

## FCC Test Report

### (PART 27)

**Report No.:** RF180704C01-4

**FCC ID:** ZMOL850GLD

**Test Model:** L850-GL

**Received Date:** Jul. 04, 2018

**Test Date:** Jul. 10, 2018 ~ Jul. 17, 2018

**Issued Date:** Jul. 19, 2018

**Applicant:** Fibocom Wireless Inc.

**Address:** 5/F, Tower A, Technology Building II, 1057 Nanhai Blvd, Nanshan,  
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 Vil, Kwei Shan Dist., Taoyuan City  
33383, Taiwan (R.O.C)

**FCC Registration /**  
**Designation Number:** 788550 / TW0003



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### Release Control Record

| Issue No.     | Description      | Date Issued   |
|---------------|------------------|---------------|
| RF180704C01-4 | Original Release | Jul. 19, 2018 |

## 1 Certificate of Conformity

**Product:** LTE module

**Brand:** Fibocom

**Test Model:** L850-GL

**Sample Status:** Identical Prototype

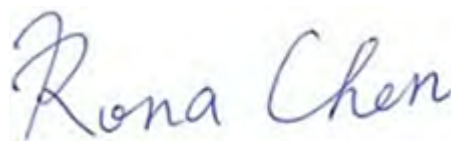
**Applicant:** Fibocom Wireless Inc.

**Test Date:** Jul. 10, 2018 ~ Jul. 17, 2018

**Standards:** FCC Part 27, Subpart C, H, F, L

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

**Prepared by :**



**Date:**

Jul. 19, 2018

Rona Chen / Specialist

**Approved by :**



**Date:**

Jul. 19, 2018

Dylan Chiou / 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.                                                        |
| 2.1047                                         | Modulation Characteristics          | Pass   | Meet the requirement.                                                                 |
| 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 -26.19 dB at 7010.40 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.                                                        |
| 2.1047                                         | Modulation Characteristics   | Pass   | Meet the requirement.                                                                 |
| 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 -20.59 dB at 6980.00 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.                                                      |
| 2.1047                                          | Modulation Characteristics   | Pass   | Meet the requirement.                                                               |
| 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 -30.57 dB at 39.70 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.                                                        |
| 2.1047                                          | Modulation Characteristics   | Pass   | Meet the requirement.                                                                 |
| 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 -17.63 dB at 1564.00 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.                                                      |
| 2.1047                                          | Modulation Characteristics   | Pass   | Meet the requirement.                                                               |
| 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 -30.57 dB at 39.70 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.                                                      |
| 2.1047                                          | Modulation Characteristics   | Pass   | Meet the requirement.                                                               |
| 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 -30.01 dB at 39.70 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) ( $\pm$ ) |
|--------------------------------|--------------------|-----------------------------------------|
| 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                       | N9038A                     | MY51210203                    | Mar. 16, 2018       | Mar. 15, 2019           |
| Spectrum Analyzer<br>Agilent                   | N9010A                     | MY52220314                    | Nov. 24, 2017       | Nov. 23, 2018           |
| Spectrum Analyzer<br>ROHDE & SCHWARZ           | FSU43                      | 101261                        | Jan. 11, 2018       | Jan. 10, 2019           |
| Double Ridge Guide Horn<br>Antenna EMCO        | 3115                       | 5619                          | Nov. 30, 2017       | Nov. 29, 2018           |
| BILOG Antenna<br>SCHWARZBECK                   | VULB 9168                  | 9168-153                      | Dec. 06, 2017       | Dec. 05, 2018           |
| Fixed Attenuator<br>Mini-Circuits              | MDCS18N-10                 | MDCS18N-10-01                 | Apr. 16, 2018       | Apr. 15, 2019           |
| Preamplifier<br>EMCI                           | EMC 012645                 | 980115                        | Oct. 20, 2017       | Oct. 19, 2018           |
| Preamplifier<br>EMCI                           | EMC 184045                 | 980116                        | Oct. 20, 2017       | Oct. 19, 2018           |
| Preamplifier<br>EMCI                           | EMC 330H                   | 980112                        | Oct. 13, 2017       | Oct. 12, 2018           |
| Power Meter<br>Anritsu                         | ML2495A                    | 1012010                       | Aug. 15, 2017       | Aug. 14, 2018           |
| Power Sensor<br>Anritsu                        | MA2411B                    | 1315050                       | Aug. 15, 2017       | Aug. 14, 2018           |
| RF Coaxial Cable<br>HUBER+SUHNNER              | EMC104-SM-SM-800<br>0&3000 | 140811+170717                 | Oct. 20, 2017       | Oct. 19, 2018           |
| RF Coaxial Cable<br>HUBER+SUHNNER              | SUCOFLEX 104               | EMC104-SM-SM-<br>1000(140807) | Oct. 20, 2017       | Oct. 19, 2018           |
| RF Coaxial Cable<br>Worken                     | 8D-FB                      | Cable-Ch10-01                 | Oct. 20, 2017       | Oct. 19, 2018           |
| 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. 16, 2017       | Aug. 15, 2019           |
| Temperature & Humidity<br>Chamber              | GTH-120-40-CP-AR           | MAA1306-019                   | Sep. 08, 2017       | Sep. 07, 2018           |
| DC Power Supply<br>Topward                     | 33010D                     | 807748                        | Oct. 25, 2016       | Oct. 24, 2018           |
| Digital Multimeter<br>Fluke                    | 87-III                     | 70360742                      | Jun. 29, 2018       | Jun. 28, 2019           |

- 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 IC Site Registration No. is IC7450F-10.

### 3 General Information

#### 3.1 General Description of EUT

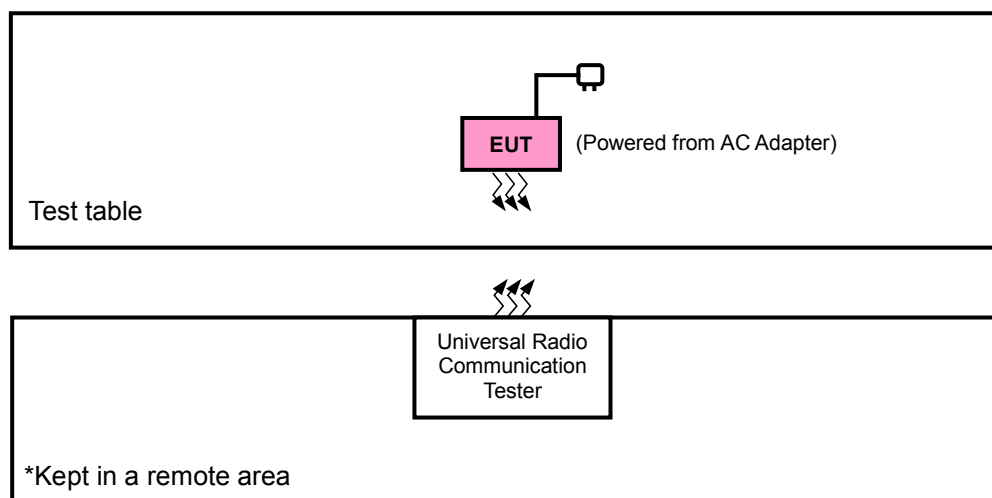
|                            |                                          |                     |
|----------------------------|------------------------------------------|---------------------|
| <b>Product</b>             | LTE module                               |                     |
| <b>Brand</b>               | Fibocom                                  |                     |
| <b>Test Model</b>          | L850-GL                                  |                     |
| <b>Status of EUT</b>       | Identical Prototype                      |                     |
| <b>Power Supply Rating</b> | 3.3 Vdc (Host equipment)                 |                     |
| <b>Modulation Type</b>     | WCDMA                                    | QPSK                |
|                            | 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)  | 709.0 ~ 711.0 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)  | 1M10W7D             |
|                            | LTE Band 4 (Channel Bandwidth: 3 MHz)    | 2M70G7D             |
|                            | LTE Band 4 (Channel Bandwidth: 5 MHz)    | 4M50G7D             |
|                            | LTE Band 4 (Channel Bandwidth: 10 MHz)   | 8M99G7D             |
|                            | LTE Band 4 (Channel Bandwidth: 15 MHz)   | 13M48W7D            |
|                            | LTE Band 4 (Channel Bandwidth: 20 MHz)   | 17M99W7D            |
|                            | LTE Band 12 (Channel Bandwidth: 1.4 MHz) | 1M10G7D             |
|                            | LTE Band 12 (Channel Bandwidth: 3 MHz)   | 2M71W7D             |
|                            | LTE Band 12 (Channel Bandwidth: 5 MHz)   | 4M50G7D             |
|                            | LTE Band 12 (Channel Bandwidth: 10 MHz)  | 9M00G7D             |
|                            | LTE Band 13 (Channel Bandwidth: 5 MHz)   | 4M50G7D             |
|                            | LTE Band 13 (Channel Bandwidth: 10 MHz)  | 8M97G7D             |
|                            | LTE Band 17 (Channel Bandwidth: 5 MHz)   | 4M50G7D             |

|                            |                                          |           |
|----------------------------|------------------------------------------|-----------|
|                            | LTE Band 17 (Channel Bandwidth: 10 MHz)  | 8M99G7D   |
|                            | LTE Band 66 (Channel Bandwidth: 1.4 MHz) | 1M10W7D   |
|                            | LTE Band 66 (Channel Bandwidth: 3 MHz)   | 2M71W7D   |
|                            | LTE Band 66 (Channel Bandwidth: 5 MHz)   | 4M51W7D   |
|                            | LTE Band 66 (Channel Bandwidth: 10 MHz)  | 9M00G7D   |
|                            | LTE Band 66 (Channel Bandwidth: 15 MHz)  | 13M48W7D  |
|                            | LTE Band 66 (Channel Bandwidth: 20 MHz)  | 17M98G7D  |
| <b>Max. ERP Power</b>      | LTE Band 12 (Channel Bandwidth: 1.4 MHz) | 234.42 mW |
|                            | LTE Band 12 (Channel Bandwidth: 3 MHz)   | 233.35 mW |
|                            | LTE Band 12 (Channel Bandwidth: 5 MHz)   | 238.23 mW |
|                            | LTE Band 12 (Channel Bandwidth: 10 MHz)  | 240.99 mW |
|                            | LTE Band 13 (Channel Bandwidth: 5 MHz)   | 252.35 mW |
|                            | LTE Band 13 (Channel Bandwidth: 10 MHz)  | 252.93 mW |
|                            | LTE Band 17 (Channel Bandwidth: 5 MHz)   | 244.34 mW |
|                            | LTE Band 17 (Channel Bandwidth: 10 MHz)  | 247.17 mW |
| <b>Max. EIRP Power</b>     | WCDMA                                    | 859.01 mW |
|                            | LTE Band 4 (Channel Bandwidth: 1.4 MHz)  | 610.94 mW |
|                            | LTE Band 4 (Channel Bandwidth: 3 MHz)    | 616.60 mW |
|                            | LTE Band 4 (Channel Bandwidth: 5 MHz)    | 618.02 mW |
|                            | LTE Band 4 (Channel Bandwidth: 10 MHz)   | 633.87 mW |
|                            | LTE Band 4 (Channel Bandwidth: 15 MHz)   | 638.26 mW |
|                            | LTE Band 4 (Channel Bandwidth: 20 MHz)   | 647.14 mW |
|                            | LTE Band 66 (Channel Bandwidth: 1.4 MHz) | 641.21 mW |
|                            | LTE Band 66 (Channel Bandwidth: 3 MHz)   | 656.15 mW |
|                            | LTE Band 66 (Channel Bandwidth: 5 MHz)   | 657.66 mW |
|                            | LTE Band 66 (Channel Bandwidth: 10 MHz)  | 669.88 mW |
|                            | LTE Band 66 (Channel Bandwidth: 15 MHz)  | 682.34 mW |
|                            | LTE Band 66 (Channel Bandwidth: 20 MHz)  | 687.07 mW |
| <b>Antenna Type</b>        | External Antenna                         |           |
| <b>Antenna Gain</b>        | WCDMA                                    | 5.0 dBi   |
|                            | LTE Band 4                               | 5.0 dBi   |
|                            | LTE Band 12                              | 3.0 dBi   |
|                            | LTE Band 13                              | 3.0 dBi   |
|                            | LTE Band 17                              | 3.0 dBi   |
|                            | LTE Band 66                              | 5.0 dBi   |
| <b>Accessory Device</b>    | N/A                                      |           |
| <b>Data Cable Supplied</b> | N/A                                      |           |

Note:

1. The above EUT information is declared by manufacturer and for more detailed features description, please refers 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        | Radiated Emission |
|-------------|-------------------|
| WCDMA       | Z-axis            |
| LTE Band 4  | Z-axis            |
| LTE Band 12 | Z-axis            |
| LTE Band 13 | Z-axis            |
| LTE Band 17 | Z-axis            |
| LTE Band 66 | Z-axis            |

## WCDMA

| EUT Configure Mode | Test Item                  | Available Channel | Tested Channel   | Mode  |
|--------------------|----------------------------|-------------------|------------------|-------|
| -                  | EIRP                       | 1312 to 1513      | 1312, 1413, 1513 | WCDMA |
| -                  | Modulation Characteristics | 1312 to 1513      | 1413             | 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 |
| -                  | Conducted 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 / 0 RB Offset   |
|                    |                            | 19965 to 20385    | 19965, 20175, 20385 | 3 MHz             | QPSK, 16QAM | 1 RB / 0 RB Offset   |
|                    |                            | 19975 to 20375    | 19975, 20175, 20375 | 5 MHz             | QPSK, 16QAM | 1 RB / 0 RB Offset   |
|                    |                            | 20000 to 20350    | 20000, 20175, 20350 | 10 MHz            | QPSK, 16QAM | 1 RB / 0 RB Offset   |
|                    |                            | 20025 to 20325    | 20025, 20175, 20325 | 15 MHz            | QPSK, 16QAM | 1 RB / 0 RB Offset   |
|                    |                            | 20050 to 20300    | 20050, 20175, 20300 | 20 MHz            | QPSK, 16QAM | 1 RB / 0 RB Offset   |
| -                  | Modulation Characteristics | 20050 to 20300    | 20175               | 5 MHz             | QPSK, 16QAM | 25 RB / 0 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   |
|                    |                    |                   | 20393               | 1.4 MHz           | QPSK       | 6 RB / 0 RB Offset   |
|                    |                    | 19965 to 20385    | 19965               | 3 MHz             | QPSK       | 1 RB / 5 RB Offset   |
|                    |                    |                   | 20385               | 3 MHz             | QPSK       | 6 RB / 0 RB Offset   |
|                    |                    | 19975 to 20375    | 19975               | 5 MHz             | QPSK       | 1 RB / 0 RB Offset   |
|                    |                    |                   | 20375               | 5 MHz             | QPSK       | 15 RB / 0 RB Offset  |
|                    |                    | 20000 to 20350    | 20000               | 10 MHz            | QPSK       | 1 RB / 14 RB Offset  |
|                    |                    |                   | 20350               | 10 MHz            | QPSK       | 15 RB / 0 RB Offset  |
|                    |                    | 20025 to 20325    | 20025               | 15 MHz            | QPSK       | 1 RB / 0 RB Offset   |
|                    |                    |                   | 20325               | 15 MHz            | QPSK       | 25 RB / 0 RB Offset  |
|                    |                    | 20050 to 20300    | 20050               | 20 MHz            | QPSK       | 1 RB / 24 RB Offset  |
|                    |                    |                   | 20300               | 20 MHz            | QPSK       | 25 RB / 0 RB Offset  |
|                    |                    | 19957 to 20393    | 19957, 20175, 20393 | 1.4 MHz           | QPSK       | 1 RB / 0 RB Offset   |
|                    |                    |                   | 20393               | 1.4 MHz           | QPSK       | 50 RB / 0 RB Offset  |
|                    |                    | 19965 to 20385    | 19965, 20175, 20385 | 3 MHz             | QPSK       | 1 RB / 49 RB Offset  |
|                    |                    |                   | 20385               | 3 MHz             | QPSK       | 50 RB / 0 RB Offset  |
|                    |                    | 19975 to 20375    | 19975, 20175, 20375 | 5 MHz             | QPSK       | 1 RB / 0 RB Offset   |
|                    |                    |                   | 20375               | 5 MHz             | QPSK       | 75 RB / 0 RB Offset  |
|                    |                    | 20000 to 20350    | 20000, 20175, 20350 | 10 MHz            | QPSK       | 1 RB / 74 RB Offset  |
|                    |                    |                   | 20350               | 10 MHz            | QPSK       | 75 RB / 0 RB Offset  |
|                    |                    | 20025 to 20325    | 20025, 20175, 20325 | 15 MHz            | QPSK       | 1 RB / 0 RB Offset   |
|                    |                    |                   | 20325               | 15 MHz            | QPSK       | 100 RB / 0 RB Offset |
|                    |                    | 20050 to 20300    | 20050, 20175, 20300 | 20 MHz            | QPSK       | 1 RB / 99 RB Offset  |
|                    |                    |                   | 20300               | 20 MHz            | QPSK       | 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       | 50 RB / 0 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 / 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  |
| -                  | Modulation Characteristics | 23060 to 23130    | 23095               | 5 MHz             | QPSK, 16QAM | 25 RB / 0 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        | 6 RB / 0 RB Offset  |
|                    |                            | 23035 to 23155    | 23035               | 5 MHz             | QPSK        | 1 RB / 0 RB Offset  |
|                    |                            |                   | 23155               | 5 MHz             | QPSK        | 15 RB / 0 RB Offset |
|                    |                            | 23060 to 23130    | 23060               | 10 MHz            | QPSK        | 1 RB / 14 RB Offset |
|                    |                            |                   | 23130               | 10 MHz            | QPSK        | 15 RB / 0 RB Offset |
|                    |                            | 23017 to 23173    | 23017, 23095, 23173 | 1.4 MHz           | QPSK        | 1 RB / 0 RB Offset  |
|                    |                            |                   | 23025, 23095, 23165 | 3 MHz             | QPSK        | 1 RB / 0 RB Offset  |
|                    |                            | 23035 to 23155    | 23035, 23095, 23155 | 5 MHz             | QPSK        | 1 RB / 0 RB Offset  |
|                    |                            |                   | 23060, 23095, 23130 | 10 MHz            | QPSK        | 1 RB / 0 RB Offset  |
| -                  | Radiated Emission          | 23060 to 23130    | 23060, 23095, 23130 | 10 MHz            | QPSK        | 1 RB / 0 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 / 0 RB Offset  |
| -                  | Modulation Characteristics | 23230             | 23230               | 5 MHz             | QPSK, 16QAM | 25 RB / 0 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 / 0 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 / 0 RB Offset  |
|                    |                            | 23780 to 23800    | 23780, 23790, 23800 | 10 MHz            | QPSK, 16QAM | 1 RB / 0 RB Offset  |
| -                  | Modulation Characteristics | 23780 to 23800    | 23790               | 5 MHz             | QPSK, 16QAM | 25 RB / 0 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 |
|                    |                            | 23780 to 23800    | 23825               | 5 MHz             | QPSK        | 1 RB / 24 RB Offset |
|                    |                            |                   |                     |                   |             | 25 RB / 0 RB Offset |
|                    |                            |                   | 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 / 0 RB Offset   |
|                    |                            | 131987 to 132657  | 131987, 132322, 132657 | 3 MHz             | QPSK, 16QAM | 1 RB / 0 RB Offset   |
|                    |                            | 131997 to 132647  | 131997, 132322, 132647 | 5 MHz             | QPSK, 16QAM | 1 RB / 0 RB Offset   |
|                    |                            | 132022 to 132622  | 132022, 132322, 132622 | 10 MHz            | QPSK, 16QAM | 1 RB / 0 RB Offset   |
|                    |                            | 132047 to 132597  | 132047, 132322, 132597 | 15 MHz            | QPSK, 16QAM | 1 RB / 0 RB Offset   |
|                    |                            | 132072 to 132572  | 132072, 132322, 132572 | 20 MHz            | QPSK, 16QAM | 1 RB / 0 RB Offset   |
| -                  | Modulation Characteristics | 132072 to 132572  | 132322                 | 5 MHz             | QPSK, 16QAM | 25 RB / 0 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  |

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

### **Test Condition:**

| Test Item                  | Environmental Conditions | Input Power    | Tested By                  |
|----------------------------|--------------------------|----------------|----------------------------|
| ERP / EIRP                 | 25 deg. C, 65 % RH       | 3.3 Vdc        | Getaz Yang                 |
| Modulation Characteristics | 25 deg. C, 65 % RH       | 3.3 Vdc        | Getaz Yang                 |
| Frequency Stability        | 25 deg. C, 65 % RH       | 3.3 Vdc        | Getaz Yang                 |
| Occupied Bandwidth         | 25 deg. C, 65 % RH       | 3.3 Vdc        | Getaz Yang                 |
| Band Edge                  | 25 deg. C, 65 % RH       | 3.3 Vdc        | Getaz Yang                 |
| Peak to Average Ratio      | 25 deg. C, 65 % RH       | 3.3 Vdc        | Getaz Yang                 |
| Conducted Emission         | 25 deg. C, 65 % RH       | 3.3 Vdc        | Getaz Yang                 |
| Radiated Emission          | 25 deg. C, 65 % RH       | 120 Vac, 60 Hz | Thomas Wei<br>Jisyong Wang |

### **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 v03r01**

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

**ANSI 63.26-2015**

**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

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

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

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

- $EIRP = \text{Conducted Output power level} + \text{Antenna gain}$ .
- ERP power can be calculated from EIRP power by subtracting the gain of dipole,  $ERP \text{ power} = EIRP \text{ power} - 2.15\text{dBi}$ .
- $ERP = \text{Conducted Output power level} + \text{Antenna gain (dBi)} - \text{Isotropically Factor (2.15dB)}$

#### 4.1.3 Test Setup



#### 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       | 24.11    | 24.14  | 24.34  |
| HSDPA Subtest-1 | 22.09    | 22.06  | 22.23  |
| HSDPA Subtest-2 | 22.96    | 23.07  | 23.20  |
| HSDPA Subtest-3 | 22.06    | 22.11  | 22.23  |
| HSDPA Subtest-4 | 23.98    | 23.99  | 24.23  |
| HSUPA Subtest-1 | 19.21    | 19.22  | 19.41  |
| HSUPA Subtest-2 | 19.14    | 19.16  | 19.37  |
| HSUPA Subtest-3 | 18.98    | 18.95  | 19.22  |
| HSUPA Subtest-4 | 18.93    | 18.94  | 19.20  |
| HSUPA Subtest-5 | 19.00    | 18.99  | 19.29  |

| 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         | 22.86        | 22.56        | 22.63         | 0             | 21.70        | 21.56        | 21.52         | 1             |
|           | 1       | 2         | 22.74        | 22.53        | 22.40         | 0             | 21.57        | 21.33        | 21.40         | 1             |
|           | 1       | 5         | 22.53        | 22.32        | 22.26         | 0             | 21.57        | 21.22        | 21.28         | 1             |
|           | 3       | 0         | 21.74        | 21.49        | 21.50         | 0             | 20.64        | 20.39        | 20.40         | 1             |
|           | 3       | 1         | 21.55        | 21.35        | 21.18         | 0             | 20.55        | 20.23        | 20.17         | 1             |
|           | 3       | 3         | 21.44        | 21.26        | 21.11         | 0             | 20.44        | 20.07        | 20.14         | 1             |
|           | 6       | 0         | 21.62        | 21.50        | 21.39         | 1             | 20.53        | 20.39        | 20.48         | 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         | 22.90        | 22.68        | 22.66         | 0             | 21.77        | 21.30        | 21.33         | 1             |
|           | 1       | 7         | 22.79        | 22.51        | 22.57         | 0             | 21.65        | 21.47        | 21.38         | 1             |
|           | 1       | 14        | 22.54        | 22.34        | 22.49         | 0             | 21.55        | 21.36        | 21.35         | 1             |
|           | 8       | 0         | 21.76        | 21.52        | 21.55         | 1             | 20.58        | 20.35        | 20.39         | 2             |
|           | 8       | 3         | 21.59        | 21.34        | 21.34         | 1             | 20.51        | 20.30        | 20.27         | 2             |
|           | 8       | 7         | 21.50        | 21.31        | 21.19         | 1             | 20.47        | 20.15        | 20.15         | 2             |
|           | 15      | 0         | 21.75        | 21.47        | 21.51         | 1             | 20.64        | 20.46        | 20.47         | 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         | 22.91        | 22.69        | 22.74         | 0             | 21.71        | 21.45        | 21.48         | 1             |
|           | 1       | 12        | 22.77        | 22.58        | 22.64         | 0             | 21.66        | 21.60        | 21.51         | 1             |
|           | 1       | 24        | 22.60        | 22.41        | 22.50         | 0             | 21.65        | 21.36        | 21.31         | 1             |
|           | 12      | 0         | 21.77        | 21.58        | 21.50         | 1             | 20.62        | 20.44        | 20.53         | 2             |
|           | 12      | 6         | 21.53        | 21.39        | 21.42         | 1             | 20.55        | 20.24        | 20.40         | 2             |
|           | 12      | 13        | 21.57        | 21.28        | 21.31         | 1             | 20.54        | 20.06        | 20.33         | 2             |
|           | 25      | 0         | 21.73        | 21.60        | 21.57         | 1             | 20.80        | 20.42        | 20.45         | 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         | 23.02        | 22.74        | 22.74         | 0             | 21.86        | 21.48        | 21.63         | 1             |
|           | 1       | 24        | 22.93        | 22.60        | 22.65         | 0             | 21.84        | 21.56        | 21.66         | 1             |
|           | 1       | 49        | 22.70        | 22.44        | 22.47         | 0             | 21.78        | 21.45        | 21.36         | 1             |
|           | 25      | 0         | 21.91        | 21.64        | 21.68         | 1             | 20.79        | 20.55        | 20.62         | 2             |
|           | 25      | 12        | 21.74        | 21.42        | 21.48         | 1             | 20.71        | 20.36        | 20.40         | 2             |
|           | 25      | 25        | 21.59        | 21.42        | 21.43         | 1             | 20.54        | 20.20        | 20.37         | 2             |
|           | 50      | 0         | 21.86        | 21.61        | 21.71         | 1             | 20.83        | 20.63        | 20.66         | 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         | 23.05        | 22.78        | 22.84         | 0             | 21.95        | 21.66        | 21.73         | 1             |
|           | 1       | 37        | 22.92        | 22.67        | 22.71         | 0             | 21.91        | 21.63        | 21.68         | 1             |
|           | 1       | 74        | 22.84        | 22.46        | 22.48         | 0             | 21.82        | 21.46        | 21.52         | 1             |
|           | 36      | 0         | 21.92        | 21.67        | 21.68         | 1             | 20.91        | 20.45        | 20.54         | 2             |
|           | 36      | 19        | 21.75        | 21.41        | 21.47         | 1             | 20.67        | 20.42        | 20.50         | 2             |
|           | 36      | 39        | 21.61        | 21.41        | 21.43         | 1             | 20.65        | 20.40        | 20.42         | 2             |
|           | 75      | 0         | 21.85        | 21.65        | 21.66         | 1             | 20.83        | 20.49        | 20.62         | 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         | 23.11        | 22.85        | 22.89         | 0             | 22.06        | 21.77        | 21.83         | 1             |
|           | 1       | 50        | 22.97        | 22.74        | 22.80         | 0             | 21.93        | 21.72        | 21.74         | 1             |
|           | 1       | 99        | 22.89        | 22.56        | 22.52         | 0             | 21.75        | 21.53        | 21.57         | 1             |
|           | 50      | 0         | 21.98        | 21.72        | 21.76         | 1             | 20.95        | 20.59        | 20.63         | 2             |
|           | 50      | 25        | 21.79        | 21.51        | 21.55         | 1             | 20.77        | 20.47        | 20.48         | 2             |
|           | 50      | 50        | 21.68        | 21.40        | 21.53         | 1             | 20.68        | 20.31        | 20.43         | 2             |
|           | 100     | 0         | 21.97        | 21.74        | 21.68         | 1             | 20.91        | 20.64        | 20.67         | 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         | 22.60        | 22.85        | 22.77         | 0             | 21.57        | 21.78        | 21.70         | 1             |
|           | 1       | 2         | 22.45        | 22.64        | 22.54         | 0             | 21.44        | 21.58        | 21.52         | 1             |
|           | 1       | 5         | 22.25        | 22.58        | 22.41         | 0             | 21.27        | 21.49        | 21.26         | 1             |
|           | 3       | 0         | 21.43        | 21.65        | 21.57         | 0             | 20.47        | 20.73        | 20.53         | 1             |
|           | 3       | 1         | 21.31        | 21.50        | 21.41         | 0             | 20.17        | 20.42        | 20.35         | 1             |
|           | 3       | 3         | 21.14        | 21.40        | 21.35         | 0             | 20.12        | 20.33        | 20.16         | 1             |
|           | 6       | 0         | 21.39        | 21.71        | 21.65         | 1             | 20.44        | 20.59        | 20.65         | 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         | 22.62        | 22.83        | 22.77         | 0             | 21.32        | 21.70        | 21.47         | 1             |
|           | 1       | 7         | 22.47        | 22.75        | 22.65         | 0             | 21.49        | 21.53        | 21.66         | 1             |
|           | 1       | 14        | 22.32        | 22.69        | 22.49         | 0             | 21.26        | 21.47        | 21.57         | 1             |
|           | 8       | 0         | 21.52        | 21.76        | 21.58         | 1             | 20.26        | 20.60        | 20.64         | 2             |
|           | 8       | 3         | 21.31        | 21.59        | 21.46         | 1             | 20.29        | 20.48        | 20.47         | 2             |
|           | 8       | 7         | 21.20        | 21.52        | 21.40         | 1             | 20.16        | 20.37        | 20.34         | 2             |
|           | 15      | 0         | 21.47        | 21.72        | 21.64         | 1             | 20.54        | 20.67        | 20.59         | 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         | 22.63        | 22.92        | 22.85         | 0             | 21.40        | 21.73        | 21.58         | 1             |
|           | 1       | 12        | 22.56        | 22.76        | 22.70         | 0             | 21.48        | 21.71        | 21.64         | 1             |
|           | 1       | 24        | 22.40        | 22.60        | 22.62         | 0             | 21.40        | 21.53        | 21.51         | 1             |
|           | 12      | 0         | 21.57        | 21.76        | 21.74         | 1             | 20.39        | 20.70        | 20.52         | 2             |
|           | 12      | 6         | 21.38        | 21.56        | 21.55         | 1             | 20.33        | 20.55        | 20.44         | 2             |
|           | 12      | 13        | 21.28        | 21.51        | 21.42         | 1             | 20.24        | 20.52        | 20.37         | 2             |
|           | 25      | 0         | 21.55        | 21.76        | 21.71         | 1             | 20.54        | 20.76        | 20.74         | 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         | 22.72        | 22.97        | 22.88         | 0             | 21.51        | 21.82        | 21.77         | 1             |
|           | 1       | 24        | 22.59        | 22.83        | 22.79         | 0             | 21.55        | 21.81        | 21.76         | 1             |
|           | 1       | 49        | 22.54        | 22.77        | 22.71         | 0             | 21.45        | 21.70        | 21.58         | 1             |
|           | 25      | 0         | 21.60        | 21.85        | 21.81         | 1             | 20.56        | 20.75        | 20.63         | 2             |
|           | 25      | 12        | 21.39        | 21.60        | 21.65         | 1             | 20.34        | 20.64        | 20.55         | 2             |
|           | 25      | 25        | 21.27        | 21.58        | 21.45         | 1             | 20.34        | 20.42        | 20.37         | 2             |
|           | 50      | 0         | 21.61        | 21.78        | 21.74         | 1             | 20.54        | 20.79        | 20.68         | 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         | 23.17        | 23.12        | 23.08         | 0             | 22.08        | 22.10        | 22.00         | 1             |
|           | 1       | 12        | 23.07        | 22.97        | 22.99         | 0             | 21.98        | 21.99        | 21.88         | 1             |
|           | 1       | 24        | 22.79        | 22.75        | 22.85         | 0             | 21.82        | 21.74        | 21.75         | 1             |
|           | 12      | 0         | 22.01        | 21.98        | 21.93         | 1             | 20.99        | 20.92        | 20.74         | 2             |
|           | 12      | 6         | 21.81        | 21.80        | 21.75         | 1             | 20.83        | 20.74        | 20.72         | 2             |
|           | 12      | 13        | 21.78        | 21.70        | 21.66         | 1             | 20.72        | 20.64        | 20.66         | 2             |
|           | 25      | 0         | 21.99        | 21.99        | 21.97         | 1             | 21.00        | 20.89        | 20.96         | 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            | 23.18           | 0                   | 22.15           | 1                   |
|              | 1          | 24           | 23.06           | 0                   | 21.95           | 1                   |
|              | 1          | 49           | 22.93           | 0                   | 21.81           | 1                   |
|              | 25         | 0            | 22.04           | 1                   | 20.92           | 2                   |
|              | 25         | 12           | 21.87           | 1                   | 20.77           | 2                   |
|              | 25         | 25           | 21.71           | 1                   | 20.81           | 2                   |
|              | 50         | 0            | 22.00           | 1                   | 21.01           | 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         | 22.98        | 22.94        | 23.03         | 0             | 21.89        | 21.82        | 21.90         | 1             |
|           | 1       | 12        | 22.83        | 22.81        | 22.91         | 0             | 21.79        | 21.74        | 21.82         | 1             |
|           | 1       | 24        | 22.61        | 22.59        | 22.81         | 0             | 21.59        | 21.54        | 21.76         | 1             |
|           | 12      | 0         | 21.82        | 21.88        | 21.91         | 1             | 20.65        | 20.77        | 20.81         | 2             |
|           | 12      | 6         | 21.68        | 21.63        | 21.74         | 1             | 20.62        | 20.54        | 20.61         | 2             |
|           | 12      | 13        | 21.56        | 21.64        | 21.60         | 1             | 20.61        | 20.60        | 20.53         | 2             |
|           | 25      | 0         | 21.76        | 21.83        | 21.79         | 1             | 20.84        | 20.81        | 20.84         | 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         | 23.02        | 23.01        | 23.08         | 0             | 21.93        | 22.00        | 22.06         | 1             |
|           | 1       | 24        | 22.91        | 22.89        | 22.99         | 0             | 21.89        | 21.90        | 21.84         | 1             |
|           | 1       | 49        | 22.69        | 22.77        | 22.72         | 0             | 21.59        | 21.78        | 21.73         | 1             |
|           | 25      | 0         | 21.88        | 21.89        | 21.98         | 1             | 20.76        | 20.75        | 20.92         | 2             |
|           | 25      | 12        | 21.66        | 21.69        | 21.79         | 1             | 20.61        | 20.58        | 20.75         | 2             |
|           | 25      | 25        | 21.65        | 21.55        | 21.69         | 1             | 20.50        | 20.50        | 20.66         | 2             |
|           | 50      | 0         | 21.84        | 21.83        | 21.95         | 1             | 20.78        | 20.81        | 20.93         | 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         | 22.92         | 23.07         | 23.03          | 0             | 21.94         | 21.97         | 21.92          | 1             |
|           | 1       | 2         | 22.92         | 23.01         | 22.91          | 0             | 21.85         | 21.92         | 21.85          | 1             |
|           | 1       | 5         | 22.57         | 22.79         | 22.67          | 0             | 21.65         | 21.80         | 21.60          | 1             |
|           | 3       | 0         | 21.87         | 21.93         | 21.95          | 0             | 20.86         | 20.81         | 20.82          | 1             |
|           | 3       | 1         | 21.60         | 21.74         | 21.70          | 0             | 20.64         | 20.70         | 20.62          | 1             |
|           | 3       | 3         | 21.58         | 21.69         | 21.70          | 0             | 20.56         | 20.59         | 20.50          | 1             |
|           | 6       | 0         | 21.88         | 21.99         | 21.78          | 1             | 20.81         | 20.88         | 20.71          | 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         | 23.06         | 23.17         | 23.11          | 0             | 21.95         | 21.84         | 21.77          | 1             |
|           | 1       | 7         | 22.97         | 22.97         | 22.99          | 0             | 21.71         | 21.90         | 21.93          | 1             |
|           | 1       | 14        | 22.70         | 22.89         | 22.78          | 0             | 21.61         | 21.80         | 21.71          | 1             |
|           | 8       | 0         | 21.90         | 21.97         | 21.93          | 1             | 20.83         | 20.99         | 20.88          | 2             |
|           | 8       | 3         | 21.72         | 21.75         | 21.80          | 1             | 20.62         | 20.79         | 20.75          | 2             |
|           | 8       | 7         | 21.68         | 21.67         | 21.63          | 1             | 20.67         | 20.73         | 20.63          | 2             |
|           | 15      | 0         | 21.99         | 21.97         | 21.95          | 1             | 20.86         | 21.04         | 20.72          | 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         | 23.10         | 23.18         | 23.13          | 0             | 21.87         | 22.09         | 21.88          | 1             |
|           | 1       | 12        | 23.01         | 23.01         | 22.94          | 0             | 21.85         | 22.08         | 22.03          | 1             |
|           | 1       | 24        | 22.81         | 22.93         | 22.84          | 0             | 21.61         | 21.82         | 21.73          | 1             |
|           | 12      | 0         | 22.00         | 22.11         | 21.95          | 1             | 20.84         | 20.95         | 20.95          | 2             |
|           | 12      | 6         | 21.78         | 21.89         | 21.79          | 1             | 20.80         | 20.80         | 20.77          | 2             |
|           | 12      | 13        | 21.76         | 21.83         | 21.72          | 1             | 20.58         | 20.65         | 20.67          | 2             |
|           | 25      | 0         | 21.99         | 22.03         | 21.88          | 1             | 20.87         | 21.03         | 20.90          | 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         | 23.14         | 23.26         | 23.16          | 0             | 21.98         | 22.08         | 21.95          | 1             |
|           | 1       | 24        | 23.01         | 23.09         | 23.10          | 0             | 21.94         | 22.07         | 22.06          | 1             |
|           | 1       | 49        | 22.91         | 22.99         | 22.81          | 0             | 21.83         | 21.98         | 21.82          | 1             |
|           | 25      | 0         | 22.06         | 22.17         | 22.06          | 1             | 20.90         | 21.16         | 20.92          | 2             |
|           | 25      | 12        | 21.82         | 21.96         | 21.91          | 1             | 20.81         | 20.88         | 20.76          | 2             |
|           | 25      | 25        | 21.71         | 21.81         | 21.77          | 1             | 20.69         | 20.78         | 20.83          | 2             |
|           | 50      | 0         | 22.00         | 22.10         | 22.05          | 1             | 20.93         | 21.08         | 20.98          | 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         | 23.21         | 23.34         | 23.21          | 0             | 22.12         | 22.24         | 22.11          | 1             |
|           | 1       | 37        | 23.11         | 23.15         | 23.10          | 0             | 22.01         | 22.16         | 22.04          | 1             |
|           | 1       | 74        | 22.88         | 22.95         | 23.01          | 0             | 21.91         | 22.01         | 21.78          | 1             |
|           | 36      | 0         | 22.03         | 22.19         | 22.13          | 1             | 20.95         | 21.13         | 21.03          | 2             |
|           | 36      | 19        | 21.84         | 22.03         | 21.93          | 1             | 20.88         | 20.98         | 20.93          | 2             |
|           | 36      | 39        | 21.80         | 21.94         | 21.88          | 1             | 20.78         | 20.83         | 20.77          | 2             |
|           | 75      | 0         | 22.07         | 22.21         | 22.01          | 1             | 21.01         | 21.10         | 21.04          | 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         | 23.26         | 23.37         | 23.29          | 0             | 22.24         | 22.31         | 22.25          | 1             |
|           | 1       | 50        | 23.11         | 23.25         | 23.13          | 0             | 22.05         | 22.17         | 22.10          | 1             |
|           | 1       | 99        | 22.96         | 23.16         | 23.01          | 0             | 21.79         | 21.93         | 21.97          | 1             |
|           | 50      | 0         | 22.17         | 22.26         | 22.15          | 1             | 21.10         | 21.22         | 20.98          | 2             |
|           | 50      | 25        | 21.95         | 22.09         | 21.93          | 1             | 20.84         | 20.98         | 20.85          | 2             |
|           | 50      | 50        | 21.83         | 21.92         | 21.84          | 1             | 20.80         | 20.99         | 20.80          | 2             |
|           | 100     | 0         | 22.05         | 22.22         | 22.07          | 1             | 21.00         | 21.25         | 21.04          | 2             |

## ERP Power (dBm)

Note: ERP (dBm) = Max. Conducted Power (dBm) + Gain (dBi) – 2.15

| Band 12 / 1.4M, 1RB#0  |                 |                 |                  |                 |                 |                  |
|------------------------|-----------------|-----------------|------------------|-----------------|-----------------|------------------|
| Test Mode              | QPSK            |                 |                  | 16QAM           |                 |                  |
|                        | Low Ch<br>23017 | Mid Ch<br>23095 | High Ch<br>23173 | Low Ch<br>23017 | Mid Ch<br>23095 | High Ch<br>23173 |
|                        | 699.7<br>MHz    | 707.5<br>MHz    | 715.3<br>MHz     | 699.7<br>MHz    | 707.5<br>MHz    | 715.3<br>MHz     |
| Max. Cond. Power (dBm) | 22.60           | 22.85           | 22.77            | 21.57           | 21.78           | 21.70            |
| Max. ERP Power (dBm)   | 23.45           | 23.70           | 23.62            | 22.42           | 22.63           | 22.55            |
| Max. ERP Power (mW)    | 221.31          | 234.42          | 230.14           | 174.58          | 183.23          | 179.89           |

| Band 12 / 3M, 1RB#0    |                 |                 |                  |                 |                 |                  |
|------------------------|-----------------|-----------------|------------------|-----------------|-----------------|------------------|
| Test Mode              | QPSK            |                 |                  | 16QAM           |                 |                  |
|                        | Low Ch<br>23025 | Mid Ch<br>23095 | High Ch<br>23165 | Low Ch<br>23025 | Mid Ch<br>23095 | High Ch<br>23165 |
|                        | 700.5<br>MHz    | 707.5<br>MHz    | 714.5<br>MHz     | 700.5<br>MHz    | 707.5<br>MHz    | 714.5<br>MHz     |
| Max. Cond. Power (dBm) | 22.62           | 22.83           | 22.77            | 21.32           | 21.70           | 21.47            |
| Max. ERP Power (dBm)   | 23.47           | 23.68           | 23.62            | 22.17           | 22.55           | 22.32            |
| Max. ERP Power (mW)    | 222.33          | 233.35          | 230.14           | 164.82          | 179.89          | 170.61           |

| Band 12 / 5M, 1RB#0    |                 |                 |                  |                 |                 |                  |
|------------------------|-----------------|-----------------|------------------|-----------------|-----------------|------------------|
| Test Mode              | QPSK            |                 |                  | 16QAM           |                 |                  |
|                        | Low Ch<br>23035 | Mid Ch<br>23095 | High Ch<br>23155 | Low Ch<br>23035 | Mid Ch<br>23095 | High Ch<br>23155 |
|                        | 701.5<br>MHz    | 707.5<br>MHz    | 713.5<br>MHz     | 701.5<br>MHz    | 707.5<br>MHz    | 713.5<br>MHz     |
| Max. Cond. Power (dBm) | 22.63           | 22.92           | 22.85            | 21.40           | 21.73           | 21.58            |
| Max. ERP Power (dBm)   | 23.48           | 23.77           | 23.70            | 22.25           | 22.58           | 22.43            |
| Max. ERP Power (mW)    | 222.84          | 238.23          | 234.42           | 167.88          | 181.13          | 174.98           |

| Band 12 / 10M, 1RB#0   |                 |                 |                  |                 |                 |                  |
|------------------------|-----------------|-----------------|------------------|-----------------|-----------------|------------------|
| Test Mode              | QPSK            |                 |                  | 16QAM           |                 |                  |
|                        | Low Ch<br>23060 | Mid Ch<br>23095 | High Ch<br>23130 | Low Ch<br>23060 | Mid Ch<br>23095 | High Ch<br>23130 |
|                        | 704.0<br>MHz    | 707.5<br>MHz    | 711.0<br>MHz     | 704.0<br>MHz    | 707.5<br>MHz    | 711.0<br>MHz     |
| Max. Cond. Power (dBm) | 22.72           | 22.97           | 22.88            | 21.51           | 21.82           | 21.77            |
| Max. ERP Power (dBm)   | 23.57           | 23.82           | 23.73            | 22.36           | 22.67           | 22.62            |
| Max. ERP Power (mW)    | 227.51          | 240.99          | 236.05           | 172.19          | 184.93          | 182.81           |

| Band 13 / 5M, 1RB#0    |                 |                 |                  |                 |                 |                  |
|------------------------|-----------------|-----------------|------------------|-----------------|-----------------|------------------|
| Test Mode              | QPSK            |                 |                  | 16QAM           |                 |                  |
|                        | Low Ch<br>23205 | Mid Ch<br>23230 | High Ch<br>23255 | Low Ch<br>23205 | Mid Ch<br>23230 | High Ch<br>23255 |
|                        | 779.5<br>MHz    | 782.0<br>MHz    | 784.5<br>MHz     | 779.5<br>MHz    | 782.0<br>MHz    | 784.5<br>MHz     |
| Max. Cond. Power (dBm) | 23.17           | 23.12           | 23.08            | 22.08           | 22.10           | 22.00            |
| Max. ERP Power (dBm)   | 24.02           | 23.97           | 23.93            | 22.93           | 22.95           | 22.85            |
| Max. ERP Power (mW)    | 252.35          | 249.46          | 247.17           | 196.34          | 197.24          | 192.75           |

| Band 13 / 10M, 1RB#0   |      |                 |  |       |                 |  |
|------------------------|------|-----------------|--|-------|-----------------|--|
| Test Mode              | QPSK |                 |  | 16QAM |                 |  |
|                        |      | Mid Ch<br>23230 |  |       | Mid Ch<br>23230 |  |
|                        |      | 782.0<br>MHz    |  |       | 782.0<br>MHz    |  |
| Max. Cond. Power (dBm) |      | 23.18           |  |       | 22.15           |  |
| Max. ERP Power (dBm)   |      | 24.03           |  |       | 23.00           |  |
| Max. ERP Power (mW)    |      | 252.93          |  |       | 199.53          |  |

| Band 17 / 5M, 1RB#0    |                 |                 |                  |                 |                 |                  |
|------------------------|-----------------|-----------------|------------------|-----------------|-----------------|------------------|
| Test Mode              | QPSK            |                 |                  | 16QAM           |                 |                  |
|                        | Low Ch<br>23755 | Mid Ch<br>23790 | High Ch<br>23825 | Low Ch<br>23755 | Mid Ch<br>23790 | High Ch<br>23825 |
|                        | 706.5<br>MHz    | 710.0<br>MHz    | 713.5<br>MHz     | 706.5<br>MHz    | 710.0<br>MHz    | 713.5<br>MHz     |
| Max. Cond. Power (dBm) | 22.98           | 22.94           | 23.03            | 21.89           | 21.82           | 21.90            |
| Max. ERP Power (dBm)   | 23.83           | 23.79           | 23.88            | 22.74           | 22.67           | 22.75            |
| Max. ERP Power (mW)    | 241.55          | 239.33          | 244.34           | 187.93          | 184.93          | 188.36           |

| Band 17 / 10M, 1RB#0   |                 |                 |                  |                 |                 |                  |
|------------------------|-----------------|-----------------|------------------|-----------------|-----------------|------------------|
| Test Mode              | QPSK            |                 |                  | 16QAM           |                 |                  |
|                        | Low Ch<br>23780 | Mid Ch<br>23790 | High Ch<br>23800 | Low Ch<br>23780 | Mid Ch<br>23790 | High Ch<br>23800 |
|                        | 709.0<br>MHz    | 710.0<br>MHz    | 711.0<br>MHz     | 709.0<br>MHz    | 710.0<br>MHz    | 711.0<br>MHz     |
| Max. Cond. Power (dBm) | 23.02           | 23.01           | 23.08            | 21.93           | 22.00           | 22.06            |
| Max. ERP Power (dBm)   | 23.87           | 23.86           | 23.93            | 22.78           | 22.85           | 22.91            |
| Max. ERP Power (mW)    | 243.78          | 243.22          | 247.17           | 189.67          | 192.75          | 195.43           |

#### EIRP Power (dBm)

Note: EIRP (dBm) = Max. Conducted Power (dBm) + Gain (dBi)

| Band                   | WCDMA IV  |        |        |
|------------------------|-----------|--------|--------|
|                        | RMC 12.2K |        |        |
| Channel                | 1312      | 1413   | 1513   |
| Frequency (MHz)        | 1712.4    | 1732.6 | 1752.6 |
| Max. Cond. Power (dBm) | 24.11     | 24.14  | 24.34  |
| Max. EIRP Power (dBm)  | 29.11     | 29.14  | 29.34  |
| Max. EIRP Power (mW)   | 814.70    | 820.35 | 859.01 |

**Band 4 / 1.4M, 1RB#0**

| Test Mode              | QPSK            |                 |                  | 16QAM           |                 |                  |
|------------------------|-----------------|-----------------|------------------|-----------------|-----------------|------------------|
|                        | Low Ch<br>19957 | Mid Ch<br>20175 | High Ch<br>20393 | Low Ch<br>19957 | Mid Ch<br>20175 | High Ch<br>20393 |
|                        | 1710.7<br>MHz   | 1732.5<br>MHz   | 1754.3<br>MHz    | 1710.7<br>MHz   | 1732.5<br>MHz   | 1754.3<br>MHz    |
| Max. Cond. Power (dBm) | 22.86           | 22.56           | 22.63            | 21.70           | 21.56           | 21.52            |
| Max. EIRP Power (dBm)  | 27.86           | 27.56           | 27.63            | 26.70           | 26.56           | 26.52            |
| Max. EIRP Power (mW)   | 610.94          | 570.16          | 579.43           | 467.74          | 452.90          | 448.75           |

**Band 4 / 3M, 1RB#0**

| Test Mode              | QPSK            |                 |                  | 16QAM           |                 |                  |
|------------------------|-----------------|-----------------|------------------|-----------------|-----------------|------------------|
|                        | Low Ch<br>19965 | Mid Ch<br>20175 | High Ch<br>20385 | Low Ch<br>19965 | Mid Ch<br>20175 | High Ch<br>20385 |
|                        | 1711.5<br>MHz   | 1732.5<br>MHz   | 1753.5<br>MHz    | 1711.5<br>MHz   | 1732.5<br>MHz   | 1753.5<br>MHz    |
| Max. Cond. Power (dBm) | 22.90           | 22.68           | 22.66            | 21.77           | 21.30           | 21.33            |
| Max. EIRP Power (dBm)  | 27.90           | 27.68           | 27.66            | 26.77           | 26.30           | 26.33            |
| Max. EIRP Power (mW)   | 616.60          | 586.14          | 583.45           | 475.34          | 426.58          | 429.54           |

**Band 4 / 5M, 1RB#0**

| Test Mode              | QPSK            |                 |                  | 16QAM           |                 |                  |
|------------------------|-----------------|-----------------|------------------|-----------------|-----------------|------------------|
|                        | Low Ch<br>19975 | Mid Ch<br>20175 | High Ch<br>20375 | Low Ch<br>19975 | Mid Ch<br>20175 | High Ch<br>20375 |
|                        | 1712.5<br>MHz   | 1732.5<br>MHz   | 1752.5<br>MHz    | 1712.5<br>MHz   | 1732.5<br>MHz   | 1752.5<br>MHz    |
| Max. Cond. Power (dBm) | 22.91           | 22.69           | 22.74            | 21.71           | 21.45           | 21.48            |
| Max. EIRP Power (dBm)  | 27.91           | 27.69           | 27.74            | 26.71           | 26.45           | 26.48            |
| Max. EIRP Power (mW)   | 618.02          | 587.49          | 594.29           | 468.81          | 441.57          | 444.63           |

**Band 4 / 10M, 1RB#0**

| Test Mode              | QPSK            |                 |                  | 16QAM           |                 |                  |
|------------------------|-----------------|-----------------|------------------|-----------------|-----------------|------------------|
|                        | Low Ch<br>20000 | Mid Ch<br>20175 | High Ch<br>20350 | Low Ch<br>20000 | Mid Ch<br>20175 | High Ch<br>20350 |
|                        | 1715.0<br>MHz   | 1732.5<br>MHz   | 1750.0<br>MHz    | 1715.0<br>MHz   | 1732.5<br>MHz   | 1750.0<br>MHz    |
| Max. Cond. Power (dBm) | 23.02           | 22.74           | 22.74            | 21.86           | 21.48           | 21.63            |
| Max. EIRP Power (dBm)  | 28.02           | 27.74           | 27.74            | 26.86           | 26.48           | 26.63            |
| Max. EIRP Power (mW)   | 633.87          | 594.29          | 594.29           | 485.29          | 444.63          | 460.26           |

**Band 4 / 15M, 1RB#0**

| Test Mode              | QPSK            |                 |                  | 16QAM           |                 |                  |
|------------------------|-----------------|-----------------|------------------|-----------------|-----------------|------------------|
|                        | Low Ch<br>20025 | Mid Ch<br>20175 | High Ch<br>20325 | Low Ch<br>20025 | Mid Ch<br>20175 | High Ch<br>20325 |
|                        | 1717.5<br>MHz   | 1732.5<br>MHz   | 1747.5<br>MHz    | 1717.5<br>MHz   | 1732.5<br>MHz   | 1747.5<br>MHz    |
| Max. Cond. Power (dBm) | 23.05           | 22.78           | 22.84            | 21.95           | 21.66           | 21.73            |
| Max. EIRP Power (dBm)  | 28.05           | 27.78           | 27.84            | 26.95           | 26.66           | 26.73            |
| Max. EIRP Power (mW)   | 638.26          | 599.79          | 608.14           | 495.45          | 463.45          | 470.98           |

**Band 4 / 20M, 1RB#0**

| Test Mode              | QPSK            |                 |                  | 16QAM           |                 |                  |
|------------------------|-----------------|-----------------|------------------|-----------------|-----------------|------------------|
|                        | Low Ch<br>20050 | Mid Ch<br>20175 | High Ch<br>20300 | Low Ch<br>20050 | Mid Ch<br>20175 | High Ch<br>20300 |
|                        | 1720.0<br>MHz   | 1732.5<br>MHz   | 1745.0<br>MHz    | 1720.0<br>MHz   | 1732.5<br>MHz   | 1745.0<br>MHz    |
| Max. Cond. Power (dBm) | 23.11           | 22.85           | 22.89            | 22.06           | 21.77           | 21.83            |
| Max. EIRP Power (dBm)  | 28.11           | 27.85           | 27.89            | 27.06           | 26.77           | 26.83            |
| Max. EIRP Power (mW)   | 647.14          | 609.54          | 615.18           | 508.16          | 475.34          | 481.95           |

**Band 66 / 1.4M, 1RB#0**

| Test Mode              | QPSK             |                  |                   | 16QAM            |                  |                   |
|------------------------|------------------|------------------|-------------------|------------------|------------------|-------------------|
|                        | Low Ch<br>131979 | Mid Ch<br>132322 | High Ch<br>132665 | Low Ch<br>131979 | Mid Ch<br>132322 | High Ch<br>132665 |
|                        | 1710.7<br>MHz    | 1745.0<br>MHz    | 1779.3<br>MHz     | 1710.7<br>MHz    | 1745.0<br>MHz    | 1779.3<br>MHz     |
| Max. Cond. Power (dBm) | 22.92            | 23.07            | 23.03             | 21.94            | 21.97            | 21.92             |
| Max. EIRP Power (dBm)  | 27.92            | 28.07            | 28.03             | 26.94            | 26.97            | 26.92             |
| Max. EIRP Power (mW)   | 619.44           | 641.21           | 635.33            | 494.31           | 497.74           | 492.04            |

**Band 66 / 3M, 1RB#0**

| Test Mode              | QPSK             |                  |                   | 16QAM            |                  |                   |
|------------------------|------------------|------------------|-------------------|------------------|------------------|-------------------|
|                        | Low Ch<br>131987 | Mid Ch<br>132322 | High Ch<br>132657 | Low Ch<br>131987 | Mid Ch<br>132322 | High Ch<br>132657 |
|                        | 1711.5<br>MHz    | 1745.5<br>MHz    | 1778.5<br>MHz     | 1711.5<br>MHz    | 1745.5<br>MHz    | 1778.5<br>MHz     |
| Max. Cond. Power (dBm) | 23.06            | 23.17            | 23.11             | 21.95            | 21.84            | 21.77             |
| Max. EIRP Power (dBm)  | 28.06            | 28.17            | 28.11             | 26.95            | 26.84            | 26.77             |
| Max. EIRP Power (mW)   | 639.73           | 656.15           | 647.14            | 495.45           | 483.06           | 475.34            |

**Band 66 / 5M, 1RB#0**

| Test Mode              | QPSK             |                  |                   | 16QAM            |                  |                   |
|------------------------|------------------|------------------|-------------------|------------------|------------------|-------------------|
|                        | Low Ch<br>131997 | Mid Ch<br>132322 | High Ch<br>132647 | Low Ch<br>131997 | Mid Ch<br>132322 | High Ch<br>132647 |
|                        | 1712.5<br>MHz    | 1745.0<br>MHz    | 1777.5<br>MHz     | 1712.5<br>MHz    | 1745.0<br>MHz    | 1777.5<br>MHz     |
| Max. Cond. Power (dBm) | 23.10            | 23.18            | 23.13             | 21.87            | 22.09            | 21.88             |
| Max. EIRP Power (dBm)  | 28.10            | 28.18            | 28.13             | 26.87            | 27.09            | 26.88             |
| Max. EIRP Power (mW)   | 645.65           | 657.66           | 650.13            | 486.41           | 511.68           | 487.53            |

**Band 66 / 10M, 1RB#0**

| Test Mode              | QPSK             |                  |                   | 16QAM            |                  |                   |
|------------------------|------------------|------------------|-------------------|------------------|------------------|-------------------|
|                        | Low Ch<br>132022 | Mid Ch<br>132322 | High Ch<br>132622 | Low Ch<br>132022 | Mid Ch<br>132322 | High Ch<br>132622 |
|                        | 1715.0<br>MHz    | 1745.0<br>MHz    | 1775.0<br>MHz     | 1715.0<br>MHz    | 1745.0<br>MHz    | 1775.0<br>MHz     |
| Max. Cond. Power (dBm) | 23.14            | 23.26            | 23.16             | 21.98            | 22.08            | 21.95             |
| Max. EIRP Power (dBm)  | 28.14            | 28.26            | 28.16             | 26.98            | 27.08            | 26.95             |
| Max. EIRP Power (mW)   | 651.63           | 669.88           | 654.64            | 498.88           | 510.50           | 495.45            |

**Band 66 / 15M, 1RB#0**

| Test Mode              | QPSK             |                  |                   | 16QAM            |                  |                   |
|------------------------|------------------|------------------|-------------------|------------------|------------------|-------------------|
|                        | Low Ch<br>132047 | Mid Ch<br>132322 | High Ch<br>132597 | Low Ch<br>132047 | Mid Ch<br>132322 | High Ch<br>132597 |
|                        | 1717.5<br>MHz    | 1745.0<br>MHz    | 1772.5<br>MHz     | 1717.5<br>MHz    | 1745.0<br>MHz    | 1772.5<br>MHz     |
| Max. Cond. Power (dBm) | 23.21            | 23.34            | 23.21             | 22.12            | 22.24            | 22.11             |
| Max. EIRP Power (dBm)  | 28.21            | 28.34            | 28.21             | 27.12            | 27.24            | 27.11             |
| Max. EIRP Power (mW)   | 662.22           | 682.34           | 662.22            | 515.23           | 529.66           | 514.04            |

**Band 66 / 20M, 1RB#0**

| Test Mode              | QPSK             |                  |                   | 16QAM            |                  |                   |
|------------------------|------------------|------------------|-------------------|------------------|------------------|-------------------|
|                        | Low Ch<br>132072 | Mid Ch<br>132322 | High Ch<br>132572 | Low Ch<br>132072 | Mid Ch<br>132322 | High Ch<br>132572 |
|                        | 1720.0<br>MHz    | 1745.0<br>MHz    | 1770.0<br>MHz     | 1720.0<br>MHz    | 1745.0<br>MHz    | 1770.0<br>MHz     |
| Max. Cond. Power (dBm) | 23.26            | 23.37            | 23.29             | 22.24            | 22.31            | 22.25             |
| Max. EIRP Power (dBm)  | 28.26            | 28.37            | 28.29             | 27.24            | 27.31            | 27.25             |
| Max. EIRP Power (mW)   | 669.88           | 687.07           | 674.53            | 529.66           | 538.27           | 530.88            |

