

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

FCC ID: 2AOWK-5013

Product: Mobile Phone

Trade Mark: ulefone

Model No.: GQ5013

Family Model: Armor 30 Pro, Armor 30 Ultra,
Armor 30T Ultra, Armor 30T Pro,
Armor 30 Lite, Armor 30s, Armor 30s Pro

Report No.: S24120305305006

Issue Date: Mar. 21, 2025

Prepared for

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Prepared by

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TEST RESULT CERTIFICATION

Applicant's name: Shenzhen Gotron Electronic CO.,LTD.

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Shenzhen City, Guangdong Province China

Manufacturer's Name..... : Shenzhen Gotron Electronic CO.,LTD.

Address..... : 7B01, Building A, Block 1, Anhongji Tianyao Plaza, Longhua District,
Shenzhen City, Guangdong Province China

Product name.....: Mobile Phone

Model and/or type reference ..: GQ5013

Trade Mark.....: ulefone

Family Model..... : Armor 30 Pro, Armor 30 Ultra, Armor 30T Ultra, Armor 30T Pro,
Armor 30 Lite, Armor 30s, Armor 30s Pro

Test Sample Number : S241203053005

Date of Test.....: Dec. 03, 2024 ~ Mar. 19, 2025

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

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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	GQ5013
Family Model	Armor 30 Pro, Armor 30 Ultra, Armor 30T Ultra, Armor 30T Pro, Armor 30 Lite, Armor 30s, Armor 30s Pro
Model Difference	All models are the same circuit and RF module, except for model names.
FCC ID:	2AOWK-5013
Frequency Bands:	U.S. Bands: ☒ LTE FDD Band 2,4,5,12,17,66,71 TDD Band 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 12 Uplink: 699MHz-716MHz, Downlink: 729MHz-746MHz; LTE FDD Band 17 Uplink: 704MHz-716MHz, Downlink: 734MHz-746MHz; LTE TDD Band 41 Uplink: 2496MHz-2690MHz, LTE FDD Band 66 Uplink: 1710MHz-1780MHz, Downlink: 2110MHz-2200MHz; LTE FDD 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:	IFA Antenna
Antenna gain:	Band 2: 0.22 dBi, Band 4: -1.32 dBi, Band 5: -3.4 dBi, Band 12: -4.2 dBi, Band 17: -4.2 dBi, Band 41: 0.33 dBi, Band 66: -0.74 dBi, Band 71: -4 dBi
Adapter	Model: HJ-PD66W-US Input: 100-240V~50/60Hz, 1.5A Output: 5.0V---3.0A OR 9.0V---3.0A OR 12.0V---3.0A OR 15.0V---3.0A OR 20.0V---3.25A OR 11.0V---6.0A 66W MAX
Battery	DC 3.87V, 12800mAh, 49.536Wh
Power Rating	DC 3.87V from battery or DC 5V/9V/11V/12V/15V/20V from adapter
Extreme Vol. Limits:	DC 3.29V to DC 4.45V (Nominal DC 3.87V) (Note 1)

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

1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2AOWK-5013** 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.

No. 24 Xinfu East Road, Xiangshan Community, Xinqiao Street, Baoan District, Shenzhen, Guangdong, People's Republic of 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,

CNAS Registration No.:L5516

MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement, where expanded 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% ($U = 2U_c(y)$)	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 2/4/5/12/17/41/66/71

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	GQ5013	FCC ID: 2AOWK-5013	EUT

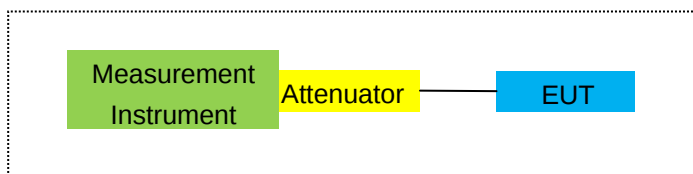
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

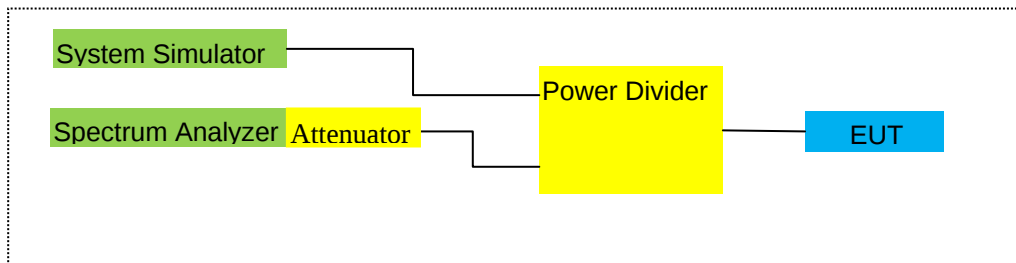
For Radiated Test Cases



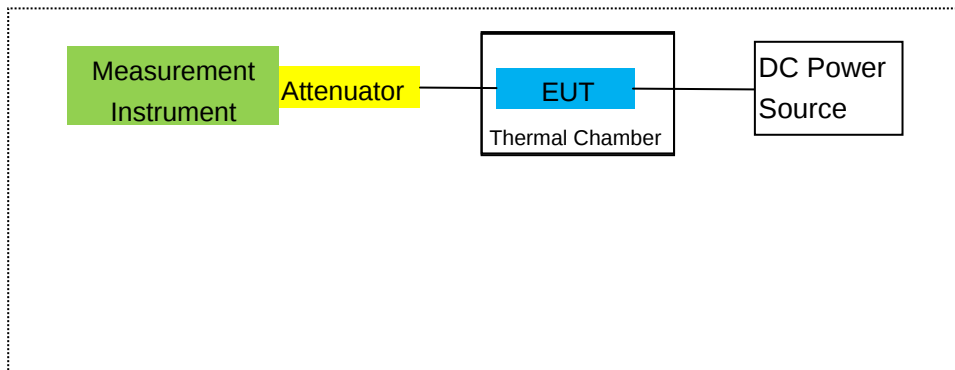
For Conducted Output Power



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	2024.04.25	2025.04.24	1 year
2	Test Receiver	R&S	ESPI	101318	2024.04.26	2025.04.25	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2024.05.12	2025.05.11	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2024.04.26	2027.04.25	3 year
5	Horn Antenna	EM	EM-AH-10180	2011071402	2024.05.12	2027.05.11	3 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2024.05.12	2027.05.11	3 year
7	Amplifier	EM	EM-30180	060538	2024.04.26	2025.04.25	1 year
8	Active Loop Antenna	SCHWARZBECK	FMZB 1519B	055	2024.05.17	2027.05.16	3 year
9	Power Meter	R&S	NRVS	100696	2024.04.26	2025.04.25	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2024.04.26	2025.04.25	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	2024.04.26	2025.04.25	1 year
15	LISN	R&S	ENV216	101313	2024.04.25	2025.04.24	1 year
16	LISN	EMCO	3816/2	00042990	2024.04.25	2025.04.24	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2024.04.26	2027.04.25	3 year
18	Field strength probe	narda	EP601	711WX81278	2024.03.20	2025.03.19	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	MY41000130	2024.04.26	2025.04.25	1 year
23	EMI Test Receiver	R&S	ESCI	101160	2024.04.26	2025.04.25	1 year
24	Universal Radio Communication	R&S	CMU200	105747	2024.04.26	2025.04.25	1 year

	Tester						
25	High and Low Temperature Box	WEISS	WT 20/40 EMC Simpac	58226119460030	2024.05.30	2027.05.29	3 year
26	DC Power Source	N/A	PS-6005D	20170402923	2024.04.25	2027.04.24	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.

Measurement Software

Item	Manufacturer	Software Name	Software Version	Description
1	MWRFTtest	MTS 8200	2.0	RF Conducted Test
2	Farad	EZ-EMC_RE	AIT-03A	RadiatedTest
3	raditeq	RadiMation	2023.1.3	RadiatedTest

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

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

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 than $43 + 10 \log (P)$ 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 2/4/5/12/17/41/66/71

RESULTS

Test data reference attachment.

7. OUT OF BAND EMISSIONS

RULE PART(S)

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

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

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

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

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)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	1850.7	-0.86	3.76	28.24	23.62	230.144	Horizontal	Pass
		1880	-0.64	3.91	28.22	23.67	232.809	Horizontal	Pass
		1909.3	-0.85	3.93	28.20	23.42	219.786	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-0.99	3.77	28.23	23.47	222.331	Horizontal	Pass
		1880	-0.68	3.91	28.24	23.65	231.739	Horizontal	Pass
		1908.5	-0.85	3.94	28.25	23.46	221.820	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-1.05	3.77	28.31	23.49	223.357	Horizontal	Pass
		1880	-0.60	3.91	28.22	23.71	234.963	Horizontal	Pass
		1907.5	-0.69	3.94	28.20	23.57	227.510	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-1.10	3.79	28.33	23.44	220.800	Horizontal	Pass
		1880	-2.56	3.95	28.22	21.71	148.252	Horizontal	Pass
		1905	-2.75	3.97	28.19	21.47	140.281	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-3.98	3.79	28.34	20.57	114.025	Horizontal	Pass
		1880	-3.46	3.95	28.22	20.81	120.504	Horizontal	Pass
		1902.5	-3.75	3.97	28.18	20.46	111.173	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-0.90	3.81	28.35	23.64	231.206	Horizontal	Pass
		1880	-0.54	3.96	28.22	23.72	235.505	Horizontal	Pass
		1900	-0.68	4.00	28.16	23.48	222.844	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-1.60	3.76	28.24	22.88	194.089	Vertical	Pass
		1880	-1.95	3.91	28.22	22.36	172.187	Vertical	Pass
		1909.3	-1.24	3.93	28.20	23.03	200.909	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-1.99	3.77	28.23	22.47	176.604	Vertical	Pass
		1880	-1.22	3.91	28.24	23.11	204.644	Vertical	Pass
		1908.5	-2.03	3.94	28.25	22.28	169.044	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-1.33	3.77	28.31	23.21	209.411	Vertical	Pass
		1880	-1.63	3.91	28.22	22.68	185.353	Vertical	Pass
		1907.5	-1.27	3.94	28.20	22.99	199.067	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1855	-2.18	3.79	28.33	22.36	172.187	Vertical	Pass
		1880	-3.07	3.95	28.22	21.20	131.826	Vertical	Pass
		1905	-3.26	3.97	28.19	20.96	124.738	Vertical	Pass
15.0MHz	1/#Mid	1857.5	-3.99	3.79	28.34	20.56	113.763	Vertical	Pass

