

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

## **FCC ID: 2AZYA-AX85**

**Product:** Mobile Phone

**Trade Mark:** ACER

**Model No.:** SOSPIRO-AX85

**Family Model:** SOSPIRO-AX85-B, SOSPIRO-AX85-N

**Report No.:** S23071306702005

**Issue Date:** Aug 10, 2023

### **Prepared for**

Senwa Global International, S.A. de C.V.  
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### TEST RESULT CERTIFICATION

**Applicant's name** ..... : Senwa Global International, S.A. de C.V.  
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 Del.Cuajimalpa de Morelos, C.P. 05320 Ciudad de Mexico, Mexico

**Manufacturer's Name**..... : Senwa Mobile China Ltd  
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**Product name**..... : Mobile Phone  
**Model and/or type reference** .. : SOSPIRO-AX85  
**Trade Mark**..... : ACER  
**Family Model**..... : SOSPIRO-AX85-B, SOSPIRO-AX85-N  
**Test Sample Number**..... S230713067003

**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..... Jul 13, 2023 ~ Aug 10, 2023

Date of Issue ..... Aug 10, 2023

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

Testing Engineer : Mukzi Lee  
 (Mukzi Lee)

Authorized Signatory : Alex  
 (Alex Li)

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# 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-AX85
Family Model	SOSPIRO-AX85-B, SOSPIRO-AX85-N
Model Difference	All the model are the same circuit and RF module, except the model names and colors. B is white, N is black.
FCC ID:	2AZYA-AX85
Frequency Bands:	U.S. Bands: <input checked="" type="checkbox"/> LTE FDD Band 2,4,5,7,12,13,17 LTE TDD Band 38,41,66
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: 2570MHz-2620MHz, LTE TDD Band 41 Uplink&Downlink: 2535MHz-2655MHz, LTE TDD Band 66 Uplink: 1710MHz-1780MHz, Downlink: 2110MHz-2200MHz;
Type of Modulation:	QPSK/16QAM/64QAM(Only Downlink)
Power Class	Class 3
SIM Card:	SIM 1 and SIM 2 is a chipset unit and tested as a single chipset. The SIM 1 is chosen for test.
Antenna:	PIFA Antenna
Antenna gain:	Band 2: -0.63 dBi, Band 4: -0.69dBi, Band 5: -0.95dBi, Band 7: -1.22dBi, Band 12: -1.34 dBi, Band 13: -1.08 dBi, Band 17: -1.45 dBi, Band 38: -0.92 dBi, Band 41: -1.23 dBi, Band 41: -0.73 dBi
Adapter	Model: SGCH0018 Input: AC 100-240V~50-60Hz ,0.5A Output: DC 5V---3A, DC 9V---2A, 18W
Battery	DC 3.87V, 5100mAh, 19.73Wh
Power supply	DC 3.87V from battery or DC 5V from Adapter.
Extreme Vol. Limits:	DC 3.29 to DC 4.45V (Nominal DC 3.87V) (Note 1)

HW Version	ums5121h10_V1.0
SW Version	Acer_AX85_Ver01
<p>** Note1: The High Voltage DC 4.45V and Low Voltage 3.29V was declared by manufacturer, The EUT couldn't be operate normally with higher or lower voltage.</p>	

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

This submittal(s) (test report) is intended for **FCC ID: 2AZYA-AX85** filing to comply with the FCC Part 22H&24E&27&90S.

**1.3 TEST METHODOLOGY**

The tests documented in this report were performed in accordance with ANSI/TIA-603-E-2016, FCC CFR 47 Part 2, Part 22, Part 24, Part 27, 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 2/4/5/7/12/13/17/38/41/66

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

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



## 2. SYSTEM TEST CONFIGURATION

### 2.1 EUT CONFIGURATION

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

### 2.2 EUT EXERCISE

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

### 2.3 CONFIGURATION OF EUT SYSTEM

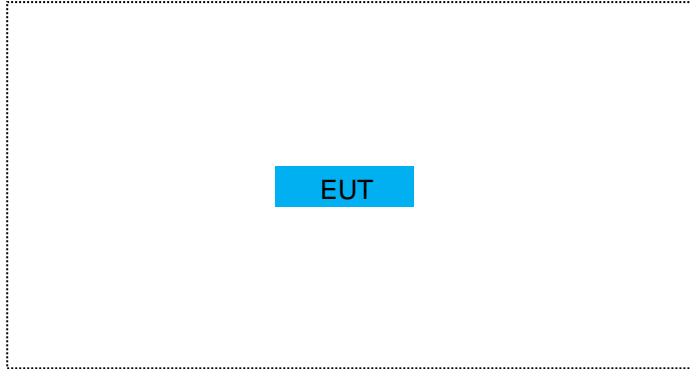
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Mobile Phone	SOSPIRO-AX85	FCC ID: 2AZYA-AX85	EUT

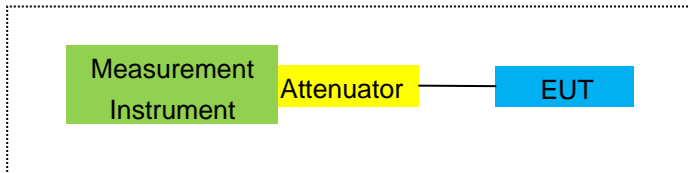
*Note: All the accessories have been used during the test.  
the following "EUT" in setup diagram means EUT system.*

## 2.4 TEST SETUP

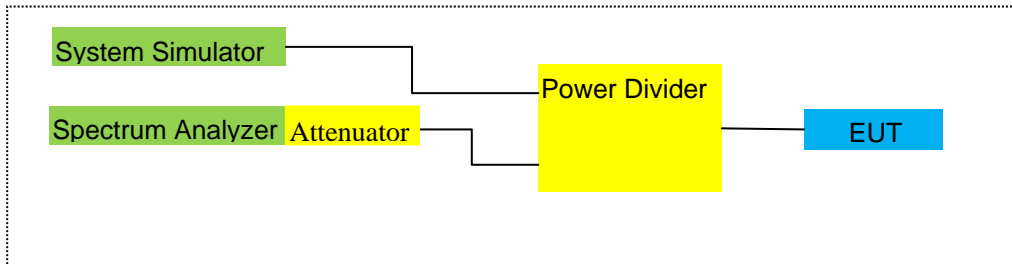
For Radiated Test Cases



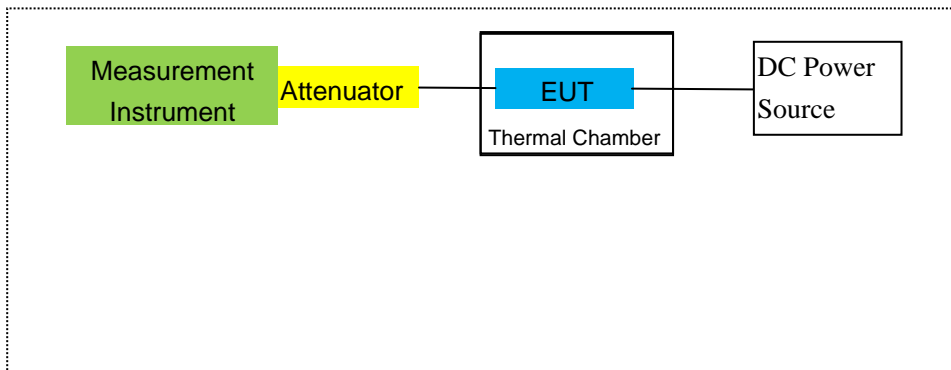
For Conducted Output Power



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	2023.03.16	2024.03.15	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2023.05.06	2026.05.05	3 year
5	Broadband Horn Antenna	SCHWARZ BECK	BBHA 9120 D	2816	2023/1/12	2024/1/11	3 year
6	Broadband Horn Antenna	SCHWARZ BECK	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	2022.11.04	2023.11.05	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	2023.05.29	2024.05.28	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 Receiver	R&S	ESCI	101160	2023.03.27	2024.03.26	1 year
14	LISN	R&S	ENV216	101313	2023.03.27	2024.03.26	1 year
15	LISN	EMCO	3816/2	00042990	2023.03.27	2024.03.26	1 year
16	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2023.03.27	2024.03.26	1 year
17	Passive Voltage Probe	R&S	ESH2-Z3	100196	2023.03.27	2024.03.26	1 year
18	Test Cable	N/A	C01	N/A	2023.05.06	2026.05.05	3 year
19	Spectrum Analyzer	agilent	e4440a	us44300399	2023.03.27	2024.03.26	1 year
20	test receiver	R&S	ESCI	a0304218	2023.03.27	2024.03.26	1 year
21	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2023.03.27	2024.03.26	1 year
22	DC Power Source	N/A	PS-6005D	20170402923	2023.05.06	2026.05.05	3 year
23	Wireless Communications Test Set	R&S	CMW500	1100.008.02	2023.05.29	2024.05.28	1 year
24	Log-Periodic Antenna	SCHWARZ BECK	VULB 9162	584	2023/1/11	2024/1/10	1 year

25	Log-Periodic Antenna	SCHWARZ BECK	VULB 9162	586	2023/1/11	2024/1/10	1 year
26	ESG Vetctor Signal Generator	Agilent	E4438C	MY4509334 7	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

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

### RESULTS

**PASS**

Test data reference attachment.

## 6. BANDEDGE AND EMISSION MASK

### RULE PART(S)

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

FCC: §22.359

### LIMITS

FCC: §22.917, §24.238, §27.53

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

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

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

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

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

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

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



**TEST PROCEDURE**

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

For each band edge measurement:

Set the spectrum analyzer span to include the block edge frequency

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

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

**MODES TESTED**

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

**RESULTS**

Test data reference attachment.

## 7. OUT OF BAND EMISSIONS

### RULE PART(S)

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

### LIMITS

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

### TEST PROCEDURE

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

For each out of band emissions measurement:

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

### **MODES TESTED**

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

#### 7.1 MEASUREMENT METHOD

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

Test data reference attachment.

## 8. RADIATED MEASUREMENT

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

#### RULE PART(S)

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

#### LIMITS:

- 22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.
- 27.50 (c) (10) the following power and antenna height requirements apply to stations transmitting in the 698–746 MHz band, the portable stations (hand-held devices) are limited to 3 watts ERP.
- 27.50 (b)(10) Portable stations (hand-held devices) transmitting in the 746–757 MHz, 758–763 MHz, 776–793 MHz, and 805–806 MHz bands are limited to 3 watts ERP.
- 27.50 (d)(4) The following power and antenna height requirements apply to stations transmitting in the 1710–1755 MHz and 2110–2155 MHz bands: Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.
- 27.50 (h)(2) Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.
- 90.635(b) The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

#### TEST PROCEDURE

ANSI/TIA-603-E Clause 2.2.17

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

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

#### MODES TESTED

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

#### RESULTS

Pass

8.2 LTE BAND 2

Radiated Power (EIRP) for Band 2										
Mode	RB/RB SIZE	Frequency	Result						Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP			
							Average (mW)			
1.4MHz Band QPSK	1/#Mid	1850.7	-4.65	3.76	28.24	19.83	96.161	Horizontal	Pass	
		1880	-4.52	3.91	28.22	19.79	95.280	Horizontal	Pass	
		1909.3	-4.52	3.93	28.20	19.75	94.406	Horizontal	Pass	
3.0MHz Band QPSK	1/#Mid	1851.5	-4.62	3.77	28.23	19.84	96.383	Horizontal	Pass	
		1880	-4.49	3.91	28.24	19.84	96.383	Horizontal	Pass	
		1908.5	-4.58	3.94	28.25	19.73	93.972	Horizontal	Pass	
5.0MHz Band QPSK	1/#Mid	1852.5	-4.68	3.77	28.31	19.86	96.828	Horizontal	Pass	
		1880	-4.56	3.91	28.22	19.75	94.406	Horizontal	Pass	
		1907.5	-4.56	3.94	28.20	19.70	93.325	Horizontal	Pass	
10.0MHz Band QPSK	1/#Mid	1855	-4.70	3.79	28.33	19.84	96.383	Horizontal	Pass	
		1880	-4.45	3.95	28.22	19.82	95.940	Horizontal	Pass	
		1905	-4.37	3.97	28.19	19.85	96.605	Horizontal	Pass	
15.0MHz Band QPSK	1/#Mid	1857.5	-4.77	3.79	28.34	19.78	95.060	Horizontal	Pass	
		1880	-4.43	3.95	28.22	19.84	96.383	Horizontal	Pass	
		1902.5	-4.43	3.97	28.18	19.78	95.060	Horizontal	Pass	
20.0MHz Band QPSK	1/#Mid	1860	-4.68	3.81	28.35	19.86	96.828	Horizontal	Pass	
		1880	-4.47	3.96	28.22	19.79	95.280	Horizontal	Pass	
		1900	-4.40	4.00	28.16	19.76	94.624	Horizontal	Pass	
1.4MHz Band QPSK	1/#Mid	1850.7	-4.70	3.76	28.24	19.78	95.060	Vertical	Pass	
		1880	-4.51	3.91	28.22	19.80	95.499	Vertical	Pass	
		1909.3	-4.54	3.93	28.20	19.73	93.972	Vertical	Pass	
3.0MHz Band QPSK	1/#Mid	1851.5	-4.60	3.77	28.23	19.86	96.828	Vertical	Pass	
		1880	-4.47	3.91	28.24	19.86	96.828	Vertical	Pass	
		1908.5	-4.50	3.94	28.25	19.81	95.719	Vertical	Pass	
5.0MHz Band QPSK	1/#Mid	1852.5	-4.70	3.77	28.31	19.84	96.383	Vertical	Pass	
		1880	-4.50	3.91	28.22	19.81	95.719	Vertical	Pass	
		1907.5	-4.57	3.94	28.20	19.69	93.111	Vertical	Pass	
10.0MHz Band QPSK	1/#Mid	1855	-4.73	3.79	28.33	19.81	95.719	Vertical	Pass	
		1880	-4.49	3.95	28.22	19.78	95.060	Vertical	Pass	
		1905	-4.43	3.97	28.19	19.79	95.280	Vertical	Pass	

