

# **FCC CFR47 PART 22H, 24E, 27 CERTIFICATION TEST REPORT FCC ID: 2AY6A-T1ELITE**

**Product:** Tablet  
**Trade Mark:** CLOUD MOBILE  
**Model Number:** Sunshine T1 ELITE  
**Family Model:** N/A  
**Report No.:** STR210826001006E

## **Prepared for**

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## 1. GENERAL INFORMATION

### 1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Designation: | Tablet                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Trade Mark           | CLOUD MOBILE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Model Name           | Sunshine T1 ELITE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Family Model         | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Model Difference     | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| FCC ID:              | 2AY6A-T1ELITE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Frequency Bands:     | U.S. Bands:<br><input checked="" type="checkbox"/> LTE FDD Band 2,4,5,7,12,17,41,66,71                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Frequency Range:     | LTE FDD Band 2 Uplink: 1850MHz-1910MHz,<br>Downlink: 1930MHz-1990MHz;<br>LTE FDD Band 4 Uplink: 1710MHz-1755MHz,<br>Downlink: 2110MHz-2155MHz;<br>LTE FDD Band 5 Uplink: 824MHz-849MHz,<br>Downlink: 869MHz-894MHz;<br>LTE-FDD Band 7 Uplink: 2500MHz-2570MHz,<br>Downlink: 2620MHz-2690MHz;<br>LTE FDD Band 12 Uplink: 699MHz-716MHz,<br>Downlink: 729MHz-746MHz;<br>LTE FDD Band 17 Uplink: 704MHz-716MHz,<br>Downlink: 734MHz-746MHz;<br>LTE FDD Band 41 Uplink: 2496MHz-2690MHz,<br>LTE FDD Band 66 Uplink: 1710MHz-1780MHz,<br>Downlink: 2110MHz-2200MHz;<br>LTE FDD Band 71 Uplink: 663MHz-698MHz,<br>Downlink: 617MHz-652MHz; |
| Type of Modulation:  | QPSK/16QAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| SIM Card             | SIM 1 and SIM 2 is a chipset unit and tested as a single chipset. The SIM 1 is chosen for test.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Antenna:             | PIFA Antenna                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Antenna gain:        | Band 2: -0.18dBi; Band 4: -0.8dBi ; Band 5: (-3.51dBi ; Band 7: -0.3dBi ;<br>Band 12: -3.8dBi ; Band 17: -4.0dBi; Band 41: -0.35dBi; Band 66: -0.8dBi;<br>Band 71: -6.2)dBi;                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Power Supply:        | DC 3.7V, 3500mAh from battery or DC 5V from Adapter.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Adapter:             | Model: JML-0500150NZ-LW<br>Input: 100V-240V 50/60Hz 0.3A<br>Output: 5V---1.5A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Extreme Vol. Limits: | DC 3.4V to DC 4.2V (Nominal DC 3.7V) (Note 1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

|                                                                                                                                                                 |                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| HW Version                                                                                                                                                      | AL-MT8765-863-V1.0-EP  |
| SW Version                                                                                                                                                      | Sunshine_T1_Elite_v1.0 |
| <p>** Note1: The High Voltage DC 4.2V and Low Voltage 3.4V was declared by manufacturer, The EUT couldn't be operate normally with higher or lower voltage.</p> |                        |

## 1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2AY6A-T1ELITE** filing to comply with the FCC Part 22H&24E&27

## 1.3 TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI/TIA-603-E-2016, FCC CFR 47 Part 2, Part 22, Part 24, Part 27, ANSI C63.26:2015.

## 1.4 TEST FACILITY

The test site used to collect the radiated data is located at:

ShenZhen NTEK Testing Technology Co., Ltd.

1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen 518126 P.R.China.

The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.26:2015& ANSI C63.4: 2014.

FCC Registration No.:463705

IC Registration No.:9270A-1,

CNAS Registration No.:L5516

## MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

| No. | Item                                                                     | Uncertainty |
|-----|--------------------------------------------------------------------------|-------------|
| 1   | Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2U_c(y)$ ) | 2.5dB       |
|     |                                                                          |             |

## 1.5 SPECIAL ACCESSORIES

The battery and the charger, earphone supplied by the applicant were used as accessories and being tested with EUT intended for FCC grant together.

## 1.6 WORST-CASE CONFIGURATION AND MODE

The worst-case scenario for all measurements is based on the investigation results.

The device has LTE Bands of: Band 2, Band 4, Band 5, Band 7, Band 12, Band 17, Band 41, Band 66, Band 71.

The RB Size was selected to measure for peak or average ERP and EIRP, which was based on the conducted power verification baseline data.

For the fundamental investigation of radiated emissions, the EUT is investigated for vertical and horizontal antenna orientations and X Y and Z orientations of the EUT alone. After the investigations



the worst case was determined to be at X orientation for all LTE bands.

## 2. SYSTEM TEST CONFIGURATION

### 2.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 2.2 EUT EXERCISE

The Transmitter was operated in the maximum output power mode through Communication Tester. The TX frequency was fixed which was for the purpose of the measurements.

### 2.3 CONFIGURATION OF EUT SYSTEM

Table 2-1 Equipment Used in EUT System

| Item | Equipment | Model No.         | ID or Specification   | Note |
|------|-----------|-------------------|-----------------------|------|
| 1    | Tablet    | Sunshine T1 ELITE | FCC ID: 2AY6A-T1ELITE | EUT  |
|      |           |                   |                       |      |
|      |           |                   |                       |      |

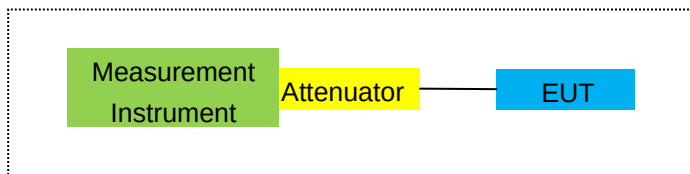
*Note: All the accessories have been used during the test.  
the following "EUT" in setup diagram means EUT system.*

## 2.4 TEST SETUP

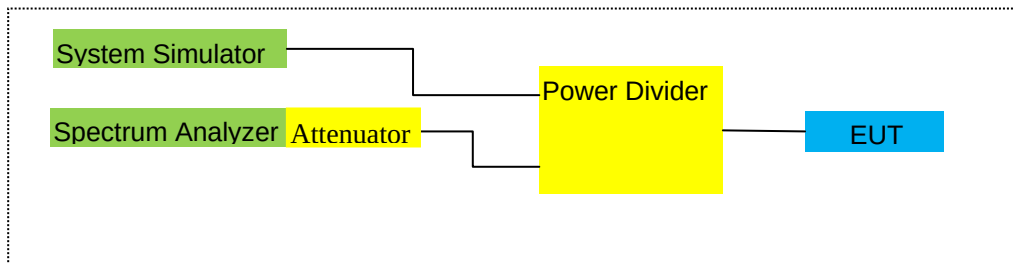
For Radiated Test Cases



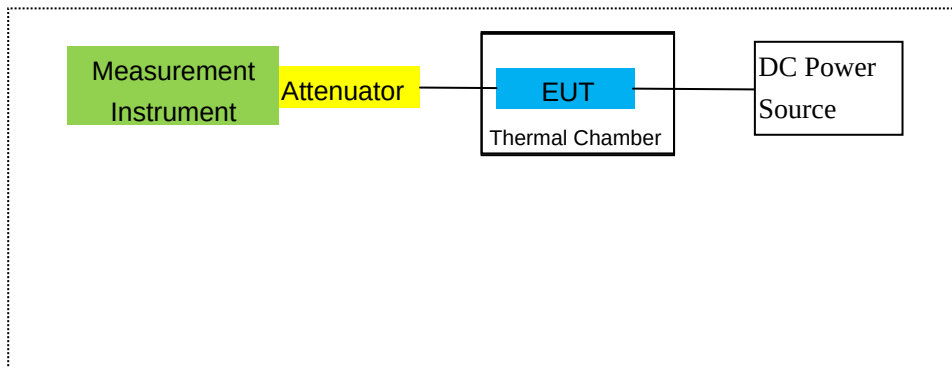
For Conducted Output Power



For Peak-to Average Ratio, Occupied Bandwidth, Conducted Band edge and Conducted Spurious Emission



For Frequency Stability



Note: EUT built-in battery-powered, the battery is fully-charged.

### 3.TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

| Item | Kind of Equipment     | Manufacturer | Type No.    | Serial No.   | Last calibration | Calibrated until | Calibration period |
|------|-----------------------|--------------|-------------|--------------|------------------|------------------|--------------------|
| 1    | MXA Signal Analyzer   | Agilent      | N9020A      | MY49100060   | 2021.07.01       | 2022.06.30       | 1 year             |
| 2    | Test Receiver         | R&S          | ESPI        | 101318       | 2021.04.27       | 2022.04.26       | 1 year             |
| 3    | Bilog Antenna         | TESEQ        | CBL6111D    | 31216        | 2021.03.29       | 2022.03.28       | 1 year             |
| 4    | 50Ω Coaxial Switch    | Anritsu      | MP59B       | 6200983705   | 2020.05.11       | 2023.05.10       | 3 year             |
| 5    | Horn Antenna          | EM           | EM-AH-10180 | 2011071402   | 2021.03.29       | 2022.03.28       | 1 year             |
| 6    | Horn Ant              | Schwarzbeck  | BBHA 9170   | 9170-181     | 2020.11.19       | 2021.11.18       | 1 year             |
| 7    | Amplifier             | EM           | EM-30180    | 060538       | 2021.07.01       | 2022.06.30       | 1 year             |
| 8    | Loop Antenna          | ARA          | PLA-1030/B  | 1029         | 2021.04.27       | 2022.04.26       | 1 year             |
| 9    | Power Meter           | R&S          | NRVS        | 100696       | 2021.07.01       | 2022.06.30       | 1 year             |
| 10   | Power Sensor          | R&S          | URV5-Z4     | 0395.1619.05 | 2021.04.27       | 2022.04.26       | 1 year             |
| 11   | Test Cable            | N/A          | R-01        | N/A          | 2019.08.06       | 2022.08.05       | 3 year             |
| 12   | Test Cable            | N/A          | R-02        | N/A          | 2019.08.06       | 2022.08.05       | 3 year             |
| 13   | Test Cable            | N/A          | R-03        | N/A          | 2019.06.28       | 2022.06.27       | 3 year             |
| 14   | Test Receiver         | R&S          | ESCI        | 101160       | 2021.04.27       | 2022.04.26       | 1 year             |
| 15   | LISN                  | R&S          | ENV216      | 101313       | 2021.04.27       | 2022.04.26       | 1 year             |
| 16   | LISN                  | EMCO         | 3816/2      | 00042990     | 2021.04.27       | 2022.04.26       | 1 year             |
| 17   | 50Ω Coaxial Switch    | Anritsu      | MP59B       | 6200264417   | 2021.04.27       | 2022.04.26       | 1 year             |
| 18   | Passive Voltage Probe | R&S          | ESH2-Z3     | 100196       | 2021.04.27       | 2022.04.26       | 1 year             |
| 19   | Test Cable            | N/A          | C01         | N/A          | 2020.05.11       | 2023.05.10       | 3 year             |
| 20   | Test Cable            | N/A          | C02         | N/A          | 2020.05.11       | 2023.05.10       | 3 year             |
| 21   | Test Cable            | N/A          | C03         | N/A          | 2020.05.11       | 2023.05.10       | 3 year             |
| 22   | Attenuator            | MCE          | 24-10-34    | BN9258       | 2021.07.01       | 2022.06.30       | 1 year             |
| 23   | Spectrum Analyzer     | agilent      | e4440a      | us44300399   | 2021.04.27       | 2022.04.26       | 1 year             |
| 24   | test receiver         | R&S          | ESCI        | a0304218     | 2021.04.27       | 2022.04.26       | 1 year             |
| 25   | Communication Tester  | R&S          | CMU200      | A0304247     | 2021.07.01       | 2022.06.30       | 1 year             |
| 26   | Thermal Chamber       | Ten Billion  | TTC-B3C     | TBN-960502   | 2021.04.27       | 2022.04.26       | 1 year             |

|    |                             |         |          |                 |            |            |        |
|----|-----------------------------|---------|----------|-----------------|------------|------------|--------|
| 27 | DC Power Source             | N/A     | PS-6005D | 2017040292<br>3 | 2020.05.11 | 2023.05.10 | 3 year |
| 28 | PSG Analog Signal Generator | Agilent | E8257D   | MY51110112      | 2021.07.01 | 2022.06.30 | 1 year |
| 29 | Communication Tester        | R&S     | CMW500   | 148500          | 2021.07.01 | 2022.06.30 | 1 year |
| 30 | PSG Analog Signal Generator | Agilent | E8257D   | MY51110112      | 2021.07.01 | 2022.06.30 | 1 year |

Note: Each piece of equipment is scheduled for calibration once a year except the Test Cable& DC Power Source which is scheduled for calibration every 3 years.

## 4. OUTPUT POWER

### 4.1 OUTPUT POWER MEASUREMENT

#### LTE Measurement Procedure:

All LTE bands conducted power peak and average are obtained from the CMW500 telecommunication test set. The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

**Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3**

| Modulation | Channel bandwidth / Transmission bandwidth (RB) |         |       |        |        |        | MPR (dB) |
|------------|-------------------------------------------------|---------|-------|--------|--------|--------|----------|
|            | 1.4 MHz                                         | 3.0 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz |          |
| QPSK       | > 5                                             | > 4     | > 8   | > 12   | > 16   | > 18   | ≤ 1      |
| 16 QAM     | ≤ 5                                             | ≤ 4     | ≤ 8   | ≤ 12   | ≤ 16   | ≤ 18   | ≤ 1      |
| 16 QAM     | > 5                                             | > 4     | > 8   | > 12   | > 16   | > 18   | ≤ 2      |

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of "NS\_01".3

**Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)**

| Network Signalling value | Requirements (sub-clause) | E-UTRA Band              | Channel bandwidth (MHz) | Resources Blocks ( $N_{RB}$ ) | A-MPR (dB)    |
|--------------------------|---------------------------|--------------------------|-------------------------|-------------------------------|---------------|
| NS_01                    | 6.6.2.1.1                 | Table 5.5-1              | 1.4, 3, 5, 10, 15, 20   | Table 5.6-1                   | NA            |
| NS_03                    | 6.6.2.2.1                 | 2, 4, 10, 23, 25, 35, 36 | 3                       | >5                            | $\leq 1$      |
|                          |                           |                          | 5                       | >6                            | $\leq 1$      |
|                          |                           |                          | 10                      | >6                            | $\leq 1$      |
|                          |                           |                          | 15                      | >8                            | $\leq 1$      |
|                          |                           |                          | 20                      | >10                           | $\leq 1$      |
| NS_04                    | 6.6.2.2.2                 | 41                       | 5                       | >6                            | $\leq 1$      |
|                          |                           |                          | 10, 15, 20              | See Table 6.2.4-4             |               |
| NS_05                    | 6.6.3.3.1                 | 1                        | 10, 15, 20              | $\geq 50$                     | $\leq 1$      |
| NS_06                    | 6.6.2.2.3                 | 12, 13, 14, 17           | 1.4, 3, 5, 10           | Table 5.6-1                   | n/a           |
| NS_07                    | 6.6.2.2.3<br>6.6.3.3.2    | 13                       | 10                      | Table 6.2.4-2                 | Table 6.2.4-2 |
| NS_08                    | 6.6.3.3.3                 | 19                       | 10, 15                  | > 44                          | $\leq 3$      |
| NS_09                    | 6.6.3.3.4                 | 21                       | 10, 15                  | > 40                          | $\leq 1$      |
|                          |                           |                          |                         | > 55                          | $\leq 2$      |
| NS_10                    |                           | 20                       | 15, 20                  | Table 6.2.4-3                 | Table 6.2.4-3 |
| NS_11                    | 6.6.2.2.1                 | 23 <sup>1</sup>          | 1.4, 3, 5, 10           | Table 6.2.4-5                 | Table 6.2.4-5 |
| ..                       |                           |                          |                         |                               |               |
| NS_32                    | -                         | -                        | -                       | -                             | -             |

Note 1: Applies to the lower block of Band 23, i.e. a carrier placed in the 2000-2010 MHz region.

Test data reference attachment.

## 5. OCCUPIED BANDWIDTH

### RULE PART(S)

FCC: §2.1049

### LIMITS

For reporting purposes only

### TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The -26dB bandwidth was also measured and recorded.

### MODES TESTED

- ☐ LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 17
- LTE Band 41
- LTE Band 66
- LTE Band 71

### RESULTS

**PASS**

Test data reference attachment.

## 6. BANDEDGE AND EMISSION MASK

### RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53,  
FCC: §22.359

### LIMITS

FCC: §22.917, §24.238, §27.53

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.

(m)(4) For mobile digital stations, the attenuation factor shall be not less than  $40 + 10 \log (P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log (P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and  $55 + 10 \log (P)$  dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than  $43 + 10 \log (P)$  dB on all frequencies between 2490.5 MHz and 2496 MHz and  $55 + 10 \log (P)$  dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees. Show citation box.

(c)(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than  $65 + 10 \log (P)$  dB in a 6.25 kHz band segment, for mobile and portable stations;



**TEST PROCEDURE**

The transmitter output was connected to a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

For each band edge measurement:

Set the spectrum analyzer span to include the block edge frequency

Set a marker to point the corresponding band edge frequency in each test case.

Set resolution bandwidth to at least 1% of emission bandwidth.

**MODES TESTED**

- ☐ LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 17
- LTE Band 41
- LTE Band 66
- LTE Band 71

**RESULTS**

Test data reference attachment.

## 7. OUT OF BAND EMISSIONS

### RULE PART(S)

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

### LIMITS

1. 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.
2. The Band 7/41 emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $55 + 10 \log (P)$  dB.

### TEST PROCEDURE

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.

For each out of band emissions measurement:

- ☐
- ☐ Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

### **MODES TESTED**

- ☐ LTE Band 2/4/5/7/12/17/41/66/71
- ☐

#### 7.1 MEASUREMENT METHOD

The test set up and general procedure is similar to conducted peak output power test. Only different for setting the measurement configuration of the measuring instrument of Spectrum Analyzer.

Test data reference attachment.

## 8. RADIATED MEASUREMENT

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

#### RULE PART(S)

FCC: §2.1046, §22.913, §24.232, §27.50

#### LIMITS:

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

27.50 (c) (10) the following power and antenna height requirements apply to stations transmitting in the 698–746 MHz band, the portable stations (hand-held devices) are limited to 3 watts ERP.

27.50 (b)(10) Portable stations (hand-held devices) transmitting in the 746–757 MHz, 758–763 MHz, 776–793 MHz, and 805–806 MHz bands are limited to 3 watts ERP.

27.50 (d)(4) The following power and antenna height requirements apply to stations transmitting in the 1710–1755 MHz and 2110–2155 MHz bands: Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.

27.50 (h)(2) Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

#### TEST PROCEDURE

ANSI/TIA-603-E Clause 2.2.17

KDB 971168 v02r01 RF power output using broadband peak and average power meter method.

KDB 971168 D01 Power Meas License Digital Systems v02r01, "Measurement Guidance for Certification of Licensed Digital Transmitters"

#### MODES TESTED

- ☐ LTE Band 2/4/5/7/12/17/41/66/71

#### RESULTS

Pass

## 8.2 LTE BAND 2

| Radiated Power (EIRP) for Band 2 |               |           |                      |                        |                         |                                  |              |                             |            |
|----------------------------------|---------------|-----------|----------------------|------------------------|-------------------------|----------------------------------|--------------|-----------------------------|------------|
| Mode                             | RB/RB<br>SIZE | Frequency | Result               |                        |                         |                                  |              |                             | Conclusion |
|                                  |               |           | SG<br>Level<br>(dBm) | Cable<br>Loss<br>(dBm) | Antenna<br>Gain<br>(dB) | Max.<br>EIRP<br>Average<br>(dBm) | Max.<br>EIRP | Polarization<br>Of Max. ERP |            |
|                                  |               |           |                      |                        |                         |                                  | Average      |                             |            |
|                                  |               |           |                      |                        |                         |                                  | (mW)         |                             |            |
| 1.4MHz<br>Band<br>QPSK           | 1/#Mid        | 1850.7    | -3.24                | 3.76                   | 28.24                   | 21.24                            | 133.045      | Horizontal                  | Pass       |
| 1880                             |               | -3.05     | 3.91                 | 28.22                  | 21.26                   | 133.660                          | Horizontal   | Pass                        |            |
| 1909.3                           |               | -2.96     | 3.93                 | 28.20                  | 21.31                   | 135.207                          | Horizontal   | Pass                        |            |
| 3.0MHz<br>Band<br>QPSK           | 1/#Mid        | 1851.5    | -3.30                | 3.77                   | 28.23                   | 21.16                            | 130.617      | Horizontal                  | Pass       |
| 1880                             |               | -3.15     | 3.91                 | 28.24                  | 21.18                   | 131.220                          | Horizontal   | Pass                        |            |
| 1908.5                           |               | -3.02     | 3.94                 | 28.25                  | 21.29                   | 134.586                          | Horizontal   | Pass                        |            |
| 5.0MHz<br>Band<br>QPSK           | 1/#Mid        | 1852.5    | -3.19                | 3.77                   | 28.31                   | 21.35                            | 136.458      | Horizontal                  | Pass       |
| 1880                             |               | -2.81     | 3.91                 | 28.22                  | 21.50                   | 141.254                          | Horizontal   | Pass                        |            |
| 1907.5                           |               | -2.74     | 3.94                 | 28.20                  | 21.52                   | 141.906                          | Horizontal   | Pass                        |            |
| 10.0MHz<br>Band<br>QPSK          | 1/#Mid        | 1855      | -3.05                | 3.79                   | 28.33                   | 21.49                            | 140.929      | Horizontal                  | Pass       |
| 1880                             |               | -2.75     | 3.95                 | 28.22                  | 21.52                   | 141.906                          | Horizontal   | Pass                        |            |
| 1905                             |               | -2.64     | 3.97                 | 28.19                  | 21.58                   | 143.880                          | Horizontal   | Pass                        |            |
| 15.0MHz<br>Band<br>QPSK          | 1/#Mid        | 1857.5    | -3.01                | 3.79                   | 28.34                   | 21.54                            | 142.561      | Horizontal                  | Pass       |
| 1880                             |               | -2.80     | 3.95                 | 28.22                  | 21.47                   | 140.281                          | Horizontal   | Pass                        |            |
| 1902.5                           |               | -2.66     | 3.97                 | 28.18                  | 21.55                   | 142.889                          | Horizontal   | Pass                        |            |
| 20.0MHz<br>Band<br>QPSK          | 1/#Mid        | 1860      | -3.00                | 3.81                   | 28.35                   | 21.54                            | 142.561      | Horizontal                  | Pass       |
| 1880                             |               | -2.67     | 3.96                 | 28.22                  | 21.59                   | 144.212                          | Horizontal   | Pass                        |            |
| 1900                             |               | -2.61     | 4.00                 | 28.16                  | 21.55                   | 142.889                          | Horizontal   | Pass                        |            |
| 1.4MHz<br>Band<br>QPSK           | 1/#Mid        | 1850.7    | -4.14                | 3.76                   | 28.24                   | 20.34                            | 108.143      | Vertical                    | Pass       |
| 1880                             |               | -3.46     | 3.91                 | 28.22                  | 20.85                   | 121.619                          | Vertical     | Pass                        |            |
| 1909.3                           |               | -3.43     | 3.93                 | 28.20                  | 20.84                   | 121.339                          | Vertical     | Pass                        |            |
| 3.0MHz<br>Band<br>QPSK           | 1/#Mid        | 1851.5    | -4.33                | 3.77                   | 28.23                   | 20.13                            | 103.039      | Vertical                    | Pass       |
| 1880                             |               | -3.94     | 3.91                 | 28.24                  | 20.39                   | 109.396                          | Vertical     | Pass                        |            |
| 1908.5                           |               | -4.25     | 3.94                 | 28.25                  | 20.06                   | 101.391                          | Vertical     | Pass                        |            |
| 5.0MHz<br>Band<br>QPSK           | 1/#Mid        | 1852.5    | -4.09                | 3.77                   | 28.31                   | 20.45                            | 110.917      | Vertical                    | Pass       |
| 1880                             |               | -3.71     | 3.91                 | 28.22                  | 20.60                   | 114.815                          | Vertical     | Pass                        |            |
| 1907.5                           |               | -3.51     | 3.94                 | 28.20                  | 20.75                   | 118.850                          | Vertical     | Pass                        |            |
| 10.0MHz<br>Band<br>QPSK          | 1/#Mid        | 1855      | -3.85                | 3.79                   | 28.33                   | 20.69                            | 117.220      | Vertical                    | Pass       |
| 1880                             |               | -3.88     | 3.95                 | 28.22                  | 20.39                   | 109.396                          | Vertical     | Pass                        |            |
| 1905                             |               | -3.68     | 3.97                 | 28.19                  | 20.54                   | 113.240                          | Vertical     | Pass                        |            |

|         |              |        |        |       |      |       |       |         |          |      |
|---------|--------------|--------|--------|-------|------|-------|-------|---------|----------|------|
| 15.0MHz | Band<br>QPSK | 1/#Mid | 1857.5 | -4.15 | 3.79 | 28.34 | 20.40 | 109.648 | Vertical | Pass |
|         |              |        | 1880   | -4.11 | 3.95 | 28.22 | 20.16 | 103.753 | Vertical | Pass |
|         |              |        | 1902.5 | -3.43 | 3.97 | 28.18 | 20.78 | 119.674 | Vertical | Pass |
| 20.0MHz | Band<br>QPSK | 1/#Mid | 1860   | -4.49 | 3.81 | 28.35 | 20.05 | 101.158 | Vertical | Pass |
|         |              |        | 1880   | -3.63 | 3.96 | 28.22 | 20.63 | 115.611 | Vertical | Pass |
|         |              |        | 1900   | -4.09 | 4.00 | 28.16 | 20.07 | 101.625 | Vertical | Pass |