Band		1880	-3.29	3.95	28.22	20.98	125.314	Vertical	Pass
QPSK		1902.5	-3.44	3.97	28.18	20.77	119.399	Vertical	Pass
20.0MHz	1/#Mid	1860	-3.67	3.81	28.35	20.87	122.180	Vertical	Pass
Band		1880	-3.94	3.96	28.22	20.32	107.647	Vertical	Pass
QPSK		1900	-3.85	4.00	28.16	20.31	107.399	Vertical	Pass

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	1850.7	-1.70	3.76	28.24	22.78	189.671	Horizontal	Pass
		1880	-1.45	3.91	28.22	22.86	193.197	Horizontal	Pass
		1909.3	-1.47	3.93	28.20	22.80	190.546	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-1.75	3.77	28.23	22.71	186.638	Horizontal	Pass
		1880	-1.41	3.91	28.24	22.92	195.884	Horizontal	Pass
		1908.5	-1.57	3.94	28.25	22.74	187.932	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-1.77	3.77	28.31	22.77	189.234	Horizontal	Pass
		1880	-1.38	3.91	28.22	22.93	196.336	Horizontal	Pass
		1907.5	-1.55	3.94	28.20	22.71	186.638	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-1.87	3.79	28.33	22.67	184.927	Horizontal	Pass
		1880	-2.21	3.95	28.22	22.06	160.694	Horizontal	Pass
		1905	-3.39	3.97	28.19	20.83	121.060	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-3.65	3.79	28.34	20.90	123.027	Horizontal	Pass
		1880	-3.27	3.95	28.22	21.00	125.893	Horizontal	Pass
		1902.5	-3.42	3.97	28.18	20.79	119.950	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-1.67	3.81	28.35	22.87	193.642	Horizontal	Pass
		1880	-1.32	3.96	28.22	22.94	196.789	Horizontal	Pass
		1900	-1.52	4.00	28.16	22.64	183.654	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1850.7	-2.55	3.76	28.24	21.93	155.955	Vertical	Pass
		1880	-2.48	3.91	28.22	21.83	152.405	Vertical	Pass
		1909.3	-2.70	3.93	28.20	21.57	143.549	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-2.37	3.77	28.23	22.09	161.808	Vertical	Pass
		1880	-2.92	3.91	28.24	21.41	138.357	Vertical	Pass
		1908.5	-2.60	3.94	28.25	21.71	148.252	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-2.65	3.77	28.31	21.89	154.525	Vertical	Pass
		1880	-3.02	3.91	28.22	21.29	134.586	Vertical	Pass
		1907.5	-2.29	3.94	28.20	21.97	157.398	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-2.97	3.79	28.33	21.57	143.549	Vertical	Pass
		1880	-3.57	3.95	28.22	20.70	117.490	Vertical	Pass
		1905	-3.52	3.97	28.19	20.70	117.490	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-3.85	3.79	28.34	20.70	117.490	Vertical	Pass
		1880	-3.57	3.95	28.22	20.70	117.490	Vertical	Pass
		1902.5	-3.51	3.97	28.18	20.70	117.490	Vertical	Pass

20.0MHz	1/#Mid	1860	-3.84	3.81	28.35	20.70	117.490	Vertical	Pass
Band 16		1880	-3.56	3.96	28.22	20.70	117.490	Vertical	Pass
QAM		1900	-3.46	4.00	28.16	20.70	117.490	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.3 LTE BAND 4

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	1710.7	-4.73	3.12	27.58	19.73	93.972	Horizontal	Pass
		1732.5	-4.62	3.27	27.61	19.72	93.756	Horizontal	Pass
		1754.3	-4.54	3.29	27.63	19.80	95.499	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-4.88	3.13	27.61	19.60	91.201	Horizontal	Pass
		1732.5	-4.68	3.27	27.61	19.66	92.470	Horizontal	Pass
		1753.5	-4.93	3.30	27.62	19.39	86.896	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-4.83	3.13	27.63	19.67	92.683	Horizontal	Pass
		1732.5	-4.67	3.27	27.61	19.67	92.683	Horizontal	Pass
		1752.5	-4.85	3.30	27.60	19.45	88.105	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-4.91	3.15	27.64	19.58	90.782	Horizontal	Pass
		1732.5	-4.70	3.31	27.61	19.60	91.201	Horizontal	Pass
		1750	-4.76	3.33	27.59	19.50	89.125	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-4.88	3.15	27.65	19.62	91.622	Horizontal	Pass
		1732.5	-4.68	3.31	27.61	19.62	91.622	Horizontal	Pass
		1747.5	-4.66	3.33	27.57	19.58	90.782	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-1.97	3.17	27.66	22.52	178.649	Horizontal	Pass
		1732.5	-1.86	3.32	27.61	22.43	174.985	Horizontal	Pass
		1745	-1.93	3.36	27.56	22.27	168.655	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-3.31	3.12	27.58	21.15	130.317	Vertical	Pass
		1732.5	-2.85	3.27	27.61	21.49	140.929	Vertical	Pass
		1754.3	-3.45	3.29	27.63	20.89	122.744	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-5.71	3.13	27.61	18.77	75.336	Vertical	Pass
		1732.5	-5.30	3.27	27.61	19.04	80.168	Vertical	Pass
		1753.5	-4.75	3.30	27.62	19.57	90.573	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-5.60	3.13	27.63	18.90	77.625	Vertical	Pass
		1732.5	-5.48	3.27	27.61	18.86	76.913	Vertical	Pass
		1752.5	-5.16	3.30	27.60	19.14	82.035	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-5.16	3.15	27.64	19.33	85.704	Vertical	Pass
		1732.5	-5.16	3.31	27.61	19.14	82.035	Vertical	Pass
		1750	-5.41	3.33	27.59	18.85	76.736	Vertical	Pass

15.0MHz	1/#Mid	1717.5	-5.26	3.15	27.65	19.24	83.946	Vertical	Pass
Band		1732.5	-4.67	3.31	27.61	19.63	91.833	Vertical	Pass
QPSK		1747.5	-4.60	3.33	27.57	19.64	92.045	Vertical	Pass
20.0MHz	1/#Mid	1720	-4.94	3.17	27.66	19.55	90.157	Vertical	Pass
Band		1732.5	-5.38	3.32	27.61	18.91	77.804	Vertical	Pass
QPSK		1745	-5.37	3.36	27.56	18.83	76.384	Vertical	Pass

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	1710.7	-4.38	3.12	27.58	20.08	101.859	Horizontal	Pass
		1732.5	-4.25	3.27	27.61	20.09	102.094	Horizontal	Pass
		1754.3	-4.28	3.29	27.63	20.06	101.391	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-4.65	3.13	27.61	19.83	96.161	Horizontal	Pass
		1732.5	-4.44	3.27	27.61	19.90	97.724	Horizontal	Pass
		1753.5	-4.64	3.30	27.62	19.68	92.897	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-4.66	3.13	27.63	19.84	96.383	Horizontal	Pass
		1732.5	-4.47	3.27	27.61	19.87	97.051	Horizontal	Pass
		1752.5	-4.52	3.30	27.60	19.78	95.060	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-4.62	3.15	27.64	19.87	97.051	Horizontal	Pass
		1732.5	-4.45	3.31	27.61	19.85	96.605	Horizontal	Pass
		1750	-4.46	3.33	27.59	19.80	95.499	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-4.55	3.15	27.65	19.95	98.855	Horizontal	Pass
		1732.5	-4.35	3.31	27.61	19.95	98.855	Horizontal	Pass
		1747.5	-4.37	3.33	27.57	19.87	97.051	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-2.30	3.17	27.66	22.19	165.577	Horizontal	Pass
		1732.5	-2.63	3.32	27.61	21.66	146.555	Horizontal	Pass
		1745	-3.60	3.36	27.56	20.60	114.815	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-3.85	3.12	27.58	20.61	115.080	Vertical	Pass
		1732.5	-4.18	3.27	27.61	20.16	103.753	Vertical	Pass
		1754.3	-4.09	3.29	27.63	20.25	105.925	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-4.00	3.13	27.61	20.48	111.686	Vertical	Pass
		1732.5	-3.83	3.27	27.61	20.51	112.460	Vertical	Pass
		1753.5	-4.39	3.30	27.62	19.93	98.401	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-3.89	3.13	27.63	20.61	115.080	Vertical	Pass
		1732.5	-3.80	3.27	27.61	20.54	113.240	Vertical	Pass
		1752.5	-3.95	3.30	27.60	20.35	108.393	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-4.65	3.15	27.64	19.84	96.383	Vertical	Pass
		1732.5	-3.93	3.31	27.61	20.37	108.893	Vertical	Pass
		1750	-3.82	3.33	27.59	20.44	110.662	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-4.81	3.15	27.65	19.69	93.111	Vertical	Pass
		1732.5	-4.17	3.31	27.61	20.13	103.039	Vertical	Pass
		1747.5	-4.18	3.33	27.57	20.06	101.391	Vertical	Pass

20.0MHz	1/#Mid	1720	-4.38	3.17	27.66	20.11	102.565	Vertical	Pass
Band 16		1732.5	-4.10	3.32	27.61	20.19	104.472	Vertical	Pass
QAM		1745	-4.04	3.36	27.56	20.16	103.753	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.4 LTE BAND 5

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	3/#Mid	824.7	3.42	2.01	19.68	2.15	18.94	78.343	Horizontal	Pass
		836.5	3.35	2.01	19.77	2.15	18.96	78.705	Horizontal	Pass
		848.3	3.21	2.02	19.82	2.15	18.86	76.913	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	825.5	5.15	2.01	19.70	2.15	20.69	117.220	Horizontal	Pass
		836.5	5.18	2.01	19.77	2.15	20.79	119.950	Horizontal	Pass
		847.5	4.90	2.02	19.81	2.15	20.54	113.240	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	826.5	3.24	2.01	19.71	2.15	18.79	75.683	Horizontal	Pass
		836.5	3.22	2.01	19.77	2.15	18.83	76.384	Horizontal	Pass
		846.5	2.96	2.02	19.79	2.15	18.58	72.111	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	829	5.19	2.01	19.73	2.15	20.76	119.124	Horizontal	Pass
		836.5	5.24	2.01	19.77	2.15	20.85	121.619	Horizontal	Pass
		844	4.91	2.02	19.78	2.15	20.52	112.720	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	824.7	3.73	2.01	19.68	2.15	19.25	84.140	Vertical	Pass
		836.5	3.35	2.01	19.77	2.15	18.96	78.705	Vertical	Pass
		848.3	3.16	2.02	19.82	2.15	18.81	76.033	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	825.5	3.38	2.01	19.70	2.15	18.92	77.983	Vertical	Pass
		836.5	3.88	2.01	19.77	2.15	19.49	88.920	Vertical	Pass
		847.5	3.52	2.02	19.81	2.15	19.16	82.414	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	826.5	3.88	2.01	19.71	2.15	19.43	87.700	Vertical	Pass
		836.5	3.34	2.01	19.77	2.15	18.95	78.524	Vertical	Pass
		846.5	3.00	2.02	19.79	2.15	18.62	72.778	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	829	3.92	2.01	19.73	2.15	19.49	88.920	Vertical	Pass
		836.5	3.28	2.01	19.77	2.15	18.89	77.446	Vertical	Pass
		844	3.17	2.02	19.78	2.15	18.78	75.509	Vertical	Pass

