

## FCC Test Report

### (PART 24)

**Report No.:** RF190516C01-7

**FCC ID:** B94HNQ20PK

**Test Model:** HSN-Q20C

**Received Date:** May 16, 2019

**Test Date:** May 25 ~ Jun. 07, 2019

**Issued Date:** Jun. 26, 2019

**Applicant:** HP Inc.

**Address:** 3390 East Harmony Road, Fort Collins, Colorado 80528, United States

**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   |
|---------------|------------------|---------------|
| RF190516C01-7 | Original Release | Jun. 26, 2019 |

## 1 Certificate of Conformity

**Product:** Notebook Computer

**Brand:** HP

**Test Model:** HSN-Q20C

**Sample Status:** Engineering Sample

**Applicant:** HP Inc.

**Test Date:** May 25 ~ Jun. 07, 2019

**Standards:** FCC Part 24, Subpart E

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 :** Gina Liu, **Date:** Jun. 26, 2019  
Gina Liu / Specialist

**Approved by :** Dylan Chiou, **Date:** Jun. 26, 2019  
Dylan Chiou / Project Engineer

## 2 Summary of Test Results

| Applied Standard: FCC Part 24 & Part 2 |                                    |        |                                                                                     |
|----------------------------------------|------------------------------------|--------|-------------------------------------------------------------------------------------|
| FCC Clause                             | Test Item                          | Result | Remarks                                                                             |
| 2.1046<br>24.232                       | Effective Isotropic Radiated Power | Pass   | Meet the requirement of limit.                                                      |
| 2.1047                                 | Modulation Characteristics         | Pass   | Meet the requirement.                                                               |
| 2.1046<br>24.232(d)                    | Peak to Average Ratio              | Pass   | Meet the requirement of limit.                                                      |
| 2.1055<br>24.235                       | Frequency Stability                | Pass   | Meet the requirement of limit.                                                      |
| 2.1049                                 | Occupied Bandwidth                 | Pass   | Meet the requirement of limit.                                                      |
| 24.238                                 | Band Edge Measurements             | Pass   | Meet the requirement of limit.                                                      |
| 2.1051<br>24.238                       | Conducted Spurious Emissions       | Pass   | Meet the requirement of limit.                                                      |
| 2.1053<br>24.238                       | Radiated Spurious Emissions        | Pass   | Meet the requirement of limit.<br>Minimum passing margin is -29.95 dB at 30.00 MHz. |

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

### 2.1 Measurement Uncertainty

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

| Measurement                    | Frequency          | Expanded Uncertainty (k=2) (±) |
|--------------------------------|--------------------|--------------------------------|
| Radiated Emissions up to 1 GHz | 9 kHz ~ 30 MHz     | 3.04 dB                        |
|                                | 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. 18, 2019       | Mar. 17, 2020           |
| Spectrum Analyzer<br>Agilent                   | N9010A                     | MY52220314                    | Dec. 13, 2018       | Dec. 12, 2019           |
| Spectrum Analyzer<br>ROHDE & SCHWARZ           | FSU43                      | 101261                        | Apr. 15, 2019       | Apr. 14, 2020           |
| HORN Antenna<br>SCHWARZBECK                    | BBHA 9170                  | 148                           | Nov. 25, 2018       | Nov. 24, 2019           |
| HORN Antenna<br>SCHWARZBECK                    | BBHA 9120 D                | 9120D-969                     | Nov. 25, 2018       | Nov. 24, 2019           |
| BILOG Antenna<br>SCHWARZBECK                   | VULB9168                   | 9168-472                      | Nov. 23, 2018       | Nov. 22, 2019           |
| Double Ridge Guide Horn<br>Antenna EMCO        | 3115                       | 5619                          | Nov. 25, 2018       | Nov. 24, 2019           |
| BILOG Antenna<br>SCHWARZBECK                   | VULB 9168                  | 9168-153                      | Nov. 23, 2018       | Nov. 22, 2019           |
| Fixed Attenuator<br>WORKEN                     | MDCS18N-10                 | MDCS18N-10-01                 | Apr. 15, 2019       | Apr. 14, 2020           |
| MXG Vector signal<br>generator<br>Agilent      | N5182B                     | MY53050430                    | Nov. 19, 2018       | Nov. 18, 2019           |
| Preamplifier<br>EMCI                           | EMC 012645                 | 980115                        | Oct. 12, 2018       | Oct. 11, 2019           |
| Preamplifier<br>EMCI                           | EMC 330H                   | 980112                        | Oct. 12, 2018       | Oct. 11, 2019           |
| RF Coaxial Cable<br>HUBER+SUHNNER              | EMC104-SM-SM-800<br>0&3000 | 140811+170717                 | Oct. 12, 2018       | Oct. 11, 2019           |
| RF Coaxial Cable<br>HUBER+SUHNNER              | SUCOFLEX 104               | EMC104-SM-SM-1<br>000(140807) | Oct. 12, 2018       | Oct. 11, 2019           |
| RF Coaxial Cable<br>WOKEN                      | 8D-FB                      | Cable-Ch10-01                 | Oct. 12, 2018       | Oct. 11, 2019           |
| Boresight Antenna Fixture                      | FBA-01                     | FBA-SIP01                     | NA                  | NA                      |
| 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 Anritsu        | MT8821C                    | 6261806803                    | Jan. 22, 2019       | Jan. 21, 2020           |
| Radio Communication<br>Analyzer<br>Anritsu     | MT8820C                    | 6201300640                    | Aug. 16, 2017       | Aug. 15, 2019           |
| Temperature & Humidity<br>Chamber              | GTH-120-40-CP-AR           | MAA1306-019                   | Sep. 05, 2018       | Sep. 04, 2019           |
| DC Power Supply<br>Topward                     | 33010D                     | 807748                        | NA                  | NA                      |

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 General Information

#### 3.1 General Description of EUT

|                            |                                          |                     |
|----------------------------|------------------------------------------|---------------------|
| <b>Product</b>             | Notebook Computer                        |                     |
| <b>Brand</b>               | HP                                       |                     |
| <b>Test Model</b>          | HSN-Q20C                                 |                     |
| <b>Status of EUT</b>       | Engineering Sample                       |                     |
| <b>Power Supply Rating</b> | 5 or 9 or 12 or 15 or 20 Vdc (Adapter)   |                     |
| <b>Modulation Type</b>     | WCDMA                                    | QPSK                |
|                            | LTE                                      | QPSK, 16QAM, 64QAM  |
| <b>Frequency Range</b>     | WCDMA                                    | 1852.4 ~ 1907.6 MHz |
|                            | LTE Band 2 (Channel Bandwidth: 1.4 MHz)  | 1850.7 ~ 1909.3 MHz |
|                            | LTE Band 2 (Channel Bandwidth: 3 MHz)    | 1851.5 ~ 1908.5 MHz |
|                            | LTE Band 2 (Channel Bandwidth: 5 MHz)    | 1852.5 ~ 1907.5 MHz |
|                            | LTE Band 2 (Channel Bandwidth: 10 MHz)   | 1855.0 ~ 1905.0 MHz |
|                            | LTE Band 2 (Channel Bandwidth: 15 MHz)   | 1857.5 ~ 1902.5 MHz |
|                            | LTE Band 2 (Channel Bandwidth: 20 MHz)   | 1860.0 ~ 1900.0 MHz |
|                            | LTE Band 25 (Channel Bandwidth: 1.4 MHz) | 1850.7 ~ 1914.3 MHz |
|                            | LTE Band 25 (Channel Bandwidth: 3 MHz)   | 1851.5 ~ 1913.5 MHz |
|                            | LTE Band 25 (Channel Bandwidth: 5 MHz)   | 1852.5 ~ 1912.5 MHz |
|                            | LTE Band 25 (Channel Bandwidth: 10 MHz)  | 1855.0 ~ 1910.0 MHz |
|                            | LTE Band 25 (Channel Bandwidth: 15 MHz)  | 1857.5 ~ 1907.5 MHz |
|                            | LTE Band 25 (Channel Bandwidth: 20 MHz)  | 1860.0 ~ 1905.0 MHz |
| <b>Max. EIRP Power</b>     | WCDMA                                    | 44.77 mW            |
|                            | LTE Band 2 (Channel Bandwidth: 1.4 MHz)  | 33.57 mW            |
|                            | LTE Band 2 (Channel Bandwidth: 3 MHz)    | 35.73 mW            |
|                            | LTE Band 2 (Channel Bandwidth: 5 MHz)    | 38.19 mW            |
|                            | LTE Band 2 (Channel Bandwidth: 10 MHz)   | 40.09 mW            |
|                            | LTE Band 2 (Channel Bandwidth: 15 MHz)   | 42.07 mW            |
|                            | LTE Band 2 (Channel Bandwidth: 20 MHz)   | 44.16 mW            |
|                            | LTE Band 25 (Channel Bandwidth: 1.4 MHz) | 34.43 mW            |
|                            | LTE Band 25 (Channel Bandwidth: 3 MHz)   | 36.39 mW            |
|                            | LTE Band 25 (Channel Bandwidth: 5 MHz)   | 38.37 mW            |
|                            | LTE Band 25 (Channel Bandwidth: 10 MHz)  | 40.64 mW            |
|                            | LTE Band 25 (Channel Bandwidth: 15 MHz)  | 42.85 mW            |
|                            | LTE Band 25 (Channel Bandwidth: 20 MHz)  | 45.19 mW            |
| <b>Emission Designator</b> | WCDMA                                    | 4M09F9W             |
|                            | LTE Band 2 (Channel Bandwidth: 1.4 MHz)  | 1M09D7W             |
|                            | LTE Band 2 (Channel Bandwidth: 3 MHz)    | 2M71G7D             |
|                            | LTE Band 2 (Channel Bandwidth: 5 MHz)    | 4M50G7D             |
|                            | LTE Band 2 (Channel Bandwidth: 10 MHz)   | 8M99D7W             |
|                            | LTE Band 2 (Channel Bandwidth: 15 MHz)   | 13M5G7D             |
|                            | LTE Band 2 (Channel Bandwidth: 20 MHz)   | 18M0D7W             |
|                            | LTE Band 25 (Channel Bandwidth: 1.4 MHz) | 1M09D7W             |
|                            | LTE Band 25 (Channel Bandwidth: 3 MHz)   | 2M70G7D             |



|                            |                                         |         |
|----------------------------|-----------------------------------------|---------|
|                            | LTE Band 25 (Channel Bandwidth: 5 MHz)  | 4M50D7W |
|                            | LTE Band 25 (Channel Bandwidth: 10 MHz) | 9M01D7W |
|                            | LTE Band 25 (Channel Bandwidth: 15 MHz) | 13M5G7D |
|                            | LTE Band 25 (Channel Bandwidth: 20 MHz) | 18M0D7W |
| <b>Antenna Type</b>        | Couple Antenna with -6.19 dBi gain      |         |
| <b>Accessory Device</b>    | Refer to Note as below                  |         |
| <b>Data Cable Supplied</b> | Refer to Note as below                  |         |

Note:

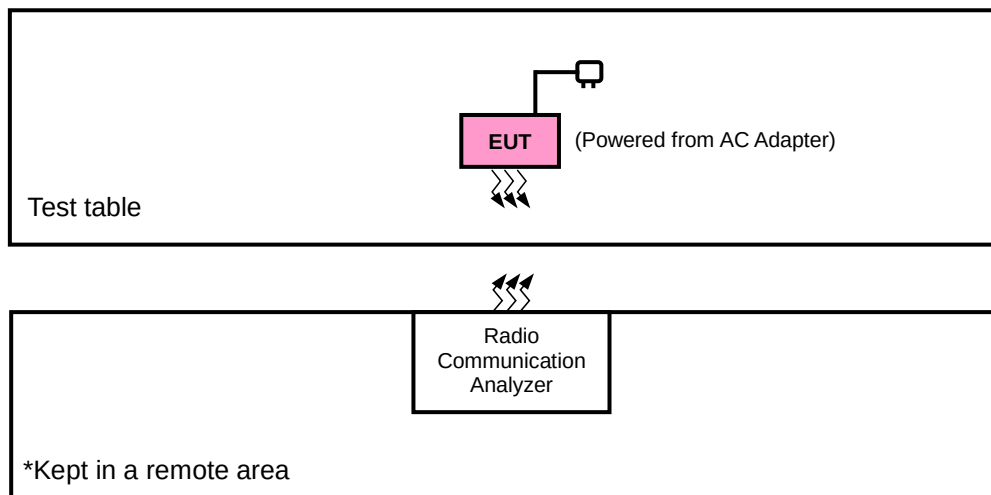
1. The WWAN module (Brand: Fibocom, Model: L860-GL) was installed in the EUT.
2. The EUT contains following accessory devices.

| Product | Brand | Model    | Description                                                                                                           |
|---------|-------|----------|-----------------------------------------------------------------------------------------------------------------------|
| Adapter | hp    | TPN-TA02 | I/P: 100-240 Vac, 50-60 Hz, 1.6 A<br>O/P: 5 Vdc, 3 A or 9 Vdc, 3 A or 12 Vdc, 5 A or 15 Vdc, 4.33 A or 20 Vdc, 3.25 A |

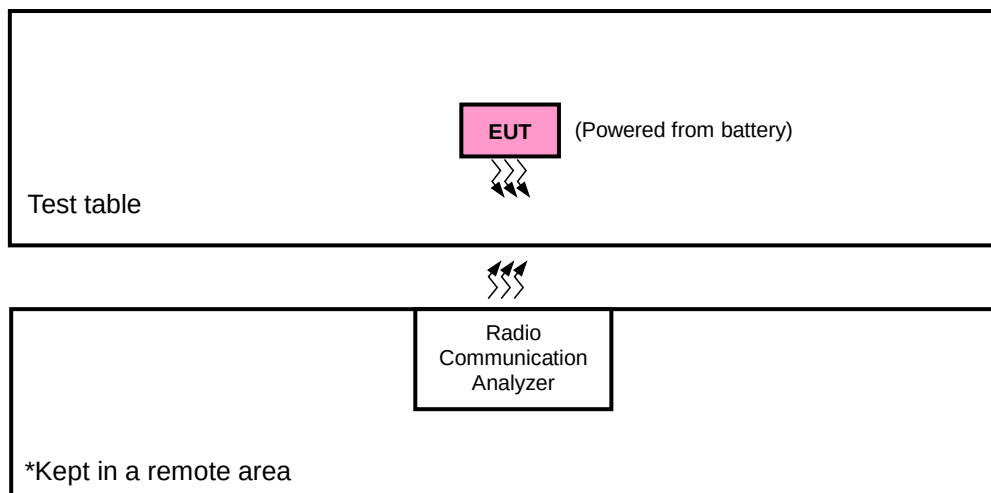
3. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

### 3.2 Configuration of System under Test

#### <Radiated Emission Test>



#### <E.I.R.P. 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 NB mode, 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        | EIRP    | Radiated Emission |
|-------------|---------|-------------------|
| WCDMA       | NB mode | Z-axis            |
| LTE Band 2  | NB mode | NB mode           |
| LTE Band 25 | NB mode | NB mode           |

#### WCDMA

| EUT Configure Mode | Test Item                  | Available Channel | Tested Channel   | Mode  |
|--------------------|----------------------------|-------------------|------------------|-------|
| -                  | EIRP                       | 9262 to 9538      | 9262, 9400, 9538 | WCDMA |
| -                  | Modulation Characteristics | 9262 to 9538      | 9400             | WCDMA |
| -                  | Frequency Stability        | 9262 to 9538      | 9262, 9538       | WCDMA |
| -                  | Occupied Bandwidth         | 9262 to 9538      | 9262, 9400, 9538 | WCDMA |
| -                  | Band Edge                  | 9262 to 9538      | 9262, 9538       | WCDMA |
| -                  | Peak to Average Ratio      | 9262 to 9538      | 9262, 9400, 9538 | WCDMA |
| -                  | Conducted Emission         | 9262 to 9538      | 9262, 9400, 9538 | WCDMA |
| -                  | Radiated Emission          | 9262 to 9538      | 9262, 9400, 9538 | WCDMA |

#### LTE Band 2

| EUT Configure Mode | Test Item                  | Available Channel | Tested Channel      | Channel Bandwidth | Modulation         | Mode                 |
|--------------------|----------------------------|-------------------|---------------------|-------------------|--------------------|----------------------|
| -                  | EIRP                       | 18607 to 19193    | 18607, 18900, 19193 | 1.4 MHz           | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset   |
|                    |                            | 18615 to 19185    | 18615, 18900, 19185 | 3 MHz             | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset   |
|                    |                            | 18625 to 19175    | 18625, 18900, 19175 | 5 MHz             | QPSK, 16QAM, 64QAM | 1 RB / 12 RB Offset  |
|                    |                            | 18650 to 19150    | 18650, 18900, 19150 | 10 MHz            | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset   |
|                    |                            | 18675 to 19125    | 18675, 18900, 19125 | 15 MHz            | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset   |
|                    |                            | 18700 to 19100    | 18700, 18900, 19100 | 20 MHz            | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset   |
| -                  | Modulation Characteristics | 18700 to 19100    | 18900               | 20 MHz            | QPSK, 16QAM, 64QAM | 100 RB / 0 RB Offset |
| -                  | Frequency Stability        | 18607 to 19193    | 18607, 19193        | 1.4 MHz           | QPSK               | 1 RB / 0 RB Offset   |
|                    |                            | 18615 to 19185    | 18615, 19185        | 3 MHz             | QPSK               | 1 RB / 0 RB Offset   |
|                    |                            | 18625 to 19175    | 18625, 19175        | 5 MHz             | QPSK               | 1 RB / 0 RB Offset   |
|                    |                            | 18650 to 19150    | 18650, 19150        | 10 MHz            | QPSK               | 1 RB / 0 RB Offset   |
|                    |                            | 18675 to 19125    | 18675, 19125        | 15 MHz            | QPSK               | 1 RB / 0 RB Offset   |
|                    |                            | 18700 to 19100    | 18700, 19100        | 20 MHz            | QPSK               | 1 RB / 0 RB Offset   |

