

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

FCC ID: 2AOWK-3116

Product: Mobile Phone

Trade Mark: ulefone

Model No.: GQ3116

Family Model: Armor 24, Armor 24 Pro, Armor 24 Ultra, Armor 24 Lite, Armor 24 Plus, Armor 24S, Armor 24P, Armor 24T, Armor 24E

Report No.: S23072005407006

Issue Date: Sep 05, 2023

Prepared for

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TEST RESULT CERTIFICATION

Applicant's name : Shenzhen Gotron Electronic CO.,LTD.
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 Shenzhen City, Guangdong Province China
Manufacturer's Name..... : Shenzhen Gotron Electronic CO.,LTD.
Address..... : 7B01, Building A, Block 1, Anhongji Tianyao Plaza, Longhua District,
 Shenzhen City, Guangdong Province China
Product name..... : Mobile Phone
Model and/or type reference .. : GQ3116
Trade Mark..... : ulefone
Family Model..... : Armor 24, Armor 24 Pro, Armor 24 Ultra, Armor 24 Lite, Armor 24
 Plus, Armor 24S, Armor 24P, Armor 24T, Armor 24E
Test Sample Number..... S230720054007
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 24, 2023 ~ Sep 05, 2023

Date of Issue Sep 05, 2023

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

Testing Engineer : 

 (Allen Liu)
 Authorized Signatory : 

 (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	ulefone
Model Name	GQ3116
Family Model	Armor 24, Armor 24 Pro, Armor 24 Ultra, Armor 24 Lite, Armor 24 Plus, Armor 24S, Armor 24P, Armor 24T, Armor 24E
Model Difference	All models are the same circuit and RF module, except the model name and colour.
FCC ID:	2AOWK-3116
Frequency Bands:	U.S. Bands: <input checked="" type="checkbox"/> LTE FDD Band 2,4,5,7,12,17,41,66
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 17 Uplink: 704MHz-716MHz, Downlink: 734MHz-746MHz; LTE FDD Band 41 Uplink: 2535MHz-2655MHz, (see note 2) LTE FDD Band 66 Uplink: 1710MHz-1780MHz, Downlink: 2110MHz-2200MHz;
Type of Modulation:	QPSK/16QAM/64QAM(Only Downlink)
Power Class	Class 3
Antenna:	PIFA Antenna
Antenna gain:	Band 2:-3.97dBi;Band 4:-3.82dBi;Band 5:-6.18dBi;Band 7:-4.42dBi Band 12:-7.42dBi;Band 17:-7.42dBi;Band 41:-4.83dBi;Band 66:-3.82dBi
Adapter	Model: HJ-PD66W-US Input: 100-240V~50/60Hz 1.5A Output: 5.0V---3.0A OR 9.0V---3.0A OR 12.0V---3.0A OR 15.0V---3.0A OR 20.0V---3.25A OR 11.0V---6.0A 66W MAX
Battery	DC 3.87V, 2200mAh
Power supply	DC 3.87V from battery or DC 5V from adapter
Extreme Vol. Limits:	DC 3.4V to DC 4.4V (Nominal DC 3.87V) (Note 1)
HW Version	F2_01
SW Version	N/A
<p>** Note1: The High Voltage DC 4.4V and Low Voltage DC 3.4V was declared by manufacturer, The EUT couldn't be operate normally with higher or lower voltage.</p> <p>Note2:channel list:</p>	

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

1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2AOWK-3116** filing to comply with the FCC Part 22H&24E&27.

1.3 TEST METHODOLOGY

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

1.4 TEST FACILITY

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

ShenZhen NTEK Testing Technology Co., Ltd.

1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen 518126 P.R.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 2/4/5/7/12/17/41/66

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

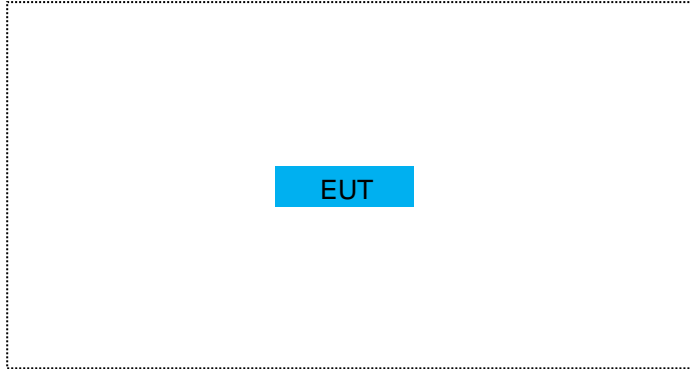
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Mobile Phone	GQ3116	FCC ID: 2AOWK-3116	EUT

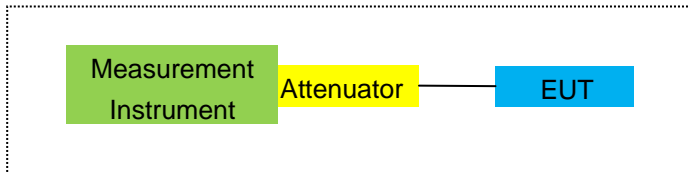
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

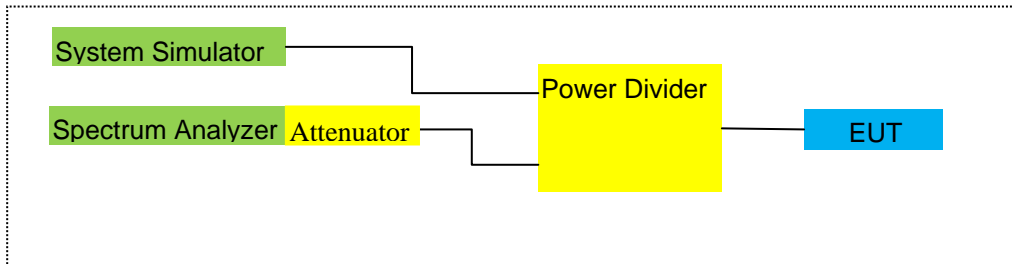
For Radiated Test Cases



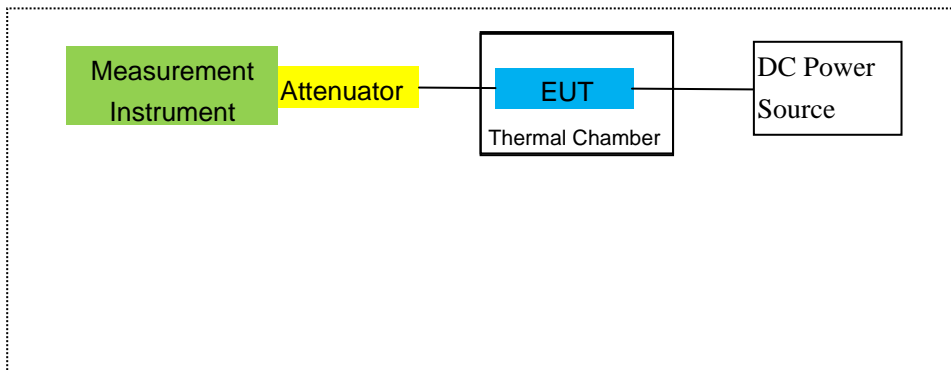
For Conducted Output Power



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	2023.03.27	2024.03.26	1 year
2	Test Receiver	R&S	ESPI	101318	2023.03.27	2024.03.26	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2023.03.27	2024.03.26	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2023.05.06	2026.05.05	3 year
5	Horn Antenna	EM	EM-AH-10180	2011071402	2023.03.27	2024.03.26	1 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2023.03.27	2024.03.26	1 year
7	Amplifier	EM	EM-30180	060538	2023.03.27	2024.03.26	1 year
8	Loop Antenna	ARA	PLA-1030/B	1029	2023.03.27	2024.03.26	1 year
9	Power Meter	R&S	NRVS	100696	2023.03.27	2024.03.26	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2023.03.27	2024.03.26	1 year
11	Test Cable	N/A	R-01	N/A	2022.06.17	2025.06.16	3 year
12	Test Cable	N/A	R-02	N/A	2022.06.17	2025.06.16	3 year
13	Test Cable	N/A	R-03	N/A	2022.06.17	2025.06.16	3 year
14	Test Receiver	R&S	ESCI	101160	2023.03.27	2024.03.26	1 year
15	LISN	R&S	ENV216	101313	2023.03.27	2024.03.26	1 year
16	LISN	EMCO	3816/2	00042990	2023.03.27	2024.03.26	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2023.03.27	2024.03.26	1 year
18	Passive Voltage Probe	R&S	ESH2-Z3	100196	2023.03.27	2024.03.26	1 year
19	Test Cable	N/A	C01	N/A	2023.05.06	2026.05.05	3 year
20	Test Cable	N/A	C02	N/A	2023.05.06	2026.05.05	3 year
21	Test Cable	N/A	C03	N/A	2023.05.06	2026.05.05	3 year
22	Attenuator	MCE	24-10-34	BN9258	2023.03.27	2024.03.26	1 year
23	Spectrum Analyzer	agilent	e4440a	us44300399	2023.03.27	2024.03.26	1 year
24	test receiver	R&S	ESCI	a0304218	2023.03.27	2024.03.26	1 year
25	Communication Tester	R&S	CMU200	A0304247	2022.06.16	2023.06.15	1 year

26	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2023.03.27	2024.03.26	1 year
27	DC Power Source	N/A	PS-6005D	2017040292 3	2023.05.06	2026.05.05	3 year
28	MXG Vector Signal Generator	Agilent	N5182A	MY47070317	2023.03.27	2024.03.26	1 year
29	Communication Tester	R&S	CMW500	148500	2023.03.27	2024.03.26	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	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.2	41	5	>6	≤ 1
			10, 15, 20	See Table 6.2.4-4	
NS_05	6.6.3.3.1	1	10,15,20	≥ 50	≤ 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	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23 ¹	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 2/4/5/7/12/17/41/66

RESULTS

PASS

Test data reference attachment.

6. BANDEDGE AND EMISSION MASK

RULE PART(S)

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

FCC: §22.359

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;

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

RESULTS

Test data reference attachment.

7. OUT OF BAND EMISSIONS

RULE PART(S)

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

LIMITS

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

TEST PROCEDURE

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

For each out of band emissions measurement:

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

MODES TESTED

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

7.1 MEASUREMENT METHOD

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

Test data reference attachment.

8. RADIATED MEASUREMENT

8.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

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

LIMITS:

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.

