

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

FCC ID: 2AOWK-5011

Product: Mobile Phone

Trade Mark: ulefone

Model No.: GQ5011

Family Model: Armor 28 Ultra, Armor 28, Armor 28 Pro,
Armor 28T Ultra, Armor 28T Pro, Armor 28 Lite,
Armor 28s, Armor 28s Pro

Report No.: S24111904707006

Issue Date: Jan. 14, 2025

Prepared for

Shenzhen Gotron Electronic CO.,LTD.
7B01, Building A, Block 1, Anhongji Tianyao Plaza, Longhua District, Shenzhen City,
Guangdong Province China

Prepared by

Shenzhen NTEK Testing Technology Co., Ltd.
No. 24 Xinfu East Road, Xiangshan Community, Xinqiao Street, Baoan
District, Shenzhen, Guangdong, People's Republic of China
Tel. 0755-23200050 Website: <http://www.ntek.org.cn>

TEST RESULT CERTIFICATION

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

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

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

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

Product name..... : Mobile Phone

Model and/or type reference .. : GQ5011

Trade Mark..... : ulefone

Family Model..... : Armor 28 Ultra, Armor 28, Armor 28 Pro, Armor 28T Ultra, Armor 28T Pro, Armor 28 Lite, Armor 28s, Armor 28s Pro

Test Sample Number : S241119047007

Date of Test..... : Nov. 19, 2024 ~ Jan. 14, 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.

This report shall not be reproduced except in full, without the written approval of NTEK, this document may be altered or revised by NTEK, personal only, and shall be noted in the revision of the document.

Test Result **Pass**

Prepared By : 
Allen Liu
(Project Engineer)

Reviewed : 
By : Aaron Cheng
(Supervisor)

Approved : 
By : Alex Li
(Manager)

TABLE OF CONTENTS

1. GENERAL INFORMATION.....	5
1. GENERAL INFORMATION.....	5
1.1 PRODUCT DESCRIPTION	5
1.3 TEST METHODOLOGY	7
1.4 TEST FACILITY	7
MEASUREMENT UNCERTAINTY	7
1.5 SPECIAL ACCESSORIES.....	7
1.6 WORST-CASE CONFIGURATION AND MODE.....	7
2. SYSTEM TEST CONFIGURATION	8
2.1 EUT CONFIGURATION.....	8
2.2 EUT EXERCISE	8
2.3 CONFIGURATION OF EUT SYSTEM.....	8
2.4 TEST SETUP	9
3.TEST AND MEASUREMENT EQUIPMENT	10
4. OUTPUT POWER.....	12
4.1 OUTPUT POWER MEASUREMENT	12
5. OCCUPIED BANDWIDTH	14
6. BANEDGE AND EMISSION MASK	15
7. OUT OF BAND EMISSIONS	17
7.1 MEASUREMENT METHOD	17
8. RADIATED MEASUREMENT	18
8.1. RADIATED POWER (ERP & EIRP).....	18
8.2 LTE BAND 2.....	19
8.3 LTE BAND 4.....	23
8.4 LTE BAND 5.....	27

8.5 LTE BAND 12	29
8.6 LTE BAND 17	31
8.7 LTE BAND 41	33
8.8 LTE BAND 66	35
8.9 LTE BAND 71	39
9. SPURIOUS RADIATION EMISSION	41
9.1 LTE BAND 2.....	43
9.2 LTE BAND 4.....	45
9.3 LTE BAND 5.....	47
9.4 LTE BAND 12	49
9.5 LTE BAND 17	51
9.6 LTE BAND 41	53
9.7 LTE BAND 66	55
9.8 LTE BAND 71	57
10. FREQUENCY STABILITY	59
10.1 LTE BAND 2	60
10.2 LTE BAND 4	62
10.3 LTE BAND 5	64
10.4 LTE BAND 12	66
10.5 LTE BAND 17	68
10.6 LTE BAND 41	70
10.7 LTE BAND 66	72
10.8 LTE BAND 71	74
11. PEAK-TO-AVERAGE RATIO.....	76
11.1 Description of the PAR Measurement.....	76
11.2 Measuring Instruments	76
11.3 Test Procedures.....	76
11.4 Test Setup.....	77

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	GQ5011
Family Model	Armor 28 Ultra, Armor 28, Armor 28 Pro, Armor 28T Ultra, Armor 28T Pro, Armor 28 Lite, Armor 28s, Armor 28s Pro
Model Difference	All models are the same circuit and RF module, except for model names.
FCC ID:	2AOWK-5011
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:	LDS Antenna
Antenna gain:	Band 2: 0.15 dBi, Band 4: -0.38 dBi, Band 5: -1.88 dBi, Band 12: -3.25 dBi, Band 17: -3.25 dBi, Band 41: -1.63 dBi, Band 66: -0.38 dBi, Band 71: -1.96 dBi
Adapter	Model: HJ-PD120W-US Input: 100-240V~50/60Hz, 1.8A Output: 5.0V---3.0A 15.0W OR 9.0V---3.0A 27.0W OR 12.0V---3.0A 36.0W OR 15.0V---3.0A 45.0W OR 20.0V---5.0A 100.0W MAX PPS: 3.6V-20.0V---6.0A 120.0W MAX
Battery	DC 7.74V, 5300mAh, 41.022Wh
Power Rating	DC 7.74V from battery or DC 5V/9V/12V/15V/20V from adapter

Extreme Vol. Limits:	DC 6.58V to DC 8.90V (Nominal DC 7.74V) (Note 1)
HW Version	M190-MUB-V
SW Version	N/A
** Note1: The High Voltage DC 8.90V and Low Voltage 6.58V was declared by manufacturer, The EUT couldn't be operate normally with higher or lower voltage.	

1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2AOWK-5011** 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 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% ($U = 2U_c(y)$)	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	GQ5011	FCC ID: 2AOWK-5011	EUT

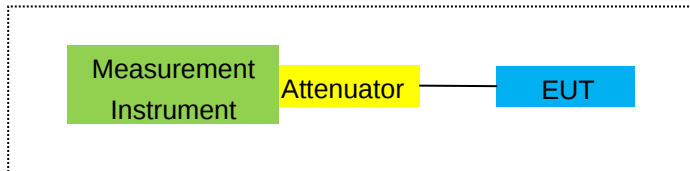
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

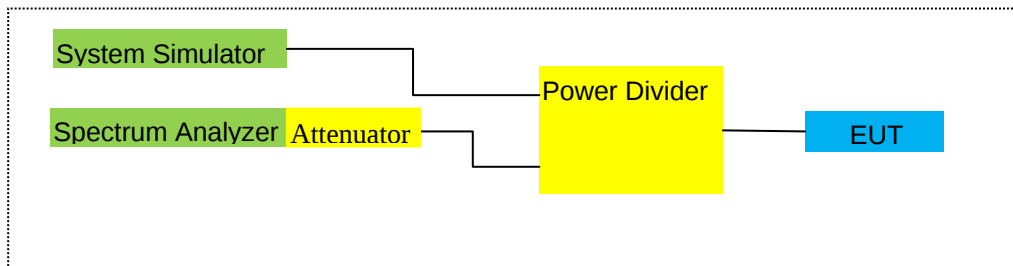
For Radiated Test Cases



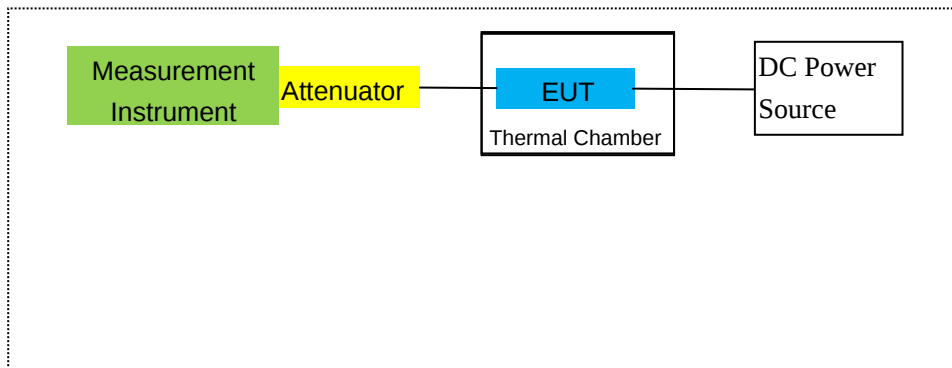
For Conducted Output Power



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	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	2024.04.26	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	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	2024.03.12	2025.03.11	1 year
23	test receiver	R&S	ESCI	a0304218	2024.03.12	2025.03.11	1 year
24	Communication Tester	R&S	CMU200	A0304247	2024.03.12	2025.03.11	1 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	2017040292 3	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					Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP		
							Average		
							(mW)		
1.4MHz Band QPSK	1/#Mid	1850.7	-5.07	3.76	28.24	19.41	87.297	Horizontal	Pass
		1880	-4.88	3.91	28.22	19.43	87.700	Horizontal	Pass
		1909.3	-4.79	3.93	28.20	19.48	88.716	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-5.13	3.77	28.23	19.33	85.704	Horizontal	Pass
		1880	-4.98	3.91	28.24	19.35	86.099	Horizontal	Pass
		1908.5	-4.85	3.94	28.25	19.46	88.308	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-5.02	3.77	28.31	19.52	89.536	Horizontal	Pass
		1880	-4.64	3.91	28.22	19.67	92.683	Horizontal	Pass
		1907.5	-4.57	3.94	28.20	19.69	93.111	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-4.88	3.79	28.33	19.66	92.470	Horizontal	Pass
		1880	-4.58	3.95	28.22	19.69	93.111	Horizontal	Pass
		1905	-4.47	3.97	28.19	19.75	94.406	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-4.84	3.79	28.34	19.71	93.541	Horizontal	Pass
		1880	-4.63	3.95	28.22	19.64	92.045	Horizontal	Pass
		1902.5	-4.49	3.97	28.18	19.72	93.756	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-4.83	3.81	28.35	19.71	93.541	Horizontal	Pass
		1880	-4.50	3.96	28.22	19.76	94.624	Horizontal	Pass
		1900	-4.44	4.00	28.16	19.72	93.756	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-6.24	3.76	28.24	18.24	66.681	Vertical	Pass
		1880	-5.70	3.91	28.22	18.61	72.611	Vertical	Pass
		1909.3	-5.90	3.93	28.20	18.37	68.707	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-5.42	3.77	28.23	19.04	80.168	Vertical	Pass
		1880	-5.48	3.91	28.24	18.85	76.736	Vertical	Pass
		1908.5	-5.96	3.94	28.25	18.35	68.391	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-6.20	3.77	28.31	18.34	68.234	Vertical	Pass
		1880	-5.66	3.91	28.22	18.65	73.282	Vertical	Pass
		1907.5	-5.61	3.94	28.20	18.65	73.282	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1855	-6.36	3.79	28.33	18.18	65.766	Vertical	Pass
		1880	-5.40	3.95	28.22	18.87	77.090	Vertical	Pass
		1905	-5.24	3.97	28.19	18.98	79.068	Vertical	Pass

