

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

## **FCC ID: 2AZYA-AC50**

**Product:** Mobile Phone

**Trade Mark:** ACER

**Model Number:** SOSPIRO-AC50

**Family Model:** SOSPIRO-AC50-B, SOSPIRO-AC50-N

**Report No.:** S23080705802005

### **Prepared for**

Senwa Global International, S.A. de C.V.

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TEST RESULT CERTIFICATION

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Address.....: Carretera Mexico-Toluca No. 5324 PB, Colonia El Yaqui Del.
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Manufacturer's Name.....: Senwa Mobile China Ltd
Address.....: A611, Languang technology building, No. 27, Gaoxin North 6th Road,
songpingshan community, Xili street, Nanshan District, Shenzhen,
Guangdong Province
Product name.....: Mobile Phone
Model and/or type reference.....: SOSPIRO-AC50
Family Model: SOSPIRO-AC50-B, SOSPIRO-AC50-N
Test sample number S230807058003
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.

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Date of Test .....
Date (s) of performance of tests ..... Aug 08, 2023 ~ Aug 28, 2023
Date of Issue ..... Aug 28, 2023
Test Result..... Pass

Testing Engineer : [Signature]
(Allen Liu)

Authorized Signatory : [Signature]
(Alex Li)

## TABLE OF CONTENTS

<b>1. GENERAL INFORMATION</b> .....	<b>6</b>
<b>1.1 PRODUCT DESCRIPTION</b> .....	<b>6</b>
<b>1.2 RELATED SUBMITTAL(S) / GRANT (S)</b> .....	<b>8</b>
<b>1.3 TEST METHODOLOGY</b> .....	<b>8</b>
<b>1.4 TEST FACILITY</b> .....	<b>8</b>
<b>MEASUREMENT UNCERTAINTY</b> .....	<b>8</b>
<b>1.5 SPECIAL ACCESSORIES</b> .....	<b>8</b>
<b>1.6 WORST-CASE CONFIGURATION AND MODE</b> .....	<b>8</b>
<b>2. SYSTEM TEST CONFIGURATION</b> .....	<b>9</b>
<b>2.1 EUT CONFIGURATION</b> .....	<b>9</b>
<b>2.2 EUT EXERCISE</b> .....	<b>9</b>
<b>2.3 CONFIGURATION OF EUT SYSTEM</b> .....	<b>9</b>
<b>2.4 TEST SETUP</b> .....	<b>10</b>
<b>3. TEST AND MEASUREMENT EQUIPMENT</b> .....	<b>11</b>
<b>4. OUTPUT POWER</b> .....	<b>13</b>
<b>4.1 OUTPUT POWER MEASUREMENT</b> .....	<b>13</b>
<b>6. BANDEDGE AND EMISSION MASK</b> .....	<b>16</b>
<b>7. OUT OF BAND EMISSIONS</b> .....	<b>17</b>
<b>7.1 MEASUREMENT METHOD</b> .....	<b>18</b>
<b>8. RADIATED MEASUREMENT</b> .....	<b>19</b>
<b>8.1. RADIATED POWER (ERP &amp; EIRP)</b> .....	<b>19</b>
<b>8.2 LTE BAND 2</b> .....	<b>20</b>
<b>8.3 LTE BAND 4</b> .....	<b>24</b>
<b>8.4 LTE BAND 5</b> .....	<b>28</b>
<b>8.5 LTE BAND 7</b> .....	<b>30</b>

<b>8.6 LTE BAND 12</b> .....	<b>32</b>
<b>8.7 LTE BAND 13</b> .....	<b>34</b>
<b>8.8 LTE BAND 17</b> .....	<b>36</b>
<b>8.9 LTE BAND 38</b> .....	<b>38</b>
<b>8.10 LTE BAND 41</b> .....	<b>40</b>
<b>8.11 LTE BAND 66</b> .....	<b>42</b>
<b>9. SPURIOUS RADIATION EMISSION</b> .....	<b>46</b>
<b>9.1 LTE BAND 2</b> .....	<b>48</b>
<b>9.2 LTE BAND 4</b> .....	<b>50</b>
<b>9.3 LTE BAND 5</b> .....	<b>52</b>
<b>9.4 LTE BAND 7</b> .....	<b>54</b>
<b>9.5 LTE BAND 12</b> .....	<b>56</b>
<b>9.6 LTE BAND 13</b> .....	<b>58</b>
<b>9.7 LTE BAND 17</b> .....	<b>60</b>
<b>9.8 LTE BAND 38</b> .....	<b>62</b>
<b>9.9 LTE BAND 41</b> .....	<b>64</b>
<b>9.10 LTE BAND 66</b> .....	<b>66</b>
<b>10. FREQUENCY STABILITY</b> .....	<b>68</b>
<b>10.1 LTE BAND 2</b> .....	<b>69</b>
<b>10.2 LTE BAND 4</b> .....	<b>71</b>
<b>10.3 LTE BAND 5</b> .....	<b>73</b>
<b>10.4 LTE BAND 7</b> .....	<b>75</b>
<b>10.5 LTE BAND 12</b> .....	<b>77</b>
<b>10.6 LTE BAND 13</b> .....	<b>79</b>
<b>10.7 LTE BAND 17</b> .....	<b>81</b>
<b>10.8 LTE BAND 38</b> .....	<b>83</b>
<b>10.9 LTE BAND 41</b> .....	<b>85</b>
<b>10.10 LTE BAND 66</b> .....	<b>87</b>

**11. PEAK-TO-AVERAGE RATIO.....89**

**11.1 Description of the PAR Measurement..... 89**

**11.2 Measuring Instruments ..... 89**

**11.3 Test Procedures..... 89**

**11.4 Test Setup..... 89**

# 1. GENERAL INFORMATION

## 1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	Mobile Phone
Trade Mark	ACER
Model Name	SOSPIRO-AC50
Family Model	SOSPIRO-AC50-B, SOSPIRO-AC50-N
Model Difference	All models are the same circuit and RF module, except the model name and colour.
FCC ID:	2AZYA-AC50
Frequency Bands:	U.S. Bands: <input checked="" type="checkbox"/> LTE FDD Band 2, 4, 5, 7, 12, 13, 17, 66 LTE TDD Band 38, 41
Frequency Range:	LTE FDD Band 2 Uplink: 1850MHz-1910MHz, Downlink: 1930MHz-1990MHz; LTE FDD Band 4 Uplink: 1710MHz-1755MHz, Downlink: 2110MHz-2155MHz; LTE FDD Band 5 Uplink: 824MHz-849MHz, Downlink: 869MHz-894MHz; LTE-FDD Band 7 Uplink: 2500MHz-2570MHz, Downlink: 2620MHz-2690MHz; LTE FDD Band 12 Uplink: 699MHz-716MHz, Downlink: 729MHz-746MHz; LTE FDD Band 13 Uplink: 777MHz-787MHz, Downlink: 746MHz-756MHz; LTE FDD Band 17 Uplink: 704MHz-716MHz, Downlink: 734MHz-746MHz; LTE TDD Band 38: Uplink & Downlink: 2570 MHz to 2620 MHz LTE TDD Band 41 :Uplink & Downlink: 2535MHz-2655MHz, (see note 2) LTE FDD Band 66 Uplink: 1710MHz-1780MHz, Downlink: 2110MHz-2200MHz;
Type of Modulation:	QPSK/16QAM
Antenna:	PIFA Antenna
Antenna gain:	0.8 dBi,
Power Supply:	DC 3.87V/4900mAh from battery or DC 5V from Adapter.
Adapter:	INPUT: AC 100-240V~50-60Hz 0.3A OUTPUT: DC 5.0V---2A
Extreme Vol. Limits:	DC 3.4V to DC 4.4V (Nominal DC 3.87V) (Note 1)

HW Version	ums5121h10_V1.0
SW Version	Acer_AC50_Ver01

\*\* Note1: The High Voltage DC 4.4V and Low Voltage DC 3.4V was declared by manufacturer, The EUT couldn't be operate normally with higher or lower voltage.

Note2:channel list:

Test Frequency ID	Bandwidth(MHz)	EARFCN	Frequency (UL and DL) (MHz)
Low Range	5	40065	2537.5
	10	40090	2540
	15	40115	2542.5
	20	40140	2545
Mid Range	5/10/15/20	40640	2595
High Range	5	41215	2652.5
	10	41190	2650
	15	41165	2647.5
	20	41140	2645

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

This submittal(s) (test report) is intended for **FCC ID: 2AZYA-AC50** 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.

1&5/F, Building C, 1&2/F, Building E, Fenda Science Park, Sanwei Community, Hangcheng Street, Baoan District, Shenzhen ,Guangdong, 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-1,

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, Band 4, Band 5, Band 7, Band 12, Band 13, Band 17, Band 38, Band 41, Band 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	Mobile Phone	SOSPIRO-AC50	FCC ID: 2AZYA-AC50	EUT

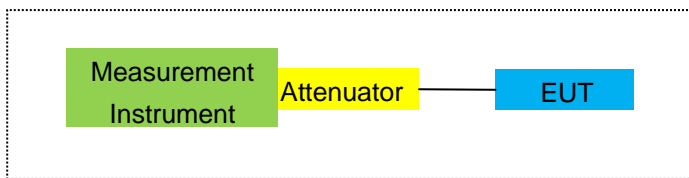
*Note: All the accessories have been used during the test.  
the following "EUT" in setup diagram means EUT system.*

## 2.4 TEST SETUP

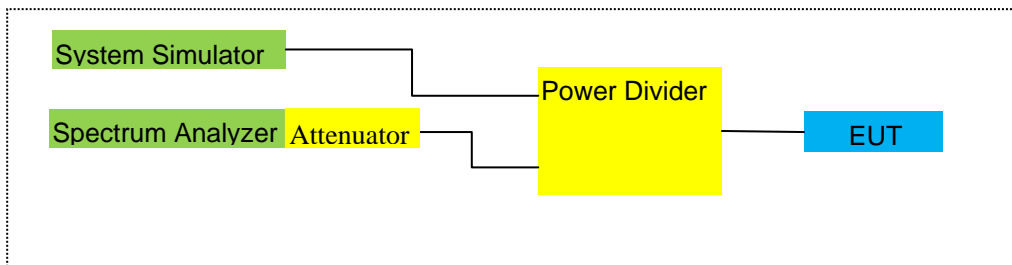
For Radiated Test Cases



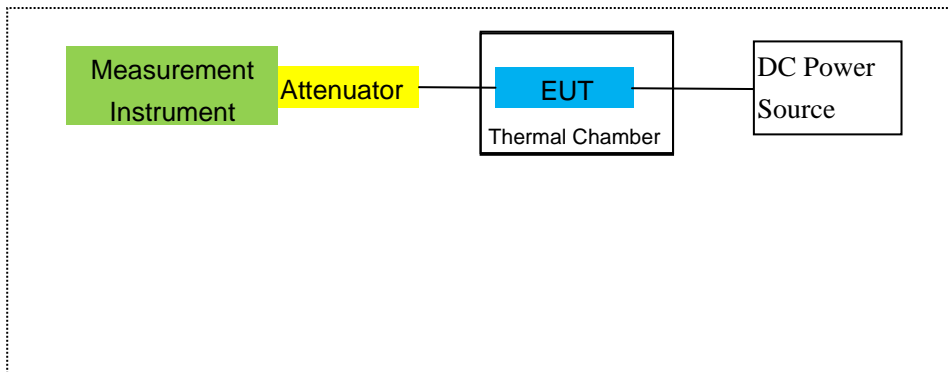
For Conducted Output Power



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	2023.05.29	2024.05.28	1 year
2	Test Receiver	R&S	ESPI	101318	2023.03.27	2024.03.26	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2023.03.27	2024.03.26	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2023.05.06	2026.05.05	3 year
5	Broadband Horn Antenna	SCHWARZBECK	BBHA 9120 D	2816	2023/1/12	2024/1/11	1 year
6	Broadband Horn Antenna	SCHWARZBECK	BBHA 9120 D	2817	2023/1/12	2024/1/11	1 year
7	Amplifier	EM	EM-30180	060538	2023.05.29	2024.05.28	1 year
8	Loop Antenna	ARA	PLA-1030/B	1029	2023.03.27	2024.03.26	1 year
9	Power Meter	R&S	NRVS	100696	2023.05.29	2024.05.28	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2023.03.27	2024.03.26	1 year
11	Test Cable	N/A	R-01	N/A	2022.06.17	2025.06.16	3 year
12	Test Cable	N/A	R-02	N/A	2022.06.17	2025.06.16	3 year
13	Test Cable	N/A	R-03	N/A	2022.06.17	2025.06.16	3 year
14	Test Receiver	R&S	ESCI	101160	2023.03.27	2024.03.26	1 year
15	LISN	R&S	ENV216	101313	2023.03.27	2024.03.26	1 year
16	LISN	EMCO	3816/2	00042990	2023.03.27	2024.03.26	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2023.03.27	2024.03.26	1 year
18	Passive Voltage Probe	R&S	ESH2-Z3	100196	2023.03.27	2024.03.26	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	Attenuator	MCE	24-10-34	BN9258	2023.03.27	2024.03.26	1 year
23	Spectrum Analyzer	agilent	e4440a	us44300399	2023.03.27	2024.03.26	1 year
24	test receiver	R&S	ESCI	a0304218	2023.03.27	2024.03.26	1 year

25	Communication Tester	R&S	CMU200	A0304247	2023.05.29	2024.05.28	1 year
26	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2023.03.27	2024.03.26	1 year
27	DC Power Source	N/A	PS-6005D	20170402923	2023.05.06	2026.05.05	3 year
28	MXG Vector Signal Generator	Agilent	N5182A	MY47070317	2023.05.29	2024.05.28	1 year
29	Communication Tester	R&S	CMW500	148500	2023.05.29	2024.05.28	1 year
30	Log-Periodic Antenna	SCHWARZBECK	VULB 9162	584	2023/1/11	2024/1/10	1 year
31	Log-Periodic Antenna	SCHWARZBECK	VULB 9162	586	2023/1/11	2024/1/10	1 year
32	ESG Vector Signal Generator	Agilent	E4438C	MY45093347	2023/3/21	2024/3/20	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.

## 4. OUTPUT POWER

### 4.1 OUTPUT POWER MEASUREMENT

#### LTE Measurement Procedure:

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

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

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

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

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

**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	13	10	Table 6.2.4-2	Table 6.2.4-2
	6.6.3.3.2				
NS_08	6.6.3.3.3	19	10, 15	> 44	$\leq 3$
NS_09	6.6.3.3.4	21	10, 15	> 40	$\leq 1$
				> 55	$\leq 2$
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23 <sup>1</sup>	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
..					
NS_32	-	-	-	-	-

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

Test data reference attachment.

