

## FCC Test Report

### (PART 24)

**Report No.:** RF171122C17-1

**FCC ID:** HD5-CT60L1N

**Test Model:** CT60L1N

**Received Date:** Nov. 22, 2017

**Test Date:** Nov. 23, 2017 ~ Dec. 24, 2017

**Issued Date:** Jan. 08, 2017

**Applicant:** Honeywell International Inc.

**Address:** 9680 Old Bailes Road, Fort Mill, SC 29707 USA

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

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

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

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



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

## Table of Contents

|                                                                 |            |
|-----------------------------------------------------------------|------------|
| <b>Release Control Record .....</b>                             | <b>3</b>   |
| <b>1 Certificate of Conformity .....</b>                        | <b>4</b>   |
| <b>2 Summary of Test Results.....</b>                           | <b>5</b>   |
| 2.1 Measurement Uncertainty.....                                | 5          |
| 2.2 Test Site And Instruments .....                             | 6          |
| <b>3 General Information .....</b>                              | <b>8</b>   |
| 3.1 General Description of EUT .....                            | 8          |
| 3.2 Configuration of System under Test.....                     | 10         |
| 3.2.1 Description of Support Units .....                        | 10         |
| 3.3 Test Mode Applicability and Tested Channel Detail .....     | 11         |
| 3.4 EUT Operating Conditions .....                              | 16         |
| 3.5 General Description of Applied Standards.....               | 16         |
| <b>4 Test Types and Results .....</b>                           | <b>17</b>  |
| 4.1 Output Power Measurement.....                               | 17         |
| 4.1.1 Limits of Output Power Measurement .....                  | 17         |
| 4.1.2 Test Procedures.....                                      | 17         |
| 4.1.3 Test Setup.....                                           | 18         |
| 4.1.4 Test Results .....                                        | 19         |
| 4.2 Frequency Stability Measurement .....                       | 35         |
| 4.2.1 Limits of Frequency Stability Measurement.....            | 35         |
| 4.2.2 Test Procedure .....                                      | 35         |
| 4.2.3 Test Setup.....                                           | 35         |
| 4.2.4 Test Results .....                                        | 36         |
| 4.3 Occupied Bandwidth Measurement.....                         | 52         |
| 4.3.1 Test Procedure .....                                      | 52         |
| 4.3.2 Test Setup.....                                           | 52         |
| 4.3.3 Test Result .....                                         | 53         |
| 4.4 Band Edge Measurement .....                                 | 60         |
| 4.4.1 Limits of Band Edge Measurement .....                     | 60         |
| 4.4.2 Test Setup.....                                           | 60         |
| 4.4.3 Test Procedures.....                                      | 60         |
| 4.4.4 Test Results .....                                        | 61         |
| 4.5 Peak to Average Ratio .....                                 | 75         |
| 4.5.1 Limits of Peak to Average Ratio Measurement .....         | 75         |
| 4.5.2 Test Setup.....                                           | 75         |
| 4.5.3 Test Procedures.....                                      | 75         |
| 4.5.4 Test Results .....                                        | 76         |
| 4.6 Conducted Spurious Emissions.....                           | 83         |
| 4.6.1 Limits of Conducted Spurious Emissions Measurement.....   | 83         |
| 4.6.2 Test Setup.....                                           | 83         |
| 4.6.3 Test Procedure .....                                      | 83         |
| 4.6.4 Test Results .....                                        | 84         |
| 4.7 Radiated Emission Measurement.....                          | 132        |
| 4.7.1 Limits of Radiated Emission Measurement .....             | 132        |
| 4.7.2 Test Procedure .....                                      | 132        |
| 4.7.3 Deviation from Test Standard .....                        | 132        |
| 4.7.4 Test Setup.....                                           | 133        |
| 4.7.5 Test Results .....                                        | 134        |
| <b>5 Pictures of Test Arrangements.....</b>                     | <b>170</b> |
| <b>Appendix – Information on the Testing Laboratories .....</b> | <b>171</b> |

### Release Control Record

| Issue No.     | Description      | Date Issued   |
|---------------|------------------|---------------|
| RF171122C17-1 | Original Release | Jan. 08, 2017 |

## 1 Certificate of Conformity

**Product:** Dolphin CT60

**Brand:** Honeywell

**Test Model:** CT60L1N

**Sample Status:** Engineering sample

**Applicant:** Honeywell International Inc.

**Test Date:** Nov. 23, 2017 ~ Dec. 24, 2017

**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 EMC characteristics under the conditions specified in this report.

**Prepared by :** Evonne Liu, **Date:** Jan. 08, 2017  
Evonne Liu / Specialist

**Approved by :** Dylan Chiou, **Date:** Jan. 08, 2017  
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.                                                     |
| 2.1046<br>24.232(d)                    | Peak to Average Ratio              | Pass   | Meet the requirement of limit.                                                     |
| 2.1055<br>24.235                       | Frequency Stability                | Pass   | Meet the requirement of limit.                                                     |
| 2.1049<br>24.238(b)                    | Occupied Bandwidth                 | Pass   | Meet the requirement of limit.                                                     |
| 24.238(b)                              | Band Edge Measurements             | Pass   | Meet the requirement of limit.                                                     |
| 2.1051<br>24.238                       | Conducted Spurious Emissions       | Pass   | Meet the requirement of limit.                                                     |
| 2.1053<br>24.238                       | Radiated Spurious Emissions        | Pass   | Meet the requirement of limit.<br>Minimum passing margin is -25.79 dB at 7620 MHz. |

### 2.1 Measurement Uncertainty

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

| Measurement                        | Frequency          | Expanded Uncertainty (k=2) (±) |
|------------------------------------|--------------------|--------------------------------|
| Conducted Emissions at mains ports | 150 kHz ~ 30 MHz   | 2.44 dB                        |
| Radiated Emissions up to 1 GHz     | 30 MHz ~ 200 MHz   | 2.93 dB                        |
|                                    | 200 MHz ~ 1000 MHz | 2.95 dB                        |
| Radiated Emissions above 1 GHz     | 1 GHz ~ 18 GHz     | 2.26 dB                        |
|                                    | 18 GHz ~ 40 GHz    | 1.94 dB                        |

## 2.2 Test Site and Instruments

| Description & Manufacturer                | Model No.   | Serial No.                                                        | Date of Calibration | Due Date of Calibration |
|-------------------------------------------|-------------|-------------------------------------------------------------------|---------------------|-------------------------|
| Test Receiver<br>Agilent                  | N9038A      | MY51210203                                                        | Feb. 17, 2017       | Feb. 16, 2018           |
| Spectrum Analyzer<br>Agilent              | N9010A      | MY52220314                                                        | Dec. 16, 2016       | Dec. 15, 2017           |
| Spectrum Analyzer<br>ROHDE & SCHWARZ      | FSU43       | 100115                                                            | Nov. 23, 2017       | Nov. 22, 2018           |
| BILOG Antenna<br>SCHWARZBECK              | VULB9168    | 9168-472                                                          | Dec. 13, 2016       | Dec. 12, 2017           |
|                                           |             |                                                                   | Dec. 06, 2017       | Dec. 05, 2018           |
| HORN Antenna<br>SCHWARZBECK               | BBHA 9120 D | 9120D-969                                                         | Dec. 27, 2016       | Dec. 26, 2017           |
| Double Ridge Guide Horn<br>Antenna EMCO   | 3115        | 5619                                                              | Dec. 15, 2016       | Dec. 14, 2017           |
| BILOG Antenna<br>SCHWARZBECK              | VULB 9168   | 9168-153                                                          | Dec. 13, 2016       | Dec. 12, 2017           |
|                                           |             |                                                                   | Dec. 06, 2017       | Dec. 05, 2018           |
| HORN Antenna<br>SCHWARZBECK               | BBHA 9170   | 9170-480                                                          | Dec. 14, 2016       | Dec. 13, 2017           |
|                                           |             |                                                                   | Dec. 01, 2017       | Nov. 30, 2018           |
| RF signal cable<br>ETS-LINDGREN           | 5D-FB       | Cable-CH1-01(R<br>FC-SMS-100-SM<br>S-120+RFC-SMS<br>-100-SMS-400) | Jun. 23, 2017       | Jun. 22, 2018           |
| MXG Vector signal<br>generator<br>Agilent | N5182B      | MY53050430                                                        | Oct. 24, 2017       | Oct. 23, 2018           |
| Loop Antenna                              | EM-6879     | 269                                                               | Aug. 11, 2017       | Aug. 10, 2018           |
| Preamplifier<br>EMCI                      | EMC001340   | 980201                                                            | Nov. 01, 2017       | Oct. 30, 2018           |
| Bluetooth Tester                          | CBT         | 100946                                                            | Jul. 29, 2016       | Jul. 28, 2018           |
| Preamplifier<br>EMCI                      | EMC 012645  | 980115                                                            | Oct. 20, 2017       | Oct. 19, 2018           |
| Preamplifier<br>EMCI                      | EMC 184045  | 980116                                                            | Oct. 20, 2017       | Oct. 19, 2018           |
| Preamplifier<br>EMCI                      | EMC 330H    | 980112                                                            | Oct. 13, 2017       | Oct. 12, 2018           |
| Power Meter<br>Anritsu                    | ML2495A     | 1012010                                                           | Aug. 15, 2017       | Aug. 14, 2018           |
| Power Sensor<br>Anritsu                   | MA2411B     | 1315050                                                           | Aug. 15, 2017       | Aug. 14, 2018           |

| Description & Manufacturer                     | Model No.                  | Serial No.                    | Date of Calibration | Due Date of Calibration |
|------------------------------------------------|----------------------------|-------------------------------|---------------------|-------------------------|
| RF Coaxial Cable<br>HUBER+SUHNNER              | EMC104-SM-SM-8<br>000&3000 | 140811+170717                 | Oct. 20, 2017       | Oct. 19, 2018           |
| RF Coaxial Cable<br>HUBER+SUHNNER              | SUCOFLEX 104               | EMC104-SM-SM-<br>1000(140807) | Oct. 20, 2017       | Oct. 19, 2018           |
| RF Coaxial Cable<br>Worken                     | 8D-FB                      | Cable-Ch10-01                 | Oct. 20, 2017       | Oct. 19, 2018           |
| Software<br>BV ADT                             | E3<br>6.120103             | NA                            | NA                  | NA                      |
| Antenna Tower<br>MF                            | MFA-440H                   | NA                            | NA                  | NA                      |
| Turn Table<br>MF                               | MFT-201SS                  | NA                            | NA                  | NA                      |
| Antenna Tower & Turn<br>Table Controller<br>MF | MF-7802                    | NA                            | NA                  | NA                      |

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

### 3 General Information

#### 3.1 General Description of EUT

|                            |                                          |                     |
|----------------------------|------------------------------------------|---------------------|
| <b>Product</b>             | Dolphin CT60                             |                     |
| <b>Brand</b>               | Honeywell                                |                     |
| <b>Test Model</b>          | CT60L1N                                  |                     |
| <b>Status of EUT</b>       | Engineering sample                       |                     |
| <b>HW Version</b>          | V1.0                                     |                     |
| <b>HW P/N</b>              | DVT3                                     |                     |
| <b>SW Version</b>          | OS.01.001-HON.01.003                     |                     |
| <b>SW P/N</b>              | 329D                                     |                     |
| <b>Power Supply Rating</b> | 3.6 Vdc (Li-ion battery)                 |                     |
| <b>Modulation Type</b>     | GSM/GPRS                                 | GMSK                |
|                            | EDGE                                     | GMSK, 8PSK          |
|                            | WCDMA                                    | QPSK                |
|                            | CDMA                                     | QPSK, OQPSK, HPSK   |
|                            | LTE                                      | QPSK, 16QAM, 64QAM  |
| <b>Frequency Range</b>     | GSM/GPRS/EDGE                            | 1850.2 ~ 1909.8 MHz |
|                            | WCDMA                                    | 1852.4 ~ 1907.6 MHz |
|                            | CDMA                                     | 1851.3 ~ 1908.8 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>     | GSM/GPRS                                 | 946.46 mW           |
|                            | EDGE                                     | 381.15 mW           |
|                            | WCDMA                                    | 204.69 mW           |
|                            | CDMA                                     | 196.34 mW           |
|                            | LTE Band 2 (Channel Bandwidth: 1.4 MHz)  | 243.22 mW           |
|                            | LTE Band 2 (Channel Bandwidth: 3 MHz)    | 246.60 mW           |
|                            | LTE Band 2 (Channel Bandwidth: 5 MHz)    | 258.23 mW           |
|                            | LTE Band 2 (Channel Bandwidth: 10 MHz)   | 309.74 mW           |
|                            | LTE Band 2 (Channel Bandwidth: 15 MHz)   | 321.37 mW           |
|                            | LTE Band 2 (Channel Bandwidth: 20 MHz)   | 330.37 mW           |
|                            | LTE Band 25 (Channel Bandwidth: 1.4 MHz) | 133.66 mW           |
|                            | LTE Band 25 (Channel Bandwidth: 3 MHz)   | 143.55 mW           |
|                            | LTE Band 25 (Channel Bandwidth: 5 MHz)   | 153.82 mW           |

|                            |                                          |           |
|----------------------------|------------------------------------------|-----------|
| <b>Emission Designator</b> | LTE Band 25 (Channel Bandwidth: 10 MHz)  | 154.53 mW |
|                            | LTE Band 25 (Channel Bandwidth: 15 MHz)  | 160.69 mW |
|                            | LTE Band 25 (Channel Bandwidth: 20 MHz)  | 181.97 mW |
|                            | GSM/GPRS                                 | 245KGXW   |
|                            | EDGE                                     | 249KG7W   |
|                            | WCDMA                                    | 4M15F9W   |
|                            | CDMA                                     | 1M27F9W   |
|                            | LTE Band 2 (Channel Bandwidth: 1.4 MHz)  | 1M09W7D   |
|                            | LTE Band 2 (Channel Bandwidth: 3 MHz)    | 2M70G7D   |
|                            | LTE Band 2 (Channel Bandwidth: 5 MHz)    | 4M50W7D   |
|                            | LTE Band 2 (Channel Bandwidth: 10 MHz)   | 8M98W7D   |
|                            | LTE Band 2 (Channel Bandwidth: 15 MHz)   | 13M4G7D   |
|                            | LTE Band 2 (Channel Bandwidth: 20 MHz)   | 17M9W7D   |
|                            | LTE Band 25 (Channel Bandwidth: 1.4 MHz) | 1M09W7D   |
|                            | LTE Band 25 (Channel Bandwidth: 3 MHz)   | 2M70G7D   |
|                            | LTE Band 25 (Channel Bandwidth: 5 MHz)   | 4M56G7D   |
|                            | LTE Band 25 (Channel Bandwidth: 10 MHz)  | 8M98W7D   |
|                            | LTE Band 25 (Channel Bandwidth: 15 MHz)  | 13M4G7D   |
|                            | LTE Band 25 (Channel Bandwidth: 20 MHz)  | 17M9W7D   |
| <b>Antenna Type</b>        | PIFA Antenna                             |           |
| <b>Accessory Device</b>    | Refer to Note as below                   |           |
| <b>Data Cable Supplied</b> | Refer to Note as below                   |           |

Note:

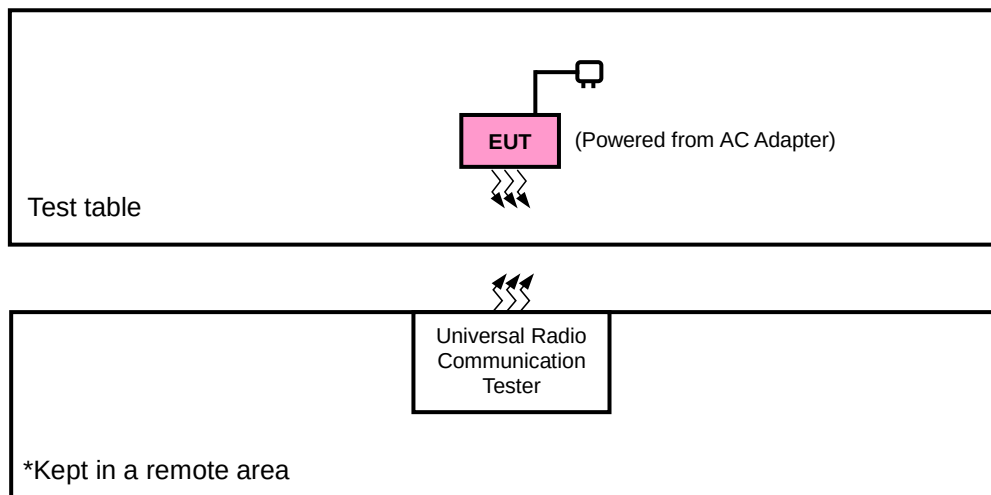
- The EUT contains following accessory devices.

| Product | Brand    | Model     | Description               |
|---------|----------|-----------|---------------------------|
| Battery | Inventus | CT50-BTSC | 3.6 Vdc, 4040 mAh, 14.6Wh |

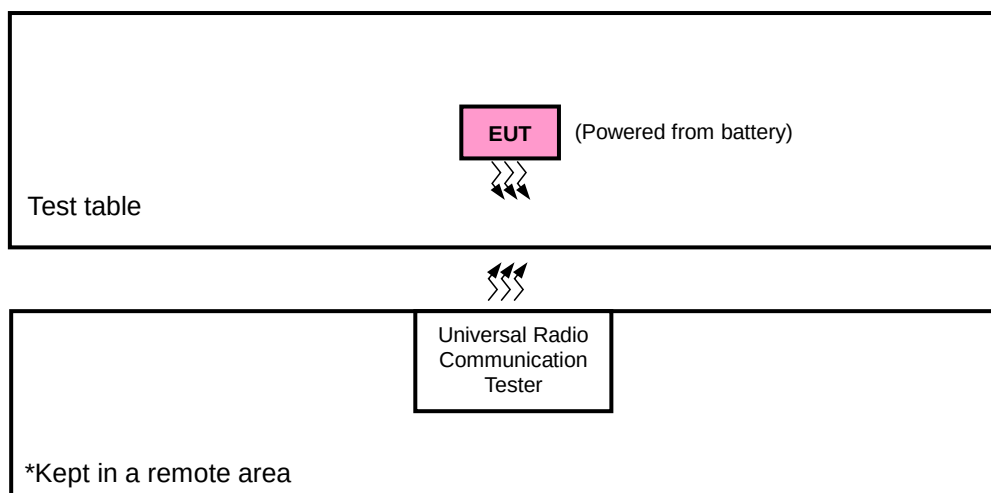
- The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

### 3.2 Configuration of System under Test

#### <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 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 |
|-------------|---------|-------------------|
| GSM         | Y-plane | X-axis            |
| EDGE        | Y-plane | X-axis            |
| WCDMA       | Y-plane | X-axis            |
| CDMA        | Y-plane | X-axis            |
| LTE Band 2  | Y-plane | X-axis            |
| LTE Band 25 | Y-plane | X-axis            |

#### GSM

| EUT Configure Mode | Test Item             | Available Channel | Tested Channel | Mode      |
|--------------------|-----------------------|-------------------|----------------|-----------|
| -                  | EIRP                  | 512 to 810        | 512, 661, 810  | GSM, EDGE |
| -                  | Frequency Stability   | 512 to 810        | 512, 810       | GSM, EDGE |
| -                  | Occupied Bandwidth    | 512 to 810        | 512, 661, 810  | GSM, EDGE |
| -                  | Band Edge             | 512 to 810        | 512, 810       | GSM, EDGE |
| -                  | Peak to Average Ratio | 512 to 810        | 512, 661, 810  | GSM, EDGE |
| -                  | Conducted Emission    | 512 to 810        | 512, 661, 810  | GSM, EDGE |
| -                  | Radiated Emission     | 512 to 810        | 512, 661, 810  | GSM, EDGE |

#### WCDMA

| EUT Configure Mode | Test Item             | Available Channel | Tested Channel   | Mode  |
|--------------------|-----------------------|-------------------|------------------|-------|
| -                  | EIRP                  | 9262 to 9538      | 9262, 9400, 9538 | 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 |

## CDMA

| EUT Configure Mode | Test Item             | Available Channel | Tested Channel | Mode  |
|--------------------|-----------------------|-------------------|----------------|-------|
| -                  | ERP                   | 25 to 1175        | 25, 600, 1175  | 1xRTT |
| -                  | Frequency Stability   | 25 to 1175        | 25, 1175       | 1xRTT |
| -                  | Occupied Bandwidth    | 25 to 1175        | 25, 600, 1175  | 1xRTT |
| -                  | Band Edge             | 25 to 1175        | 25, 600, 1175  | 1xRTT |
| -                  | Peak to Average Ratio | 25 to 1175        | 25, 1175       | 1xRTT |
| -                  | Conducted Emission    | 25 to 1175        | 25, 600, 1175  | 1xRTT |
| -                  | Radiated Emission     | 25 to 1175        | 25, 600, 1175  | 1xRTT |

## 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 / 0 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   |
| -                  | 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   |
| -                  | 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 / 0 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<br>6 RB / 0 RB Offset    |
|   |                    |                | 19193               | 1.4 MHz | QPSK               | 1 RB / 5 RB Offset<br>6 RB / 0 RB Offset    |
|   |                    | 18615 to 19185 | 18615               | 3 MHz   | QPSK               | 1 RB / 0 RB Offset<br>15 RB / 0 RB Offset   |
|   |                    |                | 19185               | 3 MHz   | QPSK               | 1 RB / 14 RB Offset<br>15 RB / 0 RB Offset  |
|   |                    | 18625 to 19175 | 18625               | 5 MHz   | QPSK               | 1 RB / 0 RB Offset<br>25 RB / 0 RB Offset   |
|   |                    |                | 19175               | 5 MHz   | QPSK               | 1 RB / 24 RB Offset<br>25 RB / 0 RB Offset  |
|   |                    | 18650 to 19150 | 18650               | 10 MHz  | QPSK               | 1 RB / 0 RB Offset<br>50 RB / 0 RB Offset   |
|   |                    |                | 19150               | 10 MHz  | QPSK               | 1 RB / 49 RB Offset<br>50 RB / 0 RB Offset  |
|   |                    | 18675 to 19125 | 18675               | 15 MHz  | QPSK               | 1 RB / 0 RB Offset<br>75 RB / 0 RB Offset   |
|   |                    |                | 19125               | 15 MHz  | QPSK               | 1 RB / 74 RB Offset<br>75 RB / 0 RB Offset  |
|   |                    | 18700 to 19100 | 18700               | 20 MHz  | QPSK               | 1 RB / 0 RB Offset<br>100 RB / 0 RB Offset  |
|   |                    |                | 19100               | 20 MHz  | QPSK               | 1 RB / 99 RB Offset<br>100 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 / 0 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                          |
| - | Radiated Emission  | 18700 to 19100 | 18700, 18900, 19100 | 20 MHz  | QPSK               | 1 RB / 0 RB Offset                          |

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

## LTE Band 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   |
| -                  | 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 / 7 RB Offset   |
|                    |                       | 26065 to 26665    | 26065, 26365, 26665 | 5 MHz             | QPSK, 16QAM, 64QAM | 1 RB / 12 RB Offset  |
|                    |                       | 26090 to 26640    | 26090, 26365, 26640 | 10 MHz            | QPSK, 16QAM, 64QAM | 1 RB / 24 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 |
| -                  | Band Edge             | 26047 to 26683    | 26047               | 1.4 MHz           | QPSK               | 1 RB / 0 RB Offset   |
|                    |                       |                   |                     |                   |                    | 6 RB / 0 RB Offset   |
|                    |                       |                   | 26683               | 1.4 MHz           | QPSK               | 1 RB / 5 RB Offset   |
|                    |                       |                   |                     |                   |                    | 6 RB / 0 RB Offset   |
|                    |                       | 26055 to 26675    | 26055               | 3 MHz             | QPSK               | 1 RB / 0 RB Offset   |
|                    |                       |                   |                     |                   |                    | 1 RB / 0 RB Offset   |
|                    |                       |                   | 26675               | 3 MHz             | QPSK               | 1 RB / 14 RB Offset  |
|                    |                       |                   |                     |                   |                    | 15 RB / 0 RB Offset  |
|                    |                       | 26065 to 26665    | 26065               | 5 MHz             | QPSK               | 1 RB / 0 RB Offset   |
|                    |                       |                   |                     |                   |                    | 25 RB / 0 RB Offset  |
|                    |                       |                   | 26665               | 5 MHz             | QPSK               | 1 RB / 24 RB Offset  |
|                    |                       |                   |                     |                   |                    | 25 RB / 0 RB Offset  |

|                |                    |                    |                     |                     |                      |                     |                      |
|----------------|--------------------|--------------------|---------------------|---------------------|----------------------|---------------------|----------------------|
|                |                    | 26090 to 26640     | 26090               | 10 MHz              | QPSK                 | 1 RB / 0 RB Offset  |                      |
|                |                    |                    |                     |                     |                      | 50 RB / 0 RB Offset |                      |
|                |                    | 26115 to 26615     | 26640               | 10 MHz              | QPSK                 | 1 RB / 49 RB Offset |                      |
|                |                    |                    |                     |                     |                      | 50 RB / 0 RB Offset |                      |
|                |                    |                    | 26140 to 26590      | 26115               | 15 MHz               | QPSK                | 1 RB / 0 RB Offset   |
|                |                    |                    |                     |                     |                      |                     | 75 RB / 0 RB Offset  |
|                |                    | 26615              |                     | 15 MHz              | QPSK                 | 1 RB / 74 RB Offset |                      |
|                |                    |                    |                     |                     |                      |                     | 75 RB / 0 RB Offset  |
|                |                    |                    | 26140               | 20 MHz              | QPSK                 | 1 RB / 0 RB Offset  |                      |
|                |                    |                    |                     |                     |                      |                     | 100 RB / 0 RB Offset |
| 26590          | 20 MHz             | QPSK               |                     | 1 RB / 99 RB Offset |                      |                     |                      |
|                |                    |                    |                     |                     | 100 RB / 0 RB Offset |                     |                      |
|                | EUT Configure Mode | Test Item          | Available Channel   | Tested Channel      | Channel Bandwidth    | Modulation          | Mode                 |
|                | -                  | Conducted Emission | 26047 to 26683      | 26047, 26365, 26683 | 1.4 MHz              | QPSK                | 1 RB / 5 RB Offset   |
| 26055 to 26675 |                    |                    | 26055, 26365, 26675 | 3 MHz               | QPSK                 | 1 RB / 7 RB Offset  |                      |
| 26065 to 26665 |                    |                    | 26065, 26365, 26665 | 5 MHz               | QPSK                 | 1 RB / 12 RB Offset |                      |
| 26090 to 26640 |                    |                    | 26090, 26365, 26640 | 10 MHz              | QPSK                 | 1 RB / 24 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  | 26140 to 26590     | 26140, 26365, 26590 | 20 MHz              | QPSK                 | 1 RB / 0 RB Offset  |                      |

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

**Test Condition:**

| Test Item             | Environmental Conditions | Input Power    | Tested By                 |
|-----------------------|--------------------------|----------------|---------------------------|
| EIRP                  | 26 deg. C, 58 % RH       | 3.6 Vdc        | Wayne Lin                 |
| Frequency Stability   | 26 deg. C, 58 % RH       | 3.6 Vdc        | Wayne Lin                 |
| Occupied Bandwidth    | 26 deg. C, 58 % RH       | 3.6 Vdc        | Wayne Lin                 |
| Band Edge             | 26 deg. C, 58 % RH       | 3.6 Vdc        | Wayne Lin                 |
| Peak to Average Ratio | 26 deg. C, 58 % RH       | 3.6 Vdc        | Wayne Lin                 |
| Conducted Emission    | 26 deg. C, 58 % RH       | 3.6 Vdc        | Wayne Lin                 |
| Radiated Emission     | 25 deg. C, 65 % RH       | 120 Vac, 60 Hz | Getaz Yang / Jisyong Wang |

### **3.4 EUT Operating Conditions**

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

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

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

**FCC 47 CFR Part 2**

**FCC 47 CFR Part 24**

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

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

**ANSI 63.26-2015**

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

## 4 Test Types and Results

### 4.1 Output Power Measurement

#### 4.1.1 Limits of Output Power Measurement

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 1 MHz for GSM, GPRS & EDGE, 5 MHz for WCDMA and CDMA, 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,  $E.R.P \text{ power} = E.I.P.R \text{ power} - 2.15 \text{ dBi}$ .

