

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

FCC ID: 2AOWK-5006AF1

Product: Mobile Phone

Trade Mark: ulefone

Model No.: GQ5006

Family Model: Armor 26 Ultra, Armor 26T Ultra, Armor 26, Armor 26T
Armor 26 Lite, Armor 26 Pro, Armor 26T Pro, Armor
26s, Armor 26s Pro

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TABLE OF CONTENTS

1. GENERAL INFORMATION.....	5
1. GENERAL INFORMATION.....	5
1.1 PRODUCT DESCRIPTION.....	5
1.3 TEST METHODOLOGY.....	6
1.4 TEST FACILITY.....	6
MEASUREMENT UNCERTAINTY.....	6
1.5 SPECIAL ACCESSORIES.....	6
1.6 WORST-CASE CONFIGURATION AND MODE.....	6
2. SYSTEM TEST CONFIGURATION.....	7
2.1 EUT CONFIGURATION.....	7
2.2 EUT EXERCISE.....	7
2.3 CONFIGURATION OF EUT SYSTEM.....	7
2.4 TEST SETUP.....	8
3. TEST AND MEASUREMENT EQUIPMENT.....	9
4. OUTPUT POWER.....	11
4.1 OUTPUT POWER MEASUREMENT.....	11
6. BANEDGE AND EMISSION MASK.....	14
7. OUT OF BAND EMISSIONS.....	16
7.1 MEASUREMENT METHOD.....	16
8. RADIATED MEASUREMENT.....	17
8.1. RADIATED POWER (ERP & EIRP).....	17
8.2 LTE BAND 2.....	18
8.3 LTE BAND 4.....	22
8.4 LTE BAND 5.....	26
8.5 LTE BAND 7.....	28

8.6 LTE BAND 12	30
8.7 LTE BAND 17	32
8.8 LTE BAND 41	34
9. SPURIOUS RADIATION EMISSION	36
9.1 LTE BAND 2	38
9.2 LTE BAND 4	40
9.3 LTE BAND 5	42
9.4 LTE BAND 7	44
9.5 LTE BAND 12	46
9.6 LTE BAND 17	48
9.7 LTE BAND 41	50
10. FREQUENCY STABILITY	52
10.1 LTE BAND 2	53
10.2 LTE BAND 4	55
10.3 LTE BAND 5	57
10.4 LTE BAND 7	59
10.5 LTE BAND 12	61
10.6 LTE BAND 17	63
10.7 LTE BAND 41	65
11. PEAK-TO-AVERAGE RATIO	67
11.1 Description of the PAR Measurement	67
11.2 Measuring Instruments	67
11.3 Test Procedures	67
11.4 Test Setup	68

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	GQ5006
Family Model	Armor 26 Ultra, Armor 26T Ultra, Armor 26, Armor 26T, Armor 26 Lite, Armor 26 Pro, Armor 26T Pro, Armor 26s, Armor 26s Pro
Model Difference	All models are the same circuit and RF module, except the Model Name.
FCC ID:	2AOWK-5006AF1
Frequency Bands:	U.S. Bands: <input checked="" type="checkbox"/> LTE FDD Band 2,4,5,7,12,17,41
Frequency Range:	LTE FDD Band 2 Uplink: 1850MHz-1910MHz, Downlink: 1930MHz-1990MHz; LTE FDD Band 4 Uplink: 1710MHz-1755MHz, Downlink: 2110MHz-2155MHz; LTE FDD Band 5 Uplink: 824MHz-849MHz, Downlink: 869MHz-894MHz; LTE-FDD Band 7 Uplink: 2500MHz-2570MHz, Downlink: 2620MHz-2690MHz; LTE FDD Band 12 Uplink: 699MHz-716MHz, Downlink: 729MHz-746MHz; LTE FDD Band 17 Uplink: 704MHz-716MHz, Downlink: 734MHz-746MHz; LTE FDD Band 41 Uplink: 2496MHz-2690MHz,
Type of Modulation:	QPSK/16QAM/64QAM(Only Downlink)
Power Class	Class 3
Antenna:	LDS Antenna
Antenna gain:	Band 2:1.36dBi;Band 4:-0.26dBi;Band 5:-2.66dBi;Band 7:-2.47dBi Band 12:-3.42dBi;Band 17:-3.42dBi;Band 41:-2.42dBi;
Adapter	Model: HJ-PD120W-US Input: 100-240V~50/60Hz 1.8A Output: 5.0V---3.0A 15.0W OR 9.0V---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, 7800mAh
Power supply	DC 7.74V from battery or DC 5V from adapter
Extreme Vol. Limits:	DC 6V to DC 8.9V (Nominal DC 7.74V) (Note 1)
HW Version	N/A
SW Version	N/A
** Note1: The High Voltage DC 8.9V and Low Voltage DC 6V 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-5006AF1** filing to comply with the FCC Part 22H&24E&27.

1.3 TEST METHODOLOGY

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

1.4 TEST FACILITY

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

ShenZhen NTEK Testing Technology Co., Ltd.

1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen 518126 P.R.China.

The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.26:2015& ANSI C63.4: 2014.

FCC Registration No.:463705

IC Registration No.:9270A-1,

CNAS Registration No.:L5516

MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.5dB

1.5 SPECIAL ACCESSORIES

The battery and the charger, earphone supplied by the applicant were used as accessories and being tested with EUT intended for FCC grant together.

1.6 WORST-CASE CONFIGURATION AND MODE

The worst-case scenario for all measurements is based on the investigation results.

The device has LTE Bands of: Band 2/4/5/7/12/17/41

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

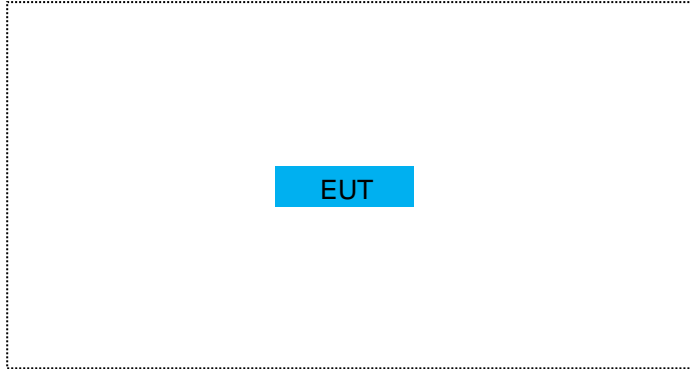
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Mobile Phone	GQ5006	FCC ID: 2AOWK-5006AF1	EUT

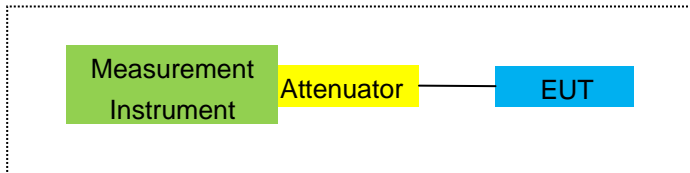
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

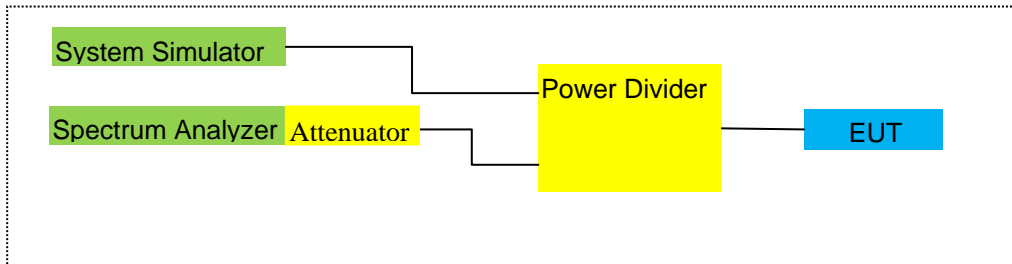
For Radiated Test Cases



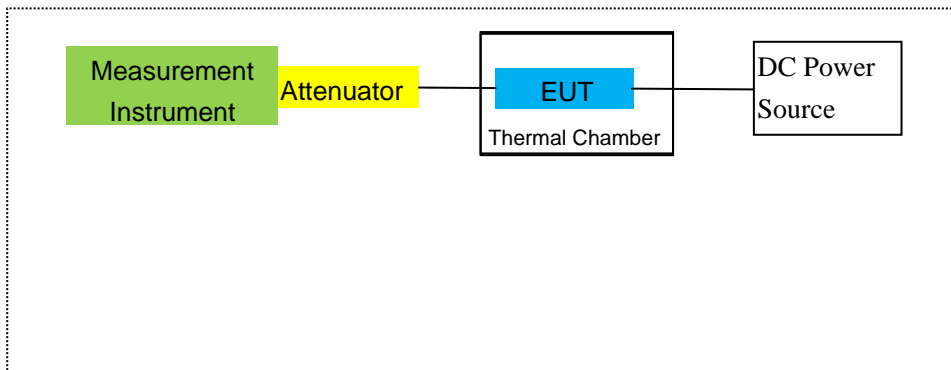
For Conducted Output Power



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	2024.03.12	2025.03.11	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2024.03.11	2025.03.10	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	2024.03.12	2025.03.11	1 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2023.05.29	2024.05.28	1 year
7	Amplifier	EM	EM-30180	060538	2023.05.29	2024.05.28	1 year
8	Loop Antenna	ARA	PLA-1030/B	1029	2024.03.12	2025.03.11	1 year
9	Power Meter	R&S	NRVS	100696	2023.05.29	2024.05.28	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2024.03.12	2025.03.11	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	2024.03.12	2025.03.11	1 year
15	LISN	R&S	ENV216	101313	2024.03.12	2025.03.11	1 year
16	LISN	EMCO	3816/2	00042990	2024.03.12	2025.03.11	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2024.03.12	2025.03.11	1 year
18	Passive Voltage Probe	R&S	ESH2-Z3	100196	2024.03.12	2025.03.11	1 year
19	Test Cable	N/A	C01	N/A	2023.05.06	2026.05.05	3 year
20	Test Cable	N/A	C02	N/A	2023.05.06	2026.05.05	3 year
21	Test Cable	N/A	C03	N/A	2023.05.06	2026.05.05	3 year
22	Attenuator	MCE	24-10-34	BN9258	2024.03.12	2025.03.11	1 year
23	Spectrum Analyzer	agilent	e4440a	us44300399	2024.03.12	2025.03.11	1 year
24	test receiver	R&S	ESCI	a0304218	2024.03.12	2025.03.11	1 year
25	Communication Tester	R&S	CMU200	A0304247	2023.05.29	2024.05.28	1 year

26	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2024.03.12	2025.03.11	1 year
27	DC Power Source	N/A	PS-6005D	2017040292 3	2023.05.06	2026.05.05	3 year
28	MXG Vector Signal Generator	Agilent	N5182A	MY47070317	2023.05.29	2024.05.28	1 year
29	Communication Tester	R&S	CMW500	148500	2023.05.29	2024.05.28	1 year

Note: Each piece of equipment is scheduled for calibration once a year except the Test Cable& DC Power Source which is scheduled for calibration every 3 years.