## 5. OCCUPIED BANDWIDTH

### RULE PART(S)

FCC: §2.1049

### LIMITS

For reporting purposes only

### TEST PROCEDURE

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

### MODES TESTED

- LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 13
- LTE Band 17
- LTE Band 38
- LTE Band 41
- LTE Band 66

### RESULTS

**PASS**

Test data reference attachment.

## 6. BANDEDGE AND EMISSION MASK

### RULE PART(S)

FCC: §2.1051, §22.917(a), §24.238(a), §27.53(c)(g)(h)(m)

FCC: §2.1046, §22.913, §24.232

### LIMITS

The minimum permissible attenuation level of any spurious emission is  $43 + \log_{10}(P[\text{Watts}])$ , where P is the transmitter power in Watts.

The minimum permissible attenuation level for Band 7 is as following.

Per 27.53(g) for operations in the 698-746 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

Per 27.53(c.5) for operations in the 776-788 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

For all plots showing emissions in the 763 – 775MHz and 793 – 805MHz band, the FCC limit per 27.53(c.4) is  $65 + 10\log_{10}(P) = -35\text{dBm}$  in a 6.25kHz bandwidth.

Per 27.53(m) for operations in the BRS/EBS bands, the attenuation factor shall be not less than  $40 + 10 \log (P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log (P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and  $55 + 10 \log (P)$  dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth.

### TEST PROCEDURE

The transmitter output was connected to a CMW500Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

For each band edge measurement:

Set the spectrum analyzer span to include the block edge frequency

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

Set display line

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

### MODES TESTED

- LTE Band2/4/5/7/12/13/17/38/41/66

### RESULTS

Test data reference attachment.

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



## 7. OUT OF BAND EMISSIONS

### RULE PART(S)

FCC: §2.1051, §22.917(a), §24.238(a), §27.53(c)(g)(h)(m)

### LIMITS

The minimum permissible attenuation level of any spurious emission is  $43 + \log_{10}(P[\text{Watts}])$ , where P is the transmitter power in Watts.

The minimum permissible attenuation level for Band 7 is as following.

Per 27.53(g) for operations in the 698-746 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

Per 27.53(c.5) for operations in the 776-788 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

For all plots showing emissions in the 763 – 775MHz and 793 – 805MHz band, the FCC limit per 27.53(c.4) is  $65 + 10\log_{10}(P) = -35\text{dBm}$  in a 6.25kHz bandwidth.

Per 27.53(m) for operations in the BRS/EBS bands, the attenuation factor shall be not less than  $40 + 10 \log (P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log (P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and  $55 + 10 \log (P)$  dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth.

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

### MODES TESTED

- LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 13
- LTE Band 17

LTE Band 38  
LTE Band 41  
LTE Band 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.

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

## 8. RADIATED MEASUREMENT

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

#### RULE PART(S)

FCC: §2.1046, §22.913(a)(2), §24.232(c) and §27.50 (h)(2), (b)(10), (c)(10), (d)(4)

#### LIMITS:

22.913(a) (2)- The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.  
24.232 (c) Mobile and portable stations are limited to 2 watts EIRP.  
27.50 (c) (10) the following power and antenna height requirements apply to stations transmitting in the 698–746 MHz band, the portable stations (hand-held devices) are limited to 3 watts ERP.  
27.50 (b)(10) Portable stations (hand-held devices) transmitting in the 746–757 MHz, 758–763 MHz, 776–793 MHz, and 805–806 MHz bands are limited to 3 watts ERP.  
27.50 (d)(4) The following power and antenna height requirements apply to stations transmitting in the 1710–1755 MHz and 2110–2155 MHz bands: Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.  
27.50 (h)(2) Mobile and other user stations in the 2500–2570 MHz and 2620–2690 MHz bands. 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

- LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 13
- LTE Band 17
- LTE Band 38
- LTE Band 41
- LTE Band 66

#### RESULTS

Pass

### 8.2 LTE BAND 2

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						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	1850.7	-3.05	3.76	28.24	21.43	138.995	Horizontal	Pass
		1880	-2.86	3.91	28.22	21.45	139.637	Horizontal	Pass
		1909.3	-2.77	3.93	28.20	21.50	141.254	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-3.11	3.77	28.23	21.35	136.458	Horizontal	Pass
		1880	-2.96	3.91	28.24	21.37	137.088	Horizontal	Pass
		1908.5	-2.83	3.94	28.25	21.48	140.605	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-3.00	3.77	28.31	21.54	142.561	Horizontal	Pass
		1880	-2.62	3.91	28.22	21.69	147.571	Horizontal	Pass
		1907.5	-2.55	3.94	28.20	21.71	148.252	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-2.86	3.79	28.33	21.68	147.231	Horizontal	Pass
		1880	-2.56	3.95	28.22	21.71	148.252	Horizontal	Pass
		1905	-2.45	3.97	28.19	21.77	150.314	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-2.82	3.79	28.34	21.73	148.936	Horizontal	Pass
		1880	-2.61	3.95	28.22	21.66	146.555	Horizontal	Pass
		1902.5	-2.47	3.97	28.18	21.74	149.279	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-2.81	3.81	28.35	21.73	148.936	Horizontal	Pass
		1880	-2.48	3.96	28.22	<b>21.78</b>	150.661	Horizontal	Pass
		1900	-2.42	4.00	28.16	21.74	149.279	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-3.61	3.76	28.24	20.87	122.180	Vertical	Pass
		1880	-3.68	3.91	28.22	20.63	115.611	Vertical	Pass
		1909.3	-3.83	3.93	28.20	20.44	110.662	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-3.53	3.77	28.23	20.93	123.880	Vertical	Pass
		1880	-3.28	3.91	28.24	21.05	127.350	Vertical	Pass
		1908.5	-3.92	3.94	28.25	20.39	109.396	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-4.01	3.77	28.31	20.53	112.980	Vertical	Pass
		1880	-3.58	3.91	28.22	20.73	118.304	Vertical	Pass
		1907.5	-4.03	3.94	28.20	20.23	105.439	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1855	-3.89	3.79	28.33	20.65	116.145	Vertical	Pass
		1880	-3.57	3.95	28.22	20.70	117.490	Vertical	Pass
		1905	-3.74	3.97	28.19	20.48	111.686	Vertical	Pass

15.0MHz		1857.5	-4.10	3.79	28.34	20.45	110.917	Vertical	Pass
Band	1/#Mid	1880	-3.34	3.95	28.22	20.93	123.880	Vertical	Pass
QPSK		1902.5	-3.07	3.97	28.18	21.14	130.017	Vertical	Pass
20.0MHz		1860	-4.21	3.81	28.35	20.33	107.895	Vertical	Pass
Band	1/#Mid	1880	-3.42	3.96	28.22	20.84	121.339	Vertical	Pass
QPSK		1900	-3.05	4.00	28.16	21.11	129.122	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						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 16 QAM	1/#Mid	1850.7	-4.17	3.76	28.24	20.31	107.399	Horizontal	Pass
		1880	-3.64	3.91	28.22	20.67	116.681	Horizontal	Pass
		1909.3	-3.57	3.93	28.20	20.70	117.490	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-3.67	3.77	28.23	20.79	119.950	Horizontal	Pass
		1880	-3.75	3.91	28.24	20.58	114.288	Horizontal	Pass
		1908.5	-3.96	3.94	28.25	20.35	108.393	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-3.61	3.77	28.31	20.93	123.880	Horizontal	Pass
		1880	-3.52	3.91	28.22	20.79	119.950	Horizontal	Pass
		1907.5	-3.20	3.94	28.20	21.06	127.644	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-3.66	3.79	28.33	20.88	122.462	Horizontal	Pass
		1880	-3.65	3.95	28.22	20.62	115.345	Horizontal	Pass
		1905	-3.12	3.97	28.19	21.10	128.825	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-3.64	3.79	28.34	20.91	123.310	Horizontal	Pass
		1880	-3.43	3.95	28.22	20.84	121.339	Horizontal	Pass
		1902.5	-3.39	3.97	28.18	20.82	120.781	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-3.53	3.81	28.35	21.01	126.183	Horizontal	Pass
		1880	-3.23	3.96	28.22	21.03	126.765	Horizontal	Pass
		1900	-3.05	4.00	28.16	<b>21.11</b>	129.122	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1850.7	-5.25	3.76	28.24	19.23	83.753	Vertical	Pass
		1880	-4.78	3.91	28.22	19.53	89.743	Vertical	Pass
		1909.3	-5.00	3.93	28.20	19.27	84.528	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-4.72	3.77	28.23	19.74	94.189	Vertical	Pass
		1880	-4.73	3.91	28.24	19.60	91.201	Vertical	Pass
		1908.5	-4.39	3.94	28.25	19.92	98.175	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-4.59	3.77	28.31	19.95	98.855	Vertical	Pass
		1880	-4.27	3.91	28.22	20.04	100.925	Vertical	Pass
		1907.5	-4.73	3.94	28.20	19.53	89.743	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-5.19	3.79	28.33	19.35	86.099	Vertical	Pass
		1880	-5.06	3.95	28.22	19.21	83.368	Vertical	Pass
		1905	-4.32	3.97	28.19	19.90	97.724	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-4.98	3.79	28.34	19.57	90.573	Vertical	Pass
		1880	-4.99	3.95	28.22	19.28	84.723	Vertical	Pass
		1902.5	-4.91	3.97	28.18	19.30	85.114	Vertical	Pass

20.0MHz		1860	-4.71	3.81	28.35	19.83	96.161	Vertical	Pass
Band 16	1/#Mid	1880	-4.55	3.96	28.22	19.71	93.541	Vertical	Pass
QAM		1900	-4.61	4.00	28.16	19.55	90.157	Vertical	Pass

**Note:**

SG Level= Signal generator output

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

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

### 8.3 LTE BAND 4

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss	Antenna Factor	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)	Average	Average	Of Max. ERP	
						(dBm)	(mW)		
1.4MHz Band QPSK	1/#Mid	1710.7	-2.96	3.12	27.58	21.50	141.254	Horizontal	Pass
		1732.5	-2.95	3.27	27.61	21.39	137.721	Horizontal	Pass
		1754.3	-2.93	3.29	27.63	21.41	138.357	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-3.13	3.13	27.61	21.35	136.458	Horizontal	Pass
		1732.5	-3.05	3.27	27.61	21.29	134.586	Horizontal	Pass
		1753.5	-2.97	3.30	27.62	21.35	136.458	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-2.90	3.13	27.63	21.60	144.544	Horizontal	Pass
		1732.5	-2.80	3.27	27.61	21.54	142.561	Horizontal	Pass
		1752.5	-2.68	3.30	27.60	21.62	145.211	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-2.84	3.15	27.64	21.65	146.218	Horizontal	Pass
		1732.5	-2.61	3.31	27.61	21.69	147.571	Horizontal	Pass
		1750	-2.63	3.33	27.59	21.63	145.546	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-2.85	3.15	27.65	21.65	146.218	Horizontal	Pass
		1732.5	-2.69	3.31	27.61	21.61	144.877	Horizontal	Pass
		1747.5	-2.63	3.33	27.57	21.61	144.877	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-2.79	3.17	27.66	<b>21.70</b>	147.911	Horizontal	Pass
		1732.5	-2.62	3.32	27.61	21.67	146.893	Horizontal	Pass
		1745	-2.56	3.36	27.56	21.64	145.881	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-3.87	3.12	27.58	20.59	114.551	Vertical	Pass
		1732.5	-3.35	3.27	27.61	20.99	125.603	Vertical	Pass
		1754.3	-3.74	3.29	27.63	20.60	114.815	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-3.82	3.13	27.61	20.66	116.413	Vertical	Pass
		1732.5	-3.55	3.27	27.61	20.79	119.950	Vertical	Pass
		1753.5	-3.84	3.30	27.62	20.48	111.686	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-3.69	3.13	27.63	20.81	120.504	Vertical	Pass
		1732.5	-3.34	3.27	27.61	21.00	125.893	Vertical	Pass
		1752.5	-3.83	3.30	27.60	20.47	111.429	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-3.37	3.15	27.64	21.12	129.420	Vertical	Pass
		1732.5	-3.34	3.31	27.61	20.96	124.738	Vertical	Pass
		1750	-3.90	3.33	27.59	20.36	108.643	Vertical	Pass



15.0MHz		1717.5	-3.57	3.15	27.65	20.93	123.880	Vertical	Pass
Band	1/#Mid	1732.5	-3.20	3.31	27.61	21.10	128.825	Vertical	Pass
QPSK		1747.5	-3.67	3.33	27.57	20.57	114.025	Vertical	Pass
20.0MHz		1720	-3.49	3.17	27.66	21.00	125.893	Vertical	Pass
Band	1/#Mid	1732.5	-3.49	3.32	27.61	20.80	120.226	Vertical	Pass
QPSK		1745	-3.59	3.36	27.56	20.61	115.080	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
						(dBm)	(mW)		
1.4MHz	1/#Mid	1710.7	-3.77	3.12	27.58	20.69	117.220	Horizontal	Pass
Band 16		1732.5	-3.62	3.27	27.61	20.72	118.032	Horizontal	Pass
QAM		1754.3	-3.62	3.29	27.63	20.72	118.032	Horizontal	Pass
3.0MHz	1/#Mid	1711.5	-3.71	3.13	27.61	20.77	119.399	Horizontal	Pass
Band 16		1732.5	-3.84	3.27	27.61	20.50	112.202	Horizontal	Pass
QAM		1753.5	-4.06	3.30	27.62	20.26	106.170	Horizontal	Pass
5.0MHz	1/#Mid	1712.5	-3.54	3.13	27.63	20.96	124.738	Horizontal	Pass
Band 16		1732.5	-3.50	3.27	27.61	20.84	121.339	Horizontal	Pass
QAM		1752.5	-3.19	3.30	27.60	21.11	129.122	Horizontal	Pass
10.0MHz	1/#Mid	1715	-3.61	3.15	27.64	20.88	122.462	Horizontal	Pass
Band 16		1732.5	-3.80	3.31	27.61	20.50	112.202	Horizontal	Pass
QAM		1750	-3.18	3.33	27.59	21.08	128.233	Horizontal	Pass
15.0MHz	1/#Mid	1717.5	-3.41	3.15	27.65	21.09	128.529	Horizontal	Pass
Band 16		1732.5	-3.47	3.31	27.61	20.83	121.060	Horizontal	Pass
QAM		1747.5	-3.49	3.33	27.57	20.75	118.850	Horizontal	Pass
20.0MHz	1/#Mid	1720	-3.36	3.17	27.66	<b>21.13</b>	129.718	Horizontal	Pass
Band 16		1732.5	-3.37	3.32	27.61	20.92	123.595	Horizontal	Pass
QAM		1745	-3.18	3.36	27.56	21.02	126.474	Horizontal	Pass
1.4MHz	1/#Mid	1710.7	-5.01	3.12	27.58	19.45	88.105	Vertical	Pass
Band 16		1732.5	-4.74	3.27	27.61	19.60	91.201	Vertical	Pass
QAM		1754.3	-4.78	3.29	27.63	19.56	90.365	Vertical	Pass
3.0MHz	1/#Mid	1711.5	-5.09	3.13	27.61	19.39	86.896	Vertical	Pass
Band 16		1732.5	-4.37	3.27	27.61	19.97	99.312	Vertical	Pass
QAM		1753.5	-4.98	3.30	27.62	19.34	85.901	Vertical	Pass
5.0MHz	1/#Mid	1712.5	-5.19	3.13	27.63	19.31	85.310	Vertical	Pass
Band 16		1732.5	-4.75	3.27	27.61	19.59	90.991	Vertical	Pass
QAM		1752.5	-4.50	3.30	27.60	19.80	95.499	Vertical	Pass
10.0MHz	1/#Mid	1715	-4.37	3.15	27.64	20.12	102.802	Vertical	Pass
Band 16		1732.5	-4.52	3.31	27.61	19.78	95.060	Vertical	Pass
QAM		1750	-4.19	3.33	27.59	20.07	101.625	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-4.64	3.15	27.65	19.86	96.828	Vertical	Pass
Band 16		1732.5	-4.49	3.31	27.61	19.81	95.719	Vertical	Pass
QAM		1747.5	-4.78	3.33	27.57	19.46	88.308	Vertical	Pass