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	3/#Mid	824.7	3.64	2.01	19.68	2.15	19.16	82.414	Horizontal	Pass
		836.5	3.53	2.01	19.77	2.15	19.14	82.035	Horizontal	Pass
		848.3	3.41	2.02	19.82	2.15	19.06	80.538	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	4.46	2.01	19.70	2.15	20.00	100.000	Horizontal	Pass
		836.5	4.46	2.01	19.77	2.15	20.07	101.625	Horizontal	Pass
		847.5	3.10	2.02	19.81	2.15	18.74	74.817	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	3.49	2.01	19.71	2.15	19.04	80.168	Horizontal	Pass
		836.5	3.47	2.01	19.77	2.15	19.08	80.910	Horizontal	Pass
		846.5	3.26	2.02	19.79	2.15	18.88	77.268	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	829	4.39	2.01	19.73	2.15	19.96	99.083	Horizontal	Pass
		836.5	4.48	2.01	19.77	2.15	20.09	102.094	Horizontal	Pass
		844	4.12	2.02	19.78	2.15	19.73	93.972	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	824.7	2.12	2.01	19.68	2.15	17.64	58.076	Vertical	Pass
		836.5	2.20	2.01	19.77	2.15	17.81	60.395	Vertical	Pass
		848.3	2.27	2.02	19.82	2.15	17.92	61.944	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	2.25	2.01	19.70	2.15	17.79	60.117	Vertical	Pass
		836.5	2.75	2.01	19.77	2.15	18.36	68.549	Vertical	Pass
		847.5	2.14	2.02	19.81	2.15	17.78	59.979	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	3.72	2.01	19.71	2.15	19.27	84.528	Vertical	Pass
		836.5	3.06	2.01	19.77	2.15	18.67	73.621	Vertical	Pass
		846.5	2.60	2.02	19.79	2.15	18.22	66.374	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	829	3.85	2.01	19.73	2.15	19.42	87.498	Vertical	Pass
		836.5	2.62	2.01	19.77	2.15	18.23	66.527	Vertical	Pass
		844	3.49	2.02	19.78	2.15	19.10	81.283	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)

ERP(dBm)=EIRP-2.15

8.5 LTE BAND 12

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	699.7	4.61	1.91	19.21	2.15	19.76	94.624	Horizontal	Pass
		707.5	4.43	1.91	19.26	2.15	19.63	91.833	Horizontal	Pass
		715.3	4.39	1.93	19.34	2.15	19.65	92.257	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	700.5	4.5	1.91	19.21	2.15	19.65	92.257	Horizontal	Pass
		707.5	4.38	1.91	19.26	2.15	19.58	90.782	Horizontal	Pass
		714.5	4.43	1.93	19.34	2.15	19.69	93.111	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	701.5	4.61	1.91	19.23	2.15	19.78	95.060	Horizontal	Pass
		707.5	4.43	1.91	19.26	2.15	19.63	91.833	Horizontal	Pass
		713.5	4.46	1.92	19.33	2.15	19.72	93.756	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	704	4.4	1.91	19.25	2.15	19.59	90.991	Horizontal	Pass
		707.5	4.47	1.91	19.26	2.15	19.67	92.683	Horizontal	Pass
		711	4.38	1.92	19.32	2.15	19.63	91.833	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	699.7	1.81	1.91	19.21	2.15	16.96	49.659	Vertical	Pass
		707.5	2.35	1.91	19.26	2.15	17.55	56.885	Vertical	Pass
		715.3	1.61	1.93	19.34	2.15	16.87	48.641	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	700.5	1.8	1.91	19.21	2.15	16.95	49.545	Vertical	Pass
		707.5	2.08	1.91	19.26	2.15	17.28	53.456	Vertical	Pass
		714.5	2.5	1.93	19.34	2.15	17.76	59.704	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	701.5	1.94	1.91	19.23	2.15	17.11	51.404	Vertical	Pass
		707.5	1.73	1.91	19.26	2.15	16.93	49.317	Vertical	Pass
		713.5	1.58	1.92	19.33	2.15	16.84	48.306	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	704	1.91	1.91	19.25	2.15	17.10	51.286	Vertical	Pass
		707.5	1.76	1.91	19.26	2.15	16.96	49.659	Vertical	Pass
		711	2.51	1.92	19.32	2.15	17.76	59.704	Vertical	Pass

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
1.4MHz	1/#Mid	699.7	3.81	1.91	19.21	2.15	18.96	78.705	Horizontal	Pass
Band 16		707.5	3.71	1.91	19.26	2.15	18.91	77.804	Horizontal	Pass
QAM		715.3	3.57	1.93	19.34	2.15	18.83	76.384	Horizontal	Pass
3.0MHz	1/#Mid	700.5	3.64	1.91	19.21	2.15	18.79	75.683	Horizontal	Pass
Band 16		707.5	3.65	1.91	19.26	2.15	18.85	76.736	Horizontal	Pass
QAM		714.5	3.65	1.93	19.34	2.15	18.91	77.804	Horizontal	Pass
5.0MHz	1/#Mid	701.5	3.83	1.91	19.23	2.15	19.00	79.433	Horizontal	Pass
Band 16		707.5	3.73	1.91	19.26	2.15	18.93	78.163	Horizontal	Pass
QAM		713.5	3.67	1.92	19.33	2.15	18.93	78.163	Horizontal	Pass
10.0MHz	1/#Mid	704	3.65	1.91	19.25	2.15	18.84	76.560	Horizontal	Pass
Band 16		707.5	3.65	1.91	19.26	2.15	18.85	76.736	Horizontal	Pass
QAM		711	3.6	1.92	19.32	2.15	18.85	76.736	Horizontal	Pass
1.4MHz	1/#Mid	699.7	1.81	1.91	19.21	2.15	16.96	49.659	Vertical	Pass
Band 16		707.5	2.16	1.91	19.26	2.15	17.36	54.450	Vertical	Pass
QAM		715.3	1.66	1.93	19.34	2.15	16.92	49.204	Vertical	Pass
3.0MHz	1/#Mid	700.5	2.12	1.91	19.21	2.15	17.27	53.333	Vertical	Pass
Band 16		707.5	1.98	1.91	19.26	2.15	17.18	52.240	Vertical	Pass
QAM		714.5	2.33	1.93	19.34	2.15	17.59	57.412	Vertical	Pass
5.0MHz	1/#Mid	701.5	2.58	1.91	19.23	2.15	17.75	59.566	Vertical	Pass
Band 16		707.5	2.59	1.91	19.26	2.15	17.79	60.117	Vertical	Pass
QAM		713.5	2.43	1.92	19.33	2.15	17.69	58.749	Vertical	Pass
10.0MHz	1/#Mid	704	2.5	1.91	19.25	2.15	17.69	58.749	Vertical	Pass
Band 16		707.5	2.53	1.91	19.26	2.15	17.73	59.293	Vertical	Pass
QAM		711	1.73	1.92	19.32	2.15	16.98	49.888	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)

ERP(dBm)=EIRP-2.15

8.6 LTE BAND 17

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	706.5	4.52	1.91	19.23	2.15	19.69	93.111	Horizontal	Pass
		710	4.50	1.91	19.26	2.15	19.70	93.325	Horizontal	Pass
		713.5	4.44	1.92	19.33	2.15	19.70	93.325	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	709	4.47	1.91	19.25	2.15	19.66	92.470	Horizontal	Pass
		710	4.47	1.91	19.26	2.15	19.67	92.683	Horizontal	Pass
		711	4.39	1.92	19.32	2.15	19.64	92.045	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	706.5	3.28	1.91	19.23	2.15	18.45	69.984	Vertical	Pass
		710	3.52	1.91	19.26	2.15	18.72	74.473	Vertical	Pass
		713.5	4.35	1.92	19.33	2.15	19.61	91.411	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	709	3.54	1.91	19.25	2.15	18.73	74.645	Vertical	Pass
		710	3.04	1.91	19.26	2.15	18.24	66.681	Vertical	Pass
		711	4.16	1.92	19.32	2.15	19.41	87.297	Vertical	Pass

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	706.5	3.85	1.91	19.23	2.15	19.02	79.799	Horizontal	Pass
		710	3.72	1.91	19.26	2.15	18.92	77.983	Horizontal	Pass
		713.5	3.68	1.92	19.33	2.15	18.94	78.343	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	709	3.75	1.91	19.25	2.15	18.94	78.343	Horizontal	Pass
		710	3.68	1.91	19.26	2.15	18.88	77.268	Horizontal	Pass
		711	3.61	1.92	19.32	2.15	18.86	76.913	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	706.5	3.56	1.91	19.23	2.15	18.73	74.645	Vertical	Pass
		710	2.70	1.91	19.26	2.15	17.90	61.660	Vertical	Pass
		713.5	3.01	1.92	19.33	2.15	18.27	67.143	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	709	2.92	1.91	19.25	2.15	18.11	64.714	Vertical	Pass
		710	3.39	1.91	19.26	2.15	18.59	72.277	Vertical	Pass
		711	3.04	1.92	19.32	2.15	18.29	67.453	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)