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

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)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)			
1.4MHz Band QPSK	1/#Mid	1850.7	-2.49	3.76	28.24	21.99	158.125	Horizontal	Pass	
		1880	-2.60	3.91	28.22	21.71	148.252	Horizontal	Pass	
		1909.3	-2.21	3.93	28.20	22.06	160.694	Horizontal	Pass	
3.0MHz Band QPSK	1/#Mid	1851.5	-2.55	3.77	28.23	21.91	155.239	Horizontal	Pass	
		1880	-2.40	3.91	28.24	21.93	155.955	Horizontal	Pass	
		1908.5	-2.27	3.94	28.25	22.04	159.956	Horizontal	Pass	
5.0MHz Band QPSK	1/#Mid	1852.5	-2.44	3.77	28.31	22.10	162.181	Horizontal	Pass	
		1880	-2.06	3.91	28.22	22.25	167.880	Horizontal	Pass	
		1907.5	-1.99	3.94	28.20	22.27	168.655	Horizontal	Pass	
10.0MHz Band QPSK	1/#Mid	1855	-2.30	3.79	28.33	22.24	167.494	Horizontal	Pass	
		1880	-2.00	3.95	28.22	22.27	168.655	Horizontal	Pass	
		1905	-1.89	3.97	28.19	22.33	171.002	Horizontal	Pass	
15.0MHz Band QPSK	1/#Mid	1857.5	-2.26	3.79	28.34	22.29	169.434	Horizontal	Pass	
		1880	-2.05	3.95	28.22	22.22	166.725	Horizontal	Pass	
		1902.5	-1.91	3.97	28.18	22.30	169.824	Horizontal	Pass	
20.0MHz Band QPSK	1/#Mid	1860	-2.25	3.81	28.35	22.29	169.434	Horizontal	Pass	
		1880	-1.92	3.96	28.22	22.34	171.396	Horizontal	Pass	
		1900	-1.86	4.00	28.16	22.30	169.824	Horizontal	Pass	
1.4MHz Band QPSK	1/#Mid	1850.7	-3.23	3.76	28.24	21.25	133.352	Vertical	Pass	
		1880	-2.74	3.91	28.22	21.57	143.549	Vertical	Pass	
		1909.3	-3.30	3.93	28.20	20.97	125.026	Vertical	Pass	
3.0MHz Band QPSK	1/#Mid	1851.5	-2.92	3.77	28.23	21.54	142.561	Vertical	Pass	
		1880	-3.08	3.91	28.24	21.25	133.352	Vertical	Pass	
		1908.5	-3.19	3.94	28.25	21.12	129.420	Vertical	Pass	
5.0MHz Band QPSK	1/#Mid	1852.5	-3.25	3.77	28.31	21.29	134.586	Vertical	Pass	
		1880	-2.81	3.91	28.22	21.50	141.254	Vertical	Pass	
		1907.5	-2.69	3.94	28.20	21.57	143.549	Vertical	Pass	
10.0MHz Band QPSK	1/#Mid	1855	-3.32	3.79	28.33	21.22	132.434	Vertical	Pass	
		1880	-2.77	3.95	28.22	21.50	141.254	Vertical	Pass	
		1905	-3.34	3.97	28.19	20.88	122.462	Vertical	Pass	

15.0MHz		1857.5	-3.81	3.79	28.34	20.74	118.577	Vertical	Pass
Band	1/#Mid	1880	-3.52	3.95	28.22	20.75	118.850	Vertical	Pass
QPSK		1902.5	-2.75	3.97	28.18	21.46	139.959	Vertical	Pass
20.0MHz		1860	-2.91	3.81	28.35	21.63	145.546	Vertical	Pass
Band	1/#Mid	1880	-2.74	3.96	28.22	21.52	141.906	Vertical	Pass
QPSK		1900	-2.62	4.00	28.16	21.54	142.561	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)	Antenna Factor (dB)	Max. EIRP	Max. EIRP		
						Average (dBm)	Average (mW)		
1.4MHz Band 16 QAM	1/#Mid	1850.7	-3.61	3.76	28.24	20.87	122.180	Horizontal	Pass
		1880	-3.08	3.91	28.22	21.23	132.739	Horizontal	Pass
		1909.3	-3.01	3.93	28.20	21.26	133.660	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-3.11	3.77	28.23	21.35	136.458	Horizontal	Pass
		1880	-3.19	3.91	28.24	21.14	130.017	Horizontal	Pass
		1908.5	-3.40	3.94	28.25	20.91	123.310	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-3.05	3.77	28.31	21.49	140.929	Horizontal	Pass
		1880	-2.96	3.91	28.22	21.35	136.458	Horizontal	Pass
		1907.5	-2.64	3.94	28.20	21.62	145.211	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-3.10	3.79	28.33	21.44	139.316	Horizontal	Pass
		1880	-3.09	3.95	28.22	21.18	131.220	Horizontal	Pass
		1905	-2.56	3.97	28.19	21.66	146.555	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-3.08	3.79	28.34	21.47	140.281	Horizontal	Pass
		1880	-2.87	3.95	28.22	21.40	138.038	Horizontal	Pass
		1902.5	-2.83	3.97	28.18	21.38	137.404	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-2.97	3.81	28.35	21.57	143.549	Horizontal	Pass
		1880	-2.67	3.96	28.22	21.59	144.212	Horizontal	Pass
		1900	-2.49	4.00	28.16	21.67	146.893	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1850.7	-4.76	3.76	28.24	19.72	93.756	Vertical	Pass
		1880	-3.71	3.91	28.22	20.60	114.815	Vertical	Pass
		1909.3	-4.52	3.93	28.20	19.75	94.406	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-4.48	3.77	28.23	19.98	99.541	Vertical	Pass
		1880	-4.28	3.91	28.24	20.05	101.158	Vertical	Pass
		1908.5	-4.52	3.94	28.25	19.79	95.280	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-4.53	3.77	28.31	20.01	100.231	Vertical	Pass
		1880	-4.45	3.91	28.22	19.86	96.828	Vertical	Pass
		1907.5	-4.10	3.94	28.20	20.16	103.753	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-4.38	3.79	28.33	20.16	103.753	Vertical	Pass
		1880	-3.78	3.95	28.22	20.49	111.944	Vertical	Pass
		1905	-3.99	3.97	28.19	20.23	105.439	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-3.96	3.79	28.34	20.59	114.551	Vertical	Pass
		1880	-3.82	3.95	28.22	20.45	110.917	Vertical	Pass
		1902.5	-4.08	3.97	28.18	20.13	103.039	Vertical	Pass

20.0MHz		1860	-4.05	3.81	28.35	20.49	111.944	Vertical	Pass
Band 16	1/#Mid	1880	-4.38	3.96	28.22	19.88	97.275	Vertical	Pass
QAM		1900	-4.36	4.00	28.16	19.80	95.499	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	Antenna Factor	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)	Average	Average	Of Max. ERP	
						(dBm)	(mW)		
1.4MHz Band QPSK	1/#Mid	1710.7	-2.40	3.12	27.58	22.06	160.694	Horizontal	Pass
		1732.5	-2.39	3.27	27.61	21.95	156.675	Horizontal	Pass
		1754.3	-2.37	3.29	27.63	21.97	157.398	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-2.57	3.13	27.61	21.91	155.239	Horizontal	Pass
		1732.5	-2.49	3.27	27.61	21.85	153.109	Horizontal	Pass
		1753.5	-2.41	3.30	27.62	21.91	155.239	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-2.34	3.13	27.63	22.16	164.437	Horizontal	Pass
		1732.5	-2.24	3.27	27.61	22.10	162.181	Horizontal	Pass
		1752.5	-2.12	3.30	27.60	22.18	165.196	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-2.28	3.15	27.64	22.21	166.341	Horizontal	Pass
		1732.5	-2.05	3.31	27.61	22.25	167.880	Horizontal	Pass
		1750	-2.07	3.33	27.59	22.19	165.577	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-2.29	3.15	27.65	22.21	166.341	Horizontal	Pass
		1732.5	-2.13	3.31	27.61	22.17	164.816	Horizontal	Pass
		1747.5	-2.07	3.33	27.57	22.17	164.816	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-2.23	3.17	27.66	22.26	168.267	Horizontal	Pass
		1732.5	-2.06	3.32	27.61	22.23	167.109	Horizontal	Pass
		1745	-2.00	3.36	27.56	22.20	165.959	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-3.28	3.12	27.58	21.18	131.220	Vertical	Pass
		1732.5	-3.49	3.27	27.61	20.85	121.619	Vertical	Pass
		1754.3	-2.73	3.29	27.63	21.61	144.877	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-3.12	3.13	27.61	21.36	136.773	Vertical	Pass
		1732.5	-3.39	3.27	27.61	20.95	124.451	Vertical	Pass
		1753.5	-2.61	3.30	27.62	21.71	148.252	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-3.67	3.13	27.63	20.83	121.060	Vertical	Pass
		1732.5	-2.69	3.27	27.61	21.65	146.218	Vertical	Pass
		1752.5	-2.85	3.30	27.60	21.45	139.637	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-3.60	3.15	27.64	20.89	122.744	Vertical	Pass
		1732.5	-3.49	3.31	27.61	20.81	120.504	Vertical	Pass
		1750	-3.31	3.33	27.59	20.95	124.451	Vertical	Pass

15.0MHz		1717.5	-2.90	3.15	27.65	21.60	144.544	Vertical	Pass
Band	1/#Mid	1732.5	-2.90	3.31	27.61	21.40	138.038	Vertical	Pass
QPSK		1747.5	-2.59	3.33	27.57	21.65	146.218	Vertical	Pass
20.0MHz		1720	-2.78	3.17	27.66	21.71	148.252	Vertical	Pass
Band	1/#Mid	1732.5	-3.11	3.32	27.61	21.18	131.220	Vertical	Pass
QPSK		1745	-3.28	3.36	27.56	20.92	123.595	Vertical	Pass

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
						Average	Average		
						(dBm)	(mW)		
1.4MHz Band 16 QAM	1/#Mid	1710.7	-3.21	3.12	27.58	21.25	133.352	Horizontal	Pass
		1732.5	-3.06	3.27	27.61	21.28	134.276	Horizontal	Pass
		1754.3	-3.06	3.29	27.63	21.28	134.276	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-3.15	3.13	27.61	21.33	135.831	Horizontal	Pass
		1732.5	-3.28	3.27	27.61	21.06	127.644	Horizontal	Pass
		1753.5	-3.50	3.30	27.62	20.82	120.781	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-2.98	3.13	27.63	21.52	141.906	Horizontal	Pass
		1732.5	-2.94	3.27	27.61	21.40	138.038	Horizontal	Pass
		1752.5	-2.63	3.30	27.60	21.67	146.893	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-3.05	3.15	27.64	21.44	139.316	Horizontal	Pass
		1732.5	-3.24	3.31	27.61	21.06	127.644	Horizontal	Pass
		1750	-2.62	3.33	27.59	21.64	145.881	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-2.85	3.15	27.65	21.65	146.218	Horizontal	Pass
		1732.5	-2.91	3.31	27.61	21.39	137.721	Horizontal	Pass
		1747.5	-2.93	3.33	27.57	21.31	135.207	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-2.80	3.17	27.66	21.69	147.571	Horizontal	Pass
		1732.5	-2.81	3.32	27.61	21.48	140.605	Horizontal	Pass
		1745	-2.62	3.36	27.56	21.58	143.880	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-4.73	3.12	27.58	19.73	93.972	Vertical	Pass
		1732.5	-3.82	3.27	27.61	20.52	112.720	Vertical	Pass
		1754.3	-4.06	3.29	27.63	20.28	106.660	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-4.74	3.13	27.61	19.74	94.189	Vertical	Pass
		1732.5	-4.40	3.27	27.61	19.94	98.628	Vertical	Pass
		1753.5	-4.44	3.30	27.62	19.88	97.275	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-4.05	3.13	27.63	20.45	110.917	Vertical	Pass
		1732.5	-3.66	3.27	27.61	20.68	116.950	Vertical	Pass
		1752.5	-3.99	3.30	27.60	20.31	107.399	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-3.86	3.15	27.64	20.63	115.611	Vertical	Pass
		1732.5	-4.07	3.31	27.61	20.23	105.439	Vertical	Pass
		1750	-4.21	3.33	27.59	20.05	101.158	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-4.74	3.15	27.65	19.76	94.624	Vertical	Pass
		1732.5	-4.00	3.31	27.61	20.30	107.152	Vertical	Pass
		1747.5	-4.03	3.33	27.57	20.21	104.954	Vertical	Pass

