

# FCC Test Report

**FCC ID** : N7NHL7688  
**Equipment** : Wireless Module  
**Model No.** : HL7688  
**Brand Name** : AirPrime  
**Applicant** : Sierra Wireless Inc.  
**Address** : 13811 Wireless Way Richmond, BC, V6V 3A4  
Canada  
**Standard** : 47 CFR FCC Part 22 Subpart H  
**Received Date** : Jul. 12, 2016  
**Tested Date** : Aug. 03 ~ Aug. 08, 2016

We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Approved & Reviewed by:

  
Gary Chang / Manager



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## Release Record

| Report No.     | Version | Description   | Issued Date   |
|----------------|---------|---------------|---------------|
| FG571601-01P22 | Rev. 01 | Initial issue | Aug. 18, 2016 |

## Summary of Test Results

| FCC Rules             | Test Items               | Measured                                   | Result |
|-----------------------|--------------------------|--------------------------------------------|--------|
| 2.1046 / 22.913(a)(2) | Effective Radiated Power | Power[dBm] :<br>WCDMA: 23.20<br>LTE: 22.88 | Pass   |
| 2.1053 / 22.917(a)    | Radiated Emissions       | Meet the requirement of limit              | Pass   |
| 2.1051 / 22.917(a)    | Conducted Emissions      | Meet the requirement of limit              | Pass   |
| 2.1051 / 22.917(a)    | Band Edge                | Meet the requirement of limit              | Pass   |
| 2.1049 / 22.917(a)    | Occupied Bandwidth       | Meet the requirement of limit              | Pass   |
| -                     | Peak to average ratio    | Meet the requirement of limit              | Pass   |
| 2.1055 / 22.355       | Frequency Stability      | Meet the requirement of limit              | Pass   |

# 1 General Description

## 1.1 Information

### 1.1.1 Specification of the Equipment under Test (EUT)

|                            |                                                                                                                                                                                                                                                           |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Operating Frequency</b> | WCDMA Band 5: 826.4 MHz ~ 846.6 MHz<br>LTE Band 5:<br>Channel Bandwidth: 1.4MHz: 824.7 MHz ~ 848.3 MHz<br>Channel Bandwidth: 3MHz: 825.5 MHz ~ 847.5 MHz<br>Channel Bandwidth: 5MHz: 826.5 MHz ~ 846.5 MHz<br>Channel Bandwidth: 10MHz: 829 MHz ~ 844 MHz |
| <b>Modulation</b>          | WCDMA: BPSK (Uplink)<br>LTE: QPSK, 16QAM (Uplink)                                                                                                                                                                                                         |
| <b>Release Version</b>     | WCDMA: R5 / R6 / R7 / R8<br>LTE: 8                                                                                                                                                                                                                        |
| <b>Duplex Mode</b>         | FDD                                                                                                                                                                                                                                                       |
| <b>UE Category</b>         | Cat. 1                                                                                                                                                                                                                                                    |
| <b>H/W Version</b>         | 1                                                                                                                                                                                                                                                         |
| <b>S/W Version</b>         | RHL76xx.A.2.10.1                                                                                                                                                                                                                                          |

### 1.1.2 Maximum ERP and Emission Designator

| Mode                   | Modulation | Maximum ERP(W) | Emission Designator |
|------------------------|------------|----------------|---------------------|
| WCDMA 850              | QPSK       | 0.209          | 4M10F9W             |
| LTE Band 5, CB: 1.4MHz | QPSK       | 0.194          | 1M09G7D             |
| LTE Band 5, CB: 1.4MHz | 16QAM      | 0.164          | 1M09W7D             |
| LTE Band 5, CB: 3MHz   | QPSK       | 0.189          | 2M69G7D             |
| LTE Band 5, CB: 3MHz   | 16QAM      | 0.165          | 2M70W7D             |
| LTE Band 5, CB: 5MHz   | QPSK       | 0.186          | 4M50G7D             |
| LTE Band 5, CB: 5MHz   | 16QAM      | 0.147          | 4M50W7D             |
| LTE Band 5, CB: 10MHz  | QPSK       | 0.194          | 9M03G7D             |
| LTE Band 5, CB: 10MHz  | 16QAM      | 0.160          | 9M00W7D             |

### 1.1.3 Antenna Details

| Ant. No. | Type   | Gain (dBi) | Connector | Remark |
|----------|--------|------------|-----------|--------|
| 1        | Dipole | 2          | R-SMA     | ---    |

Note: The antenna is for testing use only.

#### 1.1.4 EUT Operational Condition

|                             |                                                  |                                                  |                                                  |
|-----------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|
| <b>Supply Voltage</b>       | 3.7 Vdc from host                                |                                                  |                                                  |
| <b>Operational Voltage</b>  | <input checked="" type="checkbox"/> Vnom (3.7 V) | <input checked="" type="checkbox"/> Vmax (4.5 V) | <input checked="" type="checkbox"/> Vmin (3.2 V) |
| <b>Operational Climatic</b> | <input checked="" type="checkbox"/> Tnom (20°C)  | <input checked="" type="checkbox"/> Tmax (55°C)  | <input checked="" type="checkbox"/> Tmin (-30°C) |

#### 1.1.5 Operating Channel List

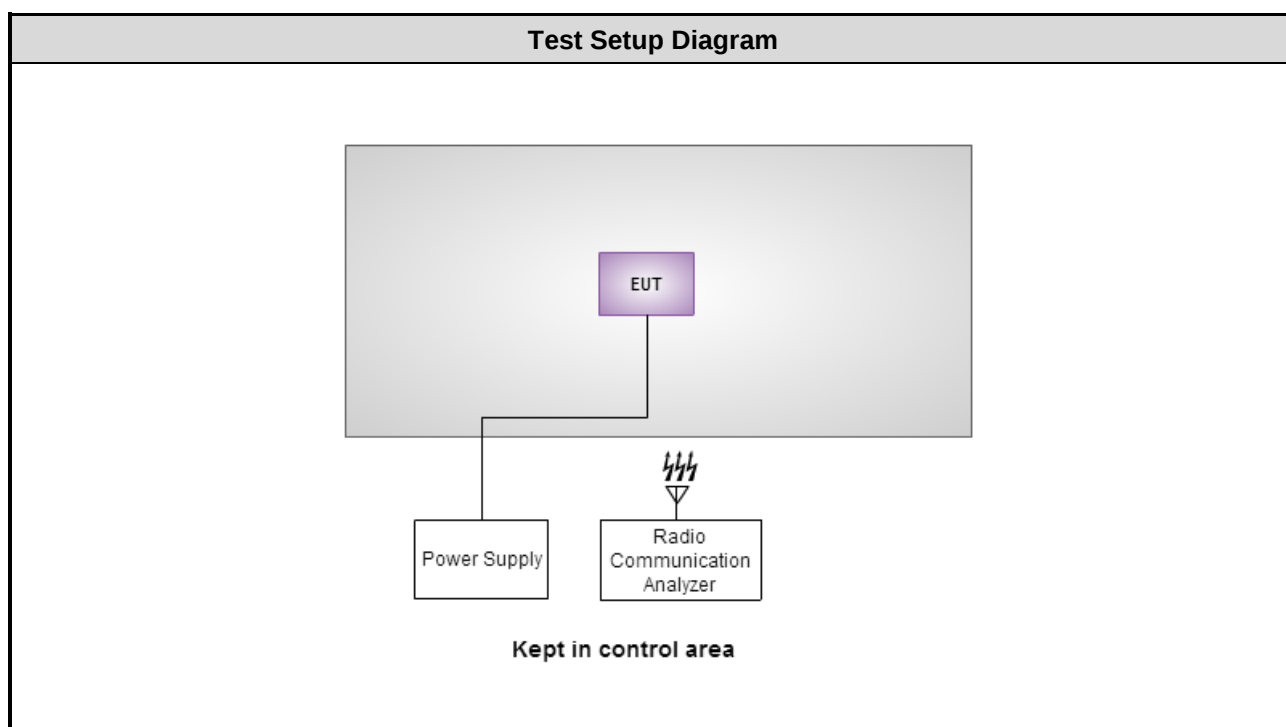
| WCDMA Band 5     |         |                 |
|------------------|---------|-----------------|
| Channel Location | Channel | Frequency (MHz) |
| Low              | 4132    | 826.4           |
| Middle           | 4182    | 836.4           |
| High             | 4233    | 846.6           |

| LTE Band 5               |         |                 |
|--------------------------|---------|-----------------|
| Channel Bandwidths (MHz) | Channel | Frequency (MHz) |
| 1.4                      | 20407   | 824.7           |
| 1.4                      | 20525   | 836.5           |
| 1.4                      | 20643   | 848.3           |
| 3                        | 20415   | 825.5           |
| 3                        | 20525   | 836.5           |
| 3                        | 20635   | 847.5           |
| 5                        | 20425   | 826.5           |
| 5                        | 20525   | 836.5           |
| 5                        | 20625   | 846.5           |
| 10                       | 20450   | 829.0           |
| 10                       | 20525   | 836.5           |
| 10                       | 20600   | 844.0           |

