FCC CFR47 PART 22H, 24E, 27
CERTIFICATION TEST REPORT
FCC ID: 2AOWK-5005AF1

Product: Mobile Phone

Trade Mark: ulefone

Model No.: Armor 23 Ultra

Family Model: GQ5005, Armor 23, Armor 23E, Armor 23S, Armor 23 Lite, Armor 23 Pro, Armor 23 Pro+, Armor 23s, Armor 23s Pro

Report No.: S23101702907006

Issue Date: Dec 20, 2023

Prepared for

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Prepared by

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TEST RESULT CERTIFICATION

Applicant's name ..... :	Shenzhen Gotron Electronic CO.,LTD.
Address..... :	7B01, Building A, Block 1, Anhongji Tianyao Plaza, Longhua District, 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 .. :	Armor 23 Ultra
Trade Mark..... :	ulefone
Family Model..... :	GQ5005, Armor 23, Armor 23E, Armor 23S, Armor 23 Lite, Armor 23 Pro, Armor 23 Pro+, Armor 23s, Armor 23s Pro
Test Sample number ..... :	S231017029001
Date of Test ..... :	Oct 17, 2023 ~ Dec 20, 2023
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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Prepared By :	Reviewed By :	Approved By :
Mukzi Lee	Aaron Cheng	Alex Li
(Project Engineer)	(Supervisor)	(Manager)

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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	Armor 23 Ultra
Family Model	GQ5005, Armor 23, Armor 23E, Armor 23S, Armor 23 Lite, Armor 23 Pro, Armor 23 Pro+, Armor 23s, Armor 23s Pro
Model Difference	All the model are the same circuit and RF module, except the model names.
FCC ID:	2AOWK-5005AF1
Frequency Bands:	U.S. Bands: ☒LTE FDD Band 2,4,5,7,12,17,66 LTE TDD Band 41,71
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 TDD Band 41 Uplink& Downlink: 2496MHz-2690MHz, LTE FDD Band 66 Uplink: 1710MHz-1780MHz, Downlink: 2110MHz-2200MHz; LTE TDD Band 71 Uplink: 663MHz-698MHz, Downlink: 617MHz-652MHz;
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: -0.9 dBi, Band 4: -4.63dBi, Band 5: -2.7dBi, Band 7: 0.2dBi, Band 12: -3.9 dBi, Band 17: -3.9 dBi, Band 41: 0.2 dBi, Band 66: -0.4 dBi, Band 71: -3.9 dBi
Adapter	Model: HJ-PD120W-US Input: 100-240V~50/60Hz 1.8A Output: 5.0V⎓3.0A 15.0W OR 9.0⎓3.0A 27.0W OR 12.0V⎓3.0A 36.0W OR 15.0V⎓3.0A 45.0W OR 20.0V⎓5.0A 100.0W MAX PPS: 3.6V-20.0V⎓6.0A 120.0W MAX

Battery	DC 7.74V, 2640mAh, 20.434Wh
Power supply	DC 7.74V from battery or DC 5V from adapter
Extreme Vol. Limits:	DC 6.58V to DC 8.90V (Nominal DC 7.74)（Note 1）
HW Version	A500-02
SW Version	N/A
** Note1: The High Voltage DC 8.90V and Low Voltage 6.58V was declared by manufacturer, The EUT couldn't be operate normally with higher or lower voltage.	

1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2AOWK-5005AF1** 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/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 2/4/5/7/12/17/41/66/71
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

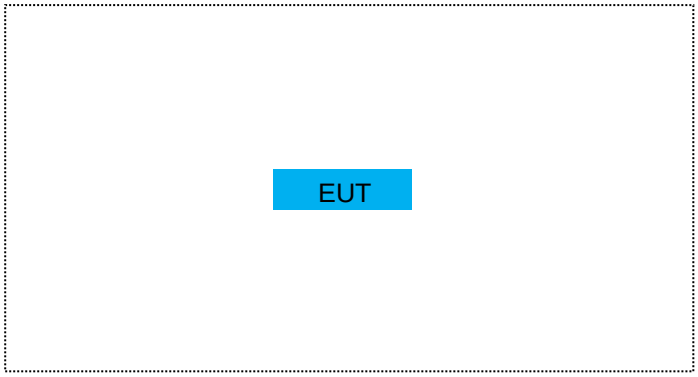
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Mobile Phone	Armor 23 Ultra	FCC ID: 2AOWK-5005AF1	EUT

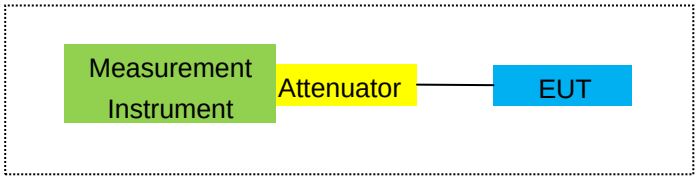
Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.

2.4 TEST SETUP

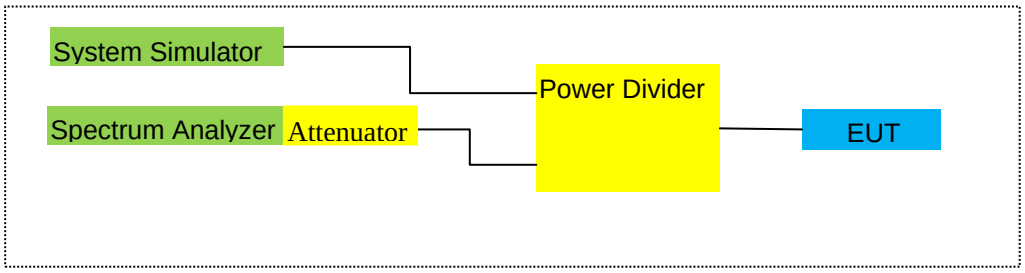
For Radiated Test Cases



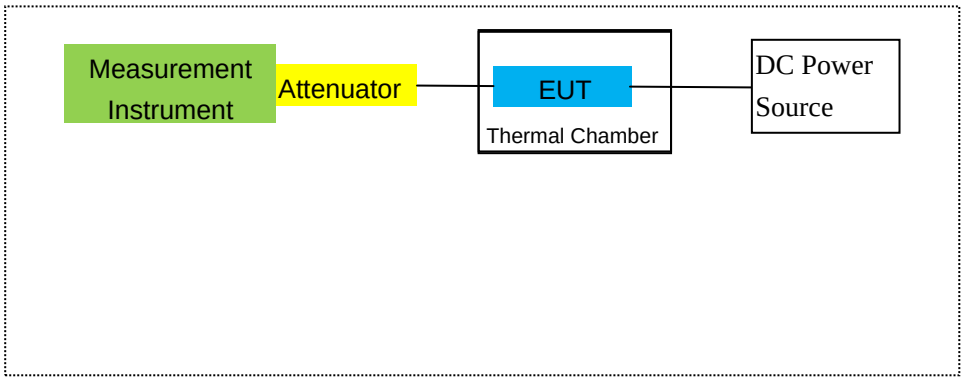
For Conducted Output Power



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	Horn Antenna	EM	EM-AH-10180	2011071402	2022.03.31	2025.03.30	3 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2022.11.07	2025.11.06	3 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 2023.11.03	2023.11.03 2026.11.02	1 year 3 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 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	Spectrum Analyzer	agilent	e4440a	us44300399	2023.03.27	2024.03.26	1 year
23	test receiver	R&S	ESCI	a0304218	2023.03.27	2024.03.26	1 year
24	Communication Tester	R&S	CMU200	A0304247	2023.05.29	2024.05.28	1 year

25	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2023.03.27	2024.03.26	1 year
26	DC Power Source	N/A	PS-6005D	2017040292 3	2023.05.06	2026.05.05	3 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 6.6.3.3.2	13	10	Table 6.2.4-2	Table 6.2.4-2
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 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 2/4/5/7/12/17/41/66/71

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 Log10(f/6.1) decibels or 50 + 10 Log10(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 + 10Log10(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 2/4/5/7/12/17/41/66/71

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 100kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

MODES TESTED

□ Band 2/4/5/7/12/17/41/66/71

□

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 2/4/5/7/12/17/41/66/71

RESULTS

Pass

8.2 LTE BAND 2

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	1850.7	-4.93	3.76	28.24	19.55	90.157	Horizontal	Pass
		1880	-4.72	3.91	28.22	19.59	90.991	Horizontal	Pass
		1909.3	-4.68	3.93	28.20	19.59	90.991	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-4.80	3.77	28.23	19.66	92.470	Horizontal	Pass
		1880	-4.78	3.91	28.24	19.55	90.157	Horizontal	Pass
		1908.5	-4.63	3.94	28.25	19.68	92.897	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-4.96	3.77	28.31	19.58	90.782	Horizontal	Pass
		1880	-4.76	3.91	28.22	19.55	90.157	Horizontal	Pass
		1907.5	-4.66	3.94	28.20	19.60	91.201	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-4.97	3.79	28.33	19.57	90.573	Horizontal	Pass
		1880	-4.66	3.95	28.22	19.61	91.411	Horizontal	Pass
		1905	-4.65	3.97	28.19	19.57	90.573	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-4.98	3.79	28.34	19.57	90.573	Horizontal	Pass
		1880	-4.63	3.95	28.22	19.64	92.045	Horizontal	Pass
		1902.5	-4.64	3.97	28.18	19.57	90.573	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-4.92	3.81	28.35	19.62	91.622	Horizontal	Pass
		1880	-4.59	3.96	28.22	19.67	92.683	Horizontal	Pass
		1900	-4.57	4.00	28.16	19.59	90.991	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-4.85	3.76	28.24	19.63	91.833	Vertical	Pass
		1880	-4.69	3.91	28.22	19.62	91.622	Vertical	Pass
		1909.3	-4.66	3.93	28.20	19.61	91.411	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-4.84	3.77	28.23	19.62	91.622	Vertical	Pass
		1880	-4.78	3.91	28.24	19.55	90.157	Vertical	Pass
		1908.5	-4.67	3.94	28.25	19.64	92.045	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-5.01	3.77	28.31	19.53	89.743	Vertical	Pass
		1880	-4.78	3.91	28.22	19.53	89.743	Vertical	Pass
		1907.5	-4.57	3.94	28.20	19.69	93.111	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1855	-4.92	3.79	28.33	19.62	91.622	Vertical	Pass
		1880	-4.67	3.95	28.22	19.60	91.201	Vertical	Pass
		1905	-4.65	3.97	28.19	19.57	90.573	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1857.5	-4.90	3.79	28.34	19.65	92.257	Vertical	Pass
		1880	-4.70	3.95	28.22	19.57	90.573	Vertical	Pass
		1902.5	-4.58	3.97	28.18	19.63	91.833	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1860	-4.82	3.81	28.35	19.72	93.756	Vertical	Pass
		1880	-4.53	3.96	28.22	19.73	93.972	Vertical	Pass
		1900	-4.44	4.00	28.16	19.72	93.756	Vertical	Pass

