

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

FCC ID: 2AOWK-5007

Product: Mobile Phone

Trade Mark: ulefone

Model No.: GQ5007

Family Model: Armor 25T, Armor 25T Pro, Armor 25 Ultra,
Armor 25T Ultra, Armor 25, Armor 25 Lite,
Armor 25 Pro, Armor 25s, Armor 25s Pro

Report No.: S24050905705006

Issue Date: Jul 01, 2024

Prepared for

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TEST RESULT CERTIFICATION

Applicant's name : Shenzhen Gotron Electronic CO.,LTD.
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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 .. : GQ5007
Trade Mark..... : ulefone
Family Model..... : Armor 25T, Armor 25T Pro, Armor 25 Ultra, Armor 25T Ultra, Armor 25, Armor 25 Lite, Armor 25 Pro, Armor 25s, Armor 25s Pro
Test Sample Number..... S240509057005
Standards..... : FCC CFR 47 Part 22H, Part 24E, Part 27
Test procedure : ANSI C63.26:2015
 ANSI/TIA-603-E-2016

This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test

Date (s) of performance of tests..... May 20, 2024 ~ Jun 29, 2024

Date of Issue Jul 01 , 2024

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	GQ5007
Family Model	Armor 25T, Armor 25T Pro, Armor 25 Ultra, Armor 25T Ultra, Armor 25, Armor 25 Lite, Armor 25 Pro, Armor 25s, Armor 25s Pro
Model Difference	All models are the same circuit and RF module, except for model names.
FCC ID:	2AOWK-5007
Frequency Bands:	U.S. Bands: <input checked="" type="checkbox"/> LTE FDD Band 2, 4, 5, 7, 12, 17, 66 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 7 Uplink: 2500MHz-2570MHz, Downlink: 2620MHz-2690MHz; LTE FDD Band 12 Uplink: 699MHz-716MHz, Downlink: 729MHz-746MHz; LTE FDD Band 17 Uplink: 704MHz-716MHz, Downlink: 734MHz-746MHz; LTE TDD Band 41 Uplink& Downlink: 2535MHz-2655MHz, LTE FDD Band 66 Uplink: 1710MHz-1780MHz, Downlink: 2110MHz-2200MHz;
Type of Modulation:	QPSK/16QAM/64QAM(Only Downlink)
Power Class	Class 3
SIM Card:	SIM 1 and SIM 2 is a chipset unit and tested as a single chipset. The SIM 1 is chosen for test.
Antenna:	PIFA Antenna
Antenna gain:	Band 2: 0.46 dBi, Band 4: -1.18dBi, Band 5: -0.95 dBi, Band 7: 2.37dBi, Band 12: -1.88dBi, Band 17: -2.63 dBi, Band 41:2.37 dBi , Band 66: -1.18dBi
Adapter	Model: UF82PD3303 Input:100-240V~50/60Hz 0.8A PD Output: 5.0V $\overline{\text{---}}$ 3.0A 15.0W or 9.0V $\overline{\text{---}}$ 3.0A 27.0W or 12.0V $\overline{\text{---}}$ 2.5A 30.0W 15.0V $\overline{\text{---}}$ 2.0A 30.0W or 20.0V $\overline{\text{---}}$ 1.5A 30.0W (PPS)5.0V-11.0V $\overline{\text{---}}$ 3.0A or 5.0V-16.0V $\overline{\text{---}}$ 2.0A 33.0W Max
Battery	DC 3.87V, 6500mAh, 25.155Wh
Power supply	DC 3.87V from battery or DC 5V from Adapter.
Extreme Vol. Limits:	DC 3.29V to DC 4.45V (Nominal DC 3.87V) (Note 1)

HW Version	N/A
FW 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-5007** filing to comply with the FCC Part 22H&24E&27.

1.3 TEST METHODOLOGY

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

1.4 TEST FACILITY

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

ShenZhen NTEK Testing Technology Co., Ltd.

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

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

FCC Registration No.:463705

IC Registration No.:9270A-1,

CNAS Registration No.:L5516

MEASUREMENT UNCERTAINTY

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

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

1.5 SPECIAL ACCESSORIES

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

1.6 WORST-CASE CONFIGURATION AND MODE

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

The device has LTE Bands of: Band 2/4/5/7/12/17/41/66

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

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

2. SYSTEM TEST CONFIGURATION

2.1 EUT CONFIGURATION

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

2.2 EUT EXERCISE

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

2.3 CONFIGURATION OF EUT SYSTEM

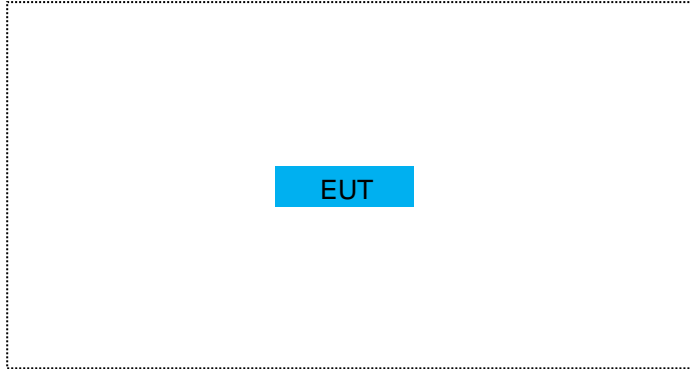
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Mobile Phone	GQ5007	FCC ID: 2AOWK-5007	EUT

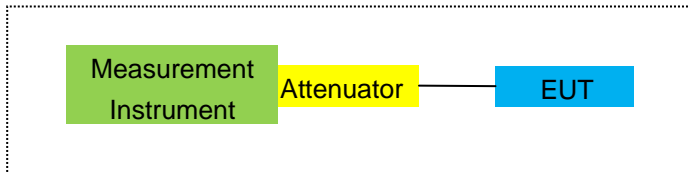
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

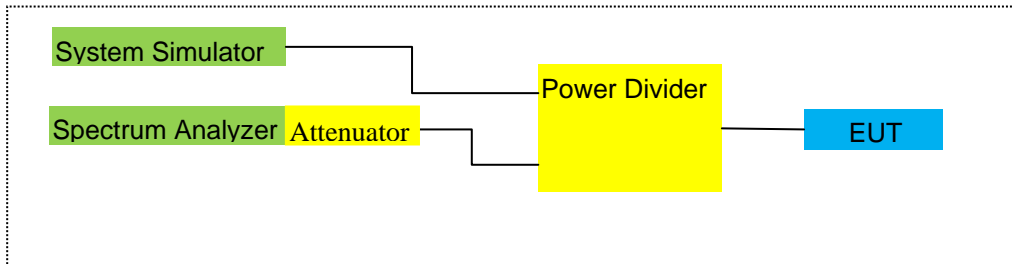
For Radiated Test Cases



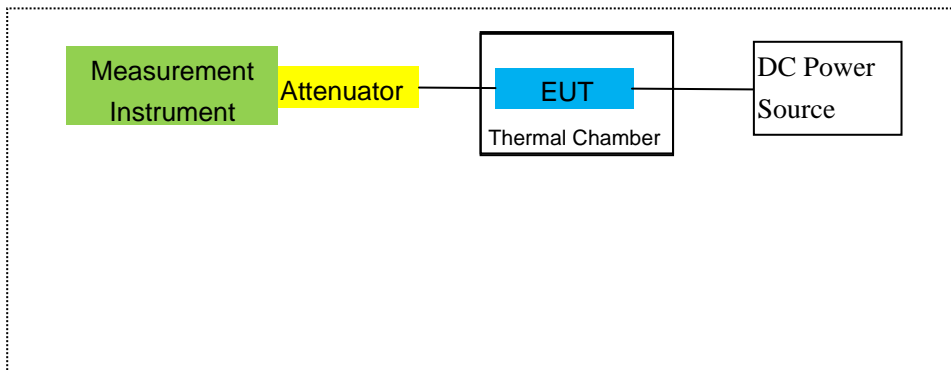
For Conducted Output Power



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	2024.04.26	2025.04.25	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	2022.03.31	2025.03.30	3 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2022.03.31	2025.03.30	3 year
7	Amplifier	EM	EM-30180	060538	2024.04.26	2025.04.25	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	2024.04.26	2025.04.25	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	Spectrum Analyzer	agilent	e4440a	us44300399	2023.05.06	2026.05.05	3 year
23	test receiver	R&S	ESCI	a0304218	2023.05.06	2026.05.05	3 year
24	Communication Tester	R&S	CMU200	A0304247	2023.05.06	2026.05.05	3 year
25	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2024.03.12	2025.03.11	1 year

26	DC Power Source	N/A	PS-6005D	20170402923	2023.05.06	2026.05.05	3 year
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Note: Each piece of equipment is scheduled for calibration once a year except the Test Cable& DC Power Source which is scheduled for calibration every 3 years.

4. OUTPUT POWER

4.1 OUTPUT POWER MEASUREMENT

LTE Measurement Procedure:

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

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

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

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

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

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

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

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

Test data reference attachment.

5. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

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

MODES TESTED

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

RESULTS

PASS

Test data reference attachment.

6. BANDEDGE AND EMISSION MASK

RULE PART(S)

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

FCC: §22.359

LIMITS

FCC: §22.917, §24.238, §27.53

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

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

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

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

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

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

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

TEST PROCEDURE

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

For each band edge measurement:

Set the spectrum analyzer span to include the block edge frequency

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

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

MODES TESTED

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

RESULTS

Test data reference attachment.

7. OUT OF BAND EMISSIONS

RULE PART(S)

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

LIMITS

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

TEST PROCEDURE

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

For each out of band emissions measurement:

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

MODES TESTED

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

7.1 MEASUREMENT METHOD

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

Test data reference attachment.