20.0MHz		1720	-4.74	3.17	27.66	19.75	94.406	Vertical	Pass
Band 16	1/#Mid	1732.5	-4.48	3.32	27.61	19.81	95.719	Vertical	Pass
QAM		1745	-4.67	3.36	27.56	19.53	89.743	Vertical	Pass

**Note:**

SG Level= Signal generator output

Max. EIRP Average (dBm)= Factor 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							Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss	Antenna Factor	Correction	Max. EIRP	Max. EIRP			
			(dBm)	(dBm)	(dB)	(dB)	Average	Average			
							(dBm)	(mW)			
1.4MHz Band QPSK	3/#Mid	824.7	6.34	2.01	19.68	2.15	21.86	153.462	Horizontal	Pass	
		836.5	6.22	2.01	19.77	2.15	21.83	152.405	Horizontal	Pass	
		848.3	6.02	2.02	19.82	2.15	21.67	146.893	Horizontal	Pass	
3.0MHz Band QPSK	1/#Mid	825.5	6.11	2.01	19.70	2.15	21.65	146.218	Horizontal	Pass	
		836.5	6.01	2.01	19.77	2.15	21.62	145.211	Horizontal	Pass	
		847.5	5.88	2.02	19.81	2.15	21.52	141.906	Horizontal	Pass	
5.0MHz Band QPSK	1/#Mid	826.5	6.39	2.01	19.71	2.15	21.94	156.315	Horizontal	Pass	
		836.5	6.27	2.01	19.77	2.15	21.88	154.170	Horizontal	Pass	
		846.5	6.11	2.02	19.79	2.15	21.73	148.936	Horizontal	Pass	
10.0MHz Band QPSK	1/#Mid	829	6.41	2.01	19.73	2.15	<b>21.98</b>	157.761	Horizontal	Pass	
		836.5	6.36	2.01	19.77	2.15	21.97	157.398	Horizontal	Pass	
		844	6.26	2.02	19.78	2.15	21.87	153.815	Horizontal	Pass	
1.4MHz Band QPSK	1/#Mid	824.7	5.20	2.01	19.68	2.15	20.72	118.032	Vertical	Pass	
		836.5	4.81	2.01	19.77	2.15	20.42	110.154	Vertical	Pass	
		848.3	5.02	2.02	19.82	2.15	20.67	116.681	Vertical	Pass	
3.0MHz Band QPSK	1/#Mid	825.5	5.59	2.01	19.70	2.15	21.13	129.718	Vertical	Pass	
		836.5	5.32	2.01	19.77	2.15	20.93	123.880	Vertical	Pass	
		847.5	5.19	2.02	19.81	2.15	20.83	121.060	Vertical	Pass	
5.0MHz Band QPSK	1/#Mid	826.5	5.31	2.01	19.71	2.15	20.86	121.899	Vertical	Pass	
		836.5	5.31	2.01	19.77	2.15	20.92	123.595	Vertical	Pass	
		846.5	5.51	2.02	19.79	2.15	21.13	129.718	Vertical	Pass	
10.0MHz Band QPSK	1/#Mid	829	4.85	2.01	19.73	2.15	20.42	110.154	Vertical	Pass	
		836.5	5.44	2.01	19.77	2.15	21.05	127.350	Vertical	Pass	
		844	4.78	2.02	19.78	2.15	20.39	109.396	Vertical	Pass	

**Radiated Power (ERP) for Band 5**

Radiated Power (ERP) for Band 5											
Mode	RB/RB SIZE	Frequency	Result							Polarization	Conclusion
			SG Level	Cable Loss	Antenna Factor	Correction	Max. EIRP	Max. EIRP	Of Max. ERP		
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	ERP		
							(dBm)	(mW)			
1.4MHz Band 16 QAM	3/#Mid	824.7	5.49	2.01	19.68	2.15	21.01	126.183	Horizontal	Pass	
		836.5	5.42	2.01	19.77	2.15	21.03	126.765	Horizontal	Pass	
		848.3	5.26	2.02	19.82	2.15	20.91	123.310	Horizontal	Pass	
3.0MHz Band 16 QAM	1/#Mid	825.5	5.57	2.01	19.70	2.15	21.11	129.122	Horizontal	Pass	
		836.5	5.28	2.01	19.77	2.15	20.89	122.744	Horizontal	Pass	
		847.5	4.76	2.02	19.81	2.15	20.40	109.648	Horizontal	Pass	
5.0MHz Band 16 QAM	1/#Mid	826.5	5.89	2.01	19.71	2.15	21.44	139.316	Horizontal	Pass	
		836.5	5.66	2.01	19.77	2.15	21.27	133.968	Horizontal	Pass	
		846.5	5.41	2.02	19.79	2.15	21.03	126.765	Horizontal	Pass	
10.0MHz Band 16 QAM	1/#Mid	829	5.89	2.01	19.73	2.15	<b>21.46</b>	139.959	Horizontal	Pass	
		836.5	5.61	2.01	19.77	2.15	21.22	132.434	Horizontal	Pass	
		844	5.15	2.02	19.78	2.15	20.76	119.124	Horizontal	Pass	
1.4MHz Band 16 QAM	1/#Mid	824.7	4.19	2.01	19.68	2.15	19.71	93.541	Vertical	Pass	
		836.5	5.20	2.01	19.77	2.15	20.81	120.504	Vertical	Pass	
		848.3	4.84	2.02	19.82	2.15	20.49	111.944	Vertical	Pass	
3.0MHz Band 16 QAM	1/#Mid	825.5	4.77	2.01	19.70	2.15	20.31	107.399	Vertical	Pass	
		836.5	5.26	2.01	19.77	2.15	20.87	122.180	Vertical	Pass	
		847.5	4.44	2.02	19.81	2.15	20.08	101.859	Vertical	Pass	
5.0MHz Band 16 QAM	1/#Mid	826.5	4.60	2.01	19.71	2.15	20.15	103.514	Vertical	Pass	
		836.5	5.40	2.01	19.77	2.15	21.01	126.183	Vertical	Pass	
		846.5	4.79	2.02	19.79	2.15	20.41	109.901	Vertical	Pass	
10.0MHz Band 16 QAM	1/#Mid	829	4.01	2.01	19.73	2.15	19.58	90.782	Vertical	Pass	
		836.5	5.38	2.01	19.77	2.15	20.99	125.603	Vertical	Pass	
		844	4.45	2.02	19.78	2.15	20.06	101.391	Vertical	Pass	

Note:

ERP=EIRP-2.15

SG Level= Signal generator output

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

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

### 8.5 LTE BAND 7

Radiated Power (EIRP) for Band 7									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
						(dBm)	(mW)		
5.0MHz Band QPSK	1/#Mid	2502.5	-1.24	4.54	27.75	21.97	157.398	Horizontal	Pass
		2535	-1.07	4.69	27.72	21.96	157.036	Horizontal	Pass
		2567.5	-1.00	4.71	27.71	22.00	158.489	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2505	-1.17	4.55	27.76	22.04	159.956	Horizontal	Pass
		2535	-0.98	4.69	27.72	22.05	160.325	Horizontal	Pass
		2565	-0.90	4.72	27.70	22.08	161.436	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-1.18	4.55	27.77	22.04	159.956	Horizontal	Pass
		2535	-1.04	4.69	27.72	21.99	158.125	Horizontal	Pass
		2562.5	-0.94	4.72	27.69	22.03	159.588	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2510	-1.12	4.57	27.78	<b>22.09</b>	161.808	Horizontal	Pass
		2535	-0.94	4.73	27.72	22.05	160.325	Horizontal	Pass
		2560	-0.90	4.75	27.68	22.03	159.588	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	-2.97	4.54	27.75	20.24	105.682	Vertical	Pass
		2535	-2.12	4.69	27.72	20.91	123.310	Vertical	Pass
		2567.5	-2.69	4.71	27.71	20.31	107.399	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2505	-3.02	4.55	27.76	20.19	104.472	Vertical	Pass
		2535	-2.13	4.69	27.72	20.90	123.027	Vertical	Pass
		2565	-2.74	4.72	27.70	20.24	105.682	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-2.14	4.55	27.77	21.08	128.233	Vertical	Pass
		2535	-2.08	4.69	27.72	20.95	124.451	Vertical	Pass
		2562.5	-2.11	4.72	27.69	20.86	121.899	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2510	-2.12	4.57	27.78	21.09	128.529	Vertical	Pass
		2535	-2.36	4.73	27.72	20.63	115.611	Vertical	Pass
		2560	-2.63	4.75	27.68	20.30	107.152	Vertical	Pass

Radiated Power (EIRP) for Band 7									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
						(dBm)	(mW)		
5.0MHz	1/#Mid	2502.5	-1.93	4.54	27.75	21.28	134.276	Horizontal	Pass
Band 16		2535	-1.62	4.69	27.72	21.41	138.357	Horizontal	Pass
QAM		2567.5	-1.70	4.71	27.71	21.30	134.896	Horizontal	Pass
10.0MHz	1/#Mid	2505	-1.82	4.55	27.76	21.39	137.721	Horizontal	Pass
Band 16		2535	-1.83	4.69	27.72	21.20	131.826	Horizontal	Pass
QAM		2565	-2.10	4.72	27.70	20.88	122.462	Horizontal	Pass
15.0MHz	1/#Mid	2507.5	-2.00	4.55	27.77	21.22	132.434	Horizontal	Pass
Band 16		2535	-1.97	4.69	27.72	21.06	127.644	Horizontal	Pass
QAM		2562.5	-1.58	4.72	27.69	21.39	137.721	Horizontal	Pass
20.0MHz	1/#Mid	2510	-1.88	4.57	27.78	21.33	135.831	Horizontal	Pass
Band 16		2535	-1.55	4.73	27.72	<b>21.44</b>	139.316	Horizontal	Pass
QAM		2560	-1.65	4.75	27.68	21.28	134.276	Horizontal	Pass
5.0MHz	1/#Mid	2502.5	-3.07	4.54	27.75	20.14	103.276	Vertical	Pass
Band 16		2535	-2.73	4.69	27.72	20.30	107.152	Vertical	Pass
QAM		2567.5	-2.90	4.71	27.71	20.10	102.329	Vertical	Pass
10.0MHz	1/#Mid	2505	-3.41	4.55	27.76	19.80	95.499	Vertical	Pass
Band 16		2535	-3.22	4.69	27.72	19.81	95.719	Vertical	Pass
QAM		2565	-1.93	4.72	27.70	21.05	127.350	Vertical	Pass
15.0MHz	1/#Mid	2507.5	-4.05	4.55	27.77	19.17	82.604	Vertical	Pass
Band 16		2535	-3.09	4.69	27.72	19.94	98.628	Vertical	Pass
QAM		2562.5	-2.53	4.72	27.69	20.44	110.662	Vertical	Pass
20.0MHz	1/#Mid	2510	-2.12	4.57	27.78	21.09	128.529	Vertical	Pass
Band 16		2535	-1.90	4.73	27.72	21.09	128.529	Vertical	Pass
QAM		2560	-2.44	4.75	27.68	20.49	111.944	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

### 8.6 LTE BAND 12

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Factor	Correction	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	Of Max. ERP	
							(dBm)	(mW)		
1.4MHz Band QPSK	1/#Mid	699.7	6.71	1.91	19.21	2.15	21.86	153.462	Vertical	Pass
		707.5	6.63	1.91	19.26	2.15	21.83	152.405	Vertical	Pass
		715.3	6.41	1.93	19.34	2.15	21.67	146.893	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	700.5	6.50	1.91	19.21	2.15	21.65	146.218	Vertical	Pass
		707.5	6.42	1.91	19.26	2.15	21.62	145.211	Vertical	Pass
		714.5	6.26	1.93	19.34	2.15	21.52	141.906	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	701.5	6.77	1.91	19.23	2.15	21.94	156.315	Vertical	Pass
		707.5	6.68	1.91	19.26	2.15	21.88	154.170	Vertical	Pass
		713.5	6.47	1.92	19.33	2.15	21.73	148.936	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	704	6.79	1.91	19.25	2.15	<b>21.98</b>	157.761	Vertical	Pass
		707.5	6.77	1.91	19.26	2.15	21.97	157.398	Vertical	Pass
		711	6.62	1.92	19.32	2.15	21.87	153.815	Vertical	Pass
1.4MHz Band QPSK	1/#Mid	699.7	5.34	1.91	19.21	2.15	20.49	111.944	Horizontal	Pass
		707.5	5.23	1.91	19.26	2.15	20.43	110.408	Horizontal	Pass
		715.3	5.13	1.93	19.34	2.15	20.39	109.396	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	700.5	5.11	1.91	19.21	2.15	20.26	106.170	Horizontal	Pass
		707.5	5.73	1.91	19.26	2.15	20.93	123.880	Horizontal	Pass
		714.5	5.59	1.93	19.34	2.15	20.85	121.619	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	701.5	5.01	1.91	19.23	2.15	20.18	104.232	Horizontal	Pass
		707.5	5.26	1.91	19.26	2.15	20.46	111.173	Horizontal	Pass
		713.5	5.74	1.92	19.33	2.15	21.00	125.893	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	704	5.76	1.91	19.25	2.15	20.95	124.451	Horizontal	Pass
		707.5	5.68	1.91	19.26	2.15	20.88	122.462	Horizontal	Pass
		711	5.78	1.92	19.32	2.15	21.03	126.765	Horizontal	Pass



Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Factor	Correction	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	Of Max. ERP	
							(dBm)	(mW)		
1.4MHz Band 16 QAM	1/#Mid	699.7	7.27	1.91	19.21	2.15	22.42	174.582	Vertical	Pass
		707.5	7.19	1.91	19.26	2.15	22.39	173.380	Vertical	Pass
		715.3	6.97	1.93	19.34	2.15	22.23	167.109	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	7.06	1.91	19.21	2.15	22.21	166.341	Vertical	Pass
		707.5	6.98	1.91	19.26	2.15	22.18	165.196	Vertical	Pass
		714.5	6.82	1.93	19.34	2.15	22.08	161.436	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	7.33	1.91	19.23	2.15	22.50	177.828	Vertical	Pass
		707.5	7.24	1.91	19.26	2.15	22.44	175.388	Vertical	Pass
		713.5	7.03	1.92	19.33	2.15	22.29	169.434	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	704	7.35	1.91	19.25	2.15	<b>22.54</b>	179.473	Vertical	Pass
		707.5	7.33	1.91	19.26	2.15	22.53	179.061	Vertical	Pass
		711	7.18	1.92	19.32	2.15	22.43	174.985	Vertical	Pass
1.4MHz Band 16 QAM	1/#Mid	699.7	6.31	1.91	19.21	2.15	21.46	139.959	Horizontal	Pass
		707.5	5.99	1.91	19.26	2.15	21.19	131.522	Horizontal	Pass
		715.3	6.37	1.93	19.34	2.15	21.63	145.546	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	6.43	1.91	19.21	2.15	21.58	143.880	Horizontal	Pass
		707.5	5.62	1.91	19.26	2.15	20.82	120.781	Horizontal	Pass
		714.5	5.86	1.93	19.34	2.15	21.12	129.420	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	6.34	1.91	19.23	2.15	21.51	141.579	Horizontal	Pass
		707.5	6.10	1.91	19.26	2.15	21.30	134.896	Horizontal	Pass
		713.5	6.06	1.92	19.33	2.15	21.32	135.519	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	704	6.01	1.91	19.25	2.15	21.20	131.826	Horizontal	Pass
		707.5	5.66	1.91	19.26	2.15	20.86	121.899	Horizontal	Pass
		711	5.98	1.92	19.32	2.15	21.23	132.739	Horizontal	Pass

Note:

ERP=EIRP-2.15

SG Level= Signal generator output

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

### 8.7 LTE BAND 13

Radiated Power (ERP) for Band 13										
Mode	RB/RB SIZE	Frequency	Result							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	6.11	1.91	19.23	2.15	21.28	134.28	Horizontal	Pass
		782	5.96	1.91	19.26	2.15	21.16	130.62	Horizontal	Pass
		784.5	5.07	1.92	19.33	2.15	20.33	107.89	Horizontal	Pass
10.0MHz Band QPSK	50/0	782	6.26	1.91	19.26	2.15	<b>21.46</b>	139.96	Horizontal	Pass
5.0MHz Band QPSK	25/0	779.5	4.51	1.91	19.23	2.15	19.68	92.90	Vertical	Pass
		782	4.85	1.91	19.26	2.15	20.05	101.16	Vertical	Pass
		784.5	4.67	1.92	19.33	2.15	19.93	98.40	Vertical	Pass
10.0MHz Band QPSK	50/0	782	4.99	1.92	19.32	2.15	20.24	105.68	Vertical	Pass

Radiated Power (ERP) for Band 13										
Mode	RB/RB SIZE	Frequency	Result							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 16 QAM	25/0	779.5	6.18	1.91	19.23	2.15	21.35	136.46	Horizontal	Pass
		782	4.86	1.91	19.26	2.15	20.06	101.39	Horizontal	Pass
		784.5	4.55	1.92	19.33	2.15	19.81	95.72	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	782	6.17	1.91	19.26	2.15	<b>21.37</b>	137.09	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	779.5	5.25	1.91	19.23	2.15	20.42	110.15	Vertical	Pass
		782	4.88	1.91	19.26	2.15	20.08	101.86	Vertical	Pass
		784.5	4.41	1.92	19.33	2.15	19.67	92.68	Vertical	Pass
10.0MHz Band 16 QAM	50/0	782	4.80	1.91	19.26	2.15	20.00	100.00	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

### 8.8 LTE BAND 17

Radiated Power (ERP) for Band 17											
Mode	RB/RB SIZE	Frequency	Result							Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss	Antenna Factor	Correction	Max. EIRP	Max. EIRP			
			(dBm)	(dBm)	(dB)		Average	Average			
							(dB)	(dBm)	(mW)		
5.0MHz Band QPSK	1/#Mid	706.5	6.20	1.91	19.23	2.15	21.37	137.088	Vertical	Pass	
		710	6.06	1.91	19.26	2.15	21.26	133.660	Vertical	Pass	
		713.5	5.96	1.92	19.33	2.15	21.22	132.434	Vertical	Pass	
10.0MHz Band QPSK	1/#Mid	709	6.21	1.91	19.25	2.15	<b>21.40</b>	138.038	Vertical	Pass	
		710	6.16	1.91	19.26	2.15	21.36	136.773	Vertical	Pass	
		711	6.12	1.92	19.32	2.15	21.37	137.088	Vertical	Pass	
5.0MHz Band QPSK	1/#Mid	706.5	4.63	1.91	19.23	2.15	19.80	95.499	Horizontal	Pass	
		710	5.20	1.91	19.26	2.15	20.40	109.648	Horizontal	Pass	
		713.5	5.73	1.92	19.33	2.15	20.99	125.603	Horizontal	Pass	
10.0MHz Band QPSK	1/#Mid	709	4.30	1.91	19.25	2.15	19.49	88.920	Horizontal	Pass	
		710	4.33	1.91	19.26	2.15	19.53	89.743	Horizontal	Pass	
		711	4.18	1.92	19.32	2.15	19.43	87.700	Horizontal	Pass	

Radiated Power (ERP) for Band 17											
Mode	RB/RB SIZE	Frequency	Result							Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss	Antenna Factor	Correction	Max. EIRP	Max. EIRP			
			(dBm)	(dBm)	(dB)		Average	Average			
							(dB)	(dBm)	(mW)		
5.0MHz	Band 16 QAM	706.5	5.55	1.91	19.23	2.15	20.72	118.032	Vertical	Pass	
		710	5.46	1.91	19.26	2.15	20.66	116.413	Vertical	Pass	
		713.5	5.26	1.92	19.33	2.15	20.52	112.720	Vertical	Pass	
10.0MHz	Band 16 QAM	709	5.09	1.91	19.25	2.15	20.28	106.660	Vertical	Pass	
		710	5.62	1.91	19.26	2.15	<b>20.82</b>	120.781	Vertical	Pass	
		711	5.35	1.92	19.32	2.15	20.60	114.815	Vertical	Pass	
5.0MHz	Band 16 QAM	706.5	4.25	1.91	19.23	2.15	19.42	87.498	Horizontal	Pass	
		710	4.21	1.91	19.26	2.15	19.41	87.297	Horizontal	Pass	
		713.5	4.15	1.92	19.33	2.15	19.41	87.297	Horizontal	Pass	
10.0MHz	Band 16 QAM	709	4.67	1.91	19.25	2.15	19.86	96.828	Horizontal	Pass	
		710	4.10	1.91	19.26	2.15	19.30	85.114	Horizontal	Pass	
		711	4.61	1.92	19.32	2.15	19.86	96.828	Horizontal	Pass	

Note:

ERP=EIRP-2.15

SG Level= Signal generator output

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

### 8.9 LTE BAND 38

Radiated Power (EIRP) for Band 38									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG	Cable	Antenna	Max.	Max. EIRP	Polarization	
			Level	Loss	Gain	EIRP	Average	Of Max.	
			(dBm)	(dBm)	(dB)	Average	Average	ERP	
			(dBm)	(mW)					
5.0MHz Band QPSK	25/0	2572.5	-2.12	4.95	27.79	20.74	118.577	Vertical	Pass
		2595	-2.64	4.88	27.71	20.85	121.619	Vertical	Pass
		2617.5	-2.58	4.93	27.95	21.52	141.906	Vertical	Pass
5.0MHz Band 16 QAM	25/0	2572.5	-2.37	4.81	27.73	21.33	135.831	Vertical	Pass
		2595	-2.47	4.95	27.81	21.08	128.233	Vertical	Pass
		2617.5	-2.59	5.03	27.69	21.28	134.276	Vertical	Pass
10.0MHz Band QPSK	50/0	2575	-2.98	5.01	27.86	21.27	133.968	Vertical	Pass
		2595	-2.6	5	27.65	21.02	126.474	Vertical	Pass
		2615	-2.67	4.87	27.89	21.37	137.088	Vertical	Pass
10.0MHz Band 16 QAM	50/0	2575	-2.71	4.77	27.78	20.80	120.226	Vertical	Pass
		2595	-2.38	4.87	27.87	21.18	131.220	Vertical	Pass
		2615	-2.56	4.94	27.77	21.13	129.718	Vertical	Pass
15.0MHz Band QPSK	75/0	2577.5	-2.9	4.89	27.88	21.70	147.911	Vertical	Pass
		2595	-2.32	4.87	27.84	21.26	133.660	Vertical	Pass
		2612.5	-2.52	4.92	27.93	21.14	130.017	Vertical	Pass
15.0MHz Band 16 QAM	75/0	2577.5	-2.53	4.75	27.78	20.94	124.165	Vertical	Pass
		2595	-2.53	4.98	27.82	20.83	121.060	Vertical	Pass
		2612.5	-2.6	4.95	27.83	20.75	118.850	Vertical	Pass
20.0MHz Band QPSK	100/0	2580	-2.53	4.86	27.8	21.28	134.276	Vertical	Pass
		2595	-2.37	4.79	27.83	<b>22.32</b>	170.608	Vertical	Pass
		2610	-2.68	4.89	27.87	20.96	124.738	Vertical	Pass
20.0MHz Band 16 QAM	100/0	2580	-2.87	4.95	27.73	21.60	144.544	Vertical	Pass
		2595	-2.88	4.91	27.71	20.83	121.060	Vertical	Pass
		2610	-2.81	4.96	27.92	20.76	119.124	Vertical	Pass

Radiated Power (EIRP) for Band 38									
Mode	RB/RB SIZE	Frequency	Result					Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss	Antenna Gain	Max. EIRP	Max. EIRP		
			(dBm)	(dBm)	(dB)	Average	Average		
						(dBm)	(mW)		
5.0MHz Band QPSK	25/0	2572.5	-2.12	4.95	27.79	20.31	107.399	Horizontal	Pass
		2595	-2.64	4.88	27.71	20.83	121.060	Horizontal	Pass
		2617.5	-2.58	4.93	27.95	19.86	96.828	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	2572.5	-2.37	4.81	27.73	20.85	121.619	Horizontal	Pass
		2595	-2.47	4.95	27.81	19.94	98.628	Horizontal	Pass
		2617.5	-2.59	5.03	27.69	20.71	117.761	Horizontal	Pass
10.0MHz Band QPSK	50/0	2575	-2.98	5.01	27.86	20.68	116.950	Horizontal	Pass
		2595	-2.6	5	27.65	20.48	111.686	Horizontal	Pass
		2615	-2.67	4.87	27.89	20.85	121.619	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	2575	-2.71	4.77	27.78	20.55	113.501	Horizontal	Pass
		2595	-2.38	4.87	27.87	20.05	101.158	Horizontal	Pass
		2615	-2.56	4.94	27.77	20.82	120.781	Horizontal	Pass
15.0MHz Band QPSK	75/0	2577.5	-2.9	4.89	27.88	20.45	110.917	Horizontal	Pass
		2595	-2.32	4.87	27.84	20.18	104.232	Horizontal	Pass
		2612.5	-2.52	4.92	27.93	20.53	112.980	Horizontal	Pass
15.0MHz Band 16 QAM	75/0	2577.5	-2.53	4.75	27.78	20.46	111.173	Horizontal	Pass
		2595	-2.53	4.98	27.82	20.04	100.925	Horizontal	Pass
		2612.5	-2.6	4.95	27.83	20.08	101.859	Horizontal	Pass
20.0MHz Band QPSK	100/0	2580	-2.53	4.86	27.8	20.38	109.144	Horizontal	Pass
		2595	-2.37	4.79	27.83	21.46	139.959	Horizontal	Pass
		2610	-2.68	4.89	27.87	20.16	103.753	Horizontal	Pass
20.0MHz Band 16 QAM	100/0	2580	-2.87	4.95	27.73	20.03	100.693	Horizontal	Pass
		2595	-2.88	4.91	27.71	<b>21.47</b>	140.281	Horizontal	Pass
		2610	-2.81	4.96	27.92	20.67	116.681	Horizontal	Pass

