

FCC CFR47 PART 22H, 24E, 27 CERTIFICATION TEST REPORT FCC ID: 2BD9H-E65PRO

Product: mobile phone

Trade Mark: EUDORA

Model No.: E65 Pro

Family Model: N/A

Report No.: S24010505204006

Issue Date: Feb 23, 2024

Prepared for

Eudora Mobile Inc

2610 Columbia ST A, Torrance, CA 90503

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 : Eudora Mobile Inc

Address..... : 2610 Columbia ST A, Torrance, CA 90503

Manufacturer's Name..... : Eudora Mobile Inc

Address..... : 2610 Columbia ST A, Torrance, CA 90503

Product name..... : mobile phone

Model and/or type reference .. : E65 Pro

Trade Mark..... : EUDORA

Family Model..... : N/A

Test Sample Number : S240105052005

Date of Test..... : Jan 05, 2024 ~ Feb 23, 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 By : Mukzi Lee
Mukzi Lee
(Project Engineer)

Reviewed : Aaron Cheng
By : Aaron Cheng
(Supervisor)

Approved : Alex Li
By : Alex Li
(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 17	28
8.8 LTE BAND 41	30
8.9 LTE BAND 66	32
8.10 LTE BAND 71	35
9. SPURIOUS RADIATION EMISSION	37
9.1 LTE BAND 2.....	39
9.2 LTE BAND 4.....	41
9.3 LTE BAND 5.....	43
9.5 LTE BAND 12	45
9.6 LTE BAND 17	47
9.7 LTE BAND 41	49
9.8 LTE BAND 66	51
9.9 LTE BAND 71	53
10. FREQUENCY STABILITY	55
10.1 LTE BAND 2	56
10.2 LTE BAND 4	58
10.3 LTE BAND 5	60
10.5 LTE BAND 12	62
10.6 LTE BAND 17	64
10.7 LTE BAND 41	66
10.8 LTE BAND 66	68
10.9 LTE BAND 71	70
11. PEAK-TO-AVERAGE RATIO.....	72
11.1 Description of the PAR Measurement.....	72
11.2 Measuring Instruments	72
11.3 Test Procedures.....	72
11.4 Test Setup.....	73

1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	mobile phone
Trade Mark	EUDORA
Model Name	E65 Pro
Family Model	N/A
Model Difference	N/A
FCC ID:	2BD9H-E65PRO
Frequency Bands:	U.S. Bands: ☒ LTE FDD Band 2,4,5,12,17,66, 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 17 Uplink: 704MHz-716MHz, Downlink: 734MHz-746MHz; LTE TDD Band 41 Uplink: 2496MHz-2690MHz, LTE FDD Band 66 Uplink: 1710MHz-1780MHz, Downlink: 2110MHz-2200MHz; LTE 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: -1.1 dBi, Band 4: -0.83 dBi, Band 5: -0.91 dBi, Band 12: -0.38 dBi, Band 17: -0.38 dBi, Band 41: -1.2 dBi, Band 66: -0.83dBi, Band 71: -0.38 dBi
Adapter	Input: 100-240V~50/60Hz 0.15A Output: 5.0V---2.0A
Battery	DC 3.8V, 4000mAh, 15.2Wh
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	2277WQ_HDI_V15
SW Version	Eudora_E65Pro_V2.0
** 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: 2BD9H-E65PRO** 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% ($U = 2U_c(y)$)	2.5dB

1.5 SPECIAL ACCESSORIES

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

1.6 WORST-CASE CONFIGURATION AND MODE

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

The device has LTE Bands of: Band 2/4/5/12/17/41/66/71

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

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

2. SYSTEM TEST CONFIGURATION

2.1 EUT CONFIGURATION

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

2.2 EUT EXERCISE

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

2.3 CONFIGURATION OF EUT SYSTEM

Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	mobile phone	E65 Pro	FCC ID: 2BD9H-E65PRO	EUT

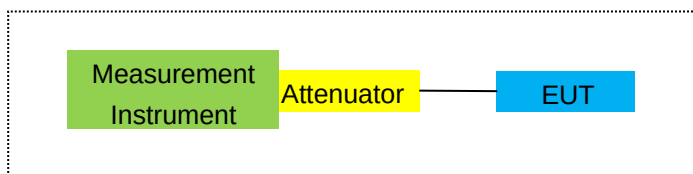
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

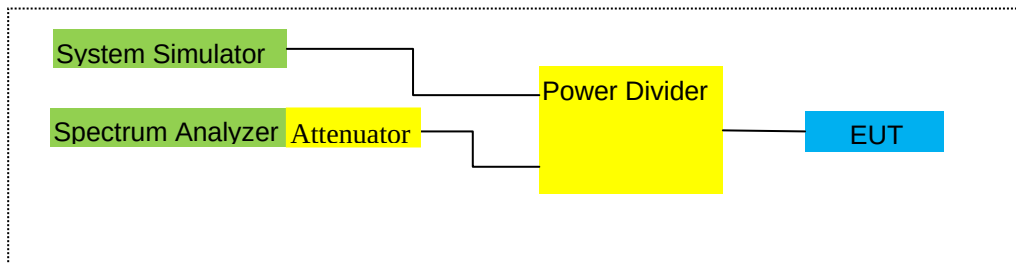
For Radiated Test Cases



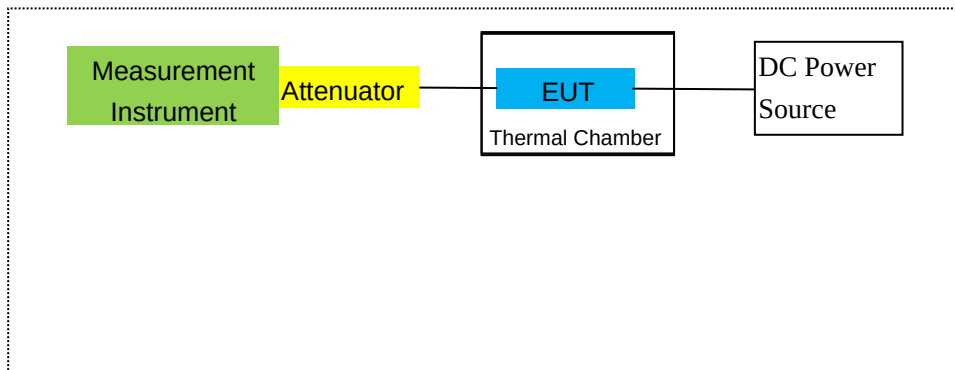
For Conducted Output Power



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	20170402923	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 6.6.3.3.2	13	10	Table 6.2.4-2	Table 6.2.4-2
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23 ¹	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
..					
NS_32	-	-	-	-	-

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

Test data reference attachment.

5. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

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

MODES TESTED

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

RESULTS

PASS

Test data reference attachment.

6. BANDEDGE AND EMISSION MASK

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53, 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 than $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees. Show citation box.

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

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

RESULTS

Test data reference attachment.

7. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53 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 2/4/5/12/17/41/66/71

7.1 MEASUREMENT METHOD

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

Test data reference attachment.

8. RADIATED MEASUREMENT

8.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232, §27.50 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 2/4/5/12/17/41/66/71

RESULTS

Pass

8.2 LTE BAND 2

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	1850.7	-2.19	3.76	28.24	22.29	169.434	Horizontal	Pass
		1880	-1.96	3.91	28.22	22.35	171.791	Horizontal	Pass
		1909.3	-1.99	3.93	28.20	22.28	169.044	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-2.06	3.77	28.23	22.40	173.780	Horizontal	Pass
		1880	-2.09	3.91	28.24	22.24	167.494	Horizontal	Pass
		1908.5	-1.93	3.94	28.25	22.38	172.982	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-2.19	3.77	28.31	22.35	171.791	Horizontal	Pass
		1880	-2.07	3.91	28.22	22.24	167.494	Horizontal	Pass
		1907.5	-1.88	3.94	28.20	22.38	172.982	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-2.19	3.79	28.33	22.35	171.791	Horizontal	Pass
		1880	-2.01	3.95	28.22	22.26	168.267	Horizontal	Pass
		1905	-1.94	3.97	28.19	22.28	169.044	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-2.17	3.79	28.34	22.38	172.982	Horizontal	Pass
		1880	-1.90	3.95	28.22	22.37	172.584	Horizontal	Pass
		1902.5	-1.91	3.97	28.18	22.30	169.824	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-2.29	3.81	28.35	22.25	167.880	Horizontal	Pass
		1880	-1.97	3.96	28.22	22.29	169.434	Horizontal	Pass
		1900	-1.87	4.00	28.16	22.29	169.434	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-2.09	3.76	28.24	22.39	173.380	Vertical	Pass
		1880	-1.99	3.91	28.22	22.32	170.608	Vertical	Pass
		1909.3	-1.92	3.93	28.20	22.35	171.791	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-2.11	3.77	28.23	22.35	171.791	Vertical	Pass
		1880	-1.99	3.91	28.24	22.34	171.396	Vertical	Pass
		1908.5	-2.03	3.94	28.25	22.28	169.044	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-2.26	3.77	28.31	22.28	169.044	Vertical	Pass
		1880	-1.95	3.91	28.22	22.36	172.187	Vertical	Pass
		1907.5	-1.99	3.94	28.20	22.27	168.655	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1855	-2.23	3.79	28.33	22.31	170.216	Vertical	Pass
		1880	-1.90	3.95	28.22	22.37	172.584	Vertical	Pass
		1905	-1.93	3.97	28.19	22.29	169.434	Vertical	Pass

15.0MHz	1/#Mid	1857.5	-2.25	3.79	28.34	22.30	169.824	Vertical	Pass
Band		1880	-1.96	3.95	28.22	22.31	170.216	Vertical	Pass
QPSK		1902.5	-1.91	3.97	28.18	22.30	169.824	Vertical	Pass
20.0MHz	1/#Mid	1860	-2.12	3.81	28.35	22.42	174.582	Vertical	Pass
Band		1880	-1.85	3.96	28.22	22.41	174.181	Vertical	Pass
QPSK		1900	-1.73	4.00	28.16	22.43	174.985	Vertical	Pass