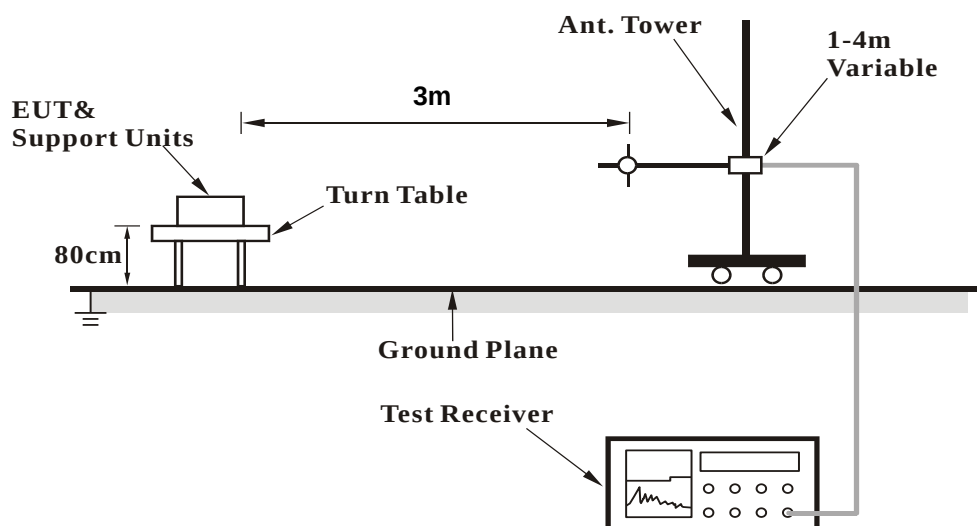
##### **Conducted Power Measurement:**

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.

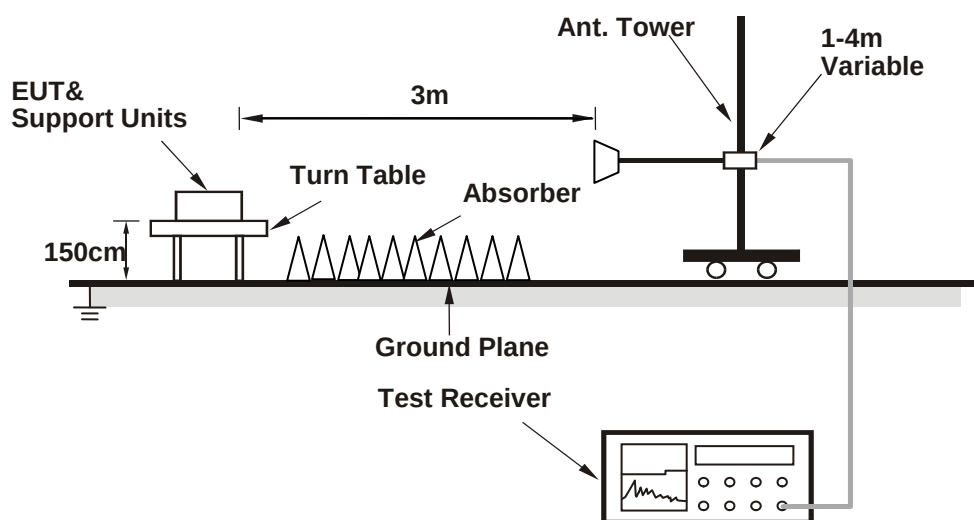
#### 4.1.3 Test Setup

##### EIRP / ERP Measurement:

<Radiated Emission below or equal 1 GHz>

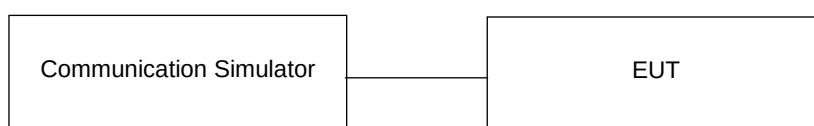


<Radiated Emission above 1 GHz>



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                  | GSM1900 |        |        |
|-----------------------|---------|--------|--------|
| Channel               | 512     | 661    | 810    |
| Frequency (MHz)       | 1850.2  | 1880.0 | 1909.8 |
| GSM (GMSK, 1Tx-slot)  | 30.07   | 30.56  | 30.89  |
| GPRS (GMSK, 1Tx-slot) | 29.62   | 30.11  | 30.44  |
| GPRS (GMSK, 2Tx-slot) | 27.50   | 27.99  | 28.32  |
| GPRS (GMSK, 3Tx-slot) | 25.33   | 25.82  | 26.15  |
| GPRS (GMSK, 4Tx-slot) | 24.06   | 24.55  | 24.88  |
| EDGE (8PSK, 1Tx-slot) | 26.90   | 27.39  | 27.72  |
| EDGE (8PSK, 2Tx-slot) | 23.88   | 24.37  | 24.70  |
| EDGE (8PSK, 3Tx-slot) | 22.03   | 22.52  | 22.85  |
| EDGE (8PSK, 4Tx-slot) | 20.76   | 21.25  | 21.58  |

| Band            | WCDMA II |        |        |
|-----------------|----------|--------|--------|
| Channel         | 9262     | 9400   | 9538   |
| Frequency (MHz) | 1852.4   | 1880.0 | 1907.6 |
| RMC 12.2K       | 24.01    | 24.15  | 24.18  |
| HSDPA Subtest-1 | 23.00    | 23.14  | 23.17  |
| HSDPA Subtest-2 | 23.05    | 23.19  | 23.22  |
| HSDPA Subtest-3 | 22.52    | 22.66  | 22.69  |
| HSDPA Subtest-4 | 22.53    | 22.67  | 22.70  |
| HSUPA Subtest-1 | 23.01    | 23.15  | 23.18  |
| HSUPA Subtest-2 | 21.05    | 21.19  | 21.22  |
| HSUPA Subtest-3 | 22.13    | 22.27  | 22.30  |
| HSUPA Subtest-4 | 21.02    | 21.16  | 21.19  |
| HSUPA Subtest-5 | 23.06    | 23.20  | 23.23  |

| Band              | CDMA    |       |         |
|-------------------|---------|-------|---------|
| Channel           | 25      | 600   | 1175    |
| Frequency (MHz)   | 1851.25 | 1880  | 1908.75 |
| RC1+SO55          | 23.83   | 23.82 | 23.88   |
| RC3+SO55          | 23.90   | 23.78 | 23.84   |
| RC3+SO32 (+F-SCH) | 23.87   | 23.79 | 23.85   |
| RC3+SO32 (+SCH)   | 23.88   | 23.77 | 23.83   |
| RTAP 153.6        | 23.89   | 23.78 | 23.84   |
| RETAP 4096        | 23.73   | 23.62 | 23.68   |

| 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         | 24.77  | 24.90  | 24.81  | 0             | 15M  | QPSK      | 1               | 0         | 24.70  | 24.89  | 24.74  | 0             |
|            |           | 1               | 50        | 24.72  | 24.73  | 24.42  | 0             |      |           | 1               | 37        | 24.65  | 24.66  | 24.35  | 0             |
|            |           | 1               | 99        | 24.51  | 24.70  | 24.57  | 0             |      |           | 1               | 74        | 24.44  | 24.63  | 24.50  | 0             |
|            |           | 50              | 0         | 23.80  | 23.82  | 23.76  | 1             |      |           | 36              | 0         | 23.73  | 23.75  | 23.69  | 1             |
|            |           | 50              | 25        | 23.75  | 23.78  | 23.70  | 1             |      |           | 36              | 19        | 23.68  | 23.71  | 23.63  | 1             |
|            |           | 50              | 50        | 23.51  | 23.81  | 23.59  | 1             |      |           | 36              | 39        | 23.44  | 23.74  | 23.52  | 1             |
|            |           | 100             | 0         | 23.73  | 23.79  | 23.77  | 1             |      |           | 75              | 0         | 23.66  | 23.72  | 23.70  | 1             |
|            |           | 1               | 0         | 23.87  | 23.88  | 23.90  | 1             |      | 16QAM     | 1               | 0         | 23.80  | 23.90  | 23.84  | 1             |
|            | 16QAM     | 1               | 50        | 23.89  | 23.90  | 23.82  | 1             |      |           | 1               | 37        | 23.84  | 23.84  | 23.75  | 1             |
|            |           | 1               | 99        | 23.48  | 23.85  | 23.86  | 1             |      |           | 1               | 74        | 23.41  | 23.78  | 23.79  | 1             |
|            |           | 50              | 0         | 22.74  | 22.83  | 22.68  | 2             |      |           | 36              | 0         | 22.67  | 22.76  | 22.61  | 2             |
|            |           | 50              | 25        | 22.67  | 22.81  | 22.58  | 2             |      |           | 36              | 19        | 22.60  | 22.74  | 22.51  | 2             |
|            |           | 50              | 50        | 22.69  | 22.72  | 22.60  | 2             |      |           | 36              | 39        | 22.62  | 22.65  | 22.53  | 2             |
|            |           | 100             | 0         | 22.57  | 22.61  | 22.63  | 2             |      |           | 75              | 0         | 22.50  | 22.54  | 22.56  | 2             |
|            |           | 1               | 0         | 22.88  | 22.89  | 22.90  | 2             |      | 64QAM     | 1               | 0         | 22.81  | 22.90  | 22.85  | 2             |
|            | 64QAM     | 1               | 50        | 22.90  | 22.90  | 22.83  | 2             |      |           | 1               | 37        | 22.85  | 22.85  | 22.76  | 2             |
|            |           | 1               | 99        | 22.49  | 22.86  | 22.87  | 2             |      |           | 1               | 74        | 22.42  | 22.79  | 22.80  | 2             |
|            |           | 50              | 0         | 21.75  | 21.84  | 21.69  | 3             |      |           | 36              | 0         | 21.68  | 21.77  | 21.62  | 3             |
|            |           | 50              | 25        | 21.68  | 21.82  | 21.59  | 3             |      |           | 36              | 19        | 21.61  | 21.75  | 21.52  | 3             |
|            |           | 50              | 50        | 21.70  | 21.73  | 21.61  | 3             |      |           | 36              | 39        | 21.63  | 21.66  | 21.54  | 3             |
|            |           | 100             | 0         | 21.58  | 21.62  | 21.64  | 3             |      |           | 75              | 0         | 21.51  | 21.55  | 21.57  | 3             |
|            |           | 1               | 0         | 21.88  | 21.89  | 21.90  | 3             |      |           | 1               | 0         | 21.81  | 21.90  | 21.85  | 3             |
| 10M        | QPSK      | 1               | 0         | 24.64  | 24.85  | 24.68  | 0             | 5M   | QPSK      | 1               | 0         | 24.56  | 24.77  | 24.60  | 0             |
|            |           | 1               | 24        | 24.59  | 24.60  | 24.29  | 0             |      |           | 1               | 12        | 24.51  | 24.52  | 24.21  | 0             |
|            |           | 1               | 49        | 24.38  | 24.57  | 24.44  | 0             |      |           | 1               | 24        | 24.30  | 24.49  | 24.36  | 0             |
|            |           | 25              | 0         | 23.67  | 23.69  | 23.63  | 1             |      |           | 12              | 0         | 23.59  | 23.61  | 23.55  | 1             |
|            |           | 25              | 12        | 23.62  | 23.65  | 23.57  | 1             |      |           | 12              | 6         | 23.54  | 23.57  | 23.49  | 1             |
|            |           | 25              | 25        | 23.38  | 23.68  | 23.46  | 1             |      |           | 12              | 13        | 23.30  | 23.60  | 23.38  | 1             |
|            |           | 50              | 0         | 23.60  | 23.66  | 23.64  | 1             |      |           | 25              | 0         | 23.52  | 23.58  | 23.56  | 1             |
|            |           | 1               | 0         | 23.74  | 23.85  | 23.78  | 1             |      | 16QAM     | 1               | 0         | 23.66  | 23.77  | 23.70  | 1             |
|            | 16QAM     | 1               | 24        | 23.78  | 23.78  | 23.69  | 1             |      |           | 1               | 12        | 23.70  | 23.70  | 23.61  | 1             |
|            |           | 1               | 49        | 23.35  | 23.72  | 23.73  | 1             |      |           | 1               | 24        | 23.27  | 23.64  | 23.65  | 1             |
|            |           | 25              | 0         | 22.61  | 22.70  | 22.55  | 2             |      |           | 12              | 0         | 22.53  | 22.62  | 22.47  | 2             |
|            |           | 25              | 12        | 22.54  | 22.68  | 22.45  | 2             |      |           | 12              | 6         | 22.46  | 22.60  | 22.37  | 2             |
|            |           | 25              | 25        | 22.56  | 22.59  | 22.47  | 2             |      |           | 12              | 13        | 22.48  | 22.51  | 22.39  | 2             |
|            |           | 50              | 0         | 22.44  | 22.48  | 22.50  | 2             |      |           | 25              | 0         | 22.36  | 22.40  | 22.42  | 2             |
|            |           | 1               | 0         | 22.75  | 22.86  | 22.79  | 2             |      | 64QAM     | 1               | 0         | 22.67  | 22.78  | 22.71  | 2             |
|            | 64QAM     | 1               | 24        | 22.79  | 22.79  | 22.70  | 2             |      |           | 1               | 12        | 22.71  | 22.71  | 22.62  | 2             |
|            |           | 1               | 49        | 22.36  | 22.73  | 22.74  | 2             |      |           | 1               | 24        | 22.28  | 22.65  | 22.66  | 2             |
|            |           | 25              | 0         | 21.62  | 21.71  | 21.56  | 3             |      |           | 12              | 0         | 21.54  | 21.63  | 21.48  | 3             |
|            |           | 25              | 12        | 21.55  | 21.69  | 21.46  | 3             |      |           | 12              | 6         | 21.47  | 21.61  | 21.38  | 3             |
|            |           | 25              | 25        | 21.57  | 21.60  | 21.48  | 3             |      |           | 12              | 13        | 21.49  | 21.52  | 21.40  | 3             |
|            |           | 50              | 0         | 21.45  | 21.49  | 21.51  | 3             |      |           | 25              | 0         | 21.37  | 21.41  | 21.43  | 3             |
|            |           | 1               | 0         | 21.88  | 21.89  | 21.90  | 3             |      |           | 1               | 0         | 21.81  | 21.90  | 21.85  | 3             |
| 3M         | QPSK      | 1               | 0         | 24.49  | 24.70  | 24.53  | 0             | 1.4M | QPSK      | 1               | 0         | 24.41  | 24.62  | 24.45  | 0             |
|            |           | 1               | 7         | 24.44  | 24.45  | 24.14  | 0             |      |           | 1               | 2         | 24.36  | 24.37  | 24.06  | 0             |
|            |           | 1               | 14        | 24.23  | 24.42  | 24.29  | 0             |      |           | 1               | 5         | 24.15  | 24.34  | 24.21  | 0             |
|            |           | 8               | 0         | 23.52  | 23.54  | 23.48  | 1             |      |           | 3               | 0         | 23.44  | 23.46  | 23.40  | 0             |
|            |           | 8               | 3         | 23.47  | 23.50  | 23.42  | 1             |      |           | 3               | 1         | 23.39  | 23.42  | 23.34  | 0             |
|            |           | 8               | 7         | 23.23  | 23.53  | 23.31  | 1             |      |           | 3               | 3         | 23.15  | 23.45  | 23.23  | 0             |
|            |           | 15              | 0         | 23.45  | 23.51  | 23.49  | 1             |      |           | 6               | 0         | 23.37  | 23.43  | 23.41  | 1             |
|            |           | 1               | 0         | 23.59  | 23.70  | 23.63  | 1             |      | 16QAM     | 1               | 0         | 23.51  | 23.62  | 23.55  | 1             |
|            | 16QAM     | 1               | 7         | 23.63  | 23.63  | 23.54  | 1             |      |           | 1               | 2         | 23.55  | 23.55  | 23.46  | 1             |
|            |           | 1               | 14        | 23.20  | 23.57  | 23.58  | 1             |      |           | 1               | 5         | 23.12  | 23.49  | 23.50  | 1             |
|            |           | 8               | 0         | 22.46  | 22.55  | 22.40  | 2             |      |           | 3               | 0         | 22.38  | 22.47  | 22.32  | 1             |
|            |           | 8               | 3         | 22.39  | 22.53  | 22.30  | 2             |      |           | 3               | 1         | 22.31  | 22.45  | 22.22  | 1             |
|            |           | 8               | 7         | 22.41  | 22.44  | 22.32  | 2             |      |           | 3               | 3         | 22.33  | 22.36  | 22.24  | 1             |
|            |           | 15              | 0         | 22.29  | 22.33  | 22.35  | 2             |      |           | 6               | 0         | 22.21  | 22.25  | 22.27  | 2             |
|            |           | 1               | 0         | 22.60  | 22.71  | 22.64  | 2             |      | 64QAM     | 1               | 0         | 22.52  | 22.63  | 22.56  | 2             |
|            | 64QAM     | 1               | 7         | 22.64  | 22.64  | 22.55  | 2             |      |           | 1               | 2         | 22.56  | 22.56  | 22.47  | 2             |
|            |           | 1               | 14        | 22.21  | 22.58  | 22.59  | 2             |      |           | 1               | 5         | 22.13  | 22.50  | 22.51  | 2             |
|            |           | 8               | 0         | 21.47  | 21.56  | 21.41  | 3             |      |           | 3               | 0         | 21.39  | 21.48  | 21.33  | 2             |
|            |           | 8               | 3         | 21.40  | 21.54  | 21.31  | 3             |      |           | 3               | 1         | 21.32  | 21.46  | 21.23  | 2             |
|            |           | 8               | 7         | 21.42  | 21.45  | 21.33  | 3             |      |           | 3               | 3         | 21.34  | 21.37  | 21.25  | 2             |
|            |           | 15              | 0         | 21.30  | 21.34  | 21.36  | 3             |      |           | 6               | 0         | 21.22  | 21.26  | 21.28  | 3             |
|            |           | 1               | 0         | 21.88  | 21.89  | 21.90  | 3             |      |           | 1               | 0         | 21.81  | 21.90  | 21.85  | 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         | 23.55  | 23.33  | 23.22  | 0             | 15M  | QPSK      | 1               | 0         | 23.47  | 23.25  | 23.14  | 0             |
|             |           | 1               | 50        | 23.21  | 23.17  | 22.99  | 0             |      |           | 1               | 37        | 23.13  | 23.09  | 22.91  | 0             |
|             |           | 1               | 99        | 23.17  | 23.22  | 23.04  | 0             |      |           | 1               | 74        | 23.09  | 23.14  | 22.96  | 0             |
|             |           | 50              | 0         | 22.38  | 22.31  | 22.19  | 1             |      |           | 36              | 0         | 22.30  | 22.23  | 22.11  | 1             |
|             |           | 50              | 25        | 22.36  | 22.34  | 22.19  | 1             |      |           | 36              | 19        | 22.28  | 22.26  | 22.11  | 1             |
|             |           | 50              | 50        | 22.22  | 22.27  | 22.15  | 1             |      |           | 36              | 39        | 22.14  | 22.19  | 22.07  | 1             |
|             |           | 100             | 0         | 22.32  | 22.31  | 22.18  | 1             |      |           | 75              | 0         | 22.24  | 22.23  | 22.10  | 1             |
|             |           | 1               | 0         | 22.47  | 22.51  | 22.65  | 1             |      | 16QAM     | 1               | 0         | 22.39  | 22.43  | 22.57  | 1             |
|             | 16QAM     | 1               | 50        | 22.49  | 22.61  | 22.06  | 1             |      |           | 1               | 37        | 22.41  | 22.53  | 21.98  | 1             |
|             |           | 1               | 99        | 22.28  | 22.69  | 22.01  | 1             |      |           | 1               | 74        | 22.20  | 22.61  | 21.93  | 1             |
|             |           | 50              | 0         | 21.32  | 21.38  | 21.30  | 2             |      |           | 36              | 0         | 21.24  | 21.30  | 21.22  | 2             |
|             |           | 50              | 25        | 21.22  | 21.22  | 21.17  | 2             |      |           | 36              | 19        | 21.14  | 21.14  | 21.09  | 2             |
|             |           | 50              | 50        | 21.10  | 21.11  | 21.11  | 2             |      |           | 36              | 39        | 21.02  | 21.03  | 21.03  | 2             |
|             |           | 100             | 0         | 21.34  | 21.36  | 21.24  | 2             |      |           | 75              | 0         | 21.26  | 21.28  | 21.16  | 2             |
|             |           | 1               | 0         | 21.68  | 21.72  | 21.71  | 2             |      | 64QAM     | 1               | 0         | 21.60  | 21.64  | 21.63  | 2             |
|             | 64QAM     | 1               | 50        | 21.67  | 21.71  | 21.70  | 2             |      |           | 1               | 37        | 21.59  | 21.63  | 21.62  | 2             |
|             |           | 1               | 99        | 21.62  | 21.66  | 21.65  | 2             |      |           | 1               | 74        | 21.54  | 21.58  | 21.57  | 2             |
|             |           | 50              | 0         | 20.51  | 20.55  | 20.54  | 3             |      |           | 36              | 0         | 20.43  | 20.47  | 20.46  | 3             |
|             |           | 50              | 25        | 20.52  | 20.56  | 20.55  | 3             |      |           | 36              | 19        | 20.44  | 20.48  | 20.47  | 3             |
|             |           | 50              | 50        | 20.51  | 20.55  | 20.54  | 3             |      |           | 36              | 39        | 20.43  | 20.47  | 20.46  | 3             |
|             |           | 100             | 0         | 20.49  | 20.53  | 20.52  | 3             |      |           | 75              | 0         | 20.41  | 20.45  | 20.44  | 3             |
| 10M         | QPSK      | 1               | 0         | 23.38  | 23.16  | 23.05  | 0             | 5M   | QPSK      | 1               | 0         | 23.30  | 23.08  | 22.97  | 0             |
|             |           | 1               | 24        | 23.04  | 23.00  | 22.82  | 0             |      |           | 1               | 12        | 22.96  | 22.92  | 22.74  | 0             |
|             |           | 1               | 49        | 23.00  | 23.05  | 22.87  | 0             |      |           | 1               | 24        | 22.92  | 22.97  | 22.79  | 0             |
|             |           | 25              | 0         | 22.21  | 22.14  | 22.02  | 1             |      |           | 12              | 0         | 22.13  | 22.06  | 21.94  | 1             |
|             |           | 25              | 12        | 22.19  | 22.17  | 22.02  | 1             |      |           | 12              | 6         | 22.11  | 22.09  | 21.94  | 1             |
|             |           | 25              | 25        | 22.05  | 22.10  | 21.98  | 1             |      |           | 12              | 13        | 21.97  | 22.02  | 21.90  | 1             |
|             |           | 50              | 0         | 22.15  | 22.14  | 22.01  | 1             |      |           | 25              | 0         | 22.07  | 22.06  | 21.93  | 1             |
|             |           | 1               | 0         | 22.30  | 22.34  | 22.48  | 1             |      | 16QAM     | 1               | 0         | 22.22  | 22.26  | 22.40  | 1             |
|             | 16QAM     | 1               | 24        | 22.32  | 22.44  | 21.89  | 1             |      |           | 1               | 12        | 22.24  | 22.36  | 21.81  | 1             |
|             |           | 1               | 49        | 22.11  | 22.52  | 21.84  | 1             |      |           | 1               | 24        | 22.03  | 22.44  | 21.76  | 1             |
|             |           | 25              | 0         | 21.15  | 21.21  | 21.13  | 2             |      |           | 12              | 0         | 21.07  | 21.13  | 21.05  | 2             |
|             |           | 25              | 12        | 21.05  | 21.05  | 21.00  | 2             |      |           | 12              | 6         | 20.97  | 20.97  | 20.92  | 2             |
|             |           | 25              | 25        | 20.93  | 20.94  | 20.94  | 2             |      |           | 12              | 13        | 20.85  | 20.86  | 20.86  | 2             |
|             |           | 50              | 0         | 21.17  | 21.19  | 21.07  | 2             |      |           | 25              | 0         | 21.09  | 21.11  | 20.99  | 2             |
|             |           | 1               | 0         | 21.55  | 21.59  | 21.58  | 2             |      | 64QAM     | 1               | 0         | 21.49  | 21.53  | 21.52  | 2             |
|             | 64QAM     | 1               | 24        | 21.54  | 21.58  | 21.57  | 2             |      |           | 1               | 12        | 21.48  | 21.52  | 21.51  | 2             |
|             |           | 1               | 49        | 21.49  | 21.53  | 21.52  | 2             |      |           | 1               | 24        | 21.43  | 21.47  | 21.46  | 2             |
|             |           | 25              | 0         | 20.38  | 20.42  | 20.41  | 3             |      |           | 12              | 0         | 20.32  | 20.36  | 20.35  | 3             |
|             |           | 25              | 12        | 20.39  | 20.43  | 20.42  | 3             |      |           | 12              | 6         | 20.33  | 20.37  | 20.36  | 3             |
|             |           | 25              | 25        | 20.38  | 20.42  | 20.41  | 3             |      |           | 12              | 13        | 20.32  | 20.36  | 20.35  | 3             |
|             |           | 50              | 0         | 20.36  | 20.40  | 20.39  | 3             |      |           | 25              | 0         | 20.30  | 20.34  | 20.33  | 3             |
| 3M          | QPSK      | 1               | 0         | 23.22  | 23.00  | 22.89  | 0             | 1.4M | QPSK      | 1               | 0         | 23.17  | 22.95  | 22.84  | 0             |
|             |           | 1               | 7         | 22.88  | 22.84  | 22.66  | 0             |      |           | 1               | 2         | 22.83  | 22.79  | 22.61  | 0             |
|             |           | 1               | 14        | 22.84  | 22.89  | 22.71  | 0             |      |           | 1               | 5         | 22.79  | 22.84  | 22.66  | 0             |
|             |           | 8               | 0         | 22.05  | 21.98  | 21.86  | 1             |      |           | 3               | 0         | 22.15  | 22.22  | 22.21  | 0             |
|             |           | 8               | 3         | 22.03  | 22.01  | 21.86  | 1             |      |           | 3               | 1         | 22.14  | 22.21  | 22.19  | 0             |
|             |           | 8               | 7         | 21.89  | 21.94  | 21.82  | 1             |      |           | 3               | 3         | 22.13  | 22.22  | 22.21  | 0             |
|             |           | 15              | 0         | 21.99  | 21.98  | 21.85  | 1             |      |           | 6               | 0         | 21.94  | 21.93  | 21.80  | 1             |
|             |           | 1               | 0         | 22.14  | 22.18  | 22.32  | 1             |      | 16QAM     | 1               | 0         | 22.09  | 22.13  | 22.27  | 1             |
|             | 16QAM     | 1               | 7         | 22.16  | 22.28  | 21.73  | 1             |      |           | 1               | 2         | 22.11  | 22.23  | 21.68  | 1             |
|             |           | 1               | 14        | 21.95  | 22.36  | 21.68  | 1             |      |           | 1               | 5         | 21.90  | 22.31  | 21.63  | 1             |
|             |           | 8               | 0         | 20.99  | 21.05  | 20.97  | 2             |      |           | 3               | 0         | 21.22  | 21.23  | 22.00  | 1             |
|             |           | 8               | 3         | 20.89  | 20.89  | 20.84  | 2             |      |           | 3               | 1         | 21.18  | 21.18  | 21.56  | 1             |
|             |           | 8               | 7         | 20.77  | 20.78  | 20.78  | 2             |      |           | 3               | 3         | 22.15  | 21.15  | 21.43  | 1             |
|             |           | 15              | 0         | 21.01  | 21.03  | 20.91  | 2             |      |           | 6               | 0         | 20.96  | 20.98  | 20.86  | 2             |
|             |           | 1               | 0         | 21.43  | 21.47  | 21.46  | 2             |      | 64QAM     | 1               | 0         | 21.38  | 21.42  | 21.41  | 2             |
|             | 64QAM     | 1               | 7         | 21.42  | 21.46  | 21.45  | 2             |      |           | 1               | 2         | 21.37  | 21.41  | 21.40  | 2             |
|             |           | 1               | 14        | 21.37  | 21.41  | 21.40  | 2             |      |           | 1               | 5         | 21.32  | 21.36  | 21.35  | 2             |
|             |           | 8               | 0         | 20.26  | 20.30  | 20.29  | 3             |      |           | 3               | 0         | 20.21  | 20.25  | 20.24  | 2             |
|             |           | 8               | 3         | 20.27  | 20.31  | 20.30  | 3             |      |           | 3               | 1         | 20.22  | 20.26  | 20.25  | 2             |
|             |           | 8               | 7         | 20.26  | 20.30  | 20.29  | 3             |      |           | 3               | 3         | 20.21  | 20.25  | 20.24  | 2             |
|             |           | 15              | 0         | 20.24  | 20.28  | 20.27  | 3             |      |           | 6               | 0         | 20.19  | 20.23  | 20.22  | 3             |