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Factor 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						Conclusion
			SG Level	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
						(dBm)	(mW)		
5.0MHz Band QPSK	1/#Mid	2537.50	-1.64	4.54	27.75	21.57	143.549	Horizontal	Pass
		2595.00	-1.49	4.69	27.72	21.54	142.561	Horizontal	Pass
		2652.50	-1.37	4.71	27.71	21.63	145.546	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2540.00	-1.72	4.55	27.76	21.49	140.929	Horizontal	Pass
		2595.00	-1.58	4.69	27.72	21.45	139.637	Horizontal	Pass
		2650.00	-1.57	4.72	27.70	21.41	138.357	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2542.50	-1.55	4.55	27.77	21.67	146.893	Horizontal	Pass
		2595.00	-1.27	4.69	27.72	21.76	149.968	Horizontal	Pass
		2647.50	-1.32	4.72	27.69	21.65	146.218	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2545.00	-1.16	4.57	27.78	<b>22.05</b>	160.325	Horizontal	Pass
		2595.00	-1.21	4.73	27.72	21.78	150.661	Horizontal	Pass
		2645.00	-1.21	4.75	27.68	21.72	148.594	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2537.50	-1.44	4.54	27.75	21.77	150.314	Vertical	Pass
		2595.00	-1.35	4.69	27.72	21.68	147.231	Vertical	Pass
		2652.50	-1.33	4.71	27.71	21.67	146.893	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2540.00	-1.42	4.55	27.76	21.79	151.008	Vertical	Pass
		2595.00	-1.26	4.69	27.72	21.77	150.314	Vertical	Pass
		2650.00	-1.33	4.72	27.70	21.65	146.218	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2542.50	-2.44	4.55	27.77	20.78	119.674	Vertical	Pass
		2595.00	-2.07	4.69	27.72	20.96	124.738	Vertical	Pass
		2647.50	-2.03	4.72	27.69	20.94	124.165	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2545.00	-2.78	4.57	27.78	20.43	110.408	Vertical	Pass
		2595.00	-2.73	4.73	27.72	20.26	106.170	Vertical	Pass
		2645.00	-1.97	4.75	27.68	20.96	124.738	Vertical	Pass



Radiated Power (EIRP) for Band 41									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss	Antenna Factor	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
				(dBm)	(dB)	(dBm)	(mW)		
5.0MHz Band 16 QAM	1/#Mid	2537.50	-1.64	4.54	27.75	21.57	143.549	Horizontal	Pass
		2595.00	-1.49	4.69	27.72	21.54	142.561	Horizontal	Pass
		2652.50	-1.37	4.71	27.71	21.63	145.546	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2540.00	-1.72	4.55	27.76	21.49	140.929	Horizontal	Pass
		2595.00	-1.58	4.69	27.72	21.45	139.637	Horizontal	Pass
		2650.00	-1.57	4.72	27.70	21.41	138.357	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2542.50	-1.55	4.55	27.77	21.67	146.893	Horizontal	Pass
		2595.00	-1.27	4.69	27.72	21.76	149.968	Horizontal	Pass
		2647.50	-1.32	4.72	27.69	21.65	146.218	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2545.00	-1.27	4.57	27.78	<b>21.94</b>	156.315	Horizontal	Pass
		2595.00	-1.21	4.73	27.72	21.78	150.661	Horizontal	Pass
		2645.00	-1.21	4.75	27.68	21.72	148.594	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2537.50	-1.44	4.54	27.75	21.77	150.314	Vertical	Pass
		2595.00	-1.35	4.69	27.72	21.68	147.231	Vertical	Pass
		2652.50	-1.33	4.71	27.71	21.67	146.893	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2540.00	-1.42	4.55	27.76	21.79	151.008	Vertical	Pass
		2595.00	-1.26	4.69	27.72	21.77	150.314	Vertical	Pass
		2650.00	-1.33	4.72	27.70	21.65	146.218	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2542.50	-2.27	4.55	27.77	20.95	124.451	Vertical	Pass
		2595.00	-2.70	4.69	27.72	20.33	107.895	Vertical	Pass
		2647.50	-2.81	4.72	27.69	20.16	103.753	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2545.00	-2.55	4.57	27.78	20.66	116.413	Vertical	Pass
		2595.00	-2.79	4.73	27.72	20.20	104.713	Vertical	Pass
		2645.00	-2.72	4.75	27.68	20.21	104.954	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

### 8.11 LTE BAND 66

Radiated Power (EIRP) for Band 66									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP Average (mW)	Polarization Of Max. ERP	
						Average			
						(dBm)			
1.4MHz Band QPSK	1/#Mid	1710.7	-3.35	3.76	28.24	21.13	129.718	Horizontal	Pass
		1745	-3.21	3.91	28.22	21.10	128.825	Horizontal	Pass
		1779.3	-3.08	3.93	28.2	21.19	131.522	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-3.41	3.77	28.23	21.05	127.350	Horizontal	Pass
		1745	-3.32	3.91	28.24	21.01	126.183	Horizontal	Pass
		1778.5	-3.34	3.94	28.25	20.97	125.026	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-3.31	3.77	28.31	21.23	132.739	Horizontal	Pass
		1745	-2.99	3.91	28.22	21.32	135.519	Horizontal	Pass
		1777.5	-3.05	3.94	28.2	21.21	132.130	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-3.20	3.79	28.33	21.34	136.144	Horizontal	Pass
		1745	-2.93	3.95	28.22	21.34	136.144	Horizontal	Pass
		1775	-2.94	3.97	28.19	21.28	134.276	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-3.22	3.79	28.34	21.33	135.831	Horizontal	Pass
		1745	-3.03	3.95	28.22	21.24	133.045	Horizontal	Pass
		1772.5	-2.98	3.97	28.18	21.23	132.739	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-3.19	3.81	28.35	<b>21.35</b>	136.458	Horizontal	Pass
		1745	-2.93	3.96	28.22	21.33	135.831	Horizontal	Pass
		1770	-2.95	4	28.16	21.21	132.130	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-4.35	3.76	28.24	20.13	103.039	Vertical	Pass
		1745	-4.23	3.91	28.22	20.08	101.859	Vertical	Pass
		1779.3	-4.51	3.93	28.2	19.76	94.624	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-4.08	3.77	28.23	20.38	109.144	Vertical	Pass
		1745	-3.93	3.91	28.24	20.40	109.648	Vertical	Pass
		1778.5	-4.19	3.94	28.25	20.12	102.802	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-4.21	3.77	28.31	20.33	107.895	Vertical	Pass
		1745	-4.67	3.91	28.22	19.64	92.045	Vertical	Pass
		1777.5	-4.45	3.94	28.2	19.81	95.719	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-4.62	3.79	28.34	19.93	98.401	Vertical	Pass
		1745	-3.94	3.95	28.22	20.33	107.895	Vertical	Pass
		1775	-3.93	3.97	28.18	20.28	106.660	Vertical	Pass

15.0MHz		1717.5	-4.78	3.81	28.35	19.76	94.624	Vertical	Pass
Band	1/#Mid	1745	-4.25	3.96	28.22	20.01	100.231	Vertical	Pass
QPSK		1772.5	-4.47	4	28.16	19.69	93.111	Vertical	Pass
20.0MHz		1720	-4.17	3.79	28.34	20.38	109.144	Vertical	Pass
Band	1/#Mid	1745	-4.11	3.95	28.22	20.16	103.753	Vertical	Pass
QPSK		1770	-3.94	3.97	28.18	20.27	106.414	Vertical	Pass

Radiated Power (EIRP) for Band 66									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz	1/#Mid	1710.7	-4.18	3.76	28.24	20.30	107.152	Horizontal	Pass
Band 16		1745	-3.79	3.91	28.22	20.52	112.720	Horizontal	Pass
QAM		1779.3	-3.97	3.93	28.2	20.30	107.152	Horizontal	Pass
3.0MHz	1/#Mid	1711.5	-4.57	3.77	28.23	19.89	97.499	Horizontal	Pass
Band 16		1745	-3.82	3.91	28.24	20.51	112.460	Horizontal	Pass
QAM		1778.5	-4.11	3.94	28.25	20.20	104.713	Horizontal	Pass
5.0MHz	1/#Mid	1712.5	-3.99	3.77	28.31	20.55	113.501	Horizontal	Pass
Band 16		1745	-4.05	3.91	28.22	20.26	106.170	Horizontal	Pass
QAM		1777.5	-3.72	3.94	28.2	20.54	113.240	Horizontal	Pass
10.0MHz	1/#Mid	1715	-4.04	3.79	28.33	20.50	112.202	Horizontal	Pass
Band 16		1745	-3.70	3.95	28.22	20.57	114.025	Horizontal	Pass
QAM		1775	-4.02	3.97	28.19	20.20	104.713	Horizontal	Pass
15.0MHz	1/#Mid	1717.5	-4.03	3.79	28.34	20.52	112.720	Horizontal	Pass
Band 16		1745	-3.85	3.95	28.22	20.42	110.154	Horizontal	Pass
QAM		1772.5	-3.64	3.97	28.18	20.57	114.025	Horizontal	Pass
20.0MHz	1/#Mid	1720	-3.86	3.81	28.35	<b>20.68</b>	116.950	Horizontal	Pass
Band 16		1745	-3.64	3.96	28.22	20.62	115.345	Horizontal	Pass
QAM		1770	-3.58	4	28.16	20.58	114.288	Horizontal	Pass
1.4MHz	1/#Mid	1710.7	-4.57	3.76	28.24	19.91	97.949	Vertical	Pass
Band 16		1745	-5.51	3.91	28.22	18.80	75.858	Vertical	Pass
QAM		1779.3	-4.15	3.93	28.2	20.12	102.802	Vertical	Pass
3.0MHz	1/#Mid	1711.5	-4.12	3.77	28.23	20.34	108.143	Vertical	Pass
Band 16		1745	-4.48	3.91	28.24	19.85	96.605	Vertical	Pass
QAM		1778.5	-4.45	3.94	28.25	19.86	96.828	Vertical	Pass
5.0MHz	1/#Mid	1712.5	-5.16	3.77	28.31	19.38	86.696	Vertical	Pass
Band 16		1745	-5.48	3.91	28.22	18.83	76.384	Vertical	Pass
QAM		1777.5	-5.19	3.94	28.2	19.07	80.724	Vertical	Pass
10.0MHz	1/#Mid	1715	-4.96	3.79	28.34	19.59	90.991	Vertical	Pass
Band 16		1745	-4.01	3.95	28.22	20.26	106.170	Vertical	Pass
QAM		1775	-4.64	3.97	28.18	19.57	90.573	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-4.17	3.81	28.35	20.37	108.893	Vertical	Pass
Band 16		1745	-4.23	3.96	28.22	20.03	100.693	Vertical	Pass

QAM		1772.5	-3.70	4	28.16	20.46	111.173	Vertical	Pass
20.0MHz	1/#Mid	1720	-5.15	3.79	28.34	19.40	87.096	Vertical	Pass
Band 16		1745	-4.96	3.95	28.22	19.31	85.310	Vertical	Pass
QAM		1770	-4.05	3.97	28.18	20.16	103.753	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

## 9. SPURIOUS RADIATION EMISSION

### RULE PART(S)

FCC: §2.1051, §22.917(a), §24.238(a), §27.53(c)(g)(h)(m)

### LIMIT

For Band 7, the minimum permissible attenuation level of any spurious emission is  $55 + \log_{10}(P)$  [Watts].

The minimum permissible attenuation level of any spurious emission is  $43 + \log_{10}(P)$  [Watts], where P is the transmitter power in Watts.

### TEST PROCEDURE

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

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

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

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

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

**MODES TESTED**

- LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 13
- LTE Band 17
- LTE Band 38
- LTE Band 41
- LTE Band 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	-51.25	4.04	33.51	-21.78	-13	-8.78	Horizontal
3701.4	-51.56	4.04	33.51	-22.09	-13	-9.09	Vertical
5552.1	-52.02	5.24	35.84	-21.42	-13	-8.42	Vertical
5552.1	-50.01	5.24	35.84	-19.41	-13	-6.41	Horizontal
206.9	-36.70	1.43	16.02	-22.11	-13	-9.11	Vertical
418.8	-36.26	1.30	17.99	-19.57	-13	-6.57	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-52.67	4.04	33.56	-23.15	-13	-10.15	Horizontal
3760.0	-51.06	4.04	33.56	-21.54	-13	-8.54	Vertical
5640.0	-53.96	5.24	35.91	-23.29	-13	-10.29	Vertical
5640.0	-50.25	5.24	35.91	-19.58	-13	-6.58	Horizontal
200.8	-43.45	1.62	16.97	-28.10	-13	-15.10	Vertical
290.5	-40.39	1.74	15.98	-26.16	-13	-13.16	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-51.01	4.04	34.00	-21.05	-13	-8.05	Horizontal
3818.6	-49.30	4.04	34.00	-19.34	-13	-6.34	Vertical
5727.9	-51.95	5.24	36.04	-21.15	-13	-8.15	Vertical
5727.9	-49.05	5.24	36.04	-18.25	-13	-5.25	Horizontal
187.3	-44.60	1.42	17.29	-28.73	-13	-15.73	Vertical
417.6	-43.50	1.50	17.90	-27.09	-13	-14.09	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	-49.09	4.07	33.54	-19.62	-13	-6.62	Horizontal
3720.0	-46.67	4.07	33.54	-17.20	-13	-4.20	Vertical
5580.0	-50.33	5.28	35.86	-19.75	-13	-6.75	Vertical
5580.0	-49.92	5.28	35.86	-19.34	-13	-6.34	Horizontal
188.0	-43.94	1.58	16.89	-28.62	-13	-15.62	Vertical
365.3	-38.42	1.76	17.26	-22.92	-13	-9.92	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-48.76	4.04	33.56	-19.24	-13	-6.24	Horizontal
3760.0	-49.90	4.04	33.56	-20.38	-13	-7.38	Vertical
5640.0	-51.25	5.24	35.91	-20.58	-13	-7.58	Vertical
5640.0	-52.31	5.24	35.91	-21.64	-13	-8.64	Horizontal
194.3	-43.97	1.46	16.27	-29.16	-13	-16.16	Vertical
448.9	-38.43	1.59	15.15	-24.87	-13	-11.87	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-48.56	4.04	34.00	-18.60	-13	-5.60	Horizontal
3800.0	-50.26	4.04	34.00	-20.30	-13	-7.30	Vertical
5700.0	-52.02	5.24	36.04	-21.22	-13	-8.22	Vertical
5700.0	-50.68	5.24	36.04	-19.88	-13	-6.88	Horizontal
183.9	-39.57	1.36	17.39	-23.53	-13	-10.53	Vertical
349.1	-41.93	1.66	15.39	-28.20	-13	-15.20	Horizontal