ERP=EIRP-2.15

8.7 LTE BAND 41

Radiated Power (EIRP) for Band 41									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
						Average	Average		
						(dBm)	(mW)		
5.0MHz Band QPSK	1/#Mid	2498.5	0.89	4.54	27.75	24.10	257.040	Horizontal	Pass
		2595	1.46	4.69	27.72	24.49	281.190	Horizontal	Pass
		2687.5	0.81	4.71	27.71	23.81	240.436	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2501	0.37	4.55	27.76	23.58	228.034	Horizontal	Pass
		2595	1.27	4.69	27.72	24.30	269.153	Horizontal	Pass
		2685	0.69	4.72	27.70	23.67	232.809	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2503.5	0.21	4.55	27.77	23.43	220.293	Horizontal	Pass
		2595	1.36	4.69	27.72	24.39	274.789	Horizontal	Pass
		2682.5	0.67	4.72	27.69	23.64	231.206	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2506	0.09	4.57	27.78	23.30	213.796	Horizontal	Pass
		2595	1.22	4.73	27.72	24.21	263.633	Horizontal	Pass
		2680	0.53	4.75	27.68	23.46	221.820	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2498.5	-0.57	4.54	27.75	22.64	183.654	Vertical	Pass
		2595	-0.01	4.69	27.72	23.02	200.447	Vertical	Pass
		2687.5	-0.61	4.71	27.71	22.39	173.380	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2501	-0.04	4.55	27.76	23.17	207.491	Vertical	Pass
		2595	-0.69	4.69	27.72	22.34	171.396	Vertical	Pass
		2685	-0.61	4.72	27.70	22.37	172.584	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2503.5	-0.64	4.55	27.77	22.58	181.134	Vertical	Pass
		2595	0.25	4.69	27.72	23.28	212.814	Vertical	Pass
		2682.5	-0.44	4.72	27.69	22.53	179.061	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2506	-0.73	4.57	27.78	22.48	177.011	Vertical	Pass
		2595	0.01	4.73	27.72	23.00	199.526	Vertical	Pass
		2680	0.05	4.75	27.68	22.98	198.609	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	0.25	4.54	27.75	23.46	221.820	Horizontal	Pass
		2595	0.66	4.69	27.72	23.69	233.884	Horizontal	Pass
		2687.5	0.73	4.71	27.71	23.73	236.048	Horizontal	Pass
10.0MHz Band 16 QAM	1/##Mid	2501	0.24	4.55	27.76	23.45	221.309	Horizontal	Pass
		2595	0.60	4.69	27.72	23.63	230.675	Horizontal	Pass
		2685	0.72	4.72	27.70	23.70	234.423	Horizontal	Pass
15.0MHz Band 16 QAM	1/##Mid	2503.5	0.29	4.55	27.77	23.51	224.388	Horizontal	Pass
		2595	0.64	4.69	27.72	23.67	232.809	Horizontal	Pass
		2682.5	0.64	4.72	27.69	23.61	229.615	Horizontal	Pass
20.0MHz Band 16 QAM	1/##Mid	2506	0.23	4.57	27.78	23.44	220.800	Horizontal	Pass
		2595	0.72	4.73	27.72	23.71	234.963	Horizontal	Pass
		2680	0.64	4.75	27.68	23.57	227.510	Horizontal	Pass
5.0MHz Band 16 QAM	1/##Mid	2498.5	-1.29	4.54	27.75	21.92	155.597	Vertical	Pass
		2595	-0.99	4.69	27.72	22.04	159.956	Vertical	Pass
		2687.5	-1.25	4.71	27.71	21.75	149.624	Vertical	Pass
10.0MHz Band 16 QAM	1/##Mid	2501	-1.11	4.55	27.76	22.10	162.181	Vertical	Pass
		2595	-1.03	4.69	27.72	22.00	158.489	Vertical	Pass
		2685	-1.26	4.72	27.70	21.72	148.594	Vertical	Pass
15.0MHz Band 16 QAM	1/##Mid	2503.5	-1.82	4.55	27.77	21.40	138.038	Vertical	Pass
		2595	-1.54	4.69	27.72	21.49	140.929	Vertical	Pass
		2682.5	-0.94	4.72	27.69	22.03	159.588	Vertical	Pass
20.0MHz Band 16 QAM	1/##Mid	2506	-1.78	4.57	27.78	21.43	138.995	Vertical	Pass
		2595	-1.23	4.73	27.72	21.76	149.968	Vertical	Pass
		2680	-1.34	4.75	27.68	21.59	144.212	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.8 LTE BAND 66

Radiated Power (EIRP) for Band 66									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP	Polarization Of Max. ERP	
							Average (mW)		
1.4MHz Band QPSK	1/#Mid	1710.7	-1.40	3.76	28.24	23.08	203.236	Horizontal	Pass
		1745	-1.30	3.91	28.22	23.01	199.986	Horizontal	Pass
		1779.3	-1.26	3.93	28.2	23.01	199.986	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-1.50	3.77	28.23	22.96	197.697	Horizontal	Pass
		1745	-1.28	3.91	28.24	23.05	201.837	Horizontal	Pass
		1778.5	-1.29	3.94	28.25	23.02	200.447	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-1.38	3.77	28.31	23.16	207.014	Horizontal	Pass
		1745	-1.25	3.91	28.22	23.06	202.302	Horizontal	Pass
		1777.5	-1.13	3.94	28.2	23.13	205.589	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-1.49	3.79	28.33	23.05	201.837	Horizontal	Pass
		1745	-1.24	3.95	28.22	23.03	200.909	Horizontal	Pass
		1775	-1.00	3.97	28.19	23.22	209.894	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-1.53	3.79	28.34	23.02	200.447	Horizontal	Pass
		1745	-1.21	3.95	28.22	23.06	202.302	Horizontal	Pass
		1772.5	-1.09	3.97	28.18	23.12	205.116	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-1.42	3.81	28.35	23.12	205.116	Horizontal	Pass
		1745	-1.31	3.96	28.22	22.95	197.242	Horizontal	Pass
		1770	-1.07	4	28.16	23.09	203.704	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-2.82	3.76	28.24	21.66	146.555	Vertical	Pass
		1745	-2.34	3.91	28.22	21.97	157.398	Vertical	Pass
		1779.3	-2.54	3.93	28.2	21.73	148.936	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-3.09	3.77	28.23	21.37	137.088	Vertical	Pass
		1745	-2.96	3.91	28.24	21.37	137.088	Vertical	Pass
		1778.5	-2.55	3.94	28.25	21.76	149.968	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-2.49	3.77	28.31	22.05	160.325	Vertical	Pass
		1745	-2.31	3.91	28.22	22.00	158.489	Vertical	Pass
		1777.5	-2.53	3.94	28.2	21.73	148.936	Vertical	Pass
10.0MHz	1/#Mid	1715	-3.08	3.79	28.34	21.47	140.281	Vertical	Pass

Band		1745	-2.23	3.95	28.22	22.04	159.956	Vertical	Pass
QPSK		1775	-2.66	3.97	28.18	21.55	142.889	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-2.36	3.81	28.35	22.18	165.196	Vertical	Pass
Band		1745	-2.51	3.96	28.22	21.75	149.624	Vertical	Pass
QPSK		1772.5	-2.08	4	28.16	22.08	161.436	Vertical	Pass
20.0MHz	1/#Mid	1720	-2.74	3.79	28.34	21.81	151.705	Vertical	Pass
Band		1745	-2.51	3.95	28.22	21.76	149.968	Vertical	Pass
QPSK		1770	-2.92	3.97	28.18	21.29	134.586	Vertical	Pass

Radiated Power (EIRP) for Band 66									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP	Polarization Of Max. ERP	
							Average		
							(mW)		
1.4MHz Band 16 QAM	1/#Mid	1710.7	-2.22	3.76	28.24	22.26	168.267	Horizontal	Pass
		1745	-2.06	3.91	28.22	22.25	167.880	Horizontal	Pass
		1779.3	-2.09	3.93	28.2	22.18	165.196	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-2.25	3.77	28.23	22.21	166.341	Horizontal	Pass
		1745	-2.08	3.91	28.24	22.25	167.880	Horizontal	Pass
		1778.5	-2.00	3.94	28.25	22.31	170.216	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-2.19	3.77	28.31	22.35	171.791	Horizontal	Pass
		1745	-1.96	3.91	28.22	22.35	171.791	Horizontal	Pass
		1777.5	-1.99	3.94	28.2	22.27	168.655	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-2.15	3.79	28.33	22.39	173.380	Horizontal	Pass
		1745	-1.97	3.95	28.22	22.30	169.824	Horizontal	Pass
		1775	-1.80	3.97	28.19	22.42	174.582	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-2.25	3.79	28.34	22.30	169.824	Horizontal	Pass
		1745	-1.93	3.95	28.22	22.34	171.396	Horizontal	Pass
		1772.5	-1.95	3.97	28.18	22.26	168.267	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-2.19	3.81	28.35	22.35	171.791	Horizontal	Pass
		1745	-1.99	3.96	28.22	22.27	168.655	Horizontal	Pass
		1770	-1.74	4	28.16	22.42	174.582	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-3.42	3.76	28.24	21.06	127.644	Vertical	Pass
		1745	-3.18	3.91	28.22	21.13	129.718	Vertical	Pass
		1779.3	-2.42	3.93	28.2	21.85	153.109	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-3.90	3.77	28.23	20.56	113.763	Vertical	Pass
		1745	-2.61	3.91	28.24	21.72	148.594	Vertical	Pass
		1778.5	-3.97	3.94	28.25	20.34	108.143	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-2.46	3.77	28.31	22.08	161.436	Vertical	Pass
		1745	-3.61	3.91	28.22	20.70	117.490	Vertical	Pass
		1777.5	-3.43	3.94	28.2	20.83	121.060	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-4.22	3.79	28.34	20.33	107.895	Vertical	Pass
		1745	-2.68	3.95	28.22	21.59	144.212	Vertical	Pass
		1775	-3.24	3.97	28.18	20.97	125.026	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-4.27	3.81	28.35	20.27	106.414	Vertical	Pass

Band 16 QAM		1745	-2.79	3.96	28.22	21.47	140.281	Vertical	Pass
		1772.5	-2.59	4	28.16	21.57	143.549	Vertical	Pass
20.0MHz	1/#Mid	1720	-3.39	3.79	28.34	21.16	130.617	Vertical	Pass
Band 16		1745	-2.79	3.95	28.22	21.48	140.605	Vertical	Pass
QAM		1770	-3.15	3.97	28.18	21.06	127.644	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.9 LTE BAND 71

