

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

## **FCC ID: 2BSSA-K9**

**Product:** 4G Smart Watch  
**Trade Mark:** LAGENIO  
**Model No.:** K9  
**Family Model:** L47Q  
**Report No.:** N25122405004E  
**Issue Date:** Jan. 20, 2026

### **Prepared for**

HK LAGENIO TECHNOLOGY CO.,LIMITED  
RM1710 17/F THE CLOUD 111 TUNG CHAU STREET TAI KOK TSUI HK

### **Prepared by**

Shenzhen NTEK Testing Technology Co., Ltd.  
No. 24 Xinfu East Road, Xiangshan Community, Xinqiao Street,  
Baoan District, Shenzhen, Guangdong, People's Republic of China  
Tel. 0755-23200050 Website:<http://www.ntek.org.cn>

## TEST RESULT CERTIFICATION

**Applicant's name** .....: HK LAGENIO TECHNOLOGY CO.,LIMITED

**Address** .....: RM1710 17/F THE CLOUD 111 TUNG CHAU STREET TAI KOK TSUI  
HK

**Manufacturer's Name** .....: SHENZHEN LAGENIO TECHNOLOGY CO.,LIMITED

**Address** .....: Floor 12th, Block B, Longhua Digital Innovation Center, North Station  
Community,Minzhi Street, Longhua District, Shenzhen,China

**Product name**.....: 4G Smart Watch

**Model and/or type reference** ...: K9

**Trade Mark**.....: LAGENIO

**Family Model**.....: L47Q

**Test Sample Number**..... S2512250015-1#

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

**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.

This report shall not be reproduced except in full, without the written approval of NTEK, this document may be altered or revised by NTEK, personal only, and shall be noted in the revision of the document.

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

**Date (s) of performance of tests** ..... Dec. 24, 2025 ~ Jan. 20, 2026

**Date of Issue** ..... Jan. 20, 2026

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

Prepared :   
By : \_\_\_\_\_  
Allen Liu  
(Project Engineer)

Reviewed :   
By : \_\_\_\_\_  
Aaron Cheng  
(Supervisor)

Approved :   
By : \_\_\_\_\_  
Alex Li  
(Manager)

## TABLE OF CONTENTS

|                                                                                  |           |
|----------------------------------------------------------------------------------|-----------|
| <b>1. GENERAL INFORMATION .....</b>                                              | <b>6</b>  |
| 1.1 PRODUCT DESCRIPTION .....                                                    | 6         |
| 1.2 RELATED SUBMITTAL(S) / GRANT (S).....                                        | 11        |
| 1.3 TEST METHODOLOGY.....                                                        | 11        |
| 1.4 TEST FACILITY.....                                                           | 11        |
| MEASUREMENT UNCERTAINTY .....                                                    | 11        |
| 1.5 SPECIAL ACCESSORIES.....                                                     | 11        |
| 1.6 WORST-CASE CONFIGURATION AND MODE.....                                       | 11        |
| <b>2. SYSTEM TEST CONFIGURATION .....</b>                                        | <b>12</b> |
| 2.1 EUT CONFIGURATION.....                                                       | 12        |
| 2.2 EUT EXERCISE .....                                                           | 12        |
| 2.3 CONFIGURATION OF EUT SYSTEM.....                                             | 12        |
| 2.4 TEST SETUP .....                                                             | 13        |
| <b>3.TEST AND MEASUREMENT EQUIPMENT .....</b>                                    | <b>14</b> |
| <b>4. OUTPUT POWER.....</b>                                                      | <b>16</b> |
| 4.1 OUTPUT POWER MEASUREMENT .....                                               | 16        |
| <b>5. OCCUPIED BANDWIDTH.....</b>                                                | <b>18</b> |
| According to FCC KDB 971168 D01 Section 4 and ANSI C63.26: 2015 Section 5.4..... | 18        |
| <b>6. BANDEDGE AND EMISSION MASK .....</b>                                       | <b>19</b> |
| <b>7. OUT OF BAND EMISSIONS.....</b>                                             | <b>21</b> |
| 7.1 MEASUREMENT METHOD .....                                                     | 21        |
| <b>8. RADIATED MEASUREMENT .....</b>                                             | <b>22</b> |
| 8.1. RADIATED POWER (ERP & EIRP) .....                                           | 22        |
| 8.2 LTE BAND 2 .....                                                             | 23        |

|                                      |    |
|--------------------------------------|----|
| 8.3 LTE BAND 4 .....                 | 27 |
| 8.4 LTE BAND 5 .....                 | 31 |
| 8.5 LTE BAND 7 .....                 | 33 |
| 8.6 LTE BAND 12 .....                | 35 |
| 8.7 LTE BAND 13 .....                | 37 |
| 8.8 LTE BAND 17 .....                | 39 |
| 8.9 LTE BAND 38 .....                | 41 |
| 8.10 LTE BAND 41 .....               | 43 |
| 8.11 LTE BAND 66 .....               | 45 |
| 9. SPURIOUS RADIATION EMISSION ..... | 49 |
| 9.1 LTE BAND 2 .....                 | 51 |
| 9.2 LTE BAND 4 .....                 | 53 |
| 9.3 LTE BAND 5 .....                 | 55 |
| 9.4 LTE BAND 7 .....                 | 57 |
| 9.5 LTE BAND 12 .....                | 59 |
| 9.6 LTE BAND 13 .....                | 61 |
| 9.7 LTE BAND 17 .....                | 63 |
| 9.8 LTE BAND 38 .....                | 65 |
| 9.9 LTE BAND 41 .....                | 67 |
| 9.10 LTE BAND 66 .....               | 69 |
| 10. FREQUENCY STABILITY .....        | 71 |
| 10.1 LTE BAND 2 .....                | 72 |
| 10.2 LTE BAND 4 .....                | 74 |
| 10.3 LTE BAND 5 .....                | 76 |
| 10.4 LTE BAND 7 .....                | 78 |
| 10.5 LTE BAND 12 .....               | 80 |
| 10.6 LTE BAND 13 .....               | 82 |
| 10.7 LTE BAND 17 .....               | 84 |
| 10.8 LTE BAND 38 .....               | 86 |

|                                                      |           |
|------------------------------------------------------|-----------|
| <b>10.9 LTE BAND 41 .....</b>                        | <b>88</b> |
| <b>10.10 LTE BAND 66.....</b>                        | <b>90</b> |
| <b>11. PEAK-TO-AVERAGE RATIO .....</b>               | <b>92</b> |
| <b>11.1 Description of the PAR Measurement .....</b> | <b>92</b> |
| <b>11.2 Measuring Instruments .....</b>              | <b>92</b> |
| <b>11.3 Test Procedures.....</b>                     | <b>92</b> |
| <b>11.4 Test Setup.....</b>                          | <b>93</b> |

## 1. GENERAL INFORMATION

### 1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Designation: | 4G Smart Watch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Trade Mark           | LAGENIO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Model Name           | K9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Family Model         | L47Q                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Model Difference     | All models have the same circuit and RF module, except for model name.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| FCC ID:              | 2BSSA-K9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Frequency Bands:     | U.S. Bands:<br><input checked="" type="checkbox"/> LTE FDD Band 2, 4, 5, 7, 12, 13, 17, 66<br><input checked="" type="checkbox"/> LTE TDD Band 38, 41,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Frequency Range:     | LTE FDD Band 2 Uplink: 1850MHz-1910MHz,<br>Downlink: 1930MHz-1990MHz;<br>LTE FDD Band 4 Uplink: 1710MHz-1755MHz,<br>Downlink: 2110MHz-2155MHz;<br>LTE FDD Band 5 Uplink: 824MHz-849MHz,<br>Downlink: 869MHz-894MHz;<br>LTE-FDD Band 7 Uplink: 2500MHz-2570MHz,<br>Downlink: 2620MHz-2690MHz;<br>LTE FDD Band 12 Uplink: 699MHz-716MHz,<br>Downlink: 729MHz-746MHz;<br>LTE FDD Band 13 Uplink: 777MHz-787MHz,<br>Downlink: 746MHz-756MHz;<br>LTE FDD Band 17 Uplink: 704MHz-716MHz,<br>Downlink: 734MHz-746MHz;<br>LTE TDD Band 38 Uplink& Downlink: 2570MHz-2620MHz<br>LTE TDD Band 41 Uplink& Downlink: 2535MHz-2655MHz<br>LTE FDD Band 66 Uplink: 1710MHz-1780MHz,<br>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:             | LDS Antenna                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Antenna gain:        | Band 2: -2.45 dBi, Band 4: -3.01 dBi, Band 5: -5.5 dBi, Band 7: -3.0 dBi,<br>Band 12: -7.52 dBi, Band 13: -7.11 dBi, Band 17: -7.53 dBi,<br>Band 38: -3.0 dBi, Band41: -3.0 dBi, Band 66: -2.52 dBi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

|                                                                                                                                                          |                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| Adapter                                                                                                                                                  | N/A                                                        |
| Battery                                                                                                                                                  | DC 3.85V, 700mAh, 2.695Wh                                  |
| Power supply                                                                                                                                             | DC 3.85V from battery or DC 5V from magnetic charging port |
| Extreme Vol. Limits:                                                                                                                                     | DC 3.6V to DC 4.4V (Nominal DC 3.85V) (Note 1)             |
| HW Version                                                                                                                                               | ZT07-MB-V2.0                                               |
| FW Version                                                                                                                                               | N/A                                                        |
| SW Version                                                                                                                                               | N/A                                                        |
| ** Note1: The High Voltage DC 4.4V and Low Voltage 3.6V was declared by manufacturer, The EUT couldn't be operate normally with higher or lower voltage. |                                                            |

Test Frequency and Channels:

| Test Mode      | Band Width | Modulation Mode | Test Channel | Frequency (MHz) |
|----------------|------------|-----------------|--------------|-----------------|
| LTE FDD Band 2 | 1.4MHz     | QPSK/16QAM      | Ch 18607     | 1850.7          |
|                |            |                 | Ch 18900     | 1880            |
|                |            |                 | Ch 19193     | 1909.3          |
|                | 3MHz       | QPSK/16QAM      | Ch 18615     | 1851.5          |
|                |            |                 | Ch 18900     | 1880            |
|                |            |                 | Ch 19185     | 1908.5          |
|                | 5MHz       | QPSK/16QAM      | Ch 18625     | 1852.5          |
|                |            |                 | Ch 18900     | 1880            |
|                |            |                 | Ch 19175     | 1907.5          |
|                | 10MHz      | QPSK/16QAM      | Ch 18650     | 1855            |
|                |            |                 | Ch 18900     | 1880            |
|                |            |                 | Ch 19150     | 1905            |
|                | 15MHz      | QPSK/16QAM      | Ch 18675     | 1857.5          |
|                |            |                 | Ch 18900     | 1880            |
|                |            |                 | Ch 19125     | 1902.5          |
|                | 20MHz      | QPSK/16QAM      | Ch 18700     | 1860            |
|                |            |                 | Ch 18900     | 1880            |
|                |            |                 | Ch 19100     | 1900            |
| LTE FDD Band 4 | 1.4MHz     | QPSK/16QAM      | Ch 19957     | 1710.7          |
|                |            |                 | Ch 20175     | 1732.5          |
|                |            |                 | Ch 20393     | 1754.3          |
|                | 3MHz       | QPSK/16QAM      | Ch 19965     | 1711.5          |
|                |            |                 | Ch 20175     | 1732.5          |

|                |        |                |          |        |
|----------------|--------|----------------|----------|--------|
|                | 5MHz   | QPSK/<br>16QAM | Ch 20385 | 1753.5 |
|                |        |                | Ch 19975 | 1712.5 |
|                |        |                | Ch 20175 | 1732.5 |
|                |        |                | Ch 20375 | 1752.5 |
|                | 10MHz  | QPSK/<br>16QAM | Ch 20000 | 1715   |
|                |        |                | Ch 20175 | 1732.5 |
|                |        |                | Ch 20350 | 1750   |
|                | 15MHz  | QPSK/<br>16QAM | Ch 20025 | 1717.5 |
|                |        |                | Ch 20175 | 1732.5 |
|                |        |                | Ch 20325 | 1747.5 |
|                | 20MHz  | QPSK/<br>16QAM | Ch 20050 | 1720   |
|                |        |                | Ch 20175 | 1732.5 |
|                |        |                | Ch 20300 | 1745   |
| LTE FDD Band 5 | 1.4MHz | QPSK/<br>16QAM | Ch 20407 | 824.7  |
|                |        |                | Ch 20525 | 836.5  |
|                |        |                | Ch 20643 | 848.3  |
|                | 3MHz   | QPSK/<br>16QAM | Ch 20415 | 825.5  |
|                |        |                | Ch 20525 | 836.5  |
|                |        |                | Ch 20635 | 847.5  |
|                | 5MHz   | QPSK/<br>16QAM | Ch 20425 | 826.5  |
|                |        |                | Ch 20525 | 836.5  |
|                |        |                | Ch 20625 | 846.5  |
|                | 10MHz  | QPSK/<br>16QAM | Ch 20450 | 829    |
|                |        |                | Ch 20525 | 836.5  |
|                |        |                | Ch 20600 | 844    |

|                |       |                |          |        |
|----------------|-------|----------------|----------|--------|
| LTE FDD Band 7 | 5MHz  | QPSK/<br>16QAM | Ch 20775 | 2502.5 |
|                |       |                | Ch 21100 | 2535   |
|                |       |                | Ch 21425 | 2567.5 |
|                | 10MHz | QPSK/<br>16QAM | Ch 20800 | 2505   |
|                |       |                | Ch 21100 | 2535   |
|                |       |                | Ch 21400 | 2565   |
|                | 15MHz | QPSK/<br>16QAM | Ch 20825 | 2507.5 |
|                |       |                | Ch 21100 | 2535   |
|                |       |                | Ch 21375 | 2562.5 |

|                 |        |                |          |       |
|-----------------|--------|----------------|----------|-------|
|                 | 20MHz  | QPSK/<br>16QAM | Ch 20850 | 2510  |
|                 |        |                | Ch 21100 | 2535  |
|                 |        |                | Ch 21350 | 2560  |
| LTE FDD Band 12 | 1.4MHz | QPSK/<br>16QAM | Ch 23017 | 699.7 |
|                 |        |                | Ch 23095 | 707.5 |
|                 |        |                | Ch 23173 | 715.3 |
|                 | 3MHz   | QPSK/<br>16QAM | Ch 23025 | 700.5 |
|                 |        |                | Ch 23095 | 707.5 |
|                 |        |                | Ch 23165 | 714.5 |
|                 | 5MHz   | QPSK/<br>16QAM | Ch 23035 | 701.5 |
|                 |        |                | Ch 23095 | 707.5 |
|                 |        |                | Ch 23155 | 713.5 |
|                 | 10MHz  | QPSK/<br>16QAM | Ch 23060 | 704   |
|                 |        |                | Ch 23095 | 707.5 |
|                 |        |                | Ch 23130 | 711   |
| LTE FDD Band 13 | 5MHz   | QPSK/<br>16QAM | Ch 23205 | 779.5 |
|                 |        |                | Ch 23230 | 782   |
|                 |        |                | Ch 23255 | 784.5 |
|                 | 10MHz  | QPSK/<br>16QAM | Ch 23230 | 782   |
| LTE FDD Band 17 | 5MHz   | QPSK/<br>16QAM | Ch 23755 | 706.5 |
|                 |        |                | Ch 23790 | 710   |
|                 |        |                | Ch 23825 | 713.5 |
|                 | 10MHz  | QPSK/<br>16QAM | Ch 23780 | 709   |
|                 |        |                | Ch 23790 | 710   |
|                 |        |                | Ch 23800 | 711   |

|                 |       |                |          |        |
|-----------------|-------|----------------|----------|--------|
| LTE FDD Band 38 | 5MHz  | QPSK/<br>16QAM | Ch 37775 | 2572.5 |
|                 |       |                | Ch 38000 | 2595   |
|                 |       |                | Ch 38225 | 2617.5 |
|                 | 10MHz | QPSK/<br>16QAM | Ch 37800 | 2575   |
|                 |       |                | Ch 38000 | 2595   |
|                 |       |                | Ch 38200 | 2615   |
|                 | 15MHz | QPSK/<br>16QAM | Ch 37825 | 2577.5 |
|                 |       |                | Ch 38000 | 2595   |
|                 |       |                | Ch 38175 | 2612.5 |
|                 | 20MHz | QPSK/<br>16QAM | Ch 37850 | 2580   |
|                 |       |                | Ch 38000 | 2595   |
|                 |       |                | Ch 38150 | 2610   |

|                 |        |                |           |        |
|-----------------|--------|----------------|-----------|--------|
| LTE FDD Band 41 | 5MHz   | QPSK/<br>16QAM | Ch 40065  | 2537.5 |
|                 |        |                | Ch 40640  | 2595   |
|                 |        |                | Ch 41215  | 2652.5 |
|                 | 10MHz  | QPSK/<br>16QAM | Ch 40090  | 2540   |
|                 |        |                | Ch 40640  | 2595   |
|                 |        |                | Ch 41190  | 2650   |
|                 | 15MHz  | QPSK/<br>16QAM | Ch 40115  | 2542.5 |
|                 |        |                | Ch 40640  | 2595   |
|                 |        |                | Ch 41165  | 2647.5 |
|                 | 20MHz  | QPSK/<br>16QAM | Ch 40140  | 2545   |
|                 |        |                | Ch 40640  | 2595   |
|                 |        |                | Ch 41140  | 2645   |
| LTE FDD Band 66 | 1.4MHz | QPSK/<br>16QAM | Ch 131979 | 1710.7 |
|                 |        |                | Ch 132322 | 1745   |
|                 |        |                | Ch 132665 | 1779.3 |
|                 | 3MHz   | QPSK/<br>16QAM | Ch 131987 | 1711.5 |
|                 |        |                | Ch 132322 | 1745   |
|                 |        |                | Ch 132657 | 1778.5 |
|                 | 5MHz   | QPSK/<br>16QAM | Ch 131997 | 1712.5 |
|                 |        |                | Ch 132322 | 1745   |
|                 |        |                | Ch 132647 | 1777.5 |
|                 | 10MHz  | QPSK/<br>16QAM | Ch 132022 | 1715   |
|                 |        |                | Ch 132322 | 1745   |
|                 |        |                | Ch 132622 | 1775   |
|                 | 15MHz  | QPSK/<br>16QAM | Ch 132047 | 1717.5 |
|                 |        |                | Ch 132322 | 1745   |
|                 |        |                | Ch 132597 | 1772.5 |
|                 | 20MHz  | QPSK/<br>16QAM | Ch 132072 | 1720   |
|                 |        |                | Ch 132322 | 1745   |
|                 |        |                | Ch 132572 | 1770   |

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

This submittal(s) (test report) is intended for **FCC ID: 2BSSA-K9** filing to comply with the FCC Part 22H&24E&27

## 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, 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 Xinfa 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 expended 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 2/4/5/7/12/13/17/38/41/66

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

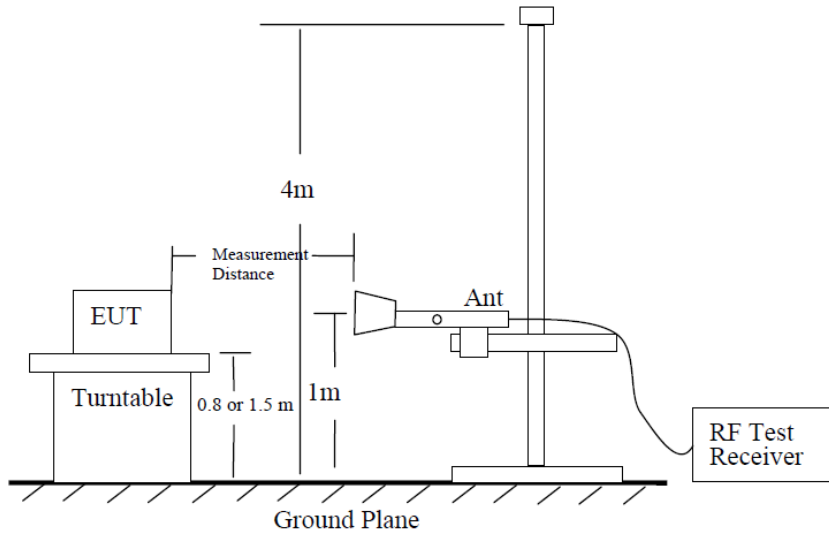
Table 2-1 Equipment Used in EUT System

| Item | Equipment      | Model No. | ID or Specification | Note |
|------|----------------|-----------|---------------------|------|
| 1    | 4G Smart Watch | K9        | FCC ID: 2BSSA-K9    | EUT  |
|      |                |           |                     |      |
|      |                |           |                     |      |

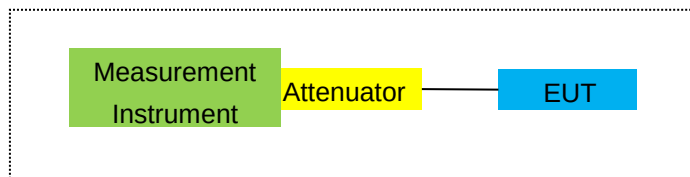
*Note: All the accessories have been used during the test.  
the following "EUT" in setup diagram means EUT system.*

## 2.4 TEST SETUP

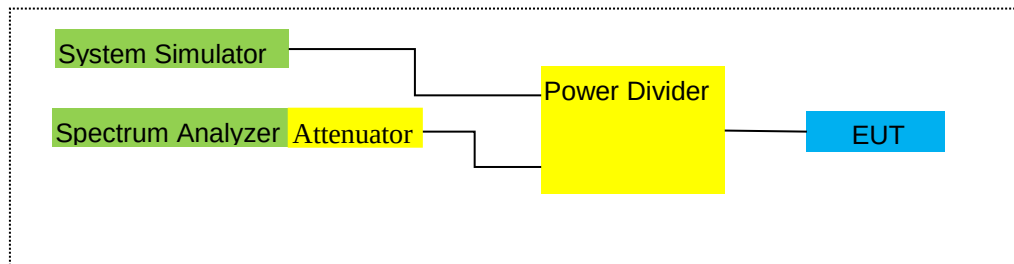
For Radiated Test Cases



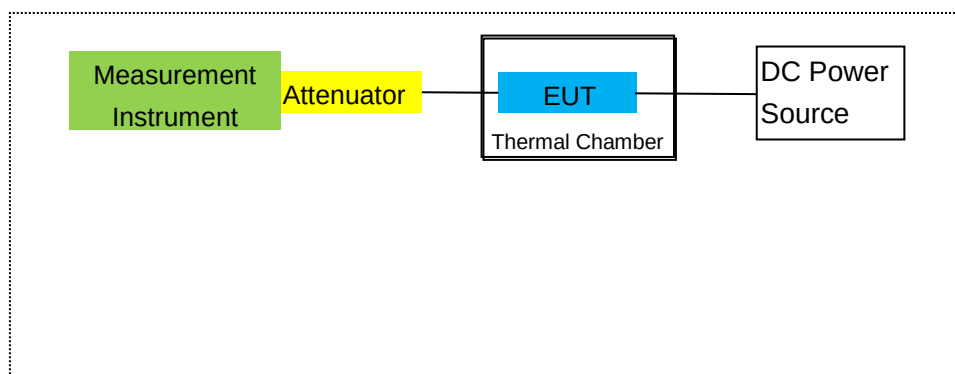
For Conducted Output Power



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        | 2025.04.17       | 2026.04.16       | 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         | 2024.05.18       | 2027.05.17       | 3 year             |
| 6    | Broadband Horn Antenna | SCHWARZBECK  | BBHA 9120 D | 2817         | 2024.05.18       | 2027.05.17       | 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    | MWRFTtest    | 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      |
| 64 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".

**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

According to FCC KDB 971168 D01 Section 4 and ANSI C63.26: 2015 Section 5.4

### LIMITS

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

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

### TEST PROCEDURE

The testing follows FCC KDB 971168 v03r01 Section 4.

The EUT was connected to Spectrum Analyzer and Base Station via power divider.

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.

The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.

The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.

Set the detection mode to peak, and the trace mode to max hold.

Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace.