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

| Radiated Power (EIRP) for Band 2 |            |           |                |                  |                   |                         |           |                          |            |
|----------------------------------|------------|-----------|----------------|------------------|-------------------|-------------------------|-----------|--------------------------|------------|
| Mode                             | RB/RB SIZE | Frequency | Result         |                  |                   |                         |           |                          | Conclusion |
|                                  |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Gain (dB) | Max. EIRP Average (dBm) | Max. EIRP | Polarization Of Max. ERP |            |
|                                  |            |           |                |                  |                   |                         | Average   |                          |            |
|                                  |            |           |                |                  |                   |                         | (mW)      |                          |            |
| 1.4MHz<br>Band 16<br>QAM         | 1/#Mid     | 1850.7    | -4.36          | 3.76             | 28.24             | 20.12                   | 102.802   | Horizontal               | Pass       |
|                                  |            | 1880      | -3.83          | 3.91             | 28.22             | 20.48                   | 111.686   | Horizontal               | Pass       |
|                                  |            | 1909.3    | -3.76          | 3.93             | 28.20             | 20.51                   | 112.460   | Horizontal               | Pass       |
| 3.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 1851.5    | -3.86          | 3.77             | 28.23             | 20.60                   | 114.815   | Horizontal               | Pass       |
|                                  |            | 1880      | -3.94          | 3.91             | 28.24             | 20.39                   | 109.396   | Horizontal               | Pass       |
|                                  |            | 1908.5    | -4.15          | 3.94             | 28.25             | 20.16                   | 103.753   | Horizontal               | Pass       |
| 5.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 1852.5    | -3.80          | 3.77             | 28.31             | 20.74                   | 118.577   | Horizontal               | Pass       |
|                                  |            | 1880      | -3.71          | 3.91             | 28.22             | 20.60                   | 114.815   | Horizontal               | Pass       |
|                                  |            | 1907.5    | -3.39          | 3.94             | 28.20             | 20.87                   | 122.180   | Horizontal               | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 1/#Mid     | 1855      | -3.85          | 3.79             | 28.33             | 20.69                   | 117.220   | Horizontal               | Pass       |
|                                  |            | 1880      | -3.84          | 3.95             | 28.22             | 20.43                   | 110.408   | Horizontal               | Pass       |
|                                  |            | 1905      | -3.31          | 3.97             | 28.19             | 20.91                   | 123.310   | Horizontal               | Pass       |
| 15.0MHz<br>Band 16<br>QAM        | 1/#Mid     | 1857.5    | -3.83          | 3.79             | 28.34             | 20.72                   | 118.032   | Horizontal               | Pass       |
|                                  |            | 1880      | -3.62          | 3.95             | 28.22             | 20.65                   | 116.145   | Horizontal               | Pass       |
|                                  |            | 1902.5    | -3.58          | 3.97             | 28.18             | 20.63                   | 115.611   | Horizontal               | Pass       |
| 20.0MHz<br>Band 16<br>QAM        | 1/#Mid     | 1860      | -3.72          | 3.81             | 28.35             | 20.82                   | 120.781   | Horizontal               | Pass       |
|                                  |            | 1880      | -3.42          | 3.96             | 28.22             | 20.84                   | 121.339   | Horizontal               | Pass       |
|                                  |            | 1900      | -3.24          | 4.00             | 28.16             | 20.92                   | 123.595   | Horizontal               | Pass       |
| 1.4MHz<br>Band 16<br>QAM         | 1/#Mid     | 1850.7    | -5.45          | 3.76             | 28.24             | 19.03                   | 79.983    | Vertical                 | Pass       |
|                                  |            | 1880      | -4.64          | 3.91             | 28.22             | 19.67                   | 92.683    | Vertical                 | Pass       |
|                                  |            | 1909.3    | -4.31          | 3.93             | 28.20             | 19.96                   | 99.083    | Vertical                 | Pass       |
| 3.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 1851.5    | -4.87          | 3.77             | 28.23             | 19.59                   | 90.991    | Vertical                 | Pass       |
|                                  |            | 1880      | -4.39          | 3.91             | 28.24             | 19.94                   | 98.628    | Vertical                 | Pass       |
|                                  |            | 1908.5    | -4.55          | 3.94             | 28.25             | 19.76                   | 94.624    | Vertical                 | Pass       |
| 5.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 1852.5    | -5.11          | 3.77             | 28.31             | 19.43                   | 87.700    | Vertical                 | Pass       |
|                                  |            | 1880      | -5.29          | 3.91             | 28.22             | 19.02                   | 79.799    | Vertical                 | Pass       |
|                                  |            | 1907.5    | -4.36          | 3.94             | 28.20             | 19.90                   | 97.724    | Vertical                 | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 1/#Mid     | 1855      | -5.23          | 3.79             | 28.33             | 19.31                   | 85.310    | Vertical                 | Pass       |
|                                  |            | 1880      | -4.50          | 3.95             | 28.22             | 19.77                   | 94.842    | Vertical                 | Pass       |
|                                  |            | 1905      | -4.61          | 3.97             | 28.19             | 19.61                   | 91.411    | Vertical                 | Pass       |
| 15.0MHz<br>Band 16               | 1/#Mid     | 1857.5    | -5.28          | 3.79             | 28.34             | 19.27                   | 84.528    | Vertical                 | Pass       |
|                                  |            | 1880      | -4.31          | 3.95             | 28.22             | 19.96                   | 99.083    | Vertical                 | Pass       |

|         |        |        |       |      |       |       |        |          |      |
|---------|--------|--------|-------|------|-------|-------|--------|----------|------|
| QAM     |        | 1902.5 | -4.81 | 3.97 | 28.18 | 19.40 | 87.096 | Vertical | Pass |
| 20.0MHz | 1/#Mid | 1860   | -5.42 | 3.81 | 28.35 | 19.12 | 81.658 | Vertical | Pass |
| Band 16 |        | 1880   | -5.03 | 3.96 | 28.22 | 19.23 | 83.753 | Vertical | Pass |
| QAM     |        | 1900   | -4.31 | 4.00 | 28.16 | 19.85 | 96.605 | Vertical | Pass |

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

### 8.3 LTE BAND 4

| Radiated Power (EIRP) for Band 4 |            |           |          |            |              |              |           |              |            |
|----------------------------------|------------|-----------|----------|------------|--------------|--------------|-----------|--------------|------------|
| Mode                             | RB/RB SIZE | Frequency | Result   |            |              |              |           |              | Conclusion |
|                                  |            |           | SG Level | Cable Loss | Antenna Gain | Max. EIRP    | Max. EIRP | Polarization |            |
|                                  |            |           | (dBm)    | (dBm)      | (dB)         | Average      | Average   | Of Max. ERP  |            |
|                                  |            |           |          |            |              | (dBm)        | (mW)      |              |            |
| 1.4MHz<br>Band<br>QPSK           | 1/#Mid     | 1710.7    | -3.11    | 3.12       | 27.58        | 21.35        | 136.458   | Horizontal   | Pass       |
|                                  |            | 1732.5    | -3.10    | 3.27       | 27.61        | 21.24        | 133.045   | Horizontal   | Pass       |
|                                  |            | 1754.3    | -3.08    | 3.29       | 27.63        | 21.26        | 133.660   | Horizontal   | Pass       |
| 3.0MHz<br>Band<br>QPSK           | 1/#Mid     | 1711.5    | -3.28    | 3.13       | 27.61        | 21.20        | 131.826   | Horizontal   | Pass       |
|                                  |            | 1732.5    | -3.20    | 3.27       | 27.61        | 21.14        | 130.017   | Horizontal   | Pass       |
|                                  |            | 1753.5    | -3.12    | 3.30       | 27.62        | 21.20        | 131.826   | Horizontal   | Pass       |
| 5.0MHz<br>Band<br>QPSK           | 1/#Mid     | 1712.5    | -3.05    | 3.13       | 27.63        | 21.45        | 139.637   | Horizontal   | Pass       |
|                                  |            | 1732.5    | -2.95    | 3.27       | 27.61        | 21.39        | 137.721   | Horizontal   | Pass       |
|                                  |            | 1752.5    | -2.83    | 3.30       | 27.60        | 21.47        | 140.281   | Horizontal   | Pass       |
| 10.0MHz<br>Band<br>QPSK          | 1/#Mid     | 1715      | -2.99    | 3.15       | 27.64        | 21.50        | 141.254   | Horizontal   | Pass       |
|                                  |            | 1732.5    | -2.76    | 3.31       | 27.61        | 21.54        | 142.561   | Horizontal   | Pass       |
|                                  |            | 1750      | -2.78    | 3.33       | 27.59        | 21.48        | 140.605   | Horizontal   | Pass       |
| 15.0MHz<br>Band<br>QPSK          | 1/#Mid     | 1717.5    | -3.00    | 3.15       | 27.65        | 21.50        | 141.254   | Horizontal   | Pass       |
|                                  |            | 1732.5    | -2.84    | 3.31       | 27.61        | 21.46        | 139.959   | Horizontal   | Pass       |
|                                  |            | 1747.5    | -2.78    | 3.33       | 27.57        | 21.46        | 139.959   | Horizontal   | Pass       |
| 20.0MHz<br>Band<br>QPSK          | 1/#Mid     | 1720      | -2.94    | 3.17       | 27.66        | <b>21.55</b> | 142.889   | Horizontal   | Pass       |
|                                  |            | 1732.5    | -2.77    | 3.32       | 27.61        | 21.52        | 141.906   | Horizontal   | Pass       |
|                                  |            | 1745      | -2.71    | 3.36       | 27.56        | 21.49        | 140.929   | Horizontal   | Pass       |
| 1.4MHz<br>Band<br>QPSK           | 1/#Mid     | 1710.7    | -3.61    | 3.12       | 27.58        | 20.85        | 121.619   | Vertical     | Pass       |
|                                  |            | 1732.5    | -3.62    | 3.27       | 27.61        | 20.72        | 118.032   | Vertical     | Pass       |
|                                  |            | 1754.3    | -3.58    | 3.29       | 27.63        | 20.76        | 119.124   | Vertical     | Pass       |
| 3.0MHz<br>Band<br>QPSK           | 1/#Mid     | 1711.5    | -4.07    | 3.13       | 27.61        | 20.41        | 109.901   | Vertical     | Pass       |
|                                  |            | 1732.5    | -4.29    | 3.27       | 27.61        | 20.05        | 101.158   | Vertical     | Pass       |
|                                  |            | 1753.5    | -4.06    | 3.30       | 27.62        | 20.26        | 106.170   | Vertical     | Pass       |
| 5.0MHz<br>Band<br>QPSK           | 1/#Mid     | 1712.5    | -3.81    | 3.13       | 27.63        | 20.69        | 117.220   | Vertical     | Pass       |
|                                  |            | 1732.5    | -4.00    | 3.27       | 27.61        | 20.34        | 108.143   | Vertical     | Pass       |
|                                  |            | 1752.5    | -3.97    | 3.30       | 27.60        | 20.33        | 107.895   | Vertical     | Pass       |
| 10.0MHz<br>Band<br>QPSK          | 1/#Mid     | 1715      | -3.55    | 3.15       | 27.64        | 20.94        | 124.165   | Vertical     | Pass       |
|                                  |            | 1732.5    | -3.47    | 3.31       | 27.61        | 20.83        | 121.060   | Vertical     | Pass       |
|                                  |            | 1750      | -3.30    | 3.33       | 27.59        | 20.96        | 124.738   | Vertical     | Pass       |



|         |        |        |       |      |       |       |         |          |      |
|---------|--------|--------|-------|------|-------|-------|---------|----------|------|
| 15.0MHz | 1/#Mid | 1717.5 | -4.04 | 3.15 | 27.65 | 20.46 | 111.173 | Vertical | Pass |
| Band    |        | 1732.5 | -4.10 | 3.31 | 27.61 | 20.20 | 104.713 | Vertical | Pass |
| QPSK    |        | 1747.5 | -4.05 | 3.33 | 27.57 | 20.19 | 104.472 | Vertical | Pass |
| 20.0MHz | 1/#Mid | 1720   | -3.79 | 3.17 | 27.66 | 20.70 | 117.490 | Vertical | Pass |
| Band    |        | 1732.5 | -3.93 | 3.32 | 27.61 | 20.36 | 108.643 | Vertical | Pass |
| QPSK    |        | 1745   | -3.41 | 3.36 | 27.56 | 20.79 | 119.950 | Vertical | Pass |

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

| Radiated Power (EIRP) for Band 4 |            |           |          |            |              |              |           |              |            |
|----------------------------------|------------|-----------|----------|------------|--------------|--------------|-----------|--------------|------------|
| Mode                             | RB/RB SIZE | Frequency | Result   |            |              |              |           |              | Conclusion |
|                                  |            |           | SG Level | Cable Loss | Antenna Gain | Max. EIRP    | Max. EIRP | Polarization |            |
|                                  |            |           | (dBm)    | (dBm)      | (dB)         | Average      | Average   | Of Max. ERP  |            |
|                                  |            |           |          |            |              | (dBm)        | (mW)      |              |            |
| 1.4MHz                           | 1/#Mid     | 1710.7    | -3.92    | 3.12       | 27.58        | 20.54        | 113.240   | Horizontal   | Pass       |
| Band 16                          |            | 1732.5    | -3.77    | 3.27       | 27.61        | 20.57        | 114.025   | Horizontal   | Pass       |
| QAM                              |            | 1754.3    | -3.77    | 3.29       | 27.63        | 20.57        | 114.025   | Horizontal   | Pass       |
| 3.0MHz                           | 1/#Mid     | 1711.5    | -3.86    | 3.13       | 27.61        | 20.62        | 115.345   | Horizontal   | Pass       |
| Band 16                          |            | 1732.5    | -3.99    | 3.27       | 27.61        | 20.35        | 108.393   | Horizontal   | Pass       |
| QAM                              |            | 1753.5    | -4.21    | 3.30       | 27.62        | 20.11        | 102.565   | Horizontal   | Pass       |
| 5.0MHz                           | 1/#Mid     | 1712.5    | -3.69    | 3.13       | 27.63        | 20.81        | 120.504   | Horizontal   | Pass       |
| Band 16                          |            | 1732.5    | -3.65    | 3.27       | 27.61        | 20.69        | 117.220   | Horizontal   | Pass       |
| QAM                              |            | 1752.5    | -3.34    | 3.30       | 27.60        | 20.96        | 124.738   | Horizontal   | Pass       |
| 10.0MHz                          | 1/#Mid     | 1715      | -3.76    | 3.15       | 27.64        | 20.73        | 118.304   | Horizontal   | Pass       |
| Band 16                          |            | 1732.5    | -3.95    | 3.31       | 27.61        | 20.35        | 108.393   | Horizontal   | Pass       |
| QAM                              |            | 1750      | -3.33    | 3.33       | 27.59        | 20.93        | 123.880   | Horizontal   | Pass       |
| 15.0MHz                          | 1/#Mid     | 1717.5    | -3.56    | 3.15       | 27.65        | 20.94        | 124.165   | Horizontal   | Pass       |
| Band 16                          |            | 1732.5    | -3.62    | 3.31       | 27.61        | 20.68        | 116.950   | Horizontal   | Pass       |
| QAM                              |            | 1747.5    | -3.64    | 3.33       | 27.57        | 20.60        | 114.815   | Horizontal   | Pass       |
| 20.0MHz                          | 1/#Mid     | 1720      | -3.51    | 3.17       | 27.66        | <b>20.98</b> | 125.314   | Horizontal   | Pass       |
| Band 16                          |            | 1732.5    | -3.52    | 3.32       | 27.61        | 20.77        | 119.399   | Horizontal   | Pass       |
| QAM                              |            | 1745      | -3.33    | 3.36       | 27.56        | 20.87        | 122.180   | Horizontal   | Pass       |
| 1.4MHz                           | 1/#Mid     | 1710.7    | -4.86    | 3.12       | 27.58        | 19.60        | 91.201    | Vertical     | Pass       |
| Band 16                          |            | 1732.5    | -5.13    | 3.27       | 27.61        | 19.21        | 83.368    | Vertical     | Pass       |
| QAM                              |            | 1754.3    | -4.54    | 3.29       | 27.63        | 19.80        | 95.499    | Vertical     | Pass       |
| 3.0MHz                           | 1/#Mid     | 1711.5    | -5.43    | 3.13       | 27.61        | 19.05        | 80.353    | Vertical     | Pass       |
| Band 16                          |            | 1732.5    | -4.80    | 3.27       | 27.61        | 19.54        | 89.950    | Vertical     | Pass       |
| QAM                              |            | 1753.5    | -4.48    | 3.30       | 27.62        | 19.84        | 96.383    | Vertical     | Pass       |
| 5.0MHz                           | 1/#Mid     | 1712.5    | -4.76    | 3.13       | 27.63        | 19.74        | 94.189    | Vertical     | Pass       |
| Band 16                          |            | 1732.5    | -5.01    | 3.27       | 27.61        | 19.33        | 85.704    | Vertical     | Pass       |
| QAM                              |            | 1752.5    | -4.61    | 3.30       | 27.60        | 19.69        | 93.111    | Vertical     | Pass       |
| 10.0MHz                          | 1/#Mid     | 1715      | -5.16    | 3.15       | 27.64        | 19.33        | 85.704    | Vertical     | Pass       |
| Band 16                          |            | 1732.5    | -4.82    | 3.31       | 27.61        | 19.48        | 88.716    | Vertical     | Pass       |
| QAM                              |            | 1750      | -4.38    | 3.33       | 27.59        | 19.88        | 97.275    | Vertical     | Pass       |
| 15.0MHz                          | 1/#Mid     | 1717.5    | -4.51    | 3.15       | 27.65        | 19.99        | 99.770    | Vertical     | Pass       |
| Band 16                          |            | 1732.5    | -5.10    | 3.31       | 27.61        | 19.20        | 83.176    | Vertical     | Pass       |

|         |        |        |       |      |       |       |        |          |      |
|---------|--------|--------|-------|------|-------|-------|--------|----------|------|
| QAM     |        | 1747.5 | -5.09 | 3.33 | 27.57 | 19.15 | 82.224 | Vertical | Pass |
| 20.0MHz | 1/#Mid | 1720   | -5.35 | 3.17 | 27.66 | 19.14 | 82.035 | Vertical | Pass |
| Band 16 |        | 1732.5 | -5.23 | 3.32 | 27.61 | 19.06 | 80.538 | Vertical | Pass |
| QAM     |        | 1745   | -4.48 | 3.36 | 27.56 | 19.72 | 93.756 | Vertical | Pass |

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

## 8.4 LTE BAND 5

| Radiated Power (ERP) for Band 5 |               |           |             |                        |                         |                        |              |              |                             |            |
|---------------------------------|---------------|-----------|-------------|------------------------|-------------------------|------------------------|--------------|--------------|-----------------------------|------------|
| Mode                            | RB/RB<br>SIZE | Frequency | Result      |                        |                         |                        |              |              |                             | Conclusion |
|                                 |               |           | SG<br>Level | Cable<br>Loss<br>(dBm) | Antenna<br>Gain<br>(dB) | Correction<br><br>(dB) | Max.<br>EIRP | Max.<br>EIRP | Polarization<br>Of Max. ERP |            |
|                                 |               |           | (dBm)       |                        |                         |                        | Average      | Average      |                             |            |
|                                 |               |           |             |                        |                         |                        | (dBm)        | (mW)         |                             |            |
| 1.4MHz<br>Band<br>QPSK          | 3/#Mid        | 824.7     | 6.54        | 2.01                   | 19.68                   | 2.15                   | 22.06        | 160.694      | Horizontal                  | Pass       |
|                                 |               | 836.5     | 6.42        | 2.01                   | 19.77                   | 2.15                   | 22.03        | 159.588      | Horizontal                  | Pass       |
|                                 |               | 848.3     | 6.22        | 2.02                   | 19.82                   | 2.15                   | 21.87        | 153.815      | Horizontal                  | Pass       |
| 3.0MHz<br>Band<br>QPSK          | 1/#Mid        | 825.5     | 6.31        | 2.01                   | 19.70                   | 2.15                   | 21.85        | 153.109      | Horizontal                  | Pass       |
|                                 |               | 836.5     | 6.21        | 2.01                   | 19.77                   | 2.15                   | 21.82        | 152.055      | Horizontal                  | Pass       |
|                                 |               | 847.5     | 6.08        | 2.02                   | 19.81                   | 2.15                   | 21.72        | 148.594      | Horizontal                  | Pass       |
| 5.0MHz<br>Band<br>QPSK          | 1/#Mid        | 826.5     | 6.59        | 2.01                   | 19.71                   | 2.15                   | 22.14        | 163.682      | Horizontal                  | Pass       |
|                                 |               | 836.5     | 6.47        | 2.01                   | 19.77                   | 2.15                   | 22.08        | 161.436      | Horizontal                  | Pass       |
|                                 |               | 846.5     | 6.31        | 2.02                   | 19.79                   | 2.15                   | 21.93        | 155.955      | Horizontal                  | Pass       |
| 10.0MHz<br>Band<br>QPSK         | 1/#Mid        | 829       | 6.61        | 2.01                   | 19.73                   | 2.15                   | <b>22.18</b> | 165.196      | Horizontal                  | Pass       |
|                                 |               | 836.5     | 6.56        | 2.01                   | 19.77                   | 2.15                   | 22.17        | 164.816      | Horizontal                  | Pass       |
|                                 |               | 844       | 6.46        | 2.02                   | 19.78                   | 2.15                   | 22.07        | 161.065      | Horizontal                  | Pass       |
| 1.4MHz<br>Band<br>QPSK          | 1/#Mid        | 824.7     | 5.40        | 2.01                   | 19.68                   | 2.15                   | 20.92        | 123.595      | Vertical                    | Pass       |
|                                 |               | 836.5     | 5.40        | 2.01                   | 19.77                   | 2.15                   | 21.01        | 126.183      | Vertical                    | Pass       |
|                                 |               | 848.3     | 5.28        | 2.02                   | 19.82                   | 2.15                   | 20.93        | 123.880      | Vertical                    | Pass       |
| 3.0MHz<br>Band<br>QPSK          | 1/#Mid        | 825.5     | 4.99        | 2.01                   | 19.70                   | 2.15                   | 20.53        | 112.980      | Vertical                    | Pass       |
|                                 |               | 836.5     | 5.66        | 2.01                   | 19.77                   | 2.15                   | 21.27        | 133.968      | Vertical                    | Pass       |
|                                 |               | 847.5     | 5.56        | 2.02                   | 19.81                   | 2.15                   | 21.20        | 131.826      | Vertical                    | Pass       |
| 5.0MHz<br>Band<br>QPSK          | 1/#Mid        | 826.5     | 5.74        | 2.01                   | 19.71                   | 2.15                   | 21.29        | 134.586      | Vertical                    | Pass       |
|                                 |               | 836.5     | 4.84        | 2.01                   | 19.77                   | 2.15                   | 20.45        | 110.917      | Vertical                    | Pass       |
|                                 |               | 846.5     | 4.75        | 2.02                   | 19.79                   | 2.15                   | 20.37        | 108.893      | Vertical                    | Pass       |
| 10.0MHz<br>Band<br>QPSK         | 1/#Mid        | 829       | 5.24        | 2.01                   | 19.73                   | 2.15                   | 20.81        | 120.504      | Vertical                    | Pass       |
|                                 |               | 836.5     | 4.94        | 2.01                   | 19.77                   | 2.15                   | 20.55        | 113.501      | Vertical                    | Pass       |
|                                 |               | 844       | 4.74        | 2.02                   | 19.78                   | 2.15                   | 20.35        | 108.393      | Vertical                    | Pass       |

