

# FCC CFR47 PART 22H, 24E, 27,90S CERTIFICATION TEST REPORT

## FCC ID: 2A27O-AT1201

**Product:** Tablet PC  
**Trade Mark:** HENA, Azeyou  
**Model No.:** AT1201  
**Family Model:** M17QF27A, M17QF27A, AT1017U, M17QF27A,  
M17T12, M17T11, M17QF5A, F27A, F27, F5A,  
F5, F8, T12, T11, T10, T13, T15, T16, T18, K10  
**Report No.:** S25050703302006  
**Issue Date:** Jul. 21, 2025

### Prepared for

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## TEST RESULT CERTIFICATION

**Applicant's name** ..... : Dongguan Lianzhou Electronic Technology Co., Ltd.

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**Manufacturer's Name**..... : Dongguan Lianzhou Electronic Technology Co., Ltd.

**Address**..... : Building 1, No. 10, Feng Gang Technology Road, Feng Gang Town, DongGuan City, GuangDong Province, China

**Product name**..... : Tablet PC

**Model and/or type reference** .. : AT1201

**Trade Mark**..... : HENA, Azeyou

**Family Model**..... : M17QF27A, M17QF27A, AT1017U, M17QF27A, M17T12, M17T11, M17QF5A, F27A, F27, F5A, F5, F8, T12, T11, T10, T13, T15, T16, T18, K10

**Test Sample Number**..... : S250507033003

**Standards**..... : FCC CFR 47 Part 22H, Part 24E, Part 27, Part 90S

**Test procedure** ..... : ANSI C63.26:2015  
ANSI/TIA-603-E-2016

This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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**Date of Test** .....

**Date (s) of performance of tests**..... May. 07, 2025 ~Jul. 21, 2025

**Date of Issue** ..... Jul. 21, 2025

**Test Result**..... **Pass**

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## 1. GENERAL INFORMATION

### 1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Designation: | Tablet PC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Trade Mark           | HENA, Azeyou                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Model Name           | AT1201                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Family Model         | M17QF27A, M17QF27A, AT1017U, M17QF27A, M17T12, M17T11, M17QF5A, F27A, F27, F5A, F5, F8, T12, T11, T10, T13, T15, T16, T18, K10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Model Difference     | All model are the same circuit and RF module, except for the names.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| FCC ID:              | 2A27O-AT1201                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Frequency Bands:     | U.S. Bands:<br><input checked="" type="checkbox"/> LTE FDD Band 2,4,5,7,12,13, 25, 26, 66<br><input checked="" type="checkbox"/> LTE TDD Band 41                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Frequency Range:     | LTE FDD Band 2 Uplink: 1850MHz-1910MHz, Downlink: 1930MHz-1990MHz;<br>LTE FDD Band 4 Uplink: 1710MHz-1755MHz, Downlink: 2110MHz-2155MHz;<br>LTE FDD Band 5 Uplink: 824MHz-849MHz, Downlink: 869MHz-894MHz;<br>LTE-FDD Band 7 Uplink: 2500MHz-2570MHz, Downlink: 2620MHz-2690MHz;<br>LTE FDD Band 12 Uplink: 699MHz-716MHz, Downlink: 729MHz-746MHz;<br>LTE FDD Band 13 Uplink: 777MHz-787MHz, Downlink: 746MHz-756MHz;<br>LTE FDD Band 25 Uplink: 1850MHz-1915MHz, Downlink: 1930MHz-1995MHz;<br>LTE FDD Band 26A Uplink: 814MHz-824MHz, Downlink: 859MHz-869MHz;<br>LTE FDD Band 26B Uplink: 824MHz-849MHz, Downlink: 869MHz-894MHz;<br>LTE TDD Band 41 Uplink& Downlink: 2535MHz-2655MHz<br>LTE FDD Band 66 Uplink: 1710MHz-1780MHz Downlink: 2110MHz-2200MHz; |
| Type of Modulation:  | QPSK/16QAM/64QAM(Only Downlink)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Power Class          | Class 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| SIM Card:            | SIM 1 and SIM 2 is a chipset unit and tested as a single chipset. The SIM 1 is chosen for test.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Antenna:             | FPC Antenna                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Antenna gain:        | Band 2: 2.08 dBi, Band 4: -0.75 dBi, Band 5: -2.09 dBi, Band 7: -1.09 dBi, Band 12: -11.35 dBi, Band 13: -6.61 dBi, Band25: 2.08 dBi, Band 26: -3.92 dBi, Band 41: -1.09 dBi , Band66: 0.40 dBi;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

|                                                                                                                                                            |                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Adapter                                                                                                                                                    | Model: TEKA-SCC20US<br>Input: 100-240V~50/60Hz 0.5A MAX<br>Output: 5.0V---3.0A 15.0W OR 9.0V---2.22A 19.98W Max<br>OR 12.0V---1.67A 20.04W MAX |
| Battery                                                                                                                                                    | DC 3.8V, 8000mAh, 30.4Wh                                                                                                                       |
| Power supply                                                                                                                                               | DC 3.8V from battery or DC 5V/9V/12V from adapter                                                                                              |
| Extreme Vol. Limits:                                                                                                                                       | DC 3.23V to DC 4.37V (Nominal DC 3.8V) (Note 1)                                                                                                |
| HW Version                                                                                                                                                 | T30-T616-V2.0                                                                                                                                  |
| FW Version                                                                                                                                                 | N/A                                                                                                                                            |
| SW Version                                                                                                                                                 | Android 15                                                                                                                                     |
| ** Note1: The High Voltage DC 4.37V and Low Voltage 3.23V was declared by manufacturer, The EUT couldn't be operate normally with higher or lower voltage. |                                                                                                                                                |

## 1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2A270-AT1201** filing to comply with the FCC Part 22H&24E&27&90S

## 1.3 TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI/TIA-603-E-2016, FCC CFR 47 Part 2, Part 22, Part 24, Part 27, Part 90S, ANSI C63.26:2015.

## 1.4 TEST FACILITY

The test site used to collect the radiated data is located at:

ShenZhen NTEK Testing Technology Co., Ltd.

No. 24 Xinfu East Road, Xiangshan Community, Xinqiao Street, Baoan District, Shenzhen, Guangdong, People's Republic of China.

The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.26:2015& ANSI C63.4: 2014.

FCC Registration No.:463705

IC Registration No.:9270A,

CNAS Registration No.:L5516

## MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

| No. | Item                                                                    | Uncertainty |
|-----|-------------------------------------------------------------------------|-------------|
| 1   | Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 2.5dB       |
|     |                                                                         |             |

## 1.5 SPECIAL ACCESSORIES

The battery and the charger, earphone supplied by the applicant were used as accessories and being tested with EUT intended for FCC grant together.

## 1.6 WORST-CASE CONFIGURATION AND MODE

The worst-case scenario for all measurements is based on the investigation results.

The device has LTE Bands of: Band 2/4/5/7/12/13/17/25/26/41/66

The RB Size was selected to measure for peak or average ERP and EIRP, which was based on the conducted power verification baseline data.

For the fundamental investigation of radiated emissions, the EUT is investigated for vertical and horizontal antenna orientations and X Y and Z orientations of the EUT alone. After the investigations the worst case was determined to be at X orientation for all LTE bands.

## 2. SYSTEM TEST CONFIGURATION

### 2.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 2.2 EUT EXERCISE

The Transmitter was operated in the maximum output power mode through Communication Tester. The TX frequency was fixed which was for the purpose of the measurements.

### 2.3 CONFIGURATION OF EUT SYSTEM

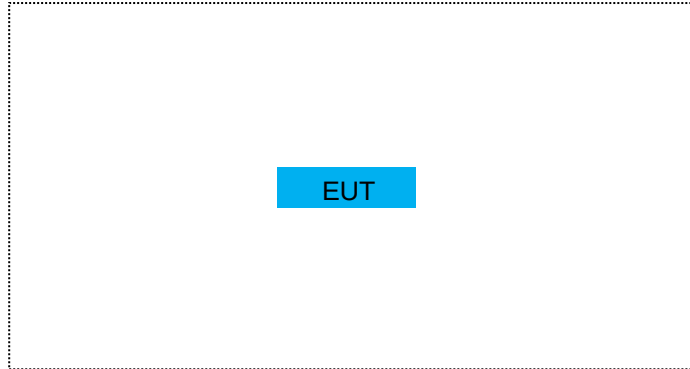
Table 2-1 Equipment Used in EUT System

| Item | Equipment | Model No. | ID or Specification  | Note |
|------|-----------|-----------|----------------------|------|
| 1    | Tablet PC | AT1201    | FCC ID: 2A27O-AT1201 | EUT  |
|      |           |           |                      |      |
|      |           |           |                      |      |

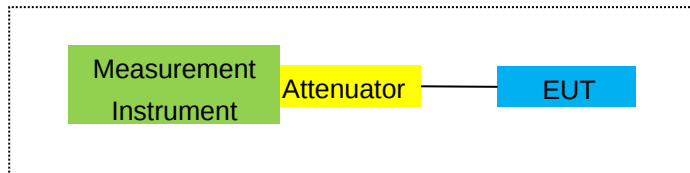
*Note: All the accessories have been used during the test.  
the following "EUT" in setup diagram means EUT system.*

## 2.4 TEST SETUP

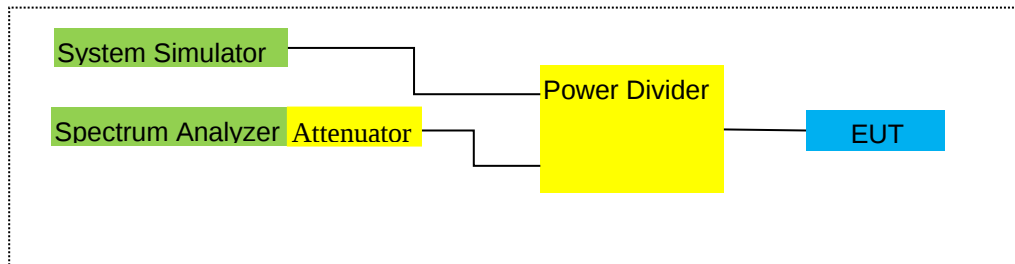
For Radiated Test Cases



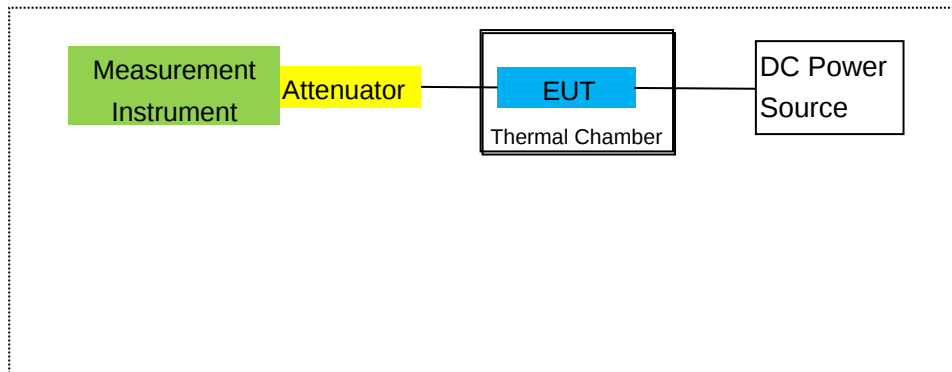
For Conducted Output Power



For Peak-to Average Ratio, Occupied Bandwidth, Conducted Band edge and Conducted Spurious Emission



For Frequency Stability



Note: EUT built-in battery-powered, the battery is fully-charged.

### 3.TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

| Item | Kind of Equipment                    | Manufacturer | Type No.    | Serial No.   | Last calibration | Calibrated until | Calibration period |
|------|--------------------------------------|--------------|-------------|--------------|------------------|------------------|--------------------|
| 1    | MXA Signal Analyzer                  | Agilent      | N9020A      | MY49100060   | 2025.04.17       | 2026.04.16       | 1 year             |
| 2    | Test Receiver                        | R&S          | ESPI        | 101318       | 2025.04.17       | 2026.04.16       | 1 year             |
| 3    | Bilog Antenna                        | TESEQ        | CBL6111D    | 31216        | 2025.05.11       | 2026.05.10       | 1 year             |
| 4    | 50Ω Coaxial Switch                   | Anritsu      | MP59B       | 6200983705   | 2024.04.26       | 2027.04.25       | 3 year             |
| 5    | Broadband Horn Antenna               | SCHWARZBECK  | BBHA 9120 D | 2816         | 2024.5.18        | 2027.5.17        | 3 year             |
| 6    | Broadband Horn Antenna               | SCHWARZBECK  | BBHA 9120 D | 2817         | 2024.5.18        | 2027.5.17        | 3 year             |
| 7    | Amplifier                            | EM           | EM-30180    | 060538       | 2025.04.17       | 2026.04.16       | 1 year             |
| 8    | Active Loop Antenna                  | SCHWARZBECK  | FMZB 1519 B | 055          | 2024.05.17       | 2027.05.16       | 3 year             |
| 9    | Power Meter                          | R&S          | NRVS        | 100696       | 2025.04.17       | 2026.04.16       | 1 year             |
| 10   | Power Sensor                         | R&S          | URV5-Z4     | 0395.1619.05 | 2025.04.17       | 2026.04.16       | 1 year             |
| 11   | Test Cable                           | N/A          | R-01        | N/A          | 2023.06.17       | 2026.06.16       | 3 year             |
| 12   | Test Cable                           | N/A          | R-02        | N/A          | 2023.06.17       | 2026.06.16       | 3 year             |
| 13   | Test Cable                           | N/A          | R-03        | N/A          | 2023.06.17       | 2026.06.16       | 3 year             |
| 14   | Test Receiver                        | R&S          | ESCI        | 101160       | 2025.04.17       | 2026.04.16       | 1 year             |
| 15   | LISN                                 | R&S          | ENV216      | 101313       | 2025.04.17       | 2026.04.16       | 1 year             |
| 16   | LISN                                 | EMCO         | 3816/2      | 00042990     | 2025.04.17       | 2026.04.16       | 1 year             |
| 17   | 50Ω Coaxial Switch                   | Anritsu      | MP59B       | 6200983705   | 2024.04.26       | 2027.04.25       | 3 year             |
| 18   | Field strength probe                 | narda        | EP601       | 711WX81278   | 2025.04.17       | 2026.04.16       | 1 year             |
| 19   | Test Cable                           | N/A          | C01         | N/A          | 2023.05.06       | 2026.05.05       | 3 year             |
| 20   | Test Cable                           | N/A          | C02         | N/A          | 2023.05.06       | 2026.05.05       | 3 year             |
| 21   | Test Cable                           | N/A          | C03         | N/A          | 2023.05.06       | 2026.05.05       | 3 year             |
| 22   | Spectrum Analyzer                    | Agilent      | E4440A      | MY41000130   | 2025.04.17       | 2026.04.16       | 1 year             |
| 23   | EMI Test Receiver                    | R&S          | ESCI        | 101160       | 2025.04.17       | 2026.04.16       | 1 year             |
| 24   | Universal Radio Communication Tester | R&S          | CMU200      | 105747       | 2025.04.17       | 2026.04.16       | 1 year             |

|    |                              |             |                     |                |            |            |        |
|----|------------------------------|-------------|---------------------|----------------|------------|------------|--------|
| 25 | High and Low Temperature Box | WEISS       | WT 20/40 EMC Simpac | 58226119460030 | 2024.05.30 | 2027.05.29 | 3 year |
| 26 | DC Power Source              | N/A         | PS-6005D            | 20170402923    | 2024.04.25 | 2027.04.24 | 3 year |
| 27 | MXG Vector Signal Generator  | Agilent     | N5183B              | MY57280984     | 2025.04.17 | 2026.04.16 | 1 year |
| 28 | Log-Periodic Antenna         | SCHWARZBECK | VULB 9162           | 584            | 2025.04.17 | 2026.04.16 | 1 year |
| 29 | Log-Periodic Antenna         | SCHWARZBECK | VULB 9162           | 586            | 2025.04.17 | 2026.04.16 | 1 year |

Note: Each piece of equipment is scheduled for calibration once a year except the Test Cable& DC Power Source which is scheduled for calibration every 3 years

#### Measurement Software

| Item | Manufacturer | Software Name | Software Version | Description       |
|------|--------------|---------------|------------------|-------------------|
| 1    | MWRTest      | MTS 8200      | 2.0              | RF Conducted Test |
| 2    | Farad        | EZ-EMC_RE     | AIT-03A          | RadiatedTest      |
| 3    | raditeq      | RadiMation    | 2023.1.3         | RadiatedTest      |

## 4. OUTPUT POWER

### 4.1 OUTPUT POWER MEASUREMENT

#### LTE Measurement Procedure:

All LTE bands conducted power peak and average are obtained from the CMW500 telecommunication test set. The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

**Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3**

| Modulation | Channel bandwidth / Transmission bandwidth (RB) |         |       |        |        |        | MPR (dB) |
|------------|-------------------------------------------------|---------|-------|--------|--------|--------|----------|
|            | 1.4 MHz                                         | 3.0 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz |          |
| QPSK       | > 5                                             | > 4     | > 8   | > 12   | > 16   | > 18   | ≤ 1      |
| 16 QAM     | ≤ 5                                             | ≤ 4     | ≤ 8   | ≤ 12   | ≤ 16   | ≤ 18   | ≤ 1      |
| 16 QAM     | > 5                                             | > 4     | > 8   | > 12   | > 16   | > 18   | ≤ 2      |

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of "NS\_01".<sup>3</sup>

**Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)**

| Network Signalling value | Requirements (sub-clause) | E-UTRA Band              | Channel bandwidth (MHz) | Resources Blocks ( $N_{RB}$ ) | A-MPR (dB)    |
|--------------------------|---------------------------|--------------------------|-------------------------|-------------------------------|---------------|
| NS_01                    | 6.6.2.1.1                 | Table 5.5-1              | 1.4, 3, 5, 10, 15, 20   | Table 5.6-1                   | NA            |
| NS_03                    | 6.6.2.2.1                 | 2, 4, 10, 23, 25, 35, 36 | 3                       | >5                            | $\leq 1$      |
|                          |                           |                          | 5                       | >6                            | $\leq 1$      |
|                          |                           |                          | 10                      | >6                            | $\leq 1$      |
|                          |                           |                          | 15                      | >8                            | $\leq 1$      |
|                          |                           |                          | 20                      | >10                           | $\leq 1$      |
| NS_04                    | 6.6.2.2.2                 | 41                       | 5                       | >6                            | $\leq 1$      |
|                          |                           |                          | 10, 15, 20              | See Table 6.2.4-4             |               |
| NS_05                    | 6.6.3.3.1                 | 1                        | 10, 15, 20              | $\geq 50$                     | $\leq 1$      |
| NS_06                    | 6.6.2.2.3                 | 12, 13, 14, 17           | 1.4, 3, 5, 10           | Table 5.6-1                   | n/a           |
| NS_07                    | 6.6.2.2.3<br>6.6.3.3.2    | 13                       | 10                      | Table 6.2.4-2                 | Table 6.2.4-2 |
| NS_08                    | 6.6.3.3.3                 | 19                       | 10, 15                  | > 44                          | $\leq 3$      |
| NS_09                    | 6.6.3.3.4                 | 21                       | 10, 15                  | > 40                          | $\leq 1$      |
|                          |                           |                          |                         | > 55                          | $\leq 2$      |
| NS_10                    |                           | 20                       | 15, 20                  | Table 6.2.4-3                 | Table 6.2.4-3 |
| NS_11                    | 6.6.2.2.1                 | 23 <sup>1</sup>          | 1.4, 3, 5, 10           | Table 6.2.4-5                 | Table 6.2.4-5 |
| ..                       |                           |                          |                         |                               |               |
| NS_32                    | -                         | -                        | -                       | -                             | -             |

Note 1: Applies to the lower block of Band 23, i.e. a carrier placed in the 2000-2010 MHz region.

Test data reference attachment.

## 5. OCCUPIED BANDWIDTH

### RULE PART(S)

FCC: §2.1049

### LIMITS

For reporting purposes only

### TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The -26dB bandwidth was also measured and recorded.

### MODES TESTED

Band 2/4/5/7/12/13/25/26/41/66

### RESULTS

**PASS**

Test data reference attachment.

## 6. BANDEDGE AND EMISSION MASK

### RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53, and §90.691

FCC: §22.359

### LIMITS

FCC: §22.917, §24.238, §27.53

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log (P)$  dB.

(m)(4) For mobile digital stations, the attenuation factor shall be not less than  $40 + 10 \log (P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log (P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and  $55 + 10 \log (P)$  dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than  $43 + 10 \log (P)$  dB on all frequencies between 2490.5 MHz and 2496 MHz and  $55 + 10 \log (P)$  dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees. Show citation box.

(c)(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than  $65 + 10 \log (P)$  dB in a 6.25 kHz band segment, for mobile and portable stations;

FCC: §90.691 Emission mask requirements for EA-based systems.

(a) Out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least  $116 \log_{10}(f/6.1)$  decibels or  $50 + 10 \log_{10}(P)$  decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10}(P)$  decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

**TEST PROCEDURE**

The transmitter output was connected to a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

For each band edge measurement:

Set the spectrum analyzer span to include the block edge frequency

Set a marker to point the corresponding band edge frequency in each test case.

Set resolution bandwidth to at least 1% of emission bandwidth.

**MODES TESTED**

Band 2/4/5/7/12/13/25/26/41/66

**RESULTS**

Test data reference attachment.

## 7. OUT OF BAND EMISSIONS

### RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53 and §90.691

### LIMITS

1. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log (P)$  dB.
2. The Band 7/41 emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $55 + 10 \log (P)$  dB.

### TEST PROCEDURE

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

For each out of band emissions measurement:

Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

### **MODES TESTED**

Band 2/4/5/7/12/13/25/26/41/66

#### 7.1 MEASUREMENT METHOD

The test set up and general procedure is similar to conducted peak output power test. Only different for setting the measurement configuration of the measuring instrument of Spectrum Analyzer.

Test data reference attachment.

## 8. RADIATED MEASUREMENT

### 8.1. RADIATED POWER (ERP & EIRP)

#### RULE PART(S)

FCC: §2.1046, §22.913, §24.232, §27.50 and §90.635

#### LIMITS:

22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

27.50 (c) (10) the following power and antenna height requirements apply to stations transmitting in the 698–746 MHz band, the portable stations (hand-held devices) are limited to 3 watts ERP.

27.50 (b)(10) Portable stations (hand-held devices) transmitting in the 746–757 MHz, 758–763 MHz, 776–793 MHz, and 805–806 MHz bands are limited to 3 watts ERP.

27.50 (d)(4) The following power and antenna height requirements apply to stations transmitting in the 1710–1755 MHz and 2110–2155 MHz bands: Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.

27.50 (h)(2) Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

90.635(b) The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

#### TEST PROCEDURE

ANSI/TIA-603-E Clause 2.2.17

KDB 971168 v02r01 RF power output using broadband peak and average power meter method.

KDB 971168 D01 Power Meas License Digital Systems v02r01, "Measurement Guidance for Certification of Licensed Digital Transmitters"

#### MODES TESTED

Band 2/4/5/7/12/13/25/26/41/66

#### RESULTS

Pass

## 8.2 LTE BAND 2

| Radiated Power (EIRP) for Band 2 |               |           |                   |                        |                          |                  |                              |                                |            |
|----------------------------------|---------------|-----------|-------------------|------------------------|--------------------------|------------------|------------------------------|--------------------------------|------------|
| Mode                             | RB/RB<br>SIZE | Frequency | Result            |                        |                          |                  |                              |                                | Conclusion |
|                                  |               |           | SG Level<br>(dBm) | Cable<br>Loss<br>(dBm) | Antenna<br>Gain<br>(dBi) | Max. EIRP        | Max. EIRP<br>Average<br>(mW) | Polarization<br>Of Max.<br>ERP |            |
|                                  |               |           |                   |                        |                          | Average<br>(dBm) |                              |                                |            |
| 1.4MHz<br>Band<br>QPSK           | 6/0           | 1850.7    | 16.48             | 3.76                   | 8.90                     | 21.62            | 145.167                      | Horizontal                     | Pass       |
|                                  |               | 1880      | 14.40             | 3.91                   | 8.90                     | 19.39            | 86.861                       | Horizontal                     | Pass       |
|                                  |               | 1909.3    | 15.57             | 3.93                   | 8.90                     | 20.54            | 113.221                      | Horizontal                     | Pass       |
| 3.0MHz<br>Band<br>QPSK           | 15/0          | 1851.5    | 13.78             | 3.77                   | 8.90                     | 18.91            | 77.886                       | Horizontal                     | Pass       |
|                                  |               | 1880      | 14.72             | 3.91                   | 8.90                     | 19.71            | 93.503                       | Horizontal                     | Pass       |
|                                  |               | 1908.5    | 16.15             | 3.94                   | 8.90                     | 21.11            | 129.231                      | Horizontal                     | Pass       |
| 5.0MHz<br>Band<br>QPSK           | 25/0          | 1852.5    | 16.49             | 3.77                   | 8.90                     | 21.62            | 145.282                      | Horizontal                     | Pass       |
|                                  |               | 1880      | 17.35             | 3.91                   | 8.90                     | 22.34            | 171.591                      | Horizontal                     | Pass       |
|                                  |               | 1907.5    | 16.48             | 3.94                   | 8.90                     | 21.44            | 139.471                      | Horizontal                     | Pass       |
| 10.0MHz<br>Band<br>QPSK          | 50/0          | 1855      | 17.27             | 3.79                   | 8.90                     | 22.38            | 173.076                      | Horizontal                     | Pass       |
|                                  |               | 1880      | 17.90             | 3.95                   | 8.90                     | 22.85            | 192.735                      | Horizontal                     | Pass       |
|                                  |               | 1905      | 15.26             | 3.97                   | 8.90                     | 20.19            | 104.443                      | Horizontal                     | Pass       |
| 15.0MHz<br>Band<br>QPSK          | 75/0          | 1857.5    | 16.13             | 3.79                   | 8.90                     | 21.24            | 133.052                      | Horizontal                     | Pass       |
|                                  |               | 1880      | 16.36             | 3.95                   | 8.90                     | 21.31            | 135.338                      | Horizontal                     | Pass       |
|                                  |               | 1902.5    | 15.84             | 3.97                   | 8.90                     | 20.77            | 119.369                      | Horizontal                     | Pass       |
| 20.0MHz<br>Band<br>QPSK          | 100/0         | 1860      | 17.23             | 3.81                   | 8.90                     | 22.32            | 170.666                      | Horizontal                     | Pass       |
|                                  |               | 1880      | 15.17             | 3.96                   | 8.90                     | 20.11            | 102.493                      | Horizontal                     | Pass       |
|                                  |               | 1900      | 17.18             | 4.00                   | 8.90                     | 22.08            | 161.396                      | Horizontal                     | Pass       |
| 1.4MHz<br>Band<br>QPSK           | 6/0           | 1850.7    | 15.74             | 3.76                   | 8.90                     | 20.88            | 122.447                      | Vertical                       | Pass       |
|                                  |               | 1880      | 14.43             | 3.91                   | 8.90                     | 19.42            | 87.593                       | Vertical                       | Pass       |
|                                  |               | 1909.3    | 16.28             | 3.93                   | 8.90                     | 21.25            | 133.313                      | Vertical                       | Pass       |
| 3.0MHz<br>Band<br>QPSK           | 15/0          | 1851.5    | 15.61             | 3.77                   | 8.90                     | 20.74            | 118.490                      | Vertical                       | Pass       |
|                                  |               | 1880      | 16.47             | 3.91                   | 8.90                     | 21.46            | 139.815                      | Vertical                       | Pass       |
|                                  |               | 1908.5    | 14.88             | 3.94                   | 8.90                     | 19.84            | 96.275                       | Vertical                       | Pass       |
| 5.0MHz<br>Band<br>QPSK           | 25/0          | 1852.5    | 15.46             | 3.77                   | 8.90                     | 20.59            | 114.559                      | Vertical                       | Pass       |
|                                  |               | 1880      | 14.87             | 3.91                   | 8.90                     | 19.86            | 96.891                       | Vertical                       | Pass       |
|                                  |               | 1907.5    | 17.11             | 3.94                   | 8.90                     | 22.07            | 160.900                      | Vertical                       | Pass       |
| 10.0MHz<br>Band<br>QPSK          | 50/0          | 1855      | 14.47             | 3.79                   | 8.90                     | 19.58            | 90.712                       | Vertical                       | Pass       |
|                                  |               | 1880      | 13.46             | 3.95                   | 8.90                     | 18.41            | 69.296                       | Vertical                       | Pass       |
|                                  |               | 1905      | 14.14             | 3.97                   | 8.90                     | 19.07            | 80.793                       | Vertical                       | Pass       |
| 15.0MHz                          | 75/0          | 1857.5    | 15.78             | 3.79                   | 8.90                     | 20.89            | 122.882                      | Vertical                       | Pass       |