Radiated Power (EIRP) for Band 2									
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 16 QAM	1/#Mid	1850.7	-5.79	3.76	28.24	18.69	73.961	Horizontal	Pass
		1880	-5.53	3.91	28.22	18.78	75.509	Horizontal	Pass
		1909.3	-5.61	3.93	28.20	18.66	73.451	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-5.80	3.77	28.23	18.66	73.451	Horizontal	Pass
		1880	-5.65	3.91	28.24	18.68	73.790	Horizontal	Pass
		1908.5	-5.58	3.94	28.25	18.73	74.645	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-5.90	3.77	28.31	18.64	73.114	Horizontal	Pass
		1880	-5.52	3.91	28.22	18.79	75.683	Horizontal	Pass
		1907.5	-5.55	3.94	28.20	18.71	74.302	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-5.82	3.79	28.33	18.72	74.473	Horizontal	Pass
		1880	-5.56	3.95	28.22	18.71	74.302	Horizontal	Pass
		1905	-5.45	3.97	28.19	18.77	75.336	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-5.87	3.79	28.34	18.68	73.790	Horizontal	Pass
		1880	-5.53	3.95	28.22	18.74	74.817	Horizontal	Pass
		1902.5	-5.49	3.97	28.18	18.72	74.473	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-5.77	3.81	28.35	18.77	75.336	Horizontal	Pass
		1880	-5.62	3.96	28.22	18.64	73.114	Horizontal	Pass
		1900	-5.39	4.00	28.16	18.77	75.336	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1850.7	-5.68	3.76	28.24	18.80	75.858	Vertical	Pass
		1880	-5.55	3.91	28.22	18.76	75.162	Vertical	Pass
		1909.3	-5.49	3.93	28.20	18.78	75.509	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-5.66	3.77	28.23	18.80	75.858	Vertical	Pass
		1880	-5.63	3.91	28.24	18.70	74.131	Vertical	Pass
		1908.5	-5.56	3.94	28.25	18.75	74.989	Vertical	Pass
5.0MHz	1/#Mid	1852.5	-5.80	3.77	28.31	18.74	74.817	Vertical	Pass

Band 16 QAM		1880	-5.68	3.91	28.22	18.63	72.946	Vertical	Pass
		1907.5	-5.59	3.94	28.20	18.67	73.621	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-5.86	3.79	28.33	18.68	73.790	Vertical	Pass
		1880	-5.54	3.95	28.22	18.73	74.645	Vertical	Pass
		1905	-5.45	3.97	28.19	18.77	75.336	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-5.89	3.79	28.34	18.66	73.451	Vertical	Pass
		1880	-5.49	3.95	28.22	18.78	75.509	Vertical	Pass
		1902.5	-5.49	3.97	28.18	18.72	74.473	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-5.71	3.81	28.35	18.83	76.384	Vertical	Pass
		1880	-5.41	3.96	28.22	18.85	76.736	Vertical	Pass
		1900	-5.36	4.00	28.16	18.80	75.858	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					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	1710.7	-3.20	3.12	27.58	21.26	133.660	Horizontal	Pass
		1732.5	-3.06	3.27	27.61	21.28	134.276	Horizontal	Pass
		1754.3	-3.18	3.29	27.63	21.16	130.617	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-3.29	3.13	27.61	21.19	131.522	Horizontal	Pass
		1732.5	-3.10	3.27	27.61	21.24	133.045	Horizontal	Pass
		1753.5	-3.02	3.30	27.62	21.30	134.896	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-3.36	3.13	27.63	21.14	130.017	Horizontal	Pass
		1732.5	-3.09	3.27	27.61	21.25	133.352	Horizontal	Pass
		1752.5	-3.18	3.30	27.60	21.12	129.420	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-3.31	3.15	27.64	21.18	131.220	Horizontal	Pass
		1732.5	-3.13	3.31	27.61	21.17	130.918	Horizontal	Pass
		1750	-3.07	3.33	27.59	21.19	131.522	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-3.24	3.15	27.65	21.26	133.660	Horizontal	Pass
		1732.5	-3.07	3.31	27.61	21.23	132.739	Horizontal	Pass
		1747.5	-3.02	3.33	27.57	21.22	132.434	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-3.20	3.17	27.66	21.29	134.586	Horizontal	Pass
		1732.5	-2.99	3.32	27.61	21.30	134.896	Horizontal	Pass
		1745	-3.07	3.36	27.56	21.13	129.718	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-3.26	3.12	27.58	21.20	131.826	Vertical	Pass
		1732.5	-3.17	3.27	27.61	21.17	130.918	Vertical	Pass
		1754.3	-3.07	3.29	27.63	21.27	133.968	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-3.33	3.13	27.61	21.15	130.317	Vertical	Pass
		1732.5	-3.10	3.27	27.61	21.24	133.045	Vertical	Pass
		1753.5	-3.17	3.30	27.62	21.15	130.317	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-3.35	3.13	27.63	21.15	130.317	Vertical	Pass
		1732.5	-3.19	3.27	27.61	21.15	130.317	Vertical	Pass
		1752.5	-3.05	3.30	27.60	21.25	133.352	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-3.33	3.15	27.64	21.16	130.617	Vertical	Pass
		1732.5	-3.14	3.31	27.61	21.16	130.617	Vertical	Pass
		1750	-2.96	3.33	27.59	21.30	134.896	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1717.5	-3.29	3.15	27.65	21.21	132.130	Vertical	Pass
		1732.5	-3.04	3.31	27.61	21.26	133.660	Vertical	Pass
		1747.5	-3.10	3.33	27.57	21.14	130.017	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1720	-3.16	3.17	27.66	21.33	135.831	Vertical	Pass
		1732.5	-2.96	3.32	27.61	21.33	135.831	Vertical	Pass
		1745	-2.89	3.36	27.56	21.31	135.207	Vertical	Pass

Radiated Power (EIRP) for Band 4									
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 16 QAM	1/#Mid	1710.7	-4.17	3.12	27.58	20.29	106.905	Horizontal	Pass
		1732.5	-4.01	3.27	27.61	20.33	107.895	Horizontal	Pass
		1754.3	-4.02	3.29	27.63	20.32	107.647	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-4.23	3.13	27.61	20.25	105.925	Horizontal	Pass
		1732.5	-3.99	3.27	27.61	20.35	108.393	Horizontal	Pass
		1753.5	-4.01	3.30	27.62	20.31	107.399	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-4.16	3.13	27.63	20.34	108.143	Horizontal	Pass
		1732.5	-3.98	3.27	27.61	20.36	108.643	Horizontal	Pass
		1752.5	-3.92	3.30	27.60	20.38	109.144	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-4.20	3.15	27.64	20.29	106.905	Horizontal	Pass
		1732.5	-4.02	3.31	27.61	20.28	106.660	Horizontal	Pass
		1750	-3.86	3.33	27.59	20.40	109.648	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-4.17	3.15	27.65	20.33	107.895	Horizontal	Pass
		1732.5	-4.03	3.31	27.61	20.27	106.414	Horizontal	Pass
		1747.5	-3.91	3.33	27.57	20.33	107.895	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-4.11	3.17	27.66	20.38	109.144	Horizontal	Pass
		1732.5	-4.05	3.32	27.61	20.24	105.682	Horizontal	Pass
		1745	-3.82	3.36	27.56	20.38	109.144	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-4.13	3.12	27.58	20.33	107.895	Vertical	Pass
		1732.5	-4.04	3.27	27.61	20.30	107.152	Vertical	Pass
		1754.3	-3.94	3.29	27.63	20.40	109.648	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-4.17	3.13	27.61	20.31	107.399	Vertical	Pass
		1732.5	-3.98	3.27	27.61	20.36	108.643	Vertical	Pass
		1753.5	-4.07	3.30	27.62	20.25	105.925	Vertical	Pass
5.0MHz	1/#Mid	1712.5	-4.12	3.13	27.63	20.38	109.144	Vertical	Pass

Band 16 QAM		1732.5	-3.98	3.27	27.61	20.36	108.643	Vertical	Pass
		1752.5	-4.02	3.30	27.60	20.28	106.660	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-4.15	3.15	27.64	20.34	108.143	Vertical	Pass
		1732.5	-4.02	3.31	27.61	20.28	106.660	Vertical	Pass
		1750	-3.98	3.33	27.59	20.28	106.660	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-4.14	3.15	27.65	20.36	108.643	Vertical	Pass
		1732.5	-4.03	3.31	27.61	20.27	106.414	Vertical	Pass
		1747.5	-3.93	3.33	27.57	20.31	107.399	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-4.06	3.17	27.66	20.43	110.408	Vertical	Pass
		1732.5	-3.85	3.32	27.61	20.44	110.662	Vertical	Pass
		1745	-3.77	3.36	27.56	20.43	110.408	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							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	824.7	3.83	2.01	19.68	2.15	19.35	86.099	Horizontal	Pass
		836.5	3.79	2.01	19.77	2.15	19.40	87.096	Horizontal	Pass
		848.3	3.80	2.02	19.82	2.15	19.45	88.105	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	825.5	3.87	2.01	19.70	2.15	19.41	87.297	Horizontal	Pass
		836.5	3.82	2.01	19.77	2.15	19.43	87.700	Horizontal	Pass
		847.5	3.74	2.02	19.81	2.15	19.38	86.696	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	826.5	3.87	2.01	19.71	2.15	19.42	87.498	Horizontal	Pass
		836.5	3.81	2.01	19.77	2.15	19.42	87.498	Horizontal	Pass
		846.5	3.77	2.02	19.79	2.15	19.39	86.896	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	829	3.74	2.01	19.73	2.15	19.31	85.310	Horizontal	Pass
		836.5	3.77	2.01	19.77	2.15	19.38	86.696	Horizontal	Pass
		844	3.70	2.02	19.78	2.15	19.31	85.310	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	824.7	3.93	2.01	19.68	2.15	19.45	88.105	Vertical	Pass
		836.5	3.81	2.01	19.77	2.15	19.42	87.498	Vertical	Pass
		848.3	3.84	2.02	19.82	2.15	19.49	88.920	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	825.5	3.82	2.01	19.70	2.15	19.36	86.298	Vertical	Pass
		836.5	3.79	2.01	19.77	2.15	19.40	87.096	Vertical	Pass
		847.5	3.85	2.02	19.81	2.15	19.49	88.920	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	826.5	3.80	2.01	19.71	2.15	19.35	86.099	Vertical	Pass
		836.5	3.78	2.01	19.77	2.15	19.39	86.896	Vertical	Pass
		846.5	3.84	2.02	19.79	2.15	19.46	88.308	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	829	3.93	2.01	19.73	2.15	19.50	89.125	Vertical	Pass
		836.5	3.93	2.01	19.77	2.15	19.54	89.950	Vertical	Pass
		844	3.93	2.02	19.78	2.15	19.54	89.950	Vertical	Pass