15.0MHz Band QPSK	1/#Mid	1857.5	-4.68	3.79	28.34	19.87	97.051	Vertical	Pass
		1880	-4.44	3.95	28.22	19.83	96.161	Vertical	Pass
		1902.5	-4.46	3.97	28.18	19.75	94.406	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1860	-4.64	3.81	28.35	19.90	97.724	Vertical	Pass
		1880	-4.34	3.96	28.22	19.92	98.175	Vertical	Pass
		1900	-4.28	4.00	28.16	19.88	97.275	Vertical	Pass

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result					Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP		
							Average (mW)		
1.4MHz Band 16 QAM	1/#Mid	1850.7	-5.10	3.76	28.24	19.38	86.696	Horizontal	Pass
		1880	-4.89	3.91	28.22	19.42	87.498	Horizontal	Pass
		1909.3	-4.94	3.93	28.20	19.33	85.704	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-5.12	3.77	28.23	19.34	85.901	Horizontal	Pass
		1880	-4.91	3.91	28.24	19.42	87.498	Horizontal	Pass
		1908.5	-4.91	3.94	28.25	19.40	87.096	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-5.08	3.77	28.31	19.46	88.308	Horizontal	Pass
		1880	-4.97	3.91	28.22	19.34	85.901	Horizontal	Pass
		1907.5	-4.83	3.94	28.20	19.43	87.700	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-5.08	3.79	28.33	19.46	88.308	Horizontal	Pass
		1880	-4.90	3.95	28.22	19.37	86.497	Horizontal	Pass
		1905	-4.85	3.97	28.19	19.37	86.497	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-5.11	3.79	28.34	19.44	87.902	Horizontal	Pass
		1880	-4.84	3.95	28.22	19.43	87.700	Horizontal	Pass
		1902.5	-4.86	3.97	28.18	19.35	86.099	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-5.23	3.81	28.35	19.31	85.310	Horizontal	Pass
		1880	-4.79	3.96	28.22	19.47	88.512	Horizontal	Pass
		1900	-4.83	4.00	28.16	19.33	85.704	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1850.7	-5.12	3.76	28.24	19.36	86.298	Vertical	Pass
		1880	-4.97	3.91	28.22	19.34	85.901	Vertical	Pass
		1909.3	-4.84	3.93	28.20	19.43	87.700	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-5.03	3.77	28.23	19.43	87.700	Vertical	Pass
		1880	-4.98	3.91	28.24	19.35	86.099	Vertical	Pass
		1908.5	-4.93	3.94	28.25	19.38	86.696	Vertical	Pass
5.0MHz	1/#Mid	1852.5	-5.21	3.77	28.31	19.33	85.704	Vertical	Pass

Band 16		1880	-4.93	3.91	28.22	19.38	86.696	Vertical	Pass
QAM		1907.5	-4.94	3.94	28.20	19.32	85.507	Vertical	Pass
10.0MHz	1/#Mid	1855	-5.15	3.79	28.33	19.39	86.896	Vertical	Pass
Band 16		1880	-4.89	3.95	28.22	19.38	86.696	Vertical	Pass
QAM		1905	-4.80	3.97	28.19	19.42	87.498	Vertical	Pass
15.0MHz	1/#Mid	1857.5	-5.22	3.79	28.34	19.33	85.704	Vertical	Pass
Band 16		1880	-4.83	3.95	28.22	19.44	87.902	Vertical	Pass
QAM		1902.5	-4.89	3.97	28.18	19.32	85.507	Vertical	Pass
20.0MHz	1/#Mid	1860	-5.05	3.81	28.35	19.49	88.920	Vertical	Pass
Band 16		1880	-4.75	3.96	28.22	19.51	89.331	Vertical	Pass
QAM		1900	-4.65	4.00	28.16	19.51	89.331	Vertical	Pass

**Note:**

SG Level= Signal generator output

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

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

### 8.3 LTE BAND 4

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
						(dBm)	(mW)		
1.4MHz Band QPSK	1/#Mid	1710.7	-4.60	3.12	27.58	19.86	96.828	Horizontal	Pass
		1732.5	-4.54	3.27	27.61	19.80	95.499	Horizontal	Pass
		1754.3	-4.52	3.29	27.63	19.82	95.940	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-4.68	3.13	27.61	19.80	95.499	Horizontal	Pass
		1732.5	-4.51	3.27	27.61	19.83	96.161	Horizontal	Pass
		1753.5	-4.46	3.30	27.62	19.86	96.828	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-4.75	3.13	27.63	19.75	94.406	Horizontal	Pass
		1732.5	-4.48	3.27	27.61	19.86	96.828	Horizontal	Pass
		1752.5	-4.39	3.30	27.60	19.91	97.949	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-4.70	3.15	27.64	19.79	95.280	Horizontal	Pass
		1732.5	-4.50	3.31	27.61	19.80	95.499	Horizontal	Pass
		1750	-4.43	3.33	27.59	19.83	96.161	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-4.60	3.15	27.65	19.90	97.724	Horizontal	Pass
		1732.5	-4.52	3.31	27.61	19.78	95.060	Horizontal	Pass
		1747.5	-4.46	3.33	27.57	19.78	95.060	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-4.62	3.17	27.66	19.87	97.051	Horizontal	Pass
		1732.5	-4.43	3.32	27.61	19.86	96.828	Horizontal	Pass
		1745	-4.38	3.36	27.56	19.82	95.940	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-4.61	3.12	27.58	19.85	96.605	Vertical	Pass
		1732.5	-4.49	3.27	27.61	19.85	96.605	Vertical	Pass
		1754.3	-4.55	3.29	27.63	19.79	95.280	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-4.62	3.13	27.61	19.86	96.828	Vertical	Pass
		1732.5	-4.57	3.27	27.61	19.77	94.842	Vertical	Pass
		1753.5	-4.45	3.30	27.62	19.87	97.051	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-4.61	3.13	27.63	19.89	97.499	Vertical	Pass
		1732.5	-4.45	3.27	27.61	19.89	97.499	Vertical	Pass
		1752.5	-4.56	3.30	27.60	19.74	94.189	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-4.70	3.15	27.64	19.79	95.280	Vertical	Pass
		1732.5	-4.54	3.31	27.61	19.76	94.624	Vertical	Pass
		1750	-4.43	3.33	27.59	19.83	96.161	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1717.5	-4.61	3.15	27.65	19.89	97.499	Vertical	Pass
		1732.5	-4.46	3.31	27.61	19.84	96.383	Vertical	Pass
		1747.5	-4.44	3.33	27.57	19.80	95.499	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1720	-4.54	3.17	27.66	19.95	98.855	Vertical	Pass
		1732.5	-4.38	3.32	27.61	19.91	97.949	Vertical	Pass
		1745	-4.26	3.36	27.56	19.94	98.628	Vertical	Pass

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result					Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP	Max. EIRP		
						Average	Average		
						(dBm)	(mW)		
1.4MHz Band 16 QAM	1/#Mid	1710.7	-5.35	3.12	27.58	19.11	81.470	Horizontal	Pass
		1732.5	-5.23	3.27	27.61	19.11	81.470	Horizontal	Pass
		1754.3	-5.18	3.29	27.63	19.16	82.414	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-5.35	3.13	27.61	19.13	81.846	Horizontal	Pass
		1732.5	-5.15	3.27	27.61	19.19	82.985	Horizontal	Pass
		1753.5	-5.18	3.30	27.62	19.14	82.035	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-5.45	3.13	27.63	19.05	80.353	Horizontal	Pass
		1732.5	-5.19	3.27	27.61	19.15	82.224	Horizontal	Pass
		1752.5	-5.17	3.30	27.60	19.13	81.846	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-5.38	3.15	27.64	19.11	81.470	Horizontal	Pass
		1732.5	-5.16	3.31	27.61	19.14	82.035	Horizontal	Pass
		1750	-5.15	3.33	27.59	19.11	81.470	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-5.36	3.15	27.65	19.14	82.035	Horizontal	Pass
		1732.5	-5.11	3.31	27.61	19.19	82.985	Horizontal	Pass
		1747.5	-5.04	3.33	27.57	19.20	83.176	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-5.41	3.17	27.66	19.08	80.910	Horizontal	Pass
		1732.5	-5.18	3.32	27.61	19.11	81.470	Horizontal	Pass
		1745	-5.07	3.36	27.56	19.13	81.846	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-5.33	3.12	27.58	19.13	81.846	Vertical	Pass
		1732.5	-5.17	3.27	27.61	19.17	82.604	Vertical	Pass
		1754.3	-5.24	3.29	27.63	19.10	81.283	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-5.34	3.13	27.61	19.14	82.035	Vertical	Pass
		1732.5	-5.22	3.27	27.61	19.12	81.658	Vertical	Pass
		1753.5	-5.21	3.30	27.62	19.11	81.470	Vertical	Pass
5.0MHz	1/#Mid	1712.5	-5.35	3.13	27.63	19.15	82.224	Vertical	Pass



Band 16		1732.5	-5.15	3.27	27.61	19.19	82.985	Vertical	Pass
QAM		1752.5	-5.09	3.30	27.60	19.21	83.368	Vertical	Pass
10.0MHz	1/#Mid	1715	-5.41	3.15	27.64	19.08	80.910	Vertical	Pass
Band 16		1732.5	-5.10	3.31	27.61	19.20	83.176	Vertical	Pass
QAM		1750	-5.19	3.33	27.59	19.07	80.724	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-5.30	3.15	27.65	19.20	83.176	Vertical	Pass
Band 16		1732.5	-5.19	3.31	27.61	19.11	81.470	Vertical	Pass
QAM		1747.5	-5.19	3.33	27.57	19.05	80.353	Vertical	Pass
20.0MHz	1/#Mid	1720	-5.23	3.17	27.66	19.26	84.333	Vertical	Pass
Band 16		1732.5	-5.05	3.32	27.61	19.24	83.946	Vertical	Pass
QAM		1745	-4.98	3.36	27.56	19.22	83.560	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

### 8.4 LTE BAND 5

Radiated Power (ERP) for Band 5											
Mode	RB/RB SIZE	Frequency	Result							Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP	Max. ERP			
			(dBm)				Average	Average			
							(dBm)	(mW)			
1.4MHz Band QPSK	1/#Mid	824.7	2.68	2.01	19.68	2.15	18.20	66.069	Horizontal	Pass	
		836.5	2.56	2.01	19.77	2.15	18.17	65.615	Horizontal	Pass	
		848.3	2.49	2.02	19.82	2.15	18.14	65.163	Horizontal	Pass	
3.0MHz Band QPSK	1/#Mid	825.5	2.63	2.01	19.70	2.15	18.17	65.615	Horizontal	Pass	
		836.5	2.64	2.01	19.77	2.15	18.25	66.834	Horizontal	Pass	
		847.5	2.54	2.02	19.81	2.15	18.18	65.766	Horizontal	Pass	
5.0MHz Band QPSK	1/#Mid	826.5	2.58	2.01	19.71	2.15	18.13	65.013	Horizontal	Pass	
		836.5	2.60	2.01	19.77	2.15	18.21	66.222	Horizontal	Pass	
		846.5	2.54	2.02	19.79	2.15	18.16	65.464	Horizontal	Pass	
10.0MHz z Band QPSK	1/#Mid	829	2.51	2.01	19.73	2.15	18.08	64.269	Horizontal	Pass	
		836.5	2.56	2.01	19.77	2.15	18.17	65.615	Horizontal	Pass	
		844	2.48	2.02	19.78	2.15	18.09	64.417	Horizontal	Pass	
1.4MHz Band QPSK	1/#Mid	824.7	2.60	2.01	19.68	2.15	18.12	64.863	Vertical	Pass	
		836.5	2.50	2.01	19.77	2.15	18.11	64.714	Vertical	Pass	
		848.3	2.49	2.02	19.82	2.15	18.14	65.163	Vertical	Pass	
3.0MHz Band QPSK	1/#Mid	825.5	2.69	2.01	19.70	2.15	18.23	66.527	Vertical	Pass	
		836.5	2.51	2.01	19.77	2.15	18.12	64.863	Vertical	Pass	
		847.5	2.55	2.02	19.81	2.15	18.19	65.917	Vertical	Pass	
5.0MHz Band QPSK	1/#Mid	826.5	2.60	2.01	19.71	2.15	18.15	65.313	Vertical	Pass	
		836.5	2.58	2.01	19.77	2.15	18.19	65.917	Vertical	Pass	
		846.5	2.50	2.02	19.79	2.15	18.12	64.863	Vertical	Pass	
10.0MHz z Band QPSK	1/#Mid	829	2.72	2.01	19.73	2.15	18.29	67.453	Vertical	Pass	
		836.5	2.67	2.01	19.77	2.15	18.28	67.298	Vertical	Pass	
		844	2.65	2.02	19.78	2.15	18.26	66.988	Vertical	Pass	

