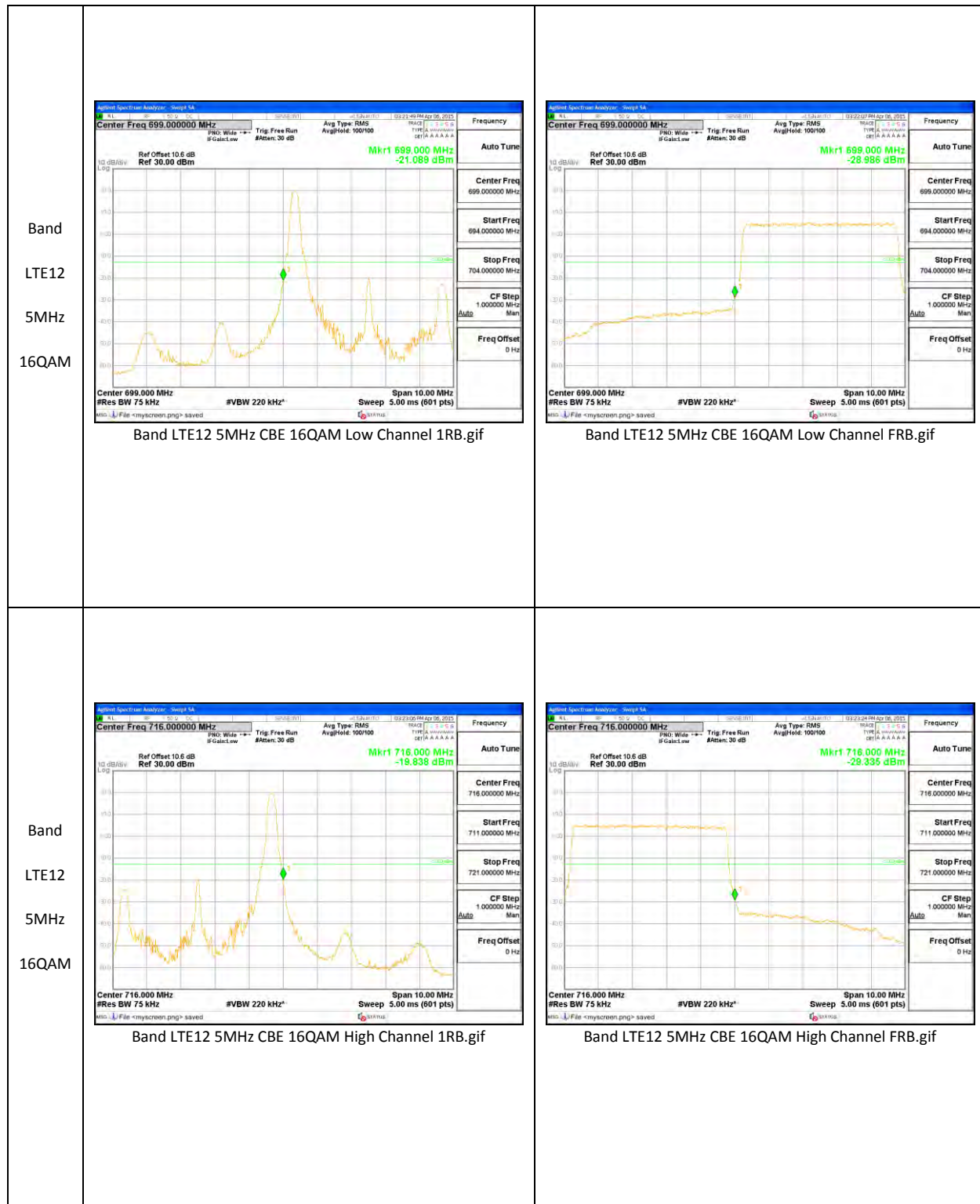
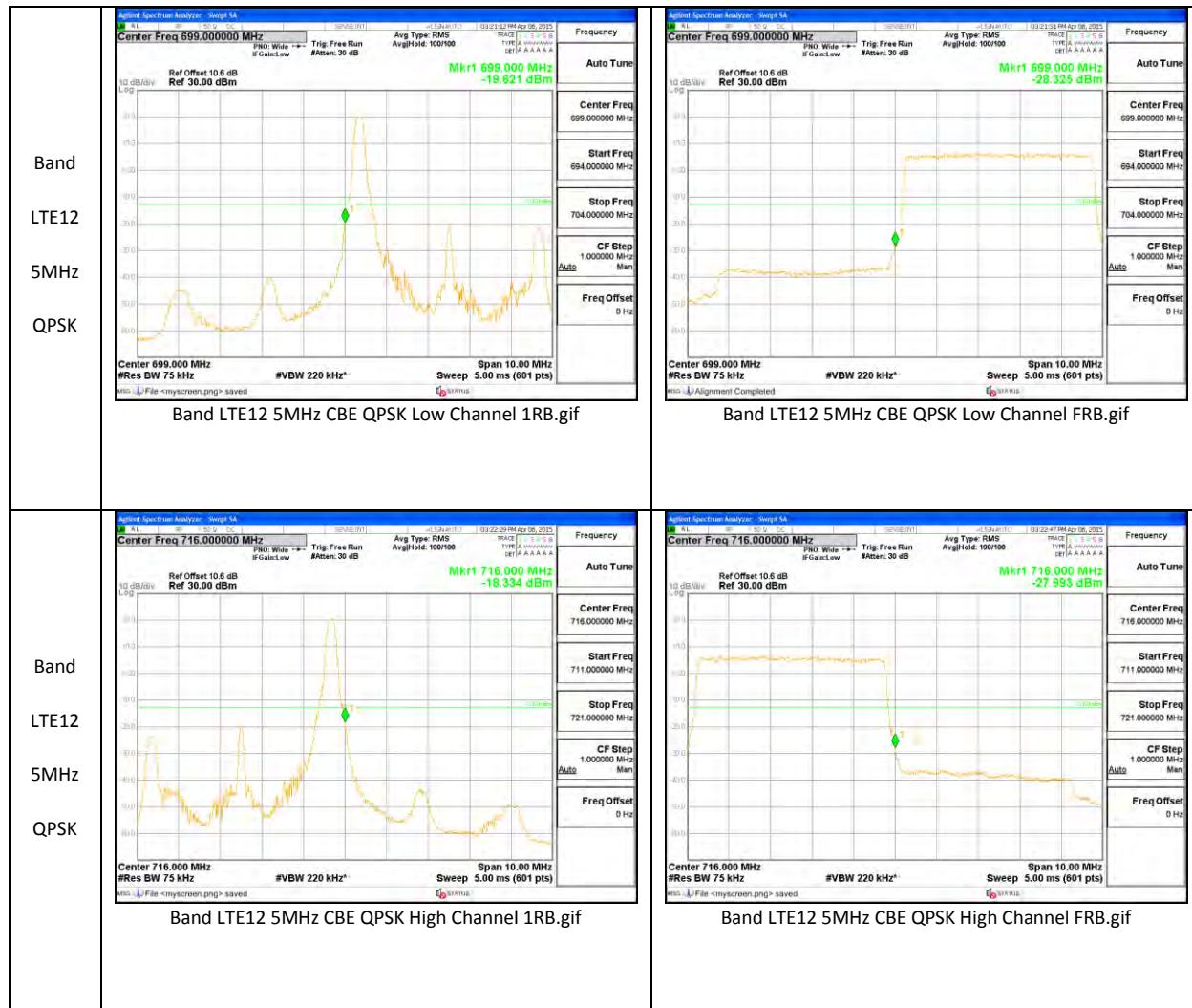
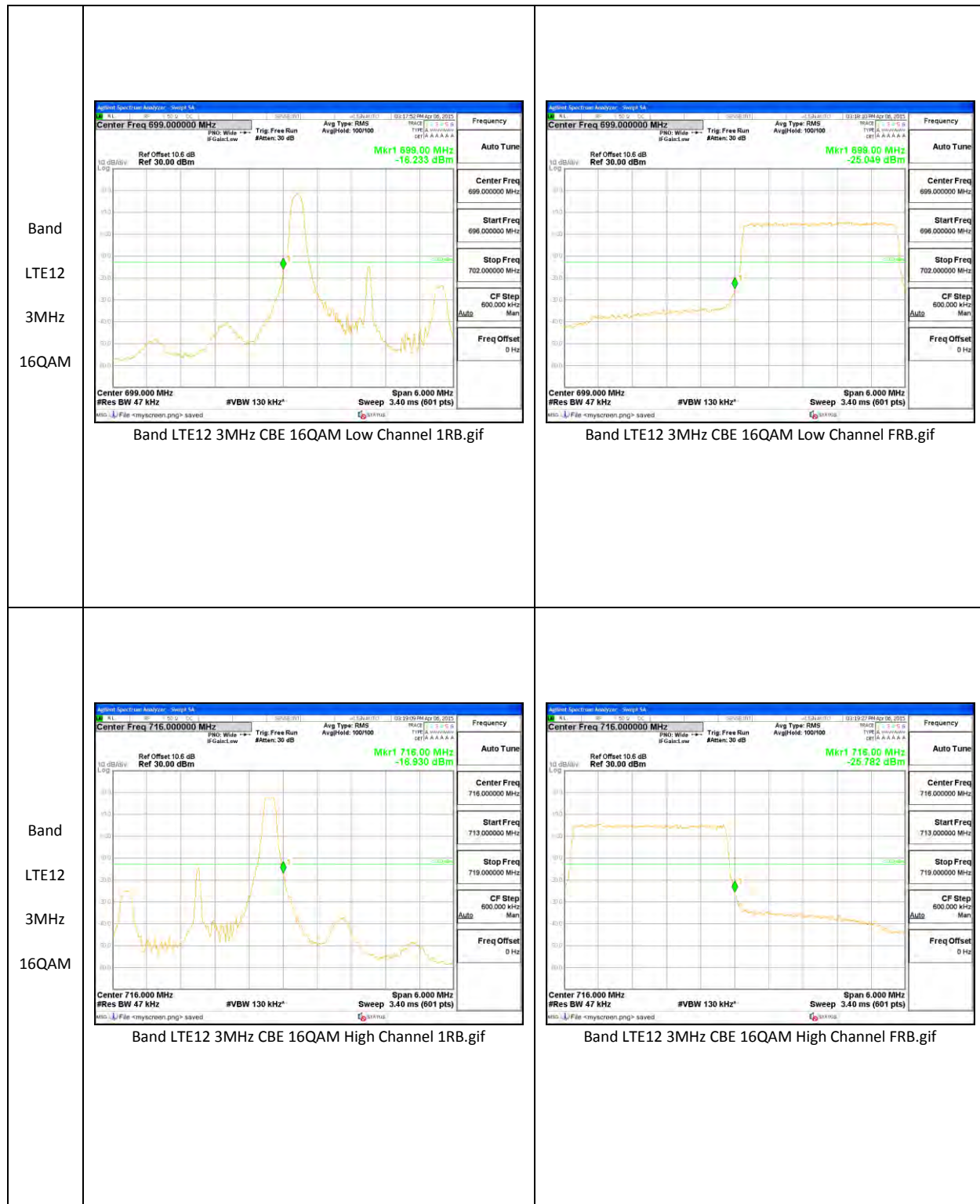
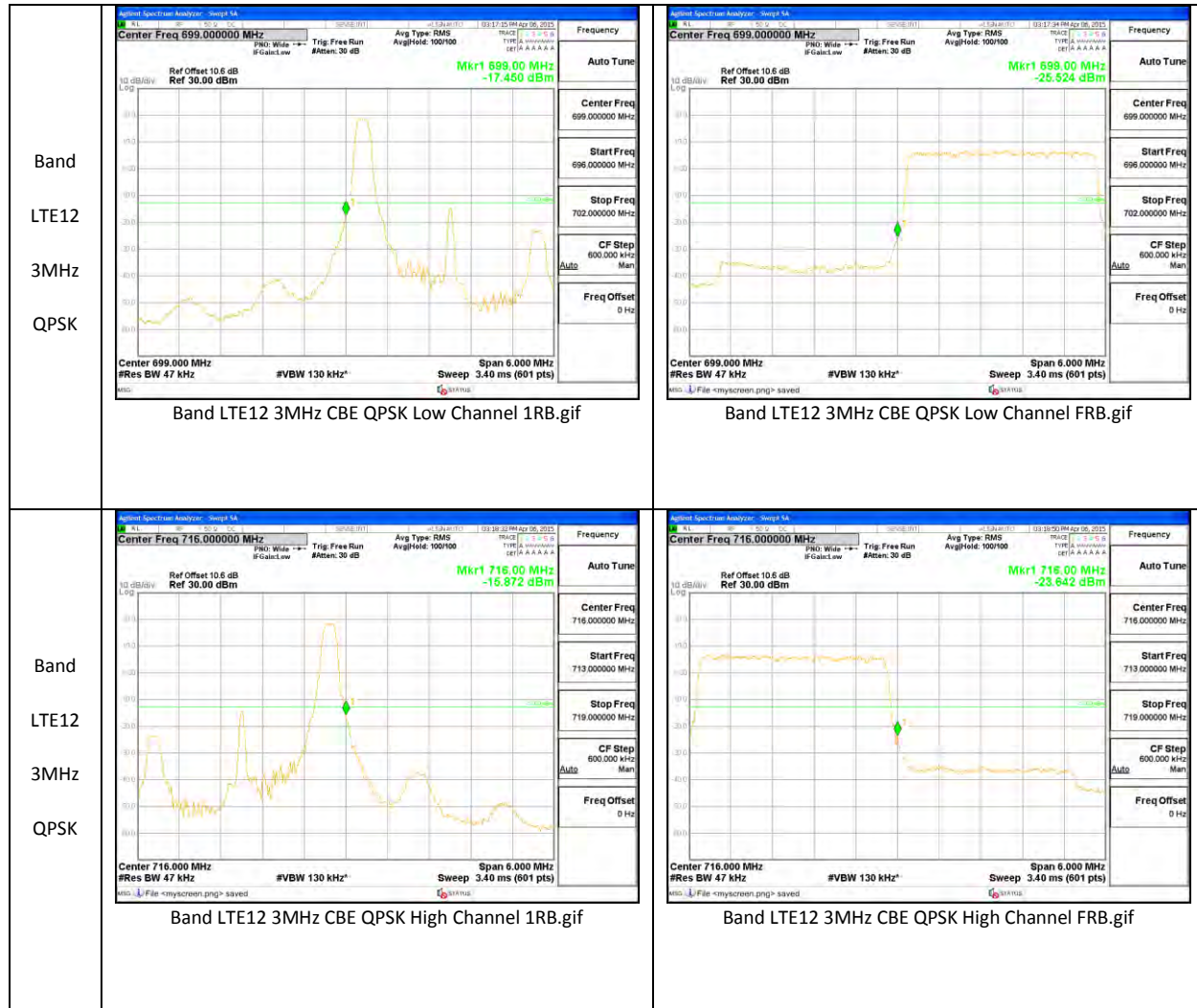
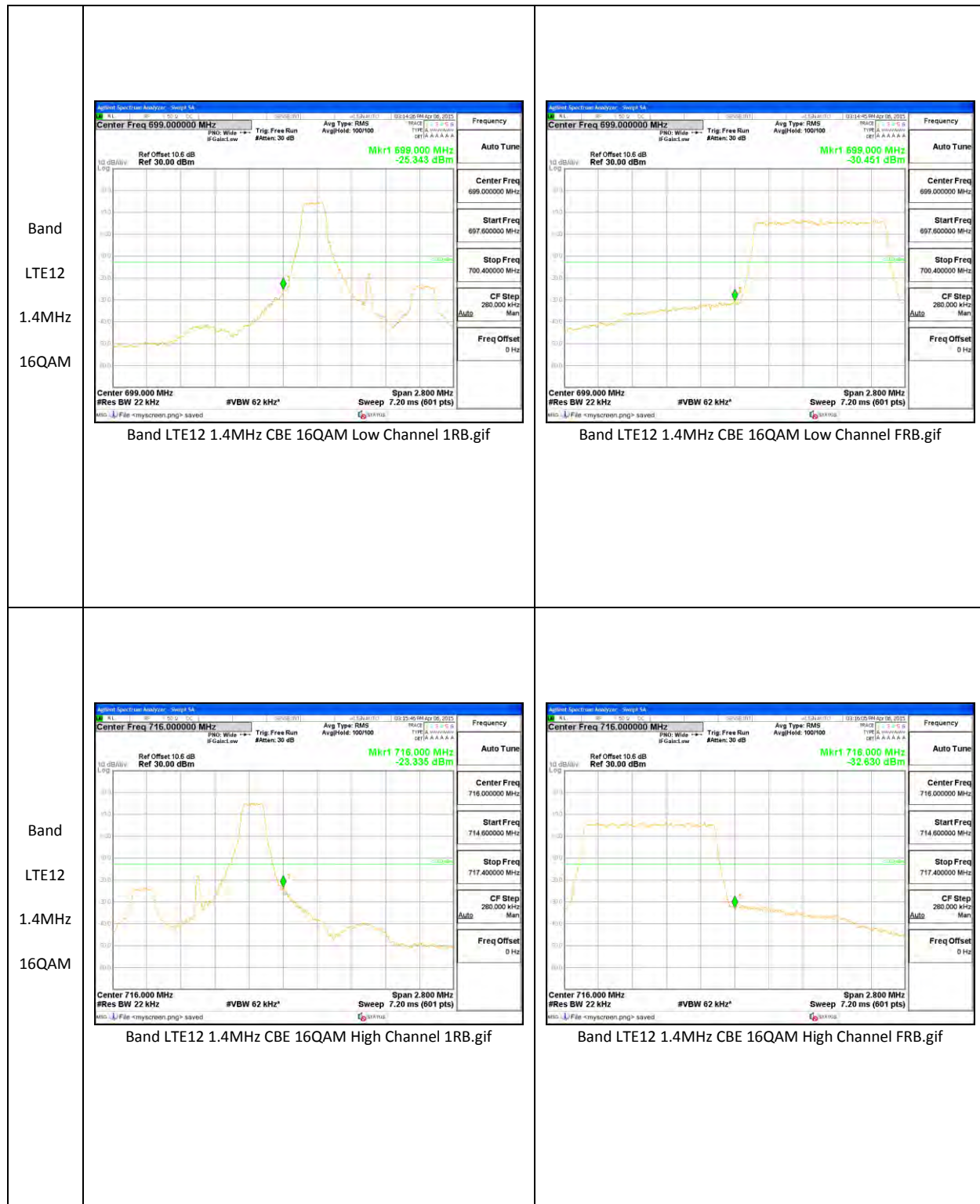