4. OUTPUT POWER

4.1 OUTPUT POWER MEASUREMENT

LTE Measurement Procedure:

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

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

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

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

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of "NS_01".3

Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)

Network Signalling value	Requirements (sub-clause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	NA
NS_03	6.6.2.2.1	2, 4, 10, 23, 25, 35, 36	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.2	41	5	>6	≤ 1
			10, 15, 20	See Table 6.2.4-4	
NS_05	6.6.3.3.1	1	10, 15, 20	≥ 50	≤ 1
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.6-1	n/a
NS_07	6.6.2.2.3	13	10	Table 6.2.4-2	Table 6.2.4-2
	6.6.3.3.2				
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23 ¹	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
..					
NS_32	-	-	-	-	-

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

Test data reference attachment.

5. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

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

MODES TESTED

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

RESULTS

PASS

Test data reference attachment.

6. BANDEDGE AND EMISSION MASK

RULE PART(S)

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

FCC: §22.359

LIMITS

FCC: §22.917, §24.238, §27.53

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

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

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

TEST PROCEDURE

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

For each band edge measurement:

Set the spectrum analyzer span to include the block edge frequency

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

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

MODES TESTED

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

RESULTS

Test data reference attachment.

7. OUT OF BAND EMISSIONS

RULE PART(S)

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

LIMITS

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

TEST PROCEDURE

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

For each out of band emissions measurement:

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

MODES TESTED

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

7.1 MEASUREMENT METHOD

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

Test data reference attachment.

8. RADIATED MEASUREMENT

8.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

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

LIMITS:

22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

27.50 (c) (10) the following power and antenna height requirements apply to stations transmitting in the 698–746 MHz band, the portable stations (hand-held devices) are limited to 3 watts ERP.

27.50 (b)(10) Portable stations (hand-held devices) transmitting in the 746–757 MHz, 758–763 MHz, 776–793 MHz, and 805–806 MHz bands are limited to 3 watts ERP.

27.50 (d)(4) The following power and antenna height requirements apply to stations transmitting in the 1710–1755 MHz and 2110–2155 MHz bands: Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.

27.50 (h)(2) Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

TEST PROCEDURE

ANSI/TIA-603-E Clause 2.2.17

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

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

MODES TESTED

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

RESULTS

Pass

8.2 LTE BAND 2

Radiated Power (EIRP) for Band 2										
Mode	RB/RB SIZE	Frequency	Result						Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)			
1.4MHz Band QPSK	1/#Mid	1850.7	-2.78	3.76	28.24	21.70	147.911	Horizontal	Pass	
		1880	-2.59	3.91	28.22	21.72	148.594	Horizontal	Pass	
		1909.3	-2.50	3.93	28.20	21.77	150.314	Horizontal	Pass	
3.0MHz Band QPSK	1/#Mid	1851.5	-2.84	3.77	28.23	21.62	145.211	Horizontal	Pass	
		1880	-2.69	3.91	28.24	21.64	145.881	Horizontal	Pass	
		1908.5	-2.56	3.94	28.25	21.75	149.624	Horizontal	Pass	
5.0MHz Band QPSK	1/#Mid	1852.5	-2.73	3.77	28.31	21.81	151.705	Horizontal	Pass	
		1880	-2.35	3.91	28.22	21.96	157.036	Horizontal	Pass	
		1907.5	-2.28	3.94	28.20	21.98	157.761	Horizontal	Pass	
10.0MHz Band QPSK	1/#Mid	1855	-2.59	3.79	28.33	21.95	156.675	Horizontal	Pass	
		1880	-2.29	3.95	28.22	21.98	157.761	Horizontal	Pass	
		1905	-2.18	3.97	28.19	22.04	159.956	Horizontal	Pass	
15.0MHz Band QPSK	1/#Mid	1857.5	-2.55	3.79	28.34	22.00	158.489	Horizontal	Pass	
		1880	-2.34	3.95	28.22	21.93	155.955	Horizontal	Pass	
		1902.5	-2.20	3.97	28.18	22.01	158.855	Horizontal	Pass	
20.0MHz Band QPSK	1/#Mid	1860	-2.54	3.81	28.35	22.00	158.489	Horizontal	Pass	
		1880	-2.21	3.96	28.22	22.05	160.325	Horizontal	Pass	
		1900	-2.15	4.00	28.16	22.01	158.855	Horizontal	Pass	
1.4MHz Band QPSK	1/#Mid	1850.7	-3.95	3.76	28.24	20.53	112.980	Vertical	Pass	
		1880	-3.41	3.91	28.22	20.90	123.027	Vertical	Pass	
		1909.3	-3.61	3.93	28.20	20.66	116.413	Vertical	Pass	
3.0MHz Band QPSK	1/#Mid	1851.5	-3.13	3.77	28.23	21.33	135.831	Vertical	Pass	
		1880	-3.19	3.91	28.24	21.14	130.017	Vertical	Pass	
		1908.5	-3.67	3.94	28.25	20.64	115.878	Vertical	Pass	
5.0MHz Band QPSK	1/#Mid	1852.5	-3.91	3.77	28.31	20.63	115.611	Vertical	Pass	
		1880	-3.37	3.91	28.22	20.94	124.165	Vertical	Pass	
		1907.5	-3.32	3.94	28.20	20.94	124.165	Vertical	Pass	
10.0MHz Band QPSK	1/#Mid	1855	-4.07	3.79	28.33	20.47	111.429	Vertical	Pass	
		1880	-3.11	3.95	28.22	21.16	130.617	Vertical	Pass	
		1905	-2.95	3.97	28.19	21.27	133.968	Vertical	Pass	
15.0MHz	1/#Mid	1857.5	-3.81	3.79	28.34	20.74	118.577	Vertical	Pass	

Band QPSK		1880	-3.75	3.95	28.22	20.52	112.720	Vertical	Pass
		1902.5	-3.71	3.97	28.18	20.50	112.202	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1860	-3.15	3.81	28.35	21.39	137.721	Vertical	Pass
		1880	-3.67	3.96	28.22	20.59	114.551	Vertical	Pass
		1900	-3.56	4.00	28.16	20.60	114.815	Vertical	Pass

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	1850.7	-3.90	3.76	28.24	20.58	114.288	Horizontal	Pass
		1880	-3.37	3.91	28.22	20.94	124.165	Horizontal	Pass
		1909.3	-3.30	3.93	28.20	20.97	125.026	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-3.40	3.77	28.23	21.06	127.644	Horizontal	Pass
		1880	-3.48	3.91	28.24	20.85	121.619	Horizontal	Pass
		1908.5	-3.69	3.94	28.25	20.62	115.345	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-3.34	3.77	28.31	21.20	131.826	Horizontal	Pass
		1880	-3.25	3.91	28.22	21.06	127.644	Horizontal	Pass
		1907.5	-2.93	3.94	28.20	21.33	135.831	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-3.39	3.79	28.33	21.15	130.317	Horizontal	Pass
		1880	-3.38	3.95	28.22	20.89	122.744	Horizontal	Pass
		1905	-2.85	3.97	28.19	21.37	137.088	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-3.37	3.79	28.34	21.18	131.220	Horizontal	Pass
		1880	-3.16	3.95	28.22	21.11	129.122	Horizontal	Pass
		1902.5	-3.12	3.97	28.18	21.09	128.529	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-3.26	3.81	28.35	21.28	134.276	Horizontal	Pass
		1880	-2.96	3.96	28.22	21.30	134.896	Horizontal	Pass
		1900	-2.78	4.00	28.16	21.38	137.404	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1850.7	-4.47	3.76	28.24	20.01	100.231	Vertical	Pass
		1880	-4.39	3.91	28.22	19.92	98.175	Vertical	Pass
		1909.3	-4.18	3.93	28.20	20.09	102.094	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-4.31	3.77	28.23	20.15	103.514	Vertical	Pass
		1880	-4.02	3.91	28.24	20.31	107.399	Vertical	Pass
		1908.5	-4.64	3.94	28.25	19.67	92.683	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-4.25	3.77	28.31	20.29	106.905	Vertical	Pass
		1880	-4.07	3.91	28.22	20.24	105.682	Vertical	Pass
		1907.5	-4.62	3.94	28.20	19.64	92.045	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-4.65	3.79	28.33	19.89	97.499	Vertical	Pass
		1880	-4.52	3.95	28.22	19.75	94.406	Vertical	Pass
		1905	-4.52	3.97	28.19	19.70	93.325	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-5.01	3.79	28.34	19.54	89.950	Vertical	Pass
		1880	-4.64	3.95	28.22	19.63	91.833	Vertical	Pass
		1902.5	-4.59	3.97	28.18	19.62	91.622	Vertical	Pass