| EUT Configure Mode | Test Item             | Available Channel | Tested Channel      | Channel Bandwidth | Modulation         | Mode                 |
|--------------------|-----------------------|-------------------|---------------------|-------------------|--------------------|----------------------|
| -                  | Occupied Bandwidth    | 18607 to 19193    | 18607, 18900, 19193 | 1.4 MHz           | QPSK, 16QAM, 64QAM | 6 RB / 0 RB Offset   |
|                    |                       | 18615 to 19185    | 18615, 18900, 19185 | 3 MHz             | QPSK, 16QAM, 64QAM | 15 RB / 0 RB Offset  |
|                    |                       | 18625 to 19175    | 18625, 18900, 19175 | 5 MHz             | QPSK, 16QAM, 64QAM | 25 RB / 0 RB Offset  |
|                    |                       | 18650 to 19150    | 18650, 18900, 19150 | 10 MHz            | QPSK, 16QAM, 64QAM | 50 RB / 0 RB Offset  |
|                    |                       | 18675 to 19125    | 18675, 18900, 19125 | 15 MHz            | QPSK, 16QAM, 64QAM | 75 RB / 0 RB Offset  |
|                    |                       | 18700 to 19100    | 18700, 18900, 19100 | 20 MHz            | QPSK, 16QAM, 64QAM | 100 RB / 0 RB Offset |
| -                  | Peak to Average Ratio | 18607 to 19193    | 18607, 18900, 19193 | 1.4 MHz           | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset   |
|                    |                       | 18615 to 19185    | 18615, 18900, 19185 | 3 MHz             | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset   |
|                    |                       | 18625 to 19175    | 18625, 18900, 19175 | 5 MHz             | QPSK, 16QAM, 64QAM | 1 RB / 12 RB Offset  |
|                    |                       | 18650 to 19150    | 18650, 18900, 19150 | 10 MHz            | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset   |
|                    |                       | 18675 to 19125    | 18675, 18900, 19125 | 15 MHz            | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset   |
|                    |                       | 18700 to 19100    | 18700, 18900, 19100 | 20 MHz            | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset   |
| -                  | Band Edge             | 18607 to 19193    | 18607               | 1.4 MHz           | QPSK               | 1 RB / 0 RB Offset   |
|                    |                       |                   |                     |                   |                    | 6 RB / 0 RB Offset   |
|                    |                       |                   | 19193               | 1.4 MHz           | QPSK               | 1 RB / 5 RB Offset   |
|                    |                       |                   |                     |                   |                    | 6 RB / 0 RB Offset   |
|                    |                       | 18615 to 19185    | 18615               | 3 MHz             | QPSK               | 1 RB / 0 RB Offset   |
|                    |                       |                   |                     |                   |                    | 15 RB / 0 RB Offset  |
|                    |                       |                   | 19185               | 3 MHz             | QPSK               | 1 RB / 14 RB Offset  |
|                    |                       |                   |                     |                   |                    | 15 RB / 0 RB Offset  |
|                    |                       | 18625 to 19175    | 18625               | 5 MHz             | QPSK               | 1 RB / 0 RB Offset   |
|                    |                       |                   |                     |                   |                    | 25 RB / 0 RB Offset  |
|                    |                       |                   | 19175               | 5 MHz             | QPSK               | 1 RB / 24 RB Offset  |
|                    |                       |                   |                     |                   |                    | 25 RB / 0 RB Offset  |
|                    |                       | 18650 to 19150    | 18650               | 10 MHz            | QPSK               | 1 RB / 0 RB Offset   |
|                    |                       |                   |                     |                   |                    | 50 RB / 0 RB Offset  |
|                    |                       |                   | 19150               | 10 MHz            | QPSK               | 1 RB / 49 RB Offset  |
|                    |                       |                   |                     |                   |                    | 50 RB / 0 RB Offset  |
|                    |                       | 18675 to 19125    | 18675               | 15 MHz            | QPSK               | 1 RB / 0 RB Offset   |
|                    |                       |                   |                     |                   |                    | 75 RB / 0 RB Offset  |
|                    |                       |                   | 19125               | 15 MHz            | QPSK               | 1 RB / 74 RB Offset  |
|                    |                       |                   |                     |                   |                    | 75 RB / 0 RB Offset  |
| -                  | Conducted Emission    | 18607 to 19193    | 18607, 18900, 19193 | 1.4 MHz           | QPSK               | 1 RB / 0 RB Offset   |
|                    |                       | 18615 to 19185    | 18615, 18900, 19185 | 3 MHz             | QPSK               | 1 RB / 0 RB Offset   |
|                    |                       | 18625 to 19175    | 18625, 18900, 19175 | 5 MHz             | QPSK               | 1 RB / 12 RB Offset  |
|                    |                       | 18650 to 19150    | 18650, 18900, 19150 | 10 MHz            | QPSK               | 1 RB / 0 RB Offset   |
|                    |                       | 18675 to 19125    | 18675, 18900, 19125 | 15 MHz            | QPSK               | 1 RB / 0 RB Offset   |
|                    |                       | 18700 to 19100    | 18700, 18900, 19100 | 20 MHz            | QPSK               | 1 RB / 0 RB Offset   |

| EUT Configure Mode | Test Item         | Available Channel | Tested Channel      | Channel Bandwidth | Modulation | Mode                |
|--------------------|-------------------|-------------------|---------------------|-------------------|------------|---------------------|
| -                  | Radiated Emission | 18607 to 19193    | 18607, 18900, 19193 | 1.4 MHz           | QPSK       | 1 RB / 0 RB Offset  |
|                    |                   | 18625 to 19175    | 18625, 18900, 19175 | 5 MHz             | QPSK       | 1 RB / 12 RB Offset |
|                    |                   | 18700 to 19100    | 18700, 18900, 19100 | 20 MHz            | QPSK       | 1 RB / 0 RB Offset  |

**Note:**

1. This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.
2. For radiated emission above 1 GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest, 5 MHz & highest channel bandwidth for final test.

**LTE Band 25**

| EUT Configure Mode | Test Item                  | Available Channel | Tested Channel      | Channel Bandwidth | Modulation         | Mode                 |
|--------------------|----------------------------|-------------------|---------------------|-------------------|--------------------|----------------------|
| -                  | EIRP                       | 26047 to 26683    | 26047, 26365, 26683 | 1.4 MHz           | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset   |
|                    |                            | 26055 to 26675    | 26055, 26365, 26675 | 3 MHz             | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset   |
|                    |                            | 26065 to 26665    | 26065, 26365, 26665 | 5 MHz             | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset   |
|                    |                            | 26090 to 26640    | 26090, 26365, 26640 | 10 MHz            | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset   |
|                    |                            | 26115 to 26615    | 26115, 26365, 26615 | 15 MHz            | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset   |
|                    |                            | 26140 to 26590    | 26140, 26365, 26590 | 20 MHz            | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset   |
| -                  | Modulation Characteristics | 26090 to 26640    | 26365               | 20 MHz            | QPSK, 16QAM, 64QAM | 100 RB / 0 RB Offset |
| -                  | Frequency Stability        | 26047 to 26683    | 26047, 26683        | 1.4 MHz           | QPSK               | 1 RB / 0 RB Offset   |
|                    |                            | 26055 to 26675    | 26055, 26675        | 3 MHz             | QPSK               | 1 RB / 0 RB Offset   |
|                    |                            | 26065 to 26665    | 26065, 26665        | 5 MHz             | QPSK               | 1 RB / 0 RB Offset   |
|                    |                            | 26090 to 26640    | 26090, 26640        | 10 MHz            | QPSK               | 1 RB / 0 RB Offset   |
|                    |                            | 26115 to 26615    | 26115, 26615        | 15 MHz            | QPSK               | 1 RB / 0 RB Offset   |
|                    |                            | 26140 to 26590    | 26140, 26590        | 20 MHz            | QPSK               | 1 RB / 0 RB Offset   |
| -                  | Occupied Bandwidth         | 26047 to 26683    | 26047, 26365, 26683 | 1.4 MHz           | QPSK, 16QAM, 64QAM | 6 RB / 0 RB Offset   |
|                    |                            | 26055 to 26675    | 26055, 26365, 26675 | 3 MHz             | QPSK, 16QAM, 64QAM | 15 RB / 0 RB Offset  |
|                    |                            | 26065 to 26665    | 26065, 26365, 26665 | 5 MHz             | QPSK, 16QAM, 64QAM | 25 RB / 0 RB Offset  |
|                    |                            | 26090 to 26640    | 26090, 26365, 26640 | 10 MHz            | QPSK, 16QAM, 64QAM | 50 RB / 0 RB Offset  |
|                    |                            | 26115 to 26615    | 26115, 26365, 26615 | 15 MHz            | QPSK, 16QAM, 64QAM | 75 RB / 0 RB Offset  |
|                    |                            | 26140 to 26590    | 26140, 26365, 26590 | 20 MHz            | QPSK, 16QAM, 64QAM | 100 RB / 0 RB Offset |
| -                  | Peak to Average Ratio      | 26047 to 26683    | 26047, 26365, 26683 | 1.4 MHz           | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset   |
|                    |                            | 26055 to 26675    | 26055, 26365, 26675 | 3 MHz             | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset   |
|                    |                            | 26065 to 26665    | 26065, 26365, 26665 | 5 MHz             | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset   |
|                    |                            | 26090 to 26640    | 26090, 26365, 26640 | 10 MHz            | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset   |
|                    |                            | 26115 to 26615    | 26115, 26365, 26615 | 15 MHz            | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset   |
|                    |                            | 26140 to 26590    | 26140, 26365, 26590 | 20 MHz            | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset   |

| EUT Configure Mode | Test Item          | Available Channel | Tested Channel      | Channel Bandwidth | Modulation | Mode                 |
|--------------------|--------------------|-------------------|---------------------|-------------------|------------|----------------------|
| -                  | Band Edge          | 26047 to 26683    | 26047               | 1.4 MHz           | QPSK       | 1 RB / 0 RB Offset   |
|                    |                    |                   | 26683               | 1.4 MHz           | QPSK       | 6 RB / 0 RB Offset   |
|                    |                    | 26055 to 26675    | 26055               | 3 MHz             | QPSK       | 1 RB / 5 RB Offset   |
|                    |                    |                   |                     |                   |            | 6 RB / 0 RB Offset   |
|                    |                    |                   | 26675               | 3 MHz             | QPSK       | 1 RB / 0 RB Offset   |
|                    |                    |                   |                     |                   |            | 1 RB / 14 RB Offset  |
|                    |                    | 26065 to 26665    | 26065               | 5 MHz             | QPSK       | 15 RB / 0 RB Offset  |
|                    |                    |                   |                     |                   |            | 1 RB / 0 RB Offset   |
|                    |                    |                   | 26665               | 5 MHz             | QPSK       | 25 RB / 0 RB Offset  |
|                    |                    |                   |                     |                   |            | 1 RB / 24 RB Offset  |
|                    |                    | 26090 to 26640    | 26090               | 10 MHz            | QPSK       | 25 RB / 0 RB Offset  |
|                    |                    |                   |                     |                   |            | 1 RB / 0 RB Offset   |
|                    |                    |                   | 26640               | 10 MHz            | QPSK       | 50 RB / 0 RB Offset  |
|                    |                    |                   |                     |                   |            | 1 RB / 49 RB Offset  |
|                    |                    | 26115 to 26615    | 26115               | 15 MHz            | QPSK       | 50 RB / 0 RB Offset  |
|                    |                    |                   |                     |                   |            | 1 RB / 0 RB Offset   |
|                    |                    |                   | 26615               | 15 MHz            | QPSK       | 75 RB / 0 RB Offset  |
|                    |                    |                   |                     |                   |            | 1 RB / 74 RB Offset  |
|                    |                    | 26140 to 26590    | 26140               | 20 MHz            | QPSK       | 75 RB / 0 RB Offset  |
|                    |                    |                   |                     |                   |            | 1 RB / 0 RB Offset   |
|                    |                    |                   | 26590               | 20 MHz            | QPSK       | 100 RB / 0 RB Offset |
|                    |                    |                   |                     |                   |            | 1 RB / 99 RB Offset  |
| -                  | Conducted Emission | 26047 to 26683    | 26047, 26365, 26683 | 1.4 MHz           | QPSK       | 100 RB / 0 RB Offset |
|                    |                    | 26055 to 26675    | 26055, 26365, 26675 | 3 MHz             | QPSK       | 1 RB / 0 RB Offset   |
|                    |                    | 26065 to 26665    | 26065, 26365, 26665 | 5 MHz             | QPSK       | 1 RB / 0 RB Offset   |
|                    |                    | 26090 to 26640    | 26090, 26365, 26640 | 10 MHz            | QPSK       | 1 RB / 0 RB Offset   |
|                    |                    | 26115 to 26615    | 26115, 26365, 26615 | 15 MHz            | QPSK       | 1 RB / 0 RB Offset   |
|                    |                    | 26140 to 26590    | 26140, 26365, 26590 | 20 MHz            | QPSK       | 1 RB / 0 RB Offset   |
| -                  | Radiated Emission  | 18607 to 19193    | 18607, 18900, 19193 | 1.4 MHz           | QPSK       | 1 RB / 0 RB Offset   |
|                    |                    | 18625 to 19175    | 18625, 18900, 19175 | 5 MHz             | QPSK       | 1 RB / 0 RB Offset   |
|                    |                    | 18700 to 19100    | 18700, 18900, 19100 | 20 MHz            | QPSK       | 1 RB / 0 RB Offset   |

**Note:**

1. This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.
2. For radiated emission above 1 GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest, 5 MHz & highest channel bandwidth for final test.

### **Test Condition:**

| Test Item                  | Environmental Conditions | Input Power    | Tested By  |
|----------------------------|--------------------------|----------------|------------|
| EIRP                       | 26 deg. C, 58 % RH       | 120 Vac, 60 Hz | Thomas Wei |
| Modulation Characteristics | 26 deg. C, 58 % RH       | 120 Vac, 60 Hz | Wayne Lin  |
| Frequency Stability        | 26 deg. C, 58 % RH       | 120 Vac, 60 Hz | Wayne Lin  |
| Occupied Bandwidth         | 26 deg. C, 58 % RH       | 120 Vac, 60 Hz | Wayne Lin  |
| Band Edge                  | 26 deg. C, 58 % RH       | 120 Vac, 60 Hz | Wayne Lin  |
| Peak to Average Ratio      | 26 deg. C, 58 % RH       | 120 Vac, 60 Hz | Wayne Lin  |
| Conducted Emission         | 26 deg. C, 58 % RH       | 120 Vac, 60 Hz | Wayne Lin  |
| Radiated Emission          | 25 deg. C, 65 % RH       | 120 Vac, 60 Hz | Thomas Wei |

### **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 24**

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

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

**ANSI 63.26-2015**

**ANSI 63.2 -1996**

**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

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

#### 4.1.2 Test Procedures

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

- a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 5 MHz for WCDMA, and 10 MHz for LTE mode.
- b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (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.
- c. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a tx cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step b. Record the power level of S.G.
- d.  $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$ . E.R.P power can be calculated from E.I.R.P power by subtracting the gain of dipole,  $E.R.P \text{ power} = E.I.R.P \text{ power} - 2.15 \text{ dB}$ .

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

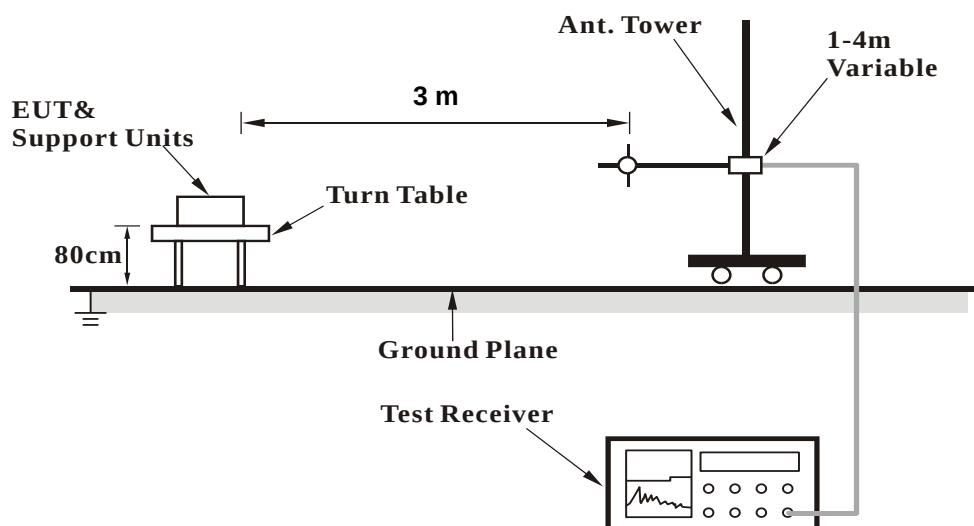
The EUT was set up for the maximum power with GSM, GPRS, EDGE, WCDMA, CDMA, and LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.



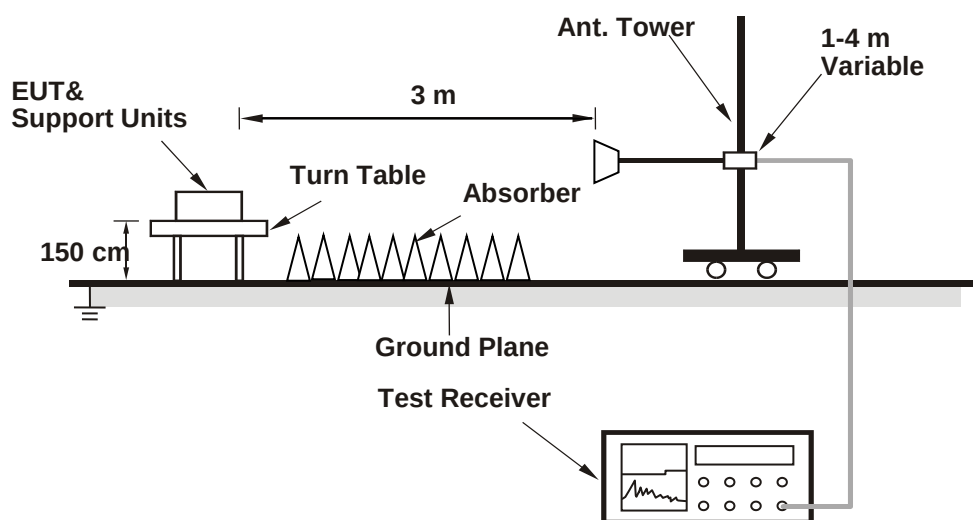
#### 4.1.3 Test Setup

##### EIRP / ERP Measurement:

<Radiated Emission below or equal 1 GHz>

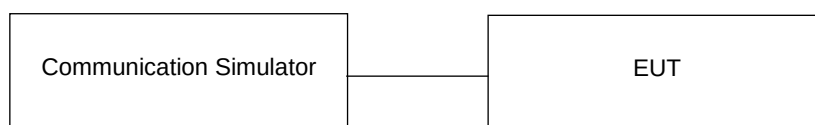


<Radiated Emission above 1 GHz>



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

##### Conducted Power Measurement:



#### 4.1.4 Test Results

##### Conducted Output Power (dBm)

| Band               | WCDMA II |        |        |
|--------------------|----------|--------|--------|
| Channel            | 9262     | 9400   | 9538   |
| Frequency (MHz)    | 1852.4   | 1880.0 | 1907.6 |
| RMC 12.2K          | 23.44    | 23.49  | 23.42  |
| HSDPA Subtest-1    | 23.43    | 23.48  | 23.41  |
| HSDPA Subtest-2    | 23.13    | 23.18  | 23.11  |
| HSDPA Subtest-3    | 22.89    | 22.94  | 22.87  |
| HSDPA Subtest-4    | 22.63    | 22.68  | 22.61  |
| DC-HSDPA Subtest-1 | 23.33    | 23.38  | 23.31  |
| DC-HSDPA Subtest-2 | 23.03    | 23.08  | 23.01  |
| DC-HSDPA Subtest-3 | 22.79    | 22.84  | 22.77  |
| DC-HSDPA Subtest-4 | 22.53    | 22.58  | 22.51  |
| HSUPA Subtest-1    | 23.20    | 23.25  | 23.18  |
| HSUPA Subtest-2    | 21.11    | 21.16  | 21.09  |
| HSUPA Subtest-3    | 22.16    | 22.21  | 22.14  |
| HSUPA Subtest-4    | 21.38    | 21.43  | 21.36  |
| HSUPA Subtest-5    | 23.15    | 23.20  | 23.13  |