|         |       |        |       |      |      |       |         |          |      |
|---------|-------|--------|-------|------|------|-------|---------|----------|------|
| Band    |       | 1880   | 15.92 | 3.95 | 8.90 | 20.87 | 122.297 | Vertical | Pass |
| QPSK    |       | 1902.5 | 17.43 | 3.97 | 8.90 | 22.36 | 172.369 | Vertical | Pass |
| 20.0MHz | 100/0 | 1860   | 18.26 | 3.81 | 8.90 | 23.35 | 216.371 | Vertical | Pass |
| Band    |       | 1880   | 16.77 | 3.96 | 8.90 | 21.71 | 148.159 | Vertical | Pass |
| QPSK    |       | 1900   | 15.37 | 4.00 | 8.90 | 20.27 | 106.507 | Vertical | Pass |

| Radiated Power (EIRP) for Band 2 |            |           |                |                  |                    |                         |                        |                          |            |
|----------------------------------|------------|-----------|----------------|------------------|--------------------|-------------------------|------------------------|--------------------------|------------|
| Mode                             | RB/RB SIZE | Frequency | Result         |                  |                    |                         |                        |                          | Conclusion |
|                                  |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Gain (dBi) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |            |
| 1.4MHz<br>Band 16<br>QAM         | 6/0        | 1850.7    | 14.60          | 3.76             | 8.90               | 20.51                   | 112.373                | Horizontal               | Pass       |
|                                  |            | 1880      | 15.75          | 3.91             | 8.90               | 19.97                   | 99.307                 | Horizontal               | Pass       |
|                                  |            | 1909.3    | 15.45          | 3.93             | 8.90               | 21.09                   | 128.494                | Horizontal               | Pass       |
| 3.0MHz<br>Band 16<br>QAM         | 15/0       | 1851.5    | 15.29          | 3.77             | 8.90               | 18.33                   | 68.079                 | Horizontal               | Pass       |
|                                  |            | 1880      | 14.95          | 3.91             | 8.90               | 20.99                   | 125.721                | Horizontal               | Pass       |
|                                  |            | 1908.5    | 14.55          | 3.94             | 8.90               | 18.60                   | 72.424                 | Horizontal               | Pass       |
| 5.0MHz<br>Band 16<br>QAM         | 25/0       | 1852.5    | 15.14          | 3.77             | 8.90               | 21.70                   | 147.828                | Horizontal               | Pass       |
|                                  |            | 1880      | 15.50          | 3.91             | 8.90               | 19.27                   | 84.473                 | Horizontal               | Pass       |
|                                  |            | 1907.5    | 14.00          | 3.94             | 8.90               | 18.51                   | 70.928                 | Horizontal               | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 50/0       | 1855      | 15.35          | 3.79             | 8.90               | 20.42                   | 110.050                | Horizontal               | Pass       |
|                                  |            | 1880      | 14.05          | 3.95             | 8.90               | 20.52                   | 112.776                | Horizontal               | Pass       |
|                                  |            | 1905      | 15.36          | 3.97             | 8.90               | 20.66                   | 116.512                | Horizontal               | Pass       |
| 15.0MHz<br>Band 16<br>QAM        | 75/0       | 1857.5    | 13.68          | 3.79             | 8.90               | 20.70                   | 117.494                | Horizontal               | Pass       |
|                                  |            | 1880      | 15.77          | 3.95             | 8.90               | 18.78                   | 75.494                 | Horizontal               | Pass       |
|                                  |            | 1902.5    | 15.65          | 3.97             | 8.90               | 20.93                   | 123.987                | Horizontal               | Pass       |
| 20.0MHz<br>Band 16<br>QAM        | 100/0      | 1860      | 13.84          | 3.81             | 8.90               | 18.99                   | 79.211                 | Horizontal               | Pass       |
|                                  |            | 1880      | 16.17          | 3.96             | 8.90               | 20.10                   | 102.405                | Horizontal               | Pass       |
|                                  |            | 1900      | 14.55          | 4.00             | 8.90               | 19.00                   | 79.508                 | Horizontal               | Pass       |
| 1.4MHz<br>Band 16<br>QAM         | 6/0        | 1850.7    | 14.61          | 3.76             | 8.90               | 21.09                   | 128.397                | Vertical                 | Pass       |
|                                  |            | 1880      | 15.84          | 3.91             | 8.90               | 18.93                   | 78.217                 | Vertical                 | Pass       |
|                                  |            | 1909.3    | 15.13          | 3.93             | 8.90               | 19.48                   | 88.789                 | Vertical                 | Pass       |
| 3.0MHz<br>Band 16<br>QAM         | 15/0       | 1851.5    | 13.77          | 3.77             | 8.90               | 19.44                   | 87.918                 | Vertical                 | Pass       |
|                                  |            | 1880      | 14.83          | 3.91             | 8.90               | 19.97                   | 99.232                 | Vertical                 | Pass       |
|                                  |            | 1908.5    | 14.56          | 3.94             | 8.90               | 19.40                   | 87.175                 | Vertical                 | Pass       |
| 5.0MHz<br>Band 16<br>QAM         | 25/0       | 1852.5    | 13.76          | 3.77             | 8.90               | 21.62                   | 145.182                | Vertical                 | Pass       |
|                                  |            | 1880      | 15.05          | 3.91             | 8.90               | 21.26                   | 133.724                | Vertical                 | Pass       |
|                                  |            | 1907.5    | 15.69          | 3.94             | 8.90               | 20.53                   | 112.891                | Vertical                 | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 50/0       | 1855      | 13.98          | 3.79             | 8.90               | 21.17                   | 131.032                | Vertical                 | Pass       |
|                                  |            | 1880      | 15.57          | 3.95             | 8.90               | 20.81                   | 120.601                | Vertical                 | Pass       |
|                                  |            | 1905      | 15.12          | 3.97             | 8.90               | 19.91                   | 97.930                 | Vertical                 | Pass       |
| 15.0MHz<br>Band 16               | 75/0       | 1857.5    | 13.85          | 3.79             | 8.90               | 20.16                   | 103.852                | Vertical                 | Pass       |
|                                  |            | 1880      | 14.87          | 3.95             | 8.90               | 21.84                   | 152.698                | Vertical                 | Pass       |

|         |       |        |       |      |      |       |         |          |      |
|---------|-------|--------|-------|------|------|-------|---------|----------|------|
| QAM     |       | 1902.5 | 13.66 | 3.97 | 8.90 | 20.52 | 112.640 | Vertical | Pass |
| 20.0MHz | 100/0 | 1860   | 14.29 | 3.81 | 8.90 | 22.25 | 167.789 | Vertical | Pass |
| Band 16 |       | 1880   | 14.90 | 3.96 | 8.90 | 21.67 | 146.969 | Vertical | Pass |
| QAM     |       | 1900   | 13.78 | 4.00 | 8.90 | 19.73 | 94.075  | Vertical | Pass |

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

### 8.3 LTE BAND 4

| Radiated Power (EIRP) for Band 4 |            |           |                |                  |                    |                         |                        |                          |            |
|----------------------------------|------------|-----------|----------------|------------------|--------------------|-------------------------|------------------------|--------------------------|------------|
| Mode                             | RB/RB SIZE | Frequency | Result         |                  |                    |                         |                        |                          | Conclusion |
|                                  |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Gain (dBi) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |            |
| 1.4MHz Band QPSK                 | 6/0        | 1710.7    | 13.87          | 3.12             | 8.90               | 19.65                   | 92.361                 | Horizontal               | Pass       |
|                                  |            | 1732.5    | 12.78          | 3.27             | 8.90               | 18.41                   | 69.307                 | Horizontal               | Pass       |
|                                  |            | 1754.3    | 15.85          | 3.29             | 8.90               | 21.46                   | 139.952                | Horizontal               | Pass       |
| 3.0MHz Band QPSK                 | 15/0       | 1711.5    | 13.81          | 3.13             | 8.90               | 19.58                   | 90.689                 | Horizontal               | Pass       |
|                                  |            | 1732.5    | 14.80          | 3.27             | 8.90               | 20.43                   | 110.356                | Horizontal               | Pass       |
|                                  |            | 1753.5    | 15.48          | 3.30             | 8.90               | 21.08                   | 128.168                | Horizontal               | Pass       |
| 5.0MHz Band QPSK                 | 25/0       | 1712.5    | 16.30          | 3.13             | 8.90               | 22.07                   | 161.031                | Horizontal               | Pass       |
|                                  |            | 1732.5    | 15.46          | 3.27             | 8.90               | 21.09                   | 128.518                | Horizontal               | Pass       |
|                                  |            | 1752.5    | 15.39          | 3.30             | 8.90               | 20.99                   | 125.571                | Horizontal               | Pass       |
| 10.0MHz Band QPSK                | 50/0       | 1715      | 15.28          | 3.15             | 8.90               | 21.03                   | 126.879                | Horizontal               | Pass       |
|                                  |            | 1732.5    | 14.62          | 3.31             | 8.90               | 20.21                   | 104.849                | Horizontal               | Pass       |
|                                  |            | 1750      | 16.43          | 3.33             | 8.90               | 22.00                   | 158.387                | Horizontal               | Pass       |
| 15.0MHz Band QPSK                | 75/0       | 1717.5    | 15.03          | 3.15             | 8.90               | 20.78                   | 119.609                | Horizontal               | Pass       |
|                                  |            | 1732.5    | 15.24          | 3.31             | 8.90               | 20.83                   | 120.996                | Horizontal               | Pass       |
|                                  |            | 1747.5    | 16.38          | 3.33             | 8.90               | 21.95                   | 156.783                | Horizontal               | Pass       |
| 20.0MHz Band QPSK                | 100/0      | 1720      | 13.57          | 3.17             | 8.90               | 19.30                   | 85.161                 | Horizontal               | Pass       |
|                                  |            | 1732.5    | 14.80          | 3.32             | 8.90               | 20.38                   | 109.028                | Horizontal               | Pass       |
|                                  |            | 1745      | 14.75          | 3.36             | 8.90               | 20.29                   | 106.815                | Horizontal               | Pass       |
| 1.4MHz Band QPSK                 | 6/0        | 1710.7    | 14.75          | 3.12             | 8.90               | 20.53                   | 112.973                | Vertical                 | Pass       |
|                                  |            | 1732.5    | 14.96          | 3.27             | 8.90               | 20.59                   | 114.566                | Vertical                 | Pass       |
|                                  |            | 1754.3    | 15.33          | 3.29             | 8.90               | 20.94                   | 124.040                | Vertical                 | Pass       |
| 3.0MHz Band QPSK                 | 15/0       | 1711.5    | 15.32          | 3.13             | 8.90               | 21.09                   | 128.634                | Vertical                 | Pass       |
|                                  |            | 1732.5    | 16.48          | 3.27             | 8.90               | 22.11                   | 162.375                | Vertical                 | Pass       |
|                                  |            | 1753.5    | 16.46          | 3.30             | 8.90               | 22.06                   | 160.649                | Vertical                 | Pass       |
| 5.0MHz Band QPSK                 | 25/0       | 1712.5    | 15.28          | 3.13             | 8.90               | 21.05                   | 127.396                | Vertical                 | Pass       |
|                                  |            | 1732.5    | 15.10          | 3.27             | 8.90               | 20.73                   | 118.207                | Vertical                 | Pass       |
|                                  |            | 1752.5    | 13.97          | 3.30             | 8.90               | 19.57                   | 90.481                 | Vertical                 | Pass       |
| 10.0MHz Band                     | 50/0       | 1715      | 12.37          | 3.15             | 8.90               | 18.12                   | 64.799                 | Vertical                 | Pass       |
|                                  |            | 1732.5    | 16.02          | 3.31             | 8.90               | 21.61                   | 144.919                | Vertical                 | Pass       |

|         |       |        |       |      |      |       |         |          |      |
|---------|-------|--------|-------|------|------|-------|---------|----------|------|
| QPSK    |       | 1750   | 14.73 | 3.33 | 8.90 | 20.30 | 107.262 | Vertical | Pass |
| 15.0MHz | 75/0  | 1717.5 | 15.54 | 3.15 | 8.90 | 21.29 | 134.446 | Vertical | Pass |
| Band    |       | 1732.5 | 16.09 | 3.31 | 8.90 | 21.68 | 147.313 | Vertical | Pass |
| QPSK    |       | 1747.5 | 14.91 | 3.33 | 8.90 | 20.48 | 111.731 | Vertical | Pass |
| 20.0MHz | 100/0 | 1720   | 16.65 | 3.17 | 8.90 | 22.38 | 173.131 | Vertical | Pass |
| Band    |       | 1732.5 | 16.59 | 3.32 | 8.90 | 22.17 | 164.818 | Vertical | Pass |
| QPSK    |       | 1745   | 13.99 | 3.36 | 8.90 | 19.53 | 89.829  | Vertical | Pass |

| Radiated Power (EIRP) for Band 4 |            |           |                   |                     |                       |                               |                              |                                |            |
|----------------------------------|------------|-----------|-------------------|---------------------|-----------------------|-------------------------------|------------------------------|--------------------------------|------------|
| Mode                             | RB/RB SIZE | Frequency | Result            |                     |                       |                               |                              |                                | Conclusion |
|                                  |            |           | SG Level<br>(dBm) | Cable Loss<br>(dBm) | Antenna Gain<br>(dBi) | Max. EIRP<br>Average<br>(dBm) | Max. EIRP<br>Average<br>(mW) | Polarization<br>Of Max.<br>ERP |            |
| 1.4MHz<br>Band 16<br>QAM         | 6/0        | 1710.7    | 15.22             | 3.12                | 8.90                  | 21.00                         | 125.926                      | Horizontal                     | Pass       |
|                                  |            | 1732.5    | 15.48             | 3.27                | 8.90                  | 21.11                         | 129.251                      | Horizontal                     | Pass       |
|                                  |            | 1754.3    | 15.85             | 3.29                | 8.90                  | 21.46                         | 139.993                      | Horizontal                     | Pass       |
| 3.0MHz<br>Band 16<br>QAM         | 15/0       | 1711.5    | 13.98             | 3.13                | 8.90                  | 19.75                         | 94.403                       | Horizontal                     | Pass       |
|                                  |            | 1732.5    | 15.24             | 3.27                | 8.90                  | 20.87                         | 122.237                      | Horizontal                     | Pass       |
|                                  |            | 1753.5    | 16.74             | 3.30                | 8.90                  | 22.34                         | 171.559                      | Horizontal                     | Pass       |
| 5.0MHz<br>Band 16<br>QAM         | 25/0       | 1712.5    | 13.61             | 3.13                | 8.90                  | 19.38                         | 86.656                       | Horizontal                     | Pass       |
|                                  |            | 1732.5    | 13.37             | 3.27                | 8.90                  | 19.00                         | 79.361                       | Horizontal                     | Pass       |
|                                  |            | 1752.5    | 14.69             | 3.30                | 8.90                  | 20.29                         | 106.813                      | Horizontal                     | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 50/0       | 1715      | 15.86             | 3.15                | 8.90                  | 21.61                         | 144.923                      | Horizontal                     | Pass       |
|                                  |            | 1732.5    | 13.23             | 3.31                | 8.90                  | 18.82                         | 76.124                       | Horizontal                     | Pass       |
|                                  |            | 1750      | 12.95             | 3.33                | 8.90                  | 18.52                         | 71.059                       | Horizontal                     | Pass       |
| 15.0MHz<br>Band 16<br>QAM        | 75/0       | 1717.5    | 14.59             | 3.15                | 8.90                  | 20.34                         | 108.149                      | Horizontal                     | Pass       |
|                                  |            | 1732.5    | 15.69             | 3.31                | 8.90                  | 21.28                         | 134.239                      | Horizontal                     | Pass       |
|                                  |            | 1747.5    | 14.78             | 3.33                | 8.90                  | 20.35                         | 108.269                      | Horizontal                     | Pass       |
| 20.0MHz<br>Band 16<br>QAM        | 100/0      | 1720      | 14.43             | 3.17                | 8.90                  | 20.16                         | 103.674                      | Horizontal                     | Pass       |
|                                  |            | 1732.5    | 15.45             | 3.32                | 8.90                  | 21.03                         | 126.863                      | Horizontal                     | Pass       |
|                                  |            | 1745      | 15.76             | 3.36                | 8.90                  | 21.30                         | 135.047                      | Horizontal                     | Pass       |
| 1.4MHz<br>Band 16<br>QAM         | 6/0        | 1710.7    | 15.96             | 3.12                | 8.90                  | 21.74                         | 149.386                      | Vertical                       | Pass       |
|                                  |            | 1732.5    | 14.53             | 3.27                | 8.90                  | 20.16                         | 103.740                      | Vertical                       | Pass       |
|                                  |            | 1754.3    | 14.67             | 3.29                | 8.90                  | 20.28                         | 106.694                      | Vertical                       | Pass       |
| 3.0MHz<br>Band 16<br>QAM         | 15/0       | 1711.5    | 14.45             | 3.13                | 8.90                  | 20.22                         | 105.300                      | Vertical                       | Pass       |
|                                  |            | 1732.5    | 14.76             | 3.27                | 8.90                  | 20.39                         | 109.277                      | Vertical                       | Pass       |
|                                  |            | 1753.5    | 15.56             | 3.30                | 8.90                  | 21.16                         | 130.626                      | Vertical                       | Pass       |
| 5.0MHz<br>Band 16<br>QAM         | 25/0       | 1712.5    | 16.61             | 3.13                | 8.90                  | 22.38                         | 173.080                      | Vertical                       | Pass       |
|                                  |            | 1732.5    | 15.08             | 3.27                | 8.90                  | 20.71                         | 117.885                      | Vertical                       | Pass       |
|                                  |            | 1752.5    | 14.45             | 3.30                | 8.90                  | 20.05                         | 101.152                      | Vertical                       | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 50/0       | 1715      | 13.74             | 3.15                | 8.90                  | 19.49                         | 88.873                       | Vertical                       | Pass       |
|                                  |            | 1732.5    | 15.10             | 3.31                | 8.90                  | 20.69                         | 117.295                      | Vertical                       | Pass       |
|                                  |            | 1750      | 16.10             | 3.33                | 8.90                  | 21.67                         | 146.838                      | Vertical                       | Pass       |

|         |       |        |       |      |      |       |         |          |      |
|---------|-------|--------|-------|------|------|-------|---------|----------|------|
| 15.0MHz | 75/0  | 1717.5 | 14.58 | 3.15 | 8.90 | 20.33 | 107.940 | Vertical | Pass |
| Band 16 |       | 1732.5 | 14.55 | 3.31 | 8.90 | 20.14 | 103.395 | Vertical | Pass |
| QAM     |       | 1747.5 | 14.93 | 3.33 | 8.90 | 20.50 | 112.282 | Vertical | Pass |
| 20.0MHz | 100/0 | 1720   | 15.78 | 3.17 | 8.90 | 21.51 | 141.590 | Vertical | Pass |
| Band 16 |       | 1732.5 | 17.17 | 3.32 | 8.90 | 22.75 | 188.514 | Vertical | Pass |
| QAM     |       | 1745   | 14.85 | 3.36 | 8.90 | 20.39 | 109.413 | Vertical | Pass |

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

## 8.4 LTE BAND 5

| Radiated Power (ERP) for Band 5 |            |           |                |                  |                   |                 |                        |                       |                          |            |
|---------------------------------|------------|-----------|----------------|------------------|-------------------|-----------------|------------------------|-----------------------|--------------------------|------------|
| Mode                            | RB/RB SIZE | Frequency | Result         |                  |                   |                 |                        |                       |                          | Conclusion |
|                                 |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Gain (dB) | Correction (dB) | Max. ERP Average (dBm) | Max. ERP Average (mW) | Polarization Of Max. ERP |            |
| 1.4MHz Band QPSK                | 6/0        | 824.7     | 21.07          | 2.01             | 5.30              | 2.15            | 22.21                  | 166.251               | Horizontal               | Pass       |
|                                 |            | 836.5     | 21.99          | 2.01             | 5.30              | 2.15            | 23.13                  | 205.598               | Horizontal               | Pass       |
|                                 |            | 848.3     | 20.21          | 2.02             | 5.70              | 2.15            | 21.74                  | 149.287               | Horizontal               | Pass       |
| 3.0MHz Band QPSK                | 15/0       | 825.5     | 21.72          | 2.01             | 5.30              | 2.15            | 22.86                  | 193.010               | Horizontal               | Pass       |
|                                 |            | 836.5     | 22.05          | 2.01             | 5.30              | 2.15            | 23.19                  | 208.279               | Horizontal               | Pass       |
|                                 |            | 847.5     | 20.81          | 2.02             | 5.70              | 2.15            | 22.34                  | 171.496               | Horizontal               | Pass       |
| 5.0MHz Band QPSK                | 25/0       | 826.5     | 20.63          | 2.01             | 5.30              | 2.15            | 21.77                  | 150.351               | Horizontal               | Pass       |
|                                 |            | 836.5     | 21.29          | 2.01             | 5.30              | 2.15            | 22.43                  | 174.806               | Horizontal               | Pass       |
|                                 |            | 846.5     | 22.09          | 2.02             | 5.70              | 2.15            | 23.62                  | 230.045               | Horizontal               | Pass       |
| 10.0MHz Band QPSK               | 50/0       | 829       | 20.47          | 2.01             | 5.30              | 2.15            | 21.61                  | 144.921               | Horizontal               | Pass       |
|                                 |            | 836.5     | 22.43          | 2.01             | 5.30              | 2.15            | 23.57                  | 227.407               | Horizontal               | Pass       |
|                                 |            | 844       | 20.19          | 2.02             | 5.70              | 2.15            | 21.72                  | 148.589               | Horizontal               | Pass       |
| 1.4MHz Band QPSK                | 6/0        | 824.7     | 22.35          | 2.01             | 5.30              | 2.15            | 23.49                  | 223.294               | Vertical                 | Pass       |
|                                 |            | 836.5     | 22.47          | 2.01             | 5.30              | 2.15            | 23.61                  | 229.484               | Vertical                 | Pass       |
|                                 |            | 848.3     | 21.32          | 2.02             | 5.70              | 2.15            | 22.85                  | 192.911               | Vertical                 | Pass       |
| 3.0MHz Band QPSK                | 15/0       | 825.5     | 21.66          | 2.01             | 5.30              | 2.15            | 22.80                  | 190.558               | Vertical                 | Pass       |
|                                 |            | 836.5     | 21.59          | 2.01             | 5.30              | 2.15            | 22.73                  | 187.647               | Vertical                 | Pass       |
|                                 |            | 847.5     | 20.27          | 2.02             | 5.70              | 2.15            | 21.80                  | 151.191               | Vertical                 | Pass       |
| 5.0MHz Band QPSK                | 25/0       | 826.5     | 19.86          | 2.01             | 5.30              | 2.15            | 21.00                  | 125.846               | Vertical                 | Pass       |
|                                 |            | 836.5     | 22.05          | 2.01             | 5.30              | 2.15            | 23.19                  | 208.285               | Vertical                 | Pass       |
|                                 |            | 846.5     | 20.47          | 2.02             | 5.70              | 2.15            | 22.00                  | 158.484               | Vertical                 | Pass       |
| 10.0MHz Band QPSK               | 50/0       | 829       | 19.46          | 2.01             | 5.30              | 2.15            | 20.60                  | 114.736               | Vertical                 | Pass       |
|                                 |            | 836.5     | 23.43          | 2.01             | 5.30              | 2.15            | 24.57                  | 286.619               | Vertical                 | Pass       |
|                                 |            | 844       | 20.28          | 2.02             | 5.70              | 2.15            | 21.81                  | 151.718               | Vertical                 | Pass       |

| Radiated Power (ERP) for Band 5 |            |           |                |                  |                   |                 |                        |                       |                          |            |
|---------------------------------|------------|-----------|----------------|------------------|-------------------|-----------------|------------------------|-----------------------|--------------------------|------------|
| Mode                            | RB/RB SIZE | Frequency | Result         |                  |                   |                 |                        |                       |                          | Conclusion |
|                                 |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Gain (dB) | Correction (dB) | Max. ERP Average (dBm) | Max. ERP Average (mW) | Polarization Of Max. ERP |            |
| 1.4MHz<br>Band 16<br>QAM        | 6/0        | 824.7     | 20.55          | 2.01             | 5.30              | 2.15            | 21.69                  | 147.508               | Horizontal               | Pass       |
|                                 |            | 836.5     | 21.06          | 2.01             | 5.30              | 2.15            | 22.20                  | 165.830               | Horizontal               | Pass       |
|                                 |            | 848.3     | 19.79          | 2.02             | 5.70              | 2.15            | 21.32                  | 135.379               | Horizontal               | Pass       |
| 3.0MHz<br>Band 16<br>QAM        | 15/0       | 825.5     | 21.17          | 2.01             | 5.30              | 2.15            | 22.31                  | 170.221               | Horizontal               | Pass       |
|                                 |            | 836.5     | 19.34          | 2.01             | 5.30              | 2.15            | 20.48                  | 111.642               | Horizontal               | Pass       |
|                                 |            | 847.5     | 20.54          | 2.02             | 5.70              | 2.15            | 22.07                  | 161.077               | Horizontal               | Pass       |
| 5.0MHz<br>Band 16<br>QAM        | 25/0       | 826.5     | 20.35          | 2.01             | 5.30              | 2.15            | 21.49                  | 140.822               | Horizontal               | Pass       |
|                                 |            | 836.5     | 19.25          | 2.01             | 5.30              | 2.15            | 20.39                  | 109.519               | Horizontal               | Pass       |
|                                 |            | 846.5     | 20.39          | 2.02             | 5.70              | 2.15            | 21.92                  | 155.698               | Horizontal               | Pass       |
| 10.0MHz<br>Band 16<br>QAM       | 50/0       | 829       | 20.16          | 2.01             | 5.30              | 2.15            | 21.30                  | 134.922               | Horizontal               | Pass       |
|                                 |            | 836.5     | 19.45          | 2.01             | 5.30              | 2.15            | 20.59                  | 114.521               | Horizontal               | Pass       |
|                                 |            | 844       | 19.44          | 2.02             | 5.70              | 2.15            | 20.97                  | 124.945               | Horizontal               | Pass       |
| 1.4MHz<br>Band 16<br>QAM        | 6/0        | 824.7     | 21.40          | 2.01             | 5.30              | 2.15            | 22.54                  | 179.515               | Vertical                 | Pass       |
|                                 |            | 836.5     | 21.27          | 2.01             | 5.30              | 2.15            | 22.41                  | 174.186               | Vertical                 | Pass       |
|                                 |            | 848.3     | 21.07          | 2.02             | 5.70              | 2.15            | 22.60                  | 181.816               | Vertical                 | Pass       |
| 3.0MHz<br>Band 16<br>QAM        | 15/0       | 825.5     | 18.96          | 2.01             | 5.30              | 2.15            | 20.10                  | 102.404               | Vertical                 | Pass       |
|                                 |            | 836.5     | 20.46          | 2.01             | 5.30              | 2.15            | 21.60                  | 144.390               | Vertical                 | Pass       |
|                                 |            | 847.5     | 19.66          | 2.02             | 5.70              | 2.15            | 21.19                  | 131.664               | Vertical                 | Pass       |
| 5.0MHz<br>Band 16<br>QAM        | 25/0       | 826.5     | 19.97          | 2.01             | 5.30              | 2.15            | 21.11                  | 129.217               | Vertical                 | Pass       |
|                                 |            | 836.5     | 17.88          | 2.01             | 5.30              | 2.15            | 19.02                  | 79.715                | Vertical                 | Pass       |
|                                 |            | 846.5     | 20.63          | 2.02             | 5.70              | 2.15            | 22.16                  | 164.337               | Vertical                 | Pass       |
| 10.0MHz<br>Band 16<br>QAM       | 50/0       | 829       | 19.64          | 2.01             | 5.30              | 2.15            | 20.78                  | 119.682               | Vertical                 | Pass       |
|                                 |            | 836.5     | 22.33          | 2.01             | 5.30              | 2.15            | 23.47                  | 222.266               | Vertical                 | Pass       |
|                                 |            | 844       | 22.05          | 2.02             | 5.70              | 2.15            | 23.58                  | 228.018               | Vertical                 | Pass       |