### EIRP Power (dBm)

| GSM   |         |                 |           |                        |            |           |                    |
|-------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Plane | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Y     | 512     | 1850.2          | -16.34    | 36.57                  | 20.23      | 105.49    | H                  |
|       | 661     | 1880.0          | -16.42    | 37.22                  | 20.80      | 120.34    |                    |
|       | 810     | 1909.8          | -16.28    | 37.18                  | 20.90      | 123.08    |                    |
|       | 512     | 1850.2          | -7.89     | 37.65                  | 29.76      | 946.46    | V                  |
|       | 661     | 1880.0          | -8.05     | 37.58                  | 29.53      | 898.05    |                    |
|       | 810     | 1909.8          | -7.76     | 37.48                  | 29.72      | 937.56    |                    |

| EDGE  |         |                 |           |                        |            |           |                    |
|-------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Plane | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Y     | 512     | 1850.2          | -17.33    | 36.57                  | 19.24      | 83.98     | H                  |
|       | 661     | 1880.0          | -17.36    | 37.22                  | 19.86      | 96.92     |                    |
|       | 810     | 1909.8          | -17.15    | 37.18                  | 20.03      | 100.74    |                    |
|       | 512     | 1850.2          | -11.84    | 37.65                  | 25.81      | 381.15    | V                  |
|       | 661     | 1880.0          | -11.93    | 37.58                  | 25.65      | 367.54    |                    |
|       | 810     | 1909.8          | -11.76    | 37.48                  | 25.72      | 373.25    |                    |

| WCDMA |         |                 |           |                        |            |           |                    |
|-------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Plane | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Y     | 9262    | 1852.4          | -20.33    | 36.57                  | 16.24      | 42.09     | H                  |
|       | 9400    | 1880.0          | -20.41    | 37.22                  | 16.81      | 48.02     |                    |
|       | 9538    | 1907.6          | -20.34    | 37.18                  | 16.84      | 48.33     |                    |
|       | 9262    | 1852.4          | -14.54    | 37.65                  | 23.11      | 204.69    | V                  |
|       | 9400    | 1880.0          | -14.76    | 37.58                  | 22.82      | 191.56    |                    |
|       | 9538    | 1907.6          | -14.64    | 37.48                  | 22.84      | 192.31    |                    |

| CDMA  |         |                 |           |                        |            |           |                    |
|-------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Plane | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Y     | 25      | 1851.25         | -18.47    | 36.57                  | 18.10      | 64.60     | H                  |
|       | 600     | 1880.00         | -18.55    | 37.22                  | 18.67      | 73.69     |                    |
|       | 1175    | 1908.75         | -18.24    | 37.18                  | 18.94      | 78.38     |                    |
|       | 25      | 1851.25         | -14.76    | 37.65                  | 22.89      | 194.58    | V                  |
|       | 600     | 1880.00         | -14.81    | 37.58                  | 22.77      | 189.37    |                    |
|       | 1175    | 1908.75         | -14.55    | 37.48                  | 22.93      | 196.34    |                    |

| LTE Band 2                         |         |                 |           |                        |            |           |                    |
|------------------------------------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 1.4 MHz / QPSK  |         |                 |           |                        |            |           |                    |
| Plane                              | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Y                                  | 18607   | 1850.7          | -18.69    | 36.57                  | 17.88      | 61.40     | H                  |
|                                    | 18900   | 1880.0          | -18.95    | 37.22                  | 18.27      | 67.14     |                    |
|                                    | 19193   | 1909.3          | -18.79    | 37.18                  | 18.40      | 69.12     |                    |
|                                    | 18607   | 1850.7          | -14.33    | 37.65                  | 23.32      | 214.78    | V                  |
|                                    | 18900   | 1880.0          | -14.03    | 37.58                  | 23.55      | 226.46    |                    |
|                                    | 19193   | 1909.3          | -13.62    | 37.48                  | 23.86      | 243.22    |                    |
| Channel Bandwidth: 1.4 MHz / 16QAM |         |                 |           |                        |            |           |                    |
| Y                                  | 18607   | 1850.7          | -19.78    | 36.57                  | 16.79      | 47.77     | H                  |
|                                    | 18900   | 1880.0          | -20.04    | 37.22                  | 17.18      | 52.24     |                    |
|                                    | 19193   | 1909.3          | -19.88    | 37.18                  | 17.31      | 53.78     |                    |
|                                    | 18607   | 1850.7          | -15.36    | 37.65                  | 22.29      | 169.43    | V                  |
|                                    | 18900   | 1880.0          | -15.09    | 37.58                  | 22.49      | 177.42    |                    |
|                                    | 19193   | 1909.3          | -14.65    | 37.48                  | 22.83      | 191.87    |                    |
| Channel Bandwidth: 1.4 MHz / 64QAM |         |                 |           |                        |            |           |                    |
| Y                                  | 18607   | 1850.7          | -20.86    | 36.57                  | 15.71      | 37.26     | H                  |
|                                    | 18900   | 1880.0          | -21.09    | 37.22                  | 16.13      | 41.02     |                    |
|                                    | 19193   | 1909.3          | -20.91    | 37.18                  | 16.28      | 42.42     |                    |
|                                    | 18607   | 1850.7          | -16.41    | 37.65                  | 21.24      | 133.05    | V                  |
|                                    | 18900   | 1880.0          | -16.14    | 37.58                  | 21.44      | 139.32    |                    |
|                                    | 19193   | 1909.3          | -15.74    | 37.48                  | 21.74      | 149.28    |                    |

| LTE Band 2                       |         |                 |           |                        |            |           |                    |
|----------------------------------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 3 MHz / QPSK  |         |                 |           |                        |            |           |                    |
| Plane                            | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Y                                | 18615   | 1851.5          | -18.62    | 36.57                  | 17.95      | 62.40     | H                  |
|                                  | 18900   | 1880.0          | -18.90    | 37.22                  | 18.32      | 67.92     |                    |
|                                  | 19185   | 1908.5          | -18.66    | 37.18                  | 18.53      | 71.22     |                    |
|                                  | 18615   | 1851.5          | -14.20    | 37.65                  | 23.45      | 221.31    | V                  |
|                                  | 18900   | 1880.0          | -13.95    | 37.58                  | 23.63      | 230.67    |                    |
|                                  | 19185   | 1908.5          | -13.56    | 37.48                  | 23.92      | 246.60    |                    |
| Channel Bandwidth: 3 MHz / 16QAM |         |                 |           |                        |            |           |                    |
| Y                                | 18615   | 1851.5          | -19.67    | 36.57                  | 16.90      | 49.00     | H                  |
|                                  | 18900   | 1880.0          | -19.96    | 37.22                  | 17.26      | 53.21     |                    |
|                                  | 19185   | 1908.5          | -19.73    | 37.18                  | 17.46      | 55.67     |                    |
|                                  | 18615   | 1851.5          | -15.22    | 37.65                  | 22.43      | 174.98    | V                  |
|                                  | 18900   | 1880.0          | -15.02    | 37.58                  | 22.56      | 180.30    |                    |
|                                  | 19185   | 1908.5          | -14.65    | 37.48                  | 22.83      | 191.87    |                    |
| Channel Bandwidth: 3 MHz / 64QAM |         |                 |           |                        |            |           |                    |
| Y                                | 18615   | 1851.5          | -20.78    | 36.57                  | 15.79      | 37.95     | H                  |
|                                  | 18900   | 1880.0          | -21.00    | 37.22                  | 16.22      | 41.88     |                    |
|                                  | 19185   | 1908.5          | -20.77    | 37.18                  | 16.42      | 43.81     |                    |
|                                  | 18615   | 1851.5          | -16.27    | 37.65                  | 21.38      | 137.40    | V                  |
|                                  | 18900   | 1880.0          | -16.11    | 37.58                  | 21.47      | 140.28    |                    |
|                                  | 19185   | 1908.5          | -15.68    | 37.48                  | 21.80      | 151.36    |                    |

| LTE Band 2                       |         |                 |           |                        |            |           |                    |
|----------------------------------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 5 MHz / QPSK  |         |                 |           |                        |            |           |                    |
| Plane                            | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Y                                | 18625   | 1852.5          | -18.44    | 36.57                  | 18.13      | 65.04     | H                  |
|                                  | 18900   | 1880.0          | -18.73    | 37.22                  | 18.49      | 70.63     |                    |
|                                  | 19175   | 1907.5          | -18.49    | 37.18                  | 18.70      | 74.06     |                    |
|                                  | 18625   | 1852.5          | -14.03    | 37.65                  | 23.62      | 230.14    | V                  |
|                                  | 18900   | 1880.0          | -13.78    | 37.58                  | 23.80      | 239.88    |                    |
|                                  | 19175   | 1907.5          | -13.36    | 37.48                  | 24.12      | 258.23    |                    |
| Channel Bandwidth: 5 MHz / 16QAM |         |                 |           |                        |            |           |                    |
| Y                                | 18625   | 1852.5          | -19.58    | 36.57                  | 16.99      | 50.03     | H                  |
|                                  | 18900   | 1880.0          | -19.86    | 37.22                  | 17.36      | 54.45     |                    |
|                                  | 19175   | 1907.5          | -19.60    | 37.18                  | 17.59      | 57.36     |                    |
|                                  | 18625   | 1852.5          | -15.16    | 37.65                  | 22.49      | 177.42    | V                  |
|                                  | 18900   | 1880.0          | -14.80    | 37.58                  | 22.78      | 189.67    |                    |
|                                  | 19175   | 1907.5          | -14.48    | 37.48                  | 23.00      | 199.53    |                    |
| Channel Bandwidth: 5 MHz / 64QAM |         |                 |           |                        |            |           |                    |
| Y                                | 18625   | 1852.5          | -20.72    | 36.57                  | 15.85      | 38.48     | H                  |
|                                  | 18900   | 1880.0          | -20.85    | 37.22                  | 16.37      | 43.35     |                    |
|                                  | 19175   | 1907.5          | -20.26    | 37.18                  | 16.93      | 49.27     |                    |
|                                  | 18625   | 1852.5          | -16.33    | 37.65                  | 21.32      | 135.52    | V                  |
|                                  | 18900   | 1880.0          | -15.99    | 37.58                  | 21.59      | 144.21    |                    |
|                                  | 19175   | 1907.5          | -15.70    | 37.48                  | 21.78      | 150.66    |                    |

| LTE Band 2                        |         |                 |           |                        |            |           |                    |
|-----------------------------------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 10 MHz / QPSK  |         |                 |           |                        |            |           |                    |
| Plane                             | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Y                                 | 18650   | 1855.0          | -17.68    | 36.57                  | 18.89      | 77.48     | H                  |
|                                   | 18900   | 1880.0          | -17.94    | 37.22                  | 19.28      | 84.72     |                    |
|                                   | 19150   | 1905.0          | -17.66    | 37.18                  | 19.53      | 89.66     |                    |
|                                   | 18650   | 1855.0          | -13.16    | 37.65                  | 24.49      | 281.19    | V                  |
|                                   | 18900   | 1880.0          | -12.98    | 37.58                  | 24.60      | 288.40    |                    |
|                                   | 19150   | 1905.0          | -12.57    | 37.48                  | 24.91      | 309.74    |                    |
| Channel Bandwidth: 10 MHz / 16QAM |         |                 |           |                        |            |           |                    |
| Y                                 | 18650   | 1855.0          | -18.77    | 36.57                  | 17.80      | 60.28     | H                  |
|                                   | 18900   | 1880.0          | -18.96    | 37.22                  | 18.26      | 66.99     |                    |
|                                   | 19150   | 1905.0          | -18.67    | 37.18                  | 18.52      | 71.06     |                    |
|                                   | 18650   | 1855.0          | -14.25    | 37.65                  | 23.40      | 218.78    | V                  |
|                                   | 18900   | 1880.0          | -14.06    | 37.58                  | 23.52      | 224.91    |                    |
|                                   | 19150   | 1905.0          | -13.60    | 37.48                  | 23.88      | 244.34    |                    |
| Channel Bandwidth: 10 MHz / 64QAM |         |                 |           |                        |            |           |                    |
| Y                                 | 18650   | 1855.0          | -19.86    | 36.57                  | 16.71      | 46.90     | H                  |
|                                   | 18900   | 1880.0          | -19.97    | 37.22                  | 17.25      | 53.09     |                    |
|                                   | 19150   | 1905.0          | -19.69    | 37.18                  | 17.50      | 56.18     |                    |
|                                   | 18650   | 1855.0          | -15.33    | 37.65                  | 22.32      | 170.61    | V                  |
|                                   | 18900   | 1880.0          | -15.11    | 37.58                  | 22.47      | 176.60    |                    |
|                                   | 19150   | 1905.0          | -14.62    | 37.48                  | 22.86      | 193.20    |                    |

| LTE Band 2                        |         |                 |           |                        |            |           |                    |
|-----------------------------------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 15 MHz / QPSK  |         |                 |           |                        |            |           |                    |
| Plane                             | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Y                                 | 18675   | 1857.5          | -17.44    | 36.57                  | 19.13      | 81.88     | H                  |
|                                   | 18900   | 1880.0          | -17.72    | 37.22                  | 19.50      | 89.13     |                    |
|                                   | 19125   | 1902.5          | -17.52    | 37.18                  | 19.67      | 92.60     |                    |
|                                   | 18675   | 1857.5          | -13.06    | 37.65                  | 24.59      | 287.74    | V                  |
|                                   | 18900   | 1880.0          | -12.72    | 37.58                  | 24.86      | 306.20    |                    |
|                                   | 19125   | 1902.5          | -12.41    | 37.48                  | 25.07      | 321.37    |                    |
| Channel Bandwidth: 15 MHz / 16QAM |         |                 |           |                        |            |           |                    |
| Y                                 | 18675   | 1857.5          | -18.53    | 36.57                  | 18.04      | 63.71     | H                  |
|                                   | 18900   | 1880.0          | -18.77    | 37.22                  | 18.45      | 69.98     |                    |
|                                   | 19125   | 1902.5          | -18.61    | 37.18                  | 18.58      | 72.04     |                    |
|                                   | 18675   | 1857.5          | -14.13    | 37.65                  | 23.52      | 224.91    | V                  |
|                                   | 18900   | 1880.0          | -13.79    | 37.58                  | 23.79      | 239.33    |                    |
|                                   | 19125   | 1902.5          | -13.50    | 37.48                  | 23.98      | 250.03    |                    |
| Channel Bandwidth: 15 MHz / 64QAM |         |                 |           |                        |            |           |                    |
| Y                                 | 18675   | 1857.5          | -19.62    | 36.57                  | 16.95      | 49.57     | H                  |
|                                   | 18900   | 1880.0          | -19.81    | 37.22                  | 17.41      | 55.08     |                    |
|                                   | 19125   | 1902.5          | -19.62    | 37.18                  | 17.57      | 57.10     |                    |
|                                   | 18675   | 1857.5          | -15.16    | 37.65                  | 22.49      | 177.42    | V                  |
|                                   | 18900   | 1880.0          | -14.88    | 37.58                  | 22.70      | 186.21    |                    |
|                                   | 19125   | 1902.5          | -14.56    | 37.48                  | 22.92      | 195.88    |                    |

| LTE Band 2                        |         |                 |           |                        |            |           |                    |
|-----------------------------------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 20 MHz / QPSK  |         |                 |           |                        |            |           |                    |
| Plane                             | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Y                                 | 18700   | 1860.0          | -17.25    | 36.57                  | 19.32      | 85.55     | H                  |
|                                   | 18900   | 1880.0          | -17.63    | 37.22                  | 19.59      | 90.99     |                    |
|                                   | 19100   | 1900.0          | -17.39    | 37.18                  | 19.80      | 95.41     |                    |
|                                   | 18700   | 1860.0          | -12.89    | 37.65                  | 24.76      | 299.23    | V                  |
|                                   | 18900   | 1880.0          | -12.62    | 37.58                  | 24.96      | 313.33    |                    |
|                                   | 19100   | 1900.0          | -12.29    | 37.48                  | 25.19      | 330.37    |                    |
| Channel Bandwidth: 20 MHz / 16QAM |         |                 |           |                        |            |           |                    |
| Y                                 | 18700   | 1860.0          | -18.31    | 36.57                  | 18.26      | 67.02     | H                  |
|                                   | 18900   | 1880.0          | -18.68    | 37.22                  | 18.54      | 71.45     |                    |
|                                   | 19100   | 1900.0          | -18.44    | 37.18                  | 18.75      | 74.92     |                    |
|                                   | 18700   | 1860.0          | -13.92    | 37.65                  | 23.73      | 236.05    | V                  |
|                                   | 18900   | 1880.0          | -13.70    | 37.58                  | 23.88      | 244.34    |                    |
|                                   | 19100   | 1900.0          | -13.31    | 37.48                  | 24.17      | 261.22    |                    |
| Channel Bandwidth: 20 MHz / 64QAM |         |                 |           |                        |            |           |                    |
| Y                                 | 18700   | 1860.0          | -19.34    | 36.57                  | 17.23      | 52.87     | H                  |
|                                   | 18900   | 1880.0          | -19.73    | 37.22                  | 17.49      | 56.10     |                    |
|                                   | 19100   | 1900.0          | -19.53    | 37.18                  | 17.66      | 58.29     |                    |
|                                   | 18700   | 1860.0          | -14.95    | 37.65                  | 22.70      | 186.21    | V                  |
|                                   | 18900   | 1880.0          | -14.75    | 37.58                  | 22.83      | 191.87    |                    |
|                                   | 19100   | 1900.0          | -14.36    | 37.48                  | 23.12      | 205.12    |                    |

| LTE Band 25                        |         |                 |           |                        |            |           |                    |
|------------------------------------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 1.4 MHz / QPSK  |         |                 |           |                        |            |           |                    |
| Plane                              | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Y                                  | 26047   | 1850.7          | -22.39    | 36.57                  | 14.18      | 26.19     | H                  |
|                                    | 26365   | 1882.5          | -22.25    | 37.22                  | 14.97      | 31.43     |                    |
|                                    | 26683   | 1914.3          | -23.16    | 39.09                  | 15.93      | 39.17     |                    |
|                                    | 26047   | 1850.7          | -17.68    | 37.65                  | 19.97      | 99.33     | V                  |
|                                    | 26365   | 1882.5          | -16.39    | 37.58                  | 21.19      | 131.61    |                    |
|                                    | 26683   | 1914.3          | -16.66    | 37.92                  | 21.26      | 133.66    |                    |
| Channel Bandwidth: 1.4 MHz / 16QAM |         |                 |           |                        |            |           |                    |
| Y                                  | 26047   | 1850.7          | -22.56    | 36.57                  | 14.01      | 25.19     | H                  |
|                                    | 26365   | 1882.5          | -22.24    | 37.22                  | 14.98      | 31.51     |                    |
|                                    | 26683   | 1914.3          | -23.33    | 38.09                  | 14.76      | 29.92     |                    |
|                                    | 26047   | 1850.7          | -18.88    | 37.65                  | 18.77      | 75.35     | V                  |
|                                    | 26365   | 1882.5          | -17.59    | 37.58                  | 19.99      | 99.84     |                    |
|                                    | 26683   | 1914.3          | -17.86    | 37.92                  | 20.06      | 101.39    |                    |
| Channel Bandwidth: 1.4 MHz / 64QAM |         |                 |           |                        |            |           |                    |
| Y                                  | 26047   | 1850.7          | -22.66    | 36.57                  | 13.91      | 24.62     | H                  |
|                                    | 26365   | 1882.5          | -22.34    | 37.22                  | 14.88      | 30.79     |                    |
|                                    | 26683   | 1914.3          | -23.43    | 38.09                  | 14.66      | 29.24     |                    |
|                                    | 26047   | 1850.7          | -20.38    | 37.65                  | 17.27      | 53.35     | V                  |
|                                    | 26365   | 1882.5          | -18.99    | 37.58                  | 18.59      | 72.33     |                    |
|                                    | 26683   | 1914.3          | -19.06    | 37.92                  | 18.86      | 76.91     |                    |

| LTE Band 25                      |         |                 |           |                        |            |           |                    |
|----------------------------------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 3 MHz / QPSK  |         |                 |           |                        |            |           |                    |
| Plane                            | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Y                                | 26055   | 1851.5          | -22.33    | 36.57                  | 14.24      | 26.56     | H                  |
|                                  | 26365   | 1882.5          | -22.19    | 37.22                  | 15.03      | 31.87     |                    |
|                                  | 26675   | 1913.5          | -23.12    | 39.11                  | 15.99      | 39.72     |                    |
|                                  | 26055   | 1851.5          | -17.38    | 37.65                  | 20.27      | 106.44    | V                  |
|                                  | 26365   | 1882.5          | -16.19    | 37.58                  | 21.39      | 137.82    |                    |
|                                  | 26675   | 1913.5          | -16.36    | 37.93                  | 21.57      | 143.55    |                    |
| Channel Bandwidth: 3 MHz / 16QAM |         |                 |           |                        |            |           |                    |
| Y                                | 26055   | 1851.5          | -22.40    | 36.57                  | 14.17      | 26.13     | H                  |
|                                  | 26365   | 1882.5          | -22.20    | 37.22                  | 15.02      | 31.80     |                    |
|                                  | 26675   | 1913.5          | -23.30    | 38.14                  | 14.84      | 30.48     |                    |
|                                  | 26055   | 1851.5          | -18.68    | 37.65                  | 18.97      | 78.90     | V                  |
|                                  | 26365   | 1882.5          | -17.39    | 37.58                  | 20.19      | 104.54    |                    |
|                                  | 26675   | 1913.5          | -17.66    | 37.93                  | 20.27      | 106.41    |                    |
| Channel Bandwidth: 3 MHz / 64QAM |         |                 |           |                        |            |           |                    |
| Y                                | 26055   | 1851.5          | -22.50    | 36.57                  | 14.07      | 25.54     | H                  |
|                                  | 26365   | 1882.5          | -22.30    | 37.22                  | 14.92      | 31.07     |                    |
|                                  | 26675   | 1913.5          | -23.40    | 38.14                  | 14.74      | 29.79     |                    |
|                                  | 26055   | 1851.5          | -20.08    | 37.65                  | 17.57      | 57.16     | V                  |
|                                  | 26365   | 1882.5          | -18.89    | 37.58                  | 18.69      | 74.01     |                    |
|                                  | 26675   | 1913.5          | -19.06    | 37.93                  | 18.87      | 77.09     |                    |

| LTE Band 25                      |         |                 |           |                        |            |           |                    |
|----------------------------------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 5 MHz / QPSK  |         |                 |           |                        |            |           |                    |
| Plane                            | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Y                                | 26065   | 1852.5          | -22.25    | 36.57                  | 14.32      | 27.05     | H                  |
|                                  | 26365   | 1882.5          | -22.13    | 37.22                  | 15.09      | 32.31     |                    |
|                                  | 26665   | 1912.5          | -23.01    | 38.11                  | 15.10      | 32.36     |                    |
|                                  | 26065   | 1852.5          | -17.08    | 37.65                  | 20.57      | 114.05    | V                  |
|                                  | 26365   | 1882.5          | -15.99    | 37.58                  | 21.59      | 144.31    |                    |
|                                  | 26665   | 1912.5          | -16.09    | 37.96                  | 21.87      | 153.82    |                    |
| Channel Bandwidth: 5 MHz / 16QAM |         |                 |           |                        |            |           |                    |
| Y                                | 26065   | 1852.5          | -22.33    | 36.57                  | 14.24      | 26.56     | H                  |
|                                  | 26365   | 1882.5          | -22.15    | 37.22                  | 15.07      | 32.17     |                    |
|                                  | 26665   | 1912.5          | -23.08    | 38.14                  | 15.06      | 32.06     |                    |
|                                  | 26065   | 1852.5          | -18.38    | 37.65                  | 19.27      | 84.55     | V                  |
|                                  | 26365   | 1882.5          | -17.28    | 37.58                  | 20.30      | 107.23    |                    |
|                                  | 26665   | 1912.5          | -17.35    | 37.96                  | 20.61      | 115.08    |                    |
| Channel Bandwidth: 5 MHz / 64QAM |         |                 |           |                        |            |           |                    |
| Y                                | 26065   | 1852.5          | -22.43    | 36.57                  | 14.14      | 25.95     | H                  |
|                                  | 26365   | 1882.5          | -22.25    | 37.22                  | 14.97      | 31.43     |                    |
|                                  | 26665   | 1912.5          | -23.18    | 38.14                  | 14.96      | 31.33     |                    |
|                                  | 26065   | 1852.5          | -19.88    | 37.65                  | 17.77      | 59.85     | V                  |
|                                  | 26365   | 1882.5          | -18.38    | 37.58                  | 19.20      | 83.23     |                    |
|                                  | 26665   | 1912.5          | -18.65    | 37.96                  | 19.31      | 85.31     |                    |