20.0MHz		1860	-4.56	3.81	28.35	19.98	99.541	Vertical	Pass
Band 16	1/#Mid	1880	-4.51	3.96	28.22	19.75	94.406	Vertical	Pass
QAM		1900	-4.19	4.00	28.16	19.97	99.312	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	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP			
			(dBm)			Average	Average			
						(dBm)	(mW)			
1.4MHz Band QPSK	1/#Mid	1710.7	-2.85	3.12	27.58	21.61	144.877	Horizontal	Pass	
		1732.5	-2.84	3.27	27.61	21.50	141.254	Horizontal	Pass	
		1754.3	-2.82	3.29	27.63	21.52	141.906	Horizontal	Pass	
3.0MHz Band QPSK	1/#Mid	1711.5	-3.02	3.13	27.61	21.46	139.959	Horizontal	Pass	
		1732.5	-2.94	3.27	27.61	21.40	138.038	Horizontal	Pass	
		1753.5	-2.86	3.30	27.62	21.46	139.959	Horizontal	Pass	
5.0MHz Band QPSK	1/#Mid	1712.5	-2.79	3.13	27.63	21.71	148.252	Horizontal	Pass	
		1732.5	-2.69	3.27	27.61	21.65	146.218	Horizontal	Pass	
		1752.5	-2.57	3.30	27.60	21.73	148.936	Horizontal	Pass	
10.0MHz Band QPSK	1/#Mid	1715	-2.73	3.15	27.64	21.76	149.968	Horizontal	Pass	
		1732.5	-2.50	3.31	27.61	21.80	151.356	Horizontal	Pass	
		1750	-2.52	3.33	27.59	21.74	149.279	Horizontal	Pass	
15.0MHz Band QPSK	1/#Mid	1717.5	-2.74	3.15	27.65	21.76	149.968	Horizontal	Pass	
		1732.5	-2.58	3.31	27.61	21.72	148.594	Horizontal	Pass	
		1747.5	-2.52	3.33	27.57	21.72	148.594	Horizontal	Pass	
20.0MHz Band QPSK	1/#Mid	1720	-2.68	3.17	27.66	21.81	151.705	Horizontal	Pass	
		1732.5	-2.51	3.32	27.61	21.78	150.661	Horizontal	Pass	
		1745	-2.45	3.36	27.56	21.75	149.624	Horizontal	Pass	
1.4MHz Band QPSK	1/#Mid	1710.7	-3.65	3.12	27.58	20.81	120.504	Vertical	Pass	
		1732.5	-4.03	3.27	27.61	20.31	107.399	Vertical	Pass	
		1754.3	-3.63	3.29	27.63	20.71	117.761	Vertical	Pass	
3.0MHz Band QPSK	1/#Mid	1711.5	-3.55	3.13	27.61	20.93	123.880	Vertical	Pass	
		1732.5	-3.08	3.27	27.61	21.26	133.660	Vertical	Pass	
		1753.5	-3.92	3.30	27.62	20.40	109.648	Vertical	Pass	
5.0MHz Band QPSK	1/#Mid	1712.5	-3.41	3.13	27.63	21.09	128.529	Vertical	Pass	
		1732.5	-3.25	3.27	27.61	21.09	128.529	Vertical	Pass	
		1752.5	-3.48	3.30	27.60	20.82	120.781	Vertical	Pass	
10.0MHz Band QPSK	1/#Mid	1715	-3.98	3.15	27.64	20.51	112.460	Vertical	Pass	
		1732.5	-3.47	3.31	27.61	20.83	121.060	Vertical	Pass	
		1750	-3.65	3.33	27.59	20.61	115.080	Vertical	Pass	
15.0MHz	1/#Mid	1717.5	-4.18	3.15	27.65	20.32	107.647	Vertical	Pass	

Band		1732.5	-3.75	3.31	27.61	20.55	113.501	Vertical	Pass
QPSK		1747.5	-3.91	3.33	27.57	20.33	107.895	Vertical	Pass
20.0MHz	1/#Mid	1720	-4.14	3.17	27.66	20.35	108.393	Vertical	Pass
Band		1732.5	-3.09	3.32	27.61	21.20	131.826	Vertical	Pass
QPSK		1745	-3.70	3.36	27.56	20.50	112.202	Vertical	Pass

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
						(dBm)	(mW)		
1.4MHz Band 16 QAM	1/#Mid	1710.7	-3.66	3.12	27.58	20.80	120.226	Horizontal	Pass
		1732.5	-3.51	3.27	27.61	20.83	121.060	Horizontal	Pass
		1754.3	-3.51	3.29	27.63	20.83	121.060	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-3.60	3.13	27.61	20.88	122.462	Horizontal	Pass
		1732.5	-3.73	3.27	27.61	20.61	115.080	Horizontal	Pass
		1753.5	-3.95	3.30	27.62	20.37	108.893	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-3.43	3.13	27.63	21.07	127.938	Horizontal	Pass
		1732.5	-3.39	3.27	27.61	20.95	124.451	Horizontal	Pass
		1752.5	-3.08	3.30	27.60	21.22	132.434	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-3.50	3.15	27.64	20.99	125.603	Horizontal	Pass
		1732.5	-3.69	3.31	27.61	20.61	115.080	Horizontal	Pass
		1750	-3.07	3.33	27.59	21.19	131.522	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-3.30	3.15	27.65	21.20	131.826	Horizontal	Pass
		1732.5	-3.36	3.31	27.61	20.94	124.165	Horizontal	Pass
		1747.5	-3.38	3.33	27.57	20.86	121.899	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-3.25	3.17	27.66	21.24	133.045	Horizontal	Pass
		1732.5	-3.26	3.32	27.61	21.03	126.765	Horizontal	Pass
		1745	-3.07	3.36	27.56	21.13	129.718	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-4.30	3.12	27.58	20.16	103.753	Vertical	Pass
		1732.5	-4.56	3.27	27.61	19.78	95.060	Vertical	Pass
		1754.3	-4.80	3.29	27.63	19.54	89.950	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-4.49	3.13	27.61	19.99	99.770	Vertical	Pass
		1732.5	-4.39	3.27	27.61	19.95	98.855	Vertical	Pass
		1753.5	-4.43	3.30	27.62	19.89	97.499	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-5.05	3.13	27.63	19.45	88.105	Vertical	Pass
		1732.5	-4.76	3.27	27.61	19.58	90.782	Vertical	Pass
		1752.5	-4.37	3.30	27.60	19.93	98.401	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-5.18	3.15	27.64	19.31	85.310	Vertical	Pass
		1732.5	-4.52	3.31	27.61	19.78	95.060	Vertical	Pass
		1750	-4.65	3.33	27.59	19.61	91.411	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-5.08	3.15	27.65	19.42	87.498	Vertical	Pass
		1732.5	-5.00	3.31	27.61	19.30	85.114	Vertical	Pass
		1747.5	-4.97	3.33	27.57	19.27	84.528	Vertical	Pass

20.0MHz		1720	-4.54	3.17	27.66	19.95	98.855	Vertical	Pass
Band 16	1/#Mid	1732.5	-4.72	3.32	27.61	19.57	90.573	Vertical	Pass
QAM		1745	-4.38	3.36	27.56	19.82	95.940	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	Cable Loss	Antenna Factor	Correction	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	Of Max. ERP	
							(dBm)	(mW)		
1.4MHz Band QPSK	3/#Mid	824.7	5.89	2.01	19.68	2.15	21.41	138.357	Horizontal	Pass
		836.5	5.77	2.01	19.77	2.15	21.38	137.404	Horizontal	Pass
		848.3	5.57	2.02	19.82	2.15	21.22	132.434	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	825.5	5.66	2.01	19.70	2.15	21.20	131.826	Horizontal	Pass
		836.5	5.56	2.01	19.77	2.15	21.17	130.918	Horizontal	Pass
		847.5	5.43	2.02	19.81	2.15	21.07	127.938	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	826.5	5.94	2.01	19.71	2.15	21.49	140.929	Horizontal	Pass
		836.5	5.82	2.01	19.77	2.15	21.43	138.995	Horizontal	Pass
		846.5	5.66	2.02	19.79	2.15	21.28	134.276	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	829	5.96	2.01	19.73	2.15	21.53	142.233	Horizontal	Pass
		836.5	5.91	2.01	19.77	2.15	21.52	141.906	Horizontal	Pass
		844	5.81	2.02	19.78	2.15	21.42	138.676	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	824.7	4.48	2.01	19.68	2.15	20.00	100.000	Vertical	Pass
		836.5	4.52	2.01	19.77	2.15	20.13	103.039	Vertical	Pass
		848.3	4.85	2.02	19.82	2.15	20.50	112.202	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	825.5	5.16	2.01	19.70	2.15	20.70	117.490	Vertical	Pass
		836.5	4.65	2.01	19.77	2.15	20.26	106.170	Vertical	Pass
		847.5	4.67	2.02	19.81	2.15	20.31	107.399	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	826.5	4.40	2.01	19.71	2.15	19.95	98.855	Vertical	Pass
		836.5	4.60	2.01	19.77	2.15	20.21	104.954	Vertical	Pass
		846.5	4.67	2.02	19.79	2.15	20.29	106.905	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	829	4.26	2.01	19.73	2.15	19.83	96.161	Vertical	Pass
		836.5	4.84	2.01	19.77	2.15	20.45	110.917	Vertical	Pass
		844	5.07	2.02	19.78	2.15	20.68	116.950	Vertical	Pass

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Factor	Correction	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	Of Max. ERP	
							(dBm)	(mW)		
1.4MHz Band 16 QAM	3/#Mid	824.7	5.04	2.01	19.68	2.15	20.56	113.763	Horizontal	Pass
		836.5	4.97	2.01	19.77	2.15	20.58	114.288	Horizontal	Pass
		848.3	4.81	2.02	19.82	2.15	20.46	111.173	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	5.12	2.01	19.70	2.15	20.66	116.413	Horizontal	Pass
		836.5	4.83	2.01	19.77	2.15	20.44	110.662	Horizontal	Pass
		847.5	4.31	2.02	19.81	2.15	19.95	98.855	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	5.44	2.01	19.71	2.15	20.99	125.603	Horizontal	Pass
		836.5	5.21	2.01	19.77	2.15	20.82	120.781	Horizontal	Pass
		846.5	4.96	2.02	19.79	2.15	20.58	114.288	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	829	5.44	2.01	19.73	2.15	21.01	126.183	Horizontal	Pass
		836.5	5.16	2.01	19.77	2.15	20.77	119.399	Horizontal	Pass
		844	4.70	2.02	19.78	2.15	20.31	107.399	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	824.7	4.18	2.01	19.68	2.15	19.70	93.325	Vertical	Pass
		836.5	5.09	2.01	19.77	2.15	20.70	117.490	Vertical	Pass
		848.3	4.61	2.02	19.82	2.15	20.26	106.170	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	4.49	2.01	19.70	2.15	20.03	100.693	Vertical	Pass
		836.5	3.43	2.01	19.77	2.15	19.04	80.168	Vertical	Pass
		847.5	4.10	2.02	19.81	2.15	19.74	94.189	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	4.14	2.01	19.71	2.15	19.69	93.111	Vertical	Pass
		836.5	3.68	2.01	19.77	2.15	19.29	84.918	Vertical	Pass
		846.5	3.10	2.02	19.79	2.15	18.72	74.473	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	829	3.65	2.01	19.73	2.15	19.22	83.560	Vertical	Pass
		836.5	3.52	2.01	19.77	2.15	19.13	81.846	Vertical	Pass
		844	3.92	2.02	19.78	2.15	19.53	89.743	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.5 LTE BAND 7