8. RADIATED MEASUREMENT

8.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

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

LIMITS:

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

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

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

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

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

90.635(b) The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

TEST PROCEDURE

ANSI/TIA-603-E Clause 2.2.17

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

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

MODES TESTED

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

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 Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)		
1.4MHz Band QPSK	1/#Mid	1850.7	-1.60	3.76	28.24	22.88	194.089	Horizontal	Pass
		1880	-1.25	3.91	28.22	23.06	202.302	Horizontal	Pass
		1909.3	-0.88	3.93	28.20	23.39	218.273	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-1.59	3.77	28.23	22.87	193.642	Horizontal	Pass
		1880	-1.29	3.91	28.24	23.04	201.372	Horizontal	Pass
		1908.5	-0.97	3.94	28.25	23.34	215.774	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-1.41	3.77	28.31	23.13	205.589	Horizontal	Pass
		1880	-0.99	3.91	28.22	23.32	214.783	Horizontal	Pass
		1907.5	-0.69	3.94	28.20	23.57	227.510	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-1.41	3.79	28.33	23.13	205.589	Horizontal	Pass
		1880	-0.93	3.95	28.22	23.34	215.774	Horizontal	Pass
		1905	-0.67	3.97	28.19	23.55	226.464	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-1.43	3.79	28.34	23.12	205.116	Horizontal	Pass
		1880	-0.89	3.95	28.22	23.38	217.771	Horizontal	Pass
		1902.5	-0.63	3.97	28.18	23.58	228.034	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-1.47	3.81	28.35	23.07	202.768	Horizontal	Pass
		1880	-0.91	3.96	28.22	23.35	216.272	Horizontal	Pass
		1900	-0.70	4.00	28.16	23.46	221.820	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-1.49	3.76	28.24	22.99	199.067	Vertical	Pass
		1880	-0.87	3.91	28.22	23.44	220.800	Vertical	Pass
		1909.3	-0.88	3.93	28.20	23.39	218.273	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-1.40	3.77	28.23	23.06	202.302	Vertical	Pass
		1880	-1.15	3.91	28.24	23.18	207.970	Vertical	Pass
		1908.5	-1.12	3.94	28.25	23.19	208.449	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-1.87	3.77	28.31	22.67	184.927	Vertical	Pass
		1880	-0.91	3.91	28.22	23.40	218.776	Vertical	Pass
		1907.5	-1.57	3.94	28.20	22.69	185.780	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1855	-1.47	3.79	28.33	23.07	202.768	Vertical	Pass
		1880	-1.63	3.95	28.22	22.64	183.654	Vertical	Pass
		1905	-1.46	3.97	28.19	22.76	188.799	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1857.5	-1.80	3.79	28.34	22.75	188.365	Vertical	Pass
		1880	-1.33	3.95	28.22	22.94	196.789	Vertical	Pass
		1902.5	-1.11	3.97	28.18	23.10	204.174	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1860	-1.56	3.81	28.35	22.98	198.609	Vertical	Pass
		1880	-1.73	3.96	28.22	22.53	179.061	Vertical	Pass
		1900	-0.77	4.00	28.16	23.39	218.273	Vertical	Pass

Radiated Power (EIRP) for Band 2										
Mode	RB/RB SIZE	Frequency	Result						Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)			
1.4MHz Band 16 QAM	1/#Mid	1850.7	-2.21	3.76	28.24	22.27	168.655	Horizontal	Pass	
		1880	-1.84	3.91	28.22	22.47	176.604	Horizontal	Pass	
		1909.3	-1.52	3.93	28.20	22.75	188.365	Horizontal	Pass	
3.0MHz Band 16 QAM	1/#Mid	1851.5	-2.31	3.77	28.23	22.15	164.059	Horizontal	Pass	
		1880	-1.92	3.91	28.24	22.41	174.181	Horizontal	Pass	
		1908.5	-1.70	3.94	28.25	22.61	182.390	Horizontal	Pass	
5.0MHz Band 16 QAM	1/#Mid	1852.5	-2.17	3.77	28.31	22.37	172.584	Horizontal	Pass	
		1880	-1.66	3.91	28.22	22.65	184.077	Horizontal	Pass	
		1907.5	-1.32	3.94	28.20	22.94	196.789	Horizontal	Pass	
10.0MHz Band 16 QAM	1/#Mid	1855	-2.19	3.79	28.33	22.35	171.791	Horizontal	Pass	
		1880	-1.62	3.95	28.22	22.65	184.077	Horizontal	Pass	
		1905	-1.42	3.97	28.19	22.80	190.546	Horizontal	Pass	
15.0MHz Band 16 QAM	1/#Mid	1857.5	-2.19	3.79	28.34	22.36	172.187	Horizontal	Pass	
		1880	-1.67	3.95	28.22	22.60	181.970	Horizontal	Pass	
		1902.5	-1.40	3.97	28.18	22.81	190.985	Horizontal	Pass	
20.0MHz Band 16 QAM	1/#Mid	1860	-2.19	3.81	28.35	22.35	171.791	Horizontal	Pass	
		1880	-1.62	3.96	28.22	22.64	183.654	Horizontal	Pass	
		1900	-1.43	4.00	28.16	22.73	187.499	Horizontal	Pass	
1.4MHz Band 16 QAM	1/#Mid	1850.7	-2.58	3.76	28.24	21.90	154.882	Vertical	Pass	
		1880	-2.81	3.91	28.22	21.50	141.254	Vertical	Pass	
		1909.3	-1.96	3.93	28.20	22.31	170.216	Vertical	Pass	
3.0MHz Band 16 QAM	1/#Mid	1851.5	-2.82	3.77	28.23	21.64	145.881	Vertical	Pass	
		1880	-2.21	3.91	28.24	22.12	162.930	Vertical	Pass	
		1908.5	-1.99	3.94	28.25	22.32	170.608	Vertical	Pass	
5.0MHz Band 16	1/#Mid	1852.5	-2.82	3.77	28.31	21.72	148.594	Vertical	Pass	
		1880	-2.07	3.91	28.22	22.24	167.494	Vertical	Pass	

QAM		1907.5	-2.37	3.94	28.20	21.89	154.525	Vertical	Pass
10.0MHz	1/#Mid	1855	-2.78	3.79	28.33	21.76	149.968	Vertical	Pass
Band 16		1880	-2.68	3.95	28.22	21.59	144.212	Vertical	Pass
QAM		1905	-2.66	3.97	28.19	21.56	143.219	Vertical	Pass
15.0MHz	1/#Mid	1857.5	-2.51	3.79	28.34	22.04	159.956	Vertical	Pass
Band 16		1880	-2.13	3.95	28.22	22.14	163.682	Vertical	Pass
QAM		1902.5	-2.23	3.97	28.18	21.98	157.761	Vertical	Pass
20.0MHz	1/#Mid	1860	-3.07	3.81	28.35	21.47	140.281	Vertical	Pass
Band 16		1880	-2.46	3.96	28.22	21.80	151.356	Vertical	Pass
QAM		1900	-1.83	4.00	28.16	22.33	171.002	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.3 LTE BAND 4

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result					Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)		
1.4MHz Band QPSK	1/#Mid	1710.7	-2.44	3.12	27.58	22.02	159.221	Horizontal	Pass
		1732.5	-2.74	3.27	27.61	21.60	144.544	Horizontal	Pass
		1754.3	-3.11	3.29	27.63	21.23	132.739	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-2.45	3.13	27.61	22.03	159.588	Horizontal	Pass
		1732.5	-2.75	3.27	27.61	21.59	144.212	Horizontal	Pass
		1753.5	-3.10	3.30	27.62	21.22	132.434	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-2.21	3.13	27.63	22.29	169.434	Horizontal	Pass
		1732.5	-2.51	3.27	27.61	21.83	152.405	Horizontal	Pass
		1752.5	-2.74	3.30	27.60	21.56	143.219	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-2.25	3.15	27.64	22.24	167.494	Horizontal	Pass
		1732.5	-2.45	3.31	27.61	21.85	153.109	Horizontal	Pass
		1750	-2.61	3.33	27.59	21.65	146.218	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-2.32	3.15	27.65	22.18	165.196	Horizontal	Pass
		1732.5	-2.43	3.31	27.61	21.87	153.815	Horizontal	Pass
		1747.5	-2.53	3.33	27.57	21.71	148.252	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-2.41	3.17	27.66	22.08	161.436	Horizontal	Pass
		1732.5	-2.42	3.32	27.61	21.87	153.815	Horizontal	Pass
		1745	-2.42	3.36	27.56	21.78	150.661	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-3.38	3.12	27.58	21.08	128.233	Vertical	Pass
		1732.5	-3.11	3.27	27.61	21.23	132.739	Vertical	Pass
		1754.3	-2.54	3.29	27.63	21.80	151.356	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-3.35	3.13	27.61	21.13	129.718	Vertical	Pass
		1732.5	-2.93	3.27	27.61	21.41	138.357	Vertical	Pass
		1753.5	-3.21	3.30	27.62	21.11	129.122	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-3.41	3.13	27.63	21.09	128.529	Vertical	Pass
		1732.5	-2.85	3.27	27.61	21.49	140.929	Vertical	Pass
		1752.5	-3.13	3.30	27.60	21.17	130.918	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-3.60	3.15	27.64	20.89	122.744	Vertical	Pass
		1732.5	-3.18	3.31	27.61	21.12	129.420	Vertical	Pass
		1750	-2.69	3.33	27.59	21.57	143.549	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1717.5	-3.18	3.15	27.65	21.32	135.519	Vertical	Pass
		1732.5	-2.84	3.31	27.61	21.46	139.959	Vertical	Pass
		1747.5	-2.76	3.33	27.57	21.48	140.605	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1720	-3.29	3.17	27.66	21.20	131.826	Vertical	Pass
		1732.5	-2.87	3.32	27.61	21.42	138.676	Vertical	Pass
		1745	-2.84	3.36	27.56	21.36	136.773	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	-2.99	3.12	27.58	21.47	140.281	Horizontal	Pass
		1732.5	-3.50	3.27	27.61	20.84	121.339	Horizontal	Pass
		1754.3	-3.75	3.29	27.63	20.59	114.551	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-3.11	3.13	27.61	21.37	137.088	Horizontal	Pass
		1732.5	-3.54	3.27	27.61	20.80	120.226	Horizontal	Pass
		1753.5	-3.72	3.30	27.62	20.60	114.815	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-2.97	3.13	27.63	21.53	142.233	Horizontal	Pass
		1732.5	-3.26	3.27	27.61	21.08	128.233	Horizontal	Pass
		1752.5	-3.55	3.30	27.60	20.75	118.850	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-2.95	3.15	27.64	21.54	142.561	Horizontal	Pass
		1732.5	-3.08	3.31	27.61	21.22	132.434	Horizontal	Pass
		1750	-3.37	3.33	27.59	20.89	122.744	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-3.05	3.15	27.65	21.45	139.637	Horizontal	Pass
		1732.5	-3.10	3.31	27.61	21.20	131.826	Horizontal	Pass
		1747.5	-3.24	3.33	27.57	21.00	125.893	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-3.06	3.17	27.66	21.43	138.995	Horizontal	Pass
		1732.5	-3.18	3.32	27.61	21.11	129.122	Horizontal	Pass
		1745	-3.03	3.36	27.56	21.17	130.918	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-4.47	3.12	27.58	19.99	99.770	Vertical	Pass
		1732.5	-3.74	3.27	27.61	20.60	114.815	Vertical	Pass
		1754.3	-4.47	3.29	27.63	19.87	97.051	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-3.75	3.13	27.61	20.73	118.304	Vertical	Pass
		1732.5	-4.20	3.27	27.61	20.14	103.276	Vertical	Pass
		1753.5	-4.46	3.30	27.62	19.86	96.828	Vertical	Pass
5.0MHz Band 16	1/#Mid	1712.5	-4.08	3.13	27.63	20.42	110.154	Vertical	Pass
		1732.5	-4.37	3.27	27.61	19.97	99.312	Vertical	Pass

