

| LTE Band12 (Low Channel, QPSK & 16QAM)      |                 |                  |                 |                |                   |             |             |
|---------------------------------------------|-----------------|------------------|-----------------|----------------|-------------------|-------------|-------------|
| Frequency (MHz)                             | Ant. Pol. (H/V) | SG Reading (dBm) | Cable Loss (dB) | Ant Gain (dBd) | ERP Measure (dBm) | Limit (dBm) | Margin (dB) |
| QPSK, CH23017 / 699.7MHz, Bandwidth 1.4MHz  |                 |                  |                 |                |                   |             |             |
| 699.7                                       | H               | 13.17            | 0.84            | 7.4            | 19.730            | 34.8        | -15.07      |
| 699.7                                       | V               | 8.59             | 0.84            | 7.4            | 15.150            | 34.8        | -19.65      |
| QPSK, CH23025 / 700.5MHz, Bandwidth 3MHz    |                 |                  |                 |                |                   |             |             |
| 700.5                                       | H               | 12.82            | 0.84            | 7.4            | 19.380            | 34.8        | -15.42      |
| 700.5                                       | V               | 9.67             | 0.84            | 7.4            | 16.230            | 34.8        | -18.57      |
| QPSK, CH23035 / 701.5MHz, Bandwidth 5MHz    |                 |                  |                 |                |                   |             |             |
| 701.5                                       | H               | 13.3             | 0.84            | 7.4            | 19.860            | 34.8        | -14.94      |
| 701.5                                       | V               | 9.87             | 0.84            | 7.4            | 16.430            | 34.8        | -18.37      |
| QPSK, CH23060 / 704MHz, Bandwidth 10MHz     |                 |                  |                 |                |                   |             |             |
| 704                                         | H               | 13.07            | 0.84            | 7.4            | 19.630            | 34.8        | -15.17      |
| 704                                         | V               | 7.33             | 0.84            | 7.4            | 13.890            | 34.8        | -20.91      |
| 16QAM, CH23017 / 699.7MHz, Bandwidth 1.4MHz |                 |                  |                 |                |                   |             |             |
| 699.7                                       | H               | 12.442           | 0.84            | 7.4            | 19.002            | 34.8        | -15.80      |
| 699.7                                       | V               | 7.67             | 0.84            | 7.4            | 14.230            | 34.8        | -20.57      |
| 16QAM, CH23025 / 700.5MHz, Bandwidth 3MHz   |                 |                  |                 |                |                   |             |             |
| 700.5                                       | H               | 11.96            | 0.84            | 7.4            | 18.520            | 34.8        | -16.28      |
| 700.5                                       | V               | 9.2              | 0.84            | 7.4            | 15.760            | 34.8        | -19.04      |
| 16QAM, CH23035 / 701.5MHz, Bandwidth 5MHz   |                 |                  |                 |                |                   |             |             |
| 701.5                                       | H               | 12.56            | 0.84            | 7.4            | 19.120            | 34.8        | -15.68      |
| 701.5                                       | V               | 9.2              | 0.84            | 7.4            | 15.760            | 34.8        | -19.04      |
| 16QAM, CH23060 / 704MHz, Bandwidth 10MHz    |                 |                  |                 |                |                   |             |             |
| 704                                         | H               | 12.327           | 0.84            | 7.4            | 18.887            | 34.8        | -15.91      |
| 704                                         | V               | 6.564            | 0.84            | 7.4            | 13.124            | 34.8        | -21.68      |

**NOTES:**

- ERP (dBm) / EIRP (dBm)=  
SG Reading (dBm) - Cable Loss (dB) + Substitute Antenna Gain (dBd/dBi)
- This unit was tested with its standard adapter.
- The EUT was tested in three orthogonal planes and in all possible test configurations and positioning.

| LTE Band12 (Mid Channel, QPSK & 16QAM)      |                 |                  |                 |                |                   |             |             |
|---------------------------------------------|-----------------|------------------|-----------------|----------------|-------------------|-------------|-------------|
| Frequency (MHz)                             | Ant. Pol. (H/V) | SG Reading (dBm) | Cable Loss (dB) | Ant Gain (dBd) | ERP Measure (dBm) | Limit (dBm) | Margin (dB) |
| QPSK, CH23095 / 707.5MHz, Bandwidth 1.4MHz  |                 |                  |                 |                |                   |             |             |
| 707.5                                       | H               | 15.98            | 0.84            | 5.28           | 20.420            | 34.8        | -14.38      |
| 707.5                                       | V               | 9.86             | 0.84            | 5.28           | 14.300            | 34.8        | -20.50      |
| QPSK, CH23095 / 707.5MHz, Bandwidth 3MHz    |                 |                  |                 |                |                   |             |             |
| 707.5                                       | H               | 16.15            | 0.84            | 5.28           | 20.590            | 34.8        | -14.21      |
| 707.5                                       | V               | 9.99             | 0.84            | 5.28           | 14.430            | 34.8        | -20.37      |
| QPSK, CH23095 / 707.5MHz, Bandwidth 5MHz    |                 |                  |                 |                |                   |             |             |
| 707.5                                       | H               | 13.67            | 0.84            | 7.43           | 20.260            | 34.8        | -14.54      |
| 707.5                                       | V               | 7.98             | 0.84            | 7.43           | 14.570            | 34.8        | -20.23      |
| QPSK, CH23095 / 707.5MHz, Bandwidth 10MHz   |                 |                  |                 |                |                   |             |             |
| 707.5                                       | H               | 16.18            | 0.84            | 5.28           | 20.620            | 34.8        | -14.18      |
| 707.5                                       | V               | 10.25            | 0.84            | 5.28           | 14.690            | 34.8        | -20.11      |
| 16QAM, CH23095 / 707.5MHz, Bandwidth 1.4MHz |                 |                  |                 |                |                   |             |             |
| 707.5                                       | H               | 14.32            | 0.84            | 5.28           | 18.760            | 34.8        | -16.04      |
| 707.5                                       | V               | 9.23             | 0.84            | 5.28           | 13.670            | 34.8        | -21.13      |
| 16QAM, CH23095 / 707.5MHz, Bandwidth 3MHz   |                 |                  |                 |                |                   |             |             |
| 707.5                                       | H               | 15.41            | 0.84            | 5.28           | 19.852            | 34.8        | -14.95      |
| 707.5                                       | V               | 9.34             | 0.84            | 5.28           | 13.782            | 34.8        | -21.02      |
| 16QAM, CH23095 / 707.5MHz, Bandwidth 5MHz   |                 |                  |                 |                |                   |             |             |
| 707.5                                       | H               | 15.23            | 0.84            | 5.28           | 19.670            | 34.8        | -15.13      |
| 707.5                                       | V               | 9.23             | 0.84            | 5.28           | 13.665            | 34.8        | -21.14      |
| 16QAM, CH23095 / 707.5MHz, Bandwidth 10MHz  |                 |                  |                 |                |                   |             |             |
| 707.5                                       | H               | 14.68            | 0.84            | 5.28           | 19.123            | 34.8        | -15.68      |
| 707.5                                       | V               | 9.43             | 0.84            | 5.28           | 13.870            | 34.8        | -20.93      |

**NOTES:**

- ERP (dBm) / EIRP (dBm)=  
SG Reading (dBm) - Cable Loss (dB) + Substitute Antenna Gain (dBd/dBi)
- This unit was tested with its standard adapter.
- The EUT was tested in three orthogonal planes and in all possible test configurations and positioning.

