

## FCC Test Report (ENDC: n12+Band 2/66)

**Report No.:** RF200109E02-12

**FCC ID:** 2AQ68T99W175

**Test Model:** T99W175

**Received Date:** Jan. 10, 2020

**Test Date:** Apr. 23 ~ Apr. 26, 2020

**Issued Date:** Apr. 29, 2020

**Applicant:** Hon Lin Technology Co., Ltd.

**Address:** 11F, No. 32, Jihu Rd., Neihu Dist., Taipei City 114, Taiwan R.O.C.

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Lin Kou Laboratories

**Lab Address:** No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

**Test Location:** No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City  
33383, Taiwan

**FCC Registration /** 788550 / TW0003

**Designation Number:**



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### Release Control Record

| Issue No.      | Description      | Date Issued   |
|----------------|------------------|---------------|
| RF200109E02-12 | Original release | Apr. 29, 2020 |

## 1 Certificate of Conformity

**Product:** 5G WWAN Module

**Brand:** Foxconn

**Test Model:** T99W175

**Sample Status:** Engineering Sample

**Applicant:** Hon Lin Technology Co., Ltd.

**Test Date:** Apr. 23 ~ Apr. 26, 2020

**Standards:** FCC Part 24, Subpart E  
FCC Part 27, Subpart H, L

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

**Prepared by :** Pettie Chen, **Date:** Apr. 29, 2020  
Pettie Chen / Senior Specialist

**Approved by :** Bruce Chen, **Date:** Apr. 29, 2020  
Bruce Chen / Senior Project Engineer

## 2 Summary of Test Results

| Applied Standard: FCC Part 24 & Part 2 |                              |        |                                                                                    |
|----------------------------------------|------------------------------|--------|------------------------------------------------------------------------------------|
| FCC Clause                             | Test Item                    | Result | Remarks                                                                            |
| 2.1046<br>24.232                       | Effective radiated power     | Pass   | Meet the requirement of limit.                                                     |
| 2.1046<br>24.232(d)                    | Peak To Average Ratio        | Pass   | Meet the requirement of limit.                                                     |
| 2.1055<br>24.235                       | Frequency Stability          | Pass   | Meet the requirement of limit.                                                     |
| 2.1049<br>24.238(b)                    | Occupied Bandwidth           | Pass   | Meet the requirement of limit.                                                     |
| 24.238(b)                              | Band Edge Measurements       | Pass   | Meet the requirement of limit.                                                     |
| 2.1051<br>24.238                       | Conducted Spurious Emissions | Pass   | Meet the requirement of limit.                                                     |
| 2.1053<br>24.238                       | Radiated Spurious Emissions  | Pass   | Meet the requirement of limit.<br>Minimum passing margin is -36.3dB at 3760.00MHz. |

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

| Applied Standard: FCC Part 27 & Part 2 |                           |                                                                     |        |                                                                                  |
|----------------------------------------|---------------------------|---------------------------------------------------------------------|--------|----------------------------------------------------------------------------------|
| FCC Clause                             |                           | Test Item                                                           | Result | Remarks                                                                          |
| n12                                    | LTE Band 66               |                                                                     |        |                                                                                  |
| 2.1046<br>27.50<br>(d)(4)              | 2.1046<br>27.50<br>(d)(4) | Equivalent Isotropically Radiated Power / Equivalent Radiated Power | Pass   | Meet the requirement of limit.                                                   |
| 2.1047                                 | -                         | Modulation Characteristics                                          | Pass   | Meet the requirement of limit.                                                   |
| 27.50<br>(d)(5)                        | 27.50<br>(d)(5)           | Peak To Average Ratio                                               | Pass   | Meet the requirement of limit.                                                   |
| 2.1055<br>27.54                        | 2.1055<br>27.54           | Frequency Stability<br>Stay with the authorized bands of operation  | Pass   | Meet the requirement of limit.                                                   |
| 2.1049                                 | 2.1049                    | Occupied Bandwidth                                                  | Pass   | Meet the requirement of limit.                                                   |
| 2.1051<br>27.53(h)                     | 2.1051<br>27.53(h)        | Band Edge Measurements                                              | Pass   | Meet the requirement of limit.                                                   |
| 2.1051<br>27.53(h)                     | 2.1051<br>27.53(h)        | Conducted Spurious Emissions                                        | Pass   | Meet the requirement of limit.                                                   |
| 2.1053<br>27.53(h)                     | 2.1053<br>27.53(h)        | Radiated Spurious Emissions                                         | Pass   | Meet the requirement of limit.<br>Minimum passing margin is -28.7dB at 32.91MHz. |

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

## 2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| Measurement                    | Frequency       | Expanded Uncertainty<br>(k=2) ( $\pm$ ) |
|--------------------------------|-----------------|-----------------------------------------|
| Radiated Emissions up to 1 GHz | 9kHz ~ 30MHz    | 3.04 dB                                 |
|                                | 30MHz ~ 200MHz  | 3.63 dB                                 |
|                                | 200MHz ~1000MHz | 3.64 dB                                 |
| Radiated Emissions above 1 GHz | 1GHz ~ 18GHz    | 2.29 dB                                 |
|                                | 18GHz ~ 40GHz   | 2.29 dB                                 |

## 2.2 Test Site and Instruments

| Description & Manufacturer                   | Model No.                | Serial No.            | Cal. Date     | Cal. Due      |
|----------------------------------------------|--------------------------|-----------------------|---------------|---------------|
| Test Receiver<br>ROHDE & SCHWARZ             | ESCI                     | 100424                | Dec. 31, 2019 | Dec. 30, 2020 |
| Spectrum Analyzer<br>ROHDE & SCHWARZ         | FSP40                    | 100040                | Sep. 23, 2019 | Sep. 22, 2020 |
| Spectrum Analyzer<br>KEYSIGHT                | N9030B                   | MY57140953            | Jul. 03, 2019 | Jul. 02, 2020 |
| Radio Communication<br>Analyzer Anritsu      | MT8000A                  | 6262012865            | Dec. 12, 2019 | Dec. 11, 2020 |
| MXG Vector signal generator<br>Agilent       | N5182B                   | MY53050162            | Jan. 14, 2020 | Jan. 13, 2021 |
| BILOG Antenna<br>SCHWARZBECK                 | VULB9168                 | 9168-158              | Nov. 08, 2019 | Nov. 07, 2020 |
| BILOG Antenna<br>SCHWARZBECK                 | VULB9168                 | 9168-155              | Nov. 11, 2019 | Nov. 10, 2020 |
| HORN Antenna<br>SCHWARZBECK                  | BBHA 9120D               | 9120D-1170            | Nov. 24, 2019 | Nov. 23, 2020 |
| HORN Antenna<br>SCHWARZBECK                  | BBHA 9170                | BBHA9170241           | Nov. 24, 2019 | Nov. 23, 2020 |
| Loop Antenna<br>TESEQ                        | HLA 6121                 | 45745                 | Jul. 01, 2019 | Jun. 30, 2020 |
| Preamplifier<br>Agilent<br>(Below 1GHz)      | 8447D                    | 2944A10631            | Jul. 11, 2019 | Jul. 10, 2020 |
| Preamplifier<br>KEYSIGHT<br>(Above 1GHz)     | 83017A                   | MY53270295            | Jun. 11, 2019 | Jun. 10, 2020 |
| RF Coaxial Cable<br>WOKEN<br>With 5dB PAD    | 8D-FB                    | Cable-CH4-01          | Aug. 20, 2019 | Aug. 19, 2020 |
| RF Coaxial Cable<br>EMCI                     | EMC102-KM-KM-3000        | 150929                | Aug. 20, 2019 | Aug. 19, 2020 |
| RF Coaxial Cable<br>EMCI                     | EMC102-KM-KM-600         | 150928                | Aug. 20, 2019 | Aug. 19, 2020 |
| RF signal cable<br>HUBER+SUHNER              | SUCOFLEX 104             | MY 13380+295012/04    | Jul. 11, 2019 | Jul. 10, 2020 |
| RF signal cable<br>HUBER+SUHNER              | SUCOFLEX 104             | Cable-CH4-03 (250724) | Jul. 11, 2019 | Jul. 10, 2020 |
| Software<br>BV ADT                           | ADT_Radiated_V7.6.15.9.5 | NA                    | NA            | NA            |
| Antenna Tower<br>inn-co GmbH                 | MA 4000                  | 010303                | NA            | NA            |
| Antenna Tower Controller<br>BV ADT           | AT100                    | AT93021703            | NA            | NA            |
| Boresight Antenna Fixture                    | FBA-01                   | FBA-SIP01             | NA            | NA            |
| Standard Temperature And<br>Humidity Chamber | MHU-225AU                | 920842                | May 31, 2019  | May 30, 2020  |
| JFW 20dB attenuation                         | 50HF-020-SMA             | NA                    | NA            | NA            |
| True RMS Clamp Meter<br>Fluke                | 325                      | 31130711WS            | May 21, 2019  | May 20, 2020  |
| DC power supply                              | U8002A                   | MY56330015            | NA            | NA            |

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HwaYa Chamber 4.

### 3 General Information

#### 3.1 General Description of EUT

|                     |                                                     |
|---------------------|-----------------------------------------------------|
| Product             | 5G WWAN Module                                      |
| Brand               | Foxconn                                             |
| Test Model          | T99W175                                             |
| Sample Status       | Engineering Sample                                  |
| Power Supply Rating | 5 Vdc (Host equipment)<br>3.135Vdc~3.63Vdc (Module) |

#### n12

|                     |                                          |                         |                         |                         |                         |                         |
|---------------------|------------------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Modulation Type     | $\pi/2$ BPSK, QPSK, 16QAM, 64QAM, 256QAM |                         |                         |                         |                         |                         |
| Waveform Type       | CP-OFDM, DFT-s-OFDM                      |                         |                         |                         |                         |                         |
| Operating Frequency | n12 (Channel Bandwidth 5MHz)             | 701.5MHz ~ 713.5MHz     |                         |                         |                         |                         |
|                     | n12 (Channel Bandwidth 10MHz)            | 704.0MHz ~ 711.0MHz     |                         |                         |                         |                         |
|                     | n12 (Channel Bandwidth 15MHz)            | 706.5MHz ~ 708.5MHz     |                         |                         |                         |                         |
| Max. ERP Power      |                                          | $\pi/2$ BPSK            | QPSK                    | 16QAM                   | 64QAM                   | 256QAM                  |
|                     | n12 (Channel Bandwidth 5MHz)             | 590.201mW<br>(27.71dBm) | 562.341mW<br>(27.50dBm) | 544.503mW<br>(27.36dBm) | 514.044mW<br>(27.11dBm) | 292.415mW<br>(24.66dBm) |
|                     | n12 (Channel Bandwidth 10MHz)            | 579.429mW<br>(27.63dBm) | 562.341mW<br>(27.50dBm) | 550.808mW<br>(27.41dBm) | 506.991mW<br>(27.05dBm) | 295.801mW<br>(24.71dBm) |
|                     | n12 (Channel Bandwidth 15MHz)            | 572.796mW<br>(27.58dBm) | 549.541mW<br>(27.40dBm) | 508.159mW<br>(27.06dBm) | 508.159mW<br>(27.06dBm) | 286.418mW<br>(24.57dBm) |
| Emission Designator |                                          | $\pi/2$ BPSK            | QPSK                    | 16QAM                   | 64QAM                   | 256QAM                  |
|                     | n12 (Channel Bandwidth 5MHz)             | 4M49G7D                 | 4M49G7D                 | 4M49D7W                 | 4M49D7W                 | 4M49D7W                 |
|                     | n12 (Channel Bandwidth 10MHz)            | 8M96G7D                 | 8M96G7D                 | 8M96D7W                 | 8M95D7W                 | 8M96D7W                 |
|                     | n12 (Channel Bandwidth 15MHz)            | 13M5G7D                 | 13M5G7D                 | 13M4D7W                 | 13M4D7W                 | 13M4D7W                 |

## LTE Band

| Modulation Type     | QPSK, 16QAM, 64QAM       |                          |                         |                         |                         |
|---------------------|--------------------------|--------------------------|-------------------------|-------------------------|-------------------------|
| Operating Frequency | LTE Band 2               | Channel Bandwidth 1.4MHz |                         | 1850.7MHz ~1909.3MHz    |                         |
|                     |                          | Channel Bandwidth 3MHz   |                         | 1851.5MHz ~1908.5MHz    |                         |
|                     |                          | Channel Bandwidth 5MHz   |                         | 1852.5MHz ~1907.5MHz    |                         |
|                     |                          | Channel Bandwidth 10MHz  |                         | 1855.0MHz ~1905.0MHz    |                         |
|                     |                          | Channel Bandwidth 15MHz  |                         | 1857.5MHz ~1902.5MHz    |                         |
|                     |                          | Channel Bandwidth 20MHz  |                         | 1860.0MHz ~1900.0MHz    |                         |
|                     | LTE Band 66              | Channel Bandwidth 1.4MHz |                         | 1710.7MHz ~ 1779.3MHz   |                         |
|                     |                          | Channel Bandwidth 3MHz   |                         | 1711.5MHz ~ 1778.5MHz   |                         |
|                     |                          | Channel Bandwidth 5MHz   |                         | 1712.5MHz ~ 1777.5MHz   |                         |
|                     |                          | Channel Bandwidth 10MHz  |                         | 1715.0MHz ~ 1775.0MHz   |                         |
|                     |                          | Channel Bandwidth 15MHz  |                         | 1717.5MHz ~ 1772.5MHz   |                         |
|                     |                          | Channel Bandwidth 20MHz  |                         | 1720.0MHz ~ 1770.0MHz   |                         |
| Max. EIRP Power     | LTE Band 2               |                          | QPSK                    | 16QAM                   | 64QAM                   |
|                     |                          | Channel Bandwidth 1.4MHz | 583.445mW<br>(27.66dBm) | 464.515mW<br>(26.67dBm) | 366.438mW<br>(25.64dBm) |
|                     |                          | Channel Bandwidth 3MHz   | 580.764mW<br>(27.64dBm) | 464.515mW<br>(26.67dBm) | 366.438mW<br>(25.64dBm) |
|                     |                          | Channel Bandwidth 5MHz   | 570.164mW<br>(27.56dBm) | 448.745mW<br>(26.52dBm) | 368.978mW<br>(25.67dBm) |
|                     |                          | Channel Bandwidth 10MHz  | 583.445mW<br>(27.66dBm) | 456.037mW<br>(26.59dBm) | 365.595mW<br>(25.63dBm) |
|                     |                          | Channel Bandwidth 15MHz  | 575.440mW<br>(27.60dBm) | 463.447mW<br>(26.66dBm) | 365.595mW<br>(25.63dBm) |
|                     |                          | Channel Bandwidth 20MHz  | 582.103mW<br>(27.65dBm) | 462.381mW<br>(26.65dBm) | 367.282mW<br>(25.65dBm) |
|                     | LTE Band 66              | Channel Bandwidth 1.4MHz | 547.016mW<br>(27.38dBm) | 438.531mW<br>(26.42dBm) | 351.560mW<br>(25.46dBm) |
|                     |                          | Channel Bandwidth 3MHz   | 558.470mW<br>(27.47dBm) | 472.063mW<br>(26.74dBm) | 352.371mW<br>(25.47dBm) |
|                     |                          | Channel Bandwidth 5MHz   | 543.250mW<br>(27.35dBm) | 441.570mW<br>(26.45dBm) | 350.752mW<br>(25.45dBm) |
|                     |                          | Channel Bandwidth 10MHz  | 545.758mW<br>(27.37dBm) | 442.588mW<br>(26.46dBm) | 350.752mW<br>(25.45dBm) |
|                     |                          | Channel Bandwidth 15MHz  | 557.186mW<br>(27.46dBm) | 442.588mW<br>(26.46dBm) | 349.945mW<br>(25.44dBm) |
|                     |                          | Channel Bandwidth 20MHz  | 555.904mW<br>(27.45dBm) | 443.609mW<br>(26.47dBm) | 345.144mW<br>(25.38dBm) |
|                     |                          | Emission Designator      |                         |                         | QPSK                    |
| LTE Band 2          | Channel Bandwidth 1.4MHz |                          | 1M09G7D                 | 1M09D7W                 | 1M09D7W                 |
|                     | Channel Bandwidth 3MHz   |                          | 2M70G7D                 | 2M70D7W                 | 2M70D7W                 |
|                     | Channel Bandwidth 5MHz   |                          | 4M49G7D                 | 4M49D7W                 | 4M50D7W                 |
|                     | Channel Bandwidth 10MHz  |                          | 8M96G7D                 | 8M97D7W                 | 8M97D7W                 |
|                     | Channel Bandwidth 15MHz  |                          | 13M5G7D                 | 13M5D7W                 | 13M5D7W                 |
|                     | Channel Bandwidth 20MHz  |                          | 18M0G7D                 | 18M0D7W                 | 18M0D7W                 |
| LTE Band 66         | Channel Bandwidth 1.4MHz |                          | 1M09G7D                 | 1M09D7W                 | 1M09D7W                 |
|                     | Channel Bandwidth 3MHz   |                          | 2M70G7D                 | 2M70D7W                 | 2M70D7W                 |
|                     | Channel Bandwidth 5MHz   |                          | 4M49G7D                 | 4M49D7W                 | 4M50D7W                 |
|                     | Channel Bandwidth 10MHz  |                          | 8M96G7D                 | 8M97D7W                 | 8M97D7W                 |
|                     | Channel Bandwidth 15MHz  |                          | 13M5G7D                 | 13M5D7W                 | 13M5D7W                 |
|                     | Channel Bandwidth 20MHz  |                          | 18M0G7D                 | 18M0D7W                 | 18M0D7W                 |

|                   |                        |
|-------------------|------------------------|
| Antenna Type      | Refer to Note as below |
| Antenna Connector | Refer to Note as below |
| Accessory Device  | NA                     |
| Cable Supplied    | NA                     |

| Output Power / Emission Designator | n12+LTE Band 2  |                    | MAX EIRP / ERP       | Sum Bandwidth     |
|------------------------------------|-----------------|--------------------|----------------------|-------------------|
|                                    |                 | n12 (ERP)          | 590.201mW (27.71dBm) | 13M4D7W           |
|                                    |                 | LTE Band 2 (EIRP)  | 583.445mW (27.66dBm) |                   |
|                                    |                 |                    | EIRP / ERP           | MAX Sum Bandwidth |
|                                    | n12+LTE Band 66 | n12 (ERP)          | 545.758mW (27.37dBm) | 31M5D7W           |
|                                    |                 | LTE Band 2 (EIRP)  | 462.381mW (26.65dBm) |                   |
|                                    |                 |                    | EIRP / ERP           | MAX Sum Bandwidth |
|                                    |                 | n12 (ERP)          | 590.201mW (27.71dBm) | 7M18D7W           |
|                                    |                 | LTE Band 66 (EIRP) | 558.470mW (27.47dBm) |                   |
|                                    |                 |                    | EIRP / ERP           | MAX Sum Bandwidth |
|                                    |                 | n12 (ERP)          | 545.758mW (27.37dBm) | 31M4D7W           |
|                                    |                 | LTE Band 66 (EIRP) | 357.273mW (25.53dBm) |                   |

Note:

1. There are four Difference HW of T99W175.

| Brand   | Model   | HW                                          |
|---------|---------|---------------------------------------------|
| Foxconn | T99W175 | 1. 3G+LTE+Sub6+eSIM                         |
|         |         | 2. 3G+LTE+Sub6 only w/o eSIM                |
|         |         | 3. 3G+LTE+Sub6+eSIM+GNSS connector          |
|         |         | 4. 3G+LTE+Sub6 only+w/o eSIM+GNSS connector |

\*After pre-testing, "HW: 1. 3G+LTE+Sub6+eSIM" is the worst for the final tests.

2. After pre-testing, "DFT-s-OFDM" is the worst for the final tests.

## 3. The following antennas were provided to the EUT.

| Antenna No. | RF Chain No. | Brand        | Model          | Antenna Net Gain(dBi)                                                    | Frequency range (MHz)                                                                                         | Antenna Type | Connector Type |
|-------------|--------------|--------------|----------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------|----------------|
| 1           |              | WHA YU       | C107-511720-A  | 4.41                                                                     | 660~803                                                                                                       | PCB          | I-PEX          |
| 2           |              | WHA YU       | C107-511721-A  | 3.81<br>4.03                                                             | 791~960<br>1447.9~1606                                                                                        | PCB          | I-PEX          |
| 3           |              | WHA YU       | C107-511722-A  | 4.27<br>5.31                                                             | 1710~2170<br>2500~2690                                                                                        | PCB          | I-PEX          |
| 4           |              | WHA YU       | C107-511723-A  | 2.99<br>0.92                                                             | 2300~2400<br>3500~3700                                                                                        | PCB          | I-PEX          |
| 5           |              | WHA YU       | C107-511724-A  | 6.45                                                                     | 5150~5925                                                                                                     | PCB          | I-PEX          |
| 6           |              | WHA YU       | C107-511725-A  | 4.89                                                                     | 3400~3700                                                                                                     | PCB          | I-PEX          |
| 7           |              | AVX          | 5000106-R1-X01 | 2.91                                                                     | 699~803                                                                                                       | Monopole     | I-PEX          |
| 8           |              | AVX          | 5000107-R1-X01 | 2.59                                                                     | 791~960                                                                                                       | Monopole     | I-PEX          |
| 9           |              | AVX          | 5000108-R1-X01 | 2.85                                                                     | 1427~1610                                                                                                     | Monopole     | I-PEX          |
| 10          |              | AVX          | 5000109-R1-X01 | 2.23<br>2.94                                                             | 1710~2200<br>5150~5925                                                                                        | Monopole     | I-PEX          |
| 11          |              | AVX          | 5000110-R1-X01 | 0.9                                                                      | 2300~2690                                                                                                     | Monopole     | I-PEX          |
| 12          |              | AVX          | 5000111-R1-X01 | 0.87                                                                     | 3300~5000                                                                                                     | Monopole     | I-PEX          |
| 13          | Tx1/<br>Rx1  | Ethertronics | 5003806        | 0.4<br>-1.61<br>0.39<br>2.95<br>1.98<br>0.38<br>0.83<br>2.31             | 698-821<br>824-960<br>1425-1515<br>1710-2200<br>2300-2690<br>3300-4200<br>4400-5000<br>5150-5925              | PIFA         | I-PEX          |
|             | Rx2          | Ethertronics | 5003807        | -2.24<br>-4.52<br>2.87<br>2.99<br>2.93<br>2.91<br>2.23<br>-0.85<br>-3.04 | 716-821<br>824-960<br>1425-1515<br>1557-1610<br>1805-2200<br>2300-2690<br>3300-4200<br>4400-5000<br>5150-5925 | PIFA         | I-PEX          |
|             | Tx2/<br>Rx3  | Ethertronics | 5003806        | 2.21<br>2.25<br>-0.45<br>2.6                                             | 1710-2200<br>2300-2690<br>3300-4200<br>4400-5000                                                              | PIFA         | I-PEX          |
|             | Rx4          | Ethertronics | 5003700        | 1.38<br>2.87<br>0.6<br>-2.09                                             | 1805-2200<br>2300-2690<br>3300-4200<br>4400-5000                                                              | PIFA         | I-PEX          |

| Antenna No. | RF Chain No.   | Brand       | Model | Antenna Net Gain(dBi)                  | Frequency range (MHz)                                              | Antenna Type | Connector Type |
|-------------|----------------|-------------|-------|----------------------------------------|--------------------------------------------------------------------|--------------|----------------|
| 14          | Ant. 0 (TX/RX) | Master Wave | NA    | 2.4<br>2.2<br>2.9<br>2.9<br>2.9<br>NA  | 880~960<br>1020~2170<br>2545~2595<br>3565~3600<br>3900~4000<br>GPS | PCB          | I-PEX          |
|             | Ant. 2 (TX/RX) | Master Wave | NA    | NA<br>2.2<br>2.8<br>2.9<br>2.8<br>NA   | 880~960<br>1020~2170<br>2545~2595<br>3565~3600<br>3900~4000<br>GPS | PCB          | I-PEX          |
|             | Ant. 1 (RX)    | Master Wave | NA    | NA<br>5.3<br>5.1<br>4.3<br>4.5<br>NA   | 880~960<br>1020~2170<br>2545~2595<br>3565~3600<br>3900~4000<br>GPS | PCB          | I-PEX          |
|             | Ant. 3 (RX)    | Master Wave | NA    | 1.3<br>6.8<br>3.7<br>6.4<br>6.2<br>3.7 | 880~960<br>1020~2170<br>2545~2595<br>3565~3600<br>3900~4000<br>GPS | PCB          | I-PEX          |

\*The antenna for the final tests as following table.

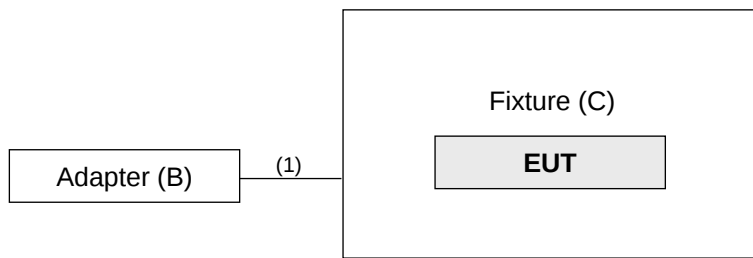
|      | Band                | Antenna   |
|------|---------------------|-----------|
| 5GNR | 12 (15kHz) /5/10/15 | Antenna 1 |

|     | Band | Antenna   |
|-----|------|-----------|
| LTE | 2    | Antenna 3 |
|     | 66   | Antenna 3 |

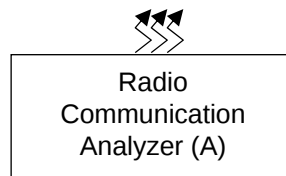
4. The EUT supports the following ENDC configuration.

| 5GNR | FCC 5G FR1 |       |                       | ENDC                  |
|------|------------|-------|-----------------------|-----------------------|
|      | Band       | SCS   | Bandwidth (MHz)       |                       |
|      | n2         | 15kHz | 5/10/15/20            | Band 5/12/13/30/48/66 |
|      | n5         | 15kHz | 5/10/15/20            | Band 2/7/12/48/66     |
|      | n7         | 15kHz | 5/10/15/20            | Band 5/12             |
|      | n12        | 15kHz | 5/10/15               | Band 2/66             |
|      | n41        | 30kHz | 20/40/50/60/80/90/100 | Band 2/25/26/66/41    |
|      | n66        | 15kHz | 5/10/15/20            | Band 5/12/13/30/48/71 |
|      | n71        | 15kHz | 5/10/15/20            | Band 2/7/66           |

### 3.2 Configuration of System under Test



Remote site



#### 3.2.1 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| ID | Product                      | Brand   | Model No.  | Serial No. | FCC ID | Remarks             |
|----|------------------------------|---------|------------|------------|--------|---------------------|
| A. | Radio Communication Analyzer | Anritsu | MT8821C    | 6261806803 | NA     | -                   |
| B. | Adapter                      | LITEON  | PA-1050-39 | NA         | NA     | -                   |
| C. | Fixture                      | NA      | NA         | NA         | NA     | Provided by client. |

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item A acted as a communication partner to transfer data.

| ID | Descriptions | Qty. | Length (m) | Shielding (Yes/No) | Cores (Qty.) | Remarks |
|----|--------------|------|------------|--------------------|--------------|---------|
| 1. | USB cable    | 1    | 1.5        | Y                  | 0            | -       |

### 3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports. The worst case was found when positioned on Z-plane. Following channel(s) was (were) selected for the final test as listed below.

n12

| EUT Configure Mode | Test item                  | Available channel | Tested channel                                             | Channel Bandwidth | Modulation                                            | Mode                                                                                                                                                           |
|--------------------|----------------------------|-------------------|------------------------------------------------------------|-------------------|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -                  | ERP                        | 140300 to 142700  | 140300(701.5MHz),<br>141500(707.5MHz),<br>142700(713.5MHz) | 5MHz              | $\pi/2$ BPSK /<br>QPSK / 16QAM /<br>64QAM /<br>256QAM | 1 RB / 0 RB Offset<br>1 RB / 12 RB Offset<br>1 RB / 24 RB Offset<br>12 RB / 0 RB Offset<br>12 RB / 6 RB Offset<br>12 RB / 13 RB Offset<br>25 RB / 0 RB Offset  |
|                    |                            | 140800 to 142200  | 140800(704.0MHz),<br>141500(707.5MHz),<br>142200(711.0MHz) | 10MHz             | $\pi/2$ BPSK /<br>QPSK / 16QAM /<br>64QAM /<br>256QAM | 1 RB / 0 RB Offset<br>1 RB / 24 RB Offset<br>1 RB / 49 RB Offset<br>25 RB / 0 RB Offset<br>25 RB / 12 RB Offset<br>25 RB / 25 RB Offset<br>50 RB / 0 RB Offset |
|                    |                            | 141300 to 141700  | 141300(706.5MHz),<br>141500(707.5MHz),<br>141700(708.5MHz) | 15MHz             | $\pi/2$ BPSK /<br>QPSK / 16QAM /<br>64QAM /<br>256QAM | 1 RB / 0 RB Offset<br>1 RB / 37 RB Offset<br>1 RB / 74 RB Offset<br>36 RB / 0 RB Offset<br>36 RB / 19 RB Offset<br>36 RB / 39 RB Offset<br>75 RB / 0 RB Offset |
| -                  | Modulation Characteristics | 141300 to 141700  | 141500(707.5MHz)                                           | 15MHz             | $\pi/2$ BPSK /<br>QPSK / 16QAM /<br>64QAM /<br>256QAM | 79 RB / 0 RB Offset                                                                                                                                            |
| -                  | Frequency Stability        | 140300 to 142700  | 140300(701.5MHz),<br>142700(713.5MHz)                      | 5MHz              | $\pi/2$ BPSK                                          | 25 RB / 0 RB Offset                                                                                                                                            |
|                    |                            | 140800 to 142200  | 140800(704.0MHz),<br>142200(711.0MHz)                      | 10MHz             | $\pi/2$ BPSK                                          | 52 RB / 0 RB Offset                                                                                                                                            |
|                    |                            | 141300 to 141700  | 141300(706.5MHz),<br>141700(708.5MHz)                      | 15MHz             | $\pi/2$ BPSK                                          | 79 RB / 0 RB Offset                                                                                                                                            |
| -                  | Emission Bandwidth         | 140300 to 142700  | 140300(701.5MHz),<br>141500(707.5MHz),<br>142700(713.5MHz) | 5MHz              | $\pi/2$ BPSK /<br>QPSK / 16QAM /<br>64QAM /<br>256QAM | 25 RB / 0 RB Offset                                                                                                                                            |
|                    |                            | 140800 to 142200  | 140800(704.0MHz),<br>141500(707.5MHz),<br>142200(711.0MHz) | 10MHz             | $\pi/2$ BPSK /<br>QPSK / 16QAM /<br>64QAM /<br>256QAM | 52 RB / 0 RB Offset                                                                                                                                            |
|                    |                            | 141300 to 141700  | 141300(706.5MHz),<br>141500(707.5MHz),<br>141700(708.5MHz) | 15MHz             | $\pi/2$ BPSK /<br>QPSK / 16QAM /<br>64QAM /<br>256QAM | 79 RB / 0 RB Offset                                                                                                                                            |
| -                  | Band Edge                  | 140300 to 142700  | 140300(701.5MHz),<br>142700(713.5MHz)                      | 5MHz              | $\pi/2$ BPSK                                          | 1 RB / 0 RB Offset<br>1 RB / 24 RB Offset<br>25 RB / 0 RB Offset                                                                                               |
|                    |                            | 140800 to 142200  | 140800(704.0MHz),<br>142200(711.0MHz)                      | 10MHz             | $\pi/2$ BPSK                                          | 1 RB / 0 RB Offset<br>1 RB / 51 RB Offset<br>52 RB / 0 RB Offset                                                                                               |
|                    |                            | 141300 to 141700  | 141300(706.5MHz),<br>141700(708.5MHz)                      | 15MHz             | $\pi/2$ BPSK                                          | 1 RB / 0 RB Offset<br>1 RB / 78 RB Offset<br>79 RB / 0 RB Offset                                                                                               |

| EUT Configure Mode | Test item                    | Available channel | Tested channel                                             | Channel Bandwidth | Modulation                                            | Mode               |
|--------------------|------------------------------|-------------------|------------------------------------------------------------|-------------------|-------------------------------------------------------|--------------------|
| -                  | Peak to Average Ratio        | 140300 to 142700  | 140300(701.5MHz),<br>141500(707.5MHz),<br>142700(713.5MHz) | 5MHz              | $\pi/2$ BPSK /<br>QPSK / 16QAM /<br>64QAM /<br>256QAM | 1 RB / 0 RB Offset |
|                    |                              | 140800 to 142200  | 140800(704.0MHz),<br>141500(707.5MHz),<br>142200(711.0MHz) | 10MHz             | $\pi/2$ BPSK /<br>QPSK / 16QAM /<br>64QAM /<br>256QAM | 1 RB / 0 RB Offset |
|                    |                              | 141300 to 141700  | 141300(706.5MHz),<br>141500(707.5MHz),<br>141700(708.5MHz) | 15MHz             | $\pi/2$ BPSK /<br>QPSK / 16QAM /<br>64QAM /<br>256QAM | 1 RB / 0 RB Offset |
| -                  | Conducted Emission           | 140300 to 142700  | 140300(701.5MHz),<br>141500(707.5MHz),<br>142700(713.5MHz) | 5MHz              | $\pi/2$ BPSK                                          | 1 RB / 0 RB Offset |
|                    |                              | 140800 to 142200  | 140800(704.0MHz),<br>141500(707.5MHz),<br>142200(711.0MHz) | 10MHz             | $\pi/2$ BPSK                                          | 1 RB / 0 RB Offset |
|                    |                              | 141300 to 141700  | 141300(706.5MHz),<br>141500(707.5MHz),<br>141700(708.5MHz) | 15MHz             | $\pi/2$ BPSK                                          | 1 RB / 0 RB Offset |
| -                  | Radiated Emission Below 1GHz | 140300 to 142700  | 142700(713.5MHz)                                           | 5MHz              | $\pi/2$ BPSK                                          | 1 RB / 0 RB Offset |
| -                  | Radiated Emission Above 1GHz | 140300 to 142700  | 140300(701.5MHz),<br>141500(707.5MHz),<br>142700(713.5MHz) | 5MHz              | $\pi/2$ BPSK                                          | 1 RB / 0 RB Offset |
|                    |                              | 140800 to 142200  | 140800(704.0MHz),<br>141500(707.5MHz),<br>142200(711.0MHz) | 10MHz             | $\pi/2$ BPSK                                          | 1 RB / 0 RB Offset |
|                    |                              | 141300 to 141700  | 141300(706.5MHz),<br>141500(707.5MHz),<br>141700(708.5MHz) | 15MHz             | $\pi/2$ BPSK                                          | 1 RB / 0 RB Offset |

Note: The conducted output power for  $\pi/2$  BPSK, QPSK, 16QAM, 64QAM and 256QAM, measured value of  $\pi/2$  BPSK is higher than QPSK, 16QAM, 64QAM and 256QAM mode. Therefore, only ERP, Modulation characteristics, occupied bandwidth and Peak to average ratio items had been tested under  $\pi/2$  BPSK, QPSK, 16QAM, 64QAM and 256QAM modes, the other test items were performed under  $\pi/2$  BPSK mode only.

## LTE Band 2

| EUT<br>Configure<br>Mode | Test item              | Available channel | Tested Channel                                                   | Channel<br>Bandwidth | Modulation              | Mode                                                                                                                                                            |
|--------------------------|------------------------|-------------------|------------------------------------------------------------------|----------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -                        | EIRP                   | 18607 to 19193    | 18607 (1850.70MHz),<br>18900 (1880.00MHz),<br>19193 (1909.30MHz) | 1.4MHz               | QPSK / 16QAM /<br>64QAM | 1 RB / 0 RB Offset<br>1 RB / 2 RB Offset<br>1 RB / 5 RB Offset<br>3 RB / 0 RB Offset<br>3 RB / 1 RB Offset<br>3 RB / 3 RB Offset<br>6 RB / 0 RB Offset          |
|                          |                        | 18615 to 19185    | 18615 (1851.50MHz),<br>18900 (1880.00MHz),<br>19185 (1908.50MHz) | 3MHz                 | QPSK / 16QAM /<br>64QAM | 1 RB / 0 RB Offset<br>1 RB / 7 RB Offset<br>1 RB / 14 RB Offset<br>8 RB / 0 RB Offset<br>8 RB / 3 RB Offset<br>8 RB / 7 RB Offset<br>15 RB / 0 RB Offset        |
|                          |                        | 18625 to 19175    | 18625 (1852.50MHz),<br>18900 (1880.00MHz),<br>19175 (1907.50MHz) | 5MHz                 | QPSK / 16QAM /<br>64QAM | 1 RB / 0 RB Offset<br>1 RB / 12 RB Offset<br>1 RB / 24 RB Offset<br>12 RB / 0 RB Offset<br>12 RB / 6 RB Offset<br>12 RB / 13 RB Offset<br>25 RB / 0 RB Offset   |
|                          |                        | 18650 to 19150    | 18650 (1855.00MHz),<br>18900 (1880.00MHz),<br>19150 (1905.00MHz) | 10MHz                | QPSK / 16QAM /<br>64QAM | 1 RB / 0 RB Offset<br>1 RB / 24 RB Offset<br>1 RB / 49 RB Offset<br>25 RB / 0 RB Offset<br>25 RB / 12 RB Offset<br>25 RB / 25 RB Offset<br>50 RB / 0 RB Offset  |
|                          |                        | 18675 to 19125    | 18675 (1857.50MHz),<br>18900 (1880.00MHz),<br>19125 (1902.50MHz) | 15MHz                | QPSK / 16QAM /<br>64QAM | 1 RB / 0 RB Offset<br>1 RB / 37 RB Offset<br>1 RB / 74 RB Offset<br>36 RB / 0 RB Offset<br>36 RB / 19 RB Offset<br>36 RB / 39 RB Offset<br>75 RB / 0 RB Offset  |
|                          |                        | 18700 to 19100    | 18700 (1860.00MHz),<br>18900 (1880.00MHz),<br>19100 (1900.00MHz) | 20MHz                | QPSK / 16QAM /<br>64QAM | 1 RB / 0 RB Offset<br>1 RB / 50 RB Offset<br>1 RB / 99 RB Offset<br>50 RB / 0 RB Offset<br>50 RB / 25 RB Offset<br>50 RB / 50 RB Offset<br>100 RB / 0 RB Offset |
| -                        | Frequency<br>Stability | 18607 to 19193    | 18607 (1850.70MHz),<br>19193 (1909.30MHz)                        | 1.4MHz               | QPSK                    | 5 RB / 0 RB Offset                                                                                                                                              |
|                          |                        | 18615 to 19185    | 18615 (1851.50MHz),<br>19185 (1908.50MHz)                        | 3MHz                 | QPSK                    | 15 RB / 0 RB Offset                                                                                                                                             |
|                          |                        | 18625 to 19175    | 18625 (1852.50MHz),<br>19175 (1907.50MHz)                        | 5MHz                 | QPSK                    | 25 RB / 0 RB Offset                                                                                                                                             |
|                          |                        | 18650 to 19150    | 18650 (1855.00MHz),<br>19150 (1905.00MHz)                        | 10MHz                | QPSK                    | 50 RB / 0 RB Offset                                                                                                                                             |
|                          |                        | 18675 to 19125    | 18675 (1857.50MHz),<br>19125 (1902.50MHz)                        | 15MHz                | QPSK                    | 75 RB / 0 RB Offset                                                                                                                                             |
|                          |                        | 18700 to 19100    | 18700 (1860.00MHz),<br>19100 (1900.00MHz)                        | 20MHz                | QPSK                    | 100 RB / 0 RB Offset                                                                                                                                            |

| EUT Configure Mode | Test item             | Available channel | Tested Channel                                                   | Channel Bandwidth | Modulation           | Mode                                                              |
|--------------------|-----------------------|-------------------|------------------------------------------------------------------|-------------------|----------------------|-------------------------------------------------------------------|
| -                  | Occupied Bandwidth    | 18607 to 19193    | 18607 (1850.70MHz),<br>18900 (1880.00MHz),<br>19193 (1909.30MHz) | 1.4MHz            | QPSK / 16QAM / 64QAM | 5 RB / 0 RB Offset                                                |
|                    |                       | 18615 to 19185    | 18615 (1851.50MHz),<br>18900 (1880.00MHz),<br>19185 (1908.50MHz) | 3MHz              | QPSK / 16QAM / 64QAM | 15 RB / 0 RB Offset                                               |
|                    |                       | 18625 to 19175    | 18625 (1852.50MHz),<br>18900 (1880.00MHz),<br>19175 (1907.50MHz) | 5MHz              | QPSK / 16QAM / 64QAM | 25 RB / 0 RB Offset                                               |
|                    |                       | 18650 to 19150    | 18650 (1855.00MHz),<br>18900 (1880.00MHz),<br>19150 (1905.00MHz) | 10MHz             | QPSK / 16QAM / 64QAM | 50 RB / 0 RB Offset                                               |
|                    |                       | 18675 to 19125    | 18675 (1857.50MHz),<br>18900 (1880.00MHz),<br>19125 (1902.50MHz) | 15MHz             | QPSK / 16QAM / 64QAM | 75 RB / 0 RB Offset                                               |
|                    |                       | 18700 to 19100    | 18700 (1860.00MHz),<br>18900 (1880.00MHz),<br>19100 (1900.00MHz) | 20MHz             | QPSK / 16QAM / 64QAM | 100 RB / 0 RB Offset                                              |
| -                  | Band Edge             | 18607 to 19193    | 18607 (1850.70MHz),<br>19193 (1909.30MHz)                        | 1.4MHz            | QPSK                 | 1 RB / 0 RB Offset<br>1 RB / 5 RB Offset<br>6 RB / 0 RB Offset    |
|                    |                       | 18615 to 19185    | 18615 (1851.50MHz),<br>19185 (1908.50MHz)                        | 3MHz              | QPSK                 | 1 RB / 0 RB Offset<br>1 RB / 14 RB Offset<br>15 RB / 0 RB Offset  |
|                    |                       | 18625 to 19175    | 18625 (1852.50MHz),<br>19175 (1907.50MHz)                        | 5MHz              | QPSK                 | 1 RB / 0 RB Offset<br>1 RB / 24 RB Offset<br>25 RB / 0 RB Offset  |
|                    |                       | 18650 to 19150    | 18650 (1855.00MHz),<br>19150 (1905.00MHz)                        | 10MHz             | QPSK                 | 1 RB / 0 RB Offset<br>1 RB / 49 RB Offset<br>50 RB / 0 RB Offset  |
|                    |                       | 18675 to 19125    | 18675 (1857.50MHz),<br>19125 (1902.50MHz)                        | 15MHz             | QPSK                 | 1 RB / 0 RB Offset<br>1 RB / 74 RB Offset<br>75 RB / 0 RB Offset  |
|                    |                       | 18700 to 19100    | 18700 (1860.00MHz),<br>19100 (1900.00MHz)                        | 20MHz             | QPSK                 | 1 RB / 0 RB Offset<br>1 RB / 99 RB Offset<br>100 RB / 0 RB Offset |
| -                  | Peak to Average Ratio | 18607 to 19193    | 18607 (1850.70MHz),<br>18900 (1880.00MHz),<br>19193 (1909.30MHz) | 1.4MHz            | QPSK / 16QAM / 64QAM | 1 RB / 2 RB Offset                                                |
|                    |                       | 18615 to 19185    | 18615 (1851.50MHz),<br>18900 (1880.00MHz),<br>19185 (1908.50MHz) | 3MHz              | QPSK / 16QAM / 64QAM | 1 RB / 14 RB Offset                                               |
|                    |                       | 18625 to 19175    | 18625 (1852.50MHz),<br>18900 (1880.00MHz),<br>19175 (1907.50MHz) | 5MHz              | QPSK / 16QAM / 64QAM | 1 RB / 12 RB Offset                                               |
|                    |                       | 18650 to 19150    | 18650 (1855.00MHz),<br>18900 (1880.00MHz),<br>19150 (1905.00MHz) | 10MHz             | QPSK / 16QAM / 64QAM | 1 RB / 49 RB Offset                                               |
|                    |                       | 18675 to 19125    | 18675 (1857.50MHz),<br>18900 (1880.00MHz),<br>19125 (1902.50MHz) | 15MHz             | QPSK / 16QAM / 64QAM | 1 RB / 0 RB Offset                                                |
|                    |                       | 18700 to 19100    | 18700 (1860.00MHz),<br>18900 (1880.00MHz),<br>19100 (1900.00MHz) | 20MHz             | QPSK / 16QAM / 64QAM | 1 RB / 0 RB Offset                                                |

| EUT Configure Mode | Test item                    | Available channel | Tested Channel                                                   | Channel Bandwidth | Modulation | Mode                |
|--------------------|------------------------------|-------------------|------------------------------------------------------------------|-------------------|------------|---------------------|
| -                  | Conducted Emission           | 18607 to 19193    | 18607 (1850.70MHz),<br>18900 (1880.00MHz),<br>19193 (1909.30MHz) | 1.4MHz            | QPSK       | 1 RB / 2 RB Offset  |
|                    |                              | 18615 to 19185    | 18615 (1851.50MHz),<br>18900 (1880.00MHz),<br>19185 (1908.50MHz) | 3MHz              | QPSK       | 1 RB / 14 RB Offset |
|                    |                              | 18625 to 19175    | 18625 (1852.50MHz),<br>18900 (1880.00MHz),<br>19175 (1907.50MHz) | 5MHz              | QPSK       | 1 RB / 12 RB Offset |
|                    |                              | 18650 to 19150    | 18650 (1855.00MHz),<br>18900 (1880.00MHz),<br>19150 (1905.00MHz) | 10MHz             | QPSK       | 1 RB / 49 RB Offset |
|                    |                              | 18675 to 19125    | 18675 (1857.50MHz),<br>18900 (1880.00MHz),<br>19125 (1902.50MHz) | 15MHz             | QPSK       | 1 RB / 0 RB Offset  |
|                    |                              | 18700 to 19100    | 18700 (1860.00MHz),<br>18900 (1880.00MHz),<br>19100 (1900.00MHz) | 20MHz             | QPSK       | 1 RB / 0 RB Offset  |
| -                  | Radiated Emission Below 1GHz | 18700 to 19100    | 18900 (1880.00MHz)                                               | 20MHz             | QPSK       | 1 RB / 0 RB Offset  |
| -                  | Radiated Emission Above 1GHz | 18607 to 19193    | 18607 (1850.70MHz),<br>18900 (1880.00MHz),<br>19193 (1909.30MHz) | 1.4MHz            | QPSK       | 1 RB / 2 RB Offset  |
|                    |                              | 18625 to 19175    | 18625 (1852.50MHz),<br>18900 (1880.00MHz),<br>19175 (1907.50MHz) | 5MHz              | QPSK       | 1 RB / 12 RB Offset |
|                    |                              | 18700 to 19100    | 18700 (1860.00MHz),<br>18900 (1880.00MHz),<br>19100 (1900.00MHz) | 20MHz             | QPSK       | 1 RB / 0 RB Offset  |

Note:

1. For radiated emission above 1GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest, 5MHz & highest channel bandwidth for final test.
2. The conducted output power for QPSK, 16QAM and 64QAM, measured value of QPSK is higher than 16QAM and 64QAM mode. Therefore, only EIRP, occupied bandwidth and Peak to average ratio items had been tested under QPSK, 16QAM and 64QAM modes, the other test items were performed under QPSK mode only.