(this is the reference value)

Determine the “-26 dB down amplitude” as equal to (Reference Value – X).

Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “-X dB down amplitude” determined in step 6. If a marker is below this “-X dB down amplitude” value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.

Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

### **Test Setup**

Please refer to Section 2.4 of this test report.

### MODES TESTED

Band 2/4/5/7/12/13/17/38/41/66

### 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

FCC: §22.359

According to FCC KDB 971168 D01 Section 6 and ANSI C63.26: 2015 Section 5.7.

### LIMITS

For LTE Band 2, LTE Band 5, (824 MHz ~ 849 MHz):

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. The emission limit equal to  $-13$  dBm.

For LTE Band 12, LTE Band 17:

According to FCC 47 CFR part 27.53(g), for operations in the 600 MHz band and 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. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater.

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

For LTE Band 13:

According to FCC 47 CFR part 27.53(c)(2), for on any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least  $43 + 10 \log(P)$  dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

According to FCC 47 CFR part 27.53(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.

For operations in the 775-788 MHz, emissions in the band 1559-1610 MHz shall be limited to  $-70$  dBW/MHz (EIRP). The limit of emissions is equal to  $-40$  dBm.

For LTE Band 4, LTE Band 66:

According to FCC 47 CFR part 27.53(h), for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log(P)$  dB. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

For LTE Band 7, LTE Band 38, LTE Band 41:

According to FCC 47 CFR part 27.53(m)(4) regulations, any transmit power outside of the channel edge must be attenuated below the transmitting power (P) by a 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. 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. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent may be employed.

**TEST PROCEDURE**

The testing follows FCC KDB 971168 v03r01 Section 6.

The EUT was connected to Spectrum Analyzer and Base Station via power divider.

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.

The band edges of low and high channels for the highest RF powers were measured.

The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

**MODES TESTED**

Band 2/4/5/7/12/13/17/38/41/66

**RESULTS**

Test data reference attachment.

## 7. OUT OF BAND EMISSIONS

### RULE PART(S)

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

### 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 2/4/5/7/12/13/17/38/41/66

#### 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

#### LIMITS:

For LTE Band 5, (824 MHz ~ 849 MHz):

The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

For LTE Band 2:

Mobile and portable stations are limited to 2 watts EIRP.

For LTE Band 12, LTE Band 17:

Control and mobile stations in the 698-746 MHz band are limited to 30 watts ERP.

For LTE Band 13:

Control stations and mobile stations transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands and fixed stations transmitting in the 787-788 MHz and 805-806 MHz bands are limited to 30 watts ERP.

For LTE Band 4, LTE Band 66:

Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

For LTE Band 7, LTE Band 38, LTE Band 41:

Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

#### 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 2/4/5/7/12/13/17/38/41/66

#### RESULTS

Pass

## 8.2 LTE BAND 2

| Radiated Power (EIRP) for Band 2 |               |           |                      |                        |                            |                  |                                     |                                    |       |            |
|----------------------------------|---------------|-----------|----------------------|------------------------|----------------------------|------------------|-------------------------------------|------------------------------------|-------|------------|
| Mode                             | RB/RB<br>SIZE | Frequency | Result               |                        |                            |                  |                                     |                                    | Limit | Conclusion |
|                                  |               |           | SG<br>Level<br>(dBm) | Cable<br>Loss<br>(dBm) | Antenna<br>Factor<br>(dBi) | Max. EIRP        | Max.<br>EIRP<br><br>Average<br>(mW) | Polarization<br><br>Of Max.<br>ERP |       |            |
|                                  |               |           |                      |                        |                            | Average<br>(dBm) |                                     |                                    |       |            |
| 1.4MHz<br>Band<br>QPSK           | 1/#Mid        | 1850.7    | -6.39                | 3.76                   | 28.24                      | 18.09            | 64.417                              | Horizontal                         | 2     | Pass       |
|                                  |               | 1880      | -6.20                | 3.91                   | 28.22                      | 18.11            | 64.714                              | Horizontal                         | 2     | Pass       |
|                                  |               | 1909.3    | -6.11                | 3.93                   | 28.20                      | 18.16            | 65.464                              | Horizontal                         | 2     | Pass       |
| 3.0MHz<br>Band<br>QPSK           | 1/#Mid        | 1851.5    | -6.45                | 3.77                   | 28.23                      | 18.01            | 63.241                              | Horizontal                         | 2     | Pass       |
|                                  |               | 1880      | -6.30                | 3.91                   | 28.24                      | 18.03            | 63.533                              | Horizontal                         | 2     | Pass       |
|                                  |               | 1908.5    | -6.17                | 3.94                   | 28.25                      | 18.14            | 65.163                              | Horizontal                         | 2     | Pass       |
| 5.0MHz<br>Band<br>QPSK           | 1/#Mid        | 1852.5    | -6.34                | 3.77                   | 28.31                      | 18.20            | 66.069                              | Horizontal                         | 2     | Pass       |
|                                  |               | 1880      | -5.96                | 3.91                   | 28.22                      | 18.35            | 68.391                              | Horizontal                         | 2     | Pass       |
|                                  |               | 1907.5    | -5.89                | 3.94                   | 28.20                      | 18.37            | 68.707                              | Horizontal                         | 2     | Pass       |
| 10.0MHz<br>Band<br>QPSK          | 1/#Mid        | 1855      | -6.20                | 3.79                   | 28.33                      | 18.34            | 68.234                              | Horizontal                         | 2     | Pass       |
|                                  |               | 1880      | -5.90                | 3.95                   | 28.22                      | 18.37            | 68.707                              | Horizontal                         | 2     | Pass       |
|                                  |               | 1905      | -5.79                | 3.97                   | 28.19                      | 18.43            | 69.663                              | Horizontal                         | 2     | Pass       |
| 15.0MHz<br>Band<br>QPSK          | 1/#Mid        | 1857.5    | -6.16                | 3.79                   | 28.34                      | 18.39            | 69.024                              | Horizontal                         | 2     | Pass       |
|                                  |               | 1880      | -5.95                | 3.95                   | 28.22                      | 18.32            | 67.920                              | Horizontal                         | 2     | Pass       |
|                                  |               | 1902.5    | -5.81                | 3.97                   | 28.18                      | 18.40            | 69.183                              | Horizontal                         | 2     | Pass       |
| 20.0MHz<br>Band<br>QPSK          | 1/#Mid        | 1860      | -6.15                | 3.81                   | 28.35                      | 18.39            | 69.024                              | Horizontal                         | 2     | Pass       |
|                                  |               | 1880      | -5.82                | 3.96                   | 28.22                      | 18.44            | 69.823                              | Horizontal                         | 2     | Pass       |
|                                  |               | 1900      | -5.76                | 4.00                   | 28.16                      | 18.40            | 69.183                              | Horizontal                         | 2     | Pass       |
| 1.4MHz<br>Band<br>QPSK           | 1/#Mid        | 1850.7    | -7.56                | 3.76                   | 28.24                      | 16.92            | 49.204                              | Vertical                           | 2     | Pass       |
|                                  |               | 1880      | -7.02                | 3.91                   | 28.22                      | 17.29            | 53.580                              | Vertical                           | 2     | Pass       |
|                                  |               | 1909.3    | -7.22                | 3.93                   | 28.20                      | 17.05            | 50.699                              | Vertical                           | 2     | Pass       |
| 3.0MHz<br>Band<br>QPSK           | 1/#Mid        | 1851.5    | -6.74                | 3.77                   | 28.23                      | 17.72            | 59.156                              | Vertical                           | 2     | Pass       |
|                                  |               | 1880      | -6.80                | 3.91                   | 28.24                      | 17.53            | 56.624                              | Vertical                           | 2     | Pass       |
|                                  |               | 1908.5    | -7.28                | 3.94                   | 28.25                      | 17.03            | 50.466                              | Vertical                           | 2     | Pass       |
| 5.0MHz<br>Band<br>QPSK           | 1/#Mid        | 1852.5    | -7.52                | 3.77                   | 28.31                      | 17.02            | 50.350                              | Vertical                           | 2     | Pass       |
|                                  |               | 1880      | -6.98                | 3.91                   | 28.22                      | 17.33            | 54.075                              | Vertical                           | 2     | Pass       |
|                                  |               | 1907.5    | -6.93                | 3.94                   | 28.20                      | 17.33            | 54.075                              | Vertical                           | 2     | Pass       |
| 10.0MHz<br>Band<br>QPSK          | 1/#Mid        | 1855      | -7.68                | 3.79                   | 28.33                      | 16.86            | 48.529                              | Vertical                           | 2     | Pass       |
|                                  |               | 1880      | -6.72                | 3.95                   | 28.22                      | 17.55            | 56.885                              | Vertical                           | 2     | Pass       |
|                                  |               | 1905      | -6.56                | 3.97                   | 28.19                      | 17.66            | 58.345                              | Vertical                           | 2     | Pass       |

|         |        |        |       |      |       |       |        |          |   |      |
|---------|--------|--------|-------|------|-------|-------|--------|----------|---|------|
| 15.0MHz |        | 1857.5 | -7.42 | 3.79 | 28.34 | 17.13 | 51.642 | Vertical | 2 | Pass |
| Band    | 1/#Mid | 1880   | -7.36 | 3.95 | 28.22 | 16.91 | 49.091 | Vertical | 2 | Pass |
| QPSK    |        | 1902.5 | -7.32 | 3.97 | 28.18 | 16.89 | 48.865 | Vertical | 2 | Pass |
| 20.0MHz |        | 1860   | -6.76 | 3.81 | 28.35 | 17.78 | 59.979 | Vertical | 2 | Pass |
| Band    | 1/#Mid | 1880   | -7.28 | 3.96 | 28.22 | 16.98 | 49.888 | Vertical | 2 | Pass |
| QPSK    |        | 1900   | -7.17 | 4.00 | 28.16 | 16.99 | 50.003 | Vertical | 2 | Pass |

| Radiated Power (EIRP) for Band 2 |            |           |                |                  |                      |                         |                        |                          |       |            |
|----------------------------------|------------|-----------|----------------|------------------|----------------------|-------------------------|------------------------|--------------------------|-------|------------|
| Mode                             | RB/RB SIZE | Frequency | Result         |                  |                      |                         |                        |                          | Limit | Conclusion |
|                                  |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Factor (dBi) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |       |            |
| 1.4MHz<br>Band 16<br>QAM         | 1/#Mid     | 1850.7    | -7.51          | 3.76             | 28.24                | 16.97                   | 49.774                 | Horizontal               | 2     | Pass       |
|                                  |            | 1880      | -6.98          | 3.91             | 28.22                | 17.33                   | 54.075                 | Horizontal               | 2     | Pass       |
|                                  |            | 1909.3    | -6.91          | 3.93             | 28.20                | 17.36                   | 54.450                 | Horizontal               | 2     | Pass       |
| 3.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 1851.5    | -7.01          | 3.77             | 28.23                | 17.45                   | 55.590                 | Horizontal               | 2     | Pass       |
|                                  |            | 1880      | -7.09          | 3.91             | 28.24                | 17.24                   | 52.966                 | Horizontal               | 2     | Pass       |
|                                  |            | 1908.5    | -7.30          | 3.94             | 28.25                | 17.01                   | 50.234                 | Horizontal               | 2     | Pass       |
| 5.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 1852.5    | -6.95          | 3.77             | 28.31                | 17.59                   | 57.412                 | Horizontal               | 2     | Pass       |
|                                  |            | 1880      | -6.86          | 3.91             | 28.22                | 17.45                   | 55.590                 | Horizontal               | 2     | Pass       |
|                                  |            | 1907.5    | -6.54          | 3.94             | 28.20                | 17.72                   | 59.156                 | Horizontal               | 2     | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 1/#Mid     | 1855      | -7.00          | 3.79             | 28.33                | 17.54                   | 56.754                 | Horizontal               | 2     | Pass       |
|                                  |            | 1880      | -6.99          | 3.95             | 28.22                | 17.28                   | 53.456                 | Horizontal               | 2     | Pass       |
|                                  |            | 1905      | -6.46          | 3.97             | 28.19                | 17.76                   | 59.704                 | Horizontal               | 2     | Pass       |
| 15.0MHz<br>Band 16<br>QAM        | 1/#Mid     | 1857.5    | -6.98          | 3.79             | 28.34                | 17.57                   | 57.148                 | Horizontal               | 2     | Pass       |
|                                  |            | 1880      | -6.77          | 3.95             | 28.22                | 17.50                   | 56.234                 | Horizontal               | 2     | Pass       |
|                                  |            | 1902.5    | -6.73          | 3.97             | 28.18                | 17.48                   | 55.976                 | Horizontal               | 2     | Pass       |
| 20.0MHz<br>Band 16<br>QAM        | 1/#Mid     | 1860      | -6.87          | 3.81             | 28.35                | 17.67                   | 58.479                 | Horizontal               | 2     | Pass       |
|                                  |            | 1880      | -6.57          | 3.96             | 28.22                | 17.69                   | 58.749                 | Horizontal               | 2     | Pass       |
|                                  |            | 1900      | -6.39          | 4.00             | 28.16                | 17.77                   | 59.841                 | Horizontal               | 2     | Pass       |
| 1.4MHz<br>Band 16<br>QAM         | 1/#Mid     | 1850.7    | -8.08          | 3.76             | 28.24                | 16.40                   | 43.652                 | Vertical                 | 2     | Pass       |
|                                  |            | 1880      | -8.00          | 3.91             | 28.22                | 16.31                   | 42.756                 | Vertical                 | 2     | Pass       |
|                                  |            | 1909.3    | -7.79          | 3.93             | 28.20                | 16.48                   | 44.463                 | Vertical                 | 2     | Pass       |
| 3.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 1851.5    | -7.92          | 3.77             | 28.23                | 16.54                   | 45.082                 | Vertical                 | 2     | Pass       |
|                                  |            | 1880      | -7.63          | 3.91             | 28.24                | 16.70                   | 46.774                 | Vertical                 | 2     | Pass       |
|                                  |            | 1908.5    | -8.25          | 3.94             | 28.25                | 16.06                   | 40.365                 | Vertical                 | 2     | Pass       |
| 5.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 1852.5    | -7.86          | 3.77             | 28.31                | 16.68                   | 46.559                 | Vertical                 | 2     | Pass       |
|                                  |            | 1880      | -7.68          | 3.91             | 28.22                | 16.63                   | 46.026                 | Vertical                 | 2     | Pass       |
|                                  |            | 1907.5    | -8.23          | 3.94             | 28.20                | 16.03                   | 40.087                 | Vertical                 | 2     | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 1/#Mid     | 1855      | -8.26          | 3.79             | 28.33                | 16.28                   | 42.462                 | Vertical                 | 2     | Pass       |
|                                  |            | 1880      | -8.13          | 3.95             | 28.22                | 16.14                   | 41.115                 | Vertical                 | 2     | Pass       |
|                                  |            | 1905      | -8.13          | 3.97             | 28.19                | 16.09                   | 40.644                 | Vertical                 | 2     | Pass       |
| 15.0MHz<br>Band 16               | 1/#Mid     | 1857.5    | -8.62          | 3.79             | 28.34                | 15.93                   | 39.174                 | Vertical                 | 2     | Pass       |
|                                  |            | 1880      | -8.25          | 3.95             | 28.22                | 16.02                   | 39.994                 | Vertical                 | 2     | Pass       |

|         |        |        |       |      |       |       |        |          |   |      |
|---------|--------|--------|-------|------|-------|-------|--------|----------|---|------|
| QAM     |        | 1902.5 | -8.20 | 3.97 | 28.18 | 16.01 | 39.902 | Vertical | 2 | Pass |
| 20.0MHz | 1/#Mid | 1860   | -8.17 | 3.81 | 28.35 | 16.37 | 43.351 | Vertical | 2 | Pass |
| Band 16 |        | 1880   | -8.12 | 3.96 | 28.22 | 16.14 | 41.115 | Vertical | 2 | Pass |
| QAM     |        | 1900   | -7.80 | 4.00 | 28.16 | 16.36 | 43.251 | Vertical | 2 | 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<br>SIZE | Frequency | Result               |                     |                            |                                       |                                         |                                    |       | Conclusion |
|                                  |               |           | SG<br>Level<br>(dBm) | Cable Loss<br>(dBm) | Antenna<br>Factor<br>(dBi) | Max. EIRP<br><br>Average<br><br>(dBm) | Max.<br>EIRP<br><br>Average<br><br>(mW) | Polarization<br><br>Of Max.<br>ERP |       |            |
|                                  |               |           |                      |                     |                            |                                       |                                         |                                    | Limit |            |
|                                  |               |           |                      |                     |                            |                                       |                                         |                                    |       |            |
| 1.4MHz                           | 1/#Mid        | 1710.7    | -6.30                | 3.12                | 27.58                      | 18.16                                 | 65.464                                  | Horizontal                         | 1     | Pass       |
| Band                             |               | 1732.5    | -6.29                | 3.27                | 27.61                      | 18.05                                 | 63.826                                  | Horizontal                         | 1     | Pass       |
| QPSK                             |               | 1754.3    | -6.27                | 3.29                | 27.63                      | 18.07                                 | 64.121                                  | Horizontal                         | 1     | Pass       |
| 3.0MHz                           | 1/#Mid        | 1711.5    | -6.47                | 3.13                | 27.61                      | 18.01                                 | 63.241                                  | Horizontal                         | 1     | Pass       |
| Band                             |               | 1732.5    | -6.39                | 3.27                | 27.61                      | 17.95                                 | 62.373                                  | Horizontal                         | 1     | Pass       |
| QPSK                             |               | 1753.5    | -6.31                | 3.30                | 27.62                      | 18.01                                 | 63.241                                  | Horizontal                         | 1     | Pass       |
| 5.0MHz                           | 1/#Mid        | 1712.5    | -6.24                | 3.13                | 27.63                      | 18.26                                 | 66.988                                  | Horizontal                         | 1     | Pass       |
| Band                             |               | 1732.5    | -6.14                | 3.27                | 27.61                      | 18.20                                 | 66.069                                  | Horizontal                         | 1     | Pass       |
| QPSK                             |               | 1752.5    | -6.02                | 3.30                | 27.60                      | 18.28                                 | 67.298                                  | Horizontal                         | 1     | Pass       |
| 10.0MHz                          | 1/#Mid        | 1715      | -6.18                | 3.15                | 27.64                      | 18.31                                 | 67.764                                  | Horizontal                         | 1     | Pass       |
| Band                             |               | 1732.5    | -5.95                | 3.31                | 27.61                      | 18.35                                 | 68.391                                  | Horizontal                         | 1     | Pass       |
| QPSK                             |               | 1750      | -5.97                | 3.33                | 27.59                      | 18.29                                 | 67.453                                  | Horizontal                         | 1     | Pass       |
| 15.0MHz                          | 1/#Mid        | 1717.5    | -6.19                | 3.15                | 27.65                      | 18.31                                 | 67.764                                  | Horizontal                         | 1     | Pass       |
| Band                             |               | 1732.5    | -6.03                | 3.31                | 27.61                      | 18.27                                 | 67.143                                  | Horizontal                         | 1     | Pass       |
| QPSK                             |               | 1747.5    | -5.97                | 3.33                | 27.57                      | 18.27                                 | 67.143                                  | Horizontal                         | 1     | Pass       |
| 20.0MHz                          | 1/#Mid        | 1720      | -6.13                | 3.17                | 27.66                      | 18.36                                 | 68.549                                  | Horizontal                         | 1     | Pass       |
| Band                             |               | 1732.5    | -5.96                | 3.32                | 27.61                      | 18.33                                 | 68.077                                  | Horizontal                         | 1     | Pass       |
| QPSK                             |               | 1745      | -5.90                | 3.36                | 27.56                      | 18.30                                 | 67.608                                  | Horizontal                         | 1     | Pass       |
| 1.4MHz                           | 1/#Mid        | 1710.7    | -7.10                | 3.12                | 27.58                      | 17.36                                 | 54.450                                  | Vertical                           | 1     | Pass       |
| Band                             |               | 1732.5    | -7.48                | 3.27                | 27.61                      | 16.86                                 | 48.529                                  | Vertical                           | 1     | Pass       |
| QPSK                             |               | 1754.3    | -7.08                | 3.29                | 27.63                      | 17.26                                 | 53.211                                  | Vertical                           | 1     | Pass       |
| 3.0MHz                           | 1/#Mid        | 1711.5    | -7.00                | 3.13                | 27.61                      | 17.48                                 | 55.976                                  | Vertical                           | 1     | Pass       |
| Band                             |               | 1732.5    | -6.53                | 3.27                | 27.61                      | 17.81                                 | 60.395                                  | Vertical                           | 1     | Pass       |
| QPSK                             |               | 1753.5    | -7.37                | 3.30                | 27.62                      | 16.95                                 | 49.545                                  | Vertical                           | 1     | Pass       |
| 5.0MHz                           | 1/#Mid        | 1712.5    | -6.86                | 3.13                | 27.63                      | 17.64                                 | 58.076                                  | Vertical                           | 1     | Pass       |
| Band                             |               | 1732.5    | -6.70                | 3.27                | 27.61                      | 17.64                                 | 58.076                                  | Vertical                           | 1     | Pass       |
| QPSK                             |               | 1752.5    | -6.93                | 3.30                | 27.60                      | 17.37                                 | 54.576                                  | Vertical                           | 1     | Pass       |
| 10.0MHz                          | 1/#Mid        | 1715      | -7.43                | 3.15                | 27.64                      | 17.06                                 | 50.816                                  | Vertical                           | 1     | Pass       |

|              |        |        |       |      |       |       |        |          |   |      |
|--------------|--------|--------|-------|------|-------|-------|--------|----------|---|------|
| Band<br>QPSK |        | 1732.5 | -6.92 | 3.31 | 27.61 | 17.38 | 54.702 | Vertical | 1 | Pass |
|              |        | 1750   | -7.10 | 3.33 | 27.59 | 17.16 | 52.000 | Vertical | 1 | Pass |
| 15.0MHz      | 1/#Mid | 1717.5 | -7.63 | 3.15 | 27.65 | 16.87 | 48.641 | Vertical | 1 | Pass |
| Band<br>QPSK |        | 1732.5 | -7.20 | 3.31 | 27.61 | 17.10 | 51.286 | Vertical | 1 | Pass |
|              |        | 1747.5 | -7.36 | 3.33 | 27.57 | 16.88 | 48.753 | Vertical | 1 | Pass |
| 20.0MHz      | 1/#Mid | 1720   | -7.59 | 3.17 | 27.66 | 16.90 | 48.978 | Vertical | 1 | Pass |
| Band<br>QPSK |        | 1732.5 | -6.54 | 3.32 | 27.61 | 17.75 | 59.566 | Vertical | 1 | Pass |
|              |        | 1745   | -7.15 | 3.36 | 27.56 | 17.05 | 50.699 | Vertical | 1 | Pass |