Radiated Power (ERP) for Band 5										
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	
1.4MHz Band 16 QAM	1/#Mid	824.7	3.26	2.01	19.68	2.15	18.78	75.509	Horizontal	Pass
		836.5	3.16	2.01	19.77	2.15	18.77	75.336	Horizontal	Pass
		848.3	3.16	2.02	19.82	2.15	18.81	76.033	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	3.29	2.01	19.70	2.15	18.83	76.384	Horizontal	Pass
		836.5	3.19	2.01	19.77	2.15	18.80	75.858	Horizontal	Pass
		847.5	3.26	2.02	19.81	2.15	18.90	77.625	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	3.26	2.01	19.71	2.15	18.81	76.033	Horizontal	Pass
		836.5	3.22	2.01	19.77	2.15	18.83	76.384	Horizontal	Pass
		846.5	3.23	2.02	19.79	2.15	18.85	76.736	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	829	3.23	2.01	19.73	2.15	18.80	75.858	Horizontal	Pass
		836.5	3.21	2.01	19.77	2.15	18.82	76.208	Horizontal	Pass
		844	3.25	2.02	19.78	2.15	18.86	76.913	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	824.7	3.26	2.01	19.68	2.15	18.78	75.509	Vertical	Pass
		836.5	3.27	2.01	19.77	2.15	18.88	77.268	Vertical	Pass
		848.3	3.12	2.02	19.82	2.15	18.77	75.336	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	3.30	2.01	19.70	2.15	18.84	76.560	Vertical	Pass
		836.5	3.27	2.01	19.77	2.15	18.88	77.268	Vertical	Pass
		847.5	3.15	2.02	19.81	2.15	18.79	75.683	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	3.19	2.01	19.71	2.15	18.74	74.817	Vertical	Pass
		836.5	3.23	2.01	19.77	2.15	18.84	76.560	Vertical	Pass
		846.5	3.24	2.02	19.79	2.15	18.86	76.913	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	829	3.37	2.01	19.73	2.15	18.94	78.343	Vertical	Pass
		836.5	3.31	2.01	19.77	2.15	18.92	77.983	Vertical	Pass
		844	3.29	2.02	19.78	2.15	18.90	77.625	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 (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	2502.5	-2.07	4.54	27.75	21.14	130.017	Horizontal	Pass
		2535	-1.84	4.69	27.72	21.19	131.522	Horizontal	Pass
		2567.5	-1.93	4.71	27.71	21.07	127.938	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2505	-2.02	4.55	27.76	21.19	131.522	Horizontal	Pass
		2535	-1.92	4.69	27.72	21.11	129.122	Horizontal	Pass
		2565	-1.81	4.72	27.70	21.17	130.918	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-2.17	4.55	27.77	21.05	127.350	Horizontal	Pass
		2535	-1.93	4.69	27.72	21.10	128.825	Horizontal	Pass
		2562.5	-1.89	4.72	27.69	21.08	128.233	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2510	-2.06	4.57	27.78	21.15	130.317	Horizontal	Pass
		2535	-1.89	4.73	27.72	21.10	128.825	Horizontal	Pass
		2560	-1.83	4.75	27.68	21.10	128.825	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	-2.15	4.54	27.75	21.06	127.644	Vertical	Pass
		2535	-1.97	4.69	27.72	21.06	127.644	Vertical	Pass
		2567.5	-1.88	4.71	27.71	21.12	129.420	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2505	-2.06	4.55	27.76	21.15	130.317	Vertical	Pass
		2535	-1.99	4.69	27.72	21.04	127.057	Vertical	Pass
		2565	-1.79	4.72	27.70	21.19	131.522	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-2.11	4.55	27.77	21.11	129.122	Vertical	Pass
		2535	-1.95	4.69	27.72	21.08	128.233	Vertical	Pass
		2562.5	-1.90	4.72	27.69	21.07	127.938	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2510	-1.98	4.57	27.78	21.23	132.739	Vertical	Pass
		2535	-1.74	4.73	27.72	21.25	133.352	Vertical	Pass
		2560	-1.71	4.75	27.68	21.22	132.434	Vertical	Pass

Radiated Power (EIRP) for Band 7									
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	2502.5	-3.07	4.54	27.75	20.14	103.276	Horizontal	Pass
		2535	-2.85	4.69	27.72	20.18	104.232	Horizontal	Pass
		2567.5	-2.80	4.71	27.71	20.20	104.713	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-3.11	4.55	27.76	20.10	102.329	Horizontal	Pass
		2535	-2.85	4.69	27.72	20.18	104.232	Horizontal	Pass
		2565	-2.89	4.72	27.70	20.09	102.094	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-3.12	4.55	27.77	20.10	102.329	Horizontal	Pass
		2535	-2.88	4.69	27.72	20.15	103.514	Horizontal	Pass
		2562.5	-2.80	4.72	27.69	20.17	103.992	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-3.15	4.57	27.78	20.06	101.391	Horizontal	Pass
		2535	-2.94	4.73	27.72	20.05	101.158	Horizontal	Pass
		2560	-2.78	4.75	27.68	20.15	103.514	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	-3.14	4.54	27.75	20.07	101.625	Vertical	Pass
		2535	-2.96	4.69	27.72	20.07	101.625	Vertical	Pass
		2567.5	-2.90	4.71	27.71	20.10	102.329	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-3.09	4.55	27.76	20.12	102.802	Vertical	Pass
		2535	-2.95	4.69	27.72	20.08	101.859	Vertical	Pass
		2565	-2.88	4.72	27.70	20.10	102.329	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-3.05	4.55	27.77	20.17	103.992	Vertical	Pass
		2535	-2.95	4.69	27.72	20.08	101.859	Vertical	Pass
		2562.5	-2.84	4.72	27.69	20.13	103.039	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-3.00	4.57	27.78	20.21	104.954	Vertical	Pass
		2535	-2.79	4.73	27.72	20.20	104.713	Vertical	Pass
		2560	-2.70	4.75	27.68	20.23	105.439	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 (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	699.7	3.12	1.91	19.21	2.15	18.27	67.143	Vertical	Pass
		707.5	3.19	1.91	19.26	2.15	18.39	69.024	Vertical	Pass
		715.3	3.11	1.93	19.34	2.15	18.37	68.707	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	700.5	3.11	1.91	19.21	2.15	18.26	66.988	Vertical	Pass
		707.5	3.16	1.91	19.26	2.15	18.36	68.549	Vertical	Pass
		714.5	3.00	1.93	19.34	2.15	18.26	66.988	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	701.5	3.10	1.91	19.23	2.15	18.27	67.143	Vertical	Pass
		707.5	3.13	1.91	19.26	2.15	18.33	68.077	Vertical	Pass
		713.5	2.98	1.92	19.33	2.15	18.24	66.681	Vertical	Pass
10.0Hz Band QPSK	1/#Mid	704	3.11	1.91	19.25	2.15	18.30	67.608	Vertical	Pass
		707.5	3.09	1.91	19.26	2.15	18.29	67.453	Vertical	Pass
		711	3.11	1.92	19.32	2.15	18.36	68.549	Vertical	Pass
1.4MHz Band QPSK	1/#Mid	699.7	3.10	1.91	19.21	2.15	18.25	66.834	Horizontal	Pass
		707.5	3.10	1.91	19.26	2.15	18.30	67.608	Horizontal	Pass
		715.3	3.14	1.93	19.34	2.15	18.40	69.183	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	700.5	3.16	1.91	19.21	2.15	18.31	67.764	Horizontal	Pass
		707.5	3.15	1.91	19.26	2.15	18.35	68.391	Horizontal	Pass
		714.5	3.04	1.93	19.34	2.15	18.30	67.608	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	701.5	3.15	1.91	19.23	2.15	18.32	67.920	Horizontal	Pass
		707.5	3.14	1.91	19.26	2.15	18.34	68.234	Horizontal	Pass
		713.5	3.10	1.92	19.33	2.15	18.36	68.549	Horizontal	Pass
10.0Hz Band QPSK	1/#Mid	704	3.24	1.91	19.25	2.15	18.43	69.663	Horizontal	Pass
		707.5	3.21	1.91	19.26	2.15	18.41	69.343	Horizontal	Pass
		711	3.16	1.92	19.32	2.15	18.41	69.343	Horizontal	Pass

Radiated Power (ERP) for Band 12										
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	
1.4MHz Band 16 QAM	1/#Mid	699.7	2.42	1.91	19.21	2.15	17.57	57.148	Vertical	Pass
		707.5	2.32	1.91	19.26	2.15	17.52	56.494	Vertical	Pass
		715.3	2.22	1.93	19.34	2.15	17.48	55.976	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	2.36	1.91	19.21	2.15	17.51	56.364	Vertical	Pass
		707.5	2.28	1.91	19.26	2.15	17.48	55.976	Vertical	Pass
		714.5	2.22	1.93	19.34	2.15	17.48	55.976	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	2.38	1.91	19.23	2.15	17.55	56.885	Vertical	Pass
		707.5	2.30	1.91	19.26	2.15	17.50	56.234	Vertical	Pass
		713.5	2.31	1.92	19.33	2.15	17.57	57.148	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	704	2.24	1.91	19.25	2.15	17.43	55.335	Vertical	Pass
		707.5	2.22	1.91	19.26	2.15	17.42	55.208	Vertical	Pass
		711	2.31	1.92	19.32	2.15	17.56	57.016	Vertical	Pass
1.4MHz Band 16 QAM	1/#Mid	699.7	2.37	1.91	19.21	2.15	17.52	56.494	Horizontal	Pass
		707.5	2.31	1.91	19.26	2.15	17.51	56.364	Horizontal	Pass
		715.3	2.28	1.93	19.34	2.15	17.54	56.754	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	2.35	1.91	19.21	2.15	17.50	56.234	Horizontal	Pass
		707.5	2.29	1.91	19.26	2.15	17.49	56.105	Horizontal	Pass
		714.5	2.29	1.93	19.34	2.15	17.55	56.885	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	2.30	1.91	19.23	2.15	17.47	55.847	Horizontal	Pass
		707.5	2.31	1.91	19.26	2.15	17.51	56.364	Horizontal	Pass
		713.5	2.28	1.92	19.33	2.15	17.54	56.754	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	704	2.46	1.91	19.25	2.15	17.65	58.210	Horizontal	Pass
		707.5	2.44	1.91	19.26	2.15	17.64	58.076	Horizontal	Pass
		711	2.38	1.92	19.32	2.15	17.63	57.943	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 (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	706.5	3.06	1.91	19.23	2.15	18.23	66.527	Vertical	Pass
		710	3.10	1.91	19.26	2.15	18.30	67.608	Vertical	Pass
		713.5	2.98	1.92	19.33	2.15	18.24	66.681	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	709	2.96	1.91	19.25	2.15	18.15	65.313	Vertical	Pass
		710	3.00	1.91	19.26	2.15	18.20	66.069	Vertical	Pass
		711	2.97	1.92	19.32	2.15	18.22	66.374	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	706.5	3.05	1.91	19.23	2.15	18.22	66.374	Horizontal	Pass
		710	3.07	1.91	19.26	2.15	18.27	67.143	Horizontal	Pass
		713.5	2.99	1.92	19.33	2.15	18.25	66.834	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	709	3.14	1.91	19.25	2.15	18.33	68.077	Horizontal	Pass
		710	3.14	1.91	19.26	2.15	18.34	68.234	Horizontal	Pass
		711	3.06	1.92	19.32	2.15	18.31	67.764	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 Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	706.5	2.18	1.91	19.23	2.15	17.35	54.325	Vertical	Pass
		710	2.12	1.91	19.26	2.15	17.32	53.951	Vertical	Pass
		713.5	2.06	1.92	19.33	2.15	17.32	53.951	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	709	2.11	1.91	19.25	2.15	17.30	53.703	Vertical	Pass
		710	2.17	1.91	19.26	2.15	17.37	54.576	Vertical	Pass
		711	2.02	1.92	19.32	2.15	17.27	53.333	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	706.5	2.21	1.91	19.23	2.15	17.38	54.702	Horizontal	Pass
		710	2.10	1.91	19.26	2.15	17.30	53.703	Horizontal	Pass
		713.5	2.11	1.92	19.33	2.15	17.37	54.576	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	709	2.24	1.91	19.25	2.15	17.43	55.335	Horizontal	Pass
		710	2.20	1.91	19.26	2.15	17.40	54.954	Horizontal	Pass
		711	2.19	1.92	19.32	2.15	17.44	55.463	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 (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	2498.5	-0.65	4.54	27.75	22.56	180.302	Horizontal	Pass
		2593	-0.38	4.69	27.72	22.65	184.077	Horizontal	Pass
		2687.5	-0.32	4.71	27.71	22.68	185.353	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2501	-0.53	4.55	27.76	22.68	185.353	Horizontal	Pass
		2593	-0.44	4.69	27.72	22.59	181.552	Horizontal	Pass
		2685	-0.39	4.72	27.70	22.59	181.552	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2503.5	-0.63	4.55	27.77	22.59	181.552	Horizontal	Pass
		2593	-0.42	4.69	27.72	22.61	182.390	Horizontal	Pass
		2682.5	-0.43	4.72	27.69	22.54	179.473	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2506	-0.57	4.57	27.78	22.64	183.654	Horizontal	Pass
		2593	-0.33	4.73	27.72	22.66	184.502	Horizontal	Pass
		2680	-0.28	4.75	27.68	22.65	184.077	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2498.5	-0.58	4.54	27.75	22.63	183.231	Vertical	Pass
		2593	-0.47	4.69	27.72	22.56	180.302	Vertical	Pass
		2687.5	-0.37	4.71	27.71	22.63	183.231	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2501	-0.60	4.55	27.76	22.61	182.390	Vertical	Pass
		2593	-0.48	4.69	27.72	22.55	179.887	Vertical	Pass
		2685	-0.40	4.72	27.70	22.58	181.134	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2503.5	-0.69	4.55	27.77	22.53	179.061	Vertical	Pass
		2593	-0.48	4.69	27.72	22.55	179.887	Vertical	Pass
		2682.5	-0.29	4.72	27.69	22.68	185.353	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2506	-0.47	4.57	27.78	22.74	187.932	Vertical	Pass
		2593	-0.27	4.73	27.72	22.72	187.068	Vertical	Pass
		2680	-0.18	4.75	27.68	22.75	188.365	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	2502.5	-1.44	4.54	27.75	21.77	150.314	Horizontal	Pass
		2535	-1.25	4.69	27.72	21.78	150.661	Horizontal	Pass
		2567.5	-1.29	4.71	27.71	21.71	148.252	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-1.52	4.55	27.76	21.69	147.571	Horizontal	Pass
		2535	-1.27	4.69	27.72	21.76	149.968	Horizontal	Pass
		2565	-1.22	4.72	27.70	21.76	149.968	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-1.54	4.55	27.77	21.68	147.231	Horizontal	Pass
		2535	-1.37	4.69	27.72	21.66	146.555	Horizontal	Pass
		2562.5	-1.20	4.72	27.69	21.77	150.314	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-1.43	4.57	27.78	21.78	150.661	Horizontal	Pass
		2535	-1.24	4.73	27.72	21.75	149.624	Horizontal	Pass
		2560	-1.22	4.75	27.68	21.71	148.252	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	-1.45	4.54	27.75	21.76	149.968	Vertical	Pass
		2535	-1.25	4.69	27.72	21.78	150.661	Vertical	Pass
		2567.5	-1.35	4.71	27.71	21.65	146.218	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-1.56	4.55	27.76	21.65	146.218	Vertical	Pass
		2535	-1.31	4.69	27.72	21.72	148.594	Vertical	Pass
		2565	-1.33	4.72	27.70	21.65	146.218	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-1.53	4.55	27.77	21.69	147.571	Vertical	Pass
		2535	-1.23	4.69	27.72	21.80	151.356	Vertical	Pass
		2562.5	-1.29	4.72	27.69	21.68	147.231	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-1.37	4.57	27.78	21.84	152.757	Vertical	Pass
		2535	-1.15	4.73	27.72	21.84	152.757	Vertical	Pass
		2560	-1.09	4.75	27.68	21.84	152.757	Vertical	Pass