15.0MHz	1/#Mid	1857.5	-6.10	3.79	28.34	18.45	69.984	Vertical	Pass
Band		1880	-6.04	3.95	28.22	18.23	66.527	Vertical	Pass
QPSK		1902.5	-6.00	3.97	28.18	18.21	66.222	Vertical	Pass
20.0MHz	1/#Mid	1860	-5.44	3.81	28.35	19.10	81.283	Vertical	Pass
Band		1880	-5.96	3.96	28.22	18.30	67.608	Vertical	Pass
QPSK		1900	-5.85	4.00	28.16	18.31	67.764	Vertical	Pass

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP	Polarization Of Max. ERP	
							Average (mW)		
1.4MHz Band 16 QAM	1/#Mid	1850.7	-6.19	3.76	28.24	18.29	67.453	Horizontal	Pass
		1880	-5.66	3.91	28.22	18.65	73.282	Horizontal	Pass
		1909.3	-5.59	3.93	28.20	18.68	73.790	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-5.69	3.77	28.23	18.77	75.336	Horizontal	Pass
		1880	-5.77	3.91	28.24	18.56	71.779	Horizontal	Pass
		1908.5	-5.98	3.94	28.25	18.33	68.077	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-5.63	3.77	28.31	18.91	77.804	Horizontal	Pass
		1880	-5.54	3.91	28.22	18.77	75.336	Horizontal	Pass
		1907.5	-5.22	3.94	28.20	19.04	80.168	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-5.68	3.79	28.33	18.86	76.913	Horizontal	Pass
		1880	-5.67	3.95	28.22	18.60	72.444	Horizontal	Pass
		1905	-5.14	3.97	28.19	19.08	80.910	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-5.66	3.79	28.34	18.89	77.446	Horizontal	Pass
		1880	-5.45	3.95	28.22	18.82	76.208	Horizontal	Pass
		1902.5	-5.41	3.97	28.18	18.80	75.858	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-5.55	3.81	28.35	18.99	79.250	Horizontal	Pass
		1880	-5.25	3.96	28.22	19.01	79.616	Horizontal	Pass
		1900	-5.07	4.00	28.16	19.09	81.096	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1850.7	-6.76	3.76	28.24	17.72	59.156	Vertical	Pass
		1880	-6.68	3.91	28.22	17.63	57.943	Vertical	Pass
		1909.3	-6.47	3.93	28.20	17.80	60.256	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-6.60	3.77	28.23	17.86	61.094	Vertical	Pass
		1880	-6.31	3.91	28.24	18.02	63.387	Vertical	Pass
		1908.5	-6.93	3.94	28.25	17.38	54.702	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-6.54	3.77	28.31	18.00	63.096	Vertical	Pass
		1880	-6.36	3.91	28.22	17.95	62.373	Vertical	Pass
		1907.5	-6.91	3.94	28.20	17.35	54.325	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-6.94	3.79	28.33	17.60	57.544	Vertical	Pass
		1880	-6.81	3.95	28.22	17.46	55.719	Vertical	Pass
		1905	-6.81	3.97	28.19	17.41	55.081	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-7.30	3.79	28.34	17.25	53.088	Vertical	Pass
		1880	-6.93	3.95	28.22	17.34	54.200	Vertical	Pass
		1902.5	-6.88	3.97	28.18	17.33	54.075	Vertical	Pass
20.0MHz	1/#Mid	1860	-6.85	3.81	28.35	17.69	58.749	Vertical	Pass

Band 16		1880	-6.80	3.96	28.22	17.46	55.719	Vertical	Pass
QAM		1900	-6.48	4.00	28.16	17.68	58.614	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 Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	1710.7	-4.98	3.12	27.58	19.48	88.716	Horizontal	Pass
		1732.5	-4.97	3.27	27.61	19.37	86.497	Horizontal	Pass
		1754.3	-4.95	3.29	27.63	19.39	86.896	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-5.15	3.13	27.61	19.33	85.704	Horizontal	Pass
		1732.5	-5.07	3.27	27.61	19.27	84.528	Horizontal	Pass
		1753.5	-4.99	3.30	27.62	19.33	85.704	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-4.92	3.13	27.63	19.58	90.782	Horizontal	Pass
		1732.5	-4.82	3.27	27.61	19.52	89.536	Horizontal	Pass
		1752.5	-4.70	3.30	27.60	19.60	91.201	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-4.86	3.15	27.64	19.63	91.833	Horizontal	Pass
		1732.5	-4.63	3.31	27.61	19.67	92.683	Horizontal	Pass
		1750	-4.65	3.33	27.59	19.61	91.411	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-4.87	3.15	27.65	19.63	91.833	Horizontal	Pass
		1732.5	-4.71	3.31	27.61	19.59	90.991	Horizontal	Pass
		1747.5	-4.65	3.33	27.57	19.59	90.991	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-4.81	3.17	27.66	19.68	92.897	Horizontal	Pass
		1732.5	-4.64	3.32	27.61	19.65	92.257	Horizontal	Pass
		1745	-4.58	3.36	27.56	19.62	91.622	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-5.78	3.12	27.58	18.68	73.790	Vertical	Pass
		1732.5	-6.16	3.27	27.61	18.18	65.766	Vertical	Pass
		1754.3	-5.76	3.29	27.63	18.58	72.111	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-5.68	3.13	27.61	18.80	75.858	Vertical	Pass
		1732.5	-5.21	3.27	27.61	19.13	81.846	Vertical	Pass
		1753.5	-6.05	3.30	27.62	18.27	67.143	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-5.54	3.13	27.63	18.96	78.705	Vertical	Pass
		1732.5	-5.38	3.27	27.61	18.96	78.705	Vertical	Pass
		1752.5	-5.61	3.30	27.60	18.69	73.961	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-6.11	3.15	27.64	18.38	68.865	Vertical	Pass
		1732.5	-5.60	3.31	27.61	18.70	74.131	Vertical	Pass
		1750	-5.78	3.33	27.59	18.48	70.469	Vertical	Pass

15.0MHz	1/#Mid	1717.5	-6.31	3.15	27.65	18.19	65.917	Vertical	Pass
Band		1732.5	-5.88	3.31	27.61	18.42	69.502	Vertical	Pass
QPSK		1747.5	-6.04	3.33	27.57	18.20	66.069	Vertical	Pass
20.0MHz	1/#Mid	1720	-6.27	3.17	27.66	18.22	66.374	Vertical	Pass
Band		1732.5	-5.22	3.32	27.61	19.07	80.724	Vertical	Pass
QPSK		1745	-5.83	3.36	27.56	18.37	68.707	Vertical	Pass

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	1710.7	-5.79	3.12	27.58	18.67	73.621	Horizontal	Pass
		1732.5	-5.64	3.27	27.61	18.70	74.131	Horizontal	Pass
		1754.3	-5.64	3.29	27.63	18.70	74.131	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-5.73	3.13	27.61	18.75	74.989	Horizontal	Pass
		1732.5	-5.86	3.27	27.61	18.48	70.469	Horizontal	Pass
		1753.5	-6.08	3.30	27.62	18.24	66.681	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-5.56	3.13	27.63	18.94	78.343	Horizontal	Pass
		1732.5	-5.52	3.27	27.61	18.82	76.208	Horizontal	Pass
		1752.5	-5.21	3.30	27.60	19.09	81.096	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-5.63	3.15	27.64	18.86	76.913	Horizontal	Pass
		1732.5	-5.82	3.31	27.61	18.48	70.469	Horizontal	Pass
		1750	-5.20	3.33	27.59	19.06	80.538	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-5.43	3.15	27.65	19.07	80.724	Horizontal	Pass
		1732.5	-5.49	3.31	27.61	18.81	76.033	Horizontal	Pass
		1747.5	-5.51	3.33	27.57	18.73	74.645	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-5.38	3.17	27.66	19.11	81.470	Horizontal	Pass
		1732.5	-5.39	3.32	27.61	18.90	77.625	Horizontal	Pass
		1745	-5.20	3.36	27.56	19.00	79.433	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-6.43	3.12	27.58	18.03	63.533	Vertical	Pass
		1732.5	-6.69	3.27	27.61	17.65	58.210	Vertical	Pass
		1754.3	-6.93	3.29	27.63	17.41	55.081	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-6.62	3.13	27.61	17.86	61.094	Vertical	Pass
		1732.5	-6.52	3.27	27.61	17.82	60.534	Vertical	Pass
		1753.5	-6.56	3.30	27.62	17.76	59.704	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-7.18	3.13	27.63	17.32	53.951	Vertical	Pass
		1732.5	-6.89	3.27	27.61	17.45	55.590	Vertical	Pass
		1752.5	-6.50	3.30	27.60	17.80	60.256	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-7.31	3.15	27.64	17.18	52.240	Vertical	Pass
		1732.5	-6.65	3.31	27.61	17.65	58.210	Vertical	Pass
		1750	-6.78	3.33	27.59	17.48	55.976	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-7.21	3.15	27.65	17.29	53.580	Vertical	Pass
		1732.5	-7.13	3.31	27.61	17.17	52.119	Vertical	Pass
		1747.5	-7.10	3.33	27.57	17.14	51.761	Vertical	Pass
20.0MHz	1/#Mid	1720	-6.67	3.17	27.66	17.82	60.534	Vertical	Pass