### LTE Band 2

| BW  | MCS Index | RB Size         | RB Offset | Low    | Mid    | High   | 3GPP MPR (dB) | BW   | MCS Index | RB Size         | RB Offset | Low    | Mid    | High   | 3GPP MPR (dB) |
|-----|-----------|-----------------|-----------|--------|--------|--------|---------------|------|-----------|-----------------|-----------|--------|--------|--------|---------------|
|     |           | Channel         |           | 18700  | 18900  | 19100  |               |      |           | Channel         |           | 18675  | 18900  | 19125  |               |
|     |           | Frequency (MHz) |           | 1860.0 | 1880.0 | 1900.0 |               |      |           | Frequency (MHz) |           | 1857.5 | 1880.0 | 1902.5 |               |
| 20M | QPSK      | 1               | 0         | 22.80  | 22.92  | 22.78  | 0             | 15M  | QPSK      | 1               | 0         | 22.78  | 22.90  | 22.77  | 0             |
|     |           | 1               | 50        | 22.73  | 22.81  | 22.69  | 0             |      |           | 1               | 37        | 22.70  | 22.74  | 22.68  | 0             |
|     |           | 1               | 99        | 22.75  | 22.87  | 22.73  | 0             |      |           | 1               | 74        | 22.74  | 22.79  | 22.67  | 0             |
|     |           | 50              | 0         | 21.95  | 22.02  | 21.91  | 1             |      |           | 36              | 0         | 21.93  | 21.99  | 21.86  | 1             |
|     |           | 50              | 25        | 21.83  | 21.90  | 21.78  | 1             |      |           | 36              | 19        | 21.75  | 21.87  | 21.68  | 1             |
|     |           | 50              | 50        | 21.79  | 21.89  | 21.75  | 1             |      |           | 36              | 39        | 21.72  | 21.88  | 21.67  | 1             |
|     | 16QAM     | 100             | 0         | 21.83  | 21.93  | 21.80  | 1             |      |           | 75              | 0         | 21.74  | 21.89  | 21.79  | 1             |
|     |           | 1               | 0         | 21.66  | 21.90  | 21.70  | 1             |      | 16QAM     | 1               | 0         | 21.60  | 21.78  | 21.64  | 1             |
|     |           | 1               | 50        | 21.70  | 21.73  | 21.66  | 1             |      |           | 1               | 37        | 21.67  | 21.62  | 21.51  | 1             |
|     |           | 1               | 99        | 21.70  | 21.87  | 21.68  | 1             |      |           | 1               | 74        | 21.69  | 21.77  | 21.55  | 1             |
|     |           | 50              | 0         | 20.93  | 20.99  | 20.85  | 2             |      |           | 36              | 0         | 20.77  | 20.94  | 20.83  | 2             |
|     |           | 50              | 25        | 20.80  | 20.89  | 20.74  | 2             |      |           | 36              | 19        | 20.71  | 20.72  | 20.69  | 2             |
|     | 64QAM     | 50              | 50        | 20.73  | 20.82  | 20.75  | 2             |      |           | 36              | 39        | 20.67  | 20.84  | 20.67  | 2             |
|     |           | 100             | 0         | 20.83  | 20.86  | 20.72  | 2             |      |           | 75              | 0         | 20.71  | 20.84  | 20.79  | 2             |
|     |           | 1               | 0         | 20.70  | 20.91  | 20.74  | 2             |      | 64QAM     | 1               | 0         | 20.73  | 20.81  | 20.63  | 2             |
|     |           | 1               | 50        | 20.70  | 20.76  | 20.64  | 2             |      |           | 1               | 37        | 20.56  | 20.61  | 20.62  | 2             |
|     |           | 1               | 99        | 20.75  | 20.81  | 20.66  | 2             |      |           | 1               | 74        | 20.65  | 20.72  | 20.64  | 2             |
|     |           | 50              | 0         | 19.91  | 19.99  | 19.81  | 3             |      |           | 36              | 0         | 19.82  | 19.88  | 19.87  | 3             |
|     |           | 50              | 25        | 19.76  | 19.89  | 19.68  | 3             |      |           | 36              | 19        | 19.67  | 19.84  | 19.63  | 3             |
|     |           | 50              | 50        | 19.72  | 19.84  | 19.73  | 3             |      |           | 36              | 39        | 19.67  | 19.75  | 19.67  | 3             |
|     |           | 100             | 0         | 19.75  | 19.90  | 19.71  | 3             |      |           | 75              | 0         | 19.76  | 19.84  | 19.67  | 3             |
| 10M | QPSK      | 1               | 0         | 22.67  | 22.81  | 22.74  | 0             | 5M   | QPSK      | 1               | 0         | 22.70  | 22.72  | 22.70  | 0             |
|     |           | 1               | 24        | 22.65  | 22.73  | 22.54  | 0             |      |           | 1               | 12        | 22.51  | 22.73  | 22.48  | 0             |
|     |           | 1               | 49        | 22.64  | 22.74  | 22.60  | 0             |      |           | 1               | 24        | 22.70  | 22.69  | 22.52  | 0             |
|     |           | 25              | 0         | 21.95  | 21.89  | 21.74  | 1             |      |           | 12              | 0         | 21.82  | 21.90  | 21.71  | 1             |
|     |           | 25              | 12        | 21.66  | 21.83  | 21.58  | 1             |      |           | 12              | 6         | 21.83  | 21.76  | 21.47  | 1             |
|     |           | 25              | 25        | 21.69  | 21.68  | 21.64  | 1             |      |           | 12              | 13        | 21.68  | 21.74  | 21.58  | 1             |
|     | 16QAM     | 50              | 0         | 21.62  | 21.84  | 21.60  | 1             |      |           | 25              | 0         | 21.76  | 21.72  | 21.69  | 1             |
|     |           | 1               | 0         | 21.54  | 21.81  | 21.67  | 1             |      | 16QAM     | 1               | 0         | 21.53  | 21.74  | 21.58  | 1             |
|     |           | 1               | 24        | 21.58  | 21.54  | 21.48  | 1             |      |           | 1               | 12        | 21.46  | 21.53  | 21.52  | 1             |
|     |           | 1               | 49        | 21.61  | 21.65  | 21.53  | 1             |      |           | 1               | 24        | 21.47  | 21.62  | 21.56  | 1             |
|     |           | 25              | 0         | 20.63  | 20.78  | 20.66  | 2             |      |           | 12              | 0         | 20.65  | 20.84  | 20.72  | 2             |
|     |           | 25              | 12        | 20.57  | 20.70  | 20.62  | 2             |      |           | 12              | 6         | 20.74  | 20.73  | 20.72  | 2             |
|     | 64QAM     | 25              | 25        | 20.46  | 20.76  | 20.44  | 2             |      |           | 12              | 13        | 20.60  | 20.76  | 20.72  | 2             |
|     |           | 50              | 0         | 20.70  | 20.72  | 20.76  | 2             |      |           | 25              | 0         | 20.54  | 20.74  | 20.66  | 2             |
|     |           | 1               | 0         | 20.59  | 20.82  | 20.45  | 2             |      | 64QAM     | 1               | 0         | 20.79  | 20.72  | 20.57  | 2             |
|     |           | 1               | 24        | 20.56  | 20.61  | 20.48  | 2             |      |           | 1               | 12        | 20.59  | 20.66  | 20.42  | 2             |
|     |           | 1               | 49        | 20.67  | 20.77  | 20.49  | 2             |      |           | 1               | 24        | 20.61  | 20.80  | 20.58  | 2             |
|     |           | 25              | 0         | 19.65  | 19.88  | 19.84  | 3             |      |           | 12              | 0         | 19.67  | 19.94  | 19.65  | 3             |
|     |           | 25              | 12        | 19.65  | 19.83  | 19.65  | 3             |      |           | 12              | 6         | 19.53  | 19.64  | 19.49  | 3             |
|     |           | 25              | 25        | 19.65  | 19.78  | 19.56  | 3             |      |           | 12              | 13        | 19.69  | 19.58  | 19.53  | 3             |
|     |           | 50              | 0         | 19.69  | 19.82  | 19.62  | 3             |      |           | 25              | 0         | 19.61  | 19.67  | 19.69  | 3             |
| 3M  | QPSK      | 1               | 0         | 22.64  | 22.79  | 22.64  | 0             | 1.4M | QPSK      | 1               | 0         | 22.57  | 22.84  | 22.61  | 0             |
|     |           | 1               | 7         | 22.66  | 22.70  | 22.48  | 0             |      |           | 1               | 2         | 22.62  | 22.64  | 22.52  | 0             |
|     |           | 1               | 14        | 22.60  | 22.70  | 22.56  | 0             |      |           | 1               | 5         | 22.53  | 22.65  | 22.65  | 0             |
|     |           | 8               | 0         | 21.76  | 21.81  | 21.80  | 1             |      |           | 3               | 0         | 22.81  | 22.79  | 22.72  | 0             |
|     |           | 8               | 3         | 21.65  | 21.75  | 21.72  | 1             |      |           | 3               | 1         | 22.69  | 22.75  | 22.66  | 0             |
|     |           | 8               | 7         | 21.63  | 21.78  | 21.60  | 1             |      |           | 3               | 3         | 22.68  | 22.69  | 22.59  | 0             |
|     | 16QAM     | 15              | 0         | 21.71  | 21.80  | 21.59  | 1             |      |           | 6               | 0         | 21.72  | 21.88  | 21.73  | 1             |
|     |           | 1               | 0         | 21.60  | 21.89  | 21.60  | 1             |      | 16QAM     | 1               | 0         | 21.61  | 21.77  | 21.67  | 1             |
|     |           | 1               | 7         | 21.53  | 21.62  | 21.37  | 1             |      |           | 1               | 2         | 21.53  | 21.61  | 21.53  | 1             |
|     |           | 1               | 14        | 21.54  | 21.71  | 21.59  | 1             |      |           | 1               | 5         | 21.68  | 21.67  | 21.48  | 1             |
|     |           | 8               | 0         | 20.74  | 20.88  | 20.79  | 2             |      |           | 3               | 0         | 21.77  | 21.82  | 21.73  | 1             |
|     |           | 8               | 3         | 20.51  | 20.74  | 20.54  | 2             |      |           | 3               | 1         | 21.59  | 21.81  | 21.59  | 1             |
|     | 64QAM     | 8               | 7         | 20.53  | 20.79  | 20.51  | 2             |      |           | 3               | 3         | 21.66  | 21.67  | 21.62  | 1             |
|     |           | 15              | 0         | 20.54  | 20.82  | 20.55  | 2             |      |           | 6               | 0         | 20.74  | 20.79  | 20.72  | 2             |
|     |           | 1               | 0         | 20.55  | 20.69  | 20.56  | 2             |      | 64QAM     | 1               | 0         | 20.74  | 20.66  | 20.61  | 2             |
|     |           | 1               | 7         | 20.47  | 20.70  | 20.53  | 2             |      |           | 1               | 2         | 20.46  | 20.74  | 20.49  | 2             |
|     |           | 1               | 14        | 20.55  | 20.71  | 20.55  | 2             |      |           | 1               | 5         | 20.57  | 20.73  | 20.57  | 2             |
|     |           | 8               | 0         | 19.77  | 19.91  | 19.81  | 3             |      |           | 3               | 0         | 20.86  | 20.85  | 20.82  | 2             |
|     |           | 8               | 3         | 19.67  | 19.84  | 19.61  | 3             |      |           | 3               | 1         | 20.72  | 20.71  | 20.63  | 2             |
|     |           | 8               | 7         | 19.73  | 19.78  | 19.62  | 3             |      |           | 3               | 3         | 20.70  | 20.74  | 20.57  | 2             |
|     |           | 15              | 0         | 19.66  | 19.73  | 19.64  | 3             |      |           | 6               | 0         | 19.74  | 19.79  | 19.63  | 3             |

### LTE Band 25

| BW  | MCS Index | RB Size         | RB Offset       | Low       | Mid    | High   | 3GPP MPR (dB) | BW              | MCS Index       | RB Size         | RB Offset | Low       | Mid     | High      | 3GPP MPR (dB) |       |      |
|-----|-----------|-----------------|-----------------|-----------|--------|--------|---------------|-----------------|-----------------|-----------------|-----------|-----------|---------|-----------|---------------|-------|------|
|     |           | Channel         |                 | 26140     | 26365  | 26590  |               |                 |                 | Channel         |           | 26115     | 26365   | 26615     |               |       |      |
|     |           | Frequency (MHz) |                 | 1860.0    | 1882.5 | 1905.0 |               |                 |                 | Frequency (MHz) |           | 1857.5    | 1882.5  | 1907.5    |               |       |      |
| 20M | QPSK      | 1               | 0               | 23.23     | 23.21  | 23.17  | 0             | 15M             | QPSK            | 1               | 0         | 23.16     | 23.19   | 23.16     | 0             |       |      |
|     |           | 1               | 50              | 23.07     | 23.03  | 22.95  | 0             |                 |                 | 1               | 37        | 23.05     | 23.01   | 22.85     | 0             |       |      |
|     |           | 1               | 99              | 23.16     | 23.12  | 23.08  | 0             |                 |                 | 1               | 74        | 23.16     | 23.09   | 23.07     | 0             |       |      |
|     |           | 50              | 0               | 22.18     | 22.16  | 22.10  | 1             |                 |                 | 36              | 0         | 22.13     | 22.12   | 22.06     | 1             |       |      |
|     |           | 50              | 25              | 22.07     | 22.05  | 22.01  | 1             |                 |                 | 36              | 19        | 22.04     | 22.03   | 22.01     | 1             |       |      |
|     |           | 50              | 50              | 22.09     | 22.02  | 21.98  | 1             |                 |                 | 36              | 39        | 22.05     | 21.96   | 21.96     | 1             |       |      |
|     |           | 100             | 0               | 22.08     | 22.06  | 22.03  | 1             |                 |                 | 75              | 0         | 21.98     | 21.99   | 21.95     | 1             |       |      |
|     |           | 1               | 0               | 22.13     | 22.21  | 22.17  | 1             |                 |                 | 16QAM           | 1         | 0         | 22.07   | 22.18     | 22.08         | 1     |      |
|     | 1         | 50              | 22.00           | 22.03     | 21.88  | 1      | 1             |                 | 37              |                 | 22.01     | 21.98     | 21.80   | 1         |               |       |      |
|     | 1         | 99              | 22.10           | 22.02     | 21.99  | 1      | 1             |                 | 74              |                 | 22.07     | 21.98     | 21.95   | 1         |               |       |      |
|     | 50        | 0               | 21.08           | 21.14     | 21.06  | 2      | 36            |                 | 0               |                 | 20.98     | 21.05     | 20.96   | 2         |               |       |      |
|     | 50        | 25              | 20.97           | 21.04     | 20.93  | 2      | 36            |                 | 19              |                 | 21.00     | 20.95     | 20.93   | 2         |               |       |      |
|     | 50        | 50              | 20.99           | 20.94     | 20.94  | 2      | 36            |                 | 39              |                 | 21.07     | 20.90     | 20.81   | 2         |               |       |      |
|     | 100       | 0               | 20.99           | 21.06     | 21.01  | 2      | 75            |                 | 0               |                 | 21.01     | 20.90     | 20.86   | 2         |               |       |      |
|     | 1         | 0               | 21.13           | 21.14     | 21.16  | 2      | 64QAM         |                 | 1               |                 | 0         | 21.15     | 21.07   | 21.10     | 2             |       |      |
|     | 1         | 50              | 20.98           | 20.98     | 20.94  | 2      |               |                 | 1               | 37              | 21.01     | 20.85     | 20.87   | 2         |               |       |      |
|     | 1         | 99              | 21.09           | 21.02     | 20.99  | 2      |               |                 | 1               | 74              | 21.10     | 20.97     | 21.03   | 2         |               |       |      |
|     | 50        | 0               | 20.13           | 20.09     | 20.05  | 3      |               |                 | 36              | 0               | 20.05     | 20.10     | 19.98   | 3         |               |       |      |
|     | 50        | 25              | 20.07           | 20.02     | 19.93  | 3      |               |                 | 36              | 19              | 19.93     | 19.97     | 19.88   | 3         |               |       |      |
|     | 50        | 50              | 20.06           | 19.93     | 19.97  | 3      |               |                 | 36              | 39              | 19.97     | 19.97     | 19.85   | 3         |               |       |      |
|     | 100       | 0               | 20.04           | 20.00     | 20.00  | 3      |               |                 | 75              | 0               | 19.95     | 19.96     | 19.94   | 3         |               |       |      |
|     | BW        | MCS Index       | RB Size         | RB Offset | Low    | Mid    |               |                 | High            | 3GPP MPR (dB)   | BW        | MCS Index | RB Size | RB Offset | Low           | Mid   | High |
|     |           |                 | Channel         |           | 26090  | 26365  | 26640         |                 | Channel         |                 |           |           | 26065   | 26365     | 26665         |       |      |
|     |           |                 | Frequency (MHz) |           | 2855.0 | 1882.5 | 1910.0        |                 | Frequency (MHz) |                 |           |           | 1852.5  | 1882.5    | 1912.5        |       |      |
|     | 10M       | QPSK            | 1               | 0         | 23.19  | 23.13  | 23.14         |                 | 0               | 5M              | QPSK      | 1         | 0       | 23.18     | 23.01         | 22.87 | 0    |
|     |           |                 | 1               | 24        | 22.85  | 22.88  | 22.89         |                 | 0               |                 |           | 1         | 12      | 22.97     | 22.84         | 22.75 | 0    |
|     |           |                 | 1               | 49        | 22.99  | 22.99  | 22.97         |                 | 0               |                 |           | 1         | 24      | 22.99     | 22.90         | 22.99 | 0    |
|     |           |                 | 25              | 0         | 21.97  | 21.99  | 22.01         |                 | 1               |                 |           | 12        | 0       | 22.06     | 22.10         | 21.88 | 1    |
| 25  |           |                 | 12              | 22.01     | 21.87  | 21.88  | 1             | 12              | 6               |                 |           | 21.86     | 21.94   | 21.88     | 1             |       |      |
| 25  |           |                 | 25              | 21.95     | 21.86  | 21.89  | 1             | 12              | 13              |                 |           | 21.94     | 21.88   | 21.70     | 1             |       |      |
| 50  |           |                 | 0               | 22.05     | 21.95  | 21.96  | 1             | 25              | 0               |                 |           | 22.03     | 22.00   | 21.93     | 1             |       |      |
| 1   |           |                 | 0               | 22.11     | 21.94  | 22.12  | 1             | 16QAM           | 1               |                 |           | 0         | 22.05   | 22.01     | 21.94         | 1     |      |
| 1   |           | 24              | 21.95           | 21.78     | 21.75  | 1      | 1             |                 | 12              |                 | 21.93     | 21.75     | 21.89   | 1         |               |       |      |
| 1   |           | 49              | 22.04           | 22.05     | 21.92  | 1      | 1             |                 | 24              |                 | 21.98     | 21.94     | 21.85   | 1         |               |       |      |
| 25  |           | 0               | 21.04           | 21.00     | 20.86  | 2      | 12            |                 | 0               |                 | 20.97     | 21.02     | 20.96   | 2         |               |       |      |
| 25  |           | 12              | 20.97           | 20.84     | 20.86  | 2      | 12            |                 | 6               |                 | 20.91     | 20.79     | 20.93   | 2         |               |       |      |
| 25  |           | 25              | 20.87           | 20.96     | 20.83  | 2      | 12            |                 | 13              |                 | 20.80     | 20.89     | 20.83   | 2         |               |       |      |
| 50  |           | 0               | 20.94           | 20.88     | 20.76  | 2      | 25            |                 | 0               |                 | 20.83     | 20.91     | 20.97   | 2         |               |       |      |
| 1   |           | 0               | 20.99           | 21.15     | 21.09  | 2      | 64QAM         |                 | 1               |                 | 0         | 20.99     | 20.97   | 21.05     | 2             |       |      |
| 1   |           | 24              | 20.92           | 20.83     | 20.76  | 2      |               | 1               | 12              |                 | 20.85     | 20.76     | 20.78   | 2         |               |       |      |
| 1   |           | 49              | 20.95           | 21.05     | 20.89  | 2      |               | 1               | 24              |                 | 20.98     | 21.00     | 21.01   | 2         |               |       |      |
| 25  |           | 0               | 20.01           | 19.85     | 19.94  | 3      |               | 12              | 0               |                 | 19.90     | 20.00     | 19.98   | 3         |               |       |      |
| 25  |           | 12              | 19.84           | 19.87     | 19.71  | 3      |               | 12              | 6               |                 | 19.82     | 19.90     | 19.83   | 3         |               |       |      |
| 25  |           | 25              | 19.84           | 19.83     | 19.78  | 3      |               | 12              | 13              |                 | 19.94     | 19.78     | 19.77   | 3         |               |       |      |
| 50  |           | 0               | 19.90           | 19.94     | 19.95  | 3      |               | 25              | 0               |                 | 19.90     | 19.91     | 19.85   | 3         |               |       |      |
| BW  |           | MCS Index       | RB Size         | RB Offset | Low    | Mid    |               | High            | 3GPP MPR (dB)   |                 | BW        | MCS Index | RB Size | RB Offset | Low           | Mid   | High |
|     |           |                 | Channel         |           | 26055  | 26365  | 26675         | Channel         |                 |                 |           |           | 26047   | 26365     | 26683         |       |      |
|     |           |                 | Frequency (MHz) |           | 1851.5 | 1882.5 | 1913.5        | Frequency (MHz) |                 |                 |           |           | 1850.7  | 1882.5    | 1914.3        |       |      |
| 3M  |           | QPSK            | 1               | 0         | 23.02  | 23.14  | 23.09         | 0               | 1.4M            |                 | QPSK      | 1         | 0       | 23.12     | 23.01         | 22.98 | 0    |
|     |           |                 | 1               | 7         | 22.92  | 22.86  | 22.85         | 0               |                 |                 |           | 1         | 2       | 22.88     | 23.01         | 22.77 | 0    |
|     |           |                 | 1               | 14        | 23.06  | 22.91  | 22.95         | 0               |                 |                 |           | 1         | 5       | 23.05     | 22.88         | 22.95 | 0    |
|     |           |                 | 8               | 0         | 22.09  | 22.02  | 22.03         | 1               |                 |                 |           | 3         | 0       | 23.18     | 23.04         | 22.99 | 0    |
|     | 8         |                 | 3               | 22.05     | 21.98  | 21.88  | 1             | 3               |                 | 1               |           | 23.05     | 22.95   | 22.84     | 0             |       |      |
|     | 8         |                 | 7               | 21.96     | 21.91  | 21.81  | 1             | 3               |                 | 3               |           | 23.06     | 22.81   | 22.90     | 0             |       |      |
|     | 15        |                 | 0               | 22.03     | 21.95  | 21.91  | 1             | 6               |                 | 0               |           | 22.04     | 21.96   | 21.79     | 1             |       |      |
|     | 1         |                 | 0               | 22.05     | 21.88  | 21.98  | 1             | 16QAM           |                 | 1               |           | 0         | 22.16   | 22.03     | 22.02         | 1     |      |
|     | 1         | 7               | 21.99           | 21.84     | 21.81  | 1      | 1             |                 |                 | 2               | 21.87     | 21.86     | 21.66   | 1         |               |       |      |
|     | 1         | 14              | 21.95           | 21.92     | 21.94  | 1      | 1             |                 |                 | 5               | 22.11     | 21.85     | 21.84   | 1         |               |       |      |
|     | 8         | 0               | 20.96           | 20.96     | 20.95  | 2      | 3             |                 |                 | 0               | 22.06     | 21.89     | 21.99   | 1         |               |       |      |
|     | 8         | 3               | 20.80           | 20.97     | 20.90  | 2      | 3             |                 |                 | 1               | 21.90     | 21.87     | 21.79   | 1         |               |       |      |
|     | 8         | 7               | 20.83           | 20.93     | 20.82  | 2      | 3             |                 |                 | 3               | 21.94     | 21.89     | 21.71   | 1         |               |       |      |
|     | 15        | 0               | 20.98           | 20.93     | 20.85  | 2      | 6             |                 |                 | 0               | 20.86     | 20.89     | 20.78   | 2         |               |       |      |
|     | 1         | 0               | 20.98           | 21.04     | 20.95  | 2      | 64QAM         |                 |                 | 1               | 0         | 20.96     | 21.00   | 20.96     | 2             |       |      |
|     | 1         | 7               | 20.92           | 20.81     | 20.78  | 2      |               | 1               |                 | 2               | 20.94     | 20.77     | 20.78   | 2         |               |       |      |
|     | 1         | 14              | 20.92           | 20.85     | 20.87  | 2      |               | 1               |                 | 5               | 20.98     | 21.01     | 20.79   | 2         |               |       |      |
|     | 8         | 0               | 19.95           | 19.94     | 19.89  | 3      |               | 3               |                 | 0               | 20.96     | 21.00     | 20.96   | 2         |               |       |      |
|     | 8         | 3               | 20.01           | 19.86     | 19.84  | 3      |               | 3               |                 | 1               | 20.79     | 21.00     | 20.87   | 2         |               |       |      |
|     | 8         | 7               | 19.90           | 19.81     | 19.75  | 3      |               | 3               |                 | 3               | 20.98     | 20.88     | 20.85   | 2         |               |       |      |
|     | 15        | 0               | 19.86           | 19.90     | 19.96  | 3      |               | 6               |                 | 0               | 19.90     | 19.94     | 19.85   | 3         |               |       |      |