20.0MHz		1720	-4.72	3.17	27.66	19.77	94.842	Vertical	Pass
Band 16	1/#Mid	1732.5	-4.44	3.32	27.61	19.85	96.605	Vertical	Pass
QAM		1745	-4.27	3.36	27.56	19.93	98.401	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 (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP	Max. EIRP			
						Average	Average				
						(dBm)	(mW)				
1.4MHz Band QPSK	3/#Midd	824.7	6.90	2.01	19.68	2.15	22.42	174.582	Horizontal	Pass	
		836.5	6.78	2.01	19.77	2.15	22.39	173.380	Horizontal	Pass	
		848.3	6.58	2.02	19.82	2.15	22.23	167.109	Horizontal	Pass	
3.0MHz Band QPSK	1/#Midd	825.5	6.67	2.01	19.70	2.15	22.21	166.341	Horizontal	Pass	
		836.5	6.57	2.01	19.77	2.15	22.18	165.196	Horizontal	Pass	
		847.5	6.44	2.02	19.81	2.15	22.08	161.436	Horizontal	Pass	
5.0MHz Band QPSK	1/#Midd	826.5	6.95	2.01	19.71	2.15	22.50	177.828	Horizontal	Pass	
		836.5	6.83	2.01	19.77	2.15	22.44	175.388	Horizontal	Pass	
		846.5	6.67	2.02	19.79	2.15	22.29	169.434	Horizontal	Pass	
10.0MHz Band QPSK	1/#Midd	829	6.97	2.01	19.73	2.15	22.54	179.473	Horizontal	Pass	
		836.5	6.92	2.01	19.77	2.15	22.53	179.061	Horizontal	Pass	
		844	6.82	2.02	19.78	2.15	22.43	174.985	Horizontal	Pass	
1.4MHz Band QPSK	1/#Midd	824.7	5.96	2.01	19.68	2.15	21.48	140.605	Vertical	Pass	
		836.5	5.10	2.01	19.77	2.15	20.71	117.761	Vertical	Pass	
		848.3	5.88	2.02	19.82	2.15	21.53	142.233	Vertical	Pass	
3.0MHz Band QPSK	1/#Midd	825.5	5.98	2.01	19.70	2.15	21.52	141.906	Vertical	Pass	
		836.5	5.34	2.01	19.77	2.15	20.95	124.451	Vertical	Pass	
		847.5	5.97	2.02	19.81	2.15	21.61	144.877	Vertical	Pass	
5.0MHz Band QPSK	1/#Midd	826.5	5.37	2.01	19.71	2.15	20.92	123.595	Vertical	Pass	
		836.5	6.05	2.01	19.77	2.15	21.66	146.555	Vertical	Pass	
		846.5	5.12	2.02	19.79	2.15	20.74	118.577	Vertical	Pass	
10.0MHz Band QPSK	1/#Midd	829	5.31	2.01	19.73	2.15	20.88	122.462	Vertical	Pass	
		836.5	5.30	2.01	19.77	2.15	20.91	123.310	Vertical	Pass	
		844	5.99	2.02	19.78	2.15	21.60	144.544	Vertical	Pass	

Radiated Power (ERP) for Band 5											
Mode	RB/RB SIZE	Frequency	Result							Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss	Antenna Factor	Correction	Max. EIRP	Max. EIRP			
			(dBm)	(dBm)	(dB)	(dB)	Average	Average			
							(dBm)	(mW)			
1.4MHz Band 16 QAM	3/#Mid	824.7	6.05	2.01	19.68	2.15	21.57	143.549	Horizontal	Pass	
		836.5	5.98	2.01	19.77	2.15	21.59	144.212	Horizontal	Pass	
		848.3	5.82	2.02	19.82	2.15	21.47	140.281	Horizontal	Pass	
3.0MHz Band 16 QAM	1/#Mid	825.5	6.13	2.01	19.70	2.15	21.67	146.893	Horizontal	Pass	
		836.5	5.84	2.01	19.77	2.15	21.45	139.637	Horizontal	Pass	
		847.5	5.32	2.02	19.81	2.15	20.96	124.738	Horizontal	Pass	
5.0MHz Band 16 QAM	1/#Mid	826.5	6.45	2.01	19.71	2.15	22.00	158.489	Horizontal	Pass	
		836.5	6.22	2.01	19.77	2.15	21.83	152.405	Horizontal	Pass	
		846.5	5.97	2.02	19.79	2.15	21.59	144.212	Horizontal	Pass	
10.0MHz Band 16 QAM	1/#Mid	829	6.45	2.01	19.73	2.15	22.02	159.221	Horizontal	Pass	
		836.5	6.17	2.01	19.77	2.15	21.78	150.661	Horizontal	Pass	
		844	5.71	2.02	19.78	2.15	21.32	135.519	Horizontal	Pass	
1.4MHz Band 16 QAM	1/#Mid	824.7	5.64	2.01	19.68	2.15	21.16	130.617	Vertical	Pass	
		836.5	4.64	2.01	19.77	2.15	20.25	105.925	Vertical	Pass	
		848.3	4.30	2.02	19.82	2.15	19.95	98.855	Vertical	Pass	
3.0MHz Band 16 QAM	1/#Mid	825.5	4.79	2.01	19.70	2.15	20.33	107.895	Vertical	Pass	
		836.5	5.27	2.01	19.77	2.15	20.88	122.462	Vertical	Pass	
		847.5	5.82	2.02	19.81	2.15	21.46	139.959	Vertical	Pass	
5.0MHz Band 16 QAM	1/#Mid	826.5	4.93	2.01	19.71	2.15	20.48	111.686	Vertical	Pass	
		836.5	5.53	2.01	19.77	2.15	21.14	130.017	Vertical	Pass	
		846.5	4.15	2.02	19.79	2.15	19.77	94.842	Vertical	Pass	
10.0MHz Band 16 QAM	1/#Mid	829	5.31	2.01	19.73	2.15	20.88	122.462	Vertical	Pass	
		836.5	5.17	2.01	19.77	2.15	20.78	119.674	Vertical	Pass	
		844	4.85	2.02	19.78	2.15	20.46	111.173	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						Conclusion
			SG Level	Cable Loss	Antenna Factor	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)	Average	Average	Of Max.	
						(dBm)	(mW)	ERP	
5.0MHz Band QPSK	1/#Mid	2502.5	-0.68	4.54	27.75	22.53	179.061	Horizontal	Pass
		2535	-0.51	4.69	27.72	22.52	178.649	Horizontal	Pass
		2567.5	-0.44	4.71	27.71	22.56	180.302	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2505	-0.61	4.55	27.76	22.60	181.970	Horizontal	Pass
		2535	-0.42	4.69	27.72	22.61	182.390	Horizontal	Pass
		2565	-0.34	4.72	27.70	22.64	183.654	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-0.62	4.55	27.77	22.60	181.970	Horizontal	Pass
		2535	-0.48	4.69	27.72	22.55	179.887	Horizontal	Pass
		2562.5	-0.38	4.72	27.69	22.59	181.552	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2510	-0.56	4.57	27.78	22.65	184.077	Horizontal	Pass
		2535	-0.38	4.73	27.72	22.61	182.390	Horizontal	Pass
		2560	-0.34	4.75	27.68	22.59	181.552	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	-1.61	4.54	27.75	21.60	144.544	Vertical	Pass
		2535	-2.07	4.69	27.72	20.96	124.738	Vertical	Pass
		2567.5	-1.33	4.71	27.71	21.67	146.893	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2505	-2.22	4.55	27.76	20.99	125.603	Vertical	Pass
		2535	-1.35	4.69	27.72	21.68	147.231	Vertical	Pass
		2565	-2.11	4.72	27.70	20.87	122.180	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-1.53	4.55	27.77	21.69	147.571	Vertical	Pass
		2535	-1.70	4.69	27.72	21.33	135.831	Vertical	Pass
		2562.5	-1.44	4.72	27.69	21.53	142.233	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2510	-2.26	4.57	27.78	20.95	124.451	Vertical	Pass
		2535	-2.23	4.73	27.72	20.76	119.124	Vertical	Pass
		2560	-1.48	4.75	27.68	21.45	139.637	Vertical	Pass

Radiated Power (EIRP) for Band 7									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss	Antenna Factor	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)	Average	Average	Of Max. ERP	
						(dBm)	(mW)		
5.0MHz Band 16 QAM	1/#Mid	2502.5	-1.37	4.54	27.75	21.84	152.757	Horizontal	Pass
		2535	-1.06	4.69	27.72	21.97	157.398	Horizontal	Pass
		2567.5	-1.14	4.71	27.71	21.86	153.462	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-1.26	4.55	27.76	21.95	156.675	Horizontal	Pass
		2535	-1.27	4.69	27.72	21.76	149.968	Horizontal	Pass
		2565	-1.54	4.72	27.70	21.44	139.316	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-1.44	4.55	27.77	21.78	150.661	Horizontal	Pass
		2535	-1.41	4.69	27.72	21.62	145.211	Horizontal	Pass
		2562.5	-1.02	4.72	27.69	21.95	156.675	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-1.32	4.57	27.78	21.89	154.525	Horizontal	Pass
		2535	-0.99	4.73	27.72	22.00	158.489	Horizontal	Pass
		2560	-1.09	4.75	27.68	21.84	152.757	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	-1.64	4.54	27.75	21.57	143.549	Vertical	Pass
		2535	-1.67	4.69	27.72	21.36	136.773	Vertical	Pass
		2567.5	-1.73	4.71	27.71	21.27	133.968	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-2.43	4.55	27.76	20.78	119.674	Vertical	Pass
		2535	-1.86	4.69	27.72	21.17	130.918	Vertical	Pass
		2565	-2.03	4.72	27.70	20.95	124.451	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-1.80	4.55	27.77	21.42	138.676	Vertical	Pass
		2535	-1.70	4.69	27.72	21.33	135.831	Vertical	Pass
		2562.5	-2.27	4.72	27.69	20.70	117.490	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-2.21	4.57	27.78	21.00	125.893	Vertical	Pass
		2535	-1.84	4.73	27.72	21.15	130.317	Vertical	Pass
		2560	-1.26	4.75	27.68	21.67	146.893	Vertical	Pass

Note:

SG Level= Signal generator output

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

8.6 LTE BAND 12

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Factor	Correction	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	Of Max. ERP	
							(dBm)	(mW)		
1.4MHz Band QPSK	1/#Mid	699.7	7.27	1.91	19.21	2.15	22.42	174.582	Vertical	Pass
		707.5	7.19	1.91	19.26	2.15	22.39	173.380	Vertical	Pass
		715.3	6.97	1.93	19.34	2.15	22.23	167.109	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	700.5	7.06	1.91	19.21	2.15	22.21	166.341	Vertical	Pass
		707.5	6.98	1.91	19.26	2.15	22.18	165.196	Vertical	Pass
		714.5	6.82	1.93	19.34	2.15	22.08	161.436	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	701.5	7.33	1.91	19.23	2.15	22.50	177.828	Vertical	Pass
		707.5	7.24	1.91	19.26	2.15	22.44	175.388	Vertical	Pass
		713.5	7.03	1.92	19.33	2.15	22.29	169.434	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	704	7.35	1.91	19.25	2.15	22.54	179.473	Vertical	Pass
		707.5	7.33	1.91	19.26	2.15	22.53	179.061	Vertical	Pass
		711	7.18	1.92	19.32	2.15	22.43	174.985	Vertical	Pass
1.4MHz Band QPSK	1/#Mid	699.7	5.58	1.91	19.21	2.15	20.73	118.304	Horizontal	Pass
		707.5	5.73	1.91	19.26	2.15	20.93	123.880	Horizontal	Pass
		715.3	6.36	1.93	19.34	2.15	21.62	145.211	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	700.5	6.40	1.91	19.21	2.15	21.55	142.889	Horizontal	Pass
		707.5	5.72	1.91	19.26	2.15	20.92	123.595	Horizontal	Pass
		714.5	5.87	1.93	19.34	2.15	21.13	129.718	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	701.5	6.36	1.91	19.23	2.15	21.53	142.233	Horizontal	Pass
		707.5	5.96	1.91	19.26	2.15	21.16	130.617	Horizontal	Pass
		713.5	6.08	1.92	19.33	2.15	21.34	136.144	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	704	6.38	1.91	19.25	2.15	21.57	143.549	Horizontal	Pass
		707.5	5.72	1.91	19.26	2.15	20.92	123.595	Horizontal	Pass
		711	6.25	1.92	19.32	2.15	21.50	141.254	Horizontal	Pass

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Factor	Correction	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	Of Max. ERP	
							(dBm)	(mW)		
1.4MHz Band 16 QAM	1/#Mid	699.7	7.20	1.91	19.21	2.15	22.35	171.791	Vertical	Pass
		707.5	7.12	1.91	19.26	2.15	22.32	170.608	Vertical	Pass
		715.3	6.90	1.93	19.34	2.15	22.16	164.437	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	6.99	1.91	19.21	2.15	22.14	163.682	Vertical	Pass
		707.5	6.91	1.91	19.26	2.15	22.11	162.555	Vertical	Pass
		714.5	6.75	1.93	19.34	2.15	22.01	158.855	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	7.26	1.91	19.23	2.15	22.43	174.985	Vertical	Pass
		707.5	7.17	1.91	19.26	2.15	22.37	172.584	Vertical	Pass
		713.5	6.96	1.92	19.33	2.15	22.22	166.725	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	704	7.28	1.91	19.25	2.15	22.47	176.604	Vertical	Pass
		707.5	7.26	1.91	19.26	2.15	22.46	176.198	Vertical	Pass
		711	7.11	1.92	19.32	2.15	22.36	172.187	Vertical	Pass
1.4MHz Band 16 QAM	1/#Mid	699.7	5.90	1.91	19.21	2.15	21.05	127.350	Horizontal	Pass
		707.5	6.18	1.91	19.26	2.15	21.38	137.404	Horizontal	Pass
		715.3	6.29	1.93	19.34	2.15	21.55	142.889	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	6.45	1.91	19.21	2.15	21.60	144.544	Horizontal	Pass
		707.5	5.91	1.91	19.26	2.15	21.11	129.122	Horizontal	Pass
		714.5	5.76	1.93	19.34	2.15	21.02	126.474	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	5.81	1.91	19.23	2.15	20.98	125.314	Horizontal	Pass
		707.5	6.40	1.91	19.26	2.15	21.60	144.544	Horizontal	Pass
		713.5	6.00	1.92	19.33	2.15	21.26	133.660	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	704	5.95	1.91	19.25	2.15	21.14	130.017	Horizontal	Pass
		707.5	5.98	1.91	19.26	2.15	21.18	131.220	Horizontal	Pass
		711	5.66	1.92	19.32	2.15	20.91	123.310	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 17

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Factor	Correction	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)	(dBm)	(dB)		Average	Average		
							(dBm)	(mW)		
5.0MHz Band QPSK	1/#Mid	706.5	7.66	1.91	19.23	2.15	22.83	191.867	Vertical	Pass
		710	7.52	1.91	19.26	2.15	22.72	187.068	Vertical	Pass
		713.5	7.42	1.92	19.33	2.15	22.68	185.353	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	709	7.67	1.91	19.25	2.15	22.86	193.197	Vertical	Pass
		710	7.62	1.91	19.26	2.15	22.82	191.426	Vertical	Pass
		711	7.58	1.92	19.32	2.15	22.83	191.867	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	706.5	5.59	1.91	19.23	2.15	20.76	119.124	Horizontal	Pass
		710	6.10	1.91	19.26	2.15	21.30	134.896	Horizontal	Pass
		713.5	6.65	1.92	19.33	2.15	21.91	155.239	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	709	6.70	1.91	19.25	2.15	21.89	154.525	Horizontal	Pass
		710	7.29	1.91	19.26	2.15	22.49	177.419	Horizontal	Pass
		711	7.20	1.92	19.32	2.15	22.45	175.792	Horizontal	Pass

Radiated Power (ERP) for Band 17											
Mode	RB/RB SIZE	Frequency	Result							Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss	Antenna Factor	Correction	Max. EIRP	Max. EIRP			
			(dBm)	(dBm)	(dB)		Average	Average			
							(dB)	(dBm)	(mW)		
5.0MHz	1/#Mid	706.5	7.09	1.91	19.23	2.15	22.26	168.267	Vertical	Pass	
Band 16		710	7.00	1.91	19.26	2.15	22.20	165.959	Vertical	Pass	
QAM		713.5	6.80	1.92	19.33	2.15	22.06	160.694	Vertical	Pass	
10.0MHz	1/#Mid	709	6.63	1.91	19.25	2.15	21.82	152.055	Vertical	Pass	
Band 16		710	7.16	1.91	19.26	2.15	22.36	172.187	Vertical	Pass	
QAM		711	6.89	1.92	19.32	2.15	22.14	163.682	Vertical	Pass	
5.0MHz	1/#Mid	706.5	5.72	1.91	19.23	2.15	20.89	122.744	Horizontal	Pass	
Band 16		710	6.32	1.91	19.26	2.15	21.52	141.906	Horizontal	Pass	
QAM		713.5	6.00	1.92	19.33	2.15	21.26	133.660	Horizontal	Pass	
10.0MHz	1/#Mid	709	5.61	1.91	19.25	2.15	20.80	120.226	Horizontal	Pass	
Band 16		710	5.94	1.91	19.26	2.15	21.14	130.017	Horizontal	Pass	
QAM		711	5.53	1.92	19.32	2.15	20.78	119.674	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)

8.8 LTE BAND 41

Radiated Power (EIRP) for Band 41									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable	Antenna	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	Loss	Factor	Average	Average	Of Max.	
			(dBm)	(dB)	(dBm)	(mW)	ERP		
5.0MHz Band QPSK	1/#Mid	2537.5	-0.97	4.54	27.75	22.24	167.494	Horizontal	Pass
		2595.0	-0.82	4.69	27.72	22.21	166.341	Horizontal	Pass
		2652.5	-0.70	4.71	27.71	22.30	169.824	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2540.0	-1.05	4.55	27.76	22.16	164.437	Horizontal	Pass
		2595.0	-0.91	4.69	27.72	22.12	162.930	Horizontal	Pass
		2650.0	-0.90	4.72	27.70	22.08	161.436	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2542.5	-0.88	4.55	27.77	22.34	171.396	Horizontal	Pass
		2595.0	-0.60	4.69	27.72	22.43	174.985	Horizontal	Pass
		2647.5	-0.65	4.72	27.69	22.32	170.608	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2545.0	-0.49	4.57	27.78	22.72	187.068	Horizontal	Pass
		2595.0	-0.54	4.73	27.72	22.45	175.792	Horizontal	Pass
		2645.0	-0.54	4.75	27.68	22.39	173.380	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2537.5	-0.77	4.54	27.75	22.44	175.388	Vertical	Pass
		2595.0	-0.68	4.69	27.72	22.35	171.791	Vertical	Pass
		2652.5	-0.66	4.71	27.71	22.34	171.396	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2540.0	-0.75	4.55	27.76	22.46	176.198	Vertical	Pass
		2595.0	-0.59	4.69	27.72	22.44	175.388	Vertical	Pass
		2650.0	-0.66	4.72	27.70	22.32	170.608	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2542.5	-1.52	4.55	27.77	21.70	147.911	Vertical	Pass
		2595.0	-2.10	4.69	27.72	20.93	123.880	Vertical	Pass
		2647.5	-1.43	4.72	27.69	21.54	142.561	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2545.0	-2.01	4.57	27.78	21.20	131.826	Vertical	Pass
		2595.0	-1.81	4.73	27.72	21.18	131.220	Vertical	Pass
		2645.0	-1.70	4.75	27.68	21.23	132.739	Vertical	Pass

Radiated Power (EIRP) for Band 41									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
						(dBm)	(mW)		
5.0MHz Band 16 QAM	1/#Mid	2537.5	-1.06	4.54	27.75	22.15	164.059	Horizontal	Pass
		2595.0	-0.91	4.69	27.72	22.12	162.930	Horizontal	Pass
		2652.5	-0.79	4.71	27.71	22.21	166.341	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2540.0	-1.14	4.55	27.76	22.07	161.065	Horizontal	Pass
		2595.0	-1.00	4.69	27.72	22.03	159.588	Horizontal	Pass
		2650.0	-0.99	4.72	27.70	21.99	158.125	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2542.5	-0.97	4.55	27.77	22.25	167.880	Horizontal	Pass
		2595.0	-0.69	4.69	27.72	22.34	171.396	Horizontal	Pass
		2647.5	-0.74	4.72	27.69	22.23	167.109	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2545.0	-0.69	4.57	27.78	22.52	178.649	Horizontal	Pass
		2595.0	-0.63	4.73	27.72	22.36	172.187	Horizontal	Pass
		2645.0	-0.63	4.75	27.68	22.30	169.824	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2537.5	-0.86	4.54	27.75	22.35	171.791	Vertical	Pass
		2595.0	-0.77	4.69	27.72	22.26	168.267	Vertical	Pass
		2652.5	-0.75	4.71	27.71	22.25	167.880	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2540.0	-0.84	4.55	27.76	22.37	172.584	Vertical	Pass
		2595.0	-0.68	4.69	27.72	22.35	171.791	Vertical	Pass
		2650.0	-0.75	4.72	27.70	22.23	167.109	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2542.5	-2.24	4.55	27.77	20.98	125.314	Vertical	Pass
		2595.0	-1.99	4.69	27.72	21.04	127.057	Vertical	Pass
		2647.5	-2.25	4.72	27.69	20.72	118.032	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2545.0	-1.76	4.57	27.78	21.45	139.637	Vertical	Pass
		2595.0	-2.08	4.73	27.72	20.91	123.310	Vertical	Pass
		2645.0	-1.66	4.75	27.68	21.27	133.968	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.9 LTE BAND 66