## 4.2 Modulation Characteristics Measurement

### 4.2.1 Limits of Modulation Characteristics

N/A

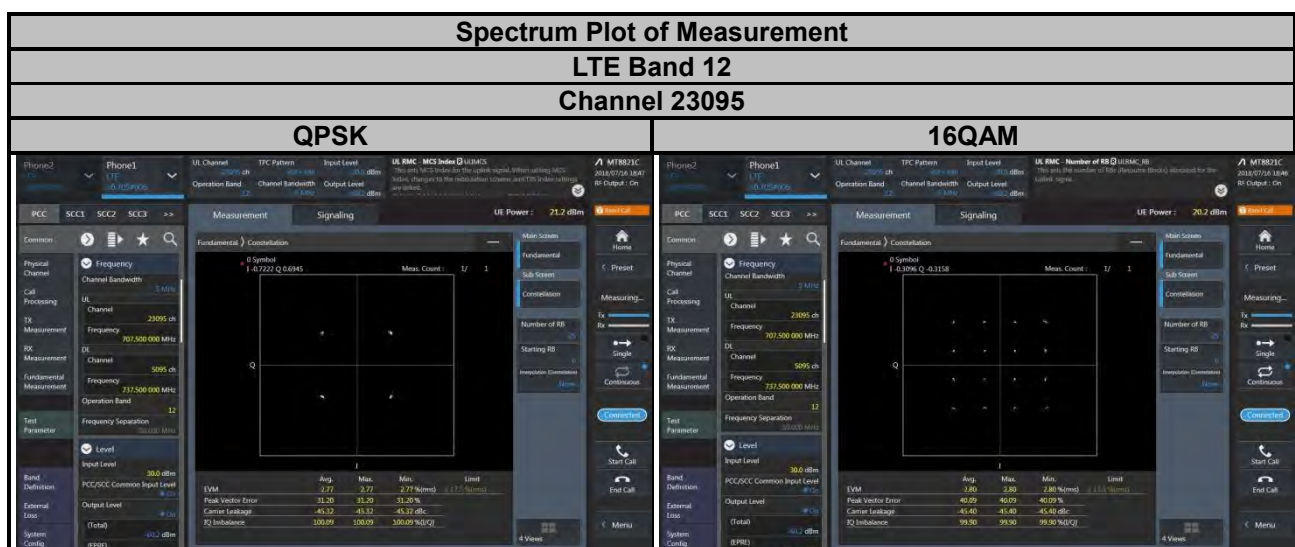
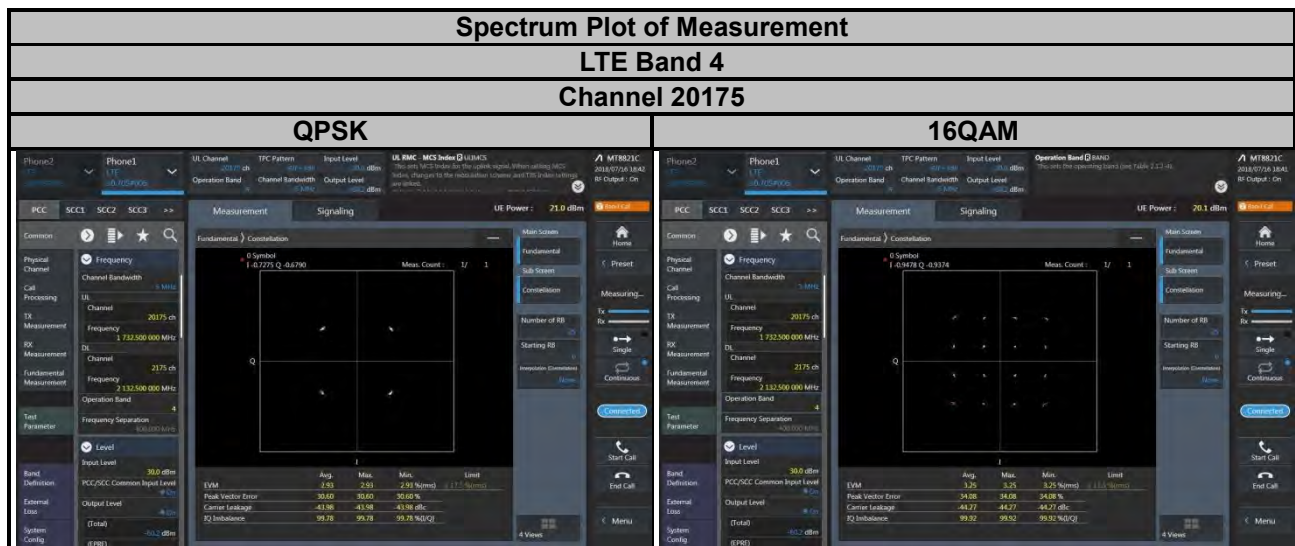
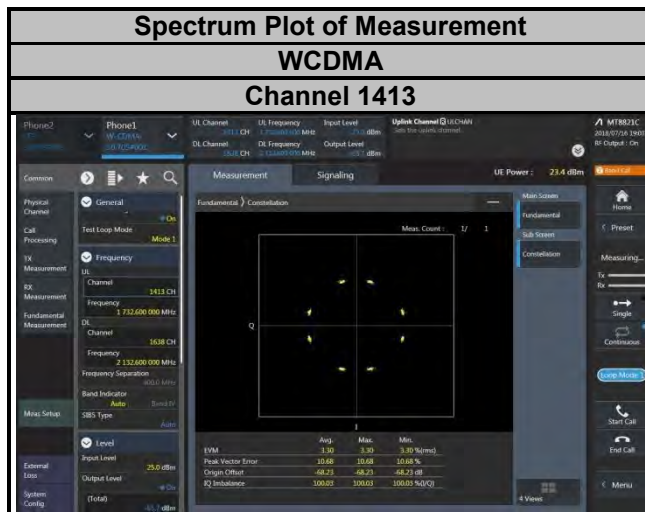
### 4.2.2 Test Setup



### 4.2.3 Test Procedure

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

#### 4.2.4 Test Results



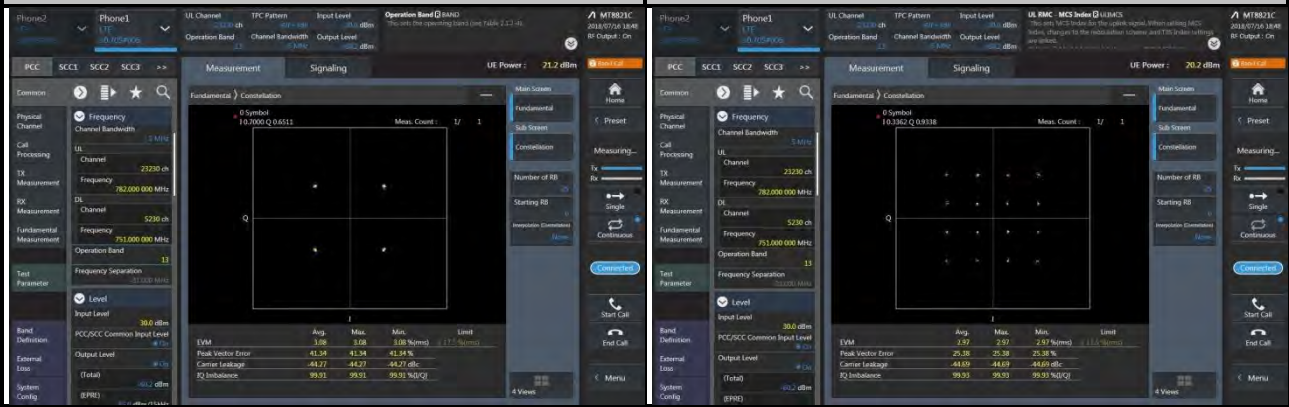
## Spectrum Plot of Measurement

### LTE Band 13

### Channel 23230

**QPSK**

**16QAM**



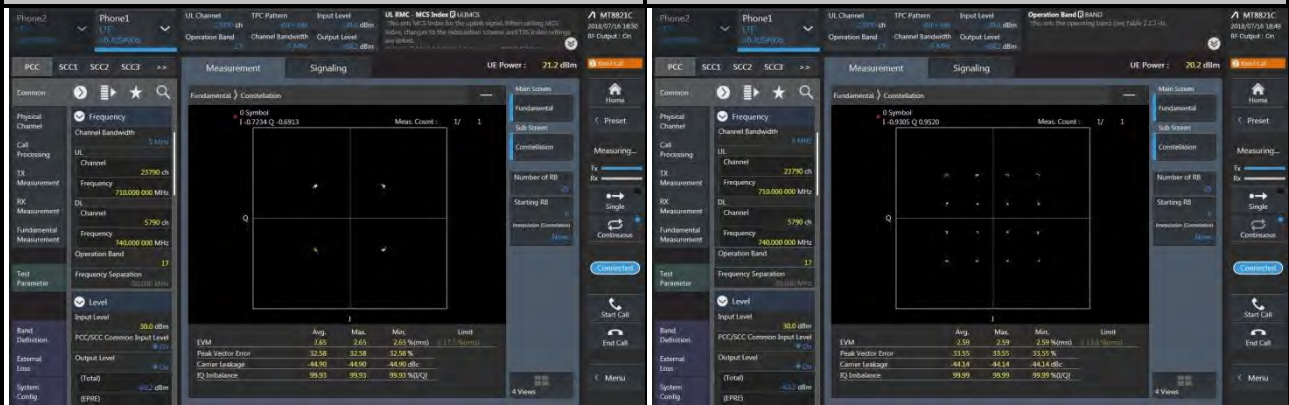
## Spectrum Plot of Measurement

### LTE Band 17

### Channel 23790

**QPSK**

**16QAM**



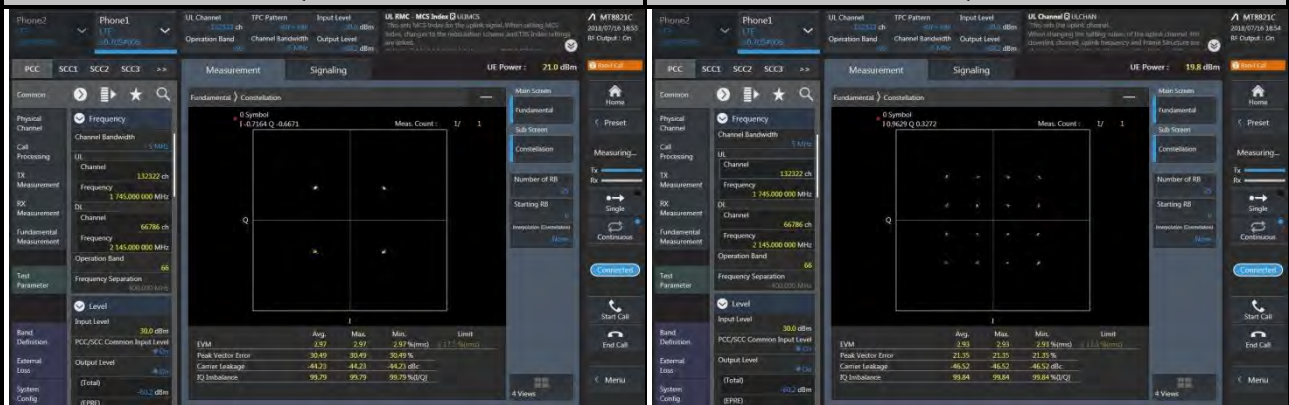
## Spectrum Plot of Measurement

### LTE Band 66

### Channel 132322

**QPSK**

**16QAM**



### 4.3 Frequency Stability Measurement

#### 4.3.1 Limits of Frequency Stability Measurement

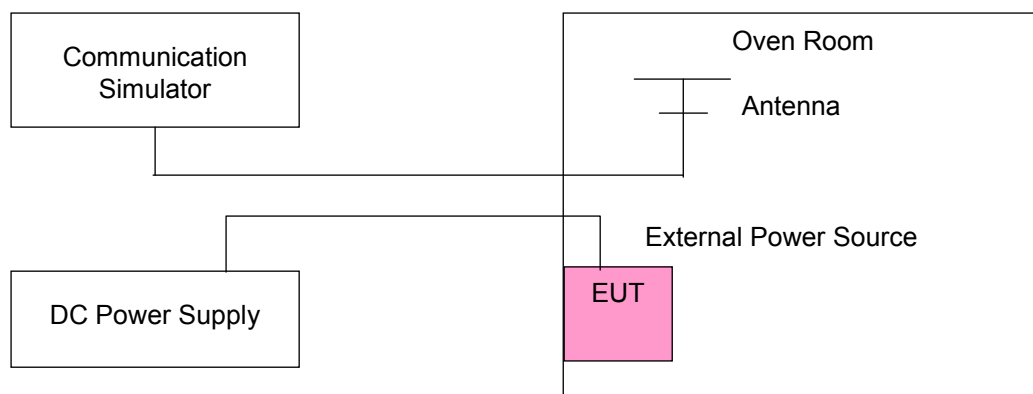
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

#### 4.3.2 Test Procedure

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

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

#### 4.3.3 Test Setup



#### 4.3.4 Test Results

##### Frequency Error vs. Voltage

| Voltage<br>(Volts) | WCDMA           |                       |                 |                       | Limit (ppm) |
|--------------------|-----------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Low Channel     |                       | High Channel    |                       |             |
|                    | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.3                | 1712.400002     | 0.001                 | 1752.600001     | 0.001                 | 2.5         |
| 3.135              | 1712.400004     | 0.002                 | 1752.600002     | 0.001                 | 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 3.135 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) |             |
| -30        | 1712.400004     | 0.002                 | 1752.600004     | 0.002                 | 2.5         |
| -20        | 1712.400003     | 0.002                 | 1752.600002     | 0.001                 | 2.5         |
| -10        | 1712.400004     | 0.002                 | 1752.600001     | 0.001                 | 2.5         |
| 0          | 1712.400001     | 0.001                 | 1752.600004     | 0.002                 | 2.5         |
| 10         | 1712.400002     | 0.001                 | 1752.600003     | 0.001                 | 2.5         |
| 20         | 1712.399997     | -0.002                | 1752.599998     | -0.001                | 2.5         |
| 30         | 1712.399998     | -0.001                | 1752.599999     | -0.001                | 2.5         |
| 40         | 1712.399998     | -0.001                | 1752.599998     | -0.001                | 2.5         |
| 50         | 1712.399999     | -0.001                | 1752.599997     | -0.002                | 2.5         |
| 55         | 1712.399996     | -0.002                | 1752.599997     | -0.002                | 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                | 1710.700002                | 0.001                 | 1754.300002     | 0.001                 | 2.5         |
| 3.135              | 1710.700002                | 0.001                 | 1754.300002     | 0.001                 | 2.5         |
| 4.4                | 1710.700003                | 0.002                 | 1754.300004     | 0.002                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.135 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) |             |
| -30        | 1710.700002                | 0.001                 | 1754.300003     | 0.002                 | 2.5         |
| -20        | 1710.700003                | 0.002                 | 1754.300002     | 0.001                 | 2.5         |
| -10        | 1710.700001                | 0.001                 | 1754.300004     | 0.002                 | 2.5         |
| 0          | 1710.700003                | 0.002                 | 1754.300002     | 0.001                 | 2.5         |
| 10         | 1710.700002                | 0.001                 | 1754.300001     | 0.001                 | 2.5         |
| 20         | 1710.699997                | -0.002                | 1754.299996     | -0.002                | 2.5         |
| 30         | 1710.699998                | -0.001                | 1754.299997     | -0.002                | 2.5         |
| 40         | 1710.699998                | -0.001                | 1754.299999     | -0.001                | 2.5         |
| 50         | 1710.699996                | -0.002                | 1754.299997     | -0.002                | 2.5         |
| 55         | 1710.699998                | -0.001                | 1754.299998     | -0.001                | 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                | 1711.500002              | 0.001                 | 1753.500004     | 0.002                 | 2.5         |
| 3.135              | 1711.500002              | 0.001                 | 1753.500001     | 0.001                 | 2.5         |
| 4.4                | 1711.500004              | 0.002                 | 1753.500003     | 0.002                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.135 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) |             |
| -30        | 1711.500002              | 0.001                 | 1753.500003     | 0.002                 | 2.5         |
| -20        | 1711.500002              | 0.001                 | 1753.500001     | 0.001                 | 2.5         |
| -10        | 1711.500003              | 0.002                 | 1753.500002     | 0.001                 | 2.5         |
| 0          | 1711.500003              | 0.002                 | 1753.500002     | 0.001                 | 2.5         |
| 10         | 1711.500003              | 0.002                 | 1753.500001     | 0.001                 | 2.5         |
| 20         | 1711.499996              | -0.002                | 1753.499996     | -0.002                | 2.5         |
| 30         | 1711.499999              | -0.001                | 1753.499996     | -0.002                | 2.5         |
| 40         | 1711.499999              | -0.001                | 1753.499997     | -0.002                | 2.5         |
| 50         | 1711.499999              | -0.001                | 1753.499999     | -0.001                | 2.5         |
| 55         | 1711.499997              | -0.002                | 1753.499998     | -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                | 1712.500003              | 0.001                 | 1752.500003     | 0.002                 | 2.5         |
| 3.135              | 1712.500001              | 0.001                 | 1752.500003     | 0.002                 | 2.5         |
| 4.4                | 1712.500001              | 0.001                 | 1752.500004     | 0.002                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.135 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) |             |
| -30        | 1712.500003              | 0.001                 | 1752.500003     | 0.001                 | 2.5         |
| -20        | 1712.500004              | 0.002                 | 1752.500001     | 0.001                 | 2.5         |
| -10        | 1712.500002              | 0.001                 | 1752.500002     | 0.001                 | 2.5         |
| 0          | 1712.500002              | 0.001                 | 1752.500002     | 0.001                 | 2.5         |
| 10         | 1712.500002              | 0.001                 | 1752.500003     | 0.002                 | 2.5         |
| 20         | 1712.499998              | -0.001                | 1752.499998     | -0.001                | 2.5         |
| 30         | 1712.499997              | -0.002                | 1752.499997     | -0.002                | 2.5         |
| 40         | 1712.499997              | -0.002                | 1752.499997     | -0.002                | 2.5         |
| 50         | 1712.499998              | -0.001                | 1752.499998     | -0.001                | 2.5         |
| 55         | 1712.499997              | -0.002                | 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                | 1715.000003               | 0.002                 | 1750.000002     | 0.001                 | 2.5         |
| 3.135              | 1715.000002               | 0.001                 | 1750.000001     | 0.001                 | 2.5         |
| 4.4                | 1715.000002               | 0.001                 | 1750.000001     | 0.001                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.135 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) |             |
| -30        | 1715.000003               | 0.001                 | 1750.000001     | 0.001                 | 2.5         |
| -20        | 1715.000002               | 0.001                 | 1750.000001     | 0.001                 | 2.5         |
| -10        | 1715.000002               | 0.001                 | 1750.000002     | 0.001                 | 2.5         |
| 0          | 1715.000003               | 0.002                 | 1750.000004     | 0.002                 | 2.5         |
| 10         | 1715.000002               | 0.001                 | 1750.000003     | 0.002                 | 2.5         |
| 20         | 1714.999998               | -0.001                | 1749.999996     | -0.002                | 2.5         |
| 30         | 1714.999997               | -0.002                | 1749.999997     | -0.002                | 2.5         |
| 40         | 1714.999997               | -0.002                | 1749.999999     | -0.001                | 2.5         |
| 50         | 1714.999996               | -0.002                | 1749.999998     | -0.001                | 2.5         |
| 55         | 1714.999997               | -0.002                | 1749.999998     | -0.001                | 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                | 1717.500003               | 0.001                 | 1747.500002     | 0.001                 | 2.5         |
| 3.135              | 1717.500003               | 0.002                 | 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 3.135 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) |             |
| -30        | 1717.500003               | 0.002                 | 1747.500002     | 0.001                 | 2.5         |
| -20        | 1717.500002               | 0.001                 | 1747.500001     | 0.001                 | 2.5         |
| -10        | 1717.500002               | 0.001                 | 1747.500002     | 0.001                 | 2.5         |
| 0          | 1717.500003               | 0.002                 | 1747.500001     | 0.001                 | 2.5         |
| 10         | 1717.500004               | 0.002                 | 1747.500003     | 0.001                 | 2.5         |
| 20         | 1717.499998               | -0.001                | 1747.499997     | -0.002                | 2.5         |
| 30         | 1717.499997               | -0.002                | 1747.499997     | -0.002                | 2.5         |
| 40         | 1717.499998               | -0.001                | 1747.499999     | -0.001                | 2.5         |
| 50         | 1717.499997               | -0.002                | 1747.499999     | -0.001                | 2.5         |
| 55         | 1717.499997               | -0.002                | 1747.499999     | -0.001                | 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                | 1720.000001               | 0.001                 | 1745.000002     | 0.001                 | 2.5         |
| 3.135              | 1720.000002               | 0.001                 | 1745.000003     | 0.002                 | 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 3.135 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) |             |
| -30        | 1720.000004               | 0.002                 | 1745.000002     | 0.001                 | 2.5         |
| -20        | 1720.000003               | 0.002                 | 1745.000003     | 0.002                 | 2.5         |
| -10        | 1720.000002               | 0.001                 | 1745.000004     | 0.002                 | 2.5         |
| 0          | 1720.000002               | 0.001                 | 1745.000002     | 0.001                 | 2.5         |
| 10         | 1720.000003               | 0.002                 | 1745.000003     | 0.001                 | 2.5         |
| 20         | 1719.999997               | -0.002                | 1744.999997     | -0.001                | 2.5         |
| 30         | 1719.999997               | -0.002                | 1744.999997     | -0.002                | 2.5         |
| 40         | 1719.999998               | -0.001                | 1744.999997     | -0.002                | 2.5         |
| 50         | 1719.999999               | -0.001                | 1744.999999     | -0.001                | 2.5         |
| 55         | 1719.999997               | -0.002                | 1744.999997     | -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                 | 0.004                 | 715.300002      | 0.003                 | 2.5         |
| 3.135              | 699.700002                 | 0.002                 | 715.300002      | 0.002                 | 2.5         |
| 4.4                | 699.700004                 | 0.006                 | 715.300003      | 0.004                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.135 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) |             |
| -30        | 699.700002                 | 0.003                 | 715.300003      | 0.004                 | 2.5         |
| -20        | 699.700004                 | 0.006                 | 715.300001      | 0.001                 | 2.5         |
| -10        | 699.700003                 | 0.005                 | 715.300003      | 0.004                 | 2.5         |
| 0          | 699.700003                 | 0.004                 | 715.300001      | 0.001                 | 2.5         |
| 10         | 699.700004                 | 0.006                 | 715.300004      | 0.005                 | 2.5         |
| 20         | 699.699998                 | -0.003                | 715.299996      | -0.005                | 2.5         |
| 30         | 699.699999                 | -0.002                | 715.299997      | -0.004                | 2.5         |
| 40         | 699.699996                 | -0.006                | 715.299996      | -0.005                | 2.5         |
| 50         | 699.699997                 | -0.005                | 715.299996      | -0.006                | 2.5         |
| 55         | 699.699997                 | -0.004                | 715.299998      | -0.003                | 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                | 700.500002               | 0.003                 | 714.500003      | 0.003                 | 2.5         |
| 3.135              | 700.500001               | 0.002                 | 714.500001      | 0.002                 | 2.5         |
| 4.4                | 700.500004               | 0.005                 | 714.500004      | 0.005                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.135 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) |             |
| -30        | 700.500002               | 0.003                 | 714.500004      | 0.005                 | 2.5         |
| -20        | 700.500001               | 0.002                 | 714.500001      | 0.002                 | 2.5         |
| -10        | 700.500002               | 0.003                 | 714.500003      | 0.004                 | 2.5         |
| 0          | 700.500003               | 0.005                 | 714.500004      | 0.006                 | 2.5         |
| 10         | 700.500004               | 0.005                 | 714.500004      | 0.006                 | 2.5         |
| 20         | 700.499998               | -0.003                | 714.499996      | -0.005                | 2.5         |
| 30         | 700.499997               | -0.004                | 714.499997      | -0.005                | 2.5         |
| 40         | 700.499997               | -0.005                | 714.499998      | -0.003                | 2.5         |
| 50         | 700.499997               | -0.005                | 714.499998      | -0.003                | 2.5         |
| 55         | 700.499996               | -0.006                | 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               | 0.004                 | 713.500004      | 0.005                 | 2.5         |
| 3.135              | 701.500003               | 0.004                 | 713.500003      | 0.004                 | 2.5         |
| 4.4                | 701.500003               | 0.004                 | 713.500003      | 0.004                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.135 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) |             |
| -30        | 701.500002               | 0.003                 | 713.500002      | 0.003                 | 2.5         |
| -20        | 701.500003               | 0.004                 | 713.500002      | 0.003                 | 2.5         |
| -10        | 701.500004               | 0.005                 | 713.500003      | 0.004                 | 2.5         |
| 0          | 701.500003               | 0.004                 | 713.500001      | 0.002                 | 2.5         |
| 10         | 701.500003               | 0.004                 | 713.500003      | 0.004                 | 2.5         |
| 20         | 701.499997               | -0.005                | 713.499998      | -0.002                | 2.5         |
| 30         | 701.499997               | -0.005                | 713.499998      | -0.002                | 2.5         |
| 40         | 701.499997               | -0.004                | 713.499999      | -0.002                | 2.5         |
| 50         | 701.499998               | -0.003                | 713.499997      | -0.004                | 2.5         |
| 55         | 701.499998               | -0.002                | 713.499997      | -0.005                | 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                | 704.000004                | 0.005                 | 711.000002      | 0.003                 | 2.5         |
| 3.135              | 704.000003                | 0.005                 | 711.000001      | 0.002                 | 2.5         |
| 4.4                | 704.000002                | 0.003                 | 711.000002      | 0.003                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.135 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) |             |
| -30        | 704.000003                | 0.005                 | 711.000004      | 0.005                 | 2.5         |
| -20        | 704.000002                | 0.003                 | 711.000004      | 0.006                 | 2.5         |
| -10        | 704.000003                | 0.004                 | 711.000004      | 0.005                 | 2.5         |
| 0          | 704.000002                | 0.003                 | 711.000002      | 0.003                 | 2.5         |
| 10         | 704.000003                | 0.004                 | 711.000001      | 0.001                 | 2.5         |
| 20         | 703.999999                | -0.002                | 710.999998      | -0.003                | 2.5         |
| 30         | 703.999996                | -0.005                | 710.999998      | -0.003                | 2.5         |
| 40         | 703.999998                | -0.002                | 710.999999      | -0.002                | 2.5         |
| 50         | 703.999998                | -0.003                | 710.999998      | -0.002                | 2.5         |
| 55         | 703.999997                | -0.005                | 710.999998      | -0.002                | 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                | 779.500001               | 0.001                 | 784.500002      | 0.002                 | 2.5         |
| 3.135              | 779.500003               | 0.004                 | 784.500004      | 0.005                 | 2.5         |
| 4.4                | 779.500001               | 0.001                 | 784.500004      | 0.004                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.135 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) |             |
| -30        | 779.500002               | 0.003                 | 784.500003      | 0.004                 | 2.5         |
| -20        | 779.500003               | 0.003                 | 784.500002      | 0.002                 | 2.5         |
| -10        | 779.500003               | 0.003                 | 784.500003      | 0.004                 | 2.5         |
| 0          | 779.500002               | 0.002                 | 784.500004      | 0.005                 | 2.5         |
| 10         | 779.500003               | 0.004                 | 784.500003      | 0.004                 | 2.5         |
| 20         | 779.499998               | -0.003                | 784.499996      | -0.005                | 2.5         |
| 30         | 779.499999               | -0.002                | 784.499998      | -0.002                | 2.5         |
| 40         | 779.499999               | -0.002                | 784.499997      | -0.003                | 2.5         |
| 50         | 779.499997               | -0.004                | 784.499997      | -0.004                | 2.5         |
| 55         | 779.499997               | -0.003                | 784.499998      | -0.002                | 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                | 782.000002                | 0.003                 | 2.5         |
| 3.135              | 782.000001                | 0.001                 | 2.5         |
| 4.4                | 782.000002                | 0.002                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.135 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 13               |                       | Limit (ppm) |
|------------|---------------------------|-----------------------|-------------|
|            | Channel Bandwidth: 10 MHz |                       |             |
|            | Frequency (MHz)           | Frequency Error (ppm) |             |
| -30        | 782.000002                | 0.003                 | 2.5         |
| -20        | 782.000002                | 0.003                 | 2.5         |
| -10        | 782.000002                | 0.002                 | 2.5         |
| 0          | 782.000002                | 0.002                 | 2.5         |
| 10         | 782.000002                | 0.003                 | 2.5         |
| 20         | 781.999998                | -0.003                | 2.5         |
| 30         | 781.999999                | -0.001                | 2.5         |
| 40         | 781.999997                | -0.004                | 2.5         |
| 50         | 781.999999                | -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                | 706.500004               | 0.005                 | 713.500003      | 0.004                 | 2.5         |
| 3.135              | 706.500001               | 0.002                 | 713.500001      | 0.001                 | 2.5         |
| 4.4                | 706.500002               | 0.002                 | 713.500004      | 0.006                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.135 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) |             |
| -30        | 706.500003               | 0.004                 | 713.500004      | 0.005                 | 2.5         |
| -20        | 706.500002               | 0.002                 | 713.500003      | 0.004                 | 2.5         |
| -10        | 706.500002               | 0.003                 | 713.500002      | 0.003                 | 2.5         |
| 0          | 706.500002               | 0.003                 | 713.500004      | 0.005                 | 2.5         |
| 10         | 706.500004               | 0.005                 | 713.500003      | 0.004                 | 2.5         |
| 20         | 706.499997               | -0.005                | 713.499998      | -0.003                | 2.5         |
| 30         | 706.499998               | -0.003                | 713.499999      | -0.002                | 2.5         |
| 40         | 706.499998               | -0.003                | 713.499997      | -0.004                | 2.5         |
| 50         | 706.499999               | -0.002                | 713.499999      | -0.002                | 2.5         |
| 55         | 706.499999               | -0.002                | 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                | 709.000001                | 0.002                 | 711.000003      | 0.004                 | 2.5         |
| 3.135              | 709.000002                | 0.003                 | 711.000003      | 0.004                 | 2.5         |
| 4.4                | 709.000001                | 0.001                 | 711.000003      | 0.004                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.135 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) |             |
| -30        | 709.000002                | 0.002                 | 711.000004      | 0.005                 | 2.5         |
| -20        | 709.000001                | 0.002                 | 711.000003      | 0.005                 | 2.5         |
| -10        | 709.000003                | 0.005                 | 711.000002      | 0.002                 | 2.5         |
| 0          | 709.000002                | 0.003                 | 711.000001      | 0.002                 | 2.5         |
| 10         | 709.000004                | 0.005                 | 711.000004      | 0.005                 | 2.5         |
| 20         | 708.999998                | -0.004                | 710.999997      | -0.005                | 2.5         |
| 30         | 708.999997                | -0.005                | 710.999999      | -0.002                | 2.5         |
| 40         | 708.999998                | -0.003                | 710.999996      | -0.005                | 2.5         |
| 50         | 708.999999                | -0.002                | 710.999998      | -0.002                | 2.5         |
| 55         | 708.999998                | -0.004                | 710.999999      | -0.001                | 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                | 1710.700003                | 0.002                 | 1779.300003     | 0.002                 | 2.5         |
| 3.135              | 1710.700003                | 0.002                 | 1779.300004     | 0.002                 | 2.5         |
| 4.4                | 1710.700002                | 0.001                 | 1779.300003     | 0.001                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.135 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) |             |
| -30        | 1710.700001                | 0.001                 | 1779.300001     | 0.001                 | 2.5         |
| -20        | 1710.700001                | 0.001                 | 1779.300001     | 0.001                 | 2.5         |
| -10        | 1710.700002                | 0.001                 | 1779.300003     | 0.002                 | 2.5         |
| 0          | 1710.700001                | 0.001                 | 1779.300002     | 0.001                 | 2.5         |
| 10         | 1710.700003                | 0.002                 | 1779.300004     | 0.002                 | 2.5         |
| 20         | 1710.699997                | -0.002                | 1779.299997     | -0.002                | 2.5         |
| 30         | 1710.699999                | -0.001                | 1779.299999     | -0.001                | 2.5         |
| 40         | 1710.699997                | -0.002                | 1779.299997     | -0.002                | 2.5         |
| 50         | 1710.699997                | -0.002                | 1779.299998     | -0.001                | 2.5         |
| 55         | 1710.699997                | -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                | 1711.500003              | 0.001                 | 1778.500004     | 0.002                 | 2.5         |
| 3.135              | 1711.500003              | 0.001                 | 1778.500002     | 0.001                 | 2.5         |
| 4.4                | 1711.500002              | 0.001                 | 1778.500003     | 0.002                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.135 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) |             |
| -30        | 1711.500002              | 0.001                 | 1778.500003     | 0.002                 | 2.5         |
| -20        | 1711.500003              | 0.002                 | 1778.500001     | 0.001                 | 2.5         |
| -10        | 1711.500001              | 0.001                 | 1778.500001     | 0.001                 | 2.5         |
| 0          | 1711.500001              | 0.001                 | 1778.500002     | 0.001                 | 2.5         |
| 10         | 1711.500003              | 0.002                 | 1778.500003     | 0.002                 | 2.5         |
| 20         | 1711.499999              | -0.001                | 1778.499997     | -0.002                | 2.5         |
| 30         | 1711.499996              | -0.002                | 1778.499997     | -0.002                | 2.5         |
| 40         | 1711.499998              | -0.001                | 1778.499997     | -0.002                | 2.5         |
| 50         | 1711.499997              | -0.002                | 1778.499998     | -0.001                | 2.5         |
| 55         | 1711.499996              | -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                | 1712.500001              | 0.001                 | 1777.500004     | 0.002                 | 2.5         |
| 3.135              | 1712.500003              | 0.002                 | 1777.500004     | 0.002                 | 2.5         |
| 4.4                | 1712.500004              | 0.002                 | 1777.500004     | 0.002                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.135 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) |             |
| -30        | 1712.500004              | 0.002                 | 1777.500002     | 0.001                 | 2.5         |
| -20        | 1712.500004              | 0.002                 | 1777.500002     | 0.001                 | 2.5         |
| -10        | 1712.500001              | 0.001                 | 1777.500003     | 0.002                 | 2.5         |
| 0          | 1712.500004              | 0.002                 | 1777.500002     | 0.001                 | 2.5         |
| 10         | 1712.500001              | 0.001                 | 1777.500001     | 0.001                 | 2.5         |
| 20         | 1712.499998              | -0.001                | 1777.499997     | -0.002                | 2.5         |
| 30         | 1712.499996              | -0.002                | 1777.499996     | -0.002                | 2.5         |
| 40         | 1712.499999              | -0.001                | 1777.499997     | -0.002                | 2.5         |
| 50         | 1712.499999              | -0.001                | 1777.499999     | -0.001                | 2.5         |
| 55         | 1712.499999              | -0.001                | 1777.499997     | -0.002                | 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                | 1715.000001               | 0.001                 | 1775.000002     | 0.001                 | 2.5         |
| 3.135              | 1715.000001               | 0.001                 | 1775.000002     | 0.001                 | 2.5         |
| 4.4                | 1715.000001               | 0.001                 | 1775.000004     | 0.002                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.135 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) |             |
| -30        | 1715.000004               | 0.002                 | 1775.000001     | 0.001                 | 2.5         |
| -20        | 1715.000004               | 0.002                 | 1775.000002     | 0.001                 | 2.5         |
| -10        | 1715.000001               | 0.001                 | 1775.000002     | 0.001                 | 2.5         |
| 0          | 1715.000002               | 0.001                 | 1775.000003     | 0.001                 | 2.5         |
| 10         | 1715.000002               | 0.001                 | 1775.000004     | 0.002                 | 2.5         |
| 20         | 1714.999997               | -0.002                | 1774.999998     | -0.001                | 2.5         |
| 30         | 1714.999996               | -0.002                | 1774.999998     | -0.001                | 2.5         |
| 40         | 1714.999997               | -0.002                | 1774.999997     | -0.002                | 2.5         |
| 50         | 1714.999997               | -0.002                | 1774.999997     | -0.002                | 2.5         |
| 55         | 1714.999999               | -0.001                | 1774.999997     | -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                | 1717.500003               | 0.002                 | 1772.500002     | 0.001                 | 2.5         |
| 3.135              | 1717.500002               | 0.001                 | 1772.500002     | 0.001                 | 2.5         |
| 4.4                | 1717.500003               | 0.002                 | 1772.500003     | 0.002                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.135 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) |             |
| -30        | 1717.500002               | 0.001                 | 1772.500003     | 0.001                 | 2.5         |
| -20        | 1717.500001               | 0.001                 | 1772.500003     | 0.002                 | 2.5         |
| -10        | 1717.500001               | 0.001                 | 1772.500003     | 0.002                 | 2.5         |
| 0          | 1717.500003               | 0.001                 | 1772.500002     | 0.001                 | 2.5         |
| 10         | 1717.500004               | 0.002                 | 1772.500003     | 0.002                 | 2.5         |
| 20         | 1717.499998               | -0.001                | 1772.499998     | -0.001                | 2.5         |
| 30         | 1717.499997               | -0.002                | 1772.499997     | -0.002                | 2.5         |
| 40         | 1717.499998               | -0.001                | 1772.499998     | -0.001                | 2.5         |
| 50         | 1717.499998               | -0.001                | 1772.499997     | -0.002                | 2.5         |
| 55         | 1717.499997               | -0.002                | 1772.499996     | -0.002                | 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                | 1720.000002               | 0.001                 | 1770.000001     | 0.001                 | 2.5         |
| 3.135              | 1720.000003               | 0.002                 | 1770.000002     | 0.001                 | 2.5         |
| 4.4                | 1720.000004               | 0.002                 | 1770.000003     | 0.001                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.135 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) |             |
| -30        | 1720.000001               | 0.001                 | 1770.000002     | 0.001                 | 2.5         |
| -20        | 1720.000002               | 0.001                 | 1770.000003     | 0.002                 | 2.5         |
| -10        | 1720.000002               | 0.001                 | 1770.000003     | 0.002                 | 2.5         |
| 0          | 1720.000003               | 0.002                 | 1770.000003     | 0.002                 | 2.5         |
| 10         | 1720.000001               | 0.001                 | 1770.000003     | 0.002                 | 2.5         |
| 20         | 1719.999998               | -0.001                | 1769.999998     | -0.001                | 2.5         |
| 30         | 1719.999998               | -0.001                | 1769.999998     | -0.001                | 2.5         |
| 40         | 1719.999998               | -0.001                | 1769.999998     | -0.001                | 2.5         |
| 50         | 1719.999998               | -0.001                | 1769.999996     | -0.002                | 2.5         |
| 55         | 1719.999998               | -0.001                | 1769.999997     | -0.002                | 2.5         |

#### 4.4 Occupied Bandwidth Measurement

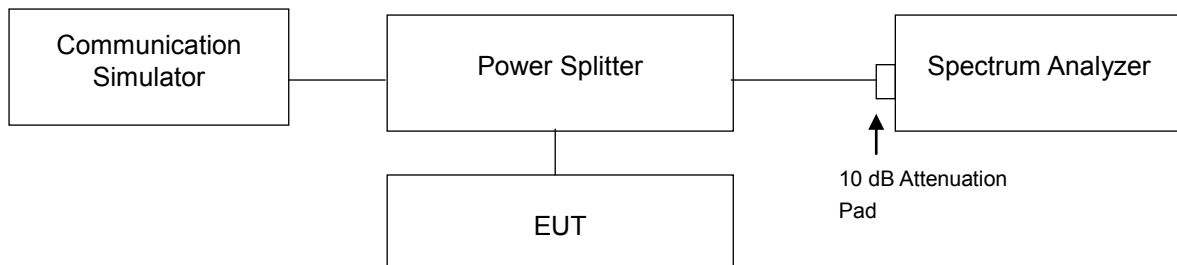
##### 4.4.1 Limits of Occupied Bandwidth Measurement

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.

##### 4.4.2 Test Procedure

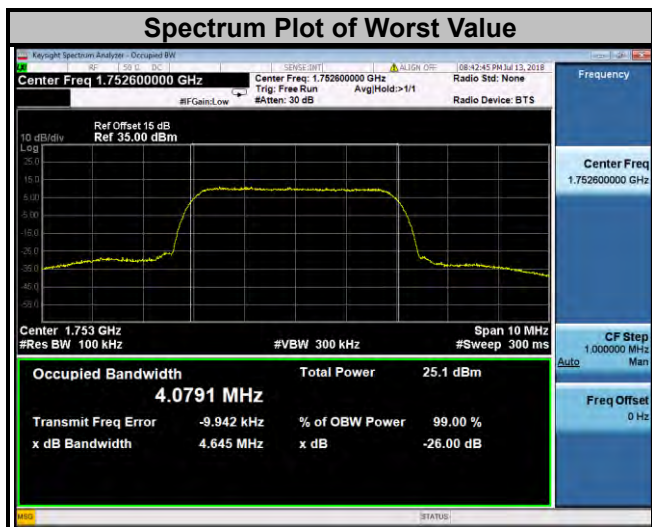
- The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

##### 4.4.3 Test Setup

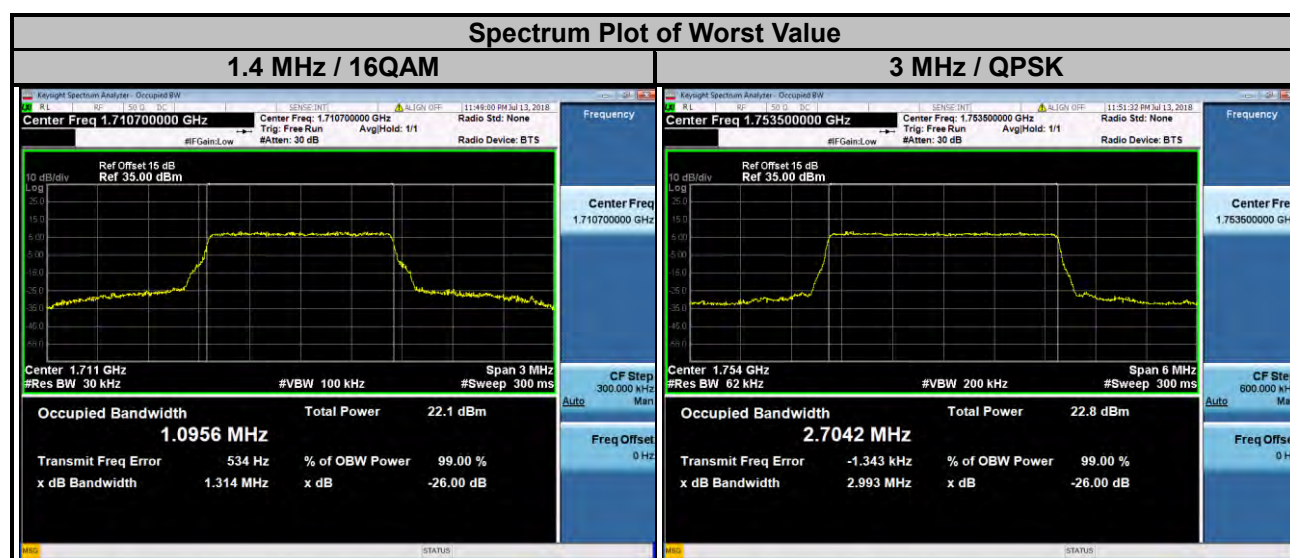


#### 4.4.4 Test Result

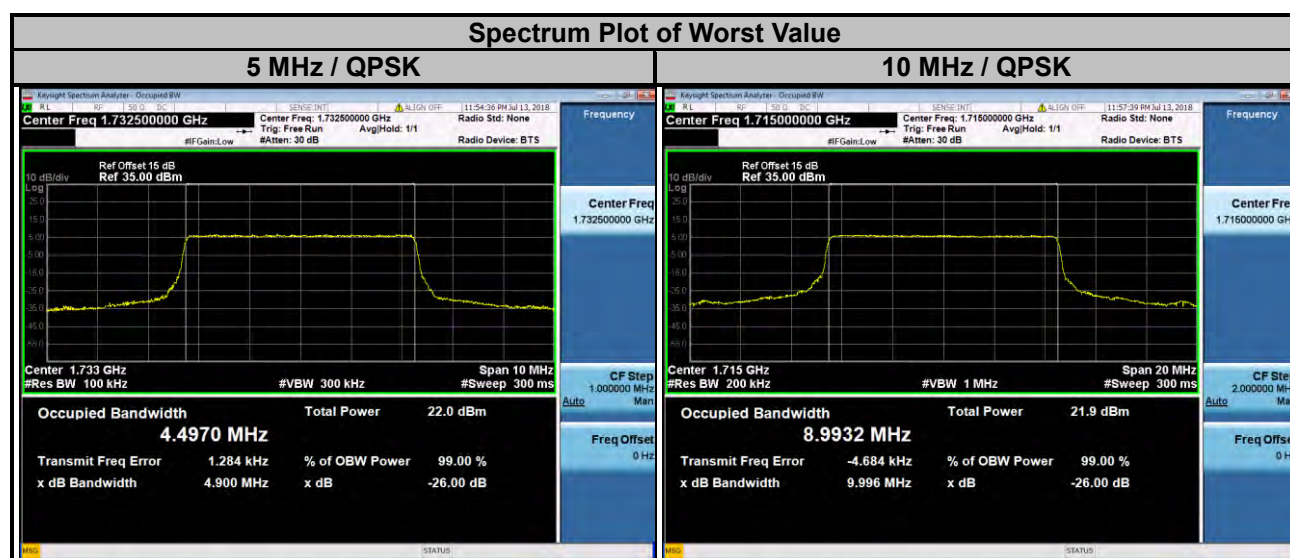
| WCDMA   |                 |                               |
|---------|-----------------|-------------------------------|
| Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |
| 1312    | 1712.4          | 4.0731                        |
| 1413    | 1732.6          | 4.0779                        |
| 1513    | 1752.6          | 4.0791                        |



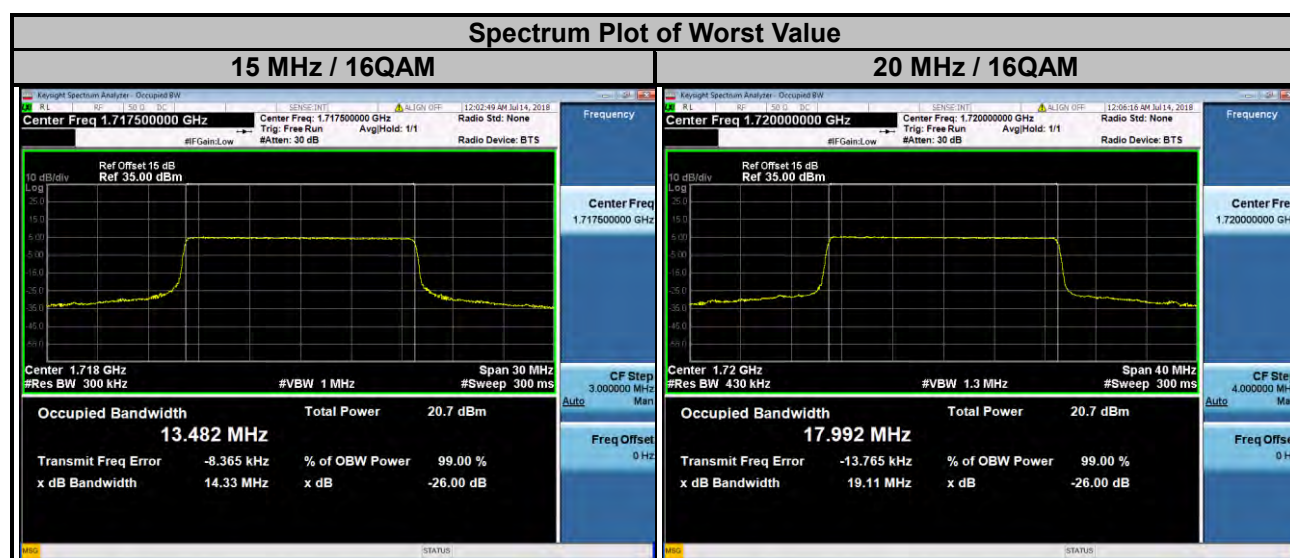
| LTE Band 4                 |                 |                               |       |                          |                 |                               |       |
|----------------------------|-----------------|-------------------------------|-------|--------------------------|-----------------|-------------------------------|-------|
| 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          | 1.09                          | 1.10  | 19965                    | 1711.5          | 2.70                          | 2.70  |
| 20175                      | 1732.5          | 1.09                          | 1.09  | 20175                    | 1732.5          | 2.70                          | 2.70  |
| 20393                      | 1754.3          | 1.09                          | 1.09  | 20385                    | 1753.5          | 2.70                          | 2.70  |



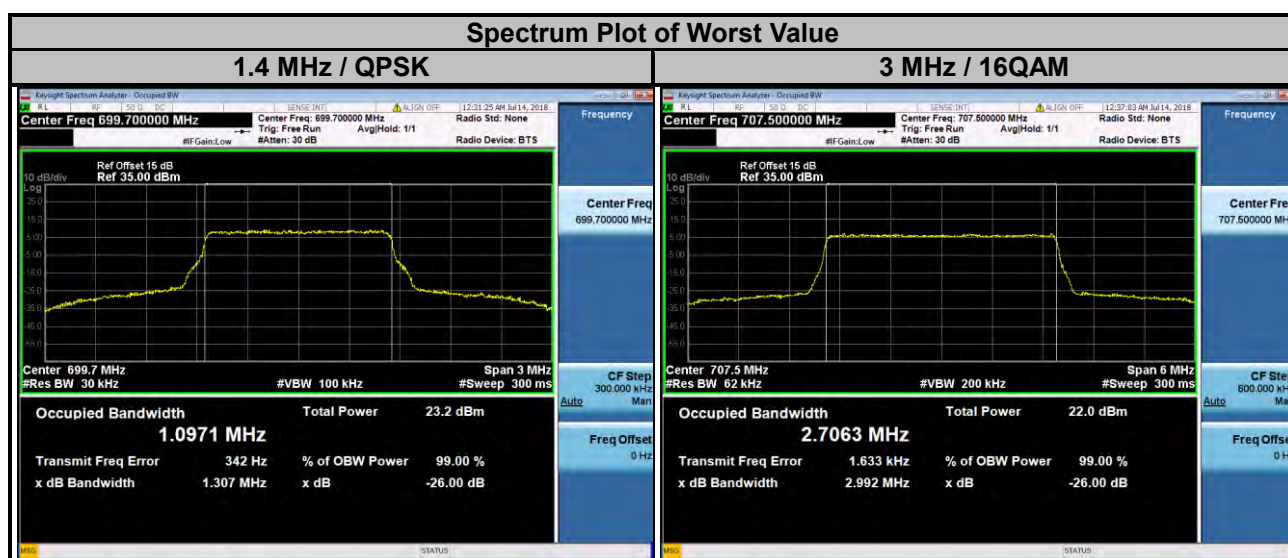
| LTE Band 4               |                 |                               |       |                           |                 |                               |       |
|--------------------------|-----------------|-------------------------------|-------|---------------------------|-----------------|-------------------------------|-------|
| 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          | 4.49                          | 4.50  | 20000                     | 1715.0          | 8.99                          | 8.99  |
| 20175                    | 1732.5          | 4.50                          | 4.50  | 20175                     | 1732.5          | 8.99                          | 8.98  |
| 20375                    | 1752.5          | 4.50                          | 4.50  | 20350                     | 1750.0          | 8.98                          | 8.98  |



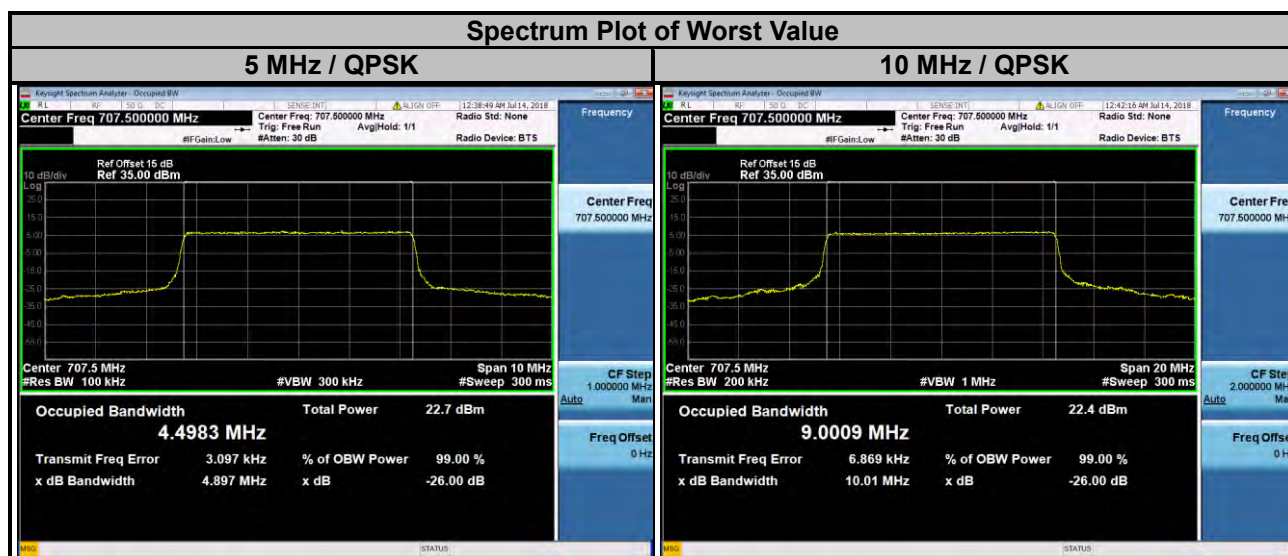
| LTE Band 4                |                 |                               |       |                           |                 |                               |       |
|---------------------------|-----------------|-------------------------------|-------|---------------------------|-----------------|-------------------------------|-------|
| 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          | 17.98                         | 17.99 |
| 20175                     | 1732.5          | 13.47                         | 13.48 | 20175                     | 1732.5          | 17.98                         | 17.98 |
| 20325                     | 1747.5          | 13.47                         | 13.48 | 20300                     | 1745.0          | 17.97                         | 17.98 |



| 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           | 1.10                          | 1.09  | 23025                    | 700.5           | 2.70                          | 2.71  |
| 23095                      | 707.5           | 1.09                          | 1.09  | 23095                    | 707.5           | 2.70                          | 2.71  |
| 23173                      | 715.3           | 1.10                          | 1.10  | 23165                    | 714.5           | 2.70                          | 2.70  |



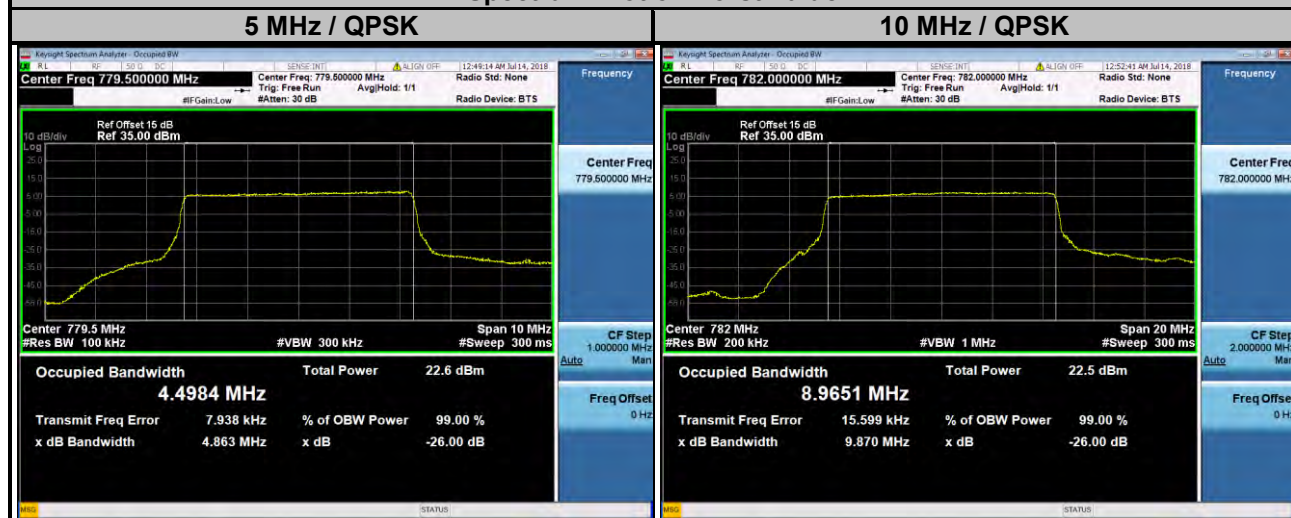
| LTE Band 12              |                 |                               |       |                           |                 |                               |       |
|--------------------------|-----------------|-------------------------------|-------|---------------------------|-----------------|-------------------------------|-------|
| 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           | 4.50                          | 4.49  | 23060                     | 704.0           | 8.99                          | 8.99  |
| 23095                    | 707.5           | 4.50                          | 4.50  | 23095                     | 707.5           | 9.00                          | 9.00  |
| 23155                    | 713.5           | 4.49                          | 4.49  | 23130                     | 711.0           | 8.98                          | 8.97  |



### 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           | 4.50                          | 4.50  | 23230                     | 782.0           | 8.97                          | 8.96  |
| 23230                    | 782.0           | 4.49                          | 4.49  |                           |                 |                               |       |
| 23255                    | 784.5           | 4.49                          | 4.49  |                           |                 |                               |       |

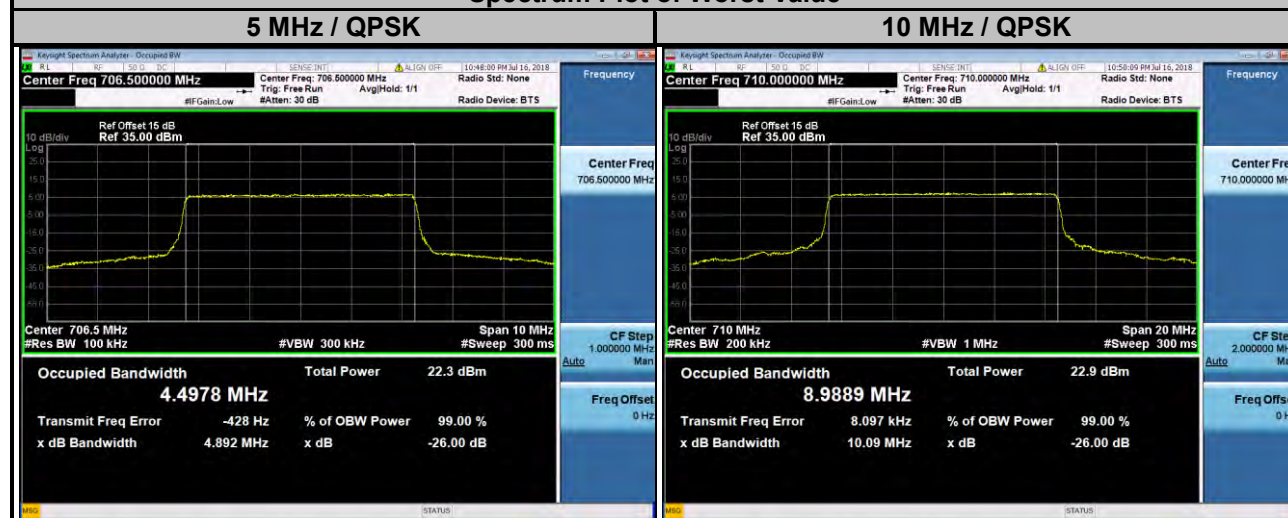
### Spectrum Plot of Worst Value



## 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                          | 4.50  | 23780                     | 709.0           | 8.98                          | 8.99  |
| 23790                    | 710.0           | 4.50                          | 4.50  | 23790                     | 710.0           | 8.99                          | 8.98  |
| 23825                    | 713.5           | 4.49                          | 4.49  | 23800                     | 711.0           | 8.99                          | 8.97  |