# EIRP Power (dBm)

| WCDMA |         |                 |               |                        |            |           |                    |
|-------|---------|-----------------|---------------|------------------------|------------|-----------|--------------------|
| Plane | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| NB    | 9262    | 1852.4          | -27.03        | 36.57                  | 9.54       | 8.99      | H                  |
|       | 9400    | 1880.0          | -27.33        | 37.22                  | 9.89       | 9.75      |                    |
|       | 9538    | 1907.6          | -27.42        | 37.18                  | 9.76       | 9.46      |                    |
|       | 9262    | 1852.4          | -21.31        | 37.65                  | 16.34      | 43.05     | V                  |
|       | 9400    | 1880.0          | -21.07        | 37.58                  | 16.51      | 44.77     |                    |
|       | 9538    | 1907.6          | -21.06        | 37.48                  | 16.42      | 43.85     |                    |

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

| LTE Band 2                         |         |                 |               |                        |            |           |                    |
|------------------------------------|---------|-----------------|---------------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 1.4 MHz / QPSK  |         |                 |               |                        |            |           |                    |
| Plane                              | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| NB                                 | 18607   | 1850.7          | -27.88        | 36.57                  | 8.69       | 7.40      | H                  |
|                                    | 18900   | 1880.0          | -28.25        | 37.22                  | 8.97       | 7.89      |                    |
|                                    | 19193   | 1909.3          | -28.63        | 37.18                  | 8.55       | 7.16      |                    |
|                                    | 18607   | 1850.7          | -22.68        | 37.65                  | 14.97      | 31.41     | V                  |
|                                    | 18900   | 1880.0          | -22.32        | 37.58                  | 15.26      | 33.57     |                    |
|                                    | 19193   | 1909.3          | -22.72        | 37.48                  | 14.76      | 29.92     |                    |
| Channel Bandwidth: 1.4 MHz / 16QAM |         |                 |               |                        |            |           |                    |
| NB                                 | 18607   | 1850.7          | -28.87        | 36.57                  | 7.70       | 5.89      | H                  |
|                                    | 18900   | 1880.0          | -29.49        | 37.22                  | 7.73       | 5.93      |                    |
|                                    | 19193   | 1909.3          | -29.57        | 37.18                  | 7.61       | 5.77      |                    |
|                                    | 18607   | 1850.7          | -23.81        | 37.65                  | 13.84      | 24.21     | V                  |
|                                    | 18900   | 1880.0          | -23.66        | 37.58                  | 13.92      | 24.66     |                    |
|                                    | 19193   | 1909.3          | -23.72        | 37.48                  | 13.76      | 23.77     |                    |
| Channel Bandwidth: 1.4 MHz / 64QAM |         |                 |               |                        |            |           |                    |
| NB                                 | 18607   | 1850.7          | -29.92        | 36.57                  | 6.65       | 4.62      | H                  |
|                                    | 18900   | 1880.0          | -30.50        | 37.22                  | 6.72       | 4.70      |                    |
|                                    | 19193   | 1909.3          | -30.60        | 37.18                  | 6.58       | 4.55      |                    |
|                                    | 18607   | 1850.7          | -24.89        | 37.65                  | 12.76      | 18.88     | V                  |
|                                    | 18900   | 1880.0          | -24.61        | 37.58                  | 12.97      | 19.82     |                    |
|                                    | 19193   | 1909.3          | -24.73        | 37.48                  | 12.75      | 18.84     |                    |

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

| LTE Band 2                       |         |                 |               |                        |            |           |                    |
|----------------------------------|---------|-----------------|---------------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 3 MHz / QPSK  |         |                 |               |                        |            |           |                    |
| Plane                            | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| NB                               | 18615   | 1851.5          | -27.54        | 36.57                  | 9.03       | 8.00      | H                  |
|                                  | 18900   | 1880.0          | -27.98        | 37.22                  | 9.24       | 8.39      |                    |
|                                  | 19185   | 1908.5          | -28.30        | 37.18                  | 8.88       | 7.73      |                    |
|                                  | 18615   | 1851.5          | -22.34        | 37.65                  | 15.31      | 33.96     | V                  |
|                                  | 18900   | 1880.0          | -22.05        | 37.58                  | 15.53      | 35.73     |                    |
|                                  | 19185   | 1908.5          | -22.38        | 37.48                  | 15.10      | 32.36     |                    |
| Channel Bandwidth: 3 MHz / 16QAM |         |                 |               |                        |            |           |                    |
| NB                               | 18615   | 1851.5          | -28.59        | 36.57                  | 7.98       | 6.28      | H                  |
|                                  | 18900   | 1880.0          | -29.20        | 37.22                  | 8.02       | 6.34      |                    |
|                                  | 19185   | 1908.5          | -29.32        | 37.18                  | 7.86       | 6.11      |                    |
|                                  | 18615   | 1851.5          | -23.56        | 37.65                  | 14.09      | 25.64     | V                  |
|                                  | 18900   | 1880.0          | -23.40        | 37.58                  | 14.18      | 26.18     |                    |
|                                  | 19185   | 1908.5          | -23.42        | 37.48                  | 14.06      | 25.47     |                    |
| Channel Bandwidth: 3 MHz / 64QAM |         |                 |               |                        |            |           |                    |
| NB                               | 18615   | 1851.5          | -29.64        | 36.57                  | 6.93       | 4.93      | H                  |
|                                  | 18900   | 1880.0          | -30.18        | 37.22                  | 7.04       | 5.06      |                    |
|                                  | 19185   | 1908.5          | -30.37        | 37.18                  | 6.81       | 4.80      |                    |
|                                  | 18615   | 1851.5          | -24.69        | 37.65                  | 12.96      | 19.77     | V                  |
|                                  | 18900   | 1880.0          | -24.37        | 37.58                  | 13.21      | 20.94     |                    |
|                                  | 19185   | 1908.5          | -24.59        | 37.48                  | 12.89      | 19.45     |                    |

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

| LTE Band 2                       |         |                 |               |                        |            |           |                    |
|----------------------------------|---------|-----------------|---------------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 5 MHz / QPSK  |         |                 |               |                        |            |           |                    |
| Plane                            | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| NB                               | 18625   | 1852.5          | -27.33        | 36.57                  | 9.24       | 8.39      | H                  |
|                                  | 18900   | 1880.0          | -27.71        | 37.22                  | 9.51       | 8.93      |                    |
|                                  | 19175   | 1907.5          | -27.95        | 37.18                  | 9.23       | 8.38      |                    |
|                                  | 18625   | 1852.5          | -22.09        | 37.65                  | 15.56      | 35.97     | V                  |
|                                  | 18900   | 1880.0          | -21.76        | 37.58                  | 15.82      | 38.19     |                    |
|                                  | 19175   | 1907.5          | -22.07        | 37.48                  | 15.41      | 34.75     |                    |
| Channel Bandwidth: 5 MHz / 16QAM |         |                 |               |                        |            |           |                    |
| NB                               | 18625   | 1852.5          | -28.35        | 36.57                  | 8.22       | 6.64      | H                  |
|                                  | 18900   | 1880.0          | -28.92        | 37.22                  | 8.30       | 6.76      |                    |
|                                  | 19175   | 1907.5          | -29.04        | 37.18                  | 8.14       | 6.52      |                    |
|                                  | 18625   | 1852.5          | -23.29        | 37.65                  | 14.36      | 27.29     | V                  |
|                                  | 18900   | 1880.0          | -23.17        | 37.58                  | 14.41      | 27.61     |                    |
|                                  | 19175   | 1907.5          | -23.16        | 37.48                  | 14.32      | 27.04     |                    |
| Channel Bandwidth: 5 MHz / 64QAM |         |                 |               |                        |            |           |                    |
| NB                               | 18625   | 1852.5          | -29.38        | 36.57                  | 7.19       | 5.24      | H                  |
|                                  | 18900   | 1880.0          | -29.98        | 37.22                  | 7.24       | 5.30      |                    |
|                                  | 19175   | 1907.5          | -30.10        | 37.18                  | 7.08       | 5.11      |                    |
|                                  | 18625   | 1852.5          | -24.40        | 37.65                  | 13.25      | 21.13     | V                  |
|                                  | 18900   | 1880.0          | -24.16        | 37.58                  | 13.42      | 21.98     |                    |
|                                  | 19175   | 1907.5          | -24.25        | 37.48                  | 13.23      | 21.04     |                    |

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

| LTE Band 2                        |         |                 |               |                        |            |           |                    |
|-----------------------------------|---------|-----------------|---------------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 10 MHz / QPSK  |         |                 |               |                        |            |           |                    |
| Plane                             | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| NB                                | 18650   | 1855.0          | -27.01        | 36.57                  | 9.56       | 9.04      | H                  |
|                                   | 18900   | 1880.0          | -27.44        | 37.22                  | 9.78       | 9.51      |                    |
|                                   | 19150   | 1905.0          | -27.69        | 37.18                  | 9.49       | 8.89      |                    |
|                                   | 18650   | 1855.0          | -21.82        | 37.65                  | 15.83      | 38.28     | V                  |
|                                   | 18900   | 1880.0          | -21.55        | 37.58                  | 16.03      | 40.09     |                    |
|                                   | 19150   | 1905.0          | -21.78        | 37.48                  | 15.70      | 37.15     |                    |
| Channel Bandwidth: 10 MHz / 16QAM |         |                 |               |                        |            |           |                    |
| NB                                | 18650   | 1855.0          | -28.14        | 36.57                  | 8.43       | 6.97      | H                  |
|                                   | 18900   | 1880.0          | -28.66        | 37.22                  | 8.56       | 7.18      |                    |
|                                   | 19150   | 1905.0          | -28.74        | 37.18                  | 8.44       | 6.98      |                    |
|                                   | 18650   | 1855.0          | -23.01        | 37.65                  | 14.64      | 29.11     | V                  |
|                                   | 18900   | 1880.0          | -22.87        | 37.58                  | 14.71      | 29.58     |                    |
|                                   | 19150   | 1905.0          | -22.90        | 37.48                  | 14.58      | 28.71     |                    |
| Channel Bandwidth: 10 MHz / 64QAM |         |                 |               |                        |            |           |                    |
| NB                                | 18650   | 1855.0          | -29.07        | 36.57                  | 7.50       | 5.62      | H                  |
|                                   | 18900   | 1880.0          | -29.68        | 37.22                  | 7.54       | 5.68      |                    |
|                                   | 19150   | 1905.0          | -29.81        | 37.18                  | 7.37       | 5.46      |                    |
|                                   | 18650   | 1855.0          | -24.09        | 37.65                  | 13.56      | 22.70     | V                  |
|                                   | 18900   | 1880.0          | -23.96        | 37.58                  | 13.62      | 23.01     |                    |
|                                   | 19150   | 1905.0          | -23.96        | 37.48                  | 13.52      | 22.49     |                    |

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)



| LTE Band 2                        |         |                 |               |                        |            |           |                    |
|-----------------------------------|---------|-----------------|---------------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 15 MHz / QPSK  |         |                 |               |                        |            |           |                    |
| Plane                             | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| NB                                | 18675   | 1857.5          | -26.73        | 36.57                  | 9.84       | 9.64      | H                  |
|                                   | 18900   | 1880.0          | -27.23        | 37.22                  | 9.99       | 9.98      |                    |
|                                   | 19125   | 1902.5          | -27.40        | 37.18                  | 9.78       | 9.51      |                    |
|                                   | 18675   | 1857.5          | -21.62        | 37.65                  | 16.03      | 40.09     | V                  |
|                                   | 18900   | 1880.0          | -21.34        | 37.58                  | 16.24      | 42.07     |                    |
|                                   | 19125   | 1902.5          | -21.53        | 37.48                  | 15.95      | 39.36     |                    |
| Channel Bandwidth: 15 MHz / 16QAM |         |                 |               |                        |            |           |                    |
| NB                                | 18675   | 1857.5          | -27.82        | 36.57                  | 8.75       | 7.50      | H                  |
|                                   | 18900   | 1880.0          | -28.34        | 37.22                  | 8.88       | 7.73      |                    |
|                                   | 19125   | 1902.5          | -28.48        | 37.18                  | 8.70       | 7.41      |                    |
|                                   | 18675   | 1857.5          | -22.76        | 37.65                  | 14.89      | 30.83     | V                  |
|                                   | 18900   | 1880.0          | -22.60        | 37.58                  | 14.98      | 31.48     |                    |
|                                   | 19125   | 1902.5          | -22.62        | 37.48                  | 14.86      | 30.62     |                    |
| Channel Bandwidth: 15 MHz / 64QAM |         |                 |               |                        |            |           |                    |
| NB                                | 18675   | 1857.5          | -28.87        | 36.57                  | 7.70       | 5.89      | H                  |
|                                   | 18900   | 1880.0          | -29.43        | 37.22                  | 7.79       | 6.01      |                    |
|                                   | 19125   | 1902.5          | -29.58        | 37.18                  | 7.60       | 5.75      |                    |
|                                   | 18675   | 1857.5          | -23.83        | 37.65                  | 13.82      | 24.10     | V                  |
|                                   | 18900   | 1880.0          | -23.70        | 37.58                  | 13.88      | 24.43     |                    |
|                                   | 19125   | 1902.5          | -23.73        | 37.48                  | 13.75      | 23.71     |                    |