Radiated Power (EIRP) for Band 66															
Mode	RB/RB SIZE	Frequency	Result						Conclusion						
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP							
1.4MHz Band QPSK	1/#Mid	1710.7	-2.33	3.76	28.24	22.15	164.059	Horizontal	Pass						
		1745	-2.19	3.91	28.22	22.12	162.930	Horizontal	Pass						
		1779.3	-2.06	3.93	28.2	22.21	166.341	Horizontal	Pass						
3.0MHz Band QPSK	1/#Mid	1711.5	-2.39	3.77	28.23	22.07	161.065	Horizontal	Pass						
		1745	-2.30	3.91	28.24	22.03	159.588	Horizontal	Pass						
		1778.5	-2.32	3.94	28.25	21.99	158.125	Horizontal	Pass						
5.0MHz Band QPSK	1/#Mid	1712.5	-2.29	3.77	28.31	22.25	167.880	Horizontal	Pass						
		1745	-1.97	3.91	28.22	22.34	171.396	Horizontal	Pass						
		1777.5	-2.03	3.94	28.2	22.23	167.109	Horizontal	Pass						
10.0MHz Band QPSK	1/#Mid	1715	-2.18	3.79	28.33	22.36	172.187	Horizontal	Pass						
		1745	-1.91	3.95	28.22	22.36	172.187	Horizontal	Pass						
		1775	-1.92	3.97	28.19	22.30	169.824	Horizontal	Pass						
15.0MHz Band QPSK	1/#Mid	1717.5	-2.20	3.79	28.34	22.35	171.791	Horizontal	Pass						
		1745	-2.01	3.95	28.22	22.26	168.267	Horizontal	Pass						
		1772.5	-1.96	3.97	28.18	22.25	167.880	Horizontal	Pass						
20.0MHz Band QPSK	1/#Mid	1720	-2.17	3.81	28.35	22.37	172.584	Horizontal	Pass						
		1745	-1.91	3.96	28.22	22.35	171.791	Horizontal	Pass						
		1770	-1.93	4	28.16	22.23	167.109	Horizontal	Pass						
1.4MHz Band QPSK	1/#Mid	1710.7	-3.74	3.76	28.24	20.74	118.577	Vertical	Pass						
		1745	-3.29	3.91	28.22	21.02	126.474	Vertical	Pass						
		1779.3	-3.39	3.93	28.2	20.88	122.462	Vertical	Pass						
3.0MHz Band QPSK	1/#Mid	1711.5	-3.15	3.77	28.23	21.31	135.207	Vertical	Pass						
		1745	-2.95	3.91	28.24	21.38	137.404	Vertical	Pass						
		1778.5	-3.21	3.94	28.25	21.10	128.825	Vertical	Pass						
5.0MHz Band QPSK	1/#Mid	1712.5	-3.62	3.77	28.31	20.92	123.595	Vertical	Pass						
		1745	-3.62	3.91	28.22	20.69	117.220	Vertical	Pass						
		1777.5	-3.44	3.94	28.2	20.82	120.781	Vertical	Pass						
10.0MHz Band QPSK	1/#Mid	1715	-2.96	3.79	28.34	21.59	144.212	Vertical	Pass						
		1745	-3.64	3.95	28.22	20.63	115.611	Vertical	Pass						
		1775	-3.29	3.97	28.18	20.92	123.595	Vertical	Pass						

15.0MHz		1717.5	-3.86	3.81	28.35	20.68	116.950	Vertical	Pass
Band	1/#Mid	1745	-3.29	3.96	28.22	20.97	125.026	Vertical	Pass
QPSK		1772.5	-2.81	4	28.16	21.35	136.458	Vertical	Pass
20.0MHz		1720	-3.20	3.79	28.34	21.35	136.458	Vertical	Pass
Band	1/#Mid	1745	-3.10	3.95	28.22	21.17	130.918	Vertical	Pass
QPSK		1770	-3.03	3.97	28.18	21.18	131.220	Vertical	Pass

Radiated Power (EIRP) for Band 66									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
						Average	Average		
						(dBm)	(mW)		
1.4MHz Band 16 QAM	1/#Mid	1710.7	-3.05	3.76	28.24	21.43	138.995	Horizontal	Pass
		1745	-2.66	3.91	28.22	21.65	146.218	Horizontal	Pass
		1779.3	-2.84	3.93	28.2	21.43	138.995	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-3.44	3.77	28.23	21.02	126.474	Horizontal	Pass
		1745	-2.69	3.91	28.24	21.64	145.881	Horizontal	Pass
		1778.5	-2.98	3.94	28.25	21.33	135.831	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-2.86	3.77	28.31	21.68	147.231	Horizontal	Pass
		1745	-2.92	3.91	28.22	21.39	137.721	Horizontal	Pass
		1777.5	-2.59	3.94	28.2	21.67	146.893	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-2.91	3.79	28.33	21.63	145.546	Horizontal	Pass
		1745	-2.57	3.95	28.22	21.70	147.911	Horizontal	Pass
		1775	-2.89	3.97	28.19	21.33	135.831	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-2.90	3.79	28.34	21.65	146.218	Horizontal	Pass
		1745	-2.72	3.95	28.22	21.55	142.889	Horizontal	Pass
		1772.5	-2.51	3.97	28.18	21.70	147.911	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-2.73	3.81	28.35	21.81	151.705	Horizontal	Pass
		1745	-2.51	3.96	28.22	21.75	149.624	Horizontal	Pass
		1770	-2.45	4	28.16	21.71	148.252	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-4.68	3.76	28.24	19.80	95.499	Vertical	Pass
		1745	-4.15	3.91	28.22	20.16	103.753	Vertical	Pass
		1779.3	-4.23	3.93	28.2	20.04	100.925	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-4.25	3.77	28.23	20.21	104.954	Vertical	Pass
		1745	-4.12	3.91	28.24	20.21	104.954	Vertical	Pass
		1778.5	-4.33	3.94	28.25	19.98	99.541	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-3.61	3.77	28.31	20.93	123.880	Vertical	Pass
		1745	-4.13	3.91	28.22	20.18	104.232	Vertical	Pass
		1777.5	-4.39	3.94	28.2	19.87	97.051	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-3.55	3.79	28.34	21.00	125.893	Vertical	Pass
		1745	-3.71	3.95	28.22	20.56	113.763	Vertical	Pass
		1775	-3.45	3.97	28.18	20.76	119.124	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-3.42	3.81	28.35	21.12	129.420	Vertical	Pass
		1745	-4.22	3.96	28.22	20.04	100.925	Vertical	Pass
		1772.5	-2.61	4	28.16	21.55	142.889	Vertical	Pass

20.0MHz		1720	-4.75	3.79	28.34	19.80	95.499	Vertical	Pass
Band 16	1/#Mid	1745	-3.46	3.95	28.22	20.81	120.504	Vertical	Pass
QAM		1770	-3.00	3.97	28.18	21.21	132.130	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

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

RESULTS

PASS

9.1 LTE BAND 2

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

Test Results for Low Channel 1850.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3701.4	-52.36	4.04	33.51	-22.89	-13	-9.89	Horizontal
3701.4	-51.69	4.04	33.51	-22.22	-13	-9.22	Vertical
5552.1	-48.58	5.24	35.84	-17.98	-13	-4.98	Vertical
5552.1	-51.94	5.24	35.84	-21.34	-13	-8.34	Horizontal
206.2	-42.29	1.43	16.02	-27.70	-13	-14.70	Vertical
337.7	-39.41	1.30	17.99	-22.72	-13	-9.72	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-53.14	4.04	33.56	-23.62	-13	-10.62	Horizontal
3760.0	-49.25	4.04	33.56	-19.73	-13	-6.73	Vertical
5640.0	-48.87	5.24	35.91	-18.20	-13	-5.20	Vertical
5640.0	-50.09	5.24	35.91	-19.42	-13	-6.42	Horizontal
182.4	-34.90	1.62	16.97	-19.55	-13	-6.55	Vertical
346.0	-40.41	1.74	15.98	-26.18	-13	-13.18	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-50.25	4.04	34.00	-20.29	-13	-7.29	Horizontal
3818.6	-53.58	4.04	34.00	-23.62	-13	-10.62	Vertical
5727.9	-53.17	5.24	36.04	-22.37	-13	-9.37	Vertical
5727.9	-53.18	5.24	36.04	-22.38	-13	-9.38	Horizontal
191.0	-37.80	1.42	17.29	-21.93	-13	-8.93	Vertical
283.6	-42.36	1.50	17.90	-25.95	-13	-12.95	Horizontal

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

Test Results for Low Channel 1860MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3720.0	-51.57	4.07	33.54	-22.10	-13	-9.10	Horizontal
3720.0	-50.80	4.07	33.54	-21.33	-13	-8.33	Vertical
5580.0	-49.14	5.28	35.86	-18.56	-13	-5.56	Vertical
5580.0	-51.24	5.28	35.86	-20.66	-13	-7.66	Horizontal
199.0	-37.40	1.58	16.89	-22.08	-13	-9.08	Vertical
420.4	-34.99	1.76	17.26	-19.49	-13	-6.49	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-52.60	4.04	33.56	-23.08	-13	-10.08	Horizontal
3760.0	-50.14	4.04	33.56	-20.62	-13	-7.62	Vertical
5640.0	-50.46	5.24	35.91	-19.79	-13	-6.79	Vertical
5640.0	-49.06	5.24	35.91	-18.39	-13	-5.39	Horizontal
176.6	-37.42	1.46	16.27	-22.61	-13	-9.61	Vertical
436.6	-37.50	1.59	15.15	-23.94	-13	-10.94	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-51.32	4.04	34.00	-21.36	-13	-8.36	Horizontal
3800.0	-53.02	4.04	34.00	-23.06	-13	-10.06	Vertical
5700.0	-49.57	5.24	36.04	-18.77	-13	-5.77	Vertical
5700.0	-50.03	5.24	36.04	-19.23	-13	-6.23	Horizontal
186.1	-39.02	1.36	17.39	-22.98	-13	-9.98	Vertical
360.7	-39.27	1.66	15.39	-25.54	-13	-12.54	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.