Band 16 QAM		1732.5	-6.85	3.32	27.61	17.44	55.463	Vertical	Pass
		1745	-6.51	3.36	27.56	17.69	58.749	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 Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	3/#Mid	824.7	4.32	2.01	19.68	2.15	19.84	96.383	Horizontal	Pass
		836.5	4.20	2.01	19.77	2.15	19.81	95.719	Horizontal	Pass
		848.3	4.00	2.02	19.82	2.15	19.65	92.257	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	825.5	4.09	2.01	19.70	2.15	19.63	91.833	Horizontal	Pass
		836.5	3.99	2.01	19.77	2.15	19.60	91.201	Horizontal	Pass
		847.5	3.86	2.02	19.81	2.15	19.50	89.125	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	826.5	4.37	2.01	19.71	2.15	19.92	98.175	Horizontal	Pass
		836.5	4.25	2.01	19.77	2.15	19.86	96.828	Horizontal	Pass
		846.5	4.09	2.02	19.79	2.15	19.71	93.541	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	829	4.39	2.01	19.73	2.15	19.96	99.083	Horizontal	Pass
		836.5	4.34	2.01	19.77	2.15	19.95	98.855	Horizontal	Pass
		844	4.24	2.02	19.78	2.15	19.85	96.605	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	824.7	2.91	2.01	19.68	2.15	18.43	69.663	Vertical	Pass
		836.5	2.95	2.01	19.77	2.15	18.56	71.779	Vertical	Pass
		848.3	3.28	2.02	19.82	2.15	18.93	78.163	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	825.5	3.59	2.01	19.70	2.15	19.13	81.846	Vertical	Pass
		836.5	3.08	2.01	19.77	2.15	18.69	73.961	Vertical	Pass
		847.5	3.10	2.02	19.81	2.15	18.74	74.817	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	826.5	2.83	2.01	19.71	2.15	18.38	68.865	Vertical	Pass
		836.5	3.03	2.01	19.77	2.15	18.64	73.114	Vertical	Pass
		846.5	3.10	2.02	19.79	2.15	18.72	74.473	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	829	2.69	2.01	19.73	2.15	18.26	66.988	Vertical	Pass
		836.5	3.27	2.01	19.77	2.15	18.88	77.268	Vertical	Pass
		844	3.50	2.02	19.78	2.15	19.11	81.470	Vertical	Pass

Radiated Power (ERP) for Band 5										
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	
1.4MHz Band 16 QAM	3/##Mid	824.7	3.47	2.01	19.68	2.15	18.99	79.250	Horizontal	Pass
		836.5	3.40	2.01	19.77	2.15	19.01	79.616	Horizontal	Pass
		848.3	3.24	2.02	19.82	2.15	18.89	77.446	Horizontal	Pass
3.0MHz Band 16 QAM	1/##Mid	825.5	3.55	2.01	19.70	2.15	19.09	81.096	Horizontal	Pass
		836.5	3.26	2.01	19.77	2.15	18.87	77.090	Horizontal	Pass
		847.5	2.74	2.02	19.81	2.15	18.38	68.865	Horizontal	Pass
5.0MHz Band 16 QAM	1/##Mid	826.5	3.87	2.01	19.71	2.15	19.42	87.498	Horizontal	Pass
		836.5	3.64	2.01	19.77	2.15	19.25	84.140	Horizontal	Pass
		846.5	3.39	2.02	19.79	2.15	19.01	79.616	Horizontal	Pass
10.0MHz Band 16 QAM	1/##Mid	829	3.87	2.01	19.73	2.15	19.44	87.902	Horizontal	Pass
		836.5	3.59	2.01	19.77	2.15	19.20	83.176	Horizontal	Pass
		844	3.13	2.02	19.78	2.15	18.74	74.817	Horizontal	Pass
1.4MHz Band 16 QAM	1/##Mid	824.7	2.61	2.01	19.68	2.15	18.13	65.013	Vertical	Pass
		836.5	3.52	2.01	19.77	2.15	19.13	81.846	Vertical	Pass
		848.3	3.04	2.02	19.82	2.15	18.69	73.961	Vertical	Pass
3.0MHz Band 16 QAM	1/##Mid	825.5	2.92	2.01	19.70	2.15	18.46	70.146	Vertical	Pass
		836.5	1.86	2.01	19.77	2.15	17.47	55.847	Vertical	Pass
		847.5	2.53	2.02	19.81	2.15	18.17	65.615	Vertical	Pass
5.0MHz Band 16 QAM	1/##Mid	826.5	2.57	2.01	19.71	2.15	18.12	64.863	Vertical	Pass
		836.5	2.11	2.01	19.77	2.15	17.72	59.156	Vertical	Pass
		846.5	1.53	2.02	19.79	2.15	17.15	51.880	Vertical	Pass
10.0MHz Band 16 QAM	1/##Mid	829	2.08	2.01	19.73	2.15	17.65	58.210	Vertical	Pass
		836.5	1.95	2.01	19.77	2.15	17.56	57.016	Vertical	Pass
		844	2.35	2.02	19.78	2.15	17.96	62.517	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 Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	699.7	4.69	1.91	19.21	2.15	19.84	96.383	Vertical	Pass
		707.5	4.61	1.91	19.26	2.15	19.81	95.719	Vertical	Pass
		715.3	4.39	1.93	19.34	2.15	19.65	92.257	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	700.5	4.48	1.91	19.21	2.15	19.63	91.833	Vertical	Pass
		707.5	4.40	1.91	19.26	2.15	19.60	91.201	Vertical	Pass
		714.5	4.24	1.93	19.34	2.15	19.50	89.125	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	701.5	4.75	1.91	19.23	2.15	19.92	98.175	Vertical	Pass
		707.5	4.66	1.91	19.26	2.15	19.86	96.828	Vertical	Pass
		713.5	4.45	1.92	19.33	2.15	19.71	93.541	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	704	4.77	1.91	19.25	2.15	19.96	99.083	Vertical	Pass
		707.5	4.75	1.91	19.26	2.15	19.95	98.855	Vertical	Pass
		711	4.60	1.92	19.32	2.15	19.85	96.605	Vertical	Pass
1.4MHz Band QPSK	1/#Mid	699.7	3.61	1.91	19.21	2.15	18.76	75.162	Horizontal	Pass
		707.5	3.92	1.91	19.26	2.15	19.12	81.658	Horizontal	Pass
		715.3	3.76	1.93	19.34	2.15	19.02	79.799	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	700.5	2.99	1.91	19.21	2.15	18.14	65.163	Horizontal	Pass
		707.5	3.03	1.91	19.26	2.15	18.23	66.527	Horizontal	Pass
		714.5	3.17	1.93	19.34	2.15	18.43	69.663	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	701.5	3.54	1.91	19.23	2.15	18.71	74.302	Horizontal	Pass
		707.5	3.22	1.91	19.26	2.15	18.42	69.502	Horizontal	Pass
		713.5	3.55	1.92	19.33	2.15	18.81	76.033	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	704	3.77	1.91	19.25	2.15	18.96	78.705	Horizontal	Pass
		707.5	3.44	1.91	19.26	2.15	18.64	73.114	Horizontal	Pass
		711	3.63	1.92	19.32	2.15	18.88	77.268	Horizontal	Pass

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. ERP	Max. ERP	Polarization Of Max. ERP	
							Average	Average		
							(dBm)	(mW)		
1.4MHz Band 16 QAM	1/#Mid	699.7	4.62	1.91	19.21	2.15	19.77	94.842	Vertical	Pass
		707.5	4.54	1.91	19.26	2.15	19.74	94.189	Vertical	Pass
		715.3	4.32	1.93	19.34	2.15	19.58	90.782	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	4.41	1.91	19.21	2.15	19.56	90.365	Vertical	Pass
		707.5	4.33	1.91	19.26	2.15	19.53	89.743	Vertical	Pass
		714.5	4.17	1.93	19.34	2.15	19.43	87.700	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	4.68	1.91	19.23	2.15	19.85	96.605	Vertical	Pass
		707.5	4.59	1.91	19.26	2.15	19.79	95.280	Vertical	Pass
		713.5	4.38	1.92	19.33	2.15	19.64	92.045	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	704	4.70	1.91	19.25	2.15	19.89	97.499	Vertical	Pass
		707.5	4.68	1.91	19.26	2.15	19.88	97.275	Vertical	Pass
		711	4.53	1.92	19.32	2.15	19.78	95.060	Vertical	Pass
1.4MHz Band 16 QAM	1/#Mid	699.7	3.26	1.91	19.21	2.15	18.41	69.343	Horizontal	Pass
		707.5	3.28	1.91	19.26	2.15	18.48	70.469	Horizontal	Pass
		715.3	3.33	1.93	19.34	2.15	18.59	72.277	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	3.32	1.91	19.21	2.15	18.47	70.307	Horizontal	Pass
		707.5	3.43	1.91	19.26	2.15	18.63	72.946	Horizontal	Pass
		714.5	3.16	1.93	19.34	2.15	18.42	69.502	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	3.66	1.91	19.23	2.15	18.83	76.384	Horizontal	Pass
		707.5	3.50	1.91	19.26	2.15	18.70	74.131	Horizontal	Pass
		713.5	3.66	1.92	19.33	2.15	18.92	77.983	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	704	3.14	1.91	19.25	2.15	18.33	68.077	Horizontal	Pass
		707.5	2.91	1.91	19.26	2.15	18.11	64.714	Horizontal	Pass
		711	3.07	1.92	19.32	2.15	18.32	67.920	Horizontal	Pass

Note:

SG Level= Signal generator output

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

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

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 Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	706.5	5.08	1.91	19.23	2.15	20.25	105.925	Vertical	Pass
		710	4.94	1.91	19.26	2.15	20.14	103.276	Vertical	Pass
		713.5	4.84	1.92	19.33	2.15	20.10	102.329	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	709	5.09	1.91	19.25	2.15	20.28	106.660	Vertical	Pass
		710	5.04	1.91	19.26	2.15	20.24	105.682	Vertical	Pass
		711	5.00	1.92	19.32	2.15	20.25	105.925	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	706.5	3.65	1.91	19.23	2.15	18.82	76.208	Horizontal	Pass
		710	3.47	1.91	19.26	2.15	18.67	73.621	Horizontal	Pass
		713.5	3.88	1.92	19.33	2.15	19.14	82.035	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	709	4.69	1.91	19.25	2.15	19.88	97.275	Horizontal	Pass
		710	4.35	1.91	19.26	2.15	19.55	90.157	Horizontal	Pass
		711	3.44	1.92	19.32	2.15	18.69	73.961	Horizontal	Pass