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

| Radiated Power (ERP) for Band 5 |               |           |        |       |         |            |         |         |                                    |            |
|---------------------------------|---------------|-----------|--------|-------|---------|------------|---------|---------|------------------------------------|------------|
| Mode                            | RB/RB<br>SIZE | Frequency | Result |       |         |            |         |         |                                    | Conclusion |
|                                 |               |           | SG     | Cable | Antenna | Correction | Max.    | Max.    | Polarization<br><br>Of Max.<br>ERP |            |
|                                 |               |           | Level  | Loss  | Gain    |            | EIRP    | EIRP    |                                    |            |
|                                 |               |           | (dBm)  | (dBm) | (dB)    |            | Average | Average |                                    |            |
|                                 |               |           |        |       |         | (dB)       | (dBm)   | (mW)    |                                    |            |
| 1.4MHz<br>Band 16<br>QAM        | 3/#Mid        | 824.7     | 5.69   | 2.01  | 19.68   | 2.15       | 21.21   | 132.130 | Horizontal                         | Pass       |
|                                 |               | 836.5     | 5.62   | 2.01  | 19.77   | 2.15       | 21.23   | 132.739 | Horizontal                         | Pass       |
|                                 |               | 848.3     | 5.46   | 2.02  | 19.82   | 2.15       | 21.11   | 129.122 | Horizontal                         | Pass       |
| 3.0MHz<br>Band 16<br>QAM        | 1/#Mid        | 825.5     | 5.77   | 2.01  | 19.70   | 2.15       | 21.31   | 135.207 | Horizontal                         | Pass       |
|                                 |               | 836.5     | 5.48   | 2.01  | 19.77   | 2.15       | 21.09   | 128.529 | Horizontal                         | Pass       |
|                                 |               | 847.5     | 4.96   | 2.02  | 19.81   | 2.15       | 20.60   | 114.815 | Horizontal                         | Pass       |
| 5.0MHz<br>Band 16<br>QAM        | 1/#Mid        | 826.5     | 6.09   | 2.01  | 19.71   | 2.15       | 21.64   | 145.881 | Horizontal                         | Pass       |
|                                 |               | 836.5     | 5.86   | 2.01  | 19.77   | 2.15       | 21.47   | 140.281 | Horizontal                         | Pass       |
|                                 |               | 846.5     | 5.61   | 2.02  | 19.79   | 2.15       | 21.23   | 132.739 | Horizontal                         | Pass       |
| 10.0MHz<br>Band 16<br>QAM       | 1/#Mid        | 829       | 6.09   | 2.01  | 19.73   | 2.15       | 21.66   | 146.555 | Horizontal                         | Pass       |
|                                 |               | 836.5     | 5.81   | 2.01  | 19.77   | 2.15       | 21.42   | 138.676 | Horizontal                         | Pass       |
|                                 |               | 844       | 5.35   | 2.02  | 19.78   | 2.15       | 20.96   | 124.738 | Horizontal                         | Pass       |
| 1.4MHz<br>Band 16<br>QAM        | 1/#Mid        | 824.7     | 4.32   | 2.01  | 19.68   | 2.15       | 19.84   | 96.383  | Vertical                           | Pass       |
|                                 |               | 836.5     | 4.35   | 2.01  | 19.77   | 2.15       | 19.96   | 99.083  | Vertical                           | Pass       |
|                                 |               | 848.3     | 4.67   | 2.02  | 19.82   | 2.15       | 20.32   | 107.647 | Vertical                           | Pass       |
| 3.0MHz<br>Band 16<br>QAM        | 1/#Mid        | 825.5     | 5.05   | 2.01  | 19.70   | 2.15       | 20.59   | 114.551 | Vertical                           | Pass       |
|                                 |               | 836.5     | 4.65   | 2.01  | 19.77   | 2.15       | 20.26   | 106.170 | Vertical                           | Pass       |
|                                 |               | 847.5     | 5.69   | 2.02  | 19.81   | 2.15       | 21.33   | 135.831 | Vertical                           | Pass       |
| 5.0MHz<br>Band 16<br>QAM        | 1/#Mid        | 826.5     | 4.78   | 2.01  | 19.71   | 2.15       | 20.33   | 107.895 | Vertical                           | Pass       |
|                                 |               | 836.5     | 4.54   | 2.01  | 19.77   | 2.15       | 20.15   | 103.514 | Vertical                           | Pass       |
|                                 |               | 846.5     | 5.42   | 2.02  | 19.79   | 2.15       | 21.04   | 127.057 | Vertical                           | Pass       |
| 10.0MHz<br>Band 16<br>QAM       | 1/#Mid        | 829       | 5.49   | 2.01  | 19.73   | 2.15       | 21.06   | 127.644 | Vertical                           | Pass       |
|                                 |               | 836.5     | 4.81   | 2.01  | 19.77   | 2.15       | 20.42   | 110.154 | Vertical                           | Pass       |
|                                 |               | 844       | 5.54   | 2.02  | 19.78   | 2.15       | 21.15   | 130.317 | Vertical                           | Pass       |

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

## 8.5 LTE BAND 7

| Radiated Power (EIRP) for Band 7 |               |           |        |       |         |         |         |              |            |
|----------------------------------|---------------|-----------|--------|-------|---------|---------|---------|--------------|------------|
| Mode                             | RB/RB<br>SIZE | Frequency | Result |       |         |         |         |              | Conclusion |
|                                  |               |           | SG     | Cable | Antenna | Max.    | Max.    | Polarization |            |
|                                  |               |           | Level  | Loss  | Gain    | EIRP    | EIRP    | Of Max. ERP  |            |
|                                  |               |           | (dBm)  | (dBm) | (dB)    | Average | Average |              |            |
|                                  |               |           |        |       |         | (dBm)   | (mW)    |              |            |
| 5.0MHz<br>Band<br>QPSK           | 1/#Mid        | 2502.5    | -1.93  | 4.54  | 27.75   | 21.28   | 134.276 | Horizontal   | Pass       |
|                                  |               | 2535      | -1.76  | 4.69  | 27.72   | 21.27   | 133.968 | Horizontal   | Pass       |
|                                  |               | 2567.5    | -1.69  | 4.71  | 27.71   | 21.31   | 135.207 | Horizontal   | Pass       |
| 10.0MHz<br>Band<br>QPSK          | 1/#Mid        | 2505      | -1.86  | 4.55  | 27.76   | 21.35   | 136.458 | Horizontal   | Pass       |
|                                  |               | 2535      | -1.67  | 4.69  | 27.72   | 21.36   | 136.773 | Horizontal   | Pass       |
|                                  |               | 2565      | -1.59  | 4.72  | 27.70   | 21.39   | 137.721 | Horizontal   | Pass       |
| 15.0MHz<br>Band<br>QPSK          | 1/#Mid        | 2507.5    | -1.87  | 4.55  | 27.77   | 21.35   | 136.458 | Horizontal   | Pass       |
|                                  |               | 2535      | -1.73  | 4.69  | 27.72   | 21.30   | 134.896 | Horizontal   | Pass       |
|                                  |               | 2562.5    | -1.63  | 4.72  | 27.69   | 21.34   | 136.144 | Horizontal   | Pass       |
| 20.0MHz<br>Band<br>QPSK          | 1/#Mid        | 2510      | -1.81  | 4.57  | 27.78   | 21.40   | 138.038 | Horizontal   | Pass       |
|                                  |               | 2535      | -1.63  | 4.73  | 27.72   | 21.36   | 136.773 | Horizontal   | Pass       |
|                                  |               | 2560      | -1.59  | 4.75  | 27.68   | 21.34   | 136.144 | Horizontal   | Pass       |
| 5.0MHz<br>Band<br>QPSK           | 1/#Mid        | 2502.5    | -3.75  | 4.54  | 27.75   | 19.46   | 88.308  | Vertical     | Pass       |
|                                  |               | 2535      | -3.16  | 4.69  | 27.72   | 19.87   | 97.051  | Vertical     | Pass       |
|                                  |               | 2567.5    | -3.00  | 4.71  | 27.71   | 20.00   | 100.000 | Vertical     | Pass       |
| 10.0MHz<br>Band<br>QPSK          | 1/#Mid        | 2505      | -3.72  | 4.55  | 27.76   | 19.49   | 88.920  | Vertical     | Pass       |
|                                  |               | 2535      | -3.09  | 4.69  | 27.72   | 19.94   | 98.628  | Vertical     | Pass       |
|                                  |               | 2565      | -3.38  | 4.72  | 27.70   | 19.60   | 91.201  | Vertical     | Pass       |
| 15.0MHz<br>Band<br>QPSK          | 1/#Mid        | 2507.5    | -3.48  | 4.55  | 27.77   | 19.74   | 94.189  | Vertical     | Pass       |
|                                  |               | 2535      | -2.73  | 4.69  | 27.72   | 20.30   | 107.152 | Vertical     | Pass       |
|                                  |               | 2562.5    | -3.26  | 4.72  | 27.69   | 19.71   | 93.541  | Vertical     | Pass       |
| 20.0MHz<br>Band<br>QPSK          | 1/#Mid        | 2510      | -3.24  | 4.57  | 27.78   | 19.97   | 99.312  | Vertical     | Pass       |
|                                  |               | 2535      | -3.52  | 4.73  | 27.72   | 19.47   | 88.512  | Vertical     | Pass       |
|                                  |               | 2560      | -3.16  | 4.75  | 27.68   | 19.77   | 94.842  | Vertical     | Pass       |

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

| Radiated Power (EIRP) for Band 7 |            |           |          |            |              |              |           |                          |            |
|----------------------------------|------------|-----------|----------|------------|--------------|--------------|-----------|--------------------------|------------|
| Mode                             | RB/RB SIZE | Frequency | Result   |            |              |              |           |                          | Conclusion |
|                                  |            |           | SG Level | Cable Loss | Antenna Gain | Max. EIRP    | Max. EIRP | Polarization Of Max. ERP |            |
|                                  |            |           | (dBm)    | (dBm)      | (dB)         | Average      | Average   |                          |            |
|                                  |            |           |          |            |              | (dBm)        | (mW)      |                          |            |
| 5.0MHz                           | 1/#Mid     | 2502.5    | -2.62    | 4.54       | 27.75        | 20.59        | 114.551   | Horizontal               | Pass       |
| Band 16                          |            | 2535      | -2.31    | 4.69       | 27.72        | 20.72        | 118.032   | Horizontal               | Pass       |
| QAM                              |            | 2567.5    | -2.39    | 4.71       | 27.71        | 20.61        | 115.080   | Horizontal               | Pass       |
| 10.0MHz                          | 1/#Mid     | 2505      | -2.51    | 4.55       | 27.76        | 20.70        | 117.490   | Horizontal               | Pass       |
| Band 16                          |            | 2535      | -2.52    | 4.69       | 27.72        | 20.51        | 112.460   | Horizontal               | Pass       |
| QAM                              |            | 2565      | -2.79    | 4.72       | 27.70        | 20.19        | 104.472   | Horizontal               | Pass       |
| 15.0MHz                          | 1/#Mid     | 2507.5    | -2.69    | 4.55       | 27.77        | 20.53        | 112.980   | Horizontal               | Pass       |
| Band 16                          |            | 2535      | -2.66    | 4.69       | 27.72        | 20.37        | 108.893   | Horizontal               | Pass       |
| QAM                              |            | 2562.5    | -2.27    | 4.72       | 27.69        | 20.70        | 117.490   | Horizontal               | Pass       |
| 20.0MHz                          | 1/#Mid     | 2510      | -2.57    | 4.57       | 27.78        | 20.64        | 115.878   | Horizontal               | Pass       |
| Band 16                          |            | 2535      | -2.24    | 4.73       | 27.72        | <b>20.75</b> | 118.850   | Horizontal               | Pass       |
| QAM                              |            | 2560      | -2.34    | 4.75       | 27.68        | 20.59        | 114.551   | Horizontal               | Pass       |
| 5.0MHz                           | 1/#Mid     | 2502.5    | -3.66    | 4.54       | 27.75        | 19.55        | 90.157    | Vertical                 | Pass       |
| Band 16                          |            | 2535      | -3.74    | 4.69       | 27.72        | 19.29        | 84.918    | Vertical                 | Pass       |
| QAM                              |            | 2567.5    | -4.12    | 4.71       | 27.71        | 18.88        | 77.268    | Vertical                 | Pass       |
| 10.0MHz                          | 1/#Mid     | 2505      | -3.04    | 4.55       | 27.76        | 20.17        | 103.992   | Vertical                 | Pass       |
| Band 16                          |            | 2535      | -4.54    | 4.69       | 27.72        | 18.49        | 70.632    | Vertical                 | Pass       |
| QAM                              |            | 2565      | -3.35    | 4.72       | 27.70        | 19.63        | 91.833    | Vertical                 | Pass       |
| 15.0MHz                          | 1/#Mid     | 2507.5    | -3.40    | 4.55       | 27.77        | 19.82        | 95.940    | Vertical                 | Pass       |
| Band 16                          |            | 2535      | -3.92    | 4.69       | 27.72        | 19.11        | 81.470    | Vertical                 | Pass       |
| QAM                              |            | 2562.5    | -4.09    | 4.72       | 27.69        | 18.88        | 77.268    | Vertical                 | Pass       |
| 20.0MHz                          | 1/#Mid     | 2510      | -4.11    | 4.57       | 27.78        | 19.10        | 81.283    | Vertical                 | Pass       |
| Band 16                          |            | 2535      | -3.71    | 4.73       | 27.72        | 19.28        | 84.723    | Vertical                 | Pass       |
| QAM                              |            | 2560      | -3.39    | 4.75       | 27.68        | 19.54        | 89.950    | Vertical                 | Pass       |

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

## 8.6 LTE BAND 12

| Radiated Power (ERP) for Band 12 |               |           |             |                        |                         |                        |              |              |                                |            |
|----------------------------------|---------------|-----------|-------------|------------------------|-------------------------|------------------------|--------------|--------------|--------------------------------|------------|
| Mode                             | RB/RB<br>SIZE | Frequency | Result      |                        |                         |                        |              |              |                                | Conclusion |
|                                  |               |           | SG<br>Level | Cable<br>Loss<br>(dBm) | Antenna<br>Gain<br>(dB) | Correction<br><br>(dB) | Max.<br>EIRP | Max.<br>EIRP | Polarization<br>Of Max.<br>ERP |            |
|                                  |               |           | (dBm)       |                        |                         |                        | Average      | Average      |                                |            |
|                                  |               |           |             |                        |                         |                        | (dBm)        | (dBm)        |                                |            |
| 1.4MHz<br>Band<br>QPSK           | 1/#Mid        | 699.7     | 6.91        | 1.91                   | 19.21                   | 2.15                   | 22.06        | 160.694      | Vertical                       | Pass       |
|                                  |               | 707.5     | 6.83        | 1.91                   | 19.26                   | 2.15                   | 22.03        | 159.588      | Vertical                       | Pass       |
|                                  |               | 715.3     | 6.61        | 1.93                   | 19.34                   | 2.15                   | 21.87        | 153.815      | Vertical                       | Pass       |
| 3.0MHz<br>Band<br>QPSK           | 1/#Mid        | 700.5     | 6.70        | 1.91                   | 19.21                   | 2.15                   | 21.85        | 153.109      | Vertical                       | Pass       |
|                                  |               | 707.5     | 6.62        | 1.91                   | 19.26                   | 2.15                   | 21.82        | 152.055      | Vertical                       | Pass       |
|                                  |               | 714.5     | 6.46        | 1.93                   | 19.34                   | 2.15                   | 21.72        | 148.594      | Vertical                       | Pass       |
| 5.0MHz<br>Band<br>QPSK           | 1/#Mid        | 701.5     | 6.97        | 1.91                   | 19.23                   | 2.15                   | 22.14        | 163.682      | Vertical                       | Pass       |
|                                  |               | 707.5     | 6.88        | 1.91                   | 19.26                   | 2.15                   | 22.08        | 161.436      | Vertical                       | Pass       |
|                                  |               | 713.5     | 6.67        | 1.92                   | 19.33                   | 2.15                   | 21.93        | 155.955      | Vertical                       | Pass       |
| 10.0MHz<br>Band<br>QPSK          | 1/#Mid        | 704       | 6.99        | 1.91                   | 19.25                   | 2.15                   | 22.18        | 165.196      | Vertical                       | Pass       |
|                                  |               | 707.5     | 6.97        | 1.91                   | 19.26                   | 2.15                   | 22.17        | 164.816      | Vertical                       | Pass       |
|                                  |               | 711       | 6.82        | 1.92                   | 19.32                   | 2.15                   | 22.07        | 161.065      | Vertical                       | Pass       |
| 1.4MHz<br>Band<br>QPSK           | 1/#Mid        | 699.7     | 5.52        | 1.91                   | 19.21                   | 2.15                   | 20.67        | 116.681      | Horizontal                     | Pass       |
|                                  |               | 707.5     | 5.51        | 1.91                   | 19.26                   | 2.15                   | 20.71        | 117.761      | Horizontal                     | Pass       |
|                                  |               | 715.3     | 5.34        | 1.93                   | 19.34                   | 2.15                   | 20.60        | 114.815      | Horizontal                     | Pass       |
| 3.0MHz<br>Band<br>QPSK           | 1/#Mid        | 700.5     | 5.88        | 1.91                   | 19.21                   | 2.15                   | 21.03        | 126.765      | Horizontal                     | Pass       |
|                                  |               | 707.5     | 5.16        | 1.91                   | 19.26                   | 2.15                   | 20.36        | 108.643      | Horizontal                     | Pass       |
|                                  |               | 714.5     | 5.72        | 1.93                   | 19.34                   | 2.15                   | 20.98        | 125.314      | Horizontal                     | Pass       |
| 5.0MHz<br>Band<br>QPSK           | 1/#Mid        | 701.5     | 5.60        | 1.91                   | 19.23                   | 2.15                   | 20.77        | 119.399      | Horizontal                     | Pass       |
|                                  |               | 707.5     | 5.87        | 1.91                   | 19.26                   | 2.15                   | 21.07        | 127.938      | Horizontal                     | Pass       |
|                                  |               | 713.5     | 5.23        | 1.92                   | 19.33                   | 2.15                   | 20.49        | 111.944      | Horizontal                     | Pass       |
| 10.0MHz<br>Band<br>QPSK          | 1/#Mid        | 704       | 5.25        | 1.91                   | 19.25                   | 2.15                   | 20.44        | 110.662      | Horizontal                     | Pass       |
|                                  |               | 707.5     | 5.69        | 1.91                   | 19.26                   | 2.15                   | 20.89        | 122.744      | Horizontal                     | Pass       |
|                                  |               | 711       | 5.98        | 1.92                   | 19.32                   | 2.15                   | 21.23        | 132.739      | Horizontal                     | Pass       |



| Radiated Power (ERP) for Band 12 |            |           |          |            |              |            |              |           |              |            |
|----------------------------------|------------|-----------|----------|------------|--------------|------------|--------------|-----------|--------------|------------|
| Mode                             | RB/RB SIZE | Frequency | Result   |            |              |            |              |           |              | Conclusion |
|                                  |            |           | SG Level | Cable Loss | Antenna Gain | Correction | Max. EIRP    | Max. EIRP | Polarization |            |
|                                  |            |           | (dBm)    | (dBm)      | (dB)         | (dB)       | Average      | Average   | Of Max. ERP  |            |
|                                  |            |           |          |            |              |            | (dBm)        | (mW)      |              |            |
| 1.4MHz<br>Band 16<br>QAM         | 1/#Mid     | 699.7     | 6.91     | 1.91       | 19.21        | 2.15       | 22.93        | 196.336   | Vertical     | Pass       |
|                                  |            | 707.5     | 6.83     | 1.91       | 19.26        | 2.15       | 22.90        | 194.984   | Vertical     | Pass       |
|                                  |            | 715.3     | 6.61     | 1.93       | 19.34        | 2.15       | 22.74        | 187.932   | Vertical     | Pass       |
| 3.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 700.5     | 6.70     | 1.91       | 19.21        | 2.15       | 22.72        | 187.068   | Vertical     | Pass       |
|                                  |            | 707.5     | 6.62     | 1.91       | 19.26        | 2.15       | 22.69        | 185.780   | Vertical     | Pass       |
|                                  |            | 714.5     | 6.46     | 1.93       | 19.34        | 2.15       | 22.59        | 181.552   | Vertical     | Pass       |
| 5.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 701.5     | 6.97     | 1.91       | 19.23        | 2.15       | 23.01        | 199.986   | Vertical     | Pass       |
|                                  |            | 707.5     | 6.88     | 1.91       | 19.26        | 2.15       | 22.95        | 197.242   | Vertical     | Pass       |
|                                  |            | 713.5     | 6.67     | 1.92       | 19.33        | 2.15       | 22.80        | 190.546   | Vertical     | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 1/#Mid     | 704       | 6.99     | 1.91       | 19.25        | 2.15       | <b>23.05</b> | 201.837   | Vertical     | Pass       |
|                                  |            | 707.5     | 6.97     | 1.91       | 19.26        | 2.15       | 23.04        | 201.372   | Vertical     | Pass       |
|                                  |            | 711       | 6.82     | 1.92       | 19.32        | 2.15       | 22.94        | 196.789   | Vertical     | Pass       |
| 1.4MHz<br>Band 16<br>QAM         | 1/#Mid     | 699.7     | 6.15     | 1.91       | 19.21        | 2.15       | 21.94        | 156.315   | Horizontal   | Pass       |
|                                  |            | 707.5     | 5.17     | 1.91       | 19.26        | 2.15       | 22.08        | 161.436   | Horizontal   | Pass       |
|                                  |            | 715.3     | 5.93     | 1.93       | 19.34        | 2.15       | 22.15        | 164.059   | Horizontal   | Pass       |
| 3.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 700.5     | 5.54     | 1.91       | 19.21        | 2.15       | 21.32        | 135.519   | Horizontal   | Pass       |
|                                  |            | 707.5     | 6.10     | 1.91       | 19.26        | 2.15       | 22.10        | 162.181   | Horizontal   | Pass       |
|                                  |            | 714.5     | 5.40     | 1.93       | 19.34        | 2.15       | 21.93        | 155.955   | Horizontal   | Pass       |
| 5.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 701.5     | 5.76     | 1.91       | 19.23        | 2.15       | 22.15        | 164.059   | Horizontal   | Pass       |
|                                  |            | 707.5     | 5.83     | 1.91       | 19.26        | 2.15       | 22.18        | 165.196   | Horizontal   | Pass       |
|                                  |            | 713.5     | 5.65     | 1.92       | 19.33        | 2.15       | 21.51        | 141.579   | Horizontal   | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 1/#Mid     | 704       | 5.61     | 1.91       | 19.25        | 2.15       | 21.71        | 148.252   | Horizontal   | Pass       |
|                                  |            | 707.5     | 5.57     | 1.91       | 19.26        | 2.15       | 21.56        | 143.219   | Horizontal   | Pass       |
|                                  |            | 711       | 5.47     | 1.92       | 19.32        | 2.15       | 22.18        | 165.196   | Horizontal   | Pass       |