| LTE Band12 (High Channel, QPSK & 16QAM)     |                 |                  |                 |                |                   |             |             |
|---------------------------------------------|-----------------|------------------|-----------------|----------------|-------------------|-------------|-------------|
| Frequency (MHz)                             | Ant. Pol. (H/V) | SG Reading (dBm) | Cable Loss (dB) | Ant Gain (dBd) | ERP Measure (dBm) | Limit (dBm) | Margin (dB) |
| QPSK, CH23173 / 715.3MHz, Bandwidth 1.4MHz  |                 |                  |                 |                |                   |             |             |
| 715.3                                       | H               | 17.18            | 0.84            | 5.28           | 21.620            | 34.8        | -13.18      |
| 715.3                                       | V               | 10.31            | 0.84            | 5.28           | 14.750            | 34.8        | -20.05      |
| QPSK, CH23165 / 714.5MHz, Bandwidth 3MHz    |                 |                  |                 |                |                   |             |             |
| 714.5                                       | H               | 15.55            | 0.84            | 7.48           | 22.190            | 34.8        | -12.61      |
| 714.5                                       | V               | 8.92             | 0.84            | 7.48           | 15.560            | 34.8        | -19.24      |
| QPSK, CH23155 / 713.5MHz, Bandwidth 5MHz    |                 |                  |                 |                |                   |             |             |
| 713.5                                       | H               | 16.78            | 0.84            | 5.28           | 21.221            | 34.8        | -13.58      |
| 713.5                                       | V               | 10.28            | 0.84            | 5.28           | 14.720            | 34.8        | -20.08      |
| QPSK, CH23130 / 711MHz, Bandwidth 10MHz     |                 |                  |                 |                |                   |             |             |
| 711                                         | H               | 14.51            | 0.84            | 7.48           | 21.150            | 34.8        | -13.65      |
| 711                                         | V               | 8.46             | 0.84            | 7.48           | 15.100            | 34.8        | -19.70      |
| 16QAM, CH23173 / 715.3MHz, Bandwidth 1.4MHz |                 |                  |                 |                |                   |             |             |
| 715.3                                       | H               | 14.316           | 0.84            | 7.48           | 20.956            | 34.8        | -13.84      |
| 715.3                                       | V               | 7.386            | 0.84            | 7.48           | 14.026            | 34.8        | -20.77      |
| 16QAM, CH23165 / 714.5MHz, Bandwidth 3MHz   |                 |                  |                 |                |                   |             |             |
| 714.5                                       | H               | 14.79            | 0.84            | 7.48           | 21.430            | 34.8        | -13.37      |
| 714.5                                       | V               | 8.049            | 0.84            | 7.48           | 14.689            | 34.8        | -20.11      |
| 16QAM, CH23155 / 713.5MHz, Bandwidth 5MHz   |                 |                  |                 |                |                   |             |             |
| 713.5                                       | H               | 16.564           | 0.84            | 5.28           | 21.004            | 34.8        | -13.80      |
| 713.5                                       | V               | 9.558            | 0.84            | 5.28           | 13.998            | 34.8        | -20.80      |
| 16QAM, CH23130 / 711MHz, Bandwidth 10MHz    |                 |                  |                 |                |                   |             |             |
| 711                                         | H               | 13.916           | 0.84            | 7.48           | 20.556            | 34.8        | -14.24      |
| 711                                         | V               | 7.736            | 0.84            | 7.48           | 14.376            | 34.8        | -20.42      |

**NOTES:**

- ERP (dBm) / EIRP (dBm)=  
SG Reading (dBm) - Cable Loss (dB) + Substitute Antenna Gain (dBd/dBi)
- This unit was tested with its standard adapter.
- The EUT was tested in three orthogonal planes and in all possible test configurations and positioning.

### Radiated Spurious Emission

| LTE Band2                                 |                 |                  |                 |                |                    |             |             |
|-------------------------------------------|-----------------|------------------|-----------------|----------------|--------------------|-------------|-------------|
| Frequency (MHz)                           | Ant. Pol. (H/V) | SG Reading (dBm) | Cable Loss (dB) | Ant Gain (dBi) | EIRP Measure (dBm) | Limit (dBm) | Margin (dB) |
| QPSK, CH18900 / 1880MHz, Bandwidth 1.4MHz |                 |                  |                 |                |                    |             |             |
| 3760                                      | H               | -59.64           | 1.360           | 7.950          | -53.050            | -13         | -40.05      |
| 5640                                      | H               | -67.13           | 1.790           | 10.100         | -58.820            | -13         | -45.82      |
| 7520                                      | H               | -62.702          | 1.720           | 11.722         | -52.700            | -13         | -39.70      |
| 3760                                      | V               | -65.34           | 1.360           | 7.950          | -58.750            | -13         | -45.75      |
| 5640                                      | V               | -66.57           | 1.790           | 10.100         | -58.260            | -13         | -45.26      |
| 7520                                      | V               | -65.192          | 1.720           | 11.722         | -55.190            | -13         | -42.19      |
| QPSK, CH18900 / 1880MHz, Bandwidth 3MHz   |                 |                  |                 |                |                    |             |             |
| 3760                                      | H               | -59.57           | 1.360           | 7.950          | -52.980            | -13         | -39.98      |
| 5640                                      | H               | -66.76           | 1.790           | 10.100         | -58.450            | -13         | -45.45      |
| 7520                                      | H               | -62.003          | 1.720           | 11.722         | -52.001            | -13         | -39.00      |
| 3760                                      | V               | -64.24           | 1.360           | 7.950          | -57.650            | -13         | -44.65      |
| 5640                                      | V               | -66.09           | 1.790           | 10.100         | -57.780            | -13         | -44.78      |
| 7520                                      | V               | -66.182          | 1.720           | 11.722         | -56.180            | -13         | -43.18      |
| QPSK, CH18900 / 1880MHz, Bandwidth 5MHz   |                 |                  |                 |                |                    |             |             |
| 3760                                      | H               | -58.46           | 1.360           | 7.950          | -51.870            | -13         | -38.87      |
| 5640                                      | H               | -66.49           | 1.790           | 10.100         | -58.180            | -13         | -45.18      |
| 7520                                      | H               | -63.992          | 1.720           | 11.722         | -53.990            | -13         | -40.99      |
| 3760                                      | V               | -65.48           | 1.360           | 7.950          | -58.890            | -13         | -45.89      |
| 5640                                      | V               | -67.72           | 1.790           | 10.100         | -59.410            | -13         | -46.41      |
| 7520                                      | V               | -64.982          | 1.720           | 11.722         | -54.980            | -13         | -41.98      |

Note:

- Spurious emissions within 30-1000MHz & Other harmonic were found more than 20dB below limit line.
- $EIRP \text{ or } ERP \text{ (dBm)} = SG \text{ Reading (dBm)} - Cable \text{ Loss (dB)} + Substitute \text{ Antenna Gain (dBi)}$

| LTE Band2                                |                 |                  |                 |                |                    |             |             |
|------------------------------------------|-----------------|------------------|-----------------|----------------|--------------------|-------------|-------------|
| Frequency (MHz)                          | Ant. Pol. (H/V) | SG Reading (dBm) | Cable Loss (dB) | Ant Gain (dBi) | EIRP Measure (dBm) | Limit (dBm) | Margin (dB) |
| QPSK, CH18900 / 1880MHz, Bandwidth 10MHz |                 |                  |                 |                |                    |             |             |
| 3760                                     | H               | -59.37           | 1.360           | 7.950          | -52.780            | -13         | -39.78      |
| 5640                                     | H               | -66.68           | 1.790           | 10.100         | -58.370            | -13         | -45.37      |
| 7520                                     | H               | -62.992          | 1.720           | 11.722         | -52.990            | -13         | -39.99      |
| 3760                                     | V               | -65.12           | 1.360           | 7.950          | -58.530            | -13         | -45.53      |
| 5640                                     | V               | -67.47           | 1.790           | 10.100         | -59.160            | -13         | -46.16      |
| 7520                                     | V               | -64.232          | 1.720           | 11.722         | -54.230            | -13         | -41.23      |
| QPSK, CH18900 / 1880MHz, Bandwidth 15MHz |                 |                  |                 |                |                    |             |             |
| 3760                                     | H               | -60.37           | 1.360           | 7.950          | -53.780            | -13         | -40.78      |
| 5640                                     | H               | -67.3098         | 1.790           | 10.100         | -59.000            | -13         | -46.00      |
| 7520                                     | H               | -63.412          | 1.720           | 11.722         | -53.410            | -13         | -40.41      |
| 3760                                     | V               | -64.27           | 1.360           | 7.950          | -57.680            | -13         | -44.68      |
| 5640                                     | V               | -67.1            | 1.790           | 10.100         | -58.790            | -13         | -45.79      |
| 7520                                     | V               | -65.652          | 1.720           | 11.722         | -55.650            | -13         | -42.65      |
| QPSK, CH18900 / 1880MHz, Bandwidth 20MHz |                 |                  |                 |                |                    |             |             |
| 3760                                     | H               | -60.13           | 1.360           | 7.950          | -53.540            | -13         | -40.54      |
| 5640                                     | H               | -66.2            | 1.790           | 10.100         | -57.890            | -13         | -44.89      |
| 7520                                     | H               | -64.492          | 1.720           | 11.722         | -54.490            | -13         | -41.49      |
| 3760                                     | V               | -64.04           | 1.360           | 7.950          | -57.450            | -13         | -44.45      |
| 5640                                     | V               | -67.02           | 1.790           | 10.100         | -58.710            | -13         | -45.71      |
| 7520                                     | V               | -65.112          | 1.720           | 11.722         | -55.110            | -13         | -42.11      |

Note:

- Spurious emissions within 30-1000MHz & Other harmonic were found more than 20dB below limit line.
- $EIRP \text{ or } ERP \text{ (dBm)} = SG \text{ Reading (dBm)} - Cable \text{ Loss (dB)} + Substitute \text{ Antenna Gain (dBi)}$

| LTE Band4                                  |                 |                  |                 |                |                    |             |             |
|--------------------------------------------|-----------------|------------------|-----------------|----------------|--------------------|-------------|-------------|
| Frequency (MHz)                            | Ant. Pol. (H/V) | SG Reading (dBm) | Cable Loss (dB) | Ant Gain (dBi) | EIRP Measure (dBm) | Limit (dBm) | Margin (dB) |
| QPSK, CH20175 /1732.5MHz, Bandwidth 1.4MHz |                 |                  |                 |                |                    |             |             |
| 3465                                       | H               | -55.326          | 1.330           | 7.646          | -49.010            | -13         | -36.01      |
| 5197.5                                     | H               | -63.04           | 1.680           | 9.880          | -54.840            | -13         | -41.84      |
| 6930                                       | H               | -62.556          | 1.810           | 11.146         | -53.220            | -13         | -40.22      |
| 3465                                       | V               | -55.506          | 1.330           | 7.646          | -49.190            | -13         | -36.19      |
| 5197.5                                     | V               | -66.39           | 1.680           | 9.880          | -58.190            | -13         | -45.19      |
| 6930                                       | V               | -62.526          | 1.810           | 11.146         | -53.190            | -13         | -40.19      |
| QPSK, CH20175 /1732.5MHz, Bandwidth 3MHz   |                 |                  |                 |                |                    |             |             |
| 3465                                       | H               | -57.076          | 1.330           | 7.646          | -50.760            | -13         | -37.76      |
| 5197.5                                     | H               | -63.32           | 1.680           | 9.880          | -55.120            | -13         | -42.12      |
| 6930                                       | H               | -63.646          | 1.810           | 11.146         | -54.310            | -13         | -41.31      |
| 3465                                       | V               | -56.202          | 1.330           | 7.646          | -49.886            | -13         | -36.89      |
| 5197.5                                     | V               | -66.18           | 1.680           | 9.880          | -57.980            | -13         | -44.98      |
| 6930                                       | V               | -64.122          | 1.810           | 11.146         | -54.786            | -13         | -41.79      |
| QPSK, CH20175 /1732.5MHz, Bandwidth 5MHz   |                 |                  |                 |                |                    |             |             |
| 3465                                       | H               | -54.936          | 1.330           | 7.646          | -48.620            | -13         | -35.62      |
| 5197.5                                     | H               | -63.69           | 1.680           | 9.880          | -55.490            | -13         | -42.49      |
| 6930                                       | H               | -62.206          | 1.810           | 11.146         | -52.870            | -13         | -39.87      |
| 3465                                       | V               | -55.786          | 1.330           | 7.646          | -49.470            | -13         | -36.47      |
| 5197.5                                     | V               | -67.57           | 1.680           | 9.880          | -59.370            | -13         | -46.37      |
| 6930                                       | V               | -62.786          | 1.810           | 11.146         | -53.450            | -13         | -40.45      |

Note:

1. Spurious emissions within 30-1000MHz & Other harmonic were found more than 20dB below limit line.
2.  $EIRP \text{ or } ERP \text{ (dBm)} = SG \text{ Reading (dBm)} - \text{Cable Loss (dB)} + \text{Substitute Antenna Gain (dBi)}$

| LTE Band4                                 |                 |                  |                 |                |                    |             |             |
|-------------------------------------------|-----------------|------------------|-----------------|----------------|--------------------|-------------|-------------|
| Frequency (MHz)                           | Ant. Pol. (H/V) | SG Reading (dBm) | Cable Loss (dB) | Ant Gain (dBi) | EIRP Measure (dBm) | Limit (dBm) | Margin (dB) |
| QPSK, CH20175 /1732.5MHz, Bandwidth 10MHz |                 |                  |                 |                |                    |             |             |
| 3465                                      | H               | -51.706          | 1.330           | 7.646          | -45.390            | -13         | -32.39      |
| 5197.5                                    | H               | -64.300          | 1.680           | 9.880          | -56.100            | -13         | -43.10      |
| 6930                                      | H               | -62.486          | 1.810           | 11.146         | -53.150            | -13         | -40.15      |
| 3465                                      | V               | -54.686          | 1.330           | 7.646          | -48.370            | -13         | -35.37      |
| 5197.5                                    | V               | -67.78           | 1.680           | 9.880          | -59.580            | -13         | -46.58      |
| 6930                                      | V               | -62.336          | 1.810           | 11.146         | -53.000            | -13         | -40.00      |
| QPSK, CH20175 /1732.5MHz, Bandwidth 15MHz |                 |                  |                 |                |                    |             |             |
| 3465                                      | H               | -55.526          | 1.330           | 7.646          | -49.210            | -13         | -36.21      |
| 5197.5                                    | H               | -62.87           | 1.680           | 9.880          | -54.670            | -13         | -41.67      |
| 6930                                      | H               | -63.096          | 1.810           | 11.146         | -53.760            | -13         | -40.76      |
| 3465                                      | V               | -56.55           | 1.330           | 7.646          | -50.234            | -13         | -37.23      |
| 5197.5                                    | V               | -66.968          | 1.680           | 9.880          | -58.768            | -13         | -45.77      |
| 6930                                      | V               | -62.546          | 1.810           | 11.146         | -53.210            | -13         | -40.21      |
| QPSK, CH20175 /1732.5MHz, Bandwidth 20MHz |                 |                  |                 |                |                    |             |             |
| 3465                                      | H               | -53.926          | 1.330           | 7.646          | -47.610            | -13         | -34.61      |
| 5197.5                                    | H               | -63.59           | 1.680           | 9.880          | -55.390            | -13         | -42.39      |
| 6930                                      | H               | -61.626          | 1.810           | 11.146         | -52.290            | -13         | -39.29      |
| 3465                                      | V               | -57.956          | 1.330           | 7.646          | -51.640            | -13         | -38.64      |
| 5197.5                                    | V               | -67.36           | 1.680           | 9.880          | -59.160            | -13         | -46.16      |
| 6930                                      | V               | -63.226          | 1.810           | 11.146         | -53.890            | -13         | -40.89      |