Radiated Power (ERP) for Band 17										
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	1/#Mid	706.5	4.49	1.91	19.23	2.15	19.66	92.470	Vertical	Pass
		710	4.40	1.91	19.26	2.15	19.60	91.201	Vertical	Pass
		713.5	4.20	1.92	19.33	2.15	19.46	88.308	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	709	4.03	1.91	19.25	2.15	19.22	83.560	Vertical	Pass
		710	4.56	1.91	19.26	2.15	19.76	94.624	Vertical	Pass
		711	4.29	1.92	19.32	2.15	19.54	89.950	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	706.5	3.58	1.91	19.23	2.15	18.75	74.989	Horizontal	Pass
		710	3.44	1.91	19.26	2.15	18.64	73.114	Horizontal	Pass
		713.5	3.03	1.92	19.33	2.15	18.29	67.453	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	709	3.13	1.91	19.25	2.15	18.32	67.920	Horizontal	Pass
		710	2.93	1.91	19.26	2.15	18.13	65.013	Horizontal	Pass
		711	3.17	1.92	19.32	2.15	18.42	69.502	Horizontal	Pass

Note:

SG Level= Signal generator output

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

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

ERP=EIRP-2.15

8.7 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	
						Average	Average		
						(dBm)	(mW)		
5.0MHz Band QPSK	1/#Mid	2498.5	-3.57	4.54	27.75	19.64	92.045	Horizontal	Pass
		2593	-3.42	4.69	27.72	19.61	91.411	Horizontal	Pass
		2687.5	-3.30	4.71	27.71	19.70	93.325	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2501	-3.65	4.55	27.76	19.56	90.365	Horizontal	Pass
		2593	-3.51	4.69	27.72	19.52	89.536	Horizontal	Pass
		2685	-3.50	4.72	27.70	19.48	88.716	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2503.5	-3.48	4.55	27.77	19.74	94.189	Horizontal	Pass
		2593	-3.20	4.69	27.72	19.83	96.161	Horizontal	Pass
		2682.5	-3.25	4.72	27.69	19.72	93.756	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2506	-3.09	4.57	27.78	20.12	102.802	Horizontal	Pass
		2593	-3.14	4.73	27.72	19.85	96.605	Horizontal	Pass
		2680	-3.14	4.75	27.68	19.79	95.280	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2498.5	-3.37	4.54	27.75	19.84	96.383	Vertical	Pass
		2593	-3.28	4.69	27.72	19.75	94.406	Vertical	Pass
		2687.5	-3.26	4.71	27.71	19.74	94.189	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2501	-3.35	4.55	27.76	19.86	96.828	Vertical	Pass
		2593	-3.19	4.69	27.72	19.84	96.383	Vertical	Pass
		2685	-3.26	4.72	27.70	19.72	93.756	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2503.5	-5.06	4.55	27.77	18.16	65.464	Vertical	Pass
		2593	-4.04	4.69	27.72	18.99	79.250	Vertical	Pass
		2682.5	-4.22	4.72	27.69	18.75	74.989	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2506	-5.07	4.57	27.78	18.14	65.163	Vertical	Pass
		2593	-4.37	4.73	27.72	18.62	72.778	Vertical	Pass
		2680	-4.41	4.75	27.68	18.52	71.121	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	-3.67	4.54	27.75	19.54	89.950	Horizontal	Pass
		2593	-3.52	4.69	27.72	19.51	89.331	Horizontal	Pass
		2687.5	-3.40	4.71	27.71	19.60	91.201	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2501	-3.75	4.55	27.76	19.46	88.308	Horizontal	Pass
		2593	-3.61	4.69	27.72	19.42	87.498	Horizontal	Pass
		2685	-3.60	4.72	27.70	19.38	86.696	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2503.5	-3.58	4.55	27.77	19.64	92.045	Horizontal	Pass
		2593	-3.30	4.69	27.72	19.73	93.972	Horizontal	Pass
		2682.5	-3.35	4.72	27.69	19.62	91.622	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2506	-3.30	4.57	27.78	19.91	97.949	Horizontal	Pass
		2593	-3.24	4.73	27.72	19.75	94.406	Horizontal	Pass
		2680	-3.24	4.75	27.68	19.69	93.111	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2498.5	-3.47	4.54	27.75	19.74	94.189	Vertical	Pass
		2593	-3.38	4.69	27.72	19.65	92.257	Vertical	Pass
		2687.5	-3.36	4.71	27.71	19.64	92.045	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2501	-3.45	4.55	27.76	19.76	94.624	Vertical	Pass
		2593	-3.29	4.69	27.72	19.74	94.189	Vertical	Pass
		2685	-3.36	4.72	27.70	19.62	91.622	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2503.5	-4.64	4.55	27.77	18.58	72.111	Vertical	Pass
		2593	-4.18	4.69	27.72	18.85	76.736	Vertical	Pass
		2682.5	-4.10	4.72	27.69	18.87	77.090	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2506	-4.31	4.57	27.78	18.90	77.625	Vertical	Pass
		2593	-4.62	4.73	27.72	18.37	68.707	Vertical	Pass
		2680	-4.48	4.75	27.68	18.45	69.984	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 Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP	Polarization Of Max. ERP	
							Average		
							(mW)		
1.4MHz Band QPSK	1/#Mid	1710.7	-4.94	3.76	28.24	19.54	89.950	Horizontal	Pass
		1745	-4.80	3.91	28.22	19.51	89.331	Horizontal	Pass
		1779.3	-4.67	3.93	28.2	19.60	91.201	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-5.00	3.77	28.23	19.46	88.308	Horizontal	Pass
		1745	-4.91	3.91	28.24	19.42	87.498	Horizontal	Pass
		1778.5	-4.93	3.94	28.25	19.38	86.696	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-4.90	3.77	28.31	19.64	92.045	Horizontal	Pass
		1745	-4.58	3.91	28.22	19.73	93.972	Horizontal	Pass
		1777.5	-4.64	3.94	28.2	19.62	91.622	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-4.79	3.79	28.33	19.75	94.406	Horizontal	Pass
		1745	-4.52	3.95	28.22	19.75	94.406	Horizontal	Pass
		1775	-4.53	3.97	28.19	19.69	93.111	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-4.81	3.79	28.34	19.74	94.189	Horizontal	Pass
		1745	-4.62	3.95	28.22	19.65	92.257	Horizontal	Pass
		1772.5	-4.57	3.97	28.18	19.64	92.045	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-4.78	3.81	28.35	19.76	94.624	Horizontal	Pass
		1745	-4.52	3.96	28.22	19.74	94.189	Horizontal	Pass
		1770	-4.54	4	28.16	19.62	91.622	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-6.20	3.76	28.24	18.28	67.298	Vertical	Pass
		1745	-5.95	3.91	28.22	18.36	68.549	Vertical	Pass
		1779.3	-5.91	3.93	28.2	18.36	68.549	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-6.01	3.77	28.23	18.45	69.984	Vertical	Pass
		1745	-5.31	3.91	28.24	19.02	79.799	Vertical	Pass
		1778.5	-5.68	3.94	28.25	18.63	72.946	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-6.12	3.77	28.31	18.42	69.502	Vertical	Pass
		1745	-5.53	3.91	28.22	18.78	75.509	Vertical	Pass
		1777.5	-5.59	3.94	28.2	18.67	73.621	Vertical	Pass
10.0MHz	1/#Mid	1715	-5.94	3.79	28.34	18.61	72.611	Vertical	Pass

Band QPSK		1745	-5.54	3.95	28.22	18.73	74.645	Vertical	Pass
		1775	-5.23	3.97	28.18	18.98	79.068	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-5.70	3.81	28.35	18.84	76.560	Vertical	Pass
		1745	-6.17	3.96	28.22	18.09	64.417	Vertical	Pass
		1772.5	-5.90	4	28.16	18.26	66.988	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1720	-6.19	3.79	28.34	18.36	68.549	Vertical	Pass
		1745	-5.40	3.95	28.22	18.87	77.090	Vertical	Pass
		1770	-6.14	3.97	28.18	18.07	64.121	Vertical	Pass

Radiated Power (EIRP) for Band 66									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP	Polarization Of Max. ERP	
							Average		
							(mW)		
1.4MHz Band 16 QAM	1/#Mid	1710.7	-5.72	3.76	28.24	18.76	75.162	Horizontal	Pass
		1745	-5.33	3.91	28.22	18.98	79.068	Horizontal	Pass
		1779.3	-5.51	3.93	28.2	18.76	75.162	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-6.11	3.77	28.23	18.35	68.391	Horizontal	Pass
		1745	-5.36	3.91	28.24	18.97	78.886	Horizontal	Pass
		1778.5	-5.65	3.94	28.25	18.66	73.451	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-5.53	3.77	28.31	19.01	79.616	Horizontal	Pass
		1745	-5.59	3.91	28.22	18.72	74.473	Horizontal	Pass
		1777.5	-5.26	3.94	28.2	19.00	79.433	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-5.58	3.79	28.33	18.96	78.705	Horizontal	Pass
		1745	-5.24	3.95	28.22	19.03	79.983	Horizontal	Pass
		1775	-5.56	3.97	28.19	18.66	73.451	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-5.57	3.79	28.34	18.98	79.068	Horizontal	Pass
		1745	-5.39	3.95	28.22	18.88	77.268	Horizontal	Pass
		1772.5	-5.18	3.97	28.18	19.03	79.983	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-5.40	3.81	28.35	19.14	82.035	Horizontal	Pass
		1745	-5.18	3.96	28.22	19.08	80.910	Horizontal	Pass
		1770	-5.12	4	28.16	19.04	80.168	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-5.80	3.76	28.24	18.68	73.790	Vertical	Pass
		1745	-7.15	3.91	28.22	17.16	52.000	Vertical	Pass
		1779.3	-5.55	3.93	28.2	18.72	74.473	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-7.19	3.77	28.23	17.27	53.333	Vertical	Pass
		1745	-5.64	3.91	28.24	18.69	73.961	Vertical	Pass
		1778.5	-7.24	3.94	28.25	17.07	50.933	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-6.93	3.77	28.31	17.61	57.677	Vertical	Pass
		1745	-7.11	3.91	28.22	17.20	52.481	Vertical	Pass
		1777.5	-6.80	3.94	28.2	17.46	55.719	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-5.59	3.79	28.34	18.96	78.705	Vertical	Pass
		1745	-6.05	3.95	28.22	18.22	66.374	Vertical	Pass
		1775	-7.10	3.97	28.18	17.11	51.404	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-7.44	3.81	28.35	17.10	51.286	Vertical	Pass