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	1/#Mid	1850.7	-3.29	3.76	28.24	21.19	131.522	Horizontal	Pass
Band 16		1880	-3.04	3.91	28.22	21.27	133.968	Horizontal	Pass
QAM		1909.3	-3.04	3.93	28.20	21.23	132.739	Horizontal	Pass
3.0MHz	1/#Mid	1851.5	-3.31	3.77	28.23	21.15	130.317	Horizontal	Pass
Band 16		1880	-3.16	3.91	28.24	21.17	130.918	Horizontal	Pass
QAM		1908.5	-3.13	3.94	28.25	21.18	131.220	Horizontal	Pass
5.0MHz	1/#Mid	1852.5	-3.40	3.77	28.31	21.14	130.017	Horizontal	Pass
Band 16		1880	-3.05	3.91	28.22	21.26	133.660	Horizontal	Pass
QAM		1907.5	-3.09	3.94	28.20	21.17	130.918	Horizontal	Pass
10.0MHz	1/#Mid	1855	-3.26	3.79	28.33	21.28	134.276	Horizontal	Pass
Band 16		1880	-3.01	3.95	28.22	21.26	133.660	Horizontal	Pass
QAM		1905	-2.99	3.97	28.19	21.23	132.739	Horizontal	Pass
15.0MHz	1/#Mid	1857.5	-3.33	3.79	28.34	21.22	132.434	Horizontal	Pass
Band 16		1880	-3.11	3.95	28.22	21.16	130.617	Horizontal	Pass
QAM		1902.5	-3.04	3.97	28.18	21.17	130.918	Horizontal	Pass
20.0MHz	1/#Mid	1860	-3.26	3.81	28.35	21.28	134.276	Horizontal	Pass
Band 16		1880	-3.02	3.96	28.22	21.24	133.045	Horizontal	Pass
QAM		1900	-2.94	4.00	28.16	21.22	132.434	Horizontal	Pass
1.4MHz	1/#Mid	1850.7	-3.33	3.76	28.24	21.15	130.317	Vertical	Pass
Band 16		1880	-3.08	3.91	28.22	21.23	132.739	Vertical	Pass
QAM		1909.3	-3.11	3.93	28.20	21.16	130.617	Vertical	Pass
3.0MHz	1/#Mid	1851.5	-3.31	3.77	28.23	21.15	130.317	Vertical	Pass
Band 16		1880	-3.17	3.91	28.24	21.16	130.617	Vertical	Pass
QAM		1908.5	-3.17	3.94	28.25	21.14	130.017	Vertical	Pass
5.0MHz	1/#Mid	1852.5	-3.38	3.77	28.31	21.16	130.617	Vertical	Pass

Band 16		1880	-3.08	3.91	28.22	21.23	132.739	Vertical	Pass
QAM		1907.5	-2.99	3.94	28.20	21.27	133.968	Vertical	Pass
10.0MHz	1/#Mid	1855	-3.25	3.79	28.33	21.29	134.586	Vertical	Pass
Band 16		1880	-2.99	3.95	28.22	21.28	134.276	Vertical	Pass
QAM		1905	-2.99	3.97	28.19	21.23	132.739	Vertical	Pass
15.0MHz	1/#Mid	1857.5	-3.26	3.79	28.34	21.29	134.586	Vertical	Pass
Band 16		1880	-3.06	3.95	28.22	21.21	132.130	Vertical	Pass
QAM		1902.5	-2.93	3.97	28.18	21.28	134.276	Vertical	Pass
20.0MHz	1/#Mid	1860	-3.20	3.81	28.35	21.34	136.144	Vertical	Pass
Band 16		1880	-2.93	3.96	28.22	21.33	135.831	Vertical	Pass
QAM		1900	-2.81	4.00	28.16	21.35	136.458	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	-4.62	3.12	27.58	19.84	96.383	Horizontal	Pass
		1732.5	-4.56	3.27	27.61	19.78	95.060	Horizontal	Pass
		1754.3	-4.56	3.29	27.63	19.78	95.060	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-4.63	3.13	27.61	19.85	96.605	Horizontal	Pass
		1732.5	-4.55	3.27	27.61	19.79	95.280	Horizontal	Pass
		1753.5	-4.54	3.30	27.62	19.78	95.060	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-4.77	3.13	27.63	19.73	93.972	Horizontal	Pass
		1732.5	-4.49	3.27	27.61	19.85	96.605	Horizontal	Pass
		1752.5	-4.56	3.30	27.60	19.74	94.189	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-4.71	3.15	27.64	19.78	95.060	Horizontal	Pass
		1732.5	-4.52	3.31	27.61	19.78	95.060	Horizontal	Pass
		1750	-4.50	3.33	27.59	19.76	94.624	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-4.78	3.15	27.65	19.72	93.756	Horizontal	Pass
		1732.5	-4.54	3.31	27.61	19.76	94.624	Horizontal	Pass
		1747.5	-4.40	3.33	27.57	19.84	96.383	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-4.71	3.17	27.66	19.78	95.060	Horizontal	Pass
		1732.5	-4.60	3.32	27.61	19.69	93.111	Horizontal	Pass
		1745	-4.38	3.36	27.56	19.82	95.940	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-4.73	3.12	27.58	19.73	93.972	Vertical	Pass
		1732.5	-4.50	3.27	27.61	19.84	96.383	Vertical	Pass
		1754.3	-4.53	3.29	27.63	19.81	95.719	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-4.75	3.13	27.61	19.73	93.972	Vertical	Pass
		1732.5	-4.49	3.27	27.61	19.85	96.605	Vertical	Pass
		1753.5	-4.53	3.30	27.62	19.79	95.280	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-4.81	3.13	27.63	19.69	93.111	Vertical	Pass
		1732.5	-4.57	3.27	27.61	19.77	94.842	Vertical	Pass
		1752.5	-4.61	3.30	27.60	19.69	93.111	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-4.69	3.15	27.64	19.80	95.499	Vertical	Pass
		1732.5	-4.55	3.31	27.61	19.75	94.406	Vertical	Pass
		1750	-4.52	3.33	27.59	19.74	94.189	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1717.5	-4.64	3.15	27.65	19.86	96.828	Vertical	Pass
		1732.5	-4.51	3.31	27.61	19.79	95.280	Vertical	Pass
		1747.5	-4.40	3.33	27.57	19.84	96.383	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1720	-4.61	3.17	27.66	19.88	97.275	Vertical	Pass
		1732.5	-4.41	3.32	27.61	19.88	97.275	Vertical	Pass
		1745	-4.28	3.36	27.56	19.92	98.175	Vertical	Pass

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 16 QAM	1/#Mid	1710.7	-5.61	3.12	27.58	18.85	76.736	Horizontal	Pass
		1732.5	-5.51	3.27	27.61	18.83	76.384	Horizontal	Pass
		1754.3	-5.47	3.29	27.63	18.87	77.090	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-5.62	3.13	27.61	18.86	76.913	Horizontal	Pass
		1732.5	-5.42	3.27	27.61	18.92	77.983	Horizontal	Pass
		1753.5	-5.51	3.30	27.62	18.81	76.033	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-5.70	3.13	27.63	18.80	75.858	Horizontal	Pass
		1732.5	-5.46	3.27	27.61	18.88	77.268	Horizontal	Pass
		1752.5	-5.51	3.30	27.60	18.79	75.683	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-5.65	3.15	27.64	18.84	76.560	Horizontal	Pass
		1732.5	-5.38	3.31	27.61	18.92	77.983	Horizontal	Pass
		1750	-5.39	3.33	27.59	18.87	77.090	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-5.66	3.15	27.65	18.84	76.560	Horizontal	Pass
		1732.5	-5.46	3.31	27.61	18.84	76.560	Horizontal	Pass
		1747.5	-5.28	3.33	27.57	18.96	78.705	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-5.55	3.17	27.66	18.94	78.343	Horizontal	Pass
		1732.5	-5.43	3.32	27.61	18.86	76.913	Horizontal	Pass
		1745	-5.36	3.36	27.56	18.84	76.560	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-5.60	3.12	27.58	18.86	76.913	Vertical	Pass
		1732.5	-5.48	3.27	27.61	18.86	76.913	Vertical	Pass
		1754.3	-5.41	3.29	27.63	18.93	78.163	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-5.58	3.13	27.61	18.90	77.625	Vertical	Pass
		1732.5	-5.41	3.27	27.61	18.93	78.163	Vertical	Pass
		1753.5	-5.46	3.30	27.62	18.86	76.913	Vertical	Pass
5.0MHz	1/#Mid	1712.5	-5.65	3.13	27.63	18.85	76.736	Vertical	Pass

Band 16		1732.5	-5.38	3.27	27.61	18.96	78.705	Vertical	Pass
QAM		1752.5	-5.44	3.30	27.60	18.86	76.913	Vertical	Pass
10.0MHz	1/#Mid	1715	-5.67	3.15	27.64	18.82	76.208	Vertical	Pass
Band 16		1732.5	-5.34	3.31	27.61	18.96	78.705	Vertical	Pass
QAM		1750	-5.31	3.33	27.59	18.95	78.524	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-5.61	3.15	27.65	18.89	77.446	Vertical	Pass
Band 16		1732.5	-5.45	3.31	27.61	18.85	76.736	Vertical	Pass
QAM		1747.5	-5.33	3.33	27.57	18.91	77.804	Vertical	Pass
20.0MHz	1/#Mid	1720	-5.49	3.17	27.66	19.00	79.433	Vertical	Pass
Band 16		1732.5	-5.31	3.32	27.61	18.98	79.068	Vertical	Pass
QAM		1745	-5.20	3.36	27.56	19.00	79.433	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.4 LTE BAND 5