Radiated Power (ERP) for Band 5											
Mode	RB/RB SIZE	Frequency	Result							Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP	Max. ERP			
			(dBm)				Average	Average			
							(dBm)	(mW)			
1.4MHz Band 16 QAM	1/#Mid	824.7	2.20	2.01	19.68	2.15	17.72	59.156	Horizontal	Pass	
		836.5	2.13	2.01	19.77	2.15	17.74	59.429	Horizontal	Pass	
		848.3	2.03	2.02	19.82	2.15	17.68	58.614	Horizontal	Pass	
3.0MHz Band 16 QAM	1/#Mid	825.5	2.07	2.01	19.70	2.15	17.61	57.677	Horizontal	Pass	
		836.5	2.05	2.01	19.77	2.15	17.66	58.345	Horizontal	Pass	
		847.5	2.10	2.02	19.81	2.15	17.74	59.429	Horizontal	Pass	
5.0MHz Band 16 QAM	1/#Mid	826.5	2.12	2.01	19.71	2.15	17.67	58.479	Horizontal	Pass	
		836.5	1.99	2.01	19.77	2.15	17.60	57.544	Horizontal	Pass	
		846.5	2.05	2.02	19.79	2.15	17.67	58.479	Horizontal	Pass	
10.0MHz z Band 16 QAM	1/#Mid	829	2.03	2.01	19.73	2.15	17.60	57.544	Horizontal	Pass	
		836.5	2.05	2.01	19.77	2.15	17.66	58.345	Horizontal	Pass	
		844	2.06	2.02	19.78	2.15	17.67	58.479	Horizontal	Pass	
1.4MHz Band 16 QAM	1/#Mid	824.7	2.19	2.01	19.68	2.15	17.71	59.020	Vertical	Pass	
		836.5	2.14	2.01	19.77	2.15	17.75	59.566	Vertical	Pass	
		848.3	2.10	2.02	19.82	2.15	17.75	59.566	Vertical	Pass	
3.0MHz Band 16 QAM	1/#Mid	825.5	2.15	2.01	19.70	2.15	17.69	58.749	Vertical	Pass	
		836.5	2.12	2.01	19.77	2.15	17.73	59.293	Vertical	Pass	
		847.5	2.03	2.02	19.81	2.15	17.67	58.479	Vertical	Pass	
5.0MHz Band 16 QAM	1/#Mid	826.5	2.18	2.01	19.71	2.15	17.73	59.293	Vertical	Pass	
		836.5	2.00	2.01	19.77	2.15	17.61	57.677	Vertical	Pass	
		846.5	2.08	2.02	19.79	2.15	17.70	58.884	Vertical	Pass	
10.0MHz z Band 16 QAM	1/#Mid	829	2.19	2.01	19.73	2.15	17.76	59.704	Vertical	Pass	
		836.5	2.14	2.01	19.77	2.15	17.75	59.566	Vertical	Pass	
		844	2.18	2.02	19.78	2.15	17.79	60.117	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)

### 8.5 LTE BAND 7

Radiated Power (EIRP) for Band 7									
Mode	RB/RB SIZE	Frequency	Result					Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss	Factor (dB)	Max. EIRP	Max. EIRP		
			(dBm)	(dBm)		Average	Average		
					(dBm)	(mW)			
5.0MHz Band QPSK	1/#Mid	2502.5	-3.14	4.54	27.75	20.07	101.625	Horizontal	Pass
		2535	-3.07	4.69	27.72	19.96	99.083	Horizontal	Pass
		2567.5	-3.03	4.71	27.71	19.97	99.312	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2505	-3.21	4.55	27.76	20.00	100.000	Horizontal	Pass
		2535	-3.03	4.69	27.72	20.00	100.000	Horizontal	Pass
		2565	-3.06	4.72	27.70	19.92	98.175	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-3.21	4.55	27.77	20.01	100.231	Horizontal	Pass
		2535	-3.08	4.69	27.72	19.95	98.855	Horizontal	Pass
		2562.5	-3.03	4.72	27.69	19.94	98.628	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2510	-3.21	4.57	27.78	20.00	100.000	Horizontal	Pass
		2535	-2.95	4.73	27.72	20.04	100.925	Horizontal	Pass
		2560	-2.87	4.75	27.68	20.06	101.391	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	-3.22	4.54	27.75	19.99	99.770	Vertical	Pass
		2535	-3.07	4.69	27.72	19.96	99.083	Vertical	Pass
		2567.5	-2.96	4.71	27.71	20.04	100.925	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2505	-3.15	4.55	27.76	20.06	101.391	Vertical	Pass
		2535	-3.02	4.69	27.72	20.01	100.231	Vertical	Pass
		2565	-2.99	4.72	27.70	19.99	99.770	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-3.14	4.55	27.77	20.08	101.859	Vertical	Pass
		2535	-2.95	4.69	27.72	20.08	101.859	Vertical	Pass
		2562.5	-2.94	4.72	27.69	20.03	100.693	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2510	-3.11	4.57	27.78	20.10	102.329	Vertical	Pass
		2535	-2.91	4.73	27.72	20.08	101.859	Vertical	Pass
		2560	-2.84	4.75	27.68	20.09	102.094	Vertical	Pass

Radiated Power (EIRP) for Band 7									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss	Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
				(dBm)	(dB)	(dBm)	(mW)		
5.0MHz Band 16 QAM	1/#Mid	2502.5	-3.95	4.54	27.75	19.26	84.333	Horizontal	Pass
		2535	-3.80	4.69	27.72	19.23	83.753	Horizontal	Pass
		2567.5	-3.63	4.71	27.71	19.37	86.497	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-3.90	4.55	27.76	19.31	85.310	Horizontal	Pass
		2535	-3.71	4.69	27.72	19.32	85.507	Horizontal	Pass
		2565	-3.75	4.72	27.70	19.23	83.753	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-3.86	4.55	27.77	19.36	86.298	Horizontal	Pass
		2535	-3.71	4.69	27.72	19.32	85.507	Horizontal	Pass
		2562.5	-3.69	4.72	27.69	19.28	84.723	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-3.95	4.57	27.78	19.26	84.333	Horizontal	Pass
		2535	-3.74	4.73	27.72	19.25	84.140	Horizontal	Pass
		2560	-3.66	4.75	27.68	19.27	84.528	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	-3.94	4.54	27.75	19.27	84.528	Vertical	Pass
		2535	-3.78	4.69	27.72	19.25	84.140	Vertical	Pass
		2567.5	-3.64	4.71	27.71	19.36	86.298	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-3.93	4.55	27.76	19.28	84.723	Vertical	Pass
		2535	-3.70	4.69	27.72	19.33	85.704	Vertical	Pass
		2565	-3.60	4.72	27.70	19.38	86.696	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-3.90	4.55	27.77	19.32	85.507	Vertical	Pass
		2535	-3.78	4.69	27.72	19.25	84.140	Vertical	Pass
		2562.5	-3.61	4.72	27.69	19.36	86.298	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-3.80	4.57	27.78	19.41	87.297	Vertical	Pass
		2535	-3.60	4.73	27.72	19.39	86.896	Vertical	Pass
		2560	-3.55	4.75	27.68	19.38	86.696	Vertical	Pass

Note:

SG Level= Signal generator output

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

### 8.6 LTE BAND 12

Radiated Power (ERP) for Band 12											
Mode	RB/RB SIZE	Frequency	Result							Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss (dBm)	Factor (dB)	Correction	Max. ERP	Max. ERP			
			(dBm)			(dB)	Average	Average			
						(dB)	(dBm)	(mW)			
1.4MHz Band QPSK	1/#Mid	699.7	2.97	1.91	19.21	2.15	18.12	64.863	Vertical	Pass	
		707.5	2.83	1.91	19.26	2.15	18.03	63.533	Vertical	Pass	
		715.3	2.88	1.93	19.34	2.15	18.14	65.163	Vertical	Pass	
3.0MHz Band QPSK	1/#Mid	700.5	2.99	1.91	19.21	2.15	18.14	65.163	Vertical	Pass	
		707.5	2.87	1.91	19.26	2.15	18.07	64.121	Vertical	Pass	
		714.5	2.79	1.93	19.34	2.15	18.05	63.826	Vertical	Pass	
5.0MHz Band QPSK	1/#Mid	701.5	2.94	1.91	19.23	2.15	18.11	64.714	Vertical	Pass	
		707.5	2.87	1.91	19.26	2.15	18.07	64.121	Vertical	Pass	
		713.5	2.76	1.92	19.33	2.15	18.02	63.387	Vertical	Pass	
10.0MHz Band QPSK	1/#Mid	704	2.93	1.91	19.25	2.15	18.12	64.863	Vertical	Pass	
		707.5	2.79	1.91	19.26	2.15	17.99	62.951	Vertical	Pass	
		711	2.84	1.92	19.32	2.15	18.09	64.417	Vertical	Pass	
1.4MHz Band QPSK	1/#Mid	699.7	2.90	1.91	19.21	2.15	18.05	63.826	Horizontal	Pass	
		707.5	2.81	1.91	19.26	2.15	18.01	63.241	Horizontal	Pass	
		715.3	2.89	1.93	19.34	2.15	18.15	65.313	Horizontal	Pass	
3.0MHz Band QPSK	1/#Mid	700.5	2.92	1.91	19.21	2.15	18.07	64.121	Horizontal	Pass	
		707.5	2.94	1.91	19.26	2.15	18.14	65.163	Horizontal	Pass	
		714.5	2.79	1.93	19.34	2.15	18.05	63.826	Horizontal	Pass	
5.0MHz Band QPSK	1/#Mid	701.5	2.96	1.91	19.23	2.15	18.13	65.013	Horizontal	Pass	
		707.5	2.95	1.91	19.26	2.15	18.15	65.313	Horizontal	Pass	
		713.5	2.74	1.92	19.33	2.15	18.00	63.096	Horizontal	Pass	
10.0MHz Band QPSK	1/#Mid	704	3.00	1.91	19.25	2.15	18.19	65.917	Horizontal	Pass	
		707.5	2.99	1.91	19.26	2.15	18.19	65.917	Horizontal	Pass	
		711	2.96	1.92	19.32	2.15	18.21	66.222	Horizontal	Pass	

Radiated Power (ERP) for Band 12											
Mode	RB/RB SIZE	Frequency	Result							Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss (dBm)	Factor (dB)	Correction	Max. ERP	Max. ERP			
			(dBm)			(dB)	Average	Average			
							(dBm)	(mW)			
1.4MHz Band 16 QAM	1/#Mid	699.7	2.16	1.91	19.21	2.15	17.31	53.827	Vertical	Pass	
		707.5	2.15	1.91	19.26	2.15	17.35	54.325	Vertical	Pass	
		715.3	2.06	1.93	19.34	2.15	17.32	53.951	Vertical	Pass	
3.0MHz Band 16 QAM	1/#Mid	700.5	2.30	1.91	19.21	2.15	17.45	55.590	Vertical	Pass	
		707.5	2.22	1.91	19.26	2.15	17.42	55.208	Vertical	Pass	
		714.5	2.10	1.93	19.34	2.15	17.36	54.450	Vertical	Pass	
5.0MHz Band 16 QAM	1/#Mid	701.5	2.25	1.91	19.23	2.15	17.42	55.208	Vertical	Pass	
		707.5	2.16	1.91	19.26	2.15	17.36	54.450	Vertical	Pass	
		713.5	2.16	1.92	19.33	2.15	17.42	55.208	Vertical	Pass	
10.0MHz Band 16 QAM	1/#Mid	704	2.09	1.91	19.25	2.15	17.28	53.456	Vertical	Pass	
		707.5	2.07	1.91	19.26	2.15	17.27	53.333	Vertical	Pass	
		711	2.10	1.92	19.32	2.15	17.35	54.325	Vertical	Pass	
1.4MHz Band 16 QAM	1/#Mid	699.7	2.28	1.91	19.21	2.15	17.43	55.335	Horizontal	Pass	
		707.5	2.24	1.91	19.26	2.15	17.44	55.463	Horizontal	Pass	
		715.3	2.10	1.93	19.34	2.15	17.36	54.450	Horizontal	Pass	
3.0MHz Band 16 QAM	1/#Mid	700.5	2.23	1.91	19.21	2.15	17.38	54.702	Horizontal	Pass	
		707.5	2.14	1.91	19.26	2.15	17.34	54.200	Horizontal	Pass	
		714.5	2.10	1.93	19.34	2.15	17.36	54.450	Horizontal	Pass	
5.0MHz Band 16 QAM	1/#Mid	701.5	2.22	1.91	19.23	2.15	17.39	54.828	Horizontal	Pass	
		707.5	2.21	1.91	19.26	2.15	17.41	55.081	Horizontal	Pass	
		713.5	2.15	1.92	19.33	2.15	17.41	55.081	Horizontal	Pass	
10.0MHz Band 16 QAM	1/#Mid	704	2.32	1.91	19.25	2.15	17.51	56.364	Horizontal	Pass	
		707.5	2.26	1.91	19.26	2.15	17.46	55.719	Horizontal	Pass	
		711	2.24	1.92	19.32	2.15	17.49	56.105	Horizontal	Pass	