## 1.2 Local Support Equipment List

| Support Equipment List |              |          |           |          |        |                           |
|------------------------|--------------|----------|-----------|----------|--------|---------------------------|
| No.                    | Equipment    | Brand    | Model     | S/N      | FCC ID | Signal cable / Length (m) |
| 1                      | Power Supply | GWINSTEK | GPC-60300 | EM884797 | ---    | ---                       |

## 1.3 Test Setup Chart



## 1.4 The Equipment List

| Test Item                                                           | RF Conducted |                  |             |                  |                   |
|---------------------------------------------------------------------|--------------|------------------|-------------|------------------|-------------------|
| Test Site                                                           | (TH01-WS)    |                  |             |                  |                   |
| Instrument                                                          | Manufacturer | Model No.        | Serial No.  | Calibration Date | Calibration Until |
| Spectrum Analyzer                                                   | R&S          | FSV40            | 101063      | Feb. 17, 2016    | Feb. 16, 2017     |
| TEMP&HUMIDITY CHAMBER                                               | GIANT FORCE  | GCT-225-40-SP-SD | MAF1212-002 | Nov. 27, 2015    | Nov. 26, 2016     |
| Power Meter                                                         | Anritsu      | ML2495A          | 1241002     | Sep. 21, 2015    | Sep. 20, 2016     |
| Power Sensor                                                        | Anritsu      | MA2411B          | 1207366     | Sep. 21, 2015    | Sep. 20, 2016     |
| Radio Communication Analyzer                                        | Anritsu      | MT8820C          | 6201240341  | Mar. 28, 2016    | Mar. 27, 2017     |
| DC POWER SOURCE                                                     | GW INSTRON   | GPC-3060D        | EM884797    | Oct. 20, 2015    | Oct. 19, 2016     |
| Measurement Software                                                | Sporton      | Sporton_1        | 1.3.30      | NA               | NA                |
| Note: Calibration Interval of instruments listed above is one year. |              |                  |             |                  |                   |

| Test Item                                                           | Radiated Emission           |                   |                     |                  |                   |
|---------------------------------------------------------------------|-----------------------------|-------------------|---------------------|------------------|-------------------|
| Test Site                                                           | 966 chamber 3 / (03CH03-WS) |                   |                     |                  |                   |
| Instrument                                                          | Manufacturer                | Model No.         | Serial No.          | Calibration Date | Calibration Until |
| Spectrum Analyzer                                                   | Agilent                     | N9010A            | MY53400091          | Sep. 14, 2015    | Sep. 13, 2016     |
| Receiver                                                            | Agilent                     | N9038A            | MY53290044          | Oct. 14, 2015    | Oct. 13, 2016     |
| Bilog Antenna                                                       | SCHWARZBECK                 | VULB9168          | VULB9168-685        | Apr. 26, 2016    | Apr. 25, 2017     |
| Horn Antenna 1G-18G                                                 | SCHWARZBECK                 | BBHA 9120 D       | BBHA 9120 D 1206    | Feb. 24, 2016    | Feb. 23, 2017     |
| Horn Antenna 18G-40G                                                | SCHWARZBECK                 | BBHA 9170         | BBHA 9170517        | Nov. 04, 2015    | Nov. 03, 2016     |
| Preamplifier                                                        | EMC                         | EMC02325          | 980187              | Sep. 21, 2015    | Sep. 20, 2016     |
| Preamplifier                                                        | Agilent                     | 83017A            | MY53270014          | Sep. 07, 2015    | Sep. 06, 2016     |
| Preamplifier                                                        | EMC                         | EMC184045B        | 980192              | Sep. 01, 2015    | Aug. 31, 2016     |
| RF cable-3M                                                         | HUBER+SUHNER                | SUCOFLEX104       | MY22620/4           | Feb. 05, 2016    | Feb. 04, 2017     |
| RF cable-8M                                                         | HUBER+SUHNER                | SUCOFLEX104       | MY22600/4           | Feb. 05, 2016    | Feb. 04, 2017     |
| RF cable-1M                                                         | HUBER+SUHNER                | SUCOFLEX104       | MY22624/4           | Feb. 05, 2016    | Feb. 04, 2017     |
| LF cable-0.8M                                                       | EMC                         | EMC8D-NM-NM-800   | EMC8D-NM-NM-800-001 | Feb. 05, 2016    | Feb. 04, 2017     |
| LF cable-3M                                                         | EMC                         | EMC8D-NM-NM-3000  | 131103              | Feb. 05, 2016    | Feb. 04, 2017     |
| LF cable-13M                                                        | EMC                         | EMC8D-NM-NM-13000 | 131104              | Feb. 05, 2016    | Feb. 04, 2017     |
| Radio Communication Analyzer                                        | Anritsu                     | MT8820C           | 6201240341          | Mar. 28, 2016    | Mar. 27, 2017     |
| Measurement Software                                                | AUDIX                       | e3                | 6.120210g           | NA               | NA                |
| Note: Calibration Interval of instruments listed above is one year. |                             |                   |                     |                  |                   |

## 1.5 Test Standards

According to the specification of EUT, the EUT must comply with following standards.

47 CFR FCC Part 22 Subpart H

ANSI / TIA / EIA-603-D -2010

FCC KDB 971168 D01 Power Meas License Digital Systems v02r02

FCC KDB 412172 D01 Determining ERP and EIRP v01r01

## 1.6 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

| Measurement Uncertainty        |                 |
|--------------------------------|-----------------|
| Parameters                     | Uncertainty     |
| Bandwidth                      | $\pm 34.134$ Hz |
| Conducted power                | $\pm 0.808$ dB  |
| Frequency error                | $\pm 34.134$ Hz |
| Temperature                    | $\pm 0.6$ °C    |
| Conducted emission             | $\pm 2.670$ dB  |
| AC conducted emission          | $\pm 2.90$ dB   |
| Radiated emission $\leq 1$ GHz | $\pm 3.66$ dB   |
| Radiated emission $> 1$ GHz    | $\pm 5.37$ dB   |

## 2 Test Configuration

### 2.1 Testing Condition and Location Information

| Test Item          | Test Site | Ambient Condition | Tested By     |
|--------------------|-----------|-------------------|---------------|
| RF conducted       | TH01-WS   | 23°C / 64%        | Felix Sung    |
| Radiated Emissions | 03CH03-WS | 22°C / 64%        | Anderson Hung |

➤ FCC site registration No.: 207696

➤ IC site registration No.: 10807C-1

### 2.2 The Worst Test Modes and Channel Details

| WCDMA Band 5                                                                                                                                                                                                                       |              |                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------|
| Test item                                                                                                                                                                                                                          | Mode         | Test channel     |
| Effective Radiated Power                                                                                                                                                                                                           | WCDMA Band 5 | 4132, 4182, 4233 |
| Radiated Emissions $\leq$ 1GHz                                                                                                                                                                                                     | WCDMA Band 5 | 4182             |
| Radiated Emissions $>$ 1GHz                                                                                                                                                                                                        | WCDMA Band 5 | 4132, 4182, 4233 |
| Conducted Emissions                                                                                                                                                                                                                | WCDMA Band 5 | 4132, 4182, 4233 |
| Band Edge                                                                                                                                                                                                                          | WCDMA Band 5 | 4132, 4233       |
| Occupied Bandwidth                                                                                                                                                                                                                 | WCDMA Band 5 | 4132, 4182, 4233 |
| Peak to average ratio                                                                                                                                                                                                              | WCDMA Band 5 | 4132, 4182, 4233 |
| Frequency Stability                                                                                                                                                                                                                | WCDMA Band 5 | 4182             |
| <b>Note:</b><br>1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The <b>Y-plane</b> results were found as the worst case and were shown in this report. |              |                  |

