

FCC CFR47 PART 22H, 24E, 27 CERTIFICATION TEST REPORT FCC ID: 2AQRM-A63

Product: Smart phone

Trade Mark: FOXXD

Model No.: A63

Family Model: N/A

Report No.: S23120604202006

Issue Date: Jan 19, 2024

Prepared for

Foxx Development Inc.

3480 Preston Ridge Road, Suite500, Alpharetta, GA 30005, USA

Prepared by

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

Tel. 400-800-6106, 0755-2320 0050, 0755-2320 0090

Website: <http://www.ntek.org.cn>

TEST RESULT CERTIFICATION

Applicant's name : Foxx Development Inc.
Address..... : 3480 Preston Ridge Road, Suite500, Alpharetta, GA 30005, USA
Manufacturer's Name..... : Foxx Development Inc.
Address..... : 3480 Preston Ridge Road, Suite500, Alpharetta, GA 30005, USA
Product name..... : Smart phone
Model and/or type reference .. : A63
Trade Mark..... : FOXXD
Family Model..... : N/A
Test Sample Number : S231206042003
Date of Test..... : Dec 06, 2023 ~ Jan 19, 2024
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**

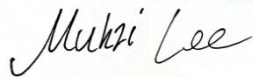


Prepared		Reviewed		Approved	
By	_____	By	_____	By	_____
	Mukzi Lee		Aaron Cheng		Alex Li
	(Project Engineer)		(Supervisor)		(Manager)

TABLE OF CONTENTS

1. GENERAL INFORMATION.....	5
1. GENERAL INFORMATION.....	5
1.1 PRODUCT DESCRIPTION.....	5
1.3 TEST METHODOLOGY.....	6
1.4 TEST FACILITY.....	6
MEASUREMENT UNCERTAINTY.....	6
1.5 SPECIAL ACCESSORIES.....	6
1.6 WORST-CASE CONFIGURATION AND MODE.....	6
2. SYSTEM TEST CONFIGURATION.....	7
2.1 EUT CONFIGURATION.....	7
2.2 EUT EXERCISE.....	7
2.3 CONFIGURATION OF EUT SYSTEM.....	7
2.4 TEST SETUP.....	8
3. TEST AND MEASUREMENT EQUIPMENT.....	9
4. OUTPUT POWER.....	11
4.1 OUTPUT POWER MEASUREMENT.....	11
6. BANDEDGE AND EMISSION MASK.....	14
7. OUT OF BAND EMISSIONS.....	16
7.1 MEASUREMENT METHOD.....	16
8. RADIATED MEASUREMENT.....	17
8.1. RADIATED POWER (ERP & EIRP).....	17
8.2 LTE BAND 2.....	18
8.3 LTE BAND 4.....	21
8.4 LTE BAND 5.....	24
8.6 LTE BAND 12.....	26

8.7 LTE BAND 13	28
8.11 LTE BAND 41	30
8.12 LTE BAND 66	32
8.13 LTE BAND 71	35
9. SPURIOUS RADIATION EMISSION	38
9.1 LTE BAND 2	40
9.2 LTE BAND 4	42
9.3 LTE BAND 5	44
9.4 LTE BAND 7	46
9.5 LTE BAND 12	47
9.6 LTE BAND 13	49
9.11 LTE BAND 41	51
9.12 LTE BAND 66	53
9.13 LTE BAND 71	55
10. FREQUENCY STABILITY	57
10.1 LTE BAND 2	58
10.2 LTE BAND 4	60
10.3 LTE BAND 5	62
10.5 LTE BAND 12	64
10.6 LTE BAND 13	66
10.11 LTE BAND 41	68
10.12 LTE BAND 66	70
10.13 LTE BAND 71	72
11. PEAK-TO-AVERAGE RATIO	74
11.1 Description of the PAR Measurement	74
11.2 Measuring Instruments	74
11.3 Test Procedures	74
11.4 Test Setup	75

1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	Smart phone
Trade Mark	FOXXD
Model Name	A63
Family Model	N/A
Model Difference	N/A
FCC ID:	2AQRM-A63
Frequency Bands:	U.S. Bands: <input checked="" type="checkbox"/> LTE FDD Band 2,4,5,12,13,66, TDD Band 41,71
Frequency Range:	LTE FDD Band 2 Uplink: 1850MHz-1910MHz, Downlink: 1930MHz-1990MHz; LTE FDD Band 4 Uplink: 1710MHz-1755MHz, Downlink: 2110MHz-2155MHz; LTE FDD Band 5 Uplink: 824MHz-849MHz, Downlink: 869MHz-894MHz; LTE FDD Band 12 Uplink: 699MHz-716MHz, Downlink: 729MHz-746MHz; LTE FDD Band 13 Uplink: 777MHz-787MHz, Downlink: 746MHz-756MHz; LTE TDD Band 41 Uplink: 2496MHz-2690MHz, LTE FDD Band 66 Uplink: 1710MHz-1780MHz, Downlink: 2110MHz-2200MHz; LTE TDD Band 71 Uplink: 663MHz-698MHz, Downlink: 617MHz-652MHz;
Type of Modulation:	QPSK/16QAM/64QAM(Only Downlink)
Power Class	Class 3
SIM CARD	SIM 1 and SIM 2 is a chipset unit and tested as a single chipset. The SIM 1 is chosen for test.
Antenna:	PIFA Antenna
Antenna gain:	Band 2: -0.86 dBi, Band 4: -0.74 dBi, Band 5: -2.31 dBi, Band 12: -2.67dBi, Band 13: -2.22 dBi, Band 41: -0.36 dBi, Band 66: -0.71dBi, Band 71: -2.14 dBi
Adapter	Model: ZFX-11U-0510-05-B Input: 100-240V~50/60Hz 0.2A Output: 5.0V---1000mA
Battery	DC 3.8V, 3000mAh, 11.4Wh
Power Rating	DC 3.8V from battery or DC 5V from adapter
Extreme Vol. Limits:	DC 3.23V to DC 4.37V (Nominal DC 3.8V) (Note 1)
HW Version	H327_MB_V1
SW Version	Android_F0XXD_A63
** Note1: The High Voltage DC 4.37V and Low Voltage 3.23V 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: 2AQRM-A63** filing to comply with the FCC Part 22H&24E&27&90S.

1.3 TEST METHODOLOGY

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

1.4 TEST FACILITY

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

ShenZhen NTEK Testing Technology Co., Ltd.

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

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

FCC Registration No.:463705

IC Registration No.:9270A-1,

CNAS Registration No.:L5516

MEASUREMENT UNCERTAINTY

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

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

1.5 SPECIAL ACCESSORIES

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

1.6 WORST-CASE CONFIGURATION AND MODE

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

The device has LTE Bands of: Band 2/4/5/12/13/41/66/71

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

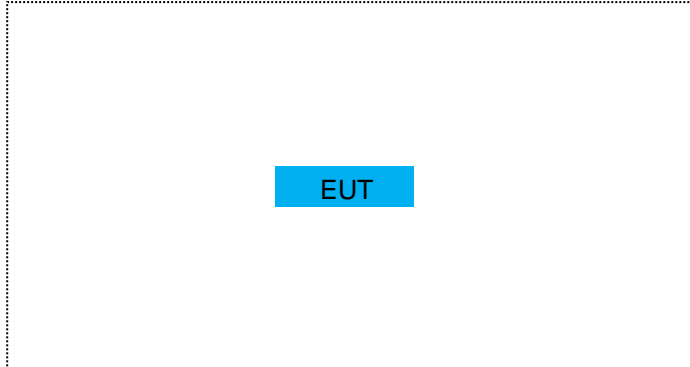
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Smart phone	A63	FCC ID: 2AQRM-A63	EUT

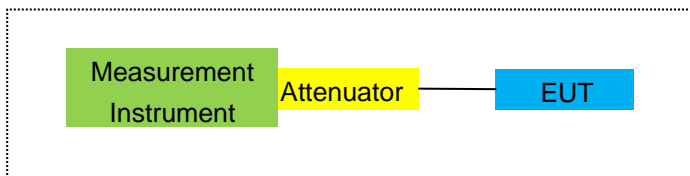
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

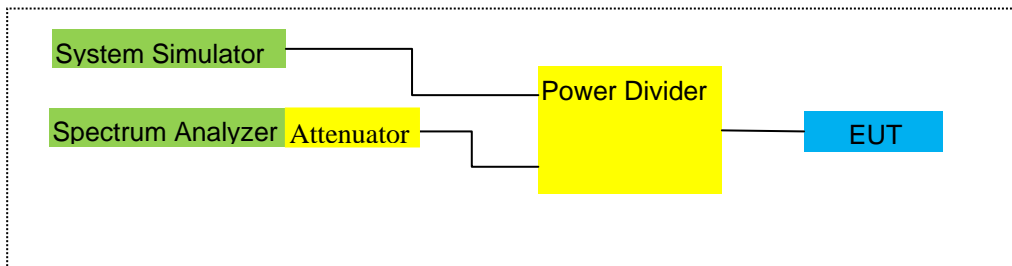
For Radiated Test Cases



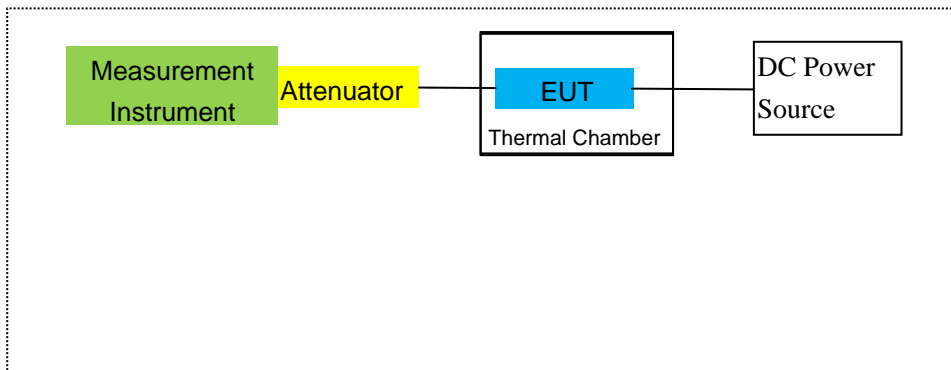
For Conducted Output Power



For Peak-to Average Ratio, Occupied Bandwidth, Conducted Band edge and Conducted Spurious Emission



For Frequency Stability



Note: EUT built-in battery-powered, the battery is fully-charged.

3. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	MXA Signal Analyzer	Agilent	N9020A	MY49100060	2023.05.29	2024.05.28	1 year
2	Test Receiver	R&S	ESPI	101318	2023.03.27	2024.03.26	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2023.03.16	2024.03.15	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2023.05.06	2026.05.05	3 year
5	Horn Antenna	EM	EM-AH-10180	2011071402	2022.03.31	2025.03.30	3 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2022.11.07	2025.11.06	3 year
7	Amplifier	EM	EM-30180	060538	2023.05.29	2024.05.28	1 year
8	Loop Antenna	ARA	PLA-1030/B	1029	2023.11.03	2026.11.02	3 year
9	Power Meter	R&S	NRVS	100696	2023.05.29	2024.05.28	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2023.05.29	2024.05.28	1 year
11	Test Cable	N/A	R-01	N/A	2022.06.17	2025.06.16	3 year
12	Test Cable	N/A	R-02	N/A	2022.06.17	2025.06.16	3 year
13	Test Cable	N/A	R-03	N/A	2022.06.17	2025.06.16	3 year
14	Test Receiver	R&S	ESCI	101160	2023.03.27	2024.03.26	1 year
15	LISN	R&S	ENV216	101313	2023.03.27	2024.03.26	1 year
16	LISN	EMCO	3816/2	00042990	2023.03.27	2024.03.26	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2023.03.27	2024.03.26	1 year
18	Passive Voltage Probe	R&S	ESH2-Z3	100196	2023.03.27	2024.03.26	1 year
19	Test Cable	N/A	C01	N/A	2023.05.06	2026.05.05	3 year
20	Test Cable	N/A	C02	N/A	2023.05.06	2026.05.05	3 year
21	Test Cable	N/A	C03	N/A	2023.05.06	2026.05.05	3 year
22	Attenuator	MCE	24-10-34	BN9258	2023.03.27	2024.03.26	1 year
23	Spectrum Analyzer	agilent	e4440a	us44300399	2023.03.27	2024.03.26	1 year
24	test receiver	R&S	ESCI	a0304218	2023.03.27	2024.03.26	1 year
25	Communication Tester	R&S	CMU200	A0304247	2023.05.29	2024.05.28	1 year

26	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2023.03.27	2024.03.26	1 year
27	DC Power Source	N/A	PS-6005D	2017040292 3	2023.05.06	2026.05.05	3 year
28	MXG Vector Signal Generator	Agilent	N5182A	MY47070317	2023.05.29	2024.05.28	1 year
29	Communication Tester	R&S	CMW500	148500	2023.05.29	2024.05.28	1 year

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

4. OUTPUT POWER

4.1 OUTPUT POWER MEASUREMENT

LTE Measurement Procedure:

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

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

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

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

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

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

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

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

Test data reference attachment.

5. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

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

MODES TESTED

Band 2/4/5/12/13/41/66/71

RESULTS

PASS

Test data reference attachment.

6. BANDEDGE AND EMISSION MASK

RULE PART(S)

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

FCC: §22.359

LIMITS

FCC: §22.917, §24.238, §27.53

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

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

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

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

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

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \log_{10}(f/6.1)$ 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 2/4/5/12/13/41/66/71

RESULTS

Test data reference attachment.

7. OUT OF BAND EMISSIONS

RULE PART(S)

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

LIMITS

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

TEST PROCEDURE

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

For each out of band emissions measurement:

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

MODES TESTED

- Band 2/4/5/12/13/41/66/71
-

7.1 MEASUREMENT METHOD

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

Test data reference attachment.

8. RADIATED MEASUREMENT

8.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

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

LIMITS:

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

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

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

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

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

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

TEST PROCEDURE

ANSI/TIA-603-E Clause 2.2.17

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

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

MODES TESTED

- Band 2/4/5/12/13/41/66/71

RESULTS

Pass

8.2 LTE BAND 2

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	1850.7	-4.80	3.76	28.24	19.68	92.897	Horizontal	Pass
		1880	-4.60	3.91	28.22	19.71	93.541	Horizontal	Pass
		1909.3	-4.54	3.93	28.20	19.73	93.972	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-4.78	3.77	28.23	19.68	92.897	Horizontal	Pass
		1880	-4.68	3.91	28.24	19.65	92.257	Horizontal	Pass
		1908.5	-4.53	3.94	28.25	19.78	95.060	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-4.92	3.77	28.31	19.62	91.622	Horizontal	Pass
		1880	-4.63	3.91	28.22	19.68	92.897	Horizontal	Pass
		1907.5	-4.61	3.94	28.20	19.65	92.257	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-4.82	3.79	28.33	19.72	93.756	Horizontal	Pass
		1880	-4.62	3.95	28.22	19.65	92.257	Horizontal	Pass
		1905	-4.55	3.97	28.19	19.67	92.683	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-4.90	3.79	28.34	19.65	92.257	Horizontal	Pass
		1880	-4.59	3.95	28.22	19.68	92.897	Horizontal	Pass
		1902.5	-4.48	3.97	28.18	19.73	93.972	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-4.82	3.81	28.35	19.72	93.756	Horizontal	Pass
		1880	-4.55	3.96	28.22	19.71	93.541	Horizontal	Pass
		1900	-4.52	4.00	28.16	19.64	92.045	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-4.81	3.76	28.24	19.67	92.683	Vertical	Pass
		1880	-4.63	3.91	28.22	19.68	92.897	Vertical	Pass
		1909.3	-4.59	3.93	28.20	19.68	92.897	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-4.71	3.77	28.23	19.75	94.406	Vertical	Pass
		1880	-4.57	3.91	28.24	19.76	94.624	Vertical	Pass
		1908.5	-4.61	3.94	28.25	19.70	93.325	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-4.91	3.77	28.31	19.63	91.833	Vertical	Pass
		1880	-4.65	3.91	28.22	19.66	92.470	Vertical	Pass
		1907.5	-4.61	3.94	28.20	19.65	92.257	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1855	-4.75	3.79	28.33	19.79	95.280	Vertical	Pass
		1880	-4.49	3.95	28.22	19.78	95.060	Vertical	Pass
		1905	-4.43	3.97	28.19	19.79	95.280	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1857.5	-4.84	3.79	28.34	19.71	93.541	Vertical	Pass
		1880	-4.49	3.95	28.22	19.78	95.060	Vertical	Pass
		1902.5	-4.46	3.97	28.18	19.75	94.406	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1860	-4.71	3.81	28.35	19.83	96.161	Vertical	Pass
		1880	-4.42	3.96	28.22	19.84	96.383	Vertical	Pass
		1900	-4.34	4.00	28.16	19.82	95.940	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)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)			
1.4MHz Band 16 QAM	1/#Mid	1850.7	-5.73	3.76	28.24	18.75	74.989	Horizontal	Pass	
		1880	-5.54	3.91	28.22	18.77	75.336	Horizontal	Pass	
		1909.3	-5.46	3.93	28.20	18.81	76.033	Horizontal	Pass	
3.0MHz Band 16 QAM	1/#Mid	1851.5	-5.57	3.77	28.23	18.89	77.446	Horizontal	Pass	
		1880	-5.52	3.91	28.24	18.81	76.033	Horizontal	Pass	
		1908.5	-5.46	3.94	28.25	18.85	76.736	Horizontal	Pass	
5.0MHz Band 16 QAM	1/#Mid	1852.5	-5.74	3.77	28.31	18.80	75.858	Horizontal	Pass	
		1880	-5.45	3.91	28.22	18.86	76.913	Horizontal	Pass	
		1907.5	-5.47	3.94	28.20	18.79	75.683	Horizontal	Pass	
10.0MHz Band 16 QAM	1/#Mid	1855	-5.67	3.79	28.33	18.87	77.090	Horizontal	Pass	
		1880	-5.43	3.95	28.22	18.84	76.560	Horizontal	Pass	
		1905	-5.35	3.97	28.19	18.87	77.090	Horizontal	Pass	
15.0MHz Band 16 QAM	1/#Mid	1857.5	-5.80	3.79	28.34	18.75	74.989	Horizontal	Pass	
		1880	-5.50	3.95	28.22	18.77	75.336	Horizontal	Pass	
		1902.5	-5.36	3.97	28.18	18.85	76.736	Horizontal	Pass	
20.0MHz Band 16 QAM	1/#Mid	1860	-5.76	3.81	28.35	18.78	75.509	Horizontal	Pass	
		1880	-5.38	3.96	28.22	18.88	77.268	Horizontal	Pass	
		1900	-5.43	4.00	28.16	18.73	74.645	Horizontal	Pass	
1.4MHz Band 16 QAM	1/#Mid	1850.7	-5.65	3.76	28.24	18.83	76.384	Vertical	Pass	
		1880	-5.44	3.91	28.22	18.87	77.090	Vertical	Pass	
		1909.3	-5.42	3.93	28.20	18.85	76.736	Vertical	Pass	
3.0MHz Band 16 QAM	1/#Mid	1851.5	-5.66	3.77	28.23	18.80	75.858	Vertical	Pass	
		1880	-5.48	3.91	28.24	18.85	76.736	Vertical	Pass	
		1908.5	-5.55	3.94	28.25	18.76	75.162	Vertical	Pass	
5.0MHz	1/#Mid	1852.5	-5.70	3.77	28.31	18.84	76.560	Vertical	Pass	

Band 16		1880	-5.43	3.91	28.22	18.88	77.268	Vertical	Pass
QAM		1907.5	-5.44	3.94	28.20	18.82	76.208	Vertical	Pass
10.0MHz	1/#Mid	1855	-5.65	3.79	28.33	18.89	77.446	Vertical	Pass
Band 16		1880	-5.46	3.95	28.22	18.81	76.033	Vertical	Pass
QAM		1905	-5.34	3.97	28.19	18.88	77.268	Vertical	Pass
15.0MHz	1/#Mid	1857.5	-5.75	3.79	28.34	18.80	75.858	Vertical	Pass
Band 16		1880	-5.49	3.95	28.22	18.78	75.509	Vertical	Pass
QAM		1902.5	-5.41	3.97	28.18	18.80	75.858	Vertical	Pass
20.0MHz	1/#Mid	1860	-5.61	3.81	28.35	18.93	78.163	Vertical	Pass
Band 16		1880	-5.34	3.96	28.22	18.92	77.983	Vertical	Pass
QAM		1900	-5.26	4.00	28.16	18.90	77.625	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.3 LTE BAND 4

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	1710.7	-4.98	3.12	27.58	19.48	88.716	Horizontal	Pass
		1732.5	-4.81	3.27	27.61	19.53	89.743	Horizontal	Pass
		1754.3	-4.77	3.29	27.63	19.57	90.573	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-4.99	3.13	27.61	19.49	88.920	Horizontal	Pass
		1732.5	-4.72	3.27	27.61	19.62	91.622	Horizontal	Pass
		1753.5	-4.72	3.30	27.62	19.60	91.201	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-4.87	3.13	27.63	19.63	91.833	Horizontal	Pass
		1732.5	-4.84	3.27	27.61	19.50	89.125	Horizontal	Pass
		1752.5	-4.84	3.30	27.60	19.46	88.308	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-4.96	3.15	27.64	19.53	89.743	Horizontal	Pass
		1732.5	-4.75	3.31	27.61	19.55	90.157	Horizontal	Pass
		1750	-4.75	3.33	27.59	19.51	89.331	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-4.98	3.15	27.65	19.52	89.536	Horizontal	Pass
		1732.5	-4.71	3.31	27.61	19.59	90.991	Horizontal	Pass
		1747.5	-4.77	3.33	27.57	19.47	88.512	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-5.04	3.17	27.66	19.45	88.105	Horizontal	Pass
		1732.5	-4.72	3.32	27.61	19.57	90.573	Horizontal	Pass
		1745	-4.59	3.36	27.56	19.61	91.411	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-4.86	3.12	27.58	19.60	91.201	Vertical	Pass
		1732.5	-4.84	3.27	27.61	19.50	89.125	Vertical	Pass
		1754.3	-4.73	3.29	27.63	19.61	91.411	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-4.88	3.13	27.61	19.60	91.201	Vertical	Pass
		1732.5	-4.81	3.27	27.61	19.53	89.743	Vertical	Pass
		1753.5	-4.85	3.30	27.62	19.47	88.512	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-5.02	3.13	27.63	19.48	88.716	Vertical	Pass
		1732.5	-4.80	3.27	27.61	19.54	89.950	Vertical	Pass
		1752.5	-4.69	3.30	27.60	19.61	91.411	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-4.93	3.15	27.64	19.56	90.365	Vertical	Pass
		1732.5	-4.81	3.31	27.61	19.49	88.920	Vertical	Pass
		1750	-4.70	3.33	27.59	19.56	90.365	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1717.5	-4.95	3.15	27.65	19.55	90.157	Vertical	Pass
		1732.5	-4.72	3.31	27.61	19.58	90.782	Vertical	Pass
		1747.5	-4.62	3.33	27.57	19.62	91.622	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1720	-4.85	3.17	27.66	19.64	92.045	Vertical	Pass
		1732.5	-4.66	3.32	27.61	19.63	91.833	Vertical	Pass
		1745	-4.54	3.36	27.56	19.66	92.470	Vertical	Pass