**Note:**

SG Level= Signal generator output

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

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

8.7 LTE BAND 13

Radiated Power (ERP) for Band 13										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	779.5	3.45	1.95	19.23	2.15	18.58	72.111	Vertical	Pass
		782	3.42	1.95	19.26	2.15	18.58	72.111	Vertical	Pass
		784.5	3.38	1.96	19.33	2.15	18.60	72.444	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	782	3.34	1.95	19.25	2.15	18.49	70.632	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	779.5	3.44	1.95	19.23	2.15	18.57	71.945	Horizontal	Pass
		782	3.36	1.95	19.26	2.15	18.52	71.121	Horizontal	Pass
		784.5	3.28	1.96	19.33	2.15	18.50	70.795	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	782	3.49	1.95	19.25	2.15	18.64	73.114	Horizontal	Pass



Radiated Power (ERP) for Band 13										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. EPR	Max. EPR	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	779.5	2.75	1.95	19.23	2.15	17.88	61.376	Vertical	Pass
		782	2.84	1.95	19.26	2.15	18.00	63.096	Vertical	Pass
		784.5	2.73	1.96	19.33	2.15	17.95	62.373	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	782	2.82	1.95	19.25	2.15	17.97	62.661	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	779.5	2.83	1.95	19.23	2.15	17.96	62.517	Horizontal	Pass
		782	2.76	1.95	19.26	2.15	17.92	61.944	Horizontal	Pass
		784.5	2.74	1.96	19.33	2.15	17.96	62.517	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	782	2.87	1.95	19.25	2.15	18.02	63.387	Horizontal	Pass

**Note:**

SG Level= Signal generator output

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

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

8.8 LTE BAND 17

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP	Max. ERP	Polarization Of Max. ERP	
							Average	Average		
							(dBm)	(mW)		
5.0MHz Band QPSK	1/#Mid	706.5	2.73	1.91	19.23	2.15	17.90	61.660	Vertical	Pass
		710	2.65	1.91	19.26	2.15	17.85	60.954	Vertical	Pass
		713.5	2.59	1.92	19.33	2.15	17.85	60.954	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	709	2.76	1.91	19.25	2.15	17.95	62.373	Vertical	Pass
		710	2.60	1.91	19.26	2.15	17.80	60.256	Vertical	Pass
		711	2.66	1.92	19.32	2.15	17.91	61.802	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	706.5	2.73	1.91	19.23	2.15	17.90	61.660	Horizontal	Pass
		710	2.72	1.91	19.26	2.15	17.92	61.944	Horizontal	Pass
		713.5	2.66	1.92	19.33	2.15	17.92	61.944	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	709	2.78	1.91	19.25	2.15	17.97	62.661	Horizontal	Pass
		710	2.78	1.91	19.26	2.15	17.98	62.806	Horizontal	Pass
		711	2.71	1.92	19.32	2.15	17.96	62.517	Horizontal	Pass

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP (dBm)	Max. ERP (mW)	Polarization Of Max. ERP	
							Average	Average		
5.0MHz Band 16 QAM	1/#Mid	706.5	2.24	1.91	19.23	2.15	17.41	55.081	Vertical	Pass
		710	2.21	1.91	19.26	2.15	17.41	55.081	Vertical	Pass
		713.5	2.16	1.92	19.33	2.15	17.42	55.208	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	709	2.33	1.91	19.25	2.15	17.52	56.494	Vertical	Pass
		710	2.25	1.91	19.26	2.15	17.45	55.590	Vertical	Pass
		711	2.22	1.92	19.32	2.15	17.47	55.847	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	706.5	2.34	1.91	19.23	2.15	17.51	56.364	Horizontal	Pass
		710	2.18	1.91	19.26	2.15	17.38	54.702	Horizontal	Pass
		713.5	2.25	1.92	19.33	2.15	17.51	56.364	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	709	2.37	1.91	19.25	2.15	17.56	57.016	Horizontal	Pass
		710	2.34	1.91	19.26	2.15	17.54	56.754	Horizontal	Pass
		711	2.31	1.92	19.32	2.15	17.56	57.016	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)

### 8.9 LTE BAND 38

Radiated Power (EIRP) for Band38									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	25/0	2572.5	-3.87	4.44	27.75	19.44	87.902	Horizontal	Pass
		2595	-3.71	4.67	27.72	19.34	85.901	Horizontal	Pass
		2617.5	-3.74	4.62	27.71	19.35	86.099	Horizontal	Pass
10.0MHz Band QPSK	50/0	2575	-3.80	4.51	27.76	19.45	88.105	Horizontal	Pass
		2595	-3.79	4.60	27.72	19.33	85.704	Horizontal	Pass
		2615	-3.57	4.70	27.70	19.43	87.700	Horizontal	Pass
15.0MHz Band QPSK	75/0	2577.5	-3.85	4.47	27.77	19.45	88.105	Horizontal	Pass
		2595	-3.70	4.65	27.72	19.37	86.497	Horizontal	Pass
		2612.5	-3.67	4.66	27.69	19.36	86.298	Horizontal	Pass
20.0MHz Band QPSK	100/0	2580	-3.83	4.50	27.78	19.45	88.105	Horizontal	Pass
		2595	-3.64	4.66	27.72	19.42	87.498	Horizontal	Pass
		2610	-3.59	4.68	27.68	19.41	87.297	Horizontal	Pass
5.0MHz Band QPSK	25/0	2572.5	-3.88	4.48	27.75	19.39	86.896	Vertical	Pass
		2595	-3.71	4.62	27.72	19.39	86.896	Vertical	Pass
		2617.5	-3.68	4.63	27.71	19.40	87.096	Vertical	Pass
10.0MHz Band QPSK	50/0	2575	-3.96	4.46	27.76	19.34	85.901	Vertical	Pass
		2595	-3.72	4.65	27.72	19.35	86.099	Vertical	Pass
		2615	-3.58	4.69	27.70	19.43	87.700	Vertical	Pass
15.0MHz Band QPSK	75/0	2577.5	-4.00	4.47	27.77	19.30	85.114	Vertical	Pass
		2595	-3.71	4.65	27.72	19.36	86.298	Vertical	Pass
		2612.5	-3.72	4.66	27.69	19.31	85.310	Vertical	Pass
20.0MHz Band QPSK	100/0	2580	-3.73	4.53	27.78	19.52	89.536	Vertical	Pass
		2595	-3.56	4.66	27.72	19.50	89.125	Vertical	Pass
		2610	-3.49	4.68	27.68	19.51	89.331	Vertical	Pass

Radiated Power (EIRP) for Band38									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	25/0	2572.5	-5.11	4.44	27.75	18.20	66.069	Horizontal	Pass
		2595	-4.79	4.67	27.72	18.26	66.988	Horizontal	Pass
		2617.5	-4.89	4.62	27.71	18.20	66.069	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	2575	-5.06	4.51	27.76	18.19	65.917	Horizontal	Pass
		2595	-4.87	4.60	27.72	18.25	66.834	Horizontal	Pass
		2615	-4.87	4.70	27.70	18.13	65.013	Horizontal	Pass
15.0MHz Band 16 QAM	75/0	2577.5	-5.12	4.47	27.77	18.18	65.766	Horizontal	Pass
		2595	-4.81	4.65	27.72	18.26	66.988	Horizontal	Pass
		2612.5	-4.83	4.66	27.69	18.20	66.069	Horizontal	Pass
20.0MHz Band 16 QAM	100/0	2580	-5.04	4.50	27.78	18.24	66.681	Horizontal	Pass
		2595	-4.79	4.66	27.72	18.27	67.143	Horizontal	Pass
		2610	-4.83	4.68	27.68	18.17	65.615	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	2572.5	-5.05	4.48	27.75	18.22	66.374	Vertical	Pass
		2595	-4.89	4.62	27.72	18.21	66.222	Vertical	Pass
		2617.5	-4.83	4.63	27.71	18.25	66.834	Vertical	Pass
10.0MHz Band 16 QAM	50/0	2575	-5.18	4.46	27.76	18.12	64.863	Vertical	Pass
		2595	-4.82	4.65	27.72	18.25	66.834	Vertical	Pass
		2615	-4.84	4.69	27.70	18.17	65.615	Vertical	Pass
15.0MHz Band 16 QAM	75/0	2577.5	-5.19	4.47	27.77	18.11	64.714	Vertical	Pass
		2595	-4.84	4.65	27.72	18.23	66.527	Vertical	Pass
		2612.5	-4.92	4.66	27.69	18.11	64.714	Vertical	Pass
20.0MHz Band 16 QAM	100/0	2580	-4.97	4.53	27.78	18.28	67.298	Vertical	Pass
		2595	-4.76	4.66	27.72	18.30	67.608	Vertical	Pass
		2610	-4.70	4.68	27.68	18.30	67.608	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)

8.10 LTE BAND 41

Radiated Power (EIRP) for Band 41									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	2537.5	-3.95	4.54	27.75	19.26	84.333	Horizontal	Pass
		2595	-3.78	4.69	27.72	19.25	84.140	Horizontal	Pass
		2652.5	-3.77	4.71	27.71	19.23	83.753	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2540	-4.06	4.55	27.76	19.15	82.224	Horizontal	Pass
		2595	-3.84	4.69	27.72	19.19	82.985	Horizontal	Pass
		2650	-3.86	4.72	27.70	19.12	81.658	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2542.5	-4.05	4.55	27.77	19.17	82.604	Horizontal	Pass
		2595	-3.93	4.69	27.72	19.10	81.283	Horizontal	Pass
		2647.5	-3.74	4.72	27.69	19.23	83.753	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2545	-3.99	4.57	27.78	19.22	83.560	Horizontal	Pass
		2595	-3.76	4.73	27.72	19.23	83.753	Horizontal	Pass
		2645	-3.75	4.75	27.68	19.18	82.794	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2537.5	-4.08	4.54	27.75	19.13	81.846	Vertical	Pass
		2595	-3.85	4.69	27.72	19.18	82.794	Vertical	Pass
		2652.5	-3.83	4.71	27.71	19.17	82.604	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2540	-3.99	4.55	27.76	19.22	83.560	Vertical	Pass
		2595	-3.84	4.69	27.72	19.19	82.985	Vertical	Pass
		2650	-3.79	4.72	27.70	19.19	82.985	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2542.5	-3.96	4.55	27.77	19.26	84.333	Vertical	Pass
		2595	-3.76	4.69	27.72	19.27	84.528	Vertical	Pass
		2647.5	-3.80	4.72	27.69	19.17	82.604	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2545	-3.90	4.57	27.78	19.31	85.310	Vertical	Pass
		2595	-3.67	4.73	27.72	19.32	85.507	Vertical	Pass
		2645	-3.62	4.75	27.68	19.31	85.310	Vertical	Pass

Radiated Power (EIRP) for Band 41									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	2537.5	-5.37	4.54	27.75	17.84	60.814	Horizontal	Pass
		2595	-5.21	4.69	27.72	17.82	60.534	Horizontal	Pass
		2652.5	-5.09	4.71	27.71	17.91	61.802	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2540	-5.34	4.55	27.76	17.87	61.235	Horizontal	Pass
		2595	-5.22	4.69	27.72	17.81	60.395	Horizontal	Pass
		2650	-5.04	4.72	27.70	17.94	62.230	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2542.5	-5.39	4.55	27.77	17.83	60.674	Horizontal	Pass
		2595	-5.18	4.69	27.72	17.85	60.954	Horizontal	Pass
		2647.5	-5.17	4.72	27.69	17.80	60.256	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2545	-5.35	4.57	27.78	17.86	61.094	Horizontal	Pass
		2595	-5.09	4.73	27.72	17.90	61.660	Horizontal	Pass
		2645	-5.03	4.75	27.68	17.90	61.660	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2537.5	-5.37	4.54	27.75	17.84	60.814	Vertical	Pass
		2595	-5.08	4.69	27.72	17.95	62.373	Vertical	Pass
		2652.5	-5.14	4.71	27.71	17.86	61.094	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2540	-5.39	4.55	27.76	17.82	60.534	Vertical	Pass
		2595	-5.14	4.69	27.72	17.89	61.518	Vertical	Pass
		2650	-5.16	4.72	27.70	17.82	60.534	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2542.5	-5.27	4.55	27.77	17.95	62.373	Vertical	Pass
		2595	-5.22	4.69	27.72	17.81	60.395	Vertical	Pass
		2647.5	-5.08	4.72	27.69	17.89	61.518	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2545	-5.21	4.57	27.78	18.00	63.096	Vertical	Pass
		2595	-4.98	4.73	27.72	18.01	63.241	Vertical	Pass
		2645	-4.94	4.75	27.68	17.99	62.951	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)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	1710.7	-5.01	3.76	28.24	19.47	88.512	Horizontal	Pass
		1745	-4.90	3.91	28.22	19.41	87.297	Horizontal	Pass
		1779.3	-4.86	3.93	28.2	19.41	87.297	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-5.05	3.77	28.23	19.41	87.297	Horizontal	Pass
		1745	-4.95	3.91	28.24	19.38	86.696	Horizontal	Pass
		1778.5	-4.87	3.94	28.25	19.44	87.902	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-5.13	3.77	28.31	19.41	87.297	Horizontal	Pass
		1745	-4.86	3.91	28.22	19.45	88.105	Horizontal	Pass
		1777.5	-4.79	3.94	28.2	19.47	88.512	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-5.15	3.79	28.33	19.39	86.896	Horizontal	Pass
		1745	-4.89	3.95	28.22	19.38	86.696	Horizontal	Pass
		1775	-4.83	3.97	28.19	19.39	86.896	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-5.09	3.79	28.34	19.46	88.308	Horizontal	Pass
		1745	-4.87	3.95	28.22	19.40	87.096	Horizontal	Pass
		1772.5	-4.79	3.97	28.18	19.42	87.498	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-5.24	3.81	28.35	19.30	85.114	Horizontal	Pass
		1745	-4.80	3.96	28.22	19.46	88.308	Horizontal	Pass
		1770	-4.71	4	28.16	19.45	88.105	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-5.08	3.76	28.24	19.40	87.096	Vertical	Pass
		1745	-4.84	3.91	28.22	19.47	88.512	Vertical	Pass
		1779.3	-4.92	3.93	28.2	19.35	86.099	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-5.12	3.77	28.23	19.34	85.901	Vertical	Pass
		1745	-4.95	3.91	28.24	19.38	86.696	Vertical	Pass
		1778.5	-4.92	3.94	28.25	19.39	86.896	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-5.08	3.77	28.31	19.46	88.308	Vertical	Pass
		1745	-5.00	3.91	28.22	19.31	85.310	Vertical	Pass
		1777.5	-4.97	3.94	28.2	19.29	84.918	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-5.13	3.79	28.34	19.42	87.498	Vertical	Pass
		1745	-4.92	3.95	28.22	19.35	86.099	Vertical	Pass
		1775	-4.75	3.97	28.18	19.46	88.308	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-5.15	3.81	28.35	19.39	86.896	Vertical	Pass



