

## FCC Test Report

### (PART 27)

**Report No.:** RF170106C02-4

**FCC ID:** ZMOL850GL

**Test Model:** L850-GL

**Received Date:** Jan. 06, 2017

**Test Date:** Jan. 10, 2017 ~ Feb. 18, 2017

**Issued Date:** Feb. 21, 2017

**Applicant:** Fibocom Wireless Inc.

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Shenzhen, China

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

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

**Test Location:** No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan  
Hsien 333, Taiwan, R.O.C.



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### Release Control Record

| Issue No.     | Description      | Date Issued   |
|---------------|------------------|---------------|
| RF170106C02-4 | Original Release | Feb. 21, 2017 |

## 1 Certificate of Conformity

**Product:** LTE module

**Brand:** Fibocom

**Test Model:** L850-GL

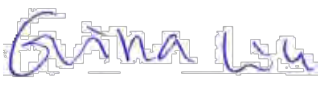
**Sample Status:** Identical Prototype

**Applicant:** Fibocom Wireless Inc.

**Test Date:** Jan. 10, 2017 ~ Feb. 18, 2017

**Standards:** FCC Part 27, Subpart C, 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 EMC characteristics under the conditions specified in this report.

**Prepared by :**  , **Date:** Feb. 21, 2017  
Gina Liu / Specialist

**Approved by :**  , **Date:** Feb. 21, 2017  
David Huang / Project Engineer

## 2 Summary of Test Results

| Applied Standard: FCC Part 27 & Part 2 (WCDMA) |                                     |        |                                                                                       |
|------------------------------------------------|-------------------------------------|--------|---------------------------------------------------------------------------------------|
| FCC Clause                                     | Test Item                           | Result | Remarks                                                                               |
| 2.1046<br>27.50(d)(4)                          | Equivalent Isotropic Radiated Power | Pass   | Meet the requirement of limit.                                                        |
| 2.1055<br>27.54                                | Frequency Stability                 | Pass   | Meet the requirement of limit.                                                        |
| 2.1049<br>27.53(h)                             | Occupied Bandwidth                  | Pass   | Meet the requirement of limit.                                                        |
| 27.50(d)(5)                                    | Peak to Average Ratio               | Pass   | Meet the requirement of limit.                                                        |
| 27.53(h)                                       | Band Edge Measurements              | Pass   | Meet the requirement of limit.                                                        |
| 2.1051<br>27.53(h)                             | Conducted Spurious Emissions        | Pass   | Meet the requirement of limit.                                                        |
| 2.1053<br>27.53(h)                             | Radiated Spurious Emissions         | Pass   | Meet the requirement of limit.<br>Minimum passing margin is -30.49 dB at 3505.20 MHz. |

| Applied Standard: FCC Part 27 & Part 2 (LTE 4) |                              |        |                                                                                      |
|------------------------------------------------|------------------------------|--------|--------------------------------------------------------------------------------------|
| FCC Clause                                     | Test Item                    | Result | Remarks                                                                              |
| 2.1046<br>27.50(d)(4)                          | Maximum Peak Output Power    | Pass   | Meet the requirement of limit.                                                       |
| 2.1055<br>27.54                                | Frequency Stability          | Pass   | Meet the requirement of limit.                                                       |
| 2.1049<br>27.53(h)                             | Occupied Bandwidth           | Pass   | Meet the requirement of limit.                                                       |
| 27.50(d)(5)                                    | Peak to Average Ratio        | Pass   | Meet the requirement of limit.                                                       |
| 27.53(h)                                       | Band Edge Measurements       | Pass   | Meet the requirement of limit.                                                       |
| 2.1051<br>27.53(h)                             | Conducted Spurious Emissions | Pass   | Meet the requirement of limit.                                                       |
| 2.1053<br>27.53(h)                             | Radiated Spurious Emissions  | Pass   | Meet the requirement of limit.<br>Minimum passing margin is -33.71 dB at 235.64 MHz. |

| Applied Standard: FCC Part 27 & Part 2 (LTE 12) |                              |        |                                                                                      |
|-------------------------------------------------|------------------------------|--------|--------------------------------------------------------------------------------------|
| FCC Clause                                      | Test Item                    | Result | Remarks                                                                              |
| 2.1046<br>27.50(C)(10)                          | Maximum Peak Output Power    | Pass   | Meet the requirement of limit.                                                       |
| 2.1055<br>27.54                                 | Frequency Stability          | Pass   | Meet the requirement of limit.                                                       |
| 2.1049<br>27.53(g)                              | Occupied Bandwidth           | Pass   | Meet the requirement of limit.                                                       |
| 27.50(d)(5)                                     | Peak to Average Ratio        | Pass   | Meet the requirement of limit.                                                       |
| 27.53(g)                                        | Band Edge Measurements       | Pass   | Meet the requirement of limit.                                                       |
| 2.1051<br>27.53(g)                              | Conducted Spurious Emissions | Pass   | Meet the requirement of limit.                                                       |
| 2.1053<br>27.53(g)                              | Radiated Spurious Emissions  | Pass   | Meet the requirement of limit.<br>Minimum passing margin is -33.31 dB at 222.06 MHz. |

| Applied Standard: FCC Part 27 & Part 2 (LTE 13) |                              |        |                                                                                    |
|-------------------------------------------------|------------------------------|--------|------------------------------------------------------------------------------------|
| FCC Clause                                      | Test Item                    | Result | Remarks                                                                            |
| 2.1046<br>27.50(b)(10)                          | Maximum Peak Output Power    | Pass   | Meet the requirement of limit.                                                     |
| 2.1055<br>27.54                                 | Frequency Stability          | Pass   | Meet the requirement of limit.                                                     |
| 2.1049<br>27.53(g)                              | Occupied Bandwidth           | Pass   | Meet the requirement of limit.                                                     |
| 27.50(d)(5)                                     | Peak to Average Ratio        | Pass   | Meet the requirement of limit.                                                     |
| 27.53(g)                                        | Band Edge Measurements       | Pass   | Meet the requirement of limit.                                                     |
| 2.1051<br>27.53(g)                              | Conducted Spurious Emissions | Pass   | Meet the requirement of limit.                                                     |
| 2.1053<br>27.53(g)(f)                           | Radiated Spurious Emissions  | Pass   | Meet the requirement of limit.<br>Minimum passing margin is -21.05 dB at 1564 MHz. |

| Applied Standard: FCC Part 27 & Part 2 (LTE 17) |                              |        |                                                                                      |
|-------------------------------------------------|------------------------------|--------|--------------------------------------------------------------------------------------|
| FCC Clause                                      | Test Item                    | Result | Remarks                                                                              |
| 2.1046<br>27.50(C)(10)                          | Maximum Peak Output Power    | Pass   | Meet the requirement of limit.                                                       |
| 2.1055<br>27.54                                 | Frequency Stability          | Pass   | Meet the requirement of limit.                                                       |
| 2.1049<br>27.53(g)                              | Occupied Bandwidth           | Pass   | Meet the requirement of limit.                                                       |
| 27.50(d)(5)                                     | Peak to Average Ratio        | Pass   | Meet the requirement of limit.                                                       |
| 27.53(g)                                        | Band Edge Measurements       | Pass   | Meet the requirement of limit.                                                       |
| 2.1051<br>27.53(g)                              | Conducted Spurious Emissions | Pass   | Meet the requirement of limit.                                                       |
| 2.1053<br>27.53(g)                              | Radiated Spurious Emissions  | Pass   | Meet the requirement of limit.<br>Minimum passing margin is -33.22 dB at 236.61 MHz. |

| Applied Standard: FCC Part 27 & Part 2 (LTE 66) |                              |        |                                                                                    |
|-------------------------------------------------|------------------------------|--------|------------------------------------------------------------------------------------|
| FCC Clause                                      | Test Item                    | Result | Remarks                                                                            |
| 2.1046<br>27.50(d)(4)                           | Maximum Peak Output Power    | Pass   | Meet the requirement of limit.                                                     |
| 2.1055<br>27.54                                 | Frequency Stability          | Pass   | Meet the requirement of limit.                                                     |
| 2.1049<br>27.53(h)                              | Occupied Bandwidth           | Pass   | Meet the requirement of limit.                                                     |
| 27.50(d)(5)                                     | Peak to Average Ratio        | Pass   | Meet the requirement of limit.                                                     |
| 27.53(h)                                        | Band Edge Measurements       | Pass   | Meet the requirement of limit.                                                     |
| 2.1051<br>27.53(h)                              | Conducted Spurious Emissions | Pass   | Meet the requirement of limit.                                                     |
| 2.1053<br>27.53(h)                              | Radiated Spurious Emissions  | Pass   | Meet the requirement of limit.<br>Minimum passing margin is -30.42 dB at 3540 MHz. |

## 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) ( $\pm$ ) |
|------------------------------------|--------------------|-----------------------------------------|
| Conducted Emissions at mains ports | 150 kHz ~ 30 MHz   | 2.44 dB                                 |
| Radiated Emissions up to 1 GHz     | 30 MHz ~ 200 MHz   | 2.93 dB                                 |
|                                    | 200 MHz ~ 1000 MHz | 2.95 dB                                 |
| Radiated Emissions above 1 GHz     | 1 GHz ~ 18 GHz     | 2.26 dB                                 |
|                                    | 18 GHz ~ 40 GHz    | 1.94 dB                                 |



## 2.2 Test Site and Instruments

| Description & Manufacturer                     | Model No.            | Serial No.          | Date of Calibration | Due Date of Calibration |
|------------------------------------------------|----------------------|---------------------|---------------------|-------------------------|
| Test Receiver<br>Agilent Technologies          | N9038A               | MY52260177          | Jun. 21, 2016       | Jun. 20, 2017           |
| Spectrum Analyzer<br>Agilent                   | N9010A               | MY52220314          | Dec. 16, 2016       | Dec. 15, 2017           |
| Spectrum Analyzer<br>ROHDE & SCHWARZ           | FSU43                | 101261              | Dec. 13, 2016       | Dec. 12, 2017           |
| BILOG Antenna<br>SCHWARZBECK                   | VULB9168             | 9168-472            | Dec. 26, 2016       | Dec. 27, 2017           |
| HORN Antenna<br>SCHWARZBECK                    | BBHA 9120 D          | 9120D-969           | Dec. 12, 2016       | Dec. 13, 2017           |
| Double Ridge Guide Horn<br>Antenna EMCO        | 3115                 | 5619                | Dec. 26, 2016       | Dec. 27, 2017           |
| BILOG Antenna<br>SCHWARZBECK                   | VULB 9168            | 9168-153            | Dec. 12, 2016       | Dec. 13, 2017           |
| Agilent Communications<br>Tester-Wireless      | 8960 Series 10       | MY53201073          | Jul. 03, 2015       | Jul. 02, 2017           |
| Preamplifier<br>EMCI                           | EMC 012645           | 980115              | Oct. 21, 2016       | Oct. 20, 2017           |
| Preamplifier<br>EMCI                           | EMC 184045           | 980116              | Oct. 21, 2016       | Oct. 20, 2017           |
| Preamplifier<br>EMCI                           | EMC 330H             | 980112              | Oct. 21, 2016       | Oct. 20, 2017           |
| Power Meter<br>Anritsu                         | ML2495A              | 1232002             | Sep. 08, 2016       | Sep. 07, 2017           |
| Power Sensor<br>Anritsu                        | MA2411B              | 1207325             | Sep. 08, 2016       | Sep. 07, 2017           |
| RF signal cable<br>HUBER+SUHNNER               | SUCOFLEX 104         | 309219/4<br>2950114 | Oct. 21, 2016       | Oct. 20, 2017           |
| RF signal cable<br>HUBER+SUHNNER               | SUCOFLEX 104         | 250130/4            | Oct. 21, 2016       | Oct. 20, 2017           |
| RF Coaxial Cable<br>Worken                     | 8D-FB                | Cable-Ch10-01       | Oct. 21, 2016       | Oct. 20, 2017           |
| Software<br>BV ADT                             | E3<br>6.120103       | NA                  | NA                  | NA                      |
| Antenna Tower<br>MF                            | MFA-440H             | NA                  | NA                  | NA                      |
| Turn Table<br>MF                               | MFT-201SS            | NA                  | NA                  | NA                      |
| Antenna Tower & Turn<br>Table Controller<br>MF | MF-7802              | NA                  | NA                  | NA                      |
| Radio Communication<br>Analyzer                | MT8820C              | 6201300640          | Aug. 10, 2015       | Aug. 09, 2017           |
| Temperature & Humidity<br>Chamber              | GTH-120-40-CP-A<br>R | MAA1306-019         | Sep. 02, 2016       | Sep. 01, 2017           |
| DC Power Supply<br>Topward                     | 33010D               | 807748              | Oct. 25, 2016       | Oct. 24, 2018           |
| Digital Multimeter<br>Fluke                    | 87-III               | 70360742            | Jul. 01, 2016       | Jun. 30, 2017           |

- Note: 1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 10.
3. The horn antenna and preamplifier (model: EMC 184045) are used only for the measurement of emission frequency above 1 GHz if tested.
4. The FCC Site Registration No. is 690701.
5. The IC Site Registration No. is IC7450F-10.

### 3 General Information

#### 3.1 General Description of EUT

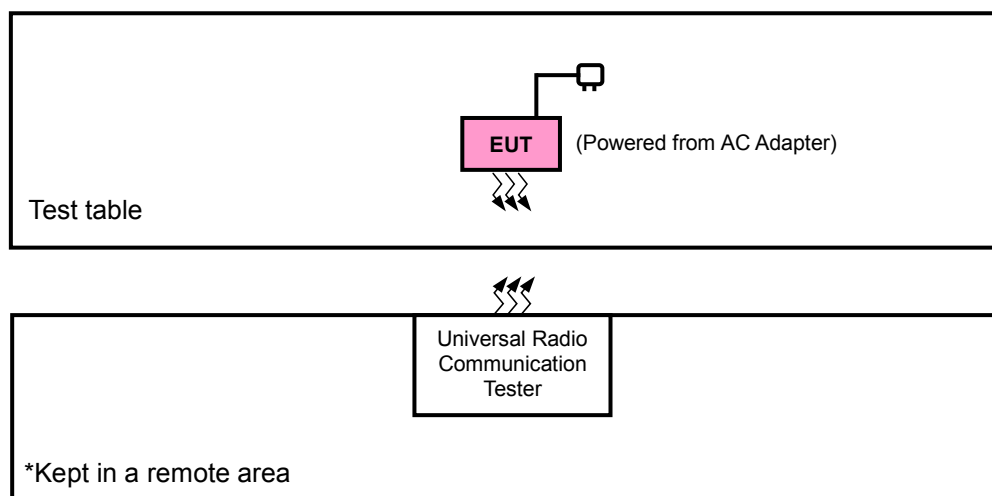
|                            |                                          |                     |
|----------------------------|------------------------------------------|---------------------|
| <b>Product</b>             | LTE module                               |                     |
| <b>Brand</b>               | Fibocom                                  |                     |
| <b>Test Model</b>          | L850-GL                                  |                     |
| <b>Status of EUT</b>       | Identical Prototype                      |                     |
| <b>Power Supply Rating</b> | 3.3 Vdc (from Host Equipment)            |                     |
| <b>Modulation Type</b>     | WCDMA                                    | QPSK, BPSK          |
|                            | LTE                                      | QPSK, 16QAM         |
| <b>Frequency Range</b>     | WCDMA                                    | 1712.4 ~ 1752.6 MHz |
|                            | LTE Band 4 (Channel Bandwidth: 1.4 MHz)  | 1710.7 ~ 1754.3 MHz |
|                            | LTE Band 4 (Channel Bandwidth: 3 MHz)    | 1711.5 ~ 1753.5 MHz |
|                            | LTE Band 4 (Channel Bandwidth: 5 MHz)    | 1712.5 ~ 1752.5 MHz |
|                            | LTE Band 4 (Channel Bandwidth: 10 MHz)   | 1715.0 ~ 1750.0 MHz |
|                            | LTE Band 4 (Channel Bandwidth: 15 MHz)   | 1717.5 ~ 1747.5 MHz |
|                            | LTE Band 4 (Channel Bandwidth: 20 MHz)   | 1720.0 ~ 1745.0 MHz |
|                            | LTE Band 12 (Channel Bandwidth: 1.4 MHz) | 699.7 ~ 715.3 MHz   |
|                            | LTE Band 12 (Channel Bandwidth: 3 MHz)   | 700.5 ~ 714.5 MHz   |
|                            | LTE Band 12 (Channel Bandwidth: 5 MHz)   | 701.5 ~ 713.5 MHz   |
|                            | LTE Band 12 (Channel Bandwidth: 10 MHz)  | 704.0 ~ 711.0 MHz   |
|                            | LTE Band 13 (Channel Bandwidth: 5 MHz)   | 779.5 ~ 784.5 MHz   |
|                            | LTE Band 13 (Channel Bandwidth: 10 MHz)  | 782.0 MHz           |
|                            | LTE Band 17 (Channel Bandwidth: 5 MHz)   | 706.5 ~ 713.5 MHz   |
|                            | LTE Band 17 (Channel Bandwidth: 10 MHz)  | 709 ~ 711 MHz       |
|                            | LTE Band 66 (Channel Bandwidth: 1.4 MHz) | 1710.7 ~ 1779.3 MHz |
|                            | LTE Band 66 (Channel Bandwidth: 3 MHz)   | 1711.5 ~ 1778.5 MHz |
|                            | LTE Band 66 (Channel Bandwidth: 5 MHz)   | 1712.5 ~ 1777.5 MHz |
|                            | LTE Band 66 (Channel Bandwidth: 10 MHz)  | 1715.0 ~ 1775.0 MHz |
|                            | LTE Band 66 (Channel Bandwidth: 15 MHz)  | 1717.5 ~ 1772.5 MHz |
|                            | LTE Band 66 (Channel Bandwidth: 20 MHz)  | 1720.0 ~ 1770.0 MHz |
| <b>Emission Designator</b> | WCDMA                                    | 4M08F9W             |
|                            | LTE Band 4 (Channel Bandwidth: 1.4 MHz)  | 1M10G7D             |
|                            | LTE Band 4 (Channel Bandwidth: 3 MHz)    | 2M71G7D             |
|                            | LTE Band 4 (Channel Bandwidth: 5 MHz)    | 4M50G7D             |
|                            | LTE Band 4 (Channel Bandwidth: 10 MHz)   | 9M00W7D             |
|                            | LTE Band 4 (Channel Bandwidth: 15 MHz)   | 13M5G7D             |
|                            | LTE Band 4 (Channel Bandwidth: 20 MHz)   | 18M0G7D             |
|                            | LTE Band 12 (Channel Bandwidth: 1.4 MHz) | 1M10W7D             |
|                            | LTE Band 12 (Channel Bandwidth: 3 MHz)   | 2M70W7D             |
|                            | LTE Band 12 (Channel Bandwidth: 5 MHz)   | 4M50G7D             |
|                            | LTE Band 12 (Channel Bandwidth: 10 MHz)  | 9M00G7D             |
|                            | LTE Band 13 (Channel Bandwidth: 5 MHz)   | 4M50W7D             |
|                            | LTE Band 13 (Channel Bandwidth: 10 MHz)  | 8M97G7D             |
|                            | LTE Band 17 (Channel Bandwidth: 5 MHz)   | 4M50G7D             |

|                            |                                          |          |
|----------------------------|------------------------------------------|----------|
|                            | LTE Band 17 (Channel Bandwidth: 10 MHz)  | 9M00W7D  |
|                            | LTE Band 66 (Channel Bandwidth: 1.4 MHz) | 1M09W7D  |
|                            | LTE Band 66 (Channel Bandwidth: 3 MHz)   | 2M71W7D  |
|                            | LTE Band 66 (Channel Bandwidth: 5 MHz)   | 4M50G7D  |
|                            | LTE Band 66 (Channel Bandwidth: 10 MHz)  | 8M99W7D  |
|                            | LTE Band 66 (Channel Bandwidth: 15 MHz)  | 13M5W7D  |
|                            | LTE Band 66 (Channel Bandwidth: 20 MHz)  | 17M9W7D  |
| <b>Max. ERP Power</b>      | LTE Band 12 (Channel Bandwidth: 1.4 MHz) | 170.22mW |
|                            | LTE Band 12 (Channel Bandwidth: 3 MHz)   | 172.98mW |
|                            | LTE Band 12 (Channel Bandwidth: 5 MHz)   | 175.79mW |
|                            | LTE Band 12 (Channel Bandwidth: 10 MHz)  | 178.65mW |
|                            | LTE Band 13 (Channel Bandwidth: 5 MHz)   | 165.58mW |
|                            | LTE Band 13 (Channel Bandwidth: 10 MHz)  | 168.27mW |
|                            | LTE Band 17 (Channel Bandwidth: 5 MHz)   | 181.97mW |
|                            | LTE Band 17 (Channel Bandwidth: 10 MHz)  | 183.65mW |
| <b>Max. EIRP Power</b>     | WCDMA                                    | 388.87mW |
|                            | LTE Band 4 (Channel Bandwidth: 1.4 MHz)  | 200.91mW |
|                            | LTE Band 4 (Channel Bandwidth: 3 MHz)    | 204.17mW |
|                            | LTE Band 4 (Channel Bandwidth: 5 MHz)    | 209.89mW |
|                            | LTE Band 4 (Channel Bandwidth: 10 MHz)   | 213.75mW |
|                            | LTE Band 4 (Channel Bandwidth: 15 MHz)   | 220.80mW |
|                            | LTE Band 4 (Channel Bandwidth: 20 MHz)   | 227.51mW |
|                            | LTE Band 66 (Channel Bandwidth: 1.4 MHz) | 152.05mW |
|                            | LTE Band 66 (Channel Bandwidth: 3 MHz)   | 155.24mW |
|                            | LTE Band 66 (Channel Bandwidth: 5 MHz)   | 156.68mW |
|                            | LTE Band 66 (Channel Bandwidth: 10 MHz)  | 158.82mW |
|                            | LTE Band 66 (Channel Bandwidth: 15 MHz)  | 161.81mW |
|                            | LTE Band 66 (Channel Bandwidth: 20 MHz)  | 163.68mW |
| <b>Antenna Type</b>        | External Antenna                         |          |
| <b>Accessory Device</b>    | Refer to Note as below                   |          |
| <b>Data Cable Supplied</b> | Refer to Note as below                   |          |

Note:

1. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

## 3.2 Configuration of System under Test



### 3.2.1 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units.

## 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 as the table below. Following channel(s) was (were) selected for the final test as listed below:

| Band        | ERP / EIRP | Radiated Emission |
|-------------|------------|-------------------|
| WCDMA       | Z-plane    | X-axis            |
| LTE Band 4  | Z-plane    | X-axis            |
| LTE Band 12 | X-plane    | X-axis            |
| LTE Band 13 | X-plane    | X-axis            |
| LTE Band 17 | X-plane    | Z-axis            |
| LTE Band 66 | Z-plane    | X-axis            |

## WCDMA

| EUT Configure Mode | Test Item             | Available Channel | Tested Channel   | Mode  |
|--------------------|-----------------------|-------------------|------------------|-------|
| -                  | EIRP                  | 1312 to 1513      | 1312, 1413, 1513 | WCDMA |
| -                  | Frequency Stability   | 1312 to 1513      | 1312, 1513       | WCDMA |
| -                  | Occupied Bandwidth    | 1312 to 1513      | 1312, 1413, 1513 | WCDMA |
| -                  | Band Edge             | 1312 to 1513      | 1312, 1513       | WCDMA |
| -                  | Peak to Average Ratio | 1312 to 1513      | 1312, 1413, 1513 | WCDMA |
| -                  | Conducuted Emission   | 1312 to 1513      | 1312, 1413, 1513 | WCDMA |
| -                  | Radiated Emission     | 1312 to 1513      | 1312, 1413, 1513 | WCDMA |

## LTE Band 4

| EUT Configure Mode | Test Item             | Available Channel | Tested Channel      | Channel Bandwidth | Modulation  | Mode                 |
|--------------------|-----------------------|-------------------|---------------------|-------------------|-------------|----------------------|
| -                  | EIRP                  | 19957 to 20393    | 19957, 20175, 20393 | 1.4 MHz           | QPSK, 16QAM | 1 RB / 5 RB Offset   |
|                    |                       | 19965 to 20385    | 19965, 20175, 20385 | 3 MHz             | QPSK, 16QAM | 1 RB / 14 RB Offset  |
|                    |                       | 19975 to 20375    | 19975, 20175, 20375 | 5 MHz             | QPSK, 16QAM | 1 RB / 24 RB Offset  |
|                    |                       | 20000 to 20350    | 20000, 20175, 20350 | 10 MHz            | QPSK, 16QAM | 1 RB / 49 RB Offset  |
|                    |                       | 20025 to 20325    | 20025, 20175, 20325 | 15 MHz            | QPSK, 16QAM | 1 RB / 74 RB Offset  |
|                    |                       | 20050 to 20300    | 20050, 20175, 20300 | 20 MHz            | QPSK, 16QAM | 1 RB / 99 RB Offset  |
| -                  | Frequency Stability   | 19957 to 20393    | 19957, 20393        | 1.4 MHz           | QPSK        | 1 RB / 5 RB Offset   |
|                    |                       | 19965 to 20385    | 19965, 20385        | 3 MHz             | QPSK        | 1 RB / 14 RB Offset  |
|                    |                       | 19975 to 20375    | 19975, 20375        | 5 MHz             | QPSK        | 1 RB / 24 RB Offset  |
|                    |                       | 20000 to 20350    | 20000, 20350        | 10 MHz            | QPSK        | 1 RB / 49 RB Offset  |
|                    |                       | 20025 to 20325    | 20025, 20325        | 15 MHz            | QPSK        | 1 RB / 74 RB Offset  |
|                    |                       | 20050 to 20300    | 20050, 20300        | 20 MHz            | QPSK        | 1 RB / 99 RB Offset  |
| -                  | Occupied Bandwidth    | 19957 to 20393    | 19957, 20175, 20393 | 1.4 MHz           | QPSK, 16QAM | 6 RB / 0 RB Offset   |
|                    |                       | 19965 to 20385    | 19965, 20175, 20385 | 3 MHz             | QPSK, 16QAM | 15 RB / 0 RB Offset  |
|                    |                       | 19975 to 20375    | 19975, 20175, 20375 | 5 MHz             | QPSK, 16QAM | 25 RB / 0 RB Offset  |
|                    |                       | 20000 to 20350    | 20000, 20175, 20350 | 10 MHz            | QPSK, 16QAM | 50 RB / 0 RB Offset  |
|                    |                       | 20025 to 20325    | 20025, 20175, 20325 | 15 MHz            | QPSK, 16QAM | 75 RB / 0 RB Offset  |
|                    |                       | 20050 to 20300    | 20050, 20175, 20300 | 20 MHz            | QPSK, 16QAM | 100 RB / 0 RB Offset |
| -                  | Peak to Average Ratio | 19957 to 20393    | 19957, 20175, 20393 | 1.4 MHz           | QPSK, 16QAM | 1 RB / 2 RB Offset   |
|                    |                       | 19965 to 20385    | 19965, 20175, 20385 | 3 MHz             | QPSK, 16QAM | 1 RB / 7 RB Offset   |
|                    |                       | 19975 to 20375    | 19975, 20175, 20375 | 5 MHz             | QPSK, 16QAM | 12 RB / 0 RB Offset  |
|                    |                       | 20000 to 20350    | 20000, 20175, 20350 | 10 MHz            | QPSK, 16QAM | 1 RB / 24 RB Offset  |
|                    |                       | 20025 to 20325    | 20025, 20175, 20325 | 15 MHz            | QPSK, 16QAM | 36 RB / 0 RB Offset  |
|                    |                       | 20050 to 20300    | 20050, 20175, 20300 | 20 MHz            | QPSK, 16QAM | 50 RB / 0 RB Offset  |

| EUT Configure Mode | Test Item          | Available Channel | Tested Channel      | Channel Bandwidth | Modulation | Mode                 |
|--------------------|--------------------|-------------------|---------------------|-------------------|------------|----------------------|
| -                  | Band Edge          | 19957 to 20393    | 19957               | 1.4 MHz           | QPSK       | 1 RB / 0 RB Offset   |
|                    |                    |                   |                     |                   |            | 6 RB / 0 RB Offset   |
|                    |                    |                   | 20393               | 1.4 MHz           | QPSK       | 1 RB / 5 RB Offset   |
|                    |                    |                   |                     |                   |            | 6 RB / 0 RB Offset   |
|                    |                    | 19965 to 20385    | 19965               | 3 MHz             | QPSK       | 1 RB / 0 RB Offset   |
|                    |                    |                   |                     |                   |            | 15 RB / 0 RB Offset  |
|                    |                    |                   | 20385               | 3 MHz             | QPSK       | 1 RB / 14 RB Offset  |
|                    |                    |                   |                     |                   |            | 15 RB / 0 RB Offset  |
|                    |                    | 19975 to 20375    | 19975               | 5 MHz             | QPSK       | 1 RB / 0 RB Offset   |
|                    |                    |                   |                     |                   |            | 25 RB / 0 RB Offset  |
|                    |                    |                   | 20375               | 5 MHz             | QPSK       | 1 RB / 24 RB Offset  |
|                    |                    |                   |                     |                   |            | 25 RB / 0 RB Offset  |
|                    |                    | 20000 to 20350    | 20000               | 10 MHz            | QPSK       | 1 RB / 0 RB Offset   |
|                    |                    |                   |                     |                   |            | 50 RB / 0 RB Offset  |
|                    |                    |                   | 20350               | 10 MHz            | QPSK       | 1 RB / 49 RB Offset  |
|                    |                    |                   |                     |                   |            | 50 RB / 0 RB Offset  |
|                    |                    | 20025 to 20325    | 20025               | 15 MHz            | QPSK       | 1 RB / 0 RB Offset   |
|                    |                    |                   |                     |                   |            | 75 RB / 0 RB Offset  |
|                    |                    |                   | 20325               | 15 MHz            | QPSK       | 1 RB / 74 RB Offset  |
|                    |                    |                   |                     |                   |            | 75 RB / 0 RB Offset  |
|                    |                    | 20050 to 20300    | 20050               | 20 MHz            | QPSK       | 1 RB / 0 RB Offset   |
|                    |                    |                   |                     |                   |            | 100 RB / 0 RB Offset |
|                    |                    |                   | 20300               | 20 MHz            | QPSK       | 1 RB / 99 RB Offset  |
|                    |                    |                   |                     |                   |            | 100 RB / 0 RB Offset |
| -                  | Conducted Emission | 19957 to 20393    | 19957, 20175, 20393 | 1.4 MHz           | QPSK       | 1 RB / 2 RB Offset   |
|                    |                    | 19965 to 20385    | 19965, 20175, 20385 | 3 MHz             | QPSK       | 1 RB / 7 RB Offset   |
|                    |                    | 19975 to 20375    | 19975, 20175, 20375 | 5 MHz             | QPSK       | 12 RB / 0 RB Offset  |
|                    |                    | 20000 to 20350    | 20000, 20175, 20350 | 10 MHz            | QPSK       | 50 RB / 0 RB Offset  |
|                    |                    | 20025 to 20325    | 20025, 20175, 20325 | 15 MHz            | QPSK       | 36 RB / 0 RB Offset  |
|                    |                    | 20050 to 20300    | 20050, 20175, 20300 | 20 MHz            | QPSK       | 50 RB / 0 RB Offset  |
| -                  | Radiated Emission  | 20050 to 20300    | 20050, 20175, 20300 | 20 MHz            | QPSK       | 1 RB / 99 RB Offset  |

**Note:** This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

## LTE Band 12

| EUT Configure Mode | Test Item             | Available Channel | Tested Channel      | Channel Bandwidth | Modulation  | Mode                |
|--------------------|-----------------------|-------------------|---------------------|-------------------|-------------|---------------------|
| -                  | ERP                   | 23017 to 23173    | 23017, 23095, 23173 | 1.4 MHz           | QPSK, 16QAM | 1 RB / 2 RB Offset  |
|                    |                       | 23025 to 23165    | 23025, 23095, 23165 | 3 MHz             | QPSK, 16QAM | 1 RB / 7 RB Offset  |
|                    |                       | 23035 to 23155    | 23035, 23095, 23155 | 5 MHz             | QPSK, 16QAM | 1 RB / 12 RB Offset |
|                    |                       | 23060 to 23130    | 23060, 23095, 23130 | 10 MHz            | QPSK, 16QAM | 1 RB / 24 RB Offset |
| -                  | Frequency Stability   | 23017 to 23173    | 23017, 23173        | 1.4 MHz           | QPSK        | 1 RB / 2 RB Offset  |
|                    |                       | 23025 to 23165    | 23025, 23165        | 3 MHz             | QPSK        | 1 RB / 7 RB Offset  |
|                    |                       | 23035 to 23155    | 23035, 23155        | 5 MHz             | QPSK        | 1 RB / 12 RB Offset |
|                    |                       | 23060 to 23130    | 23060, 23130        | 10 MHz            | QPSK        | 1 RB / 24 RB Offset |
| -                  | Occupied Bandwidth    | 23017 to 23173    | 23017, 23095, 23173 | 1.4 MHz           | QPSK, 16QAM | 6 RB / 0 RB Offset  |
|                    |                       | 23025 to 23165    | 23025, 23095, 23165 | 3 MHz             | QPSK, 16QAM | 15 RB / 0 RB Offset |
|                    |                       | 23035 to 23155    | 23035, 23095, 23155 | 5 MHz             | QPSK, 16QAM | 25 RB / 0 RB Offset |
|                    |                       | 23060 to 23130    | 23060, 23095, 23130 | 10 MHz            | QPSK, 16QAM | 50 RB / 0 RB Offset |
| -                  | Peak to Average Ratio | 23017 to 23173    | 23017, 23095, 23173 | 1.4 MHz           | QPSK, 16QAM | 1 RB / 0 RB Offset  |
|                    |                       | 23025 to 23165    | 23025, 23095, 23165 | 3 MHz             | QPSK, 16QAM | 1 RB / 0 RB Offset  |
|                    |                       | 23035 to 23155    | 23035, 23095, 23155 | 5 MHz             | QPSK, 16QAM | 1 RB / 0 RB Offset  |
|                    |                       | 23060 to 23130    | 23060, 23095, 23130 | 10 MHz            | QPSK, 16QAM | 1 RB / 0 RB Offset  |
| -                  | Band Edge             | 23017 to 23173    | 23017               | 1.4 MHz           | QPSK        | 1 RB / 0 RB Offset  |
|                    |                       |                   | 23173               | 1.4 MHz           | QPSK        | 6 RB / 0 RB Offset  |
|                    |                       | 23025 to 23165    | 23025               | 3 MHz             | QPSK        | 1 RB / 5 RB Offset  |
|                    |                       |                   | 23165               | 3 MHz             | QPSK        | 15 RB / 0 RB Offset |
|                    |                       | 23035 to 23155    | 23035               | 5 MHz             | QPSK        | 1 RB / 14 RB Offset |
|                    |                       |                   | 23155               | 5 MHz             | QPSK        | 15 RB / 0 RB Offset |
|                    |                       | 23060 to 23130    | 23035               | 5 MHz             | QPSK        | 1 RB / 0 RB Offset  |
|                    |                       |                   | 23155               | 5 MHz             | QPSK        | 25 RB / 0 RB Offset |
|                    |                       | 23060 to 23130    | 23060               | 10 MHz            | QPSK        | 1 RB / 24 RB Offset |
|                    |                       |                   | 23130               | 10 MHz            | QPSK        | 25 RB / 0 RB Offset |
|                    |                       | 23060 to 23130    | 23060               | 10 MHz            | QPSK        | 1 RB / 0 RB Offset  |
|                    |                       |                   | 23130               | 10 MHz            | QPSK        | 50 RB / 0 RB Offset |
| -                  | Conducted Emission    | 23017 to 23173    | 23017, 23095, 23173 | 1.4 MHz           | QPSK        | 1 RB / 49 RB Offset |
|                    |                       | 23025 to 23165    | 23025, 23095, 23165 | 3 MHz             | QPSK        | 50 RB / 0 RB Offset |
|                    |                       | 23035 to 23155    | 23035, 23095, 23155 | 5 MHz             | QPSK        | 1 RB / 0 RB Offset  |
|                    |                       | 23060 to 23130    | 23060, 23095, 23130 | 10 MHz            | QPSK        | 1 RB / 0 RB Offset  |
| -                  | Radiated Emission     | 23060 to 23130    | 23060, 23095, 23130 | 10 MHz            | QPSK        | 1 RB / 24 RB Offset |

**Note:** This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.



### LTE Band 13

| EUT Configure Mode | Test Item             | Available Channel | Tested Channel      | Channel Bandwidth | Modulation  | Mode                |
|--------------------|-----------------------|-------------------|---------------------|-------------------|-------------|---------------------|
| -                  | ERP                   | 23205 to 23255    | 23205, 23230, 23255 | 5 MHz             | QPSK, 16QAM | 1 RB / 0 RB Offset  |
|                    |                       | 23230             | 23230               | 10 MHz            | QPSK, 16QAM | 1 RB / 24 RB Offset |
| -                  | Frequency Stability   | 23205 to 23255    | 23205, 23255        | 5 MHz             | QPSK        | 1 RB / 0 RB Offset  |
|                    |                       | 23230             | 23230               | 10 MHz            | QPSK        | 1 RB / 24 RB Offset |
| -                  | Occupied Bandwidth    | 23205 to 23255    | 23205, 23230, 23255 | 5 MHz             | QPSK, 16QAM | 25 RB / 0 RB Offset |
|                    |                       | 23230             | 23230               | 10 MHz            | QPSK, 16QAM | 50 RB / 0 RB Offset |
| -                  | Peak to Average Ratio | 23205 to 23255    | 23205, 23230, 23255 | 5 MHz             | QPSK, 16QAM | 1 RB / 0 RB Offset  |
|                    |                       | 23230             | 23230               | 10 MHz            | QPSK, 16QAM | 1 RB / 0 RB Offset  |
| -                  | Band Edge             | 23205 to 23255    | 23205               | 5 MHz             | QPSK        | 1 RB / 0 RB Offset  |
|                    |                       |                   |                     |                   |             | 25 RB / 0 RB Offset |
|                    |                       |                   | 23255               | 5 MHz             | QPSK        | 1 RB / 24 RB Offset |
|                    |                       |                   |                     |                   |             | 25 RB / 0 RB Offset |
|                    |                       | 23230             | 23230               | 10 MHz            | QPSK        | 1 RB / 0 RB Offset  |
|                    |                       |                   |                     |                   |             | 50 RB / 0 RB Offset |
| -                  | Conducted Emission    | 23205 to 23255    | 23205, 23230, 23255 | 5 MHz             | QPSK        | 1 RB / 0 RB Offset  |
|                    |                       | 23230             | 23230               | 10 MHz            | QPSK        | 1 RB / 0 RB Offset  |
| -                  | Radiated Emission     | 23230             | 23230               | 10 MHz            | QPSK        | 1 RB / 24 RB Offset |
|                    |                       |                   |                     |                   |             | 1 RB / 50 RB Offset |

**Note:** This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

### LTE Band 17

| EUT Configure Mode | Test Item             | Available Channel | Tested Channel      | Channel Bandwidth | Modulation  | Mode                |
|--------------------|-----------------------|-------------------|---------------------|-------------------|-------------|---------------------|
| -                  | ERP                   | 23755 to 23825    | 23755, 23790, 23825 | 5 MHz             | QPSK, 16QAM | 1 RB / 12 RB Offset |
|                    |                       | 23780 to 23800    | 23780, 23790, 23800 | 10 MHz            | QPSK, 16QAM | 1 RB / 24 RB Offset |
| -                  | Frequency Stability   | 23755 to 23825    | 23755, 23825        | 5 MHz             | QPSK        | 1 RB / 12 RB Offset |
|                    |                       | 23780 to 23800    | 23780, 23800        | 10 MHz            | QPSK        | 1 RB / 24 RB Offset |
| -                  | Occupied Bandwidth    | 23755 to 23825    | 23755, 23790, 23825 | 5 MHz             | QPSK, 16QAM | 25 RB / 0 RB Offset |
|                    |                       | 23780 to 23800    | 23780, 23790, 23800 | 10 MHz            | QPSK, 16QAM | 50 RB / 0 RB Offset |
| -                  | Peak to Average Ratio | 23755 to 23825    | 23755, 23790, 23825 | 5 MHz             | QPSK, 16QAM | 1 RB / 12 RB Offset |
|                    |                       | 23780 to 23800    | 23780, 23790, 23800 | 10 MHz            | QPSK, 16QAM | 1 RB / 24 RB Offset |
| -                  | Band Edge             | 23755 to 23825    | 23755               | 5 MHz             | QPSK        | 1 RB / 0 RB Offset  |
|                    |                       |                   |                     |                   |             | 25 RB / 0 RB Offset |
|                    |                       |                   | 23825               | 5 MHz             | QPSK        | 1 RB / 24 RB Offset |
|                    |                       |                   |                     |                   |             | 25 RB / 0 RB Offset |
|                    |                       | 23780 to 23800    | 23780               | 10 MHz            | QPSK        | 1 RB / 0 RB Offset  |
|                    |                       |                   |                     |                   |             | 50 RB / 0 RB Offset |
| -                  | Conducted Emission    | 23755 to 23825    | 23755, 23790, 23825 | 5 MHz             | QPSK        | 1 RB / 12 RB Offset |
|                    |                       | 23780 to 23800    | 23780, 23790, 23800 | 10 MHz            | QPSK        | 1 RB / 24 RB Offset |
| -                  | Radiated Emission     | 23780 to 23800    | 23780, 23790, 23800 | 10 MHz            | QPSK        | 1 RB / 24 RB Offset |