Band 16 QAM		1745	-5.43	3.96	28.22	18.83	76.384	Vertical	Pass
		1772.5	-5.72	4	28.16	18.44	69.823	Vertical	Pass
20.0MHz	1/#Mid	1720	-7.13	3.79	28.34	17.42	55.208	Vertical	Pass
Band 16		1745	-6.50	3.95	28.22	17.77	59.841	Vertical	Pass
QAM		1770	-5.41	3.97	28.18	18.80	75.858	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.9 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	4.26	2.01	19.68	2.15	19.78	95.06	Horizontal	Pass
		680.5	4.14	2.01	19.77	2.15	19.75	94.41	Horizontal	Pass
		695.5	3.94	2.02	19.82	2.15	19.59	90.99	Horizontal	Pass
10.0MHz Band QPSK	50/0	668	4.03	2.01	19.70	2.15	19.57	90.57	Horizontal	Pass
		680.5	3.93	2.01	19.77	2.15	19.54	89.95	Horizontal	Pass
		693	3.80	2.02	19.81	2.15	19.44	87.90	Horizontal	Pass
15.0MHz Band QPSK	75/0	670.5	4.31	2.01	19.71	2.15	19.86	96.83	Horizontal	Pass
		680.5	4.19	2.01	19.77	2.15	19.80	95.50	Horizontal	Pass
		690.5	4.03	2.02	19.79	2.15	19.65	92.26	Horizontal	Pass
20.0MHz Band QPSK	100/0	673	4.33	2.01	19.73	2.15	19.90	97.72	Horizontal	Pass
		683	4.28	2.01	19.77	2.15	19.89	97.50	Horizontal	Pass
		688	4.18	2.02	19.78	2.15	19.79	95.28	Horizontal	Pass
5.0MHz Band QPSK	25/0	665.5	3.29	2.01	19.68	2.15	18.81	76.03	Vertical	Pass
		680.5	2.80	2.01	19.77	2.15	18.41	69.34	Vertical	Pass
		695.5	3.34	2.02	19.82	2.15	18.99	79.25	Vertical	Pass
15.0MHz Band QPSK	50/0	668	3.06	2.01	19.70	2.15	18.60	72.44	Vertical	Pass
		680.5	3.20	2.01	19.77	2.15	18.81	76.03	Vertical	Pass
		693	2.84	2.02	19.81	2.15	18.48	70.47	Vertical	Pass
15.0MHz Band QPSK	75/0	670.5	2.77	2.01	19.71	2.15	18.32	67.92	Vertical	Pass
		680.5	3.30	2.01	19.77	2.15	18.91	77.80	Vertical	Pass
		690.5	3.11	2.02	19.79	2.15	18.73	74.64	Vertical	Pass
20MHz Band QPSK	100/0	673	2.98	2.01	19.73	2.15	18.55	71.61	Vertical	Pass
		683	2.82	2.01	19.77	2.15	18.43	69.66	Vertical	Pass
		688	3.35	2.02	19.78	2.15	18.96	78.70	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	4.30	2.01	19.68	2.15	19.82	95.94	Horizontal	Pass
		680.5	4.18	2.01	19.77	2.15	19.79	95.28	Horizontal	Pass
		695.5	3.98	2.02	19.82	2.15	19.63	91.83	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	668	4.07	2.01	19.70	2.15	19.61	91.41	Horizontal	Pass
		680.5	3.97	2.01	19.77	2.15	19.58	90.78	Horizontal	Pass
		693	3.84	2.02	19.81	2.15	19.48	88.72	Horizontal	Pass
15.0MHz Band 16 QAM	75/0	670.5	4.35	2.01	19.71	2.15	19.90	97.72	Horizontal	Pass
		680.5	4.23	2.01	19.77	2.15	19.84	96.38	Horizontal	Pass
		690.5	4.07	2.02	19.79	2.15	19.69	93.11	Horizontal	Pass
20.0MHz Band 16 QAM	100/0	673	4.37	2.01	19.73	2.15	19.94	98.63	Horizontal	Pass
		683	4.32	2.01	19.77	2.15	19.93	98.40	Horizontal	Pass
		688	4.22	2.02	19.78	2.15	19.83	96.16	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	665.5	3.23	2.01	19.68	2.15	18.75	74.99	Vertical	Pass
		680.5	2.75	2.01	19.77	2.15	18.36	68.55	Vertical	Pass
		695.5	2.75	2.02	19.82	2.15	18.40	69.18	Vertical	Pass
10.0MHz Band 16 QAM	50/0	668	3.35	2.01	19.70	2.15	18.89	77.45	Vertical	Pass
		680.5	2.63	2.01	19.77	2.15	18.24	66.68	Vertical	Pass
		693	3.19	2.02	19.81	2.15	18.83	76.38	Vertical	Pass
15.0MHz Band 16 QAM	75/0	670.5	3.29	2.01	19.71	2.15	18.84	76.56	Vertical	Pass
		680.5	3.12	2.01	19.77	2.15	18.73	74.64	Vertical	Pass
		690.5	2.95	2.02	19.79	2.15	18.57	71.94	Vertical	Pass
20.0MHz Band 16 QAM	100/0	673	2.98	2.01	19.73	2.15	18.55	71.61	Vertical	Pass
		683	3.47	2.01	19.77	2.15	19.08	80.91	Vertical	Pass
		688	3.14	2.02	19.78	2.15	18.75	74.99	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 Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3701.4	-49.72	4.04	33.51	-20.25	-13	-7.25	Horizontal
3701.4	-50.42	4.04	33.51	-20.95	-13	-7.95	Vertical
5552.1	-51.04	5.24	35.84	-20.44	-13	-7.44	Vertical
5552.1	-53.74	5.24	35.84	-23.14	-13	-10.14	Horizontal
182.0	-40.53	1.43	16.02	-25.94	-13	-12.94	Vertical
332.0	-35.50	1.30	17.99	-18.81	-13	-5.81	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-48.57	4.04	33.56	-19.05	-13	-6.05	Horizontal
3760.0	-51.69	4.04	33.56	-22.17	-13	-9.17	Vertical
5640.0	-49.29	5.24	35.91	-18.62	-13	-5.62	Vertical
5640.0	-51.83	5.24	35.91	-21.16	-13	-8.16	Horizontal
189.5	-41.90	1.62	16.97	-26.55	-13	-13.55	Vertical
309.0	-40.79	1.74	15.98	-26.56	-13	-13.56	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-49.63	4.04	34.00	-19.67	-13	-6.67	Horizontal
3818.6	-50.20	4.04	34.00	-20.24	-13	-7.24	Vertical
5727.9	-51.90	5.24	36.04	-21.10	-13	-8.10	Vertical
5727.9	-49.20	5.24	36.04	-18.40	-13	-5.40	Horizontal
206.4	-42.14	1.42	17.29	-26.27	-13	-13.27	Vertical
412.4	-41.35	1.50	17.90	-24.94	-13	-11.94	Horizontal

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

Test Results for Low Channel 1860MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3720.0	-46.84	4.07	33.54	-17.37	-13	-4.37	Horizontal
3720.0	-48.84	4.07	33.54	-19.37	-13	-6.37	Vertical
5580.0	-53.47	5.28	35.86	-22.89	-13	-9.89	Vertical
5580.0	-53.09	5.28	35.86	-22.51	-13	-9.51	Horizontal
185.0	-42.11	1.58	16.89	-26.79	-13	-13.79	Vertical
353.3	-43.35	1.76	17.26	-27.85	-13	-14.85	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-49.88	4.04	33.56	-20.36	-13	-7.36	Horizontal
3760.0	-45.16	4.04	33.56	-15.64	-13	-2.64	Vertical
5640.0	-47.30	5.24	35.91	-16.63	-13	-3.63	Vertical
5640.0	-53.91	5.24	35.91	-23.24	-13	-10.24	Horizontal
190.4	-37.87	1.46	16.27	-23.06	-13	-10.06	Vertical
359.0	-35.16	1.59	15.15	-21.60	-13	-8.60	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-49.34	4.04	34.00	-19.38	-13	-6.38	Horizontal
3800.0	-49.47	4.04	34.00	-19.51	-13	-6.51	Vertical
5700.0	-44.87	5.24	36.04	-14.07	-13	-1.07	Vertical
5700.0	-49.66	5.24	36.04	-18.86	-13	-5.86	Horizontal
182.8	-36.65	1.36	17.39	-20.61	-13	-7.61	Vertical
397.5	-42.83	1.66	15.39	-29.10	-13	-16.10	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 Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-53.14	4.02	29.80	-27.36	-13	-14.36	Horizontal
3421.4	-44.33	4.02	29.80	-18.55	-13	-5.55	Vertical
5132.1	-52.35	5.24	35.84	-21.75	-13	-8.75	Vertical
5132.1	-51.30	5.24	35.84	-20.70	-13	-7.70	Horizontal
211.7	-42.81	1.68	16.04	-28.45	-13	-15.45	Vertical
362.2	-34.73	1.78	17.74	-18.77	-13	-5.77	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-51.23	4.03	30.00	-25.26	-13	-12.26	Horizontal
3465.0	-46.40	4.03	30.00	-20.43	-13	-7.43	Vertical
5197.5	-53.61	5.25	35.86	-23.00	-13	-10.00	Vertical
5197.5	-50.75	5.25	35.86	-20.14	-13	-7.14	Horizontal
209.5	-38.25	1.72	17.69	-22.28	-13	-9.28	Vertical
369.3	-44.33	1.62	16.02	-29.92	-13	-16.92	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-50.65	4.05	30.01	-24.69	-13	-11.69	Horizontal
3508.6	-51.71	4.05	30.01	-25.75	-13	-12.75	Vertical
5262.9	-48.16	5.26	35.86	-17.56	-13	-4.56	Vertical
5262.9	-52.91	5.26	35.86	-22.31	-13	-9.31	Horizontal
197.6	-38.09	1.80	16.69	-23.20	-13	-10.20	Vertical
423.1	-42.29	1.75	16.66	-27.39	-13	-14.39	Horizontal