Radiated Power (ERP) for Band 71										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	25/0	665.5	4.43	2.01	19.68	2.15	19.95	98.855	Horizontal	Pass
		680.5	4.26	2.01	19.77	2.15	19.87	97.051	Horizontal	Pass
		695.5	4.36	2.02	19.82	2.15	20.01	100.231	Horizontal	Pass
10.0MHz Band QPSK	50/0	668	4.25	2.01	19.70	2.15	19.79	95.280	Horizontal	Pass
		680.5	4.22	2.01	19.77	2.15	19.83	96.161	Horizontal	Pass
		693	4.30	2.02	19.81	2.15	19.94	98.628	Horizontal	Pass
15.0MHz Band QPSK	75/0	670.5	4.15	2.01	19.71	2.15	19.70	93.325	Horizontal	Pass
		680.5	4.31	2.01	19.77	2.15	19.92	98.175	Horizontal	Pass
		690.5	4.33	2.02	19.79	2.15	19.95	98.855	Horizontal	Pass
20.0MHz Band QPSK	100/0	673	4.17	2.01	19.73	2.15	19.74	94.189	Horizontal	Pass
		683	4.30	2.01	19.77	2.15	19.91	97.949	Horizontal	Pass
		688	4.35	2.02	19.78	2.15	19.96	99.083	Horizontal	Pass
5.0MHz Band QPSK	25/0	665.5	2.99	2.01	19.68	2.15	18.51	70.958	Vertical	Pass
		680.5	3.13	2.01	19.77	2.15	18.74	74.817	Vertical	Pass
		695.5	2.61	2.02	19.82	2.15	18.26	66.988	Vertical	Pass
15.0MHz Band QPSK	50/0	668	3.00	2.01	19.70	2.15	18.54	71.450	Vertical	Pass
		680.5	2.62	2.01	19.77	2.15	18.23	66.527	Vertical	Pass
		693	2.58	2.02	19.81	2.15	18.22	66.374	Vertical	Pass
15.0MHz Band QPSK	75/0	670.5	3.13	2.01	19.71	2.15	18.68	73.790	Vertical	Pass
		680.5	3.03	2.01	19.77	2.15	18.64	73.114	Vertical	Pass
		690.5	2.83	2.02	19.79	2.15	18.45	69.984	Vertical	Pass
20MHz Band QPSK	100/0	673	3.02	2.01	19.73	2.15	18.59	72.277	Vertical	Pass
		683	2.84	2.01	19.77	2.15	18.45	69.984	Vertical	Pass
		688	3.03	2.02	19.78	2.15	18.64	73.114	Vertical	Pass

Radiated Power (ERP) for Band 71										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	25/0	665.5	3.64	2.01	19.68	2.15	19.16	82.414	Horizontal	Pass
		680.5	3.58	2.01	19.77	2.15	19.19	82.985	Horizontal	Pass
		695.5	3.54	2.02	19.82	2.15	19.19	82.985	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	668	3.47	2.01	19.70	2.15	19.01	79.616	Horizontal	Pass
		680.5	3.50	2.01	19.77	2.15	19.11	81.470	Horizontal	Pass
		693	3.61	2.02	19.81	2.15	19.25	84.140	Horizontal	Pass
15.0MHz Band 16 QAM	75/0	670.5	3.37	2.01	19.71	2.15	18.92	77.983	Horizontal	Pass
		680.5	3.56	2.01	19.77	2.15	19.17	82.604	Horizontal	Pass
		690.5	3.66	2.02	19.79	2.15	19.28	84.723	Horizontal	Pass
20.0MHz Band 16 QAM	100/0	673	3.37	2.01	19.73	2.15	18.94	78.343	Horizontal	Pass
		683	3.56	2.01	19.77	2.15	19.17	82.604	Horizontal	Pass
		688	3.63	2.02	19.78	2.15	19.24	83.946	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	665.5	1.83	2.01	19.68	2.15	17.35	54.325	Vertical	Pass
		680.5	1.92	2.01	19.77	2.15	17.53	56.624	Vertical	Pass
		695.5	1.94	2.02	19.82	2.15	17.59	57.412	Vertical	Pass
10.0MHz Band 16 QAM	50/0	668	1.93	2.01	19.70	2.15	17.47	55.847	Vertical	Pass
		680.5	2.14	2.01	19.77	2.15	17.75	59.566	Vertical	Pass
		693	1.47	2.02	19.81	2.15	17.11	51.404	Vertical	Pass
15.0MHz Band 16 QAM	75/0	670.5	2.13	2.01	19.71	2.15	17.68	58.614	Vertical	Pass
		680.5	2.19	2.01	19.77	2.15	17.80	60.256	Vertical	Pass
		690.5	1.42	2.02	19.79	2.15	17.04	50.582	Vertical	Pass
20.0MHz Band 16 QAM	100/0	673	1.95	2.01	19.73	2.15	17.52	56.494	Vertical	Pass
		683	2.26	2.01	19.77	2.15	17.87	61.235	Vertical	Pass
		688	2.05	2.02	19.78	2.15	17.66	58.345	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)

ERP=EIRP-2.15

9. SPURIOUS RADIATION EMISSION

RULE PART(S)

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

LIMIT

§22.917 (e) and §24.238 (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 $43 + 10 \log_{10}(p)$, dB; and
- b. for mobile subscriber equipment, the attenuation shall not be less than $43 + 10 \log_{10}(p)$, dB at the channel edges and $55 + 10 \log_{10}(p)$ 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 2/4/5/12/17/41/66/71

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	-51.29	4.04	33.51	-21.82	-13	-8.82	Horizontal
3701.4	-51.97	4.04	33.51	-22.50	-13	-9.50	Vertical
5552.1	-49.82	5.24	35.84	-19.22	-13	-6.22	Vertical
5552.1	-52.58	5.24	35.84	-21.98	-13	-8.98	Horizontal
193.2	-38.01	1.43	16.02	-23.42	-13	-10.42	Vertical
387.0	-44.53	1.30	17.99	-27.84	-13	-14.84	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-50.49	4.04	33.56	-20.97	-13	-7.97	Horizontal
3760.0	-50.17	4.04	33.56	-20.65	-13	-7.65	Vertical
5640.0	-47.71	5.24	35.91	-17.04	-13	-4.04	Vertical
5640.0	-50.35	5.24	35.91	-19.68	-13	-6.68	Horizontal
192.1	-42.99	1.62	16.97	-27.64	-13	-14.64	Vertical
243.9	-43.24	1.74	15.98	-29.01	-13	-16.01	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-52.08	4.04	34.00	-22.12	-13	-9.12	Horizontal
3818.6	-51.94	4.04	34.00	-21.98	-13	-8.98	Vertical
5727.9	-46.69	5.24	36.04	-15.89	-13	-2.89	Vertical
5727.9	-52.44	5.24	36.04	-21.64	-13	-8.64	Horizontal
206.7	-38.30	1.42	17.29	-22.43	-13	-9.43	Vertical
276.4	-42.20	1.50	17.90	-25.79	-13	-12.79	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	-49.66	4.07	33.54	-20.19	-13	-7.19	Horizontal
3720.0	-49.36	4.07	33.54	-19.89	-13	-6.89	Vertical
5580.0	-53.73	5.28	35.86	-23.15	-13	-10.15	Vertical
5580.0	-49.71	5.28	35.86	-19.13	-13	-6.13	Horizontal
187.5	-38.36	1.58	16.89	-23.04	-13	-10.04	Vertical
325.9	-39.51	1.76	17.26	-24.01	-13	-11.01	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-44.33	4.04	33.56	-14.81	-13	-1.81	Horizontal
3760.0	-45.17	4.04	33.56	-15.65	-13	-2.65	Vertical
5640.0	-52.16	5.24	35.91	-21.49	-13	-8.49	Vertical
5640.0	-51.94	5.24	35.91	-21.27	-13	-8.27	Horizontal
198.5	-42.64	1.46	16.27	-27.83	-13	-14.83	Vertical
331.6	-42.73	1.59	15.15	-29.17	-13	-16.17	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-47.10	4.04	34.00	-17.14	-13	-4.14	Horizontal
3800.0	-52.15	4.04	34.00	-22.19	-13	-9.19	Vertical
5700.0	-47.22	5.24	36.04	-16.42	-13	-3.42	Vertical
5700.0	-51.92	5.24	36.04	-21.12	-13	-8.12	Horizontal
203.2	-40.42	1.36	17.39	-24.38	-13	-11.38	Vertical
244.6	-44.92	1.66	15.39	-31.19	-13	-18.19	Horizontal

Note: P_{Mea}(dBm)= Power(dBm)+ AR_{pl} (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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-52.33	4.02	29.80	-26.55	-13	-13.55	Horizontal
3421.4	-45.73	4.02	29.80	-19.95	-13	-6.95	Vertical
5132.1	-44.28	5.24	35.84	-13.68	-13	-0.68	Vertical
5132.1	-49.65	5.24	35.84	-19.05	-13	-6.05	Horizontal
182.2	-35.65	1.68	16.04	-21.29	-13	-8.29	Vertical
232.7	-34.02	1.78	17.74	-18.06	-13	-5.06	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-44.95	4.03	30.00	-18.98	-13	-5.98	Horizontal
3465.0	-49.24	4.03	30.00	-23.27	-13	-10.27	Vertical
5197.5	-52.02	5.25	35.86	-21.41	-13	-8.41	Vertical
5197.5	-53.17	5.25	35.86	-22.56	-13	-9.56	Horizontal
188.3	-39.68	1.72	17.69	-23.71	-13	-10.71	Vertical
367.2	-38.05	1.62	16.02	-23.64	-13	-10.64	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-47.51	4.05	30.01	-21.55	-13	-8.55	Horizontal
3508.6	-47.81	4.05	30.01	-21.85	-13	-8.85	Vertical
5262.9	-48.26	5.26	35.86	-17.66	-13	-4.66	Vertical
5262.9	-52.37	5.26	35.86	-21.77	-13	-8.77	Horizontal
199.9	-43.58	1.80	16.69	-28.69	-13	-15.69	Vertical
329.2	-38.06	1.75	16.66	-23.16	-13	-10.16	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	-50.45	4.02	29.80	-24.67	-13	-11.67	Horizontal
3440.0	-45.81	4.02	29.80	-20.03	-13	-7.03	Vertical
5160.0	-52.14	5.24	35.84	-21.54	-13	-8.54	Vertical
5160.0	-50.26	5.24	35.84	-19.66	-13	-6.66	Horizontal
190.5	-36.73	1.57	17.26	-21.04	-13	-8.04	Vertical
420.6	-36.86	1.78	16.35	-22.29	-13	-9.29	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-45.83	4.03	30.00	-19.86	-13	-6.86	Horizontal
3465.0	-46.02	4.03	30.00	-20.05	-13	-7.05	Vertical
5197.5	-46.95	5.25	35.86	-16.34	-13	-3.34	Vertical
5197.5	-53.54	5.25	35.86	-22.93	-13	-9.93	Horizontal
175.6	-39.19	1.44	17.95	-22.68	-13	-9.68	Vertical
404.8	-41.22	1.65	16.09	-26.78	-13	-13.78	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-44.75	2.91	27.68	-19.98	-13	-6.98	Horizontal
3490.0	-48.06	2.91	27.68	-23.29	-13	-10.29	Vertical
5235.0	-45.66	5.26	35.86	-15.06	-13	-2.06	Vertical
5235.0	-53.21	5.26	35.86	-22.61	-13	-9.61	Horizontal
175.7	-41.87	1.61	16.85	-26.63	-13	-13.63	Vertical
407.6	-43.31	1.61	15.19	-29.73	-13	-16.73	Horizontal