**Note:** This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

## LTE Band 66

| EUT Configure Mode | Test Item             | Available Channel | Tested Channel         | Channel Bandwidth | Modulation  | Mode                 |
|--------------------|-----------------------|-------------------|------------------------|-------------------|-------------|----------------------|
| -                  | EIRP                  | 131979 to 132665  | 131979, 132322, 132665 | 1.4 MHz           | QPSK, 16QAM | 1 RB / 5 RB Offset   |
|                    |                       | 131987 to 132657  | 131987, 132322, 132657 | 3 MHz             | QPSK, 16QAM | 1 RB / 14 RB Offset  |
|                    |                       | 131997 to 132647  | 131997, 132322, 132647 | 5 MHz             | QPSK, 16QAM | 1 RB / 24 RB Offset  |
|                    |                       | 132022 to 132622  | 132022, 132322, 132622 | 10 MHz            | QPSK, 16QAM | 1 RB / 49 RB Offset  |
|                    |                       | 132047 to 132597  | 132047, 132322, 132597 | 15 MHz            | QPSK, 16QAM | 1 RB / 74 RB Offset  |
|                    |                       | 132072 to 132572  | 132072, 132322, 132572 | 20 MHz            | QPSK, 16QAM | 1 RB / 99 RB Offset  |
| -                  | Frequency Stability   | 131979 to 132665  | 131979, 132665         | 1.4 MHz           | QPSK        | 1 RB / 5 RB Offset   |
|                    |                       | 131987 to 132657  | 131987, 132657         | 3 MHz             | QPSK        | 1 RB / 14 RB Offset  |
|                    |                       | 131997 to 132647  | 131997, 132647         | 5 MHz             | QPSK        | 1 RB / 24 RB Offset  |
|                    |                       | 132022 to 132622  | 132022, 132622         | 10 MHz            | QPSK        | 1 RB / 49 RB Offset  |
|                    |                       | 132047 to 132597  | 132047, 132597         | 15 MHz            | QPSK        | 1 RB / 74 RB Offset  |
|                    |                       | 132072 to 132572  | 132072, 132572         | 20 MHz            | QPSK        | 1 RB / 99 RB Offset  |
| -                  | Occupied Bandwidth    | 131979 to 132665  | 131979, 132322, 132665 | 1.4 MHz           | QPSK, 16QAM | 6 RB / 0 RB Offset   |
|                    |                       | 131987 to 132657  | 131987, 132322, 132657 | 3 MHz             | QPSK, 16QAM | 15 RB / 0 RB Offset  |
|                    |                       | 131997 to 132647  | 131997, 132322, 132647 | 5 MHz             | QPSK, 16QAM | 25 RB / 0 RB Offset  |
|                    |                       | 132022 to 132622  | 132022, 132322, 132622 | 10 MHz            | QPSK, 16QAM | 50 RB / 0 RB Offset  |
|                    |                       | 132047 to 132597  | 132047, 132322, 132597 | 15 MHz            | QPSK, 16QAM | 75 RB / 0 RB Offset  |
|                    |                       | 132072 to 132572  | 132072, 132322, 132572 | 20 MHz            | QPSK, 16QAM | 100 RB / 0 RB Offset |
| -                  | Peak to Average Ratio | 131979 to 132665  | 131979, 132322, 132665 | 1.4 MHz           | QPSK, 16QAM | 1 RB / 2 RB Offset   |
|                    |                       | 131987 to 132657  | 131987, 132322, 132657 | 3 MHz             | QPSK, 16QAM | 1 RB / 7 RB Offset   |
|                    |                       | 131997 to 132647  | 131997, 132322, 132647 | 5 MHz             | QPSK, 16QAM | 12 RB / 0 RB Offset  |
|                    |                       | 132022 to 132622  | 132022, 132322, 132622 | 10 MHz            | QPSK, 16QAM | 1 RB / 24 RB Offset  |
|                    |                       | 132047 to 132597  | 132047, 132322, 132597 | 15 MHz            | QPSK, 16QAM | 36 RB / 0 RB Offset  |
|                    |                       | 132072 to 132572  | 132072, 132322, 132572 | 20 MHz            | QPSK, 16QAM | 50 RB / 0 RB Offset  |
| -                  | Band Edge             | 131979 to 132665  | 131979                 | 1.4 MHz           | QPSK        | 1 RB / 0 RB Offset   |
|                    |                       |                   |                        |                   |             | 6 RB / 0 RB Offset   |
|                    |                       |                   | 132665                 | 1.4 MHz           | QPSK        | 1 RB / 5 RB Offset   |
|                    |                       |                   |                        |                   |             | 6 RB / 0 RB Offset   |
|                    |                       | 131987 to 132657  | 131987                 | 3 MHz             | QPSK        | 1 RB / 0 RB Offset   |
|                    |                       |                   |                        |                   |             | 15 RB / 0 RB Offset  |
|                    |                       |                   | 132657                 | 3 MHz             | QPSK        | 1 RB / 14 RB Offset  |
|                    |                       |                   |                        |                   |             | 15 RB / 0 RB Offset  |
|                    |                       | 131997 to 132647  | 131997                 | 5 MHz             | QPSK        | 1 RB / 0 RB Offset   |
|                    |                       |                   |                        |                   |             | 25 RB / 0 RB Offset  |
|                    |                       |                   | 132647                 | 5 MHz             | QPSK        | 1 RB / 24 RB Offset  |
|                    |                       |                   |                        |                   |             | 25 RB / 0 RB Offset  |
|                    |                       | 132022 to 132622  | 132022                 | 10 MHz            | QPSK        | 1 RB / 0 RB Offset   |
|                    |                       |                   |                        |                   |             | 50 RB / 0 RB Offset  |
|                    |                       |                   | 132622                 | 10 MHz            | QPSK        | 1 RB / 49 RB Offset  |
|                    |                       |                   |                        |                   |             | 50 RB / 0 RB Offset  |
|                    |                       | 132047 to 132597  | 132047                 | 15 MHz            | QPSK        | 1 RB / 0 RB Offset   |
|                    |                       |                   |                        |                   |             | 75 RB / 0 RB Offset  |
|                    |                       |                   | 132597                 | 15 MHz            | QPSK        | 1 RB / 74 RB Offset  |
|                    |                       |                   |                        |                   |             | 75 RB / 0 RB Offset  |
|                    |                       | 132072 to 132572  | 132072                 | 20 MHz            | QPSK        | 1 RB / 0 RB Offset   |
|                    |                       |                   |                        |                   |             | 100 RB / 0 RB Offset |
|                    |                       |                   | 132572                 | 20 MHz            | QPSK        | 1 RB / 99 RB Offset  |
|                    |                       |                   |                        |                   |             | 100 RB / 0 RB Offset |

| EUT Configure Mode | Test Item          | Available Channel | Tested Channel         | Channel Bandwidth | Modulation | Mode                |
|--------------------|--------------------|-------------------|------------------------|-------------------|------------|---------------------|
| -                  | Conducted Emission | 131979 to 132665  | 131979, 132322, 132665 | 1.4 MHz           | QPSK       | 1 RB / 2 RB Offset  |
|                    |                    | 131987 to 132657  | 131987, 132322, 132657 | 3 MHz             | QPSK       | 1 RB / 7 RB Offset  |
|                    |                    | 131997 to 132647  | 131997, 132322, 132647 | 5 MHz             | QPSK       | 12 RB / 0 RB Offset |
|                    |                    | 132022 to 132622  | 132022, 132322, 132622 | 10 MHz            | QPSK       | 50 RB / 0 RB Offset |
|                    |                    | 132047 to 132597  | 132047, 132322, 132597 | 15 MHz            | QPSK       | 36 RB / 0 RB Offset |
|                    |                    | 132072 to 132572  | 132072, 132322, 132572 | 20 MHz            | QPSK       | 50 RB / 0 RB Offset |
| -                  | Radiated Emission  | 132072 to 132572  | 132072, 132322, 132572 | 20 MHz            | QPSK       | 1 RB / 99 RB Offset |

**Note:** This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

#### **Test Condition:**

| Test Item             | Environmental Conditions | Input Power    | Tested By   |
|-----------------------|--------------------------|----------------|-------------|
| ERP / EIRP            | 25 deg. C, 65 % RH       | 3.3 Vdc        | Getaz Yang  |
| Frequency Stability   | 25 deg. C, 65 % RH       | 3.3 Vdc        | Carlos Chen |
| Occupied Bandwidth    | 25 deg. C, 65 % RH       | 3.3 Vdc        | Carlos Chen |
| Band Edge             | 25 deg. C, 65 % RH       | 3.3 Vdc        | Carlos Chen |
| Peak to Average Ratio | 25 deg. C, 65 % RH       | 3.3 Vdc        | Carlos Chen |
| Condcudeted Emission  | 25 deg. C, 65 % RH       | 3.3 Vdc        | Carlos Chen |
| Radiated Emission     | 25 deg. C, 65 % RH       | 120 Vac, 60 Hz | Getaz Yang  |

### **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**

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

**FCC 47 CFR Part 2**

**FCC 47 CFR Part 27**

**KDB 971168 D01 Power Meas License Digital Systems v02r02**

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

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

## 4 Test Types and Results

### 4.1 Output Power Measurement

#### 4.1.1 Limits of Output Power Measurement

Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.

Portable stations (hand-held devices) operating in the 704-716 MHz band are limited to 3 watts ERP

#### 4.1.2 Test Procedures

##### **EIRP / ERP Measurement:**

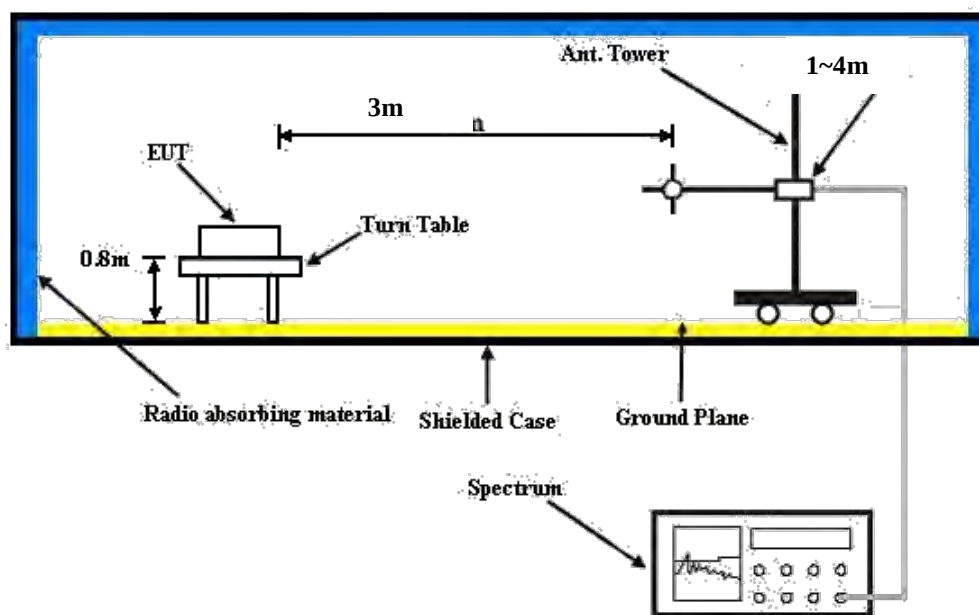
- a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 5 MHz for WCDMA and 10 MHz for LTE mode.
- b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
- c. 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 b. Record the power level of S.G.
- d.  $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$ . E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole,  $E.R.P \text{ power} = E.I.P.R \text{ power} - 2.15 \text{ dBi}$ .

##### **Conducted Power Measurement:**

- a. The EUT was set up for the maximum power with LTE link data modulation and link up with simulator.
- b. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

#### 4.1.3 Test Setup

##### EIRP / ERP Measurement:



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

##### Conducted Power Measurement:



#### 4.1.4 Test Results

##### Conducted Output Power (dBm)

| Band            | WCDMA IV |        |        |
|-----------------|----------|--------|--------|
| Channel         | 1312     | 1413   | 1513   |
| Frequency (MHz) | 1712.4   | 1732.6 | 1752.6 |
| RMC 12.2K       | 23.59    | 23.38  | 23.77  |
| HSDPA Subtest-1 | 22.05    | 22.03  | 22.07  |
| HSDPA Subtest-2 | 22.07    | 22.10  | 22.05  |
| HSDPA Subtest-3 | 22.09    | 22.02  | 22.18  |
| HSDPA Subtest-4 | 22.30    | 21.91  | 22.15  |
| HSUPA Subtest-1 | 20.34    | 20.33  | 20.33  |
| HSUPA Subtest-2 | 18.74    | 18.94  | 19.23  |
| HSUPA Subtest-3 | 19.71    | 19.76  | 19.85  |
| HSUPA Subtest-4 | 19.19    | 19.22  | 19.55  |
| HSUPA Subtest-5 | 20.27    | 20.30  | 20.40  |

| Band / BW | RB Size | RB Offset | QPSK         |              |               | 3GPP MPR (dB) | 16QAM        |              |               | 3GPP MPR (dB) |
|-----------|---------|-----------|--------------|--------------|---------------|---------------|--------------|--------------|---------------|---------------|
|           |         |           | Low Ch 19957 | Mid Ch 20175 | High Ch 20393 |               | Low Ch 19957 | Mid Ch 20175 | High Ch 20393 |               |
|           |         |           | 1710.7 MHz   | 1732.5 MHz   | 1754.3 MHz    |               | 1710.7 MHz   | 1732.5 MHz   | 1754.3 MHz    |               |
| 4 / 1.4M  | 1       | 0         | 22.91        | 22.96        | 22.97         | 0             | 21.90        | 21.90        | 21.88         | 1             |
|           | 1       | 2         | 22.80        | 22.81        | 22.85         | 0             | 21.80        | 21.84        | 21.84         | 1             |
|           | 1       | 5         | 22.53        | 22.59        | 22.60         | 0             | 21.62        | 21.57        | 21.69         | 1             |
|           | 3       | 0         | 22.86        | 22.83        | 22.88         | 0             | 21.80        | 21.74        | 21.79         | 1             |
|           | 3       | 1         | 22.68        | 22.66        | 22.73         | 0             | 21.68        | 21.57        | 21.70         | 1             |
|           | 3       | 3         | 22.56        | 22.58        | 22.52         | 0             | 21.53        | 21.54        | 21.47         | 1             |
|           | 6       | 0         | 21.77        | 21.86        | 21.87         | 1             | 20.73        | 20.77        | 20.79         | 2             |

| Band / BW | RB Size | RB Offset | QPSK         |              |               | 3GPP MPR (dB) | 16QAM        |              |               | 3GPP MPR (dB) |
|-----------|---------|-----------|--------------|--------------|---------------|---------------|--------------|--------------|---------------|---------------|
|           |         |           | Low Ch 19965 | Mid Ch 20175 | High Ch 20385 |               | Low Ch 19965 | Mid Ch 20175 | High Ch 20385 |               |
|           |         |           | 1711.5 MHz   | 1732.5 MHz   | 1753.5 MHz    |               | 1711.5 MHz   | 1732.5 MHz   | 1753.5 MHz    |               |
| 4 / 3M    | 1       | 0         | 22.98        | 22.89        | 23.02         | 0             | 21.90        | 21.80        | 22.01         | 1             |
|           | 1       | 7         | 22.88        | 22.80        | 22.89         | 0             | 21.82        | 21.69        | 21.84         | 1             |
|           | 1       | 14        | 22.69        | 22.59        | 22.74         | 0             | 21.59        | 21.57        | 21.66         | 1             |
|           | 8       | 0         | 21.96        | 21.88        | 21.95         | 1             | 20.75        | 20.68        | 20.75         | 2             |
|           | 8       | 3         | 21.85        | 21.73        | 21.86         | 1             | 20.81        | 20.63        | 20.77         | 2             |
|           | 8       | 7         | 21.65        | 21.54        | 21.57         | 1             | 20.54        | 20.51        | 20.64         | 2             |
|           | 15      | 0         | 21.93        | 21.78        | 21.83         | 1             | 20.80        | 20.62        | 20.91         | 2             |

| Band / BW | RB Size | RB Offset | QPSK         |              |               | 3GPP MPR (dB) | 16QAM        |              |               | 3GPP MPR (dB) |
|-----------|---------|-----------|--------------|--------------|---------------|---------------|--------------|--------------|---------------|---------------|
|           |         |           | Low Ch 19975 | Mid Ch 20175 | High Ch 20375 |               | Low Ch 19975 | Mid Ch 20175 | High Ch 20375 |               |
|           |         |           | 1712.5 MHz   | 1732.5 MHz   | 1752.5 MHz    |               | 1712.5 MHz   | 1732.5 MHz   | 1752.5 MHz    |               |
| 4 / 5M    | 1       | 0         | 23.01        | 23.03        | 23.08         | 0             | 22.00        | 21.94        | 22.01         | 1             |
|           | 1       | 12        | 22.86        | 22.89        | 22.92         | 0             | 21.82        | 21.84        | 21.84         | 1             |
|           | 1       | 24        | 22.76        | 22.76        | 22.81         | 0             | 21.69        | 21.64        | 21.81         | 1             |
|           | 12      | 0         | 21.98        | 21.92        | 22.14         | 1             | 20.91        | 20.84        | 21.07         | 2             |
|           | 12      | 6         | 21.86        | 21.82        | 22.02         | 1             | 20.84        | 20.77        | 20.96         | 2             |
|           | 12      | 13        | 21.75        | 21.55        | 21.93         | 1             | 20.73        | 20.66        | 20.75         | 2             |
|           | 25      | 0         | 21.84        | 21.87        | 22.07         | 1             | 20.83        | 20.91        | 20.77         | 2             |

| Band / BW | RB Size | RB Offset | QPSK         |              |               | 3GPP MPR (dB) | 16QAM        |              |               | 3GPP MPR (dB) |
|-----------|---------|-----------|--------------|--------------|---------------|---------------|--------------|--------------|---------------|---------------|
|           |         |           | Low Ch 20000 | Mid Ch 20175 | High Ch 20350 |               | Low Ch 20000 | Mid Ch 20175 | High Ch 20350 |               |
|           |         |           | 1715.0 MHz   | 1732.5 MHz   | 1750.0 MHz    |               | 1715.0 MHz   | 1732.5 MHz   | 1750.0 MHz    |               |
| 4 / 10M   | 1       | 0         | 23.11        | 22.99        | 23.13         | 0             | 22.06        | 21.90        | 22.12         | 1             |
|           | 1       | 24        | 22.95        | 22.87        | 23.00         | 0             | 21.97        | 21.80        | 21.92         | 1             |
|           | 1       | 49        | 22.73        | 22.77        | 22.91         | 0             | 21.70        | 21.62        | 21.75         | 1             |
|           | 25      | 0         | 21.98        | 21.85        | 22.14         | 1             | 20.96        | 20.84        | 21.07         | 2             |
|           | 25      | 12        | 21.83        | 21.72        | 22.00         | 1             | 20.81        | 20.65        | 20.95         | 2             |
|           | 25      | 25        | 21.74        | 21.58        | 21.79         | 1             | 20.68        | 20.60        | 20.85         | 2             |
|           | 50      | 0         | 22.03        | 21.89        | 22.00         | 1             | 20.86        | 20.78        | 21.05         | 2             |

| Band / BW | RB Size | RB Offset | QPSK         |              |               | 3GPP MPR (dB) | 16QAM        |              |               | 3GPP MPR (dB) |
|-----------|---------|-----------|--------------|--------------|---------------|---------------|--------------|--------------|---------------|---------------|
|           |         |           | Low Ch 20025 | Mid Ch 20175 | High Ch 20325 |               | Low Ch 20025 | Mid Ch 20175 | High Ch 20325 |               |
|           |         |           | 1717.5 MHz   | 1732.5 MHz   | 1747.5 MHz    |               | 1717.5 MHz   | 1732.5 MHz   | 1747.5 MHz    |               |
| 4 / 15M   | 1       | 0         | 22.98        | 23.00        | 23.16         | 0             | 21.96        | 21.95        | 22.13         | 1             |
|           | 1       | 37        | 22.85        | 22.88        | 23.04         | 0             | 21.79        | 21.79        | 21.95         | 1             |
|           | 1       | 74        | 22.62        | 22.74        | 22.94         | 0             | 21.59        | 21.66        | 21.89         | 1             |
|           | 36      | 0         | 21.88        | 21.89        | 22.07         | 1             | 20.76        | 20.78        | 20.90         | 2             |
|           | 36      | 19        | 21.74        | 21.74        | 21.91         | 1             | 20.71        | 20.77        | 20.87         | 2             |
|           | 36      | 39        | 21.50        | 21.54        | 21.71         | 1             | 20.60        | 20.60        | 20.77         | 2             |
|           | 75      | 0         | 21.78        | 21.79        | 22.08         | 1             | 20.78        | 20.71        | 21.07         | 2             |

| Band / BW | RB Size | RB Offset | QPSK         |              |               | 3GPP MPR (dB) | 16QAM        |              |               | 3GPP MPR (dB) |
|-----------|---------|-----------|--------------|--------------|---------------|---------------|--------------|--------------|---------------|---------------|
|           |         |           | Low Ch 20050 | Mid Ch 20175 | High Ch 20300 |               | Low Ch 20050 | Mid Ch 20175 | High Ch 20300 |               |
|           |         |           | 1720.0 MHz   | 1732.5 MHz   | 1745.0 MHz    |               | 1720.0 MHz   | 1732.5 MHz   | 1745.0 MHz    |               |
| 4 / 20M   | 1       | 0         | 22.99        | 23.02        | 23.27         | 0             | 21.91        | 21.93        | 22.18         | 1             |
|           | 1       | 50        | 22.85        | 22.93        | 23.16         | 0             | 21.76        | 21.88        | 22.13         | 1             |
|           | 1       | 99        | 22.70        | 22.79        | 23.00         | 0             | 21.57        | 21.64        | 21.83         | 1             |
|           | 50      | 0         | 21.79        | 21.92        | 22.15         | 1             | 20.68        | 20.91        | 21.04         | 2             |
|           | 50      | 25        | 21.70        | 21.80        | 22.01         | 1             | 20.58        | 20.72        | 20.97         | 2             |
|           | 50      | 50        | 21.41        | 21.62        | 21.83         | 1             | 20.53        | 20.52        | 20.87         | 2             |
|           | 100     | 0         | 21.80        | 21.94        | 22.20         | 1             | 20.87        | 20.78        | 21.15         | 2             |

| Band / BW | RB Size | RB Offset | QPSK         |              |               | 3GPP MPR (dB) | 16QAM        |              |               | 3GPP MPR (dB) |
|-----------|---------|-----------|--------------|--------------|---------------|---------------|--------------|--------------|---------------|---------------|
|           |         |           | Low Ch 23017 | Mid Ch 23095 | High Ch 23173 |               | Low Ch 23017 | Mid Ch 23095 | High Ch 23173 |               |
|           |         |           | 699.7 MHz    | 707.5 MHz    | 715.3 MHz     |               | 699.7 MHz    | 707.5 MHz    | 715.3 MHz     |               |
| 12 / 1.4M | 1       | 0         | 22.52        | 22.58        | <b>22.64</b>  | 0             | 21.44        | 21.55        | <b>21.60</b>  | 1             |
|           | 1       | 2         | 22.36        | 22.47        | 22.49         | 0             | 21.33        | 21.35        | 21.46         | 1             |
|           | 1       | 5         | 22.24        | 22.33        | 22.28         | 0             | 21.21        | 21.21        | 21.23         | 1             |
|           | 3       | 0         | 21.42        | 21.45        | 21.55         | 0             | 20.38        | 20.36        | 20.51         | 1             |
|           | 3       | 1         | 21.27        | 21.32        | 21.36         | 0             | 20.15        | 20.29        | 20.36         | 1             |
|           | 3       | 3         | 21.11        | 21.24        | 21.33         | 0             | 20.12        | 20.10        | 20.25         | 1             |
|           | 6       | 0         | 21.38        | 21.36        | 21.61         | 1             | 20.28        | 20.46        | 20.45         | 2             |

| Band / BW | RB Size | RB Offset | QPSK         |              |               | 3GPP MPR (dB) | 16QAM        |              |               | 3GPP MPR (dB) |
|-----------|---------|-----------|--------------|--------------|---------------|---------------|--------------|--------------|---------------|---------------|
|           |         |           | Low Ch 23025 | Mid Ch 23095 | High Ch 23165 |               | Low Ch 23025 | Mid Ch 23095 | High Ch 23165 |               |
|           |         |           | 700.5 MHz    | 707.5 MHz    | 714.5 MHz     |               | 700.5 MHz    | 707.5 MHz    | 714.5 MHz     |               |
| 12 / 3M   | 1       | 0         | 22.55        | 22.60        | <b>22.77</b>  | 0             | 21.47        | 21.54        | <b>21.69</b>  | 1             |
|           | 1       | 7         | 22.41        | 22.48        | 22.64         | 0             | 21.35        | 21.35        | 21.58         | 1             |
|           | 1       | 14        | 22.29        | 22.36        | 22.50         | 0             | 21.14        | 21.33        | 21.49         | 1             |
|           | 8       | 0         | 22.48        | 22.35        | 22.52         | 1             | 21.40        | 21.19        | 21.39         | 2             |
|           | 8       | 3         | 22.37        | 22.22        | 22.38         | 1             | 21.30        | 21.21        | 21.37         | 2             |
|           | 8       | 7         | 22.22        | 22.04        | 22.20         | 1             | 21.10        | 21.02        | 21.24         | 2             |
|           | 15      | 0         | 21.39        | 21.40        | 21.66         | 1             | 20.48        | 20.48        | 20.49         | 2             |

| Band / BW | RB Size | RB Offset | QPSK         |              |               | 3GPP MPR (dB) | 16QAM        |              |               | 3GPP MPR (dB) |
|-----------|---------|-----------|--------------|--------------|---------------|---------------|--------------|--------------|---------------|---------------|
|           |         |           | Low Ch 23035 | Mid Ch 23095 | High Ch 23155 |               | Low Ch 23035 | Mid Ch 23095 | High Ch 23155 |               |
|           |         |           | 701.5 MHz    | 707.5 MHz    | 713.5 MHz     |               | 701.5 MHz    | 707.5 MHz    | 713.5 MHz     |               |
| 12 / 5M   | 1       | 0         | 22.58        | 22.64        | <b>22.84</b>  | 0             | 21.51        | 21.59        | <b>21.83</b>  | 1             |
|           | 1       | 12        | 22.42        | 22.50        | 22.75         | 0             | 21.40        | 21.44        | 21.67         | 1             |
|           | 1       | 24        | 22.32        | 22.40        | 22.57         | 0             | 21.27        | 21.35        | 21.58         | 1             |
|           | 12      | 0         | 21.41        | 21.43        | 21.55         | 1             | 20.26        | 20.35        | 20.39         | 2             |
|           | 12      | 6         | 21.30        | 21.29        | 21.39         | 1             | 20.24        | 20.27        | 20.35         | 2             |
|           | 12      | 13        | 21.12        | 21.07        | 21.33         | 1             | 20.00        | 20.06        | 20.30         | 2             |
|           | 25      | 0         | 21.39        | 21.47        | 21.83         | 1             | 20.39        | 20.46        | 20.79         | 2             |

| Band / BW | RB Size | RB Offset | QPSK         |              |               | 3GPP MPR (dB) | 16QAM        |              |               | 3GPP MPR (dB) |
|-----------|---------|-----------|--------------|--------------|---------------|---------------|--------------|--------------|---------------|---------------|
|           |         |           | Low Ch 23060 | Mid Ch 23095 | High Ch 23130 |               | Low Ch 23060 | Mid Ch 23095 | High Ch 23130 |               |
|           |         |           | 704.0 MHz    | 707.5 MHz    | 711.0 MHz     |               | 704.0 MHz    | 707.5 MHz    | 711.0 MHz     |               |
| 12 / 10M  | 1       | 0         | 22.62        | 22.76        | <b>22.88</b>  | 0             | 21.53        | 21.74        | <b>21.79</b>  | 1             |
|           | 1       | 24        | 22.49        | 22.63        | 22.78         | 0             | 21.44        | 21.60        | 21.68         | 1             |
|           | 1       | 49        | 22.26        | 22.48        | 22.67         | 0             | 21.30        | 21.44        | 21.57         | 1             |
|           | 25      | 0         | 21.52        | 21.65        | 21.72         | 1             | 20.43        | 20.43        | 20.69         | 2             |
|           | 25      | 12        | 21.40        | 21.52        | 21.57         | 1             | 20.38        | 20.46        | 20.56         | 2             |
|           | 25      | 25        | 21.29        | 21.34        | 21.38         | 1             | 20.22        | 20.29        | 20.33         | 2             |
|           | 50      | 0         | 21.40        | 21.66        | 21.78         | 1             | 20.57        | 20.63        | 20.62         | 2             |



| Band / BW | RB Size | RB Offset | QPSK         |              |               | 3GPP MPR (dB) | 16QAM        |              |               | 3GPP MPR (dB) |
|-----------|---------|-----------|--------------|--------------|---------------|---------------|--------------|--------------|---------------|---------------|
|           |         |           | Low Ch 23205 | Mid Ch 23230 | High Ch 23255 |               | Low Ch 23205 | Mid Ch 23230 | High Ch 23255 |               |
|           |         |           | 779.5 MHz    | 782.0 MHz    | 784.5 MHz     |               | 779.5 MHz    | 782.0 MHz    | 784.5 MHz     |               |
| 13 / 5M   | 1       | 0         | 22.56        | 22.63        | <b>22.78</b>  | 0             | 21.49        | 21.60        | <b>21.70</b>  | 1             |
|           | 1       | 12        | 22.42        | 22.52        | 22.64         | 0             | 21.34        | 21.46        | 21.59         | 1             |
|           | 1       | 24        | 22.19        | 22.34        | 22.47         | 0             | 21.29        | 21.18        | 21.43         | 1             |
|           | 12      | 0         | 21.55        | 21.60        | 21.63         | 1             | 20.37        | 20.57        | 20.58         | 2             |
|           | 12      | 6         | 21.40        | 21.49        | 21.54         | 1             | 20.37        | 20.48        | 20.42         | 2             |
|           | 12      | 13        | 21.20        | 21.35        | 21.27         | 1             | 20.26        | 20.24        | 20.33         | 2             |
|           | 25      | 0         | 21.41        | 21.56        | 21.67         | 1             | 20.43        | 20.41        | 20.63         | 2             |

| Band /<br>BW | RB<br>Size | RB<br>Offset | QPSK            | 3GPP<br>MPR<br>(dB) | 16QAM           | 3GPP<br>MPR<br>(dB) |
|--------------|------------|--------------|-----------------|---------------------|-----------------|---------------------|
|              |            |              | Mid Ch<br>23230 |                     | Mid Ch<br>23230 |                     |
|              |            |              | 782.0<br>MHz    |                     | 782.0<br>MHz    |                     |
| 13 / 10M     | 1          | 0            | 23.03           | 0                   | 21.98           | 1                   |
|              | 1          | 24           | 22.89           | 0                   | 21.90           | 1                   |
|              | 1          | 49           | 22.72           | 0                   | 21.74           | 1                   |
|              | 25         | 0            | 21.87           | 1                   | 20.79           | 2                   |
|              | 25         | 12           | 21.75           | 1                   | 20.69           | 2                   |
|              | 25         | 25           | 21.64           | 1                   | 20.55           | 2                   |
|              | 50         | 0            | 21.97           | 1                   | 20.82           | 2                   |

| Band / BW | RB Size | RB Offset | QPSK         |              |               | 3GPP MPR (dB) | 16QAM        |              |               | 3GPP MPR (dB) |
|-----------|---------|-----------|--------------|--------------|---------------|---------------|--------------|--------------|---------------|---------------|
|           |         |           | Low Ch 23755 | Mid Ch 23790 | High Ch 23825 |               | Low Ch 23755 | Mid Ch 23790 | High Ch 23825 |               |
|           |         |           | 706.5 MHz    | 710.0 MHz    | 713.5 MHz     |               | 706.5 MHz    | 710.0 MHz    | 713.5 MHz     |               |
| 17 / 5M   | 1       | 0         | 22.53        | 22.62        | <b>22.65</b>  | 0             | 21.50        | 21.57        | <b>21.62</b>  | 1             |
|           | 1       | 12        | 22.44        | 22.46        | 22.54         | 0             | 21.37        | 21.48        | 21.42         | 1             |
|           | 1       | 24        | 22.26        | 22.40        | 22.32         | 0             | 21.12        | 21.21        | 21.28         | 1             |
|           | 12      | 0         | 21.45        | 21.58        | 21.56         | 1             | 20.44        | 20.55        | 20.38         | 2             |
|           | 12      | 6         | 21.33        | 21.43        | 21.47         | 1             | 20.33        | 20.46        | 20.38         | 2             |
|           | 12      | 13        | 21.17        | 21.36        | 21.33         | 1             | 20.17        | 20.29        | 20.21         | 2             |
|           | 25      | 0         | 21.46        | 21.51        | 21.57         | 1             | 20.33        | 20.46        | 20.45         | 2             |

| Band / BW | RB Size | RB Offset | QPSK         |              |               | 3GPP MPR (dB) | 16QAM        |              |               | 3GPP MPR (dB) |
|-----------|---------|-----------|--------------|--------------|---------------|---------------|--------------|--------------|---------------|---------------|
|           |         |           | Low Ch 23780 | Mid Ch 23790 | High Ch 23800 |               | Low Ch 23780 | Mid Ch 23790 | High Ch 23800 |               |
|           |         |           | 709.0 MHz    | 710.0 MHz    | 711.0 MHz     |               | 709.0 MHz    | 710.0 MHz    | 711.0 MHz     |               |
| 17 / 10M  | 1       | 0         | 22.81        | <b>23.00</b> | 22.86         | 0             | 21.73        | <b>21.93</b> | 21.85         | 1             |
|           | 1       | 24        | 22.67        | 22.91        | 22.71         | 0             | 21.66        | 21.78        | 21.65         | 1             |
|           | 1       | 49        | 22.52        | 22.79        | 22.59         | 0             | 21.44        | 21.56        | 21.59         | 1             |
|           | 25      | 0         | 21.69        | 21.71        | 21.74         | 1             | 20.67        | 20.65        | 20.69         | 2             |
|           | 25      | 12        | 21.55        | 21.60        | 21.63         | 1             | 20.48        | 20.51        | 20.51         | 2             |
|           | 25      | 25        | 21.32        | 21.45        | 21.43         | 1             | 20.30        | 20.46        | 20.42         | 2             |
|           | 50      | 0         | 21.73        | 21.97        | 21.83         | 1             | 20.62        | 20.89        | 20.68         | 2             |

| Band / BW | RB Size | RB Offset | QPSK          |               |                | 3GPP MPR (dB) | 16QAM         |               |                | 3GPP MPR (dB) |
|-----------|---------|-----------|---------------|---------------|----------------|---------------|---------------|---------------|----------------|---------------|
|           |         |           | Low Ch 131979 | Mid Ch 132322 | High Ch 132665 |               | Low Ch 131979 | Mid Ch 132322 | High Ch 132665 |               |
|           |         |           | 1710.7 MHz    | 1745.0 MHz    | 1779.3 MHz     |               | 1710.7 MHz    | 1745.0 MHz    | 1779.3 MHz     |               |
| 66 / 1.4M | 1       | 0         | 22.82         | 22.87         | 22.78          | 0             | 21.23         | 21.30         | 21.26          | 1             |
|           | 1       | 2         | 22.16         | 22.18         | 22.16          | 0             | 21.04         | 21.20         | 21.15          | 1             |
|           | 1       | 5         | 21.99         | 22.10         | 22.03          | 0             | 21.00         | 21.01         | 20.93          | 1             |
|           | 3       | 0         | 22.68         | 22.74         | 22.65          | 0             | 20.27         | 20.31         | 20.32          | 1             |
|           | 3       | 1         | 21.21         | 21.28         | 21.17          | 0             | 20.16         | 20.18         | 20.09          | 1             |
|           | 3       | 3         | 21.08         | 21.08         | 21.03          | 0             | 20.04         | 20.10         | 20.07          | 1             |
|           | 6       | 0         | 21.22         | 21.33         | 21.22          | 1             | 20.14         | 20.21         | 20.18          | 2             |

| Band / BW | RB Size | RB Offset | QPSK          |               |                | 3GPP MPR (dB) | 16QAM         |               |                | 3GPP MPR (dB) |
|-----------|---------|-----------|---------------|---------------|----------------|---------------|---------------|---------------|----------------|---------------|
|           |         |           | Low Ch 131987 | Mid Ch 132322 | High Ch 132657 |               | Low Ch 131987 | Mid Ch 132322 | High Ch 132657 |               |
|           |         |           | 1711.5 MHz    | 1745.5 MHz    | 1778.5 MHz     |               | 1711.5 MHz    | 1745.5 MHz    | 1778.5 MHz     |               |
| 66 / 3M   | 1       | 0         | 22.77         | 22.94         | 22.85          | 0             | 21.68         | 21.91         | 21.81          | 1             |
|           | 1       | 7         | 22.63         | 22.78         | 22.75          | 0             | 21.57         | 21.69         | 21.73          | 1             |
|           | 1       | 14        | 22.40         | 22.64         | 22.63          | 0             | 21.32         | 21.58         | 21.46          | 1             |
|           | 8       | 0         | 22.37         | 22.45         | 22.34          | 1             | 21.25         | 21.39         | 21.22          | 2             |
|           | 8       | 3         | 22.22         | 22.35         | 22.23          | 1             | 21.14         | 21.23         | 21.18          | 2             |
|           | 8       | 7         | 22.08         | 22.17         | 22.07          | 1             | 20.97         | 21.16         | 21.02          | 2             |
|           | 15      | 0         | 21.65         | 21.77         | 21.80          | 1             | 20.58         | 20.65         | 20.76          | 2             |

| Band / BW | RB Size | RB Offset | QPSK          |               |                | 3GPP MPR (dB) | 16QAM         |               |                | 3GPP MPR (dB) |
|-----------|---------|-----------|---------------|---------------|----------------|---------------|---------------|---------------|----------------|---------------|
|           |         |           | Low Ch 131997 | Mid Ch 132322 | High Ch 132647 |               | Low Ch 131997 | Mid Ch 132322 | High Ch 132647 |               |
|           |         |           | 1712.5 MHz    | 1745.0 MHz    | 1777.5 MHz     |               | 1712.5 MHz    | 1745.0 MHz    | 1777.5 MHz     |               |
| 66 / 5M   | 1       | 0         | 22.88         | 22.99         | 22.95          | 0             | 21.80         | 21.92         | 21.89          | 1             |
|           | 1       | 12        | 22.72         | 22.85         | 22.82          | 0             | 21.68         | 21.87         | 21.81          | 1             |
|           | 1       | 24        | 22.56         | 22.77         | 22.61          | 0             | 21.43         | 21.62         | 21.55          | 1             |
|           | 12      | 0         | 22.61         | 22.74         | 22.75          | 1             | 21.43         | 21.65         | 21.74          | 2             |
|           | 12      | 6         | 22.45         | 22.64         | 22.59          | 1             | 21.42         | 21.63         | 21.55          | 2             |
|           | 12      | 13        | 22.31         | 22.44         | 22.52          | 1             | 21.25         | 21.45         | 21.38          | 2             |
|           | 25      | 0         | 21.75         | 21.92         | 21.81          | 1             | 20.68         | 20.97         | 20.68          | 2             |

| Band / BW | RB Size | RB Offset | QPSK          |               |                | 3GPP MPR (dB) | 16QAM         |               |                | 3GPP MPR (dB) |
|-----------|---------|-----------|---------------|---------------|----------------|---------------|---------------|---------------|----------------|---------------|
|           |         |           | Low Ch 132022 | Mid Ch 132322 | High Ch 132622 |               | Low Ch 132022 | Mid Ch 132322 | High Ch 132622 |               |
|           |         |           | 1715.0 MHz    | 1745.0 MHz    | 1775.0 MHz     |               | 1715.0 MHz    | 1745.0 MHz    | 1775.0 MHz     |               |
| 66 / 10M  | 1       | 0         | 22.97         | 23.05         | 23.02          | 0             | 21.91         | 22.02         | 21.97          | 1             |
|           | 1       | 24        | 22.86         | 22.90         | 22.86          | 0             | 21.78         | 21.85         | 21.88          | 1             |
|           | 1       | 49        | 22.74         | 22.74         | 22.64          | 0             | 21.56         | 21.72         | 21.76          | 1             |
|           | 25      | 0         | 22.62         | 22.78         | 22.67          | 1             | 21.46         | 21.66         | 21.66          | 2             |
|           | 25      | 12        | 22.52         | 22.65         | 22.53          | 1             | 21.44         | 21.61         | 21.48          | 2             |
|           | 25      | 25        | 22.28         | 22.45         | 22.35          | 1             | 21.25         | 21.41         | 21.37          | 2             |
|           | 50      | 0         | 21.80         | 21.92         | 21.87          | 1             | 20.78         | 20.93         | 20.79          | 2             |

| Band / BW | RB Size | RB Offset | QPSK          |               |                | 3GPP MPR (dB) | 16QAM         |               |                | 3GPP MPR (dB) |
|-----------|---------|-----------|---------------|---------------|----------------|---------------|---------------|---------------|----------------|---------------|
|           |         |           | Low Ch 132047 | Mid Ch 132322 | High Ch 132597 |               | Low Ch 132047 | Mid Ch 132322 | High Ch 132597 |               |
|           |         |           | 1717.5 MHz    | 1745.0 MHz    | 1772.5 MHz     |               | 1717.5 MHz    | 1745.0 MHz    | 1772.5 MHz     |               |
| 66 / 15M  | 1       | 0         | 23.06         | 23.13         | 23.00          | 0             | 22.03         | 22.10         | 21.94          | 1             |
|           | 1       | 37        | 22.90         | 22.99         | 22.89          | 0             | 21.90         | 21.97         | 21.88          | 1             |
|           | 1       | 74        | 22.73         | 22.86         | 22.65          | 0             | 21.67         | 21.77         | 21.66          | 1             |
|           | 36      | 0         | 22.69         | 22.83         | 22.71          | 1             | 21.59         | 21.76         | 21.67          | 2             |
|           | 36      | 19        | 22.59         | 22.69         | 22.58          | 1             | 21.50         | 21.67         | 21.54          | 2             |
|           | 36      | 39        | 22.43         | 22.45         | 22.38          | 1             | 21.35         | 21.59         | 21.28          | 2             |
|           | 75      | 0         | 21.93         | 22.06         | 21.94          | 1             | 21.02         | 21.05         | 20.75          | 2             |

| Band / BW | RB Size | RB Offset | QPSK          |               |                | 3GPP MPR (dB) | 16QAM         |               |                | 3GPP MPR (dB) |
|-----------|---------|-----------|---------------|---------------|----------------|---------------|---------------|---------------|----------------|---------------|
|           |         |           | Low Ch 132072 | Mid Ch 132322 | High Ch 132572 |               | Low Ch 132072 | Mid Ch 132322 | High Ch 132572 |               |
|           |         |           | 1720.0 MHz    | 1745.0 MHz    | 1770.0 MHz     |               | 1720.0 MHz    | 1745.0 MHz    | 1770.0 MHz     |               |
| 66 / 20M  | 1       | 0         | 23.09         | 23.25         | 23.11          | 0             | 22.07         | 22.21         | 22.08          | 1             |
|           | 1       | 50        | 22.96         | 23.11         | 22.99          | 0             | 21.90         | 22.10         | 21.90          | 1             |
|           | 1       | 99        | 22.84         | 22.95         | 22.90          | 0             | 21.78         | 21.93         | 21.68          | 1             |
|           | 50      | 0         | 22.75         | 23.02         | 22.87          | 1             | 21.67         | 21.92         | 21.78          | 2             |
|           | 50      | 25        | 22.59         | 22.89         | 22.74          | 1             | 21.53         | 21.86         | 21.67          | 2             |
|           | 50      | 50        | 22.49         | 22.65         | 22.51          | 1             | 21.42         | 21.73         | 21.61          | 2             |
|           | 100     | 0         | 21.87         | 22.17         | 21.96          | 1             | 20.88         | <b>21.05</b>  | 20.91          | 2             |