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

## 8.7 LTE BAND 17

| Radiated Power (ERP) for Band 17 |               |           |             |               |                 |            |              |              |                             |            |
|----------------------------------|---------------|-----------|-------------|---------------|-----------------|------------|--------------|--------------|-----------------------------|------------|
| Mode                             | RB/RB<br>SIZE | Frequency | Result      |               |                 |            |              |              |                             | Conclusion |
|                                  |               |           | SG<br>Level | Cable<br>Loss | Antenna<br>Gain | Correction | Max.<br>EIRP | Max.<br>EIRP | Polarization<br>Of Max. ERP |            |
|                                  |               |           | (dBm)       | (dBm)         | (dB)            |            | Average      | Average      |                             |            |
|                                  |               |           |             |               |                 |            | (dBm)        | (mW)         |                             |            |
| 5.0MHz<br>Band<br>QPSK           | 1/#Mid        | 706.5     | 7.37        | 1.91          | 19.23           | 2.15       | 22.54        | 179.473      | Vertical                    | Pass       |
|                                  |               | 710       | 7.23        | 1.91          | 19.26           | 2.15       | 22.43        | 174.985      | Vertical                    | Pass       |
|                                  |               | 713.5     | 7.13        | 1.92          | 19.33           | 2.15       | 22.39        | 173.380      | Vertical                    | Pass       |
| 10.0MHz<br>Band<br>QPSK          | 1/#Mid        | 709       | 7.38        | 1.91          | 19.25           | 2.15       | 22.57        | 180.717      | Vertical                    | Pass       |
|                                  |               | 710       | 7.33        | 1.91          | 19.26           | 2.15       | 22.53        | 179.061      | Vertical                    | Pass       |
|                                  |               | 711       | 7.29        | 1.92          | 19.32           | 2.15       | 22.54        | 179.473      | Vertical                    | Pass       |
| 5.0MHz<br>Band<br>QPSK           | 1/#Mid        | 706.5     | 5.55        | 1.91          | 19.23           | 2.15       | 20.72        | 118.032      | Horizontal                  | Pass       |
|                                  |               | 710       | 5.30        | 1.91          | 19.26           | 2.15       | 20.50        | 112.202      | Horizontal                  | Pass       |
|                                  |               | 713.5     | 6.95        | 1.92          | 19.33           | 2.15       | 22.21        | 166.341      | Horizontal                  | Pass       |
| 10.0MHz<br>Band<br>QPSK          | 1/#Mid        | 709       | 6.26        | 1.91          | 19.25           | 2.15       | 21.45        | 139.637      | Horizontal                  | Pass       |
|                                  |               | 710       | 6.55        | 1.91          | 19.26           | 2.15       | 21.75        | 149.624      | Horizontal                  | Pass       |
|                                  |               | 711       | 5.43        | 1.92          | 19.32           | 2.15       | 20.68        | 116.950      | Horizontal                  | Pass       |

| Radiated Power (ERP) for Band 17 |               |           |             |                        |                         |                        |           |              |                                |            |
|----------------------------------|---------------|-----------|-------------|------------------------|-------------------------|------------------------|-----------|--------------|--------------------------------|------------|
| Mode                             | RB/RB<br>SIZE | Frequency | Result      |                        |                         |                        |           |              |                                | Conclusion |
|                                  |               |           | SG<br>Level | Cable<br>Loss<br>(dBm) | Antenna<br>Gain<br>(dB) | Correction<br><br>(dB) | Max. EIRP | Max.<br>EIRP | Polarization<br>Of Max.<br>ERP |            |
|                                  |               |           | (dBm)       |                        |                         |                        | Average   | Average      |                                |            |
|                                  |               |           |             |                        |                         |                        | (dBm)     | (mW)         |                                |            |
| 5.0MHz<br>Band 16<br>QAM         | 1/#Mid        | 706.5     | 6.72        | 1.91                   | 19.23                   | 2.15                   | 21.89     | 154.525      | Vertical                       | Pass       |
|                                  |               | 710       | 6.63        | 1.91                   | 19.26                   | 2.15                   | 21.83     | 152.405      | Vertical                       | Pass       |
|                                  |               | 713.5     | 6.43        | 1.92                   | 19.33                   | 2.15                   | 21.69     | 147.571      | Vertical                       | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 1/#Mid        | 709       | 6.26        | 1.91                   | 19.25                   | 2.15                   | 21.45     | 139.637      | Vertical                       | Pass       |
|                                  |               | 710       | 6.79        | 1.91                   | 19.26                   | 2.15                   | 21.99     | 158.125      | Vertical                       | Pass       |
|                                  |               | 711       | 6.52        | 1.92                   | 19.32                   | 2.15                   | 21.77     | 150.314      | Vertical                       | Pass       |
| 5.0MHz<br>Band 16<br>QAM         | 1/#Mid        | 706.5     | 6.09        | 1.91                   | 19.23                   | 2.15                   | 21.26     | 133.660      | Horizontal                     | Pass       |
|                                  |               | 710       | 5.46        | 1.91                   | 19.26                   | 2.15                   | 20.66     | 116.413      | Horizontal                     | Pass       |
|                                  |               | 713.5     | 5.20        | 1.92                   | 19.33                   | 2.15                   | 20.46     | 111.173      | Horizontal                     | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 1/#Mid        | 709       | 5.69        | 1.91                   | 19.25                   | 2.15                   | 20.88     | 122.462      | Horizontal                     | Pass       |
|                                  |               | 710       | 5.42        | 1.91                   | 19.26                   | 2.15                   | 20.62     | 115.345      | Horizontal                     | Pass       |
|                                  |               | 711       | 5.68        | 1.92                   | 19.32                   | 2.15                   | 20.93     | 123.880      | Horizontal                     | Pass       |

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

## 8.8 LTE BAND 41

| Radiated Power (EIRP) for Band 41 |               |           |             |                        |                         |              |              |                                |            |
|-----------------------------------|---------------|-----------|-------------|------------------------|-------------------------|--------------|--------------|--------------------------------|------------|
| Mode                              | RB/RB<br>SIZE | Frequency | Result      |                        |                         |              |              |                                | Conclusion |
|                                   |               |           | SG<br>Level | Cable<br>Loss<br>(dBm) | Antenna<br>Gain<br>(dB) | Max.<br>EIRP | Max.<br>EIRP | Polarization<br>Of Max.<br>ERP |            |
|                                   |               |           |             |                        |                         | Average      | Average      |                                |            |
|                                   |               |           |             |                        |                         | (dBm)        | (mW)         |                                |            |
| 5.0MHz<br>Band<br>QPSK            | 1/#Mid        | 2498.5    | -1.14       | 4.54                   | 27.75                   | 22.07        | 161.065      | Horizontal                     | Pass       |
|                                   |               | 2593      | -0.99       | 4.69                   | 27.72                   | 22.04        | 159.956      | Horizontal                     | Pass       |
|                                   |               | 2687.5    | -0.87       | 4.71                   | 27.71                   | 22.13        | 163.305      | Horizontal                     | Pass       |
| 10.0MHz<br>Band<br>QPSK           | 1/#Mid        | 2501      | -1.22       | 4.55                   | 27.76                   | 21.99        | 158.125      | Horizontal                     | Pass       |
|                                   |               | 2593      | -1.08       | 4.69                   | 27.72                   | 21.95        | 156.675      | Horizontal                     | Pass       |
|                                   |               | 2685      | -1.07       | 4.72                   | 27.70                   | 21.91        | 155.239      | Horizontal                     | Pass       |
| 15.0MHz<br>Band<br>QPSK           | 1/#Mid        | 2503.5    | -1.05       | 4.55                   | 27.77                   | 22.17        | 164.816      | Horizontal                     | Pass       |
|                                   |               | 2593      | -0.77       | 4.69                   | 27.72                   | 22.26        | 168.267      | Horizontal                     | Pass       |
|                                   |               | 2682.5    | -0.82       | 4.72                   | 27.69                   | 22.15        | 164.059      | Horizontal                     | Pass       |
| 20.0MHz<br>Band<br>QPSK           | 1/#Mid        | 2506      | -0.93       | 4.57                   | 27.78                   | 22.28        | 169.044      | Horizontal                     | Pass       |
|                                   |               | 2593      | -0.71       | 4.73                   | 27.72                   | 22.28        | 169.044      | Horizontal                     | Pass       |
|                                   |               | 2680      | -0.71       | 4.75                   | 27.68                   | 22.22        | 166.725      | Horizontal                     | Pass       |
| 5.0MHz<br>Band<br>QPSK            | 1/#Mid        | 2498.5    | -0.94       | 4.54                   | 27.75                   | 22.27        | 168.655      | Vertical                       | Pass       |
|                                   |               | 2593      | -0.85       | 4.69                   | 27.72                   | 22.18        | 165.196      | Vertical                       | Pass       |
|                                   |               | 2687.5    | -0.83       | 4.71                   | 27.71                   | 22.17        | 164.816      | Vertical                       | Pass       |
| 10.0MHz<br>Band<br>QPSK           | 1/#Mid        | 2501      | -0.92       | 4.55                   | 27.76                   | 21.11        | 129.122      | Vertical                       | Pass       |
|                                   |               | 2593      | -0.76       | 4.69                   | 27.72                   | 22.27        | 168.655      | Vertical                       | Pass       |
|                                   |               | 2685      | -0.83       | 4.72                   | 27.70                   | 22.15        | 164.059      | Vertical                       | Pass       |
| 15.0MHz<br>Band<br>QPSK           | 1/#Mid        | 2503.5    | -2.04       | 4.55                   | 27.77                   | 21.18        | 131.220      | Vertical                       | Pass       |
|                                   |               | 2593      | -2.06       | 4.69                   | 27.72                   | 20.97        | 125.026      | Vertical                       | Pass       |
|                                   |               | 2682.5    | -1.65       | 4.72                   | 27.69                   | 21.32        | 135.519      | Vertical                       | Pass       |
| 20.0MHz<br>Band<br>QPSK           | 1/#Mid        | 2506      | -1.91       | 4.57                   | 27.78                   | 21.30        | 134.896      | Vertical                       | Pass       |
|                                   |               | 2593      | -1.79       | 4.73                   | 27.72                   | 21.20        | 131.826      | Vertical                       | Pass       |
|                                   |               | 2680      | -1.82       | 4.75                   | 27.68                   | 22.29        | 169.434      | Vertical                       | Pass       |

| Radiated Power (EIRP) for Band 41 |               |           |             |                        |                         |              |              |                                |            |
|-----------------------------------|---------------|-----------|-------------|------------------------|-------------------------|--------------|--------------|--------------------------------|------------|
| Mode                              | RB/RB<br>SIZE | Frequency | Result      |                        |                         |              |              |                                | Conclusion |
|                                   |               |           | SG<br>Level | Cable<br>Loss<br>(dBm) | Antenna<br>Gain<br>(dB) | Max.<br>EIRP | Max.<br>EIRP | Polarization<br>Of Max.<br>ERP |            |
|                                   |               |           |             |                        |                         | Average      | Average      |                                |            |
|                                   |               |           |             |                        |                         | (dBm)        | (mW)         |                                |            |
| 5.0MHz<br>Band 16<br>QAM          | 1/#Mid        | 2498.5    | -1.14       | 4.54                   | 27.75                   | 22.63        | 183.231      | Horizontal                     | Pass       |
|                                   |               | 2593      | -0.99       | 4.69                   | 27.72                   | 22.60        | 181.970      | Horizontal                     | Pass       |
|                                   |               | 2687.5    | -0.87       | 4.71                   | 27.71                   | 22.69        | 185.780      | Horizontal                     | Pass       |
| 10.0MHz<br>Band 16<br>QAM         | 1/#Mid        | 2501      | -1.22       | 4.55                   | 27.76                   | 22.55        | 179.887      | Horizontal                     | Pass       |
|                                   |               | 2593      | -1.08       | 4.69                   | 27.72                   | 22.51        | 178.238      | Horizontal                     | Pass       |
|                                   |               | 2685      | -1.07       | 4.72                   | 27.70                   | 22.47        | 176.604      | Horizontal                     | Pass       |
| 15.0MHz<br>Band 16<br>QAM         | 1/#Mid        | 2503.5    | -1.05       | 4.55                   | 27.77                   | 22.73        | 187.499      | Horizontal                     | Pass       |
|                                   |               | 2593      | -0.77       | 4.69                   | 27.72                   | 22.82        | 191.426      | Horizontal                     | Pass       |
|                                   |               | 2682.5    | -0.82       | 4.72                   | 27.69                   | 22.71        | 186.638      | Horizontal                     | Pass       |
| 20.0MHz<br>Band 16<br>QAM         | 1/#Mid        | 2506      | -0.93       | 4.57                   | 27.78                   | 22.84        | 192.309      | Horizontal                     | Pass       |
|                                   |               | 2593      | -0.71       | 4.73                   | 27.72                   | 22.84        | 192.309      | Horizontal                     | Pass       |
|                                   |               | 2680      | -0.71       | 4.75                   | 27.68                   | 22.78        | 189.671      | Horizontal                     | Pass       |
| 5.0MHz<br>Band 16<br>QAM          | 1/#Mid        | 2498.5    | -0.94       | 4.54                   | 27.75                   | 22.83        | 191.867      | Vertical                       | Pass       |
|                                   |               | 2593      | -0.85       | 4.69                   | 27.72                   | 22.74        | 187.932      | Vertical                       | Pass       |
|                                   |               | 2687.5    | -0.83       | 4.71                   | 27.71                   | 22.73        | 187.499      | Vertical                       | Pass       |
| 10.0MHz<br>Band 16<br>QAM         | 1/#Mid        | 2501      | -0.92       | 4.55                   | 27.76                   | 22.85        | 192.752      | Vertical                       | Pass       |
|                                   |               | 2593      | -0.76       | 4.69                   | 27.72                   | 22.83        | 191.867      | Vertical                       | Pass       |
|                                   |               | 2685      | -0.83       | 4.72                   | 27.70                   | 22.71        | 186.638      | Vertical                       | Pass       |
| 15.0MHz<br>Band 16<br>QAM         | 1/#Mid        | 2503.5    | -2.30       | 4.55                   | 27.77                   | 21.75        | 149.624      | Vertical                       | Pass       |
|                                   |               | 2593      | -2.20       | 4.69                   | 27.72                   | 22.05        | 160.325      | Vertical                       | Pass       |
|                                   |               | 2682.5    | -2.23       | 4.72                   | 27.69                   | 21.49        | 140.929      | Vertical                       | Pass       |
| 20.0MHz<br>Band 16<br>QAM         | 1/#Mid        | 2506      | -2.48       | 4.57                   | 27.78                   | 21.33        | 135.831      | Vertical                       | Pass       |
|                                   |               | 2593      | -1.77       | 4.73                   | 27.72                   | 21.33        | 135.831      | Vertical                       | Pass       |
|                                   |               | 2680      | -1.68       | 4.75                   | 27.68                   | 22.92        | 195.884      | Vertical                       | Pass       |

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

## 8.9 LTE BAND 66

| Radiated Power (EIRP) for Band 66 |            |           |                |                  |                   |               |           |                          |            |
|-----------------------------------|------------|-----------|----------------|------------------|-------------------|---------------|-----------|--------------------------|------------|
| Mode                              | RB/RB SIZE | Frequency | Result         |                  |                   |               |           |                          | Conclusion |
|                                   |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Gain (dB) | Max. EIRP     | Max. EIRP | Polarization Of Max. ERP |            |
|                                   |            |           |                |                  |                   | Average (dBm) | Average   |                          |            |
|                                   |            |           |                |                  |                   |               | (mW)      |                          |            |
| 1.4MHz                            | 1/#Mid     | 1710.7    | -2.41          | 3.76             | 28.24             | 22.94         | 196.789   | Horizontal               | Pass       |
| Band                              |            | 1745      | -2.27          | 3.91             | 28.22             | 22.91         | 195.434   | Horizontal               | Pass       |
| QPSK                              |            | 1779.3    | -2.14          | 3.93             | 28.2              | 23.00         | 199.526   | Horizontal               | Pass       |
| 3.0MHz                            | 1/#Mid     | 1711.5    | -2.47          | 3.77             | 28.23             | 22.86         | 193.197   | Horizontal               | Pass       |
| Band                              |            | 1745      | -2.38          | 3.91             | 28.24             | 22.82         | 191.426   | Horizontal               | Pass       |
| QPSK                              |            | 1778.5    | -2.40          | 3.94             | 28.25             | 22.78         | 189.671   | Horizontal               | Pass       |
| 5.0MHz                            | 1/#Mid     | 1712.5    | -2.37          | 3.77             | 28.31             | 23.04         | 201.372   | Horizontal               | Pass       |
| Band                              |            | 1745      | -2.05          | 3.91             | 28.22             | 23.13         | 205.589   | Horizontal               | Pass       |
| QPSK                              |            | 1777.5    | -2.11          | 3.94             | 28.2              | 23.02         | 200.447   | Horizontal               | Pass       |
| 10.0MHz                           | 1/#Mid     | 1715      | -2.26          | 3.79             | 28.33             | 23.15         | 206.538   | Horizontal               | Pass       |
| Band                              |            | 1745      | -1.99          | 3.95             | 28.22             | 23.15         | 206.538   | Horizontal               | Pass       |
| QPSK                              |            | 1775      | -2.00          | 3.97             | 28.19             | 23.09         | 203.704   | Horizontal               | Pass       |
| 15.0MHz                           | 1/#Mid     | 1717.5    | -2.28          | 3.79             | 28.34             | 23.14         | 206.063   | Horizontal               | Pass       |
| Band                              |            | 1745      | -2.09          | 3.95             | 28.22             | 23.05         | 201.837   | Horizontal               | Pass       |
| QPSK                              |            | 1772.5    | -2.04          | 3.97             | 28.18             | 23.04         | 201.372   | Horizontal               | Pass       |
| 20.0MHz                           | 1/#Mid     | 1720      | -2.25          | 3.81             | 28.35             | 23.16         | 207.014   | Horizontal               | Pass       |
| Band                              |            | 1745      | -1.99          | 3.96             | 28.22             | 23.14         | 206.063   | Horizontal               | Pass       |
| QPSK                              |            | 1770      | -2.01          | 4                | 28.16             | 23.02         | 200.447   | Horizontal               | Pass       |
| 1.4MHz                            | 1/#Mid     | 1710.7    | -3.73          | 3.76             | 28.24             | 22.25         | 167.880   | Vertical                 | Pass       |
| Band                              |            | 1745      | -3.25          | 3.91             | 28.22             | 22.00         | 158.489   | Vertical                 | Pass       |
| QPSK                              |            | 1779.3    | -3.42          | 3.93             | 28.2              | 22.31         | 170.216   | Vertical                 | Pass       |
| 3.0MHz                            | 1/#Mid     | 1711.5    | -3.23          | 3.77             | 28.23             | 22.11         | 162.555   | Vertical                 | Pass       |
| Band                              |            | 1745      | -3.74          | 3.91             | 28.24             | 22.30         | 169.824   | Vertical                 | Pass       |
| QPSK                              |            | 1778.5    | -3.15          | 3.94             | 28.25             | 21.67         | 146.893   | Vertical                 | Pass       |
| 5.0MHz                            | 1/#Mid     | 1712.5    | -3.47          | 3.77             | 28.31             | 21.97         | 157.398   | Vertical                 | Pass       |
| Band                              |            | 1745      | -3.07          | 3.91             | 28.22             | 22.19         | 165.577   | Vertical                 | Pass       |
| QPSK                              |            | 1777.5    | -3.09          | 3.94             | 28.2              | 22.08         | 161.436   | Vertical                 | Pass       |
| 10.0MHz                           | 1/#Mid     | 1715      | -3.06          | 3.79             | 28.34             | 21.43         | 138.995   | Vertical                 | Pass       |
| Band                              |            | 1745      | -2.94          | 3.95             | 28.22             | 21.72         | 148.594   | Vertical                 | Pass       |

|         |        |        |       |      |       |       |         |          |      |
|---------|--------|--------|-------|------|-------|-------|---------|----------|------|
| QPSK    |        | 1775   | -3.51 | 3.97 | 28.18 | 21.57 | 143.549 | Vertical | Pass |
| 15.0MHz | 1/#Mid | 1717.5 | -3.97 | 3.81 | 28.35 | 22.21 | 166.341 | Vertical | Pass |
| Band    |        | 1745   | -3.38 | 3.96 | 28.22 | 21.71 | 148.252 | Vertical | Pass |
| QPSK    |        | 1772.5 | -3.13 | 4    | 28.16 | 22.29 | 169.434 | Vertical | Pass |
| 20.0MHz | 1/#Mid | 1720   | -3.83 | 3.79 | 28.34 | 22.41 | 174.181 | Vertical | Pass |
| Band    |        | 1745   | -2.73 | 3.95 | 28.22 | 21.60 | 144.544 | Vertical | Pass |
| QPSK    |        | 1770   | -2.79 | 3.97 | 28.18 | 22.94 | 196.789 | Vertical | Pass |