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	824.7	3.71	2.01	19.68	2.15	19.23	83.753	Horizontal	Pass
		836.5	3.64	2.01	19.77	2.15	19.25	84.140	Horizontal	Pass
		848.3	3.55	2.02	19.82	2.15	19.20	83.176	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	825.5	3.72	2.01	19.70	2.15	19.26	84.333	Horizontal	Pass
		836.5	3.57	2.01	19.77	2.15	19.18	82.794	Horizontal	Pass
		847.5	3.55	2.02	19.81	2.15	19.19	82.985	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	826.5	3.64	2.01	19.71	2.15	19.19	82.985	Horizontal	Pass
		836.5	3.68	2.01	19.77	2.15	19.29	84.918	Horizontal	Pass
		846.5	3.53	2.02	19.79	2.15	19.15	82.224	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	829	3.69	2.01	19.73	2.15	19.26	84.333	Horizontal	Pass
		836.5	3.50	2.01	19.77	2.15	19.11	81.470	Horizontal	Pass
		844	3.65	2.02	19.78	2.15	19.26	84.333	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	824.7	3.71	2.01	19.68	2.15	19.23	83.753	Vertical	Pass
		836.5	3.64	2.01	19.77	2.15	19.25	84.140	Vertical	Pass
		848.3	3.53	2.02	19.82	2.15	19.18	82.794	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	825.5	3.66	2.01	19.70	2.15	19.20	83.176	Vertical	Pass
		836.5	3.57	2.01	19.77	2.15	19.18	82.794	Vertical	Pass
		847.5	3.65	2.02	19.81	2.15	19.29	84.918	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	826.5	3.72	2.01	19.71	2.15	19.27	84.528	Vertical	Pass
		836.5	3.67	2.01	19.77	2.15	19.28	84.723	Vertical	Pass
		846.5	3.57	2.02	19.79	2.15	19.19	82.985	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	829	3.73	2.01	19.73	2.15	19.30	85.114	Vertical	Pass
		836.5	3.69	2.01	19.77	2.15	19.30	85.114	Vertical	Pass
		844	3.70	2.02	19.78	2.15	19.31	85.310	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	2.95	2.01	19.68	2.15	18.47	70.307	Horizontal	Pass
		836.5	2.93	2.01	19.77	2.15	18.54	71.450	Horizontal	Pass
		848.3	2.80	2.02	19.82	2.15	18.45	69.984	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	2.99	2.01	19.70	2.15	18.53	71.285	Horizontal	Pass
		836.5	2.92	2.01	19.77	2.15	18.53	71.285	Horizontal	Pass
		847.5	2.91	2.02	19.81	2.15	18.55	71.614	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	2.96	2.01	19.71	2.15	18.51	70.958	Horizontal	Pass
		836.5	2.83	2.01	19.77	2.15	18.44	69.823	Horizontal	Pass
		846.5	2.96	2.02	19.79	2.15	18.58	72.111	Horizontal	Pass
10.0MHz z Band 16 QAM	1/#Mid	829	2.83	2.01	19.73	2.15	18.40	69.183	Horizontal	Pass
		836.5	2.91	2.01	19.77	2.15	18.52	71.121	Horizontal	Pass
		844	2.98	2.02	19.78	2.15	18.59	72.277	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	824.7	3.04	2.01	19.68	2.15	18.56	71.779	Vertical	Pass
		836.5	2.97	2.01	19.77	2.15	18.58	72.111	Vertical	Pass
		848.3	2.82	2.02	19.82	2.15	18.47	70.307	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	2.92	2.01	19.70	2.15	18.46	70.146	Vertical	Pass
		836.5	2.89	2.01	19.77	2.15	18.50	70.795	Vertical	Pass
		847.5	2.94	2.02	19.81	2.15	18.58	72.111	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	3.03	2.01	19.71	2.15	18.58	72.111	Vertical	Pass
		836.5	2.83	2.01	19.77	2.15	18.44	69.823	Vertical	Pass
		846.5	2.81	2.02	19.79	2.15	18.43	69.663	Vertical	Pass
10.0MHz z Band 16 QAM	1/#Mid	829	3.04	2.01	19.73	2.15	18.61	72.611	Vertical	Pass
		836.5	3.00	2.01	19.77	2.15	18.61	72.611	Vertical	Pass
		844	3.01	2.02	19.78	2.15	18.62	72.778	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							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 QPSK	1/#Mid	699.7	5.43	1.91	19.21	2.15	20.58	114.288	Vertical	Pass
		707.5	5.34	1.91	19.26	2.15	20.54	113.240	Vertical	Pass
		715.3	5.30	1.93	19.34	2.15	20.56	113.763	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	700.5	5.34	1.91	19.21	2.15	20.49	111.944	Vertical	Pass
		707.5	5.36	1.91	19.26	2.15	20.56	113.763	Vertical	Pass
		714.5	5.31	1.93	19.34	2.15	20.57	114.025	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	701.5	5.44	1.91	19.23	2.15	20.61	115.080	Vertical	Pass
		707.5	5.37	1.91	19.26	2.15	20.57	114.025	Vertical	Pass
		713.5	5.22	1.92	19.33	2.15	20.48	111.686	Vertical	Pass
10.0Hz Band QPSK	1/#Mid	704	5.38	1.91	19.25	2.15	20.57	114.025	Vertical	Pass
		707.5	5.28	1.91	19.26	2.15	20.48	111.686	Vertical	Pass
		711	5.29	1.92	19.32	2.15	20.54	113.240	Vertical	Pass
1.4MHz Band QPSK	1/#Mid	699.7	5.46	1.91	19.21	2.15	20.61	115.080	Horizontal	Pass
		707.5	5.28	1.91	19.26	2.15	20.48	111.686	Horizontal	Pass
		715.3	5.24	1.93	19.34	2.15	20.50	112.202	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	700.5	5.36	1.91	19.21	2.15	20.51	112.460	Horizontal	Pass
		707.5	5.31	1.91	19.26	2.15	20.51	112.460	Horizontal	Pass
		714.5	5.33	1.93	19.34	2.15	20.59	114.551	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	701.5	5.41	1.91	19.23	2.15	20.58	114.288	Horizontal	Pass
		707.5	5.26	1.91	19.26	2.15	20.46	111.173	Horizontal	Pass
		713.5	5.25	1.92	19.33	2.15	20.51	112.460	Horizontal	Pass
10.0Hz Band QPSK	1/#Mid	704	5.45	1.91	19.25	2.15	20.64	115.878	Horizontal	Pass
		707.5	5.44	1.91	19.26	2.15	20.64	115.878	Horizontal	Pass
		711	5.37	1.92	19.32	2.15	20.62	115.345	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	4.53	1.91	19.21	2.15	19.68	92.897	Vertical	Pass
		707.5	4.50	1.91	19.26	2.15	19.70	93.325	Vertical	Pass
		715.3	4.51	1.93	19.34	2.15	19.77	94.842	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	4.57	1.91	19.21	2.15	19.72	93.756	Vertical	Pass
		707.5	4.58	1.91	19.26	2.15	19.78	95.060	Vertical	Pass
		714.5	4.40	1.93	19.34	2.15	19.66	92.470	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	4.46	1.91	19.23	2.15	19.63	91.833	Vertical	Pass
		707.5	4.51	1.91	19.26	2.15	19.71	93.541	Vertical	Pass
		713.5	4.55	1.92	19.33	2.15	19.81	95.719	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	704	4.56	1.91	19.25	2.15	19.75	94.406	Vertical	Pass
		707.5	4.46	1.91	19.26	2.15	19.66	92.470	Vertical	Pass
		711	4.54	1.92	19.32	2.15	19.79	95.280	Vertical	Pass
1.4MHz Band 16 QAM	1/#Mid	699.7	4.59	1.91	19.21	2.15	19.74	94.189	Horizontal	Pass
		707.5	4.47	1.91	19.26	2.15	19.67	92.683	Horizontal	Pass
		715.3	4.46	1.93	19.34	2.15	19.72	93.756	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	4.65	1.91	19.21	2.15	19.80	95.499	Horizontal	Pass
		707.5	4.46	1.91	19.26	2.15	19.66	92.470	Horizontal	Pass
		714.5	4.46	1.93	19.34	2.15	19.72	93.756	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	4.51	1.91	19.23	2.15	19.68	92.897	Horizontal	Pass
		707.5	4.55	1.91	19.26	2.15	19.75	94.406	Horizontal	Pass
		713.5	4.46	1.92	19.33	2.15	19.72	93.756	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	704	4.66	1.91	19.25	2.15	19.85	96.605	Horizontal	Pass
		707.5	4.64	1.91	19.26	2.15	19.84	96.383	Horizontal	Pass
		711	4.57	1.92	19.32	2.15	19.82	95.940	Horizontal	Pass

Note:

SG Level= Signal generator output

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

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

8.7 LTE BAND 17

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Factor	Correction	Max. ERP	Max. ERP	Polarization	
			(dBm)	(dBm)	(dB)		Average	Average	Of Max. ERP	
							(dBm)	(mW)		
5.0MHz Band QPSK	1/#Mid	706.5	4.76	1.91	19.23	2.15	19.93	98.401	Vertical	Pass
		710	4.75	1.91	19.26	2.15	19.95	98.855	Vertical	Pass
		713.5	4.61	1.92	19.33	2.15	19.87	97.051	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	709	4.65	1.91	19.25	2.15	19.84	96.383	Vertical	Pass
		710	4.75	1.91	19.26	2.15	19.95	98.855	Vertical	Pass
		711	4.65	1.92	19.32	2.15	19.90	97.724	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	706.5	4.71	1.91	19.23	2.15	19.88	97.275	Horizontal	Pass
		710	4.78	1.91	19.26	2.15	19.98	99.541	Horizontal	Pass
		713.5	4.74	1.92	19.33	2.15	20.00	100.000	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	709	4.83	1.91	19.25	2.15	20.02	100.462	Horizontal	Pass
		710	4.81	1.91	19.26	2.15	20.01	100.231	Horizontal	Pass
		711	4.77	1.92	19.32	2.15	20.02	100.462	Horizontal	Pass

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Factor	Correction	Max. ERP	Max. ERP	Polarization	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	Of Max. ERP	
							(dBm)	(mW)		
5.0MHz Band 16 QAM	1/#Mid	706.5	3.81	1.91	19.23	2.15	18.98	79.068	Vertical	Pass
		710	3.82	1.91	19.26	2.15	19.02	79.799	Vertical	Pass
		713.5	3.83	1.92	19.33	2.15	19.09	81.096	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	709	3.88	1.91	19.25	2.15	19.07	80.724	Vertical	Pass
		710	3.83	1.91	19.26	2.15	19.03	79.983	Vertical	Pass
		711	3.70	1.92	19.32	2.15	18.95	78.524	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	706.5	3.94	1.91	19.23	2.15	19.11	81.470	Horizontal	Pass
		710	3.84	1.91	19.26	2.15	19.04	80.168	Horizontal	Pass
		713.5	3.84	1.92	19.33	2.15	19.10	81.283	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	709	3.94	1.91	19.25	2.15	19.13	81.846	Horizontal	Pass
		710	3.92	1.91	19.26	2.15	19.12	81.658	Horizontal	Pass
		711	3.88	1.92	19.32	2.15	19.13	81.846	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)