Radiated Power (EIRP) for Band 4										
Mode	RB/RB SIZE	Frequency	Result						Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)			
1.4MHz Band 16 QAM	1/#Mid	1710.7	-5.41	3.12	27.58	19.05	80.353	Horizontal	Pass	
		1732.5	-5.31	3.27	27.61	19.03	79.983	Horizontal	Pass	
		1754.3	-5.28	3.29	27.63	19.06	80.538	Horizontal	Pass	
3.0MHz Band 16 QAM	1/#Mid	1711.5	-5.43	3.13	27.61	19.05	80.353	Horizontal	Pass	
		1732.5	-5.31	3.27	27.61	19.03	79.983	Horizontal	Pass	
		1753.5	-5.26	3.30	27.62	19.06	80.538	Horizontal	Pass	
5.0MHz Band 16 QAM	1/#Mid	1712.5	-5.44	3.13	27.63	19.06	80.538	Horizontal	Pass	
		1732.5	-5.33	3.27	27.61	19.01	79.616	Horizontal	Pass	
		1752.5	-5.33	3.30	27.60	18.97	78.886	Horizontal	Pass	
10.0MHz Band 16 QAM	1/#Mid	1715	-5.49	3.15	27.64	19.00	79.433	Horizontal	Pass	
		1732.5	-5.22	3.31	27.61	19.08	80.910	Horizontal	Pass	
		1750	-5.15	3.33	27.59	19.11	81.470	Horizontal	Pass	
15.0MHz Band 16 QAM	1/#Mid	1717.5	-5.45	3.15	27.65	19.05	80.353	Horizontal	Pass	
		1732.5	-5.18	3.31	27.61	19.12	81.658	Horizontal	Pass	
		1747.5	-5.14	3.33	27.57	19.10	81.283	Horizontal	Pass	
20.0MHz Band 16 QAM	1/#Mid	1720	-5.41	3.17	27.66	19.08	80.910	Horizontal	Pass	
		1732.5	-5.29	3.32	27.61	19.00	79.433	Horizontal	Pass	
		1745	-5.13	3.36	27.56	19.07	80.724	Horizontal	Pass	
1.4MHz Band 16 QAM	1/#Mid	1710.7	-5.37	3.12	27.58	19.09	81.096	Vertical	Pass	
		1732.5	-5.33	3.27	27.61	19.01	79.616	Vertical	Pass	
		1754.3	-5.23	3.29	27.63	19.11	81.470	Vertical	Pass	
3.0MHz Band 16 QAM	1/#Mid	1711.5	-5.37	3.13	27.61	19.11	81.470	Vertical	Pass	
		1732.5	-5.27	3.27	27.61	19.07	80.724	Vertical	Pass	
		1753.5	-5.33	3.30	27.62	18.99	79.250	Vertical	Pass	
5.0MHz	1/#Mid	1712.5	-5.43	3.13	27.63	19.07	80.724	Vertical	Pass	

Band 16		1732.5	-5.34	3.27	27.61	19.00	79.433	Vertical	Pass
QAM		1752.5	-5.29	3.30	27.60	19.01	79.616	Vertical	Pass
10.0MHz	1/#Mid	1715	-5.42	3.15	27.64	19.07	80.724	Vertical	Pass
Band 16		1732.5	-5.20	3.31	27.61	19.10	81.283	Vertical	Pass
QAM		1750	-5.24	3.33	27.59	19.02	79.799	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-5.38	3.15	27.65	19.12	81.658	Vertical	Pass
Band 16		1732.5	-5.29	3.31	27.61	19.01	79.616	Vertical	Pass
QAM		1747.5	-5.18	3.33	27.57	19.06	80.538	Vertical	Pass
20.0MHz	1/#Mid	1720	-5.35	3.17	27.66	19.14	82.035	Vertical	Pass
Band 16		1732.5	-5.11	3.32	27.61	19.18	82.794	Vertical	Pass
QAM		1745	-5.06	3.36	27.56	19.14	82.035	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							Conclui on
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	824.7	2.70	2.01	19.68	2.15	18.22	66.374	Horizontal	Pass
		836.5	2.63	2.01	19.77	2.15	18.24	66.681	Horizontal	Pass
		848.3	2.59	2.02	19.82	2.15	18.24	66.681	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	825.5	2.67	2.01	19.70	2.15	18.21	66.222	Horizontal	Pass
		836.5	2.57	2.01	19.77	2.15	18.18	65.766	Horizontal	Pass
		847.5	2.59	2.02	19.81	2.15	18.23	66.527	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	826.5	2.72	2.01	19.71	2.15	18.27	67.143	Horizontal	Pass
		836.5	2.57	2.01	19.77	2.15	18.18	65.766	Horizontal	Pass
		846.5	2.53	2.02	19.79	2.15	18.15	65.313	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	829	2.59	2.01	19.73	2.15	18.16	65.464	Horizontal	Pass
		836.5	2.57	2.01	19.77	2.15	18.18	65.766	Horizontal	Pass
		844	2.59	2.02	19.78	2.15	18.20	66.069	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	824.7	2.71	2.01	19.68	2.15	18.23	66.527	Vertical	Pass
		836.5	2.65	2.01	19.77	2.15	18.26	66.988	Vertical	Pass
		848.3	2.54	2.02	19.82	2.15	18.19	65.917	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	825.5	2.69	2.01	19.70	2.15	18.23	66.527	Vertical	Pass
		836.5	2.66	2.01	19.77	2.15	18.27	67.143	Vertical	Pass
		847.5	2.52	2.02	19.81	2.15	18.16	65.464	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	826.5	2.66	2.01	19.71	2.15	18.21	66.222	Vertical	Pass
		836.5	2.57	2.01	19.77	2.15	18.18	65.766	Vertical	Pass
		846.5	2.53	2.02	19.79	2.15	18.15	65.313	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	829	2.73	2.01	19.73	2.15	18.30	67.608	Vertical	Pass
		836.5	2.68	2.01	19.77	2.15	18.29	67.453	Vertical	Pass
		844	2.70	2.02	19.78	2.15	18.31	67.764	Vertical	Pass

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	824.7	2.15	2.01	19.68	2.15	17.67	58.479	Horizontal	Pass
		836.5	2.01	2.01	19.77	2.15	17.62	57.810	Horizontal	Pass
		848.3	2.00	2.02	19.82	2.15	17.65	58.210	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	2.14	2.01	19.70	2.15	17.68	58.614	Horizontal	Pass
		836.5	1.96	2.01	19.77	2.15	17.57	57.148	Horizontal	Pass
		847.5	2.01	2.02	19.81	2.15	17.65	58.210	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	2.15	2.01	19.71	2.15	17.70	58.884	Horizontal	Pass
		836.5	2.10	2.01	19.77	2.15	17.71	59.020	Horizontal	Pass
		846.5	2.00	2.02	19.79	2.15	17.62	57.810	Horizontal	Pass
10.0MHz z Band 16 QAM	1/#Mid	829	2.06	2.01	19.73	2.15	17.63	57.943	Horizontal	Pass
		836.5	2.10	2.01	19.77	2.15	17.71	59.020	Horizontal	Pass
		844	2.05	2.02	19.78	2.15	17.66	58.345	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	824.7	2.10	2.01	19.68	2.15	17.62	57.810	Vertical	Pass
		836.5	1.99	2.01	19.77	2.15	17.60	57.544	Vertical	Pass
		848.3	1.97	2.02	19.82	2.15	17.62	57.810	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	2.07	2.01	19.70	2.15	17.61	57.677	Vertical	Pass
		836.5	2.00	2.01	19.77	2.15	17.61	57.677	Vertical	Pass
		847.5	1.99	2.02	19.81	2.15	17.63	57.943	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	2.03	2.01	19.71	2.15	17.58	57.280	Vertical	Pass
		836.5	2.05	2.01	19.77	2.15	17.66	58.345	Vertical	Pass
		846.5	2.02	2.02	19.79	2.15	17.64	58.076	Vertical	Pass
10.0MHz z Band 16 QAM	1/#Mid	829	2.17	2.01	19.73	2.15	17.74	59.429	Vertical	Pass
		836.5	2.12	2.01	19.77	2.15	17.73	59.293	Vertical	Pass
		844	2.12	2.02	19.78	2.15	17.73	59.293	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)

8.6 LTE BAND 12

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusi on
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	699.7	2.58	1.91	19.21	2.15	17.73	59.293	Vertical	Pass
		707.5	2.62	1.91	19.26	2.15	17.82	60.534	Vertical	Pass
		699.7	2.48	1.93	19.34	2.15	17.74	59.429	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	707.5	2.62	1.91	19.21	2.15	17.77	59.841	Vertical	Pass
		715.3	2.49	1.91	19.26	2.15	17.69	58.749	Vertical	Pass
		700.5	2.54	1.93	19.34	2.15	17.80	60.256	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	707.5	2.51	1.91	19.23	2.15	17.68	58.614	Vertical	Pass
		714.5	2.52	1.91	19.26	2.15	17.72	59.156	Vertical	Pass
		701.5	2.53	1.92	19.33	2.15	17.79	60.117	Vertical	Pass
10.0Hz Band QPSK	1/#Mid	707.5	2.57	1.91	19.25	2.15	17.76	59.704	Vertical	Pass
		713.5	2.44	1.91	19.26	2.15	17.64	58.076	Vertical	Pass
		704	2.43	1.92	19.32	2.15	17.68	58.614	Vertical	Pass
1.4MHz Band QPSK	1/#Mid	707.5	2.67	1.91	19.21	2.15	17.82	60.534	Vertical	Pass
		711	2.61	1.91	19.26	2.15	17.81	60.395	Vertical	Pass
		699.7	2.49	1.93	19.34	2.15	17.75	59.566	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	707.5	2.61	1.91	19.21	2.15	17.76	59.704	Horizontal	Pass
		715.3	2.60	1.91	19.26	2.15	17.80	60.256	Horizontal	Pass
		700.5	2.54	1.93	19.34	2.15	17.80	60.256	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	707.5	2.50	1.91	19.23	2.15	17.67	58.479	Horizontal	Pass
		714.5	2.61	1.91	19.26	2.15	17.81	60.395	Horizontal	Pass
		701.5	2.52	1.92	19.33	2.15	17.78	59.979	Horizontal	Pass
10.0Hz Band QPSK	1/#Mid	707.5	2.66	1.91	19.25	2.15	17.85	60.954	Horizontal	Pass
		713.5	2.64	1.91	19.26	2.15	17.84	60.814	Horizontal	Pass
		704	2.62	1.92	19.32	2.15	17.87	61.235	Horizontal	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	1.99	1.91	19.21	2.15	17.14	51.761	Vertical	Pass
		707.5	2.01	1.91	19.26	2.15	17.21	52.602	Vertical	Pass
		715.3	1.88	1.93	19.34	2.15	17.14	51.761	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	2.06	1.91	19.21	2.15	17.21	52.602	Vertical	Pass
		707.5	1.89	1.91	19.26	2.15	17.09	51.168	Vertical	Pass
		714.5	1.83	1.93	19.34	2.15	17.09	51.168	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	2.03	1.91	19.23	2.15	17.20	52.481	Vertical	Pass
		707.5	1.96	1.91	19.26	2.15	17.16	52.000	Vertical	Pass
		713.5	1.80	1.92	19.33	2.15	17.06	50.816	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	704	1.91	1.91	19.25	2.15	17.10	51.286	Vertical	Pass
		707.5	1.83	1.91	19.26	2.15	17.03	50.466	Vertical	Pass
		711	1.91	1.92	19.32	2.15	17.16	52.000	Vertical	Pass
1.4MHz Band 16 QAM	1/#Mid	699.7	1.96	1.91	19.21	2.15	17.11	51.404	Horizontal	Pass
		707.5	2.00	1.91	19.26	2.15	17.20	52.481	Horizontal	Pass
		715.3	1.87	1.93	19.34	2.15	17.13	51.642	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	2.01	1.91	19.21	2.15	17.16	52.000	Horizontal	Pass
		707.5	1.89	1.91	19.26	2.15	17.09	51.168	Horizontal	Pass
		714.5	1.91	1.93	19.34	2.15	17.17	52.119	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	1.92	1.91	19.23	2.15	17.09	51.168	Horizontal	Pass
		707.5	1.92	1.91	19.26	2.15	17.12	51.523	Horizontal	Pass
		713.5	1.96	1.92	19.33	2.15	17.22	52.723	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	704	2.06	1.91	19.25	2.15	17.25	53.088	Horizontal	Pass
		707.5	2.07	1.91	19.26	2.15	17.27	53.333	Horizontal	Pass
		711	2.01	1.92	19.32	2.15	17.26	53.211	Horizontal	Pass