Radiated Power (EIRP) for Band 7									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
						(dBm)	(mW)		
5.0MHz Band QPSK	1/#Mid	2502.5	-1.69	4.54	27.75	21.52	141.906	Horizontal	Pass
		2535	-1.52	4.69	27.72	21.51	141.579	Horizontal	Pass
		2567.5	-1.45	4.71	27.71	21.55	142.889	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2505	-1.62	4.55	27.76	21.59	144.212	Horizontal	Pass
		2535	-1.43	4.69	27.72	21.60	144.544	Horizontal	Pass
		2565	-1.35	4.72	27.70	21.63	145.546	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-1.63	4.55	27.77	21.59	144.212	Horizontal	Pass
		2535	-1.49	4.69	27.72	21.54	142.561	Horizontal	Pass
		2562.5	-1.39	4.72	27.69	21.58	143.880	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2510	-1.57	4.57	27.78	21.64	145.881	Horizontal	Pass
		2535	-1.39	4.73	27.72	21.60	144.544	Horizontal	Pass
		2560	-1.35	4.75	27.68	21.58	143.880	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	-3.49	4.54	27.75	19.72	93.756	Vertical	Pass
		2535	-3.26	4.69	27.72	19.77	94.842	Vertical	Pass
		2567.5	-2.61	4.71	27.71	20.39	109.396	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2505	-2.89	4.55	27.76	20.32	107.647	Vertical	Pass
		2535	-2.55	4.69	27.72	20.48	111.686	Vertical	Pass
		2565	-3.16	4.72	27.70	19.82	95.940	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-2.79	4.55	27.77	20.43	110.408	Vertical	Pass
		2535	-2.49	4.69	27.72	20.54	113.240	Vertical	Pass
		2562.5	-3.27	4.72	27.69	19.70	93.325	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2510	-2.58	4.57	27.78	20.63	115.611	Vertical	Pass
		2535	-3.04	4.73	27.72	19.95	98.855	Vertical	Pass
		2560	-3.22	4.75	27.68	19.71	93.541	Vertical	Pass

Radiated Power (EIRP) for Band 7									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
						(dBm)	(mW)		
5.0MHz Band 16 QAM	1/#Mid	2502.5	-2.38	4.54	27.75	20.83	121.060	Horizontal	Pass
		2535	-2.07	4.69	27.72	20.96	124.738	Horizontal	Pass
		2567.5	-2.15	4.71	27.71	20.85	121.619	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-2.27	4.55	27.76	20.94	124.165	Horizontal	Pass
		2535	-2.28	4.69	27.72	20.75	118.850	Horizontal	Pass
		2565	-2.55	4.72	27.70	20.43	110.408	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-2.45	4.55	27.77	20.77	119.399	Horizontal	Pass
		2535	-2.42	4.69	27.72	20.61	115.080	Horizontal	Pass
		2562.5	-2.03	4.72	27.69	20.94	124.165	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-2.33	4.57	27.78	20.88	122.462	Horizontal	Pass
		2535	-2.00	4.73	27.72	20.99	125.603	Horizontal	Pass
		2560	-2.10	4.75	27.68	20.83	121.060	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	-3.75	4.54	27.75	19.46	88.308	Vertical	Pass
		2535	-3.83	4.69	27.72	19.20	83.176	Vertical	Pass
		2567.5	-2.53	4.71	27.71	20.47	111.429	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-2.64	4.55	27.76	20.57	114.025	Vertical	Pass
		2535	-3.08	4.69	27.72	19.95	98.855	Vertical	Pass
		2565	-3.12	4.72	27.70	19.86	96.828	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-3.02	4.55	27.77	20.20	104.713	Vertical	Pass
		2535	-3.28	4.69	27.72	19.75	94.406	Vertical	Pass
		2562.5	-3.46	4.72	27.69	19.51	89.331	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-4.01	4.57	27.78	19.20	83.176	Vertical	Pass
		2535	-3.76	4.73	27.72	19.23	83.753	Vertical	Pass
		2560	-2.87	4.75	27.68	20.06	101.391	Vertical	Pass

Note:

SG Level= Signal generator output

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

8.6 LTE BAND 12

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Factor	Correction	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	Of Max. ERP	
							(dBm)	(mW)		
1.4MHz Band QPSK	1/#Mid	699.7	6.26	1.91	19.21	2.15	21.41	138.357	Vertical	Pass
		707.5	6.18	1.91	19.26	2.15	21.38	137.404	Vertical	Pass
		715.3	5.96	1.93	19.34	2.15	21.22	132.434	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	700.5	6.05	1.91	19.21	2.15	21.20	131.826	Vertical	Pass
		707.5	5.97	1.91	19.26	2.15	21.17	130.918	Vertical	Pass
		714.5	5.81	1.93	19.34	2.15	21.07	127.938	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	701.5	6.32	1.91	19.23	2.15	21.49	140.929	Vertical	Pass
		707.5	6.23	1.91	19.26	2.15	21.43	138.995	Vertical	Pass
		713.5	6.02	1.92	19.33	2.15	21.28	134.276	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	704	6.34	1.91	19.25	2.15	21.53	142.233	Vertical	Pass
		707.5	6.32	1.91	19.26	2.15	21.52	141.906	Vertical	Pass
		711	6.17	1.92	19.32	2.15	21.42	138.676	Vertical	Pass
1.4MHz Band QPSK	1/#Mid	699.7	5.18	1.91	19.21	2.15	20.33	107.895	Horizontal	Pass
		707.5	5.49	1.91	19.26	2.15	20.69	117.220	Horizontal	Pass
		715.3	5.33	1.93	19.34	2.15	20.59	114.551	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	700.5	4.56	1.91	19.21	2.15	19.71	93.541	Horizontal	Pass
		707.5	4.60	1.91	19.26	2.15	19.80	95.499	Horizontal	Pass
		714.5	4.74	1.93	19.34	2.15	20.00	100.000	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	701.5	5.11	1.91	19.23	2.15	20.28	106.660	Horizontal	Pass
		707.5	4.79	1.91	19.26	2.15	19.99	99.770	Horizontal	Pass
		713.5	5.12	1.92	19.33	2.15	20.38	109.144	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	704	5.34	1.91	19.25	2.15	20.53	112.980	Horizontal	Pass
		707.5	5.01	1.91	19.26	2.15	20.21	104.954	Horizontal	Pass
		711	5.20	1.92	19.32	2.15	20.45	110.917	Horizontal	Pass

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Factor	Correction	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	Of Max. ERP	
							(dBm)	(mW)		
1.4MHz	Band 16 QAM	699.7	6.15	1.91	19.21	2.15	21.30	134.896	Vertical	Pass
		707.5	6.07	1.91	19.26	2.15	21.27	133.968	Vertical	Pass
		715.3	5.85	1.93	19.34	2.15	21.11	129.122	Vertical	Pass
3.0MHz	Band 16 QAM	700.5	5.94	1.91	19.21	2.15	21.09	128.529	Vertical	Pass
		707.5	5.86	1.91	19.26	2.15	21.06	127.644	Vertical	Pass
		714.5	5.70	1.93	19.34	2.15	20.96	124.738	Vertical	Pass
5.0MHz	Band 16 QAM	701.5	6.21	1.91	19.23	2.15	21.38	137.404	Vertical	Pass
		707.5	6.12	1.91	19.26	2.15	21.32	135.519	Vertical	Pass
		713.5	5.91	1.92	19.33	2.15	21.17	130.918	Vertical	Pass
10.0MHz	Band 16 QAM	704	6.23	1.91	19.25	2.15	21.42	138.676	Vertical	Pass
		707.5	6.21	1.91	19.26	2.15	21.41	138.357	Vertical	Pass
		711	6.06	1.92	19.32	2.15	21.31	135.207	Vertical	Pass
1.4MHz	Band 16 QAM	699.7	4.79	1.91	19.21	2.15	19.94	98.628	Horizontal	Pass
		707.5	4.81	1.91	19.26	2.15	20.01	100.231	Horizontal	Pass
		715.3	4.86	1.93	19.34	2.15	20.12	102.802	Horizontal	Pass
3.0MHz	Band 16 QAM	700.5	4.85	1.91	19.21	2.15	20.00	100.000	Horizontal	Pass
		707.5	4.96	1.91	19.26	2.15	20.16	103.753	Horizontal	Pass
		714.5	4.69	1.93	19.34	2.15	19.95	98.855	Horizontal	Pass
5.0MHz	Band 16 QAM	701.5	5.19	1.91	19.23	2.15	20.36	108.643	Horizontal	Pass
		707.5	5.03	1.91	19.26	2.15	20.23	105.439	Horizontal	Pass
		713.5	5.19	1.92	19.33	2.15	20.45	110.917	Horizontal	Pass
10.0MHz	Band 16 QAM	704	4.67	1.91	19.25	2.15	19.86	96.828	Horizontal	Pass
		707.5	4.44	1.91	19.26	2.15	19.64	92.045	Horizontal	Pass
		711	4.60	1.92	19.32	2.15	19.85	96.605	Horizontal	Pass

Note:

SG Level= Signal generator output

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

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

8.7 LTE BAND 17

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Factor	Correction	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)		Average	Average	Of Max. ERP	
							(dB)	(dBm)	(mW)	
5.0MHz Band QPSK	1/#Mid	706.5	6.61	1.91	19.23	2.15	21.78	150.661	Vertical	Pass
		710	6.47	1.91	19.26	2.15	21.67	146.893	Vertical	Pass
		713.5	6.37	1.92	19.33	2.15	21.63	145.546	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	709	6.62	1.91	19.25	2.15	21.81	151.705	Vertical	Pass
		710	6.57	1.91	19.26	2.15	21.77	150.314	Vertical	Pass
		711	6.53	1.92	19.32	2.15	21.78	150.661	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	706.5	5.18	1.91	19.23	2.15	20.35	108.393	Horizontal	Pass
		710	5.00	1.91	19.26	2.15	20.20	104.713	Horizontal	Pass
		713.5	5.41	1.92	19.33	2.15	20.67	116.681	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	709	6.22	1.91	19.25	2.15	21.41	138.357	Horizontal	Pass
		710	5.88	1.91	19.26	2.15	21.08	128.233	Horizontal	Pass
		711	4.97	1.92	19.32	2.15	20.22	105.196	Horizontal	Pass

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Factor	Correction	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)	(dBm)	(dB)		Average	Average		
							(dB)	(dBm)		
5.0MHz Band 16 QAM	1/#Mid	706.5	5.96	1.91	19.23	2.15	21.13	129.718	Vertical	Pass
		710	5.87	1.91	19.26	2.15	21.07	127.938	Vertical	Pass
		713.5	5.67	1.92	19.33	2.15	20.93	123.880	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	709	5.50	1.91	19.25	2.15	20.69	117.220	Vertical	Pass
		710	6.03	1.91	19.26	2.15	21.23	132.739	Vertical	Pass
		711	5.76	1.92	19.32	2.15	21.01	126.183	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	706.5	5.05	1.91	19.23	2.15	20.22	105.196	Horizontal	Pass
		710	4.91	1.91	19.26	2.15	20.11	102.565	Horizontal	Pass
		713.5	4.50	1.92	19.33	2.15	19.76	94.624	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	709	4.60	1.91	19.25	2.15	19.79	95.280	Horizontal	Pass
		710	4.40	1.91	19.26	2.15	19.60	91.201	Horizontal	Pass
		711	4.64	1.92	19.32	2.15	19.89	97.499	Horizontal	Pass

Note:

ERP=EIRP-2.15

SG Level= Signal generator output

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

8.8 LTE BAND 41

Radiated Power (EIRP) for Band 41									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP Average	Polarization Of Max. ERP	
			(dBm)			Average			
						(dBm)			
5.0MHz Band QPSK	1#Mid	2498.5	-2.10	4.54	27.75	21.11	129.122	Horizontal	Pass
		2593	-1.95	4.69	27.72	21.08	128.233	Horizontal	Pass
		2687.5	-1.83	4.71	27.71	21.17	130.918	Horizontal	Pass
10.0MHz Band QPSK	1#Mid	2501	-2.18	4.55	27.76	21.03	126.765	Horizontal	Pass
		2593	-2.04	4.69	27.72	20.99	125.603	Horizontal	Pass
		2685	-2.03	4.72	27.70	20.95	124.451	Horizontal	Pass
15.0MHz Band QPSK	1#Mid	2503.5	-2.01	4.55	27.77	21.21	132.130	Horizontal	Pass
		2593	-1.73	4.69	27.72	21.30	134.896	Horizontal	Pass
		2682.5	-1.78	4.72	27.69	21.19	131.522	Horizontal	Pass
20.0MHz Band QPSK	1#Mid	2506	-1.62	4.57	27.78	21.59	144.212	Horizontal	Pass
		2593	-1.67	4.73	27.72	21.32	135.519	Horizontal	Pass
		2680	-1.67	4.75	27.68	21.26	133.660	Horizontal	Pass
5.0MHz Band QPSK	1#Mid	2498.5	-1.90	4.54	27.75	21.31	135.207	Vertical	Pass
		2593	-1.81	4.69	27.72	21.22	132.434	Vertical	Pass
		2687.5	-1.79	4.71	27.71	21.21	132.130	Vertical	Pass
10.0MHz Band QPSK	1#Mid	2501	-1.88	4.55	27.76	21.33	135.831	Vertical	Pass
		2593	-1.72	4.69	27.72	21.31	135.207	Vertical	Pass
		2685	-1.79	4.72	27.70	21.19	131.522	Vertical	Pass
15.0MHz Band QPSK	1#Mid	2503.5	-3.29	4.55	27.77	19.93	98.401	Vertical	Pass
		2593	-2.96	4.69	27.72	20.07	101.625	Vertical	Pass
		2682.5	-2.68	4.72	27.69	20.29	106.905	Vertical	Pass
20.0MHz Band QPSK	1#Mid	2506	-2.73	4.57	27.78	20.48	111.686	Vertical	Pass
		2593	-3.00	4.73	27.72	19.99	99.770	Vertical	Pass
		2680	-3.18	4.75	27.68	19.75	94.406	Vertical	Pass

Radiated Power (EIRP) for Band 41									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
						(dBm)	(mW)		
5.0MHz Band 16 QAM	1/#Mid	2498.5	-2.07	4.54	27.75	21.14	130.017	Horizontal	Pass
		2593	-1.92	4.69	27.72	21.11	129.122	Horizontal	Pass
		2687.5	-1.80	4.71	27.71	21.20	131.826	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2501	-2.15	4.55	27.76	21.06	127.644	Horizontal	Pass
		2593	-2.01	4.69	27.72	21.02	126.474	Horizontal	Pass
		2685	-2.00	4.72	27.70	20.98	125.314	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2503.5	-1.98	4.55	27.77	21.24	133.045	Horizontal	Pass
		2593	-1.70	4.69	27.72	21.33	135.831	Horizontal	Pass
		2682.5	-1.75	4.72	27.69	21.22	132.434	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2506	-1.70	4.57	27.78	21.51	141.579	Horizontal	Pass
		2593	-1.64	4.73	27.72	21.35	136.458	Horizontal	Pass
		2680	-1.64	4.75	27.68	21.29	134.586	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2498.5	-1.87	4.54	27.75	21.34	136.144	Vertical	Pass
		2593	-1.78	4.69	27.72	21.25	133.352	Vertical	Pass
		2687.5	-1.76	4.71	27.71	21.24	133.045	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2501	-1.85	4.55	27.76	21.36	136.773	Vertical	Pass
		2593	-1.69	4.69	27.72	21.34	136.144	Vertical	Pass
		2685	-1.76	4.72	27.70	21.22	132.434	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2503.5	-2.83	4.55	27.77	20.39	109.396	Vertical	Pass
		2593	-3.34	4.69	27.72	19.69	93.111	Vertical	Pass
		2682.5	-2.97	4.72	27.69	20.00	100.000	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2506	-2.95	4.57	27.78	20.26	106.170	Vertical	Pass
		2593	-2.80	4.73	27.72	20.19	104.472	Vertical	Pass
		2680	-2.56	4.75	27.68	20.37	108.893	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

9. SPURIOUS RADIATION EMISSION

RULE PART(S)

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

LIMIT

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

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

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

TEST PROCEDURE

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

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

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

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

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

MODES TESTED

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

RESULTS

PASS

9.1 LTE BAND 2

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

Test Results for Low Channel 1850.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3701.4	-47.01	4.04	33.51	-17.54	-13	-4.54	Horizontal
3701.4	-47.11	4.04	33.51	-17.64	-13	-4.64	Vertical
5552.1	-52.11	5.24	35.84	-21.51	-13	-8.51	Vertical
5552.1	-53.71	5.24	35.84	-23.11	-13	-10.11	Horizontal
189.0	-42.96	1.43	16.02	-28.37	-13	-15.37	Vertical
390.9	-35.93	1.30	17.99	-19.24	-13	-6.24	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-47.63	4.04	33.56	-18.11	-13	-5.11	Horizontal
3760.0	-48.64	4.04	33.56	-19.12	-13	-6.12	Vertical
5640.0	-50.07	5.24	35.91	-19.40	-13	-6.40	Vertical
5640.0	-51.75	5.24	35.91	-21.08	-13	-8.08	Horizontal
183.9	-36.25	1.62	16.97	-20.90	-13	-7.90	Vertical
447.5	-38.77	1.74	15.98	-24.54	-13	-11.54	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-50.05	4.04	34.00	-20.09	-13	-7.09	Horizontal
3818.6	-50.39	4.04	34.00	-20.43	-13	-7.43	Vertical
5727.9	-45.22	5.24	36.04	-14.42	-13	-1.42	Vertical
5727.9	-49.98	5.24	36.04	-19.18	-13	-6.18	Horizontal
211.6	-34.25	1.42	17.29	-18.38	-13	-5.38	Vertical
310.6	-37.26	1.50	17.90	-20.85	-13	-7.85	Horizontal

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

Test Results for Low Channel 1860MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3720.0	-45.42	4.07	33.54	-15.95	-13	-2.95	Horizontal
3720.0	-48.19	4.07	33.54	-18.72	-13	-5.72	Vertical
5580.0	-51.34	5.28	35.86	-20.76	-13	-7.76	Vertical
5580.0	-51.07	5.28	35.86	-20.49	-13	-7.49	Horizontal
187.9	-43.42	1.58	16.89	-28.10	-13	-15.10	Vertical
284.8	-41.73	1.76	17.26	-26.23	-13	-13.23	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-53.53	4.04	33.56	-24.01	-13	-11.01	Horizontal
3760.0	-46.02	4.04	33.56	-16.50	-13	-3.50	Vertical
5640.0	-48.34	5.24	35.91	-17.67	-13	-4.67	Vertical
5640.0	-52.86	5.24	35.91	-22.19	-13	-9.19	Horizontal
199.9	-43.76	1.46	16.27	-28.95	-13	-15.95	Vertical
386.6	-44.16	1.59	15.15	-30.60	-13	-17.60	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-47.92	4.04	34.00	-17.96	-13	-4.96	Horizontal
3800.0	-45.07	4.04	34.00	-15.11	-13	-2.11	Vertical
5700.0	-52.55	5.24	36.04	-21.75	-13	-8.75	Vertical
5700.0	-52.58	5.24	36.04	-21.78	-13	-8.78	Horizontal
195.8	-38.58	1.36	17.39	-22.54	-13	-9.54	Vertical
290.7	-44.43	1.66	15.39	-30.70	-13	-17.70	Horizontal