Note:

SG Level= Signal generator output

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

8.9 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	-3.42	3.76	28.24	21.06	127.644	Horizontal	Pass
		1745	-3.17	3.91	28.22	21.14	130.017	Horizontal	Pass
		1779.3	-3.14	3.93	28.2	21.13	129.718	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-3.40	3.77	28.23	21.06	127.644	Horizontal	Pass
		1745	-3.21	3.91	28.24	21.12	129.420	Horizontal	Pass
		1778.5	-3.13	3.94	28.25	21.18	131.220	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-3.51	3.77	28.31	21.03	126.765	Horizontal	Pass
		1745	-3.22	3.91	28.22	21.09	128.529	Horizontal	Pass
		1777.5	-3.07	3.94	28.2	21.19	131.522	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-3.39	3.79	28.33	21.15	130.317	Horizontal	Pass
		1745	-3.08	3.95	28.22	21.19	131.522	Horizontal	Pass
		1775	-3.04	3.97	28.19	21.18	131.220	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-3.37	3.79	28.34	21.18	131.220	Horizontal	Pass
		1745	-3.13	3.95	28.22	21.14	130.017	Horizontal	Pass
		1772.5	-3.06	3.97	28.18	21.15	130.317	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-3.39	3.81	28.35	21.15	130.317	Horizontal	Pass
		1745	-3.07	3.96	28.22	21.19	131.522	Horizontal	Pass
		1770	-2.97	4	28.16	21.19	131.522	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-3.34	3.76	28.24	21.14	130.017	Vertical	Pass
		1745	-3.12	3.91	28.22	21.19	131.522	Vertical	Pass
		1779.3	-3.19	3.93	28.2	21.08	128.233	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-3.28	3.77	28.23	21.18	131.220	Vertical	Pass
		1745	-3.16	3.91	28.24	21.17	130.918	Vertical	Pass
		1778.5	-3.26	3.94	28.25	21.05	127.350	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-3.50	3.77	28.31	21.04	127.057	Vertical	Pass
		1745	-3.25	3.91	28.22	21.06	127.644	Vertical	Pass
		1777.5	-3.12	3.94	28.2	21.14	130.017	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-3.43	3.79	28.34	21.12	129.420	Vertical	Pass
		1745	-3.17	3.95	28.22	21.10	128.825	Vertical	Pass
		1775	-3.13	3.97	28.18	21.08	128.233	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1717.5	-3.40	3.81	28.35	21.14	130.017	Vertical	Pass
		1745	-3.20	3.96	28.22	21.06	127.644	Vertical	Pass
		1772.5	-3.03	4	28.16	21.13	129.718	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1720	-3.32	3.79	28.34	21.23	132.739	Vertical	Pass
		1745	-3.06	3.95	28.22	21.21	132.130	Vertical	Pass
		1770	-2.99	3.97	28.18	21.22	132.434	Vertical	Pass

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 16 QAM	1/#Mid	1710.7	-4.14	3.76	28.24	20.34	108.143	Horizontal	Pass
		1745	-3.97	3.91	28.22	20.34	108.143	Horizontal	Pass
		1779.3	-4.00	3.93	28.2	20.27	106.414	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-4.07	3.77	28.23	20.39	109.396	Horizontal	Pass
		1745	-3.94	3.91	28.24	20.39	109.396	Horizontal	Pass
		1778.5	-4.00	3.94	28.25	20.31	107.399	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-4.16	3.77	28.31	20.38	109.144	Horizontal	Pass
		1745	-4.07	3.91	28.22	20.24	105.682	Horizontal	Pass
		1777.5	-4.01	3.94	28.2	20.25	105.925	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-4.16	3.79	28.33	20.38	109.144	Horizontal	Pass
		1745	-4.00	3.95	28.22	20.27	106.414	Horizontal	Pass
		1775	-3.97	3.97	28.19	20.25	105.925	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-4.26	3.79	28.34	20.29	106.905	Horizontal	Pass
		1745	-3.88	3.95	28.22	20.39	109.396	Horizontal	Pass
		1772.5	-3.94	3.97	28.18	20.27	106.414	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-4.26	3.81	28.35	20.28	106.660	Horizontal	Pass
		1745	-4.03	3.96	28.22	20.23	105.439	Horizontal	Pass
		1770	-3.85	4	28.16	20.31	107.399	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-4.11	3.76	28.24	20.37	108.893	Vertical	Pass
		1745	-3.92	3.91	28.22	20.39	109.396	Vertical	Pass
		1779.3	-3.97	3.93	28.2	20.30	107.152	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-4.18	3.77	28.23	20.28	106.660	Vertical	Pass
		1745	-3.99	3.91	28.24	20.34	108.143	Vertical	Pass
		1778.5	-3.93	3.94	28.25	20.38	109.144	Vertical	Pass
5.0MHz	1/#Mid	1712.5	-4.15	3.77	28.31	20.39	109.396	Vertical	Pass

Band 16 QAM		1745	-3.93	3.91	28.22	20.38	109.144	Vertical	Pass
		1777.5	-3.92	3.94	28.2	20.34	108.143	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-4.26	3.79	28.34	20.29	106.905	Vertical	Pass
		1745	-3.88	3.95	28.22	20.39	109.396	Vertical	Pass
		1775	-3.83	3.97	28.18	20.38	109.144	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-4.19	3.81	28.35	20.35	108.393	Vertical	Pass
		1745	-3.95	3.96	28.22	20.31	107.399	Vertical	Pass
		1772.5	-3.86	4	28.16	20.30	107.152	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-4.14	3.79	28.34	20.41	109.901	Vertical	Pass
		1745	-3.85	3.95	28.22	20.42	110.154	Vertical	Pass
		1770	-3.76	3.97	28.18	20.45	110.917	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 71

Radiated Power (ERP) for Band 71										
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 QPSK	1/#Mid	665.5	3.10	1.91	19.21	2.15	18.25	66.834	Vertical	Pass
		680.5	2.99	1.91	19.26	2.15	18.19	65.917	Vertical	Pass
		695.5	3.02	1.93	19.34	2.15	18.28	67.298	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	668	3.04	1.91	19.21	2.15	18.19	65.917	Vertical	Pass
		680.5	3.04	1.91	19.26	2.15	18.24	66.681	Vertical	Pass
		693	2.95	1.93	19.34	2.15	18.21	66.222	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	670.5	3.13	1.91	19.23	2.15	18.30	67.608	Vertical	Pass
		680.5	3.04	1.91	19.26	2.15	18.24	66.681	Vertical	Pass
		690.5	3.01	1.92	19.33	2.15	18.27	67.143	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	673	2.96	1.91	19.25	2.15	18.15	65.313	Vertical	Pass
		683	3.02	1.91	19.26	2.15	18.22	66.374	Vertical	Pass
		688	2.87	1.92	19.32	2.15	18.12	64.863	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	665.5	3.07	1.91	19.21	2.15	18.22	66.374	Horizontal	Pass
		680.5	3.00	1.91	19.26	2.15	18.20	66.069	Horizontal	Pass
		695.5	2.96	1.93	19.34	2.15	18.22	66.374	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	668	3.02	1.91	19.21	2.15	18.17	65.615	Horizontal	Pass
		680.5	3.01	1.91	19.26	2.15	18.21	66.222	Horizontal	Pass
		693	2.92	1.93	19.34	2.15	18.18	65.766	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	670.5	3.06	1.91	19.23	2.15	18.23	66.527	Horizontal	Pass
		680.5	2.98	1.91	19.26	2.15	18.18	65.766	Horizontal	Pass
		690.5	2.99	1.92	19.33	2.15	18.25	66.834	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	673	3.15	1.91	19.25	2.15	18.34	68.234	Horizontal	Pass
		683	3.13	1.91	19.26	2.15	18.33	68.077	Horizontal	Pass
		688	3.05	1.92	19.32	2.15	18.30	67.608	Horizontal	Pass