Note:

SG Level= Signal generator output

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

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

8.7 LTE BAND 13

Radiated Power (ERP) for Band 13										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	779.5	4.06	1.95	19.23	2.15	19.19	82.985	Vertical	Pass
		782	4.02	1.95	19.26	2.15	19.18	82.794	Vertical	Pass
		784.5	3.92	1.96	19.33	2.15	19.14	82.035	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	782	4.1	1.95	19.25	2.15	19.25	84.140	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	779.5	4.02	1.95	19.23	2.15	19.15	82.224	Horizontal	Pass
		782	4.05	1.95	19.26	2.15	19.21	83.368	Horizontal	Pass
		784.5	4.04	1.96	19.33	2.15	19.26	84.333	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	782	4.17	1.95	19.25	2.15	19.32	85.507	Horizontal	Pass

Radiated Power (ERP) for Band 13										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. EPR	Max. EPR	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	779.5	3.27	1.95	19.23	2.15	18.40	69.183	Vertical	Pass
		782	3.29	1.95	19.26	2.15	18.45	69.984	Vertical	Pass
		784.5	3.17	1.96	19.33	2.15	18.39	69.024	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	782	3.33	1.95	19.25	2.15	18.48	70.469	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	779.5	3.27	1.95	19.23	2.15	18.40	69.183	Horizontal	Pass
		782	3.31	1.95	19.26	2.15	18.47	70.307	Horizontal	Pass
		784.5	3.27	1.96	19.33	2.15	18.49	70.632	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	782	3.35	1.95	19.25	2.15	18.5	70.795	Horizontal	Pass

Note:

SG Level= Signal generator output

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

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

8.11 LTE BAND 41

Radiated Power (EIRP) for Band 41									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	2498.5	-1.52	4.54	27.75	21.69	147.571	Horizontal	Pass
		2593	-1.19	4.69	27.72	21.84	152.757	Horizontal	Pass
		2687.5	-1.22	4.71	27.71	21.78	150.661	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2501	-1.50	4.55	27.76	21.71	148.252	Horizontal	Pass
		2593	-1.24	4.69	27.72	21.79	151.008	Horizontal	Pass
		2685	-1.23	4.72	27.70	21.75	149.624	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2503.5	-1.44	4.55	27.77	21.78	150.661	Horizontal	Pass
		2593	-1.36	4.69	27.72	21.67	146.893	Horizontal	Pass
		2682.5	-1.31	4.72	27.69	21.66	146.555	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2506	-1.38	4.57	27.78	21.83	152.405	Horizontal	Pass
		2593	-1.20	4.73	27.72	21.79	151.008	Horizontal	Pass
		2680	-1.21	4.75	27.68	21.72	148.594	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2498.5	-1.50	4.54	27.75	21.71	148.252	Vertical	Pass
		2593	-1.29	4.69	27.72	21.74	149.279	Vertical	Pass
		2687.5	-1.18	4.71	27.71	21.82	152.055	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2501	-1.40	4.55	27.76	21.81	151.705	Vertical	Pass
		2593	-1.32	4.69	27.72	21.71	148.252	Vertical	Pass
		2685	-1.30	4.72	27.70	21.68	147.231	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2503.5	-1.45	4.55	27.77	21.77	150.314	Vertical	Pass
		2593	-1.32	4.69	27.72	21.71	148.252	Vertical	Pass
		2682.5	-1.28	4.72	27.69	21.69	147.571	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2506	-1.37	4.57	27.78	21.84	152.757	Vertical	Pass
		2593	-1.14	4.73	27.72	21.85	153.109	Vertical	Pass
		2680	-1.08	4.75	27.68	21.85	153.109	Vertical	Pass

Radiated Power (EIRP) for Band 41									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	2502.5	-2.57	4.54	27.75	20.64	115.878	Horizontal	Pass
		2535	-2.40	4.69	27.72	20.63	115.611	Horizontal	Pass
		2567.5	-2.35	4.71	27.71	20.65	116.145	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-2.59	4.55	27.76	20.62	115.345	Horizontal	Pass
		2535	-2.33	4.69	27.72	20.70	117.490	Horizontal	Pass
		2565	-2.29	4.72	27.70	20.69	117.220	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-2.61	4.55	27.77	20.61	115.080	Horizontal	Pass
		2535	-2.33	4.69	27.72	20.70	117.490	Horizontal	Pass
		2562.5	-2.37	4.72	27.69	20.60	114.815	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-2.49	4.57	27.78	20.72	118.032	Horizontal	Pass
		2535	-2.29	4.73	27.72	20.70	117.490	Horizontal	Pass
		2560	-2.21	4.75	27.68	20.72	118.032	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	-2.55	4.54	27.75	20.66	116.413	Vertical	Pass
		2535	-2.37	4.69	27.72	20.66	116.413	Vertical	Pass
		2567.5	-2.40	4.71	27.71	20.60	114.815	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-2.50	4.55	27.76	20.71	117.761	Vertical	Pass
		2535	-2.38	4.69	27.72	20.65	116.145	Vertical	Pass
		2565	-2.27	4.72	27.70	20.71	117.761	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-2.62	4.55	27.77	20.60	114.815	Vertical	Pass
		2535	-2.40	4.69	27.72	20.63	115.611	Vertical	Pass
		2562.5	-2.32	4.72	27.69	20.65	116.145	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-2.43	4.57	27.78	20.78	119.674	Vertical	Pass
		2535	-2.21	4.73	27.72	20.78	119.674	Vertical	Pass
		2560	-2.18	4.75	27.68	20.75	118.850	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)

8.12 LTE BAND 66

Radiated Power (EIRP) for Band 66									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	6/0	1710.7	-3.53	3.76	28.24	20.95	124.451	Horizontal	Pass
		1745	-3.30	3.91	28.22	21.01	126.183	Horizontal	Pass
		1779.3	-3.20	3.93	28.2	21.07	127.938	Horizontal	Pass
3.0MHz Band QPSK	15/0	1711.5	-3.44	3.77	28.23	21.02	126.474	Horizontal	Pass
		1745	-3.36	3.91	28.24	20.97	125.026	Horizontal	Pass
		1778.5	-3.37	3.94	28.25	20.94	124.165	Horizontal	Pass
5.0MHz Band QPSK	25/0	1712.5	-3.60	3.77	28.31	20.94	124.165	Horizontal	Pass
		1745	-3.24	3.91	28.22	21.07	127.938	Horizontal	Pass
		1777.5	-3.33	3.94	28.2	20.93	123.880	Horizontal	Pass
10.0MHz Band QPSK	50/0	1715	-3.47	3.79	28.33	21.07	127.938	Horizontal	Pass
		1745	-3.25	3.95	28.22	21.02	126.474	Horizontal	Pass
		1775	-3.18	3.97	28.19	21.04	127.057	Horizontal	Pass
15.0MHz Band QPSK	75/0	1717.5	-3.50	3.79	28.34	21.05	127.350	Horizontal	Pass
		1745	-3.21	3.95	28.22	21.06	127.644	Horizontal	Pass
		1772.5	-3.26	3.97	28.18	20.95	124.451	Horizontal	Pass
20.0MHz Band QPSK	100/0	1720	-3.55	3.81	28.35	20.99	125.603	Horizontal	Pass
		1745	-3.30	3.96	28.22	20.96	124.738	Horizontal	Pass
		1770	-3.11	4	28.16	21.05	127.350	Horizontal	Pass
1.4MHz Band QPSK	6/0	1710.7	-3.45	3.76	28.24	21.03	126.765	Vertical	Pass
		1745	-3.31	3.91	28.22	21.00	125.893	Vertical	Pass
		1779.3	-3.19	3.93	28.2	21.08	128.233	Vertical	Pass
3.0MHz Band QPSK	15/0	1711.5	-3.47	3.77	28.23	20.99	125.603	Vertical	Pass
		1745	-3.34	3.91	28.24	20.99	125.603	Vertical	Pass
		1778.5	-3.38	3.94	28.25	20.93	123.880	Vertical	Pass
5.0MHz Band QPSK	25/0	1712.5	-3.49	3.77	28.31	21.05	127.350	Vertical	Pass
		1745	-3.22	3.91	28.22	21.09	128.529	Vertical	Pass
		1777.5	-3.23	3.94	28.2	21.03	126.765	Vertical	Pass
10.0MHz	50/0	1715	-3.57	3.79	28.34	20.98	125.314	Vertical	Pass

Band QPSK		1745	-3.32	3.95	28.22	20.95	124.451	Vertical	Pass
		1775	-3.13	3.97	28.18	21.08	128.233	Vertical	Pass
15.0MHz Band QPSK	75/0	1717.5	-3.46	3.81	28.35	21.08	128.233	Vertical	Pass
		1745	-3.18	3.96	28.22	21.08	128.233	Vertical	Pass
		1772.5	-3.09	4	28.16	21.07	127.938	Vertical	Pass
20.0MHz Band QPSK	100/0	1720	-3.43	3.79	28.34	21.12	129.420	Vertical	Pass
		1745	-3.16	3.95	28.22	21.11	129.122	Vertical	Pass
		1770	-3.12	3.97	28.18	21.09	128.529	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	6/0	1710.7	-4.46	3.76	28.24	20.02	100.462	Horizontal	Pass	
		1745	-4.35	3.91	28.22	19.96	99.083	Horizontal	Pass	
		1779.3	-4.26	3.93	28.2	20.01	100.231	Horizontal	Pass	
3.0MHz Band 16 QAM	15/0	1711.5	-4.42	3.77	28.23	20.04	100.925	Horizontal	Pass	
		1745	-4.37	3.91	28.24	19.96	99.083	Horizontal	Pass	
		1778.5	-4.29	3.94	28.25	20.02	100.462	Horizontal	Pass	
5.0MHz Band 16 QAM	25/0	1712.5	-4.64	3.77	28.31	19.90	97.724	Horizontal	Pass	
		1745	-4.39	3.91	28.22	19.92	98.175	Horizontal	Pass	
		1777.5	-4.28	3.94	28.2	19.98	99.541	Horizontal	Pass	
10.0MHz Band 16 QAM	50/0	1715	-4.56	3.79	28.33	19.98	99.541	Horizontal	Pass	
		1745	-4.34	3.95	28.22	19.93	98.401	Horizontal	Pass	
		1775	-4.29	3.97	28.19	19.93	98.401	Horizontal	Pass	
15.0MHz Band 16 QAM	75/0	1717.5	-4.52	3.79	28.34	20.03	100.693	Horizontal	Pass	
		1745	-4.22	3.95	28.22	20.05	101.158	Horizontal	Pass	
		1772.5	-4.19	3.97	28.18	20.02	100.462	Horizontal	Pass	
20.0MHz Band 16 QAM	100/0	1720	-4.58	3.81	28.35	19.96	99.083	Horizontal	Pass	
		1745	-4.31	3.96	28.22	19.95	98.855	Horizontal	Pass	
		1770	-4.18	4	28.16	19.98	99.541	Horizontal	Pass	
1.4MHz Band 16 QAM	6/0	1710.7	-4.54	3.76	28.24	19.94	98.628	Vertical	Pass	
		1745	-4.39	3.91	28.22	19.92	98.175	Vertical	Pass	
		1779.3	-4.37	3.93	28.2	19.90	97.724	Vertical	Pass	
3.0MHz Band 16 QAM	15/0	1711.5	-4.42	3.77	28.23	20.04	100.925	Vertical	Pass	
		1745	-4.35	3.91	28.24	19.98	99.541	Vertical	Pass	
		1778.5	-4.41	3.94	28.25	19.90	97.724	Vertical	Pass	