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

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-49.73	4.02	29.80	-23.95	-13	-10.95	Horizontal
3440.0	-48.69	4.02	29.80	-22.91	-13	-9.91	Vertical
5160.0	-48.06	5.24	35.84	-17.46	-13	-4.46	Vertical
5160.0	-52.47	5.24	35.84	-21.87	-13	-8.87	Horizontal
192.5	-42.23	1.57	17.26	-26.54	-13	-13.54	Vertical
330.2	-35.00	1.78	16.35	-20.43	-13	-7.43	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-48.18	4.03	30.00	-22.21	-13	-9.21	Horizontal
3465.0	-49.62	4.03	30.00	-23.65	-13	-10.65	Vertical
5197.5	-52.89	5.25	35.86	-22.28	-13	-9.28	Vertical
5197.5	-52.18	5.25	35.86	-21.57	-13	-8.57	Horizontal
203.6	-35.83	1.44	17.95	-19.32	-13	-6.32	Vertical
335.2	-44.96	1.65	16.09	-30.52	-13	-17.52	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-47.61	2.91	27.68	-22.84	-13	-9.84	Horizontal
3490.0	-47.13	2.91	27.68	-22.36	-13	-9.36	Vertical
5235.0	-52.36	5.26	35.86	-21.76	-13	-8.76	Vertical
5235.0	-51.23	5.26	35.86	-20.63	-13	-7.63	Horizontal
210.8	-39.01	1.61	16.85	-23.77	-13	-10.77	Vertical
439.1	-38.75	1.61	15.19	-25.17	-13	-12.17	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 Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1649.4	-51.48	2.78	27.50	-26.76	-13	-13.76	Horizontal
1649.4	-53.86	2.78	27.50	-29.14	-13	-16.14	Vertical
2474.1	-49.28	2.90	27.80	-24.38	-13	-11.38	Vertical
2474.1	-50.79	2.90	27.80	-25.89	-13	-12.89	Horizontal
208.2	-36.99	1.76	17.59	-21.16	-13	-8.16	Vertical
387.7	-34.10	1.63	15.87	-19.86	-13	-6.86	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-49.65	2.80	27.48	-24.97	-13	-11.97	Horizontal
1673.0	-47.38	2.80	27.48	-22.70	-13	-9.70	Vertical
2509.5	-49.72	2.91	27.70	-24.93	-13	-11.93	Vertical
2509.5	-52.82	2.91	27.70	-28.03	-13	-15.03	Horizontal
199.7	-40.05	1.61	15.68	-25.98	-13	-12.98	Vertical
331.6	-37.84	1.59	17.52	-21.92	-13	-8.92	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-46.73	2.82	27.43	-22.12	-13	-9.12	Horizontal
1696.6	-48.68	2.82	27.43	-24.07	-13	-11.07	Vertical
2544.9	-50.99	2.92	27.74	-26.17	-13	-13.17	Vertical
2544.9	-53.44	2.92	27.74	-28.62	-13	-15.62	Horizontal
175.7	-39.59	1.69	16.67	-24.60	-13	-11.60	Vertical
235.2	-43.03	1.70	17.18	-27.55	-13	-14.55	Horizontal

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

Test Results for Low Channel 829MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1658.0	-48.88	2.78	27.50	-24.16	-13	-11.16	Horizontal
1658.0	-47.70	2.78	27.50	-22.98	-13	-9.98	Vertical
2487.0	-53.63	2.90	27.80	-28.73	-13	-15.73	Vertical
2487.0	-51.69	2.90	27.80	-26.79	-13	-13.79	Horizontal
181.3	-40.45	1.71	15.57	-26.59	-13	-13.59	Vertical
315.2	-35.63	1.34	16.40	-20.57	-13	-7.57	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-50.99	2.80	27.48	-26.31	-13	-13.31	Horizontal
1673.0	-47.12	2.80	27.48	-22.44	-13	-9.44	Vertical
2509.5	-53.85	2.91	27.70	-29.06	-13	-16.06	Vertical
2509.5	-49.67	2.91	27.70	-24.88	-13	-11.88	Horizontal
197.6	-44.90	1.44	17.04	-29.30	-13	-16.30	Vertical
382.0	-44.75	1.76	17.62	-28.89	-13	-15.89	Horizontal
Test Results for High Channel 844MHz							
1688.0	-47.05	2.82	27.43	-22.44	-13	-9.44	Horizontal
1688.0	-50.96	2.82	27.43	-26.35	-13	-13.35	Vertical
2532.0	-51.05	2.92	27.74	-26.23	-13	-13.23	Vertical
2532.0	-49.04	2.92	27.74	-24.22	-13	-11.22	Horizontal
201.3	-38.51	1.74	17.70	-22.55	-13	-9.55	Vertical
347.4	-43.42	1.41	17.46	-27.36	-13	-14.36	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 Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1399.4	-47.44	2.60	27.20	-22.84	-13	-9.84	Horizontal
1399.4	-45.07	2.60	27.20	-20.47	-13	-7.47	Vertical
2099.1	-53.39	2.85	27.54	-28.70	-13	-15.70	Vertical
2099.1	-50.98	2.85	27.54	-26.29	-13	-13.29	Horizontal
206.3	-37.26	1.49	17.78	-20.97	-13	-7.97	Vertical
234.3	-40.57	1.36	17.33	-24.60	-13	-11.60	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-52.82	2.61	27.28	-28.15	-13	-15.15	Horizontal
1415.0	-49.82	2.61	27.28	-25.15	-13	-12.15	Vertical
2122.5	-46.00	2.87	27.59	-21.28	-13	-8.28	Vertical
2122.5	-52.43	2.87	27.59	-27.71	-13	-14.71	Horizontal
175.4	-37.24	1.73	15.74	-23.23	-13	-10.23	Vertical
300.4	-42.37	1.62	15.79	-28.20	-13	-15.20	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-48.68	2.63	27.28	-24.03	-13	-11.03	Horizontal
1430.6	-50.09	2.63	27.28	-25.44	-13	-12.44	Vertical
2145.9	-51.41	2.88	27.60	-26.69	-13	-13.69	Vertical
2145.9	-52.11	2.88	27.60	-27.39	-13	-14.39	Horizontal
193.8	-35.13	1.61	18.00	-18.74	-13	-5.74	Vertical
444.6	-35.49	1.45	15.49	-21.46	-13	-8.46	Horizontal

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

Test Results for Low Channel 704MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1408.0	-48.07	2.61	27.26	-23.42	-13	-10.42	Horizontal
1408.0	-45.48	2.61	27.26	-20.83	-13	-7.83	Vertical
2112.0	-45.43	2.87	27.58	-20.72	-13	-7.72	Vertical
2112.0	-52.51	2.87	27.58	-27.80	-13	-14.80	Horizontal
179.4	-43.40	1.31	16.97	-27.74	-13	-14.74	Vertical
315.3	-40.36	1.65	16.70	-25.31	-13	-12.31	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-47.32	2.61	27.28	-22.65	-13	-9.65	Horizontal
1415.0	-51.34	2.61	27.28	-26.67	-13	-13.67	Vertical
2122.5	-47.50	2.87	27.59	-22.78	-13	-9.78	Vertical
2122.5	-52.47	2.87	27.59	-27.75	-13	-14.75	Horizontal
202.2	-39.19	1.72	17.99	-22.92	-13	-9.92	Vertical
303.5	-35.24	1.73	17.94	-19.03	-13	-6.03	Horizontal
Test Results for High Channel 711MHz							
1422.0	-44.72	2.62	27.28	-20.06	-13	-7.06	Horizontal
1422.0	-52.82	2.62	27.28	-28.16	-13	-15.16	Vertical
2133.0	-53.92	2.87	27.60	-29.19	-13	-16.19	Vertical
2133.0	-50.45	2.87	27.60	-25.72	-13	-12.72	Horizontal
180.9	-38.80	1.58	15.93	-24.45	-13	-11.45	Vertical
267.4	-44.12	1.36	15.59	-29.89	-13	-16.89	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 Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1413.0	-50.35	2.61	27.28	-25.68	-13	-12.68	Horizontal
1413.0	-52.76	2.61	27.28	-28.09	-13	-15.09	Vertical
2119.5	-45.34	2.87	27.59	-20.62	-13	-7.62	Vertical
2119.5	-53.59	2.87	27.59	-28.87	-13	-15.87	Horizontal
178.6	-37.51	1.71	16.15	-23.07	-13	-10.07	Vertical
373.4	-44.81	1.41	17.32	-28.90	-13	-15.90	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-50.34	2.62	27.30	-25.66	-13	-12.66	Horizontal
1420.0	-49.19	2.62	27.30	-24.51	-13	-11.51	Vertical
2130.0	-47.56	2.87	27.62	-22.81	-13	-9.81	Vertical
2130.0	-52.47	2.87	27.62	-27.72	-13	-14.72	Horizontal
184.1	-42.24	1.42	15.25	-28.42	-13	-15.42	Vertical
453.6	-41.50	1.36	17.19	-25.67	-13	-12.67	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-46.89	2.66	27.28	-22.27	-13	-9.27	Horizontal
1427.0	-52.52	2.66	27.28	-27.90	-13	-14.90	Vertical
2140.5	-50.72	2.88	27.60	-26.00	-13	-13.00	Vertical
2140.5	-51.45	2.88	27.60	-26.73	-13	-13.73	Horizontal
203.1	-43.16	1.32	17.29	-27.19	-13	-14.19	Vertical
265.1	-43.88	1.72	16.89	-28.71	-13	-15.71	Horizontal