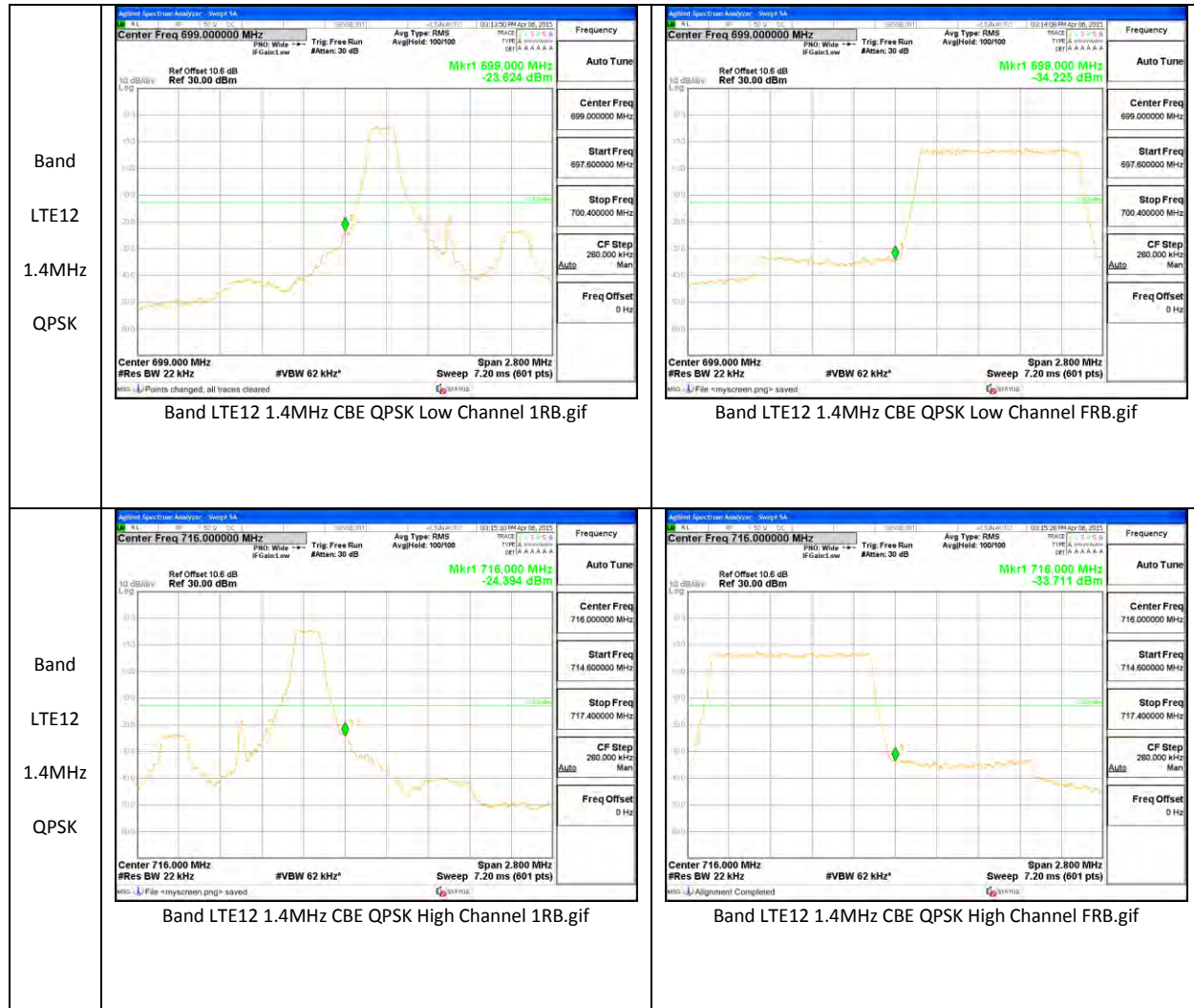


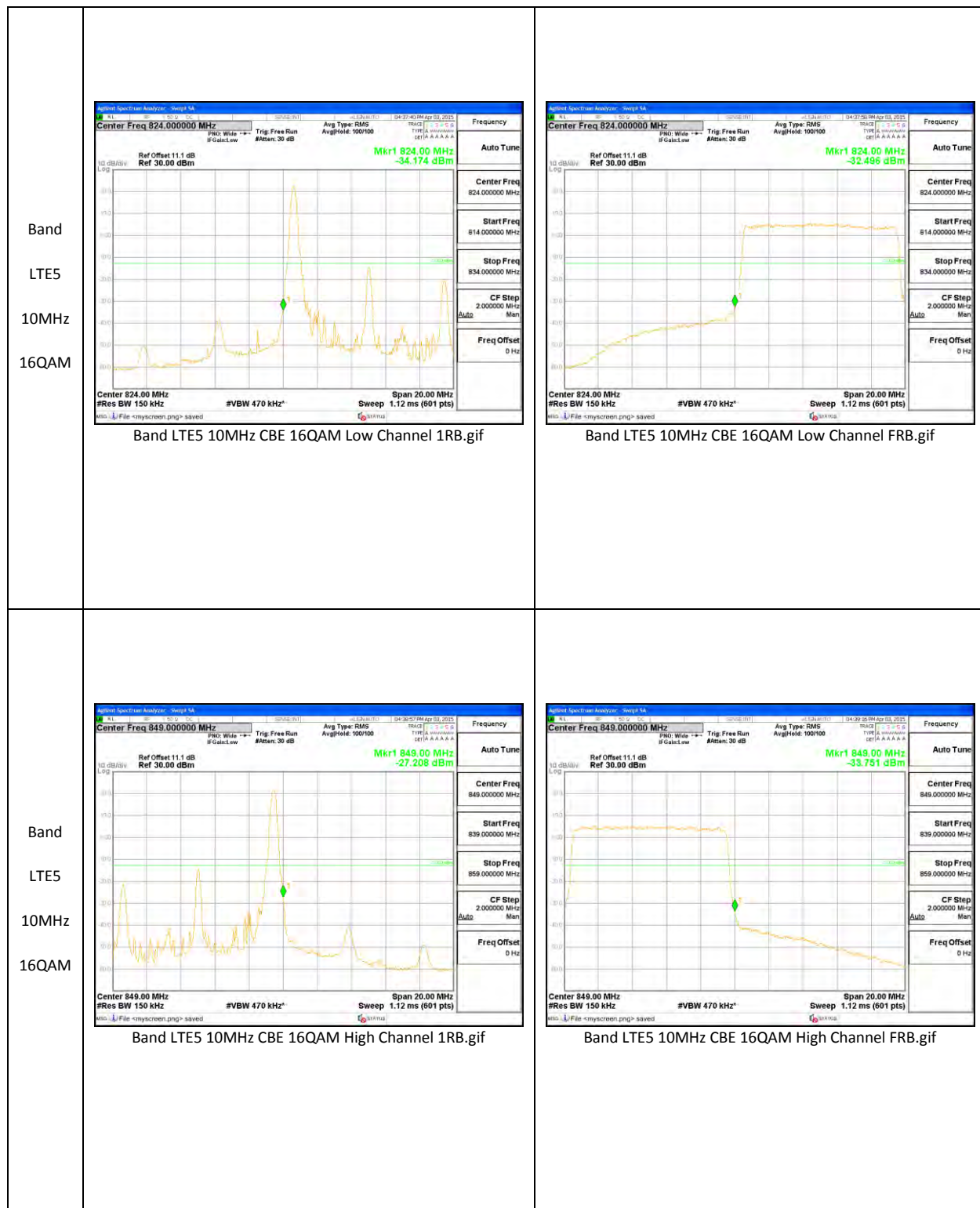


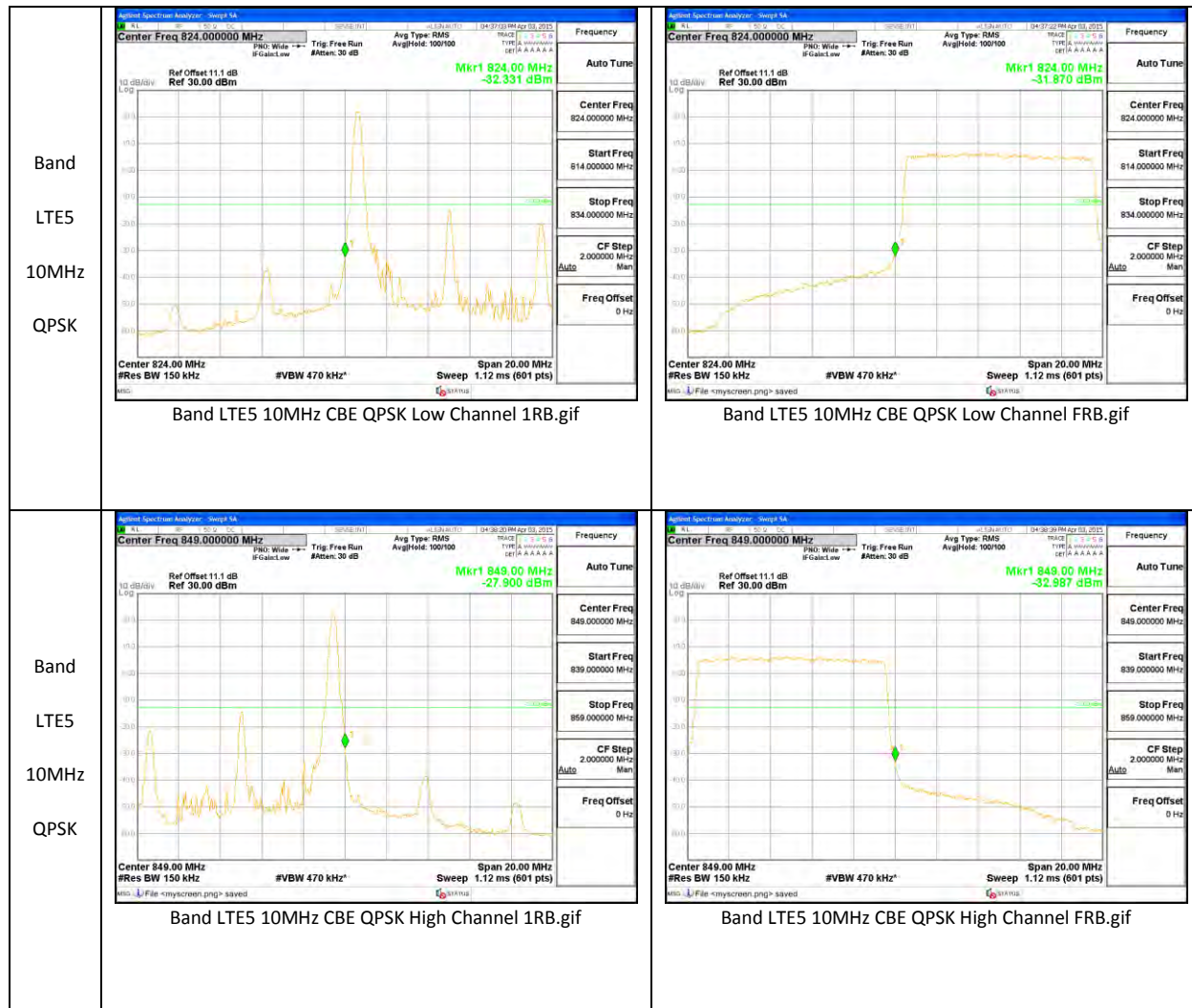


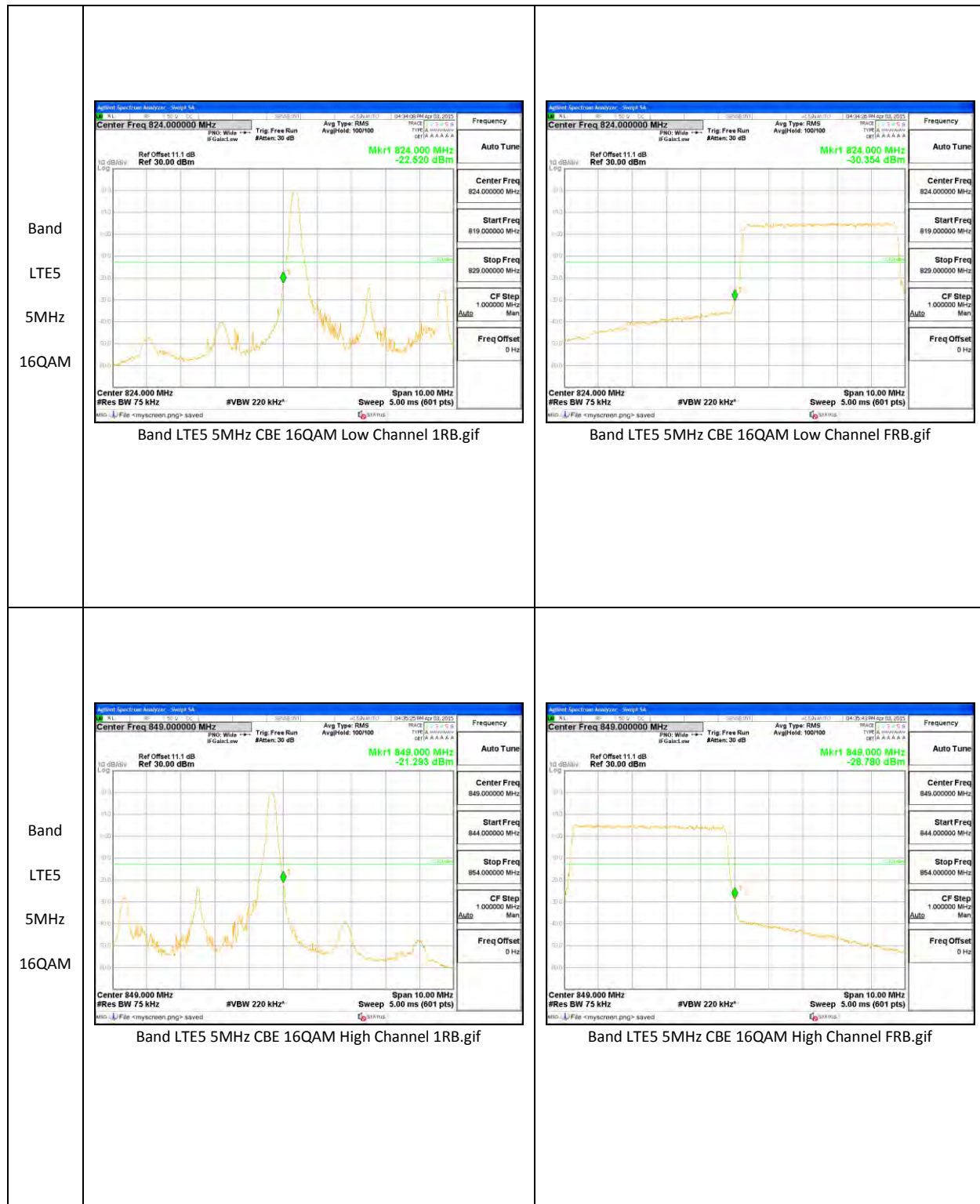


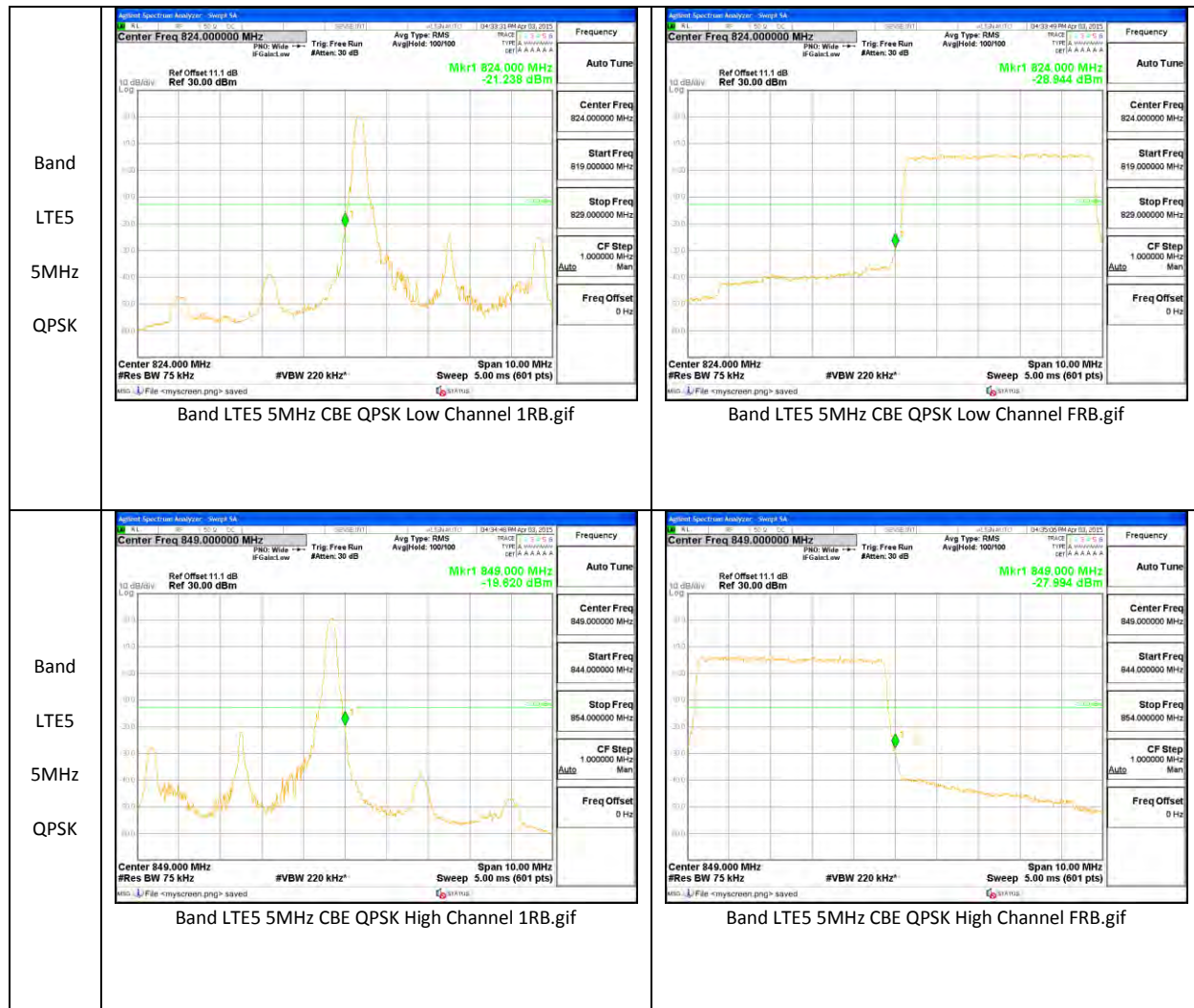


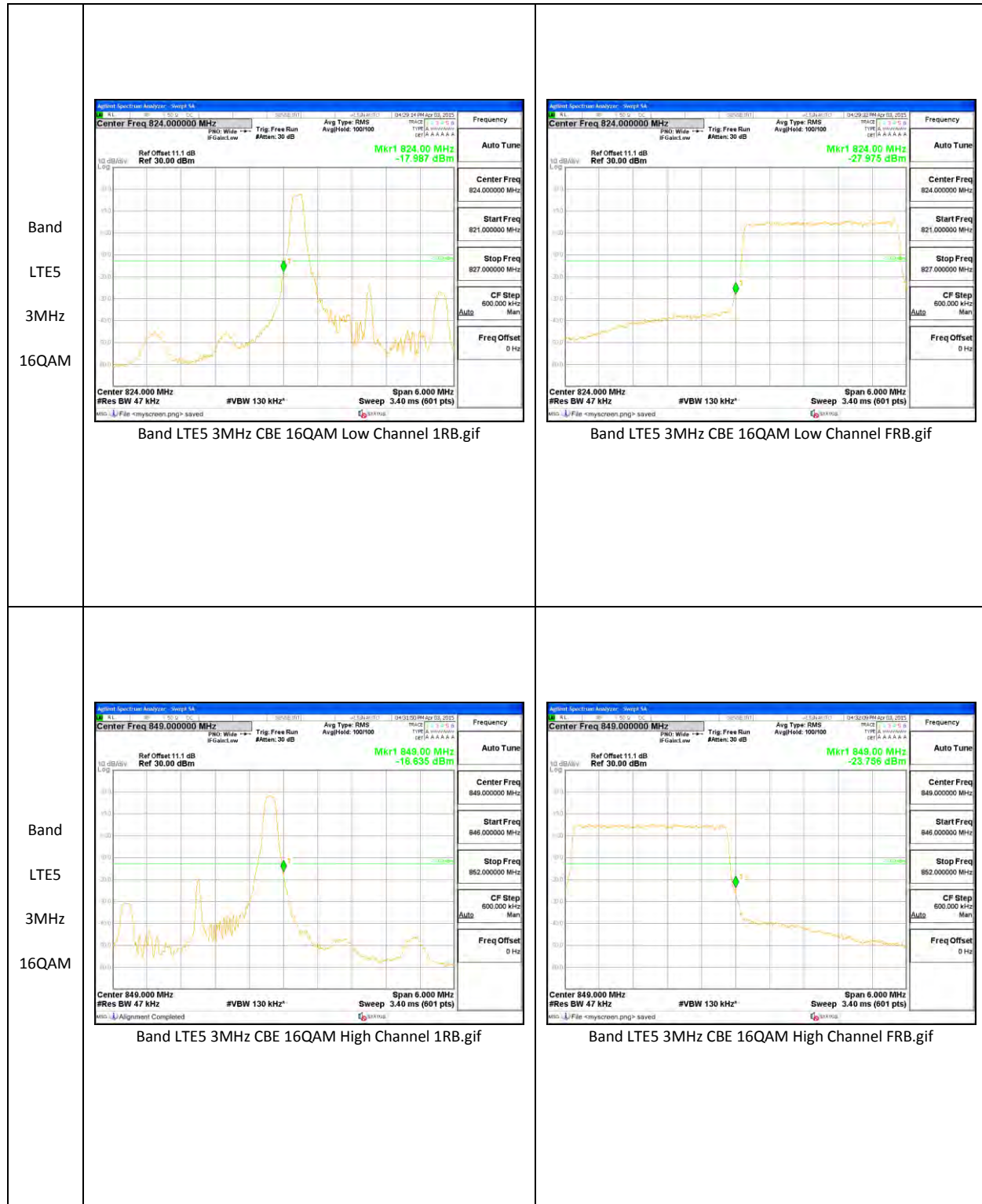


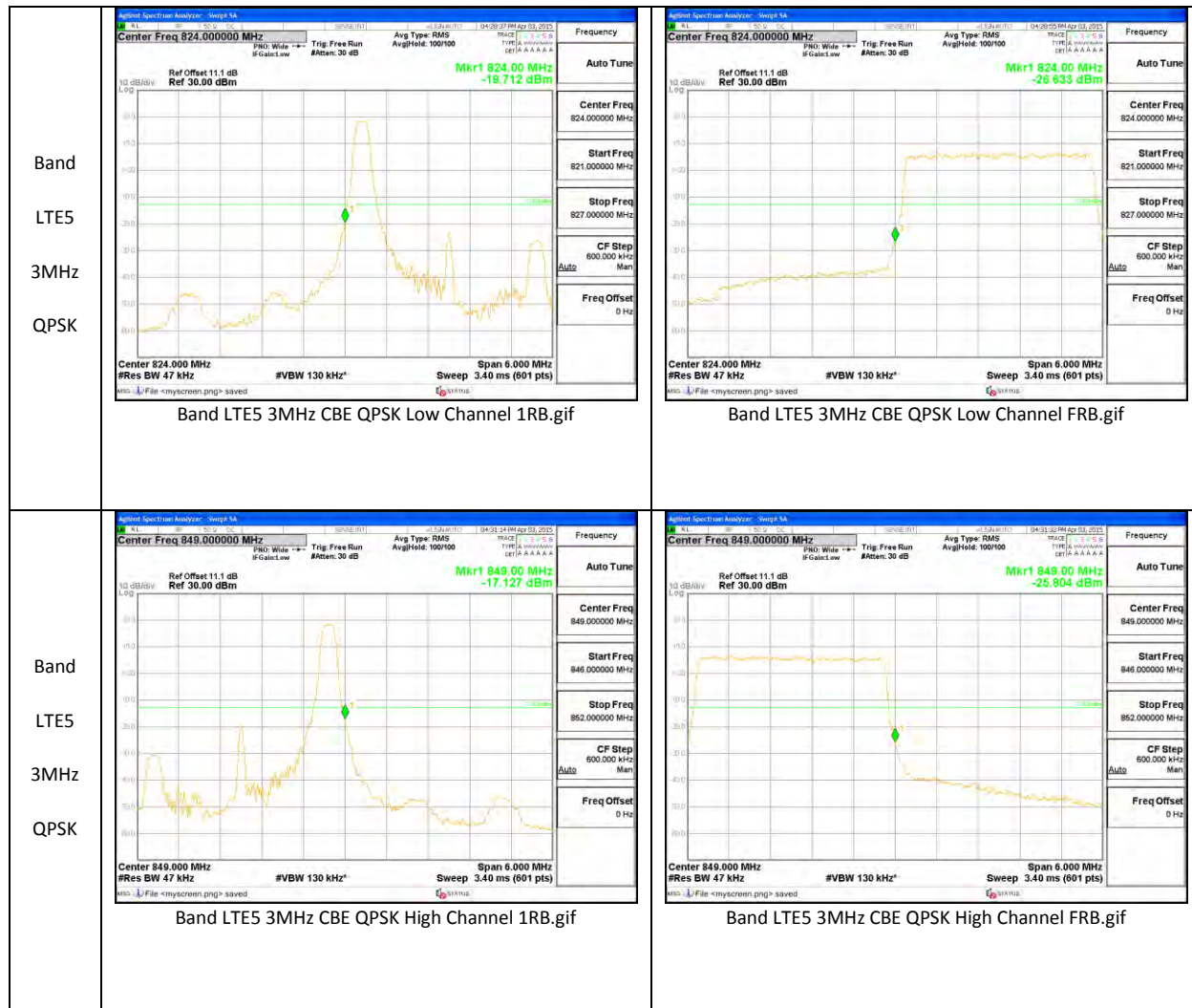
**LTE Band 5**

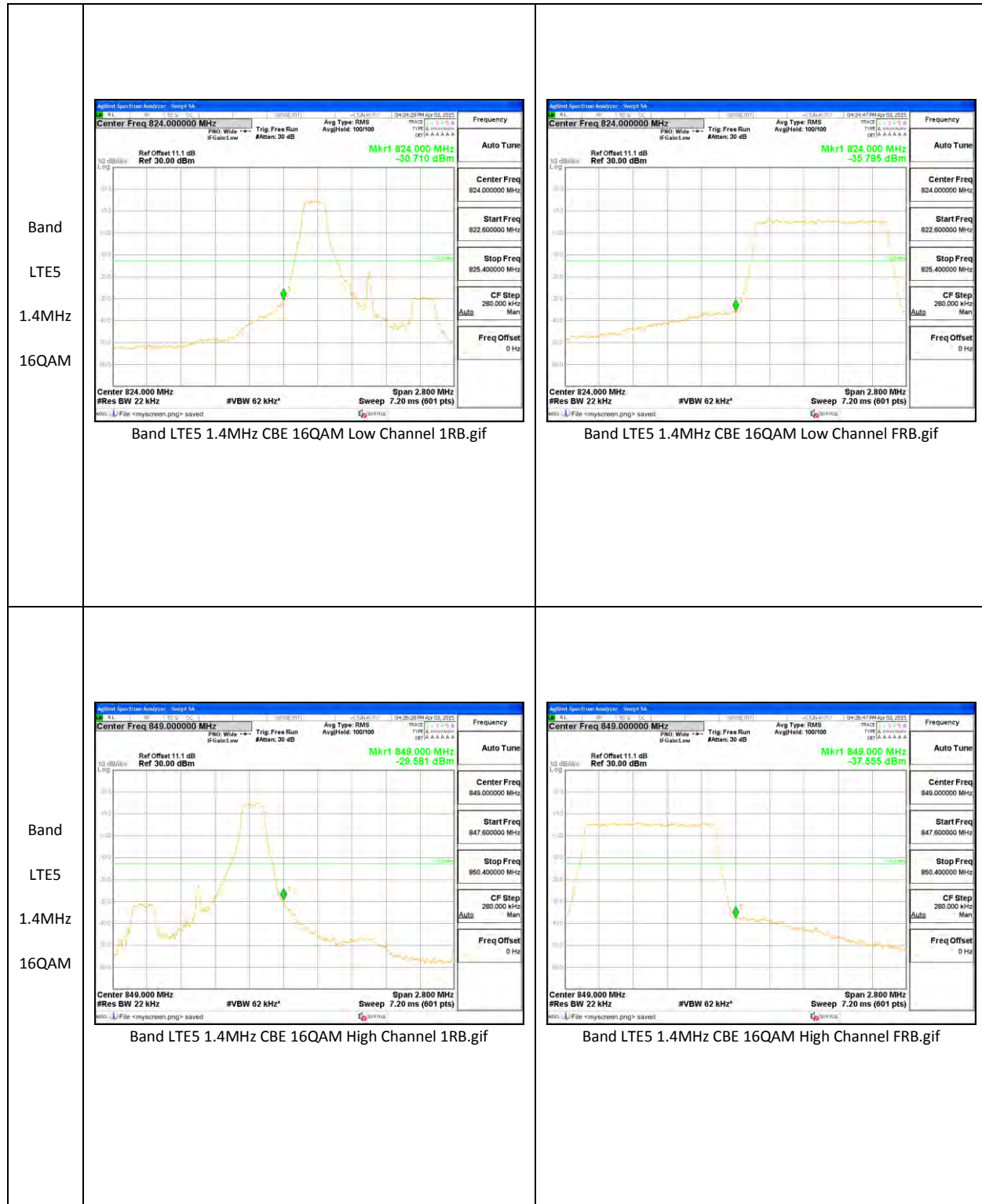


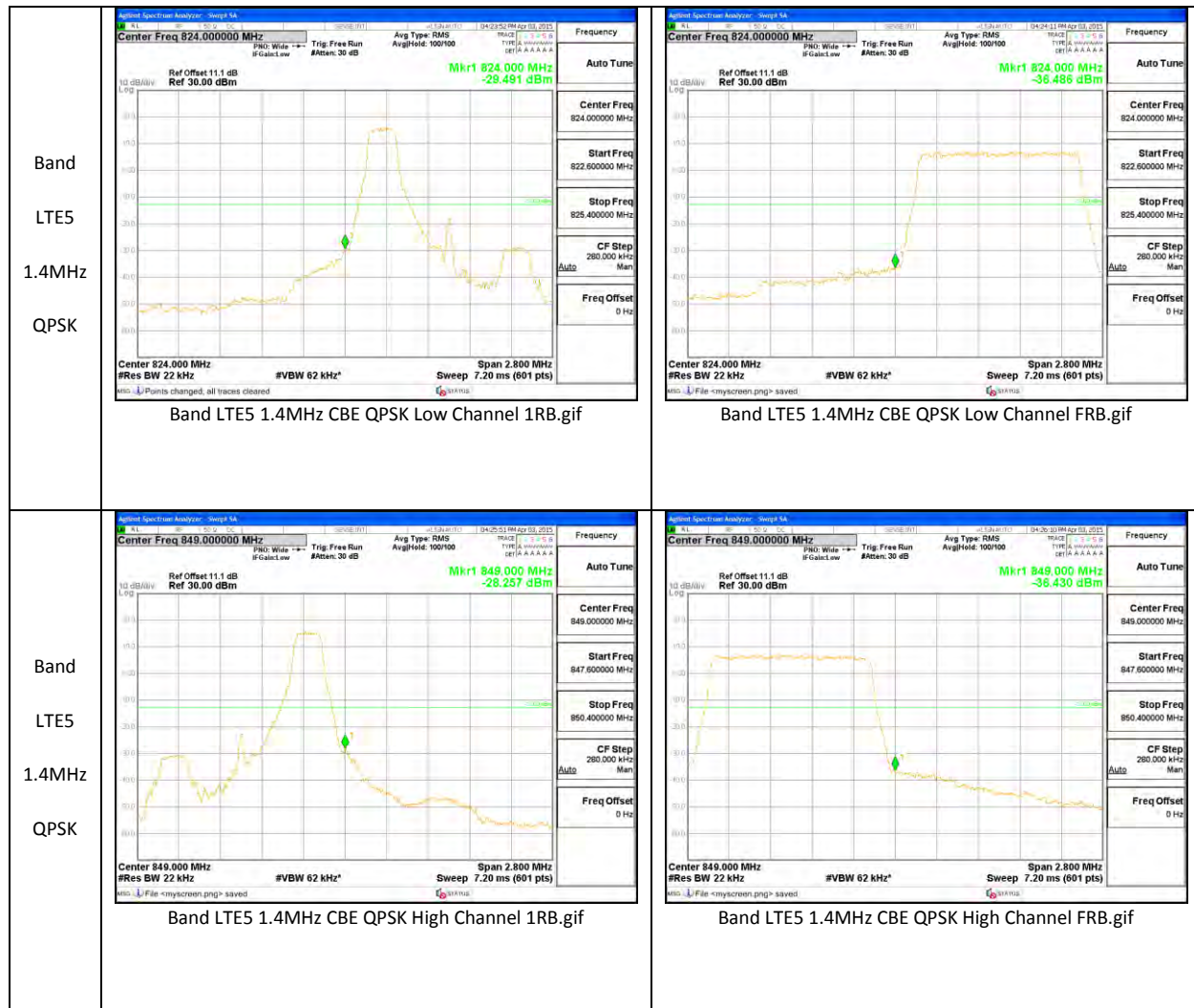


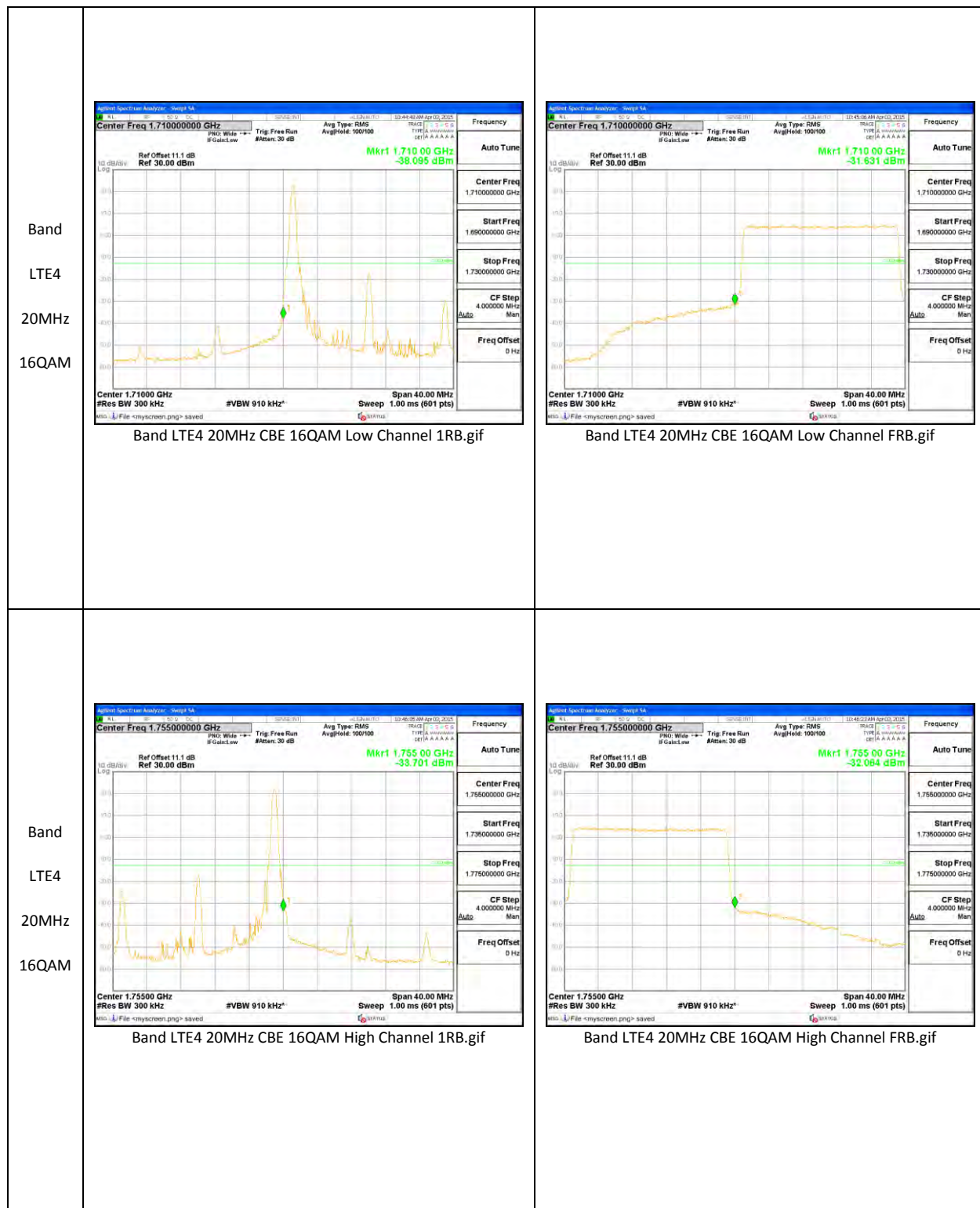


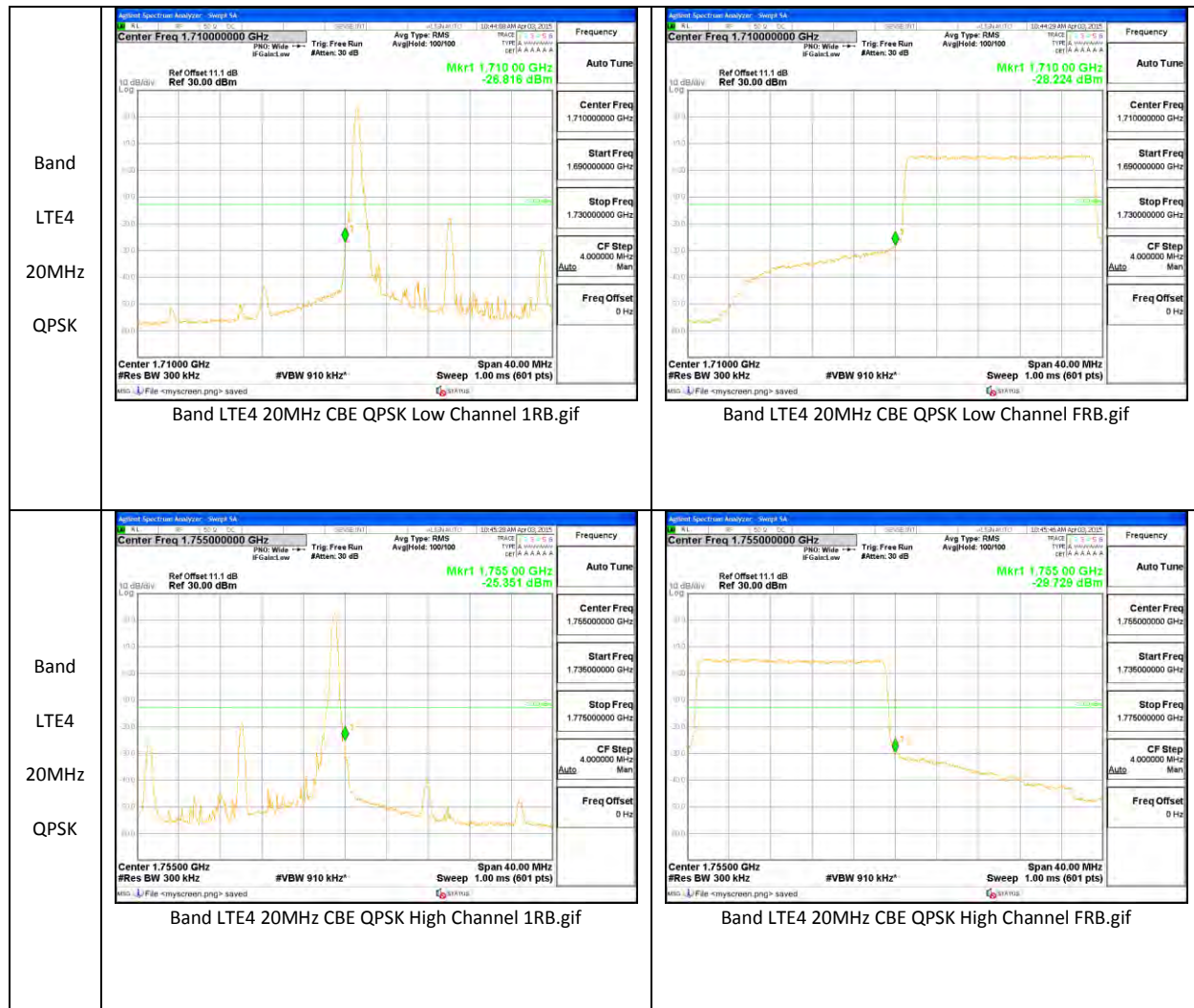


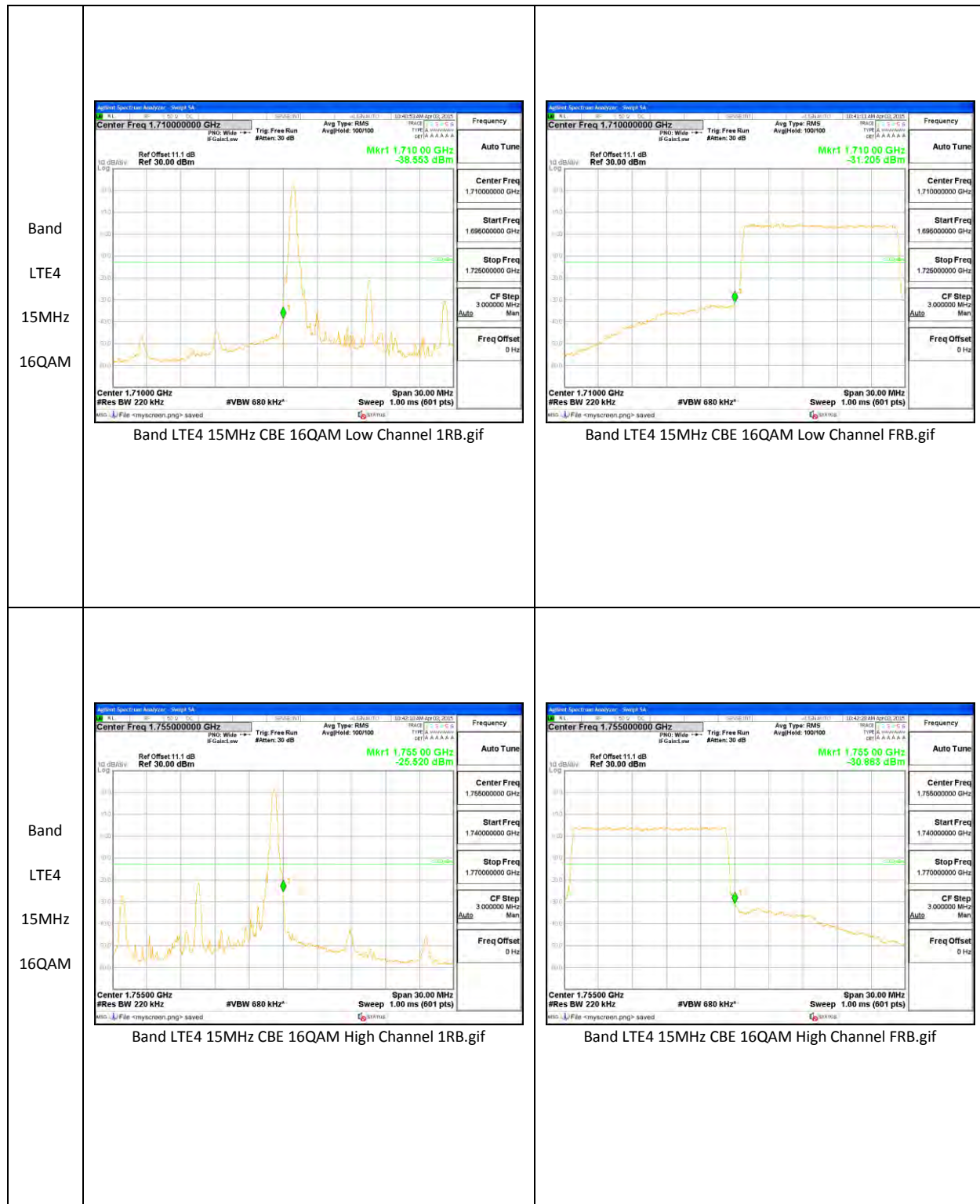


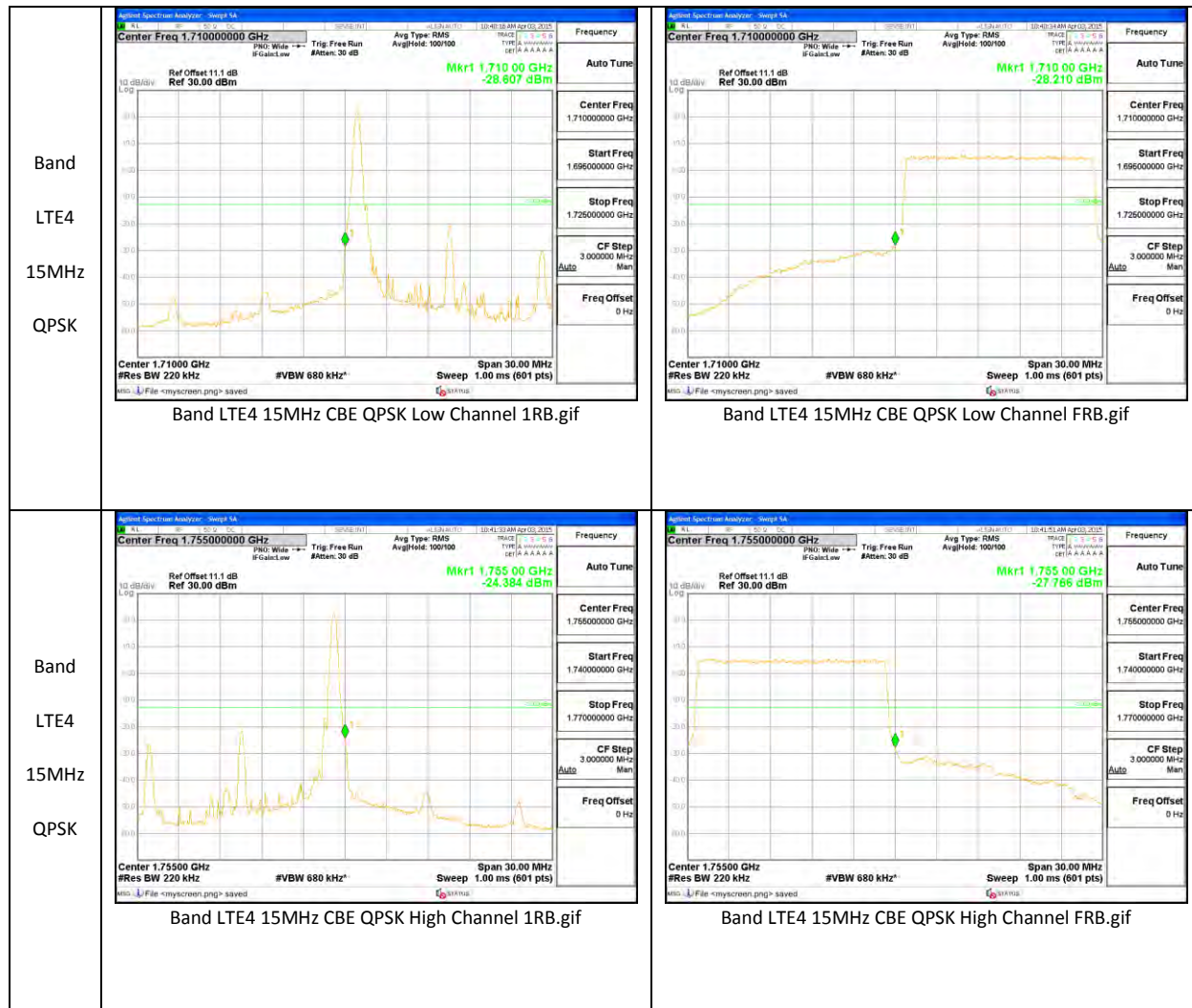


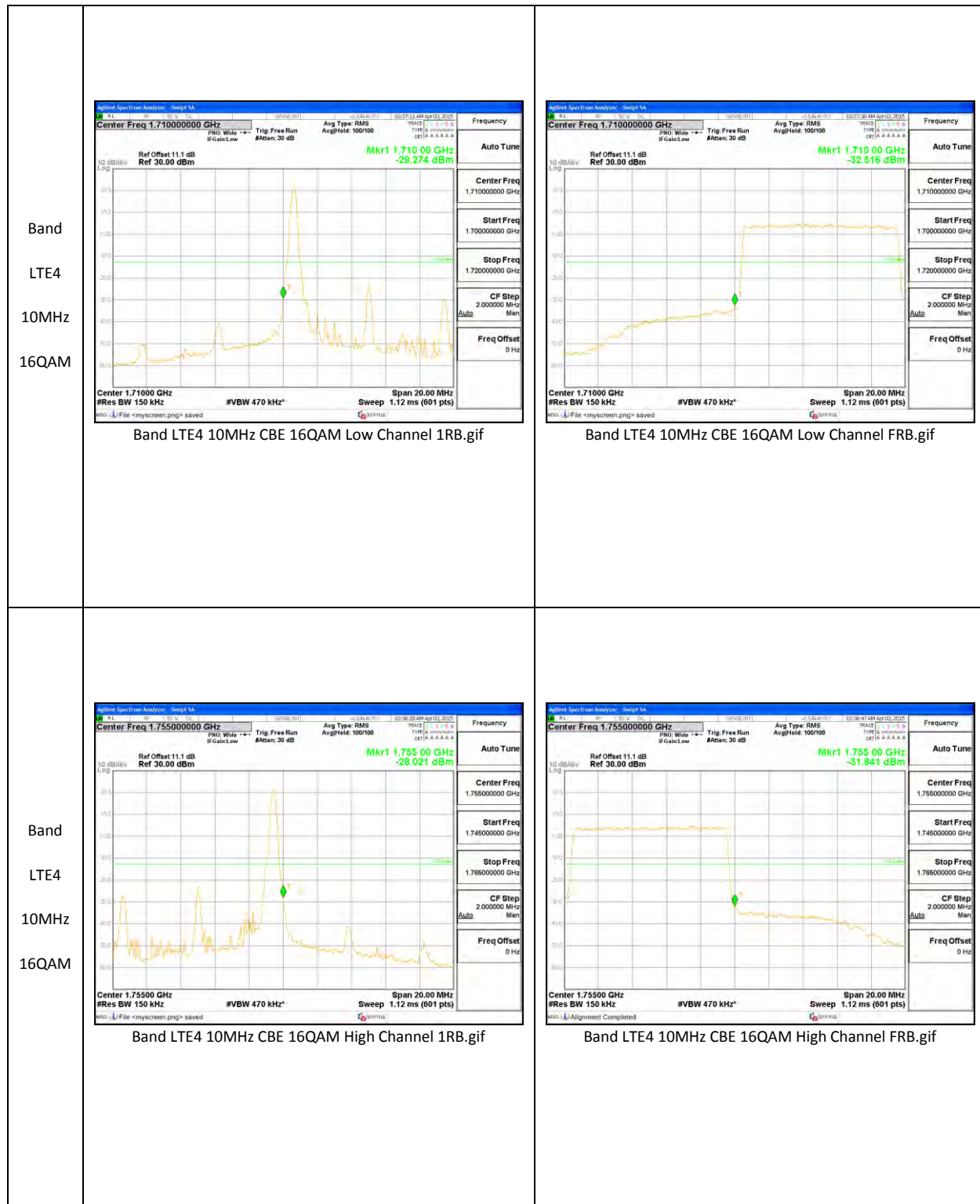


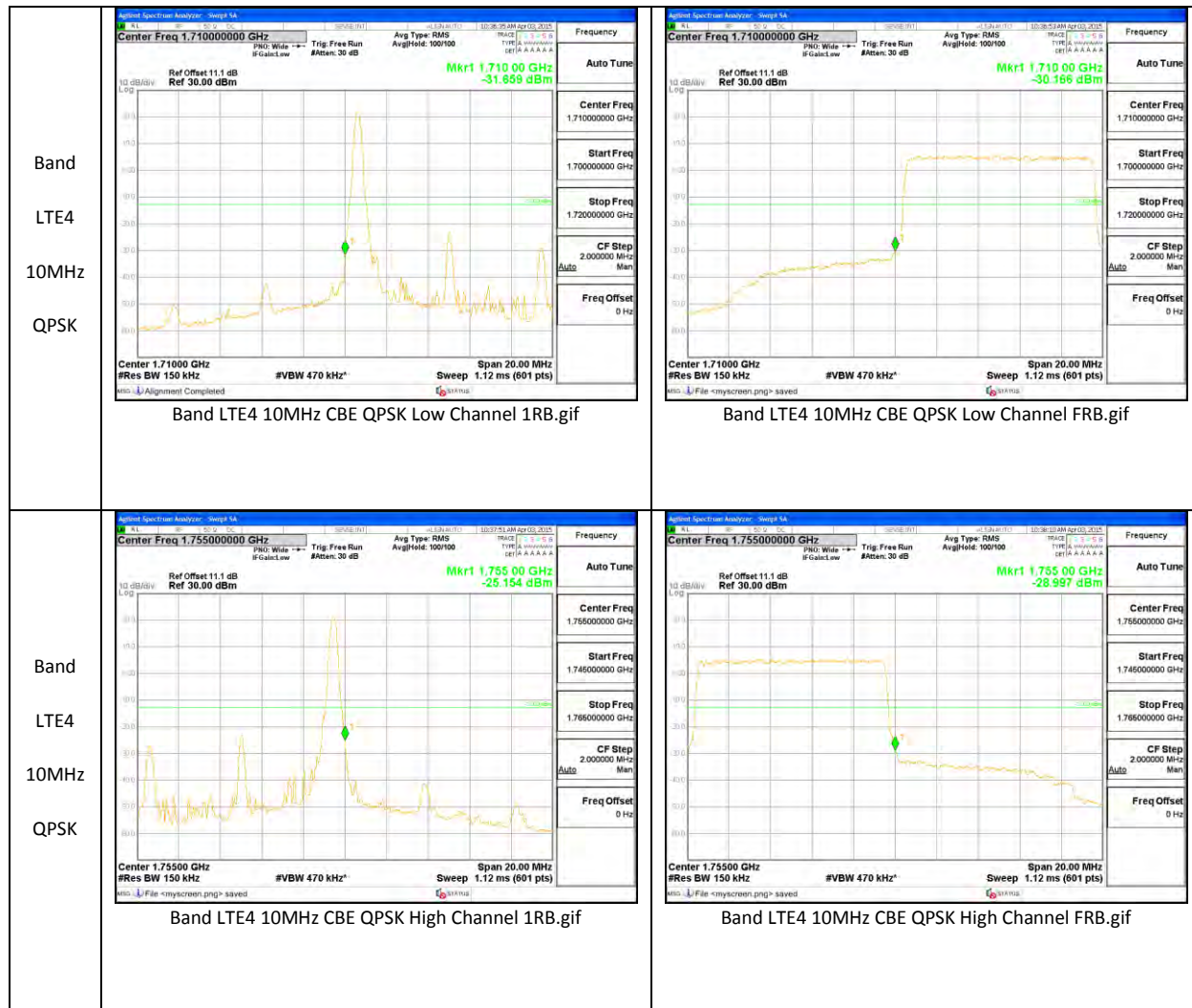
**LTE Band 4**

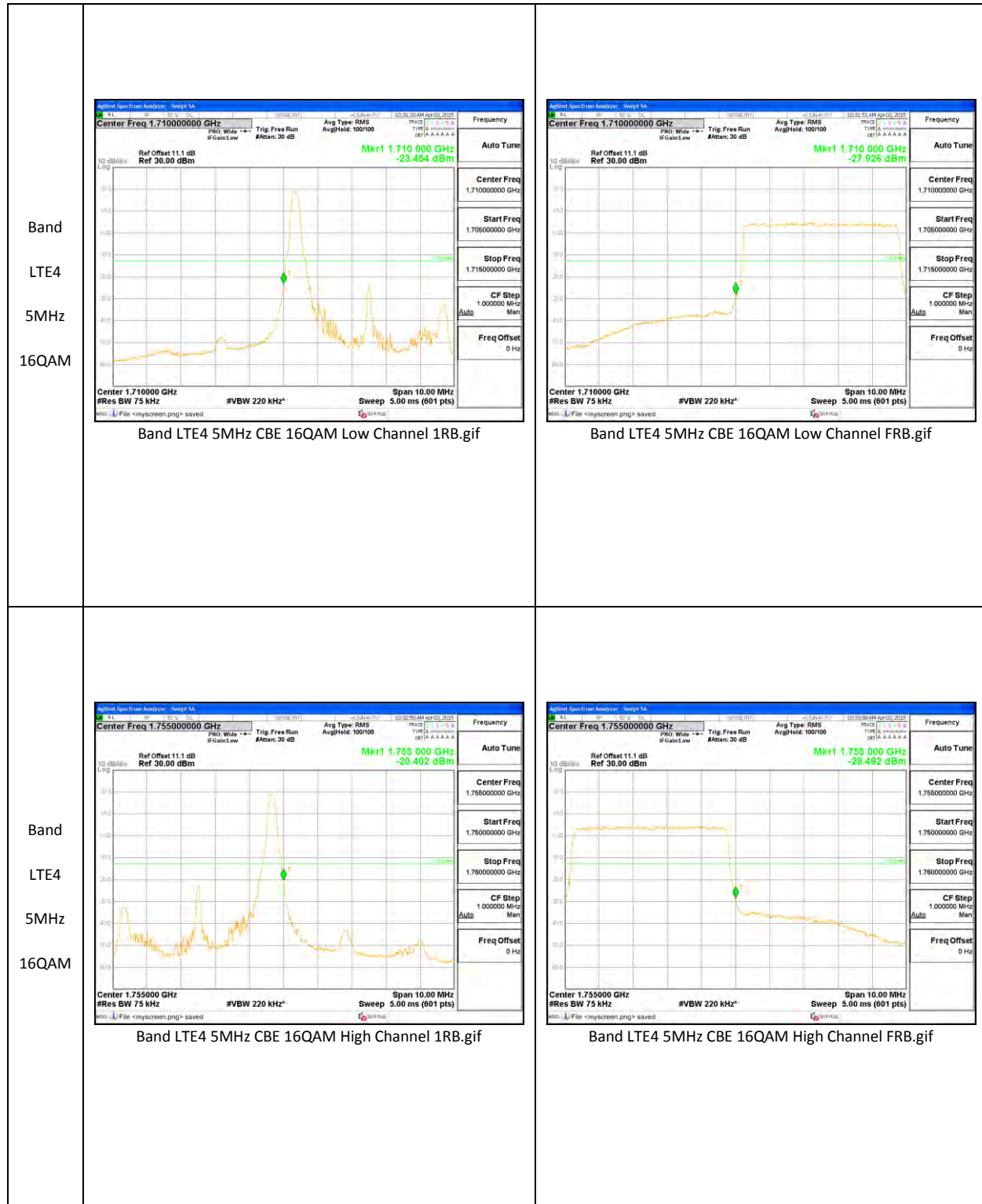


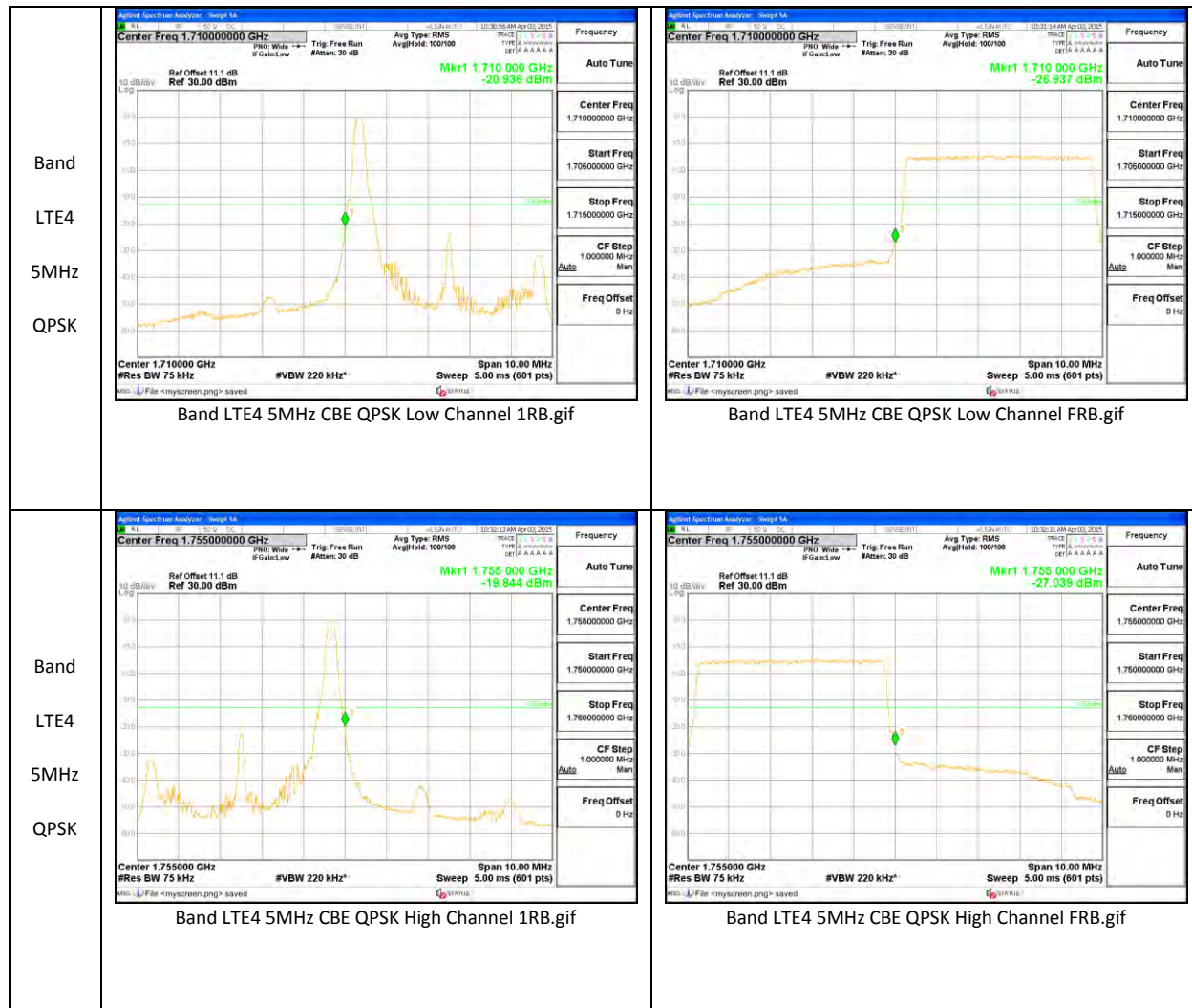


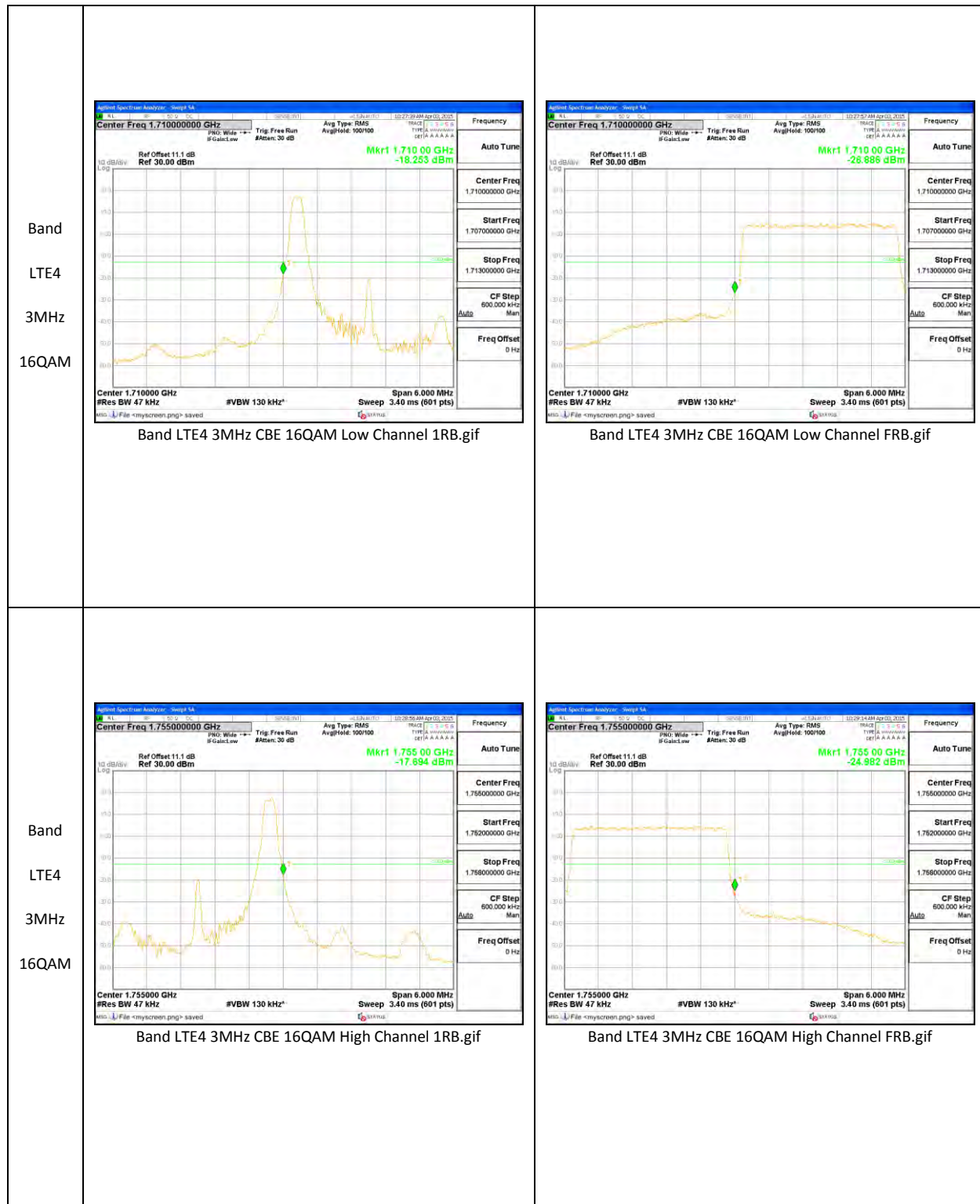


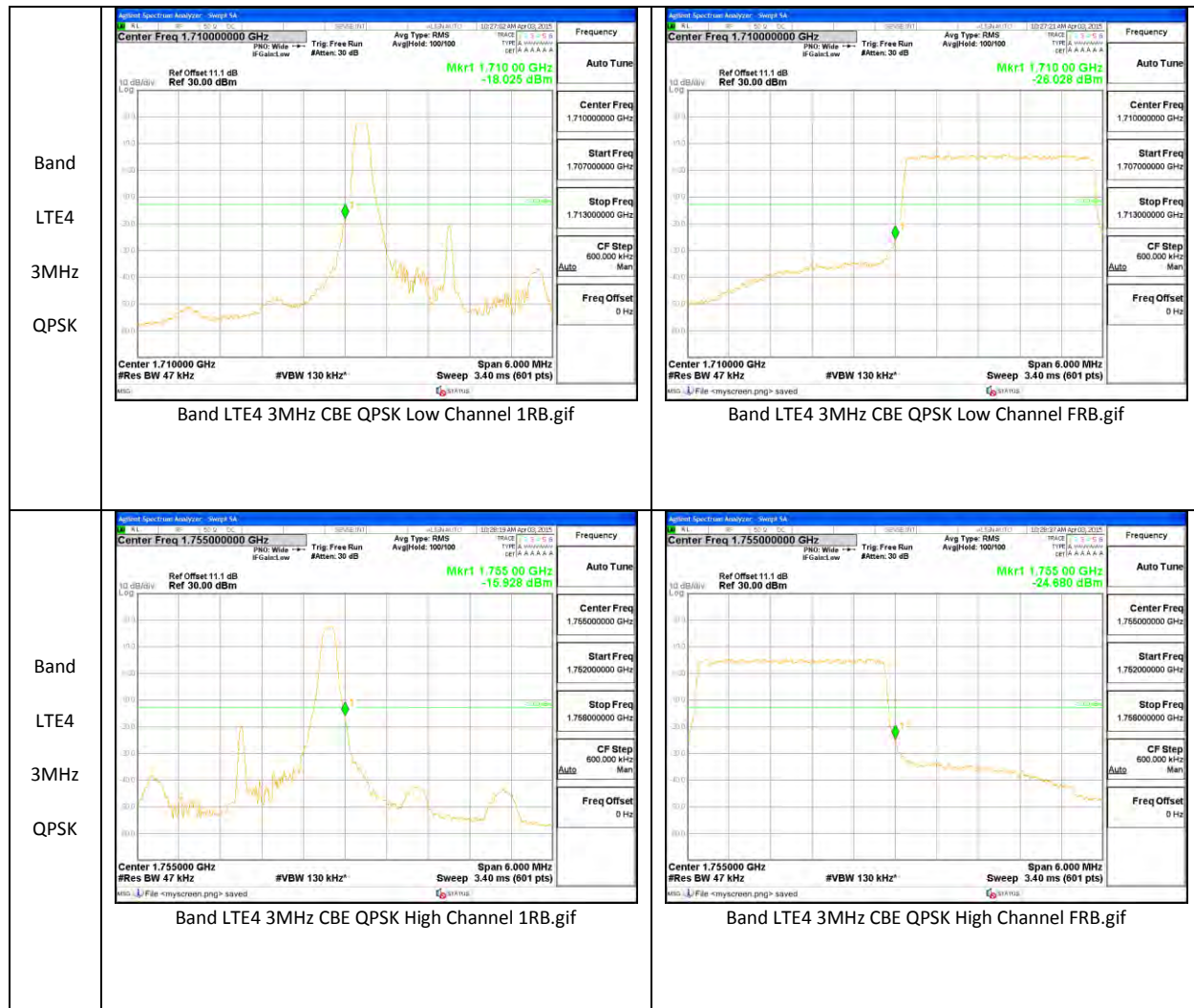


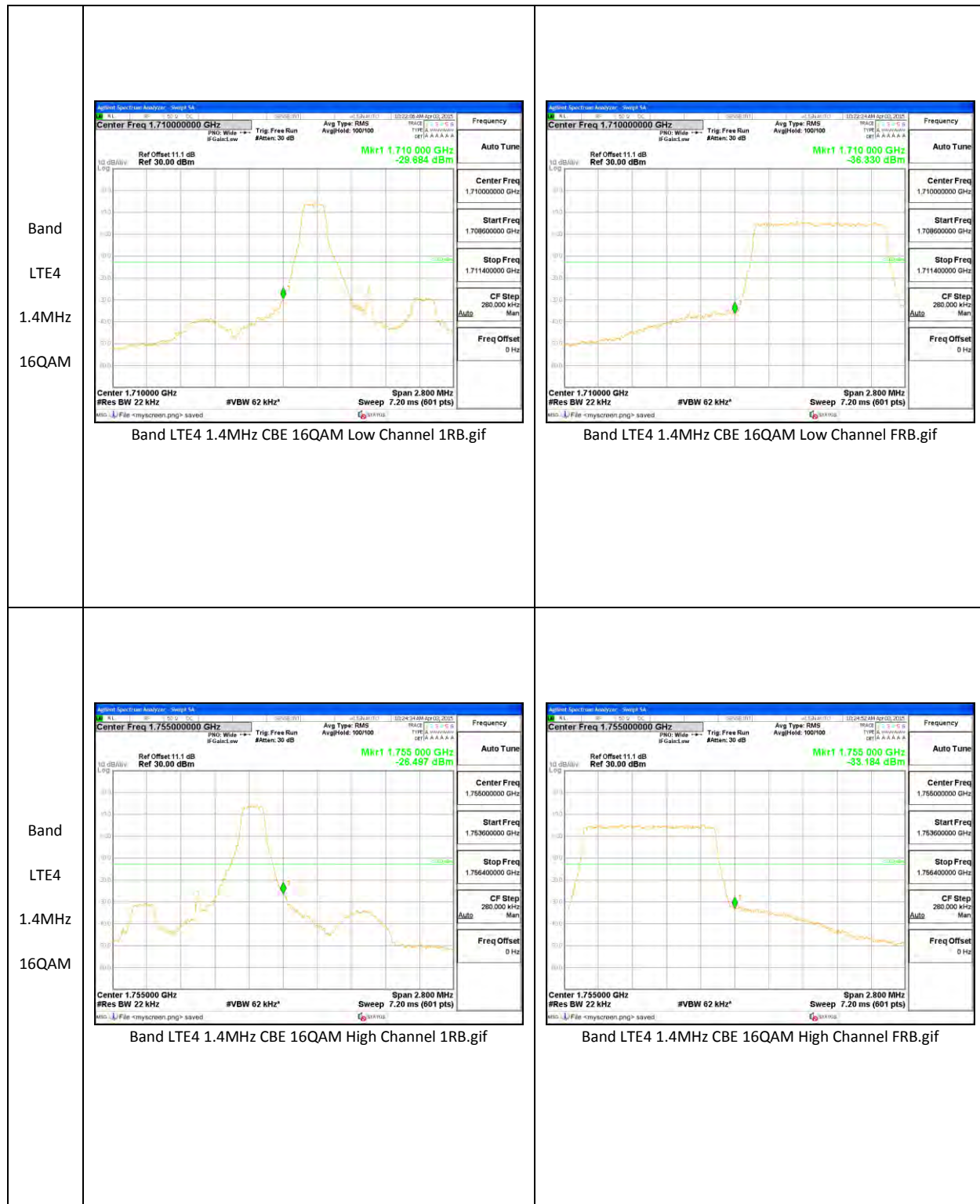


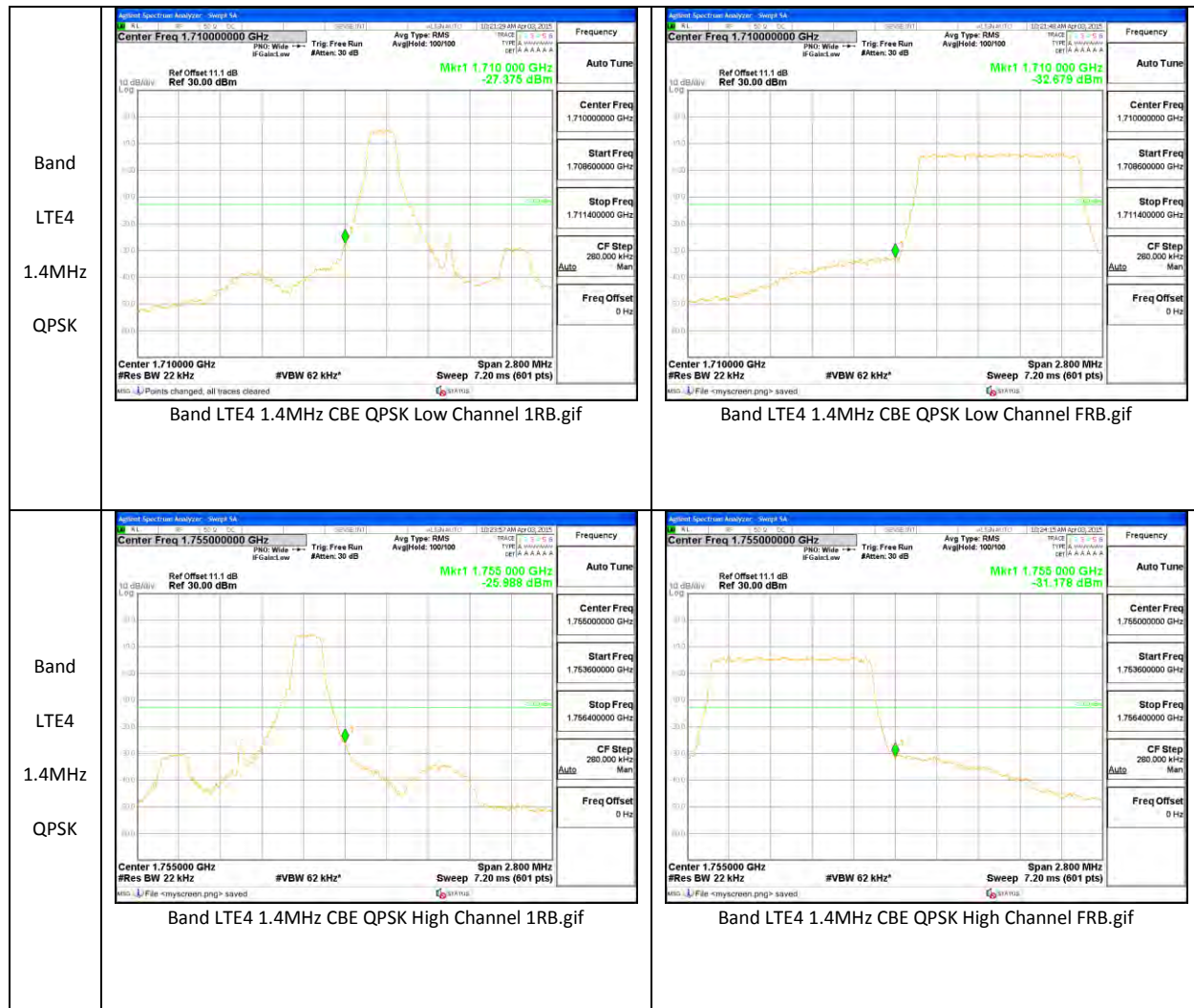




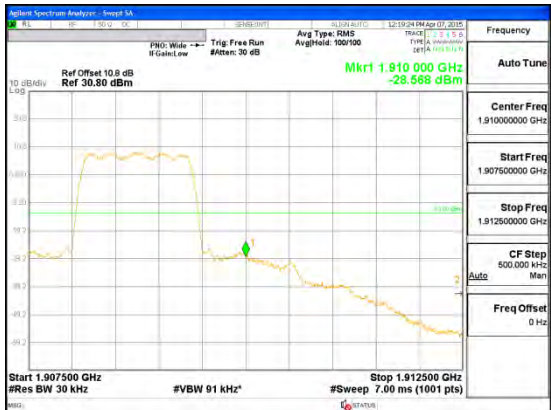


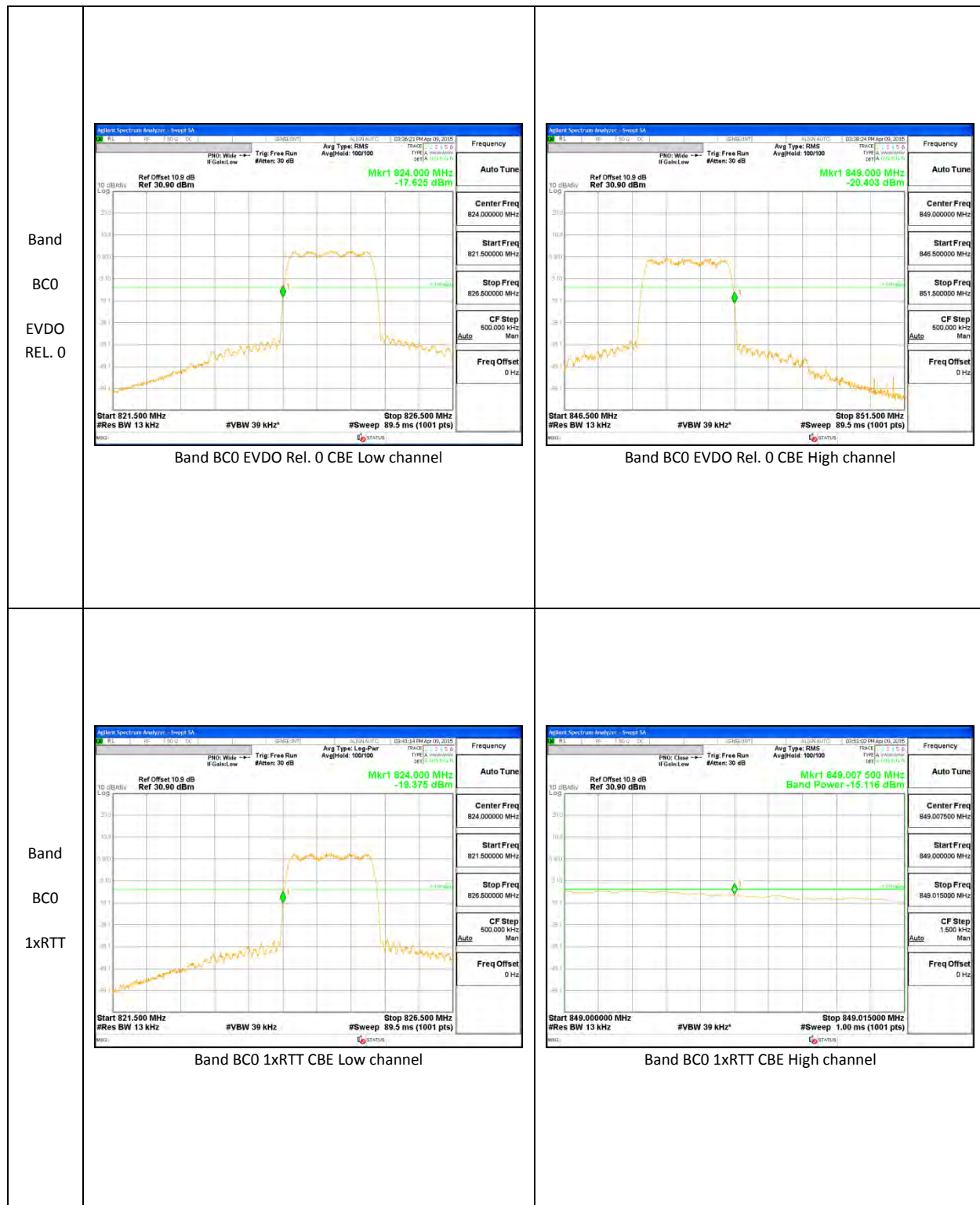


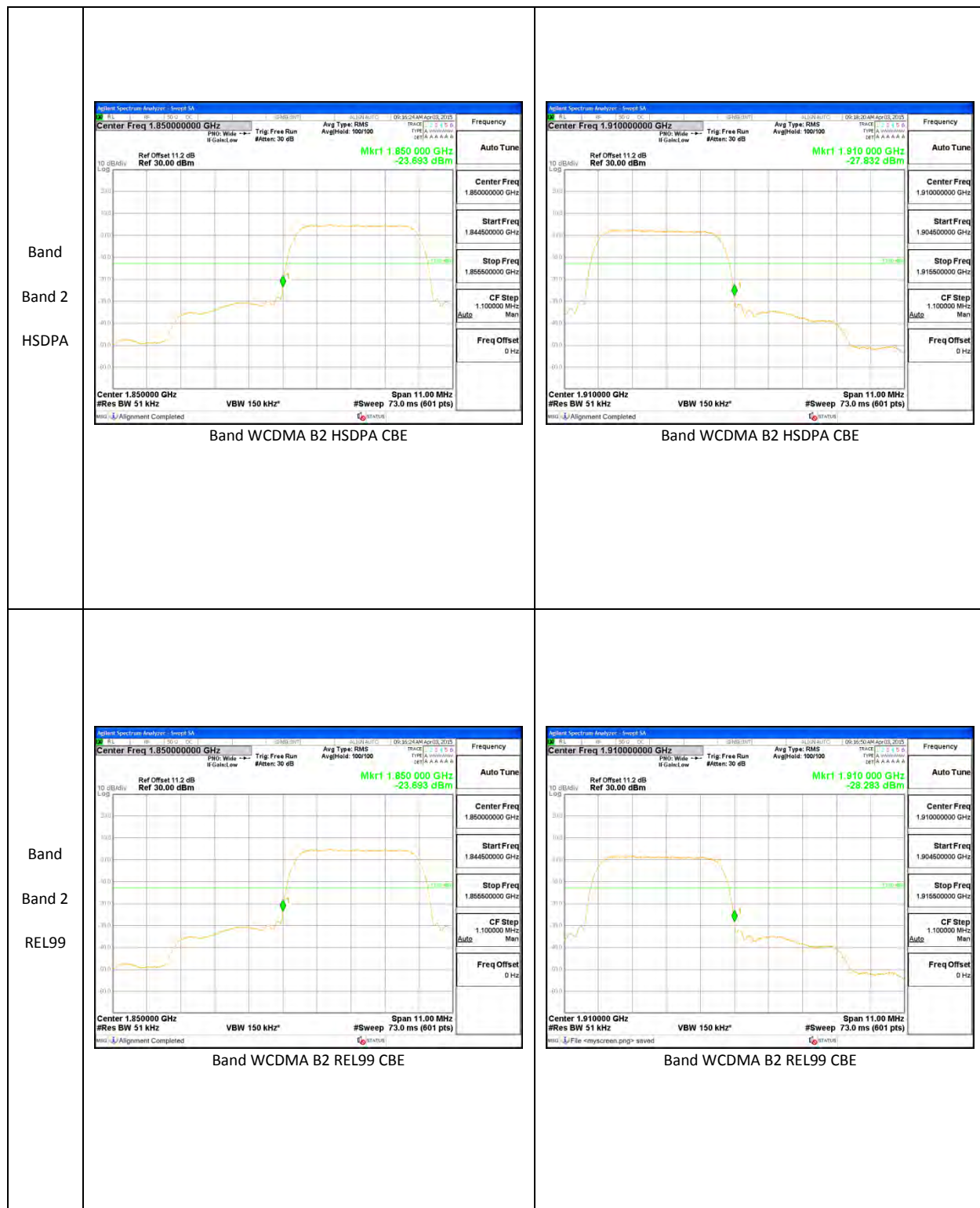


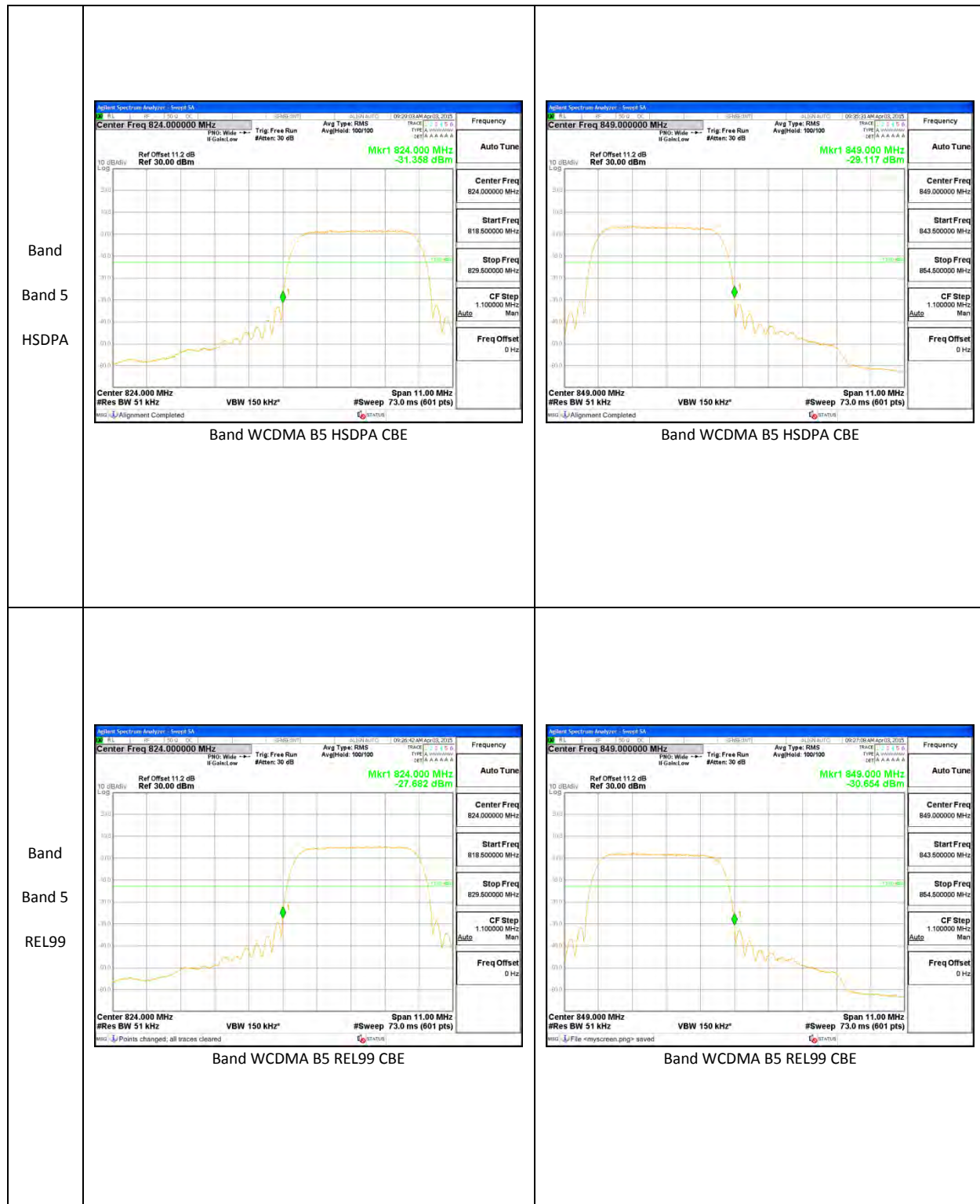


**CDMA**

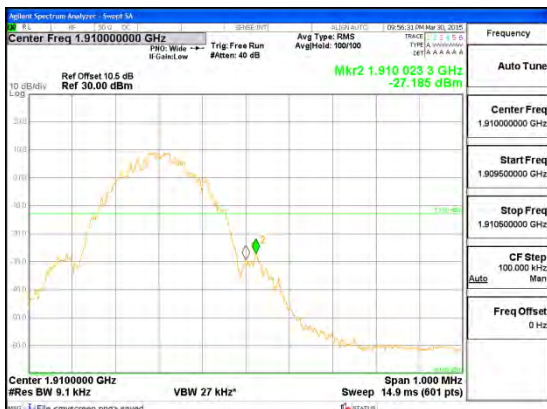