| Radiated Power (EIRP) for Band 66 |               |           |                      |                        |                         |                                      |                                         |                                    |            |
|-----------------------------------|---------------|-----------|----------------------|------------------------|-------------------------|--------------------------------------|-----------------------------------------|------------------------------------|------------|
| Mode                              | RB/RB<br>SIZE | Frequency | Result               |                        |                         |                                      |                                         |                                    | Conclusion |
|                                   |               |           | SG<br>Level<br>(dBm) | Cable<br>Loss<br>(dBm) | Antenna<br>Gain<br>(dB) | Max.<br>EIRP<br><br>Average<br>(dBm) | Max.<br>EIRP<br><br>Average<br><br>(mW) | Polarization<br><br>Of Max.<br>ERP |            |
|                                   |               |           |                      |                        |                         |                                      |                                         |                                    |            |
|                                   |               |           |                      |                        |                         |                                      |                                         |                                    |            |
| 1.4MHz<br>Band 16<br>QAM          | 1/#Mid        | 1710.7    | -3.24                | 3.76                   | 28.24                   | 21.95                                | 156.675                                 | Horizontal                         | Pass       |
|                                   |               | 1745      | -2.85                | 3.91                   | 28.22                   | 22.17                                | 164.816                                 | Horizontal                         | Pass       |
|                                   |               | 1779.3    | -3.03                | 3.93                   | 28.2                    | 21.95                                | 156.675                                 | Horizontal                         | Pass       |
| 3.0MHz<br>Band 16<br>QAM          | 1/#Mid        | 1711.5    | -3.63                | 3.77                   | 28.23                   | 21.54                                | 142.561                                 | Horizontal                         | Pass       |
|                                   |               | 1745      | -2.88                | 3.91                   | 28.24                   | 22.16                                | 164.437                                 | Horizontal                         | Pass       |
|                                   |               | 1778.5    | -3.17                | 3.94                   | 28.25                   | 21.85                                | 153.109                                 | Horizontal                         | Pass       |
| 5.0MHz<br>Band 16<br>QAM          | 1/#Mid        | 1712.5    | -3.05                | 3.77                   | 28.31                   | 22.20                                | 165.959                                 | Horizontal                         | Pass       |
|                                   |               | 1745      | -3.11                | 3.91                   | 28.22                   | 21.91                                | 155.239                                 | Horizontal                         | Pass       |
|                                   |               | 1777.5    | -2.78                | 3.94                   | 28.2                    | 22.19                                | 165.577                                 | Horizontal                         | Pass       |
| 10.0MHz<br>Band 16<br>QAM         | 1/#Mid        | 1715      | -3.10                | 3.79                   | 28.33                   | 22.15                                | 164.059                                 | Horizontal                         | Pass       |
|                                   |               | 1745      | -2.76                | 3.95                   | 28.22                   | 22.22                                | 166.725                                 | Horizontal                         | Pass       |
|                                   |               | 1775      | -3.08                | 3.97                   | 28.19                   | 21.85                                | 153.109                                 | Horizontal                         | Pass       |
| 15.0MHz<br>Band 16<br>QAM         | 1/#Mid        | 1717.5    | -3.09                | 3.79                   | 28.34                   | 22.17                                | 164.816                                 | Horizontal                         | Pass       |
|                                   |               | 1745      | -2.91                | 3.95                   | 28.22                   | 22.07                                | 161.065                                 | Horizontal                         | Pass       |
|                                   |               | 1772.5    | -2.70                | 3.97                   | 28.18                   | 22.22                                | 166.725                                 | Horizontal                         | Pass       |
| 20.0MHz<br>Band 16<br>QAM         | 1/#Mid        | 1720      | -2.92                | 3.81                   | 28.35                   | 22.33                                | 171.002                                 | Horizontal                         | Pass       |
|                                   |               | 1745      | -2.70                | 3.96                   | 28.22                   | 22.27                                | 168.655                                 | Horizontal                         | Pass       |
|                                   |               | 1770      | -2.64                | 4                      | 28.16                   | 22.23                                | 167.109                                 | Horizontal                         | Pass       |
| 1.4MHz<br>Band 16<br>QAM          | 1/#Mid        | 1710.7    | -3.15                | 3.76                   | 28.24                   | 22.24                                | 167.494                                 | Vertical                           | Pass       |
|                                   |               | 1745      | -2.97                | 3.91                   | 28.22                   | 20.29                                | 106.905                                 | Vertical                           | Pass       |
|                                   |               | 1779.3    | -3.10                | 3.93                   | 28.2                    | 21.47                                | 140.281                                 | Vertical                           | Pass       |
| 3.0MHz<br>Band 16<br>QAM          | 1/#Mid        | 1711.5    | -4.54                | 3.77                   | 28.23                   | 21.44                                | 139.316                                 | Vertical                           | Pass       |
|                                   |               | 1745      | -4.02                | 3.91                   | 28.24                   | 20.48                                | 111.686                                 | Vertical                           | Pass       |
|                                   |               | 1778.5    | -4.19                | 3.94                   | 28.25                   | 21.19                                | 131.522                                 | Vertical                           | Pass       |
| 5.0MHz<br>Band 16<br>QAM          | 1/#Mid        | 1712.5    | -4.72                | 3.77                   | 28.31                   | 20.59                                | 114.551                                 | Vertical                           | Pass       |
|                                   |               | 1745      | -3.63                | 3.91                   | 28.22                   | 21.60                                | 144.544                                 | Vertical                           | Pass       |
|                                   |               | 1777.5    | -4.00                | 3.94                   | 28.2                    | 21.29                                | 134.586                                 | Vertical                           | Pass       |
| 10.0MHz<br>Band 16<br>QAM         | 1/#Mid        | 1715      | -4.27                | 3.79                   | 28.34                   | 21.55                                | 142.889                                 | Vertical                           | Pass       |
|                                   |               | 1745      | -3.03                | 3.95                   | 28.22                   | 21.16                                | 130.617                                 | Vertical                           | Pass       |
|                                   |               | 1775      | -3.46                | 3.97                   | 28.18                   | 21.37                                | 137.088                                 | Vertical                           | Pass       |
| 15.0MHz<br>Band 16                | 1/#Mid        | 1717.5    | -4.11                | 3.81                   | 28.35                   | 22.06                                | 160.694                                 | Vertical                           | Pass       |
|                                   |               | 1745      | -3.36                | 3.96                   | 28.22                   | 22.15                                | 164.059                                 | Vertical                           | Pass       |



|         |        |        |       |      |       |       |         |          |      |
|---------|--------|--------|-------|------|-------|-------|---------|----------|------|
| QAM     |        | 1772.5 | -4.58 | 4    | 28.16 | 21.54 | 142.561 | Vertical | Pass |
| 20.0MHz | 1/#Mid | 1720   | -3.20 | 3.79 | 28.34 | 22.02 | 159.221 | Vertical | Pass |
| Band 16 |        | 1745   | -3.03 | 3.95 | 28.22 | 20.60 | 114.815 | Vertical | Pass |
| QAM     |        | 1770   | -3.36 | 3.97 | 28.18 | 21.51 | 141.579 | Vertical | Pass |

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

## 8.10 LTE BAND 71

| Radiated Power (ERP) for Band 71 |               |           |             |                        |                         |                        |              |              |                             |            |
|----------------------------------|---------------|-----------|-------------|------------------------|-------------------------|------------------------|--------------|--------------|-----------------------------|------------|
| Mode                             | RB/RB<br>SIZE | Frequency | Result      |                        |                         |                        |              |              |                             | Conclusion |
|                                  |               |           | SG<br>Level | Cable<br>Loss<br>(dBm) | Antenna<br>Gain<br>(dB) | Correction<br><br>(dB) | Max.<br>EIRP | Max.<br>EIRP | Polarization<br>Of Max. ERP |            |
|                                  |               |           | (dBm)       |                        |                         |                        | Average      | Average      |                             |            |
|                                  |               |           |             |                        |                         |                        | (dBm)        | (mW)         |                             |            |
| 5.0MHz<br>Band<br>QPSK           | 25/0          | 665.5     | 7.54        | 2.01                   | 19.68                   | 2.15                   | 23.48        | 222.84       | Horizontal                  | Pass       |
|                                  |               | 680.5     | 7.42        | 2.01                   | 19.77                   | 2.15                   | 23.45        | 221.31       | Horizontal                  | Pass       |
|                                  |               | 695.5     | 7.22        | 2.02                   | 19.82                   | 2.15                   | 23.29        | 213.30       | Horizontal                  | Pass       |
| 10.0MHz<br>Band<br>QPSK          | 50/0          | 668       | 7.31        | 2.01                   | 19.70                   | 2.15                   | 23.27        | 212.32       | Horizontal                  | Pass       |
|                                  |               | 680.5     | 7.21        | 2.01                   | 19.77                   | 2.15                   | 23.24        | 210.86       | Horizontal                  | Pass       |
|                                  |               | 693       | 7.08        | 2.02                   | 19.81                   | 2.15                   | 23.14        | 206.06       | Horizontal                  | Pass       |
| 15.0MHz<br>Band<br>QPSK          | 75/0          | 670.5     | 7.59        | 2.01                   | 19.71                   | 2.15                   | 23.56        | 226.99       | Horizontal                  | Pass       |
|                                  |               | 680.5     | 7.47        | 2.01                   | 19.77                   | 2.15                   | 23.50        | 223.87       | Horizontal                  | Pass       |
|                                  |               | 690.5     | 7.31        | 2.02                   | 19.79                   | 2.15                   | 23.35        | 216.27       | Horizontal                  | Pass       |
| 20.0MHz<br>Band<br>QPSK          | 100/0         | 673       | 7.61        | 2.01                   | 19.73                   | 2.15                   | <b>23.60</b> | 229.09       | Horizontal                  | Pass       |
|                                  |               | 683       | 7.56        | 2.01                   | 19.77                   | 2.15                   | 23.59        | 228.56       | Horizontal                  | Pass       |
|                                  |               | 688       | 7.46        | 2.02                   | 19.78                   | 2.15                   | 23.49        | 223.36       | Horizontal                  | Pass       |
| 5.0MHz<br>Band<br>QPSK           | 25/0          | 665.5     | 6.53        | 2.01                   | 19.68                   | 2.15                   | 22.13        | 163.31       | Vertical                    | Pass       |
|                                  |               | 680.5     | 6.43        | 2.01                   | 19.77                   | 2.15                   | 22.11        | 162.55       | Vertical                    | Pass       |
|                                  |               | 695.5     | 6.14        | 2.02                   | 19.82                   | 2.15                   | 22.16        | 164.44       | Vertical                    | Pass       |
| 15.0MHz<br>Band<br>QPSK          | 50/0          | 668       | 6.72        | 2.01                   | 19.70                   | 2.15                   | 22.20        | 165.96       | Vertical                    | Pass       |
|                                  |               | 680.5     | 6.13        | 2.01                   | 19.77                   | 2.15                   | 22.08        | 161.44       | Vertical                    | Pass       |
|                                  |               | 693       | 6.27        | 2.02                   | 19.81                   | 2.15                   | 22.45        | 175.79       | Vertical                    | Pass       |
| 15.0MHz<br>Band<br>QPSK          | 75/0          | 670.5     | 5.90        | 2.01                   | 19.71                   | 2.15                   | 22.07        | 161.06       | Vertical                    | Pass       |
|                                  |               | 680.5     | 6.74        | 2.01                   | 19.77                   | 2.15                   | 22.33        | 171.00       | Vertical                    | Pass       |
|                                  |               | 690.5     | 6.00        | 2.02                   | 19.79                   | 2.15                   | 22.07        | 161.06       | Vertical                    | Pass       |
| 20MHz<br>Band<br>QPSK            | 100/0         | 673       | 6.48        | 2.01                   | 19.73                   | 2.15                   | 21.99        | 158.12       | Vertical                    | Pass       |
|                                  |               | 683       | 6.28        | 2.01                   | 19.77                   | 2.15                   | 22.27        | 168.66       | Vertical                    | Pass       |
|                                  |               | 688       | 5.97        | 2.02                   | 19.78                   | 2.15                   | 22.43        | 174.98       | Vertical                    | Pass       |

| Radiated Power (ERP) for Band 71 |            |           |          |            |              |            |              |           |              |            |
|----------------------------------|------------|-----------|----------|------------|--------------|------------|--------------|-----------|--------------|------------|
| Mode                             | RB/RB SIZE | Frequency | Result   |            |              |            |              |           |              | Conclusion |
|                                  |            |           | SG Level | Cable Loss | Antenna Gain | Correction | Max. EIRP    | Max. EIRP | Polarization |            |
|                                  |            |           | (dBm)    | (dBm)      | (dB)         | (dB)       | Average      | Average   | Of Max. ERP  |            |
|                                  |            |           |          |            |              |            | (dBm)        | (mW)      |              |            |
| 5.0MHz<br>Band 16<br>QAM         | 25/0       | 665.5     | 7.54     | 2.01       | 19.68        | 2.15       | 22.97        | 198.15    | Horizontal   | Pass       |
|                                  |            | 680.5     | 7.42     | 2.01       | 19.77        | 2.15       | 22.94        | 196.79    | Horizontal   | Pass       |
|                                  |            | 695.5     | 7.22     | 2.02       | 19.82        | 2.15       | 22.78        | 189.67    | Horizontal   | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 50/0       | 668       | 7.31     | 2.01       | 19.70        | 2.15       | 22.76        | 188.80    | Horizontal   | Pass       |
|                                  |            | 680.5     | 7.21     | 2.01       | 19.77        | 2.15       | 22.73        | 187.50    | Horizontal   | Pass       |
|                                  |            | 693       | 7.08     | 2.02       | 19.81        | 2.15       | 22.63        | 183.23    | Horizontal   | Pass       |
| 15.0MHz<br>Band 16<br>QAM        | 75/0       | 670.5     | 7.59     | 2.01       | 19.71        | 2.15       | 23.05        | 201.84    | Horizontal   | Pass       |
|                                  |            | 680.5     | 7.47     | 2.01       | 19.77        | 2.15       | 22.99        | 199.07    | Horizontal   | Pass       |
|                                  |            | 690.5     | 7.31     | 2.02       | 19.79        | 2.15       | 22.84        | 192.31    | Horizontal   | Pass       |
| 20.0MHz<br>Band 16<br>QAM        | 100/0      | 673       | 7.61     | 2.01       | 19.73        | 2.15       | <b>23.09</b> | 203.70    | Horizontal   | Pass       |
|                                  |            | 683       | 7.56     | 2.01       | 19.77        | 2.15       | 23.08        | 203.24    | Horizontal   | Pass       |
|                                  |            | 688       | 7.46     | 2.02       | 19.78        | 2.15       | 22.98        | 198.61    | Horizontal   | Pass       |
| 5.0MHz<br>Band 16<br>QAM         | 25/0       | 665.5     | 6.37     | 2.01       | 19.68        | 2.15       | 21.68        | 147.23    | Vertical     | Pass       |
|                                  |            | 680.5     | 6.04     | 2.01       | 19.77        | 2.15       | 21.61        | 144.88    | Vertical     | Pass       |
|                                  |            | 695.5     | 5.92     | 2.02       | 19.82        | 2.15       | 22.14        | 163.68    | Vertical     | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 50/0       | 668       | 6.34     | 2.01       | 19.70        | 2.15       | 21.95        | 156.68    | Vertical     | Pass       |
|                                  |            | 680.5     | 6.48     | 2.01       | 19.77        | 2.15       | 21.81        | 151.71    | Vertical     | Pass       |
|                                  |            | 693       | 6.41     | 2.02       | 19.81        | 2.15       | 21.57        | 143.55    | Vertical     | Pass       |
| 15.0MHz<br>Band 16<br>QAM        | 75/0       | 670.5     | 5.84     | 2.01       | 19.71        | 2.15       | 21.38        | 137.40    | Vertical     | Pass       |
|                                  |            | 680.5     | 6.59     | 2.01       | 19.77        | 2.15       | 21.81        | 151.71    | Vertical     | Pass       |
|                                  |            | 690.5     | 6.50     | 2.02       | 19.79        | 2.15       | 21.49        | 140.93    | Vertical     | Pass       |
| 20.0MHz<br>Band 16<br>QAM        | 100/0      | 673       | 5.99     | 2.01       | 19.73        | 2.15       | 22.09        | 161.81    | Vertical     | Pass       |
|                                  |            | 683       | 6.30     | 2.01       | 19.77        | 2.15       | 22.16        | 164.44    | Vertical     | Pass       |
|                                  |            | 688       | 6.20     | 2.02       | 19.78        | 2.15       | 21.87        | 153.82    | Vertical     | Pass       |

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

## 9. SPURIOUS RADIATION EMISSION

### RULE PART(S)

FCC: §2.1053, §22.917, §24.238, §27.53

### LIMIT

§22.917 (e) and §24.238 (a): Out of band emissions. 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.

§27.53 (g) For operations in the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least  $43 + 10 \log (P)$  dB.

§27.53 (h) For operations in the 1710–1755 MHz and 2110–2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log_{10}(P)$  dB.

### TEST PROCEDURE

For Cellular equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

For PCS equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

The unwanted emission power shall be measured with a resolution bandwidth of at least 1% of the occupied bandwidth in the 1 MHz band immediately outside and adjacent to the channel edge of the equipment. Beyond the 1 MHz band immediately outside the channel edge of the equipment, a resolution bandwidth of 1 MHz shall be employed. A narrower resolution bandwidth is allowed to be used provided that the measured power is integrated over the full required measurement bandwidth of 1 MHz or 1% of the occupied bandwidth as applicable.

The power of any unwanted emissions measured from the channel edge of the equipment shall be attenuated below the transmitter power,  $P$  (dBW), as follows:

- a. for base station and subscriber equipment, other than mobile subscriber equipment, the attenuation shall not be less than  $43 + 10 \log_{10}(p)$ , dB; and
- b. for mobile subscriber equipment, the attenuation shall not be less than  $43 + 10 \log_{10}(p)$ , dB at the channel edges and  $55 + 10 \log_{10}(p)$  at 5.5 MHz away and beyond the channel edges where  $p$  in (a) and (b) is the transmitter power measured in watts.

**MODES TESTED**

- ☐ LTE Band 2
- ☐ LTE Band 4
- ☐ LTE Band 5
- ☐ LTE Band 7
- ☐ LTE Band 12
- ☐ LTE Band 17
- ☐ LTE Band 41
- ☐ LTE Band 66
- ☐ LTE Band 71

**RESULTS**

PASS

## 9.1 LTE BAND 2

### QPSK EIRP POWER FOR LTE BAND 2 (1.4MHZ BANDWIDTH)

| Test Results for Low Channel 1850.7MHz  |               |                |                  |                     |             |             |            |
|-----------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                          | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 3701.4                                  | -46.30        | 4.04           | 33.51            | -16.83              | -13         | -3.83       | Horizontal |
| 3701.4                                  | -52.92        | 4.04           | 33.51            | -23.45              | -13         | -10.45      | Vertical   |
| 5552.1                                  | -49.43        | 5.24           | 35.84            | -18.83              | -13         | -5.83       | Vertical   |
| 5552.1                                  | -50.73        | 5.24           | 35.84            | -20.13              | -13         | -7.13       | Horizontal |
| 181.0                                   | -42.30        | 1.43           | 16.02            | -27.71              | -13         | -14.71      | Vertical   |
| 441.4                                   | -40.22        | 1.30           | 17.99            | -23.53              | -13         | -10.53      | Horizontal |
| Test Results for Mid Channel 1880MHz    |               |                |                  |                     |             |             |            |
| 3760.0                                  | -44.79        | 4.04           | 33.56            | -15.27              | -13         | -2.27       | Horizontal |
| 3760.0                                  | -50.32        | 4.04           | 33.56            | -20.80              | -13         | -7.80       | Vertical   |
| 5640.0                                  | -51.15        | 5.24           | 35.91            | -20.48              | -13         | -7.48       | Vertical   |
| 5640.0                                  | -49.59        | 5.24           | 35.91            | -18.92              | -13         | -5.92       | Horizontal |
| 198.8                                   | -34.03        | 1.62           | 16.97            | -18.68              | -13         | -5.68       | Vertical   |
| 402.2                                   | -40.03        | 1.74           | 15.98            | -25.80              | -13         | -12.80      | Horizontal |
| Test Results for High Channel 1909.3MHz |               |                |                  |                     |             |             |            |
| 3818.6                                  | -46.53        | 4.04           | 34.00            | -16.57              | -13         | -3.57       | Horizontal |
| 3818.6                                  | -50.18        | 4.04           | 34.00            | -20.22              | -13         | -7.22       | Vertical   |
| 5727.9                                  | -51.17        | 5.24           | 36.04            | -20.37              | -13         | -7.37       | Vertical   |
| 5727.9                                  | -49.48        | 5.24           | 36.04            | -18.68              | -13         | -5.68       | Horizontal |
| 207.3                                   | -44.37        | 1.42           | 17.29            | -28.50              | -13         | -15.50      | Vertical   |
| 374.9                                   | -39.77        | 1.50           | 17.90            | -23.36              | -13         | -10.36      | Horizontal |

# **QPSK EIRP POWER FOR LTE BAND 2 (20.0MHZ BANDWIDTH)**

| Test Results for Low Channel 1860MHz  |               |                |                  |                     |             |             |            |
|---------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                        | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 3720.0                                | -45.32        | 4.07           | 33.54            | -15.85              | -13         | -2.85       | Horizontal |
| 3720.0                                | -49.26        | 4.07           | 33.54            | -19.79              | -13         | -6.79       | Vertical   |
| 5580.0                                | -44.88        | 5.28           | 35.86            | -14.30              | -13         | -1.30       | Vertical   |
| 5580.0                                | -50.51        | 5.28           | 35.86            | -19.93              | -13         | -6.93       | Horizontal |
| 209.9                                 | -34.60        | 1.58           | 16.89            | -19.28              | -13         | -6.28       | Vertical   |
| 316.5                                 | -42.92        | 1.76           | 17.26            | -27.42              | -13         | -14.42      | Horizontal |
| Test Results for Mid Channel 1880MHz  |               |                |                  |                     |             |             |            |
| 3760.0                                | -48.55        | 4.04           | 33.56            | -19.03              | -13         | -6.03       | Horizontal |
| 3760.0                                | -45.83        | 4.04           | 33.56            | -16.31              | -13         | -3.31       | Vertical   |
| 5640.0                                | -49.81        | 5.24           | 35.91            | -19.14              | -13         | -6.14       | Vertical   |
| 5640.0                                | -49.44        | 5.24           | 35.91            | -18.77              | -13         | -5.77       | Horizontal |
| 208.6                                 | -34.20        | 1.46           | 16.27            | -19.39              | -13         | -6.39       | Vertical   |
| 257.4                                 | -43.88        | 1.59           | 15.15            | -30.32              | -13         | -17.32      | Horizontal |
| Test Results for High Channel 1900MHz |               |                |                  |                     |             |             |            |
| 3800.0                                | -48.84        | 4.04           | 34.00            | -18.88              | -13         | -5.88       | Horizontal |
| 3800.0                                | -53.22        | 4.04           | 34.00            | -23.26              | -13         | -10.26      | Vertical   |
| 5700.0                                | -53.96        | 5.24           | 36.04            | -23.16              | -13         | -10.16      | Vertical   |
| 5700.0                                | -50.55        | 5.24           | 36.04            | -19.75              | -13         | -6.75       | Horizontal |
| 176.3                                 | -43.37        | 1.36           | 17.39            | -27.33              | -13         | -14.33      | Vertical   |
| 361.6                                 | -34.26        | 1.66           | 15.39            | -20.53              | -13         | -7.53       | Horizontal |

Note: P<sub>Mea</sub>(dBm)= Power(dBm)+ AR<sub>pl</sub> (dBm)

. Over Limit= : P<sub>Mea</sub>(dBm)-Limit(dBm)

. Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.