| Radiated Power (EIRP) for Band 4 |            |           |                |                  |                      |                         |                        |                          |       |            |
|----------------------------------|------------|-----------|----------------|------------------|----------------------|-------------------------|------------------------|--------------------------|-------|------------|
| Mode                             | RB/RB SIZE | Frequency | Result         |                  |                      |                         |                        |                          | Limit | Conclusion |
|                                  |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Factor (dBi) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |       |            |
| 1.4MHz<br>Band 16<br>QAM         | 1/#Mid     | 1710.7    | -7.11          | 3.12             | 27.58                | 17.35                   | 54.325                 | Horizontal               | 1     | Pass       |
|                                  |            | 1732.5    | -6.96          | 3.27             | 27.61                | 17.38                   | 54.702                 | Horizontal               | 1     | Pass       |
|                                  |            | 1754.3    | -6.96          | 3.29             | 27.63                | 17.38                   | 54.702                 | Horizontal               | 1     | Pass       |
| 3.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 1711.5    | -7.05          | 3.13             | 27.61                | 17.43                   | 55.335                 | Horizontal               | 1     | Pass       |
|                                  |            | 1732.5    | -7.18          | 3.27             | 27.61                | 17.16                   | 52.000                 | Horizontal               | 1     | Pass       |
|                                  |            | 1753.5    | -7.40          | 3.30             | 27.62                | 16.92                   | 49.204                 | Horizontal               | 1     | Pass       |
| 5.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 1712.5    | -6.88          | 3.13             | 27.63                | 17.62                   | 57.810                 | Horizontal               | 1     | Pass       |
|                                  |            | 1732.5    | -6.84          | 3.27             | 27.61                | 17.50                   | 56.234                 | Horizontal               | 1     | Pass       |
|                                  |            | 1752.5    | -6.53          | 3.30             | 27.60                | 17.77                   | 59.841                 | Horizontal               | 1     | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 1/#Mid     | 1715      | -6.95          | 3.15             | 27.64                | 17.54                   | 56.754                 | Horizontal               | 1     | Pass       |
|                                  |            | 1732.5    | -7.14          | 3.31             | 27.61                | 17.16                   | 52.000                 | Horizontal               | 1     | Pass       |
|                                  |            | 1750      | -6.52          | 3.33             | 27.59                | 17.74                   | 59.429                 | Horizontal               | 1     | Pass       |
| 15.0MHz<br>Band 16<br>QAM        | 1/#Mid     | 1717.5    | -6.75          | 3.15             | 27.65                | 17.75                   | 59.566                 | Horizontal               | 1     | Pass       |
|                                  |            | 1732.5    | -6.81          | 3.31             | 27.61                | 17.49                   | 56.105                 | Horizontal               | 1     | Pass       |
|                                  |            | 1747.5    | -6.83          | 3.33             | 27.57                | 17.41                   | 55.081                 | Horizontal               | 1     | Pass       |
| 20.0MHz<br>Band 16<br>QAM        | 1/#Mid     | 1720      | -6.70          | 3.17             | 27.66                | 17.79                   | 60.117                 | Horizontal               | 1     | Pass       |
|                                  |            | 1732.5    | -6.71          | 3.32             | 27.61                | 17.58                   | 57.280                 | Horizontal               | 1     | Pass       |
|                                  |            | 1745      | -6.52          | 3.36             | 27.56                | 17.68                   | 58.614                 | Horizontal               | 1     | Pass       |
| 1.4MHz<br>Band 16<br>QAM         | 1/#Mid     | 1710.7    | -7.75          | 3.12             | 27.58                | 16.71                   | 46.881                 | Vertical                 | 1     | Pass       |
|                                  |            | 1732.5    | -8.01          | 3.27             | 27.61                | 16.33                   | 42.954                 | Vertical                 | 1     | Pass       |
|                                  |            | 1754.3    | -8.25          | 3.29             | 27.63                | 16.09                   | 40.644                 | Vertical                 | 1     | Pass       |
| 3.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 1711.5    | -7.94          | 3.13             | 27.61                | 16.54                   | 45.082                 | Vertical                 | 1     | Pass       |
|                                  |            | 1732.5    | -7.84          | 3.27             | 27.61                | 16.50                   | 44.668                 | Vertical                 | 1     | Pass       |
|                                  |            | 1753.5    | -7.88          | 3.30             | 27.62                | 16.44                   | 44.055                 | Vertical                 | 1     | Pass       |
| 5.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 1712.5    | -8.50          | 3.13             | 27.63                | 16.00                   | 39.811                 | Vertical                 | 1     | Pass       |
|                                  |            | 1732.5    | -8.21          | 3.27             | 27.61                | 16.13                   | 41.020                 | Vertical                 | 1     | Pass       |
|                                  |            | 1752.5    | -7.82          | 3.30             | 27.60                | 16.48                   | 44.463                 | Vertical                 | 1     | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 1/#Mid     | 1715      | -8.63          | 3.15             | 27.64                | 15.86                   | 38.548                 | Vertical                 | 1     | Pass       |
|                                  |            | 1732.5    | -7.97          | 3.31             | 27.61                | 16.33                   | 42.954                 | Vertical                 | 1     | Pass       |
|                                  |            | 1750      | -8.10          | 3.33             | 27.59                | 16.16                   | 41.305                 | Vertical                 | 1     | Pass       |

|         |                |        |        |       |      |       |       |        |          |   |      |
|---------|----------------|--------|--------|-------|------|-------|-------|--------|----------|---|------|
| 15.0MHz | Band 16<br>QAM | 1/#Mid | 1717.5 | -8.53 | 3.15 | 27.65 | 15.97 | 39.537 | Vertical | 1 | Pass |
|         |                |        | 1732.5 | -8.45 | 3.31 | 27.61 | 15.85 | 38.459 | Vertical | 1 | Pass |
|         |                |        | 1747.5 | -8.42 | 3.33 | 27.57 | 15.82 | 38.194 | Vertical | 1 | Pass |
| 20.0MHz | Band 16<br>QAM | 1/#Mid | 1720   | -7.99 | 3.17 | 27.66 | 16.50 | 44.668 | Vertical | 1 | Pass |
|         |                |        | 1732.5 | -8.17 | 3.32 | 27.61 | 16.12 | 40.926 | Vertical | 1 | Pass |
|         |                |        | 1745   | -7.83 | 3.36 | 27.56 | 16.37 | 43.351 | Vertical | 1 | 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         |                  |                     |                 |                         |                        |                          | Limit | Conclusion |
|                                 |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Factor (dB) | Correction (dB) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |       |            |
| 1.4MHz Band QPSK                | 3/#Mid     | 824.7     | 3.00           | 2.01             | 19.68               | 2.15            | 18.52                   | 71.121                 | Horizontal               | 7     | Pass       |
|                                 |            | 836.5     | 2.88           | 2.01             | 19.77               | 2.15            | 18.49                   | 70.632                 | Horizontal               | 7     | Pass       |
|                                 |            | 848.3     | 2.68           | 2.02             | 19.82               | 2.15            | 18.33                   | 68.077                 | Horizontal               | 7     | Pass       |
| 3.0MHz Band QPSK                | 1/#Mid     | 825.5     | 2.77           | 2.01             | 19.70               | 2.15            | 18.31                   | 67.764                 | Horizontal               | 7     | Pass       |
|                                 |            | 836.5     | 2.67           | 2.01             | 19.77               | 2.15            | 18.28                   | 67.298                 | Horizontal               | 7     | Pass       |
|                                 |            | 847.5     | 2.54           | 2.02             | 19.81               | 2.15            | 18.18                   | 65.766                 | Horizontal               | 7     | Pass       |
| 5.0MHz Band QPSK                | 1/#Mid     | 826.5     | 3.05           | 2.01             | 19.71               | 2.15            | 18.60                   | 72.444                 | Horizontal               | 7     | Pass       |
|                                 |            | 836.5     | 2.93           | 2.01             | 19.77               | 2.15            | 18.54                   | 71.450                 | Horizontal               | 7     | Pass       |
|                                 |            | 846.5     | 2.77           | 2.02             | 19.79               | 2.15            | 18.39                   | 69.024                 | Horizontal               | 7     | Pass       |
| 10.0MHz Band QPSK               | 1/#Mid     | 829       | 3.07           | 2.01             | 19.73               | 2.15            | <b>18.64</b>            | 73.114                 | Horizontal               | 7     | Pass       |
|                                 |            | 836.5     | 3.02           | 2.01             | 19.77               | 2.15            | 18.63                   | 72.946                 | Horizontal               | 7     | Pass       |
|                                 |            | 844       | 2.92           | 2.02             | 19.78               | 2.15            | 18.53                   | 71.285                 | Horizontal               | 7     | Pass       |
| 1.4MHz Band QPSK                | 1/#Mid     | 824.7     | 1.59           | 2.01             | 19.68               | 2.15            | 17.11                   | 51.404                 | Vertical                 | 7     | Pass       |
|                                 |            | 836.5     | 1.63           | 2.01             | 19.77               | 2.15            | 17.24                   | 52.966                 | Vertical                 | 7     | Pass       |
|                                 |            | 848.3     | 1.96           | 2.02             | 19.82               | 2.15            | 17.61                   | 57.677                 | Vertical                 | 7     | Pass       |
| 3.0MHz Band QPSK                | 1/#Mid     | 825.5     | 2.27           | 2.01             | 19.70               | 2.15            | 17.81                   | 60.395                 | Vertical                 | 7     | Pass       |
|                                 |            | 836.5     | 1.76           | 2.01             | 19.77               | 2.15            | 17.37                   | 54.576                 | Vertical                 | 7     | Pass       |
|                                 |            | 847.5     | 1.78           | 2.02             | 19.81               | 2.15            | 17.42                   | 55.208                 | Vertical                 | 7     | Pass       |
| 5.0MHz Band QPSK                | 1/#Mid     | 826.5     | 1.51           | 2.01             | 19.71               | 2.15            | 17.06                   | 50.816                 | Vertical                 | 7     | Pass       |
|                                 |            | 836.5     | 1.71           | 2.01             | 19.77               | 2.15            | 17.32                   | 53.951                 | Vertical                 | 7     | Pass       |
|                                 |            | 846.5     | 1.78           | 2.02             | 19.79               | 2.15            | 17.40                   | 54.954                 | Vertical                 | 7     | Pass       |
| 10.0MHz Band QPSK               | 1/#Mid     | 829       | 1.37           | 2.01             | 19.73               | 2.15            | 16.94                   | 49.431                 | Vertical                 | 7     | Pass       |
|                                 |            | 836.5     | 1.95           | 2.01             | 19.77               | 2.15            | 17.56                   | 57.016                 | Vertical                 | 7     | Pass       |
|                                 |            | 844       | 2.18           | 2.02             | 19.78               | 2.15            | 17.79                   | 60.117                 | Vertical                 | 7     | Pass       |

| Radiated Power (ERP) for Band 5 |            |           |                |                  |                     |                 |                         |                        |                          |       |            |
|---------------------------------|------------|-----------|----------------|------------------|---------------------|-----------------|-------------------------|------------------------|--------------------------|-------|------------|
| Mode                            | RB/RB SIZE | Frequency | Result         |                  |                     |                 |                         |                        |                          | Limit | Conclusion |
|                                 |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Factor (dB) | Correction (dB) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |       |            |
| 1.4MHz<br>Band 16<br>QAM        | 3/#Mid     | 824.7     | 2.15           | 2.01             | 19.68               | 2.15            | 17.67                   | 58.479                 | Horizontal               | 7     | Pass       |
|                                 |            | 836.5     | 2.08           | 2.01             | 19.77               | 2.15            | 17.69                   | 58.749                 | Horizontal               | 7     | Pass       |
|                                 |            | 848.3     | 1.92           | 2.02             | 19.82               | 2.15            | 17.57                   | 57.148                 | Horizontal               | 7     | Pass       |
| 3.0MHz<br>Band 16<br>QAM        | 1/#Mid     | 825.5     | 2.23           | 2.01             | 19.70               | 2.15            | 17.77                   | 59.841                 | Horizontal               | 7     | Pass       |
|                                 |            | 836.5     | 1.94           | 2.01             | 19.77               | 2.15            | 17.55                   | 56.885                 | Horizontal               | 7     | Pass       |
|                                 |            | 847.5     | 1.42           | 2.02             | 19.81               | 2.15            | 17.06                   | 50.816                 | Horizontal               | 7     | Pass       |
| 5.0MHz<br>Band 16<br>QAM        | 1/#Mid     | 826.5     | 2.55           | 2.01             | 19.71               | 2.15            | 18.10                   | 64.565                 | Horizontal               | 7     | Pass       |
|                                 |            | 836.5     | 2.32           | 2.01             | 19.77               | 2.15            | 17.93                   | 62.087                 | Horizontal               | 7     | Pass       |
|                                 |            | 846.5     | 2.07           | 2.02             | 19.79               | 2.15            | 17.69                   | 58.749                 | Horizontal               | 7     | Pass       |
| 10.0MHz<br>Band 16<br>QAM       | 1/#Mid     | 829       | 2.55           | 2.01             | 19.73               | 2.15            | <b>18.12</b>            | 64.863                 | Horizontal               | 7     | Pass       |
|                                 |            | 836.5     | 2.27           | 2.01             | 19.77               | 2.15            | 17.88                   | 61.376                 | Horizontal               | 7     | Pass       |
|                                 |            | 844       | 1.81           | 2.02             | 19.78               | 2.15            | 17.42                   | 55.208                 | Horizontal               | 7     | Pass       |
| 1.4MHz<br>Band 16<br>QAM        | 1/#Mid     | 824.7     | 1.29           | 2.01             | 19.68               | 2.15            | 16.81                   | 47.973                 | Vertical                 | 7     | Pass       |
|                                 |            | 836.5     | 2.20           | 2.01             | 19.77               | 2.15            | 17.81                   | 60.395                 | Vertical                 | 7     | Pass       |
|                                 |            | 848.3     | 1.72           | 2.02             | 19.82               | 2.15            | 17.37                   | 54.576                 | Vertical                 | 7     | Pass       |
| 3.0MHz<br>Band 16<br>QAM        | 1/#Mid     | 825.5     | 1.60           | 2.01             | 19.70               | 2.15            | 17.14                   | 51.761                 | Vertical                 | 7     | Pass       |
|                                 |            | 836.5     | 0.54           | 2.01             | 19.77               | 2.15            | 16.15                   | 41.210                 | Vertical                 | 7     | Pass       |
|                                 |            | 847.5     | 1.21           | 2.02             | 19.81               | 2.15            | 16.85                   | 48.417                 | Vertical                 | 7     | Pass       |
| 5.0MHz<br>Band 16<br>QAM        | 1/#Mid     | 826.5     | 1.25           | 2.01             | 19.71               | 2.15            | 16.80                   | 47.863                 | Vertical                 | 7     | Pass       |
|                                 |            | 836.5     | 0.79           | 2.01             | 19.77               | 2.15            | 16.40                   | 43.652                 | Vertical                 | 7     | Pass       |
|                                 |            | 846.5     | 0.21           | 2.02             | 19.79               | 2.15            | 15.83                   | 38.282                 | Vertical                 | 7     | Pass       |
| 10.0MHz<br>Band 16<br>QAM       | 1/#Mid     | 829       | 0.76           | 2.01             | 19.73               | 2.15            | 16.33                   | 42.954                 | Vertical                 | 7     | Pass       |
|                                 |            | 836.5     | 0.63           | 2.01             | 19.77               | 2.15            | 16.24                   | 42.073                 | Vertical                 | 7     | Pass       |
|                                 |            | 844       | 1.03           | 2.02             | 19.78               | 2.15            | 16.64                   | 46.132                 | Vertical                 | 7     | 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<br>SIZE | Frequency | Result               |                     |                            |                  |                                     |                                    | Limit | Conclusion |
|                                  |               |           | SG<br>Level<br>(dBm) | Cable Loss<br>(dBm) | Antenna<br>Factor<br>(dBi) | Max. EIRP        | Max.<br>EIRP<br><br>Average<br>(mW) | Polarization<br><br>Of Max.<br>ERP |       |            |
|                                  |               |           |                      |                     |                            | Average<br>(dBm) |                                     |                                    |       |            |
| 5.0MHz<br>Band<br>QPSK           | 1/#Mid        | 2502.5    | -4.58                | 4.54                | 27.75                      | 18.63            | 72.946                              | Horizontal                         | 2     | Pass       |
|                                  |               | 2535      | -4.41                | 4.69                | 27.72                      | 18.62            | 72.778                              | Horizontal                         | 2     | Pass       |
|                                  |               | 2567.5    | -4.34                | 4.71                | 27.71                      | 18.66            | 73.451                              | Horizontal                         | 2     | Pass       |
| 10.0MHz<br>Band<br>QPSK          | 1/#Mid        | 2505      | -4.51                | 4.55                | 27.76                      | 18.70            | 74.131                              | Horizontal                         | 2     | Pass       |
|                                  |               | 2535      | -4.32                | 4.69                | 27.72                      | 18.71            | 74.302                              | Horizontal                         | 2     | Pass       |
|                                  |               | 2565      | -4.24                | 4.72                | 27.70                      | 18.74            | 74.817                              | Horizontal                         | 2     | Pass       |
| 15.0MHz<br>Band<br>QPSK          | 1/#Mid        | 2507.5    | -4.52                | 4.55                | 27.77                      | 18.70            | 74.131                              | Horizontal                         | 2     | Pass       |
|                                  |               | 2535      | -4.38                | 4.69                | 27.72                      | 18.65            | 73.282                              | Horizontal                         | 2     | Pass       |
|                                  |               | 2562.5    | -4.28                | 4.72                | 27.69                      | 18.69            | 73.961                              | Horizontal                         | 2     | Pass       |
| 20.0MHz<br>Band<br>QPSK          | 1/#Mid        | 2510      | -4.46                | 4.57                | 27.78                      | 18.75            | 74.989                              | Horizontal                         | 2     | Pass       |
|                                  |               | 2535      | -4.28                | 4.73                | 27.72                      | 18.71            | 74.302                              | Horizontal                         | 2     | Pass       |
|                                  |               | 2560      | -4.24                | 4.75                | 27.68                      | 18.69            | 73.961                              | Horizontal                         | 2     | Pass       |
| 5.0MHz<br>Band<br>QPSK           | 1/#Mid        | 2502.5    | -6.38                | 4.54                | 27.75                      | 16.83            | 48.195                              | Vertical                           | 2     | Pass       |
|                                  |               | 2535      | -6.15                | 4.69                | 27.72                      | 16.88            | 48.753                              | Vertical                           | 2     | Pass       |
|                                  |               | 2567.5    | -5.50                | 4.71                | 27.71                      | 17.50            | 56.234                              | Vertical                           | 2     | Pass       |
| 10.0MHz<br>Band<br>QPSK          | 1/#Mid        | 2505      | -5.78                | 4.55                | 27.76                      | 17.43            | 55.335                              | Vertical                           | 2     | Pass       |
|                                  |               | 2535      | -5.44                | 4.69                | 27.72                      | 17.59            | 57.412                              | Vertical                           | 2     | Pass       |
|                                  |               | 2565      | -6.05                | 4.72                | 27.70                      | 16.93            | 49.317                              | Vertical                           | 2     | Pass       |
| 15.0MHz<br>Band<br>QPSK          | 1/#Mid        | 2507.5    | -5.68                | 4.55                | 27.77                      | 17.54            | 56.754                              | Vertical                           | 2     | Pass       |
|                                  |               | 2535      | -5.38                | 4.69                | 27.72                      | 17.65            | 58.210                              | Vertical                           | 2     | Pass       |
|                                  |               | 2562.5    | -6.16                | 4.72                | 27.69                      | 16.81            | 47.973                              | Vertical                           | 2     | Pass       |
| 20.0MHz<br>Band<br>QPSK          | 1/#Mid        | 2510      | -5.47                | 4.57                | 27.78                      | 17.74            | 59.429                              | Vertical                           | 2     | Pass       |
|                                  |               | 2535      | -5.93                | 4.73                | 27.72                      | 17.06            | 50.816                              | Vertical                           | 2     | Pass       |
|                                  |               | 2560      | -6.11                | 4.75                | 27.68                      | 16.82            | 48.084                              | Vertical                           | 2     | Pass       |

| Radiated Power (EIRP) for Band 7 |               |           |                      |                     |                            |                                   |                                     |                                    |       |            |
|----------------------------------|---------------|-----------|----------------------|---------------------|----------------------------|-----------------------------------|-------------------------------------|------------------------------------|-------|------------|
| Mode                             | RB/RB<br>SIZE | Frequency | Result               |                     |                            |                                   |                                     |                                    | Limit | Conclusion |
|                                  |               |           | SG<br>Level<br>(dBm) | Cable Loss<br>(dBm) | Antenna<br>Factor<br>(dBi) | Max. EIRP<br><br>Average<br>(dBm) | Max.<br>EIRP<br><br>Average<br>(mW) | Polarization<br><br>Of Max.<br>ERP |       |            |
|                                  |               |           |                      |                     |                            |                                   |                                     |                                    |       |            |
| 5.0MHz<br>Band 16<br>QAM         | 1/#Mid        | 2502.5    | -5.27                | 4.54                | 27.75                      | 17.94                             | 62.230                              | Horizontal                         | 2     | Pass       |
|                                  |               | 2535      | -4.96                | 4.69                | 27.72                      | 18.07                             | 64.121                              | Horizontal                         | 2     | Pass       |
|                                  |               | 2567.5    | -5.04                | 4.71                | 27.71                      | 17.96                             | 62.517                              | Horizontal                         | 2     | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 1/#Mid        | 2505      | -5.16                | 4.55                | 27.76                      | 18.05                             | 63.826                              | Horizontal                         | 2     | Pass       |
|                                  |               | 2535      | -5.17                | 4.69                | 27.72                      | 17.86                             | 61.094                              | Horizontal                         | 2     | Pass       |
|                                  |               | 2565      | -5.44                | 4.72                | 27.70                      | 17.54                             | 56.754                              | Horizontal                         | 2     | Pass       |
| 15.0MHz<br>Band 16<br>QAM        | 1/#Mid        | 2507.5    | -5.34                | 4.55                | 27.77                      | 17.88                             | 61.376                              | Horizontal                         | 2     | Pass       |
|                                  |               | 2535      | -5.31                | 4.69                | 27.72                      | 17.72                             | 59.156                              | Horizontal                         | 2     | Pass       |
|                                  |               | 2562.5    | -4.92                | 4.72                | 27.69                      | 18.05                             | 63.826                              | Horizontal                         | 2     | Pass       |
| 20.0MHz<br>Band 16<br>QAM        | 1/#Mid        | 2510      | -5.22                | 4.57                | 27.78                      | 17.99                             | 62.951                              | Horizontal                         | 2     | Pass       |
|                                  |               | 2535      | -4.89                | 4.73                | 27.72                      | 18.10                             | 64.565                              | Horizontal                         | 2     | Pass       |
|                                  |               | 2560      | -4.99                | 4.75                | 27.68                      | 17.94                             | 62.230                              | Horizontal                         | 2     | Pass       |
| 5.0MHz<br>Band 16<br>QAM         | 1/#Mid        | 2502.5    | -6.64                | 4.54                | 27.75                      | 16.57                             | 45.394                              | Vertical                           | 2     | Pass       |
|                                  |               | 2535      | -6.72                | 4.69                | 27.72                      | 16.31                             | 42.756                              | Vertical                           | 2     | Pass       |
|                                  |               | 2567.5    | -5.42                | 4.71                | 27.71                      | 17.58                             | 57.280                              | Vertical                           | 2     | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 1/#Mid        | 2505      | -5.53                | 4.55                | 27.76                      | 17.68                             | 58.614                              | Vertical                           | 2     | Pass       |
|                                  |               | 2535      | -5.97                | 4.69                | 27.72                      | 17.06                             | 50.816                              | Vertical                           | 2     | Pass       |
|                                  |               | 2565      | -6.01                | 4.72                | 27.70                      | 16.97                             | 49.774                              | Vertical                           | 2     | Pass       |
| 15.0MHz<br>Band 16<br>QAM        | 1/#Mid        | 2507.5    | -5.91                | 4.55                | 27.77                      | 17.31                             | 53.827                              | Vertical                           | 2     | Pass       |
|                                  |               | 2535      | -6.17                | 4.69                | 27.72                      | 16.86                             | 48.529                              | Vertical                           | 2     | Pass       |
|                                  |               | 2562.5    | -6.35                | 4.72                | 27.69                      | 16.62                             | 45.920                              | Vertical                           | 2     | Pass       |
| 20.0MHz<br>Band 16<br>QAM        | 1/#Mid        | 2510      | -6.90                | 4.57                | 27.78                      | 16.31                             | 42.756                              | Vertical                           | 2     | Pass       |
|                                  |               | 2535      | -6.65                | 4.73                | 27.72                      | 16.34                             | 43.053                              | Vertical                           | 2     | Pass       |
|                                  |               | 2560      | -5.76                | 4.75                | 27.68                      | 17.17                             | 52.119                              | Vertical                           | 2     | 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         |                  |                     |                 |                         |                        |                          | Limit | Conclusion |
|                                  |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Factor (dB) | Correction (dB) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |       |            |
| 1.4MHz Band QPSK                 | 1/#Mid     | 699.7     | 3.31           | 1.91             | 19.21               | 2.15            | 18.46                   | 70.146                 | Vertical                 | 3     | Pass       |
|                                  |            | 707.5     | 3.23           | 1.91             | 19.26               | 2.15            | 18.43                   | 69.663                 | Vertical                 | 3     | Pass       |
|                                  |            | 715.3     | 3.01           | 1.93             | 19.34               | 2.15            | 18.27                   | 67.143                 | Vertical                 | 3     | Pass       |
| 3.0MHz Band QPSK                 | 1/#Mid     | 700.5     | 3.10           | 1.91             | 19.21               | 2.15            | 18.25                   | 66.834                 | Vertical                 | 3     | Pass       |
|                                  |            | 707.5     | 3.02           | 1.91             | 19.26               | 2.15            | 18.22                   | 66.374                 | Vertical                 | 3     | Pass       |
|                                  |            | 714.5     | 2.86           | 1.93             | 19.34               | 2.15            | 18.12                   | 64.863                 | Vertical                 | 3     | Pass       |
| 5.0MHz Band QPSK                 | 1/#Mid     | 701.5     | 3.37           | 1.91             | 19.23               | 2.15            | 18.54                   | 71.450                 | Vertical                 | 3     | Pass       |
|                                  |            | 707.5     | 3.28           | 1.91             | 19.26               | 2.15            | 18.48                   | 70.469                 | Vertical                 | 3     | Pass       |
|                                  |            | 713.5     | 3.07           | 1.92             | 19.33               | 2.15            | 18.33                   | 68.077                 | Vertical                 | 3     | Pass       |
| 10.0MHz Band QPSK                | 1/#Mid     | 704       | 3.39           | 1.91             | 19.25               | 2.15            | <b>18.58</b>            | 72.111                 | Vertical                 | 3     | Pass       |
|                                  |            | 707.5     | 3.37           | 1.91             | 19.26               | 2.15            | 18.57                   | 71.945                 | Vertical                 | 3     | Pass       |
|                                  |            | 711       | 3.22           | 1.92             | 19.32               | 2.15            | 18.47                   | 70.307                 | Vertical                 | 3     | Pass       |
| 1.4MHz Band QPSK                 | 1/#Mid     | 699.7     | 2.23           | 1.91             | 19.21               | 2.15            | 17.38                   | 54.702                 | Horizontal               | 3     | Pass       |
|                                  |            | 707.5     | 2.54           | 1.91             | 19.26               | 2.15            | 17.74                   | 59.429                 | Horizontal               | 3     | Pass       |
|                                  |            | 715.3     | 2.38           | 1.93             | 19.34               | 2.15            | 17.64                   | 58.076                 | Horizontal               | 3     | Pass       |
| 3.0MHz Band QPSK                 | 1/#Mid     | 700.5     | 1.61           | 1.91             | 19.21               | 2.15            | 16.76                   | 47.424                 | Horizontal               | 3     | Pass       |
|                                  |            | 707.5     | 1.65           | 1.91             | 19.26               | 2.15            | 16.85                   | 48.417                 | Horizontal               | 3     | Pass       |
|                                  |            | 714.5     | 1.79           | 1.93             | 19.34               | 2.15            | 17.05                   | 50.699                 | Horizontal               | 3     | Pass       |
| 5.0MHz Band QPSK                 | 1/#Mid     | 701.5     | 2.16           | 1.91             | 19.23               | 2.15            | 17.33                   | 54.075                 | Horizontal               | 3     | Pass       |
|                                  |            | 707.5     | 1.84           | 1.91             | 19.26               | 2.15            | 17.04                   | 50.582                 | Horizontal               | 3     | Pass       |
|                                  |            | 713.5     | 2.17           | 1.92             | 19.33               | 2.15            | 17.43                   | 55.335                 | Horizontal               | 3     | Pass       |
| 10.0MHz Band QPSK                | 1/#Mid     | 704       | 2.39           | 1.91             | 19.25               | 2.15            | 17.58                   | 57.280                 | Horizontal               | 3     | Pass       |
|                                  |            | 707.5     | 2.06           | 1.91             | 19.26               | 2.15            | 17.26                   | 53.211                 | Horizontal               | 3     | Pass       |
|                                  |            | 711       | 2.25           | 1.92             | 19.32               | 2.15            | 17.50                   | 56.234                 | Horizontal               | 3     | Pass       |