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

ERP(dBm)=EIRP-2.15

## 8.5 LTE BAND 7

| Radiated Power (EIRP) for Band 7 |            |           |                |                  |                    |                         |                        |                          |            |
|----------------------------------|------------|-----------|----------------|------------------|--------------------|-------------------------|------------------------|--------------------------|------------|
| Mode                             | RB/RB SIZE | Frequency | Result         |                  |                    |                         |                        |                          | Conclusion |
|                                  |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Gain (dBi) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |            |
| 5.0MHz Band QPSK                 | 25/0       | 2502.5    | 17.93          | 4.54             | 9.00               | 22.39                   | 173.215                | Horizontal               | Pass       |
|                                  |            | 2535      | 18.65          | 4.69             | 9.00               | 22.96                   | 197.711                | Horizontal               | Pass       |
|                                  |            | 2567.5    | 16.12          | 4.71             | 9.00               | 20.41                   | 109.872                | Horizontal               | Pass       |
| 10.0MHz Band QPSK                | 50/0       | 2505      | 15.82          | 4.55             | 9.00               | 20.27                   | 106.365                | Horizontal               | Pass       |
|                                  |            | 2535      | 18.47          | 4.69             | 9.00               | 22.78                   | 189.460                | Horizontal               | Pass       |
|                                  |            | 2565      | 18.52          | 4.72             | 9.00               | 22.80                   | 190.705                | Horizontal               | Pass       |
| 15.0MHz Band QPSK                | 75/0       | 2507.5    | 18.92          | 4.55             | 9.00               | 23.37                   | 217.427                | Horizontal               | Pass       |
|                                  |            | 2535      | 18.92          | 4.69             | 9.00               | 23.23                   | 210.521                | Horizontal               | Pass       |
|                                  |            | 2562.5    | 18.37          | 4.72             | 9.00               | 22.65                   | 184.151                | Horizontal               | Pass       |
| 20.0MHz Band QPSK                | 100/0      | 2510      | 16.00          | 4.57             | 9.00               | 20.43                   | 110.359                | Horizontal               | Pass       |
|                                  |            | 2535      | 18.40          | 4.73             | 9.00               | 22.67                   | 184.953                | Horizontal               | Pass       |
|                                  |            | 2560      | 16.98          | 4.75             | 9.00               | 21.23                   | 132.599                | Horizontal               | Pass       |
| 5.0MHz Band QPSK                 | 25/0       | 2502.5    | 17.18          | 4.54             | 9.00               | 21.64                   | 145.720                | Vertical                 | Pass       |
|                                  |            | 2535      | 19.23          | 4.69             | 9.00               | 23.54                   | 226.020                | Vertical                 | Pass       |
|                                  |            | 2567.5    | 18.84          | 4.71             | 9.00               | 23.13                   | 205.527                | Vertical                 | Pass       |
| 10.0MHz Band QPSK                | 50/0       | 2505      | 16.99          | 4.55             | 9.00               | 21.44                   | 139.282                | Vertical                 | Pass       |
|                                  |            | 2535      | 19.32          | 4.69             | 9.00               | 23.63                   | 230.512                | Vertical                 | Pass       |
|                                  |            | 2565      | 19.00          | 4.72             | 9.00               | 23.28                   | 212.649                | Vertical                 | Pass       |
| 15.0MHz Band QPSK                | 75/0       | 2507.5    | 18.32          | 4.55             | 9.00               | 22.77                   | 189.063                | Vertical                 | Pass       |
|                                  |            | 2535      | 19.67          | 4.69             | 9.00               | 23.98                   | 249.954                | Vertical                 | Pass       |
|                                  |            | 2562.5    | 17.85          | 4.72             | 9.00               | 22.13                   | 163.121                | Vertical                 | Pass       |
| 20.0MHz Band QPSK                | 100/0      | 2510      | 19.49          | 4.57             | 9.00               | 23.92                   | 246.454                | Vertical                 | Pass       |
|                                  |            | 2535      | 19.41          | 4.73             | 9.00               | 23.68                   | 233.518                | Vertical                 | Pass       |
|                                  |            | 2560      | 19.99          | 4.75             | 9.00               | 24.24                   | 265.275                | Vertical                 | Pass       |

| Radiated Power (EIRP) for Band 7 |            |           |                |                  |                    |                         |                        |                          |            |
|----------------------------------|------------|-----------|----------------|------------------|--------------------|-------------------------|------------------------|--------------------------|------------|
| Mode                             | RB/RB SIZE | Frequency | Result         |                  |                    |                         |                        |                          | Conclusion |
|                                  |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Gain (dBi) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |            |
| 5.0MHz<br>Band 16<br>QAM         | 25/0       | 2502.5    | 17.15          | 4.54             | 9.00               | 21.61                   | 144.893                | Horizontal               | Pass       |
|                                  |            | 2535      | 17.29          | 4.69             | 9.00               | 21.60                   | 144.512                | Horizontal               | Pass       |
|                                  |            | 2567.5    | 17.98          | 4.71             | 9.00               | 22.27                   | 168.590                | Horizontal               | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 50/0       | 2505      | 17.56          | 4.55             | 9.00               | 22.01                   | 158.897                | Horizontal               | Pass       |
|                                  |            | 2535      | 17.70          | 4.69             | 9.00               | 22.01                   | 159.021                | Horizontal               | Pass       |
|                                  |            | 2565      | 19.08          | 4.72             | 9.00               | 23.36                   | 216.889                | Horizontal               | Pass       |
| 15.0MHz<br>Band 16<br>QAM        | 75/0       | 2507.5    | 18.12          | 4.55             | 9.00               | 22.57                   | 180.828                | Horizontal               | Pass       |
|                                  |            | 2535      | 18.82          | 4.69             | 9.00               | 23.13                   | 205.710                | Horizontal               | Pass       |
|                                  |            | 2562.5    | 17.23          | 4.72             | 9.00               | 21.51                   | 141.486                | Horizontal               | Pass       |
| 20.0MHz<br>Band 16<br>QAM        | 100/0      | 2510      | 18.04          | 4.57             | 9.00               | 22.47                   | 176.553                | Horizontal               | Pass       |
|                                  |            | 2535      | 16.56          | 4.73             | 9.00               | 20.83                   | 121.124                | Horizontal               | Pass       |
|                                  |            | 2560      | 17.60          | 4.75             | 9.00               | 21.85                   | 152.987                | Horizontal               | Pass       |
| 5.0MHz<br>Band 16<br>QAM         | 25/0       | 2502.5    | 18.21          | 4.54             | 9.00               | 22.67                   | 184.991                | Vertical                 | Pass       |
|                                  |            | 2535      | 18.83          | 4.69             | 9.00               | 23.14                   | 206.281                | Vertical                 | Pass       |
|                                  |            | 2567.5    | 19.21          | 4.71             | 9.00               | 23.50                   | 223.704                | Vertical                 | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 50/0       | 2505      | 17.15          | 4.55             | 9.00               | 21.60                   | 144.446                | Vertical                 | Pass       |
|                                  |            | 2535      | 19.60          | 4.69             | 9.00               | 23.91                   | 246.270                | Vertical                 | Pass       |
|                                  |            | 2565      | 17.02          | 4.72             | 9.00               | 21.30                   | 134.932                | Vertical                 | Pass       |
| 15.0MHz<br>Band 16<br>QAM        | 75/0       | 2507.5    | 18.66          | 4.55             | 9.00               | 23.11                   | 204.664                | Vertical                 | Pass       |
|                                  |            | 2535      | 18.04          | 4.69             | 9.00               | 22.35                   | 171.979                | Vertical                 | Pass       |
|                                  |            | 2562.5    | 16.38          | 4.72             | 9.00               | 20.66                   | 116.381                | Vertical                 | Pass       |
| 20.0MHz<br>Band 16<br>QAM        | 100/0      | 2510      | 19.99          | 4.57             | 9.00               | 24.42                   | 276.446                | Vertical                 | Pass       |
|                                  |            | 2535      | 17.57          | 4.73             | 9.00               | 21.84                   | 152.867                | Vertical                 | Pass       |
|                                  |            | 2560      | 18.65          | 4.75             | 9.00               | 22.90                   | 194.881                | Vertical                 | Pass       |

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Factor (dB)+ SG Level (dBm)- Cable Loss(dBm)

## 8.6 LTE BAND 12

| Radiated Power (ERP) for Band 12 |            |           |                |                  |                   |                 |                         |                        |                          |            |
|----------------------------------|------------|-----------|----------------|------------------|-------------------|-----------------|-------------------------|------------------------|--------------------------|------------|
| Mode                             | RB/RB SIZE | Frequency | Result         |                  |                   |                 |                         |                        |                          | Conclusion |
|                                  |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Gain (dB) | Correction (dB) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |            |
| 1.4MHz Band QPSK                 | 6/0        | 699.7     | 17.41          | 1.91             | 5.60              | 2.15            | 18.95                   | 78.474                 | Horizontal               | Pass       |
|                                  |            | 707.5     | 19.20          | 1.91             | 5.70              | 2.15            | 20.84                   | 121.278                | Horizontal               | Pass       |
|                                  |            | 715.3     | 16.77          | 1.93             | 5.80              | 2.15            | 18.49                   | 70.682                 | Horizontal               | Pass       |
| 3.0MHz Band QPSK                 | 15/0       | 700.5     | 17.86          | 1.91             | 5.60              | 2.15            | 19.40                   | 86.997                 | Horizontal               | Pass       |
|                                  |            | 707.5     | 18.02          | 1.91             | 5.70              | 2.15            | 19.66                   | 92.433                 | Horizontal               | Pass       |
|                                  |            | 714.5     | 18.04          | 1.93             | 5.80              | 2.15            | 19.76                   | 94.527                 | Horizontal               | Pass       |
| 5.0MHz Band QPSK                 | 25/0       | 701.5     | 18.29          | 1.91             | 5.60              | 2.15            | 19.83                   | 96.241                 | Horizontal               | Pass       |
|                                  |            | 707.5     | 18.83          | 1.91             | 5.70              | 2.15            | 20.47                   | 111.529                | Horizontal               | Pass       |
|                                  |            | 713.5     | 18.53          | 1.92             | 5.80              | 2.15            | 20.26                   | 106.048                | Horizontal               | Pass       |
| 10.0MHz Band QPSK                | 50/0       | 704       | 17.79          | 1.91             | 5.60              | 2.15            | 19.33                   | 85.685                 | Horizontal               | Pass       |
|                                  |            | 707.5     | 16.79          | 1.91             | 5.70              | 2.15            | 18.43                   | 69.615                 | Horizontal               | Pass       |
|                                  |            | 711       | 16.33          | 1.92             | 5.80              | 2.15            | 18.06                   | 63.974                 | Horizontal               | Pass       |
| 1.4MHz Band QPSK                 | 6/0        | 699.7     | 17.74          | 1.91             | 5.60              | 2.15            | 19.28                   | 84.664                 | Vertical                 | Pass       |
|                                  |            | 707.5     | 17.40          | 1.91             | 5.70              | 2.15            | 19.04                   | 80.231                 | Vertical                 | Pass       |
|                                  |            | 715.3     | 17.21          | 1.93             | 5.80              | 2.15            | 18.93                   | 78.113                 | Vertical                 | Pass       |
| 3.0MHz Band QPSK                 | 15/0       | 700.5     | 17.92          | 1.91             | 5.60              | 2.15            | 19.46                   | 88.396                 | Vertical                 | Pass       |
|                                  |            | 707.5     | 16.71          | 1.91             | 5.70              | 2.15            | 18.35                   | 68.362                 | Vertical                 | Pass       |
|                                  |            | 714.5     | 19.60          | 1.93             | 5.80              | 2.15            | 21.32                   | 135.461                | Vertical                 | Pass       |
| 5.0MHz Band QPSK                 | 25/0       | 701.5     | 17.50          | 1.91             | 5.60              | 2.15            | 19.04                   | 80.207                 | Vertical                 | Pass       |
|                                  |            | 707.5     | 17.46          | 1.91             | 5.70              | 2.15            | 19.10                   | 81.258                 | Vertical                 | Pass       |
|                                  |            | 713.5     | 17.25          | 1.92             | 5.80              | 2.15            | 18.98                   | 79.098                 | Vertical                 | Pass       |
| 10.0MHz Band QPSK                | 50/0       | 704       | 18.22          | 1.91             | 5.60              | 2.15            | 19.76                   | 94.704                 | Vertical                 | Pass       |
|                                  |            | 707.5     | 19.78          | 1.91             | 5.70              | 2.15            | 21.42                   | 138.715                | Vertical                 | Pass       |
|                                  |            | 711       | 18.89          | 1.92             | 5.80              | 2.15            | 20.62                   | 115.423                | Vertical                 | Pass       |

| Radiated Power (ERP) for Band 12 |            |           |                |                  |                   |                 |                         |                        |                          |            |
|----------------------------------|------------|-----------|----------------|------------------|-------------------|-----------------|-------------------------|------------------------|--------------------------|------------|
| Mode                             | RB/RB SIZE | Frequency | Result         |                  |                   |                 |                         |                        |                          | Conclusion |
|                                  |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Gain (dB) | Correction (dB) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |            |
| 1.4MHz<br>Band 16<br>QAM         | 6/0        | 699.7     | 21.15          | 1.91             | 5.60              | 2.15            | 22.69                   | 185.626                | Horizontal               | Pass       |
|                                  |            | 707.5     | 21.28          | 1.91             | 5.70              | 2.15            | 22.92                   | 196.047                | Horizontal               | Pass       |
|                                  |            | 715.3     | 20.95          | 1.93             | 5.80              | 2.15            | 22.67                   | 184.777                | Horizontal               | Pass       |
| 3.0MHz<br>Band 16<br>QAM         | 15/0       | 700.5     | 21.39          | 1.91             | 5.60              | 2.15            | 22.93                   | 196.259                | Horizontal               | Pass       |
|                                  |            | 707.5     | 19.79          | 1.91             | 5.70              | 2.15            | 21.43                   | 138.943                | Horizontal               | Pass       |
|                                  |            | 714.5     | 19.95          | 1.93             | 5.80              | 2.15            | 21.67                   | 146.750                | Horizontal               | Pass       |
| 5.0MHz<br>Band 16<br>QAM         | 25/0       | 701.5     | 20.14          | 1.91             | 5.60              | 2.15            | 21.68                   | 147.083                | Horizontal               | Pass       |
|                                  |            | 707.5     | 21.89          | 1.91             | 5.70              | 2.15            | 23.53                   | 225.482                | Horizontal               | Pass       |
|                                  |            | 713.5     | 21.79          | 1.92             | 5.80              | 2.15            | 23.52                   | 225.085                | Horizontal               | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 50/0       | 704       | 20.84          | 1.91             | 5.60              | 2.15            | 22.38                   | 172.922                | Horizontal               | Pass       |
|                                  |            | 707.5     | 19.39          | 1.91             | 5.70              | 2.15            | 21.03                   | 126.712                | Horizontal               | Pass       |
|                                  |            | 711       | 21.80          | 1.92             | 5.80              | 2.15            | 23.53                   | 225.418                | Horizontal               | Pass       |
| 1.4MHz<br>Band 16<br>QAM         | 6/0        | 699.7     | 19.30          | 1.91             | 5.60              | 2.15            | 20.84                   | 121.245                | Vertical                 | Pass       |
|                                  |            | 707.5     | 21.29          | 1.91             | 5.70              | 2.15            | 22.93                   | 196.515                | Vertical                 | Pass       |
|                                  |            | 715.3     | 20.78          | 1.93             | 5.80              | 2.15            | 22.50                   | 177.872                | Vertical                 | Pass       |
| 3.0MHz<br>Band 16<br>QAM         | 15/0       | 700.5     | 21.98          | 1.91             | 5.60              | 2.15            | 23.52                   | 224.715                | Vertical                 | Pass       |
|                                  |            | 707.5     | 20.95          | 1.91             | 5.70              | 2.15            | 22.59                   | 181.731                | Vertical                 | Pass       |
|                                  |            | 714.5     | 21.94          | 1.93             | 5.80              | 2.15            | 23.66                   | 232.160                | Vertical                 | Pass       |
| 5.0MHz<br>Band 16<br>QAM         | 25/0       | 701.5     | 20.61          | 1.91             | 5.60              | 2.15            | 22.15                   | 163.951                | Vertical                 | Pass       |
|                                  |            | 707.5     | 21.99          | 1.91             | 5.70              | 2.15            | 23.63                   | 230.817                | Vertical                 | Pass       |
|                                  |            | 713.5     | 19.89          | 1.92             | 5.80              | 2.15            | 21.62                   | 145.247                | Vertical                 | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 50/0       | 704       | 20.97          | 1.91             | 5.60              | 2.15            | 22.51                   | 178.122                | Vertical                 | Pass       |
|                                  |            | 707.5     | 22.57          | 1.91             | 5.70              | 2.15            | 24.21                   | 263.776                | Vertical                 | Pass       |
|                                  |            | 711       | 20.66          | 1.92             | 5.80              | 2.15            | 22.39                   | 173.414                | Vertical                 | Pass       |

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

ERP(dBm)=EIRP-2.15

## 8.7 LTE BAND 13

| Radiated Power (ERP) for Band 13 |            |           |                   |                        |                |                    |                              |                                |                                |            |
|----------------------------------|------------|-----------|-------------------|------------------------|----------------|--------------------|------------------------------|--------------------------------|--------------------------------|------------|
| Mode                             | RB/RB SIZE | Frequency | Result            |                        |                |                    |                              |                                |                                | Conclusion |
|                                  |            |           | SG Level<br>(dBm) | Cable<br>Loss<br>(dBm) | Factor<br>(dB) | Correction<br>(dB) | Max. ERP<br>Average<br>(dBm) | Max.<br>ERP<br>Average<br>(mW) | Polarization<br>Of Max.<br>ERP |            |
| 5.0MHz<br>Band<br>QPSK           | 1/#Mid     | 779.5     | 20.94             | 1.91                   | 5.60           | 2.15               | 22.48                        | 177.209                        | Horizontal                     | Pass       |
|                                  |            | 782       | 20.41             | 1.91                   | 5.70           | 2.15               | 22.05                        | 160.165                        | Horizontal                     | Pass       |
|                                  |            | 784.5     | 20.07             | 1.92                   | 5.80           | 2.15               | 21.80                        | 151.368                        | Horizontal                     | Pass       |
| 10.0MHz<br>Band<br>QPSK          | 1/#Mid     | 782       | <b>20.55</b>      | 1.91                   | 5.70           | <b>2.15</b>        | 22.19                        | 165.745                        | Horizontal                     | Pass       |
| 5.0MHz<br>Band<br>QPSK           | 1/#Mid     | 779.5     | 20.62             | 1.91                   | 5.60           | 2.15               | 22.16                        | 164.345                        | Vertical                       | Pass       |
|                                  |            | 782       | 19.66             | 1.91                   | 5.70           | 2.15               | 21.30                        | 134.829                        | Vertical                       | Pass       |
|                                  |            | 784.5     | 20.21             | 1.92                   | 5.80           | 2.15               | 21.94                        | 156.209                        | Vertical                       | Pass       |
| 10.0MHz<br>Band<br>QPSK          | 1/#Mid     | 782       | <b>21.07</b>      | 1.91                   | 5.70           | 2.15               | <b>22.71</b>                 | 186.549                        | Horizontal                     | Pass       |

| Radiated Power (ERP) for Band 13 |            |           |                |                  |             |                 |                        |                       |                          |            |
|----------------------------------|------------|-----------|----------------|------------------|-------------|-----------------|------------------------|-----------------------|--------------------------|------------|
| Mode                             | RB/RB SIZE | Frequency | Result         |                  |             |                 |                        |                       |                          | Conclusion |
|                                  |            |           | SG Level (dBm) | Cable Loss (dBm) | Factor (dB) | Correction (dB) | Max. EPR Average (dBm) | Max. EPR Average (mW) | Polarization Of Max. ERP |            |
| 5.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 779.5     | 20.21          | 1.91             | 5.60        | 2.15            | 21.75                  | 149.661               | Horizontal               | Pass       |
|                                  |            | 782       | 19.39          | 1.91             | 5.70        | 2.15            | 21.03                  | 126.746               | Horizontal               | Pass       |
|                                  |            | 784.5     | 19.74          | 1.92             | 5.80        | 2.15            | 21.47                  | 140.346               | Horizontal               | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 1/#Mid     | 782       | <b>20.55</b>   | 1.91             | 5.70        | 2.15            | 22.19                  | 165.745               | Horizontal               | Pass       |
| 5.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 779.5     | 19.91          | 1.91             | 5.60        | 2.15            | 21.45                  | 139.522               | Vertical                 | Pass       |
|                                  |            | 782       | 21.07          | 1.91             | 5.70        | 2.15            | 22.71                  | 186.447               | Vertical                 | Pass       |
|                                  |            | 784.5     | 20.16          | 1.92             | 5.80        | 2.15            | 21.89                  | 154.398               | Vertical                 | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 1/#Mid     | 782       | <b>21.09</b>   | 1.91             | 5.70        | 2.15            | <b>22.73</b>           | 187.446               | Horizontal               | Pass       |

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

ERP(dBm)=EIRP-2.15

## 8.8 LTE BAND 25

| Radiated Power (EIRP) for Band 25 |            |           |                |                  |                   |                         |                        |                          |            |
|-----------------------------------|------------|-----------|----------------|------------------|-------------------|-------------------------|------------------------|--------------------------|------------|
| Mode                              | RB/RB SIZE | Frequency | Result         |                  |                   |                         |                        |                          | Conclusion |
|                                   |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Gain (dB) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |            |
| 1.4MHz Band QPSK                  | 6/0        | 1850.7    | 16.30          | 3.12             | 8.90              | 22.08                   | 161.546                | Horizontal               | Pass       |
|                                   |            | 1882.5    | 16.16          | 3.27             | 8.90              | 21.79                   | 150.970                | Horizontal               | Pass       |
|                                   |            | 1914.3    | 16.02          | 3.29             | 8.90              | 21.63                   | 145.683                | Horizontal               | Pass       |
| 3.0MHz Band QPSK                  | 15/0       | 1851.5    | 17.08          | 3.13             | 8.90              | 22.85                   | 192.958                | Horizontal               | Pass       |
|                                   |            | 1882.5    | 16.74          | 3.27             | 8.90              | 22.37                   | 172.638                | Horizontal               | Pass       |
|                                   |            | 1913.5    | 15.91          | 3.30             | 8.90              | 21.51                   | 141.654                | Horizontal               | Pass       |
| 5.0MHz Band QPSK                  | 25/0       | 1852.5    | 15.64          | 3.13             | 8.90              | 21.41                   | 138.267                | Horizontal               | Pass       |
|                                   |            | 1882.5    | 15.10          | 3.27             | 8.90              | 20.73                   | 118.257                | Horizontal               | Pass       |
|                                   |            | 1912.5    | 16.29          | 3.30             | 8.90              | 21.89                   | 154.410                | Horizontal               | Pass       |
| 10.0MHz Band QPSK                 | 50/0       | 1855      | 16.11          | 3.15             | 8.90              | 21.86                   | 153.398                | Horizontal               | Pass       |
|                                   |            | 1882.5    | 16.79          | 3.31             | 8.90              | 22.38                   | 172.985                | Horizontal               | Pass       |
|                                   |            | 1910      | 15.59          | 3.33             | 8.90              | 21.16                   | 130.702                | Horizontal               | Pass       |
| 15.0MHz Band QPSK                 | 75/0       | 1857.5    | 16.44          | 3.15             | 8.90              | 22.19                   | 165.397                | Horizontal               | Pass       |
|                                   |            | 1882.5    | 16.33          | 3.31             | 8.90              | 21.92                   | 155.755                | Horizontal               | Pass       |
|                                   |            | 1907.5    | 16.85          | 3.33             | 8.90              | 22.42                   | 174.418                | Horizontal               | Pass       |
| 20.0MHz Band QPSK                 | 100/0      | 1860      | 15.09          | 3.17             | 8.90              | 20.82                   | 120.903                | Horizontal               | Pass       |
|                                   |            | 1882.5    | 17.27          | 3.32             | 8.90              | 22.85                   | 192.915                | Horizontal               | Pass       |
|                                   |            | 1905      | 16.11          | 3.36             | 8.90              | 21.65                   | 146.370                | Horizontal               | Pass       |
| 1.4MHz Band QPSK                  | 6/0        | 1850.7    | 17.26          | 3.12             | 8.90              | 23.04                   | 201.391                | Vertical                 | Pass       |
|                                   |            | 1882.5    | 17.09          | 3.27             | 8.90              | 22.72                   | 186.889                | Vertical                 | Pass       |
|                                   |            | 1914.3    | 15.17          | 3.29             | 8.90              | 20.78                   | 119.621                | Vertical                 | Pass       |
| 3.0MHz Band QPSK                  | 15/0       | 1851.5    | 16.55          | 3.13             | 8.90              | 22.32                   | 170.744                | Vertical                 | Pass       |
|                                   |            | 1882.5    | 16.79          | 3.27             | 8.90              | 22.42                   | 174.561                | Vertical                 | Pass       |
|                                   |            | 1913.5    | 16.96          | 3.30             | 8.90              | 22.56                   | 180.240                | Vertical                 | Pass       |
| 5.0MHz Band QPSK                  | 25/0       | 1852.5    | 16.94          | 3.13             | 8.90              | 22.71                   | 186.457                | Vertical                 | Pass       |
|                                   |            | 1882.5    | 15.49          | 3.27             | 8.90              | 21.12                   | 129.340                | Vertical                 | Pass       |
|                                   |            | 1912.5    | 16.30          | 3.30             | 8.90              | 21.90                   | 155.007                | Vertical                 | Pass       |
| 10.0MHz Band QPSK                 | 50/0       | 1855      | 15.59          | 3.15             | 8.90              | 21.34                   | 136.063                | Vertical                 | Pass       |
|                                   |            | 1882.5    | 16.95          | 3.31             | 8.90              | 22.54                   | 179.316                | Vertical                 | Pass       |
|                                   |            | 1910      | 16.00          | 3.33             | 8.90              | 21.57                   | 143.455                | Vertical                 | Pass       |