8.8 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	-5.11	4.54	27.75	18.10	64.565	Horizontal	Pass
		2593	-4.94	4.69	27.72	18.09	64.417	Horizontal	Pass
		2687.5	-4.89	4.71	27.71	18.11	64.714	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2501	-5.04	4.55	27.76	18.17	65.615	Horizontal	Pass
		2593	-4.86	4.69	27.72	18.17	65.615	Horizontal	Pass
		2685	-4.84	4.72	27.70	18.14	65.163	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2503.5	-5.10	4.55	27.77	18.12	64.863	Horizontal	Pass
		2593	-4.85	4.69	27.72	18.18	65.766	Horizontal	Pass
		2682.5	-4.82	4.72	27.69	18.15	65.313	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2506	-5.17	4.57	27.78	18.04	63.680	Horizontal	Pass
		2593	-4.83	4.73	27.72	18.16	65.464	Horizontal	Pass
		2680	-4.89	4.75	27.68	18.04	63.680	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2498.5	-5.05	4.54	27.75	18.16	65.464	Vertical	Pass
		2593	-4.97	4.69	27.72	18.06	63.973	Vertical	Pass
		2687.5	-4.93	4.71	27.71	18.07	64.121	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2501	-5.13	4.55	27.76	18.08	64.269	Vertical	Pass
		2593	-4.86	4.69	27.72	18.17	65.615	Vertical	Pass
		2685	-4.88	4.72	27.70	18.10	64.565	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2503.5	-5.19	4.55	27.77	18.03	63.533	Vertical	Pass
		2593	-4.98	4.69	27.72	18.05	63.826	Vertical	Pass
		2682.5	-4.90	4.72	27.69	18.07	64.121	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2506	-5.01	4.57	27.78	18.20	66.069	Vertical	Pass
		2593	-4.80	4.73	27.72	18.19	65.917	Vertical	Pass
		2680	-4.70	4.75	27.68	18.23	66.527	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	-6.13	4.54	27.75	17.08	51.050	Horizontal	Pass
		2535	-5.95	4.69	27.72	17.08	51.050	Horizontal	Pass
		2567.5	-5.88	4.71	27.71	17.12	51.523	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-6.08	4.55	27.76	17.13	51.642	Horizontal	Pass
		2535	-5.88	4.69	27.72	17.15	51.880	Horizontal	Pass
		2565	-5.95	4.72	27.70	17.03	50.466	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-6.15	4.55	27.77	17.07	50.933	Horizontal	Pass
		2535	-5.85	4.69	27.72	17.18	52.240	Horizontal	Pass
		2562.5	-5.80	4.72	27.69	17.17	52.119	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-6.05	4.57	27.78	17.16	52.000	Horizontal	Pass
		2535	-5.94	4.73	27.72	17.05	50.699	Horizontal	Pass
		2560	-5.83	4.75	27.68	17.10	51.286	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	-6.08	4.54	27.75	17.13	51.642	Vertical	Pass
		2535	-5.96	4.69	27.72	17.07	50.933	Vertical	Pass
		2567.5	-5.90	4.71	27.71	17.10	51.286	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-6.18	4.55	27.76	17.03	50.466	Vertical	Pass
		2535	-5.93	4.69	27.72	17.10	51.286	Vertical	Pass
		2565	-5.93	4.72	27.70	17.05	50.699	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-6.20	4.55	27.77	17.02	50.350	Vertical	Pass
		2535	-5.85	4.69	27.72	17.18	52.240	Vertical	Pass
		2562.5	-5.88	4.72	27.69	17.09	51.168	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-5.98	4.57	27.78	17.23	52.845	Vertical	Pass
		2535	-5.78	4.73	27.72	17.21	52.602	Vertical	Pass
		2560	-5.75	4.75	27.68	17.18	52.240	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.9 LTE BAND 66

Radiated Power (EIRP) for Band 66									
Mode	RB/RB SIZE	Frequency	Result						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	-4.33	3.76	28.24	20.15	103.514	Horizontal	Pass
		1745	-4.14	3.91	28.22	20.17	103.992	Horizontal	Pass
		1779.3	-4.13	3.93	28.2	20.14	103.276	Horizontal	Pass
3.0MHz Band QPSK	15/0	1711.5	-4.26	3.77	28.23	20.20	104.713	Horizontal	Pass
		1745	-4.11	3.91	28.24	20.22	105.196	Horizontal	Pass
		1778.5	-4.05	3.94	28.25	20.26	106.170	Horizontal	Pass
5.0MHz Band QPSK	25/0	1712.5	-4.29	3.77	28.31	20.25	105.925	Horizontal	Pass
		1745	-4.10	3.91	28.22	20.21	104.954	Horizontal	Pass
		1777.5	-4.11	3.94	28.2	20.15	103.514	Horizontal	Pass
10.0MHz Band QPSK	50/0	1715	-4.35	3.79	28.33	20.19	104.472	Horizontal	Pass
		1745	-4.03	3.95	28.22	20.24	105.682	Horizontal	Pass
		1775	-4.10	3.97	28.19	20.12	102.802	Horizontal	Pass
15.0MHz Band QPSK	75/0	1717.5	-4.44	3.79	28.34	20.11	102.565	Horizontal	Pass
		1745	-4.05	3.95	28.22	20.22	105.196	Horizontal	Pass
		1772.5	-4.06	3.97	28.18	20.15	103.514	Horizontal	Pass
20.0MHz Band QPSK	100/0	1720	-4.40	3.81	28.35	20.14	103.276	Horizontal	Pass
		1745	-4.09	3.96	28.22	20.17	103.992	Horizontal	Pass
		1770	-4.03	4	28.16	20.13	103.039	Horizontal	Pass
1.4MHz Band QPSK	6/0	1710.7	-4.27	3.76	28.24	20.21	104.954	Vertical	Pass
		1745	-4.12	3.91	28.22	20.19	104.472	Vertical	Pass
		1779.3	-4.15	3.93	28.2	20.12	102.802	Vertical	Pass
3.0MHz Band QPSK	15/0	1711.5	-4.23	3.77	28.23	20.23	105.439	Vertical	Pass
		1745	-4.11	3.91	28.24	20.22	105.196	Vertical	Pass
		1778.5	-4.06	3.94	28.25	20.25	105.925	Vertical	Pass
5.0MHz Band QPSK	25/0	1712.5	-4.41	3.77	28.31	20.13	103.039	Vertical	Pass
		1745	-4.07	3.91	28.22	20.24	105.682	Vertical	Pass
		1777.5	-4.07	3.94	28.2	20.19	104.472	Vertical	Pass
10.0MHz	50/0	1715	-4.28	3.79	28.34	20.27	106.414	Vertical	Pass

Band QPSK		1745	-4.11	3.95	28.22	20.16	103.753	Vertical	Pass
		1775	-4.00	3.97	28.18	20.21	104.954	Vertical	Pass
15.0MHz Band QPSK	75/0	1717.5	-4.35	3.81	28.35	20.19	104.472	Vertical	Pass
		1745	-3.99	3.96	28.22	20.27	106.414	Vertical	Pass
		1772.5	-3.92	4	28.16	20.24	105.682	Vertical	Pass
20.0MHz Band QPSK	100/0	1720	-4.27	3.79	28.34	20.28	106.660	Vertical	Pass
		1745	-3.99	3.95	28.22	20.28	106.660	Vertical	Pass
		1770	-3.90	3.97	28.18	20.31	107.399	Vertical	Pass

Radiated Power (EIRP) for Band 66									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	6/0	1710.7	-5.13	3.76	28.24	19.35	86.099	Horizontal	Pass
		1745	-4.96	3.91	28.22	19.35	86.099	Horizontal	Pass
		1779.3	-4.90	3.93	28.2	19.37	86.497	Horizontal	Pass
3.0MHz Band 16 QAM	15/0	1711.5	-5.00	3.77	28.23	19.46	88.308	Horizontal	Pass
		1745	-4.89	3.91	28.24	19.44	87.902	Horizontal	Pass
		1778.5	-4.96	3.94	28.25	19.35	86.099	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	1712.5	-5.24	3.77	28.31	19.30	85.114	Horizontal	Pass
		1745	-4.88	3.91	28.22	19.43	87.700	Horizontal	Pass
		1777.5	-4.82	3.94	28.2	19.44	87.902	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	1715	-5.18	3.79	28.33	19.36	86.298	Horizontal	Pass
		1745	-4.95	3.95	28.22	19.32	85.507	Horizontal	Pass
		1775	-4.77	3.97	28.19	19.45	88.105	Horizontal	Pass
15.0MHz Band 16 QAM	75/0	1717.5	-5.11	3.79	28.34	19.44	87.902	Horizontal	Pass
		1745	-4.87	3.95	28.22	19.40	87.096	Horizontal	Pass
		1772.5	-4.79	3.97	28.18	19.42	87.498	Horizontal	Pass
20.0MHz Band 16 QAM	100/0	1720	-5.11	3.81	28.35	19.43	87.700	Horizontal	Pass
		1745	-4.86	3.96	28.22	19.40	87.096	Horizontal	Pass
		1770	-4.72	4	28.16	19.44	87.902	Horizontal	Pass
1.4MHz Band 16 QAM	6/0	1710.7	-5.04	3.76	28.24	19.44	87.902	Vertical	Pass
		1745	-4.85	3.91	28.22	19.46	88.308	Vertical	Pass
		1779.3	-4.89	3.93	28.2	19.38	86.696	Vertical	Pass
3.0MHz Band 16 QAM	15/0	1711.5	-5.08	3.77	28.23	19.38	86.696	Vertical	Pass
		1745	-4.93	3.91	28.24	19.40	87.096	Vertical	Pass
		1778.5	-4.96	3.94	28.25	19.35	86.099	Vertical	Pass

5.0MHz	25/0	1712.5	-5.09	3.77	28.31	19.45	88.105	Vertical	Pass
Band 16		1745	-5.01	3.91	28.22	19.30	85.114	Vertical	Pass
QAM		1777.5	-4.97	3.94	28.2	19.29	84.918	Vertical	Pass
10.0MHz	50/0	1715	-5.19	3.79	28.34	19.36	86.298	Vertical	Pass
Band 16		1745	-4.89	3.95	28.22	19.38	86.696	Vertical	Pass
QAM		1775	-4.87	3.97	28.18	19.34	85.901	Vertical	Pass
15.0MHz	75/0	1717.5	-5.10	3.81	28.35	19.44	87.902	Vertical	Pass
Band 16		1745	-4.95	3.96	28.22	19.31	85.310	Vertical	Pass
QAM		1772.5	-4.73	4	28.16	19.43	87.700	Vertical	Pass
20.0MHz	100/0	1720	-5.06	3.79	28.34	19.49	88.920	Vertical	Pass
Band 16		1745	-4.75	3.95	28.22	19.52	89.536	Vertical	Pass
QAM		1770	-4.71	3.97	28.18	19.50	89.125	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)