5.0MHz	25/0	1712.5	-4.62	3.77	28.31	19.92	98.175	Vertical	Pass
Band 16		1745	-4.32	3.91	28.22	19.99	99.770	Vertical	Pass
QAM		1777.5	-4.23	3.94	28.2	20.03	100.693	Vertical	Pass
10.0MHz	50/0	1715	-4.57	3.79	28.34	19.98	99.541	Vertical	Pass
Band 16		1745	-4.23	3.95	28.22	20.04	100.925	Vertical	Pass
QAM		1775	-4.27	3.97	28.18	19.94	98.628	Vertical	Pass
15.0MHz	75/0	1717.5	-4.54	3.81	28.35	20.00	100.000	Vertical	Pass
Band 16		1745	-4.29	3.96	28.22	19.97	99.312	Vertical	Pass
QAM		1772.5	-4.19	4	28.16	19.97	99.312	Vertical	Pass
20.0MHz	100/0	1720	-4.46	3.79	28.34	20.09	102.094	Vertical	Pass
Band 16		1745	-4.18	3.95	28.22	20.09	102.094	Vertical	Pass
QAM		1770	-4.15	3.97	28.18	20.06	101.391	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)

8.13 LTE BAND 71

Radiated Power (ERP) for Band 71											
Mode	RB/RB SIZE	Frequency	Result							Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)			
5.0MHz Band QPSK	1/#Mid	665.5	5.19	1.91	19.21	2.15	20.34	108.143	Vertical	Pass	
		680.5	5.14	1.91	19.26	2.15	20.34	108.143	Vertical	Pass	
		695.5	5.02	1.93	19.34	2.15	20.28	106.660	Vertical	Pass	
10.0MHz Band QPSK	1/#Mid	668	5.18	1.91	19.21	2.15	20.33	107.895	Vertical	Pass	
		680.5	5.07	1.91	19.26	2.15	20.27	106.414	Vertical	Pass	
		693	4.95	1.93	19.34	2.15	20.21	104.954	Vertical	Pass	
15.0MHz Band QPSK	1/#Mid	670.5	5.07	1.91	19.23	2.15	20.24	105.682	Vertical	Pass	
		680.5	5.04	1.91	19.26	2.15	20.24	105.682	Vertical	Pass	
		690.5	5.07	1.92	19.33	2.15	20.33	107.895	Vertical	Pass	
20.0MHz Band QPSK	1/#Mid	673	5.00	1.91	19.25	2.15	20.19	104.472	Vertical	Pass	
		683	5.07	1.91	19.26	2.15	20.27	106.414	Vertical	Pass	
		688	5.10	1.92	19.32	2.15	20.35	108.393	Vertical	Pass	
5.0MHz Band QPSK	1/#Mid	665.5	5.12	1.91	19.21	2.15	20.27	106.414	Horizontal	Pass	
		680.5	5.09	1.91	19.26	2.15	20.29	106.905	Horizontal	Pass	
		695.5	4.98	1.93	19.34	2.15	20.24	105.682	Horizontal	Pass	
10.0MHz Band QPSK	1/#Mid	668	5.12	1.91	19.21	2.15	20.27	106.414	Horizontal	Pass	
		680.5	5.08	1.91	19.26	2.15	20.28	106.660	Horizontal	Pass	
		693	4.97	1.93	19.34	2.15	20.23	105.439	Horizontal	Pass	
15.0MHz Band QPSK	1/#Mid	670.5	5.15	1.91	19.23	2.15	20.32	107.647	Horizontal	Pass	
		680.5	5.16	1.91	19.26	2.15	20.36	108.643	Horizontal	Pass	
		690.5	4.99	1.92	19.33	2.15	20.25	105.925	Horizontal	Pass	
20.0MHz Band QPSK	1/#Mid	673	5.18	1.91	19.25	2.15	20.37	108.893	Horizontal	Pass	
		683	5.17	1.91	19.26	2.15	20.37	108.893	Horizontal	Pass	
		688	5.16	1.92	19.32	2.15	20.41	109.901	Horizontal	Pass	
5.0MHz Band QPSK	1/#Mid	665.5	5.19	1.91	19.21	2.15	20.34	108.143	Vertical	Pass	
		680.5	5.14	1.91	19.26	2.15	20.34	108.143	Vertical	Pass	
		695.5	5.02	1.93	19.34	2.15	20.28	106.660	Vertical	Pass	
10.0MHz Band QPSK	1/#Mid	668	5.18	1.91	19.21	2.15	20.33	107.895	Vertical	Pass	
		680.5	5.07	1.91	19.26	2.15	20.27	106.414	Vertical	Pass	
		693	4.95	1.93	19.34	2.15	20.21	104.954	Vertical	Pass	

Radiated Power (ERP) for Band 71										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	665.5	4.38	1.91	19.21	2.15	19.53	89.743	Vertical	Pass
		680.5	4.26	1.91	19.26	2.15	19.46	88.308	Vertical	Pass
		695.5	4.18	1.93	19.34	2.15	19.44	87.902	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	668	4.28	1.91	19.21	2.15	19.43	87.700	Vertical	Pass
		680.5	4.24	1.91	19.26	2.15	19.44	87.902	Vertical	Pass
		693	4.20	1.93	19.34	2.15	19.46	88.308	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	670.5	4.33	1.91	19.23	2.15	19.50	89.125	Vertical	Pass
		680.5	4.22	1.91	19.26	2.15	19.42	87.498	Vertical	Pass
		690.5	4.17	1.92	19.33	2.15	19.43	87.700	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	673	4.29	1.91	19.25	2.15	19.48	88.716	Vertical	Pass
		683	4.29	1.91	19.26	2.15	19.49	88.920	Vertical	Pass
		688	4.12	1.92	19.32	2.15	19.37	86.497	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	665.5	4.31	1.91	19.21	2.15	19.46	88.308	Horizontal	Pass
		680.5	4.34	1.91	19.26	2.15	19.54	89.950	Horizontal	Pass
		695.5	4.21	1.93	19.34	2.15	19.47	88.512	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	668	4.29	1.91	19.21	2.15	19.44	87.902	Horizontal	Pass
		680.5	4.24	1.91	19.26	2.15	19.44	87.902	Horizontal	Pass
		693	4.25	1.93	19.34	2.15	19.51	89.331	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	670.5	4.35	1.91	19.23	2.15	19.52	89.536	Horizontal	Pass
		680.5	4.28	1.91	19.26	2.15	19.48	88.716	Horizontal	Pass
		690.5	4.13	1.92	19.33	2.15	19.39	86.896	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	673	4.37	1.91	19.25	2.15	19.56	90.365	Horizontal	Pass
		683	4.39	1.91	19.26	2.15	19.59	90.991	Horizontal	Pass
		688	4.34	1.92	19.32	2.15	19.59	90.991	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	665.5	4.38	1.91	19.21	2.15	19.53	89.743	Vertical	Pass
		680.5	4.26	1.91	19.26	2.15	19.46	88.308	Vertical	Pass
		695.5	4.18	1.93	19.34	2.15	19.44	87.902	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	668	4.28	1.91	19.21	2.15	19.43	87.700	Vertical	Pass
		680.5	4.24	1.91	19.26	2.15	19.44	87.902	Vertical	Pass
		693	4.20	1.93	19.34	2.15	19.46	88.308	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 2/4/5/12/13/41/66/71

RESULTS

PASS

9.1 LTE BAND 2

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

Test Results for Low Channel 1850.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3701.4	-52.12	4.04	33.51	-22.65	-13	-9.65	Horizontal
3701.4	-45.71	4.04	33.51	-16.24	-13	-3.24	Vertical
5552.1	-50.86	5.24	35.84	-20.26	-13	-7.26	Vertical
5552.1	-53.55	5.24	35.84	-22.95	-13	-9.95	Horizontal
193.4	-37.79	1.43	16.02	-23.20	-13	-10.20	Vertical
233.9	-40.25	1.30	17.99	-23.56	-13	-10.56	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-52.47	4.04	33.56	-22.95	-13	-9.95	Horizontal
3760.0	-48.78	4.04	33.56	-19.26	-13	-6.26	Vertical
5640.0	-48.52	5.24	35.91	-17.85	-13	-4.85	Vertical
5640.0	-53.97	5.24	35.91	-23.30	-13	-10.30	Horizontal
176.6	-44.96	1.62	16.97	-29.61	-13	-16.61	Vertical
239.8	-40.37	1.74	15.98	-26.14	-13	-13.14	Horizontal
Test Results for High Channel 1909.3MHz							
	-49.32	4.04	34.00	-19.36	-13	-6.36	Horizontal
3818.6	-46.78	4.04	34.00	-16.82	-13	-3.82	Vertical
5727.9	-48.13	5.24	36.04	-17.33	-13	-4.33	Vertical
5727.9	-50.04	5.24	36.04	-19.24	-13	-6.24	Horizontal
179.9	-36.97	1.42	17.29	-21.10	-13	-8.10	Vertical
299.6	-39.23	1.50	17.90	-22.82	-13	-9.82	Horizontal

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

Test Results for Low Channel 1860MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3720.0	-52.22	4.07	33.54	-22.75	-13	-9.75	Horizontal
3720.0	-49.91	4.07	33.54	-20.44	-13	-7.44	Vertical
5580.0	-53.54	5.28	35.86	-22.96	-13	-9.96	Vertical
5580.0	-51.46	5.28	35.86	-20.88	-13	-7.88	Horizontal
198.2	-34.44	1.58	16.89	-19.12	-13	-6.12	Vertical
442.7	-36.30	1.76	17.26	-20.80	-13	-7.80	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-46.97	4.04	33.56	-17.45	-13	-4.45	Horizontal
3760.0	-49.48	4.04	33.56	-19.96	-13	-6.96	Vertical
5640.0	-45.30	5.24	35.91	-14.63	-13	-1.63	Vertical
5640.0	-53.83	5.24	35.91	-23.16	-13	-10.16	Horizontal
193.1	-36.84	1.46	16.27	-22.03	-13	-9.03	Vertical
444.9	-42.77	1.59	15.15	-29.21	-13	-16.21	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-46.75	4.04	34.00	-16.79	-13	-3.79	Horizontal
3800.0	-47.05	4.04	34.00	-17.09	-13	-4.09	Vertical
5700.0	-47.75	5.24	36.04	-16.95	-13	-3.95	Vertical
5700.0	-50.57	5.24	36.04	-19.77	-13	-6.77	Horizontal
203.1	-44.50	1.36	17.39	-28.46	-13	-15.46	Vertical
233.9	-36.04	1.66	15.39	-22.31	-13	-9.31	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	-48.74	4.02	29.80	-22.96	-13	-9.96	Horizontal
3421.4	-50.54	4.02	29.80	-24.76	-13	-11.76	Vertical
5132.1	-47.91	5.24	35.84	-17.31	-13	-4.31	Vertical
5132.1	-51.77	5.24	35.84	-21.17	-13	-8.17	Horizontal
187.6	-41.25	1.68	16.04	-26.89	-13	-13.89	Vertical
241.6	-43.06	1.78	17.74	-27.10	-13	-14.10	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-45.31	4.03	30.00	-19.34	-13	-6.34	Horizontal
3465.0	-53.77	4.03	30.00	-27.80	-13	-14.80	Vertical
5197.5	-53.45	5.25	35.86	-22.84	-13	-9.84	Vertical
5197.5	-53.97	5.25	35.86	-23.36	-13	-10.36	Horizontal
176.1	-42.29	1.72	17.69	-26.32	-13	-13.32	Vertical
286.7	-38.74	1.62	16.02	-24.33	-13	-11.33	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-44.20	4.05	30.01	-18.24	-13	-5.24	Horizontal
3508.6	-49.04	4.05	30.01	-23.08	-13	-10.08	Vertical
5262.9	-53.30	5.26	35.86	-22.70	-13	-9.70	Vertical
5262.9	-51.60	5.26	35.86	-21.00	-13	-8.00	Horizontal
177.7	-43.48	1.80	16.69	-28.59	-13	-15.59	Vertical
354.7	-37.79	1.75	16.66	-22.89	-13	-9.89	Horizontal