QAM		1752.5	-4.15	3.30	27.60	20.15	103.514	Vertical	Pass
10.0MHz	1/#Mid	1715	-4.14	3.15	27.64	20.35	108.393	Vertical	Pass
Band 16		1732.5	-4.31	3.31	27.61	19.99	99.770	Vertical	Pass
QAM		1750	-3.57	3.33	27.59	20.69	117.220	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-3.95	3.15	27.65	20.55	113.501	Vertical	Pass
Band 16		1732.5	-4.05	3.31	27.61	20.25	105.925	Vertical	Pass
QAM		1747.5	-3.71	3.33	27.57	20.53	112.980	Vertical	Pass
20.0MHz	1/#Mid	1720	-3.68	3.17	27.66	20.81	120.504	Vertical	Pass
Band 16		1732.5	-3.87	3.32	27.61	20.42	110.154	Vertical	Pass
QAM		1745	-3.54	3.36	27.56	20.66	116.413	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. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	3/#Mid	824.7	6.19	2.01	19.68	2.15	21.71	148.252	Horizontal	Pass
		836.5	6.36	2.01	19.77	2.15	21.97	157.398	Horizontal	Pass
		848.3	6.13	2.02	19.82	2.15	21.78	150.661	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	825.5	6.12	2.01	19.70	2.15	21.66	146.555	Horizontal	Pass
		836.5	6.27	2.01	19.77	2.15	21.88	154.170	Horizontal	Pass
		847.5	6.08	2.02	19.81	2.15	21.72	148.594	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	826.5	6.41	2.01	19.71	2.15	21.96	157.036	Horizontal	Pass
		836.5	6.53	2.01	19.77	2.15	22.14	163.682	Horizontal	Pass
		846.5	6.41	2.02	19.79	2.15	22.03	159.588	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	829	6.48	2.01	19.73	2.15	22.05	160.325	Horizontal	Pass
		836.5	6.55	2.01	19.77	2.15	22.16	164.437	Horizontal	Pass
		844	6.45	2.02	19.78	2.15	22.06	160.694	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	824.7	5.92	2.01	19.68	2.15	21.44	139.316	Vertical	Pass
		836.5	5.84	2.01	19.77	2.15	21.45	139.637	Vertical	Pass
		848.3	5.49	2.02	19.82	2.15	21.14	130.017	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	825.5	6.37	2.01	19.70	2.15	21.91	155.239	Vertical	Pass
		836.5	6.19	2.01	19.77	2.15	21.80	151.356	Vertical	Pass
		847.5	5.73	2.02	19.81	2.15	21.37	137.088	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	826.5	6.17	2.01	19.71	2.15	21.72	148.594	Vertical	Pass
		836.5	5.96	2.01	19.77	2.15	21.57	143.549	Vertical	Pass
		846.5	6.09	2.02	19.79	2.15	21.71	148.252	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	829	6.42	2.01	19.73	2.15	21.99	158.125	Vertical	Pass
		836.5	5.95	2.01	19.77	2.15	21.56	143.219	Vertical	Pass
		844	5.88	2.02	19.78	2.15	21.49	140.929	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. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	3/#Mid	824.7	5.50	2.01	19.68	2.15	21.02	126.474	Horizontal	Pass
		836.5	5.68	2.01	19.77	2.15	21.29	134.586	Horizontal	Pass
		848.3	5.55	2.02	19.82	2.15	21.20	131.826	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	5.40	2.01	19.70	2.15	20.94	124.165	Horizontal	Pass
		836.5	5.53	2.01	19.77	2.15	21.14	130.017	Horizontal	Pass
		847.5	5.46	2.02	19.81	2.15	21.10	128.825	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	5.77	2.01	19.71	2.15	21.32	135.519	Horizontal	Pass
		836.5	5.86	2.01	19.77	2.15	21.47	140.281	Horizontal	Pass
		846.5	5.76	2.02	19.79	2.15	21.38	137.404	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	829	5.82	2.01	19.73	2.15	21.39	137.721	Horizontal	Pass
		836.5	5.73	2.01	19.77	2.15	21.34	136.144	Horizontal	Pass
		844	5.75	2.02	19.78	2.15	21.36	136.773	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	824.7	4.77	2.01	19.68	2.15	20.29	106.905	Vertical	Pass
		836.5	5.10	2.01	19.77	2.15	20.71	117.761	Vertical	Pass
		848.3	4.85	2.02	19.82	2.15	20.50	112.202	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	5.36	2.01	19.70	2.15	20.90	123.027	Vertical	Pass
		836.5	5.07	2.01	19.77	2.15	20.68	116.950	Vertical	Pass
		847.5	5.31	2.02	19.81	2.15	20.95	124.451	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	5.24	2.01	19.71	2.15	20.79	119.950	Vertical	Pass
		836.5	5.39	2.01	19.77	2.15	21.00	125.893	Vertical	Pass
		846.5	4.49	2.02	19.79	2.15	20.11	102.565	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	829	5.43	2.01	19.73	2.15	21.00	125.893	Vertical	Pass
		836.5	4.92	2.01	19.77	2.15	20.53	112.980	Vertical	Pass
		844	4.64	2.02	19.78	2.15	20.25	105.925	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 7

Radiated Power (EIRP) for Band 7									
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	
5.0MHz Band QPSK	1/#Mid	2502.5	1.79	4.54	27.75	25.00	316.228	Horizontal	Pass
		2535	2.19	4.69	27.72	25.22	332.660	Horizontal	Pass
		2567.5	2.80	4.71	27.71	25.80	380.189	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2505	1.79	4.55	27.76	25.00	316.228	Horizontal	Pass
		2535	2.18	4.69	27.72	25.21	331.894	Horizontal	Pass
		2565	2.75	4.72	27.70	25.73	374.111	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	1.85	4.55	27.77	25.07	321.366	Horizontal	Pass
		2535	2.22	4.69	27.72	25.25	334.965	Horizontal	Pass
		2562.5	2.65	4.72	27.69	25.62	364.754	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2510	1.86	4.57	27.78	25.07	321.366	Horizontal	Pass
		2535	2.22	4.73	27.72	25.21	331.894	Horizontal	Pass
		2560	2.54	4.75	27.68	25.47	352.371	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	1.70	4.54	27.75	24.91	309.742	Vertical	Pass
		2535	1.43	4.69	27.72	24.46	279.254	Vertical	Pass
		2567.5	2.19	4.71	27.71	25.19	330.370	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2505	1.19	4.55	27.76	24.40	275.423	Vertical	Pass
		2535	1.60	4.69	27.72	24.63	290.402	Vertical	Pass
		2565	1.49	4.72	27.70	24.47	279.898	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	1.84	4.55	27.77	25.06	320.627	Vertical	Pass
		2535	1.48	4.69	27.72	24.51	282.488	Vertical	Pass
		2562.5	2.39	4.72	27.69	25.36	343.558	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2510	1.93	4.57	27.78	25.14	326.588	Vertical	Pass
		2535	1.98	4.73	27.72	24.97	314.051	Vertical	Pass
		2560	1.57	4.75	27.68	24.50	281.838	Vertical	Pass

Radiated Power (EIRP) for Band 7									
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	
5.0MHz Band 16 QAM	1/#Mid	2502.5	0.91	4.54	27.75	24.12	258.226	Horizontal	Pass
		2535	1.39	4.69	27.72	24.42	276.694	Horizontal	Pass
		2567.5	1.95	4.71	27.71	24.95	312.608	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	1.01	4.55	27.76	24.22	264.241	Horizontal	Pass
		2535	1.43	4.69	27.72	24.46	279.254	Horizontal	Pass
		2565	1.93	4.72	27.70	24.91	309.742	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	1.05	4.55	27.77	24.27	267.301	Horizontal	Pass
		2535	1.41	4.69	27.72	24.44	277.971	Horizontal	Pass
		2562.5	1.91	4.72	27.69	24.88	307.610	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	1.18	4.57	27.78	24.39	274.789	Horizontal	Pass
		2535	1.37	4.73	27.72	24.36	272.898	Horizontal	Pass
		2560	1.72	4.75	27.68	24.65	291.743	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	1.03	4.54	27.75	24.24	265.461	Vertical	Pass
		2535	0.40	4.69	27.72	23.43	220.293	Vertical	Pass
		2567.5	0.70	4.71	27.71	23.70	234.423	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	0.82	4.55	27.76	24.03	252.930	Vertical	Pass
		2535	1.24	4.69	27.72	24.27	267.301	Vertical	Pass
		2565	1.02	4.72	27.70	24.00	251.189	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	0.20	4.55	27.77	23.42	219.786	Vertical	Pass
		2535	0.97	4.69	27.72	24.00	251.189	Vertical	Pass
		2562.5	1.06	4.72	27.69	24.03	252.930	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	0.81	4.57	27.78	24.02	252.348	Vertical	Pass
		2535	1.13	4.73	27.72	24.12	258.226	Vertical	Pass
		2560	0.78	4.75	27.68	23.71	234.963	Vertical	Pass

Note:

SG Level= Signal generator output

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

8.6 LTE BAND 12

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	699.7	5.71	1.91	19.21	2.15	20.86	121.899	Horizontal	Pass
		707.5	5.45	1.91	19.26	2.15	20.65	116.145	Horizontal	Pass
		715.3	5.55	1.93	19.34	2.15	20.81	120.504	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	700.5	5.6	1.91	19.21	2.15	20.75	118.850	Horizontal	Pass
		707.5	5.45	1.91	19.26	2.15	20.65	116.145	Horizontal	Pass
		714.5	5.43	1.93	19.34	2.15	20.69	117.220	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	701.5	5.84	1.91	19.23	2.15	21.01	126.183	Horizontal	Pass
		707.5	5.7	1.91	19.26	2.15	20.90	123.027	Horizontal	Pass
		713.5	5.66	1.92	19.33	2.15	20.92	123.595	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	704	5.78	1.91	19.25	2.15	20.97	125.026	Horizontal	Pass
		707.5	5.71	1.91	19.26	2.15	20.91	123.310	Horizontal	Pass
		711	5.64	1.92	19.32	2.15	20.89	122.744	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	699.7	4.74	1.91	19.21	2.15	19.89	97.499	Vertical	Pass
		707.5	4.08	1.91	19.26	2.15	19.28	84.723	Vertical	Pass
		715.3	4.06	1.93	19.34	2.15	19.32	85.507	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	700.5	4.87	1.91	19.21	2.15	20.02	100.462	Vertical	Pass
		707.5	4.16	1.91	19.26	2.15	19.36	86.298	Vertical	Pass
		714.5	3.93	1.93	19.34	2.15	19.19	82.985	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	701.5	4.6	1.91	19.23	2.15	19.77	94.842	Vertical	Pass
		707.5	4.37	1.91	19.26	2.15	19.57	90.573	Vertical	Pass
		713.5	4.09	1.92	19.33	2.15	19.35	86.099	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	704	4.07	1.91	19.25	2.15	19.26	84.333	Vertical	Pass
		707.5	4.35	1.91	19.26	2.15	19.55	90.157	Vertical	Pass
		711	4.34	1.92	19.32	2.15	19.59	90.991	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. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	699.7	5.08	1.91	19.21	2.15	20.23	105.439	Horizontal	Pass
		707.5	4.86	1.91	19.26	2.15	20.06	101.391	Horizontal	Pass
		715.3	4.79	1.93	19.34	2.15	20.05	101.158	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	4.86	1.91	19.21	2.15	20.01	100.231	Horizontal	Pass
		707.5	4.61	1.91	19.26	2.15	19.81	95.719	Horizontal	Pass
		714.5	4.66	1.93	19.34	2.15	19.92	98.175	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	5.08	1.91	19.23	2.15	20.25	105.925	Horizontal	Pass
		707.5	5.03	1.91	19.26	2.15	20.23	105.439	Horizontal	Pass
		713.5	4.98	1.92	19.33	2.15	20.24	105.682	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	704	5.03	1.91	19.25	2.15	20.22	105.196	Horizontal	Pass
		707.5	4.99	1.91	19.26	2.15	20.19	104.472	Horizontal	Pass
		711	4.89	1.92	19.32	2.15	20.14	103.276	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	699.7	4.16	1.91	19.21	2.15	19.31	85.310	Vertical	Pass
		707.5	4.22	1.91	19.26	2.15	19.42	87.498	Vertical	Pass
		715.3	4.05	1.93	19.34	2.15	19.31	85.310	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	4.77	1.91	19.21	2.15	19.92	98.175	Vertical	Pass
		707.5	4.56	1.91	19.26	2.15	19.76	94.624	Vertical	Pass
		714.5	4.07	1.93	19.34	2.15	19.33	85.704	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	4.83	1.91	19.23	2.15	20.00	100.000	Vertical	Pass
		707.5	4.05	1.91	19.26	2.15	19.25	84.140	Vertical	Pass
		713.5	4.61	1.92	19.33	2.15	19.87	97.051	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	704	4.83	1.91	19.25	2.15	20.02	100.462	Vertical	Pass
		707.5	4.19	1.91	19.26	2.15	19.39	86.896	Vertical	Pass
		711	4.27	1.92	19.32	2.15	19.52	89.536	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

8.7 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. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	706.5	4.94	1.91	19.23	2.15	20.11	102.565	Horizontal	Pass
		710	4.91	1.91	19.26	2.15	20.11	102.565	Horizontal	Pass
		713.5	4.86	1.92	19.33	2.15	20.12	102.802	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	709	4.94	1.91	19.25	2.15	20.13	103.039	Horizontal	Pass
		710	4.95	1.91	19.26	2.15	20.15	103.514	Horizontal	Pass
		711	4.86	1.92	19.32	2.15	20.11	102.565	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	706.5	3.35	1.91	19.23	2.15	18.52	71.121	Vertical	Pass
		710	3.81	1.91	19.26	2.15	19.01	79.616	Vertical	Pass
		713.5	3.75	1.92	19.33	2.15	19.01	79.616	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	709	3.49	1.91	19.25	2.15	18.68	73.790	Vertical	Pass
		710	3.31	1.91	19.26	2.15	18.51	70.958	Vertical	Pass
		711	3.72	1.92	19.32	2.15	18.97	78.886	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. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	706.5	4.23	1.91	19.23	2.15	19.40	87.096	Horizontal	Pass
		710	4.24	1.91	19.26	2.15	19.44	87.902	Horizontal	Pass
		713.5	4.13	1.92	19.33	2.15	19.39	86.896	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	709	4.20	1.91	19.25	2.15	19.39	86.896	Horizontal	Pass
		710	4.10	1.91	19.26	2.15	19.30	85.114	Horizontal	Pass
		711	4.19	1.92	19.32	2.15	19.44	87.902	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	706.5	3.99	1.91	19.23	2.15	19.16	82.414	Vertical	Pass
		710	3.98	1.91	19.26	2.15	19.18	82.794	Vertical	Pass
		713.5	3.84	1.92	19.33	2.15	19.10	81.283	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	709	3.54	1.91	19.25	2.15	18.73	74.645	Vertical	Pass
		710	3.37	1.91	19.26	2.15	18.57	71.945	Vertical	Pass
		711	3.46	1.92	19.32	2.15	18.71	74.302	Vertical	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	Polarization Of Max. ERP	
			(dBm)			Average	Average		
						(dBm)	(mW)		
5.0MHz Band QPSK	1/#Mid	2537.5	1.31	4.54	27.75	24.52	283.139	Horizontal	Pass
		2595	2.66	4.69	27.72	25.69	370.681	Horizontal	Pass
		2652.5	2.07	4.71	27.71	25.07	321.366	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2540	1.30	4.55	27.76	24.51	282.488	Horizontal	Pass
		2595	2.61	4.69	27.72	25.64	366.438	Horizontal	Pass
		2650	2.08	4.72	27.70	25.06	320.627	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2542.5	1.28	4.55	27.77	24.50	281.838	Horizontal	Pass
		2595	2.61	4.69	27.72	25.64	366.438	Horizontal	Pass
		2647.5	2.07	4.72	27.69	25.04	319.154	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2545	1.23	4.57	27.78	24.44	277.971	Horizontal	Pass
		2595	2.62	4.73	27.72	25.61	363.915	Horizontal	Pass
		2645	2.12	4.75	27.68	25.05	319.890	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2537.5	2.16	4.54	27.75	25.37	344.350	Vertical	Pass
		2595	1.59	4.69	27.72	24.62	289.734	Vertical	Pass
		2652.5	1.65	4.71	27.71	24.65	291.743	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2540	1.53	4.55	27.76	24.74	297.852	Vertical	Pass
		2595	1.85	4.69	27.72	24.88	307.610	Vertical	Pass
		2650	1.68	4.72	27.70	24.66	292.415	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2542.5	1.60	4.55	27.77	24.82	303.389	Vertical	Pass
		2595	1.63	4.69	27.72	24.66	292.415	Vertical	Pass
		2647.5	1.98	4.72	27.69	24.95	312.608	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2545	1.65	4.57	27.78	24.86	306.196	Vertical	Pass
		2595	2.24	4.73	27.72	25.23	333.426	Vertical	Pass
		2645	1.89	4.75	27.68	24.82	303.389	Vertical	Pass

Radiated Power (EIRP) for Band 41									
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 (dBm)	Average (mW)		
5.0MHz Band 16 QAM	1/#Mid	2537.5	0.48	4.54	27.75	23.69	233.884	Horizontal	Pass
		2595	1.83	4.69	27.72	24.86	306.196	Horizontal	Pass
		2652.5	1.25	4.71	27.71	24.25	266.073	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2540	0.50	4.55	27.76	23.71	234.963	Horizontal	Pass
		2595	1.78	4.69	27.72	24.81	302.691	Horizontal	Pass
		2650	1.28	4.72	27.70	24.26	266.686	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2542.5	0.44	4.55	27.77	23.66	232.274	Horizontal	Pass
		2595	1.75	4.69	27.72	24.78	300.608	Horizontal	Pass
		2647.5	1.24	4.72	27.69	24.21	263.633	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2545	0.42	4.57	27.78	23.63	230.675	Horizontal	Pass
		2595	1.79	4.73	27.72	24.78	300.608	Horizontal	Pass
		2645	1.30	4.75	27.68	24.23	264.850	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2537.5	1.07	4.54	27.75	24.28	267.917	Vertical	Pass
		2595	0.93	4.69	27.72	23.96	248.886	Vertical	Pass
		2652.5	1.35	4.71	27.71	24.35	272.270	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2540	0.91	4.55	27.76	24.12	258.226	Vertical	Pass
		2595	0.47	4.69	27.72	23.50	223.872	Vertical	Pass
		2650	0.53	4.72	27.70	23.51	224.388	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2542.5	1.01	4.55	27.77	24.23	264.850	Vertical	Pass
		2595	0.89	4.69	27.72	23.92	246.604	Vertical	Pass
		2647.5	1.26	4.72	27.69	24.23	264.850	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2545	1.06	4.57	27.78	24.27	267.301	Vertical	Pass
		2595	0.64	4.73	27.72	23.63	230.675	Vertical	Pass
		2645	1.34	4.75	27.68	24.27	267.301	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.9 LTE BAND 66

Radiated Power (EIRP) for Band 66										
Mode	RB/RB SIZE	Frequency	Result						Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)			
1.4MHz Band QPSK	1/#Mid	1710.7	-2.76	3.76	28.24	21.72	148.594	Horizontal	Pass	
		1745	-3.18	3.91	28.22	21.13	129.718	Horizontal	Pass	
		1779.3	-3.44	3.93	28.2	20.83	121.060	Horizontal	Pass	
3.0MHz Band QPSK	1/#Mid	1711.5	-2.75	3.77	28.23	21.71	148.252	Horizontal	Pass	
		1745	-3.26	3.91	28.24	21.07	127.938	Horizontal	Pass	
		1778.5	-3.44	3.94	28.25	20.87	122.180	Horizontal	Pass	
5.0MHz Band QPSK	1/#Mid	1712.5	-2.65	3.77	28.31	21.89	154.525	Horizontal	Pass	
		1745	-2.96	3.91	28.22	21.35	136.458	Horizontal	Pass	
		1777.5	-3.10	3.94	28.2	21.16	130.617	Horizontal	Pass	
10.0MHz Band QPSK	1/#Mid	1715	-2.80	3.79	28.33	21.74	149.279	Horizontal	Pass	
		1745	-2.89	3.95	28.22	21.38	137.404	Horizontal	Pass	
		1775	-2.97	3.97	28.19	21.25	133.352	Horizontal	Pass	
15.0MHz Band QPSK	1/#Mid	1717.5	-3.00	3.79	28.34	21.55	142.889	Horizontal	Pass	
		1745	-2.87	3.95	28.22	21.40	138.038	Horizontal	Pass	
		1772.5	-3.10	3.97	28.18	21.11	129.122	Horizontal	Pass	
20.0MHz Band QPSK	1/#Mid	1720	-3.16	3.81	28.35	21.38	137.404	Horizontal	Pass	
		1745	-2.86	3.96	28.22	21.40	138.038	Horizontal	Pass	
		1770	-3.21	4	28.16	20.95	124.451	Horizontal	Pass	
1.4MHz Band QPSK	1/#Mid	1710.7	-3.37	3.76	28.24	21.11	129.122	Vertical	Pass	
		1745	-2.90	3.91	28.22	21.41	138.357	Vertical	Pass	
		1779.3	-3.33	3.93	28.2	20.94	124.165	Vertical	Pass	
3.0MHz Band QPSK	1/#Mid	1711.5	-3.40	3.77	28.23	21.06	127.644	Vertical	Pass	
		1745	-2.84	3.91	28.24	21.49	140.929	Vertical	Pass	
		1778.5	-3.12	3.94	28.25	21.19	131.522	Vertical	Pass	
5.0MHz Band QPSK	1/#Mid	1712.5	-3.18	3.77	28.31	21.36	136.773	Vertical	Pass	
		1745	-3.21	3.91	28.22	21.10	128.825	Vertical	Pass	
		1777.5	-2.47	3.94	28.2	21.79	151.008	Vertical	Pass	
10.0MHz Band	1/#Mid	1715	-3.20	3.79	28.34	21.35	136.458	Vertical	Pass	
		1745	-3.18	3.95	28.22	21.09	128.529	Vertical	Pass	