**ERP Power (dBm)**

| LTE Band 12                        |         |                 |           |                        |           |          |                    |
|------------------------------------|---------|-----------------|-----------|------------------------|-----------|----------|--------------------|
| Channel Bandwidth: 1.4 MHz / QPSK  |         |                 |           |                        |           |          |                    |
| Plane                              | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | ERP (dBm) | ERP (mW) | Polarization (H/V) |
| X                                  | 23017   | 699.7           | -5.95     | 30.36                  | 22.26     | 168.27   | H                  |
|                                    | 23095   | 707.5           | -5.71     | 30.17                  | 22.31     | 170.22   |                    |
|                                    | 23173   | 715.3           | -5.79     | 30.17                  | 22.23     | 167.11   |                    |
|                                    | 23017   | 699.7           | -16.02    | 32.03                  | 13.86     | 24.32    | V                  |
|                                    | 23095   | 707.5           | -15.94    | 31.98                  | 13.89     | 24.49    |                    |
|                                    | 23173   | 715.3           | -16.09    | 32.06                  | 13.82     | 24.10    |                    |
| Channel Bandwidth: 1.4 MHz / 16QAM |         |                 |           |                        |           |          |                    |
| X                                  | 23017   | 699.7           | -7.02     | 30.36                  | 21.19     | 131.52   | H                  |
|                                    | 23095   | 707.5           | -6.80     | 30.17                  | 21.22     | 132.43   |                    |
|                                    | 23173   | 715.3           | -6.85     | 30.17                  | 21.17     | 130.92   |                    |
|                                    | 23017   | 699.7           | -16.16    | 32.03                  | 13.72     | 23.55    | V                  |
|                                    | 23095   | 707.5           | -16.10    | 31.98                  | 13.73     | 23.60    |                    |
|                                    | 23173   | 715.3           | -16.21    | 32.06                  | 13.70     | 23.44    |                    |

| LTE Band 12                      |         |                 |           |                        |           |          |                    |
|----------------------------------|---------|-----------------|-----------|------------------------|-----------|----------|--------------------|
| Channel Bandwidth: 3 MHz / QPSK  |         |                 |           |                        |           |          |                    |
| Plane                            | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | ERP (dBm) | ERP (mW) | Polarization (H/V) |
| X                                | 23025   | 700.5           | -5.66     | 30.17                  | 22.36     | 172.19   | H                  |
|                                  | 23095   | 707.5           | -5.64     | 30.17                  | 22.38     | 172.98   |                    |
|                                  | 23165   | 714.5           | -5.70     | 30.18                  | 22.33     | 171.00   |                    |
|                                  | 23025   | 700.5           | -15.88    | 31.96                  | 13.93     | 24.72    | V                  |
|                                  | 23095   | 707.5           | -15.86    | 31.98                  | 13.97     | 24.95    |                    |
|                                  | 23165   | 714.5           | -15.96    | 32.03                  | 13.92     | 24.66    |                    |
| Channel Bandwidth: 3 MHz / 16QAM |         |                 |           |                        |           |          |                    |
| X                                | 23025   | 700.5           | -6.78     | 30.17                  | 21.24     | 133.05   | H                  |
|                                  | 23095   | 707.5           | -6.75     | 30.17                  | 21.27     | 133.97   |                    |
|                                  | 23165   | 714.5           | -6.81     | 30.18                  | 21.22     | 132.43   |                    |
|                                  | 23025   | 700.5           | -16.03    | 31.96                  | 13.78     | 23.88    | V                  |
|                                  | 23095   | 707.5           | -16.02    | 31.98                  | 13.81     | 24.04    |                    |
|                                  | 23165   | 714.5           | -16.09    | 32.03                  | 13.79     | 23.93    |                    |

| LTE Band 12                      |         |                 |           |                        |           |          |                    |
|----------------------------------|---------|-----------------|-----------|------------------------|-----------|----------|--------------------|
| Channel Bandwidth: 5 MHz / QPSK  |         |                 |           |                        |           |          |                    |
| Plane                            | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | ERP (dBm) | ERP (mW) | Polarization (H/V) |
| X                                | 23035   | 701.5           | -5.59     | 30.17                  | 22.43     | 174.98   | H                  |
|                                  | 23095   | 707.5           | -5.57     | 30.17                  | 22.45     | 175.79   |                    |
|                                  | 23155   | 713.5           | -5.62     | 30.18                  | 22.41     | 174.18   |                    |
|                                  | 23035   | 701.5           | -15.80    | 31.96                  | 14.01     | 25.18    | V                  |
|                                  | 23095   | 707.5           | -15.79    | 31.98                  | 14.04     | 25.35    |                    |
|                                  | 23155   | 713.5           | -15.86    | 32.03                  | 14.02     | 25.23    |                    |
| Channel Bandwidth: 5 MHz / 16QAM |         |                 |           |                        |           |          |                    |
| X                                | 23035   | 701.5           | -6.70     | 30.17                  | 21.32     | 135.52   | H                  |
|                                  | 23095   | 707.5           | -6.69     | 30.17                  | 21.33     | 135.83   |                    |
|                                  | 23155   | 713.5           | -6.72     | 30.18                  | 21.31     | 135.21   |                    |
|                                  | 23035   | 701.5           | -15.98    | 31.96                  | 13.83     | 24.15    | V                  |
|                                  | 23095   | 707.5           | -15.97    | 31.98                  | 13.86     | 24.32    |                    |
|                                  | 23155   | 713.5           | -16.03    | 32.03                  | 13.85     | 24.27    |                    |

| LTE Band 12                       |         |                 |           |                        |           |          |                    |
|-----------------------------------|---------|-----------------|-----------|------------------------|-----------|----------|--------------------|
| Channel Bandwidth: 10 MHz / QPSK  |         |                 |           |                        |           |          |                    |
| Plane                             | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | ERP (dBm) | ERP (mW) | Polarization (H/V) |
| X                                 | 23060   | 704.0           | -5.52     | 30.17                  | 22.50     | 177.83   | H                  |
|                                   | 23095   | 707.5           | -5.50     | 30.17                  | 22.52     | 178.65   |                    |
|                                   | 23130   | 711.0           | -5.54     | 30.18                  | 22.49     | 177.42   |                    |
|                                   | 23060   | 704.0           | -15.76    | 31.96                  | 14.05     | 25.41    | V                  |
|                                   | 23095   | 707.5           | -15.70    | 31.98                  | 14.13     | 25.88    |                    |
|                                   | 23130   | 711.0           | -15.81    | 32.03                  | 14.07     | 25.53    |                    |
| Channel Bandwidth: 10 MHz / 16QAM |         |                 |           |                        |           |          |                    |
| X                                 | 23060   | 704.0           | -6.64     | 30.17                  | 21.38     | 137.40   | H                  |
|                                   | 23095   | 707.5           | -6.61     | 30.17                  | 21.41     | 138.36   |                    |
|                                   | 23130   | 711.0           | -6.68     | 30.18                  | 21.35     | 136.46   |                    |
|                                   | 23060   | 704.0           | -15.92    | 31.96                  | 13.89     | 24.49    | V                  |
|                                   | 23095   | 707.5           | -15.90    | 31.98                  | 13.93     | 24.72    |                    |
|                                   | 23130   | 711.0           | -15.97    | 32.03                  | 13.91     | 24.60    |                    |

| LTE Band 13                      |         |                 |           |                        |           |          |                    |
|----------------------------------|---------|-----------------|-----------|------------------------|-----------|----------|--------------------|
| Channel Bandwidth: 5 MHz / QPSK  |         |                 |           |                        |           |          |                    |
| Plane                            | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | ERP (dBm) | ERP (mW) | Polarization (H/V) |
| X                                | 23205   | 779.5           | -7.95     | 32.24                  | 22.14     | 163.68   | H                  |
|                                  | 23230   | 782.0           | -7.83     | 32.17                  | 22.19     | 165.58   |                    |
|                                  | 23255   | 784.5           | -7.83     | 32.11                  | 22.13     | 163.31   |                    |
|                                  | 23205   | 779.5           | -14.67    | 32.43                  | 15.61     | 36.39    | V                  |
|                                  | 23230   | 782.0           | -14.62    | 32.42                  | 15.65     | 36.73    |                    |
|                                  | 23255   | 784.5           | -14.69    | 32.46                  | 15.62     | 36.48    |                    |
| Channel Bandwidth: 5 MHz / 16QAM |         |                 |           |                        |           |          |                    |
| X                                | 23205   | 779.5           | -8.58     | 32.24                  | 21.51     | 141.58   | H                  |
|                                  | 23230   | 782.0           | -8.47     | 32.17                  | 21.55     | 142.89   |                    |
|                                  | 23255   | 784.5           | -8.43     | 32.11                  | 21.53     | 142.23   |                    |
|                                  | 23205   | 779.5           | -15.26    | 32.43                  | 15.02     | 31.77    | V                  |
|                                  | 23230   | 782.0           | -15.24    | 32.42                  | 15.03     | 31.84    |                    |
|                                  | 23255   | 784.5           | -15.32    | 32.46                  | 14.99     | 31.55    |                    |

| LTE Band 13                       |         |                 |           |                        |           |          |                    |
|-----------------------------------|---------|-----------------|-----------|------------------------|-----------|----------|--------------------|
| Channel Bandwidth: 10 MHz / QPSK  |         |                 |           |                        |           |          |                    |
| Plane                             | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | ERP (dBm) | ERP (mW) | Polarization (H/V) |
| X                                 | 23230   | 782.0           | -7.76     | 32.17                  | 22.26     | 168.27   | H                  |
|                                   | 23230   | 782.0           | -14.49    | 32.42                  | 15.78     | 37.84    | V                  |
| Channel Bandwidth: 10 MHz / 16QAM |         |                 |           |                        |           |          |                    |
| X                                 | 23230   | 782.0           | -8.34     | 32.17                  | 21.68     | 147.23   | H                  |
|                                   | 23230   | 782.0           | -15.22    | 32.42                  | 15.05     | 31.99    | V                  |

| LTE Band 17                      |         |                 |           |                        |           |          |                    |
|----------------------------------|---------|-----------------|-----------|------------------------|-----------|----------|--------------------|
| Channel Bandwidth: 5 MHz / QPSK  |         |                 |           |                        |           |          |                    |
| Plane                            | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | ERP (dBm) | ERP (mW) | Polarization (H/V) |
| X                                | 23755   | 706.5           | -5.63     | 30.36                  | 22.58     | 181.13   | H                  |
|                                  | 23790   | 710.0           | -5.42     | 30.17                  | 22.60     | 181.97   |                    |
|                                  | 23825   | 713.5           | -5.49     | 30.17                  | 22.53     | 179.06   |                    |
|                                  | 23755   | 706.5           | -16.39    | 32.03                  | 13.49     | 22.34    | V                  |
|                                  | 23790   | 710.0           | -16.33    | 31.98                  | 13.50     | 22.39    |                    |
|                                  | 23825   | 713.5           | -16.48    | 32.06                  | 13.43     | 22.03    |                    |
| Channel Bandwidth: 5 MHz / 16QAM |         |                 |           |                        |           |          |                    |
| X                                | 23755   | 706.5           | -6.80     | 30.36                  | 21.41     | 138.36   | H                  |
|                                  | 23790   | 710.0           | -6.55     | 30.17                  | 21.47     | 140.28   |                    |
|                                  | 23825   | 713.5           | -6.56     | 30.17                  | 21.46     | 139.96   |                    |
|                                  | 23755   | 706.5           | -17.63    | 32.03                  | 12.25     | 16.79    | V                  |
|                                  | 23790   | 710.0           | -17.54    | 31.98                  | 12.29     | 16.94    |                    |
|                                  | 23825   | 713.5           | -17.69    | 32.06                  | 12.22     | 16.67    |                    |

| LTE Band 17                       |         |                 |           |                        |           |          |                    |
|-----------------------------------|---------|-----------------|-----------|------------------------|-----------|----------|--------------------|
| Channel Bandwidth: 10 MHz / QPSK  |         |                 |           |                        |           |          |                    |
| Plane                             | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | ERP (dBm) | ERP (mW) | Polarization (H/V) |
| X                                 | 23780   | 709.0           | -5.42     | 30.17                  | 22.60     | 181.97   | H                  |
|                                   | 23790   | 710.0           | -5.38     | 30.17                  | 22.64     | 183.65   |                    |
|                                   | 23800   | 711.0           | -5.44     | 30.18                  | 22.59     | 181.55   |                    |
|                                   | 23780   | 709.0           | -16.21    | 31.96                  | 13.60     | 22.91    | V                  |
|                                   | 23790   | 710.0           | -16.22    | 31.98                  | 13.61     | 22.96    |                    |
|                                   | 23800   | 711.0           | -16.30    | 32.03                  | 13.58     | 22.80    |                    |
| Channel Bandwidth: 10 MHz / 16QAM |         |                 |           |                        |           |          |                    |
| X                                 | 23780   | 709.0           | -6.51     | 30.17                  | 21.51     | 141.58   | H                  |
|                                   | 23790   | 710.0           | -6.47     | 30.17                  | 21.55     | 142.89   |                    |
|                                   | 23800   | 711.0           | -6.49     | 30.18                  | 21.54     | 142.56   |                    |
|                                   | 23780   | 709.0           | -17.43    | 31.96                  | 12.38     | 17.30    | V                  |
|                                   | 23790   | 710.0           | -17.40    | 31.98                  | 12.43     | 17.50    |                    |
|                                   | 23800   | 711.0           | -17.49    | 32.03                  | 12.39     | 17.34    |                    |

# EIRP Power (dBm)

| WCDMA |         |                 |           |                        |            |           |                    |
|-------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Plane | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Z     | 1312    | 1712.4          | -24.55    | 36.29                  | 11.74      | 14.92     | H                  |
|       | 1413    | 1732.6          | -24.68    | 36.69                  | 12.01      | 15.88     |                    |
|       | 1513    | 1752.6          | -25.15    | 36.98                  | 11.83      | 15.24     |                    |
|       | 1312    | 1712.4          | -11.21    | 37.11                  | 25.90      | 388.87    | V                  |
|       | 1413    | 1732.6          | -11.35    | 37.60                  | 26.25      | 421.70    |                    |
|       | 1513    | 1752.6          | -11.56    | 37.65                  | 26.09      | 406.35    |                    |

| LTE Band 4                         |         |                 |           |                        |            |           |                    |
|------------------------------------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 1.4 MHz / QPSK  |         |                 |           |                        |            |           |                    |
| Plane                              | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Z                                  | 19957   | 1710.7          | -24.13    | 36.45                  | 12.32      | 17.06     | H                  |
|                                    | 20175   | 1732.5          | -24.42    | 36.80                  | 12.38      | 17.29     |                    |
|                                    | 20393   | 1754.3          | -24.61    | 36.94                  | 12.33      | 17.11     |                    |
|                                    | 19957   | 1710.7          | -14.32    | 37.28                  | 22.96      | 197.56    | V                  |
|                                    | 20175   | 1732.5          | -14.60    | 37.63                  | 23.03      | 200.91    |                    |
|                                    | 20393   | 1754.3          | -14.63    | 37.64                  | 23.01      | 199.99    |                    |
| Channel Bandwidth: 1.4 MHz / 16QAM |         |                 |           |                        |            |           |                    |
| Z                                  | 19957   | 1710.7          | -25.32    | 36.45                  | 11.13      | 12.97     | H                  |
|                                    | 20175   | 1732.5          | -25.56    | 36.80                  | 11.24      | 13.30     |                    |
|                                    | 20393   | 1754.3          | -25.79    | 36.94                  | 11.15      | 13.04     |                    |
|                                    | 19957   | 1710.7          | -15.25    | 37.28                  | 22.03      | 159.48    | V                  |
|                                    | 20175   | 1732.5          | -15.56    | 37.63                  | 22.07      | 161.06    |                    |
|                                    | 20393   | 1754.3          | -15.62    | 37.64                  | 22.02      | 159.22    |                    |



| LTE Band 4                       |         |                 |           |                        |            |           |                    |
|----------------------------------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 3 MHz / QPSK  |         |                 |           |                        |            |           |                    |
| Plane                            | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Z                                | 19965   | 1711.5          | -24.02    | 36.45                  | 12.43      | 17.50     | H                  |
|                                  | 20175   | 1732.5          | -24.32    | 36.80                  | 12.48      | 17.70     |                    |
|                                  | 20385   | 1753.5          | -24.53    | 36.94                  | 12.41      | 17.43     |                    |
|                                  | 19965   | 1711.5          | -14.19    | 37.28                  | 23.09      | 203.56    | V                  |
|                                  | 20175   | 1732.5          | -14.53    | 37.63                  | 23.10      | 204.17    |                    |
|                                  | 20385   | 1753.5          | -14.58    | 37.64                  | 23.06      | 202.30    |                    |
| Channel Bandwidth: 3 MHz / 16QAM |         |                 |           |                        |            |           |                    |
| Z                                | 19965   | 1711.5          | -25.20    | 36.45                  | 11.25      | 13.34     | H                  |
|                                  | 20175   | 1732.5          | -25.47    | 36.80                  | 11.33      | 13.58     |                    |
|                                  | 20385   | 1753.5          | -25.68    | 36.94                  | 11.26      | 13.38     |                    |
|                                  | 19965   | 1711.5          | -15.14    | 37.28                  | 22.14      | 163.57    | V                  |
|                                  | 20175   | 1732.5          | -15.47    | 37.63                  | 22.16      | 164.44    |                    |
|                                  | 20385   | 1753.5          | -15.52    | 37.64                  | 22.12      | 162.93    |                    |

| LTE Band 4                       |         |                 |           |                        |            |           |                    |
|----------------------------------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 5 MHz / QPSK  |         |                 |           |                        |            |           |                    |
| Plane                            | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Z                                | 19975   | 1712.5          | -23.95    | 36.45                  | 12.50      | 17.78     | H                  |
|                                  | 20175   | 1732.5          | -24.24    | 36.80                  | 12.56      | 18.03     |                    |
|                                  | 20375   | 1752.5          | -24.47    | 36.94                  | 12.47      | 17.67     |                    |
|                                  | 19975   | 1712.5          | -14.08    | 37.28                  | 23.20      | 208.79    | V                  |
|                                  | 20175   | 1732.5          | -14.41    | 37.63                  | 23.22      | 209.89    |                    |
|                                  | 20375   | 1752.5          | -14.47    | 37.64                  | 23.17      | 207.49    |                    |
| Channel Bandwidth: 5 MHz / 16QAM |         |                 |           |                        |            |           |                    |
| Z                                | 19975   | 1712.5          | -25.09    | 36.45                  | 11.36      | 13.68     | H                  |
|                                  | 20175   | 1732.5          | -25.34    | 36.80                  | 11.46      | 13.99     |                    |
|                                  | 20375   | 1752.5          | -25.57    | 36.94                  | 11.37      | 13.72     |                    |
|                                  | 19975   | 1712.5          | -15.05    | 37.28                  | 22.23      | 166.99    | V                  |
|                                  | 20175   | 1732.5          | -15.36    | 37.63                  | 22.27      | 168.66    |                    |
|                                  | 20375   | 1752.5          | -15.43    | 37.64                  | 22.21      | 166.34    |                    |

| LTE Band 4                        |         |                 |           |                        |            |           |                    |
|-----------------------------------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 10 MHz / QPSK  |         |                 |           |                        |            |           |                    |
| Plane                             | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Z                                 | 20000   | 1715.0          | -24.04    | 36.64                  | 12.60      | 18.20     | H                  |
|                                   | 20175   | 1732.5          | -24.13    | 36.80                  | 12.67      | 18.47     |                    |
|                                   | 20350   | 1750.0          | -24.31    | 36.80                  | 12.49      | 17.74     |                    |
|                                   | 20000   | 1715.0          | -14.18    | 37.44                  | 23.26      | 211.79    | V                  |
|                                   | 20175   | 1732.5          | -14.33    | 37.63                  | 23.30      | 213.75    |                    |
|                                   | 20350   | 1750.0          | -14.43    | 37.64                  | 23.21      | 209.17    |                    |
| Channel Bandwidth: 10 MHz / 16QAM |         |                 |           |                        |            |           |                    |
| Z                                 | 20000   | 1715.0          | -25.19    | 36.64                  | 11.45      | 13.96     | H                  |
|                                   | 20175   | 1732.5          | -25.29    | 36.80                  | 11.51      | 14.14     |                    |
|                                   | 20350   | 1750.0          | -25.33    | 36.80                  | 11.47      | 14.03     |                    |
|                                   | 20000   | 1715.0          | -15.08    | 37.44                  | 22.36      | 172.15    | V                  |
|                                   | 20175   | 1732.5          | -15.25    | 37.63                  | 22.38      | 172.94    |                    |
|                                   | 20350   | 1750.0          | -15.31    | 37.64                  | 22.33      | 170.80    |                    |

| LTE Band 4                        |         |                 |           |                        |            |           |                    |
|-----------------------------------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 15 MHz / QPSK  |         |                 |           |                        |            |           |                    |
| Plane                             | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Z                                 | 20025   | 1717.5          | -23.71    | 36.45                  | 12.74      | 18.79     | H                  |
|                                   | 20175   | 1732.5          | -24.03    | 36.80                  | 12.77      | 18.92     |                    |
|                                   | 20325   | 1747.5          | -24.19    | 36.94                  | 12.75      | 18.85     |                    |
|                                   | 20025   | 1717.5          | -13.96    | 37.28                  | 23.32      | 214.63    | V                  |
|                                   | 20175   | 1732.5          | -14.19    | 37.63                  | 23.44      | 220.80    |                    |
|                                   | 20325   | 1747.5          | -14.22    | 37.64                  | 23.42      | 219.79    |                    |
| Channel Bandwidth: 15 MHz / 16QAM |         |                 |           |                        |            |           |                    |
| Z                                 | 20025   | 1717.5          | -24.88    | 36.45                  | 11.57      | 14.35     | H                  |
|                                   | 20175   | 1732.5          | -25.20    | 36.80                  | 11.60      | 14.45     |                    |
|                                   | 20325   | 1747.5          | -25.39    | 36.94                  | 11.55      | 14.30     |                    |
|                                   | 20025   | 1717.5          | -14.87    | 37.28                  | 22.41      | 174.06    | V                  |
|                                   | 20175   | 1732.5          | -15.13    | 37.63                  | 22.50      | 177.83    |                    |
|                                   | 20325   | 1747.5          | -15.15    | 37.64                  | 22.49      | 177.42    |                    |

| LTE Band 4                        |         |                 |           |                        |            |           |                    |
|-----------------------------------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 20 MHz / QPSK  |         |                 |           |                        |            |           |                    |
| Plane                             | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Z                                 | 20050   | 1720.0          | -23.68    | 36.45                  | 12.77      | 18.92     | H                  |
|                                   | 20175   | 1732.5          | -23.97    | 36.80                  | 12.83      | 19.18     |                    |
|                                   | 20300   | 1745.0          | -24.15    | 36.94                  | 12.79      | 19.02     |                    |
|                                   | 20050   | 1720.0          | -13.77    | 37.28                  | 23.51      | 224.23    | V                  |
|                                   | 20175   | 1732.5          | -14.06    | 37.63                  | 23.57      | 227.51    |                    |
|                                   | 20300   | 1745.0          | -14.10    | 37.64                  | 23.54      | 225.94    |                    |
| Channel Bandwidth: 20 MHz / 16QAM |         |                 |           |                        |            |           |                    |
| Z                                 | 20050   | 1720.0          | -24.81    | 36.45                  | 11.64      | 14.59     | H                  |
|                                   | 20175   | 1732.5          | -25.11    | 36.80                  | 11.69      | 14.75     |                    |
|                                   | 20300   | 1745.0          | -25.28    | 36.94                  | 11.66      | 14.67     |                    |
|                                   | 20050   | 1720.0          | -14.73    | 37.28                  | 22.55      | 179.76    | V                  |
|                                   | 20175   | 1732.5          | -15.02    | 37.63                  | 22.61      | 182.39    |                    |
|                                   | 20300   | 1745.0          | -15.10    | 37.64                  | 22.54      | 179.47    |                    |

| LTE Band 66                        |         |                 |           |                        |            |           |                    |
|------------------------------------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 1.4 MHz / QPSK  |         |                 |           |                        |            |           |                    |
| Plane                              | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Z                                  | 131979  | 1710.7          | -24.92    | 36.45                  | 11.53      | 14.22     | H                  |
|                                    | 132322  | 1745            | -25.11    | 36.80                  | 11.69      | 14.75     |                    |
|                                    | 132665  | 1779.3          | -25.35    | 36.94                  | 11.59      | 14.43     |                    |
|                                    | 131979  | 1710.7          | -15.52    | 37.28                  | 21.76      | 149.86    | V                  |
|                                    | 132322  | 1745            | -15.81    | 37.63                  | 21.82      | 152.05    |                    |
|                                    | 132665  | 1779.3          | -15.85    | 37.64                  | 21.79      | 151.01    |                    |
| Channel Bandwidth: 1.4 MHz / 16QAM |         |                 |           |                        |            |           |                    |
| Z                                  | 131979  | 1710.7          | -25.56    | 36.45                  | 10.89      | 12.27     | H                  |
|                                    | 132322  | 1745            | -25.87    | 36.80                  | 10.93      | 12.39     |                    |
|                                    | 132665  | 1779.3          | -26.12    | 36.94                  | 10.82      | 12.09     |                    |
|                                    | 131979  | 1710.7          | -16.22    | 37.28                  | 21.06      | 127.56    | V                  |
|                                    | 132322  | 1745            | -16.48    | 37.63                  | 21.15      | 130.32    |                    |
|                                    | 132665  | 1779.3          | -16.60    | 37.64                  | 21.04      | 127.06    |                    |

| LTE Band 66                      |         |                 |           |                        |            |           |                    |
|----------------------------------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 3 MHz / QPSK  |         |                 |           |                        |            |           |                    |
| Plane                            | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Z                                | 131987  | 1711.5          | -24.82    | 36.45                  | 11.63      | 14.55     | H                  |
|                                  | 132322  | 1745            | -25.02    | 36.80                  | 11.78      | 15.06     |                    |
|                                  | 132657  | 1778.5          | -25.30    | 36.94                  | 11.64      | 14.60     |                    |
|                                  | 131987  | 1711.5          | -15.41    | 37.28                  | 21.87      | 153.71    | V                  |
|                                  | 132322  | 1745            | -15.72    | 37.63                  | 21.91      | 155.24    |                    |
|                                  | 132657  | 1778.5          | -15.78    | 37.64                  | 21.86      | 153.46    |                    |
| Channel Bandwidth: 3 MHz / 16QAM |         |                 |           |                        |            |           |                    |
| Z                                | 131987  | 1711.5          | -25.50    | 36.45                  | 10.95      | 12.45     | H                  |
|                                  | 132322  | 1745            | -25.81    | 36.80                  | 10.99      | 12.56     |                    |
|                                  | 132657  | 1778.5          | -26.05    | 36.94                  | 10.89      | 12.28     |                    |
|                                  | 131987  | 1711.5          | -16.15    | 37.28                  | 21.13      | 129.63    | V                  |
|                                  | 132322  | 1745            | -16.41    | 37.63                  | 21.22      | 132.43    |                    |
|                                  | 132657  | 1778.5          | -16.52    | 37.64                  | 21.12      | 129.42    |                    |

| LTE Band 66                      |         |                 |           |                        |            |           |                    |
|----------------------------------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 5 MHz / QPSK  |         |                 |           |                        |            |           |                    |
| Plane                            | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Z                                | 131997  | 1712.5          | -24.73    | 36.45                  | 11.72      | 14.86     | H                  |
|                                  | 132322  | 1745            | -24.97    | 36.80                  | 11.83      | 15.24     |                    |
|                                  | 132647  | 1777.5          | -25.21    | 36.94                  | 11.73      | 14.90     |                    |
|                                  | 131997  | 1712.5          | -15.35    | 37.28                  | 21.93      | 155.85    | V                  |
|                                  | 132322  | 1745            | -15.68    | 37.63                  | 21.95      | 156.68    |                    |
|                                  | 132647  | 1777.5          | -15.72    | 37.64                  | 21.92      | 155.60    |                    |
| Channel Bandwidth: 5 MHz / 16QAM |         |                 |           |                        |            |           |                    |
| Z                                | 131997  | 1712.5          | -25.43    | 36.45                  | 11.02      | 12.65     | H                  |
|                                  | 132322  | 1745            | -25.74    | 36.80                  | 11.06      | 12.76     |                    |
|                                  | 132647  | 1777.5          | -25.91    | 36.94                  | 11.03      | 12.69     |                    |
|                                  | 131997  | 1712.5          | -16.11    | 37.28                  | 21.17      | 130.83    | V                  |
|                                  | 132322  | 1745            | -16.38    | 37.63                  | 21.25      | 133.35    |                    |
|                                  | 132647  | 1777.5          | -16.43    | 37.64                  | 21.21      | 132.13    |                    |

| LTE Band 66                       |         |                 |           |                        |            |           |                    |
|-----------------------------------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 10 MHz / QPSK  |         |                 |           |                        |            |           |                    |
| Plane                             | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Z                                 | 132022  | 1715            | -24.82    | 36.64                  | 11.82      | 15.21     | H                  |
|                                   | 132322  | 1745            | -24.91    | 36.80                  | 11.89      | 15.43     |                    |
|                                   | 132622  | 1775            | -25.03    | 36.80                  | 11.77      | 15.03     |                    |
|                                   | 132022  | 1715            | -15.45    | 37.44                  | 21.99      | 158.09    | V                  |
|                                   | 132322  | 1745            | -15.62    | 37.63                  | 22.01      | 158.82    |                    |
|                                   | 132622  | 1775            | -15.70    | 37.64                  | 21.94      | 156.13    |                    |
| Channel Bandwidth: 10 MHz / 16QAM |         |                 |           |                        |            |           |                    |
| Z                                 | 132022  | 1715            | -25.58    | 36.64                  | 11.06      | 12.76     | H                  |
|                                   | 132322  | 1745            | -25.68    | 36.80                  | 11.12      | 12.93     |                    |
|                                   | 132622  | 1775            | -25.72    | 36.80                  | 11.08      | 12.82     |                    |
|                                   | 132022  | 1715            | -16.15    | 37.44                  | 21.29      | 134.56    | V                  |
|                                   | 132322  | 1745            | -16.31    | 37.63                  | 21.32      | 135.49    |                    |
|                                   | 132622  | 1775            | -16.37    | 37.64                  | 21.27      | 133.81    |                    |

| LTE Band 66                       |         |                 |           |                        |            |           |                    |
|-----------------------------------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 15 MHz / QPSK  |         |                 |           |                        |            |           |                    |
| Plane                             | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Z                                 | 132047  | 1717.5          | -24.61    | 36.45                  | 11.84      | 15.28     | H                  |
|                                   | 132322  | 1745            | -24.83    | 36.80                  | 11.97      | 15.74     |                    |
|                                   | 132597  | 1772.5          | -24.99    | 36.94                  | 11.95      | 15.68     |                    |
|                                   | 132047  | 1717.5          | -15.24    | 37.28                  | 22.04      | 159.85    | V                  |
|                                   | 132322  | 1745            | -15.54    | 37.63                  | 22.09      | 161.81    |                    |
|                                   | 132597  | 1772.5          | -15.62    | 37.64                  | 22.02      | 159.22    |                    |
| Channel Bandwidth: 15 MHz / 16QAM |         |                 |           |                        |            |           |                    |
| Z                                 | 132047  | 1717.5          | -25.31    | 36.45                  | 11.14      | 13.00     | H                  |
|                                   | 132322  | 1745            | -25.61    | 36.80                  | 11.19      | 13.15     |                    |
|                                   | 132597  | 1772.5          | -25.77    | 36.94                  | 11.17      | 13.10     |                    |
|                                   | 132047  | 1717.5          | -15.98    | 37.28                  | 21.30      | 134.80    | V                  |
|                                   | 132322  | 1745            | -16.25    | 37.63                  | 21.38      | 137.40    |                    |
|                                   | 132597  | 1772.5          | -16.30    | 37.64                  | 21.34      | 136.14    |                    |

| LTE Band 66                       |         |                 |           |                        |            |           |                    |
|-----------------------------------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 20 MHz / QPSK  |         |                 |           |                        |            |           |                    |
| Plane                             | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Z                                 | 132072  | 1720            | -24.49    | 36.45                  | 11.96      | 15.70     | H                  |
|                                   | 132322  | 1745            | -24.77    | 36.80                  | 12.03      | 15.96     |                    |
|                                   | 132572  | 1770            | -24.93    | 36.94                  | 12.01      | 15.90     |                    |
|                                   | 132072  | 1720            | -15.15    | 37.28                  | 22.13      | 163.19    | V                  |
|                                   | 132322  | 1745            | -15.49    | 37.63                  | 22.14      | 163.68    |                    |
|                                   | 132572  | 1770            | -15.57    | 37.64                  | 22.07      | 161.06    |                    |
| Channel Bandwidth: 20 MHz / 16QAM |         |                 |           |                        |            |           |                    |
| Z                                 | 132072  | 1720            | -25.23    | 36.45                  | 11.22      | 13.24     | H                  |
|                                   | 132322  | 1745            | -25.54    | 36.80                  | 11.26      | 13.36     |                    |
|                                   | 132572  | 1770            | -25.70    | 36.94                  | 11.24      | 13.31     |                    |
|                                   | 132072  | 1720            | -15.92    | 37.28                  | 21.36      | 136.68    | V                  |
|                                   | 132322  | 1745            | -16.18    | 37.63                  | 21.45      | 139.64    |                    |
|                                   | 132572  | 1770            | -16.21    | 37.64                  | 21.43      | 139.00    |                    |

## 4.2 Frequency Stability Measurement

### 4.2.1 Limits of Frequency Stability Measurement

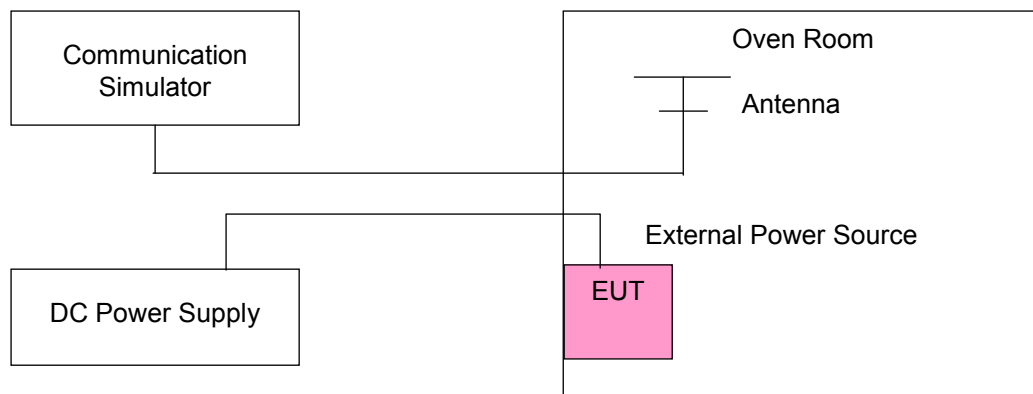
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

### 4.2.2 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  $\pm 0.5$  °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.

### 4.2.3 Test Setup



#### 4.2.4 Test Results

##### Frequency Error vs. Voltage

| Voltage<br>(Volts) | WCDMA           |                       |                 |                       | Limit (ppm) |
|--------------------|-----------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Low Channel     |                       | High Channel    |                       |             |
|                    | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.3                | 1712.400001     | 0.001                 | 1752.600004     | 0.002                 | 2.5         |
| 3.14               | 1712.400001     | 0.001                 | 1752.600003     | 0.002                 | 2.5         |
| 4.4                | 1712.400003     | 0.002                 | 1752.600002     | 0.001                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.14 Vdc to 4.4 Vdc.

##### Frequency Error vs. Temperature

| Temp. (°C) | WCDMA           |                       |                 |                       | Limit (ppm) |
|------------|-----------------|-----------------------|-----------------|-----------------------|-------------|
|            | Low Channel     |                       | High Channel    |                       |             |
|            | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -20        | 1712.400004     | 0.002                 | 1752.600003     | 0.002                 | 2.5         |
| -10        | 1712.400004     | 0.002                 | 1752.600002     | 0.001                 | 2.5         |
| 0          | 1712.400003     | 0.002                 | 1752.600003     | 0.002                 | 2.5         |
| 10         | 1712.400002     | 0.001                 | 1752.600002     | 0.001                 | 2.5         |
| 20         | 1712.399997     | -0.002                | 1752.599997     | -0.002                | 2.5         |
| 30         | 1712.399996     | -0.002                | 1752.599997     | -0.002                | 2.5         |
| 40         | 1712.399997     | -0.002                | 1752.599996     | -0.002                | 2.5         |
| 50         | 1712.399998     | -0.001                | 1752.599997     | -0.002                | 2.5         |
| 55         | 1712.399996     | -0.002                | 1752.599999     | -0.001                | 2.5         |



### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 4                 |                       |                 |                       | Limit (ppm) |
|--------------------|----------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 1.4 MHz |                       |                 |                       |             |
|                    | Low Channel                |                       | High Channel    |                       |             |
|                    | Frequency (MHz)            | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.3                | 1710.700003                | 0.002                 | 1754.300001     | 0.001                 | 2.5         |
| 3.14               | 1710.700001                | 0.001                 | 1754.300003     | 0.002                 | 2.5         |
| 4.4                | 1710.700001                | 0.001                 | 1754.300002     | 0.001                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.14 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 4                 |                       |                 |                       | Limit (ppm) |
|------------|----------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 1.4 MHz |                       |                 |                       |             |
|            | Low Channel                |                       | High Channel    |                       |             |
|            | Frequency (MHz)            | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -20        | 1710.700001                | 0.001                 | 1754.300003     | 0.002                 | 2.5         |
| -10        | 1710.700003                | 0.002                 | 1754.300002     | 0.001                 | 2.5         |
| 0          | 1710.700002                | 0.001                 | 1754.300003     | 0.002                 | 2.5         |
| 10         | 1710.700002                | 0.001                 | 1754.300003     | 0.002                 | 2.5         |
| 20         | 1710.699998                | -0.001                | 1754.299999     | -0.001                | 2.5         |
| 30         | 1710.699998                | -0.001                | 1754.299999     | -0.001                | 2.5         |
| 40         | 1710.699997                | -0.002                | 1754.299997     | -0.002                | 2.5         |
| 50         | 1710.699998                | -0.001                | 1754.299997     | -0.002                | 2.5         |
| 55         | 1710.699998                | -0.001                | 1754.299997     | -0.002                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 4               |                       |                 |                       | Limit (ppm) |
|--------------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 3 MHz |                       |                 |                       |             |
|                    | Low Channel              |                       | High Channel    |                       |             |
|                    | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.3                | 1711.500003              | 0.002                 | 1753.500001     | 0.001                 | 2.5         |
| 3.14               | 1711.500003              | 0.002                 | 1753.500004     | 0.002                 | 2.5         |
| 4.4                | 1711.500004              | 0.002                 | 1753.500001     | 0.001                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.14 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 4               |                       |                 |                       | Limit (ppm) |
|------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 3 MHz |                       |                 |                       |             |
|            | Low Channel              |                       | High Channel    |                       |             |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -20        | 1711.500001              | 0.001                 | 1753.500003     | 0.002                 | 2.5         |
| -10        | 1711.500002              | 0.001                 | 1753.500002     | 0.001                 | 2.5         |
| 0          | 1711.500002              | 0.001                 | 1753.500003     | 0.001                 | 2.5         |
| 10         | 1711.500003              | 0.002                 | 1753.500002     | 0.001                 | 2.5         |
| 20         | 1711.499999              | -0.001                | 1753.499997     | -0.001                | 2.5         |
| 30         | 1711.499998              | -0.001                | 1753.499997     | -0.002                | 2.5         |
| 40         | 1711.499999              | -0.001                | 1753.499997     | -0.001                | 2.5         |
| 50         | 1711.499998              | -0.001                | 1753.499998     | -0.001                | 2.5         |
| 55         | 1711.499999              | -0.001                | 1753.499997     | -0.001                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 4               |                       |                 |                       | Limit (ppm) |
|--------------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 5 MHz |                       |                 |                       |             |
|                    | Low Channel              |                       | High Channel    |                       |             |
|                    | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.3                | 1712.500002              | 0.001                 | 1752.500003     | 0.001                 | 2.5         |
| 3.14               | 1712.500002              | 0.001                 | 1752.500001     | 0.001                 | 2.5         |
| 4.4                | 1712.500003              | 0.002                 | 1752.500003     | 0.002                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.14 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 4               |                       |                 |                       | Limit (ppm) |
|------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 5 MHz |                       |                 |                       |             |
|            | Low Channel              |                       | High Channel    |                       |             |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -20        | 1712.500004              | 0.002                 | 1752.500004     | 0.002                 | 2.5         |
| -10        | 1712.500001              | 0.001                 | 1752.500002     | 0.001                 | 2.5         |
| 0          | 1712.500001              | 0.001                 | 1752.500002     | 0.001                 | 2.5         |
| 10         | 1712.500001              | 0.001                 | 1752.500003     | 0.002                 | 2.5         |
| 20         | 1712.499998              | -0.001                | 1752.499997     | -0.002                | 2.5         |
| 30         | 1712.499998              | -0.001                | 1752.499996     | -0.002                | 2.5         |
| 40         | 1712.499997              | -0.002                | 1752.499997     | -0.002                | 2.5         |
| 50         | 1712.499997              | -0.002                | 1752.499999     | -0.001                | 2.5         |
| 55         | 1712.499998              | -0.001                | 1752.499997     | -0.002                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 4                |                       |                 |                       | Limit (ppm) |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 10 MHz |                       |                 |                       |             |
|                    | Low Channel               |                       | High Channel    |                       |             |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.3                | 1715.000001               | 0.001                 | 1750.000001     | 0.001                 | 2.5         |
| 3.14               | 1715.000002               | 0.001                 | 1750.000001     | 0.001                 | 2.5         |
| 4.4                | 1715.000001               | 0.001                 | 1750.000002     | 0.001                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.14 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 4                |                       |                 |                       | Limit (ppm) |
|------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 10 MHz |                       |                 |                       |             |
|            | Low Channel               |                       | High Channel    |                       |             |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -20        | 1715.000003               | 0.002                 | 1750.000003     | 0.002                 | 2.5         |
| -10        | 1715.000003               | 0.002                 | 1750.000003     | 0.002                 | 2.5         |
| 0          | 1715.000003               | 0.002                 | 1750.000003     | 0.002                 | 2.5         |
| 10         | 1715.000003               | 0.002                 | 1750.000002     | 0.001                 | 2.5         |
| 20         | 1714.999997               | -0.002                | 1749.999997     | -0.002                | 2.5         |
| 30         | 1714.999998               | -0.001                | 1749.999998     | -0.001                | 2.5         |
| 40         | 1714.999999               | -0.001                | 1749.999998     | -0.001                | 2.5         |
| 50         | 1714.999996               | -0.002                | 1749.999999     | -0.001                | 2.5         |
| 55         | 1714.999998               | -0.001                | 1749.999996     | -0.002                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 4                |                       |                 |                       | Limit (ppm) |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 15 MHz |                       |                 |                       |             |
|                    | Low Channel               |                       | High Channel    |                       |             |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.3                | 1717.500001               | 0.001                 | 1747.500003     | 0.002                 | 2.5         |
| 3.14               | 1717.500001               | 0.001                 | 1747.500002     | 0.001                 | 2.5         |
| 4.4                | 1717.500001               | 0.001                 | 1747.500002     | 0.001                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.14 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 4                |                       |                 |                       | Limit (ppm) |
|------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 15 MHz |                       |                 |                       |             |
|            | Low Channel               |                       | High Channel    |                       |             |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -20        | 1717.500001               | 0.001                 | 1747.500004     | 0.002                 | 2.5         |
| -10        | 1717.500003               | 0.002                 | 1747.500003     | 0.002                 | 2.5         |
| 0          | 1717.500003               | 0.002                 | 1747.500002     | 0.001                 | 2.5         |
| 10         | 1717.500002               | 0.001                 | 1747.500001     | 0.001                 | 2.5         |
| 20         | 1717.499998               | -0.001                | 1747.499998     | -0.001                | 2.5         |
| 30         | 1717.499998               | -0.001                | 1747.499996     | -0.002                | 2.5         |
| 40         | 1717.499997               | -0.002                | 1747.499999     | -0.001                | 2.5         |
| 50         | 1717.499997               | -0.002                | 1747.499999     | -0.001                | 2.5         |
| 55         | 1717.499997               | -0.002                | 1747.499996     | -0.002                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 4                |                       |                 |                       | Limit (ppm) |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 20 MHz |                       |                 |                       |             |
|                    | Low Channel               |                       | High Channel    |                       |             |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.3                | 1720.000003               | 0.002                 | 1745.000002     | 0.001                 | 2.5         |
| 3.14               | 1720.000003               | 0.002                 | 1745.000001     | 0.001                 | 2.5         |
| 4.4                | 1720.000003               | 0.002                 | 1745.000002     | 0.001                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.14 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 4                |                       |                 |                       | Limit (ppm) |
|------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 20 MHz |                       |                 |                       |             |
|            | Low Channel               |                       | High Channel    |                       |             |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -20        | 1720.000004               | 0.002                 | 1745.000003     | 0.002                 | 2.5         |
| -10        | 1720.000001               | 0.001                 | 1745.000004     | 0.002                 | 2.5         |
| 0          | 1720.000003               | 0.002                 | 1745.000003     | 0.002                 | 2.5         |
| 10         | 1720.000003               | 0.002                 | 1745.000003     | 0.002                 | 2.5         |
| 20         | 1719.999997               | -0.002                | 1744.999997     | -0.002                | 2.5         |
| 30         | 1719.999998               | -0.001                | 1744.999998     | -0.001                | 2.5         |
| 40         | 1719.999998               | -0.001                | 1744.999998     | -0.001                | 2.5         |
| 50         | 1719.999999               | -0.001                | 1744.999998     | -0.001                | 2.5         |
| 55         | 1719.999998               | -0.001                | 1744.999996     | -0.002                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 12                |                       |                 |                       | Limit (ppm) |
|--------------------|----------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 1.4 MHz |                       |                 |                       |             |
|                    | Low Channel                |                       | High Channel    |                       |             |
|                    | Frequency (MHz)            | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.3                | 699.700003                 | 0.005                 | 715.300003      | 0.004                 | 2.5         |
| 3.14               | 699.700004                 | 0.006                 | 715.300004      | 0.005                 | 2.5         |
| 4.4                | 699.700001                 | 0.002                 | 715.300002      | 0.002                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.14 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 12                |                       |                 |                       | Limit (ppm) |
|------------|----------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 1.4 MHz |                       |                 |                       |             |
|            | Low Channel                |                       | High Channel    |                       |             |
|            | Frequency (MHz)            | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -20        | 699.700003                 | 0.004                 | 715.300002      | 0.003                 | 2.5         |
| -10        | 699.700004                 | 0.005                 | 715.300001      | 0.002                 | 2.5         |
| 0          | 699.700004                 | 0.005                 | 715.300002      | 0.003                 | 2.5         |
| 10         | 699.700003                 | 0.005                 | 715.300004      | 0.005                 | 2.5         |
| 20         | 699.699998                 | -0.002                | 715.299997      | -0.004                | 2.5         |
| 30         | 699.699997                 | -0.005                | 715.299997      | -0.005                | 2.5         |
| 40         | 699.699999                 | -0.001                | 715.299998      | -0.003                | 2.5         |
| 50         | 699.699998                 | -0.002                | 715.299999      | -0.002                | 2.5         |
| 55         | 699.699998                 | -0.003                | 715.299999      | -0.002                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 12              |                       |                 |                       | Limit (ppm) |
|--------------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 3 MHz |                       |                 |                       |             |
|                    | Low Channel              |                       | High Channel    |                       |             |
|                    | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.3                | 700.500003               | 0.005                 | 714.500004      | 0.005                 | 2.5         |
| 3.14               | 700.500002               | 0.003                 | 714.500003      | 0.004                 | 2.5         |
| 4.4                | 700.500001               | 0.002                 | 714.500003      | 0.005                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.14 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 12              |                       |                 |                       | Limit (ppm) |
|------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 3 MHz |                       |                 |                       |             |
|            | Low Channel              |                       | High Channel    |                       |             |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -20        | 700.500003               | 0.005                 | 714.500004      | 0.006                 | 2.5         |
| -10        | 700.500004               | 0.005                 | 714.500002      | 0.003                 | 2.5         |
| 0          | 700.500001               | 0.002                 | 714.500002      | 0.002                 | 2.5         |
| 10         | 700.500002               | 0.003                 | 714.500002      | 0.002                 | 2.5         |
| 20         | 700.499996               | -0.005                | 714.499997      | -0.004                | 2.5         |
| 30         | 700.499998               | -0.002                | 714.499997      | -0.004                | 2.5         |
| 40         | 700.499998               | -0.003                | 714.499998      | -0.003                | 2.5         |
| 50         | 700.499999               | -0.002                | 714.499999      | -0.002                | 2.5         |
| 55         | 700.499996               | -0.005                | 714.499998      | -0.003                | 2.5         |



### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 12              |                       |                 |                       | Limit (ppm) |
|--------------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 5 MHz |                       |                 |                       |             |
|                    | Low Channel              |                       | High Channel    |                       |             |
|                    | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.3                | 701.500003               | 0.005                 | 713.500001      | 0.001                 | 2.5         |
| 3.14               | 701.500003               | 0.004                 | 713.500004      | 0.005                 | 2.5         |
| 4.4                | 701.500002               | 0.002                 | 713.500003      | 0.005                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.14 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 12              |                       |                 |                       | Limit (ppm) |
|------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 5 MHz |                       |                 |                       |             |
|            | Low Channel              |                       | High Channel    |                       |             |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -20        | 701.500002               | 0.003                 | 713.500002      | 0.002                 | 2.5         |
| -10        | 701.500003               | 0.004                 | 713.500003      | 0.005                 | 2.5         |
| 0          | 701.500004               | 0.005                 | 713.500002      | 0.003                 | 2.5         |
| 10         | 701.500004               | 0.006                 | 713.500001      | 0.002                 | 2.5         |
| 20         | 701.499997               | -0.004                | 713.499997      | -0.004                | 2.5         |
| 30         | 701.499998               | -0.003                | 713.499999      | -0.002                | 2.5         |
| 40         | 701.499998               | -0.004                | 713.499997      | -0.004                | 2.5         |
| 50         | 701.499996               | -0.005                | 713.499996      | -0.006                | 2.5         |
| 55         | 701.499999               | -0.002                | 713.499999      | -0.002                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 12               |                       |                 |                       | Limit (ppm) |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 10 MHz |                       |                 |                       |             |
|                    | Low Channel               |                       | High Channel    |                       |             |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.3                | 704.000003                | 0.005                 | 711.000002      | 0.003                 | 2.5         |
| 3.14               | 704.000002                | 0.003                 | 711.000002      | 0.003                 | 2.5         |
| 4.4                | 704.000004                | 0.005                 | 711.000003      | 0.004                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.14 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 12               |                       |                 |                       | Limit (ppm) |
|------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 10 MHz |                       |                 |                       |             |
|            | Low Channel               |                       | High Channel    |                       |             |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -20        | 704.000004                | 0.006                 | 711.000004      | 0.006                 | 2.5         |
| -10        | 704.000002                | 0.003                 | 711.000003      | 0.005                 | 2.5         |
| 0          | 704.000003                | 0.005                 | 711.000001      | 0.002                 | 2.5         |
| 10         | 704.000001                | 0.002                 | 711.000001      | 0.002                 | 2.5         |
| 20         | 703.999998                | -0.004                | 710.999997      | -0.005                | 2.5         |
| 30         | 703.999998                | -0.004                | 710.999999      | -0.002                | 2.5         |
| 40         | 703.999998                | -0.003                | 710.999997      | -0.005                | 2.5         |
| 50         | 703.999996                | -0.006                | 710.999999      | -0.002                | 2.5         |
| 55         | 703.999998                | -0.002                | 710.999998      | -0.003                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 13              |                       |                 |                       | Limit (ppm) |
|--------------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 5 MHz |                       |                 |                       |             |
|                    | Low Channel              |                       | High Channel    |                       |             |
|                    | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.3                | 779.500004               | 0.005                 | 784.500003      | 0.004                 | 2.5         |
| 3.14               | 779.500001               | 0.001                 | 784.500002      | 0.003                 | 2.5         |
| 4.4                | 779.500003               | 0.004                 | 784.500001      | 0.001                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.14 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 13              |                       |                 |                       | Limit (ppm) |
|------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 5 MHz |                       |                 |                       |             |
|            | Low Channel              |                       | High Channel    |                       |             |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -20        | 779.500003               | 0.004                 | 784.500003      | 0.004                 | 2.5         |
| -10        | 779.500002               | 0.003                 | 784.500004      | 0.005                 | 2.5         |
| 0          | 779.500004               | 0.005                 | 784.500002      | 0.003                 | 2.5         |
| 10         | 779.500002               | 0.002                 | 784.500002      | 0.002                 | 2.5         |
| 20         | 779.499997               | -0.004                | 784.499999      | -0.001                | 2.5         |
| 30         | 779.499997               | -0.003                | 784.499998      | -0.002                | 2.5         |
| 40         | 779.499999               | -0.002                | 784.499998      | -0.002                | 2.5         |
| 50         | 779.499996               | -0.005                | 784.499996      | -0.005                | 2.5         |
| 55         | 779.499998               | -0.003                | 784.499999      | -0.001                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 13               |                       | Limit (ppm) |
|--------------------|---------------------------|-----------------------|-------------|
|                    | Channel Bandwidth: 10 MHz |                       |             |
|                    | Frequency (MHz)           | Frequency Error (ppm) |             |
| 3.3                | 782.000003                | 0.004                 | 2.5         |
| 3.14               | 782.000002                | 0.002                 | 2.5         |
| 4.4                | 782.000002                | 0.003                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.14 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 13               |                       | Limit (ppm) |
|------------|---------------------------|-----------------------|-------------|
|            | Channel Bandwidth: 10 MHz |                       |             |
|            | Low Channel               | High Channel          |             |
|            | Frequency (MHz)           | Frequency Error (ppm) |             |
| -20        | 782.000001                | 0.002                 | 2.5         |
| -10        | 782.000001                | 0.002                 | 2.5         |
| 0          | 782.000001                | 0.002                 | 2.5         |
| 10         | 782.000002                | 0.003                 | 2.5         |
| 20         | 781.999998                | -0.003                | 2.5         |
| 30         | 781.999996                | -0.005                | 2.5         |
| 40         | 781.999998                | -0.002                | 2.5         |
| 50         | 781.999998                | -0.002                | 2.5         |
| 55         | 781.999997                | -0.004                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 17              |                       |                 |                       | Limit (ppm) |
|--------------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 5 MHz |                       |                 |                       |             |
|                    | Low Channel              |                       | High Channel    |                       |             |
|                    | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.3                | 706.500002               | 0.003                 | 713.500001      | 0.002                 | 2.5         |
| 3.14               | 706.500004               | 0.006                 | 713.500002      | 0.002                 | 2.5         |
| 4.4                | 706.500003               | 0.004                 | 713.500003      | 0.004                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.14 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 17              |                       |                 |                       | Limit (ppm) |
|------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 5 MHz |                       |                 |                       |             |
|            | Low Channel              |                       | High Channel    |                       |             |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -20        | 706.500003               | 0.005                 | 713.500002      | 0.003                 | 2.5         |
| -10        | 706.500003               | 0.004                 | 713.500001      | 0.001                 | 2.5         |
| 0          | 706.500001               | 0.001                 | 713.500003      | 0.004                 | 2.5         |
| 10         | 706.500001               | 0.001                 | 713.500002      | 0.002                 | 2.5         |
| 20         | 706.499998               | -0.004                | 713.499997      | -0.005                | 2.5         |
| 30         | 706.499998               | -0.003                | 713.499997      | -0.004                | 2.5         |
| 40         | 706.499996               | -0.005                | 713.499997      | -0.004                | 2.5         |
| 50         | 706.499997               | -0.004                | 713.499997      | -0.004                | 2.5         |
| 55         | 706.499997               | -0.005                | 713.499998      | -0.003                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 17               |                       |                 |                       | Limit (ppm) |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 10 MHz |                       |                 |                       |             |
|                    | Low Channel               |                       | High Channel    |                       |             |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.3                | 709.000003                | 0.004                 | 711.000003      | 0.004                 | 2.5         |
| 3.14               | 709.000003                | 0.005                 | 711.000004      | 0.006                 | 2.5         |
| 4.4                | 709.000001                | 0.002                 | 711.000004      | 0.005                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.14 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 17               |                       |                 |                       | Limit (ppm) |
|------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 10 MHz |                       |                 |                       |             |
|            | Low Channel               |                       | High Channel    |                       |             |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -20        | 709.000003                | 0.005                 | 711.000002      | 0.003                 | 2.5         |
| -10        | 709.000001                | 0.002                 | 711.000002      | 0.003                 | 2.5         |
| 0          | 709.000003                | 0.004                 | 711.000002      | 0.003                 | 2.5         |
| 10         | 709.000001                | 0.002                 | 711.000002      | 0.003                 | 2.5         |
| 20         | 708.999997                | -0.004                | 710.999996      | -0.005                | 2.5         |
| 30         | 708.999996                | -0.005                | 710.999997      | -0.004                | 2.5         |
| 40         | 708.999998                | -0.003                | 710.999997      | -0.004                | 2.5         |
| 50         | 708.999997                | -0.004                | 710.999996      | -0.006                | 2.5         |
| 55         | 708.999998                | -0.003                | 710.999998      | -0.002                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 66                |                       |                 |                       | Limit (ppm) |
|--------------------|----------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 1.4 MHz |                       |                 |                       |             |
|                    | Low Channel                |                       | High Channel    |                       |             |
|                    | Frequency (MHz)            | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.3                | 1710.700002                | 0.001                 | 1779.300003     | 0.002                 | 2.5         |
| 3.14               | 1710.700001                | 0.001                 | 1779.300003     | 0.002                 | 2.5         |
| 4.4                | 1710.700003                | 0.002                 | 1779.300002     | 0.001                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.14 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 66                |                       |                 |                       | Limit (ppm) |
|------------|----------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 1.4 MHz |                       |                 |                       |             |
|            | Low Channel                |                       | High Channel    |                       |             |
|            | Frequency (MHz)            | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -20        | 1710.700004                | 0.002                 | 1779.300002     | 0.001                 | 2.5         |
| -10        | 1710.700002                | 0.001                 | 1779.300003     | 0.002                 | 2.5         |
| 0          | 1710.700001                | 0.001                 | 1779.300001     | 0.001                 | 2.5         |
| 10         | 1710.700004                | 0.002                 | 1779.300003     | 0.002                 | 2.5         |
| 20         | 1710.700003                | 0.002                 | 1779.300004     | 0.002                 | 2.5         |
| 30         | 1710.699998                | -0.001                | 1779.299998     | -0.001                | 2.5         |
| 40         | 1710.699998                | -0.001                | 1779.299999     | -0.001                | 2.5         |
| 50         | 1710.699999                | -0.001                | 1779.299998     | -0.001                | 2.5         |
| 55         | 1710.699996                | -0.002                | 1779.299998     | -0.001                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 66              |                       |                 |                       | Limit (ppm) |
|--------------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 3 MHz |                       |                 |                       |             |
|                    | Low Channel              |                       | High Channel    |                       |             |
|                    | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.3                | 1711.500001              | 0.001                 | 1778.500004     | 0.002                 | 2.5         |
| 3.14               | 1711.500001              | 0.001                 | 1778.500003     | 0.002                 | 2.5         |
| 4.4                | 1711.500002              | 0.001                 | 1778.500002     | 0.001                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.14 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 66              |                       |                 |                       | Limit (ppm) |
|------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 3 MHz |                       |                 |                       |             |
|            | Low Channel              |                       | High Channel    |                       |             |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -20        | 1711.500002              | 0.001                 | 1778.500002     | 0.001                 | 2.5         |
| -10        | 1711.500001              | 0.001                 | 1778.500003     | 0.002                 | 2.5         |
| 0          | 1711.500004              | 0.002                 | 1778.500002     | 0.001                 | 2.5         |
| 10         | 1711.500003              | 0.002                 | 1778.500004     | 0.002                 | 2.5         |
| 20         | 1711.500002              | 0.001                 | 1778.500001     | 0.001                 | 2.5         |
| 30         | 1711.499998              | -0.001                | 1778.499997     | -0.002                | 2.5         |
| 40         | 1711.499997              | -0.002                | 1778.499997     | -0.002                | 2.5         |
| 50         | 1711.499996              | -0.002                | 1778.499999     | -0.001                | 2.5         |
| 55         | 1711.499997              | -0.002                | 1778.499997     | -0.002                | 2.5         |



### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 66              |                       |                 |                       | Limit (ppm) |
|--------------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 5 MHz |                       |                 |                       |             |
|                    | Low Channel              |                       | High Channel    |                       |             |
|                    | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.3                | 1712.500003              | 0.002                 | 1777.500003     | 0.001                 | 2.5         |
| 3.14               | 1712.500003              | 0.001                 | 1777.500002     | 0.001                 | 2.5         |
| 4.4                | 1712.500002              | 0.001                 | 1777.500002     | 0.001                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.14 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 66              |                       |                 |                       | Limit (ppm) |
|------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 5 MHz |                       |                 |                       |             |
|            | Low Channel              |                       | High Channel    |                       |             |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -20        | 1712.500004              | 0.002                 | 1777.500004     | 0.002                 | 2.5         |
| -10        | 1712.500004              | 0.002                 | 1777.500003     | 0.002                 | 2.5         |
| 0          | 1712.500002              | 0.001                 | 1777.500003     | 0.002                 | 2.5         |
| 10         | 1712.500003              | 0.002                 | 1777.500003     | 0.002                 | 2.5         |
| 20         | 1712.500004              | 0.002                 | 1777.500003     | 0.002                 | 2.5         |
| 30         | 1712.499998              | -0.001                | 1777.499997     | -0.002                | 2.5         |
| 40         | 1712.499996              | -0.002                | 1777.499998     | -0.001                | 2.5         |
| 50         | 1712.499998              | -0.001                | 1777.499996     | -0.002                | 2.5         |
| 55         | 1712.499997              | -0.002                | 1777.499999     | -0.001                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 66               |                       |                 |                       | Limit (ppm) |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 10 MHz |                       |                 |                       |             |
|                    | Low Channel               |                       | High Channel    |                       |             |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.3                | 1715.000002               | 0.001                 | 1775.000002     | 0.001                 | 2.5         |
| 3.14               | 1715.000001               | 0.001                 | 1775.000001     | 0.001                 | 2.5         |
| 4.4                | 1715.000003               | 0.002                 | 1775.000002     | 0.001                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.14 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 66               |                       |                 |                       | Limit (ppm) |
|------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 10 MHz |                       |                 |                       |             |
|            | Low Channel               |                       | High Channel    |                       |             |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -20        | 1715.000004               | 0.002                 | 1775.000002     | 0.001                 | 2.5         |
| -10        | 1715.000001               | 0.001                 | 1775.000001     | 0.001                 | 2.5         |
| 0          | 1715.000004               | 0.002                 | 1775.000002     | 0.001                 | 2.5         |
| 10         | 1715.000002               | 0.001                 | 1775.000003     | 0.002                 | 2.5         |
| 20         | 1715.000003               | 0.002                 | 1775.000003     | 0.002                 | 2.5         |
| 30         | 1714.999996               | -0.002                | 1774.999998     | -0.001                | 2.5         |
| 40         | 1714.999996               | -0.002                | 1774.999997     | -0.002                | 2.5         |
| 50         | 1714.999997               | -0.002                | 1774.999996     | -0.002                | 2.5         |
| 55         | 1714.999997               | -0.002                | 1774.999996     | -0.002                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 66               |                       |                 |                       | Limit (ppm) |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 15 MHz |                       |                 |                       |             |
|                    | Low Channel               |                       | High Channel    |                       |             |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.3                | 1717.500004               | 0.002                 | 1772.500001     | 0.001                 | 2.5         |
| 3.14               | 1717.500003               | 0.002                 | 1772.500003     | 0.002                 | 2.5         |
| 4.4                | 1717.500002               | 0.001                 | 1772.500001     | 0.001                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.14 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 66               |                       |                 |                       | Limit (ppm) |
|------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 15 MHz |                       |                 |                       |             |
|            | Low Channel               |                       | High Channel    |                       |             |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -20        | 1717.500004               | 0.002                 | 1772.500002     | 0.001                 | 2.5         |
| -10        | 1717.500001               | 0.001                 | 1772.500002     | 0.001                 | 2.5         |
| 0          | 1717.500001               | 0.001                 | 1772.500001     | 0.001                 | 2.5         |
| 10         | 1717.500003               | 0.002                 | 1772.500003     | 0.002                 | 2.5         |
| 20         | 1717.500002               | 0.001                 | 1772.500003     | 0.002                 | 2.5         |
| 30         | 1717.499998               | -0.001                | 1772.499997     | -0.002                | 2.5         |
| 40         | 1717.499998               | -0.001                | 1772.499998     | -0.001                | 2.5         |
| 50         | 1717.499998               | -0.001                | 1772.499998     | -0.001                | 2.5         |
| 55         | 1717.499996               | -0.002                | 1772.499999     | -0.001                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 66               |                       |                 |                       | Limit (ppm) |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 20 MHz |                       |                 |                       |             |
|                    | Low Channel               |                       | High Channel    |                       |             |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.3                | 1720.000003               | 0.002                 | 1770.000002     | 0.001                 | 2.5         |
| 3.14               | 1720.000004               | 0.002                 | 1770.000003     | 0.002                 | 2.5         |
| 4.4                | 1720.000001               | 0.001                 | 1770.000003     | 0.001                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.14 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 66               |                       |                 |                       | Limit (ppm) |
|------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 20 MHz |                       |                 |                       |             |
|            | Low Channel               |                       | High Channel    |                       |             |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -20        | 1720.000001               | 0.001                 | 1770.000004     | 0.002                 | 2.5         |
| -10        | 1720.000002               | 0.001                 | 1770.000003     | 0.002                 | 2.5         |
| 0          | 1720.000001               | 0.001                 | 1770.000003     | 0.001                 | 2.5         |
| 10         | 1720.000003               | 0.002                 | 1770.000001     | 0.001                 | 2.5         |
| 20         | 1720.000003               | 0.002                 | 1770.000003     | 0.002                 | 2.5         |
| 30         | 1719.999998               | -0.001                | 1769.999999     | -0.001                | 2.5         |
| 40         | 1719.999997               | -0.002                | 1769.999997     | -0.002                | 2.5         |
| 50         | 1719.999998               | -0.001                | 1769.999998     | -0.001                | 2.5         |
| 55         | 1719.999999               | -0.001                | 1769.999996     | -0.002                | 2.5         |

### 4.3 Occupied Bandwidth Measurement

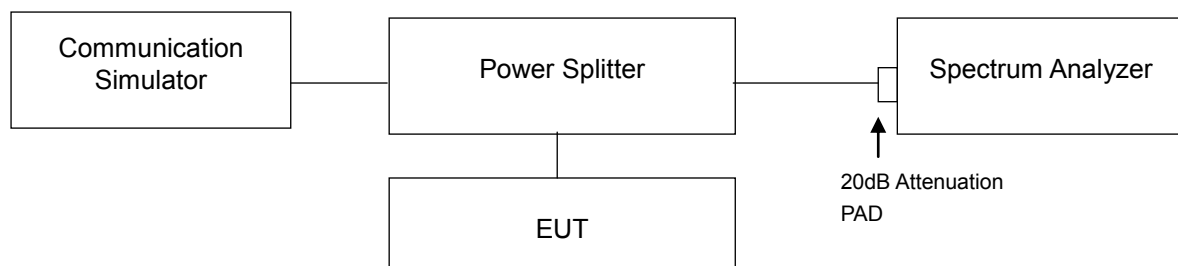
#### 4.3.1 Limits of Occupied Bandwidth Measurement

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

#### 4.3.2 Test Procedure

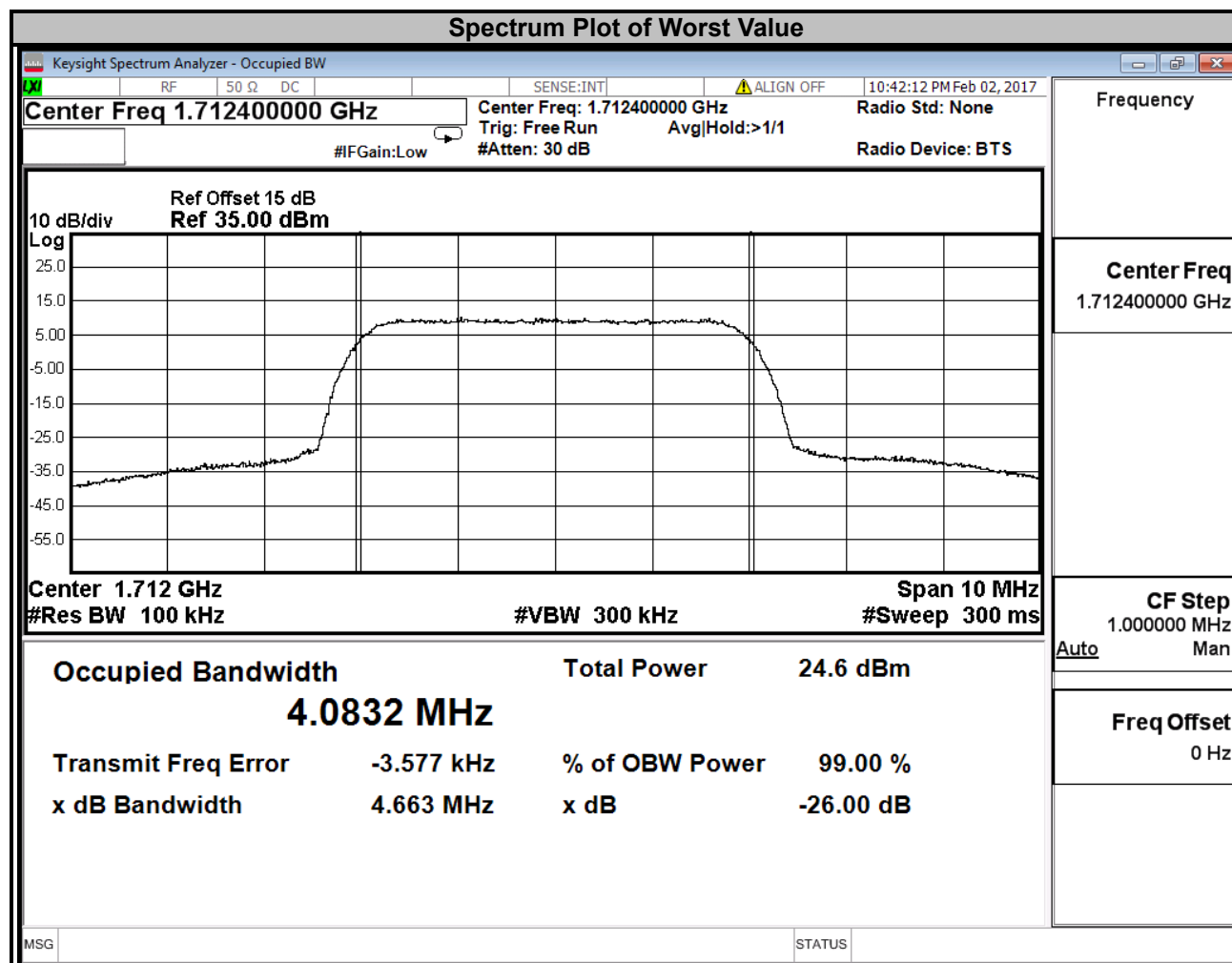
- The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

#### 4.3.3 Test Setup



#### 4.3.4 Test Result

| WCDMA   |                 |                               |
|---------|-----------------|-------------------------------|
| Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |
| 1312    | 1712.4          | 4.08                          |
| 1413    | 1732.6          | 4.08                          |
| 1513    | 1752.6          | 4.08                          |



### LTE Band 4

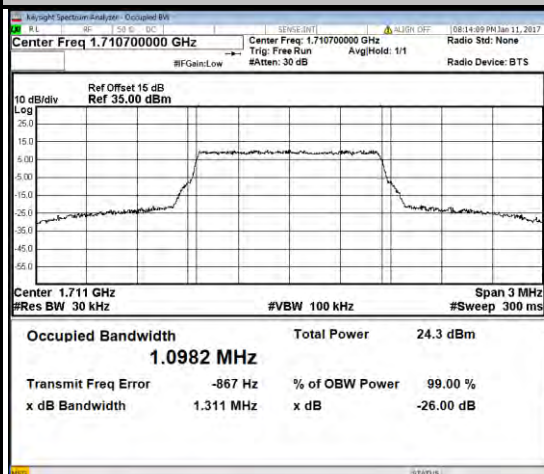
#### Channel Bandwidth: 1.4 MHz

#### Channel Bandwidth: 3 MHz

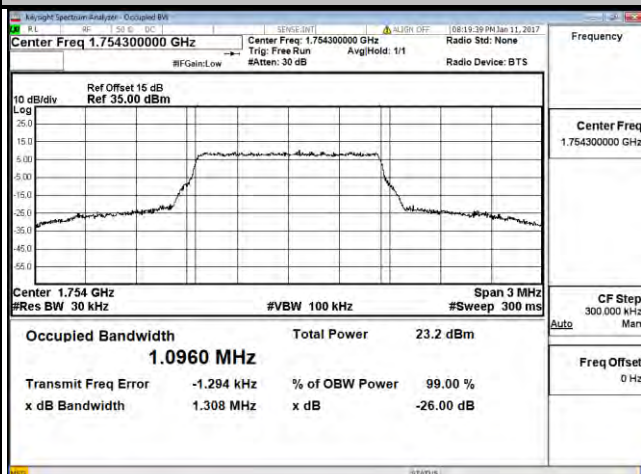
| Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       | Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       |
|---------|-----------------|-------------------------------|-------|---------|-----------------|-------------------------------|-------|
|         |                 | QPSK                          | 16QAM |         |                 | QPSK                          | 16QAM |
| 19957   | 1710.7          | 1.10                          | 1.10  | 19965   | 1711.5          | 2.70                          | 2.71  |
| 20175   | 1732.5          | 1.09                          | 1.09  | 20175   | 1732.5          | 2.70                          | 2.70  |
| 20393   | 1754.3          | 1.09                          | 1.10  | 20385   | 1753.5          | 2.71                          | 2.70  |

### Spectrum Plot of Worst Value

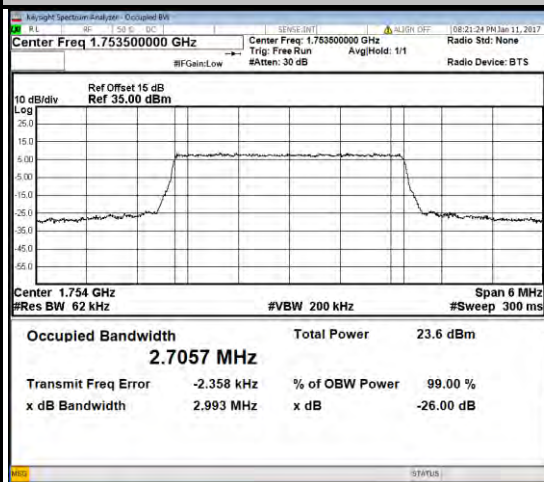
#### 1.4 MHz / QPSK



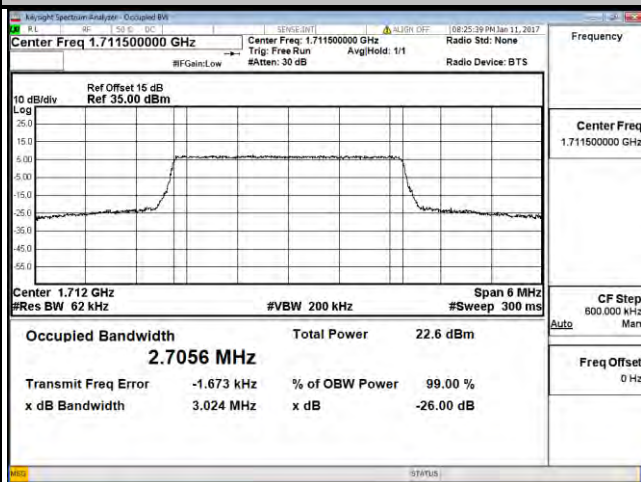
#### 1.4 MHz / 16QAM



#### 3 MHz / QPSK



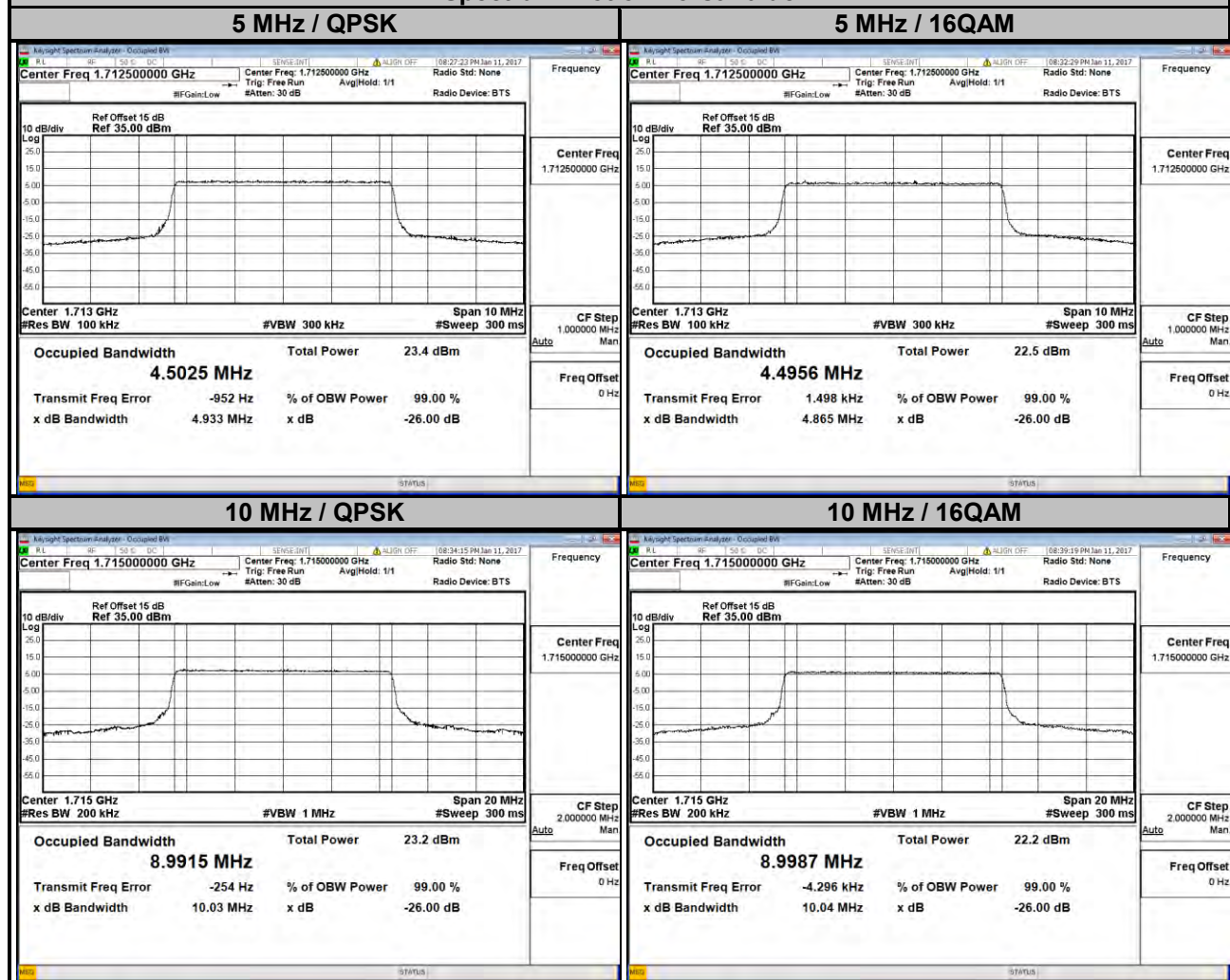
#### 3 MHz / 16QAM



### LTE Band 4

| Channel Bandwidth: 5 MHz |                 |                               |       | Channel Bandwidth: 10 MHz |                 |                               |       |
|--------------------------|-----------------|-------------------------------|-------|---------------------------|-----------------|-------------------------------|-------|
| Channel                  | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       | Channel                   | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       |
|                          |                 | QPSK                          | 16QAM |                           |                 | QPSK                          | 16QAM |
| 19975                    | 1712.5          | 4.50                          | 4.50  | 20000                     | 1715.0          | 8.99                          | 9.00  |
| 20175                    | 1732.5          | 4.50                          | 4.49  | 20175                     | 1732.5          | 8.99                          | 8.98  |
| 20375                    | 1752.5          | 4.49                          | 4.49  | 20350                     | 1750.0          | 8.98                          | 8.98  |

### Spectrum Plot of Worst Value





### LTE Band 4

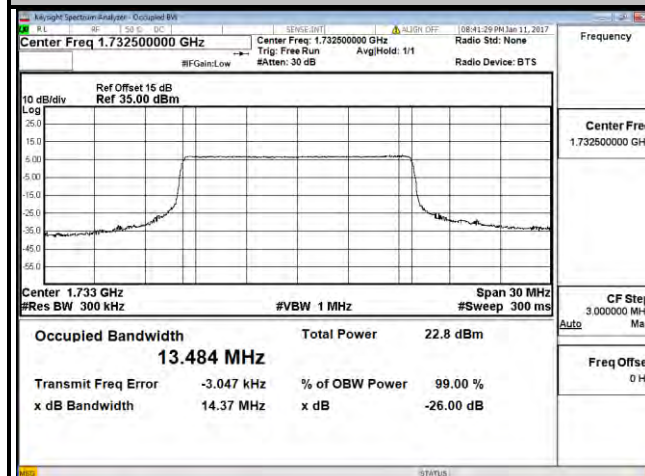
#### Channel Bandwidth: 15 MHz

#### Channel Bandwidth: 20 MHz

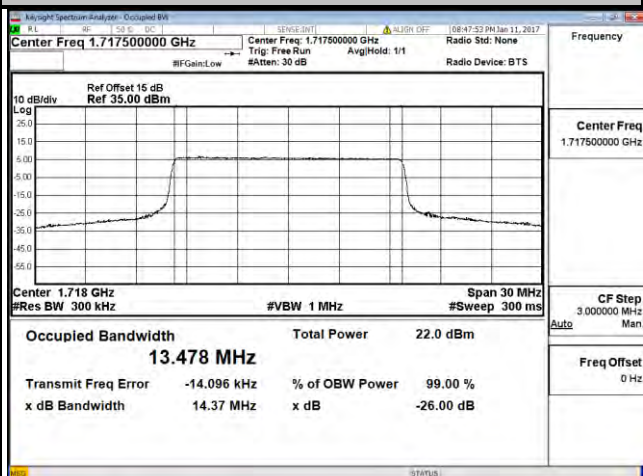
| Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       | Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       |
|---------|-----------------|-------------------------------|-------|---------|-----------------|-------------------------------|-------|
|         |                 | QPSK                          | 16QAM |         |                 | QPSK                          | 16QAM |
| 20025   | 1717.5          | 13.48                         | 13.48 | 20050   | 1720.0          | 17.99                         | 17.99 |
| 20175   | 1732.5          | 13.48                         | 13.48 | 20175   | 1732.5          | 18.01                         | 17.98 |
| 20325   | 1747.5          | 13.47                         | 13.47 | 20300   | 1745.0          | 17.97                         | 17.96 |

### Spectrum Plot of Worst Value

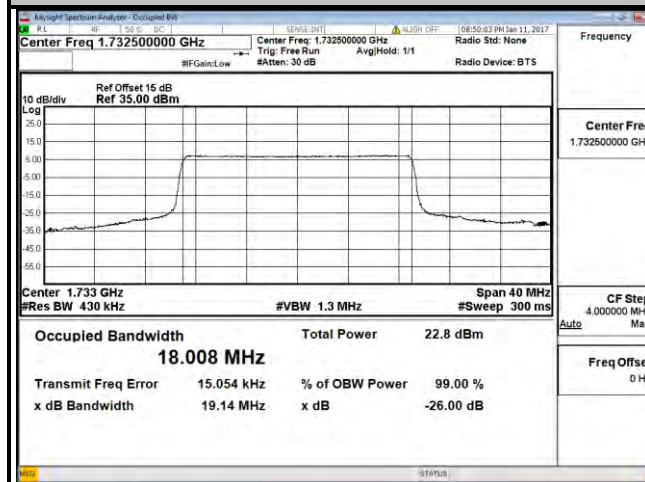
#### 15 MHz / QPSK



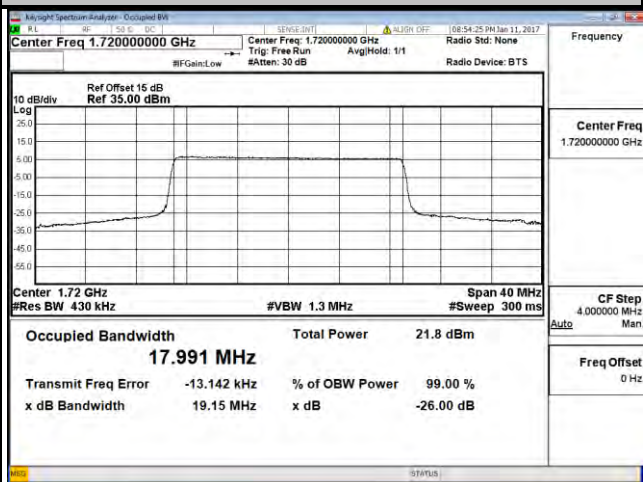
#### 15 MHz / 16QAM



#### 20 MHz / QPSK



#### 20 MHz / 16QAM



### LTE Band 12

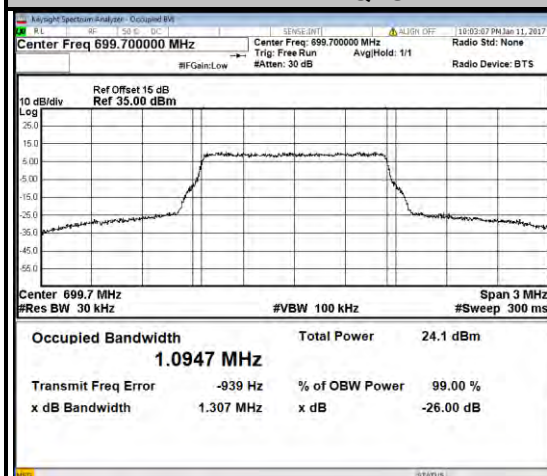
#### Channel Bandwidth: 1.4 MHz

#### Channel Bandwidth: 3 MHz

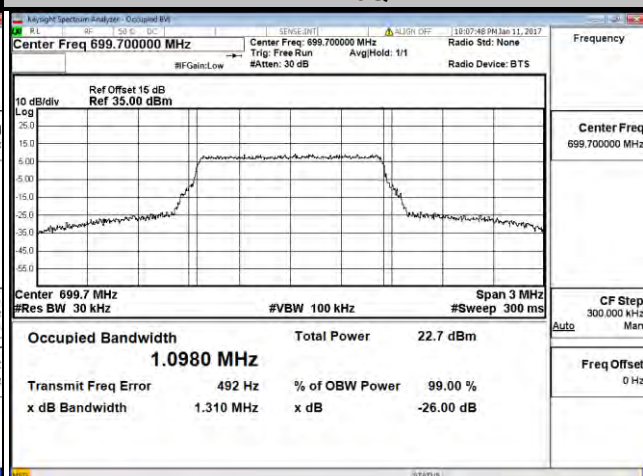
| Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       | Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       |
|---------|-----------------|-------------------------------|-------|---------|-----------------|-------------------------------|-------|
|         |                 | QPSK                          | 16QAM |         |                 | QPSK                          | 16QAM |
| 23017   | 699.7           | 1.09                          | 1.10  | 23025   | 700.5           | 2.70                          | 2.70  |
| 23095   | 707.5           | 1.09                          | 1.10  | 23095   | 707.5           | 2.70                          | 2.70  |
| 23173   | 715.3           | 1.09                          | 1.09  | 23165   | 714.5           | 2.70                          | 2.70  |