Note:

1. Spurious emissions within 30-1000MHz & Other harmonic were found more than 20dB below limit line.
2.  $EIRP \text{ or } ERP \text{ (dBm)} = SG \text{ Reading (dBm)} - Cable \text{ Loss (dB)} + Substitute \text{ Antenna Gain (dBi)}$

| LTE Band5                                  |                 |                  |                 |                |                   |             |             |
|--------------------------------------------|-----------------|------------------|-----------------|----------------|-------------------|-------------|-------------|
| Frequency (MHz)                            | Ant. Pol. (H/V) | SG Reading (dBm) | Cable Loss (dB) | Ant Gain (dBi) | ERP Measure (dBm) | Limit (dBm) | Margin (dB) |
| QPSK, CH20525 / 836.5MHz, Bandwidth 1.4MHz |                 |                  |                 |                |                   |             |             |
| 1673                                       | H               | -50.304          | 1.050           | 5.024          | -46.330           | -13         | -33.33      |
| 2509.5                                     | H               | -68.566          | 1.140           | 5.636          | -64.070           | -13         | -51.07      |
| 3346                                       | H               | -65.832          | 1.320           | 7.122          | -60.030           | -13         | -47.03      |
| 1673                                       | V               | -48.094          | 1.050           | 5.024          | -44.120           | -13         | -31.12      |
| 2509.5                                     | V               | -64.236          | 1.140           | 5.636          | -59.740           | -13         | -46.74      |
| 3346                                       | V               | -68.082          | 1.320           | 7.122          | -62.280           | -13         | -49.28      |
| QPSK, CH20525 / 836.5MHz, Bandwidth 3MHz   |                 |                  |                 |                |                   |             |             |
| 1673                                       | H               | -51.184          | 1.050           | 5.024          | -47.210           | -13         | -34.21      |
| 2509.5                                     | H               | -68.483          | 1.140           | 5.636          | -63.987           | -13         | -50.99      |
| 3346                                       | H               | -66.354          | 1.320           | 7.122          | -60.552           | -13         | -47.55      |
| 1673                                       | V               | -49.184          | 1.050           | 5.024          | -45.210           | -13         | -32.21      |
| 2509.5                                     | V               | -64.95           | 1.140           | 5.636          | -60.454           | -13         | -47.45      |
| 3346                                       | V               | -67.122          | 1.320           | 7.122          | -61.320           | -13         | -48.32      |

Note:

1. Spurious emissions within 30-1000MHz & Other harmonic were found more than 20dB below limit line.
2. EIRP or ERP (dBm) = SG Reading (dBm) - Cable Loss (dB) + Substitute Antenna Gain (dBi)



| LTE Band5                                 |                 |                  |                 |                |                   |             |             |
|-------------------------------------------|-----------------|------------------|-----------------|----------------|-------------------|-------------|-------------|
| Frequency (MHz)                           | Ant. Pol. (H/V) | SG Reading (dBm) | Cable Loss (dB) | Ant Gain (dBi) | ERP Measure (dBm) | Limit (dBm) | Margin (dB) |
| QPSK, CH20525 / 836.5MHz, Bandwidth 5MHz  |                 |                  |                 |                |                   |             |             |
| 1673                                      | H               | -53.044          | 1.050           | 5.024          | -49.070           | -13         | -36.07      |
| 2509.5                                    | H               | -64.806          | 1.140           | 5.636          | -60.310           | -13         | -47.31      |
| 3346                                      | H               | -66.912          | 1.320           | 7.122          | -61.110           | -13         | -48.11      |
| 1673                                      | V               | -49.304          | 1.050           | 5.024          | -45.330           | -13         | -32.33      |
| 2509.5                                    | V               | -63.516          | 1.140           | 5.636          | -59.020           | -13         | -46.02      |
| 3346                                      | V               | -67.012          | 1.320           | 7.122          | -61.210           | -13         | -48.21      |
| QPSK, CH20525 / 836.5MHz, Bandwidth 10MHz |                 |                  |                 |                |                   |             |             |
| 1673                                      | H               | -52.064          | 1.050           | 5.024          | -48.090           | -13         | -35.09      |
| 2509.5                                    | H               | -64.386          | 1.140           | 5.636          | -59.890           | -13         | -46.89      |
| 3346                                      | H               | -67.952          | 1.320           | 7.122          | -62.150           | -13         | -49.15      |
| 1673                                      | V               | -48.024          | 1.050           | 5.024          | -44.050           | -13         | -31.05      |
| 2509.5                                    | V               | -62.606          | 1.140           | 5.636          | -58.110           | -13         | -45.11      |
| 3346                                      | V               | -66.582          | 1.320           | 7.122          | -60.780           | -13         | -47.78      |

Note:

1. Spurious emissions within 30-1000MHz & Other harmonic were found more than 20dB below limit line.
2. EIRP or ERP (dBm) = SG Reading (dBm) - Cable Loss (dB) + Substitute Antenna Gain (dBi)

| LTE Band12                                 |                 |                  |                 |                |                   |             |             |
|--------------------------------------------|-----------------|------------------|-----------------|----------------|-------------------|-------------|-------------|
| Frequency (MHz)                            | Ant. Pol. (H/V) | SG Reading (dBm) | Cable Loss (dB) | Ant Gain (dBi) | ERP Measure (dBm) | Limit (dBm) | Margin (dB) |
| QPSK, CH23095 / 707.5MHz, Bandwidth 1.4MHz |                 |                  |                 |                |                   |             |             |
| 1415                                       | H               | -53.224          | 1.020           | 4.754          | -49.490           | -13         | -36.49      |
| 2122.5                                     | H               | -58.432          | 1.160           | 4.742          | -54.850           | -13         | -41.85      |
| 2830                                       | H               | -65.318          | 1.270           | 6.438          | -60.150           | -13         | -47.15      |
| 1415                                       | V               | -52.234          | 1.020           | 4.754          | -48.500           | -13         | -35.50      |
| 2122.5                                     | V               | -61.312          | 1.160           | 4.742          | -57.730           | -13         | -44.73      |
| 2830                                       | V               | -67.898          | 1.270           | 6.438          | -62.730           | -13         | -49.73      |
| QPSK, CH23095 / 707.5MHz, Bandwidth 3MHz   |                 |                  |                 |                |                   |             |             |
| 1415                                       | H               | -54.244          | 1.020           | 4.754          | -50.510           | -13         | -37.51      |
| 2122.5                                     | H               | -58.792          | 1.160           | 4.742          | -55.210           | -13         | -42.21      |
| 2830                                       | H               | -66.638          | 1.270           | 6.438          | -61.470           | -13         | -48.47      |
| 1415                                       | V               | -52.844          | 1.020           | 4.754          | -49.110           | -13         | -36.11      |
| 2122.5                                     | V               | -62.492          | 1.160           | 4.742          | -58.910           | -13         | -45.91      |
| 2830                                       | V               | -68.838          | 1.270           | 6.438          | -63.670           | -13         | -50.67      |