|         |       |        |       |      |      |       |         |          |      |
|---------|-------|--------|-------|------|------|-------|---------|----------|------|
| 15.0MHz |       | 1857.5 | 15.68 | 3.15 | 8.90 | 21.43 | 139.079 | Vertical | Pass |
| Band    | 75/0  | 1882.5 | 16.26 | 3.31 | 8.90 | 21.85 | 153.081 | Vertical | Pass |
| QPSK    |       | 1907.5 | 15.57 | 3.33 | 8.90 | 21.14 | 129.929 | Vertical | Pass |
| 20.0MHz |       | 1860   | 14.05 | 3.17 | 8.90 | 19.78 | 95.015  | Vertical | Pass |
| Band    | 100/0 | 1882.5 | 17.89 | 3.32 | 8.90 | 23.47 | 222.157 | Vertical | Pass |
| QPSK    |       | 1905   | 18.07 | 3.36 | 8.90 | 23.61 | 229.403 | Vertical | Pass |

| Radiated Power (EIRP) for Band 25 |            |           |                |                  |                   |                         |                        |                          |            |
|-----------------------------------|------------|-----------|----------------|------------------|-------------------|-------------------------|------------------------|--------------------------|------------|
| Mode                              | RB/RB SIZE | Frequency | Result         |                  |                   |                         |                        |                          | Conclusion |
|                                   |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Gain (dB) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |            |
| 1.4MHz<br>Band 16<br>QAM          | 6/0        | 1850.7    | 16.93          | 3.12             | 8.90              | 22.71                   | 186.756                | Horizontal               | Pass       |
|                                   |            | 1882.5    | 16.13          | 3.27             | 8.90              | 21.76                   | 149.982                | Horizontal               | Pass       |
|                                   |            | 1914.3    | 15.84          | 3.29             | 8.90              | 21.45                   | 139.786                | Horizontal               | Pass       |
| 3.0MHz<br>Band 16<br>QAM          | 15/0       | 1851.5    | 16.52          | 3.13             | 8.90              | 22.29                   | 169.294                | Horizontal               | Pass       |
|                                   |            | 1882.5    | 16.22          | 3.27             | 8.90              | 21.85                   | 152.942                | Horizontal               | Pass       |
|                                   |            | 1913.5    | 17.35          | 3.30             | 8.90              | 22.95                   | 197.102                | Horizontal               | Pass       |
| 5.0MHz<br>Band 16<br>QAM          | 25/0       | 1852.5    | 17.26          | 3.13             | 8.90              | 23.03                   | 201.110                | Horizontal               | Pass       |
|                                   |            | 1882.5    | 16.32          | 3.27             | 8.90              | 21.95                   | 156.506                | Horizontal               | Pass       |
|                                   |            | 1912.5    | 15.76          | 3.30             | 8.90              | 21.36                   | 136.781                | Horizontal               | Pass       |
| 10.0MHz<br>Band 16<br>QAM         | 50/0       | 1855      | 16.62          | 3.15             | 8.90              | 22.37                   | 172.512                | Horizontal               | Pass       |
|                                   |            | 1882.5    | 16.39          | 3.31             | 8.90              | 21.98                   | 157.754                | Horizontal               | Pass       |
|                                   |            | 1910      | 16.01          | 3.33             | 8.90              | 21.58                   | 143.931                | Horizontal               | Pass       |
| 15.0MHz<br>Band 16<br>QAM         | 75/0       | 1857.5    | 16.16          | 3.15             | 8.90              | 21.91                   | 155.192                | Horizontal               | Pass       |
|                                   |            | 1882.5    | 16.23          | 3.31             | 8.90              | 21.82                   | 152.014                | Horizontal               | Pass       |
|                                   |            | 1907.5    | 16.39          | 3.33             | 8.90              | 21.96                   | 157.035                | Horizontal               | Pass       |
| 20.0MHz<br>Band 16<br>QAM         | 100/0      | 1860      | 17.08          | 3.17             | 8.90              | 22.81                   | 190.899                | Horizontal               | Pass       |
|                                   |            | 1882.5    | 17.36          | 3.32             | 8.90              | 22.94                   | 196.984                | Horizontal               | Pass       |
|                                   |            | 1905      | 16.46          | 3.36             | 8.90              | 22.00                   | 158.417                | Horizontal               | Pass       |
| 1.4MHz<br>Band 16<br>QAM          | 6/0        | 1850.7    | 16.38          | 3.12             | 8.90              | 22.16                   | 164.586                | Vertical                 | Pass       |
|                                   |            | 1882.5    | 16.68          | 3.27             | 8.90              | 22.31                   | 170.291                | Vertical                 | Pass       |
|                                   |            | 1914.3    | 16.60          | 3.29             | 8.90              | 22.21                   | 166.180                | Vertical                 | Pass       |
| 3.0MHz<br>Band 16<br>QAM          | 15/0       | 1851.5    | 16.54          | 3.13             | 8.90              | 22.31                   | 170.190                | Vertical                 | Pass       |
|                                   |            | 1882.5    | 16.81          | 3.27             | 8.90              | 22.44                   | 175.416                | Vertical                 | Pass       |
|                                   |            | 1913.5    | 16.88          | 3.30             | 8.90              | 22.48                   | 177.085                | Vertical                 | Pass       |
| 5.0MHz<br>Band 16<br>QAM          | 25/0       | 1852.5    | 16.54          | 3.13             | 8.90              | 22.31                   | 170.317                | Vertical                 | Pass       |
|                                   |            | 1882.5    | 16.58          | 3.27             | 8.90              | 22.21                   | 166.407                | Vertical                 | Pass       |
|                                   |            | 1912.5    | 16.91          | 3.30             | 8.90              | 22.51                   | 178.389                | Vertical                 | Pass       |
| 10.0MHz<br>Band 16<br>QAM         | 50/0       | 1855      | 16.72          | 3.15             | 8.90              | 22.47                   | 176.618                | Vertical                 | Pass       |
|                                   |            | 1882.5    | 17.52          | 3.31             | 8.90              | 23.11                   | 204.800                | Vertical                 | Pass       |
|                                   |            | 1910      | 17.08          | 3.33             | 8.90              | 22.65                   | 184.178                | Vertical                 | Pass       |
| 15.0MHz<br>Band 16                | 75/0       | 1857.5    | 16.97          | 3.15             | 8.90              | 22.72                   | 186.973                | Vertical                 | Pass       |
|                                   |            | 1882.5    | 17.16          | 3.31             | 8.90              | 22.75                   | 188.239                | Vertical                 | Pass       |

|         |       |        |       |      |      |       |         |          |      |
|---------|-------|--------|-------|------|------|-------|---------|----------|------|
| QAM     |       | 1907.5 | 16.57 | 3.33 | 8.90 | 22.14 | 163.832 | Vertical | Pass |
| 20.0MHz | 100/0 | 1860   | 17.88 | 3.17 | 8.90 | 23.61 | 229.557 | Vertical | Pass |
| Band 16 |       | 1882.5 | 16.83 | 3.32 | 8.90 | 22.41 | 174.377 | Vertical | Pass |
| QAM     |       | 1905   | 16.23 | 3.36 | 8.90 | 21.77 | 150.200 | Vertical | Pass |

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

## 8.9 LTE BAND 26 A

| Radiated Power (ERP) for Band 26(814-824) |            |           |                |                  |                   |                 |                        |                       |                          |            |
|-------------------------------------------|------------|-----------|----------------|------------------|-------------------|-----------------|------------------------|-----------------------|--------------------------|------------|
| Mode                                      | RB/RB SIZE | Frequency | Result         |                  |                   |                 |                        |                       |                          | Conclusion |
|                                           |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Gain (dB) | Correction (dB) | Max. ERP Average (dBm) | Max. ERP Average (mW) | Polarization Of Max. ERP |            |
| 1.4MHz<br>BW<br>QPSK                      | 6/0        | 814.7     | 21.65          | 3.76             | 5.60              | 2.15            | 21.34                  | 136.208               | Horizontal               | Pass       |
|                                           |            | 819       | 21.31          | 3.91             | 5.70              | 2.15            | 20.95                  | 124.339               | Horizontal               | Pass       |
|                                           |            | 823.3     | 20.89          | 3.93             | 5.80              | 2.15            | 20.61                  | 115.145               | Horizontal               | Pass       |
| 3.0MHz<br>BW<br>QPSK                      | 15/0       | 815.5     | 21.44          | 3.77             | 5.60              | 2.15            | 21.12                  | 129.529               | Horizontal               | Pass       |
|                                           |            | 819       | 21.67          | 3.91             | 5.70              | 2.15            | 21.31                  | 135.055               | Horizontal               | Pass       |
|                                           |            | 822.5     | 21.35          | 3.94             | 5.80              | 2.15            | 21.06                  | 127.691               | Horizontal               | Pass       |
| 5.0MHz<br>BW<br>QPSK                      | 25/0       | 816.5     | 20.88          | 3.77             | 5.60              | 2.15            | 20.56                  | 113.772               | Horizontal               | Pass       |
|                                           |            | 819       | 20.68          | 3.91             | 5.70              | 2.15            | 20.32                  | 107.568               | Horizontal               | Pass       |
|                                           |            | 821.5     | 22.07          | 3.94             | 5.80              | 2.15            | 21.78                  | 150.519               | Horizontal               | Pass       |
| 10.0MHz<br>BW<br>QPSK                     | 50/0       | 819       | 22.11          | 3.91             | 5.70              | 2.15            | 21.75                  | 149.745               | Horizontal               | Pass       |
| 1.4MHz<br>BW<br>QPSK                      | 6/0        | 814.7     | 20.79          | 3.79             | 5.60              | 2.15            | 20.45                  | 111.005               | Vertical                 | Pass       |
|                                           |            | 819       | 21.56          | 3.95             | 5.70              | 2.15            | 21.16                  | 130.617               | Vertical                 | Pass       |
|                                           |            | 823.3     | 21.27          | 3.97             | 5.80              | 2.15            | 20.95                  | 124.552               | Vertical                 | Pass       |
| 3.0MHz<br>BW<br>QPSK                      | 15/0       | 815.5     | 20.50          | 3.77             | 5.60              | 2.15            | 20.18                  | 104.182               | Vertical                 | Pass       |
|                                           |            | 819       | 21.58          | 3.91             | 5.70              | 2.15            | 21.22                  | 132.484               | Vertical                 | Pass       |
|                                           |            | 822.5     | 20.36          | 3.94             | 5.80              | 2.15            | 20.07                  | 101.728               | Vertical                 | Pass       |
| 5.0MHz<br>BW<br>QPSK                      | 25/0       | 816.5     | 21.80          | 3.77             | 5.60              | 2.15            | 21.48                  | 140.540               | Vertical                 | Pass       |
|                                           |            | 819       | 21.72          | 3.91             | 5.70              | 2.15            | 21.36                  | 136.699               | Vertical                 | Pass       |
|                                           |            | 821.5     | 21.32          | 3.94             | 5.80              | 2.15            | 21.03                  | 126.746               | Vertical                 | Pass       |
| 10.0MHz<br>BW<br>QPSK                     | 50/0       | 819       | 22.47          | 3.91             | 5.70              | 2.15            | 22.11                  | 162.433               | Vertical                 | Pass       |

| Radiated Power (ERP) for Band 26(814-824) |            |           |                |                  |                   |                 |                         |                        |                          |            |
|-------------------------------------------|------------|-----------|----------------|------------------|-------------------|-----------------|-------------------------|------------------------|--------------------------|------------|
| Mode                                      | RB/RB SIZE | Frequency | Result         |                  |                   |                 |                         |                        |                          | Conclusion |
|                                           |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Gain (dB) | Correction (dB) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |            |
| 1.4MHz<br>BW 16<br>QAM                    | 6/0        | 814.7     | 23.60          | 3.76             | 5.60              | 2.15            | 23.29                   | 213.338                | Horizontal               | Pass       |
|                                           |            | 819       | 22.96          | 3.91             | 5.70              | 2.15            | 22.60                   | 182.164                | Horizontal               | Pass       |
|                                           |            | 823.3     | 23.53          | 3.93             | 5.80              | 2.15            | 23.25                   | 211.515                | Horizontal               | Pass       |
| 3.0MHz<br>BW 16<br>QAM                    | 15/0       | 815.5     | 23.42          | 3.77             | 5.60              | 2.15            | 23.10                   | 204.340                | Horizontal               | Pass       |
|                                           |            | 819       | 22.53          | 3.91             | 5.70              | 2.15            | 22.17                   | 164.986                | Horizontal               | Pass       |
|                                           |            | 822.5     | 22.72          | 3.94             | 5.80              | 2.15            | 22.43                   | 174.832                | Horizontal               | Pass       |
| 5.0MHz<br>BW 16<br>QAM                    | 25/0       | 816.5     | 22.33          | 3.77             | 5.60              | 2.15            | 22.01                   | 158.746                | Horizontal               | Pass       |
|                                           |            | 819       | 22.54          | 3.91             | 5.70              | 2.15            | 22.18                   | 165.215                | Horizontal               | Pass       |
|                                           |            | 821.5     | 23.80          | 3.94             | 5.80              | 2.15            | 23.51                   | 224.618                | Horizontal               | Pass       |
| 10.0MHz<br>BW 16<br>QAM                   | 50/0       | 819       | 22.85          | 3.91             | 5.70              | 2.15            | 22.49                   | 177.513                | Horizontal               | Pass       |
| 1.4MHz<br>BW 16<br>QAM                    | 6/0        | 814.7     | 22.96          | 3.79             | 5.60              | 2.15            | 22.62                   | 182.746                | Vertical                 | Pass       |
|                                           |            | 819       | 23.81          | 3.95             | 5.70              | 2.15            | 23.41                   | 219.335                | Vertical                 | Pass       |
|                                           |            | 823.3     | 22.16          | 3.97             | 5.80              | 2.15            | 21.84                   | 152.703                | Vertical                 | Pass       |
| 3.0MHz<br>BW 16<br>QAM                    | 15/0       | 815.5     | 23.72          | 3.77             | 5.60              | 2.15            | 23.40                   | 218.656                | Vertical                 | Pass       |
|                                           |            | 819       | 22.90          | 3.91             | 5.70              | 2.15            | 22.54                   | 179.370                | Vertical                 | Pass       |
|                                           |            | 822.5     | 22.49          | 3.94             | 5.80              | 2.15            | 22.20                   | 165.778                | Vertical                 | Pass       |
| 5.0MHz<br>BW 16<br>QAM                    | 25/0       | 816.5     | 23.04          | 3.77             | 5.60              | 2.15            | 22.72                   | 187.060                | Vertical                 | Pass       |
|                                           |            | 819       | 22.62          | 3.91             | 5.70              | 2.15            | 22.26                   | 168.210                | Vertical                 | Pass       |
|                                           |            | 821.5     | 21.84          | 3.94             | 5.80              | 2.15            | 21.55                   | 142.910                | Vertical                 | Pass       |
| 10.0MHz<br>BW 16<br>QAM                   | 50/0       | 819       | 23.92          | 3.91             | 5.70              | 2.15            | 23.56                   | 226.897                | Vertical                 | Pass       |

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

ERP(dBm)=EIRP-2.15

## 8.10 LTE BAND 26 B

| Radiated Power (ERP) for Band 26(824-849) |            |           |                |                  |                   |                 |                        |                       |                          |            |
|-------------------------------------------|------------|-----------|----------------|------------------|-------------------|-----------------|------------------------|-----------------------|--------------------------|------------|
| Mode                                      | RB/RB SIZE | Frequency | Result         |                  |                   |                 |                        |                       |                          | Conclusion |
|                                           |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Gain (dB) | Correction (dB) | Max. ERP Average (dBm) | Max. ERP Average (mW) | Polarization Of Max. ERP |            |
| 1.4MHz Band QPSK                          | 6/0        | 824.7     | 22.17          | 2.01             | 5.30              | 2.15            | 23.31                  | 214.292               | Horizontal               | Pass       |
|                                           |            | 836.5     | 20.88          | 2.01             | 5.30              | 2.15            | 22.02                  | 159.052               | Horizontal               | Pass       |
|                                           |            | 848.3     | 21.19          | 2.02             | 5.70              | 2.15            | 22.72                  | 186.994               | Horizontal               | Pass       |
| 3.0MHz Band QPSK                          | 15/0       | 825.5     | 20.17          | 2.01             | 5.30              | 2.15            | 21.31                  | 135.128               | Horizontal               | Pass       |
|                                           |            | 836.5     | 21.45          | 2.01             | 5.30              | 2.15            | 22.59                  | 181.399               | Horizontal               | Pass       |
|                                           |            | 847.5     | 19.91          | 2.02             | 5.70              | 2.15            | 21.44                  | 139.159               | Horizontal               | Pass       |
| 5.0MHz Band QPSK                          | 25/0       | 826.5     | 19.31          | 2.01             | 5.30              | 2.15            | 20.45                  | 110.802               | Horizontal               | Pass       |
|                                           |            | 836.5     | 19.60          | 2.01             | 5.30              | 2.15            | 20.74                  | 118.698               | Horizontal               | Pass       |
|                                           |            | 846.5     | 21.15          | 2.02             | 5.70              | 2.15            | 22.68                  | 185.507               | Horizontal               | Pass       |
| 10.0MHz Band QPSK                         | 50/0       | 829       | 19.70          | 2.01             | 5.30              | 2.15            | 20.84                  | 121.396               | Horizontal               | Pass       |
|                                           |            | 836.5     | 19.49          | 2.01             | 5.30              | 2.15            | 20.63                  | 115.612               | Horizontal               | Pass       |
|                                           |            | 844       | 19.72          | 2.02             | 5.70              | 2.15            | 21.25                  | 133.322               | Horizontal               | Pass       |
| 15.0MHz Band QPSK                         | 75/0       | 831.5     | 21.24          | 2.01             | 5.30              | 2.15            | 22.38                  | 173.163               | Horizontal               | Pass       |
|                                           |            | 836.5     | 21.11          | 2.01             | 5.30              | 2.15            | 22.25                  | 168.058               | Horizontal               | Pass       |
|                                           |            | 841.5     | 20.10          | 2.02             | 5.70              | 2.15            | 21.63                  | 145.463               | Horizontal               | Pass       |
| 1.4MHz Band QPSK                          | 6/0        | 824.7     | 21.14          | 2.01             | 5.30              | 2.15            | 22.28                  | 168.960               | Vertical                 | Pass       |
|                                           |            | 836.5     | 20.91          | 2.01             | 5.30              | 2.15            | 22.05                  | 160.407               | Vertical                 | Pass       |
|                                           |            | 848.3     | 21.43          | 2.02             | 5.70              | 2.15            | 22.96                  | 197.801               | Vertical                 | Pass       |
| 3.0MHz Band QPSK                          | 15/0       | 825.5     | 20.07          | 2.01             | 5.30              | 2.15            | 21.21                  | 132.171               | Vertical                 | Pass       |
|                                           |            | 836.5     | 20.45          | 2.01             | 5.30              | 2.15            | 21.59                  | 144.249               | Vertical                 | Pass       |
|                                           |            | 847.5     | 20.56          | 2.02             | 5.70              | 2.15            | 22.09                  | 161.921               | Vertical                 | Pass       |
| 5.0MHz Band QPSK                          | 25/0       | 826.5     | 20.77          | 2.01             | 5.30              | 2.15            | 21.91                  | 155.316               | Vertical                 | Pass       |
|                                           |            | 836.5     | 21.78          | 2.01             | 5.30              | 2.15            | 22.92                  | 195.857               | Vertical                 | Pass       |
|                                           |            | 846.5     | 20.03          | 2.02             | 5.70              | 2.15            | 21.56                  | 143.134               | Vertical                 | Pass       |
| 10.0MHz Band QPSK                         | 50/0       | 829       | 20.85          | 2.01             | 5.30              | 2.15            | 21.99                  | 157.974               | Vertical                 | Pass       |
|                                           |            | 836.5     | 22.61          | 2.01             | 5.30              | 2.15            | 23.75                  | 237.219               | Vertical                 | Pass       |
|                                           |            | 844       | 21.48          | 2.02             | 5.70              | 2.15            | 23.01                  | 200.143               | Vertical                 | Pass       |
| 15.0MHz Band QPSK                         | 75/0       | 831.5     | 21.30          | 2.01             | 5.30              | 2.15            | 22.44                  | 175.534               | Vertical                 | Pass       |
|                                           |            | 836.5     | 22.67          | 2.01             | 5.30              | 2.15            | 23.81                  | 240.463               | Vertical                 | Pass       |
|                                           |            | 841.5     | 20.90          | 2.02             | 5.70              | 2.15            | 22.43                  | 175.185               | Vertical                 | Pass       |

| Radiated Power (ERP) for Band 26(824-849) |            |           |                |                  |                   |                 |                         |                        |                          |            |
|-------------------------------------------|------------|-----------|----------------|------------------|-------------------|-----------------|-------------------------|------------------------|--------------------------|------------|
| Mode                                      | RB/RB SIZE | Frequency | Result         |                  |                   |                 |                         |                        |                          | Conclusion |
|                                           |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Gain (dB) | Correction (dB) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |            |
| 1.4MHz<br>Band 16<br>QAM                  | 6/0        | 824.7     | 21.82          | 2.01             | 5.30              | 2.15            | 22.96                   | 197.789                | Horizontal               | Pass       |
|                                           |            | 836.5     | 19.81          | 2.01             | 5.30              | 2.15            | 20.95                   | 124.311                | Horizontal               | Pass       |
|                                           |            | 848.3     | 19.05          | 2.02             | 5.70              | 2.15            | 20.58                   | 114.383                | Horizontal               | Pass       |
| 3.0MHz<br>Band 16<br>QAM                  | 15/0       | 825.5     | 19.39          | 2.01             | 5.30              | 2.15            | 20.53                   | 112.943                | Horizontal               | Pass       |
|                                           |            | 836.5     | 20.45          | 2.01             | 5.30              | 2.15            | 21.59                   | 144.187                | Horizontal               | Pass       |
|                                           |            | 847.5     | 20.50          | 2.02             | 5.70              | 2.15            | 22.03                   | 159.715                | Horizontal               | Pass       |
| 5.0MHz<br>Band 16<br>QAM                  | 25/0       | 826.5     | 19.46          | 2.01             | 5.30              | 2.15            | 20.60                   | 114.871                | Horizontal               | Pass       |
|                                           |            | 836.5     | 19.58          | 2.01             | 5.30              | 2.15            | 20.72                   | 118.134                | Horizontal               | Pass       |
|                                           |            | 846.5     | 18.91          | 2.02             | 5.70              | 2.15            | 20.44                   | 110.719                | Horizontal               | Pass       |
| 10.0MHz<br>Band 16<br>QAM                 | 50/0       | 829       | 19.53          | 2.01             | 5.30              | 2.15            | 20.67                   | 116.709                | Horizontal               | Pass       |
|                                           |            | 836.5     | 21.58          | 2.01             | 5.30              | 2.15            | 22.72                   | 187.227                | Horizontal               | Pass       |
|                                           |            | 844       | 20.12          | 2.02             | 5.70              | 2.15            | 21.65                   | 146.202                | Horizontal               | Pass       |
| 15.0MHz<br>Band<br>QPSK                   | 75/0       | 831.5     | 19.53          | 2.01             | 5.30              | 2.15            | 20.67                   | 116.590                | Horizontal               | Pass       |
|                                           |            | 836.5     | 20.08          | 2.01             | 5.30              | 2.15            | 21.22                   | 132.376                | Horizontal               | Pass       |
|                                           |            | 841.5     | 20.50          | 2.02             | 5.70              | 2.15            | 22.03                   | 159.445                | Horizontal               | Pass       |
| 1.4MHz<br>Band 16<br>QAM                  | 6/0        | 824.7     | 20.22          | 2.01             | 5.30              | 2.15            | 21.36                   | 136.685                | Vertical                 | Pass       |
|                                           |            | 836.5     | 20.79          | 2.01             | 5.30              | 2.15            | 21.93                   | 156.111                | Vertical                 | Pass       |
|                                           |            | 848.3     | 20.45          | 2.02             | 5.70              | 2.15            | 21.98                   | 157.759                | Vertical                 | Pass       |
| 3.0MHz<br>Band 16<br>QAM                  | 15/0       | 825.5     | 19.18          | 2.01             | 5.30              | 2.15            | 20.32                   | 107.593                | Vertical                 | Pass       |
|                                           |            | 836.5     | 18.99          | 2.01             | 5.30              | 2.15            | 20.13                   | 103.087                | Vertical                 | Pass       |
|                                           |            | 847.5     | 19.41          | 2.02             | 5.70              | 2.15            | 20.94                   | 124.151                | Vertical                 | Pass       |
| 5.0MHz<br>Band 16<br>QAM                  | 25/0       | 826.5     | 20.44          | 2.01             | 5.30              | 2.15            | 21.58                   | 143.770                | Vertical                 | Pass       |
|                                           |            | 836.5     | 19.26          | 2.01             | 5.30              | 2.15            | 20.40                   | 109.625                | Vertical                 | Pass       |
|                                           |            | 846.5     | 21.21          | 2.02             | 5.70              | 2.15            | 22.74                   | 187.875                | Vertical                 | Pass       |
| 10.0MHz<br>Band 16<br>QAM                 | 50/0       | 829       | 21.88          | 2.01             | 5.30              | 2.15            | 23.02                   | 200.385                | Vertical                 | Pass       |
|                                           |            | 836.5     | 21.75          | 2.01             | 5.30              | 2.15            | 22.89                   | 194.625                | Vertical                 | Pass       |
|                                           |            | 844       | 19.24          | 2.02             | 5.70              | 2.15            | 20.77                   | 119.532                | Vertical                 | Pass       |

|         |      |       |       |      |      |      |       |         |          |      |
|---------|------|-------|-------|------|------|------|-------|---------|----------|------|
| 15.0MHz | 75/0 | 831.5 | 20.51 | 2.01 | 5.30 | 2.15 | 21.65 | 146.315 | Vertical | Pass |
| Band    |      | 836.5 | 21.20 | 2.01 | 5.30 | 2.15 | 22.34 | 171.517 | Vertical | Pass |
| QPSK    |      | 841.5 | 22.10 | 2.02 | 5.70 | 2.15 | 23.63 | 230.628 | Vertical | Pass |