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

Test Results for Low Channel 709MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1418.0	-47.85	2.62	27.30	-23.17	-13	-10.17	Horizontal
1418.0	-45.49	2.62	27.30	-20.81	-13	-7.81	Vertical
2127.0	-44.20	2.87	27.62	-19.45	-13	-6.45	Vertical
2127.0	-53.92	2.87	27.62	-29.17	-13	-16.17	Horizontal
195.6	-39.23	1.35	16.91	-23.67	-13	-10.67	Vertical
441.7	-36.36	1.62	16.31	-21.67	-13	-8.67	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-50.68	2.62	27.30	-26.00	-13	-13.00	Horizontal
1420.0	-44.59	2.62	27.30	-19.91	-13	-6.91	Vertical
2130.0	-53.78	2.87	27.62	-29.03	-13	-16.03	Vertical
2130.0	-49.64	2.87	27.62	-24.89	-13	-11.89	Horizontal
187.0	-40.36	1.51	17.14	-24.73	-13	-11.73	Vertical
358.9	-41.17	1.77	16.88	-26.06	-13	-13.06	Horizontal
Test Results for High Channel 711MHz							
1422.0	-50.34	2.62	27.30	-25.66	-13	-12.66	Horizontal
1422.0	-46.63	2.62	27.30	-21.95	-13	-8.95	Vertical
2133.0	-46.27	2.87	27.62	-21.52	-13	-8.52	Vertical
2133.0	-53.91	2.87	27.62	-29.16	-13	-16.16	Horizontal
197.7	-35.01	1.78	15.95	-20.84	-13	-7.84	Vertical
377.6	-37.84	1.34	17.95	-21.24	-13	-8.24	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
4997.0	-62.70	5.23	35.81	-32.12	-25	-7.12	Horizontal
4997.0	-64.18	5.23	35.81	-33.60	-25	-8.60	Vertical
2495.5	-64.82	5.67	36.85	-33.64	-25	-8.64	Vertical
2495.5	-60.91	5.67	36.85	-29.73	-25	-4.73	Horizontal
435.3	-47.13	1.38	15.98	-32.53	-25	-7.53	Vertical
465.8	-48.27	1.62	15.66	-34.23	-25	-9.23	Horizontal
Test Results for Mid Channel 2593MHz							
5186.0	-61.55	5.23	35.82	-30.96	-25	-5.96	Horizontal
5186.0	-63.01	5.23	35.82	-32.42	-25	-7.42	Vertical
5186.0	-59.25	5.67	36.85	-28.07	-25	-3.07	Vertical
5186.0	-64.43	5.67	36.85	-33.25	-25	-8.25	Horizontal
510.4	-46.45	1.62	16.17	-31.90	-25	-6.90	Vertical
562.9	-48.04	1.74	17.63	-32.15	-25	-7.15	Horizontal
Test Results for High Channel 2617.5MHz							
5375.0	-63.38	5.24	35.83	-32.79	-25	-7.79	Horizontal
5375.0	-59.51	5.24	35.83	-28.92	-25	-3.92	Vertical
8062.5	-64.27	5.68	36.87	-33.08	-25	-8.08	Vertical
8062.5	-63.78	5.68	36.87	-32.59	-25	-7.59	Horizontal
197.6	-46.58	1.55	15.84	-32.29	-25	-7.29	Vertical
353.1	-46.85	1.51	17.06	-31.30	-25	-6.30	Horizontal

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

Test Results for Low Channel 2506MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5012.0	-59.15	5.23	35.82	-28.56	-25	-3.56	Horizontal
5012.0	-60.35	5.23	35.82	-29.76	-25	-4.76	Vertical
7518.0	-64.33	5.67	36.86	-33.14	-25	-8.14	Vertical
7518.0	-60.58	5.67	36.86	-29.39	-25	-4.39	Horizontal
128.9	-44.61	1.43	15.51	-30.53	-25	-5.53	Vertical
344.8	-45.90	1.40	16.97	-30.33	-25	-5.33	Horizontal
Test Results for Mid Channel 2593MHz							
5186.0	-61.92	5.23	35.82	-31.33	-25	-6.33	Horizontal
5186.0	-60.26	5.23	35.82	-29.67	-25	-4.67	Vertical
7779.0	-63.89	5.67	36.85	-32.71	-25	-7.71	Vertical
7779.0	-59.58	5.67	36.85	-28.40	-25	-3.40	Horizontal
100.8	-48.52	1.77	16.72	-33.57	-25	-8.57	Vertical
263.5	-48.18	1.31	16.99	-32.50	-25	-7.50	Horizontal
Test Results for High Channel 2680MHz							
5360.0	-64.38	5.24	35.83	-33.79	-25	-8.79	Horizontal
5360.0	-64.72	5.24	35.83	-34.13	-25	-9.13	Vertical
2677.0	-61.60	5.70	36.88	-30.42	-25	-5.42	Vertical
2677.0	-60.05	5.70	36.88	-28.87	-25	-3.87	Horizontal
349.9	-48.55	1.70	15.73	-34.52	-25	-9.52	Vertical
110.3	-49.02	1.75	17.33	-33.44	-25	-8.44	Horizontal

Note: P_{Mea}(dBm)= Power(dBm)+ A_{Rpl} (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 Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-44.62	4.02	29.80	-18.84	-13	-5.84	Horizontal
3421.4	-48.35	4.02	29.80	-22.57	-13	-9.57	Vertical
5132.1	-53.34	5.24	35.84	-22.74	-13	-9.74	Vertical
5132.1	-52.24	5.24	35.84	-21.64	-13	-8.64	Horizontal
112.6	-46.30	1.52	15.57	-32.25	-13	-19.25	Vertical
220.5	-52.30	1.33	17.14	-36.49	-13	-23.49	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-48.25	4.03	30.00	-22.28	-13	-9.28	Horizontal
3490.0	-44.12	4.03	30.00	-18.15	-13	-5.15	Vertical
5235.0	-54.71	5.25	35.86	-24.10	-13	-11.10	Vertical
5235.0	-51.29	5.25	35.86	-20.68	-13	-7.68	Horizontal
157.3	-44.08	1.53	17.13	-28.48	-13	-15.48	Vertical
213.1	-53.57	1.41	15.95	-39.03	-13	-26.03	Horizontal
Test Results for High Channel 1779.3MHz							
3558.6	-52.45	4.05	30.01	-26.49	-13	-13.49	Horizontal
3558.6	-49.79	4.05	30.01	-23.83	-13	-10.83	Vertical
5337.9	-52.00	5.26	35.86	-21.40	-13	-8.40	Vertical
5337.9	-52.32	5.26	35.86	-21.72	-13	-8.72	Horizontal
170.6	-53.28	1.44	15.51	-39.21	-13	-26.21	Vertical
169.0	-44.86	1.78	15.76	-30.88	-13	-17.88	Horizontal

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

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-51.38	4.02	29.80	-25.60	-13	-12.60	Horizontal
3440.0	-45.06	4.02	29.80	-19.28	-13	-6.28	Vertical
5160.0	-49.69	5.24	35.84	-19.09	-13	-6.09	Vertical
5160.0	-49.06	5.24	35.84	-18.46	-13	-5.46	Horizontal
268.8	-54.73	1.62	17.02	-39.33	-13	-26.33	Vertical
161.4	-44.88	1.32	17.31	-28.89	-13	-15.89	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-49.73	4.03	30.00	-23.76	-13	-10.76	Horizontal
3490.0	-54.58	4.03	30.00	-28.61	-13	-15.61	Vertical
5235.0	-54.39	5.25	35.86	-23.78	-13	-10.78	Vertical
5235.0	-50.37	5.25	35.86	-19.76	-13	-6.76	Horizontal
159.9	-50.91	1.45	15.17	-37.19	-13	-24.19	Vertical
172.1	-46.74	1.48	17.82	-30.40	-13	-17.40	Horizontal
Test Results for High Channel 1770MHz							
3540.0	-48.80	2.91	27.68	-24.03	-13	-11.03	Horizontal
3540.0	-46.34	2.91	27.68	-21.57	-13	-8.57	Vertical
5310.0	-53.76	5.26	35.86	-23.16	-13	-10.16	Vertical
5310.0	-51.39	5.26	35.86	-20.79	-13	-7.79	Horizontal
197.3	-45.67	1.76	16.38	-31.05	-13	-18.05	Vertical
158.5	-46.63	1.43	17.13	-30.93	-13	-17.93	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	-53.31	2.61	27.28	-28.64	-13	-15.64	Horizontal
1331	-50.79	2.61	27.28	-26.12	-13	-13.12	Vertical
1996.5	-51.53	2.87	27.59	-26.81	-13	-13.81	Vertical
1996.5	-52.91	2.87	27.59	-28.19	-13	-15.19	Horizontal
Test Results for Mid Channel 680.5MHz							
1361	-52.25	2.62	27.30	-27.57	-13	-14.57	Horizontal
1361	-50.07	2.62	27.30	-25.39	-13	-12.39	Vertical
2041.5	-52.59	2.87	27.62	-27.84	-13	-14.84	Vertical
2041.5	-51.29	2.87	27.62	-26.54	-13	-13.54	Horizontal
Test Results for High Channel 695.5MHz							
1391	-49.12	2.66	27.28	-24.50	-13	-11.50	Horizontal
1391	-50.54	2.66	27.28	-25.92	-13	-12.92	Vertical
2086.5	-51.93	2.88	27.60	-27.21	-13	-14.21	Vertical
2086.5	-54.12	2.88	27.60	-29.40	-13	-16.40	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	-53.95	2.62	27.30	-29.27	-13	-16.27	Horizontal
1346	-50.90	2.62	27.30	-26.22	-13	-13.22	Vertical
2019	-52.40	2.87	27.62	-27.65	-13	-14.65	Vertical
2019	-53.42	2.87	27.62	-28.67	-13	-15.67	Horizontal
Test Results for Mid Channel 683MHz							
1366	-51.96	2.62	27.30	-27.28	-13	-14.28	Horizontal
1366	-50.31	2.62	27.30	-25.63	-13	-12.63	Vertical
2049	-53.16	2.87	27.62	-28.41	-13	-15.41	Vertical
2049	-51.52	2.87	27.62	-26.77	-13	-13.77	Horizontal
Test Results for High Channel 688MHz							
1376	-49.53	2.62	27.30	-24.85	-13	-11.85	Horizontal
1376	-50.24	2.62	27.30	-25.56	-13	-12.56	Vertical
2064	-52.70	2.87	27.62	-27.95	-13	-14.95	Vertical
2064	-54.56	2.87	27.62	-29.81	-13	-16.81	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 7.74V 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]
6.58	1880	13.1	0.006959	2.5
7.74	1880	14.2	0.007551	2.5
8.90	1880	13.1	0.006990	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	12.5	0.006648	2.5
Extreme (50C)	1880	11.9	0.006324	2.5
Extreme (40C)	1880	14.1	0.007493	2.5
Extreme (30C)	1880	13.7	0.007313	2.5
Extreme (10C)	1880	14.3	0.007585	2.5
Extreme (0C)	1880	12.0	0.006379	2.5
Extreme (-10C)	1880	12.8	0.006828	2.5
Extreme (-20C)	1880	14.3	0.007617	2.5
Extreme (-30C)	1880	15.0	0.007990	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
6.58	1880	9.8	0.005215	2.5
7.74	1880	8.8	0.004670	2.5
8.90	1880	7.7	0.004109	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	9.9	0.005285	2.5
Extreme (50C)	1880	9.0	0.004809	2.5
Extreme (40C)	1880	8.3	0.004436	2.5
Extreme (30C)	1880	8.8	0.004683	2.5
Extreme (10C)	1880	8.9	0.004709	2.5
Extreme (0C)	1880	8.5	0.004498	2.5
Extreme (-10C)	1880	9.3	0.004941	2.5
Extreme (-20C)	1880	8.6	0.004560	2.5
Extreme (-30C)	1880	8.2	0.004370	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	8.6	0.004955	2.5
7.74	1732.5	9.2	0.005307	2.5
8.90	1732.5	8.4	0.004866	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.5	0.004913	2.5
Extreme (50C)	1732.5	8.5	0.004935	2.5
Extreme (40C)	1732.5	7.3	0.004221	2.5
Extreme (30C)	1732.5	5.6	0.003251	2.5
Extreme (10C)	1732.5	7.6	0.004382	2.5
Extreme (0C)	1732.5	9.7	0.005616	2.5
Extreme (-10C)	1732.5	8.5	0.004908	2.5
Extreme (-20C)	1732.5	7.0	0.004043	2.5
Extreme (-30C)	1732.5	8.2	0.004736	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
6.58	1732.5	9.6	0.005555	2.5
7.74	1732.5	8.7	0.005004	2.5
8.90	1732.5	8.3	0.004809	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	10.0	0.005791	2.5
Extreme (50C)	1732.5	8.9	0.005132	2.5
Extreme (40C)	1732.5	8.2	0.004754	2.5
Extreme (30C)	1732.5	8.7	0.005040	2.5
Extreme (10C)	1732.5	8.7	0.004996	2.5
Extreme (0C)	1732.5	8.1	0.004694	2.5
Extreme (-10C)	1732.5	9.3	0.005388	2.5
Extreme (-20C)	1732.5	9.3	0.005354	2.5
Extreme (-30C)	1732.5	8.1	0.004660	2.5