Note:

1. Spurious emissions within 30-1000MHz & Other harmonic were found more than 20dB below limit line.
2. EIRP or ERP (dBm) = SG Reading (dBm) - Cable Loss (dB) + Substitute Antenna Gain (dBi)

| LTE Band12                                |                 |                  |                 |                |                   |             |             |
|-------------------------------------------|-----------------|------------------|-----------------|----------------|-------------------|-------------|-------------|
| Frequency (MHz)                           | Ant. Pol. (H/V) | SG Reading (dBm) | Cable Loss (dB) | Ant Gain (dBi) | ERP Measure (dBm) | Limit (dBm) | Margin (dB) |
| QPSK, CH23095 / 707.5MHz, Bandwidth 5MHz  |                 |                  |                 |                |                   |             |             |
| 1415                                      | H               | -57.634          | 1.020           | 4.754          | -53.900           | -13         | -40.90      |
| 2122.5                                    | H               | -62.458          | 1.160           | 4.742          | -58.876           | -13         | -45.88      |
| 2830                                      | H               | -67.8856         | 1.270           | 6.438          | -62.718           | -13         | -49.72      |
| 1415                                      | V               | -53.854          | 1.020           | 4.754          | -50.120           | -13         | -37.12      |
| 2122.5                                    | V               | -60.601          | 1.160           | 4.742          | -57.019           | -13         | -44.02      |
| 2830                                      | V               | -69.148          | 1.270           | 6.438          | -63.980           | -13         | -50.98      |
| QPSK, CH23095 / 707.5MHz, Bandwidth 10MHz |                 |                  |                 |                |                   |             |             |
| 1415                                      | H               | -56.924          | 1.020           | 4.754          | -53.190           | -13         | -40.19      |
| 2122.5                                    | H               | -60.592          | 1.160           | 4.742          | -57.010           | -13         | -44.01      |
| 2830                                      | H               | -68.408          | 1.270           | 6.438          | -63.240           | -13         | -50.24      |
| 1415                                      | V               | -53.914          | 1.020           | 4.754          | -50.180           | -13         | -37.18      |
| 2122.5                                    | V               | -62.012          | 1.160           | 4.742          | -58.430           | -13         | -45.43      |
| 2830                                      | V               | -68.518          | 1.270           | 6.438          | -63.350           | -13         | -50.35      |

Note:

1. Spurious emissions within 30-1000MHz & Other harmonic were found more than 20dB below limit line.
2. EIRP or ERP (dBm) = SG Reading (dBm) - Cable Loss (dB) + Substitute Antenna Gain (dBi)

## 7.6. Peak-Average Ratio

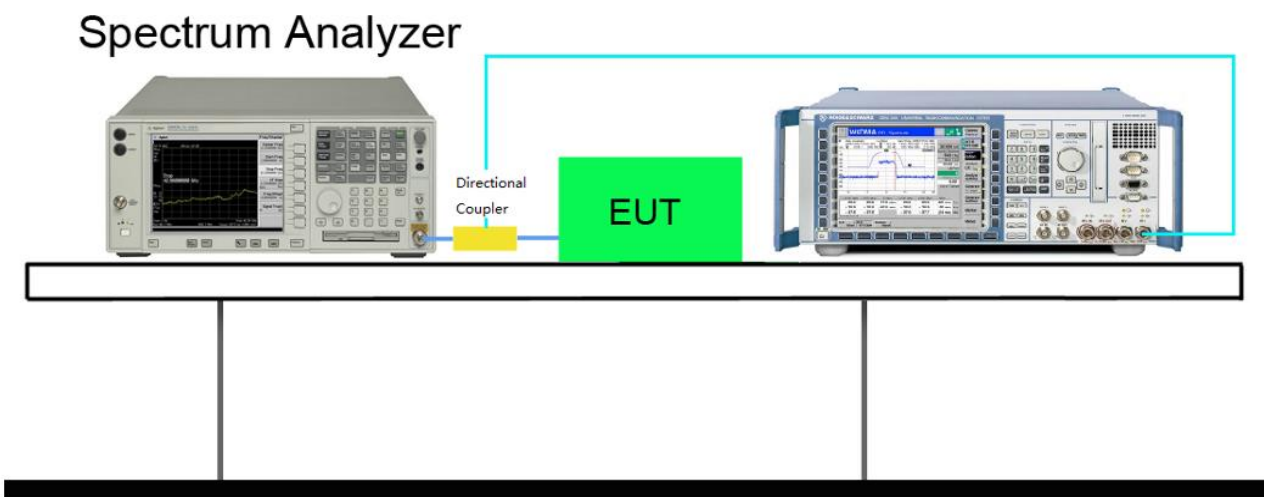
### 7.6.1 Test Limit

The transmitter's peak-to-average power ratio (PAPR) shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

### 7.6.2 Test Procedure

KDB 971168 D01v03r01 - Section 5.7 & ANSI/TIA-603-E-2016

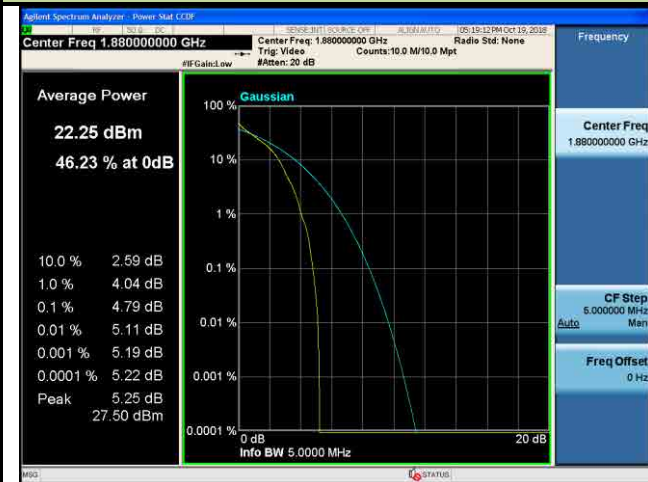
### 7.6.3 Test Setup



#### 7.6.4 Test Result

| Test Mode  | Modulation | Channel/<br>Frequency<br>(MHz) | Bandwidth<br>(MHz) | RB Size | RB Offset | Test<br>Result |
|------------|------------|--------------------------------|--------------------|---------|-----------|----------------|
| LTE Band 2 | QPSK       | CH18900/1880MHz                | 1.4                | 1       | 2         | Pass           |
|            |            |                                | 3                  | 1       | 7         | Pass           |
|            |            |                                | 5                  | 1       | 12        | Pass           |
|            |            |                                | 10                 | 1       | 25        | Pass           |
|            |            |                                | 15                 | 1       | 36        | Pass           |
|            |            |                                | 20                 | 1       | 49        | Pass           |
|            | 16QAM      |                                | 1.4                | 1       | 2         | Pass           |
|            |            |                                | 3                  | 1       | 7         | Pass           |
|            |            |                                | 5                  | 1       | 12        | Pass           |
|            |            |                                | 10                 | 1       | 25        | Pass           |
|            |            |                                | 15                 | 1       | 36        | Pass           |
|            |            |                                | 20                 | 1       | 49        | Pass           |