| LTE Band 5                                                                                                                                                                                                                         |                    |              |                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-----------------------|
| Test item                                                                                                                                                                                                                          | Channel Bandwidths | Modulation   | Test channel          |
| Effective Radiated Power                                                                                                                                                                                                           | 1.4 MHz            | QPSK / 16QAM | 20407 / 20525 / 20643 |
| Conducted Emissions                                                                                                                                                                                                                | 3 MHz              | QPSK / 16QAM | 20415 / 20525 / 20635 |
| Occupied Bandwidth                                                                                                                                                                                                                 | 5 MHz              | QPSK / 16QAM | 20425 / 20525 / 20625 |
| Peak to Average Ratio                                                                                                                                                                                                              | 10 MHz             | QPSK / 16QAM | 20450 / 20525 / 20600 |
| Radiated Emission $\leq$ 1GHz                                                                                                                                                                                                      | 1.4 MHz            | QPSK         | 20407                 |
|                                                                                                                                                                                                                                    | 3 MHz              | QPSK         | 20415                 |
|                                                                                                                                                                                                                                    | 5 MHz              | QPSK         | 20425                 |
|                                                                                                                                                                                                                                    | 10 MHz             | QPSK         | 20450                 |
| Radiated Emission $>$ 1GHz                                                                                                                                                                                                         | 1.4 MHz            | QPSK         | 20407 / 20525 / 20643 |
|                                                                                                                                                                                                                                    | 3 MHz              | QPSK         | 20415 / 20525 / 20635 |
|                                                                                                                                                                                                                                    | 5 MHz              | QPSK         | 20425 / 20525 / 20625 |
|                                                                                                                                                                                                                                    | 10 MHz             | QPSK         | 20450 / 20525 / 20600 |
| Band Edge                                                                                                                                                                                                                          | 1.4 MHz            | QPSK / 16QAM | 20407 / 20643         |
|                                                                                                                                                                                                                                    | 3 MHz              | QPSK / 16QAM | 20415 / 20635         |
|                                                                                                                                                                                                                                    | 5 MHz              | QPSK / 16QAM | 20425 / 20625         |
|                                                                                                                                                                                                                                    | 10 MHz             | QPSK / 16QAM | 20450 / 20600         |
| Frequency Stability                                                                                                                                                                                                                | 1.4 MHz            | QPSK         | 20525                 |
|                                                                                                                                                                                                                                    | 3 MHz              | QPSK         | 20525                 |
|                                                                                                                                                                                                                                    | 5 MHz              | QPSK         | 20525                 |
|                                                                                                                                                                                                                                    | 10 MHz             | QPSK         | 20525                 |
| <b>Note:</b><br>1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The <b>Y-plane</b> results were found as the worst case and were shown in this report. |                    |              |                       |

### 3 Test Results

#### 3.1 Effective Radiated Power

##### 3.1.1 Limit of Effective Radiated Power

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

##### 3.1.2 Test Procedures

For Conducted power measurement:

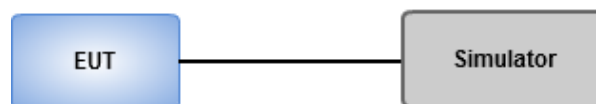
1. The EUT links up with simulator and is set to maximum output power level at low / middel / high channel.
2. Measure the output power of low / middle / high channel of the EUT.

For ERP measurement:

EPR can be calculated by below formula from KDB 412172 D01.

1.  $EIRP = P_T + G_T - L_C$   
 $P_T$  = transmitter output power, in dBm.  
 $G_T$  = gain of the transmitting antenna, in dBi (EIRP).  
 $L_C$  = signal attenuation in the connecting cable between the transmitter and antenna, in dB.
2.  $ERP = EIRP - 2.15 \text{ dB}$ .

##### 3.1.3 Test Setup



### 3.1.4 Test Result of Conducted Output Power (dBm)

| Band               | WCDMA BAND 5 |              |       |
|--------------------|--------------|--------------|-------|
| Channel            | 4132         | 4182         | 4233  |
| Frequency (MHz)    | 826.4        | 836.4        | 846.6 |
| RMC 12.2K          | 23.24        | <b>23.35</b> | 23.27 |
| HSDPA Subtest-1    | 23.22        | 23.27        | 23.24 |
| HSDPA Subtest-2    | 22.83        | 22.83        | 22.81 |
| HSDPA Subtest-3    | 22.61        | 22.64        | 22.62 |
| HSDPA Subtest-4    | 22.37        | 22.41        | 22.37 |
| DC-HSDPA Subtest-1 | 23.10        | 23.11        | 23.09 |
| DC-HSDPA Subtest-2 | 22.69        | 22.70        | 22.67 |
| DC-HSDPA Subtest-3 | 22.45        | 22.49        | 22.47 |
| DC-HSDPA Subtest-4 | 22.24        | 22.28        | 22.25 |
| HSUPA Subtest-1    | 22.80        | 22.92        | 22.81 |
| HSUPA Subtest-2    | 20.60        | 20.56        | 20.56 |
| HSUPA Subtest-3    | 21.60        | 21.69        | 21.55 |
| HSUPA Subtest-4    | 20.79        | 20.82        | 20.76 |
| HSUPA Subtest-5    | 22.43        | 22.90        | 22.80 |

| Band / Channel Bandwidth |    |           | LTE Band 5 / CB: 1.4MHz |       |       |
|--------------------------|----|-----------|-------------------------|-------|-------|
| Channel                  |    |           | 20407                   | 20525 | 20643 |
| Frequency (MHz)          |    |           | 824.7                   | 836.5 | 848.3 |
| Mode                     | RB | RB Offset | Maximum AV Power (dBm)  |       |       |
| QPSK                     | 1  | 0         | <b>23.03</b>            | 22.93 | 22.71 |
|                          | 1  | 2         | 22.85                   | 22.74 | 22.62 |
|                          | 1  | 5         | 22.87                   | 22.81 | 22.66 |
|                          | 3  | 0         | 22.93                   | 22.79 | 22.63 |
|                          | 3  | 1         | 22.85                   | 22.81 | 22.61 |
|                          | 3  | 2         | 22.85                   | 22.77 | 22.70 |
|                          | 6  | 0         | 21.74                   | 21.77 | 21.69 |
| 16QAM                    | 1  | 0         | 22.31                   | 22.05 | 22.16 |
|                          | 1  | 2         | 22.11                   | 22.01 | 22.10 |
|                          | 1  | 5         | 22.24                   | 21.92 | 21.89 |
|                          | 3  | 0         | 22.03                   | 21.89 | 21.8  |
|                          | 3  | 1         | 22.05                   | 21.86 | 21.78 |
|                          | 3  | 2         | 22.00                   | 22.04 | 21.77 |
|                          | 6  | 0         | 20.92                   | 20.93 | 20.71 |

| Band / Channel Bandwidth |    |           | LTE Band 5 / CB: 3MHz  |       |       |
|--------------------------|----|-----------|------------------------|-------|-------|
| Channel                  |    |           | 20415                  | 20525 | 20635 |
| Frequency (MHz)          |    |           | 825.5                  | 836.5 | 847.5 |
| Mode                     | RB | RB Offset | Maximum AV Power (dBm) |       |       |
| QPSK                     | 1  | 0         | <b>22.91</b>           | 22.84 | 22.65 |
|                          | 1  | 7         | 22.88                  | 22.74 | 22.59 |
|                          | 1  | 14        | 22.76                  | 22.76 | 22.49 |
|                          | 8  | 0         | 21.88                  | 21.79 | 21.60 |
|                          | 8  | 4         | 21.84                  | 21.78 | 21.62 |
|                          | 8  | 7         | 21.97                  | 21.69 | 21.41 |
|                          | 15 | 0         | 21.83                  | 21.69 | 21.63 |
| 16QAM                    | 1  | 0         | 22.25                  | 22.19 | 22.10 |
|                          | 1  | 7         | 22.33                  | 22.11 | 21.95 |
|                          | 1  | 14        | 22.11                  | 22.01 | 21.97 |
|                          | 8  | 0         | 20.90                  | 20.83 | 20.55 |
|                          | 8  | 4         | 20.94                  | 20.84 | 20.65 |
|                          | 8  | 7         | 20.98                  | 20.82 | 20.71 |
|                          | 15 | 0         | 20.99                  | 20.76 | 20.55 |

| Band / Channel Bandwidth |    |           | LTE Band 5 / CB: 5MHz  |       |       |
|--------------------------|----|-----------|------------------------|-------|-------|
| Channel                  |    |           | 20425                  | 20525 | 20625 |
| Frequency (MHz)          |    |           | 826.5                  | 836.5 | 846.5 |
| Mode                     | RB | RB Offset | Maximum AV Power (dBm) |       |       |
| QPSK                     | 1  | 0         | <b>22.85</b>           | 22.72 | 22.68 |
|                          | 1  | 12        | 22.82                  | 22.63 | 22.62 |
|                          | 1  | 24        | 22.77                  | 22.56 | 22.47 |
|                          | 12 | 0         | 21.82                  | 21.75 | 21.65 |
|                          | 12 | 6         | 21.84                  | 21.80 | 21.61 |
|                          | 12 | 11        | 21.87                  | 21.78 | 21.56 |
|                          | 25 | 0         | 21.78                  | 21.76 | 21.58 |
| 16QAM                    | 1  | 0         | 21.83                  | 21.77 | 21.82 |
|                          | 1  | 12        | 21.82                  | 21.72 | 21.74 |
|                          | 1  | 24        | 21.72                  | 21.66 | 21.63 |
|                          | 12 | 0         | 20.92                  | 20.91 | 20.75 |
|                          | 12 | 6         | 20.95                  | 20.84 | 20.71 |
|                          | 12 | 11        | 20.93                  | 20.83 | 20.52 |
|                          | 25 | 0         | 20.90                  | 20.76 | 20.64 |