8.10 LTE BAND 71

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 QPSK	1/#Mid	665.5	4.24	1.91	19.21	2.15	19.39	86.896	Vertical	Pass
		680.5	4.16	1.91	19.26	2.15	19.36	86.298	Vertical	Pass
		695.5	4.13	1.93	19.34	2.15	19.39	86.896	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	668	4.26	1.91	19.21	2.15	19.41	87.297	Vertical	Pass
		680.5	4.16	1.91	19.26	2.15	19.36	86.298	Vertical	Pass
		693	4.11	1.93	19.34	2.15	19.37	86.497	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	670.5	4.21	1.91	19.23	2.15	19.38	86.696	Vertical	Pass
		680.5	4.09	1.91	19.26	2.15	19.29	84.918	Vertical	Pass
		690.5	4.11	1.92	19.33	2.15	19.37	86.497	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	673	4.12	1.91	19.25	2.15	19.31	85.310	Vertical	Pass
		683	4.13	1.91	19.26	2.15	19.33	85.704	Vertical	Pass
		688	4.08	1.92	19.32	2.15	19.33	85.704	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	665.5	4.13	1.91	19.21	2.15	19.28	84.723	Horizontal	Pass
		680.5	4.12	1.91	19.26	2.15	19.32	85.507	Horizontal	Pass
		695.5	4.12	1.93	19.34	2.15	19.38	86.696	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	668	4.13	1.91	19.21	2.15	19.28	84.723	Horizontal	Pass
		680.5	4.15	1.91	19.26	2.15	19.35	86.099	Horizontal	Pass
		693	4.12	1.93	19.34	2.15	19.38	86.696	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	670.5	4.18	1.91	19.23	2.15	19.35	86.099	Horizontal	Pass
		680.5	4.21	1.91	19.26	2.15	19.41	87.297	Horizontal	Pass
		690.5	4.15	1.92	19.33	2.15	19.41	87.297	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	673	4.27	1.91	19.25	2.15	19.46	88.308	Horizontal	Pass
		683	4.24	1.91	19.26	2.15	19.44	87.902	Horizontal	Pass
		688	4.18	1.92	19.32	2.15	19.43	87.700	Horizontal	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	3.53	1.91	19.21	2.15	18.68	73.790	Vertical	Pass
		680.5	3.62	1.91	19.26	2.15	18.82	76.208	Vertical	Pass
		695.5	3.43	1.93	19.34	2.15	18.69	73.961	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	668	3.61	1.91	19.21	2.15	18.76	75.162	Vertical	Pass
		680.5	3.59	1.91	19.26	2.15	18.79	75.683	Vertical	Pass
		693	3.45	1.93	19.34	2.15	18.71	74.302	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	670.5	3.49	1.91	19.23	2.15	18.66	73.451	Vertical	Pass
		680.5	3.54	1.91	19.26	2.15	18.74	74.817	Vertical	Pass
		690.5	3.38	1.92	19.33	2.15	18.64	73.114	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	673	3.50	1.91	19.25	2.15	18.69	73.961	Vertical	Pass
		683	3.54	1.91	19.26	2.15	18.74	74.817	Vertical	Pass
		688	3.55	1.92	19.32	2.15	18.80	75.858	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	665.5	3.57	1.91	19.21	2.15	18.72	74.473	Horizontal	Pass
		680.5	3.53	1.91	19.26	2.15	18.73	74.645	Horizontal	Pass
		695.5	3.54	1.93	19.34	2.15	18.80	75.858	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	668	3.54	1.91	19.21	2.15	18.69	73.961	Horizontal	Pass
		680.5	3.54	1.91	19.26	2.15	18.74	74.817	Horizontal	Pass
		693	3.53	1.93	19.34	2.15	18.79	75.683	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	670.5	3.62	1.91	19.23	2.15	18.79	75.683	Horizontal	Pass
		680.5	3.62	1.91	19.26	2.15	18.82	76.208	Horizontal	Pass
		690.5	3.41	1.92	19.33	2.15	18.67	73.621	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	673	3.68	1.91	19.25	2.15	18.87	77.090	Horizontal	Pass
		683	3.63	1.91	19.26	2.15	18.83	76.384	Horizontal	Pass
		688	3.61	1.92	19.32	2.15	18.86	76.913	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)

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

MODES TESTED

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

RESULTS

PASS

9.1 LTE BAND 2

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

Test Results for Low Channel 1850.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3701.4	-51.07	4.04	33.51	-21.60	-13	-8.60	Horizontal
3701.4	-52.86	4.04	33.51	-23.39	-13	-10.39	Vertical
5552.1	-52.07	5.24	35.84	-21.47	-13	-8.47	Vertical
5552.1	-49.56	5.24	35.84	-18.96	-13	-5.96	Horizontal
205.1	-34.65	1.43	16.02	-20.06	-13	-7.06	Vertical
461.6	-34.60	1.30	17.99	-17.91	-13	-4.91	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-44.31	4.04	33.56	-14.79	-13	-1.79	Horizontal
3760.0	-51.73	4.04	33.56	-22.21	-13	-9.21	Vertical
5640.0	-45.46	5.24	35.91	-14.79	-13	-1.79	Vertical
5640.0	-49.86	5.24	35.91	-19.19	-13	-6.19	Horizontal
208.2	-42.77	1.62	16.97	-27.42	-13	-14.42	Vertical
469.9	-41.10	1.74	15.98	-26.87	-13	-13.87	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-45.75	4.04	34.00	-15.79	-13	-2.79	Horizontal
3818.6	-47.05	4.04	34.00	-17.09	-13	-4.09	Vertical
5727.9	-53.91	5.24	36.04	-23.11	-13	-10.11	Vertical
5727.9	-50.91	5.24	36.04	-20.11	-13	-7.11	Horizontal
194.3	-40.50	1.42	17.29	-24.63	-13	-11.63	Vertical
235.1	-44.35	1.50	17.90	-27.94	-13	-14.94	Horizontal

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

Test Results for Low Channel 1860MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3720.0	-53.77	4.07	33.54	-24.30	-13	-11.30	Horizontal
3720.0	-49.14	4.07	33.54	-19.67	-13	-6.67	Vertical
5580.0	-53.27	5.28	35.86	-22.69	-13	-9.69	Vertical
5580.0	-51.20	5.28	35.86	-20.62	-13	-7.62	Horizontal
209.0	-41.14	1.58	16.89	-25.82	-13	-12.82	Vertical
266.0	-43.72	1.76	17.26	-28.22	-13	-15.22	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-50.60	4.04	33.56	-21.08	-13	-8.08	Horizontal
3760.0	-50.62	4.04	33.56	-21.10	-13	-8.10	Vertical
5640.0	-47.74	5.24	35.91	-17.07	-13	-4.07	Vertical
5640.0	-52.03	5.24	35.91	-21.36	-13	-8.36	Horizontal
183.4	-44.55	1.46	16.27	-29.74	-13	-16.74	Vertical
436.4	-40.13	1.59	15.15	-26.57	-13	-13.57	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-49.74	4.04	34.00	-19.78	-13	-6.78	Horizontal
3800.0	-53.28	4.04	34.00	-23.32	-13	-10.32	Vertical
5700.0	-48.86	5.24	36.04	-18.06	-13	-5.06	Vertical
5700.0	-53.22	5.24	36.04	-22.42	-13	-9.42	Horizontal
199.6	-41.71	1.36	17.39	-25.67	-13	-12.67	Vertical
400.4	-39.70	1.66	15.39	-25.97	-13	-12.97	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	-50.92	4.02	29.80	-25.14	-13	-12.14	Horizontal
3421.4	-52.85	4.02	29.80	-27.07	-13	-14.07	Vertical
5132.1	-44.94	5.24	35.84	-14.34	-13	-1.34	Vertical
5132.1	-52.68	5.24	35.84	-22.08	-13	-9.08	Horizontal
203.3	-34.21	1.68	16.04	-19.85	-13	-6.85	Vertical
403.1	-38.37	1.78	17.74	-22.41	-13	-9.41	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-47.30	4.03	30.00	-21.33	-13	-8.33	Horizontal
3465.0	-50.82	4.03	30.00	-24.85	-13	-11.85	Vertical
5197.5	-45.48	5.25	35.86	-14.87	-13	-1.87	Vertical
5197.5	-53.69	5.25	35.86	-23.08	-13	-10.08	Horizontal
197.2	-37.09	1.72	17.69	-21.12	-13	-8.12	Vertical
285.6	-41.96	1.62	16.02	-27.55	-13	-14.55	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-53.13	4.05	30.01	-27.17	-13	-14.17	Horizontal
3508.6	-49.36	4.05	30.01	-23.40	-13	-10.40	Vertical
5262.9	-52.98	5.26	35.86	-22.38	-13	-9.38	Vertical
5262.9	-51.11	5.26	35.86	-20.51	-13	-7.51	Horizontal
203.2	-36.85	1.80	16.69	-21.96	-13	-8.96	Vertical
362.3	-44.06	1.75	16.66	-29.16	-13	-16.16	Horizontal