| LTE Band 25                       |         |                 |           |                        |            |           |                    |
|-----------------------------------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 10 MHz / QPSK  |         |                 |           |                        |            |           |                    |
| Plane                             | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Y                                 | 26090   | 1855.0          | -22.15    | 36.57                  | 14.42      | 27.68     | H                  |
|                                   | 26365   | 1882.5          | -22.03    | 37.22                  | 15.19      | 33.07     |                    |
|                                   | 26640   | 1910.0          | -22.94    | 38.19                  | 15.25      | 33.50     |                    |
|                                   | 26090   | 1855.0          | -16.68    | 37.65                  | 20.97      | 125.05    | V                  |
|                                   | 26365   | 1882.5          | -15.89    | 37.58                  | 21.69      | 147.67    |                    |
|                                   | 26640   | 1910.0          | -15.26    | 37.15                  | 21.89      | 154.53    |                    |
| Channel Bandwidth: 10 MHz / 16QAM |         |                 |           |                        |            |           |                    |
| Y                                 | 26090   | 1855.0          | -22.16    | 36.57                  | 14.41      | 27.62     | H                  |
|                                   | 26365   | 1882.5          | -22.08    | 37.22                  | 15.14      | 32.69     |                    |
|                                   | 26640   | 1910.0          | -22.99    | 38.19                  | 15.20      | 33.11     |                    |
|                                   | 26090   | 1855.0          | -17.78    | 37.65                  | 19.87      | 97.07     | V                  |
|                                   | 26365   | 1882.5          | -16.89    | 37.58                  | 20.69      | 117.30    |                    |
|                                   | 26640   | 1910.0          | -16.76    | 38.15                  | 21.39      | 137.72    |                    |
| Channel Bandwidth: 10 MHz / 64QAM |         |                 |           |                        |            |           |                    |
| Y                                 | 26090   | 1855.0          | -22.26    | 36.57                  | 14.31      | 26.99     | H                  |
|                                   | 26365   | 1882.5          | -22.18    | 37.22                  | 15.04      | 31.94     |                    |
|                                   | 26640   | 1910.0          | -23.09    | 38.19                  | 15.10      | 32.36     |                    |
|                                   | 26090   | 1855.0          | -19.18    | 37.65                  | 18.47      | 70.32     | V                  |
|                                   | 26365   | 1882.5          | -18.29    | 37.58                  | 19.29      | 84.98     |                    |
|                                   | 26640   | 1910.0          | -18.06    | 38.15                  | 20.09      | 102.09    |                    |

| LTE Band 25                       |         |                 |           |                        |            |           |                    |
|-----------------------------------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 15 MHz / QPSK  |         |                 |           |                        |            |           |                    |
| Plane                             | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Y                                 | 26115   | 1857.5          | -22.06    | 36.57                  | 14.51      | 28.26     | H                  |
|                                   | 26365   | 1882.5          | -21.94    | 37.22                  | 15.28      | 33.76     |                    |
|                                   | 26615   | 1907.5          | -22.84    | 38.23                  | 15.39      | 34.59     |                    |
|                                   | 26115   | 1857.5          | -16.28    | 37.65                  | 21.37      | 137.12    | V                  |
|                                   | 26365   | 1882.5          | -15.59    | 37.58                  | 21.99      | 158.23    |                    |
|                                   | 26615   | 1907.5          | -15.16    | 37.22                  | 22.06      | 160.69    |                    |
| Channel Bandwidth: 15 MHz / 16QAM |         |                 |           |                        |            |           |                    |
| Y                                 | 26115   | 1857.5          | -22.15    | 36.57                  | 14.42      | 27.68     | H                  |
|                                   | 26365   | 1882.5          | -21.99    | 37.22                  | 15.23      | 33.37     |                    |
|                                   | 26615   | 1907.5          | -22.90    | 38.23                  | 15.33      | 34.12     |                    |
|                                   | 26115   | 1857.5          | -17.18    | 37.65                  | 20.47      | 111.46    | V                  |
|                                   | 26365   | 1882.5          | -16.59    | 37.58                  | 20.99      | 125.69    |                    |
|                                   | 26615   | 1907.5          | -16.16    | 37.22                  | 21.06      | 127.64    |                    |
| Channel Bandwidth: 15 MHz / 64QAM |         |                 |           |                        |            |           |                    |
| Y                                 | 26115   | 1857.5          | -22.25    | 36.57                  | 14.32      | 27.05     | H                  |
|                                   | 26365   | 1882.5          | -22.09    | 37.22                  | 15.13      | 32.61     |                    |
|                                   | 26615   | 1907.5          | -23.00    | 38.23                  | 15.23      | 33.34     |                    |
|                                   | 26115   | 1857.5          | -18.38    | 37.65                  | 19.27      | 84.55     | V                  |
|                                   | 26365   | 1882.5          | -17.99    | 37.58                  | 19.59      | 91.05     |                    |
|                                   | 26615   | 1907.5          | -17.26    | 38.22                  | 20.96      | 124.74    |                    |

| LTE Band 25                       |         |                 |           |                        |            |           |                    |
|-----------------------------------|---------|-----------------|-----------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 20 MHz / QPSK  |         |                 |           |                        |            |           |                    |
| Plane                             | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| Y                                 | 26140   | 1860.0          | -21.95    | 36.57                  | 14.62      | 28.99     | H                  |
|                                   | 26365   | 1882.5          | -21.83    | 37.22                  | 15.39      | 34.63     |                    |
|                                   | 26590   | 1905.0          | -22.74    | 38.72                  | 15.98      | 39.63     |                    |
|                                   | 26140   | 1860.0          | -15.88    | 37.65                  | 21.77      | 150.35    | V                  |
|                                   | 26365   | 1882.5          | -15.09    | 37.58                  | 22.49      | 177.54    |                    |
|                                   | 26590   | 1905.0          | -14.96    | 37.56                  | 22.60      | 181.97    |                    |
| Channel Bandwidth: 20 MHz / 16QAM |         |                 |           |                        |            |           |                    |
| Y                                 | 26140   | 1860.0          | -22.12    | 36.57                  | 14.45      | 27.87     | H                  |
|                                   | 26365   | 1882.5          | -21.92    | 37.22                  | 15.30      | 33.92     |                    |
|                                   | 26590   | 1905.0          | -22.83    | 38.72                  | 15.89      | 38.82     |                    |
|                                   | 26140   | 1860.0          | -16.68    | 37.65                  | 20.97      | 125.05    | V                  |
|                                   | 26365   | 1882.5          | -15.89    | 37.58                  | 21.69      | 147.67    |                    |
|                                   | 26590   | 1905.0          | -15.66    | 37.56                  | 21.90      | 154.88    |                    |
| Channel Bandwidth: 20 MHz / 64QAM |         |                 |           |                        |            |           |                    |
| Y                                 | 26140   | 1860.0          | -23.12    | 36.57                  | 13.45      | 22.14     | H                  |
|                                   | 26365   | 1882.5          | -22.02    | 37.22                  | 15.20      | 33.14     |                    |
|                                   | 26590   | 1905.0          | -22.93    | 38.72                  | 15.79      | 37.93     |                    |
|                                   | 26140   | 1860.0          | -18.08    | 37.65                  | 19.57      | 90.59     | V                  |
|                                   | 26365   | 1882.5          | -17.09    | 37.58                  | 20.49      | 112.02    |                    |
|                                   | 26590   | 1905.0          | -17.06    | 37.56                  | 20.50      | 112.20    |                    |

## 4.2 Frequency Stability Measurement

### 4.2.1 Limits of Frequency Stability Measurement

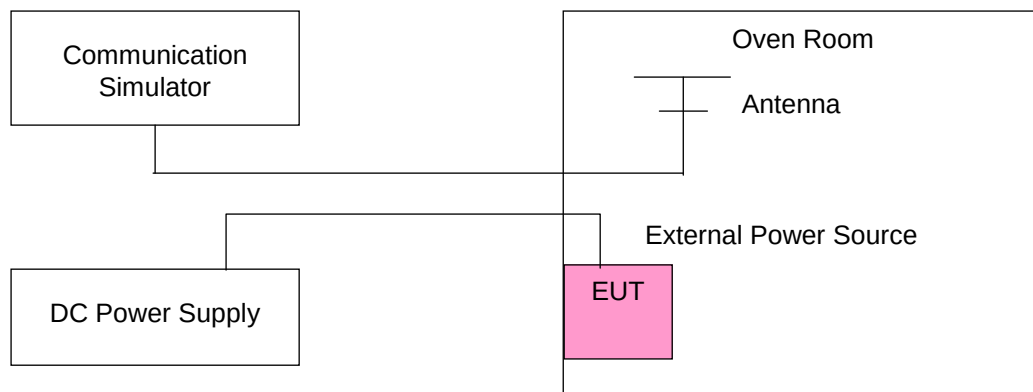
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

### 4.2.2 Test Procedure

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

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

### 4.2.3 Test Setup



#### 4.2.4 Test Results

##### Frequency Error vs. Voltage

| Voltage<br>(Volts) | GSM             |                       |                 |                       | Limit (ppm) |
|--------------------|-----------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Low Channel     |                       | High Channel    |                       |             |
|                    | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.6                | 1850.200002     | 0.001                 | 1909.800001     | 0.001                 | 2.5         |
| 3.3                | 1850.200002     | 0.001                 | 1909.800003     | 0.002                 | 2.5         |
| 4.2                | 1850.200001     | 0.001                 | 1909.800004     | 0.002                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.3 Vdc to 4.2 Vdc.

##### Frequency Error vs. Temperature

| Temp. (°C) | GSM             |                       |                 |                       | Limit (ppm) |
|------------|-----------------|-----------------------|-----------------|-----------------------|-------------|
|            | Low Channel     |                       | High Channel    |                       |             |
|            | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -30        | 1850.200002     | 0.001                 | 1909.800003     | 0.002                 | 2.5         |
| -20        | 1850.200003     | 0.002                 | 1909.800004     | 0.002                 | 2.5         |
| -10        | 1850.200002     | 0.001                 | 1909.800003     | 0.002                 | 2.5         |
| 0          | 1850.200003     | 0.002                 | 1909.800003     | 0.001                 | 2.5         |
| 10         | 1850.200002     | 0.001                 | 1909.800004     | 0.002                 | 2.5         |
| 20         | 1850.199996     | -0.002                | 1909.799998     | -0.001                | 2.5         |
| 30         | 1850.199999     | -0.001                | 1909.799998     | -0.001                | 2.5         |
| 40         | 1850.199997     | -0.002                | 1909.799998     | -0.001                | 2.5         |
| 50         | 1850.199997     | -0.002                | 1909.799997     | -0.002                | 2.5         |
| 55         | 1850.199999     | -0.001                | 1909.799999     | -0.001                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | EDGE            |                       |                 |                       | Limit (ppm) |
|--------------------|-----------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Low Channel     |                       | High Channel    |                       |             |
|                    | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.6                | 1850.200003     | 0.001                 | 1909.800004     | 0.002                 | 2.5         |
| 3.3                | 1850.200001     | 0.001                 | 1909.800001     | 0.001                 | 2.5         |
| 4.2                | 1850.200002     | 0.001                 | 1909.800002     | 0.001                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.3 Vdc to 4.2 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | EDGE            |                       |                 |                       | Limit (ppm) |
|------------|-----------------|-----------------------|-----------------|-----------------------|-------------|
|            | Low Channel     |                       | High Channel    |                       |             |
|            | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -30        | 1850.200002     | 0.001                 | 1909.800002     | 0.001                 | 2.5         |
| -20        | 1850.200003     | 0.002                 | 1909.800003     | 0.001                 | 2.5         |
| -10        | 1850.200002     | 0.001                 | 1909.800004     | 0.002                 | 2.5         |
| 0          | 1850.200003     | 0.002                 | 1909.800001     | 0.001                 | 2.5         |
| 10         | 1850.200002     | 0.001                 | 1909.800004     | 0.002                 | 2.5         |
| 20         | 1850.199997     | -0.002                | 1909.799997     | -0.002                | 2.5         |
| 30         | 1850.199998     | -0.001                | 1909.799999     | -0.001                | 2.5         |
| 40         | 1850.199998     | -0.001                | 1909.799997     | -0.002                | 2.5         |
| 50         | 1850.199997     | -0.001                | 1909.799997     | -0.001                | 2.5         |
| 55         | 1850.199999     | -0.001                | 1909.799998     | -0.001                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | WCDMA           |                       |                 |                       | Limit (ppm) |
|--------------------|-----------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Low Channel     |                       | High Channel    |                       |             |
|                    | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.6                | 1852.400002     | 0.001                 | 1907.600004     | 0.002                 | 2.5         |
| 3.3                | 1852.400001     | 0.001                 | 1907.600001     | 0.001                 | 2.5         |
| 4.2                | 1852.400002     | 0.001                 | 1907.600003     | 0.002                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.3 Vdc to 4.2 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | WCDMA           |                       |                 |                       | Limit (ppm) |
|------------|-----------------|-----------------------|-----------------|-----------------------|-------------|
|            | Low Channel     |                       | High Channel    |                       |             |
|            | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -30        | 1852.400002     | 0.001                 | 1907.600001     | 0.001                 | 2.5         |
| -20        | 1852.400003     | 0.002                 | 1907.600003     | 0.002                 | 2.5         |
| -10        | 1852.400002     | 0.001                 | 1907.600001     | 0.001                 | 2.5         |
| 0          | 1852.400003     | 0.002                 | 1907.600002     | 0.001                 | 2.5         |
| 10         | 1852.400003     | 0.002                 | 1907.600002     | 0.001                 | 2.5         |
| 20         | 1852.399999     | -0.001                | 1907.599998     | -0.001                | 2.5         |
| 30         | 1852.399999     | -0.001                | 1907.599998     | -0.001                | 2.5         |
| 40         | 1852.399997     | -0.001                | 1907.599998     | -0.001                | 2.5         |
| 50         | 1852.399999     | -0.001                | 1907.599996     | -0.002                | 2.5         |
| 55         | 1852.399997     | -0.002                | 1907.599998     | -0.001                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | CDMA            |                       |                 |                       | Limit (ppm) |
|--------------------|-----------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Low Channel     |                       | High Channel    |                       |             |
|                    | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.6                | 1851.250003     | 0.001                 | 1908.750002     | 0.001                 | 2.5         |
| 3.3                | 1851.250003     | 0.002                 | 1908.750002     | 0.001                 | 2.5         |
| 4.2                | 1851.250004     | 0.002                 | 1908.750001     | 0.001                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.3 Vdc to 4.2 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | CDMA            |                       |                 |                       | Limit (ppm) |
|------------|-----------------|-----------------------|-----------------|-----------------------|-------------|
|            | Low Channel     |                       | High Channel    |                       |             |
|            | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -30        | 1851.250004     | 0.002                 | 1908.750004     | 0.002                 | 2.5         |
| -20        | 1851.250001     | 0.001                 | 1908.750002     | 0.001                 | 2.5         |
| -10        | 1851.250002     | 0.001                 | 1908.750002     | 0.001                 | 2.5         |
| 0          | 1851.250004     | 0.002                 | 1908.750003     | 0.002                 | 2.5         |
| 10         | 1851.250003     | 0.002                 | 1908.750002     | 0.001                 | 2.5         |
| 20         | 1851.249999     | -0.001                | 1908.749997     | -0.002                | 2.5         |
| 30         | 1851.249997     | -0.002                | 1908.749999     | -0.001                | 2.5         |
| 40         | 1851.249997     | -0.001                | 1908.749998     | -0.001                | 2.5         |
| 50         | 1851.249998     | -0.001                | 1908.749998     | -0.001                | 2.5         |
| 55         | 1851.249998     | -0.001                | 1908.749998     | -0.001                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 2                 |                       |                 |                       | Limit (ppm) |
|--------------------|----------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 1.4 MHz |                       |                 |                       |             |
|                    | Low Channel                |                       | High Channel    |                       |             |
|                    | Frequency (MHz)            | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.6                | 1850.700001                | 0.001                 | 1909.300002     | 0.001                 | 2.5         |
| 3.3                | 1850.700001                | 0.001                 | 1909.300004     | 0.002                 | 2.5         |
| 4.2                | 1850.700002                | 0.001                 | 1909.300001     | 0.001                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.3 Vdc to 4.2 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2                 |                       |                 |                       | Limit (ppm) |
|------------|----------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 1.4 MHz |                       |                 |                       |             |
|            | Low Channel                |                       | High Channel    |                       |             |
|            | Frequency (MHz)            | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -30        | 1850.700004                | 0.002                 | 1909.300003     | 0.002                 | 2.5         |
| -20        | 1850.700003                | 0.002                 | 1909.300003     | 0.001                 | 2.5         |
| -10        | 1850.700004                | 0.002                 | 1909.300001     | 0.001                 | 2.5         |
| 0          | 1850.700004                | 0.002                 | 1909.300002     | 0.001                 | 2.5         |
| 10         | 1850.700002                | 0.001                 | 1909.300001     | 0.001                 | 2.5         |
| 20         | 1850.699998                | -0.001                | 1909.299996     | -0.002                | 2.5         |
| 30         | 1850.699999                | -0.001                | 1909.299998     | -0.001                | 2.5         |
| 40         | 1850.699998                | -0.001                | 1909.299997     | -0.001                | 2.5         |
| 50         | 1850.699996                | -0.002                | 1909.299998     | -0.001                | 2.5         |
| 55         | 1850.699997                | -0.002                | 1909.299999     | -0.001                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 2               |                       |                 |                       | Limit (ppm) |
|--------------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 3 MHz |                       |                 |                       |             |
|                    | Low Channel              |                       | High Channel    |                       |             |
|                    | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.6                | 1851.500003              | 0.001                 | 1907.500003     | 0.001                 | 2.5         |
| 3.3                | 1851.500002              | 0.001                 | 1907.500002     | 0.001                 | 2.5         |
| 4.2                | 1851.500003              | 0.002                 | 1907.500002     | 0.001                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.3 Vdc to 4.2 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2               |                       |                 |                       | Limit (ppm) |
|------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 3 MHz |                       |                 |                       |             |
|            | Low Channel              |                       | High Channel    |                       |             |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -30        | 1851.500003              | 0.002                 | 1907.500004     | 0.002                 | 2.5         |
| -20        | 1851.500002              | 0.001                 | 1907.500004     | 0.002                 | 2.5         |
| -10        | 1851.500004              | 0.002                 | 1907.500002     | 0.001                 | 2.5         |
| 0          | 1851.500002              | 0.001                 | 1907.500002     | 0.001                 | 2.5         |
| 10         | 1851.500001              | 0.001                 | 1907.500001     | 0.001                 | 2.5         |
| 20         | 1851.499996              | -0.002                | 1907.499997     | -0.001                | 2.5         |
| 30         | 1851.499997              | -0.002                | 1907.499996     | -0.002                | 2.5         |
| 40         | 1851.499997              | -0.002                | 1907.499998     | -0.001                | 2.5         |
| 50         | 1851.499998              | -0.001                | 1907.499998     | -0.001                | 2.5         |
| 55         | 1851.499997              | -0.002                | 1907.499998     | -0.001                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 2               |                       |                 |                       | Limit (ppm) |
|--------------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 5 MHz |                       |                 |                       |             |
|                    | Low Channel              |                       | High Channel    |                       |             |
|                    | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.6                | 1852.500001              | 0.001                 | 1907.500001     | 0.001                 | 2.5         |
| 3.3                | 1852.500004              | 0.002                 | 1907.500001     | 0.001                 | 2.5         |
| 4.2                | 1852.500003              | 0.002                 | 1907.500003     | 0.002                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.3 Vdc to 4.2 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2               |                       |                 |                       | Limit (ppm) |
|------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 5 MHz |                       |                 |                       |             |
|            | Low Channel              |                       | High Channel    |                       |             |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -30        | 1852.500001              | 0.001                 | 1907.500004     | 0.002                 | 2.5         |
| -20        | 1852.500002              | 0.001                 | 1907.500003     | 0.002                 | 2.5         |
| -10        | 1852.500003              | 0.001                 | 1907.500003     | 0.001                 | 2.5         |
| 0          | 1852.500004              | 0.002                 | 1907.500003     | 0.002                 | 2.5         |
| 10         | 1852.500003              | 0.001                 | 1907.500001     | 0.001                 | 2.5         |
| 20         | 1852.499997              | -0.002                | 1907.499998     | -0.001                | 2.5         |
| 30         | 1852.499997              | -0.002                | 1907.499999     | -0.001                | 2.5         |
| 40         | 1852.499998              | -0.001                | 1907.499999     | -0.001                | 2.5         |
| 50         | 1852.499997              | -0.002                | 1907.499997     | -0.002                | 2.5         |
| 55         | 1852.499998              | -0.001                | 1907.499997     | -0.002                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 2                |                       |                 |                       | Limit (ppm) |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 10 MHz |                       |                 |                       |             |
|                    | Low Channel               |                       | High Channel    |                       |             |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.6                | 1855.000002               | 0.001                 | 1905.000003     | 0.001                 | 2.5         |
| 3.3                | 1855.000004               | 0.002                 | 1905.000004     | 0.002                 | 2.5         |
| 4.2                | 1855.000002               | 0.001                 | 1905.000003     | 0.001                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.3 Vdc to 4.2 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2                |                       |                 |                       | Limit (ppm) |
|------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 10 MHz |                       |                 |                       |             |
|            | Low Channel               |                       | High Channel    |                       |             |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -30        | 1855.000002               | 0.001                 | 1905.000001     | 0.001                 | 2.5         |
| -20        | 1855.000004               | 0.002                 | 1905.000003     | 0.002                 | 2.5         |
| -10        | 1855.000003               | 0.001                 | 1905.000004     | 0.002                 | 2.5         |
| 0          | 1855.000003               | 0.002                 | 1905.000001     | 0.001                 | 2.5         |
| 10         | 1855.000002               | 0.001                 | 1905.000002     | 0.001                 | 2.5         |
| 20         | 1854.999997               | -0.002                | 1904.999996     | -0.002                | 2.5         |
| 30         | 1854.999997               | -0.001                | 1904.999998     | -0.001                | 2.5         |
| 40         | 1854.999998               | -0.001                | 1904.999997     | -0.001                | 2.5         |
| 50         | 1854.999999               | -0.001                | 1904.999998     | -0.001                | 2.5         |
| 55         | 1854.999998               | -0.001                | 1904.999998     | -0.001                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 2                |                       |                 |                       | Limit (ppm) |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 15 MHz |                       |                 |                       |             |
|                    | Low Channel               |                       | High Channel    |                       |             |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.6                | 1857.500003               | 0.002                 | 1902.500003     | 0.002                 | 2.5         |
| 3.3                | 1857.500003               | 0.002                 | 1902.500004     | 0.002                 | 2.5         |
| 4.2                | 1857.500002               | 0.001                 | 1902.500004     | 0.002                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.3 Vdc to 4.2 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2                |                       |                 |                       | Limit (ppm) |
|------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 15 MHz |                       |                 |                       |             |
|            | Low Channel               |                       | High Channel    |                       |             |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -30        | 1857.500004               | 0.002                 | 1902.500004     | 0.002                 | 2.5         |
| -20        | 1857.500004               | 0.002                 | 1902.500004     | 0.002                 | 2.5         |
| -10        | 1857.500002               | 0.001                 | 1902.500002     | 0.001                 | 2.5         |
| 0          | 1857.500002               | 0.001                 | 1902.500003     | 0.002                 | 2.5         |
| 10         | 1857.500003               | 0.002                 | 1902.500002     | 0.001                 | 2.5         |
| 20         | 1857.499999               | -0.001                | 1902.499998     | -0.001                | 2.5         |
| 30         | 1857.499997               | -0.002                | 1902.499997     | -0.002                | 2.5         |
| 40         | 1857.499997               | -0.002                | 1902.499997     | -0.002                | 2.5         |
| 50         | 1857.499996               | -0.002                | 1902.499996     | -0.002                | 2.5         |
| 55         | 1857.499999               | -0.001                | 1902.499998     | -0.001                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 2                |                       |                 |                       | Limit (ppm) |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 20 MHz |                       |                 |                       |             |
|                    | Low Channel               |                       | High Channel    |                       |             |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.6                | 1860.000003               | 0.001                 | 1900.000002     | 0.001                 | 2.5         |
| 3.3                | 1860.000003               | 0.002                 | 1900.000003     | 0.002                 | 2.5         |
| 4.2                | 1860.000003               | 0.002                 | 1900.000004     | 0.002                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.3 Vdc to 4.2 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2                |                       |                 |                       | Limit (ppm) |
|------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 20 MHz |                       |                 |                       |             |
|            | Low Channel               |                       | High Channel    |                       |             |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -30        | 1860.000001               | 0.001                 | 1900.000004     | 0.002                 | 2.5         |
| -20        | 1860.000002               | 0.001                 | 1900.000002     | 0.001                 | 2.5         |
| -10        | 1860.000001               | 0.001                 | 1900.000003     | 0.002                 | 2.5         |
| 0          | 1860.000003               | 0.001                 | 1900.000004     | 0.002                 | 2.5         |
| 10         | 1860.000002               | 0.001                 | 1900.000002     | 0.001                 | 2.5         |
| 20         | 1859.999997               | -0.002                | 1899.999998     | -0.001                | 2.5         |
| 30         | 1859.999997               | -0.002                | 1899.999997     | -0.002                | 2.5         |
| 40         | 1859.999999               | -0.001                | 1899.999997     | -0.001                | 2.5         |
| 50         | 1859.999997               | -0.001                | 1899.999998     | -0.001                | 2.5         |
| 55         | 1859.999999               | -0.001                | 1899.999996     | -0.002                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 25                |                       |                 |                       | Limit (ppm) |
|--------------------|----------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 1.4 MHz |                       |                 |                       |             |
|                    | Low Channel                |                       | High Channel    |                       |             |
|                    | Frequency (MHz)            | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.6                | 1850.700003                | 0.002                 | 1914.300002     | 0.001                 | 2.5         |
| 3.3                | 1850.700002                | 0.001                 | 1914.300002     | 0.001                 | 2.5         |
| 4.2                | 1850.700001                | 0.001                 | 1914.300002     | 0.001                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.3 Vdc to 4.2 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 25                |                       |                 |                       | Limit (ppm) |
|------------|----------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 1.4 MHz |                       |                 |                       |             |
|            | Low Channel                |                       | High Channel    |                       |             |
|            | Frequency (MHz)            | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -30        | 1850.700002                | 0.001                 | 1914.300004     | 0.002                 | 2.5         |
| -20        | 1850.700003                | 0.001                 | 1914.300001     | 0.001                 | 2.5         |
| -10        | 1850.700002                | 0.001                 | 1914.300002     | 0.001                 | 2.5         |
| 0          | 1850.700003                | 0.002                 | 1914.300001     | 0.001                 | 2.5         |
| 10         | 1850.700004                | 0.002                 | 1914.300002     | 0.001                 | 2.5         |
| 20         | 1850.699999                | -0.001                | 1914.299997     | -0.002                | 2.5         |
| 30         | 1850.699997                | -0.001                | 1914.299997     | -0.002                | 2.5         |
| 40         | 1850.699998                | -0.001                | 1914.299999     | -0.001                | 2.5         |
| 50         | 1850.699998                | -0.001                | 1914.299996     | -0.002                | 2.5         |
| 55         | 1850.699998                | -0.001                | 1914.299997     | -0.002                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 25              |                       |                 |                       | Limit (ppm) |
|--------------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 3 MHz |                       |                 |                       |             |
|                    | Low Channel              |                       | High Channel    |                       |             |
|                    | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.6                | 1851.500001              | 0.001                 | 1913.500003     | 0.002                 | 2.5         |
| 3.3                | 1851.500004              | 0.002                 | 1913.500002     | 0.001                 | 2.5         |
| 4.2                | 1851.500003              | 0.001                 | 1913.500003     | 0.002                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.3 Vdc to 4.2 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 25              |                       |                 |                       | Limit (ppm) |
|------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 3 MHz |                       |                 |                       |             |
|            | Low Channel              |                       | High Channel    |                       |             |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -30        | 1851.500003              | 0.001                 | 1913.500004     | 0.002                 | 2.5         |
| -20        | 1851.500001              | 0.001                 | 1913.500003     | 0.002                 | 2.5         |
| -10        | 1851.500004              | 0.002                 | 1913.500001     | 0.001                 | 2.5         |
| 0          | 1851.500002              | 0.001                 | 1913.500003     | 0.002                 | 2.5         |
| 10         | 1851.500002              | 0.001                 | 1913.500003     | 0.002                 | 2.5         |
| 20         | 1851.499996              | -0.002                | 1913.499996     | -0.002                | 2.5         |
| 30         | 1851.499998              | -0.001                | 1913.499998     | -0.001                | 2.5         |
| 40         | 1851.499997              | -0.002                | 1913.499997     | -0.002                | 2.5         |
| 50         | 1851.499998              | -0.001                | 1913.499997     | -0.002                | 2.5         |
| 55         | 1851.499996              | -0.002                | 1913.499997     | -0.001                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 25              |                       |                 |                       | Limit (ppm) |
|--------------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 5 MHz |                       |                 |                       |             |
|                    | Low Channel              |                       | High Channel    |                       |             |
|                    | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.6                | 1852.500002              | 0.001                 | 1912.500004     | 0.002                 | 2.5         |
| 3.3                | 1852.500002              | 0.001                 | 1912.500001     | 0.001                 | 2.5         |
| 4.2                | 1852.500004              | 0.002                 | 1912.500004     | 0.002                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.3 Vdc to 4.2 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 25              |                       |                 |                       | Limit (ppm) |
|------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 5 MHz |                       |                 |                       |             |
|            | Low Channel              |                       | High Channel    |                       |             |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -30        | 1852.500003              | 0.002                 | 1912.500002     | 0.001                 | 2.5         |
| -20        | 1852.500003              | 0.001                 | 1912.500003     | 0.001                 | 2.5         |
| -10        | 1852.500002              | 0.001                 | 1912.500003     | 0.002                 | 2.5         |
| 0          | 1852.500003              | 0.001                 | 1912.500001     | 0.001                 | 2.5         |
| 10         | 1852.500004              | 0.002                 | 1912.500003     | 0.001                 | 2.5         |
| 20         | 1852.499997              | -0.002                | 1912.499998     | -0.001                | 2.5         |
| 30         | 1852.499997              | -0.002                | 1912.499998     | -0.001                | 2.5         |
| 40         | 1852.499997              | -0.002                | 1912.499997     | -0.001                | 2.5         |
| 50         | 1852.499999              | -0.001                | 1912.499998     | -0.001                | 2.5         |
| 55         | 1852.499996              | -0.002                | 1912.499998     | -0.001                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 25               |                       |                 |                       | Limit (ppm) |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 10 MHz |                       |                 |                       |             |
|                    | Low Channel               |                       | High Channel    |                       |             |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.6                | 1855.000002               | 0.001                 | 1910.000004     | 0.002                 | 2.5         |
| 3.3                | 1855.000004               | 0.002                 | 1910.000004     | 0.002                 | 2.5         |
| 4.2                | 1855.000002               | 0.001                 | 1910.000002     | 0.001                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.3 Vdc to 4.2 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 25               |                       |                 |                       | Limit (ppm) |
|------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 10 MHz |                       |                 |                       |             |
|            | Low Channel               |                       | High Channel    |                       |             |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -30        | 1855.000003               | 0.002                 | 1910.000002     | 0.001                 | 2.5         |
| -20        | 1855.000002               | 0.001                 | 1910.000002     | 0.001                 | 2.5         |
| -10        | 1855.000002               | 0.001                 | 1910.000003     | 0.002                 | 2.5         |
| 0          | 1855.000001               | 0.001                 | 1910.000003     | 0.002                 | 2.5         |
| 10         | 1855.000003               | 0.002                 | 1910.000003     | 0.002                 | 2.5         |
| 20         | 1854.999997               | -0.002                | 1909.999996     | -0.002                | 2.5         |
| 30         | 1854.999997               | -0.002                | 1909.999999     | -0.001                | 2.5         |
| 40         | 1854.999998               | -0.001                | 1909.999998     | -0.001                | 2.5         |
| 50         | 1854.999998               | -0.001                | 1909.999997     | -0.002                | 2.5         |
| 55         | 1854.999998               | -0.001                | 1909.999998     | -0.001                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 25               |                       |                 |                       | Limit (ppm) |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 15 MHz |                       |                 |                       |             |
|                    | Low Channel               |                       | High Channel    |                       |             |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.6                | 1857.500002               | 0.001                 | 1907.500004     | 0.002                 | 2.5         |
| 3.3                | 1857.500004               | 0.002                 | 1907.500004     | 0.002                 | 2.5         |
| 4.2                | 1857.500002               | 0.001                 | 1907.500002     | 0.001                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.3 Vdc to 4.2 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 25               |                       |                 |                       | Limit (ppm) |
|------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 15 MHz |                       |                 |                       |             |
|            | Low Channel               |                       | High Channel    |                       |             |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -30        | 1857.500003               | 0.002                 | 1907.500002     | 0.001                 | 2.5         |
| -20        | 1857.500002               | 0.001                 | 1907.500003     | 0.001                 | 2.5         |
| -10        | 1857.500002               | 0.001                 | 1907.500002     | 0.001                 | 2.5         |
| 0          | 1857.500002               | 0.001                 | 1907.500004     | 0.002                 | 2.5         |
| 10         | 1857.500002               | 0.001                 | 1907.500004     | 0.002                 | 2.5         |
| 20         | 1857.499998               | -0.001                | 1907.499997     | -0.002                | 2.5         |
| 30         | 1857.499996               | -0.002                | 1907.499997     | -0.002                | 2.5         |
| 40         | 1857.499996               | -0.002                | 1907.499997     | -0.002                | 2.5         |
| 50         | 1857.499998               | -0.001                | 1907.499998     | -0.001                | 2.5         |
| 55         | 1857.499998               | -0.001                | 1907.499999     | -0.001                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 25               |                       |                 |                       | Limit (ppm) |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 20 MHz |                       |                 |                       |             |
|                    | Low Channel               |                       | High Channel    |                       |             |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.6                | 1860.000001               | 0.001                 | 1905.000001     | 0.001                 | 2.5         |
| 3.3                | 1860.000004               | 0.002                 | 1905.000002     | 0.001                 | 2.5         |
| 4.2                | 1860.000001               | 0.001                 | 1905.000004     | 0.002                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.3 Vdc to 4.2 Vdc.