Radiated Power (ERP) for Band 71										
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	665.5	2.00	1.91	19.21	2.15	17.15	51.880	Vertical	Pass
		680.5	1.99	1.91	19.26	2.15	17.19	52.360	Vertical	Pass
		695.5	2.00	1.93	19.34	2.15	17.26	53.211	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	668	2.12	1.91	19.21	2.15	17.27	53.333	Vertical	Pass
		680.5	2.09	1.91	19.26	2.15	17.29	53.580	Vertical	Pass
		693	1.98	1.93	19.34	2.15	17.24	52.966	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	670.5	2.03	1.91	19.23	2.15	17.20	52.481	Vertical	Pass
		680.5	2.03	1.91	19.26	2.15	17.23	52.845	Vertical	Pass
		690.5	1.97	1.92	19.33	2.15	17.23	52.845	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	673	1.98	1.91	19.25	2.15	17.17	52.119	Vertical	Pass
		683	1.92	1.91	19.26	2.15	17.12	51.523	Vertical	Pass
		688	2.01	1.92	19.32	2.15	17.26	53.211	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	665.5	2.03	1.91	19.21	2.15	17.18	52.240	Horizontal	Pass
		680.5	2.05	1.91	19.26	2.15	17.25	53.088	Horizontal	Pass
		695.5	2.02	1.93	19.34	2.15	17.28	53.456	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	668	2.01	1.91	19.21	2.15	17.16	52.000	Horizontal	Pass
		680.5	1.98	1.91	19.26	2.15	17.18	52.240	Horizontal	Pass
		693	2.01	1.93	19.34	2.15	17.27	53.333	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	670.5	1.96	1.91	19.23	2.15	17.13	51.642	Horizontal	Pass
		680.5	2.00	1.91	19.26	2.15	17.20	52.481	Horizontal	Pass
		690.5	1.90	1.92	19.33	2.15	17.16	52.000	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	673	2.14	1.91	19.25	2.15	17.33	54.075	Horizontal	Pass
		683	2.14	1.91	19.26	2.15	17.34	54.200	Horizontal	Pass
		688	2.10	1.92	19.32	2.15	17.35	54.325	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)

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 log10(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 Log10 (p), dB; and
b. for mobile subscriber equipment, the attenuation shall not be less than 43 + 10 Log10 (p), dB at the channel edges and 55 + 10 Log10 (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 2/4/5/7/12/17/41/66/71

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	-53.60	4.04	33.51	-24.13	-13	-11.13	Horizontal
3701.4	-45.24	4.04	33.51	-15.77	-13	-2.77	Vertical
5552.1	-49.72	5.24	35.84	-19.12	-13	-6.12	Vertical
5552.1	-52.60	5.24	35.84	-22.00	-13	-9.00	Horizontal
187.4	-40.88	1.43	16.02	-26.29	-13	-13.29	Vertical
329.1	-35.36	1.30	17.99	-18.67	-13	-5.67	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-53.49	4.04	33.56	-23.97	-13	-10.97	Horizontal
3760.0	-51.41	4.04	33.56	-21.89	-13	-8.89	Vertical
5640.0	-46.52	5.24	35.91	-15.85	-13	-2.85	Vertical
5640.0	-52.61	5.24	35.91	-21.94	-13	-8.94	Horizontal
207.6	-35.65	1.62	16.97	-20.30	-13	-7.30	Vertical
350.1	-36.16	1.74	15.98	-21.93	-13	-8.93	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-45.86	4.04	34.00	-15.90	-13	-2.90	Horizontal
3818.6	-47.21	4.04	34.00	-17.25	-13	-4.25	Vertical
5727.9	-50.25	5.24	36.04	-19.45	-13	-6.45	Vertical
5727.9	-49.53	5.24	36.04	-18.73	-13	-5.73	Horizontal
187.4	-38.56	1.42	17.29	-22.69	-13	-9.69	Vertical
296.4	-41.90	1.50	17.90	-25.49	-13	-12.49	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	-52.45	4.07	33.54	-22.98	-13	-9.98	Horizontal
3720.0	-50.90	4.07	33.54	-21.43	-13	-8.43	Vertical
5580.0	-50.36	5.28	35.86	-19.78	-13	-6.78	Vertical
5580.0	-52.96	5.28	35.86	-22.38	-13	-9.38	Horizontal
199.9	-41.24	1.58	16.89	-25.92	-13	-12.92	Vertical
363.1	-42.45	1.76	17.26	-26.95	-13	-13.95	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-45.82	4.04	33.56	-16.30	-13	-3.30	Horizontal
3760.0	-53.40	4.04	33.56	-23.88	-13	-10.88	Vertical
5640.0	-45.12	5.24	35.91	-14.45	-13	-1.45	Vertical
5640.0	-52.87	5.24	35.91	-22.20	-13	-9.20	Horizontal
201.6	-35.73	1.46	16.27	-20.92	-13	-7.92	Vertical
337.5	-41.33	1.59	15.15	-27.77	-13	-14.77	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-53.23	4.04	34.00	-23.27	-13	-10.27	Horizontal
3800.0	-45.45	4.04	34.00	-15.49	-13	-2.49	Vertical
5700.0	-52.83	5.24	36.04	-22.03	-13	-9.03	Vertical
5700.0	-50.34	5.24	36.04	-19.54	-13	-6.54	Horizontal
185.7	-34.75	1.36	17.39	-18.71	-13	-5.71	Vertical
277.5	-35.12	1.66	15.39	-21.39	-13	-8.39	Horizontal

Note: PMea(dBm)= Power(dBm)+ ARpl (dBm)

. Over Limit= : PMea(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	-51.05	4.02	29.80	-25.27	-13	-12.27	Horizontal
3421.4	-52.72	4.02	29.80	-26.94	-13	-13.94	Vertical
5132.1	-46.52	5.24	35.84	-15.92	-13	-2.92	Vertical
5132.1	-50.99	5.24	35.84	-20.39	-13	-7.39	Horizontal
176.3	-39.96	1.68	16.04	-25.60	-13	-12.60	Vertical
444.6	-38.88	1.78	17.74	-22.92	-13	-9.92	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-45.71	4.03	30.00	-19.74	-13	-6.74	Horizontal
3465.0	-52.49	4.03	30.00	-26.52	-13	-13.52	Vertical
5197.5	-44.37	5.25	35.86	-13.76	-13	-0.76	Vertical
5197.5	-51.32	5.25	35.86	-20.71	-13	-7.71	Horizontal
212.9	-44.97	1.72	17.69	-29.00	-13	-16.00	Vertical
453.4	-36.07	1.62	16.02	-21.66	-13	-8.66	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-52.36	4.05	30.01	-26.40	-13	-13.40	Horizontal
3508.6	-52.08	4.05	30.01	-26.12	-13	-13.12	Vertical
5262.9	-51.42	5.26	35.86	-20.82	-13	-7.82	Vertical
5262.9	-50.43	5.26	35.86	-19.83	-13	-6.83	Horizontal
185.8	-37.81	1.80	16.69	-22.92	-13	-9.92	Vertical
265.8	-36.26	1.75	16.66	-21.36	-13	-8.36	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	-52.84	4.02	29.80	-27.06	-13	-14.06	Horizontal
3440.0	-51.55	4.02	29.80	-25.77	-13	-12.77	Vertical
5160.0	-49.03	5.24	35.84	-18.43	-13	-5.43	Vertical
5160.0	-52.58	5.24	35.84	-21.98	-13	-8.98	Horizontal
193.3	-34.70	1.57	17.26	-19.01	-13	-6.01	Vertical
278.1	-38.83	1.78	16.35	-24.26	-13	-11.26	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-48.86	4.03	30.00	-22.89	-13	-9.89	Horizontal
3465.0	-48.49	4.03	30.00	-22.52	-13	-9.52	Vertical
5197.5	-50.30	5.25	35.86	-19.69	-13	-6.69	Vertical
5197.5	-50.88	5.25	35.86	-20.27	-13	-7.27	Horizontal
186.5	-44.72	1.44	17.95	-28.21	-13	-15.21	Vertical
252.9	-34.85	1.65	16.09	-20.41	-13	-7.41	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-51.21	4.05	27.68	-27.58	-13	-14.58	Horizontal
3490.0	-45.16	4.05	27.68	-21.53	-13	-8.53	Vertical
5235.0	-53.41	5.26	35.86	-22.81	-13	-9.81	Vertical
5235.0	-51.93	5.26	35.86	-21.33	-13	-8.33	Horizontal
199.3	-35.82	1.61	16.85	-20.58	-13	-7.58	Vertical
414.2	-34.14	1.61	15.19	-20.56	-13	-7.56	Horizontal

Note: PMea(dBm)= Power(dBm)+ ARpl (dBm)

. Over Limit= : PMea(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	-52.59	2.78	27.50	-27.87	-13	-14.87	Horizontal
1649.4	-44.34	2.78	27.50	-19.62	-13	-6.62	Vertical
2474.1	-52.10	2.90	27.80	-27.20	-13	-14.20	Vertical
2474.1	-53.02	2.90	27.80	-28.12	-13	-15.12	Horizontal
182.3	-41.93	1.76	17.59	-26.10	-13	-13.10	Vertical
414.4	-35.93	1.63	15.87	-21.69	-13	-8.69	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-52.76	2.80	27.48	-28.08	-13	-15.08	Horizontal
1673.0	-48.80	2.80	27.48	-24.12	-13	-11.12	Vertical
2509.5	-49.32	2.91	27.70	-24.53	-13	-11.53	Vertical
2509.5	-49.17	2.91	27.70	-24.38	-13	-11.38	Horizontal
178.8	-35.35	1.61	15.68	-21.28	-13	-8.28	Vertical
274.3	-42.34	1.59	17.52	-26.42	-13	-13.42	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-52.85	2.82	27.43	-28.24	-13	-15.24	Horizontal
1696.6	-50.25	2.82	27.43	-25.64	-13	-12.64	Vertical
2544.9	-47.33	2.92	27.74	-22.51	-13	-9.51	Vertical
2544.9	-51.70	2.92	27.74	-26.88	-13	-13.88	Horizontal
207.7	-38.53	1.69	16.67	-23.54	-13	-10.54	Vertical
414.0	-42.11	1.70	17.18	-26.63	-13	-13.63	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	-50.67	2.78	27.50	-25.95	-13	-12.95	Horizontal
1658.0	-50.24	2.78	27.50	-25.52	-13	-12.52	Vertical
2487.0	-51.26	2.90	27.80	-26.36	-13	-13.36	Vertical
2487.0	-53.96	2.90	27.80	-29.06	-13	-16.06	Horizontal
204.7	-38.30	1.71	15.57	-24.44	-13	-11.44	Vertical
279.8	-39.78	1.34	16.40	-24.72	-13	-11.72	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-52.59	2.80	27.48	-27.91	-13	-14.91	Horizontal
1673.0	-49.35	2.80	27.48	-24.67	-13	-11.67	Vertical
2509.5	-53.53	2.91	27.70	-28.74	-13	-15.74	Vertical
2509.5	-52.75	2.91	27.70	-27.96	-13	-14.96	Horizontal
205.7	-38.48	1.44	17.04	-22.88	-13	-9.88	Vertical
245.1	-41.16	1.76	17.62	-25.30	-13	-12.30	Horizontal
Test Results for High Channel 844MHz							
1688.0	-53.33	2.82	27.43	-28.72	-13	-15.72	Horizontal
1688.0	-46.16	2.82	27.43	-21.55	-13	-8.55	Vertical
2532.0	-44.11	2.92	27.74	-19.29	-13	-6.29	Vertical
2532.0	-49.60	2.92	27.74	-24.78	-13	-11.78	Horizontal
198.5	-43.20	1.74	17.70	-27.24	-13	-14.24	Vertical
282.3	-36.46	1.41	17.46	-20.40	-13	-7.40	Horizontal