Band QPSK		1745	-4.90	3.96	28.22	19.36	86.298	Vertical	Pass
		1772.5	-4.84	4	28.16	19.32	85.507	Vertical	Pass
20.0MHz	1/#Mid	1720	-5.03	3.79	28.34	<b>19.52</b>	89.536	Vertical	Pass
Band QPSK		1745	-4.78	3.95	28.22	19.49	88.920	Vertical	Pass
		1770	-4.74	3.97	28.18	19.47	88.512	Vertical	Pass

Radiated Power (EIRP) for Band 66										
Mode	RB/RB SIZE	Frequency	Result						Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)			
1.4MHz Band 16 QAM	1/#Mid	1710.7	-5.34	3.76	28.24	19.14	82.035	Horizontal	Pass	
		1745	-5.11	3.91	28.22	19.20	83.176	Horizontal	Pass	
		1779.3	-5.07	3.93	28.2	19.20	83.176	Horizontal	Pass	
3.0MHz Band 16 QAM	1/#Mid	1711.5	-5.24	3.77	28.23	19.22	83.560	Horizontal	Pass	
		1745	-5.16	3.91	28.24	19.17	82.604	Horizontal	Pass	
		1778.5	-5.09	3.94	28.25	19.22	83.560	Horizontal	Pass	
5.0MHz Band 16 QAM	1/#Mid	1712.5	-5.36	3.77	28.31	19.18	82.794	Horizontal	Pass	
		1745	-5.11	3.91	28.22	19.20	83.176	Horizontal	Pass	
		1777.5	-5.04	3.94	28.2	19.22	83.560	Horizontal	Pass	
10.0MHz Band 16 QAM	1/#Mid	1715	-5.33	3.79	28.33	19.21	83.368	Horizontal	Pass	
		1745	-5.15	3.95	28.22	19.12	81.658	Horizontal	Pass	
		1775	-5.01	3.97	28.19	19.21	83.368	Horizontal	Pass	
15.0MHz Band 16 QAM	1/#Mid	1717.5	-5.38	3.79	28.34	19.17	82.604	Horizontal	Pass	
		1745	-5.09	3.95	28.22	19.18	82.794	Horizontal	Pass	
		1772.5	-5.03	3.97	28.18	19.18	82.794	Horizontal	Pass	
20.0MHz Band 16 QAM	1/#Mid	1720	-5.33	3.81	28.35	19.21	83.368	Horizontal	Pass	
		1745	-5.02	3.96	28.22	19.24	83.946	Horizontal	Pass	
		1770	-5.05	4	28.16	19.11	81.470	Horizontal	Pass	
1.4MHz Band 16 QAM	1/#Mid	1710.7	-5.31	3.76	28.24	19.17	82.604	Vertical	Pass	
		1745	-5.15	3.91	28.22	19.16	82.414	Vertical	Pass	
		1779.3	-5.03	3.93	28.2	19.24	83.946	Vertical	Pass	
3.0MHz Band 16 QAM	1/#Mid	1711.5	-5.27	3.77	28.23	19.19	82.985	Vertical	Pass	
		1745	-5.16	3.91	28.24	19.17	82.604	Vertical	Pass	
		1778.5	-5.13	3.94	28.25	19.18	82.794	Vertical	Pass	
5.0MHz Band 16	1/#Mid	1712.5	-5.29	3.77	28.31	19.25	84.140	Vertical	Pass	
		1745	-5.10	3.91	28.22	19.21	83.368	Vertical	Pass	

QAM		1777.5	-5.10	3.94	28.2	19.16	82.414	Vertical	Pass
10.0MHz	1/#Mid	1715	-5.35	3.79	28.34	19.20	83.176	Vertical	Pass
Band 16		1745	-5.07	3.95	28.22	19.20	83.176	Vertical	Pass
QAM		1775	-5.00	3.97	28.18	19.21	83.368	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-5.40	3.81	28.35	19.14	82.035	Vertical	Pass
Band 16		1745	-5.00	3.96	28.22	19.26	84.333	Vertical	Pass
QAM		1772.5	-4.93	4	28.16	19.23	83.753	Vertical	Pass
20.0MHz	1/#Mid	1720	-5.23	3.79	28.34	19.32	85.507	Vertical	Pass
Band 16		1745	-4.96	3.95	28.22	19.31	85.310	Vertical	Pass
QAM		1770	-4.89	3.97	28.18	19.32	85.507	Vertical	Pass

**Note:**

SG Level= Signal generator output

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

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

## 9. SPURIOUS RADIATION EMISSION

### RULE PART(S)

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

### LIMIT

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

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

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

### TEST PROCEDURE

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

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

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

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

- a. for base station and subscriber equipment, other than mobile subscriber equipment, the attenuation shall not be less than  $43 + 10 \text{ Log}_{10} (p)$ , 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 2/4/5/7/12/13/17/38/41/66

#### **RESULTS**

PASS

**9.1 LTE BAND 2**

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

Test Results for Low Channel 1850.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3701.4	-53.86	4.04	33.51	-24.39	-13	-11.39	Horizontal
3701.4	-46.71	4.04	33.51	-17.24	-13	-4.24	Vertical
5552.1	-44.53	5.24	35.84	-13.93	-13	-0.93	Vertical
5552.1	-51.85	5.24	35.84	-21.25	-13	-8.25	Horizontal
188.7	-36.41	1.43	16.02	-21.82	-13	-8.82	Vertical
252.4	-42.35	1.30	17.99	-25.66	-13	-12.66	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-52.98	4.04	33.56	-23.46	-13	-10.46	Horizontal
3760.0	-48.08	4.04	33.56	-18.56	-13	-5.56	Vertical
5640.0	-46.83	5.24	35.91	-16.16	-13	-3.16	Vertical
5640.0	-52.97	5.24	35.91	-22.30	-13	-9.30	Horizontal
182.9	-42.26	1.62	16.97	-26.91	-13	-13.91	Vertical
316.0	-37.94	1.74	15.98	-23.71	-13	-10.71	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-52.78	4.04	34.00	-22.82	-13	-9.82	Horizontal
3818.6	-44.25	4.04	34.00	-14.29	-13	-1.29	Vertical
5727.9	-49.70	5.24	36.04	-18.90	-13	-5.90	Vertical
5727.9	-52.92	5.24	36.04	-22.12	-13	-9.12	Horizontal
177.0	-38.85	1.42	17.29	-22.98	-13	-9.98	Vertical
239.7	-43.57	1.50	17.90	-27.16	-13	-14.16	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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3720.0	-48.31	4.07	33.54	-18.84	-13	-5.84	Horizontal
3720.0	-51.33	4.07	33.54	-21.86	-13	-8.86	Vertical
5580.0	-44.99	5.28	35.86	-14.41	-13	-1.41	Vertical
5580.0	-49.90	5.28	35.86	-19.32	-13	-6.32	Horizontal
185.0	-37.26	1.58	16.89	-21.94	-13	-8.94	Vertical
457.5	-34.69	1.76	17.26	-19.19	-13	-6.19	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-53.31	4.04	33.56	-23.79	-13	-10.79	Horizontal
3760.0	-50.83	4.04	33.56	-21.31	-13	-8.31	Vertical
5640.0	-51.37	5.24	35.91	-20.70	-13	-7.70	Vertical
5640.0	-50.55	5.24	35.91	-19.88	-13	-6.88	Horizontal
199.9	-34.01	1.46	16.27	-19.20	-13	-6.20	Vertical
424.7	-36.08	1.59	15.15	-22.52	-13	-9.52	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-51.62	4.04	34.00	-21.66	-13	-8.66	Horizontal
3800.0	-44.75	4.04	34.00	-14.79	-13	-1.79	Vertical
5700.0	-47.66	5.24	36.04	-16.86	-13	-3.86	Vertical
5700.0	-52.92	5.24	36.04	-22.12	-13	-9.12	Horizontal
211.3	-39.11	1.36	17.39	-23.07	-13	-10.07	Vertical
447.1	-42.70	1.66	15.39	-28.97	-13	-15.97	Horizontal

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

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

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

**9.2 LTE BAND 4**

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

Test Results for Low Channel 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-47.69	4.02	29.80	-21.91	-13	-8.91	Horizontal
3421.4	-51.00	4.02	29.80	-25.22	-13	-12.22	Vertical
5132.1	-46.11	5.24	35.84	-15.51	-13	-2.51	Vertical
5132.1	-52.25	5.24	35.84	-21.65	-13	-8.65	Horizontal
182.9	-37.97	1.68	16.04	-23.61	-13	-10.61	Vertical
242.5	-35.21	1.78	17.74	-19.25	-13	-6.25	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-50.89	4.03	30.00	-24.92	-13	-11.92	Horizontal
3465.0	-45.75	4.03	30.00	-19.78	-13	-6.78	Vertical
5197.5	-52.36	5.25	35.86	-21.75	-13	-8.75	Vertical
5197.5	-52.58	5.25	35.86	-21.97	-13	-8.97	Horizontal
207.6	-38.93	1.72	17.69	-22.96	-13	-9.96	Vertical
357.8	-41.04	1.62	16.02	-26.63	-13	-13.63	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-45.94	4.05	30.01	-19.98	-13	-6.98	Horizontal
3508.6	-47.24	4.05	30.01	-21.28	-13	-8.28	Vertical
5262.9	-45.01	5.26	35.86	-14.41	-13	-1.41	Vertical
5262.9	-53.98	5.26	35.86	-23.38	-13	-10.38	Horizontal
193.3	-38.36	1.80	16.69	-23.47	-13	-10.47	Vertical
296.8	-34.16	1.75	16.66	-19.26	-13	-6.26	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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-44.18	4.02	29.80	-18.40	-13	-5.40	Horizontal
3440.0	-46.44	4.02	29.80	-20.66	-13	-7.66	Vertical
5160.0	-48.15	5.24	35.84	-17.55	-13	-4.55	Vertical
5160.0	-49.48	5.24	35.84	-18.88	-13	-5.88	Horizontal
183.2	-34.61	1.57	17.26	-18.92	-13	-5.92	Vertical
360.5	-35.42	1.78	16.35	-20.85	-13	-7.85	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-44.36	4.03	30.00	-18.39	-13	-5.39	Horizontal
3465.0	-51.73	4.03	30.00	-25.76	-13	-12.76	Vertical
5197.5	-48.03	5.25	35.86	-17.42	-13	-4.42	Vertical
5197.5	-53.32	5.25	35.86	-22.71	-13	-9.71	Horizontal
179.4	-37.50	1.44	17.95	-20.99	-13	-7.99	Vertical
260.2	-34.19	1.65	16.09	-19.75	-13	-6.75	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-46.47	4.05	27.68	-22.84	-13	-9.84	Horizontal
3490.0	-45.75	4.05	27.68	-22.12	-13	-9.12	Vertical
5235.0	-46.87	5.26	35.86	-16.27	-13	-3.27	Vertical
5235.0	-52.27	5.26	35.86	-21.67	-13	-8.67	Horizontal
204.1	-43.86	1.61	16.85	-28.62	-13	-15.62	Vertical
340.4	-44.92	1.61	15.19	-31.34	-13	-18.34	Horizontal