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

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-51.80	4.02	29.80	-26.02	-13	-13.02	Horizontal
3440.0	-52.41	4.02	29.80	-26.63	-13	-13.63	Vertical
5160.0	-51.06	5.24	35.84	-20.46	-13	-7.46	Vertical
5160.0	-52.11	5.24	35.84	-21.51	-13	-8.51	Horizontal
190.0	-41.37	1.57	17.26	-25.68	-13	-12.68	Vertical
245.4	-40.49	1.78	16.35	-25.92	-13	-12.92	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-52.59	4.03	30.00	-26.62	-13	-13.62	Horizontal
3465.0	-53.70	4.03	30.00	-27.73	-13	-14.73	Vertical
5197.5	-44.46	5.25	35.86	-13.85	-13	-0.85	Vertical
5197.5	-51.03	5.25	35.86	-20.42	-13	-7.42	Horizontal
187.7	-40.00	1.44	17.95	-23.49	-13	-10.49	Vertical
326.9	-44.04	1.65	16.09	-29.60	-13	-16.60	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-51.65	4.05	27.68	-28.02	-13	-15.02	Horizontal
3490.0	-48.26	4.05	27.68	-24.63	-13	-11.63	Vertical
5235.0	-46.72	5.26	35.86	-16.12	-13	-3.12	Vertical
5235.0	-51.85	5.26	35.86	-21.25	-13	-8.25	Horizontal
204.3	-42.61	1.61	16.85	-27.37	-13	-14.37	Vertical
407.2	-40.02	1.61	15.19	-26.44	-13	-13.44	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	-50.80	2.78	27.50	-26.08	-13	-13.08	Horizontal
1649.4	-53.79	2.78	27.50	-29.07	-13	-16.07	Vertical
2474.1	-50.33	2.90	27.80	-25.43	-13	-12.43	Vertical
2474.1	-50.52	2.90	27.80	-25.62	-13	-12.62	Horizontal
183.0	-40.62	1.76	17.59	-24.79	-13	-11.79	Vertical
273.7	-36.43	1.63	15.87	-22.19	-13	-9.19	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-52.58	2.80	27.48	-27.90	-13	-14.90	Horizontal
1673.0	-50.60	2.80	27.48	-25.92	-13	-12.92	Vertical
2509.5	-53.29	2.91	27.70	-28.50	-13	-15.50	Vertical
2509.5	-50.08	2.91	27.70	-25.29	-13	-12.29	Horizontal
190.5	-37.46	1.61	15.68	-23.39	-13	-10.39	Vertical
379.1	-40.29	1.59	17.52	-24.37	-13	-11.37	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-52.89	2.82	27.43	-28.28	-13	-15.28	Horizontal
1696.6	-45.59	2.82	27.43	-20.98	-13	-7.98	Vertical
2544.9	-47.38	2.92	27.74	-22.56	-13	-9.56	Vertical
2544.9	-52.27	2.92	27.74	-27.45	-13	-14.45	Horizontal
200.0	-43.94	1.69	16.67	-28.95	-13	-15.95	Vertical
401.0	-38.25	1.70	17.18	-22.77	-13	-9.77	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	-45.59	2.78	27.50	-20.87	-13	-7.87	Horizontal
1658.0	-47.01	2.78	27.50	-22.29	-13	-9.29	Vertical
2487.0	-45.64	2.90	27.80	-20.74	-13	-7.74	Vertical
2487.0	-53.11	2.90	27.80	-28.21	-13	-15.21	Horizontal
194.7	-42.91	1.71	15.57	-29.05	-13	-16.05	Vertical
400.3	-44.22	1.34	16.40	-29.16	-13	-16.16	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-52.81	2.80	27.48	-28.13	-13	-15.13	Horizontal
1673.0	-51.24	2.80	27.48	-26.56	-13	-13.56	Vertical
2509.5	-46.27	2.91	27.70	-21.48	-13	-8.48	Vertical
2509.5	-53.80	2.91	27.70	-29.01	-13	-16.01	Horizontal
199.4	-40.28	1.44	17.04	-24.68	-13	-11.68	Vertical
337.8	-37.96	1.76	17.62	-22.10	-13	-9.10	Horizontal
Test Results for High Channel 844MHz							
1688.0	-48.20	2.82	27.43	-23.59	-13	-10.59	Horizontal
1688.0	-47.08	2.82	27.43	-22.47	-13	-9.47	Vertical
2532.0	-46.73	2.92	27.74	-21.91	-13	-8.91	Vertical
2532.0	-52.68	2.92	27.74	-27.86	-13	-14.86	Horizontal
194.4	-34.07	1.74	17.70	-18.11	-13	-5.11	Vertical
451.4	-40.09	1.41	17.46	-24.03	-13	-11.03	Horizontal

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

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

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

9.5 LTE BAND 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	-53.16	2.60	27.20	-28.56	-13	-15.56	Horizontal
1399.4	-49.86	2.60	27.20	-25.26	-13	-12.26	Vertical
2099.1	-53.87	2.85	27.54	-29.18	-13	-16.18	Vertical
2099.1	-53.32	2.85	27.54	-28.63	-13	-15.63	Horizontal
211.6	-43.06	1.49	17.78	-26.77	-13	-13.77	Vertical
258.7	-42.73	1.36	17.33	-26.76	-13	-13.76	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-45.68	2.61	27.28	-21.01	-13	-8.01	Horizontal
1415.0	-47.77	2.61	27.28	-23.10	-13	-10.10	Vertical
2122.5	-48.17	2.87	27.59	-23.45	-13	-10.45	Vertical
2122.5	-53.45	2.87	27.59	-28.73	-13	-15.73	Horizontal
195.5	-41.09	1.73	15.74	-27.08	-13	-14.08	Vertical
445.8	-42.25	1.62	15.79	-28.08	-13	-15.08	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-49.95	2.63	27.28	-25.30	-13	-12.30	Horizontal
1430.6	-47.72	2.63	27.28	-23.07	-13	-10.07	Vertical
2145.9	-53.29	2.88	27.60	-28.57	-13	-15.57	Vertical
2145.9	-51.63	2.88	27.60	-26.91	-13	-13.91	Horizontal
195.3	-39.10	1.61	18.00	-22.71	-13	-9.71	Vertical
295.3	-42.43	1.45	15.49	-28.40	-13	-15.40	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	-50.50	2.61	27.26	-25.85	-13	-12.85	Horizontal
1408.0	-47.66	2.61	27.26	-23.01	-13	-10.01	Vertical
2112.0	-44.13	2.87	27.58	-19.42	-13	-6.42	Vertical
2112.0	-51.73	2.87	27.58	-27.02	-13	-14.02	Horizontal
193.9	-43.58	1.31	16.97	-27.92	-13	-14.92	Vertical
401.7	-36.49	1.65	16.70	-21.44	-13	-8.44	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-50.99	2.61	27.28	-26.32	-13	-13.32	Horizontal
1415.0	-52.97	2.61	27.28	-28.30	-13	-15.30	Vertical
2122.5	-44.71	2.87	27.59	-19.99	-13	-6.99	Vertical
2122.5	-52.70	2.87	27.59	-27.98	-13	-14.98	Horizontal
185.8	-38.71	1.72	17.99	-22.44	-13	-9.44	Vertical
392.4	-37.63	1.73	17.94	-21.42	-13	-8.42	Horizontal
Test Results for High Channel 711MHz							
1422.0	-53.25	2.62	27.28	-28.59	-13	-15.59	Horizontal
1422.0	-45.30	2.62	27.28	-20.64	-13	-7.64	Vertical
2133.0	-51.52	2.87	27.60	-26.79	-13	-13.79	Vertical
2133.0	-49.45	2.87	27.60	-24.72	-13	-11.72	Horizontal
201.4	-35.34	1.58	15.93	-20.99	-13	-7.99	Vertical
466.4	-34.61	1.36	15.59	-20.38	-13	-7.38	Horizontal

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

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

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

9.6 LTE BAND 17

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

Test Results for Low Channel 706.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1413.0	-46.53	2.61	27.28	-21.86	-13	-8.86	Horizontal
1413.0	-46.32	2.61	27.28	-21.65	-13	-8.65	Vertical
2119.5	-44.38	2.87	27.59	-19.66	-13	-6.66	Vertical
2119.5	-51.44	2.87	27.59	-26.72	-13	-13.72	Horizontal
189.0	-43.76	1.71	16.15	-29.32	-13	-16.32	Vertical
285.8	-38.69	1.41	17.32	-22.78	-13	-9.78	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-53.91	2.62	27.30	-29.23	-13	-16.23	Horizontal
1420.0	-49.63	2.62	27.30	-24.95	-13	-11.95	Vertical
2130.0	-46.83	2.87	27.62	-22.08	-13	-9.08	Vertical
2130.0	-52.90	2.87	27.62	-28.15	-13	-15.15	Horizontal
190.9	-37.77	1.42	15.25	-23.95	-13	-10.95	Vertical
287.3	-36.10	1.36	17.19	-20.27	-13	-7.27	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-52.03	2.66	27.28	-27.41	-13	-14.41	Horizontal
1427.0	-49.12	2.66	27.28	-24.50	-13	-11.50	Vertical
2140.5	-53.76	2.88	27.60	-29.04	-13	-16.04	Vertical
2140.5	-50.07	2.88	27.60	-25.35	-13	-12.35	Horizontal
201.8	-43.22	1.32	17.29	-27.25	-13	-14.25	Vertical
430.9	-37.03	1.72	16.89	-21.86	-13	-8.86	Horizontal

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

Test Results for Low Channel 709MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1418.0	-52.88	2.62	27.30	-28.20	-13	-15.20	Horizontal
1418.0	-49.27	2.62	27.30	-24.59	-13	-11.59	Vertical
2127.0	-46.74	2.87	27.62	-21.99	-13	-8.99	Vertical
2127.0	-49.71	2.87	27.62	-24.96	-13	-11.96	Horizontal
184.0	-43.88	1.35	16.91	-28.32	-13	-15.32	Vertical
257.7	-41.09	1.62	16.31	-26.40	-13	-13.40	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-48.85	2.62	27.30	-24.17	-13	-11.17	Horizontal
1420.0	-49.87	2.62	27.30	-25.19	-13	-12.19	Vertical
2130.0	-49.80	2.87	27.62	-25.05	-13	-12.05	Vertical
2130.0	-51.52	2.87	27.62	-26.77	-13	-13.77	Horizontal
182.5	-37.80	1.51	17.14	-22.17	-13	-9.17	Vertical
250.9	-42.52	1.77	16.88	-27.41	-13	-14.41	Horizontal
Test Results for High Channel 711MHz							
1422.0	-49.37	2.62	27.30	-24.69	-13	-11.69	Horizontal
1422.0	-53.98	2.62	27.30	-29.30	-13	-16.30	Vertical
2133.0	-52.87	2.87	27.62	-28.12	-13	-15.12	Vertical
2133.0	-50.89	2.87	27.62	-26.14	-13	-13.14	Horizontal
180.2	-44.37	1.78	15.95	-30.20	-13	-17.20	Vertical
388.5	-35.39	1.34	17.95	-18.79	-13	-5.79	Horizontal