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

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-50.13	4.02	29.80	-24.35	-13	-11.35	Horizontal
3440.0	-48.91	4.02	29.80	-23.13	-13	-10.13	Vertical
5160.0	-51.79	5.24	35.84	-21.19	-13	-8.19	Vertical
5160.0	-52.88	5.24	35.84	-22.28	-13	-9.28	Horizontal
190.5	-35.24	1.57	17.26	-19.55	-13	-6.55	Vertical
319.3	-35.40	1.78	16.35	-20.83	-13	-7.83	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-49.36	4.03	30.00	-23.39	-13	-10.39	Horizontal
3465.0	-44.26	4.03	30.00	-18.29	-13	-5.29	Vertical
5197.5	-47.44	5.25	35.86	-16.83	-13	-3.83	Vertical
5197.5	-53.38	5.25	35.86	-22.77	-13	-9.77	Horizontal
210.8	-36.63	1.44	17.95	-20.12	-13	-7.12	Vertical
333.9	-39.16	1.65	16.09	-24.72	-13	-11.72	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-50.06	4.05	27.68	-26.43	-13	-13.43	Horizontal
3490.0	-47.73	4.05	27.68	-24.10	-13	-11.10	Vertical
5235.0	-50.02	5.26	35.86	-19.42	-13	-6.42	Vertical
5235.0	-49.90	5.26	35.86	-19.30	-13	-6.30	Horizontal
207.1	-44.88	1.61	16.85	-29.64	-13	-16.64	Vertical
351.6	-44.44	1.61	15.19	-30.86	-13	-17.86	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	-51.66	2.78	27.50	-26.94	-13	-13.94	Horizontal
1649.4	-51.99	2.78	27.50	-27.27	-13	-14.27	Vertical
2474.1	-45.19	2.90	27.80	-20.29	-13	-7.29	Vertical
2474.1	-51.66	2.90	27.80	-26.76	-13	-13.76	Horizontal
211.7	-39.70	1.76	17.59	-23.87	-13	-10.87	Vertical
397.7	-38.54	1.63	15.87	-24.30	-13	-11.30	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-45.37	2.80	27.48	-20.69	-13	-7.69	Horizontal
1673.0	-52.59	2.80	27.48	-27.91	-13	-14.91	Vertical
2509.5	-49.20	2.91	27.70	-24.41	-13	-11.41	Vertical
2509.5	-49.64	2.91	27.70	-24.85	-13	-11.85	Horizontal
184.5	-37.08	1.61	15.68	-23.01	-13	-10.01	Vertical
363.2	-34.75	1.59	17.52	-18.83	-13	-5.83	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-50.00	2.82	27.43	-25.39	-13	-12.39	Horizontal
1696.6	-53.94	2.82	27.43	-29.33	-13	-16.33	Vertical
2544.9	-44.59	2.92	27.74	-19.77	-13	-6.77	Vertical
2544.9	-52.98	2.92	27.74	-28.16	-13	-15.16	Horizontal
207.3	-37.25	1.69	16.67	-22.26	-13	-9.26	Vertical
387.3	-42.82	1.70	17.18	-27.34	-13	-14.34	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	-46.48	2.78	27.50	-21.76	-13	-8.76	Horizontal
1658.0	-44.23	2.78	27.50	-19.51	-13	-6.51	Vertical
2487.0	-51.96	2.90	27.80	-27.06	-13	-14.06	Vertical
2487.0	-53.12	2.90	27.80	-28.22	-13	-15.22	Horizontal
179.4	-37.36	1.71	15.57	-23.50	-13	-10.50	Vertical
331.2	-41.58	1.34	16.40	-26.52	-13	-13.52	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-45.28	2.80	27.48	-20.60	-13	-7.60	Horizontal
1673.0	-50.96	2.80	27.48	-26.28	-13	-13.28	Vertical
2509.5	-52.95	2.91	27.70	-28.16	-13	-15.16	Vertical
2509.5	-52.08	2.91	27.70	-27.29	-13	-14.29	Horizontal
184.3	-34.85	1.44	17.04	-19.25	-13	-6.25	Vertical
426.2	-40.48	1.76	17.62	-24.62	-13	-11.62	Horizontal
Test Results for High Channel 844MHz							
1688.0	-47.48	2.82	27.43	-22.87	-13	-9.87	Horizontal
1688.0	-50.11	2.82	27.43	-25.50	-13	-12.50	Vertical
2532.0	-54.00	2.92	27.74	-29.18	-13	-16.18	Vertical
2532.0	-52.16	2.92	27.74	-27.34	-13	-14.34	Horizontal
189.7	-42.46	1.74	17.70	-26.50	-13	-13.50	Vertical
317.9	-36.73	1.41	17.46	-20.67	-13	-7.67	Horizontal

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

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

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

9.4 LTE BAND 7

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

Test Results for Low Channel 2502.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5005.0	-59.36	5.23	35.81	-28.78	-25	-3.78	Horizontal
5005.0	-62.61	5.23	35.81	-32.03	-25	-7.03	Vertical
7507.5	-62.07	5.67	36.85	-30.89	-25	-5.89	Vertical
7507.5	-62.07	5.67	36.85	-30.89	-25	-5.89	Horizontal
175.7	-48.20	1.73	17.97	-31.96	-25	-6.96	Vertical
382.2	-49.53	1.38	15.11	-35.80	-25	-10.80	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-60.38	5.23	35.82	-29.79	-25	-4.79	Horizontal
5070.0	-62.89	5.23	35.82	-32.30	-25	-7.30	Vertical
7605.0	-62.56	5.67	36.85	-31.38	-25	-6.38	Vertical
7605.0	-61.64	5.67	36.85	-30.46	-25	-5.46	Horizontal
195.8	-44.26	1.77	16.17	-29.85	-25	-4.85	Vertical
365.2	-50.53	1.63	15.21	-36.95	-25	-11.95	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-64.68	5.24	35.83	-34.09	-25	-9.09	Horizontal
5135.0	-62.19	5.24	35.83	-31.60	-25	-6.60	Vertical
7702.5	-60.97	5.68	36.87	-29.78	-25	-4.78	Vertical
7702.5	-61.29	5.68	36.87	-30.10	-25	-5.10	Horizontal
199.4	-47.42	1.58	17.56	-31.44	-25	-6.44	Vertical
294.5	-48.89	1.45	16.58	-33.76	-25	-8.76	Horizontal

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

Test Results for Low Channel 2510MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5020.0	-63.70	5.23	35.82	-33.11	-25	-8.11	Horizontal
5020.0	-61.44	5.23	35.82	-30.85	-25	-5.85	Vertical

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	-44.66	2.60	27.20	-20.06	-13	-7.06	Horizontal
1399.4	-46.84	2.60	27.20	-22.24	-13	-9.24	Vertical
2099.1	-48.74	2.85	27.54	-24.05	-13	-11.05	Vertical
2099.1	-51.88	2.85	27.54	-27.19	-13	-14.19	Horizontal
184.4	-44.72	1.49	17.78	-28.43	-13	-15.43	Vertical
371.8	-41.92	1.36	17.33	-25.95	-13	-12.95	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-49.65	2.61	27.28	-24.98	-13	-11.98	Horizontal
1415.0	-46.92	2.61	27.28	-22.25	-13	-9.25	Vertical
2122.5	-47.39	2.87	27.59	-22.67	-13	-9.67	Vertical
2122.5	-51.71	2.87	27.59	-26.99	-13	-13.99	Horizontal
205.4	-43.76	1.73	15.74	-29.75	-13	-16.75	Vertical
251.5	-39.58	1.62	15.79	-25.41	-13	-12.41	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-51.10	2.63	27.28	-26.45	-13	-13.45	Horizontal
1430.6	-47.33	2.63	27.28	-22.68	-13	-9.68	Vertical
2145.9	-53.63	2.88	27.60	-28.91	-13	-15.91	Vertical
2145.9	-53.88	2.88	27.60	-29.16	-13	-16.16	Horizontal
210.9	-39.35	1.61	18.00	-22.96	-13	-9.96	Vertical
466.7	-42.87	1.45	15.49	-28.84	-13	-15.84	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	-51.67	2.61	27.26	-27.02	-13	-14.02	Horizontal
1408.0	-48.93	2.61	27.26	-24.28	-13	-11.28	Vertical
2112.0	-51.81	2.87	27.58	-27.10	-13	-14.10	Vertical
2112.0	-52.08	2.87	27.58	-27.37	-13	-14.37	Horizontal
211.2	-39.55	1.31	16.97	-23.89	-13	-10.89	Vertical
463.2	-44.45	1.65	16.70	-29.40	-13	-16.40	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-53.33	2.61	27.28	-28.66	-13	-15.66	Horizontal
1415.0	-46.31	2.61	27.28	-21.64	-13	-8.64	Vertical
2122.5	-45.50	2.87	27.59	-20.78	-13	-7.78	Vertical
2122.5	-51.24	2.87	27.59	-26.52	-13	-13.52	Horizontal
210.9	-34.22	1.72	17.99	-17.95	-13	-4.95	Vertical
384.0	-36.85	1.73	17.94	-20.64	-13	-7.64	Horizontal
Test Results for High Channel 711MHz							
1422.0	-53.41	2.62	27.28	-28.75	-13	-15.75	Horizontal
1422.0	-47.09	2.62	27.28	-22.43	-13	-9.43	Vertical
2133.0	-46.65	2.87	27.60	-21.92	-13	-8.92	Vertical
2133.0	-51.26	2.87	27.60	-26.53	-13	-13.53	Horizontal
182.0	-36.30	1.58	15.93	-21.95	-13	-8.95	Vertical
241.5	-44.96	1.36	15.59	-30.73	-13	-17.73	Horizontal

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

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

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

9.6 LTE BAND 13

QPSK EIRP POWER FOR LTE BAND 13 (5MHZ BANDWIDTH)

Test Results for Low Channel 779.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1559.0	-68.94	2.61	27.28	-44.27	-40	-4.27	Horizontal
1559.0	-71.40	2.61	27.28	-46.73	-40	-6.73	Vertical
2338.5	-67.88	2.87	27.59	-43.16	-13	-30.16	Vertical
2338.5	-72.15	2.87	27.59	-47.43	-13	-34.43	Horizontal
200.5	-73.05	1.71	16.15	-58.61	-13	-45.61	Vertical
390.6	-71.24	1.41	17.32	-55.33	-13	-42.33	Horizontal
Test Results For Mid Channel 782MHz							
1564.0	-74.84	2.62	27.30	-50.16	-40	-10.16	Horizontal
1564.0	-75.76	2.62	27.30	-51.08	-40	-11.08	Vertical
2346.0	-67.64	2.87	27.62	-42.89	-13	-29.89	Vertical
2346.0	-69.27	2.87	27.62	-44.52	-13	-31.52	Horizontal
200.5	-67.58	1.42	15.25	-53.76	-13	-40.76	Vertical
290.8	-69.26	1.36	17.19	-53.43	-13	-40.43	Horizontal
Test Results for High Channel 784.5MHz							
1569.0	-72.73	2.66	27.28	-48.11	-40	-8.11	Horizontal
1569.0	-76.11	2.66	27.28	-51.49	-40	-11.49	Vertical
2353.5	-67.58	2.88	27.60	-42.86	-13	-29.86	Vertical
2353.5	-68.67	2.88	27.60	-43.95	-13	-30.95	Horizontal
208.5	-68.06	1.32	17.29	-52.09	-13	-39.09	Vertical
271.5	-74.39	1.72	16.89	-59.22	-13	-46.22	Horizontal

QPSK EIRP POWER FOR LTE BAND 13 (10MHZ BANDWIDTH)

Test Results for Low Channel 782MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1564.0	-71.26	2.62	27.30	-46.58	-40	-6.58	Horizontal
1564.0	-69.46	2.62	27.30	-44.78	-40	-4.78	Vertical
2346.0	-68.99	2.87	27.62	-44.24	-13	-31.24	Vertical
2346.0	-72.30	2.87	27.62	-47.55	-13	-34.55	Horizontal
178.0	-73.47	1.35	16.91	-57.91	-13	-44.91	Vertical
358.7	-70.25	1.62	16.31	-55.56	-13	-42.56	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.