| Radiated Power (ERP) for Band 12 |            |           |                |                  |                     |                 |                         |                        |                          |       |            |
|----------------------------------|------------|-----------|----------------|------------------|---------------------|-----------------|-------------------------|------------------------|--------------------------|-------|------------|
| Mode                             | RB/RB SIZE | Frequency | Result         |                  |                     |                 |                         |                        |                          | Limit | Conclusion |
|                                  |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Factor (dB) | Correction (dB) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |       |            |
| 1.4MHz<br>Band 16<br>QAM         | 1/#Mid     | 699.7     | 3.17           | 1.91             | 19.21               | 2.15            | 18.32                   | 67.920                 | Vertical                 | 3     | Pass       |
|                                  |            | 707.5     | 3.09           | 1.91             | 19.26               | 2.15            | 18.29                   | 67.453                 | Vertical                 | 3     | Pass       |
|                                  |            | 715.3     | 2.87           | 1.93             | 19.34               | 2.15            | 18.13                   | 65.013                 | Vertical                 | 3     | Pass       |
| 3.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 700.5     | 2.96           | 1.91             | 19.21               | 2.15            | 18.11                   | 64.714                 | Vertical                 | 3     | Pass       |
|                                  |            | 707.5     | 2.88           | 1.91             | 19.26               | 2.15            | 18.08                   | 64.269                 | Vertical                 | 3     | Pass       |
|                                  |            | 714.5     | 2.72           | 1.93             | 19.34               | 2.15            | 17.98                   | 62.806                 | Vertical                 | 3     | Pass       |
| 5.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 701.5     | 3.23           | 1.91             | 19.23               | 2.15            | 18.40                   | 69.183                 | Vertical                 | 3     | Pass       |
|                                  |            | 707.5     | 3.14           | 1.91             | 19.26               | 2.15            | 18.34                   | 68.234                 | Vertical                 | 3     | Pass       |
|                                  |            | 713.5     | 2.93           | 1.92             | 19.33               | 2.15            | 18.19                   | 65.917                 | Vertical                 | 3     | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 1/#Mid     | 704       | 3.25           | 1.91             | 19.25               | 2.15            | 18.44                   | 69.823                 | Vertical                 | 3     | Pass       |
|                                  |            | 707.5     | 3.23           | 1.91             | 19.26               | 2.15            | 18.43                   | 69.663                 | Vertical                 | 3     | Pass       |
|                                  |            | 711       | 3.08           | 1.92             | 19.32               | 2.15            | 18.33                   | 68.077                 | Vertical                 | 3     | Pass       |
| 1.4MHz<br>Band 16<br>QAM         | 1/#Mid     | 699.7     | 1.81           | 1.91             | 19.21               | 2.15            | 16.96                   | 49.659                 | Horizontal               | 3     | Pass       |
|                                  |            | 707.5     | 1.83           | 1.91             | 19.26               | 2.15            | 17.03                   | 50.466                 | Horizontal               | 3     | Pass       |
|                                  |            | 715.3     | 1.88           | 1.93             | 19.34               | 2.15            | 17.14                   | 51.761                 | Horizontal               | 3     | Pass       |
| 3.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 700.5     | 1.87           | 1.91             | 19.21               | 2.15            | 17.02                   | 50.350                 | Horizontal               | 3     | Pass       |
|                                  |            | 707.5     | 1.98           | 1.91             | 19.26               | 2.15            | 17.18                   | 52.240                 | Horizontal               | 3     | Pass       |
|                                  |            | 714.5     | 1.71           | 1.93             | 19.34               | 2.15            | 16.97                   | 49.774                 | Horizontal               | 3     | Pass       |
| 5.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 701.5     | 2.21           | 1.91             | 19.23               | 2.15            | 17.38                   | 54.702                 | Horizontal               | 3     | Pass       |
|                                  |            | 707.5     | 2.05           | 1.91             | 19.26               | 2.15            | 17.25                   | 53.088                 | Horizontal               | 3     | Pass       |
|                                  |            | 713.5     | 2.21           | 1.92             | 19.33               | 2.15            | 17.47                   | 55.847                 | Horizontal               | 3     | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 1/#Mid     | 704       | 1.69           | 1.91             | 19.25               | 2.15            | 16.88                   | 48.753                 | Horizontal               | 3     | Pass       |
|                                  |            | 707.5     | 1.46           | 1.91             | 19.26               | 2.15            | 16.66                   | 46.345                 | Horizontal               | 3     | Pass       |
|                                  |            | 711       | 1.62           | 1.92             | 19.32               | 2.15            | 16.87                   | 48.641                 | Horizontal               | 3     | 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   |            |                |            |              |           |              | Limit | Conclusion |
|                                  |            |           | SG Level | Cable Loss | Antenna Factor | Correction | Max. EIRP    | Max. EIRP | Polarization |       |            |
|                                  |            |           | (dBm)    | (dBm)      | (dB)           | (dB)       | Average      | Average   | Of Max. ERP  |       |            |
|                                  |            |           |          |            |                |            | (dBm)        | (mW)      |              |       |            |
| 5.0MHz Band QPSK                 | 25/0       | 779.5     | 3.00     | 1.91       | 19.23          | 2.15       | 18.17        | 65.61     | Horizontal   | 3     | Pass       |
|                                  |            | 782       | 2.85     | 1.91       | 19.26          | 2.15       | 18.05        | 63.83     | Horizontal   | 3     | Pass       |
|                                  |            | 784.5     | 1.28     | 1.92       | 19.33          | 2.15       | 16.54        | 45.08     | Horizontal   | 3     | Pass       |
| 10.0MHz Band QPSK                | 50/0       | 782       | 1.68     | 1.91       | 19.25          | 2.15       | 16.87        | 48.64     | Horizontal   | 3     | Pass       |
|                                  |            |           | 3.15     | 1.91       | 19.26          | 2.15       | <b>18.35</b> | 68.39     | Horizontal   | 3     | Pass       |
|                                  |            |           | 1.47     | 1.92       | 19.32          | 2.15       | 16.72        | 46.99     | Horizontal   | 3     | Pass       |
| 5.0MHz Band QPSK                 | 25/0       | 779.5     | 2.17     | 1.91       | 19.23          | 2.15       | 17.34        | 54.20     | Vertical     | 3     | Pass       |
|                                  |            | 782       | 1.82     | 1.91       | 19.26          | 2.15       | 17.02        | 50.35     | Vertical     | 3     | Pass       |
|                                  |            | 784.5     | 1.67     | 1.92       | 19.33          | 2.15       | 16.93        | 49.32     | Vertical     | 3     | Pass       |
| 10.0MHz Band QPSK                | 50/0       | 782       | 1.89     | 1.91       | 19.25          | 2.15       | 17.08        | 51.05     | Vertical     | 3     | Pass       |
|                                  |            |           | 1.41     | 1.91       | 19.26          | 2.15       | 16.61        | 45.81     | Vertical     | 3     | Pass       |
|                                  |            |           | 2.10     | 1.92       | 19.32          | 2.15       | 17.35        | 54.33     | Vertical     | 3     | Pass       |

| Radiated Power (ERP) for Band 13 |            |           |          |            |                |            |              |           |              |       |            |
|----------------------------------|------------|-----------|----------|------------|----------------|------------|--------------|-----------|--------------|-------|------------|
| Mode                             | RB/RB SIZE | Frequency | Result   |            |                |            |              |           |              | Limit | Conclusion |
|                                  |            |           | SG Level | Cable Loss | Antenna Factor | Correction | Max. EIRP    | Max. EIRP | Polarization |       |            |
|                                  |            |           | (dBm)    | (dBm)      | (dB)           | (dB)       | Average      | Average   | Of Max. ERP  |       |            |
| 5.0MHz<br>Band 16<br>QAM         | 25/0       | 779.5     | 2.68     | 1.91       | 19.23          | 2.15       | 17.85        | 60.95     | Horizontal   | 3     | Pass       |
|                                  |            | 782       | 1.64     | 1.91       | 19.26          | 2.15       | 16.84        | 48.31     | Horizontal   | 3     | Pass       |
|                                  |            | 784.5     | 1.04     | 1.92       | 19.33          | 2.15       | 16.30        | 42.66     | Horizontal   | 3     | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 50/0       | 782       | 1.63     | 1.91       | 19.25          | 2.15       | 16.82        | 48.08     | Horizontal   | 3     | Pass       |
|                                  |            |           | 2.67     | 1.91       | 19.26          | 2.15       | <b>17.87</b> | 61.24     | Horizontal   | 3     | Pass       |
|                                  |            |           | 1.11     | 1.92       | 19.32          | 2.15       | 16.36        | 43.25     | Horizontal   | 3     | Pass       |
| 5.0MHz<br>Band 16<br>QAM         | 25/0       | 779.5     | 1.93     | 1.91       | 19.23          | 2.15       | 17.10        | 51.29     | Vertical     | 3     | Pass       |
|                                  |            | 782       | 1.50     | 1.91       | 19.26          | 2.15       | 16.70        | 46.77     | Vertical     | 3     | Pass       |
|                                  |            | 784.5     | 1.37     | 1.92       | 19.33          | 2.15       | 16.63        | 46.03     | Vertical     | 3     | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 50/0       | 782       | 1.47     | 1.91       | 19.25          | 2.15       | 16.66        | 46.34     | Vertical     | 3     | Pass       |
|                                  |            |           | 1.90     | 1.91       | 19.26          | 2.15       | 17.10        | 51.29     | Vertical     | 3     | Pass       |
|                                  |            |           | 1.60     | 1.92       | 19.32          | 2.15       | 16.85        | 48.42     | Vertical     | 3     | 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 17

| Radiated Power (ERP) for Band 17 |            |           |                |                  |                      |                 |                         |                        |                          |       |            |
|----------------------------------|------------|-----------|----------------|------------------|----------------------|-----------------|-------------------------|------------------------|--------------------------|-------|------------|
| Mode                             | RB/RB SIZE | Frequency | Result         |                  |                      |                 |                         |                        |                          | Limit | Conclusion |
|                                  |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Factor (dBi) | Correction (dB) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |       |            |
| 5.0MHz<br>Band<br>QPSK           | 1/#Mid     | 706.5     | 3.63           | 1.91             | 19.23                | 2.15            | 18.80                   | 75.858                 | Vertical                 | 3     | Pass       |
|                                  |            | 710       | 3.49           | 1.91             | 19.26                | 2.15            | 18.69                   | 73.961                 | Vertical                 | 3     | Pass       |
|                                  |            | 713.5     | 3.39           | 1.92             | 19.33                | 2.15            | 18.65                   | 73.282                 | Vertical                 | 3     | Pass       |
| 10.0MHz<br>Band<br>QPSK          | 1/#Mid     | 709       | 3.64           | 1.91             | 19.25                | 2.15            | <b>18.83</b>            | 76.384                 | Vertical                 | 3     | Pass       |
|                                  |            | 710       | 3.59           | 1.91             | 19.26                | 2.15            | 18.79                   | 75.683                 | Vertical                 | 3     | Pass       |
|                                  |            | 711       | 3.55           | 1.92             | 19.32                | 2.15            | 18.80                   | 75.858                 | Vertical                 | 3     | Pass       |
| 5.0MHz<br>Band<br>QPSK           | 1/#Mid     | 706.5     | 2.20           | 1.91             | 19.23                | 2.15            | 17.37                   | 54.576                 | Horizontal               | 3     | Pass       |
|                                  |            | 710       | 2.02           | 1.91             | 19.26                | 2.15            | 17.22                   | 52.723                 | Horizontal               | 3     | Pass       |
|                                  |            | 713.5     | 2.43           | 1.92             | 19.33                | 2.15            | 17.69                   | 58.749                 | Horizontal               | 3     | Pass       |
| 10.0MHz<br>Band<br>QPSK          | 1/#Mid     | 709       | 3.24           | 1.91             | 19.25                | 2.15            | 18.43                   | 69.663                 | Horizontal               | 3     | Pass       |
|                                  |            | 710       | 2.90           | 1.91             | 19.26                | 2.15            | 18.10                   | 64.565                 | Horizontal               | 3     | Pass       |
|                                  |            | 711       | 1.99           | 1.92             | 19.32                | 2.15            | 17.24                   | 52.966                 | Horizontal               | 3     | Pass       |

| Radiated Power (ERP) for Band 17 |            |           |                |                  |                      |                 |                         |                        |                          |       |            |
|----------------------------------|------------|-----------|----------------|------------------|----------------------|-----------------|-------------------------|------------------------|--------------------------|-------|------------|
| Mode                             | RB/RB SIZE | Frequency | Result         |                  |                      |                 |                         |                        |                          |       | Conclusion |
|                                  |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Factor (dBi) | Correction (dB) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP | Limit |            |
| 5.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 706.5     | 3.36           | 1.91             | 19.23                | 2.15            | 18.53                   | 71.285                 | Vertical                 | 3     | Pass       |
|                                  |            | 710       | 3.27           | 1.91             | 19.26                | 2.15            | 18.47                   | 70.307                 | Vertical                 | 3     | Pass       |
|                                  |            | 713.5     | 3.07           | 1.92             | 19.33                | 2.15            | 18.33                   | 68.077                 | Vertical                 | 3     | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 1/#Mid     | 709       | 2.90           | 1.91             | 19.25                | 2.15            | 18.09                   | 64.417                 | Vertical                 | 3     | Pass       |
|                                  |            | 710       | 3.43           | 1.91             | 19.26                | 2.15            | <b>18.63</b>            | 72.946                 | Vertical                 | 3     | Pass       |
|                                  |            | 711       | 3.16           | 1.92             | 19.32                | 2.15            | 18.41                   | 69.343                 | Vertical                 | 3     | Pass       |
| 5.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 706.5     | 2.45           | 1.91             | 19.23                | 2.15            | 17.62                   | 57.810                 | Horizontal               | 3     | Pass       |
|                                  |            | 710       | 2.31           | 1.91             | 19.26                | 2.15            | 17.51                   | 56.364                 | Horizontal               | 3     | Pass       |
|                                  |            | 713.5     | 1.90           | 1.92             | 19.33                | 2.15            | 17.16                   | 52.000                 | Horizontal               | 3     | Pass       |
| 10.0MHz<br>Band 16<br>QAM        | 1/#Mid     | 709       | 2.00           | 1.91             | 19.25                | 2.15            | 17.19                   | 52.360                 | Horizontal               | 3     | Pass       |
|                                  |            | 710       | 1.80           | 1.91             | 19.26                | 2.15            | 17.00                   | 50.119                 | Horizontal               | 3     | Pass       |
|                                  |            | 711       | 2.04           | 1.92             | 19.32                | 2.15            | 17.29                   | 53.580                 | Horizontal               | 3     | Pass       |

Note:

ERP=EIRP-2.15

SG Level= Signal generator output

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

## 8.9 LTE BAND 38

|                           |               | Radiated Power (EIRP) for Band 38 |             |                        |                           |              |           |       |                                |            |
|---------------------------|---------------|-----------------------------------|-------------|------------------------|---------------------------|--------------|-----------|-------|--------------------------------|------------|
| Mode                      | RB/RB<br>SIZE | Frequency                         | Result      |                        |                           |              |           |       |                                | Conclusion |
|                           |               |                                   | SG<br>Level | Cable<br>Loss<br>(dBm) | Antenna<br>Factor<br>(dB) | Max.<br>EIRP | Max. EIRP |       | Polarization<br>Of Max.<br>ERP |            |
|                           |               |                                   |             |                        |                           | Average      | Average   | Limit |                                |            |
|                           |               |                                   |             |                        |                           | (dBm)        | (mW)      | (W)   |                                |            |
| 5.0MHz<br>Band<br>QPSK    | 25/0          | 2572.5                            | -2.12       | 4.95                   | 27.79                     | 17.33        | 54.075    | 2     | Vertical                       | Pass       |
|                           |               | 2595                              | -2.64       | 4.88                   | 27.71                     | 18.18        | 65.766    | 2     | Vertical                       | Pass       |
|                           |               | 2617.5                            | -2.58       | 4.93                   | 27.95                     | 18.08        | 64.269    | 2     | Vertical                       | Pass       |
| 5.0MHz<br>Band 16<br>QAM  | 25/0          | 2572.5                            | -2.37       | 4.81                   | 27.73                     | 17.46        | 55.719    | 2     | Vertical                       | Pass       |
|                           |               | 2595                              | -2.47       | 4.95                   | 27.81                     | 17.36        | 54.450    | 2     | Vertical                       | Pass       |
|                           |               | 2617.5                            | -2.59       | 5.03                   | 27.69                     | 17.34        | 54.200    | 2     | Vertical                       | Pass       |
| 10.0MHz<br>Band<br>QPSK   | 50/0          | 2575                              | -2.98       | 5.01                   | 27.86                     | 18.30        | 67.608    | 2     | Vertical                       | Pass       |
|                           |               | 2595                              | -2.6        | 5                      | 27.65                     | 17.80        | 60.256    | 2     | Vertical                       | Pass       |
|                           |               | 2615                              | -2.67       | 4.87                   | 27.89                     | 17.41        | 55.081    | 2     | Vertical                       | Pass       |
| 10.0MHz<br>Band 16<br>QAM | 50/0          | 2575                              | -2.71       | 4.77                   | 27.78                     | 17.84        | 60.814    | 2     | Vertical                       | Pass       |
|                           |               | 2595                              | -2.38       | 4.87                   | 27.87                     | 17.88        | 61.376    | 2     | Vertical                       | Pass       |
|                           |               | 2615                              | -2.56       | 4.94                   | 27.77                     | 18.15        | 65.313    | 2     | Vertical                       | Pass       |
| 15.0MHz<br>Band<br>QPSK   | 75/0          | 2577.5                            | -2.9        | 4.89                   | 27.88                     | 18.23        | 66.527    | 2     | Vertical                       | Pass       |
|                           |               | 2595                              | -2.32       | 4.87                   | 27.84                     | 17.79        | 60.117    | 2     | Vertical                       | Pass       |
|                           |               | 2612.5                            | -2.52       | 4.92                   | 27.93                     | 17.85        | 60.954    | 2     | Vertical                       | Pass       |
| 15.0MHz<br>Band 16<br>QAM | 75/0          | 2577.5                            | -2.53       | 4.75                   | 27.78                     | 17.86        | 61.094    | 2     | Vertical                       | Pass       |
|                           |               | 2595                              | -2.53       | 4.98                   | 27.82                     | 17.43        | 55.335    | 2     | Vertical                       | Pass       |
|                           |               | 2612.5                            | -2.6        | 4.95                   | 27.83                     | 17.83        | 60.674    | 2     | Vertical                       | Pass       |
| 20.0MHz<br>Band<br>QPSK   | 100/0         | 2580                              | -2.53       | 4.86                   | 27.8                      | 18.21        | 66.222    | 2     | Vertical                       | Pass       |
|                           |               | 2595                              | -2.37       | 4.79                   | 27.83                     | 18.91        | 77.804    | 2     | Vertical                       | Pass       |
|                           |               | 2610                              | -2.68       | 4.89                   | 27.87                     | 18.12        | 64.863    | 2     | Vertical                       | Pass       |
| 20.0MHz<br>Band 16<br>QAM | 100/0         | 2580                              | -2.87       | 4.95                   | 27.73                     | 17.50        | 56.234    | 2     | Vertical                       | Pass       |
|                           |               | 2595                              | -2.88       | 4.91                   | 27.71                     | 18.20        | 66.069    | 2     | Vertical                       | Pass       |
|                           |               | 2610                              | -2.81       | 4.96                   | 27.92                     | 18.23        | 66.527    | 2     | Vertical                       | Pass       |