# LTE Band 66

| EUT<br>Configure<br>Mode | Test Item           | Available<br>Channel | Tested Channel                                                   | Channel<br>Bandwidth | Modulation                 | Mode                                                                                                                                                            |
|--------------------------|---------------------|----------------------|------------------------------------------------------------------|----------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -                        | EIRP                | 131979 to<br>132665  | 131979 (1710.7MHz),<br>132322 (1745.0MHz),<br>132665 (1779.3MHz) | 1.4MHz               | QPSK /<br>16QAM /<br>64QAM | 1 RB / 0 RB Offset<br>1 RB / 2 RB Offset<br>1 RB / 5 RB Offset<br>3 RB / 0 RB Offset<br>3 RB / 1 RB Offset<br>3 RB / 3 RB Offset<br>6 RB / 0 RB Offset          |
|                          |                     | 131987 to<br>132657  | 131987 (1711.5MHz),<br>132322 (1745.0MHz),<br>132657 (1778.5MHz) | 3MHz                 | QPSK /<br>16QAM /<br>64QAM | 1 RB / 0 RB Offset<br>1 RB / 7 RB Offset<br>1 RB / 14 RB Offset<br>8 RB / 0 RB Offset<br>8 RB / 3 RB Offset<br>8 RB / 7 RB Offset<br>15 RB / 0 RB Offset        |
|                          |                     | 131997 to<br>132647  | 131997 (1712.5MHz),<br>132322 (1745.0MHz),<br>132647 (1777.5MHz) | 5MHz                 | QPSK /<br>16QAM /<br>64QAM | 1 RB / 0 RB Offset<br>1 RB / 12 RB Offset<br>1 RB / 24 RB Offset<br>12 RB / 0 RB Offset<br>12 RB / 6 RB Offset<br>12 RB / 13 RB Offset<br>25 RB / 0 RB Offset   |
|                          |                     | 132022 to<br>132622  | 132022 (1715.0MHz),<br>132322 (1745.0MHz),<br>132622 (1775.0MHz) | 10MHz                | QPSK /<br>16QAM /<br>64QAM | 1 RB / 0 RB Offset<br>1 RB / 24 RB Offset<br>1 RB / 49 RB Offset<br>25 RB / 0 RB Offset<br>25 RB / 12 RB Offset<br>25 RB / 25 RB Offset<br>50 RB / 0 RB Offset  |
|                          |                     | 132047 to<br>132597  | 132047 (1717.5MHz),<br>132322 (1745.0MHz),<br>132597 (1772.5MHz) | 15MHz                | QPSK /<br>16QAM /<br>64QAM | 1 RB / 0 RB Offset<br>1 RB / 37 RB Offset<br>1 RB / 74 RB Offset<br>36 RB / 0 RB Offset<br>36 RB / 19 RB Offset<br>36 RB / 39 RB Offset<br>75 RB / 0 RB Offset  |
|                          |                     | 132072 to<br>132572  | 132072 (1720.0MHz),<br>132322 (1745.0MHz),<br>132572 (1770.0MHz) | 20MHz                | QPSK /<br>16QAM /<br>64QAM | 1 RB / 0 RB Offset<br>1 RB / 50 RB Offset<br>1 RB / 99 RB Offset<br>50 RB / 0 RB Offset<br>50 RB / 25 RB Offset<br>50 RB / 50 RB Offset<br>100 RB / 0 RB Offset |
| -                        | Frequency Stability | 131979 to<br>132665  | 131979 (1710.7MHz),<br>132665 (1779.3MHz)                        | 1.4MHz               | QPSK                       | 6 RB / 0 RB Offset                                                                                                                                              |
|                          |                     | 131987 to<br>132657  | 131987 (1711.5MHz),<br>132657 (1778.5MHz)                        | 3MHz                 | QPSK                       | 15 RB / 0 RB Offset                                                                                                                                             |
|                          |                     | 131997 to<br>132647  | 131997 (1712.5MHz),<br>132647 (1777.5MHz)                        | 5MHz                 | QPSK                       | 25 RB / 0 RB Offset                                                                                                                                             |
|                          |                     | 132022 to<br>132622  | 132022 (1715.0MHz),<br>132622 (1775.0MHz)                        | 10MHz                | QPSK                       | 50 RB / 0 RB Offset                                                                                                                                             |
|                          |                     | 132047 to<br>132597  | 132047 (1717.5MHz),<br>132597 (1772.5MHz)                        | 15MHz                | QPSK                       | 75 RB / 0 RB Offset                                                                                                                                             |
|                          |                     | 132072 to<br>132572  | 132072 (1720.0MHz),<br>132572 (1770.0MHz)                        | 20MHz                | QPSK                       | 100 RB / 0 RB Offset                                                                                                                                            |

| EUT Configure Mode | Test Item             | Available Channel | Tested Channel                                                   | Channel Bandwidth | Modulation                 | Mode                                                              |
|--------------------|-----------------------|-------------------|------------------------------------------------------------------|-------------------|----------------------------|-------------------------------------------------------------------|
| -                  | Emission Bandwidth    | 131979 to 132665  | 131979 (1710.7MHz),<br>132322 (1745.0MHz),<br>132665 (1779.3MHz) | 1.4MHz            | QPSK /<br>16QAM /<br>64QAM | 6 RB / 0 RB Offset                                                |
|                    |                       | 131987 to 132657  | 131987 (1711.5MHz),<br>132322 (1745.0MHz),<br>132657 (1778.5MHz) | 3MHz              | QPSK /<br>16QAM /<br>64QAM | 15 RB / 0 RB Offset                                               |
|                    |                       | 131997 to 132647  | 131997 (1712.5MHz),<br>132322 (1745.0MHz),<br>132647 (1777.5MHz) | 5MHz              | QPSK /<br>16QAM /<br>64QAM | 25 RB / 0 RB Offset                                               |
|                    |                       | 132022 to 132622  | 132022 (1715.0MHz),<br>132322 (1745.0MHz),<br>132622 (1775.0MHz) | 10MHz             | QPSK /<br>16QAM /<br>64QAM | 50 RB / 0 RB Offset                                               |
|                    |                       | 132047 to 132597  | 132047 (1717.5MHz),<br>132322 (1745.0MHz),<br>132597 (1772.5MHz) | 15MHz             | QPSK /<br>16QAM /<br>64QAM | 75 RB / 0 RB Offset                                               |
|                    |                       | 132072 to 132572  | 132072 (1720.0MHz),<br>132322 (1745.0MHz),<br>132572 (1770.0MHz) | 20MHz             | QPSK /<br>16QAM /<br>64QAM | 100 RB / 0 RB Offset                                              |
| -                  | Band Edge             | 131979 to 132665  | 131979 (1710.7MHz),<br>132665 (1779.3MHz)                        | 1.4MHz            | QPSK                       | 1 RB / 0 RB Offset<br>1 RB / 5 RB Offset<br>6 RB / 0 RB Offset    |
|                    |                       | 131987 to 132657  | 131987 (1711.5MHz),<br>132657 (1778.5MHz)                        | 3MHz              | QPSK                       | 1 RB / 0 RB Offset<br>1 RB / 14 RB Offset<br>15 RB / 0 RB Offset  |
|                    |                       | 131997 to 132647  | 131997 (1712.5MHz),<br>132647 (1777.5MHz)                        | 5MHz              | QPSK                       | 1 RB / 0 RB Offset<br>1 RB / 24 RB Offset<br>25 RB / 0 RB Offset  |
|                    |                       | 132022 to 132622  | 132022 (1715.0MHz),<br>132622 (1775.0MHz)                        | 10MHz             | QPSK                       | 1 RB / 0 RB Offset<br>1 RB / 49 RB Offset<br>50 RB / 0 RB Offset  |
|                    |                       | 132047 to 132597  | 132047 (1717.5MHz),<br>132597 (1772.5MHz)                        | 15MHz             | QPSK                       | 1 RB / 0 RB Offset<br>1 RB / 74 RB Offset<br>75 RB / 0 RB Offset  |
|                    |                       | 132072 to 132572  | 132072 (1720.0MHz),<br>132572 (1770.0MHz)                        | 20MHz             | QPSK                       | 1 RB / 0 RB Offset<br>1 RB / 99 RB Offset<br>100 RB / 0 RB Offset |
| -                  | Peak to Average Ratio | 131979 to 132665  | 131979 (1710.7MHz),<br>132322 (1745.0MHz),<br>132665 (1779.3MHz) | 1.4MHz            | QPSK                       | 1 RB / 2 RB Offset                                                |
|                    |                       | 131987 to 132657  | 131987 (1711.5MHz),<br>132322 (1745.0MHz),<br>132657 (1778.5MHz) | 3MHz              | QPSK                       | 1 RB / 7 RB Offset                                                |
|                    |                       | 131997 to 132647  | 131997 (1712.5MHz),<br>132322 (1745.0MHz),<br>132647 (1777.5MHz) | 5MHz              | QPSK                       | 1 RB / 24 RB Offset                                               |
|                    |                       | 132022 to 132622  | 132022 (1715.0MHz),<br>132322 (1745.0MHz),<br>132622 (1775.0MHz) | 10MHz             | QPSK                       | 7 RB / 49 RB Offset                                               |
|                    |                       | 132047 to 132597  | 132047 (1717.5MHz),<br>132322 (1745.0MHz),<br>132597 (1772.5MHz) | 15MHz             | QPSK                       | 1 RB / 0 RB Offset                                                |
|                    |                       | 132072 to 132572  | 132072 (1720.0MHz),<br>132322 (1745.0MHz),<br>132572 (1770.0MHz) | 20MHz             | QPSK                       | 1 RB / 50 RB Offset                                               |

| EUT Configure Mode | Test Item                    | Available Channel | Tested Channel                                                   | Channel Bandwidth | Modulation | Mode                |
|--------------------|------------------------------|-------------------|------------------------------------------------------------------|-------------------|------------|---------------------|
| -                  | Conducted Emission           | 131979 to 132665  | 131979 (1710.7MHz),<br>132322 (1745.0MHz),<br>132665 (1779.3MHz) | 1.4MHz            | QPSK       | 1 RB / 2 RB Offset  |
|                    |                              | 131987 to 132657  | 131987 (1711.5MHz),<br>132322 (1745.0MHz),<br>132657 (1778.5MHz) | 3MHz              | QPSK       | 1 RB / 7 RB Offset  |
|                    |                              | 131997 to 132647  | 131997 (1712.5MHz),<br>132322 (1745.0MHz),<br>132647 (1777.5MHz) | 5MHz              | QPSK       | 1 RB / 24 RB Offset |
|                    |                              | 132022 to 132622  | 132022 (1715.0MHz),<br>132322 (1745.0MHz),<br>132622 (1775.0MHz) | 10MHz             | QPSK       | 7 RB / 49 RB Offset |
|                    |                              | 132047 to 132597  | 132047 (1717.5MHz),<br>132322 (1745.0MHz),<br>132597 (1772.5MHz) | 15MHz             | QPSK       | 1 RB / 0 RB Offset  |
|                    |                              | 132072 to 132572  | 132072 (1720.0MHz),<br>132322 (1745.0MHz),<br>132572 (1770.0MHz) | 20MHz             | QPSK       | 1 RB / 50 RB Offset |
| -                  | Radiated Emission Below 1GHz | 131979 to 132665  | 132072 (1720.0MHz)                                               | 20MHz             | QPSK       | 1 RB / 2 RB Offset  |
| -                  | Radiated Emission Above 1GHz | 131979 to 132665  | 131979 (1710.7MHz),<br>132322 (1745.0MHz),<br>132665 (1779.3MHz) | 1.4MHz            | QPSK       | 1 RB / 2 RB Offset  |
|                    |                              | 131997 to 132647  | 131997 (1712.5MHz),<br>132322 (1745.0MHz),<br>132647 (1777.5MHz) | 5MHz              | QPSK       | 1 RB / 24 RB Offset |
|                    |                              | 132072 to 132572  | 132072 (1720.0MHz),<br>132322 (1745.0MHz),<br>132572 (1770.0MHz) | 20MHz             | QPSK       | 1 RB / 50 RB Offset |

Test Condition:

| Test Item             | Environmental Conditions | Input Power (system) | Tested By  |
|-----------------------|--------------------------|----------------------|------------|
| ERP                   | 25deg. C, 70%RH          | 5Vdc                 | James Yang |
| Frequency Stability   | 24deg. C, 64%RH          | 5Vdc                 | James Yang |
| Occupied Bandwidth    | 24deg. C, 64%RH          | 5Vdc                 | James Yang |
| Band Edge             | 24deg. C, 64%RH          | 5Vdc                 | James Yang |
| Peak To Average Ratio | 24deg. C, 64%RH          | 5Vdc                 | James Yang |
| Conducted Emission    | 24deg. C, 64%RH          | 5Vdc                 | James Yang |
| Radiated Emission     | 22deg. C, 68%RH          | 120Vac, 60Hz         | Greg Lin   |

### **3.4 EUT Operating Conditions**

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency

### **3.5 General Description of Applied Standards and References**

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards and References:

#### **Test Standard:**

**FCC 47 CFR Part 2**

**FCC 47 CFR Part 24**

**FCC 47 CFR Part 27**

**ANSI/TIA/EIA-603-D-2010**

**ANSI/TIA/EIA-603-E 2016**

**ANSI 63.26-2015**

All test items have been performed and recorded as per the above standards.

#### **References Test Guidance:**

**KDB 971168 D01 Power Meas License Digital Systems v03r01**

**KDB 971168 D02 Misc Rev Approv License Devices v02r01**

All test items have been performed as a reference to the above KDB test guidance.

## 4 Test Types and Results

### 4.1 Output Power Measurement

#### 4.1.1 Limits of Output Power Measurement

For n12:

Control and mobile stations in the 698-746 MHz, 746-757 MHz, 787-788 MHz and 805-806 MHz band are limited to 30 watts ERP.

Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink, 746-757 MHz, 787-788 MHz and 805-806 MHz band are limited to 3 watts ERP.

For LTE Band 2:

Mobile / Portable station are limited to 2 watts e.r.p.

For LTE Band 66:

Mobile / Portable station are limited to 1 watts e.i.r.p.

#### 4.1.2 Test Procedures

##### Conducted Power Measurement:

The EUT was set up for the maximum power with 5GNR link data modulation and link up with simulator.

Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

##### Maximum EIRP

The relevant equation for determining the maximum ERP or EIRP from the measured RF output power is given in Equation as follows:

$$\text{ERP or EIRP} = P_{\text{Meas}} + G_T$$

where

ERP or EIRP effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as  $P_{\text{Meas}}$ , e.g., dBm or dBW)

$P_{\text{Meas}}$  measured transmitter output power or PSD, in dBm or dBW

$G_T$  gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)

#### 4.1.3 Test Setup

Conducted Power Measurement:



For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.1.4 Test Results

##### Conducted Output Power (dBm)

| n12 |              |                 |    |        |        |        |
|-----|--------------|-----------------|----|--------|--------|--------|
| BW  | MCS Index    | Channel         |    | 140300 | 141500 | 142700 |
|     |              | Frequency (MHz) |    | 701.5  | 707.5  | 713.5  |
| 5M  | $\pi/2$ BPSK | 1               | 0  | 22.97  | 22.90  | 23.13  |
|     |              | 1               | 12 | 22.96  | 22.96  | 23.30  |
|     |              | 1               | 24 | 22.81  | 23.19  | 23.23  |
|     |              | 12              | 0  | 22.66  | 23.01  | 22.62  |
|     |              | 12              | 6  | 22.83  | 22.74  | 22.97  |
|     |              | 12              | 13 | 22.75  | 22.70  | 22.93  |
|     |              | 25              | 0  | 22.90  | 22.72  | 22.66  |
|     | QPSK         | 1               | 0  | 23.09  | 23.04  | 22.99  |
|     |              | 1               | 12 | 22.93  | 22.88  | 22.98  |
|     |              | 1               | 24 | 23.07  | 22.84  | 22.93  |
|     |              | 12              | 0  | 22.84  | 22.80  | 22.72  |
|     |              | 12              | 6  | 22.84  | 22.72  | 22.80  |
|     |              | 12              | 13 | 22.78  | 22.87  | 22.71  |
|     |              | 25              | 0  | 22.86  | 22.72  | 22.73  |
|     | 16QAM        | 1               | 0  | 22.83  | 22.60  | 22.95  |
|     |              | 1               | 12 | 22.68  | 22.80  | 22.94  |
|     |              | 1               | 24 | 22.81  | 22.71  | 22.69  |
|     |              | 12              | 0  | 22.76  | 22.73  | 22.53  |
|     |              | 12              | 6  | 22.61  | 22.44  | 22.70  |
|     |              | 12              | 13 | 22.43  | 22.76  | 22.69  |
|     |              | 25              | 0  | 22.44  | 22.60  | 22.60  |
|     | 64QAM        | 1               | 0  | 22.36  | 22.20  | 22.29  |
|     |              | 1               | 12 | 22.57  | 22.24  | 22.45  |
|     |              | 1               | 24 | 22.55  | 22.41  | 22.70  |
|     |              | 12              | 0  | 22.04  | 22.10  | 22.21  |
|     |              | 12              | 6  | 22.34  | 22.06  | 22.13  |
|     |              | 12              | 13 | 22.48  | 22.50  | 22.20  |
|     |              | 25              | 0  | 22.26  | 22.01  | 22.38  |
|     | 256QAM       | 1               | 0  | 19.93  | 20.17  | 20.14  |
|     |              | 1               | 12 | 20.09  | 20.20  | 20.25  |
|     |              | 1               | 24 | 19.99  | 20.13  | 19.93  |
|     |              | 12              | 0  | 19.63  | 19.21  | 20.00  |
|     |              | 12              | 6  | 19.64  | 19.89  | 19.25  |
|     |              | 12              | 13 | 19.23  | 19.27  | 19.43  |
|     |              | 25              | 0  | 19.90  | 19.58  | 19.72  |

| n12 |              |                 |    |        |        |        |
|-----|--------------|-----------------|----|--------|--------|--------|
| BW  | MCS Index    | Channel         |    | 140800 | 141500 | 142200 |
|     |              | Frequency (MHz) |    | 704    | 707.5  | 711    |
| 10M | $\pi/2$ BPSK | 1               | 0  | 23.11  | 23.13  | 22.87  |
|     |              | 1               | 26 | 23.14  | 23.10  | 22.97  |
|     |              | 1               | 51 | 23.05  | 22.85  | 23.22  |
|     |              | 26              | 0  | 22.74  | 22.99  | 22.85  |
|     |              | 26              | 13 | 23.08  | 22.65  | 22.94  |
|     |              | 26              | 26 | 22.80  | 22.66  | 22.72  |
|     |              | 52              | 0  | 22.96  | 22.85  | 22.98  |
|     | QPSK         | 1               | 0  | 22.89  | 22.98  | 22.90  |
|     |              | 1               | 26 | 22.80  | 23.07  | 23.05  |
|     |              | 1               | 51 | 23.09  | 22.85  | 22.81  |
|     |              | 26              | 0  | 22.61  | 22.76  | 22.81  |
|     |              | 26              | 13 | 22.62  | 22.68  | 22.77  |
|     |              | 26              | 26 | 22.84  | 22.68  | 22.85  |
|     |              | 52              | 0  | 22.76  | 22.77  | 22.79  |
|     | 16QAM        | 1               | 0  | 22.61  | 22.62  | 22.60  |
|     |              | 1               | 26 | 23.00  | 22.69  | 22.91  |
|     |              | 1               | 51 | 22.71  | 22.93  | 22.90  |
|     |              | 26              | 0  | 22.40  | 22.53  | 22.79  |
|     |              | 26              | 13 | 22.61  | 22.49  | 22.47  |
|     |              | 26              | 26 | 22.62  | 22.57  | 22.62  |
|     |              | 52              | 0  | 22.79  | 22.56  | 22.44  |
|     | 64QAM        | 1               | 0  | 22.32  | 22.63  | 22.64  |
|     |              | 1               | 26 | 22.63  | 22.44  | 22.59  |
|     |              | 1               | 51 | 22.59  | 22.62  | 22.54  |
|     |              | 26              | 0  | 22.44  | 22.49  | 22.35  |
|     |              | 26              | 13 | 22.44  | 22.04  | 22.01  |
|     |              | 26              | 26 | 22.38  | 22.50  | 22.48  |
|     |              | 52              | 0  | 22.07  | 22.29  | 22.47  |
|     | 256QAM       | 1               | 0  | 20.23  | 19.70  | 19.78  |
|     |              | 1               | 26 | 19.98  | 19.75  | 20.24  |
|     |              | 1               | 51 | 20.30  | 19.77  | 20.14  |
|     |              | 26              | 0  | 19.59  | 19.22  | 19.77  |
|     |              | 26              | 13 | 19.14  | 19.21  | 19.81  |
|     |              | 26              | 26 | 19.54  | 19.45  | 19.90  |
|     |              | 52              | 0  | 19.25  | 19.69  | 19.40  |

| n12 |              |                 |    |        |        |        |
|-----|--------------|-----------------|----|--------|--------|--------|
| BW  | MCS Index    | Channel         |    | 141300 | 141500 | 141700 |
|     |              | Frequency (MHz) |    | 706.5  | 707.5  | 708.5  |
| 15M | $\pi/2$ BPSK | 1               | 0  | 22.96  | 23.04  | 23.08  |
|     |              | 1               | 39 | 23.07  | 23.07  | 22.83  |
|     |              | 1               | 78 | 22.84  | 23.17  | 22.90  |
|     |              | 39              | 0  | 22.96  | 22.90  | 22.67  |
|     |              | 39              | 19 | 23.00  | 22.74  | 22.60  |
|     |              | 39              | 40 | 22.88  | 22.74  | 22.83  |
|     |              | 79              | 0  | 22.62  | 22.93  | 22.96  |
|     | QPSK         | 1               | 0  | 23.10  | 22.86  | 22.87  |
|     |              | 1               | 39 | 22.83  | 23.05  | 22.84  |
|     |              | 1               | 78 | 22.88  | 22.89  | 22.83  |
|     |              | 39              | 0  | 22.77  | 22.90  | 22.87  |
|     |              | 39              | 19 | 22.62  | 22.74  | 22.77  |
|     |              | 39              | 40 | 22.73  | 22.76  | 22.76  |
|     |              | 79              | 0  | 22.56  | 22.66  | 22.61  |
|     | 16QAM        | 1               | 0  | 22.74  | 22.92  | 22.83  |
|     |              | 1               | 39 | 22.72  | 22.85  | 22.99  |
|     |              | 1               | 78 | 22.65  | 22.65  | 22.82  |
|     |              | 39              | 0  | 22.44  | 22.77  | 22.68  |
|     |              | 39              | 19 | 22.69  | 22.70  | 22.45  |
|     |              | 39              | 40 | 22.68  | 22.47  | 22.57  |
|     |              | 79              | 0  | 22.48  | 22.51  | 22.75  |
|     | 64QAM        | 1               | 0  | 22.32  | 22.59  | 22.61  |
|     |              | 1               | 39 | 22.30  | 22.65  | 22.26  |
|     |              | 1               | 78 | 22.44  | 22.37  | 22.42  |
|     |              | 39              | 0  | 22.00  | 22.03  | 22.10  |
|     |              | 39              | 19 | 22.15  | 22.43  | 22.37  |
|     |              | 39              | 40 | 22.34  | 22.48  | 22.17  |
|     |              | 79              | 0  | 22.43  | 22.18  | 22.42  |
|     | 256QAM       | 1               | 0  | 19.81  | 20.12  | 20.16  |
|     |              | 1               | 39 | 19.72  | 19.67  | 19.67  |
|     |              | 1               | 78 | 19.68  | 19.75  | 19.60  |
|     |              | 39              | 0  | 19.49  | 19.79  | 19.80  |
|     |              | 39              | 19 | 19.22  | 19.71  | 19.13  |
|     |              | 39              | 40 | 19.17  | 19.85  | 19.91  |
|     |              | 79              | 0  | 19.15  | 19.93  | 19.35  |

| LTE Band 2 |           |                 |           |        |       |        |
|------------|-----------|-----------------|-----------|--------|-------|--------|
| BW         | MCS Index | RB Size         | RB Offset | Low    | Mid   | High   |
|            |           | Channel         |           | 18607  | 18900 | 19193  |
|            |           | Frequency (MHz) |           | 1850.7 | 1880  | 1909.3 |
| 1.4M       | QPSK      | 1               | 0         | 23.17  | 23.07 | 23.13  |
|            |           | 1               | 2         | 23.39  | 23.20 | 23.17  |
|            |           | 1               | 5         | 23.29  | 23.39 | 23.37  |
|            |           | 3               | 0         | 22.49  | 22.22 | 22.76  |
|            |           | 3               | 1         | 22.45  | 22.33 | 22.57  |
|            |           | 3               | 3         | 22.72  | 22.22 | 22.86  |
|            |           | 6               | 0         | 22.67  | 22.97 | 22.83  |
|            | 16QAM     | 1               | 0         | 22.35  | 22.11 | 22.29  |
|            |           | 1               | 2         | 22.25  | 22.40 | 22.16  |
|            |           | 1               | 5         | 22.27  | 22.31 | 22.13  |
|            |           | 3               | 0         | 21.56  | 21.96 | 21.46  |
|            |           | 3               | 1         | 21.31  | 21.70 | 21.37  |
|            |           | 3               | 3         | 21.20  | 21.84 | 21.89  |
|            |           | 6               | 0         | 21.68  | 21.66 | 21.56  |
|            | 64QAM     | 1               | 0         | 21.24  | 21.26 | 21.04  |
|            |           | 1               | 2         | 21.37  | 21.23 | 21.35  |
|            |           | 1               | 5         | 21.15  | 21.24 | 21.11  |
|            |           | 3               | 0         | 20.54  | 20.90 | 20.85  |
|            |           | 3               | 1         | 20.33  | 20.60 | 20.34  |
|            |           | 3               | 3         | 20.34  | 20.59 | 20.93  |
|            |           | 6               | 0         | 20.27  | 20.73 | 20.80  |

| LTE Band 2 |           |                 |    |        |       |        |
|------------|-----------|-----------------|----|--------|-------|--------|
| BW         | MCS Index | Channel         |    | 18615  | 18900 | 19185  |
|            |           | Frequency (MHz) |    | 1851.5 | 1880  | 1908.5 |
| 3M         | QPSK      | 1               | 0  | 23.15  | 23.18 | 23.37  |
|            |           | 1               | 7  | 23.13  | 23.20 | 23.29  |
|            |           | 1               | 14 | 23.13  | 23.08 | 23.32  |
|            |           | 8               | 0  | 22.67  | 22.60 | 22.70  |
|            |           | 8               | 3  | 22.68  | 22.61 | 22.25  |
|            |           | 8               | 7  | 22.45  | 22.22 | 22.78  |
|            |           | 15              | 0  | 22.37  | 22.37 | 22.34  |
|            | 16QAM     | 1               | 0  | 22.22  | 22.07 | 22.13  |
|            |           | 1               | 7  | 22.40  | 22.10 | 22.16  |
|            |           | 1               | 14 | 22.05  | 22.15 | 22.09  |
|            |           | 8               | 0  | 21.65  | 21.89 | 21.67  |
|            |           | 8               | 3  | 21.99  | 21.99 | 21.74  |
|            |           | 8               | 7  | 21.32  | 21.62 | 21.85  |
|            |           | 15              | 0  | 21.56  | 21.85 | 21.26  |
|            | 64QAM     | 1               | 0  | 21.30  | 21.15 | 21.24  |
|            |           | 1               | 7  | 21.13  | 21.37 | 21.34  |
|            |           | 1               | 14 | 21.14  | 21.29 | 21.29  |
|            |           | 8               | 0  | 20.91  | 20.47 | 20.61  |
|            |           | 8               | 3  | 20.26  | 20.85 | 20.37  |
|            |           | 8               | 7  | 20.30  | 20.49 | 20.53  |
|            |           | 15              | 0  | 20.65  | 20.96 | 20.74  |

| LTE Band 2 |           |                 |    |        |       |        |
|------------|-----------|-----------------|----|--------|-------|--------|
| BW         | MCS Index | Channel         |    | 18625  | 18900 | 19175  |
|            |           | Frequency (MHz) |    | 1852.5 | 1880  | 1907.5 |
| 5M         | QPSK      | 1               | 0  | 23.03  | 23.21 | 23.20  |
|            |           | 1               | 12 | 23.04  | 23.29 | 23.22  |
|            |           | 1               | 24 | 23.11  | 23.14 | 23.28  |
|            |           | 12              | 0  | 22.99  | 22.35 | 22.86  |
|            |           | 12              | 6  | 22.20  | 22.75 | 22.62  |
|            |           | 12              | 13 | 22.77  | 22.70 | 22.54  |
|            |           | 25              | 0  | 22.68  | 22.93 | 22.33  |
|            | 16QAM     | 1               | 0  | 22.25  | 22.02 | 22.08  |
|            |           | 1               | 12 | 22.17  | 22.14 | 22.16  |
|            |           | 1               | 24 | 22.23  | 22.24 | 22.08  |
|            |           | 12              | 0  | 21.73  | 22.00 | 21.52  |
|            |           | 12              | 6  | 21.57  | 21.55 | 21.43  |
|            |           | 12              | 13 | 21.42  | 21.79 | 21.34  |
|            |           | 25              | 0  | 21.40  | 21.64 | 21.43  |
|            | 64QAM     | 1               | 0  | 21.39  | 21.40 | 21.08  |
|            |           | 1               | 12 | 21.15  | 21.18 | 21.15  |
|            |           | 1               | 24 | 21.19  | 21.10 | 21.34  |
|            |           | 12              | 0  | 20.34  | 20.24 | 20.25  |
|            |           | 12              | 6  | 20.99  | 20.69 | 20.73  |
|            |           | 12              | 13 | 20.75  | 20.51 | 20.79  |
|            |           | 25              | 0  | 20.77  | 20.85 | 20.57  |

| LTE Band 2 |           |                 |    |       |       |       |
|------------|-----------|-----------------|----|-------|-------|-------|
| BW         | MCS Index | Channel         |    | 18650 | 18900 | 19150 |
|            |           | Frequency (MHz) |    | 1855  | 1880  | 1905  |
| 10M        | QPSK      | 1               | 0  | 23.30 | 23.13 | 23.08 |
|            |           | 1               | 24 | 23.26 | 23.22 | 23.16 |
|            |           | 1               | 49 | 23.23 | 23.27 | 23.39 |
|            |           | 25              | 0  | 22.97 | 22.99 | 22.47 |
|            |           | 25              | 12 | 22.36 | 22.52 | 22.84 |
|            |           | 25              | 25 | 22.58 | 22.37 | 22.64 |
|            |           | 50              | 0  | 22.54 | 22.25 | 22.74 |
|            | 16QAM     | 1               | 0  | 22.21 | 22.32 | 22.20 |
|            |           | 1               | 24 | 22.16 | 22.00 | 22.32 |
|            |           | 1               | 49 | 22.29 | 22.14 | 22.15 |
|            |           | 25              | 0  | 21.24 | 21.25 | 21.25 |
|            |           | 25              | 12 | 21.39 | 21.23 | 21.75 |
|            |           | 25              | 25 | 21.29 | 21.61 | 21.45 |
|            |           | 50              | 0  | 21.93 | 21.20 | 21.40 |
|            | 64QAM     | 1               | 0  | 21.27 | 21.34 | 21.19 |
|            |           | 1               | 24 | 21.19 | 21.36 | 21.14 |
|            |           | 1               | 49 | 21.08 | 21.26 | 21.32 |
|            |           | 25              | 0  | 20.43 | 20.90 | 20.39 |
|            |           | 25              | 12 | 20.74 | 20.67 | 20.31 |
|            |           | 25              | 25 | 20.45 | 20.67 | 20.80 |
|            |           | 50              | 0  | 20.78 | 20.51 | 20.26 |

| LTE Band 2 |           |                 |    |        |       |        |
|------------|-----------|-----------------|----|--------|-------|--------|
| BW         | MCS Index | Channel         |    | 18675  | 18900 | 19125  |
|            |           | Frequency (MHz) |    | 1857.5 | 1880  | 1902.5 |
| 15M        | QPSK      | 1               | 0  | 23.28  | 23.05 | 23.23  |
|            |           | 1               | 37 | 23.33  | 23.27 | 23.07  |
|            |           | 1               | 74 | 23.20  | 23.32 | 23.22  |
|            |           | 36              | 0  | 22.40  | 22.37 | 22.90  |
|            |           | 36              | 19 | 22.32  | 22.47 | 22.47  |
|            |           | 36              | 39 | 22.78  | 22.66 | 22.29  |
|            |           | 75              | 0  | 22.78  | 22.98 | 22.40  |
|            | 16QAM     | 1               | 0  | 22.21  | 22.30 | 22.01  |
|            |           | 1               | 37 | 22.10  | 22.35 | 22.16  |
|            |           | 1               | 74 | 22.39  | 22.16 | 22.33  |
|            |           | 36              | 0  | 21.21  | 21.31 | 21.20  |
|            |           | 36              | 19 | 21.28  | 21.80 | 21.59  |
|            |           | 36              | 39 | 21.22  | 21.87 | 21.52  |
|            |           | 75              | 0  | 21.23  | 21.79 | 21.45  |
|            | 64QAM     | 1               | 0  | 21.32  | 21.23 | 21.36  |
|            |           | 1               | 37 | 21.26  | 21.27 | 21.04  |
|            |           | 1               | 74 | 21.29  | 21.03 | 21.33  |
|            |           | 36              | 0  | 20.57  | 20.70 | 20.78  |
|            |           | 36              | 19 | 20.82  | 20.25 | 20.46  |
|            |           | 36              | 39 | 20.44  | 20.69 | 20.88  |
|            |           | 75              | 0  | 20.67  | 20.75 | 20.24  |

| LTE Band 2 |           |                 |    |       |       |       |
|------------|-----------|-----------------|----|-------|-------|-------|
| BW         | MCS Index | Channel         |    | 18700 | 18900 | 19100 |
|            |           | Frequency (MHz) |    | 1860  | 1880  | 1900  |
| 20M        | QPSK      | 1               | 0  | 23.35 | 23.38 | 23.22 |
|            |           | 1               | 50 | 23.13 | 23.20 | 23.35 |
|            |           | 1               | 99 | 23.18 | 23.11 | 23.37 |
|            |           | 50              | 0  | 22.54 | 22.28 | 22.40 |
|            |           | 50              | 25 | 22.26 | 22.55 | 22.83 |
|            |           | 50              | 50 | 22.40 | 22.25 | 22.29 |
|            |           | 100             | 0  | 22.59 | 22.98 | 22.38 |
|            | 16QAM     | 1               | 0  | 22.19 | 22.30 | 22.26 |
|            |           | 1               | 50 | 22.17 | 22.14 | 22.37 |
|            |           | 1               | 99 | 22.01 | 22.38 | 22.18 |
|            |           | 50              | 0  | 21.86 | 21.61 | 21.82 |
|            |           | 50              | 25 | 21.72 | 21.76 | 21.43 |
|            |           | 50              | 50 | 21.92 | 21.53 | 21.67 |
|            |           | 100             | 0  | 21.91 | 21.63 | 21.66 |
|            | 64QAM     | 1               | 0  | 21.38 | 21.23 | 21.22 |
|            |           | 1               | 50 | 21.33 | 21.22 | 21.27 |
|            |           | 1               | 99 | 21.34 | 21.17 | 21.32 |
|            |           | 50              | 0  | 20.85 | 20.91 | 20.69 |
|            |           | 50              | 25 | 20.53 | 20.30 | 20.99 |
|            |           | 50              | 50 | 20.90 | 20.86 | 20.52 |
|            |           | 100             | 0  | 20.99 | 20.74 | 20.21 |

| LTE Band 66 |           |                 |   |        |        |        |
|-------------|-----------|-----------------|---|--------|--------|--------|
| BW          | MCS Index | Channel         |   | 131979 | 132322 | 132665 |
|             |           | Frequency (MHz) |   | 1710.7 | 1745   | 1779.3 |
| 1.4M        | QPSK      | 1               | 0 | 23.11  | 22.84  | 23.06  |
|             |           | 1               | 2 | 22.85  | 23.06  | 22.83  |
|             |           | 1               | 5 | 23.08  | 22.81  | 22.94  |
|             |           | 3               | 0 | 22.43  | 22.34  | 22.57  |
|             |           | 3               | 1 | 22.42  | 22.39  | 22.76  |
|             |           | 3               | 3 | 22.62  | 22.88  | 22.22  |
|             |           | 6               | 0 | 22.41  | 22.72  | 22.20  |
|             | 16QAM     | 1               | 0 | 21.95  | 22.04  | 21.95  |
|             |           | 1               | 2 | 22.05  | 21.87  | 21.80  |
|             |           | 1               | 5 | 22.15  | 21.94  | 22.06  |
|             |           | 3               | 0 | 21.46  | 21.40  | 21.32  |
|             |           | 3               | 1 | 21.59  | 21.61  | 21.47  |
|             |           | 3               | 3 | 21.43  | 21.81  | 21.31  |
|             |           | 6               | 0 | 21.26  | 21.75  | 21.58  |
|             | 64QAM     | 1               | 0 | 20.91  | 21.16  | 21.02  |
|             |           | 1               | 2 | 20.96  | 21.11  | 21.19  |
|             |           | 1               | 5 | 20.95  | 21.15  | 20.86  |
|             |           | 3               | 0 | 20.66  | 20.79  | 20.79  |
|             |           | 3               | 1 | 20.48  | 20.34  | 20.70  |
|             |           | 3               | 3 | 20.77  | 20.46  | 20.69  |
|             |           | 6               | 0 | 20.46  | 20.77  | 20.56  |

| LTE Band 66 |           |                 |    |        |        |        |
|-------------|-----------|-----------------|----|--------|--------|--------|
| BW          | MCS Index | Channel         |    | 131987 | 132322 | 132657 |
|             |           | Frequency (MHz) |    | 1711.5 | 1745   | 1778.5 |
| 3M          | QPSK      | 1               | 0  | 22.85  | 23.06  | 23.20  |
|             |           | 1               | 7  | 22.88  | 22.84  | 23.06  |
|             |           | 1               | 14 | 22.97  | 23.16  | 23.05  |
|             |           | 8               | 0  | 22.73  | 22.28  | 22.35  |
|             |           | 8               | 3  | 22.79  | 22.86  | 22.32  |
|             |           | 8               | 7  | 22.28  | 22.45  | 22.67  |
|             |           | 15              | 0  | 22.28  | 22.24  | 22.50  |
|             | 16QAM     | 1               | 0  | 22.04  | 22.13  | 21.90  |
|             |           | 1               | 7  | 21.92  | 21.97  | 22.20  |
|             |           | 1               | 14 | 22.12  | 22.03  | 21.80  |
|             |           | 8               | 0  | 21.46  | 21.66  | 21.21  |
|             |           | 8               | 3  | 21.41  | 21.85  | 21.57  |
|             |           | 8               | 7  | 21.48  | 21.39  | 21.89  |
|             |           | 15              | 0  | 21.22  | 21.40  | 21.88  |
|             | 64QAM     | 1               | 0  | 21.11  | 21.20  | 21.16  |
|             |           | 1               | 7  | 20.91  | 20.96  | 20.85  |
|             |           | 1               | 14 | 21.08  | 21.05  | 20.82  |
|             |           | 8               | 0  | 20.82  | 20.61  | 20.39  |
|             |           | 8               | 3  | 20.26  | 20.39  | 20.35  |
|             |           | 8               | 7  | 20.56  | 20.39  | 20.36  |
|             |           | 15              | 0  | 20.50  | 20.36  | 20.25  |

| LTE Band 66 |           |                 |    |        |        |        |
|-------------|-----------|-----------------|----|--------|--------|--------|
| BW          | MCS Index | Channel         |    | 131997 | 132322 | 132647 |
|             |           | Frequency (MHz) |    | 1712.5 | 1745   | 1777.5 |
| 5M          | QPSK      | 1               | 0  | 22.84  | 23.08  | 22.88  |
|             |           | 1               | 12 | 23.05  | 23.05  | 22.87  |
|             |           | 1               | 24 | 22.91  | 22.80  | 23.06  |
|             |           | 12              | 0  | 22.22  | 22.71  | 22.23  |
|             |           | 12              | 6  | 22.70  | 22.53  | 22.84  |
|             |           | 12              | 13 | 22.89  | 22.77  | 22.77  |
|             |           | 25              | 0  | 22.61  | 22.47  | 22.82  |
|             | 16QAM     | 1               | 0  | 22.18  | 22.02  | 21.82  |
|             |           | 1               | 12 | 22.17  | 22.01  | 22.03  |
|             |           | 1               | 24 | 22.05  | 22.13  | 21.99  |
|             |           | 12              | 0  | 21.23  | 21.82  | 21.69  |
|             |           | 12              | 6  | 21.69  | 21.39  | 21.25  |
|             |           | 12              | 13 | 21.77  | 21.28  | 21.21  |
|             |           | 25              | 0  | 21.58  | 21.21  | 21.42  |
|             | 64QAM     | 1               | 0  | 20.88  | 20.87  | 21.05  |
|             |           | 1               | 12 | 20.89  | 20.97  | 21.00  |
|             |           | 1               | 24 | 21.18  | 20.91  | 20.94  |
|             |           | 12              | 0  | 20.41  | 20.84  | 20.61  |
|             |           | 12              | 6  | 20.35  | 20.67  | 20.39  |
|             |           | 12              | 13 | 20.33  | 20.69  | 20.60  |
|             |           | 25              | 0  | 20.24  | 20.56  | 20.47  |

| LTE Band 66 |           |                 |    |        |        |        |
|-------------|-----------|-----------------|----|--------|--------|--------|
| BW          | MCS Index | Channel         |    | 132022 | 132322 | 132622 |
|             |           | Frequency (MHz) |    | 1715   | 1745   | 1775   |
| 10M         | QPSK      | 1               | 0  | 23.10  | 22.81  | 22.83  |
|             |           | 1               | 24 | 23.00  | 22.88  | 22.99  |
|             |           | 1               | 49 | 23.03  | 22.86  | 22.86  |
|             |           | 25              | 0  | 22.35  | 22.77  | 22.64  |
|             |           | 25              | 12 | 22.23  | 22.47  | 22.69  |
|             |           | 25              | 25 | 22.64  | 22.40  | 22.67  |
|             |           | 50              | 0  | 22.87  | 22.76  | 22.58  |
|             | 16QAM     | 1               | 0  | 21.94  | 22.19  | 21.97  |
|             |           | 1               | 24 | 21.91  | 22.05  | 21.82  |
|             |           | 1               | 49 | 22.16  | 21.92  | 22.19  |
|             |           | 25              | 0  | 21.90  | 21.46  | 21.53  |
|             |           | 25              | 12 | 21.59  | 21.41  | 21.73  |
|             |           | 25              | 25 | 21.32  | 21.74  | 21.40  |
|             |           | 50              | 0  | 21.22  | 21.58  | 21.71  |
|             | 64QAM     | 1               | 0  | 20.86  | 20.92  | 21.07  |
|             |           | 1               | 24 | 21.18  | 21.14  | 21.12  |
|             |           | 1               | 49 | 20.83  | 21.02  | 21.16  |
|             |           | 25              | 0  | 20.86  | 20.43  | 20.86  |
|             |           | 25              | 12 | 20.32  | 20.37  | 20.73  |
|             |           | 25              | 25 | 20.45  | 20.61  | 20.25  |
|             |           | 50              | 0  | 20.46  | 20.60  | 20.58  |

| LTE Band 66 |           |                 |    |        |        |        |
|-------------|-----------|-----------------|----|--------|--------|--------|
| BW          | MCS Index | Channel         |    | 132047 | 132322 | 132597 |
|             |           | Frequency (MHz) |    | 1717.5 | 1745   | 1772.5 |
| 15M         | QPSK      | 1               | 0  | 23.01  | 23.08  | 22.94  |
|             |           | 1               | 37 | 23.06  | 23.05  | 23.04  |
|             |           | 1               | 74 | 23.16  | 23.19  | 22.89  |
|             |           | 36              | 0  | 22.30  | 22.51  | 22.84  |
|             |           | 36              | 19 | 22.55  | 22.59  | 22.36  |
|             |           | 36              | 39 | 22.54  | 22.67  | 22.81  |
|             |           | 75              | 0  | 22.74  | 22.54  | 22.39  |
|             | 16QAM     | 1               | 0  | 21.87  | 21.97  | 21.83  |
|             |           | 1               | 37 | 22.10  | 22.11  | 21.94  |
|             |           | 1               | 74 | 21.89  | 22.03  | 22.19  |
|             |           | 36              | 0  | 21.70  | 21.27  | 21.81  |
|             |           | 36              | 19 | 21.70  | 21.24  | 21.79  |
|             |           | 36              | 39 | 21.49  | 21.48  | 21.26  |
|             |           | 75              | 0  | 21.85  | 21.65  | 21.54  |
|             | 64QAM     | 1               | 0  | 21.10  | 21.03  | 21.11  |
|             |           | 1               | 37 | 21.05  | 20.87  | 21.16  |
|             |           | 1               | 74 | 21.02  | 21.03  | 21.17  |
|             |           | 36              | 0  | 20.24  | 20.57  | 20.60  |
|             |           | 36              | 19 | 20.82  | 20.24  | 20.38  |
|             |           | 36              | 39 | 20.45  | 20.20  | 20.80  |
|             |           | 75              | 0  | 20.50  | 20.46  | 20.83  |

| LTE Band 66 |           |                 |    |        |        |        |
|-------------|-----------|-----------------|----|--------|--------|--------|
| BW          | MCS Index | Channel         |    | 132072 | 132322 | 132575 |
|             |           | Frequency (MHz) |    | 1720   | 1745   | 1770   |
| 20M         | QPSK      | 1               | 0  | 22.83  | 23.18  | 22.95  |
|             |           | 1               | 50 | 23.10  | 23.04  | 22.95  |
|             |           | 1               | 99 | 22.97  | 22.97  | 22.95  |
|             |           | 50              | 0  | 22.61  | 22.65  | 22.47  |
|             |           | 50              | 25 | 22.78  | 22.66  | 22.45  |
|             |           | 50              | 50 | 22.30  | 22.23  | 22.44  |
|             |           | 100             | 0  | 22.51  | 22.58  | 22.56  |
|             | 16QAM     | 1               | 0  | 22.14  | 21.94  | 21.80  |
|             |           | 1               | 50 | 21.82  | 22.16  | 22.06  |
|             |           | 1               | 99 | 22.01  | 22.20  | 22.14  |
|             |           | 50              | 0  | 21.64  | 21.67  | 21.48  |
|             |           | 50              | 25 | 21.64  | 21.34  | 21.38  |
|             |           | 50              | 50 | 21.38  | 21.31  | 21.28  |
|             |           | 100             | 0  | 21.54  | 21.31  | 21.26  |
|             | 64QAM     | 1               | 0  | 21.09  | 21.10  | 20.87  |
|             |           | 1               | 50 | 21.09  | 21.03  | 21.11  |
|             |           | 1               | 99 | 20.95  | 21.05  | 21.09  |
|             |           | 50              | 0  | 20.29  | 20.89  | 20.79  |
|             |           | 50              | 25 | 20.71  | 20.66  | 20.28  |
|             |           | 50              | 50 | 20.85  | 20.39  | 20.81  |
|             |           | 100             | 0  | 20.40  | 20.58  | 20.52  |