### Frequency Error vs. Temperature

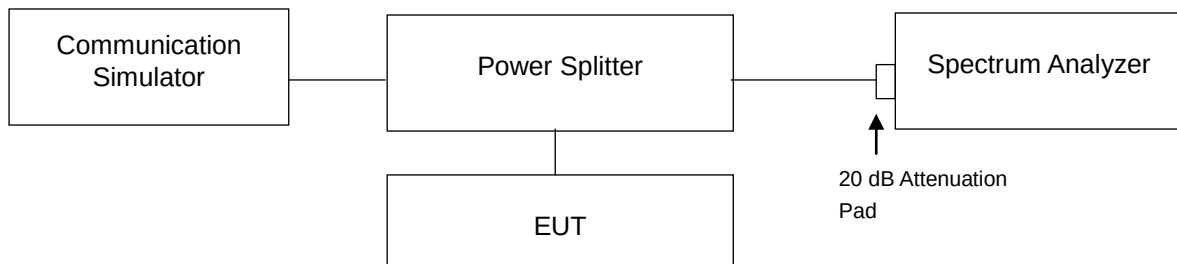
| Temp. (°C) | LTE Band 25               |                       |                 |                       | Limit (ppm) |
|------------|---------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 20 MHz |                       |                 |                       |             |
|            | Low Channel               |                       | High Channel    |                       |             |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -30        | 1860.000002               | 0.001                 | 1905.000002     | 0.001                 | 2.5         |
| -20        | 1860.000004               | 0.002                 | 1905.000003     | 0.001                 | 2.5         |
| -10        | 1860.000004               | 0.002                 | 1905.000001     | 0.001                 | 2.5         |
| 0          | 1860.000001               | 0.001                 | 1905.000002     | 0.001                 | 2.5         |
| 10         | 1860.000001               | 0.001                 | 1905.000004     | 0.002                 | 2.5         |
| 20         | 1859.999998               | -0.001                | 1904.999998     | -0.001                | 2.5         |
| 30         | 1859.999996               | -0.002                | 1904.999998     | -0.001                | 2.5         |
| 40         | 1859.999996               | -0.002                | 1904.999997     | -0.002                | 2.5         |
| 50         | 1859.999996               | -0.002                | 1904.999998     | -0.001                | 2.5         |
| 55         | 1859.999996               | -0.002                | 1904.999997     | -0.001                | 2.5         |

### 4.3 Occupied Bandwidth Measurement

#### 4.3.1 Test Procedure

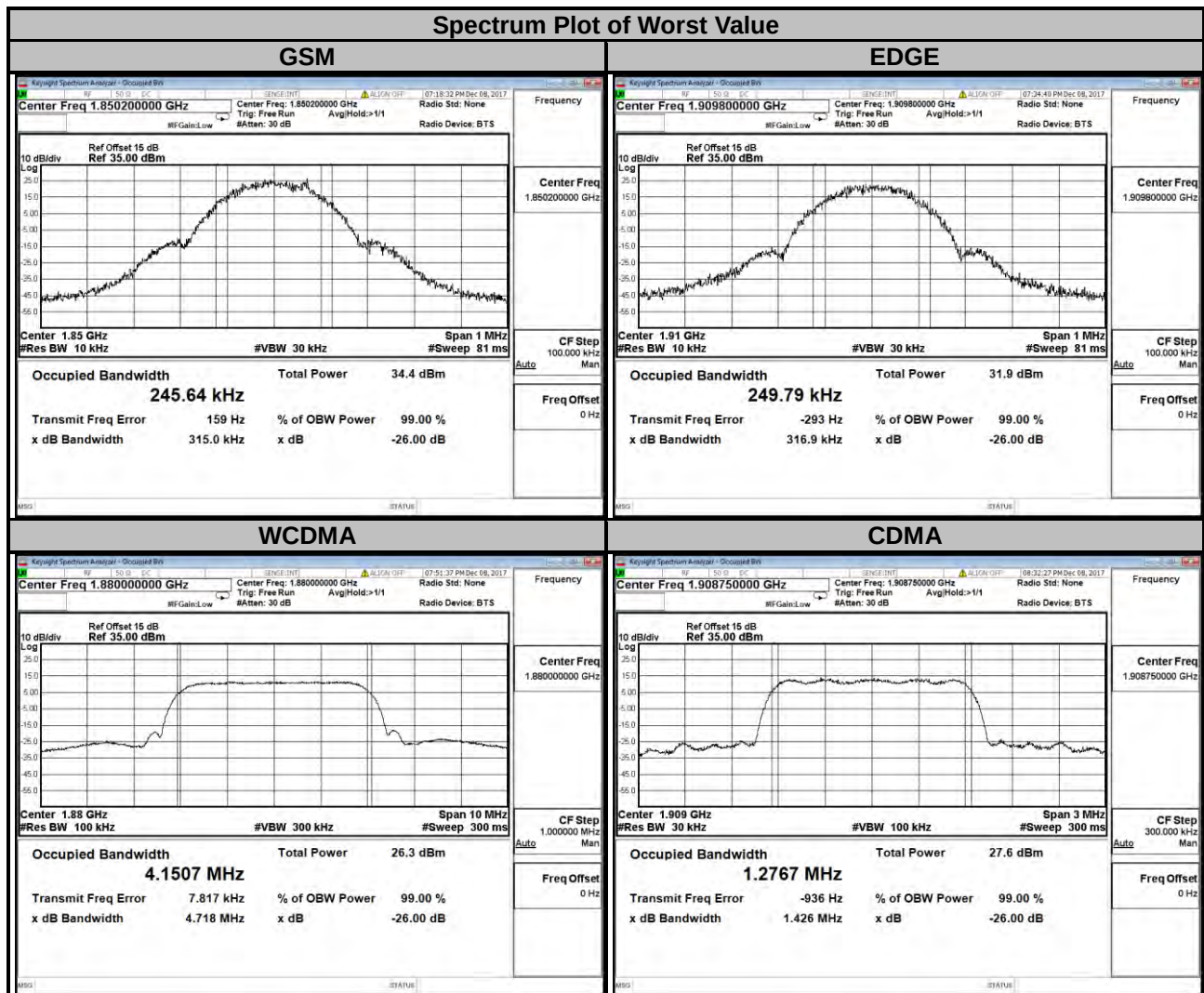
The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function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

#### 4.3.2 Test Setup



### 4.3.3 Test Result

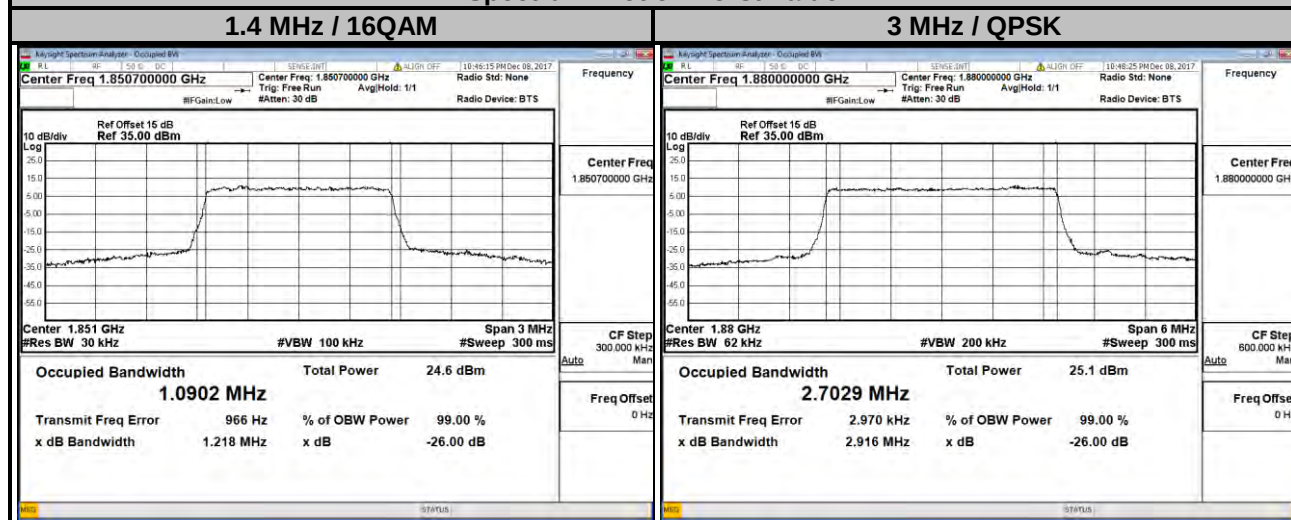
| Channel | Frequency (MHz) | 99 % Occupied Bandwidth (kHz) |        | Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |
|---------|-----------------|-------------------------------|--------|---------|-----------------|-------------------------------|
|         |                 | GSM                           | EDGE   |         |                 |                               |
| 512     | 1850.2          | 245.64                        | 247.48 | 9262    | 1852.4          | 4.1369                        |
| 661     | 1880.0          | 244.29                        | 247.03 | 9400    | 1880.0          | 4.1507                        |
| 810     | 1909.8          | 244.61                        | 249.79 | 9538    | 1907.6          | 4.1454                        |
| Channel | Frequency (MHz) | 99 % Occupied Bandwidth (kHz) |        |         |                 |                               |
|         |                 | CDMA                          |        |         |                 |                               |
| 25      | 1851.25         | 1.2736                        |        |         |                 |                               |
| 600     | 1880.00         | 1.2735                        |        |         |                 |                               |
| 1175    | 1908.75         | 1.2767                        |        |         |                 |                               |



### LTE Band 2

| Channel Bandwidth: 1.4 MHz |                 |                               |        |        | Channel Bandwidth: 3 MHz |                 |                               |        |        |
|----------------------------|-----------------|-------------------------------|--------|--------|--------------------------|-----------------|-------------------------------|--------|--------|
| Channel                    | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |        |        | Channel                  | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |        |        |
|                            |                 | QPSK                          | 16QAM  | 64QAM  |                          |                 | QPSK                          | 16QAM  | 64QAM  |
| 18607                      | 1850.7          | 1.0876                        | 1.0902 | 1.0889 | 18615                    | 1851.5          | 2.7028                        | 2.6996 | 2.6992 |
| 18900                      | 1880.0          | 1.0873                        | 1.0876 | 1.0889 | 18900                    | 1880.0          | 2.7029                        | 2.6980 | 2.6968 |
| 19193                      | 1909.3          | 1.0874                        | 1.0895 | 1.0884 | 19185                    | 1908.5          | 2.7011                        | 2.6968 | 2.6985 |

### Spectrum Plot of Worst Value



## LTE Band 2

### Channel Bandwidth: 5 MHz

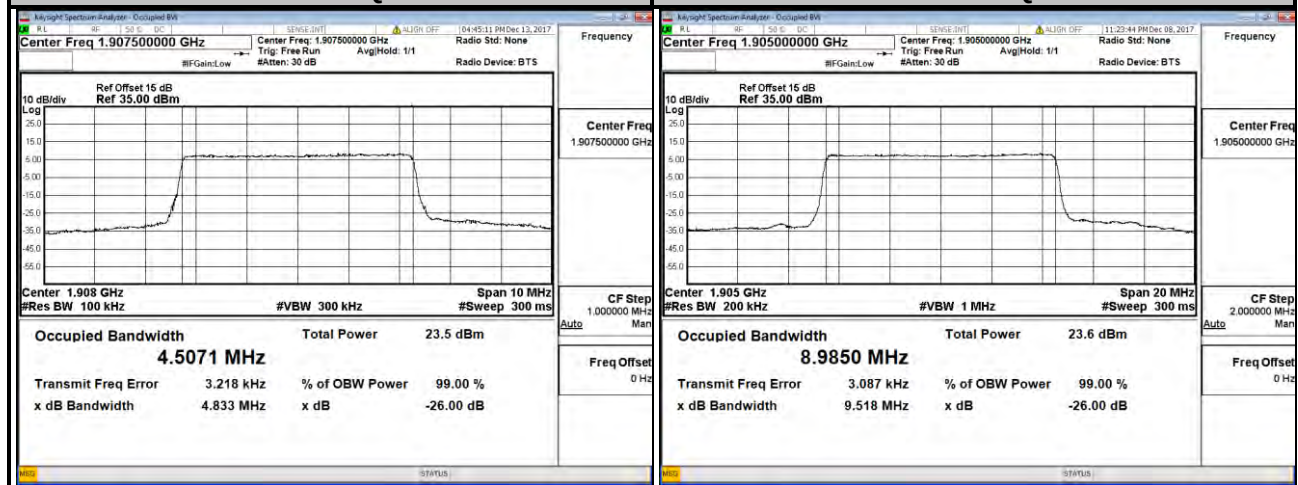
### Channel Bandwidth: 10 MHz

| Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |        |        | Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |        |        |
|---------|-----------------|-------------------------------|--------|--------|---------|-----------------|-------------------------------|--------|--------|
|         |                 | QPSK                          | 16QAM  | 64QAM  |         |                 | QPSK                          | 16QAM  | 64QAM  |
| 18625   | 1852.5          | 4.4933                        | 4.4913 | 4.4922 | 18650   | 1855.0          | 8.9599                        | 8.9616 | 8.9790 |
| 18900   | 1880.0          | 4.4962                        | 4.4974 | 4.5033 | 18900   | 1880.0          | 8.9772                        | 8.9778 | 8.9785 |
| 19175   | 1907.5          | 4.4917                        | 4.4933 | 4.5071 | 19150   | 1905.0          | 8.9813                        | 8.9850 | 8.9821 |

## Spectrum Plot of Worst Value

### 5 MHz / 64QAM

### 10 MHz / 16QAM

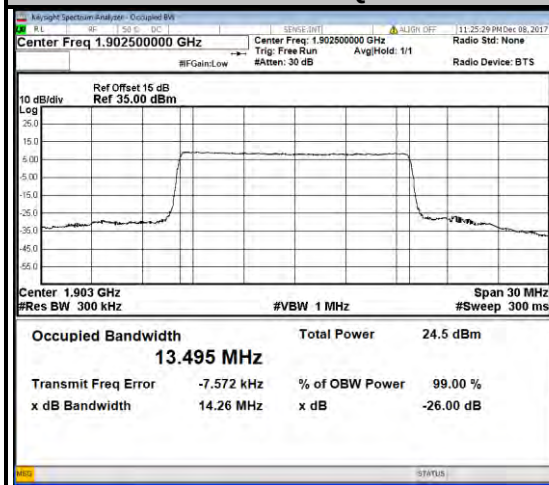


### LTE Band 2

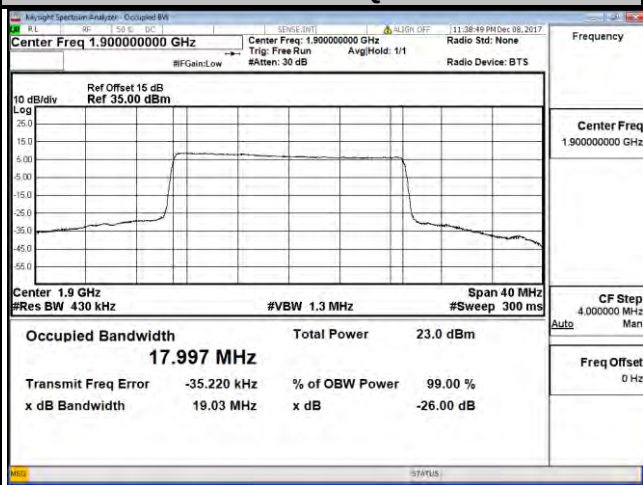
| Channel Bandwidth: 15 MHz |                 |                               |        |        | Channel Bandwidth: 20 MHz |                 |                               |        |        |
|---------------------------|-----------------|-------------------------------|--------|--------|---------------------------|-----------------|-------------------------------|--------|--------|
| Channel                   | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |        |        | Channel                   | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |        |        |
|                           |                 | QPSK                          | 16QAM  | 64QAM  |                           |                 | QPSK                          | 16QAM  | 64QAM  |
| 18675                     | 1857.5          | 13.428                        | 13.419 | 13.442 | 18700                     | 1860.0          | 17.894                        | 17.912 | 17.934 |
| 18900                     | 1880.0          | 13.464                        | 13.454 | 13.445 | 18900                     | 1880.0          | 17.939                        | 17.957 | 17.943 |
| 19125                     | 1902.5          | 13.495                        | 13.485 | 13.422 | 19100                     | 1900.0          | 17.973                        | 17.997 | 17.891 |

### Spectrum Plot of Worst Value

#### 15 MHz / QPSK



#### 20 MHz / 16QAM



### LTE Band 25

#### Channel Bandwidth: 1.4 MHz

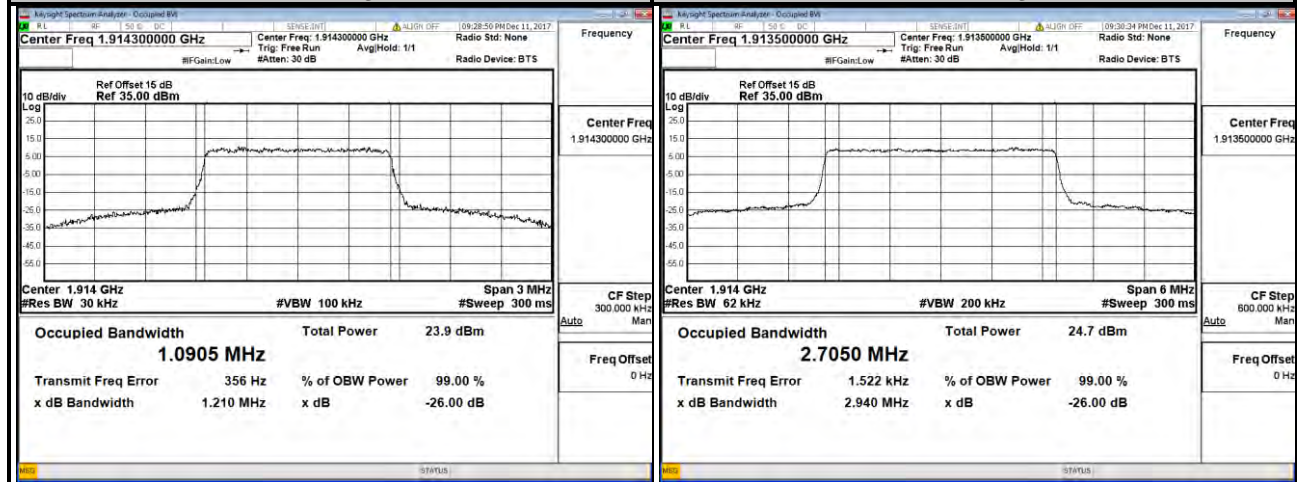
#### Channel Bandwidth: 3 MHz

| Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |        |        | Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |        |        |
|---------|-----------------|-------------------------------|--------|--------|---------|-----------------|-------------------------------|--------|--------|
|         |                 | QPSK                          | 16QAM  | 64QAM  |         |                 | QPSK                          | 16QAM  | 64QAM  |
| 26047   | 1850.7          | 1.0890                        | 1.0887 | 1.0879 | 26055   | 1851.5          | 2.7035                        | 2.7018 | 2.6984 |
| 26365   | 1882.5          | 1.0876                        | 1.0863 | 1.0881 | 26365   | 1882.5          | 2.7446                        | 2.6960 | 2.6984 |
| 26683   | 1914.3          | 1.0879                        | 1.0905 | 1.0871 | 26675   | 1913.5          | 2.7050                        | 2.6989 | 2.6986 |

### Spectrum Plot of Worst Value

#### 1.4 MHz / QPSK

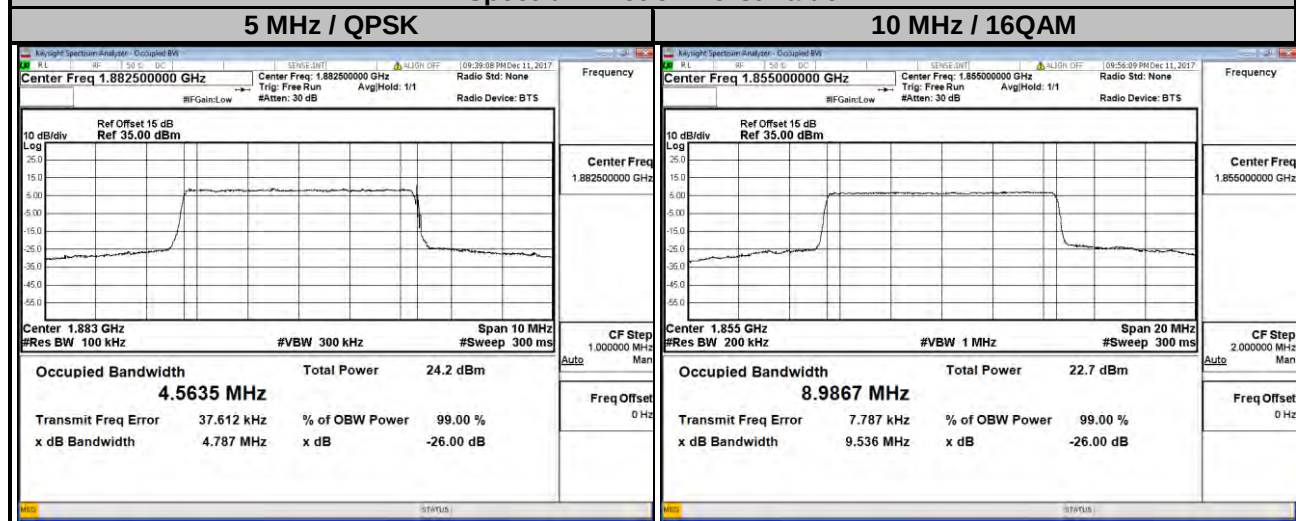
#### 3 MHz / 16QAM



### LTE Band 25

| Channel Bandwidth: 5 MHz |                 |                               |        |        | Channel Bandwidth: 10 MHz |                 |                               |        |        |
|--------------------------|-----------------|-------------------------------|--------|--------|---------------------------|-----------------|-------------------------------|--------|--------|
| Channel                  | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |        |        | Channel                   | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |        |        |
|                          |                 | QPSK                          | 16QAM  | 64QAM  |                           |                 | QPSK                          | 16QAM  | 64QAM  |
| 26065                    | 1852.5          | 4.4965                        | 4.4973 | 4.4922 | 26090                     | 1855.0          | 8.9843                        | 8.9867 | 8.9790 |
| 26365                    | 1882.5          | 4.5635                        | 4.5033 | 4.5033 | 26365                     | 1882.5          | 8.9811                        | 8.9745 | 8.9785 |
| 26665                    | 1912.5          | 4.4975                        | 4.4981 | 4.5071 | 26640                     | 1910.0          | 8.9787                        | 8.9780 | 8.9821 |