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

| LTE Band 2                        |         |                 |               |                        |            |           |                    |
|-----------------------------------|---------|-----------------|---------------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 20 MHz / QPSK  |         |                 |               |                        |            |           |                    |
| Plane                             | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| NB                                | 18700   | 1860.0          | -26.45        | 36.57                  | 10.12      | 10.28     | H                  |
|                                   | 18900   | 1880.0          | -26.99        | 37.22                  | 10.23      | 10.54     |                    |
|                                   | 19100   | 1900.0          | -27.12        | 37.18                  | 10.06      | 10.14     |                    |
|                                   | 18700   | 1860.0          | -21.29        | 37.65                  | 16.36      | 43.25     | V                  |
|                                   | 18900   | 1880.0          | -21.13        | 37.58                  | 16.45      | 44.16     |                    |
|                                   | 19100   | 1900.0          | -21.19        | 37.48                  | 16.29      | 42.56     |                    |
| Channel Bandwidth: 20 MHz / 16QAM |         |                 |               |                        |            |           |                    |
| NB                                | 18700   | 1860.0          | -27.51        | 36.57                  | 9.06       | 8.05      | H                  |
|                                   | 18900   | 1880.0          | -28.11        | 37.22                  | 9.11       | 8.15      |                    |
|                                   | 19100   | 1900.0          | -28.23        | 37.18                  | 8.95       | 7.85      |                    |
|                                   | 18700   | 1860.0          | -22.44        | 37.65                  | 15.21      | 33.19     | V                  |
|                                   | 18900   | 1880.0          | -22.26        | 37.58                  | 15.32      | 34.04     |                    |
|                                   | 19100   | 1900.0          | -22.28        | 37.48                  | 15.20      | 33.11     |                    |
| Channel Bandwidth: 20 MHz / 64QAM |         |                 |               |                        |            |           |                    |
| NB                                | 18700   | 1860.0          | -28.53        | 36.57                  | 8.04       | 6.37      | H                  |
|                                   | 18900   | 1880.0          | -29.17        | 37.22                  | 8.05       | 6.38      |                    |
|                                   | 19100   | 1900.0          | -29.29        | 37.18                  | 7.89       | 6.15      |                    |
|                                   | 18700   | 1860.0          | -23.60        | 37.65                  | 14.05      | 25.41     | V                  |
|                                   | 18900   | 1880.0          | -23.49        | 37.58                  | 14.09      | 25.64     |                    |
|                                   | 19100   | 1900.0          | -23.48        | 37.48                  | 14.00      | 25.12     |                    |

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

| LTE Band 25                        |         |                 |               |                        |            |           |                    |
|------------------------------------|---------|-----------------|---------------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 1.4 MHz / QPSK  |         |                 |               |                        |            |           |                    |
| Plane                              | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| NB                                 | 26047   | 1850.7          | -27.39        | 36.57                  | 9.18       | 8.28      | H                  |
|                                    | 26365   | 1882.5          | -28.07        | 37.22                  | 9.15       | 8.22      |                    |
|                                    | 26683   | 1914.3          | -30.35        | 39.09                  | 8.74       | 7.48      |                    |
|                                    | 26047   | 1850.7          | -22.28        | 37.65                  | 15.37      | 34.43     | V                  |
|                                    | 26365   | 1882.5          | -22.48        | 37.58                  | 15.10      | 32.36     |                    |
|                                    | 26683   | 1914.3          | -22.90        | 37.92                  | 15.02      | 31.77     |                    |
| Channel Bandwidth: 1.4 MHz / 16QAM |         |                 |               |                        |            |           |                    |
| NB                                 | 26047   | 1850.7          | -28.49        | 36.57                  | 8.08       | 6.43      | H                  |
|                                    | 26365   | 1882.5          | -29.37        | 37.22                  | 7.85       | 6.10      |                    |
|                                    | 26683   | 1914.3          | -31.40        | 39.09                  | 7.69       | 5.87      |                    |
|                                    | 26047   | 1850.7          | -23.34        | 37.65                  | 14.31      | 26.98     | V                  |
|                                    | 26365   | 1882.5          | -23.56        | 37.58                  | 14.02      | 25.23     |                    |
|                                    | 26683   | 1914.3          | -23.98        | 37.92                  | 13.94      | 24.77     |                    |
| Channel Bandwidth: 1.4 MHz / 64QAM |         |                 |               |                        |            |           |                    |
| NB                                 | 26047   | 1850.7          | -29.44        | 36.57                  | 7.13       | 5.16      | H                  |
|                                    | 26365   | 1882.5          | -30.34        | 37.22                  | 6.88       | 4.88      |                    |
|                                    | 26683   | 1914.3          | -32.52        | 39.09                  | 6.57       | 4.54      |                    |
|                                    | 26047   | 1850.7          | -24.45        | 37.65                  | 13.20      | 20.89     | V                  |
|                                    | 26365   | 1882.5          | -24.56        | 37.58                  | 13.02      | 20.04     |                    |
|                                    | 26683   | 1914.3          | -25.17        | 37.92                  | 12.75      | 18.84     |                    |

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

| LTE Band 25                      |         |                 |               |                        |            |           |                    |
|----------------------------------|---------|-----------------|---------------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 3 MHz / QPSK  |         |                 |               |                        |            |           |                    |
| Plane                            | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| NB                               | 26055   | 1851.5          | -27.15        | 36.57                  | 9.42       | 8.75      | H                  |
|                                  | 26365   | 1882.5          | -27.83        | 37.22                  | 9.39       | 8.69      |                    |
|                                  | 26675   | 1913.5          | -30.04        | 39.11                  | 9.07       | 8.07      |                    |
|                                  | 26055   | 1851.5          | -22.04        | 37.65                  | 15.61      | 36.39     | V                  |
|                                  | 26365   | 1882.5          | -22.20        | 37.58                  | 15.38      | 34.51     |                    |
|                                  | 26675   | 1913.5          | -22.59        | 37.93                  | 15.34      | 34.20     |                    |
| Channel Bandwidth: 3 MHz / 16QAM |         |                 |               |                        |            |           |                    |
| NB                               | 26055   | 1851.5          | -28.18        | 36.57                  | 8.39       | 6.90      | H                  |
|                                  | 26365   | 1882.5          | -29.16        | 37.22                  | 8.06       | 6.40      |                    |
|                                  | 26675   | 1913.5          | -31.21        | 39.11                  | 7.90       | 6.17      |                    |
|                                  | 26055   | 1851.5          | -23.11        | 37.65                  | 14.54      | 28.44     | V                  |
|                                  | 26365   | 1882.5          | -23.25        | 37.58                  | 14.33      | 27.10     |                    |
|                                  | 26675   | 1913.5          | -23.75        | 37.93                  | 14.18      | 26.18     |                    |
| Channel Bandwidth: 3 MHz / 64QAM |         |                 |               |                        |            |           |                    |
| NB                               | 26055   | 1851.5          | -29.16        | 36.57                  | 7.41       | 5.51      | H                  |
|                                  | 26365   | 1882.5          | -30.12        | 37.22                  | 7.10       | 5.13      |                    |
|                                  | 26675   | 1913.5          | -32.30        | 39.11                  | 6.81       | 4.80      |                    |
|                                  | 26055   | 1851.5          | -24.16        | 37.65                  | 13.49      | 22.34     | V                  |
|                                  | 26365   | 1882.5          | -24.33        | 37.58                  | 13.25      | 21.13     |                    |
|                                  | 26675   | 1913.5          | -24.87        | 37.93                  | 13.06      | 20.23     |                    |

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

| LTE Band 25                      |         |                 |               |                        |            |           |                    |
|----------------------------------|---------|-----------------|---------------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 5 MHz / QPSK  |         |                 |               |                        |            |           |                    |
| Plane                            | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| NB                               | 26065   | 1852.5          | -26.80        | 36.57                  | 9.77       | 9.48      | H                  |
|                                  | 26365   | 1882.5          | -27.57        | 37.22                  | 9.65       | 9.23      |                    |
|                                  | 26665   | 1912.5          | -28.71        | 38.11                  | 9.40       | 8.71      |                    |
|                                  | 26065   | 1852.5          | -21.81        | 37.65                  | 15.84      | 38.37     | V                  |
|                                  | 26365   | 1882.5          | -21.94        | 37.58                  | 15.64      | 36.64     |                    |
|                                  | 26665   | 1912.5          | -22.37        | 37.96                  | 15.59      | 36.22     |                    |
| Channel Bandwidth: 5 MHz / 16QAM |         |                 |               |                        |            |           |                    |
| NB                               | 26065   | 1852.5          | -27.88        | 36.57                  | 8.69       | 7.40      | H                  |
|                                  | 26365   | 1882.5          | -28.95        | 37.22                  | 8.27       | 6.71      |                    |
|                                  | 26665   | 1912.5          | -29.92        | 38.11                  | 8.19       | 6.59      |                    |
|                                  | 26065   | 1852.5          | -22.82        | 37.65                  | 14.83      | 30.41     | V                  |
|                                  | 26365   | 1882.5          | -23.02        | 37.58                  | 14.56      | 28.58     |                    |
|                                  | 26665   | 1912.5          | -23.53        | 37.96                  | 14.43      | 27.73     |                    |
| Channel Bandwidth: 5 MHz / 64QAM |         |                 |               |                        |            |           |                    |
| NB                               | 26065   | 1852.5          | -28.96        | 36.57                  | 7.61       | 5.77      | H                  |
|                                  | 26365   | 1882.5          | -29.81        | 37.22                  | 7.41       | 5.51      |                    |
|                                  | 26665   | 1912.5          | -30.98        | 38.11                  | 7.13       | 5.16      |                    |
|                                  | 26065   | 1852.5          | -23.93        | 37.65                  | 13.72      | 23.55     | V                  |
|                                  | 26365   | 1882.5          | -24.10        | 37.58                  | 13.48      | 22.28     |                    |
|                                  | 26665   | 1912.5          | -24.61        | 37.96                  | 13.35      | 21.63     |                    |

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

| LTE Band 25                       |         |                 |               |                        |            |           |                    |
|-----------------------------------|---------|-----------------|---------------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 10 MHz / QPSK  |         |                 |               |                        |            |           |                    |
| Plane                             | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| NB                                | 26090   | 1855.0          | -26.54        | 36.57                  | 10.03      | 10.07     | H                  |
|                                   | 26365   | 1882.5          | -27.30        | 37.22                  | 9.92       | 9.82      |                    |
|                                   | 26640   | 1910.0          | -28.44        | 38.19                  | 9.75       | 9.44      |                    |
|                                   | 26090   | 1855.0          | -21.56        | 37.65                  | 16.09      | 40.64     | V                  |
|                                   | 26365   | 1882.5          | -21.73        | 37.58                  | 15.85      | 38.46     |                    |
|                                   | 26640   | 1910.0          | -22.32        | 38.15                  | 15.83      | 38.28     |                    |
| Channel Bandwidth: 10 MHz / 16QAM |         |                 |               |                        |            |           |                    |
| NB                                | 26090   | 1855.0          | -27.63        | 36.57                  | 8.94       | 7.83      | H                  |
|                                   | 26365   | 1882.5          | -28.70        | 37.22                  | 8.52       | 7.11      |                    |
|                                   | 26640   | 1910.0          | -29.70        | 38.19                  | 8.49       | 7.06      |                    |
|                                   | 26090   | 1855.0          | -22.57        | 37.65                  | 15.08      | 32.21     | V                  |
|                                   | 26365   | 1882.5          | -22.77        | 37.58                  | 14.81      | 30.27     |                    |
|                                   | 26640   | 1910.0          | -23.40        | 38.15                  | 14.75      | 29.85     |                    |
| Channel Bandwidth: 10 MHz / 64QAM |         |                 |               |                        |            |           |                    |
| NB                                | 26090   | 1855.0          | -28.69        | 36.57                  | 7.88       | 6.14      | H                  |
|                                   | 26365   | 1882.5          | -29.60        | 37.22                  | 7.62       | 5.78      |                    |
|                                   | 26640   | 1910.0          | -30.74        | 38.19                  | 7.45       | 5.56      |                    |
|                                   | 26090   | 1855.0          | -23.69        | 37.65                  | 13.96      | 24.89     | V                  |
|                                   | 26365   | 1882.5          | -23.80        | 37.58                  | 13.78      | 23.88     |                    |
|                                   | 26640   | 1910.0          | -24.56        | 38.15                  | 13.59      | 22.86     |                    |

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

| LTE Band 25                       |         |                 |               |                        |            |           |                    |
|-----------------------------------|---------|-----------------|---------------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 15 MHz / QPSK  |         |                 |               |                        |            |           |                    |
| Plane                             | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| NB                                | 26115   | 1857.5          | -26.28        | 36.57                  | 10.29      | 10.69     | H                  |
|                                   | 26365   | 1882.5          | -27.09        | 37.22                  | 10.13      | 10.30     |                    |
|                                   | 26615   | 1907.5          | -28.28        | 38.23                  | 9.95       | 9.89      |                    |
|                                   | 26115   | 1857.5          | -21.33        | 37.65                  | 16.32      | 42.85     | V                  |
|                                   | 26365   | 1882.5          | -21.42        | 37.58                  | 16.16      | 41.30     |                    |
|                                   | 26615   | 1907.5          | -22.15        | 38.22                  | 16.07      | 40.46     |                    |
| Channel Bandwidth: 15 MHz / 16QAM |         |                 |               |                        |            |           |                    |
| NB                                | 26115   | 1857.5          | -27.36        | 36.57                  | 9.21       | 8.34      | H                  |
|                                   | 26365   | 1882.5          | -28.37        | 37.22                  | 8.85       | 7.67      |                    |
|                                   | 26615   | 1907.5          | -29.45        | 38.23                  | 8.78       | 7.55      |                    |
|                                   | 26115   | 1857.5          | -22.34        | 37.65                  | 15.31      | 33.96     | V                  |
|                                   | 26365   | 1882.5          | -22.52        | 37.58                  | 15.06      | 32.06     |                    |
|                                   | 26615   | 1907.5          | -23.23        | 38.22                  | 14.99      | 31.55     |                    |
| Channel Bandwidth: 15 MHz / 64QAM |         |                 |               |                        |            |           |                    |
| NB                                | 26115   | 1857.5          | -28.48        | 36.57                  | 8.09       | 6.44      | H                  |
|                                   | 26365   | 1882.5          | -29.38        | 37.22                  | 7.84       | 6.08      |                    |
|                                   | 26615   | 1907.5          | -30.54        | 38.23                  | 7.69       | 5.87      |                    |
|                                   | 26115   | 1857.5          | -23.37        | 37.65                  | 14.28      | 26.79     | V                  |
|                                   | 26365   | 1882.5          | -23.53        | 37.58                  | 14.05      | 25.41     |                    |
|                                   | 26615   | 1907.5          | -24.39        | 38.22                  | 13.83      | 24.15     |                    |

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

| LTE Band 25                       |         |                 |               |                        |            |           |                    |
|-----------------------------------|---------|-----------------|---------------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 20 MHz / QPSK  |         |                 |               |                        |            |           |                    |
| Plane                             | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| NB                                | 26140   | 1860.0          | -26.05        | 36.57                  | 10.52      | 11.27     | H                  |
|                                   | 26365   | 1882.5          | -26.82        | 37.22                  | 10.40      | 10.96     |                    |
|                                   | 26590   | 1905.0          | -28.45        | 38.72                  | 10.27      | 10.64     |                    |
|                                   | 26140   | 1860.0          | -21.10        | 37.65                  | 16.55      | 45.19     | V                  |
|                                   | 26365   | 1882.5          | -21.11        | 37.58                  | 16.47      | 44.36     |                    |
|                                   | 26590   | 1905.0          | -21.23        | 37.56                  | 16.33      | 42.95     |                    |
| Channel Bandwidth: 20 MHz / 16QAM |         |                 |               |                        |            |           |                    |
| NB                                | 26140   | 1860.0          | -27.16        | 36.57                  | 9.41       | 8.73      | H                  |
|                                   | 26365   | 1882.5          | -28.04        | 37.22                  | 9.18       | 8.28      |                    |
|                                   | 26590   | 1905.0          | -29.68        | 38.72                  | 9.04       | 8.02      |                    |
|                                   | 26140   | 1860.0          | -22.03        | 37.65                  | 15.62      | 36.48     | V                  |
|                                   | 26365   | 1882.5          | -22.26        | 37.58                  | 15.32      | 34.04     |                    |
|                                   | 26590   | 1905.0          | -22.36        | 37.56                  | 15.20      | 33.11     |                    |
| Channel Bandwidth: 20 MHz / 64QAM |         |                 |               |                        |            |           |                    |
| NB                                | 26140   | 1860.0          | -28.20        | 36.57                  | 8.37       | 6.87      | H                  |
|                                   | 26365   | 1882.5          | -29.08        | 37.22                  | 8.14       | 6.52      |                    |
|                                   | 26590   | 1905.0          | -30.77        | 38.72                  | 7.95       | 6.24      |                    |
|                                   | 26140   | 1860.0          | -23.10        | 37.65                  | 14.55      | 28.51     | V                  |
|                                   | 26365   | 1882.5          | -23.29        | 37.58                  | 14.29      | 26.85     |                    |
|                                   | 26590   | 1905.0          | -23.44        | 37.56                  | 14.12      | 25.82     |                    |

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)