QPSK		1775	-2.93	3.97	28.18	21.28	134.276	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-2.85	3.81	28.35	21.69	147.571	Vertical	Pass
Band		1745	-3.44	3.96	28.22	20.82	120.781	Vertical	Pass
QPSK		1772.5	-2.78	4	28.16	21.38	137.404	Vertical	Pass
20.0MHz	1/#Mid	1720	-3.22	3.79	28.34	21.33	135.831	Vertical	Pass
Band		1745	-2.53	3.95	28.22	21.74	149.279	Vertical	Pass
QPSK		1770	-2.71	3.97	28.18	21.50	141.254	Vertical	Pass

Radiated Power (EIRP) for Band 66									
Mode	RB/RB SIZE	Frequency	Result					Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP		
							Average (mW)		
1.4MHz Band 16 QAM	1/#Mid	1710.7	-3.38	3.76	28.24	21.10	128.825	Horizontal	Pass
		1745	-3.83	3.91	28.22	20.48	111.686	Horizontal	Pass
		1779.3	-4.19	3.93	28.2	20.08	101.859	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-3.43	3.77	28.23	21.03	126.765	Horizontal	Pass
		1745	-4.05	3.91	28.24	20.28	106.660	Horizontal	Pass
		1778.5	-4.12	3.94	28.25	20.19	104.472	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-3.34	3.77	28.31	21.20	131.826	Horizontal	Pass
		1745	-3.67	3.91	28.22	20.64	115.878	Horizontal	Pass
		1777.5	-3.79	3.94	28.2	20.47	111.429	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-3.56	3.79	28.33	20.98	125.314	Horizontal	Pass
		1745	-3.67	3.95	28.22	20.60	114.815	Horizontal	Pass
		1775	-3.69	3.97	28.19	20.53	112.980	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-3.71	3.79	28.34	20.84	121.339	Horizontal	Pass
		1745	-3.65	3.95	28.22	20.62	115.345	Horizontal	Pass
		1772.5	-3.76	3.97	28.18	20.45	110.917	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-3.89	3.81	28.35	20.65	116.145	Horizontal	Pass
		1745	-3.52	3.96	28.22	20.74	118.577	Horizontal	Pass
		1770	-3.85	4	28.16	20.31	107.399	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-4.46	3.76	28.24	20.02	100.462	Vertical	Pass
		1745	-3.67	3.91	28.22	20.64	115.878	Vertical	Pass
		1779.3	-3.47	3.93	28.2	20.80	120.226	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-3.78	3.77	28.23	20.68	116.950	Vertical	Pass
		1745	-4.14	3.91	28.24	20.19	104.472	Vertical	Pass
		1778.5	-3.70	3.94	28.25	20.61	115.080	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-4.53	3.77	28.31	20.01	100.231	Vertical	Pass
		1745	-4.17	3.91	28.22	20.14	103.276	Vertical	Pass
		1777.5	-4.17	3.94	28.2	20.09	102.094	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-3.96	3.79	28.34	20.59	114.551	Vertical	Pass
		1745	-3.47	3.95	28.22	20.80	120.226	Vertical	Pass
		1775	-3.92	3.97	28.18	20.29	106.905	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-4.64	3.81	28.35	19.90	97.724	Vertical	Pass

Band 16 QAM		1745	-4.35	3.96	28.22	19.91	97.949	Vertical	Pass
		1772.5	-3.62	4	28.16	20.54	113.240	Vertical	Pass
20.0MHz	1/#Mid	1720	-4.67	3.79	28.34	19.88	97.275	Vertical	Pass
Band 16		1745	-3.54	3.95	28.22	20.73	118.304	Vertical	Pass
QAM		1770	-3.84	3.97	28.18	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 and §90.691

LIMIT

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

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

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

TEST PROCEDURE

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

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

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

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

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

MODES TESTED

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

RESULTS

PASS

9.1 LTE BAND 2

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

Test Results for Low Channel 1850.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3701.4	-44.87	4.04	33.51	-15.40	-13	-2.40	Horizontal
3701.4	-48.67	4.04	33.51	-19.20	-13	-6.20	Vertical
5552.1	-53.03	5.24	35.84	-22.43	-13	-9.43	Vertical
5552.1	-53.02	5.24	35.84	-22.42	-13	-9.42	Horizontal
176.3	-40.99	1.43	16.02	-26.40	-13	-13.40	Vertical
287.5	-43.34	1.30	17.99	-26.65	-13	-13.65	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-47.92	4.04	33.56	-18.40	-13	-5.40	Horizontal
3760.0	-52.32	4.04	33.56	-22.80	-13	-9.80	Vertical
5640.0	-45.67	5.24	35.91	-15.00	-13	-2.00	Vertical
5640.0	-49.92	5.24	35.91	-19.25	-13	-6.25	Horizontal
201.2	-41.34	1.62	16.97	-25.99	-13	-12.99	Vertical
439.6	-39.60	1.74	15.98	-25.37	-13	-12.37	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-47.70	4.04	34.00	-17.74	-13	-4.74	Horizontal
3818.6	-49.69	4.04	34.00	-19.73	-13	-6.73	Vertical
5727.9	-48.38	5.24	36.04	-17.58	-13	-4.58	Vertical
5727.9	-49.44	5.24	36.04	-18.64	-13	-5.64	Horizontal
211.2	-38.50	1.42	17.29	-22.63	-13	-9.63	Vertical
449.6	-36.64	1.50	17.90	-20.23	-13	-7.23	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	-50.96	4.07	33.54	-21.49	-13	-8.49	Horizontal
3720.0	-52.52	4.07	33.54	-23.05	-13	-10.05	Vertical
5580.0	-52.70	5.28	35.86	-22.12	-13	-9.12	Vertical
5580.0	-50.26	5.28	35.86	-19.68	-13	-6.68	Horizontal
175.6	-35.33	1.58	16.89	-20.01	-13	-7.01	Vertical
445.7	-44.04	1.76	17.26	-28.54	-13	-15.54	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-44.11	4.04	33.56	-14.59	-13	-1.59	Horizontal
3760.0	-53.99	4.04	33.56	-24.47	-13	-11.47	Vertical
5640.0	-53.00	5.24	35.91	-22.33	-13	-9.33	Vertical
5640.0	-51.52	5.24	35.91	-20.85	-13	-7.85	Horizontal
202.5	-35.10	1.46	16.27	-20.29	-13	-7.29	Vertical
315.9	-40.34	1.59	15.15	-26.78	-13	-13.78	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-49.21	4.04	34.00	-19.25	-13	-6.25	Horizontal
3800.0	-52.79	4.04	34.00	-22.83	-13	-9.83	Vertical
5700.0	-50.88	5.24	36.04	-20.08	-13	-7.08	Vertical
5700.0	-51.91	5.24	36.04	-21.11	-13	-8.11	Horizontal
194.8	-44.94	1.36	17.39	-28.90	-13	-15.90	Vertical
370.5	-40.06	1.66	15.39	-26.33	-13	-13.33	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	-48.40	4.02	29.80	-22.62	-13	-9.62	Horizontal
3421.4	-53.15	4.02	29.80	-27.37	-13	-14.37	Vertical
5132.1	-44.40	5.24	35.84	-13.80	-13	-0.80	Vertical
5132.1	-50.81	5.24	35.84	-20.21	-13	-7.21	Horizontal
184.4	-43.75	1.68	16.04	-29.39	-13	-16.39	Vertical
341.6	-40.31	1.78	17.74	-24.35	-13	-11.35	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-50.25	4.03	30.00	-24.28	-13	-11.28	Horizontal
3465.0	-44.64	4.03	30.00	-18.67	-13	-5.67	Vertical
5197.5	-53.97	5.25	35.86	-23.36	-13	-10.36	Vertical
5197.5	-53.16	5.25	35.86	-22.55	-13	-9.55	Horizontal
201.7	-43.07	1.72	17.69	-27.10	-13	-14.10	Vertical
428.1	-38.60	1.62	16.02	-24.19	-13	-11.19	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-47.35	4.05	30.01	-21.39	-13	-8.39	Horizontal
3508.6	-50.50	4.05	30.01	-24.54	-13	-11.54	Vertical
5262.9	-53.93	5.26	35.86	-23.33	-13	-10.33	Vertical
5262.9	-51.85	5.26	35.86	-21.25	-13	-8.25	Horizontal
193.4	-36.45	1.80	16.69	-21.56	-13	-8.56	Vertical
355.3	-40.47	1.75	16.66	-25.57	-13	-12.57	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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-51.19	4.02	29.80	-25.41	-13	-12.41	Horizontal
3440.0	-51.72	4.02	29.80	-25.94	-13	-12.94	Vertical
5160.0	-50.83	5.24	35.84	-20.23	-13	-7.23	Vertical
5160.0	-52.92	5.24	35.84	-22.32	-13	-9.32	Horizontal
195.1	-34.55	1.57	17.26	-18.86	-13	-5.86	Vertical
331.6	-35.30	1.78	16.35	-20.73	-13	-7.73	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-51.36	4.03	30.00	-25.39	-13	-12.39	Horizontal
3465.0	-53.13	4.03	30.00	-27.16	-13	-14.16	Vertical
5197.5	-49.51	5.25	35.86	-18.90	-13	-5.90	Vertical
5197.5	-52.92	5.25	35.86	-22.31	-13	-9.31	Horizontal
180.4	-41.07	1.44	17.95	-24.56	-13	-11.56	Vertical
405.1	-40.28	1.65	16.09	-25.84	-13	-12.84	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-53.66	2.91	27.68	-28.89	-13	-15.89	Horizontal
3490.0	-44.01	2.91	27.68	-19.24	-13	-6.24	Vertical
5235.0	-53.06	5.26	35.86	-22.46	-13	-9.46	Vertical
5235.0	-53.13	5.26	35.86	-22.53	-13	-9.53	Horizontal
191.8	-37.77	1.61	16.85	-22.53	-13	-9.53	Vertical
264.2	-37.88	1.61	15.19	-24.30	-13	-11.30	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	-45.95	2.78	27.50	-21.23	-13	-8.23	Horizontal
1649.4	-46.43	2.78	27.50	-21.71	-13	-8.71	Vertical
2474.1	-50.00	2.90	27.80	-25.10	-13	-12.10	Vertical
2474.1	-53.26	2.90	27.80	-28.36	-13	-15.36	Horizontal
175.6	-41.71	1.76	17.59	-25.88	-13	-12.88	Vertical
420.3	-44.66	1.63	15.87	-30.42	-13	-17.42	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-46.15	2.80	27.48	-21.47	-13	-8.47	Horizontal
1673.0	-51.80	2.80	27.48	-27.12	-13	-14.12	Vertical
2509.5	-51.86	2.91	27.70	-27.07	-13	-14.07	Vertical
2509.5	-49.64	2.91	27.70	-24.85	-13	-11.85	Horizontal
180.0	-44.49	1.61	15.68	-30.42	-13	-17.42	Vertical
423.8	-42.01	1.59	17.52	-26.09	-13	-13.09	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-48.01	2.82	27.43	-23.40	-13	-10.40	Horizontal
1696.6	-51.84	2.82	27.43	-27.23	-13	-14.23	Vertical
2544.9	-50.44	2.92	27.74	-25.62	-13	-12.62	Vertical
2544.9	-51.70	2.92	27.74	-26.88	-13	-13.88	Horizontal
184.4	-39.04	1.69	16.67	-24.05	-13	-11.05	Vertical
325.2	-41.59	1.70	17.18	-26.11	-13	-13.11	Horizontal