### Spectrum Plot of Worst Value

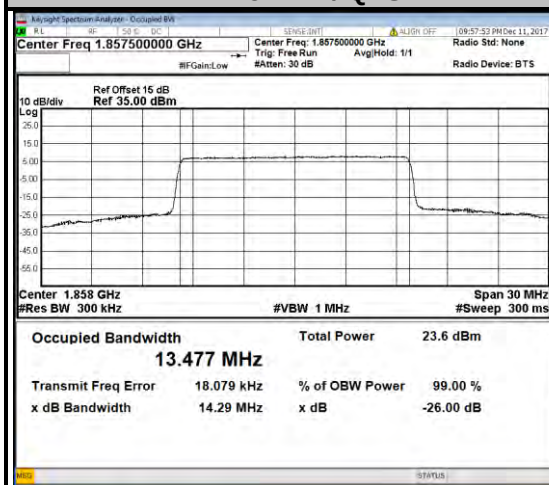


### LTE BAND 25

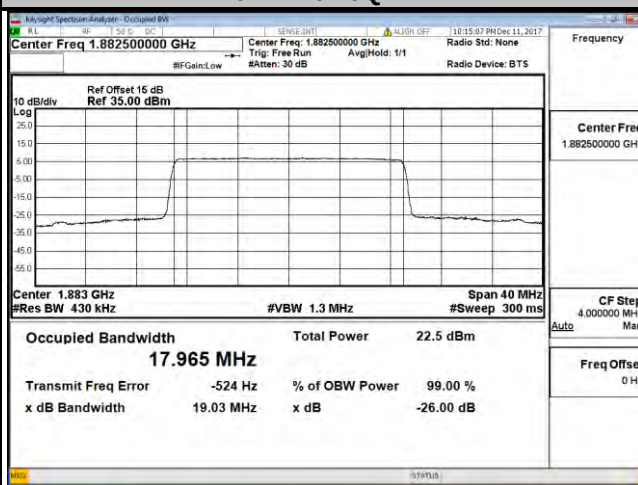
| Channel Bandwidth: 15 MHz |                 |                               |        |        | Channel Bandwidth: 20 MHz |                 |                               |        |        |
|---------------------------|-----------------|-------------------------------|--------|--------|---------------------------|-----------------|-------------------------------|--------|--------|
| Channel                   | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |        |        | Channel                   | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |        |        |
|                           |                 | QPSK                          | 16QAM  | 64QAM  |                           |                 | QPSK                          | 16QAM  | 64QAM  |
| 26115                     | 1857.5          | 13.477                        | 13.462 | 13.442 | 26140                     | 1860.0          | 17.939                        | 17.948 | 17.934 |
| 26365                     | 1882.5          | 13.471                        | 13.455 | 13.445 | 26365                     | 1882.5          | 17.945                        | 17.965 | 17.943 |
| 26615                     | 1907.5          | 13.446                        | 13.436 | 13.422 | 26590                     | 1905.0          | 17.886                        | 17.898 | 17.891 |

### Spectrum Plot of Worst Value

#### 15 MHz / QPSK



#### 20 MHz / 16QAM

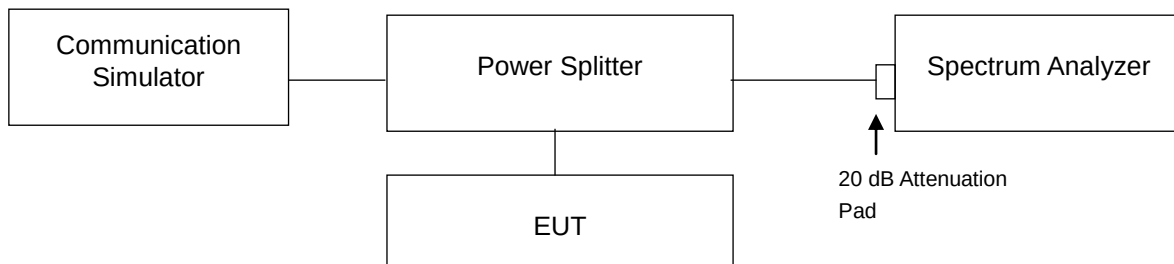


## 4.4 Band Edge Measurement

### 4.4.1 Limits of Band Edge Measurement

Power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

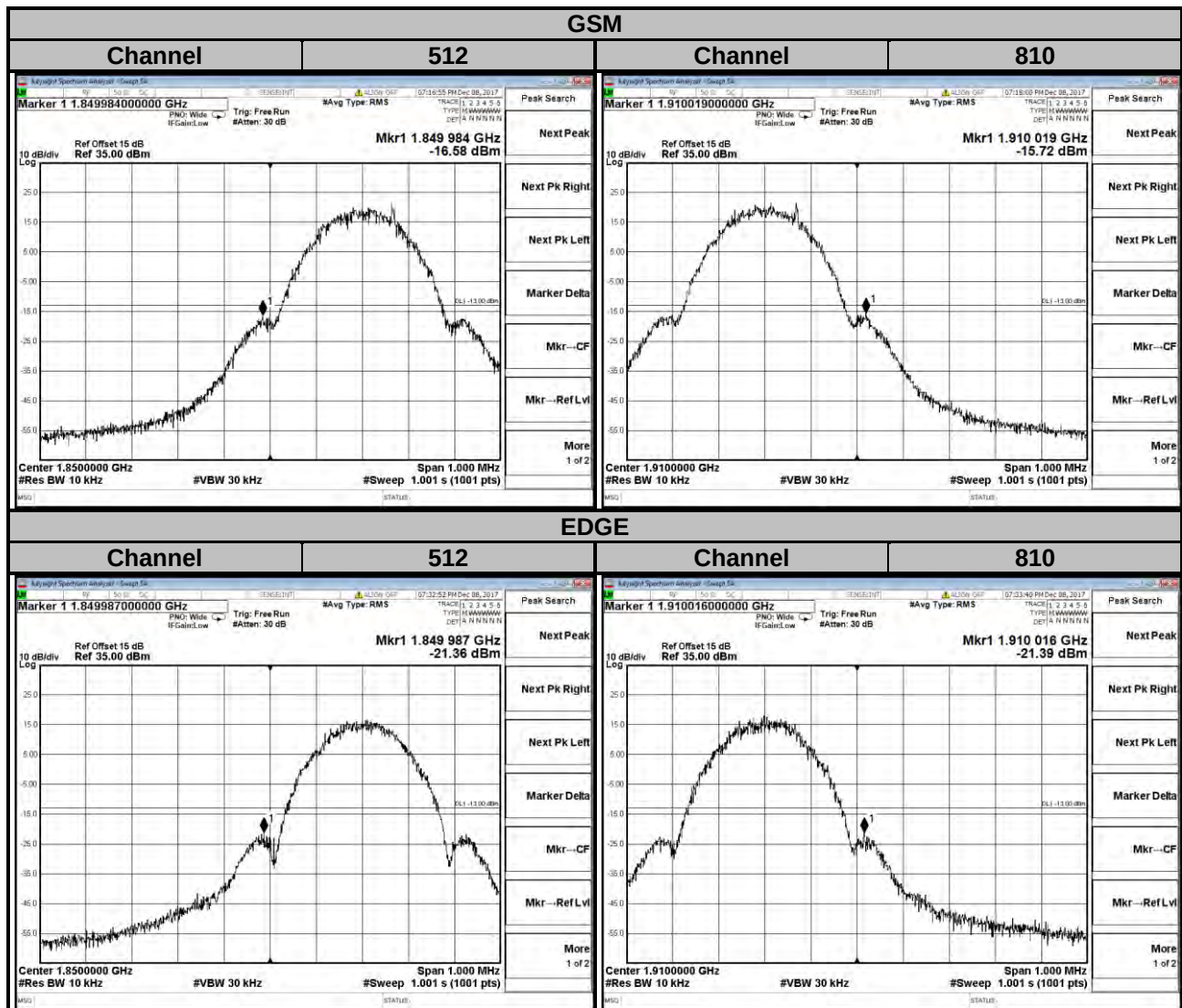
### 4.4.2 Test Setup

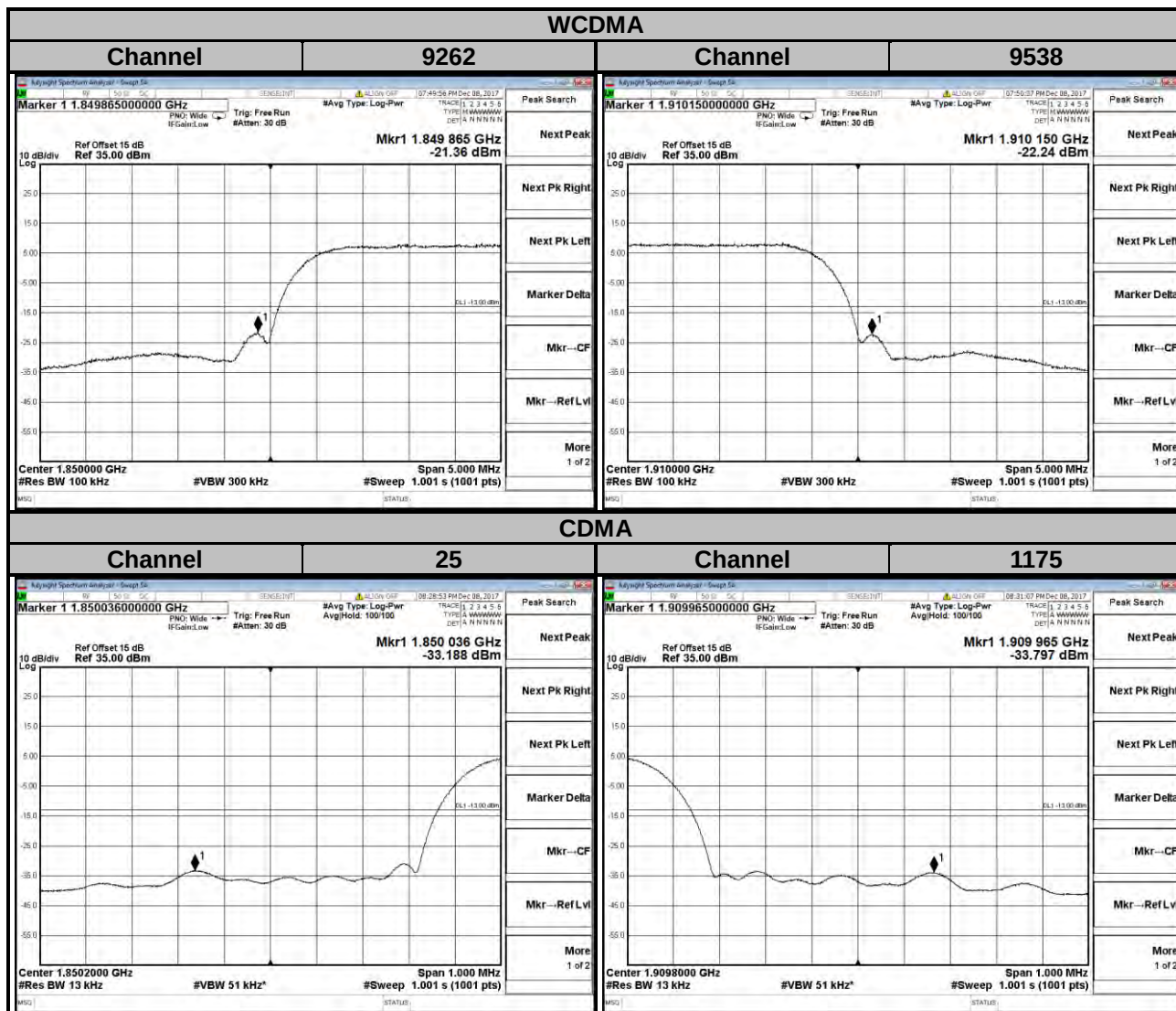


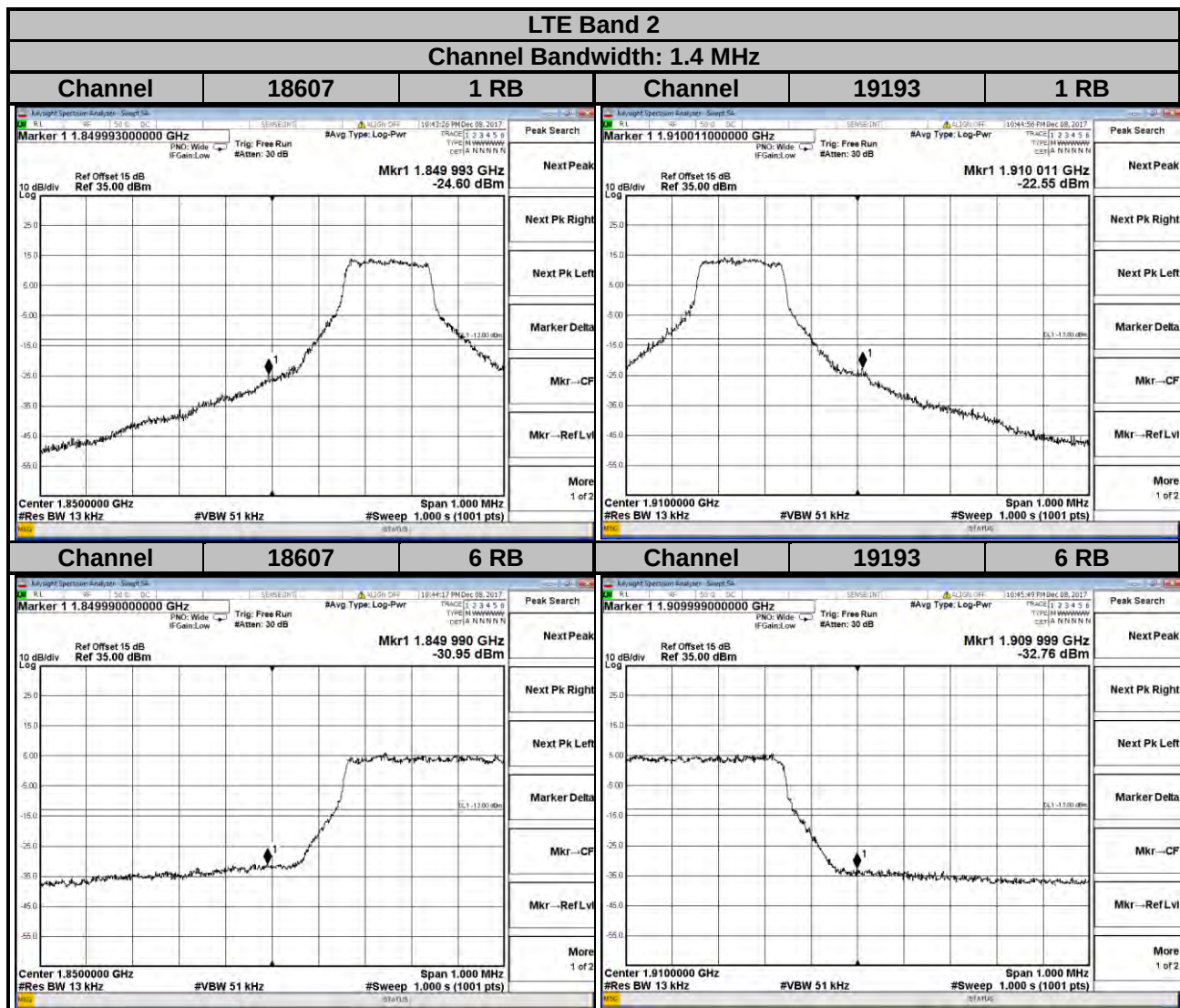
### 4.4.3 Test Procedures

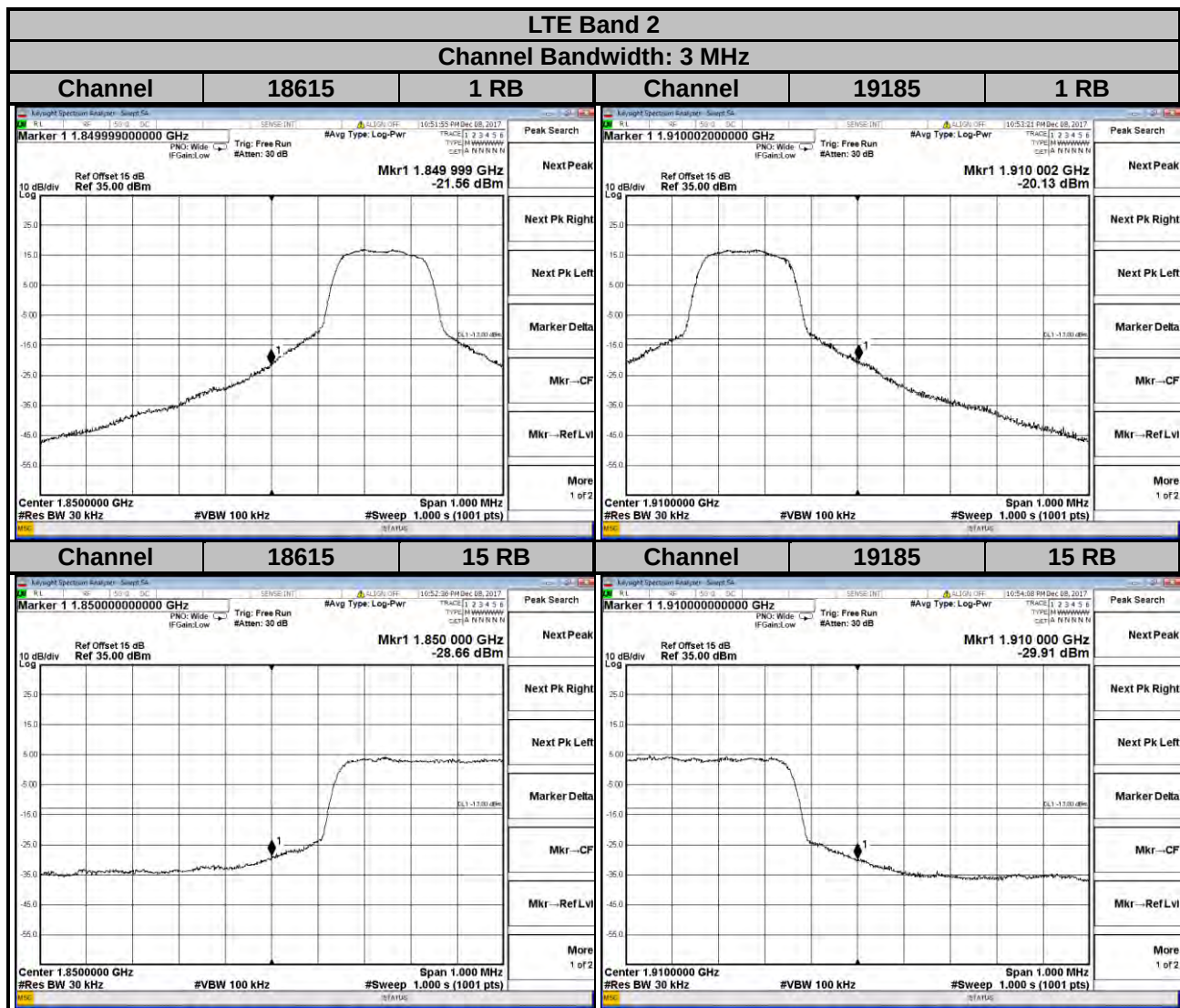
- All measurements were done at low and high operational frequency range.
- The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 10 kHz and VB of the spectrum is 30 kHz (GSM/GPRS/EDGE).
- The center frequency of spectrum is the band edge frequency and span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