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	-48.43	4.02	29.80	-22.65	-13	-9.65	Horizontal
3421.4	-53.28	4.02	29.80	-27.50	-13	-14.50	Vertical
5132.1	-53.23	5.24	35.84	-22.63	-13	-9.63	Vertical
5132.1	-50.97	5.24	35.84	-20.37	-13	-7.37	Horizontal
184.1	-43.38	1.68	16.04	-29.02	-13	-16.02	Vertical
290.3	-39.99	1.78	17.74	-24.03	-13	-11.03	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-45.06	4.03	30.00	-19.09	-13	-6.09	Horizontal
3465.0	-46.85	4.03	30.00	-20.88	-13	-7.88	Vertical
5197.5	-49.13	5.25	35.86	-18.52	-13	-5.52	Vertical
5197.5	-53.89	5.25	35.86	-23.28	-13	-10.28	Horizontal
179.1	-36.18	1.72	17.69	-20.21	-13	-7.21	Vertical
440.9	-38.07	1.62	16.02	-23.66	-13	-10.66	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-50.02	4.05	30.01	-24.06	-13	-11.06	Horizontal
3508.6	-53.18	4.05	30.01	-27.22	-13	-14.22	Vertical
5262.9	-51.58	5.26	35.86	-20.98	-13	-7.98	Vertical
5262.9	-50.41	5.26	35.86	-19.81	-13	-6.81	Horizontal
178.3	-41.14	1.80	16.69	-26.25	-13	-13.25	Vertical
238.7	-35.40	1.75	16.66	-20.50	-13	-7.50	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	-52.40	4.02	29.80	-26.62	-13	-13.62	Horizontal
3440.0	-46.56	4.02	29.80	-20.78	-13	-7.78	Vertical
5160.0	-53.94	5.24	35.84	-23.34	-13	-10.34	Vertical
5160.0	-51.19	5.24	35.84	-20.59	-13	-7.59	Horizontal
204.2	-34.19	1.57	17.26	-18.50	-13	-5.50	Vertical
329.1	-37.76	1.78	16.35	-23.19	-13	-10.19	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-48.79	4.03	30.00	-22.82	-13	-9.82	Horizontal
3465.0	-49.34	4.03	30.00	-23.37	-13	-10.37	Vertical
5197.5	-47.13	5.25	35.86	-16.52	-13	-3.52	Vertical
5197.5	-52.59	5.25	35.86	-21.98	-13	-8.98	Horizontal
191.6	-34.78	1.44	17.95	-18.27	-13	-5.27	Vertical
309.6	-44.25	1.65	16.09	-29.81	-13	-16.81	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-51.97	2.91	27.68	-27.20	-13	-14.20	Horizontal
3490.0	-47.79	2.91	27.68	-23.02	-13	-10.02	Vertical
5235.0	-52.11	5.26	35.86	-21.51	-13	-8.51	Vertical
5235.0	-49.06	5.26	35.86	-18.46	-13	-5.46	Horizontal
204.2	-39.78	1.61	16.85	-24.54	-13	-11.54	Vertical
258.1	-40.77	1.61	15.19	-27.19	-13	-14.19	Horizontal

### 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	-50.95	2.78	27.50	-26.23	-13	-13.23	Horizontal
1649.4	-45.78	2.78	27.50	-21.06	-13	-8.06	Vertical
2474.1	-46.35	2.90	27.80	-21.45	-13	-8.45	Vertical
2474.1	-51.34	2.90	27.80	-26.44	-13	-13.44	Horizontal
188.0	-34.10	1.76	17.59	-18.27	-13	-5.27	Vertical
358.8	-42.05	1.63	15.87	-27.81	-13	-14.81	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-46.38	2.80	27.48	-21.70	-13	-8.70	Horizontal
1673.0	-53.80	2.80	27.48	-29.12	-13	-16.12	Vertical
2509.5	-47.80	2.91	27.70	-23.01	-13	-10.01	Vertical
2509.5	-51.30	2.91	27.70	-26.51	-13	-13.51	Horizontal
179.3	-35.56	1.61	15.68	-21.49	-13	-8.49	Vertical
334.6	-41.32	1.59	17.52	-25.40	-13	-12.40	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-51.91	2.82	27.43	-27.30	-13	-14.30	Horizontal
1696.6	-53.59	2.82	27.43	-28.98	-13	-15.98	Vertical
2544.9	-50.25	2.92	27.74	-25.43	-13	-12.43	Vertical
2544.9	-49.95	2.92	27.74	-25.13	-13	-12.13	Horizontal
197.4	-40.20	1.69	16.67	-25.21	-13	-12.21	Vertical
419.5	-40.39	1.70	17.18	-24.91	-13	-11.91	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	-53.22	2.78	27.50	-28.50	-13	-15.50	Horizontal
1658.0	-46.09	2.78	27.50	-21.37	-13	-8.37	Vertical
2487.0	-48.01	2.90	27.80	-23.11	-13	-10.11	Vertical
2487.0	-51.36	2.90	27.80	-26.46	-13	-13.46	Horizontal
209.0	-35.70	1.71	15.57	-21.84	-13	-8.84	Vertical
236.1	-35.50	1.34	16.40	-20.44	-13	-7.44	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-45.08	2.80	27.48	-20.40	-13	-7.40	Horizontal
1673.0	-53.84	2.80	27.48	-29.16	-13	-16.16	Vertical
2509.5	-51.55	2.91	27.70	-26.76	-13	-13.76	Vertical
2509.5	-49.48	2.91	27.70	-24.69	-13	-11.69	Horizontal
196.1	-37.73	1.44	17.04	-22.13	-13	-9.13	Vertical
249.2	-37.64	1.76	17.62	-21.78	-13	-8.78	Horizontal
Test Results for High Channel 844MHz							
1688.0	-48.73	2.82	27.43	-24.12	-13	-11.12	Horizontal
1688.0	-45.24	2.82	27.43	-20.63	-13	-7.63	Vertical
2532.0	-51.61	2.92	27.74	-26.79	-13	-13.79	Vertical
2532.0	-50.26	2.92	27.74	-25.44	-13	-12.44	Horizontal
205.1	-44.49	1.74	17.70	-28.53	-13	-15.53	Vertical
396.2	-41.68	1.41	17.46	-25.62	-13	-12.62	Horizontal

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	-64.58	5.23	35.81	-34.00	-25	-9.00	Horizontal
5005.0	-60.10	5.23	35.81	-29.52	-25	-4.52	Vertical
7507.5	-61.26	5.67	36.85	-30.08	-25	-5.08	Vertical
7507.5	-61.23	5.67	36.85	-30.05	-25	-5.05	Horizontal
211.1	-51.51	1.73	17.97	-35.27	-25	-10.27	Vertical
327.1	-47.29	1.38	15.11	-33.56	-25	-8.56	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-63.47	5.23	35.82	-32.88	-25	-7.88	Horizontal
5070.0	-59.95	5.23	35.82	-29.36	-25	-4.36	Vertical
7605.0	-61.69	5.67	36.85	-30.51	-25	-5.51	Vertical
7605.0	-62.47	5.67	36.85	-31.29	-25	-6.29	Horizontal
210.1	-47.48	1.77	16.17	-33.07	-25	-8.07	Vertical
357.2	-54.45	1.63	15.21	-40.87	-25	-15.87	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-62.68	5.24	35.83	-32.09	-25	-7.09	Horizontal
5135.0	-60.11	5.24	35.83	-29.52	-25	-4.52	Vertical
7702.5	-64.53	5.68	36.87	-33.34	-25	-8.34	Vertical
7702.5	-64.93	5.68	36.87	-33.74	-25	-8.74	Horizontal
191.3	-54.66	1.58	17.56	-38.68	-25	-13.68	Vertical
340.0	-45.41	1.45	16.58	-30.28	-25	-5.28	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	-64.79	5.23	35.82	-34.20	-25	-9.20	Horizontal
5020.0	-61.87	5.23	35.82	-31.28	-25	-6.28	Vertical
7530.0	-61.39	5.67	36.86	-30.20	-25	-5.20	Vertical
7530.0	-61.52	5.67	36.86	-30.33	-25	-5.33	Horizontal
187.2	-47.40	1.63	15.76	-33.27	-25	-8.27	Vertical
252.2	-52.94	1.71	15.44	-39.21	-25	-14.21	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-61.98	5.23	35.82	-31.39	-25	-6.39	Horizontal
5070.0	-59.63	5.23	35.82	-29.04	-25	-4.04	Vertical
7605.0	-64.73	5.67	36.85	-33.55	-25	-8.55	Vertical
7605.0	-60.04	5.67	36.85	-28.86	-25	-3.86	Horizontal
177.0	-48.98	1.79	16.84	-33.92	-25	-8.92	Vertical
279.1	-48.01	1.71	17.64	-32.08	-25	-7.08	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-60.90	5.24	35.83	-30.31	-25	-5.31	Horizontal
5120.0	-64.65	5.24	35.83	-34.06	-25	-9.06	Vertical
7680.0	-64.05	5.70	36.88	-32.87	-25	-7.87	Vertical
7680.0	-62.31	5.70	36.88	-31.13	-25	-6.13	Horizontal
187.3	-49.16	1.79	16.84	-34.10	-25	-9.10	Vertical
313.2	-47.66	1.71	17.64	-31.73	-25	-6.73	Horizontal

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	-51.69	2.60	27.20	-27.09	-13	-14.09	Horizontal
1399.4	-52.68	2.60	27.20	-28.08	-13	-15.08	Vertical
2099.1	-51.14	2.85	27.54	-26.45	-13	-13.45	Vertical
2099.1	-51.31	2.85	27.54	-26.62	-13	-13.62	Horizontal
176.3	-38.63	1.49	17.78	-22.34	-13	-9.34	Vertical
236.1	-34.43	1.36	17.33	-18.46	-13	-5.46	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-52.11	2.61	27.28	-27.44	-13	-14.44	Horizontal
1415.0	-49.28	2.61	27.28	-24.61	-13	-11.61	Vertical
2122.5	-45.53	2.87	27.59	-20.81	-13	-7.81	Vertical
2122.5	-52.62	2.87	27.59	-27.90	-13	-14.90	Horizontal
179.9	-34.34	1.73	15.74	-20.33	-13	-7.33	Vertical
408.8	-44.36	1.62	15.79	-30.19	-13	-17.19	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-47.88	2.63	27.28	-23.23	-13	-10.23	Horizontal
1430.6	-44.86	2.63	27.28	-20.21	-13	-7.21	Vertical
2145.9	-53.28	2.88	27.60	-28.56	-13	-15.56	Vertical
2145.9	-51.20	2.88	27.60	-26.48	-13	-13.48	Horizontal
201.1	-44.65	1.61	18.00	-28.26	-13	-15.26	Vertical
412.3	-37.70	1.45	15.49	-23.67	-13	-10.67	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	-49.34	2.61	27.26	-24.69	-13	-11.69	Horizontal
1408.0	-51.26	2.61	27.26	-26.61	-13	-13.61	Vertical
2112.0	-45.23	2.87	27.58	-20.52	-13	-7.52	Vertical
2112.0	-53.67	2.87	27.58	-28.96	-13	-15.96	Horizontal
190.2	-37.95	1.31	16.97	-22.29	-13	-9.29	Vertical
231.9	-40.79	1.65	16.70	-25.74	-13	-12.74	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-53.25	2.61	27.28	-28.58	-13	-15.58	Horizontal
1415.0	-48.69	2.61	27.28	-24.02	-13	-11.02	Vertical
2122.5	-48.41	2.87	27.59	-23.69	-13	-10.69	Vertical
2122.5	-50.86	2.87	27.59	-26.14	-13	-13.14	Horizontal
204.9	-39.12	1.72	17.99	-22.85	-13	-9.85	Vertical
349.9	-37.41	1.73	17.94	-21.20	-13	-8.20	Horizontal
Test Results for High Channel 711MHz							
1422.0	-52.74	2.62	27.28	-28.08	-13	-15.08	Horizontal
1422.0	-47.53	2.62	27.28	-22.87	-13	-9.87	Vertical
2133.0	-44.67	2.87	27.60	-19.94	-13	-6.94	Vertical
2133.0	-53.75	2.87	27.60	-29.02	-13	-16.02	Horizontal
197.9	-35.29	1.58	15.93	-20.94	-13	-7.94	Vertical
312.3	-44.61	1.36	15.59	-30.38	-13	-17.38	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

**9.6 LTE BAND 13**  
**QPSK EIRP POWER FOR 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	-74.10	2.61	27.28	-49.43	-40	-9.43	Horizontal
1559.0	-72.83	2.61	27.28	-48.16	-40	-8.16	Vertical
2338.5	-47.36	2.87	27.59	-22.64	-13	-9.64	Vertical
2338.5	-43.67	2.87	27.59	-18.95	-13	-5.95	Horizontal
120.1	-39.39	1.54	15.61	-25.32	-13	-12.32	Vertical
197.8	-36.37	1.51	15.21	-22.67	-13	-9.67	Horizontal
Test Results For Mid Channel 782MHz							
1564.0	-74.75	2.62	27.30	-50.07	-40	-10.07	Horizontal
1564.0	-72.36	2.62	27.30	-47.68	-40	-7.68	Vertical
2346.0	-42.55	2.87	27.62	-17.80	-13	-4.80	Vertical
2346.0	-44.56	2.87	27.62	-19.81	-13	-6.81	Horizontal
131.2	-37.16	1.65	16.17	-22.64	-13	-9.64	Vertical
267.5	-37.80	1.48	16.88	-22.40	-13	-9.40	Horizontal
Test Results for High Channel 784.5MHz							
1569.0	-72.54	2.66	27.28	-47.92	-40	-7.92	Horizontal
1569.0	-73.34	2.66	27.28	-48.72	-40	-8.72	Vertical
2353.5	-42.20	2.88	27.60	-17.48	-13	-4.48	Vertical
2353.5	-42.89	2.88	27.60	-18.17	-13	-5.17	Horizontal
80.8	-38.76	1.54	16.40	-23.90	-13	-10.90	Vertical
155.6	-39.06	1.43	15.77	-24.72	-13	-11.72	Horizontal

**QPSK EIRP POWER FOR 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	-72.41	2.62	27.30	-47.73	-40	-7.73	Horizontal
1564.0	-73.32	2.62	27.30	-48.64	-40	-8.64	Vertical
2346.0	-42.41	2.87	27.62	-17.66	-13	-4.66	Vertical
2346.0	-44.49	2.87	27.62	-19.74	-13	-6.74	Horizontal
129.1	-36.93	1.43	17.03	-21.33	-13	-8.33	Vertical
86.9	-35.99	1.62	16.63	-20.98	-13	-7.98	Horizontal