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

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

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



**9.3 LTE BAND 5**

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

Test Results for Low Channel 824.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1649.4	-47.89	2.78	27.50	-23.17	-13	-10.17	Horizontal
1649.4	-51.95	2.78	27.50	-27.23	-13	-14.23	Vertical
2474.1	-48.01	2.90	27.80	-23.11	-13	-10.11	Vertical
2474.1	-52.52	2.90	27.80	-27.62	-13	-14.62	Horizontal
209.7	-39.73	1.76	17.59	-23.90	-13	-10.90	Vertical
387.3	-38.91	1.63	15.87	-24.67	-13	-11.67	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-51.58	2.80	27.48	-26.90	-13	-13.90	Horizontal
1673.0	-50.12	2.80	27.48	-25.44	-13	-12.44	Vertical
2509.5	-48.97	2.91	27.70	-24.18	-13	-11.18	Vertical
2509.5	-51.89	2.91	27.70	-27.10	-13	-14.10	Horizontal
206.0	-44.23	1.61	15.68	-30.16	-13	-17.16	Vertical
305.4	-38.69	1.59	17.52	-22.77	-13	-9.77	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-49.12	2.82	27.43	-24.51	-13	-11.51	Horizontal
1696.6	-48.15	2.82	27.43	-23.54	-13	-10.54	Vertical
2544.9	-44.64	2.92	27.74	-19.82	-13	-6.82	Vertical
2544.9	-52.07	2.92	27.74	-27.25	-13	-14.25	Horizontal
195.2	-42.82	1.69	16.67	-27.83	-13	-14.83	Vertical
445.2	-34.73	1.70	17.18	-19.25	-13	-6.25	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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1658.0	-47.29	2.78	27.50	-22.57	-13	-9.57	Horizontal
1658.0	-45.73	2.78	27.50	-21.01	-13	-8.01	Vertical
2487.0	-44.37	2.90	27.80	-19.47	-13	-6.47	Vertical
2487.0	-51.03	2.90	27.80	-26.13	-13	-13.13	Horizontal
181.2	-35.30	1.71	15.57	-21.44	-13	-8.44	Vertical
431.9	-43.33	1.34	16.40	-28.27	-13	-15.27	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-52.68	2.80	27.48	-28.00	-13	-15.00	Horizontal
1673.0	-49.80	2.80	27.48	-25.12	-13	-12.12	Vertical
2509.5	-51.92	2.91	27.70	-27.13	-13	-14.13	Vertical
2509.5	-51.07	2.91	27.70	-26.28	-13	-13.28	Horizontal
198.8	-43.75	1.44	17.04	-28.15	-13	-15.15	Vertical
256.3	-36.13	1.76	17.62	-20.27	-13	-7.27	Horizontal
Test Results for High Channel 844MHz							
1688.0	-53.90	2.82	27.43	-29.29	-13	-16.29	Horizontal
1688.0	-50.67	2.82	27.43	-26.06	-13	-13.06	Vertical
2532.0	-52.78	2.92	27.74	-27.96	-13	-14.96	Vertical
2532.0	-50.60	2.92	27.74	-25.78	-13	-12.78	Horizontal
175.9	-36.59	1.74	17.70	-20.63	-13	-7.63	Vertical
366.5	-40.92	1.41	17.46	-24.86	-13	-11.86	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.

**9.4 LTE BAND 7**

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

<b>Test Results for Low Channel 2502.5MHz</b>							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5005.0	-64.83	5.23	35.81	-34.25	-25	-9.25	Horizontal
5005.0	-63.10	5.23	35.81	-32.52	-25	-7.52	Vertical
7507.5	-60.32	5.67	36.85	-29.14	-25	-4.14	Vertical
7507.5	-62.08	5.67	36.85	-30.90	-25	-5.90	Horizontal
190.5	-47.49	1.73	17.97	-31.25	-25	-6.25	Vertical
305.2	-46.07	1.38	15.11	-32.34	-25	-7.34	Horizontal
<b>Test Results for Mid Channel 2535MHz</b>							
5070.0	-61.65	5.23	35.82	-31.06	-25	-6.06	Horizontal
5070.0	-62.42	5.23	35.82	-31.83	-25	-6.83	Vertical
7605.0	-60.17	5.67	36.85	-28.99	-25	-3.99	Vertical
7605.0	-59.02	5.67	36.85	-27.84	-25	-2.84	Horizontal
207.1	-52.07	1.77	16.17	-37.66	-25	-12.66	Vertical
268.9	-53.83	1.63	15.21	-40.25	-25	-15.25	Horizontal
<b>Test Results for High Channel 2567.5MHz</b>							
5135.0	-63.48	5.24	35.83	-32.89	-25	-7.89	Horizontal
5135.0	-64.97	5.24	35.83	-34.38	-25	-9.38	Vertical
7702.5	-64.59	5.68	36.87	-33.40	-25	-8.40	Vertical
7702.5	-59.29	5.68	36.87	-28.10	-25	-3.10	Horizontal
176.3	-54.47	1.58	17.56	-38.49	-25	-13.49	Vertical
255.5	-50.83	1.45	16.58	-35.70	-25	-10.70	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	-59.33	5.23	35.82	-28.74	-25	-3.74	Horizontal
5020.0	-59.54	5.23	35.82	-28.95	-25	-3.95	Vertical
7530.0	-62.68	5.67	36.86	-31.49	-25	-6.49	Vertical
7530.0	-64.82	5.67	36.86	-33.63	-25	-8.63	Horizontal
212.0	-44.40	1.63	15.76	-30.27	-25	-5.27	Vertical
336.4	-51.11	1.71	15.44	-37.38	-25	-12.38	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-60.61	5.23	35.82	-30.02	-25	-5.02	Horizontal
5070.0	-59.98	5.23	35.82	-29.39	-25	-4.39	Vertical
7605.0	-61.16	5.67	36.85	-29.98	-25	-4.98	Vertical
7605.0	-62.02	5.67	36.85	-30.84	-25	-5.84	Horizontal
177.8	-50.62	1.79	16.84	-35.56	-25	-10.56	Vertical
254.5	-54.97	1.71	17.64	-39.04	-25	-14.04	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-64.70	5.24	35.83	-34.11	-25	-9.11	Horizontal
5120.0	-63.74	5.24	35.83	-33.15	-25	-8.15	Vertical
7680.0	-61.56	5.70	36.88	-30.38	-25	-5.38	Vertical
7680.0	-63.40	5.70	36.88	-32.22	-25	-7.22	Horizontal
180.0	-48.22	1.79	16.84	-33.16	-25	-8.16	Vertical
408.9	-47.32	1.71	17.64	-31.39	-25	-6.39	Horizontal

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

. Margin = Spurious Emission Level - Limit

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

**9.5 LTE BAND 12**

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

Test Results for Low Channel 699.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1399.4	-45.69	2.60	27.20	-21.09	-13	-8.09	Horizontal
1399.4	-52.90	2.60	27.20	-28.30	-13	-15.30	Vertical
2099.1	-53.00	2.85	27.54	-28.31	-13	-15.31	Vertical
2099.1	-50.25	2.85	27.54	-25.56	-13	-12.56	Horizontal
187.1	-44.79	1.49	17.78	-28.50	-13	-15.50	Vertical
410.7	-42.19	1.36	17.33	-26.22	-13	-13.22	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-50.15	2.61	27.28	-25.48	-13	-12.48	Horizontal
1415.0	-50.66	2.61	27.28	-25.99	-13	-12.99	Vertical
2122.5	-52.49	2.87	27.59	-27.77	-13	-14.77	Vertical
2122.5	-49.95	2.87	27.59	-25.23	-13	-12.23	Horizontal
210.8	-42.63	1.73	15.74	-28.62	-13	-15.62	Vertical
384.3	-36.90	1.62	15.79	-22.73	-13	-9.73	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-51.83	2.63	27.28	-27.18	-13	-14.18	Horizontal
1430.6	-45.63	2.63	27.28	-20.98	-13	-7.98	Vertical
2145.9	-53.35	2.88	27.60	-28.63	-13	-15.63	Vertical
2145.9	-53.94	2.88	27.60	-29.22	-13	-16.22	Horizontal
187.6	-44.63	1.61	18.00	-28.24	-13	-15.24	Vertical
299.7	-39.69	1.45	15.49	-25.66	-13	-12.66	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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1408.0	-48.40	2.61	27.26	-23.75	-13	-10.75	Horizontal
1408.0	-48.04	2.61	27.26	-23.39	-13	-10.39	Vertical
2112.0	-49.26	2.87	27.58	-24.55	-13	-11.55	Vertical
2112.0	-53.68	2.87	27.58	-28.97	-13	-15.97	Horizontal
212.3	-41.97	1.31	16.97	-26.31	-13	-13.31	Vertical
375.5	-39.09	1.65	16.70	-24.04	-13	-11.04	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-49.33	2.61	27.28	-24.66	-13	-11.66	Horizontal
1415.0	-53.72	2.61	27.28	-29.05	-13	-16.05	Vertical
2122.5	-48.91	2.87	27.59	-24.19	-13	-11.19	Vertical
2122.5	-53.84	2.87	27.59	-29.12	-13	-16.12	Horizontal
185.8	-40.69	1.72	17.99	-24.42	-13	-11.42	Vertical
272.6	-37.27	1.73	17.94	-21.06	-13	-8.06	Horizontal
Test Results for High Channel 711MHz							
1422.0	-49.75	2.62	27.28	-25.09	-13	-12.09	Horizontal
1422.0	-48.54	2.62	27.28	-23.88	-13	-10.88	Vertical
2133.0	-50.79	2.87	27.60	-26.06	-13	-13.06	Vertical
2133.0	-53.14	2.87	27.60	-28.41	-13	-15.41	Horizontal
207.3	-44.13	1.58	15.93	-29.78	-13	-16.78	Vertical
292.9	-41.84	1.36	15.59	-27.61	-13	-14.61	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.

**9.6 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	-76.09	2.61	27.28	-51.42	-40	-11.42	Horizontal
1559.0	-76.57	2.61	27.28	-51.90	-40	-11.90	Vertical
2338.5	-69.04	2.87	27.59	-44.32	-13	-31.32	Vertical
2338.5	-67.10	2.87	27.59	-42.38	-13	-29.38	Horizontal
210.5	-68.42	1.71	16.15	-53.98	-13	-40.98	Vertical
412.8	-70.73	1.41	17.32	-54.82	-13	-41.82	Horizontal
Test Results For Mid Channel 782MHz							
1564.0	-68.10	2.62	27.30	-43.42	-40	-3.42	Horizontal
1564.0	-71.30	2.62	27.30	-46.62	-40	-6.62	Vertical
2346.0	-67.61	2.87	27.62	-42.86	-13	-29.86	Vertical
2346.0	-73.46	2.87	27.62	-48.71	-13	-35.71	Horizontal
183.1	-69.75	1.42	15.25	-55.93	-13	-42.93	Vertical
252.2	-69.77	1.36	17.19	-53.94	-13	-40.94	Horizontal
Test Results for High Channel 784.5MHz							
1569.0	-75.06	2.66	27.28	-50.44	-40	-10.44	Horizontal
1569.0	-68.96	2.66	27.28	-44.34	-40	-4.34	Vertical
2353.5	-68.49	2.88	27.60	-43.77	-13	-30.77	Vertical
2353.5	-70.60	2.88	27.60	-45.88	-13	-32.88	Horizontal
195.1	-73.89	1.32	17.29	-57.92	-13	-44.92	Vertical
275.1	-73.92	1.72	16.89	-58.75	-13	-45.75	Horizontal

**QPSK EIRP POWER FOR LTE BAND 13 (10MHZ BANDWIDTH)**

Test Results for Low Channel 782MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1564.0	-70.03	2.62	27.30	-45.35	-40	-5.35	Horizontal
1564.0	-67.66	2.62	27.30	-42.98	-40	-2.98	Vertical
2346.0	-70.32	2.87	27.62	-45.57	-13	-32.57	Vertical
2346.0	-73.17	2.87	27.62	-48.42	-13	-35.42	Horizontal
195.9	-72.77	1.35	16.91	-57.21	-13	-44.21	Vertical
254.3	-72.24	1.62	16.31	-57.55	-13	-44.55	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.



**9.7 LTE BAND 17**

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

Test Results for Low Channel 706.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1413.0	-49.74	2.61	27.28	-25.07	-13	-12.07	Horizontal
1413.0	-47.90	2.61	27.28	-23.23	-13	-10.23	Vertical
2119.5	-45.55	2.87	27.59	-20.83	-13	-7.83	Vertical
2119.5	-53.22	2.87	27.59	-28.50	-13	-15.50	Horizontal
179.1	-42.18	1.71	16.15	-27.74	-13	-14.74	Vertical
314.0	-42.16	1.41	17.32	-26.25	-13	-13.25	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-50.55	2.62	27.30	-25.87	-13	-12.87	Horizontal
1420.0	-51.57	2.62	27.30	-26.89	-13	-13.89	Vertical
2130.0	-51.05	2.87	27.62	-26.30	-13	-13.30	Vertical
2130.0	-51.93	2.87	27.62	-27.18	-13	-14.18	Horizontal
208.8	-39.51	1.42	15.25	-25.69	-13	-12.69	Vertical
249.7	-39.25	1.36	17.19	-23.42	-13	-10.42	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-53.51	2.66	27.28	-28.89	-13	-15.89	Horizontal
1427.0	-50.88	2.66	27.28	-26.26	-13	-13.26	Vertical
2140.5	-49.60	2.88	27.60	-24.88	-13	-11.88	Vertical
2140.5	-51.67	2.88	27.60	-26.95	-13	-13.95	Horizontal
190.5	-39.67	1.32	17.29	-23.70	-13	-10.70	Vertical
413.9	-37.59	1.72	16.89	-22.42	-13	-9.42	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	-44.87	2.62	27.30	-20.19	-13	-7.19	Horizontal
1418.0	-44.70	2.62	27.30	-20.02	-13	-7.02	Vertical
2127.0	-52.29	2.87	27.62	-27.54	-13	-14.54	Vertical
2127.0	-49.55	2.87	27.62	-24.80	-13	-11.80	Horizontal
189.7	-38.26	1.35	16.91	-22.70	-13	-9.70	Vertical
305.8	-41.70	1.62	16.31	-27.01	-13	-14.01	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-47.33	2.62	27.30	-22.65	-13	-9.65	Horizontal
1420.0	-47.74	2.62	27.30	-23.06	-13	-10.06	Vertical
2130.0	-45.17	2.87	27.62	-20.42	-13	-7.42	Vertical
2130.0	-51.81	2.87	27.62	-27.06	-13	-14.06	Horizontal
179.4	-34.17	1.51	17.14	-18.54	-13	-5.54	Vertical
329.5	-34.19	1.77	16.88	-19.08	-13	-6.08	Horizontal
Test Results for High Channel 711MHz							
1422.0	-48.51	2.62	27.30	-23.83	-13	-10.83	Horizontal
1422.0	-46.28	2.62	27.30	-21.60	-13	-8.60	Vertical
2133.0	-46.09	2.87	27.62	-21.34	-13	-8.34	Vertical
2133.0	-52.23	2.87	27.62	-27.48	-13	-14.48	Horizontal
180.9	-39.96	1.78	15.95	-25.79	-13	-12.79	Vertical
452.5	-42.93	1.34	17.95	-26.33	-13	-13.33	Horizontal

Note: Spurious Emission Level = Spectrum Analyzer Read Value + Cable Loss+ Antenna Factor + 11.74  
 . Margin = Spurious Emission Level - Limit  
 . Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.