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

Test Results for Low Channel 829MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1658.0	-47.22	2.78	27.50	-22.50	-13	-9.50	Horizontal
1658.0	-51.12	2.78	27.50	-26.40	-13	-13.40	Vertical
2487.0	-48.12	2.90	27.80	-23.22	-13	-10.22	Vertical
2487.0	-52.19	2.90	27.80	-27.29	-13	-14.29	Horizontal
183.9	-34.61	1.71	15.57	-20.75	-13	-7.75	Vertical
235.6	-36.21	1.34	16.40	-21.15	-13	-8.15	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-47.12	2.80	27.48	-22.44	-13	-9.44	Horizontal
1673.0	-52.83	2.80	27.48	-28.15	-13	-15.15	Vertical
2509.5	-50.22	2.91	27.70	-25.43	-13	-12.43	Vertical
2509.5	-52.37	2.91	27.70	-27.58	-13	-14.58	Horizontal
185.7	-37.85	1.44	17.04	-22.25	-13	-9.25	Vertical
238.0	-36.85	1.76	17.62	-20.99	-13	-7.99	Horizontal
Test Results for High Channel 844MHz							
1688.0	-50.02	2.82	27.43	-25.41	-13	-12.41	Horizontal
1688.0	-47.10	2.82	27.43	-22.49	-13	-9.49	Vertical
2532.0	-52.86	2.92	27.74	-28.04	-13	-15.04	Vertical
2532.0	-52.64	2.92	27.74	-27.82	-13	-14.82	Horizontal
180.0	-41.49	1.74	17.70	-25.53	-13	-12.53	Vertical
297.9	-41.96	1.41	17.46	-25.90	-13	-12.90	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 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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5005.0	-61.08	5.23	35.81	-30.50	-25	-5.50	Horizontal
5005.0	-60.06	5.23	35.81	-29.48	-25	-4.48	Vertical
7507.5	-63.83	5.67	36.85	-32.65	-25	-7.65	Vertical
7507.5	-63.35	5.67	36.85	-32.17	-25	-7.17	Horizontal
209.7	-53.74	1.73	17.97	-37.50	-25	-12.50	Vertical
437.4	-47.72	1.38	15.11	-33.99	-25	-8.99	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-62.06	5.23	35.82	-31.47	-25	-6.47	Horizontal
5070.0	-61.87	5.23	35.82	-31.28	-25	-6.28	Vertical
7605.0	-64.16	5.67	36.85	-32.98	-25	-7.98	Vertical
7605.0	-60.17	5.67	36.85	-28.99	-25	-3.99	Horizontal
205.6	-49.75	1.77	16.17	-35.34	-25	-10.34	Vertical
267.6	-48.64	1.63	15.21	-35.06	-25	-10.06	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-63.19	5.24	35.83	-32.60	-25	-7.60	Horizontal
5135.0	-60.93	5.24	35.83	-30.34	-25	-5.34	Vertical
7702.5	-59.30	5.68	36.87	-28.11	-25	-3.11	Vertical
7702.5	-60.45	5.68	36.87	-29.26	-25	-4.26	Horizontal
205.6	-47.51	1.58	17.56	-31.53	-25	-6.53	Vertical
399.1	-46.30	1.45	16.58	-31.17	-25	-6.17	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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5020.0	-62.87	5.23	35.82	-32.28	-25	-7.28	Horizontal
5020.0	-61.00	5.23	35.82	-30.41	-25	-5.41	Vertical
7530.0	-59.70	5.67	36.86	-28.51	-25	-3.51	Vertical
7530.0	-61.73	5.67	36.86	-30.54	-25	-5.54	Horizontal
208.0	-50.84	1.63	15.76	-36.71	-25	-11.71	Vertical
394.5	-51.31	1.71	15.44	-37.58	-25	-12.58	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-63.81	5.23	35.82	-33.22	-25	-8.22	Horizontal
5070.0	-60.65	5.23	35.82	-30.06	-25	-5.06	Vertical
7605.0	-63.85	5.67	36.85	-32.67	-25	-7.67	Vertical
7605.0	-64.95	5.67	36.85	-33.77	-25	-8.77	Horizontal
187.9	-51.83	1.79	16.84	-36.77	-25	-11.77	Vertical
288.1	-50.55	1.71	17.64	-34.62	-25	-9.62	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-63.96	5.24	35.83	-33.37	-25	-8.37	Horizontal
5120.0	-64.49	5.24	35.83	-33.90	-25	-8.90	Vertical
7680.0	-64.61	5.70	36.88	-33.43	-25	-8.43	Vertical
7680.0	-59.22	5.70	36.88	-28.04	-25	-3.04	Horizontal
177.1	-48.04	1.79	16.84	-32.98	-25	-7.98	Vertical
313.8	-46.12	1.71	17.64	-30.19	-25	-5.19	Horizontal

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

. Margin = Spurious Emission Level - Limit

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

9.5 LTE BAND 12

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

Test Results for Low Channel 699.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1399.4	-46.61	2.60	27.20	-22.01	-13	-9.01	Horizontal
1399.4	-47.11	2.60	27.20	-22.51	-13	-9.51	Vertical
2099.1	-53.16	2.85	27.54	-28.47	-13	-15.47	Vertical
2099.1	-51.71	2.85	27.54	-27.02	-13	-14.02	Horizontal
198.4	-38.47	1.49	17.78	-22.18	-13	-9.18	Vertical
453.1	-38.14	1.36	17.33	-22.17	-13	-9.17	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-48.82	2.61	27.28	-24.15	-13	-11.15	Horizontal
1415.0	-53.52	2.61	27.28	-28.85	-13	-15.85	Vertical
2122.5	-49.92	2.87	27.59	-25.20	-13	-12.20	Vertical
2122.5	-49.06	2.87	27.59	-24.34	-13	-11.34	Horizontal
211.5	-39.35	1.73	15.74	-25.34	-13	-12.34	Vertical
396.1	-37.62	1.62	15.79	-23.45	-13	-10.45	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-49.55	2.63	27.28	-24.90	-13	-11.90	Horizontal
1430.6	-45.27	2.63	27.28	-20.62	-13	-7.62	Vertical
2145.9	-50.52	2.88	27.60	-25.80	-13	-12.80	Vertical
2145.9	-51.21	2.88	27.60	-26.49	-13	-13.49	Horizontal
199.1	-40.42	1.61	18.00	-24.03	-13	-11.03	Vertical
374.9	-40.44	1.45	15.49	-26.41	-13	-13.41	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	-51.28	2.61	27.26	-26.63	-13	-13.63	Horizontal
1408.0	-51.84	2.61	27.26	-27.19	-13	-14.19	Vertical
2112.0	-48.84	2.87	27.58	-24.13	-13	-11.13	Vertical
2112.0	-51.57	2.87	27.58	-26.86	-13	-13.86	Horizontal
208.4	-38.24	1.31	16.97	-22.58	-13	-9.58	Vertical
465.1	-35.91	1.65	16.70	-20.86	-13	-7.86	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-47.82	2.61	27.28	-23.15	-13	-10.15	Horizontal
1415.0	-49.57	2.61	27.28	-24.90	-13	-11.90	Vertical
2122.5	-45.19	2.87	27.59	-20.47	-13	-7.47	Vertical
2122.5	-53.98	2.87	27.59	-29.26	-13	-16.26	Horizontal
179.7	-37.92	1.72	17.99	-21.65	-13	-8.65	Vertical
428.2	-38.19	1.73	17.94	-21.98	-13	-8.98	Horizontal
Test Results for High Channel 711MHz							
1422.0	-45.16	2.62	27.28	-20.50	-13	-7.50	Horizontal
1422.0	-53.62	2.62	27.28	-28.96	-13	-15.96	Vertical
2133.0	-48.79	2.87	27.60	-24.06	-13	-11.06	Vertical
2133.0	-52.14	2.87	27.60	-27.41	-13	-14.41	Horizontal
205.8	-44.06	1.58	15.93	-29.71	-13	-16.71	Vertical
414.5	-43.28	1.36	15.59	-29.05	-13	-16.05	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.