9.2 LTE BAND 4

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

Test Results for Low Channel 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-46.94	4.02	29.80	-21.16	-13	-8.16	Horizontal
3421.4	-50.49	4.02	29.80	-24.71	-13	-11.71	Vertical
5132.1	-48.16	5.24	35.84	-17.56	-13	-4.56	Vertical
5132.1	-53.84	5.24	35.84	-23.24	-13	-10.24	Horizontal
208.1	-40.60	1.68	16.04	-26.24	-13	-13.24	Vertical
374.1	-36.09	1.78	17.74	-20.13	-13	-7.13	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-44.95	4.03	30.00	-18.98	-13	-5.98	Horizontal
3465.0	-52.27	4.03	30.00	-26.30	-13	-13.30	Vertical
5197.5	-52.02	5.25	35.86	-21.41	-13	-8.41	Vertical
5197.5	-51.99	5.25	35.86	-21.38	-13	-8.38	Horizontal
202.6	-40.87	1.72	17.69	-24.90	-13	-11.90	Vertical
467.0	-36.95	1.62	16.02	-22.54	-13	-9.54	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-53.71	4.05	30.01	-27.75	-13	-14.75	Horizontal
3508.6	-46.70	4.05	30.01	-20.74	-13	-7.74	Vertical
5262.9	-51.64	5.26	35.86	-21.04	-13	-8.04	Vertical
5262.9	-50.79	5.26	35.86	-20.19	-13	-7.19	Horizontal
197.9	-36.38	1.80	16.69	-21.49	-13	-8.49	Vertical
437.6	-44.79	1.75	16.66	-29.89	-13	-16.89	Horizontal

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

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-44.12	4.02	29.80	-18.34	-13	-5.34	Horizontal
3440.0	-45.72	4.02	29.80	-19.94	-13	-6.94	Vertical
5160.0	-51.48	5.24	35.84	-20.88	-13	-7.88	Vertical
5160.0	-50.18	5.24	35.84	-19.58	-13	-6.58	Horizontal
194.9	-39.74	1.57	17.26	-24.05	-13	-11.05	Vertical
334.4	-40.08	1.78	16.35	-25.51	-13	-12.51	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-53.37	4.03	30.00	-27.40	-13	-14.40	Horizontal
3465.0	-49.53	4.03	30.00	-23.56	-13	-10.56	Vertical
5197.5	-50.32	5.25	35.86	-19.71	-13	-6.71	Vertical
5197.5	-51.12	5.25	35.86	-20.51	-13	-7.51	Horizontal
206.6	-34.78	1.44	17.95	-18.27	-13	-5.27	Vertical
431.4	-34.73	1.65	16.09	-20.29	-13	-7.29	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-53.62	2.91	27.68	-28.85	-13	-15.85	Horizontal
3490.0	-45.46	2.91	27.68	-20.69	-13	-7.69	Vertical
5235.0	-51.54	5.26	35.86	-20.94	-13	-7.94	Vertical
5235.0	-51.24	5.26	35.86	-20.64	-13	-7.64	Horizontal
179.4	-36.01	1.61	16.85	-20.77	-13	-7.77	Vertical
424.3	-44.26	1.61	15.19	-30.68	-13	-17.68	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.

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

Test Results for Low Channel 824.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1649.4	-44.62	2.78	27.50	-19.90	-13	-6.90	Horizontal
1649.4	-51.71	2.78	27.50	-26.99	-13	-13.99	Vertical
2474.1	-51.75	2.90	27.80	-26.85	-13	-13.85	Vertical
2474.1	-51.95	2.90	27.80	-27.05	-13	-14.05	Horizontal
195.7	-41.45	1.76	17.59	-25.62	-13	-12.62	Vertical
402.9	-42.90	1.63	15.87	-28.66	-13	-15.66	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-47.94	2.80	27.48	-23.26	-13	-10.26	Horizontal
1673.0	-52.63	2.80	27.48	-27.95	-13	-14.95	Vertical
2509.5	-47.75	2.91	27.70	-22.96	-13	-9.96	Vertical
2509.5	-53.85	2.91	27.70	-29.06	-13	-16.06	Horizontal
189.8	-41.45	1.61	15.68	-27.38	-13	-14.38	Vertical
248.6	-43.23	1.59	17.52	-27.31	-13	-14.31	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-52.87	2.82	27.43	-28.26	-13	-15.26	Horizontal
1696.6	-46.51	2.82	27.43	-21.90	-13	-8.90	Vertical
2544.9	-52.93	2.92	27.74	-28.11	-13	-15.11	Vertical
2544.9	-53.65	2.92	27.74	-28.83	-13	-15.83	Horizontal
181.7	-43.51	1.69	16.67	-28.52	-13	-15.52	Vertical
300.8	-38.59	1.70	17.18	-23.11	-13	-10.11	Horizontal

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

Test Results for Low Channel 829MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1658.0	-44.06	2.78	27.50	-19.34	-13	-6.34	Horizontal
1658.0	-50.75	2.78	27.50	-26.03	-13	-13.03	Vertical
2487.0	-50.14	2.90	27.80	-25.24	-13	-12.24	Vertical
2487.0	-51.59	2.90	27.80	-26.69	-13	-13.69	Horizontal
177.1	-44.11	1.71	15.57	-30.25	-13	-17.25	Vertical
264.9	-39.98	1.34	16.40	-24.92	-13	-11.92	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-49.58	2.80	27.48	-24.90	-13	-11.90	Horizontal
1673.0	-48.78	2.80	27.48	-24.10	-13	-11.10	Vertical
2509.5	-44.55	2.91	27.70	-19.76	-13	-6.76	Vertical
2509.5	-53.18	2.91	27.70	-28.39	-13	-15.39	Horizontal
193.4	-43.53	1.44	17.04	-27.93	-13	-14.93	Vertical
368.0	-38.82	1.76	17.62	-22.96	-13	-9.96	Horizontal
Test Results for High Channel 844MHz							
1688.0	-48.13	2.82	27.43	-23.52	-13	-10.52	Horizontal
1688.0	-44.41	2.82	27.43	-19.80	-13	-6.80	Vertical
2532.0	-49.40	2.92	27.74	-24.58	-13	-11.58	Vertical
2532.0	-51.99	2.92	27.74	-27.17	-13	-14.17	Horizontal
178.6	-40.09	1.74	17.70	-24.13	-13	-11.13	Vertical
325.8	-34.13	1.41	17.46	-18.07	-13	-5.07	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)

Test Results for Low Channel 2502.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5005.0	-61.73	5.23	35.81	-31.15	-25	-6.15	Horizontal
5005.0	-64.16	5.23	35.81	-33.58	-25	-8.58	Vertical
7507.5	-62.19	5.67	36.85	-31.01	-25	-6.01	Vertical
7507.5	-61.95	5.67	36.85	-30.77	-25	-5.77	Horizontal
182.9	-52.64	1.73	17.97	-36.40	-25	-11.40	Vertical
267.9	-45.47	1.38	15.11	-31.74	-25	-6.74	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-62.34	5.23	35.82	-31.75	-25	-6.75	Horizontal
5070.0	-59.71	5.23	35.82	-29.12	-25	-4.12	Vertical
7605.0	-63.26	5.67	36.85	-32.08	-25	-7.08	Vertical
7605.0	-60.33	5.67	36.85	-29.15	-25	-4.15	Horizontal
202.9	-48.84	1.77	16.17	-34.43	-25	-9.43	Vertical
303.9	-44.13	1.63	15.21	-30.55	-25	-5.55	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-62.93	5.24	35.83	-32.34	-25	-7.34	Horizontal
5135.0	-63.53	5.24	35.83	-32.94	-25	-7.94	Vertical
7702.5	-62.17	5.68	36.87	-30.98	-25	-5.98	Vertical
7702.5	-61.36	5.68	36.87	-30.17	-25	-5.17	Horizontal
203.8	-46.54	1.58	17.56	-30.56	-25	-5.56	Vertical
287.2	-47.17	1.45	16.58	-32.04	-25	-7.04	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	-60.06	5.23	35.82	-29.47	-25	-4.47	Horizontal
5020.0	-64.32	5.23	35.82	-33.73	-25	-8.73	Vertical
7530.0	-60.72	5.67	36.86	-29.53	-25	-4.53	Vertical
7530.0	-60.94	5.67	36.86	-29.75	-25	-4.75	Horizontal
180.4	-52.70	1.63	15.76	-38.57	-25	-13.57	Vertical
446.3	-45.28	1.71	15.44	-31.55	-25	-6.55	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-64.05	5.23	35.82	-33.46	-25	-8.46	Horizontal
5070.0	-61.42	5.23	35.82	-30.83	-25	-5.83	Vertical
7605.0	-63.77	5.67	36.85	-32.59	-25	-7.59	Vertical
7605.0	-60.33	5.67	36.85	-29.15	-25	-4.15	Horizontal
193.4	-48.46	1.79	16.84	-33.40	-25	-8.40	Vertical
339.0	-46.75	1.71	17.64	-30.82	-25	-5.82	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-60.76	5.24	35.83	-30.17	-25	-5.17	Horizontal
5120.0	-62.05	5.24	35.83	-31.46	-25	-6.46	Vertical
7680.0	-64.25	5.70	36.88	-33.07	-25	-8.07	Vertical
7680.0	-61.79	5.70	36.88	-30.61	-25	-5.61	Horizontal
193.3	-44.36	1.79	16.84	-29.30	-25	-4.30	Vertical
425.9	-46.67	1.71	17.64	-30.74	-25	-5.74	Horizontal

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

. Margin = Spurious Emission Level - Limit

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

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

Test Results for Low Channel 699.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1399.4	-49.59	2.60	27.20	-24.99	-13	-11.99	Horizontal
1399.4	-45.46	2.60	27.20	-20.86	-13	-7.86	Vertical
2099.1	-52.30	2.85	27.54	-27.61	-13	-14.61	Vertical
2099.1	-50.94	2.85	27.54	-26.25	-13	-13.25	Horizontal
207.8	-36.70	1.49	17.78	-20.41	-13	-7.41	Vertical
456.4	-41.73	1.36	17.33	-25.76	-13	-12.76	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-48.82	2.61	27.28	-24.15	-13	-11.15	Horizontal
1415.0	-47.48	2.61	27.28	-22.81	-13	-9.81	Vertical
2122.5	-44.14	2.87	27.59	-19.42	-13	-6.42	Vertical
2122.5	-49.67	2.87	27.59	-24.95	-13	-11.95	Horizontal
181.3	-42.41	1.73	15.74	-28.40	-13	-15.40	Vertical
428.2	-36.16	1.62	15.79	-21.99	-13	-8.99	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-52.67	2.63	27.28	-28.02	-13	-15.02	Horizontal
1430.6	-47.09	2.63	27.28	-22.44	-13	-9.44	Vertical
2145.9	-44.84	2.88	27.60	-20.12	-13	-7.12	Vertical
2145.9	-49.50	2.88	27.60	-24.78	-13	-11.78	Horizontal
202.2	-35.32	1.61	18.00	-18.93	-13	-5.93	Vertical
375.1	-40.64	1.45	15.49	-26.61	-13	-13.61	Horizontal