## 9.2 LTE BAND 4

### QPSK EIRP POWER FOR LTE BAND 4 (1.4MHZ BANDWIDTH)

| Test Results for Low Channel 1710.7MHz  |               |                |                  |                     |             |             |            |
|-----------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                          | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 3421.4                                  | -51.72        | 4.02           | 29.80            | -25.94              | -13         | -12.94      | Horizontal |
| 3421.4                                  | -46.27        | 4.02           | 29.80            | -20.49              | -13         | -7.49       | Vertical   |
| 5132.1                                  | -48.77        | 5.24           | 35.84            | -18.17              | -13         | -5.17       | Vertical   |
| 5132.1                                  | -51.53        | 5.24           | 35.84            | -20.93              | -13         | -7.93       | Horizontal |
| 203.7                                   | -40.92        | 1.68           | 16.04            | -26.56              | -13         | -13.56      | Vertical   |
| 279.2                                   | -42.59        | 1.78           | 17.74            | -26.63              | -13         | -13.63      | Horizontal |
| Test Results for Mid Channel 1732.5MHz  |               |                |                  |                     |             |             |            |
| 3465.0                                  | -52.14        | 4.03           | 30.00            | -26.17              | -13         | -13.17      | Horizontal |
| 3465.0                                  | -47.84        | 4.03           | 30.00            | -21.87              | -13         | -8.87       | Vertical   |
| 5197.5                                  | -51.23        | 5.25           | 35.86            | -20.62              | -13         | -7.62       | Vertical   |
| 5197.5                                  | -52.20        | 5.25           | 35.86            | -21.59              | -13         | -8.59       | Horizontal |
| 210.7                                   | -39.02        | 1.72           | 17.69            | -23.05              | -13         | -10.05      | Vertical   |
| 365.9                                   | -41.42        | 1.62           | 16.02            | -27.01              | -13         | -14.01      | Horizontal |
| Test Results for High Channel 1754.3MHz |               |                |                  |                     |             |             |            |
| 3508.6                                  | -48.57        | 4.05           | 30.01            | -22.61              | -13         | -9.61       | Horizontal |
| 3508.6                                  | -46.65        | 4.05           | 30.01            | -20.69              | -13         | -7.69       | Vertical   |
| 5262.9                                  | -47.88        | 5.26           | 35.86            | -17.28              | -13         | -4.28       | Vertical   |
| 5262.9                                  | -52.30        | 5.26           | 35.86            | -21.70              | -13         | -8.70       | Horizontal |
| 197.4                                   | -41.33        | 1.80           | 16.69            | -26.44              | -13         | -13.44      | Vertical   |
| 266.4                                   | -35.41        | 1.75           | 16.66            | -20.51              | -13         | -7.51       | Horizontal |



**QPSK EIRP POWER FOR LTE BAND 4 (20.0MHZ BANDWIDTH)**

| Test Results for Low Channel 1720MHz   |               |                |                  |                     |             |             |            |
|----------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                         | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 3440.0                                 | -53.18        | 4.02           | 29.80            | -27.40              | -13         | -14.40      | Horizontal |
| 3440.0                                 | -53.59        | 4.02           | 29.80            | -27.81              | -13         | -14.81      | Vertical   |
| 5160.0                                 | -52.38        | 5.24           | 35.84            | -21.78              | -13         | -8.78       | Vertical   |
| 5160.0                                 | -52.76        | 5.24           | 35.84            | -22.16              | -13         | -9.16       | Horizontal |
| 195.6                                  | -44.26        | 1.57           | 17.26            | -28.57              | -13         | -15.57      | Vertical   |
| 250.3                                  | -44.27        | 1.78           | 16.35            | -29.70              | -13         | -16.70      | Horizontal |
| Test Results for Mid Channel 1732.5MHz |               |                |                  |                     |             |             |            |
| 3465.0                                 | -53.10        | 4.03           | 30.00            | -27.13              | -13         | -14.13      | Horizontal |
| 3465.0                                 | -52.77        | 4.03           | 30.00            | -26.80              | -13         | -13.80      | Vertical   |
| 5197.5                                 | -50.90        | 5.25           | 35.86            | -20.29              | -13         | -7.29       | Vertical   |
| 5197.5                                 | -49.89        | 5.25           | 35.86            | -19.28              | -13         | -6.28       | Horizontal |
| 200.2                                  | -37.25        | 1.44           | 17.95            | -20.74              | -13         | -7.74       | Vertical   |
| 340.2                                  | -40.48        | 1.65           | 16.09            | -26.04              | -13         | -13.04      | Horizontal |
| Test Results for High Channel 1745MHz  |               |                |                  |                     |             |             |            |
| 3490.0                                 | -48.50        | 2.91           | 27.68            | -23.73              | -13         | -10.73      | Horizontal |
| 3490.0                                 | -53.72        | 2.91           | 27.68            | -28.95              | -13         | -15.95      | Vertical   |
| 5235.0                                 | -49.33        | 5.26           | 35.86            | -18.73              | -13         | -5.73       | Vertical   |
| 5235.0                                 | -50.03        | 5.26           | 35.86            | -19.43              | -13         | -6.43       | Horizontal |
| 191.3                                  | -38.41        | 1.61           | 16.85            | -23.17              | -13         | -10.17      | Vertical   |
| 404.3                                  | -34.86        | 1.61           | 15.19            | -21.28              | -13         | -8.28       | Horizontal |

Note: P<sub>Mea</sub>(dBm)= Power(dBm)+ AR<sub>pl</sub> (dBm)

Over Limit= : P<sub>Mea</sub>(dBm)-Limit(dBm)

Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.

### 9.3 LTE BAND 5

#### **QPSK EIRP POWER FOR LTE BAND 5 (1.4MHZ BANDWIDTH)**

| <b>Test Results for Low Channel 824.7MHz</b>  |               |                |                  |                     |             |             |            |
|-----------------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                                | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 1649.4                                        | -49.75        | 2.78           | 27.50            | -25.03              | -13         | -12.03      | Horizontal |
| 1649.4                                        | -49.16        | 2.78           | 27.50            | -24.44              | -13         | -11.44      | Vertical   |
| 2474.1                                        | -47.42        | 2.90           | 27.80            | -22.52              | -13         | -9.52       | Vertical   |
| 2474.1                                        | -52.85        | 2.90           | 27.80            | -27.95              | -13         | -14.95      | Horizontal |
| 189.2                                         | -36.74        | 1.76           | 17.59            | -20.91              | -13         | -7.91       | Vertical   |
| 348.5                                         | -41.60        | 1.63           | 15.87            | -27.36              | -13         | -14.36      | Horizontal |
| <b>Test Results For Mid Channel 836.5MHz</b>  |               |                |                  |                     |             |             |            |
| 1673.0                                        | -52.86        | 2.80           | 27.48            | -28.18              | -13         | -15.18      | Horizontal |
| 1673.0                                        | -49.48        | 2.80           | 27.48            | -24.80              | -13         | -11.80      | Vertical   |
| 2509.5                                        | -46.07        | 2.91           | 27.70            | -21.28              | -13         | -8.28       | Vertical   |
| 2509.5                                        | -52.92        | 2.91           | 27.70            | -28.13              | -13         | -15.13      | Horizontal |
| 189.5                                         | -34.36        | 1.61           | 15.68            | -20.29              | -13         | -7.29       | Vertical   |
| 413.9                                         | -40.25        | 1.59           | 17.52            | -24.33              | -13         | -11.33      | Horizontal |
| <b>Test Results for High Channel 848.3MHz</b> |               |                |                  |                     |             |             |            |
| 1696.6                                        | -50.94        | 2.82           | 27.43            | -26.33              | -13         | -13.33      | Horizontal |
| 1696.6                                        | -50.00        | 2.82           | 27.43            | -25.39              | -13         | -12.39      | Vertical   |
| 2544.9                                        | -44.62        | 2.92           | 27.74            | -19.80              | -13         | -6.80       | Vertical   |
| 2544.9                                        | -49.98        | 2.92           | 27.74            | -25.16              | -13         | -12.16      | Horizontal |
| 176.3                                         | -36.14        | 1.69           | 16.67            | -21.15              | -13         | -8.15       | Vertical   |
| 244.5                                         | -43.27        | 1.70           | 17.18            | -27.79              | -13         | -14.79      | Horizontal |

### QPSK EIRP POWER FOR LTE BAND 5 (10MHZ BANDWIDTH)

| Test Results for Low Channel 829MHz   |               |                |                  |                     |             |             |            |
|---------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                        | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 1658.0                                | -45.66        | 2.78           | 27.50            | -20.94              | -13         | -7.94       | Horizontal |
| 1658.0                                | -47.35        | 2.78           | 27.50            | -22.63              | -13         | -9.63       | Vertical   |
| 2487.0                                | -51.12        | 2.90           | 27.80            | -26.22              | -13         | -13.22      | Vertical   |
| 2487.0                                | -51.82        | 2.90           | 27.80            | -26.92              | -13         | -13.92      | Horizontal |
| 179.9                                 | -37.99        | 1.71           | 15.57            | -24.13              | -13         | -11.13      | Vertical   |
| 402.6                                 | -36.84        | 1.34           | 16.40            | -21.78              | -13         | -8.78       | Horizontal |
| Test Results for Mid Channel 836.5MHz |               |                |                  |                     |             |             |            |
| 1673.0                                | -44.88        | 2.80           | 27.48            | -20.20              | -13         | -7.20       | Horizontal |
| 1673.0                                | -46.12        | 2.80           | 27.48            | -21.44              | -13         | -8.44       | Vertical   |
| 2509.5                                | -53.53        | 2.91           | 27.70            | -28.74              | -13         | -15.74      | Vertical   |
| 2509.5                                | -52.57        | 2.91           | 27.70            | -27.78              | -13         | -14.78      | Horizontal |
| 180.0                                 | -43.17        | 1.44           | 17.04            | -27.57              | -13         | -14.57      | Vertical   |
| 328.1                                 | -44.04        | 1.76           | 17.62            | -28.18              | -13         | -15.18      | Horizontal |
| Test Results for High Channel 844MHz  |               |                |                  |                     |             |             |            |
| 1688.0                                | -44.05        | 2.82           | 27.43            | -19.44              | -13         | -6.44       | Horizontal |
| 1688.0                                | -47.31        | 2.82           | 27.43            | -22.70              | -13         | -9.70       | Vertical   |
| 2532.0                                | -48.73        | 2.92           | 27.74            | -23.91              | -13         | -10.91      | Vertical   |
| 2532.0                                | -51.92        | 2.92           | 27.74            | -27.10              | -13         | -14.10      | Horizontal |
| 196.9                                 | -40.06        | 1.74           | 17.70            | -24.10              | -13         | -11.10      | Vertical   |
| 250.2                                 | -42.41        | 1.41           | 17.46            | -26.35              | -13         | -13.35      | Horizontal |

Note: P<sub>Mea</sub>(dBm)= Power(dBm)+ AR<sub>pl</sub> (dBm)

. Over Limit= : P<sub>Mea</sub>(dBm)-Limit(dBm)

. Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.

#### 9.4 LTE BAND 7

#### QPSK EIRP POWER FOR LTE BAND 7 (5.0MHZ BANDWIDTH)

| Test Results for Low Channel 2502.5MHz  |               |                |                  |                     |             |             |            |
|-----------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                          | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 5005.0                                  | -60.11        | 5.23           | 35.81            | -29.53              | -25         | -4.53       | Horizontal |
| 5005.0                                  | -61.98        | 5.23           | 35.81            | -31.40              | -25         | -6.40       | Vertical   |
| 7507.5                                  | -61.27        | 5.67           | 36.85            | -30.09              | -25         | -5.09       | Vertical   |
| 7507.5                                  | -62.59        | 5.67           | 36.85            | -31.41              | -25         | -6.41       | Horizontal |
| 195.7                                   | -47.54        | 1.73           | 17.97            | -31.30              | -25         | -6.30       | Vertical   |
| 255.4                                   | -50.57        | 1.38           | 15.11            | -36.84              | -25         | -11.84      | Horizontal |
| Test Results for Mid Channel 2535MHz    |               |                |                  |                     |             |             |            |
| 5070.0                                  | -64.89        | 5.23           | 35.82            | -34.30              | -25         | -9.30       | Horizontal |
| 5070.0                                  | -60.16        | 5.23           | 35.82            | -29.57              | -25         | -4.57       | Vertical   |
| 7605.0                                  | -64.89        | 5.67           | 36.85            | -33.71              | -25         | -8.71       | Vertical   |
| 7605.0                                  | -63.53        | 5.67           | 36.85            | -32.35              | -25         | -7.35       | Horizontal |
| 201.1                                   | -48.62        | 1.77           | 16.17            | -34.21              | -25         | -9.21       | Vertical   |
| 415.0                                   | -51.75        | 1.63           | 15.21            | -38.17              | -25         | -13.17      | Horizontal |
| Test Results for High Channel 2567.5MHz |               |                |                  |                     |             |             |            |
| 5135.0                                  | -59.32        | 5.24           | 35.83            | -28.73              | -25         | -3.73       | Horizontal |
| 5135.0                                  | -61.75        | 5.24           | 35.83            | -31.16              | -25         | -6.16       | Vertical   |
| 7702.5                                  | -64.92        | 5.68           | 36.87            | -33.73              | -25         | -8.73       | Vertical   |
| 7702.5                                  | -60.90        | 5.68           | 36.87            | -29.71              | -25         | -4.71       | Horizontal |
| 177.1                                   | -54.46        | 1.58           | 17.56            | -38.48              | -25         | -13.48      | Vertical   |
| 436.1                                   | -51.97        | 1.45           | 16.58            | -36.84              | -25         | -11.84      | Horizontal |

**QPSK EIRP POWER FOR LTE BAND 7 (20.0MHZ BANDWIDTH)**

| Test Results for Low Channel 2510MHz  |               |                |                  |                     |             |             |            |
|---------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                        | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 5020.0                                | -62.96        | 5.23           | 35.82            | -32.37              | -25         | -7.37       | Horizontal |
| 5020.0                                | -63.25        | 5.23           | 35.82            | -32.66              | -25         | -7.66       | Vertical   |
| 7530.0                                | -61.65        | 5.67           | 36.86            | -30.46              | -25         | -5.46       | Vertical   |
| 7530.0                                | -60.37        | 5.67           | 36.86            | -29.18              | -25         | -4.18       | Horizontal |
| 175.4                                 | -45.92        | 1.63           | 15.76            | -31.79              | -25         | -6.79       | Vertical   |
| 307.2                                 | -49.76        | 1.71           | 15.44            | -36.03              | -25         | -11.03      | Horizontal |
| Test Results for Mid Channel 2535MHz  |               |                |                  |                     |             |             |            |
| 5070.0                                | -59.42        | 5.23           | 35.82            | -28.83              | -25         | -3.83       | Horizontal |
| 5070.0                                | -63.74        | 5.23           | 35.82            | -33.15              | -25         | -8.15       | Vertical   |
| 7605.0                                | -61.51        | 5.67           | 36.85            | -30.33              | -25         | -5.33       | Vertical   |
| 7605.0                                | -64.19        | 5.67           | 36.85            | -33.01              | -25         | -8.01       | Horizontal |
| 185.1                                 | -54.21        | 1.79           | 16.84            | -39.15              | -25         | -14.15      | Vertical   |
| 319.6                                 | -52.44        | 1.71           | 17.64            | -36.51              | -25         | -11.51      | Horizontal |
| Test Results for High Channel 2560MHz |               |                |                  |                     |             |             |            |
| 5120.0                                | -63.39        | 5.24           | 35.83            | -32.80              | -25         | -7.80       | Horizontal |
| 5120.0                                | -62.19        | 5.24           | 35.83            | -31.60              | -25         | -6.60       | Vertical   |
| 7680.0                                | -64.23        | 5.70           | 36.88            | -33.05              | -25         | -8.05       | Vertical   |
| 7680.0                                | -63.46        | 5.70           | 36.88            | -32.28              | -25         | -7.28       | Horizontal |
| 203.0                                 | -47.44        | 1.79           | 16.84            | -32.38              | -25         | -7.38       | Vertical   |
| 303.1                                 | -47.08        | 1.71           | 17.64            | -31.15              | -25         | -6.15       | Horizontal |

Note: P<sub>Mea</sub>(dBm)= Power(dBm)+ AR<sub>pl</sub> (dBm)

. Over Limit= : P<sub>Mea</sub>(dBm)-Limit(dBm)

. Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.

9.5 LTE BAND 12

**QPSK EIRP POWER FOR LTE BAND 12 (1.4MHZ BANDWIDTH)**

| Test Results for Low Channel 699.7MHz  |               |                |                  |                     |             |             |            |
|----------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                         | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 1399.4                                 | -44.08        | 2.60           | 27.20            | -19.48              | -13         | -6.48       | Horizontal |
| 1399.4                                 | -49.21        | 2.60           | 27.20            | -24.61              | -13         | -11.61      | Vertical   |
| 2099.1                                 | -44.24        | 2.85           | 27.54            | -19.55              | -13         | -6.55       | Vertical   |
| 2099.1                                 | -50.07        | 2.85           | 27.54            | -25.38              | -13         | -12.38      | Horizontal |
| 194.7                                  | -34.30        | 1.49           | 17.78            | -18.01              | -13         | -5.01       | Vertical   |
| 398.6                                  | -41.78        | 1.36           | 17.33            | -25.81              | -13         | -12.81      | Horizontal |
| Test Results For Mid Channel 707.5MHz  |               |                |                  |                     |             |             |            |
| 1415.0                                 | -49.39        | 2.61           | 27.28            | -24.72              | -13         | -11.72      | Horizontal |
| 1415.0                                 | -47.73        | 2.61           | 27.28            | -23.06              | -13         | -10.06      | Vertical   |
| 2122.5                                 | -46.47        | 2.87           | 27.59            | -21.75              | -13         | -8.75       | Vertical   |
| 2122.5                                 | -53.47        | 2.87           | 27.59            | -28.75              | -13         | -15.75      | Horizontal |
| 205.3                                  | -40.23        | 1.73           | 15.74            | -26.22              | -13         | -13.22      | Vertical   |
| 363.1                                  | -37.51        | 1.62           | 15.79            | -23.34              | -13         | -10.34      | Horizontal |
| Test Results for High Channel 715.3MHz |               |                |                  |                     |             |             |            |
| 1430.6                                 | -44.45        | 2.63           | 27.28            | -19.80              | -13         | -6.80       | Horizontal |
| 1430.6                                 | -46.63        | 2.63           | 27.28            | -21.98              | -13         | -8.98       | Vertical   |
| 2145.9                                 | -48.01        | 2.88           | 27.60            | -23.29              | -13         | -10.29      | Vertical   |
| 2145.9                                 | -52.74        | 2.88           | 27.60            | -28.02              | -13         | -15.02      | Horizontal |
| 205.9                                  | -35.11        | 1.61           | 18.00            | -18.72              | -13         | -5.72       | Vertical   |
| 361.9                                  | -40.20        | 1.45           | 15.49            | -26.17              | -13         | -13.17      | Horizontal |

### QPSK EIRP POWER FOR LTE BAND 12 (10MHZ BANDWIDTH)

| Test Results for Low Channel 704MHz   |               |                |                  |                     |             |             |            |
|---------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                        | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 1408.0                                | -51.47        | 2.61           | 27.26            | -26.82              | -13         | -13.82      | Horizontal |
| 1408.0                                | -53.83        | 2.61           | 27.26            | -29.18              | -13         | -16.18      | Vertical   |
| 2112.0                                | -49.82        | 2.87           | 27.58            | -25.11              | -13         | -12.11      | Vertical   |
| 2112.0                                | -50.02        | 2.87           | 27.58            | -25.31              | -13         | -12.31      | Horizontal |
| 211.3                                 | -40.26        | 1.31           | 16.97            | -24.60              | -13         | -11.60      | Vertical   |
| 323.1                                 | -38.91        | 1.65           | 16.70            | -23.86              | -13         | -10.86      | Horizontal |
| Test Results for Mid Channel 707.5MHz |               |                |                  |                     |             |             |            |
| 1415.0                                | -50.84        | 2.61           | 27.28            | -26.17              | -13         | -13.17      | Horizontal |
| 1415.0                                | -47.74        | 2.61           | 27.28            | -23.07              | -13         | -10.07      | Vertical   |
| 2122.5                                | -46.95        | 2.87           | 27.59            | -22.23              | -13         | -9.23       | Vertical   |
| 2122.5                                | -53.93        | 2.87           | 27.59            | -29.21              | -13         | -16.21      | Horizontal |
| 186.6                                 | -34.19        | 1.72           | 17.99            | -17.92              | -13         | -4.92       | Vertical   |
| 258.3                                 | -38.20        | 1.73           | 17.94            | -21.99              | -13         | -8.99       | Horizontal |
| Test Results for High Channel 711MHz  |               |                |                  |                     |             |             |            |
| 1422.0                                | -50.54        | 2.62           | 27.28            | -25.88              | -13         | -12.88      | Horizontal |
| 1422.0                                | -45.81        | 2.62           | 27.28            | -21.15              | -13         | -8.15       | Vertical   |
| 2133.0                                | -52.63        | 2.87           | 27.60            | -27.90              | -13         | -14.90      | Vertical   |
| 2133.0                                | -50.08        | 2.87           | 27.60            | -25.35              | -13         | -12.35      | Horizontal |
| 188.3                                 | -40.85        | 1.58           | 15.93            | -26.50              | -13         | -13.50      | Vertical   |
| 343.7                                 | -39.02        | 1.36           | 15.59            | -24.79              | -13         | -11.79      | Horizontal |

Note: P<sub>Mea</sub>(dBm)= Power(dBm)+ AR<sub>pl</sub> (dBm)

. Over Limit= : P<sub>Mea</sub>(dBm)-Limit(dBm)

. Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.