9.11 LTE BAND 41

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

Test Results for Low Channel 2498.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5115.0	-64.12	5.13	35.81	-33.44	-25	-8.44	Horizontal
5115.0	-61.78	5.13	35.81	-31.10	-25	-6.10	Vertical
7672.5	-59.06	5.42	36.85	-27.63	-25	-2.63	Vertical
7672.5	-59.28	5.42	36.85	-27.85	-25	-2.85	Horizontal
192.5	-47.21	1.56	17.97	-30.80	-25	-5.80	Vertical
299.8	-53.12	1.33	15.11	-39.34	-25	-14.34	Horizontal
Test Results for Mid Channel 2593MHz							
5210.0	-59.42	5.16	35.82	-28.76	-25	-3.76	Horizontal
5210.0	-62.15	5.16	35.82	-31.49	-25	-6.49	Vertical
7815.0	-60.22	5.53	36.85	-28.90	-25	-3.90	Vertical
7815.0	-62.48	5.53	36.85	-31.16	-25	-6.16	Horizontal
182.0	-49.97	1.77	16.17	-35.56	-25	-10.56	Vertical
283.4	-54.50	1.63	15.21	-40.92	-25	-15.92	Horizontal
Test Results for High Channel 2687.5MHz							
5305.0	-59.20	5.23	35.83	-28.60	-25	-3.60	Horizontal
5305.0	-63.75	5.23	35.83	-33.15	-25	-8.15	Vertical
7957.5	-61.69	5.62	36.87	-30.44	-25	-5.44	Vertical
7957.5	-61.70	5.62	36.87	-30.45	-25	-5.45	Horizontal
191.1	-53.18	1.58	17.56	-37.20	-25	-12.20	Vertical
281.2	-53.92	1.45	16.58	-38.79	-25	-13.79	Horizontal

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

Test Results for Low Channel 2506MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5130.0	-59.76	5.23	35.82	-29.17	-25	-4.17	Horizontal
5130.0	-61.10	5.23	35.82	-30.51	-25	-5.51	Vertical
7695.0	-60.92	5.67	36.86	-29.73	-25	-4.73	Vertical
7695.0	-60.92	5.67	36.86	-29.73	-25	-4.73	Horizontal
183.5	-49.39	1.55	15.76	-35.18	-25	-10.18	Vertical
367.9	-48.76	1.62	15.44	-34.94	-25	-9.94	Horizontal
Test Results for Mid Channel 2593MHz							
5210.0	-63.90	5.16	35.82	-33.24	-25	-8.24	Horizontal
5210.0	-60.29	5.16	35.82	-29.63	-25	-4.63	Vertical
7815.0	-61.29	5.53	36.85	-29.97	-25	-4.97	Vertical
7815.0	-64.97	5.53	36.85	-33.65	-25	-8.65	Horizontal
209.2	-45.92	1.58	16.84	-30.66	-25	-5.66	Vertical
429.8	-53.57	1.61	17.64	-37.54	-25	-12.54	Horizontal
Test Results for High Channel 2680MHz							
5290.0	-64.83	5.24	35.83	-34.24	-25	-9.24	Horizontal
5290.0	-63.13	5.24	35.83	-32.54	-25	-7.54	Vertical
7935.0	-61.34	5.70	36.88	-30.16	-25	-5.16	Vertical
7935.0	-60.84	5.70	36.88	-29.66	-25	-4.66	Horizontal
198.4	-48.00	1.48	16.84	-32.64	-25	-7.64	Vertical
307.9	-46.84	1.59	17.64	-30.79	-25	-5.79	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.

9.12 LTE BAND 66

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

Test Results for Low Channel 1710.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-59.63	3.84	35.81	-27.66	-13	-14.66	Horizontal
3421.4	-60.12	3.84	35.81	-28.15	-13	-15.15	Vertical
5132.1	-61.34	5.18	36.85	-29.67	-13	-16.67	Vertical
5132.1	-62.61	5.18	36.85	-30.94	-13	-17.94	Horizontal
179.0	-49.45	1.56	17.97	-33.04	-13	-20.04	Vertical
416.1	-44.98	1.33	15.11	-31.20	-13	-18.20	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-59.50	3.85	35.82	-27.53	-13	-14.53	Horizontal
3490.0	-64.06	3.85	35.82	-32.09	-13	-19.09	Vertical
5235.0	-61.99	5.21	36.85	-30.35	-13	-17.35	Vertical
5235.0	-64.09	5.21	36.85	-32.45	-13	-19.45	Horizontal
194.3	-47.54	1.77	16.17	-33.13	-13	-20.13	Vertical
306.3	-52.57	1.63	15.21	-38.99	-13	-25.99	Horizontal
Test Results for High Channel 1779.3MHz							
3558.6	-59.39	3.86	35.83	-27.42	-13	-14.42	Horizontal
3558.6	-63.02	3.86	35.83	-31.05	-13	-18.05	Vertical
5337.9	-61.03	5.24	36.87	-29.40	-13	-16.40	Vertical
5337.9	-63.16	5.24	36.87	-31.53	-13	-18.53	Horizontal
189.3	-53.71	1.58	17.56	-37.73	-13	-24.73	Vertical
266.5	-45.56	1.45	16.58	-30.43	-13	-17.43	Horizontal

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

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-64.46	3.84	35.82	-32.48	-13	-19.48	Horizontal
3440.0	-61.60	3.84	35.82	-29.62	-13	-16.62	Vertical
5160.0	-59.70	5.18	36.86	-28.02	-13	-15.02	Vertical
5160.0	-64.22	5.18	36.86	-32.54	-13	-19.54	Horizontal
178.0	-51.77	1.56	15.76	-37.57	-13	-24.57	Vertical
242.9	-50.96	1.33	15.44	-36.85	-13	-23.85	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-64.72	3.85	35.82	-32.75	-13	-19.75	Horizontal
3490.0	-59.92	3.85	35.82	-27.95	-13	-14.95	Vertical
5235.0	-64.98	5.21	36.85	-33.34	-13	-20.34	Vertical
5235.0	-64.94	5.21	36.85	-33.30	-13	-20.30	Horizontal
201.8	-47.25	1.77	16.84	-32.17	-13	-19.17	Vertical
399.4	-51.83	1.63	17.64	-35.82	-13	-22.82	Horizontal
Test Results for High Channel 1770MHz							
3540.0	-63.87	3.86	35.83	-31.90	-13	-18.90	Horizontal
3540.0	-59.41	3.86	35.83	-27.44	-13	-14.44	Vertical
5310.0	-60.33	5.24	36.88	-28.69	-13	-15.69	Vertical
5310.0	-60.28	5.24	36.88	-28.64	-13	-15.64	Horizontal
211.2	-44.39	1.58	16.84	-29.12	-13	-16.12	Vertical
456.9	-44.07	1.45	17.64	-27.88	-13	-14.88	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.

9.13 LTE BAND 71

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

Test Results for Low Channel 665.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1331.0	-62.93	2.16	35.81	-29.28	-13	-16.28	Horizontal
1331.0	-61.51	2.16	35.81	-27.86	-13	-14.86	Vertical
1996.5	-61.46	2.89	36.85	-27.50	-13	-14.50	Vertical
1996.5	-59.36	2.89	36.85	-25.40	-13	-12.40	Horizontal
186.1	-46.53	1.56	17.97	-30.12	-13	-17.12	Vertical
336.1	-47.16	1.33	15.11	-33.38	-13	-20.38	Horizontal
Test Results for Mid Channel 680.5MHz							
1361.0	-61.79	2.17	35.82	-28.14	-13	-15.14	Horizontal
1361.0	-61.10	2.17	35.82	-27.45	-13	-14.45	Vertical
2041.5	-64.40	2.90	36.85	-30.45	-13	-17.45	Vertical
2041.5	-64.49	2.90	36.85	-30.54	-13	-17.54	Horizontal
200.9	-53.40	1.77	16.17	-38.99	-13	-25.99	Vertical
361.3	-45.48	1.63	15.21	-31.90	-13	-18.90	Horizontal
Test Results for High Channel 695.5MHz							
1391.0	-63.78	2.19	35.83	-30.14	-13	-17.14	Horizontal
1391.0	-61.22	2.19	35.83	-27.58	-13	-14.58	Vertical
2086.5	-62.81	2.95	36.87	-28.89	-13	-15.89	Vertical
2086.5	-60.05	2.95	36.87	-26.13	-13	-13.13	Horizontal
175.3	-46.63	1.58	17.56	-30.65	-13	-17.65	Vertical
434.5	-50.70	1.45	16.58	-35.57	-13	-22.57	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
1391.0	-63.78	2.19	35.83	-30.14	-13	-17.14	Horizontal
1391.0	-61.22	2.19	35.83	-27.58	-13	-14.58	Vertical
2086.5	-62.81	2.95	36.87	-28.89	-13	-15.89	Vertical
2086.5	-60.05	2.95	36.87	-26.13	-13	-13.13	Horizontal
175.3	-46.63	1.58	17.56	-30.65	-13	-17.65	Vertical
434.5	-50.70	1.45	16.58	-35.57	-13	-22.57	Horizontal
Test Results for Mid Channel 683MHz							
1366.0	-64.58	2.17	35.82	-30.93	-13	-17.93	Horizontal
1366.0	-59.51	2.17	35.82	-25.86	-13	-12.86	Vertical
2049.0	-59.54	2.90	36.85	-25.59	-13	-12.59	Vertical
2049.0	-59.12	2.90	36.85	-25.17	-13	-12.17	Horizontal
208.1	-48.08	1.77	16.84	-33.00	-13	-20.00	Vertical
392.6	-51.10	1.63	17.64	-35.09	-13	-22.09	Horizontal
Test Results for High Channel 688MHz							
1376.0	-62.15	2.19	35.83	-28.51	-13	-15.51	Horizontal
1376.0	-61.13	2.19	35.83	-27.49	-13	-14.49	Vertical
2064.0	-59.30	2.95	36.88	-25.37	-13	-12.37	Vertical
2064.0	-61.41	2.95	36.88	-27.48	-13	-14.48	Horizontal
191.6	-46.90	1.58	16.84	-31.63	-13	-18.63	Vertical
333.8	-49.52	1.45	17.64	-33.33	-13	-20.33	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, §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 3.23V, Normal, DC 3.8V and High voltage, DC 4.37V.

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/

RESULTS

See the following pages.