**ERP Power (dBm)**

| n12 |              |                 |    |        |        |        |
|-----|--------------|-----------------|----|--------|--------|--------|
| BW  | MCS Index    | Channel         |    | 140300 | 141500 | 142700 |
|     |              | Frequency (MHz) |    | 701.5  | 707.5  | 713.5  |
| 5M  | $\pi/2$ BPSK | 1               | 0  | 27.38  | 27.31  | 27.54  |
|     |              | 1               | 12 | 27.37  | 27.37  | 27.71  |
|     |              | 1               | 24 | 27.22  | 27.60  | 27.64  |
|     |              | 12              | 0  | 27.07  | 27.42  | 27.03  |
|     |              | 12              | 6  | 27.24  | 27.15  | 27.38  |
|     |              | 12              | 13 | 27.16  | 27.11  | 27.34  |
|     |              | 25              | 0  | 27.31  | 27.13  | 27.07  |
|     | QPSK         | 1               | 0  | 27.50  | 27.45  | 27.40  |
|     |              | 1               | 12 | 27.34  | 27.29  | 27.39  |
|     |              | 1               | 24 | 27.48  | 27.25  | 27.34  |
|     |              | 12              | 0  | 27.25  | 27.21  | 27.13  |
|     |              | 12              | 6  | 27.25  | 27.13  | 27.21  |
|     |              | 12              | 13 | 27.19  | 27.28  | 27.12  |
|     |              | 25              | 0  | 27.27  | 27.13  | 27.14  |
|     | 16QAM        | 1               | 0  | 27.24  | 27.01  | 27.36  |
|     |              | 1               | 12 | 27.09  | 27.21  | 27.35  |
|     |              | 1               | 24 | 27.22  | 27.12  | 27.10  |
|     |              | 12              | 0  | 27.17  | 27.14  | 26.94  |
|     |              | 12              | 6  | 27.02  | 26.85  | 27.11  |
|     |              | 12              | 13 | 26.84  | 27.17  | 27.10  |
|     |              | 25              | 0  | 26.85  | 27.01  | 27.01  |
|     | 64QAM        | 1               | 0  | 26.77  | 26.61  | 26.70  |
|     |              | 1               | 12 | 26.98  | 26.65  | 26.86  |
|     |              | 1               | 24 | 26.96  | 26.82  | 27.11  |
|     |              | 12              | 0  | 26.45  | 26.51  | 26.62  |
|     |              | 12              | 6  | 26.75  | 26.47  | 26.54  |
|     |              | 12              | 13 | 26.89  | 26.91  | 26.61  |
|     |              | 25              | 0  | 26.67  | 26.42  | 26.79  |
|     | 256QAM       | 1               | 0  | 24.34  | 24.58  | 24.55  |
|     |              | 1               | 12 | 24.50  | 24.61  | 24.66  |
|     |              | 1               | 24 | 24.40  | 24.54  | 24.34  |
|     |              | 12              | 0  | 24.04  | 23.62  | 24.41  |
|     |              | 12              | 6  | 24.05  | 24.30  | 23.66  |
|     |              | 12              | 13 | 23.64  | 23.68  | 23.84  |
|     |              | 25              | 0  | 24.31  | 23.99  | 24.13  |

\*ERP = Conducted + antenna gain (4.41dBi)-2.15

| n12 |              |                 |    |        |        |        |
|-----|--------------|-----------------|----|--------|--------|--------|
| BW  | MCS Index    | Channel         |    | 140800 | 141500 | 142200 |
|     |              | Frequency (MHz) |    | 704    | 707.5  | 711    |
| 10M | $\pi/2$ BPSK | 1               | 0  | 27.52  | 27.54  | 27.28  |
|     |              | 1               | 26 | 27.55  | 27.51  | 27.38  |
|     |              | 1               | 51 | 27.46  | 27.26  | 27.63  |
|     |              | 26              | 0  | 27.15  | 27.40  | 27.26  |
|     |              | 26              | 13 | 27.49  | 27.06  | 27.35  |
|     |              | 26              | 26 | 27.21  | 27.07  | 27.13  |
|     |              | 52              | 0  | 27.37  | 27.26  | 27.39  |
|     | QPSK         | 1               | 0  | 27.30  | 27.39  | 27.31  |
|     |              | 1               | 26 | 27.21  | 27.48  | 27.46  |
|     |              | 1               | 51 | 27.50  | 27.26  | 27.22  |
|     |              | 26              | 0  | 27.02  | 27.17  | 27.22  |
|     |              | 26              | 13 | 27.03  | 27.09  | 27.18  |
|     |              | 26              | 26 | 27.25  | 27.09  | 27.26  |
|     |              | 52              | 0  | 27.17  | 27.18  | 27.20  |
|     | 16QAM        | 1               | 0  | 27.02  | 27.03  | 27.01  |
|     |              | 1               | 26 | 27.41  | 27.10  | 27.32  |
|     |              | 1               | 51 | 27.12  | 27.34  | 27.31  |
|     |              | 26              | 0  | 26.81  | 26.94  | 27.20  |
|     |              | 26              | 13 | 27.02  | 26.90  | 26.88  |
|     |              | 26              | 26 | 27.03  | 26.98  | 27.03  |
|     |              | 52              | 0  | 27.20  | 26.97  | 26.85  |
|     | 64QAM        | 1               | 0  | 26.73  | 27.04  | 27.05  |
|     |              | 1               | 26 | 27.04  | 26.85  | 27.00  |
|     |              | 1               | 51 | 27.00  | 27.03  | 26.95  |
|     |              | 26              | 0  | 26.85  | 26.90  | 26.76  |
|     |              | 26              | 13 | 26.85  | 26.45  | 26.42  |
|     |              | 26              | 26 | 26.79  | 26.91  | 26.89  |
|     |              | 52              | 0  | 26.48  | 26.70  | 26.88  |
|     | 256QAM       | 1               | 0  | 24.64  | 24.11  | 24.19  |
|     |              | 1               | 26 | 24.39  | 24.16  | 24.65  |
|     |              | 1               | 51 | 24.71  | 24.18  | 24.55  |
|     |              | 26              | 0  | 24.00  | 23.63  | 24.18  |
|     |              | 26              | 13 | 23.55  | 23.62  | 24.22  |
|     |              | 26              | 26 | 23.95  | 23.86  | 24.31  |
|     |              | 52              | 0  | 23.66  | 24.10  | 23.81  |

\*ERP = Conducted + antenna gain (4.41dBi)-2.15

| n12 |              |                 |    |        |        |        |
|-----|--------------|-----------------|----|--------|--------|--------|
| BW  | MCS Index    | Channel         |    | 141300 | 141500 | 141700 |
|     |              | Frequency (MHz) |    | 706.5  | 707.5  | 708.5  |
| 15M | $\pi/2$ BPSK | 1               | 0  | 27.37  | 27.45  | 27.49  |
|     |              | 1               | 39 | 27.48  | 27.48  | 27.24  |
|     |              | 1               | 78 | 27.25  | 27.58  | 27.31  |
|     |              | 39              | 0  | 27.37  | 27.31  | 27.08  |
|     |              | 39              | 19 | 27.41  | 27.15  | 27.01  |
|     |              | 39              | 40 | 27.29  | 27.15  | 27.24  |
|     |              | 79              | 0  | 27.03  | 27.34  | 27.37  |
|     | QPSK         | 1               | 0  | 27.15  | 27.33  | 27.24  |
|     |              | 1               | 39 | 27.13  | 27.26  | 27.40  |
|     |              | 1               | 78 | 27.06  | 27.06  | 27.23  |
|     |              | 39              | 0  | 26.85  | 27.18  | 27.09  |
|     |              | 39              | 19 | 27.10  | 27.11  | 26.86  |
|     |              | 39              | 40 | 27.09  | 26.88  | 26.98  |
|     |              | 79              | 0  | 26.89  | 26.92  | 27.16  |
|     | 16QAM        | 1               | 0  | 26.73  | 27.00  | 27.02  |
|     |              | 1               | 39 | 26.71  | 27.06  | 26.67  |
|     |              | 1               | 78 | 26.85  | 26.78  | 26.83  |
|     |              | 39              | 0  | 26.41  | 26.44  | 26.51  |
|     |              | 39              | 19 | 26.56  | 26.84  | 26.78  |
|     |              | 39              | 40 | 26.75  | 26.89  | 26.58  |
|     |              | 79              | 0  | 26.84  | 26.59  | 26.83  |
|     | 64QAM        | 1               | 0  | 26.73  | 27.00  | 27.02  |
|     |              | 1               | 39 | 26.71  | 27.06  | 26.67  |
|     |              | 1               | 78 | 26.85  | 26.78  | 26.83  |
|     |              | 39              | 0  | 26.41  | 26.44  | 26.51  |
|     |              | 39              | 19 | 26.56  | 26.84  | 26.78  |
|     |              | 39              | 40 | 26.75  | 26.89  | 26.58  |
|     |              | 79              | 0  | 26.84  | 26.59  | 26.83  |
|     | 256QAM       | 1               | 0  | 24.22  | 24.53  | 24.57  |
|     |              | 1               | 39 | 24.13  | 24.08  | 24.08  |
|     |              | 1               | 78 | 24.09  | 24.16  | 24.01  |
|     |              | 39              | 0  | 23.90  | 24.20  | 24.21  |
|     |              | 39              | 19 | 23.63  | 24.12  | 23.54  |
|     |              | 39              | 40 | 23.58  | 24.26  | 24.32  |
|     |              | 79              | 0  | 23.56  | 24.34  | 23.76  |

\*ERP = Conducted + antenna gain (4.41dBi)-2.15

# EIRP

| LTE Band 2 |           |                 |           |        |       |        |
|------------|-----------|-----------------|-----------|--------|-------|--------|
| BW         | MCS Index | RB Size         | RB Offset | Low    | Mid   | High   |
|            |           | Channel         |           | 18607  | 18900 | 19193  |
|            |           | Frequency (MHz) |           | 1850.7 | 1880  | 1909.3 |
| 1.4M       | QPSK      | 1               | 0         | 27.44  | 27.34 | 27.40  |
|            |           | 1               | 2         | 27.66  | 27.47 | 27.44  |
|            |           | 1               | 5         | 27.56  | 27.66 | 27.64  |
|            |           | 3               | 0         | 26.76  | 26.49 | 27.03  |
|            |           | 3               | 1         | 26.72  | 26.60 | 26.84  |
|            |           | 3               | 3         | 26.99  | 26.49 | 27.13  |
|            |           | 6               | 0         | 26.94  | 27.24 | 27.10  |
|            | 16QAM     | 1               | 0         | 26.62  | 26.38 | 26.56  |
|            |           | 1               | 2         | 26.52  | 26.67 | 26.43  |
|            |           | 1               | 5         | 26.54  | 26.58 | 26.40  |
|            |           | 3               | 0         | 25.83  | 26.23 | 25.73  |
|            |           | 3               | 1         | 25.58  | 25.97 | 25.64  |
|            |           | 3               | 3         | 25.47  | 26.11 | 26.16  |
|            |           | 6               | 0         | 25.95  | 25.93 | 25.83  |
|            | 64QAM     | 1               | 0         | 25.51  | 25.53 | 25.31  |
|            |           | 1               | 2         | 25.64  | 25.50 | 25.62  |
|            |           | 1               | 5         | 25.42  | 25.51 | 25.38  |
|            |           | 3               | 0         | 24.81  | 25.17 | 25.12  |
|            |           | 3               | 1         | 24.60  | 24.87 | 24.61  |
|            |           | 3               | 3         | 24.61  | 24.86 | 25.20  |
|            |           | 6               | 0         | 24.54  | 25.00 | 25.07  |

\*EIRP = Conducted + antenna gain (4.27dBi)

| LTE Band 2 |           |                 |    |        |       |        |
|------------|-----------|-----------------|----|--------|-------|--------|
| BW         | MCS Index | Channel         |    | 18615  | 18900 | 19185  |
|            |           | Frequency (MHz) |    | 1851.5 | 1880  | 1908.5 |
| 3M         | QPSK      | 1               | 0  | 27.42  | 27.45 | 27.64  |
|            |           | 1               | 7  | 27.40  | 27.47 | 27.56  |
|            |           | 1               | 14 | 27.40  | 27.35 | 27.59  |
|            |           | 8               | 0  | 26.94  | 26.87 | 26.97  |
|            |           | 8               | 3  | 26.95  | 26.88 | 26.52  |
|            |           | 8               | 7  | 26.72  | 26.49 | 27.05  |
|            |           | 15              | 0  | 26.64  | 26.64 | 26.61  |
|            | 16QAM     | 1               | 0  | 26.49  | 26.34 | 26.40  |
|            |           | 1               | 7  | 26.67  | 26.37 | 26.43  |
|            |           | 1               | 14 | 26.32  | 26.42 | 26.36  |
|            |           | 8               | 0  | 25.92  | 26.16 | 25.94  |
|            |           | 8               | 3  | 26.26  | 26.26 | 26.01  |
|            |           | 8               | 7  | 25.59  | 25.89 | 26.12  |
|            |           | 15              | 0  | 25.83  | 26.12 | 25.53  |
|            | 64QAM     | 1               | 0  | 25.57  | 25.42 | 25.51  |
|            |           | 1               | 7  | 25.40  | 25.64 | 25.61  |
|            |           | 1               | 14 | 25.41  | 25.56 | 25.56  |
|            |           | 8               | 0  | 25.18  | 24.74 | 24.88  |
|            |           | 8               | 3  | 24.53  | 25.12 | 24.64  |
|            |           | 8               | 7  | 24.57  | 24.76 | 24.80  |
|            |           | 15              | 0  | 24.92  | 25.23 | 25.01  |

\*EIRP = Conducted + antenna gain (4.27dBi)

| LTE Band 2 |           |                 |    |        |       |        |
|------------|-----------|-----------------|----|--------|-------|--------|
| BW         | MCS Index | Channel         |    | 18625  | 18900 | 19175  |
|            |           | Frequency (MHz) |    | 1852.5 | 1880  | 1907.5 |
| 5M         | QPSK      | 1               | 0  | 27.30  | 27.48 | 27.47  |
|            |           | 1               | 12 | 27.31  | 27.56 | 27.49  |
|            |           | 1               | 24 | 27.38  | 27.41 | 27.55  |
|            |           | 12              | 0  | 27.26  | 26.62 | 27.13  |
|            |           | 12              | 6  | 26.47  | 27.02 | 26.89  |
|            |           | 12              | 13 | 27.04  | 26.97 | 26.81  |
|            |           | 25              | 0  | 26.95  | 27.20 | 26.60  |
|            | 16QAM     | 1               | 0  | 26.52  | 26.29 | 26.35  |
|            |           | 1               | 12 | 26.44  | 26.41 | 26.43  |
|            |           | 1               | 24 | 26.50  | 26.51 | 26.35  |
|            |           | 12              | 0  | 26.00  | 26.27 | 25.79  |
|            |           | 12              | 6  | 25.84  | 25.82 | 25.70  |
|            |           | 12              | 13 | 25.69  | 26.06 | 25.61  |
|            |           | 25              | 0  | 25.67  | 25.91 | 25.70  |
|            | 64QAM     | 1               | 0  | 25.66  | 25.67 | 25.35  |
|            |           | 1               | 12 | 25.42  | 25.45 | 25.42  |
|            |           | 1               | 24 | 25.46  | 25.37 | 25.61  |
|            |           | 12              | 0  | 24.61  | 24.51 | 24.52  |
|            |           | 12              | 6  | 25.26  | 24.96 | 25.00  |
|            |           | 12              | 13 | 25.02  | 24.78 | 25.06  |
|            |           | 25              | 0  | 25.04  | 25.12 | 24.84  |

\*EIRP = Conducted + antenna gain (4.27dBi)

| LTE Band 2 |           |                 |    |       |       |       |
|------------|-----------|-----------------|----|-------|-------|-------|
| BW         | MCS Index | Channel         |    | 18650 | 18900 | 19150 |
|            |           | Frequency (MHz) |    | 1855  | 1880  | 1905  |
| 10M        | QPSK      | 1               | 0  | 27.57 | 27.40 | 27.35 |
|            |           | 1               | 24 | 27.53 | 27.49 | 27.43 |
|            |           | 1               | 49 | 27.50 | 27.54 | 27.66 |
|            |           | 25              | 0  | 27.24 | 27.26 | 26.74 |
|            |           | 25              | 12 | 26.63 | 26.79 | 27.11 |
|            |           | 25              | 25 | 26.85 | 26.64 | 26.91 |
|            |           | 50              | 0  | 26.81 | 26.52 | 27.01 |
|            | 16QAM     | 1               | 0  | 26.48 | 26.59 | 26.47 |
|            |           | 1               | 24 | 26.43 | 26.27 | 26.59 |
|            |           | 1               | 49 | 26.56 | 26.41 | 26.42 |
|            |           | 25              | 0  | 25.51 | 25.52 | 25.52 |
|            |           | 25              | 12 | 25.66 | 25.50 | 26.02 |
|            |           | 25              | 25 | 25.56 | 25.88 | 25.72 |
|            |           | 50              | 0  | 26.20 | 25.47 | 25.67 |
|            | 64QAM     | 1               | 0  | 25.54 | 25.61 | 25.46 |
|            |           | 1               | 24 | 25.46 | 25.63 | 25.41 |
|            |           | 1               | 49 | 25.35 | 25.53 | 25.59 |
|            |           | 25              | 0  | 24.70 | 25.17 | 24.66 |
|            |           | 25              | 12 | 25.01 | 24.94 | 24.58 |
|            |           | 25              | 25 | 24.72 | 24.94 | 25.07 |
|            |           | 50              | 0  | 25.05 | 24.78 | 24.53 |

\*EIRP = Conducted + antenna gain (4.27dBi)

| LTE Band 2 |           |                 |    |        |       |        |
|------------|-----------|-----------------|----|--------|-------|--------|
| BW         | MCS Index | Channel         |    | 18675  | 18900 | 19125  |
|            |           | Frequency (MHz) |    | 1857.5 | 1880  | 1902.5 |
| 15M        | QPSK      | 1               | 0  | 27.55  | 27.32 | 27.50  |
|            |           | 1               | 37 | 27.60  | 27.54 | 27.34  |
|            |           | 1               | 74 | 27.47  | 27.59 | 27.49  |
|            |           | 36              | 0  | 26.67  | 26.64 | 27.17  |
|            |           | 36              | 19 | 26.59  | 26.74 | 26.74  |
|            |           | 36              | 39 | 27.05  | 26.93 | 26.56  |
|            |           | 75              | 0  | 27.05  | 27.25 | 26.67  |
|            | 16QAM     | 1               | 0  | 26.48  | 26.57 | 26.28  |
|            |           | 1               | 37 | 26.37  | 26.62 | 26.43  |
|            |           | 1               | 74 | 26.66  | 26.43 | 26.60  |
|            |           | 36              | 0  | 25.48  | 25.58 | 25.47  |
|            |           | 36              | 19 | 25.55  | 26.07 | 25.86  |
|            |           | 36              | 39 | 25.49  | 26.14 | 25.79  |
|            |           | 75              | 0  | 25.50  | 26.06 | 25.72  |
|            | 64QAM     | 1               | 0  | 25.59  | 25.50 | 25.63  |
|            |           | 1               | 37 | 25.53  | 25.54 | 25.31  |
|            |           | 1               | 74 | 25.56  | 25.30 | 25.60  |
|            |           | 36              | 0  | 24.84  | 24.97 | 25.05  |
|            |           | 36              | 19 | 25.09  | 24.52 | 24.73  |
|            |           | 36              | 39 | 24.71  | 24.96 | 25.15  |
|            |           | 75              | 0  | 24.94  | 25.02 | 24.51  |

\*EIRP = Conducted + antenna gain (4.27dBi)

| LTE Band 2 |           |                 |    |       |       |       |
|------------|-----------|-----------------|----|-------|-------|-------|
| BW         | MCS Index | Channel         |    | 18700 | 18900 | 19100 |
|            |           | Frequency (MHz) |    | 1860  | 1880  | 1900  |
| 20M        | QPSK      | 1               | 0  | 27.62 | 27.65 | 27.49 |
|            |           | 1               | 50 | 27.40 | 27.47 | 27.62 |
|            |           | 1               | 99 | 27.45 | 27.38 | 27.64 |
|            |           | 50              | 0  | 26.81 | 26.55 | 26.67 |
|            |           | 50              | 25 | 26.53 | 26.82 | 27.10 |
|            |           | 50              | 50 | 26.67 | 26.52 | 26.56 |
|            |           | 100             | 0  | 26.86 | 27.25 | 26.65 |
|            | 16QAM     | 1               | 0  | 26.46 | 26.57 | 26.53 |
|            |           | 1               | 50 | 26.44 | 26.41 | 26.64 |
|            |           | 1               | 99 | 26.28 | 26.65 | 26.45 |
|            |           | 50              | 0  | 26.13 | 25.88 | 26.09 |
|            |           | 50              | 25 | 25.99 | 26.03 | 25.70 |
|            |           | 50              | 50 | 26.19 | 25.80 | 25.94 |
|            |           | 100             | 0  | 26.18 | 25.90 | 25.93 |
|            | 64QAM     | 1               | 0  | 25.65 | 25.50 | 25.49 |
|            |           | 1               | 50 | 25.60 | 25.49 | 25.54 |
|            |           | 1               | 99 | 25.61 | 25.44 | 25.59 |
|            |           | 50              | 0  | 25.12 | 25.18 | 24.96 |
|            |           | 50              | 25 | 24.80 | 24.57 | 25.26 |
|            |           | 50              | 50 | 25.17 | 25.13 | 24.79 |
|            |           | 100             | 0  | 25.26 | 25.01 | 24.48 |

\*EIRP = Conducted + antenna gain (4.27dBi)

| LTE Band 66 |           |                 |   |        |        |        |
|-------------|-----------|-----------------|---|--------|--------|--------|
| BW          | MCS Index | Channel         |   | 131979 | 132322 | 132665 |
|             |           | Frequency (MHz) |   | 1710.7 | 1745   | 1779.3 |
| 1.4M        | QPSK      | 1               | 0 | 27.38  | 27.11  | 27.33  |
|             |           | 1               | 2 | 27.12  | 27.33  | 27.10  |
|             |           | 1               | 5 | 27.35  | 27.08  | 27.21  |
|             |           | 3               | 0 | 26.70  | 26.61  | 26.84  |
|             |           | 3               | 1 | 26.69  | 26.66  | 27.03  |
|             |           | 3               | 3 | 26.89  | 27.15  | 26.49  |
|             |           | 6               | 0 | 26.68  | 26.99  | 26.47  |
|             | 16QAM     | 1               | 0 | 26.22  | 26.31  | 26.22  |
|             |           | 1               | 2 | 26.32  | 26.14  | 26.07  |
|             |           | 1               | 5 | 26.42  | 26.21  | 26.33  |
|             |           | 3               | 0 | 25.73  | 25.67  | 25.59  |
|             |           | 3               | 1 | 25.86  | 25.88  | 25.74  |
|             |           | 3               | 3 | 25.70  | 26.08  | 25.58  |
|             |           | 6               | 0 | 25.53  | 26.02  | 25.85  |
|             | 64QAM     | 1               | 0 | 25.18  | 25.43  | 25.29  |
|             |           | 1               | 2 | 25.23  | 25.38  | 25.46  |
|             |           | 1               | 5 | 25.22  | 25.42  | 25.13  |
|             |           | 3               | 0 | 24.93  | 25.06  | 25.06  |
|             |           | 3               | 1 | 24.75  | 24.61  | 24.97  |
|             |           | 3               | 3 | 25.04  | 24.73  | 24.96  |
|             |           | 6               | 0 | 24.73  | 25.04  | 24.83  |

\*EIRP = Conducted + antenna gain (4.27dBi)

| LTE Band 66 |           |                 |    |        |        |        |
|-------------|-----------|-----------------|----|--------|--------|--------|
| BW          | MCS Index | Channel         |    | 131987 | 132322 | 132657 |
|             |           | Frequency (MHz) |    | 1711.5 | 1745   | 1778.5 |
| 3M          | QPSK      | 1               | 0  | 27.12  | 27.33  | 27.47  |
|             |           | 1               | 7  | 27.15  | 27.11  | 27.33  |
|             |           | 1               | 14 | 27.24  | 27.43  | 27.32  |
|             |           | 8               | 0  | 27.00  | 26.55  | 26.62  |
|             |           | 8               | 3  | 27.06  | 27.13  | 26.59  |
|             |           | 8               | 7  | 26.55  | 26.72  | 26.94  |
|             |           | 15              | 0  | 26.55  | 26.51  | 26.77  |
|             | 16QAM     | 1               | 0  | 26.31  | 26.40  | 26.17  |
|             |           | 1               | 7  | 26.19  | 26.24  | 26.47  |
|             |           | 1               | 14 | 26.39  | 26.30  | 26.07  |
|             |           | 8               | 0  | 25.73  | 25.93  | 25.48  |
|             |           | 8               | 3  | 25.68  | 26.12  | 25.84  |
|             |           | 8               | 7  | 25.75  | 25.66  | 26.16  |
|             |           | 15              | 0  | 25.49  | 25.67  | 26.15  |
|             | 64QAM     | 1               | 0  | 25.38  | 25.47  | 25.43  |
|             |           | 1               | 7  | 25.18  | 25.23  | 25.12  |
|             |           | 1               | 14 | 25.35  | 25.32  | 25.09  |
|             |           | 8               | 0  | 25.09  | 24.88  | 24.66  |
|             |           | 8               | 3  | 24.53  | 24.66  | 24.62  |
|             |           | 8               | 7  | 24.83  | 24.66  | 24.63  |
|             |           | 15              | 0  | 24.77  | 24.63  | 24.52  |

\*EIRP = Conducted + antenna gain (4.27dBi)

| LTE Band 66 |           |                 |    |        |        |        |
|-------------|-----------|-----------------|----|--------|--------|--------|
| BW          | MCS Index | Channel         |    | 131997 | 132322 | 132647 |
|             |           | Frequency (MHz) |    | 1712.5 | 1745   | 1777.5 |
| 5M          | QPSK      | 1               | 0  | 27.11  | 27.35  | 27.15  |
|             |           | 1               | 12 | 27.32  | 27.32  | 27.14  |
|             |           | 1               | 24 | 27.18  | 27.07  | 27.33  |
|             |           | 12              | 0  | 26.49  | 26.98  | 26.50  |
|             |           | 12              | 6  | 26.97  | 26.80  | 27.11  |
|             |           | 12              | 13 | 27.16  | 27.04  | 27.04  |
|             |           | 25              | 0  | 26.88  | 26.74  | 27.09  |
|             | 16QAM     | 1               | 0  | 26.45  | 26.29  | 26.09  |
|             |           | 1               | 12 | 26.44  | 26.28  | 26.30  |
|             |           | 1               | 24 | 26.32  | 26.40  | 26.26  |
|             |           | 12              | 0  | 25.50  | 26.09  | 25.96  |
|             |           | 12              | 6  | 25.96  | 25.66  | 25.52  |
|             |           | 12              | 13 | 26.04  | 25.55  | 25.48  |
|             |           | 25              | 0  | 25.85  | 25.48  | 25.69  |
|             | 64QAM     | 1               | 0  | 25.15  | 25.14  | 25.32  |
|             |           | 1               | 12 | 25.16  | 25.24  | 25.27  |
|             |           | 1               | 24 | 25.45  | 25.18  | 25.21  |
|             |           | 12              | 0  | 24.68  | 25.11  | 24.88  |
|             |           | 12              | 6  | 24.62  | 24.94  | 24.66  |
|             |           | 12              | 13 | 24.60  | 24.96  | 24.87  |
|             |           | 25              | 0  | 24.51  | 24.83  | 24.74  |

\*EIRP = Conducted + antenna gain (4.27dBi)

| LTE Band 66 |           |                 |    |        |        |        |
|-------------|-----------|-----------------|----|--------|--------|--------|
| BW          | MCS Index | Channel         |    | 132022 | 132322 | 132622 |
|             |           | Frequency (MHz) |    | 1715   | 1745   | 1775   |
| 10M         | QPSK      | 1               | 0  | 27.37  | 27.08  | 27.10  |
|             |           | 1               | 24 | 27.27  | 27.15  | 27.26  |
|             |           | 1               | 49 | 27.30  | 27.13  | 27.13  |
|             |           | 25              | 0  | 26.62  | 27.04  | 26.91  |
|             |           | 25              | 12 | 26.50  | 26.74  | 26.96  |
|             |           | 25              | 25 | 26.91  | 26.67  | 26.94  |
|             |           | 50              | 0  | 27.14  | 27.03  | 26.85  |
|             | 16QAM     | 1               | 0  | 26.21  | 26.46  | 26.24  |
|             |           | 1               | 24 | 26.18  | 26.32  | 26.09  |
|             |           | 1               | 49 | 26.43  | 26.19  | 26.46  |
|             |           | 25              | 0  | 26.17  | 25.73  | 25.80  |
|             |           | 25              | 12 | 25.86  | 25.68  | 26.00  |
|             |           | 25              | 25 | 25.59  | 26.01  | 25.67  |
|             |           | 50              | 0  | 25.49  | 25.85  | 25.98  |
|             | 64QAM     | 1               | 0  | 25.13  | 25.19  | 25.34  |
|             |           | 1               | 24 | 25.45  | 25.41  | 25.39  |
|             |           | 1               | 49 | 25.10  | 25.29  | 25.43  |
|             |           | 25              | 0  | 25.13  | 24.70  | 25.13  |
|             |           | 25              | 12 | 24.59  | 24.64  | 25.00  |
|             |           | 25              | 25 | 24.72  | 24.88  | 24.52  |
|             |           | 50              | 0  | 24.73  | 24.87  | 24.85  |

\*EIRP = Conducted + antenna gain (4.27dBi)

| LTE Band 66 |           |                 |    |        |        |        |
|-------------|-----------|-----------------|----|--------|--------|--------|
| BW          | MCS Index | Channel         |    | 132047 | 132322 | 132597 |
|             |           | Frequency (MHz) |    | 1717.5 | 1745   | 1772.5 |
| 15M         | QPSK      | 1               | 0  | 27.28  | 27.35  | 27.21  |
|             |           | 1               | 37 | 27.33  | 27.32  | 27.31  |
|             |           | 1               | 74 | 27.43  | 27.46  | 27.16  |
|             |           | 36              | 0  | 26.57  | 26.78  | 27.11  |
|             |           | 36              | 19 | 26.82  | 26.86  | 26.63  |
|             |           | 36              | 39 | 26.81  | 26.94  | 27.08  |
|             |           | 75              | 0  | 27.01  | 26.81  | 26.66  |
|             | 16QAM     | 1               | 0  | 26.14  | 26.24  | 26.10  |
|             |           | 1               | 37 | 26.37  | 26.38  | 26.21  |
|             |           | 1               | 74 | 26.16  | 26.30  | 26.46  |
|             |           | 36              | 0  | 25.97  | 25.54  | 26.08  |
|             |           | 36              | 19 | 25.97  | 25.51  | 26.06  |
|             |           | 36              | 39 | 25.76  | 25.75  | 25.53  |
|             |           | 75              | 0  | 26.12  | 25.92  | 25.81  |
|             | 64QAM     | 1               | 0  | 25.37  | 25.30  | 25.38  |
|             |           | 1               | 37 | 25.32  | 25.14  | 25.43  |
|             |           | 1               | 74 | 25.29  | 25.30  | 25.44  |
|             |           | 36              | 0  | 24.51  | 24.84  | 24.87  |
|             |           | 36              | 19 | 25.09  | 24.51  | 24.65  |
|             |           | 36              | 39 | 24.72  | 24.47  | 25.07  |
|             |           | 75              | 0  | 24.77  | 24.73  | 25.10  |

\*EIRP = Conducted + antenna gain (4.27dBi)

| LTE Band 66 |           |                 |    |        |        |        |
|-------------|-----------|-----------------|----|--------|--------|--------|
| BW          | MCS Index | Channel         |    | 132072 | 132322 | 132575 |
|             |           | Frequency (MHz) |    | 1720   | 1745   | 1770   |
| 20M         | QPSK      | 1               | 0  | 27.10  | 27.45  | 27.22  |
|             |           | 1               | 50 | 27.37  | 27.31  | 27.22  |
|             |           | 1               | 99 | 27.24  | 27.24  | 27.22  |
|             |           | 50              | 0  | 26.88  | 26.92  | 26.74  |
|             |           | 50              | 25 | 27.05  | 26.93  | 26.72  |
|             |           | 50              | 50 | 26.57  | 26.50  | 26.71  |
|             |           | 100             | 0  | 26.78  | 26.85  | 26.83  |
|             | 16QAM     | 1               | 0  | 26.41  | 26.21  | 26.07  |
|             |           | 1               | 50 | 26.09  | 26.43  | 26.33  |
|             |           | 1               | 99 | 26.28  | 26.47  | 26.41  |
|             |           | 50              | 0  | 25.91  | 25.94  | 25.75  |
|             |           | 50              | 25 | 25.91  | 25.61  | 25.65  |
|             |           | 50              | 50 | 25.65  | 25.58  | 25.55  |
|             |           | 100             | 0  | 25.81  | 25.58  | 25.53  |
|             | 64QAM     | 1               | 0  | 25.36  | 25.37  | 25.14  |
|             |           | 1               | 50 | 25.36  | 25.30  | 25.38  |
|             |           | 1               | 99 | 25.22  | 25.32  | 25.36  |
|             |           | 50              | 0  | 24.56  | 25.16  | 25.06  |
|             |           | 50              | 25 | 24.98  | 24.93  | 24.55  |
|             |           | 50              | 50 | 25.12  | 24.66  | 25.08  |
|             |           | 100             | 0  | 24.67  | 24.85  | 24.79  |

\*EIRP = Conducted + antenna gain (4.27dBi)

## 4.2 Modulation Characteristics Measurement

### 4.2.1 Limits of Modulation Characteristics

N/A

### 4.2.2 Test Procedure

Connect the EUT to Communication Simulator via the antenna connector, The frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

### 4.2.3 Test Setup



## 4.2.4 Test Results



### 4.3 Frequency Stability Measurement

#### 4.3.1 Limits of Frequency Stability Measurement

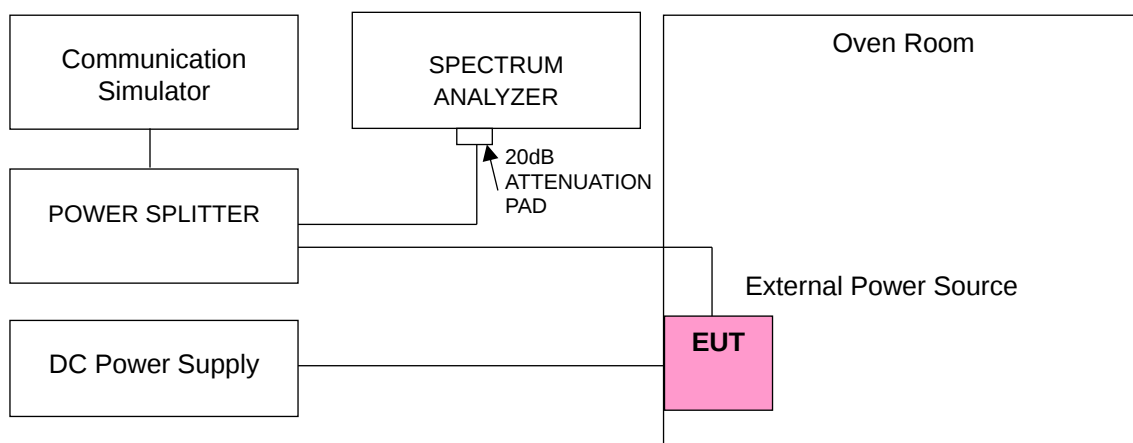
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

#### 4.3.2 Test Procedure

- Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the  $\pm 0.5^{\circ}\text{C}$  during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

Note: The frequency error was recorded frequency error from the communication simulator.

#### 4.3.3 Test Setup



#### 4.3.4 Test Results

##### Frequency Error vs. Voltage

| Voltage (Volts) | n12                      |                       |                 |                       |
|-----------------|--------------------------|-----------------------|-----------------|-----------------------|
|                 | Channel Bandwidth: 5 MHz |                       |                 |                       |
|                 | Low Channel              |                       | High Channel    |                       |
|                 | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.25            | 701.500004               | 0.006                 | 713.500002      | 0.003                 |
| 5               | 701.500001               | 0.002                 | 713.500004      | 0.005                 |
| 5.75            | 701.500004               | 0.005                 | 713.500003      | 0.005                 |

Note: The applicant defined the normal working voltage is from 4.25Vdc to 5.75Vdc.

##### Frequency Error vs. Temperature

| Temp. (°C) | n12                      |                       |                 |                       |
|------------|--------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 5 MHz |                       |                 |                       |
|            | Low Channel              |                       | High Channel    |                       |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 701.500002               | 0.003                 | 713.500002      | 0.003                 |
| -20        | 701.500003               | 0.004                 | 713.500003      | 0.004                 |
| -10        | 701.500001               | 0.001                 | 713.500002      | 0.002                 |
| 0          | 701.500004               | 0.006                 | 713.500002      | 0.003                 |
| 10         | 701.500004               | 0.005                 | 713.500003      | 0.004                 |
| 20         | 701.499999               | -0.001                | 713.499999      | -0.002                |
| 30         | 701.499999               | -0.001                | 713.499997      | -0.004                |
| 40         | 701.499996               | -0.005                | 713.499996      | -0.006                |
| 50         | 701.499998               | -0.003                | 713.499997      | -0.004                |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | n12                       |                       |                 |                       |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|
|                    | Channel Bandwidth: 10 MHz |                       |                 |                       |
|                    | Low Channel               |                       | High Channel    |                       |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.25               | 704.000003                | 0.004                 | 711.000004      | 0.005                 |
| 5                  | 704.000002                | 0.003                 | 711.000002      | 0.003                 |
| 5.75               | 704.000002                | 0.003                 | 711.000004      | 0.006                 |

Note: The applicant defined the normal working voltage is from 4.25Vdc to 5.75Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | n12                       |                       |                 |                       |
|------------|---------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 10 MHz |                       |                 |                       |
|            | Low Channel               |                       | High Channel    |                       |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 704.000002                | 0.002                 | 711.000001      | 0.002                 |
| -20        | 704.000001                | 0.002                 | 711.000001      | 0.001                 |
| -10        | 704.000004                | 0.005                 | 711.000004      | 0.005                 |
| 0          | 704.000002                | 0.003                 | 711.000004      | 0.005                 |
| 10         | 704.000004                | 0.005                 | 711.000003      | 0.004                 |
| 20         | 703.999998                | -0.003                | 710.999998      | -0.003                |
| 30         | 703.999997                | -0.004                | 710.999998      | -0.003                |
| 40         | 703.999997                | -0.004                | 710.999998      | -0.004                |
| 50         | 703.999997                | -0.004                | 710.999996      | -0.005                |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | n12                       |                       |                 |                       |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|
|                    | Channel Bandwidth: 15 MHz |                       |                 |                       |
|                    | Low Channel               |                       | High Channel    |                       |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.25               | 706.500001                | 0.002                 | 708.500002      | 0.002                 |
| 5                  | 706.500004                | 0.005                 | 708.500001      | 0.002                 |
| 5.75               | 706.500003                | 0.005                 | 708.500002      | 0.003                 |

Note: The applicant defined the normal working voltage is from 4.25Vdc to 5.75Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | n12                       |                       |                 |                       |
|------------|---------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 15 MHz |                       |                 |                       |
|            | Low Channel               |                       | High Channel    |                       |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 706.500001                | 0.002                 | 708.500004      | 0.005                 |
| -20        | 706.500002                | 0.003                 | 708.500002      | 0.003                 |
| -10        | 706.500002                | 0.003                 | 708.500003      | 0.004                 |
| 0          | 706.500002                | 0.003                 | 708.500001      | 0.001                 |
| 10         | 706.500003                | 0.004                 | 708.500002      | 0.002                 |
| 20         | 706.499997                | -0.005                | 708.499997      | -0.004                |
| 30         | 706.499997                | -0.004                | 708.499997      | -0.005                |
| 40         | 706.499999                | -0.002                | 708.499999      | -0.002                |
| 50         | 706.499998                | -0.003                | 708.499998      | -0.003                |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 2                 |                       |                 |                       |
|--------------------|----------------------------|-----------------------|-----------------|-----------------------|
|                    | Channel Bandwidth: 1.4 MHz |                       |                 |                       |
|                    | Low Channel                |                       | High Channel    |                       |
|                    | Frequency (MHz)            | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.25               | 1850.700004                | 0.002                 | 1909.300000     | 0.002                 |
| 5                  | 1850.700003                | 0.002                 | 1909.300002     | 0.001                 |
| 5.75               | 1850.700002                | 0.001                 | 1909.300002     | 0.001                 |

Note: The applicant defined the normal working voltage is from 4.25Vdc to 5.75Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2                 |                       |                 |                       |
|------------|----------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 1.4 MHz |                       |                 |                       |
|            | Low Channel                |                       | High Channel    |                       |
|            | Frequency (MHz)            | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1850.700002                | 0.001                 | 1909.300002     | 0.001                 |
| -20        | 1850.700002                | 0.001                 | 1909.300003     | 0.002                 |
| -10        | 1850.700003                | 0.001                 | 1909.300002     | 0.001                 |
| 0          | 1850.700004                | 0.002                 | 1909.300003     | 0.002                 |
| 10         | 1850.700004                | 0.002                 | 1909.300001     | 0.001                 |
| 20         | 1850.699996                | -0.002                | 1909.299999     | -0.001                |
| 30         | 1850.699996                | -0.002                | 1909.299998     | -0.001                |
| 40         | 1850.699998                | -0.001                | 1909.299997     | -0.001                |
| 50         | 1850.699999                | -0.001                | 1909.299998     | -0.001                |

#### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 2               |                       |                 |                       |
|--------------------|--------------------------|-----------------------|-----------------|-----------------------|
|                    | Channel Bandwidth: 3 MHz |                       |                 |                       |
|                    | Low Channel              |                       | High Channel    |                       |
|                    | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.25               | 1851.500003              | 0.002                 | 1908.500003     | 0.001                 |
| 5                  | 1851.500002              | 0.001                 | 1908.500003     | 0.002                 |
| 5.75               | 1851.500004              | 0.002                 | 1908.500003     | 0.001                 |

Note: The applicant defined the normal working voltage is from 4.25Vdc to 5.75Vdc.

#### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2               |                       |                 |                       |
|------------|--------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 3 MHz |                       |                 |                       |
|            | Low Channel              |                       | High Channel    |                       |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1851.500002              | 0.001                 | 1908.500004     | 0.002                 |
| -20        | 1851.500001              | 0.001                 | 1908.500004     | 0.002                 |
| -10        | 1851.500003              | 0.001                 | 1908.500002     | 0.001                 |
| 0          | 1851.500004              | 0.002                 | 1908.500003     | 0.002                 |
| 10         | 1851.500004              | 0.002                 | 1908.500003     | 0.001                 |
| 20         | 1851.499998              | -0.001                | 1908.499998     | -0.001                |
| 30         | 1851.499997              | -0.002                | 1908.499997     | -0.001                |
| 40         | 1851.499997              | -0.002                | 1908.499999     | -0.001                |
| 50         | 1851.499996              | -0.002                | 1908.499996     | -0.002                |

### Frequency Error vs. Voltage

| Voltage (Volts) | LTE Band 2               |                       |                 |                       |
|-----------------|--------------------------|-----------------------|-----------------|-----------------------|
|                 | Channel Bandwidth: 5 MHz |                       |                 |                       |
|                 | Low Channel              |                       | High Channel    |                       |
|                 | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.25            | 1852.500003              | 0.002                 | 1907.500004     | 0.002                 |
| 5               | 1852.500004              | 0.002                 | 1907.500004     | 0.002                 |
| 5.75            | 1852.500004              | 0.002                 | 1907.500004     | 0.002                 |

Note: The applicant defined the normal working voltage is from 4.25Vdc to 5.75Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2               |                       |                 |                       |
|------------|--------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 5 MHz |                       |                 |                       |
|            | Low Channel              |                       | High Channel    |                       |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1852.500002              | 0.001                 | 1907.500004     | 0.002                 |
| -20        | 1852.500003              | 0.002                 | 1907.500004     | 0.002                 |
| -10        | 1852.500001              | 0.001                 | 1907.500003     | 0.002                 |
| 0          | 1852.500002              | 0.001                 | 1907.500002     | 0.001                 |
| 10         | 1852.500003              | 0.002                 | 1907.500004     | 0.002                 |
| 20         | 1852.499996              | -0.002                | 1907.499997     | -0.001                |
| 30         | 1852.499996              | -0.002                | 1907.499996     | -0.002                |
| 40         | 1852.499999              | -0.001                | 1907.499997     | -0.002                |
| 50         | 1852.499997              | -0.002                | 1907.499997     | -0.002                |

### Frequency Error vs. Voltage

| Voltage (Volts) | LTE Band 2                |                       |                 |                       |
|-----------------|---------------------------|-----------------------|-----------------|-----------------------|
|                 | Channel Bandwidth: 10 MHz |                       |                 |                       |
|                 | Low Channel               |                       | High Channel    |                       |
|                 | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.25            | 1855.000004               | 0.002                 | 1905.000003     | 0.002                 |
| 5               | 1855.000002               | 0.001                 | 1905.000004     | 0.002                 |
| 5.75            | 1855.000004               | 0.002                 | 1905.000004     | 0.002                 |

Note: The applicant defined the normal working voltage is from 4.25Vdc to 5.75Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2                |                       |                 |                       |
|------------|---------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 10 MHz |                       |                 |                       |
|            | Low Channel               |                       | High Channel    |                       |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1855.000003               | 0.002                 | 1905.000004     | 0.002                 |
| -20        | 1855.000001               | 0.001                 | 1905.000001     | 0.001                 |
| -10        | 1855.000003               | 0.002                 | 1905.000001     | 0.001                 |
| 0          | 1855.000003               | 0.002                 | 1905.000003     | 0.001                 |
| 10         | 1855.000001               | 0.001                 | 1905.000002     | 0.001                 |
| 20         | 1854.999999               | -0.001                | 1904.999999     | -0.001                |
| 30         | 1854.999997               | -0.002                | 1904.999999     | -0.001                |
| 40         | 1854.999996               | -0.002                | 1904.999997     | -0.002                |
| 50         | 1854.999996               | -0.002                | 1904.999998     | -0.001                |

### Frequency Error vs. Voltage

| Voltage (Volts) | LTE Band 2                |                       |                 |                       |
|-----------------|---------------------------|-----------------------|-----------------|-----------------------|
|                 | Channel Bandwidth: 15 MHz |                       |                 |                       |
|                 | Low Channel               |                       | High Channel    |                       |
|                 | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.25            | 1857.500003               | 0.002                 | 1902.500003     | 0.001                 |
| 5               | 1857.500001               | 0.001                 | 1902.500002     | 0.001                 |
| 5.75            | 1857.500001               | 0.001                 | 1902.500002     | 0.001                 |

Note: The applicant defined the normal working voltage is from 4.25Vdc to 5.75Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2                |                       |                 |                       |
|------------|---------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 15 MHz |                       |                 |                       |
|            | Low Channel               |                       | High Channel    |                       |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1857.500004               | 0.002                 | 1902.500002     | 0.001                 |
| -20        | 1857.500001               | 0.001                 | 1902.500001     | 0.001                 |
| -10        | 1857.500002               | 0.001                 | 1902.500004     | 0.002                 |
| 0          | 1857.500003               | 0.002                 | 1902.500003     | 0.001                 |
| 10         | 1857.500002               | 0.001                 | 1902.500003     | 0.001                 |
| 20         | 1857.499997               | -0.002                | 1902.499997     | -0.002                |
| 30         | 1857.499999               | -0.001                | 1902.499997     | -0.002                |
| 40         | 1857.499998               | -0.001                | 1902.499998     | -0.001                |
| 50         | 1857.499997               | -0.002                | 1902.499996     | -0.002                |

### Frequency Error vs. Voltage

| Voltage (Volts) | LTE Band 2                |                       |                 |                       |
|-----------------|---------------------------|-----------------------|-----------------|-----------------------|
|                 | Channel Bandwidth: 20 MHz |                       |                 |                       |
|                 | Low Channel               |                       | High Channel    |                       |
|                 | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.25            | 1860.000002               | 0.001                 | 1900.000003     | 0.002                 |
| 5               | 1860.000004               | 0.002                 | 1900.000002     | 0.001                 |
| 5.75            | 1860.000001               | 0.001                 | 1900.000001     | 0.001                 |

Note: The applicant defined the normal working voltage is from 4.25Vdc to 5.75Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2                |                       |                 |                       |
|------------|---------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 20 MHz |                       |                 |                       |
|            | Low Channel               |                       | High Channel    |                       |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1860.000003               | 0.001                 | 1900.000002     | 0.001                 |
| -20        | 1860.000003               | 0.001                 | 1900.000002     | 0.001                 |
| -10        | 1860.000003               | 0.002                 | 1900.000002     | 0.001                 |
| 0          | 1860.000002               | 0.001                 | 1900.000002     | 0.001                 |
| 10         | 1860.000002               | 0.001                 | 1900.000002     | 0.001                 |
| 20         | 1859.999998               | -0.001                | 1899.999999     | -0.001                |
| 30         | 1859.999998               | -0.001                | 1899.999999     | -0.001                |
| 40         | 1859.999998               | -0.001                | 1899.999996     | -0.002                |
| 50         | 1859.999999               | -0.001                | 1899.999999     | -0.001                |

#### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 66                |                       |                 |                       |
|--------------------|----------------------------|-----------------------|-----------------|-----------------------|
|                    | Channel Bandwidth: 1.4 MHz |                       |                 |                       |
|                    | Low Channel                |                       | High Channel    |                       |
|                    | Frequency (MHz)            | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.25               | 1710.700001                | 0.001                 | 1779.300003     | 0.001                 |
| 5                  | 1710.700002                | 0.001                 | 1779.300002     | 0.001                 |
| 5.75               | 1710.700004                | 0.002                 | 1779.300003     | 0.002                 |

Note: The applicant defined the normal working voltage is from 4.25Vdc to 5.75Vdc.

#### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 66                |                       |                 |                       |
|------------|----------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 1.4 MHz |                       |                 |                       |
|            | Low Channel                |                       | High Channel    |                       |
|            | Frequency (MHz)            | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1710.700003                | 0.002                 | 1779.300002     | 0.001                 |
| -20        | 1710.700001                | 0.001                 | 1779.300002     | 0.001                 |
| -10        | 1710.700003                | 0.002                 | 1779.300003     | 0.002                 |
| 0          | 1710.700001                | 0.001                 | 1779.300004     | 0.002                 |
| 10         | 1710.700002                | 0.001                 | 1779.300004     | 0.002                 |
| 20         | 1710.699999                | -0.001                | 1779.299998     | -0.001                |
| 30         | 1710.699997                | -0.002                | 1779.299997     | -0.002                |
| 40         | 1710.699999                | -0.001                | 1779.299997     | -0.002                |
| 50         | 1710.699999                | -0.001                | 1779.299996     | -0.002                |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 66              |                       |                 |                       |
|--------------------|--------------------------|-----------------------|-----------------|-----------------------|
|                    | Channel Bandwidth: 3 MHz |                       |                 |                       |
|                    | Low Channel              |                       | High Channel    |                       |
|                    | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.25               | 1711.500003              | 0.002                 | 1778.500002     | 0.001                 |
| 5                  | 1711.500001              | 0.001                 | 1778.500003     | 0.001                 |
| 5.75               | 1711.500003              | 0.002                 | 1778.500003     | 0.002                 |

Note: The applicant defined the normal working voltage is from 4.25Vdc to 5.75Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 66              |                       |                 |                       |
|------------|--------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 3 MHz |                       |                 |                       |
|            | Low Channel              |                       | High Channel    |                       |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1711.500002              | 0.001                 | 1778.500002     | 0.001                 |
| -20        | 1711.500003              | 0.002                 | 1778.500003     | 0.002                 |
| -10        | 1711.500003              | 0.001                 | 1778.500003     | 0.002                 |
| 0          | 1711.500003              | 0.002                 | 1778.500002     | 0.001                 |
| 10         | 1711.500002              | 0.001                 | 1778.500001     | 0.001                 |
| 20         | 1711.499998              | -0.001                | 1778.499997     | -0.002                |
| 30         | 1711.499998              | -0.001                | 1778.499998     | -0.001                |
| 40         | 1711.499996              | -0.002                | 1778.499997     | -0.002                |
| 50         | 1711.499996              | -0.002                | 1778.499999     | -0.001                |

### Frequency Error vs. Voltage

| Voltage (Volts) | LTE Band 66              |                       |                 |                       |
|-----------------|--------------------------|-----------------------|-----------------|-----------------------|
|                 | Channel Bandwidth: 5 MHz |                       |                 |                       |
|                 | Low Channel              |                       | High Channel    |                       |
|                 | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.25            | 1712.500004              | 0.002                 | 1777.500003     | 0.002                 |
| 5               | 1712.500004              | 0.002                 | 1777.500003     | 0.002                 |
| 5.75            | 1712.500002              | 0.001                 | 1777.500001     | 0.001                 |

Note: The applicant defined the normal working voltage is from 4.25Vdc to 5.75Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 66              |                       |                 |                       |
|------------|--------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 5 MHz |                       |                 |                       |
|            | Low Channel              |                       | High Channel    |                       |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1712.500004              | 0.002                 | 1777.500004     | 0.002                 |
| -20        | 1712.500003              | 0.002                 | 1777.500004     | 0.002                 |
| -10        | 1712.500004              | 0.002                 | 1777.500002     | 0.001                 |
| 0          | 1712.500003              | 0.002                 | 1777.500001     | 0.001                 |
| 10         | 1712.500003              | 0.002                 | 1777.500004     | 0.002                 |
| 20         | 1712.499999              | -0.001                | 1777.499997     | -0.002                |
| 30         | 1712.499998              | -0.001                | 1777.499998     | -0.001                |
| 40         | 1712.499999              | -0.001                | 1777.499997     | -0.002                |
| 50         | 1712.499997              | -0.002                | 1777.499999     | -0.001                |

### Frequency Error vs. Voltage

| Voltage (Volts) | LTE Band 66               |                       |                 |                       |
|-----------------|---------------------------|-----------------------|-----------------|-----------------------|
|                 | Channel Bandwidth: 10 MHz |                       |                 |                       |
|                 | Low Channel               |                       | High Channel    |                       |
|                 | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.25            | 1715.000002               | 0.001                 | 1775.000002     | 0.001                 |
| 5               | 1715.000002               | 0.001                 | 1775.000002     | 0.001                 |
| 5.75            | 1715.000001               | 0.001                 | 1775.000002     | 0.001                 |

Note: The applicant defined the normal working voltage is from 4.25Vdc to 5.75Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 66               |                       |                 |                       |
|------------|---------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 10 MHz |                       |                 |                       |
|            | Low Channel               |                       | High Channel    |                       |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1715.000002               | 0.001                 | 1775.000003     | 0.002                 |
| -20        | 1715.000004               | 0.002                 | 1775.000002     | 0.001                 |
| -10        | 1715.000004               | 0.002                 | 1775.000002     | 0.001                 |
| 0          | 1715.000003               | 0.002                 | 1775.000003     | 0.002                 |
| 10         | 1715.000003               | 0.002                 | 1775.000003     | 0.001                 |
| 20         | 1714.999998               | -0.001                | 1774.999996     | -0.002                |
| 30         | 1714.999998               | -0.001                | 1774.999997     | -0.002                |
| 40         | 1714.999998               | -0.001                | 1774.999999     | -0.001                |
| 50         | 1714.999998               | -0.001                | 1774.999999     | -0.001                |

### Frequency Error vs. Voltage

| Voltage (Volts) | LTE Band 66               |                       |                 |                       |
|-----------------|---------------------------|-----------------------|-----------------|-----------------------|
|                 | Channel Bandwidth: 15 MHz |                       |                 |                       |
|                 | Low Channel               |                       | High Channel    |                       |
|                 | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.25            | 1717.500004               | 0.002                 | 1772.500003     | 0.001                 |
| 5               | 1717.500002               | 0.001                 | 1772.500004     | 0.002                 |
| 5.75            | 1717.500004               | 0.002                 | 1772.500002     | 0.001                 |

Note: The applicant defined the normal working voltage is from 4.25Vdc to 5.75Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 66               |                       |                 |                       |
|------------|---------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 15 MHz |                       |                 |                       |
|            | Low Channel               |                       | High Channel    |                       |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1717.500003               | 0.002                 | 1772.500002     | 0.001                 |
| -20        | 1717.500004               | 0.002                 | 1772.500003     | 0.002                 |
| -10        | 1717.500004               | 0.002                 | 1772.500003     | 0.002                 |
| 0          | 1717.500004               | 0.002                 | 1772.500002     | 0.001                 |
| 10         | 1717.500004               | 0.002                 | 1772.500002     | 0.001                 |
| 20         | 1717.499997               | -0.002                | 1772.499999     | -0.001                |
| 30         | 1717.499999               | -0.001                | 1772.499996     | -0.002                |
| 40         | 1717.499999               | -0.001                | 1772.499996     | -0.002                |
| 50         | 1717.499997               | -0.002                | 1772.499997     | -0.001                |

### Frequency Error vs. Voltage

| Voltage (Volts) | LTE Band 66               |                       |                 |                       |
|-----------------|---------------------------|-----------------------|-----------------|-----------------------|
|                 | Channel Bandwidth: 20 MHz |                       |                 |                       |
|                 | Low Channel               |                       | High Channel    |                       |
|                 | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.25            | 1720.000003               | 0.002                 | 1770.000003     | 0.002                 |
| 5               | 1720.000002               | 0.001                 | 1770.000003     | 0.001                 |
| 5.75            | 1720.000002               | 0.001                 | 1770.000001     | 0.001                 |

Note: The applicant defined the normal working voltage is from 4.25Vdc to 5.75Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 66               |                       |                 |                       |
|------------|---------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 20 MHz |                       |                 |                       |
|            | Low Channel               |                       | High Channel    |                       |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1720.000001               | 0.001                 | 1770.000002     | 0.001                 |
| -20        | 1720.000004               | 0.002                 | 1770.000003     | 0.002                 |
| -10        | 1720.000003               | 0.002                 | 1770.000002     | 0.001                 |
| 0          | 1720.000001               | 0.001                 | 1770.000002     | 0.001                 |
| 10         | 1720.000002               | 0.001                 | 1770.000003     | 0.002                 |
| 20         | 1719.999999               | -0.001                | 1769.999999     | -0.001                |
| 30         | 1719.999998               | -0.001                | 1769.999998     | -0.001                |
| 40         | 1719.999997               | -0.002                | 1769.999999     | -0.001                |
| 50         | 1719.999998               | -0.001                | 1769.999997     | -0.001                |

## 4.4 Occupied Bandwidth Measurement

### 4.4.1 Test Procedure

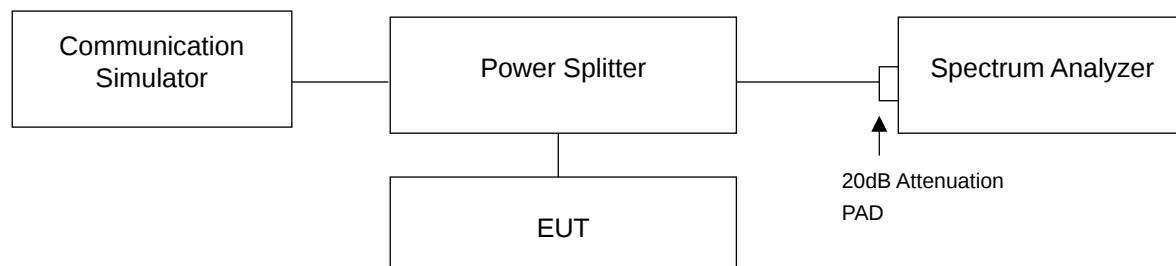
For LTB Band 2:

The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

For LTB Band 66:

The occupied bandwidth (OBW), that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission.

### 4.4.2 Test Setup



#### 4.4.3 Test Result

##### Occupied Bandwidth

n12

| n12, Channel Bandwidth 5MHz  |                 |                              |        |        |        |        |
|------------------------------|-----------------|------------------------------|--------|--------|--------|--------|
| Channel                      | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |        |        |        |        |
|                              |                 | $\pi/2$ BPSK                 | QPSK   | 16QAM  | 64QAM  | 256QAM |
| 140300                       | 701.5           | 4.4857                       | 4.4859 | 4.4893 | 4.4896 | 4.4845 |
| 141500                       | 707.5           | 4.4858                       | 4.4833 | 4.4847 | 4.4864 | 4.4868 |
| 142700                       | 713.5           | 4.4841                       | 4.4873 | 4.4880 | 4.4873 | 4.4842 |
| n12, Channel Bandwidth 10MHz |                 |                              |        |        |        |        |
| Channel                      | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |        |        |        |        |
|                              |                 | $\pi/2$ BPSK                 | QPSK   | 16QAM  | 64QAM  | 256QAM |
| 140800                       | 704.0           | 8.9589                       | 8.9572 | 8.9609 | 8.9535 | 8.9613 |
| 141500                       | 707.5           | 8.9477                       | 8.9492 | 8.9570 | 8.9475 | 8.9564 |
| 142200                       | 711.0           | 8.9480                       | 8.9492 | 8.9508 | 8.9424 | 8.9492 |
| n12, Channel Bandwidth 15MHz |                 |                              |        |        |        |        |
| Channel                      | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |        |        |        |        |
|                              |                 | $\pi/2$ BPSK                 | QPSK   | 16QAM  | 64QAM  | 256QAM |
| 141300                       | 706.5           | 13.445                       | 13.444 | 13.435 | 13.428 | 13.435 |
| 141500                       | 707.5           | 13.449                       | 13.451 | 13.437 | 13.433 | 13.442 |
| 141700                       | 708.5           | 13.455                       | 13.447 | 13.442 | 13.437 | 13.446 |

## Spectrum Plot of Worst Value

5MHz / 64QAM



10MHz / 256QAM



15MHz /  $\pi/2$  BPSK



## LTE Band 2

| LTE Band 2, Channel Bandwidth 1.4MHz |                 |                              |       |       |
|--------------------------------------|-----------------|------------------------------|-------|-------|
| Channel                              | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |       |       |
|                                      |                 | QPSK                         | 16QAM | 64QAM |
| 18607                                | 1850.7          | 1.09                         | 1.09  | 1.09  |
| 18900                                | 1880.0          | 1.09                         | 1.09  | 1.09  |
| 19193                                | 1909.3          | 1.09                         | 1.09  | 1.09  |

| LTE Band 2, Channel Bandwidth 3MHz |                 |                              |       |       |
|------------------------------------|-----------------|------------------------------|-------|-------|
| Channel                            | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |       |       |
|                                    |                 | QPSK                         | 16QAM | 64QAM |
| 18615                              | 1851.5          | 2.70                         | 2.70  | 2.70  |
| 18900                              | 1880.0          | 2.70                         | 2.70  | 2.70  |
| 19185                              | 1908.5          | 2.70                         | 2.70  | 2.70  |

| LTE Band 2, Channel Bandwidth 5MHz |                 |                              |       |       |
|------------------------------------|-----------------|------------------------------|-------|-------|
| Channel                            | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |       |       |
|                                    |                 | QPSK                         | 16QAM | 64QAM |
| 18625                              | 1852.5          | 4.49                         | 4.49  | 4.50  |
| 18900                              | 1880.0          | 4.49                         | 4.49  | 4.50  |
| 19175                              | 1907.5          | 4.49                         | 4.49  | 4.50  |

| LTE Band 2, Channel Bandwidth 10MHz |                 |                              |       |       |
|-------------------------------------|-----------------|------------------------------|-------|-------|
| Channel                             | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |       |       |
|                                     |                 | QPSK                         | 16QAM | 64QAM |
| 18650                               | 1855.0          | 8.95                         | 8.96  | 8.96  |
| 18900                               | 1880.0          | 8.96                         | 8.97  | 8.96  |
| 19150                               | 1905.0          | 8.96                         | 8.96  | 8.97  |

| LTE Band 2, Channel Bandwidth 15MHz |                 |                              |       |       |
|-------------------------------------|-----------------|------------------------------|-------|-------|
| Channel                             | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |       |       |
|                                     |                 | QPSK                         | 16QAM | 64QAM |
| 18675                               | 1857.5          | 13.46                        | 13.44 | 13.43 |
| 18900                               | 1880.0          | 13.47                        | 13.45 | 13.44 |
| 19125                               | 1902.5          | 13.50                        | 13.48 | 13.47 |

| LTE Band 2, Channel Bandwidth 20MHz |                 |                              |       |       |
|-------------------------------------|-----------------|------------------------------|-------|-------|
| Channel                             | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |       |       |
|                                     |                 | QPSK                         | 16QAM | 64QAM |
| 18700                               | 1860.0          | 17.92                        | 17.94 | 17.92 |
| 18900                               | 1880.0          | 17.93                        | 17.95 | 17.94 |
| 19100                               | 1900.0          | 18.05                        | 18.00 | 17.99 |

## Spectrum Plot of Worst Value

1.4MHz / 16QAM



3MHz / QPSK



5MHz / 64QAM



10MHz / 16QAM



15MHz / QPSK



20MHz / QPSK



# LTE Band 66

| LTE Band 66, Channel Bandwidth 1.4MHz |                 |                              |       |       |
|---------------------------------------|-----------------|------------------------------|-------|-------|
| Channel                               | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |       |       |
|                                       |                 | QPSK                         | 16QAM | 64QAM |
| 131979                                | 1710.7          | 1.09                         | 1.09  | 1.09  |
| 132322                                | 1745.0          | 1.09                         | 1.09  | 1.09  |
| 132665                                | 1779.3          | 1.09                         | 1.09  | 1.09  |
| LTE Band 66, Channel Bandwidth 3MHz   |                 |                              |       |       |
| Channel                               | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |       |       |
|                                       |                 | QPSK                         | 16QAM | 64QAM |
| 131987                                | 1711.5          | 2.70                         | 2.70  | 2.70  |
| 132322                                | 1745.0          | 2.70                         | 2.70  | 2.70  |
| 132657                                | 1778.5          | 2.70                         | 2.69  | 2.70  |
| LTE Band 66, Channel Bandwidth 5MHz   |                 |                              |       |       |
| Channel                               | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |       |       |
|                                       |                 | QPSK                         | 16QAM | 64QAM |
| 131997                                | 1712.5          | 4.49                         | 4.49  | 4.50  |
| 132322                                | 1745.0          | 4.49                         | 4.49  | 4.50  |
| 132647                                | 1777.5          | 4.49                         | 4.49  | 4.50  |
| LTE Band 66, Channel Bandwidth 10MHz  |                 |                              |       |       |
| Channel                               | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |       |       |
|                                       |                 | QPSK                         | 16QAM | 64QAM |
| 132022                                | 1715.0          | 8.96                         | 8.97  | 8.97  |
| 132322                                | 1745.0          | 8.96                         | 8.97  | 8.97  |
| 132622                                | 1775.0          | 8.96                         | 8.96  | 8.97  |
| LTE Band 66, Channel Bandwidth 15MHz  |                 |                              |       |       |
| Channel                               | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |       |       |
|                                       |                 | QPSK                         | 16QAM | 64QAM |
| 132047                                | 1717.5          | 13.45                        | 13.44 | 13.44 |
| 132322                                | 1745.0          | 13.48                        | 13.47 | 13.46 |
| 132597                                | 1772.5          | 13.48                        | 13.48 | 13.48 |

| LTE Band 66, Channel Bandwidth 20MHz |                 |                              |       |       |
|--------------------------------------|-----------------|------------------------------|-------|-------|
| Channel                              | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |       |       |
|                                      |                 | QPSK                         | 16QAM | 64QAM |
| 132072                               | 1720.0          | 17.90                        | 17.91 | 17.91 |
| 132322                               | 1745.0          | 17.96                        | 17.99 | 17.98 |
| 132572                               | 1770.0          | 18.00                        | 18.02 | 18.02 |

## Spectrum Plot of Worst Value

### 1.4MHz / 16QAM



### 3MHz / QPSK



### 5MHz / 64QAM



### 10MHz / 64QAM



### 15MHz / QPSK



### 20MHz / 16QAM



## 26dB Bandwidth

n12

| n12, Channel Bandwidth 5MHz  |                 |                      |       |       |       |        |
|------------------------------|-----------------|----------------------|-------|-------|-------|--------|
| Channel                      | Frequency (MHz) | 26dB Bandwidth (MHz) |       |       |       |        |
|                              |                 | $\pi/2$ BPSK         | QPSK  | 16QAM | 64QAM | 256QAM |
| 140300                       | 701.5           | 4.785                | 4.805 | 4.794 | 4.801 | 4.795  |
| 141500                       | 707.5           | 4.795                | 4.782 | 4.807 | 4.795 | 4.787  |
| 142700                       | 713.5           | 4.783                | 4.804 | 4.802 | 4.795 | 4.802  |
| n12, Channel Bandwidth 10MHz |                 |                      |       |       |       |        |
| Channel                      | Frequency (MHz) | 26dB Bandwidth (MHz) |       |       |       |        |
|                              |                 | $\pi/2$ BPSK         | QPSK  | 16QAM | 64QAM | 256QAM |
| 140800                       | 704.0           | 9.506                | 9.515 | 9.515 | 9.496 | 9.517  |
| 141500                       | 707.5           | 9.499                | 9.499 | 9.503 | 9.495 | 9.504  |
| 142200                       | 711.0           | 9.501                | 9.499 | 9.496 | 9.514 | 9.506  |
| n12, Channel Bandwidth 15MHz |                 |                      |       |       |       |        |
| Channel                      | Frequency (MHz) | 26dB Bandwidth (MHz) |       |       |       |        |
|                              |                 | $\pi/2$ BPSK         | QPSK  | 16QAM | 64QAM | 256QAM |
| 141300                       | 706.5           | 14.26                | 14.23 | 14.23 | 14.23 | 14.24  |
| 141500                       | 707.5           | 14.24                | 14.25 | 14.24 | 14.24 | 14.25  |
| 141700                       | 708.5           | 14.26                | 14.26 | 14.26 | 14.23 | 14.26  |

## Spectrum Plot of Worst Value

5MHz / 16QAM



10MHz / 256QAM



15MHz /  $\pi/2$  BPSK



## LTE Band 2

| LTE Band 2, Channel Bandwidth 1.4MHz |                 |                       |       |       |
|--------------------------------------|-----------------|-----------------------|-------|-------|
| Channel                              | Frequency (MHz) | 26dBc Bandwidth (MHz) |       |       |
|                                      |                 | QPSK                  | 16QAM | 64QAM |
| 18607                                | 1850.7          | 1.21                  | 1.21  | 1.22  |
| 18900                                | 1880.0          | 1.22                  | 1.21  | 1.22  |
| 19193                                | 1909.3          | 1.21                  | 1.21  | 1.22  |

| LTE Band 2, Channel Bandwidth 3MHz |                 |                       |       |       |
|------------------------------------|-----------------|-----------------------|-------|-------|
| Channel                            | Frequency (MHz) | 26dBc Bandwidth (MHz) |       |       |
|                                    |                 | QPSK                  | 16QAM | 64QAM |
| 18615                              | 1851.5          | 2.91                  | 2.92  | 2.91  |
| 18900                              | 1880.0          | 2.91                  | 2.93  | 2.90  |
| 19185                              | 1908.5          | 2.92                  | 2.94  | 2.90  |

| LTE Band 2, Channel Bandwidth 5MHz |                 |                       |       |       |
|------------------------------------|-----------------|-----------------------|-------|-------|
| Channel                            | Frequency (MHz) | 26dBc Bandwidth (MHz) |       |       |
|                                    |                 | QPSK                  | 16QAM | 64QAM |
| 18625                              | 1852.5          | 4.80                  | 4.81  | 4.81  |
| 18900                              | 1880.0          | 4.81                  | 4.80  | 4.84  |
| 19175                              | 1907.5          | 4.80                  | 4.79  | 4.83  |

| LTE Band 2, Channel Bandwidth 10MHz |                 |                       |       |       |
|-------------------------------------|-----------------|-----------------------|-------|-------|
| Channel                             | Frequency (MHz) | 26dBc Bandwidth (MHz) |       |       |
|                                     |                 | QPSK                  | 16QAM | 64QAM |
| 18650                               | 1855.0          | 9.51                  | 9.52  | 9.51  |
| 18900                               | 1880.0          | 9.50                  | 9.51  | 9.51  |
| 19150                               | 1905.0          | 9.51                  | 9.51  | 9.53  |

| LTE Band 2, Channel Bandwidth 15MHz |                 |                       |       |       |
|-------------------------------------|-----------------|-----------------------|-------|-------|
| Channel                             | Frequency (MHz) | 26dBc Bandwidth (MHz) |       |       |
|                                     |                 | QPSK                  | 16QAM | 64QAM |
| 18675                               | 1857.5          | 14.26                 | 14.28 | 14.26 |
| 18900                               | 1880.0          | 14.25                 | 14.25 | 14.24 |
| 19125                               | 1902.5          | 14.33                 | 14.29 | 14.29 |

| LTE Band 2, Channel Bandwidth 20MHz |                 |                       |       |       |
|-------------------------------------|-----------------|-----------------------|-------|-------|
| Channel                             | Frequency (MHz) | 26dBc Bandwidth (MHz) |       |       |
|                                     |                 | QPSK                  | 16QAM | 64QAM |
| 18700                               | 1860.0          | 19.05                 | 19.02 | 19.04 |
| 18900                               | 1880.0          | 19.03                 | 19.05 | 19.05 |
| 19100                               | 1900.0          | 26.75                 | 19.16 | 19.12 |

## Spectrum Plot of Worst Value

1.4MHz / 64QAM



3MHz / 16QAM



5MHz / 64QAM



10MHz / 64QAM



15MHz / QPSK



20MHz / QPSK



# LTE Band 66

| LTE Band 66, Channel Bandwidth 1.4MHz |                 |                      |       |       |
|---------------------------------------|-----------------|----------------------|-------|-------|
| Channel                               | Frequency (MHz) | 26dB Bandwidth (MHz) |       |       |
|                                       |                 | QPSK                 | 16QAM | 64QAM |
| 131979                                | 1710.7          | 1.21                 | 1.22  | 1.22  |
| 132322                                | 1745.0          | 1.21                 | 1.22  | 1.22  |
| 132665                                | 1779.3          | 1.22                 | 1.22  | 1.22  |
| LTE Band 66, Channel Bandwidth 3MHz   |                 |                      |       |       |
| Channel                               | Frequency (MHz) | 26dB Bandwidth (MHz) |       |       |
|                                       |                 | QPSK                 | 16QAM | 64QAM |
| 131987                                | 1711.5          | 2.92                 | 2.93  | 2.91  |
| 132322                                | 1745.0          | 2.92                 | 2.93  | 2.92  |
| 132657                                | 1778.5          | 2.92                 | 2.93  | 2.90  |
| LTE Band 66, Channel Bandwidth 5MHz   |                 |                      |       |       |
| Channel                               | Frequency (MHz) | 26dB Bandwidth (MHz) |       |       |
|                                       |                 | QPSK                 | 16QAM | 64QAM |
| 131997                                | 1712.5          | 4.80                 | 4.81  | 4.82  |
| 132322                                | 1745.0          | 4.80                 | 4.81  | 4.82  |
| 132647                                | 1777.5          | 4.79                 | 4.80  | 4.83  |
| LTE Band 66, Channel Bandwidth 10MHz  |                 |                      |       |       |
| Channel                               | Frequency (MHz) | 26dB Bandwidth (MHz) |       |       |
|                                       |                 | QPSK                 | 16QAM | 64QAM |
| 132022                                | 1715.0          | 9.49                 | 9.51  | 9.51  |
| 132322                                | 1745.0          | 9.50                 | 9.51  | 9.52  |
| 132622                                | 1775.0          | 9.49                 | 9.51  | 9.51  |
| LTE Band 66, Channel Bandwidth 15MHz  |                 |                      |       |       |
| Channel                               | Frequency (MHz) | 26dB Bandwidth (MHz) |       |       |
|                                       |                 | QPSK                 | 16QAM | 64QAM |
| 132047                                | 1717.5          | 14.24                | 14.24 | 14.23 |
| 132322                                | 1745.0          | 14.28                | 14.26 | 14.26 |
| 132597                                | 1772.5          | 14.31                | 14.29 | 14.27 |

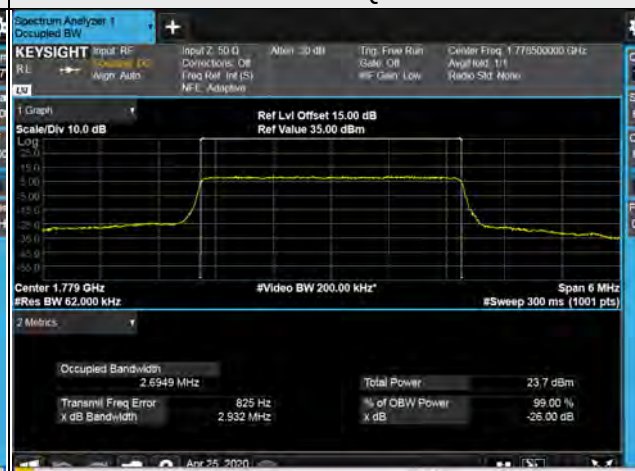
| LTE Band 66, Channel Bandwidth 20MHz |                 |                      |       |       |
|--------------------------------------|-----------------|----------------------|-------|-------|
| Channel                              | Frequency (MHz) | 26dB Bandwidth (MHz) |       |       |
|                                      |                 | QPSK                 | 16QAM | 64QAM |
| 132072                               | 1720.0          | 19.03                | 19.05 | 19.01 |
| 132322                               | 1745.0          | 19.04                | 19.05 | 19.05 |
| 132572                               | 1770.0          | 19.44                | 19.21 | 19.17 |

## Spectrum Plot of Worst Value

1.4MHz / 64QAM



3MHz / 16QAM



5MHz / 64QAM



10MHz / 64QAM



15MHz / QPSK



20MHz / QPSK



## 4.5 Band Edge Measurement

### 4.5.1 Limits of Band Edge Measurement

For n12

According to FCC 27.53(g) for operations in the 600 MHz band and 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. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater.

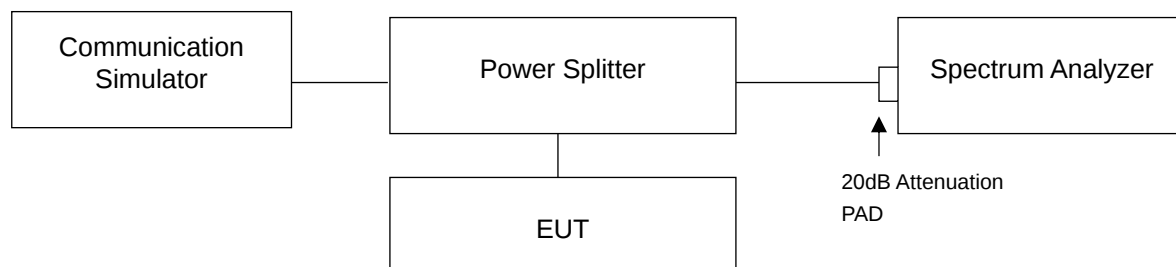
For LTE Band 2

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. 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.

For LTE Band 66

According to FCC 27.53(h) for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log(P)$  dB.

### 4.5.2 Test Setup



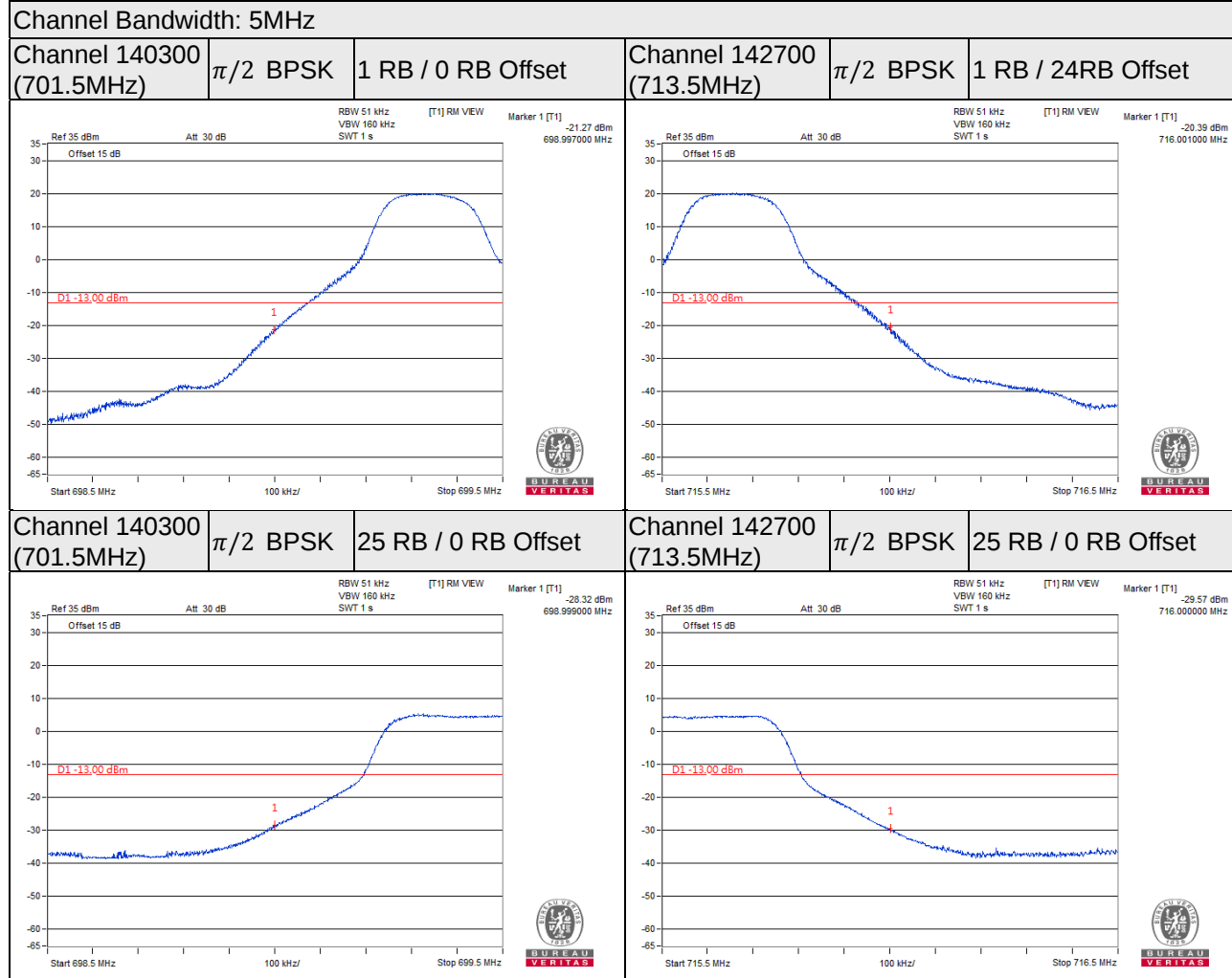
### 4.5.3 Test Procedures

- All measurements were done at low and high operational frequency range.
- The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 15kHz and VB of the spectrum is 51kHz (LTE Channel Bandwidth 1.4MHz).
- The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 30kHz and VB of the spectrum is 100kHz (LTE Channel Bandwidth 3MHz).
- The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 51kHz and VB of the spectrum is 160kHz (Channel Bandwidth 5MHz).
- The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (Channel Bandwidth 10MHz).
- The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 150kHz and VB of the spectrum is 470kHz (Channel Bandwidth 15MHz).
- The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 200kHz and VB of the spectrum is 1MHz (Channel Bandwidth 20MHz).
- Record the max trace plot into the test report.