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

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

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

9.2 LTE BAND 4

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

Test Results for Low Channel 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-47.77	4.02	29.80	-21.99	-13	-8.99	Horizontal
3421.4	-53.56	4.02	29.80	-27.78	-13	-14.78	Vertical
5132.1	-50.46	5.24	35.84	-19.86	-13	-6.86	Vertical
5132.1	-49.83	5.24	35.84	-19.23	-13	-6.23	Horizontal
209.1	-36.13	1.68	16.04	-21.77	-13	-8.77	Vertical
372.2	-42.61	1.78	17.74	-26.65	-13	-13.65	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-45.83	4.03	30.00	-19.86	-13	-6.86	Horizontal
3465.0	-53.79	4.03	30.00	-27.82	-13	-14.82	Vertical
5197.5	-52.71	5.25	35.86	-22.10	-13	-9.10	Vertical
5197.5	-49.83	5.25	35.86	-19.22	-13	-6.22	Horizontal
194.5	-40.89	1.72	17.69	-24.92	-13	-11.92	Vertical
400.0	-39.03	1.62	16.02	-24.62	-13	-11.62	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-49.86	4.05	30.01	-23.90	-13	-10.90	Horizontal
3508.6	-44.73	4.05	30.01	-18.77	-13	-5.77	Vertical
5262.9	-51.35	5.26	35.86	-20.75	-13	-7.75	Vertical
5262.9	-49.10	5.26	35.86	-18.50	-13	-5.50	Horizontal
198.6	-37.92	1.80	16.69	-23.03	-13	-10.03	Vertical
401.7	-35.47	1.75	16.66	-20.57	-13	-7.57	Horizontal

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

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-47.58	4.02	29.80	-21.80	-13	-8.80	Horizontal
3440.0	-51.27	4.02	29.80	-25.49	-13	-12.49	Vertical
5160.0	-44.87	5.24	35.84	-14.27	-13	-1.27	Vertical
5160.0	-53.37	5.24	35.84	-22.77	-13	-9.77	Horizontal
193.0	-35.73	1.57	17.26	-20.04	-13	-7.04	Vertical
342.7	-34.30	1.78	16.35	-19.73	-13	-6.73	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-48.97	4.03	30.00	-23.00	-13	-10.00	Horizontal
3465.0	-49.24	4.03	30.00	-23.27	-13	-10.27	Vertical
5197.5	-50.52	5.25	35.86	-19.91	-13	-6.91	Vertical
5197.5	-49.43	5.25	35.86	-18.82	-13	-5.82	Horizontal
204.5	-41.95	1.44	17.95	-25.44	-13	-12.44	Vertical
382.7	-34.68	1.65	16.09	-20.24	-13	-7.24	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-49.35	2.91	27.68	-24.58	-13	-11.58	Horizontal
3490.0	-46.85	2.91	27.68	-22.08	-13	-9.08	Vertical
5235.0	-51.09	5.26	35.86	-20.49	-13	-7.49	Vertical
5235.0	-52.76	5.26	35.86	-22.16	-13	-9.16	Horizontal
183.4	-40.64	1.61	16.85	-25.40	-13	-12.40	Vertical
313.6	-43.34	1.61	15.19	-29.76	-13	-16.76	Horizontal

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

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

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

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

Test Results for Low Channel 824.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1649.4	-44.95	2.78	27.50	-20.23	-13	-7.23	Horizontal
1649.4	-50.10	2.78	27.50	-25.38	-13	-12.38	Vertical
2474.1	-45.49	2.90	27.80	-20.59	-13	-7.59	Vertical
2474.1	-52.28	2.90	27.80	-27.38	-13	-14.38	Horizontal
204.2	-42.36	1.76	17.59	-26.53	-13	-13.53	Vertical
452.7	-41.75	1.63	15.87	-27.51	-13	-14.51	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-50.28	2.80	27.48	-25.60	-13	-12.60	Horizontal
1673.0	-47.92	2.80	27.48	-23.24	-13	-10.24	Vertical
2509.5	-50.26	2.91	27.70	-25.47	-13	-12.47	Vertical
2509.5	-52.74	2.91	27.70	-27.95	-13	-14.95	Horizontal
188.9	-44.96	1.61	15.68	-30.89	-13	-17.89	Vertical
265.1	-39.24	1.59	17.52	-23.32	-13	-10.32	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-45.07	2.82	27.43	-20.46	-13	-7.46	Horizontal
1696.6	-48.02	2.82	27.43	-23.41	-13	-10.41	Vertical
2544.9	-50.42	2.92	27.74	-25.60	-13	-12.60	Vertical
2544.9	-51.02	2.92	27.74	-26.20	-13	-13.20	Horizontal
210.1	-43.27	1.69	16.67	-28.28	-13	-15.28	Vertical
393.4	-40.42	1.70	17.18	-24.94	-13	-11.94	Horizontal

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

Test Results for Low Channel 829MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1658.0	-50.26	2.78	27.50	-25.54	-13	-12.54	Horizontal
1658.0	-45.57	2.78	27.50	-20.85	-13	-7.85	Vertical
2487.0	-47.15	2.90	27.80	-22.25	-13	-9.25	Vertical
2487.0	-49.61	2.90	27.80	-24.71	-13	-11.71	Horizontal
186.7	-40.63	1.71	15.57	-26.77	-13	-13.77	Vertical
300.0	-39.45	1.34	16.40	-24.39	-13	-11.39	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-53.71	2.80	27.48	-29.03	-13	-16.03	Horizontal
1673.0	-44.29	2.80	27.48	-19.61	-13	-6.61	Vertical
2509.5	-52.97	2.91	27.70	-28.18	-13	-15.18	Vertical
2509.5	-53.34	2.91	27.70	-28.55	-13	-15.55	Horizontal
203.6	-35.07	1.44	17.04	-19.47	-13	-6.47	Vertical
286.5	-35.17	1.76	17.62	-19.31	-13	-6.31	Horizontal
Test Results for High Channel 844MHz							
1688.0	-52.20	2.82	27.43	-27.59	-13	-14.59	Horizontal
1688.0	-46.46	2.82	27.43	-21.85	-13	-8.85	Vertical
2532.0	-50.53	2.92	27.74	-25.71	-13	-12.71	Vertical
2532.0	-52.62	2.92	27.74	-27.80	-13	-14.80	Horizontal
185.0	-39.43	1.74	17.70	-23.47	-13	-10.47	Vertical
343.5	-37.69	1.41	17.46	-21.63	-13	-8.63	Horizontal

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

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

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

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

Test Results for Low Channel 2502.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5005.0	-61.25	5.23	35.81	-30.67	-25	-5.67	Horizontal
5005.0	-60.47	5.23	35.81	-29.89	-25	-4.89	Vertical
7507.5	-60.88	5.67	36.85	-29.70	-25	-4.70	Vertical
7507.5	-61.76	5.67	36.85	-30.58	-25	-5.58	Horizontal
175.6	-45.92	1.73	17.97	-29.68	-25	-4.68	Vertical
440.0	-53.08	1.38	15.11	-39.35	-25	-14.35	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-59.56	5.23	35.82	-28.97	-25	-3.97	Horizontal
5070.0	-59.45	5.23	35.82	-28.86	-25	-3.86	Vertical
7605.0	-59.25	5.67	36.85	-28.07	-25	-3.07	Vertical
7605.0	-61.64	5.67	36.85	-30.46	-25	-5.46	Horizontal
175.2	-46.16	1.77	16.17	-31.75	-25	-6.75	Vertical
410.0	-44.06	1.63	15.21	-30.48	-25	-5.48	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-60.41	5.24	35.83	-29.82	-25	-4.82	Horizontal
5135.0	-64.73	5.24	35.83	-34.14	-25	-9.14	Vertical
7702.5	-59.49	5.68	36.87	-28.30	-25	-3.30	Vertical
7702.5	-64.24	5.68	36.87	-33.05	-25	-8.05	Horizontal
212.6	-49.48	1.58	17.56	-33.50	-25	-8.50	Vertical
382.0	-49.91	1.45	16.58	-34.78	-25	-9.78	Horizontal

QPSK EIRP POWER FOR LTE BAND 7 (20.0MHZ BANDWIDTH)

Test Results for Low Channel 2510MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5020.0	-64.67	5.23	35.82	-34.08	-25	-9.08	Horizontal
5020.0	-62.78	5.23	35.82	-32.19	-25	-7.19	Vertical
7530.0	-61.30	5.67	36.86	-30.11	-25	-5.11	Vertical
7530.0	-61.45	5.67	36.86	-30.26	-25	-5.26	Horizontal
188.1	-46.42	1.63	15.76	-32.29	-25	-7.29	Vertical
458.9	-45.26	1.71	15.44	-31.53	-25	-6.53	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-63.50	5.23	35.82	-32.91	-25	-7.91	Horizontal
5070.0	-64.39	5.23	35.82	-33.80	-25	-8.80	Vertical
7605.0	-62.48	5.67	36.85	-31.30	-25	-6.30	Vertical
7605.0	-59.04	5.67	36.85	-27.86	-25	-2.86	Horizontal
196.2	-45.49	1.79	16.84	-30.43	-25	-5.43	Vertical
294.0	-46.55	1.71	17.64	-30.62	-25	-5.62	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-61.69	5.24	35.83	-31.10	-25	-6.10	Horizontal
5120.0	-64.43	5.24	35.83	-33.84	-25	-8.84	Vertical
7680.0	-60.73	5.70	36.88	-29.55	-25	-4.55	Vertical
7680.0	-62.16	5.70	36.88	-30.98	-25	-5.98	Horizontal
182.8	-46.92	1.79	16.84	-31.86	-25	-6.86	Vertical
333.4	-47.33	1.71	17.64	-31.40	-25	-6.40	Horizontal