## 4.2 Modulation Characteristics Measurement

### 4.2.1 Limits of Modulation Characteristics

N/A

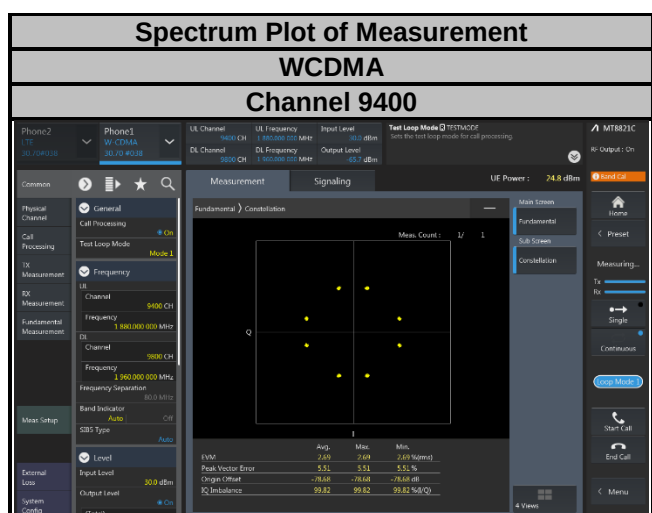
### 4.2.2 Test Setup



### 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

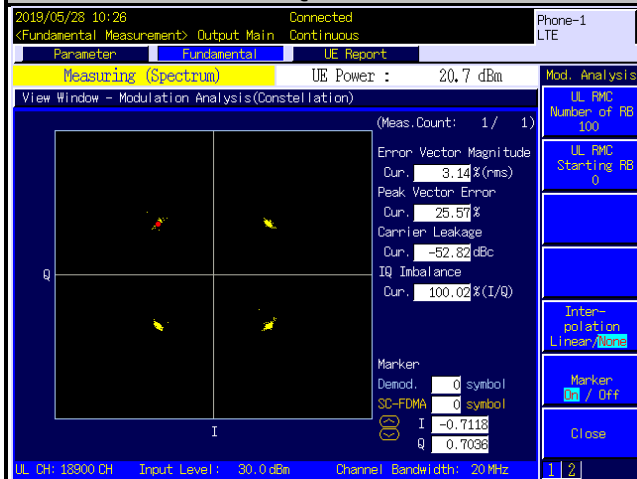


## Spectrum Plot of Measurement

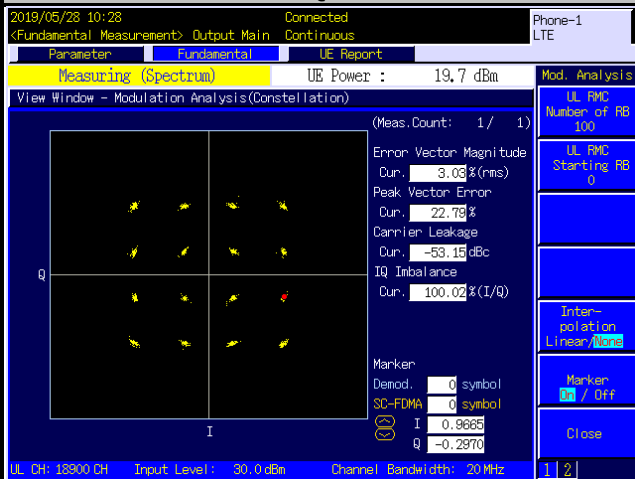
LTE Band 2

Channel 18900

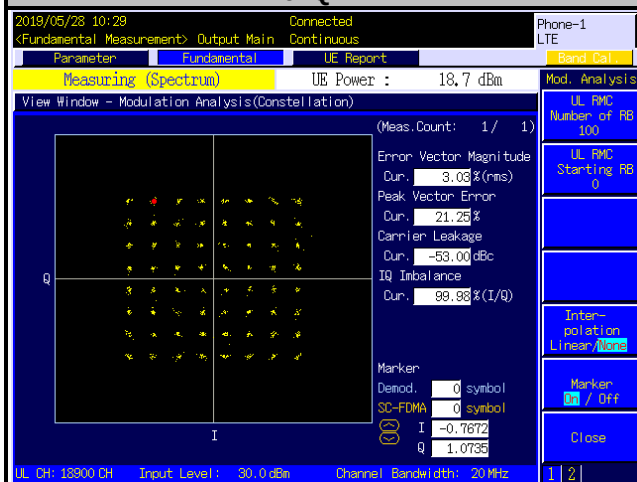
QPSK



16QAM



64QAM

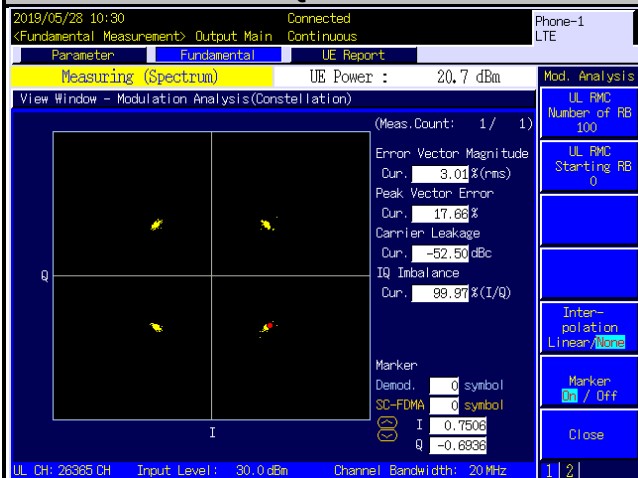


## Spectrum Plot of Measurement

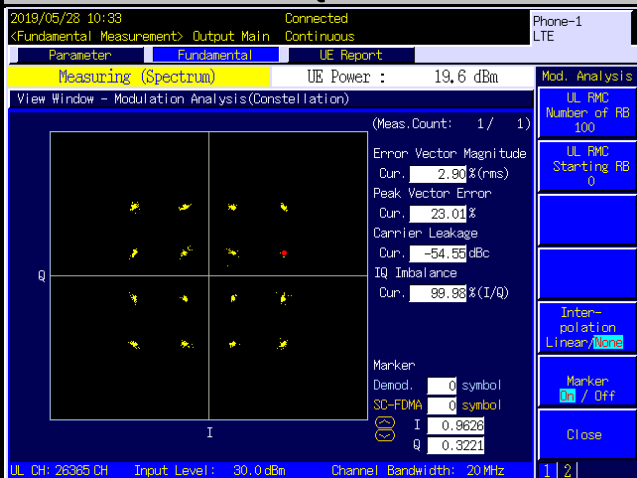
LTE Band 25

Channel 26365

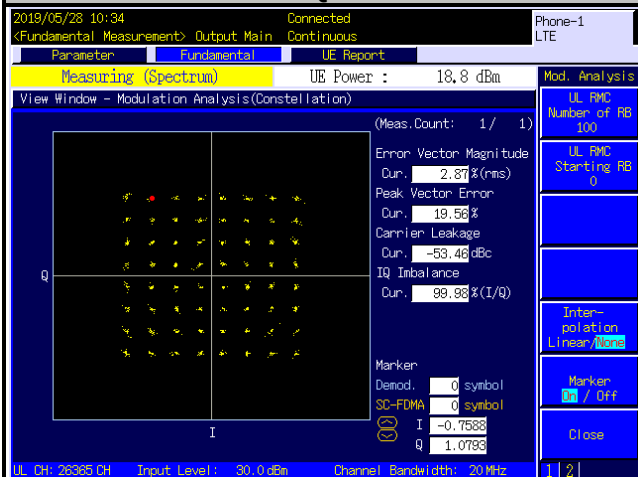
QPSK



16QAM



64QAM



### 4.3 Frequency Stability Measurement

#### 4.3.1 Limits of Frequency Stability Measurement

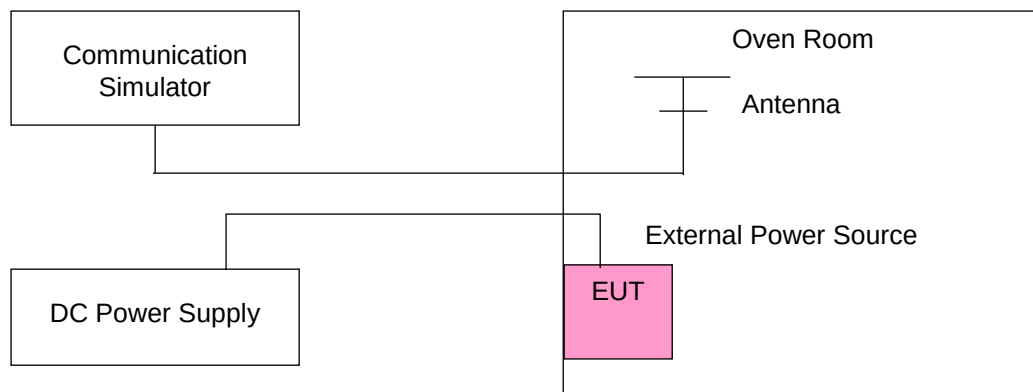
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

#### 4.3.2 Test Procedure

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

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

#### 4.3.3 Test Setup



#### 4.3.4 Test Results

##### Frequency Error vs. Voltage

| Voltage<br>(Volts) | WCDMA           |                       |                 |                       |
|--------------------|-----------------|-----------------------|-----------------|-----------------------|
|                    | Low Channel     |                       | High Channel    |                       |
|                    | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 120                | 1852.400004     | 0.002                 | 1907.600004     | 0.002                 |
| 102                | 1852.400004     | 0.002                 | 1907.600003     | 0.002                 |
| 138                | 1852.400003     | 0.002                 | 1907.600003     | 0.002                 |

**Note:** The applicant defined the normal working voltage of the battery is from 102 Vac to 138 Vac.

##### Frequency Error vs. Temperature

| Temp. (°C) | WCDMA           |                       |                 |                       |
|------------|-----------------|-----------------------|-----------------|-----------------------|
|            | Low Channel     |                       | High Channel    |                       |
|            | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1852.400002     | 0.001                 | 1907.600003     | 0.001                 |
| -20        | 1852.400002     | 0.001                 | 1907.600002     | 0.001                 |
| -10        | 1852.400002     | 0.001                 | 1907.600001     | 0.001                 |
| 0          | 1852.400004     | 0.002                 | 1907.600002     | 0.001                 |
| 10         | 1852.400001     | 0.001                 | 1907.600002     | 0.001                 |
| 20         | 1852.399997     | -0.002                | 1907.599996     | -0.002                |
| 30         | 1852.399998     | -0.001                | 1907.599998     | -0.001                |
| 40         | 1852.399997     | -0.002                | 1907.599998     | -0.001                |
| 50         | 1852.399997     | -0.002                | 1907.599998     | -0.001                |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 2                 |                       |                 |                       |
|--------------------|----------------------------|-----------------------|-----------------|-----------------------|
|                    | Channel Bandwidth: 1.4 MHz |                       |                 |                       |
|                    | Low Channel                |                       | High Channel    |                       |
|                    | Frequency (MHz)            | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 120                | 1850.700002                | 0.001                 | 1909.300000     | 0.002                 |
| 102                | 1850.700002                | 0.001                 | 1909.300002     | 0.001                 |
| 138                | 1850.700002                | 0.001                 | 1909.300001     | 0.001                 |

**Note:** The applicant defined the normal working voltage of the battery is from 102 Vac to 138 Vac.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2                 |                       |                 |                       |
|------------|----------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 1.4 MHz |                       |                 |                       |
|            | Low Channel                |                       | High Channel    |                       |
|            | Frequency (MHz)            | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1850.700004                | 0.002                 | 1909.300002     | 0.001                 |
| -20        | 1850.700004                | 0.002                 | 1909.300002     | 0.001                 |
| -10        | 1850.700004                | 0.002                 | 1909.300002     | 0.001                 |
| 0          | 1850.700004                | 0.002                 | 1909.300001     | 0.001                 |
| 10         | 1850.700004                | 0.002                 | 1909.300003     | 0.001                 |
| 20         | 1850.699996                | -0.002                | 1909.300004     | 0.002                 |
| 30         | 1850.699998                | -0.001                | 1909.299998     | -0.001                |
| 40         | 1850.699997                | -0.002                | 1909.299997     | -0.002                |
| 50         | 1850.699998                | -0.001                | 1909.299999     | -0.001                |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 2               |                       |                 |                       |
|--------------------|--------------------------|-----------------------|-----------------|-----------------------|
|                    | Channel Bandwidth: 3 MHz |                       |                 |                       |
|                    | Low Channel              |                       | High Channel    |                       |
|                    | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 120                | 1850.700003              | 0.002                 | 1909.300000     | 0.001                 |
| 102                | 1850.700003              | 0.002                 | 1909.300003     | 0.002                 |
| 138                | 1850.700003              | 0.002                 | 1909.300001     | 0.001                 |

**Note:** The applicant defined the normal working voltage of the battery is from 102 Vac to 138 Vac.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2               |                       |                 |                       |
|------------|--------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 3 MHz |                       |                 |                       |
|            | Low Channel              |                       | High Channel    |                       |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1850.700003              | 0.002                 | 1909.300001     | 0.001                 |
| -20        | 1850.700004              | 0.002                 | 1909.300003     | 0.002                 |
| -10        | 1850.700002              | 0.001                 | 1909.300001     | 0.001                 |
| 0          | 1850.700004              | 0.002                 | 1909.300002     | 0.001                 |
| 10         | 1850.700004              | 0.002                 | 1909.300004     | 0.002                 |
| 20         | 1850.699996              | -0.002                | 1909.300003     | 0.001                 |
| 30         | 1850.699998              | -0.001                | 1909.299997     | -0.002                |
| 40         | 1850.699998              | -0.001                | 1909.299996     | -0.002                |
| 50         | 1850.699997              | -0.002                | 1909.299997     | -0.001                |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 2               |                       |                 |                       |
|--------------------|--------------------------|-----------------------|-----------------|-----------------------|
|                    | Channel Bandwidth: 5 MHz |                       |                 |                       |
|                    | Low Channel              |                       | High Channel    |                       |
|                    | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 120                | 1850.700004              | 0.002                 | 1909.300000     | 0.001                 |
| 102                | 1850.700001              | 0.001                 | 1909.300001     | 0.001                 |
| 138                | 1850.700003              | 0.001                 | 1909.300002     | 0.001                 |

**Note:** The applicant defined the normal working voltage of the battery is from 102 Vac to 138 Vac.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2               |                       |                 |                       |
|------------|--------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 5 MHz |                       |                 |                       |
|            | Low Channel              |                       | High Channel    |                       |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1850.700002              | 0.001                 | 1909.300002     | 0.001                 |
| -20        | 1850.700001              | 0.001                 | 1909.300003     | 0.002                 |
| -10        | 1850.700003              | 0.002                 | 1909.300002     | 0.001                 |
| 0          | 1850.700003              | 0.002                 | 1909.300003     | 0.002                 |
| 10         | 1850.700002              | 0.001                 | 1909.300003     | 0.001                 |
| 20         | 1850.699999              | -0.001                | 1909.300002     | 0.001                 |
| 30         | 1850.699998              | -0.001                | 1909.299997     | -0.002                |
| 40         | 1850.699996              | -0.002                | 1909.299996     | -0.002                |
| 50         | 1850.699997              | -0.002                | 1909.299998     | -0.001                |



### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 2                |                       |                 |                       |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|
|                    | Channel Bandwidth: 10 MHz |                       |                 |                       |
|                    | Low Channel               |                       | High Channel    |                       |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 120                | 1850.700003               | 0.002                 | 1909.300000     | 0.002                 |
| 102                | 1850.700003               | 0.002                 | 1909.300001     | 0.001                 |
| 138                | 1850.700003               | 0.002                 | 1909.300004     | 0.002                 |

**Note:** The applicant defined the normal working voltage of the battery is from 102 Vac to 138 Vac.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2                |                       |                 |                       |
|------------|---------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 10 MHz |                       |                 |                       |
|            | Low Channel               |                       | High Channel    |                       |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1850.700004               | 0.002                 | 1909.300003     | 0.002                 |
| -20        | 1850.700002               | 0.001                 | 1909.300003     | 0.002                 |
| -10        | 1850.700002               | 0.001                 | 1909.300004     | 0.002                 |
| 0          | 1850.700003               | 0.001                 | 1909.300003     | 0.002                 |
| 10         | 1850.700002               | 0.001                 | 1909.300002     | 0.001                 |
| 20         | 1850.699996               | -0.002                | 1909.300001     | 0.001                 |
| 30         | 1850.699996               | -0.002                | 1909.299999     | -0.001                |
| 40         | 1850.699996               | -0.002                | 1909.299996     | -0.002                |
| 50         | 1850.699997               | -0.002                | 1909.299998     | -0.001                |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 2                |                       |                 |                       |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|
|                    | Channel Bandwidth: 15 MHz |                       |                 |                       |
|                    | Low Channel               |                       | High Channel    |                       |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 120                | 1850.700003               | 0.002                 | 1909.300000     | 0.002                 |
| 102                | 1850.700003               | 0.002                 | 1909.300001     | 0.001                 |
| 138                | 1850.700003               | 0.001                 | 1909.300004     | 0.002                 |

**Note:** The applicant defined the normal working voltage of the battery is from 102 Vac to 138 Vac.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2                |                       |                 |                       |
|------------|---------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 15 MHz |                       |                 |                       |
|            | Low Channel               |                       | High Channel    |                       |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1850.700004               | 0.002                 | 1909.300002     | 0.001                 |
| -20        | 1850.700003               | 0.002                 | 1909.300003     | 0.002                 |
| -10        | 1850.700003               | 0.001                 | 1909.300001     | 0.001                 |
| 0          | 1850.700004               | 0.002                 | 1909.300003     | 0.001                 |
| 10         | 1850.700003               | 0.002                 | 1909.300003     | 0.001                 |
| 20         | 1850.699996               | -0.002                | 1909.300002     | 0.001                 |
| 30         | 1850.699998               | -0.001                | 1909.299996     | -0.002                |
| 40         | 1850.699997               | -0.002                | 1909.299998     | -0.001                |
| 50         | 1850.699997               | -0.002                | 1909.299997     | -0.001                |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 2                |                       |                 |                       |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|
|                    | Channel Bandwidth: 20 MHz |                       |                 |                       |
|                    | Low Channel               |                       | High Channel    |                       |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 120                | 1850.700002               | 0.001                 | 1909.300000     | 0.001                 |
| 102                | 1850.700003               | 0.002                 | 1909.300002     | 0.001                 |
| 138                | 1850.700004               | 0.002                 | 1909.300003     | 0.001                 |

**Note:** The applicant defined the normal working voltage of the battery is from 102 Vac to 138 Vac.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2                |                       |                 |                       |
|------------|---------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 20 MHz |                       |                 |                       |
|            | Low Channel               |                       | High Channel    |                       |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1850.700002               | 0.001                 | 1909.300002     | 0.001                 |
| -20        | 1850.700003               | 0.002                 | 1909.300003     | 0.001                 |
| -10        | 1850.700001               | 0.001                 | 1909.300001     | 0.001                 |
| 0          | 1850.700004               | 0.002                 | 1909.300002     | 0.001                 |
| 10         | 1850.700003               | 0.001                 | 1909.300002     | 0.001                 |
| 20         | 1850.699997               | -0.002                | 1909.299998     | -0.001                |
| 30         | 1850.699999               | -0.001                | 1909.299998     | -0.001                |
| 40         | 1850.699998               | -0.001                | 1909.299998     | -0.001                |
| 50         | 1850.699998               | -0.001                | 1909.299998     | -0.001                |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 25                |                       |                 |                       |
|--------------------|----------------------------|-----------------------|-----------------|-----------------------|
|                    | Channel Bandwidth: 1.4 MHz |                       |                 |                       |
|                    | Low Channel                |                       | High Channel    |                       |
|                    | Frequency (MHz)            | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 120                | 1850.700003                | 0.002                 | 1914.300002     | 0.001                 |
| 102                | 1850.700004                | 0.002                 | 1914.300002     | 0.001                 |
| 138                | 1850.700003                | 0.002                 | 1914.300004     | 0.002                 |

**Note:** The applicant defined the normal working voltage of the battery is from 102 Vac to 138 Vac.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 25                |                       |                 |                       |
|------------|----------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 1.4 MHz |                       |                 |                       |
|            | Low Channel                |                       | High Channel    |                       |
|            | Frequency (MHz)            | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1850.700003                | 0.001                 | 1914.300002     | 0.001                 |
| -20        | 1850.700002                | 0.001                 | 1914.300001     | 0.001                 |
| -10        | 1850.700001                | 0.001                 | 1914.300002     | 0.001                 |
| 0          | 1850.700003                | 0.001                 | 1914.300003     | 0.001                 |
| 10         | 1850.700003                | 0.002                 | 1914.300002     | 0.001                 |
| 20         | 1850.699996                | -0.002                | 1914.299998     | -0.001                |
| 30         | 1850.699996                | -0.002                | 1914.299997     | -0.002                |
| 40         | 1850.699999                | -0.001                | 1914.299998     | -0.001                |
| 50         | 1850.699997                | -0.002                | 1914.299999     | -0.001                |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 25              |                       |                 |                       |
|--------------------|--------------------------|-----------------------|-----------------|-----------------------|
|                    | Channel Bandwidth: 3 MHz |                       |                 |                       |
|                    | Low Channel              |                       | High Channel    |                       |
|                    | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 120                | 1850.700003              | 0.002                 | 1914.300002     | 0.001                 |
| 102                | 1850.700003              | 0.002                 | 1914.300004     | 0.002                 |
| 138                | 1850.700003              | 0.002                 | 1914.300001     | 0.001                 |