## 4.5.4 Test Results

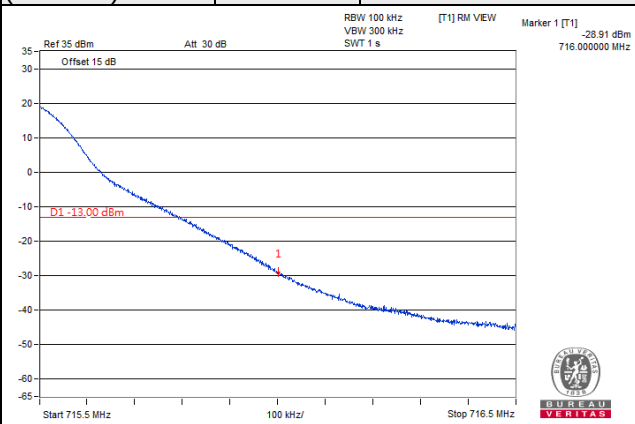
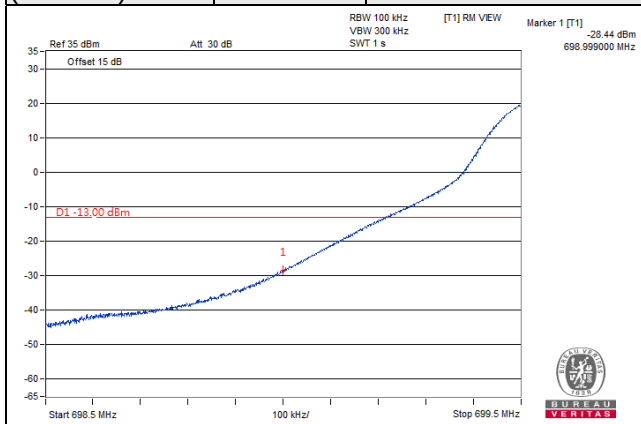
n12

Band edge:

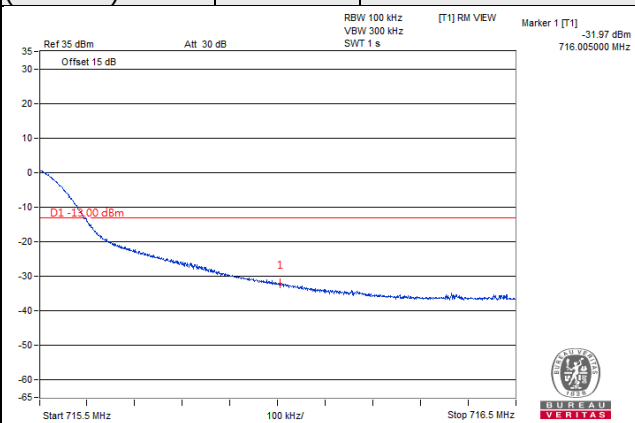
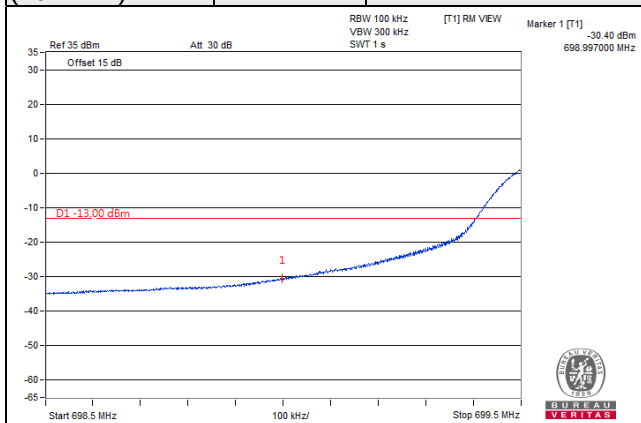


Channel Bandwidth: 10MHz

|                            |              |                    |                            |              |                    |
|----------------------------|--------------|--------------------|----------------------------|--------------|--------------------|
| Channel 140800<br>(704MHz) | $\pi/2$ BPSK | 1 RB / 0 RB Offset | Channel 142200<br>(711MHz) | $\pi/2$ BPSK | 1 RB / 51RB Offset |
|----------------------------|--------------|--------------------|----------------------------|--------------|--------------------|

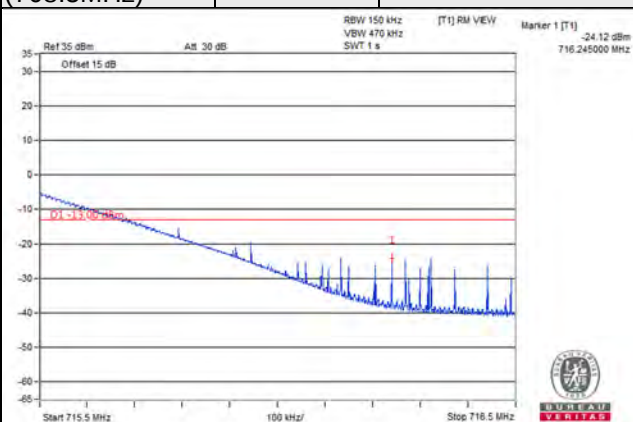
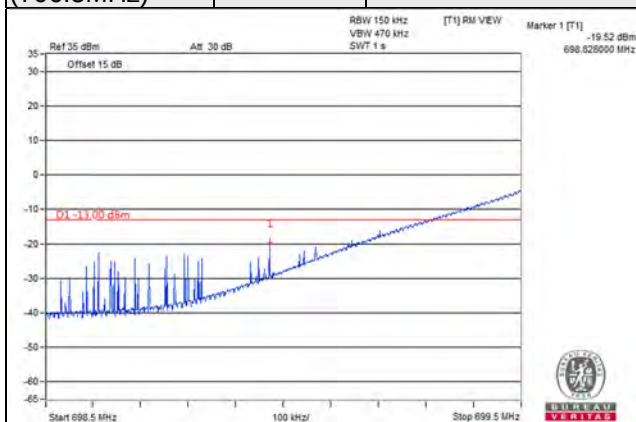


|                            |              |                     |                            |              |                     |
|----------------------------|--------------|---------------------|----------------------------|--------------|---------------------|
| Channel 140800<br>(704MHz) | $\pi/2$ BPSK | 52 RB / 0 RB Offset | Channel 142200<br>(711MHz) | $\pi/2$ BPSK | 52 RB / 0 RB Offset |
|----------------------------|--------------|---------------------|----------------------------|--------------|---------------------|

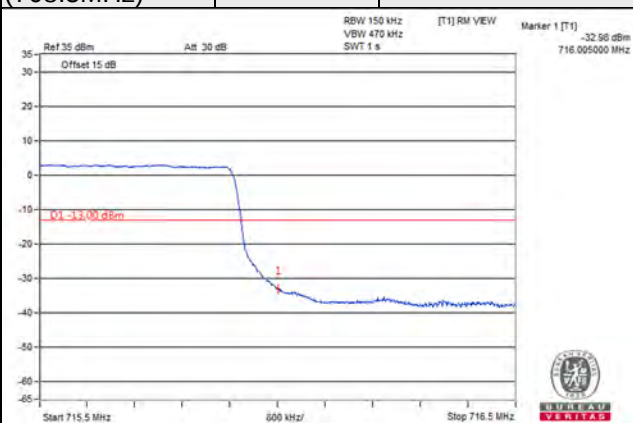
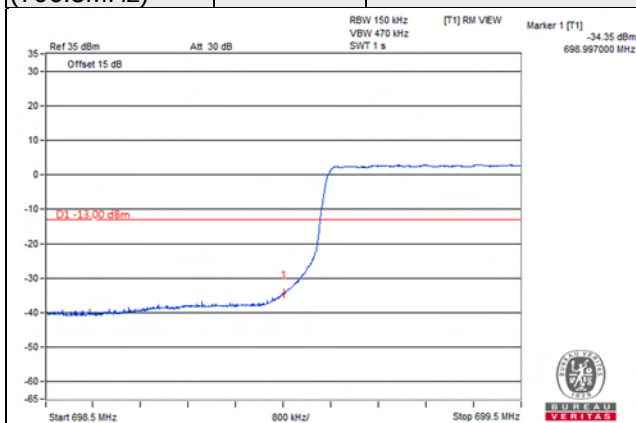


Channel Bandwidth: 15MHz

|                              |              |                    |                              |              |                     |
|------------------------------|--------------|--------------------|------------------------------|--------------|---------------------|
| Channel 141300<br>(706.5MHz) | $\pi/2$ BPSK | 1 RB / 0 RB Offset | Channel 141700<br>(708.5MHz) | $\pi/2$ BPSK | 1 RB / 78 RB Offset |
|------------------------------|--------------|--------------------|------------------------------|--------------|---------------------|



|                              |              |                     |                              |              |                     |
|------------------------------|--------------|---------------------|------------------------------|--------------|---------------------|
| Channel 141300<br>(706.5MHz) | $\pi/2$ BPSK | 79 RB / 0 RB Offset | Channel 141700<br>(708.5MHz) | $\pi/2$ BPSK | 79 RB / 0 RB Offset |
|------------------------------|--------------|---------------------|------------------------------|--------------|---------------------|



# LTE Band 2

## Channel Bandwidth 1.4MHz

Channel 18607  
(1850.70MHz)

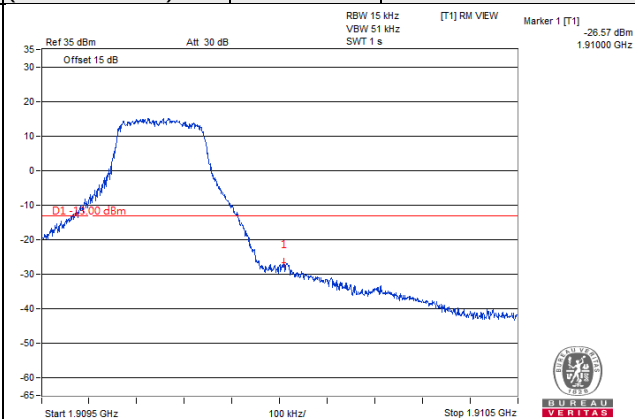
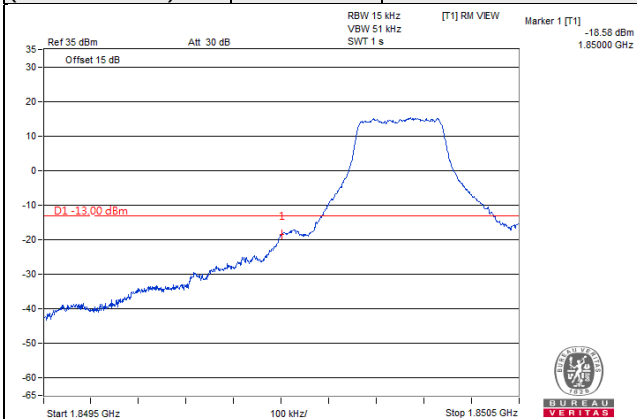
QPSK

1 RB / 0 RB Offset

Channel 19193  
(1909.30MHz)

QPSK

1 RB / 5 RB Offset



Channel 18607  
(1850.70MHz)

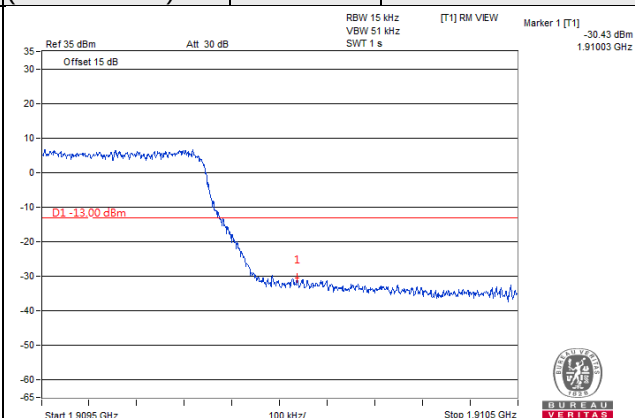
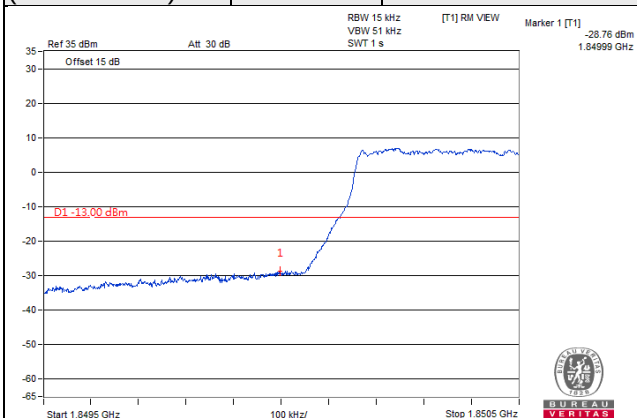
QPSK

6 RB / 0 RB Offset

Channel 19193  
(1909.30MHz)

QPSK

6 RB / 0 RB Offset



# Channel Bandwidth 3MHz

Channel 18615  
(1851.50MHz)

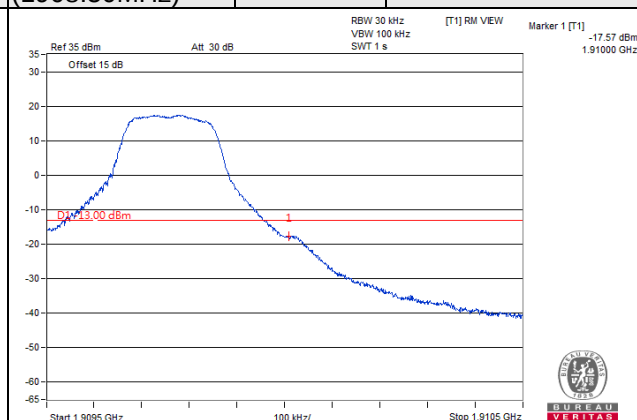
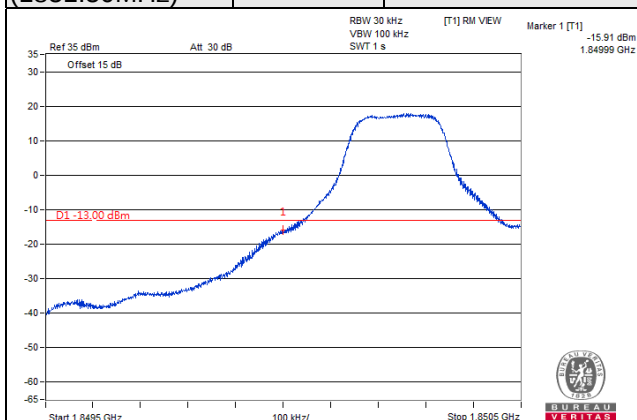
QPSK

1 RB / 0 RB Offset

Channel 19185  
(1908.50MHz)

QPSK

1 RB / 14 RB Offset



Channel 18615  
(1851.50MHz)

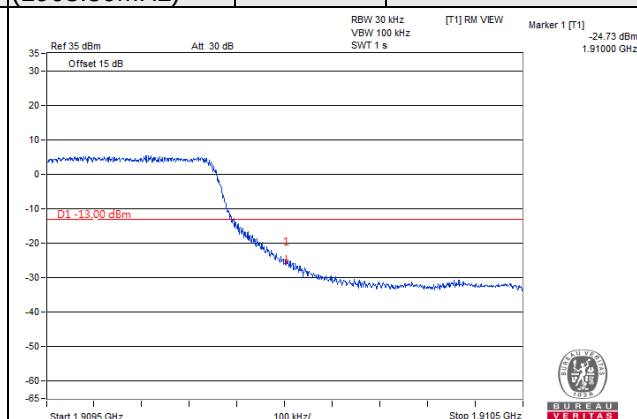
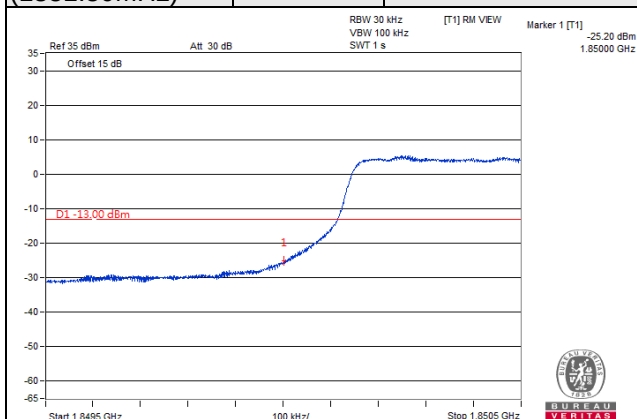
QPSK

15 RB / 0 RB Offset

Channel 19185  
(1908.50MHz)

QPSK

15 RB / 0 RB Offset



# Channel Bandwidth 5MHz

Channel 18625  
(1852.50MHz)

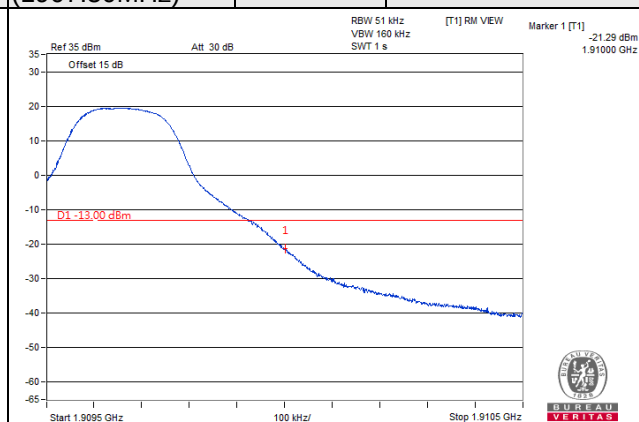
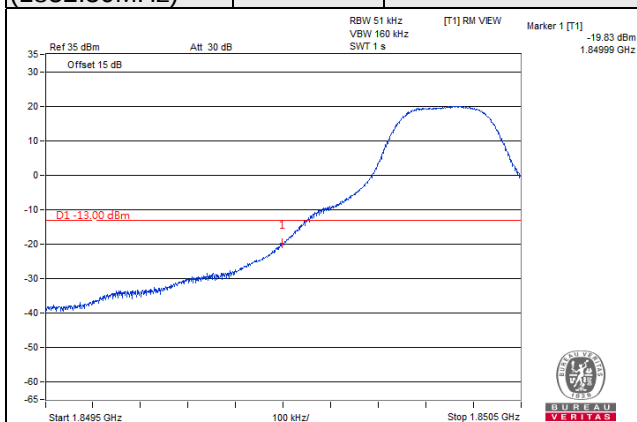
QPSK

1 RB / 0 RB Offset

Channel 19175  
(1907.50MHz)

QPSK

1 RB / 24 RB Offset



Channel 18625  
(1852.50MHz)

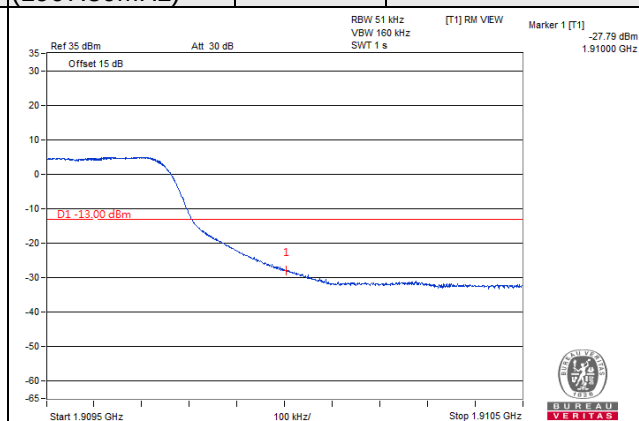
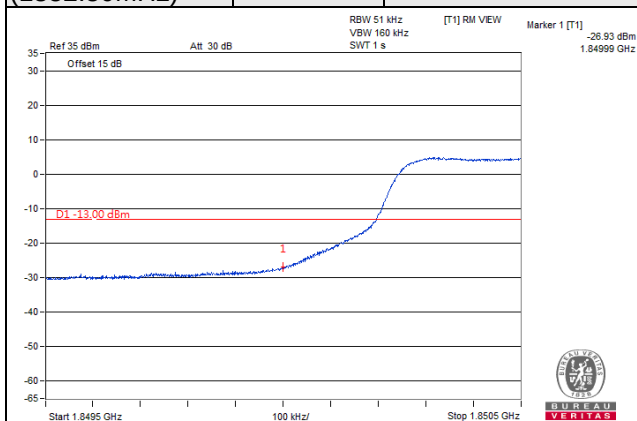
QPSK

25 RB / 0 RB Offset

Channel 19175  
(1907.50MHz)

QPSK

25 RB / 0 RB Offset



# Channel Bandwidth 10MHz

Channel 18650  
(1855.00MHz)

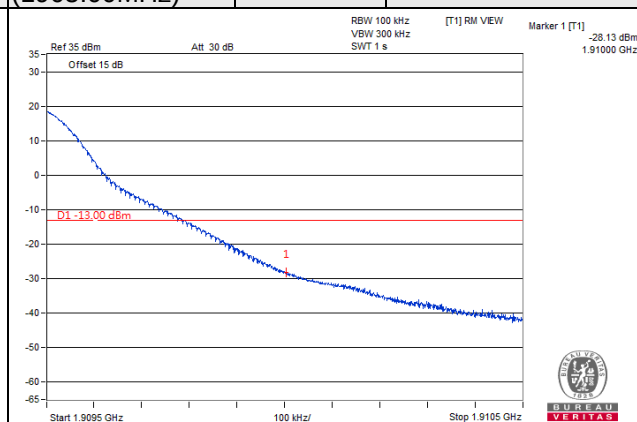
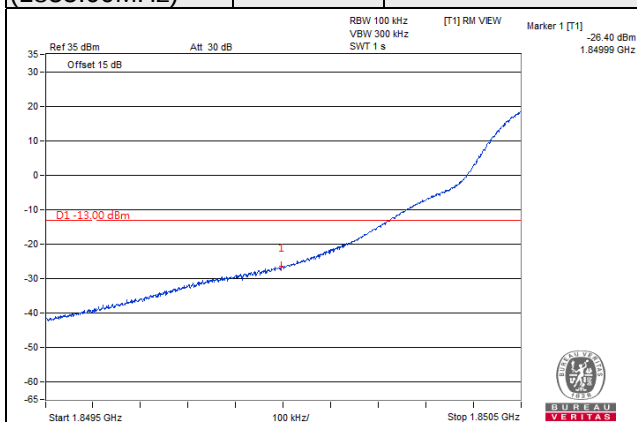
QPSK

1 RB / 0 RB Offset

Channel 19150  
(1905.00MHz)

QPSK

1 RB / 49 RB Offset



Channel 18650  
(1855.00MHz)

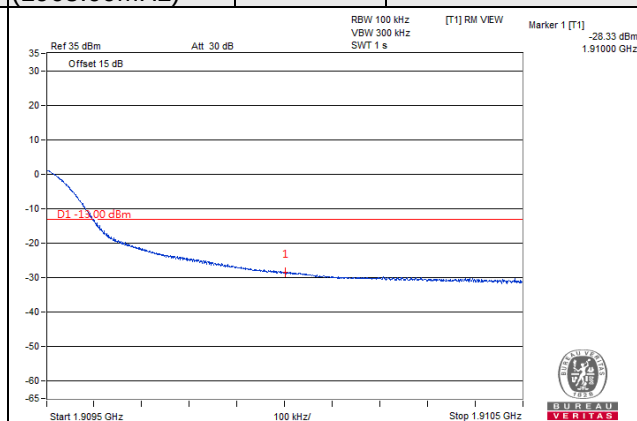
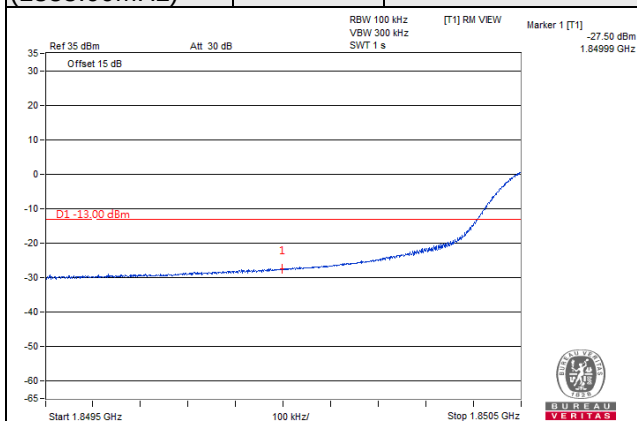
QPSK

50 RB / 0 RB Offset

Channel 19150  
(1905.00MHz)

QPSK

50 RB / 0 RB Offset



# Channel Bandwidth 15MHz

Channel 18675  
(1857.50MHz)

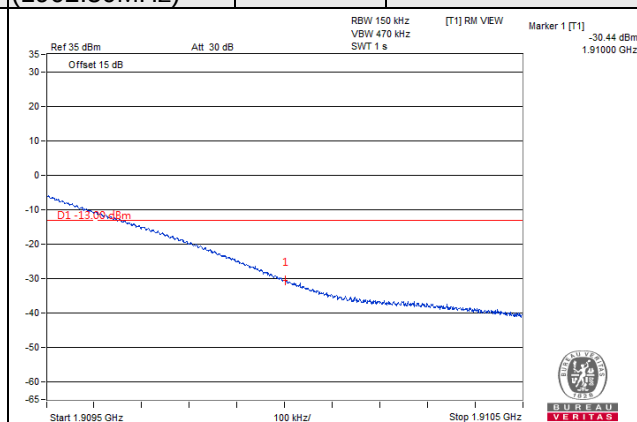
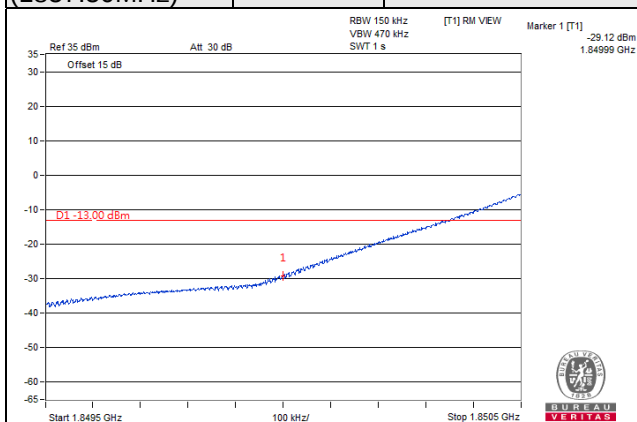
QPSK

1 RB / 0 RB Offset

Channel 19125  
(1902.50MHz)

QPSK

1 RB / 74 RB Offset



Channel 18675  
(1857.50MHz)

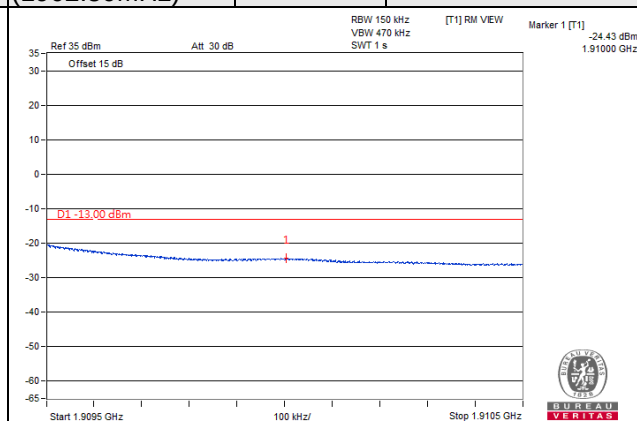
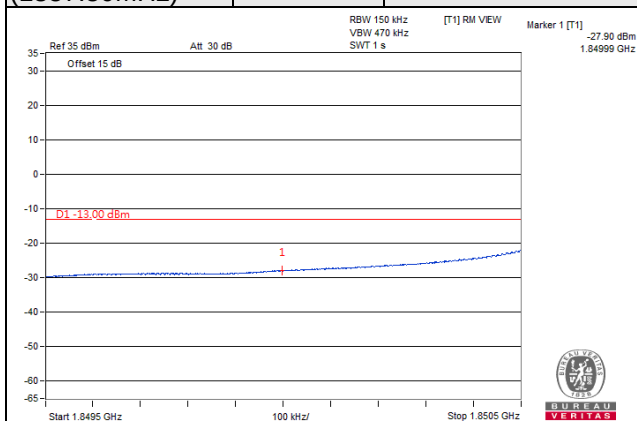
QPSK

75 RB / 0 RB Offset

Channel 19125  
(1902.50MHz)

QPSK

75 RB / 0 RB Offset



# Channel Bandwidth 20MHz

Channel 18700  
(1860.00MHz)

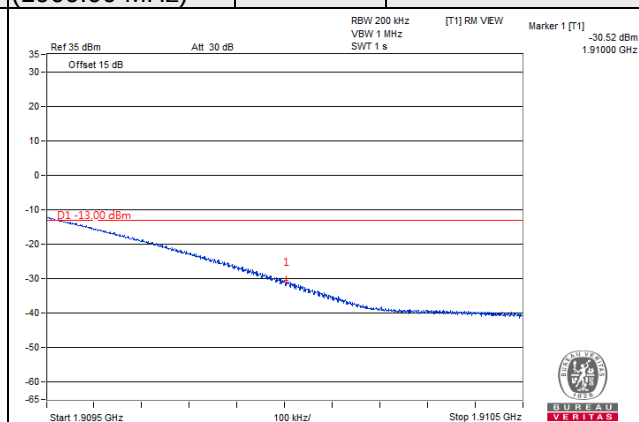
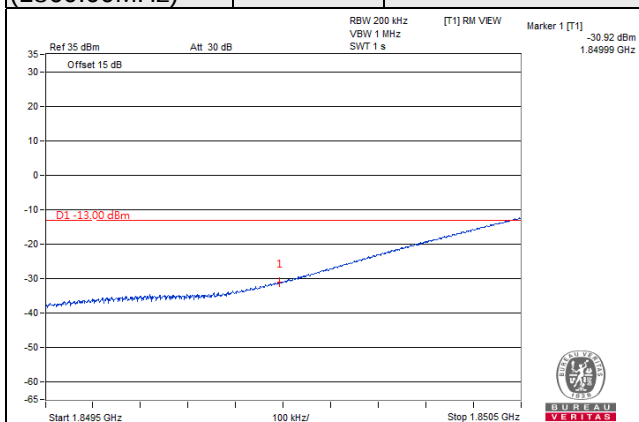
QPSK

1 RB / 0 RB Offset

Channel 19100  
(1900.00 MHz)

QPSK

1 RB / 99 RB Offset



Channel 18700  
(1860.00MHz)

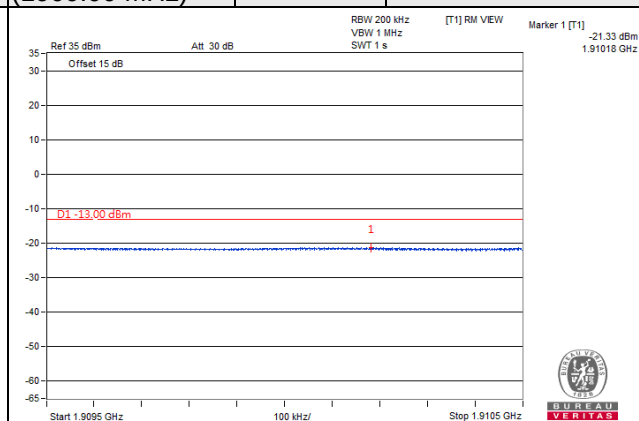
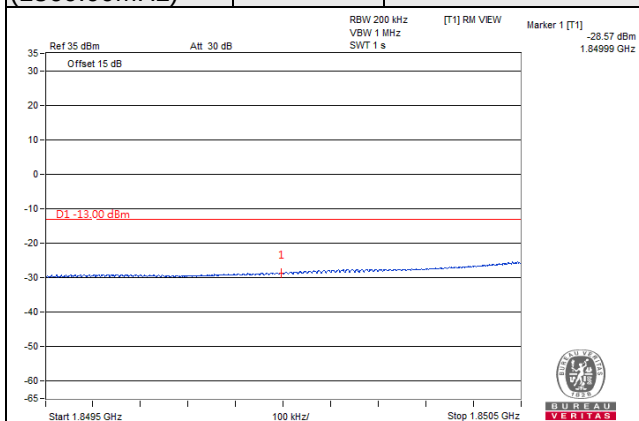
QPSK

100 RB / 0 RB Offset

Channel 19100  
(1900.00 MHz)

QPSK

100 RB / 0 RB Offset



# LTE Band 66

Channel Bandwidth: 1.4MHz

Channel 131979  
(1710.7MHz)

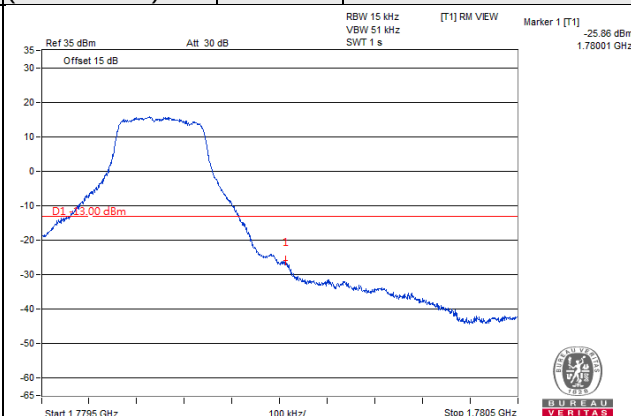
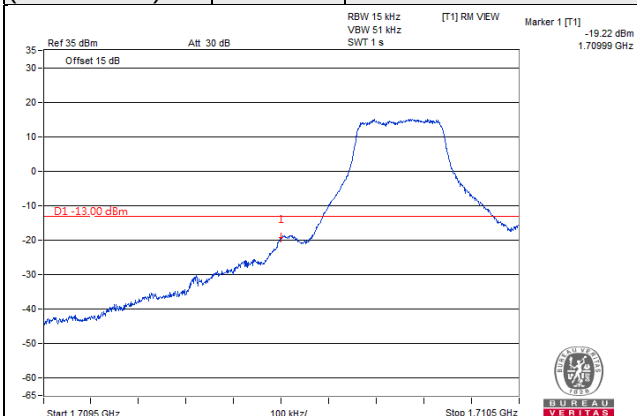
QPSK

1 RB / 0 RB Offset

Channel 132665  
(1779.3MHz)

QPSK

1 RB / 5 RB Offset



Channel 131979  
(1710.7MHz)

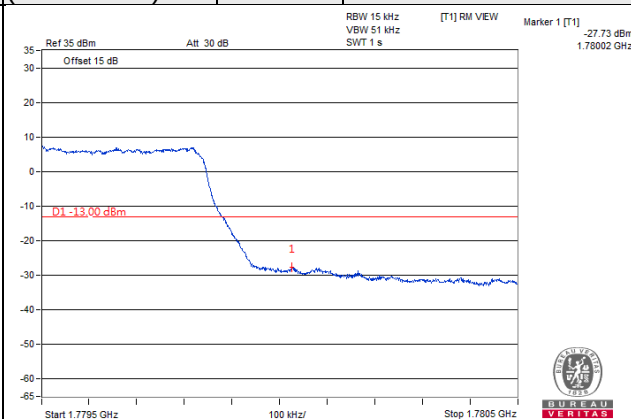
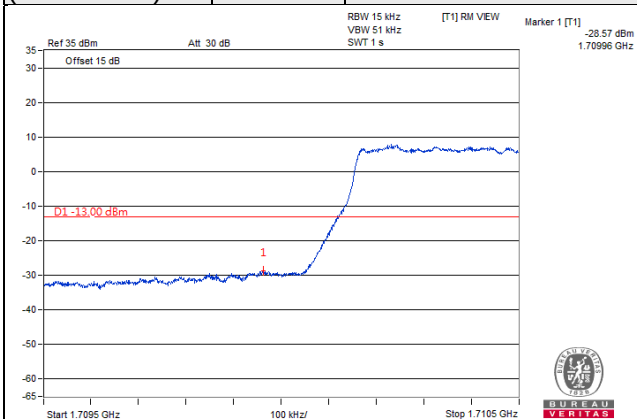
QPSK

6 RB / 0 RB Offset

Channel 132665  
(1779.3MHz)

QPSK

6 RB / 0 RB Offset



Channel Bandwidth: 3MHz

Channel 131987  
(1711.5MHz)

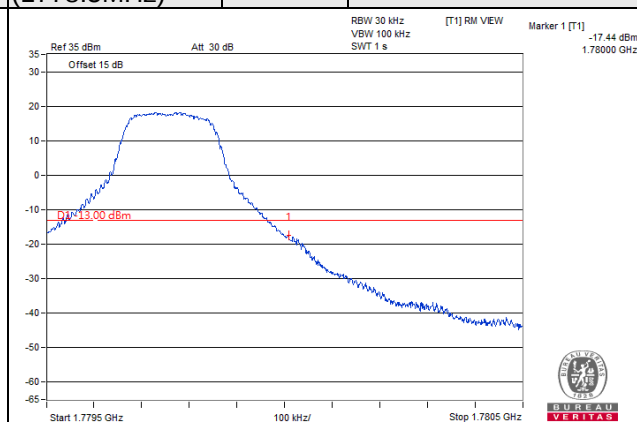
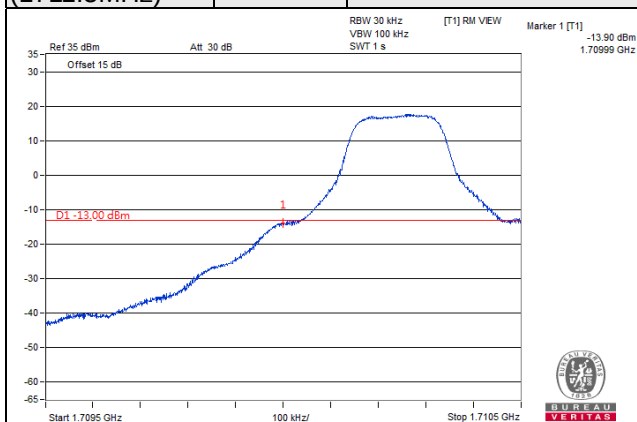
QPSK

1 RB / 0 RB Offset

Channel 132657  
(1778.5MHz)

QPSK

1 RB / 14 RB Offset



Channel 131987  
(1711.5MHz)

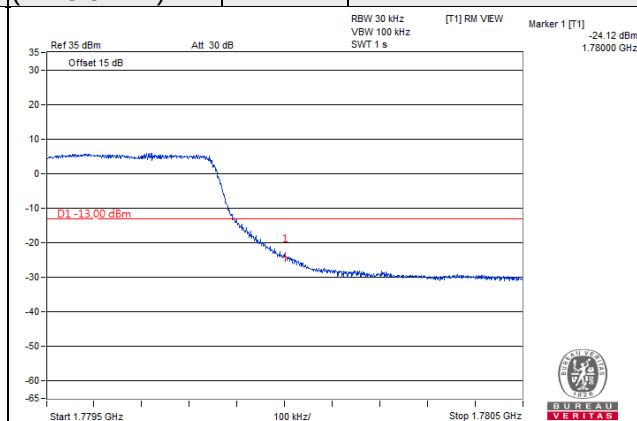
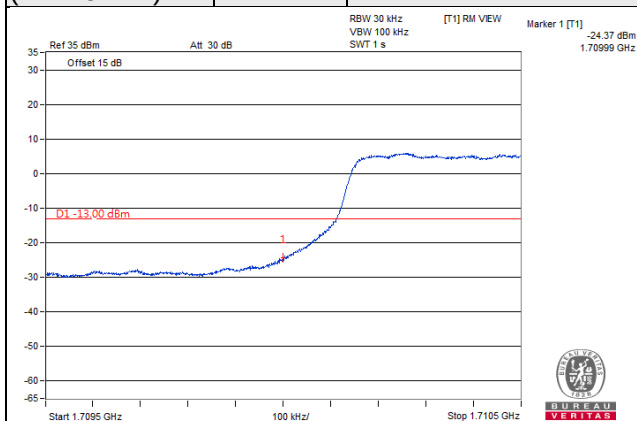
QPSK

15 RB / 0 RB Offset

Channel 132657  
(1778.5MHz)

QPSK

15 RB / 0 RB Offset



Channel Bandwidth: 5MHz

Channel 131997  
(1712.5MHz)

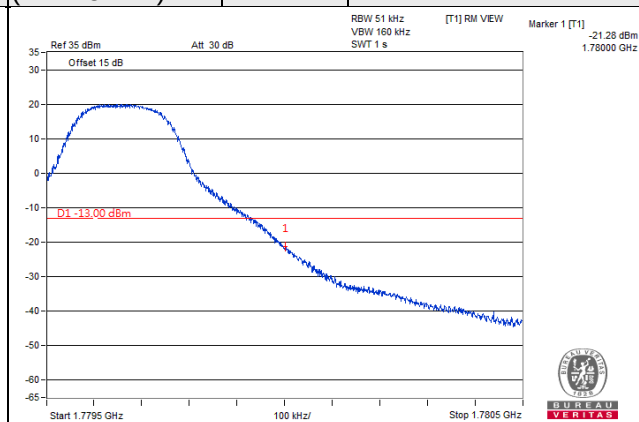
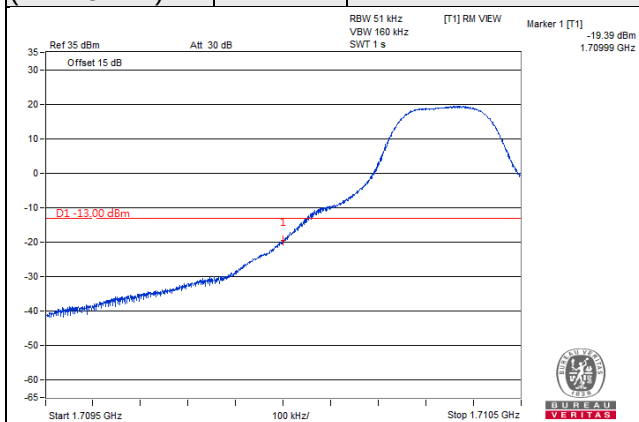
QPSK

1 RB / 0 RB Offset

Channel 132647  
(1777.5MHz)

QPSK

1 RB / 24 RB Offset



Channel 131997  
(1712.5MHz)

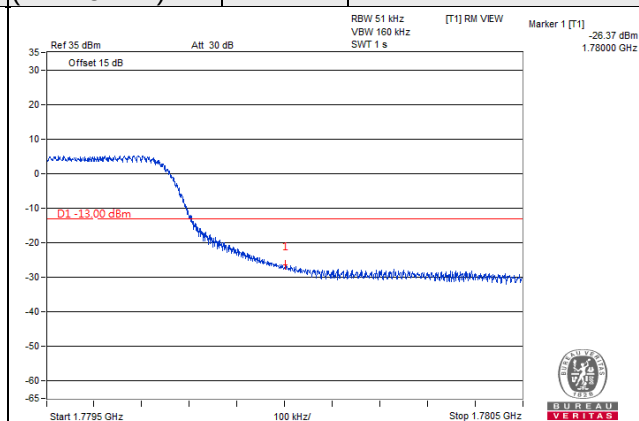
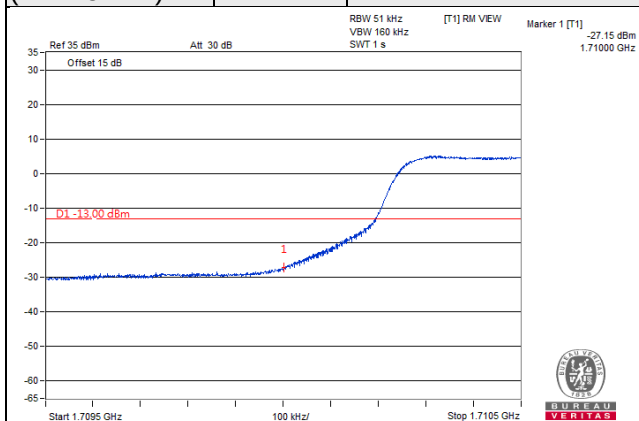
QPSK

25 RB / 0 RB Offset

Channel 132647  
(1777.5MHz)

QPSK

25 RB / 0 RB Offset



Channel Bandwidth: 10MHz

Channel 132022  
(1715.0MHz)

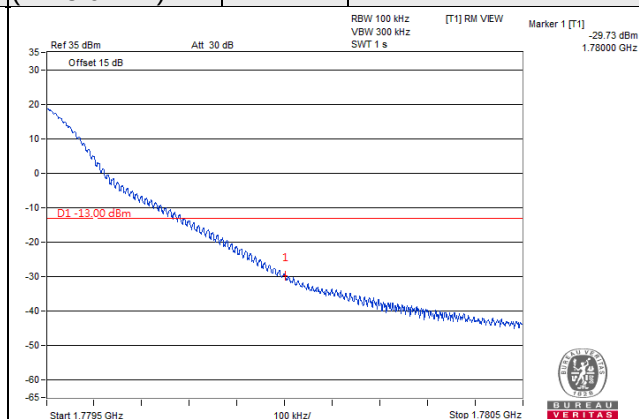
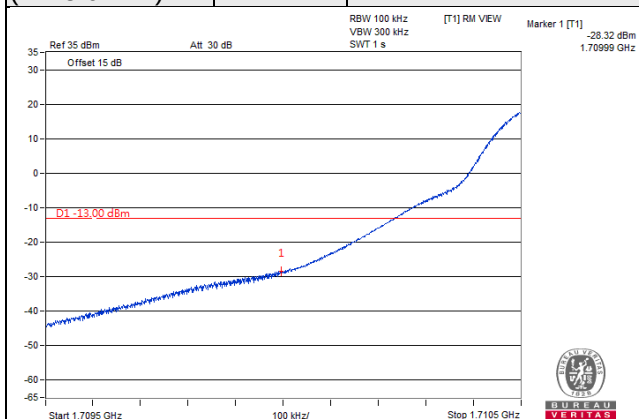
QPSK

1 RB / 0 RB Offset

Channel 132622  
(1775.0MHz)

QPSK

1 RB / 49 RB Offset



Channel 132022  
(1715.0MHz)

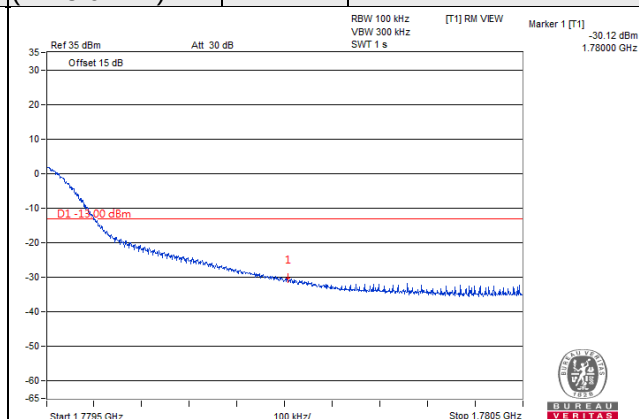
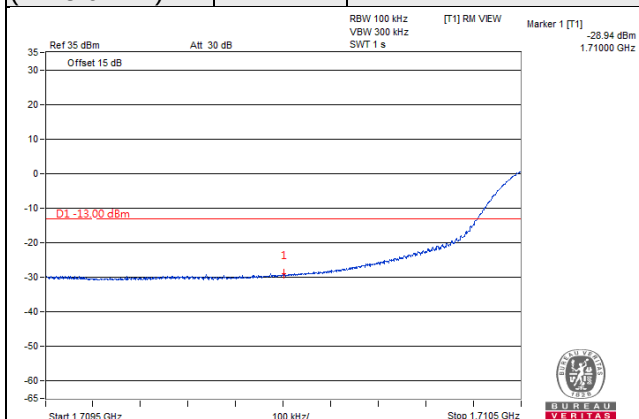
QPSK

50 RB / 0 RB Offset

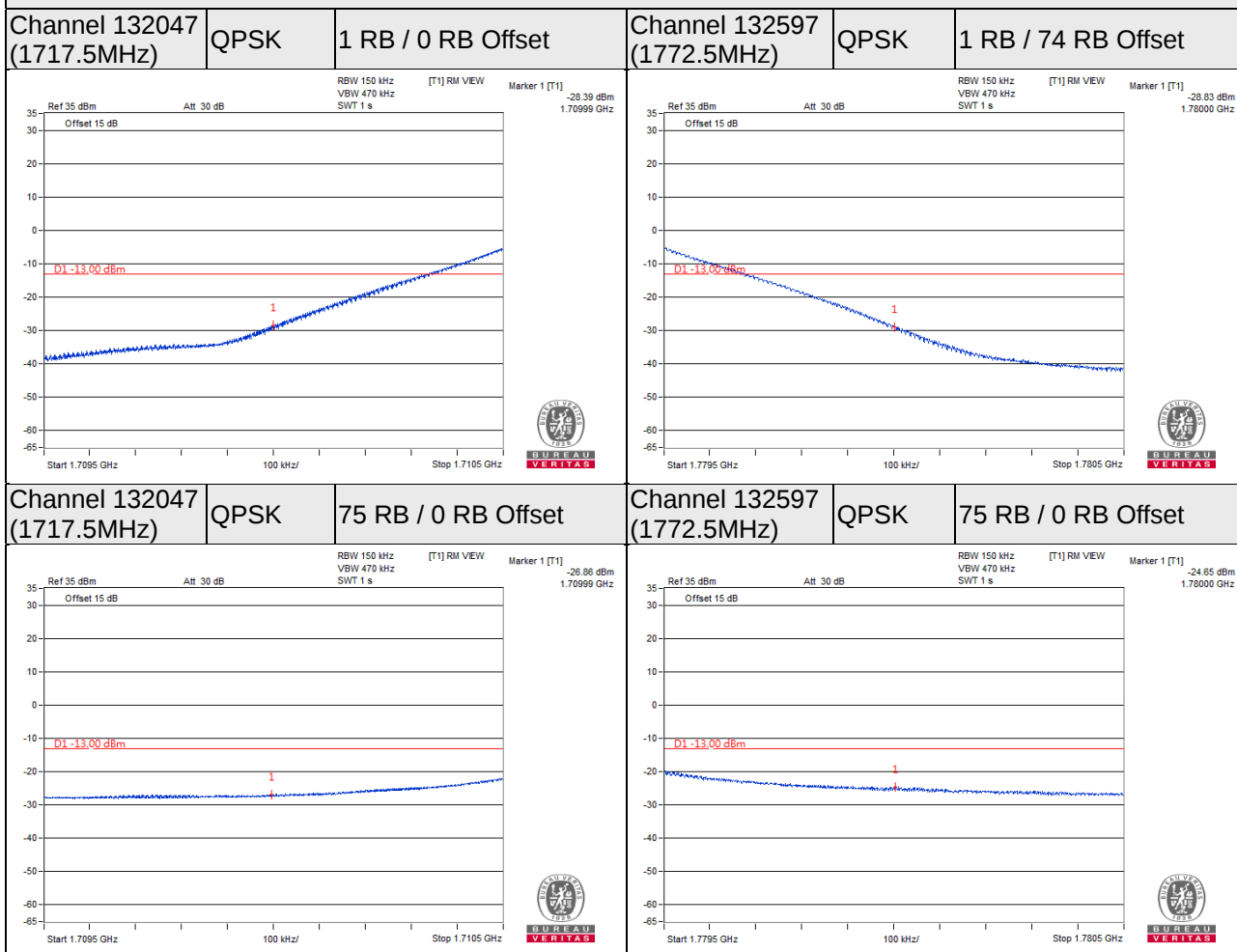
Channel 132622  
(1775.0MHz)

QPSK

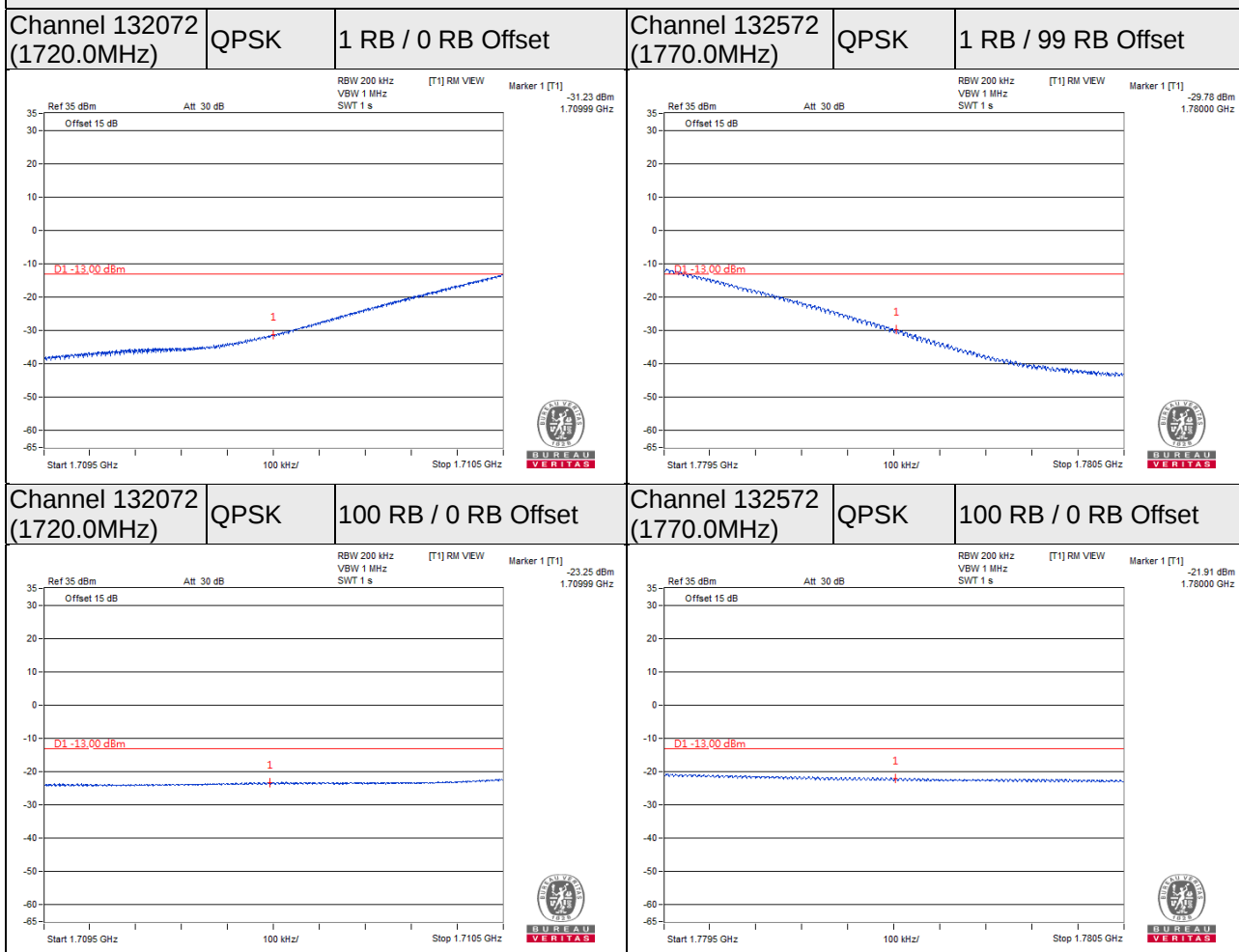
50 RB / 0 RB Offset



Channel Bandwidth: 15MHz



Channel Bandwidth: 20MHz

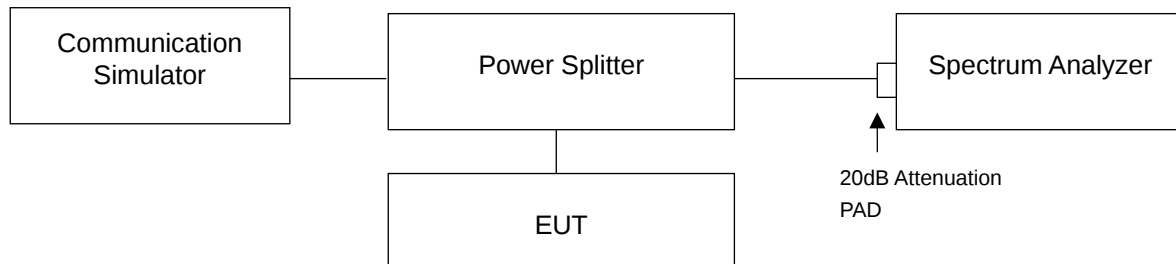


## 4.6 Peak to Average Ratio

### 4.6.1 Limits of Peak to Average Ratio Measurement

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB

### 4.6.2 Test Setup



### 4.6.3 Test Procedures

- Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth;
- Set the number of counts to a value that stabilizes the measured CCDF curve;
- Record the maximum PAPR level associated with a probability of 0.1%.