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

ERP(dBm)=EIRP-2.15

### 8.11 LTE BAND 41

| Radiated Power (EIRP) for Band 41 |            |           |                |                  |                   |                         |                        |                          |            |
|-----------------------------------|------------|-----------|----------------|------------------|-------------------|-------------------------|------------------------|--------------------------|------------|
| Mode                              | RB/RB SIZE | Frequency | Result         |                  |                   |                         |                        |                          | Conclusion |
|                                   |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Gain (dB) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |            |
| 5.0MHz<br>Band<br>QPSK            | 25/0       | 2537.5    | 18.02          | 4.54             | 9.00              | 22.48                   | 176.906                | Horizontal               | Pass       |
|                                   |            | 2595      | 18.93          | 4.69             | 9.00              | 23.24                   | 210.923                | Horizontal               | Pass       |
|                                   |            | 2652.5    | 16.56          | 4.71             | 9.00              | 20.85                   | 121.539                | Horizontal               | Pass       |
| 10.0MHz<br>Band<br>QPSK           | 50/0       | 2540      | 18.83          | 4.55             | 9.00              | 23.28                   | 212.592                | Horizontal               | Pass       |
|                                   |            | 2595      | 18.60          | 4.69             | 9.00              | 22.91                   | 195.598                | Horizontal               | Pass       |
|                                   |            | 2650      | 17.58          | 4.72             | 9.00              | 21.86                   | 153.585                | Horizontal               | Pass       |
| 15.0MHz<br>Band<br>QPSK           | 75/0       | 2542.5    | 15.52          | 4.55             | 9.00              | 19.97                   | 99.327                 | Horizontal               | Pass       |
|                                   |            | 2595      | 19.10          | 4.69             | 9.00              | 23.41                   | 219.473                | Horizontal               | Pass       |
|                                   |            | 2647.5    | 18.67          | 4.72             | 9.00              | 22.95                   | 197.335                | Horizontal               | Pass       |
| 20.0MHz<br>Band<br>QPSK           | 100/0      | 2545      | 17.02          | 4.57             | 9.00              | 21.45                   | 139.653                | Horizontal               | Pass       |
|                                   |            | 2595      | 18.18          | 4.73             | 9.00              | 22.45                   | 175.780                | Horizontal               | Pass       |
|                                   |            | 2645      | 18.99          | 4.75             | 9.00              | 23.24                   | 210.809                | Horizontal               | Pass       |
| 5.0MHz<br>Band<br>QPSK            | 25/0       | 2537.5    | 18.48          | 4.54             | 9.00              | 22.94                   | 196.835                | Vertical                 | Pass       |
|                                   |            | 2595      | 17.20          | 4.69             | 9.00              | 21.51                   | 141.724                | Vertical                 | Pass       |
|                                   |            | 2652.5    | 17.38          | 4.71             | 9.00              | 21.67                   | 146.993                | Vertical                 | Pass       |
| 10.0MHz<br>Band<br>QPSK           | 50/0       | 2540      | 16.80          | 4.55             | 9.00              | 21.25                   | 133.434                | Vertical                 | Pass       |
|                                   |            | 2595      | 17.41          | 4.69             | 9.00              | 21.72                   | 148.522                | Vertical                 | Pass       |
|                                   |            | 2650      | 17.77          | 4.72             | 9.00              | 22.05                   | 160.426                | Vertical                 | Pass       |
| 15.0MHz<br>Band<br>QPSK           | 75/0       | 2542.5    | 16.23          | 4.55             | 9.00              | 20.68                   | 116.951                | Vertical                 | Pass       |
|                                   |            | 2595      | 18.84          | 4.69             | 9.00              | 23.15                   | 206.638                | Vertical                 | Pass       |
|                                   |            | 2647.5    | 16.95          | 4.72             | 9.00              | 21.23                   | 132.720                | Vertical                 | Pass       |
| 20.0MHz<br>Band<br>QPSK           | 100/0      | 2545      | 19.46          | 4.57             | 9.00              | 23.89                   | 245.085                | Vertical                 | Pass       |
|                                   |            | 2595      | 17.38          | 4.73             | 9.00              | 21.65                   | 146.205                | Vertical                 | Pass       |
|                                   |            | 2645      | 17.94          | 4.75             | 9.00              | 22.19                   | 165.682                | Vertical                 | Pass       |

| Radiated Power (EIRP) for Band 41 |            |           |                |                  |                   |                         |                        |                          |            |
|-----------------------------------|------------|-----------|----------------|------------------|-------------------|-------------------------|------------------------|--------------------------|------------|
| Mode                              | RB/RB SIZE | Frequency | Result         |                  |                   |                         |                        |                          | Conclusion |
|                                   |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Gain (dB) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |            |
| 5.0MHz<br>Band 16<br>QAM          | 25/0       | 2537.5    | 16.85          | 4.54             | 9.00              | 21.31                   | 135.328                | Horizontal               | Pass       |
|                                   |            | 2595      | 16.75          | 4.69             | 9.00              | 21.06                   | 127.615                | Horizontal               | Pass       |
|                                   |            | 2652.5    | 17.65          | 4.71             | 9.00              | 21.94                   | 156.424                | Horizontal               | Pass       |
| 10.0MHz<br>Band 16<br>QAM         | 50/0       | 2540      | 17.66          | 4.55             | 9.00              | 22.11                   | 162.420                | Horizontal               | Pass       |
|                                   |            | 2595      | 18.38          | 4.69             | 9.00              | 22.69                   | 185.946                | Horizontal               | Pass       |
|                                   |            | 2650      | 18.54          | 4.72             | 9.00              | 22.82                   | 191.524                | Horizontal               | Pass       |
| 15.0MHz<br>Band 16<br>QAM         | 75/0       | 2542.5    | 18.46          | 4.55             | 9.00              | 22.91                   | 195.275                | Horizontal               | Pass       |
|                                   |            | 2595      | 18.04          | 4.69             | 9.00              | 22.35                   | 171.943                | Horizontal               | Pass       |
|                                   |            | 2647.5    | 18.32          | 4.72             | 9.00              | 22.60                   | 181.921                | Horizontal               | Pass       |
| 20.0MHz<br>Band 16<br>QAM         | 100/0      | 2545      | 17.41          | 4.57             | 9.00              | 21.84                   | 152.647                | Horizontal               | Pass       |
|                                   |            | 2595      | 17.94          | 4.73             | 9.00              | 22.21                   | 166.282                | Horizontal               | Pass       |
|                                   |            | 2645      | 18.97          | 4.75             | 9.00              | 23.22                   | 209.903                | Horizontal               | Pass       |
| 5.0MHz<br>Band 16<br>QAM          | 25/0       | 2537.5    | 18.29          | 4.54             | 9.00              | 22.75                   | 188.287                | Vertical                 | Pass       |
|                                   |            | 2595      | 18.46          | 4.69             | 9.00              | 22.77                   | 189.329                | Vertical                 | Pass       |
|                                   |            | 2652.5    | 17.98          | 4.71             | 9.00              | 22.27                   | 168.755                | Vertical                 | Pass       |
| 10.0MHz<br>Band 16<br>QAM         | 50/0       | 2540      | 19.05          | 4.55             | 9.00              | 23.50                   | 223.782                | Vertical                 | Pass       |
|                                   |            | 2595      | 17.27          | 4.69             | 9.00              | 21.58                   | 143.731                | Vertical                 | Pass       |
|                                   |            | 2650      | 16.57          | 4.72             | 9.00              | 20.85                   | 121.531                | Vertical                 | Pass       |
| 15.0MHz<br>Band 16<br>QAM         | 75/0       | 2542.5    | 17.67          | 4.55             | 9.00              | 22.12                   | 162.786                | Vertical                 | Pass       |
|                                   |            | 2595      | 17.07          | 4.69             | 9.00              | 21.38                   | 137.415                | Vertical                 | Pass       |
|                                   |            | 2647.5    | 17.92          | 4.72             | 9.00              | 22.20                   | 166.130                | Vertical                 | Pass       |
| 20.0MHz<br>Band 16<br>QAM         | 100/0      | 2545      | 18.18          | 4.57             | 9.00              | 22.61                   | 182.212                | Vertical                 | Pass       |
|                                   |            | 2595      | 19.69          | 4.73             | 9.00              | 23.96                   | 248.755                | Vertical                 | Pass       |
|                                   |            | 2645      | 18.17          | 4.75             | 9.00              | 22.42                   | 174.491                | Vertical                 | Pass       |

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

## 8.12 LTE BAND 66

| Radiated Power (EIRP) for Band 66 |            |           |                |                  |                   |                         |                        |                          |            |
|-----------------------------------|------------|-----------|----------------|------------------|-------------------|-------------------------|------------------------|--------------------------|------------|
| Mode                              | RB/RB SIZE | Frequency | Result         |                  |                   |                         |                        |                          | Conclusion |
|                                   |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Gain (dB) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |            |
| 1.4MHz Band QPSK                  | 6/0        | 1710.7    | 14.85          | 3.12             | 8.90              | 20.63                   | 115.514                | Horizontal               | Pass       |
|                                   |            | 1745      | 13.18          | 3.27             | 8.90              | 18.81                   | 75.981                 | Horizontal               | Pass       |
|                                   |            | 1779.3    | 16.55          | 3.29             | 8.90              | 22.16                   | 164.273                | Horizontal               | Pass       |
| 3.0MHz Band QPSK                  | 15/0       | 1711.5    | 14.14          | 3.13             | 8.90              | 19.91                   | 97.839                 | Horizontal               | Pass       |
|                                   |            | 1745      | 15.25          | 3.27             | 8.90              | 20.88                   | 122.380                | Horizontal               | Pass       |
|                                   |            | 1778.5    | 14.13          | 3.30             | 8.90              | 19.73                   | 93.911                 | Horizontal               | Pass       |
| 5.0MHz Band QPSK                  | 25/0       | 1712.5    | 16.16          | 3.13             | 8.90              | 21.93                   | 155.831                | Horizontal               | Pass       |
|                                   |            | 1745      | 16.87          | 3.27             | 8.90              | 22.50                   | 177.717                | Horizontal               | Pass       |
|                                   |            | 1777.5    | 14.65          | 3.30             | 8.90              | 20.25                   | 105.817                | Horizontal               | Pass       |
| 10.0MHz Band QPSK                 | 50/0       | 1715      | 15.62          | 3.15             | 8.90              | 21.37                   | 136.995                | Horizontal               | Pass       |
|                                   |            | 1745      | 15.22          | 3.31             | 8.90              | 20.81                   | 120.481                | Horizontal               | Pass       |
|                                   |            | 1775      | 15.53          | 3.33             | 8.90              | 21.10                   | 128.681                | Horizontal               | Pass       |
| 15.0MHz Band QPSK                 | 75/0       | 1717.5    | 15.38          | 3.15             | 8.90              | 21.13                   | 129.850                | Horizontal               | Pass       |
|                                   |            | 1745      | 15.91          | 3.31             | 8.90              | 21.50                   | 141.378                | Horizontal               | Pass       |
|                                   |            | 1772.5    | 16.80          | 3.33             | 8.90              | 22.37                   | 172.571                | Horizontal               | Pass       |
| 20.0MHz Band QPSK                 | 100/0      | 1720      | 14.61          | 3.17             | 8.90              | 20.34                   | 108.213                | Horizontal               | Pass       |
|                                   |            | 1745      | 16.29          | 3.32             | 8.90              | 21.87                   | 153.710                | Horizontal               | Pass       |
|                                   |            | 1770      | 16.21          | 3.36             | 8.90              | 21.75                   | 149.566                | Horizontal               | Pass       |
| 1.4MHz Band QPSK                  | 6/0        | 1710.7    | 15.02          | 3.12             | 8.90              | 20.80                   | 120.233                | Vertical                 | Pass       |
|                                   |            | 1745      | 17.07          | 3.27             | 8.90              | 22.70                   | 186.251                | Vertical                 | Pass       |
|                                   |            | 1779.3    | 16.04          | 3.29             | 8.90              | 21.65                   | 146.185                | Vertical                 | Pass       |
| 3.0MHz Band QPSK                  | 15/0       | 1711.5    | 16.52          | 3.13             | 8.90              | 22.29                   | 169.574                | Vertical                 | Pass       |
|                                   |            | 1745      | 16.62          | 3.27             | 8.90              | 22.25                   | 167.884                | Vertical                 | Pass       |
|                                   |            | 1778.5    | 16.00          | 3.30             | 8.90              | 21.60                   | 144.419                | Vertical                 | Pass       |
| 5.0MHz Band QPSK                  | 25/0       | 1712.5    | 14.98          | 3.13             | 8.90              | 20.75                   | 118.797                | Vertical                 | Pass       |
|                                   |            | 1745      | 15.08          | 3.27             | 8.90              | 20.71                   | 117.830                | Vertical                 | Pass       |
|                                   |            | 1777.5    | 14.74          | 3.30             | 8.90              | 20.34                   | 108.138                | Vertical                 | Pass       |
| 10.0MHz Band QPSK                 | 50/0       | 1715      | 12.76          | 3.15             | 8.90              | 18.51                   | 70.948                 | Vertical                 | Pass       |
|                                   |            | 1745      | 16.38          | 3.31             | 8.90              | 21.97                   | 157.295                | Vertical                 | Pass       |
|                                   |            | 1775      | 14.58          | 3.33             | 8.90              | 20.15                   | 103.533                | Vertical                 | Pass       |

|         |       |        |       |      |      |       |         |          |      |
|---------|-------|--------|-------|------|------|-------|---------|----------|------|
| 15.0MHz | 75/0  | 1717.5 | 16.24 | 3.15 | 8.90 | 21.99 | 158.068 | Vertical | Pass |
| Band    |       | 1745   | 16.67 | 3.31 | 8.90 | 22.26 | 168.178 | Vertical | Pass |
| QPSK    |       | 1772.5 | 15.43 | 3.33 | 8.90 | 21.00 | 125.754 | Vertical | Pass |
| 20.0MHz | 100/0 | 1720   | 17.33 | 3.17 | 8.90 | 23.06 | 202.422 | Vertical | Pass |
| Band    |       | 1745   | 16.74 | 3.32 | 8.90 | 22.32 | 170.510 | Vertical | Pass |
| QPSK    |       | 1770   | 13.93 | 3.36 | 8.90 | 19.47 | 88.502  | Vertical | Pass |

| Radiated Power (EIRP) for Band 66 |            |           |                |                  |                   |                         |                        |                          |            |
|-----------------------------------|------------|-----------|----------------|------------------|-------------------|-------------------------|------------------------|--------------------------|------------|
| Mode                              | RB/RB SIZE | Frequency | Result         |                  |                   |                         |                        |                          | Conclusion |
|                                   |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Gain (dB) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |            |
| 1.4MHz<br>Band 16<br>QAM          | 6/0        | 1710.7    | 16.01          | 3.12             | 8.9               | 21.79                   | 150.887                | Horizontal               | Pass       |
|                                   |            | 1745      | 16.99          | 3.27             | 8.9               | 22.62                   | 182.737                | Horizontal               | Pass       |
|                                   |            | 1779.3    | 16.80          | 3.29             | 8.9               | 22.41                   | 174.195                | Horizontal               | Pass       |
| 3.0MHz<br>Band 16<br>QAM          | 15/0       | 1711.5    | 16.37          | 3.13             | 8.9               | 22.14                   | 163.824                | Horizontal               | Pass       |
|                                   |            | 1745      | 16.64          | 3.27             | 8.9               | 22.27                   | 168.504                | Horizontal               | Pass       |
|                                   |            | 1778.5    | 17.08          | 3.3              | 8.9               | 22.68                   | 185.282                | Horizontal               | Pass       |
| 5.0MHz<br>Band 16<br>QAM          | 25/0       | 1712.5    | 15.84          | 3.13             | 8.9               | 21.61                   | 144.955                | Horizontal               | Pass       |
|                                   |            | 1745      | 13.55          | 3.27             | 8.9               | 19.18                   | 82.734                 | Horizontal               | Pass       |
|                                   |            | 1777.5    | 15.35          | 3.3              | 8.9               | 20.95                   | 124.362                | Horizontal               | Pass       |
| 10.0MHz<br>Band 16<br>QAM         | 50/0       | 1715      | 16.28          | 3.15             | 8.9               | 22.03                   | 159.430                | Horizontal               | Pass       |
|                                   |            | 1745      | 15.28          | 3.31             | 8.9               | 20.87                   | 122.272                | Horizontal               | Pass       |
|                                   |            | 1775      | 15.30          | 3.33             | 8.9               | 20.87                   | 122.132                | Horizontal               | Pass       |
| 15.0MHz<br>Band 16<br>QAM         | 75/0       | 1717.5    | 14.32          | 3.15             | 8.9               | 20.07                   | 101.561                | Horizontal               | Pass       |
|                                   |            | 1745      | 15.66          | 3.31             | 8.9               | 21.25                   | 133.423                | Horizontal               | Pass       |
|                                   |            | 1772.5    | 16.28          | 3.33             | 8.9               | 21.85                   | 152.998                | Horizontal               | Pass       |
| 20.0MHz<br>Band 16<br>QAM         | 100/0      | 1720      | 16.22          | 3.17             | 8.9               | 21.95                   | 156.548                | Horizontal               | Pass       |
|                                   |            | 1745      | 16.27          | 3.32             | 8.9               | 21.85                   | 153.089                | Horizontal               | Pass       |
|                                   |            | 1770      | 16.37          | 3.36             | 8.9               | 21.91                   | 155.260                | Horizontal               | Pass       |
| 1.4MHz<br>Band 16<br>QAM          | 6/0        | 1710.7    | 16.21          | 3.12             | 8.9               | 21.99                   | 158.279                | Vertical                 | Pass       |
|                                   |            | 1745      | 16.26          | 3.27             | 8.9               | 21.89                   | 154.585                | Vertical                 | Pass       |
|                                   |            | 1779.3    | 16.47          | 3.29             | 8.9               | 22.08                   | 161.594                | Vertical                 | Pass       |
| 3.0MHz<br>Band 16<br>QAM          | 15/0       | 1711.5    | 15.42          | 3.13             | 8.9               | 21.19                   | 131.522                | Vertical                 | Pass       |
|                                   |            | 1745      | 15.50          | 3.27             | 8.9               | 21.13                   | 129.608                | Vertical                 | Pass       |
|                                   |            | 1778.5    | 16.83          | 3.3              | 8.9               | 22.43                   | 174.856                | Vertical                 | Pass       |
| 5.0MHz<br>Band 16<br>QAM          | 25/0       | 1712.5    | 16.70          | 3.13             | 8.9               | 22.47                   | 176.558                | Vertical                 | Pass       |
|                                   |            | 1745      | 16.64          | 3.27             | 8.9               | 22.27                   | 168.538                | Vertical                 | Pass       |
|                                   |            | 1777.5    | 14.89          | 3.3              | 8.9               | 20.49                   | 112.015                | Vertical                 | Pass       |
| 10.0MHz<br>Band 16<br>QAM         | 50/0       | 1715      | 14.16          | 3.15             | 8.9               | 19.91                   | 97.980                 | Vertical                 | Pass       |
|                                   |            | 1745      | 17.33          | 3.31             | 8.9               | 22.92                   | 195.832                | Vertical                 | Pass       |
|                                   |            | 1775      | 16.84          | 3.33             | 8.9               | 22.41                   | 174.137                | Vertical                 | Pass       |
| 15.0MHz<br>Band 16                | 75/0       | 1717.5    | 15.71          | 3.15             | 8.9               | 21.46                   | 139.969                | Vertical                 | Pass       |
|                                   |            | 1745      | 16.60          | 3.31             | 8.9               | 22.19                   | 165.613                | Vertical                 | Pass       |

|         |       |        |       |      |     |       |         |          |      |
|---------|-------|--------|-------|------|-----|-------|---------|----------|------|
| QAM     |       | 1772.5 | 16.13 | 3.33 | 8.9 | 21.70 | 147.744 | Vertical | Pass |
| 20.0MHz | 100/0 | 1720   | 17.77 | 3.17 | 8.9 | 23.50 | 223.844 | Vertical | Pass |
| Band 16 |       | 1745   | 16.88 | 3.32 | 8.9 | 22.46 | 176.065 | Vertical | Pass |
| QAM     |       | 1770   | 17.42 | 3.36 | 8.9 | 22.96 | 197.908 | Vertical | Pass |

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

## 9. SPURIOUS RADIATION EMISSION

### RULE PART(S)

FCC: §2.1053, §22.917, §24.238, §27.53 and §90.691

### LIMIT

§22.917 (e) and §24.238 and §90.691 (a): Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log (P)$  dB.

§27.53 (g) For operations in the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least  $43 + 10 \log (P)$  dB.

§27.53 (h) For operations in the 1710–1755 MHz and 2110–2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log_{10}(P)$  dB.

### TEST PROCEDURE

For Cellular equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. 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. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

For PCS equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, 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. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

The unwanted emission power shall be measured with a resolution bandwidth of at least 1% of the occupied bandwidth in the 1 MHz band immediately outside and adjacent to the channel edge of the equipment. Beyond the 1 MHz band immediately outside the channel edge of the equipment, a resolution bandwidth of 1 MHz shall be employed. A narrower resolution bandwidth is allowed to be used provided that the measured power is integrated over the full required measurement bandwidth of 1 MHz or 1% of the occupied bandwidth as applicable.

The power of any unwanted emissions measured from the channel edge of the equipment shall be attenuated below the transmitter power,  $P$  (dBW), as follows:

- a. for base station and subscriber equipment, other than mobile subscriber equipment, the attenuation shall not be less than  $43 + 10 \log_{10}(p)$ , dB; and
- b. for mobile subscriber equipment, the attenuation shall not be less than  $43 + 10 \log_{10}(p)$ , dB at the channel edges and  $55 + 10 \log_{10}(p)$  at 5.5 MHz away and beyond the channel edges where  $p$  in (a) and (b) is the transmitter power measured in watts.

**MODES TESTED**

LTE Band 2/4/5/7/12/13/25/26/41/66

**RESULTS**

PASS

## 9.1 LTE BAND 2

### QPSK EIRP POWER FOR LTE BAND 2 (1.4MHZ BANDWIDTH)

| Test Results for Low Channel 1850.7MHz  |               |                |                    |                     |             |             |            |
|-----------------------------------------|---------------|----------------|--------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                          | SG Level(dBm) | Cable Loss(dB) | Antenna Factor(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 3701.5                                  | -48.34        | 4.04           | 33.51              | -18.87              | -13         | -5.87       | Horizontal |
| 3701.5                                  | -51.35        | 4.04           | 33.51              | -21.88              | -13         | -8.88       | Vertical   |
| 5553.0                                  | -46.95        | 5.24           | 35.84              | -16.35              | -13         | -3.35       | Vertical   |
| 5553.0                                  | -49.10        | 5.24           | 35.84              | -18.50              | -13         | -5.50       | Horizontal |
| 185.9                                   | -39.52        | 1.43           | 16.02              | -24.92              | -13         | -11.92      | Vertical   |
| 454.5                                   | -33.26        | 1.30           | 17.99              | -16.57              | -13         | -3.57       | Horizontal |
| Test Results for Mid Channel 1880MHz    |               |                |                    |                     |             |             |            |
| 3760.5                                  | -46.88        | 4.04           | 33.56              | -17.36              | -13         | -4.36       | Horizontal |
| 3760.5                                  | -51.26        | 4.04           | 33.56              | -21.74              | -13         | -8.74       | Vertical   |
| 5641.0                                  | -48.79        | 5.24           | 35.91              | -18.12              | -13         | -5.12       | Vertical   |
| 5641.0                                  | -49.72        | 5.24           | 35.91              | -19.05              | -13         | -6.05       | Horizontal |
| 184.4                                   | -34.36        | 1.62           | 16.97              | -19.01              | -13         | -6.01       | Vertical   |
| 289.9                                   | -34.08        | 1.74           | 15.98              | -19.85              | -13         | -6.85       | Horizontal |
| Test Results for High Channel 1909.3MHz |               |                |                    |                     |             |             |            |
| 3819.6                                  | -45.54        | 4.04           | 34.00              | -15.58              | -13         | -2.58       | Horizontal |
| 3819.6                                  | -45.43        | 4.04           | 34.00              | -15.47              | -13         | -2.47       | Vertical   |
| 5728.7                                  | -49.97        | 5.24           | 36.04              | -19.17              | -13         | -6.17       | Vertical   |
| 5728.7                                  | -47.34        | 5.24           | 36.04              | -16.54              | -13         | -3.54       | Horizontal |
| 194.1                                   | -40.58        | 1.42           | 17.29              | -24.71              | -13         | -11.71      | Vertical   |
| 343.6                                   | -33.59        | 1.50           | 17.90              | -17.18              | -13         | -4.18       | Horizontal |

**QPSK EIRP POWER FOR LTE BAND 2 (20.0MHZ BANDWIDTH)**

| Test Results for Low Channel 1860MHz  |               |                |                    |                     |             |             |            |
|---------------------------------------|---------------|----------------|--------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                        | SG Level(dBm) | Cable Loss(dB) | Antenna Factor(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 3720.3                                | -45.49        | 4.07           | 33.54              | -16.02              | -13         | -3.02       | Horizontal |
| 3720.3                                | -48.65        | 4.07           | 33.54              | -19.18              | -13         | -6.18       | Vertical   |
| 5580.9                                | -46.45        | 5.28           | 35.86              | -15.87              | -13         | -2.87       | Vertical   |
| 5580.9                                | -49.27        | 5.28           | 35.86              | -18.69              | -13         | -5.69       | Horizontal |
| 208.9                                 | -37.62        | 1.58           | 16.89              | -22.30              | -13         | -9.30       | Vertical   |
| 358.0                                 | -41.69        | 1.76           | 17.26              | -26.19              | -13         | -13.19      | Horizontal |
| Test Results for Mid Channel 1880MHz  |               |                |                    |                     |             |             |            |
| 3760.3                                | -45.79        | 4.04           | 33.56              | -16.27              | -13         | -3.27       | Horizontal |
| 3760.3                                | -46.10        | 4.04           | 33.56              | -16.58              | -13         | -3.58       | Vertical   |
| 5640.5                                | -50.48        | 5.24           | 35.91              | -19.81              | -13         | -6.81       | Vertical   |
| 5640.5                                | -49.96        | 5.24           | 35.91              | -19.29              | -13         | -6.29       | Horizontal |
| 200.8                                 | -43.75        | 1.46           | 16.27              | -28.95              | -13         | -15.95      | Vertical   |
| 345.6                                 | -38.19        | 1.59           | 15.15              | -24.64              | -13         | -11.64      | Horizontal |
| Test Results for High Channel 1900MHz |               |                |                    |                     |             |             |            |
| 3800.2                                | -48.92        | 4.04           | 34.00              | -18.96              | -13         | -5.96       | Horizontal |
| 3800.2                                | -46.25        | 4.04           | 34.00              | -16.29              | -13         | -3.29       | Vertical   |
| 5700.7                                | -46.36        | 5.24           | 36.04              | -15.56              | -13         | -2.56       | Vertical   |
| 5700.7                                | -50.22        | 5.24           | 36.04              | -19.42              | -13         | -6.42       | Horizontal |
| 212.2                                 | -34.29        | 1.36           | 17.39              | -18.26              | -13         | -5.26       | Vertical   |
| 312.9                                 | -40.30        | 1.66           | 15.39              | -26.57              | -13         | -13.57      | Horizontal |

Note: P<sub>Mea</sub>(dBm)= Power(dBm)+ AR<sub>pl</sub> (dBm)

Over Limit= : P<sub>Mea</sub>(dBm)-Limit(dBm)

Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.