Note: P_{Mea}(dBm)= Power(dBm)+ AR_{pl} (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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1649.4	-46.43	2.78	27.50	-21.71	-13	-8.71	Horizontal
1649.4	-45.20	2.78	27.50	-20.48	-13	-7.48	Vertical
2474.1	-51.21	2.90	27.80	-26.31	-13	-13.31	Vertical
2474.1	-53.38	2.90	27.80	-28.48	-13	-15.48	Horizontal
199.4	-42.50	1.76	17.59	-26.67	-13	-13.67	Vertical
231.3	-43.01	1.63	15.87	-28.77	-13	-15.77	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-50.60	2.80	27.48	-25.92	-13	-12.92	Horizontal
1673.0	-48.60	2.80	27.48	-23.92	-13	-10.92	Vertical
2509.5	-52.60	2.91	27.70	-27.81	-13	-14.81	Vertical
2509.5	-53.79	2.91	27.70	-29.00	-13	-16.00	Horizontal
199.9	-35.39	1.61	15.68	-21.32	-13	-8.32	Vertical
352.8	-34.08	1.59	17.52	-18.16	-13	-5.16	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-52.62	2.82	27.43	-28.01	-13	-15.01	Horizontal
1696.6	-46.25	2.82	27.43	-21.64	-13	-8.64	Vertical
2544.9	-52.43	2.92	27.74	-27.61	-13	-14.61	Vertical
2544.9	-49.41	2.92	27.74	-24.59	-13	-11.59	Horizontal
185.5	-42.10	1.69	16.67	-27.11	-13	-14.11	Vertical
462.9	-44.50	1.70	17.18	-29.02	-13	-16.02	Horizontal

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

Test Results for Low Channel 829MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1658.0	-47.36	2.78	27.50	-22.64	-13	-9.64	Horizontal
1658.0	-50.94	2.78	27.50	-26.22	-13	-13.22	Vertical
2487.0	-48.64	2.90	27.80	-23.74	-13	-10.74	Vertical
2487.0	-53.39	2.90	27.80	-28.49	-13	-15.49	Horizontal
196.2	-37.28	1.71	15.57	-23.42	-13	-10.42	Vertical
378.4	-35.48	1.34	16.40	-20.42	-13	-7.42	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-53.87	2.80	27.48	-29.19	-13	-16.19	Horizontal
1673.0	-46.02	2.80	27.48	-21.34	-13	-8.34	Vertical
2509.5	-47.20	2.91	27.70	-22.41	-13	-9.41	Vertical
2509.5	-53.25	2.91	27.70	-28.46	-13	-15.46	Horizontal
204.1	-35.41	1.44	17.04	-19.81	-13	-6.81	Vertical
291.8	-40.44	1.76	17.62	-24.58	-13	-11.58	Horizontal
Test Results for High Channel 844MHz							
1688.0	-44.32	2.82	27.43	-19.71	-13	-6.71	Horizontal
1688.0	-51.56	2.82	27.43	-26.95	-13	-13.95	Vertical
2532.0	-47.55	2.92	27.74	-22.73	-13	-9.73	Vertical
2532.0	-49.81	2.92	27.74	-24.99	-13	-11.99	Horizontal
208.7	-43.85	1.74	17.70	-27.89	-13	-14.89	Vertical
273.5	-36.98	1.41	17.46	-20.92	-13	-7.92	Horizontal

Note: P_{Mea}(dBm)= Power(dBm)+ AR_{pl} (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 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	-48.30	2.60	27.20	-23.70	-13	-10.70	Horizontal
1399.4	-47.53	2.60	27.20	-22.93	-13	-9.93	Vertical
2099.1	-47.66	2.85	27.54	-22.97	-13	-9.97	Vertical
2099.1	-51.76	2.85	27.54	-27.07	-13	-14.07	Horizontal
190.7	-40.03	1.49	17.78	-23.74	-13	-10.74	Vertical
242.4	-42.60	1.36	17.33	-26.63	-13	-13.63	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-49.98	2.61	27.28	-25.31	-13	-12.31	Horizontal
1415.0	-44.45	2.61	27.28	-19.78	-13	-6.78	Vertical
2122.5	-48.39	2.87	27.59	-23.67	-13	-10.67	Vertical
2122.5	-52.33	2.87	27.59	-27.61	-13	-14.61	Horizontal
200.2	-39.31	1.73	15.74	-25.30	-13	-12.30	Vertical
437.6	-34.13	1.62	15.79	-19.96	-13	-6.96	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-50.96	2.63	27.28	-26.31	-13	-13.31	Horizontal
1430.6	-53.42	2.63	27.28	-28.77	-13	-15.77	Vertical
2145.9	-46.00	2.88	27.60	-21.28	-13	-8.28	Vertical
2145.9	-51.02	2.88	27.60	-26.30	-13	-13.30	Horizontal
176.0	-39.04	1.61	18.00	-22.65	-13	-9.65	Vertical
343.8	-39.65	1.45	15.49	-25.62	-13	-12.62	Horizontal

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

Test Results for Low Channel 704MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1408.0	-48.48	2.61	27.26	-23.83	-13	-10.83	Horizontal
1408.0	-47.50	2.61	27.26	-22.85	-13	-9.85	Vertical
2112.0	-51.91	2.87	27.58	-27.20	-13	-14.20	Vertical
2112.0	-52.92	2.87	27.58	-28.21	-13	-15.21	Horizontal
178.1	-43.29	1.31	16.97	-27.63	-13	-14.63	Vertical
428.2	-41.29	1.65	16.70	-26.24	-13	-13.24	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-45.34	2.61	27.28	-20.67	-13	-7.67	Horizontal
1415.0	-44.95	2.61	27.28	-20.28	-13	-7.28	Vertical
2122.5	-44.75	2.87	27.59	-20.03	-13	-7.03	Vertical
2122.5	-49.38	2.87	27.59	-24.66	-13	-11.66	Horizontal
206.2	-39.52	1.72	17.99	-23.25	-13	-10.25	Vertical
405.5	-35.63	1.73	17.94	-19.42	-13	-6.42	Horizontal
Test Results for High Channel 711MHz							
1422.0	-47.94	2.62	27.28	-23.28	-13	-10.28	Horizontal
1422.0	-47.47	2.62	27.28	-22.81	-13	-9.81	Vertical
2133.0	-45.77	2.87	27.60	-21.04	-13	-8.04	Vertical
2133.0	-52.54	2.87	27.60	-27.81	-13	-14.81	Horizontal
208.5	-38.51	1.58	15.93	-24.16	-13	-11.16	Vertical
316.2	-40.84	1.36	15.59	-26.61	-13	-13.61	Horizontal

Note: P_{Mea}(dBm)= Power(dBm)+ AR_{pl} (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.

9.5 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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1413.0	-47.73	2.61	27.28	-23.06	-13	-10.06	Horizontal
1413.0	-47.58	2.61	27.28	-22.91	-13	-9.91	Vertical
2119.5	-48.59	2.87	27.59	-23.87	-13	-10.87	Vertical
2119.5	-53.71	2.87	27.59	-28.99	-13	-15.99	Horizontal
178.1	-37.95	1.71	16.15	-23.51	-13	-10.51	Vertical
380.1	-37.34	1.41	17.32	-21.43	-13	-8.43	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-52.13	2.62	27.30	-27.45	-13	-14.45	Horizontal
1420.0	-47.15	2.62	27.30	-22.47	-13	-9.47	Vertical
2130.0	-44.23	2.87	27.62	-19.48	-13	-6.48	Vertical
2130.0	-51.57	2.87	27.62	-26.82	-13	-13.82	Horizontal
182.1	-41.26	1.42	15.25	-27.44	-13	-14.44	Vertical
458.0	-39.29	1.36	17.19	-23.46	-13	-10.46	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-45.86	2.66	27.28	-21.24	-13	-8.24	Horizontal
1427.0	-50.69	2.66	27.28	-26.07	-13	-13.07	Vertical
2140.5	-44.75	2.88	27.60	-20.03	-13	-7.03	Vertical
2140.5	-49.13	2.88	27.60	-24.41	-13	-11.41	Horizontal
182.6	-39.82	1.32	17.29	-23.85	-13	-10.85	Vertical
457.0	-38.03	1.72	16.89	-22.86	-13	-9.86	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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1418.0	-48.80	2.62	27.30	-24.12	-13	-11.12	Horizontal
1418.0	-48.18	2.62	27.30	-23.50	-13	-10.50	Vertical
2127.0	-50.85	2.87	27.62	-26.10	-13	-13.10	Vertical
2127.0	-52.37	2.87	27.62	-27.62	-13	-14.62	Horizontal
175.4	-42.31	1.35	16.91	-26.75	-13	-13.75	Vertical
429.6	-38.92	1.62	16.31	-24.23	-13	-11.23	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-45.10	2.62	27.30	-20.42	-13	-7.42	Horizontal
1420.0	-50.32	2.62	27.30	-25.64	-13	-12.64	Vertical
2130.0	-52.65	2.87	27.62	-27.90	-13	-14.90	Vertical
2130.0	-49.19	2.87	27.62	-24.44	-13	-11.44	Horizontal
197.6	-37.28	1.51	17.14	-21.65	-13	-8.65	Vertical
283.9	-41.31	1.77	16.88	-26.20	-13	-13.20	Horizontal
Test Results for High Channel 711MHz							
1422.0	-47.77	2.62	27.30	-23.09	-13	-10.09	Horizontal
1422.0	-49.65	2.62	27.30	-24.97	-13	-11.97	Vertical
2133.0	-49.13	2.87	27.62	-24.38	-13	-11.38	Vertical
2133.0	-51.46	2.87	27.62	-26.71	-13	-13.71	Horizontal
212.7	-38.06	1.78	15.95	-23.89	-13	-10.89	Vertical
253.8	-38.22	1.34	17.95	-21.62	-13	-8.62	Horizontal