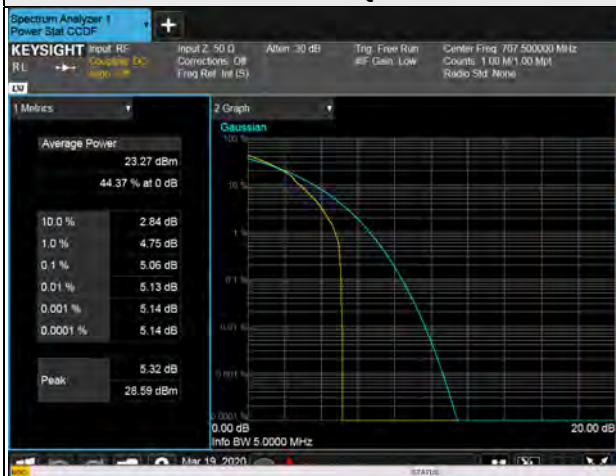
#### 4.6.4 Test Results

n12

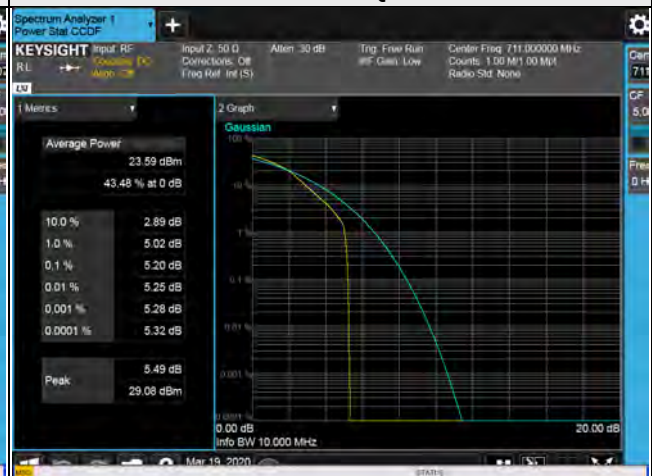
| n12, Channel Bandwidth 5MHz  |                 |                            |      |       |       |        |
|------------------------------|-----------------|----------------------------|------|-------|-------|--------|
| Channel                      | Frequency (MHz) | Peak To Average Ratio (dB) |      |       |       |        |
|                              |                 | $\pi/2$ BPSK               | QPSK | 16QAM | 64QAM | 256QAM |
| 140300                       | 701.5           | 3.48                       | 3.49 | 4.22  | 4.24  | 4.32   |
| 141500                       | 707.5           | 3.43                       | 3.43 | 4.97  | 5.06  | 5.01   |
| 142700                       | 713.5           | 3.50                       | 3.49 | 4.93  | 5.01  | 4.91   |
| n12, Channel Bandwidth 10MHz |                 |                            |      |       |       |        |
| Channel                      | Frequency (MHz) | Peak To Average Ratio (dB) |      |       |       |        |
|                              |                 | $\pi/2$ BPSK               | QPSK | 16QAM | 64QAM | 256QAM |
| 140800                       | 704.0           | 3.30                       | 3.31 | 4.56  | 4.51  | 4.72   |
| 141500                       | 707.5           | 3.30                       | 3.19 | 4.69  | 4.75  | 4.78   |
| 142200                       | 711.0           | 3.59                       | 3.62 | 5.20  | 5.16  | 5.15   |
| n12, Channel Bandwidth 15MHz |                 |                            |      |       |       |        |
| Channel                      | Frequency (MHz) | Peak To Average Ratio (dB) |      |       |       |        |
|                              |                 | $\pi/2$ BPSK               | QPSK | 16QAM | 64QAM | 256QAM |
| 141300                       | 706.5           | 3.53                       | 3.59 | 4.72  | 4.80  | 5.12   |
| 141500                       | 707.5           | 3.44                       | 3.44 | 4.92  | 5.04  | 4.99   |
| 141700                       | 708.5           | 3.33                       | 3.32 | 4.05  | 4.12  | 4.03   |

## Spectrum Plot of Worst Value

5MHz / 64QAM



10MHz / 16QAM



15MHz / 256QAM



## LTE Band 2

| LTE Band 2, Channel Bandwidth 1.4MHz |                 |                            |       |       |
|--------------------------------------|-----------------|----------------------------|-------|-------|
| Channel                              | Frequency (MHz) | Peak To Average Ratio (dB) |       |       |
|                                      |                 | QPSK                       | 16QAM | 64QAM |
| 18607                                | 1850.7          | 4.13                       | 5.16  | 6.44  |
| 18900                                | 1880.0          | 4.17                       | 4.74  | 6.61  |
| 19193                                | 1909.3          | 3.77                       | 4.37  | 6.38  |

| LTE Band 2, Channel Bandwidth 3MHz |                 |                            |       |       |
|------------------------------------|-----------------|----------------------------|-------|-------|
| Channel                            | Frequency (MHz) | Peak To Average Ratio (dB) |       |       |
|                                    |                 | QPSK                       | 16QAM | 64QAM |
| 18615                              | 1851.5          | 3.84                       | 4.86  | 6.36  |
| 18900                              | 1880.0          | 3.84                       | 4.95  | 6.56  |
| 19185                              | 1908.5          | 3.55                       | 4.35  | 6.36  |

| LTE Band 2, Channel Bandwidth 5MHz |                 |                            |       |       |
|------------------------------------|-----------------|----------------------------|-------|-------|
| Channel                            | Frequency (MHz) | Peak To Average Ratio (dB) |       |       |
|                                    |                 | QPSK                       | 16QAM | 64QAM |
| 18625                              | 1852.5          | 3.86                       | 6.20  | 6.92  |
| 18900                              | 1880.0          | 3.77                       | 4.55  | 6.57  |
| 19175                              | 1907.5          | 3.61                       | 4.34  | 6.48  |

| LTE Band 2, Channel Bandwidth 10MHz |                 |                            |       |       |
|-------------------------------------|-----------------|----------------------------|-------|-------|
| Channel                             | Frequency (MHz) | Peak To Average Ratio (dB) |       |       |
|                                     |                 | QPSK                       | 16QAM | 64QAM |
| 18650                               | 1855.0          | 3.97                       | 4.83  | 7.23  |
| 18900                               | 1880.0          | 3.82                       | 4.52  | 6.77  |
| 19150                               | 1905.0          | 3.55                       | 4.23  | 6.31  |

| LTE Band 2, Channel Bandwidth 15MHz |                 |                            |       |       |
|-------------------------------------|-----------------|----------------------------|-------|-------|
| Channel                             | Frequency (MHz) | Peak To Average Ratio (dB) |       |       |
|                                     |                 | QPSK                       | 16QAM | 64QAM |
| 18675                               | 1857.5          | 3.86                       | 4.74  | 7.12  |
| 18900                               | 1880.0          | 3.94                       | 4.74  | 7.26  |
| 19125                               | 1902.5          | 3.53                       | 4.17  | 6.16  |

| LTE Band 2, Channel Bandwidth 20MHz |                 |                            |       |       |
|-------------------------------------|-----------------|----------------------------|-------|-------|
| Channel                             | Frequency (MHz) | Peak To Average Ratio (dB) |       |       |
|                                     |                 | QPSK                       | 16QAM | 64QAM |
| 18700                               | 1860.0          | 3.81                       | 4.60  | 6.92  |
| 18900                               | 1880.0          | 3.69                       | 4.44  | 6.81  |
| 19100                               | 1900.0          | 3.63                       | 4.15  | 6.14  |

## Spectrum Plot of Worst Value

1.4MHz / 64QAM



3MHz / 64QAM



5MHz / 64QAM



10MHz / 64QAM



15MHz / 64QAM



20MHz / 64QAM



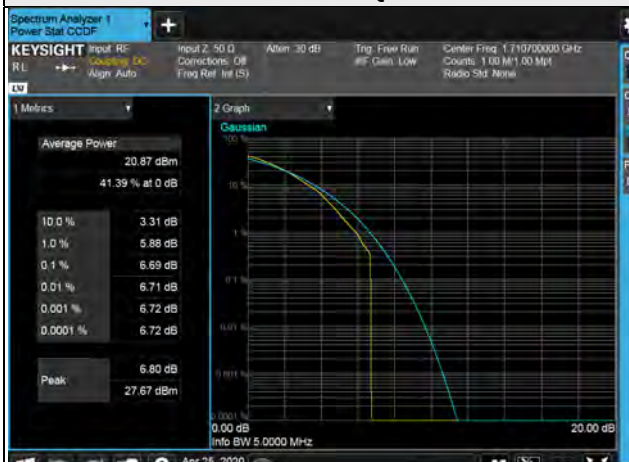
# LTE Band 66

| LTE Band 66, Channel Bandwidth 1.4MHz |                 |                            |       |       |
|---------------------------------------|-----------------|----------------------------|-------|-------|
| Channel                               | Frequency (MHz) | Peak To Average Ratio (dB) |       |       |
|                                       |                 | QPSK                       | 16QAM | 64QAM |
| 131979                                | 1710.7          | 3.70                       | 4.50  | 6.69  |
| 132322                                | 1745.0          | 3.73                       | 4.49  | 6.56  |
| 132665                                | 1779.3          | 3.95                       | 5.10  | 6.41  |
| LTE Band 66, Channel Bandwidth 3MHz   |                 |                            |       |       |
| Channel                               | Frequency (MHz) | Peak To Average Ratio (dB) |       |       |
|                                       |                 | QPSK                       | 16QAM | 64QAM |
| 131987                                | 1711.5          | 3.61                       | 4.40  | 6.54  |
| 132322                                | 1745.0          | 3.59                       | 4.42  | 6.61  |
| 132657                                | 1778.5          | 3.69                       | 5.16  | 6.41  |
| LTE Band 66, Channel Bandwidth 5MHz   |                 |                            |       |       |
| Channel                               | Frequency (MHz) | Peak To Average Ratio (dB) |       |       |
|                                       |                 | QPSK                       | 16QAM | 64QAM |
| 131997                                | 1712.5          | 3.66                       | 4.43  | 6.56  |
| 132322                                | 1745.0          | 3.68                       | 4.47  | 6.66  |
| 132647                                | 1777.5          | 3.78                       | 4.91  | 6.42  |
| LTE Band 66, Channel Bandwidth 10MHz  |                 |                            |       |       |
| Channel                               | Frequency (MHz) | Peak To Average Ratio (dB) |       |       |
|                                       |                 | QPSK                       | 16QAM | 64QAM |
| 132022                                | 1715.0          | 3.79                       | 4.61  | 6.82  |
| 132322                                | 1745.0          | 3.74                       | 4.52  | 6.72  |
| 132622                                | 1775.0          | 3.59                       | 4.37  | 6.61  |
| LTE Band 66, Channel Bandwidth 15MHz  |                 |                            |       |       |
| Channel                               | Frequency (MHz) | Peak To Average Ratio (dB) |       |       |
|                                       |                 | QPSK                       | 16QAM | 64QAM |
| 132047                                | 1717.5          | 3.64                       | 4.43  | 6.67  |
| 132322                                | 1745.0          | 3.69                       | 4.46  | 6.79  |
| 132597                                | 1772.5          | 3.46                       | 4.17  | 6.24  |

| LTE Band 66, Channel Bandwidth 20MHz |                 |                            |       |       |
|--------------------------------------|-----------------|----------------------------|-------|-------|
| Channel                              | Frequency (MHz) | Peak To Average Ratio (dB) |       |       |
|                                      |                 | QPSK                       | 16QAM | 64QAM |
| 132072                               | 1720.0          | 3.77                       | 4.57  | 6.90  |
| 132322                               | 1745.0          | 3.75                       | 4.57  | 6.73  |
| 132572                               | 1770.0          | 3.58                       | 4.87  | 6.26  |

## Spectrum Plot of Worst Value

1.4MHz / 64QAM



3MHz / 64QAM



5MHz / 64QAM



10MHz / 64QAM



15MHz / 64QAM



20MHz / 64QAM



## 4.7 Conducted Spurious Emissions

### 4.7.1 Limits of Conducted Spurious Emissions Measurement

For n12

According to FCC 27.53(g) for operations in the 600 MHz band and 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. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater.

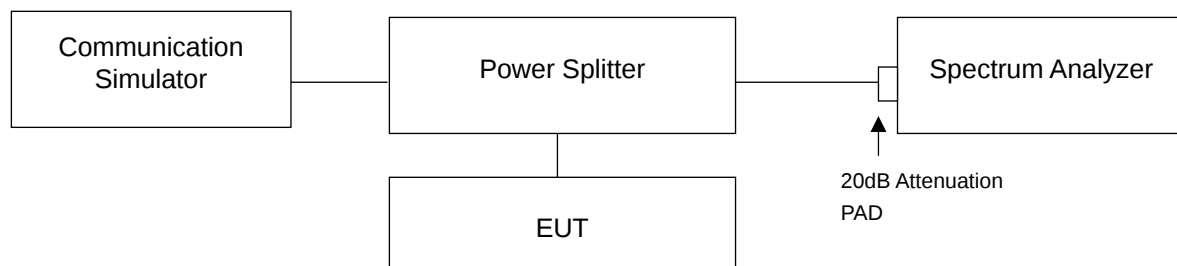
For LTE Band 2

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. The emission limit equal to  $-13\text{dBm}$ .

For LTE Band 66

In the FCC 27.53(h), On any frequency outside a licensee's frequency block, The power of any emission shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log(P)$  dB. The emission limit equal to  $-13\text{dBm}$ .

### 4.7.2 Test Setup



### 4.7.3 Test Procedure

- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 9kHz to 9GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

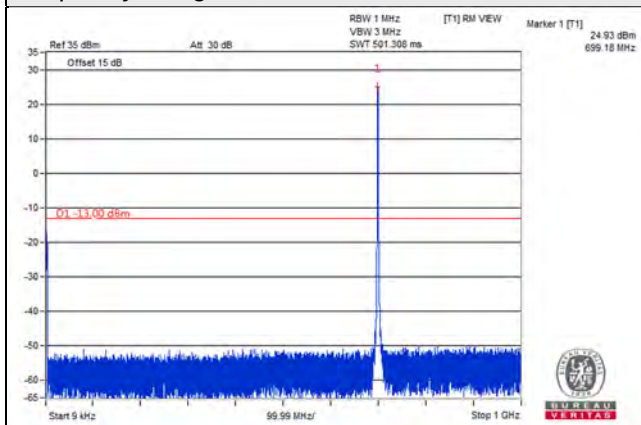
## 4.7.4 Test Results

n12

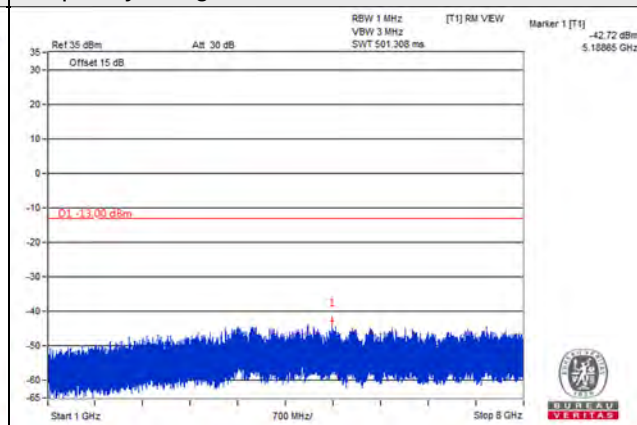
Channel Band width: 5MHz

Channel 140300 (701.5MHz)

Frequency Range : 9kHz~1GHz

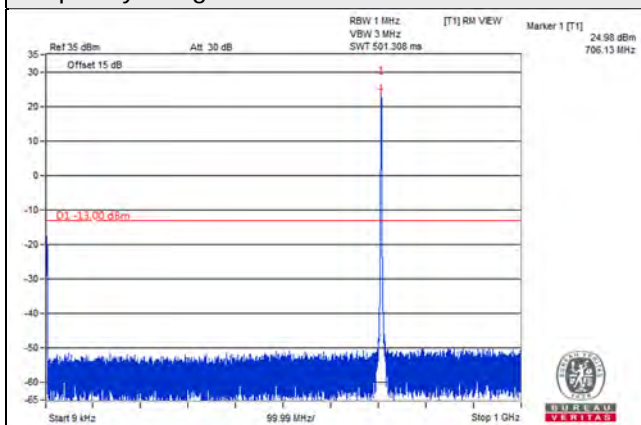


Frequency Range : 1GHz~8GHz

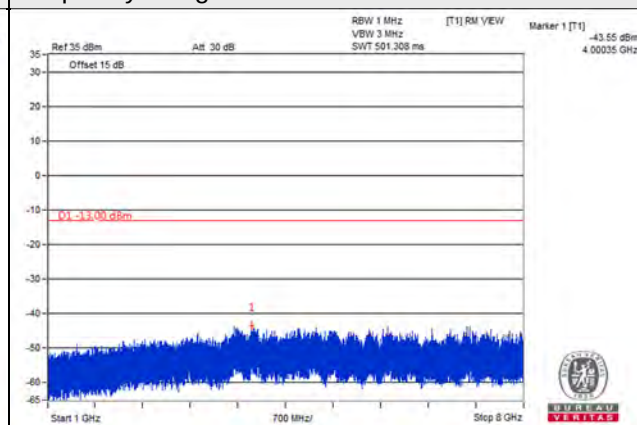


Channel 141500 (707.5MHz)

Frequency Range : 9kHz~1GHz

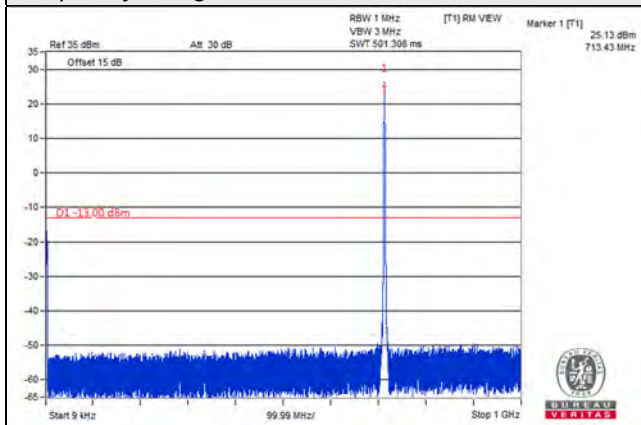


Frequency Range : 1GHz~8GHz

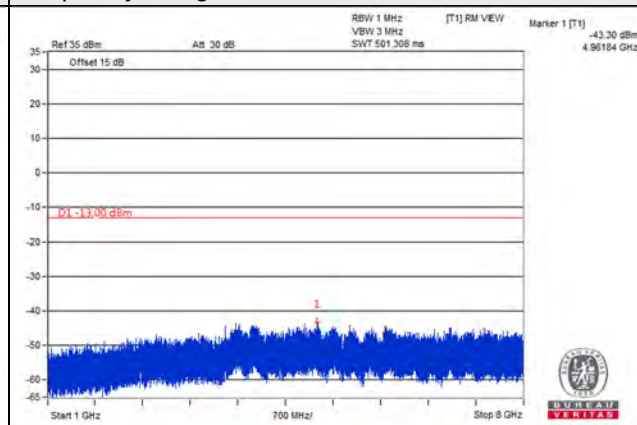


Channel 142700 (713.5MHz)

Frequency Range : 9kHz~1GHz



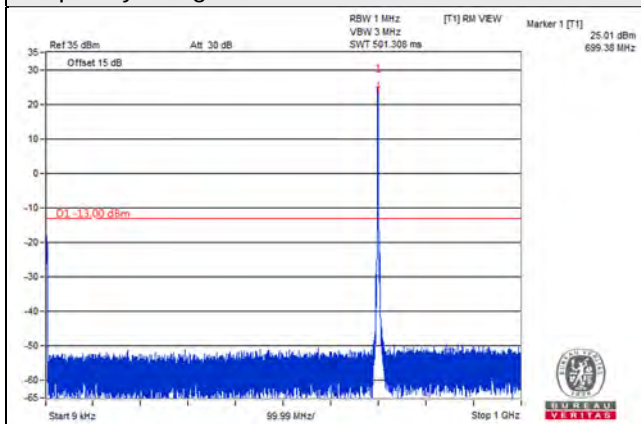
Frequency Range : 1GHz~8GHz



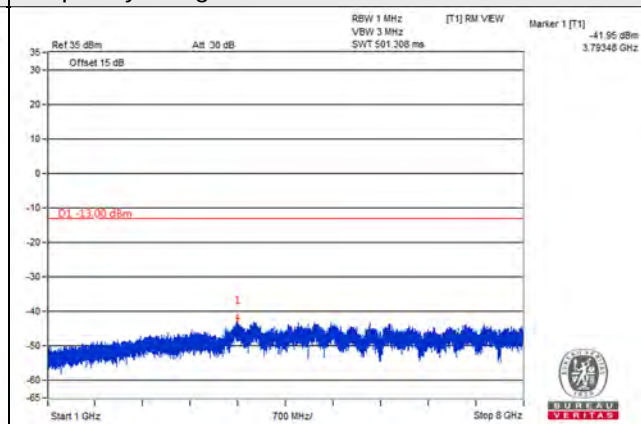
Channel Band width: 10MHz

Channel 140800 (704MHz)

Frequency Range : 9kHz~1GHz

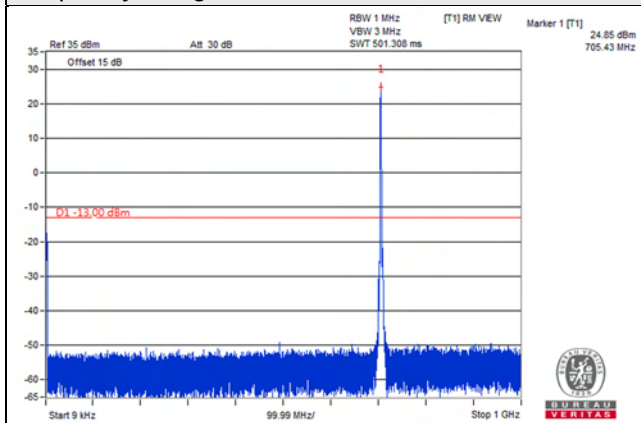


Frequency Range : 1GHz~8GHz

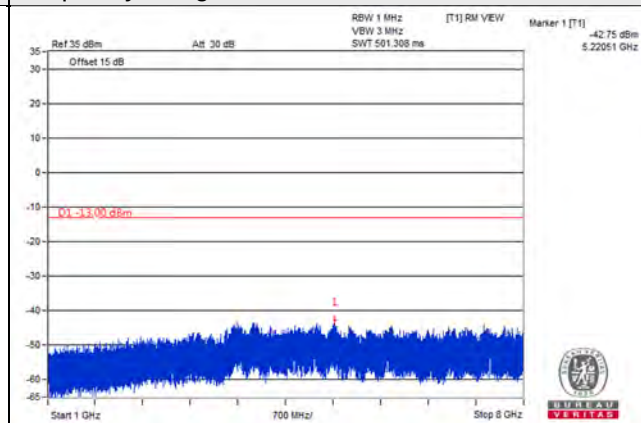


Channel 141500 (707.5MHz)

Frequency Range : 9kHz~1GHz

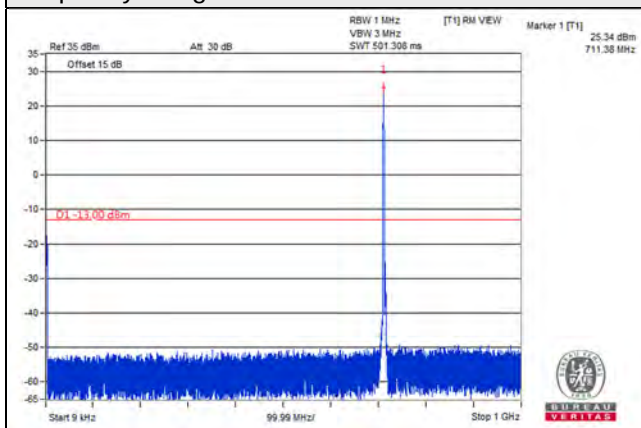


Frequency Range : 1GHz~8GHz

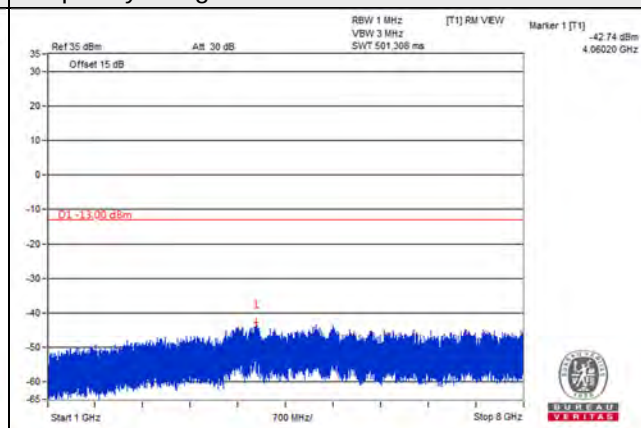


Channel 142200 (711MHz)

Frequency Range : 9kHz~1GHz



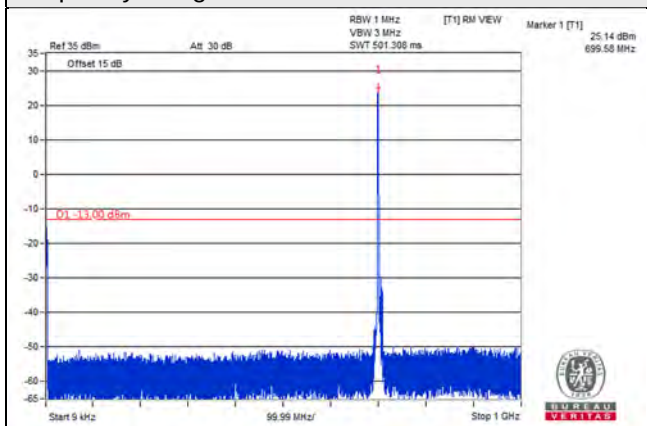
Frequency Range : 1GHz~8GHz



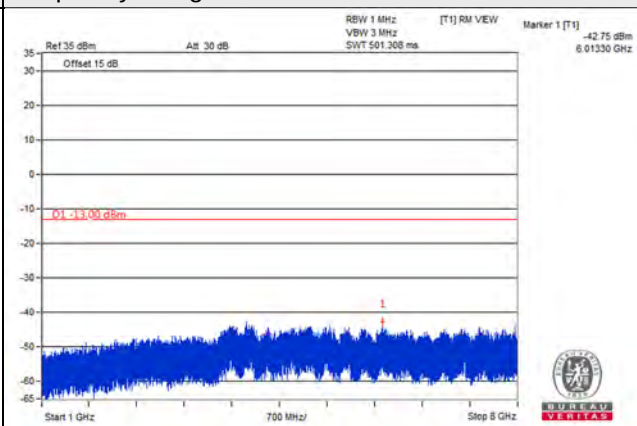
Channel Band width: 15MHz

Channel 141300 (706.5MHz)

Frequency Range : 9kHz~1GHz

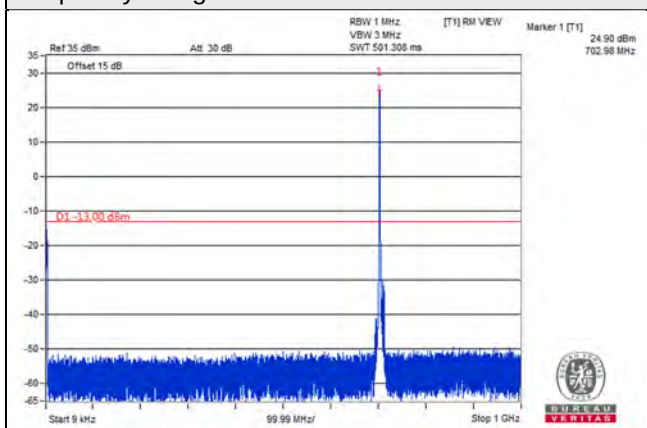


Frequency Range : 1GHz~8GHz

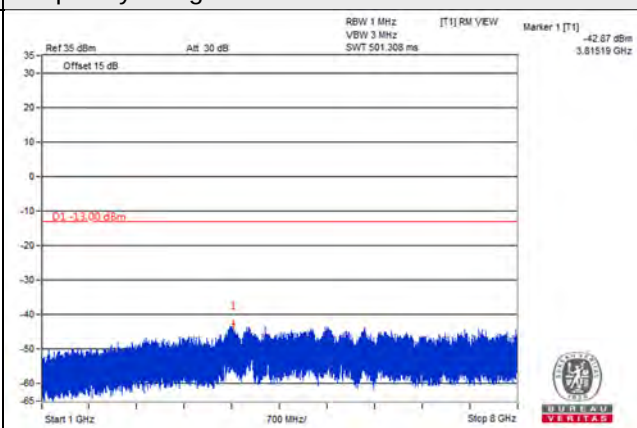


Channel 141500 (707.5MHz)

Frequency Range : 9kHz~1GHz

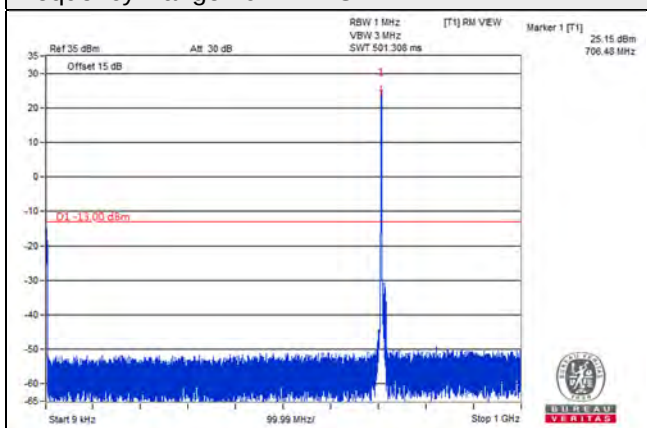


Frequency Range : 1GHz~8GHz

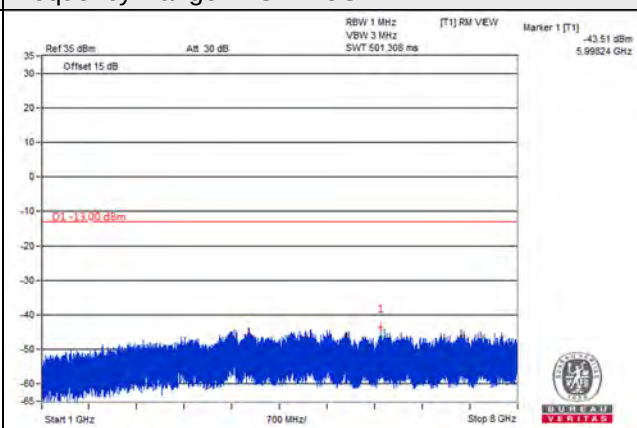


Channel 141700 (708.5MHz)

Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~8GHz

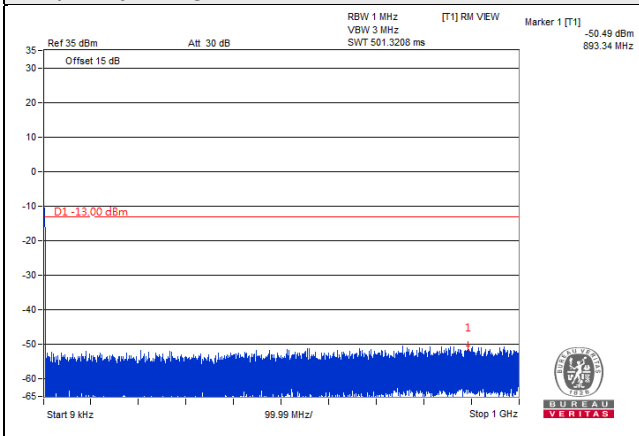


## LTE Band 2

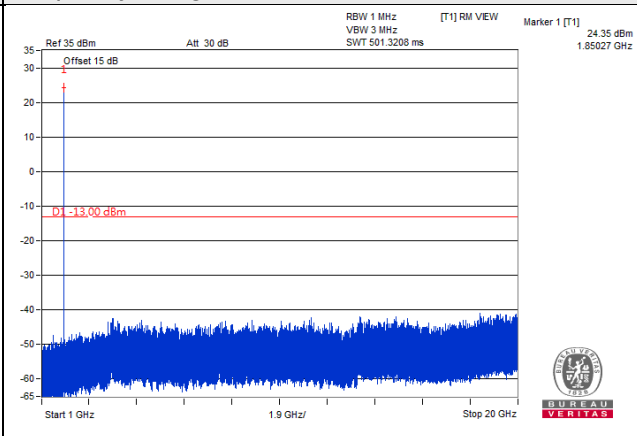
Channel Bandwidth 1.4MHz

Channel 18607 (1850.70MHz)

Frequency Range : 9kHz~1GHz

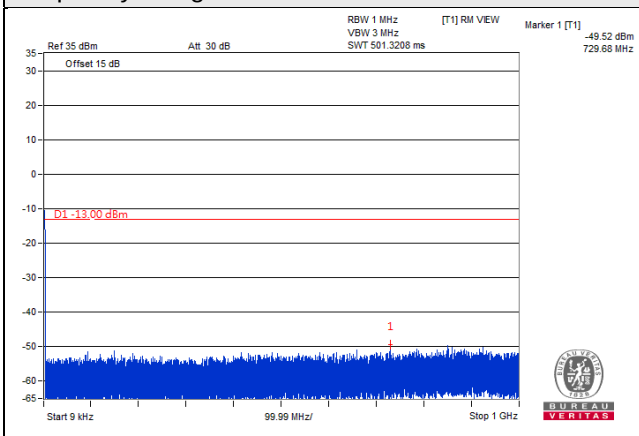


Frequency Range : 1GHz~20GHz

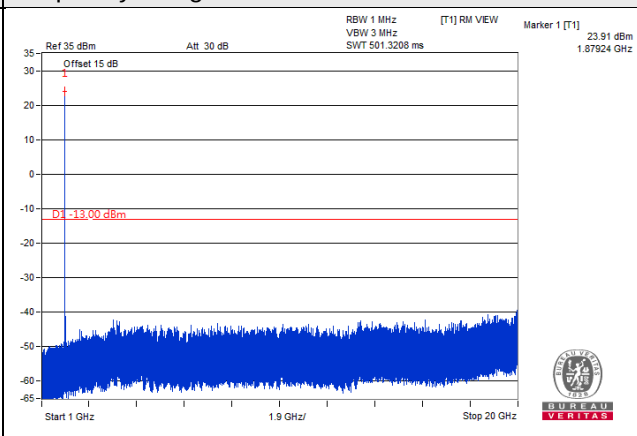


Channel 18900 (1880.00MHz)

Frequency Range : 9kHz~1GHz

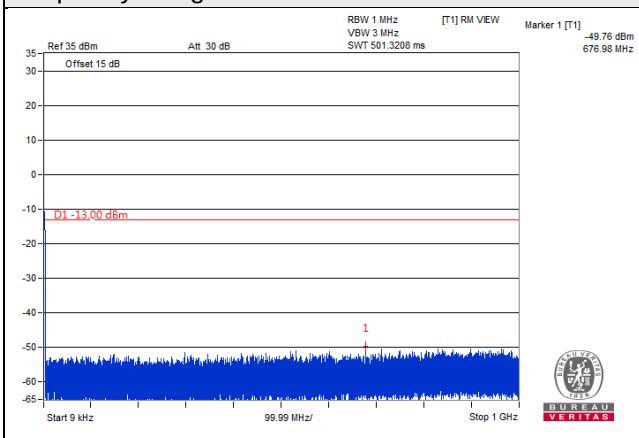


Frequency Range : 1GHz~20GHz

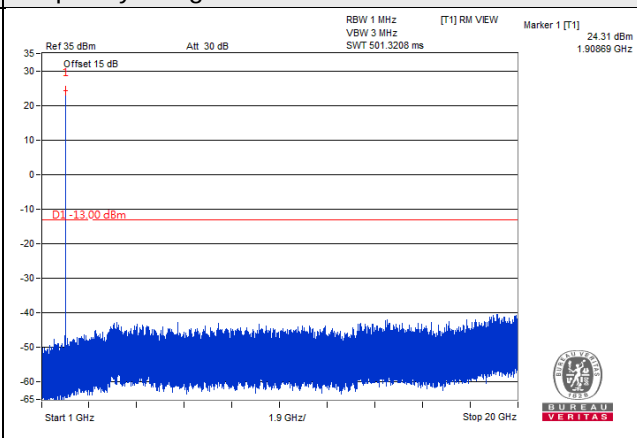


Channel 19193 (1909.30MHz)

Frequency Range : 9kHz~1GHz



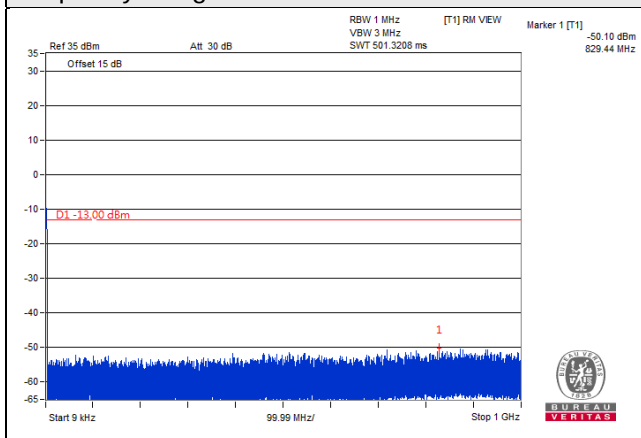
Frequency Range : 1GHz~20GHz



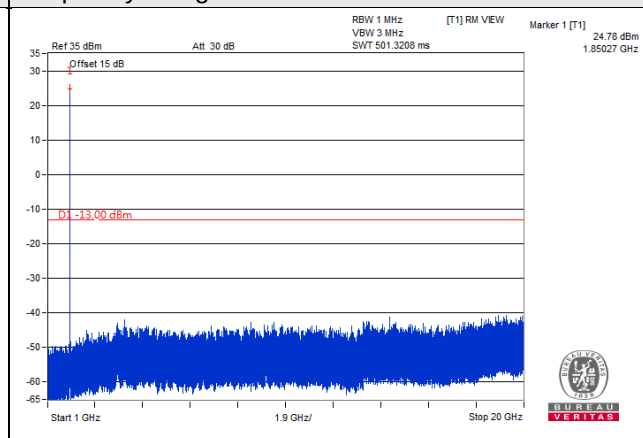
Channel Bandwidth 3MHz

Channel 18615 (1851.50MHz)

Frequency Range : 9kHz~1GHz

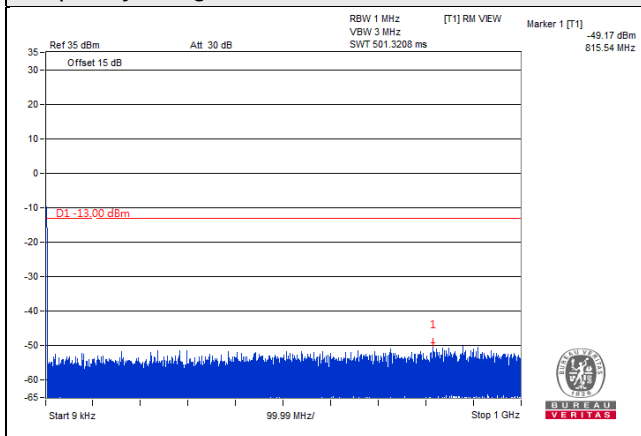


Frequency Range : 1GHz~20GHz

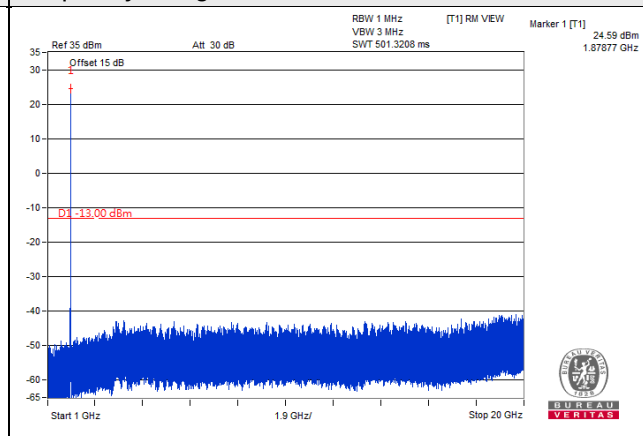


Channel 18900 (1880.00MHz)