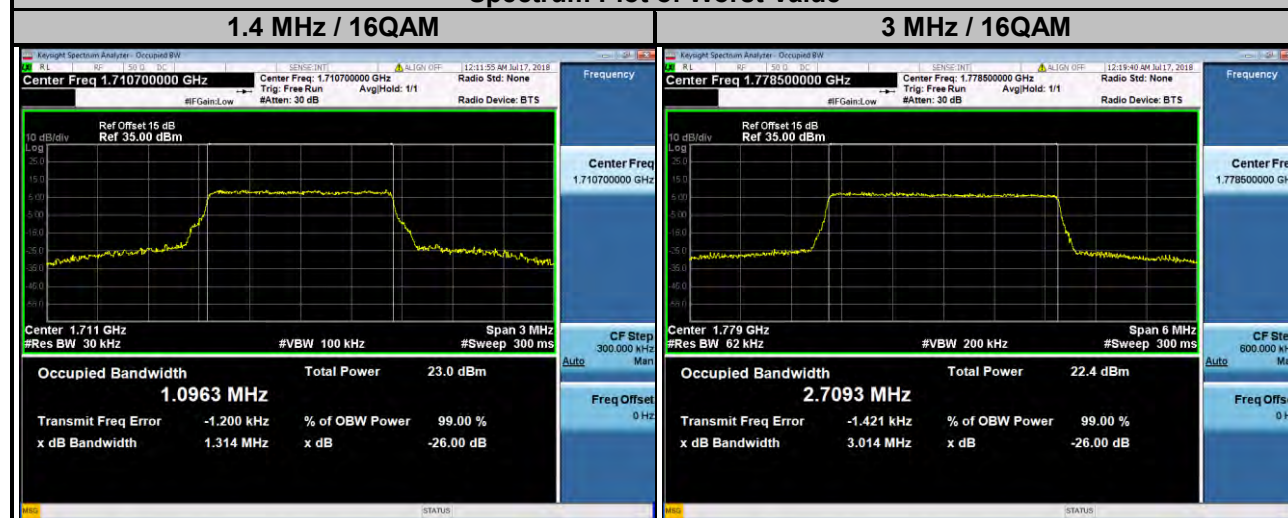
## Spectrum Plot of Worst Value



## 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 |
| 131979                     | 1710.7          | 1.09                          | 1.10  | 131987                   | 1711.5          | 2.70                          | 2.70  |
| 132322                     | 1745.0          | 1.09                          | 1.09  | 132322                   | 1745.0          | 2.70                          | 2.70  |
| 132665                     | 1779.3          | 1.09                          | 1.09  | 132657                   | 1778.5          | 2.70                          | 2.71  |

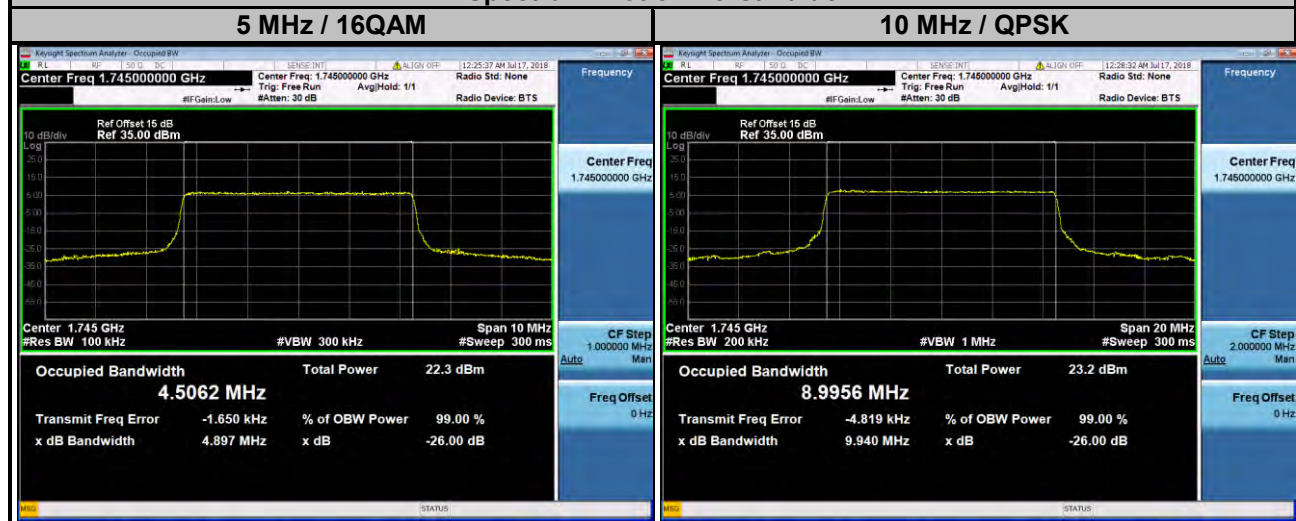
## Spectrum Plot of Worst Value



### 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 |
| 131997                   | 1712.5          | 4.50                          | 4.49  | 132022                    | 1715.0          | 8.99                          | 9.00  |
| 132322                   | 1745.0          | 4.50                          | 4.51  | 132322                    | 1745.0          | 9.00                          | 9.00  |
| 132647                   | 1777.5          | 4.50                          | 4.50  | 132622                    | 1775.0          | 8.97                          | 8.98  |

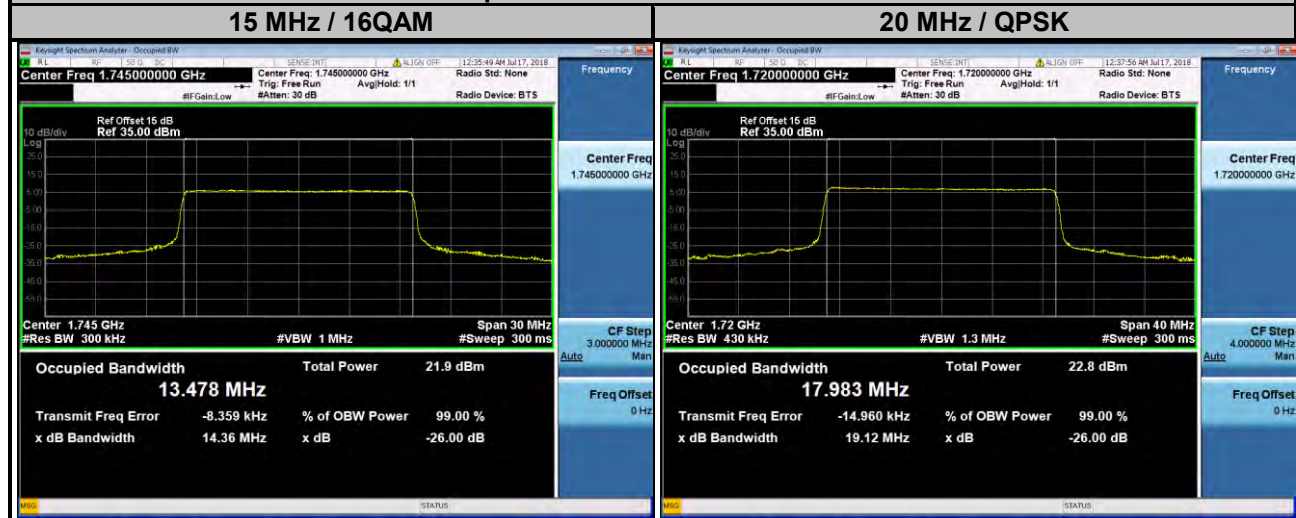
### Spectrum Plot of Worst Value



### 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 |
| 132047                    | 1717.5          | 13.47                         | 13.47 | 132072                    | 1720.0          | 17.98                         | 17.98 |
| 132322                    | 1745.0          | 13.47                         | 13.48 | 132322                    | 1745.0          | 17.96                         | 17.96 |
| 132597                    | 1772.5          | 13.45                         | 13.44 | 132572                    | 1770.0          | 17.94                         | 17.94 |

### Spectrum Plot of Worst Value



## 4.5 Band Edge Measurement

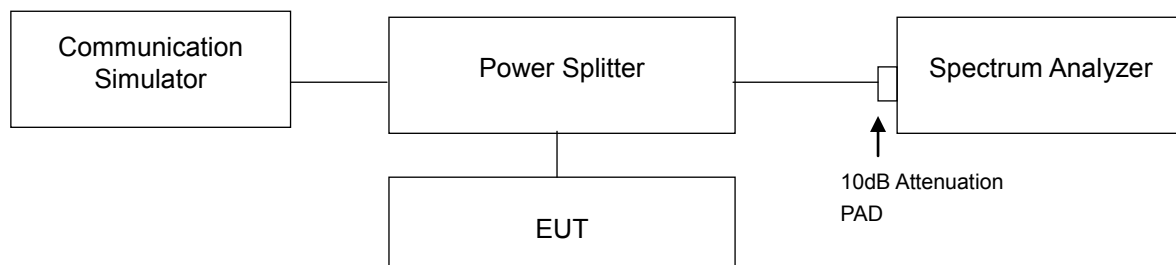
### 4.5.1 Limits of Band Edge Measurement

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  $43 + 10 \log (P)$  dB.

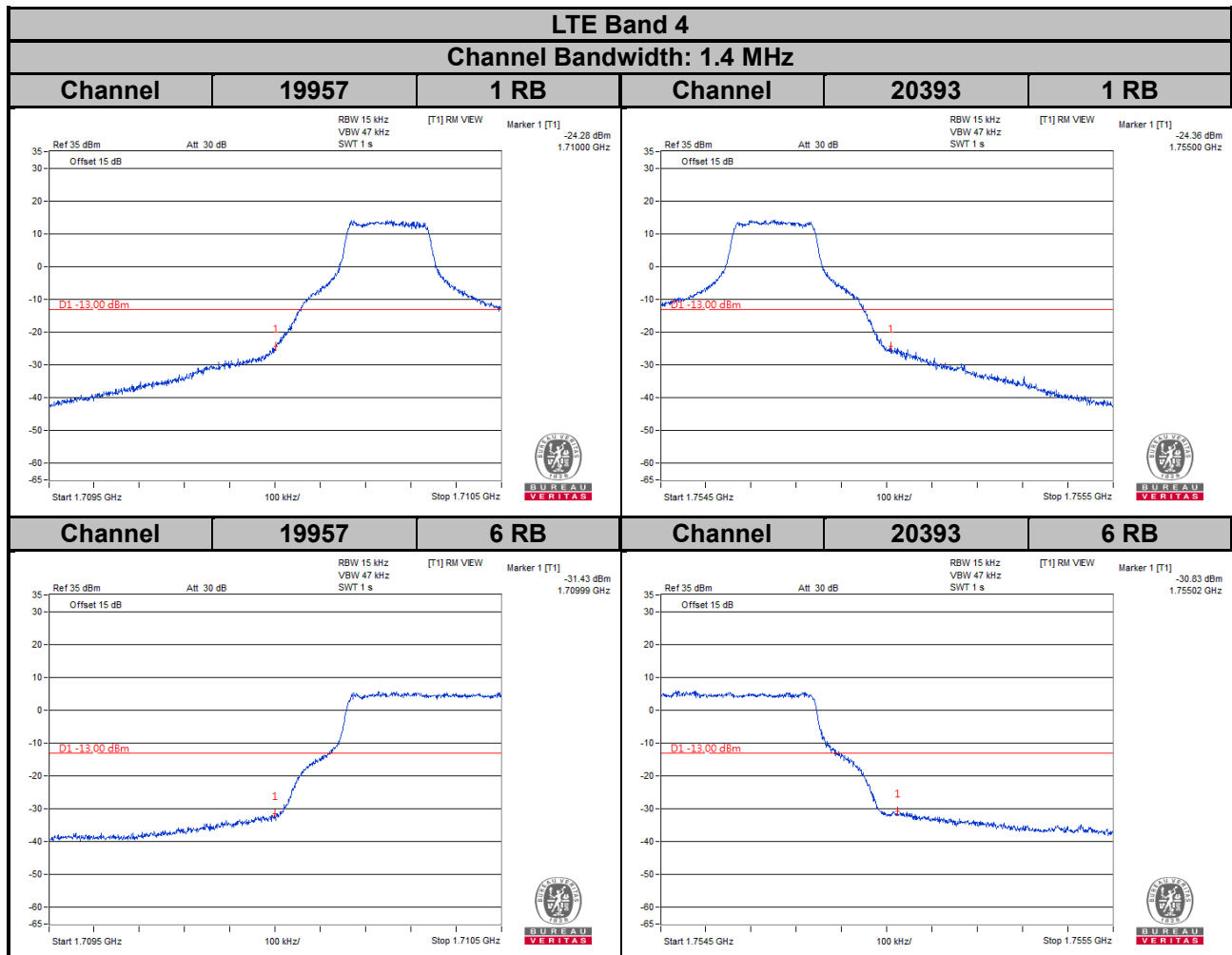
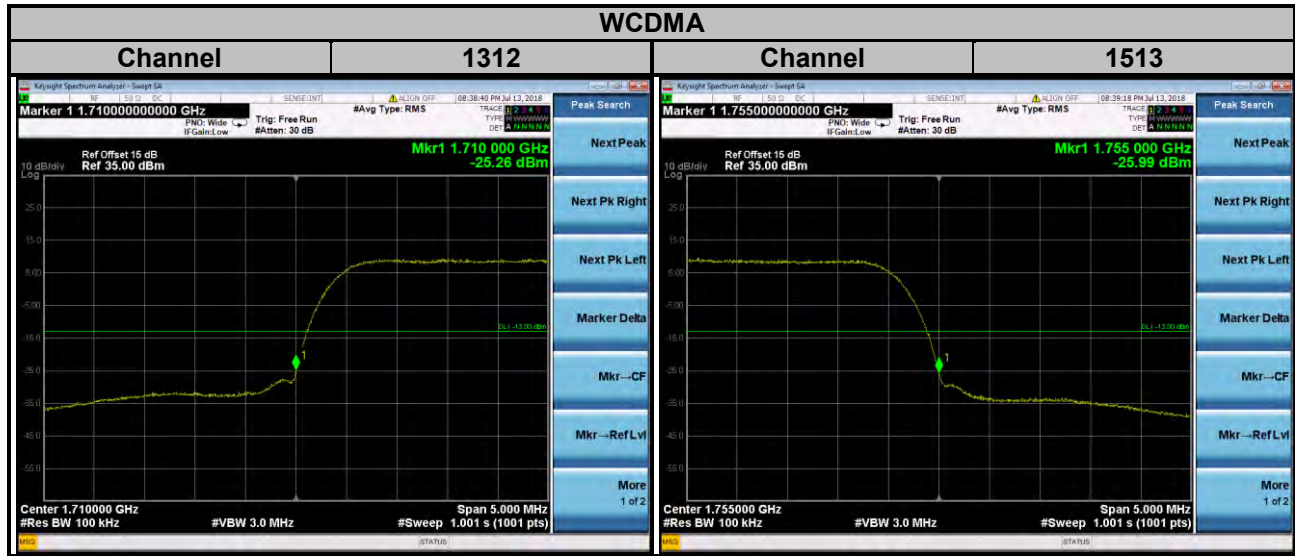
### 4.5.2 Test Setup

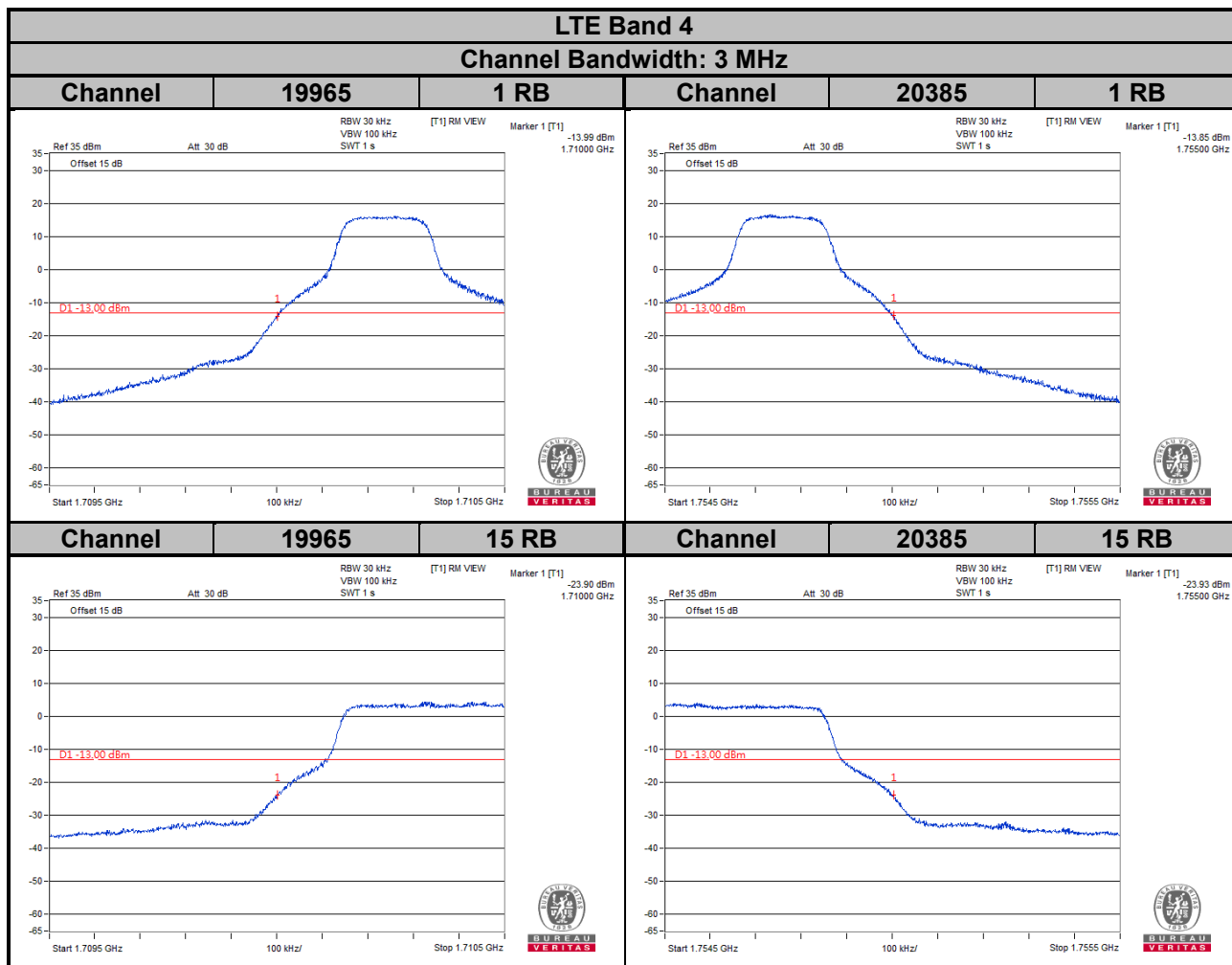


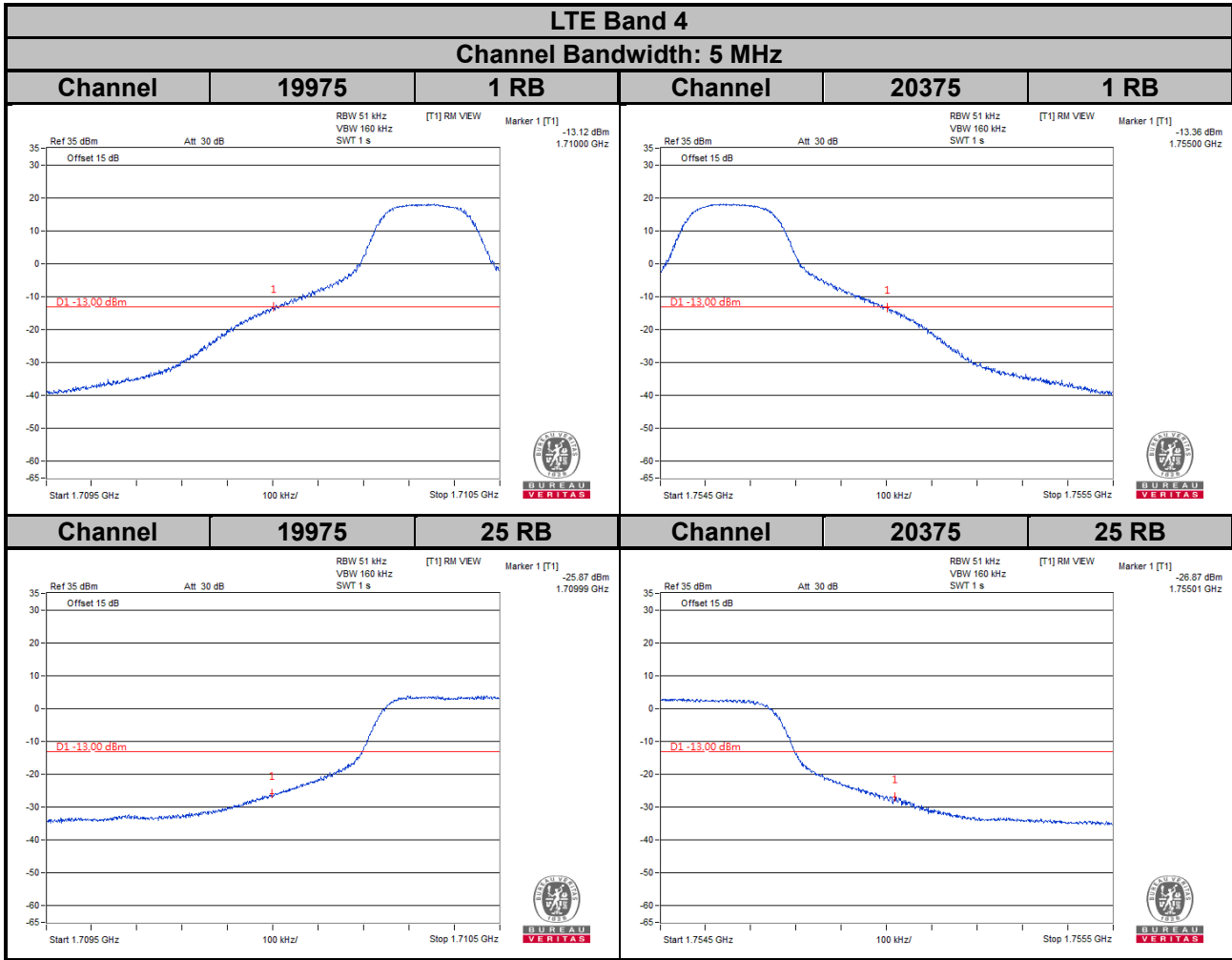
### 4.5.3 Test Procedures

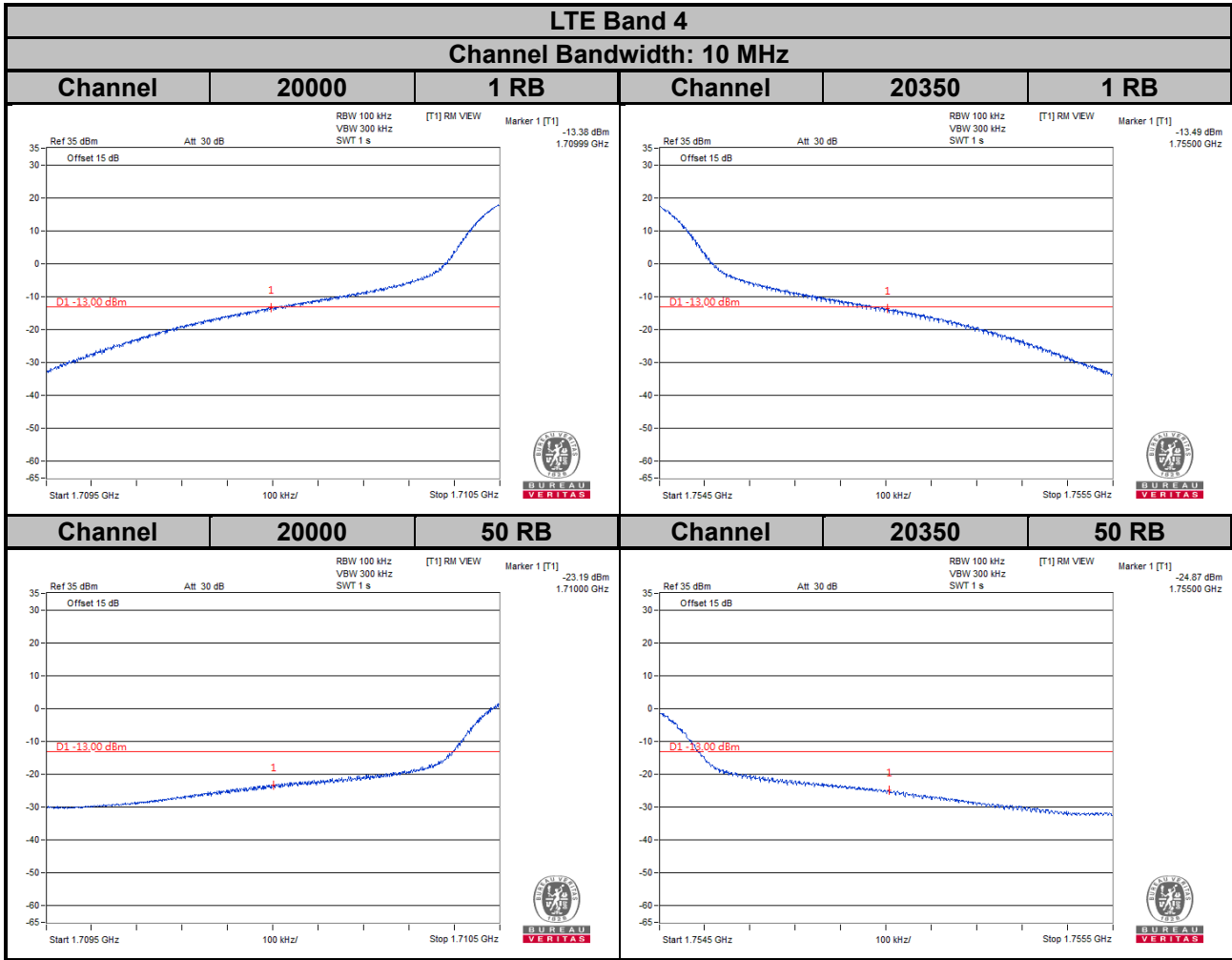
- All measurements were done at low and high operational frequency range.
- The center frequency of spectrum is the band edge frequency and span is 5 MHz. RB of the spectrum is 100 kHz and VB of the spectrum is 300 kHz (WCDMA).
- The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 30 kHz and VB of the spectrum is 100 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 62 kHz and VB of the spectrum is 200 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).
- The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 200 kHz and VB of the spectrum is 1 MHz (LTE Bandwidth 10 MHz).
- The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 300 kHz and VB of the spectrum is 1 MHz (LTE Bandwidth 15 MHz).
- The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 300 kHz and VB of the spectrum is 1 MHz (LTE Bandwidth 20 MHz).
- Record the max. trace plot into the test report.