|                               |                                                                                                                               |                                                                                                                                 |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Band<br>BC1<br>EVDO<br>REL. 0 |  <p>Band BC1 EVDO Rel. 0 CBE Low channel</p> |  <p>Band BC1 EVDO Rel. 0 CBE High channel</p> |
| Band<br>BC1<br>1xRTT          |  <p>Band BC1 1xRTT CBE Low channel</p>     |  <p>Band BC1 1xRTT CBE High channel</p>     |

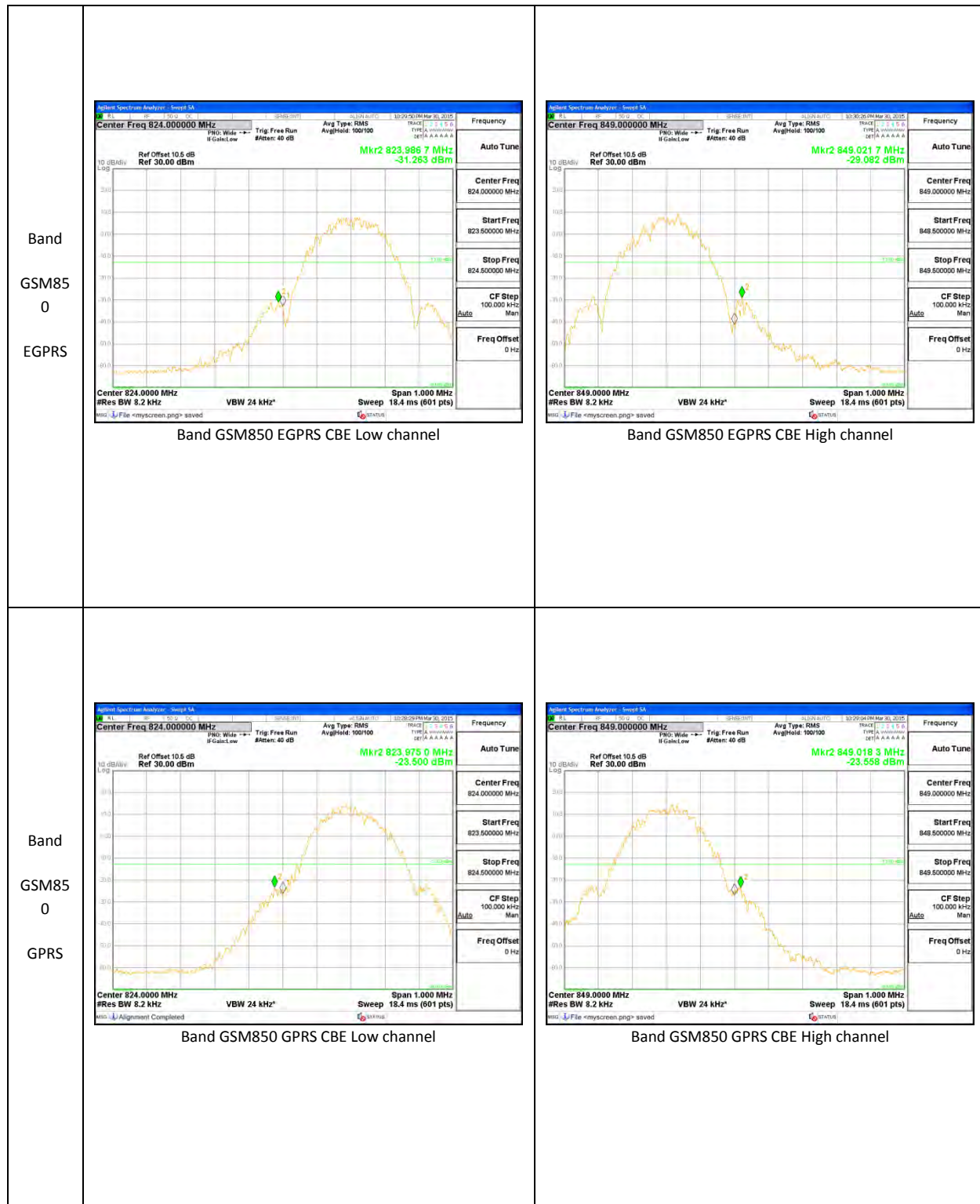


**WCDMA**



**GSM**

|                          |                                                                                                                              |                                                                                                                                |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Band<br>GSM1900<br>EGPRS |  <p>Band GSM1900 EGPRS CBE Low channel</p>  |  <p>Band GSM1900 EGPRS CBE High channel</p>  |
| Band<br>GSM1900<br>GPRS  |  <p>Band GSM1900 GPRS CBE Low channel</p> |  <p>Band GSM1900 GPRS CBE High channel</p> |



### **11.3. OUT OF BAND EMISSIONS**

#### **RULE PART(S)**

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53

#### **LIMITS**

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log (P)$  dB.