Frequency Range : 9kHz~1GHz

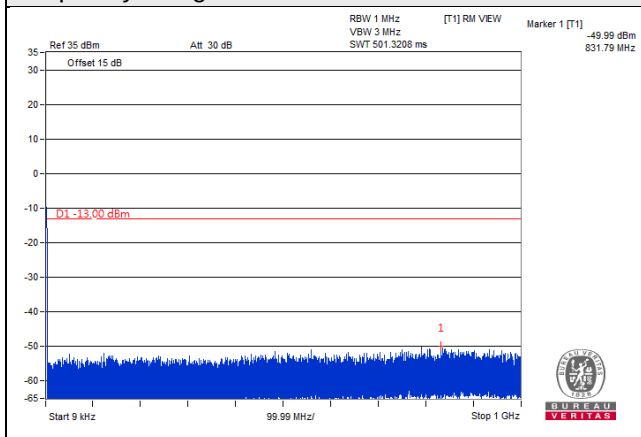


Frequency Range : 1GHz~20GHz

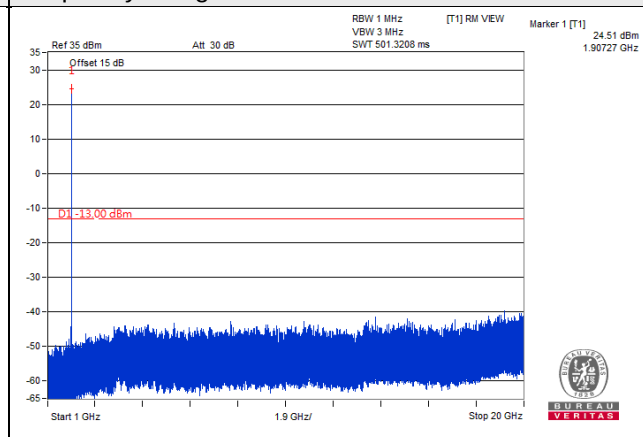


Channel 19185 (1908.50MHz)

Frequency Range : 9kHz~1GHz



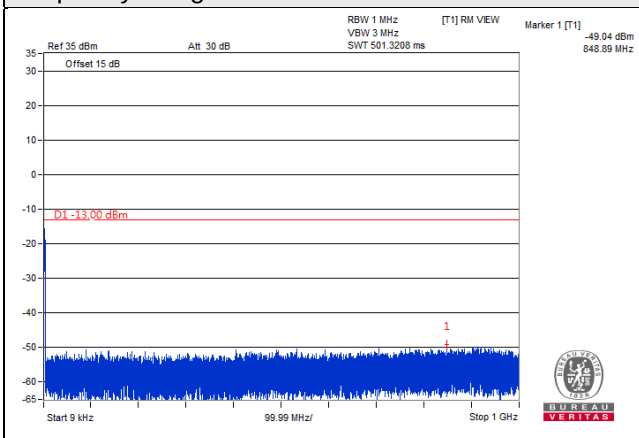
Frequency Range : 1GHz~20GHz



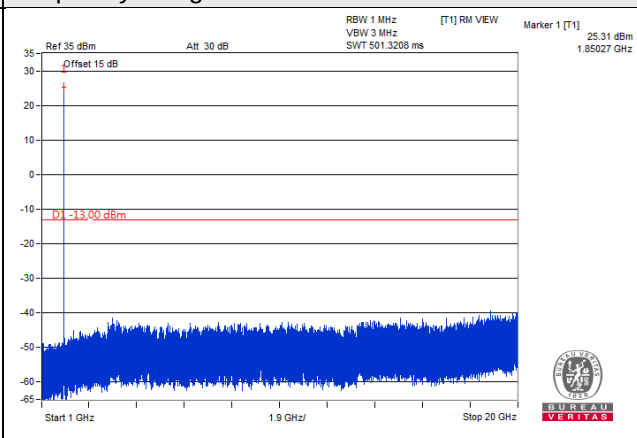
Channel Bandwidth 5MHz

Channel 18625 (1852.50MHz)

Frequency Range : 9kHz~1GHz

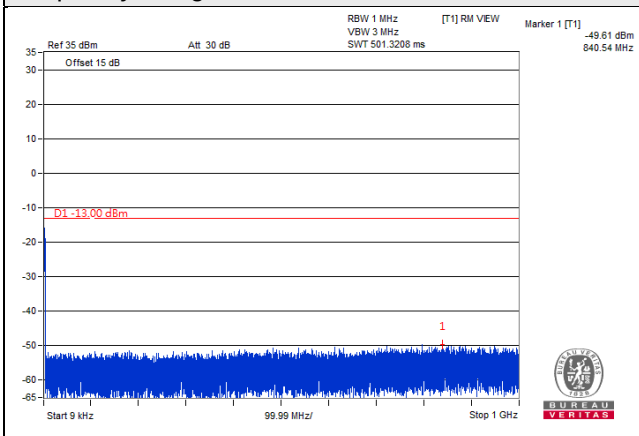


Frequency Range : 1GHz~20GHz

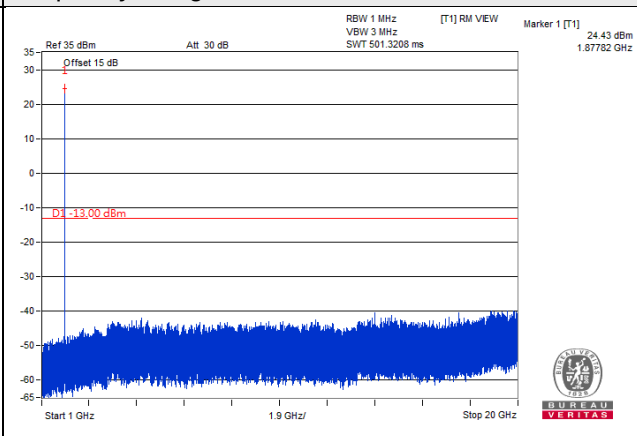


Channel 18900 (1880.00MHz)

Frequency Range : 9kHz~1GHz

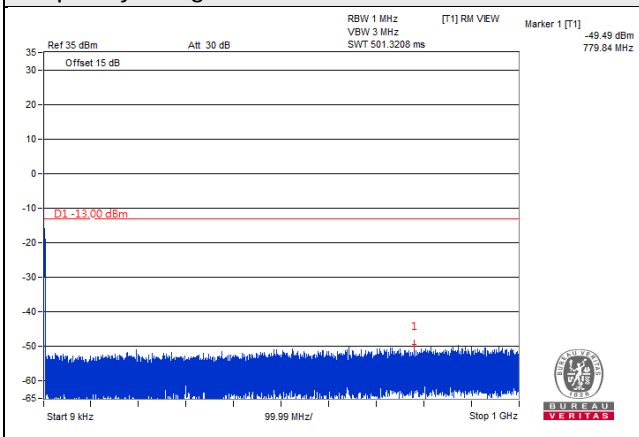


Frequency Range : 1GHz~20GHz

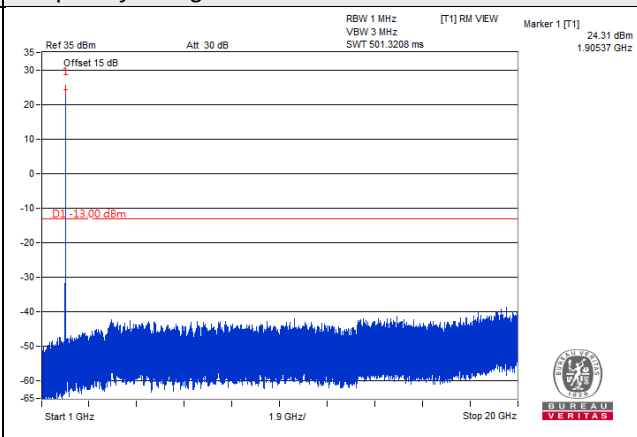


Channel 19175 (1907.50MHz)

Frequency Range : 9kHz~1GHz



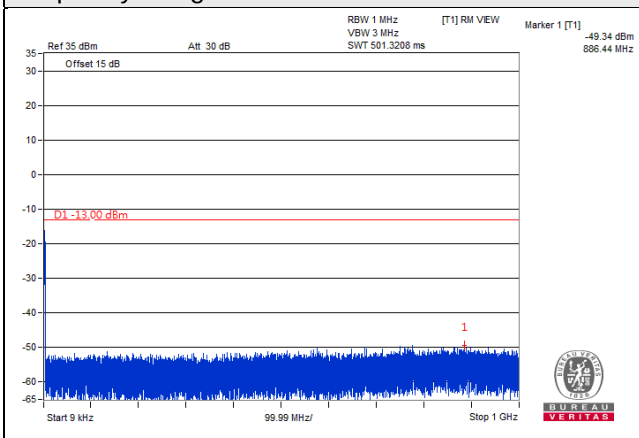
Frequency Range : 1GHz~20GHz



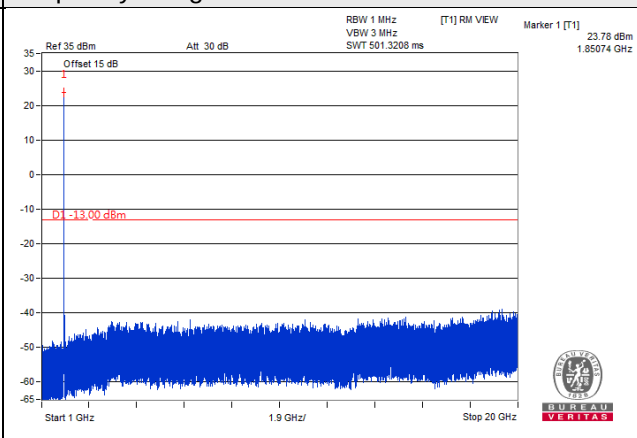
Channel Bandwidth 10MHz

Channel 18650 (1855.00MHz)

Frequency Range : 9kHz~1GHz

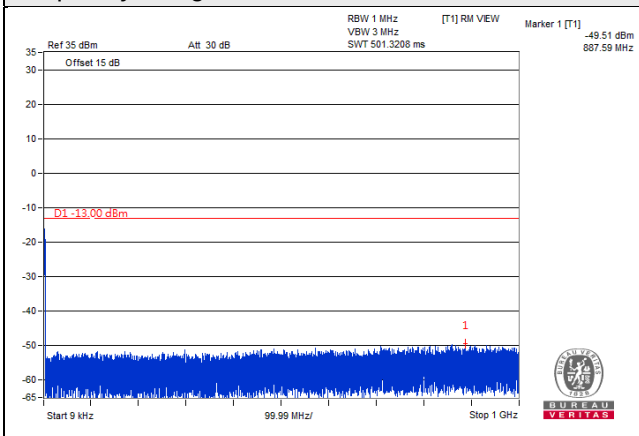


Frequency Range : 1GHz~20GHz

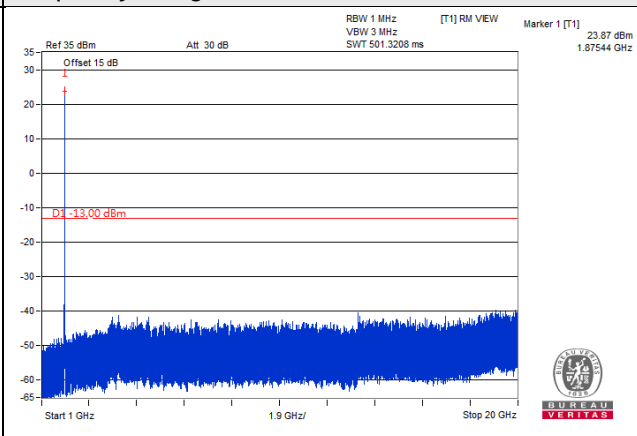


Channel 18900 (1880.00MHz)

Frequency Range : 9kHz~1GHz

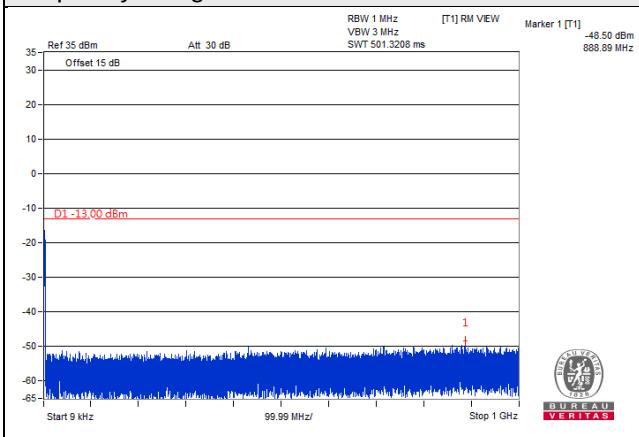


Frequency Range : 1GHz~20GHz

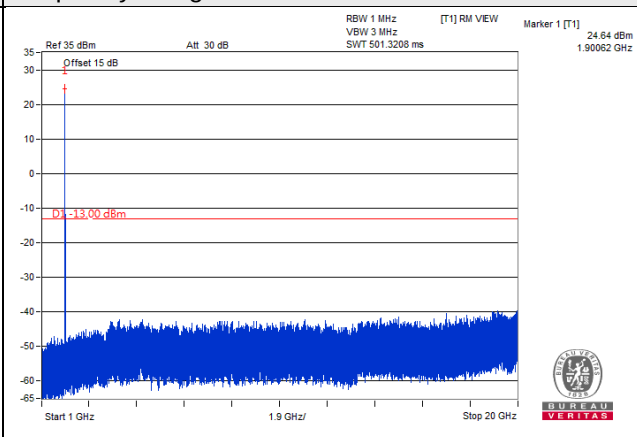


Channel 19150 (1905.00MHz)

Frequency Range : 9kHz~1GHz



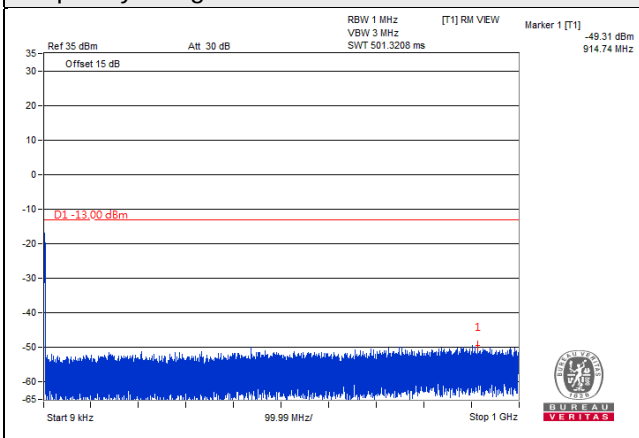
Frequency Range : 1GHz~20GHz



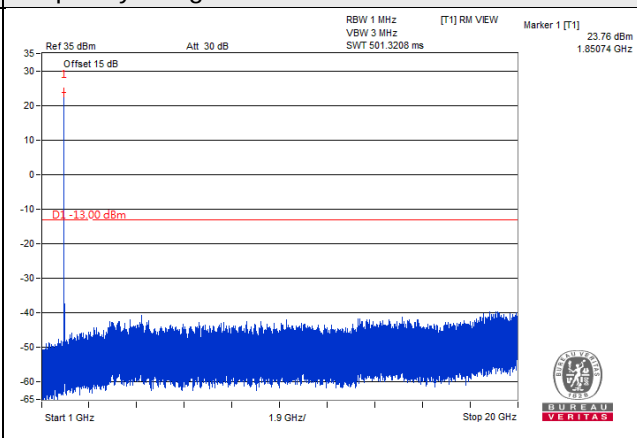
# Channel Bandwidth 15MHz

## Channel 18675 (1857.50MHz)

Frequency Range : 9kHz~1GHz

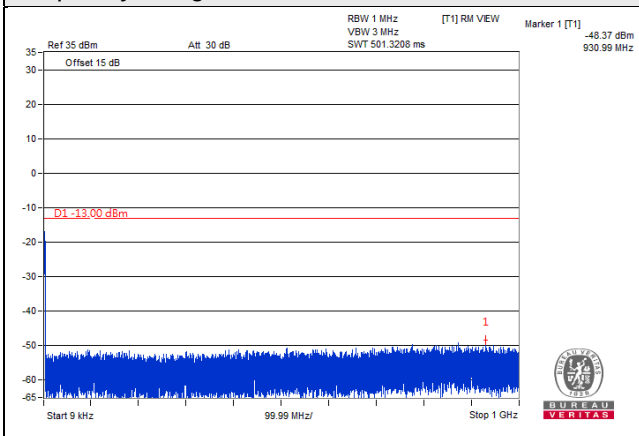


Frequency Range : 1GHz~20GHz

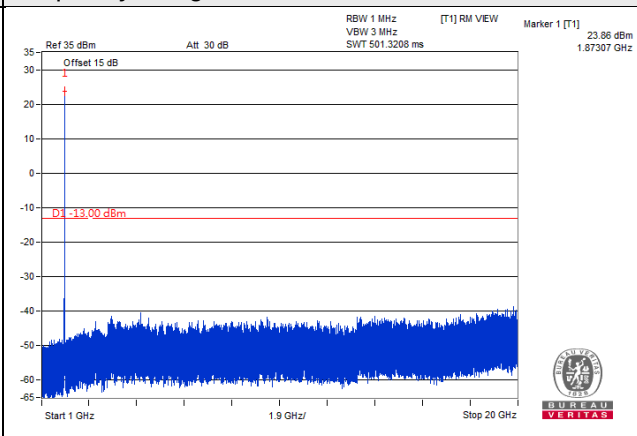


## Channel 18900 (1880.00MHz)

Frequency Range : 9kHz~1GHz

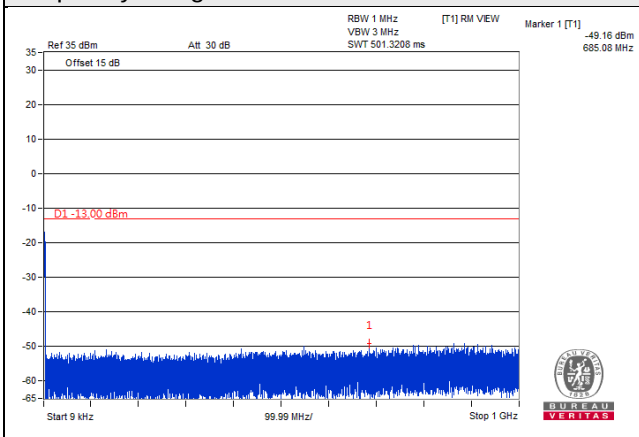


Frequency Range : 1GHz~20GHz

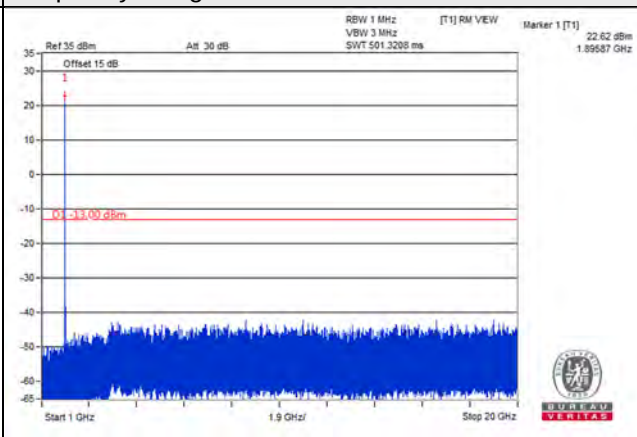


## Channel 19125 (1902.50MHz)

Frequency Range : 9kHz~1GHz



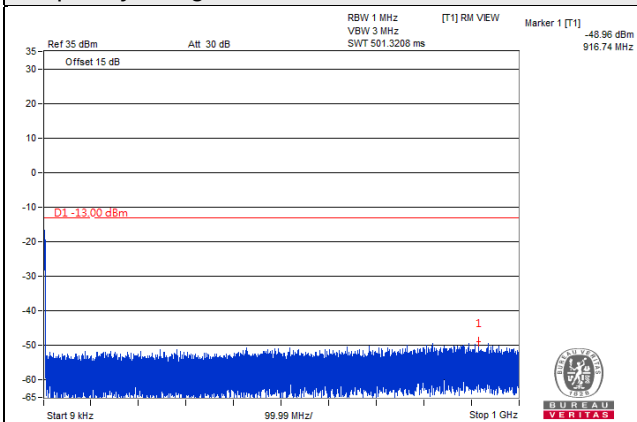
Frequency Range : 1GHz~20GHz



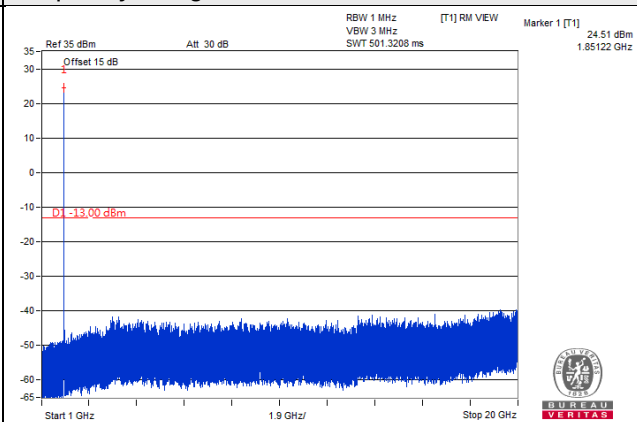
Channel Bandwidth 20MHz

Channel 18700 (1860.00MHz)

Frequency Range : 9kHz~1GHz

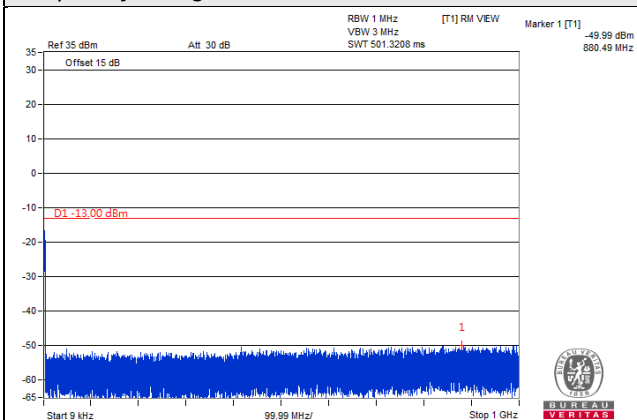


Frequency Range : 1GHz~20GHz

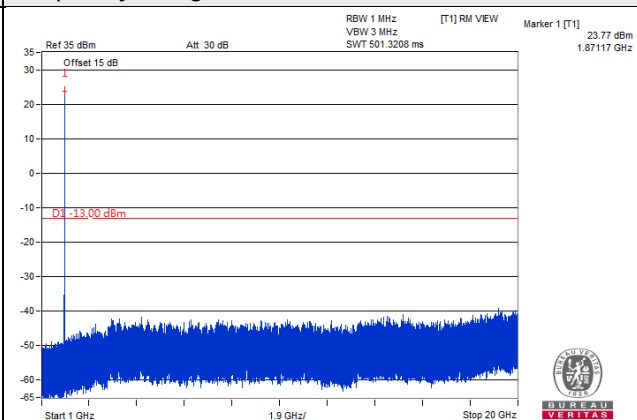


Channel 18900 (1880.00MHz)

Frequency Range : 9kHz~1GHz

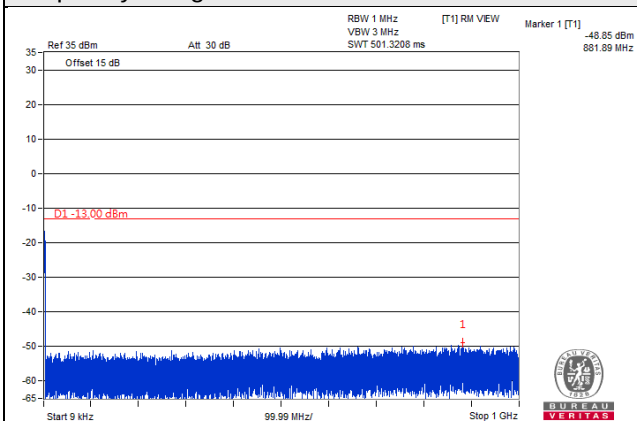


Frequency Range : 1GHz~20GHz

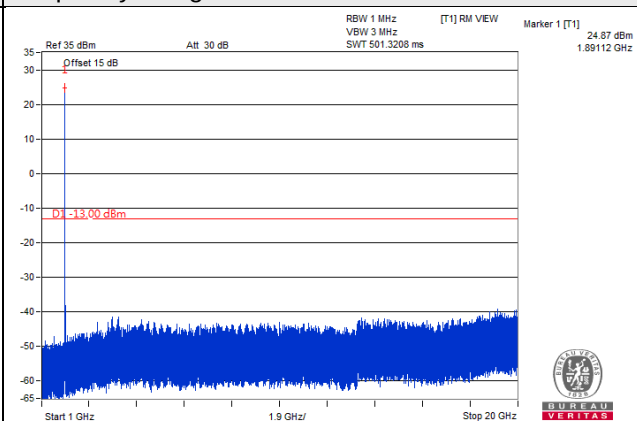


Channel 19100 (1900.00MHz)

Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~20GHz

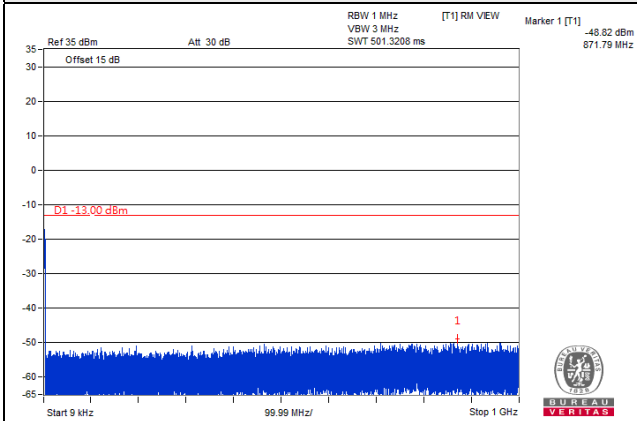


# LTE Band 66

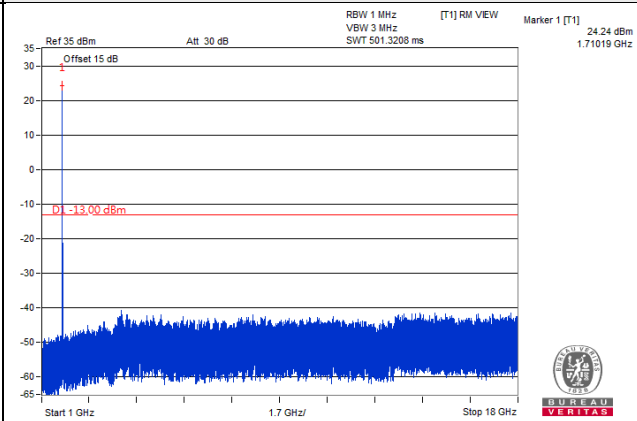
Channel Bandwidth: 1.4MHz

Channel 131979 (1710.7MHz)

Frequency Range : 9kHz~1GHz

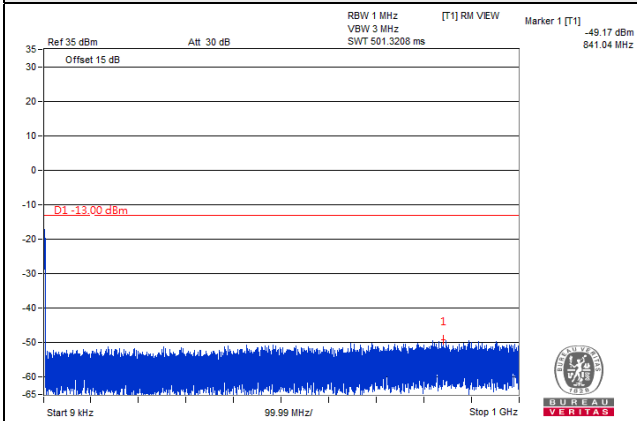


Frequency Range : 1GHz~18GHz

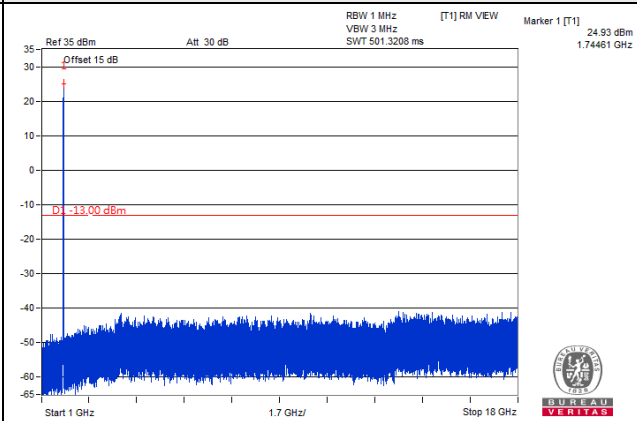


Channel 132322 (1745.0MHz)

Frequency Range : 9kHz~1GHz

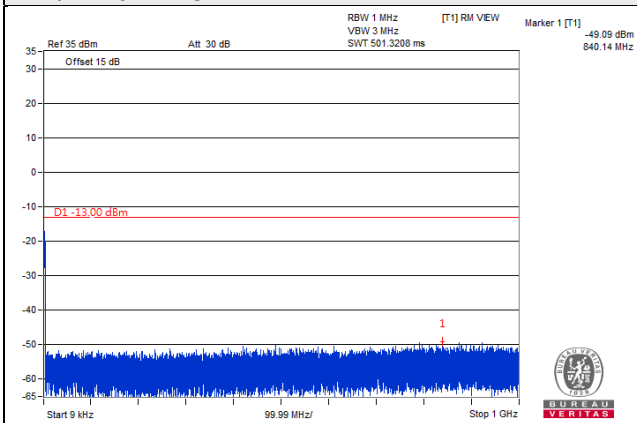


Frequency Range : 1GHz~18GHz

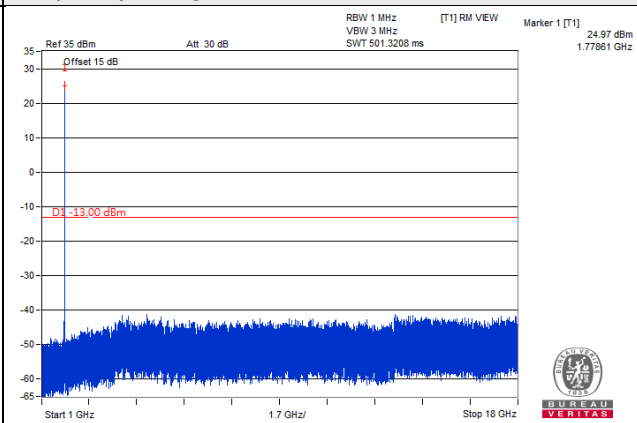


Channel 132665 (1779.3MHz)

Frequency Range : 9kHz~1GHz



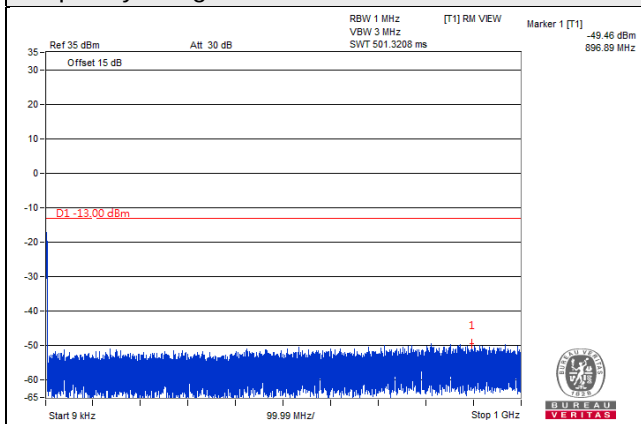
Frequency Range : 1GHz~18GHz



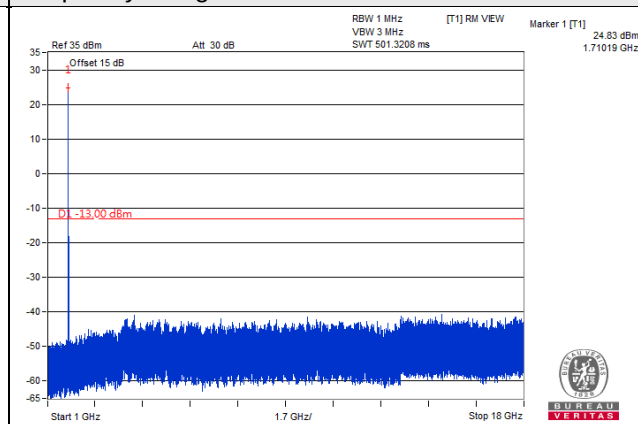
Channel Bandwidth: 3MHz

Channel 131987 (1711.5MHz)

Frequency Range : 9kHz~1GHz

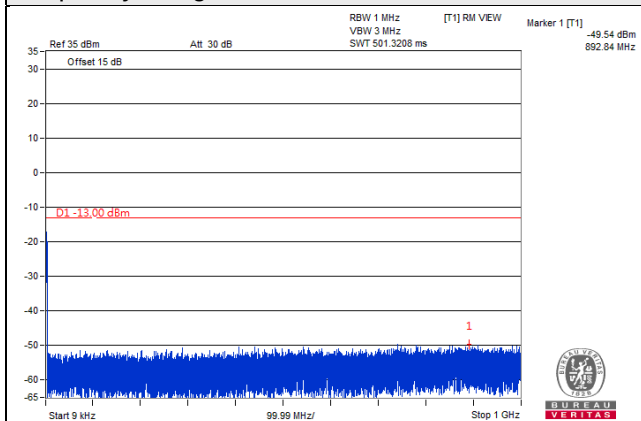


Frequency Range : 1GHz~18GHz

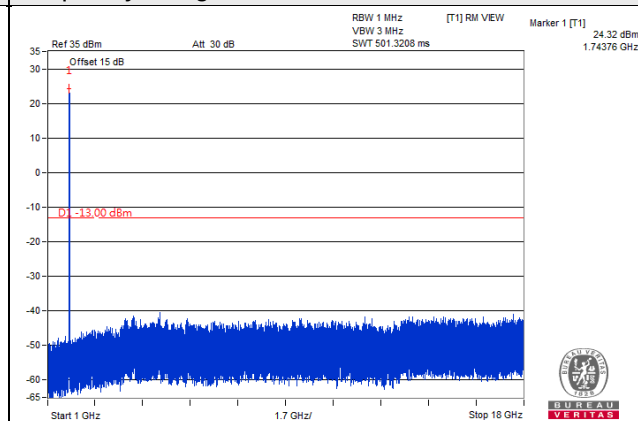


Channel 132322 (1745.0MHz)

Frequency Range : 9kHz~1GHz

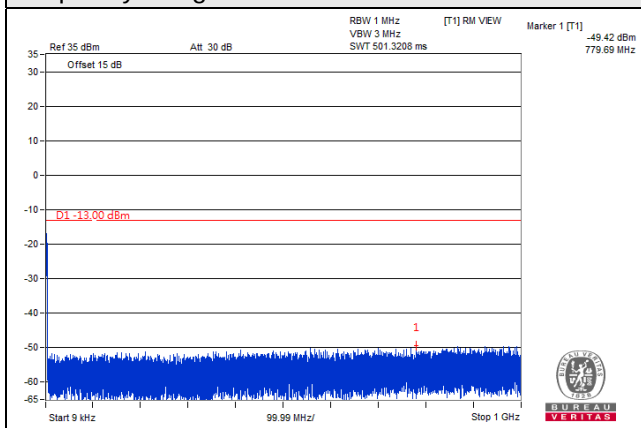


Frequency Range : 1GHz~18GHz

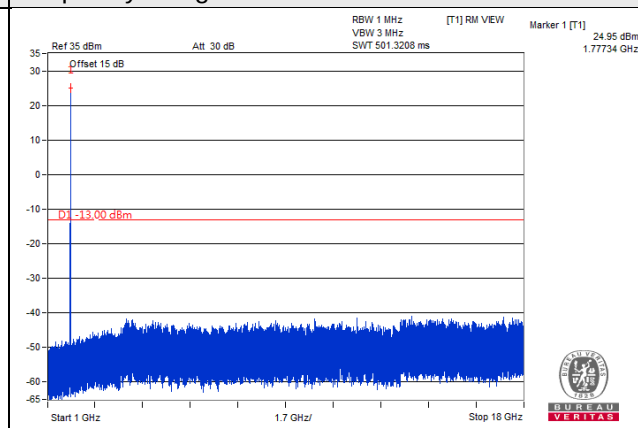


Channel 132657 (1778.5MHz)

Frequency Range : 9kHz~1GHz



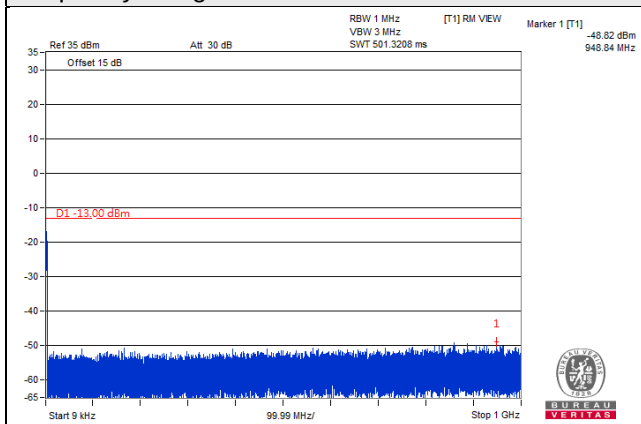
Frequency Range : 1GHz~18GHz



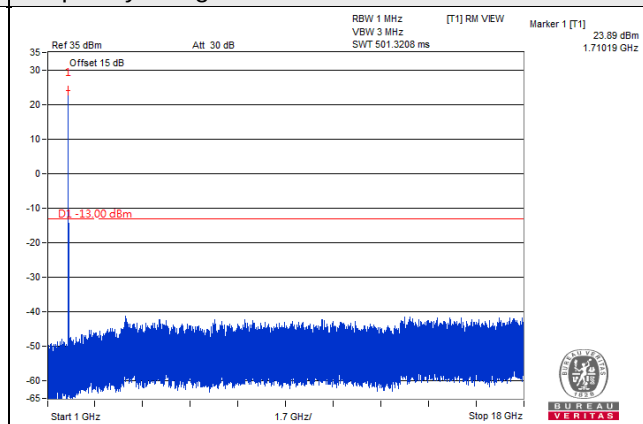
Channel Bandwidth: 5MHz

Channel 131997 (1712.5MHz)

Frequency Range : 9kHz~1GHz

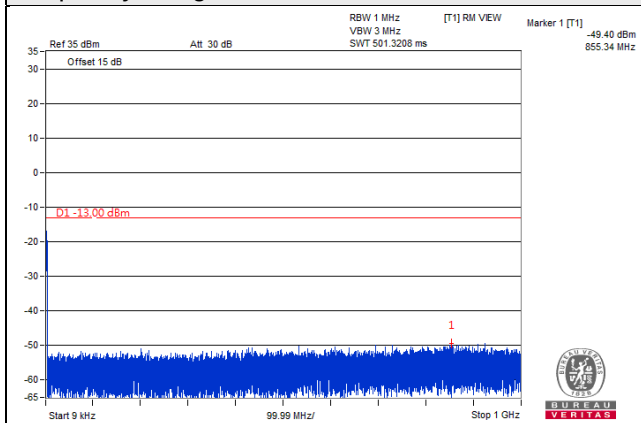


Frequency Range : 1GHz~18GHz

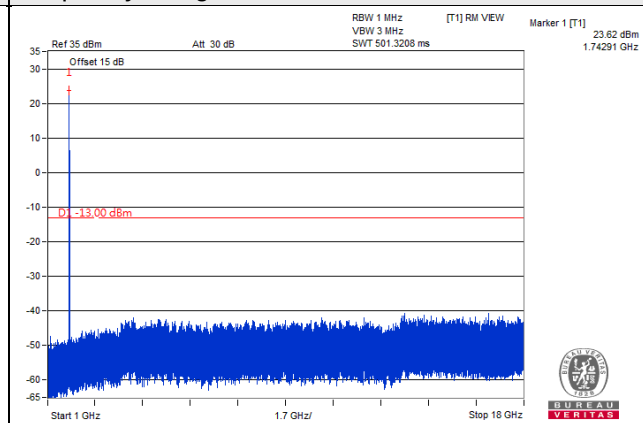


Channel 132322 (1745.0MHz)

Frequency Range : 9kHz~1GHz

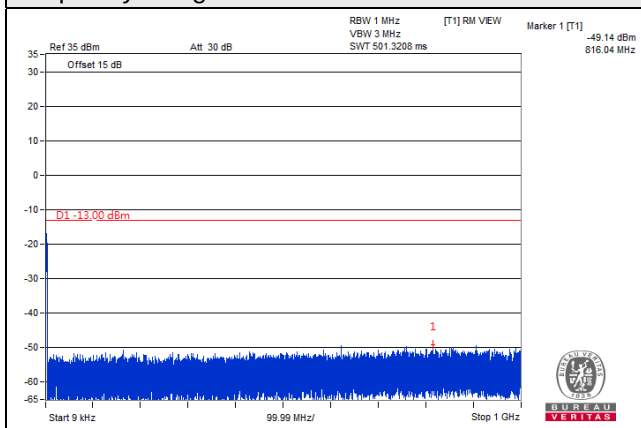


Frequency Range : 1GHz~18GHz

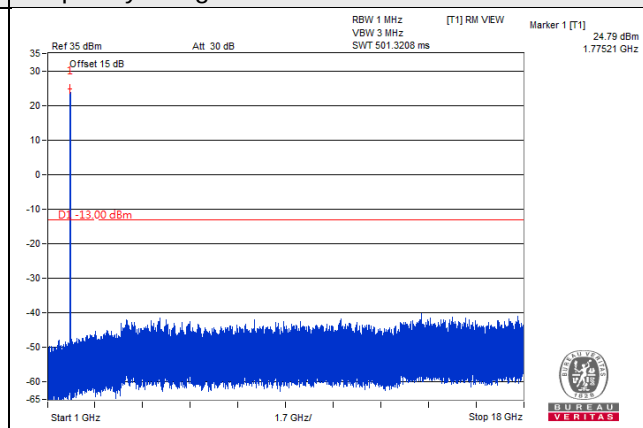


Channel 132647 (1777.5MHz)

Frequency Range : 9kHz~1GHz



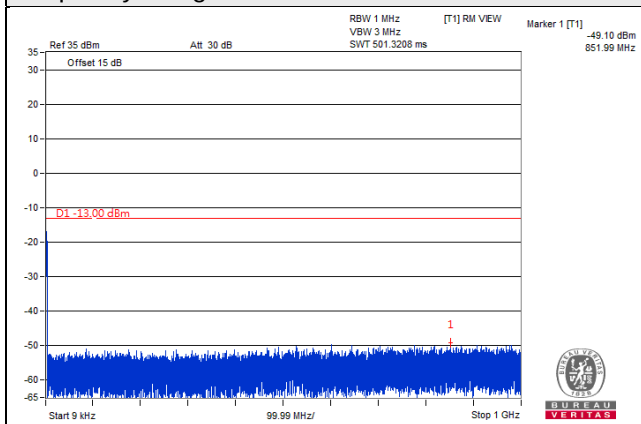
Frequency Range : 1GHz~18GHz



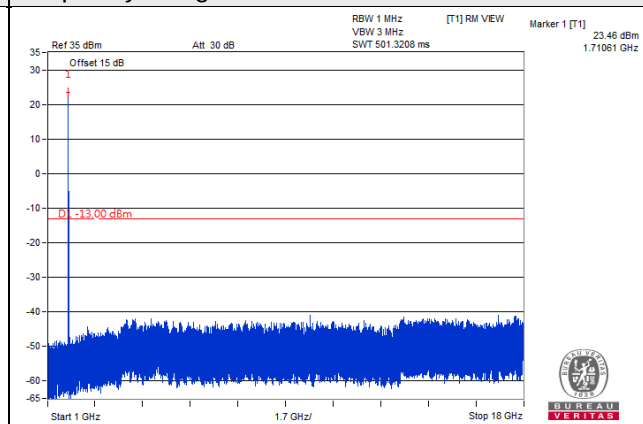
Channel Bandwidth: 10MHz

Channel 132022 (1715.0MHz)

Frequency Range : 9kHz~1GHz

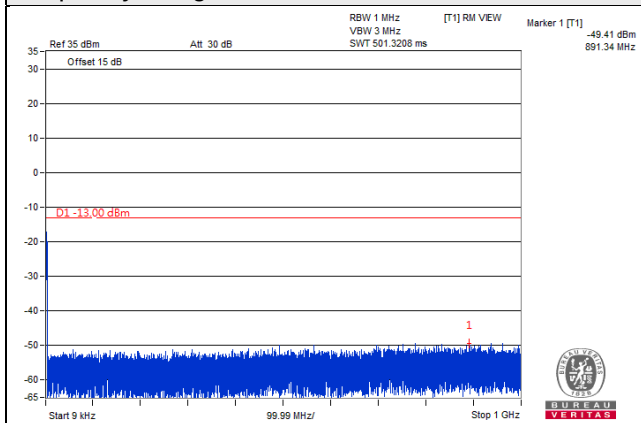


Frequency Range : 1GHz~18GHz

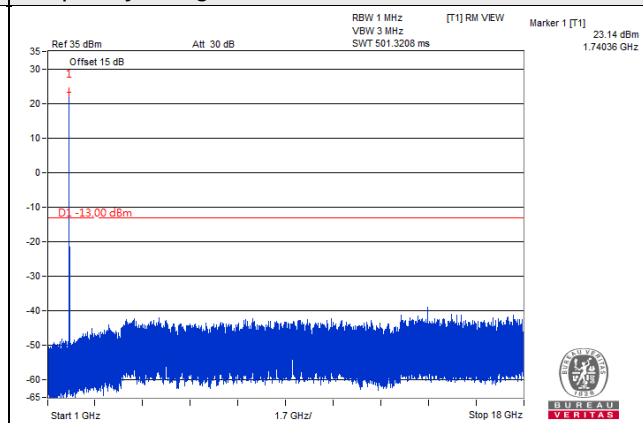


Channel 132322 (1745.0MHz)