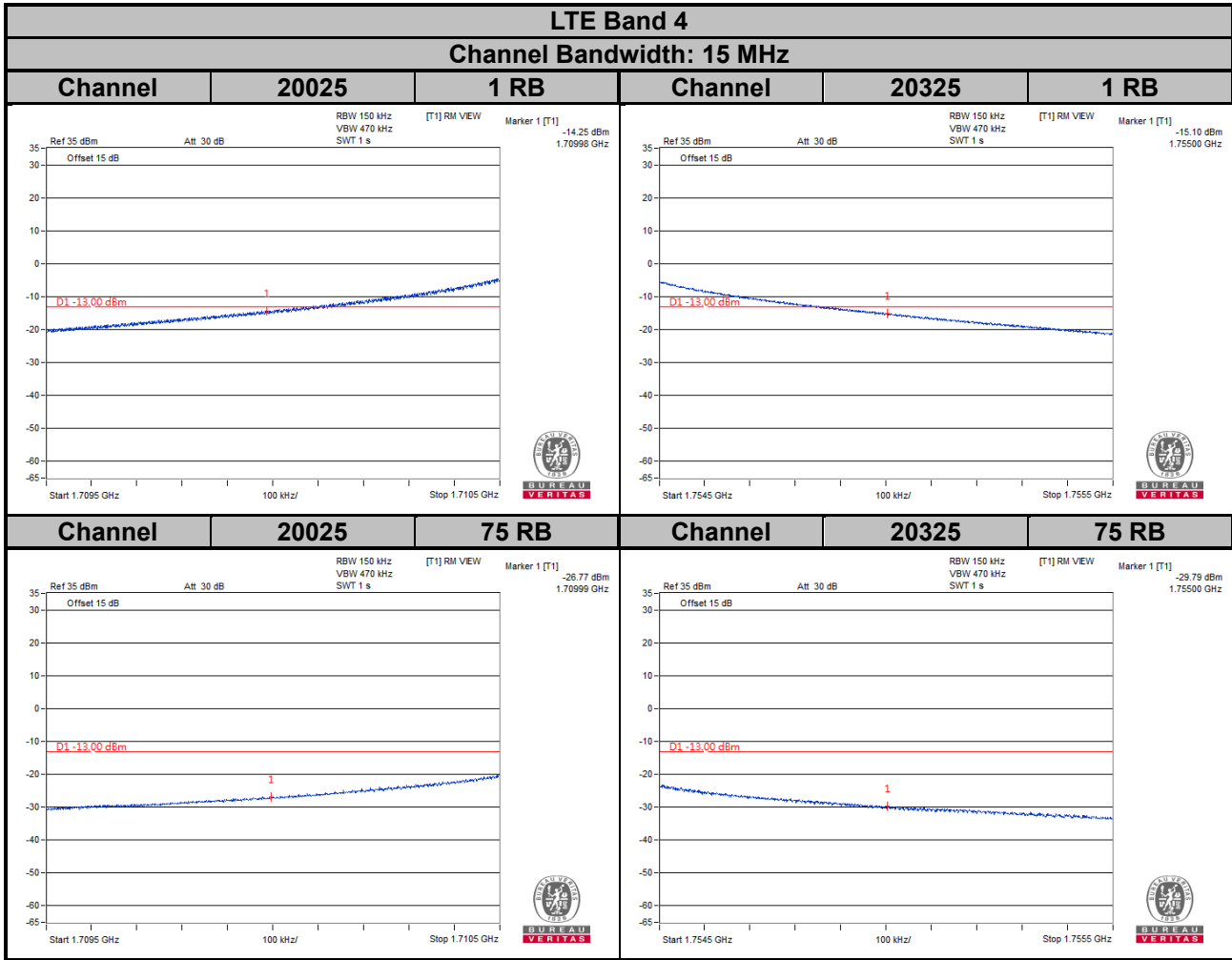
#### 4.5.4 Test Results





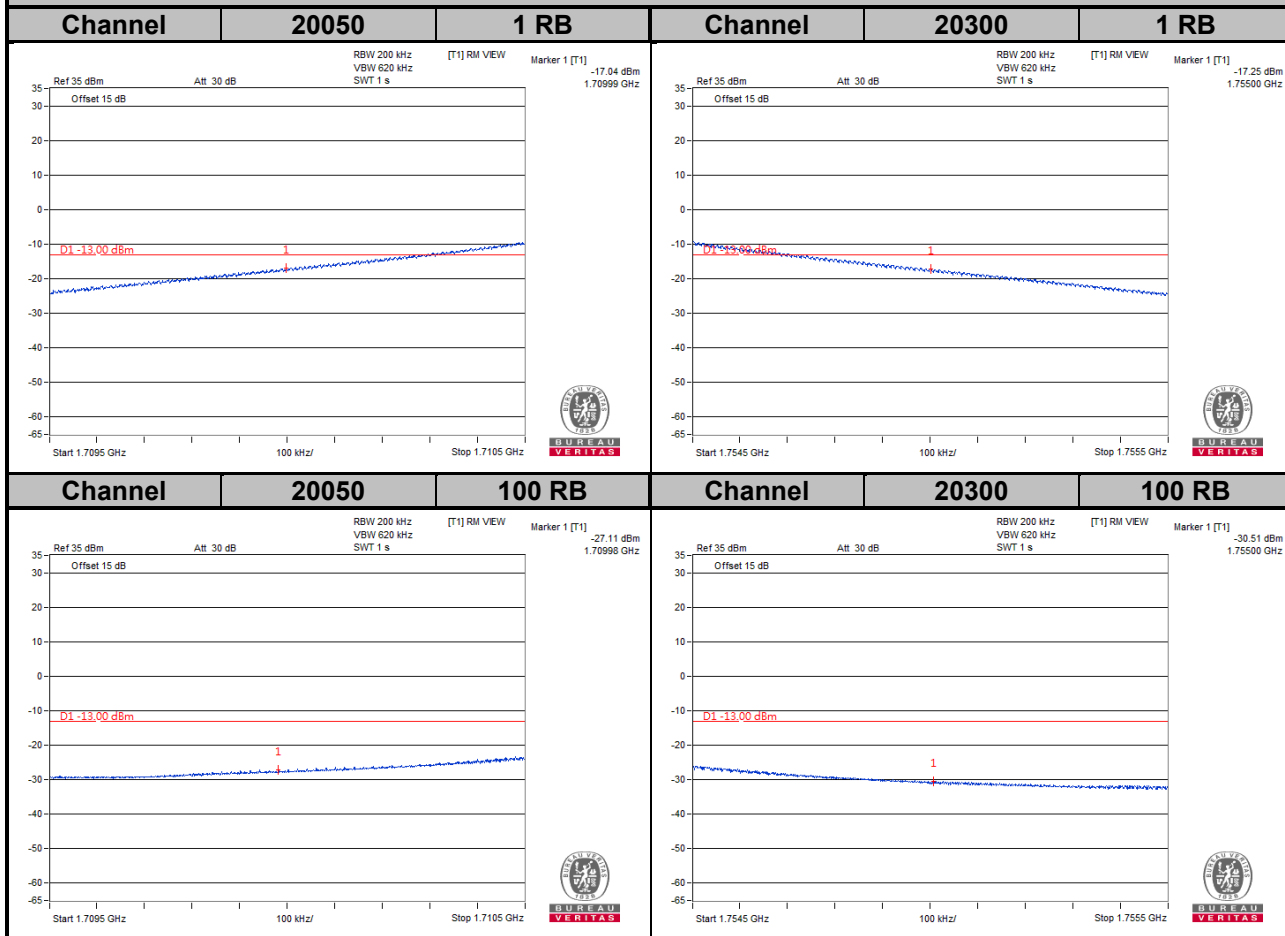


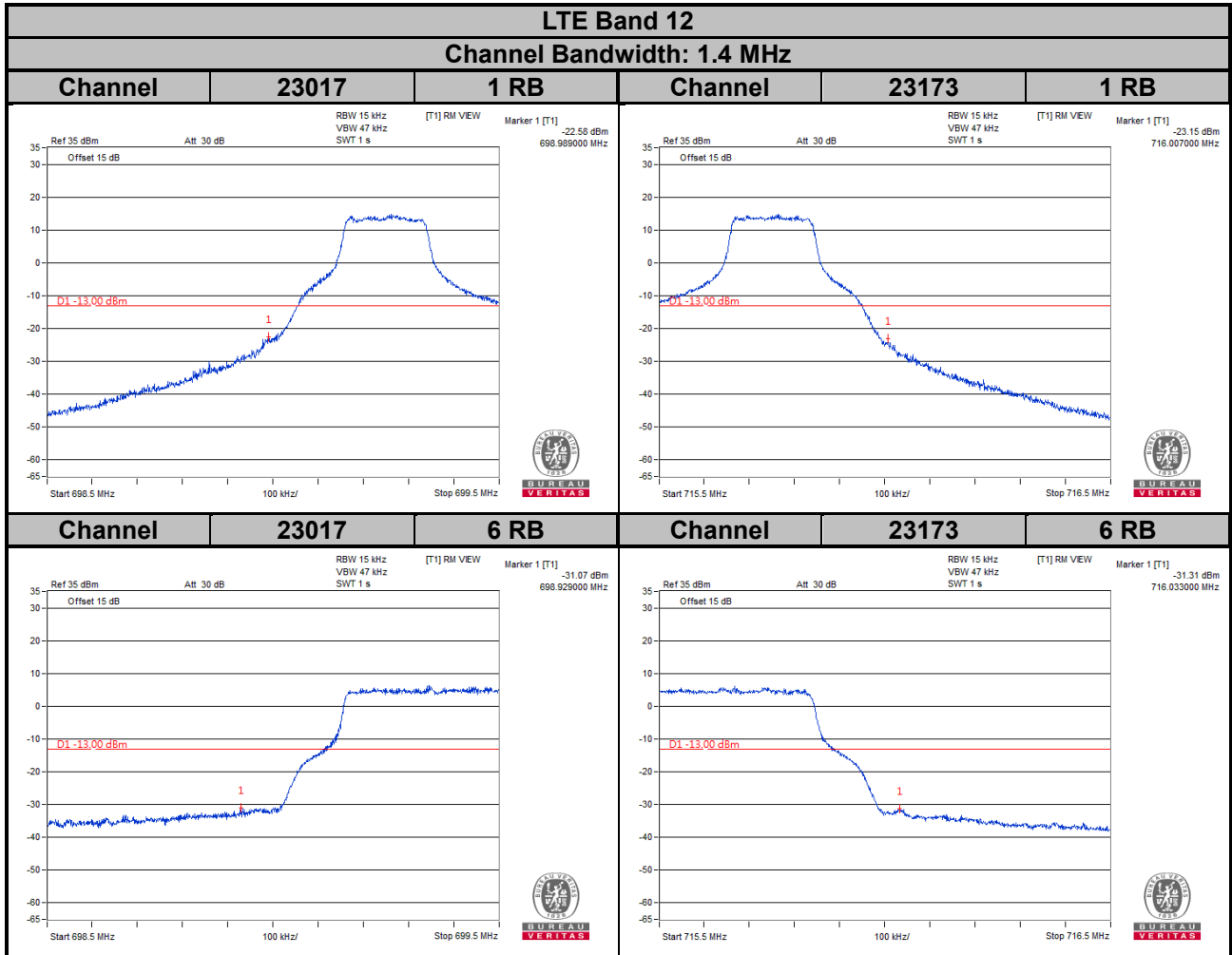


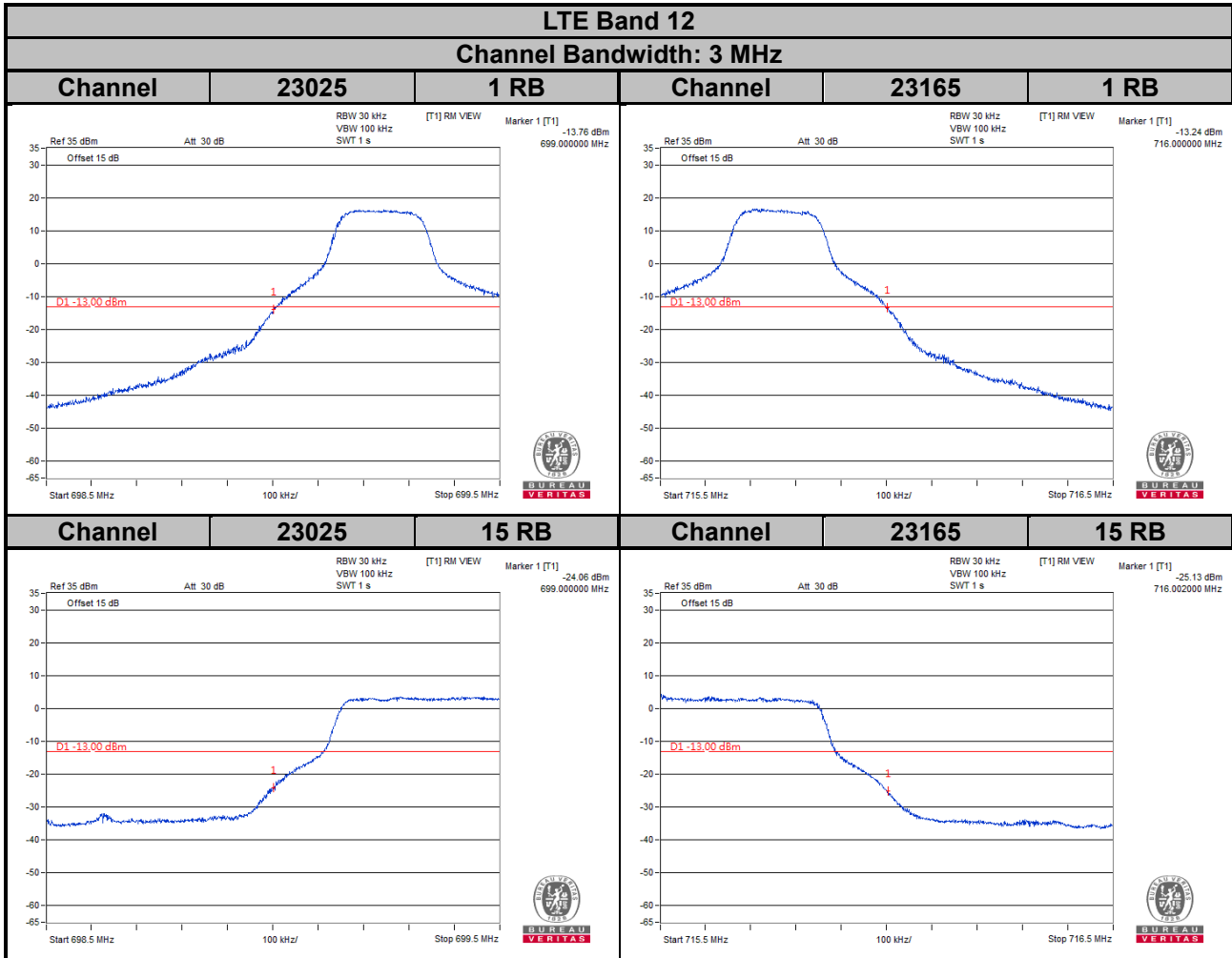


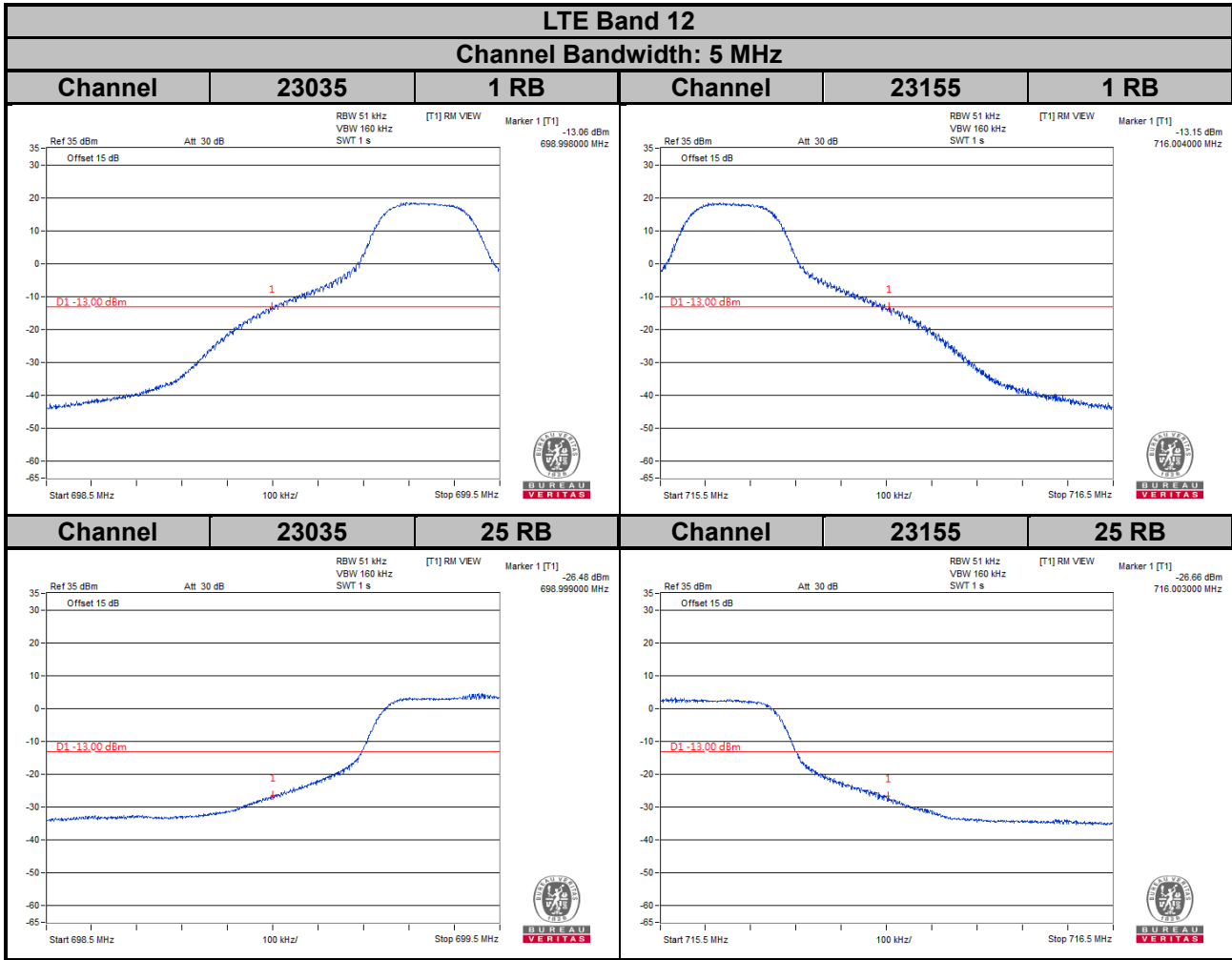
# LTE Band 4

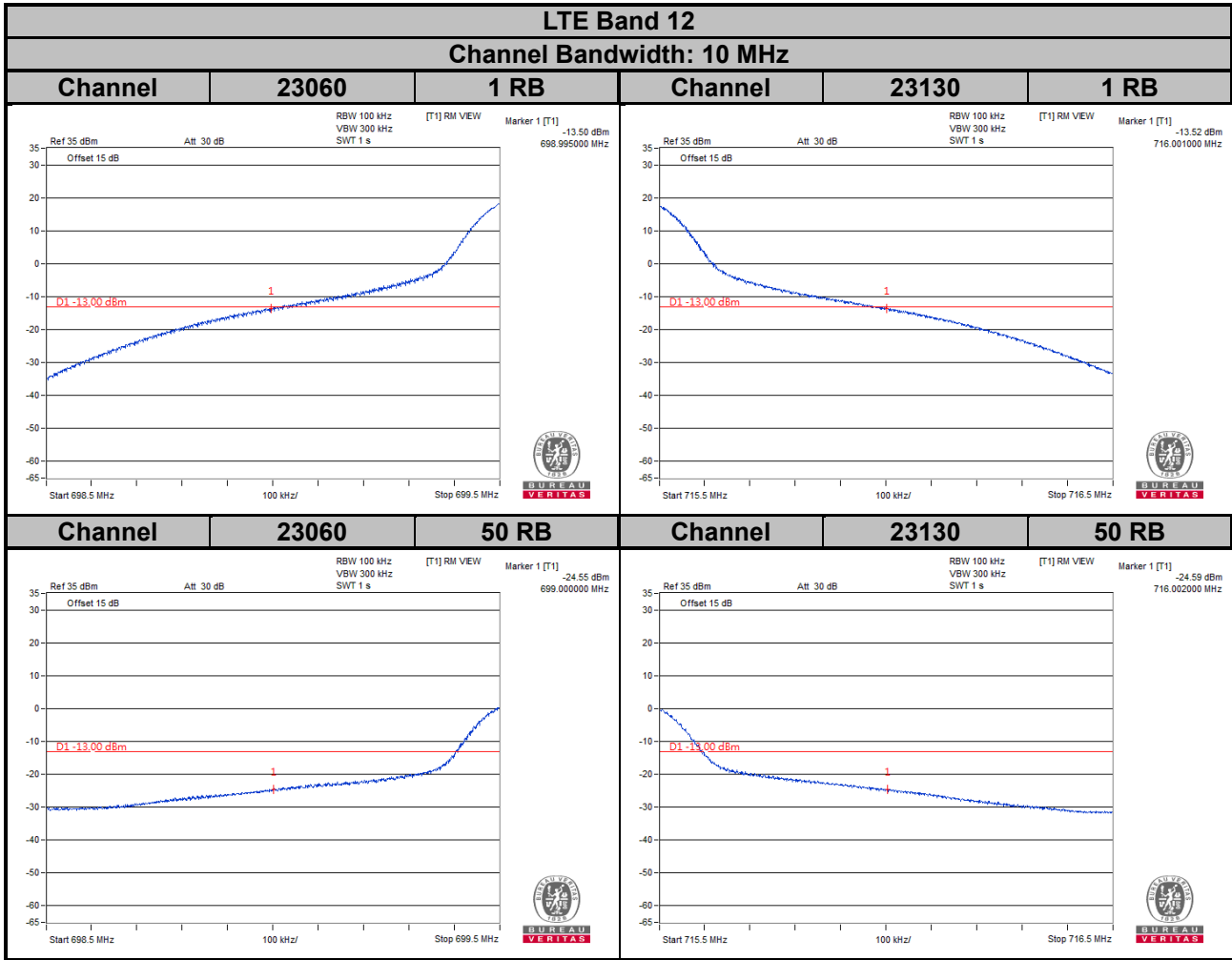
Channel Bandwidth: 20 MHz

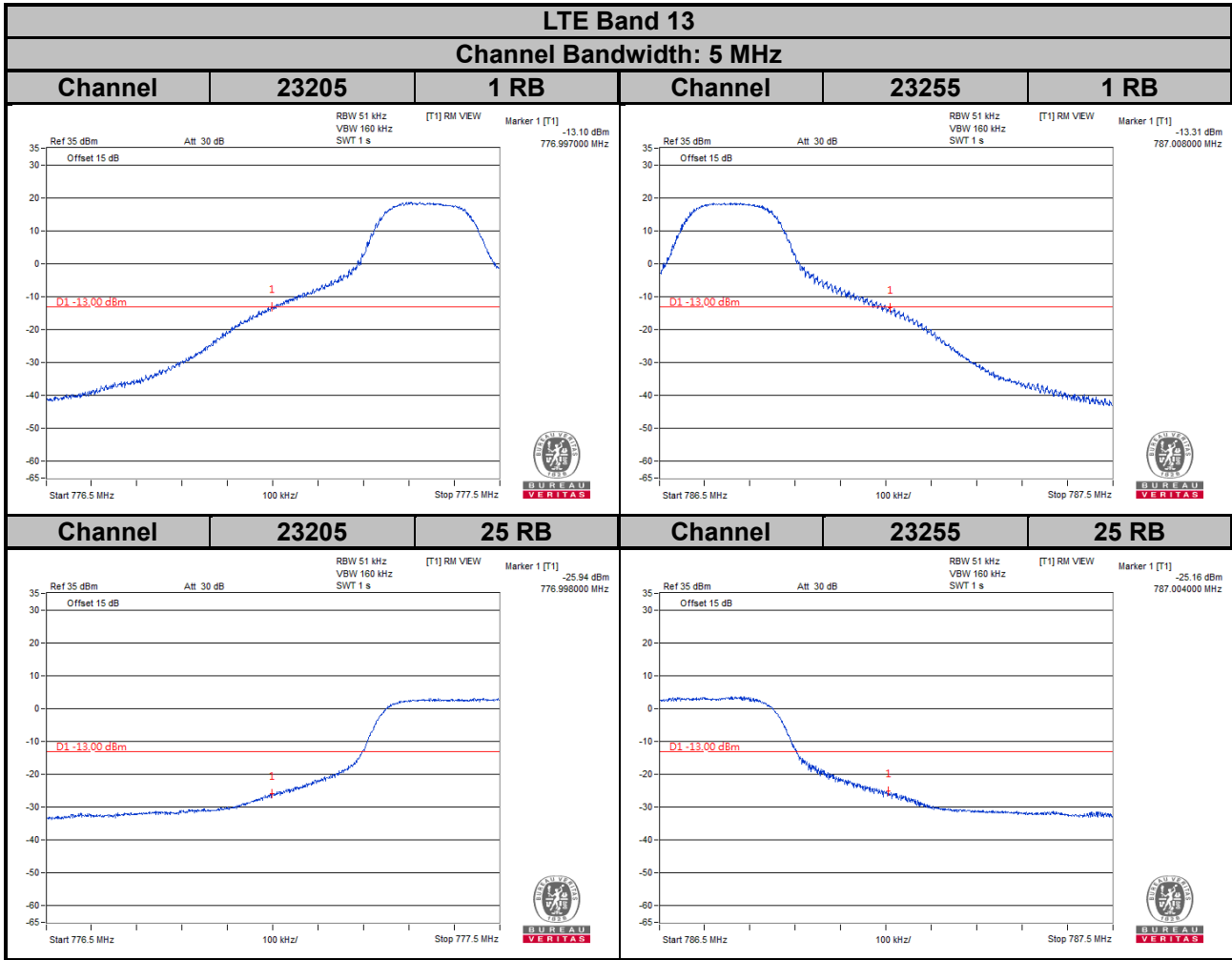


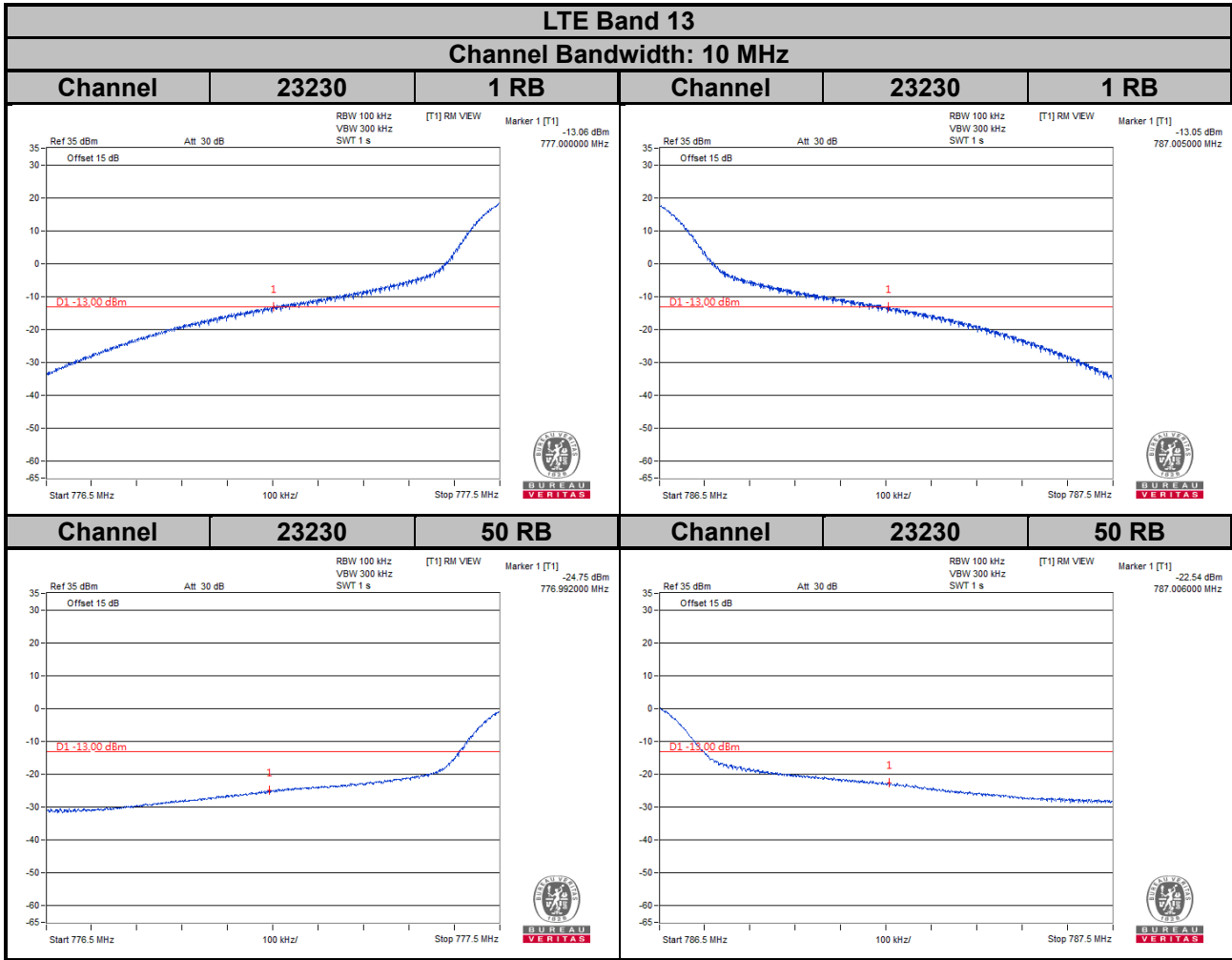


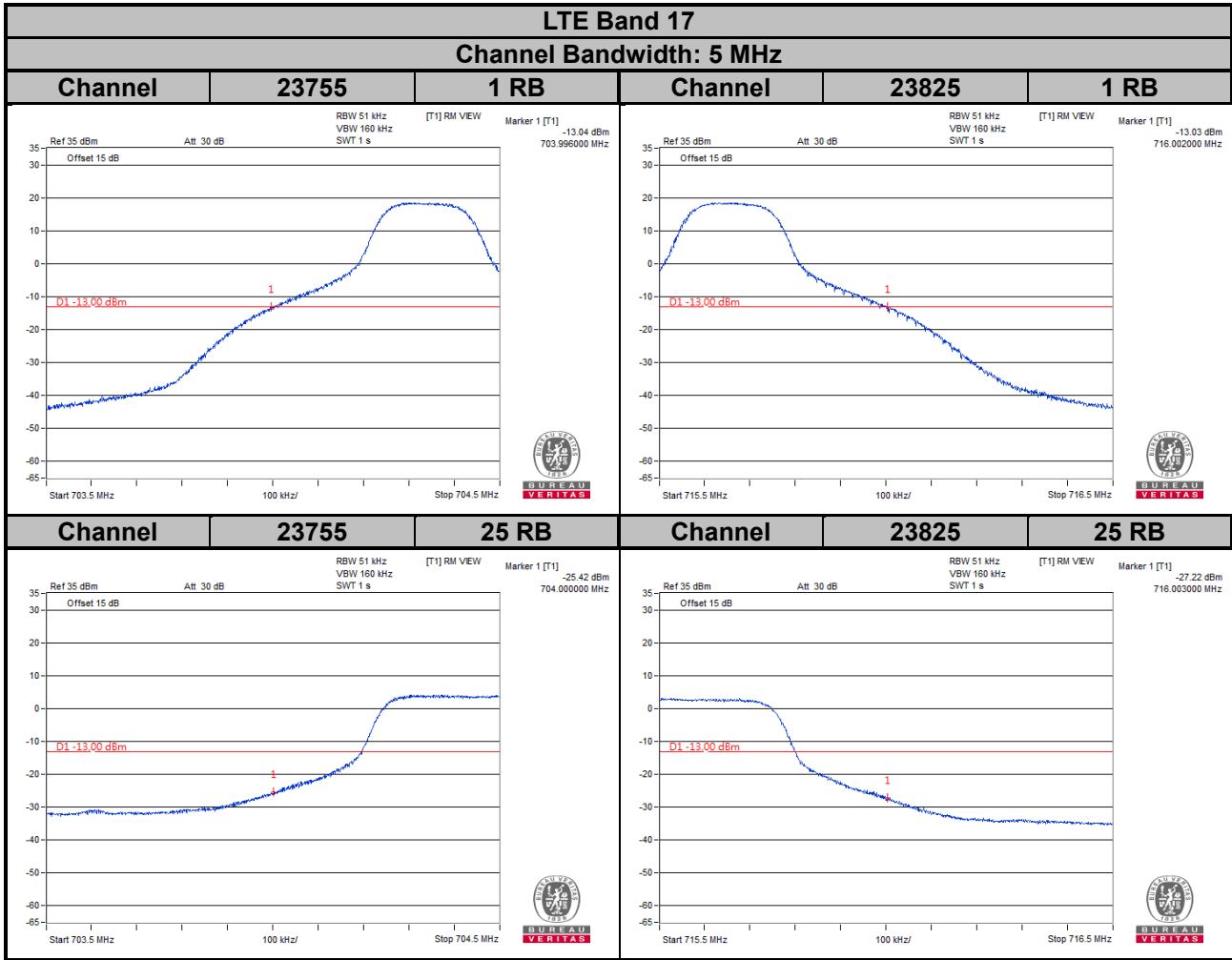


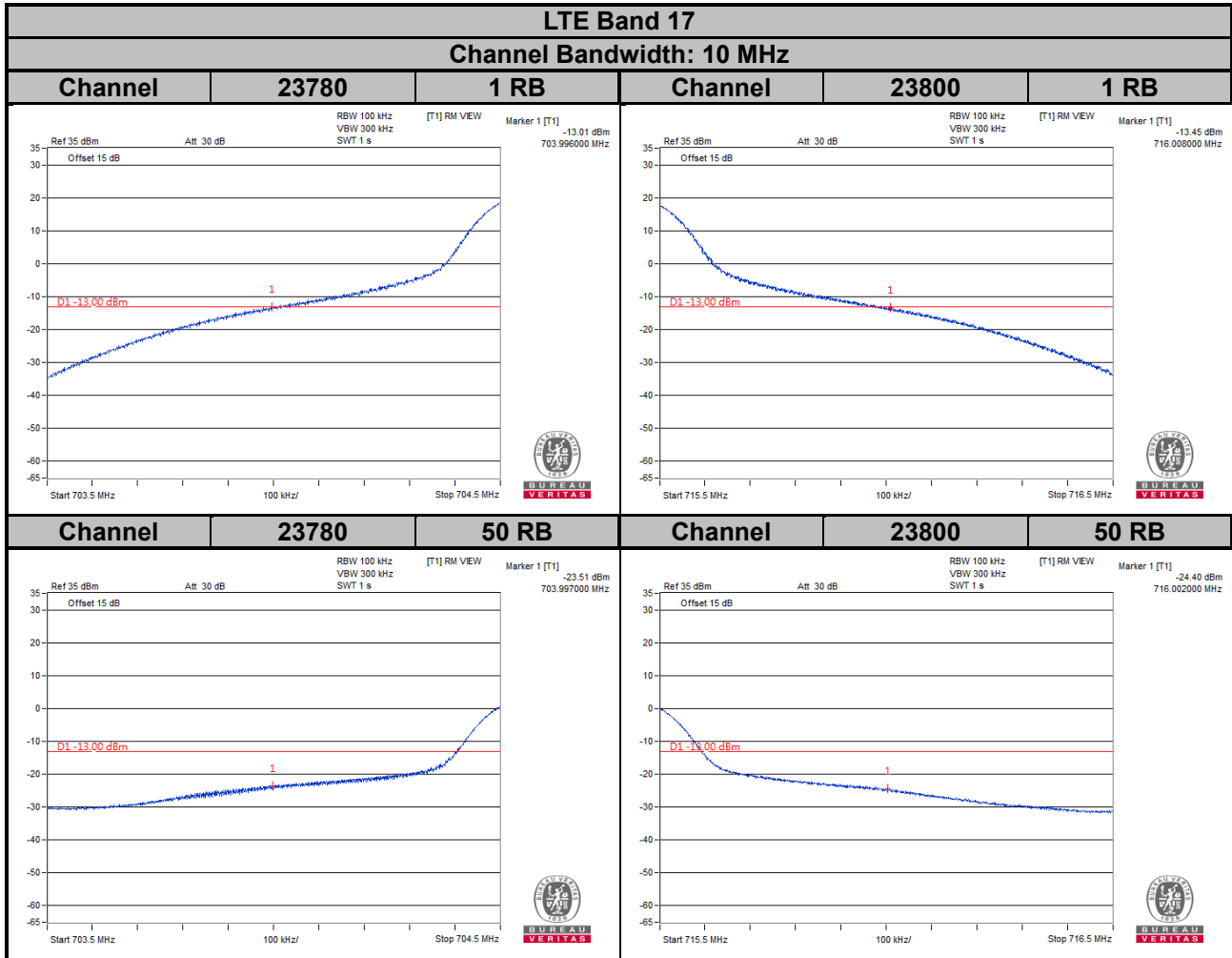


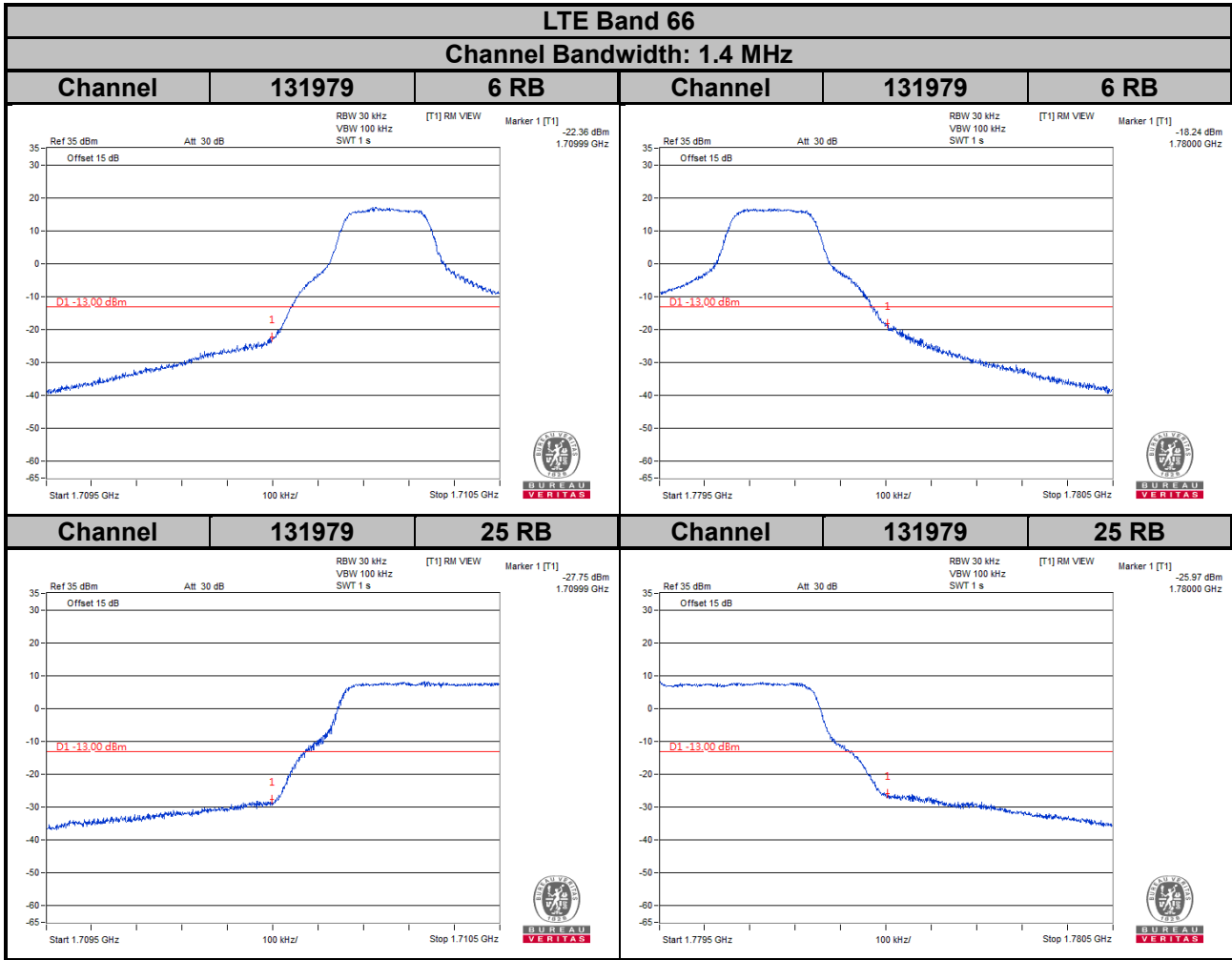






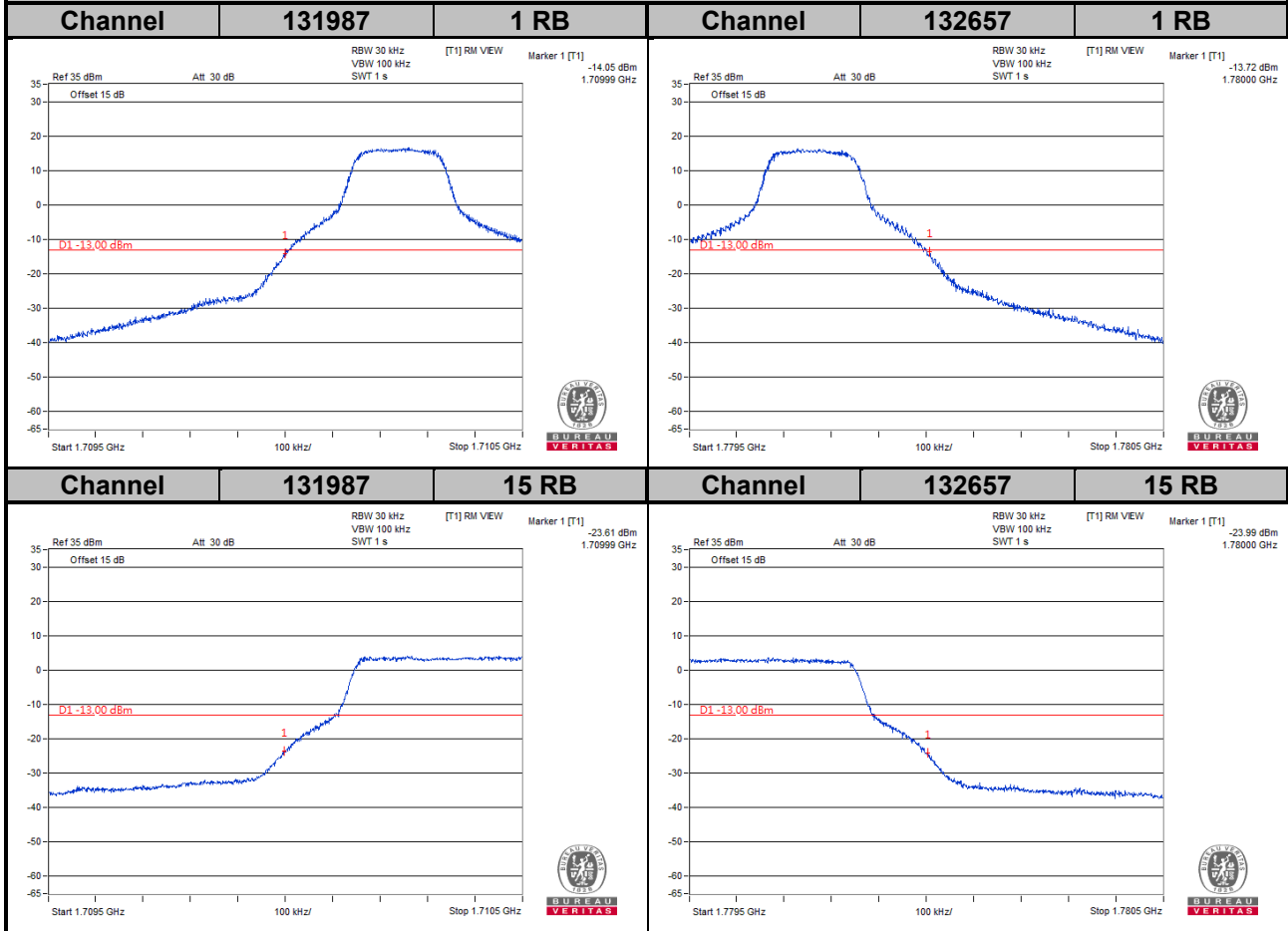


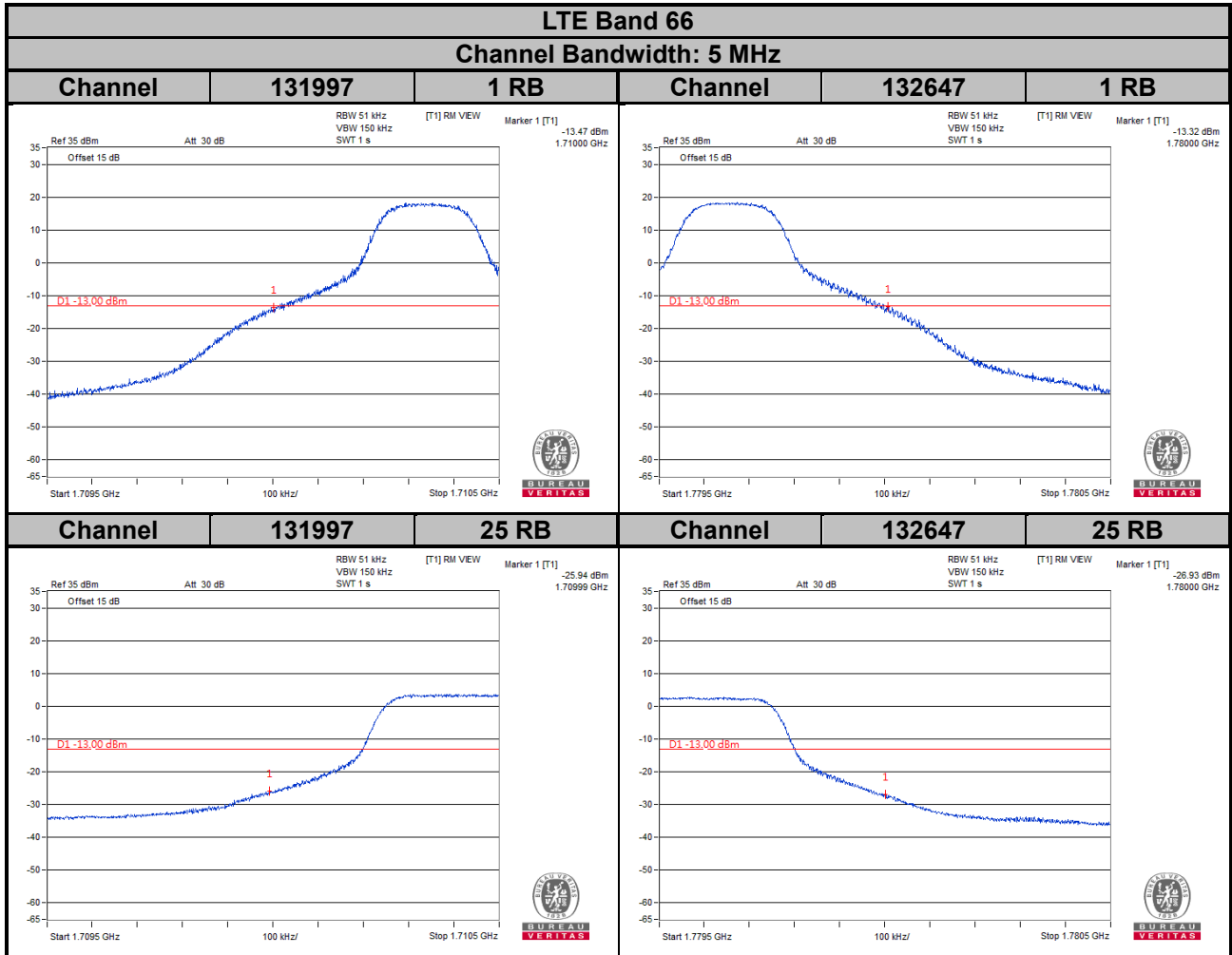


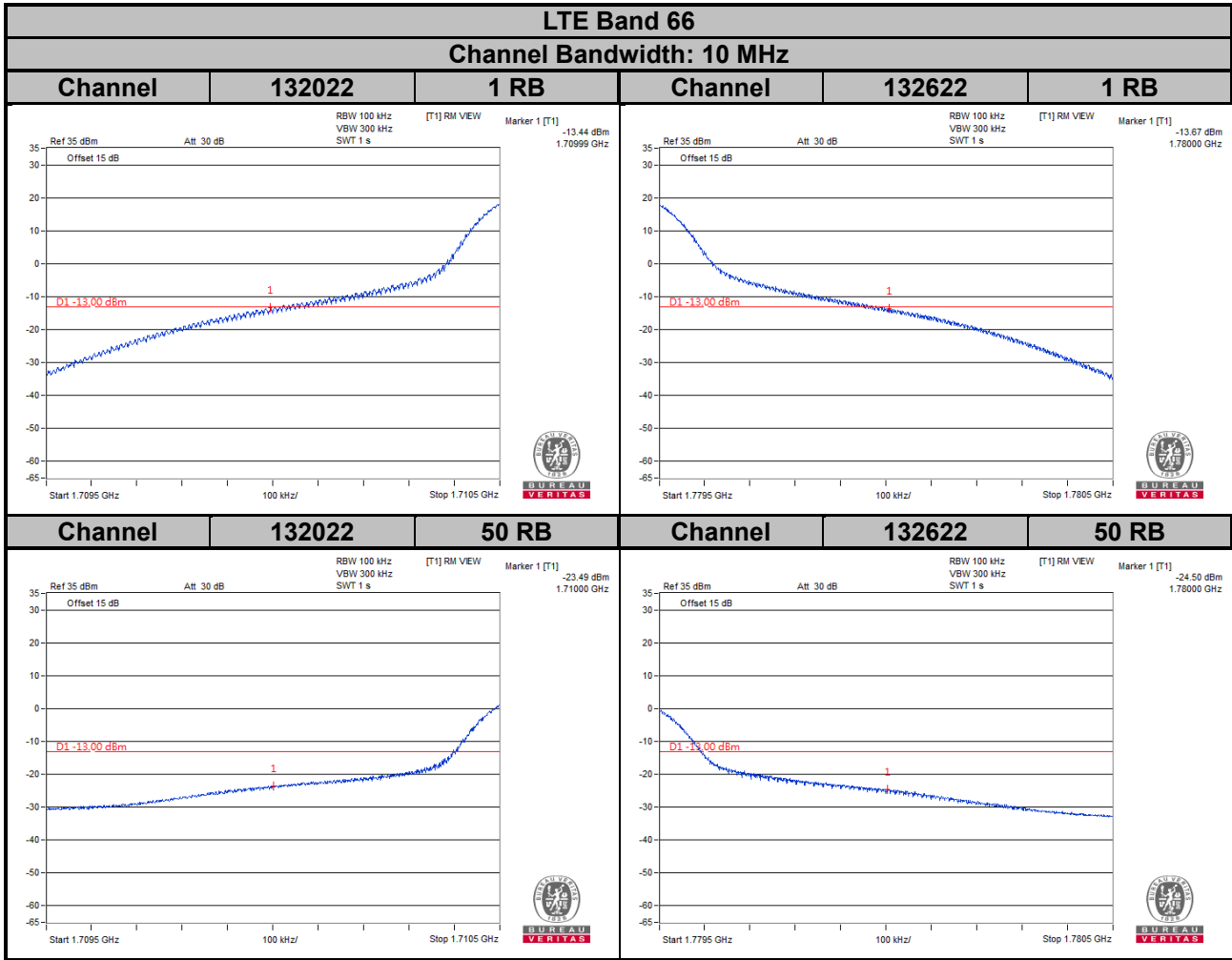


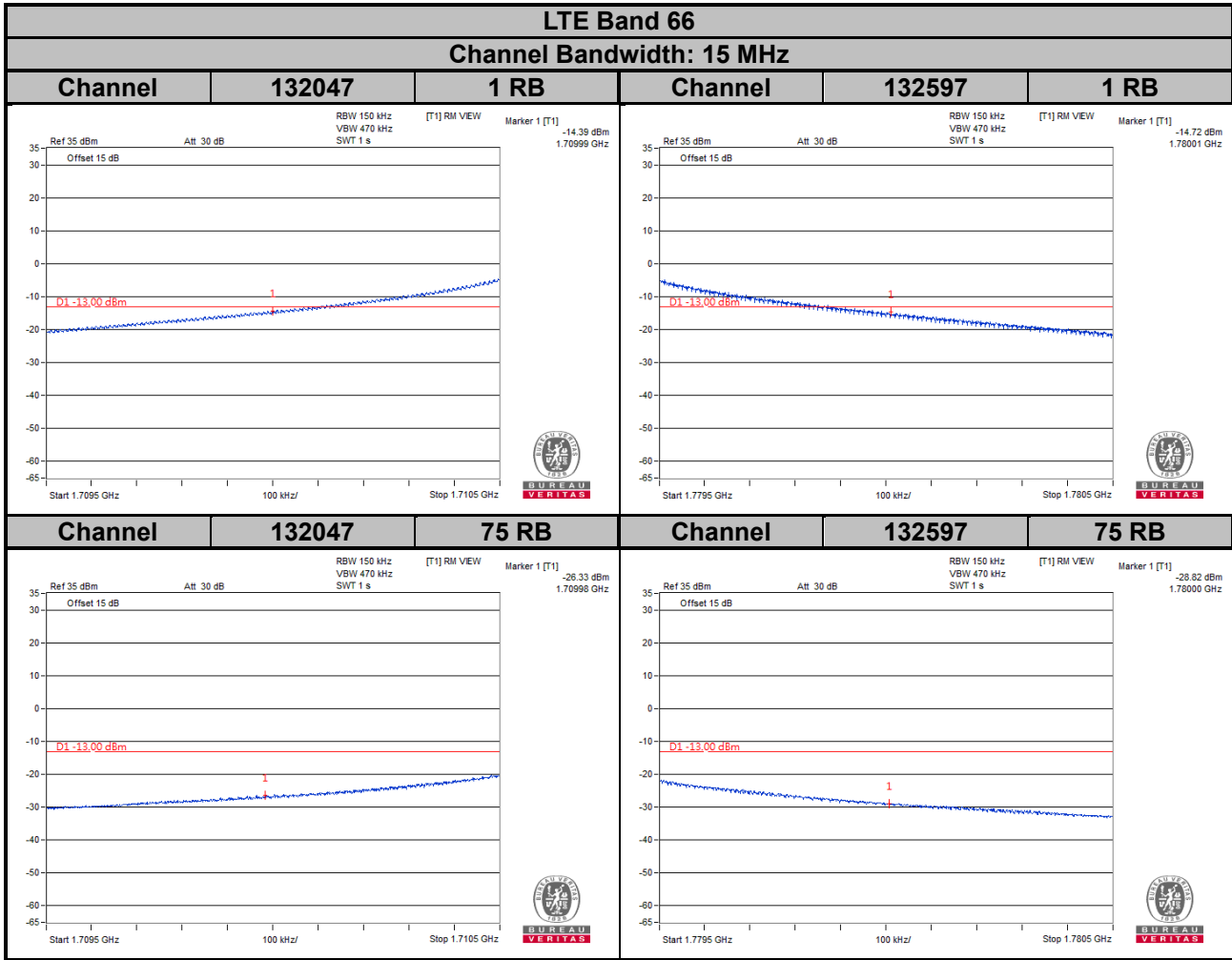
# LTE Band 66

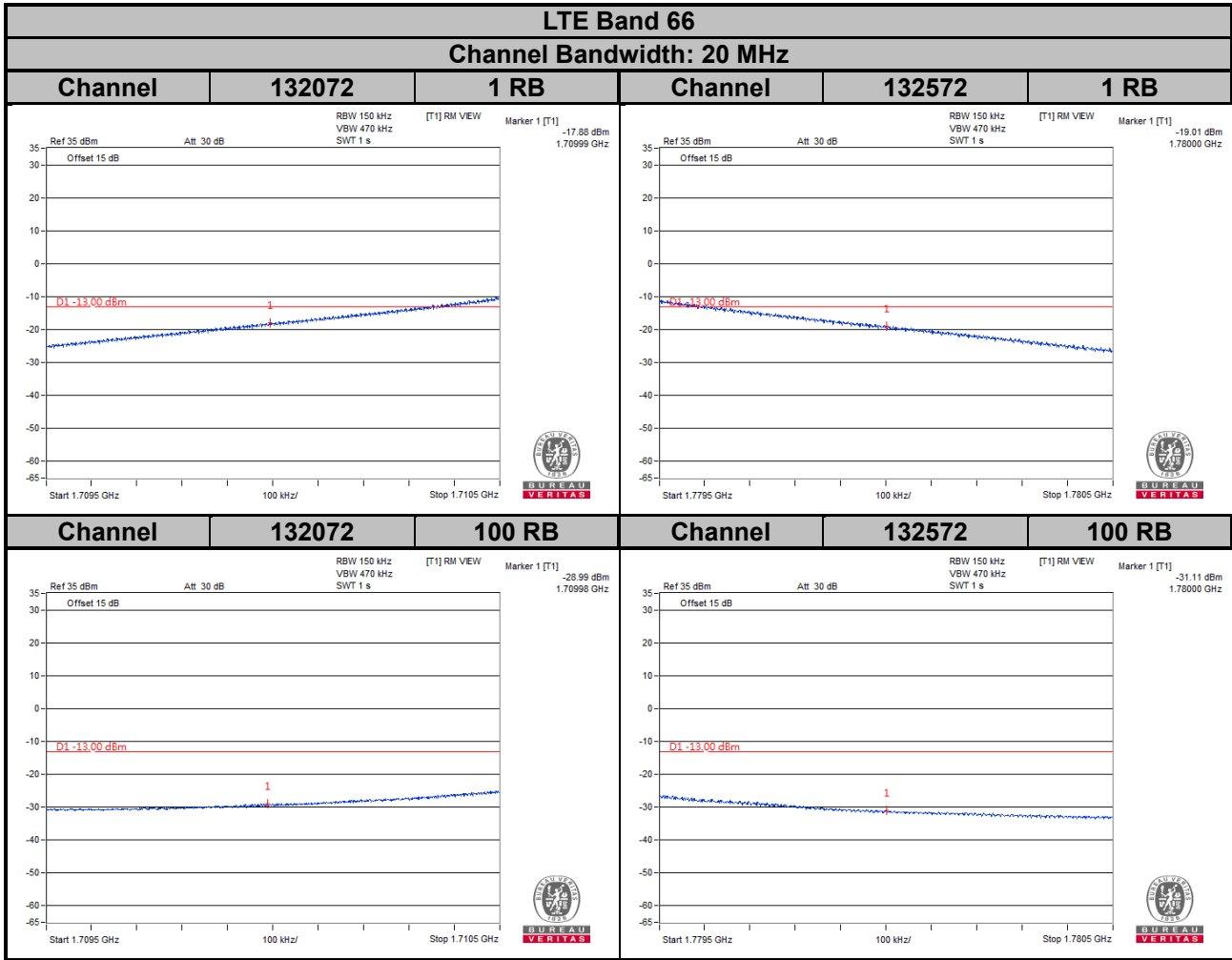
Channel Bandwidth: 3 MHz



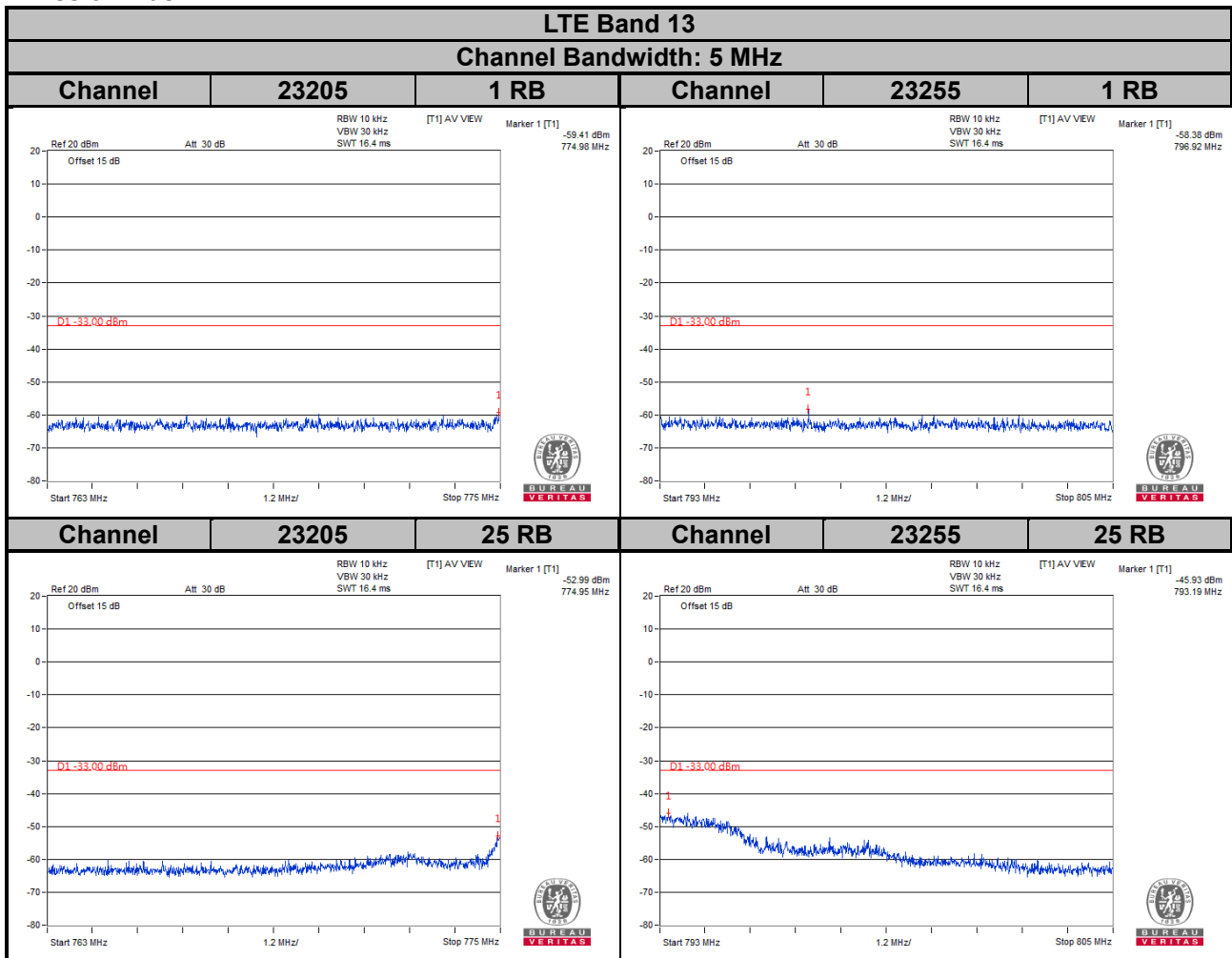








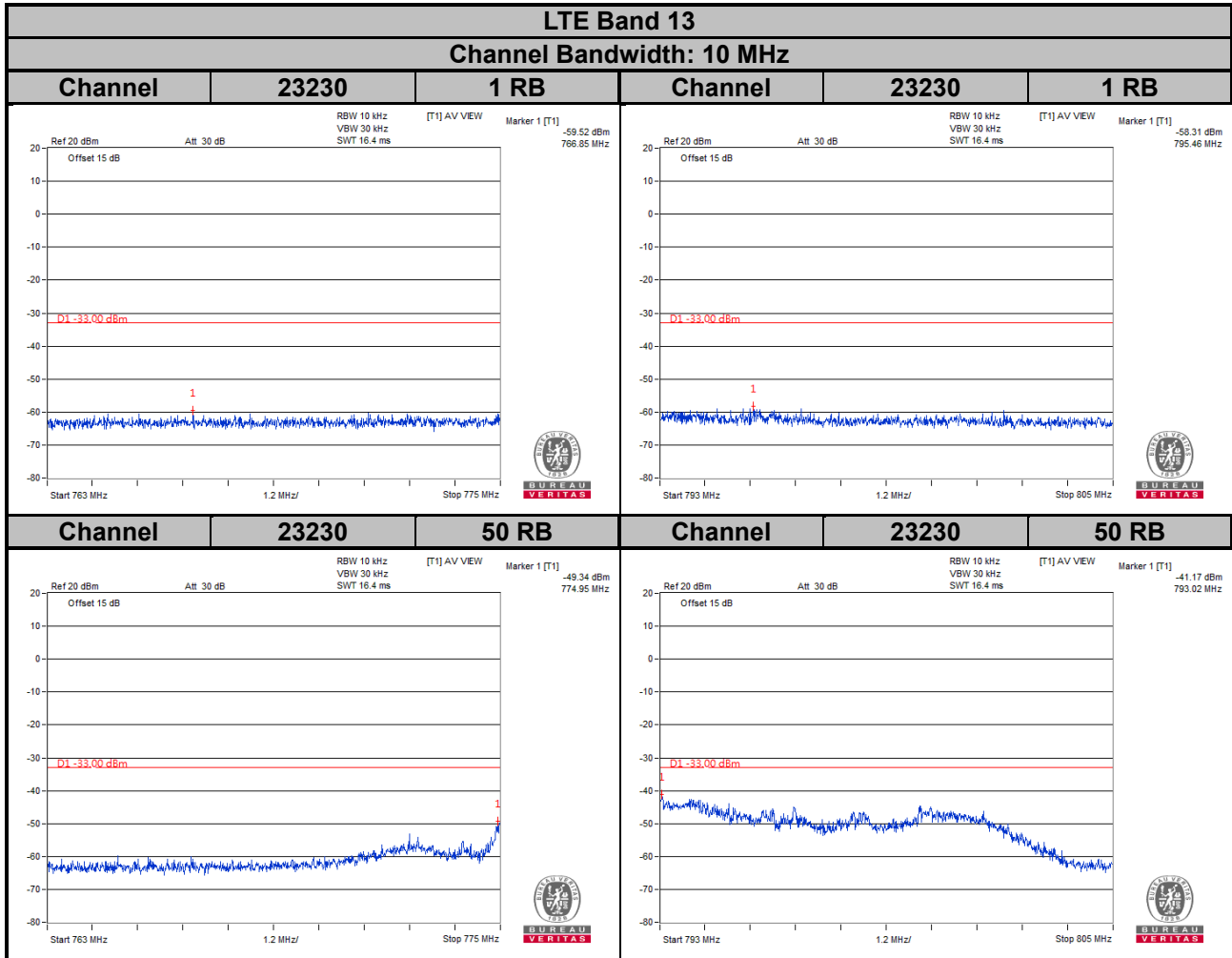
## Emission Mask



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.

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

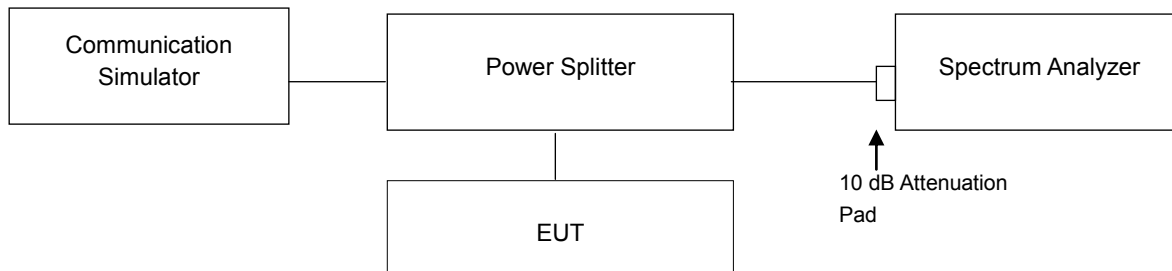
$$\text{Limit line} = -35 \text{ dBm} + 2.04 \text{ dB} = -32.96 \text{ dBm}$$

## 4.6 Peak to Average Ratio

### 4.6.1 Limits of Peak to Average Ratio Measurement

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

### 4.6.2 Test Setup

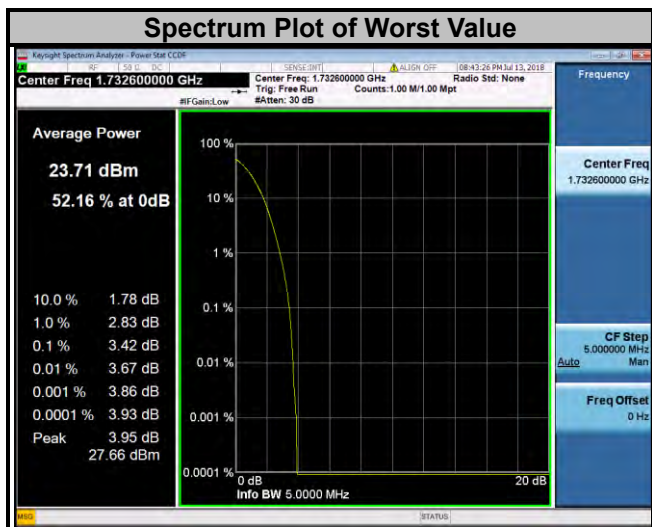


### 4.6.3 Test Procedures

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 %.

#### 4.6.4 Test Results

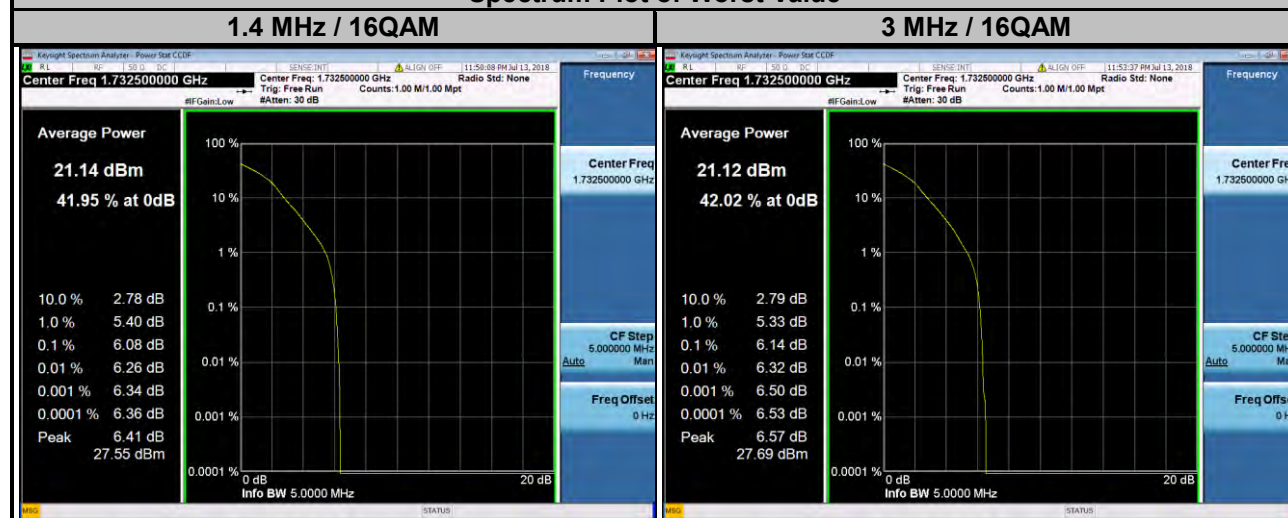
| WCDMA   |                 |                            |
|---------|-----------------|----------------------------|
| Channel | Frequency (MHz) | Peak to Average Ratio (dB) |
| 1312    | 1712.4          | 3.39                       |
| 1413    | 1732.6          | 3.42                       |
| 1513    | 1752.6          | 3.38                       |



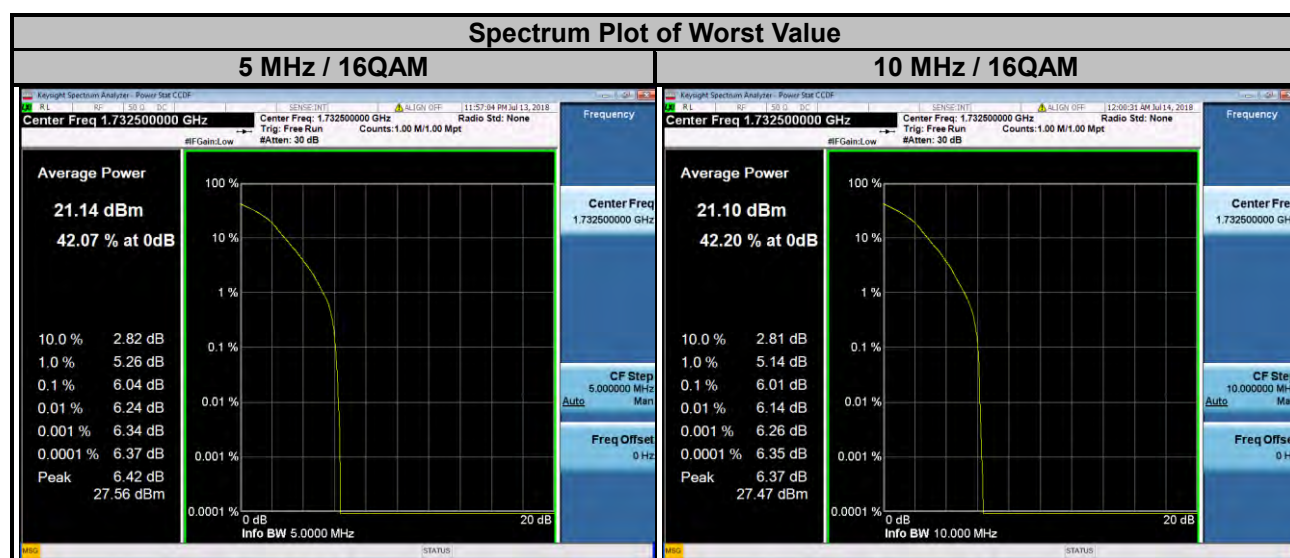
### LTE Band 4

| 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          | 5.13                       | 5.24  | 19965                    | 1711.5          | 5.21                       | 5.32  |
| 20175                      | 1732.5          | 5.72                       | 6.08  | 20175                    | 1732.5          | 5.84                       | 6.14  |
| 20393                      | 1754.3          | 5.52                       | 5.66  | 20385                    | 1753.5          | 5.60                       | 5.70  |

### Spectrum Plot of Worst Value



| 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          | 5.17                       | 5.26  | 20000                     | 1715.0          | 5.14                       | 5.33  |
| 20175                    | 1732.5          | 5.74                       | 6.04  | 20175                     | 1732.5          | 5.75                       | 6.01  |
| 20375                    | 1752.5          | 5.53                       | 5.61  | 20350                     | 1750.0          | 5.45                       | 5.55  |

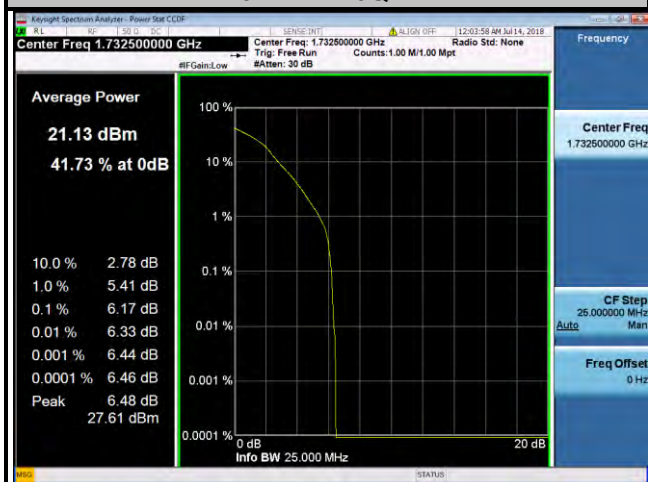


### LTE Band 4

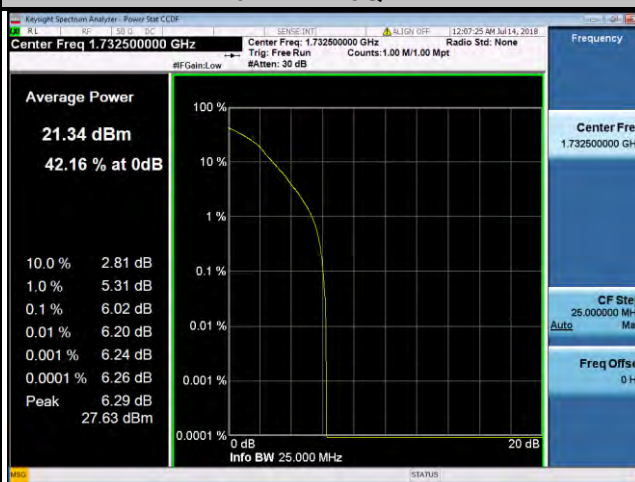
| Channel Bandwidth: 15 MHz |                 |                            |       | Channel Bandwidth: 20 MHz |                 |                            |       |
|---------------------------|-----------------|----------------------------|-------|---------------------------|-----------------|----------------------------|-------|
| Channel                   | Frequency (MHz) | Peak to Average Ratio (dB) |       | Channel                   | Frequency (MHz) | Peak to Average Ratio (dB) |       |
|                           |                 | QPSK                       | 16QAM |                           |                 | QPSK                       | 16QAM |
| 20025                     | 1717.5          | 5.20                       | 5.30  | 20050                     | 1720.0          | 5.18                       | 5.26  |
| 20175                     | 1732.5          | 5.66                       | 6.17  | 20175                     | 1732.5          | 5.80                       | 6.02  |
| 20325                     | 1747.5          | 5.62                       | 5.76  | 20300                     | 1745.0          | 5.76                       | 5.86  |

### Spectrum Plot of Worst Value

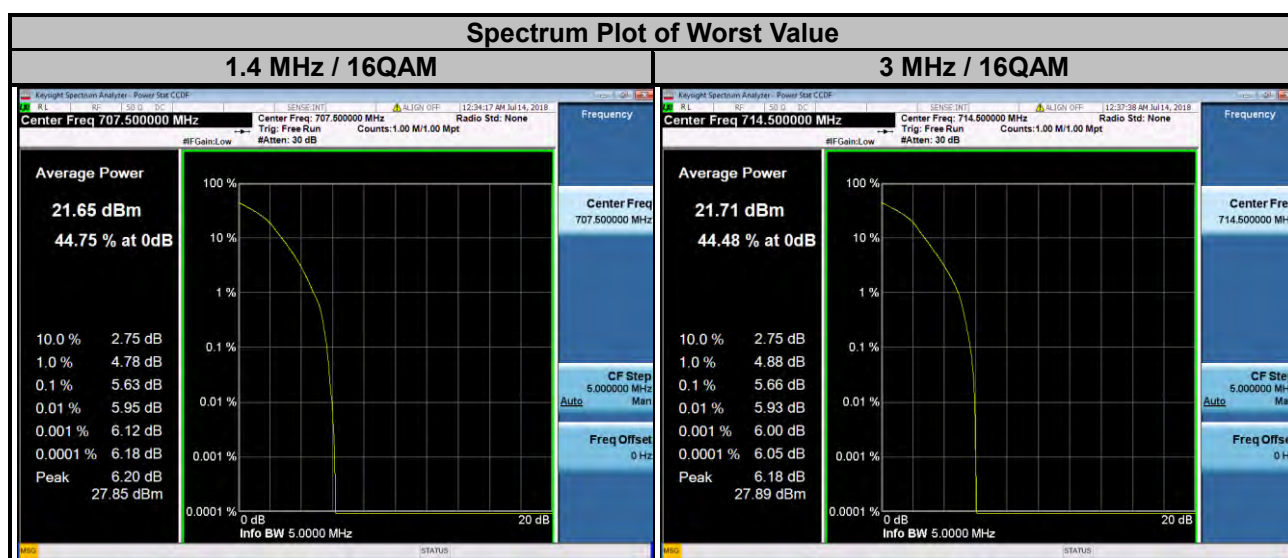
#### 15 MHz / 16QAM



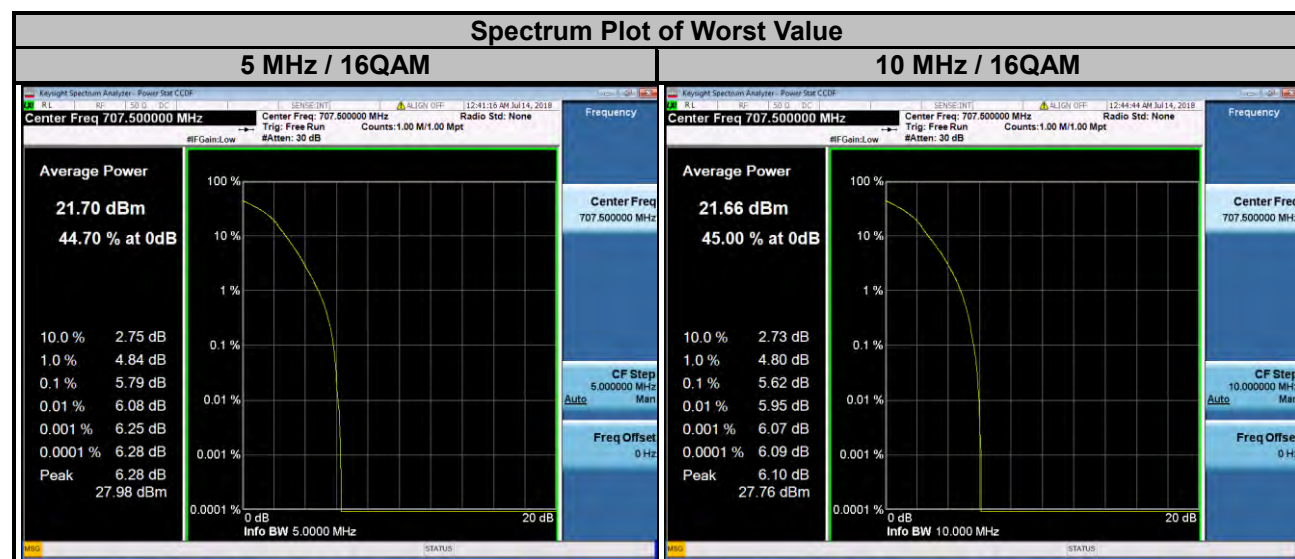
#### 20 MHz / 16QAM



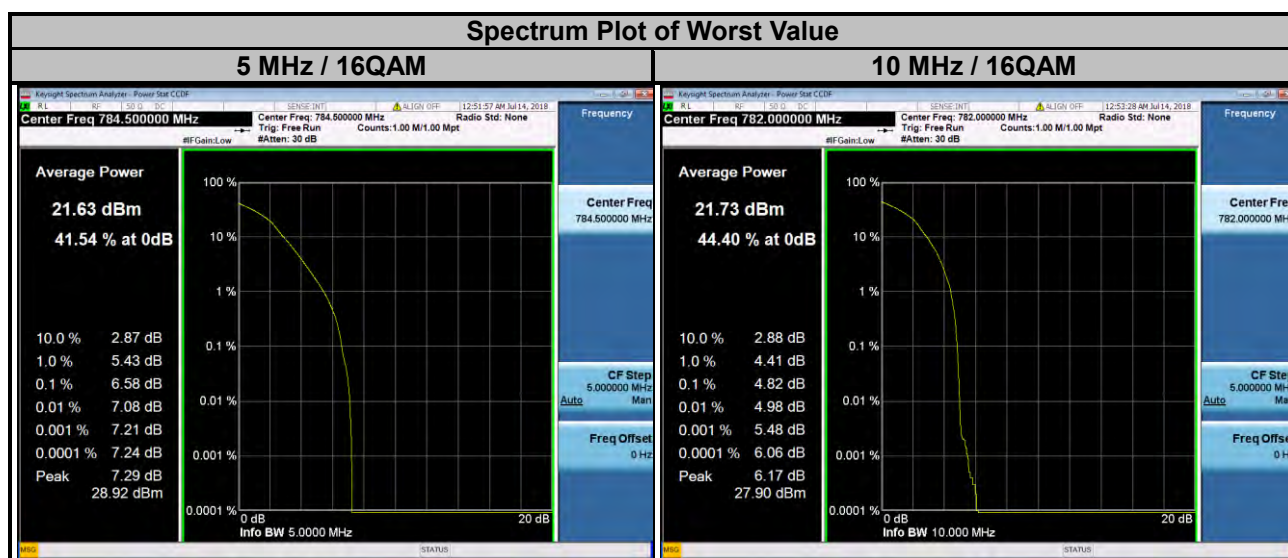
| LTE Band 12                |                 |                            |       |                          |                 |                            |       |
|----------------------------|-----------------|----------------------------|-------|--------------------------|-----------------|----------------------------|-------|
| 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           | 4.56                       | 5.38  | 23025                    | 700.5           | 4.60                       | 5.57  |
| 23095                      | 707.5           | 4.67                       | 5.63  | 23095                    | 707.5           | 4.81                       | 5.64  |
| 23173                      | 715.3           | 4.79                       | 5.62  | 23165                    | 714.5           | 4.82                       | 5.66  |



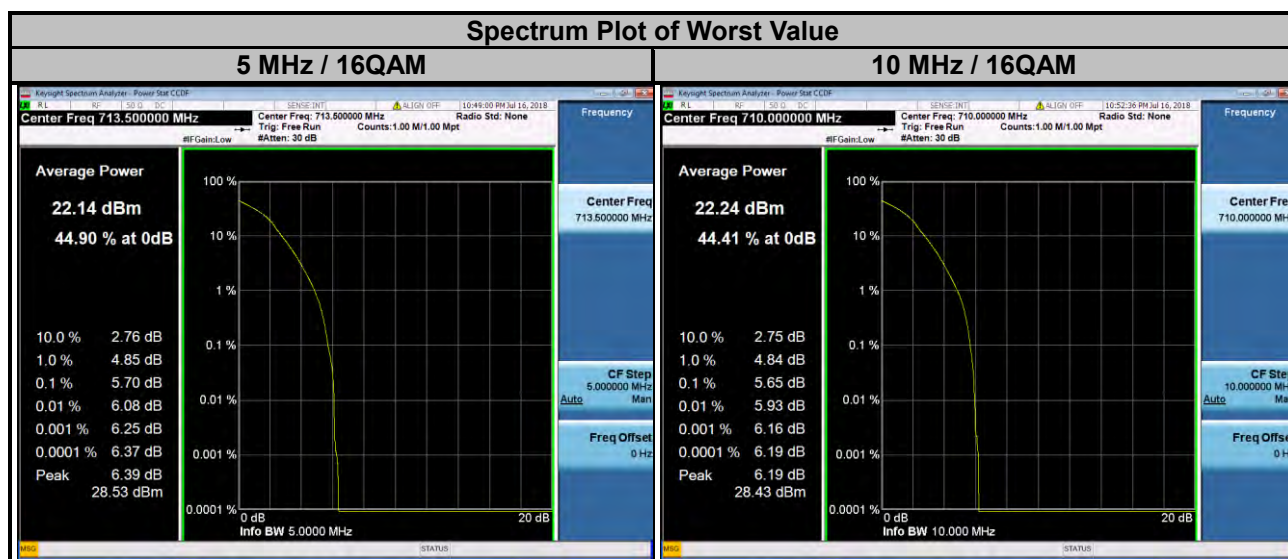
| LTE Band 12              |                 |                            |       |                           |                 |                            |       |
|--------------------------|-----------------|----------------------------|-------|---------------------------|-----------------|----------------------------|-------|
| 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           | 4.58                       | 5.51  | 23060                     | 704.0           | 4.55                       | 5.50  |
| 23095                    | 707.5           | 4.81                       | 5.79  | 23095                     | 707.5           | 4.65                       | 5.62  |
| 23155                    | 713.5           | 4.69                       | 5.53  | 23130                     | 711.0           | 4.65                       | 5.58  |



| 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           | 3.83                       | 4.87  | 23230                     | 782.0           | 3.86                       | 4.82  |
| 23230                    | 782.0           | 5.11                       | 5.99  |                           |                 |                            |       |
| 23255                    | 784.5           | 5.75                       | 6.58  |                           |                 |                            |       |



| 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           | 4.74                       | 5.53  | 23780                     | 709.0           | 4.75                       | 5.47  |
| 23790                    | 710.0           | 4.96                       | 5.60  | 23790                     | 710.0           | 4.77                       | 5.65  |
| 23825                    | 713.5           | 4.85                       | 5.70  | 23800                     | 711.0           | 4.80                       | 5.61  |

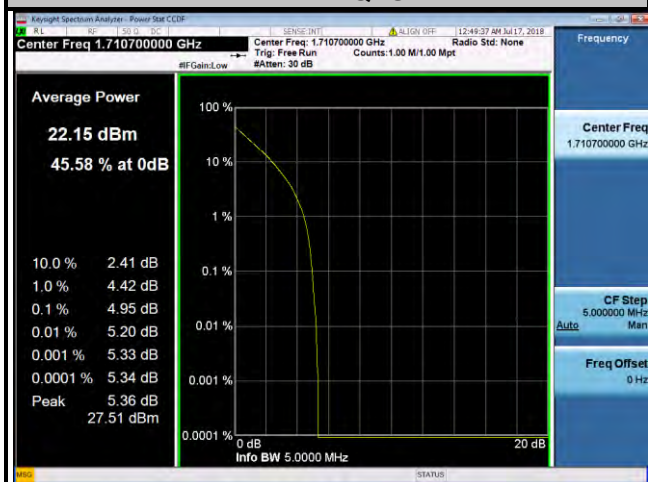


### LTE Band 66

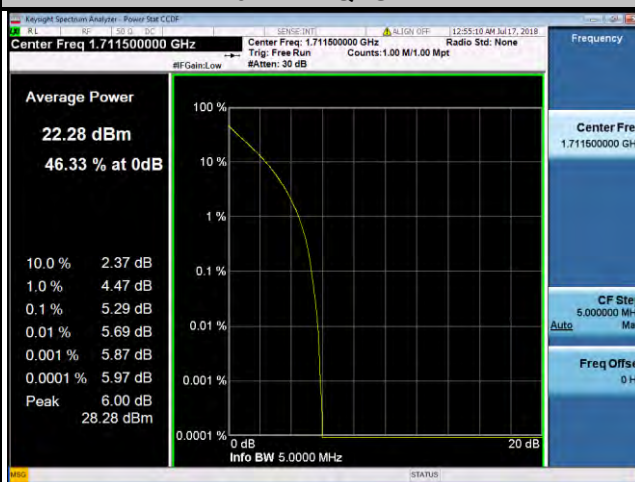
| Channel Bandwidth: 1.4 MHz |                 |                            |       | Channel Bandwidth: 3 MHz |                 |                            |       |
|----------------------------|-----------------|----------------------------|-------|--------------------------|-----------------|----------------------------|-------|
| Channel                    | Frequency (MHz) | Peak to Average Ratio (dB) |       | Channel                  | Frequency (MHz) | Peak to Average Ratio (dB) |       |
|                            |                 | QPSK                       | 16QAM |                          |                 | QPSK                       | 16QAM |
| 131979                     | 1710.7          | 4.95                       | 4.79  | 131987                   | 1711.5          | 5.29                       | 4.82  |
| 132322                     | 1745.0          | 4.91                       | 4.87  | 132322                   | 1745.0          | 4.98                       | 4.98  |
| 132665                     | 1779.3          | 4.26                       | 4.41  | 132657                   | 1778.5          | 4.46                       | 4.49  |

### Spectrum Plot of Worst Value

#### 1.4 MHz / QPSK



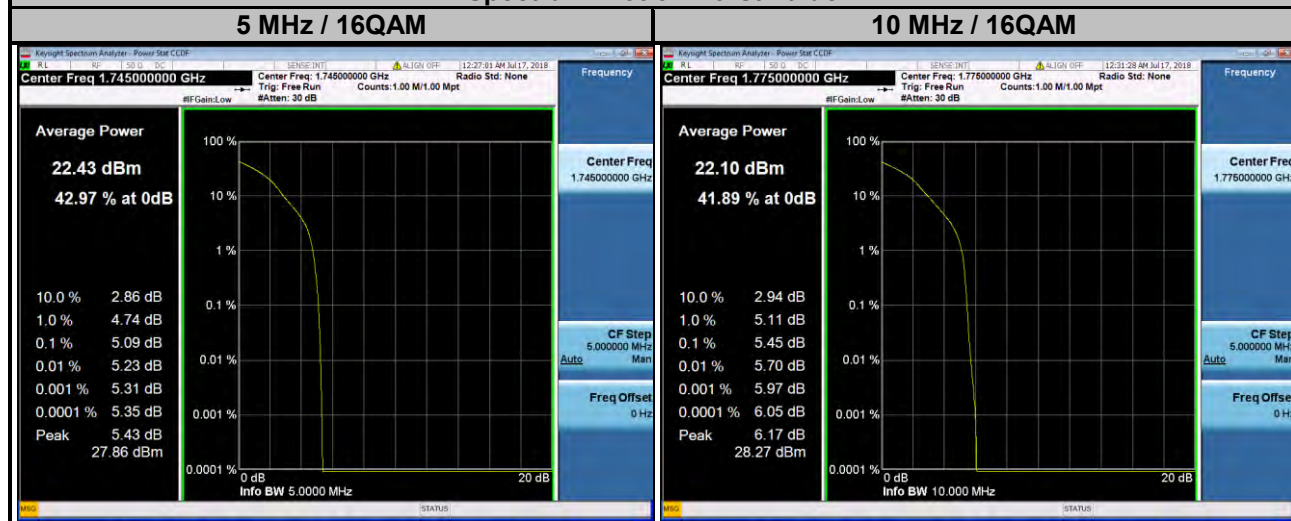
#### 3 MHz / QPSK



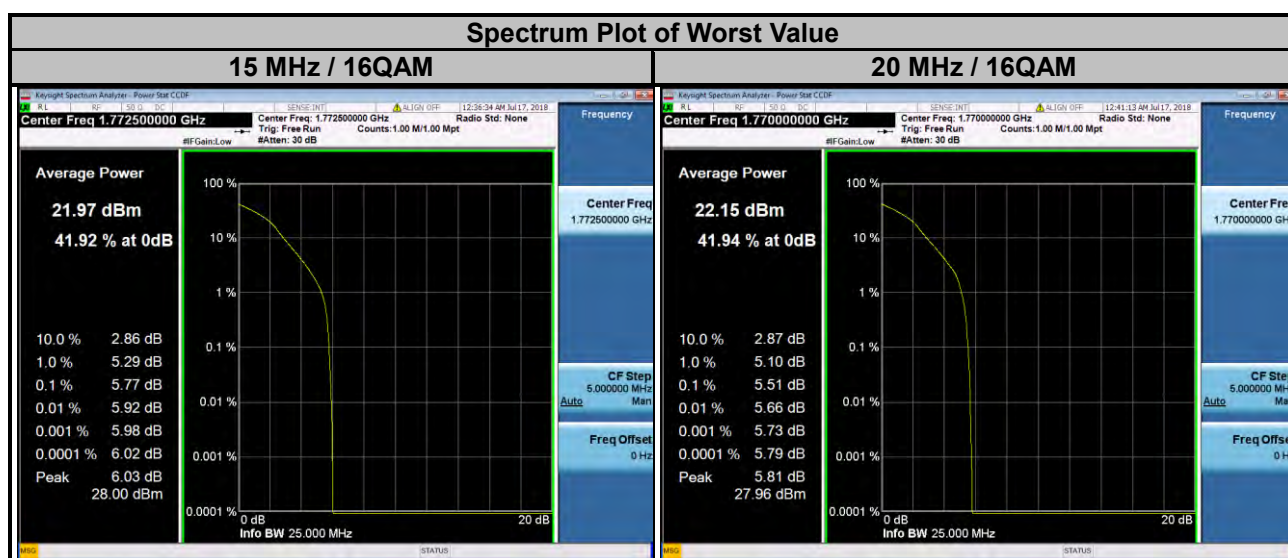
### LTE Band 66

| 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          | 4.78                       | 4.90  | 132022                    | 1715.0          | 4.73                       | 4.75  |
| 132322                   | 1745.0          | 4.91                       | 5.09  | 132322                    | 1745.0          | 5.10                       | 5.18  |
| 132647                   | 1777.5          | 4.75                       | 4.78  | 132622                    | 1775.0          | 5.35                       | 5.45  |

### Spectrum Plot of Worst Value



| 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          | 5.58                       | 4.97  | 132072                    | 1720.0          | 4.76                       | 4.85  |
| 132322                    | 1745.0          | 5.26                       | 5.24  | 132322                    | 1745.0          | 5.27                       | 5.41  |
| 132597                    | 1772.5          | 5.48                       | 5.77  | 132572                    | 1770.0          | 5.47                       | 5.51  |

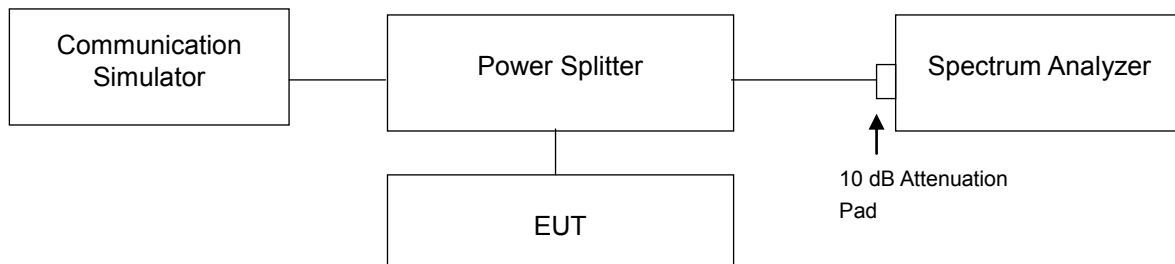


## 4.7 Conducted Spurious Emissions

### 4.7.1 Limits of Conducted Spurious Emissions Measurement

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB. The limit of emission is equal to -13 dBm.