### Spectrum Plot of Worst Value

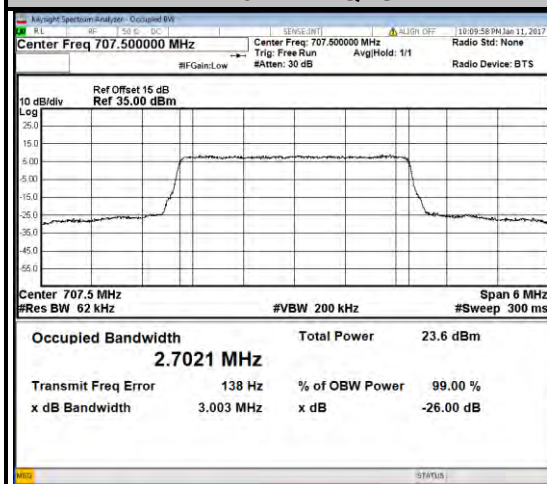
#### 1.4 MHz / QPSK



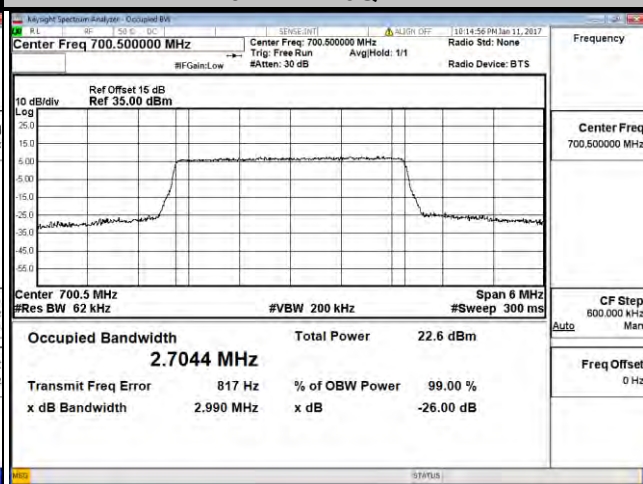
#### 1.4 MHz / 16QAM



#### 3 MHz / QPSK



#### 3 MHz / 16QAM



### LTE Band 12

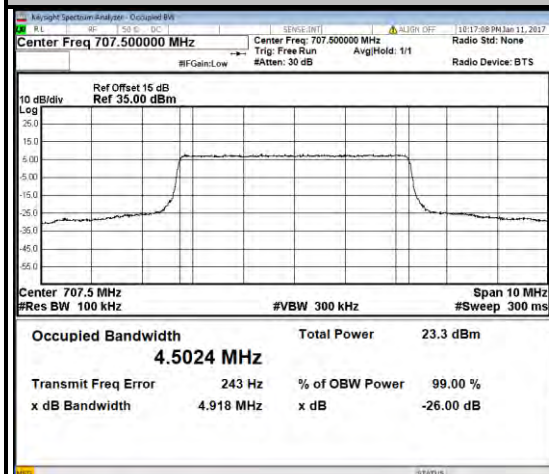
#### Channel Bandwidth: 5 MHz

#### Channel Bandwidth: 10 MHz

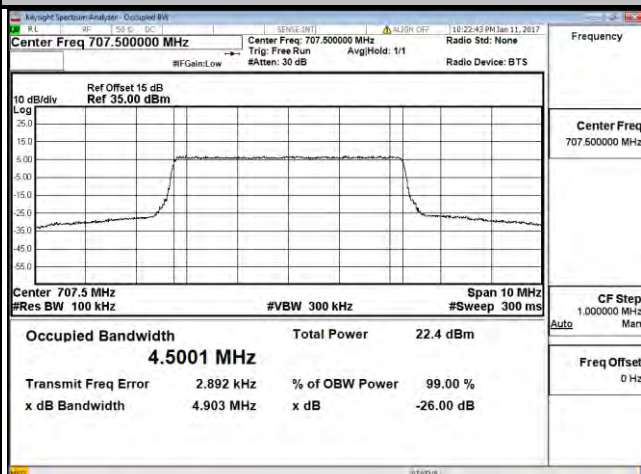
| Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       | Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       |
|---------|-----------------|-------------------------------|-------|---------|-----------------|-------------------------------|-------|
|         |                 | QPSK                          | 16QAM |         |                 | QPSK                          | 16QAM |
| 23035   | 701.5           | 4.49                          | 4.49  | 23060   | 704.0           | 8.97                          | 8.98  |
| 23095   | 707.5           | 4.50                          | 4.50  | 23095   | 707.5           | 9.00                          | 8.99  |
| 23155   | 713.5           | 4.49                          | 4.49  | 23130   | 711.0           | 8.98                          | 8.97  |

### Spectrum Plot of Worst Value

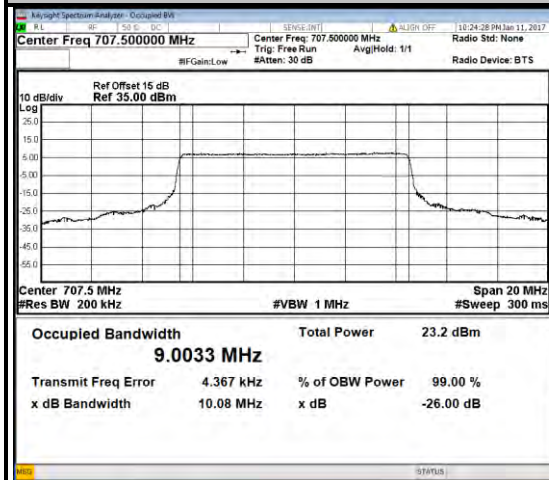
#### 5 MHz / QPSK



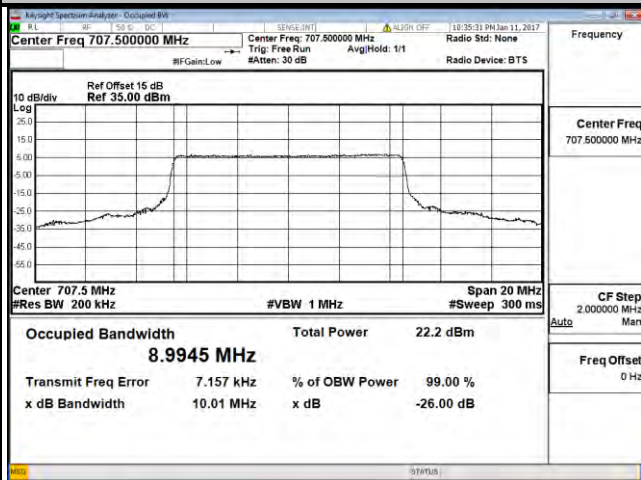
#### 5 MHz / 16QAM



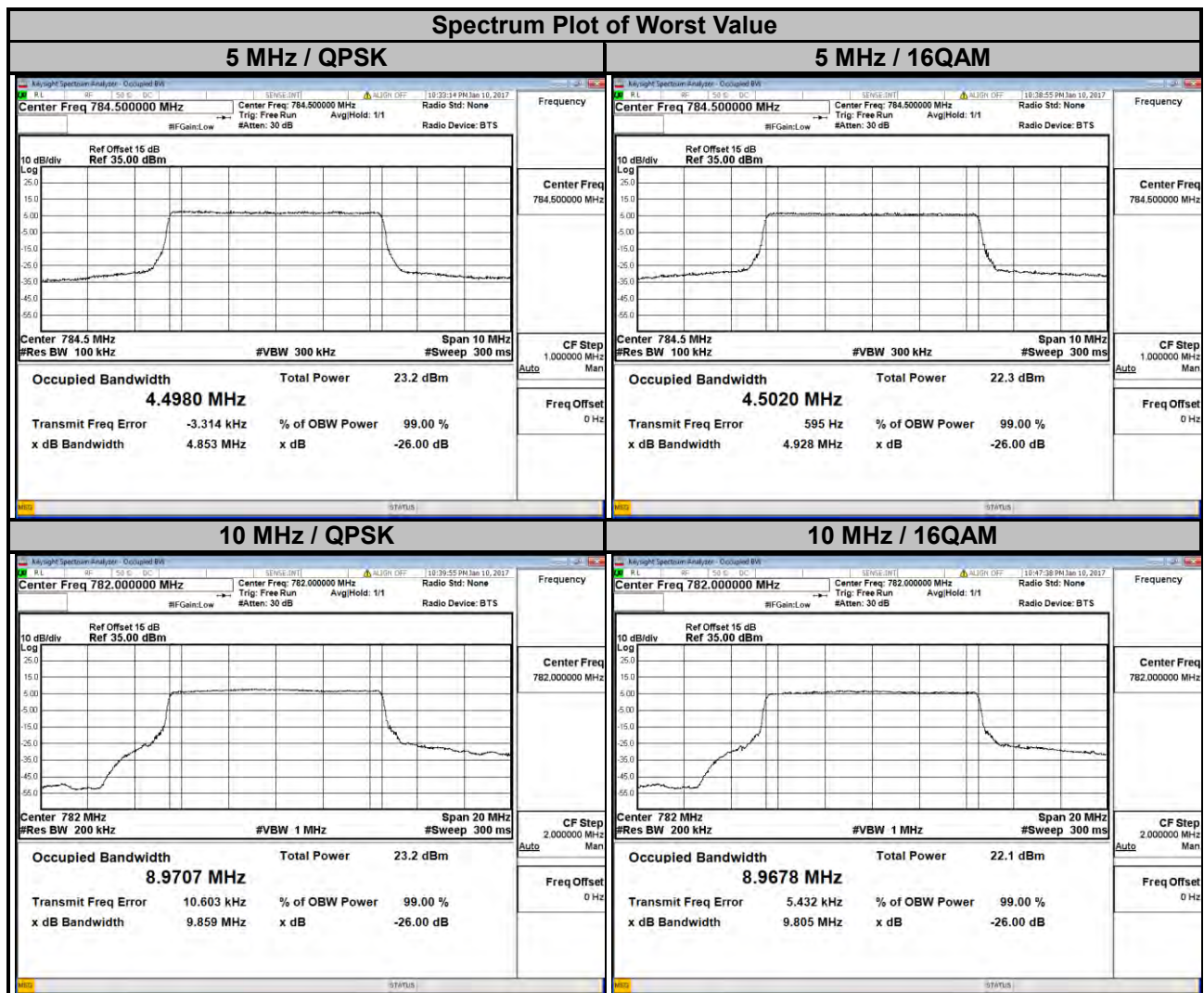
#### 10 MHz / QPSK



#### 10 MHz / 16QAM



| LTE Band 13              |                 |                               |       |                           |                 |                               |       |
|--------------------------|-----------------|-------------------------------|-------|---------------------------|-----------------|-------------------------------|-------|
| Channel Bandwidth: 5 MHz |                 |                               |       | Channel Bandwidth: 10 MHz |                 |                               |       |
| Channel                  | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       | Channel                   | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       |
|                          |                 | QPSK                          | 16QAM |                           |                 | QPSK                          | 16QAM |
| 23205                    | 779.5           | 4.49                          | 4.49  | 23230                     | 782.0           | 8.97                          | 8.97  |
| 23230                    | 782.0           | 4.49                          | 4.49  |                           |                 |                               |       |
| 23255                    | 784.5           | 4.50                          | 4.50  |                           |                 |                               |       |





## LTE Band 17

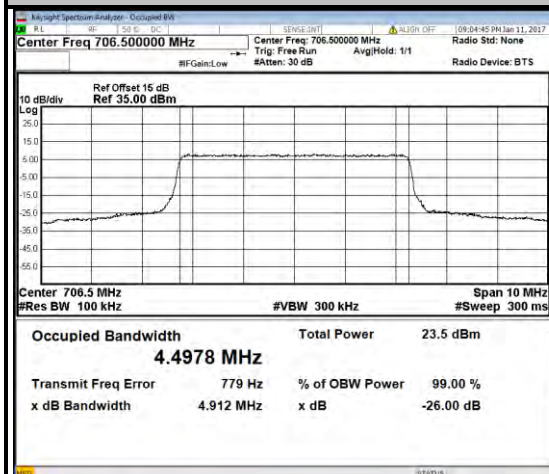
### Channel Bandwidth: 5 MHz

### Channel Bandwidth: 10 MHz

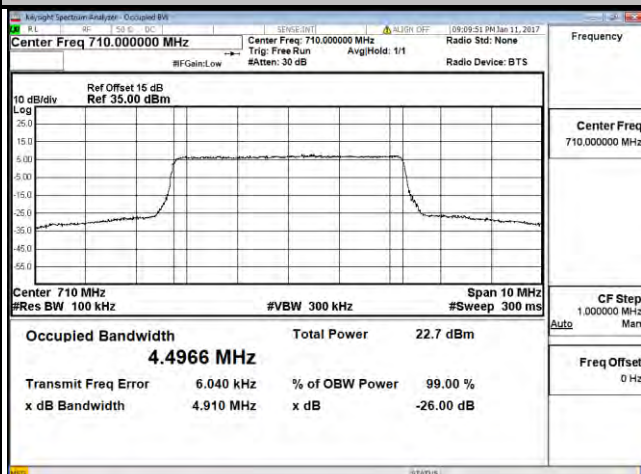
| Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       | Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       |
|---------|-----------------|-------------------------------|-------|---------|-----------------|-------------------------------|-------|
|         |                 | QPSK                          | 16QAM |         |                 | QPSK                          | 16QAM |
| 23755   | 706.5           | 4.50                          | 4.49  | 23780   | 709.0           | 9.00                          | 9.00  |
| 23790   | 710.0           | 4.50                          | 4.50  | 23790   | 710.0           | 8.99                          | 8.99  |
| 23825   | 713.5           | 4.49                          | 4.50  | 23800   | 711.0           | 8.98                          | 8.99  |

## Spectrum Plot of Worst Value

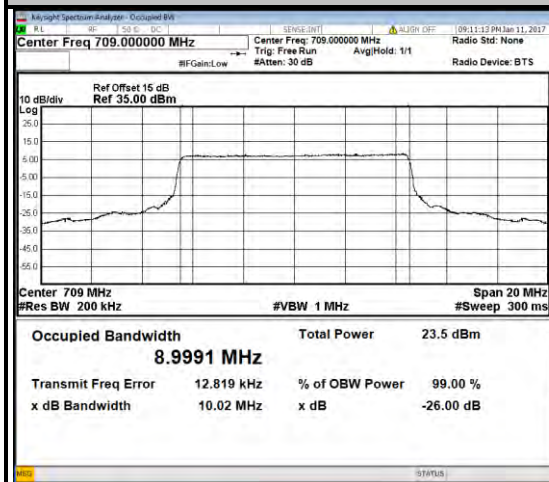
### 5 MHz / QPSK



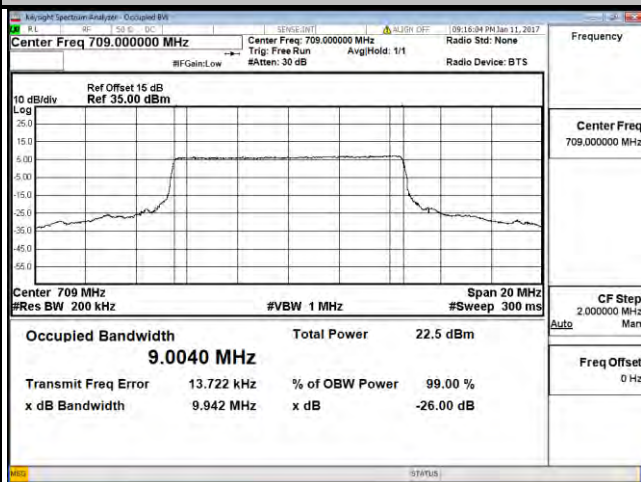
### 5 MHz / 16QAM



### 10 MHz / QPSK



### 10 MHz / 16QAM



### LTE Band 66

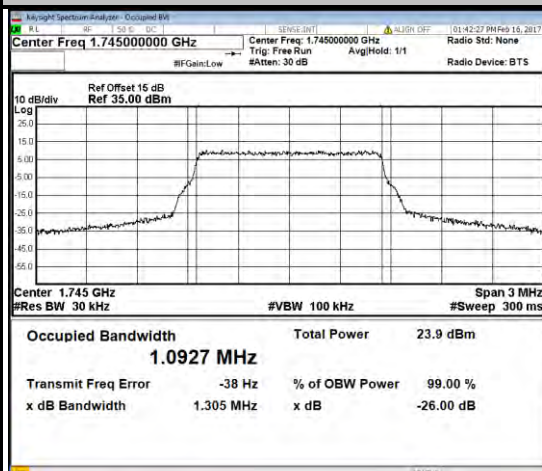
#### Channel Bandwidth: 1.4 MHz

#### Channel Bandwidth: 3 MHz

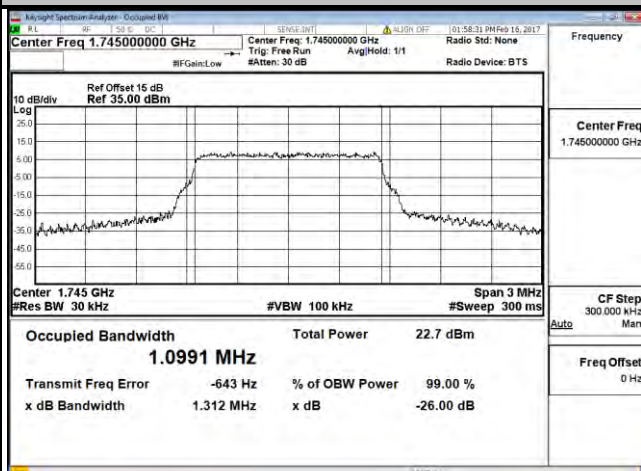
| Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       | Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       |
|---------|-----------------|-------------------------------|-------|---------|-----------------|-------------------------------|-------|
|         |                 | QPSK                          | 16QAM |         |                 | QPSK                          | 16QAM |
| 19957   | 1710.7          | 1.09                          | 1.10  | 19965   | 1711.5          | 2.70                          | 2.70  |
| 20175   | 1732.5          | 1.09                          | 1.10  | 20175   | 1732.5          | 2.70                          | 2.71  |
| 20393   | 1754.3          | 1.09                          | 1.09  | 20385   | 1753.5          | 2.70                          | 2.70  |

### Spectrum Plot of Worst Value

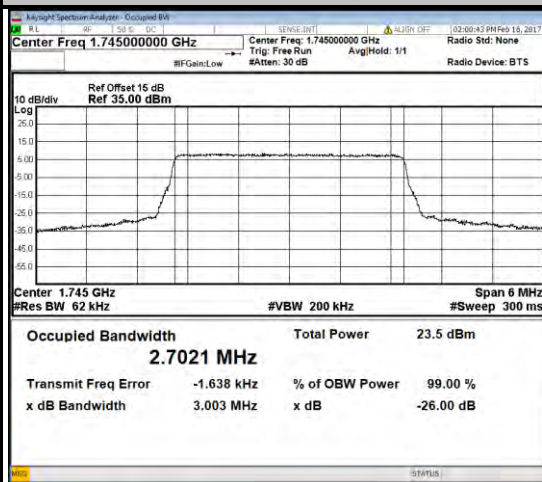
#### 1.4 MHz / QPSK



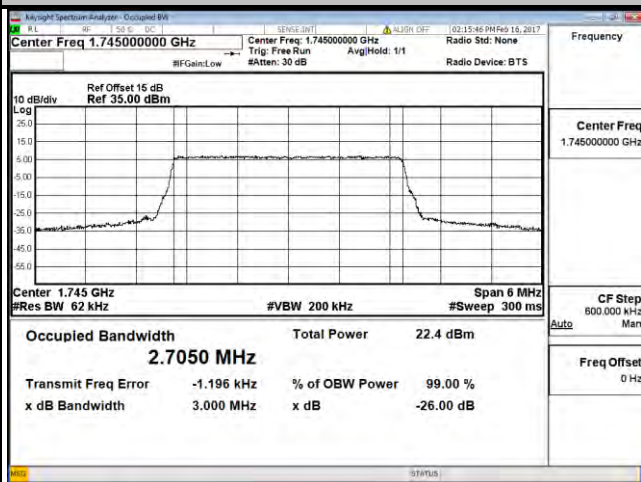
#### 1.4 MHz / 16QAM



#### 3 MHz / QPSK



#### 3 MHz / 16QAM



### LTE Band 66

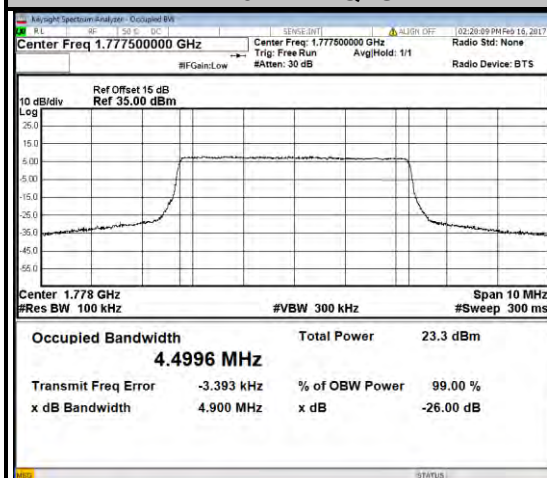
#### Channel Bandwidth: 5 MHz

#### Channel Bandwidth: 10 MHz

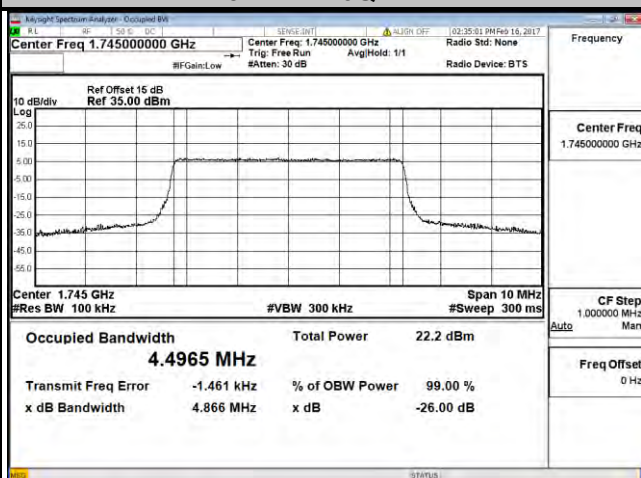
| Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       | Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       |
|---------|-----------------|-------------------------------|-------|---------|-----------------|-------------------------------|-------|
|         |                 | QPSK                          | 16QAM |         |                 | QPSK                          | 16QAM |
| 19975   | 1712.5          | 4.50                          | 4.50  | 20000   | 1715.0          | 8.98                          | 8.98  |
| 20175   | 1732.5          | 4.50                          | 4.50  | 20175   | 1732.5          | 8.99                          | 8.99  |
| 20375   | 1752.5          | 4.50                          | 4.49  | 20350   | 1750.0          | 8.98                          | 8.98  |

### Spectrum Plot of Worst Value

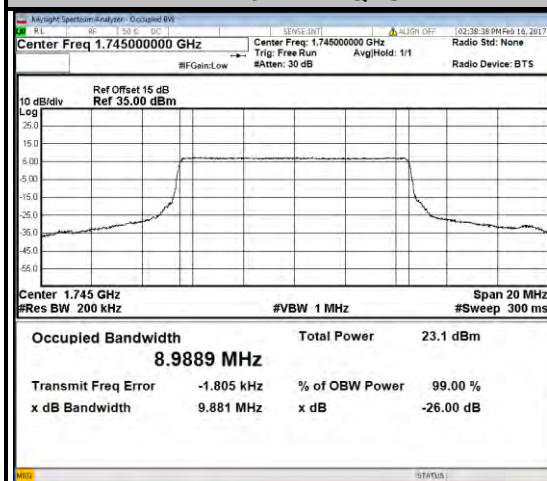
#### 5 MHz / QPSK



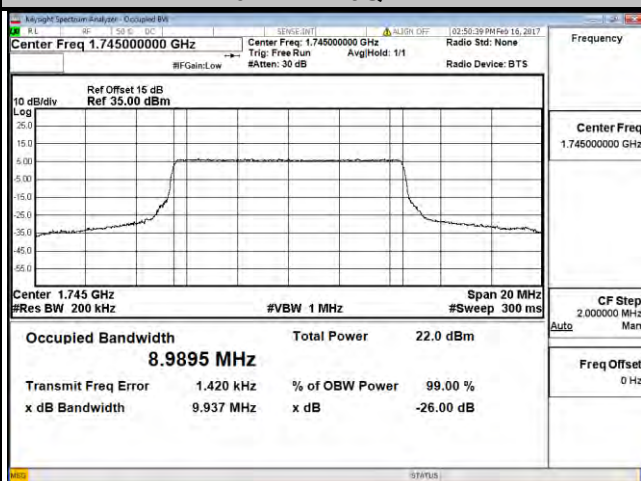
#### 5 MHz / 16QAM



#### 10 MHz / QPSK



#### 10 MHz / 16QAM



### LTE Band 66

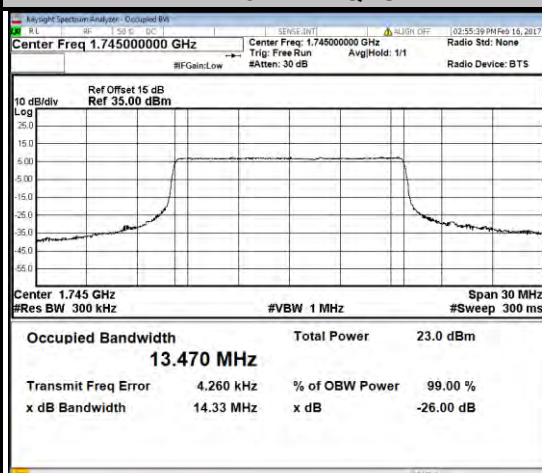
#### Channel Bandwidth: 15 MHz

#### Channel Bandwidth: 20 MHz

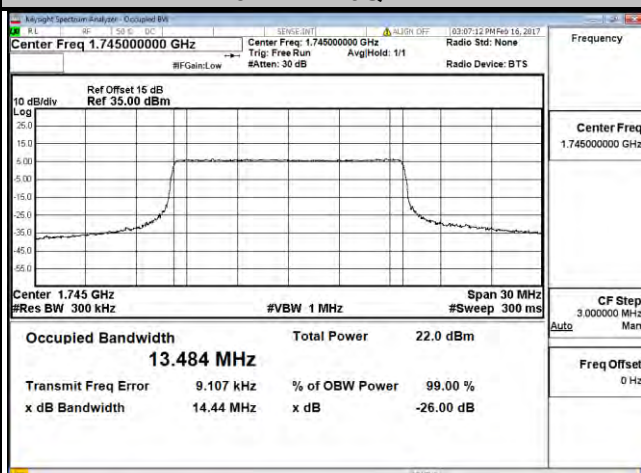
| Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       | Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       |
|---------|-----------------|-------------------------------|-------|---------|-----------------|-------------------------------|-------|
|         |                 | QPSK                          | 16QAM |         |                 | QPSK                          | 16QAM |
| 20025   | 1717.5          | 13.46                         | 13.46 | 20050   | 1720.0          | 17.98                         | 17.96 |
| 20175   | 1732.5          | 13.47                         | 13.48 | 20175   | 1732.5          | 17.98                         | 17.98 |
| 20325   | 1747.5          | 13.46                         | 13.45 | 20300   | 1745.0          | 17.97                         | 17.96 |

### Spectrum Plot of Worst Value

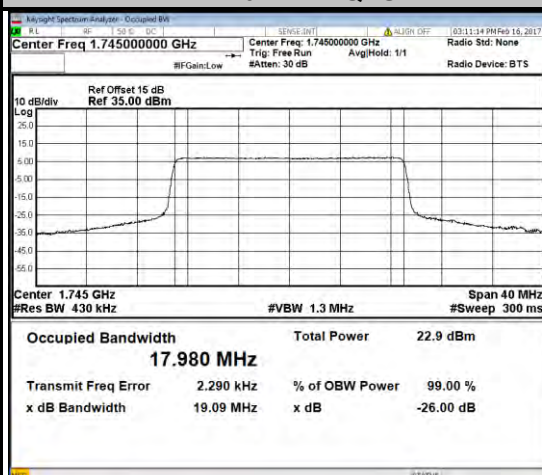
#### 15 MHz / QPSK



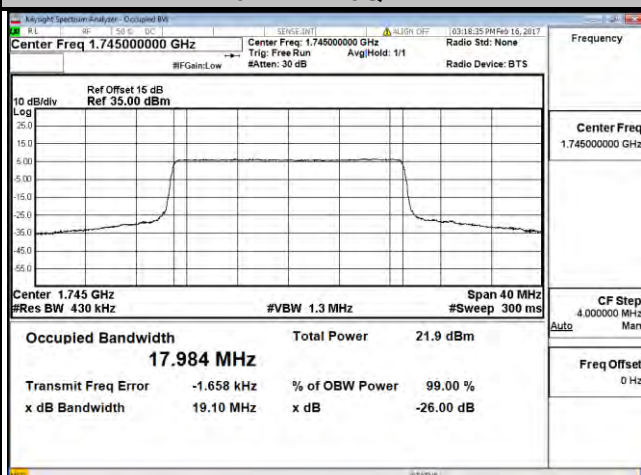
#### 15 MHz / 16QAM



#### 20 MHz / QPSK



#### 20 MHz / 16QAM





## 4.4 Band Edge Measurement

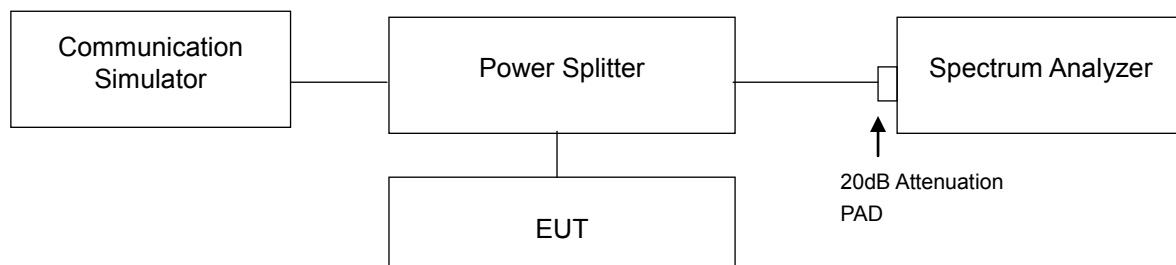
### 4.4.1 Limits of Band Edge Measurement

For operations in the 704-716 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.

However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

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

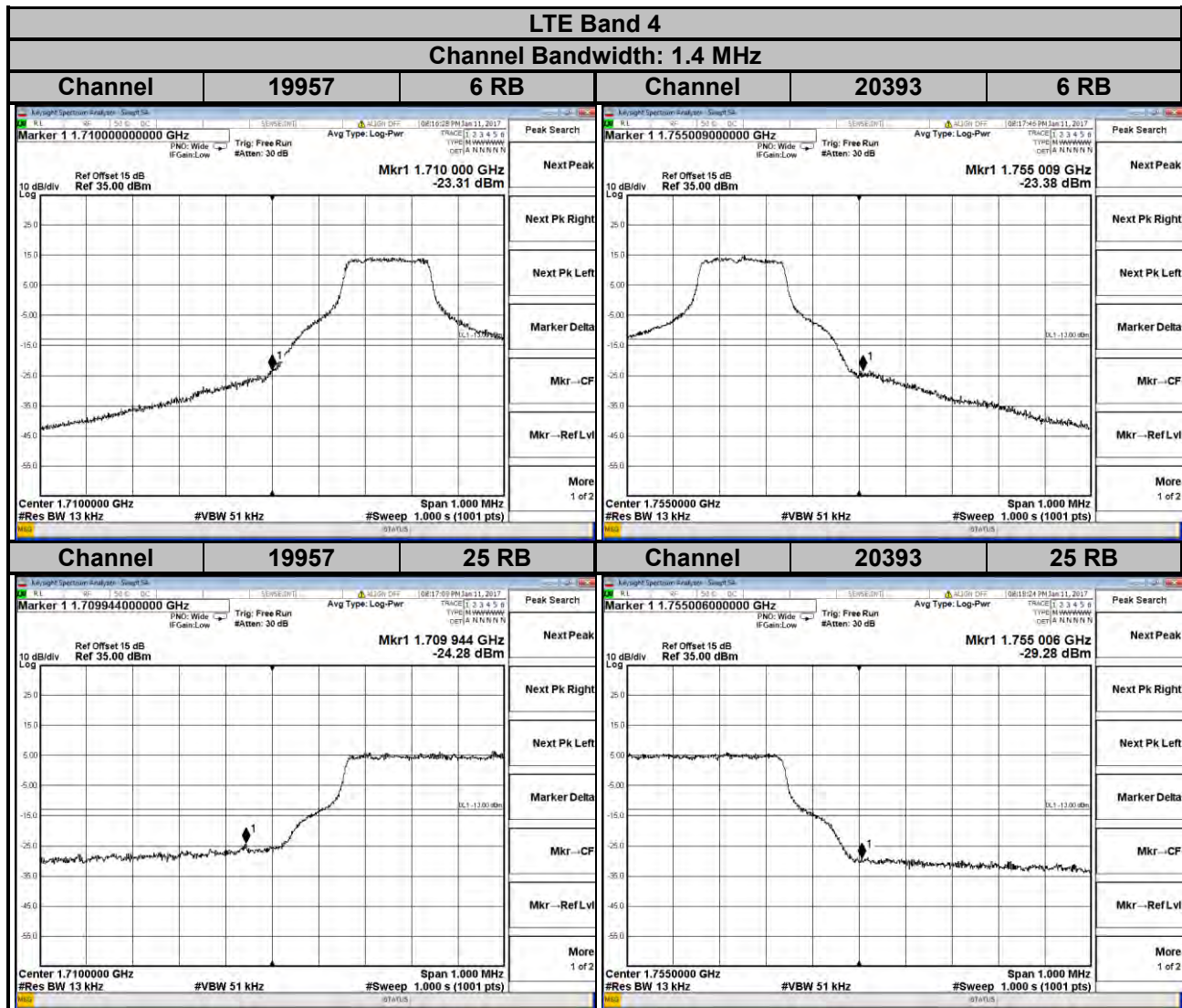
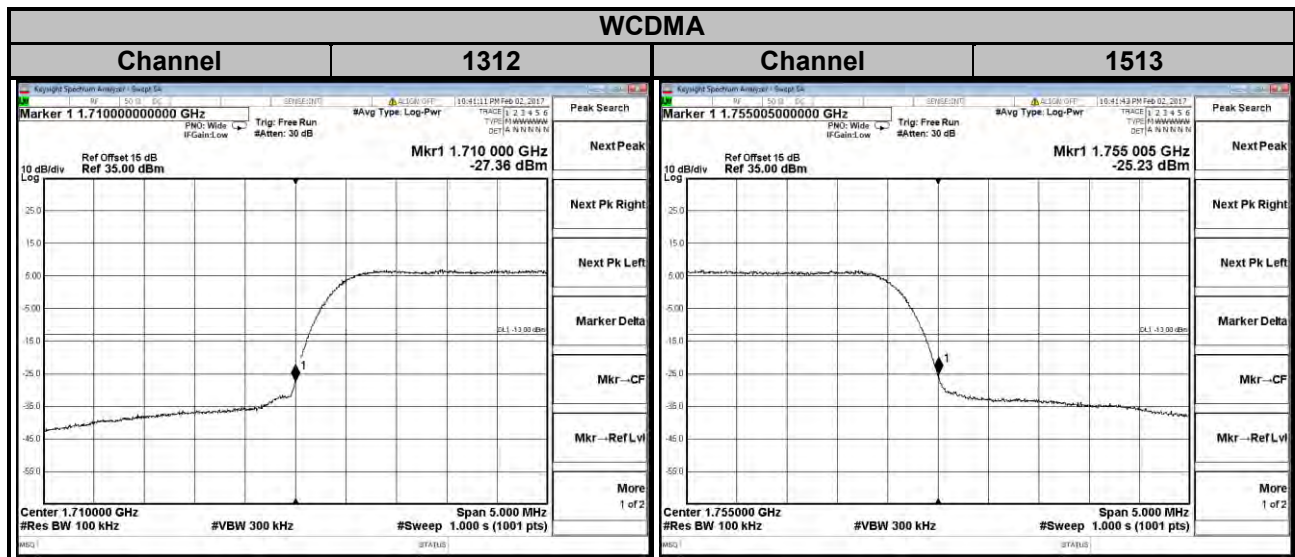
### 4.4.2 Test Setup

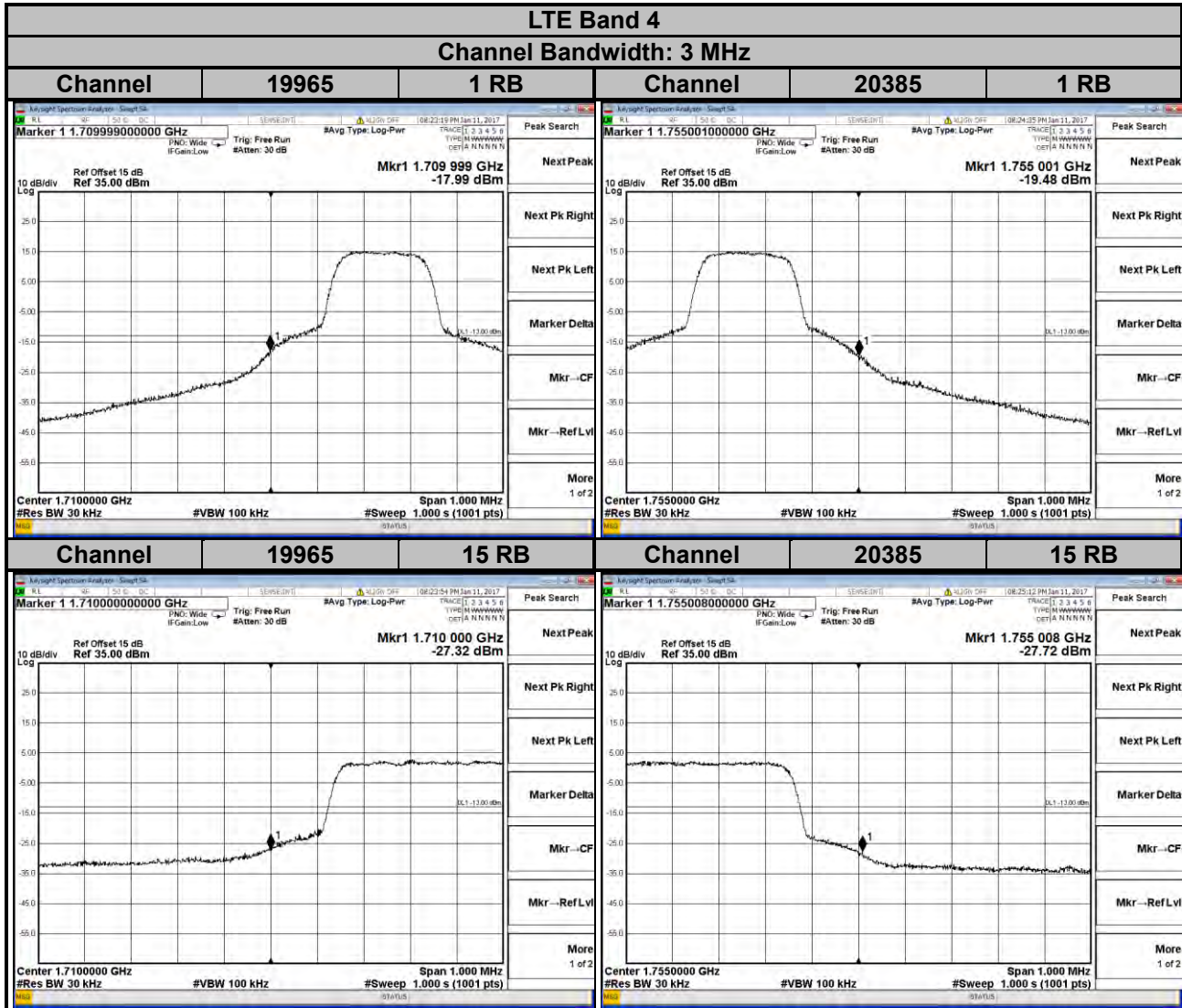


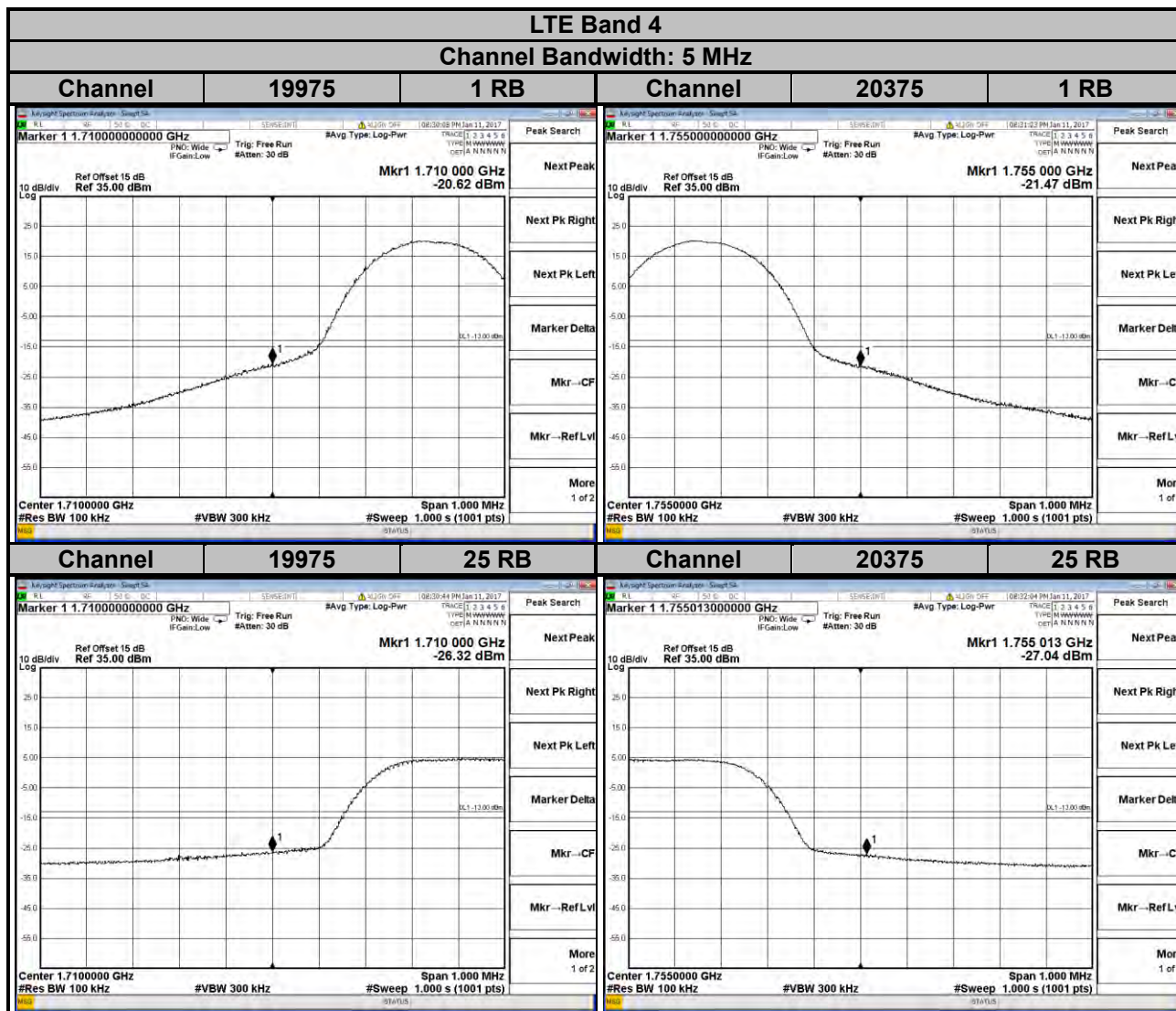
### 4.4.3 Test Procedures

- All measurements were done at low and high operational frequency range.
- The center frequency of spectrum is the band edge frequency and span is 5 MHz. RB of the spectrum is 100 kHz and VB of the spectrum is 300 kHz (WCDMA).
- The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 13 kHz and VB of the spectrum is 51 kHz (LTE Bandwidth 1.4 MHz).
- The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 30 kHz and VB of the spectrum is 100 kHz (LTE Bandwidth 3 MHz).
- The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 100 kHz and VB of the spectrum is 300 kHz (LTE Bandwidth 5 MHz/10 MHz).
- The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 150 kHz and VB of the spectrum is 470 kHz (LTE Bandwidth 15 MHz).
- The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 180 kHz and VB of the spectrum is 560 kHz (LTE Bandwidth 20 MHz).
- Record the max trace plot into the test report.