**Note:** The applicant defined the normal working voltage of the battery is from 102 Vac to 138 Vac.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 25              |                       |                 |                       |
|------------|--------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 3 MHz |                       |                 |                       |
|            | Low Channel              |                       | High Channel    |                       |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1850.700003              | 0.002                 | 1914.300002     | 0.001                 |
| -20        | 1850.700003              | 0.002                 | 1914.300004     | 0.002                 |
| -10        | 1850.700003              | 0.002                 | 1914.300004     | 0.002                 |
| 0          | 1850.700003              | 0.001                 | 1914.300002     | 0.001                 |
| 10         | 1850.700002              | 0.001                 | 1914.300003     | 0.002                 |
| 20         | 1850.699999              | -0.001                | 1914.299996     | -0.002                |
| 30         | 1850.699998              | -0.001                | 1914.299996     | -0.002                |
| 40         | 1850.699998              | -0.001                | 1914.299996     | -0.002                |
| 50         | 1850.699998              | -0.001                | 1914.299999     | -0.001                |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 25              |                       |                 |                       |
|--------------------|--------------------------|-----------------------|-----------------|-----------------------|
|                    | Channel Bandwidth: 5 MHz |                       |                 |                       |
|                    | Low Channel              |                       | High Channel    |                       |
|                    | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 120                | 1850.700003              | 0.002                 | 1914.300003     | 0.002                 |
| 102                | 1850.700002              | 0.001                 | 1914.300002     | 0.001                 |
| 138                | 1850.700002              | 0.001                 | 1914.300002     | 0.001                 |

**Note:** The applicant defined the normal working voltage of the battery is from 102 Vac to 138 Vac.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 25              |                       |                 |                       |
|------------|--------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 5 MHz |                       |                 |                       |
|            | Low Channel              |                       | High Channel    |                       |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1850.700004              | 0.002                 | 1914.300003     | 0.002                 |
| -20        | 1850.700002              | 0.001                 | 1914.300003     | 0.002                 |
| -10        | 1850.700003              | 0.002                 | 1914.300003     | 0.001                 |
| 0          | 1850.700004              | 0.002                 | 1914.300004     | 0.002                 |
| 10         | 1850.700001              | 0.001                 | 1914.300001     | 0.001                 |
| 20         | 1850.699998              | -0.001                | 1914.299998     | -0.001                |
| 30         | 1850.699997              | -0.002                | 1914.299998     | -0.001                |
| 40         | 1850.699997              | -0.002                | 1914.299998     | -0.001                |
| 50         | 1850.699999              | -0.001                | 1914.299997     | -0.002                |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 25               |                       |                 |                       |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|
|                    | Channel Bandwidth: 10 MHz |                       |                 |                       |
|                    | Low Channel               |                       | High Channel    |                       |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 120                | 1850.700001               | 0.001                 | 1914.300001     | 0.001                 |
| 102                | 1850.700004               | 0.002                 | 1914.300004     | 0.002                 |
| 138                | 1850.700001               | 0.001                 | 1914.300002     | 0.001                 |

**Note:** The applicant defined the normal working voltage of the battery is from 102 Vac to 138 Vac.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 25               |                       |                 |                       |
|------------|---------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 10 MHz |                       |                 |                       |
|            | Low Channel               |                       | High Channel    |                       |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1850.700001               | 0.001                 | 1914.300003     | 0.001                 |
| -20        | 1850.700001               | 0.001                 | 1914.300002     | 0.001                 |
| -10        | 1850.700004               | 0.002                 | 1914.300001     | 0.001                 |
| 0          | 1850.700002               | 0.001                 | 1914.300001     | 0.001                 |
| 10         | 1850.700002               | 0.001                 | 1914.300004     | 0.002                 |
| 20         | 1850.699998               | -0.001                | 1914.299998     | -0.001                |
| 30         | 1850.699997               | -0.002                | 1914.299996     | -0.002                |
| 40         | 1850.699997               | -0.001                | 1914.299997     | -0.002                |
| 50         | 1850.699998               | -0.001                | 1914.299999     | -0.001                |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 25               |                       |                 |                       |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|
|                    | Channel Bandwidth: 15 MHz |                       |                 |                       |
|                    | Low Channel               |                       | High Channel    |                       |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 120                | 1850.700003               | 0.002                 | 1914.300003     | 0.002                 |
| 102                | 1850.700002               | 0.001                 | 1914.300001     | 0.001                 |
| 138                | 1850.700003               | 0.002                 | 1914.300004     | 0.002                 |

**Note:** The applicant defined the normal working voltage of the battery is from 102 Vac to 138 Vac.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 25               |                       |                 |                       |
|------------|---------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 15 MHz |                       |                 |                       |
|            | Low Channel               |                       | High Channel    |                       |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1850.700002               | 0.001                 | 1914.300002     | 0.001                 |
| -20        | 1850.700004               | 0.002                 | 1914.300004     | 0.002                 |
| -10        | 1850.700001               | 0.001                 | 1914.300001     | 0.001                 |
| 0          | 1850.700002               | 0.001                 | 1914.300003     | 0.002                 |
| 10         | 1850.700002               | 0.001                 | 1914.300001     | 0.001                 |
| 20         | 1850.699998               | -0.001                | 1914.299999     | -0.001                |
| 30         | 1850.699998               | -0.001                | 1914.299997     | -0.002                |
| 40         | 1850.699997               | -0.001                | 1914.299999     | -0.001                |
| 50         | 1850.699997               | -0.002                | 1914.299997     | -0.002                |



### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 25               |                       |                 |                       |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|
|                    | Channel Bandwidth: 20 MHz |                       |                 |                       |
|                    | Low Channel               |                       | High Channel    |                       |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 120                | 1850.700002               | 0.001                 | 1914.300002     | 0.001                 |
| 102                | 1850.700003               | 0.002                 | 1914.300004     | 0.002                 |
| 138                | 1850.700002               | 0.001                 | 1914.300001     | 0.001                 |

**Note:** The applicant defined the normal working voltage of the battery is from 102 Vac to 138 Vac.

### Frequency Error vs. Temperature

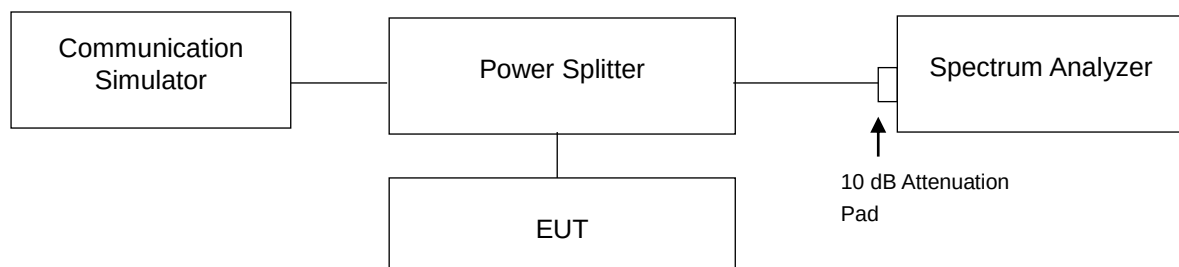
| Temp. (°C) | LTE Band 25               |                       |                 |                       |
|------------|---------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 20 MHz |                       |                 |                       |
|            | Low Channel               |                       | High Channel    |                       |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1850.700001               | 0.001                 | 1914.300002     | 0.001                 |
| -20        | 1850.700002               | 0.001                 | 1914.300002     | 0.001                 |
| -10        | 1850.700002               | 0.001                 | 1914.300002     | 0.001                 |
| 0          | 1850.700001               | 0.001                 | 1914.300002     | 0.001                 |
| 10         | 1850.700002               | 0.001                 | 1914.300003     | 0.001                 |
| 20         | 1850.699997               | -0.002                | 1914.299997     | -0.002                |
| 30         | 1850.699996               | -0.002                | 1914.299998     | -0.001                |
| 40         | 1850.699997               | -0.002                | 1914.299998     | -0.001                |
| 50         | 1850.699998               | -0.001                | 1914.299997     | -0.002                |

## 4.4 Occupied Bandwidth Measurement

### 4.4.1 Test Procedure

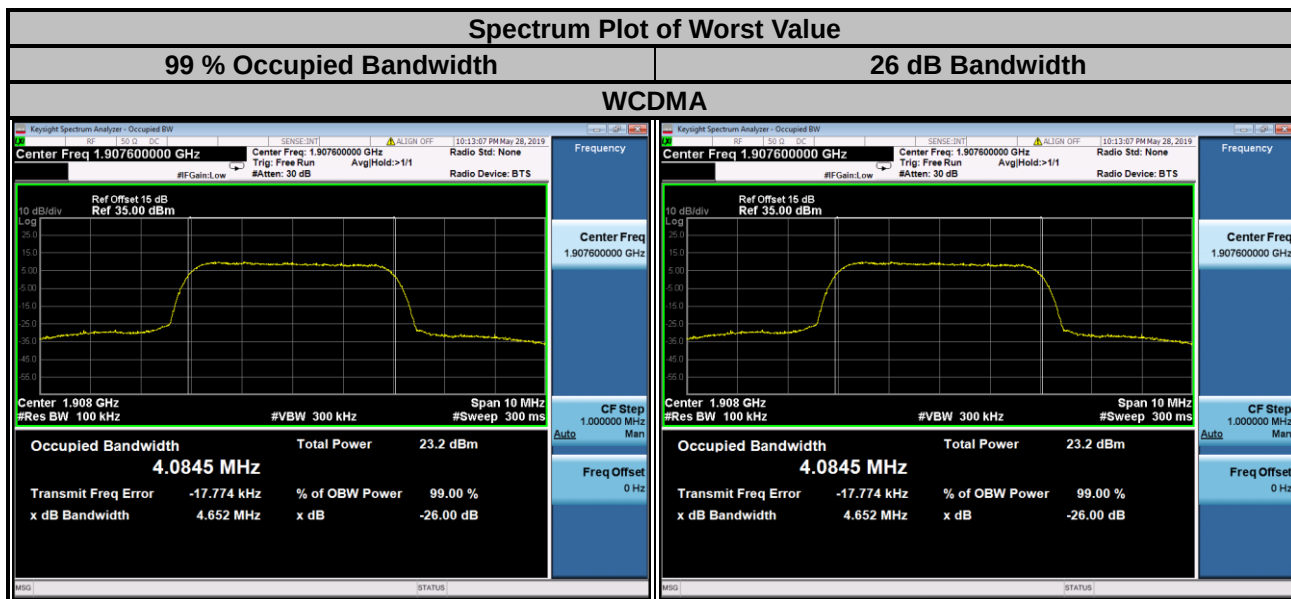
The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function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

### 4.4.2 Test Setup

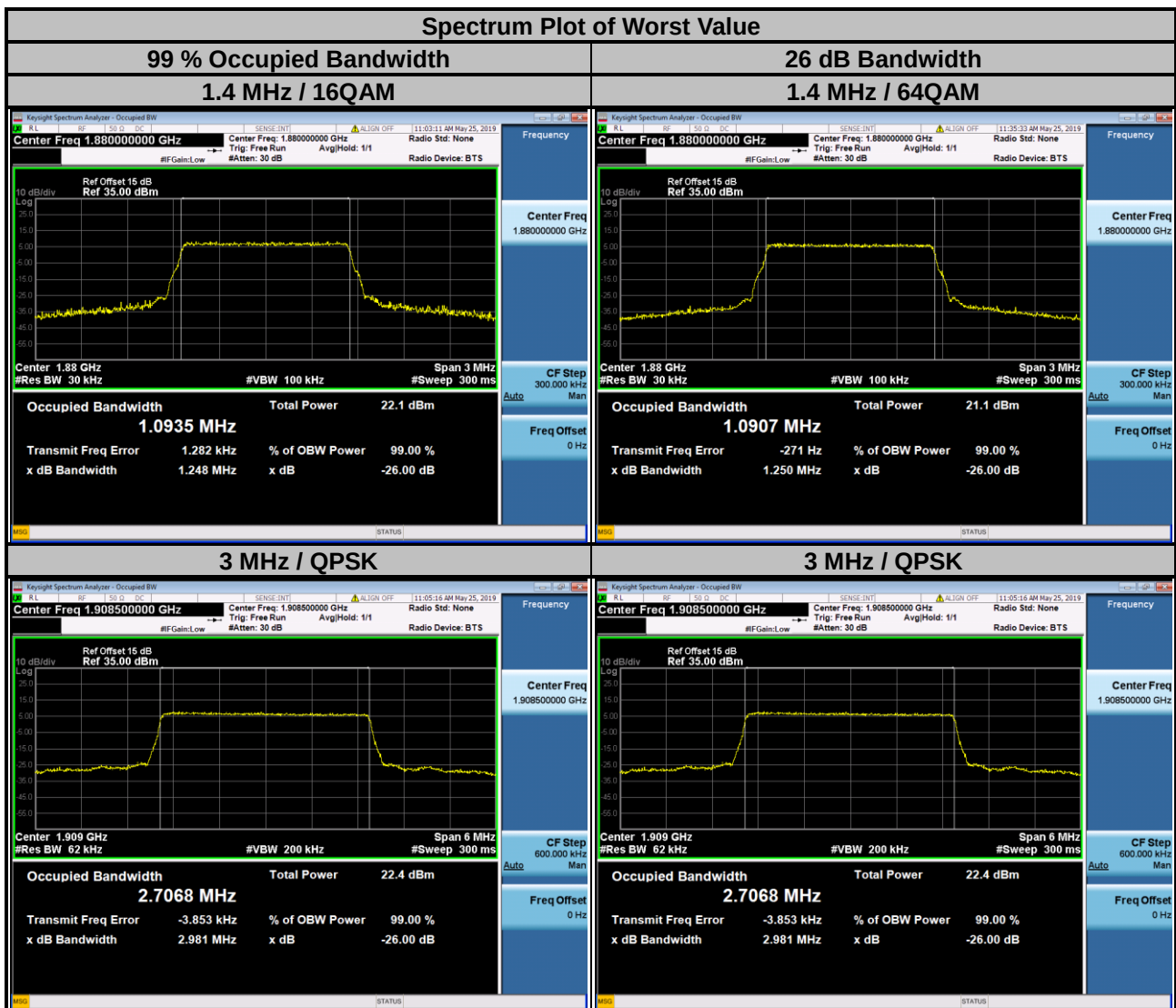


#### 4.4.3 Test Result

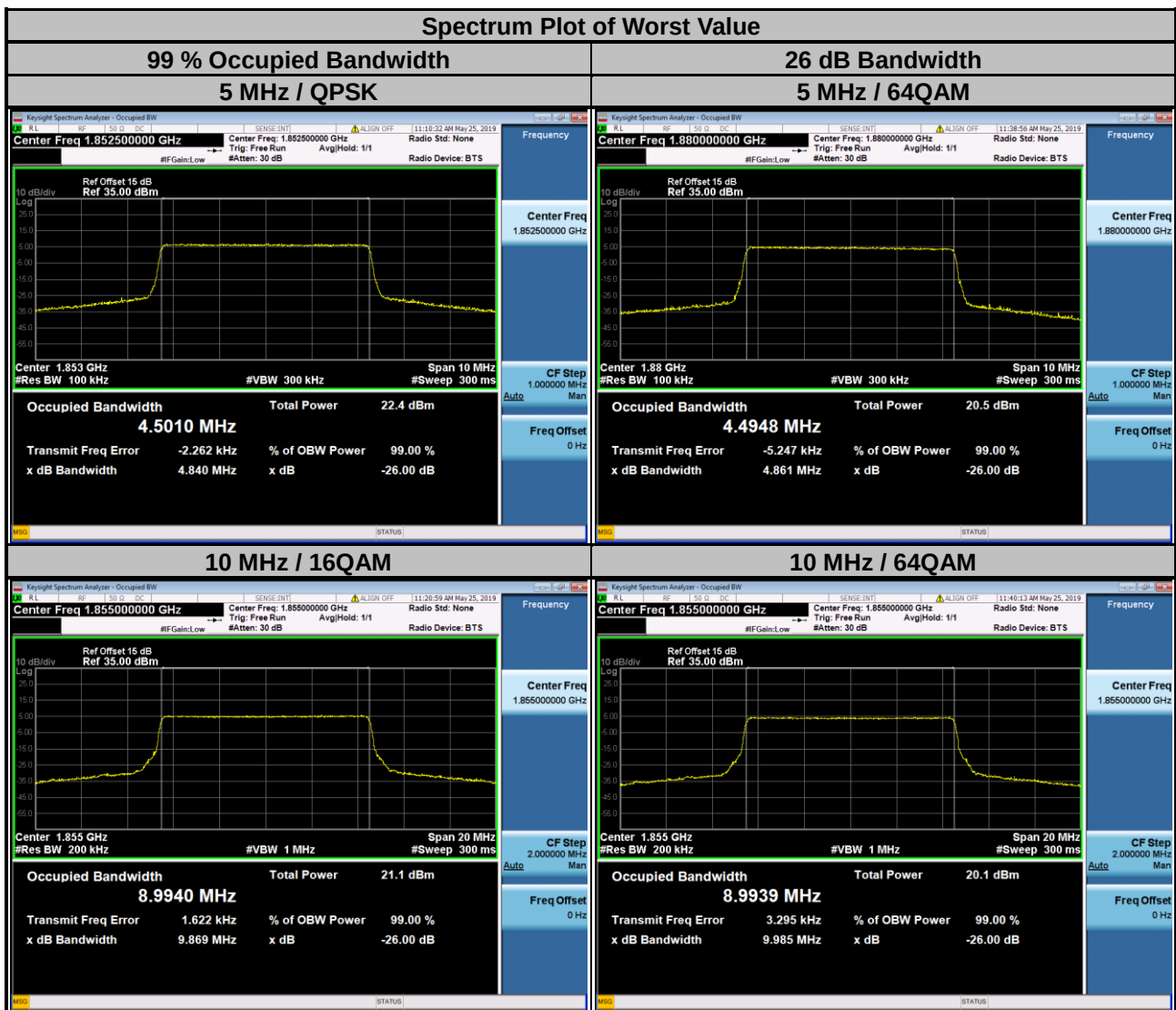
| WCDMA   |                 |                               |                       |
|---------|-----------------|-------------------------------|-----------------------|
| Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) | 26 dB Bandwidth (MHz) |
| 9262    | 1852.4          | 4.080                         | 4.650                 |
| 9400    | 1880.0          | 4.079                         | 4.651                 |
| 9538    | 1907.6          | 4.085                         | 4.652                 |