### LTE Band 2 QPSK 1.4MHz CH18900 1RB#2



### LTE Band 2 QPSK 3MHz CH18900 1RB#7



### LTE Band 2 QPSK 5MHz CH18900 1RB#12



### LTE Band 2 QPSK 10MHz CH18900 1RB#25



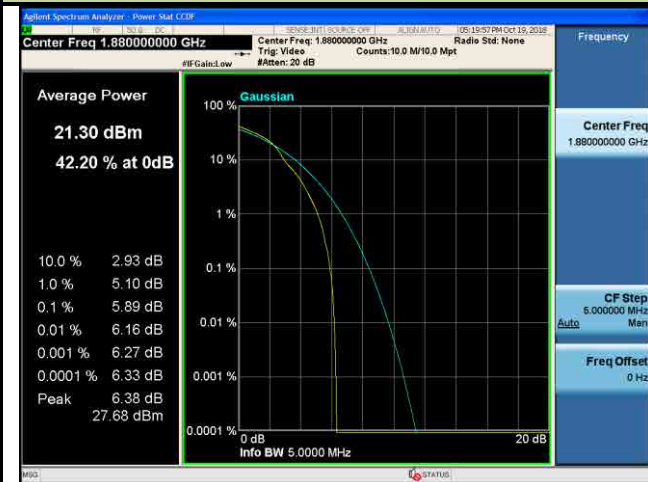
### LTE Band 2 QPSK 15MHz CH18900 1RB#36



### LTE Band 2 QPSK 20MHz CH18900 1RB#49



### LTE Band 2 16QAM 1.4MHz CH18900 1RB#2



### LTE Band 2 16QAM 3MHz CH18900 1RB#7



### LTE Band 2 16QAM 5MHz CH18900 1RB#12



### LTE Band 2 16QAM 10MHz CH18900 1RB#25



### LTE Band 2 16QAM 15MHz CH18900 1RB#36



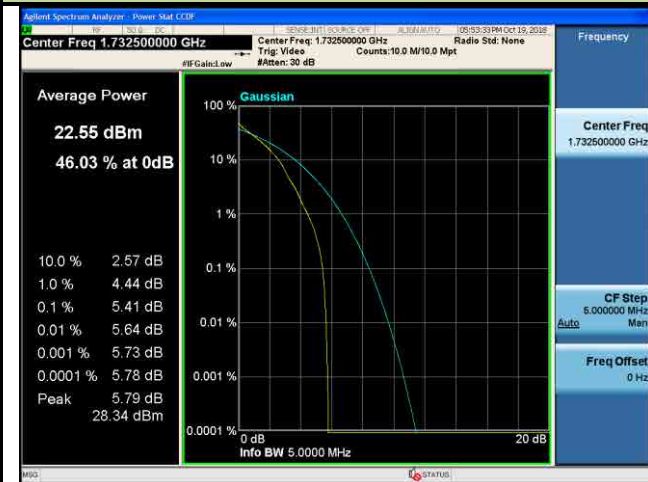
### LTE Band 2 16QAM 20MHz CH18900 1RB#49



| Test Mode  | Modulation | Channel/<br>Frequency<br>(MHz) | Bandwidth<br>(MHz) | RB Size | RB Offset | Test<br>Result |
|------------|------------|--------------------------------|--------------------|---------|-----------|----------------|
| LTE Band 4 | QPSK       | CH20175 / 1732.5MHz            | 1.4                | 1       | 2         | Pass           |
|            |            |                                | 3                  | 1       | 7         | Pass           |
|            |            |                                | 5                  | 1       | 12        | Pass           |
|            |            |                                | 10                 | 1       | 25        | Pass           |
|            |            |                                | 15                 | 1       | 36        | Pass           |
|            |            |                                | 20                 | 1       | 49        | Pass           |
|            | 16QAM      |                                | 1.4                | 1       | 2         | Pass           |
|            |            |                                | 3                  | 1       | 7         | Pass           |
|            |            |                                | 5                  | 1       | 12        | Pass           |
|            |            |                                | 10                 | 1       | 25        | Pass           |
|            |            |                                | 15                 | 1       | 36        | Pass           |
|            |            |                                | 20                 | 1       | 49        | Pass           |



### LTE Band 4 QPSK 1.4MHz CH20175 1RB#2



### LTE Band 4 QPSK 3MHz CH20175 1RB#7



### LTE Band 4 QPSK 5MHz CH20175 1RB#12



### LTE Band 4 QPSK 10MHz CH20175 1RB#25



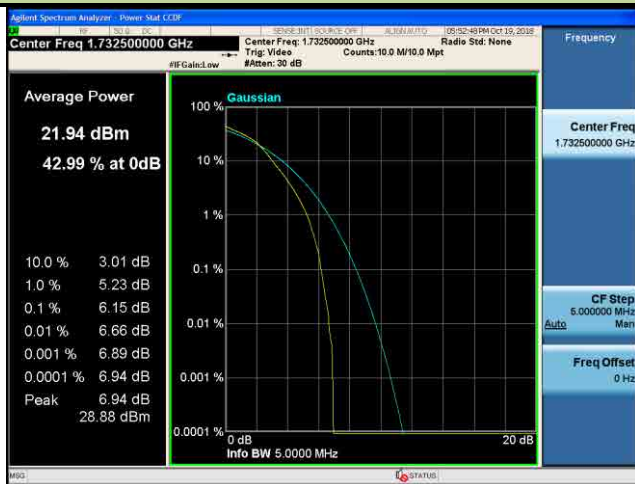
### LTE Band 4 QPSK 15MHz CH20175 1RB#36



### LTE Band 4 QPSK 20MHz CH20175 1RB#49



### LTE Band 4 16QAM 1.4MHz CH20175 1RB#2



### LTE Band 4 16QAM 3MHz CH20175 1RB#7



### LTE Band 4 16QAM 5MHz CH20175 1RB#12



### LTE Band 4 16QAM 10MHz CH20175 1RB#25



### LTE Band 4 16QAM 15MHz CH20175 1RB#36



### LTE Band 4 16QAM 20MHz CH20175 1RB#49



| Test Mode  | Modulation | Channel/<br>Frequency<br>(MHz) | Bandwidth<br>(MHz) | RB Size | RB Offset | Test<br>Result |
|------------|------------|--------------------------------|--------------------|---------|-----------|----------------|
| LTE Band 5 | QPSK       | CH20525 / 836.5MHz             | 1.4                | 1       | 2         | Pass           |
|            |            |                                | 3                  | 1       | 7         | Pass           |
|            |            |                                | 5                  | 1       | 12        | Pass           |
|            |            |                                | 10                 | 1       | 25        | Pass           |
|            | 16QAM      |                                | 1.4                | 1       | 2         | Pass           |
|            |            |                                | 3                  | 1       | 7         | Pass           |
|            |            |                                | 5                  | 1       | 12        | Pass           |
|            |            |                                | 10                 | 1       | 25        | Pass           |

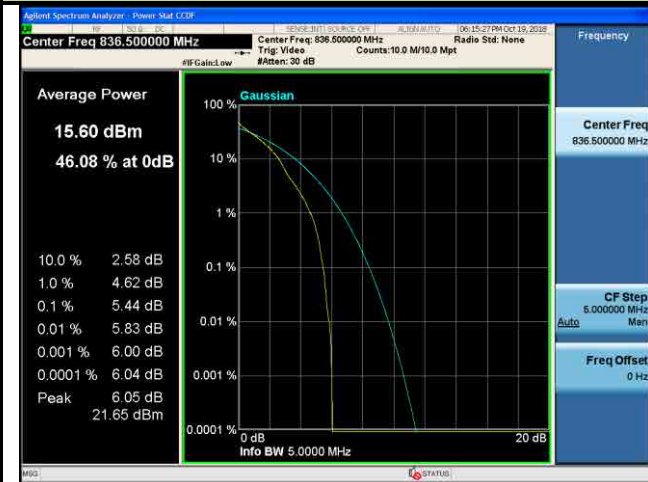
### LTE Band 5 QPSK 1.4MHz CH20525 1RB#2