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

. 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	-48.65	2.61	27.28	-23.98	-13	-10.98	Horizontal
1413.0	-52.64	2.61	27.28	-27.97	-13	-14.97	Vertical
2119.5	-46.35	2.87	27.59	-21.63	-13	-8.63	Vertical
2119.5	-53.61	2.87	27.59	-28.89	-13	-15.89	Horizontal
199.0	-41.87	1.71	16.15	-27.43	-13	-14.43	Vertical
291.1	-35.09	1.41	17.32	-19.18	-13	-6.18	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-49.96	2.62	27.30	-25.28	-13	-12.28	Horizontal
1420.0	-48.71	2.62	27.30	-24.03	-13	-11.03	Vertical
2130.0	-50.06	2.87	27.62	-25.31	-13	-12.31	Vertical
2130.0	-51.66	2.87	27.62	-26.91	-13	-13.91	Horizontal
190.6	-39.75	1.42	15.25	-25.93	-13	-12.93	Vertical
400.2	-34.54	1.36	17.19	-18.71	-13	-5.71	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-49.75	2.66	27.28	-25.13	-13	-12.13	Horizontal
1427.0	-53.69	2.66	27.28	-29.07	-13	-16.07	Vertical
2140.5	-45.71	2.88	27.60	-20.99	-13	-7.99	Vertical
2140.5	-49.33	2.88	27.60	-24.61	-13	-11.61	Horizontal
184.5	-35.07	1.32	17.29	-19.10	-13	-6.10	Vertical
293.7	-38.70	1.72	16.89	-23.53	-13	-10.53	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	-52.51	2.62	27.30	-27.83	-13	-14.83	Horizontal
1418.0	-44.31	2.62	27.30	-19.63	-13	-6.63	Vertical
2127.0	-47.72	2.87	27.62	-22.97	-13	-9.97	Vertical
2127.0	-50.91	2.87	27.62	-26.16	-13	-13.16	Horizontal
178.4	-35.46	1.35	16.91	-19.90	-13	-6.90	Vertical
436.2	-34.99	1.62	16.31	-20.30	-13	-7.30	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-44.75	2.62	27.30	-20.07	-13	-7.07	Horizontal
1420.0	-45.71	2.62	27.30	-21.03	-13	-8.03	Vertical
2130.0	-49.86	2.87	27.62	-25.11	-13	-12.11	Vertical
2130.0	-49.39	2.87	27.62	-24.64	-13	-11.64	Horizontal
200.4	-38.09	1.51	17.14	-22.46	-13	-9.46	Vertical
410.4	-40.38	1.77	16.88	-25.27	-13	-12.27	Horizontal
Test Results for High Channel 711MHz							
1422.0	-49.66	2.62	27.30	-24.98	-13	-11.98	Horizontal
1422.0	-46.73	2.62	27.30	-22.05	-13	-9.05	Vertical
2133.0	-47.50	2.87	27.62	-22.75	-13	-9.75	Vertical
2133.0	-51.61	2.87	27.62	-26.86	-13	-13.86	Horizontal
175.7	-38.89	1.78	15.95	-24.72	-13	-11.72	Vertical
447.2	-42.39	1.34	17.95	-25.79	-13	-12.79	Horizontal

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

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.

9.8 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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5145	-62.02	4.01	27.5	-38.53	-25	-13.53	Horizontal
5145	-62.03	4.01	27.5	-38.54	-25	-13.54	Vertical
7717.5	-60.41	5.09	27.8	-37.70	-25	-12.70	Vertical
7717.5	-59.42	5.09	27.8	-36.71	-25	-11.71	Horizontal
Test Results For Mid Channel 2595MHz							
5190	-57.02	4.1	27.48	-33.64	-25	-8.64	Horizontal
5190	-57.54	4.1	27.48	-34.16	-25	-9.16	Vertical
7785	-56.47	5.42	27.7	-34.19	-25	-9.19	Vertical
7785	-59.30	5.42	27.7	-37.02	-25	-12.02	Horizontal
Test Results for High Channel 2617.5MHz							
5234	-58.58	4.11	27.43	-35.26	-25	-10.26	Horizontal
5234	-57.47	4.11	27.43	-34.15	-25	-9.15	Vertical
7851	-56.98	5.31	27.74	-34.55	-25	-9.55	Vertical
7851	-59.45	5.31	27.74	-37.02	-25	-12.02	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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5160	-59.47	3.89	27.5	-35.86	-25	-10.86	Horizontal
5160	-58.17	3.89	27.5	-34.56	-25	-9.56	Vertical
7740	-56.97	5.33	27.8	-34.50	-25	-9.50	Vertical
7740	-57.30	5.33	27.8	-34.83	-25	-9.83	Horizontal
Test Results for Mid Channel 2595MHz							
5190	-58.14	4.1	27.48	-34.76	-25	-9.76	Horizontal
5190	-56.86	4.1	27.48	-33.48	-25	-8.48	Vertical
7785	-62.13	5.42	27.7	-39.85	-25	-14.85	Vertical
7785	-60.68	5.42	27.7	-38.40	-25	-13.40	Horizontal
Test Results for High Channel 2610MHz							
5220	-58.53	4.01	27.43	-35.11	-25	-10.11	Horizontal
5220	-61.84	4.01	27.43	-38.42	-25	-13.42	Vertical
7830	-60.46	5.34	27.74	-38.06	-25	-13.06	Vertical
7830	-58.37	5.34	27.74	-35.97	-25	-10.97	Horizontal

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

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**  
**QPSK EIRP POWER FOR 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
5075.0	-61.86	5.23	35.81	-31.28	-25	-6.28	Horizontal
5075.0	-64.90	5.23	35.81	-34.32	-25	-9.32	Vertical
7612.5	-64.19	5.67	36.85	-33.01	-25	-8.01	Vertical
7612.5	-63.16	5.67	36.85	-31.98	-25	-6.98	Horizontal
435.3	-49.79	1.38	15.98	-35.19	-25	-10.19	Vertical
465.8	-44.81	1.62	15.66	-30.77	-25	-5.77	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-62.65	5.23	35.82	-32.06	-25	-7.06	Horizontal
5190.0	-63.67	5.23	35.82	-33.08	-25	-8.08	Vertical
7785.0	-59.81	5.67	36.85	-28.63	-25	-3.63	Vertical
7785.0	-62.56	5.67	36.85	-31.38	-25	-6.38	Horizontal
510.4	-48.35	1.62	16.17	-33.80	-25	-8.80	Vertical
562.9	-47.25	1.74	17.63	-31.36	-25	-6.36	Horizontal
Test Results for High Channel 2652.5MHz							
5305.0	-63.74	5.24	35.83	-33.15	-25	-8.15	Horizontal
5305.0	-60.66	5.24	35.83	-30.07	-25	-5.07	Vertical
7957.5	-63.96	5.68	36.87	-32.77	-25	-7.77	Vertical
7957.5	-64.89	5.68	36.87	-33.70	-25	-8.70	Horizontal
197.6	-47.56	1.55	15.84	-33.27	-25	-8.27	Vertical
353.1	-45.79	1.51	17.06	-30.24	-25	-5.24	Horizontal



**QPSK EIRP POWER FOR 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
5090.0	-61.95	5.23	35.82	-31.36	-25	-6.36	Horizontal
5090.0	-59.33	5.23	35.82	-28.74	-25	-3.74	Vertical
7635.0	-61.08	5.67	36.86	-29.89	-25	-4.89	Vertical
7635.0	-63.36	5.67	36.86	-32.17	-25	-7.17	Horizontal
128.9	-47.41	1.43	15.51	-33.33	-25	-8.33	Vertical
344.8	-49.14	1.40	16.97	-33.57	-25	-8.57	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-60.27	5.23	35.82	-29.68	-25	-4.68	Horizontal
5190.0	-62.29	5.23	35.82	-31.70	-25	-6.70	Vertical
7785.0	-60.26	5.67	36.85	-29.08	-25	-4.08	Vertical
7785.0	-62.47	5.67	36.85	-31.29	-25	-6.29	Horizontal
100.8	-47.46	1.77	16.72	-32.51	-25	-7.51	Vertical
263.5	-48.88	1.31	16.99	-33.20	-25	-8.20	Horizontal
Test Results for High Channel 2645MHz							
5290.0	-62.92	5.24	35.83	-32.33	-25	-7.33	Horizontal
5290.0	-62.27	5.24	35.83	-31.68	-25	-6.68	Vertical
7935.0	-60.96	5.70	36.88	-29.78	-25	-4.78	Vertical
7935.0	-62.05	5.70	36.88	-30.87	-25	-5.87	Horizontal
349.9	-46.72	1.70	15.73	-32.69	-25	-7.69	Vertical
110.3	-47.12	1.75	17.33	-31.54	-25	-6.54	Horizontal

Note: P<sub>Mea</sub>(dBm)= Power(dBm)+ ARpl (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.

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 Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-53.33	4.02	29.80	-27.55	-13	-14.55	Horizontal
3421.4	-54.74	4.02	29.80	-28.96	-13	-15.96	Vertical
5132.1	-51.69	5.24	35.84	-21.09	-13	-8.09	Vertical
5132.1	-50.14	5.24	35.84	-19.54	-13	-6.54	Horizontal
112.6	-44.85	1.52	15.57	-30.80	-13	-17.80	Vertical
220.5	-48.69	1.33	17.14	-32.88	-13	-19.88	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-50.64	4.03	30.00	-24.67	-13	-11.67	Horizontal
3490.0	-48.06	4.03	30.00	-22.09	-13	-9.09	Vertical
5235.0	-53.97	5.25	35.86	-23.36	-13	-10.36	Vertical
5235.0	-50.06	5.25	35.86	-19.45	-13	-6.45	Horizontal
157.3	-51.70	1.53	17.13	-36.10	-13	-23.10	Vertical
213.1	-45.95	1.41	15.95	-31.41	-13	-18.41	Horizontal
Test Results for High Channel 1779.3MHz							
3558.6	-49.44	4.05	30.01	-23.48	-13	-10.48	Horizontal
3558.6	-53.89	4.05	30.01	-27.93	-13	-14.93	Vertical
5337.9	-53.20	5.26	35.86	-22.60	-13	-9.60	Vertical
5337.9	-48.01	5.26	35.86	-17.41	-13	-4.41	Horizontal
170.6	-54.46	1.44	15.51	-40.39	-13	-27.39	Vertical
169.0	-47.11	1.78	15.76	-33.13	-13	-20.13	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 Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-54.51	4.02	29.80	-28.73	-13	-15.73	Horizontal
3440.0	-50.62	4.02	29.80	-24.84	-13	-11.84	Vertical
5160.0	-49.70	5.24	35.84	-19.10	-13	-6.10	Vertical
5160.0	-49.71	5.24	35.84	-19.11	-13	-6.11	Horizontal
268.8	-47.20	1.62	17.02	-31.80	-13	-18.80	Vertical
161.4	-52.46	1.32	17.31	-36.47	-13	-23.47	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-51.08	4.03	30.00	-25.11	-13	-12.11	Horizontal
3490.0	-52.50	4.03	30.00	-26.53	-13	-13.53	Vertical
5235.0	-51.49	5.25	35.86	-20.88	-13	-7.88	Vertical
5235.0	-50.16	5.25	35.86	-19.55	-13	-6.55	Horizontal
159.9	-50.59	1.45	15.17	-36.87	-13	-23.87	Vertical
172.1	-49.82	1.48	17.82	-33.48	-13	-20.48	Horizontal
Test Results for High Channel 1770MHz							
3540.0	-50.94	2.91	27.68	-26.17	-13	-13.17	Horizontal
3540.0	-52.59	2.91	27.68	-27.82	-13	-14.82	Vertical
5310.0	-49.47	5.26	35.86	-18.87	-13	-5.87	Vertical
5310.0	-49.91	5.26	35.86	-19.31	-13	-6.31	Horizontal
197.3	-52.46	1.76	16.38	-37.84	-13	-24.84	Vertical
158.5	-50.03	1.43	17.13	-34.33	-13	-21.33	Horizontal

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

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.

## 10. FREQUENCY STABILITY

### RULE PART(S)

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

### LIMITS

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

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

### TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- Temp. =  $-30^{\circ}$  to  $+50^{\circ}\text{C}$
- Voltage = low voltage, DC 3.4V, Normal, DC 3.87V and High voltage, DC 4.4V.

### 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
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 13
- LTE Band 17
- LTE Band 38
- LTE Band 41
- LTE Band 66

### RESULTS

See the following pages.

10.1 LTE BAND 2

QPSK, (20MHz BANDWIDTH)

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 2 QPSK, (CH 18900 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
3.4	1880	12.9	0.006844	2.5
3.87	1880	13.6	0.007255	2.5
4.4	1880	13.7	0.007291	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 2 QPSK, (CH 18900 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
Normal (25C)	1880	13.1	0.006962	2.5
Extreme (50C)	1880	11.2	0.005942	2.5
Extreme (40C)	1880	14.0	0.007459	2.5
Extreme (30C)	1880	13.8	0.007326	2.5
Extreme (10C)	1880	14.3	0.007583	2.5
Extreme (0C)	1880	12.1	0.006412	2.5
Extreme (-10C)	1880	13.0	0.006914	2.5
Extreme (-20C)	1880	14.1	0.007494	2.5
Extreme (-30C)	1880	15.1	0.008052	2.5

**16QAM, (20MHz BANDWIDTH)**

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 2 16QAM, (CH 18900 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
3.4	1880	9.6	0.005100	2.5
3.87	1880	8.6	0.004559	2.5
4.4	1880	8.4	0.004455	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 2 16QAM, (CH 18900 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
Normal (25C)	1880	9.4	0.005005	2.5
Extreme (50C)	1880	8.8	0.004684	2.5
Extreme (40C)	1880	7.7	0.004102	2.5
Extreme (30C)	1880	9.0	0.004785	2.5
Extreme (10C)	1880	9.3	0.004949	2.5
Extreme (0C)	1880	8.0	0.004253	2.5
Extreme (-10C)	1880	8.7	0.004641	2.5
Extreme (-20C)	1880	8.5	0.004505	2.5
Extreme (-30C)	1880	7.7	0.004122	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

QPSK, (10MHz BANDWIDTH)

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 4 QPSK, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
3.4	1732.5	9.3	0.005344	2.5
3.87	1732.5	8.7	0.005008	2.5
4.4	1732.5	8.8	0.005066	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 4 QPSK, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
Normal (25C)	1732.5	7.9	0.004585	2.5
Extreme (50C)	1732.5	9.0	0.005222	2.5
Extreme (40C)	1732.5	7.0	0.004047	2.5
Extreme (30C)	1732.5	5.6	0.003245	2.5
Extreme (10C)	1732.5	7.0	0.004028	2.5
Extreme (0C)	1732.5	9.7	0.005609	2.5
Extreme (-10C)	1732.5	7.9	0.004583	2.5
Extreme (-20C)	1732.5	6.9	0.003967	2.5
Extreme (-30C)	1732.5	8.2	0.004725	2.5