## 9.2 LTE BAND 4

### QPSK EIRP POWER FOR LTE BAND 4 (1.4MHZ BANDWIDTH)

| Test Results for Low Channel 1710.7MHz  |               |                |                    |                     |             |             |            |
|-----------------------------------------|---------------|----------------|--------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                          | SG Level(dBm) | Cable Loss(dB) | Antenna Factor(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 3422.3                                  | -48.74        | 4.02           | 29.80              | -22.96              | -13         | -9.96       | Horizontal |
| 3422.3                                  | -46.48        | 4.02           | 29.80              | -20.70              | -13         | -7.70       | Vertical   |
| 5132.8                                  | -49.91        | 5.24           | 35.84              | -19.31              | -13         | -6.31       | Vertical   |
| 5132.8                                  | -50.38        | 5.24           | 35.84              | -19.78              | -13         | -6.78       | Horizontal |
| 198.3                                   | -40.32        | 1.68           | 16.04              | -25.95              | -13         | -12.95      | Vertical   |
| 455.3                                   | -34.05        | 1.78           | 17.74              | -18.09              | -13         | -5.09       | Horizontal |
| Test Results for Mid Channel 1732.5MHz  |               |                |                    |                     |             |             |            |
| 3465.6                                  | -48.38        | 4.03           | 30.00              | -22.41              | -13         | -9.41       | Horizontal |
| 3465.6                                  | -42.85        | 4.03           | 30.00              | -16.88              | -13         | -3.88       | Vertical   |
| 5198.3                                  | -46.27        | 5.25           | 35.86              | -15.66              | -13         | -2.66       | Vertical   |
| 5198.3                                  | -47.27        | 5.25           | 35.86              | -16.66              | -13         | -3.66       | Horizontal |
| 207.6                                   | -40.51        | 1.72           | 17.69              | -24.54              | -13         | -11.54      | Vertical   |
| 346.7                                   | -41.56        | 1.62           | 16.02              | -27.16              | -13         | -14.16      | Horizontal |
| Test Results for High Channel 1754.3MHz |               |                |                    |                     |             |             |            |
| 3508.6                                  | -47.82        | 4.05           | 30.01              | -21.86              | -13         | -8.86       | Horizontal |
| 3508.6                                  | -45.10        | 4.05           | 30.01              | -19.14              | -13         | -6.14       | Vertical   |
| 5263.6                                  | -47.90        | 5.26           | 35.86              | -17.30              | -13         | -4.30       | Vertical   |
| 5263.6                                  | -48.32        | 5.26           | 35.86              | -17.72              | -13         | -4.72       | Horizontal |
| 183.7                                   | -31.16        | 1.80           | 16.69              | -16.27              | -13         | -3.27       | Vertical   |
| 332.7                                   | -39.08        | 1.75           | 16.66              | -24.18              | -13         | -11.18      | Horizontal |

**QPSK EIRP POWER FOR LTE BAND 4 (20.0MHZ BANDWIDTH)**

| Test Results for Low Channel 1720MHz   |               |                |                    |                     |             |             |            |
|----------------------------------------|---------------|----------------|--------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                         | SG Level(dBm) | Cable Loss(dB) | Antenna Factor(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 3440.4                                 | -47.82        | 4.02           | 29.80              | -22.04              | -13         | -9.04       | Horizontal |
| 3440.4                                 | -47.52        | 4.02           | 29.80              | -21.74              | -13         | -8.74       | Vertical   |
| 5160.9                                 | -50.95        | 5.24           | 35.84              | -20.35              | -13         | -7.35       | Vertical   |
| 5160.9                                 | -49.33        | 5.24           | 35.84              | -18.73              | -13         | -5.73       | Horizontal |
| 183.2                                  | -38.39        | 1.57           | 17.26              | -22.71              | -13         | -9.71       | Vertical   |
| 310.7                                  | -33.67        | 1.78           | 16.35              | -19.10              | -13         | -6.10       | Horizontal |
| Test Results for Mid Channel 1732.5MHz |               |                |                    |                     |             |             |            |
| 3465.5                                 | -48.64        | 4.03           | 30.00              | -22.67              | -13         | -9.67       | Horizontal |
| 3465.5                                 | -49.16        | 4.03           | 30.00              | -23.19              | -13         | -10.19      | Vertical   |
| 5198.1                                 | -47.43        | 5.25           | 35.86              | -16.82              | -13         | -3.82       | Vertical   |
| 5198.1                                 | -47.81        | 5.25           | 35.86              | -17.20              | -13         | -4.20       | Horizontal |
| 209.4                                  | -39.19        | 1.44           | 17.95              | -22.68              | -13         | -9.68       | Vertical   |
| 270.2                                  | -31.68        | 1.65           | 16.09              | -17.24              | -13         | -4.24       | Horizontal |
| Test Results for High Channel 1745MHz  |               |                |                    |                     |             |             |            |
| 3490.5                                 | -43.93        | 2.91           | 27.68              | -19.16              | -13         | -6.16       | Horizontal |
| 3490.5                                 | -44.76        | 2.91           | 27.68              | -19.99              | -13         | -6.99       | Vertical   |
| 5235.4                                 | -47.43        | 5.26           | 35.86              | -16.83              | -13         | -3.83       | Vertical   |
| 5235.4                                 | -51.92        | 5.26           | 35.86              | -21.32              | -13         | -8.32       | Horizontal |
| 185.1                                  | -39.38        | 1.61           | 16.85              | -24.13              | -13         | -11.13      | Vertical   |
| 291.1                                  | -38.97        | 1.61           | 15.19              | -25.39              | -13         | -12.39      | Horizontal |

Note: P<sub>Mea</sub>(dBm)= Power(dBm)+ AR<sub>pl</sub> (dBm)

Over Limit= : P<sub>Mea</sub>(dBm)-Limit(dBm)

Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.

### 9.3 LTE BAND 5

#### QPSK EIRP POWER FOR LTE BAND 5 (1.4MHZ BANDWIDTH)

| Test Results for Low Channel 824.7MHz  |               |                |                    |                     |             |             |            |
|----------------------------------------|---------------|----------------|--------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                         | SG Level(dBm) | Cable Loss(dB) | Antenna Factor(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 1650.0                                 | -45.82        | 2.78           | 27.50              | -21.10              | -13         | -8.10       | Horizontal |
| 1650.0                                 | -48.83        | 2.78           | 27.50              | -24.11              | -13         | -11.11      | Vertical   |
| 2475.1                                 | -45.16        | 2.90           | 27.80              | -20.26              | -13         | -7.26       | Vertical   |
| 2475.1                                 | -51.08        | 2.90           | 27.80              | -26.18              | -13         | -13.18      | Horizontal |
| 179.1                                  | -35.64        | 1.76           | 17.59              | -19.81              | -13         | -6.81       | Vertical   |
| 460.4                                  | -39.07        | 1.63           | 15.87              | -24.84              | -13         | -11.84      | Horizontal |
| Test Results For Mid Channel 836.5MHz  |               |                |                    |                     |             |             |            |
| 1673.5                                 | -45.96        | 2.80           | 27.48              | -21.28              | -13         | -8.28       | Horizontal |
| 1673.5                                 | -44.91        | 2.80           | 27.48              | -20.23              | -13         | -7.23       | Vertical   |
| 2510.3                                 | -42.40        | 2.91           | 27.70              | -17.61              | -13         | -4.61       | Vertical   |
| 2510.3                                 | -48.82        | 2.91           | 27.70              | -24.03              | -13         | -11.03      | Horizontal |
| 213.7                                  | -40.72        | 1.61           | 15.68              | -26.66              | -13         | -13.66      | Vertical   |
| 432.1                                  | -35.74        | 1.59           | 17.52              | -19.82              | -13         | -6.82       | Horizontal |
| Test Results for High Channel 848.3MHz |               |                |                    |                     |             |             |            |
| 1696.7                                 | -48.24        | 2.82           | 27.43              | -23.63              | -13         | -10.63      | Horizontal |
| 1696.7                                 | -49.82        | 2.82           | 27.43              | -25.21              | -13         | -12.21      | Vertical   |
| 2545.4                                 | -42.57        | 2.92           | 27.74              | -17.75              | -13         | -4.75       | Vertical   |
| 2545.4                                 | -50.41        | 2.92           | 27.74              | -25.59              | -13         | -12.59      | Horizontal |
| 193.3                                  | -34.28        | 1.69           | 16.67              | -19.29              | -13         | -6.29       | Vertical   |
| 367.5                                  | -33.37        | 1.70           | 17.18              | -17.88              | -13         | -4.88       | Horizontal |

**QPSK EIRP POWER FOR LTE BAND 5 (10MHZ BANDWIDTH)**

| Test Results for Low Channel 829MHz   |               |                |                    |                     |             |             |            |
|---------------------------------------|---------------|----------------|--------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                        | SG Level(dBm) | Cable Loss(dB) | Antenna Factor(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 1658.8                                | -49.99        | 2.78           | 27.50              | -25.27              | -13         | -12.27      | Horizontal |
| 1658.8                                | -41.04        | 2.78           | 27.50              | -16.32              | -13         | -3.32       | Vertical   |
| 2487.8                                | -51.71        | 2.90           | 27.80              | -26.81              | -13         | -13.81      | Vertical   |
| 2487.8                                | -47.28        | 2.90           | 27.80              | -22.38              | -13         | -9.38       | Horizontal |
| 199.9                                 | -41.72        | 1.71           | 15.57              | -27.86              | -13         | -14.86      | Vertical   |
| 364.0                                 | -31.53        | 1.34           | 16.40              | -16.48              | -13         | -3.48       | Horizontal |
| Test Results for Mid Channel 836.5MHz |               |                |                    |                     |             |             |            |
| 1673.5                                | -41.25        | 2.80           | 27.48              | -16.57              | -13         | -3.57       | Horizontal |
| 1673.5                                | -42.34        | 2.80           | 27.48              | -17.66              | -13         | -4.66       | Vertical   |
| 2510.4                                | -50.61        | 2.91           | 27.70              | -25.82              | -13         | -12.82      | Vertical   |
| 2510.4                                | -46.12        | 2.91           | 27.70              | -21.33              | -13         | -8.33       | Horizontal |
| 212.8                                 | -32.17        | 1.44           | 17.04              | -16.57              | -13         | -3.57       | Vertical   |
| 344.3                                 | -41.88        | 1.76           | 17.62              | -26.03              | -13         | -13.03      | Horizontal |
| Test Results for High Channel 844MHz  |               |                |                    |                     |             |             |            |
| 1688.6                                | -45.95        | 2.82           | 27.43              | -21.34              | -13         | -8.34       | Horizontal |
| 1688.6                                | -46.22        | 2.82           | 27.43              | -21.61              | -13         | -8.61       | Vertical   |
| 2532.4                                | -49.28        | 2.92           | 27.74              | -24.46              | -13         | -11.46      | Vertical   |
| 2532.4                                | -46.23        | 2.92           | 27.74              | -21.41              | -13         | -8.41       | Horizontal |
| 206.0                                 | -34.09        | 1.74           | 17.70              | -18.13              | -13         | -5.13       | Vertical   |
| 393.6                                 | -34.77        | 1.41           | 17.46              | -18.71              | -13         | -5.71       | Horizontal |

Note: P<sub>Mea</sub>(dBm)= Power(dBm)+ AR<sub>pl</sub> (dBm)

. Over Limit= : P<sub>Mea</sub>(dBm)-Limit(dBm)

. Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.

#### 9.4 LTE BAND 7

#### QPSK EIRP POWER FOR LTE BAND 7 (5.0MHZ BANDWIDTH)

| Test Results for Low Channel 2502.5MHz  |               |                |                    |                     |             |             |            |
|-----------------------------------------|---------------|----------------|--------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                          | SG Level(dBm) | Cable Loss(dB) | Antenna Factor(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 5005.7                                  | -62.52        | 5.23           | 35.81              | -31.94              | -25         | -6.94       | Horizontal |
| 5005.7                                  | -61.45        | 5.23           | 35.81              | -30.87              | -25         | -5.87       | Vertical   |
| 7508.2                                  | -62.60        | 5.67           | 36.85              | -31.42              | -25         | -6.42       | Vertical   |
| 7508.2                                  | -61.65        | 5.67           | 36.85              | -30.47              | -25         | -5.47       | Horizontal |
| 202.9                                   | -49.85        | 1.73           | 17.97              | -33.61              | -25         | -8.61       | Vertical   |
| 451.0                                   | -48.66        | 1.38           | 15.11              | -34.93              | -25         | -9.93       | Horizontal |
| Test Results for Mid Channel 2535MHz    |               |                |                    |                     |             |             |            |
| 5070.3                                  | -57.91        | 5.23           | 35.82              | -27.32              | -25         | -2.32       | Horizontal |
| 5070.3                                  | -62.89        | 5.23           | 35.82              | -32.30              | -25         | -7.30       | Vertical   |
| 7605.5                                  | -61.23        | 5.67           | 36.85              | -30.05              | -25         | -5.05       | Vertical   |
| 7605.5                                  | -61.44        | 5.67           | 36.85              | -30.26              | -25         | -5.26       | Horizontal |
| 211.6                                   | -42.02        | 1.77           | 16.17              | -27.61              | -25         | -2.61       | Vertical   |
| 233.4                                   | -49.14        | 1.63           | 15.21              | -35.56              | -25         | -10.56      | Horizontal |
| Test Results for High Channel 2567.5MHz |               |                |                    |                     |             |             |            |
| 5135.2                                  | -58.74        | 5.24           | 35.83              | -28.15              | -25         | -3.15       | Horizontal |
| 5135.2                                  | -58.55        | 5.24           | 35.83              | -27.96              | -25         | -2.96       | Vertical   |
| 7703.3                                  | -60.48        | 5.68           | 36.87              | -29.29              | -25         | -4.29       | Vertical   |
| 7703.3                                  | -59.23        | 5.68           | 36.87              | -28.04              | -25         | -3.04       | Horizontal |
| 186.5                                   | -43.59        | 1.58           | 17.56              | -27.60              | -25         | -2.60       | Vertical   |
| 264.4                                   | -47.55        | 1.45           | 16.58              | -32.42              | -25         | -7.42       | Horizontal |

**QPSK EIRP POWER FOR LTE BAND 7 (20.0MHZ BANDWIDTH)**

| Test Results for Low Channel 2510MHz  |               |                |                    |                     |             |             |            |
|---------------------------------------|---------------|----------------|--------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                        | SG Level(dBm) | Cable Loss(dB) | Antenna Factor(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 5020.3                                | -58.49        | 5.23           | 35.82              | -27.90              | -25         | -2.90       | Horizontal |
| 5020.3                                | -60.15        | 5.23           | 35.82              | -29.56              | -25         | -4.56       | Vertical   |
| 7530.1                                | -60.35        | 5.67           | 36.86              | -29.16              | -25         | -4.16       | Vertical   |
| 7530.1                                | -58.63        | 5.67           | 36.86              | -27.44              | -25         | -2.44       | Horizontal |
| 193.1                                 | -47.45        | 1.63           | 15.76              | -33.33              | -25         | -8.33       | Vertical   |
| 380.2                                 | -49.65        | 1.71           | 15.44              | -35.92              | -25         | -10.92      | Horizontal |
| Test Results for Mid Channel 2535MHz  |               |                |                    |                     |             |             |            |
| 5070.3                                | -60.22        | 5.23           | 35.82              | -29.63              | -25         | -4.63       | Horizontal |
| 5070.3                                | -58.66        | 5.23           | 35.82              | -28.07              | -25         | -3.07       | Vertical   |
| 7605.3                                | -59.19        | 5.67           | 36.85              | -28.01              | -25         | -3.01       | Vertical   |
| 7605.3                                | -60.00        | 5.67           | 36.85              | -28.82              | -25         | -3.82       | Horizontal |
| 199.3                                 | -44.94        | 1.79           | 16.84              | -29.88              | -25         | -4.88       | Vertical   |
| 346.9                                 | -44.50        | 1.71           | 17.64              | -28.56              | -25         | -3.56       | Horizontal |
| Test Results for High Channel 2560MHz |               |                |                    |                     |             |             |            |
| 5120.5                                | -59.69        | 5.24           | 35.83              | -29.10              | -25         | -4.10       | Horizontal |
| 5120.5                                | -60.16        | 5.24           | 35.83              | -29.57              | -25         | -4.57       | Vertical   |
| 7680.1                                | -59.14        | 5.70           | 36.88              | -27.96              | -25         | -2.96       | Vertical   |
| 7680.1                                | -60.20        | 5.70           | 36.88              | -29.02              | -25         | -4.02       | Horizontal |
| 194.3                                 | -44.32        | 1.79           | 16.84              | -29.26              | -25         | -4.26       | Vertical   |
| 350.0                                 | -44.15        | 1.71           | 17.64              | -28.21              | -25         | -3.21       | Horizontal |

Note: Spurious Emission Level = Spectrum Analyzer Read Value + Cable Loss+ Antenna Factor + 11.74

. Margin = Spurious Emission Level - Limit

. Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.

## 9.5 LTE BAND 12

### QPSK EIRP POWER FOR LTE BAND 12 (1.4MHZ BANDWIDTH)

| Test Results for Low Channel 699.7MHz  |               |                |                    |                     |             |             |            |
|----------------------------------------|---------------|----------------|--------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                         | SG Level(dBm) | Cable Loss(dB) | Antenna Factor(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 1400.1                                 | -42.05        | 2.60           | 27.20              | -17.45              | -13         | -4.45       | Horizontal |
| 1400.1                                 | -42.55        | 2.60           | 27.20              | -17.95              | -13         | -4.95       | Vertical   |
| 2099.4                                 | -48.58        | 2.85           | 27.54              | -23.89              | -13         | -10.89      | Vertical   |
| 2099.4                                 | -47.53        | 2.85           | 27.54              | -22.84              | -13         | -9.84       | Horizontal |
| 212.2                                  | -36.14        | 1.49           | 17.78              | -19.86              | -13         | -6.86       | Vertical   |
| 387.3                                  | -40.03        | 1.36           | 17.33              | -24.06              | -13         | -11.06      | Horizontal |
| Test Results For Mid Channel 707.5MHz  |               |                |                    |                     |             |             |            |
| 1415.7                                 | -44.87        | 2.61           | 27.28              | -20.20              | -13         | -7.20       | Horizontal |
| 1415.7                                 | -43.79        | 2.61           | 27.28              | -19.12              | -13         | -6.12       | Vertical   |
| 2123.5                                 | -50.28        | 2.87           | 27.59              | -25.56              | -13         | -12.56      | Vertical   |
| 2123.5                                 | -48.95        | 2.87           | 27.59              | -24.23              | -13         | -11.23      | Horizontal |
| 207.6                                  | -38.71        | 1.73           | 15.74              | -24.70              | -13         | -11.70      | Vertical   |
| 384.9                                  | -32.35        | 1.62           | 15.79              | -18.18              | -13         | -5.18       | Horizontal |
| Test Results for High Channel 715.3MHz |               |                |                    |                     |             |             |            |
| 1430.7                                 | -50.53        | 2.63           | 27.28              | -25.88              | -13         | -12.88      | Horizontal |
| 1430.7                                 | -45.76        | 2.63           | 27.28              | -21.11              | -13         | -8.11       | Vertical   |
| 2146.4                                 | -43.17        | 2.88           | 27.60              | -18.45              | -13         | -5.45       | Vertical   |
| 2146.4                                 | -46.69        | 2.88           | 27.60              | -21.97              | -13         | -8.97       | Horizontal |
| 187.1                                  | -32.94        | 1.61           | 18.00              | -16.56              | -13         | -3.56       | Vertical   |
| 280.5                                  | -34.47        | 1.45           | 15.49              | -20.44              | -13         | -7.44       | Horizontal |

**QPSK EIRP POWER FOR LTE BAND 12 (10MHZ BANDWIDTH)**

| Test Results for Low Channel 704MHz   |               |                |                    |                     |             |             |            |
|---------------------------------------|---------------|----------------|--------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                        | SG Level(dBm) | Cable Loss(dB) | Antenna Factor(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 1408.7                                | -51.68        | 2.61           | 27.26              | -27.03              | -13         | -14.03      | Horizontal |
| 1408.7                                | -45.51        | 2.61           | 27.26              | -20.86              | -13         | -7.86       | Vertical   |
| 2112.9                                | -47.79        | 2.87           | 27.58              | -23.08              | -13         | -10.08      | Vertical   |
| 2112.9                                | -50.34        | 2.87           | 27.58              | -25.63              | -13         | -12.63      | Horizontal |
| 197.9                                 | -39.64        | 1.31           | 16.97              | -23.98              | -13         | -10.98      | Vertical   |
| 469.1                                 | -41.40        | 1.65           | 16.70              | -26.35              | -13         | -13.35      | Horizontal |
| Test Results for Mid Channel 707.5MHz |               |                |                    |                     |             |             |            |
| 1415.7                                | -43.82        | 2.61           | 27.28              | -19.15              | -13         | -6.15       | Horizontal |
| 1415.7                                | -50.58        | 2.61           | 27.28              | -25.91              | -13         | -12.91      | Vertical   |
| 2123.4                                | -50.93        | 2.87           | 27.59              | -26.21              | -13         | -13.21      | Vertical   |
| 2123.4                                | -49.67        | 2.87           | 27.59              | -24.95              | -13         | -11.95      | Horizontal |
| 176.1                                 | -34.86        | 1.72           | 17.99              | -18.59              | -13         | -5.59       | Vertical   |
| 362.9                                 | -39.19        | 1.73           | 17.94              | -22.98              | -13         | -9.98       | Horizontal |
| Test Results for High Channel 711MHz  |               |                |                    |                     |             |             |            |
| 1422.7                                | -47.33        | 2.62           | 27.28              | -22.67              | -13         | -9.67       | Horizontal |
| 1422.7                                | -42.18        | 2.62           | 27.28              | -17.52              | -13         | -4.52       | Vertical   |
| 2133.3                                | -51.63        | 2.87           | 27.60              | -26.90              | -13         | -13.90      | Vertical   |
| 2133.3                                | -48.67        | 2.87           | 27.60              | -23.94              | -13         | -10.94      | Horizontal |
| 210.0                                 | -35.53        | 1.58           | 15.93              | -21.18              | -13         | -8.18       | Vertical   |
| 361.0                                 | -32.47        | 1.36           | 15.59              | -18.24              | -13         | -5.24       | Horizontal |

Note: P<sub>Mea</sub>(dBm)= Power(dBm)+ AR<sub>pl</sub> (dBm)

. Over Limit= : P<sub>Mea</sub>(dBm)-Limit(dBm)

. Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.

## 9.6 LTE BAND 13

### LTE BAND 13 (5MHZ BANDWIDTH)

| Test Results for Low Channel 779.5MHz  |               |                |                    |                     |             |             |            |
|----------------------------------------|---------------|----------------|--------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                         | SG Level(dBm) | Cable Loss(dB) | Antenna Factor(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 1558.6                                 | -70.31        | 2.61           | 27.28              | -45.64              | -40         | -5.64       | Horizontal |
| 1558.6                                 | -74.29        | 2.61           | 27.28              | -49.62              | -40         | -9.62       | Vertical   |
| 2338.1                                 | -41.45        | 2.87           | 27.59              | -16.73              | -13         | -3.73       | Vertical   |
| 2338.1                                 | -41.82        | 2.87           | 27.59              | -17.10              | -13         | -4.10       | Horizontal |
| 120.0                                  | -38.78        | 1.54           | 15.61              | -24.71              | -13         | -11.71      | Vertical   |
| 197.3                                  | -37.32        | 1.51           | 15.21              | -23.62              | -13         | -10.62      | Horizontal |
| Test Results For Mid Channel 782MHz    |               |                |                    |                     |             |             |            |
| 1563.6                                 | -72.16        | 2.62           | 27.30              | -47.48              | -40         | -7.48       | Horizontal |
| 1563.6                                 | -70.65        | 2.62           | 27.30              | -45.97              | -40         | -5.97       | Vertical   |
| 2345.3                                 | -41.64        | 2.87           | 27.62              | -16.89              | -13         | -3.89       | Vertical   |
| 2345.3                                 | -41.08        | 2.87           | 27.62              | -16.33              | -13         | -3.33       | Horizontal |
| 130.9                                  | -35.94        | 1.65           | 16.17              | -21.42              | -13         | -8.42       | Vertical   |
| 266.7                                  | -37.44        | 1.48           | 16.88              | -22.04              | -13         | -9.04       | Horizontal |
| Test Results for High Channel 784.5MHz |               |                |                    |                     |             |             |            |
| 1568.0                                 | -73.54        | 2.66           | 27.28              | -48.92              | -40         | -8.92       | Horizontal |
| 1568.0                                 | -71.43        | 2.66           | 27.28              | -46.81              | -40         | -6.81       | Vertical   |
| 2353.5                                 | -43.83        | 2.88           | 27.60              | -19.11              | -13         | -6.11       | Vertical   |
| 2353.5                                 | -44.40        | 2.88           | 27.60              | -19.68              | -13         | -6.68       | Horizontal |
| 80.5                                   | -36.34        | 1.54           | 16.40              | -21.48              | -13         | -8.48       | Vertical   |
| 155.3                                  | -37.65        | 1.43           | 15.77              | -23.31              | -13         | -10.31      | Horizontal |

**LTE BAND 13 (10MHZ BANDWIDTH)**

| Test Results for Channel 782MHz |               |                |                    |                     |             |             |            |
|---------------------------------|---------------|----------------|--------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                  | SG Level(dBm) | Cable Loss(dB) | Antenna Factor(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 1563.4                          | -74.40        | 2.62           | 27.30              | -49.72              | -40         | -9.72       | Horizontal |
| 1563.4                          | -69.50        | 2.62           | 27.30              | -44.82              | -40         | -4.82       | Vertical   |
| 2345.7                          | -42.72        | 2.87           | 27.62              | -17.97              | -13         | -4.97       | Vertical   |
| 2345.7                          | -44.41        | 2.87           | 27.62              | -19.66              | -13         | -6.66       | Horizontal |
| 128.7                           | -38.61        | 1.43           | 17.03              | -23.01              | -13         | -10.01      | Vertical   |
| 86.1                            | -39.97        | 1.62           | 16.63              | -24.96              | -13         | -11.96      | Horizontal |

Note:  $P_{Mea}(dBm) = Power(dBm) + AR_{pl}(dBm)$

. Over Limit = :  $P_{Mea}(dBm) - Limit(dBm)$

. Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.