### LTE Band 5 QPSK 3MHz CH20525 1RB#7



### LTE Band 5 QPSK 5MHz CH20525 1RB#12



### LTE Band 5 QPSK 10MHz CH20525 1RB#25



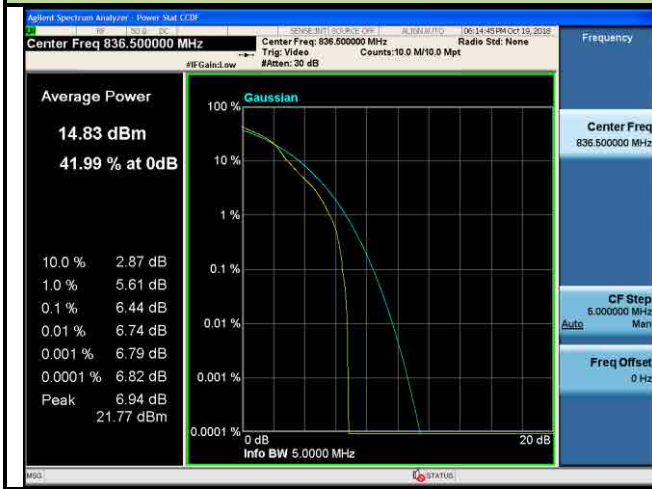
### LTE Band 5 16QAM 1.4MHz CH20525 1RB#2



### LTE Band 5 16QAM 3MHz CH20525 1RB#7



### LTE Band 5 16QAM 5MHz CH20525 1RB#12



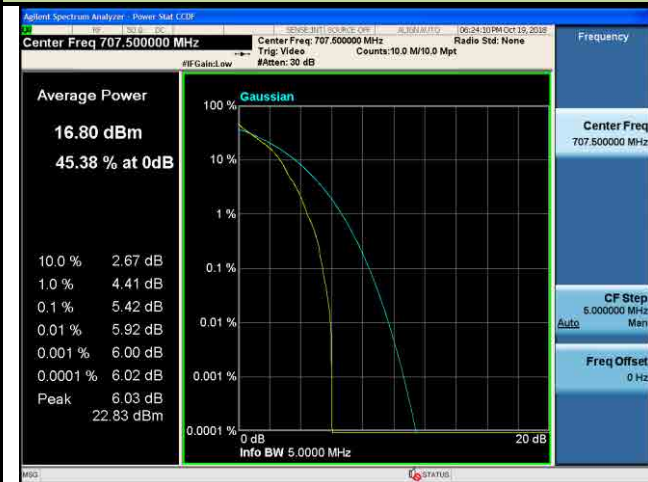
### LTE Band 5 16QAM 10MHz CH20525 1RB#25





| Test Mode   | Modulation | Channel/<br>Frequency<br>(MHz) | Bandwidth<br>(MHz) | RB Size | RB Offset | Test<br>Result |
|-------------|------------|--------------------------------|--------------------|---------|-----------|----------------|
| LTE Band 12 | QPSK       | CH23095 / 707.5MHz             | 1.4                | 1       | 2         | Pass           |
|             |            |                                | 3                  | 1       | 7         | Pass           |
|             |            |                                | 5                  | 1       | 12        | Pass           |
|             |            |                                | 10                 | 1       | 25        | Pass           |
|             | 16QAM      |                                | 1.4                | 1       | 2         | Pass           |
|             |            |                                | 3                  | 1       | 7         | Pass           |
|             |            |                                | 5                  | 1       | 12        | Pass           |
|             |            |                                | 10                 | 1       | 25        | Pass           |

### LTE Band 12 QPSK 1.4MHz CH23095 1RB#2



### LTE Band 12 QPSK 3MHz CH23095 1RB#7



### LTE Band 12 QPSK 5MHz CH23095 1RB#12



### LTE Band 12 QPSK 10MHz CH23095 1RB#25

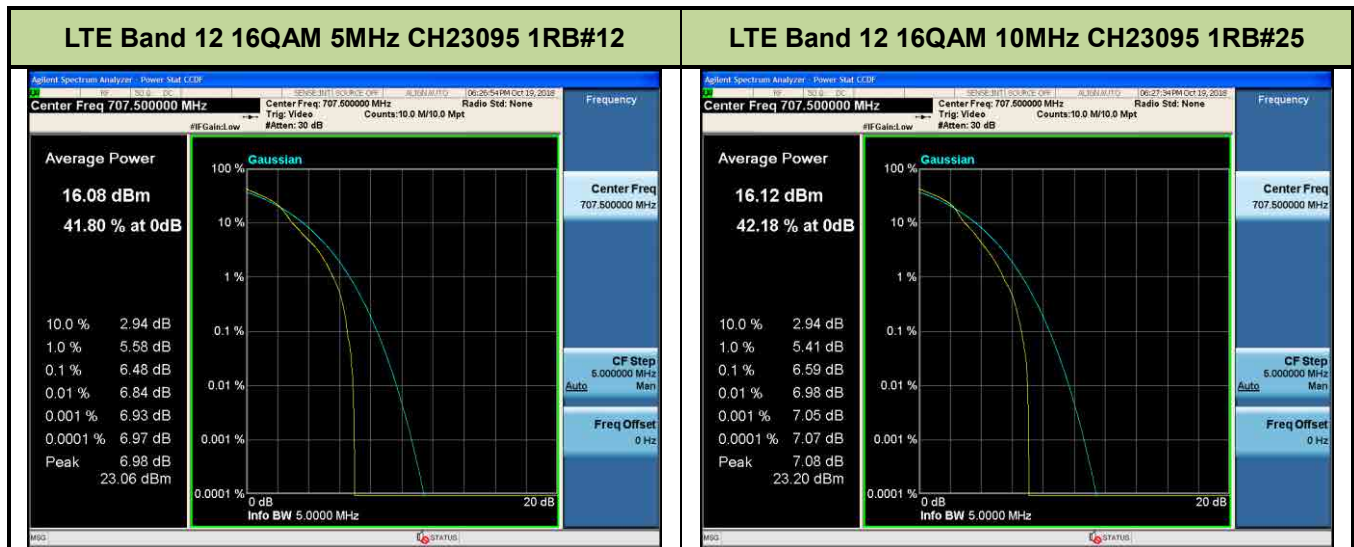


### LTE Band 12 16QAM 1.4MHz CH23095 1RB#2



### LTE Band 12 16QAM 3MHz CH23095 1RB#7









#### 7.7.4 Test Result

|                     |            |
|---------------------|------------|
| Operating Frequency | 1880MHz    |
| Channel             | CH18900    |
| Test Mode           | LTE Band 2 |
| Reference Voltage   | DC 3.6V    |