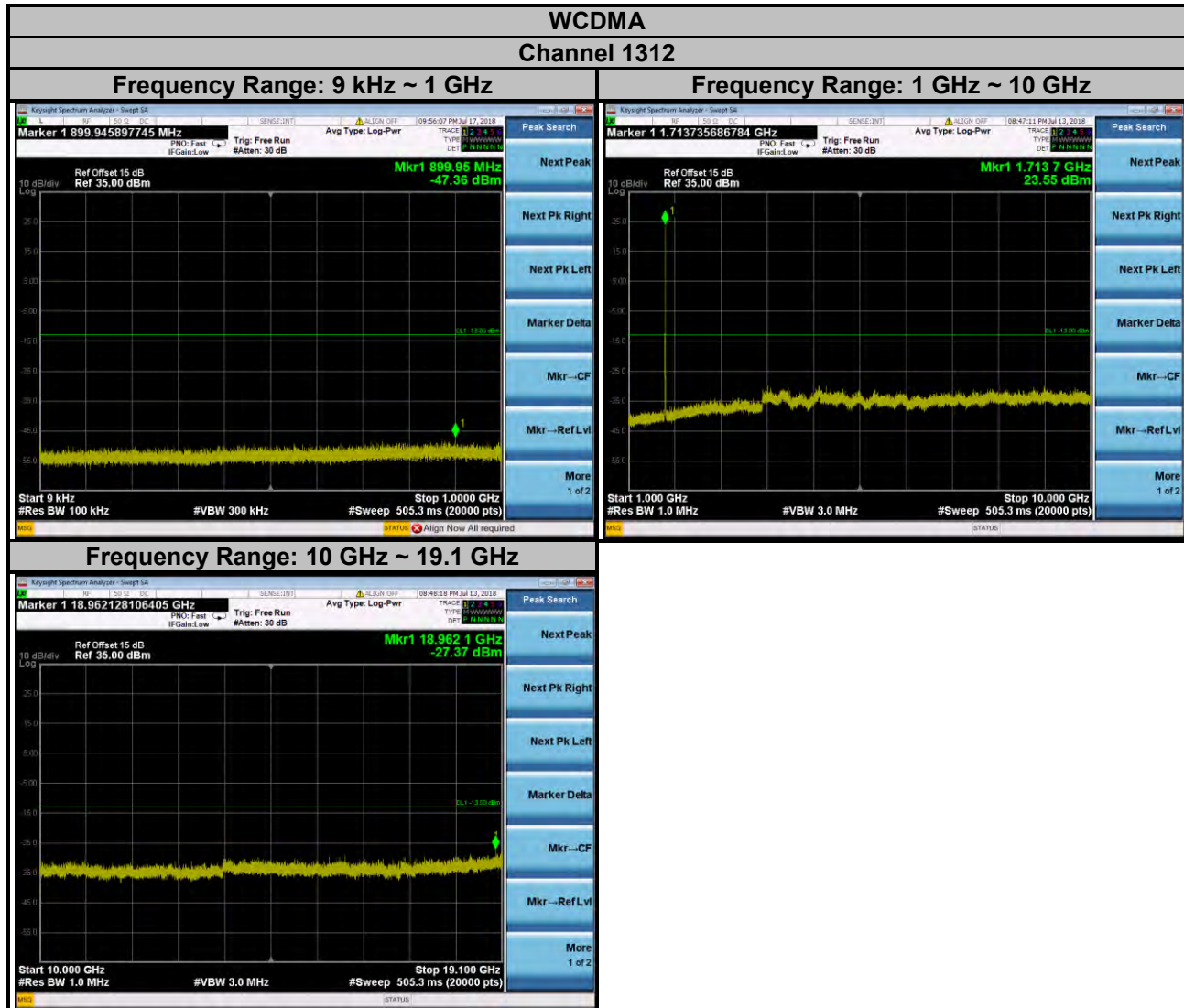
### 4.7.2 Test Setup



### 4.7.3 Test Procedure

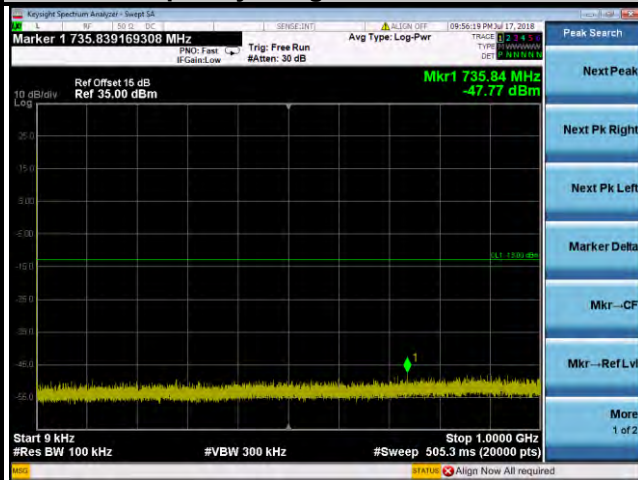
- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 9 kHz to 10 GHz for LTE Band 12, 13, 17 and from 9 kHz to 27 GHz for LTE Band 4, 66. 10 dB attenuation pad is connected with spectrum. RBW = 100 kHz and VBW = 300 kHz for 9 kHz to 1 GHz and RBW = 1 MHz and VBW = 3 MHz for 1 GHz to 27 GHz is used for conducted emission measurement.

#### 4.7.4 Test Results

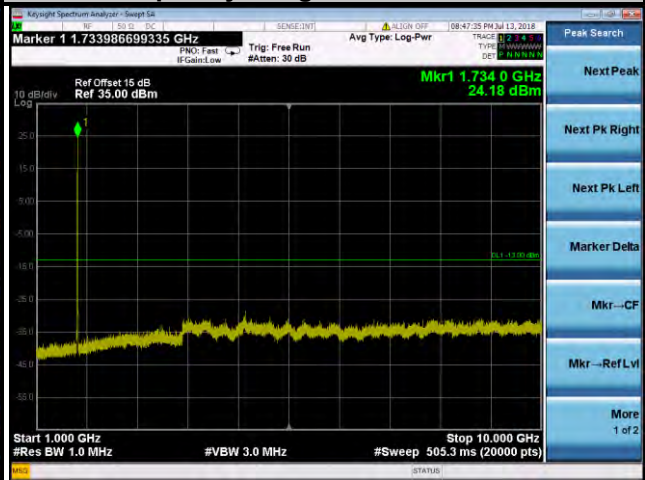


## WCDMA Channel 1413

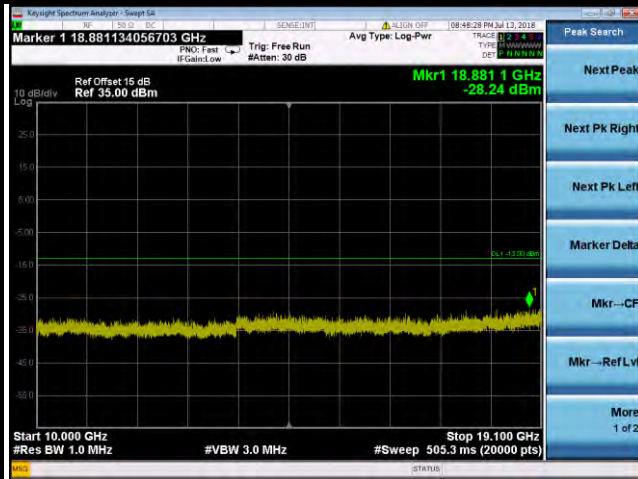
**Frequency Range: 9 kHz ~ 1 GHz**



**Frequency Range: 1 GHz ~ 10 GHz**

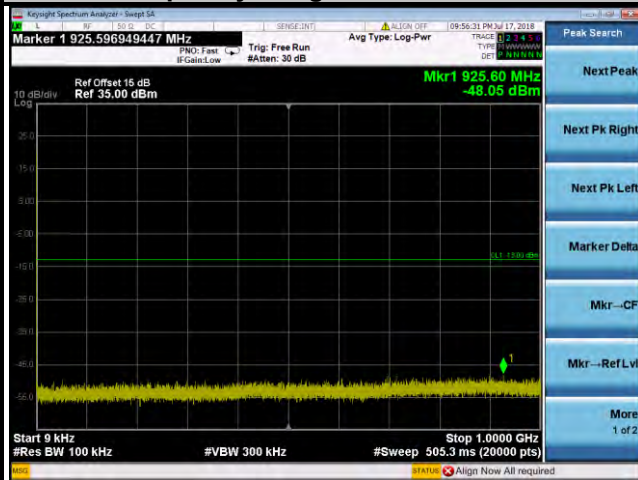


**Frequency Range: 10 GHz ~ 19.1 GHz**

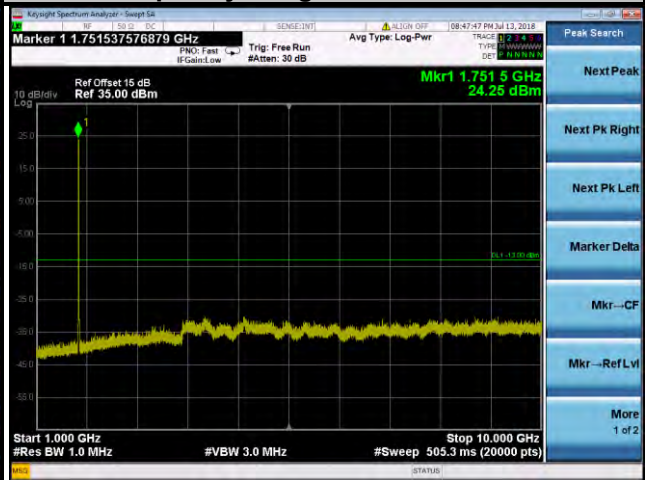


## WCDMA Channel 1513

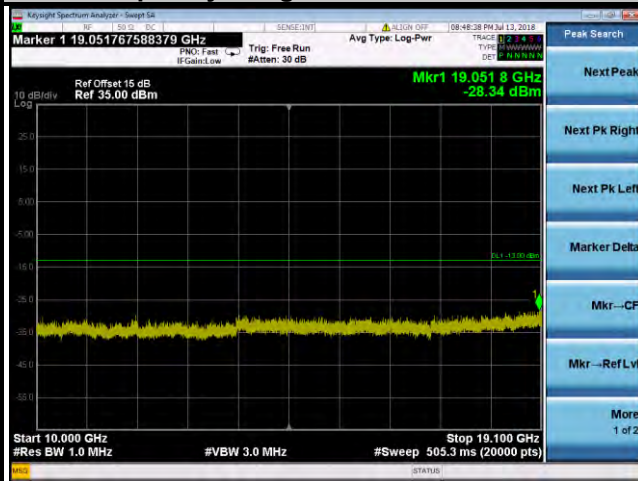
**Frequency Range: 9 kHz ~ 1 GHz**



**Frequency Range: 1 GHz ~ 10 GHz**



**Frequency Range: 10 GHz ~ 19.1 GHz**

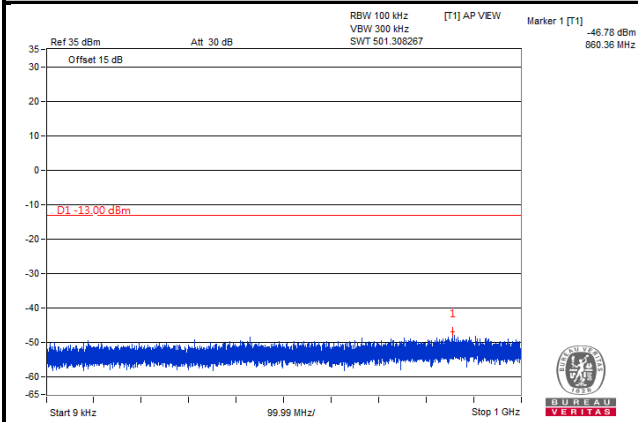


# LTE Band 4

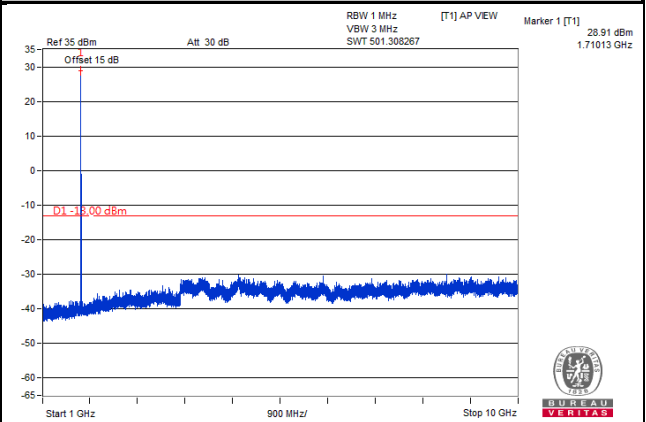
Channel Bandwidth: 1.4 MHz

Channel 19957

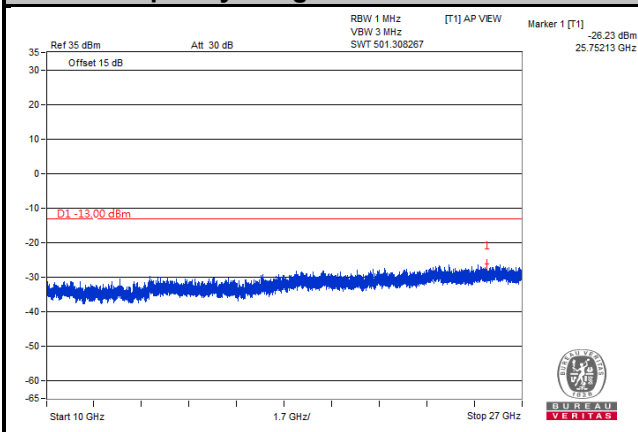
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

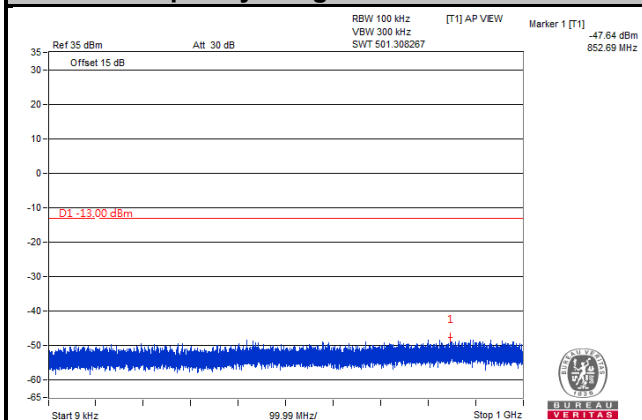


# LTE Band 4

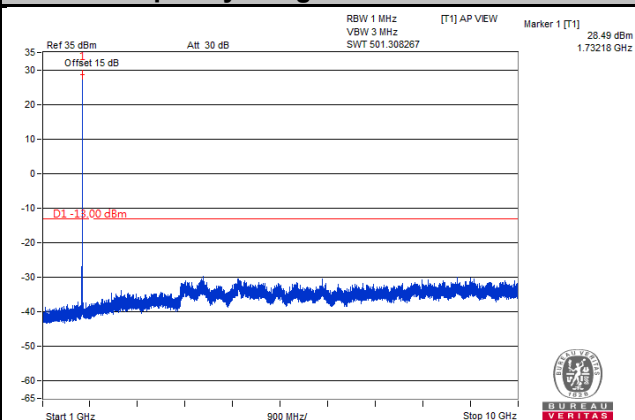
Channel Bandwidth: 1.4 MHz

Channel 20175

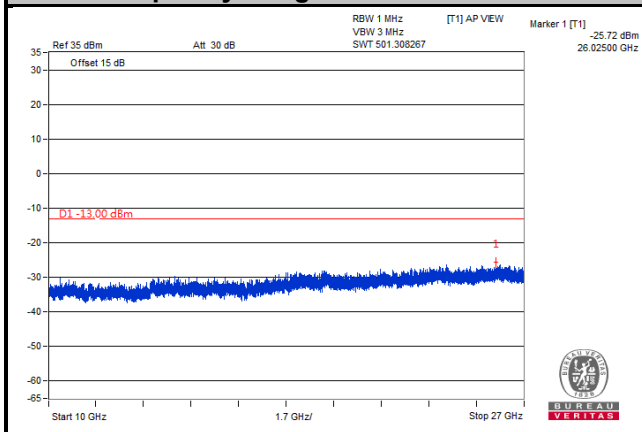
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

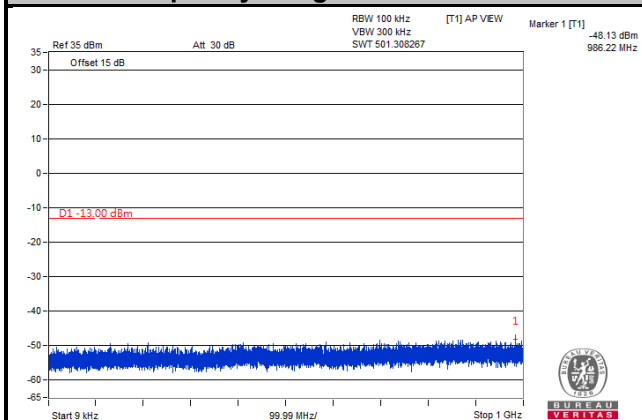


# LTE Band 4

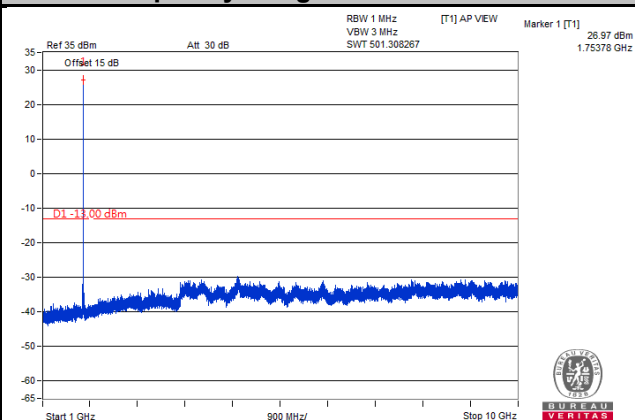
Channel Bandwidth: 1.4 MHz

Channel 20393

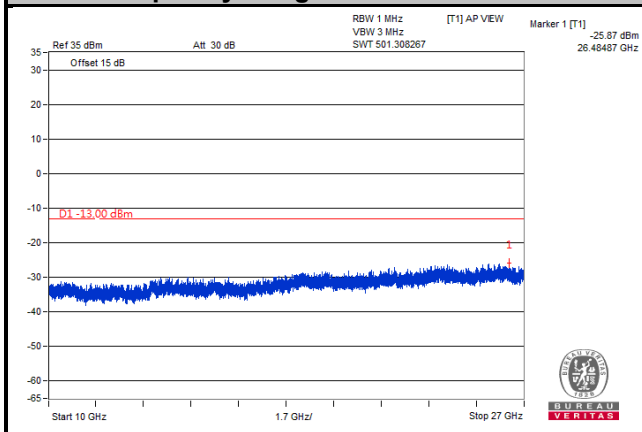
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

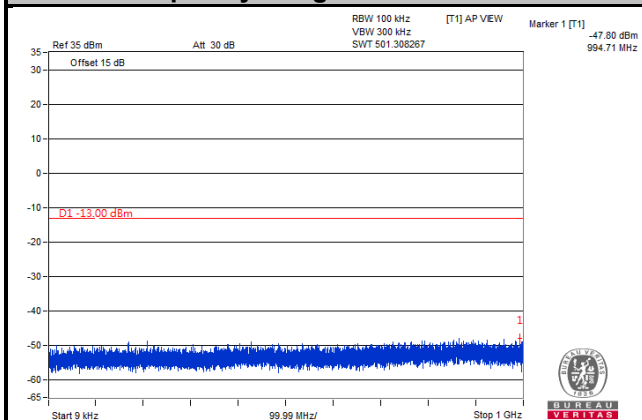


# LTE Band 4

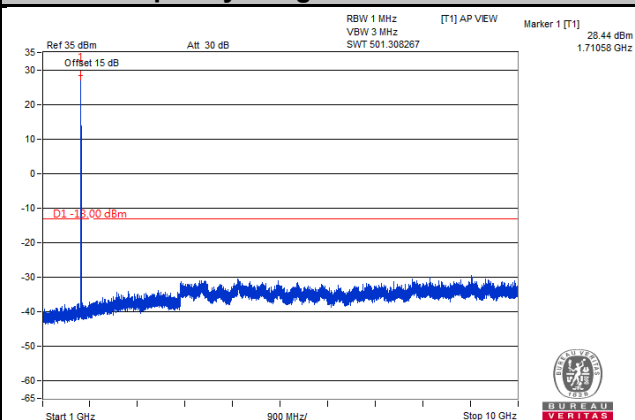
Channel Bandwidth: 3 MHz

Channel 19965

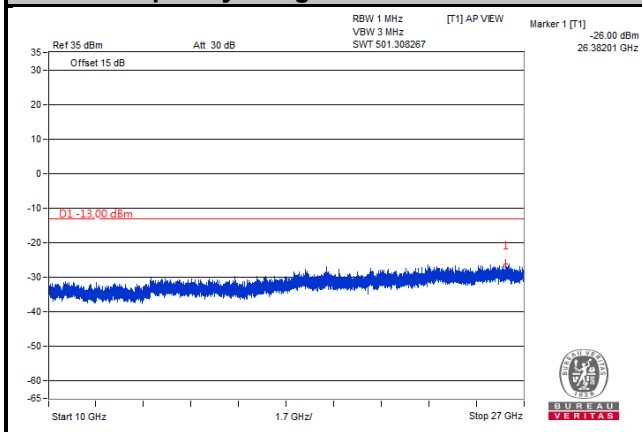
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

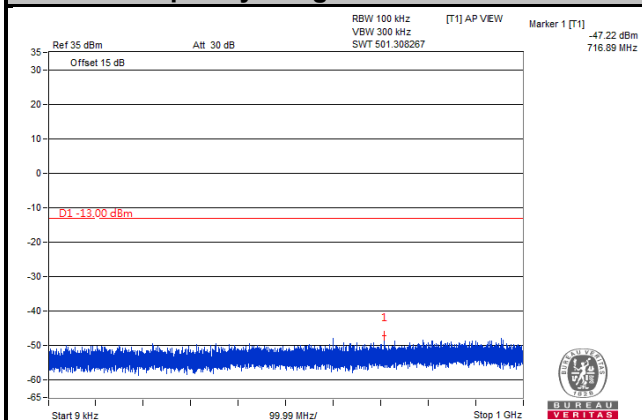


# LTE Band 4

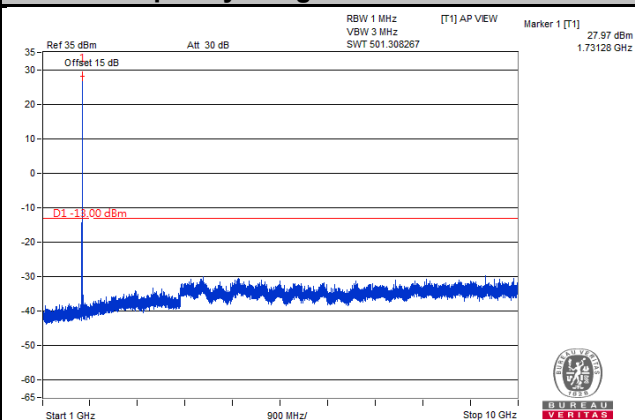
Channel Bandwidth: 3 MHz

Channel 10175

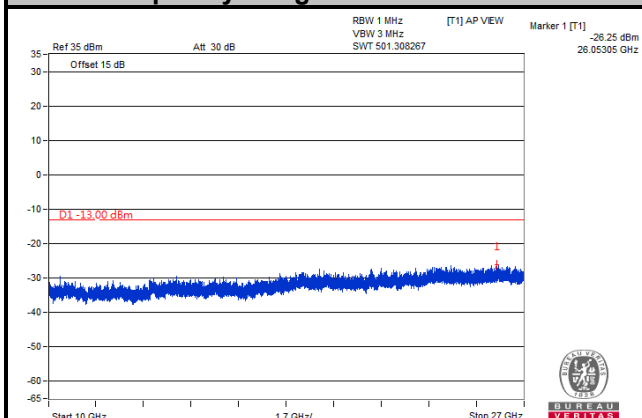
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

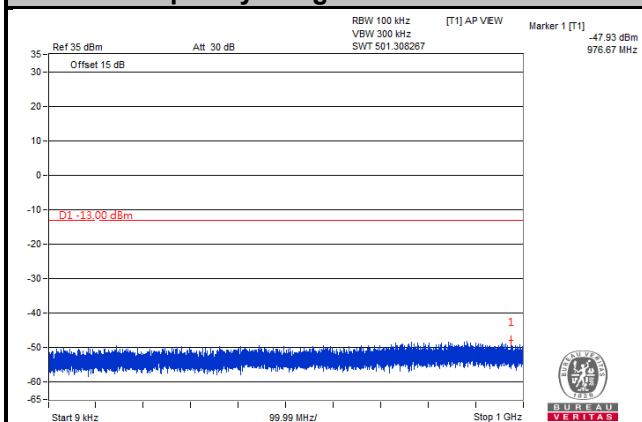


# LTE Band 4

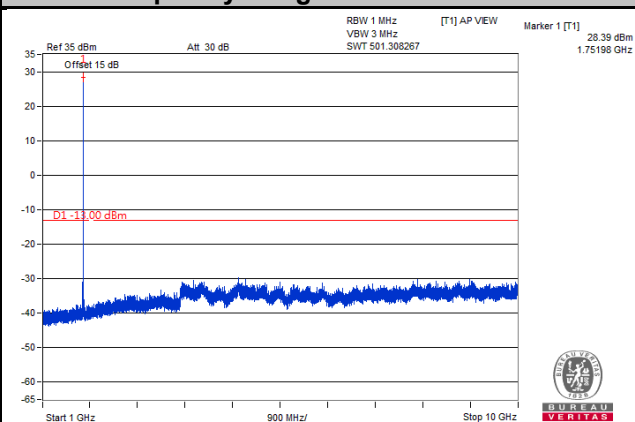
Channel Bandwidth: 3 MHz

Channel 20385

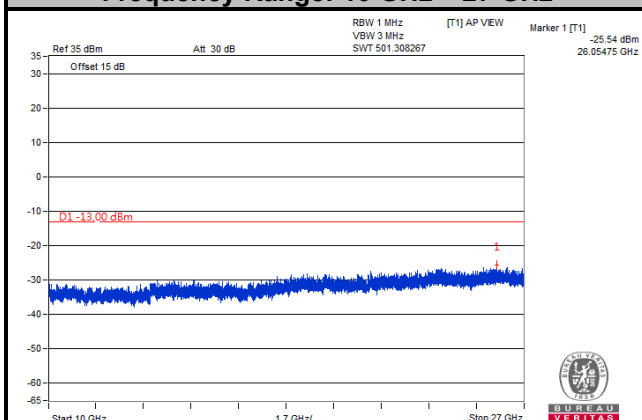
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

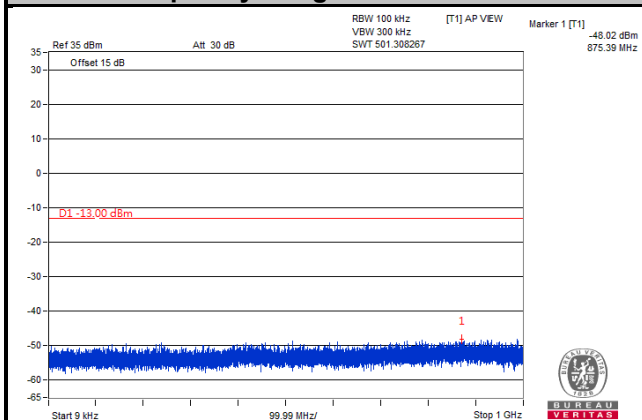


# LTE Band 4

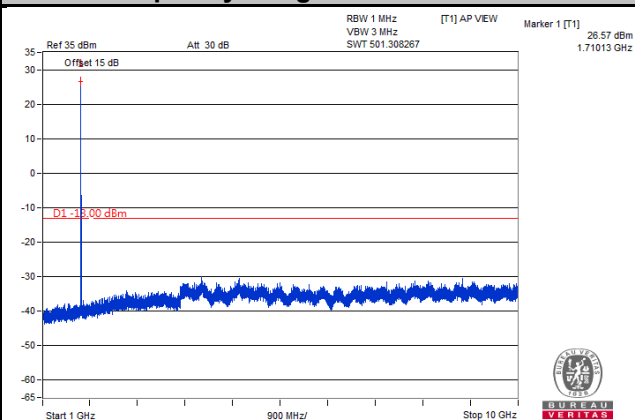
Channel Bandwidth: 5 MHz

Channel 19975

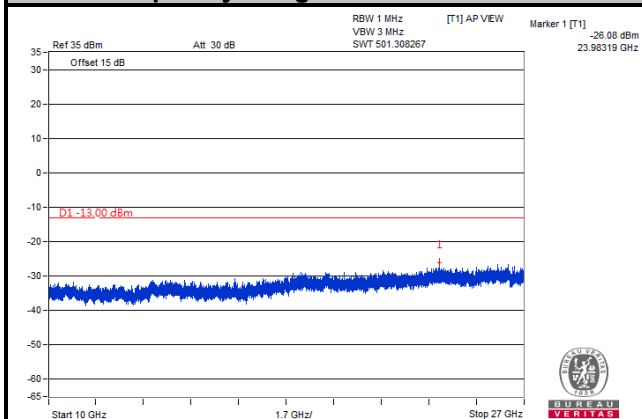
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

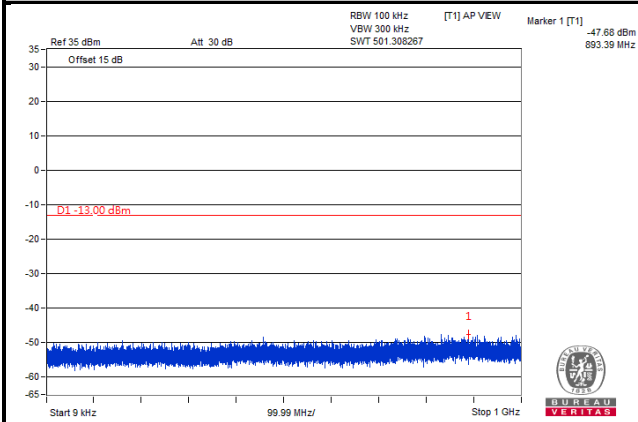


# LTE Band 4

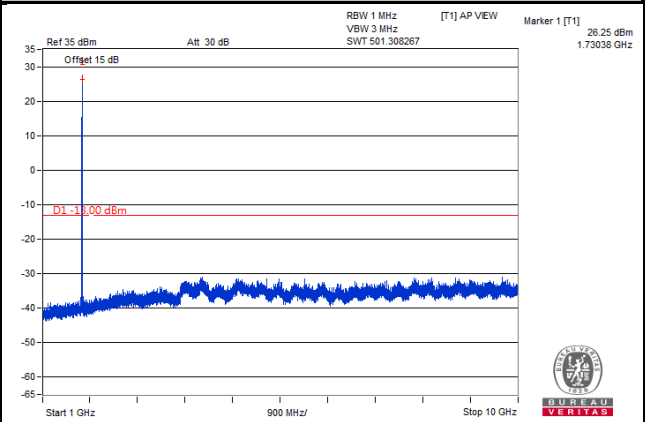
Channel Bandwidth: 5 MHz

Channel 20175

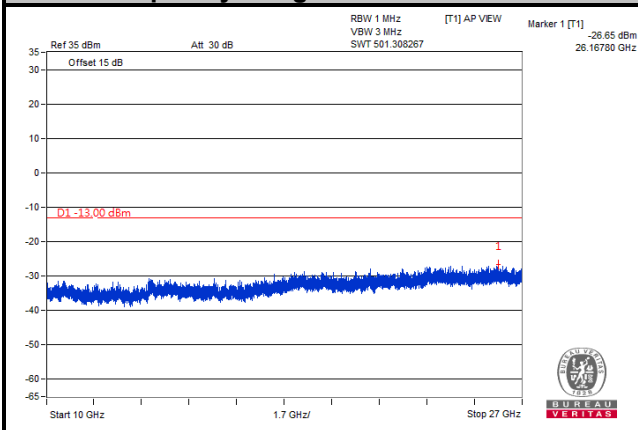
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

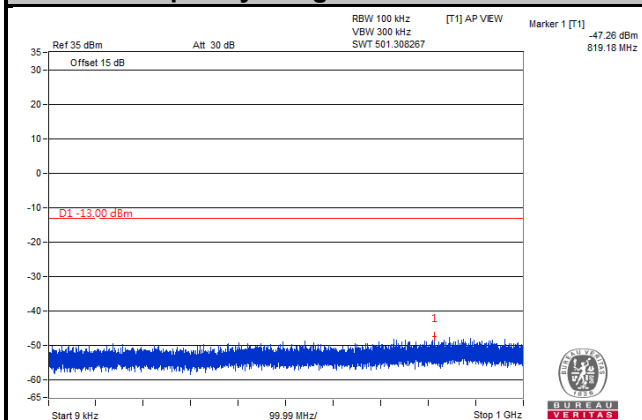


# LTE Band 4

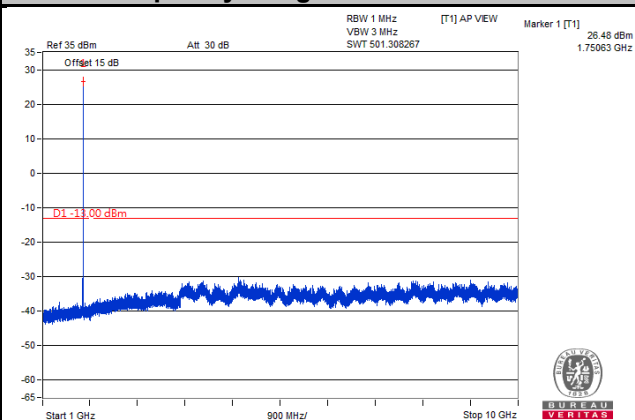
Channel Bandwidth: 5 MHz

Channel 20375

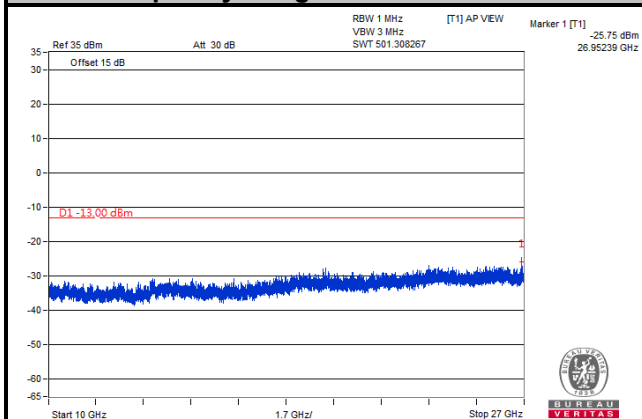
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

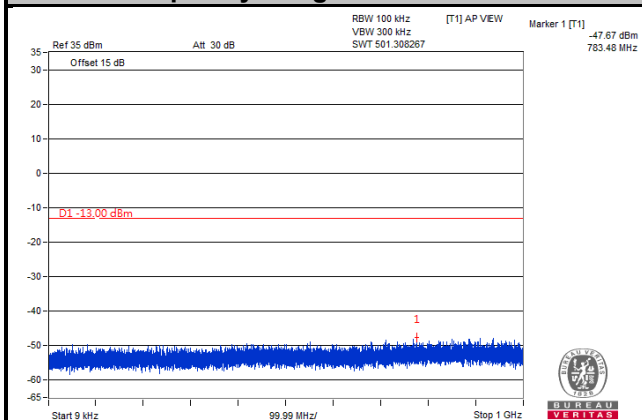


# LTE Band 4

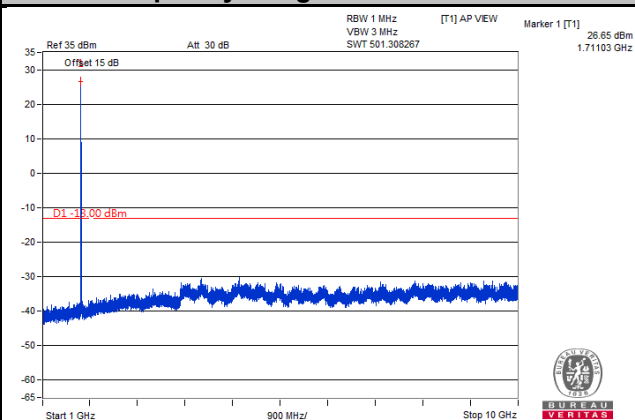
Channel Bandwidth: 10 MHz

Channel 20000

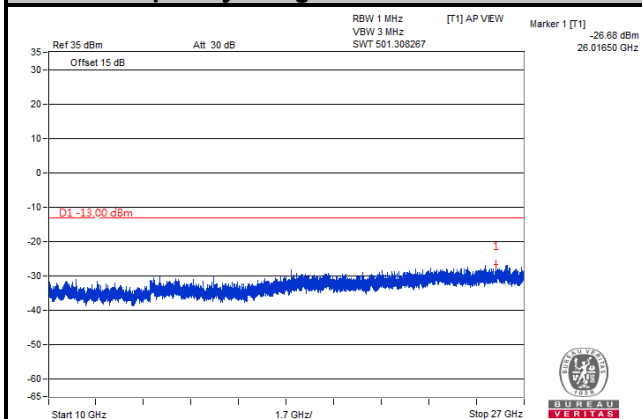
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

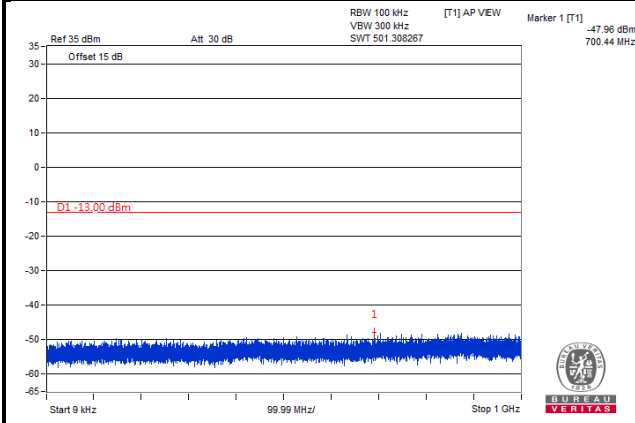


# LTE Band 4

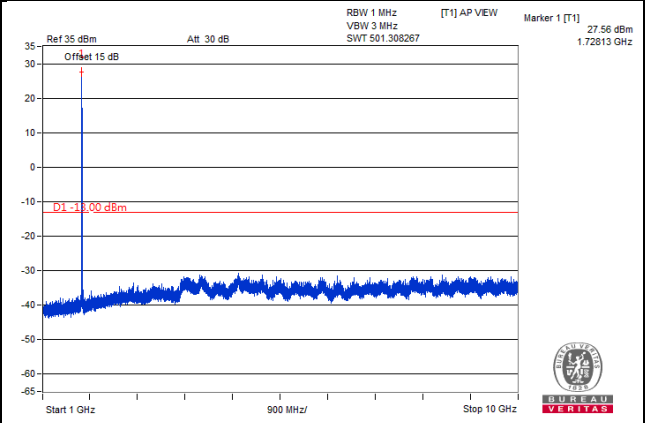
Channel Bandwidth: 10 MHz

Channel 20175

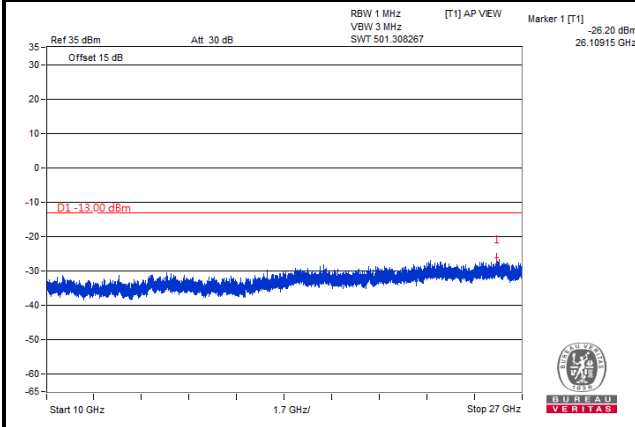
Frequency Range: 9 kHz ~ 1 GHz



Frequency Range: 1 GHz ~ 10 GHz



Frequency Range: 10 GHz ~ 27 GHz

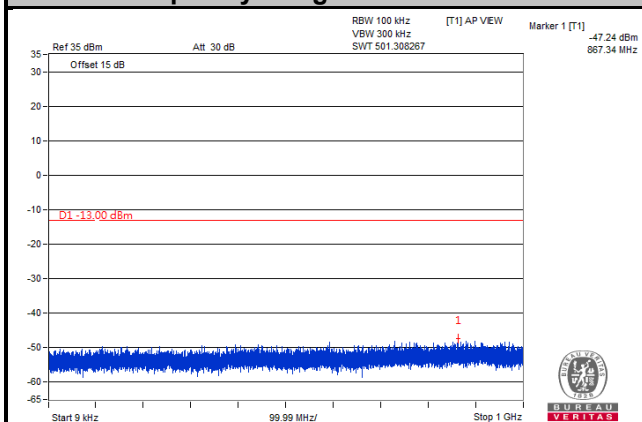


# LTE Band 4

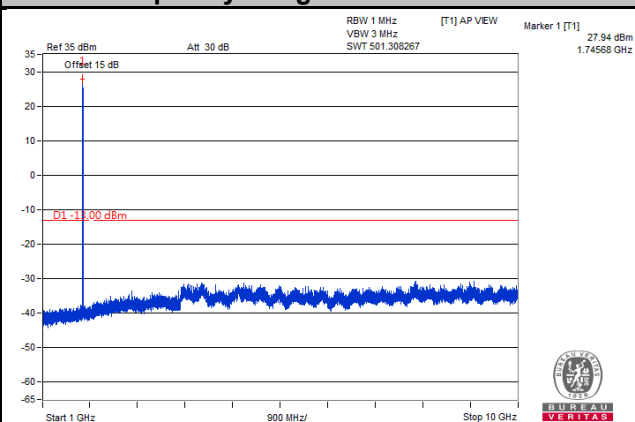
Channel Bandwidth: 10 MHz

Channel 20350

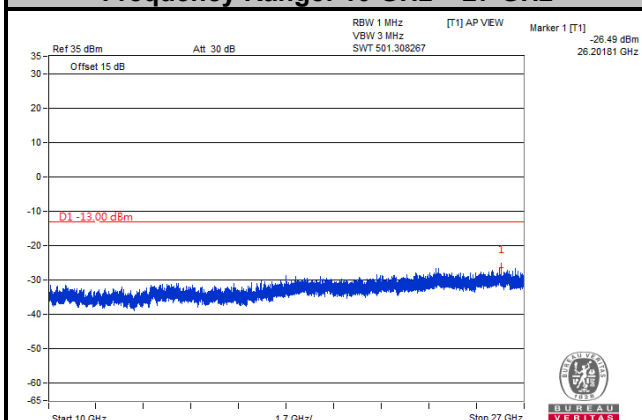
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

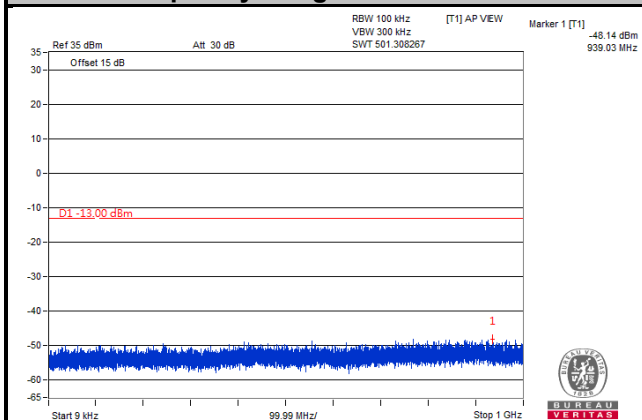


# LTE Band 4

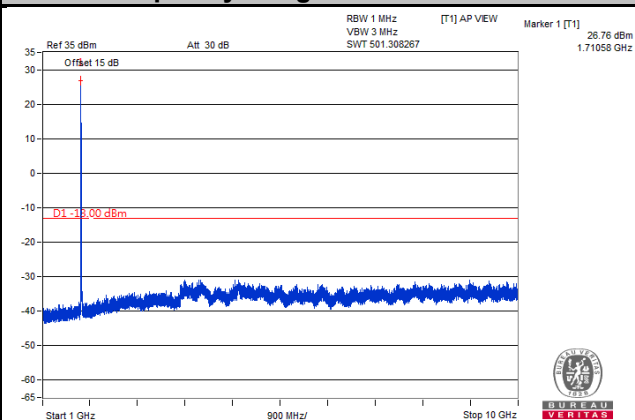
Channel Bandwidth: 15 MHz

Channel 20025

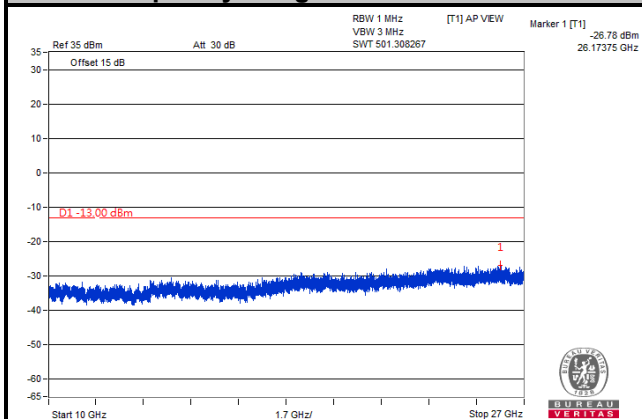
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

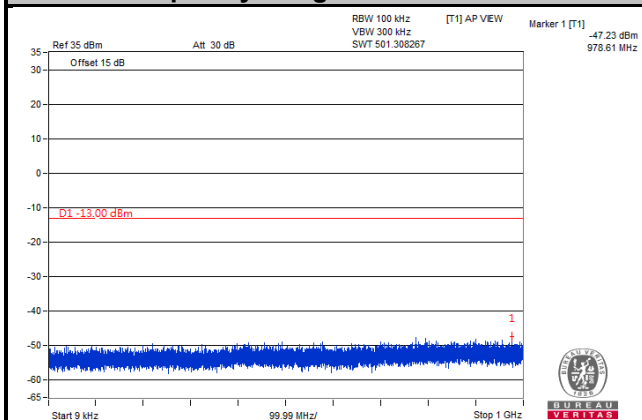


# LTE Band 4

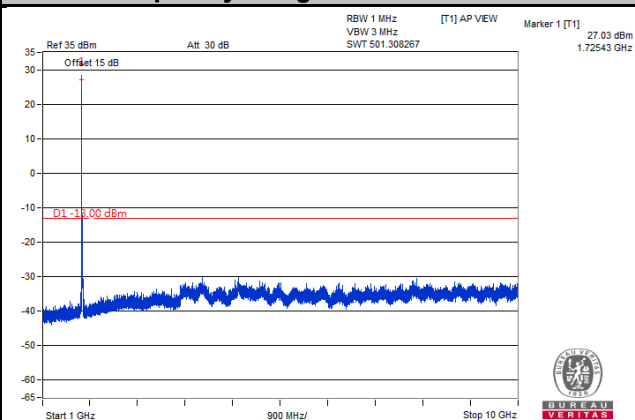
Channel Bandwidth: 15 MHz

Channel 20175

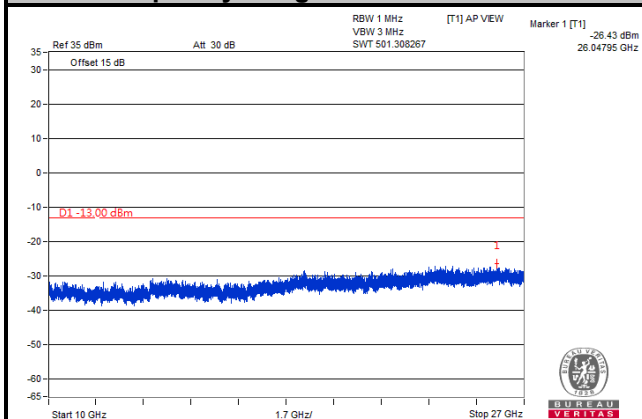
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

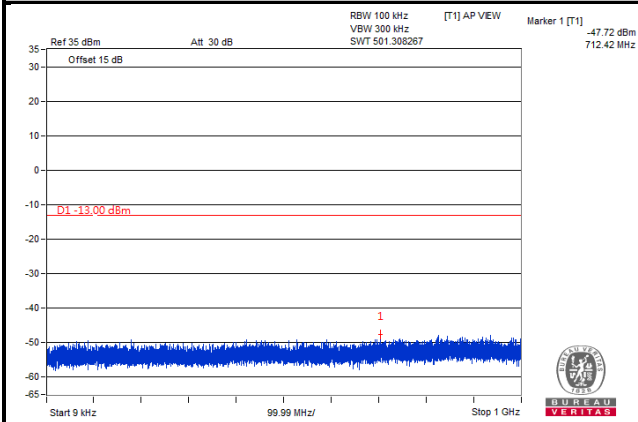


# LTE Band 4

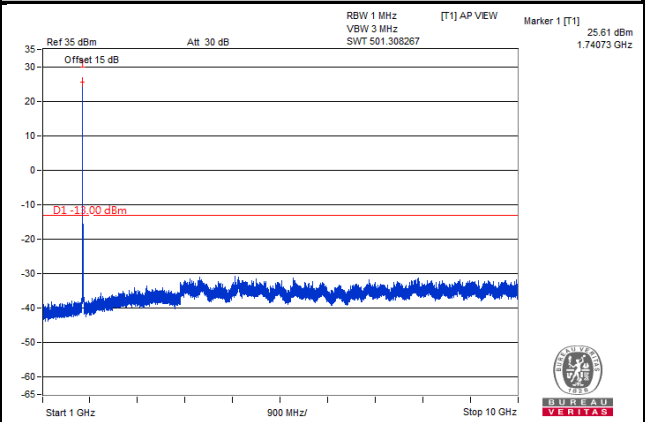
Channel Bandwidth: 15 MHz

Channel 20325

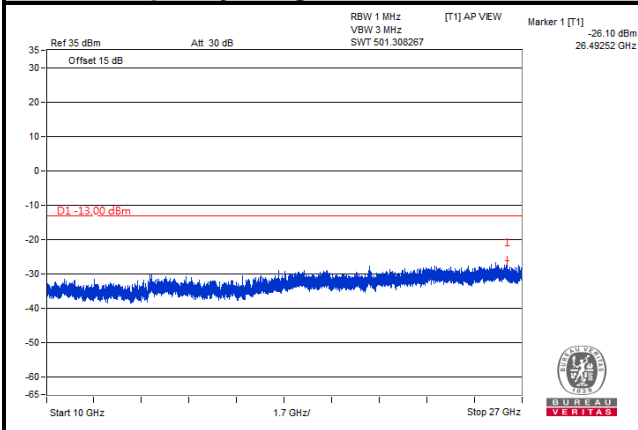
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

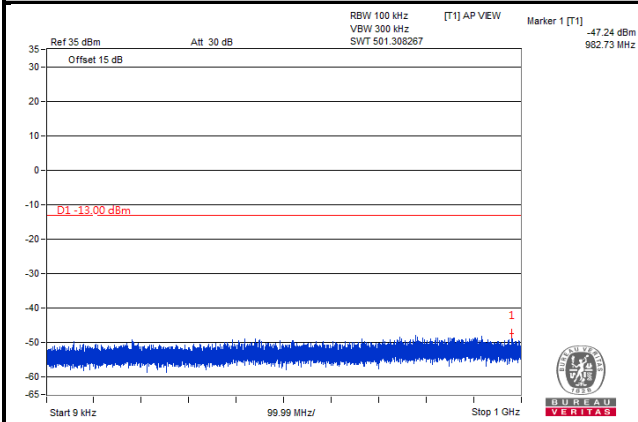


# LTE Band 4

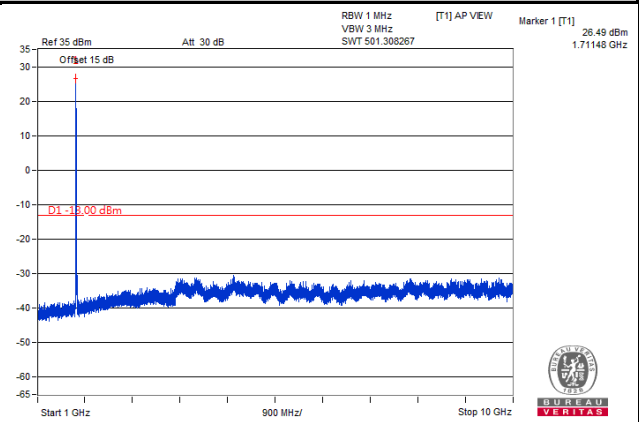
Channel Bandwidth: 20 MHz

Channel 20050

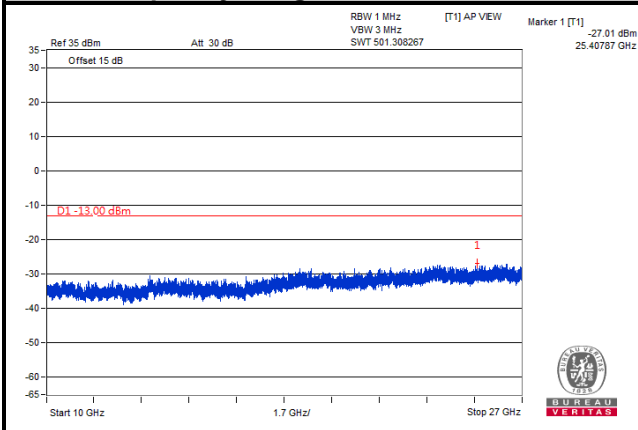
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

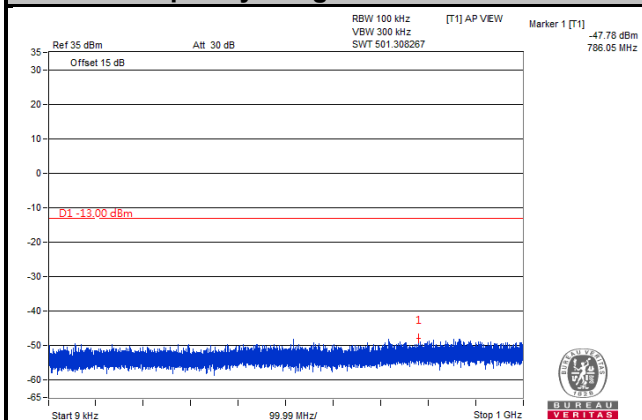


# LTE Band 4

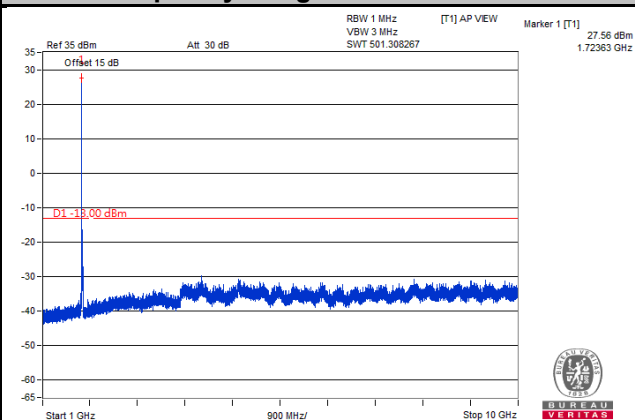
Channel Bandwidth: 20 MHz

Channel 20175

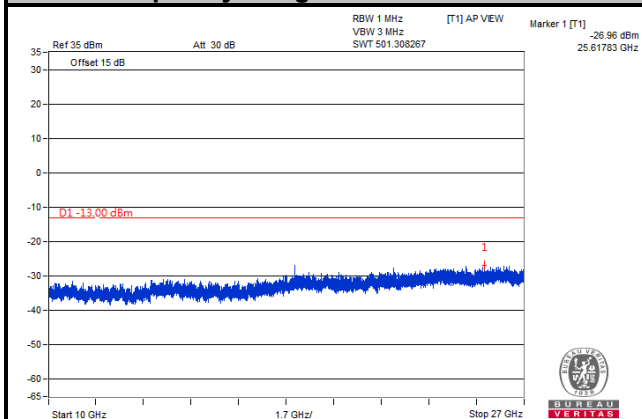
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