#### **TEST PROCEDURE**

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

#### **RESULTS**

**11.3.1. OUT OF BAND EMISSIONS RESULT**

| Band  | BW (MHz) | Mode  | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|-------|----------|-------|---------|------------|------------|------------|
| LTE25 | 20       | QPSK  | 1860    | -32.82     | -13        | -19.82     |
|       |          |       | 1882.5  | -26.24     | -13        | -13.24     |
|       |          |       | 1905    | -27.81     | -13        | -14.81     |
|       |          | 16QAM | 1860    | -33.59     | -13        | -20.59     |
|       |          |       | 1882.5  | -27.09     | -13        | -14.09     |
|       |          |       | 1905    | -27.42     | -13        | -14.42     |
|       |          |       |         |            |            |            |

| Band  | BW (MHz) | Mode  | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|-------|----------|-------|---------|------------|------------|------------|
| LTE25 | 15       | QPSK  | 1857.5  | -35.09     | -13        | -22.09     |
|       |          |       | 1882.5  | -27.80     | -13        | -14.8      |
|       |          |       | 1907.5  | -27.56     | -13        | -14.56     |
|       |          | 16QAM | 1857.5  | -34.88     | -13        | -21.88     |
|       |          |       | 1882.5  | -27.26     | -13        | -14.26     |
|       |          |       | 1907.5  | -27.38     | -13        | -14.38     |
|       |          |       |         |            |            |            |

| Band  | BW (MHz) | Mode  | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|-------|----------|-------|---------|------------|------------|------------|
| LTE25 | 10       | QPSK  | 1855    | -34.89     | -13        | -21.89     |
|       |          |       | 1882.5  | -27.22     | -13        | -14.22     |
|       |          |       | 1912    | -34.96     | -13        | -21.96     |
|       |          | 16QAM | 1855    | -34.76     | -13        | -21.76     |
|       |          |       | 1882.5  | -27.44     | -13        | -14.44     |
|       |          |       | 1912    | -34.98     | -13        | -21.98     |
|       |          |       |         |            |            |            |

| Band  | BW (MHz) | Mode  | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|-------|----------|-------|---------|------------|------------|------------|
| LTE25 | 5        | QPSK  | 1852.5  | -35.03     | -13        | -22.03     |
|       |          |       | 1882.5  | -27.39     | -13        | -14.39     |
|       |          |       | 1912.5  | -26.69     | -13        | -13.69     |
|       |          | 16QAM | 1852.5  | -26.89     | -13        | -13.89     |
|       |          |       | 1882.5  | -26.36     | -13        | -13.36     |
|       |          |       | 1912.5  | -27.51     | -13        | -14.51     |
|       |          |       |         |            |            |            |

| Band  | BW (MHz) | Mode  | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|-------|----------|-------|---------|------------|------------|------------|
| LTE25 | 3        | QPSK  | 1851.5  | -27.79     | -13        | -14.79     |
|       |          |       | 1882.5  | -27.57     | -13        | -14.57     |
|       |          |       | 1913.5  | -27.03     | -13        | -14.03     |
|       |          | 16QAM | 1851.5  | -27.0      | -13        | -14        |
|       |          |       | 1882.5  | -27.72     | -13        | -14.72     |
|       |          |       | 1913.5  | -26.84     | -13        | -13.84     |
|       |          |       |         |            |            |            |

| Band  | BW (MHz) | Mode  | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|-------|----------|-------|---------|------------|------------|------------|
| LTE25 | 1.4      | QPSK  | 1850.7  | -27.58     | -13        | -14.58     |
|       |          |       | 1882.5  | -27.71     | -13        | -14.71     |
|       |          |       | 1914.3  | -26.70     | -13        | -13.7      |
|       |          | 16QAM | 1850.7  | -27.45     | -13        | -14.45     |
|       |          |       | 1882.5  | -27.70     | -13        | -14.7      |
|       |          |       | 1914.3  | -26.73     | -13        | -13.73     |
|       |          |       |         |            |            |            |

| Band  | BW (MHz) | Mode  | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|-------|----------|-------|---------|------------|------------|------------|
| LTE13 | 10       | QPSK  | 782     | -34.93     | -13        | -21.93     |
|       |          |       | 782     | -34.93     | -13        | -21.93     |
|       |          |       | 782     | -34.93     | -13        | -21.93     |
|       |          | 16QAM | 782     | -34.36     | -13        | -21.36     |
|       |          |       | 782     | -34.36     | -13        | -21.36     |
|       |          |       | 782     | -34.36     | -13        | -21.36     |
|       |          |       |         |            |            |            |

| Band  | BW (MHz) | Mode  | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|-------|----------|-------|---------|------------|------------|------------|
| LTE13 | 5        | QPSK  | 779.5   | -34.08     | -13        | -21.08     |
|       |          |       | 782     | -36.94     | -13        | -23.94     |
|       |          |       | 784.5   | -34.91     | -13        | -21.91     |
|       |          | 16QAM | 779.5   | -27.88     | -13        | -14.88     |
|       |          |       | 782     | -34.17     | -13        | -21.17     |
|       |          |       | 784.5   | -35.14     | -13        | -22.14     |
|       |          |       |         |            |            |            |

| Band  | BW (MHz) | Mode  | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|-------|----------|-------|---------|------------|------------|------------|
| LTE12 | 10       | QPSK  | 704     | -30.47     | -13        | -17.47     |
|       |          |       | 707.5   | -27.66     | -13        | -14.66     |
|       |          |       | 711     | -28.27     | -13        | -15.27     |
|       |          | 16QAM | 704     | -27.52     | -13        | -14.52     |
|       |          |       | 707.5   | -28.03     | -13        | -15.03     |
|       |          |       | 711     | -27.36     | -13        | -14.36     |
|       |          |       |         |            |            |            |

| Band  | BW (MHz) | Mode  | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|-------|----------|-------|---------|------------|------------|------------|
| LTE12 | 5        | QPSK  | 701.5   | -28.33     | -13        | -15.33     |
|       |          |       | 707.5   | -28.10     | -13        | -15.1      |
|       |          |       | 713.5   | -28.45     | -13        | -15.45     |
|       |          | 16QAM | 701.5   | -27.54     | -13        | -14.54     |
|       |          |       | 707.5   | -27.68     | -13        | -14.68     |
|       |          |       | 713.5   | -28.49     | -13        | -15.49     |
|       |          |       |         |            |            |            |

| Band  | BW (MHz) | Mode  | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|-------|----------|-------|---------|------------|------------|------------|
| LTE12 | 3        | QPSK  | 700.5   | -27.34     | -13        | -14.34     |
|       |          |       | 707.5   | -25.96     | -13        | -12.96     |
|       |          |       | 714.5   | -28.09     | -13        | -15.09     |
|       |          | 16QAM | 700.5   | -27.92     | -13        | -14.92     |
|       |          |       | 707.5   | -27.84     | -13        | -14.84     |
|       |          |       | 714.5   | -27.97     | -13        | -14.97     |
|       |          |       |         |            |            |            |

| Band  | BW (MHz) | Mode  | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|-------|----------|-------|---------|------------|------------|------------|
| LTE12 | 1.4      | QPSK  | 699.7   | -27.08     | -13        | -14.08     |
|       |          |       | 707.5   | -26.87     | -13        | -13.87     |
|       |          |       | 715.3   | -27.80     | -13        | -14.8      |
|       |          | 16QAM | 699.7   | -27.71     | -13        | -14.71     |
|       |          |       | 707.5   | -27.12     | -13        | -14.12     |
|       |          |       | 715.3   | -27.69     | -13        | -14.69     |
|       |          |       |         |            |            |            |

| Band | BW (MHz) | Mode  | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|------|----------|-------|---------|------------|------------|------------|
| LTE5 | 10       | QPSK  | 829     | -22.86     | -13        | -9.86      |
|      |          |       | 836.5   | -27.41     | -13        | -14.41     |
|      |          |       | 844     | -22.94     | -13        | -9.94      |
|      |          | 16QAM | 829     | -23.77     | -13        | -10.77     |
|      |          |       | 836.5   | -26.84     | -13        | -13.84     |
|      |          |       | 844     | -22.52     | -13        | -9.52      |
|      |          |       |         |            |            |            |

| Band | BW (MHz) | Mode  | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|------|----------|-------|---------|------------|------------|------------|
| LTE5 | 5        | QPSK  | 826.5   | -28.02     | -13        | -15.02     |
|      |          |       | 836.5   | -27.26     | -13        | -14.26     |
|      |          |       | 846.5   | -23.36     | -13        | -10.36     |
|      |          | 16QAM | 826.5   | -28.20     | -13        | -15.2      |
|      |          |       | 836.5   | -28.60     | -13        | -15.6      |
|      |          |       | 846.5   | -22.42     | -13        | -9.42      |
|      |          |       |         |            |            |            |

| Band | BW (MHz) | Mode  | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|------|----------|-------|---------|------------|------------|------------|
| LTE5 | 3        | QPSK  | 825.5   | -27.71     | -13        | -14.71     |
|      |          |       | 836.5   | -28.43     | -13        | -15.43     |
|      |          |       | 847.5   | -22.79     | -13        | -9.79      |
|      |          | 16QAM | 825.5   | -27.73     | -13        | -14.73     |
|      |          |       | 836.5   | -27.97     | -13        | -14.97     |
|      |          |       | 847.5   | -27.67     | -13        | -14.67     |
|      |          |       |         |            |            |            |

| Band | BW (MHz) | Mode  | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|------|----------|-------|---------|------------|------------|------------|
| LTE5 | 1.4      | QPSK  | 824.7   | -29.09     | -13        | -16.09     |
|      |          |       | 836.5   | -27.96     | -13        | -14.96     |
|      |          |       | 848.3   | -28.11     | -13        | -15.11     |
|      |          | 16QAM | 824.7   | -28.59     | -13        | -15.59     |
|      |          |       | 836.5   | -28.12     | -13        | -15.12     |
|      |          |       | 848.3   | -28.31     | -13        | -15.31     |
|      |          |       |         |            |            |            |

| Band | BW (MHz) | Mode  | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|------|----------|-------|---------|------------|------------|------------|
| LTE4 | 20       | QPSK  | 1720    | -26.81     | -13        | -13.81     |
|      |          |       | 1732.5  | -27.04     | -13        | -14.04     |
|      |          |       | 1745    | -27.09     | -13        | -14.09     |
|      |          | 16QAM | 1720    | -27.07     | -13        | -14.07     |
|      |          |       | 1732.5  | -27.09     | -13        | -14.09     |
|      |          |       | 1745    | -27.10     | -13        | -14.1      |
|      |          |       |         |            |            |            |

| Band | BW (MHz) | Mode  | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|------|----------|-------|---------|------------|------------|------------|
| LTE4 | 15       | QPSK  | 1717.5  | -27.53     | -13        | -14.53     |
|      |          |       | 1732.5  | -27.01     | -13        | -14.01     |
|      |          |       | 1747.5  | -28.67     | -13        | -15.67     |
|      |          | 16QAM | 1717.5  | -27.52     | -13        | -14.52     |
|      |          |       | 1732.5  | -26.73     | -13        | -13.73     |
|      |          |       | 1747.5  | -26.87     | -13        | -13.87     |
|      |          |       |         |            |            |            |

| Band | BW (MHz) | Mode  | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|------|----------|-------|---------|------------|------------|------------|
| LTE4 | 10       | QPSK  | 1715    | -29.71     | -13        | -16.71     |
|      |          |       | 1732.5  | -26.84     | -13        | -13.84     |
|      |          |       | 1750    | -30.13     | -13        | -17.13     |
|      |          | 16QAM | 1715    | -29.54     | -13        | -16.54     |
|      |          |       | 1732.5  | -27.37     | -13        | -14.37     |
|      |          |       | 1750    | -30.22     | -13        | -17.22     |
|      |          |       |         |            |            |            |

| Band | BW (MHz) | Mode  | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|------|----------|-------|---------|------------|------------|------------|
| LTE4 | 5        | QPSK  | 1712.5  | -29.04     | -13        | -16.04     |
|      |          |       | 1732.5  | -27.12     | -13        | -14.12     |
|      |          |       | 1752.5  | -28.87     | -13        | -15.87     |
|      |          | 16QAM | 1712.5  | -26.83     | -13        | -13.83     |
|      |          |       | 1732.5  | -27.0      | -13        | -14        |
|      |          |       | 1752.5  | -28.22     | -13        | -15.22     |
|      |          |       |         |            |            |            |

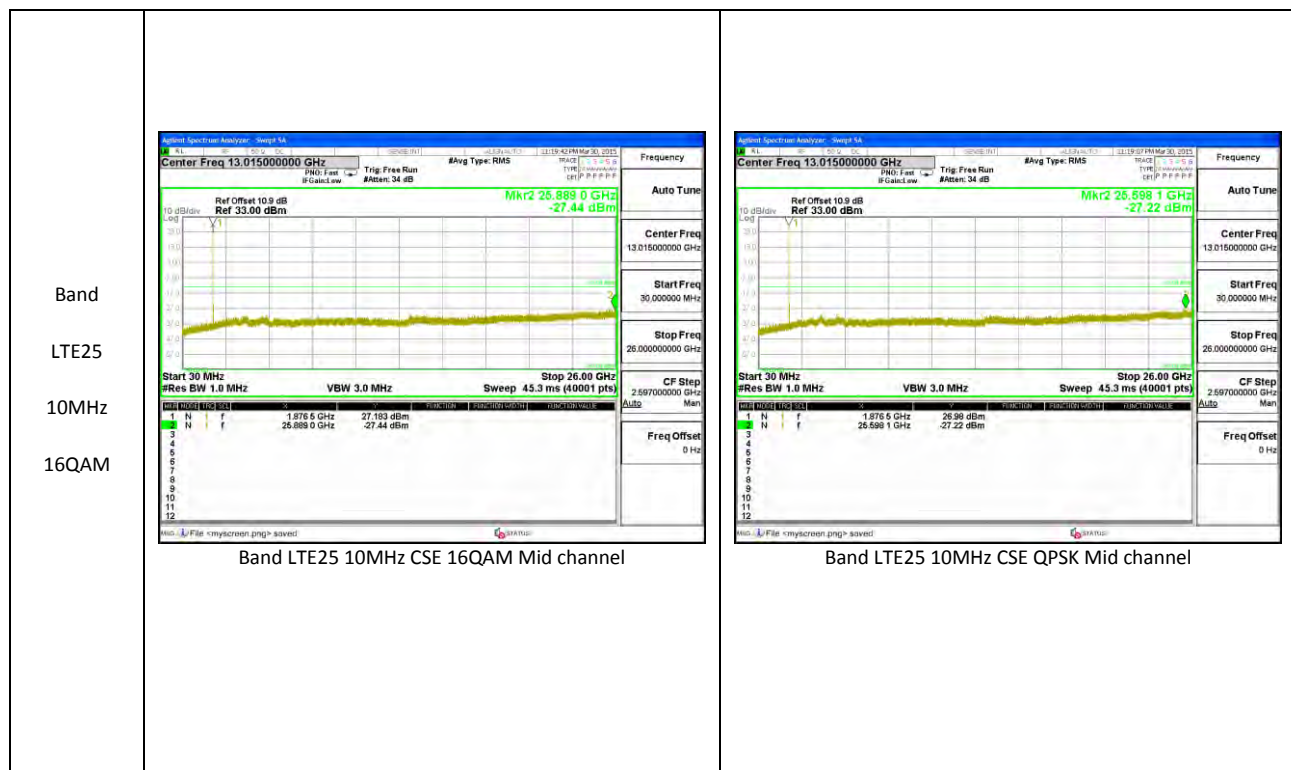
| Band | BW (MHz) | Mode  | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|------|----------|-------|---------|------------|------------|------------|
| LTE4 | 3        | QPSK  | 1711.5  | -26.43     | -13        | -13.43     |
|      |          |       | 1732.5  | -27.24     | -13        | -14.24     |
|      |          |       | 1753.5  | -27.55     | -13        | -14.55     |
|      |          | 16QAM | 1711.5  | -26.94     | -13        | -13.94     |
|      |          |       | 1732.5  | -27.67     | -13        | -14.67     |
|      |          |       | 1753.5  | -27.45     | -13        | -14.45     |
|      |          |       |         |            |            |            |

| Band | BW (MHz) | Mode  | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|------|----------|-------|---------|------------|------------|------------|
| LTE4 | 1.4      | QPSK  | 1710.7  | -27.21     | -13        | -14.21     |
|      |          |       | 1732.5  | -27.67     | -13        | -14.67     |
|      |          |       | 1754.3  | -27.24     | -13        | -14.24     |
|      |          | 16QAM | 1710.7  | -26.79     | -13        | -13.79     |
|      |          |       | 1732.5  | -27.33     | -13        | -14.33     |
|      |          |       | 1754.3  | -27.36     | -13        | -14.36     |
|      |          |       |         |            |            |            |

| Band    | Mode  | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---------|-------|---------|------------|------------|------------|
| GSM850  | GPRS  | 824.2   | -24.45     | -13        | -11.45     |
|         |       | 836.6   | -24.33     | -13        | -11.33     |
|         |       | 848.8   | -25.04     | -13        | -12.04     |
|         | EGPRS | 824.2   | -24.68     | -13        | -11.68     |
|         |       | 836.6   | -25.09     | -13        | -12.09     |
|         |       | 848.8   | -24.50     | -13        | -11.5      |
| GSM1900 | GPRS  | 1850.2  | -24.94     | -13        | -11.94     |
|         |       | 1880    | -24.95     | -13        | -11.95     |
|         |       | 1909.8  | -23.65     | -13        | -10.65     |
|         | EGPRS | 1850.2  | -24.70     | -13        | -11.7      |
|         |       | 1880    | -23.98     | -13        | -10.98     |
|         |       | 1909.8  | -24.27     | -13        | -11.27     |

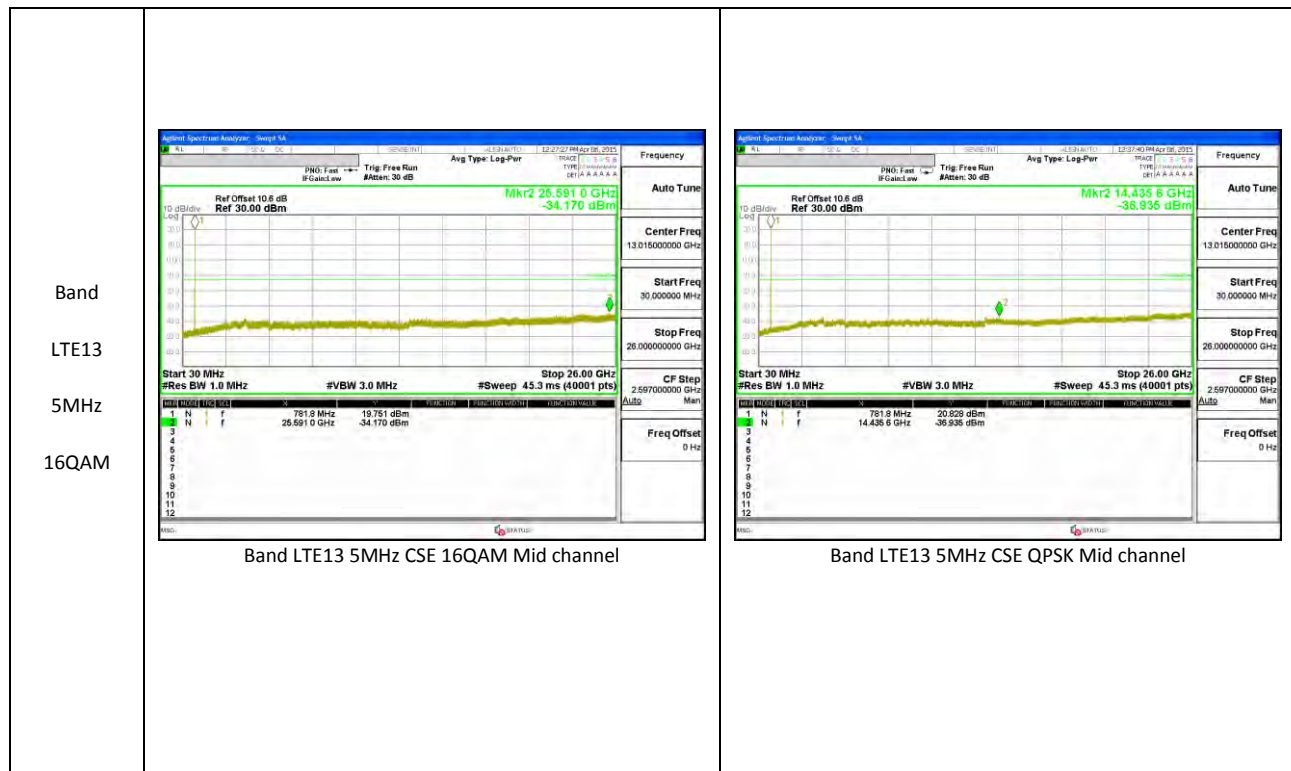
|        |       |         |        |     |        |
|--------|-------|---------|--------|-----|--------|
| Band 5 | REL99 | 826.4   | -34.0  | -13 | -21    |
|        |       | 836.6   | -34.25 | -13 | -21.25 |
|        |       | 846.6   | -29.22 | -13 | -16.22 |
|        | HSDPA | 826.4   | -29.56 | -13 | -16.56 |
|        |       | 836.6   | -34.04 | -13 | -21.04 |
|        |       | 846.6   | -34.12 | -13 | -21.12 |
| Band 2 | REL99 | 1852.4  | -29.78 | -13 | -16.78 |
|        |       | 1880    | -34.05 | -13 | -21.05 |
|        |       | 1907.6  | -30.39 | -13 | -17.39 |
|        | HSDPA | 1852.4  | -29.19 | -13 | -16.19 |
|        |       | 1880    | -34.68 | -13 | -21.68 |
|        |       | 1907.6  | -34.14 | -13 | -21.14 |
| BC0    | 1xRTT | 824.7   | -35.66 | -13 | -22.66 |
|        |       | 836.52  | -38.48 | -13 | -25.48 |
|        |       | 848.31  | -34.35 | -13 | -21.35 |
|        | EVDO  | 824.7   | -35.84 | -13 | -22.84 |
|        |       | 836.52  | -34.29 | -13 | -21.29 |
|        |       | 848.31  | -33.81 | -13 | -20.81 |
| BC1    | 1xRTT | 1851.25 | -37.04 | -13 | -24.04 |
|        |       | 1880    | -36.39 | -13 | -23.39 |
|        |       | 1908.75 | -32.07 | -13 | -19.07 |
|        | EVDO  | 1851.25 | -37.06 | -13 | -24.06 |
|        |       | 1880    | -36.43 | -13 | -23.43 |
|        |       | 1908.75 | -27.98 | -13 | -14.98 |

**11.3.2. OUT OF BAND EMISSIONS PLOTS****LTE Band 25**





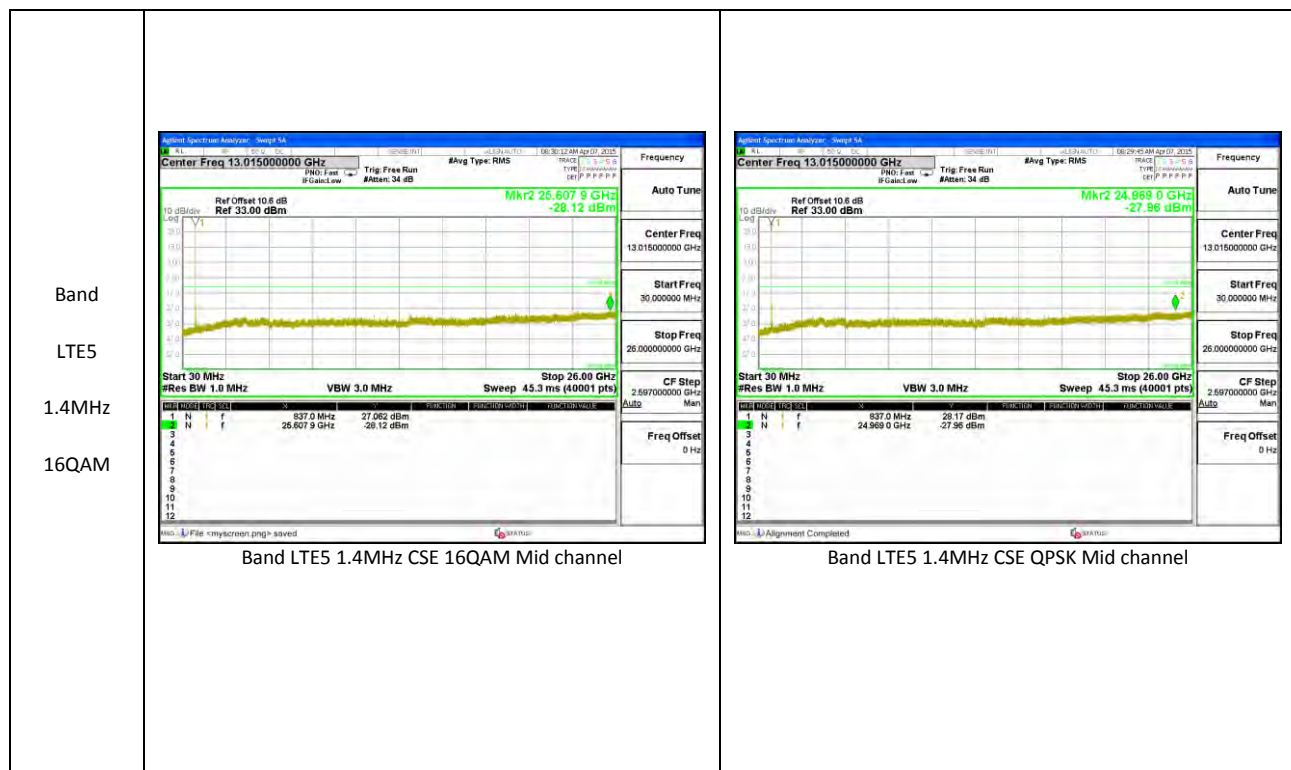


**LTE Band 13**

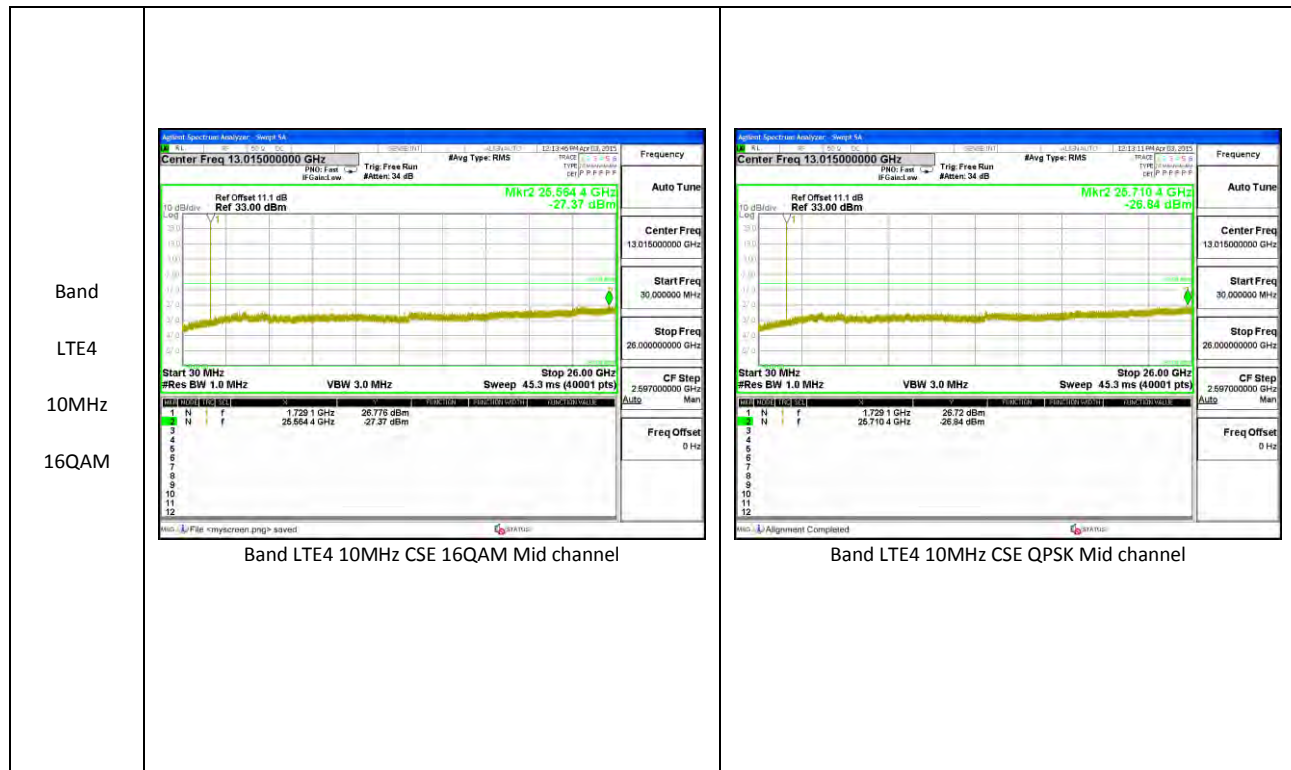
**LTE Band 12**



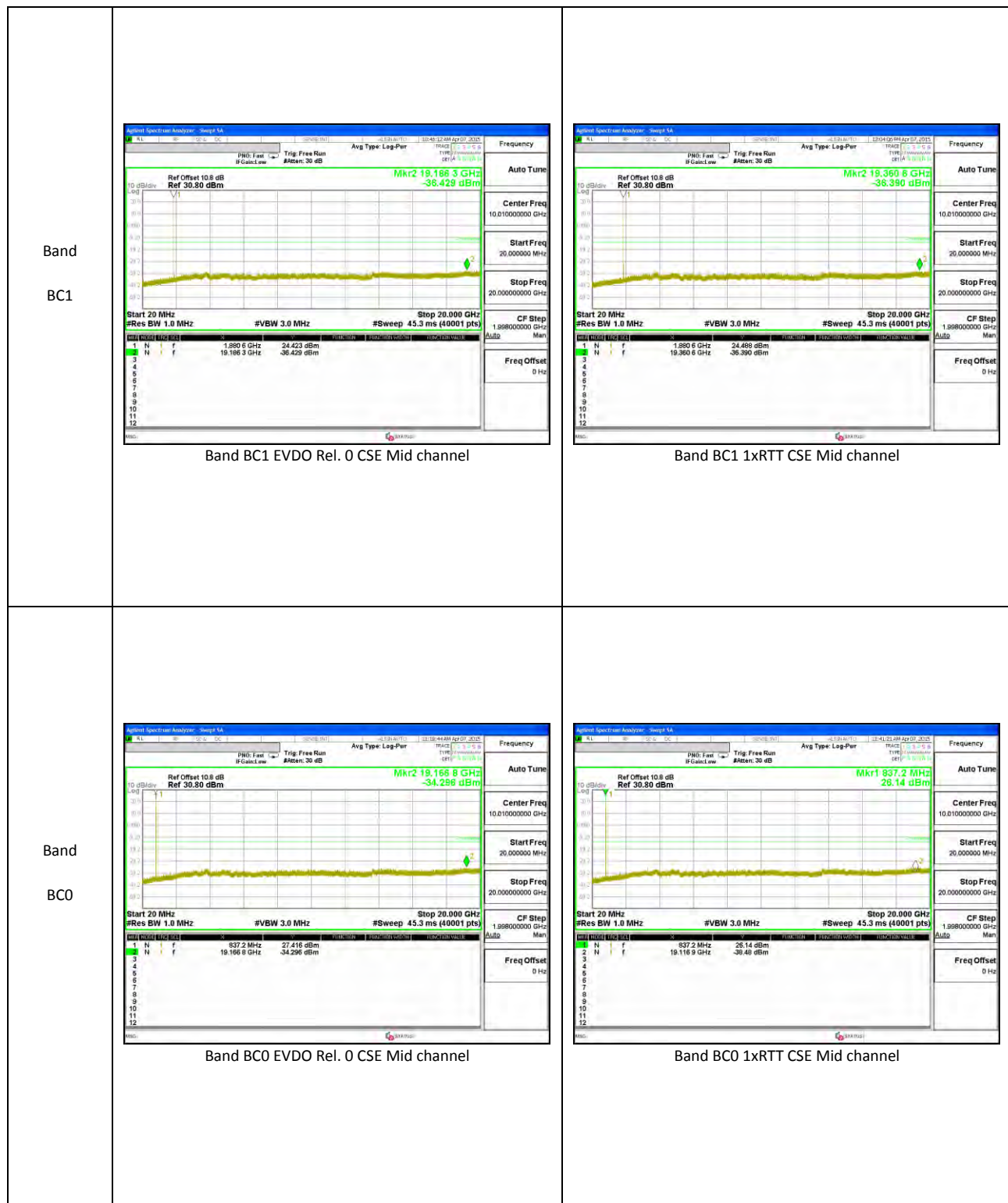
**LTE Band 5**

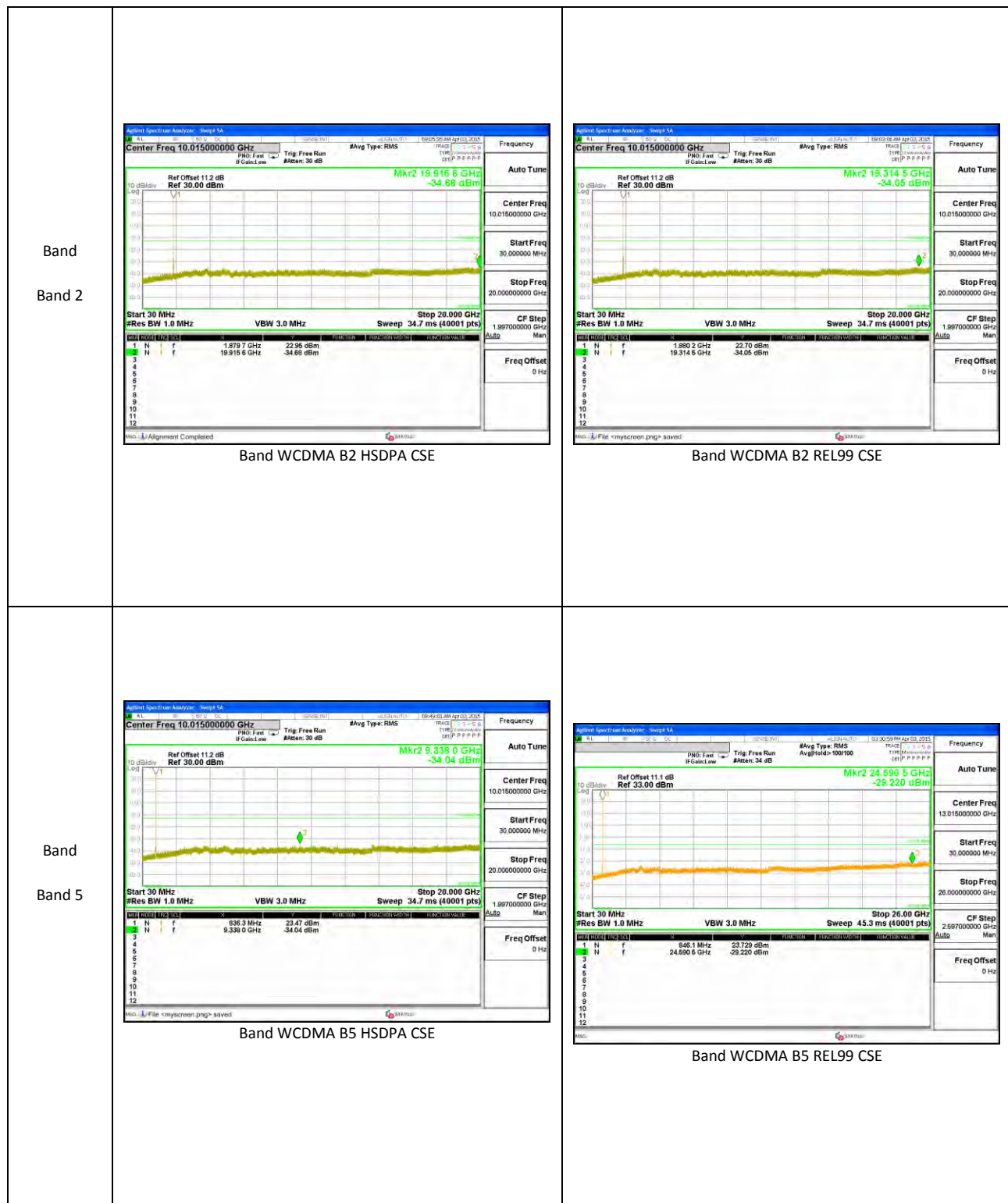


**LTE Band 4**





**CDMA**

**WCDMA**

**GSM**

**11.4. FREQUENCY STABILITY**

**RULE PART(S)**

FCC: §2.1055, §22.355, §24.235, §27.54

**LIMITS**

§22.355 - The carrier frequency shall not depart from the reference frequency in excess of  $\pm 2.5$  ppm for mobile stations.