9.6 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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1413.0	-50.22	2.61	27.28	-25.55	-13	-12.55	Horizontal
1413.0	-46.17	2.61	27.28	-21.50	-13	-8.50	Vertical
2119.5	-51.98	2.87	27.59	-27.26	-13	-14.26	Vertical
2119.5	-49.18	2.87	27.59	-24.46	-13	-11.46	Horizontal
205.7	-40.77	1.71	16.15	-26.33	-13	-13.33	Vertical
346.5	-36.25	1.41	17.32	-20.34	-13	-7.34	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-47.88	2.62	27.30	-23.20	-13	-10.20	Horizontal
1420.0	-46.53	2.62	27.30	-21.85	-13	-8.85	Vertical
2130.0	-48.01	2.87	27.62	-23.26	-13	-10.26	Vertical
2130.0	-51.30	2.87	27.62	-26.55	-13	-13.55	Horizontal
202.0	-40.69	1.42	15.25	-26.87	-13	-13.87	Vertical
264.6	-41.81	1.36	17.19	-25.98	-13	-12.98	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-45.95	2.66	27.28	-21.33	-13	-8.33	Horizontal
1427.0	-50.40	2.66	27.28	-25.78	-13	-12.78	Vertical
2140.5	-48.55	2.88	27.60	-23.83	-13	-10.83	Vertical
2140.5	-52.69	2.88	27.60	-27.97	-13	-14.97	Horizontal
182.0	-34.25	1.32	17.29	-18.28	-13	-5.28	Vertical
416.9	-39.32	1.72	16.89	-24.15	-13	-11.15	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	-45.16	2.62	27.30	-20.48	-13	-7.48	Horizontal
1418.0	-51.37	2.62	27.30	-26.69	-13	-13.69	Vertical
2127.0	-53.92	2.87	27.62	-29.17	-13	-16.17	Vertical
2127.0	-49.23	2.87	27.62	-24.48	-13	-11.48	Horizontal
186.7	-36.04	1.35	16.91	-20.48	-13	-7.48	Vertical
358.6	-42.82	1.62	16.31	-28.13	-13	-15.13	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-46.39	2.62	27.30	-21.71	-13	-8.71	Horizontal
1420.0	-48.96	2.62	27.30	-24.28	-13	-11.28	Vertical
2130.0	-44.74	2.87	27.62	-19.99	-13	-6.99	Vertical
2130.0	-52.47	2.87	27.62	-27.72	-13	-14.72	Horizontal
200.0	-42.06	1.51	17.14	-26.43	-13	-13.43	Vertical
258.4	-40.55	1.77	16.88	-25.44	-13	-12.44	Horizontal
Test Results for High Channel 711MHz							
1422.0	-52.16	2.62	27.30	-27.48	-13	-14.48	Horizontal
1422.0	-44.27	2.62	27.30	-19.59	-13	-6.59	Vertical
2133.0	-48.00	2.87	27.62	-23.25	-13	-10.25	Vertical
2133.0	-49.83	2.87	27.62	-25.08	-13	-12.08	Horizontal
182.6	-38.58	1.78	15.95	-24.41	-13	-11.41	Vertical
267.3	-39.21	1.34	17.95	-22.61	-13	-9.61	Horizontal

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

9.7 LTE BAND 41

QPSK EIRP POWER FOR LTE BAND 41 (5MHZ BANDWIDTH)

Test Results for Low Channel 2537.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5145.0	-63.69	5.23	35.81	-33.11	-25	-8.11	Horizontal
5145.0	-64.44	5.23	35.81	-33.86	-25	-8.86	Vertical
7717.5	-59.41	5.67	36.85	-28.23	-25	-3.23	Vertical
7717.5	-62.61	5.67	36.85	-31.43	-25	-6.43	Horizontal
435.3	-54.17	1.38	15.98	-39.57	-25	-14.57	Vertical
465.8	-49.33	1.62	15.66	-35.29	-25	-10.29	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-64.33	5.23	35.82	-33.74	-25	-8.74	Horizontal
5190.0	-63.92	5.23	35.82	-33.33	-25	-8.33	Vertical
7785.0	-59.32	5.67	36.85	-28.14	-25	-3.14	Vertical
7785.0	-60.50	5.67	36.85	-29.32	-25	-4.32	Horizontal
510.4	-46.64	1.62	16.17	-32.09	-25	-7.09	Vertical
562.9	-44.11	1.74	17.63	-28.22	-25	-3.22	Horizontal
Test Results for High Channel 2652.5MHz							
5235.0	-59.74	5.24	35.83	-29.15	-25	-4.15	Horizontal
5235.0	-61.31	5.24	35.83	-30.72	-25	-5.72	Vertical
7852.5	-61.82	5.68	36.87	-30.63	-25	-5.63	Vertical
7852.5	-62.61	5.68	36.87	-31.42	-25	-6.42	Horizontal
197.6	-49.12	1.55	15.84	-34.83	-25	-9.83	Vertical
353.1	-48.73	1.51	17.06	-33.18	-25	-8.18	Horizontal

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

Test Results for Low Channel 2545MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5160.0	-60.07	5.23	35.82	-29.48	-25	-4.48	Horizontal
5160.0	-64.05	5.23	35.82	-33.46	-25	-8.46	Vertical
7740.0	-61.21	5.67	36.86	-30.02	-25	-5.02	Vertical
7740.0	-64.02	5.67	36.86	-32.83	-25	-7.83	Horizontal
128.9	-45.73	1.43	15.51	-31.65	-25	-6.65	Vertical
344.8	-46.14	1.40	16.97	-30.57	-25	-5.57	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-62.79	5.23	35.82	-32.20	-25	-7.20	Horizontal
5190.0	-64.47	5.23	35.82	-33.88	-25	-8.88	Vertical
7785.0	-61.99	5.67	36.85	-30.81	-25	-5.81	Vertical
7785.0	-60.54	5.67	36.85	-29.36	-25	-4.36	Horizontal
100.8	-45.63	1.77	16.72	-30.68	-25	-5.68	Vertical
263.5	-52.60	1.31	16.99	-36.92	-25	-11.92	Horizontal
Test Results for High Channel 2645MHz							
5220.0	-63.83	5.24	35.83	-33.24	-25	-8.24	Horizontal
5220.0	-59.83	5.24	35.83	-29.24	-25	-4.24	Vertical
7830.0	-60.40	5.70	36.88	-29.22	-25	-4.22	Vertical
7830.0	-61.22	5.70	36.88	-30.04	-25	-5.04	Horizontal
349.9	-48.09	1.70	15.73	-34.06	-25	-9.06	Vertical
110.3	-45.82	1.75	17.33	-30.24	-25	-5.24	Horizontal

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

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

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

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

9.8 LTE BAND 66

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

Test Results for Low Channel 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-49.64	3.84	35.81	-17.67	-13	-4.67	Horizontal
3421.4	-52.74	3.84	35.81	-20.77	-13	-7.77	Vertical
5132.1	-51.21	5.18	36.85	-19.54	-13	-6.54	Vertical
5132.1	-49.66	5.18	36.85	-17.99	-13	-4.99	Horizontal
203.6	-34.54	1.56	17.97	-18.13	-13	-5.13	Vertical
384.4	-35.70	1.33	15.11	-21.92	-13	-8.92	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-52.01	3.85	35.82	-20.04	-13	-7.04	Horizontal
3490.0	-50.47	3.85	35.82	-18.50	-13	-5.50	Vertical
5235.0	-50.50	5.21	36.85	-18.86	-13	-5.86	Vertical
5235.0	-50.04	5.21	36.85	-18.40	-13	-5.40	Horizontal
185.4	-42.60	1.77	16.17	-28.19	-13	-15.19	Vertical
324.5	-37.35	1.63	15.21	-23.77	-13	-10.77	Horizontal
Test Results for High Channel 1779.3MHz							
3558.6	-49.37	3.86	35.83	-17.40	-13	-4.40	Horizontal
3558.6	-49.61	3.86	35.83	-17.64	-13	-4.64	Vertical
5337.9	-50.51	5.24	36.87	-18.88	-13	-5.88	Vertical
5337.9	-53.75	5.24	36.87	-22.12	-13	-9.12	Horizontal
188.4	-37.18	1.58	17.56	-21.20	-13	-8.20	Vertical
354.9	-39.03	1.45	16.58	-23.90	-13	-10.90	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	-50.60	3.84	35.82	-18.62	-13	-5.62	Horizontal
3440.0	-49.82	3.84	35.82	-17.84	-13	-4.84	Vertical
5160.0	-52.14	5.18	36.86	-20.46	-13	-7.46	Vertical
5160.0	-53.34	5.18	36.86	-21.66	-13	-8.66	Horizontal
183.7	-39.28	1.56	15.76	-25.08	-13	-12.08	Vertical
329.8	-39.91	1.33	15.44	-25.80	-13	-12.80	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-50.88	3.85	35.82	-18.91	-13	-5.91	Horizontal
3490.0	-50.88	3.85	35.82	-18.91	-13	-5.91	Vertical
5235.0	-53.75	5.21	36.85	-22.11	-13	-9.11	Vertical
5235.0	-53.13	5.21	36.85	-21.49	-13	-8.49	Horizontal
192.8	-34.05	1.77	16.84	-18.97	-13	-5.97	Vertical
240.9	-34.73	1.63	17.64	-18.72	-13	-5.72	Horizontal
Test Results for High Channel 1770MHz							
3540.0	-52.36	3.86	35.83	-20.39	-13	-7.39	Horizontal
3540.0	-51.73	3.86	35.83	-19.76	-13	-6.76	Vertical
5310.0	-53.38	5.24	36.88	-21.74	-13	-8.74	Vertical
5310.0	-49.70	5.24	36.88	-18.06	-13	-5.06	Horizontal
212.0	-40.08	1.58	16.84	-24.81	-13	-11.81	Vertical
376.2	-42.83	1.45	17.64	-26.64	-13	-13.64	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.

10. FREQUENCY STABILITY

RULE PART(S)

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

LIMITS

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

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

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

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

Frequency Stability vs Temperature:

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

Frequency Stability vs Voltage:

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

MODES TESTED

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

RESULTS

See the following pages.