| Temperature vs. Frequency Stability |             |            |                          |                         |                           |             |
|-------------------------------------|-------------|------------|--------------------------|-------------------------|---------------------------|-------------|
| Voltage (%)                         | Power (VDC) | Temp (°C)  | Declared Frequency (MHz) | Measured Frequency (Hz) | Frequency Tolerance (ppm) | Limit (ppm) |
| 100%                                | 3.6V        | -30        | 1880                     | -14.91                  | -0.008                    | ±2.5        |
|                                     |             | -20        | 1880                     | -10.64                  | -0.006                    | ±2.5        |
|                                     |             | -10        | 1880                     | -11.83                  | -0.006                    | ±2.5        |
|                                     |             | 0          | 1880                     | 10.89                   | 0.006                     | ±2.5        |
|                                     |             | 10         | 1880                     | 11.01                   | 0.006                     | ±2.5        |
|                                     |             | + 20 (Ref) | 1880                     | -8.18                   | -0.004                    | ±2.5        |
|                                     |             | 30         | 1880                     | -11.00                  | -0.006                    | ±2.5        |
|                                     |             | 40         | 1880                     | 12.99                   | 0.007                     | ±2.5        |
|                                     |             | 50         | 1880                     | -17.95                  | -0.010                    | ±2.5        |
| Voltage vs. Frequency Stability     |             |            |                          |                         |                           |             |
| Voltage (%)                         | Power (VDC) | Temp (°C)  | Declared Frequency (MHz) | Measured Frequency (Hz) | Frequency Tolerance (ppm) | Limit (ppm) |
| 100%                                | 3.6V        | 20         | 1880                     | 16.05                   | 0.009                     | ±2.5        |
| 115%                                | 4.14V       | 20         | 1880                     | -10.30                  | -0.005                    | ±2.5        |
| 85%                                 | 3.06V       | 20         | 1880                     | 19.63                   | 0.010                     | ±2.5        |

|                     |            |
|---------------------|------------|
| Operating Frequency | 1732.6MHz  |
| Channel             | CH20175    |
| Test Mode           | LTE Band 4 |
| Reference Voltage   | DC 3.6V    |

| Temperature vs. Frequency Stability |             |            |                          |                         |                           |             |
|-------------------------------------|-------------|------------|--------------------------|-------------------------|---------------------------|-------------|
| Voltage (%)                         | Power (VDC) | Temp (°C)  | Declared Frequency (MHz) | Measured Frequency (Hz) | Frequency Tolerance (ppm) | Limit (ppm) |
| 100%                                | 3.6V        | -30        | 1732.6                   | -7.44                   | -0.004                    | ±2.5        |
|                                     |             | -20        | 1732.6                   | -13.99                  | -0.008                    | ±2.5        |
|                                     |             | -10        | 1732.6                   | -10.96                  | -0.006                    | ±2.5        |
|                                     |             | 0          | 1732.6                   | -11.72                  | -0.007                    | ±2.5        |
|                                     |             | 10         | 1732.6                   | -13.49                  | -0.008                    | ±2.5        |
|                                     |             | + 20 (Ref) | 1732.6                   | -14.42                  | -0.008                    | ±2.5        |
|                                     |             | 30         | 1732.6                   | 11.70                   | 0.007                     | ±2.5        |
|                                     |             | 40         | 1732.6                   | 15.31                   | 0.009                     | ±2.5        |
|                                     |             | 50         | 1732.6                   | 14.18                   | 0.008                     | ±2.5        |
| Voltage vs. Frequency Stability     |             |            |                          |                         |                           |             |
| Voltage (%)                         | Power (VDC) | Temp (°C)  | Declared Frequency (MHz) | Measured Frequency (Hz) | Frequency Tolerance (ppm) | Limit (ppm) |
| 100%                                | 3.6V        | 20         | 1732.6                   | -11.44                  | -0.007                    | ±2.5        |
| 115%                                | 4.14V       | 20         | 1732.6                   | -14.46                  | -0.008                    | ±2.5        |
| 85%                                 | 3.06V       | 20         | 1732.6                   | -13.40                  | -0.008                    | ±2.5        |

|                     |            |
|---------------------|------------|
| Operating Frequency | 836.6MHz   |
| Channel             | CH20525    |
| Test Mode           | LTE Band 5 |
| Reference Voltage   | DC 3.6V    |

| Temperature vs. Frequency Stability |             |            |                          |                         |                           |             |
|-------------------------------------|-------------|------------|--------------------------|-------------------------|---------------------------|-------------|
| Voltage (%)                         | Power (VDC) | Temp (°C)  | Declared Frequency (MHz) | Measured Frequency (Hz) | Frequency Tolerance (ppm) | Limit (ppm) |
| 100%                                | 3.6V        | -30        | 836.6                    | 7.34                    | 0.009                     | ±2.5        |
|                                     |             | -20        | 836.6                    | -5.65                   | -0.007                    | ±2.5        |
|                                     |             | -10        | 836.6                    | 7.00                    | 0.008                     | ±2.5        |
|                                     |             | 0          | 836.6                    | 8.34                    | 0.010                     | ±2.5        |
|                                     |             | 10         | 836.6                    | 10.49                   | 0.013                     | ±2.5        |
|                                     |             | + 20 (Ref) | 836.6                    | 9.31                    | 0.011                     | ±2.5        |
|                                     |             | 30         | 836.6                    | 8.71                    | 0.010                     | ±2.5        |
|                                     |             | 40         | 836.6                    | 8.87                    | 0.011                     | ±2.5        |
|                                     |             | 50         | 836.6                    | 8.27                    | 0.010                     | ±2.5        |
| Voltage vs. Frequency Stability     |             |            |                          |                         |                           |             |
| Voltage (%)                         | Power (VDC) | Temp (°C)  | Declared Frequency (MHz) | Measured Frequency (Hz) | Frequency Tolerance (ppm) | Limit (ppm) |
| 100%                                | 3.6V        | 20         | 836.6                    | 9.28                    | 0.011                     | ±2.5        |
| 115%                                | 4.14V       | 20         | 836.6                    | 7.67                    | 0.009                     | ±2.5        |
| 85%                                 | 3.06V       | 20         | 836.6                    | 7.00                    | 0.008                     | ±2.5        |

|                     |             |
|---------------------|-------------|
| Operating Frequency | 707.5MHz    |
| Channel             | CH23095     |
| Test Mode           | LTE Band 12 |
| Reference Voltage   | DC 3.6V     |

| Temperature vs. Frequency Stability |             |            |                          |                         |                           |             |
|-------------------------------------|-------------|------------|--------------------------|-------------------------|---------------------------|-------------|
| Voltage (%)                         | Power (VDC) | Temp (°C)  | Declared Frequency (MHz) | Measured Frequency (Hz) | Frequency Tolerance (ppm) | Limit (ppm) |
| 100%                                | 3.6V        | -30        | 707.5                    | 6.54                    | 0.009                     | ±2.5        |
|                                     |             | -20        | 707.5                    | 10.53                   | 0.015                     | ±2.5        |
|                                     |             | -10        | 707.5                    | 7.95                    | 0.011                     | ±2.5        |
|                                     |             | 0          | 707.5                    | 7.64                    | 0.011                     | ±2.5        |
|                                     |             | 10         | 707.5                    | 6.71                    | 0.009                     | ±2.5        |
|                                     |             | + 20 (Ref) | 707.5                    | 6.69                    | 0.009                     | ±2.5        |
|                                     |             | 30         | 707.5                    | 6.37                    | 0.009                     | ±2.5        |
|                                     |             | 40         | 707.5                    | 6.91                    | 0.010                     | ±2.5        |
|                                     |             | 50         | 707.5                    | 7.10                    | 0.010                     | ±2.5        |
| Voltage vs. Frequency Stability     |             |            |                          |                         |                           |             |
| Voltage (%)                         | Power (VDC) | Temp (°C)  | Declared Frequency (MHz) | Measured Frequency (Hz) | Frequency Tolerance (ppm) | Limit (ppm) |
| 100%                                | 3.6V        | 20         | 707.5                    | 9.10                    | 0.013                     | ±2.5        |
| 115%                                | 4.14V       | 20         | 707.5                    | 7.52                    | 0.011                     | ±2.5        |
| 85%                                 | 3.06V       | 20         | 707.5                    | 7.77                    | 0.011                     | ±2.5        |

The End