10.1 LTE BAND 2

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	1880	13.0	0.006909	2.5
3.8	1880	14.0	0.007452	2.5
4.37	1880	13.6	0.007260	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	12.3	0.006527	2.5
Extreme (50C)	1880	11.7	0.006216	2.5
Extreme (40C)	1880	14.1	0.007520	2.5
Extreme (30C)	1880	13.4	0.007102	2.5
Extreme (10C)	1880	13.8	0.007328	2.5
Extreme (0C)	1880	11.8	0.006274	2.5
Extreme (-10C)	1880	13.0	0.006935	2.5
Extreme (-20C)	1880	13.6	0.007236	2.5
Extreme (-30C)	1880	14.8	0.007866	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	1880	10.0	0.005298	2.5
3.8	1880	8.5	0.004508	2.5
4.37	1880	7.6	0.004048	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	9.3	0.004940	2.5
Extreme (50C)	1880	9.0	0.004776	2.5
Extreme (40C)	1880	7.9	0.004217709	2.5
Extreme (30C)	1880	9.2	0.004884289	2.5
Extreme (10C)	1880	9.1	0.004823792	2.5
Extreme (0C)	1880	8.5	0.004505711	2.5
Extreme (-10C)	1880	8.6	0.004574584	2.5
Extreme (-20C)	1880	8.9	0.00474181	2.5
Extreme (-30C)	1880	7.7	0.004113853	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]
3.23	1732.5	9.1	0.005281	2.5
3.8	1732.5	8.6	0.004966	2.5
4.37	1732.5	8.2	0.004742	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.7	0.004996	2.5
Extreme (50C)	1732.5	9.2	0.005293	2.5
Extreme (40C)	1732.5	7.7	0.004451	2.5
Extreme (30C)	1732.5	5.9	0.003425	2.5
Extreme (10C)	1732.5	6.9	0.003973	2.5
Extreme (0C)	1732.5	9.8	0.005685	2.5
Extreme (-10C)	1732.5	8.1	0.004688	2.5
Extreme (-20C)	1732.5	6.5	0.003776	2.5
Extreme (-30C)	1732.5	8.6	0.004980	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	1732.5	10.0	0.005770	2.5
3.8	1732.5	8.7	0.005013	2.5
4.37	1732.5	8.5	0.004884	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	9.9	0.005695	2.5
Extreme (50C)	1732.5	9.3	0.005348	2.5
Extreme (40C)	1732.5	7.9	0.004549	2.5
Extreme (30C)	1732.5	9.1	0.005245	2.5
Extreme (10C)	1732.5	9.0	0.005220	2.5
Extreme (0C)	1732.5	8.6	0.004957	2.5
Extreme (-10C)	1732.5	8.8	0.005087	2.5
Extreme (-20C)	1732.5	9.2	0.005335	2.5
Extreme (-30C)	1732.5	7.8	0.004494	2.5

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

10.3 LTE BAND 5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	836.5	5.6	0.006699	2.5
3.8	836.5	6.9	0.008221	2.5
4.37	836.5	4.9	0.005844	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.6	0.007871	2.5
Extreme (50C)	836.5	6.0	0.007179	2.5
Extreme (40C)	836.5	6.6	0.007875	2.5
Extreme (30C)	836.5	6.1	0.007258	2.5
Extreme (10C)	836.5	4.9	0.005898	2.5
Extreme (0C)	836.5	5.3	0.006357	2.5
Extreme (-10C)	836.5	5.3	0.006334	2.5
Extreme (-20C)	836.5	6.0	0.007230	2.5
Extreme (-30C)	836.5	5.9	0.007050	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	836.5	5.9	0.007067	2.5
3.8	836.5	6.4	0.007710	2.5
4.37	836.5	5.0	0.005945	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.5	0.007789	2.5
Extreme (50C)	836.5	5.5	0.006526	2.5
Extreme (40C)	836.5	5.8	0.006953	2.5
Extreme (30C)	836.5	6.0	0.007192	2.5
Extreme (10C)	836.5	5.8	0.006931	2.5
Extreme (0C)	836.5	5.4	0.006396	2.5
Extreme (-10C)	836.5	6.1	0.007236	2.5
Extreme (-20C)	836.5	5.9	0.007068	2.5
Extreme (-30C)	836.5	6.7	0.007983	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]
3.23	707.5	8.5	0.012022	2.5
3.8	707.5	10.3	0.014603	2.5
4.37	707.5	8.6	0.012101	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	8.7	0.012239	2.5
Extreme (50C)	707.5	7.4	0.010466	2.5
Extreme (40C)	707.5	7.7	0.010903	2.5
Extreme (30C)	707.5	8.0	0.011333	2.5
Extreme (10C)	707.5	7.1	0.010088	2.5
Extreme (0C)	707.5	9.0	0.012743	2.5
Extreme (-10C)	707.5	8.5	0.012046	2.5
Extreme (-20C)	707.5	9.3	0.013100	2.5
Extreme (-30C)	707.5	7.4	0.010455	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	707.5	7.0	0.009860	2.5
3.8	707.5	7.9	0.011228	2.5
4.37	707.5	7.6	0.010700	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	9.5	0.013384	2.5
Extreme (50C)	707.5	8.6	0.012222	2.5
Extreme (40C)	707.5	9.3	0.013085	2.5
Extreme (30C)	707.5	7.6	0.010796	2.5
Extreme (10C)	707.5	8.3	0.011793	2.5
Extreme (0C)	707.5	7.3	0.010305	2.5
Extreme (-10C)	707.5	7.3	0.010362	2.5
Extreme (-20C)	707.5	9.0	0.012705	2.5
Extreme (-30C)	707.5	8.2	0.011543	2.5

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

10.6 LTE BAND 13

Band 13 QPSK, (10MHz BANDWIDTH RB size 50 RB Offset 0

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	782.0	12.7	0.016281	2.5
3.8	782.0	14.2	0.018114	2.5
4.37	782.0	13.1	0.016724	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	782.0	14.2	0.018196	2.5
Extreme (50C)	782.0	13.9	0.017829	2.5
Extreme (40C)	782.0	14.8	0.018947	2.5
Extreme (30C)	782.0	14.0	0.017946	2.5
Extreme (10C)	782.0	14.4	0.018376	2.5
Extreme (0C)	782.0	13.9	0.017813	2.5
Extreme (-10C)	782.0	13.8	0.017615	2.5
Extreme (-20C)	782.0	14.5	0.018491	2.5
Extreme (-30C)	782.0	13.4	0.017186	2.5

Band 13 16QAM, (10MHz BANDWIDTH RB size 50 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	782.0	12.9	0.016452	2.5
3.8	782.0	13.5	0.017269	2.5
4.37	782.0	13.0	0.016648	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	782.0	13.2	0.016875	2.5
Extreme (50C)	782.0	11.7	0.014964	2.5
Extreme (40C)	782.0	13.3	0.016950	2.5
Extreme (30C)	782.0	13.5	0.017252	2.5
Extreme (10C)	782.0	13.7	0.017513	2.5
Extreme (0C)	782.0	11.7	0.014941	2.5
Extreme (-10C)	782.0	13.3	0.017016	2.5
Extreme (-20C)	782.0	14.2	0.018125	2.5
Extreme (-30C)	782.0	14.7	0.018848	2.5

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

10.11 LTE BAND 41

Band 41 QPSK, (20MHz BANDWIDTH RB size 100 RB Offset 0)
Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	2605	10.5	0.004034	2.5
3.8	2605	8.6	0.003331	2.5
4.37	2605	7.9	0.003056	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2605	9.1	0.003504	2.5
Extreme (50C)	2605	9.1	0.003493	2.5
Extreme (40C)	2605	8.8	0.003399	2.5
Extreme (30C)	2605	9.1	0.003525	2.5
Extreme (10C)	2605	7.9	0.003029	2.5
Extreme (0C)	2605	8.5	0.003275	2.5
Extreme (-10C)	2605	9.5	0.003663	2.5
Extreme (-20C)	2605	8.6	0.003317	2.5
Extreme (-30C)	2605	8.6	0.003332	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	2605	6.9	0.002661	2.5
3.8	2605	6.0	0.002320	2.5
4.37	2605	5.4	0.002088	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2605	6.9	0.002661	2.5
Extreme (50C)	2605	5.3	0.002050	2.5
Extreme (40C)	2605	5.4	0.002082	2.5
Extreme (30C)	2605	7.0	0.002696	2.5
Extreme (10C)	2605	5.5	0.002125	2.5
Extreme (0C)	2605	4.9	0.001879	2.5
Extreme (-10C)	2605	5.5	0.002135	2.5
Extreme (-20C)	2605	5.7	0.002193	2.5
Extreme (-30C)	2605	5.8	0.002248	2.5

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

10.12 LTE BAND 66

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	1745	6.2	0.003562	2.5
3.8	1745	7.1	0.004055	2.5
4.37	1745	7.4	0.004219	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	5.1	0.002946	2.5
Extreme (50C)	1745	7.6	0.004360	2.5
Extreme (40C)	1745	6.5	0.003698	2.5
Extreme (30C)	1745	6.9	0.003949	2.5
Extreme (10C)	1745	7.5	0.004307	2.5
Extreme (0C)	1745	6.2	0.003568	2.5
Extreme (-10C)	1745	5.8	0.003332	2.5
Extreme (-20C)	1745	6.9	0.003946	2.5
Extreme (-30C)	1745	5.5	0.003128	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	1745	8.2	0.004683	2.5
3.8	1745	7.4	0.004256	2.5
4.37	1745	9.8	0.005618	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	8.6	0.004956	2.5
Extreme (50C)	1745	7.7	0.004414	2.5
Extreme (40C)	1745	8.2	0.004689	2.5
Extreme (30C)	1745	7.9	0.004528	2.5
Extreme (10C)	1745	8.2	0.004702	2.5
Extreme (0C)	1745	6.3	0.003596	2.5
Extreme (-10C)	1745	8.6	0.004901	2.5
Extreme (-20C)	1745	8.9	0.005116	2.5
Extreme (-30C)	1745	5.5	0.003157	2.5

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

10.13 LTE BAND 71

Band 71 QPSK, (20MHz BANDWIDTH RB size 100 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	1745	6.2	0.003536	2.5
3.8	1745	7.1	0.004060	2.5
4.37	1745	7.4	0.004242	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	6.0	0.003417	2.5
Extreme (50C)	1745	7.7	0.004420	2.5
Extreme (40C)	1745	6.8	0.003879	2.5
Extreme (30C)	1745	6.6	0.003776	2.5
Extreme (10C)	1745	7.1	0.004065	2.5
Extreme (0C)	1745	6.4	0.003643	2.5
Extreme (-10C)	1745	5.7	0.003285	2.5
Extreme (-20C)	1745	6.2	0.003550	2.5
Extreme (-30C)	1745	5.3	0.003065	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]
3.23	1745	8.5	0.004899	2.5
3.8	1745	7.3	0.004167	2.5
4.37	1745	9.0	0.005167	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	8.7	0.005013	2.5
Extreme (50C)	1745	8.0	0.004566	2.5
Extreme (40C)	1745	8.8	0.005057	2.5
Extreme (30C)	1745	8.1	0.004638	2.5
Extreme (10C)	1745	8.6	0.004914	2.5
Extreme (0C)	1745	6.9	0.003972	2.5
Extreme (-10C)	1745	8.3	0.004735	2.5
Extreme (-20C)	1745	8.3	0.004767	2.5
Extreme (-30C)	1745	5.1	0.002919	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.

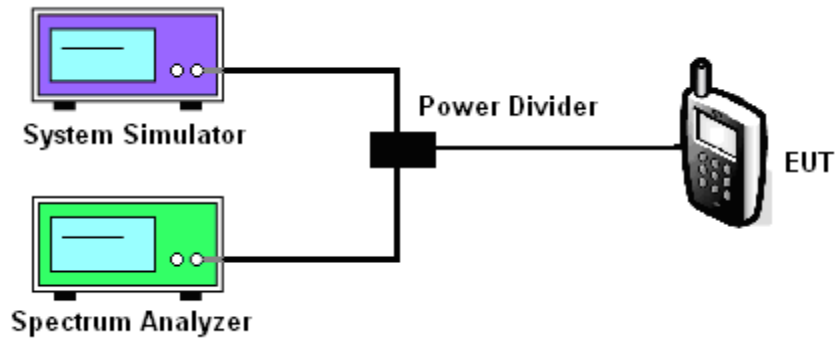
11.2 Measuring Instruments

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 2/4/5/12/13/41/66/71

Test data reference attachment.

----END OF REPORT----