§24.235 - The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

§27.54 - The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

**TEST PROCEDURE**

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

**RESULTS**

See the following pages.

**11.4.1. FREQUENCY STABILITY RESULTS****LTE Band 4, Freq: 1732.5MHz– MID CHANNEL**

| Reference Frequency: PCS Mid Channel      1732.5      MHz @ 20°C<br>Limit: to stay +/- 2.5 ppm =      4331.250      Hz |                                 |                                               |             |             |
|------------------------------------------------------------------------------------------------------------------------|---------------------------------|-----------------------------------------------|-------------|-------------|
| Power Supply<br>(Vdc)                                                                                                  | Environment<br>Temperature (°C) | Frequency Deviation Measured with Time Elapse |             |             |
|                                                                                                                        |                                 | (MHz)                                         | Delta (ppm) | Limit (ppm) |
| 3.80                                                                                                                   | 50                              | 1732.500000                                   | 0.003       | 2.5         |
| 3.80                                                                                                                   | 40                              | 1732.500000                                   | 0.003       | 2.5         |
| 3.80                                                                                                                   | 30                              | 1732.500000                                   | 0.003       | 2.5         |
| <b>3.80</b>                                                                                                            | <b>20</b>                       | <b>1732.500006</b>                            | <b>0</b>    | <b>2.5</b>  |
| 3.80                                                                                                                   | 10                              | 1732.500011                                   | -0.003      | 2.5         |
| 3.80                                                                                                                   | 0                               | 1732.500016                                   | -0.006      | 2.5         |
| 3.80                                                                                                                   | -10                             | 1732.500000                                   | 0.003       | 2.5         |
| 3.80                                                                                                                   | -20                             | 1732.500000                                   | 0.003       | 2.5         |
| 3.80                                                                                                                   | -30                             | 1732.500000                                   | 0.003       | 2.5         |

| Reference Frequency: PCS Mid Channel      1732.5      MHz @ 20°C<br>Limit: to stay +/- 2.5 ppm =      4331.250      Hz |                                 |                                               |             |             |
|------------------------------------------------------------------------------------------------------------------------|---------------------------------|-----------------------------------------------|-------------|-------------|
| Power Supply<br>(Vdc)                                                                                                  | Environment<br>Temperature (°C) | Frequency Deviation Measured with Time Elapse |             |             |
|                                                                                                                        |                                 | (MHz)                                         | Delta (ppm) | Limit (ppm) |
| <b>3.80</b>                                                                                                            | <b>20</b>                       | <b>1732.500006</b>                            | <b>0</b>    | <b>2.5</b>  |
| 4.37                                                                                                                   | 20                              | 1732.5                                        | 0.003       | 2.5         |
| 3.23(End of volt)                                                                                                      | 20                              | 1732.5                                        | 0.003       | 2.5         |

**LTE BAND 12 – MID CHANNEL (707.5 MHz)**

| Reference Frequency: Cellular Mid Channel 707.50000678 MHz @ 20°C<br>Limit: to stay +/- 2.5 ppm = 1768.750 Hz |                                 |                                               |             |             |
|---------------------------------------------------------------------------------------------------------------|---------------------------------|-----------------------------------------------|-------------|-------------|
| Power Supply<br>(Vdc)                                                                                         | Environment<br>Temperature (°C) | Frequency Deviation Measured with Time Elapse |             |             |
|                                                                                                               |                                 | (MHz)                                         | Delta (ppm) | Limit (ppm) |
| 3.80                                                                                                          | 50                              | 707.500004                                    | -0.003      | 2.5         |
| 3.80                                                                                                          | 40                              | 707.499997                                    | 0.007       | 2.5         |
| 3.80                                                                                                          | 30                              | 707.500004                                    | -0.003      | 2.5         |
| <b>3.80</b>                                                                                                   | <b>20</b>                       | <b>707.500002</b>                             | <b>0</b>    | 2.5         |
| 3.80                                                                                                          | 10                              | 707.500003                                    | -0.001      | 2.5         |
| 3.80                                                                                                          | 0                               | 707.500003                                    | -0.001      | 2.5         |
| 3.80                                                                                                          | -10                             | 707.499998                                    | 0.006       | 2.5         |
| 3.80                                                                                                          | -20                             | 707.499997                                    | 0.007       | 2.5         |
| 3.80                                                                                                          | -30                             | 707.500003                                    | -0.001      | 2.5         |
| Reference Frequency: Cellular Mid Channel 707.5 MHz @ 20°C<br>Limit: to stay +/- 2.5 ppm = 1768.750 Hz        |                                 |                                               |             |             |
| Power Supply<br>(Vdc)                                                                                         | Environment<br>Temperature (°C) | Frequency Deviation Measured with Time Elapse |             |             |
|                                                                                                               |                                 | (MHz)                                         | Delta (ppm) | Limit (ppm) |
| <b>3.80</b>                                                                                                   | <b>20</b>                       | <b>707.500002</b>                             | <b>0</b>    | <b>2.5</b>  |
| 3.23                                                                                                          | 20                              | 707.500004                                    | -0.003      | 2.5         |
| 4.37                                                                                                          | 20                              | 707.500003                                    | -0.001      | 2.5         |

**LTE Band 13, Freq: 782 MHz– MID CHANNEL**

| Reference Frequency: PCS Mid Channel      782      MHz @ 20°C<br>Limit: to stay +/- 2.5 ppm =      1955.000      Hz |                                 |                                               |             |             |
|---------------------------------------------------------------------------------------------------------------------|---------------------------------|-----------------------------------------------|-------------|-------------|
| Power Supply<br>(Vdc)                                                                                               | Environment<br>Temperature (°C) | Frequency Deviation Measured with Time Elapse |             |             |
|                                                                                                                     |                                 | (MHz)                                         | Delta (ppm) | Limit (ppm) |
| 3.80                                                                                                                | 50                              | 781.999997                                    | -0.001      | 2.5         |
| 3.80                                                                                                                | 40                              | 781.999997                                    | -0.001      | 2.5         |
| 3.80                                                                                                                | 30                              | 781.999997                                    | -0.001      | 2.5         |
| <b>3.80</b>                                                                                                         | <b>20</b>                       | <b>781.999996</b>                             | <b>0</b>    | <b>2.5</b>  |
| 3.80                                                                                                                | 10                              | 781.999998                                    | -0.002      | 2.5         |
| 3.80                                                                                                                | 0                               | 782.000004                                    | -0.009      | 2.5         |
| 3.80                                                                                                                | -10                             | 781.999997                                    | -0.001      | 2.5         |
| 3.80                                                                                                                | -20                             | 781.999997                                    | -0.001      | 2.5         |
| 3.80                                                                                                                | -30                             | 781.999997                                    | -0.001      | 2.5         |
|                                                                                                                     |                                 | 782.0000000                                   | -0.005      |             |
| Reference Frequency: PCS Mid Channel      782      MHz @ 20°C<br>Limit: to stay +/- 2.5 ppm =      1955.000      Hz |                                 |                                               |             |             |
| Power Supply<br>(Vdc)                                                                                               | Environment<br>Temperature (°C) | Frequency Deviation Measured with Time Elapse |             |             |
|                                                                                                                     |                                 | (MHz)                                         | Delta (ppm) | Limit (ppm) |
| <b>3.80</b>                                                                                                         | <b>20</b>                       | <b>781.999996</b>                             | <b>0</b>    | <b>2.5</b>  |
| 4.37                                                                                                                | 20                              | 781.9999958                                   | 0.000       | 2.5         |
| 3.23(End of volt)                                                                                                   | 20                              | 781.9999974                                   | -0.002      | 2.5         |

**GPRS 1900, Channel 661 Freq: 1880MHz– MID CHANNEL**

| Reference Frequency: PCS Mid Channel<br>Limit: to stay +/- 2.5 ppm = |                                 |                                               |             |             |
|----------------------------------------------------------------------|---------------------------------|-----------------------------------------------|-------------|-------------|
|                                                                      |                                 | 1880                                          | MHz @ 20°C  |             |
|                                                                      |                                 | 4700.000                                      | Hz          |             |
| Power Supply<br>(Vdc)                                                | Environment<br>Temperature (°C) | Frequency Deviation Measured with Time Elapse |             |             |
|                                                                      |                                 | (MHz)                                         | Delta (ppm) | Limit (ppm) |
| 3.80                                                                 | 50                              | 1880.000044                                   | -0.001      | 2.5         |
| 3.80                                                                 | 40                              | 1880.000035                                   | 0.004       | 2.5         |
| 3.80                                                                 | 30                              | 1880.000034                                   | 0.004       | 2.5         |
| <b>3.80</b>                                                          | <b>20</b>                       | <b>1880.000041</b>                            | <b>0</b>    | <b>2.5</b>  |
| 3.80                                                                 | 10                              | 1880.000040                                   | 0.000       | 2.5         |
| 3.80                                                                 | 0                               | 1880.000036                                   | 0.003       | 2.5         |
| 3.80                                                                 | -10                             | 1880.000035                                   | 0.003       | 2.5         |
| 3.80                                                                 | -20                             | 1880.000040                                   | 0.001       | 2.5         |
| 3.80                                                                 | -30                             | 1880.000037                                   | 0.002       | 2.5         |

| Reference Frequency: PCS Mid Channel<br>Limit: to stay +/- 2.5 ppm = |                                 |                                               |             |             |
|----------------------------------------------------------------------|---------------------------------|-----------------------------------------------|-------------|-------------|
|                                                                      |                                 | 1880                                          | MHz @ 20°C  |             |
|                                                                      |                                 | 4700.000                                      | Hz          |             |
| Power Supply<br>(Vdc)                                                | Environment<br>Temperature (°C) | Frequency Deviation Measured with Time Elapse |             |             |
|                                                                      |                                 | (MHz)                                         | Delta (ppm) | Limit (ppm) |
| <b>3.80</b>                                                          | <b>20</b>                       | <b>1880.000041</b>                            | <b>0</b>    | <b>2.5</b>  |
| 4.37                                                                 | 20                              | 1880.000043                                   | -0.001      | 2.5         |
| 3.23(End of volt)                                                    | 20                              | 1880.000036                                   | 0.003       | 2.5         |

**GPRS 850 CELL BAND, – MID CHANNEL190, Frequency 836.6MHz**

| Reference Frequency: PCS Mid Channel 836.6 MHz @ 20°C<br>Limit: to stay +/- 2.5 ppm = 2091.500 Hz |                              |                                               |             |             |
|---------------------------------------------------------------------------------------------------|------------------------------|-----------------------------------------------|-------------|-------------|
| Power Supply (Vdc)                                                                                | Environment Temperature (°C) | Frequency Deviation Measured with Time Elapse |             |             |
|                                                                                                   |                              | (MHz)                                         | Delta (ppm) | Limit (ppm) |
| 3.80                                                                                              | 50                           | 836.600018                                    | 0.003       | 2.5         |
| 3.80                                                                                              | 40                           | 836.600022                                    | -0.002      | 2.5         |
| 3.80                                                                                              | 30                           | 836.600022                                    | -0.002      | 2.5         |
| <b>3.80</b>                                                                                       | <b>20</b>                    | <b>836.600021</b>                             | <b>0</b>    | <b>2.5</b>  |
| 3.80                                                                                              | 10                           | 836.600018                                    | 0.003       | 2.5         |
| 3.80                                                                                              | 0                            | 836.600019                                    | 0.002       | 2.5         |
| 3.80                                                                                              | -10                          | 836.600020                                    | 0.001       | 2.5         |
| 3.80                                                                                              | -20                          | 836.600018                                    | 0.003       | 2.5         |
| 3.80                                                                                              | -30                          | 836.600020                                    | 0.001       | 2.5         |

| Reference Frequency: PCS Mid Channel 836.6 MHz @ 20°C<br>Limit: to stay +/- 2.5 ppm = 2091.500 Hz |                              |                                               |             |             |
|---------------------------------------------------------------------------------------------------|------------------------------|-----------------------------------------------|-------------|-------------|
| Power Supply (Vdc)                                                                                | Environment Temperature (°C) | Frequency Deviation Measured with Time Elapse |             |             |
|                                                                                                   |                              | (MHz)                                         | Delta (ppm) | Limit (ppm) |
| <b>3.80</b>                                                                                       | <b>20</b>                    | <b>836.600021</b>                             | <b>0</b>    | <b>2.5</b>  |
| 4.37                                                                                              | 20                           | 836.6000203                                   | 0.000       | 2.5         |
| 3.23(End of volt)                                                                                 | 20                           | 836.6000181                                   | 0.003       | 2.5         |

## 12. RADIATED TEST RESULTS

### 12.1. RADIATED POWER (ERP & EIRP)

#### RULE PART(S)

FCC: §2.1046, §22.913, §24.232, §27.

#### LIMITS

22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(c) - Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

27.50(b) - (10) Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP. (LTE B13)

27.50(c) - (10) Portable stations (hand-held devices) are limited to 3 watts ERP; (LTE B17 & 12)

27.50(d) - (4) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.(Band 4)

In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13dB.

#### TEST PROCEDURE

ANSI / TIA / EIA 603C Clause 2.2.17; PSA setting reference to 971168 D01 v02r02

For peak power measurement with a PSA:

a) Set the RBW  $\geq$  OBW; b) Set VBW  $\geq 3 \times$  RBW; c) Set span  $\geq 2 \times$  RBW; d) Sweep time = auto couple; e) Detector = peak; f) Ensure that the number of measurement points  $\geq$  span/RBW; g) Trace mode = max hold;

For average power measurement with a PSA:

a) Set span to at least 1.5 times the OBW; b) Set RBW = 1-5% of the OBW, not to exceed 1 MHz; c) Set VBW  $\geq 3 \times$  RBW; d) Set number of points in sweep  $\geq 2 \times$  span / RBW; e) Sweep time = auto-couple; f) Detector = RMS (power averaging); g) Use free run trigger If burst duty cycle  $\geq 98$ ; h) Use trigger to capture bursts If burst duty cycle  $< 98$ ; i) Trace average at least 100 traces in power averaging (*i.e.*, RMS) mode. j) Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function.

#### TEST RESULTS

**12.1.1. ERP/EIRP Results**

| Band   | Mode  | Channel | f(MHz) | ERP / EIRP |        |
|--------|-------|---------|--------|------------|--------|
|        |       |         |        | dBm        | mW     |
| Band 2 | REL99 | 9262    | 1852.4 | 25.47      | 352.37 |
|        |       | 9400    | 1880   | 25.28      | 337.29 |
|        |       | 9538    | 1907.6 | 26.26      | 422.67 |
|        | HSDPA | 9262    | 1852.4 | 25.36      | 343.56 |
|        |       | 9400    | 1880   | 25.03      | 318.42 |
|        |       | 9538    | 1907.6 | 26.07      | 404.58 |

| Band   | Mode  | Channel | f(MHz) | ERP / EIRP |        |
|--------|-------|---------|--------|------------|--------|
|        |       |         |        | dBm        | mW     |
| Band 5 | REL99 | 4132    | 826.4  | 21.38      | 137.40 |
|        |       | 4183    | 836.6  | 21.72      | 148.59 |
|        |       | 4233    | 846.6  | 21.41      | 138.36 |
|        | HSDPA | 4132    | 826.4  | 21.34      | 136.14 |
|        |       | 4183    | 836.6  | 21.63      | 145.55 |
|        |       | 4233    | 846.6  | 21.23      | 132.74 |

| Band    | Mode  | Channel | f(MHz) | ERP / EIRP |         |
|---------|-------|---------|--------|------------|---------|
|         |       |         |        | dBm        | mW      |
| GSM1900 | GPRS  | 512     | 1850.2 | 31.03      | 1267.65 |
|         |       | 661     | 1880   | 30.27      | 1064.14 |
|         |       | 810     | 1909.8 | 31.36      | 1367.73 |
|         | EGPRS | 512     | 1850.2 | 26.92      | 492.04  |
|         |       | 661     | 1880   | 28.59      | 722.77  |
|         |       | 810     | 1909.8 | 28.47      | 703.07  |

| Band   | Mode  | Channel | f(MHz) | ERP / EIRP |         |
|--------|-------|---------|--------|------------|---------|
|        |       |         |        | dBm        | mW      |
| GSM850 | GPRS  | 128     | 824.2  | 31.76      | 1499.68 |
|        |       | 190     | 836.6  | 31.88      | 1541.70 |
|        |       | 251     | 848.8  | 31.03      | 1267.65 |
|        | EGPRS | 128     | 824.2  | 26.35      | 431.52  |
|        |       | 190     | 836.6  | 26.86      | 485.29  |
|        |       | 251     | 848.8  | 26.01      | 399.02  |

| Band | Mode        | Channel | f(MHz)  | ERP / EIRP |        |
|------|-------------|---------|---------|------------|--------|
|      |             |         |         | dBm        | mW     |
| BC1  | 1xRTT       | 25      | 1851.25 | 26.02      | 399.94 |
|      |             | 600     | 1880    | 26.32      | 428.55 |
|      |             | 1175    | 1908.75 | 26.60      | 457.09 |
|      | EVDO REL. 0 | 25      | 1851.25 | 26.01      | 399.02 |
|      |             | 600     | 1880    | 26.12      | 409.26 |
|      |             | 1175    | 1908.75 | 26.50      | 446.68 |

| Band | Mode        | Channel | f(MHz) | ERP / EIRP |        |
|------|-------------|---------|--------|------------|--------|
|      |             |         |        | dBm        | mW     |
| BC0  | 1xRTT       | 1013    | 824.7  | 22.64      | 183.65 |
|      |             | 384     | 836.52 | 22.76      | 188.80 |
|      |             | 777     | 848.31 | 22.87      | 193.64 |
|      | EVDO REL. 0 | 1013    | 824.7  | 22.57      | 180.72 |
|      |             | 384     | 836.52 | 22.78      | 189.67 |
|      |             | 777     | 848.31 | 22.74      | 187.93 |

**12.1.2. LTE ERP/EIRP Results****LTE Band 25**

| Band  | BW (MHz) | Mode  | RB/RB Size | f (MHz) | ERP / EIRP |        |
|-------|----------|-------|------------|---------|------------|--------|
|       |          |       |            |         | dBm        | mW     |
| LTE25 | 20       | QPSK  | 1/0        | 1860    | 26.38      | 434.51 |
|       |          |       | 1/0        | 1882.5  | 25.55      | 358.92 |
|       |          |       | 1/0        | 1905    | 26.05      | 402.72 |
|       |          | 16QAM | 1/0        | 1860    | 25.67      | 368.98 |
|       |          |       | 1/0        | 1882.5  | 25.12      | 325.09 |
|       |          |       | 1/0        | 1905    | 25.45      | 350.75 |
|       | 15       | QPSK  | 1/0        | 1857.5  | 26.25      | 421.7  |
|       |          |       | 1/0        | 1882.5  | 26.13      | 410.2  |
|       |          |       | 1/0        | 1907.5  | 26.07      | 404.58 |
|       |          | 16QAM | 1/0        | 1857.5  | 25.48      | 353.18 |
|       |          |       | 1/0        | 1882.5  | 25.33      | 341.19 |
|       |          |       | 1/0        | 1907.5  | 25.32      | 340.41 |
|       | 10       | QPSK  | 1/0        | 1855    | 26.34      | 430.53 |
|       |          |       | 1/0        | 1882.5  | 26.09      | 406.44 |
|       |          |       | 1/0        | 1912    | 26         | 398.11 |
|       |          | 16QAM | 1/0        | 1855    | 25.2       | 331.13 |
|       |          |       | 1/0        | 1882.5  | 24.99      | 315.5  |
|       |          |       | 1/0        | 1912    | 25.35      | 342.77 |
|       | 5        | QPSK  | 1/0        | 1852.5  | 26         | 398.11 |
|       |          |       | 1/0        | 1882.5  | 26.32      | 428.55 |
|       |          |       | 1/0        | 1912.5  | 26.02      | 399.94 |
|       |          | 16QAM | 1/0        | 1852.5  | 25.3       | 338.84 |
|       |          |       | 1/0        | 1882.5  | 25.42      | 348.34 |
|       |          |       | 1/0        | 1912.5  | 25.07      | 321.37 |

| Band  | BW (MHz) | Mode  | RB/RB Size | f (MHz) | ERP / EIRP |        |
|-------|----------|-------|------------|---------|------------|--------|
|       |          |       |            |         | dBm        | mW     |
| LTE25 | 3        | QPSK  | 1/0        | 1851.5  | 26.41      | 437.52 |
|       |          |       | 1/0        | 1882.5  | 25.85      | 384.59 |
|       |          |       | 1/0        | 1913.5  | 26.24      | 420.73 |
|       |          | 16QAM | 1/0        | 1851.5  | 25.25      | 334.97 |
|       |          |       | 1/0        | 1882.5  | 25.34      | 341.98 |
|       |          |       | 1/0        | 1913.5  | 25.27      | 336.51 |
|       | 1.4      | QPSK  | 1/0        | 1850.7  | 26.39      | 435.51 |
|       |          |       | 1/0        | 1882.5  | 25.9       | 389.05 |
|       |          |       | 1/0        | 1914.3  | 26         | 398.11 |
|       |          | 16QAM | 1/0        | 1850.7  | 26.02      | 399.94 |
|       |          |       | 1/0        | 1882.5  | 24.78      | 300.61 |
|       |          |       | 1/0        | 1914.3  | 24.26      | 266.69 |

**LTE Band 13**

| Band  | BW (MHz) | Mode  | RB/RB Size | f (MHz) | ERP / EIRP |        |
|-------|----------|-------|------------|---------|------------|--------|
|       |          |       |            |         | dBm        | mW     |
| LTE13 | 10       | QPSK  | 1/0        | 782     | 20.28      | 106.66 |
|       |          |       | 1/0        | 782     | 20.28      | 106.66 |
|       |          |       | 1/0        | 782     | 20.28      | 106.66 |
|       |          | 16QAM | 1/0        | 782     | 19.47      | 88.51  |
|       |          |       | 1/0        | 782     | 19.47      | 88.51  |
|       |          |       | 1/0        | 782     | 19.47      | 88.51  |
|       | 5        | QPSK  | 1/0        | 779.5   | 20.06      | 101.39 |
|       |          |       | 1/0        | 782     | 20.10      | 102.33 |
|       |          |       | 1/0        | 784.5   | 20.07      | 101.62 |
|       |          | 16QAM | 1/0        | 779.5   | 19.38      | 86.70  |
|       |          |       | 1/0        | 782     | 19.32      | 85.51  |
|       |          |       | 1/0        | 784.5   | 19.38      | 86.70  |

**LTE Band 12**

| Band  | BW (MHz) | Mode  | RB/RB Size | f (MHz) | ERP / EIRP |        |
|-------|----------|-------|------------|---------|------------|--------|
|       |          |       |            |         | dBm        | mW     |
| LTE12 | 10       | QPSK  | 1/0        | 704     | 19.41      | 87.30  |
|       |          |       | 1/0        | 707.5   | 20.14      | 103.28 |
|       |          |       | 1/0        | 711     | 21.15      | 130.32 |
|       |          | 16QAM | 1/0        | 704     | 19.01      | 79.62  |
|       |          |       | 1/0        | 707.5   | 19.29      | 84.92  |
|       |          |       | 1/0        | 711     | 20.72      | 118.03 |
|       | 5        | QPSK  | 1/0        | 701.5   | 19.82      | 95.94  |
|       |          |       | 1/0        | 707.5   | 20.43      | 110.41 |
|       |          |       | 1/0        | 713.5   | 21.24      | 133.05 |
|       |          | 16QAM | 1/0        | 701.5   | 19.15      | 82.22  |
|       |          |       | 1/0        | 707.5   | 19.77      | 94.84  |
|       |          |       | 1/0        | 713.5   | 20.60      | 114.82 |
|       | 3        | QPSK  | 1/0        | 700.5   | 19.81      | 95.72  |
|       |          |       | 1/0        | 707.5   | 20.29      | 106.91 |
|       |          |       | 1/0        | 714.5   | 21.29      | 134.59 |
|       |          | 16QAM | 1/0        | 700.5   | 19.07      | 80.72  |
|       |          |       | 1/0        | 707.5   | 19.58      | 90.78  |
|       |          |       | 1/0        | 714.5   | 20.71      | 117.76 |
|       | 1.4      | QPSK  | 1/0        | 699.7   | 20.11      | 102.57 |
|       |          |       | 1/0        | 707.5   | 20.49      | 111.94 |
|       |          |       | 1/0        | 715.3   | 20.09      | 102.09 |
|       |          | 16QAM | 1/0        | 699.7   | 19.28      | 84.72  |
|       |          |       | 1/0        | 707.5   | 19.80      | 95.50  |
|       |          |       | 1/0        | 715.3   | 19.86      | 96.83  |

**LTE Band 5**

| Band | BW (MHz) | Mode  | RB/RB Size | f (MHz) | ERP / EIRP |        |
|------|----------|-------|------------|---------|------------|--------|
|      |          |       |            |         | dBm        | mW     |
| LTE5 | 10       | QPSK  | 1/0        | 829     | 21.95      | 156.71 |
|      |          |       | 1/0        | 836.5   | 22.50      | 177.87 |
|      |          |       | 1/0        | 844     | 22.49      | 177.46 |
|      |          | 16QAM | 1/0        | 829     | 20.26      | 106.19 |
|      |          |       | 1/0        | 836.5   | 20.75      | 118.88 |
|      |          |       | 1/0        | 844     | 21.18      | 131.25 |
|      | 5        | QPSK  | 1/0        | 826.5   | 21.99      | 158.16 |
|      |          |       | 1/0        | 836.5   | 22.31      | 170.26 |
|      |          |       | 1/0        | 846.5   | 22.19      | 165.62 |
|      |          | 16QAM | 1/0        | 826.5   | 20.17      | 104.02 |
|      |          |       | 1/0        | 836.5   | 20.46      | 111.2  |
|      |          |       | 1/0        | 846.5   | 20.53      | 113.01 |
|      | 3        | QPSK  | 1/0        | 825.5   | 22.09      | 161.81 |
|      |          |       | 1/0        | 836.5   | 22.43      | 175.02 |
|      |          |       | 1/0        | 847.5   | 22.26      | 168.27 |
|      |          | 16QAM | 1/0        | 825.5   | 20.07      | 101.62 |
|      |          |       | 1/0        | 836.5   | 20.29      | 106.93 |
|      |          |       | 1/0        | 847.5   | 20.83      | 121.06 |
|      | 1.4      | QPSK  | 1/0        | 824.7   | 21.91      | 155.24 |
|      |          |       | 1/0        | 836.5   | 22.31      | 170.26 |
|      |          |       | 1/0        | 848.3   | 22.48      | 177.01 |
|      |          | 16QAM | 1/0        | 824.7   | 19.98      | 99.54  |
|      |          |       | 1/0        | 836.5   | 20.18      | 104.26 |
|      |          |       | 1/0        | 848.3   | 20.88      | 122.46 |

| Band | BW (MHz) | Mode  | RB/RB Size | f (MHz) | ERP / EIRP |        |
|------|----------|-------|------------|---------|------------|--------|
|      |          |       |            |         | dBm        | mW     |
| LTE4 | 20       | QPSK  | 1/0        | 1720    | 29.51      | 894.18 |
|      |          |       | 1/0        | 1732.5  | 29.06      | 805.57 |
|      |          |       | 1/0        | 1745    | 29.36      | 864.54 |
|      |          | 16QAM | 1/0        | 1720    | 28.84      | 766.35 |
|      |          |       | 1/0        | 1732.5  | 28.21      | 662.38 |
|      |          |       | 1/0        | 1745    | 28.53      | 714.14 |
|      | 15       | QPSK  | 1/0        | 1717.5  | 29.23      | 839.06 |
|      |          |       | 1/0        | 1732.5  | 29.03      | 800.03 |
|      |          |       | 1/0        | 1747.5  | 29.25      | 842.21 |
|      |          | 16QAM | 1/0        | 1717.5  | 28.47      | 704.35 |
|      |          |       | 1/0        | 1732.5  | 28.15      | 653.29 |
|      |          |       | 1/0        | 1747.5  | 28.41      | 694.1  |
|      | 10       | QPSK  | 1/0        | 1715    | 29.09      | 811.16 |
|      |          |       | 1/0        | 1732.5  | 28.82      | 762.26 |
|      |          |       | 1/0        | 1750    | 28.99      | 792.73 |
|      |          | 16QAM | 1/0        | 1715    | 28.42      | 695.19 |
|      |          |       | 1/0        | 1732.5  | 28.28      | 673.14 |
|      |          |       | 1/0        | 1750    | 28.19      | 659.37 |
|      | 5        | QPSK  | 1/0        | 1712.5  | 29.23      | 838.35 |
|      |          |       | 1/0        | 1732.5  | 28.96      | 787.24 |
|      |          |       | 1/0        | 1752.5  | 28.69      | 740.94 |
|      |          | 16QAM | 1/0        | 1712.5  | 28.47      | 703.76 |
|      |          |       | 1/0        | 1732.5  | 28.14      | 651.79 |
|      |          |       | 1/0        | 1752.5  | 27.78      | 600.88 |

| Band | BW (MHz) | Mode  | RB/RB Size | f (MHz) | ERP / EIRP |        |
|------|----------|-------|------------|---------|------------|--------|
|      |          |       |            |         | dBm        | mW     |
| LTE4 | 3        | QPSK  | 1/0        | 1711.5  | 29.23      | 839.06 |
|      |          |       | 1/0        | 1732.5  | 28.99      | 792.69 |
|      |          |       | 1/0        | 1753.5  | 28.71      | 743.74 |
|      |          | 16QAM | 1/0        | 1711.5  | 28.71      | 744.37 |
|      |          |       | 1/0        | 1732.5  | 28.17      | 656.3  |
|      |          |       | 1/0        | 1753.5  | 27.80      | 603.14 |
|      | 1.4      | QPSK  | 1/0        | 1710.7  | 29.05      | 803.72 |
|      |          |       | 1/0        | 1732.5  | 28.89      | 774.65 |
|      |          |       | 1/0        | 1754.3  | 28.74      | 748.39 |
|      |          | 16QAM | 1/0        | 1710.7  | 28.30      | 676.25 |
|      |          |       | 1/0        | 1732.5  | 28.12      | 648.79 |
|      |          |       | 1/0        | 1754.3  | 27.86      | 611.12 |