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

Margin = Spurious Emission Level - Limit

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

9.6 LTE BAND 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
5145.0	-62.74	5.23	35.81	-32.16	-25	-7.16	Horizontal
5145.0	-59.85	5.23	35.81	-29.27	-25	-4.27	Vertical
7717.5	-62.32	5.67	36.85	-31.14	-25	-6.14	Vertical
7717.5	-63.16	5.67	36.85	-31.98	-25	-6.98	Horizontal
212.4	-52.14	1.38	15.98	-37.54	-25	-12.54	Vertical
458.5	-47.50	1.62	15.66	-33.46	-25	-8.46	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-63.72	5.23	35.82	-33.13	-25	-8.13	Horizontal
5190.0	-61.25	5.23	35.82	-30.66	-25	-5.66	Vertical
7785.0	-59.74	5.67	36.85	-28.56	-25	-3.56	Vertical
7785.0	-61.42	5.67	36.85	-30.24	-25	-5.24	Horizontal
200.3	-52.38	1.62	16.17	-37.83	-25	-12.83	Vertical
276.8	-54.67	1.74	17.63	-38.78	-25	-13.78	Horizontal
Test Results for High Channel 2687.5MHz							
5235.0	-59.72	5.24	35.83	-29.13	-25	-4.13	Horizontal
5235.0	-63.19	5.24	35.83	-32.60	-25	-7.60	Vertical
7852.5	-60.06	5.68	36.87	-28.87	-25	-3.87	Vertical
7852.5	-62.20	5.68	36.87	-31.01	-25	-6.01	Horizontal
187.2	-54.75	1.55	15.84	-40.46	-25	-15.46	Vertical
381.0	-46.20	1.51	17.06	-30.65	-25	-5.65	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
5160.0	-61.87	5.23	35.82	-31.28	-25	-6.28	Horizontal
5160.0	-64.26	5.23	35.82	-33.67	-25	-8.67	Vertical
7740.0	-59.50	5.67	36.86	-28.31	-25	-3.31	Vertical
7740.0	-60.28	5.67	36.86	-29.09	-25	-4.09	Horizontal
196.0	-49.04	1.43	15.51	-34.96	-25	-9.96	Vertical
320.6	-49.00	1.40	16.97	-33.43	-25	-8.43	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-64.23	5.23	35.82	-33.64	-25	-8.64	Horizontal
5190.0	-60.12	5.23	35.82	-29.53	-25	-4.53	Vertical
7785.0	-59.84	5.67	36.85	-28.66	-25	-3.66	Vertical
7785.0	-62.98	5.67	36.85	-31.80	-25	-6.80	Horizontal
203.0	-50.60	1.77	16.72	-35.65	-25	-10.65	Vertical
461.0	-44.39	1.31	16.99	-28.71	-25	-3.71	Horizontal
Test Results for High Channel 2680MHz							
5220.0	-61.90	5.24	35.83	-31.31	-25	-6.31	Horizontal
5220.0	-64.62	5.24	35.83	-34.03	-25	-9.03	Vertical
7830.0	-62.31	5.70	36.88	-31.13	-25	-6.13	Vertical
7830.0	-59.28	5.70	36.88	-28.10	-25	-3.10	Horizontal
208.6	-45.79	1.70	15.73	-31.76	-25	-6.76	Vertical
383.4	-54.66	1.75	17.33	-39.08	-25	-14.08	Horizontal

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

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

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

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

9.7 LTE BAND 66

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

Test Results for Low Channel 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-52.48	3.84	35.81	-20.51	-13	-7.51	Horizontal
3421.4	-52.01	3.84	35.81	-20.04	-13	-7.04	Vertical
5132.1	-50.59	5.18	36.85	-18.92	-13	-5.92	Vertical
5132.1	-50.70	5.18	36.85	-19.03	-13	-6.03	Horizontal
203.6	-42.10	1.56	17.97	-25.69	-13	-12.69	Vertical
384.4	-39.97	1.33	15.11	-26.19	-13	-13.19	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-50.86	3.85	35.82	-18.89	-13	-5.89	Horizontal
3490.0	-51.85	3.85	35.82	-19.88	-13	-6.88	Vertical
5235.0	-49.96	5.21	36.85	-18.32	-13	-5.32	Vertical
5235.0	-52.47	5.21	36.85	-20.83	-13	-7.83	Horizontal
185.4	-41.82	1.77	16.17	-27.41	-13	-14.41	Vertical
324.5	-43.85	1.63	15.21	-30.27	-13	-17.27	Horizontal
Test Results for High Channel 1779.3MHz							
3558.6	-51.88	3.86	35.83	-19.91	-13	-6.91	Horizontal
3558.6	-49.01	3.86	35.83	-17.04	-13	-4.04	Vertical
5337.9	-53.75	5.24	36.87	-22.12	-13	-9.12	Vertical
5337.9	-53.69	5.24	36.87	-22.06	-13	-9.06	Horizontal
188.4	-37.95	1.58	17.56	-21.97	-13	-8.97	Vertical
354.9	-42.00	1.45	16.58	-26.87	-13	-13.87	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	-51.92	3.84	35.82	-19.94	-13	-6.94	Horizontal
3440.0	-50.67	3.84	35.82	-18.69	-13	-5.69	Vertical
5160.0	-51.96	5.18	36.86	-20.28	-13	-7.28	Vertical
5160.0	-49.52	5.18	36.86	-17.84	-13	-4.84	Horizontal
183.7	-42.88	1.56	15.76	-28.68	-13	-15.68	Vertical
329.8	-42.25	1.33	15.44	-28.14	-13	-15.14	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-53.02	3.85	35.82	-21.05	-13	-8.05	Horizontal
3490.0	-51.64	3.85	35.82	-19.67	-13	-6.67	Vertical
5235.0	-50.42	5.21	36.85	-18.78	-13	-5.78	Vertical
5235.0	-53.61	5.21	36.85	-21.97	-13	-8.97	Horizontal
192.8	-37.99	1.77	16.84	-22.91	-13	-9.91	Vertical
240.9	-35.76	1.63	17.64	-19.75	-13	-6.75	Horizontal
Test Results for High Channel 1770MHz							
3540.0	-51.13	3.86	35.83	-19.16	-13	-6.16	Horizontal
3540.0	-51.47	3.86	35.83	-19.50	-13	-6.50	Vertical
5310.0	-52.25	5.24	36.88	-20.61	-13	-7.61	Vertical
5310.0	-50.13	5.24	36.88	-18.49	-13	-5.49	Horizontal
212.0	-34.61	1.58	16.84	-19.34	-13	-6.34	Vertical
376.2	-40.70	1.45	17.64	-24.51	-13	-11.51	Horizontal

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

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

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

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

9.8 LTE BAND 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	-51.94	2.61	27.28	-27.27	-13	-14.27	Horizontal
1331	-51.94	2.61	27.28	-27.27	-13	-14.27	Vertical
1996.5	-52.68	2.87	27.59	-27.96	-13	-14.96	Vertical
1996.5	-53.54	2.87	27.59	-28.82	-13	-15.82	Horizontal
Test Results for Mid Channel 680.5MHz							
1361	-49.35	2.62	27.30	-24.67	-13	-11.67	Horizontal
1361	-49.72	2.62	27.30	-25.04	-13	-12.04	Vertical
2041.5	-52.70	2.87	27.62	-27.95	-13	-14.95	Vertical
2041.5	-49.50	2.87	27.62	-24.75	-13	-11.75	Horizontal
Test Results for High Channel 695.5MHz							
1391	-51.99	2.66	27.28	-27.37	-13	-14.37	Horizontal
1391	-53.63	2.66	27.28	-29.01	-13	-16.01	Vertical
2086.5	-52.25	2.88	27.60	-27.53	-13	-14.53	Vertical
2086.5	-50.90	2.88	27.60	-26.18	-13	-13.18	Horizontal

QPSK EIRP POWER FOR LTE BAND 71 (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	-53.17	2.62	27.30	-28.49	-13	-15.49	Horizontal
1346	-53.84	2.62	27.30	-29.16	-13	-16.16	Vertical
2019	-50.27	2.87	27.62	-25.52	-13	-12.52	Vertical
2019	-53.01	2.87	27.62	-28.26	-13	-15.26	Horizontal
Test Results for Mid Channel 683MHz							
1366	-49.33	2.62	27.30	-24.65	-13	-11.65	Horizontal
1366	-49.61	2.62	27.30	-24.93	-13	-11.93	Vertical
2049	-51.61	2.87	27.62	-26.86	-13	-13.86	Vertical
2049	-52.25	2.87	27.62	-27.50	-13	-14.50	Horizontal
Test Results for High Channel 688MHz							
1376	-52.99	2.62	27.30	-28.31	-13	-15.31	Horizontal
1376	-50.02	2.62	27.30	-25.34	-13	-12.34	Vertical
2064	-50.19	2.87	27.62	-25.44	-13	-12.44	Vertical
2064	-52.24	2.87	27.62	-27.49	-13	-14.49	Horizontal

Note: P_{Mea}(dBm)= Power(dBm)+ AR_{pl} (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 6.58V, Normal, DC 3.87V and High voltage, DC 8.90V.