| Band / Channel Bandwidth |    |           | LTE Band 5 / CB: 10MHz |       |       |
|--------------------------|----|-----------|------------------------|-------|-------|
| Channel                  |    |           | 20450                  | 20525 | 20600 |
| Frequency (MHz)          |    |           | 829                    | 836.5 | 844   |
| Mode                     | RB | RB Offset | Maximum AV Power (dBm) |       |       |
| QPSK                     | 1  | 0         | <b>23.02</b>           | 22.58 | 22.65 |
|                          | 1  | 24        | 22.71                  | 22.47 | 22.57 |
|                          | 1  | 49        | 22.59                  | 22.39 | 22.19 |
|                          | 25 | 0         | 21.85                  | 21.78 | 21.74 |
|                          | 25 | 12        | 21.84                  | 21.73 | 21.63 |
|                          | 25 | 24        | 21.98                  | 21.66 | 21.57 |
|                          | 50 | 0         | 21.84                  | 21.73 | 21.64 |
| 16QAM                    | 1  | 0         | 22.08                  | 21.97 | 22.13 |
|                          | 1  | 24        | 22.05                  | 21.95 | 22.18 |
|                          | 1  | 49        | 22.07                  | 21.78 | 21.89 |
|                          | 25 | 0         | 20.88                  | 20.80 | 20.72 |
|                          | 25 | 12        | 20.81                  | 20.75 | 20.63 |
|                          | 25 | 24        | 20.80                  | 20.69 | 20.59 |
|                          | 50 | 0         | 20.87                  | 20.82 | 20.66 |

### 3.1.5 Test Result of Effective Radiated Power (dBm)

| Mode    | WCDMA Band 5, RMC 12.2K |                              |                        |            |              |         |           |
|---------|-------------------------|------------------------------|------------------------|------------|--------------|---------|-----------|
| Channel | Frequency (MHz)         | Conducted Output Power (dBm) | Max Antenna Gain (dBi) | EIRP (dBm) | ERP (dBm)    | ERP (W) | Limit (W) |
| 4132    | 826.4                   | 23.24                        | 2                      | 25.24      | 23.09        | 0.204   | 7         |
| 4182    | 836.4                   | 23.35                        | 2                      | 25.35      | <b>23.20</b> | 0.209   | 7         |
| 4233    | 846.6                   | 23.27                        | 2                      | 25.27      | 23.12        | 0.205   | 7         |

NOTE: ERP = S.G power value + correction factor - 2.15.

| Mode    | LTE Band 5, CB: 1.4MHz, QPSK |                              |                        |            |              |         |           |
|---------|------------------------------|------------------------------|------------------------|------------|--------------|---------|-----------|
| Channel | Frequency (MHz)              | Conducted Output Power (dBm) | Max Antenna Gain (dBi) | EIRP (dBm) | ERP (dBm)    | ERP (W) | Limit (W) |
| 20407   | 824.7                        | 23.03                        | 2                      | 25.03      | <b>22.88</b> | 0.194   | 7         |
| 20525   | 836.5                        | 22.93                        | 2                      | 24.93      | 22.78        | 0.190   | 7         |
| 20643   | 848.3                        | 22.71                        | 2                      | 24.71      | 22.56        | 0.180   | 7         |

| Mode    | LTE Band 5, CB: 1.4MHz, 16QAM |                              |                        |            |           |         |           |
|---------|-------------------------------|------------------------------|------------------------|------------|-----------|---------|-----------|
| Channel | Frequency (MHz)               | Conducted Output Power (dBm) | Max Antenna Gain (dBi) | EIRP (dBm) | ERP (dBm) | ERP (W) | Limit (W) |
| 20407   | 824.7                         | 22.31                        | 2                      | 24.31      | 22.16     | 0.164   | 7         |
| 20525   | 836.5                         | 22.05                        | 2                      | 24.05      | 21.90     | 0.155   | 7         |
| 20643   | 848.3                         | 22.16                        | 2                      | 24.16      | 22.01     | 0.159   | 7         |

| Mode    | LTE Band 5, CB: 3MHz, QPSK |                              |                        |            |           |         |           |
|---------|----------------------------|------------------------------|------------------------|------------|-----------|---------|-----------|
| Channel | Frequency (MHz)            | Conducted Output Power (dBm) | Max Antenna Gain (dBi) | EIRP (dBm) | ERP (dBm) | ERP (W) | Limit (W) |
| 20415   | 825.5                      | 22.91                        | 2                      | 24.91      | 22.76     | 0.189   | 7         |
| 20525   | 836.5                      | 22.84                        | 2                      | 24.84      | 22.69     | 0.186   | 7         |
| 20635   | 847.5                      | 22.65                        | 2                      | 24.65      | 22.5      | 0.178   | 7         |

| Mode    | LTE Band 5, CB: 3MHz, 16QAM |                              |                        |            |           |         |           |
|---------|-----------------------------|------------------------------|------------------------|------------|-----------|---------|-----------|
| Channel | Frequency (MHz)             | Conducted Output Power (dBm) | Max Antenna Gain (dBi) | EIRP (dBm) | ERP (dBm) | ERP (W) | Limit (W) |
| 20415   | 825.5                       | 22.33                        | 2                      | 24.33      | 22.18     | 0.165   | 7         |
| 20525   | 836.5                       | 22.19                        | 2                      | 24.19      | 22.04     | 0.160   | 7         |
| 20635   | 847.5                       | 22.1                         | 2                      | 24.1       | 21.95     | 0.157   | 7         |

NOTE: ERP = S.G power value + correction factor - 2.15.

| Mode    | LTE Band 5, CB: 5MHz, QPSK |                              |                        |            |           |         |           |
|---------|----------------------------|------------------------------|------------------------|------------|-----------|---------|-----------|
| Channel | Frequency (MHz)            | Conducted Output Power (dBm) | Max Antenna Gain (dBi) | EIRP (dBm) | ERP (dBm) | ERP (W) | Limit (W) |
| 20425   | 826.5                      | 22.85                        | 2                      | 24.85      | 22.7      | 0.186   | 7         |
| 20525   | 836.5                      | 22.72                        | 2                      | 24.72      | 22.57     | 0.181   | 7         |
| 20625   | 846.5                      | 22.68                        | 2                      | 24.68      | 22.53     | 0.179   | 7         |

| Mode    | LTE Band 5, CB: 5MHz, 16QAM |                              |                        |            |           |         |           |
|---------|-----------------------------|------------------------------|------------------------|------------|-----------|---------|-----------|
| Channel | Frequency (MHz)             | Conducted Output Power (dBm) | Max Antenna Gain (dBi) | EIRP (dBm) | ERP (dBm) | ERP (W) | Limit (W) |
| 20425   | 826.5                       | 21.83                        | 2                      | 23.83      | 21.68     | 0.147   | 7         |
| 20525   | 836.5                       | 21.77                        | 2                      | 23.77      | 21.62     | 0.145   | 7         |
| 20625   | 846.5                       | 21.82                        | 2                      | 23.82      | 21.67     | 0.147   | 7         |

| Mode    | LTE Band 5, CB: 10MHz, QPSK |                              |                        |            |           |         |           |
|---------|-----------------------------|------------------------------|------------------------|------------|-----------|---------|-----------|
| Channel | Frequency (MHz)             | Conducted Output Power (dBm) | Max Antenna Gain (dBi) | EIRP (dBm) | ERP (dBm) | ERP (W) | Limit (W) |
| 20450   | 829.0                       | 23.02                        | 2                      | 25.02      | 22.87     | 0.194   | 7         |
| 20525   | 836.5                       | 22.58                        | 2                      | 24.58      | 22.43     | 0.175   | 7         |
| 20600   | 844.0                       | 22.65                        | 2                      | 24.65      | 22.5      | 0.178   | 7         |

| Mode    | LTE Band 5, CB: 10MHz, 16QAM |                              |                        |            |           |         |           |
|---------|------------------------------|------------------------------|------------------------|------------|-----------|---------|-----------|
| Channel | Frequency (MHz)              | Conducted Output Power (dBm) | Max Antenna Gain (dBi) | EIRP (dBm) | ERP (dBm) | ERP (W) | Limit (W) |
| 20450   | 829.0                        | 22.08                        | 2                      | 24.08      | 21.93     | 0.156   | 7         |
| 20525   | 836.5                        | 21.97                        | 2                      | 23.97      | 21.82     | 0.152   | 7         |
| 20600   | 844.0                        | 22.18                        | 2                      | 24.18      | 22.03     | 0.160   | 7         |

NOTE: ERP = S.G power value + correction factor - 2.15.