**16QAM, (20MHz BANDWIDTH)**

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 4 16QAM, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
3.4	1732.5	10.2	0.005905	2.5
3.87	1732.5	9.2	0.005320	2.5
4.4	1732.5	7.7	0.004466	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 4 16QAM, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
Normal (25C)	1732.5	9.9	0.005711	2.5
Extreme (50C)	1732.5	9.4	0.005418	2.5
Extreme (40C)	1732.5	7.8	0.004509	2.5
Extreme (30C)	1732.5	8.7	0.005002	2.5
Extreme (10C)	1732.5	9.3	0.005389	2.5
Extreme (0C)	1732.5	8.3	0.004765	2.5
Extreme (-10C)	1732.5	8.5	0.004910	2.5
Extreme (-20C)	1732.5	9.0	0.005218	2.5
Extreme (-30C)	1732.5	8.5	0.004899	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

#### QPSK, (10MHz BANDWIDTH)

##### Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 5 QPSK, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b>				
3.4	836.5	6.1	0.007335	2.5
3.87	836.5	7.0	0.008406	2.5
4.4	836.5	4.9	0.005853	2.5

##### Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 5 QPSK, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b>				
Normal (25C)	836.5	6.0	0.007178	2.5
Extreme (50C)	836.5	6.0	0.007225	2.5
Extreme (40C)	836.5	6.0	0.007119	2.5
Extreme (30C)	836.5	6.7	0.007965	2.5
Extreme (10C)	836.5	5.0	0.006006	2.5
Extreme (0C)	836.5	5.4	0.006463	2.5
Extreme (-10C)	836.5	5.5	0.006585	2.5
Extreme (-20C)	836.5	6.4	0.007650	2.5
Extreme (-30C)	836.5	6.6	0.007933	2.5

**16QAM, (10MHz BANDWIDTH)**

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 5 16QAM, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b>				
3.4	836.5	6.0	0.007130	2.5
3.87	836.5	6.3	0.007568	2.5
4.4	836.5	4.7	0.005619	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 5 16QAM, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b>				
Normal (25C)	836.5	6.1	0.007342	2.5
Extreme (50C)	836.5	5.9	0.006994	2.5
Extreme (40C)	836.5	6.1	0.007259	2.5
Extreme (30C)	836.5	5.9	0.007088	2.5
Extreme (10C)	836.5	5.6	0.006690	2.5
Extreme (0C)	836.5	5.6	0.006642	2.5
Extreme (-10C)	836.5	5.9	0.007066	2.5
Extreme (-20C)	836.5	5.8	0.006943	2.5
Extreme (-30C)	836.5	6.3	0.007529	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

QPSK, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 7 QPSK, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
3.4	2535	10.1	0.003976	2.5
3.87	2535	8.5	0.003334	2.5
4.4	2535	8.9	0.003503	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 7 QPSK, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
Normal (25C)	2535	9.0	0.003538	2.5
Extreme (50C)	2535	8.5	0.003343	2.5
Extreme (40C)	2535	8.1	0.003214	2.5
Extreme (30C)	2535	8.5	0.003361	2.5
Extreme (10C)	2535	8.0	0.003153	2.5
Extreme (0C)	2535	8.3	0.003257	2.5
Extreme (-10C)	2535	9.6	0.003775	2.5
Extreme (-20C)	2535	8.4	0.003314	2.5
Extreme (-30C)	2535	8.4	0.003325	2.5

**16QAM, (20MHz BANDWIDTH)**

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 7 16QAM, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
3.4	2535	6.4	0.002524	2.5
3.87	2535	6.9	0.002716	2.5
4.4	2535	5.8	0.002294	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 7 16QAM, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
Normal (25C)	2535	6.8	0.002671	2.5
Extreme (50C)	2535	6.0	0.002384	2.5
Extreme (40C)	2535	5.1	0.002028	2.5
Extreme (30C)	2535	6.5	0.002565	2.5
Extreme (10C)	2535	5.8	0.002301	2.5
Extreme (0C)	2535	4.7	0.001872	2.5
Extreme (-10C)	2535	5.6	0.002219	2.5
Extreme (-20C)	2535	6.1	0.002414	2.5
Extreme (-30C)	2535	5.8	0.002273	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 [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	707.5	8.2	0.011644	2.5
3.87	707.5	10.0	0.014138	2.5
4.4	707.5	8.4	0.011821	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	8.5	0.012021	2.5
Extreme (50C)	707.5	7.6	0.010792	2.5
Extreme (40C)	707.5	7.4	0.010487	2.5
Extreme (30C)	707.5	8.2	0.011625	2.5
Extreme (10C)	707.5	7.5	0.010618	2.5
Extreme (0C)	707.5	8.8	0.012415	2.5
Extreme (-10C)	707.5	8.0	0.011352	2.5
Extreme (-20C)	707.5	8.7	0.012270	2.5
Extreme (-30C)	707.5	7.3	0.010362	2.5

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

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	707.5	7.9	0.011151	2.5
3.87	707.5	8.7	0.012302	2.5
4.4	707.5	7.2	0.010202	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	6.5	0.009175	2.5
Extreme (50C)	707.5	5.5	0.007765	2.5
Extreme (40C)	707.5	6.4	0.009110	2.5
Extreme (30C)	707.5	-7.7	-0.010912	2.5
Extreme (10C)	707.5	-8.2	-0.011590	2.5
Extreme (0C)	707.5	2.9	0.004100	2.5
Extreme (-10C)	707.5	-5.2	-0.007292	2.5
Extreme (-20C)	707.5	-8.7	-0.012302	2.5
Extreme (-30C)	707.5	-10.2	-0.014350	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 [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	782.0	12.3	0.017352	2.5
3.87	782.0	13.7	0.019252	2.5
4.4	782.0	13.1	0.018406	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	782.0	14.1	0.019840	2.5
Extreme (50C)	782.0	14.0	0.019707	2.5
Extreme (40C)	782.0	14.8	0.020887	2.5
Extreme (30C)	782.0	13.7	0.019288	2.5
Extreme (10C)	782.0	13.5	0.019075	2.5
Extreme (0C)	782.0	13.9	0.019556	2.5
Extreme (-10C)	782.0	14.3	0.020178	2.5
Extreme (-20C)	782.0	14.6	0.020512	2.5
Extreme (-30C)	782.0	13.7	0.019306	2.5

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

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	782.0	12.7	0.017904	2.5
3.87	782.0	14.1	0.019926	2.5
4.4	782.0	13.7	0.019307	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	782.0	13.2	0.018550	2.5
Extreme (50C)	782.0	11.6	0.016379	2.5
Extreme (40C)	782.0	13.6	0.019153	2.5
Extreme (30C)	782.0	13.7	0.019268	2.5
Extreme (10C)	782.0	13.8	0.019415	2.5
Extreme (0C)	782.0	11.7	0.016501	2.5
Extreme (-10C)	782.0	12.9	0.018127	2.5
Extreme (-20C)	782.0	14.2	0.020021	2.5
Extreme (-30C)	782.0	14.5	0.020423	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 [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	710.0	10.0	0.014110	2.5
3.87	710.0	9.3	0.013063	2.5
4.4	710.0	8.2	0.011593	2.5

#### Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.6	0.013470	2.5
Extreme (50C)	710.0	8.8	0.012361	2.5
Extreme (40C)	710.0	7.9	0.011171	2.5
Extreme (30C)	710.0	9.2	0.012986	2.5
Extreme (10C)	710.0	8.5	0.011954	2.5
Extreme (0C)	710.0	7.7	0.010781	2.5
Extreme (-10C)	710.0	8.9	0.012585	2.5
Extreme (-20C)	710.0	8.5	0.011972	2.5
Extreme (-30C)	710.0	8.2	0.011533	2.5

**Band 17 16QAM, (10MHz BANDWIDTH RB size 50 RB Offset 0)**

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	710.0	10.4	0.014623	2.5
3.87	710.0	8.5	0.012018	2.5
4.4	710.0	8.4	0.011814	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.0	0.012731	2.5
Extreme (50C)	710.0	8.6	0.012183	2.5
Extreme (40C)	710.0	8.4	0.011777	2.5
Extreme (30C)	710.0	8.9	0.012521	2.5
Extreme (10C)	710.0	8.3	0.011713	2.5
Extreme (0C)	710.0	8.7	0.012250	2.5
Extreme (-10C)	710.0	9.7	0.013708	2.5
Extreme (-20C)	710.0	9.2	0.012947	2.5
Extreme (-30C)	710.0	8.5	0.011910	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

QPSK, (20MHz BANDWIDTH)

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 38 QPSK, (CH 37850 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
3.4	2595	8.5	0.003259	2.5
3.87	2595	6.7	0.002572	2.5
4.4	2595	7.6	0.002929	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 38 QPSK, (CH 37850 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
Normal (25C)	2595	7.0	0.002691	2.5
Extreme (50C)	2595	4.4	0.001709	2.5
Extreme (40C)	2595	5.5	0.002102	2.5
Extreme (30C)	2595	4.4	0.001680	2.5
Extreme (10C)	2595	6.8	0.002613	2.5
Extreme (0C)	2595	5.2	0.001988	2.5
Extreme (-10C)	2595	9.2	0.003534	2.5
Extreme (-20C)	2595	10.9	0.004191	2.5
Extreme (-30C)	2595	6.3	0.002444	2.5

**16QAM, (20MHz BANDWIDTH)**

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 38 16QAM, (CH 37850 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
3.4	2595	8.2	0.003149	2.5
3.87	2595	6.6	0.002533	2.5
4.4	2595	6.3	0.002419	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 38 16QAM, (CH 37850 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
Normal (25C)	2595	7.3	0.002811	2.5
Extreme (50C)	2595	4.3	0.001674	2.5
Extreme (40C)	2595	5.8	0.002250	2.5
Extreme (30C)	2595	4.4	0.001677	2.5
Extreme (10C)	2595	6.6	0.002539	2.5
Extreme (0C)	2595	5.0	0.001921	2.5
Extreme (-10C)	2595	9.6	0.003680	2.5
Extreme (-20C)	2595	11.3	0.004339	2.5
Extreme (-30C)	2595	6.6	0.002533	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 [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	2595	8.4	0.003219	2.5
3.87	2595	6.8	0.002616	2.5
4.4	2595	7.5	0.002877	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	7.0	0.002702	2.5
Extreme (50C)	2595	5.0	0.001941	2.5
Extreme (40C)	2595	5.6	0.002172	2.5
Extreme (30C)	2595	4.8	0.001863	2.5
Extreme (10C)	2595	6.7	0.002567	2.5
Extreme (0C)	2595	4.6	0.001755	2.5
Extreme (-10C)	2595	9.2	0.003545	2.5
Extreme (-20C)	2595	10.3	0.003981	2.5
Extreme (-30C)	2595	6.1	0.002356	2.5

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

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	2595	8.9	0.003447	2.5
3.87	2595	6.1	0.002359	2.5
4.4	2595	6.9	0.002670	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	7.5	0.002885	2.5
Extreme (50C)	2595	4.7	0.001797	2.5
Extreme (40C)	2595	5.8	0.002228	2.5
Extreme (30C)	2595	4.7	0.001804	2.5
Extreme (10C)	2595	6.2	0.002372	2.5
Extreme (0C)	2595	4.9	0.001887	2.5
Extreme (-10C)	2595	9.4	0.003640	2.5
Extreme (-20C)	2595	10.5	0.004029	2.5
Extreme (-30C)	2595	6.7	0.002568	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

QPSK, (20MHz BANDWIDTH)

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 66 QPSK, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
3.4	1745	12.7	0.00725	2.5
3.87	1745	13.9	0.00797	2.5
4.4	1745	13.6	0.00781	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 66 QPSK, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
Normal (25C)	1745	7.2	0.004105	2.5
Extreme (50C)	1745	4.6	0.002616	2.5
Extreme (40C)	1745	5.4	0.003100	2.5
Extreme (30C)	1745	4.7	0.002698	2.5
Extreme (10C)	1745	6.3	0.003633	2.5
Extreme (0C)	1745	4.9	0.002797	2.5
Extreme (-10C)	1745	9.9	0.005648	2.5
Extreme (-20C)	1745	10.5	0.006014	2.5
Extreme (-30C)	1745	6.3	0.003585	2.5

**16QAM, (20MHz BANDWIDTH)**

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 66 16QAM, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
3.4	1745	12.2	0.007015	2.5
3.87	1745	14.1	0.008066	2.5
4.4	1745	12.9	0.007381	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 66 16QAM, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
Normal (25C)	1745	7.4	0.004235	2.5
Extreme (50C)	1745	4.6	0.002640	2.5
Extreme (40C)	1745	5.3	0.003065	2.5
Extreme (30C)	1745	5.2	0.002963	2.5
Extreme (10C)	1745	6.8	0.003920	2.5
Extreme (0C)	1745	4.5	0.002589	2.5
Extreme (-10C)	1745	9.6	0.005529	2.5
Extreme (-20C)	1745	10.7	0.006121	2.5
Extreme (-30C)	1745	6.5	0.003722	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.

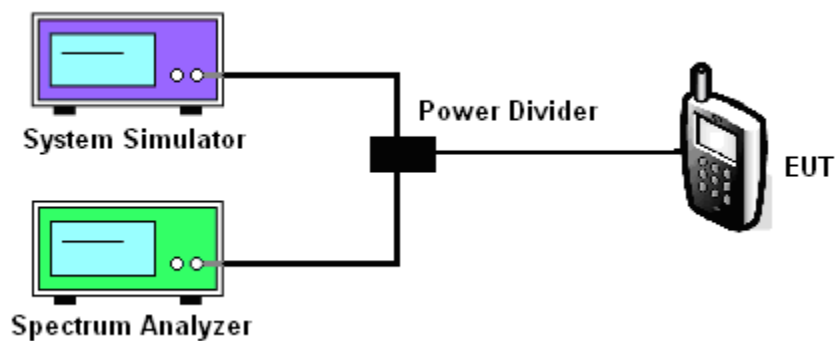
### 11.2 Measuring Instruments

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 GSM/EGPRS operating modes:
  - a. Set the RBW = 1MHz, VBW = 1MHz, Peak detector in spectrum analyzer.
  - b. Set EUT in maximum power output, and triggered the burst signal.
  - c. Measured respectively the Peak level and Mean level, and the deviation was recorded as Peak to Average Ratio.
4. For UMTS 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 Band2/4/5/7/12/13/17/38/41/66
- 

Test data reference attachment.

----END OF REPORT----