Frequency Range : 9kHz~1GHz

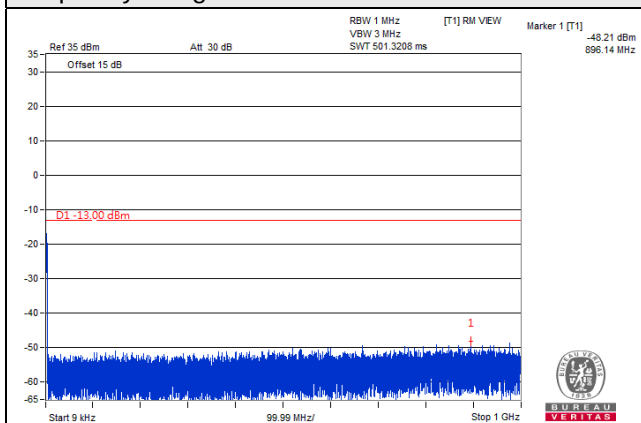


Frequency Range : 1GHz~18GHz

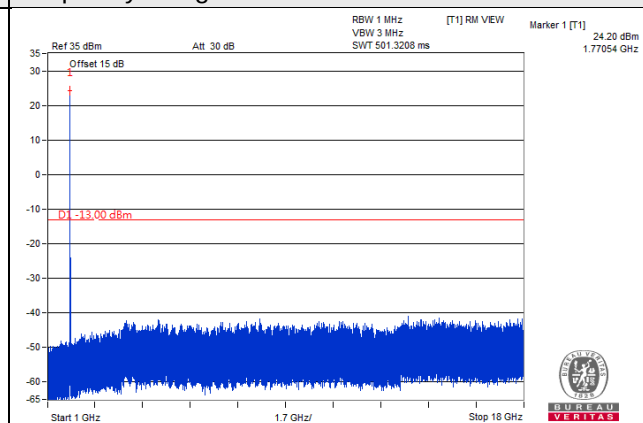


Channel 132622 (1775.0MHz)

Frequency Range : 9kHz~1GHz



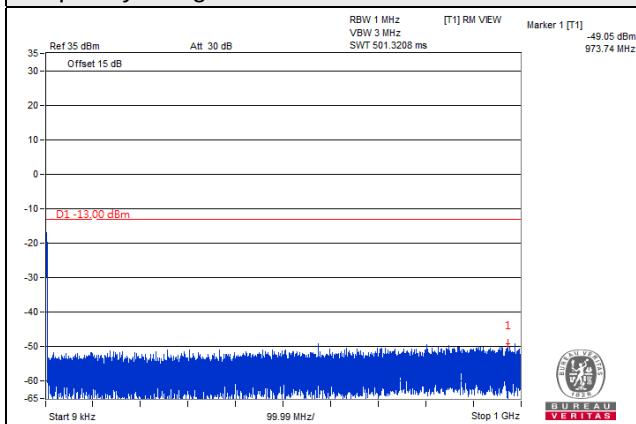
Frequency Range : 1GHz~18GHz



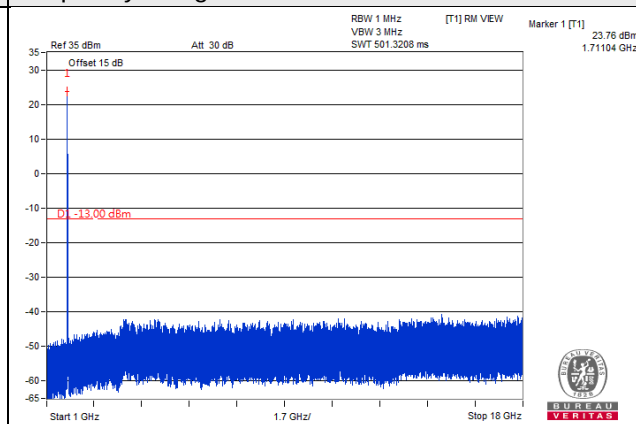
Channel Bandwidth: 15MHz

Channel 132047 (1717.5MHz)

Frequency Range : 9kHz~1GHz

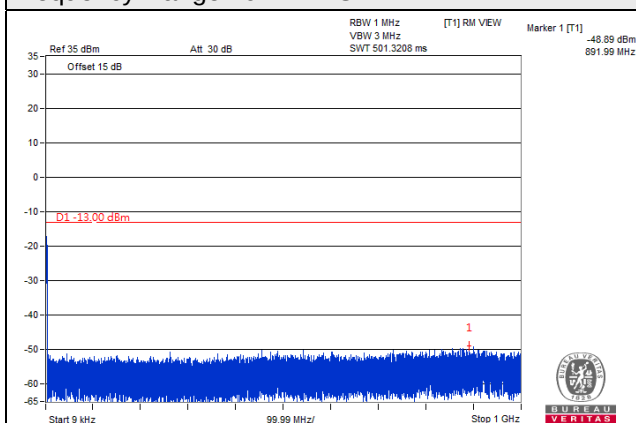


Frequency Range : 1GHz~18GHz

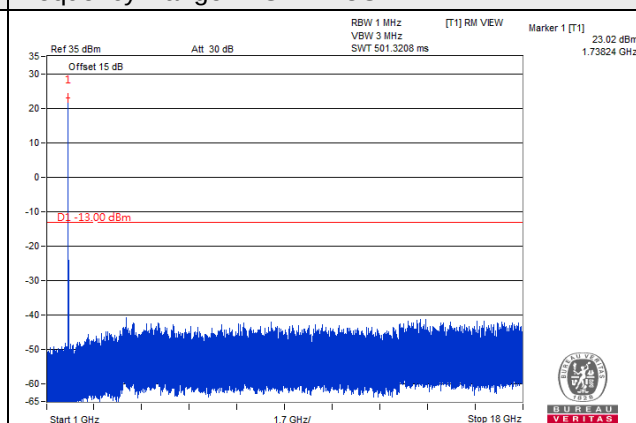


Channel 132322 (1745.0MHz)

Frequency Range : 9kHz~1GHz

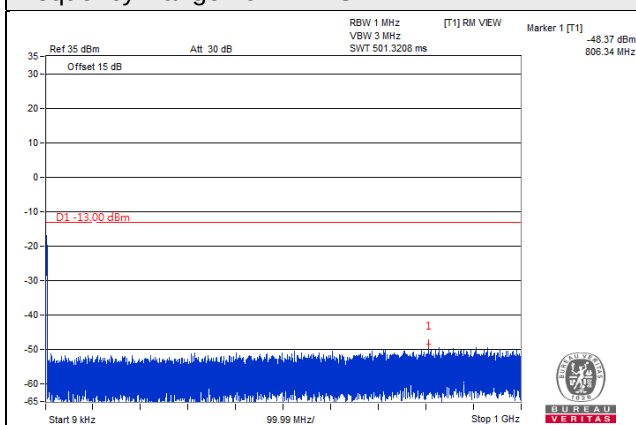


Frequency Range : 1GHz~18GHz

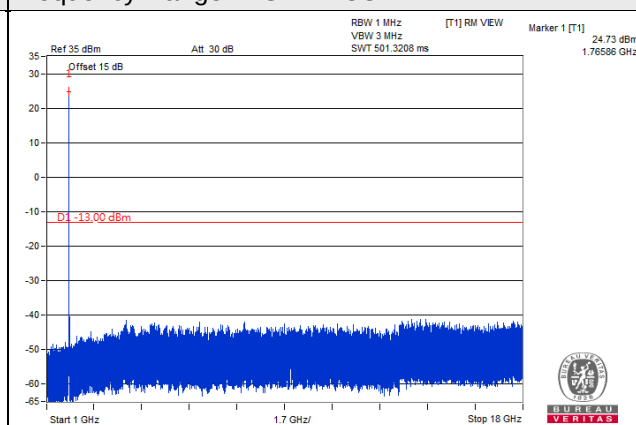


Channel 132597 (1772.5MHz)

Frequency Range : 9kHz~1GHz



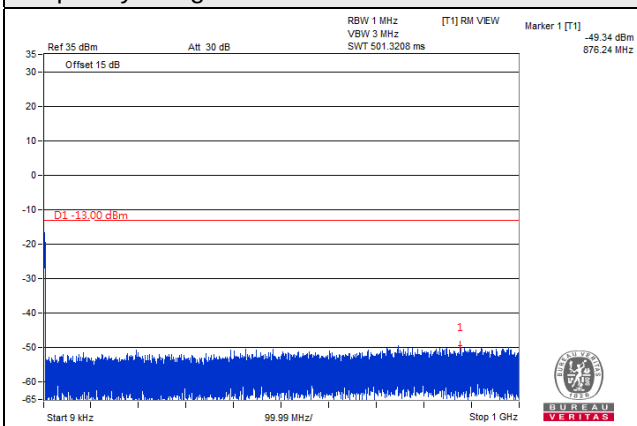
Frequency Range : 1GHz~18GHz



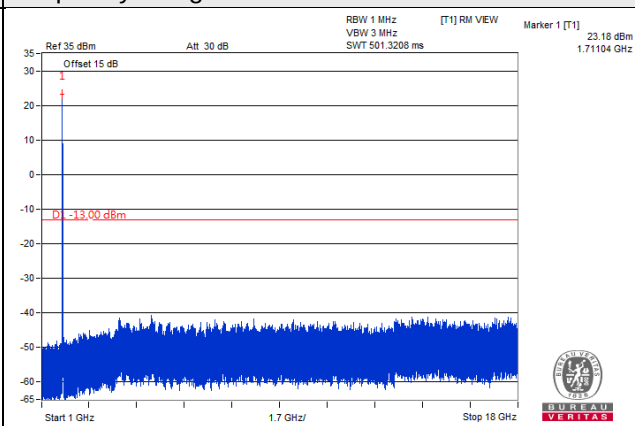
Channel Bandwidth: 20MHz

Channel 132072 (1720.0MHz)

Frequency Range : 9kHz~1GHz

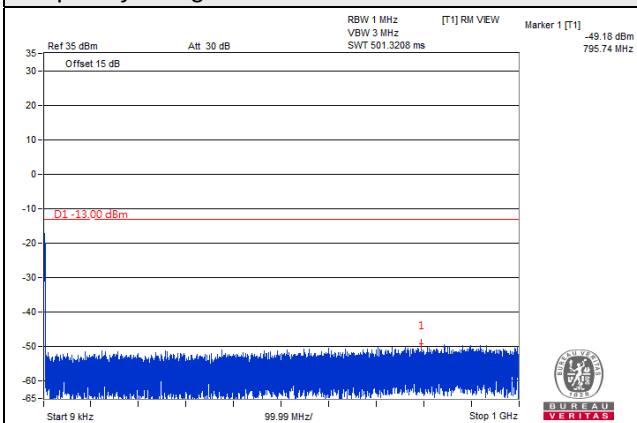


Frequency Range : 1GHz~18GHz

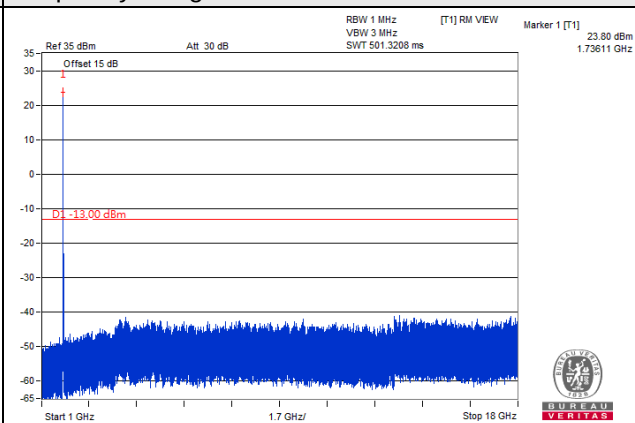


Channel 132322 (1745.0MHz)

Frequency Range : 9kHz~1GHz

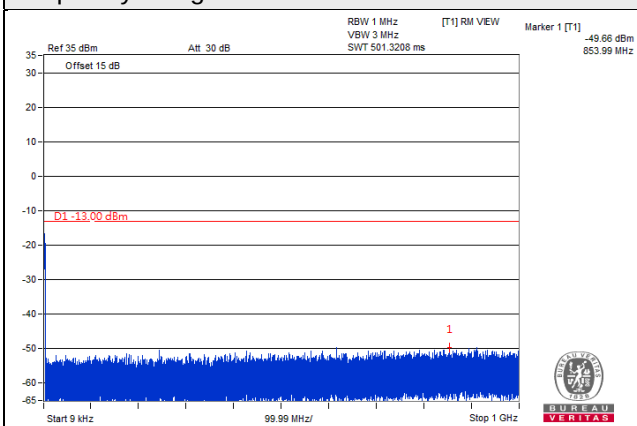


Frequency Range : 1GHz~18GHz

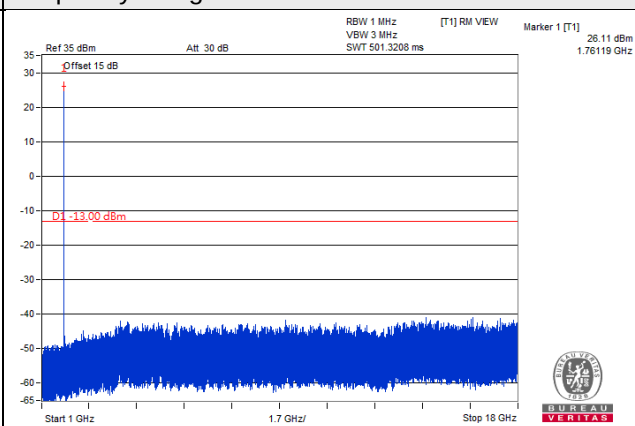


Channel 132572 (1770.0MHz)

Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~18GHz



## **4.8 Radiated Emission Measurement**

### **4.8.1 Limits of Radiated Emission Measurement**

For LTE Band 2:

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. The emission limit equal to  $-13\text{dBm}$ .

For LTE Band 66:

According to FCC 27.53(h) for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log(P)$  dB.

### **4.8.2 Test Procedure**

- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m (below or equal 1 GHz) and/or 1.5 m (above 1 GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G
- c.  $\text{EIRP} = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$ .
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole,  $\text{E.R.P power} = \text{E.I.R.P power} - 2.15\text{dBi}$ .

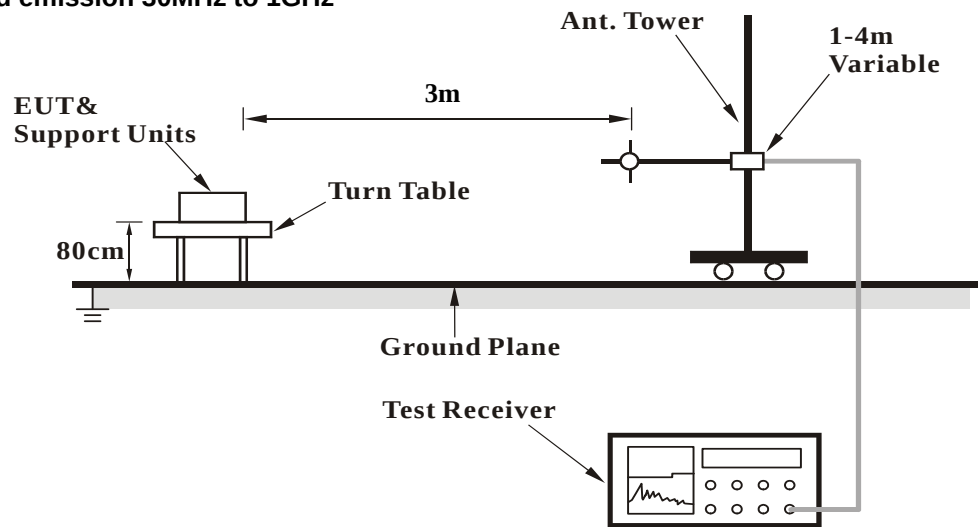
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

### **4.8.3 Deviation from Test Standard**

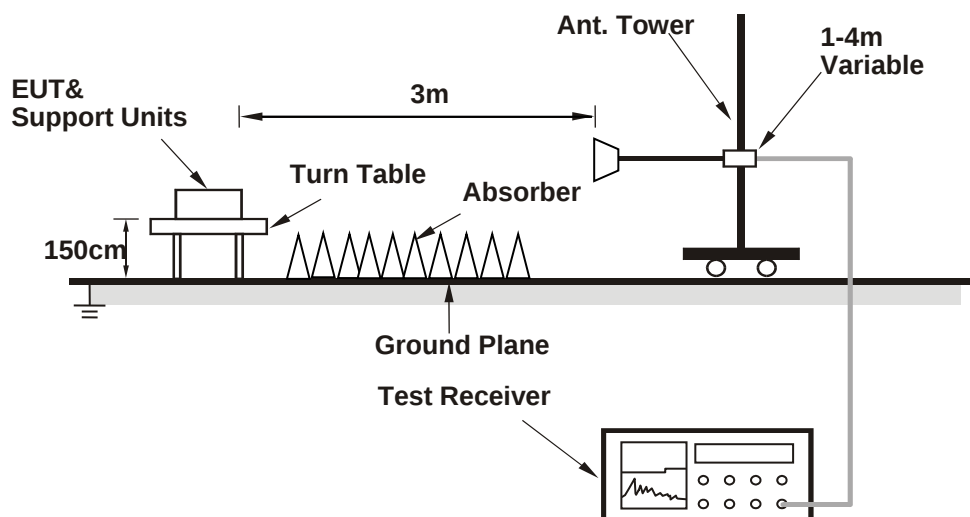
No deviation.

#### 4.8.4 Test Setup

For radiated emission 30MHz to 1GHz



For radiated emission above 1GHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.8.5 Test Results

Below 1GHz

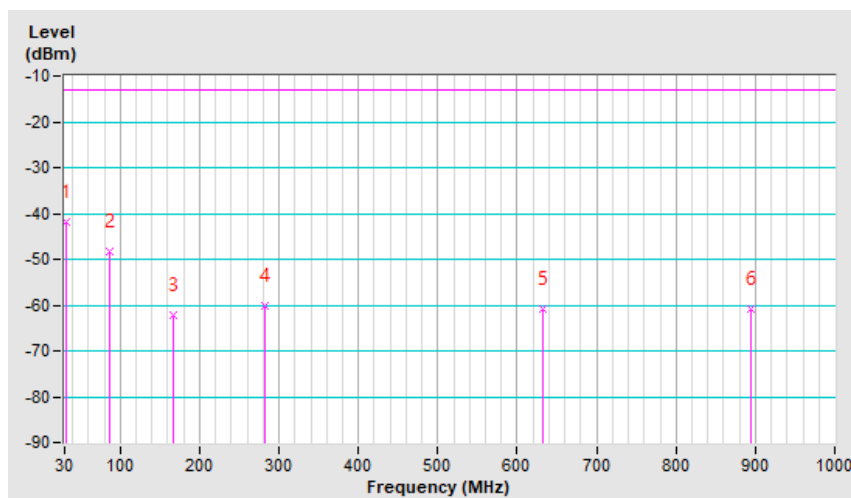
n12, Channel Bandwidth: 5MHz

|                          |                                 |                 |                |
|--------------------------|---------------------------------|-----------------|----------------|
| Mode                     | TX channel 142700<br>(713.5MHz) | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 22deg. C, 68%RH                 | Input Power     | 120Vac, 60Hz   |
| Tested By                | Greg Lin                        |                 |                |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|-----------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 32.91       | -42.7         | -24.0                 | -17.7                  | -41.7     | -13.0       | -28.7       |
| 2                                                   | 87.23       | -39.0         | -48.3                 | -0.1                   | -48.4     | -13.0       | -35.4       |
| 3                                                   | 166.77      | -53.4         | -59.3                 | -2.9                   | -62.2     | -13.0       | -49.2       |
| 4                                                   | 282.20      | -53.9         | -58.6                 | -1.7                   | -60.3     | -13.0       | -47.3       |
| 5                                                   | 632.37      | -61.0         | -64.6                 | 3.6                    | -61.0     | -13.0       | -48.0       |
| 6                                                   | 895.24      | -66.2         | -64.4                 | 3.5                    | -60.9     | -13.0       | -47.9       |

Remarks:

1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

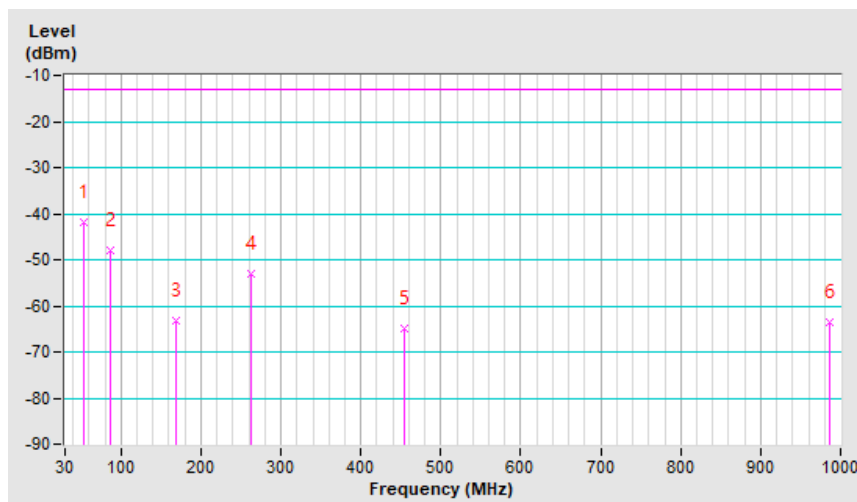


|                          |                                 |                 |                |
|--------------------------|---------------------------------|-----------------|----------------|
| Mode                     | TX channel 142700<br>(713.5MHz) | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 22deg. C, 68%RH                 | Input Power     | 120Vac, 60Hz   |
| Tested By                | Greg Lin                        |                 |                |

| Antenna Polarity & Test Distance: Vertical at 3 M |             |               |                       |                        |           |             |             |
|---------------------------------------------------|-------------|---------------|-----------------------|------------------------|-----------|-------------|-------------|
| No.                                               | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                 | 54.25       | -32.8         | -36.1                 | -5.7                   | -41.8     | -13.0       | -28.8       |
| 2                                                 | 87.23       | -39.6         | -47.9                 | -0.1                   | -48.0     | -13.0       | -35.0       |
| 3                                                 | 168.71      | -57.8         | -60.3                 | -2.8                   | -63.1     | -13.0       | -50.1       |
| 4                                                 | 261.83      | -51.9         | -51.3                 | -1.6                   | -52.9     | -13.0       | -39.9       |
| 5                                                 | 454.86      | -62.4         | -68.3                 | 3.5                    | -64.8     | -13.0       | -51.8       |
| 6                                                 | 985.45      | -70.8         | -67.0                 | 3.5                    | -63.5     | -13.0       | -50.5       |

Remarks:

1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.



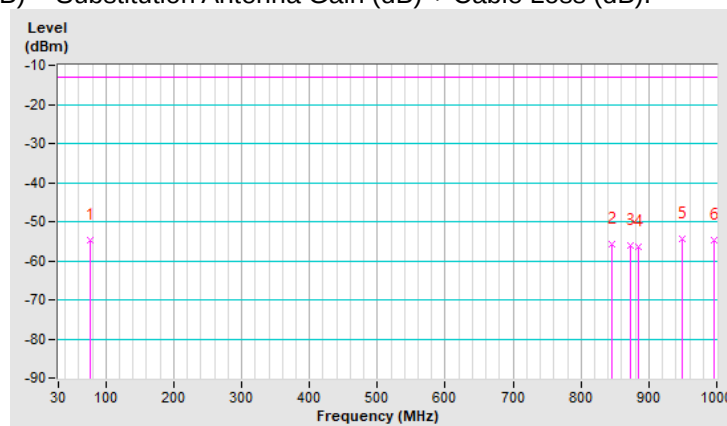
LTE Band 2, Channel Bandwidth: 20MHz

|                          |                                  |                 |                |
|--------------------------|----------------------------------|-----------------|----------------|
| Mode                     | TX channel 18900<br>(1880.00MHz) | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 22deg. C, 68%RH                  | Input Power     | 120Vac, 60Hz   |
| Tested By                | Greg Lin                         |                 |                |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 76.56       | -49.1         | -55.0                 | 0.3                    | -54.7      | -13.0       | -41.7       |
| 2                                                   | 844.80      | -62.4         | -59.3                 | 3.6                    | -55.7      | -13.0       | -42.7       |
| 3                                                   | 871.96      | -63.6         | -59.6                 | 3.4                    | -56.2      | -13.0       | -43.2       |
| 4                                                   | 885.54      | -63.6         | -59.9                 | 3.4                    | -56.5      | -13.0       | -43.5       |
| 5                                                   | 949.56      | -62.6         | -58.0                 | 3.7                    | -54.3      | -13.0       | -41.3       |
| 6                                                   | 996.12      | -63.5         | -57.9                 | 3.3                    | -54.6      | -13.0       | -41.6       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

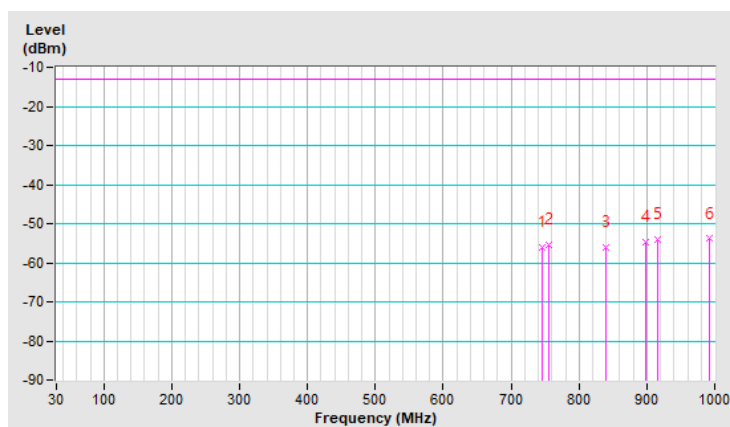


|                          |                                  |                 |                |
|--------------------------|----------------------------------|-----------------|----------------|
| Mode                     | TX channel 18900<br>(1880.00MHz) | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 22deg. C, 68%RH                  | Input Power     | 120Vac, 60Hz   |
| Tested By                | Greg Lin                         |                 |                |

| Antenna Polarity & Test Distance: Vertical at 3 M |             |               |                       |                        |            |             |             |
|---------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                               | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                 | 745.86      | -63.2         | -60.0                 | 3.8                    | -56.2      | -13.0       | -43.2       |
| 2                                                 | 755.56      | -62.6         | -59.3                 | 3.8                    | -55.5      | -13.0       | -42.5       |
| 3                                                 | 838.98      | -63.4         | -59.8                 | 3.7                    | -56.1      | -13.0       | -43.1       |
| 4                                                 | 899.12      | -63.1         | -58.3                 | 3.5                    | -54.8      | -13.0       | -41.8       |
| 5                                                 | 916.58      | -62.7         | -57.8                 | 3.6                    | -54.2      | -13.0       | -41.2       |
| 6                                                 | 992.24      | -63.8         | -57.3                 | 3.4                    | -53.9      | -13.0       | -40.9       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



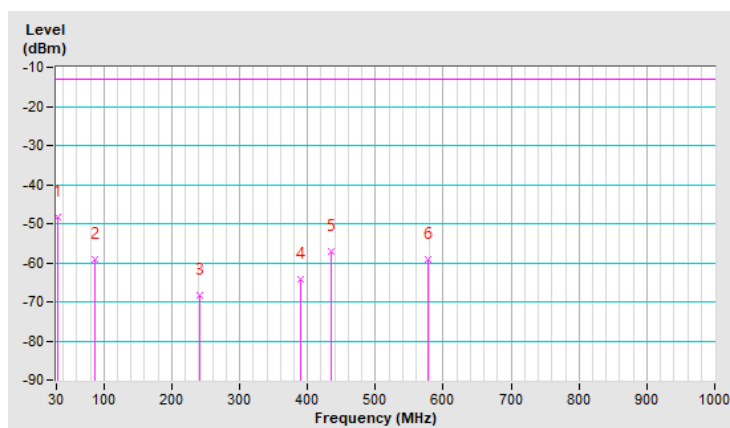
LTE Band 66, Channel Bandwidth: 20MHz

|                          |                                  |                 |                |
|--------------------------|----------------------------------|-----------------|----------------|
| Mode                     | TX channel 132072<br>(1720.0MHz) | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 22deg. C, 68%RH                  | Input Power     | 120Vac, 60Hz   |
| Tested By                | Greg Lin                         |                 |                |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 31.94       | -51.7         | -30.0                 | -18.3                  | -48.3      | -13.0       | -35.3       |
| 2                                                   | 86.26       | -52.3         | -59.2                 | 0.1                    | -59.1      | -13.0       | -46.1       |
| 3                                                   | 241.46      | -61.5         | -67.0                 | -1.4                   | -68.4      | -13.0       | -55.4       |
| 4                                                   | 388.90      | -63.5         | -67.6                 | 3.4                    | -64.2      | -13.0       | -51.2       |
| 5                                                   | 435.46      | -56.7         | -60.6                 | 3.6                    | -57.0      | -13.0       | -44.0       |
| 6                                                   | 577.08      | -60.1         | -62.8                 | 3.7                    | -59.1      | -13.0       | -46.1       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

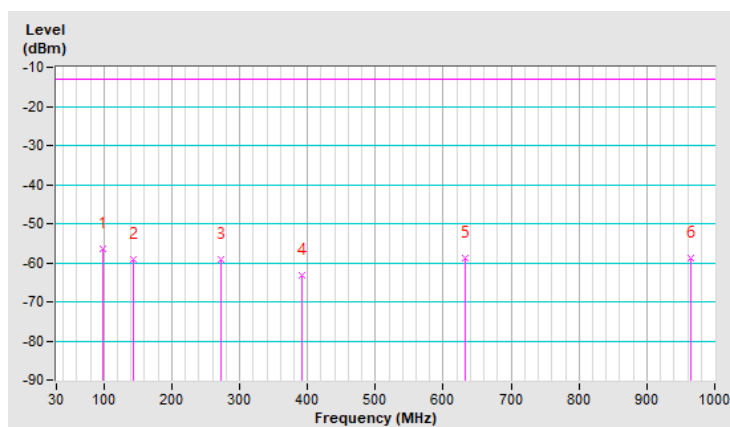


|                          |                                  |                 |                |
|--------------------------|----------------------------------|-----------------|----------------|
| Mode                     | TX channel 132072<br>(1720.0MHz) | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 22deg. C, 68%RH                  | Input Power     | 120Vac, 60Hz   |
| Tested By                | Greg Lin                         |                 |                |

| Antenna Polarity & Test Distance: Vertical at 3 M |             |               |                       |                        |            |             |             |
|---------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                               | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                 | 97.90       | -48.5         | -55.2                 | -1.4                   | -56.6      | -13.0       | -43.6       |
| 2                                                 | 142.52      | -56.8         | -55.9                 | -3.1                   | -59.0      | -13.0       | -46.0       |
| 3                                                 | 272.50      | -61.7         | -57.8                 | -1.5                   | -59.3      | -13.0       | -46.3       |
| 4                                                 | 390.84      | -62.5         | -66.5                 | 3.4                    | -63.1      | -13.0       | -50.1       |
| 5                                                 | 631.40      | -63.8         | -62.5                 | 3.6                    | -58.9      | -13.0       | -45.9       |
| 6                                                 | 965.08      | -67.8         | -62.4                 | 3.6                    | -58.8      | -13.0       | -45.8       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).



Above 1GHz  
n12, Channel Bandwidth: 5MHz

|                          |                                 |                 |              |
|--------------------------|---------------------------------|-----------------|--------------|
| Mode                     | TX channel 140300<br>(701.5MHz) | Frequency Range | 1GHz ~ 18GHz |
| Environmental Conditions | 22deg. C, 68%RH                 | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                        |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|-----------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1403.00     | -62.5         | -56.2                 | 0.9                    | -55.3     | -13.0       | -42.3       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1403.00     | -59.9         | -54.8                 | 0.9                    | -53.9     | -13.0       | -40.9       |

Remarks:

1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

|                          |                                 |                 |              |
|--------------------------|---------------------------------|-----------------|--------------|
| Mode                     | TX channel 141500<br>(707.5MHz) | Frequency Range | 1GHz ~ 18GHz |
| Environmental Conditions | 22deg. C, 68%RH                 | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                        |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|-----------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1415.00     | -63.0         | -56.5                 | 0.9                    | -55.6     | -13.0       | -42.6       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1415.00     | -59.8         | -54.4                 | 0.9                    | -53.5     | -13.0       | -40.5       |

Remarks:

1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

|                          |                                 |                 |              |
|--------------------------|---------------------------------|-----------------|--------------|
| Mode                     | TX channel 142700<br>(713.5MHz) | Frequency Range | 1GHz ~ 18GHz |
| Environmental Conditions | 22deg. C, 68%RH                 | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                        |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|-----------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1427.00     | -62.9         | -56.2                 | 1.0                    | -55.2     | -13.0       | -42.2       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1427.00     | -59.8         | -54.2                 | 1.0                    | -53.2     | -13.0       | -40.2       |

Remarks:

1.  $ERP (dBm) = S.G \text{ Value (dBm)} + \text{Correction Factor (dB)}$ .
2.  $\text{Correction Factor (dB)} = \text{Substitution Antenna Gain (dB)} - \text{Cable Loss (dB)} + 2.15dB$ .

n12, Channel Bandwidth: 10MHz

|                          |                                 |                 |              |
|--------------------------|---------------------------------|-----------------|--------------|
| Mode                     | TX channel 140800<br>(704.0MHz) | Frequency Range | 1GHz ~ 18GHz |
| Environmental Conditions | 22deg. C, 68%RH                 | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                        |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|-----------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1408.00     | -62.5         | -56.0                 | 0.9                    | -55.1     | -25.0       | -30.1       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1408.00     | -59.5         | -54.3                 | 0.9                    | -53.4     | -25.0       | -28.4       |

Remarks:

1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

|                          |                                 |                 |              |
|--------------------------|---------------------------------|-----------------|--------------|
| Mode                     | TX channel 141500<br>(707.5MHz) | Frequency Range | 1GHz ~ 18GHz |
| Environmental Conditions | 22deg. C, 68%RH                 | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                        |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|-----------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1415.00     | -62.8         | -56.2                 | 0.9                    | -55.3     | -25.0       | -30.3       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1415.00     | -59.2         | -53.9                 | 0.9                    | -53.0     | -25.0       | -28.0       |

Remarks:

1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

|                          |                                 |                 |              |
|--------------------------|---------------------------------|-----------------|--------------|
| Mode                     | TX channel 142200<br>(711.0MHz) | Frequency Range | 1GHz ~ 18GHz |
| Environmental Conditions | 22deg. C, 68%RH                 | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                        |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|-----------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1422.00     | -62.9         | -56.4                 | 1.0                    | -55.4     | -25.0       | -30.4       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1422.00     | -59.7         | -54.2                 | 1.0                    | -53.2     | -25.0       | -28.2       |

Remarks:

1.  $ERP (dBm) = S.G \text{ Value (dBm)} + \text{Correction Factor (dB)}$ .
2.  $\text{Correction Factor (dB)} = \text{Substitution Antenna Gain (dB)} - \text{Cable Loss (dB)} + 2.15dB$ .

n12, Channel Bandwidth: 15MHz

|                          |                                 |                 |              |
|--------------------------|---------------------------------|-----------------|--------------|
| Mode                     | TX channel 141300<br>(706.5MHz) | Frequency Range | 1GHz ~ 18GHz |
| Environmental Conditions | 22deg. C, 68%RH                 | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                        |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|-----------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1413.00     | -63.0         | -56.5                 | 0.9                    | -55.6     | -13.0       | -42.6       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1413.00     | -59.8         | -54.4                 | 0.9                    | -53.5     | -13.0       | -40.5       |

Remarks:

1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

|                          |                                 |                 |              |
|--------------------------|---------------------------------|-----------------|--------------|
| Mode                     | TX channel 141500<br>(707.5MHz) | Frequency Range | 1GHz ~ 18GHz |
| Environmental Conditions | 22deg. C, 68%RH                 | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                        |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|-----------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1415.00     | -62.8         | -56.2                 | 0.9                    | -55.3     | -13.0       | -42.3       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1415.00     | -59.9         | -54.5                 | 0.9                    | -53.6     | -13.0       | -40.6       |

Remarks:

1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

|                          |                                 |                 |              |
|--------------------------|---------------------------------|-----------------|--------------|
| Mode                     | TX channel 141700<br>(708.5MHz) | Frequency Range | 1GHz ~ 18GHz |
| Environmental Conditions | 22deg. C, 68%RH                 | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                        |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|-----------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1417.00     | -62.3         | -55.8                 | 0.9                    | -54.9     | -13.0       | -41.9       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1417.00     | -59.5         | -54.0                 | 0.9                    | -53.1     | -13.0       | -40.1       |

Remarks:

1.  $ERP (dBm) = S.G \text{ Value (dBm)} + \text{Correction Factor (dB)}$ .
2.  $\text{Correction Factor (dB)} = \text{Substitution Antenna Gain (dB)} - \text{Cable Loss (dB)} + 2.15dB$ .

LTE Band 2, Channel Bandwidth: 1.4MHz

|                          |                                  |                 |              |
|--------------------------|----------------------------------|-----------------|--------------|
| Mode                     | TX channel 18607<br>(1850.70MHz) | Frequency Range | 1GHz ~ 20GHz |
| Environmental Conditions | 22deg. C, 68%RH                  | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                         |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3701.40     | -61.4         | -52.9                 | 1.4                    | -51.5      | -13.0       | -38.5       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3701.40     | -59.0         | -50.8                 | 1.4                    | -49.4      | -13.0       | -36.4       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                                  |                 |              |
|--------------------------|----------------------------------|-----------------|--------------|
| Mode                     | TX channel 18900<br>(1880.00MHz) | Frequency Range | 1GHz ~ 20GHz |
| Environmental Conditions | 22deg. C, 68%RH                  | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                         |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3760.00     | -61.3         | -52.8                 | 1.3                    | -51.5      | -13.0       | -38.5       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3760.00     | -59.5         | -51.2                 | 1.3                    | -49.9      | -13.0       | -36.9       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                                  |                 |              |
|--------------------------|----------------------------------|-----------------|--------------|
| Mode                     | TX channel 19193<br>(1909.30MHz) | Frequency Range | 1GHz ~ 20GHz |
| Environmental Conditions | 22deg. C, 68%RH                  | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                         |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3818.60     | -60.7         | -52.4                 | 1.4                    | -51.0      | -13.0       | -38.0       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3818.60     | -59.7         | -51.5                 | 1.4                    | -50.1      | -13.0       | -37.1       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

LTE Band 2, Channel Bandwidth 5MHz

|                          |                                  |                 |              |
|--------------------------|----------------------------------|-----------------|--------------|
| Mode                     | TX channel 18625<br>(1852.50MHz) | Frequency Range | 1GHz ~ 20GHz |
| Environmental Conditions | 22deg. C, 68%RH                  | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                         |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3705.00     | -61.3         | -52.8                 | 1.4                    | -51.4      | -13.0       | -38.4       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3705.00     | -59.4         | -51.2                 | 1.4                    | -49.8      | -13.0       | -36.8       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                                  |                 |              |
|--------------------------|----------------------------------|-----------------|--------------|
| Mode                     | TX channel 18900<br>(1880.00MHz) | Frequency Range | 1GHz ~ 20GHz |
| Environmental Conditions | 22deg. C, 68%RH                  | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                         |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3760.00     | -60.7         | -52.2                 | 1.3                    | -50.9      | -13.0       | -37.9       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3760.00     | -59.1         | -50.8                 | 1.3                    | -49.5      | -13.0       | -36.5       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                                  |                 |              |
|--------------------------|----------------------------------|-----------------|--------------|
| Mode                     | TX channel 19175<br>(1907.50MHz) | Frequency Range | 1GHz ~ 20GHz |
| Environmental Conditions | 22deg. C, 68%RH                  | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                         |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3815.00     | -61.5         | -53.2                 | 1.4                    | -51.8      | -13.0       | -38.8       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3815.00     | -59.2         | -51.0                 | 1.4                    | -49.6      | -13.0       | -36.6       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

LTE Band 2, Channel Bandwidth 20MHz

|                          |                                  |                 |              |
|--------------------------|----------------------------------|-----------------|--------------|
| Mode                     | TX channel 18700<br>(1860.00MHz) | Frequency Range | 1GHz ~ 20GHz |
| Environmental Conditions | 22deg. C, 68%RH                  | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                         |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3720.00     | -61.5         | -53.0                 | 1.4                    | -51.6      | -13.0       | -38.6       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3720.00     | -59.9         | -51.7                 | 1.4                    | -50.3      | -13.0       | -37.3       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                                  |                 |              |
|--------------------------|----------------------------------|-----------------|--------------|
| Mode                     | TX channel 18900<br>(1880.00MHz) | Frequency Range | 1GHz ~ 20GHz |
| Environmental Conditions | 22deg. C, 68%RH                  | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                         |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |                |               |                       |                        |              |              |              |
|-----------------------------------------------------|----------------|---------------|-----------------------|------------------------|--------------|--------------|--------------|
| No.                                                 | Freq. (MHz)    | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm)   | Limit (dBm)  | Margin (dB)  |
| 1                                                   | 3760.00        | -60.9         | -52.4                 | 1.3                    | -51.1        | -13.0        | -38.1        |
| Antenna Polarity & Test Distance: Vertical at 3 M   |                |               |                       |                        |              |              |              |
| No.                                                 | Freq. (MHz)    | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm)   | Limit (dBm)  | Margin (dB)  |
| <b>1</b>                                            | <b>3760.00</b> | <b>-58.9</b>  | <b>-50.6</b>          | <b>1.3</b>             | <b>-49.3</b> | <b>-13.0</b> | <b>-36.3</b> |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                                  |                 |              |
|--------------------------|----------------------------------|-----------------|--------------|
| Mode                     | TX channel 19100<br>(1900.00MHz) | Frequency Range | 1GHz ~ 20GHz |
| Environmental Conditions | 22deg. C, 68%RH                  | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                         |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3800.00     | -61.0         | -52.6                 | 1.3                    | -51.3      | -13.0       | -38.3       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3800.00     | -59.3         | -51.1                 | 1.3                    | -49.8      | -13.0       | -36.8       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

LTE Band 66, Channel Bandwidth: 1.4MHz

|                          |                                  |                 |              |
|--------------------------|----------------------------------|-----------------|--------------|
| Mode                     | TX channel 131979<br>(1710.7MHz) | Frequency Range | 1GHz ~ 18GHz |
| Environmental Conditions | 22deg. C, 68%RH                  | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                         |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3421.40     | -62.6         | -54.0                 | 1.3                    | -52.7      | -13.0       | -39.7       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3421.40     | -60.5         | -52.4                 | 1.3                    | -51.1      | -13.0       | -38.1       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

|                          |                                  |                 |              |
|--------------------------|----------------------------------|-----------------|--------------|
| Mode                     | TX channel 132322<br>(1745.0MHz) | Frequency Range | 1GHz ~ 18GHz |
| Environmental Conditions | 22deg. C, 68%RH                  | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                         |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3490.00     | -62.5         | -54.3                 | 1.5                    | -52.8      | -13.0       | -39.8       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3490.00     | -60.3         | -52.7                 | 1.5                    | -51.2      | -13.0       | -38.2       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

|                          |                                  |                 |              |
|--------------------------|----------------------------------|-----------------|--------------|
| Mode                     | TX channel 132665<br>(1779.3MHz) | Frequency Range | 1GHz ~ 18GHz |
| Environmental Conditions | 22deg. C, 68%RH                  | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                         |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3558.60     | -62.7         | -54.2                 | 1.4                    | -52.8      | -13.0       | -39.8       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3558.60     | -60.4         | -52.6                 | 1.4                    | -51.2      | -13.0       | -38.2       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

LTE Band 66, Channel Bandwidth: 5MHz

|                          |                                  |                 |              |
|--------------------------|----------------------------------|-----------------|--------------|
| Mode                     | TX channel 131997<br>(1712.5MHz) | Frequency Range | 1GHz ~ 18GHz |
| Environmental Conditions | 22deg. C, 68%RH                  | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                         |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3425.00     | -62.3         | -53.7                 | 1.3                    | -52.4      | -13.0       | -39.4       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3425.00     | -60.8         | -52.7                 | 1.3                    | -51.4      | -13.0       | -38.4       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

|                          |                                  |                 |              |
|--------------------------|----------------------------------|-----------------|--------------|
| Mode                     | TX channel 132322<br>(1745.0MHz) | Frequency Range | 1GHz ~ 18GHz |
| Environmental Conditions | 22deg. C, 68%RH                  | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                         |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3490.00     | -62.7         | -54.5                 | 1.5                    | -53.0      | -13.0       | -40.0       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3490.00     | -60.4         | -52.8                 | 1.5                    | -51.3      | -13.0       | -38.3       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

|                          |                                  |                 |              |
|--------------------------|----------------------------------|-----------------|--------------|
| Mode                     | TX channel 132647<br>(1777.5MHz) | Frequency Range | 1GHz ~ 18GHz |
| Environmental Conditions | 22deg. C, 68%RH                  | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                         |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3555.00     | -62.6         | -54.2                 | 1.4                    | -52.8      | -13.0       | -39.8       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3555.00     | -60.8         | -53.0                 | 1.4                    | -51.6      | -13.0       | -38.6       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

LTE Band 66, Channel Bandwidth: 20MHz

|                          |                                  |                 |              |
|--------------------------|----------------------------------|-----------------|--------------|
| Mode                     | TX channel 132072<br>(1720.0MHz) | Frequency Range | 1GHz ~ 18GHz |
| Environmental Conditions | 22deg. C, 68%RH                  | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                         |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3440.00     | -62.2         | -53.7                 | 1.3                    | -52.4      | -13.0       | -39.4       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3440.00     | -60.3         | -52.3                 | 1.3                    | -51.0      | -13.0       | -38.0       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

|                          |                                  |                 |              |
|--------------------------|----------------------------------|-----------------|--------------|
| Mode                     | TX channel 132322<br>(1745.0MHz) | Frequency Range | 1GHz ~ 18GHz |
| Environmental Conditions | 22deg. C, 68%RH                  | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                         |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3490.00     | -62.4         | -54.2                 | 1.5                    | -52.7      | -13.0       | -39.7       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3490.00     | -60.7         | -53.1                 | 1.5                    | -51.6      | -13.0       | -38.6       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

|                          |                                  |                 |              |
|--------------------------|----------------------------------|-----------------|--------------|
| Mode                     | TX channel 132572<br>(1770.0MHz) | Frequency Range | 1GHz ~ 18GHz |
| Environmental Conditions | 22deg. C, 68%RH                  | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                         |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3540.00     | -62.4         | -54.0                 | 1.4                    | -52.6      | -13.0       | -39.6       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3540.00     | -60.5         | -52.7                 | 1.4                    | -51.3      | -13.0       | -38.3       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

## 5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

## Appendix – Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited and approved according to ISO/IEC 17025.

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The address and road map of all our labs can be found in our web site also.

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