|                           |               | Radiated Power (EIRP) for Band 38 |             |                        |                           |              |              |       |                                |            |
|---------------------------|---------------|-----------------------------------|-------------|------------------------|---------------------------|--------------|--------------|-------|--------------------------------|------------|
| Mode                      | RB/RB<br>SIZE | Frequency                         | Result      |                        |                           |              |              |       |                                | Conclusion |
|                           |               |                                   | SG<br>Level | Cable<br>Loss<br>(dBm) | Antenna<br>Factor<br>(dB) | Max.<br>EIRP | Max.<br>EIRP |       | Polarization<br>Of Max.<br>ERP |            |
|                           |               |                                   |             |                        |                           | Average      | Average      | Limit |                                |            |
|                           |               |                                   |             |                        |                           | (dBm)        | (mW)         | (W)   |                                |            |
| 5.0MHz<br>Band<br>QPSK    | 25/0          | 2572.5                            | -2.12       | 4.95                   | 27.79                     | 16.90        | 48.978       | 2     | Horizontal                     | Pass       |
|                           |               | 2595                              | -2.64       | 4.88                   | 27.71                     | 16.53        | 44.978       | 2     | Horizontal                     | Pass       |
|                           |               | 2617.5                            | -2.58       | 4.93                   | 27.95                     | 16.51        | 44.771       | 2     | Horizontal                     | Pass       |
| 5.0MHz<br>Band 16<br>QAM  | 25/0          | 2572.5                            | -2.37       | 4.81                   | 27.73                     | 16.49        | 44.566       | 2     | Horizontal                     | Pass       |
|                           |               | 2595                              | -2.47       | 4.95                   | 27.81                     | 17.31        | 53.827       | 2     | Horizontal                     | Pass       |
|                           |               | 2617.5                            | -2.59       | 5.03                   | 27.69                     | 16.67        | 46.452       | 2     | Horizontal                     | Pass       |
| 10.0MHz<br>Band<br>QPSK   | 50/0          | 2575                              | -2.98       | 5.01                   | 27.86                     | 17.37        | 54.576       | 2     | Horizontal                     | Pass       |
|                           |               | 2595                              | -2.6        | 5                      | 27.65                     | 16.69        | 46.666       | 2     | Horizontal                     | Pass       |
|                           |               | 2615                              | -2.67       | 4.87                   | 27.89                     | 17.34        | 54.200       | 2     | Horizontal                     | Pass       |
| 10.0MHz<br>Band 16<br>QAM | 50/0          | 2575                              | -2.71       | 4.77                   | 27.78                     | 17.43        | 55.335       | 2     | Horizontal                     | Pass       |
|                           |               | 2595                              | -2.38       | 4.87                   | 27.87                     | 17.24        | 52.966       | 2     | Horizontal                     | Pass       |
|                           |               | 2615                              | -2.56       | 4.94                   | 27.77                     | 16.83        | 48.195       | 2     | Horizontal                     | Pass       |
| 15.0MHz<br>Band<br>QPSK   | 75/0          | 2577.5                            | -2.9        | 4.89                   | 27.88                     | 16.89        | 48.865       | 2     | Horizontal                     | Pass       |
|                           |               | 2595                              | -2.32       | 4.87                   | 27.84                     | 16.88        | 48.753       | 2     | Horizontal                     | Pass       |
|                           |               | 2612.5                            | -2.52       | 4.92                   | 27.93                     | 16.56        | 45.290       | 2     | Horizontal                     | Pass       |
| 15.0MHz<br>Band 16<br>QAM | 75/0          | 2577.5                            | -2.53       | 4.75                   | 27.78                     | 17.35        | 54.325       | 2     | Horizontal                     | Pass       |
|                           |               | 2595                              | -2.53       | 4.98                   | 27.82                     | 16.53        | 44.978       | 2     | Horizontal                     | Pass       |
|                           |               | 2612.5                            | -2.6        | 4.95                   | 27.83                     | 17.32        | 53.951       | 2     | Horizontal                     | Pass       |
| 20.0MHz<br>Band<br>QPSK   | 100/0         | 2580                              | -2.53       | 4.86                   | 27.8                      | 17.11        | 51.404       | 2     | Horizontal                     | Pass       |
|                           |               | 2595                              | -2.37       | 4.79                   | 27.83                     | 18.05        | 63.826       | 2     | Horizontal                     | Pass       |
|                           |               | 2610                              | -2.68       | 4.89                   | 27.87                     | 16.82        | 48.084       | 2     | Horizontal                     | Pass       |
| 20.0MHz<br>Band 16<br>QAM | 100/0         | 2580                              | -2.87       | 4.95                   | 27.73                     | 17.25        | 53.088       | 2     | Horizontal                     | Pass       |
|                           |               | 2595                              | -2.88       | 4.91                   | 27.71                     | 16.94        | 49.431       | 2     | Horizontal                     | Pass       |
|                           |               | 2610                              | -2.81       | 4.96                   | 27.92                     | 16.88        | 48.753       | 2     | 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)

## 8.10 LTE BAND 41

| Radiated Power (EIRP) for Band 41 |            |           |                |                  |                     |                         |                        |                          |       |            |
|-----------------------------------|------------|-----------|----------------|------------------|---------------------|-------------------------|------------------------|--------------------------|-------|------------|
| Mode                              | RB/RB SIZE | Frequency | Result         |                  |                     |                         |                        |                          | Limit | Conclusion |
|                                   |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Factor (dB) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |       |            |
| 5.0MHz<br>Band<br>QPSK            | 1/#Mid     | 2537.5    | -4.70          | 4.54             | 27.75               | 18.51                   | 70.958                 | Horizontal               | 2     | Pass       |
|                                   |            | 2595      | -4.55          | 4.69             | 27.72               | 18.48                   | 70.469                 | Horizontal               | 2     | Pass       |
|                                   |            | 2652.5    | -4.43          | 4.71             | 27.71               | 18.57                   | 71.945                 | Horizontal               | 2     | Pass       |
| 10.0MHz<br>Band<br>QPSK           | 1/#Mid     | 2540      | -4.78          | 4.55             | 27.76               | 18.43                   | 69.663                 | Horizontal               | 2     | Pass       |
|                                   |            | 2595      | -4.64          | 4.69             | 27.72               | 18.39                   | 69.024                 | Horizontal               | 2     | Pass       |
|                                   |            | 2650      | -4.63          | 4.72             | 27.70               | 18.35                   | 68.391                 | Horizontal               | 2     | Pass       |
| 15.0MHz<br>Band<br>QPSK           | 1/#Mid     | 2542.5    | -4.61          | 4.55             | 27.77               | 18.61                   | 72.611                 | Horizontal               | 2     | Pass       |
|                                   |            | 2595      | -4.33          | 4.69             | 27.72               | 18.70                   | 74.131                 | Horizontal               | 2     | Pass       |
|                                   |            | 2647.5    | -4.38          | 4.72             | 27.69               | 18.59                   | 72.277                 | Horizontal               | 2     | Pass       |
| 20.0MHz<br>Band<br>QPSK           | 1/#Mid     | 2545      | -4.22          | 4.57             | 27.78               | 18.99                   | 79.250                 | Horizontal               | 2     | Pass       |
|                                   |            | 2595      | -4.27          | 4.73             | 27.72               | 18.72                   | 74.473                 | Horizontal               | 2     | Pass       |
|                                   |            | 2645      | -4.27          | 4.75             | 27.68               | 18.66                   | 73.451                 | Horizontal               | 2     | Pass       |
| 5.0MHz<br>Band<br>QPSK            | 1/#Mid     | 2537.5    | -4.50          | 4.54             | 27.75               | 18.71                   | 74.302                 | Vertical                 | 2     | Pass       |
|                                   |            | 2595      | -4.41          | 4.69             | 27.72               | 18.62                   | 72.778                 | Vertical                 | 2     | Pass       |
|                                   |            | 2652.5    | -4.39          | 4.71             | 27.71               | 18.61                   | 72.611                 | Vertical                 | 2     | Pass       |
| 10.0MHz<br>Band<br>QPSK           | 1/#Mid     | 2540      | -4.48          | 4.55             | 27.76               | 18.73                   | 74.645                 | Vertical                 | 2     | Pass       |
|                                   |            | 2595      | -4.32          | 4.69             | 27.72               | 18.71                   | 74.302                 | Vertical                 | 2     | Pass       |
|                                   |            | 2650      | -4.39          | 4.72             | 27.70               | 18.59                   | 72.277                 | Vertical                 | 2     | Pass       |
| 15.0MHz<br>Band<br>QPSK           | 1/#Mid     | 2542.5    | -5.69          | 4.55             | 27.77               | 17.53                   | 56.624                 | Vertical                 | 2     | Pass       |
|                                   |            | 2595      | -5.06          | 4.69             | 27.72               | 17.97                   | 62.661                 | Vertical                 | 2     | Pass       |
|                                   |            | 2647.5    | -5.04          | 4.72             | 27.69               | 17.93                   | 62.087                 | Vertical                 | 2     | Pass       |
| 20.0MHz<br>Band<br>QPSK           | 1/#Mid     | 2545      | -5.45          | 4.57             | 27.78               | 17.76                   | 59.704                 | Vertical                 | 2     | Pass       |
|                                   |            | 2595      | -5.08          | 4.73             | 27.72               | 17.91                   | 61.802                 | Vertical                 | 2     | Pass       |
|                                   |            | 2645      | -5.66          | 4.75             | 27.68               | 17.27                   | 53.333                 | Vertical                 | 2     | Pass       |

| Radiated Power (EIRP) for Band 41 |            |           |                |                  |                     |                         |                        |                          |       |            |
|-----------------------------------|------------|-----------|----------------|------------------|---------------------|-------------------------|------------------------|--------------------------|-------|------------|
| Mode                              | RB/RB SIZE | Frequency | Result         |                  |                     |                         |                        |                          | Limit | Conclusion |
|                                   |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Factor (dB) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |       |            |
| 5.0MHz<br>Band 16<br>QAM          | 1/#Mid     | 2537.5    | -4.62          | 4.54             | 27.75               | 18.59                   | 72.277                 | Horizontal               | 2     | Pass       |
|                                   |            | 2595      | -4.47          | 4.69             | 27.72               | 18.56                   | 71.779                 | Horizontal               | 2     | Pass       |
|                                   |            | 2652.5    | -4.35          | 4.71             | 27.71               | 18.65                   | 73.282                 | Horizontal               | 2     | Pass       |
| 10.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 2540      | -4.70          | 4.55             | 27.76               | 18.51                   | 70.958                 | Horizontal               | 2     | Pass       |
|                                   |            | 2595      | -4.56          | 4.69             | 27.72               | 18.47                   | 70.307                 | Horizontal               | 2     | Pass       |
|                                   |            | 2650      | -4.55          | 4.72             | 27.70               | 18.43                   | 69.663                 | Horizontal               | 2     | Pass       |
| 15.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 2542.5    | -4.53          | 4.55             | 27.77               | 18.69                   | 73.961                 | Horizontal               | 2     | Pass       |
|                                   |            | 2595      | -4.25          | 4.69             | 27.72               | 18.78                   | 75.509                 | Horizontal               | 2     | Pass       |
|                                   |            | 2647.5    | -4.30          | 4.72             | 27.69               | 18.67                   | 73.621                 | Horizontal               | 2     | Pass       |
| 20.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 2545      | -4.25          | 4.57             | 27.78               | 18.96                   | 78.705                 | Horizontal               | 2     | Pass       |
|                                   |            | 2595      | -4.19          | 4.73             | 27.72               | 18.80                   | 75.858                 | Horizontal               | 2     | Pass       |
|                                   |            | 2645      | -4.19          | 4.75             | 27.68               | 18.74                   | 74.817                 | Horizontal               | 2     | Pass       |
| 5.0MHz<br>Band 16<br>QAM          | 1/#Mid     | 2537.5    | -4.42          | 4.54             | 27.75               | 18.79                   | 75.683                 | Vertical                 | 2     | Pass       |
|                                   |            | 2595      | -4.33          | 4.69             | 27.72               | 18.70                   | 74.131                 | Vertical                 | 2     | Pass       |
|                                   |            | 2652.5    | -4.31          | 4.71             | 27.71               | 18.69                   | 73.961                 | Vertical                 | 2     | Pass       |
| 10.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 2540      | -4.40          | 4.55             | 27.76               | 18.81                   | 76.033                 | Vertical                 | 2     | Pass       |
|                                   |            | 2595      | -4.24          | 4.69             | 27.72               | 18.79                   | 75.683                 | Vertical                 | 2     | Pass       |
|                                   |            | 2650      | -4.31          | 4.72             | 27.70               | 18.67                   | 73.621                 | Vertical                 | 2     | Pass       |
| 15.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 2542.5    | -5.47          | 4.55             | 27.77               | 17.75                   | 59.566                 | Vertical                 | 2     | Pass       |
|                                   |            | 2595      | -5.49          | 4.69             | 27.72               | 17.54                   | 56.754                 | Vertical                 | 2     | Pass       |
|                                   |            | 2647.5    | -5.59          | 4.72             | 27.69               | 17.38                   | 54.702                 | Vertical                 | 2     | Pass       |
| 20.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 2545      | -5.35          | 4.57             | 27.78               | 17.86                   | 61.094                 | Vertical                 | 2     | Pass       |
|                                   |            | 2595      | -5.64          | 4.73             | 27.72               | 17.35                   | 54.325                 | Vertical                 | 2     | Pass       |
|                                   |            | 2645      | -5.29          | 4.75             | 27.68               | 17.64                   | 58.076                 | Vertical                 | 2     | 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)

### 8.11 LTE BAND 66

| Radiated Power (EIRP) for Band 66 |            |           |                |                  |                     |                         |                        |                          |       |            |
|-----------------------------------|------------|-----------|----------------|------------------|---------------------|-------------------------|------------------------|--------------------------|-------|------------|
| Mode                              | RB/RB SIZE | Frequency | Result         |                  |                     |                         |                        |                          | Limit | Conclusion |
|                                   |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Factor (dB) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |       |            |
| 1.4MHz Band QPSK                  | 1/#Mid     | 1710.7    | -5.89          | 3.76             | 28.24               | 18.59                   | 72.277                 | Horizontal               | 1     | Pass       |
|                                   |            | 1745      | -5.75          | 3.91             | 28.22               | 18.56                   | 71.779                 | Horizontal               | 1     | Pass       |
|                                   |            | 1779.3    | -5.62          | 3.93             | 28.2                | 18.65                   | 73.282                 | Horizontal               | 1     | Pass       |
| 3.0MHz Band QPSK                  | 1/#Mid     | 1711.5    | -5.95          | 3.77             | 28.23               | 18.51                   | 70.958                 | Horizontal               | 1     | Pass       |
|                                   |            | 1745      | -5.86          | 3.91             | 28.24               | 18.47                   | 70.307                 | Horizontal               | 1     | Pass       |
|                                   |            | 1778.5    | -5.88          | 3.94             | 28.25               | 18.43                   | 69.663                 | Horizontal               | 1     | Pass       |
| 5.0MHz Band QPSK                  | 1/#Mid     | 1712.5    | -5.85          | 3.77             | 28.31               | 18.69                   | 73.961                 | Horizontal               | 1     | Pass       |
|                                   |            | 1745      | -5.53          | 3.91             | 28.22               | 18.78                   | 75.509                 | Horizontal               | 1     | Pass       |
|                                   |            | 1777.5    | -5.59          | 3.94             | 28.2                | 18.67                   | 73.621                 | Horizontal               | 1     | Pass       |
| 10.0MHz Band QPSK                 | 1/#Mid     | 1715      | -5.74          | 3.79             | 28.33               | 18.80                   | 75.858                 | Horizontal               | 1     | Pass       |
|                                   |            | 1745      | -5.47          | 3.95             | 28.22               | 18.80                   | 75.858                 | Horizontal               | 1     | Pass       |
|                                   |            | 1775      | -5.48          | 3.97             | 28.19               | 18.74                   | 74.817                 | Horizontal               | 1     | Pass       |
| 15.0MHz Band QPSK                 | 1/#Mid     | 1717.5    | -5.76          | 3.79             | 28.34               | 18.79                   | 75.683                 | Horizontal               | 1     | Pass       |
|                                   |            | 1745      | -5.57          | 3.95             | 28.22               | 18.70                   | 74.131                 | Horizontal               | 1     | Pass       |
|                                   |            | 1772.5    | -5.52          | 3.97             | 28.18               | 18.69                   | 73.961                 | Horizontal               | 1     | Pass       |
| 20.0MHz Band QPSK                 | 1/#Mid     | 1720      | -5.73          | 3.81             | 28.35               | <b>18.81</b>            | 76.033                 | Horizontal               | 1     | Pass       |
|                                   |            | 1745      | -5.47          | 3.96             | 28.22               | 18.79                   | 75.683                 | Horizontal               | 1     | Pass       |
|                                   |            | 1770      | -5.49          | 4                | 28.16               | 18.67                   | 73.621                 | Horizontal               | 1     | Pass       |
| 1.4MHz Band QPSK                  | 1/#Mid     | 1710.7    | -7.15          | 3.76             | 28.24               | 17.33                   | 54.075                 | Vertical                 | 1     | Pass       |
|                                   |            | 1745      | -6.90          | 3.91             | 28.22               | 17.41                   | 55.081                 | Vertical                 | 1     | Pass       |
|                                   |            | 1779.3    | -6.86          | 3.93             | 28.2                | 17.41                   | 55.081                 | Vertical                 | 1     | Pass       |
| 3.0MHz Band QPSK                  | 1/#Mid     | 1711.5    | -6.96          | 3.77             | 28.23               | 17.50                   | 56.234                 | Vertical                 | 1     | Pass       |
|                                   |            | 1745      | -6.26          | 3.91             | 28.24               | 18.07                   | 64.121                 | Vertical                 | 1     | Pass       |
|                                   |            | 1778.5    | -6.63          | 3.94             | 28.25               | 17.68                   | 58.614                 | Vertical                 | 1     | Pass       |
| 5.0MHz Band QPSK                  | 1/#Mid     | 1712.5    | -7.07          | 3.77             | 28.31               | 17.47                   | 55.847                 | Vertical                 | 1     | Pass       |
|                                   |            | 1745      | -6.48          | 3.91             | 28.22               | 17.83                   | 60.674                 | Vertical                 | 1     | Pass       |
|                                   |            | 1777.5    | -6.54          | 3.94             | 28.2                | 17.72                   | 59.156                 | Vertical                 | 1     | Pass       |
| 10.0MHz Band                      | 1/#Mid     | 1715      | -6.89          | 3.79             | 28.34               | 17.66                   | 58.345                 | Vertical                 | 1     | Pass       |
|                                   |            | 1745      | -6.49          | 3.95             | 28.22               | 17.78                   | 59.979                 | Vertical                 | 1     | Pass       |

|         |        |        |       |      |       |       |        |          |   |      |
|---------|--------|--------|-------|------|-------|-------|--------|----------|---|------|
| QPSK    |        | 1775   | -6.18 | 3.97 | 28.18 | 18.03 | 63.533 | Vertical | 1 | Pass |
| 15.0MHz | 1/#Mid | 1717.5 | -6.65 | 3.81 | 28.35 | 17.89 | 61.518 | Vertical | 1 | Pass |
| Band    |        | 1745   | -7.12 | 3.96 | 28.22 | 17.14 | 51.761 | Vertical | 1 | Pass |
| QPSK    |        | 1772.5 | -6.85 | 4    | 28.16 | 17.31 | 53.827 | Vertical | 1 | Pass |
| 20.0MHz | 1/#Mid | 1720   | -7.14 | 3.79 | 28.34 | 17.41 | 55.081 | Vertical | 1 | Pass |
| Band    |        | 1745   | -6.35 | 3.95 | 28.22 | 17.92 | 61.944 | Vertical | 1 | Pass |
| QPSK    |        | 1770   | -7.09 | 3.97 | 28.18 | 17.12 | 51.523 | Vertical | 1 | Pass |

| Radiated Power (EIRP) for Band 66 |            |           |                |                  |                     |                         |                        |                          |       |            |
|-----------------------------------|------------|-----------|----------------|------------------|---------------------|-------------------------|------------------------|--------------------------|-------|------------|
| Mode                              | RB/RB SIZE | Frequency | Result         |                  |                     |                         |                        |                          | Limit | Conclusion |
|                                   |            |           | SG Level (dBm) | Cable Loss (dBm) | Antenna Factor (dB) | Max. EIRP Average (dBm) | Max. EIRP Average (mW) | Polarization Of Max. ERP |       |            |
| 1.4MHz<br>Band 16<br>QAM          | 1/#Mid     | 1710.7    | -6.48          | 3.76             | 28.24               | 18.00                   | 63.096                 | Horizontal               | 1     | Pass       |
|                                   |            | 1745      | -6.09          | 3.91             | 28.22               | 18.22                   | 66.374                 | Horizontal               | 1     | Pass       |
|                                   |            | 1779.3    | -6.27          | 3.93             | 28.2                | 18.00                   | 63.096                 | Horizontal               | 1     | Pass       |
| 3.0MHz<br>Band 16<br>QAM          | 1/#Mid     | 1711.5    | -6.87          | 3.77             | 28.23               | 17.59                   | 57.412                 | Horizontal               | 1     | Pass       |
|                                   |            | 1745      | -6.12          | 3.91             | 28.24               | 18.21                   | 66.222                 | Horizontal               | 1     | Pass       |
|                                   |            | 1778.5    | -6.41          | 3.94             | 28.25               | 17.90                   | 61.660                 | Horizontal               | 1     | Pass       |
| 5.0MHz<br>Band 16<br>QAM          | 1/#Mid     | 1712.5    | -6.29          | 3.77             | 28.31               | 18.25                   | 66.834                 | Horizontal               | 1     | Pass       |
|                                   |            | 1745      | -6.35          | 3.91             | 28.22               | 17.96                   | 62.517                 | Horizontal               | 1     | Pass       |
|                                   |            | 1777.5    | -6.02          | 3.94             | 28.2                | 18.24                   | 66.681                 | Horizontal               | 1     | Pass       |
| 10.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 1715      | -6.34          | 3.79             | 28.33               | 18.20                   | 66.069                 | Horizontal               | 1     | Pass       |
|                                   |            | 1745      | -6.00          | 3.95             | 28.22               | 18.27                   | 67.143                 | Horizontal               | 1     | Pass       |
|                                   |            | 1775      | -6.32          | 3.97             | 28.19               | 17.90                   | 61.660                 | Horizontal               | 1     | Pass       |
| 15.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 1717.5    | -6.33          | 3.79             | 28.34               | 18.22                   | 66.374                 | Horizontal               | 1     | Pass       |
|                                   |            | 1745      | -6.15          | 3.95             | 28.22               | 18.12                   | 64.863                 | Horizontal               | 1     | Pass       |
|                                   |            | 1772.5    | -5.94          | 3.97             | 28.18               | 18.27                   | 67.143                 | Horizontal               | 1     | Pass       |
| 20.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 1720      | -6.16          | 3.81             | 28.35               | 18.38                   | 68.865                 | Horizontal               | 1     | Pass       |
|                                   |            | 1745      | -5.94          | 3.96             | 28.22               | 18.32                   | 67.920                 | Horizontal               | 1     | Pass       |
|                                   |            | 1770      | -5.88          | 4                | 28.16               | 18.28                   | 67.298                 | Horizontal               | 1     | Pass       |
| 1.4MHz<br>Band 16<br>QAM          | 1/#Mid     | 1710.7    | -6.56          | 3.76             | 28.24               | 17.92                   | 61.944                 | Vertical                 | 1     | Pass       |
|                                   |            | 1745      | -7.91          | 3.91             | 28.22               | 16.40                   | 43.652                 | Vertical                 | 1     | Pass       |
|                                   |            | 1779.3    | -6.31          | 3.93             | 28.2                | 17.96                   | 62.517                 | Vertical                 | 1     | Pass       |
| 3.0MHz<br>Band 16<br>QAM          | 1/#Mid     | 1711.5    | -7.95          | 3.77             | 28.23               | 16.51                   | 44.771                 | Vertical                 | 1     | Pass       |
|                                   |            | 1745      | -6.40          | 3.91             | 28.24               | 17.93                   | 62.087                 | Vertical                 | 1     | Pass       |
|                                   |            | 1778.5    | -8.00          | 3.94             | 28.25               | 16.31                   | 42.756                 | Vertical                 | 1     | Pass       |
| 5.0MHz<br>Band 16<br>QAM          | 1/#Mid     | 1712.5    | -7.69          | 3.77             | 28.31               | 16.85                   | 48.417                 | Vertical                 | 1     | Pass       |
|                                   |            | 1745      | -7.87          | 3.91             | 28.22               | 16.44                   | 44.055                 | Vertical                 | 1     | Pass       |
|                                   |            | 1777.5    | -7.56          | 3.94             | 28.2                | 16.70                   | 46.774                 | Vertical                 | 1     | Pass       |
| 10.0MHz<br>Band 16<br>QAM         | 1/#Mid     | 1715      | -6.35          | 3.79             | 28.34               | 18.20                   | 66.069                 | Vertical                 | 1     | Pass       |
|                                   |            | 1745      | -6.81          | 3.95             | 28.22               | 17.46                   | 55.719                 | Vertical                 | 1     | Pass       |
|                                   |            | 1775      | -7.86          | 3.97             | 28.18               | 16.35                   | 43.152                 | Vertical                 | 1     | Pass       |
| 15.0MHz<br>Band 16                | 1/#Mid     | 1717.5    | -8.20          | 3.81             | 28.35               | 16.34                   | 43.053                 | Vertical                 | 1     | Pass       |
|                                   |            | 1745      | -6.19          | 3.96             | 28.22               | 18.07                   | 64.121                 | Vertical                 | 1     | Pass       |

|         |        |        |       |      |       |       |        |          |   |      |
|---------|--------|--------|-------|------|-------|-------|--------|----------|---|------|
| QAM     |        | 1772.5 | -6.48 | 4    | 28.16 | 17.68 | 58.614 | Vertical | 1 | Pass |
| 20.0MHz | 1/#Mid | 1720   | -7.89 | 3.79 | 28.34 | 16.66 | 46.345 | Vertical | 1 | Pass |
| Band 16 |        | 1745   | -7.26 | 3.95 | 28.22 | 17.01 | 50.234 | Vertical | 1 | Pass |
| QAM     |        | 1770   | -6.17 | 3.97 | 28.18 | 18.04 | 63.680 | Vertical | 1 | 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

According to FCC KDB 971168 D01 v03r01 Section 7 and ANSI C63.26: 2015 Section 5.5

### LIMIT

For LTE Band 2, LTE Band 5, (824 MHz ~ 849 MHz):

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. The emission limit equal to  $-13$  dBm.