| Band<br><br>LTE25<br><br>20MHz<br><br>QPSK | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |                                                |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------------------------------|-----------------------|---------------|----------------|---------------|-------|--|----------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|---------------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|-------|---|-----|-----|-------|------|------|--|---------------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|-------|---|-----|-----|-------|------|------|--|----------------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|-------|---|-----|-----|-------|------|------|
|                                            | <b>Company:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    | LG                                             |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                            | <b>Project #:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                    | 15I20405                                       |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                            | <b>Date:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                    | 4/1/2015                                       |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                            | <b>Test Engineer:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                    | Charles Vergonio                               |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                            | <b>Configuration:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                    | EUT Only                                       |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                            | <b>Location:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                    | Chamber C                                      |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                            | <b>Mode:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                    | LTE_QPSK Band 25 Fundamentals, 20MHz Bandwidth |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                            | <b>Test Equipment:</b><br>Receiving: Horn T119, and Chamber C SMA Cables<br>Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) Warehouse                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                                                |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                            | <table border="1"> <thead> <tr> <th>f<br/>MHz</th> <th>SG reading<br/>(dBm)</th> <th>Ant. Pol.<br/>(H/V)</th> <th>Cable Loss<br/>(dB)</th> <th>Antenna Gain<br/>(dBi)</th> <th>EIRP<br/>(dBm)</th> <th>Limit<br/>(dBm)</th> <th>Delta<br/>(dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9"><b>Low Ch</b></td> </tr> <tr> <td>1860.00</td> <td>15.38</td> <td>V</td> <td>0.9</td> <td>8.0</td> <td>22.49</td> <td>33.0</td> <td>-10.5</td> <td></td> </tr> <tr> <td>1860.00</td> <td>19.27</td> <td>H</td> <td>0.9</td> <td>8.0</td> <td>26.38</td> <td>33.0</td> <td>-6.6</td> <td></td> </tr> <tr> <td colspan="9"><b>Mid Ch</b></td> </tr> <tr> <td>1882.50</td> <td>14.71</td> <td>V</td> <td>0.9</td> <td>8.0</td> <td>21.82</td> <td>33.0</td> <td>-11.2</td> <td></td> </tr> <tr> <td>1882.50</td> <td>18.44</td> <td>H</td> <td>0.9</td> <td>8.0</td> <td>25.55</td> <td>33.0</td> <td>-7.5</td> <td></td> </tr> <tr> <td colspan="9"><b>High Ch</b></td> </tr> <tr> <td>1905.00</td> <td>15.61</td> <td>V</td> <td>0.9</td> <td>8.0</td> <td>22.72</td> <td>33.0</td> <td>-10.3</td> <td></td> </tr> <tr> <td>1905.00</td> <td>18.94</td> <td>H</td> <td>0.9</td> <td>8.0</td> <td>26.05</td> <td>33.0</td> <td>-7.0</td> <td></td> </tr> </tbody> </table> |                    |                                                |                       |               |                |               |       |  | f<br>MHz | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes | <b>Low Ch</b> |  |  |  |  |  |  |  |  | 1860.00 | 15.38 | V | 0.9 | 8.0 | 22.49 | 33.0 | -10.5 |  | 1860.00 | 19.27 | H | 0.9 | 8.0 | 26.38 | 33.0 | -6.6 |  | <b>Mid Ch</b> |  |  |  |  |  |  |  |  | 1882.50 | 14.71 | V | 0.9 | 8.0 | 21.82 | 33.0 | -11.2 |  | 1882.50 | 18.44 | H | 0.9 | 8.0 | 25.55 | 33.0 | -7.5 |  | <b>High Ch</b> |  |  |  |  |  |  |  |  | 1905.00 | 15.61 | V | 0.9 | 8.0 | 22.72 | 33.0 | -10.3 |  | 1905.00 | 18.94 | H | 0.9 | 8.0 | 26.05 | 33.0 | -7.0 |
| f<br>MHz                                   | SG reading<br>(dBm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB)                             | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| <b>Low Ch</b>                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                                                |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| 1860.00                                    | 15.38                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | V                  | 0.9                                            | 8.0                   | 22.49         | 33.0           | -10.5         |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| 1860.00                                    | 19.27                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | H                  | 0.9                                            | 8.0                   | 26.38         | 33.0           | -6.6          |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| <b>Mid Ch</b>                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                                                |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| 1882.50                                    | 14.71                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | V                  | 0.9                                            | 8.0                   | 21.82         | 33.0           | -11.2         |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| 1882.50                                    | 18.44                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | H                  | 0.9                                            | 8.0                   | 25.55         | 33.0           | -7.5          |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| <b>High Ch</b>                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                                                |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| 1905.00                                    | 15.61                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | V                  | 0.9                                            | 8.0                   | 22.72         | 33.0           | -10.3         |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| 1905.00                                    | 18.94                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | H                  | 0.9                                            | 8.0                   | 26.05         | 33.0           | -7.0          |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |

| Band<br><br>LTE25<br><br>15MHz<br><br>16QAM | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |                                                 |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------------------------------|-----------------------|---------------|----------------|---------------|-------|--|----------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|---------------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|-------|---|-----|-----|-------|------|------|--|---------------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|-------|---|-----|-----|-------|------|------|--|----------------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|-------|---|-----|-----|-------|------|------|
|                                             | <b>Company:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    | LG                                              |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                             | <b>Project #:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                    | 15I20405                                        |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                             | <b>Date:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                    | 4/1/2015                                        |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                             | <b>Test Engineer:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                    | Charles Vergonio                                |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                             | <b>Configuration:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                    | EUT Only                                        |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                             | <b>Location:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                    | Chamber C                                       |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                             | <b>Mode:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                    | LTE_16QAM Band 25 Fundamentals, 15MHz Bandwidth |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                             | <b>Test Equipment:</b><br>Receiving: Horn T119, and Chamber C SMA Cables<br>Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) Warehouse                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                                                 |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                             | <table border="1"> <thead> <tr> <th>f<br/>MHz</th> <th>SG reading<br/>(dBm)</th> <th>Ant. Pol.<br/>(H/V)</th> <th>Cable Loss<br/>(dB)</th> <th>Antenna Gain<br/>(dBi)</th> <th>EIRP<br/>(dBm)</th> <th>Limit<br/>(dBm)</th> <th>Delta<br/>(dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9"><b>Low Ch</b></td> </tr> <tr> <td>1857.50</td> <td>14.23</td> <td>V</td> <td>0.9</td> <td>8.0</td> <td>21.34</td> <td>33.0</td> <td>-11.7</td> <td></td> </tr> <tr> <td>1857.50</td> <td>18.37</td> <td>H</td> <td>0.9</td> <td>8.0</td> <td>25.48</td> <td>33.0</td> <td>-7.5</td> <td></td> </tr> <tr> <td colspan="9"><b>Mid Ch</b></td> </tr> <tr> <td>1882.50</td> <td>13.99</td> <td>V</td> <td>0.9</td> <td>8.0</td> <td>21.10</td> <td>33.0</td> <td>-11.9</td> <td></td> </tr> <tr> <td>1882.50</td> <td>18.22</td> <td>H</td> <td>0.9</td> <td>8.0</td> <td>25.33</td> <td>33.0</td> <td>-7.7</td> <td></td> </tr> <tr> <td colspan="9"><b>High Ch</b></td> </tr> <tr> <td>1907.50</td> <td>14.91</td> <td>V</td> <td>0.9</td> <td>8.0</td> <td>22.02</td> <td>33.0</td> <td>-11.0</td> <td></td> </tr> <tr> <td>1907.50</td> <td>18.21</td> <td>H</td> <td>0.9</td> <td>8.0</td> <td>25.32</td> <td>33.0</td> <td>-7.7</td> <td></td> </tr> </tbody> </table> |                    |                                                 |                       |               |                |               |       |  | f<br>MHz | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes | <b>Low Ch</b> |  |  |  |  |  |  |  |  | 1857.50 | 14.23 | V | 0.9 | 8.0 | 21.34 | 33.0 | -11.7 |  | 1857.50 | 18.37 | H | 0.9 | 8.0 | 25.48 | 33.0 | -7.5 |  | <b>Mid Ch</b> |  |  |  |  |  |  |  |  | 1882.50 | 13.99 | V | 0.9 | 8.0 | 21.10 | 33.0 | -11.9 |  | 1882.50 | 18.22 | H | 0.9 | 8.0 | 25.33 | 33.0 | -7.7 |  | <b>High Ch</b> |  |  |  |  |  |  |  |  | 1907.50 | 14.91 | V | 0.9 | 8.0 | 22.02 | 33.0 | -11.0 |  | 1907.50 | 18.21 | H | 0.9 | 8.0 | 25.32 | 33.0 | -7.7 |
| f<br>MHz                                    | SG reading<br>(dBm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB)                              | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| <b>Low Ch</b>                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                                                 |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| 1857.50                                     | 14.23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | V                  | 0.9                                             | 8.0                   | 21.34         | 33.0           | -11.7         |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| 1857.50                                     | 18.37                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | H                  | 0.9                                             | 8.0                   | 25.48         | 33.0           | -7.5          |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| <b>Mid Ch</b>                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                                                 |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| 1882.50                                     | 13.99                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | V                  | 0.9                                             | 8.0                   | 21.10         | 33.0           | -11.9         |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| 1882.50                                     | 18.22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | H                  | 0.9                                             | 8.0                   | 25.33         | 33.0           | -7.7          |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| <b>High Ch</b>                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                                                 |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| 1907.50                                     | 14.91                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | V                  | 0.9                                             | 8.0                   | 22.02         | 33.0           | -11.0         |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| 1907.50                                     | 18.21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | H                  | 0.9                                             | 8.0                   | 25.32         | 33.0           | -7.7          |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |

| Band<br><br>LTE25<br><br>15MHz<br><br>QPSK | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |                                                |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------------------------------|-----------------------|---------------|----------------|---------------|-------|--|----------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|---------------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|-------|---|-----|-----|-------|------|------|--|---------------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|-------|---|-----|-----|-------|------|------|--|----------------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|-------|---|-----|-----|-------|------|------|
|                                            | <b>Company:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    | LG                                             |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                            | <b>Project #:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                    | 15I20405                                       |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                            | <b>Date:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                    | 4/1/2015                                       |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                            | <b>Test Engineer:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                    | Charles Vergonio                               |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                            | <b>Configuration:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                    | EUT Only                                       |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                            | <b>Location:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                    | Chamber C                                      |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                            | <b>Mode:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                    | LTE_QPSK Band 25 Fundamentals, 15MHz Bandwidth |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                            | <b>Test Equipment:</b><br>Receiving: Horn T119, and Chamber C SMA Cables<br>Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) Warehouse                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                                                |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                            | <table border="1"> <thead> <tr> <th>f<br/>MHz</th> <th>SG reading<br/>(dBm)</th> <th>Ant. Pol.<br/>(H/V)</th> <th>Cable Loss<br/>(dB)</th> <th>Antenna Gain<br/>(dBi)</th> <th>EIRP<br/>(dBm)</th> <th>Limit<br/>(dBm)</th> <th>Delta<br/>(dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9"><b>Low Ch</b></td> </tr> <tr> <td>1857.50</td> <td>15.00</td> <td>V</td> <td>0.9</td> <td>8.0</td> <td>22.11</td> <td>33.0</td> <td>-10.9</td> <td></td> </tr> <tr> <td>1857.50</td> <td>19.14</td> <td>H</td> <td>0.9</td> <td>8.0</td> <td>26.25</td> <td>33.0</td> <td>-6.8</td> <td></td> </tr> <tr> <td colspan="9"><b>Mid Ch</b></td> </tr> <tr> <td>1882.50</td> <td>14.71</td> <td>V</td> <td>0.9</td> <td>8.0</td> <td>21.82</td> <td>33.0</td> <td>-11.2</td> <td></td> </tr> <tr> <td>1882.50</td> <td>19.02</td> <td>H</td> <td>0.9</td> <td>8.0</td> <td>26.13</td> <td>33.0</td> <td>-6.9</td> <td></td> </tr> <tr> <td colspan="9"><b>High Ch</b></td> </tr> <tr> <td>1907.50</td> <td>15.62</td> <td>V</td> <td>0.9</td> <td>8.0</td> <td>22.73</td> <td>33.0</td> <td>-10.3</td> <td></td> </tr> <tr> <td>1907.50</td> <td>18.96</td> <td>H</td> <td>0.9</td> <td>8.0</td> <td>26.07</td> <td>33.0</td> <td>-6.9</td> <td></td> </tr> </tbody> </table> |                    |                                                |                       |               |                |               |       |  | f<br>MHz | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes | <b>Low Ch</b> |  |  |  |  |  |  |  |  | 1857.50 | 15.00 | V | 0.9 | 8.0 | 22.11 | 33.0 | -10.9 |  | 1857.50 | 19.14 | H | 0.9 | 8.0 | 26.25 | 33.0 | -6.8 |  | <b>Mid Ch</b> |  |  |  |  |  |  |  |  | 1882.50 | 14.71 | V | 0.9 | 8.0 | 21.82 | 33.0 | -11.2 |  | 1882.50 | 19.02 | H | 0.9 | 8.0 | 26.13 | 33.0 | -6.9 |  | <b>High Ch</b> |  |  |  |  |  |  |  |  | 1907.50 | 15.62 | V | 0.9 | 8.0 | 22.73 | 33.0 | -10.3 |  | 1907.50 | 18.96 | H | 0.9 | 8.0 | 26.07 | 33.0 | -6.9 |
| f<br>MHz                                   | SG reading<br>(dBm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB)                             | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| <b>Low Ch</b>                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                                                |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| 1857.50                                    | 15.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | V                  | 0.9                                            | 8.0                   | 22.11         | 33.0           | -10.9         |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| 1857.50                                    | 19.14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | H                  | 0.9                                            | 8.0                   | 26.25         | 33.0           | -6.8          |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| <b>Mid Ch</b>                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                                                |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| 1882.50                                    | 14.71                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | V                  | 0.9                                            | 8.0                   | 21.82         | 33.0           | -11.2         |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| 1882.50                                    | 19.02                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | H                  | 0.9                                            | 8.0                   | 26.13         | 33.0           | -6.9          |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| <b>High Ch</b>                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                                                |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| 1907.50                                    | 15.62                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | V                  | 0.9                                            | 8.0                   | 22.73         | 33.0           | -10.3         |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| 1907.50                                    | 18.96                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | H                  | 0.9                                            | 8.0                   | 26.07         | 33.0           | -6.9          |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |



Band

LTE25

10MHz

QPSK

High Frequency Substitution Measurement

UL Verification Services, Inc.

Company: LG

Project #: 15I20405

Date: 4/1/2015

Test Engineer: Charles Vergonio

Configuration: EUT Only

Location: Chamber C

Mode: LTE\_QPSK Band 25 Fundamentals, 10MHz Bandwidth

Test Equipment:

Receiving: Horn T119, and Chamber C SMA Cables

Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

| f<br>MHz | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes |
|----------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|
| Low Ch   |                     |                    |                    |                       |               |                |               |       |
| 1855.00  | 15.20               | V                  | 0.9                | 8.0                   | 22.31         | 33.0           | -10.7         |       |
| 1855.00  | 19.23               | H                  | 0.9                | 8.0                   | 26.34         | 33.0           | -6.7          |       |
| Mid Ch   |                     |                    |                    |                       |               |                |               |       |
| 1882.50  | 14.68               | V                  | 0.9                | 8.0                   | 21.79         | 33.0           | -11.2         |       |
| 1882.50  | 18.98               | H                  | 0.9                | 8.0                   | 26.09         | 33.0           | -6.9          |       |
| High Ch  |                     |                    |                    |                       |               |                |               |       |
| 1912.00  | 15.62               | V                  | 0.9                | 8.0                   | 22.73         | 33.0           | -10.3         |       |
| 1912.00  | 18.89               | H                  | 0.9                | 8.0                   | 26.00         | 33.0           | -7.0          |       |



|                                                                     |                                                                                         |                                   |                                               |                                  |                                     |                             |                              |                             |              |
|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------------------|----------------------------------|-------------------------------------|-----------------------------|------------------------------|-----------------------------|--------------|
| Band<br><br>LTE25<br><br>5MHz<br><br>QPSK                           | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc.</b> |                                   |                                               |                                  |                                     |                             |                              |                             |              |
|                                                                     | <b>Company:</b>                                                                         |                                   | LG                                            |                                  |                                     |                             |                              |                             |              |
|                                                                     | <b>Project #:</b>                                                                       |                                   | 15I20405                                      |                                  |                                     |                             |                              |                             |              |
|                                                                     | <b>Date:</b>                                                                            |                                   | 4/1/2015                                      |                                  |                                     |                             |                              |                             |              |
|                                                                     | <b>Test Engineer:</b>                                                                   |                                   | Charles Vergonio                              |                                  |                                     |                             |                              |                             |              |
|                                                                     | <b>Configuration:</b>                                                                   |                                   | EUT Only                                      |                                  |                                     |                             |                              |                             |              |
|                                                                     | <b>Location:</b>                                                                        |                                   | Chamber C                                     |                                  |                                     |                             |                              |                             |              |
|                                                                     | <b>Mode:</b>                                                                            |                                   | LTE_QPSK Band 25 Fundamentals, 5MHz Bandwidth |                                  |                                     |                             |                              |                             |              |
|                                                                     | <b>Test Equipment:</b>                                                                  |                                   |                                               |                                  |                                     |                             |                              |                             |              |
|                                                                     | Receiving: Horn T119, and Chamber C SMA Cables                                          |                                   |                                               |                                  |                                     |                             |                              |                             |              |
| Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) Warehouse |                                                                                         |                                   |                                               |                                  |                                     |                             |                              |                             |              |
|                                                                     | <b>f</b><br><b>MHz</b>                                                                  | <b>SG reading</b><br><b>(dBm)</b> | <b>Ant. Pol.</b><br><b>(H/V)</b>              | <b>Cable Loss</b><br><b>(dB)</b> | <b>Antenna Gain</b><br><b>(dBi)</b> | <b>EIRP</b><br><b>(dBm)</b> | <b>Limit</b><br><b>(dBm)</b> | <b>Delta</b><br><b>(dB)</b> | <b>Notes</b> |
|                                                                     | Low Ch                                                                                  |                                   |                                               |                                  |                                     |                             |                              |                             |              |
|                                                                     | 1852.50                                                                                 | 15.05                             | V                                             | 0.9                              | 8.0                                 | 22.16                       | 33.0                         | -10.8                       |              |
|                                                                     | 1852.50                                                                                 | 18.89                             | H                                             | 0.9                              | 8.0                                 | 26.00                       | 33.0                         | -7.0                        |              |
|                                                                     | Mid Ch                                                                                  |                                   |                                               |                                  |                                     |                             |                              |                             |              |
|                                                                     | 1882.50                                                                                 | 15.00                             | V                                             | 0.9                              | 8.0                                 | 22.11                       | 33.0                         | -10.9                       |              |
|                                                                     | 1882.50                                                                                 | 19.21                             | H                                             | 0.9                              | 8.0                                 | 26.32                       | 33.0                         | -6.7                        |              |
|                                                                     | High Ch                                                                                 |                                   |                                               |                                  |                                     |                             |                              |                             |              |
|                                                                     | 1912.50                                                                                 | 15.99                             | V                                             | 0.9                              | 8.0                                 | 23.10                       | 33.0                         | -9.9                        |              |
|                                                                     | 1912.50                                                                                 | 18.91                             | H                                             | 0.9                              | 8.0                                 | 26.02                       | 33.0                         | -7.0                        |              |





| Band<br><br>LTE25<br><br>1.4MHz<br><br>16QAM | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |                                                  |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------------------------------------|-----------------------|---------------|----------------|---------------|-------|--|----------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|---------------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|-------|---|-----|-----|-------|------|------|--|---------------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|-------|---|-----|-----|-------|------|------|--|----------------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|-------|---|-----|-----|-------|------|------|
|                                              | <b>Company:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    | LG                                               |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                              | <b>Project #:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                    | 15I20405                                         |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                              | <b>Date:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                    | 4/1/2015                                         |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                              | <b>Test Engineer:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                    | Charles Vergonio                                 |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                              | <b>Configuration:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                    | EUT Only                                         |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                              | <b>Location:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                    | Chamber C                                        |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                              | <b>Mode:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                    | LTE_16QAM Band 25 Fundamentals, 1.4MHz Bandwidth |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                              | <b>Test Equipment:</b><br>Receiving: Horn T119, and Chamber C SMA Cables<br>Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) Warehouse                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                                                  |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
|                                              | <table border="1"> <thead> <tr> <th>f<br/>MHz</th> <th>SG reading<br/>(dBm)</th> <th>Ant. Pol.<br/>(H/V)</th> <th>Cable Loss<br/>(dB)</th> <th>Antenna Gain<br/>(dBi)</th> <th>EIRP<br/>(dBm)</th> <th>Limit<br/>(dBm)</th> <th>Delta<br/>(dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9"><b>Low Ch</b></td> </tr> <tr> <td>1850.70</td> <td>14.26</td> <td>V</td> <td>0.9</td> <td>8.0</td> <td>21.37</td> <td>33.0</td> <td>-11.6</td> <td></td> </tr> <tr> <td>1850.70</td> <td>18.91</td> <td>H</td> <td>0.9</td> <td>8.0</td> <td>26.02</td> <td>33.0</td> <td>-7.0</td> <td></td> </tr> <tr> <td colspan="9"><b>Mid Ch</b></td> </tr> <tr> <td>1882.50</td> <td>13.55</td> <td>V</td> <td>0.9</td> <td>8.0</td> <td>20.66</td> <td>33.0</td> <td>-12.3</td> <td></td> </tr> <tr> <td>1882.50</td> <td>17.67</td> <td>H</td> <td>0.9</td> <td>8.0</td> <td>24.78</td> <td>33.0</td> <td>-8.2</td> <td></td> </tr> <tr> <td colspan="9"><b>High Ch</b></td> </tr> <tr> <td>1914.30</td> <td>14.72</td> <td>V</td> <td>0.9</td> <td>8.0</td> <td>21.83</td> <td>33.0</td> <td>-11.2</td> <td></td> </tr> <tr> <td>1914.30</td> <td>17.15</td> <td>H</td> <td>0.9</td> <td>8.0</td> <td>24.26</td> <td>33.0</td> <td>-8.7</td> <td></td> </tr> </tbody> </table> |                    |                                                  |                       |               |                |               |       |  | f<br>MHz | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes | <b>Low Ch</b> |  |  |  |  |  |  |  |  | 1850.70 | 14.26 | V | 0.9 | 8.0 | 21.37 | 33.0 | -11.6 |  | 1850.70 | 18.91 | H | 0.9 | 8.0 | 26.02 | 33.0 | -7.0 |  | <b>Mid Ch</b> |  |  |  |  |  |  |  |  | 1882.50 | 13.55 | V | 0.9 | 8.0 | 20.66 | 33.0 | -12.3 |  | 1882.50 | 17.67 | H | 0.9 | 8.0 | 24.78 | 33.0 | -8.2 |  | <b>High Ch</b> |  |  |  |  |  |  |  |  | 1914.30 | 14.72 | V | 0.9 | 8.0 | 21.83 | 33.0 | -11.2 |  | 1914.30 | 17.15 | H | 0.9 | 8.0 | 24.26 | 33.0 | -8.7 |
| f<br>MHz                                     | SG reading<br>(dBm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB)                               | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| <b>Low Ch</b>                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                                                  |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| 1850.70                                      | 14.26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | V                  | 0.9                                              | 8.0                   | 21.37         | 33.0           | -11.6         |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| 1850.70                                      | 18.91                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | H                  | 0.9                                              | 8.0                   | 26.02         | 33.0           | -7.0          |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| <b>Mid Ch</b>                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                                                  |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| 1882.50                                      | 13.55                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | V                  | 0.9                                              | 8.0                   | 20.66         | 33.0           | -12.3         |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| 1882.50                                      | 17.67                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | H                  | 0.9                                              | 8.0                   | 24.78         | 33.0           | -8.2          |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| <b>High Ch</b>                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                                                  |                       |               |                |               |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| 1914.30                                      | 14.72                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | V                  | 0.9                                              | 8.0                   | 21.83         | 33.0           | -11.2         |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |
| 1914.30                                      | 17.15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | H                  | 0.9                                              | 8.0                   | 24.26         | 33.0           | -8.7          |       |  |          |                     |                    |                    |                       |               |                |               |       |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |               |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |  |                |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |       |  |         |       |   |     |     |       |      |      |



**LTE Band 13**

| Band<br><br>LTE13<br><br>10MHz<br><br>16QAM                                            | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc. Chamber C</b>                                                                                                                                |                     |                    |                    |                       |              |                |                |       |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|--------------|----------------|----------------|-------|
|                                                                                        | <b>Company:</b> LG<br><b>Project #:</b> 15I20405<br><b>Date:</b> 04/04/15<br><b>Test Engineer:</b> Charles Vergonio<br><b>Configuration:</b> EUT Only Z Position<br><b>Mode:</b> LTE_16QAM Band 13 Fundamentals, 10MHz Bandwidth |                     |                    |                    |                       |              |                |                |       |
|                                                                                        | <b>Test Equipment:</b><br><b>Receiving:</b> Sunol T185, and 3m Chamber C N-type Cable<br><b>Substitution:</b> Dipole T273, 4ft SMA Cable Warehouse.                                                                              |                     |                    |                    |                       |              |                |                |       |
|                                                                                        | f<br>MHz                                                                                                                                                                                                                         | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBd) | ERP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes |
|                                                                                        |                                                                                                                                                                                                                                  |                     |                    |                    |                       |              |                |                |       |
|                                                                                        |                                                                                                                                                                                                                                  |                     |                    |                    |                       |              |                |                |       |
|                                                                                        | Mid Ch                                                                                                                                                                                                                           |                     |                    |                    |                       |              |                |                |       |
|                                                                                        | 782.00                                                                                                                                                                                                                           | 20.37               | V                  | 0.9                | 0.0                   | 19.47        | 34.8           | -15.3          |       |
|                                                                                        | 782.00                                                                                                                                                                                                                           | 6.58                | H                  | 0.9                | 0.0                   | 5.68         | 34.8           | -29.1          |       |
|                                                                                        |                                                                                                                                                                                                                                  |                     |                    |                    |                       |              |                |                |       |
| Rev. 3.17.11<br>Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm |                                                                                                                                                                                                                                  |                     |                    |                    |                       |              |                |                |       |

|                                                                                        |                                                                                                   |                                   |                                                |                                  |                                     |                            |                              |                              |              |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------|------------------------------------------------|----------------------------------|-------------------------------------|----------------------------|------------------------------|------------------------------|--------------|
| Band<br><br>LTE13<br><br>10MHz<br><br>QPSK                                             | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc. Chamber C</b> |                                   |                                                |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>Company:</b>                                                                                   |                                   | LG                                             |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>Project #:</b>                                                                                 |                                   | 15I20405                                       |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>Date:</b>                                                                                      |                                   | 04/04/15                                       |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>Test Engineer:</b>                                                                             |                                   | Charles Vergonio                               |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>Configuration:</b>                                                                             |                                   | EUT Only Z Position                            |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>Mode:</b>                                                                                      |                                   | LTE_QPSK Band 13 Fundamentals, 10MHz Bandwidth |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>Test Equipment:</b>                                                                            |                                   |                                                |                                  |                                     |                            |                              |                              |              |
|                                                                                        | Receiving: Sunol T185, and 3m Chamber C N-type Cable                                              |                                   |                                                |                                  |                                     |                            |                              |                              |              |
|                                                                                        | Substitution: Dipole T273, 4ft SMA Cable Warehouse.                                               |                                   |                                                |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>f</b><br><b>MHz</b>                                                                            | <b>SG reading</b><br><b>(dBm)</b> | <b>Ant. Pol.</b><br><b>(H/V)</b>               | <b>Cable Loss</b><br><b>(dB)</b> | <b>Antenna Gain</b><br><b>(dBd)</b> | <b>ERP</b><br><b>(dBm)</b> | <b>Limit</b><br><b>(dBm)</b> | <b>Margin</b><br><b>(dB)</b> | <b>Notes</b> |
|                                                                                        |                                                                                                   |                                   |                                                |                                  |                                     |                            |                              |                              |              |
|                                                                                        |                                                                                                   |                                   |                                                |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>Mid Ch</b>                                                                                     |                                   |                                                |                                  |                                     |                            |                              |                              |              |
|                                                                                        | 782.00                                                                                            | 21.18                             | V                                              | 0.9                              | 0.0                                 | 20.28                      | 34.8                         | -14.5                        |              |
|                                                                                        | 782.00                                                                                            | 7.45                              | H                                              | 0.9                              | 0.0                                 | 6.55                       | 34.8                         | -28.2                        |              |
|                                                                                        |                                                                                                   |                                   |                                                |                                  |                                     |                            |                              |                              |              |
|                                                                                        |                                                                                                   |                                   |                                                |                                  |                                     |                            |                              |                              |              |
| Rev. 3.17.11<br>Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm |                                                                                                   |                                   |                                                |                                  |                                     |                            |                              |                              |              |

|                                                                        |                                                                                                   |                             |                                                |                            |                               |                      |                        |                        |              |
|------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------|----------------------------|-------------------------------|----------------------|------------------------|------------------------|--------------|
| Band<br><br>LTE13<br><br>5MHz<br><br>16QAM                             | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc. Chamber C</b> |                             |                                                |                            |                               |                      |                        |                        |              |
|                                                                        | <b>Company:</b>                                                                                   |                             | LG                                             |                            |                               |                      |                        |                        |              |
|                                                                        | <b>Project #:</b>                                                                                 |                             | 15I20405                                       |                            |                               |                      |                        |                        |              |
|                                                                        | <b>Date:</b>                                                                                      |                             | 04/04/15                                       |                            |                               |                      |                        |                        |              |
|                                                                        | <b>Test Engineer:</b>                                                                             |                             | Charles Vergonio                               |                            |                               |                      |                        |                        |              |
|                                                                        | <b>Configuration:</b>                                                                             |                             | EUT Only Z Position                            |                            |                               |                      |                        |                        |              |
|                                                                        | <b>Mode:</b>                                                                                      |                             | LTE_16QAM Band 13 Fundamentals, 5MHz Bandwidth |                            |                               |                      |                        |                        |              |
|                                                                        | <b>Test Equipment:</b>                                                                            |                             |                                                |                            |                               |                      |                        |                        |              |
|                                                                        | Receiving: Sunol T185, and 3m Chamber C N-type Cable                                              |                             |                                                |                            |                               |                      |                        |                        |              |
|                                                                        | Substitution: Dipole T273, 4ft SMA Cable Warehouse.                                               |                             |                                                |                            |                               |                      |                        |                        |              |
|                                                                        | <b>f<br/>MHz</b>                                                                                  | <b>SG reading<br/>(dBm)</b> | <b>Ant. Pol.<br/>(H/V)</b>                     | <b>Cable Loss<br/>(dB)</b> | <b>Antenna Gain<br/>(dBd)</b> | <b>ERP<br/>(dBm)</b> | <b>Limit<br/>(dBm)</b> | <b>Margin<br/>(dB)</b> | <b>Notes</b> |
|                                                                        | Low Ch                                                                                            |                             |                                                |                            |                               |                      |                        |                        |              |
|                                                                        | 779.50                                                                                            | 20.28                       | V                                              | 0.9                        | 0.0                           | 19.38                | 34.8                   | -15.4                  |              |
|                                                                        | 779.50                                                                                            | 6.27                        | H                                              | 0.9                        | 0.0                           | 5.37                 | 34.8                   | -29.4                  |              |
|                                                                        | Mid Ch                                                                                            |                             |                                                |                            |                               |                      |                        |                        |              |
|                                                                        | 782.00                                                                                            | 20.22                       | V                                              | 0.9                        | 0.0                           | 19.32                | 34.8                   | -15.4                  |              |
|                                                                        | 782.00                                                                                            | 6.48                        | H                                              | 0.9                        | 0.0                           | 5.58                 | 34.8                   | -29.2                  |              |
|                                                                        | High Ch                                                                                           |                             |                                                |                            |                               |                      |                        |                        |              |
|                                                                        | 784.50                                                                                            | 20.28                       | V                                              | 0.9                        | 0.0                           | 19.38                | 34.8                   | -15.4                  |              |
|                                                                        | 784.50                                                                                            | 6.56                        | H                                              | 0.9                        | 0.0                           | 5.66                 | 34.8                   | -29.1                  |              |
| Rev. 3.17.11                                                           |                                                                                                   |                             |                                                |                            |                               |                      |                        |                        |              |
| Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm |                                                                                                   |                             |                                                |                            |                               |                      |                        |                        |              |

| Band<br><br>LTE13<br><br>5MHz<br><br>QPSK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc. Chamber C</b> |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------|-----------------------|--------------|----------------|----------------|-------|----------|---------------------|--------------------|--------------------|-----------------------|--------------|----------------|----------------|-------|---------------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|------|---|-----|-----|------|------|-------|--|---------------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|------|---|-----|-----|------|------|-------|--|----------------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|------|---|-----|-----|------|------|-------|--|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Company:</b>                                                                                   |                    | LG                                            |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Project #:</b>                                                                                 |                    | 15I20405                                      |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Date:</b>                                                                                      |                    | 04/04/15                                      |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Test Engineer:</b>                                                                             |                    | Charles Vergonio                              |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Configuration:</b>                                                                             |                    | EUT Only Z Position                           |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Mode:</b>                                                                                      |                    | LTE_QPSK Band 13 Fundamentals, 5MHz Bandwidth |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Test Equipment:</b>                                                                            |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Receiving: Sunol T185, and 3m Chamber C N-type Cable                                              |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Substitution: Dipole T273, 4ft SMA Cable Warehouse.                                               |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| <table border="1"> <thead> <tr> <th>f<br/>MHz</th> <th>SG reading<br/>(dBm)</th> <th>Ant. Pol.<br/>(H/V)</th> <th>Cable Loss<br/>(dB)</th> <th>Antenna Gain<br/>(dBd)</th> <th>ERP<br/>(dBm)</th> <th>Limit<br/>(dBm)</th> <th>Margin<br/>(dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9"><b>Low Ch</b></td> </tr> <tr> <td>779.50</td> <td>20.96</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>20.06</td> <td>34.8</td> <td>-14.7</td> <td></td> </tr> <tr> <td>779.50</td> <td>6.96</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>6.06</td> <td>34.8</td> <td>-28.7</td> <td></td> </tr> <tr> <td colspan="9"><b>Mid Ch</b></td> </tr> <tr> <td>782.00</td> <td>21.00</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>20.10</td> <td>34.8</td> <td>-14.7</td> <td></td> </tr> <tr> <td>782.00</td> <td>7.16</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>6.26</td> <td>34.8</td> <td>-28.5</td> <td></td> </tr> <tr> <td colspan="9"><b>High Ch</b></td> </tr> <tr> <td>784.50</td> <td>20.97</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>20.07</td> <td>34.8</td> <td>-14.7</td> <td></td> </tr> <tr> <td>784.50</td> <td>7.38</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>6.48</td> <td>34.8</td> <td>-28.3</td> <td></td> </tr> </tbody> </table> |                                                                                                   |                    |                                               |                       |              |                |                |       | f<br>MHz | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBd) | ERP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes | <b>Low Ch</b> |  |  |  |  |  |  |  |  | 779.50 | 20.96 | V | 0.9 | 0.0 | 20.06 | 34.8 | -14.7 |  | 779.50 | 6.96 | H | 0.9 | 0.0 | 6.06 | 34.8 | -28.7 |  | <b>Mid Ch</b> |  |  |  |  |  |  |  |  | 782.00 | 21.00 | V | 0.9 | 0.0 | 20.10 | 34.8 | -14.7 |  | 782.00 | 7.16 | H | 0.9 | 0.0 | 6.26 | 34.8 | -28.5 |  | <b>High Ch</b> |  |  |  |  |  |  |  |  | 784.50 | 20.97 | V | 0.9 | 0.0 | 20.07 | 34.8 | -14.7 |  | 784.50 | 7.38 | H | 0.9 | 0.0 | 6.48 | 34.8 | -28.3 |  |
| f<br>MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | SG reading<br>(dBm)                                                                               | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB)                            | Antenna Gain<br>(dBd) | ERP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| <b>Low Ch</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                   |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 779.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 20.96                                                                                             | V                  | 0.9                                           | 0.0                   | 20.06        | 34.8           | -14.7          |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 779.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 6.96                                                                                              | H                  | 0.9                                           | 0.0                   | 6.06         | 34.8           | -28.7          |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| <b>Mid Ch</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                   |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 782.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 21.00                                                                                             | V                  | 0.9                                           | 0.0                   | 20.10        | 34.8           | -14.7          |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 782.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 7.16                                                                                              | H                  | 0.9                                           | 0.0                   | 6.26         | 34.8           | -28.5          |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| <b>High Ch</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                   |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 784.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 20.97                                                                                             | V                  | 0.9                                           | 0.0                   | 20.07        | 34.8           | -14.7          |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 784.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 7.38                                                                                              | H                  | 0.9                                           | 0.0                   | 6.48         | 34.8           | -28.3          |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| Rev. 3.17.11<br>Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                   |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |

**LTE Band 12**

Band

LTE12

10MHz

16QAM

High Frequency Substitution Measurement

UL Verification Services, Inc. Chamber C

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

Test Equipment:

Receiving: Sunol T185, and 3m Chamber C N-type Cable

Substitution: Dipole T273, 4ft SMA Cable Warehouse.