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

. Margin = Spurious Emission Level - Limit

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

9.7 LTE BAND 41

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

Test Results for Low Channel 2498.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
4997.0	-62.17	5.13	35.81	-31.49	-25	-6.49	Horizontal
4997.0	-62.17	5.13	35.81	-31.49	-25	-6.49	Vertical
7495.5	-62.95	5.42	36.85	-31.52	-25	-6.52	Vertical
7495.5	-61.05	5.42	36.85	-29.62	-25	-4.62	Horizontal
190.9	-54.88	1.56	17.97	-38.47	-25	-13.47	Vertical
245.7	-48.50	1.33	15.11	-34.72	-25	-9.72	Horizontal
Test Results for Mid Channel 2593MHz							
5186.0	-64.70	5.16	35.82	-34.04	-25	-9.04	Horizontal
5186.0	-59.26	5.16	35.82	-28.60	-25	-3.60	Vertical
7779.0	-62.54	5.53	36.85	-31.22	-25	-6.22	Vertical
7779.0	-59.95	5.53	36.85	-28.63	-25	-3.63	Horizontal
196.8	-48.68	1.77	16.17	-34.27	-25	-9.27	Vertical
454.4	-52.67	1.63	15.21	-39.09	-25	-14.09	Horizontal
Test Results for High Channel 2687.5MHz							
5375.0	-64.36	5.23	35.83	-33.76	-25	-8.76	Horizontal
5375.0	-61.82	5.23	35.83	-31.22	-25	-6.22	Vertical
8062.5	-60.19	5.62	36.87	-28.94	-25	-3.94	Vertical
8062.5	-62.25	5.62	36.87	-31.00	-25	-6.00	Horizontal
188.3	-44.73	1.58	17.56	-28.75	-25	-3.75	Vertical
463.2	-54.66	1.45	16.58	-39.53	-25	-14.53	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
5012.0	-61.20	5.23	35.82	-30.61	-25	-5.61	Horizontal
5012.0	-59.56	5.23	35.82	-28.97	-25	-3.97	Vertical
7518.0	-61.59	5.67	36.86	-30.40	-25	-5.40	Vertical
7518.0	-64.24	5.67	36.86	-33.05	-25	-8.05	Horizontal
201.8	-44.01	1.55	15.76	-29.80	-25	-4.80	Vertical
282.2	-47.76	1.62	15.44	-33.94	-25	-8.94	Horizontal
Test Results for Mid Channel 2593MHz							
5186.0	-64.69	5.16	35.82	-34.03	-25	-9.03	Horizontal
5186.0	-61.70	5.16	35.82	-31.04	-25	-6.04	Vertical
7779.0	-64.92	5.53	36.85	-33.60	-25	-8.60	Vertical
7779.0	-64.18	5.53	36.85	-32.86	-25	-7.86	Horizontal
203.2	-54.85	1.58	16.84	-39.59	-25	-14.59	Vertical
264.6	-50.12	1.61	17.64	-34.09	-25	-9.09	Horizontal
Test Results for High Channel 2680MHz							
5360.0	-60.73	5.24	35.83	-30.14	-25	-5.14	Horizontal
5360.0	-61.26	5.24	35.83	-30.67	-25	-5.67	Vertical
8040.0	-62.79	5.70	36.88	-31.61	-25	-6.61	Vertical
8040.0	-64.12	5.70	36.88	-32.94	-25	-7.94	Horizontal
187.7	-49.18	1.48	16.84	-33.82	-25	-8.82	Vertical
455.6	-46.44	1.59	17.64	-30.39	-25	-5.39	Horizontal

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

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

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

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

9.8 LTE BAND 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	-59.50	3.84	35.81	-27.53	-13	-14.53	Horizontal
3421.4	-60.50	3.84	35.81	-28.53	-13	-15.53	Vertical
5132.1	-60.46	5.18	36.85	-28.79	-13	-15.79	Vertical
5132.1	-63.41	5.18	36.85	-31.74	-13	-18.74	Horizontal
206.4	-45.22	1.56	17.97	-28.81	-13	-15.81	Vertical
412.6	-48.28	1.33	15.11	-34.50	-13	-21.50	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-60.77	3.85	35.82	-28.80	-13	-15.80	Horizontal
3490.0	-62.30	3.85	35.82	-30.33	-13	-17.33	Vertical
5235.0	-63.32	5.21	36.85	-31.68	-13	-18.68	Vertical
5235.0	-64.89	5.21	36.85	-33.25	-13	-20.25	Horizontal
204.2	-49.42	1.77	16.17	-35.01	-13	-22.01	Vertical
469.8	-45.47	1.63	15.21	-31.89	-13	-18.89	Horizontal
Test Results for High Channel 1779.3MHz							
3558.6	-60.42	3.86	35.83	-28.45	-13	-15.45	Horizontal
3558.6	-64.07	3.86	35.83	-32.10	-13	-19.10	Vertical
5337.9	-61.47	5.24	36.87	-29.84	-13	-16.84	Vertical
5337.9	-63.02	5.24	36.87	-31.39	-13	-18.39	Horizontal
200.5	-49.14	1.58	17.56	-33.16	-13	-20.16	Vertical
461.8	-50.03	1.45	16.58	-34.90	-13	-21.90	Horizontal

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

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-64.96	3.84	35.82	-32.98	-13	-19.98	Horizontal
3440.0	-59.48	3.84	35.82	-27.50	-13	-14.50	Vertical
5160.0	-60.89	5.18	36.86	-29.21	-13	-16.21	Vertical
5160.0	-62.69	5.18	36.86	-31.01	-13	-18.01	Horizontal
190.4	-46.07	1.56	15.76	-31.87	-13	-18.87	Vertical
349.6	-51.78	1.33	15.44	-37.67	-13	-24.67	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-59.86	3.85	35.82	-27.89	-13	-14.89	Horizontal
3490.0	-63.30	3.85	35.82	-31.33	-13	-18.33	Vertical
5235.0	-61.59	5.21	36.85	-29.95	-13	-16.95	Vertical
5235.0	-62.70	5.21	36.85	-31.06	-13	-18.06	Horizontal
193.6	-49.87	1.77	16.84	-34.79	-13	-21.79	Vertical
392.3	-47.56	1.63	17.64	-31.55	-13	-18.55	Horizontal
Test Results for High Channel 1770MHz							
3540.0	-59.54	3.86	35.83	-27.57	-13	-14.57	Horizontal
3540.0	-62.57	3.86	35.83	-30.60	-13	-17.60	Vertical
5310.0	-61.60	5.24	36.88	-29.96	-13	-16.96	Vertical
5310.0	-64.38	5.24	36.88	-32.74	-13	-19.74	Horizontal
195.6	-47.93	1.58	16.84	-32.66	-13	-19.66	Vertical
250.0	-47.57	1.45	17.64	-31.38	-13	-18.38	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.

9.9 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	-60.14	2.16	35.81	-26.49	-13	-13.49	Horizontal
1331.0	-63.08	2.16	35.81	-29.43	-13	-16.43	Vertical
1996.5	-63.31	2.89	36.85	-29.35	-13	-16.35	Vertical
1996.5	-61.24	2.89	36.85	-27.28	-13	-14.28	Horizontal
177.0	-53.56	1.56	17.97	-37.15	-13	-24.15	Vertical
232.6	-44.39	1.33	15.11	-30.61	-13	-17.61	Horizontal
Test Results for Mid Channel 680.5MHz							
1361.0	-64.93	2.17	35.82	-31.28	-13	-18.28	Horizontal
1361.0	-61.16	2.17	35.82	-27.51	-13	-14.51	Vertical
2041.5	-63.94	2.90	36.85	-29.99	-13	-16.99	Vertical
2041.5	-64.83	2.90	36.85	-30.88	-13	-17.88	Horizontal
199.0	-47.12	1.77	16.17	-32.71	-13	-19.71	Vertical
383.3	-46.00	1.63	15.21	-32.42	-13	-19.42	Horizontal
Test Results for High Channel 695.5MHz							
1391.0	-61.84	2.19	35.83	-28.20	-13	-15.20	Horizontal
1391.0	-64.26	2.19	35.83	-30.62	-13	-17.62	Vertical
2086.5	-60.93	2.95	36.87	-27.01	-13	-14.01	Vertical
2086.5	-63.70	2.95	36.87	-29.78	-13	-16.78	Horizontal
200.9	-47.93	1.58	17.56	-31.95	-13	-18.95	Vertical
323.4	-52.34	1.45	16.58	-37.21	-13	-24.21	Horizontal

QPSK EIRP POWER FOR LTE BAND 71 (20MHZ BANDWIDTH)

Test Results for Low Channel 673MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1346.0	-63.45	2.16	35.82	-29.79	-13	-16.79	Horizontal
1346.0	-61.14	2.16	35.82	-27.48	-13	-14.48	Vertical
2019.0	-64.93	2.89	36.86	-30.96	-13	-17.96	Vertical
2019.0	-60.42	2.89	36.86	-26.45	-13	-13.45	Horizontal
175.6	-45.05	1.56	15.76	-30.85	-13	-17.85	Vertical
442.4	-46.40	1.33	15.44	-32.29	-13	-19.29	Horizontal
Test Results for Mid Channel 683MHz							
1366.0	-64.37	2.17	35.82	-30.72	-13	-17.72	Horizontal
1366.0	-63.91	2.17	35.82	-30.26	-13	-17.26	Vertical
2049.0	-64.97	2.90	36.85	-31.02	-13	-18.02	Vertical
2049.0	-59.23	2.90	36.85	-25.28	-13	-12.28	Horizontal
177.3	-54.95	1.77	16.84	-39.87	-13	-26.87	Vertical
430.7	-53.99	1.63	17.64	-37.98	-13	-24.98	Horizontal
Test Results for High Channel 688MHz							
1376.0	-62.44	2.19	35.83	-28.80	-13	-15.80	Horizontal
1376.0	-63.90	2.19	35.83	-30.26	-13	-17.26	Vertical
2064.0	-64.83	2.95	36.88	-30.90	-13	-17.90	Vertical
2064.0	-62.73	2.95	36.88	-28.80	-13	-15.80	Horizontal
188.0	-44.05	1.58	16.84	-28.78	-13	-15.78	Vertical
273.4	-46.72	1.45	17.64	-30.53	-13	-17.53	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 2/4/5/12/17/41/66/71

RESULTS

See the following pages.