9.6 LTE BAND 17

**QPSK EIRP POWER FOR LTE BAND 17 (5MHZ BANDWIDTH)**

| Test Results for Low Channel 706.5MHz  |               |                |                  |                     |             |             |            |
|----------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                         | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 1413.0                                 | -51.86        | 2.61           | 27.28            | -27.19              | -13         | -14.19      | Horizontal |
| 1413.0                                 | -52.44        | 2.61           | 27.28            | -27.77              | -13         | -14.77      | Vertical   |
| 2119.5                                 | -53.10        | 2.87           | 27.59            | -28.38              | -13         | -15.38      | Vertical   |
| 2119.5                                 | -50.63        | 2.87           | 27.59            | -25.91              | -13         | -12.91      | Horizontal |
| 189.3                                  | -43.23        | 1.71           | 16.15            | -28.79              | -13         | -15.79      | Vertical   |
| 253.6                                  | -42.75        | 1.41           | 17.32            | -26.84              | -13         | -13.84      | Horizontal |
| Test Results For Mid Channel 710MHz    |               |                |                  |                     |             |             |            |
| 1420.0                                 | -50.41        | 2.62           | 27.30            | -25.73              | -13         | -12.73      | Horizontal |
| 1420.0                                 | -50.83        | 2.62           | 27.30            | -26.15              | -13         | -13.15      | Vertical   |
| 2130.0                                 | -46.51        | 2.87           | 27.62            | -21.76              | -13         | -8.76       | Vertical   |
| 2130.0                                 | -52.06        | 2.87           | 27.62            | -27.31              | -13         | -14.31      | Horizontal |
| 206.1                                  | -40.68        | 1.42           | 15.25            | -26.86              | -13         | -13.86      | Vertical   |
| 388.6                                  | -44.30        | 1.36           | 17.19            | -28.47              | -13         | -15.47      | Horizontal |
| Test Results for High Channel 713.5MHz |               |                |                  |                     |             |             |            |
| 1427.0                                 | -44.82        | 2.66           | 27.28            | -20.20              | -13         | -7.20       | Horizontal |
| 1427.0                                 | -47.91        | 2.66           | 27.28            | -23.29              | -13         | -10.29      | Vertical   |
| 2140.5                                 | -49.70        | 2.88           | 27.60            | -24.98              | -13         | -11.98      | Vertical   |
| 2140.5                                 | -51.50        | 2.88           | 27.60            | -26.78              | -13         | -13.78      | Horizontal |
| 181.4                                  | -34.74        | 1.32           | 17.29            | -18.77              | -13         | -5.77       | Vertical   |
| 274.1                                  | -44.69        | 1.72           | 16.89            | -29.52              | -13         | -16.52      | Horizontal |



### QPSK EIRP POWER FOR LTE BAND 17 (10MHZ BANDWIDTH)

| Test Results for Low Channel 709MHz  |               |                |                  |                     |             |             |            |
|--------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                       | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 1418.0                               | -53.87        | 2.62           | 27.30            | -29.19              | -13         | -16.19      | Horizontal |
| 1418.0                               | -45.20        | 2.62           | 27.30            | -20.52              | -13         | -7.52       | Vertical   |
| 2127.0                               | -53.04        | 2.87           | 27.62            | -28.29              | -13         | -15.29      | Vertical   |
| 2127.0                               | -49.18        | 2.87           | 27.62            | -24.43              | -13         | -11.43      | Horizontal |
| 184.7                                | -39.76        | 1.35           | 16.91            | -24.20              | -13         | -11.20      | Vertical   |
| 273.6                                | -41.41        | 1.62           | 16.31            | -26.72              | -13         | -13.72      | Horizontal |
| Test Results for Mid Channel 710MHz  |               |                |                  |                     |             |             |            |
| 1420.0                               | -48.09        | 2.62           | 27.30            | -23.41              | -13         | -10.41      | Horizontal |
| 1420.0                               | -44.47        | 2.62           | 27.30            | -19.79              | -13         | -6.79       | Vertical   |
| 2130.0                               | -53.88        | 2.87           | 27.62            | -29.13              | -13         | -16.13      | Vertical   |
| 2130.0                               | -53.90        | 2.87           | 27.62            | -29.15              | -13         | -16.15      | Horizontal |
| 212.4                                | -39.14        | 1.51           | 17.14            | -23.51              | -13         | -10.51      | Vertical   |
| 424.6                                | -41.35        | 1.77           | 16.88            | -26.24              | -13         | -13.24      | Horizontal |
| Test Results for High Channel 711MHz |               |                |                  |                     |             |             |            |
| 1422.0                               | -50.59        | 2.62           | 27.30            | -25.91              | -13         | -12.91      | Horizontal |
| 1422.0                               | -54.00        | 2.62           | 27.30            | -29.32              | -13         | -16.32      | Vertical   |
| 2133.0                               | -46.99        | 2.87           | 27.62            | -22.24              | -13         | -9.24       | Vertical   |
| 2133.0                               | -51.94        | 2.87           | 27.62            | -27.19              | -13         | -14.19      | Horizontal |
| 208.3                                | -34.97        | 1.78           | 15.95            | -20.80              | -13         | -7.80       | Vertical   |
| 282.1                                | -42.34        | 1.34           | 17.95            | -25.74              | -13         | -12.74      | Horizontal |

Note: P<sub>Mea</sub>(dBm)= Power(dBm)+ AR<sub>pl</sub> (dBm)

. Over Limit= : P<sub>Mea</sub>(dBm)-Limit(dBm)

. Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.

9.7 LTE BAND 41

**QPSK EIRP POWER FOR LTE BAND 41 (5MHZ BANDWIDTH)**

| Test Results for Low Channel 2498.5MHz  |               |                |                  |                     |             |             |            |
|-----------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                          | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 4997.0                                  | -60.58        | 5.23           | 35.81            | -30.00              | -25         | -5.00       | Horizontal |
| 4997.0                                  | -60.10        | 5.23           | 35.81            | -29.52              | -25         | -4.52       | Vertical   |
| 7495.5                                  | -60.98        | 5.67           | 36.85            | -29.80              | -25         | -4.80       | Vertical   |
| 7495.5                                  | -61.42        | 5.67           | 36.85            | -30.24              | -25         | -5.24       | Horizontal |
| 435.3                                   | -48.22        | 1.38           | 15.98            | -33.62              | -25         | -8.62       | Vertical   |
| 465.8                                   | -47.01        | 1.62           | 15.66            | -32.97              | -25         | -7.97       | Horizontal |
| Test Results for Mid Channel 2593MHz    |               |                |                  |                     |             |             |            |
| 5186.0                                  | -61.91        | 5.23           | 35.82            | -31.32              | -25         | -6.32       | Horizontal |
| 5186.0                                  | -60.08        | 5.23           | 35.82            | -29.49              | -25         | -4.49       | Vertical   |
| 7779.0                                  | -63.83        | 5.67           | 36.85            | -32.65              | -25         | -7.65       | Vertical   |
| 7779.0                                  | -63.16        | 5.67           | 36.85            | -31.98              | -25         | -6.98       | Horizontal |
| 510.4                                   | -45.89        | 1.62           | 16.17            | -31.34              | -25         | -6.34       | Vertical   |
| 562.9                                   | -47.64        | 1.74           | 17.63            | -31.75              | -25         | -6.75       | Horizontal |
| Test Results for High Channel 2687.5MHz |               |                |                  |                     |             |             |            |
| 5375.0                                  | -59.59        | 5.24           | 35.83            | -29.00              | -25         | -4.00       | Horizontal |
| 5375.0                                  | -63.16        | 5.24           | 35.83            | -32.57              | -25         | -7.57       | Vertical   |
| 8062.5                                  | -64.25        | 5.68           | 36.87            | -33.06              | -25         | -8.06       | Vertical   |
| 8062.5                                  | -59.27        | 5.68           | 36.87            | -28.08              | -25         | -3.08       | Horizontal |
| 197.6                                   | -49.75        | 1.55           | 15.84            | -35.46              | -25         | -10.46      | Vertical   |
| 353.1                                   | -48.89        | 1.51           | 17.06            | -33.34              | -25         | -8.34       | Horizontal |

**QPSK EIRP POWER FOR LTE BAND 41 (20MHZ BANDWIDTH)**

| Test Results for Low Channel 2506MHz  |               |                |                  |                     |             |             |            |
|---------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                        | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 5012.0                                | -62.40        | 5.23           | 35.82            | -31.81              | -25         | -6.81       | Horizontal |
| 5012.0                                | -63.73        | 5.23           | 35.82            | -33.14              | -25         | -8.14       | Vertical   |
| 7518.0                                | -63.95        | 5.67           | 36.86            | -32.76              | -25         | -7.76       | Vertical   |
| 7518.0                                | -62.52        | 5.67           | 36.86            | -31.33              | -25         | -6.33       | Horizontal |
| 128.9                                 | -49.95        | 1.43           | 15.51            | -35.87              | -25         | -10.87      | Vertical   |
| 344.8                                 | -45.16        | 1.40           | 16.97            | -29.59              | -25         | -4.59       | Horizontal |
| Test Results for Mid Channel 2593MHz  |               |                |                  |                     |             |             |            |
| 5186.0                                | -62.91        | 5.23           | 35.82            | -32.32              | -25         | -7.32       | Horizontal |
| 5186.0                                | -60.05        | 5.23           | 35.82            | -29.46              | -25         | -4.46       | Vertical   |
| 7779.0                                | -64.76        | 5.67           | 36.85            | -33.58              | -25         | -8.58       | Vertical   |
| 7779.0                                | -60.32        | 5.67           | 36.85            | -29.14              | -25         | -4.14       | Horizontal |
| 100.8                                 | -44.29        | 1.77           | 16.72            | -29.34              | -25         | -4.34       | Vertical   |
| 263.5                                 | -47.58        | 1.31           | 16.99            | -31.90              | -25         | -6.90       | Horizontal |
| Test Results for High Channel 2680MHz |               |                |                  |                     |             |             |            |
| 5360.0                                | -63.20        | 5.24           | 35.83            | -32.61              | -25         | -7.61       | Horizontal |
| 5360.0                                | -59.56        | 5.24           | 35.83            | -28.97              | -25         | -3.97       | Vertical   |
| 8040.0                                | -62.89        | 5.70           | 36.88            | -31.71              | -25         | -6.71       | Vertical   |
| 8040.0                                | -60.97        | 5.70           | 36.88            | -29.79              | -25         | -4.79       | Horizontal |
| 349.9                                 | -48.60        | 1.70           | 15.73            | -34.57              | -25         | -9.57       | Vertical   |
| 110.3                                 | -48.40        | 1.75           | 17.33            | -32.82              | -25         | -7.82       | Horizontal |

9.8 LTE BAND 66

**QPSK EIRP POWER FOR LTE BAND 66 (1.4MHZ BANDWIDTH)**

| Test Results for Low Channel 1710.7MHz  |               |                |                  |                     |             |             |            |
|-----------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                          | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 3421.4                                  | -47.89        | 4.02           | 29.80            | -22.11              | -13         | -9.11       | Horizontal |
| 3421.4                                  | -48.99        | 4.02           | 29.80            | -23.21              | -13         | -10.21      | Vertical   |
| 5132.1                                  | -51.86        | 5.24           | 35.84            | -21.26              | -13         | -8.26       | Vertical   |
| 5132.1                                  | -50.70        | 5.24           | 35.84            | -20.10              | -13         | -7.10       | Horizontal |
| 112.6                                   | -53.62        | 1.52           | 15.57            | -39.57              | -13         | -26.57      | Vertical   |
| 220.5                                   | -48.29        | 1.33           | 17.14            | -32.48              | -13         | -19.48      | Horizontal |
| Test Results for Mid Channel 1745MHz    |               |                |                  |                     |             |             |            |
| 3490.0                                  | -44.98        | 4.03           | 30.00            | -19.01              | -13         | -6.01       | Horizontal |
| 3490.0                                  | -49.62        | 4.03           | 30.00            | -23.65              | -13         | -10.65      | Vertical   |
| 5235.0                                  | -53.54        | 5.25           | 35.86            | -22.93              | -13         | -9.93       | Vertical   |
| 5235.0                                  | -49.88        | 5.25           | 35.86            | -19.27              | -13         | -6.27       | Horizontal |
| 157.3                                   | -47.53        | 1.53           | 17.13            | -31.93              | -13         | -18.93      | Vertical   |
| 213.1                                   | -49.71        | 1.41           | 15.95            | -35.17              | -13         | -22.17      | Horizontal |
| Test Results for High Channel 1779.3MHz |               |                |                  |                     |             |             |            |
| 3558.6                                  | -47.23        | 4.05           | 30.01            | -21.27              | -13         | -8.27       | Horizontal |
| 3558.6                                  | -53.85        | 4.05           | 30.01            | -27.89              | -13         | -14.89      | Vertical   |
| 5337.9                                  | -54.34        | 5.26           | 35.86            | -23.74              | -13         | -10.74      | Vertical   |
| 5337.9                                  | -53.77        | 5.26           | 35.86            | -23.17              | -13         | -10.17      | Horizontal |
| 170.6                                   | -51.91        | 1.44           | 15.51            | -37.84              | -13         | -24.84      | Vertical   |
| 169.0                                   | -52.35        | 1.78           | 15.76            | -38.37              | -13         | -25.37      | Horizontal |

### QPSK EIRP POWER FOR LTE BAND 66 (20MHZ BANDWIDTH)

| Test Results for Low Channel 1720MHz  |               |                |                  |                     |             |             |            |
|---------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                        | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 3440.0                                | -50.04        | 4.02           | 29.80            | -24.26              | -13         | -11.26      | Horizontal |
| 3440.0                                | -49.50        | 4.02           | 29.80            | -23.72              | -13         | -10.72      | Vertical   |
| 5160.0                                | -53.04        | 5.24           | 35.84            | -22.44              | -13         | -9.44       | Vertical   |
| 5160.0                                | -52.82        | 5.24           | 35.84            | -22.22              | -13         | -9.22       | Horizontal |
| 268.8                                 | -51.41        | 1.62           | 17.02            | -36.01              | -13         | -23.01      | Vertical   |
| 161.4                                 | -44.73        | 1.32           | 17.31            | -28.74              | -13         | -15.74      | Horizontal |
| Test Results for Mid Channel 1745MHz  |               |                |                  |                     |             |             |            |
| 3490.0                                | -48.24        | 4.03           | 30.00            | -22.27              | -13         | -9.27       | Horizontal |
| 3490.0                                | -46.70        | 4.03           | 30.00            | -20.73              | -13         | -7.73       | Vertical   |
| 5235.0                                | -51.37        | 5.25           | 35.86            | -20.76              | -13         | -7.76       | Vertical   |
| 5235.0                                | -53.86        | 5.25           | 35.86            | -23.25              | -13         | -10.25      | Horizontal |
| 159.9                                 | -54.78        | 1.45           | 15.17            | -41.06              | -13         | -28.06      | Vertical   |
| 172.1                                 | -44.10        | 1.48           | 17.82            | -27.76              | -13         | -14.76      | Horizontal |
| Test Results for High Channel 1770MHz |               |                |                  |                     |             |             |            |
| 3540.0                                | -46.48        | 2.91           | 27.68            | -21.71              | -13         | -8.71       | Horizontal |
| 3540.0                                | -45.30        | 2.91           | 27.68            | -20.53              | -13         | -7.53       | Vertical   |
| 5310.0                                | -53.27        | 5.26           | 35.86            | -22.67              | -13         | -9.67       | Vertical   |
| 5310.0                                | -52.15        | 5.26           | 35.86            | -21.55              | -13         | -8.55       | Horizontal |
| 197.3                                 | -53.88        | 1.76           | 16.38            | -39.26              | -13         | -26.26      | Vertical   |
| 158.5                                 | -44.25        | 1.43           | 17.13            | -28.55              | -13         | -15.55      | Horizontal |

Note: P<sub>Mea</sub>(dBm)= Power(dBm)+ AR<sub>pl</sub> (dBm)

. Over Limit= : P<sub>Mea</sub>(dBm)-Limit(dBm)

. We test both H direction and V direction, recorded worst case direction.

Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.

# 9.9 LTE BAND 71

## **QPSK EIRP POWER FOR LTE BAND 71 (5MHZ BANDWIDTH)**

| Test Results for Low Channel 665.5MHz  |               |                |                  |                     |             |             |            |
|----------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                         | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 1331                                   | -52.52        | 2.61           | 27.28            | -27.85              | -13         | -14.85      | Horizontal |
| 1331                                   | -50.17        | 2.61           | 27.28            | -25.50              | -13         | -12.50      | Vertical   |
| 1996.5                                 | -50.96        | 2.87           | 27.59            | -26.24              | -13         | -13.24      | Vertical   |
| 1996.5                                 | -52.16        | 2.87           | 27.59            | -27.44              | -13         | -14.44      | Horizontal |
| Test Results For Mid Channel 680.5MHz  |               |                |                  |                     |             |             |            |
| 1361                                   | -51.90        | 2.62           | 27.30            | -27.22              | -13         | -14.22      | Horizontal |
| 1361                                   | -49.19        | 2.62           | 27.30            | -24.51              | -13         | -11.51      | Vertical   |
| 2041.5                                 | -52.15        | 2.87           | 27.62            | -27.40              | -13         | -14.40      | Vertical   |
| 2041.5                                 | -50.58        | 2.87           | 27.62            | -25.83              | -13         | -12.83      | Horizontal |
| Test Results for High Channel 695.5MHz |               |                |                  |                     |             |             |            |
| 1391                                   | -48.56        | 2.66           | 27.28            | -23.94              | -13         | -10.94      | Horizontal |
| 1391                                   | -49.71        | 2.66           | 27.28            | -25.09              | -13         | -12.09      | Vertical   |
| 2086.5                                 | -51.80        | 2.88           | 27.60            | -27.08              | -13         | -14.08      | Vertical   |
| 2086.5                                 | -53.82        | 2.88           | 27.60            | -29.10              | -13         | -16.10      | Horizontal |

# **QPSK EIRP POWER FOR LTE BAND 71 (20MHZ BANDWIDTH)**

| Test Results for Low Channel 673MHz  |               |                |                  |                     |             |             |            |
|--------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                       | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 1346                                 | -53.66        | 2.62           | 27.30            | -28.98              | -13         | -15.98      | Horizontal |
| 1346                                 | -50.41        | 2.62           | 27.30            | -25.73              | -13         | -12.73      | Vertical   |
| 2019                                 | -51.93        | 2.87           | 27.62            | -27.18              | -13         | -14.18      | Vertical   |
| 2019                                 | -52.96        | 2.87           | 27.62            | -28.21              | -13         | -15.21      | Horizontal |
| Test Results for Mid Channel 683MHz  |               |                |                  |                     |             |             |            |
| 1366                                 | -51.20        | 2.62           | 27.30            | -26.52              | -13         | -13.52      | Horizontal |
| 1366                                 | -50.09        | 2.62           | 27.30            | -25.41              | -13         | -12.41      | Vertical   |
| 2049                                 | -52.59        | 2.87           | 27.62            | -27.84              | -13         | -14.84      | Vertical   |
| 2049                                 | -50.61        | 2.87           | 27.62            | -25.86              | -13         | -12.86      | Horizontal |
| Test Results for High Channel 688MHz |               |                |                  |                     |             |             |            |
| 1376                                 | -49.39        | 2.62           | 27.30            | -24.71              | -13         | -11.71      | Horizontal |
| 1376                                 | -49.91        | 2.62           | 27.30            | -25.23              | -13         | -12.23      | Vertical   |
| 2064                                 | -52.27        | 2.87           | 27.62            | -27.52              | -13         | -14.52      | Vertical   |
| 2064                                 | -53.61        | 2.87           | 27.62            | -28.86              | -13         | -15.86      | Horizontal |

Note: P<sub>Mea</sub>(dBm)= Power(dBm)+ AR<sub>pl</sub> (dBm)

. Over Limit= : P<sub>Mea</sub>(dBm)-Limit(dBm)

. We test both H direction and V direction, recorded worst case direction.

Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.

## 10. 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.

### TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- ☐ Temp. =  $-30^{\circ}$  to  $+50^{\circ}\text{C}$
- ☐ Voltage = low voltage, DC 3.4V, Normal, DC 3.7V and High voltage, DC 4.2V.

### Frequency Stability vs Temperature:

The EUT is placed inside a temperature chamber. The temperature is set to  $-30^{\circ}\text{C}$  and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until  $+50^{\circ}\text{C}$  is reached.

### Frequency Stability vs Voltage:

The peak frequency error is recorded (worst-case).

### MODES TESTED

- ☐ LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 17
- LTE Band 41
- LTE Band 66
- LTE Band 71

## RESULTS

See the following pages.



## 10.1 LTE BAND 2

### QPSK, (20MHz BANDWIDTH)

#### Frequency error vs. Voltage

| Voltage<br>[Vdc]                                                       | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 2 QPSK, (CH 18900 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| 3.4                                                                    | 1880               | 12.3                    | 0.006548                | 2.5            |
| 3.7                                                                    | 1880               | 13.4                    | 0.007106                | 2.5            |
| 4.2                                                                    | 1880               | 13.8                    | 0.007319                | 2.5            |

#### Frequency error vs. Temperature

| Temperature<br>[°C]                                                    | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 2 QPSK, (CH 18900 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| Normal (25C)                                                           | 1880               | 12.9                    | 0.006875                | 2.5            |
| Extreme (50C)                                                          | 1880               | 11.8                    | 0.006279                | 2.5            |
| Extreme (40C)                                                          | 1880               | 14.0                    | 0.007428                | 2.5            |
| Extreme (30C)                                                          | 1880               | 13.3                    | 0.007090                | 2.5            |
| Extreme (10C)                                                          | 1880               | 14.0                    | 0.007453                | 2.5            |
| Extreme (0C)                                                           | 1880               | 12.5                    | 0.006628                | 2.5            |
| Extreme (-10C)                                                         | 1880               | 12.6                    | 0.006709                | 2.5            |
| Extreme (-20C)                                                         | 1880               | 14.4                    | 0.007651                | 2.5            |
| Extreme (-30C)                                                         | 1880               | 14.2                    | 0.007568                | 2.5            |

### 16QAM, (20MHz BANDWIDTH)

#### Frequency error vs. Voltage

| Voltage<br>[Vdc]                                                        | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|-------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 2 16QAM, (CH 18900 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| 3.4                                                                     | 1880               | 9.8                     | 0.005232                | 2.5            |
| 3.7                                                                     | 1880               | 8.9                     | 0.004715                | 2.5            |
| 4.2                                                                     | 1880               | 8.1                     | 0.004311                | 2.5            |

#### Frequency error vs. Temperature

| Temperature<br>[°C]                                                     | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|-------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 2 16QAM, (CH 18900 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| Normal (25C)                                                            | 1880               | 9.3                     | 0.004955                | 2.5            |
| Extreme (50C)                                                           | 1880               | 8.6                     | 0.004567                | 2.5            |
| Extreme (40C)                                                           | 1880               | 7.9                     | 0.004216                | 2.5            |
| Extreme (30C)                                                           | 1880               | 9.1                     | 0.004820                | 2.5            |
| Extreme (10C)                                                           | 1880               | 9.0                     | 0.004798                | 2.5            |
| Extreme (0C)                                                            | 1880               | 8.3                     | 0.004398                | 2.5            |
| Extreme (-10C)                                                          | 1880               | 9.3                     | 0.004930                | 2.5            |
| Extreme (-20C)                                                          | 1880               | 9.2                     | 0.004880                | 2.5            |
| Extreme (-30C)                                                          | 1880               | 7.9                     | 0.004179                | 2.5            |

**\*Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.

## 10.2 LTE BAND 4

### QPSK, (10MHz BANDWIDTH)

#### Frequency error vs. Voltage

| Voltage<br>[Vdc]                                                       | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 4 QPSK, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| 3.4                                                                    | 1732.5             | 8.5                     | 0.004883                | 2.5            |
| 3.7                                                                    | 1732.5             | 8.4                     | 0.004851                | 2.5            |
| 4.2                                                                    | 1732.5             | 8.6                     | 0.004965                | 2.5            |

#### Frequency error vs. Temperature

| Temperature<br>[°C]                                                    | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 4 QPSK, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| Normal (25C)                                                           | 1732.5             | 8.7                     | 0.005039                | 2.5            |
| Extreme (50C)                                                          | 1732.5             | 9.0                     | 0.005185                | 2.5            |
| Extreme (40C)                                                          | 1732.5             | 7.5                     | 0.004315                | 2.5            |
| Extreme (30C)                                                          | 1732.5             | 5.5                     | 0.003180                | 2.5            |
| Extreme (10C)                                                          | 1732.5             | 7.4                     | 0.004296                | 2.5            |
| Extreme (0C)                                                           | 1732.5             | 9.1                     | 0.005271                | 2.5            |
| Extreme (-10C)                                                         | 1732.5             | 7.9                     | 0.004564                | 2.5            |
| Extreme (-20C)                                                         | 1732.5             | 7.3                     | 0.004233                | 2.5            |
| Extreme (-30C)                                                         | 1732.5             | 8.7                     | 0.005044                | 2.5            |

**16QAM, (20MHz BANDWIDTH)**

**Frequency error vs. Voltage**

| Voltage<br>[Vdc]                                                        | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|-------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 4 16QAM, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| 3.4                                                                     | 1732.5             | 9.7                     | 0.005583                | 2.5            |
| 3.7                                                                     | 1732.5             | 8.8                     | 0.005093                | 2.5            |
| 4.2                                                                     | 1732.5             | 7.9                     | 0.004581                | 2.5            |