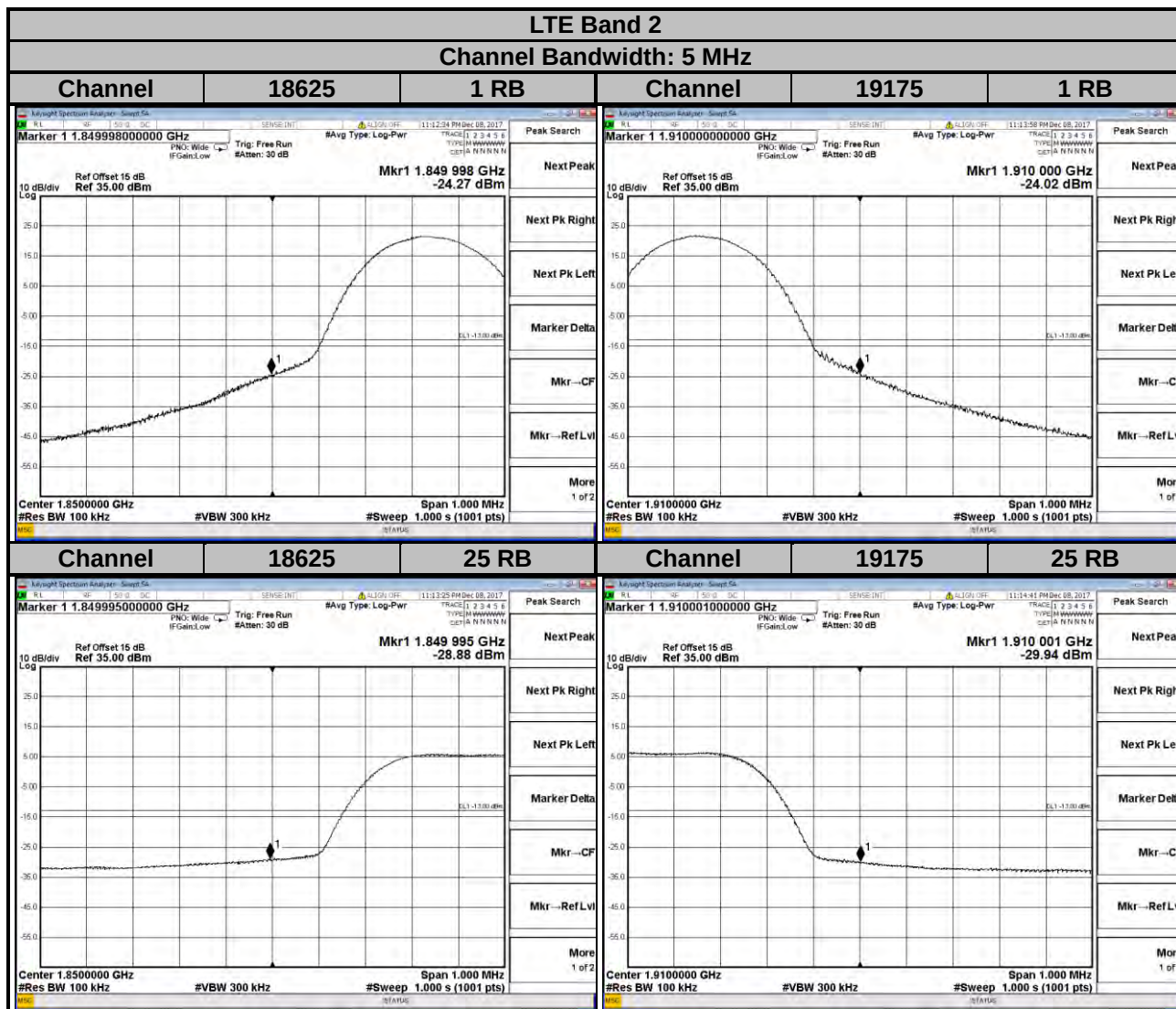
#### 4.4.4 Test Results

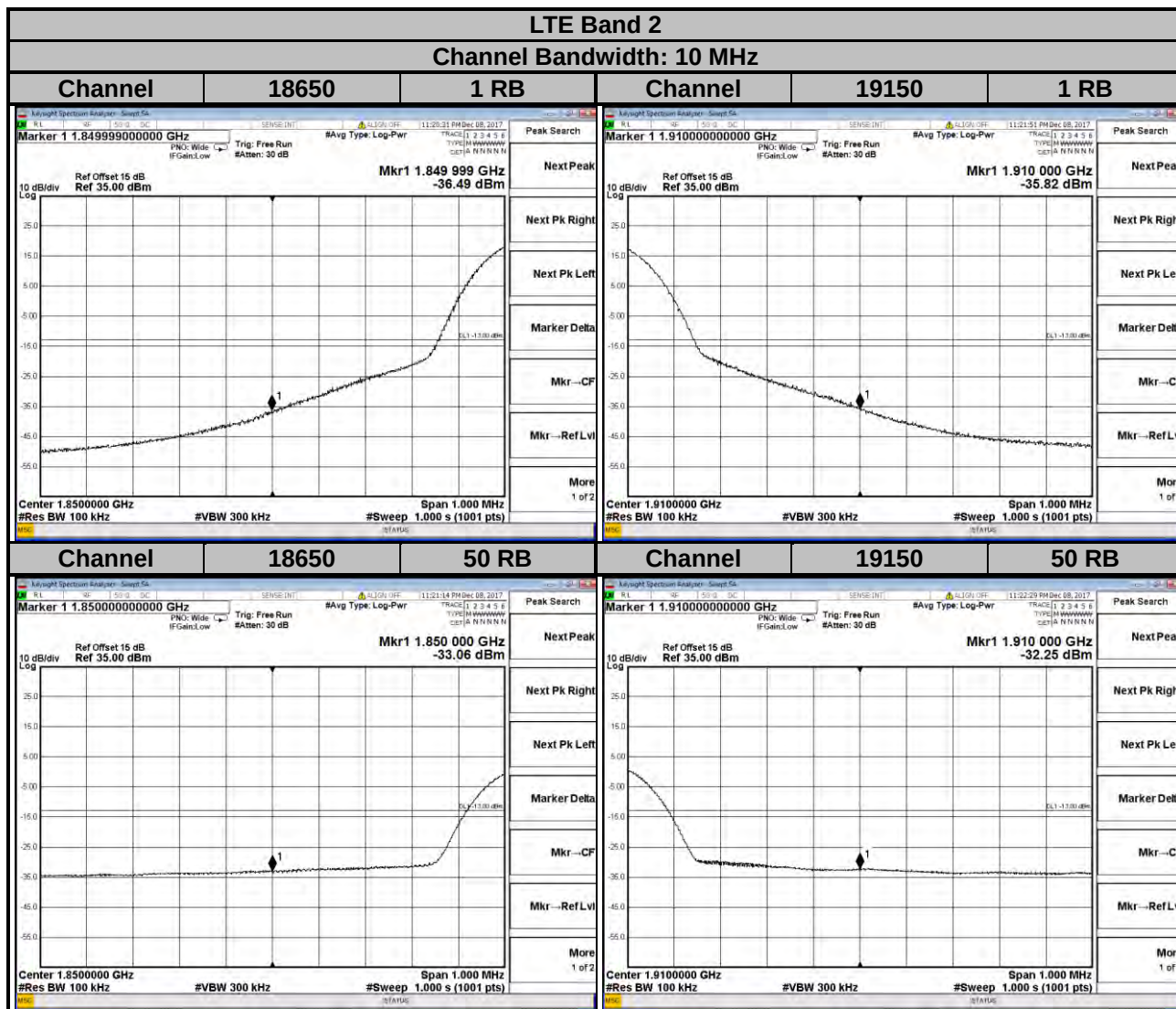


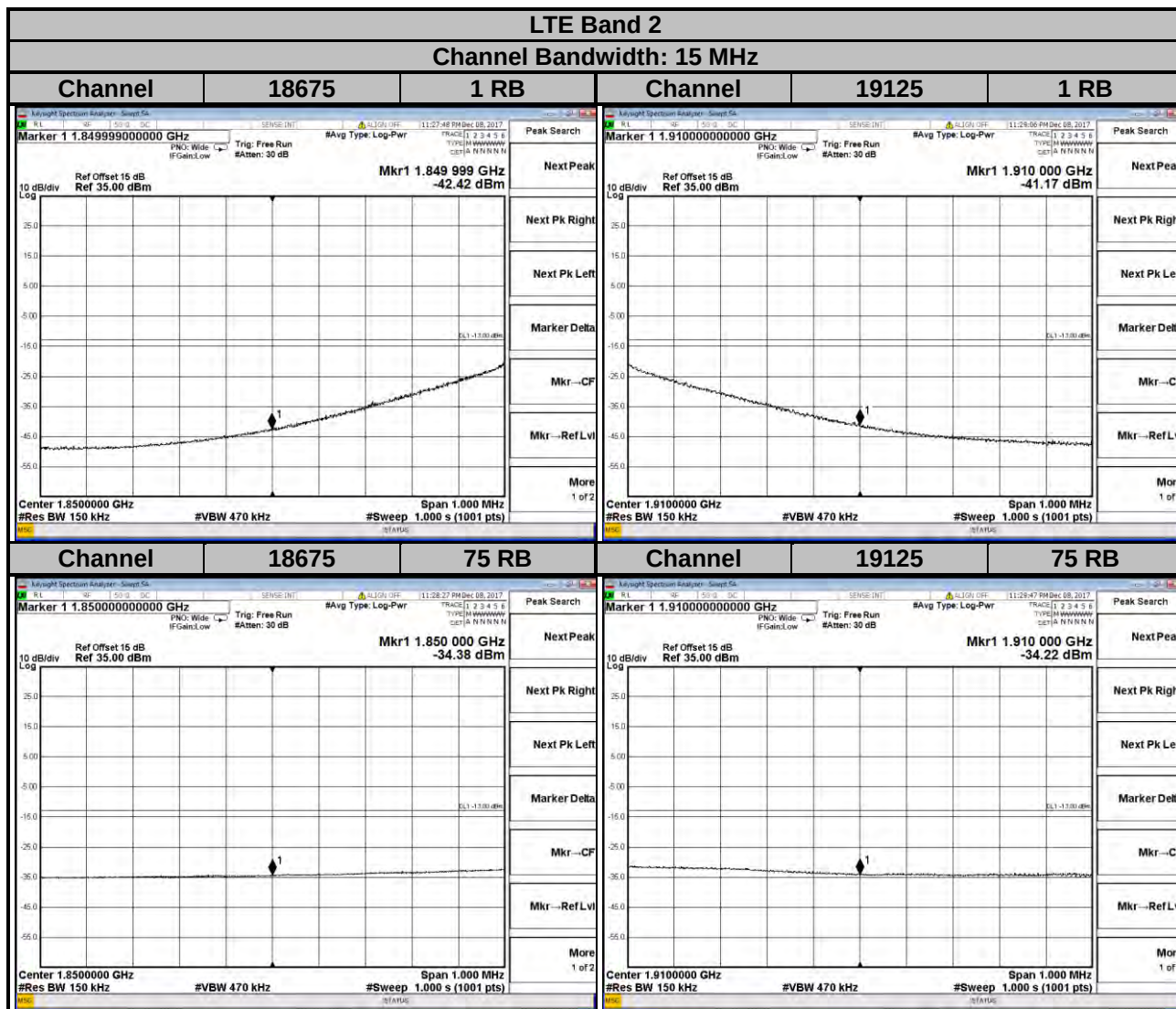


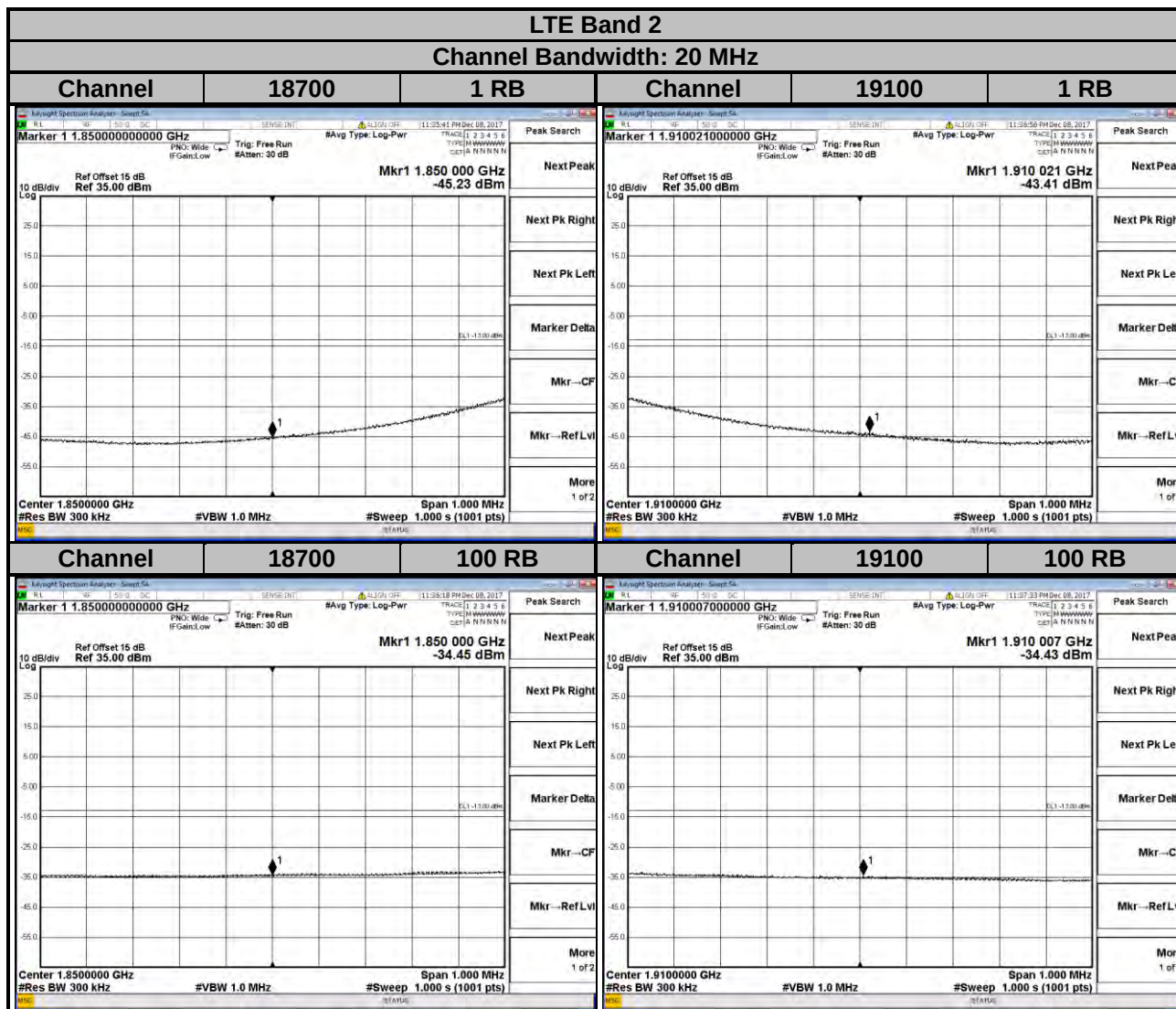


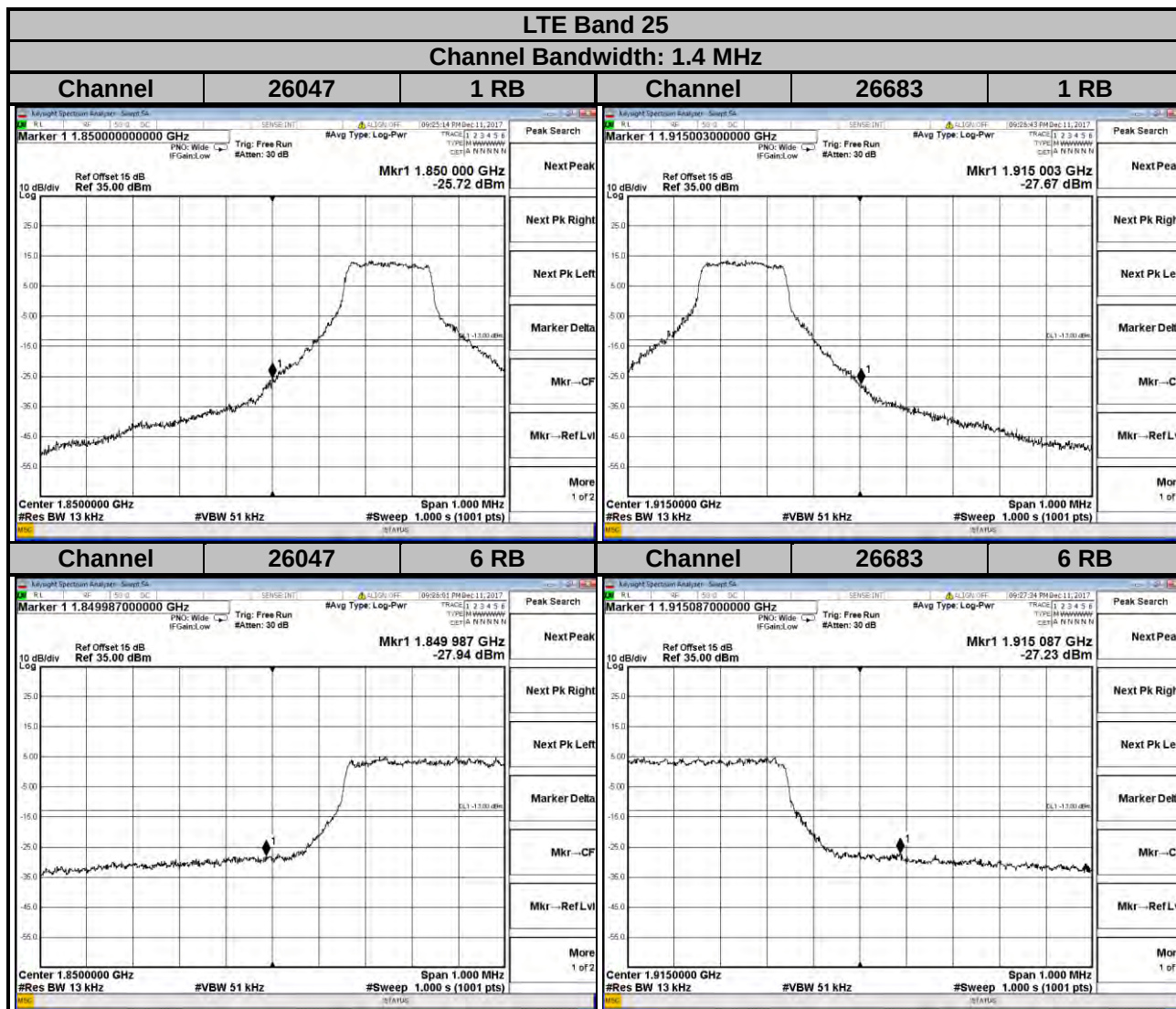


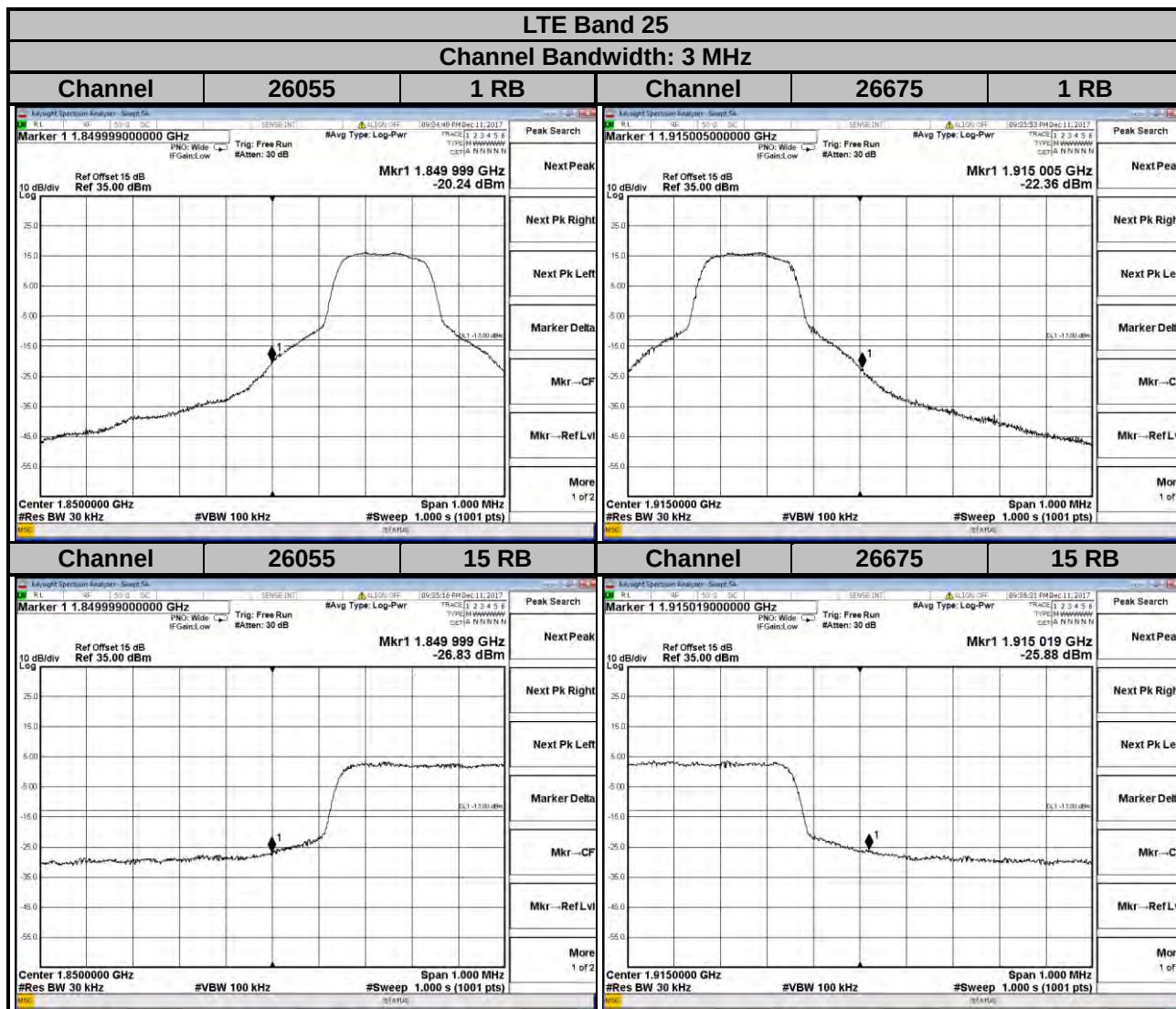


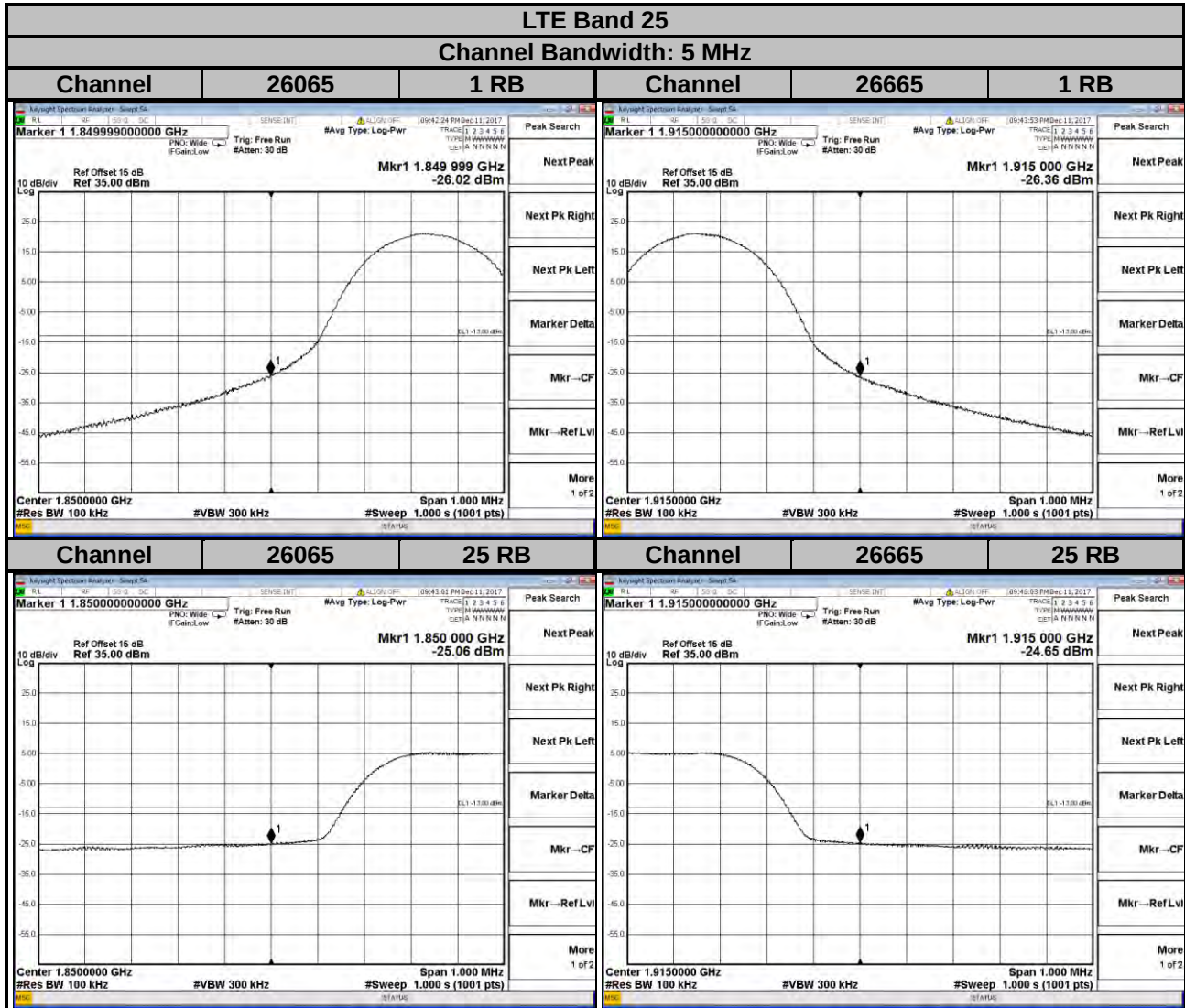


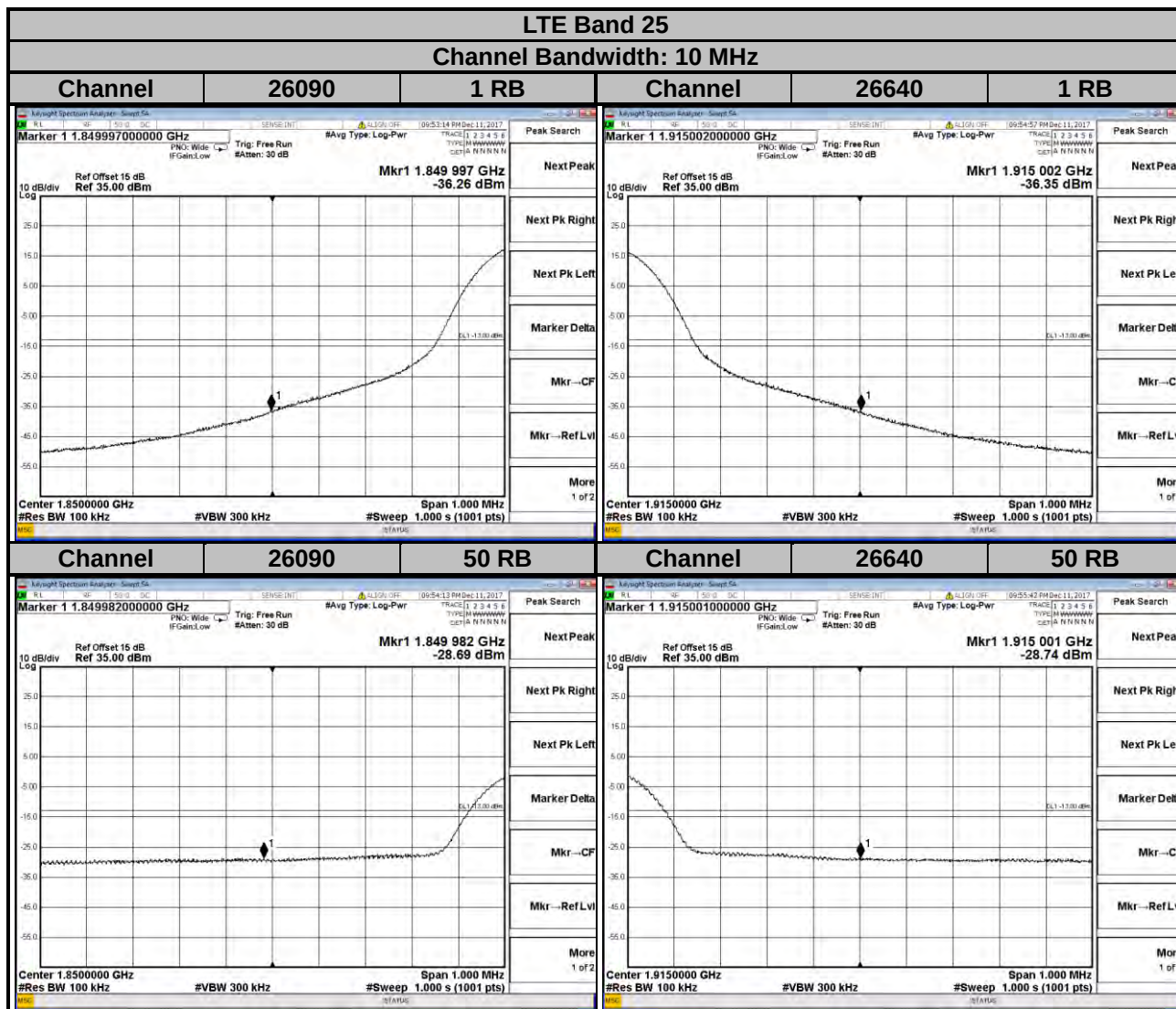


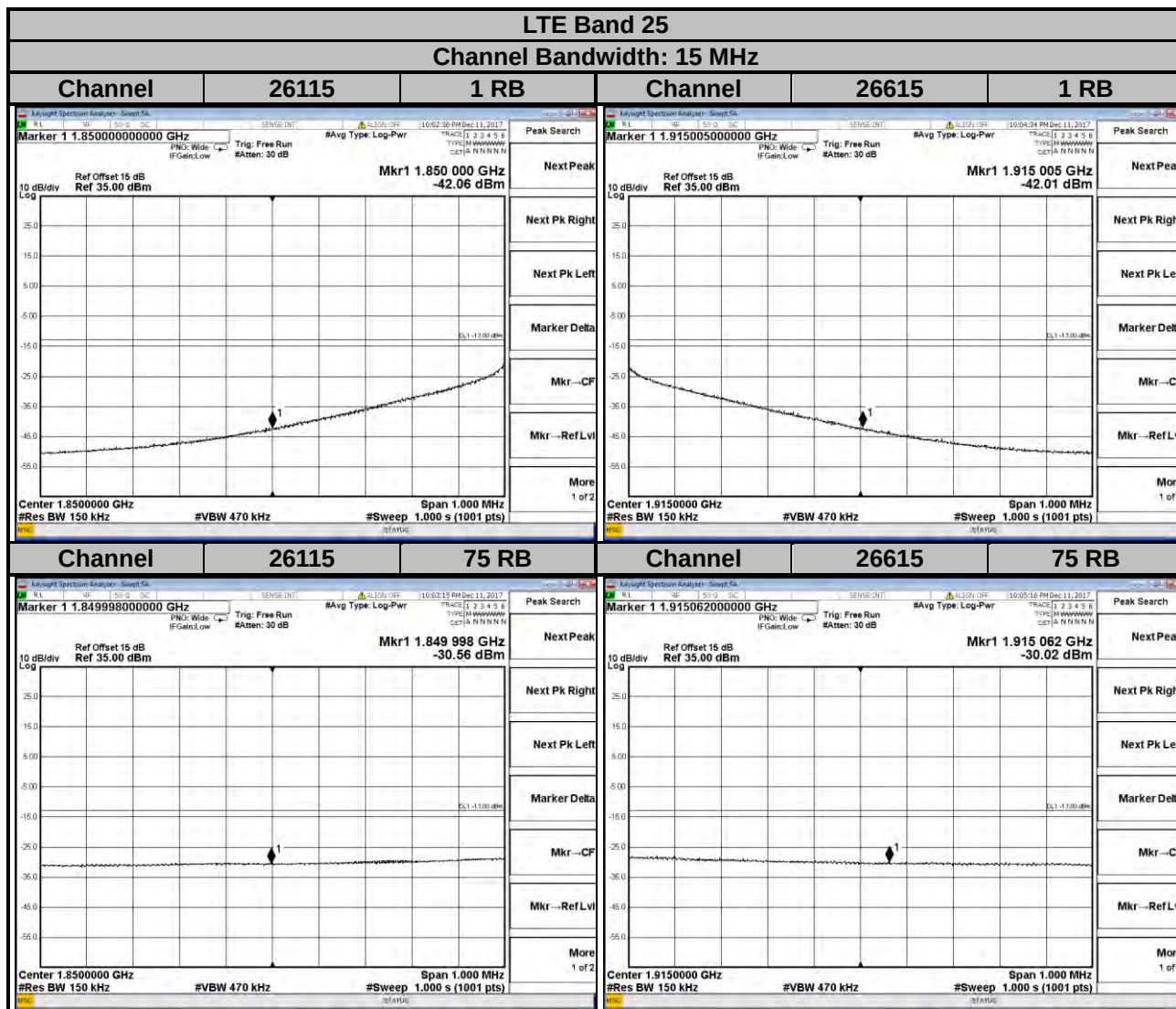


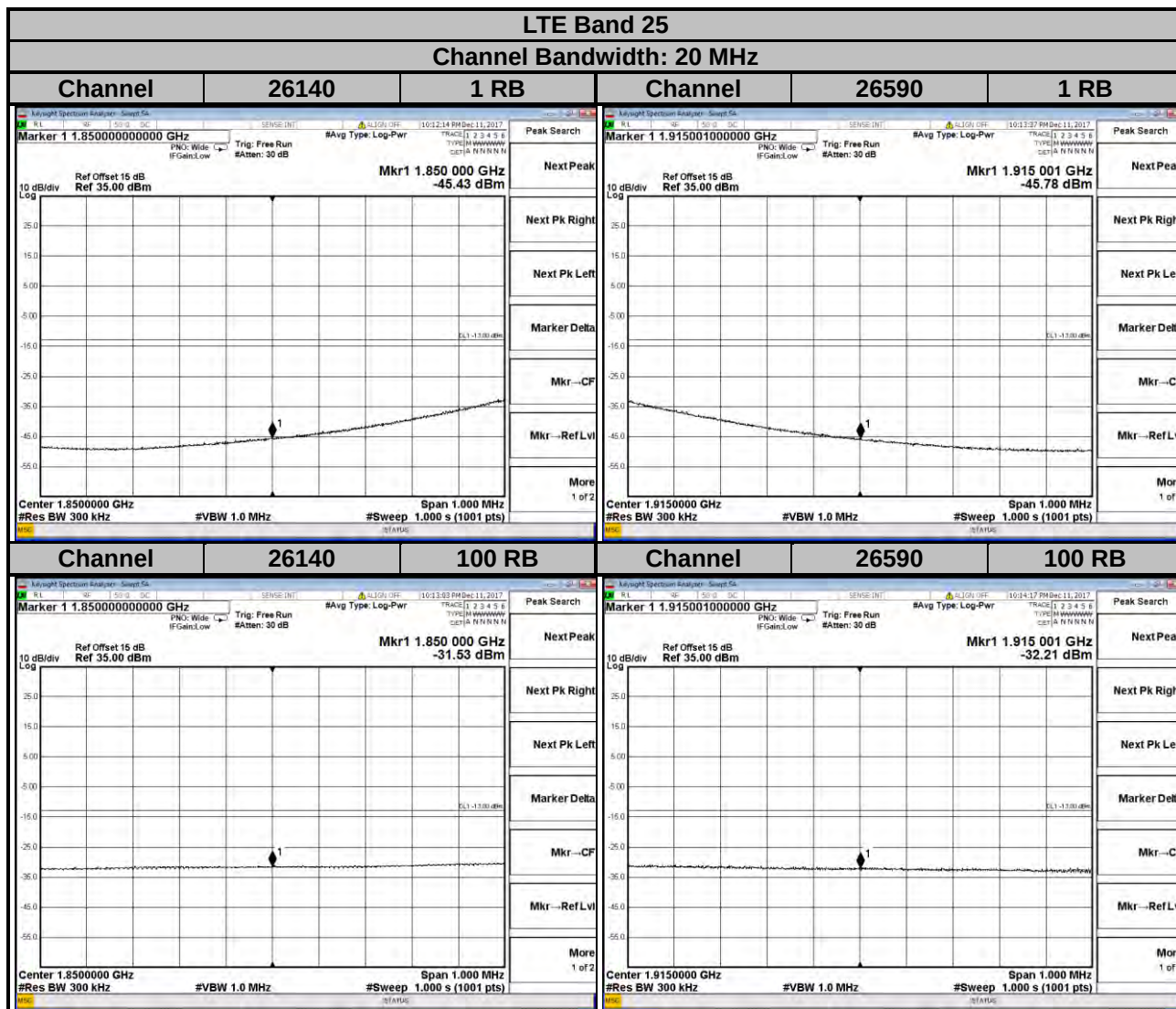










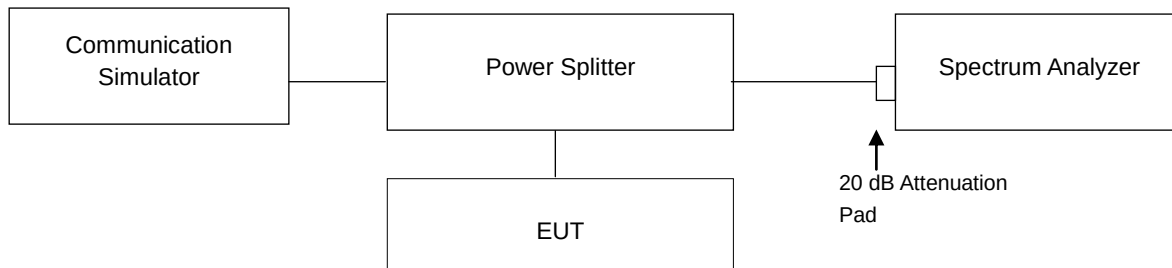


## 4.5 Peak to Average Ratio

### 4.5.1 Limits of Peak to Average Ratio Measurement

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

### 4.5.2 Test Setup

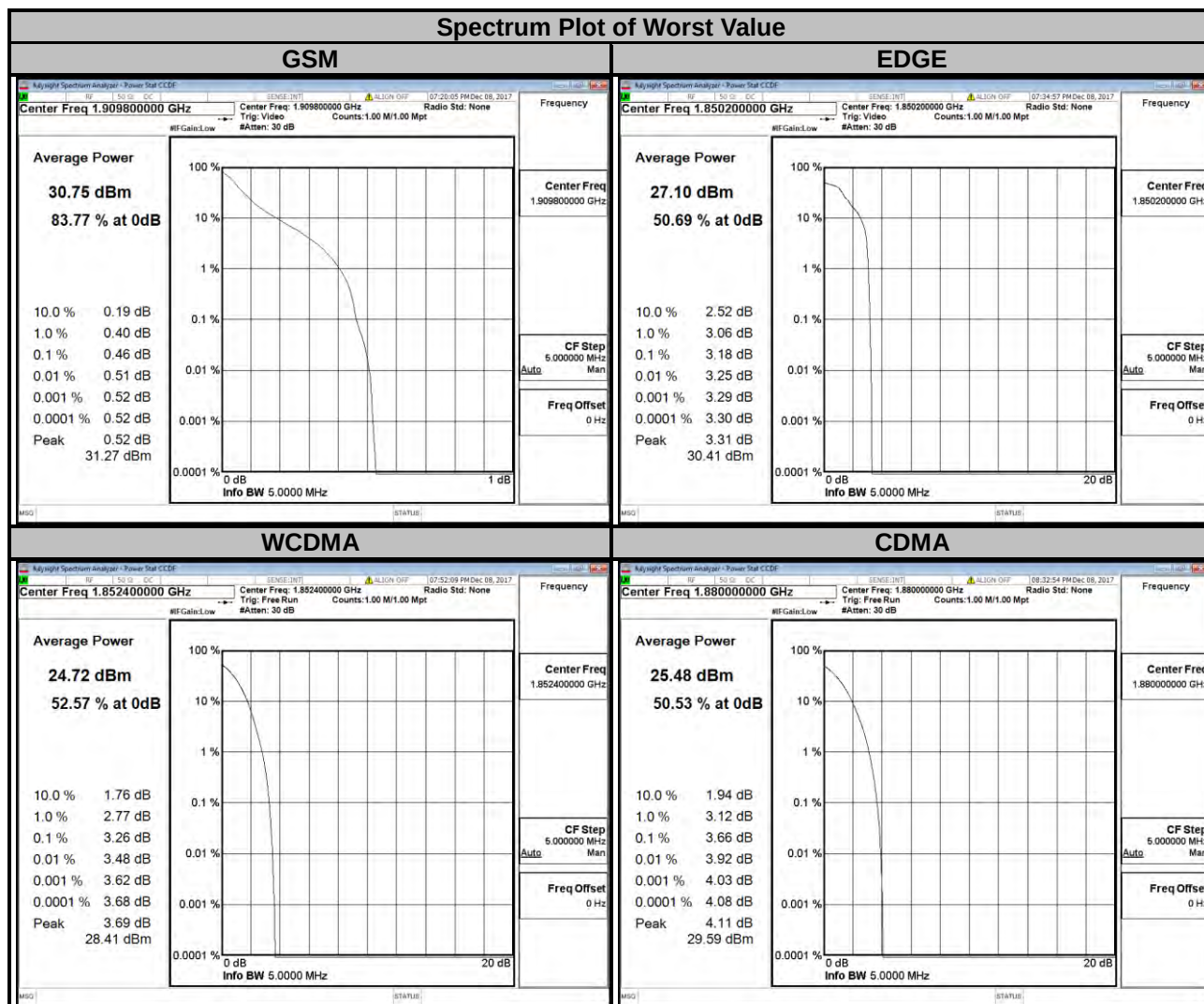


### 4.5.3 Test Procedures

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

#### 4.5.4 Test Results

| Channel | Frequency (MHz) | Peak to Average Ratio (dB) |      | Channel | Frequency (MHz) | Peak to Average Ratio (dB) |
|---------|-----------------|----------------------------|------|---------|-----------------|----------------------------|
|         |                 | GSM                        | EDGE |         |                 |                            |
| 512     | 1850.2          | 0.40                       | 3.18 | 9262    | 1852.4          | 3.26                       |
| 661     | 1880.0          | 0.43                       | 3.07 | 9400    | 1880.0          | 3.23                       |
| 810     | 1909.8          | 0.46                       | 2.99 | 9538    | 1907.6          | 3.19                       |
| Channel | Frequency (MHz) | Peak to Average Ratio (dB) |      |         |                 |                            |
|         |                 | CDMA                       |      |         |                 |                            |
| 25      | 1851.25         | 3.35                       |      |         |                 |                            |
| 600     | 1880.00         | 3.66                       |      |         |                 |                            |
| 1175    | 1908.75         | 3.09                       |      |         |                 |                            |

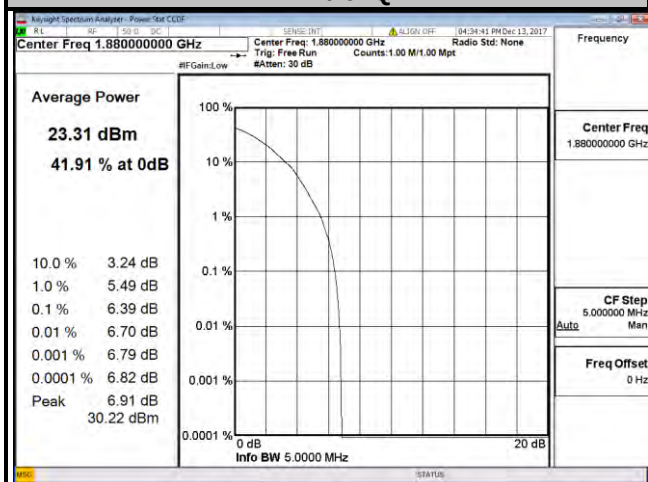


### LTE Band 2

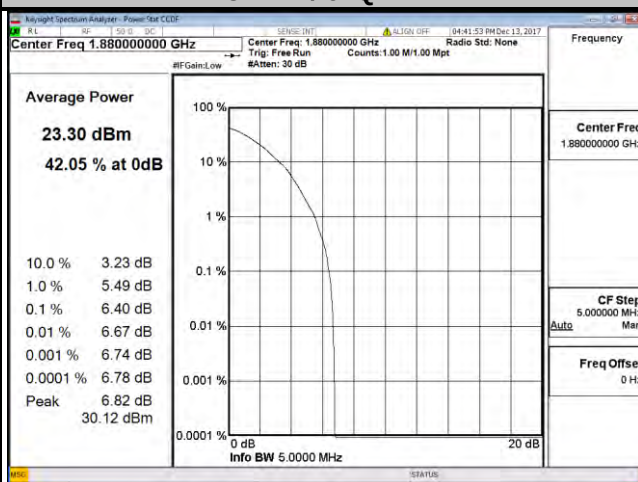
| Channel Bandwidth: 1.4 MHz |                 |                            |       |       | Channel Bandwidth: 3 MHz |                 |                            |       |       |
|----------------------------|-----------------|----------------------------|-------|-------|--------------------------|-----------------|----------------------------|-------|-------|
| Channel                    | Frequency (MHz) | Peak to Average Ratio (dB) |       |       | Channel                  | Frequency (MHz) | Peak to Average Ratio (dB) |       |       |
|                            |                 | QPSK                       | 16QAM | 64QAM |                          |                 | QPSK                       | 16QAM | 64QAM |
| 18607                      | 1850.7          | 4.50                       | 5.28  | 6.02  | 18615                    | 1851.5          | 4.43                       | 5.20  | 6.00  |
| 18900                      | 1880.0          | 4.99                       | 5.77  | 6.39  | 18900                    | 1880.0          | 4.92                       | 5.68  | 6.40  |
| 19193                      | 1909.3          | 4.37                       | 5.16  | 5.94  | 19185                    | 1908.5          | 4.49                       | 5.36  | 6.05  |

### Spectrum Plot of Worst Value

#### 1.4 MHz / 64QAM



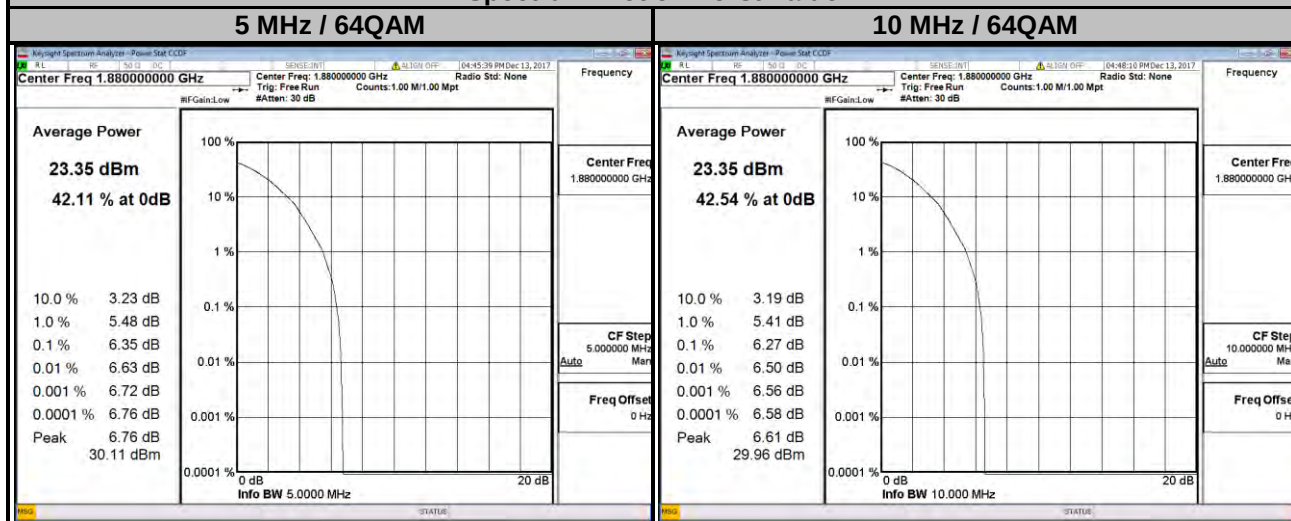
#### 3 MHz / 64QAM



### LTE Band 2

| Channel Bandwidth: 5 MHz |                 |                            |       |       | Channel Bandwidth: 10 MHz |                 |                            |       |       |
|--------------------------|-----------------|----------------------------|-------|-------|---------------------------|-----------------|----------------------------|-------|-------|
| Channel                  | Frequency (MHz) | Peak to Average Ratio (dB) |       |       | Channel                   | Frequency (MHz) | Peak to Average Ratio (dB) |       |       |
|                          |                 | QPSK                       | 16QAM | 64QAM |                           |                 | QPSK                       | 16QAM | 64QAM |
| 18625                    | 1852.5          | 4.44                       | 5.19  | 5.96  | 18650                     | 1855.0          | 4.40                       | 5.14  | 5.92  |
| 18900                    | 1880.0          | 4.89                       | 5.63  | 6.35  | 18900                     | 1880.0          | 4.75                       | 5.53  | 6.27  |
| 19175                    | 1907.5          | 4.57                       | 5.27  | 6.07  | 19150                     | 1905.0          | 4.55                       | 5.33  | 5.98  |

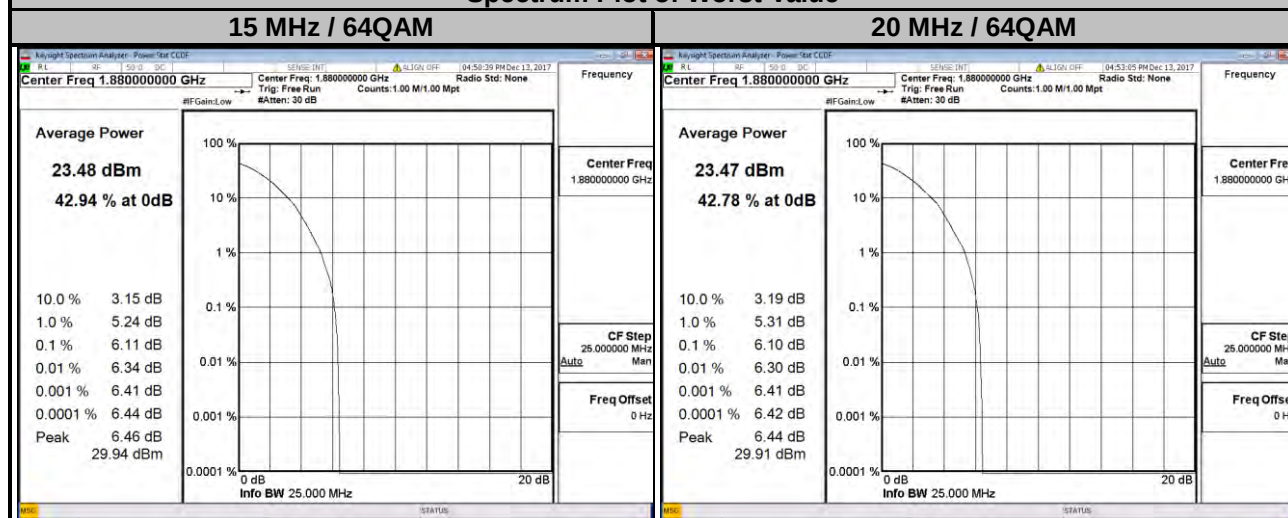
### Spectrum Plot of Worst Value



## LTE Band 2

| Channel Bandwidth: 15 MHz |                 |                            |       |       | Channel Bandwidth: 20 MHz |                 |                            |       |       |