## 3.2 Radiated Emissions

### 3.2.1 Limit of Radiated Emissions

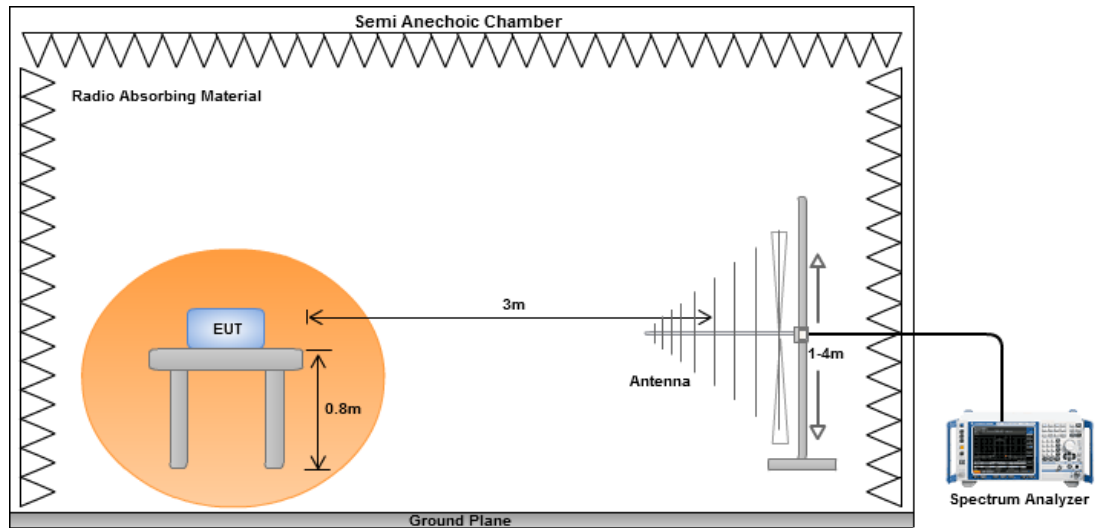
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB equal to -13dBm.

### 3.2.2 Test Procedures

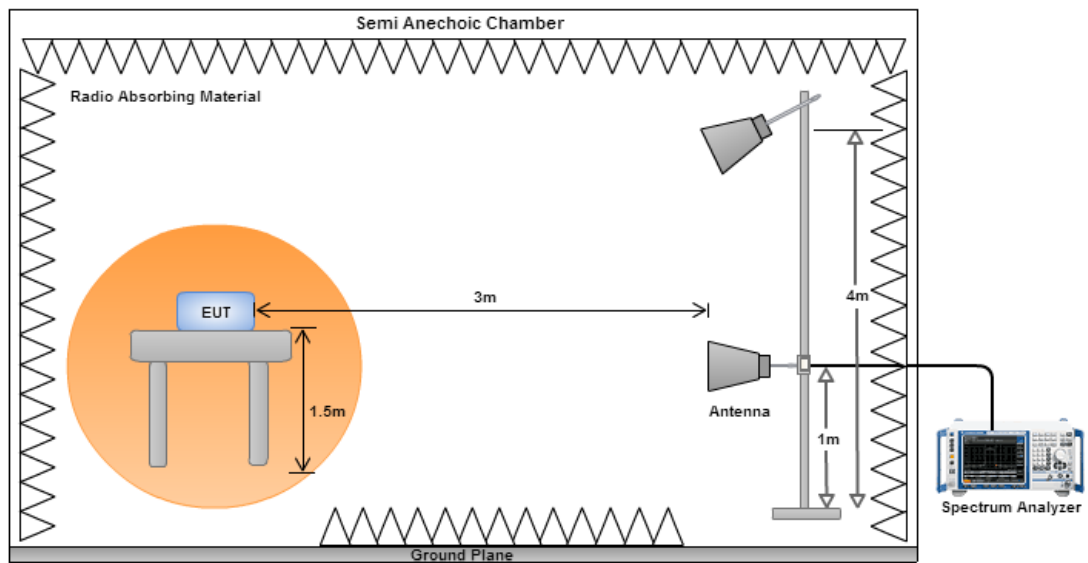
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.
4. After finding the max radiated emission, substitution method will be used for getting effective radiated power. EUT will be removed and substitution antenna will be placed at same position. Signal generator will output CW signal to substitution antenna through a RF cable. Rotate turntable and move antenna to find maximum radiated emission. Adjust output power of signal generator to let the maximum radiated emission is same as step 3. Record the output power level.
5.  $E.I.R.P = \text{output power of step 4} + \text{gain of substitution antenna} - \text{cable loss of RF cable}$ . ERP can be calculated by below formula:  
 $E.R.P = E.I.R.P - 2.15\text{dB}$ .

### 3.2.3 Test Setup

#### Radiated Emissions below 1 GHz



#### Radiated Emissions above 1 GHz



### 3.2.4 Test Result of Radiated Emissions below 1GHz

| Mode            | WCDMA Band 5, Channel: 4182 |             |             |             |                   |                       |                        |
|-----------------|-----------------------------|-------------|-------------|-------------|-------------------|-----------------------|------------------------|
| Frequency (MHz) | Antenna Polarity            | E.R.P (dBm) | Limit (dBm) | Margin (dB) | S.A Reading (dBm) | S.G Power Vaule (dBm) | Correction Factor (dB) |
| 38.25           | H                           | -64.19      | -13.00      | -51.19      | -64.33            | -49.33                | -12.71                 |
| 70.25           | H                           | -66.91      | -13.00      | -53.91      | -57.96            | -59.70                | -5.06                  |
| 149.25          | H                           | -68.95      | -13.00      | -55.95      | -60.61            | -65.70                | -1.10                  |
| 236.11          | H                           | -71.88      | -13.00      | -58.88      | -60.94            | -74.17                | 4.44                   |
| 356.44          | H                           | -80.41      | -13.00      | -67.41      | -74.49            | -82.63                | 4.37                   |
| 767.20          | H                           | -72.94      | -13.00      | -59.94      | -74.08            | -74.22                | 3.43                   |
| 38.88           | V                           | -63.95      | -13.00      | -50.95      | -53.76            | -49.19                | -12.61                 |
| 70.14           | V                           | -65.44      | -13.00      | -52.44      | -55.53            | -58.20                | -5.09                  |
| 150.25          | V                           | -77.57      | -13.00      | -64.57      | -72.17            | -74.38                | -1.04                  |
| 236.25          | V                           | -76.40      | -13.00      | -63.40      | -70.73            | -78.69                | 4.44                   |
| 355.49          | V                           | -76.03      | -13.00      | -63.03      | -71.02            | -78.25                | 4.37                   |
| 767.59          | V                           | -69.37      | -13.00      | -56.37      | -71.42            | -70.65                | 3.43                   |

NOTE: ERP = S.G power value + correction factor - 2.15.

| Mode            | LTE Band 5, CB:1.4MHz, 1RB, Offset 0, Channel: 20407 |             |             |             |                   |                       |                        |
|-----------------|------------------------------------------------------|-------------|-------------|-------------|-------------------|-----------------------|------------------------|
| Frequency (MHz) | Antenna Polarity                                     | E.R.P (dBm) | Limit (dBm) | Margin (dB) | S.A Reading (dBm) | S.G Power Vaule (dBm) | Correction Factor (dB) |
| 37.48           | H                                                    | -64.36      | -13.00      | -51.36      | -64.52            | -49.37                | -12.84                 |
| 70.83           | H                                                    | -71.33      | -13.00      | -58.33      | -62.37            | -64.28                | -4.90                  |
| 149.86          | H                                                    | -78.88      | -13.00      | -65.88      | -70.54            | -75.67                | -1.06                  |
| 235.48          | H                                                    | -79.49      | -13.00      | -66.49      | -68.54            | -81.78                | 4.44                   |
| 355.07          | H                                                    | -76.66      | -13.00      | -63.66      | -70.72            | -78.89                | 4.38                   |
| 769.13          | H                                                    | -67.86      | -13.00      | -54.86      | -69.03            | -69.14                | 3.43                   |
| 39.70           | V                                                    | -63.83      | -13.00      | -50.83      | -53.82            | -49.21                | -12.47                 |
| 69.77           | V                                                    | -64.48      | -13.00      | -51.48      | -54.57            | -57.13                | -5.20                  |
| 150.07          | V                                                    | -76.12      | -13.00      | -63.12      | -70.73            | -72.92                | -1.05                  |
| 236.05          | V                                                    | -75.92      | -13.00      | -62.92      | -70.24            | -78.21                | 4.44                   |
| 355.47          | V                                                    | -75.86      | -13.00      | -62.86      | -70.85            | -78.08                | 4.37                   |
| 767.99          | V                                                    | -67.60      | -13.00      | -54.60      | -69.65            | -68.88                | 3.43                   |