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

. Margin = Spurious Emission Level - Limit

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

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

Test Results for Low Channel 699.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1399.4	-45.81	2.60	27.20	-21.21	-13	-8.21	Horizontal
1399.4	-48.12	2.60	27.20	-23.52	-13	-10.52	Vertical
2099.1	-47.45	2.85	27.54	-22.76	-13	-9.76	Vertical
2099.1	-53.55	2.85	27.54	-28.86	-13	-15.86	Horizontal
201.6	-43.14	1.49	17.78	-26.85	-13	-13.85	Vertical
290.6	-44.32	1.36	17.33	-28.35	-13	-15.35	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-52.52	2.61	27.28	-27.85	-13	-14.85	Horizontal
1415.0	-49.41	2.61	27.28	-24.74	-13	-11.74	Vertical
2122.5	-48.99	2.87	27.59	-24.27	-13	-11.27	Vertical
2122.5	-51.44	2.87	27.59	-26.72	-13	-13.72	Horizontal
182.8	-44.71	1.73	15.74	-30.70	-13	-17.70	Vertical
442.8	-41.84	1.62	15.79	-27.67	-13	-14.67	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-49.09	2.63	27.28	-24.44	-13	-11.44	Horizontal
1430.6	-46.28	2.63	27.28	-21.63	-13	-8.63	Vertical
2145.9	-44.14	2.88	27.60	-19.42	-13	-6.42	Vertical
2145.9	-52.25	2.88	27.60	-27.53	-13	-14.53	Horizontal
184.5	-34.12	1.61	18.00	-17.73	-13	-4.73	Vertical
378.2	-37.40	1.45	15.49	-23.37	-13	-10.37	Horizontal

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

Test Results for Low Channel 704MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1408.0	-45.88	2.61	27.26	-21.23	-13	-8.23	Horizontal
1408.0	-53.88	2.61	27.26	-29.23	-13	-16.23	Vertical
2112.0	-53.10	2.87	27.58	-28.39	-13	-15.39	Vertical
2112.0	-53.16	2.87	27.58	-28.45	-13	-15.45	Horizontal
195.0	-39.12	1.31	16.97	-23.46	-13	-10.46	Vertical
335.0	-36.25	1.65	16.70	-21.20	-13	-8.20	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-45.07	2.61	27.28	-20.40	-13	-7.40	Horizontal
1415.0	-50.74	2.61	27.28	-26.07	-13	-13.07	Vertical
2122.5	-50.37	2.87	27.59	-25.65	-13	-12.65	Vertical
2122.5	-53.02	2.87	27.59	-28.30	-13	-15.30	Horizontal
179.5	-36.19	1.72	17.99	-19.92	-13	-6.92	Vertical
373.5	-43.00	1.73	17.94	-26.79	-13	-13.79	Horizontal
Test Results for High Channel 711MHz							
1422.0	-53.24	2.62	27.28	-28.58	-13	-15.58	Horizontal
1422.0	-51.10	2.62	27.28	-26.44	-13	-13.44	Vertical
2133.0	-44.94	2.87	27.60	-20.21	-13	-7.21	Vertical
2133.0	-51.56	2.87	27.60	-26.83	-13	-13.83	Horizontal
186.2	-36.58	1.58	15.93	-22.23	-13	-9.23	Vertical
403.2	-35.54	1.36	15.59	-21.31	-13	-8.31	Horizontal

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

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

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

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

Test Results for Low Channel 706.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1413.0	-47.59	2.61	27.28	-22.92	-13	-9.92	Horizontal
1413.0	-47.72	2.61	27.28	-23.05	-13	-10.05	Vertical
2119.5	-47.95	2.87	27.59	-23.23	-13	-10.23	Vertical
2119.5	-52.33	2.87	27.59	-27.61	-13	-14.61	Horizontal
175.7	-39.42	1.71	16.15	-24.98	-13	-11.98	Vertical
267.2	-44.72	1.41	17.32	-28.81	-13	-15.81	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-46.15	2.62	27.30	-21.47	-13	-8.47	Horizontal
1420.0	-47.28	2.62	27.30	-22.60	-13	-9.60	Vertical
2130.0	-51.75	2.87	27.62	-27.00	-13	-14.00	Vertical
2130.0	-53.08	2.87	27.62	-28.33	-13	-15.33	Horizontal
209.9	-36.56	1.42	15.25	-22.74	-13	-9.74	Vertical
360.7	-39.78	1.36	17.19	-23.95	-13	-10.95	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-51.40	2.66	27.28	-26.78	-13	-13.78	Horizontal
1427.0	-50.46	2.66	27.28	-25.84	-13	-12.84	Vertical
2140.5	-49.18	2.88	27.60	-24.46	-13	-11.46	Vertical
2140.5	-51.68	2.88	27.60	-26.96	-13	-13.96	Horizontal
193.7	-37.50	1.32	17.29	-21.53	-13	-8.53	Vertical
257.6	-43.35	1.72	16.89	-28.18	-13	-15.18	Horizontal

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

Test Results for Low Channel 709MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1418.0	-44.55	2.62	27.30	-19.87	-13	-6.87	Horizontal
1418.0	-49.79	2.62	27.30	-25.11	-13	-12.11	Vertical
2127.0	-52.23	2.87	27.62	-27.48	-13	-14.48	Vertical
2127.0	-53.29	2.87	27.62	-28.54	-13	-15.54	Horizontal
204.1	-42.94	1.35	16.91	-27.38	-13	-14.38	Vertical
418.7	-44.78	1.62	16.31	-30.09	-13	-17.09	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-47.00	2.62	27.30	-22.32	-13	-9.32	Horizontal
1420.0	-47.38	2.62	27.30	-22.70	-13	-9.70	Vertical
2130.0	-49.78	2.87	27.62	-25.03	-13	-12.03	Vertical
2130.0	-49.50	2.87	27.62	-24.75	-13	-11.75	Horizontal
212.8	-36.38	1.51	17.14	-20.75	-13	-7.75	Vertical
269.4	-43.60	1.77	16.88	-28.49	-13	-15.49	Horizontal
Test Results for High Channel 711MHz							
1422.0	-50.31	2.62	27.30	-25.63	-13	-12.63	Horizontal
1422.0	-44.46	2.62	27.30	-19.78	-13	-6.78	Vertical
2133.0	-53.20	2.87	27.62	-28.45	-13	-15.45	Vertical
2133.0	-49.97	2.87	27.62	-25.22	-13	-12.22	Horizontal
175.9	-42.65	1.78	15.95	-28.48	-13	-15.48	Vertical
414.6	-39.08	1.34	17.95	-22.48	-13	-9.48	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 Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
4997.0	-59.43	5.23	35.81	-28.85	-25	-3.85	Horizontal
4997.0	-64.80	5.23	35.81	-34.22	-25	-9.22	Vertical
7495.5	-64.94	5.67	36.85	-33.76	-25	-8.76	Vertical
7495.5	-59.93	5.67	36.85	-28.75	-25	-3.75	Horizontal
435.3	-44.85	1.38	15.98	-30.25	-25	-5.25	Vertical
465.8	-48.23	1.62	15.66	-34.19	-25	-9.19	Horizontal
Test Results for Mid Channel 2593MHz							
5186.0	-64.14	5.23	35.82	-33.55	-25	-8.55	Horizontal
5186.0	-62.14	5.23	35.82	-31.55	-25	-6.55	Vertical
7779.0	-63.85	5.67	36.85	-32.67	-25	-7.67	Vertical
7779.0	-60.54	5.67	36.85	-29.36	-25	-4.36	Horizontal
510.4	-46.76	1.62	16.17	-32.21	-25	-7.21	Vertical
562.9	-48.84	1.74	17.63	-32.95	-25	-7.95	Horizontal
Test Results for High Channel 2687.5MHz							
5375.0	-60.12	5.24	35.83	-29.53	-25	-4.53	Horizontal
5375.0	-59.43	5.24	35.83	-28.84	-25	-3.84	Vertical
8062.5	-59.79	5.68	36.87	-28.60	-25	-3.60	Vertical
8062.5	-64.29	5.68	36.87	-33.10	-25	-8.10	Horizontal
197.6	-49.88	1.55	15.84	-35.59	-25	-10.59	Vertical
353.1	-47.72	1.51	17.06	-32.17	-25	-7.17	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 Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5012.0	-59.63	5.23	35.82	-29.04	-25	-4.04	Horizontal
5012.0	-63.67	5.23	35.82	-33.08	-25	-8.08	Vertical
7518.0	-62.82	5.67	36.86	-31.63	-25	-6.63	Vertical
7518.0	-60.57	5.67	36.86	-29.38	-25	-4.38	Horizontal
128.9	-46.09	1.43	15.51	-32.01	-25	-7.01	Vertical
344.8	-46.94	1.40	16.97	-31.37	-25	-6.37	Horizontal
Test Results for Mid Channel 2593MHz							
5186.0	-59.76	5.23	35.82	-29.17	-25	-4.17	Horizontal
5186.0	-63.30	5.23	35.82	-32.71	-25	-7.71	Vertical
7779.0	-59.73	5.67	36.85	-28.55	-25	-3.55	Vertical
7779.0	-63.29	5.67	36.85	-32.11	-25	-7.11	Horizontal
100.8	-45.82	1.77	16.72	-30.87	-25	-5.87	Vertical
263.5	-45.23	1.31	16.99	-29.55	-25	-4.55	Horizontal
Test Results for High Channel 2680MHz							
5360.0	-64.12	5.24	35.83	-33.53	-25	-8.53	Horizontal
5360.0	-60.87	5.24	35.83	-30.28	-25	-5.28	Vertical
8040.0	-64.21	5.70	36.88	-33.03	-25	-8.03	Vertical
8040.0	-60.56	5.70	36.88	-29.38	-25	-4.38	Horizontal
349.9	-45.46	1.70	15.73	-31.43	-25	-6.43	Vertical
110.3	-47.62	1.75	17.33	-32.04	-25	-7.04	Horizontal

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

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

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

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

10. FREQUENCY STABILITY

RULE PART(S)

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

LIMITS

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

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

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- Temp. = -30° to $+50^{\circ}\text{C}$
- Voltage = low voltage, DC 6V, Normal, DC 7.74V and High voltage, DC 8.9V.