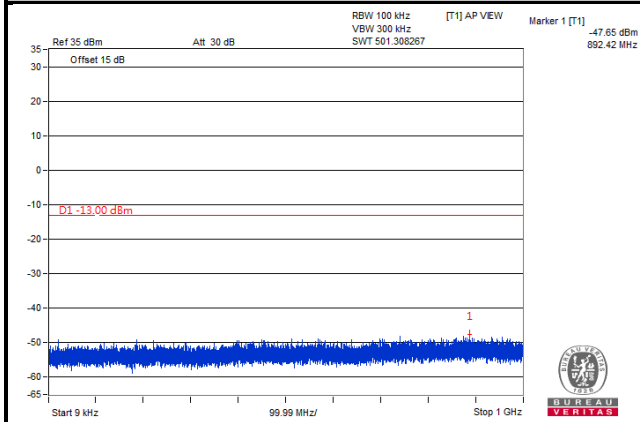


# LTE Band 4

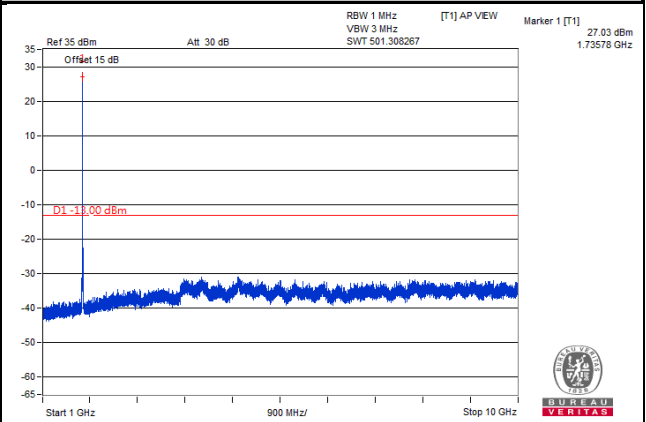
Channel Bandwidth: 20 MHz

Channel 20300

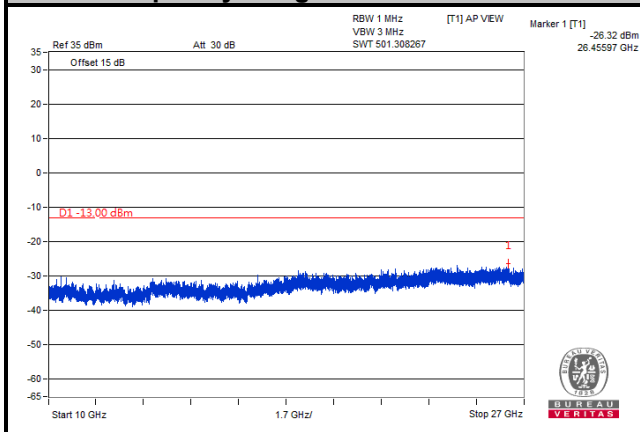
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

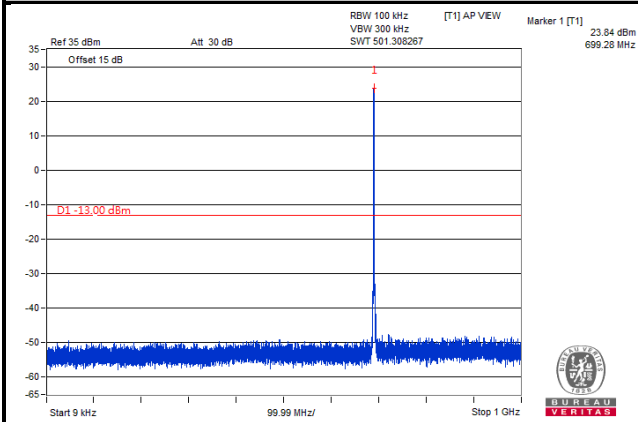


## LTE Band 12

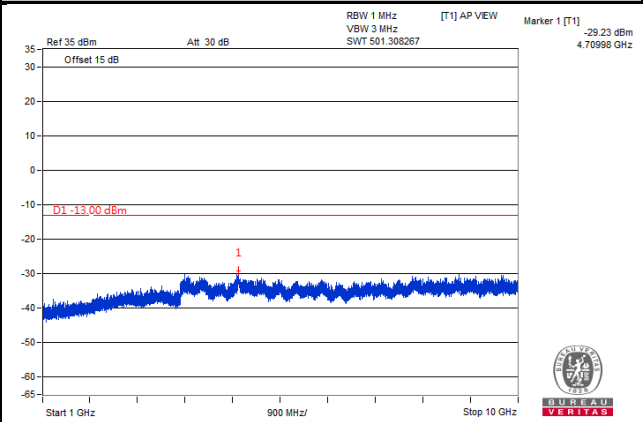
Channel Bandwidth: 1.4 MHz

Channel 23017

Frequency Range: 9 kHz ~ 1 GHz

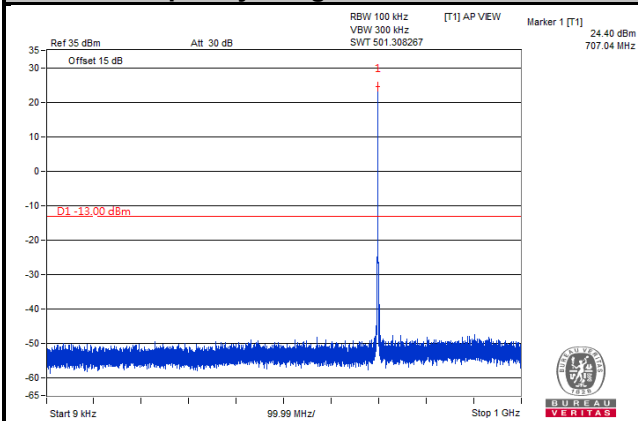


Frequency Range: 1 GHz ~ 10 GHz

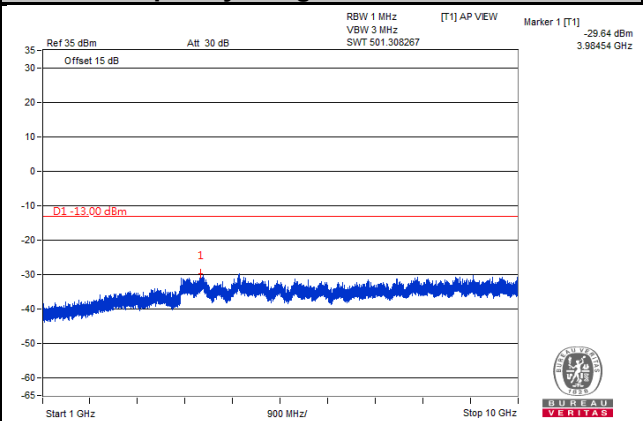


## Channel 23095

Frequency Range: 9 kHz ~ 1 GHz

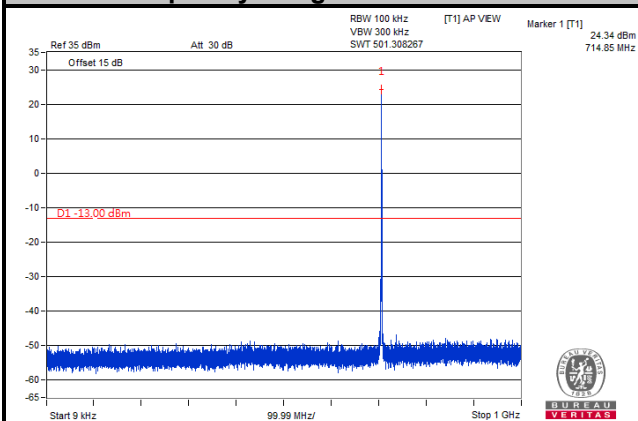


Frequency Range: 1 GHz ~ 10 GHz

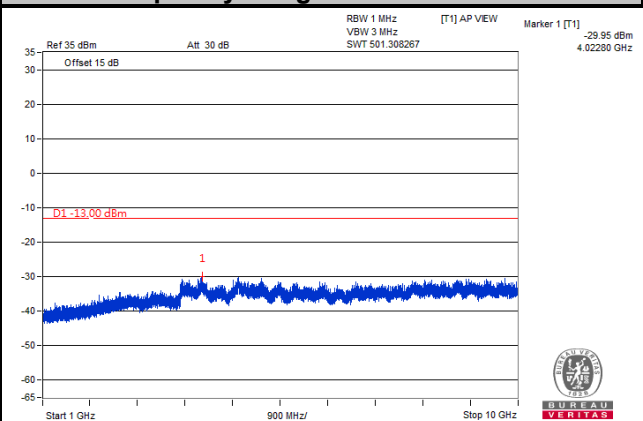


## Channel 23173

Frequency Range: 9 kHz ~ 1 GHz



Frequency Range: 1 GHz ~ 10 GHz

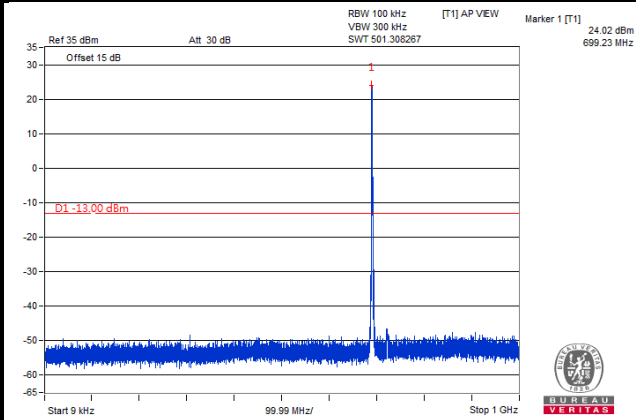


## LTE Band 12

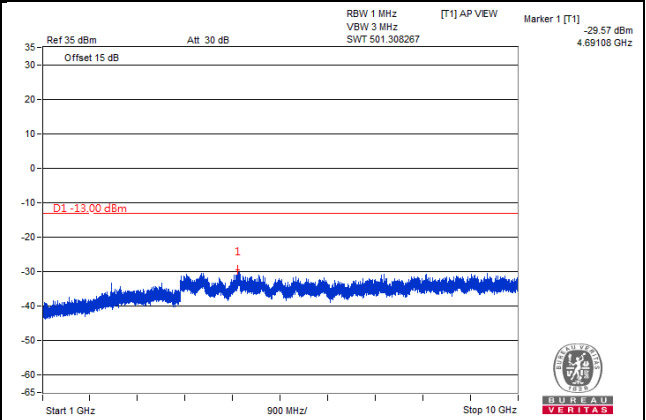
Channel Bandwidth: 3 MHz

Channel 23025

Frequency Range: 9 kHz ~ 1 GHz

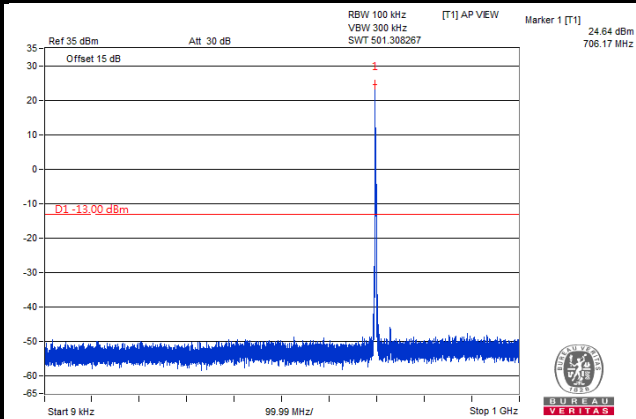


Frequency Range: 1 GHz ~ 10 GHz

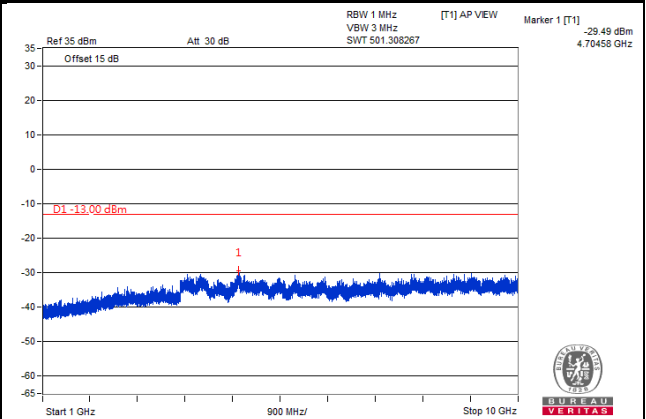


## Channel 23095

Frequency Range: 9 kHz ~ 1 GHz

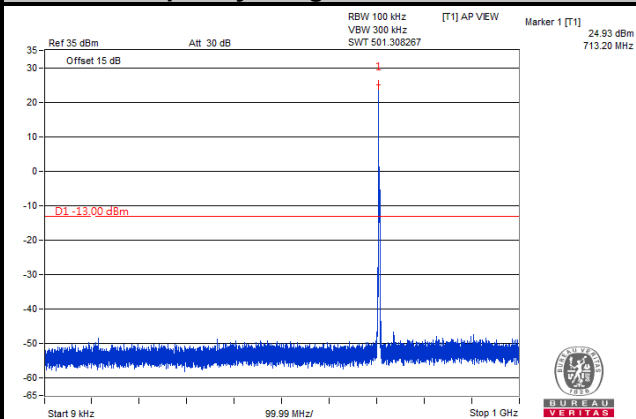


Frequency Range: 1 GHz ~ 10 GHz

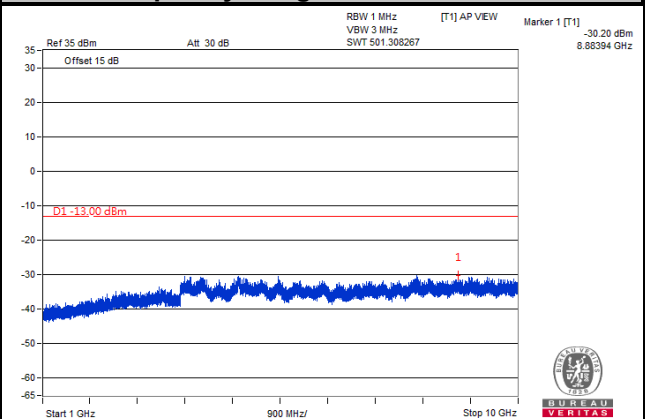


## Channel 23165

Frequency Range: 9 kHz ~ 1 GHz



Frequency Range: 1 GHz ~ 10 GHz

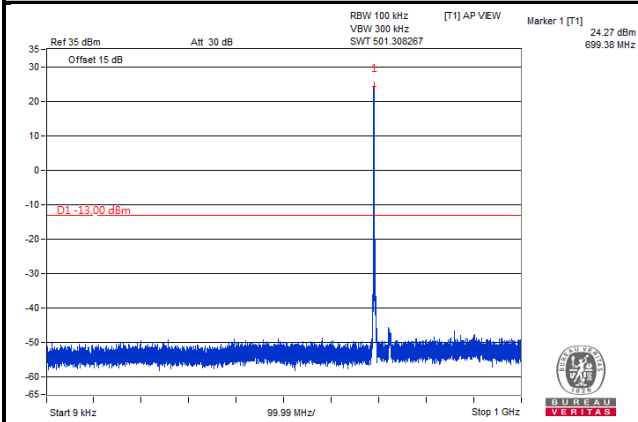


## LTE Band 12

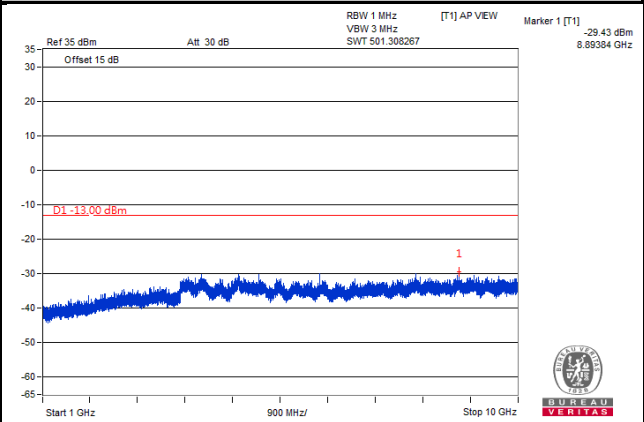
Channel Bandwidth: 5 MHz

Channel 23035

Frequency Range: 9 kHz ~ 1 GHz

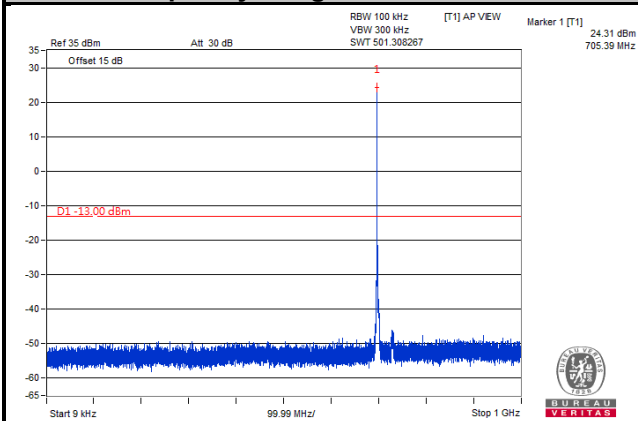


Frequency Range: 1 GHz ~ 10 GHz

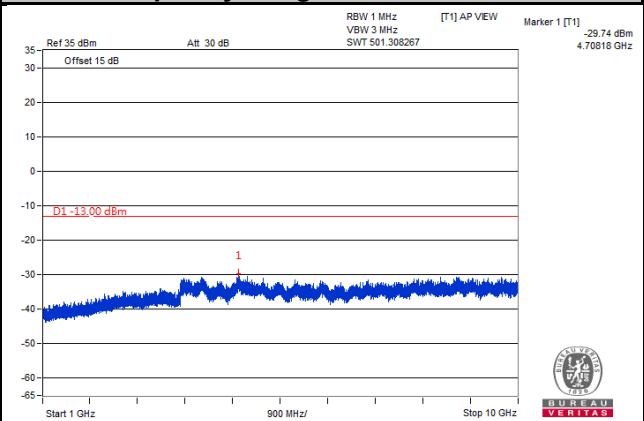


## Channel 23095

Frequency Range: 9 kHz ~ 1 GHz

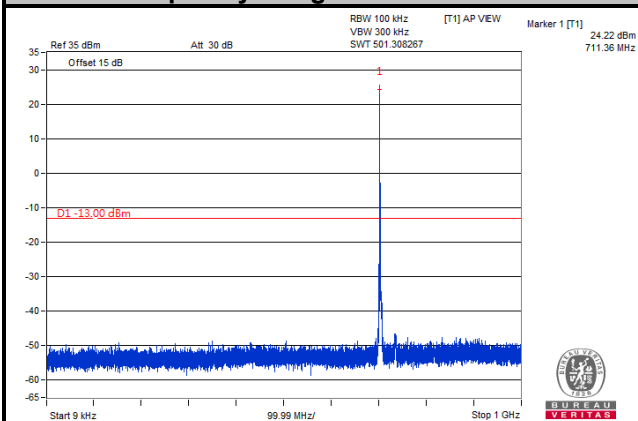


Frequency Range: 1 GHz ~ 10 GHz

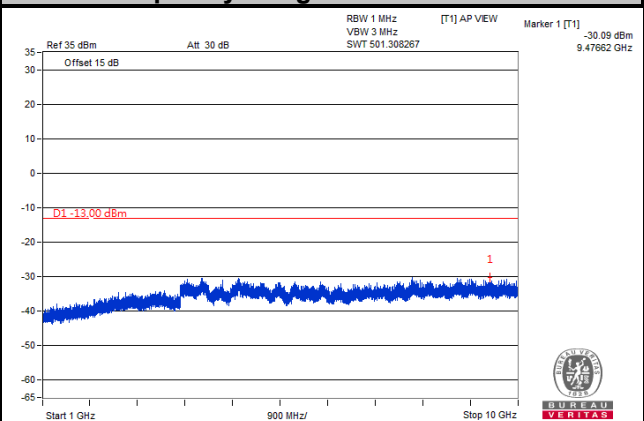


## Channel 23155

Frequency Range: 9 kHz ~ 1 GHz



Frequency Range: 1 GHz ~ 10 GHz

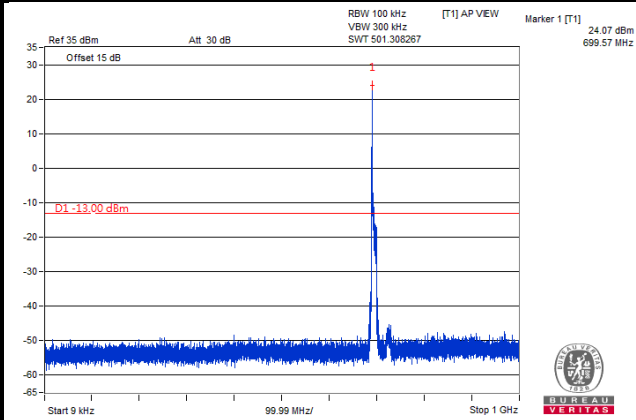


## LTE Band 12

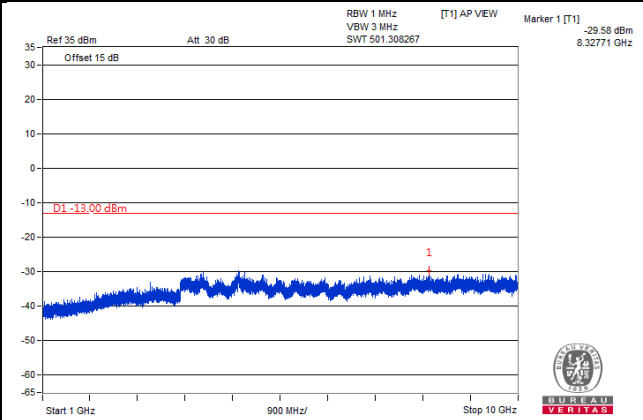
Channel Bandwidth: 10 MHz

Channel 23060

Frequency Range: 9 kHz ~ 1 GHz

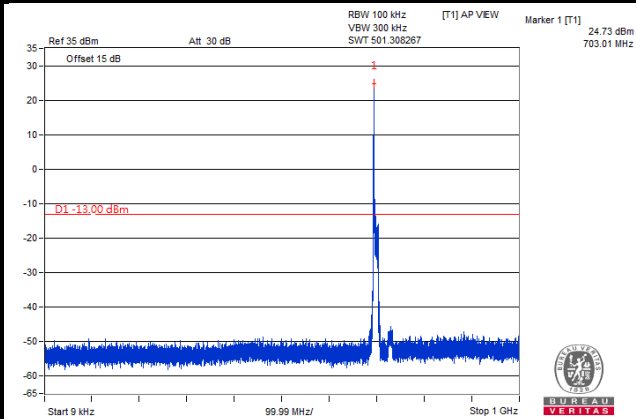


Frequency Range: 1 GHz ~ 10 GHz

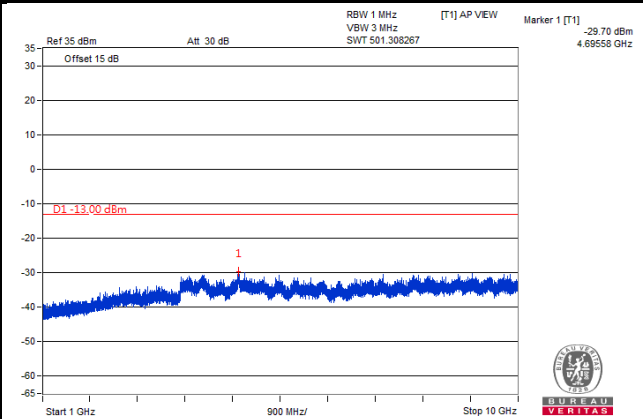


## Channel 23095

Frequency Range: 9 kHz ~ 1 GHz

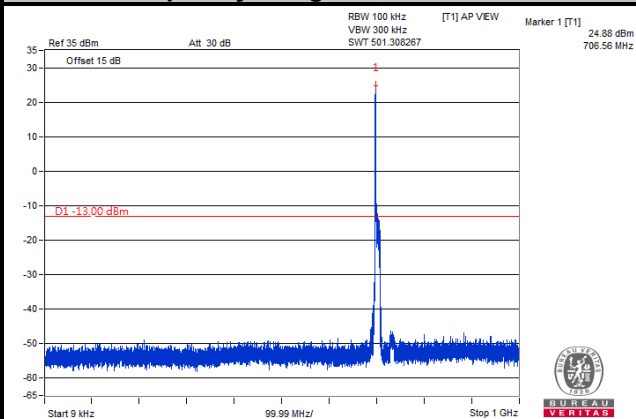


Frequency Range: 1 GHz ~ 10 GHz

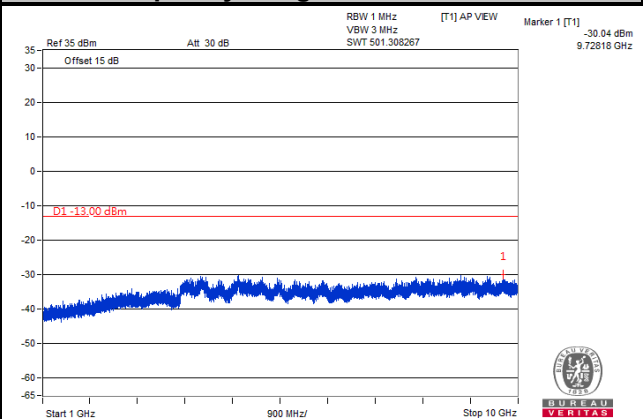


## Channel 23130

Frequency Range: 9 kHz ~ 1 GHz



Frequency Range: 1 GHz ~ 10 GHz

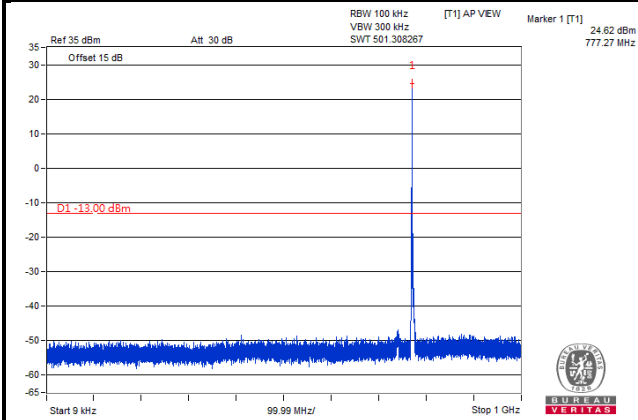


## LTE Band 13

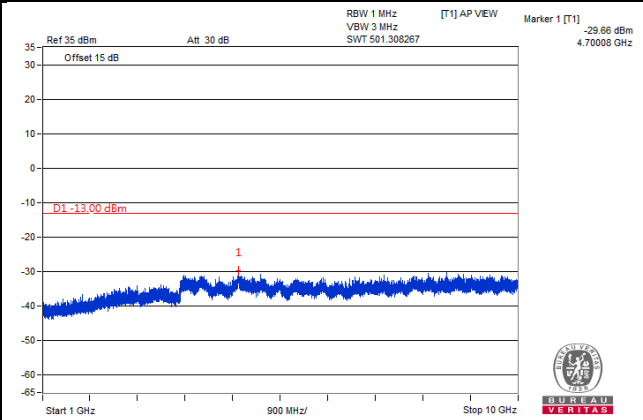
Channel Bandwidth: 5 MHz

Channel 23205

Frequency Range: 9 kHz ~ 1 GHz

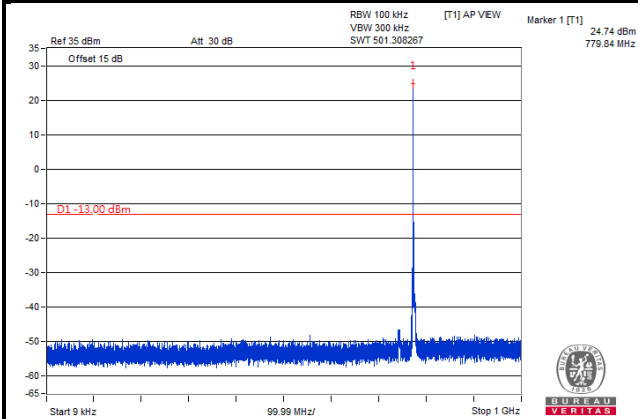


Frequency Range: 1 GHz ~ 10 GHz

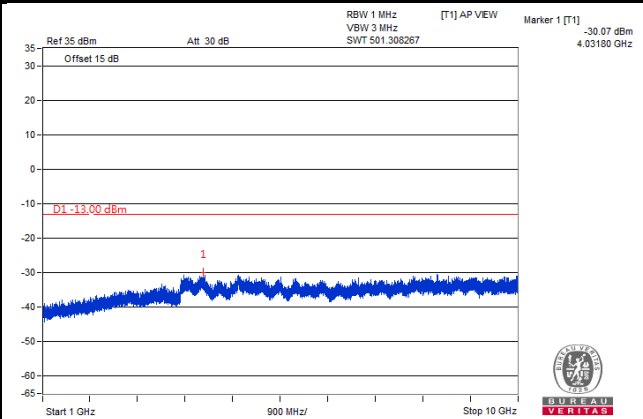


Channel 23230

Frequency Range: 9 kHz ~ 1 GHz

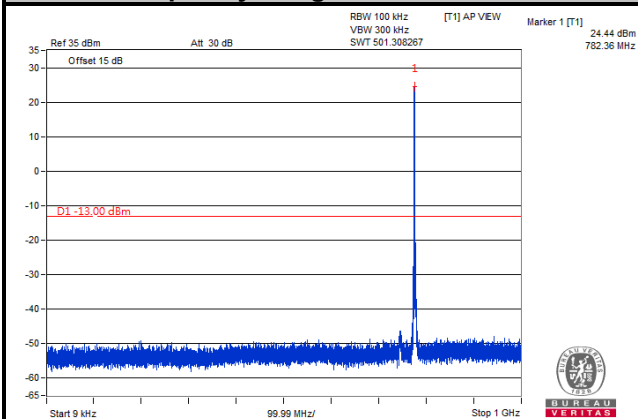


Frequency Range: 1 GHz ~ 10 GHz

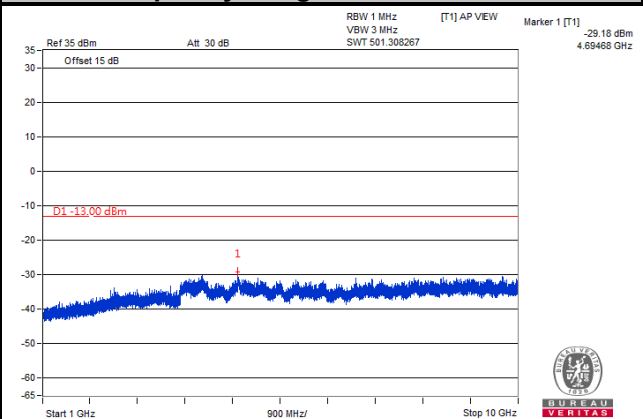


Channel 23255

Frequency Range: 9 kHz ~ 1 GHz



Frequency Range: 1 GHz ~ 10 GHz



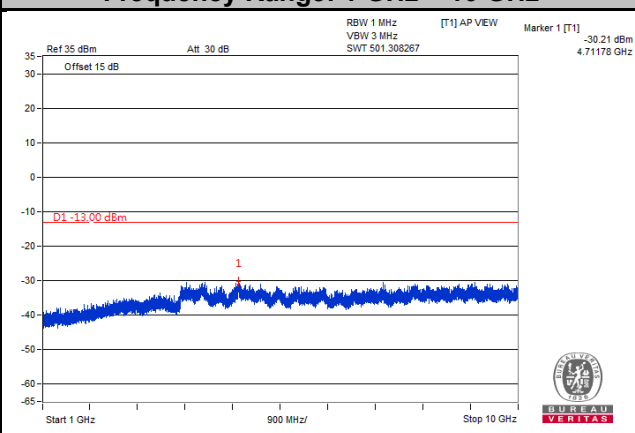
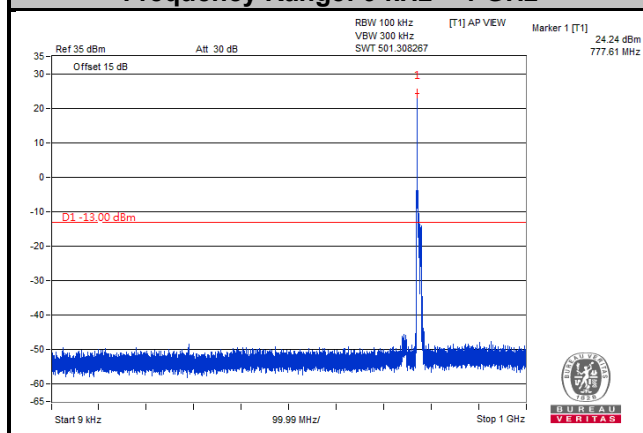
# LTE Band 13

Channel Bandwidth: 10 MHz

Channel 23230

Frequency Range: 9 kHz ~ 1 GHz

Frequency Range: 1 GHz ~ 10 GHz

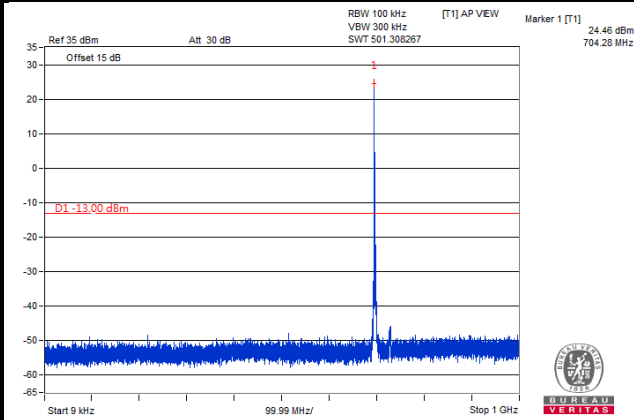


## LTE Band 17

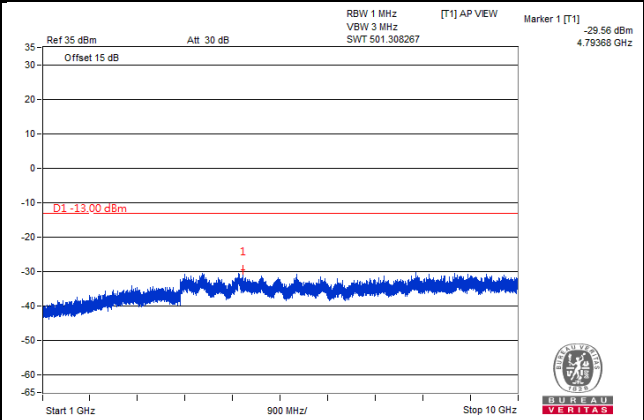
Channel Bandwidth: 5 MHz

Channel 23755

Frequency Range: 9 kHz ~ 1 GHz

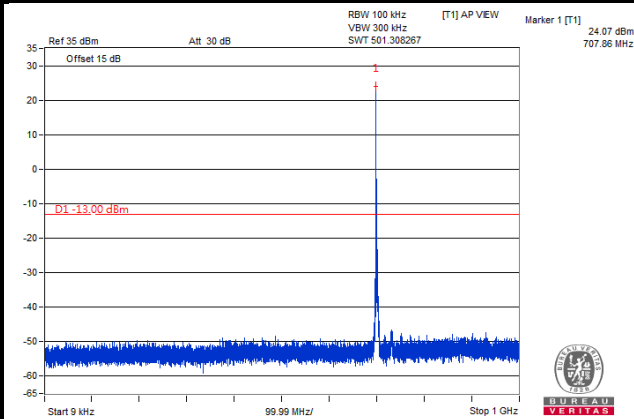


Frequency Range: 1 GHz ~ 10 GHz

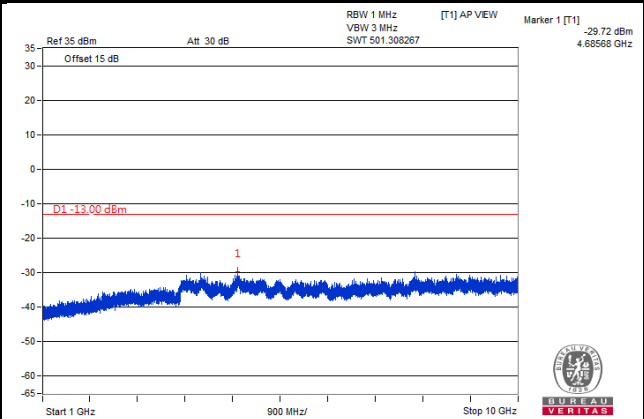


## Channel 23790

Frequency Range: 9 kHz ~ 1 GHz

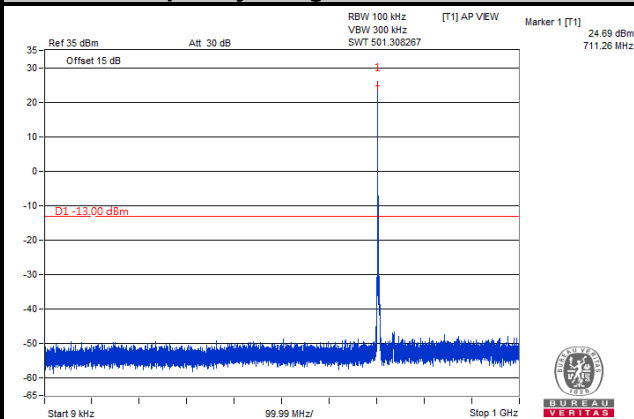


Frequency Range: 1 GHz ~ 10 GHz

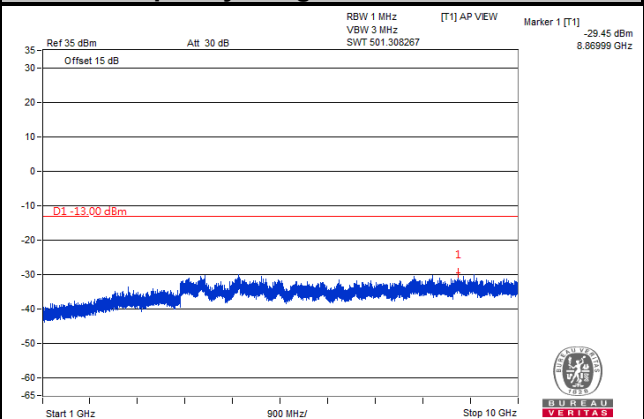


## Channel 23825

Frequency Range: 9 kHz ~ 1 GHz



Frequency Range: 1 GHz ~ 10 GHz

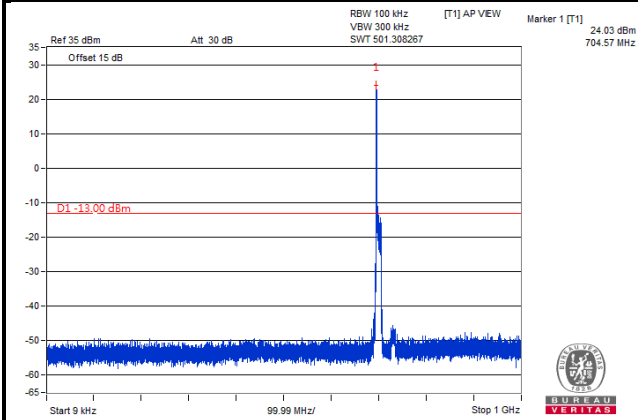


# LTE Band 17

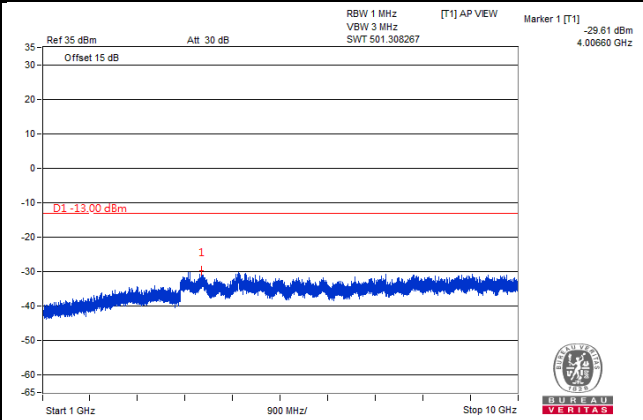
Channel Bandwidth: 10 MHz

Channel 23780

Frequency Range: 9 kHz ~ 1 GHz

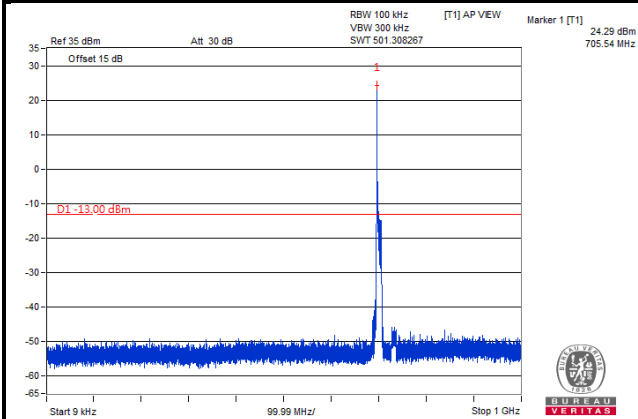


Frequency Range: 1 GHz ~ 10 GHz

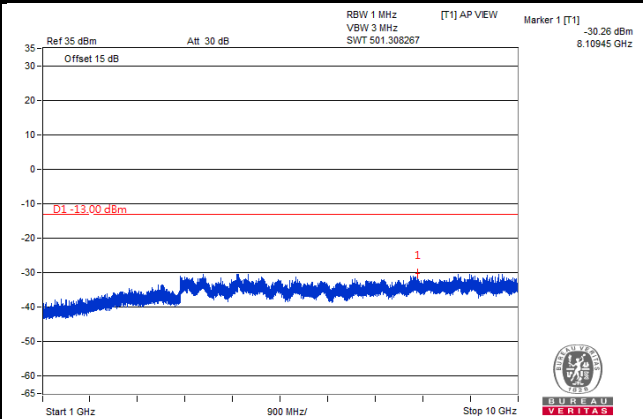


## Channel 23790

Frequency Range: 9 kHz ~ 1 GHz

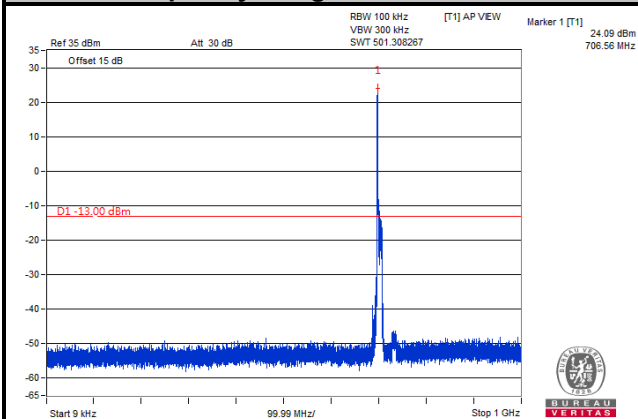


Frequency Range: 1 GHz ~ 10 GHz

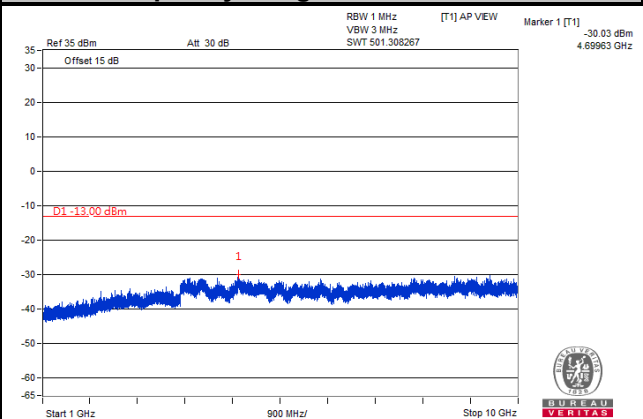


## Channel 23800

Frequency Range: 9 kHz ~ 1 GHz



Frequency Range: 1 GHz ~ 10 GHz

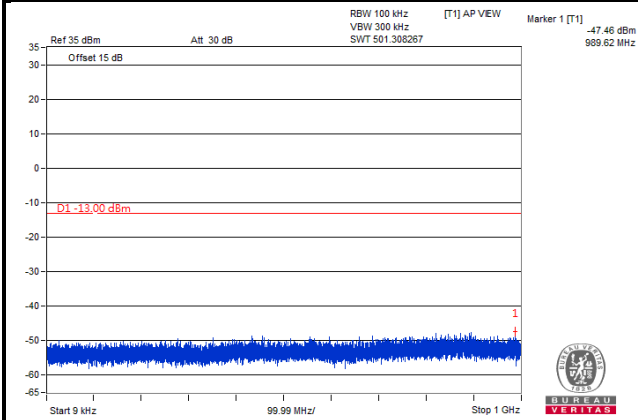


# LTE Band 66

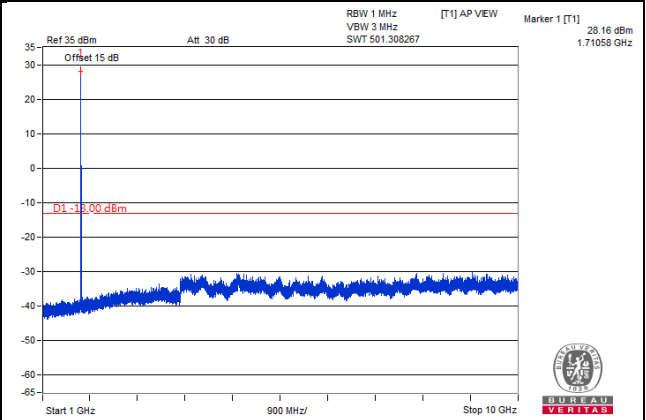
Channel Bandwidth: 1.4 MHz

Channel 131979

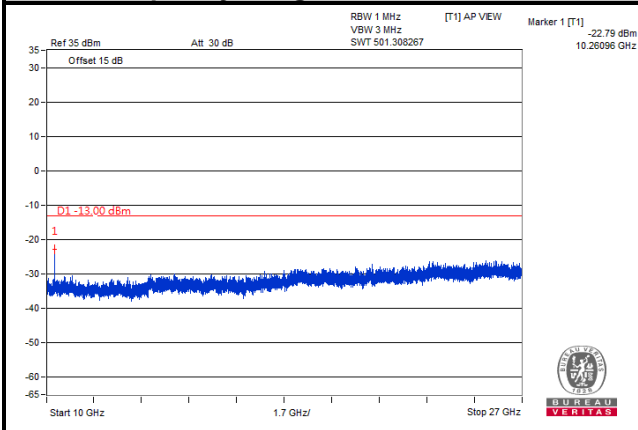
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

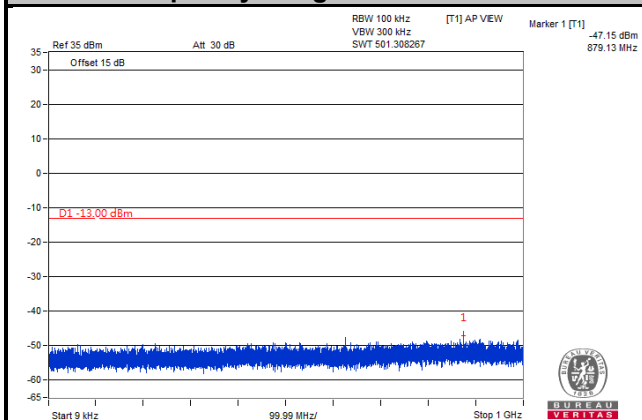


# LTE Band 66

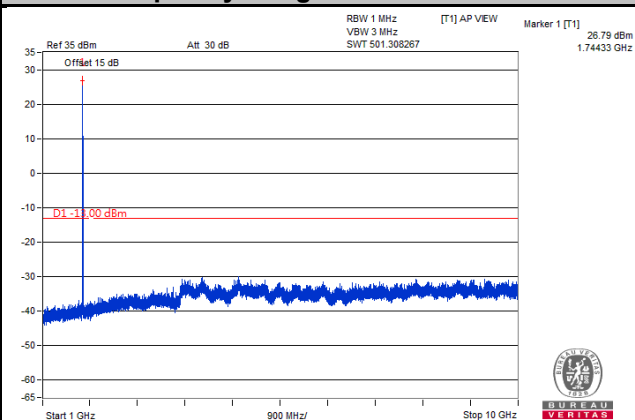
Channel Bandwidth: 1.4 MHz

Channel 13322

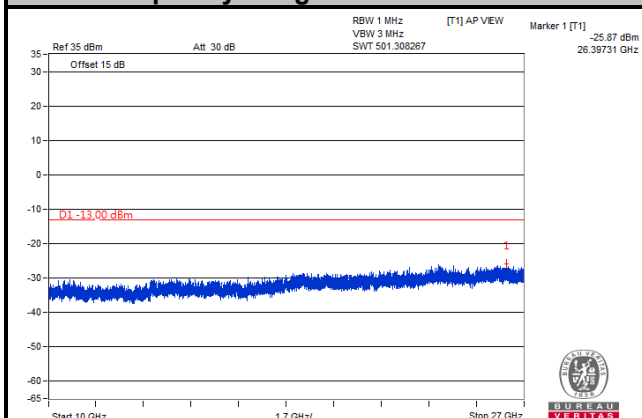
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

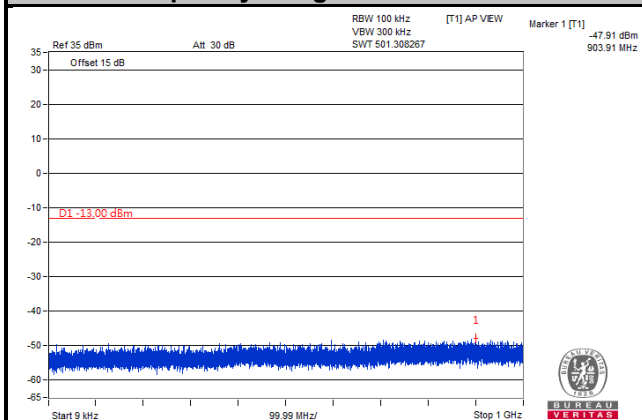


# LTE Band 66

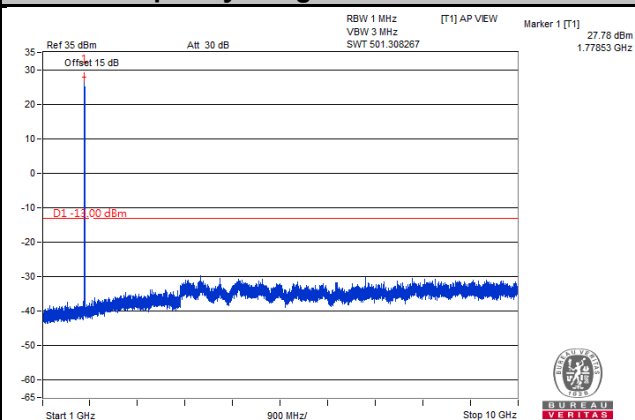
Channel Bandwidth: 1.4 MHz

Channel 132655

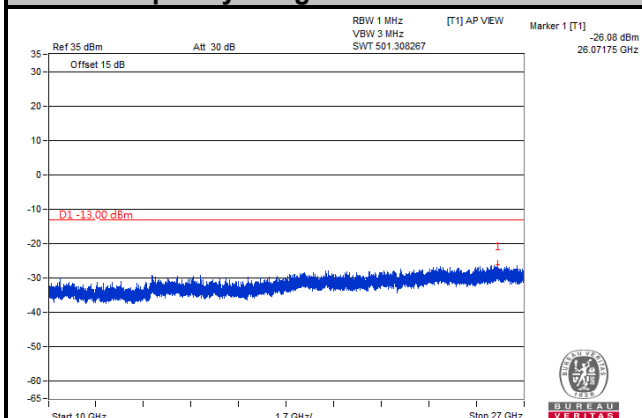
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

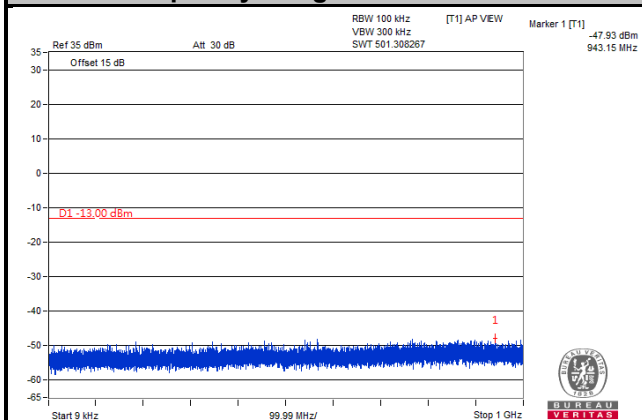


# LTE Band 66

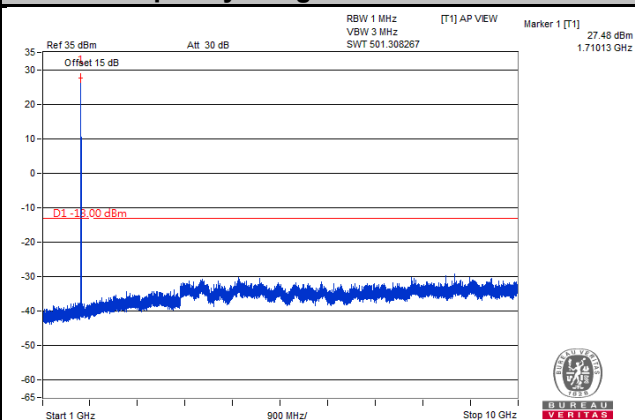
Channel Bandwidth: 3 MHz

Channel 131987

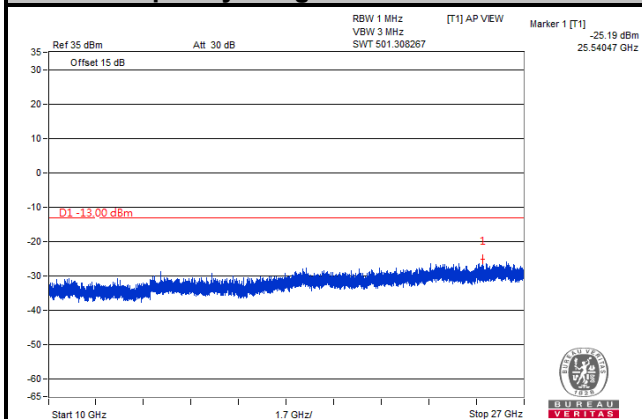
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

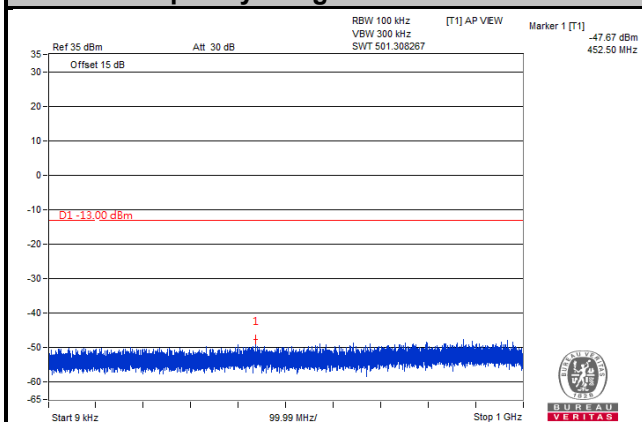


# LTE Band 66

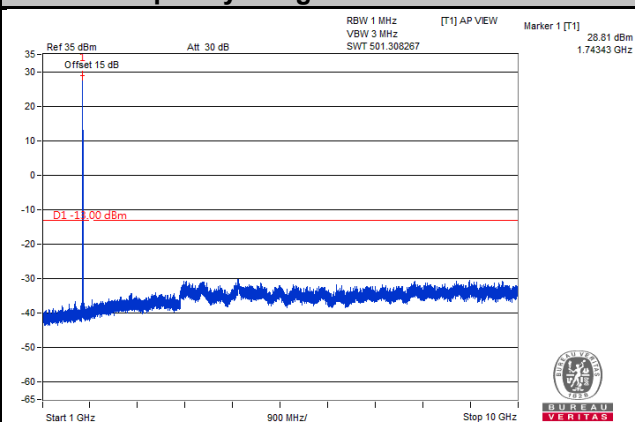
Channel Bandwidth: 3 MHz

Channel 13322

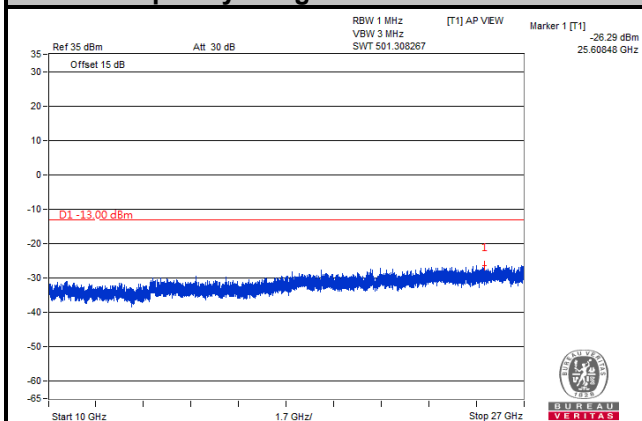
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

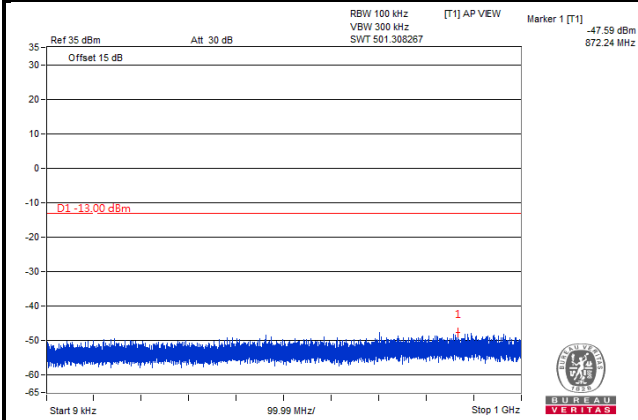


# LTE Band 66

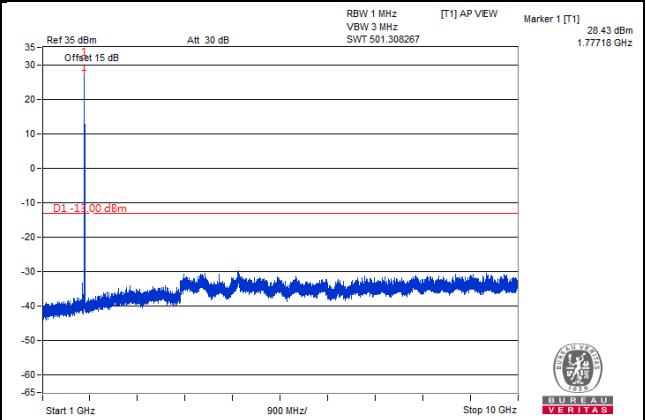
Channel Bandwidth: 3 MHz

Channel 132657

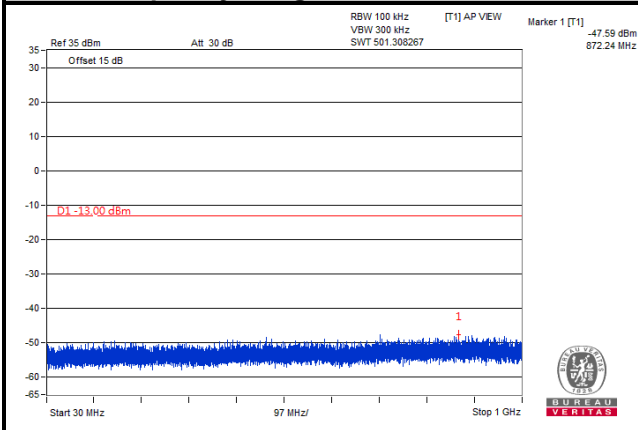
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