**9.8 LTE BAND 38**

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

Test Results for Low Channel 2572.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5145.0	-62.23	5.13	35.81	-31.55	-25	-6.55	Horizontal
5145.0	-64.34	5.13	35.81	-33.66	-25	-8.66	Vertical
7717.5	-64.51	5.42	36.85	-33.08	-25	-8.08	Vertical
7717.5	-59.28	5.42	36.85	-27.85	-25	-2.85	Horizontal
190.1	-46.17	1.56	17.97	-29.76	-25	-4.76	Vertical
410.5	-54.88	1.33	15.11	-41.10	-25	-16.10	Horizontal
Test Results For Mid Channel 2595MHz							
5190.0	-60.07	5.16	35.82	-29.41	-25	-4.41	Horizontal
5190.0	-61.79	5.16	35.82	-31.13	-25	-6.13	Vertical
7785.0	-64.24	5.53	36.85	-32.92	-25	-7.92	Vertical
7785.0	-60.03	5.53	36.85	-28.71	-25	-3.71	Horizontal
187.0	-49.90	1.77	16.17	-35.49	-25	-10.49	Vertical
339.8	-46.34	1.63	15.21	-32.76	-25	-7.76	Horizontal
Test Results for High Channel 2617.5MHz							
5235.0	-63.53	5.23	35.83	-32.93	-25	-7.93	Horizontal
5235.0	-62.33	5.23	35.83	-31.73	-25	-6.73	Vertical
7852.5	-59.80	5.62	36.87	-28.55	-25	-3.55	Vertical
7852.5	-63.83	5.62	36.87	-32.58	-25	-7.58	Horizontal
182.9	-49.50	1.58	17.56	-33.52	-25	-8.52	Vertical
431.9	-45.86	1.45	16.58	-30.73	-25	-5.73	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
5160.0	-64.14	5.23	35.82	-33.55	-25	-8.55	Horizontal
5160.0	-60.61	5.23	35.82	-30.02	-25	-5.02	Vertical
7740.0	-60.92	5.67	36.86	-29.73	-25	-4.73	Vertical
7740.0	-60.25	5.67	36.86	-29.06	-25	-4.06	Horizontal
198.0	-47.17	1.55	15.76	-32.96	-25	-7.96	Vertical
370.4	-53.83	1.62	15.44	-40.01	-25	-15.01	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-63.32	5.16	35.82	-32.66	-25	-7.66	Horizontal
5190.0	-59.00	5.16	35.82	-28.34	-25	-3.34	Vertical
7785.0	-64.44	5.53	36.85	-33.12	-25	-8.12	Vertical
7785.0	-62.38	5.53	36.85	-31.06	-25	-6.06	Horizontal
193.3	-46.56	1.58	16.84	-31.30	-25	-6.30	Vertical
328.0	-47.72	1.61	17.64	-31.69	-25	-6.69	Horizontal
Test Results for High Channel 2610MHz							
5220.0	-64.19	5.24	35.83	-33.60	-25	-8.60	Horizontal
5220.0	-64.01	5.24	35.83	-33.42	-25	-8.42	Vertical
7830.0	-60.61	5.70	36.88	-29.43	-25	-4.43	Vertical
7830.0	-62.78	5.70	36.88	-31.60	-25	-6.60	Horizontal
212.8	-46.97	1.48	16.84	-31.61	-25	-6.61	Vertical
416.5	-48.95	1.59	17.64	-32.90	-25	-7.90	Horizontal

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

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

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

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

**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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5075.0	-63.65	5.13	35.81	-32.97	-25	-7.97	Horizontal
5075.0	-62.41	5.13	35.81	-31.73	-25	-6.73	Vertical
7612.5	-63.65	5.42	36.85	-32.22	-25	-7.22	Vertical
7612.5	-64.66	5.42	36.85	-33.23	-25	-8.23	Horizontal
205.5	-44.06	1.56	17.97	-27.65	-25	-2.65	Vertical
401.0	-54.93	1.33	15.11	-41.15	-25	-16.15	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-62.25	5.16	35.82	-31.59	-25	-6.59	Horizontal
5190.0	-61.44	5.16	35.82	-30.78	-25	-5.78	Vertical
7785.0	-60.28	5.53	36.85	-28.96	-25	-3.96	Vertical
7785.0	-62.08	5.53	36.85	-30.76	-25	-5.76	Horizontal
195.1	-52.16	1.77	16.17	-37.75	-25	-12.75	Vertical
467.8	-48.23	1.63	15.21	-34.65	-25	-9.65	Horizontal
Test Results for High Channel 2652.5MHz							
5305.0	-62.57	5.23	35.83	-31.97	-25	-6.97	Horizontal
5305.0	-64.41	5.23	35.83	-33.81	-25	-8.81	Vertical
7957.5	-63.26	5.62	36.87	-32.01	-25	-7.01	Vertical
7957.5	-61.06	5.62	36.87	-29.81	-25	-4.81	Horizontal
183.6	-48.98	1.58	17.56	-33.00	-25	-8.00	Vertical
365.3	-51.43	1.45	16.58	-36.30	-25	-11.30	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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5090.0	-64.33	5.23	35.82	-33.74	-25	-8.74	Horizontal
5090.0	-62.74	5.23	35.82	-32.15	-25	-7.15	Vertical
7635.0	-61.91	5.67	36.86	-30.72	-25	-5.72	Vertical
7635.0	-64.21	5.67	36.86	-33.02	-25	-8.02	Horizontal
198.0	-53.72	1.55	15.76	-39.51	-25	-14.51	Vertical
467.2	-53.61	1.62	15.44	-39.79	-25	-14.79	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-60.04	5.16	35.82	-29.38	-25	-4.38	Horizontal
5190.0	-62.34	5.16	35.82	-31.68	-25	-6.68	Vertical
7785.0	-63.50	5.53	36.85	-32.18	-25	-7.18	Vertical
7785.0	-63.95	5.53	36.85	-32.63	-25	-7.63	Horizontal
183.1	-46.90	1.58	16.84	-31.64	-25	-6.64	Vertical
269.8	-48.23	1.61	17.64	-32.20	-25	-7.20	Horizontal
Test Results for High Channel 2645MHz							
5290.0	-62.13	5.24	35.83	-31.54	-25	-6.54	Horizontal
5290.0	-63.06	5.24	35.83	-32.47	-25	-7.47	Vertical
7935.0	-61.39	5.70	36.88	-30.21	-25	-5.21	Vertical
7935.0	-63.95	5.70	36.88	-32.77	-25	-7.77	Horizontal
190.1	-46.70	1.48	16.84	-31.34	-25	-6.34	Vertical
264.0	-47.75	1.59	17.64	-31.70	-25	-6.70	Horizontal

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

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

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

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

**9.10 LTE BAND 66**

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

Test Results for Low Channel 1710.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-60.42	3.84	35.81	-28.45	-13	-15.45	Horizontal
3421.4	-59.88	3.84	35.81	-27.91	-13	-14.91	Vertical
5132.1	-64.91	5.18	36.85	-33.24	-13	-20.24	Vertical
5132.1	-63.80	5.18	36.85	-32.13	-13	-19.13	Horizontal
184.4	-53.44	1.56	17.97	-37.03	-13	-24.03	Vertical
356.7	-53.43	1.33	15.11	-39.65	-13	-26.65	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-64.75	3.85	35.82	-32.78	-13	-19.78	Horizontal
3490.0	-61.94	3.85	35.82	-29.97	-13	-16.97	Vertical
5235.0	-63.68	5.21	36.85	-32.04	-13	-19.04	Vertical
5235.0	-63.24	5.21	36.85	-31.60	-13	-18.60	Horizontal
200.3	-52.92	1.77	16.17	-38.51	-13	-25.51	Vertical
368.7	-49.50	1.63	15.21	-35.92	-13	-22.92	Horizontal
Test Results for High Channel 1779.3MHz							
3558.6	-60.09	3.86	35.83	-28.12	-13	-15.12	Horizontal
3558.6	-64.98	3.86	35.83	-33.01	-13	-20.01	Vertical
5337.9	-60.20	5.24	36.87	-28.57	-13	-15.57	Vertical
5337.9	-63.72	5.24	36.87	-32.09	-13	-19.09	Horizontal
181.0	-46.01	1.58	17.56	-30.03	-13	-17.03	Vertical
343.7	-50.35	1.45	16.58	-35.22	-13	-22.22	Horizontal

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

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-60.01	3.84	35.82	-28.03	-13	-15.03	Horizontal
3440.0	-59.92	3.84	35.82	-27.94	-13	-14.94	Vertical
5160.0	-61.65	5.18	36.86	-29.97	-13	-16.97	Vertical
5160.0	-60.25	5.18	36.86	-28.57	-13	-15.57	Horizontal
181.4	-48.88	1.56	15.76	-34.68	-13	-21.68	Vertical
302.8	-48.29	1.33	15.44	-34.18	-13	-21.18	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-62.04	3.85	35.82	-30.07	-13	-17.07	Horizontal
3490.0	-63.35	3.85	35.82	-31.38	-13	-18.38	Vertical
5235.0	-59.13	5.21	36.85	-27.49	-13	-14.49	Vertical
5235.0	-59.39	5.21	36.85	-27.75	-13	-14.75	Horizontal
198.7	-53.49	1.77	16.84	-38.41	-13	-25.41	Vertical
359.7	-53.28	1.63	17.64	-37.27	-13	-24.27	Horizontal
Test Results for High Channel 1770MHz							
3540.0	-62.40	3.86	35.83	-30.43	-13	-17.43	Horizontal
3540.0	-61.52	3.86	35.83	-29.55	-13	-16.55	Vertical
5310.0	-59.12	5.24	36.88	-27.48	-13	-14.48	Vertical
5310.0	-64.64	5.24	36.88	-33.00	-13	-20.00	Horizontal
201.3	-46.71	1.58	16.84	-31.44	-13	-18.44	Vertical
364.9	-47.15	1.45	17.64	-30.96	-13	-17.96	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.



## 10. FREQUENCY STABILITY

### RULE PART(S)

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

### LIMITS

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

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

### TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- Temp. =  $-30^{\circ}$  to  $+50^{\circ}\text{C}$
- Voltage = low voltage, DC 3.29, Normal, DC 3.87V and High voltage, DC 4.45V.

### Frequency Stability vs Temperature:

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

### Frequency Stability vs Voltage:

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

### MODES TESTED

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

### RESULTS

See the following pages.

10.1 LTE BAND 2

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

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	1880	13.1	0.006942	2.5
3.87	1880	13.7	0.007299	2.5
4.45	1880	13.6	0.007239	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	12.3	0.006534	2.5
Extreme (50C)	1880	11.3	0.005987	2.5
Extreme (40C)	1880	13.6	0.007237	2.5
Extreme (30C)	1880	13.9	0.007400	2.5
Extreme (10C)	1880	13.8	0.007334	2.5
Extreme (0C)	1880	12.2	0.006464	2.5
Extreme (-10C)	1880	12.8	0.006808	2.5
Extreme (-20C)	1880	14.5	0.007715	2.5
Extreme (-30C)	1880	14.5	0.007711	2.5

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

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	1880	10.1	0.005386	2.5
3.87	1880	8.6	0.004564	2.5
4.45	1880	7.7	0.004080	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	9.4	0.005011	2.5
Extreme (50C)	1880	9.1	0.004854	2.5
Extreme (40C)	1880	7.8	0.004151433	2.5
Extreme (30C)	1880	8.5	0.004545503	2.5
Extreme (10C)	1880	8.7	0.004637535	2.5
Extreme (0C)	1880	8.4	0.004471219	2.5
Extreme (-10C)	1880	9.1	0.004860689	2.5
Extreme (-20C)	1880	9.3	0.004943048	2.5
Extreme (-30C)	1880	8.2	0.004352772	2.5

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

10.2 LTE BAND 4

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

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	1732.5	9.2	0.005295	2.5
3.87	1732.5	8.5	0.004911	2.5
4.45	1732.5	7.9	0.004572	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.8	0.005073	2.5
Extreme (50C)	1732.5	8.5	0.004903	2.5
Extreme (40C)	1732.5	7.6	0.004389	2.5
Extreme (30C)	1732.5	6.0	0.003462	2.5
Extreme (10C)	1732.5	7.6	0.004363	2.5
Extreme (0C)	1732.5	9.2	0.005285	2.5
Extreme (-10C)	1732.5	8.4	0.004835	2.5
Extreme (-20C)	1732.5	6.4	0.003711	2.5
Extreme (-30C)	1732.5	8.1	0.004660	2.5