## 9.7 LTE BAND 25

### QPSK EIRP POWER FOR LTE BAND 25 (1.4MHZ BANDWIDTH)

| Test Results for Low Channel 1850.7MHz  |               |                |                  |                     |             |             |            |
|-----------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                          | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 3702.3                                  | -50.99        | 2.61           | 27.26            | -26.34              | -13         | -13.34      | Horizontal |
| 3702.3                                  | -53.27        | 2.61           | 27.26            | -28.62              | -13         | -15.62      | Vertical   |
| 5552.7                                  | -50.35        | 2.87           | 27.58            | -25.64              | -13         | -12.64      | Vertical   |
| 5552.7                                  | -56.69        | 2.87           | 27.58            | -31.98              | -13         | -18.98      | Horizontal |
| Test Results for Mid Channel 1882.5MHz  |               |                |                  |                     |             |             |            |
| 3765.6                                  | -52.44        | 2.63           | 27.28            | -27.79              | -13         | -14.79      | Horizontal |
| 3765.6                                  | -51.49        | 2.63           | 27.28            | -26.84              | -13         | -13.84      | Vertical   |
| 5648.3                                  | -52.92        | 2.88           | 27.62            | -28.18              | -13         | -15.18      | Vertical   |
| 5648.3                                  | -48.54        | 2.88           | 27.62            | -23.80              | -13         | -10.80      | Horizontal |
| Test Results for High Channel 1914.3MHz |               |                |                  |                     |             |             |            |
| 3828.6                                  | -49.03        | 2.65           | 27.28            | -24.40              | -13         | -11.40      | Horizontal |
| 3828.6                                  | -51.83        | 2.65           | 27.28            | -27.20              | -13         | -14.20      | Vertical   |
| 5743.0                                  | -50.79        | 2.88           | 27.70            | -25.97              | -13         | -12.97      | Vertical   |
| 5743.0                                  | -50.19        | 2.88           | 27.70            | -25.37              | -13         | -12.37      | Horizontal |

**QPSK EIRP POWER FOR LTE BAND 25 (20MHZ BANDWIDTH)**

| Test Results for Low Channel 1860MHz   |               |                |                  |                     |             |             |            |
|----------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                         | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 3720.2                                 | -49.52        | 2.62           | 27.30            | -24.84              | -13         | -11.84      | Horizontal |
| 3720.2                                 | -50.63        | 2.62           | 27.30            | -25.95              | -13         | -12.95      | Vertical   |
| 5580.2                                 | -57.62        | 2.87           | 27.62            | -32.87              | -13         | -19.87      | Vertical   |
| 5580.2                                 | -48.41        | 2.87           | 27.62            | -23.66              | -13         | -10.66      | Horizontal |
| Test Results for Mid Channel 1882.5MHz |               |                |                  |                     |             |             |            |
| 3765.7                                 | -54.13        | 2.64           | 27.33            | -29.44              | -13         | -16.44      | Horizontal |
| 3765.7                                 | -53.99        | 2.64           | 27.33            | -29.30              | -13         | -16.30      | Vertical   |
| 5648.3                                 | -55.03        | 2.88           | 27.67            | -30.24              | -13         | -17.24      | Vertical   |
| 5648.3                                 | -55.50        | 2.88           | 27.67            | -30.71              | -13         | -17.71      | Horizontal |
| Test Results for High Channel 1905MHz  |               |                |                  |                     |             |             |            |
| 3810.6                                 | -49.11        | 2.64           | 27.33            | -24.42              | -13         | -11.42      | Horizontal |
| 3810.6                                 | -47.44        | 2.64           | 27.33            | -22.75              | -13         | -9.75       | Vertical   |
| 5715.8                                 | -55.11        | 2.88           | 27.67            | -30.32              | -13         | -17.32      | Vertical   |
| 5715.8                                 | -51.68        | 2.88           | 27.67            | -26.89              | -13         | -13.89      | Horizontal |

# 9.8 LTE BAND 26 A

## **QPSK EIRP POWER FOR LTE BAND 26A(814MHz~824MHz) (1.4MHZ BANDWIDTH)**

| Test Results for Low Channel 814.7MHz  |               |                |                  |                     |             |             |            |
|----------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                         | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 1629.4                                 | -50.64        | 2.78           | 27.5             | -25.92              | -13         | -12.92      | Horizontal |
| 1629.4                                 | -47.14        | 2.78           | 27.5             | -22.42              | -13         | -9.42       | Vertical   |
| 2444.4                                 | -53.32        | 2.9            | 27.8             | -28.42              | -13         | -15.42      | Vertical   |
| 2444.4                                 | -52.16        | 2.9            | 27.8             | -27.26              | -13         | -14.26      | Horizontal |
| Test Results for Mid Channel 819MHz    |               |                |                  |                     |             |             |            |
| 1638.3                                 | -50.47        | 2.8            | 27.48            | -25.79              | -13         | -12.79      | Horizontal |
| 1638.3                                 | -47.18        | 2.8            | 27.48            | -22.50              | -13         | -9.50       | Vertical   |
| 2458.3                                 | -52.37        | 2.91           | 27.7             | -27.58              | -13         | -14.58      | Vertical   |
| 2458.3                                 | -51.41        | 2.91           | 27.7             | -26.62              | -13         | -13.62      | Horizontal |
| Test Results for High Channel 823.3MHz |               |                |                  |                     |             |             |            |
| 1647.3                                 | -50.22        | 2.82           | 27.43            | -25.61              | -13         | -12.61      | Horizontal |
| 1647.3                                 | -51.49        | 2.82           | 27.43            | -26.88              | -13         | -13.88      | Vertical   |
| 2470.7                                 | -52.24        | 2.92           | 27.74            | -27.42              | -13         | -14.42      | Vertical   |
| 2470.7                                 | -48.07        | 2.92           | 27.74            | -23.25              | -13         | -10.25      | Horizontal |

**QPSK EIRP POWER FOR LTE BAND 26A(814MHz~824MHz) (10MHZ BANDWIDTH)**

| Test Results for Mid Channel 819MHz |        |      |       |        |     |        |            |
|-------------------------------------|--------|------|-------|--------|-----|--------|------------|
| 1638.2                              | -51.17 | 2.82 | 27.43 | -26.56 | -13 | -13.56 | Horizontal |
| 1638.2                              | -52.79 | 2.82 | 27.43 | -28.18 | -13 | -15.18 | Vertical   |
| 2458.4                              | -53.59 | 2.91 | 27.74 | -28.76 | -13 | -15.76 | Vertical   |
| 2458.4                              | -48.65 | 2.91 | 27.74 | -23.82 | -13 | -10.82 | Horizontal |

### 9.9 LTE BAND 26 B

#### QPSK EIRP POWER FOR LTE BAND 26B(824MHz~849MHz) (1.4MHZ BANDWIDTH)

| Test Results for Low Channel 824.7MHz  |               |                |                  |                     |             |             |            |
|----------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                         | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 1650.4                                 | -47.33        | 2.78           | 27.28            | -22.83              | -13         | -9.83       | Horizontal |
| 1650.4                                 | -49.72        | 2.78           | 27.28            | -25.22              | -13         | -12.22      | Vertical   |
| 2475.1                                 | -51.76        | 2.9            | 27.59            | -27.07              | -13         | -14.07      | Vertical   |
| 2475.1                                 | -49.43        | 2.9            | 27.59            | -24.74              | -13         | -11.74      | Horizontal |
| Test Results for Mid Channel 836.5MHz  |               |                |                  |                     |             |             |            |
| 1673.3                                 | -48.70        | 2.78           | 27.3             | -24.18              | -13         | -11.18      | Horizontal |
| 1673.3                                 | -51.35        | 2.78           | 27.3             | -26.83              | -13         | -13.83      | Vertical   |
| 2510.1                                 | -50.32        | 2.91           | 27.62            | -25.61              | -13         | -12.61      | Vertical   |
| 2510.1                                 | -54.14        | 2.91           | 27.62            | -29.43              | -13         | -16.43      | Horizontal |
| Test Results for High Channel 848.3MHz |               |                |                  |                     |             |             |            |
| 1697.3                                 | -52.74        | 2.78           | 27.28            | -28.24              | -13         | -15.24      | Horizontal |
| 1697.3                                 | -53.09        | 2.78           | 27.28            | -28.59              | -13         | -15.59      | Vertical   |
| 2545.3                                 | -56.44        | 2.92           | 27.6             | -31.76              | -13         | -18.76      | Vertical   |
| 2545.3                                 | -54.00        | 2.92           | 27.6             | -29.32              | -13         | -16.32      | Horizontal |

**QPSK EIRP POWER FOR LTE BAND 26B(824MHz~849MHz) (15MHZ BANDWIDTH)**

| Test Results for Low Channel 831.5MHz  |               |                |                  |                     |             |             |            |
|----------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                         | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 1663.1                                 | -50.46        | 2.78           | 27.3             | -25.94              | -13         | -12.94      | Horizontal |
| 1663.1                                 | -47.44        | 2.78           | 27.3             | -22.92              | -13         | -9.92       | Vertical   |
| 2494.8                                 | -50.99        | 2.9            | 27.62            | -26.27              | -13         | -13.27      | Vertical   |
| 2494.8                                 | -52.33        | 2.9            | 27.62            | -27.61              | -13         | -14.61      | Horizontal |
| Test Results for Mid Channel 836.5MHz  |               |                |                  |                     |             |             |            |
| 1673.7                                 | -52.09        | 2.78           | 27.3             | -27.57              | -13         | -14.57      | Horizontal |
| 1673.7                                 | -53.59        | 2.78           | 27.3             | -29.07              | -13         | -16.07      | Vertical   |
| 2509.7                                 | -52.98        | 2.91           | 27.62            | -28.27              | -13         | -15.27      | Vertical   |
| 2509.7                                 | -55.27        | 2.91           | 27.62            | -30.56              | -13         | -17.56      | Horizontal |
| Test Results for High Channel 841.5MHz |               |                |                  |                     |             |             |            |
| 1683.2                                 | -48.67        | 2.78           | 27.3             | -24.15              | -13         | -11.15      | Horizontal |
| 1683.2                                 | -50.59        | 2.78           | 27.3             | -26.07              | -13         | -13.07      | Vertical   |
| 2525.1                                 | -56.15        | 2.92           | 27.62            | -31.45              | -13         | -18.45      | Vertical   |
| 2525.1                                 | -49.44        | 2.92           | 27.62            | -24.74              | -13         | -11.74      | Horizontal |

### 9.10 LTE BAND 41

#### LTE BAND 41 (5MHZ BANDWIDTH)

| Test Results for Low Channel 2537.5MHz  |               |                |                    |                     |             |             |            |
|-----------------------------------------|---------------|----------------|--------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                          | SG Level(dBm) | Cable Loss(dB) | Antenna Factor(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 5145.1                                  | -58.50        | 5.23           | 35.81              | -27.92              | -25         | -2.92       | Horizontal |
| 5145.1                                  | -60.37        | 5.23           | 35.81              | -29.79              | -25         | -4.79       | Vertical   |
| 7718.3                                  | -58.56        | 5.67           | 36.85              | -27.38              | -25         | -2.38       | Vertical   |
| 7718.3                                  | -61.35        | 5.67           | 36.85              | -30.17              | -25         | -5.17       | Horizontal |
| 436.1                                   | -42.25        | 1.38           | 15.98              | -27.65              | -25         | -2.65       | Vertical   |
| 466.4                                   | -41.48        | 1.62           | 15.66              | -27.44              | -25         | -2.44       | Horizontal |
| Test Results for Mid Channel 2595MHz    |               |                |                    |                     |             |             |            |
| 5190.1                                  | -62.57        | 5.23           | 35.82              | -31.98              | -25         | -6.98       | Horizontal |
| 5190.1                                  | -58.22        | 5.23           | 35.82              | -27.63              | -25         | -2.63       | Vertical   |
| 7785.6                                  | -60.63        | 5.67           | 36.85              | -29.45              | -25         | -4.45       | Vertical   |
| 7785.6                                  | -61.67        | 5.67           | 36.85              | -30.49              | -25         | -5.49       | Horizontal |
| 510.8                                   | -45.98        | 1.62           | 16.17              | -31.43              | -25         | -6.43       | Vertical   |
| 563.6                                   | -43.70        | 1.74           | 17.63              | -27.81              | -25         | -2.81       | Horizontal |
| Test Results for High Channel 2652.5MHz |               |                |                    |                     |             |             |            |
| 5235.8                                  | -58.23        | 5.24           | 35.83              | -27.64              | -25         | -2.64       | Horizontal |
| 5235.8                                  | -59.40        | 5.24           | 35.83              | -28.81              | -25         | -3.81       | Vertical   |
| 7853.0                                  | -60.35        | 5.68           | 36.87              | -29.16              | -25         | -4.16       | Vertical   |
| 7853.0                                  | -59.39        | 5.68           | 36.87              | -28.20              | -25         | -3.20       | Horizontal |
| 198.0                                   | -42.14        | 1.55           | 15.84              | -27.85              | -25         | -2.85       | Vertical   |
| 353.7                                   | -45.85        | 1.51           | 17.06              | -30.30              | -25         | -5.30       | Horizontal |

**LTE BAND 41 (20MHZ BANDWIDTH)**

| Test Results for Low Channel 2545MHz  |               |                |                    |                     |             |             |            |
|---------------------------------------|---------------|----------------|--------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                        | SG Level(dBm) | Cable Loss(dB) | Antenna Factor(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 5160.1                                | -60.95        | 5.23           | 35.82              | -30.36              | -25         | -5.36       | Horizontal |
| 5160.1                                | -58.53        | 5.23           | 35.82              | -27.94              | -25         | -2.94       | Vertical   |
| 7740.2                                | -61.53        | 5.67           | 36.86              | -30.34              | -25         | -5.34       | Vertical   |
| 7740.2                                | -60.33        | 5.67           | 36.86              | -29.14              | -25         | -4.14       | Horizontal |
| 129.0                                 | -42.92        | 1.43           | 15.51              | -28.84              | -25         | -3.84       | Vertical   |
| 345.7                                 | -43.23        | 1.40           | 16.97              | -27.66              | -25         | -2.66       | Horizontal |
| Test Results for Mid Channel 2595MHz  |               |                |                    |                     |             |             |            |
| 5190.6                                | -59.56        | 5.23           | 35.82              | -28.97              | -25         | -3.97       | Horizontal |
| 5190.6                                | -58.82        | 5.23           | 35.82              | -28.23              | -25         | -3.23       | Vertical   |
| 7785.5                                | -59.20        | 5.67           | 36.85              | -28.02              | -25         | -3.02       | Vertical   |
| 7785.5                                | -59.67        | 5.67           | 36.85              | -28.49              | -25         | -3.49       | Horizontal |
| 100.9                                 | -48.15        | 1.77           | 16.72              | -33.20              | -25         | -8.20       | Vertical   |
| 264.1                                 | -46.96        | 1.31           | 16.99              | -31.28              | -25         | -6.28       | Horizontal |
| Test Results for High Channel 2645MHz |               |                |                    |                     |             |             |            |
| 5221.0                                | -62.43        | 5.24           | 35.83              | -31.84              | -25         | -6.84       | Horizontal |
| 5221.0                                | -60.96        | 5.24           | 35.83              | -30.37              | -25         | -5.37       | Vertical   |
| 7830.2                                | -59.27        | 5.70           | 36.88              | -28.09              | -25         | -3.09       | Vertical   |
| 7830.2                                | -60.22        | 5.70           | 36.88              | -29.04              | -25         | -4.04       | Horizontal |
| 350.0                                 | -45.62        | 1.70           | 15.73              | -31.59              | -25         | -6.59       | Vertical   |
| 111.3                                 | -43.52        | 1.75           | 17.33              | -27.94              | -25         | -2.94       | Horizontal |

Note: Spurious Emission Level = Spectrum Analyzer Read Value + Cable Loss+ Antenna Factor + 11.74

. Margin = Spurious Emission Level - Limit

. Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.

### 9.11 LTE BAND 66

#### QPSK EIRP POWER FOR LTE BAND 66 (1.4MHZ BANDWIDTH)

| Test Results for Low Channel 1710.7MHz  |               |                |                  |                     |             |             |            |
|-----------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                          | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 3422.0                                  | -57.74        | 3.84           | 35.81            | -25.77              | -13         | -12.77      | Horizontal |
| 3422.0                                  | -60.86        | 3.84           | 35.81            | -28.89              | -13         | -15.89      | Vertical   |
| 5132.3                                  | -61.85        | 5.18           | 36.85            | -30.18              | -13         | -17.18      | Vertical   |
| 5132.3                                  | -60.19        | 5.18           | 36.85            | -28.52              | -13         | -15.52      | Horizontal |
| 204.9                                   | -47.96        | 1.56           | 17.97            | -31.55              | -13         | -18.55      | Vertical   |
| 306.2                                   | -51.00        | 1.33           | 15.11            | -37.22              | -13         | -24.22      | Horizontal |
| Test Results for Mid Channel 1745MHz    |               |                |                  |                     |             |             |            |
| 3490.8                                  | -60.81        | 3.85           | 35.82            | -28.84              | -13         | -15.84      | Horizontal |
| 3490.8                                  | -60.59        | 3.85           | 35.82            | -28.62              | -13         | -15.62      | Vertical   |
| 5235.5                                  | -58.73        | 5.21           | 36.85            | -27.09              | -13         | -14.09      | Vertical   |
| 5235.5                                  | -60.89        | 5.21           | 36.85            | -29.25              | -13         | -16.25      | Horizontal |
| 187.8                                   | -47.54        | 1.77           | 16.17            | -33.13              | -13         | -20.13      | Vertical   |
| 390.2                                   | -46.94        | 1.63           | 15.21            | -33.36              | -13         | -20.36      | Horizontal |
| Test Results for High Channel 1779.3MHz |               |                |                  |                     |             |             |            |
| 3559.3                                  | -58.48        | 3.86           | 35.83            | -26.51              | -13         | -13.51      | Horizontal |
| 3559.3                                  | -57.08        | 3.86           | 35.83            | -25.11              | -13         | -12.11      | Vertical   |
| 5338.0                                  | -57.02        | 5.24           | 36.87            | -25.39              | -13         | -12.39      | Vertical   |
| 5338.0                                  | -59.58        | 5.24           | 36.87            | -27.95              | -13         | -14.95      | Horizontal |
| 198.7                                   | -45.84        | 1.58           | 17.56            | -29.85              | -13         | -16.85      | Vertical   |
| 268.9                                   | -49.19        | 1.45           | 16.58            | -34.07              | -13         | -21.07      | Horizontal |

**QPSK EIRP POWER FOR LTE BAND 66 (20MHZ BANDWIDTH)**

| Test Results for Low Channel 1720MHz  |               |                |                  |                     |             |             |            |
|---------------------------------------|---------------|----------------|------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                        | SG Level(dBm) | Cable Loss(dB) | Antenna Gain(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 3440.9                                | -60.99        | 3.84           | 35.82            | -29.01              | -13         | -16.01      | Horizontal |
| 3440.9                                | -62.32        | 3.84           | 35.82            | -30.34              | -13         | -17.34      | Vertical   |
| 5160.4                                | -58.75        | 5.18           | 36.86            | -27.07              | -13         | -14.07      | Vertical   |
| 5160.4                                | -62.03        | 5.18           | 36.86            | -30.35              | -13         | -17.35      | Horizontal |
| 180.4                                 | -49.75        | 1.56           | 15.76            | -35.55              | -13         | -22.55      | Vertical   |
| 324.3                                 | -46.06        | 1.33           | 15.44            | -31.95              | -13         | -18.95      | Horizontal |
| Test Results for Mid Channel 1745MHz  |               |                |                  |                     |             |             |            |
| 3490.8                                | -58.29        | 3.85           | 35.82            | -26.32              | -13         | -13.32      | Horizontal |
| 3490.8                                | -60.91        | 3.85           | 35.82            | -28.94              | -13         | -15.94      | Vertical   |
| 5235.9                                | -62.31        | 5.21           | 36.85            | -30.67              | -13         | -17.67      | Vertical   |
| 5235.9                                | -56.11        | 5.21           | 36.85            | -24.47              | -13         | -11.47      | Horizontal |
| 182.8                                 | -44.66        | 1.77           | 16.84            | -29.59              | -13         | -16.59      | Vertical   |
| 252.0                                 | -51.86        | 1.63           | 17.64            | -35.85              | -13         | -22.85      | Horizontal |
| Test Results for High Channel 1770MHz |               |                |                  |                     |             |             |            |
| 3540.4                                | -57.60        | 3.86           | 35.83            | -25.63              | -13         | -12.63      | Horizontal |
| 3540.4                                | -60.08        | 3.86           | 35.83            | -28.11              | -13         | -15.11      | Vertical   |
| 5310.2                                | -58.34        | 5.24           | 36.88            | -26.70              | -13         | -13.70      | Vertical   |
| 5310.2                                | -57.46        | 5.24           | 36.88            | -25.82              | -13         | -12.82      | Horizontal |
| 183.2                                 | -46.85        | 1.58           | 16.84            | -31.59              | -13         | -18.59      | Vertical   |
| 310.4                                 | -47.08        | 1.45           | 17.64            | -30.89              | -13         | -17.89      | Horizontal |

Note: P<sub>Mea</sub>(dBm)= Power(dBm)+ AR<sub>pl</sub> (dBm)

Over Limit= : P<sub>Mea</sub>(dBm)-Limit(dBm)

We test both H direction and V direction, recorded worst case direction.

Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.

## 10. FREQUENCY STABILITY

### RULE PART(S)

FCC: §2.1055, §22.355, §24.235, §27.54, §90.213

### LIMITS

§22.355 - The carrier frequency shall not depart from the reference frequency in excess of  $\pm 2.5$  ppm for mobile stations.

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

### TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

Temp. =  $-30^{\circ}$  to  $+50^{\circ}\text{C}$

Voltage = low voltage, DC 3.23V, Normal, DC 3.8V and High voltage, DC 4.37V.

### Frequency Stability vs Temperature:

The EUT is placed inside a temperature chamber. The temperature is set to  $-30^{\circ}\text{C}$  and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until  $+50^{\circ}\text{C}$  is reached.

### Frequency Stability vs Voltage:

The peak frequency error is recorded (worst-case).

### MODES TESTED

LTE Band 2/4/5/7/12/13/25/26/41/66

### RESULTS

See the following pages.

## 10.1 LTE BAND 2

Band 2 QPSK, (20MHz BANDWIDTH RB size 100 RB Offset 0)

### Frequency error vs. Voltage

| Voltage<br>[Vdc] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.23             | 1880               | 7.1                     | 0.003759                | 2.5            |
| 3.8              | 1880               | 5.9                     | 0.003135                | 2.5            |
| 4.37             | 1880               | 3.9                     | 0.002049                | 2.5            |

### Frequency error vs. Temperature

| Temperature<br>[°C] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|---------------------|--------------------|-------------------------|-------------------------|----------------|
| Normal (25C)        | 1880               | 14.0                    | 0.007458                | 2.5            |
| Extreme (50C)       | 1880               | 13.5                    | 0.007189                | 2.5            |
| Extreme (40C)       | 1880               | 4.8                     | 0.002562                | 2.5            |
| Extreme (30C)       | 1880               | 12.0                    | 0.006395                | 2.5            |
| Extreme (10C)       | 1880               | 3.9                     | 0.002060                | 2.5            |
| Extreme (0C)        | 1880               | 7.1                     | 0.003760                | 2.5            |
| Extreme (-10C)      | 1880               | 5.1                     | 0.002737                | 2.5            |
| Extreme (-20C)      | 1880               | 5.3                     | 0.002825                | 2.5            |
| Extreme (-30C)      | 1880               | 11.6                    | 0.006164                | 2.5            |

**Band 2 16QAM, (20MHz BANDWIDTH RB size 100 RB Offset 0)**

**Frequency error vs. Voltage**

| Voltage [Vdc] | Frequency [MHz] | Frequency* Error[Hz] | Frequency Error[ppm] | Limit [ppm] |
|---------------|-----------------|----------------------|----------------------|-------------|
| 3.23          | 1880            | 9.1                  | 0.004845             | 2.5         |
| 3.8           | 1880            | 3.5                  | 0.001870             | 2.5         |
| 4.37          | 1880            | 7.8                  | 0.004161             | 2.5         |

**Frequency error vs. Temperature**

| Temperature [°C] | Frequency [MHz] | Frequency* Error[Hz] | Frequency Error[ppm] | Limit [ppm] |
|------------------|-----------------|----------------------|----------------------|-------------|
| Normal (25C)     | 1880            | 5.3                  | 0.002825             | 2.5         |
| Extreme (50C)    | 1880            | 6.0                  | 0.003199             | 2.5         |
| Extreme (40C)    | 1880            | 7.2                  | 0.003829             | 2.5         |
| Extreme (30C)    | 1880            | 4.4                  | 0.002322             | 2.5         |
| Extreme (10C)    | 1880            | 13.9                 | 0.007381             | 2.5         |
| Extreme (0C)     | 1880            | 13.1                 | 0.006990             | 2.5         |
| Extreme (-10C)   | 1880            | 8.2                  | 0.004344             | 2.5         |
| Extreme (-20C)   | 1880            | 8.3                  | 0.004396             | 2.5         |
| Extreme (-30C)   | 1880            | 7.4                  | 0.003954             | 2.5         |

**\*Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.

## 10.2 LTE BAND 4

### Band 4 QPSK, (20MHz BANDWIDTH RB size 100 RB Offset 0)

#### Frequency error vs. Voltage

| Voltage<br>[Vdc] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.23             | 1732.5             | 3.2                     | 0.001822                | 2.5            |
| 3.8              | 1732.5             | 15.5                    | 0.008944                | 2.5            |
| 4.37             | 1732.5             | 5.2                     | 0.003014                | 2.5            |

#### Frequency error vs. Temperature

| Temperature<br>[°C] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|---------------------|--------------------|-------------------------|-------------------------|----------------|
| Normal (25C)        | 1732.5             | 15.6                    | 0.008998                | 2.5            |
| Extreme (50C)       | 1732.5             | 10.0                    | 0.005754                | 2.5            |
| Extreme (40C)       | 1732.5             | 5.3                     | 0.003047                | 2.5            |
| Extreme (30C)       | 1732.5             | 12.6                    | 0.007246                | 2.5            |
| Extreme (10C)       | 1732.5             | 12.3                    | 0.007108                | 2.5            |
| Extreme (0C)        | 1732.5             | 3.8                     | 0.002200                | 2.5            |
| Extreme (-10C)      | 1732.5             | 10.4                    | 0.005987                | 2.5            |
| Extreme (-20C)      | 1732.5             | 3.6                     | 0.002100                | 2.5            |
| Extreme (-30C)      | 1732.5             | 10.0                    | 0.005775                | 2.5            |

**Band 4 16QAM, (20MHz BANDWIDTH RB size 100 RB Offset 0)**

**Frequency error vs. Voltage**

| Voltage<br>[Vdc] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.23             | 1732.5             | 5.6                     | 0.003248                | 2.5            |
| 3.8              | 1732.5             | 8.8                     | 0.005082                | 2.5            |
| 4.37             | 1732.5             | 10.6                    | 0.006090                | 2.5            |

**Frequency error vs. Temperature**

| Temperature<br>[°C] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|---------------------|--------------------|-------------------------|-------------------------|----------------|
| Normal (25C)        | 1732.5             | 13.0                    | 0.007475                | 2.5            |
| Extreme (50C)       | 1732.5             | 10.4                    | 0.006001                | 2.5            |
| Extreme (40C)       | 1732.5             | 7.1                     | 0.004085                | 2.5            |
| Extreme (30C)       | 1732.5             | 11.9                    | 0.006850                | 2.5            |
| Extreme (10C)       | 1732.5             | 3.2                     | 0.001864                | 2.5            |
| Extreme (0C)        | 1732.5             | 12.4                    | 0.007163                | 2.5            |
| Extreme (-10C)      | 1732.5             | 4.5                     | 0.002605                | 2.5            |
| Extreme (-20C)      | 1732.5             | 6.2                     | 0.003570                | 2.5            |
| Extreme (-30C)      | 1732.5             | 14.8                    | 0.008563                | 2.5            |

**\*Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.

### 10.3 LTE BAND 5

Band 5 QPSK, (10MHz BANDWIDTH RB size 50 RB Offset 0)

#### Frequency error vs. Voltage

| Voltage<br>[Vdc] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.23             | 836.5              | 7.5                     | 0.008987                | 2.5            |
| 3.8              | 836.5              | 7.9                     | 0.009449                | 2.5            |
| 4.37             | 836.5              | 15.0                    | 0.017966                | 2.5            |