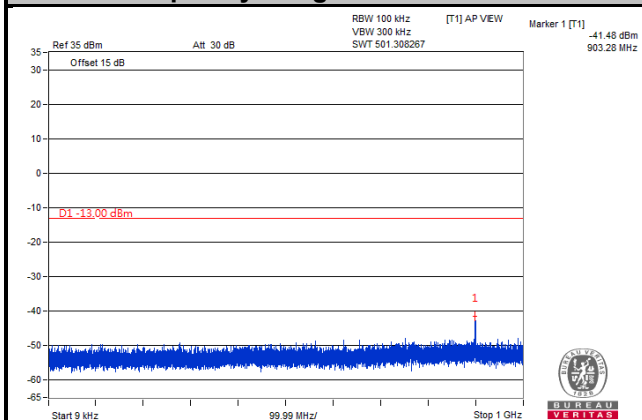


# LTE Band 66

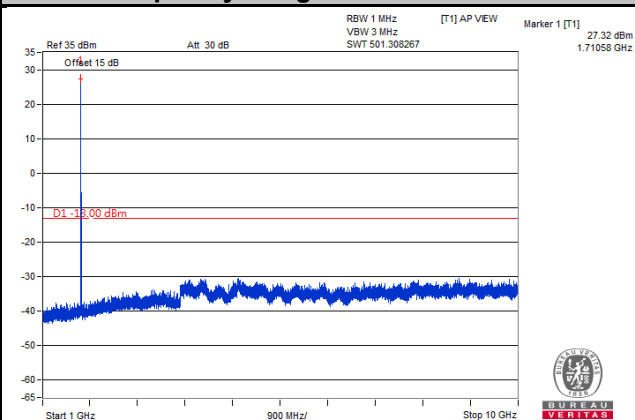
Channel Bandwidth: 5 MHz

Channel 131997

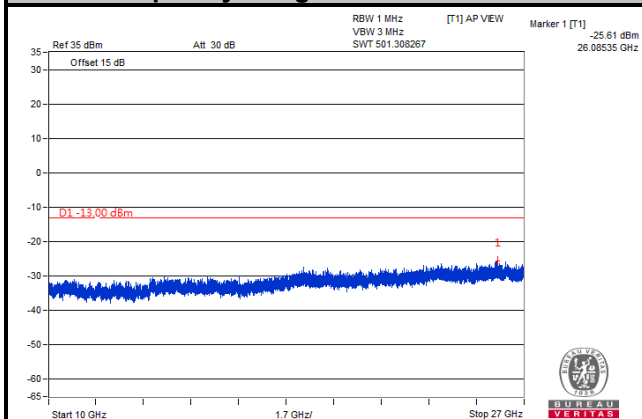
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

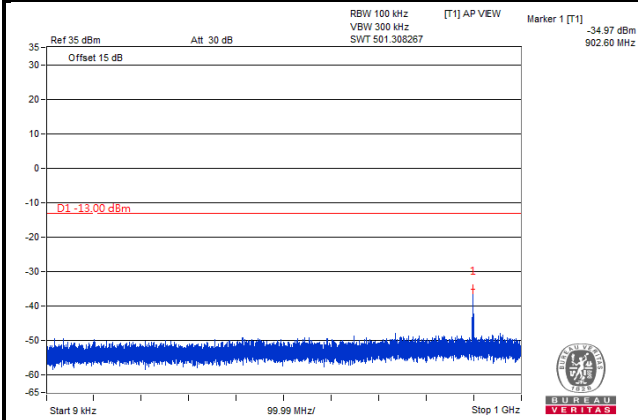


# LTE Band 66

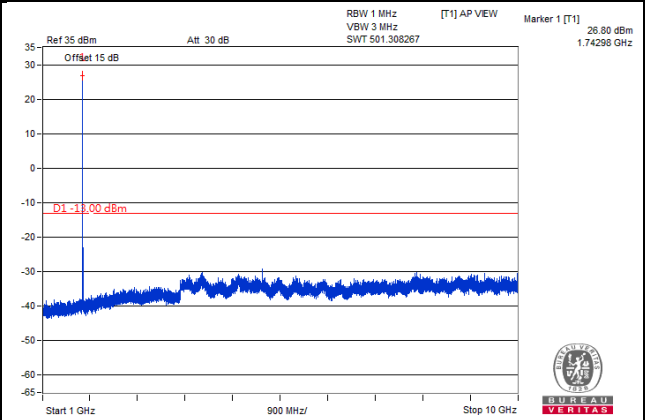
Channel Bandwidth: 5 MHz

Channel 132322

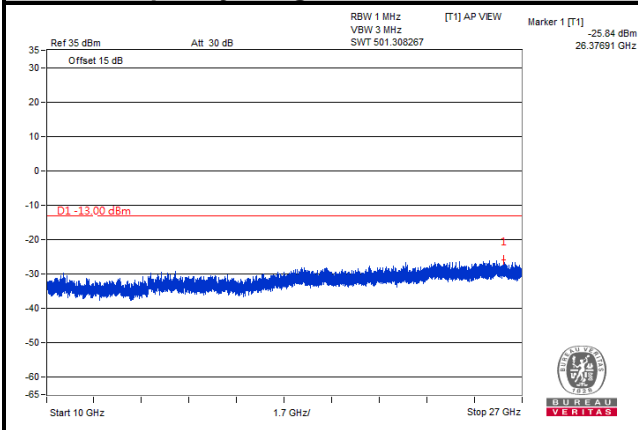
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

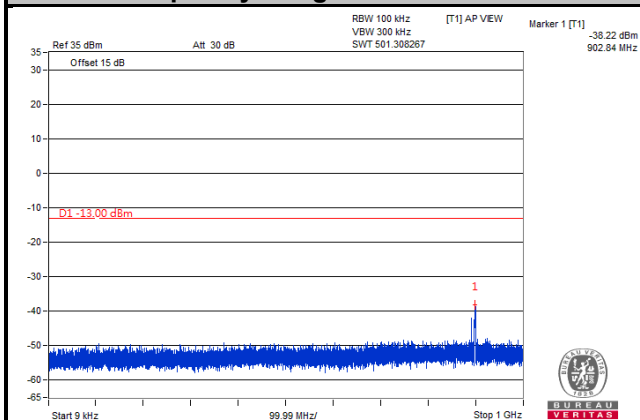


# LTE Band 66

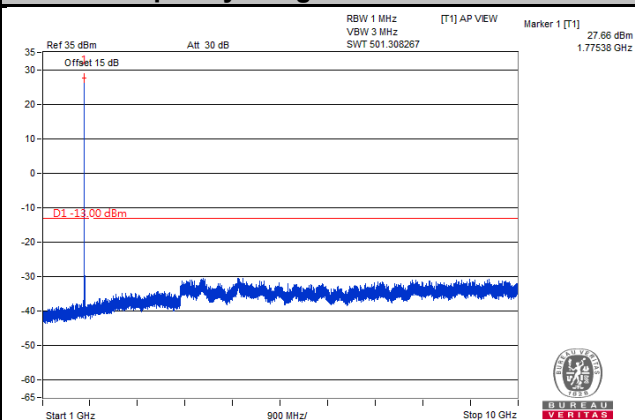
Channel Bandwidth: 5 MHz

Channel 132647

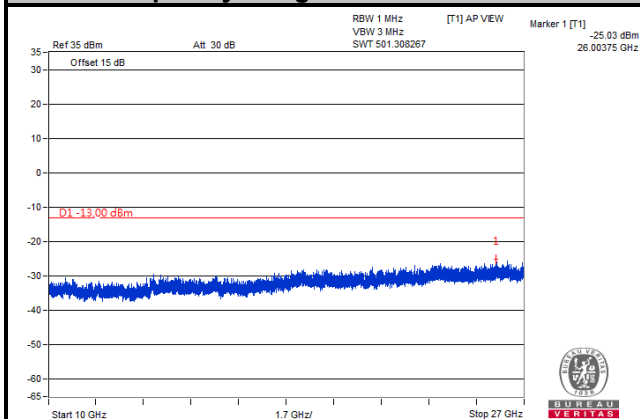
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

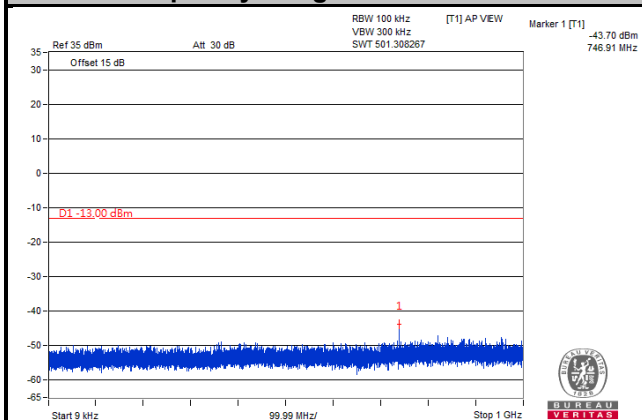


# LTE Band 66

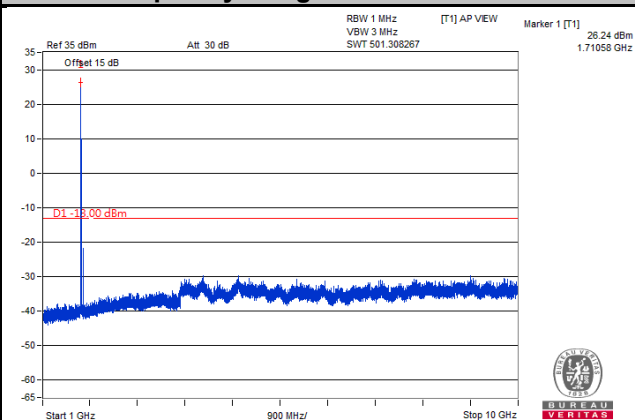
Channel Bandwidth: 10 MHz

Channel 132022

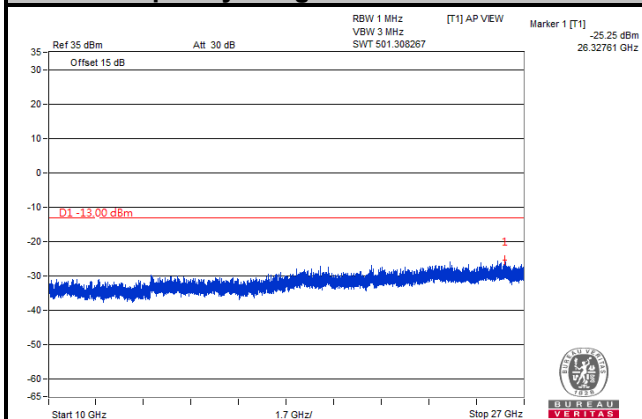
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

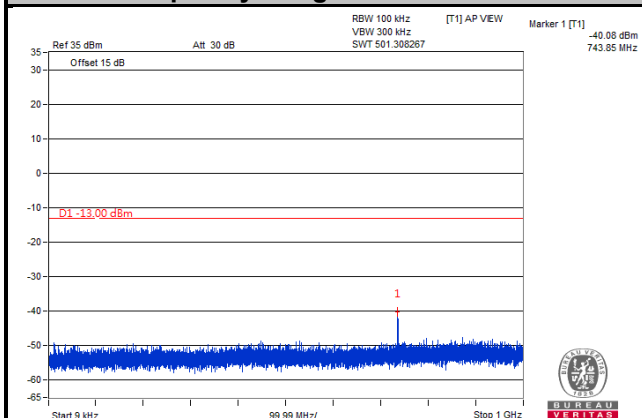


# LTE Band 66

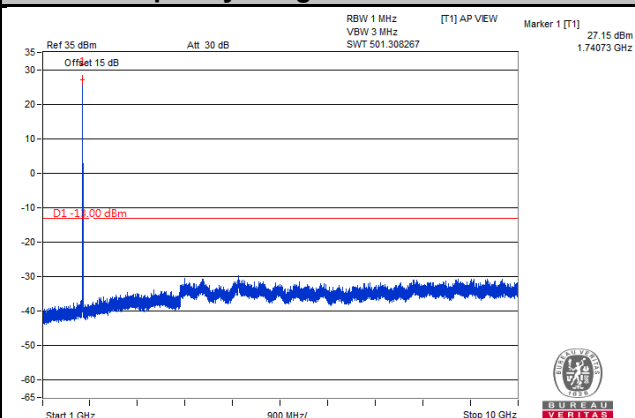
Channel Bandwidth: 10 MHz

Channel 133222

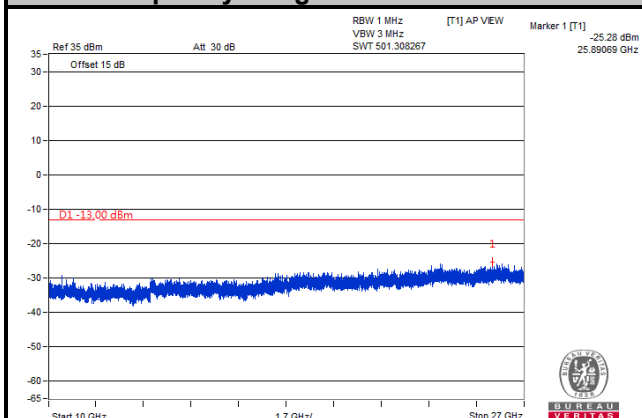
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

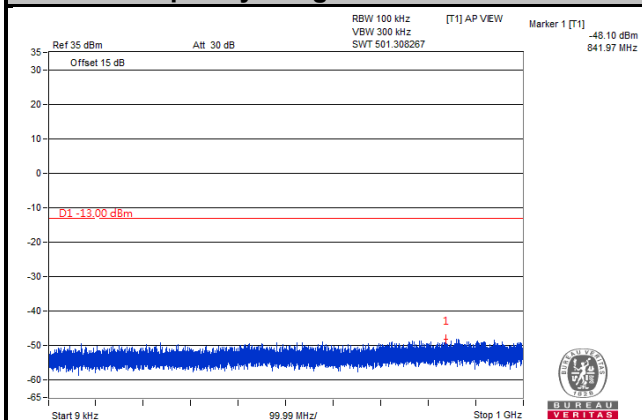


# LTE Band 66

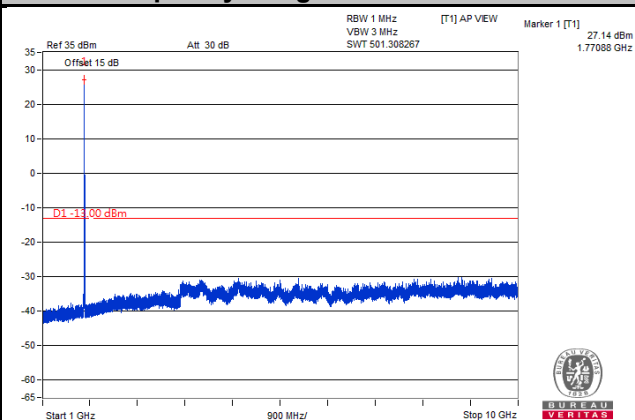
Channel Bandwidth: 10 MHz

Channel 132622

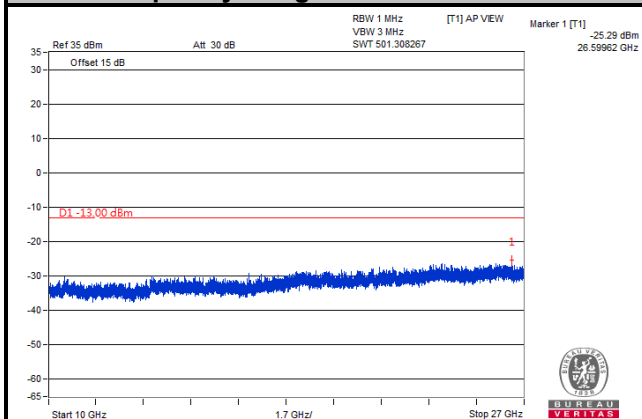
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

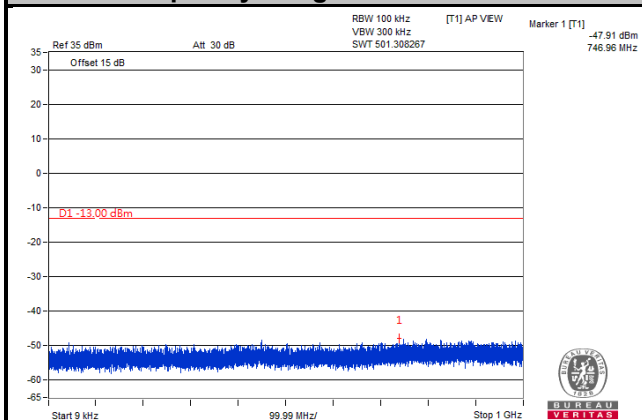


# LTE Band 66

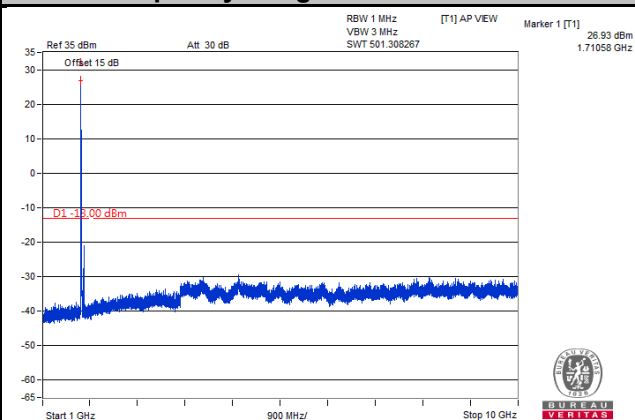
Channel Bandwidth: 15 MHz

Channel 132047

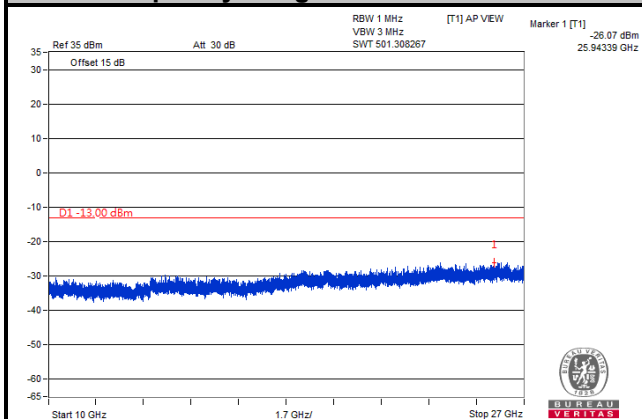
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

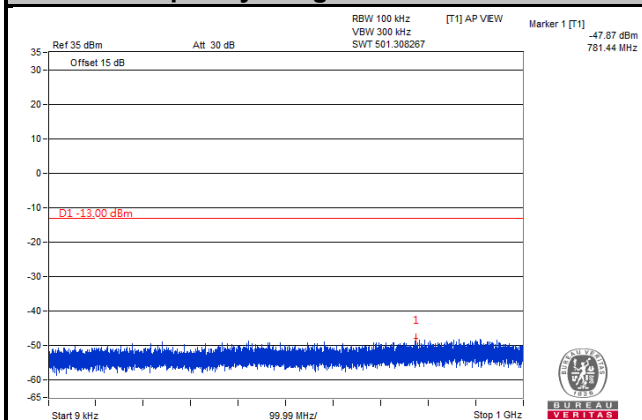


# LTE Band 66

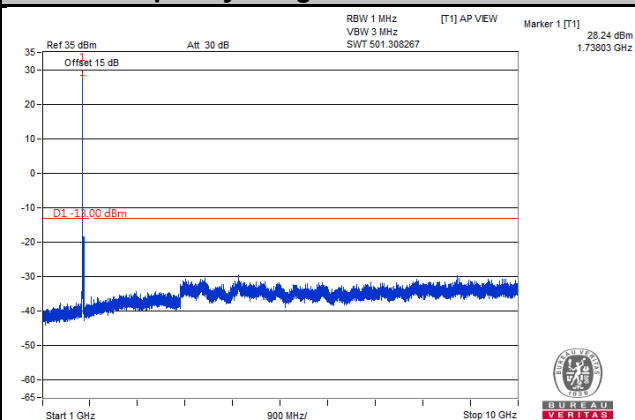
Channel Bandwidth: 15 MHz

Channel 132322

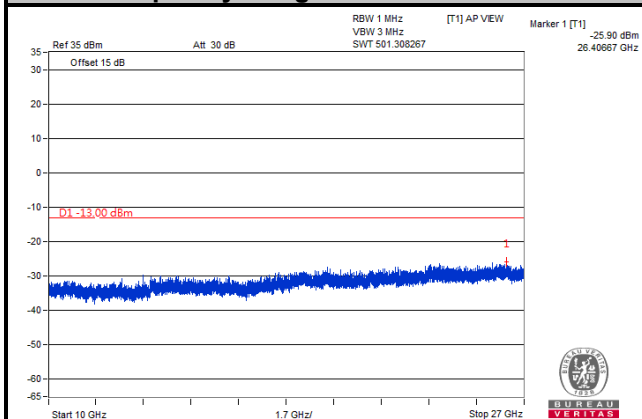
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

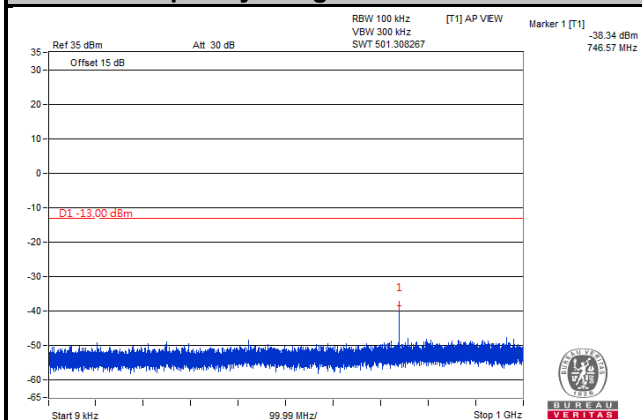


# LTE Band 66

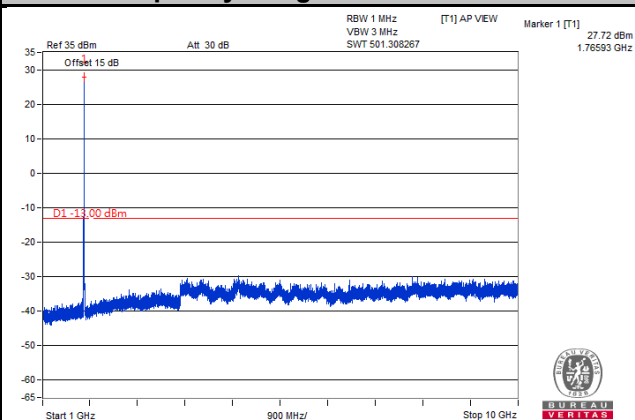
Channel Bandwidth: 15 MHz

Channel 132597

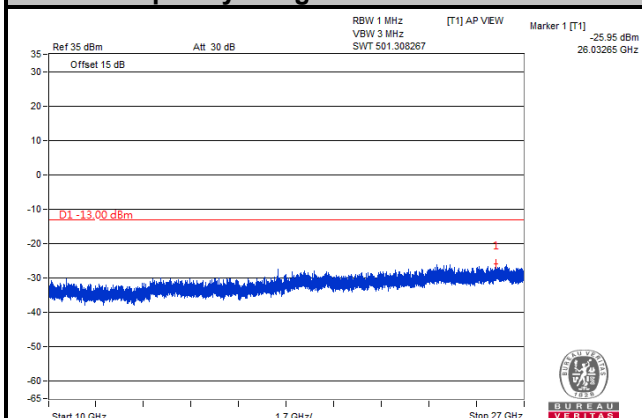
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

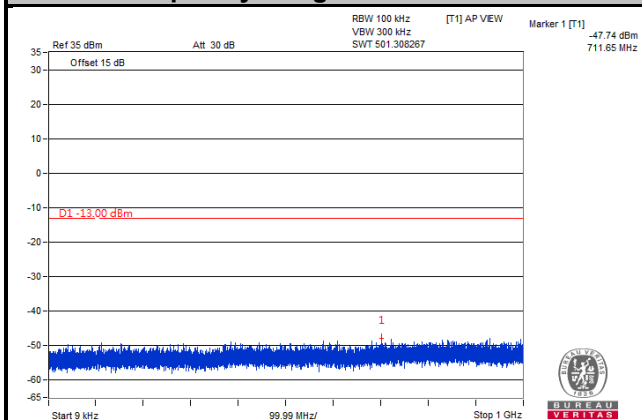


# LTE Band 66

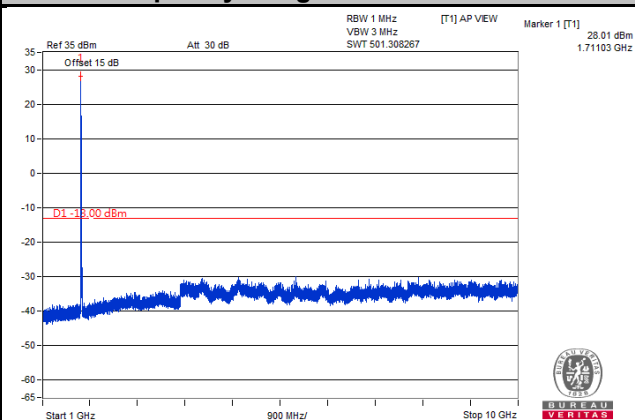
Channel Bandwidth: 20 MHz

Channel 132072

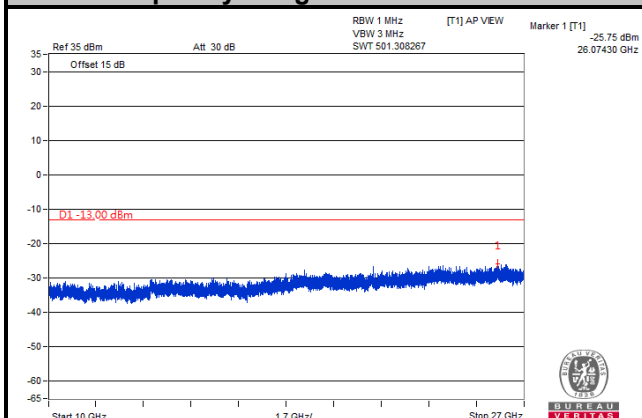
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

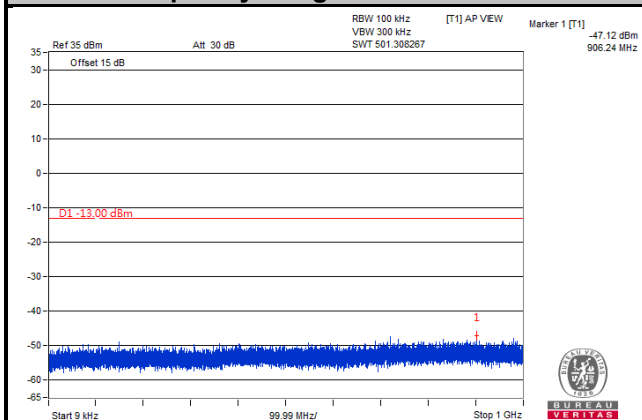


# LTE Band 66

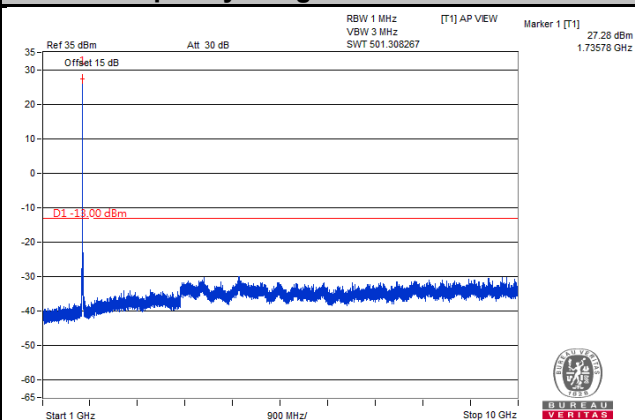
Channel Bandwidth: 20 MHz

Channel 132322

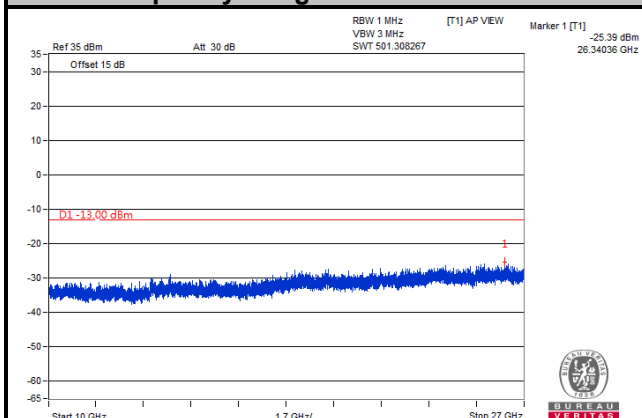
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz

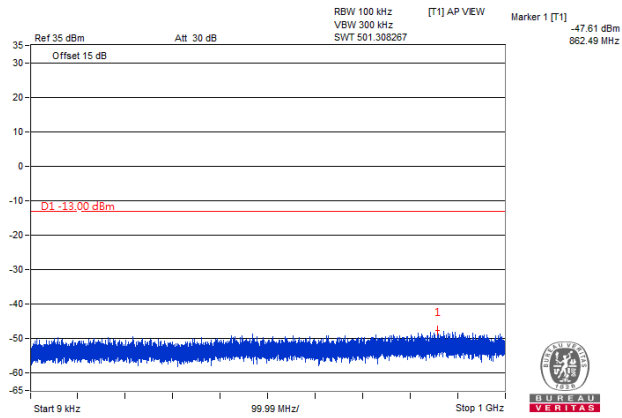


# LTE Band 66

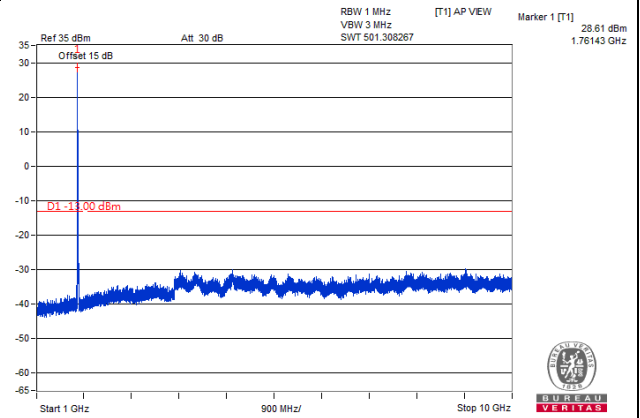
Channel Bandwidth: 20 MHz

Channel 132572

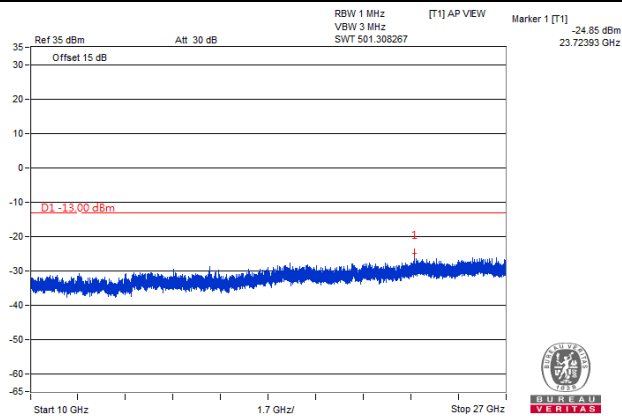
## Frequency Range: 9 kHz ~ 1 GHz



## Frequency Range: 1 GHz ~ 10 GHz



## Frequency Range: 10 GHz ~ 27 GHz



## 4.8 Radiated Emission Measurement

### 4.8.1 Limits of Radiated Emission Measurement

- a. The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB. The limit of emission is equal to -13 dBm.
- b. For operations in the 775-788 MHz, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz. The limit of emissions is equal to -40 dBm.

### 4.8.2 Test Procedure

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

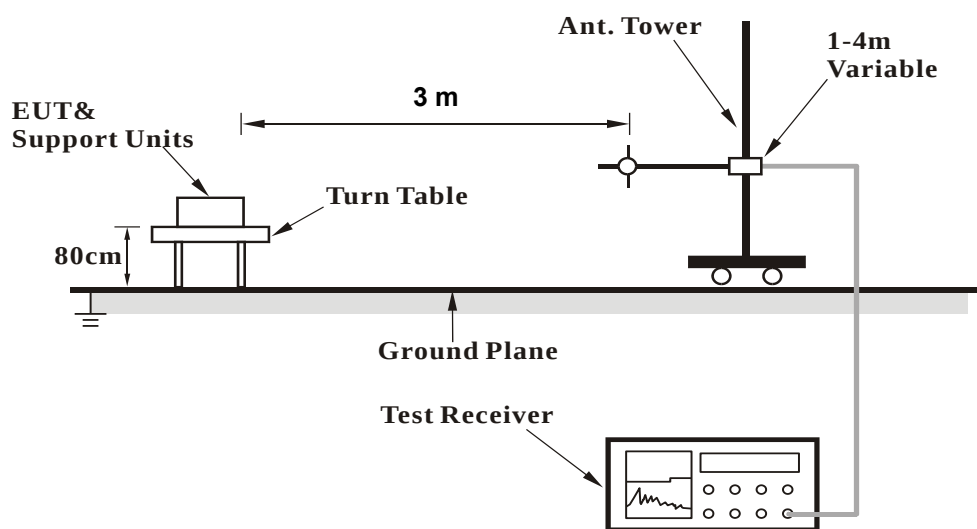
**Note:** The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

### 4.8.3 Deviation from Test Standard

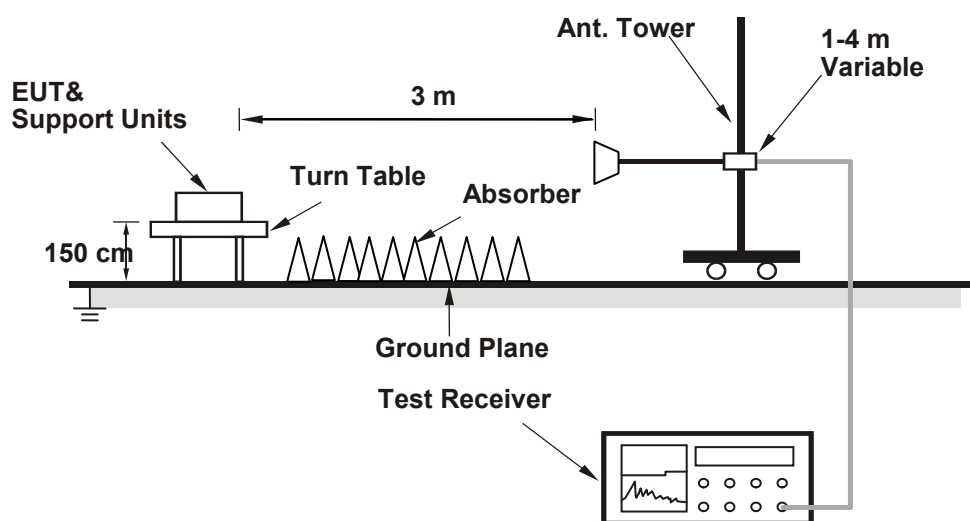
No deviation.

#### 4.8.4 Test Setup

##### <Radiated Emission below or equal 1 GHz>



##### <Radiated Emission above 1 GHz>



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

#### 4.8.5 Test Results

WCDMA:

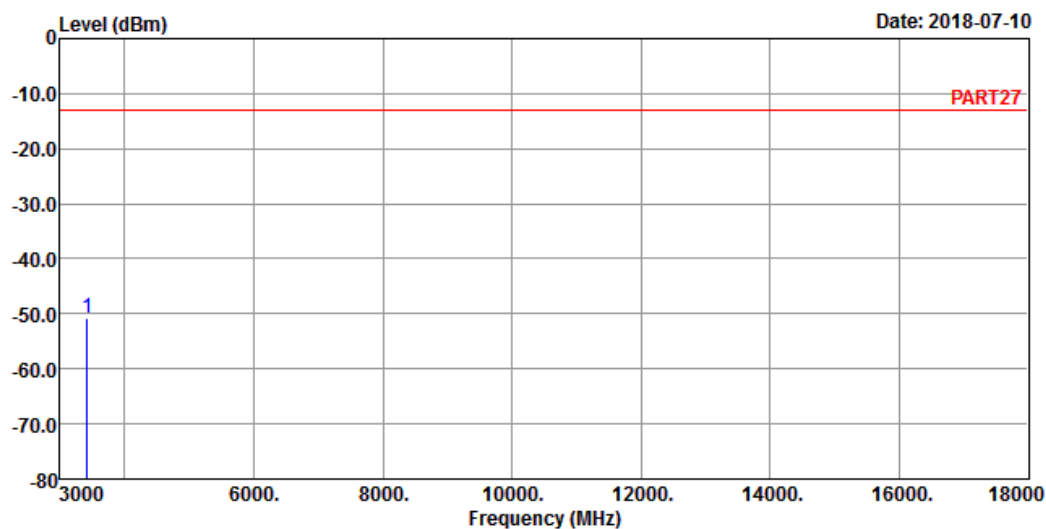
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5

Condition: PART27 HORIZONTAL

Remak : WCDMA Band 4 L-CH Link

Tested by: Jisyong Wang

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

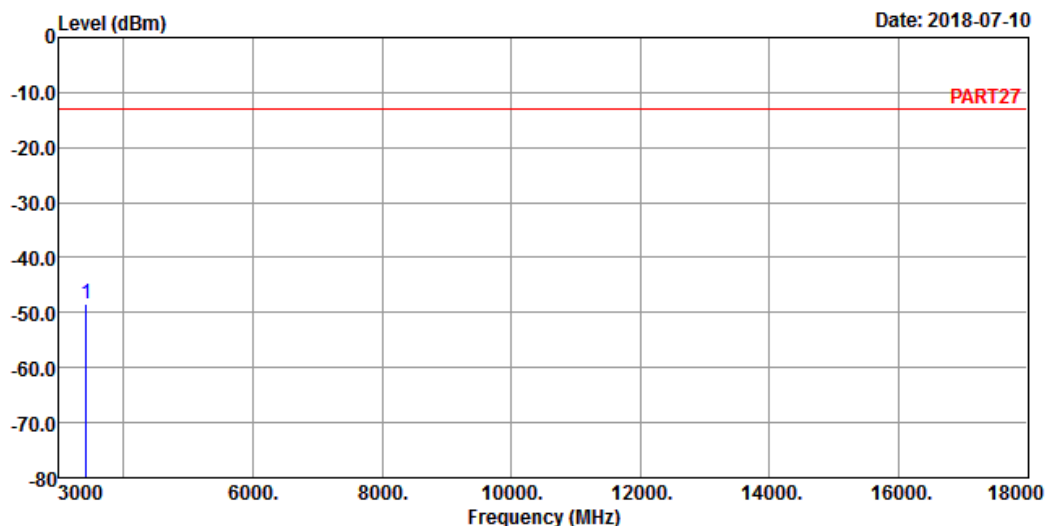
1 pp 3424.80 -50.84 -42.50 -13.00 -37.84 -8.34 Peak



# Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5  
 Condition: PART27 VERTICAL  
 Remak : WCDMA Band 4 L-CH Link  
 Tested by: Jisyong Wang

|              |        | Read   | Limit  | Over   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|
| Freq         | Level  | Level  | Line   | Limit  | Factor | Remark |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 3424.80 | -48.47 | -40.13 | -13.00 | -35.47 | -8.34  | Peak   |

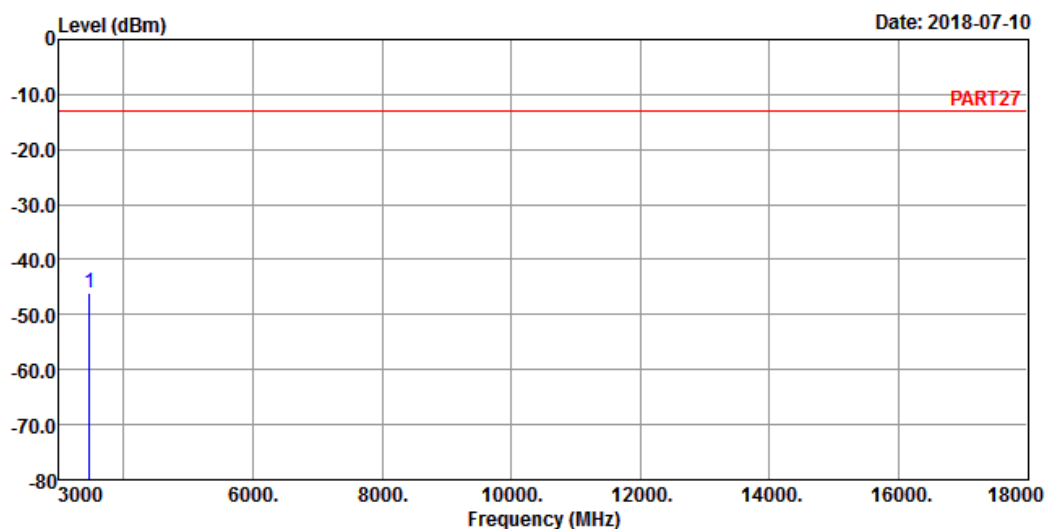
# Middle Channel



Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5  
Condition: PART27 HORIZONTAL  
Remak : WCDMA Band 4 M-CH Link  
Tested by: Jisyong Wang

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

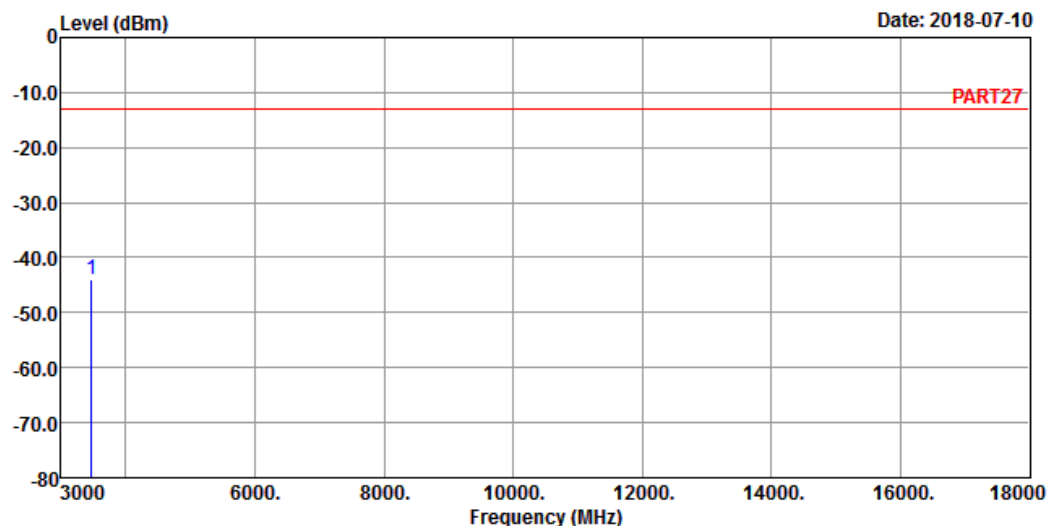
1 pp 3465.20 -46.18 -38.30 -13.00 -33.18 -7.88 Peak



# Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5  
Condition: PART27 VERTICAL  
Remak : WCDMA Band 4 M-CH Link  
Tested by: Jisyong Wang

|              |        | Read   | Limit  | Over   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|
| Freq         | Level  | Level  | Line   | Limit  | Factor | Remark |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 3465.20 | -44.05 | -36.17 | -13.00 | -31.05 | -7.88  | Peak   |

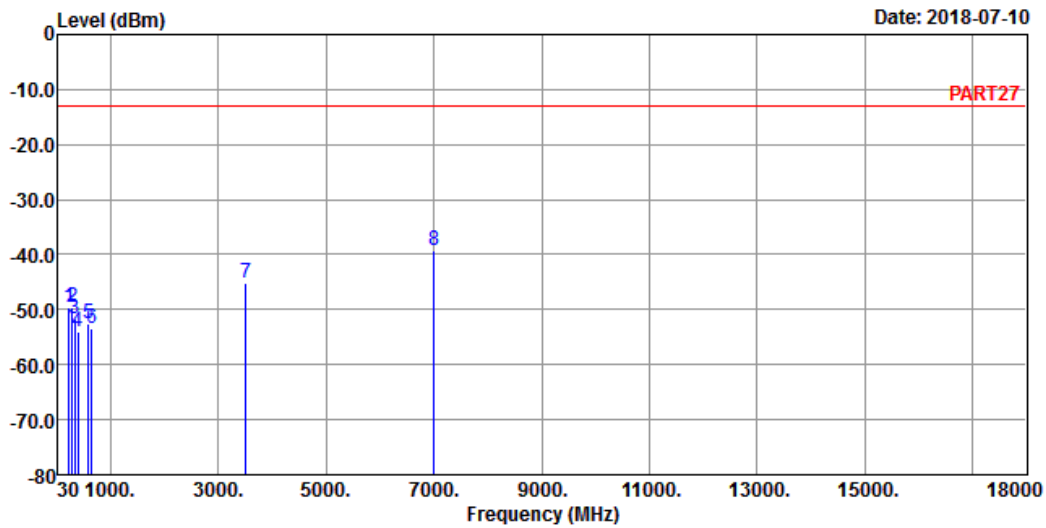
## High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5  
 Condition: PART27 HORIZONTAL  
 Remak : WCDMA Band 4 H-CH Link  
 Tested by: Jisyong Wang

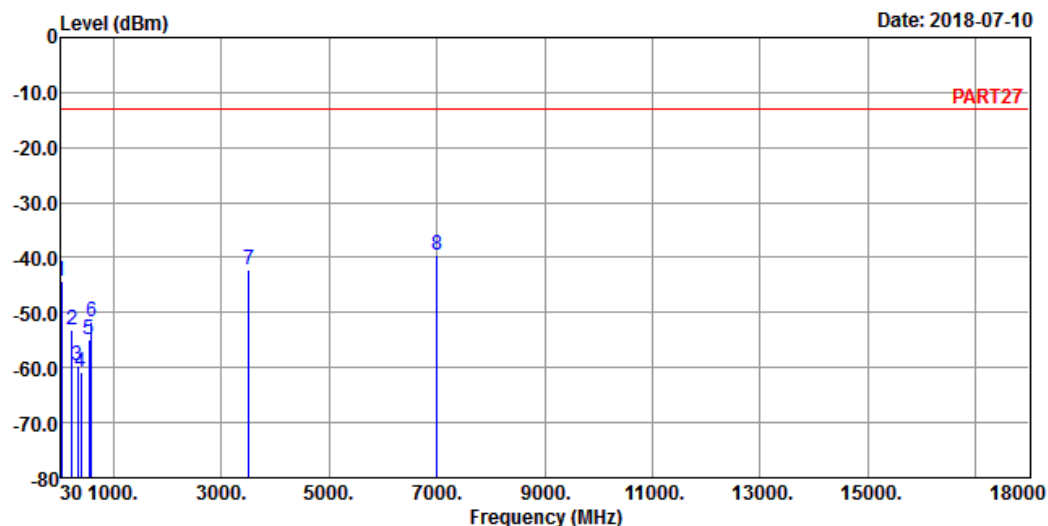
|      |         |        | Read   | Limit  | Over   |        |        |
|------|---------|--------|--------|--------|--------|--------|--------|
|      | Freq    | Level  | Level  | Line   | Limit  | Factor | Remark |
|      | MHz     | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1    | 234.67  | -49.62 | -43.00 | -13.00 | -36.62 | -6.62  | Peak   |
| 2    | 286.08  | -49.46 | -42.73 | -13.00 | -36.46 | -6.73  | Peak   |
| 3    | 338.46  | -51.78 | -45.36 | -13.00 | -38.78 | -6.42  | Peak   |
| 4    | 390.84  | -53.97 | -47.97 | -13.00 | -40.97 | -6.00  | Peak   |
| 5    | 598.42  | -52.47 | -51.64 | -13.00 | -39.47 | -0.83  | Peak   |
| 6    | 650.80  | -53.57 | -52.70 | -13.00 | -40.57 | -0.87  | Peak   |
| 7    | 3505.20 | -45.03 | -37.58 | -13.00 | -32.03 | -7.45  | Peak   |
| 8 pp | 7010.40 | -39.19 | -42.38 | -13.00 | -26.19 | 3.19   | Peak   |



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6



Site : 966 Chamber 5  
Condition: PART27 VERTICAL  
Remak : WCDMA Band 4 H-CH Link  
Tested by: Jisyong Wang

|      | Freq    | Level  | Read Level | Limit Line | Over Limit | Factor | Remark |
|------|---------|--------|------------|------------|------------|--------|--------|
|      | MHz     | dBm    | dBm        | dBm        | dB         | dB     |        |
| 1    | 40.67   | -44.18 | -44.30     | -13.00     | -31.18     | 0.12   | Peak   |
| 2    | 234.67  | -53.23 | -46.61     | -13.00     | -40.23     | -6.62  | Peak   |
| 3    | 338.46  | -59.76 | -53.34     | -13.00     | -46.76     | -6.42  | Peak   |
| 4    | 390.84  | -60.89 | -54.89     | -13.00     | -47.89     | -6.00  | Peak   |
| 5    | 546.04  | -54.80 | -51.81     | -13.00     | -41.80     | -2.99  | Peak   |
| 6    | 598.42  | -51.63 | -50.80     | -13.00     | -38.63     | -0.83  | Peak   |
| 7    | 3505.20 | -42.30 | -34.85     | -13.00     | -29.30     | -7.45  | Peak   |
| 8 pp | 7010.40 | -39.46 | -42.65     | -13.00     | -26.46     | 3.19   | Peak   |

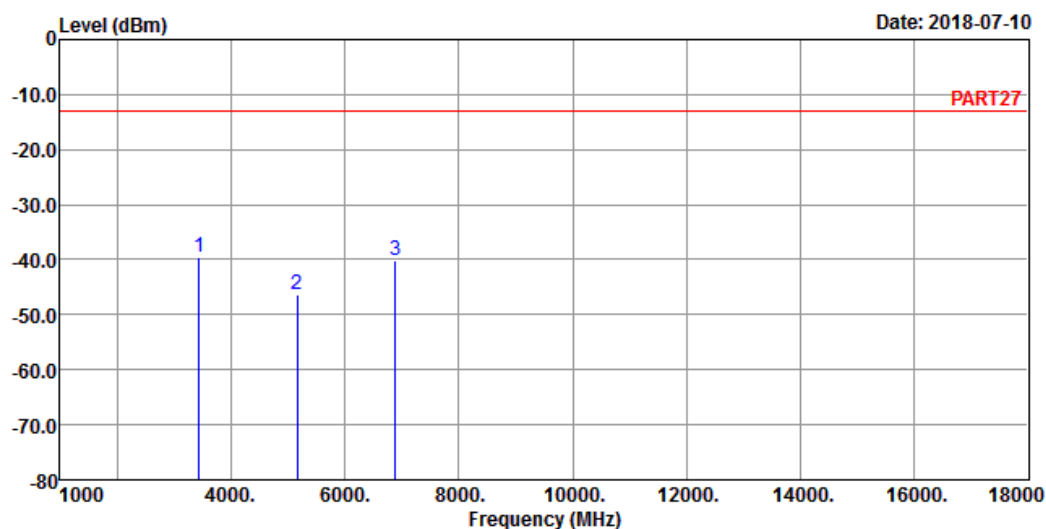
LTE Band 4  
Channel Bandwidth: 20 MHz / QPSK  
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5  
Condition: PART27 HORIZONTAL  
Remak : LTE Band 4 QPSK\_20M Link\_L-CH  
Tested by: Thomas Wei

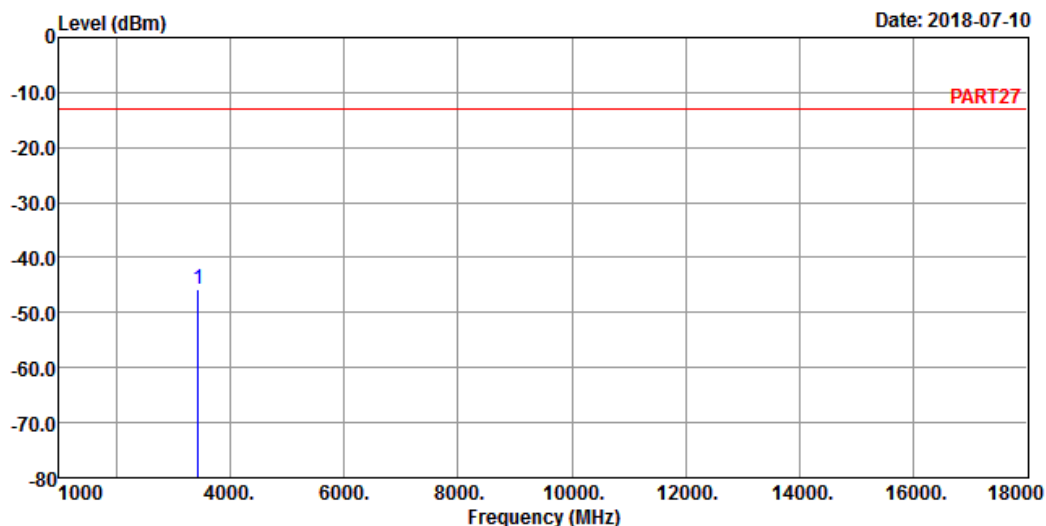
|      |         |        | Read   | Limit  | Over   |        |      |
|------|---------|--------|--------|--------|--------|--------|------|
| Freq | Level   | Level  | Line   | Limit  | Factor | Remark |      |
| MHz  | dBm     | dBm    | dBm    | dB     | dB     |        |      |
| 1 pp | 3440.00 | -39.63 | -31.41 | -13.00 | -26.63 | -8.22  | Peak |
| 2    | 5160.00 | -46.37 | -44.46 | -13.00 | -33.37 | -1.91  | Peak |
| 3    | 6880.00 | -40.12 | -42.60 | -13.00 | -27.12 | 2.48   | Peak |



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2



Site : 966 Chamber 5  
 Condition: PART27 VERTICAL  
 Remak : LTE Band 4 QPSK\_20M Link\_L-CH  
 Tested by: Thomas Wei

|              |        | Read   | Limit  | Over   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|
| Freq         | Level  | Level  | Line   | Limit  | Factor | Remark |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 3440.00 | -45.71 | -37.49 | -13.00 | -32.71 | -8.22  | Peak   |

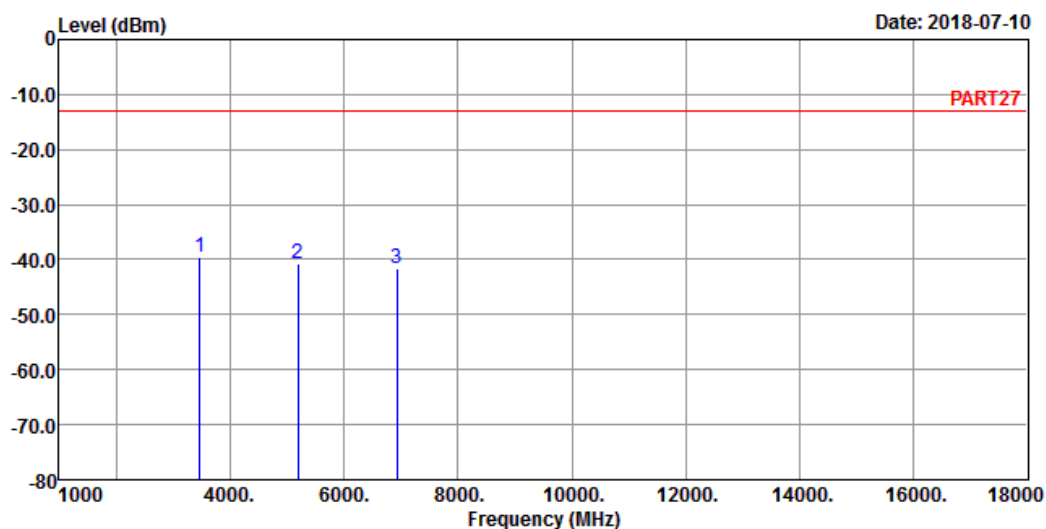
## Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5

Condition: PART27 HORIZONTAL

Remak : LTE Band 4 QPSK\_20M Link\_M-CH

Tested by: Thomas Wei

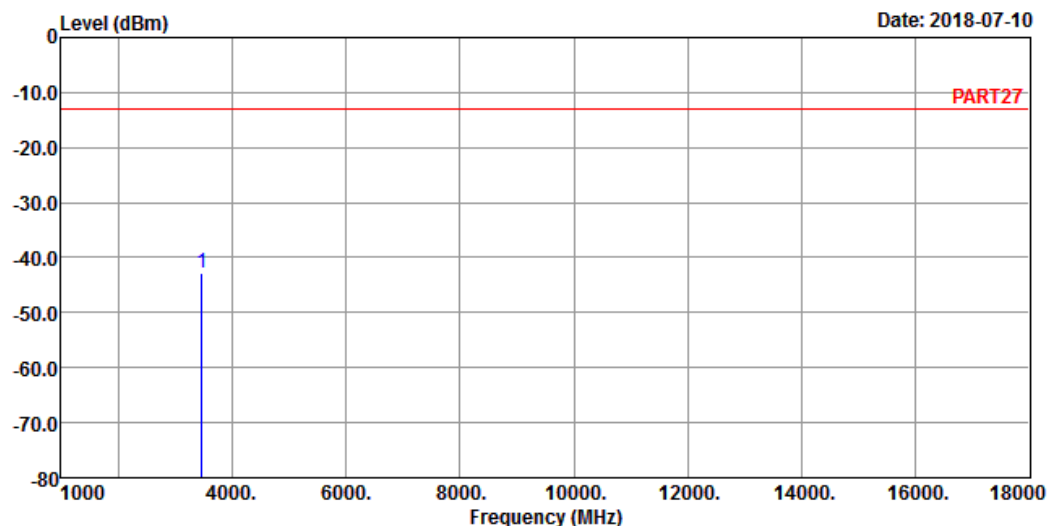
|      |         | Read   | Limit  | Over   |        |               |
|------|---------|--------|--------|--------|--------|---------------|
|      | Freq    | Level  | Level  | Line   | Limit  | Factor Remark |
|      | MHz     | dBm    | dBm    | dBm    | dB     | dB            |
| 1 pp | 3465.00 | -39.52 | -31.64 | -13.00 | -26.52 | -7.88 Peak    |
| 2    | 5197.50 | -40.63 | -38.56 | -13.00 | -27.63 | -2.07 Peak    |
| 3    | 6930.00 | -41.66 | -44.35 | -13.00 | -28.66 | 2.69 Peak     |



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2



Site : 966 Chamber 5  
 Condition: PART27 VERTICAL  
 Remak : LTE Band 4 QPSK\_20M Link\_M-CH  
 Tested by: Thomas Wei

|              |        | Read   | Limit  | Over   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|
| Freq         | Level  | Level  | Line   | Limit  | Factor | Remark |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 3465.00 | -42.81 | -34.93 | -13.00 | -29.81 | -7.88  | Peak   |