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

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]
3.29	1880	12.6	0.006682	2.5
3.87	1880	13.5	0.007196	2.5
4.45	1880	13.4	0.007128	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	13.0	0.006933	2.5
Extreme (50C)	1880	11.2	0.005957	2.5
Extreme (40C)	1880	14.0	0.007469	2.5
Extreme (30C)	1880	13.6	0.007233	2.5
Extreme (10C)	1880	13.6	0.007258	2.5
Extreme (0C)	1880	12.5	0.006622	2.5
Extreme (-10C)	1880	12.7	0.006729	2.5
Extreme (-20C)	1880	13.8	0.007344	2.5
Extreme (-30C)	1880	14.5	0.007721	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	1880	10.2	0.005405	2.5
3.87	1880	9.0	0.004803	2.5
4.45	1880	8.2	0.004339	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	9.4	0.004989	2.5
Extreme (50C)	1880	9.0	0.004786	2.5
Extreme (40C)	1880	7.9	0.004176413	2.5
Extreme (30C)	1880	9.0	0.004772231	2.5
Extreme (10C)	1880	8.4	0.0044797	2.5
Extreme (0C)	1880	8.3	0.004407268	2.5
Extreme (-10C)	1880	9.4	0.005000008	2.5
Extreme (-20C)	1880	9.1	0.004837649	2.5
Extreme (-30C)	1880	7.8	0.004147544	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	9.2	0.005329	2.5
7.74	1732.5	8.8	0.005078	2.5
8.90	1732.5	8.6	0.004973	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.7	0.005049	2.5
Extreme (50C)	1732.5	9.1	0.005230	2.5
Extreme (40C)	1732.5	7.7	0.004422	2.5
Extreme (30C)	1732.5	6.0	0.003455	2.5
Extreme (10C)	1732.5	7.0	0.004064	2.5
Extreme (0C)	1732.5	9.8	0.005664	2.5
Extreme (-10C)	1732.5	8.8	0.005052	2.5
Extreme (-20C)	1732.5	6.5	0.003767	2.5
Extreme (-30C)	1732.5	8.0	0.004641	2.5

Band 4 16QAM, (20MHz BANDWIDTH RB size 100 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	1732.5	9.8	0.005669	2.5
3.87	1732.5	9.0	0.005197	2.5
4.45	1732.5	7.8	0.004495	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	9.2	0.005314	2.5
Extreme (50C)	1732.5	8.5	0.004929	2.5
Extreme (40C)	1732.5	8.2	0.004731	2.5
Extreme (30C)	1732.5	8.9	0.005138	2.5
Extreme (10C)	1732.5	9.2	0.005290	2.5
Extreme (0C)	1732.5	7.8	0.004497	2.5
Extreme (-10C)	1732.5	9.2	0.005297	2.5
Extreme (-20C)	1732.5	8.6	0.004969	2.5
Extreme (-30C)	1732.5	8.3	0.004764	2.5

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

10.3 LTE BAND 5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	836.5	6.1	0.007342	2.5
3.87	836.5	6.4	0.007698	2.5
4.45	836.5	5.1	0.006112	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	5.8	0.006989	2.5
Extreme (50C)	836.5	5.9	0.007029	2.5
Extreme (40C)	836.5	5.6	0.006725	2.5
Extreme (30C)	836.5	6.5	0.007800	2.5
Extreme (10C)	836.5	5.6	0.006647	2.5
Extreme (0C)	836.5	5.7	0.006849	2.5
Extreme (-10C)	836.5	5.2	0.006232	2.5
Extreme (-20C)	836.5	5.9	0.007066	2.5
Extreme (-30C)	836.5	6.2	0.007431	2.5

Band 5 16QAM, (10MHz BANDWIDTH RB size 50 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	836.5	6.1	0.007257	2.5
3.87	836.5	6.8	0.008127	2.5
4.45	836.5	4.4	0.005305	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.0	0.007119	2.5
Extreme (50C)	836.5	5.8	0.006955	2.5
Extreme (40C)	836.5	6.0	0.007207	2.5
Extreme (30C)	836.5	6.1	0.007296	2.5
Extreme (10C)	836.5	5.8	0.006877	2.5
Extreme (0C)	836.5	5.8	0.006927	2.5
Extreme (-10C)	836.5	5.2	0.006231	2.5
Extreme (-20C)	836.5	6.0	0.007231	2.5
Extreme (-30C)	836.5	6.3	0.007519	2.5

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

10.4 LTE BAND 12

Band 12 QPSK, (10MHz BANDWIDTH RB size 50 RB Offset 0

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	707.5	8.6	0.012112	2.5
3.87	707.5	9.8	0.013861	2.5
4.45	707.5	8.6	0.012150	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	8.5	0.012057	2.5
Extreme (50C)	707.5	8.0	0.011261	2.5
Extreme (40C)	707.5	7.2	0.010190	2.5
Extreme (30C)	707.5	7.9	0.011154	2.5
Extreme (10C)	707.5	7.7	0.010885	2.5
Extreme (0C)	707.5	8.7	0.012256	2.5
Extreme (-10C)	707.5	8.6	0.012095	2.5
Extreme (-20C)	707.5	8.8	0.012423	2.5
Extreme (-30C)	707.5	7.5	0.010642	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	707.5	6.9	0.009778	2.5
3.87	707.5	8.5	0.012032	2.5
4.45	707.5	7.7	0.010876	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.

10.5 LTE BAND 17

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	710.0	10.1	0.014284	2.5
3.87	710.0	9.3	0.013130	2.5
4.45	710.0	8.4	0.011822	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.7	0.013713	2.5
Extreme (50C)	710.0	9.1	0.012776	2.5
Extreme (40C)	710.0	8.3	0.011723	2.5
Extreme (30C)	710.0	9.5	0.013347	2.5
Extreme (10C)	710.0	8.7	0.012218	2.5
Extreme (0C)	710.0	8.1	0.011338	2.5
Extreme (-10C)	710.0	8.6	0.012125	2.5
Extreme (-20C)	710.0	9.0	0.012732	2.5
Extreme (-30C)	710.0	7.8	0.011006	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	10.2	0.014321	2.5
7.74	710.0	8.8	0.012461	2.5
8.90	710.0	8.2	0.011554	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.0	0.012725	2.5
Extreme (50C)	710.0	8.5	0.011939	2.5
Extreme (40C)	710.0	8.4	0.011793	2.5
Extreme (30C)	710.0	8.9	0.012525	2.5
Extreme (10C)	710.0	8.4	0.011790	2.5
Extreme (0C)	710.0	8.6	0.012143	2.5
Extreme (-10C)	710.0	9.6	0.013499	2.5
Extreme (-20C)	710.0	9.0	0.012638	2.5
Extreme (-30C)	710.0	8.1	0.011383	2.5

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

10.6 LTE BAND 41

Band 41 QPSK, (20MHz BANDWIDTH RB size 100 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	2595	8.9	0.003416	2.5
3.87	2595	9.1	0.003525	2.5
4.45	2595	8.1	0.003104	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	8.8	0.003380	2.5
Extreme (50C)	2595	8.5	0.003283	2.5
Extreme (40C)	2595	8.3	0.003205	2.5
Extreme (30C)	2595	7.6	0.002937	2.5
Extreme (10C)	2595	8.2	0.003163	2.5
Extreme (0C)	2595	6.8	0.002622	2.5
Extreme (-10C)	2595	8.9	0.003418	2.5
Extreme (-20C)	2595	8.2	0.003146	2.5
Extreme (-30C)	2595	5.9	0.002292	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	2595	8.5	0.003288	2.5
3.87	2595	8.8	0.003408	2.5
4.45	2595	8.2	0.003174	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	9.1	0.003491	2.5
Extreme (50C)	2595	7.7	0.002966	2.5
Extreme (40C)	2595	9.0	0.003451	2.5
Extreme (30C)	2595	7.9	0.003061	2.5
Extreme (10C)	2595	8.8	0.003405	2.5
Extreme (0C)	2595	6.0	0.002315	2.5
Extreme (-10C)	2595	8.2	0.003147	2.5
Extreme (-20C)	2595	8.2	0.003167	2.5
Extreme (-30C)	2595	5.5	0.002129	2.5

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

10.7 LTE BAND 66

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	1745	7.1	0.003915	2.5
3.87	1745	6.8	0.003812	2.5
4.45	1745	8.2	0.004172	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	5.4	0.002985	2.5
Extreme (50C)	1745	7.6	0.004317	2.5
Extreme (40C)	1745	6.6	0.003454	2.5
Extreme (30C)	1745	7.2	0.003974	2.5
Extreme (10C)	1745	8.3	0.004509	2.5
Extreme (0C)	1745	6.5	0.003463	2.5
Extreme (-10C)	1745	6.5	0.003313	2.5
Extreme (-20C)	1745	7.7	0.003852	2.5
Extreme (-30C)	1745	6.3	0.003423	2.5

Band 66 16QAM, (20MHz BANDWIDTH RB size 100 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	1745	8.7	0.00462	2.5
3.87	1745	8.2	0.004436	2.5
4.45	1745	9.3	0.005194	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	9.3	0.005061	2.5
Extreme (50C)	1745	8.2	0.004447	2.5
Extreme (40C)	1745	8.4	0.004757	2.5
Extreme (30C)	1745	8.8	0.004539	2.5
Extreme (10C)	1745	8.2	0.004636	2.5
Extreme (0C)	1745	7.3	0.003824	2.5
Extreme (-10C)	1745	8.5	0.004745	2.5
Extreme (-20C)	1745	9.6	0.004918	2.5
Extreme (-30C)	1745	5.7	0.003037	2.5

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

10.8 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]
3.29	683	12.7	0.018658	2.5
3.87	683	13.6	0.019937	2.5
4.45	683	13.0	0.018967	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	683	7.2	0.010589	2.5
Extreme (50C)	683	4.8	0.007055	2.5
Extreme (40C)	683	5.2	0.007665	2.5
Extreme (30C)	683	4.5	0.006592	2.5
Extreme (10C)	683	6.6	0.009601	2.5
Extreme (0C)	683	4.9	0.007221	2.5
Extreme (-10C)	683	9.2	0.013466	2.5
Extreme (-20C)	683	11.2	0.016365	2.5
Extreme (-30C)	683	6.0	0.008808	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	683	12.2	0.017923	2.5
7.74	683	13.7	0.020082	2.5
8.90	683	13.4	0.019601	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	683	7.1	0.010465	2.5
Extreme (50C)	683	4.7	0.006838	2.5
Extreme (40C)	683	5.2	0.007557	2.5
Extreme (30C)	683	5.0	0.007366	2.5
Extreme (10C)	683	6.4	0.009363	2.5
Extreme (0C)	683	4.6	0.006726	2.5
Extreme (-10C)	683	9.4	0.013777	2.5
Extreme (-20C)	683	11.3	0.016500	2.5
Extreme (-30C)	683	6.6	0.009655	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.

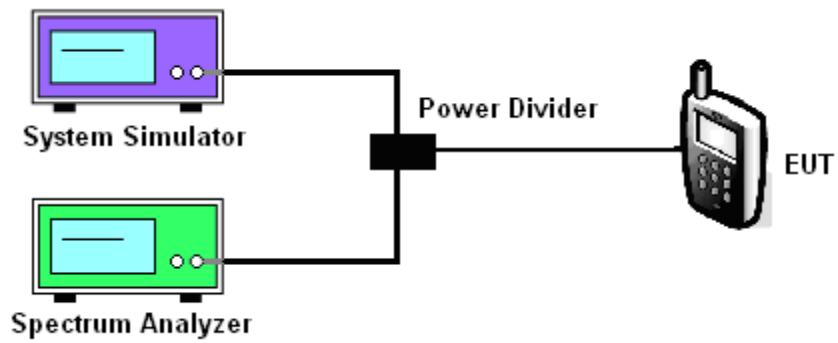
11.2 Measuring Instruments

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

Test data reference attachment.

-----END OF REPORT-----