#### Frequency error vs. Temperature

| Temperature<br>[°C] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|---------------------|--------------------|-------------------------|-------------------------|----------------|
| Normal (25C)        | 836.5              | 9.4                     | 0.011182                | 2.5            |
| Extreme (50C)       | 836.5              | 10.9                    | 0.013005                | 2.5            |
| Extreme (40C)       | 836.5              | 8.7                     | 0.010434                | 2.5            |
| Extreme (30C)       | 836.5              | 13.3                    | 0.015927                | 2.5            |
| Extreme (10C)       | 836.5              | 10.9                    | 0.013004                | 2.5            |
| Extreme (0C)        | 836.5              | 5.6                     | 0.006746                | 2.5            |
| Extreme (-10C)      | 836.5              | 14.6                    | 0.017441                | 2.5            |
| Extreme (-20C)      | 836.5              | 6.3                     | 0.007497                | 2.5            |
| Extreme (-30C)      | 836.5              | 15.0                    | 0.017895                | 2.5            |

**Band 5 16QAM, (10MHz BANDWIDTH RB size 50 RB Offset 0)**

**Frequency error vs. Voltage**

| Voltage<br>[Vdc] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.23             | 836.5              | 6.1                     | 0.007248                | 2.5            |
| 3.8              | 836.5              | 13.6                    | 0.016278                | 2.5            |
| 4.37             | 836.5              | 8.2                     | 0.009853                | 2.5            |

**Frequency error vs. Temperature**

| Temperature<br>[°C] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|---------------------|--------------------|-------------------------|-------------------------|----------------|
| Normal (25C)        | 836.5              | 15.8                    | 0.018937                | 2.5            |
| Extreme (50C)       | 836.5              | 3.3                     | 0.003989                | 2.5            |
| Extreme (40C)       | 836.5              | 13.2                    | 0.015790                | 2.5            |
| Extreme (30C)       | 836.5              | 13.0                    | 0.015499                | 2.5            |
| Extreme (10C)       | 836.5              | 10.1                    | 0.012109                | 2.5            |
| Extreme (0C)        | 836.5              | 4.7                     | 0.005615                | 2.5            |
| Extreme (-10C)      | 836.5              | 8.9                     | 0.010648                | 2.5            |
| Extreme (-20C)      | 836.5              | 7.3                     | 0.008698                | 2.5            |
| Extreme (-30C)      | 836.5              | 4.7                     | 0.005606                | 2.5            |

**\*Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.

## 10.4 LTE BAND 7

Band 7 QPSK, (20MHz BANDWIDTH RB size 100 RB Offset 0)

### Frequency error vs. Voltage

| Voltage<br>[Vdc] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.23             | 2535               | 13.6                    | 0.005353                | 2.5            |
| 3.8              | 2535               | 15.4                    | 0.006058                | 2.5            |
| 4.37             | 2535               | 4.8                     | 0.001899                | 2.5            |

### Frequency error vs. Temperature

| Temperature<br>[°C] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|---------------------|--------------------|-------------------------|-------------------------|----------------|
| Normal (25C)        | 2535               | 4.0                     | 0.001567                | 2.5            |
| Extreme (50C)       | 2535               | 9.2                     | 0.003639                | 2.5            |
| Extreme (40C)       | 2535               | 13.1                    | 0.005151                | 2.5            |
| Extreme (30C)       | 2535               | 12.1                    | 0.004773                | 2.5            |
| Extreme (10C)       | 2535               | 12.1                    | 0.004786                | 2.5            |
| Extreme (0C)        | 2535               | 3.9                     | 0.001543                | 2.5            |
| Extreme (-10C)      | 2535               | 14.8                    | 0.005837                | 2.5            |
| Extreme (-20C)      | 2535               | 8.0                     | 0.003169                | 2.5            |
| Extreme (-30C)      | 2535               | 5.9                     | 0.002329                | 2.5            |

**Band 7 16QAM, (20MHz BANDWIDTH RB size 100 RB Offset 0)**

**Frequency error vs. Voltage**

| Voltage<br>[Vdc] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.23             | 2535               | 10.4                    | 0.004084                | 2.5            |
| 3.8              | 2535               | 8.3                     | 0.003255                | 2.5            |
| 4.37             | 2535               | 8.6                     | 0.003408                | 2.5            |

**Frequency error vs. Temperature**

| Temperature<br>[°C] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|---------------------|--------------------|-------------------------|-------------------------|----------------|
| Normal (25C)        | 2535               | 7.2                     | 0.002855                | 2.5            |
| Extreme (50C)       | 2535               | 14.1                    | 0.005572                | 2.5            |
| Extreme (40C)       | 2535               | 13.9                    | 0.005475                | 2.5            |
| Extreme (30C)       | 2535               | 4.4                     | 0.001727                | 2.5            |
| Extreme (10C)       | 2535               | 15.4                    | 0.006067                | 2.5            |
| Extreme (0C)        | 2535               | 9.9                     | 0.003898                | 2.5            |
| Extreme (-10C)      | 2535               | 10.1                    | 0.003986                | 2.5            |
| Extreme (-20C)      | 2535               | 12.8                    | 0.005051                | 2.5            |
| Extreme (-30C)      | 2535               | 8.9                     | 0.003517                | 2.5            |

**\*Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.

## 10.5 LTE BAND 12

Band 12 QPSK, (10MHz BANDWIDTH RB size 50 RB Offset 0

### Frequency error vs. Voltage

| Voltage<br>[Vdc] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.23             | 707.5              | 7.5                     | 0.010649                | 2.5            |
| 3.8              | 707.5              | 4.0                     | 0.005706                | 2.5            |
| 4.37             | 707.5              | 12.2                    | 0.017257                | 2.5            |

### Frequency error vs. Temperature

| Temperature<br>[°C] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|---------------------|--------------------|-------------------------|-------------------------|----------------|
| Normal (25C)        | 707.5              | 10.6                    | 0.014949                | 2.5            |
| Extreme (50C)       | 707.5              | 8.3                     | 0.011751                | 2.5            |
| Extreme (40C)       | 707.5              | 5.3                     | 0.007547                | 2.5            |
| Extreme (30C)       | 707.5              | 15.4                    | 0.021812                | 2.5            |
| Extreme (10C)       | 707.5              | 10.7                    | 0.015134                | 2.5            |
| Extreme (0C)        | 707.5              | 15.0                    | 0.021237                | 2.5            |
| Extreme (-10C)      | 707.5              | 8.7                     | 0.012325                | 2.5            |
| Extreme (-20C)      | 707.5              | 11.5                    | 0.016193                | 2.5            |
| Extreme (-30C)      | 707.5              | 13.0                    | 0.018427                | 2.5            |

**Band 12 16QAM, (10MHz BANDWIDTH RB size 50 RB Offset 0)**

**Frequency error vs. Voltage**

| Voltage<br>[Vdc] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.23             | 707.5              | 12.1                    | 0.017141                | 2.5            |
| 3.8              | 707.5              | 11.7                    | 0.016487                | 2.5            |
| 4.37             | 707.5              | 11.7                    | 0.016519                | 2.5            |

**Frequency error vs. Temperature**

| Temperature<br>[°C] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|---------------------|--------------------|-------------------------|-------------------------|----------------|
| Normal (25C)        | 707.5              | 16.0                    | 0.022610                | 2.5            |
| Extreme (50C)       | 707.5              | 4.1                     | 0.005725                | 2.5            |
| Extreme (40C)       | 707.5              | 5.8                     | 0.008133                | 2.5            |
| Extreme (30C)       | 707.5              | 9.5                     | 0.013474                | 2.5            |
| Extreme (10C)       | 707.5              | 11.7                    | 0.016604                | 2.5            |
| Extreme (0C)        | 707.5              | 6.7                     | 0.009468                | 2.5            |
| Extreme (-10C)      | 707.5              | 9.5                     | 0.013463                | 2.5            |
| Extreme (-20C)      | 707.5              | 3.5                     | 0.004888                | 2.5            |
| Extreme (-30C)      | 707.5              | 6.8                     | 0.009672                | 2.5            |

**\*Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.

### 10.6 LTE BAND 13

Band 13 QPSK, (10MHz BANDWIDTH RB size 50 RB Offset 0)

#### Frequency error vs. Voltage

| Voltage<br>[Vdc] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.23             | 710.0              | 4.7                     | 0.006614                | 2.5            |
| 3.8              | 710.0              | 13.7                    | 0.019331                | 2.5            |
| 4.37             | 710.0              | 14.6                    | 0.020535                | 2.5            |

#### Frequency error vs. Temperature

| Temperature<br>[°C] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|---------------------|--------------------|-------------------------|-------------------------|----------------|
| Normal (25C)        | 710.0              | 16.0                    | 0.022483                | 2.5            |
| Extreme (50C)       | 710.0              | 8.3                     | 0.011658                | 2.5            |
| Extreme (40C)       | 710.0              | 4.9                     | 0.006859                | 2.5            |
| Extreme (30C)       | 710.0              | 5.3                     | 0.007526                | 2.5            |
| Extreme (10C)       | 710.0              | 7.7                     | 0.010803                | 2.5            |
| Extreme (0C)        | 710.0              | 12.1                    | 0.017020                | 2.5            |
| Extreme (-10C)      | 710.0              | 4.0                     | 0.005663                | 2.5            |
| Extreme (-20C)      | 710                | 6.9                     | 0.009756                | 2.5            |
| Extreme (-30C)      | 710                | 6.1                     | 0.008651                | 2.5            |

**Band 13 16QAM, (10MHz BANDWIDTH RB size 50 RB Offset 0)**

**Frequency error vs. Voltage**

| Voltage [Vdc] | Frequency [MHz] | Frequency* Error[Hz] | Frequency Error[ppm] | Limit [ppm] |
|---------------|-----------------|----------------------|----------------------|-------------|
| 3.23          | 710.0           | 15.7                 | 0.022068             | 2.5         |
| 3.8           | 710.0           | 7.6                  | 0.010661             | 2.5         |
| 4.37          | 710.0           | 6.9                  | 0.009666             | 2.5         |

**Frequency error vs. Temperature**

| Temperature [°C] | Frequency [MHz] | Frequency* Error[Hz] | Frequency Error[ppm] | Limit [ppm] |
|------------------|-----------------|----------------------|----------------------|-------------|
| Normal (25C)     | 710.0           | 4.4                  | 0.006243             | 2.5         |
| Extreme (50C)    | 710.0           | 11.3                 | 0.015846             | 2.5         |
| Extreme (40C)    | 710.0           | 7.1                  | 0.009982             | 2.5         |
| Extreme (30C)    | 710.0           | 3.0                  | 0.004284             | 2.5         |
| Extreme (10C)    | 710.0           | 3.5                  | 0.004955             | 2.5         |
| Extreme (0C)     | 710.0           | 3.7                  | 0.005165             | 2.5         |
| Extreme (-10C)   | 710.0           | 9.1                  | 0.012747             | 2.5         |
| Extreme (-20C)   | 710.0           | 10.0                 | 0.014104             | 2.5         |
| Extreme (-30C)   | 710.0           | 8.3                  | 0.011716             | 2.5         |

**\*Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.

## 10.7 LTE BAND 25

Band 25 QPSK, (20MHz BANDWIDTH RB size 100 RB Offset 0)

### Frequency error vs. Voltage

| Voltage<br>[Vdc] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.23             | 1882.5             | 15.7                    | 0.008329                | 2.5            |
| 3.8              | 1882.5             | 7.1                     | 0.003776                | 2.5            |
| 4.37             | 1882.5             | 4.5                     | 0.002370                | 2.5            |

### Frequency error vs. Temperature

| Temperature<br>[°C] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|---------------------|--------------------|-------------------------|-------------------------|----------------|
| Normal (25C)        | 1882.5             | 4.7                     | 0.002506                | 2.5            |
| Extreme (50C)       | 1882.5             | 11.8                    | 0.006253                | 2.5            |
| Extreme (40C)       | 1882.5             | 3.5                     | 0.001859                | 2.5            |
| Extreme (30C)       | 1882.5             | 13.8                    | 0.007315                | 2.5            |
| Extreme (10C)       | 1882.5             | 15.8                    | 0.008377                | 2.5            |
| Extreme (0C)        | 1882.5             | 9.0                     | 0.004804                | 2.5            |
| Extreme (-10C)      | 1882.5             | 6.0                     | 0.003164                | 2.5            |
| Extreme (-20C)      | 1882.5             | 7.8                     | 0.004163                | 2.5            |
| Extreme (-30C)      | 1882.5             | 6.5                     | 0.003462                | 2.5            |

**Band 25 16QAM, (20MHz BANDWIDTH RB size 100 RB Offset 0)**

**Frequency error vs. Voltage**

| Voltage<br>[Vdc] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.23             | 1882.5             | 11.8                    | 0.006254                | 2.5            |
| 3.8              | 1882.5             | 6.7                     | 0.003577                | 2.5            |
| 4.37             | 1882.5             | 15.1                    | 0.008046                | 2.5            |

**Frequency error vs. Temperature**

| Temperature<br>[°C] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|---------------------|--------------------|-------------------------|-------------------------|----------------|
| Normal (25C)        | 1882.5             | 4.5                     | 0.002417                | 2.5            |
| Extreme (50C)       | 1882.5             | 3.5                     | 0.001870                | 2.5            |
| Extreme (40C)       | 1882.5             | 8.5                     | 0.004533                | 2.5            |
| Extreme (30C)       | 1882.5             | 6.2                     | 0.003304                | 2.5            |
| Extreme (10C)       | 1882.5             | 8.4                     | 0.004470                | 2.5            |
| Extreme (0C)        | 1882.5             | 10.6                    | 0.005606                | 2.5            |
| Extreme (-10C)      | 1882.5             | 14.5                    | 0.007715                | 2.5            |
| Extreme (-20C)      | 1882.5             | 8.2                     | 0.004360                | 2.5            |
| Extreme (-30C)      | 1882.5             | 8.2                     | 0.004352                | 2.5            |

**\*Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.

## 10.8 LTE BAND 26 A

### Band 26A QPSK, (10MHz BANDWIDTH RB size 50 RB Offset 0)

#### Frequency error vs. Voltage

| Voltage<br>[Vdc]                                      | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|-------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| BAND 26 QPSK, (CH 26915 RB size 75 RB Offset 0 10MHz) |                    |                         |                         |                |
| 3.23                                                  | 819                | 6.4                     | 0.007836                | 2.5            |
| 3.8                                                   | 819                | 10.5                    | 0.012854                | 2.5            |
| 4.37                                                  | 819                | 6.9                     | 0.008384                | 2.5            |

#### Frequency error vs. Temperature

| Temperature<br>[°C]                                   | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|-------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| BAND 26 QPSK, (CH 26915 RB size 75 RB Offset 0 10MHz) |                    |                         |                         |                |
| Normal (25C)                                          | 819                | 14.2                    | 0.017325                | 2.5            |
| Extreme (50C)                                         | 819                | 4.5                     | 0.005441                | 2.5            |
| Extreme (40C)                                         | 819                | 11.3                    | 0.013848                | 2.5            |
| Extreme (30C)                                         | 819                | 13.4                    | 0.016360                | 2.5            |
| Extreme (10C)                                         | 819                | 9.1                     | 0.011099                | 2.5            |
| Extreme (0C)                                          | 819                | 12.3                    | 0.015061                | 2.5            |
| Extreme (-10C)                                        | 819                | 6.4                     | 0.007835                | 2.5            |
| Extreme (-20C)                                        | 819                | 4.7                     | 0.005747                | 2.5            |
| Extreme (-30C)                                        | 819                | 4.7                     | 0.005690                | 2.5            |

**Band 26A 16QAM, (10MHz BANDWIDTH RB size 50 RB Offset 0)**

**Frequency error vs. Voltage**

| Voltage<br>[Vdc]                                       | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|--------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| BAND 26 16QAM, (CH 26915 RB size 75 RB Offset 0 10MHz) |                    |                         |                         |                |
| 3.23                                                   | 819                | 9.9                     | 0.012140                | 2.5            |
| 3.8                                                    | 819                | 13.4                    | 0.016376                | 2.5            |
| 4.37                                                   | 819                | 3.6                     | 0.004359                | 2.5            |

**Frequency error vs. Temperature**

| Temperature<br>[°C]                                              | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| BAND 26 16QAM, (CH 26915 RB size 75 RB Offset 0 10MHz BANDWIDTH) |                    |                         |                         |                |
| Normal (25C)                                                     | 819                | 6.5                     | 0.007915                | 2.5            |
| Extreme (50C)                                                    | 819                | 14.4                    | 0.017544                | 2.5            |
| Extreme (40C)                                                    | 819                | 12.0                    | 0.014676                | 2.5            |
| Extreme (30C)                                                    | 819                | 4.5                     | 0.005493                | 2.5            |
| Extreme (10C)                                                    | 819                | 9.9                     | 0.012071                | 2.5            |
| Extreme (0C)                                                     | 819                | 5.1                     | 0.006171                | 2.5            |
| Extreme (-10C)                                                   | 819                | 13.0                    | 0.015881                | 2.5            |
| Extreme (-20C)                                                   | 819                | 12.6                    | 0.015414                | 2.5            |
| Extreme (-30C)                                                   | 819                | 6.0                     | 0.007299                | 2.5            |

**\*Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.

## 10.9 LTE BAND 26 B

### Band 26A QPSK, (15MHz BANDWIDTH RB size 50 RB Offset 0)

#### Frequency error vs. Voltage

| Voltage<br>[Vdc]                                      | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|-------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| BAND 26 QPSK, (CH 26740 RB size 75 RB Offset 0 15MHz) |                    |                         |                         |                |
| 3.23                                                  | 836.5              | 3.1                     | 0.003702                | 2.5            |
| 3.8                                                   | 836.5              | 6.9                     | 0.008234                | 2.5            |
| 4.37                                                  | 836.5              | 6.9                     | 0.008239                | 2.5            |

#### Frequency error vs. Temperature

| Temperature<br>[°C]                                   | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|-------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| BAND 26 QPSK, (CH 26740 RB size 75 RB Offset 0 15MHz) |                    |                         |                         |                |
| Normal (25C)                                          | 836.5              | 5.5                     | 0.006598                | 2.5            |
| Extreme (50C)                                         | 836.5              | 16.0                    | 0.019115                | 2.5            |
| Extreme (40C)                                         | 836.5              | 11.6                    | 0.013808                | 2.5            |
| Extreme (30C)                                         | 836.5              | 13.0                    | 0.015490                | 2.5            |
| Extreme (10C)                                         | 836.5              | 8.5                     | 0.010181                | 2.5            |
| Extreme (0C)                                          | 836.5              | 9.2                     | 0.011028                | 2.5            |
| Extreme (-10C)                                        | 836.5              | 12.1                    | 0.014499                | 2.5            |
| Extreme (-20C)                                        | 836.5              | 8.6                     | 0.010281                | 2.5            |
| Extreme (-30C)                                        | 836.5              | 8.9                     | 0.010659                | 2.5            |

**Band 26b 16QAM, (15MHz BANDWIDTH RB size 50 RB Offset 0)**

**Frequency error vs. Voltage**

| Voltage<br>[Vdc]                                       | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|--------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| BAND 26 16QAM, (CH 26740 RB size 75 RB Offset 0 15MHz) |                    |                         |                         |                |
| 3.23                                                   | 836.5              | 13.5                    | 0.016094                | 2.5            |
| 3.8                                                    | 836.5              | 9.9                     | 0.011850                | 2.5            |
| 4.37                                                   | 836.5              | 8.1                     | 0.009715                | 2.5            |

**Frequency error vs. Temperature**

| Temperature<br>[°C]                                    | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|--------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| BAND 26 16QAM, (CH 26740 RB size 75 RB Offset 0 15MHz) |                    |                         |                         |                |
| Normal (25C)                                           | 836.5              | 13.3                    | 0.015873                | 2.5            |
| Extreme (50C)                                          | 836.5              | 7.4                     | 0.008814                | 2.5            |
| Extreme (40C)                                          | 836.5              | 3.4                     | 0.004089                | 2.5            |
| Extreme (30C)                                          | 836.5              | 7.6                     | 0.009035                | 2.5            |
| Extreme (10C)                                          | 836.5              | 4.3                     | 0.005189                | 2.5            |
| Extreme (0C)                                           | 836.5              | 13.1                    | 0.015607                | 2.5            |
| Extreme (-10C)                                         | 836.5              | 15.9                    | 0.019054                | 2.5            |
| Extreme (-20C)                                         | 836.5              | 9.8                     | 0.011743                | 2.5            |
| Extreme (-30C)                                         | 836.5              | 12.0                    | 0.014314                | 2.5            |

**\*Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.

## 10.10 LTE BAND 41

### Band 41 QPSK, (20MHz BANDWIDTH RB size 100 RB Offset 0)

#### Frequency error vs. Voltage

| Voltage<br>[Vdc] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.23             | 2595               | 13.4                    | 0.005179                | 2.5            |
| 3.8              | 2595               | 10.0                    | 0.003839                | 2.5            |
| 4.37             | 2595               | 5.6                     | 0.002178                | 2.5            |

#### Frequency error vs. Temperature

| Temperature<br>[°C] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|---------------------|--------------------|-------------------------|-------------------------|----------------|
| Normal (25C)        | 2595               | 11.2                    | 0.004337                | 2.5            |
| Extreme (50C)       | 2595               | 3.7                     | 0.001432                | 2.5            |
| Extreme (40C)       | 2595               | 11.7                    | 0.004518                | 2.5            |
| Extreme (30C)       | 2595               | 3.0                     | 0.001163                | 2.5            |
| Extreme (10C)       | 2595               | 9.8                     | 0.003798                | 2.5            |
| Extreme (0C)        | 2595               | 9.5                     | 0.003657                | 2.5            |
| Extreme (-10C)      | 2595               | 8.0                     | 0.003087                | 2.5            |
| Extreme (-20C)      | 2595               | 8.1                     | 0.003136                | 2.5            |
| Extreme (-30C)      | 2595               | 6.1                     | 0.002340                | 2.5            |

**Band 41 16QAM, (20MHz BANDWIDTH RB size 100 RB Offset 0)**

**Frequency error vs. Voltage**

| Voltage<br>[Vdc] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.23             | 2593               | 13.3                    | 0.005124                | 2.5            |
| 3.8              | 2593               | 8.1                     | 0.003116                | 2.5            |
| 4.37             | 2593               | 3.7                     | 0.001420                | 2.5            |

**Frequency error vs. Temperature**

| Temperature<br>[°C] | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|---------------------|--------------------|-------------------------|-------------------------|----------------|
| Normal (25C)        | 2593               | 12.3                    | 0.004739                | 2.5            |
| Extreme (50C)       | 2593               | 15.0                    | 0.005781                | 2.5            |
| Extreme (40C)       | 2593               | 7.9                     | 0.003037                | 2.5            |
| Extreme (30C)       | 2593               | 10.7                    | 0.004115                | 2.5            |
| Extreme (10C)       | 2593               | 3.0                     | 0.001168                | 2.5            |
| Extreme (0C)        | 2593               | 15.1                    | 0.005828                | 2.5            |
| Extreme (-10C)      | 2593               | 6.2                     | 0.002407                | 2.5            |
| Extreme (-20C)      | 2593               | 11.8                    | 0.004533                | 2.5            |
| Extreme (-30C)      | 2593               | 13.2                    | 0.005098                | 2.5            |

**\*Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.

# 10.11 LTE BAND 66

## Band 66 QPSK, (20MHz BANDWIDTH RB size 100 RB Offset 0)

### Frequency error vs. Voltage

| Voltage<br>[Vdc]                                                  | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|-------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| BAND 66 QPSK, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH) |                    |                         |                         |                |
| 3.23                                                              | 1745               | 15.3                    | 0.008740                | 2.5            |
| 3.8                                                               | 1745               | 10.8                    | 0.006188                | 2.5            |
| 4.37                                                              | 1745               | 12.9                    | 0.007403                | 2.5            |

### Frequency error vs. Temperature

| Temperature<br>[°C]                                               | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|-------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| BAND 66 QPSK, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH) |                    |                         |                         |                |
| Normal (25C)                                                      | 1745               | 12.8                    | 0.007321                | 2.5            |
| Extreme (50C)                                                     | 1745               | 7.1                     | 0.004069                | 2.5            |
| Extreme (40C)                                                     | 1745               | 13.0                    | 0.007478                | 2.5            |
| Extreme (30C)                                                     | 1745               | 7.8                     | 0.004473                | 2.5            |
| Extreme (10C)                                                     | 1745               | 7.7                     | 0.004424                | 2.5            |
| Extreme (0C)                                                      | 1745               | 4.4                     | 0.002524                | 2.5            |
| Extreme (-10C)                                                    | 1745               | 13.1                    | 0.007509                | 2.5            |
| Extreme (-20C)                                                    | 1745               | 3.0                     | 0.001733                | 2.5            |
| Extreme (-30C)                                                    | 1745               | 11.2                    | 0.006440                | 2.5            |

**Band 66 16QAM, (20MHz BANDWIDTH RB size 100 RB Offset 0)**

**Frequency error vs. Voltage**

| Voltage<br>[Vdc]                                                          | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|---------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 66 16QAM, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| 3.23                                                                      | 1745               | 3.7                     | 0.002107                | 2.5            |
| 3.8                                                                       | 1745               | 13.0                    | 0.007465                | 2.5            |
| 4.37                                                                      | 1745               | 9.4                     | 0.005403                | 2.5            |

**Frequency error vs. Temperature**

| Temperature<br>[°C]                                                       | Frequency<br>[MHz] | Frequency*<br>Error[Hz] | Frequency<br>Error[ppm] | Limit<br>[ppm] |
|---------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 66 16QAM, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| Normal (25C)                                                              | 1745               | 13.0                    | 0.007458                | 2.5            |
| Extreme (50C)                                                             | 1745               | 4.0                     | 0.002305                | 2.5            |
| Extreme (40C)                                                             | 1745               | 6.2                     | 0.003532                | 2.5            |
| Extreme (30C)                                                             | 1745               | 7.5                     | 0.004295                | 2.5            |
| Extreme (10C)                                                             | 1745               | 5.8                     | 0.003298                | 2.5            |
| Extreme (0C)                                                              | 1745               | 7.4                     | 0.004249                | 2.5            |
| Extreme (-10C)                                                            | 1745               | 15.2                    | 0.008689                | 2.5            |
| Extreme (-20C)                                                            | 1745               | 13.1                    | 0.007513                | 2.5            |
| Extreme (-30C)                                                            | 1745               | 3.5                     | 0.002028                | 2.5            |

**\*Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.

## 11. Peak-to-Average Ratio

### 11.1 Description of the PAR Measurement

The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

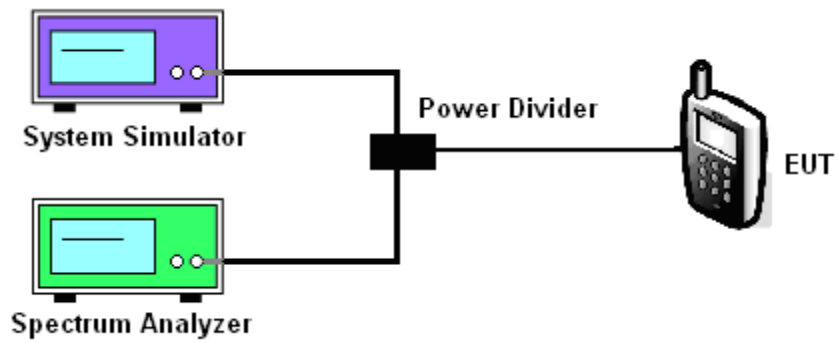
### 11.2 Measuring Instruments

See list of measuring instruments of this test report.

### 11.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. For LTE operating modes:
  - a. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
  - b. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.

#### 11.4 Test Setup



#### MODES TESTED

LTE Band 2/4/5/7/12/13/25/26/41/66

Test data reference attachment.

-----END OF REPORT-----