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

Test Results for Low Channel 704MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1408.0	-53.51	2.61	27.26	-28.86	-13	-15.86	Horizontal
1408.0	-47.80	2.61	27.26	-23.15	-13	-10.15	Vertical
2112.0	-53.39	2.87	27.58	-28.68	-13	-15.68	Vertical
2112.0	-51.71	2.87	27.58	-27.00	-13	-14.00	Horizontal
188.5	-37.02	1.31	16.97	-21.36	-13	-8.36	Vertical
322.2	-36.85	1.65	16.70	-21.80	-13	-8.80	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-52.80	2.61	27.28	-28.13	-13	-15.13	Horizontal
1415.0	-47.78	2.61	27.28	-23.11	-13	-10.11	Vertical
2122.5	-46.53	2.87	27.59	-21.81	-13	-8.81	Vertical
2122.5	-49.07	2.87	27.59	-24.35	-13	-11.35	Horizontal
190.3	-43.98	1.72	17.99	-27.71	-13	-14.71	Vertical
445.2	-38.83	1.73	17.94	-22.62	-13	-9.62	Horizontal
Test Results for High Channel 711MHz							
1422.0	-45.87	2.62	27.28	-21.21	-13	-8.21	Horizontal
1422.0	-48.04	2.62	27.28	-23.38	-13	-10.38	Vertical
2133.0	-52.06	2.87	27.60	-27.33	-13	-14.33	Vertical
2133.0	-51.49	2.87	27.60	-26.76	-13	-13.76	Horizontal
184.9	-39.24	1.58	15.93	-24.89	-13	-11.89	Vertical
412.0	-34.74	1.36	15.59	-20.51	-13	-7.51	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 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	-46.17	2.61	27.28	-21.50	-13	-8.50	Horizontal
1413.0	-48.40	2.61	27.28	-23.73	-13	-10.73	Vertical
2119.5	-53.10	2.87	27.59	-28.38	-13	-15.38	Vertical
2119.5	-52.23	2.87	27.59	-27.51	-13	-14.51	Horizontal
177.4	-35.71	1.71	16.15	-21.27	-13	-8.27	Vertical
400.9	-34.26	1.41	17.32	-18.35	-13	-5.35	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-47.96	2.62	27.30	-23.28	-13	-10.28	Horizontal
1420.0	-50.04	2.62	27.30	-25.36	-13	-12.36	Vertical
2130.0	-53.30	2.87	27.62	-28.55	-13	-15.55	Vertical
2130.0	-51.90	2.87	27.62	-27.15	-13	-14.15	Horizontal
203.0	-41.80	1.42	15.25	-27.98	-13	-14.98	Vertical
409.4	-35.06	1.36	17.19	-19.23	-13	-6.23	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-51.31	2.66	27.28	-26.69	-13	-13.69	Horizontal
1427.0	-44.19	2.66	27.28	-19.57	-13	-6.57	Vertical
2140.5	-51.06	2.88	27.60	-26.34	-13	-13.34	Vertical
2140.5	-51.37	2.88	27.60	-26.65	-13	-13.65	Horizontal
199.6	-39.91	1.32	17.29	-23.94	-13	-10.94	Vertical
389.3	-40.53	1.72	16.89	-25.36	-13	-12.36	Horizontal

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

Test Results for Low Channel 709MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1418.0	-51.87	2.62	27.30	-27.19	-13	-14.19	Horizontal
1418.0	-51.94	2.62	27.30	-27.26	-13	-14.26	Vertical
2127.0	-44.12	2.87	27.62	-19.37	-13	-6.37	Vertical
2127.0	-51.32	2.87	27.62	-26.57	-13	-13.57	Horizontal
185.5	-39.38	1.35	16.91	-23.82	-13	-10.82	Vertical
317.2	-41.90	1.62	16.31	-27.21	-13	-14.21	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-49.59	2.62	27.30	-24.91	-13	-11.91	Horizontal
1420.0	-46.44	2.62	27.30	-21.76	-13	-8.76	Vertical
2130.0	-51.21	2.87	27.62	-26.46	-13	-13.46	Vertical
2130.0	-50.39	2.87	27.62	-25.64	-13	-12.64	Horizontal
199.1	-35.66	1.51	17.14	-20.03	-13	-7.03	Vertical
421.4	-35.17	1.77	16.88	-20.06	-13	-7.06	Horizontal
Test Results for High Channel 711MHz							
1422.0	-44.49	2.62	27.30	-19.81	-13	-6.81	Horizontal
1422.0	-52.99	2.62	27.30	-28.31	-13	-15.31	Vertical
2133.0	-45.33	2.87	27.62	-20.58	-13	-7.58	Vertical
2133.0	-50.22	2.87	27.62	-25.47	-13	-12.47	Horizontal
179.3	-40.18	1.78	15.95	-26.01	-13	-13.01	Vertical
290.3	-40.16	1.34	17.95	-23.56	-13	-10.56	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 41
QPSK EIRP POWER FOR LTE BAND 41 (5MHZ BANDWIDTH)

Test Results for Low Channel 2537.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5075	-63.06	5.23	35.81	-32.48	-25	-7.48	Horizontal
5075	-60.25	5.23	35.81	-29.67	-25	-4.67	Vertical
7612.5	-60.88	5.67	36.85	-29.70	-25	-4.70	Vertical
7612.5	-59.38	5.67	36.85	-28.20	-25	-3.20	Horizontal
435.3	-45.36	1.38	15.98	-30.76	-25	-5.76	Vertical
465.8	-48.45	1.62	15.66	-34.41	-25	-9.41	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-59.33	5.23	35.82	-28.74	-25	-3.74	Horizontal
5190.0	-60.43	5.23	35.82	-29.84	-25	-4.84	Vertical
7785.0	-59.59	5.67	36.85	-28.41	-25	-3.41	Vertical
7785.0	-61.36	5.67	36.85	-30.18	-25	-5.18	Horizontal
510.4	-49.71	1.62	16.17	-35.16	-25	-10.16	Vertical
562.9	-49.16	1.74	17.63	-33.27	-25	-8.27	Horizontal
Test Results for High Channel 2652.5MHz							
5305	-64.43	5.24	35.83	-33.84	-25	-8.84	Horizontal
5305	-61.77	5.24	35.83	-31.18	-25	-6.18	Vertical
7957.5	-59.81	5.68	36.87	-28.62	-25	-3.62	Vertical
7957.5	-61.17	5.68	36.87	-29.98	-25	-4.98	Horizontal
197.6	-46.62	1.55	15.84	-32.33	-25	-7.33	Vertical
353.1	-49.00	1.51	17.06	-33.45	-25	-8.45	Horizontal

QPSK EIRP POWER FOR LTE BAND 41 (20MHZ BANDWIDTH)

Test Results for Low Channel 2545MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5090	-62.98	5.23	35.82	-32.39	-25	-7.39	Horizontal
5090	-60.92	5.23	35.82	-30.33	-25	-5.33	Vertical
7635	-61.89	5.67	36.86	-30.70	-25	-5.70	Vertical
7635	-60.67	5.67	36.86	-29.48	-25	-4.48	Horizontal
128.9	-49.87	1.43	15.51	-35.79	-25	-10.79	Vertical
344.8	-49.46	1.40	16.97	-33.89	-25	-8.89	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-62.66	5.23	35.82	-32.07	-25	-7.07	Horizontal
5190.0	-59.53	5.23	35.82	-28.94	-25	-3.94	Vertical
7785.0	-61.49	5.67	36.85	-30.31	-25	-5.31	Vertical
7785.0	-60.88	5.67	36.85	-29.70	-25	-4.70	Horizontal
100.8	-48.84	1.77	16.72	-33.89	-25	-8.89	Vertical
263.5	-47.67	1.31	16.99	-31.99	-25	-6.99	Horizontal
Test Results for High Channel 2645MHz							
5290	-64.44	5.24	35.83	-33.85	-25	-8.85	Horizontal
5290	-60.60	5.24	35.83	-30.01	-25	-5.01	Vertical
7935	-62.71	5.70	36.88	-31.53	-25	-6.53	Vertical
7935	-62.55	5.70	36.88	-31.37	-25	-6.37	Horizontal
349.9	-48.41	1.70	15.73	-34.38	-25	-9.38	Vertical
110.3	-46.71	1.75	17.33	-31.13	-25	-6.13	Horizontal

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

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

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

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

9.8 LTE BAND 66

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

Test Results for Low Channel 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-49.27	4.02	29.80	-23.49	-13	-10.49	Horizontal
3421.4	-52.00	4.02	29.80	-26.22	-13	-13.22	Vertical
5132.1	-50.20	5.24	35.84	-19.60	-13	-6.60	Vertical
5132.1	-49.54	5.24	35.84	-18.94	-13	-5.94	Horizontal
112.6	-54.35	1.52	15.57	-40.30	-13	-27.30	Vertical
220.5	-48.28	1.33	17.14	-32.47	-13	-19.47	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-48.31	4.03	30.00	-22.34	-13	-9.34	Horizontal
3490.0	-46.62	4.03	30.00	-20.65	-13	-7.65	Vertical
5235.0	-53.59	5.25	35.86	-22.98	-13	-9.98	Vertical
5235.0	-51.73	5.25	35.86	-21.12	-13	-8.12	Horizontal
157.3	-54.09	1.53	17.13	-38.49	-13	-25.49	Vertical
213.1	-52.63	1.41	15.95	-38.09	-13	-25.09	Horizontal
Test Results for High Channel 1779.3MHz							
3558.6	-52.37	4.05	30.01	-26.41	-13	-13.41	Horizontal
3558.6	-49.98	4.05	30.01	-24.02	-13	-11.02	Vertical
5337.9	-50.28	5.26	35.86	-19.68	-13	-6.68	Vertical
5337.9	-53.10	5.26	35.86	-22.50	-13	-9.50	Horizontal
170.6	-52.97	1.44	15.51	-38.90	-13	-25.90	Vertical
169.0	-48.03	1.78	15.76	-34.05	-13	-21.05	Horizontal

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

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-50.69	4.02	29.80	-24.91	-13	-11.91	Horizontal
3440.0	-49.14	4.02	29.80	-23.36	-13	-10.36	Vertical
5160.0	-49.77	5.24	35.84	-19.17	-13	-6.17	Vertical
5160.0	-50.17	5.24	35.84	-19.57	-13	-6.57	Horizontal
268.8	-52.42	1.62	17.02	-37.02	-13	-24.02	Vertical
161.4	-44.62	1.32	17.31	-28.63	-13	-15.63	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-51.09	4.03	30.00	-25.12	-13	-12.12	Horizontal
3490.0	-46.73	4.03	30.00	-20.76	-13	-7.76	Vertical
5235.0	-52.20	5.25	35.86	-21.59	-13	-8.59	Vertical
5235.0	-47.80	5.25	35.86	-17.19	-13	-4.19	Horizontal
159.9	-49.18	1.45	15.17	-35.46	-13	-22.46	Vertical
172.1	-52.81	1.48	17.82	-36.47	-13	-23.47	Horizontal
Test Results for High Channel 1770MHz							
3540.0	-53.76	2.91	27.68	-28.99	-13	-15.99	Horizontal
3540.0	-51.56	2.91	27.68	-26.79	-13	-13.79	Vertical
5310.0	-51.26	5.26	35.86	-20.66	-13	-7.66	Vertical
5310.0	-50.55	5.26	35.86	-19.95	-13	-6.95	Horizontal
197.3	-47.14	1.76	16.38	-32.52	-13	-19.52	Vertical
158.5	-52.27	1.43	17.13	-36.57	-13	-23.57	Horizontal

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

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

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

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

10. FREQUENCY STABILITY

RULE PART(S)

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

LIMITS

§22.355 - The carrier frequency shall not depart from the reference frequency in excess of ± 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° to $+50^{\circ}\text{C}$
- Voltage = low voltage, DC 3.4V, Normal, DC 3.87V and High voltage, DC 4.4V.