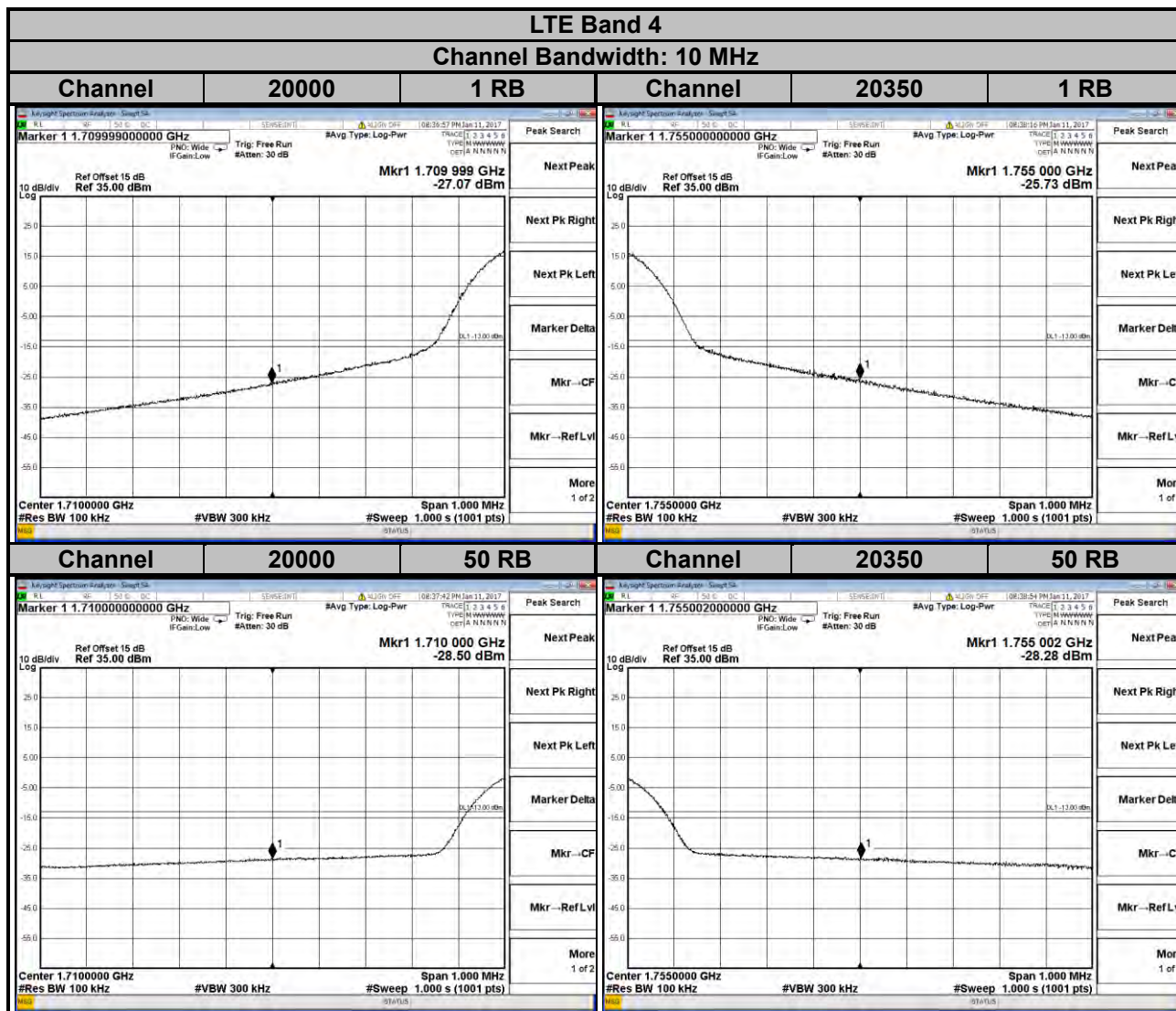
#### 4.4.4 Test Results

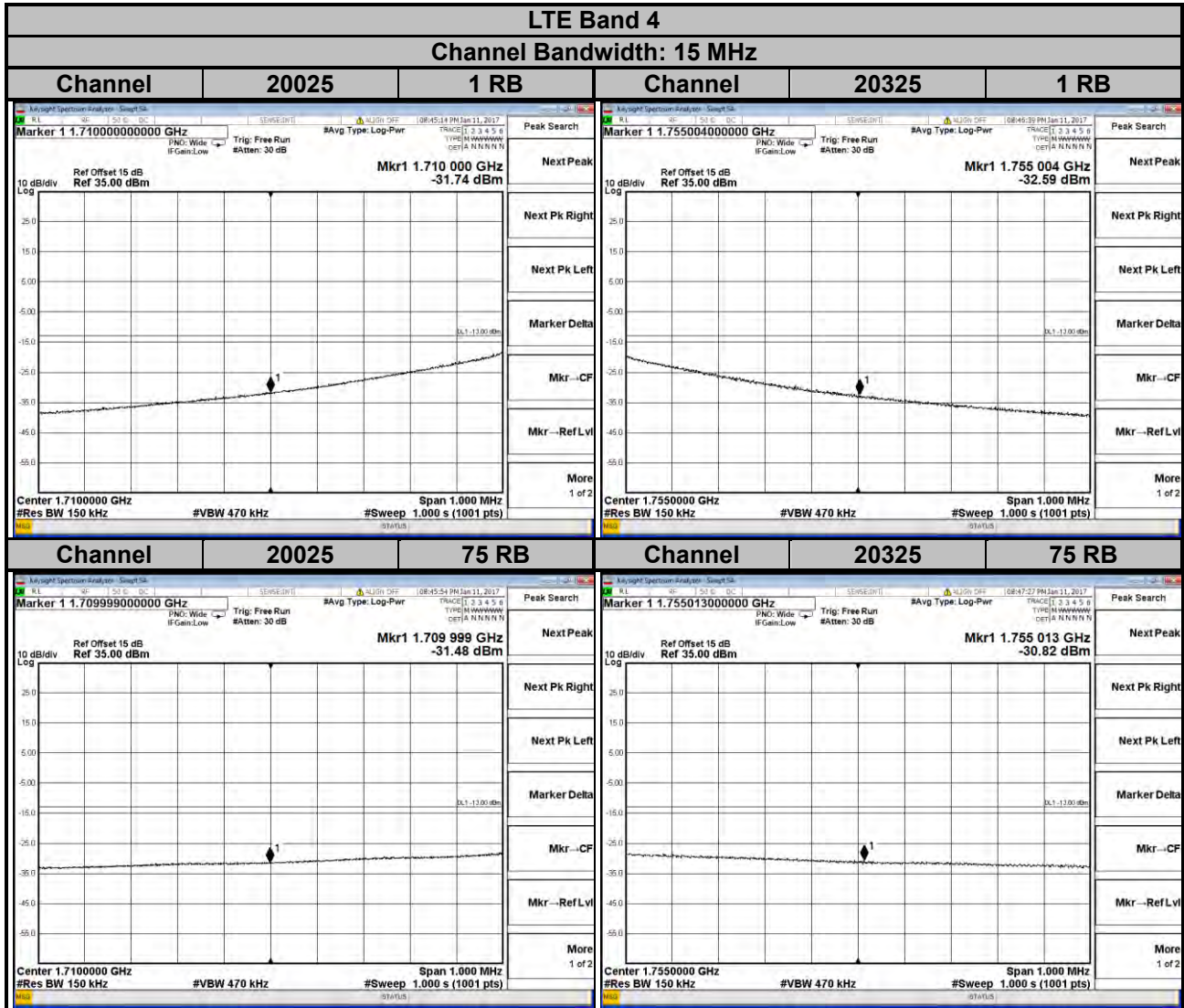


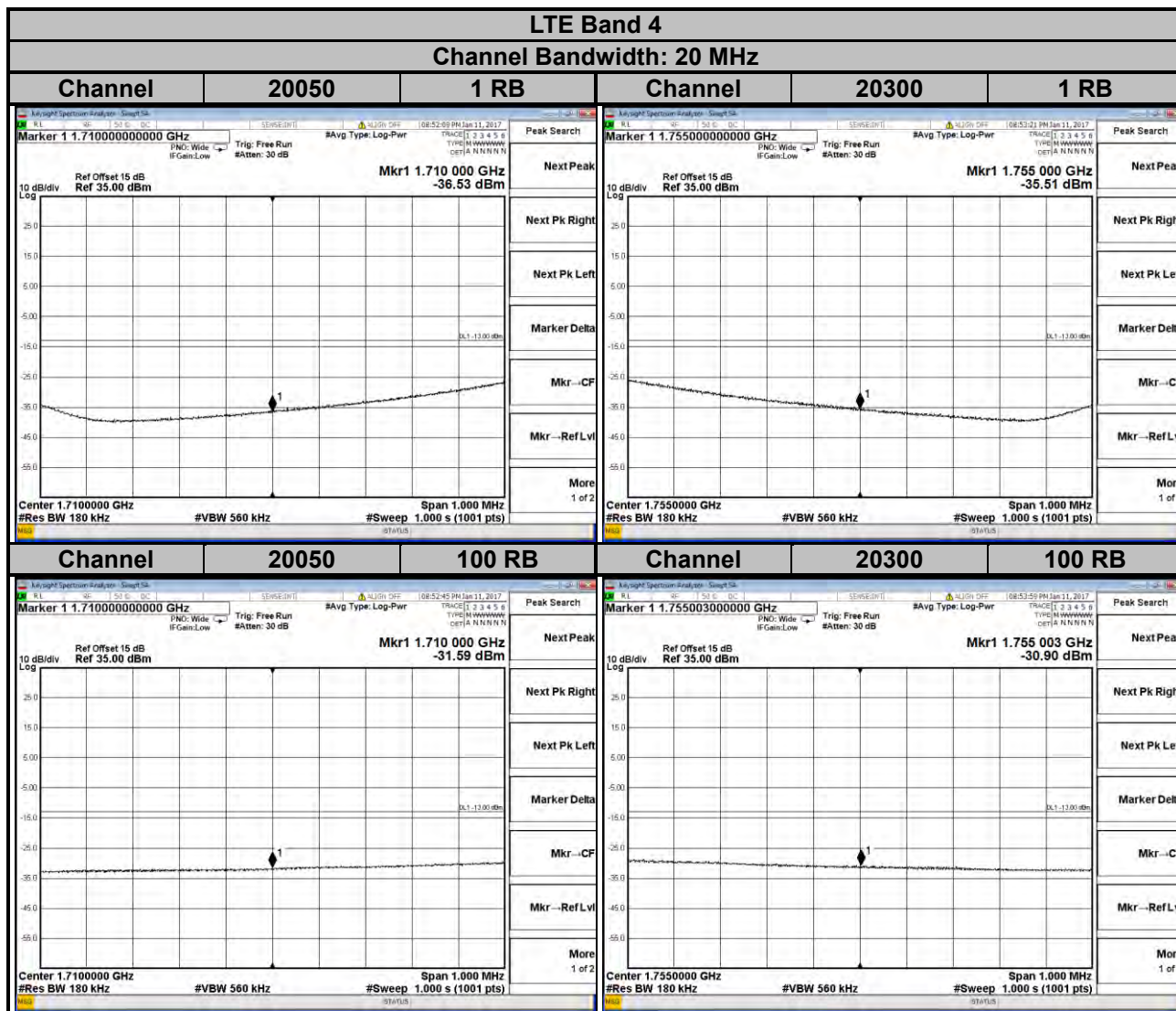


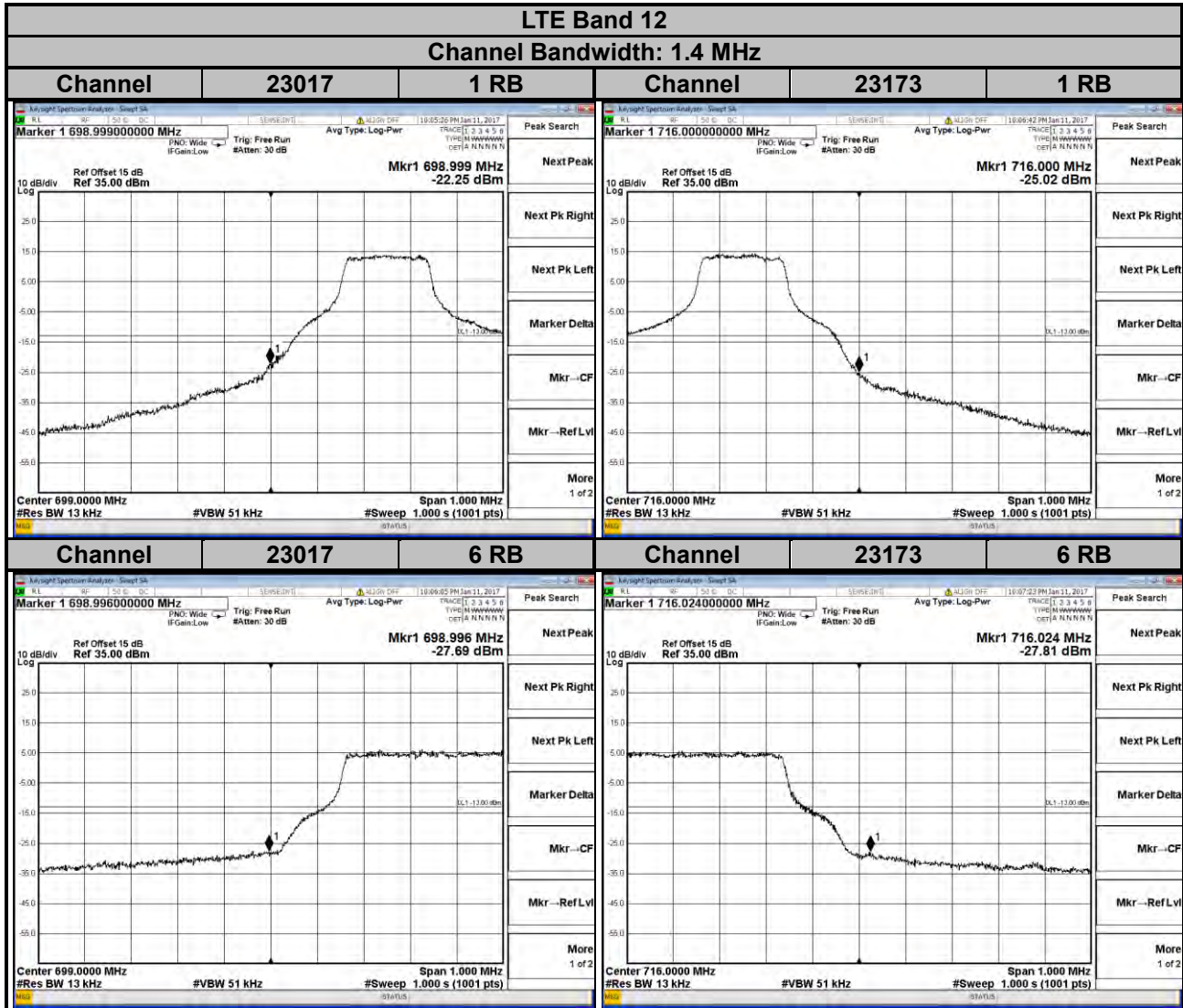




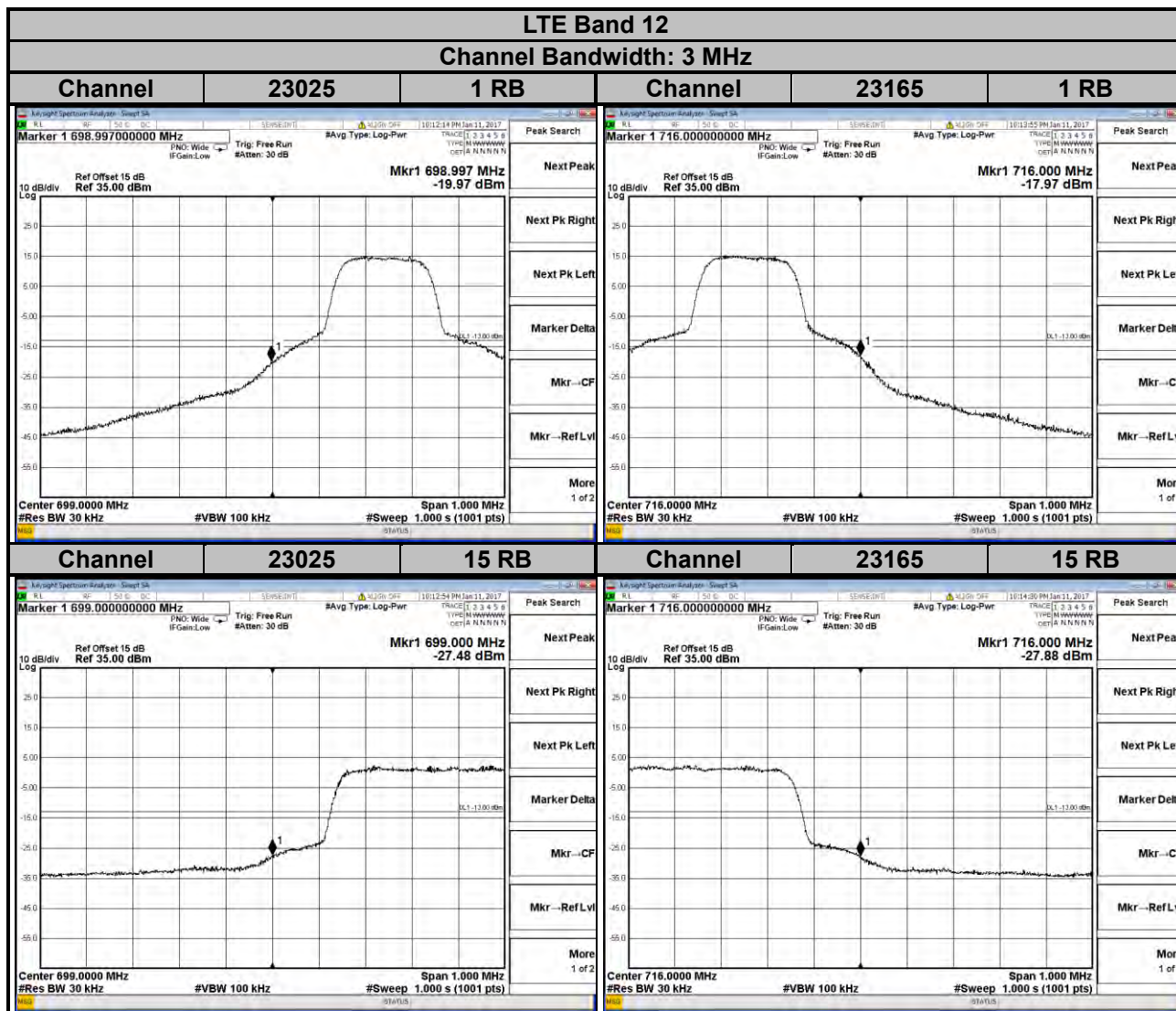


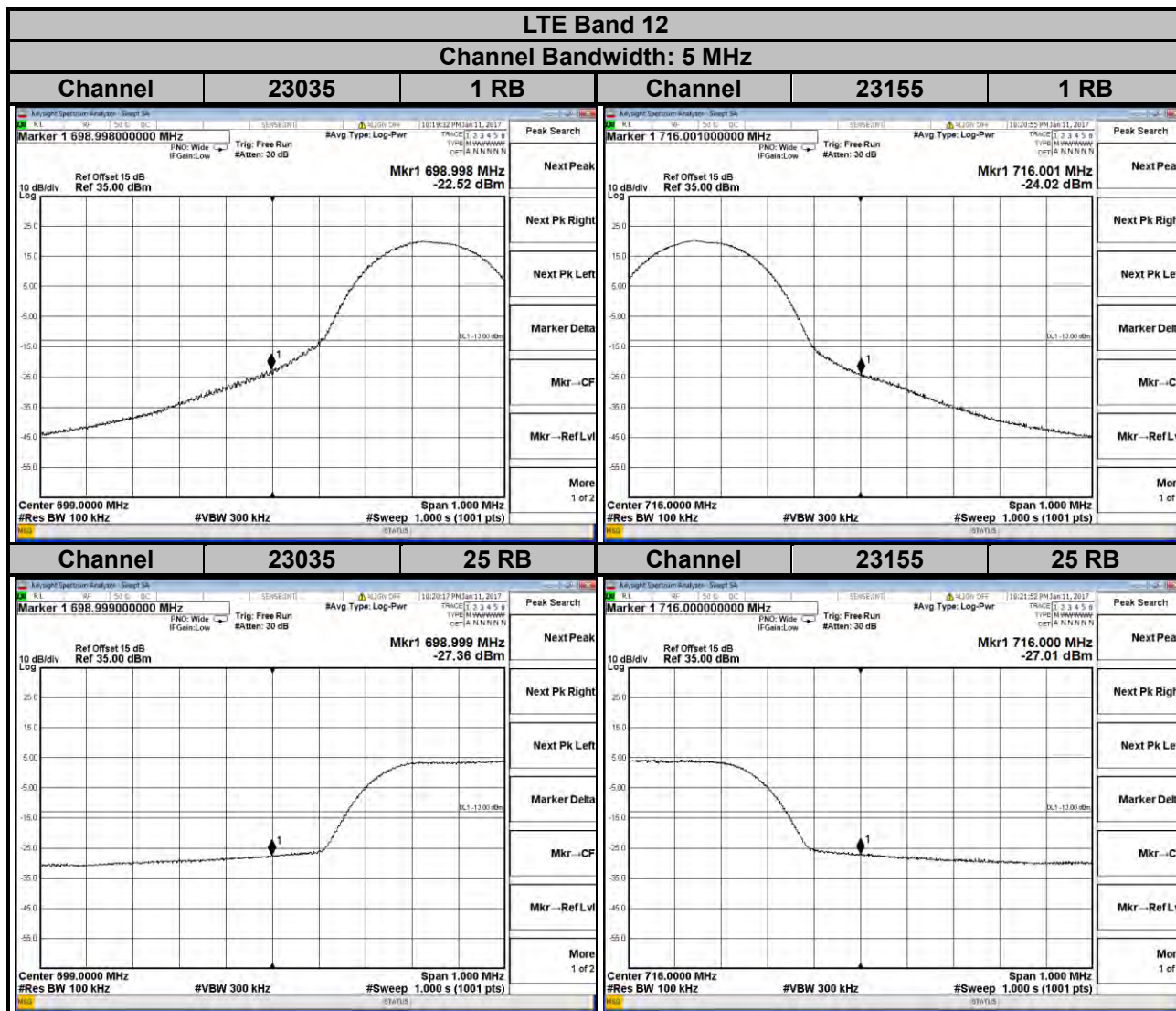


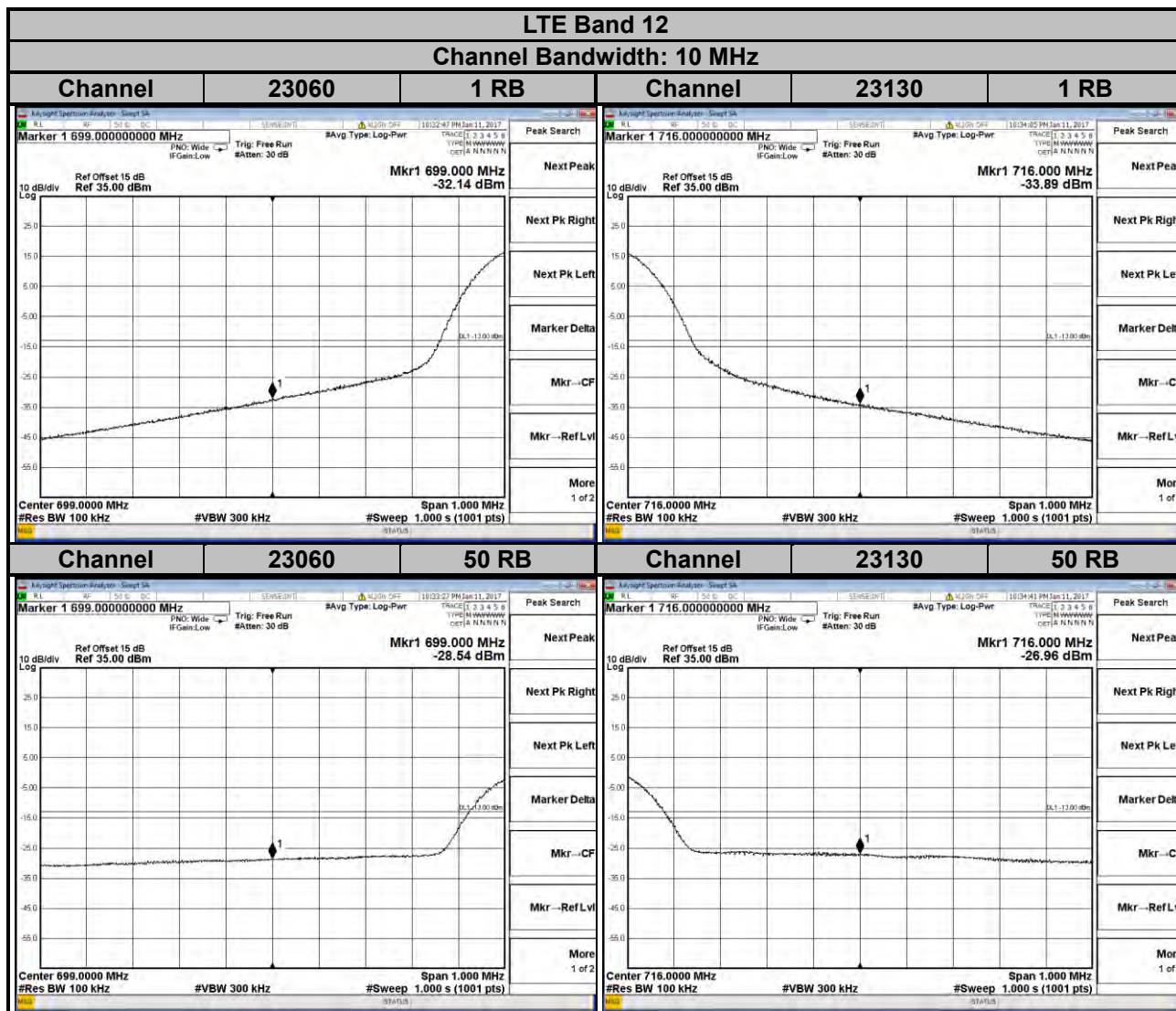




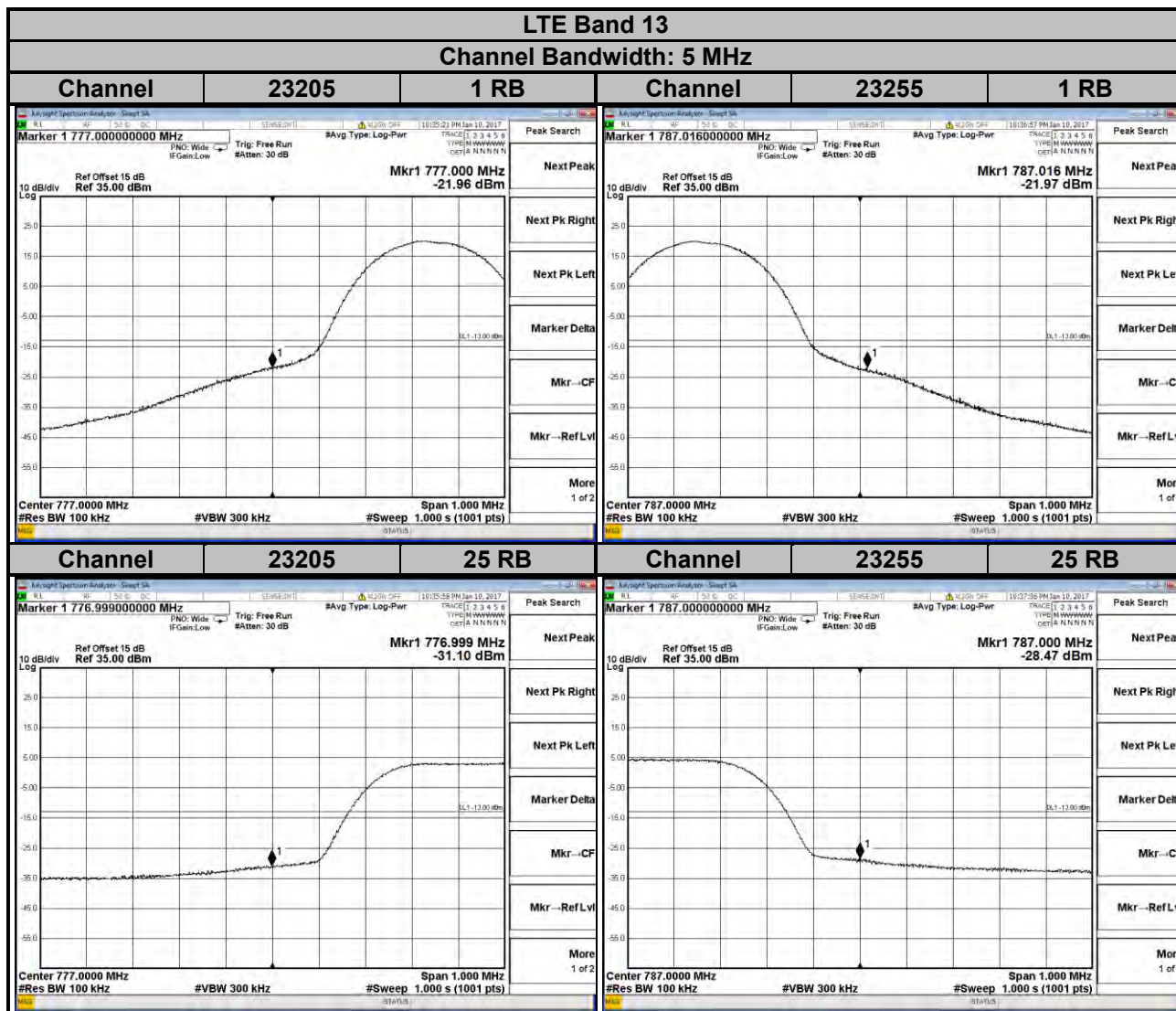


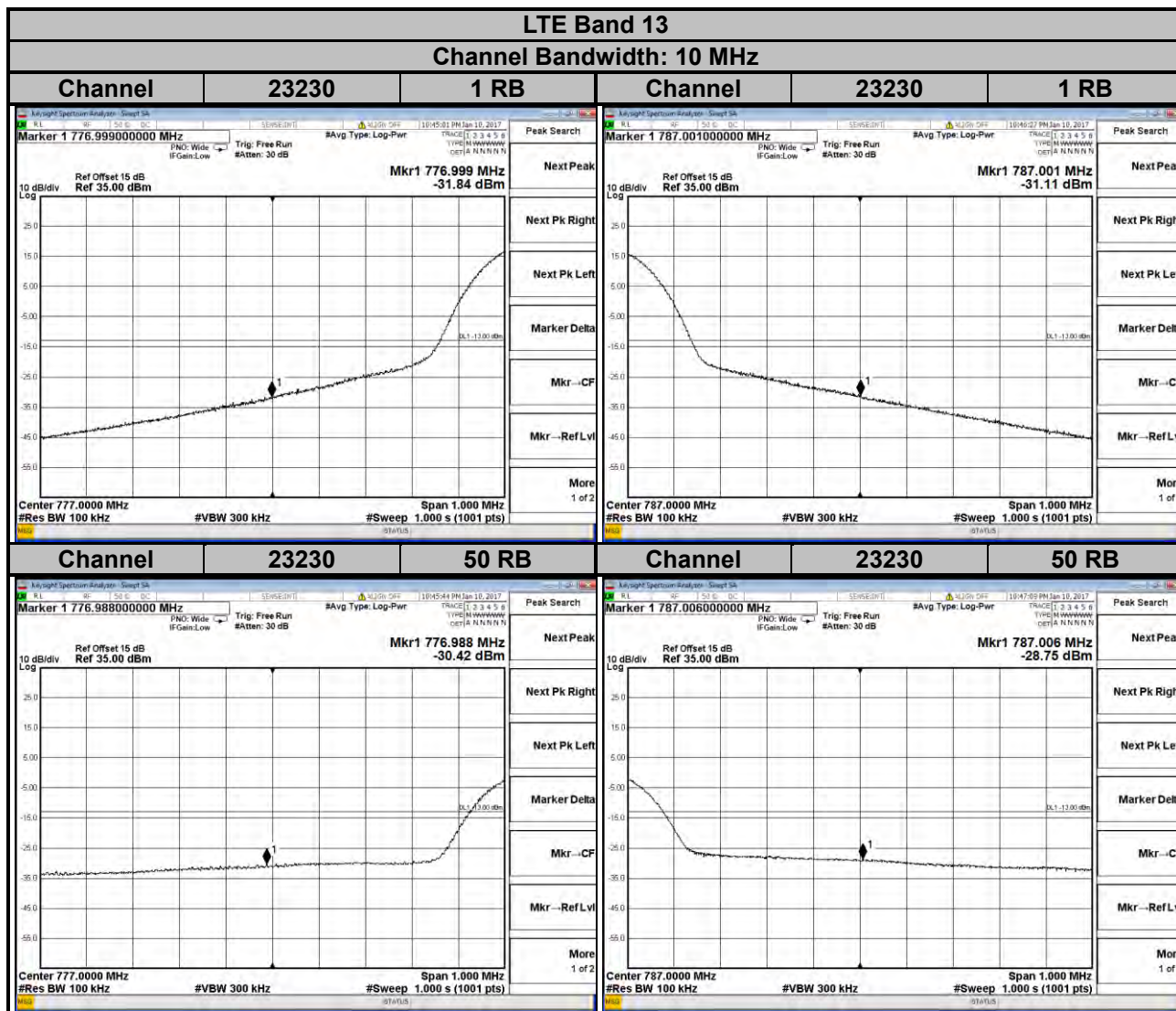


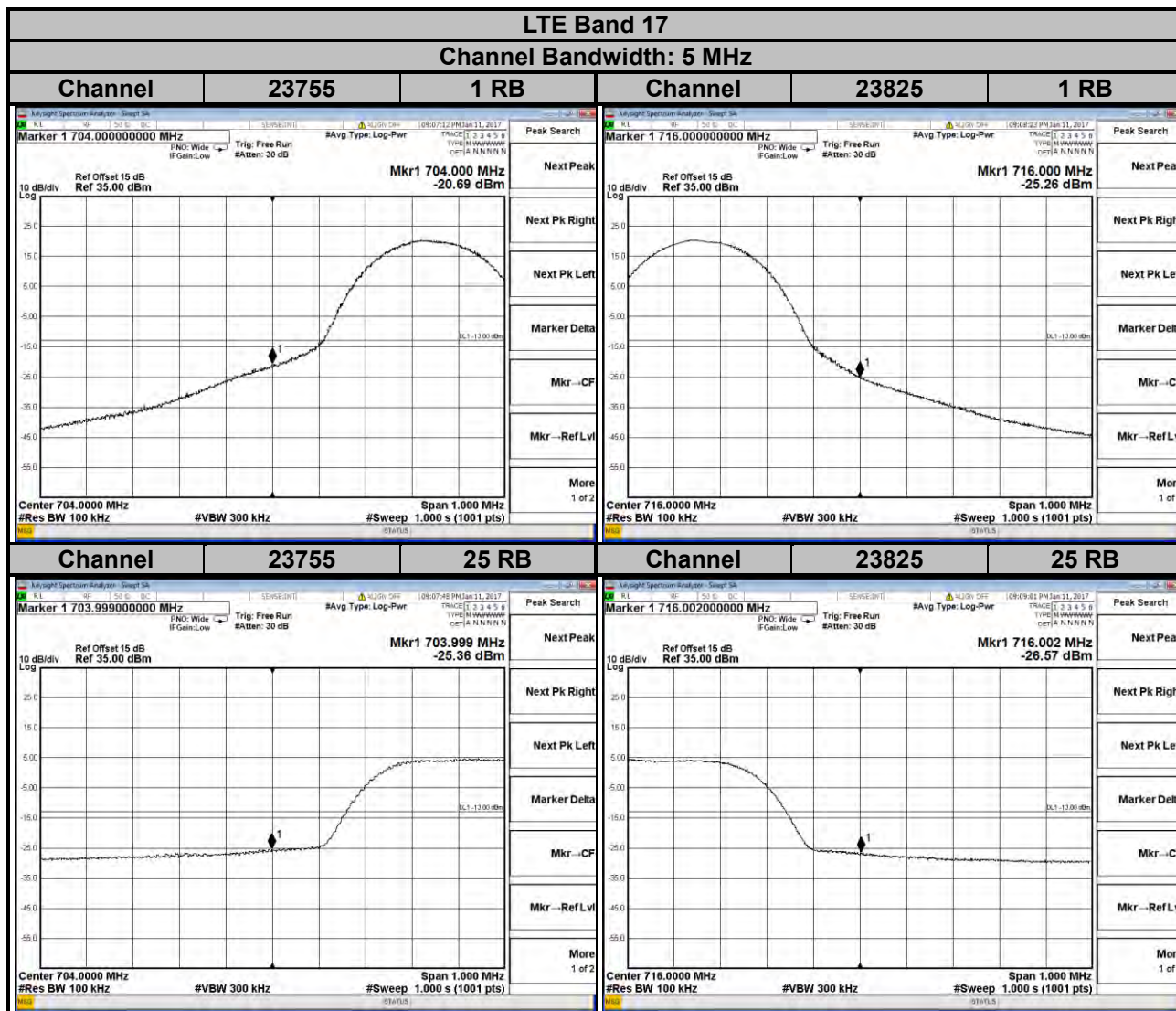


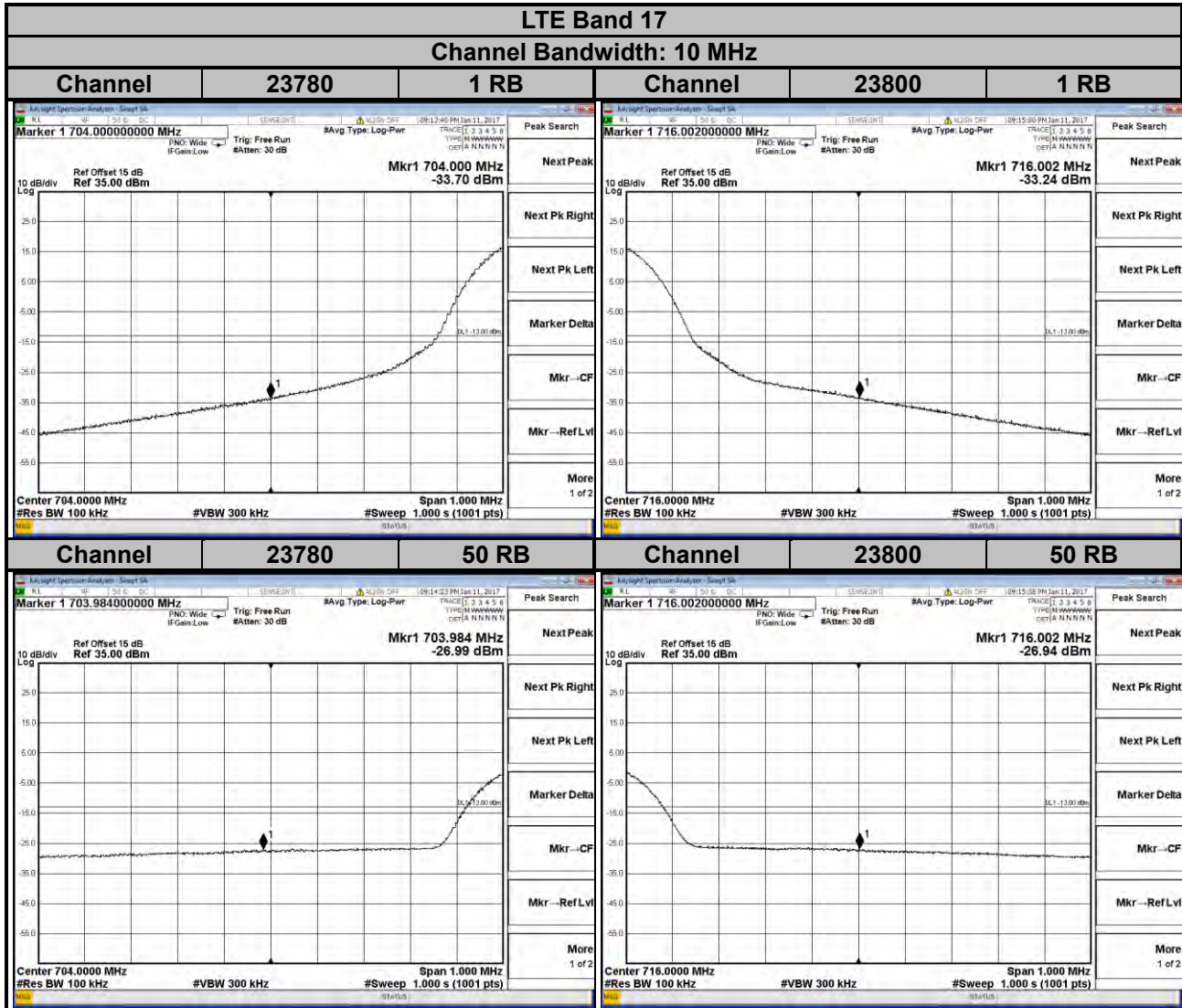




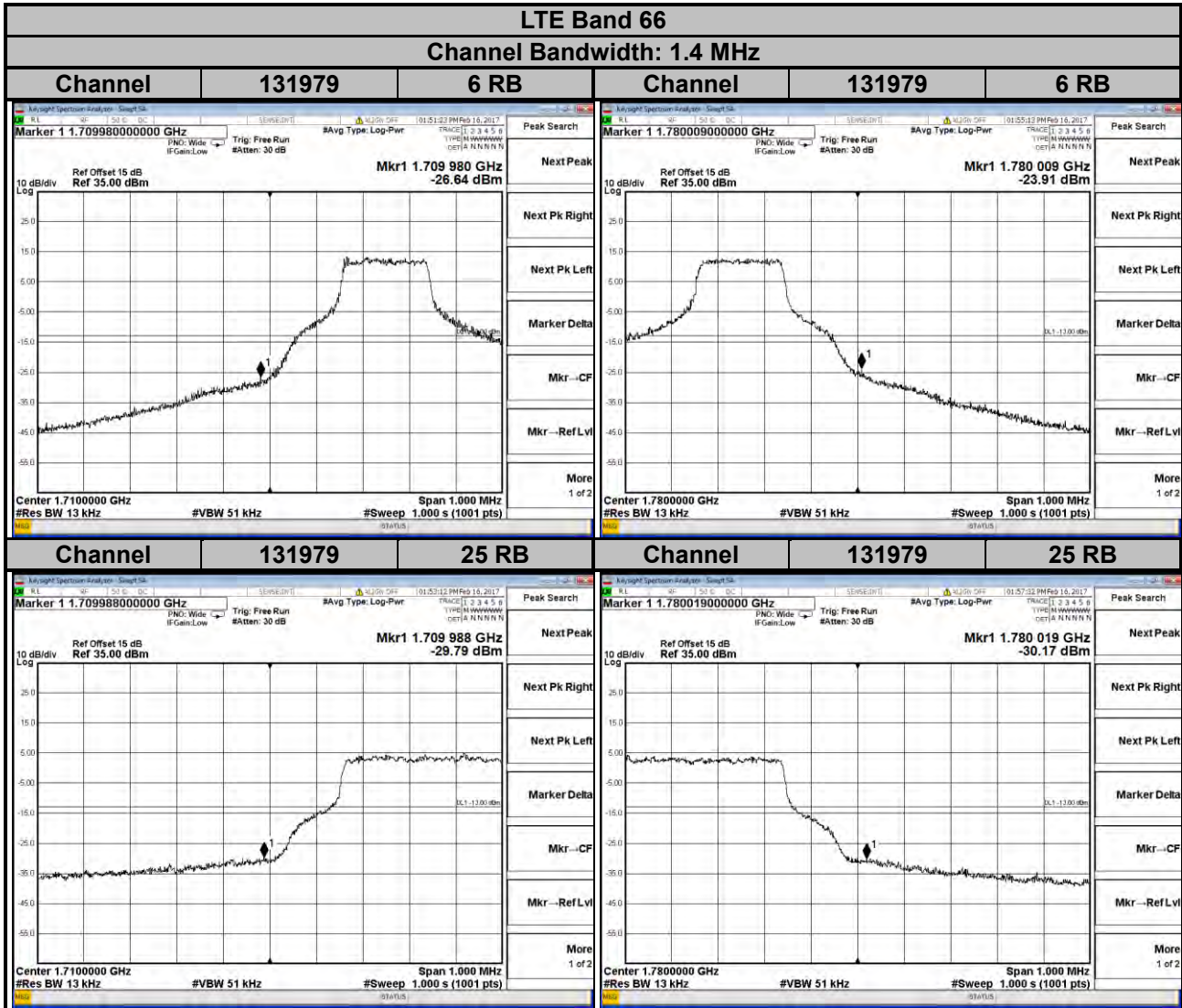




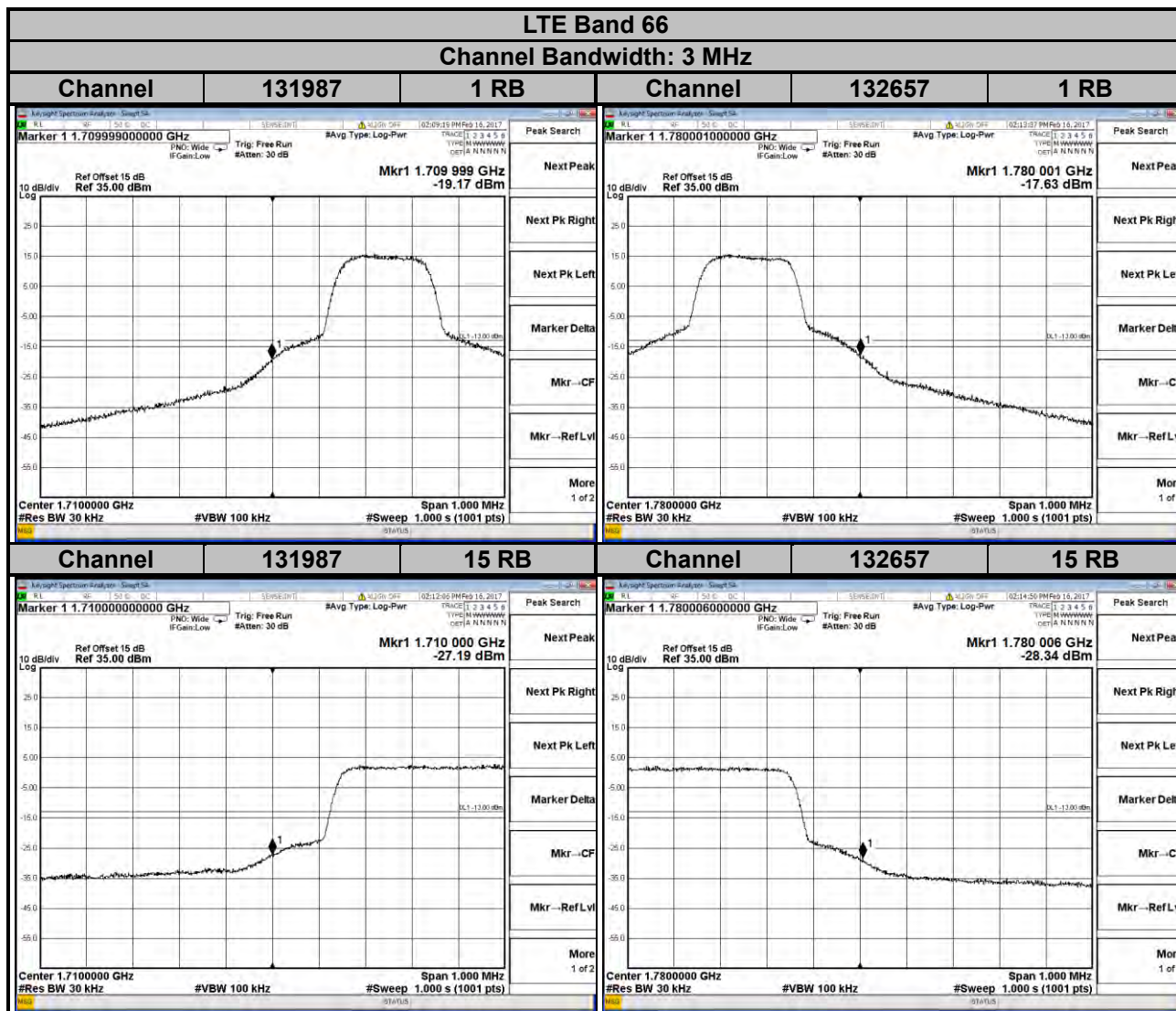


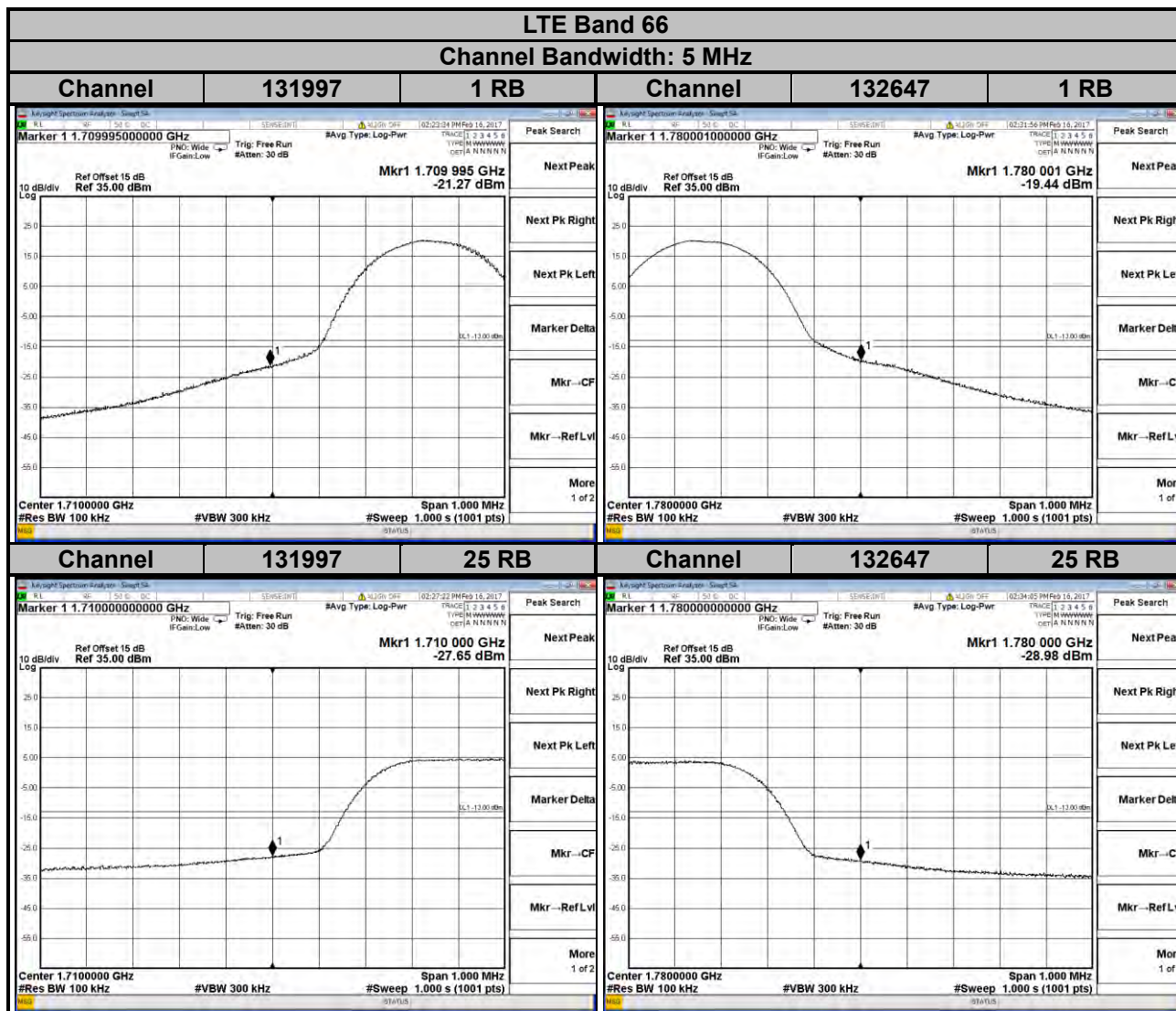


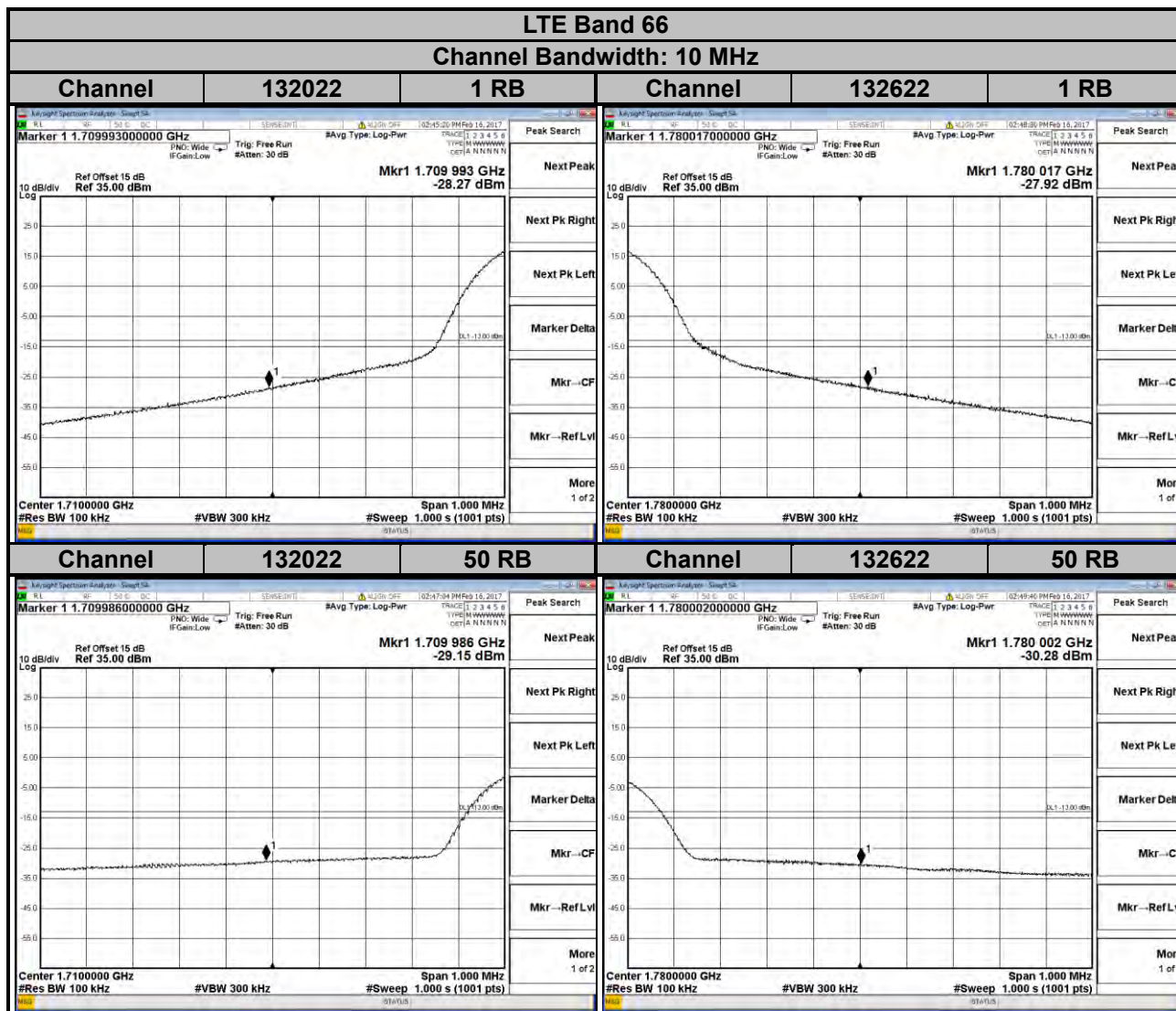


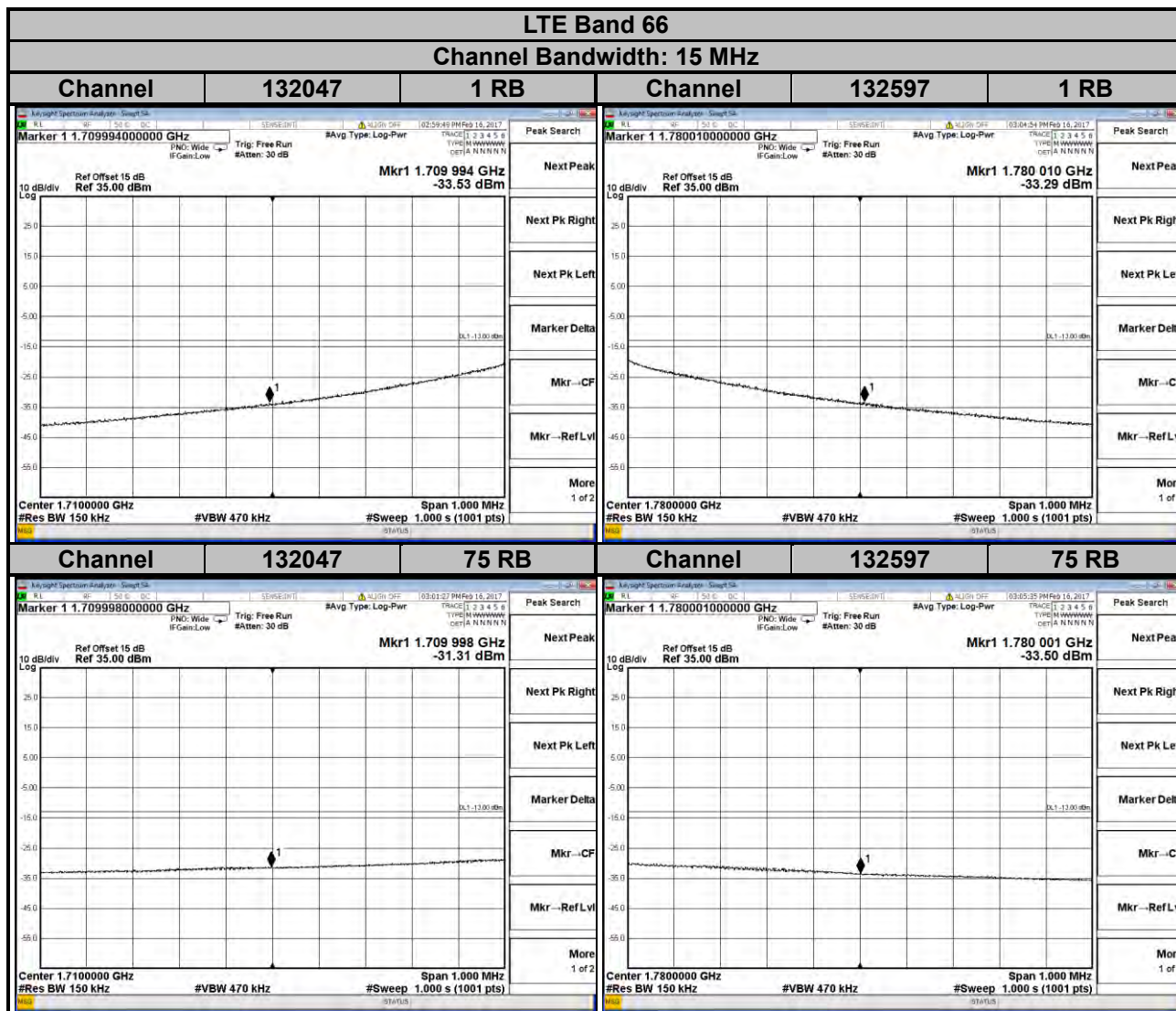




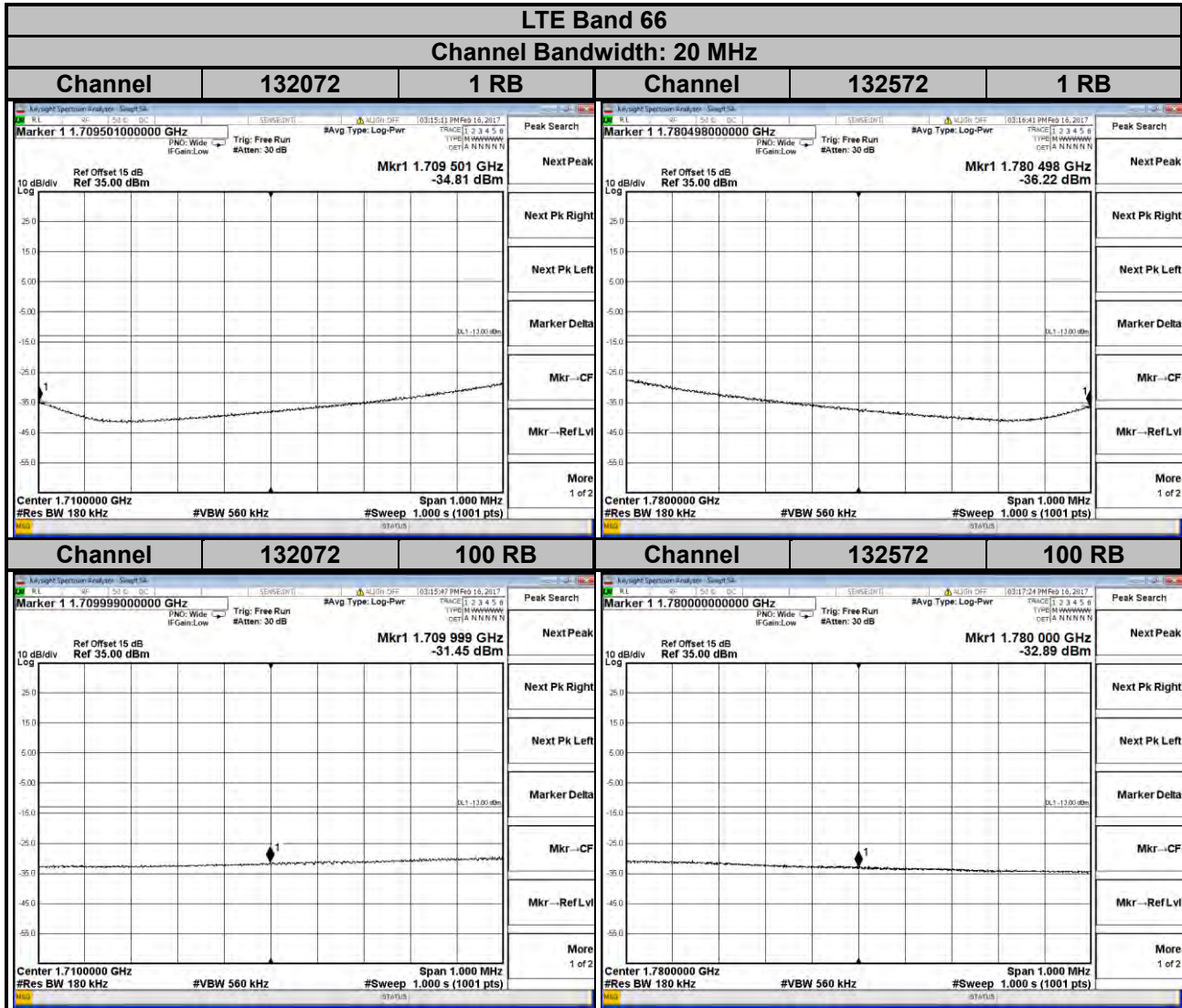




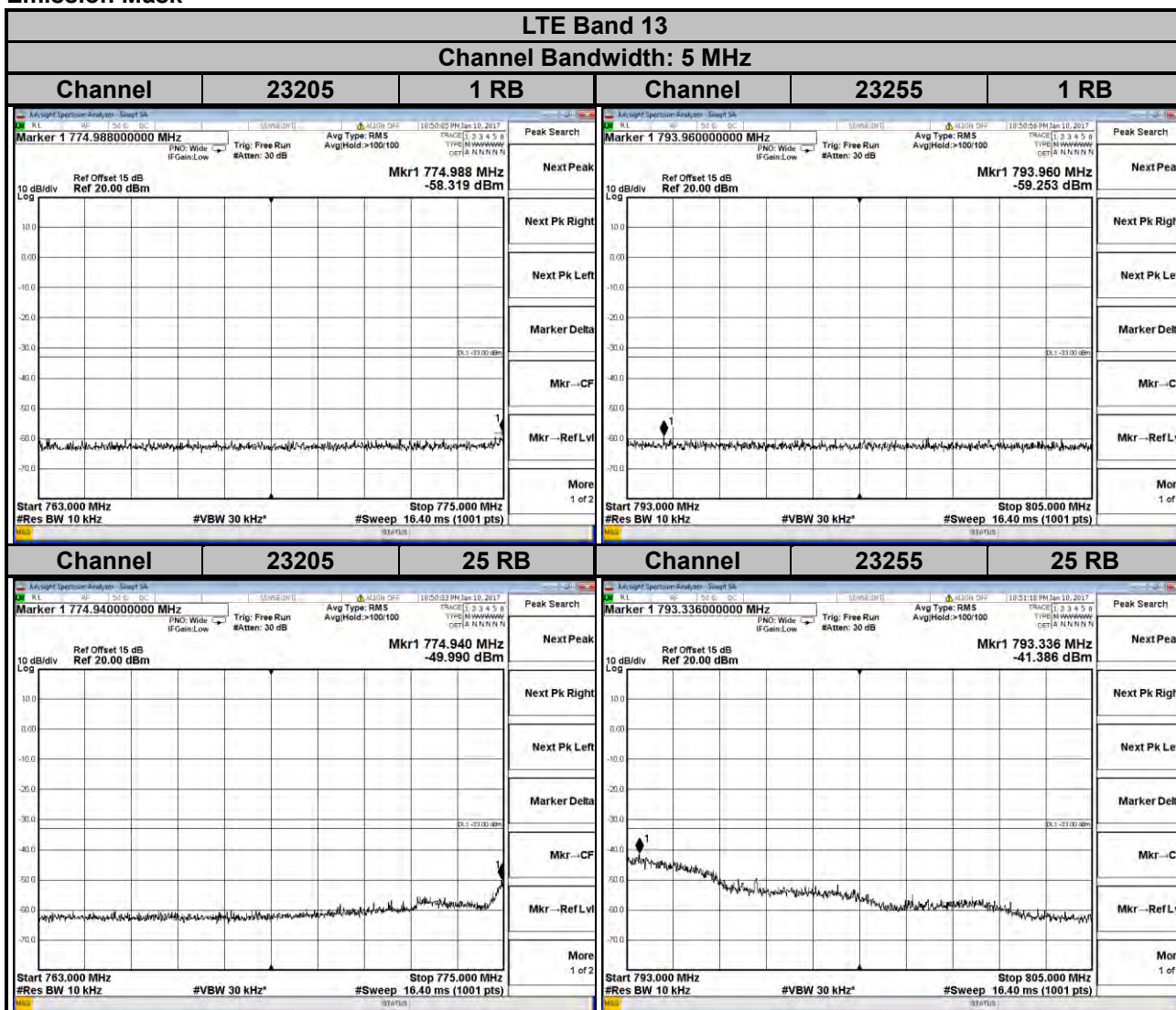








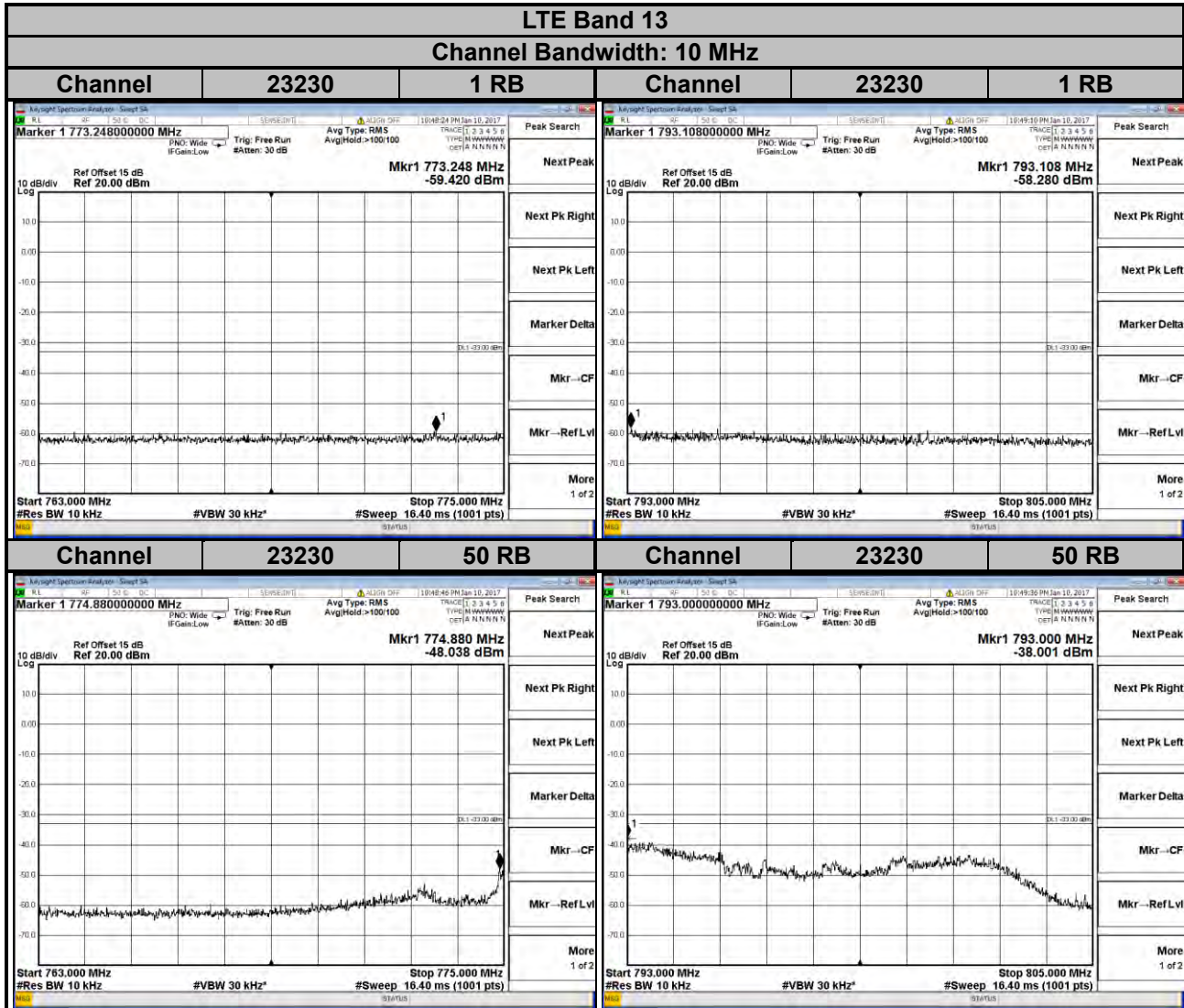
## Emission Mask



For the 763 - 775 MHz and 793 - 805 MHz band ,the FCC limit is  $65 + 10\log(P[\text{watt}])$  in a 6.25 kHz bandwidth . Since it was not possible to set the resolution bandwidth to 6.25 kHz with the available equipment , a bandwidth of 10 kHz was used instead to show compliance. By using a 10 kHz bandwidth on the spectrum analyzer.

$$10\log(10\text{kHz}/6.25\text{kHz}) = 2.04 \text{ dB}$$

$$\text{Limit line} = -35 \text{ dBm} + 2.04 \text{ dB} = -32.96 \text{ dBm}$$



For the 763 - 775 MHz and 793 - 805 MHz band ,the FCC limit is  $65 + 10\log(P[\text{watt}])$  in a 6.25 kHz bandwidth . Since it was not possible to set the resolution bandwidth to 6.25 kHz with the available equipment , a bandwidth of 10 kHz was used instead to show compliance. By using a 10 kHz bandwidth on the spectrum analyzer.

$$10\log(10\text{kHz}/6.25\text{kHz}) = 2.04 \text{ dB}$$