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

10.3 LTE BAND 5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
6.58	836.5	6.2	0.007439	2.5
7.74	836.5	6.2	0.007461	2.5
8.90	836.5	5.1	0.006054	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.2	0.007358	2.5
Extreme (50C)	836.5	6.1	0.007261	2.5
Extreme (40C)	836.5	6.5	0.007770	2.5
Extreme (30C)	836.5	6.6	0.007839	2.5
Extreme (10C)	836.5	5.2	0.006208	2.5
Extreme (0C)	836.5	5.5	0.006614	2.5
Extreme (-10C)	836.5	5.6	0.006657	2.5
Extreme (-20C)	836.5	6.4	0.007593	2.5
Extreme (-30C)	836.5	6.3	0.007554	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
6.58	836.5	5.5	0.006585	2.5
7.74	836.5	6.7	0.007956	2.5
8.90	836.5	5.1	0.006145	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.6	0.007842	2.5
Extreme (50C)	836.5	6.1	0.007269	2.5
Extreme (40C)	836.5	5.9	0.007037	2.5
Extreme (30C)	836.5	6.5	0.007810	2.5
Extreme (10C)	836.5	5.2	0.006260	2.5
Extreme (0C)	836.5	5.2	0.006258	2.5
Extreme (-10C)	836.5	5.8	0.006896	2.5
Extreme (-20C)	836.5	6.4	0.007616	2.5
Extreme (-30C)	836.5	6.4	0.007651	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]
6.58	707.5	8.5	0.012003	2.5
7.74	707.5	9.9	0.013998	2.5
8.90	707.5	9.1	0.012851	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	8.9	0.012580	2.5
Extreme (50C)	707.5	7.2	0.010200	2.5
Extreme (40C)	707.5	7.2	0.010139	2.5
Extreme (30C)	707.5	8.2	0.011617	2.5
Extreme (10C)	707.5	7.3	0.010251	2.5
Extreme (0C)	707.5	8.7	0.012288	2.5
Extreme (-10C)	707.5	8.3	0.011737	2.5
Extreme (-20C)	707.5	9.0	0.012748	2.5
Extreme (-30C)	707.5	7.5	0.010659	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
6.58	707.5	7.6	0.010717	2.5
7.74	707.5	8.3	0.011755	2.5
8.90	707.5	7.5	0.010553	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]
6.58	710.0	9.8	0.013779	2.5
7.74	710.0	9.1	0.012834	2.5
8.90	710.0	8.1	0.011477	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.3	0.013096	2.5
Extreme (50C)	710.0	8.8	0.012398	2.5
Extreme (40C)	710.0	8.2	0.011526	2.5
Extreme (30C)	710.0	8.9	0.012560	2.5
Extreme (10C)	710.0	9.3	0.013125	2.5
Extreme (0C)	710.0	8.2	0.011492	2.5
Extreme (-10C)	710.0	9.0	0.012634	2.5
Extreme (-20C)	710.0	8.5	0.011953	2.5
Extreme (-30C)	710.0	8.2	0.011502	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	10.1	0.014208	2.5
7.74	710.0	8.9	0.012506	2.5
8.90	710.0	8.4	0.011834	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.9	0.013881	2.5
Extreme (50C)	710.0	8.6	0.012182	2.5
Extreme (40C)	710.0	7.9	0.011136	2.5
Extreme (30C)	710.0	8.9	0.012496	2.5
Extreme (10C)	710.0	8.3	0.011758	2.5
Extreme (0C)	710.0	7.9	0.011163	2.5
Extreme (-10C)	710.0	9.7	0.013668	2.5
Extreme (-20C)	710.0	8.5	0.012036	2.5
Extreme (-30C)	710.0	8.6	0.012099	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]
6.58	2593	8.2	0.003170	2.5
7.74	2593	6.2	0.002398	2.5
8.90	2593	7.8	0.003001	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	7.4	0.002842	2.5
Extreme (50C)	2593	4.5	0.001742	2.5
Extreme (40C)	2593	5.8	0.002232	2.5
Extreme (30C)	2593	4.6	0.001789	2.5
Extreme (10C)	2593	6.8	0.002617	2.5
Extreme (0C)	2593	4.9	0.001896	2.5
Extreme (-10C)	2593	9.7	0.003723	2.5
Extreme (-20C)	2593	10.4	0.003993	2.5
Extreme (-30C)	2593	6.1	0.002367	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
6.58	2593	8.3	0.003184	2.5
7.74	2593	6.5	0.002512	2.5
8.90	2593	6.2	0.002374	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	7.6	0.002932	2.5
Extreme (50C)	2593	5.0	0.001921	2.5
Extreme (40C)	2593	5.6	0.002145	2.5
Extreme (30C)	2593	4.4	0.001701	2.5
Extreme (10C)	2593	6.5	0.002493	2.5
Extreme (0C)	2593	5.1	0.001977	2.5
Extreme (-10C)	2593	9.3	0.003587	2.5
Extreme (-20C)	2593	11.0	0.004248	2.5
Extreme (-30C)	2593	6.6	0.002543	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]
6.58	1745	12.5	0.00718	2.5
7.74	1745	14.2	0.00814	2.5
8.90	1745	13.4	0.00767	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	7.0	0.004038	2.5
Extreme (50C)	1745	4.5	0.002550	2.5
Extreme (40C)	1745	5.7	0.003249	2.5
Extreme (30C)	1745	5.1	0.002949	2.5
Extreme (10C)	1745	6.7	0.003862	2.5
Extreme (0C)	1745	5.3	0.003018	2.5
Extreme (-10C)	1745	10.0	0.005706	2.5
Extreme (-20C)	1745	10.7	0.006129	2.5
Extreme (-30C)	1745	6.2	0.003581	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
6.58	1745	12.9	0.007374	2.5
7.74	1745	14.1	0.008106	2.5
8.90	1745	13.0	0.007449	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	7.4	0.004263	2.5
Extreme (50C)	1745	4.6	0.002657	2.5
Extreme (40C)	1745	5.4	0.003078	2.5
Extreme (30C)	1745	4.7	0.002689	2.5
Extreme (10C)	1745	6.3	0.003636	2.5
Extreme (0C)	1745	5.1	0.002914	2.5
Extreme (-10C)	1745	9.9	0.005695	2.5
Extreme (-20C)	1745	11.3	0.006463	2.5
Extreme (-30C)	1745	6.4	0.003670	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]
6.58	683	8.6	0.01259	2.5
7.74	683	13.4	0.01962	2.5
8.90	683	13	0.01903	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	683	7.7	0.011274	2.5
Extreme (50C)	683	5.2	0.007613	2.5
Extreme (40C)	683	5.1	0.007467	2.5
Extreme (30C)	683	5	0.007321	2.5
Extreme (10C)	683	6.6	0.009663	2.5
Extreme (0C)	683	4.8	0.007028	2.5
Extreme (-10C)	683	9.8	0.014348	2.5
Extreme (-20C)	683	7.2	0.010542	2.5
Extreme (-30C)	683	7.3	0.010688	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	12.3	0.018009	2.5
7.74	683	14.2	0.020791	2.5
8.90	683	11.2	0.016398	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	683	7.7	0.011274	2.5
Extreme (50C)	683	4.7	0.006881	2.5
Extreme (40C)	683	5.9	0.008638	2.5
Extreme (30C)	683	5.2	0.007613	2.5
Extreme (10C)	683	5.2	0.007613	2.5
Extreme (0C)	683	6.3	0.009224	2.5
Extreme (-10C)	683	9.4	0.013763	2.5
Extreme (-20C)	683	8.2	0.012006	2.5
Extreme (-30C)	683	8.4	0.012299	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.

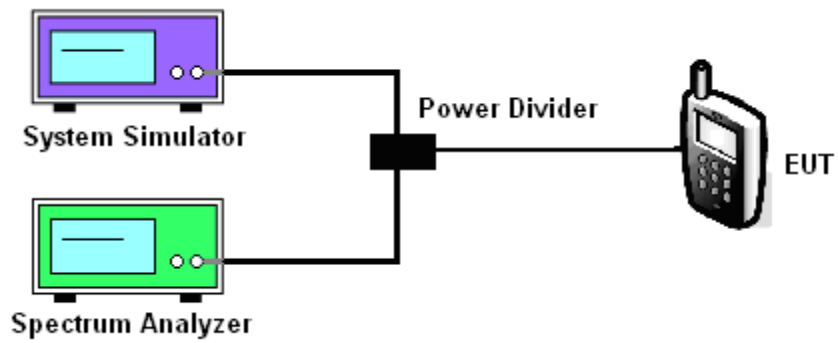
11.2 Measuring Instruments

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-----