| f       | SG reading | Ant. Pol. | Cable Loss | Antenna Gain | ERP   | Limit | Margin | Notes |
|---------|------------|-----------|------------|--------------|-------|-------|--------|-------|
| MHz     | (dBm)      | (H/V)     | (dB)       | (dBd)        | (dBm) | (dBm) | (dB)   |       |
| Low Ch  |            |           |            |              |       |       |        |       |
| 704.00  | 19.91      | V         | 0.9        | 0.0          | 19.01 | 38.5  | -19.4  |       |
| 704.00  | 6.51       | H         | 0.9        | 0.0          | 5.61  | 38.5  | -32.8  |       |
| Mid Ch  |            |           |            |              |       |       |        |       |
| 707.50  | 20.19      | V         | 0.9        | 0.0          | 19.29 | 38.5  | -19.2  |       |
| 707.50  | 7.57       | H         | 0.9        | 0.0          | 6.67  | 38.5  | -31.8  |       |
| High Ch |            |           |            |              |       |       |        |       |
| 711.00  | 21.62      | V         | 0.9        | 0.0          | 20.72 | 38.5  | -17.7  |       |
| 711.00  | 9.11       | H         | 0.9        | 0.0          | 8.21  | 38.5  | -30.2  |       |

Rev. 3.17.11

Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

| Band<br><br>LTE12<br><br>10MHz<br><br>QPSK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc. Chamber C</b> |                    |                                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------|------------------------------------------------|-----------------------|--------------|----------------|----------------|-------|----------|---------------------|--------------------|--------------------|-----------------------|--------------|----------------|----------------|-------|--------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|------|---|-----|-----|------|------|-------|--|--------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|------|---|-----|-----|------|------|-------|--|---------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|------|---|-----|-----|------|------|-------|--|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Company:</b>                                                                                   |                    | LG                                             |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Project #:</b>                                                                                 |                    | 15I20405                                       |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Date:</b>                                                                                      |                    | 04/04/15                                       |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Test Engineer:</b>                                                                             |                    | Charles Vergonio                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Configuration:</b>                                                                             |                    | EUT Only Z Position                            |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Mode:</b>                                                                                      |                    | LTE_QPSK Band 12 Fundamentals, 10MHz Bandwidth |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Test Equipment:</b>                                                                            |                    |                                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Receiving: Sunol T185, and 3m Chamber C N-type Cable                                              |                    |                                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Substitution: Dipole T273, 4ft SMA Cable Warehouse.                                               |                    |                                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| <table border="1"> <thead> <tr> <th>f<br/>MHz</th> <th>SG reading<br/>(dBm)</th> <th>Ant. Pol.<br/>(H/V)</th> <th>Cable Loss<br/>(dB)</th> <th>Antenna Gain<br/>(dBd)</th> <th>ERP<br/>(dBm)</th> <th>Limit<br/>(dBm)</th> <th>Margin<br/>(dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>Low Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>704.00</td> <td>20.31</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>19.41</td> <td>38.5</td> <td>-19.0</td> <td></td> </tr> <tr> <td>704.00</td> <td>6.71</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>5.81</td> <td>38.5</td> <td>-32.6</td> <td></td> </tr> <tr> <td>Mid Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>707.50</td> <td>21.04</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>20.14</td> <td>38.5</td> <td>-18.3</td> <td></td> </tr> <tr> <td>707.50</td> <td>7.83</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>6.93</td> <td>38.5</td> <td>-31.5</td> <td></td> </tr> <tr> <td>High Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>711.00</td> <td>22.05</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>21.15</td> <td>38.5</td> <td>-17.3</td> <td></td> </tr> <tr> <td>711.00</td> <td>9.39</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>8.49</td> <td>38.5</td> <td>-30.0</td> <td></td> </tr> </tbody> </table> |                                                                                                   |                    |                                                |                       |              |                |                |       | f<br>MHz | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBd) | ERP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes | Low Ch |  |  |  |  |  |  |  |  | 704.00 | 20.31 | V | 0.9 | 0.0 | 19.41 | 38.5 | -19.0 |  | 704.00 | 6.71 | H | 0.9 | 0.0 | 5.81 | 38.5 | -32.6 |  | Mid Ch |  |  |  |  |  |  |  |  | 707.50 | 21.04 | V | 0.9 | 0.0 | 20.14 | 38.5 | -18.3 |  | 707.50 | 7.83 | H | 0.9 | 0.0 | 6.93 | 38.5 | -31.5 |  | High Ch |  |  |  |  |  |  |  |  | 711.00 | 22.05 | V | 0.9 | 0.0 | 21.15 | 38.5 | -17.3 |  | 711.00 | 9.39 | H | 0.9 | 0.0 | 8.49 | 38.5 | -30.0 |  |
| f<br>MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | SG reading<br>(dBm)                                                                               | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB)                             | Antenna Gain<br>(dBd) | ERP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| Low Ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                   |                    |                                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 704.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 20.31                                                                                             | V                  | 0.9                                            | 0.0                   | 19.41        | 38.5           | -19.0          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 704.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 6.71                                                                                              | H                  | 0.9                                            | 0.0                   | 5.81         | 38.5           | -32.6          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| Mid Ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                   |                    |                                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 707.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 21.04                                                                                             | V                  | 0.9                                            | 0.0                   | 20.14        | 38.5           | -18.3          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 707.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 7.83                                                                                              | H                  | 0.9                                            | 0.0                   | 6.93         | 38.5           | -31.5          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| High Ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                   |                    |                                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 711.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 22.05                                                                                             | V                  | 0.9                                            | 0.0                   | 21.15        | 38.5           | -17.3          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 711.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 9.39                                                                                              | H                  | 0.9                                            | 0.0                   | 8.49         | 38.5           | -30.0          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| Rev. 3.17.11<br>Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                   |                    |                                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |

| Band<br><br>LTE12<br><br>5MHz<br><br>16QAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc. Chamber C</b> |                    |                                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------|------------------------------------------------|-----------------------|--------------|----------------|----------------|-------|----------|---------------------|--------------------|--------------------|-----------------------|--------------|----------------|----------------|-------|--------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|------|---|-----|-----|------|------|-------|--|--------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|------|---|-----|-----|------|------|-------|--|---------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|------|---|-----|-----|------|------|-------|--|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Company:</b>                                                                                   |                    | LG                                             |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Project #:</b>                                                                                 |                    | 15I20405                                       |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Date:</b>                                                                                      |                    | 04/04/15                                       |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Test Engineer:</b>                                                                             |                    | Charles Vergonio                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Configuration:</b>                                                                             |                    | EUT Only Z Position                            |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Mode:</b>                                                                                      |                    | LTE_16QAM Band 12 Fundamentals, 5MHz Bandwidth |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Test Equipment:</b>                                                                            |                    |                                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Receiving: Sunol T185, and 3m Chamber C N-type Cable                                              |                    |                                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Substitution: Dipole T273, 4ft SMA Cable Warehouse.                                               |                    |                                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| <table border="1"> <thead> <tr> <th>f<br/>MHz</th> <th>SG reading<br/>(dBm)</th> <th>Ant. Pol.<br/>(H/V)</th> <th>Cable Loss<br/>(dB)</th> <th>Antenna Gain<br/>(dBd)</th> <th>ERP<br/>(dBm)</th> <th>Limit<br/>(dBm)</th> <th>Margin<br/>(dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>Low Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>704.00</td> <td>20.05</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>19.15</td> <td>38.5</td> <td>-19.3</td> <td></td> </tr> <tr> <td>704.00</td> <td>6.74</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>5.84</td> <td>38.5</td> <td>-32.6</td> <td></td> </tr> <tr> <td>Mid Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>707.50</td> <td>20.67</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>19.77</td> <td>38.5</td> <td>-18.7</td> <td></td> </tr> <tr> <td>707.50</td> <td>7.38</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>6.48</td> <td>38.5</td> <td>-32.0</td> <td></td> </tr> <tr> <td>High Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>711.00</td> <td>21.50</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>20.60</td> <td>38.5</td> <td>-17.8</td> <td></td> </tr> <tr> <td>711.00</td> <td>8.82</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>7.92</td> <td>38.5</td> <td>-30.5</td> <td></td> </tr> </tbody> </table> |                                                                                                   |                    |                                                |                       |              |                |                |       | f<br>MHz | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBd) | ERP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes | Low Ch |  |  |  |  |  |  |  |  | 704.00 | 20.05 | V | 0.9 | 0.0 | 19.15 | 38.5 | -19.3 |  | 704.00 | 6.74 | H | 0.9 | 0.0 | 5.84 | 38.5 | -32.6 |  | Mid Ch |  |  |  |  |  |  |  |  | 707.50 | 20.67 | V | 0.9 | 0.0 | 19.77 | 38.5 | -18.7 |  | 707.50 | 7.38 | H | 0.9 | 0.0 | 6.48 | 38.5 | -32.0 |  | High Ch |  |  |  |  |  |  |  |  | 711.00 | 21.50 | V | 0.9 | 0.0 | 20.60 | 38.5 | -17.8 |  | 711.00 | 8.82 | H | 0.9 | 0.0 | 7.92 | 38.5 | -30.5 |  |
| f<br>MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | SG reading<br>(dBm)                                                                               | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB)                             | Antenna Gain<br>(dBd) | ERP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| Low Ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                   |                    |                                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 704.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 20.05                                                                                             | V                  | 0.9                                            | 0.0                   | 19.15        | 38.5           | -19.3          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 704.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 6.74                                                                                              | H                  | 0.9                                            | 0.0                   | 5.84         | 38.5           | -32.6          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| Mid Ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                   |                    |                                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 707.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 20.67                                                                                             | V                  | 0.9                                            | 0.0                   | 19.77        | 38.5           | -18.7          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 707.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 7.38                                                                                              | H                  | 0.9                                            | 0.0                   | 6.48         | 38.5           | -32.0          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| High Ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                   |                    |                                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 711.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 21.50                                                                                             | V                  | 0.9                                            | 0.0                   | 20.60        | 38.5           | -17.8          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 711.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 8.82                                                                                              | H                  | 0.9                                            | 0.0                   | 7.92         | 38.5           | -30.5          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| Rev. 3.17.11<br>Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                   |                    |                                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |

| Band<br><br>LTE12<br><br>5MHz<br><br>QPSK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc. Chamber C</b> |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------|-----------------------|--------------|----------------|----------------|-------|----------|---------------------|--------------------|--------------------|-----------------------|--------------|----------------|----------------|-------|--------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|------|---|-----|-----|------|------|-------|--|--------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|------|---|-----|-----|------|------|-------|--|---------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|------|---|-----|-----|------|------|-------|--|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Company:</b>                                                                                   |                    | LG                                            |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Project #:</b>                                                                                 |                    | 15I20405                                      |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Date:</b>                                                                                      |                    | 04/04/15                                      |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Test Engineer:</b>                                                                             |                    | Charles Vergonio                              |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Configuration:</b>                                                                             |                    | EUT Only Z Position                           |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Mode:</b>                                                                                      |                    | LTE_QPSK Band 12 Fundamentals, 5MHz Bandwidth |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Test Equipment:</b>                                                                            |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Receiving: Sunol T185, and 3m Chamber C N-type Cable                                              |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Substitution: Dipole T273, 4ft SMA Cable Warehouse.                                               |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| <table border="1"> <thead> <tr> <th>f<br/>MHz</th> <th>SG reading<br/>(dBm)</th> <th>Ant. Pol.<br/>(H/V)</th> <th>Cable Loss<br/>(dB)</th> <th>Antenna Gain<br/>(dBd)</th> <th>ERP<br/>(dBm)</th> <th>Limit<br/>(dBm)</th> <th>Margin<br/>(dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>Low Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>704.00</td> <td>20.72</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>19.82</td> <td>38.5</td> <td>-18.6</td> <td></td> </tr> <tr> <td>704.00</td> <td>6.98</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>6.08</td> <td>38.5</td> <td>-32.4</td> <td></td> </tr> <tr> <td>Mid Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>707.50</td> <td>21.33</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>20.43</td> <td>38.5</td> <td>-18.0</td> <td></td> </tr> <tr> <td>707.50</td> <td>8.41</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>7.51</td> <td>38.5</td> <td>-30.9</td> <td></td> </tr> <tr> <td>High Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>711.00</td> <td>22.14</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>21.24</td> <td>38.5</td> <td>-17.2</td> <td></td> </tr> <tr> <td>711.00</td> <td>9.15</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>8.25</td> <td>38.5</td> <td>-30.2</td> <td></td> </tr> </tbody> </table> |                                                                                                   |                    |                                               |                       |              |                |                |       | f<br>MHz | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBd) | ERP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes | Low Ch |  |  |  |  |  |  |  |  | 704.00 | 20.72 | V | 0.9 | 0.0 | 19.82 | 38.5 | -18.6 |  | 704.00 | 6.98 | H | 0.9 | 0.0 | 6.08 | 38.5 | -32.4 |  | Mid Ch |  |  |  |  |  |  |  |  | 707.50 | 21.33 | V | 0.9 | 0.0 | 20.43 | 38.5 | -18.0 |  | 707.50 | 8.41 | H | 0.9 | 0.0 | 7.51 | 38.5 | -30.9 |  | High Ch |  |  |  |  |  |  |  |  | 711.00 | 22.14 | V | 0.9 | 0.0 | 21.24 | 38.5 | -17.2 |  | 711.00 | 9.15 | H | 0.9 | 0.0 | 8.25 | 38.5 | -30.2 |  |
| f<br>MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | SG reading<br>(dBm)                                                                               | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB)                            | Antenna Gain<br>(dBd) | ERP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| Low Ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                   |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 704.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 20.72                                                                                             | V                  | 0.9                                           | 0.0                   | 19.82        | 38.5           | -18.6          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 704.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 6.98                                                                                              | H                  | 0.9                                           | 0.0                   | 6.08         | 38.5           | -32.4          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| Mid Ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                   |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 707.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 21.33                                                                                             | V                  | 0.9                                           | 0.0                   | 20.43        | 38.5           | -18.0          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 707.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 8.41                                                                                              | H                  | 0.9                                           | 0.0                   | 7.51         | 38.5           | -30.9          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| High Ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                   |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 711.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 22.14                                                                                             | V                  | 0.9                                           | 0.0                   | 21.24        | 38.5           | -17.2          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 711.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 9.15                                                                                              | H                  | 0.9                                           | 0.0                   | 8.25         | 38.5           | -30.2          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| Rev. 3.17.11<br>Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                   |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |



| Band<br><br>LTE12<br><br>3MHz<br><br>QPSK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc. Chamber C</b> |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------|-----------------------|--------------|----------------|----------------|-------|----------|---------------------|--------------------|--------------------|-----------------------|--------------|----------------|----------------|-------|--------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|------|---|-----|-----|------|------|-------|--|--------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|------|---|-----|-----|------|------|-------|--|---------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|------|---|-----|-----|------|------|-------|--|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Company:</b>                                                                                   |                    | LG                                            |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Project #:</b>                                                                                 |                    | 15I20405                                      |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Date:</b>                                                                                      |                    | 04/04/15                                      |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Test Engineer:</b>                                                                             |                    | Charles Vergonio                              |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Configuration:</b>                                                                             |                    | EUT Only Z Position                           |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Mode:</b>                                                                                      |                    | LTE_QPSK Band 12 Fundamentals, 3MHz Bandwidth |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Test Equipment:</b>                                                                            |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Receiving: Sunol T185, and 3m Chamber C N-type Cable                                              |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Substitution: Dipole T273, 4ft SMA Cable Warehouse.                                               |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| <table border="1"> <thead> <tr> <th>f<br/>MHz</th> <th>SG reading<br/>(dBm)</th> <th>Ant. Pol.<br/>(H/V)</th> <th>Cable Loss<br/>(dB)</th> <th>Antenna Gain<br/>(dBd)</th> <th>ERP<br/>(dBm)</th> <th>Limit<br/>(dBm)</th> <th>Margin<br/>(dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>Low Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>700.50</td> <td>20.71</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>19.81</td> <td>38.5</td> <td>-18.6</td> <td></td> </tr> <tr> <td>700.50</td> <td>6.94</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>6.04</td> <td>38.5</td> <td>-32.4</td> <td></td> </tr> <tr> <td>Mid Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>707.50</td> <td>21.19</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>20.29</td> <td>38.5</td> <td>-18.2</td> <td></td> </tr> <tr> <td>707.50</td> <td>8.11</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>7.21</td> <td>38.5</td> <td>-31.2</td> <td></td> </tr> <tr> <td>High Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>714.50</td> <td>22.19</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>21.29</td> <td>38.5</td> <td>-17.2</td> <td></td> </tr> <tr> <td>714.50</td> <td>9.49</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>8.59</td> <td>38.5</td> <td>-29.9</td> <td></td> </tr> </tbody> </table> |                                                                                                   |                    |                                               |                       |              |                |                |       | f<br>MHz | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBd) | ERP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes | Low Ch |  |  |  |  |  |  |  |  | 700.50 | 20.71 | V | 0.9 | 0.0 | 19.81 | 38.5 | -18.6 |  | 700.50 | 6.94 | H | 0.9 | 0.0 | 6.04 | 38.5 | -32.4 |  | Mid Ch |  |  |  |  |  |  |  |  | 707.50 | 21.19 | V | 0.9 | 0.0 | 20.29 | 38.5 | -18.2 |  | 707.50 | 8.11 | H | 0.9 | 0.0 | 7.21 | 38.5 | -31.2 |  | High Ch |  |  |  |  |  |  |  |  | 714.50 | 22.19 | V | 0.9 | 0.0 | 21.29 | 38.5 | -17.2 |  | 714.50 | 9.49 | H | 0.9 | 0.0 | 8.59 | 38.5 | -29.9 |  |
| f<br>MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | SG reading<br>(dBm)                                                                               | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB)                            | Antenna Gain<br>(dBd) | ERP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| Low Ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                   |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 700.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 20.71                                                                                             | V                  | 0.9                                           | 0.0                   | 19.81        | 38.5           | -18.6          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 700.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 6.94                                                                                              | H                  | 0.9                                           | 0.0                   | 6.04         | 38.5           | -32.4          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| Mid Ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                   |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 707.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 21.19                                                                                             | V                  | 0.9                                           | 0.0                   | 20.29        | 38.5           | -18.2          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 707.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 8.11                                                                                              | H                  | 0.9                                           | 0.0                   | 7.21         | 38.5           | -31.2          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| High Ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                   |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 714.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 22.19                                                                                             | V                  | 0.9                                           | 0.0                   | 21.29        | 38.5           | -17.2          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 714.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 9.49                                                                                              | H                  | 0.9                                           | 0.0                   | 8.59         | 38.5           | -29.9          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| Rev. 3.17.11<br>Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                   |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |

|                                                                                        |                                                                                                   |                             |                                                  |                            |                               |                      |                        |                        |              |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------|--------------------------------------------------|----------------------------|-------------------------------|----------------------|------------------------|------------------------|--------------|
| Band<br><br>LTE12<br><br>1.4MHz<br><br>16QAM                                           | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc. Chamber C</b> |                             |                                                  |                            |                               |                      |                        |                        |              |
|                                                                                        | <b>Company:</b>                                                                                   |                             | LG                                               |                            |                               |                      |                        |                        |              |
|                                                                                        | <b>Project #:</b>                                                                                 |                             | 15I20405                                         |                            |                               |                      |                        |                        |              |
|                                                                                        | <b>Date:</b>                                                                                      |                             | 04/04/15                                         |                            |                               |                      |                        |                        |              |
|                                                                                        | <b>Test Engineer:</b>                                                                             |                             | Charles Vergonio                                 |                            |                               |                      |                        |                        |              |
|                                                                                        | <b>Configuration:</b>                                                                             |                             | EUT Only Z Position                              |                            |                               |                      |                        |                        |              |
|                                                                                        | <b>Mode:</b>                                                                                      |                             | LTE_16QAM Band 12 Fundamentals, 1.4MHz Bandwidth |                            |                               |                      |                        |                        |              |
|                                                                                        | <b>Test Equipment:</b>                                                                            |                             |                                                  |                            |                               |                      |                        |                        |              |
|                                                                                        | Receiving: Sunol T185, and 3m Chamber C N-type Cable                                              |                             |                                                  |                            |                               |                      |                        |                        |              |
|                                                                                        | Substitution: Dipole T273, 4ft SMA Cable Warehouse.                                               |                             |                                                  |                            |                               |                      |                        |                        |              |
|                                                                                        | <b>f<br/>MHz</b>                                                                                  | <b>SG reading<br/>(dBm)</b> | <b>Ant. Pol.<br/>(H/V)</b>                       | <b>Cable Loss<br/>(dB)</b> | <b>Antenna Gain<br/>(dBd)</b> | <b>ERP<br/>(dBm)</b> | <b>Limit<br/>(dBm)</b> | <b>Margin<br/>(dB)</b> | <b>Notes</b> |
|                                                                                        | Low Ch                                                                                            |                             |                                                  |                            |                               |                      |                        |                        |              |
|                                                                                        | 699.70                                                                                            | 20.18                       | V                                                | 0.9                        | 0.0                           | 19.28                | 38.5                   | -19.2                  |              |
|                                                                                        | 699.70                                                                                            | 6.71                        | H                                                | 0.9                        | 0.0                           | 5.81                 | 38.5                   | -32.6                  |              |
|                                                                                        | Mid Ch                                                                                            |                             |                                                  |                            |                               |                      |                        |                        |              |
|                                                                                        | 707.50                                                                                            | 20.70                       | V                                                | 0.9                        | 0.0                           | 19.80                | 38.5                   | -18.6                  |              |
|                                                                                        | 707.50                                                                                            | 7.52                        | H                                                | 0.9                        | 0.0                           | 6.62                 | 38.5                   | -31.8                  |              |
|                                                                                        | High Ch                                                                                           |                             |                                                  |                            |                               |                      |                        |                        |              |
|                                                                                        | 715.30                                                                                            | 20.76                       | V                                                | 0.9                        | 0.0                           | 19.86                | 38.5                   | -18.6                  |              |
|                                                                                        | 715.30                                                                                            | 7.91                        | H                                                | 0.9                        | 0.0                           | 7.01                 | 38.5                   | -31.4                  |              |
| Rev. 3.17.11<br>Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm |                                                                                                   |                             |                                                  |                            |                               |                      |                        |                        |              |

| Band<br><br>LTE12<br><br>1.4MHz<br><br>QPSK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc. Chamber C</b> |                    |                                                 |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------|-------------------------------------------------|-----------------------|--------------|----------------|----------------|-------|----------|---------------------|--------------------|--------------------|-----------------------|--------------|----------------|----------------|-------|--------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|------|---|-----|-----|------|------|-------|--|--------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|------|---|-----|-----|------|------|-------|--|---------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|------|---|-----|-----|------|------|-------|--|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Company:</b>                                                                                   |                    | LG                                              |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Project #:</b>                                                                                 |                    | 15I20405                                        |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Date:</b>                                                                                      |                    | 04/04/15                                        |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Test Engineer:</b>                                                                             |                    | Charles Vergonio                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Configuration:</b>                                                                             |                    | EUT Only Z Position                             |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Mode:</b>                                                                                      |                    | LTE_QPSK Band 12 Fundamentals, 1.4MHz Bandwidth |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Test Equipment:</b>                                                                            |                    |                                                 |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Receiving: Sunol T185, and 3m Chamber C N-type Cable                                              |                    |                                                 |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Substitution: Dipole T273, 4ft SMA Cable Warehouse.                                               |                    |                                                 |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| <table border="1"> <thead> <tr> <th>f<br/>MHz</th> <th>SG reading<br/>(dBm)</th> <th>Ant. Pol.<br/>(H/V)</th> <th>Cable Loss<br/>(dB)</th> <th>Antenna Gain<br/>(dBd)</th> <th>ERP<br/>(dBm)</th> <th>Limit<br/>(dBm)</th> <th>Margin<br/>(dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>Low Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>699.70</td> <td>21.01</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>20.11</td> <td>38.5</td> <td>-18.3</td> <td></td> </tr> <tr> <td>699.70</td> <td>7.41</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>6.51</td> <td>38.5</td> <td>-31.9</td> <td></td> </tr> <tr> <td>Mid Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>707.50</td> <td>21.39</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>20.49</td> <td>38.5</td> <td>-18.0</td> <td></td> </tr> <tr> <td>707.50</td> <td>8.19</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>7.29</td> <td>38.5</td> <td>-31.2</td> <td></td> </tr> <tr> <td>High Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>715.30</td> <td>20.99</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>20.09</td> <td>38.5</td> <td>-18.4</td> <td></td> </tr> <tr> <td>715.30</td> <td>8.41</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>7.51</td> <td>38.5</td> <td>-30.9</td> <td></td> </tr> </tbody> </table> |                                                                                                   |                    |                                                 |                       |              |                |                |       | f<br>MHz | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBd) | ERP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes | Low Ch |  |  |  |  |  |  |  |  | 699.70 | 21.01 | V | 0.9 | 0.0 | 20.11 | 38.5 | -18.3 |  | 699.70 | 7.41 | H | 0.9 | 0.0 | 6.51 | 38.5 | -31.9 |  | Mid Ch |  |  |  |  |  |  |  |  | 707.50 | 21.39 | V | 0.9 | 0.0 | 20.49 | 38.5 | -18.0 |  | 707.50 | 8.19 | H | 0.9 | 0.0 | 7.29 | 38.5 | -31.2 |  | High Ch |  |  |  |  |  |  |  |  | 715.30 | 20.99 | V | 0.9 | 0.0 | 20.09 | 38.5 | -18.4 |  | 715.30 | 8.41 | H | 0.9 | 0.0 | 7.51 | 38.5 | -30.9 |  |
| f<br>MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | SG reading<br>(dBm)                                                                               | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB)                              | Antenna Gain<br>(dBd) | ERP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| Low Ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                   |                    |                                                 |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 699.70                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 21.01                                                                                             | V                  | 0.9                                             | 0.0                   | 20.11        | 38.5           | -18.3          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 699.70                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 7.41                                                                                              | H                  | 0.9                                             | 0.0                   | 6.51         | 38.5           | -31.9          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| Mid Ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                   |                    |                                                 |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 707.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 21.39                                                                                             | V                  | 0.9                                             | 0.0                   | 20.49        | 38.5           | -18.0          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 707.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 8.19                                                                                              | H                  | 0.9                                             | 0.0                   | 7.29         | 38.5           | -31.2          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| High Ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                   |                    |                                                 |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 715.30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 20.99                                                                                             | V                  | 0.9                                             | 0.0                   | 20.09        | 38.5           | -18.4          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 715.30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 8.41                                                                                              | H                  | 0.9                                             | 0.0                   | 7.51         | 38.5           | -30.9          |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| Rev. 3.17.11<br>Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                   |                    |                                                 |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |        |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |         |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |

**LTE Band 5**

Band

LTE5

10MHz

16QAM

High Frequency Substitution Measurement

UL Verification Services, Inc. Chamber C

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

Test Equipment:

Receiving: Sunol T185, and 3m Chamber C N-type Cable

Substitution: Dipole T273, 4ft SMA Cable Warehouse.

| f<br>MHz | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBd) | ERP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes |
|----------|---------------------|--------------------|--------------------|-----------------------|--------------|----------------|----------------|-------|
| Low Ch   |                     |                    |                    |                       |              |                |                |       |
| 829.00   | 21.16               | V                  | 0.9                | 0.0                   | 20.26        | 38.5           | -18.2          |       |
| 829.00   | 5.71                | H                  | 0.9                | 0.0                   | 4.81         | 38.5           | -33.6          |       |
| Mid Ch   |                     |                    |                    |                       |              |                |                |       |
| 836.50   | 21.65               | V                  | 0.9                | 0.0                   | 20.75        | 38.5           | -17.7          |       |
| 836.50   | 6.59                | H                  | 0.9                | 0.0                   | 5.69         | 38.5           | -32.8          |       |
| High Ch  |                     |                    |                    |                       |              |                |                |       |
| 844.00   | 22.08               | V                  | 0.9                | 0.0                   | 21.18        | 38.5           | -17.3          |       |
| 844.00   | 7.41                | H                  | 0.9                | 0.0                   | 6.51         | 38.5           | -31.9          |       |

Rev. 3.17.11

Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

| Band<br><br>LTE5<br><br>10MHz<br><br>QPSK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc. Chamber C</b> |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------|-----------------------|--------------|----------------|----------------|-------|----------|---------------------|--------------------|--------------------|-----------------------|--------------|----------------|----------------|-------|---------------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|------|---|-----|-----|------|------|-------|--|---------------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|------|---|-----|-----|------|------|-------|--|----------------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|------|---|-----|-----|------|------|-------|--|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Company:</b>                                                                                   |                    | LG                                            |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Project #:</b>                                                                                 |                    | 15I20405                                      |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Date:</b>                                                                                      |                    | 04/04/15                                      |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Test Engineer:</b>                                                                             |                    | Charles Vergonio                              |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Configuration:</b>                                                                             |                    | EUT Only Z Position                           |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Mode:</b>                                                                                      |                    | LTE_QPSK Band 5 Fundamentals, 10MHz Bandwidth |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Test Equipment:</b>                                                                            |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Receiving: Sunol T185, and 3m Chamber C N-type Cable                                              |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Substitution: Dipole T273, 4ft SMA Cable Warehouse.                                               |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| <table border="1"> <thead> <tr> <th>f<br/>MHz</th> <th>SG reading<br/>(dBm)</th> <th>Ant. Pol.<br/>(H/V)</th> <th>Cable Loss<br/>(dB)</th> <th>Antenna Gain<br/>(dBd)</th> <th>ERP<br/>(dBm)</th> <th>Limit<br/>(dBm)</th> <th>Margin<br/>(dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9"><b>Low Ch</b></td> </tr> <tr> <td>829.00</td> <td>22.85</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>21.95</td> <td>38.5</td> <td>-16.5</td> <td></td> </tr> <tr> <td>829.00</td> <td>7.51</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>6.61</td> <td>38.5</td> <td>-31.8</td> <td></td> </tr> <tr> <td colspan="9"><b>Mid Ch</b></td> </tr> <tr> <td>836.50</td> <td>23.40</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>22.50</td> <td>38.5</td> <td>-15.9</td> <td></td> </tr> <tr> <td>836.50</td> <td>8.01</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>7.11</td> <td>38.5</td> <td>-31.3</td> <td></td> </tr> <tr> <td colspan="9"><b>High Ch</b></td> </tr> <tr> <td>844.00</td> <td>23.39</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>22.49</td> <td>38.5</td> <td>-16.0</td> <td></td> </tr> <tr> <td>844.00</td> <td>7.78</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>6.88</td> <td>38.5</td> <td>-31.6</td> <td></td> </tr> </tbody> </table> |                                                                                                   |                    |                                               |                       |              |                |                |       | f<br>MHz | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBd) | ERP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes | <b>Low Ch</b> |  |  |  |  |  |  |  |  | 829.00 | 22.85 | V | 0.9 | 0.0 | 21.95 | 38.5 | -16.5 |  | 829.00 | 7.51 | H | 0.9 | 0.0 | 6.61 | 38.5 | -31.8 |  | <b>Mid Ch</b> |  |  |  |  |  |  |  |  | 836.50 | 23.40 | V | 0.9 | 0.0 | 22.50 | 38.5 | -15.9 |  | 836.50 | 8.01 | H | 0.9 | 0.0 | 7.11 | 38.5 | -31.3 |  | <b>High Ch</b> |  |  |  |  |  |  |  |  | 844.00 | 23.39 | V | 0.9 | 0.0 | 22.49 | 38.5 | -16.0 |  | 844.00 | 7.78 | H | 0.9 | 0.0 | 6.88 | 38.5 | -31.6 |  |
| f<br>MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | SG reading<br>(dBm)                                                                               | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB)                            | Antenna Gain<br>(dBd) | ERP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| <b>Low Ch</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                   |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 829.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 22.85                                                                                             | V                  | 0.9                                           | 0.0                   | 21.95        | 38.5           | -16.5          |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 829.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 7.51                                                                                              | H                  | 0.9                                           | 0.0                   | 6.61         | 38.5           | -31.8          |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| <b>Mid Ch</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                   |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 836.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 23.40                                                                                             | V                  | 0.9                                           | 0.0                   | 22.50        | 38.5           | -15.9          |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 836.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 8.01                                                                                              | H                  | 0.9                                           | 0.0                   | 7.11         | 38.5           | -31.3          |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| <b>High Ch</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                   |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 844.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 23.39                                                                                             | V                  | 0.9                                           | 0.0                   | 22.49        | 38.5           | -16.0          |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 844.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 7.78                                                                                              | H                  | 0.9                                           | 0.0                   | 6.88         | 38.5           | -31.6          |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| Rev. 3.17.11<br>Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                   |                    |                                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |



|                                                                                        |                                                                                                   |                                   |                                              |                                  |                                     |                            |                              |                              |              |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------|----------------------------------------------|----------------------------------|-------------------------------------|----------------------------|------------------------------|------------------------------|--------------|
| Band<br><br>LTE5<br><br>5MHz<br><br>QPSK                                               | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc. Chamber C</b> |                                   |                                              |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>Company:</b>                                                                                   |                                   | LG                                           |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>Project #:</b>                                                                                 |                                   | 15I20405                                     |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>Date:</b>                                                                                      |                                   | 04/04/15                                     |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>Test Engineer:</b>                                                                             |                                   | Charles Vergonio                             |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>Configuration:</b>                                                                             |                                   | EUT Only Z Position                          |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>Mode:</b>                                                                                      |                                   | LTE_QPSK Band 5 Fundamentals, 5MHz Bandwidth |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>Test Equipment:</b>                                                                            |                                   |                                              |                                  |                                     |                            |                              |                              |              |
|                                                                                        | Receiving: Sunol T185, and 3m Chamber C N-type Cable                                              |                                   |                                              |                                  |                                     |                            |                              |                              |              |
|                                                                                        | Substitution: Dipole T273, 4ft SMA Cable Warehouse.                                               |                                   |                                              |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>f</b><br><b>MHz</b>                                                                            | <b>SG reading</b><br><b>(dBm)</b> | <b>Ant. Pol.</b><br><b>(H/V)</b>             | <b>Cable Loss</b><br><b>(dB)</b> | <b>Antenna Gain</b><br><b>(dBd)</b> | <b>ERP</b><br><b>(dBm)</b> | <b>Limit</b><br><b>(dBm)</b> | <b>Margin</b><br><b>(dB)</b> | <b>Notes</b> |
| Low Ch                                                                                 |                                                                                                   |                                   |                                              |                                  |                                     |                            |                              |                              |              |
| 826.50                                                                                 | 22.89                                                                                             | V                                 | 0.9                                          | 0.0                              | 21.99                               | 38.5                       | -16.5                        |                              |              |
| 826.50                                                                                 | 7.51                                                                                              | H                                 | 0.9                                          | 0.0                              | 6.61                                | 38.5                       | -31.8                        |                              |              |
| Mid Ch                                                                                 |                                                                                                   |                                   |                                              |                                  |                                     |                            |                              |                              |              |
| 836.50                                                                                 | 23.21                                                                                             | V                                 | 0.9                                          | 0.0                              | 22.31                               | 38.5                       | -16.1                        |                              |              |
| 836.50                                                                                 | 7.42                                                                                              | H                                 | 0.9                                          | 0.0                              | 6.52                                | 38.5                       | -31.9                        |                              |              |
| High Ch                                                                                |                                                                                                   |                                   |                                              |                                  |                                     |                            |                              |                              |              |
| 846.50                                                                                 | 23.09                                                                                             | V                                 | 0.9                                          | 0.0                              | 22.19                               | 38.5                       | -16.3                        |                              |              |
| 846.50                                                                                 | 7.42                                                                                              | H                                 | 0.9                                          | 0.0                              | 6.52                                | 38.5                       | -31.9                        |                              |              |
| Rev. 3.17.11<br>Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm |                                                                                                   |                                   |                                              |                                  |                                     |                            |                              |                              |              |

Band

LTE5

3MHz

16QAM

High Frequency Substitution Measurement

UL Verification Services, Inc. Chamber C

Company: LG

Project #: 15I20405

Date: 04/04/15

Test Engineer: Charles Vergonio

Configuration: EUT Only Z Position

Mode: LTE\_16QAM Band 5 Fundamentals, 3MHz Bandwidth

Test Equipment:

Receiving: Sunol T185, and 3m Chamber C N-type Cable

Substitution: Dipole T273, 4ft SMA Cable Warehouse.