$$\text{Limit line} = -35 \text{ dBm} + 2.04 \text{ dB} = -32.96 \text{ dBm}$$

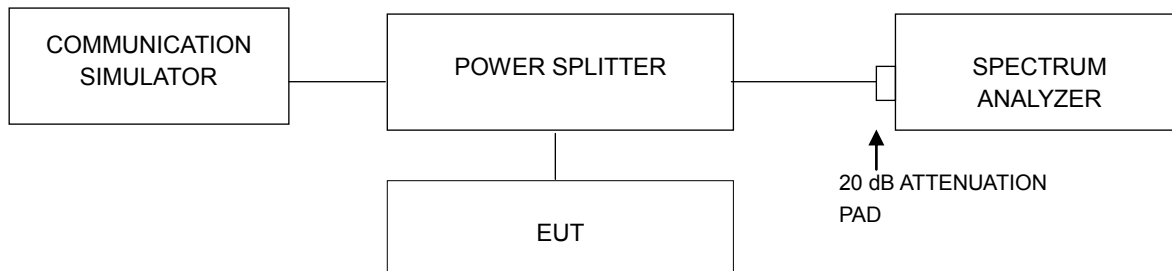


## 4.5 Peak to Average Ratio

### 4.5.1 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.

### 4.5.2 Test Setup

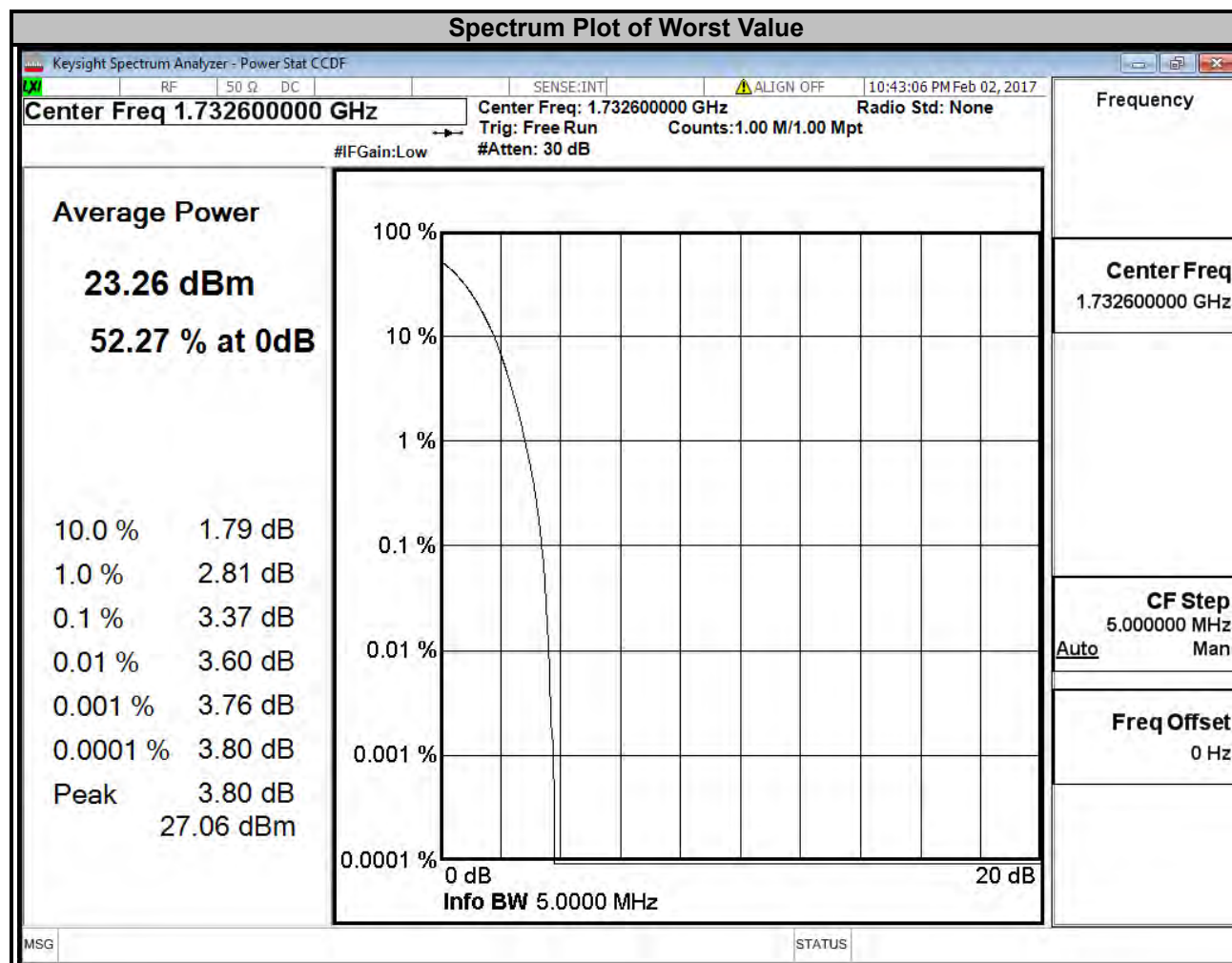


### 4.5.3 Test Procedures

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

#### 4.5.4 Test Results

| WCDMA   |                 |                            |
|---------|-----------------|----------------------------|
| Channel | Frequency (MHz) | Peak to Average Ratio (dB) |
| 1312    | 1712.4          | 3.26                       |
| 1413    | 1732.6          | 3.37                       |
| 1513    | 1752.6          | 3.09                       |



### LTE Band 4

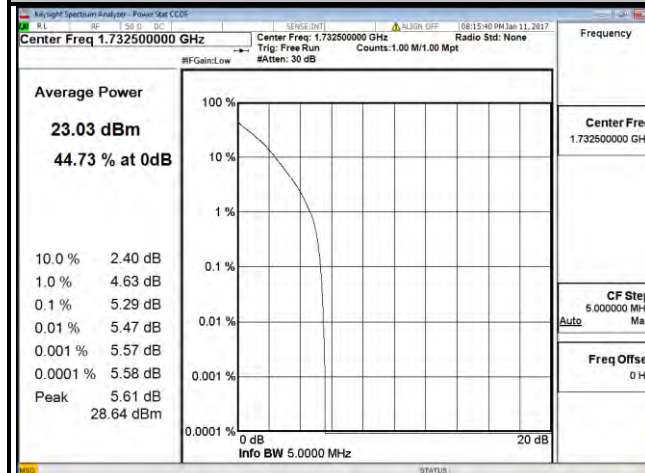
#### Channel Bandwidth: 1.4 MHz

#### Channel Bandwidth: 3 MHz

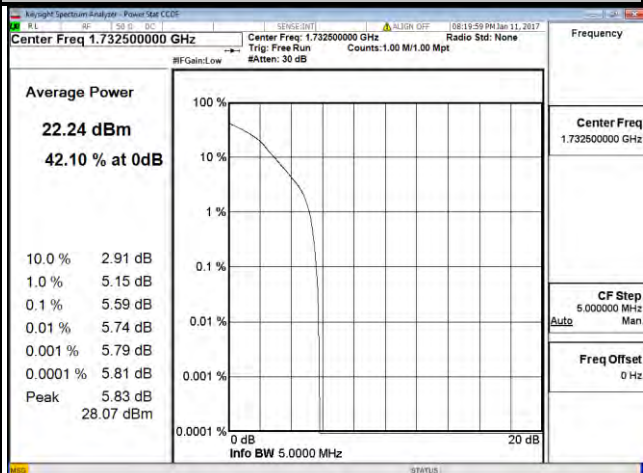
| Channel | Frequency (MHz) | Peak to Average Ratio (dB) |       | Channel | Frequency (MHz) | Peak to Average Ratio (dB) |       |
|---------|-----------------|----------------------------|-------|---------|-----------------|----------------------------|-------|
|         |                 | QPSK                       | 16QAM |         |                 | QPSK                       | 16QAM |
| 19957   | 1710.7          | 4.12                       | 4.36  | 19965   | 1711.5          | 4.20                       | 4.39  |
| 20175   | 1732.5          | 5.29                       | 5.59  | 20175   | 1732.5          | 5.41                       | 5.69  |
| 20393   | 1754.3          | 4.61                       | 4.80  | 20385   | 1753.5          | 4.56                       | 4.87  |