NOTE: ERP = S.G power value + correction factor - 2.15.

| Mode            | LTE Band 5, CB:3MHz, 1RB, Offset 0, Channel: 20415 |             |             |             |                   |                       |                        |
|-----------------|----------------------------------------------------|-------------|-------------|-------------|-------------------|-----------------------|------------------------|
| Frequency (MHz) | Antenna Polarity                                   | E.R.P (dBm) | Limit (dBm) | Margin (dB) | S.A Reading (dBm) | S.G Power Vaule (dBm) | Correction Factor (dB) |
| 37.48           | H                                                  | -66.20      | -13.00      | -53.20      | -66.36            | -51.21                | -12.84                 |
| 70.71           | H                                                  | -70.68      | -13.00      | -57.68      | -61.72            | -63.60                | -4.93                  |
| 149.86          | H                                                  | -79.41      | -13.00      | -66.41      | -71.07            | -76.20                | -1.06                  |
| 236.01          | H                                                  | -81.04      | -13.00      | -68.04      | -70.10            | -83.33                | 4.44                   |
| 356.89          | H                                                  | -76.33      | -13.00      | -63.33      | -70.42            | -78.55                | 4.37                   |
| 769.59          | H                                                  | -68.81      | -13.00      | -55.81      | -69.99            | -70.09                | 3.43                   |
| 39.70           | V                                                  | -64.43      | -13.00      | -51.43      | -54.42            | -49.81                | -12.47                 |
| 70.74           | V                                                  | -62.73      | -13.00      | -49.73      | -52.81            | -55.66                | -4.92                  |
| 150.75          | V                                                  | -62.15      | -13.00      | -49.15      | -56.71            | -58.99                | -1.01                  |
| 236.84          | V                                                  | -71.18      | -13.00      | -58.18      | -65.53            | -73.47                | 4.44                   |
| 356.89          | V                                                  | -75.77      | -13.00      | -62.77      | -70.77            | -77.99                | 4.37                   |
| 768.78          | V                                                  | -66.81      | -13.00      | -53.81      | -68.86            | -68.09                | 3.43                   |

NOTE: ERP = S.G power value + correction factor - 2.15.

| Mode            | LTE Band 5, CB:5MHz, 1RB, Offset 0, Channel: 20425 |             |             |             |                   |                       |                        |
|-----------------|----------------------------------------------------|-------------|-------------|-------------|-------------------|-----------------------|------------------------|
| Frequency (MHz) | Antenna Polarity                                   | E.R.P (dBm) | Limit (dBm) | Margin (dB) | S.A Reading (dBm) | S.G Power Vaule (dBm) | Correction Factor (dB) |
| 38.29           | H                                                  | -69.53      | -13.00      | -56.53      | -69.67            | -54.68                | -12.70                 |
| 70.74           | H                                                  | -70.59      | -13.00      | -57.59      | -61.63            | -63.52                | -4.92                  |
| 151.42          | H                                                  | -79.27      | -13.00      | -66.27      | -70.93            | -76.14                | -0.98                  |
| 238.92          | H                                                  | -80.96      | -13.00      | -67.96      | -70.07            | -83.25                | 4.44                   |
| 356.71          | H                                                  | -76.85      | -13.00      | -63.85      | -70.94            | -79.07                | 4.37                   |
| 768.17          | H                                                  | -68.02      | -13.00      | -55.02      | -69.17            | -69.30                | 3.43                   |
| 38.73           | V                                                  | -65.02      | -13.00      | -52.02      | -54.80            | -50.24                | -12.63                 |
| 70.74           | V                                                  | -63.98      | -13.00      | -50.98      | -54.06            | -56.91                | -4.92                  |
| 149.58          | V                                                  | -76.39      | -13.00      | -63.39      | -71.05            | -73.16                | -1.08                  |
| 237.65          | V                                                  | -75.85      | -13.00      | -62.85      | -70.23            | -78.14                | 4.44                   |
| 354.37          | V                                                  | -76.23      | -13.00      | -63.23      | -71.21            | -78.46                | 4.38                   |
| 769.26          | V                                                  | -66.60      | -13.00      | -53.60      | -68.65            | -67.88                | 3.43                   |

NOTE: ERP = S.G power value + correction factor - 2.15.

| Mode            | LTE Band 5, CB:10MHz, 1RB, Offset 0, Channel: 20450 |             |             |             |                   |                       |                        |
|-----------------|-----------------------------------------------------|-------------|-------------|-------------|-------------------|-----------------------|------------------------|
| Frequency (MHz) | Antenna Polarity                                    | E.R.P (dBm) | Limit (dBm) | Margin (dB) | S.A Reading (dBm) | S.G Power Vaule (dBm) | Correction Factor (dB) |
| 37.48           | H                                                   | -64.48      | -13.00      | -51.48      | -64.64            | -49.49                | -12.84                 |
| 70.74           | H                                                   | -69.96      | -13.00      | -56.96      | -61.00            | -62.89                | -4.92                  |
| 151.92          | H                                                   | -78.74      | -13.00      | -65.74      | -70.40            | -75.64                | -0.95                  |
| 236.01          | H                                                   | -80.83      | -13.00      | -67.83      | -69.89            | -83.12                | 4.44                   |
| 358.83          | H                                                   | -76.24      | -13.00      | -63.24      | -70.36            | -78.45                | 4.36                   |
| 767.29          | H                                                   | -68.29      | -13.00      | -55.29      | -69.43            | -69.57                | 3.43                   |
| 38.73           | V                                                   | -64.34      | -13.00      | -51.34      | -54.12            | -49.56                | -12.63                 |
| 71.71           | V                                                   | -63.13      | -13.00      | -50.13      | -53.20            | -56.33                | -4.65                  |
| 150.04          | V                                                   | -76.57      | -13.00      | -63.57      | -71.19            | -73.37                | -1.05                  |
| 233.80          | V                                                   | -74.87      | -13.00      | -61.87      | -69.11            | -77.17                | 4.45                   |
| 357.74          | V                                                   | -75.87      | -13.00      | -62.87      | -70.88            | -78.09                | 4.37                   |
| 768.38          | V                                                   | -67.68      | -13.00      | -54.68      | -69.73            | -68.96                | 3.43                   |

NOTE: ERP = S.G power value + correction factor - 2.15.

### 3.2.5 Test Result of Radiated Emissions above 1GHz

| Mode            | WCDMA Band 5, Channel: 4132 |             |             |             |                   |                       |                        |
|-----------------|-----------------------------|-------------|-------------|-------------|-------------------|-----------------------|------------------------|
| Frequency (MHz) | Antenna Polarity            | E.R.P (dBm) | Limit (dBm) | Margin (dB) | S.A Reading (dBm) | S.G Power Vaule (dBm) | Correction Factor (dB) |
| 1652.80         | H                           | -69.39      | -13.00      | -56.39      | -69.85            | -72.41                | 5.17                   |
| 2479.20         | H                           | -68.29      | -13.00      | -55.29      | -73.33            | -72.44                | 6.30                   |
| 3305.60         | H                           | -66.44      | -13.00      | -53.44      | -74.38            | -71.01                | 6.72                   |
| 1652.80         | V                           | -68.73      | -13.00      | -55.73      | -68.72            | -71.75                | 5.17                   |
| 2479.20         | V                           | -66.20      | -13.00      | -53.20      | -72.04            | -70.35                | 6.30                   |
| 3305.60         | V                           | -64.25      | -13.00      | -51.25      | -72.29            | -68.82                | 6.72                   |

| Mode            | WCDMA Band 5, Channel: 4182 |             |             |             |                   |                       |                        |
|-----------------|-----------------------------|-------------|-------------|-------------|-------------------|-----------------------|------------------------|
| Frequency (MHz) | Antenna Polarity            | E.R.P (dBm) | Limit (dBm) | Margin (dB) | S.A Reading (dBm) | S.G Power Vaule (dBm) | Correction Factor (dB) |
| 1672.80         | H                           | -70.49      | -13.00      | -57.49      | -70.90            | -73.55                | 5.21                   |
| 2509.20         | H                           | -68.87      | -13.00      | -55.87      | -74.18            | -73.03                | 6.31                   |
| 3345.60         | H                           | -66.72      | -13.00      | -53.72      | -74.66            | -71.34                | 6.77                   |
| 1672.80         | V                           | -67.63      | -13.00      | -54.63      | -67.62            | -70.69                | 5.21                   |
| 2509.20         | V                           | -66.43      | -13.00      | -53.43      | -72.52            | -70.59                | 6.31                   |
| 3345.60         | V                           | -63.48      | -13.00      | -50.48      | -71.52            | -68.10                | 6.77                   |

| Mode            | WCDMA Band 5, Channel: 4233 |             |             |             |                   |                       |                        |
|-----------------|-----------------------------|-------------|-------------|-------------|-------------------|-----------------------|------------------------|
| Frequency (MHz) | Antenna Polarity.           | E.R.P (dBm) | Limit (dBm) | Margin (dB) | S.A Reading (dBm) | S.G Power Vaule (dBm) | Correction Factor (dB) |
| 1693.20         | H                           | -70.72      | -13.00      | -57.72      | -71.08            | -73.83                | 5.26                   |
| 2539.80         | H                           | -68.63      | -13.00      | -55.63      | -74.13            | -72.81                | 6.33                   |
| 3386.40         | H                           | -66.15      | -13.00      | -53.15      | -74.07            | -70.81                | 6.81                   |
| 1693.20         | V                           | -68.14      | -13.00      | -55.14      | -68.13            | -71.25                | 5.26                   |
| 2539.80         | V                           | -66.29      | -13.00      | -53.29      | -72.64            | -70.47                | 6.33                   |
| 3386.40         | V                           | -63.31      | -13.00      | -50.31      | -71.36            | -67.97                | 6.81                   |