Frequency Stability vs Temperature:

The EUT is placed inside a temperature chamber. The temperature is set to -30°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 2/4/5/7/12/17/41/66

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]
3.40	1880	12.2	0.006498	2.5
3.87	1880	14.1	0.007483	2.5
4.40	1880	13.2	0.007030	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	12.3	0.006540	2.5
Extreme (50C)	1880	11.4	0.006065	2.5
Extreme (40C)	1880	13.6	0.007239	2.5
Extreme (30C)	1880	13.3	0.007052	2.5
Extreme (10C)	1880	13.6	0.007213	2.5
Extreme (0C)	1880	11.6	0.006171	2.5
Extreme (-10C)	1880	13.4	0.007123	2.5
Extreme (-20C)	1880	13.8	0.007319	2.5
Extreme (-30C)	1880	14.5	0.007735	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]
3.40	1880	9.9	0.005258	2.5
3.87	1880	8.6	0.004558	2.5
4.40	1880	8.0	0.004249	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	9.6	0.005119	2.5
Extreme (50C)	1880	9.0	0.004789	2.5
Extreme (40C)	1880	8.3	0.004416	2.5
Extreme (30C)	1880	9.2	0.004918	2.5
Extreme (10C)	1880	9.1	0.004840	2.5
Extreme (0C)	1880	8.3	0.004427	2.5
Extreme (-10C)	1880	8.6	0.004585	2.5
Extreme (-20C)	1880	9.1	0.004829	2.5
Extreme (-30C)	1880	7.8	0.004169	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]
3.40	1732.5	9.2	0.005325	2.5
3.87	1732.5	9.3	0.005352	2.5
4.40	1732.5	8.0	0.004630	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.3	0.004797	2.5
Extreme (50C)	1732.5	9.3	0.005341	2.5
Extreme (40C)	1732.5	7.7	0.004468	2.5
Extreme (30C)	1732.5	5.9	0.003394	2.5
Extreme (10C)	1732.5	7.5	0.004309	2.5
Extreme (0C)	1732.5	9.2	0.005315	2.5
Extreme (-10C)	1732.5	8.0	0.004606	2.5
Extreme (-20C)	1732.5	6.7	0.003858	2.5
Extreme (-30C)	1732.5	8.5	0.004926	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]
3.40	1732.5	10.0	0.005773	2.5
3.87	1732.5	8.5	0.004916	2.5
4.40	1732.5	8.2	0.004729	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	9.4	0.005452	2.5
Extreme (50C)	1732.5	8.7	0.005026	2.5
Extreme (40C)	1732.5	8.0	0.004620	2.5
Extreme (30C)	1732.5	8.7	0.005021	2.5
Extreme (10C)	1732.5	8.4	0.004869	2.5
Extreme (0C)	1732.5	7.9	0.004566	2.5
Extreme (-10C)	1732.5	8.7	0.005027	2.5
Extreme (-20C)	1732.5	9.0	0.005167	2.5
Extreme (-30C)	1732.5	7.7	0.004461	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]
3.40	836.5	6.1	0.007256	2.5
3.87	836.5	7.1	0.008502	2.5
4.40	836.5	4.8	0.005741	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	5.6	0.006704	2.5
Extreme (50C)	836.5	5.5	0.006570	2.5
Extreme (40C)	836.5	5.9	0.007082	2.5
Extreme (30C)	836.5	6.2	0.007429	2.5
Extreme (10C)	836.5	5.7	0.006835	2.5
Extreme (0C)	836.5	5.0	0.005934	2.5
Extreme (-10C)	836.5	5.9	0.007071	2.5
Extreme (-20C)	836.5	6.2	0.007405	2.5
Extreme (-30C)	836.5	6.2	0.007444	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]
3.40	836.5	5.5	0.006600	2.5
3.87	836.5	7.0	0.008428	2.5
4.40	836.5	4.7	0.005625	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.6	0.007857	2.5
Extreme (50C)	836.5	6.0	0.007196	2.5
Extreme (40C)	836.5	6.4	0.007647	2.5
Extreme (30C)	836.5	6.8	0.008097	2.5
Extreme (10C)	836.5	5.7	0.006776	2.5
Extreme (0C)	836.5	5.3	0.006307	2.5
Extreme (-10C)	836.5	6.0	0.007213	2.5
Extreme (-20C)	836.5	5.7	0.006806	2.5
Extreme (-30C)	836.5	6.7	0.008010	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]
3.40	2535	10.1	0.003984	2.5
3.87	2535	8.7	0.003425	2.5
4.40	2535	8.7	0.003433	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	9.5	0.003749	2.5
Extreme (50C)	2535	8.4	0.003331	2.5
Extreme (40C)	2535	8.5	0.003365	2.5
Extreme (30C)	2535	8.8	0.003479	2.5
Extreme (10C)	2535	8.3	0.003255	2.5
Extreme (0C)	2535	8.1	0.003205	2.5
Extreme (-10C)	2535	9.6	0.003785	2.5
Extreme (-20C)	2535	9.1	0.003577	2.5
Extreme (-30C)	2535	8.3	0.003292	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]
3.40	2535	6.5	0.002549	2.5
3.87	2535	6.5	0.002564	2.5
4.40	2535	5.6	0.002205	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	6.3	0.002482	2.5
Extreme (50C)	2535	5.1	0.002030	2.5
Extreme (40C)	2535	5.4	0.002121	2.5
Extreme (30C)	2535	6.4	0.002508	2.5
Extreme (10C)	2535	5.8	0.002304	2.5
Extreme (0C)	2535	5.1	0.002011	2.5
Extreme (-10C)	2535	5.0	0.001985	2.5
Extreme (-20C)	2535	5.7	0.002264	2.5
Extreme (-30C)	2535	5.3	0.002090	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]
3.40	707.5	8.7	0.012307	2.5
3.87	707.5	9.8	0.013829	2.5
4.40	707.5	8.8	0.012383	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	9.1	0.012822	2.5
Extreme (50C)	707.5	7.4	0.010429	2.5
Extreme (40C)	707.5	7.4	0.010503	2.5
Extreme (30C)	707.5	8.6	0.012201	2.5
Extreme (10C)	707.5	7.4	0.010392	2.5
Extreme (0C)	707.5	9.4	0.013226	2.5
Extreme (-10C)	707.5	7.9	0.011224	2.5
Extreme (-20C)	707.5	8.5	0.011996	2.5
Extreme (-30C)	707.5	7.5	0.010658	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]
3.40	707.5	7.0	0.009853	2.5
3.87	707.5	8.6	0.012197	2.5
4.40	707.5	7.4	0.010514	2.5

Frequency error vs. Temperature

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

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

10.6 LTE BAND 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]
3.40	710.0	9.7	0.013637	2.5
3.87	710.0	9.3	0.013030	2.5
4.40	710.0	7.8	0.011019	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	10.2	0.014300	2.5
Extreme (50C)	710.0	8.9	0.012595	2.5
Extreme (40C)	710.0	7.8	0.011054	2.5
Extreme (30C)	710.0	9.3	0.013087	2.5
Extreme (10C)	710.0	8.6	0.012075	2.5
Extreme (0C)	710.0	8.0	0.011198	2.5
Extreme (-10C)	710.0	8.7	0.012319	2.5
Extreme (-20C)	710.0	8.5	0.012031	2.5
Extreme (-30C)	710.0	8.2	0.011509	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]
3.40	710.0	9.6	0.013579	2.5
3.87	710.0	8.5	0.011953	2.5
4.40	710.0	8.4	0.011843	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.7	0.013637	2.5
Extreme (50C)	710.0	9.4	0.013181	2.5
Extreme (40C)	710.0	7.9	0.011182	2.5
Extreme (30C)	710.0	8.6	0.012162	2.5
Extreme (10C)	710.0	8.2	0.011523	2.5
Extreme (0C)	710.0	8.5	0.011953	2.5
Extreme (-10C)	710.0	9.6	0.013559	2.5
Extreme (-20C)	710.0	9.4	0.013196	2.5
Extreme (-30C)	710.0	7.9	0.011193	2.5

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

10.7 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]
3.40	2593	8.7	0.003354	2.5
3.87	2593	6.8	0.002637	2.5
4.40	2593	7.5	0.002898	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	7.8	0.003024	2.5
Extreme (50C)	2593	4.7	0.001826	2.5
Extreme (40C)	2593	5.1	0.001949	2.5
Extreme (30C)	2593	4.7	0.001826	2.5
Extreme (10C)	2593	6.8	0.002622	2.5
Extreme (0C)	2593	4.7	0.001802	2.5
Extreme (-10C)	2593	9.0	0.003480	2.5
Extreme (-20C)	2593	10.7	0.004123	2.5
Extreme (-30C)	2593	6.0	0.002323	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]
3.40	2593	8.6	0.003328	2.5
3.87	2593	6.8	0.002613	2.5
4.40	2593	6.6	0.002558	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	7.5	0.002901	2.5
Extreme (50C)	2593	4.3	0.001661	2.5
Extreme (40C)	2593	5.5	0.002107	2.5
Extreme (30C)	2593	4.4	0.001685	2.5
Extreme (10C)	2593	6.6	0.002547	2.5
Extreme (0C)	2593	4.9	0.001896	2.5
Extreme (-10C)	2593	9.1	0.003504	2.5
Extreme (-20C)	2593	11.2	0.004321	2.5
Extreme (-30C)	2593	5.9	0.002289	2.5

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

10.8 LTE BAND 66

QPSK, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 66 QPSK, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.40	1745	12.7	0.00730	2.5
3.87	1745	13.8	0.00792	2.5
4.40	1745	13.7	0.00785	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 66 QPSK, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	1745	7.6	0.004354	2.5
Extreme (50C)	1745	5.2	0.002998	2.5
Extreme (40C)	1745	5.5	0.003180	2.5
Extreme (30C)	1745	4.6	0.002643	2.5
Extreme (10C)	1745	6.9	0.003978	2.5
Extreme (0C)	1745	4.7	0.002678	2.5
Extreme (-10C)	1745	9.3	0.005329	2.5
Extreme (-20C)	1745	11.2	0.006393	2.5
Extreme (-30C)	1745	5.9	0.003395	2.5

16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 66 16QAM, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.40	1745	12.8	0.007323	2.5
3.87	1745	13.6	0.007791	2.5
4.40	1745	13.7	0.007854	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 66 16QAM, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	1745	7.5	0.004284	2.5
Extreme (50C)	1745	4.7	0.002685	2.5
Extreme (40C)	1745	5.2	0.002993	2.5
Extreme (30C)	1745	5.1	0.002927	2.5
Extreme (10C)	1745	6.5	0.003729	2.5
Extreme (0C)	1745	4.9	0.002795	2.5
Extreme (-10C)	1745	9.6	0.005518	2.5
Extreme (-20C)	1745	10.8	0.006199	2.5
Extreme (-30C)	1745	6.6	0.003773	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.

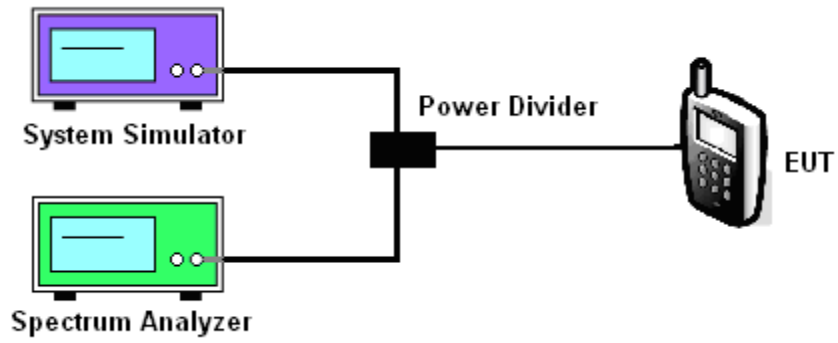
11.2 Measuring Instruments

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

Test data reference attachment.

----END OF REPORT----