### Spectrum Plot of Worst Value

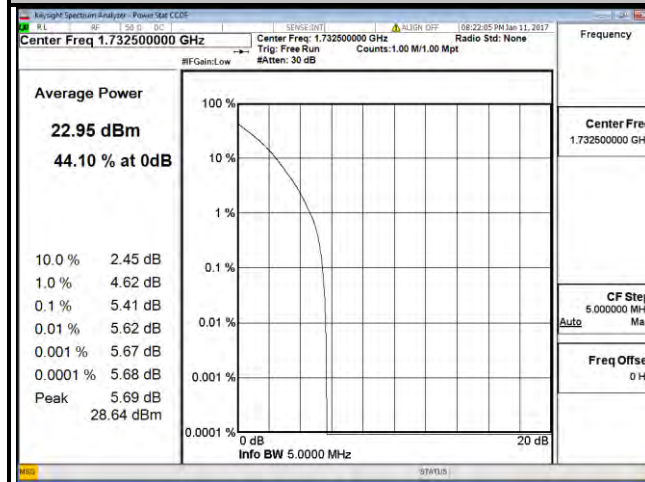
#### 1.4 MHz / QPSK



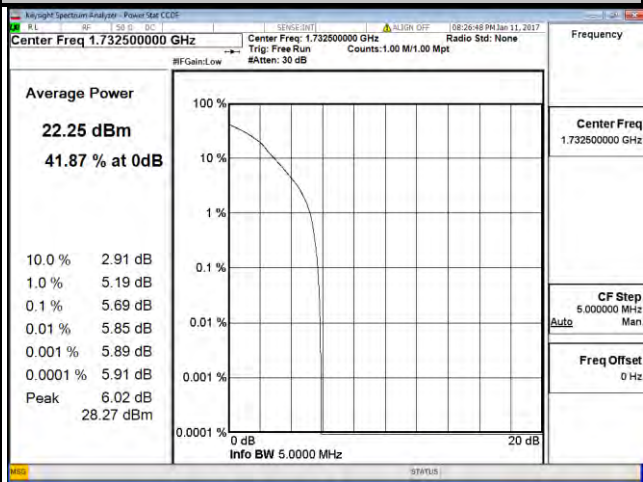
#### 1.4 MHz / 16QAM



#### 3 MHz / QPSK



#### 3 MHz / 16QAM



### LTE Band 4

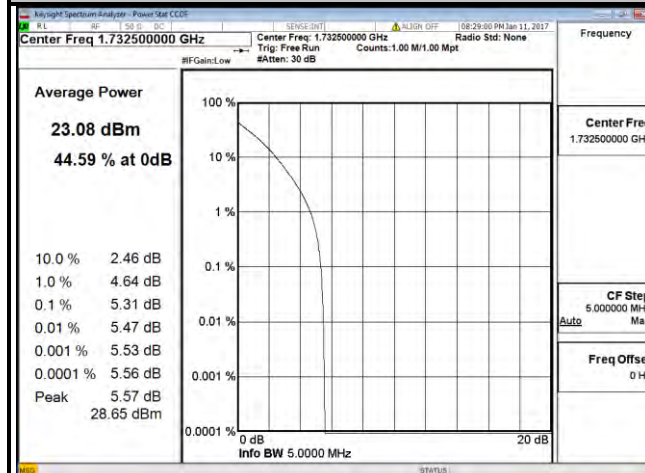
#### Channel Bandwidth: 5 MHz

#### Channel Bandwidth: 10 MHz

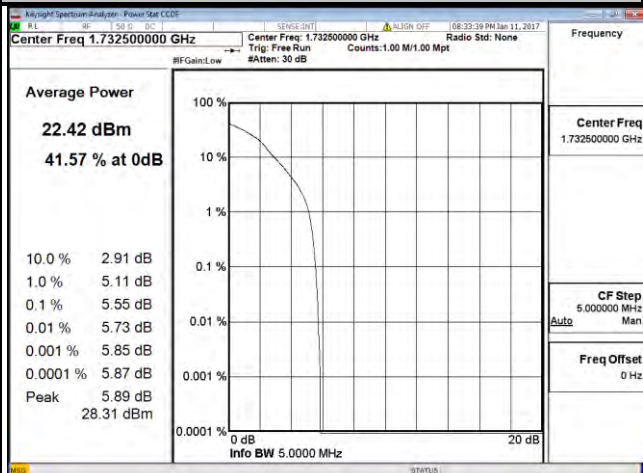
| Channel | Frequency (MHz) | Peak to Average Ratio (dB) |       | Channel | Frequency (MHz) | Peak to Average Ratio (dB) |       |
|---------|-----------------|----------------------------|-------|---------|-----------------|----------------------------|-------|
|         |                 | QPSK                       | 16QAM |         |                 | QPSK                       | 16QAM |
| 19975   | 1712.5          | 4.18                       | 4.43  | 20000   | 1715.0          | 4.15                       | 4.37  |
| 20175   | 1732.5          | 5.31                       | 5.55  | 20175   | 1732.5          | 5.33                       | 5.63  |
| 20375   | 1752.5          | 4.60                       | 4.86  | 20350   | 1750.0          | 4.63                       | 4.82  |

### Spectrum Plot of Worst Value

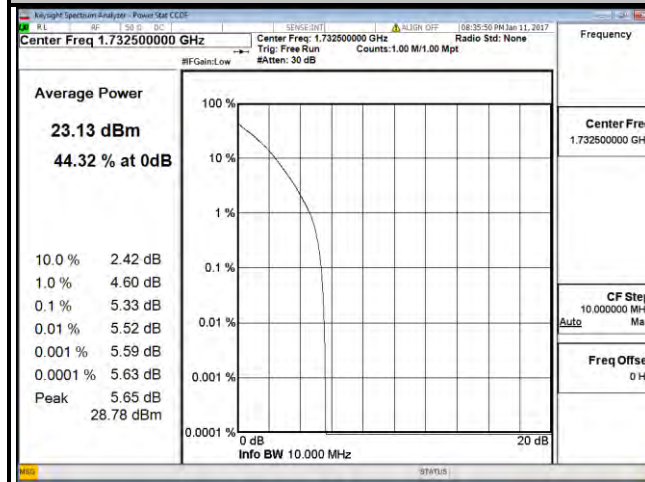
#### 5 MHz / QPSK



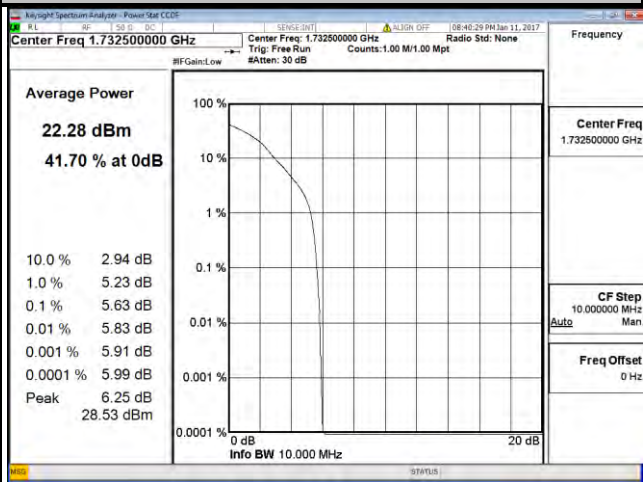
#### 5 MHz / 16QAM



#### 10 MHz / QPSK



#### 10 MHz / 16QAM



### LTE Band 4

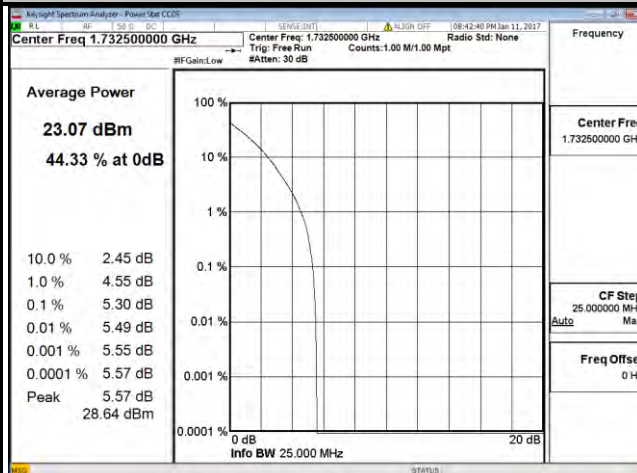
#### Channel Bandwidth: 15 MHz

#### Channel Bandwidth: 20 MHz

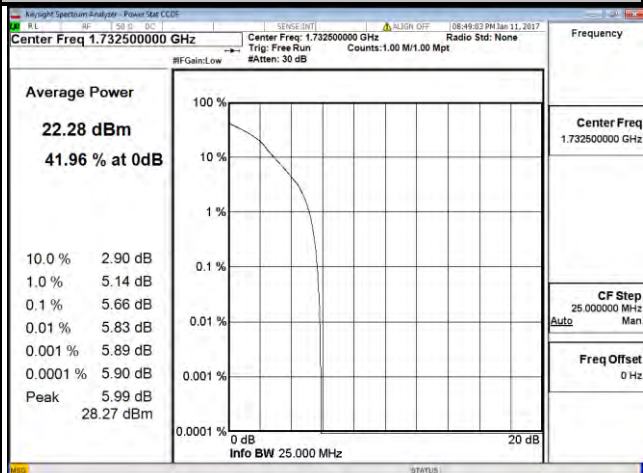
| Channel | Frequency (MHz) | Peak to Average Ratio (dB) |       | Channel | Frequency (MHz) | Peak to Average Ratio (dB) |       |
|---------|-----------------|----------------------------|-------|---------|-----------------|----------------------------|-------|
|         |                 | QPSK                       | 16QAM |         |                 | QPSK                       | 16QAM |
| 20025   | 1717.5          | 4.17                       | 4.51  | 20050   | 1720.0          | 4.16                       | 4.42  |
| 20175   | 1732.5          | 5.30                       | 5.66  | 20175   | 1732.5          | 5.24                       | 5.55  |
| 20325   | 1747.5          | 4.98                       | 5.28  | 20300   | 1745.0          | 5.21                       | 5.54  |

### Spectrum Plot of Worst Value

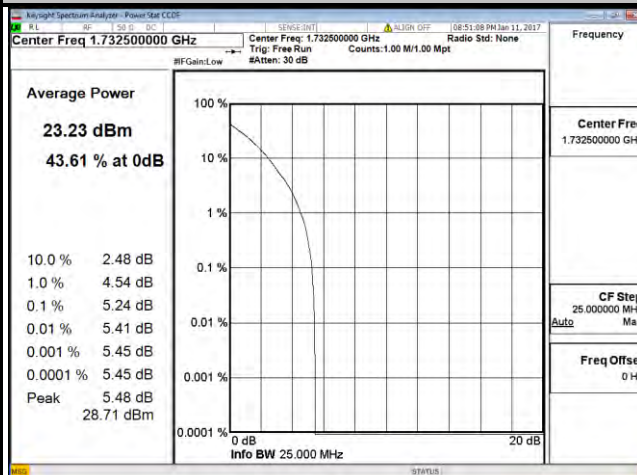
#### 15 MHz / QPSK



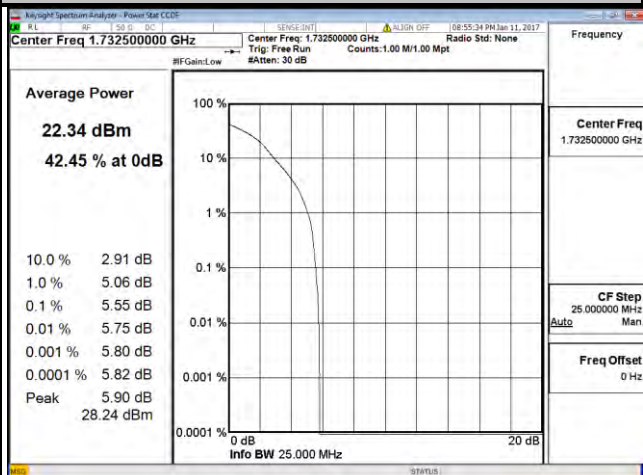
#### 15 MHz / 16QAM



#### 20 MHz / QPSK



#### 20 MHz / 16QAM





## LTE Band 12

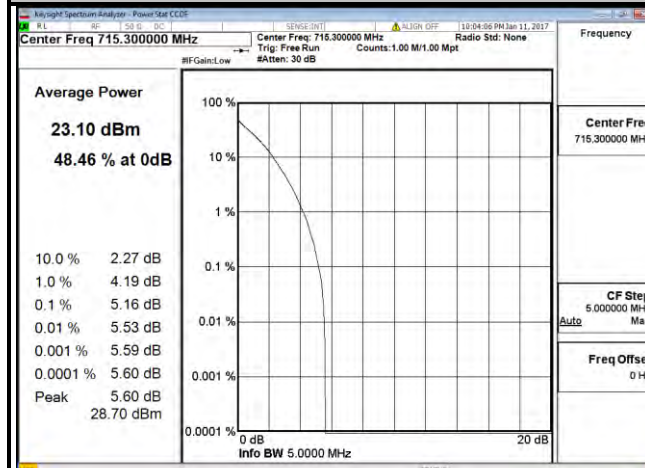
### Channel Bandwidth: 1.4 MHz

### Channel Bandwidth: 3 MHz

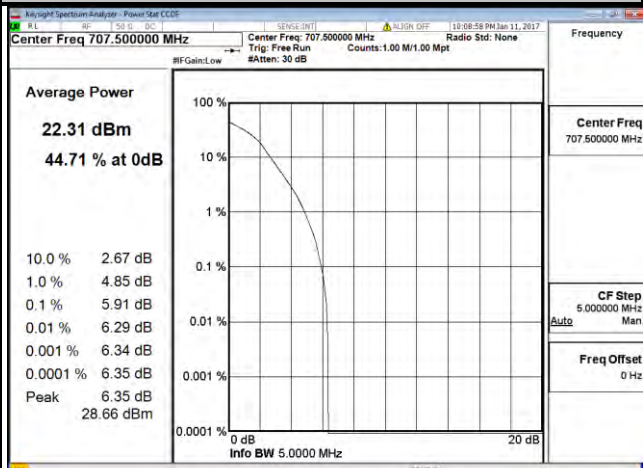
| Channel | Frequency (MHz) | Peak to Average Ratio (dB) |       | Channel | Frequency (MHz) | Peak to Average Ratio (dB) |       |
|---------|-----------------|----------------------------|-------|---------|-----------------|----------------------------|-------|
|         |                 | QPSK                       | 16QAM |         |                 | QPSK                       | 16QAM |
| 23017   | 699.7           | 4.76                       | 5.11  | 23025   | 700.5           | 4.82                       | 5.26  |
| 23095   | 707.5           | 5.04                       | 5.91  | 23095   | 707.5           | 5.08                       | 6.09  |
| 23173   | 715.3           | 5.16                       | 5.79  | 23165   | 714.5           | 4.90                       | 5.40  |

## Spectrum Plot of Worst Value

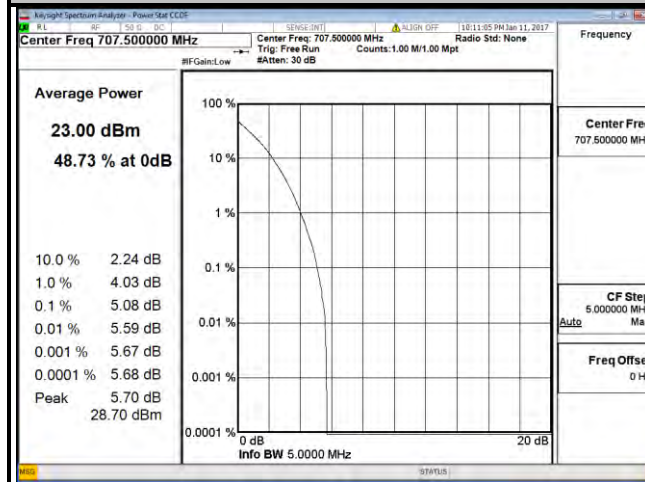
### 1.4 MHz / QPSK



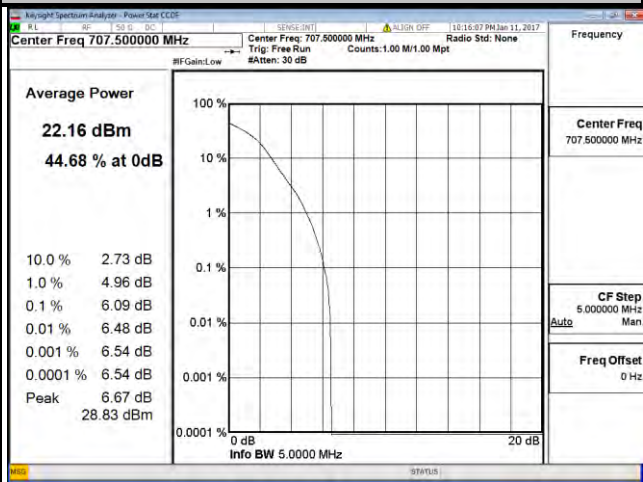
### 1.4 MHz / 16QAM



### 3 MHz / QPSK



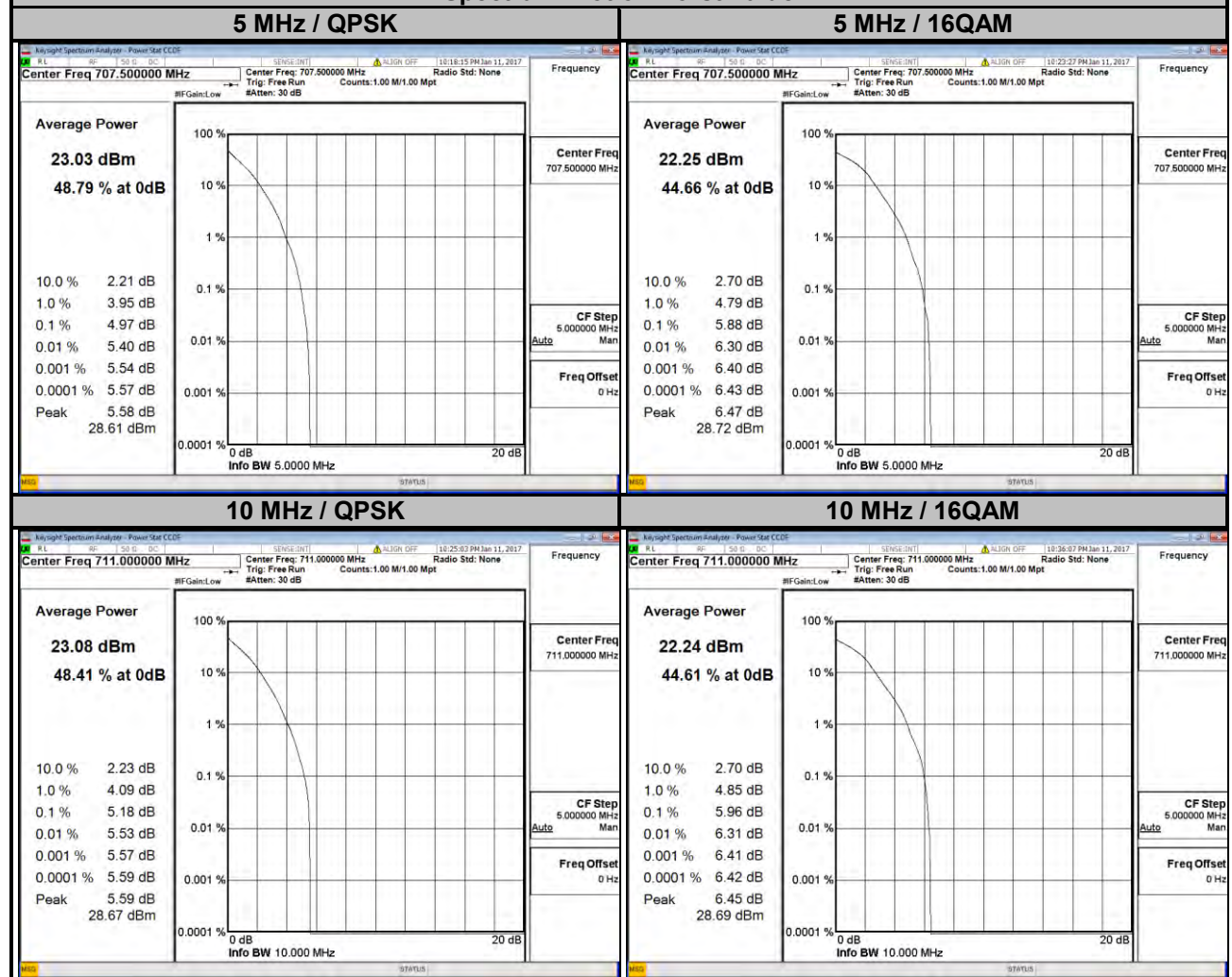
### 3 MHz / 16QAM



## LTE Band 12

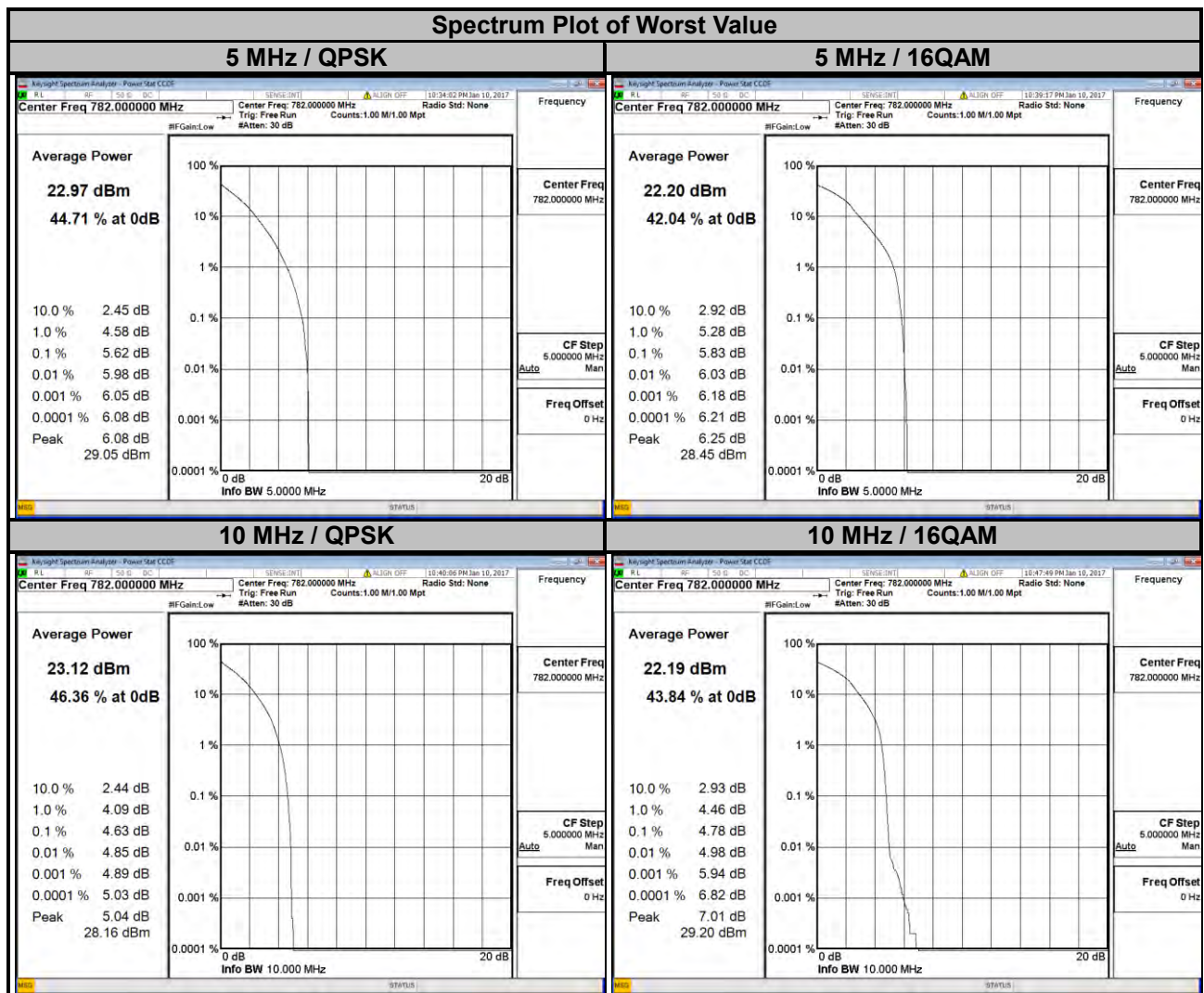
| Channel Bandwidth: 5 MHz |                 |                            |       | Channel Bandwidth: 10 MHz |                 |                            |       |
|--------------------------|-----------------|----------------------------|-------|---------------------------|-----------------|----------------------------|-------|
| Channel                  | Frequency (MHz) | Peak to Average Ratio (dB) |       | Channel                   | Frequency (MHz) | Peak to Average Ratio (dB) |       |
|                          |                 | QPSK                       | 16QAM |                           |                 | QPSK                       | 16QAM |
| 23035                    | 701.5           | 4.74                       | 5.10  | 23060                     | 704.0           | 4.70                       | 5.06  |
| 23095                    | 707.5           | 4.97                       | 5.88  | 23095                     | 707.5           | 4.88                       | 5.27  |
| 23155                    | 713.5           | 4.91                       | 5.63  | 23130                     | 711.0           | 5.18                       | 5.96  |

## Spectrum Plot of Worst Value





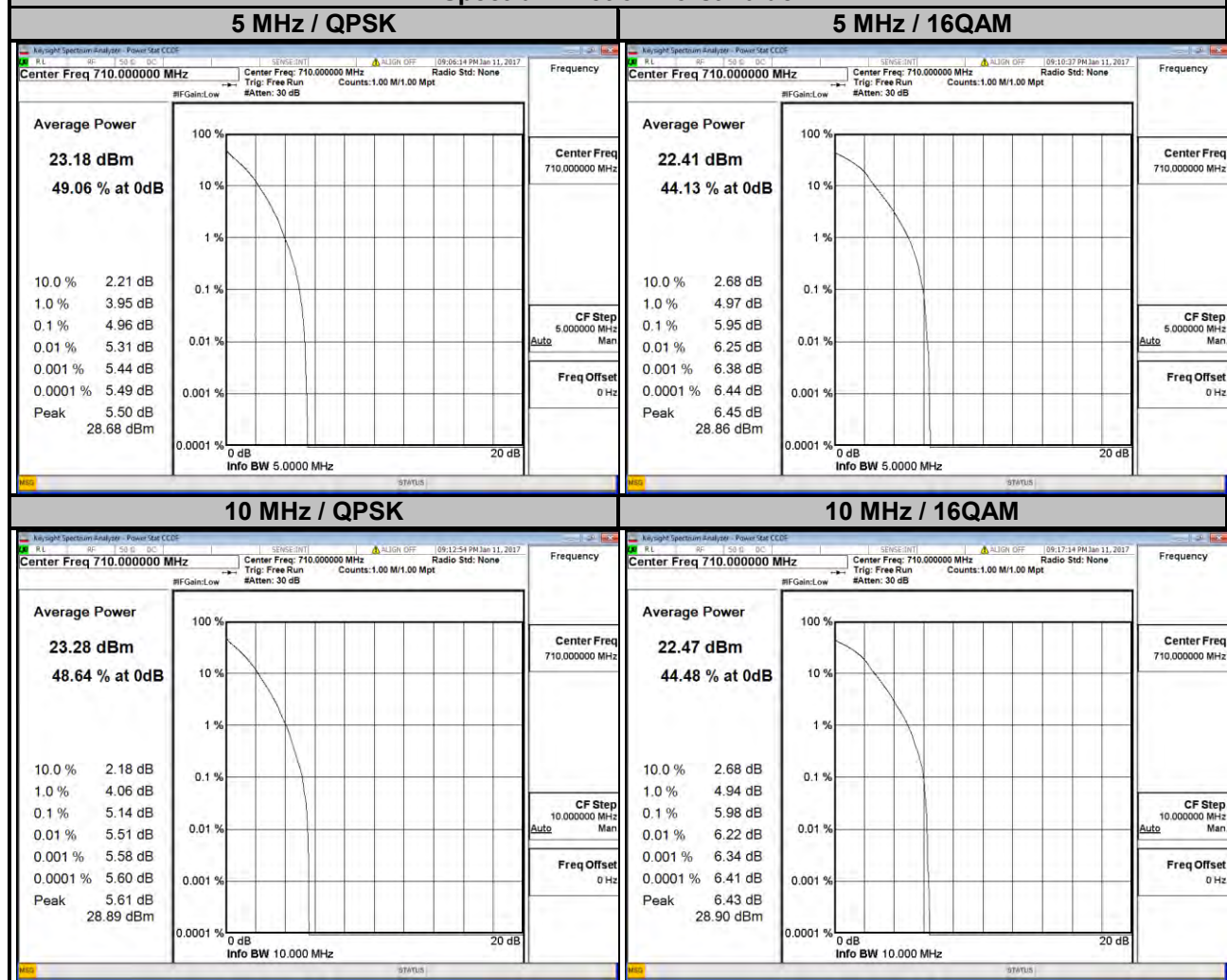
| LTE Band 13              |                 |                            |       |                           |                 |                            |       |
|--------------------------|-----------------|----------------------------|-------|---------------------------|-----------------|----------------------------|-------|
| Channel Bandwidth: 5 MHz |                 |                            |       | Channel Bandwidth: 10 MHz |                 |                            |       |
| Channel                  | Frequency (MHz) | Peak to Average Ratio (dB) |       | Channel                   | Frequency (MHz) | Peak to Average Ratio (dB) |       |
|                          |                 | QPSK                       | 16QAM |                           |                 | QPSK                       | 16QAM |
| 23205                    | 779.5           | 4.43                       | 4.38  | 23230                     | 782.0           | 4.63                       | 4.78  |
| 23230                    | 782.0           | 5.62                       | 5.83  |                           |                 |                            |       |
| 23255                    | 784.5           | 5.58                       | 5.62  |                           |                 |                            |       |



## LTE Band 17

| Channel Bandwidth: 5 MHz |                 |                            |       | Channel Bandwidth: 10 MHz |                 |                            |       |
|--------------------------|-----------------|----------------------------|-------|---------------------------|-----------------|----------------------------|-------|
| Channel                  | Frequency (MHz) | Peak to Average Ratio (dB) |       | Channel                   | Frequency (MHz) | Peak to Average Ratio (dB) |       |
|                          |                 | QPSK                       | 16QAM |                           |                 | QPSK                       | 16QAM |
| 23755                    | 706.5           | 4.95                       | 5.61  | 23780                     | 709.0           | 5.06                       | 5.68  |
| 23790                    | 710.0           | 4.96                       | 5.95  | 23790                     | 710.0           | 5.14                       | 5.98  |
| 23825                    | 713.5           | 4.95                       | 5.67  | 23800                     | 711.0           | 5.12                       | 5.96  |

## Spectrum Plot of Worst Value



## LTE Band 66

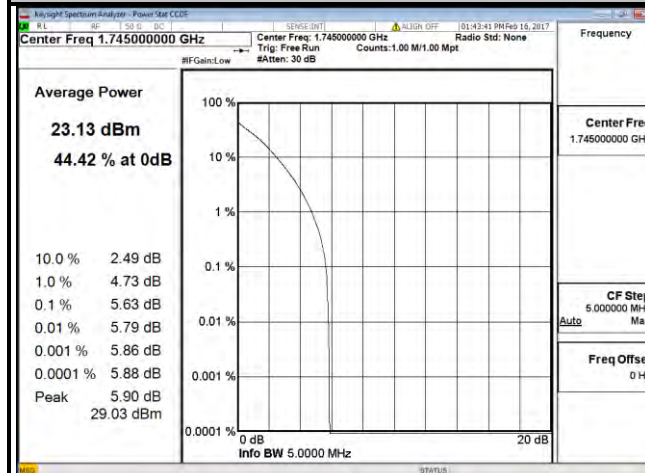
### Channel Bandwidth: 1.4 MHz

### Channel Bandwidth: 3 MHz

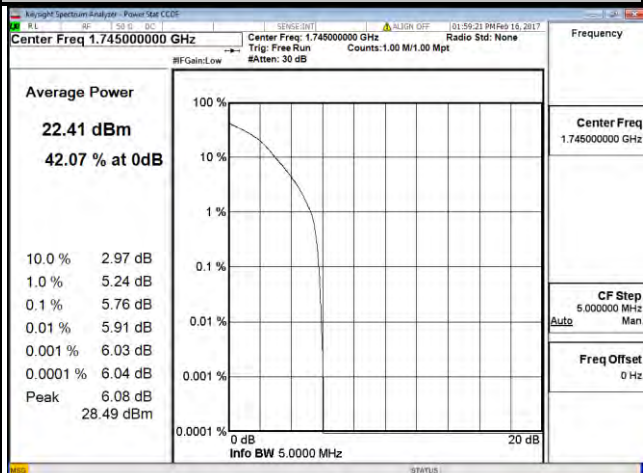
| Channel | Frequency (MHz) | Peak to Average Ratio (dB) |       | Channel | Frequency (MHz) | Peak to Average Ratio (dB) |       |
|---------|-----------------|----------------------------|-------|---------|-----------------|----------------------------|-------|
|         |                 | QPSK                       | 16QAM |         |                 | QPSK                       | 16QAM |
| 131979  | 1710.7          | 4.79                       | 4.82  | 131987  | 1711.5          | 4.88                       | 4.90  |
| 132322  | 1745            | 5.63                       | 5.76  | 132322  | 1745            | 5.68                       | 5.88  |
| 132665  | 1779.3          | 4.98                       | 5.03  | 132657  | 1778.5          | 5.21                       | 5.25  |

## Spectrum Plot of Worst Value

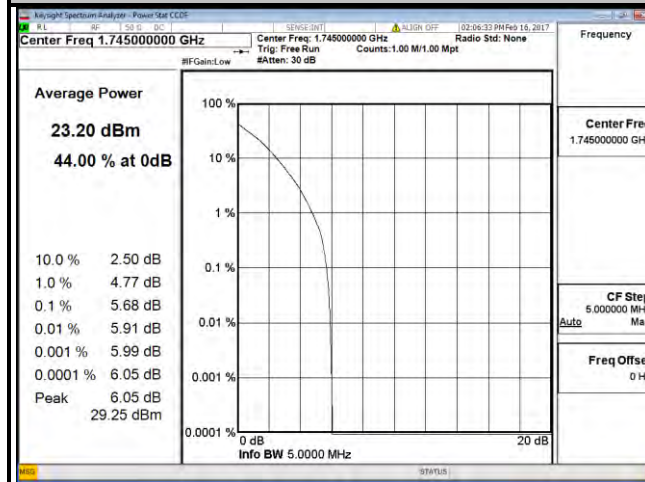
### 1.4 MHz / QPSK



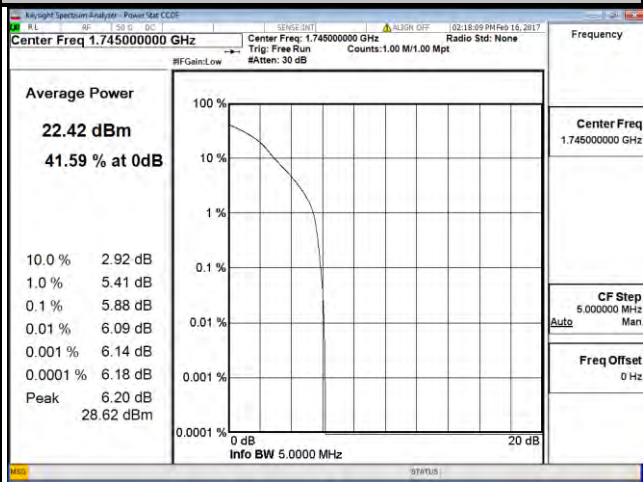
### 1.4 MHz / 16QAM



### 3 MHz / QPSK



### 3 MHz / 16QAM



## LTE Band 66

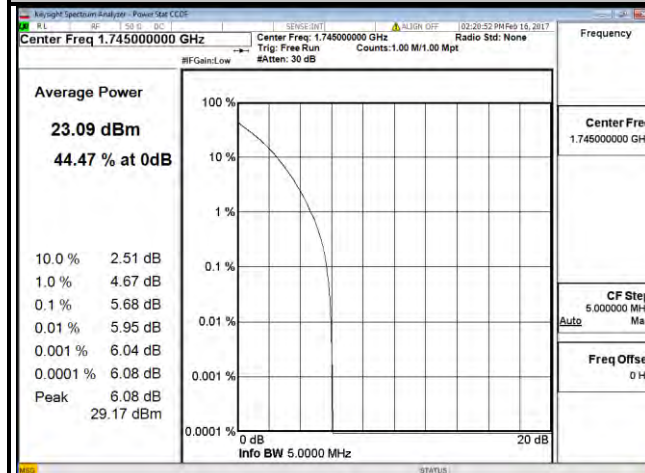
### Channel Bandwidth: 5 MHz

### Channel Bandwidth: 10 MHz

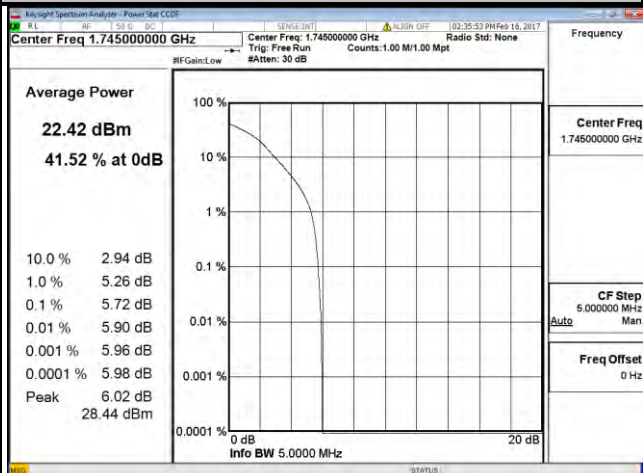
| Channel | Frequency (MHz) | Peak to Average Ratio (dB) |       | Channel | Frequency (MHz) | Peak to Average Ratio (dB) |       |
|---------|-----------------|----------------------------|-------|---------|-----------------|----------------------------|-------|
|         |                 | QPSK                       | 16QAM |         |                 | QPSK                       | 16QAM |
| 131997  | 1712.5          | 4.88                       | 4.88  | 132022  | 1715            | 5.61                       | 4.79  |
| 132322  | 1745            | 5.68                       | 5.72  | 132322  | 1745            | 5.72                       | 5.94  |
| 132647  | 1777.5          | 5.38                       | 5.32  | 132622  | 1775            | 5.62                       | 5.76  |

## Spectrum Plot of Worst Value

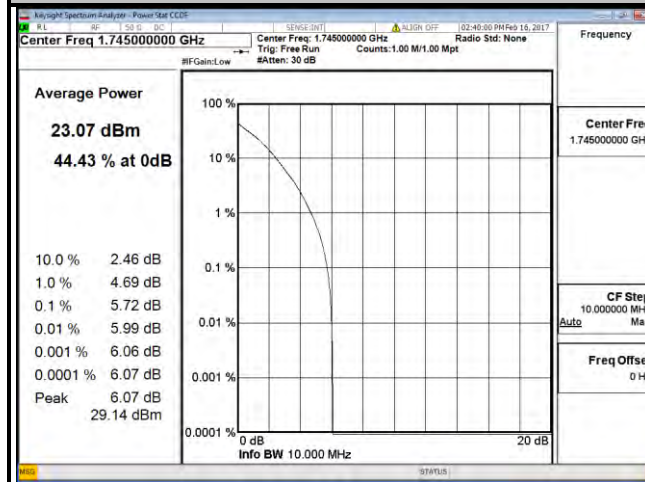
### 5 MHz / QPSK



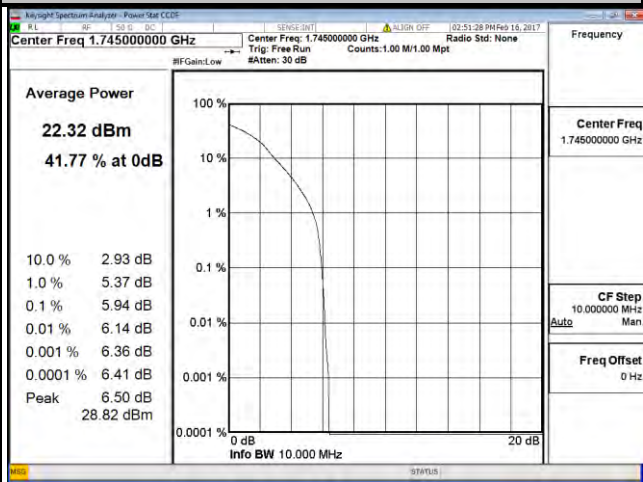
### 5 MHz / 16QAM



### 10 MHz / QPSK



### 10 MHz / 16QAM





## LTE Band 66

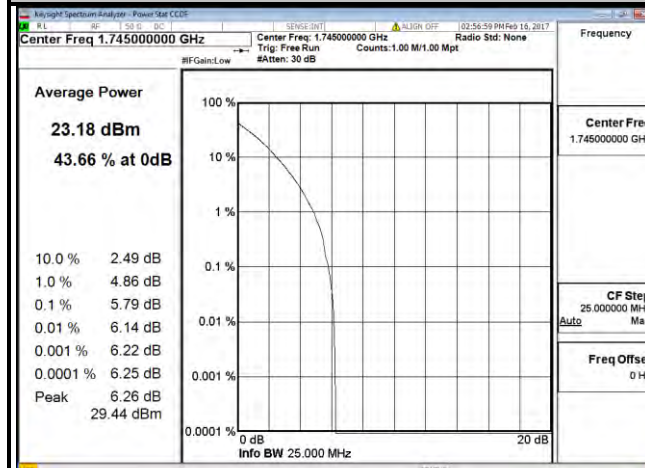
### Channel Bandwidth: 15 MHz

### Channel Bandwidth: 20 MHz

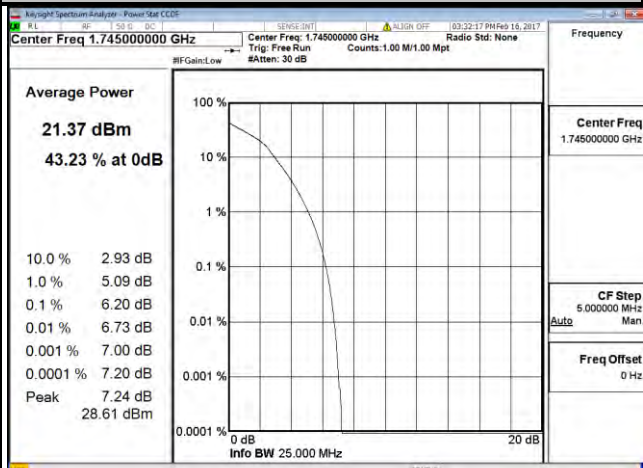
| Channel | Frequency (MHz) | Peak to Average Ratio (dB) |       | Channel | Frequency (MHz) | Peak to Average Ratio (dB) |       |
|---------|-----------------|----------------------------|-------|---------|-----------------|----------------------------|-------|
|         |                 | QPSK                       | 16QAM |         |                 | QPSK                       | 16QAM |
| 132047  | 1717.5          | 4.85                       | 4.85  | 132072  | 1720            | 4.86                       | 4.78  |
| 132322  | 1745            | 5.79                       | 6.20  | 132322  | 1745            | 5.81                       | 6.02  |
| 132597  | 1772.5          | 5.56                       | 5.62  | 132572  | 1770            | 5.34                       | 5.42  |

## Spectrum Plot of Worst Value

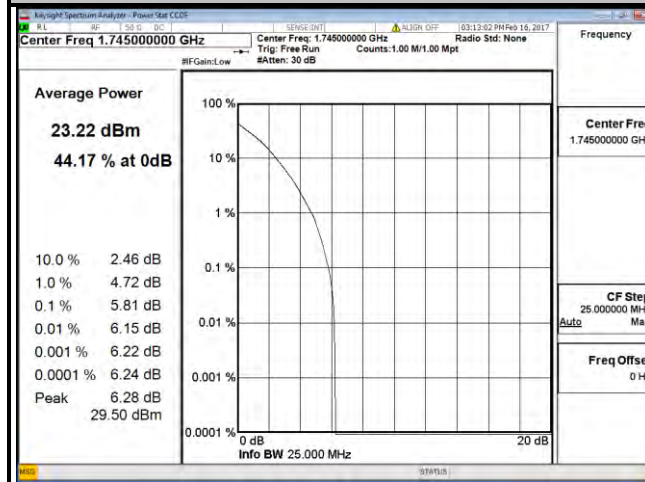
### 15 MHz / QPSK



### 15 MHz / 16QAM



### 20 MHz / QPSK



### 20 MHz / 16QAM