**Frequency error vs. Temperature**

| Temperature<br>[°C]                                                     | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|-------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 4 16QAM, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| Normal (25C)                                                            | 1732.5             | 10.0                    | 0.005764                | 2.5            |
| Extreme (50C)                                                           | 1732.5             | 9.2                     | 0.005323                | 2.5            |
| Extreme (40C)                                                           | 1732.5             | 8.3                     | 0.004800                | 2.5            |
| Extreme (30C)                                                           | 1732.5             | 8.6                     | 0.004970                | 2.5            |
| Extreme (10C)                                                           | 1732.5             | 8.9                     | 0.005166                | 2.5            |
| Extreme (0C)                                                            | 1732.5             | 7.9                     | 0.004561                | 2.5            |
| Extreme (-10C)                                                          | 1732.5             | 9.5                     | 0.005481                | 2.5            |
| Extreme (-20C)                                                          | 1732.5             | 8.9                     | 0.005155                | 2.5            |
| Extreme (-30C)                                                          | 1732.5             | 7.7                     | 0.004425                | 2.5            |

**\*Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.

### 10.3 LTE BAND 5

#### QPSK, (10MHz BANDWIDTH)

##### Frequency error vs. Voltage

| Voltage<br>[Vdc]                                                      | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|-----------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 5 QPSK, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b> |                    |                         |                         |                |
| 3.4                                                                   | 836.5              | 6.1                     | 0.007301                | 2.5            |
| 3.7                                                                   | 836.5              | 6.8                     | 0.008126                | 2.5            |
| 4.2                                                                   | 836.5              | 4.8                     | 0.005789                | 2.5            |

##### Frequency error vs. Temperature

| Temperature<br>[°C]                                                   | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|-----------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 5 QPSK, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b> |                    |                         |                         |                |
| Normal (25C)                                                          | 836.5              | 5.8                     | 0.006907                | 2.5            |
| Extreme (50C)                                                         | 836.5              | 5.9                     | 0.007012                | 2.5            |
| Extreme (40C)                                                         | 836.5              | 5.7                     | 0.006859                | 2.5            |
| Extreme (30C)                                                         | 836.5              | 6.3                     | 0.007494                | 2.5            |
| Extreme (10C)                                                         | 836.5              | 5.0                     | 0.006028                | 2.5            |
| Extreme (0C)                                                          | 836.5              | 5.1                     | 0.006115                | 2.5            |
| Extreme (-10C)                                                        | 836.5              | 5.6                     | 0.006722                | 2.5            |
| Extreme (-20C)                                                        | 836.5              | 6.1                     | 0.007261                | 2.5            |
| Extreme (-30C)                                                        | 836.5              | 6.5                     | 0.007758                | 2.5            |

**16QAM, (10MHz BANDWIDTH)**

**Frequency error vs. Voltage**

| Voltage<br>[Vdc]                                                       | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 5 16QAM, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b> |                    |                         |                         |                |
| 3.4                                                                    | 836.5              | 6.1                     | 0.007346                | 2.5            |
| 3.7                                                                    | 836.5              | 6.6                     | 0.007840                | 2.5            |
| 4.2                                                                    | 836.5              | 4.6                     | 0.005537                | 2.5            |

**Frequency error vs. Temperature**

| Temperature<br>[°C]                                                    | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 5 16QAM, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b> |                    |                         |                         |                |
| Normal (25C)                                                           | 836.5              | 6.6                     | 0.007889                | 2.5            |
| Extreme (50C)                                                          | 836.5              | 5.6                     | 0.006747                | 2.5            |
| Extreme (40C)                                                          | 836.5              | 6.0                     | 0.007192                | 2.5            |
| Extreme (30C)                                                          | 836.5              | 6.0                     | 0.007199                | 2.5            |
| Extreme (10C)                                                          | 836.5              | 5.1                     | 0.006038                | 2.5            |
| Extreme (0C)                                                           | 836.5              | 5.3                     | 0.006354                | 2.5            |
| Extreme (-10C)                                                         | 836.5              | 5.7                     | 0.006860                | 2.5            |
| Extreme (-20C)                                                         | 836.5              | 5.7                     | 0.006775                | 2.5            |
| Extreme (-30C)                                                         | 836.5              | 5.8                     | 0.006947                | 2.5            |

**\*Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.

#### 10.4 LTE BAND 7

##### QPSK, (20MHz BANDWIDTH)

##### Frequency error vs. Voltage

| Voltage<br>[Vdc]                                                       | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 7 QPSK, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| 3.4                                                                    | 2535               | 9.5                     | 0.003763                | 2.5            |
| 3.7                                                                    | 2535               | 8.7                     | 0.003434                | 2.5            |
| 4.2                                                                    | 2535               | 8.0                     | 0.003175                | 2.5            |

##### Frequency error vs. Temperature

| Temperature<br>[°C]                                                    | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 7 QPSK, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| Normal (25C)                                                           | 2535               | 9.0                     | 0.003564                | 2.5            |
| Extreme (50C)                                                          | 2535               | 8.7                     | 0.003435                | 2.5            |
| Extreme (40C)                                                          | 2535               | 8.8                     | 0.003471                | 2.5            |
| Extreme (30C)                                                          | 2535               | 8.8                     | 0.003476                | 2.5            |
| Extreme (10C)                                                          | 2535               | 8.3                     | 0.003287                | 2.5            |
| Extreme (0C)                                                           | 2535               | 8.1                     | 0.003198                | 2.5            |
| Extreme (-10C)                                                         | 2535               | 9.2                     | 0.003629                | 2.5            |
| Extreme (-20C)                                                         | 2535               | 9.4                     | 0.003707                | 2.5            |
| Extreme (-30C)                                                         | 2535               | 8.8                     | 0.003488                | 2.5            |

**16QAM, (20MHz BANDWIDTH)**

**Frequency error vs. Voltage**

| Voltage<br>[Vdc]                                                        | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|-------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 7 16QAM, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| 3.4                                                                     | 2535               | 6.9                     | 0.002722                | 2.5            |
| 3.7                                                                     | 2535               | 6.5                     | 0.002546                | 2.5            |
| 4.2                                                                     | 2535               | 5.8                     | 0.002307                | 2.5            |

**Frequency error vs. Temperature**

| Temperature<br>[°C]                                                     | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|-------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 7 16QAM, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| Normal (25C)                                                            | 2535               | 6.9                     | 0.002722                | 2.5            |
| Extreme (50C)                                                           | 2535               | 5.5                     | 0.002170                | 2.5            |
| Extreme (40C)                                                           | 2535               | 5.7                     | 0.002265                | 2.5            |
| Extreme (30C)                                                           | 2535               | 6.3                     | 0.002493                | 2.5            |
| Extreme (10C)                                                           | 2535               | 6.0                     | 0.002374                | 2.5            |
| Extreme (0C)                                                            | 2535               | 4.6                     | 0.001830                | 2.5            |
| Extreme (-10C)                                                          | 2535               | 5.3                     | 0.002083                | 2.5            |
| Extreme (-20C)                                                          | 2535               | 5.4                     | 0.002132                | 2.5            |
| Extreme (-30C)                                                          | 2535               | 5.4                     | 0.002124                | 2.5            |

**\*Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.



# 10.5 LTE BAND 12

## QPSK, (10MHz BANDWIDTH)

### Frequency error vs. Voltage

| Voltage<br>[Vdc]                                                       | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 12 QPSK, (CH 23095 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b> |                    |                         |                         |                |
| 3.4                                                                    | 707.5              | 8.3                     | 0.011800                | 2.5            |
| 3.7                                                                    | 707.5              | 10.5                    | 0.014814                | 2.5            |
| 4.2                                                                    | 707.5              | 8.6                     | 0.012091                | 2.5            |

### Frequency error vs. Temperature

| Temperature<br>[°C]                                                    | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 12 QPSK, (CH 23095 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b> |                    |                         |                         |                |
| Normal (25C)                                                           | 707.5              | 9.1                     | 0.012875                | 2.5            |
| Extreme (50C)                                                          | 707.5              | 7.5                     | 0.010651                | 2.5            |
| Extreme (40C)                                                          | 707.5              | 7.3                     | 0.010283                | 2.5            |
| Extreme (30C)                                                          | 707.5              | 7.9                     | 0.011145                | 2.5            |
| Extreme (10C)                                                          | 707.5              | 7.3                     | 0.010355                | 2.5            |
| Extreme (0C)                                                           | 707.5              | 8.8                     | 0.012488                | 2.5            |
| Extreme (-10C)                                                         | 707.5              | 8.7                     | 0.012359                | 2.5            |
| Extreme (-20C)                                                         | 707.5              | 8.4                     | 0.011895                | 2.5            |
| Extreme (-30C)                                                         | 707.5              | 8.3                     | 0.011725                | 2.5            |

**16QAM, (10MHz BANDWIDTH)**

**Frequency error vs. Voltage**

| Voltage<br>[Vdc]                                                        | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|-------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 12 16QAM, (CH 23095 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b> |                    |                         |                         |                |
| 3.4                                                                     | 707.5              | 7.4                     | 0.010399                | 2.5            |
| 3.7                                                                     | 707.5              | 8.2                     | 0.011626                | 2.5            |
| 4.2                                                                     | 707.5              | 7.2                     | 0.010163                | 2.5            |

**Frequency error vs. Temperature**

| Temperature<br>[°C]                                                    | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 12 QPSK, (CH 23095 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b> |                    |                         |                         |                |
| Normal (25C)                                                           | 707.5              | 6.5                     | 0.009175                | 2.5            |
| Extreme (50C)                                                          | 707.5              | 5.5                     | 0.007765                | 2.5            |
| Extreme (40C)                                                          | 707.5              | 6.4                     | 0.009110                | 2.5            |
| Extreme (30C)                                                          | 707.5              | -7.7                    | -0.010912               | 2.5            |
| Extreme (10C)                                                          | 707.5              | -8.2                    | -0.011590               | 2.5            |
| Extreme (0C)                                                           | 707.5              | 2.9                     | 0.004100                | 2.5            |
| Extreme (-10C)                                                         | 707.5              | -5.2                    | -0.007292               | 2.5            |
| Extreme (-20C)                                                         | 707.5              | -8.7                    | -0.012302               | 2.5            |
| Extreme (-30C)                                                         | 707.5              | -10.2                   | -0.014350               | 2.5            |

**\*Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.

## 10.6 LTE BAND 17

### QPSK, (10MHz BANDWIDTH)

#### Frequency error vs. Voltage

| Voltage<br>[Vdc]                                                       | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 17 QPSK, (CH 23790 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b> |                    |                         |                         |                |
| 3.4                                                                    | 710.0              | 10.1                    | 0.014239                | 2.5            |
| 3.7                                                                    | 710.0              | 8.8                     | 0.012431                | 2.5            |
| 4.2                                                                    | 710.0              | 8.4                     | 0.011837                | 2.5            |

#### Frequency error vs. Temperature

| Temperature<br>[°C]                                                    | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 17 QPSK, (CH 23790 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b> |                    |                         |                         |                |
| Normal (25C)                                                           | 710.0              | 9.7                     | 0.013675                | 2.5            |
| Extreme (50C)                                                          | 710.0              | 9.4                     | 0.013217                | 2.5            |
| Extreme (40C)                                                          | 710.0              | 8.3                     | 0.011689                | 2.5            |
| Extreme (30C)                                                          | 710.0              | 9.2                     | 0.012940                | 2.5            |
| Extreme (10C)                                                          | 710.0              | 8.5                     | 0.011972                | 2.5            |
| Extreme (0C)                                                           | 710.0              | 8.3                     | 0.011647                | 2.5            |
| Extreme (-10C)                                                         | 710.0              | 9.4                     | 0.013246                | 2.5            |
| Extreme (-20C)                                                         | 710.0              | 9.2                     | 0.012983                | 2.5            |
| Extreme (-30C)                                                         | 710.0              | 8.1                     | 0.011459                | 2.5            |

**16QAM, (10MHz BANDWIDTH)**

**Frequency error vs. Voltage**

| Voltage<br>[Vdc]                                                        | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|-------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 17 16QAM, (CH 23790 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b> |                    |                         |                         |                |
| 3.4                                                                     | 710.0              | 10.1                    | 0.014177                | 2.5            |
| 3.7                                                                     | 710.0              | 8.4                     | 0.011851                | 2.5            |
| 4.2                                                                     | 710.0              | 8.7                     | 0.012263                | 2.5            |

**Frequency error vs. Temperature**

| Temperature<br>[°C]                                                    | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 17 QPSK, (CH 23790 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b> |                    |                         |                         |                |
| Normal (25C)                                                           | 710.0              | 9.7                     | 0.013722                | 2.5            |
| Extreme (50C)                                                          | 710.0              | 8.9                     | 0.012533                | 2.5            |
| Extreme (40C)                                                          | 710.0              | 8.0                     | 0.011336                | 2.5            |
| Extreme (30C)                                                          | 710.0              | 8.6                     | 0.012126                | 2.5            |
| Extreme (10C)                                                          | 710.0              | 8.6                     | 0.012062                | 2.5            |
| Extreme (0C)                                                           | 710.0              | 7.9                     | 0.011159                | 2.5            |
| Extreme (-10C)                                                         | 710.0              | 9.0                     | 0.012738                | 2.5            |
| Extreme (-20C)                                                         | 710.0              | 8.9                     | 0.012540                | 2.5            |
| Extreme (-30C)                                                         | 710.0              | 8.8                     | 0.012362                | 2.5            |

**\*Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.

# 10.7 LTE BAND 41

## QPSK, (20MHz BANDWIDTH)

### Frequency error vs. Voltage

| Voltage<br>[Vdc]                                                        | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|-------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 41 QPSK, (CH 40640 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| 3.4                                                                     | 2595               | 6.2                     | 0.002387                | 2.5            |
| 3.7                                                                     | 2595               | 7.1                     | 0.002750                | 2.5            |
| 4.2                                                                     | 2595               | 7.9                     | 0.003063                | 2.5            |

### Frequency error vs. Temperature

| Temperature<br>[°C]                                                     | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|-------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 41 QPSK, (CH 40640 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| Normal (25C)                                                            | 2595               | 5.2                     | 0.002007                | 2.5            |
| Extreme (50C)                                                           | 2595               | 7.6                     | 0.002941                | 2.5            |
| Extreme (40C)                                                           | 2595               | 6.1                     | 0.002340                | 2.5            |
| Extreme (30C)                                                           | 2595               | 7.3                     | 0.002822                | 2.5            |
| Extreme (10C)                                                           | 2595               | 7.7                     | 0.002981                | 2.5            |
| Extreme (0C)                                                            | 2595               | 6.4                     | 0.002474                | 2.5            |
| Extreme (-10C)                                                          | 2595               | 5.9                     | 0.002264                | 2.5            |
| Extreme (-20C)                                                          | 2595               | 6.7                     | 0.002585                | 2.5            |
| Extreme (-30C)                                                          | 2595               | 5.4                     | 0.002062                | 2.5            |

**16QAM, (20MHz BANDWIDTH)**

**Frequency error vs. Voltage**

| Voltage<br>[Vdc]                                                         | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|--------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 41 16QAM, (CH 40640 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| 3.4                                                                      | 2595               | 2.3                     | 0.003159                | 2.5            |
| 3.7                                                                      | 2595               | 1.5                     | 0.002060                | 2.5            |
| 4.2                                                                      | 2595               | 3.1                     | 0.004258                | 2.5            |

**Frequency error vs. Temperature**

| Temperature<br>[°C]                                                      | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|--------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 41 16QAM, (CH 40640 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| Normal (25C)                                                             | 2595               | 2.5                     | 0.003434                | 2.5            |
| Extreme (50C)                                                            | 2595               | 2.1                     | 0.002885                | 2.5            |
| Extreme (40C)                                                            | 2595               | 3.6                     | 0.004945                | 2.5            |
| Extreme (30C)                                                            | 2595               | 1.9                     | 0.002610                | 2.5            |
| Extreme (10C)                                                            | 2595               | 1.7                     | 0.002335                | 2.5            |
| Extreme (0C)                                                             | 2595               | 4.2                     | 0.005769                | 2.5            |
| Extreme (-10C)                                                           | 2595               | 4.3                     | 0.005907                | 2.5            |
| Extreme (-20C)                                                           | 2595               | 3.2                     | 0.004396                | 2.5            |
| Extreme (-30C)                                                           | 2595               | 1.8                     | 0.002473                | 2.5            |

**\*Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.

# 10.8 LTE BAND 66

## QPSK, (20MHz BANDWIDTH)

### Frequency error vs. Voltage

| Voltage [Vdc]                                                     | Frequency [MHz] | Frequency* Error[Hz] | Frequency Error[ppm] | Limit [ppm] |
|-------------------------------------------------------------------|-----------------|----------------------|----------------------|-------------|
| BAND 66 QPSK, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH) |                 |                      |                      |             |
| 3.4                                                               | 1745            | 6.8                  | 0.003915             | 2.5         |
| 3.7                                                               | 1745            | 7.5                  | 0.003812             | 2.5         |
| 4.2                                                               | 1745            | 8.2                  | 0.004172             | 2.5         |

### Frequency error vs. Temperature

| Temperature [°C]                                                  | Frequency [MHz] | Frequency* Error[Hz] | Frequency Error[ppm] | Limit [ppm] |
|-------------------------------------------------------------------|-----------------|----------------------|----------------------|-------------|
| BAND 66 QPSK, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH) |                 |                      |                      |             |
| Normal (25C)                                                      | 1745            | 5.5                  | 0.002985             | 2.5         |
| Extreme (50C)                                                     | 1745            | 7.7                  | 0.004317             | 2.5         |
| Extreme (40C)                                                     | 1745            | 6.9                  | 0.003454             | 2.5         |
| Extreme (30C)                                                     | 1745            | 7.1                  | 0.003974             | 2.5         |
| Extreme (10C)                                                     | 1745            | 8.6                  | 0.004509             | 2.5         |
| Extreme (0C)                                                      | 1745            | 6.8                  | 0.003463             | 2.5         |
| Extreme (-10C)                                                    | 1745            | 6.4                  | 0.003313             | 2.5         |
| Extreme (-20C)                                                    | 1745            | 7.6                  | 0.003852             | 2.5         |
| Extreme (-30C)                                                    | 1745            | 7.0                  | 0.003423             | 2.5         |

**16QAM, (20MHz BANDWIDTH)**

**Frequency error vs. Voltage**

| Voltage<br>[Vdc]                                                          | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|---------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 66 16QAM, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| 3.4                                                                       | 1745               | 8.3                     | 0.00462                 | 2.5            |
| 3.7                                                                       | 1745               | 8.6                     | 0.004436                | 2.5            |
| 4.2                                                                       | 1745               | 9.6                     | 0.005194                | 2.5            |

**Frequency error vs. Temperature**

| Temperature<br>[°C]                                                       | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|---------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 66 16QAM, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| Normal (25C)                                                              | 1745               | 8.9                     | 0.005061                | 2.5            |
| Extreme (50C)                                                             | 1745               | 7.9                     | 0.004447                | 2.5            |
| Extreme (40C)                                                             | 1745               | 8.6                     | 0.004757                | 2.5            |
| Extreme (30C)                                                             | 1745               | 8.4                     | 0.004539                | 2.5            |
| Extreme (10C)                                                             | 1745               | 8.1                     | 0.004636                | 2.5            |
| Extreme (0C)                                                              | 1745               | 7.6                     | 0.003824                | 2.5            |
| Extreme (-10C)                                                            | 1745               | 9.0                     | 0.004745                | 2.5            |
| Extreme (-20C)                                                            | 1745               | 9.4                     | 0.004918                | 2.5            |
| Extreme (-30C)                                                            | 1745               | 6.1                     | 0.003037                | 2.5            |

**\*Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.



## 10.9 LTE BAND 71

### QPSK, (20MHz BANDWIDTH)

#### Frequency error vs. Voltage

| Voltage<br>[Vdc]                                                         | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|--------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 71 QPSK, (CH 133322 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| 3.4                                                                      | 683                | 8.6                     | 0.01259                 | 2.5            |
| 3.7                                                                      | 683                | 13.4                    | 0.01962                 | 2.5            |
| 4.2                                                                      | 683                | 13                      | 0.01903                 | 2.5            |

#### Frequency error vs. Temperature

| Temperature<br>[°C]                                                      | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|--------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 71 QPSK, (CH 133322 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| Normal (25C)                                                             | 683                | 7.7                     | 0.01127                 | 2.5            |
| Extreme (50C)                                                            | 683                | 5.2                     | 0.00761                 | 2.5            |
| Extreme (40C)                                                            | 683                | 5.1                     | 0.00747                 | 2.5            |
| Extreme (30C)                                                            | 683                | 5                       | 0.00732                 | 2.5            |
| Extreme (10C)                                                            | 683                | 6.6                     | 0.00966                 | 2.5            |
| Extreme (0C)                                                             | 683                | 4.8                     | 0.00703                 | 2.5            |
| Extreme (-10C)                                                           | 683                | 9.8                     | 0.01435                 | 2.5            |
| Extreme (-20C)                                                           | 683                | 7.2                     | 0.01054                 | 2.5            |
| Extreme (-30C)                                                           | 683                | 7.3                     | 0.01069                 | 2.5            |

**16QAM, (20MHz BANDWIDTH)**

**Frequency error vs. Voltage**

| Voltage<br>[Vdc]                                                          | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|---------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 71 16QAM, (CH 133322 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| 3.4                                                                       | 683                | 12.3                    | 0.01801                 | 2.5            |
| 3.7                                                                       | 683                | 14.2                    | 0.02079                 | 2.5            |
| 4.2                                                                       | 683                | 11.2                    | 0.01640                 | 2.5            |

**Frequency error vs. Temperature**

| Temperature<br>[°C]                                                       | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|---------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 71 16QAM, (CH 133322 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| Normal (25C)                                                              | 683                | 7.7                     | 0.01127                 | 2.5            |
| Extreme (50C)                                                             | 683                | 4.7                     | 0.00688                 | 2.5            |
| Extreme (40C)                                                             | 683                | 5.9                     | 0.00864                 | 2.5            |
| Extreme (30C)                                                             | 683                | 5.2                     | 0.00761                 | 2.5            |
| Extreme (10C)                                                             | 683                | 5.2                     | 0.00761                 | 2.5            |
| Extreme (0C)                                                              | 683                | 6.3                     | 0.00922                 | 2.5            |
| Extreme (-10C)                                                            | 683                | 9.4                     | 0.01376                 | 2.5            |
| Extreme (-20C)                                                            | 683                | 8.2                     | 0.01201                 | 2.5            |
| Extreme (-30C)                                                            | 683                | 8.4                     | 0.01230                 | 2.5            |

**\*Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.

## 11. Peak-to-Average Ratio

### 11.1 Description of the PAR Measurement

The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

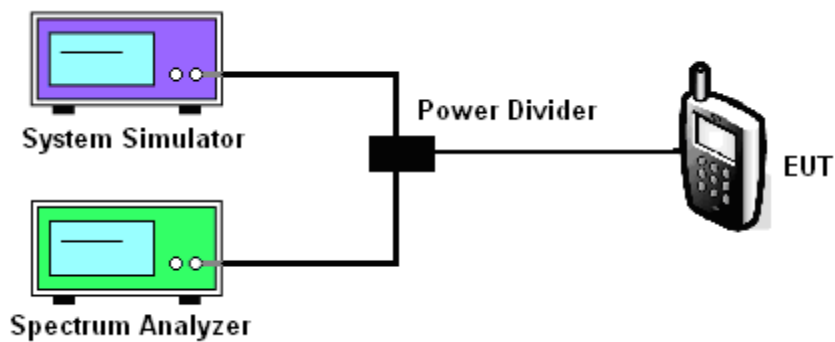
### 11.2 Measuring Instruments

See list of measuring instruments of this test report.

### 11.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. For LTE operating modes:
  - a. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
  - b. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.

## 11.4 Test Setup



### MODES TESTED

- ☐ LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 17
- LTE Band 41
- LTE Band 66
- LTE Band 71

Test data reference attachment.

----END OF REPORT----