NOTE: ERP = S.G power value + correction factor - 2.15.

| Mode            | LTE Band 5, CB: 1.4MHz, 1RB, Offset 0, Channel: 20407 |             |             |             |                   |                       |                        |
|-----------------|-------------------------------------------------------|-------------|-------------|-------------|-------------------|-----------------------|------------------------|
| Frequency (MHz) | Antenna Polarity                                      | E.R.P (dBm) | Limit (dBm) | Margin (dB) | S.A Reading (dBm) | S.G Power Vaule (dBm) | Correction Factor (dB) |
| 1649.10         | H                                                     | -64.27      | -13.00      | -51.27      | -66.88            | -67.28                | 5.16                   |
| 2472.50         | H                                                     | -58.02      | -13.00      | -45.02      | -65.26            | -62.17                | 6.30                   |
| 3297.40         | H                                                     | -52.04      | -13.00      | -39.04      | -62.14            | -56.60                | 6.71                   |
| 1649.10         | V                                                     | -60.22      | -13.00      | -47.22      | -62.36            | -63.23                | 5.16                   |
| 2472.50         | V                                                     | -54.29      | -13.00      | -41.29      | -62.23            | -58.44                | 6.30                   |
| 3297.40         | V                                                     | -50.06      | -13.00      | -37.06      | -60.25            | -54.62                | 6.71                   |

| Mode            | LTE Band 5, CB: 1.4MHz, 1RB, Offset 0, Channel: 20525 |             |             |             |                   |                       |                        |
|-----------------|-------------------------------------------------------|-------------|-------------|-------------|-------------------|-----------------------|------------------------|
| Frequency (MHz) | Antenna Polarity                                      | E.R.P (dBm) | Limit (dBm) | Margin (dB) | S.A Reading (dBm) | S.G Power Vaule (dBm) | Correction Factor (dB) |
| 1672.20         | H                                                     | -63.99      | -13.00      | -50.99      | -66.55            | -67.05                | 5.21                   |
| 2508.70         | H                                                     | -59.43      | -13.00      | -46.43      | -66.89            | -63.59                | 6.31                   |
| 3343.70         | H                                                     | -51.17      | -13.00      | -38.17      | -61.25            | -55.78                | 6.76                   |
| 1672.20         | V                                                     | -60.15      | -13.00      | -47.15      | -62.29            | -63.21                | 5.21                   |
| 2508.70         | V                                                     | -56.05      | -13.00      | -43.05      | -64.29            | -60.21                | 6.31                   |
| 3343.70         | V                                                     | -49.50      | -13.00      | -36.50      | -59.69            | -54.11                | 6.76                   |

| Mode            | LTE Band 5, CB: 1.4MHz, 1RB, Offset 0, Channel: 20643 |             |             |             |                   |                       |                        |
|-----------------|-------------------------------------------------------|-------------|-------------|-------------|-------------------|-----------------------|------------------------|
| Frequency (MHz) | Antenna Polarity.                                     | E.R.P (dBm) | Limit (dBm) | Margin (dB) | S.A Reading (dBm) | S.G Power Vaule (dBm) | Correction Factor (dB) |
| 1695.40         | H                                                     | -64.83      | -13.00      | -51.83      | -67.34            | -67.95                | 5.27                   |
| 2543.40         | H                                                     | -59.39      | -13.00      | -46.39      | -67.06            | -63.57                | 6.33                   |
| 3391.50         | H                                                     | -51.81      | -13.00      | -38.81      | -61.88            | -56.48                | 6.82                   |
| 1695.40         | V                                                     | -61.25      | -13.00      | -48.25      | -63.39            | -64.37                | 5.27                   |
| 2543.40         | V                                                     | -57.34      | -13.00      | -44.34      | -65.87            | -61.52                | 6.33                   |
| 3391.50         | V                                                     | -49.90      | -13.00      | -36.90      | -60.10            | -54.57                | 6.82                   |

NOTE: ERP = S.G power value + correction factor - 2.15.

| Mode            | LTE Band 5, CB: 3MHz, 1RB, Offset 0, Channel: 20415 |             |             |             |                   |                       |                        |
|-----------------|-----------------------------------------------------|-------------|-------------|-------------|-------------------|-----------------------|------------------------|
| Frequency (MHz) | Antenna Polarity                                    | E.R.P (dBm) | Limit (dBm) | Margin (dB) | S.A Reading (dBm) | S.G Power Vaule (dBm) | Correction Factor (dB) |
| 1652.00         | H                                                   | -63.78      | -13.00      | -50.78      | -66.39            | -66.79                | 5.16                   |
| 2476.80         | H                                                   | -54.09      | -13.00      | -41.09      | -61.36            | -58.24                | 6.30                   |
| 3301.70         | H                                                   | -50.88      | -13.00      | -37.88      | -60.97            | -55.45                | 6.72                   |
| 1652.00         | V                                                   | -61.85      | -13.00      | -48.85      | -63.99            | -64.86                | 5.16                   |
| 2476.80         | V                                                   | -52.00      | -13.00      | -39.00      | -59.97            | -56.15                | 6.30                   |
| 3301.70         | V                                                   | -49.79      | -13.00      | -36.79      | -59.98            | -54.36                | 6.72                   |

| Mode            | LTE Band 5, CB: 3MHz, 1RB, Offset 0, Channel: 20525 |             |             |             |                   |                       |                        |
|-----------------|-----------------------------------------------------|-------------|-------------|-------------|-------------------|-----------------------|------------------------|
| Frequency (MHz) | Antenna Polarity                                    | E.R.P (dBm) | Limit (dBm) | Margin (dB) | S.A Reading (dBm) | S.G Power Vaule (dBm) | Correction Factor (dB) |
| 1672.20         | H                                                   | -61.80      | -13.00      | -48.80      | -64.36            | -64.86                | 5.21                   |
| 2508.70         | H                                                   | -57.45      | -13.00      | -44.45      | -64.91            | -61.61                | 6.31                   |
| 3346.60         | H                                                   | -49.80      | -13.00      | -36.80      | -59.87            | -54.42                | 6.77                   |
| 1672.20         | V                                                   | -60.55      | -13.00      | -47.55      | -62.69            | -63.61                | 5.21                   |
| 2508.70         | V                                                   | -56.23      | -13.00      | -43.23      | -64.47            | -60.39                | 6.31                   |
| 3346.60         | V                                                   | -48.89      | -13.00      | -35.89      | -59.08            | -53.51                | 6.77                   |

| Mode            | LTE Band 5, CB: 3MHz, 1RB, Offset 0, Channel: 20635 |             |             |             |                   |                       |                        |
|-----------------|-----------------------------------------------------|-------------|-------------|-------------|-------------------|-----------------------|------------------------|
| Frequency (MHz) | Antenna Polarity.                                   | E.R.P (dBm) | Limit (dBm) | Margin (dB) | S.A Reading (dBm) | S.G Power Vaule (dBm) | Correction Factor (dB) |
| 1695.40         | H                                                   | -63.11      | -13.00      | -50.11      | -65.62            | -66.23                | 5.27                   |
| 2542.00         | H                                                   | -51.51      | -13.00      | -38.51      | -59.17            | -55.69                | 6.33                   |
| 3390.00         | H                                                   | -50.78      | -13.00      | -37.78      | -60.85            | -55.45                | 6.82                   |
| 1695.40         | V                                                   | -60.75      | -13.00      | -47.75      | -62.89            | -63.87                | 5.27                   |
| 2542.00         | V                                                   | -50.97      | -13.00      | -37.97      | -59.49            | -55.15                | 6.33                   |
| 3390.00         | V                                                   | -49.57      | -13.00      | -36.57      | -59.77            | -54.24                | 6.82                   |