Note: PMea(dBm)= Power(dBm)+ ARpl (dBm)

. Over Limit= : PMea(dBm)-Limit(dBm)

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

9.4 LTE BAND 7

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

Test Results for Low Channel 2502.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
5005.0	-59.18	5.23	35.81	-28.60	-25	-3.60	Horizontal
5005.0	-61.96	5.23	35.81	-31.38	-25	-6.38	Vertical
7507.5	-63.05	5.67	36.85	-31.87	-25	-6.87	Vertical
7507.5	-64.88	5.67	36.85	-33.70	-25	-8.70	Horizontal
184.1	-49.06	1.73	17.97	-32.82	-25	-7.82	Vertical
417.0	-44.55	1.38	15.11	-30.82	-25	-5.82	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-61.46	5.23	35.82	-30.87	-25	-5.87	Horizontal
5070.0	-61.54	5.23	35.82	-30.95	-25	-5.95	Vertical
7605.0	-61.25	5.67	36.85	-30.07	-25	-5.07	Vertical
7605.0	-60.94	5.67	36.85	-29.76	-25	-4.76	Horizontal
193.8	-49.13	1.77	16.17	-34.72	-25	-9.72	Vertical
263.3	-47.29	1.63	15.21	-33.71	-25	-8.71	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-61.87	5.24	35.83	-31.28	-25	-6.28	Horizontal
5135.0	-61.74	5.24	35.83	-31.15	-25	-6.15	Vertical
7702.5	-59.41	5.68	36.87	-28.22	-25	-3.22	Vertical
7702.5	-64.07	5.68	36.87	-32.88	-25	-7.88	Horizontal
196.2	-47.08	1.58	17.56	-31.10	-25	-6.10	Vertical
334.4	-49.69	1.45	16.58	-34.56	-25	-9.56	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	-61.23	5.23	35.82	-30.64	-25	-5.64	Horizontal
5020.0	-62.22	5.23	35.82	-31.63	-25	-6.63	Vertical
7530.0	-61.06	5.67	36.86	-29.87	-25	-4.87	Vertical
7530.0	-62.89	5.67	36.86	-31.70	-25	-6.70	Horizontal
183.6	-53.63	1.63	15.76	-39.50	-25	-14.50	Vertical
309.6	-46.28	1.71	15.44	-32.55	-25	-7.55	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-63.78	5.23	35.82	-33.19	-25	-8.19	Horizontal
5070.0	-62.77	5.23	35.82	-32.18	-25	-7.18	Vertical
7605.0	-62.01	5.67	36.85	-30.83	-25	-5.83	Vertical
7605.0	-59.16	5.67	36.85	-27.98	-25	-2.98	Horizontal
183.2	-47.26	1.79	16.84	-32.20	-25	-7.20	Vertical
432.7	-50.08	1.71	17.64	-34.15	-25	-9.15	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-59.21	5.24	35.83	-28.62	-25	-3.62	Horizontal
5120.0	-62.24	5.24	35.83	-31.65	-25	-6.65	Vertical
7680.0	-61.20	5.70	36.88	-30.02	-25	-5.02	Vertical
7680.0	-63.33	5.70	36.88	-32.15	-25	-7.15	Horizontal
197.5	-44.79	1.79	16.84	-29.73	-25	-4.73	Vertical
311.0	-44.73	1.71	17.64	-28.80	-25	-3.80	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	-45.83	2.60	27.20	-21.23	-13	-8.23	Horizontal
1399.4	-47.35	2.60	27.20	-22.75	-13	-9.75	Vertical
2099.1	-47.66	2.85	27.54	-22.97	-13	-9.97	Vertical
2099.1	-50.39	2.85	27.54	-25.70	-13	-12.70	Horizontal
196.2	-43.45	1.49	17.78	-27.16	-13	-14.16	Vertical
447.3	-43.71	1.36	17.33	-27.74	-13	-14.74	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-50.04	2.61	27.28	-25.37	-13	-12.37	Horizontal
1415.0	-53.96	2.61	27.28	-29.29	-13	-16.29	Vertical
2122.5	-49.36	2.87	27.59	-24.64	-13	-11.64	Vertical
2122.5	-53.76	2.87	27.59	-29.04	-13	-16.04	Horizontal
203.2	-36.61	1.73	15.74	-22.60	-13	-9.60	Vertical
237.5	-39.03	1.62	15.79	-24.86	-13	-11.86	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-48.82	2.63	27.28	-24.17	-13	-11.17	Horizontal
1430.6	-45.59	2.63	27.28	-20.94	-13	-7.94	Vertical
2145.9	-47.42	2.88	27.60	-22.70	-13	-9.70	Vertical
2145.9	-52.31	2.88	27.60	-27.59	-13	-14.59	Horizontal
182.9	-34.13	1.61	18.00	-17.74	-13	-4.74	Vertical
254.7	-41.92	1.45	15.49	-27.89	-13	-14.89	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	-52.67	2.61	27.26	-28.02	-13	-15.02	Horizontal
1408.0	-53.06	2.61	27.26	-28.41	-13	-15.41	Vertical
2112.0	-49.73	2.87	27.58	-25.02	-13	-12.02	Vertical
2112.0	-53.26	2.87	27.58	-28.55	-13	-15.55	Horizontal
192.7	-35.70	1.31	16.97	-20.04	-13	-7.04	Vertical
423.5	-39.60	1.65	16.70	-24.55	-13	-11.55	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-46.99	2.61	27.28	-22.32	-13	-9.32	Horizontal
1415.0	-52.98	2.61	27.28	-28.31	-13	-15.31	Vertical
2122.5	-51.43	2.87	27.59	-26.71	-13	-13.71	Vertical
2122.5	-52.58	2.87	27.59	-27.86	-13	-14.86	Horizontal
196.9	-34.73	1.72	17.99	-18.46	-13	-5.46	Vertical
366.6	-43.32	1.73	17.94	-27.11	-13	-14.11	Horizontal
Test Results for High Channel 711MHz							
1422.0	-49.98	2.62	27.28	-25.32	-13	-12.32	Horizontal
1422.0	-53.16	2.62	27.28	-28.50	-13	-15.50	Vertical
2133.0	-44.31	2.87	27.60	-19.58	-13	-6.58	Vertical
2133.0	-52.94	2.87	27.60	-28.21	-13	-15.21	Horizontal
211.6	-35.21	1.58	15.93	-20.86	-13	-7.86	Vertical
280.5	-34.01	1.36	15.59	-19.78	-13	-6.78	Horizontal

Note: PMea(dBm)= Power(dBm)+ ARpl (dBm)

. Over Limit= : PMea(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	-45.35	2.61	27.28	-20.68	-13	-7.68	Horizontal
1413.0	-53.73	2.61	27.28	-29.06	-13	-16.06	Vertical
2119.5	-50.32	2.87	27.59	-25.60	-13	-12.60	Vertical
2119.5	-52.51	2.87	27.59	-27.79	-13	-14.79	Horizontal
205.6	-38.95	1.71	16.15	-24.51	-13	-11.51	Vertical
396.0	-44.58	1.41	17.32	-28.67	-13	-15.67	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-52.41	2.62	27.30	-27.73	-13	-14.73	Horizontal
1420.0	-53.94	2.62	27.30	-29.26	-13	-16.26	Vertical
2130.0	-46.71	2.87	27.62	-21.96	-13	-8.96	Vertical
2130.0	-53.20	2.87	27.62	-28.45	-13	-15.45	Horizontal
193.5	-35.16	1.42	15.25	-21.34	-13	-8.34	Vertical
453.9	-43.28	1.36	17.19	-27.45	-13	-14.45	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-50.70	2.66	27.28	-26.08	-13	-13.08	Horizontal
1427.0	-53.94	2.66	27.28	-29.32	-13	-16.32	Vertical
2140.5	-45.88	2.88	27.60	-21.16	-13	-8.16	Vertical
2140.5	-50.53	2.88	27.60	-25.81	-13	-12.81	Horizontal
198.1	-42.18	1.32	17.29	-26.21	-13	-13.21	Vertical
277.7	-40.89	1.72	16.89	-25.72	-13	-12.72	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	-45.86	2.62	27.30	-21.18	-13	-8.18	Horizontal
1418.0	-49.04	2.62	27.30	-24.36	-13	-11.36	Vertical
2127.0	-44.29	2.87	27.62	-19.54	-13	-6.54	Vertical
2127.0	-51.65	2.87	27.62	-26.90	-13	-13.90	Horizontal
201.3	-35.38	1.35	16.91	-19.82	-13	-6.82	Vertical
399.4	-35.37	1.62	16.31	-20.68	-13	-7.68	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-47.48	2.62	27.30	-22.80	-13	-9.80	Horizontal
1420.0	-49.37	2.62	27.30	-24.69	-13	-11.69	Vertical
2130.0	-51.00	2.87	27.62	-26.25	-13	-13.25	Vertical
2130.0	-49.93	2.87	27.62	-25.18	-13	-12.18	Horizontal
199.1	-36.12	1.51	17.14	-20.49	-13	-7.49	Vertical
255.7	-36.46	1.77	16.88	-21.35	-13	-8.35	Horizontal
Test Results for High Channel 711MHz							
1422.0	-48.16	2.62	27.30	-23.48	-13	-10.48	Horizontal
1422.0	-46.56	2.62	27.30	-21.88	-13	-8.88	Vertical
2133.0	-44.94	2.87	27.62	-20.19	-13	-7.19	Vertical
2133.0	-53.41	2.87	27.62	-28.66	-13	-15.66	Horizontal
205.2	-40.83	1.78	15.95	-26.66	-13	-13.66	Vertical
320.0	-34.69	1.34	17.95	-18.09	-13	-5.09	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 2498.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
4997.0	-60.65	5.13	35.81	-29.97	-25	-4.97	Horizontal
4997.0	-62.11	5.13	35.81	-31.43	-25	-6.43	Vertical
7495.5	-63.75	5.42	36.85	-32.32	-25	-7.32	Vertical
7495.5	-64.04	5.42	36.85	-32.61	-25	-7.61	Horizontal
177.4	-47.88	1.56	17.97	-31.47	-25	-6.47	Vertical
412.2	-46.18	1.33	15.11	-32.40	-25	-7.40	Horizontal
Test Results for Mid Channel 2593MHz							
5186.0	-63.63	5.16	35.82	-32.97	-25	-7.97	Horizontal
5186.0	-63.23	5.16	35.82	-32.57	-25	-7.57	Vertical
7779.0	-59.26	5.53	36.85	-27.94	-25	-2.94	Vertical
7779.0	-59.64	5.53	36.85	-28.32	-25	-3.32	Horizontal
200.8	-48.06	1.77	16.17	-33.65	-25	-8.65	Vertical
233.4	-52.96	1.63	15.21	-39.38	-25	-14.38	Horizontal
Test Results for High Channel 2687.5MHz							
5375.0	-59.68	5.23	35.83	-29.08	-25	-4.08	Horizontal
5375.0	-64.62	5.23	35.83	-34.02	-25	-9.02	Vertical
8062.5	-61.16	5.62	36.87	-29.91	-25	-4.91	Vertical
8062.5	-60.33	5.62	36.87	-29.08	-25	-4.08	Horizontal
211.6	-45.43	1.58	17.56	-29.45	-25	-4.45	Vertical
393.0	-47.71	1.45	16.58	-32.58	-25	-7.58	Horizontal