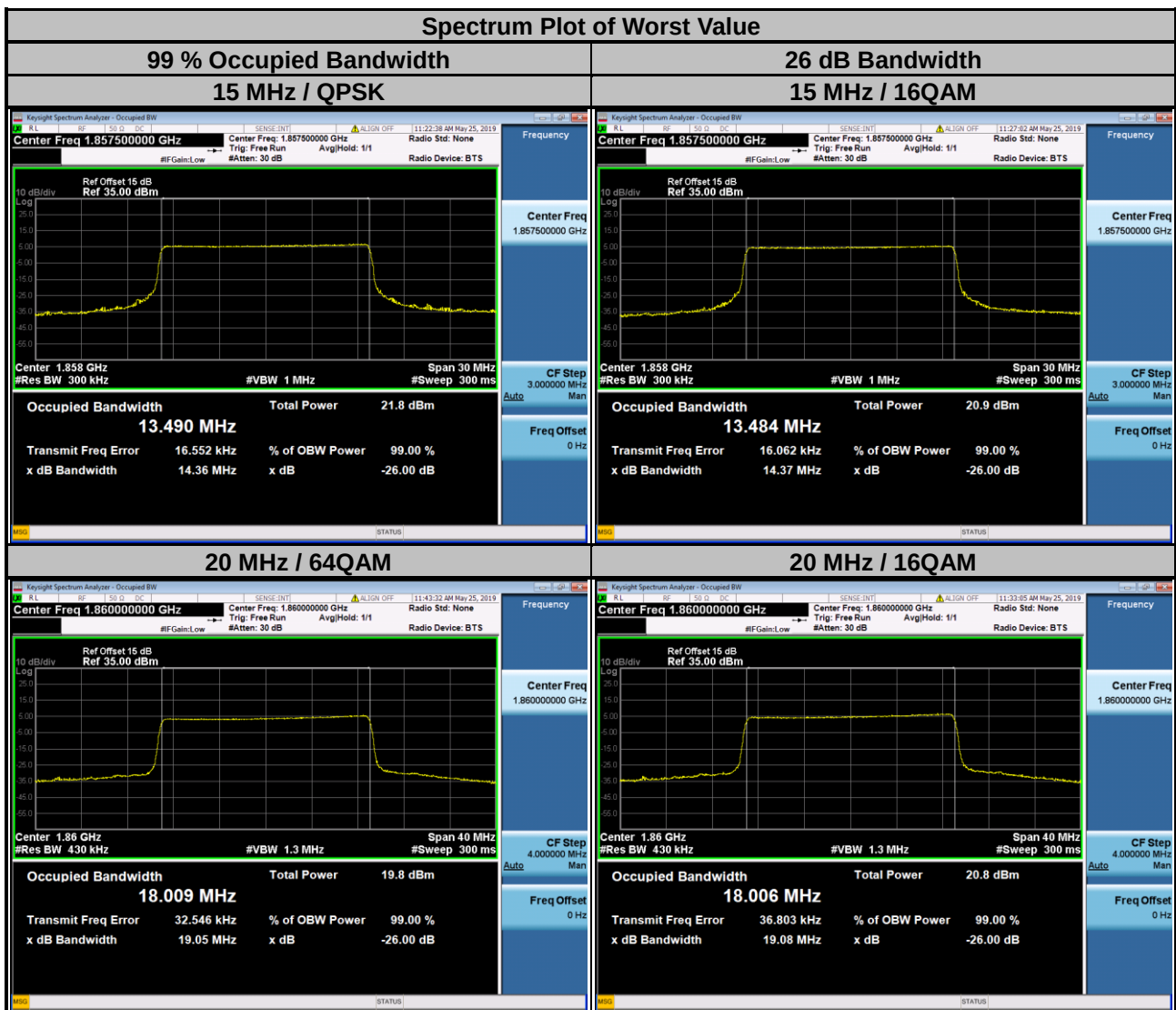
| LTE Band 2                 |                 |                               |       |       |                       |       |       |
|----------------------------|-----------------|-------------------------------|-------|-------|-----------------------|-------|-------|
| Channel Bandwidth: 1.4 MHz |                 |                               |       |       |                       |       |       |
| Channel                    | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       |       | 26 dB Bandwidth (MHz) |       |       |
|                            |                 | QPSK                          | 16QAM | 64QAM | QPSK                  | 16QAM | 64QAM |
| 18607                      | 1850.7          | 1.089                         | 1.091 | 1.091 | 1.244                 | 1.245 | 1.245 |
| 18900                      | 1880.0          | 1.091                         | 1.094 | 1.091 | 1.240                 | 1.248 | 1.250 |
| 19193                      | 1909.3          | 1.093                         | 1.093 | 1.091 | 1.247                 | 1.247 | 1.245 |
| Channel Bandwidth: 3 MHz   |                 |                               |       |       |                       |       |       |
| Channel                    | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       |       | 26 dB Bandwidth (MHz) |       |       |
|                            |                 | QPSK                          | 16QAM | 64QAM | QPSK                  | 16QAM | 64QAM |
| 18615                      | 1851.5          | 2.704                         | 2.702 | 2.702 | 2.961                 | 2.972 | 2.968 |
| 18900                      | 1880.0          | 2.704                         | 2.704 | 2.703 | 2.960                 | 2.972 | 2.964 |
| 19185                      | 1908.5          | 2.707                         | 2.702 | 2.702 | 2.981                 | 2.972 | 2.959 |



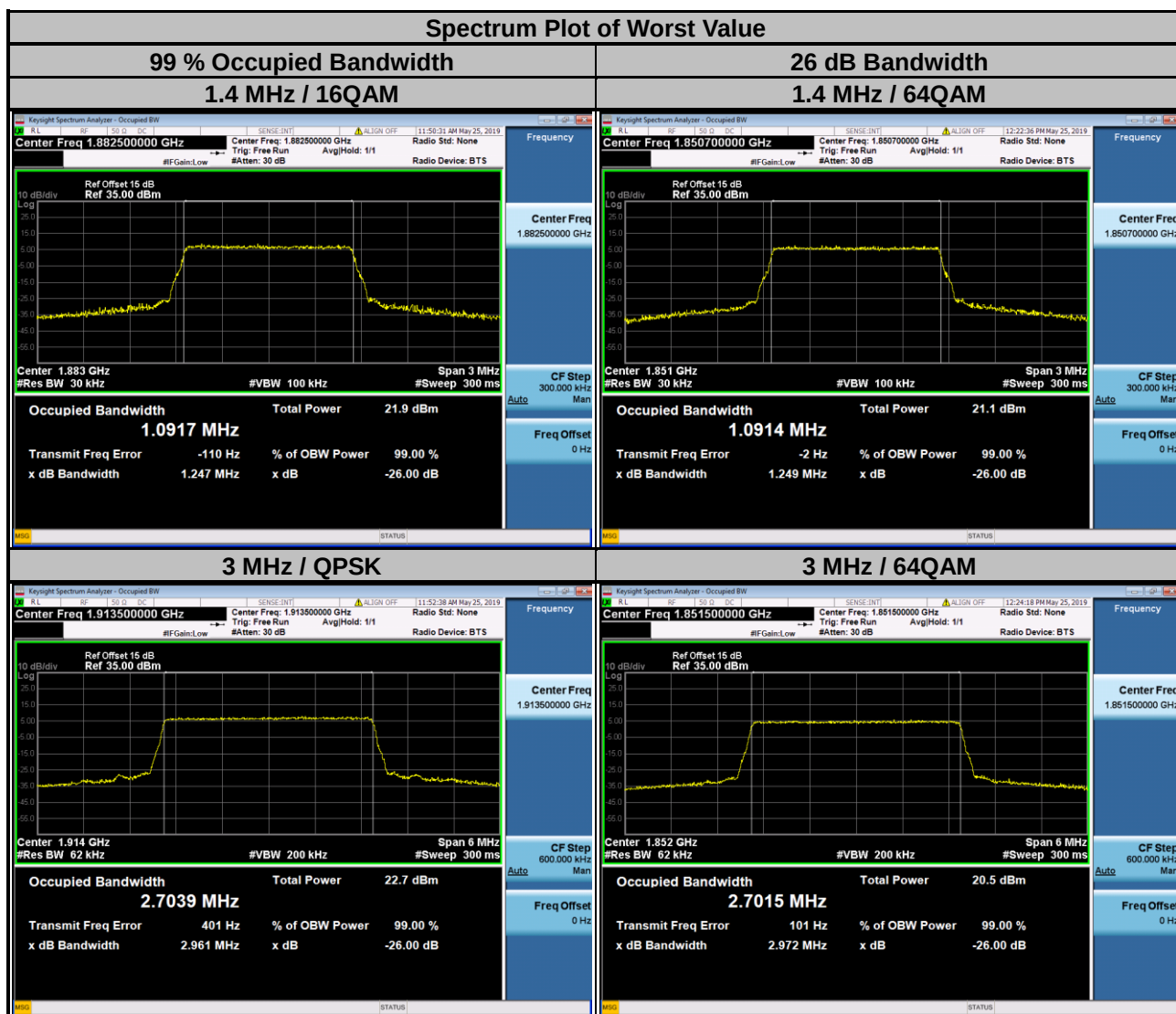
| LTE Band 2                |                 |                               |       |       |                       |       |       |
|---------------------------|-----------------|-------------------------------|-------|-------|-----------------------|-------|-------|
| Channel Bandwidth: 5 MHz  |                 |                               |       |       |                       |       |       |
| Channel                   | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       |       | 26 dB Bandwidth (MHz) |       |       |
|                           |                 | QPSK                          | 16QAM | 64QAM | QPSK                  | 16QAM | 64QAM |
| 18625                     | 1852.5          | 4.501                         | 4.496 | 4.498 | 4.840                 | 4.847 | 4.836 |
| 18900                     | 1880.0          | 4.496                         | 4.493 | 4.495 | 4.841                 | 4.819 | 4.861 |
| 19175                     | 1907.5          | 4.499                         | 4.497 | 4.496 | 4.839                 | 4.824 | 4.823 |
| Channel Bandwidth: 10 MHz |                 |                               |       |       |                       |       |       |
| Channel                   | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       |       | 26 dB Bandwidth (MHz) |       |       |
|                           |                 | QPSK                          | 16QAM | 64QAM | QPSK                  | 16QAM | 64QAM |
| 18650                     | 1855.0          | 8.992                         | 8.994 | 8.994 | 9.950                 | 9.869 | 9.985 |
| 18900                     | 1880.0          | 8.980                         | 8.976 | 8.982 | 9.763                 | 9.774 | 9.797 |
| 19150                     | 1905.0          | 8.963                         | 8.959 | 8.962 | 9.753                 | 9.791 | 9.684 |



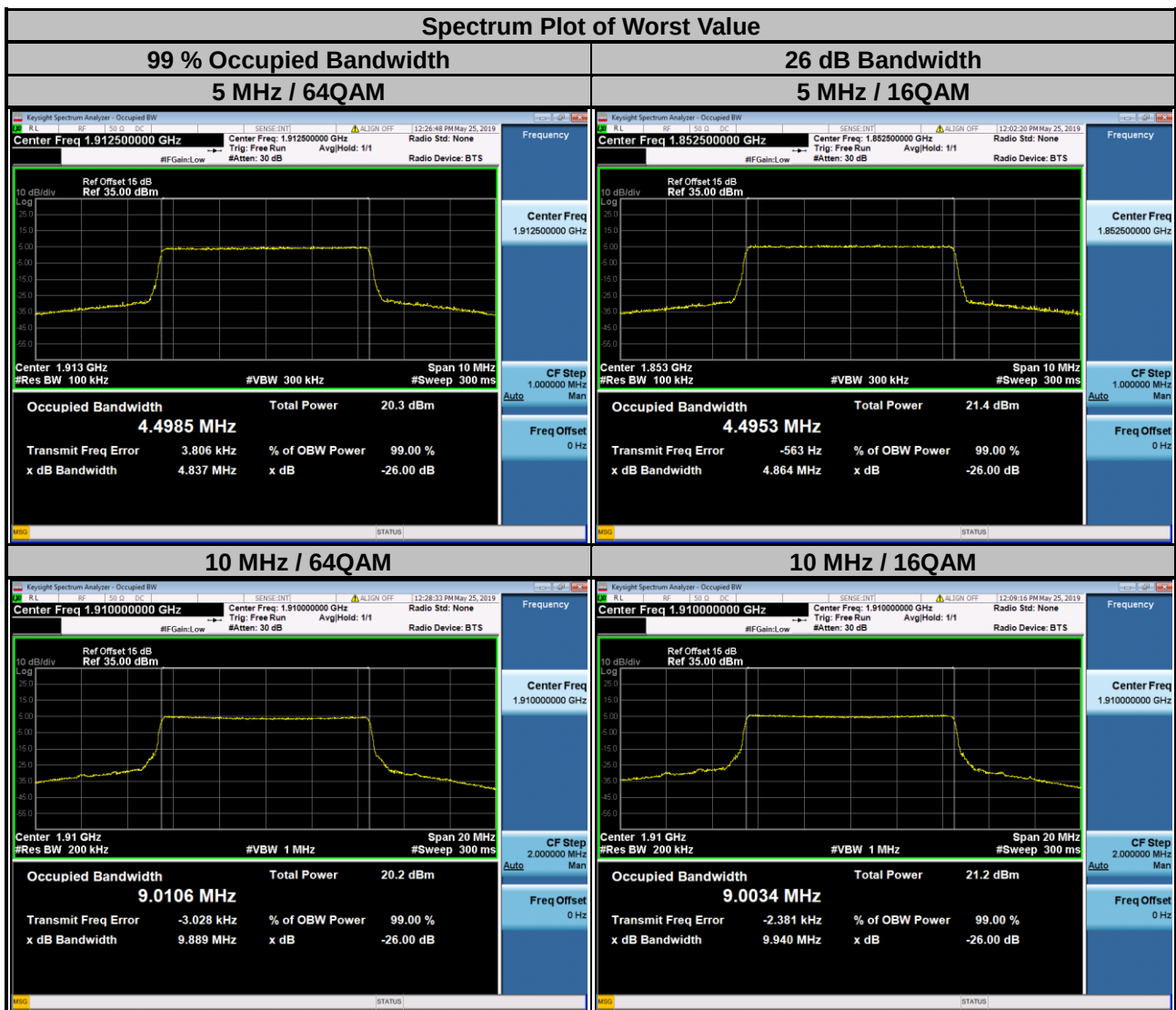
| LTE Band 2                |                 |                               |        |        |                       |        |        |
|---------------------------|-----------------|-------------------------------|--------|--------|-----------------------|--------|--------|
| Channel Bandwidth: 15 MHz |                 |                               |        |        |                       |        |        |
| Channel                   | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |        |        | 26 dB Bandwidth (MHz) |        |        |
|                           |                 | QPSK                          | 16QAM  | 64QAM  | QPSK                  | 16QAM  | 64QAM  |
| 18675                     | 1857.5          | 13.490                        | 13.484 | 13.486 | 14.360                | 14.370 | 14.340 |
| 18900                     | 1880.0          | 13.456                        | 13.447 | 13.450 | 14.310                | 14.280 | 14.300 |
| 19125                     | 1902.5          | 13.416                        | 13.413 | 13.415 | 14.270                | 14.280 | 14.280 |
| Channel Bandwidth: 20 MHz |                 |                               |        |        |                       |        |        |
| Channel                   | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |        |        | 26 dB Bandwidth (MHz) |        |        |
|                           |                 | QPSK                          | 16QAM  | 64QAM  | QPSK                  | 16QAM  | 64QAM  |
| 18700                     | 1860.0          | 17.996                        | 18.006 | 18.009 | 19.050                | 19.080 | 19.050 |
| 18900                     | 1880.0          | 17.941                        | 17.937 | 17.941 | 19.040                | 19.020 | 19.030 |
| 19100                     | 1900.0          | 17.896                        | 17.905 | 17.908 | 19.040                | 19.020 | 19.030 |



| LTE Band 25                |                 |                               |       |       |                       |       |       |
|----------------------------|-----------------|-------------------------------|-------|-------|-----------------------|-------|-------|
| Channel Bandwidth: 1.4 MHz |                 |                               |       |       |                       |       |       |
| Channel                    | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       |       | 26 dB Bandwidth (MHz) |       |       |
|                            |                 | QPSK                          | 16QAM | 64QAM | QPSK                  | 16QAM | 64QAM |
| 26047                      | 1850.7          | 1.091                         | 1.091 | 1.091 | 1.236                 | 1.247 | 1.249 |
| 26365                      | 1882.5          | 1.091                         | 1.092 | 1.092 | 1.242                 | 1.247 | 1.244 |
| 26683                      | 1914.3          | 1.091                         | 1.092 | 1.090 | 1.243                 | 1.246 | 1.241 |
| Channel Bandwidth: 3 MHz   |                 |                               |       |       |                       |       |       |
| Channel                    | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       |       | 26 dB Bandwidth (MHz) |       |       |
|                            |                 | QPSK                          | 16QAM | 64QAM | QPSK                  | 16QAM | 64QAM |
| 26055                      | 1851.5          | 2.703                         | 2.704 | 2.702 | 2.966                 | 2.968 | 2.972 |
| 26365                      | 1882.5          | 2.703                         | 2.699 | 2.700 | 2.971                 | 2.960 | 2.972 |
| 26675                      | 1913.5          | 2.704                         | 2.698 | 2.702 | 2.961                 | 2.961 | 2.970 |



| LTE Band 25               |                 |                               |       |       |                       |       |       |
|---------------------------|-----------------|-------------------------------|-------|-------|-----------------------|-------|-------|
| Channel Bandwidth: 5 MHz  |                 |                               |       |       |                       |       |       |
| Channel                   | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       |       | 26 dB Bandwidth (MHz) |       |       |
|                           |                 | QPSK                          | 16QAM | 64QAM | QPSK                  | 16QAM | 64QAM |
| 26065                     | 1852.5          | 4.491                         | 4.495 | 4.496 | 4.847                 | 4.864 | 4.850 |
| 26365                     | 1882.5          | 4.497                         | 4.493 | 4.495 | 4.828                 | 4.836 | 4.839 |
| 26665                     | 1912.5          | 4.496                         | 4.497 | 4.499 | 4.826                 | 4.846 | 4.837 |
| Channel Bandwidth: 10 MHz |                 |                               |       |       |                       |       |       |
| Channel                   | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |       |       | 26 dB Bandwidth (MHz) |       |       |
|                           |                 | QPSK                          | 16QAM | 64QAM | QPSK                  | 16QAM | 64QAM |
| 26090                     | 1855.0          | 8.985                         | 8.980 | 8.977 | 9.837                 | 9.822 | 9.820 |
| 26365                     | 1882.5          | 8.985                         | 8.979 | 8.977 | 9.845                 | 9.819 | 9.811 |
| 26640                     | 1910.0          | 9.009                         | 9.003 | 9.011 | 9.869                 | 9.940 | 9.889 |





| LTE Band 25               |                 |                               |        |        |                       |        |        |
|---------------------------|-----------------|-------------------------------|--------|--------|-----------------------|--------|--------|
| Channel Bandwidth: 15 MHz |                 |                               |        |        |                       |        |        |
| Channel                   | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |        |        | 26 dB Bandwidth (MHz) |        |        |
|                           |                 | QPSK                          | 16QAM  | 64QAM  | QPSK                  | 16QAM  | 64QAM  |
| 26115                     | 1857.5          | 13.463                        | 13.461 | 13.462 | 14.440                | 14.310 | 14.300 |
| 26365                     | 1882.5          | 13.457                        | 13.452 | 13.455 | 14.290                | 14.290 | 14.270 |
| 26615                     | 1907.5          | 13.489                        | 13.486 | 13.479 | 14.360                | 14.360 | 14.310 |
| Channel Bandwidth: 20 MHz |                 |                               |        |        |                       |        |        |
| Channel                   | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |        |        | 26 dB Bandwidth (MHz) |        |        |
|                           |                 | QPSK                          | 16QAM  | 64QAM  | QPSK                  | 16QAM  | 64QAM  |
| 26140                     | 1860.0          | 17.994                        | 17.992 | 17.996 | 19.120                | 19.080 | 19.080 |
| 26365                     | 1882.5          | 17.954                        | 17.954 | 17.948 | 19.050                | 19.050 | 19.040 |
| 26590                     | 1905.0          | 17.959                        | 17.962 | 17.957 | 19.090                | 19.080 | 19.050 |