NOTE: ERP = S.G power value + correction factor - 2.15.

| Mode            | LTE Band 5, CB: 5MHz, 1RB, Offset 0, Channel: 20425 |             |             |             |                   |                       |                        |
|-----------------|-----------------------------------------------------|-------------|-------------|-------------|-------------------|-----------------------|------------------------|
| Frequency (MHz) | Antenna Polarity                                    | E.R.P (dBm) | Limit (dBm) | Margin (dB) | S.A Reading (dBm) | S.G Power Vaule (dBm) | Correction Factor (dB) |
| 1645.10         | H                                                   | -64.31      | -13.00      | -51.31      | -66.97            | -67.31                | 5.15                   |
| 2467.65         | H                                                   | -59.41      | -13.00      | -46.41      | -66.62            | -63.56                | 6.30                   |
| 3290.20         | H                                                   | -50.62      | -13.00      | -37.62      | -60.71            | -55.17                | 6.70                   |
| 1645.10         | V                                                   | -61.48      | -13.00      | -48.48      | -63.62            | -64.48                | 5.15                   |
| 2467.65         | V                                                   | -57.24      | -13.00      | -44.24      | -65.14            | -61.39                | 6.30                   |
| 3290.20         | V                                                   | -49.42      | -13.00      | -36.42      | -59.60            | -53.97                | 6.70                   |

| Mode            | LTE Band 5, CB: 5MHz, 1RB, Offset 0, Channel: 20525 |             |             |             |                   |                       |                        |
|-----------------|-----------------------------------------------------|-------------|-------------|-------------|-------------------|-----------------------|------------------------|
| Frequency (MHz) | Antenna Polarity                                    | E.R.P (dBm) | Limit (dBm) | Margin (dB) | S.A Reading (dBm) | S.G Power Vaule (dBm) | Correction Factor (dB) |
| 1668.70         | H                                                   | -65.61      | -13.00      | -52.61      | -68.13            | -68.71                | 5.25                   |
| 2503.05         | H                                                   | -59.47      | -13.00      | -46.47      | -66.90            | -63.63                | 6.31                   |
| 3337.40         | H                                                   | -50.32      | -13.00      | -37.32      | -60.40            | -54.93                | 6.76                   |
| 1668.70         | V                                                   | -64.71      | -13.00      | -51.71      | -66.85            | -67.81                | 5.25                   |
| 2503.05         | V                                                   | -57.58      | -13.00      | -44.58      | -65.77            | -61.74                | 6.31                   |
| 3337.40         | V                                                   | -51.55      | -13.00      | -38.55      | -61.74            | -56.16                | 6.76                   |

| Mode            | LTE Band 5, CB: 5MHz, 1RB, Offset 0, Channel: 20625 |             |             |             |                   |                       |                        |
|-----------------|-----------------------------------------------------|-------------|-------------|-------------|-------------------|-----------------------|------------------------|
| Frequency (MHz) | Antenna Polarity.                                   | E.R.P (dBm) | Limit (dBm) | Margin (dB) | S.A Reading (dBm) | S.G Power Vaule (dBm) | Correction Factor (dB) |
| 1692.30         | H                                                   | -65.64      | -13.00      | -52.64      | -68.15            | -68.75                | 5.26                   |
| 2538.45         | H                                                   | -60.87      | -13.00      | -47.87      | -68.51            | -65.05                | 6.33                   |
| 3384.60         | H                                                   | -52.18      | -13.00      | -39.18      | -62.25            | -56.84                | 6.81                   |
| 1692.30         | V                                                   | -60.37      | -13.00      | -47.37      | -62.50            | -63.48                | 5.26                   |
| 2538.45         | V                                                   | -53.60      | -13.00      | -40.60      | -62.09            | -57.78                | 6.33                   |
| 3384.60         | V                                                   | -54.40      | -13.00      | -41.40      | -64.60            | -59.06                | 6.81                   |

NOTE: ERP = S.G power value + correction factor - 2.15.

| Mode            | LTE Band 5, CB: 10MHz, 1RB, Offset 0, Channel: 20450 |             |             |             |                   |                       |                        |
|-----------------|------------------------------------------------------|-------------|-------------|-------------|-------------------|-----------------------|------------------------|
| Frequency (MHz) | Antenna Polarity                                     | E.R.P (dBm) | Limit (dBm) | Margin (dB) | S.A Reading (dBm) | S.G Power Vaule (dBm) | Correction Factor (dB) |
| 1649.20         | H                                                    | -64.72      | -13.00      | -51.72      | -67.33            | -67.73                | 5.16                   |
| 2473.80         | H                                                    | -59.80      | -13.00      | -46.80      | -67.05            | -63.95                | 6.30                   |
| 3298.40         | H                                                    | -51.87      | -13.00      | -38.87      | -61.97            | -56.43                | 6.71                   |
| 1649.20         | V                                                    | -62.29      | -13.00      | -49.29      | -64.43            | -65.30                | 5.16                   |
| 2473.80         | V                                                    | -58.27      | -13.00      | -45.27      | -66.22            | -62.42                | 6.30                   |
| 3298.40         | V                                                    | -50.57      | -13.00      | -37.57      | -60.76            | -55.13                | 6.71                   |

| Mode            | LTE Band 5, CB: 10MHz, 1RB, Offset 0, Channel: 20525 |             |             |             |                   |                       |                        |
|-----------------|------------------------------------------------------|-------------|-------------|-------------|-------------------|-----------------------|------------------------|
| Frequency (MHz) | Antenna Polarity                                     | E.R.P (dBm) | Limit (dBm) | Margin (dB) | S.A Reading (dBm) | S.G Power Vaule (dBm) | Correction Factor (dB) |
| 1664.20         | H                                                    | -71.69      | -13.00      | -58.69      | -69.54            | -74.69                | 5.15                   |
| 2496.30         | H                                                    | -67.71      | -13.00      | -54.71      | -65.56            | -71.87                | 6.31                   |
| 3328.40         | H                                                    | -64.67      | -13.00      | -51.67      | -62.52            | -69.27                | 6.75                   |
| 1664.20         | V                                                    | -65.14      | -13.00      | -52.14      | -62.99            | -68.14                | 5.15                   |
| 2496.30         | V                                                    | -58.73      | -13.00      | -45.73      | -56.58            | -62.89                | 6.31                   |
| 3328.40         | V                                                    | -51.87      | -13.00      | -38.87      | -49.72            | -56.47                | 6.75                   |

| Mode            | LTE Band 5, CB: 10MHz, 1RB, Offset 0, Channel: 20600 |             |             |             |                   |                       |                        |
|-----------------|------------------------------------------------------|-------------|-------------|-------------|-------------------|-----------------------|------------------------|
| Frequency (MHz) | Antenna Polarity.                                    | E.R.P (dBm) | Limit (dBm) | Margin (dB) | S.A Reading (dBm) | S.G Power Vaule (dBm) | Correction Factor (dB) |
| 1679.20         | H                                                    | -64.27      | -13.00      | -51.27      | -66.81            | -67.35                | 5.23                   |
| 2518.80         | H                                                    | -60.37      | -13.00      | -47.37      | -67.89            | -64.54                | 6.32                   |
| 3358.40         | H                                                    | -55.40      | -13.00      | -42.40      | -65.48            | -60.03                | 6.78                   |
| 1679.20         | V                                                    | -61.25      | -13.00      | -48.25      | -63.39            | -64.33                | 5.23                   |
| 2518.80         | V                                                    | -54.90      | -13.00      | -41.90      | -63.22            | -59.07                | 6.32                   |
| 3358.40         | V                                                    | -51.59      | -13.00      | -38.59      | -61.79            | -56.22                | 6.78                   |

NOTE: ERP = S.G power value + correction factor - 2.15.

### 3.3 Conducted Emissions

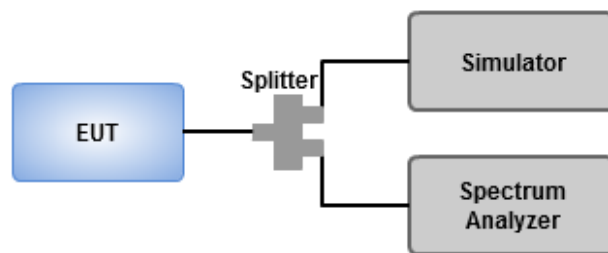
#### 3.3.1 Limit of Conducted Emissions

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB equal to -13dBm.

#### 3.3.2 Test Procedures

1. Lowest, middle and highest operating channels are tested for this item.
2. Scan frequency range is from 30 MHz ~ 9 GHz.
3. Set RBW = 1MHz, VBW = 3MHz, detector = RMS, sweep time = auto.
4. Record the max trace value and capture the test plot of each sub frequency band.

#### 3.3.3 Test Setup



### 3.3.4 Test Result of Conducted Emissions