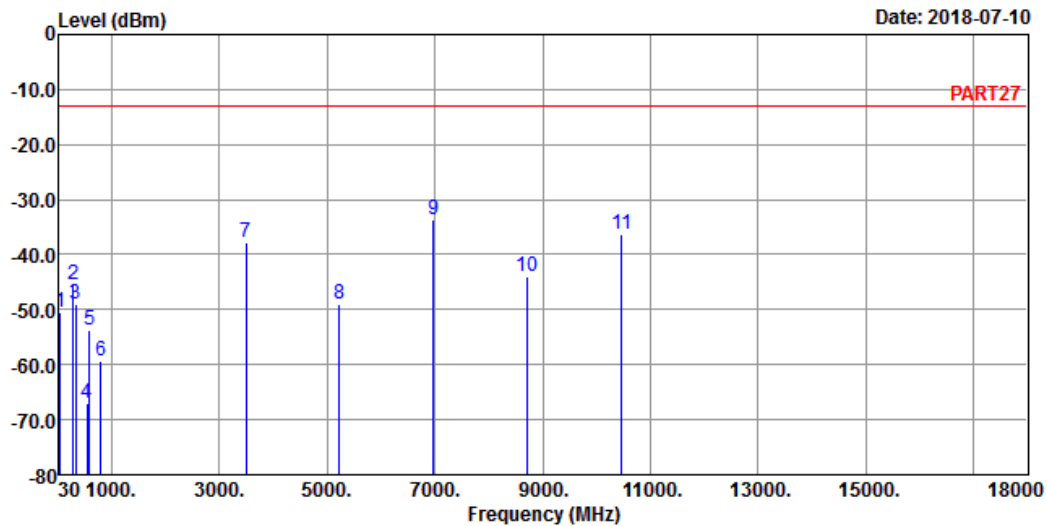
## High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5  
 Condition: PART27 HORIZONTAL  
 Remak : LTE Band 4 QPSK\_20M Link\_H-CH  
 Tested by: Thomas Wei

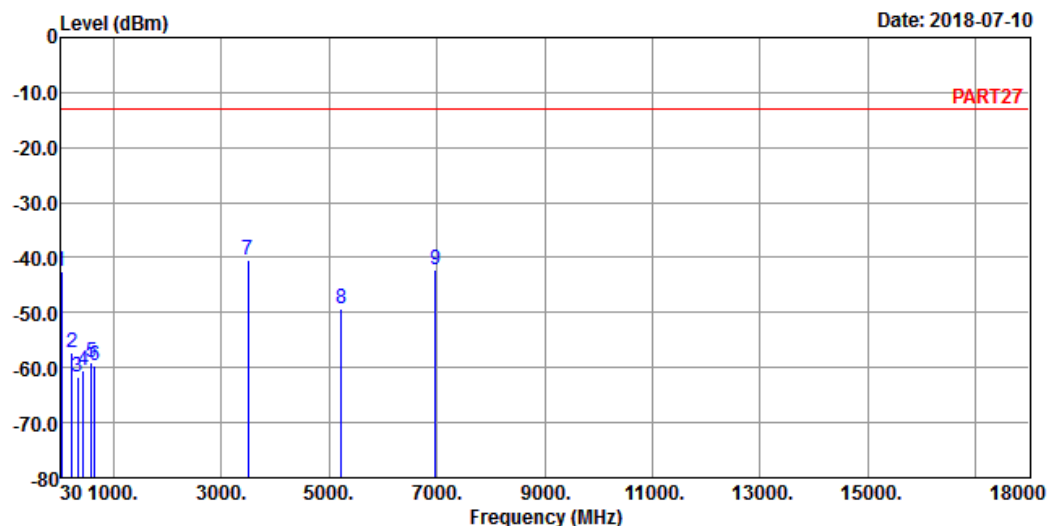
|      |          |        | Read   | Limit  | Over   |        |        |
|------|----------|--------|--------|--------|--------|--------|--------|
|      | Freq     | Level  | Level  | Line   | Limit  | Factor | Remark |
|      | MHz      | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1    | 44.55    | -50.42 | -48.43 | -13.00 | -37.42 | -1.99  | Peak   |
| 2    | 286.08   | -45.52 | -38.79 | -13.00 | -32.52 | -6.73  | Peak   |
| 3    | 338.46   | -49.15 | -42.73 | -13.00 | -36.15 | -6.42  | Peak   |
| 4    | 544.10   | -67.05 | -63.99 | -13.00 | -54.05 | -3.06  | Peak   |
| 5    | 598.42   | -53.68 | -52.85 | -13.00 | -40.68 | -0.83  | Peak   |
| 6    | 806.00   | -59.44 | -60.12 | -13.00 | -46.44 | 0.68   | Peak   |
| 7    | 3495.00  | -37.65 | -30.12 | -13.00 | -24.65 | -7.53  | Peak   |
| 8    | 5235.00  | -48.94 | -46.53 | -13.00 | -35.94 | -2.41  | Peak   |
| 9 pp | 6980.00  | -33.59 | -36.65 | -13.00 | -20.59 | 3.06   | Peak   |
| 10   | 8725.00  | -44.01 | -48.77 | -13.00 | -31.01 | 4.76   | Peak   |
| 11   | 10470.00 | -36.19 | -42.06 | -13.00 | -23.19 | 5.87   | Peak   |



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6



Site : 966 Chamber 5

Condition: PART27 VERTICAL

Remak : LTE Band 4 QPSK\_20M Link\_H-CH

Tested by: Thomas Wei

|      | Freq    | Level  | Read Level | Limit Line | Over Limit | Factor | Remark |
|------|---------|--------|------------|------------|------------|--------|--------|
|      | MHz     | dBm    | dBm        | dBm        | dB         | dB     |        |
| 1    | 39.70   | -42.47 | -43.11     | -13.00     | -29.47     | 0.64   | Peak   |
| 2    | 234.67  | -57.31 | -50.69     | -13.00     | -44.31     | -6.62  | Peak   |
| 3    | 338.46  | -61.58 | -55.16     | -13.00     | -48.58     | -6.42  | Peak   |
| 4    | 442.25  | -60.39 | -54.78     | -13.00     | -47.39     | -5.61  | Peak   |
| 5    | 598.42  | -58.91 | -58.08     | -13.00     | -45.91     | -0.83  | Peak   |
| 6    | 650.80  | -59.70 | -58.83     | -13.00     | -46.70     | -0.87  | Peak   |
| 7 pp | 3490.00 | -40.49 | -32.84     | -13.00     | -27.49     | -7.65  | Peak   |
| 8    | 5235.00 | -49.40 | -46.99     | -13.00     | -36.40     | -2.41  | Peak   |
| 9    | 6980.00 | -42.14 | -45.20     | -13.00     | -29.14     | 3.06   | Peak   |

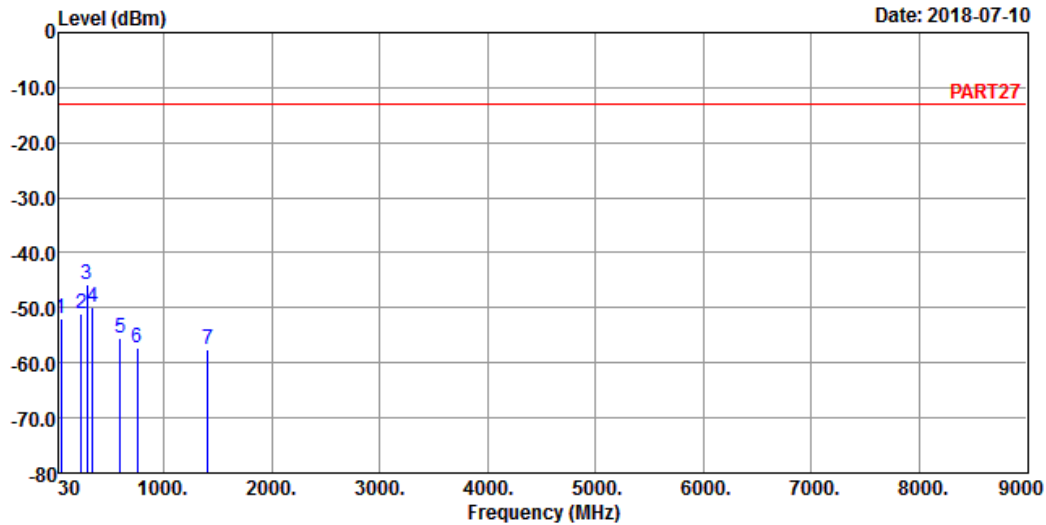
LTE Band 12  
Channel Bandwidth: 10 MHz / QPSK  
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5  
Condition: PART27 HORIZONTAL  
Remak : LTE Band 12 QPSK\_10M Link\_L-CH  
Tested by: Thomas Wei

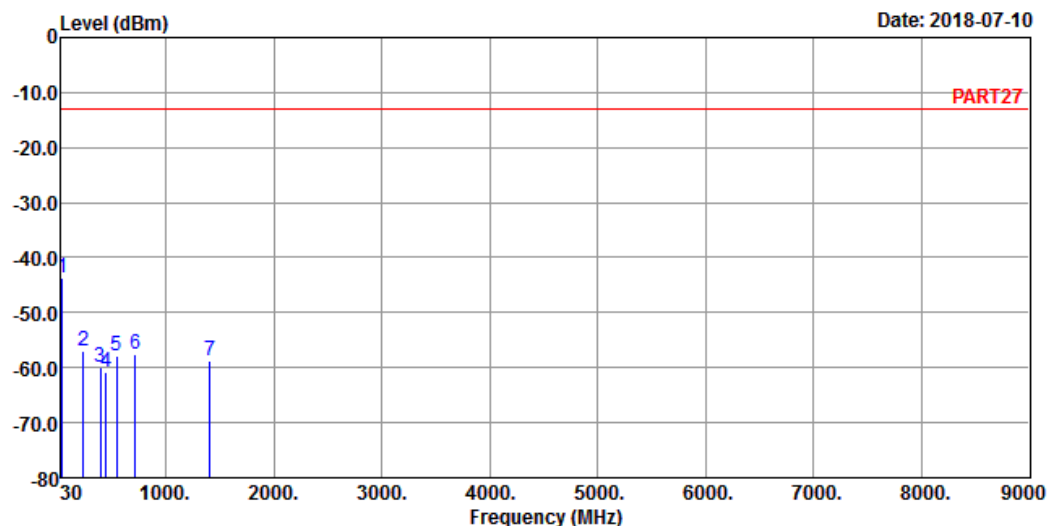
|      |         |        | Read   | Limit  | Over   |        |        |
|------|---------|--------|--------|--------|--------|--------|--------|
|      | Freq    | Level  | Level  | Line   | Limit  | Factor | Remark |
|      | MHz     | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1    | 44.55   | -51.88 | -49.89 | -13.00 | -38.88 | -1.99  | Peak   |
| 2    | 234.67  | -51.10 | -44.48 | -13.00 | -38.10 | -6.62  | Peak   |
| 3 pp | 286.08  | -45.78 | -39.05 | -13.00 | -32.78 | -6.73  | Peak   |
| 4    | 338.46  | -49.76 | -43.34 | -13.00 | -36.76 | -6.42  | Peak   |
| 5    | 598.42  | -55.44 | -54.61 | -13.00 | -42.44 | -0.83  | Peak   |
| 6    | 754.59  | -57.28 | -58.15 | -13.00 | -44.28 | 0.87   | Peak   |
| 7    | 1408.00 | -57.44 | -45.48 | -13.00 | -44.44 | -11.96 | Peak   |



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6



Site : 966 Chamber 5  
 Condition: PART27 VERTICAL  
 Remak : LTE Band 12 QPSK\_10M Link\_L-CH  
 Tested by: Thomas Wei

|      | Freq    | Level  | Read Level | Limit Line | Over Limit | Factor | Remark |
|------|---------|--------|------------|------------|------------|--------|--------|
|      | MHz     | dBm    | dBm        | dBm        | dB         | dB     |        |
| 1 pp | 39.70   | -43.57 | -44.21     | -13.00     | -30.57     | 0.64   | Peak   |
| 2    | 234.67  | -56.91 | -50.29     | -13.00     | -43.91     | -6.62  | Peak   |
| 3    | 390.84  | -59.94 | -53.94     | -13.00     | -46.94     | -6.00  | Peak   |
| 4    | 442.25  | -60.71 | -55.10     | -13.00     | -47.71     | -5.61  | Peak   |
| 5    | 546.04  | -57.91 | -54.92     | -13.00     | -44.91     | -2.99  | Peak   |
| 6    | 717.73  | -57.45 | -57.70     | -13.00     | -44.45     | 0.25   | Peak   |
| 7    | 1408.00 | -58.72 | -46.76     | -13.00     | -45.72     | -11.96 | Peak   |

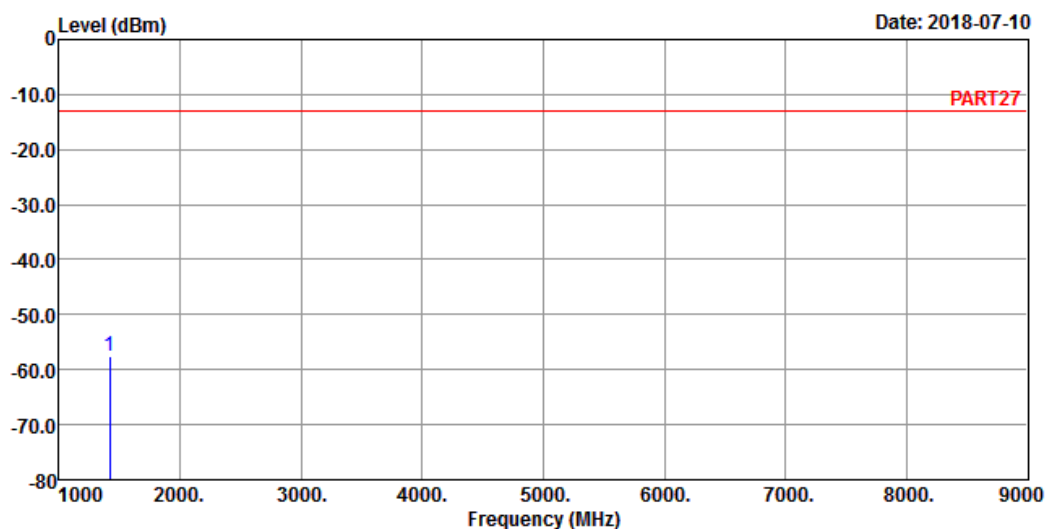
## Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5  
 Condition: PART27 HORIZONTAL  
 Remak : LTE Band 12 QPSK\_10M Link\_M-CH  
 Tested by: Thomas Wei

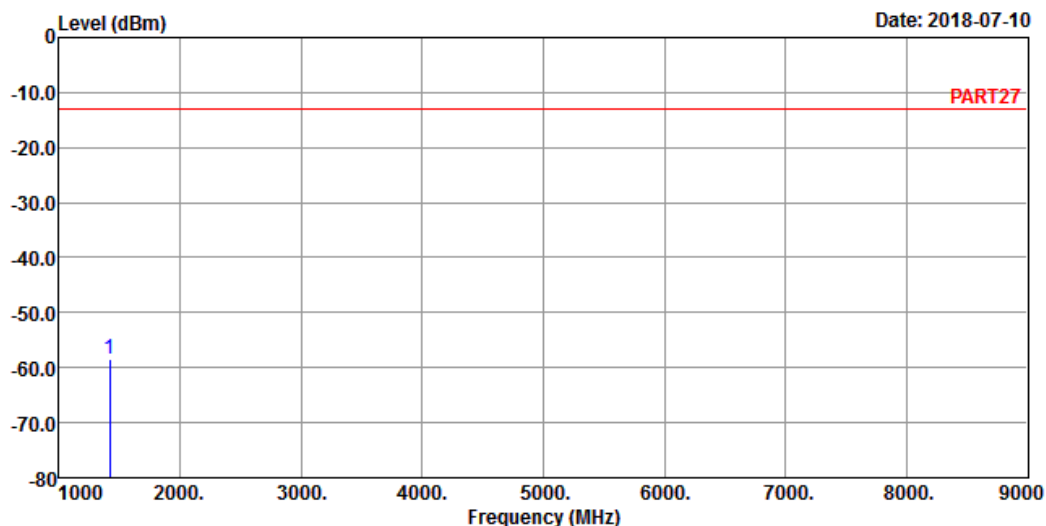
|              |        | Read   | Limit  | Over   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|
| Freq         | Level  | Level  | Line   | Limit  | Factor | Remark |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 1415.00 | -57.71 | -45.63 | -13.00 | -44.71 | -12.08 | Peak   |



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2



Site : 966 Chamber 5  
 Condition: PART27 VERTICAL  
 Remak : LTE Band 12 QPSK\_10M Link\_M-CH  
 Tested by: Thomas Wei

|              |        | Read   | Limit  | Over   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|
| Freq         | Level  | Level  | Line   | Limit  | Factor | Remark |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 1415.00 | -58.40 | -46.32 | -13.00 | -45.40 | -12.08 | Peak   |

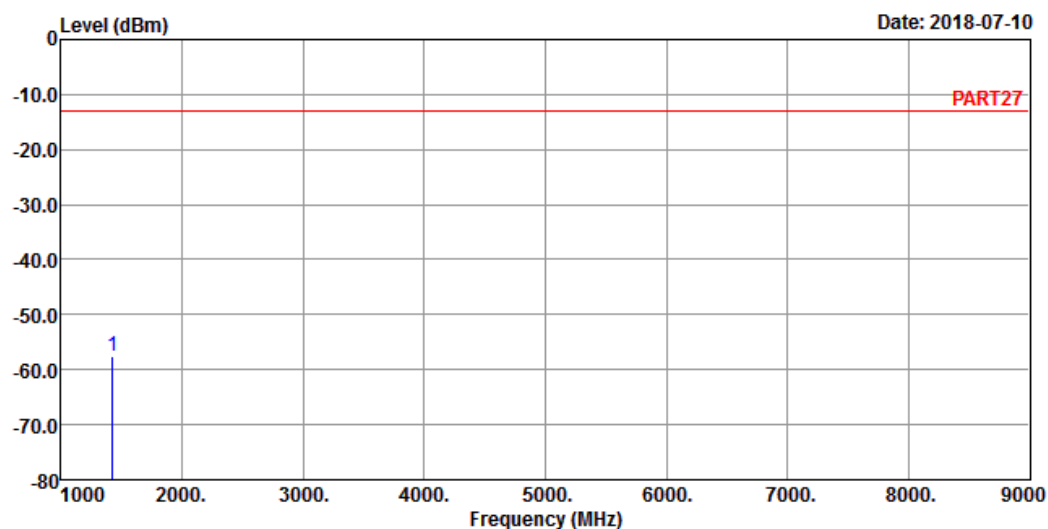
# High Channel



Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5  
Condition: PART27 HORIZONTAL  
Remak : LTE Band 12 QPSK\_10M Link\_H-CH  
Tested by: Thomas Wei

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

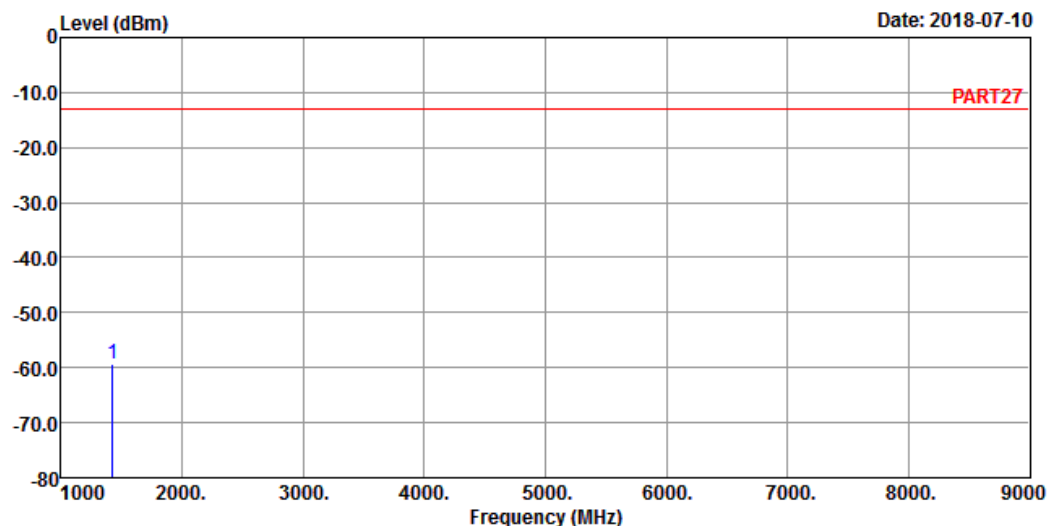
1 pp 1422.00 -57.67 -45.48 -13.00 -44.67 -12.19 Peak



# Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2



Site : 966 Chamber 5  
 Condition: PART27 VERTICAL  
 Remak : LTE Band 12 QPSK\_10M Link\_H-CH  
 Tested by: Thomas Wei

|              |        | Read   | Limit  | Over   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|
| Freq         | Level  | Level  | Line   | Limit  | Factor | Remark |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 1422.00 | -59.33 | -47.14 | -13.00 | -46.33 | -12.19 | Peak   |

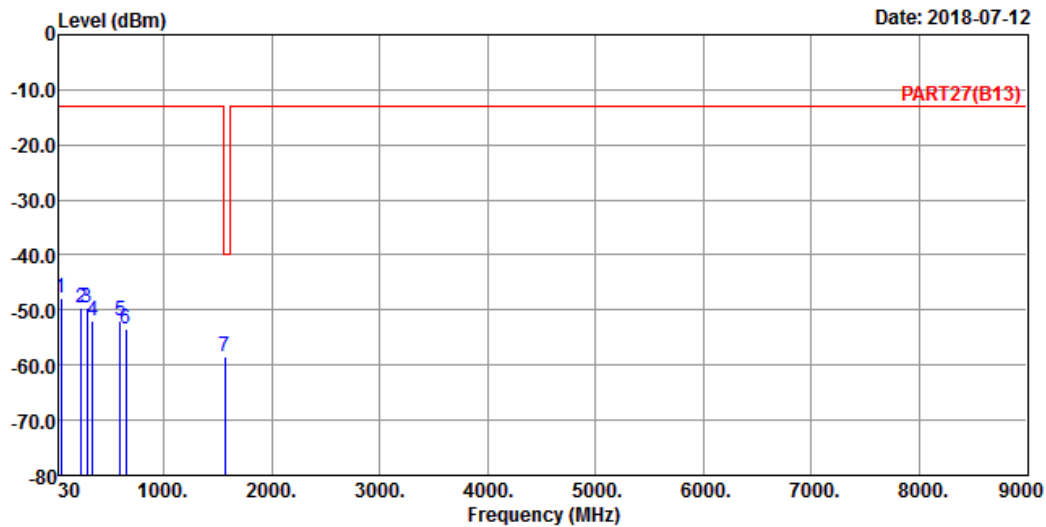
LTE Band 13  
Channel Bandwidth: 10 MHz / QPSK  
Middle Channel\_1RB



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5  
Condition: PART27(B13) HORIZONTAL  
Remak : LTE Band 13 QPSK\_10M Link\_M-CH  
Tested by: Jisyoung Wang

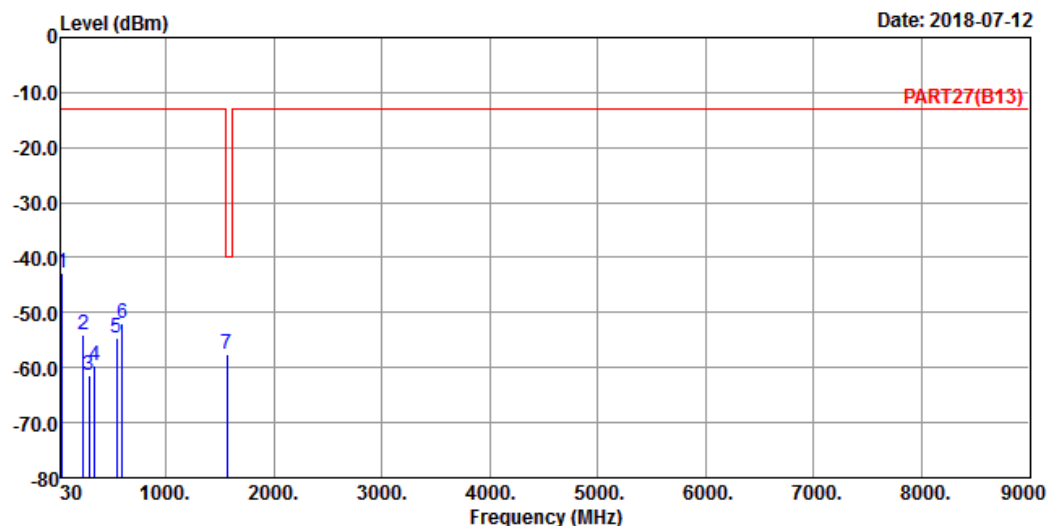
|      |         |        | Read   | Limit  | Over   |        |        |
|------|---------|--------|--------|--------|--------|--------|--------|
|      | Freq    | Level  | Level  | Line   | Limit  | Factor | Remark |
|      | MHz     | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1    | 44.55   | -47.84 | -45.85 | -13.00 | -34.84 | -1.99  | Peak   |
| 2    | 234.67  | -49.71 | -43.09 | -13.00 | -36.71 | -6.62  | Peak   |
| 3    | 286.08  | -49.63 | -42.90 | -13.00 | -36.63 | -6.73  | Peak   |
| 4    | 338.46  | -51.87 | -45.45 | -13.00 | -38.87 | -6.42  | Peak   |
| 5    | 598.42  | -52.06 | -51.23 | -13.00 | -39.06 | -0.83  | Peak   |
| 6    | 649.83  | -53.54 | -52.66 | -13.00 | -40.54 | -0.88  | Peak   |
| 7 pp | 1564.00 | -58.52 | -45.18 | -40.00 | -18.52 | -13.34 | Peak   |



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6



Site : 966 Chamber 5  
Condition: PART27(B13) VERTICAL  
Remak : LTE Band 13 QPSK\_10M Link\_M-CH  
Tested by: Jisyong Wang

|      | Freq    | Level  | Read Level | Limit Line | Over Limit | Factor | Remark |
|------|---------|--------|------------|------------|------------|--------|--------|
|      | MHz     | dBm    | dBm        | dBm        | dB         | dB     |        |
| 1    | 41.64   | -42.90 | -42.49     | -13.00     | -29.90     | -0.41  | Peak   |
| 2    | 234.67  | -53.99 | -47.37     | -13.00     | -40.99     | -6.62  | Peak   |
| 3    | 286.08  | -61.29 | -54.56     | -13.00     | -48.29     | -6.73  | Peak   |
| 4    | 338.46  | -59.67 | -53.25     | -13.00     | -46.67     | -6.42  | Peak   |
| 5    | 546.04  | -54.55 | -51.56     | -13.00     | -41.55     | -2.99  | Peak   |
| 6    | 598.42  | -51.85 | -51.02     | -13.00     | -38.85     | -0.83  | Peak   |
| 7 pp | 1564.00 | -57.63 | -44.29     | -40.00     | -17.63     | -13.34 | Peak   |

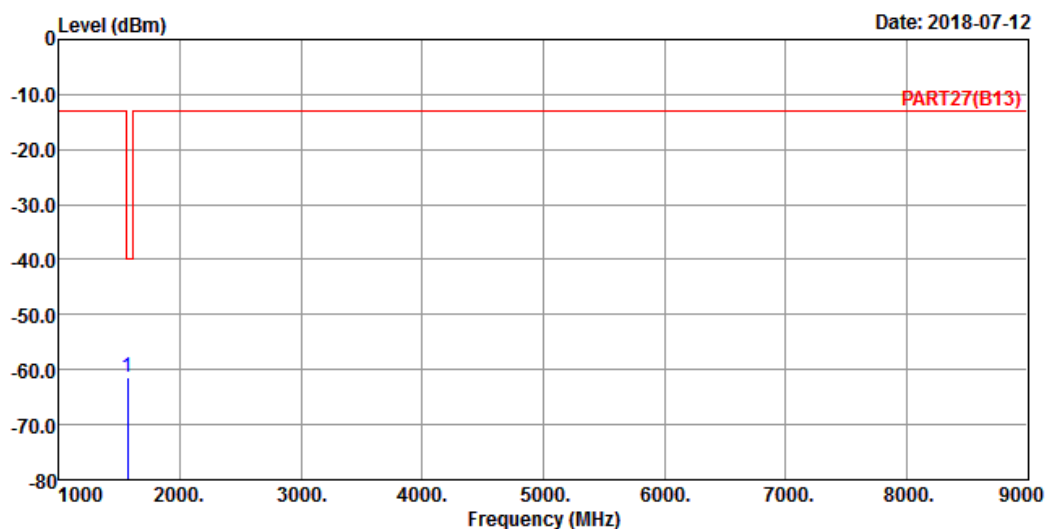
# Middle Channel\_Full RB



Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5  
Condition: PART27(B13) HORIZONTAL  
Remak : LTE Band 13 QPSK\_10M Link\_M-CH  
Tested by: Jisyong Wang

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

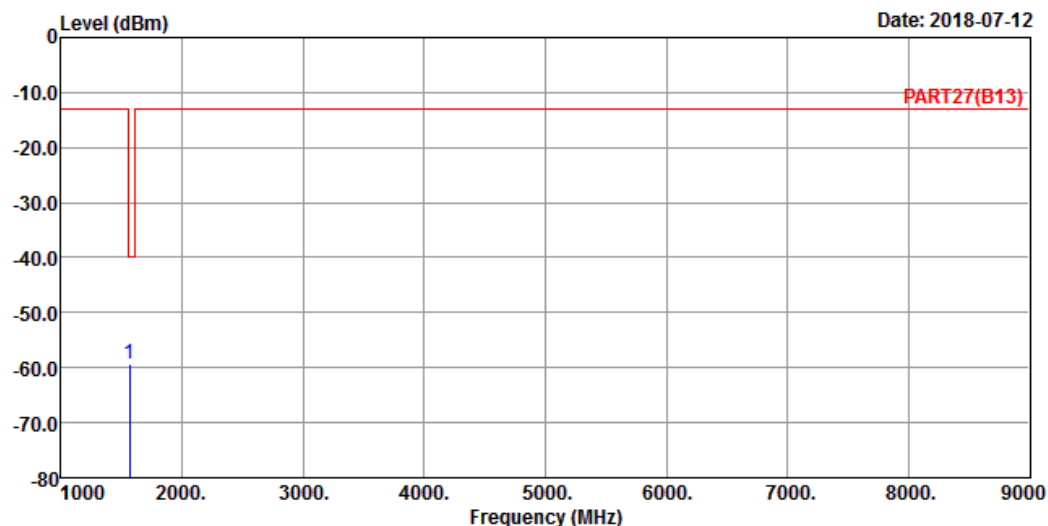
1 pp 1564.00 -61.52 -48.18 -40.00 -21.52 -13.34 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5  
 Condition: PART27(B13) VERTICAL  
 Remak : LTE Band 13 QPSK\_10M Link\_M-CH  
 Tested by: Jisyong Wang

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

1 pp 1564.00 -59.25 -45.91 -40.00 -19.25 -13.34 Peak

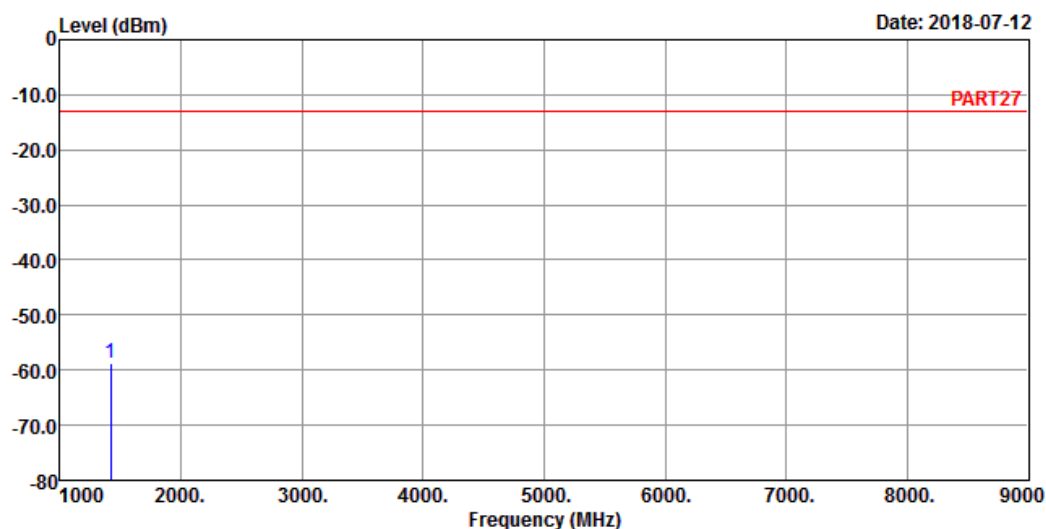
LTE Band 17  
Channel Bandwidth: 10 MHz / QPSK  
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5  
Condition: PART27 HORIZONTAL  
Remak : LTE Band 17 QPSK\_10M Link\_L-CH  
Tested by: Thomas Wei

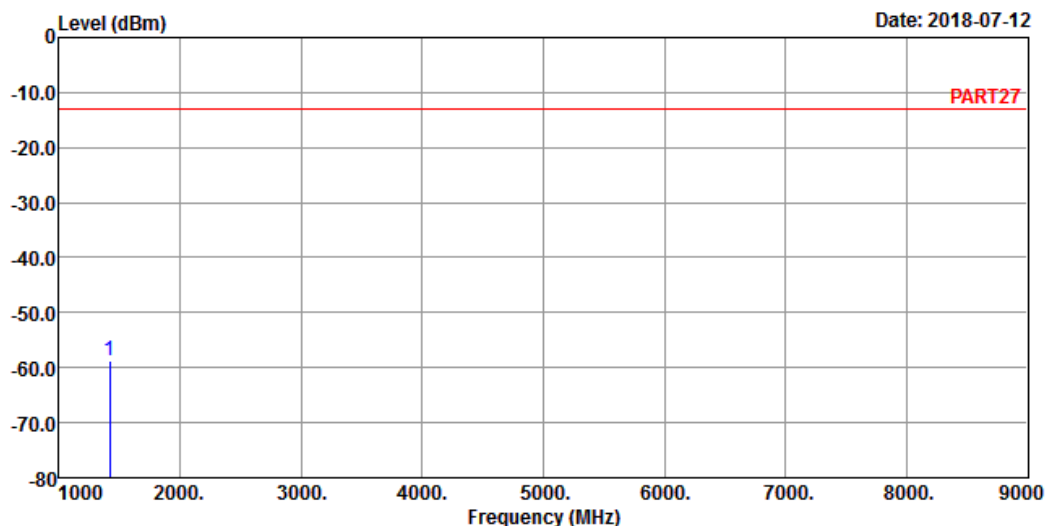
|              |        | Read   | Limit  | Over   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|
| Freq         | Level  | Level  | Line   | Limit  | Factor | Remark |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 1418.00 | -58.64 | -46.50 | -13.00 | -45.64 | -12.14 | Peak   |



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2



Site : 966 Chamber 5  
Condition: PART27 VERTICAL  
Remak : LTE Band 17 QPSK\_10M Link\_L-CH  
Tested by: Thomas Wei

|              |        |        | Read   | Limit  | Over   |        |  |
|--------------|--------|--------|--------|--------|--------|--------|--|
| Freq         | Level  | Level  | Line   | Limit  | Factor | Remark |  |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |  |
| 1 pp 1418.00 | -58.69 | -46.55 | -13.00 | -45.69 | -12.14 | Peak   |  |

# Middle Channel

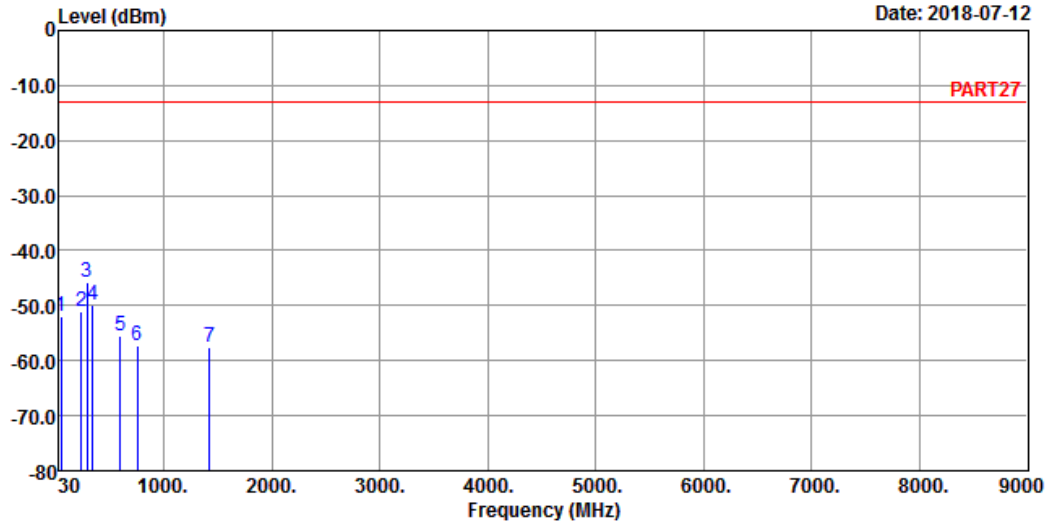


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5

Date: 2018-07-12



Site : 966 Chamber 5

Condition: PART27 HORIZONTAL

Remak : LTE Band 17 QPSK\_10M Link\_M-CH

Tested by: Thomas Wei

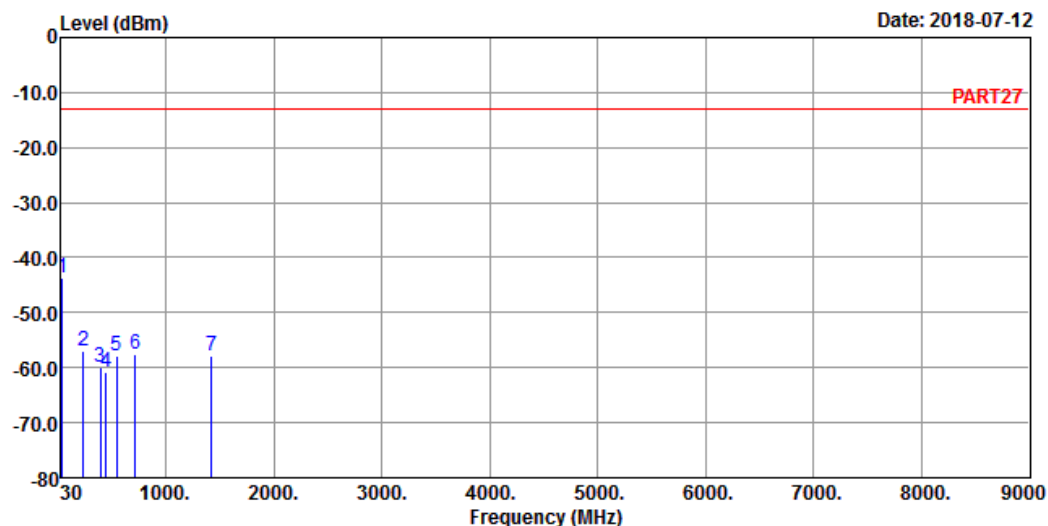
|      |         |        | Read   | Limit  | Over   |        |        |
|------|---------|--------|--------|--------|--------|--------|--------|
|      | Freq    | Level  | Level  | Line   | Limit  | Factor | Remark |
|      | MHz     | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1    | 44.55   | -51.88 | -49.89 | -13.00 | -38.88 | -1.99  | Peak   |
| 2    | 234.67  | -51.10 | -44.48 | -13.00 | -38.10 | -6.62  | Peak   |
| 3 pp | 286.08  | -45.78 | -39.05 | -13.00 | -32.78 | -6.73  | Peak   |
| 4    | 338.46  | -49.76 | -43.34 | -13.00 | -36.76 | -6.42  | Peak   |
| 5    | 598.42  | -55.44 | -54.61 | -13.00 | -42.44 | -0.83  | Peak   |
| 6    | 754.59  | -57.28 | -58.15 | -13.00 | -44.28 | 0.87   | Peak   |
| 7    | 1420.00 | -57.49 | -45.35 | -13.00 | -44.49 | -12.14 | Peak   |



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6



Site : 966 Chamber 5  
Condition: PART27 VERTICAL  
Remak : LTE Band 17 QPSK\_10M Link\_M-CH  
Tested by: Thomas Wei

|      | Freq    | Level  | Read Level | Limit Line | Over Limit | Factor | Remark |
|------|---------|--------|------------|------------|------------|--------|--------|
|      | MHz     | dBm    | dBm        | dBm        | dB         | dB     |        |
| 1 pp | 39.70   | -43.57 | -44.21     | -13.00     | -30.57     | 0.64   | Peak   |
| 2    | 234.67  | -56.91 | -50.29     | -13.00     | -43.91     | -6.62  | Peak   |
| 3    | 390.84  | -59.94 | -53.94     | -13.00     | -46.94     | -6.00  | Peak   |
| 4    | 442.25  | -60.71 | -55.10     | -13.00     | -47.71     | -5.61  | Peak   |
| 5    | 546.04  | -57.91 | -54.92     | -13.00     | -44.91     | -2.99  | Peak   |
| 6    | 717.73  | -57.45 | -57.70     | -13.00     | -44.45     | 0.25   | Peak   |
| 7    | 1420.00 | -57.84 | -45.70     | -13.00     | -44.84     | -12.14 | Peak   |

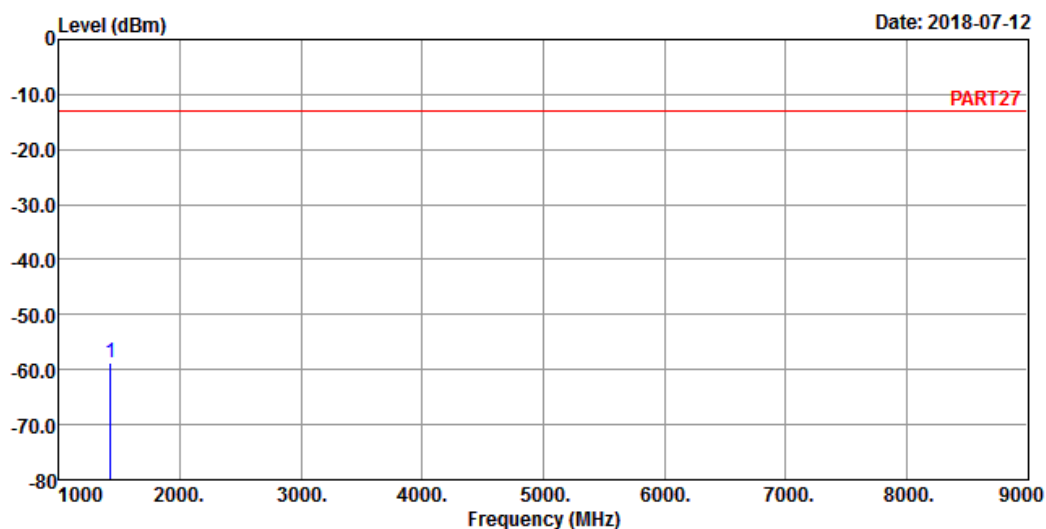
# High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5  
Condition: PART27 HORIZONTAL  
Remak : LTE Band 17 QPSK\_10M Link\_H-CH  
Tested by: Thomas Wei

| Freq | Level | Read Limit |      | Over  |    | Factor | Remark |
|------|-------|------------|------|-------|----|--------|--------|
|      |       | Level      | Line | Limit | dB |        |        |
| MHz  | dBm   | dBm        | dBm  | dB    | dB |        |        |

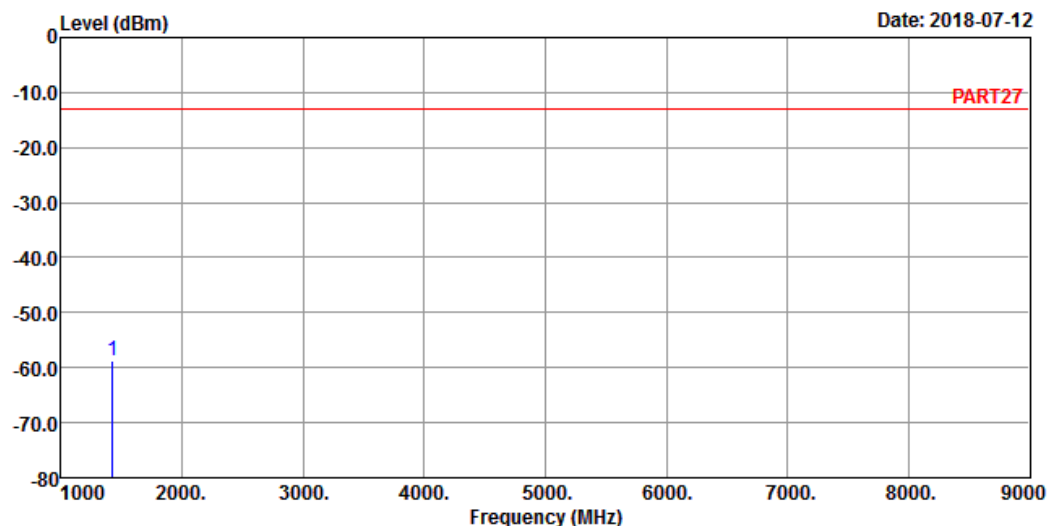
1 pp 1422.00 -58.87 -46.68 -13.00 -45.87 -12.19 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2



Site : 966 Chamber 5  
 Condition: PART27 VERTICAL  
 Remak : LTE Band 17 QPSK\_10M Link\_H-CH  
 Tested by: Thomas Wei

|              |        | Read   | Limit  | Over   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|
| Freq         | Level  | Level  | Line   | Limit  | Factor | Remark |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 1422.00 | -58.82 | -46.63 | -13.00 | -45.82 | -12.19 | Peak   |

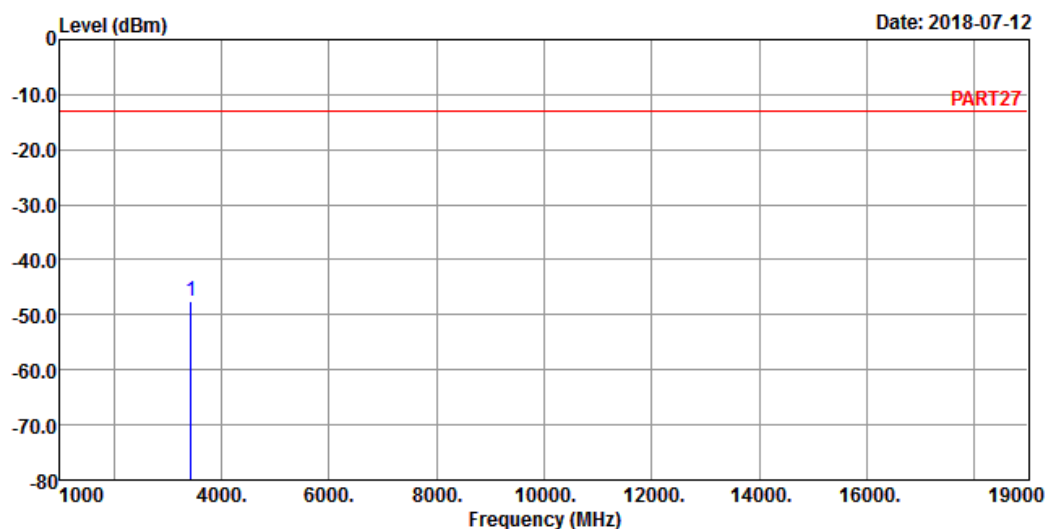
LTE Band 66:  
Channel Bandwidth: 20 MHz / QPSK  
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5  
Condition: PART27 HORIZONTAL  
Remak : LTE Band 66 QPSK\_20M Link\_L-CH  
Tested by: Jisyong Wang

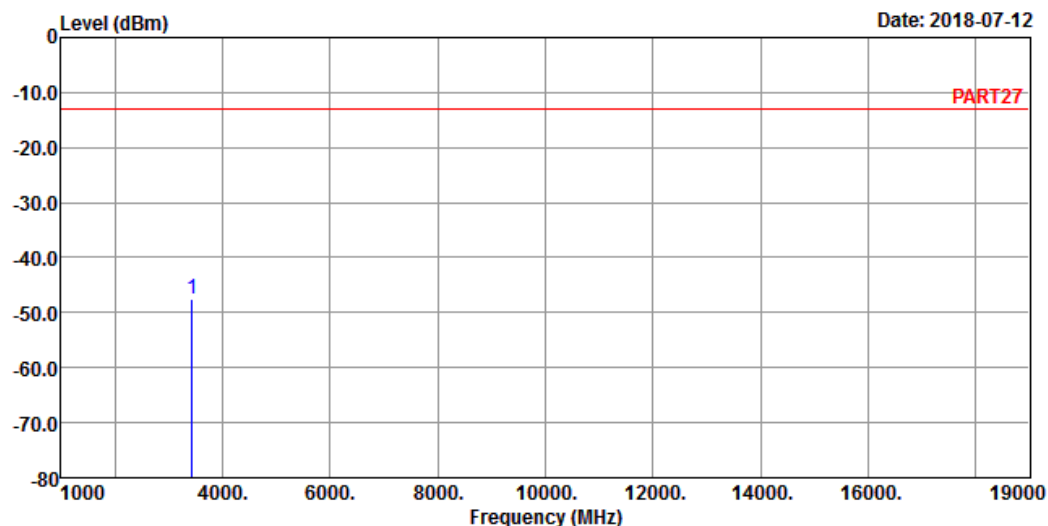
| Freq         | Level  | Read   | Limit  | Over   | Factor | Remark |
|--------------|--------|--------|--------|--------|--------|--------|
|              |        | Level  | Line   | Limit  |        |        |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 3440.00 | -47.52 | -39.30 | -13.00 | -34.52 | -8.22  | Peak   |



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5

Condition: PART27 VERTICAL

Remak : LTE Band 66 QPSK\_20M Link\_L-CH

Tested by: Jisyong Wang

|              |        | Read   | Limit  | Over   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|
| Freq         | Level  | Level  | Line   | Limit  | Factor | Remark |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 3440.00 | -47.63 | -39.41 | -13.00 | -34.63 | -8.22  | Peak   |

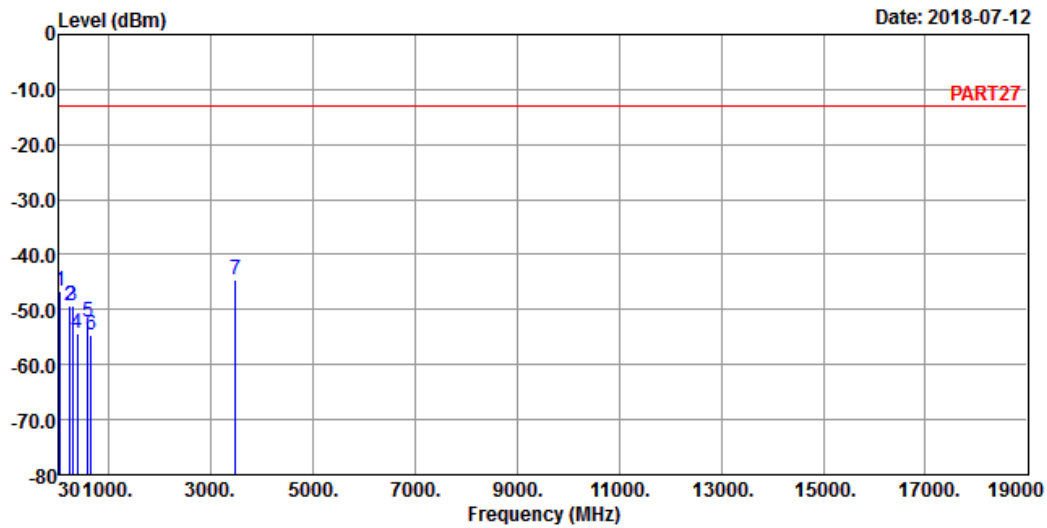
# Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5  
Condition: PART27 HORIZONTAL  
Remak : LTE Band 66 QPSK\_20M Link\_M-CH  
Tested by: Jisyong Wang

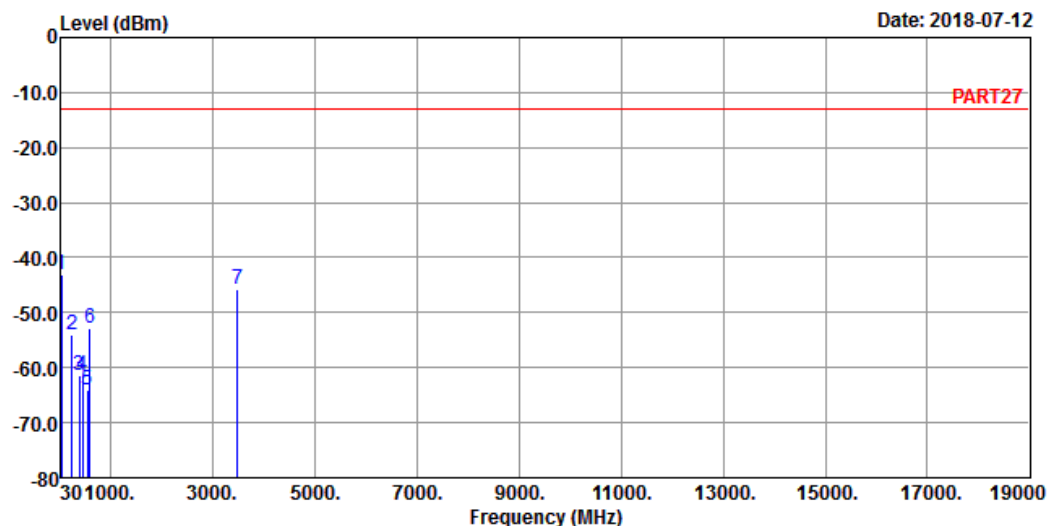
|      |         |        | Read   | Limit  | Over   |        |        |
|------|---------|--------|--------|--------|--------|--------|--------|
|      | Freq    | Level  | Level  | Line   | Limit  | Factor | Remark |
|      | MHz     | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1    | 44.55   | -46.68 | -44.69 | -13.00 | -33.68 | -1.99  | Peak   |
| 2    | 234.67  | -49.44 | -42.82 | -13.00 | -36.44 | -6.62  | Peak   |
| 3    | 286.08  | -49.34 | -42.61 | -13.00 | -36.34 | -6.73  | Peak   |
| 4    | 389.87  | -54.30 | -48.30 | -13.00 | -41.30 | -6.00  | Peak   |
| 5    | 598.42  | -52.18 | -51.35 | -13.00 | -39.18 | -0.83  | Peak   |
| 6    | 650.80  | -54.63 | -53.76 | -13.00 | -41.63 | -0.87  | Peak   |
| 7 pp | 3490.00 | -44.52 | -36.87 | -13.00 | -31.52 | -7.65  | Peak   |



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6



Site : 966 Chamber 5

Condition: PART27 VERTICAL

Remak : LTE Band 66 QPSK\_20M Link\_M-CH

Tested by: Jisyong Wang

|      |         |        | Read   | Limit  | Over   |        |        |
|------|---------|--------|--------|--------|--------|--------|--------|
|      | Freq    | Level  | Level  | Line   | Limit  | Factor | Remark |
|      | MHz     | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp | 39.70   | -43.01 | -43.65 | -13.00 | -30.01 | 0.64   | Peak   |
| 2    | 234.67  | -53.92 | -47.30 | -13.00 | -40.92 | -6.62  | Peak   |
| 3    | 390.84  | -61.38 | -55.38 | -13.00 | -48.38 | -6.00  | Peak   |
| 4    | 442.25  | -61.40 | -55.79 | -13.00 | -48.40 | -5.61  | Peak   |
| 5    | 547.98  | -64.07 | -61.15 | -13.00 | -51.07 | -2.92  | Peak   |
| 6    | 598.42  | -52.93 | -52.10 | -13.00 | -39.93 | -0.83  | Peak   |
| 7    | 3490.00 | -45.85 | -38.20 | -13.00 | -32.85 | -7.65  | Peak   |

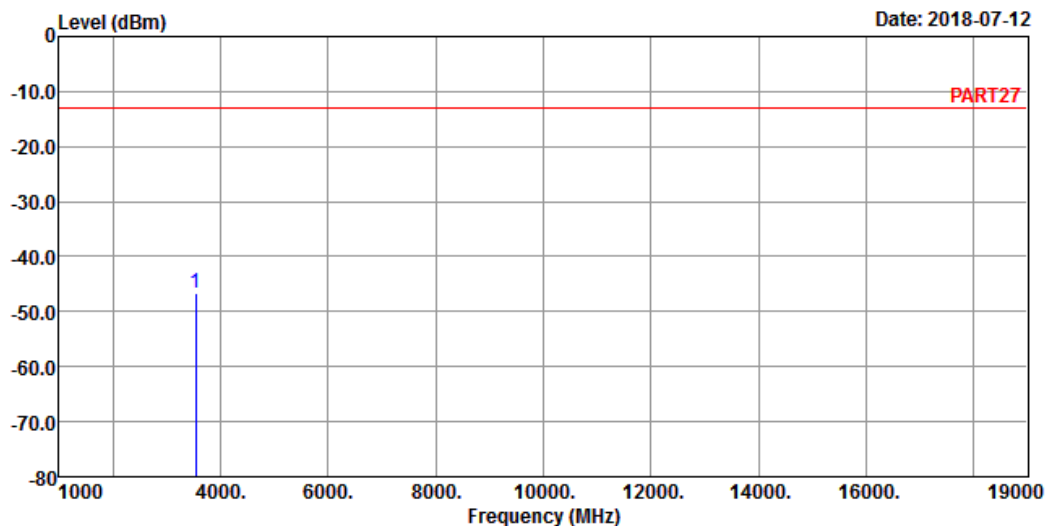
## High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5  
 Condition: PART27 HORIZONTAL  
 Remak : LTE Band 66 QPSK\_20M Link\_H-CH  
 Tested by: Jisyong Wang

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

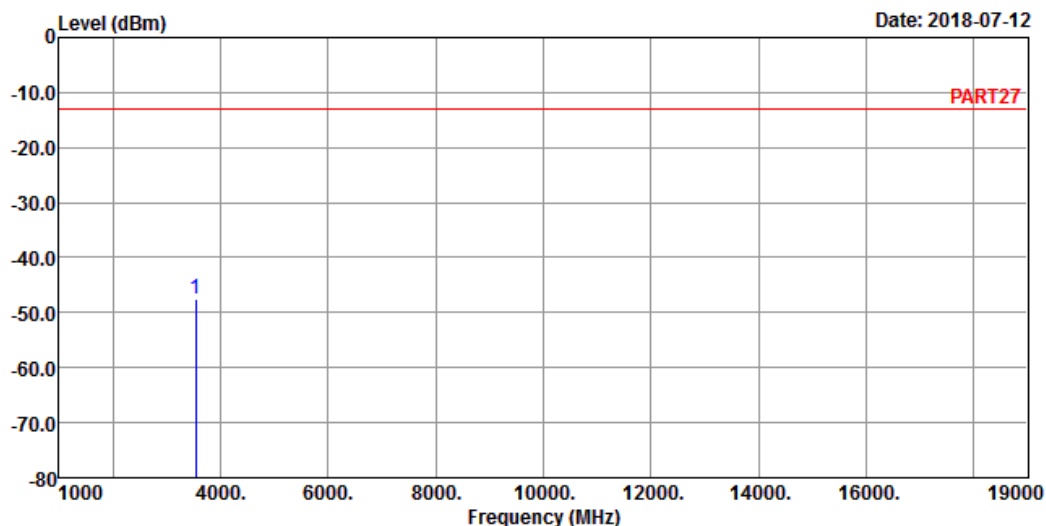
1 pp 3540.00 -46.52 -39.30 -13.00 -33.52 -7.22 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5

Condition: PART27 VERTICAL

Remak : LTE Band 66 QPSK\_20M Link\_H-CH

Tested by: Jisyong Wang

|              |        | Read   | Limit  | Over   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|
| Freq         | Level  | Level  | Line   | Limit  | Factor | Remark |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 3540.00 | -47.52 | -40.30 | -13.00 | -34.52 | -7.22  | Peak   |

## 5 Pictures of Test Arrangements

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

## Appendix – Information on the Testing Laboratories

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

If you have any comments, please feel free to contact us at the following:

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Fax: 886-2-26051924

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Tel: 886-3-6668565

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**Web Site:** [www.bureauveritas-adt.com](http://www.bureauveritas-adt.com)

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

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