For LTE Band 12, LTE Band 17:

According to FCC 47 CFR part 27.53(g), for operations in the 600 MHz band and 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. The limit of emissions is equal to  $-13$  dBm.

For LTE Band 13:

According to FCC 47 CFR part 27.53(c)(2), for on any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least  $43 + 10 \log(P)$  dB. The limit of emissions is equal to  $-13$  dBm.

For operations in the 775-788 MHz, emissions in the band 1559-1610 MHz shall be limited to  $-70$  dBW/MHz (EIRP). The limit of emissions is equal to  $-40$  dBm.

For LTE Band 4, LTE Band 66:

According to FCC 47 CFR part 27.53(h), for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log(P)$  dB. The limit of emission is equal to  $-13$  dBm.

For LTE Band 7, LTE Band 38, LTE Band 41:

According to FCC 47 CFR part 27.53(m)(4), on any frequency outside a licensee's frequency block, The power of any emission shall be attenuated below the transmitter power (P) by at least  $55 + 10 \log(P)$  dB. The emission limit equal to  $-25$  dBm.

### TEST PROCEDURE

The EUT is configured by emulator to set data modulation and maximum power using WWAN technology.

For 30MHz to 1GHz

1. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) height of turn table. rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.

2. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. Perform a field strength measurement and record the worse read value, is the field strength value via a spectrum reading obtained corrected for antenna factor, cable loss and pre-amplifier factor and then mathematically convert the measured field strength level to EIRP/ERP level.
4. Following C63.26 section 5.5 and 5.2.7

Note: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz.

The emission levels were against the limit of frequency range 9 kHz ~ 30 MHz: The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

#### Above 1GHz

1. In the semi-anechoic chamber, EUT placed on the 1.5 m height of turn table, rotated the table around 360degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
2. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. Perform a field strength measurement and record the worse read value, is the field strength value via a spectrum reading obtained corrected for antenna factor, cable loss and pre-amplifier factor and then mathematically convert the measured field strength level to EIRP/ERP level.
4. Following C63.26 section 5.5 and 5.2.7.

Note: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz

#### MODES TESTED

Band 2/4/5/7/12/13/17/38/41/66

#### 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   |
| 3701.4                                  | -45.05        | 4.04           | 33.51              | -15.58              | -13         | -2.58       | Horizontal |
| 3701.4                                  | -53.83        | 4.04           | 33.51              | -24.36              | -13         | -11.36      | Vertical   |
| 5552.1                                  | -52.22        | 5.24           | 35.84              | -21.62              | -13         | -8.62       | Vertical   |
| 5552.1                                  | -51.53        | 5.24           | 35.84              | -20.93              | -13         | -7.93       | Horizontal |
| 179.1                                   | -39.53        | 1.43           | 16.02              | -24.94              | -13         | -11.94      | Vertical   |
| 397.8                                   | -39.18        | 1.30           | 17.99              | -22.49              | -13         | -9.49       | Horizontal |
| Test Results for Mid Channel 1880MHz    |               |                |                    |                     |             |             |            |
| 3760.0                                  | -44.73        | 4.04           | 33.56              | -15.21              | -13         | -2.21       | Horizontal |
| 3760.0                                  | -44.50        | 4.04           | 33.56              | -14.98              | -13         | -1.98       | Vertical   |
| 5640.0                                  | -52.80        | 5.24           | 35.91              | -22.13              | -13         | -9.13       | Vertical   |
| 5640.0                                  | -49.51        | 5.24           | 35.91              | -18.84              | -13         | -5.84       | Horizontal |
| 194.5                                   | -41.65        | 1.62           | 16.97              | -26.30              | -13         | -13.30      | Vertical   |
| 401.8                                   | -41.54        | 1.74           | 15.98              | -27.31              | -13         | -14.31      | Horizontal |
| Test Results for High Channel 1909.3MHz |               |                |                    |                     |             |             |            |
| 3818.6                                  | -50.90        | 4.04           | 34.00              | -20.94              | -13         | -7.94       | Horizontal |
| 3818.6                                  | -53.06        | 4.04           | 34.00              | -23.10              | -13         | -10.10      | Vertical   |
| 5727.9                                  | -53.34        | 5.24           | 36.04              | -22.54              | -13         | -9.54       | Vertical   |
| 5727.9                                  | -51.34        | 5.24           | 36.04              | -20.54              | -13         | -7.54       | Horizontal |
| 210.2                                   | -41.15        | 1.42           | 17.29              | -25.28              | -13         | -12.28      | Vertical   |
| 312.2                                   | -35.06        | 1.50           | 17.90              | -18.65              | -13         | -5.65       | 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   |
| 3720.0                                | -46.43        | 4.07           | 33.54              | -16.96              | -13         | -3.96       | Horizontal |
| 3720.0                                | -50.57        | 4.07           | 33.54              | -21.10              | -13         | -8.10       | Vertical   |
| 5580.0                                | -48.13        | 5.28           | 35.86              | -17.55              | -13         | -4.55       | Vertical   |
| 5580.0                                | -49.34        | 5.28           | 35.86              | -18.76              | -13         | -5.76       | Horizontal |
| 188.1                                 | -39.15        | 1.58           | 16.89              | -23.83              | -13         | -10.83      | Vertical   |
| 342.9                                 | -44.65        | 1.76           | 17.26              | -29.15              | -13         | -16.15      | Horizontal |
| Test Results for Mid Channel 1880MHz  |               |                |                    |                     |             |             |            |
| 3760.0                                | -48.95        | 4.04           | 33.56              | -19.43              | -13         | -6.43       | Horizontal |
| 3760.0                                | -44.51        | 4.04           | 33.56              | -14.99              | -13         | -1.99       | Vertical   |
| 5640.0                                | -49.62        | 5.24           | 35.91              | -18.95              | -13         | -5.95       | Vertical   |
| 5640.0                                | -53.19        | 5.24           | 35.91              | -22.52              | -13         | -9.52       | Horizontal |
| 179.0                                 | -37.45        | 1.46           | 16.27              | -22.64              | -13         | -9.64       | Vertical   |
| 336.4                                 | -43.45        | 1.59           | 15.15              | -29.89              | -13         | -16.89      | Horizontal |
| Test Results for High Channel 1900MHz |               |                |                    |                     |             |             |            |
| 3800.0                                | -51.42        | 4.04           | 34.00              | -21.46              | -13         | -8.46       | Horizontal |
| 3800.0                                | -47.14        | 4.04           | 34.00              | -17.18              | -13         | -4.18       | Vertical   |
| 5700.0                                | -47.30        | 5.24           | 36.04              | -16.50              | -13         | -3.50       | Vertical   |
| 5700.0                                | -49.42        | 5.24           | 36.04              | -18.62              | -13         | -5.62       | Horizontal |
| 180.9                                 | -41.26        | 1.36           | 17.39              | -25.22              | -13         | -12.22      | Vertical   |
| 399.1                                 | -42.26        | 1.66           | 15.39              | -28.53              | -13         | -15.53      | 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   |
| 3421.4                                  | -49.51        | 4.02           | 29.80              | -23.73              | -13         | -10.73      | Horizontal |
| 3421.4                                  | -45.18        | 4.02           | 29.80              | -19.40              | -13         | -6.40       | Vertical   |
| 5132.1                                  | -50.43        | 5.24           | 35.84              | -19.83              | -13         | -6.83       | Vertical   |
| 5132.1                                  | -49.01        | 5.24           | 35.84              | -18.41              | -13         | -5.41       | Horizontal |
| 209.0                                   | -37.47        | 1.68           | 16.04              | -23.11              | -13         | -10.11      | Vertical   |
| 437.4                                   | -41.12        | 1.78           | 17.74              | -25.16              | -13         | -12.16      | Horizontal |
| Test Results for Mid Channel 1732.5MHz  |               |                |                    |                     |             |             |            |
| 3465.0                                  | -46.13        | 4.03           | 30.00              | -20.16              | -13         | -7.16       | Horizontal |
| 3465.0                                  | -46.30        | 4.03           | 30.00              | -20.33              | -13         | -7.33       | Vertical   |
| 5197.5                                  | -51.77        | 5.25           | 35.86              | -21.16              | -13         | -8.16       | Vertical   |
| 5197.5                                  | -52.49        | 5.25           | 35.86              | -21.88              | -13         | -8.88       | Horizontal |
| 186.1                                   | -34.75        | 1.72           | 17.69              | -18.78              | -13         | -5.78       | Vertical   |
| 326.7                                   | -42.78        | 1.62           | 16.02              | -28.37              | -13         | -15.37      | Horizontal |
| Test Results for High Channel 1754.3MHz |               |                |                    |                     |             |             |            |
| 3508.6                                  | -52.77        | 4.05           | 30.01              | -26.81              | -13         | -13.81      | Horizontal |
| 3508.6                                  | -46.31        | 4.05           | 30.01              | -20.35              | -13         | -7.35       | Vertical   |
| 5262.9                                  | -44.88        | 5.26           | 35.86              | -14.28              | -13         | -1.28       | Vertical   |
| 5262.9                                  | -49.23        | 5.26           | 35.86              | -18.63              | -13         | -5.63       | Horizontal |
| 195.1                                   | -42.55        | 1.80           | 16.69              | -27.66              | -13         | -14.66      | Vertical   |
| 365.1                                   | -38.72        | 1.75           | 16.66              | -23.82              | -13         | -10.82      | 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   |
| 3440.0                                 | -48.17        | 4.02           | 29.80              | -22.39              | -13         | -9.39       | Horizontal |
| 3440.0                                 | -53.65        | 4.02           | 29.80              | -27.87              | -13         | -14.87      | Vertical   |
| 5160.0                                 | -53.45        | 5.24           | 35.84              | -22.85              | -13         | -9.85       | Vertical   |
| 5160.0                                 | -49.40        | 5.24           | 35.84              | -18.80              | -13         | -5.80       | Horizontal |
| 188.3                                  | -38.07        | 1.57           | 17.26              | -22.38              | -13         | -9.38       | Vertical   |
| 425.1                                  | -44.49        | 1.78           | 16.35              | -29.92              | -13         | -16.92      | Horizontal |
| Test Results for Mid Channel 1732.5MHz |               |                |                    |                     |             |             |            |
| 3465.0                                 | -44.34        | 4.03           | 30.00              | -18.37              | -13         | -5.37       | Horizontal |
| 3465.0                                 | -48.25        | 4.03           | 30.00              | -22.28              | -13         | -9.28       | Vertical   |
| 5197.5                                 | -48.31        | 5.25           | 35.86              | -17.70              | -13         | -4.70       | Vertical   |
| 5197.5                                 | -49.83        | 5.25           | 35.86              | -19.22              | -13         | -6.22       | Horizontal |
| 181.4                                  | -42.15        | 1.44           | 17.95              | -25.64              | -13         | -12.64      | Vertical   |
| 394.8                                  | -41.61        | 1.65           | 16.09              | -27.17              | -13         | -14.17      | Horizontal |
| Test Results for High Channel 1745MHz  |               |                |                    |                     |             |             |            |
| 3490.0                                 | -49.13        | 2.91           | 27.68              | -24.36              | -13         | -11.36      | Horizontal |
| 3490.0                                 | -53.97        | 2.91           | 27.68              | -29.20              | -13         | -16.20      | Vertical   |
| 5235.0                                 | -49.68        | 5.26           | 35.86              | -19.08              | -13         | -6.08       | Vertical   |
| 5235.0                                 | -49.30        | 5.26           | 35.86              | -18.70              | -13         | -5.70       | Horizontal |
| 203.8                                  | -40.23        | 1.61           | 16.85              | -24.99              | -13         | -11.99      | Vertical   |
| 238.1                                  | -38.04        | 1.61           | 15.19              | -24.46              | -13         | -11.46      | 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   |
| 1649.4                                 | -46.06        | 2.78           | 27.50              | -21.34              | -13         | -8.34       | Horizontal |
| 1649.4                                 | -45.92        | 2.78           | 27.50              | -21.20              | -13         | -8.20       | Vertical   |
| 2474.1                                 | -44.14        | 2.90           | 27.80              | -19.24              | -13         | -6.24       | Vertical   |
| 2474.1                                 | -52.95        | 2.90           | 27.80              | -28.05              | -13         | -15.05      | Horizontal |
| 191.0                                  | -35.49        | 1.76           | 17.59              | -19.66              | -13         | -6.66       | Vertical   |
| 460.3                                  | -41.44        | 1.63           | 15.87              | -27.20              | -13         | -14.20      | Horizontal |
| Test Results For Mid Channel 836.5MHz  |               |                |                    |                     |             |             |            |
| 1673.0                                 | -46.78        | 2.80           | 27.48              | -22.10              | -13         | -9.10       | Horizontal |
| 1673.0                                 | -52.15        | 2.80           | 27.48              | -27.47              | -13         | -14.47      | Vertical   |
| 2509.5                                 | -53.95        | 2.91           | 27.70              | -29.16              | -13         | -16.16      | Vertical   |
| 2509.5                                 | -53.45        | 2.91           | 27.70              | -28.66              | -13         | -15.66      | Horizontal |
| 192.9                                  | -41.27        | 1.61           | 15.68              | -27.20              | -13         | -14.20      | Vertical   |
| 439.8                                  | -39.67        | 1.59           | 17.52              | -23.75              | -13         | -10.75      | Horizontal |
| Test Results for High Channel 848.3MHz |               |                |                    |                     |             |             |            |
| 1696.6                                 | -49.76        | 2.82           | 27.43              | -25.15              | -13         | -12.15      | Horizontal |
| 1696.6                                 | -48.93        | 2.82           | 27.43              | -24.32              | -13         | -11.32      | Vertical   |
| 2544.9                                 | -51.18        | 2.92           | 27.74              | -26.36              | -13         | -13.36      | Vertical   |
| 2544.9                                 | -49.46        | 2.92           | 27.74              | -24.64              | -13         | -11.64      | Horizontal |
| 204.7                                  | -39.38        | 1.69           | 16.67              | -24.39              | -13         | -11.39      | Vertical   |
| 258.9                                  | -43.87        | 1.70           | 17.18              | -28.39              | -13         | -15.39      | 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   |
| 1658.0                                | -53.83        | 2.78           | 27.50              | -29.11              | -13         | -16.11      | Horizontal |
| 1658.0                                | -48.20        | 2.78           | 27.50              | -23.48              | -13         | -10.48      | Vertical   |
| 2487.0                                | -46.71        | 2.90           | 27.80              | -21.81              | -13         | -8.81       | Vertical   |
| 2487.0                                | -50.76        | 2.90           | 27.80              | -25.86              | -13         | -12.86      | Horizontal |
| 210.3                                 | -36.44        | 1.71           | 15.57              | -22.58              | -13         | -9.58       | Vertical   |
| 372.0                                 | -35.35        | 1.34           | 16.40              | -20.29              | -13         | -7.29       | Horizontal |
| Test Results for Mid Channel 836.5MHz |               |                |                    |                     |             |             |            |
| 1673.0                                | -50.71        | 2.80           | 27.48              | -26.03              | -13         | -13.03      | Horizontal |
| 1673.0                                | -44.21        | 2.80           | 27.48              | -19.53              | -13         | -6.53       | Vertical   |
| 2509.5                                | -51.83        | 2.91           | 27.70              | -27.04              | -13         | -14.04      | Vertical   |
| 2509.5                                | -50.71        | 2.91           | 27.70              | -25.92              | -13         | -12.92      | Horizontal |
| 194.1                                 | -35.55        | 1.44           | 17.04              | -19.95              | -13         | -6.95       | Vertical   |
| 387.1                                 | -37.86        | 1.76           | 17.62              | -22.00              | -13         | -9.00       | Horizontal |
| Test Results for High Channel 844MHz  |               |                |                    |                     |             |             |            |
| 1688.0                                | -50.54        | 2.82           | 27.43              | -25.93              | -13         | -12.93      | Horizontal |
| 1688.0                                | -49.71        | 2.82           | 27.43              | -25.10              | -13         | -12.10      | Vertical   |
| 2532.0                                | -46.58        | 2.92           | 27.74              | -21.76              | -13         | -8.76       | Vertical   |
| 2532.0                                | -52.67        | 2.92           | 27.74              | -27.85              | -13         | -14.85      | Horizontal |
| 212.3                                 | -36.01        | 1.74           | 17.70              | -20.05              | -13         | -7.05       | Vertical   |
| 356.5                                 | -42.11        | 1.41           | 17.46              | -26.05              | -13         | -13.05      | 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   |
| 5005.0                                  | -59.50        | 5.23           | 35.81              | -28.92              | -25         | -3.92       | Horizontal |
| 5005.0                                  | -61.86        | 5.23           | 35.81              | -31.28              | -25         | -6.28       | Vertical   |
| 7507.5                                  | -59.33        | 5.67           | 36.85              | -28.15              | -25         | -3.15       | Vertical   |
| 7507.5                                  | -61.40        | 5.67           | 36.85              | -30.22              | -25         | -5.22       | Horizontal |
| 210.4                                   | -53.93        | 1.73           | 17.97              | -37.69              | -25         | -12.69      | Vertical   |
| 421.7                                   | -49.63        | 1.38           | 15.11              | -35.90              | -25         | -10.90      | Horizontal |
| Test Results for Mid Channel 2535MHz    |               |                |                    |                     |             |             |            |
| 5070.0                                  | -60.64        | 5.23           | 35.82              | -30.05              | -25         | -5.05       | Horizontal |
| 5070.0                                  | -60.30        | 5.23           | 35.82              | -29.71              | -25         | -4.71       | Vertical   |
| 7605.0                                  | -64.04        | 5.67           | 36.85              | -32.86              | -25         | -7.86       | Vertical   |
| 7605.0                                  | -64.51        | 5.67           | 36.85              | -33.33              | -25         | -8.33       | Horizontal |
| 210.4                                   | -46.68        | 1.77           | 16.17              | -32.27              | -25         | -7.27       | Vertical   |
| 459.3                                   | -48.79        | 1.63           | 15.21              | -35.21              | -25         | -10.21      | Horizontal |
| Test Results for High Channel 2567.5MHz |               |                |                    |                     |             |             |            |
| 5135.0                                  | -61.24        | 5.24           | 35.83              | -30.65              | -25         | -5.65       | Horizontal |
| 5135.0                                  | -61.27        | 5.24           | 35.83              | -30.68              | -25         | -5.68       | Vertical   |
| 7702.5                                  | -64.68        | 5.68           | 36.87              | -33.49              | -25         | -8.49       | Vertical   |
| 7702.5                                  | -62.29        | 5.68           | 36.87              | -31.10              | -25         | -6.10       | Horizontal |
| 211.8                                   | -44.09        | 1.58           | 17.56              | -28.11              | -25         | -3.11       | Vertical   |
| 416.5                                   | -46.47        | 1.45           | 16.58              | -31.34              | -25         | -6.34       | 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   |
| 5020.0                                | -63.86        | 5.23           | 35.82              | -33.27              | -25         | -8.27       | Horizontal |
| 5020.0                                | -63.79        | 5.23           | 35.82              | -33.20              | -25         | -8.20       | Vertical   |
| 7530.0                                | -60.01        | 5.67           | 36.86              | -28.82              | -25         | -3.82       | Vertical   |
| 7530.0                                | -59.60        | 5.67           | 36.86              | -28.41              | -25         | -3.41       | Horizontal |
| 200.1                                 | -52.27        | 1.63           | 15.76              | -38.14              | -25         | -13.14      | Vertical   |
| 376.5                                 | -53.14        | 1.71           | 15.44              | -39.41              | -25         | -14.41      | Horizontal |
| Test Results for Mid Channel 2535MHz  |               |                |                    |                     |             |             |            |
| 5070.0                                | -63.89        | 5.23           | 35.82              | -33.30              | -25         | -8.30       | Horizontal |
| 5070.0                                | -61.17        | 5.23           | 35.82              | -30.58              | -25         | -5.58       | Vertical   |
| 7605.0                                | -63.21        | 5.67           | 36.85              | -32.03              | -25         | -7.03       | Vertical   |
| 7605.0                                | -64.64        | 5.67           | 36.85              | -33.46              | -25         | -8.46       | Horizontal |
| 190.3                                 | -45.74        | 1.79           | 16.84              | -30.68              | -25         | -5.68       | Vertical   |
| 469.0                                 | -46.09        | 1.71           | 17.64              | -30.16              | -25         | -5.16       | Horizontal |
| Test Results for High Channel 2560MHz |               |                |                    |                     |             |             |            |
| 5120.0                                | -64.80        | 5.24           | 35.83              | -34.21              | -25         | -9.21       | Horizontal |
| 5120.0                                | -63.23        | 5.24           | 35.83              | -32.64              | -25         | -7.64       | Vertical   |
| 7680.0                                | -64.85        | 5.70           | 36.88              | -33.67              | -25         | -8.67       | Vertical   |
| 7680.0                                | -64.88        | 5.70           | 36.88              | -33.70              | -25         | -8.70       | Horizontal |
| 212.9                                 | -45.73        | 1.79           | 16.84              | -30.67              | -25         | -5.67       | Vertical   |
| 346.4                                 | -47.16        | 1.71           | 17.64              | -31.23              | -25         | -6.23       | 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   |
| 1399.4                                 | -49.96        | 2.60           | 27.20              | -25.36              | -13         | -12.36      | Horizontal |
| 1399.4                                 | -53.47        | 2.60           | 27.20              | -28.87              | -13         | -15.87      | Vertical   |
| 2099.1                                 | -53.81        | 2.85           | 27.54              | -29.12              | -13         | -16.12      | Vertical   |
| 2099.1                                 | -52.19        | 2.85           | 27.54              | -27.50              | -13         | -14.50      | Horizontal |
| 180.0                                  | -39.18        | 1.49           | 17.78              | -22.89              | -13         | -9.89       | Vertical   |
| 314.6                                  | -43.83        | 1.36           | 17.33              | -27.86              | -13         | -14.86      | Horizontal |
| Test Results For Mid Channel 707.5MHz  |               |                |                    |                     |             |             |            |
| 1415.0                                 | -53.91        | 2.61           | 27.28              | -29.24              | -13         | -16.24      | Horizontal |
| 1415.0                                 | -45.52        | 2.61           | 27.28              | -20.85              | -13         | -7.85       | Vertical   |
| 2122.5                                 | -49.35        | 2.87           | 27.59              | -24.63              | -13         | -11.63      | Vertical   |
| 2122.5                                 | -50.86        | 2.87           | 27.59              | -26.14              | -13         | -13.14      | Horizontal |
| 211.0                                  | -35.25        | 1.73           | 15.74              | -21.24              | -13         | -8.24       | Vertical   |
| 385.8                                  | -39.96        | 1.62           | 15.79              | -25.79              | -13         | -12.79      | Horizontal |
| Test Results for High Channel 715.3MHz |               |                |                    |                     |             |             |            |
| 1430.6                                 | -48.22        | 2.63           | 27.28              | -23.57              | -13         | -10.57      | Horizontal |
| 1430.6                                 | -53.62        | 2.63           | 27.28              | -28.97              | -13         | -15.97      | Vertical   |
| 2145.9                                 | -44.31        | 2.88           | 27.60              | -19.59              | -13         | -6.59       | Vertical   |
| 2145.9                                 | -51.02        | 2.88           | 27.60              | -26.30              | -13         | -13.30      | Horizontal |
| 204.9                                  | -43.13        | 1.61           | 18.00              | -26.74              | -13         | -13.74      | Vertical   |
| 367.0                                  | -43.20        | 1.45           | 15.49              | -29.17              | -13         | -16.17      | 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   |
| 1408.0                                | -47.09        | 2.61           | 27.26              | -22.44              | -13         | -9.44       | Horizontal |
| 1408.0                                | -46.47        | 2.61           | 27.26              | -21.82              | -13         | -8.82       | Vertical   |
| 2112.0                                | -52.38        | 2.87           | 27.58              | -27.67              | -13         | -14.67      | Vertical   |
| 2112.0                                | -52.54        | 2.87           | 27.58              | -27.83              | -13         | -14.83      | Horizontal |
| 198.6                                 | -36.35        | 1.31           | 16.97              | -20.69              | -13         | -7.69       | Vertical   |
| 406.0                                 | -42.44        | 1.65           | 16.70              | -27.39              | -13         | -14.39      | Horizontal |
| Test Results for Mid Channel 707.5MHz |               |                |                    |                     |             |             |            |
| 1415.0                                | -52.10        | 2.61           | 27.28              | -27.43              | -13         | -14.43      | Horizontal |
| 1415.0                                | -49.93        | 2.61           | 27.28              | -25.26              | -13         | -12.26      | Vertical   |
| 2122.5                                | -52.73        | 2.87           | 27.59              | -28.01              | -13         | -15.01      | Vertical   |
| 2122.5                                | -50.90        | 2.87           | 27.59              | -26.18              | -13         | -13.18      | Horizontal |
| 205.3                                 | -44.38        | 1.72           | 17.99              | -28.11              | -13         | -15.11      | Vertical   |
| 362.7                                 | -35.18        | 1.73           | 17.94              | -18.97              | -13         | -5.97       | Horizontal |
| Test Results for High Channel 711MHz  |               |                |                    |                     |             |             |            |
| 1422.0                                | -44.60        | 2.62           | 27.28              | -19.94              | -13         | -6.94       | Horizontal |
| 1422.0                                | -50.86        | 2.62           | 27.28              | -26.20              | -13         | -13.20      | Vertical   |
| 2133.0                                | -50.72        | 2.87           | 27.60              | -25.99              | -13         | -12.99      | Vertical   |
| 2133.0                                | -51.43        | 2.87           | 27.60              | -26.70              | -13         | -13.70      | Horizontal |
| 195.5                                 | -36.22        | 1.58           | 15.93              | -21.87              | -13         | -8.87       | Vertical   |
| 455.1                                 | -34.88        | 1.36           | 15.59              | -20.65              | -13         | -7.65       | 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   |
| 1559.0                                 | -71.99        | 2.61           | 27.28              | -47.32              | -40         | -7.32       | Horizontal |
| 1559.0                                 | -74.83        | 2.61           | 27.28              | -50.16              | -40         | -10.16      | Vertical   |
| 2338.5                                 | -40.09        | 2.87           | 27.59              | -15.37              | -13         | -2.37       | Vertical   |
| 2338.5                                 | -43.26        | 2.87           | 27.59              | -18.54              | -13         | -5.54       | Horizontal |
| 120.1                                  | -35.29        | 1.54           | 15.61              | -21.22              | -13         | -8.22       | Vertical   |
| 197.8                                  | -39.70        | 1.51           | 15.21              | -26.00              | -13         | -13.00      | Horizontal |
| Test Results For Mid Channel 782MHz    |               |                |                    |                     |             |             |            |
| 1564.0                                 | -71.82        | 2.62           | 27.30              | -47.14              | -40         | -7.14       | Horizontal |
| 1564.0                                 | -74.44        | 2.62           | 27.30              | -49.76              | -40         | -9.76       | Vertical   |
| 2346.0                                 | -39.52        | 2.87           | 27.62              | -14.77              | -13         | -1.77       | Vertical   |
| 2346.0                                 | -41.96        | 2.87           | 27.62              | -17.21              | -13         | -4.21       | Horizontal |
| 131.2                                  | -39.39        | 1.65           | 16.17              | -24.87              | -13         | -11.87      | Vertical   |
| 267.5                                  | -39.72        | 1.48           | 16.88              | -24.32              | -13         | -11.32      | Horizontal |
| Test Results for High Channel 784.5MHz |               |                |                    |                     |             |             |            |
| 1569.0                                 | -70.26        | 2.66           | 27.28              | -45.64              | -40         | -5.64       | Horizontal |
| 1569.0                                 | -71.49        | 2.66           | 27.28              | -46.87              | -40         | -6.87       | Vertical   |
| 2353.5                                 | -42.00        | 2.88           | 27.60              | -17.28              | -13         | -4.28       | Vertical   |
| 2353.5                                 | -40.88        | 2.88           | 27.60              | -16.16              | -13         | -3.16       | Horizontal |
| 80.8                                   | -39.23        | 1.54           | 16.40              | -24.37              | -13         | -11.37      | Vertical   |
| 155.6                                  | -36.52        | 1.43           | 15.77              | -22.18              | -13         | -9.18       | 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   |
| 1564.0                          | -73.34        | 2.62           | 27.30              | -48.66              | -40         | -8.66       | Horizontal |
| 1564.0                          | -73.60        | 2.62           | 27.30              | -48.92              | -40         | -8.92       | Vertical   |
| 2346.0                          | -40.86        | 2.87           | 27.62              | -16.11              | -13         | -3.11       | Vertical   |
| 2346.0                          | -40.48        | 2.87           | 27.62              | -15.73              | -13         | -2.73       | Horizontal |
| 129.1                           | -36.10        | 1.43           | 17.03              | -20.50              | -13         | -7.50       | Vertical   |
| 86.9                            | -35.63        | 1.62           | 16.63              | -20.62              | -13         | -7.62       | 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 17