10.1 LTE BAND 2

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
4.45	1880	13.1	0.006942	2.5
3.87	1880	13.5	0.007188	2.5
3.29	1880	13.6	0.007210	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	12.3	0.006522	2.5
Extreme (50C)	1880	11.8	0.006295	2.5
Extreme (40C)	1880	13.6	0.007208	2.5
Extreme (30C)	1880	13.4	0.007131	2.5
Extreme (10C)	1880	13.4	0.007142	2.5
Extreme (0C)	1880	12.0	0.006391	2.5
Extreme (-10C)	1880	12.7	0.006760	2.5
Extreme (-20C)	1880	14.2	0.007558	2.5
Extreme (-30C)	1880	14.5	0.007724	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]
4.45	1880	10.1	0.005353	2.5
3.87	1880	9.2	0.004904	2.5
3.29	1880	8.0	0.004235	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	10.1	0.005356	2.5
Extreme (50C)	1880	9.1	0.004836	2.5
Extreme (40C)	1880	8.6	0.004566552	2.5
Extreme (30C)	1880	9.0	0.00478107	2.5
Extreme (10C)	1880	8.7	0.004638427	2.5
Extreme (0C)	1880	8.6	0.004573496	2.5
Extreme (-10C)	1880	9.0	0.004783674	2.5
Extreme (-20C)	1880	8.7	0.004605428	2.5
Extreme (-30C)	1880	8.3	0.004395981	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]
4.45	1732.5	8.4	0.004877	2.5
3.87	1732.5	8.4	0.004853	2.5
3.29	1732.5	8.9	0.005119	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.6	0.004956	2.5
Extreme (50C)	1732.5	9.3	0.005350	2.5
Extreme (40C)	1732.5	7.2	0.004183	2.5
Extreme (30C)	1732.5	6.1	0.003507	2.5
Extreme (10C)	1732.5	7.6	0.004368	2.5
Extreme (0C)	1732.5	9.7	0.005606	2.5
Extreme (-10C)	1732.5	8.2	0.004709	2.5
Extreme (-20C)	1732.5	6.8	0.003925	2.5
Extreme (-30C)	1732.5	8.6	0.004939	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]
4.45	1732.5	9.3	0.005379	2.5
3.87	1732.5	8.7	0.005015	2.5
3.29	1732.5	8.5	0.004912	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	10.1	0.005845	2.5
Extreme (50C)	1732.5	8.8	0.005052	2.5
Extreme (40C)	1732.5	8.6	0.004941	2.5
Extreme (30C)	1732.5	8.9	0.005152	2.5
Extreme (10C)	1732.5	9.0	0.005213	2.5
Extreme (0C)	1732.5	8.3	0.004779	2.5
Extreme (-10C)	1732.5	9.1	0.005264	2.5
Extreme (-20C)	1732.5	9.3	0.005343	2.5
Extreme (-30C)	1732.5	8.0	0.004603	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]
4.45	836.5	6.2	0.007444	2.5
3.87	836.5	6.8	0.008167	2.5
3.29	836.5	5.1	0.006079	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	5.8	0.006960	2.5
Extreme (50C)	836.5	5.9	0.007077	2.5
Extreme (40C)	836.5	5.9	0.007102	2.5
Extreme (30C)	836.5	6.0	0.007163	2.5
Extreme (10C)	836.5	5.9	0.007028	2.5
Extreme (0C)	836.5	4.8	0.005779	2.5
Extreme (-10C)	836.5	5.4	0.006460	2.5
Extreme (-20C)	836.5	5.9	0.007053	2.5
Extreme (-30C)	836.5	6.0	0.007121	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]
4.45	836.5	5.4	0.006416	2.5
3.87	836.5	6.2	0.007464	2.5
3.29	836.5	4.5	0.005412	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.0	0.007147	2.5
Extreme (50C)	836.5	6.1	0.007318	2.5
Extreme (40C)	836.5	5.8	0.006915	2.5
Extreme (30C)	836.5	5.9	0.007094	2.5
Extreme (10C)	836.5	4.9	0.005882	2.5
Extreme (0C)	836.5	5.7	0.006759	2.5
Extreme (-10C)	836.5	5.4	0.006402	2.5
Extreme (-20C)	836.5	6.5	0.007817	2.5
Extreme (-30C)	836.5	6.6	0.007918	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]
4.45	2535	9.7	0.003818	2.5
3.87	2535	8.6	0.003394	2.5
3.29	2535	8.2	0.003244	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	9.3	0.003659	2.5
Extreme (50C)	2535	9.2	0.003637	2.5
Extreme (40C)	2535	8.9	0.003509	2.5
Extreme (30C)	2535	9.0	0.003544	2.5
Extreme (10C)	2535	8.6	0.003385	2.5
Extreme (0C)	2535	8.7	0.003423	2.5
Extreme (-10C)	2535	9.0	0.003566	2.5
Extreme (-20C)	2535	8.8	0.003464	2.5
Extreme (-30C)	2535	7.9	0.003126	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]
4.45	2535	6.9	0.002722	2.5
3.87	2535	6.7	0.002657	2.5
3.29	2535	5.5	0.002153	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	6.9	0.002722	2.5
Extreme (50C)	2535	5.9	0.002346	2.5
Extreme (40C)	2535	5.6	0.002210	2.5
Extreme (30C)	2535	6.2	0.002455	2.5
Extreme (10C)	2535	6.0	0.002356	2.5
Extreme (0C)	2535	5.1	0.002006	2.5
Extreme (-10C)	2535	5.2	0.002059	2.5
Extreme (-20C)	2535	5.8	0.002292	2.5
Extreme (-30C)	2535	5.3	0.002088	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]
4.45	707.5	9.2	0.012945	2.5
3.87	707.5	10.4	0.014759	2.5
3.29	707.5	8.6	0.012174	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	8.4	0.011941	2.5
Extreme (50C)	707.5	7.7	0.010952	2.5
Extreme (40C)	707.5	7.5	0.010561	2.5
Extreme (30C)	707.5	8.2	0.011522	2.5
Extreme (10C)	707.5	7.0	0.009907	2.5
Extreme (0C)	707.5	8.6	0.012106	2.5
Extreme (-10C)	707.5	8.1	0.011486	2.5
Extreme (-20C)	707.5	9.0	0.012675	2.5
Extreme (-30C)	707.5	7.6	0.010730	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]
4.45	707.5	7.2	0.010123	2.5
3.87	707.5	8.8	0.012434	2.5
3.29	707.5	7.2	0.010155	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]
4.45	710.0	9.7	0.013717	2.5
3.87	710.0	9.3	0.013083	2.5
3.29	710.0	8.4	0.011898	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.7	0.013644	2.5
Extreme (50C)	710.0	9.3	0.013124	2.5
Extreme (40C)	710.0	8.2	0.011533	2.5
Extreme (30C)	710.0	9.2	0.012902	2.5
Extreme (10C)	710.0	8.4	0.011870	2.5
Extreme (0C)	710.0	8.0	0.011279	2.5
Extreme (-10C)	710.0	9.3	0.013060	2.5
Extreme (-20C)	710.0	8.8	0.012348	2.5
Extreme (-30C)	710.0	8.5	0.011947	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]
4.45	710.0	10.3	0.014477	2.5
3.87	710.0	9.1	0.012866	2.5
3.29	710.0	8.8	0.012420	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.5	0.013403	2.5
Extreme (50C)	710.0	9.1	0.012801	2.5
Extreme (40C)	710.0	8.9	0.012509	2.5
Extreme (30C)	710.0	9.2	0.013013	2.5
Extreme (10C)	710.0	8.5	0.012016	2.5
Extreme (0C)	710.0	7.9	0.011145	2.5
Extreme (-10C)	710.0	9.1	0.012836	2.5
Extreme (-20C)	710.0	8.5	0.011998	2.5
Extreme (-30C)	710.0	8.3	0.011759	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]
4.45	2595	8.7	0.011967	2.5
3.87	2595	8.4	0.011583	2.5
3.29	2595	8.5	0.011671	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	9.0	0.012327	2.5
Extreme (50C)	2595	8.1	0.011059	2.5
Extreme (40C)	2595	9.0	0.012324	2.5
Extreme (30C)	2595	7.5	0.010316	2.5
Extreme (10C)	2595	8.5	0.011676	2.5
Extreme (0C)	2595	6.3	0.008719	2.5
Extreme (-10C)	2595	8.8	0.012098	2.5
Extreme (-20C)	2595	8.8	0.012045	2.5
Extreme (-30C)	2595	5.8	0.007971	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]
4.45	2595	8.9	0.012290	2.5
3.87	2595	8.9	0.012266	2.5
3.29	2595	8.6	0.011854	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	8.7	0.011971	2.5
Extreme (50C)	2595	8.1	0.011117	2.5
Extreme (40C)	2595	8.6	0.011861	2.5
Extreme (30C)	2595	7.6	0.010436	2.5
Extreme (10C)	2595	8.5	0.011743	2.5
Extreme (0C)	2595	6.4	0.008749	2.5
Extreme (-10C)	2595	8.0	0.011033	2.5
Extreme (-20C)	2595	8.9	0.012244	2.5
Extreme (-30C)	2595	5.7	0.007787	2.5

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

10.8 LTE BAND 66

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
4.45	1745	6.4	0.003694	2.5
3.87	1745	6.5	0.003751	2.5
3.29	1745	7.5	0.004310	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	5.1	0.002941	2.5
Extreme (50C)	1745	7.4	0.004225	2.5
Extreme (40C)	1745	6.8	0.003906	2.5
Extreme (30C)	1745	7.0	0.004037	2.5
Extreme (10C)	1745	7.7	0.004423	2.5
Extreme (0C)	1745	6.2	0.003541	2.5
Extreme (-10C)	1745	5.2	0.002989	2.5
Extreme (-20C)	1745	6.5	0.003715	2.5
Extreme (-30C)	1745	5.7	0.003243	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]
4.45	1745	8.0	0.004603	2.5
3.87	1745	7.2	0.004142	2.5
3.29	1745	9.9	0.005679	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	8.6	0.004919	2.5
Extreme (50C)	1745	8.1	0.004647	2.5
Extreme (40C)	1745	8.8	0.005062	2.5
Extreme (30C)	1745	7.6	0.004374	2.5
Extreme (10C)	1745	8.7	0.004999	2.5
Extreme (0C)	1745	6.5	0.003717	2.5
Extreme (-10C)	1745	8.4	0.004800	2.5
Extreme (-20C)	1745	8.3	0.004776	2.5
Extreme (-30C)	1745	5.9	0.003373	2.5

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

11. Peak-to-Average Ratio

11.1 Description of the PAR Measurement

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

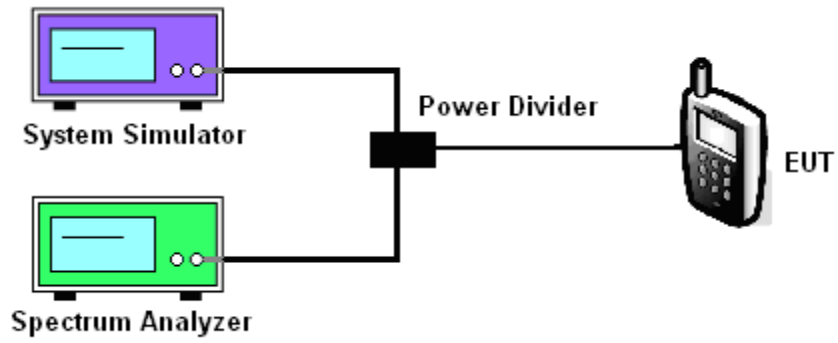
11.2 Measuring Instruments

See list of measuring instruments of this test report.

11.3 Test Procedures

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

11.4 Test Setup



MODES TESTED

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

Test data reference attachment.

----END OF REPORT----