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

Test Results for Low Channel 2506MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
5012.0	-62.90	5.23	35.82	-32.31	-25	-7.31	Horizontal
5012.0	-62.90	5.23	35.82	-32.31	-25	-7.31	Vertical
7518.0	-60.74	5.67	36.86	-29.55	-25	-4.55	Vertical
7518.0	-61.47	5.67	36.86	-30.28	-25	-5.28	Horizontal
186.2	-51.04	1.55	15.76	-36.83	-25	-11.83	Vertical
425.9	-51.63	1.62	15.44	-37.81	-25	-12.81	Horizontal
Test Results for Mid Channel 2593MHz							
5186.0	-59.21	5.16	35.82	-28.55	-25	-3.55	Horizontal
5186.0	-63.05	5.16	35.82	-32.39	-25	-7.39	Vertical
7779.0	-60.88	5.53	36.85	-29.56	-25	-4.56	Vertical
7779.0	-63.74	5.53	36.85	-32.42	-25	-7.42	Horizontal
202.0	-52.46	1.58	16.84	-37.20	-25	-12.20	Vertical
459.5	-51.23	1.61	17.64	-35.20	-25	-10.20	Horizontal
Test Results for High Channel 2680MHz							
5360.0	-60.86	5.24	35.83	-30.27	-25	-5.27	Horizontal
5360.0	-62.94	5.24	35.83	-32.35	-25	-7.35	Vertical
8040.0	-59.72	5.70	36.88	-28.54	-25	-3.54	Vertical
8040.0	-63.69	5.70	36.88	-32.51	-25	-7.51	Horizontal
204.8	-49.94	1.48	16.84	-34.58	-25	-9.58	Vertical
462.7	-45.63	1.59	17.64	-29.58	-25	-4.58	Horizontal

Note: PMea(dBm)= Power(dBm)+ ARpl (dBm)

. Over Limit= : PMea(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 1710.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
3421.4	-60.91	3.84	35.81	-28.94	-13	-15.94	Horizontal
3421.4	-61.64	3.84	35.81	-29.67	-13	-16.67	Vertical
5132.1	-59.96	5.18	36.85	-28.29	-13	-15.29	Vertical
5132.1	-59.87	5.18	36.85	-28.20	-13	-15.20	Horizontal
211.2	-49.83	1.56	17.97	-33.42	-13	-20.42	Vertical
396.2	-53.05	1.33	15.11	-39.27	-13	-26.27	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-62.45	3.85	35.82	-30.48	-13	-17.48	Horizontal
3490.0	-59.92	3.85	35.82	-27.95	-13	-14.95	Vertical
5235.0	-59.12	5.21	36.85	-27.48	-13	-14.48	Vertical
5235.0	-64.57	5.21	36.85	-32.93	-13	-19.93	Horizontal
187.4	-53.73	1.77	16.17	-39.32	-13	-26.32	Vertical
281.2	-45.69	1.63	15.21	-32.11	-13	-19.11	Horizontal
Test Results for High Channel 1779.3MHz							
3558.6	-61.14	3.86	35.83	-29.17	-13	-16.17	Horizontal
3558.6	-63.68	3.86	35.83	-31.71	-13	-18.71	Vertical
5337.9	-59.47	5.24	36.87	-27.84	-13	-14.84	Vertical
5337.9	-64.30	5.24	36.87	-32.67	-13	-19.67	Horizontal
202.5	-50.63	1.58	17.56	-34.65	-13	-21.65	Vertical
311.2	-44.86	1.45	16.58	-29.73	-13	-16.73	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	-64.36	3.84	35.82	-32.38	-13	-19.38	Horizontal
3440.0	-60.01	3.84	35.82	-28.03	-13	-15.03	Vertical
5160.0	-63.71	5.18	36.86	-32.03	-13	-19.03	Vertical
5160.0	-60.37	5.18	36.86	-28.69	-13	-15.69	Horizontal
189.8	-51.66	1.56	15.76	-37.46	-13	-24.46	Vertical
357.2	-48.79	1.33	15.44	-34.68	-13	-21.68	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-60.23	3.85	35.82	-28.26	-13	-15.26	Horizontal
3490.0	-63.56	3.85	35.82	-31.59	-13	-18.59	Vertical
5235.0	-62.32	5.21	36.85	-30.68	-13	-17.68	Vertical
5235.0	-64.36	5.21	36.85	-32.72	-13	-19.72	Horizontal
199.8	-48.49	1.77	16.84	-33.41	-13	-20.41	Vertical
467.8	-54.87	1.63	17.64	-38.86	-13	-25.86	Horizontal
Test Results for High Channel 1770MHz							
3540.0	-60.84	3.86	35.83	-28.87	-13	-15.87	Horizontal
3540.0	-59.54	3.86	35.83	-27.57	-13	-14.57	Vertical
5310.0	-64.93	5.24	36.88	-33.29	-13	-20.29	Vertical
5310.0	-61.85	5.24	36.88	-30.21	-13	-17.21	Horizontal
188.0	-48.08	1.58	16.84	-32.81	-13	-19.81	Vertical
382.4	-44.10	1.45	17.64	-27.91	-13	-14.91	Horizontal

Note: PMea(dBm)= Power(dBm)+ ARpl (dBm)

. Over Limit= : PMea(dBm)-Limit(dBm)

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

9.9 LTE BAND 71

QPSK EIRP POWER FOR LTE BAND 71 (5MHZ BANDWIDTH)

Test Results for Low Channel 665.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
1331.0	-60.40	2.16	35.81	-26.75	-13	-13.75	Horizontal
1331.0	-59.69	2.16	35.81	-26.04	-13	-13.04	Vertical
1996.5	-61.95	2.89	36.85	-27.99	-13	-14.99	Vertical
1996.5	-60.19	2.89	36.85	-26.23	-13	-13.23	Horizontal
177.9	-46.33	1.56	17.97	-29.92	-13	-16.92	Vertical
440.2	-54.03	1.33	15.11	-40.25	-13	-27.25	Horizontal
Test Results for Mid Channel 680.5MHz							
1361.0	-63.09	2.17	35.82	-29.44	-13	-16.44	Horizontal
1361.0	-59.86	2.17	35.82	-26.21	-13	-13.21	Vertical
2041.5	-62.43	2.90	36.85	-28.48	-13	-15.48	Vertical
2041.5	-64.07	2.90	36.85	-30.12	-13	-17.12	Horizontal
205.3	-50.87	1.77	16.17	-36.46	-13	-23.46	Vertical
375.0	-46.04	1.63	15.21	-32.46	-13	-19.46	Horizontal
Test Results for High Channel 695.5MHz							
1391.0	-59.55	2.19	35.83	-25.91	-13	-12.91	Horizontal
1391.0	-59.88	2.19	35.83	-26.24	-13	-13.24	Vertical
2086.5	-64.48	2.95	36.87	-30.56	-13	-17.56	Vertical
2086.5	-61.17	2.95	36.87	-27.25	-13	-14.25	Horizontal
207.6	-48.30	1.58	17.56	-32.32	-13	-19.32	Vertical
265.1	-44.60	1.45	16.58	-29.47	-13	-16.47	Horizontal

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

Test Results for Low Channel 673MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
1346.0	-63.39	2.16	35.82	-29.73	-13	-16.73	Horizontal
1346.0	-60.85	2.16	35.82	-27.19	-13	-14.19	Vertical
2019.0	-61.30	2.89	36.86	-27.33	-13	-14.33	Vertical
2019.0	-59.99	2.89	36.86	-26.02	-13	-13.02	Horizontal
186.5	-44.14	1.56	15.76	-29.94	-13	-16.94	Vertical
232.2	-53.08	1.33	15.44	-38.97	-13	-25.97	Horizontal
Test Results for Mid Channel 683MHz							
1366.0	-62.43	2.17	35.82	-28.78	-13	-15.78	Horizontal
1366.0	-60.09	2.17	35.82	-26.44	-13	-13.44	Vertical
2049.0	-62.96	2.90	36.85	-29.01	-13	-16.01	Vertical
2049.0	-59.30	2.90	36.85	-25.35	-13	-12.35	Horizontal
190.6	-50.81	1.77	16.84	-35.73	-13	-22.73	Vertical
277.8	-50.36	1.63	17.64	-34.35	-13	-21.35	Horizontal
Test Results for High Channel 688MHz							
1376.0	-59.34	2.19	35.83	-25.70	-13	-12.70	Horizontal
1376.0	-62.70	2.19	35.83	-29.06	-13	-16.06	Vertical
2064.0	-63.21	2.95	36.88	-29.28	-13	-16.28	Vertical
2064.0	-60.17	2.95	36.88	-26.24	-13	-13.24	Horizontal
197.0	-48.41	1.58	16.84	-33.14	-13	-20.14	Vertical
288.1	-48.06	1.45	17.64	-31.87	-13	-18.87	Horizontal

Note: PMea(dBm)= Power(dBm)+ ARpl (dBm)

. Over Limit= : PMea(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, §90.213

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°C
- Voltage =lowvoltage, DC 6.58V, Normal, DC 7.74V and High voltage, DC 8.90V.

Frequency Stability vs Temperature:

The EUT is place inside a temperature chamber. The temperature is set to -30ºC 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 +50ºC is reached.

Frequency Stability vs Voltage:

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

MODES TESTED

LTE Band 2/4/5/7/12/17/41/66/71

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]
6.58	1880	13.1	0.006988	2.5
7.74	1880	13.3	0.007092	2.5
8.90	1880	13.8	0.007329	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	12.9	0.006853	2.5
Extreme (50C)	1880	11.9	0.006314	2.5
Extreme (40C)	1880	14.0	0.007463	2.5
Extreme (30C)	1880	13.0	0.006929	2.5
Extreme (10C)	1880	13.8	0.007354	2.5
Extreme (0C)	1880	12.1	0.006443	2.5
Extreme (-10C)	1880	12.7	0.006738	2.5
Extreme (-20C)	1880	14.5	0.007721	2.5
Extreme (-30C)	1880	15.0	0.007999	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]
6.58	1880	9.4	0.004975	2.5
7.74	1880	9.2	0.004879	2.5
8.90	1880	7.8	0.004136	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	10.0	0.005308	2.5
Extreme (50C)	1880	9.1	0.004855	2.5
Extreme (40C)	1880	8.1	0.004327906	2.5
Extreme (30C)	1880	8.8	0.004703396	2.5
Extreme (10C)	1880	8.9	0.004727939	2.5
Extreme (0C)	1880	7.9	0.004210485	2.5
Extreme (-10C)	1880	8.8	0.004662331	2.5
Extreme (-20C)	1880	9.4	0.004989165	2.5
Extreme (-30C)	1880	8.2	0.004377286	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]
6.58	1732.5	9.0	0.005183	2.5
7.74	1732.5	9.0	0.005170	2.5
8.90	1732.5	8.2	0.004748	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	7.9	0.004570	2.5
Extreme (50C)	1732.5	8.9	0.005145	2.5
Extreme (40C)	1732.5	7.6	0.004394	2.5
Extreme (30C)	1732.5	5.6	0.003243	2.5
Extreme (10C)	1732.5	7.4	0.004297	2.5
Extreme (0C)	1732.5	9.4	0.005431	2.5
Extreme (-10C)	1732.5	8.9	0.005116	2.5
Extreme (-20C)	1732.5	6.9	0.003983	2.5
Extreme (-30C)	1732.5	8.5	0.004919	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]
6.58	1732.5	9.6	0.005528	2.5
7.74	1732.5	8.6	0.004943	2.5
8.90	1732.5	8.4	0.004869	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	9.8	0.005643	2.5
Extreme (50C)	1732.5	8.5	0.004896	2.5
Extreme (40C)	1732.5	8.1	0.004650	2.5
Extreme (30C)	1732.5	9.2	0.005324	2.5
Extreme (10C)	1732.5	8.8	0.005073	2.5
Extreme (0C)	1732.5	7.9	0.004559	2.5
Extreme (-10C)	1732.5	9.2	0.005309	2.5
Extreme (-20C)	1732.5	9.3	0.005373	2.5
Extreme (-30C)	1732.5	8.4	0.004857	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]
6.58	836.5	5.5	0.006545	2.5
7.74	836.5	6.7	0.008054	2.5
8.90	836.5	5.1	0.006106	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	5.7	0.006798	2.5
Extreme (50C)	836.5	5.5	0.006554	2.5
Extreme (40C)	836.5	5.7	0.006765	2.5
Extreme (30C)	836.5	6.0	0.007124	2.5
Extreme (10C)	836.5	5.9	0.007034	2.5
Extreme (0C)	836.5	4.8	0.005748	2.5
Extreme (-10C)	836.5	5.6	0.006727	2.5
Extreme (-20C)	836.5	5.7	0.006773	2.5
Extreme (-30C)	836.5	6.4	0.007594	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]
6.58	836.5	5.7	0.006826	2.5
7.74	836.5	7.1	0.008477	2.5
8.90	836.5	4.3	0.005150	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.1	0.007280	2.5
Extreme (50C)	836.5	5.8	0.006948	2.5
Extreme (40C)	836.5	5.8	0.006936	2.5
Extreme (30C)	836.5	6.7	0.008057	2.5
Extreme (10C)	836.5	5.5	0.006555	2.5
Extreme (0C)	836.5	5.5	0.006520	2.5
Extreme (-10C)	836.5	5.2	0.006276	2.5
Extreme (-20C)	836.5	5.7	0.006823	2.5
Extreme (-30C)	836.5	6.1	0.007347	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]
6.58	2535	10.5	0.004129	2.5
7.74	2535	8.9	0.003505	2.5
8.90	2535	8.0	0.003172	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	9.9	0.003887	2.5
Extreme (50C)	2535	9.3	0.003679	2.5
Extreme (40C)	2535	8.5	0.003349	2.5
Extreme (30C)	2535	8.9	0.003519	2.5
Extreme (10C)	2535	8.0	0.003158	2.5
Extreme (0C)	2535	8.3	0.003289	2.5
Extreme (-10C)	2535	9.1	0.003588	2.5
Extreme (-20C)	2535	8.8	0.003477	2.5
Extreme (-30C)	2535	8.4	0.003327	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]
6.58	2535	6.9	0.002722	2.5
7.74	2535	6.1	0.002418	2.5
8.90	2535	5.7	0.002259	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	5.6	0.002207	2.5
Extreme (40C)	2535	5.3	0.002096	2.5
Extreme (30C)	2535	6.8	0.002696	2.5
Extreme (10C)	2535	5.4	0.002116	2.5
Extreme (0C)	2535	4.8	0.001912	2.5
Extreme (-10C)	2535	5.2	0.002061	2.5
Extreme (-20C)	2535	6.2	0.002464	2.5
Extreme (-30C)	2535	6.1	0.002405	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]
6.58	707.5	8.9	0.012566	2.5
7.74	707.5	10.4	0.014684	2.5
8.90	707.5	8.3	0.011793	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	8.9	0.012535	2.5
Extreme (50C)	707.5	7.4	0.010412	2.5
Extreme (40C)	707.5	7.7	0.010890	2.5
Extreme (30C)	707.5	8.3	0.011748	2.5
Extreme (10C)	707.5	7.7	0.010864	2.5
Extreme (0C)	707.5	8.8	0.012382	2.5
Extreme (-10C)	707.5	8.4	0.011888	2.5
Extreme (-20C)	707.5	8.5	0.011966	2.5
Extreme (-30C)	707.5	8.0	0.011346	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]
6.58	707.5	7.0	0.009938	2.5
7.74	707.5	8.4	0.011901	2.5
8.90	707.5	7.3	0.010296	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	9.1	0.012829	2.5
Extreme (50C)	707.5	7.9	0.011235	2.5
Extreme (40C)	707.5	9.0	0.012700	2.5
Extreme (30C)	707.5	7.4	0.010466	2.5
Extreme (10C)	707.5	8.4	0.011930	2.5
Extreme (0C)	707.5	7.8	0.010986	2.5
Extreme (-10C)	707.5	7.9	0.011107	2.5
Extreme (-20C)	707.5	9.2	0.013027	2.5
Extreme (-30C)	707.5	8.0	0.011269	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]
6.58	710.0	9.5	0.013362	2.5
7.74	710.0	9.0	0.012643	2.5
8.90	710.0	8.3	0.011737	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	10.0	0.014144	2.5
Extreme (50C)	710.0	9.0	0.012670	2.5
Extreme (40C)	710.0	7.6	0.010730	2.5
Extreme (30C)	710.0	9.4	0.013187	2.5
Extreme (10C)	710.0	8.7	0.012308	2.5
Extreme (0C)	710.0	8.5	0.012029	2.5
Extreme (-10C)	710.0	9.3	0.013054	2.5
Extreme (-20C)	710.0	8.9	0.012482	2.5
Extreme (-30C)	710.0	8.1	0.011353	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]
6.58	710.0	10.0	0.014107	2.5
7.74	710.0	8.5	0.012003	2.5
8.90	710.0	8.3	0.011734	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.1	0.012874	2.5
Extreme (50C)	710.0	8.9	0.012470	2.5
Extreme (40C)	710.0	8.8	0.012440	2.5
Extreme (30C)	710.0	8.6	0.012052	2.5
Extreme (10C)	710.0	8.3	0.011734	2.5
Extreme (0C)	710.0	8.2	0.011480	2.5
Extreme (-10C)	710.0	9.4	0.013294	2.5
Extreme (-20C)	710.0	8.4	0.011881	2.5
Extreme (-30C)	710.0	8.7	0.012278	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]
6.58	2593	10.5	0.004035	2.5
7.74	2593	9.0	0.003455	2.5
8.90	2593	8.7	0.003338	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	9.7	0.003745	2.5
Extreme (50C)	2593	9.4	0.003609	2.5
Extreme (40C)	2593	8.5	0.003271	2.5
Extreme (30C)	2593	8.4	0.003258	2.5
Extreme (10C)	2593	8.2	0.003180	2.5
Extreme (0C)	2593	8.0	0.003089	2.5
Extreme (-10C)	2593	9.4	0.003642	2.5
Extreme (-20C)	2593	8.4	0.003258	2.5
Extreme (-30C)	2593	8.5	0.003295	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]
6.58	2593	6.9	0.002661	2.5
7.74	2593	6.3	0.002440	2.5
8.90	2593	5.9	0.002271	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	6.9	0.002661	2.5
Extreme (50C)	2593	5.3	0.002050	2.5
Extreme (40C)	2593	5.1	0.001978	2.5
Extreme (30C)	2593	6.9	0.002649	2.5
Extreme (10C)	2593	5.8	0.002247	2.5
Extreme (0C)	2593	5.3	0.002057	2.5
Extreme (-10C)	2593	5.1	0.001984	2.5
Extreme (-20C)	2593	6.4	0.002453	2.5
Extreme (-30C)	2593	6.1	0.002336	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

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]
6.58	1745	6.1	0.003499	2.5
7.74	1745	6.7	0.003820	2.5
8.90	1745	7.9	0.004502	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	5.3	0.003013	2.5
Extreme (50C)	1745	7.4	0.004250	2.5
Extreme (40C)	1745	6.7	0.003839	2.5
Extreme (30C)	1745	7.0	0.003985	2.5
Extreme (10C)	1745	7.4	0.004268	2.5
Extreme (0C)	1745	6.7	0.003851	2.5
Extreme (-10C)	1745	5.6	0.003211	2.5
Extreme (-20C)	1745	6.7	0.003856	2.5
Extreme (-30C)	1745	5.1	0.002918	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]
6.58	1745	8.6	0.004927	2.5
7.74	1745	7.9	0.004543	2.5
8.90	1745	9.2	0.005258	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	8.9	0.005075	2.5
Extreme (50C)	1745	8.4	0.004817	2.5
Extreme (40C)	1745	8.6	0.004932	2.5
Extreme (30C)	1745	8.0	0.004575	2.5
Extreme (10C)	1745	8.2	0.004690	2.5
Extreme (0C)	1745	6.6	0.003776	2.5
Extreme (-10C)	1745	8.0	0.004592	2.5
Extreme (-20C)	1745	8.1	0.004644	2.5
Extreme (-30C)	1745	5.4	0.003118	2.5

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

10.9 LTE BAND 71

Band 71 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]
6.58	1745	6.0	0.003464	2.5
7.74	1745	6.6	0.003757	2.5
8.90	1745	7.8	0.004482	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	5.3	0.003055	2.5
Extreme (50C)	1745	7.3	0.004184	2.5
Extreme (40C)	1745	6.8	0.003909	2.5
Extreme (30C)	1745	6.5	0.003748	2.5
Extreme (10C)	1745	7.1	0.004092	2.5
Extreme (0C)	1745	6.8	0.003889	2.5
Extreme (-10C)	1745	5.2	0.002981	2.5
Extreme (-20C)	1745	6.7	0.003838	2.5
Extreme (-30C)	1745	5.9	0.003363	2.5

Band 71 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]
6.58	1745	8.5	0.004887	2.5
7.74	1745	7.6	0.004337	2.5
8.90	1745	10.0	0.005723	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	9.0	0.005145	2.5
Extreme (50C)	1745	8.0	0.004564	2.5
Extreme (40C)	1745	9.0	0.005148	2.5
Extreme (30C)	1745	7.8	0.004444	2.5
Extreme (10C)	1745	8.5	0.004860	2.5
Extreme (0C)	1745	6.2	0.003528	2.5
Extreme (-10C)	1745	8.5	0.004876	2.5
Extreme (-20C)	1745	8.3	0.004737	2.5
Extreme (-30C)	1745	5.7	0.003285	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.

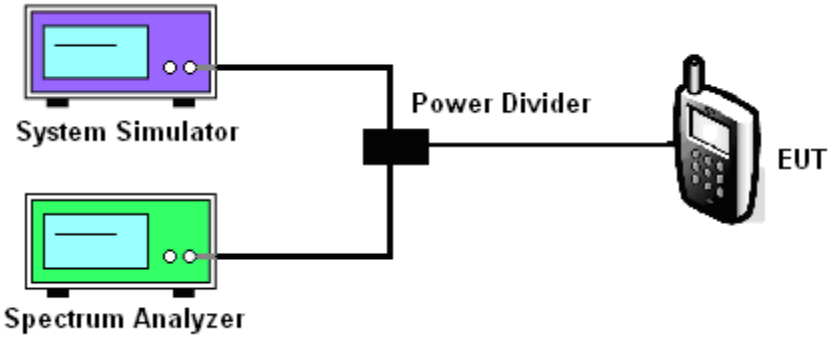
11.2 Measuring Instruments

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 2/4/5/7/12/17/41/66/71

Test data reference attachment.

----END OF REPORT----