**Band 4 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]
3.29	1732.5	9.6	0.005570	2.5
3.87	1732.5	8.9	0.005117	2.5
4.45	1732.5	7.8	0.004476	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	10.2	0.005868	2.5
Extreme (50C)	1732.5	8.7	0.005040	2.5
Extreme (40C)	1732.5	8.6	0.004935	2.5
Extreme (30C)	1732.5	8.5	0.004923	2.5
Extreme (10C)	1732.5	9.1	0.005249	2.5
Extreme (0C)	1732.5	7.6	0.004403	2.5
Extreme (-10C)	1732.5	8.5	0.004928	2.5
Extreme (-20C)	1732.5	8.7	0.005016	2.5
Extreme (-30C)	1732.5	7.8	0.004484	2.5

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

### 10.3 LTE BAND 5

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

##### Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	836.5	5.3	0.006363	2.5
3.87	836.5	7.0	0.008380	2.5
4.45	836.5	4.7	0.005572	2.5

##### Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.5	0.007781	2.5
Extreme (50C)	836.5	6.3	0.007513	2.5
Extreme (40C)	836.5	5.9	0.007025	2.5
Extreme (30C)	836.5	6.2	0.007456	2.5
Extreme (10C)	836.5	5.7	0.006821	2.5
Extreme (0C)	836.5	4.9	0.005865	2.5
Extreme (-10C)	836.5	5.3	0.006300	2.5
Extreme (-20C)	836.5	5.8	0.006944	2.5
Extreme (-30C)	836.5	6.0	0.007153	2.5

**Band 5 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]
3.29	836.5	5.8	0.006980	2.5
3.87	836.5	6.8	0.008171	2.5
4.45	836.5	5.3	0.006295	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.3	0.007537	2.5
Extreme (50C)	836.5	5.5	0.006544	2.5
Extreme (40C)	836.5	6.3	0.007474	2.5
Extreme (30C)	836.5	6.7	0.008054	2.5
Extreme (10C)	836.5	5.6	0.006684	2.5
Extreme (0C)	836.5	4.9	0.005847	2.5
Extreme (-10C)	836.5	6.1	0.007268	2.5
Extreme (-20C)	836.5	6.4	0.007622	2.5
Extreme (-30C)	836.5	6.1	0.007268	2.5

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

10.4 LTE BAND 7

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

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	2535	9.6	0.003784	2.5
3.87	2535	8.9	0.003502	2.5
4.45	2535	8.0	0.003166	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	9.9	0.003897	2.5
Extreme (50C)	2535	8.9	0.003500	2.5
Extreme (40C)	2535	8.0	0.003173	2.5
Extreme (30C)	2535	8.4	0.003325	2.5
Extreme (10C)	2535	8.0	0.003147	2.5
Extreme (0C)	2535	8.4	0.003310	2.5
Extreme (-10C)	2535	9.8	0.003862	2.5
Extreme (-20C)	2535	8.5	0.003353	2.5
Extreme (-30C)	2535	8.1	0.003192	2.5



**Band 7 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]
3.29	2535	6.9	0.002722	2.5
3.87	2535	6.7	0.002655	2.5
4.45	2535	5.6	0.002194	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	6.9	0.002722	2.5
Extreme (50C)	2535	5.2	0.002059	2.5
Extreme (40C)	2535	5.5	0.002172	2.5
Extreme (30C)	2535	6.3	0.002468	2.5
Extreme (10C)	2535	5.8	0.002289	2.5
Extreme (0C)	2535	5.5	0.002153	2.5
Extreme (-10C)	2535	5.6	0.002224	2.5
Extreme (-20C)	2535	5.7	0.002247	2.5
Extreme (-30C)	2535	5.4	0.002121	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]
3.29	707.5	8.9	0.012639	2.5
3.87	707.5	9.8	0.013880	2.5
4.45	707.5	9.1	0.012821	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	8.4	0.011865	2.5
Extreme (50C)	707.5	7.3	0.010361	2.5
Extreme (40C)	707.5	7.3	0.010340	2.5
Extreme (30C)	707.5	8.1	0.011513	2.5
Extreme (10C)	707.5	7.3	0.010332	2.5
Extreme (0C)	707.5	8.8	0.012454	2.5
Extreme (-10C)	707.5	8.6	0.012221	2.5
Extreme (-20C)	707.5	9.4	0.013218	2.5
Extreme (-30C)	707.5	8.2	0.011640	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]
3.29	707.5	7.3	0.010356	2.5
3.87	707.5	8.3	0.011778	2.5
4.45	707.5	7.8	0.011027	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	8.5	0.012062	2.5
Extreme (50C)	707.5	8.1	0.011397	2.5
Extreme (40C)	707.5	8.7	0.012227	2.5
Extreme (30C)	707.5	8.0	0.011288	2.5
Extreme (10C)	707.5	8.3	0.011767	2.5
Extreme (0C)	707.5	7.6	0.010764	2.5
Extreme (-10C)	707.5	7.5	0.010596	2.5
Extreme (-20C)	707.5	9.4	0.013319	2.5
Extreme (-30C)	707.5	8.8	0.012500	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]
3.29	782.0	12.6	0.016172	2.5
3.87	782.0	13.6	0.017438	2.5
4.45	782.0	13.6	0.017364	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	782.0	14.2	0.018139	2.5
Extreme (50C)	782.0	13.4	0.017124	2.5
Extreme (40C)	782.0	15.2	0.019430	2.5
Extreme (30C)	782.0	14.5	0.018503	2.5
Extreme (10C)	782.0	14.3	0.018264	2.5
Extreme (0C)	782.0	14.5	0.018553	2.5
Extreme (-10C)	782.0	14.1	0.017996	2.5
Extreme (-20C)	782.0	13.7	0.017487	2.5
Extreme (-30C)	782.0	13.6	0.017387	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]
3.29	782.0	12.3	0.015754	2.5
3.87	782.0	13.8	0.017696	2.5
4.45	782.0	13.3	0.016986	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	782.0	13.1	0.016718	2.5
Extreme (50C)	782.0	11.5	0.014729	2.5
Extreme (40C)	782.0	13.2	0.016898	2.5
Extreme (30C)	782.0	13.4	0.017126	2.5
Extreme (10C)	782.0	13.8	0.017686	2.5
Extreme (0C)	782.0	12.3	0.015741	2.5
Extreme (-10C)	782.0	13.2	0.016903	2.5
Extreme (-20C)	782.0	13.9	0.017736	2.5
Extreme (-30C)	782.0	14.8	0.018923	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]
3.29	710.0	9.5	0.013377	2.5
3.87	710.0	8.4	0.011880	2.5
4.45	710.0	8.3	0.011676	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	10.2	0.014350	2.5
Extreme (50C)	710.0	8.9	0.012581	2.5
Extreme (40C)	710.0	7.8	0.010949	2.5
Extreme (30C)	710.0	8.9	0.012589	2.5
Extreme (10C)	710.0	8.6	0.012070	2.5
Extreme (0C)	710.0	7.9	0.011163	2.5
Extreme (-10C)	710.0	9.3	0.013053	2.5
Extreme (-20C)	710.0	9.4	0.013224	2.5
Extreme (-30C)	710.0	7.7	0.010880	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]
3.29	710.0	10.2	0.014357	2.5
3.87	710.0	9.1	0.012780	2.5
4.45	710.0	8.4	0.011826	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.3	0.013036	2.5
Extreme (50C)	710.0	9.2	0.012926	2.5
Extreme (40C)	710.0	8.7	0.012228	2.5
Extreme (30C)	710.0	9.3	0.013033	2.5
Extreme (10C)	710.0	7.8	0.010988	2.5
Extreme (0C)	710.0	8.2	0.011484	2.5
Extreme (-10C)	710.0	9.3	0.013149	2.5
Extreme (-20C)	710.0	8.7	0.012226	2.5
Extreme (-30C)	710.0	8.6	0.012149	2.5

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

10.8 LTE BAND 38

**Band 38 QPSK, (10MHz BANDWIDTH RB size 50 RB Offset 0)**

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	2595	9.6	0.003717	2.5
3.87	2595	8.8	0.003388	2.5
4.45	2595	8.0	0.003093	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	9.0	0.003453	2.5
Extreme (50C)	2595	8.7	0.003358	2.5
Extreme (40C)	2595	8.6	0.003307	2.5
Extreme (30C)	2595	9.0	0.003481	2.5
Extreme (10C)	2595	8.2	0.003148	2.5
Extreme (0C)	2595	8.2	0.003165	2.5
Extreme (-10C)	2595	9.3	0.003587	2.5
Extreme (-20C)	2595	9.1	0.003501	2.5
Extreme (-30C)	2595	8.8	0.003385	2.5



**Band 38 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]
3.29	2595	6.9	0.002659	2.5
3.87	2595	6.9	0.002656	2.5
4.45	2595	6.1	0.002366	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	6.9	0.002659	2.5
Extreme (50C)	2595	5.4	0.002081	2.5
Extreme (40C)	2595	5.2	0.001997	2.5
Extreme (30C)	2595	6.8	0.002634	2.5
Extreme (10C)	2595	5.3	0.002061	2.5
Extreme (0C)	2595	5.4	0.002083	2.5
Extreme (-10C)	2595	5.5	0.002109	2.5
Extreme (-20C)	2595	5.9	0.002278	2.5
Extreme (-30C)	2595	6.1	0.002364	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]
3.29	2595	9.7	0.003759	2.5
3.87	2595	8.6	0.003328	2.5
4.45	2595	8.3	0.003190	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	9.0	0.003477	2.5
Extreme (50C)	2595	8.6	0.003315	2.5
Extreme (40C)	2595	8.5	0.003291	2.5
Extreme (30C)	2595	9.0	0.003462	2.5
Extreme (10C)	2595	7.7	0.002978	2.5
Extreme (0C)	2595	8.1	0.003139	2.5
Extreme (-10C)	2595	9.4	0.003633	2.5
Extreme (-20C)	2595	8.9	0.003429	2.5
Extreme (-30C)	2595	8.9	0.003424	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]
3.29	2595	6.9	0.002661	2.5
3.87	2595	6.9	0.002645	2.5
4.45	2595	5.3	0.002061	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	6.9	0.002661	2.5
Extreme (50C)	2595	5.8	0.002247	2.5
Extreme (40C)	2595	5.8	0.002226	2.5
Extreme (30C)	2595	6.2	0.002392	2.5
Extreme (10C)	2595	6.0	0.002306	2.5
Extreme (0C)	2595	5.5	0.002110	2.5
Extreme (-10C)	2595	4.8	0.001866	2.5
Extreme (-20C)	2595	6.0	0.002297	2.5
Extreme (-30C)	2595	5.3	0.002042	2.5

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

10.10 LTE BAND 66

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

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	1745	6.1	0.003482	2.5
3.87	1745	7.2	0.004138	2.5
4.45	1745	7.7	0.004425	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	5.7	0.003247	2.5
Extreme (50C)	1745	7.0	0.004018	2.5
Extreme (40C)	1745	6.8	0.003890	2.5
Extreme (30C)	1745	7.2	0.004098	2.5
Extreme (10C)	1745	7.5	0.004277	2.5
Extreme (0C)	1745	6.1	0.003501	2.5
Extreme (-10C)	1745	5.8	0.003305	2.5
Extreme (-20C)	1745	6.5	0.003721	2.5
Extreme (-30C)	1745	5.7	0.003252	2.5

**Band 66 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]
3.29	1745	8.7	0.004989	2.5
3.87	1745	7.5	0.004318	2.5
4.45	1745	9.4	0.005364	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	8.9	0.005124	2.5
Extreme (50C)	1745	7.9	0.004548	2.5
Extreme (40C)	1745	8.9	0.005085	2.5
Extreme (30C)	1745	7.5	0.004318	2.5
Extreme (10C)	1745	8.6	0.004903	2.5
Extreme (0C)	1745	6.0	0.003467	2.5
Extreme (-10C)	1745	8.7	0.005004	2.5
Extreme (-20C)	1745	8.8	0.005023	2.5
Extreme (-30C)	1745	5.8	0.003314	2.5

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

## 11. Peak-to-Average Ratio

### 11.1 Description of the PAR Measurement

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

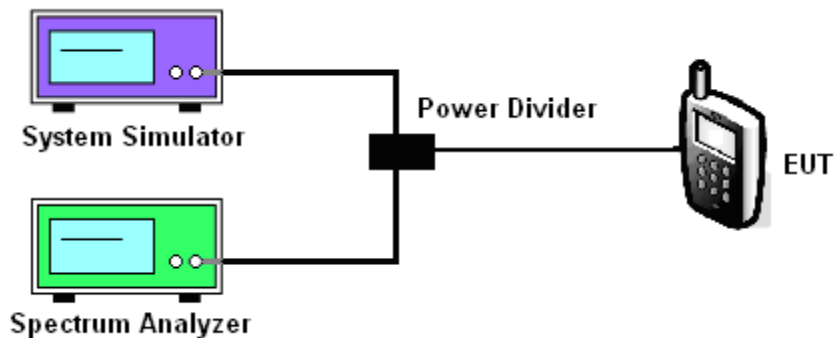
### 11.2 Measuring Instruments

See list of measuring instruments of this test report.

### 11.3 Test Procedures

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

### 11.4 Test Setup



### MODES TESTED

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

Test data reference attachment.

----END OF REPORT----