|---------------------------|-----------------|----------------------------|-------|-------|---------------------------|-----------------|----------------------------|-------|-------|
| Channel                   | Frequency (MHz) | Peak to Average Ratio (dB) |       |       | Channel                   | Frequency (MHz) | Peak to Average Ratio (dB) |       |       |
|                           |                 | QPSK                       | 16QAM | 64QAM |                           |                 | QPSK                       | 16QAM | 64QAM |
| 18675                     | 1857.5          | 4.34                       | 5.05  | 5.86  | 18700                     | 1860.0          | 4.36                       | 5.15  | 5.88  |
| 18900                     | 1880.0          | 4.63                       | 5.35  | 6.11  | 18900                     | 1880.0          | 4.59                       | 5.33  | 6.10  |
| 19125                     | 1902.5          | 4.40                       | 5.25  | 5.87  | 19100                     | 1900.0          | 4.32                       | 5.09  | 5.75  |

## Spectrum Plot of Worst Value

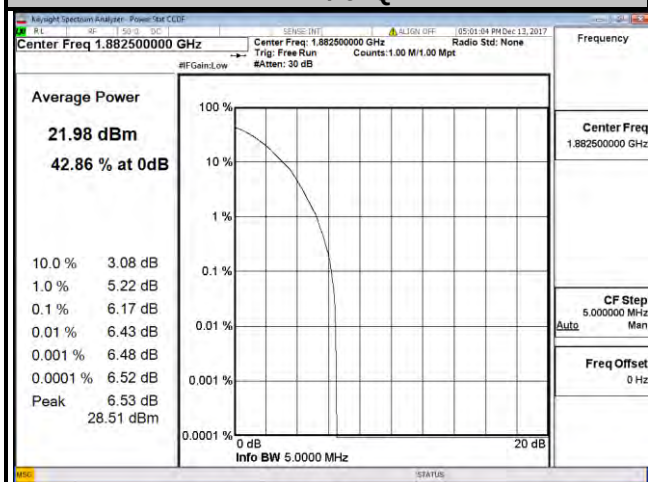


### LTE Band 25

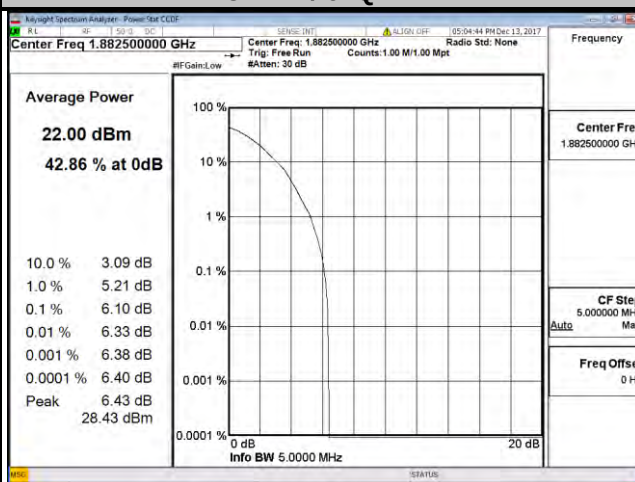
| Channel Bandwidth: 1.4 MHz |                 |                            |       |       | Channel Bandwidth: 3 MHz |                 |                            |       |       |
|----------------------------|-----------------|----------------------------|-------|-------|--------------------------|-----------------|----------------------------|-------|-------|
| Channel                    | Frequency (MHz) | Peak to Average Ratio (dB) |       |       | Channel                  | Frequency (MHz) | Peak to Average Ratio (dB) |       |       |
|                            |                 | QPSK                       | 16QAM | 64QAM |                          |                 | QPSK                       | 16QAM | 64QAM |
| 26047                      | 1850.7          | 4.32                       | 5.11  | 5.88  | 26055                    | 1851.5          | 4.24                       | 5.03  | 5.85  |
| 26365                      | 1882.5          | 4.60                       | 5.43  | 6.17  | 26365                    | 1882.5          | 4.60                       | 5.40  | 6.10  |
| 26683                      | 1914.3          | 4.18                       | 4.96  | 5.80  | 26675                    | 1913.5          | 4.19                       | 5.01  | 5.81  |

### Spectrum Plot of Worst Value

#### 1.4 MHz / 64QAM



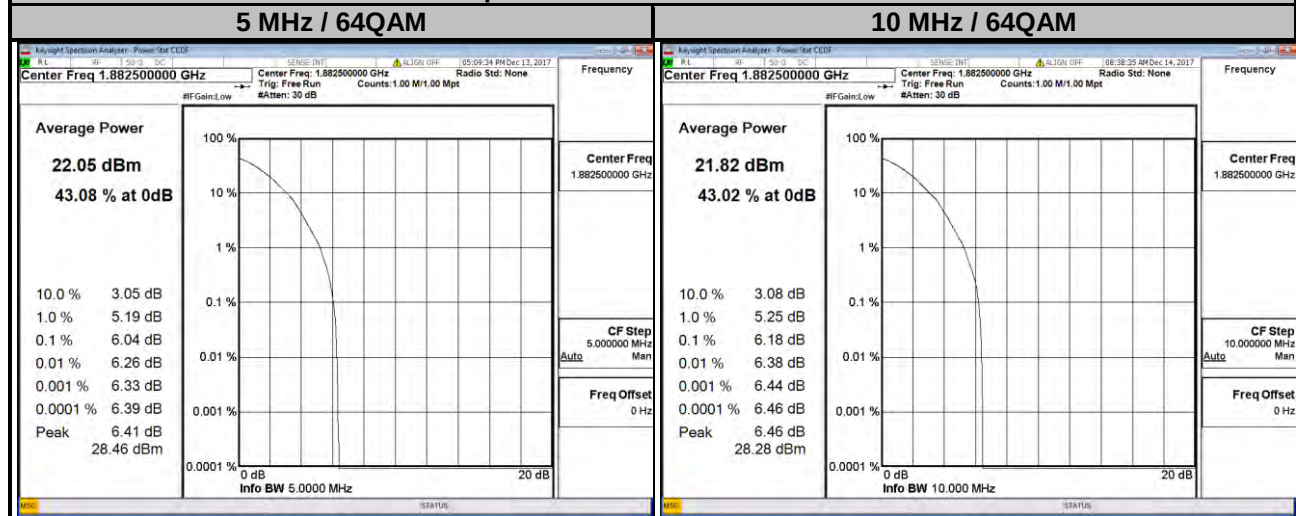
#### 3 MHz / 64QAM



### LTE Band 25

| Channel Bandwidth: 5 MHz |                 |                            |       |       | Channel Bandwidth: 10 MHz |                 |                            |       |       |
|--------------------------|-----------------|----------------------------|-------|-------|---------------------------|-----------------|----------------------------|-------|-------|
| Channel                  | Frequency (MHz) | Peak to Average Ratio (dB) |       |       | Channel                   | Frequency (MHz) | Peak to Average Ratio (dB) |       |       |
|                          |                 | QPSK                       | 16QAM | 64QAM |                           |                 | QPSK                       | 16QAM | 64QAM |
| 26065                    | 1852.5          | 4.21                       | 5.02  | 5.84  | 26090                     | 1855.0          | 4.19                       | 4.96  | 5.86  |
| 26365                    | 1882.5          | 4.45                       | 5.24  | 6.04  | 26365                     | 1882.5          | 4.47                       | 5.27  | 6.18  |
| 26665                    | 1912.5          | 4.24                       | 5.06  | 5.88  | 26640                     | 1910.0          | 4.43                       | 5.23  | 6.07  |

### Spectrum Plot of Worst Value

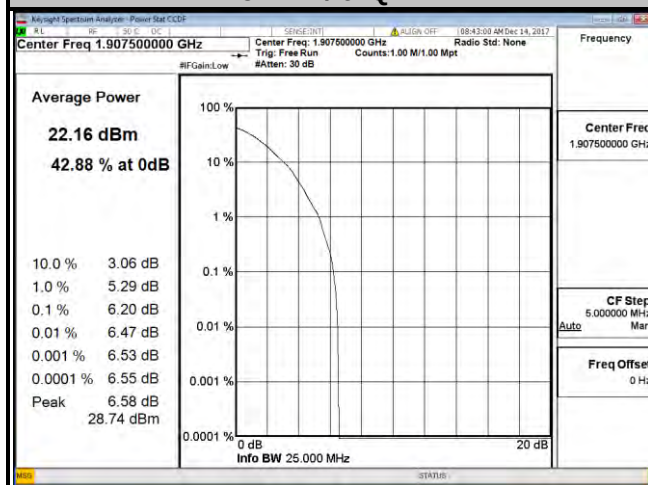


### LTE Band 25

| Channel Bandwidth: 15 MHz |                 |                            |       |       | Channel Bandwidth: 20 MHz |                 |                            |       |       |
|---------------------------|-----------------|----------------------------|-------|-------|---------------------------|-----------------|----------------------------|-------|-------|
| Channel                   | Frequency (MHz) | Peak to Average Ratio (dB) |       |       | Channel                   | Frequency (MHz) | Peak to Average Ratio (dB) |       |       |
|                           |                 | QPSK                       | 16QAM | 64QAM |                           |                 | QPSK                       | 16QAM | 64QAM |
| 26115                     | 1857.5          | 4.22                       | 5.00  | 5.75  | 26140                     | 1860.0          | 4.20                       | 4.97  | 5.92  |
| 26365                     | 1882.5          | 4.44                       | 5.29  | 6.10  | 26365                     | 1882.5          | 4.50                       | 5.34  | 6.20  |
| 26615                     | 1907.5          | 4.58                       | 5.38  | 6.20  | 26590                     | 1905.0          | 4.56                       | 5.40  | 6.24  |

### Spectrum Plot of Worst Value

#### 15 MHz / 64QAM



#### 20 MHz / 64QAM