### QPSK EIRP POWER FOR LTE BAND 17 (5MHZ BANDWIDTH)

| Test Results for Low Channel 706.5MHz  |               |                |                    |                     |             |             |            |
|----------------------------------------|---------------|----------------|--------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                         | SG Level(dBm) | Cable Loss(dB) | Antenna Factor(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 1413.0                                 | -49.11        | 2.61           | 27.28              | -24.44              | -13         | -11.44      | Horizontal |
| 1413.0                                 | -48.19        | 2.61           | 27.28              | -23.52              | -13         | -10.52      | Vertical   |
| 2119.5                                 | -44.93        | 2.87           | 27.59              | -20.21              | -13         | -7.21       | Vertical   |
| 2119.5                                 | -53.39        | 2.87           | 27.59              | -28.67              | -13         | -15.67      | Horizontal |
| 188.5                                  | -40.79        | 1.71           | 16.15              | -26.35              | -13         | -13.35      | Vertical   |
| 346.5                                  | -43.04        | 1.41           | 17.32              | -27.13              | -13         | -14.13      | Horizontal |
| Test Results For Mid Channel 710MHz    |               |                |                    |                     |             |             |            |
| 1420.0                                 | -51.43        | 2.62           | 27.30              | -26.75              | -13         | -13.75      | Horizontal |
| 1420.0                                 | -47.87        | 2.62           | 27.30              | -23.19              | -13         | -10.19      | Vertical   |
| 2130.0                                 | -45.33        | 2.87           | 27.62              | -20.58              | -13         | -7.58       | Vertical   |
| 2130.0                                 | -49.07        | 2.87           | 27.62              | -24.32              | -13         | -11.32      | Horizontal |
| 193.7                                  | -40.10        | 1.42           | 15.25              | -26.28              | -13         | -13.28      | Vertical   |
| 365.8                                  | -40.27        | 1.36           | 17.19              | -24.44              | -13         | -11.44      | Horizontal |
| Test Results for High Channel 713.5MHz |               |                |                    |                     |             |             |            |
| 1427.0                                 | -53.30        | 2.66           | 27.28              | -28.68              | -13         | -15.68      | Horizontal |
| 1427.0                                 | -50.38        | 2.66           | 27.28              | -25.76              | -13         | -12.76      | Vertical   |
| 2140.5                                 | -49.71        | 2.88           | 27.60              | -24.99              | -13         | -11.99      | Vertical   |
| 2140.5                                 | -52.97        | 2.88           | 27.60              | -28.25              | -13         | -15.25      | Horizontal |
| 187.8                                  | -39.54        | 1.32           | 17.29              | -23.57              | -13         | -10.57      | Vertical   |
| 302.9                                  | -36.53        | 1.72           | 16.89              | -21.36              | -13         | -8.36       | Horizontal |

**QPSK EIRP POWER FOR LTE BAND 17 (10MHZ BANDWIDTH)**

| Test Results for Low Channel 709MHz  |               |                |                    |                     |             |             |            |
|--------------------------------------|---------------|----------------|--------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                       | SG Level(dBm) | Cable Loss(dB) | Antenna Factor(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 1418.0                               | -53.78        | 2.62           | 27.30              | -29.10              | -13         | -16.10      | Horizontal |
| 1418.0                               | -53.07        | 2.62           | 27.30              | -28.39              | -13         | -15.39      | Vertical   |
| 2127.0                               | -48.11        | 2.87           | 27.62              | -23.36              | -13         | -10.36      | Vertical   |
| 2127.0                               | -50.70        | 2.87           | 27.62              | -25.95              | -13         | -12.95      | Horizontal |
| 192.2                                | -41.45        | 1.35           | 16.91              | -25.89              | -13         | -12.89      | Vertical   |
| 373.9                                | -42.98        | 1.62           | 16.31              | -28.29              | -13         | -15.29      | Horizontal |
| Test Results for Mid Channel 710MHz  |               |                |                    |                     |             |             |            |
| 1420.0                               | -47.90        | 2.62           | 27.30              | -23.22              | -13         | -10.22      | Horizontal |
| 1420.0                               | -49.26        | 2.62           | 27.30              | -24.58              | -13         | -11.58      | Vertical   |
| 2130.0                               | -52.61        | 2.87           | 27.62              | -27.86              | -13         | -14.86      | Vertical   |
| 2130.0                               | -50.86        | 2.87           | 27.62              | -26.11              | -13         | -13.11      | Horizontal |
| 196.4                                | -44.46        | 1.51           | 17.14              | -28.83              | -13         | -15.83      | Vertical   |
| 423.2                                | -43.45        | 1.77           | 16.88              | -28.34              | -13         | -15.34      | Horizontal |
| Test Results for High Channel 711MHz |               |                |                    |                     |             |             |            |
| 1422.0                               | -52.77        | 2.62           | 27.30              | -28.09              | -13         | -15.09      | Horizontal |
| 1422.0                               | -53.81        | 2.62           | 27.30              | -29.13              | -13         | -16.13      | Vertical   |
| 2133.0                               | -50.74        | 2.87           | 27.62              | -25.99              | -13         | -12.99      | Vertical   |
| 2133.0                               | -52.25        | 2.87           | 27.62              | -27.50              | -13         | -14.50      | Horizontal |
| 211.2                                | -41.77        | 1.78           | 15.95              | -27.60              | -13         | -14.60      | Vertical   |
| 454.4                                | -44.75        | 1.34           | 17.95              | -28.15              | -13         | -15.15      | 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.

## 9.8 LTE BAND 38

### QPSK EIRP POWER FOR LTE BAND 38 (5MHZ BANDWIDTH)

| Test Results for Low Channel 2572.5MHz  |               |                |                    |                     |              |             |            |
|-----------------------------------------|---------------|----------------|--------------------|---------------------|--------------|-------------|------------|
| Frequency(MHz)                          | SG Level(dBm) | Cable Loss(dB) | Antenna Factor(dB) | Absolute Level(dBm) | Limit (dBm ) | Margin(dBm) | Polarity   |
| 5145                                    | -51.27        | 4.01           | 27.5               | -27.78              | -25          | -2.78       | Horizontal |
| 5145                                    | -51.13        | 4.01           | 27.5               | -27.64              | -25          | -2.64       | Vertical   |
| 7717.5                                  | -50.31        | 5.09           | 27.8               | -27.60              | -25          | -2.60       | Vertical   |
| 7717.5                                  | -50.90        | 5.09           | 27.8               | -28.19              | -25          | -3.19       | Horizontal |
| Test Results for Mid Channel 2595MHz    |               |                |                    |                     |              |             |            |
| 5190                                    | -54.18        | 4.1            | 27.48              | -30.80              | -25          | -5.80       | Horizontal |
| 5190                                    | -51.65        | 4.1            | 27.48              | -28.27              | -25          | -3.27       | Vertical   |
| 7785                                    | -50.48        | 5.42           | 27.7               | -28.20              | -25          | -3.20       | Vertical   |
| 7785                                    | -54.68        | 5.42           | 27.7               | -32.40              | -25          | -7.40       | Horizontal |
| Test Results for High Channel 2617.5MHz |               |                |                    |                     |              |             |            |
| 5234                                    | -51.63        | 4.11           | 27.43              | -28.31              | -25          | -3.31       | Horizontal |
| 5234                                    | -49.63        | 4.11           | 27.43              | -26.31              | -25          | -1.31       | Vertical   |
| 7851                                    | -51.20        | 5.31           | 27.74              | -28.77              | -25          | -3.77       | Vertical   |
| 7851                                    | -54.98        | 5.31           | 27.74              | -32.55              | -25          | -7.55       | Horizontal |

**QPSK EIRP POWER FOR LTE BAND 38 (20MHZ BANDWIDTH)**

| Test Results for Low Channel 2580MHz  |               |                |                    |                     |             |             |            |
|---------------------------------------|---------------|----------------|--------------------|---------------------|-------------|-------------|------------|
| Frequency(MHz)                        | SG Level(dBm) | Cable Loss(dB) | Antenna Factor(dB) | Absolute Level(dBm) | Limit (dBm) | Margin(dBm) | Polarity   |
| 5160                                  | -51.65        | 3.89           | 27.5               | -28.04              | -25         | -3.04       | Horizontal |
| 5160                                  | -54.74        | 3.89           | 27.5               | -31.13              | -25         | -6.13       | Vertical   |
| 7740                                  | -54.15        | 5.33           | 27.8               | -31.68              | -25         | -6.68       | Vertical   |
| 7740                                  | -53.64        | 5.33           | 27.8               | -31.17              | -25         | -6.17       | Horizontal |
| Test Results for Mid Channel 2595MHz  |               |                |                    |                     |             |             |            |
| 5190                                  | -53.54        | 4.1            | 27.48              | -30.16              | -25         | -5.16       | Horizontal |
| 5190                                  | -53.40        | 4.1            | 27.48              | -30.02              | -25         | -5.02       | Vertical   |
| 7785                                  | -51.42        | 5.42           | 27.7               | -29.14              | -25         | -4.14       | Vertical   |
| 7785                                  | -50.60        | 5.42           | 27.7               | -28.32              | -25         | -3.32       | Horizontal |
| Test Results for High Channel 2610MHz |               |                |                    |                     |             |             |            |
| 5220                                  | -51.81        | 4.01           | 27.43              | -28.39              | -25         | -3.39       | Horizontal |
| 5220                                  | -52.16        | 4.01           | 27.43              | -28.74              | -25         | -3.74       | Vertical   |
| 7830                                  | -49.84        | 5.34           | 27.74              | -27.44              | -25         | -2.44       | Vertical   |
| 7830                                  | -51.93        | 5.34           | 27.74              | -29.53              | -25         | -4.53       | Horizontal |

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

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

. 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.

### 9.9 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   |
| 5145.0                                  | -62.54        | 5.23           | 35.81              | -31.96              | -25         | -6.96       | Horizontal |
| 5145.0                                  | -63.50        | 5.23           | 35.81              | -32.92              | -25         | -7.92       | Vertical   |
| 7717.5                                  | -62.71        | 5.67           | 36.85              | -31.53              | -25         | -6.53       | Vertical   |
| 7717.5                                  | -60.76        | 5.67           | 36.85              | -29.58              | -25         | -4.58       | Horizontal |
| 435.3                                   | -46.31        | 1.38           | 15.98              | -31.71              | -25         | -6.71       | Vertical   |
| 465.8                                   | -49.42        | 1.62           | 15.66              | -35.38              | -25         | -10.38      | Horizontal |
| Test Results for Mid Channel 2595MHz    |               |                |                    |                     |             |             |            |
| 5190.0                                  | -59.38        | 5.23           | 35.82              | -28.79              | -25         | -3.79       | Horizontal |
| 5190.0                                  | -61.29        | 5.23           | 35.82              | -30.70              | -25         | -5.70       | Vertical   |
| 7785.0                                  | -62.41        | 5.67           | 36.85              | -31.23              | -25         | -6.23       | Vertical   |
| 7785.0                                  | -62.98        | 5.67           | 36.85              | -31.80              | -25         | -6.80       | Horizontal |
| 510.4                                   | -47.97        | 1.62           | 16.17              | -33.42              | -25         | -8.42       | Vertical   |
| 562.9                                   | -44.47        | 1.74           | 17.63              | -28.58              | -25         | -3.58       | Horizontal |
| Test Results for High Channel 2652.5MHz |               |                |                    |                     |             |             |            |
| 5235.0                                  | -62.71        | 5.24           | 35.83              | -32.12              | -25         | -7.12       | Horizontal |
| 5235.0                                  | -63.77        | 5.24           | 35.83              | -33.18              | -25         | -8.18       | Vertical   |
| 7852.5                                  | -64.68        | 5.68           | 36.87              | -33.49              | -25         | -8.49       | Vertical   |
| 7852.5                                  | -62.09        | 5.68           | 36.87              | -30.90              | -25         | -5.90       | Horizontal |
| 197.6                                   | -49.45        | 1.55           | 15.84              | -35.16              | -25         | -10.16      | Vertical   |
| 353.1                                   | -47.97        | 1.51           | 17.06              | -32.42              | -25         | -7.42       | 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   |
| 5160.0                                | -61.01        | 5.23           | 35.82              | -30.42              | -25         | -5.42       | Horizontal |
| 5160.0                                | -59.48        | 5.23           | 35.82              | -28.89              | -25         | -3.89       | Vertical   |
| 7740.0                                | -64.00        | 5.67           | 36.86              | -32.81              | -25         | -7.81       | Vertical   |
| 7740.0                                | -63.57        | 5.67           | 36.86              | -32.38              | -25         | -7.38       | Horizontal |
| 128.9                                 | -49.89        | 1.43           | 15.51              | -35.81              | -25         | -10.81      | Vertical   |
| 344.8                                 | -46.06        | 1.40           | 16.97              | -30.49              | -25         | -5.49       | Horizontal |
| Test Results for Mid Channel 2595MHz  |               |                |                    |                     |             |             |            |
| 5190.0                                | -63.15        | 5.23           | 35.82              | -32.56              | -25         | -7.56       | Horizontal |
| 5190.0                                | -63.21        | 5.23           | 35.82              | -32.62              | -25         | -7.62       | Vertical   |
| 7785.0                                | -59.14        | 5.67           | 36.85              | -27.96              | -25         | -2.96       | Vertical   |
| 7785.0                                | -64.63        | 5.67           | 36.85              | -33.45              | -25         | -8.45       | Horizontal |
| 100.8                                 | -46.38        | 1.77           | 16.72              | -31.43              | -25         | -6.43       | Vertical   |
| 263.5                                 | -47.02        | 1.31           | 16.99              | -31.34              | -25         | -6.34       | Horizontal |
| Test Results for High Channel 2645MHz |               |                |                    |                     |             |             |            |
| 5220.0                                | -59.67        | 5.24           | 35.83              | -29.08              | -25         | -4.08       | Horizontal |
| 5220.0                                | -61.27        | 5.24           | 35.83              | -30.68              | -25         | -5.68       | Vertical   |
| 7830.0                                | -61.92        | 5.70           | 36.88              | -30.74              | -25         | -5.74       | Vertical   |
| 7830.0                                | -59.15        | 5.70           | 36.88              | -27.97              | -25         | -2.97       | Horizontal |
| 349.9                                 | -46.39        | 1.70           | 15.73              | -32.36              | -25         | -7.36       | Vertical   |
| 110.3                                 | -48.21        | 1.75           | 17.33              | -32.63              | -25         | -7.63       | 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.

### 9.10 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   |
| 3421.4                                  | -51.48        | 4.02           | 29.80            | -25.70              | -13         | -12.70      | Horizontal |
| 3421.4                                  | -44.75        | 4.02           | 29.80            | -18.97              | -13         | -5.97       | Vertical   |
| 5132.1                                  | -51.56        | 5.24           | 35.84            | -20.96              | -13         | -7.96       | Vertical   |
| 5132.1                                  | -53.53        | 5.24           | 35.84            | -22.93              | -13         | -9.93       | Horizontal |
| 112.6                                   | -44.95        | 1.52           | 15.57            | -30.90              | -13         | -17.90      | Vertical   |
| 220.5                                   | -46.64        | 1.33           | 17.14            | -30.83              | -13         | -17.83      | Horizontal |
| Test Results for Mid Channel 1745MHz    |               |                |                  |                     |             |             |            |
| 3490.0                                  | -49.74        | 4.03           | 30.00            | -23.77              | -13         | -10.77      | Horizontal |
| 3490.0                                  | -49.17        | 4.03           | 30.00            | -23.20              | -13         | -10.20      | Vertical   |
| 5235.0                                  | -51.77        | 5.25           | 35.86            | -21.16              | -13         | -8.16       | Vertical   |
| 5235.0                                  | -49.39        | 5.25           | 35.86            | -18.78              | -13         | -5.78       | Horizontal |
| 157.3                                   | -44.26        | 1.53           | 17.13            | -28.66              | -13         | -15.66      | Vertical   |
| 213.1                                   | -45.48        | 1.41           | 15.95            | -30.94              | -13         | -17.94      | Horizontal |
| Test Results for High Channel 1779.3MHz |               |                |                  |                     |             |             |            |
| 3558.6                                  | -52.11        | 4.05           | 30.01            | -26.15              | -13         | -13.15      | Horizontal |
| 3558.6                                  | -48.86        | 4.05           | 30.01            | -22.90              | -13         | -9.90       | Vertical   |
| 5337.9                                  | -53.92        | 5.26           | 35.86            | -23.32              | -13         | -10.32      | Vertical   |
| 5337.9                                  | -48.35        | 5.26           | 35.86            | -17.75              | -13         | -4.75       | Horizontal |
| 170.6                                   | -52.05        | 1.44           | 15.51            | -37.98              | -13         | -24.98      | Vertical   |
| 169.0                                   | -49.45        | 1.78           | 15.76            | -35.47              | -13         | -22.47      | 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   |
| 3440.0                                | -53.14        | 4.02           | 29.80            | -27.36              | -13         | -14.36      | Horizontal |
| 3440.0                                | -47.51        | 4.02           | 29.80            | -21.73              | -13         | -8.73       | Vertical   |
| 5160.0                                | -50.85        | 5.24           | 35.84            | -20.25              | -13         | -7.25       | Vertical   |
| 5160.0                                | -54.69        | 5.24           | 35.84            | -24.09              | -13         | -11.09      | Horizontal |
| 268.8                                 | -47.18        | 1.62           | 17.02            | -31.78              | -13         | -18.78      | Vertical   |
| 161.4                                 | -54.02        | 1.32           | 17.31            | -38.03              | -13         | -25.03      | Horizontal |
| Test Results for Mid Channel 1745MHz  |               |                |                  |                     |             |             |            |
| 3490.0                                | -45.41        | 4.03           | 30.00            | -19.44              | -13         | -6.44       | Horizontal |
| 3490.0                                | -52.59        | 4.03           | 30.00            | -26.62              | -13         | -13.62      | Vertical   |
| 5235.0                                | -53.50        | 5.25           | 35.86            | -22.89              | -13         | -9.89       | Vertical   |
| 5235.0                                | -50.44        | 5.25           | 35.86            | -19.83              | -13         | -6.83       | Horizontal |
| 159.9                                 | -46.49        | 1.45           | 15.17            | -32.77              | -13         | -19.77      | Vertical   |
| 172.1                                 | -50.94        | 1.48           | 17.82            | -34.60              | -13         | -21.60      | Horizontal |
| Test Results for High Channel 1770MHz |               |                |                  |                     |             |             |            |
| 3540.0                                | -46.14        | 2.91           | 27.68            | -21.37              | -13         | -8.37       | Horizontal |
| 3540.0                                | -49.15        | 2.91           | 27.68            | -24.38              | -13         | -11.38      | Vertical   |
| 5310.0                                | -54.93        | 5.26           | 35.86            | -24.33              | -13         | -11.33      | Vertical   |
| 5310.0                                | -51.13        | 5.26           | 35.86            | -20.53              | -13         | -7.53       | Horizontal |
| 197.3                                 | -45.50        | 1.76           | 16.38            | -30.88              | -13         | -17.88      | Vertical   |
| 158.5                                 | -52.38        | 1.43           | 17.13            | -36.68              | -13         | -23.68      | 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

According to FCC KDB 971168 D01 Section 9.0 and ANSI C63.26: 2015 Section 5.6

### LIMITS

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within  $\pm 0.00025\%$  ( $\pm 2.5\text{ppm}$ ) of the center frequency.

### TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

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

Voltage = low voltage, DC 3.6V, Normal, DC 3.85V and High voltage, DC 4.4V.

### Test Setup

Please refer to Section 2.4 of this test report.

### 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 2/4/5/7/12/13/17/38/41/66

## 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] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.6              | 1880               | 13.1                    | 0.006965                | 2.5            |
| 3.85             | 1880               | 13.5                    | 0.007164                | 2.5            |
| 4.4              | 1880               | 13.4                    | 0.007130                | 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               | 12.6                    | 0.006681                | 2.5            |
| Extreme (50C)       | 1880               | 11.4                    | 0.006042                | 2.5            |
| Extreme (40C)       | 1880               | 13.6                    | 0.007230                | 2.5            |
| Extreme (30C)       | 1880               | 13.9                    | 0.007383                | 2.5            |
| Extreme (10C)       | 1880               | 14.2                    | 0.007554                | 2.5            |
| Extreme (0C)        | 1880               | 12.1                    | 0.006410                | 2.5            |
| Extreme (-10C)      | 1880               | 12.7                    | 0.006734                | 2.5            |
| Extreme (-20C)      | 1880               | 13.8                    | 0.007367                | 2.5            |
| Extreme (-30C)      | 1880               | 14.2                    | 0.007568                | 2.5            |

**Band 2 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] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.6              | 1880               | 9.9                     | 0.005290                | 2.5            |
| 3.85             | 1880               | 8.9                     | 0.004715                | 2.5            |
| 4.4              | 1880               | 7.8                     | 0.004146                | 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               | 9.3                     | 0.004965                | 2.5            |
| Extreme (50C)       | 1880               | 9.4                     | 0.004975                | 2.5            |
| Extreme (40C)       | 1880               | 8.0                     | 0.004248                | 2.5            |
| Extreme (30C)       | 1880               | 8.6                     | 0.004560                | 2.5            |
| Extreme (10C)       | 1880               | 9.0                     | 0.004761                | 2.5            |
| Extreme (0C)        | 1880               | 8.0                     | 0.004246                | 2.5            |
| Extreme (-10C)      | 1880               | 8.6                     | 0.004601                | 2.5            |
| Extreme (-20C)      | 1880               | 9.0                     | 0.004784                | 2.5            |
| Extreme (-30C)      | 1880               | 8.0                     | 0.004266                | 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] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.6              | 1732.5             | 9.3                     | 0.005349                | 2.5            |
| 3.85             | 1732.5             | 8.8                     | 0.005066                | 2.5            |
| 4.4              | 1732.5             | 8.5                     | 0.004894                | 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             | 8.4                     | 0.004827                | 2.5            |
| Extreme (50C)       | 1732.5             | 9.1                     | 0.005251                | 2.5            |
| Extreme (40C)       | 1732.5             | 7.1                     | 0.004089                | 2.5            |
| Extreme (30C)       | 1732.5             | 5.5                     | 0.003176                | 2.5            |
| Extreme (10C)       | 1732.5             | 7.4                     | 0.004270                | 2.5            |
| Extreme (0C)        | 1732.5             | 9.4                     | 0.005405                | 2.5            |
| Extreme (-10C)      | 1732.5             | 8.6                     | 0.004945                | 2.5            |
| Extreme (-20C)      | 1732.5             | 6.4                     | 0.003703                | 2.5            |
| Extreme (-30C)      | 1732.5             | 8.7                     | 0.005044                | 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] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.6              | 1732.5             | 9.7                     | 0.005626                | 2.5            |
| 3.85             | 1732.5             | 8.9                     | 0.005148                | 2.5            |
| 4.4              | 1732.5             | 8.1                     | 0.004649                | 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             | 9.8                     | 0.005629                | 2.5            |
| Extreme (50C)       | 1732.5             | 8.7                     | 0.005019                | 2.5            |
| Extreme (40C)       | 1732.5             | 8.6                     | 0.004936                | 2.5            |
| Extreme (30C)       | 1732.5             | 8.6                     | 0.004987                | 2.5            |
| Extreme (10C)       | 1732.5             | 8.6                     | 0.004965                | 2.5            |
| Extreme (0C)        | 1732.5             | 8.4                     | 0.004866                | 2.5            |
| Extreme (-10C)      | 1732.5             | 9.1                     | 0.005259                | 2.5            |
| Extreme (-20C)      | 1732.5             | 8.8                     | 0.005061                | 2.5            |
| Extreme (-30C)      | 1732.5             | 8.5                     | 0.004920                | 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] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.6              | 836.5              | 5.4                     | 0.006465                | 2.5            |
| 3.85             | 836.5              | 6.8                     | 0.008086                | 2.5            |
| 4.4              | 836.5              | 4.5                     | 0.005360                | 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              | 6.0                     | 0.007196                | 2.5            |
| Extreme (50C)       | 836.5              | 6.1                     | 0.007281                | 2.5            |
| Extreme (40C)       | 836.5              | 6.2                     | 0.007373                | 2.5            |
| Extreme (30C)       | 836.5              | 6.2                     | 0.007374                | 2.5            |
| Extreme (10C)       | 836.5              | 5.0                     | 0.005959                | 2.5            |
| Extreme (0C)        | 836.5              | 5.8                     | 0.006908                | 2.5            |
| Extreme (-10C)      | 836.5              | 5.8                     | 0.006964                | 2.5            |
| Extreme (-20C)      | 836.5              | 6.5                     | 0.007782                | 2.5            |
| Extreme (-30C)      | 836.5              | 6.0                     | 0.007216                | 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] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.6              | 836.5              | 5.8                     | 0.006919                | 2.5            |
| 3.85             | 836.5              | 6.4                     | 0.007661                | 2.5            |
| 4.4              | 836.5              | 5.0                     | 0.005939                | 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              | 6.3                     | 0.007551                | 2.5            |
| Extreme (50C)       | 836.5              | 5.9                     | 0.007004                | 2.5            |
| Extreme (40C)       | 836.5              | 6.5                     | 0.007727                | 2.5            |
| Extreme (30C)       | 836.5              | 6.7                     | 0.007977                | 2.5            |
| Extreme (10C)       | 836.5              | 5.0                     | 0.006030                | 2.5            |
| Extreme (0C)        | 836.5              | 5.6                     | 0.006666                | 2.5            |
| Extreme (-10C)      | 836.5              | 5.1                     | 0.006147                | 2.5            |
| Extreme (-20C)      | 836.5              | 6.3                     | 0.007483                | 2.5            |
| Extreme (-30C)      | 836.5              | 5.9                     | 0.007064                | 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] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.6              | 2535               | 9.5                     | 0.003767                | 2.5            |
| 3.85             | 2535               | 8.9                     | 0.003507                | 2.5            |
| 4.4              | 2535               | 8.3                     | 0.003270                | 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               | 9.0                     | 0.003546                | 2.5            |
| Extreme (50C)       | 2535               | 9.4                     | 0.003691                | 2.5            |
| Extreme (40C)       | 2535               | 8.3                     | 0.003256                | 2.5            |
| Extreme (30C)       | 2535               | 8.9                     | 0.003516                | 2.5            |
| Extreme (10C)       | 2535               | 8.5                     | 0.003361                | 2.5            |
| Extreme (0C)        | 2535               | 8.3                     | 0.003290                | 2.5            |
| Extreme (-10C)      | 2535               | 9.7                     | 0.003833                | 2.5            |
| Extreme (-20C)      | 2535               | 8.5                     | 0.003355                | 2.5            |
| Extreme (-30C)      | 2535               | 8.0                     | 0.003172                | 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] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.6              | 2535               | 6.9                     | 0.002740                | 2.5            |
| 3.85             | 2535               | 6.0                     | 0.002367                | 2.5            |
| 4.4              | 2535               | 5.5                     | 0.002159                | 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               | 6.6                     | 0.002614                | 2.5            |
| Extreme (50C)       | 2535               | 5.7                     | 0.002252                | 2.5            |
| Extreme (40C)       | 2535               | 5.0                     | 0.001980                | 2.5            |
| Extreme (30C)       | 2535               | 6.7                     | 0.002627                | 2.5            |
| Extreme (10C)       | 2535               | 5.5                     | 0.002180                | 2.5            |
| Extreme (0C)        | 2535               | 4.7                     | 0.001841                | 2.5            |
| Extreme (-10C)      | 2535               | 4.9                     | 0.001915                | 2.5            |
| Extreme (-20C)      | 2535               | 5.6                     | 0.002206                | 2.5            |
| Extreme (-30C)      | 2535               | 6.1                     | 0.002394                | 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] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.6              | 707.5              | 8.6                     | 0.012158                | 2.5            |
| 3.85             | 707.5              | 10.4                    | 0.014635                | 2.5            |
| 4.4              | 707.5              | 8.3                     | 0.011783                | 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              | 8.4                     | 0.011871                | 2.5            |
| Extreme (50C)       | 707.5              | 7.6                     | 0.010696                | 2.5            |
| Extreme (40C)       | 707.5              | 7.9                     | 0.011100                | 2.5            |
| Extreme (30C)       | 707.5              | 8.4                     | 0.011918                | 2.5            |
| Extreme (10C)       | 707.5              | 7.7                     | 0.010830                | 2.5            |
| Extreme (0C)        | 707.5              | 8.7                     | 0.012243                | 2.5            |
| Extreme (-10C)      | 707.5              | 7.9                     | 0.011227                | 2.5            |
| Extreme (-20C)      | 707.5              | 9.0                     | 0.012691                | 2.5            |
| Extreme (-30C)      | 707.5              | 7.5                     | 0.010533                | 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] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.6              | 707.5              | 7.3                     | 0.010309                | 2.5            |
| 3.85             | 707.5              | 8.6                     | 0.012117                | 2.5            |
| 4.4              | 707.5              | 7.7                     | 0.010908                | 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              | 9.2                     | 0.012938                | 2.5            |
| Extreme (50C)       | 707.5              | 8.5                     | 0.011976                | 2.5            |
| Extreme (40C)       | 707.5              | 8.4                     | 0.011885                | 2.5            |
| Extreme (30C)       | 707.5              | 7.6                     | 0.010734                | 2.5            |
| Extreme (10C)       | 707.5              | 9.0                     | 0.012674                | 2.5            |
| Extreme (0C)        | 707.5              | 7.1                     | 0.010103                | 2.5            |
| Extreme (-10C)      | 707.5              | 7.4                     | 0.010503                | 2.5            |
| Extreme (-20C)      | 707.5              | 9.3                     | 0.013108                | 2.5            |
| Extreme (-30C)      | 707.5              | 8.6                     | 0.012121                | 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] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.6              | 782.0              | 12.9                    | 0.018191                | 2.5            |
| 3.85             | 782.0              | 14.1                    | 0.019810                | 2.5            |
| 4.4              | 782.0              | 13.0                    | 0.018337                | 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)        | 782.0              | 14.7                    | 0.020661                | 2.5            |
| Extreme (50C)       | 782.0              | 13.9                    | 0.019613                | 2.5            |
| Extreme (40C)       | 782.0              | 15.0                    | 0.021104                | 2.5            |
| Extreme (30C)       | 782.0              | 14.1                    | 0.019804                | 2.5            |
| Extreme (10C)       | 782.0              | 13.9                    | 0.019562                | 2.5            |
| Extreme (0C)        | 782.0              | 14.2                    | 0.019982                | 2.5            |
| Extreme (-10C)      | 782.0              | 14.0                    | 0.019672                | 2.5            |
| Extreme (-20C)      | 782.0              | 14.2                    | 0.020058                | 2.5            |
| Extreme (-30C)      | 782.0              | 13.3                    | 0.018775                | 2.5            |

**Band 13 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] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.6              | 782.0              | 12.8                    | 0.018079                | 2.5            |
| 3.85             | 782.0              | 13.4                    | 0.018832                | 2.5            |
| 4.4              | 782.0              | 13.3                    | 0.018765                | 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)        | 782.0              | 12.4                    | 0.017480                | 2.5            |
| Extreme (50C)       | 782.0              | 11.6                    | 0.016283                | 2.5            |
| Extreme (40C)       | 782.0              | 14.2                    | 0.019936                | 2.5            |
| Extreme (30C)       | 782.0              | 13.9                    | 0.019596                | 2.5            |
| Extreme (10C)       | 782.0              | 14.2                    | 0.019981                | 2.5            |
| Extreme (0C)        | 782.0              | 11.9                    | 0.016748                | 2.5            |
| Extreme (-10C)      | 782.0              | 12.8                    | 0.018073                | 2.5            |
| Extreme (-20C)      | 782.0              | 14.0                    | 0.019772                | 2.5            |
| Extreme (-30C)      | 782.0              | 14.6                    | 0.020527                | 2.5            |

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

## 10.7 LTE BAND 17

### Band 17 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] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.6              | 710                | 9.6                     | 0.013555                | 2.5            |
| 3.85             | 710                | 8.5                     | 0.011909                | 2.5            |
| 4.4              | 710                | 8.0                     | 0.011214                | 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                | 9.3                     | 0.013047                | 2.5            |
| Extreme (50C)       | 710                | 8.9                     | 0.012532                | 2.5            |
| Extreme (40C)       | 710                | 7.8                     | 0.010934                | 2.5            |
| Extreme (30C)       | 710                | 8.5                     | 0.012027                | 2.5            |
| Extreme (10C)       | 710                | 8.6                     | 0.012129                | 2.5            |
| Extreme (0C)        | 710                | 8.0                     | 0.011318                | 2.5            |
| Extreme (-10C)      | 710                | 9.4                     | 0.013236                | 2.5            |
| Extreme (-20C)      | 710                | 9.0                     | 0.012644                | 2.5            |
| Extreme (-30C)      | 710                | 8.1                     | 0.011358                | 2.5            |

**Band 17 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] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.6              | 710                | 9.7                     | 0.013607                | 2.5            |
| 3.85             | 710                | 9.1                     | 0.012747                | 2.5            |
| 4.4              | 710                | 8.0                     | 0.011199                | 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                | 9.6                     | 0.013585                | 2.5            |
| Extreme (50C)       | 710                | 8.7                     | 0.012199                | 2.5            |
| Extreme (40C)       | 710                | 8.5                     | 0.011966                | 2.5            |
| Extreme (30C)       | 710                | 8.4                     | 0.011859                | 2.5            |
| Extreme (10C)       | 710                | 8.1                     | 0.011351                | 2.5            |
| Extreme (0C)        | 710                | 8.1                     | 0.011346                | 2.5            |
| Extreme (-10C)      | 710                | 9.5                     | 0.013310                | 2.5            |
| Extreme (-20C)      | 710                | 8.5                     | 0.012005                | 2.5            |
| Extreme (-30C)      | 710                | 8.8                     | 0.012400                | 2.5            |

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

## 10.8 LTE BAND 38

Band 38 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] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.6              | 2595               | 8.8                     | 0.003406                | 2.5            |
| 3.85             | 2595               | 6.3                     | 0.002432                | 2.5            |
| 4.4              | 2595               | 7.7                     | 0.002963                | 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               | 7.3                     | 0.002822                | 2.5            |
| Extreme (50C)       | 2595               | 4.8                     | 0.001834                | 2.5            |
| Extreme (40C)       | 2595               | 5.9                     | 0.002263                | 2.5            |
| Extreme (30C)       | 2595               | 4.5                     | 0.001733                | 2.5            |
| Extreme (10C)       | 2595               | 6.4                     | 0.002472                | 2.5            |
| Extreme (0C)        | 2595               | 4.4                     | 0.001689                | 2.5            |
| Extreme (-10C)      | 2595               | 9.5                     | 0.003654                | 2.5            |
| Extreme (-20C)      | 2595               | 11.0                    | 0.004252                | 2.5            |
| Extreme (-30C)      | 2595               | 6.5                     | 0.002500                | 2.5            |

**Band 38 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] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.6              | 2595               | 8.8                     | 0.003405                | 2.5            |
| 3.85             | 2595               | 6.6                     | 0.002561                | 2.5            |
| 4.4              | 2595               | 6.7                     | 0.002586                | 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               | 7.9                     | 0.003058                | 2.5            |
| Extreme (50C)       | 2595               | 4.4                     | 0.001690                | 2.5            |
| Extreme (40C)       | 2595               | 5.7                     | 0.002203                | 2.5            |
| Extreme (30C)       | 2595               | 4.3                     | 0.001664                | 2.5            |
| Extreme (10C)       | 2595               | 6.9                     | 0.002640                | 2.5            |
| Extreme (0C)        | 2595               | 4.8                     | 0.001867                | 2.5            |
| Extreme (-10C)      | 2595               | 9.6                     | 0.003709                | 2.5            |
| Extreme (-20C)      | 2595               | 10.7                    | 0.004109                | 2.5            |
| Extreme (-30C)      | 2595               | 5.9                     | 0.002264                | 2.5            |

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

## 10.9 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] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.6              | 2595               | 8.2                     | 0.003151                | 2.5            |
| 3.85             | 2595               | 6.4                     | 0.002466                | 2.5            |
| 4.4              | 2595               | 7.3                     | 0.002805                | 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               | 7.5                     | 0.002900                | 2.5            |
| Extreme (50C)       | 2595               | 5.1                     | 0.001953                | 2.5            |
| Extreme (40C)       | 2595               | 5.4                     | 0.002091                | 2.5            |
| Extreme (30C)       | 2595               | 4.8                     | 0.001846                | 2.5            |
| Extreme (10C)       | 2595               | 6.8                     | 0.002623                | 2.5            |
| Extreme (0C)        | 2595               | 4.9                     | 0.001879                | 2.5            |
| Extreme (-10C)      | 2595               | 9.8                     | 0.003771                | 2.5            |
| Extreme (-20C)      | 2595               | 11.0                    | 0.004233                | 2.5            |
| Extreme (-30C)      | 2595               | 6.4                     | 0.002474                | 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] |
|------------------|--------------------|-------------------------|-------------------------|----------------|
| 3.6              | 2595               | 8.5                     | 0.003269                | 2.5            |
| 3.85             | 2595               | 6.3                     | 0.002441                | 2.5            |
| 4.4              | 2595               | 6.9                     | 0.002653                | 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               | 7.0                     | 0.002708                | 2.5            |
| Extreme (50C)       | 2595               | 4.5                     | 0.001739                | 2.5            |
| Extreme (40C)       | 2595               | 5.7                     | 0.002181                | 2.5            |
| Extreme (30C)       | 2595               | 5.2                     | 0.002014                | 2.5            |
| Extreme (10C)       | 2595               | 6.4                     | 0.002455                | 2.5            |
| Extreme (0C)        | 2595               | 4.5                     | 0.001719                | 2.5            |
| Extreme (-10C)      | 2595               | 9.7                     | 0.003753                | 2.5            |
| Extreme (-20C)      | 2595               | 10.3                    | 0.003990                | 2.5            |
| Extreme (-30C)      | 2595               | 6.5                     | 0.002522                | 2.5            |

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

## 10.10 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] |
|--------------------------------------------------------------------------|--------------------|-------------------------|-------------------------|----------------|
| <b>BAND 66 QPSK, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| 3.6                                                                      | 1745               | 12.4                    | 0.00709                 | 2.5            |
| 3.85                                                                     | 1745               | 13.6                    | 0.00777                 | 2.5            |
| 4.4                                                                      | 1745               | 13.2                    | 0.00755                 | 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 QPSK, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b> |                    |                         |                         |                |
| Normal (25C)                                                             | 1745               | 7.7                     | 0.004415                | 2.5            |
| Extreme (50C)                                                            | 1745               | 5.0                     | 0.002856                | 2.5            |
| Extreme (40C)                                                            | 1745               | 5.5                     | 0.003171                | 2.5            |
| Extreme (30C)                                                            | 1745               | 4.6                     | 0.002661                | 2.5            |
| Extreme (10C)                                                            | 1745               | 6.9                     | 0.003946                | 2.5            |
| Extreme (0C)                                                             | 1745               | 5.2                     | 0.002958                | 2.5            |
| Extreme (-10C)                                                           | 1745               | 9.6                     | 0.005522                | 2.5            |
| Extreme (-20C)                                                           | 1745               | 11.0                    | 0.006311                | 2.5            |
| Extreme (-30C)                                                           | 1745               | 6.7                     | 0.003820                | 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> |                    |                         |                         |                |
| 3.6                                                                       | 1745               | 13.1                    | 0.007533                | 2.5            |
| 3.85                                                                      | 1745               | 13.7                    | 0.007877                | 2.5            |
| 4.4                                                                       | 1745               | 13.7                    | 0.007831                | 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               | 7.9                     | 0.004529                | 2.5            |
| Extreme (50C)                                                             | 1745               | 5.1                     | 0.002948                | 2.5            |
| Extreme (40C)                                                             | 1745               | 5.4                     | 0.003091                | 2.5            |
| Extreme (30C)                                                             | 1745               | 4.5                     | 0.002587                | 2.5            |
| Extreme (10C)                                                             | 1745               | 6.6                     | 0.003803                | 2.5            |
| Extreme (0C)                                                              | 1745               | 5.1                     | 0.002930                | 2.5            |
| Extreme (-10C)                                                            | 1745               | 9.4                     | 0.005412                | 2.5            |
| Extreme (-20C)                                                            | 1745               | 10.6                    | 0.006078                | 2.5            |
| Extreme (-30C)                                                            | 1745               | 6.3                     | 0.003615                | 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.

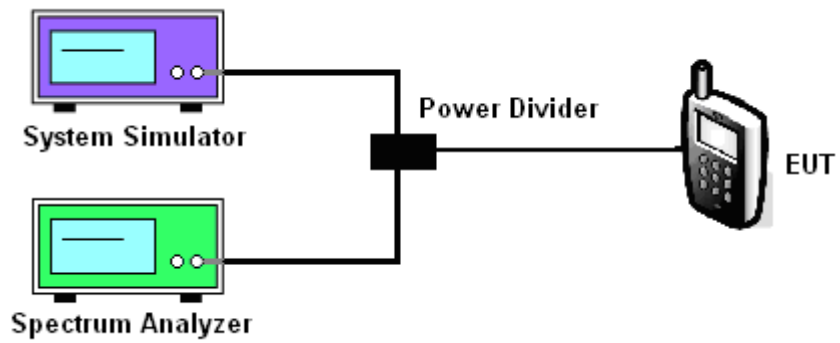
### 11.2 Measuring Instruments

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 2/4/5/7/12/13/17/38/41/66

Test data reference attachment.

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