Frequency Stability vs Temperature:

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

Frequency Stability vs Voltage:

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

MODES TESTED

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

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	1880	13.0	0.006930	2.5
7.74	1880	14.3	0.007605	2.5
8.9	1880	13.4	0.007142	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	12.3	0.006537	2.5
Extreme (50C)	1880	11.5	0.006105	2.5
Extreme (40C)	1880	13.3	0.007090	2.5
Extreme (30C)	1880	13.6	0.007235	2.5
Extreme (10C)	1880	14.2	0.007563	2.5
Extreme (0C)	1880	11.6	0.006182	2.5
Extreme (-10C)	1880	12.8	0.006813	2.5
Extreme (-20C)	1880	14.5	0.007735	2.5
Extreme (-30C)	1880	14.9	0.007940	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	1880	9.6	0.005098	2.5
7.74	1880	8.6	0.004579	2.5
8.9	1880	8.0	0.004255	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	9.1	0.004860	2.5
Extreme (50C)	1880	8.6	0.004578	2.5
Extreme (40C)	1880	8.2	0.004339	2.5
Extreme (30C)	1880	8.5	0.004535	2.5
Extreme (10C)	1880	8.4	0.004486	2.5
Extreme (0C)	1880	7.7	0.004084	2.5
Extreme (-10C)	1880	8.7	0.004649	2.5
Extreme (-20C)	1880	8.6	0.004567	2.5
Extreme (-30C)	1880	7.7	0.004104	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	1732.5	8.7	0.005048	2.5
7.74	1732.5	9.4	0.005418	2.5
8.9	1732.5	8.7	0.005021	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.4	0.004827	2.5
Extreme (50C)	1732.5	8.4	0.004856	2.5
Extreme (40C)	1732.5	7.3	0.004235	2.5
Extreme (30C)	1732.5	5.4	0.003138	2.5
Extreme (10C)	1732.5	7.4	0.004276	2.5
Extreme (0C)	1732.5	9.1	0.005241	2.5
Extreme (-10C)	1732.5	8.9	0.005124	2.5
Extreme (-20C)	1732.5	7.1	0.004112	2.5
Extreme (-30C)	1732.5	8.7	0.005048	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	1732.5	9.4	0.005422	2.5
7.74	1732.5	9.3	0.005377	2.5
8.9	1732.5	7.8	0.004521	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	9.7	0.005619	2.5
Extreme (50C)	1732.5	9.1	0.005225	2.5
Extreme (40C)	1732.5	8.0	0.004638	2.5
Extreme (30C)	1732.5	9.3	0.005394	2.5
Extreme (10C)	1732.5	8.5	0.004928	2.5
Extreme (0C)	1732.5	8.3	0.004788	2.5
Extreme (-10C)	1732.5	9.1	0.005244	2.5
Extreme (-20C)	1732.5	9.4	0.005405	2.5
Extreme (-30C)	1732.5	7.8	0.004489	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	836.5	5.9	0.007019	2.5
7.74	836.5	6.6	0.007912	2.5
8.9	836.5	4.8	0.005765	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.5	0.007812	2.5
Extreme (50C)	836.5	6.2	0.007365	2.5
Extreme (40C)	836.5	5.7	0.006855	2.5
Extreme (30C)	836.5	6.6	0.007849	2.5
Extreme (10C)	836.5	5.6	0.006722	2.5
Extreme (0C)	836.5	4.8	0.005776	2.5
Extreme (-10C)	836.5	5.8	0.006921	2.5
Extreme (-20C)	836.5	5.9	0.007012	2.5
Extreme (-30C)	836.5	6.0	0.007184	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	836.5	6.1	0.007245	2.5
7.74	836.5	7.2	0.008599	2.5
8.9	836.5	5.2	0.006254	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.6	0.007879	2.5
Extreme (50C)	836.5	6.4	0.007616	2.5
Extreme (40C)	836.5	6.6	0.007844	2.5
Extreme (30C)	836.5	6.8	0.008122	2.5
Extreme (10C)	836.5	5.1	0.006087	2.5
Extreme (0C)	836.5	5.0	0.005930	2.5
Extreme (-10C)	836.5	5.2	0.006159	2.5
Extreme (-20C)	836.5	5.9	0.007012	2.5
Extreme (-30C)	836.5	6.4	0.007660	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	2535	9.9	0.003899	2.5
7.74	2535	9.4	0.003696	2.5
8.9	2535	8.4	0.003315	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	9.5	0.003729	2.5
Extreme (50C)	2535	8.7	0.003420	2.5
Extreme (40C)	2535	8.2	0.003236	2.5
Extreme (30C)	2535	8.5	0.003370	2.5
Extreme (10C)	2535	7.8	0.003060	2.5
Extreme (0C)	2535	8.4	0.003305	2.5
Extreme (-10C)	2535	9.2	0.003619	2.5
Extreme (-20C)	2535	8.6	0.003404	2.5
Extreme (-30C)	2535	8.8	0.003452	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	2535	6.3	0.002466	2.5
7.74	2535	6.8	0.002700	2.5
8.9	2535	5.6	0.002191	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	7.0	0.002774	2.5
Extreme (50C)	2535	5.9	0.002331	2.5
Extreme (40C)	2535	5.1	0.002018	2.5
Extreme (30C)	2535	7.1	0.002783	2.5
Extreme (10C)	2535	5.3	0.002085	2.5
Extreme (0C)	2535	5.1	0.002025	2.5
Extreme (-10C)	2535	5.7	0.002232	2.5
Extreme (-20C)	2535	5.4	0.002149	2.5
Extreme (-30C)	2535	5.5	0.002170	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	707.5	8.3	0.011720	2.5
7.74	707.5	9.7	0.013706	2.5
8.9	707.5	8.9	0.012601	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	8.8	0.012374	2.5
Extreme (50C)	707.5	7.6	0.010716	2.5
Extreme (40C)	707.5	7.6	0.010677	2.5
Extreme (30C)	707.5	8.3	0.011709	2.5
Extreme (10C)	707.5	7.3	0.010333	2.5
Extreme (0C)	707.5	9.0	0.012660	2.5
Extreme (-10C)	707.5	8.1	0.011497	2.5
Extreme (-20C)	707.5	8.8	0.012407	2.5
Extreme (-30C)	707.5	8.0	0.011301	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	707.5	6.9	0.009785	2.5
7.74	707.5	8.6	0.012114	2.5
8.9	707.5	7.3	0.010325	2.5

Frequency error vs. Temperature

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

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

10.6 LTE BAND 17

Band 17 QPSK, (10MHz BANDWIDTH RB size 50 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
6	710.0	9.9	0.013916	2.5
7.74	710.0	9.0	0.012668	2.5
8.9	710.0	8.0	0.011236	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.5	0.013394	2.5
Extreme (50C)	710.0	8.7	0.012265	2.5
Extreme (40C)	710.0	8.5	0.011935	2.5
Extreme (30C)	710.0	8.5	0.012040	2.5
Extreme (10C)	710.0	8.8	0.012418	2.5
Extreme (0C)	710.0	7.8	0.010982	2.5
Extreme (-10C)	710.0	9.2	0.012936	2.5
Extreme (-20C)	710.0	8.7	0.012242	2.5
Extreme (-30C)	710.0	8.5	0.011909	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	710.0	9.5	0.013396	2.5
7.74	710.0	8.8	0.012394	2.5
8.9	710.0	8.6	0.012083	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.6	0.013590	2.5
Extreme (50C)	710.0	8.6	0.012181	2.5
Extreme (40C)	710.0	8.7	0.012203	2.5
Extreme (30C)	710.0	9.2	0.012947	2.5
Extreme (10C)	710.0	7.9	0.011194	2.5
Extreme (0C)	710.0	8.1	0.011407	2.5
Extreme (-10C)	710.0	8.9	0.012564	2.5
Extreme (-20C)	710.0	8.9	0.012553	2.5
Extreme (-30C)	710.0	8.8	0.012446	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	2593	8.1	0.003114	2.5
7.74	2593	7.0	0.002688	2.5
8.9	2593	7.4	0.002871	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	7.9	0.003065	2.5
Extreme (50C)	2593	4.4	0.001699	2.5
Extreme (40C)	2593	5.7	0.002211	2.5
Extreme (30C)	2593	4.9	0.001878	2.5
Extreme (10C)	2593	6.7	0.002587	2.5
Extreme (0C)	2593	4.9	0.001905	2.5
Extreme (-10C)	2593	9.6	0.003721	2.5
Extreme (-20C)	2593	10.8	0.004176	2.5
Extreme (-30C)	2593	6.5	0.002521	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	2593	8.8	0.003411	2.5
7.74	2593	6.3	0.002435	2.5
8.9	2593	6.8	0.002612	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	7.4	0.002837	2.5
Extreme (50C)	2593	5.2	0.001992	2.5
Extreme (40C)	2593	5.7	0.002214	2.5
Extreme (30C)	2593	4.6	0.001778	2.5
Extreme (10C)	2593	6.5	0.002495	2.5
Extreme (0C)	2593	4.8	0.001844	2.5
Extreme (-10C)	2593	10.0	0.003842	2.5
Extreme (-20C)	2593	10.9	0.004203	2.5
Extreme (-30C)	2593	6.4	0.002453	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.

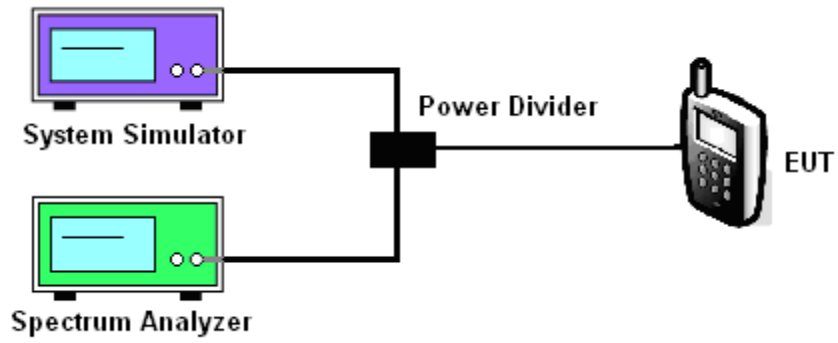
11.2 Measuring Instruments

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

Test data reference attachment.

----END OF REPORT----