| f<br>MHz | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBd) | ERP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes |
|----------|---------------------|--------------------|--------------------|-----------------------|--------------|----------------|----------------|-------|
| Low Ch   |                     |                    |                    |                       |              |                |                |       |
| 826.50   | 20.97               | V                  | 0.9                | 0.0                   | 20.07        | 38.5           | -18.4          |       |
| 826.50   | 5.41                | H                  | 0.9                | 0.0                   | 4.51         | 38.5           | -33.9          |       |
| Mid Ch   |                     |                    |                    |                       |              |                |                |       |
| 836.50   | 21.19               | V                  | 0.9                | 0.0                   | 20.29        | 38.5           | -18.2          |       |
| 836.50   | 5.83                | H                  | 0.9                | 0.0                   | 4.93         | 38.5           | -33.5          |       |
| High Ch  |                     |                    |                    |                       |              |                |                |       |
| 846.50   | 21.73               | V                  | 0.9                | 0.0                   | 20.83        | 38.5           | -17.6          |       |
| 846.50   | 7.01                | H                  | 0.9                | 0.0                   | 6.11         | 38.5           | -32.3          |       |

Rev. 3.17.11

Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

|                                                                                        |                                                                                                   |                                   |                                              |                                  |                                     |                            |                              |                              |              |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------|----------------------------------------------|----------------------------------|-------------------------------------|----------------------------|------------------------------|------------------------------|--------------|
| Band<br><br>LTE5<br><br>3MHz<br><br>QPSK                                               | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc. Chamber C</b> |                                   |                                              |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>Company:</b>                                                                                   |                                   | LG                                           |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>Project #:</b>                                                                                 |                                   | 15I20405                                     |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>Date:</b>                                                                                      |                                   | 04/04/15                                     |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>Test Engineer:</b>                                                                             |                                   | Charles Vergonio                             |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>Configuration:</b>                                                                             |                                   | EUT Only Z Position                          |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>Mode:</b>                                                                                      |                                   | LTE_QPSK Band 5 Fundamentals, 3MHz Bandwidth |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>Test Equipment:</b>                                                                            |                                   |                                              |                                  |                                     |                            |                              |                              |              |
|                                                                                        | Receiving: Sunol T185, and 3m Chamber C N-type Cable                                              |                                   |                                              |                                  |                                     |                            |                              |                              |              |
|                                                                                        | Substitution: Dipole T273, 4ft SMA Cable Warehouse.                                               |                                   |                                              |                                  |                                     |                            |                              |                              |              |
|                                                                                        | <b>f</b><br><b>MHz</b>                                                                            | <b>SG reading</b><br><b>(dBm)</b> | <b>Ant. Pol.</b><br><b>(H/V)</b>             | <b>Cable Loss</b><br><b>(dB)</b> | <b>Antenna Gain</b><br><b>(dBd)</b> | <b>ERP</b><br><b>(dBm)</b> | <b>Limit</b><br><b>(dBm)</b> | <b>Margin</b><br><b>(dB)</b> | <b>Notes</b> |
| Low Ch                                                                                 |                                                                                                   |                                   |                                              |                                  |                                     |                            |                              |                              |              |
| 826.50                                                                                 | 22.99                                                                                             | V                                 | 0.9                                          | 0.0                              | 22.09                               | 38.5                       | -16.4                        |                              |              |
| 826.50                                                                                 | 7.66                                                                                              | H                                 | 0.9                                          | 0.0                              | 6.76                                | 38.5                       | -31.7                        |                              |              |
| Mid Ch                                                                                 |                                                                                                   |                                   |                                              |                                  |                                     |                            |                              |                              |              |
| 836.50                                                                                 | 23.33                                                                                             | V                                 | 0.9                                          | 0.0                              | 22.43                               | 38.5                       | -16.0                        |                              |              |
| 836.50                                                                                 | 7.61                                                                                              | H                                 | 0.9                                          | 0.0                              | 6.71                                | 38.5                       | -31.7                        |                              |              |
| High Ch                                                                                |                                                                                                   |                                   |                                              |                                  |                                     |                            |                              |                              |              |
| 846.50                                                                                 | 23.16                                                                                             | V                                 | 0.9                                          | 0.0                              | 22.26                               | 38.5                       | -16.2                        |                              |              |
| 846.50                                                                                 | 7.71                                                                                              | H                                 | 0.9                                          | 0.0                              | 6.81                                | 38.5                       | -31.6                        |                              |              |
| Rev. 3.17.11<br>Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm |                                                                                                   |                                   |                                              |                                  |                                     |                            |                              |                              |              |

|                                                                                        |                                                                                                   |                             |                                                 |                            |                               |                      |                        |                        |              |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------|-------------------------------------------------|----------------------------|-------------------------------|----------------------|------------------------|------------------------|--------------|
| Band<br><br>LTE5<br><br>1.4MHz<br><br>16QAM                                            | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc. Chamber C</b> |                             |                                                 |                            |                               |                      |                        |                        |              |
|                                                                                        | <b>Company:</b>                                                                                   |                             | LG                                              |                            |                               |                      |                        |                        |              |
|                                                                                        | <b>Project #:</b>                                                                                 |                             | 15I20405                                        |                            |                               |                      |                        |                        |              |
|                                                                                        | <b>Date:</b>                                                                                      |                             | 04/04/15                                        |                            |                               |                      |                        |                        |              |
|                                                                                        | <b>Test Engineer:</b>                                                                             |                             | Charles Vergonio                                |                            |                               |                      |                        |                        |              |
|                                                                                        | <b>Configuration:</b>                                                                             |                             | EUT Only Z Position                             |                            |                               |                      |                        |                        |              |
|                                                                                        | <b>Mode:</b>                                                                                      |                             | LTE_16QAM Band 5 Fundamentals, 1.4MHz Bandwidth |                            |                               |                      |                        |                        |              |
|                                                                                        | <b>Test Equipment:</b>                                                                            |                             |                                                 |                            |                               |                      |                        |                        |              |
|                                                                                        | Receiving: Sunol T185, and 3m Chamber C N-type Cable                                              |                             |                                                 |                            |                               |                      |                        |                        |              |
|                                                                                        | Substitution: Dipole T273, 4ft SMA Cable Warehouse.                                               |                             |                                                 |                            |                               |                      |                        |                        |              |
|                                                                                        | <b>f<br/>MHz</b>                                                                                  | <b>SG reading<br/>(dBm)</b> | <b>Ant. Pol.<br/>(H/V)</b>                      | <b>Cable Loss<br/>(dB)</b> | <b>Antenna Gain<br/>(dBd)</b> | <b>ERP<br/>(dBm)</b> | <b>Limit<br/>(dBm)</b> | <b>Margin<br/>(dB)</b> | <b>Notes</b> |
|                                                                                        | Low Ch                                                                                            |                             |                                                 |                            |                               |                      |                        |                        |              |
|                                                                                        | 826.50                                                                                            | 20.88                       | V                                               | 0.9                        | 0.0                           | 19.98                | 38.5                   | -18.5                  |              |
|                                                                                        | 826.50                                                                                            | 5.53                        | H                                               | 0.9                        | 0.0                           | 4.63                 | 38.5                   | -33.8                  |              |
|                                                                                        | Mid Ch                                                                                            |                             |                                                 |                            |                               |                      |                        |                        |              |
|                                                                                        | 836.50                                                                                            | 21.08                       | V                                               | 0.9                        | 0.0                           | 20.18                | 38.5                   | -18.3                  |              |
|                                                                                        | 836.50                                                                                            | 6.36                        | H                                               | 0.9                        | 0.0                           | 5.46                 | 38.5                   | -33.0                  |              |
|                                                                                        | High Ch                                                                                           |                             |                                                 |                            |                               |                      |                        |                        |              |
|                                                                                        | 846.50                                                                                            | 21.78                       | V                                               | 0.9                        | 0.0                           | 20.88                | 38.5                   | -17.6                  |              |
|                                                                                        | 846.50                                                                                            | 7.41                        | H                                               | 0.9                        | 0.0                           | 6.51                 | 38.5                   | -31.9                  |              |
| Rev. 3.17.11<br>Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm |                                                                                                   |                             |                                                 |                            |                               |                      |                        |                        |              |

| Band<br><br>LTE5<br><br>1.4MHz<br><br>QPSK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc. Chamber C</b> |                    |                                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------|------------------------------------------------|-----------------------|--------------|----------------|----------------|-------|----------|---------------------|--------------------|--------------------|-----------------------|--------------|----------------|----------------|-------|---------------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|------|---|-----|-----|------|------|-------|--|---------------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|------|---|-----|-----|------|------|-------|--|----------------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|------|---|-----|-----|------|------|-------|--|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Company:</b>                                                                                   |                    | LG                                             |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Project #:</b>                                                                                 |                    | 15I20405                                       |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Date:</b>                                                                                      |                    | 04/04/15                                       |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Test Engineer:</b>                                                                             |                    | Charles Vergonio                               |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Configuration:</b>                                                                             |                    | EUT Only Z Position                            |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Mode:</b>                                                                                      |                    | LTE_QPSK Band 5 Fundamentals, 1.4MHz Bandwidth |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Test Equipment:</b>                                                                            |                    |                                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Receiving: Sunol T185, and 3m Chamber C N-type Cable                                              |                    |                                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Substitution: Dipole T273, 4ft SMA Cable Warehouse.                                               |                    |                                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| <table border="1"> <thead> <tr> <th>f<br/>MHz</th> <th>SG reading<br/>(dBm)</th> <th>Ant. Pol.<br/>(H/V)</th> <th>Cable Loss<br/>(dB)</th> <th>Antenna Gain<br/>(dBd)</th> <th>ERP<br/>(dBm)</th> <th>Limit<br/>(dBm)</th> <th>Margin<br/>(dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9"><b>Low Ch</b></td> </tr> <tr> <td>826.50</td> <td>22.81</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>21.91</td> <td>38.5</td> <td>-16.5</td> <td></td> </tr> <tr> <td>826.50</td> <td>7.49</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>6.59</td> <td>38.5</td> <td>-31.9</td> <td></td> </tr> <tr> <td colspan="9"><b>Mid Ch</b></td> </tr> <tr> <td>836.50</td> <td>23.21</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>22.31</td> <td>38.5</td> <td>-16.1</td> <td></td> </tr> <tr> <td>836.50</td> <td>7.77</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>6.87</td> <td>38.5</td> <td>-31.6</td> <td></td> </tr> <tr> <td colspan="9"><b>High Ch</b></td> </tr> <tr> <td>846.50</td> <td>23.38</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>22.48</td> <td>38.5</td> <td>-16.0</td> <td></td> </tr> <tr> <td>846.50</td> <td>7.49</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>6.59</td> <td>38.5</td> <td>-31.9</td> <td></td> </tr> </tbody> </table> |                                                                                                   |                    |                                                |                       |              |                |                |       | f<br>MHz | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBd) | ERP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes | <b>Low Ch</b> |  |  |  |  |  |  |  |  | 826.50 | 22.81 | V | 0.9 | 0.0 | 21.91 | 38.5 | -16.5 |  | 826.50 | 7.49 | H | 0.9 | 0.0 | 6.59 | 38.5 | -31.9 |  | <b>Mid Ch</b> |  |  |  |  |  |  |  |  | 836.50 | 23.21 | V | 0.9 | 0.0 | 22.31 | 38.5 | -16.1 |  | 836.50 | 7.77 | H | 0.9 | 0.0 | 6.87 | 38.5 | -31.6 |  | <b>High Ch</b> |  |  |  |  |  |  |  |  | 846.50 | 23.38 | V | 0.9 | 0.0 | 22.48 | 38.5 | -16.0 |  | 846.50 | 7.49 | H | 0.9 | 0.0 | 6.59 | 38.5 | -31.9 |  |
| f<br>MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | SG reading<br>(dBm)                                                                               | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB)                             | Antenna Gain<br>(dBd) | ERP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| <b>Low Ch</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                   |                    |                                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 826.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 22.81                                                                                             | V                  | 0.9                                            | 0.0                   | 21.91        | 38.5           | -16.5          |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 826.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 7.49                                                                                              | H                  | 0.9                                            | 0.0                   | 6.59         | 38.5           | -31.9          |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| <b>Mid Ch</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                   |                    |                                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 836.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 23.21                                                                                             | V                  | 0.9                                            | 0.0                   | 22.31        | 38.5           | -16.1          |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 836.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 7.77                                                                                              | H                  | 0.9                                            | 0.0                   | 6.87         | 38.5           | -31.6          |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| <b>High Ch</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                   |                    |                                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 846.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 23.38                                                                                             | V                  | 0.9                                            | 0.0                   | 22.48        | 38.5           | -16.0          |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| 846.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 7.49                                                                                              | H                  | 0.9                                            | 0.0                   | 6.59         | 38.5           | -31.9          |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |
| Rev. 3.17.11<br>Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                   |                    |                                                |                       |              |                |                |       |          |                     |                    |                    |                       |              |                |                |       |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |               |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |                |  |  |  |  |  |  |  |  |        |       |   |     |     |       |      |       |  |        |      |   |     |     |      |      |       |  |



| Band<br><br>LTE4<br><br>20MHz<br><br>QPSK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc.</b>           |                    |                                               |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------|-----------------------|---------------|----------------|---------------|-------|----------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|--------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|------|--|---------|-------|---|-----|-----|-------|------|------|--|--------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|------|--|---------|-------|---|-----|-----|-------|------|------|--|---------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|------|--|---------|-------|---|-----|-----|-------|------|------|--|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Company:</b>                                                                                   |                    | LG                                            |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Project #:</b>                                                                                 |                    | 15I20405                                      |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Date:</b>                                                                                      |                    | 4/7/2015                                      |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Test Engineer:</b>                                                                             |                    | R.Alegre                                      |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Configuration:</b>                                                                             |                    | EUT Only (RF Radiated 1)                      |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Location:</b>                                                                                  |                    | Chamber C                                     |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Mode:</b>                                                                                      |                    | LTE_QPSK Band 4 Fundamentals, 20MHz Bandwidth |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Test Equipment:</b>                                                                            |                    |                                               |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Receiving: Horn T119, and Chamber C SMA Cables<br>Substitution: Horn T59, 4ft SMA Cable Warehouse |                    |                                               |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| <table border="1"> <thead> <tr> <th>f<br/>MHz</th> <th>SG reading<br/>(dBm)</th> <th>Ant. Pol.<br/>(H/V)</th> <th>Cable Loss<br/>(dB)</th> <th>Antenna Gain<br/>(dBi)</th> <th>EIRP<br/>(dBm)</th> <th>Limit<br/>(dBm)</th> <th>Delta<br/>(dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>1720.00</td> <td>17.67</td> <td>V</td> <td>0.9</td> <td>8.2</td> <td>25.01</td> <td>30.0</td> <td>-5.0</td> <td></td> </tr> <tr> <td>1720.00</td> <td>22.17</td> <td>H</td> <td>0.9</td> <td>8.2</td> <td>29.51</td> <td>30.0</td> <td>-0.5</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>1732.50</td> <td>18.33</td> <td>V</td> <td>0.9</td> <td>8.2</td> <td>25.60</td> <td>30.0</td> <td>-4.4</td> <td></td> </tr> <tr> <td>1732.50</td> <td>21.79</td> <td>H</td> <td>0.9</td> <td>8.2</td> <td>29.06</td> <td>30.0</td> <td>-0.9</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>1745.00</td> <td>17.95</td> <td>V</td> <td>0.9</td> <td>8.1</td> <td>25.15</td> <td>30.0</td> <td>-4.9</td> <td></td> </tr> <tr> <td>1745.00</td> <td>22.17</td> <td>H</td> <td>0.9</td> <td>8.1</td> <td>29.37</td> <td>30.0</td> <td>-0.6</td> <td></td> </tr> </tbody> </table> |                                                                                                   |                    |                                               |                       |               |                |               |       | f<br>MHz | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes | Low Ch |  |  |  |  |  |  |  |  | 1720.00 | 17.67 | V | 0.9 | 8.2 | 25.01 | 30.0 | -5.0 |  | 1720.00 | 22.17 | H | 0.9 | 8.2 | 29.51 | 30.0 | -0.5 |  | Mid Ch |  |  |  |  |  |  |  |  | 1732.50 | 18.33 | V | 0.9 | 8.2 | 25.60 | 30.0 | -4.4 |  | 1732.50 | 21.79 | H | 0.9 | 8.2 | 29.06 | 30.0 | -0.9 |  | High Ch |  |  |  |  |  |  |  |  | 1745.00 | 17.95 | V | 0.9 | 8.1 | 25.15 | 30.0 | -4.9 |  | 1745.00 | 22.17 | H | 0.9 | 8.1 | 29.37 | 30.0 | -0.6 |  |
| f<br>MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | SG reading<br>(dBm)                                                                               | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB)                            | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| Low Ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                   |                    |                                               |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| 1720.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 17.67                                                                                             | V                  | 0.9                                           | 8.2                   | 25.01         | 30.0           | -5.0          |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| 1720.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 22.17                                                                                             | H                  | 0.9                                           | 8.2                   | 29.51         | 30.0           | -0.5          |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| Mid Ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                   |                    |                                               |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| 1732.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 18.33                                                                                             | V                  | 0.9                                           | 8.2                   | 25.60         | 30.0           | -4.4          |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| 1732.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 21.79                                                                                             | H                  | 0.9                                           | 8.2                   | 29.06         | 30.0           | -0.9          |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| High Ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                   |                    |                                               |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| 1745.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 17.95                                                                                             | V                  | 0.9                                           | 8.1                   | 25.15         | 30.0           | -4.9          |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| 1745.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 22.17                                                                                             | H                  | 0.9                                           | 8.1                   | 29.37         | 30.0           | -0.6          |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |

| Band<br><br>LTE4<br><br>15MHz<br><br>16QAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc.</b>           |                    |                                                |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------|------------------------------------------------|-----------------------|---------------|----------------|---------------|-------|----------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|--------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|------|--|---------|-------|---|-----|-----|-------|------|------|--|--------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|------|--|---------|-------|---|-----|-----|-------|------|------|--|---------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|------|--|---------|-------|---|-----|-----|-------|------|------|--|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Company:</b>                                                                                   |                    | LG                                             |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Project #:</b>                                                                                 |                    | 15I20405                                       |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Date:</b>                                                                                      |                    | 4/9/2015                                       |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Test Engineer:</b>                                                                             |                    | R. Alegre                                      |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Configuration:</b>                                                                             |                    | EUT Only                                       |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Location:</b>                                                                                  |                    | Chamber C                                      |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Mode:</b>                                                                                      |                    | LTE_16QAM Band 4 Fundamentals, 15MHz Bandwidth |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Test Equipment:</b>                                                                            |                    |                                                |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Receiving: Horn T119, and Chamber C SMA Cables<br>Substitution: Horn T59, 4ft SMA Cable Warehouse |                    |                                                |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| <table border="1"> <thead> <tr> <th>f<br/>MHz</th> <th>SG reading<br/>(dBm)</th> <th>Ant. Pol.<br/>(H/V)</th> <th>Cable Loss<br/>(dB)</th> <th>Antenna Gain<br/>(dBi)</th> <th>EIRP<br/>(dBm)</th> <th>Limit<br/>(dBm)</th> <th>Delta<br/>(dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>1717.50</td> <td>16.77</td> <td>V</td> <td>0.9</td> <td>8.2</td> <td>24.12</td> <td>30.0</td> <td>-5.9</td> <td></td> </tr> <tr> <td>1717.50</td> <td>21.13</td> <td>H</td> <td>0.9</td> <td>8.2</td> <td>28.48</td> <td>30.0</td> <td>-1.5</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>1732.50</td> <td>17.29</td> <td>V</td> <td>0.9</td> <td>8.2</td> <td>24.56</td> <td>30.0</td> <td>-5.4</td> <td></td> </tr> <tr> <td>1732.50</td> <td>20.88</td> <td>H</td> <td>0.9</td> <td>8.2</td> <td>28.15</td> <td>30.0</td> <td>-1.8</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>1747.50</td> <td>17.08</td> <td>V</td> <td>0.9</td> <td>8.1</td> <td>24.27</td> <td>30.0</td> <td>-5.7</td> <td></td> </tr> <tr> <td>1747.50</td> <td>21.22</td> <td>H</td> <td>0.9</td> <td>8.1</td> <td>28.41</td> <td>30.0</td> <td>-1.6</td> <td></td> </tr> </tbody> </table> |                                                                                                   |                    |                                                |                       |               |                |               |       | f<br>MHz | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes | Low Ch |  |  |  |  |  |  |  |  | 1717.50 | 16.77 | V | 0.9 | 8.2 | 24.12 | 30.0 | -5.9 |  | 1717.50 | 21.13 | H | 0.9 | 8.2 | 28.48 | 30.0 | -1.5 |  | Mid Ch |  |  |  |  |  |  |  |  | 1732.50 | 17.29 | V | 0.9 | 8.2 | 24.56 | 30.0 | -5.4 |  | 1732.50 | 20.88 | H | 0.9 | 8.2 | 28.15 | 30.0 | -1.8 |  | High Ch |  |  |  |  |  |  |  |  | 1747.50 | 17.08 | V | 0.9 | 8.1 | 24.27 | 30.0 | -5.7 |  | 1747.50 | 21.22 | H | 0.9 | 8.1 | 28.41 | 30.0 | -1.6 |  |
| f<br>MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | SG reading<br>(dBm)                                                                               | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB)                             | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| Low Ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                   |                    |                                                |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| 1717.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 16.77                                                                                             | V                  | 0.9                                            | 8.2                   | 24.12         | 30.0           | -5.9          |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| 1717.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 21.13                                                                                             | H                  | 0.9                                            | 8.2                   | 28.48         | 30.0           | -1.5          |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| Mid Ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                   |                    |                                                |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| 1732.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 17.29                                                                                             | V                  | 0.9                                            | 8.2                   | 24.56         | 30.0           | -5.4          |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| 1732.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 20.88                                                                                             | H                  | 0.9                                            | 8.2                   | 28.15         | 30.0           | -1.8          |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| High Ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                   |                    |                                                |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| 1747.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 17.08                                                                                             | V                  | 0.9                                            | 8.1                   | 24.27         | 30.0           | -5.7          |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| 1747.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 21.22                                                                                             | H                  | 0.9                                            | 8.1                   | 28.41         | 30.0           | -1.6          |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |

| Band<br><br>LTE4<br><br>15MHz<br><br>QPSK | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                                               |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------|-----------------------|---------------|----------------|---------------|-------|----------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|--------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|------|--|---------|-------|---|-----|-----|-------|------|------|--|--------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|------|--|---------|-------|---|-----|-----|-------|------|------|--|---------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|------|--|---------|-------|---|-----|-----|-------|------|------|
|                                           | <b>Company:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    | LG                                            |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |
|                                           | <b>Project #:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    | 15I20405                                      |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |
|                                           | <b>Date:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    | 4/9/2015                                      |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |
|                                           | <b>Test Engineer:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                    | R.Alegre                                      |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |
|                                           | <b>Configuration:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                    | EUT Only                                      |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |
|                                           | <b>Location:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                    | Chamber C                                     |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |
|                                           | <b>Mode:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    | LTE_QPSK Band 4 Fundamentals, 15MHz Bandwidth |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |
|                                           | <b>Test Equipment:</b><br><b>Receiving: Horn T119, and Chamber C SMA Cables</b><br><b>Substitution: Horn T59, 4ft SMA Cable Warehouse</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                    |                                               |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |
|                                           | <table border="1"> <thead> <tr> <th>f<br/>MHz</th> <th>SG reading<br/>(dBm)</th> <th>Ant. Pol.<br/>(H/V)</th> <th>Cable Loss<br/>(dB)</th> <th>Antenna Gain<br/>(dBi)</th> <th>EIRP<br/>(dBm)</th> <th>Limit<br/>(dBm)</th> <th>Delta<br/>(dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>1717.50</td> <td>17.64</td> <td>V</td> <td>0.9</td> <td>8.2</td> <td>24.99</td> <td>30.0</td> <td>-5.0</td> <td></td> </tr> <tr> <td>1717.50</td> <td>21.89</td> <td>H</td> <td>0.9</td> <td>8.2</td> <td>29.24</td> <td>30.0</td> <td>-0.8</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>1732.50</td> <td>18.17</td> <td>V</td> <td>0.9</td> <td>8.2</td> <td>25.44</td> <td>30.0</td> <td>-4.6</td> <td></td> </tr> <tr> <td>1732.50</td> <td>21.76</td> <td>H</td> <td>0.9</td> <td>8.2</td> <td>29.03</td> <td>30.0</td> <td>-1.0</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>1747.50</td> <td>17.88</td> <td>V</td> <td>0.9</td> <td>8.1</td> <td>25.07</td> <td>30.0</td> <td>-4.9</td> <td></td> </tr> <tr> <td>1747.50</td> <td>22.06</td> <td>H</td> <td>0.9</td> <td>8.1</td> <td>29.25</td> <td>30.0</td> <td>-0.7</td> <td></td> </tr> </tbody> </table> |                    |                                               |                       |               |                |               |       | f<br>MHz | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes | Low Ch |  |  |  |  |  |  |  |  | 1717.50 | 17.64 | V | 0.9 | 8.2 | 24.99 | 30.0 | -5.0 |  | 1717.50 | 21.89 | H | 0.9 | 8.2 | 29.24 | 30.0 | -0.8 |  | Mid Ch |  |  |  |  |  |  |  |  | 1732.50 | 18.17 | V | 0.9 | 8.2 | 25.44 | 30.0 | -4.6 |  | 1732.50 | 21.76 | H | 0.9 | 8.2 | 29.03 | 30.0 | -1.0 |  | High Ch |  |  |  |  |  |  |  |  | 1747.50 | 17.88 | V | 0.9 | 8.1 | 25.07 | 30.0 | -4.9 |  | 1747.50 | 22.06 | H | 0.9 | 8.1 | 29.25 | 30.0 | -0.7 |
| f<br>MHz                                  | SG reading<br>(dBm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB)                            | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |
| Low Ch                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |                                               |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |
| 1717.50                                   | 17.64                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | V                  | 0.9                                           | 8.2                   | 24.99         | 30.0           | -5.0          |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |
| 1717.50                                   | 21.89                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | H                  | 0.9                                           | 8.2                   | 29.24         | 30.0           | -0.8          |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |
| Mid Ch                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |                                               |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |
| 1732.50                                   | 18.17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | V                  | 0.9                                           | 8.2                   | 25.44         | 30.0           | -4.6          |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |
| 1732.50                                   | 21.76                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | H                  | 0.9                                           | 8.2                   | 29.03         | 30.0           | -1.0          |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |
| High Ch                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |                                               |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |
| 1747.50                                   | 17.88                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | V                  | 0.9                                           | 8.1                   | 25.07         | 30.0           | -4.9          |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |
| 1747.50                                   | 22.06                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | H                  | 0.9                                           | 8.1                   | 29.25         | 30.0           | -0.7          |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |

| Band<br><br>LTE4<br><br>10MHz<br><br>16QAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc.</b>           |                    |                                                |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------|------------------------------------------------|-----------------------|---------------|----------------|---------------|-------|----------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|--------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|------|--|---------|-------|---|-----|-----|-------|------|------|--|--------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|------|--|---------|-------|---|-----|-----|-------|------|------|--|---------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|------|--|---------|-------|---|-----|-----|-------|------|------|--|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Company:</b>                                                                                   |                    | LG                                             |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Project #:</b>                                                                                 |                    | 15I20405                                       |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Date:</b>                                                                                      |                    | 4/9/2015                                       |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Test Engineer:</b>                                                                             |                    | R. Alegre                                      |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Configuration:</b>                                                                             |                    | EUT Only                                       |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Location:</b>                                                                                  |                    | Chamber C                                      |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Mode:</b>                                                                                      |                    | LTE_16QAM Band 4 Fundamentals, 10MHz Bandwidth |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Test Equipment:</b>                                                                            |                    |                                                |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Receiving: Horn T119, and Chamber C SMA Cables<br>Substitution: Horn T59, 4ft SMA Cable Warehouse |                    |                                                |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| <table border="1"> <thead> <tr> <th>f<br/>MHz</th> <th>SG reading<br/>(dBm)</th> <th>Ant. Pol.<br/>(H/V)</th> <th>Cable Loss<br/>(dB)</th> <th>Antenna Gain<br/>(dBi)</th> <th>EIRP<br/>(dBm)</th> <th>Limit<br/>(dBm)</th> <th>Delta<br/>(dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>1715.00</td> <td>16.49</td> <td>V</td> <td>0.9</td> <td>8.2</td> <td>23.76</td> <td>30.0</td> <td>-6.2</td> <td></td> </tr> <tr> <td>1715.00</td> <td>21.15</td> <td>H</td> <td>0.9</td> <td>8.2</td> <td>28.42</td> <td>30.0</td> <td>-1.6</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>1732.50</td> <td>16.92</td> <td>V</td> <td>0.9</td> <td>8.2</td> <td>24.19</td> <td>30.0</td> <td>-5.8</td> <td></td> </tr> <tr> <td>1732.50</td> <td>21.01</td> <td>H</td> <td>0.9</td> <td>8.2</td> <td>28.28</td> <td>30.0</td> <td>-1.7</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>1750.00</td> <td>17.01</td> <td>V</td> <td>0.9</td> <td>8.1</td> <td>24.20</td> <td>30.0</td> <td>-5.8</td> <td></td> </tr> <tr> <td>1750.00</td> <td>21.00</td> <td>H</td> <td>0.9</td> <td>8.1</td> <td>28.19</td> <td>30.0</td> <td>-1.8</td> <td></td> </tr> </tbody> </table> |                                                                                                   |                    |                                                |                       |               |                |               |       | f<br>MHz | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes | Low Ch |  |  |  |  |  |  |  |  | 1715.00 | 16.49 | V | 0.9 | 8.2 | 23.76 | 30.0 | -6.2 |  | 1715.00 | 21.15 | H | 0.9 | 8.2 | 28.42 | 30.0 | -1.6 |  | Mid Ch |  |  |  |  |  |  |  |  | 1732.50 | 16.92 | V | 0.9 | 8.2 | 24.19 | 30.0 | -5.8 |  | 1732.50 | 21.01 | H | 0.9 | 8.2 | 28.28 | 30.0 | -1.7 |  | High Ch |  |  |  |  |  |  |  |  | 1750.00 | 17.01 | V | 0.9 | 8.1 | 24.20 | 30.0 | -5.8 |  | 1750.00 | 21.00 | H | 0.9 | 8.1 | 28.19 | 30.0 | -1.8 |  |
| f<br>MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | SG reading<br>(dBm)                                                                               | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB)                             | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| Low Ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                   |                    |                                                |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| 1715.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 16.49                                                                                             | V                  | 0.9                                            | 8.2                   | 23.76         | 30.0           | -6.2          |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| 1715.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 21.15                                                                                             | H                  | 0.9                                            | 8.2                   | 28.42         | 30.0           | -1.6          |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| Mid Ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                   |                    |                                                |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| 1732.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 16.92                                                                                             | V                  | 0.9                                            | 8.2                   | 24.19         | 30.0           | -5.8          |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| 1732.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 21.01                                                                                             | H                  | 0.9                                            | 8.2                   | 28.28         | 30.0           | -1.7          |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| High Ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                   |                    |                                                |                       |               |                |               |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| 1750.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 17.01                                                                                             | V                  | 0.9                                            | 8.1                   | 24.20         | 30.0           | -5.8          |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |
| 1750.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 21.00                                                                                             | H                  | 0.9                                            | 8.1                   | 28.19         | 30.0           | -1.8          |       |          |                     |                    |                    |                       |               |                |               |       |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |        |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |         |  |  |  |  |  |  |  |  |         |       |   |     |     |       |      |      |  |         |       |   |     |     |       |      |      |  |

| Band<br><br>LTE4<br><br>10MHz<br><br>QPSK | <b>High Frequency Substitution Measurement</b><br><b>UL Verification Services, Inc.</b>                                                                                                                                                   |                     |                    |                    |                       |               |                |               |       |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|
|                                           | <b>Company:</b> LG<br><b>Project #:</b> 15I20405<br><b>Date:</b> 4/9/2015<br><b>Test Engineer:</b> R.Alegre<br><b>Configuration:</b> EUT Only<br><b>Location:</b> Chamber C<br><b>Mode:</b> LTE_QPSK Band 4 Fundamentals, 10MHz Bandwidth |                     |                    |                    |                       |               |                |               |       |
|                                           | <b>Test Equipment:</b><br><b>Receiving:</b> Horn T119, and Chamber C SMA Cables<br><b>Substitution:</b> Horn T59, 4ft SMA Cable Warehouse                                                                                                 |                     |                    |                    |                       |               |                |               |       |
|                                           | f<br>MHz                                                                                                                                                                                                                                  | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes |
|                                           | Low Ch                                                                                                                                                                                                                                    |                     |                    |                    |                       |               |                |               |       |
|                                           | 1715.00                                                                                                                                                                                                                                   | 17.58               | V                  | 0.9                | 8.2                   | 24.85         | 30.0           | -5.1          |       |
|                                           | 1715.00                                                                                                                                                                                                                                   | 21.82               | H                  | 0.9                | 8.2                   | 29.09         | 30.0           | -0.9          |       |
|                                           | Mid Ch                                                                                                                                                                                                                                    |                     |                    |                    |                       |               |                |               |       |
|                                           | 1732.50                                                                                                                                                                                                                                   | 18.06               | V                  | 0.9                | 8.2                   | 25.33         | 30.0           | -4.7          |       |
|                                           | 1732.50                                                                                                                                                                                                                                   | 21.55               | H                  | 0.9                | 8.2                   | 28.82         | 30.0           | -1.2          |       |
| High Ch                                   |                                                                                                                                                                                                                                           |                     |                    |                    |                       |               |                |               |       |
| 1750.00                                   | 17.78                                                                                                                                                                                                                                     | V                   | 0.9                | 8.1                | 24.97                 | 30.0          | -5.0           |               |       |
| 1750.00                                   | 21.80                                                                                                                                                                                                                                     | H                   | 0.9                | 8.1                | 28.99                 | 30.0          | -1.0           |               |       |

Band

LTE4

5MHz

16QAM

High Frequency Substitution Measurement  
UL Verification Services, Inc.

Company: LG  
Project #: 15I20405  
Date: 4/9/2015  
Test Engineer: R.Alegre  
Configuration: EUT Only  
Location: Chamber C  
Mode: LTE\_16QAM Band 4 Fundamentals, 5MHz Bandwidth

Test Equipment:  
Receiving: Horn T119, and Chamber C SMA Cables  
Substitution: Horn T59, 4ft SMA Cable Warehouse

| f<br>MHz | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes |
|----------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|
| Low Ch   |                     |                    |                    |                       |               |                |               |       |
| 1712.50  | 16.63               | V                  | 0.9                | 8.2                   | 23.97         | 30.0           | -6.0          |       |
| 1712.50  | 21.13               | H                  | 0.9                | 8.2                   | 28.47         | 30.0           | -1.5          |       |
| Mid Ch   |                     |                    |                    |                       |               |                |               |       |
| 1732.50  | 16.96               | V                  | 0.9                | 8.2                   | 24.23         | 30.0           | -5.8          |       |
| 1732.50  | 20.87               | H                  | 0.9                | 8.2                   | 28.14         | 30.0           | -1.9          |       |
| High Ch  |                     |                    |                    |                       |               |                |               |       |
| 1752.50  | 16.83               | V                  | 0.9                | 8.1                   | 24.03         | 30.0           | -6.0          |       |
| 1752.50  | 20.59               | H                  | 0.9                | 8.1                   | 27.79         | 30.0           | -2.2          |       |



Band

LTE4

3MHz

16QAM

High Frequency Substitution Measurement

UL Verification Services, Inc.

Company:

Project #:

Date:

Test Engineer:

Configuration:

Location:

Mode:

Test Equipment:

Receiving: Horn T119, and Chamber C SMA Cables

Substitution: Horn T59, 4ft SMA Cable Warehouse

| f MHz   | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---------|------------------|-----------------|-----------------|--------------------|------------|-------------|------------|-------|
| Low Ch  |                  |                 |                 |                    |            |             |            |       |
| 1711.50 | 16.56            | V               | 0.9             | 8.2                | 23.91      | 30.0        | -6.1       |       |
| 1711.50 | 21.37            | H               | 0.9             | 8.2                | 28.72      | 30.0        | -1.3       |       |
| Mid Ch  |                  |                 |                 |                    |            |             |            |       |
| 1732.50 | 16.97            | V               | 0.9             | 8.2                | 24.24      | 30.0        | -5.8       |       |
| 1732.50 | 20.90            | H               | 0.9             | 8.2                | 28.17      | 30.0        | -1.8       |       |
| High Ch |                  |                 |                 |                    |            |             |            |       |
| 1753.50 | 16.93            | V               | 0.9             | 8.1                | 24.12      | 30.0        | -5.9       |       |
| 1753.50 | 20.61            | H               | 0.9             | 8.1                | 27.80      | 30.0        | -2.2       |       |