10.1 LTE BAND 2

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	1880	12.8	0.006801	2.5
3.8	1880	13.5	0.007198	2.5
4.37	1880	13.4	0.007111	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	12.3	0.006558	2.5
Extreme (50C)	1880	12.0	0.006363	2.5
Extreme (40C)	1880	13.5	0.007173	2.5
Extreme (30C)	1880	13.4	0.007104	2.5
Extreme (10C)	1880	13.7	0.007309	2.5
Extreme (0C)	1880	12.4	0.006613	2.5
Extreme (-10C)	1880	13.2	0.007019	2.5
Extreme (-20C)	1880	14.1	0.007503	2.5
Extreme (-30C)	1880	15.1	0.008020	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	10.1	0.005388	2.5
3.8	1880	8.9	0.004715	2.5
4.37	1880	8.3	0.004428	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	9.2	0.004896	2.5
Extreme (50C)	1880	8.6	0.004579	2.5
Extreme (40C)	1880	7.9	0.004214345	2.5
Extreme (30C)	1880	8.9	0.004717503	2.5
Extreme (10C)	1880	9.2	0.004915044	2.5
Extreme (0C)	1880	8.2	0.004382063	2.5
Extreme (-10C)	1880	9.3	0.004970942	2.5
Extreme (-20C)	1880	9.2	0.004904897	2.5
Extreme (-30C)	1880	7.7	0.004111046	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	9.0	0.005175	2.5
3.8	1732.5	8.4	0.004869	2.5
4.37	1732.5	8.3	0.004771	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.6	0.004990	2.5
Extreme (50C)	1732.5	8.5	0.004914	2.5
Extreme (40C)	1732.5	7.5	0.004315	2.5
Extreme (30C)	1732.5	5.9	0.003388	2.5
Extreme (10C)	1732.5	7.1	0.004069	2.5
Extreme (0C)	1732.5	9.1	0.005239	2.5
Extreme (-10C)	1732.5	8.2	0.004719	2.5
Extreme (-20C)	1732.5	6.8	0.003908	2.5
Extreme (-30C)	1732.5	8.8	0.005095	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	9.9	0.005735	2.5
3.8	1732.5	9.2	0.005299	2.5
4.37	1732.5	8.3	0.004771	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	9.5	0.005497	2.5
Extreme (50C)	1732.5	8.7	0.005013	2.5
Extreme (40C)	1732.5	8.0	0.004634	2.5
Extreme (30C)	1732.5	8.6	0.004971	2.5
Extreme (10C)	1732.5	8.6	0.004942	2.5
Extreme (0C)	1732.5	8.0	0.004644	2.5
Extreme (-10C)	1732.5	8.6	0.004981	2.5
Extreme (-20C)	1732.5	9.0	0.005187	2.5
Extreme (-30C)	1732.5	8.3	0.004764	2.5

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

10.3 LTE BAND 5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	836.5	6.3	0.007487	2.5
3.8	836.5	6.4	0.007676	2.5
4.37	836.5	5.3	0.006294	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	5.7	0.006820	2.5
Extreme (50C)	836.5	6.0	0.007121	2.5
Extreme (40C)	836.5	6.4	0.007594	2.5
Extreme (30C)	836.5	6.8	0.008084	2.5
Extreme (10C)	836.5	5.5	0.006563	2.5
Extreme (0C)	836.5	5.6	0.006692	2.5
Extreme (-10C)	836.5	5.8	0.006882	2.5
Extreme (-20C)	836.5	6.6	0.007880	2.5
Extreme (-30C)	836.5	6.3	0.007476	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	5.8	0.006948	2.5
3.8	836.5	6.8	0.008150	2.5
4.37	836.5	4.9	0.005906	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.2	0.007360	2.5
Extreme (50C)	836.5	6.0	0.007121	2.5
Extreme (40C)	836.5	6.5	0.007714	2.5
Extreme (30C)	836.5	6.4	0.007595	2.5
Extreme (10C)	836.5	5.4	0.006476	2.5
Extreme (0C)	836.5	5.5	0.006588	2.5
Extreme (-10C)	836.5	5.9	0.007055	2.5
Extreme (-20C)	836.5	6.2	0.007357	2.5
Extreme (-30C)	836.5	6.2	0.007382	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	8.9	0.012598	2.5
3.8	707.5	10.1	0.014284	2.5
4.37	707.5	8.2	0.011616	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	8.6	0.012169	2.5
Extreme (50C)	707.5	7.1	0.010002	2.5
Extreme (40C)	707.5	7.5	0.010623	2.5
Extreme (30C)	707.5	8.0	0.011289	2.5
Extreme (10C)	707.5	7.0	0.009851	2.5
Extreme (0C)	707.5	9.1	0.012834	2.5
Extreme (-10C)	707.5	7.9	0.011178	2.5
Extreme (-20C)	707.5	9.1	0.012927	2.5
Extreme (-30C)	707.5	8.0	0.011258	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	7.6	0.010790	2.5
3.8	707.5	8.0	0.011292	2.5
4.37	707.5	7.4	0.010484	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	9.0	0.012716	2.5
Extreme (50C)	707.5	8.0	0.011267	2.5
Extreme (40C)	707.5	9.1	0.012853	2.5
Extreme (30C)	707.5	7.5	0.010636	2.5
Extreme (10C)	707.5	8.7	0.012234	2.5
Extreme (0C)	707.5	7.8	0.010997	2.5
Extreme (-10C)	707.5	7.0	0.009939	2.5
Extreme (-20C)	707.5	8.7	0.012256	2.5
Extreme (-30C)	707.5	8.7	0.012271	2.5

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

10.6 LTE BAND 17

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	710.0	9.5	0.013326	2.5
3.85	710.0	8.8	0.012388	2.5
4.43	710.0	7.7	0.010860	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.8	0.013861	2.5
Extreme (50C)	710.0	9.2	0.012893	2.5
Extreme (40C)	710.0	8.4	0.011866	2.5
Extreme (30C)	710.0	9.2	0.012946	2.5
Extreme (10C)	710.0	8.7	0.012306	2.5
Extreme (0C)	710.0	8.0	0.011256	2.5
Extreme (-10C)	710.0	8.9	0.012589	2.5
Extreme (-20C)	710.0	8.9	0.012517	2.5
Extreme (-30C)	710.0	8.4	0.011787	2.5

Band 17 16QAM, (10MHz BANDWIDTH RB size 50 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	710.0	10.5	0.014782	2.5
3.85	710.0	9.2	0.012973	2.5
4.43	710.0	8.0	0.011274	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.5	0.013342	2.5
Extreme (50C)	710.0	9.4	0.013238	2.5
Extreme (40C)	710.0	7.9	0.011164	2.5
Extreme (30C)	710.0	8.7	0.012262	2.5
Extreme (10C)	710.0	8.4	0.011821	2.5
Extreme (0C)	710.0	8.3	0.011692	2.5
Extreme (-10C)	710.0	9.1	0.012807	2.5
Extreme (-20C)	710.0	8.8	0.012442	2.5
Extreme (-30C)	710.0	8.6	0.012098	2.5

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

10.7 LTE BAND 41

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	2593	10.4	0.004004	2.5
3.8	2593	8.5	0.003269	2.5
4.37	2593	8.1	0.003138	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	9.5	0.003651	2.5
Extreme (50C)	2593	9.4	0.003620	2.5
Extreme (40C)	2593	8.5	0.003291	2.5
Extreme (30C)	2593	9.4	0.003611	2.5
Extreme (10C)	2593	8.1	0.003137	2.5
Extreme (0C)	2593	8.1	0.003137	2.5
Extreme (-10C)	2593	9.0	0.003489	2.5
Extreme (-20C)	2593	8.4	0.003248	2.5
Extreme (-30C)	2593	7.9	0.003065	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	2593	6.9	0.002661	2.5
3.8	2593	6.5	0.002505	2.5
4.37	2593	5.5	0.002129	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	6.9	0.002661	2.5
Extreme (50C)	2593	5.8	0.002228	2.5
Extreme (40C)	2593	5.7	0.002199	2.5
Extreme (30C)	2593	6.8	0.002633	2.5
Extreme (10C)	2593	5.6	0.002162	2.5
Extreme (0C)	2593	4.8	0.001870	2.5
Extreme (-10C)	2593	5.0	0.001917	2.5
Extreme (-20C)	2593	5.9	0.002279	2.5
Extreme (-30C)	2593	6.0	0.002299	2.5

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

10.8 LTE BAND 66

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	1745	6.7	0.003840	2.5
3.8	1745	7.3	0.004183	2.5
4.37	1745	7.6	0.004368	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	6.0	0.003432	2.5
Extreme (50C)	1745	7.1	0.004072	2.5
Extreme (40C)	1745	6.2	0.003569	2.5
Extreme (30C)	1745	6.7	0.003816	2.5
Extreme (10C)	1745	7.3	0.004182	2.5
Extreme (0C)	1745	6.1	0.003475	2.5
Extreme (-10C)	1745	5.8	0.003352	2.5
Extreme (-20C)	1745	6.8	0.003884	2.5
Extreme (-30C)	1745	6.0	0.003426	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	8.8	0.005049	2.5
3.8	1745	7.8	0.004448	2.5
4.37	1745	9.2	0.005260	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	8.4	0.004810	2.5
Extreme (50C)	1745	7.8	0.004466	2.5
Extreme (40C)	1745	8.1	0.004668	2.5
Extreme (30C)	1745	8.3	0.004779	2.5
Extreme (10C)	1745	9.0	0.005133	2.5
Extreme (0C)	1745	6.7	0.003857	2.5
Extreme (-10C)	1745	8.1	0.004659	2.5
Extreme (-20C)	1745	8.5	0.004850	2.5
Extreme (-30C)	1745	5.1	0.002912	2.5

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

10.9 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	6.3	0.003638	2.5
3.8	1745	7.1	0.004073	2.5
4.37	1745	7.6	0.004359	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	5.4	0.003106	2.5
Extreme (50C)	1745	7.9	0.004540	2.5
Extreme (40C)	1745	6.1	0.003521	2.5
Extreme (30C)	1745	7.4	0.004238	2.5
Extreme (10C)	1745	7.6	0.004363	2.5
Extreme (0C)	1745	6.0	0.003444	2.5
Extreme (-10C)	1745	5.6	0.003232	2.5
Extreme (-20C)	1745	6.4	0.003685	2.5
Extreme (-30C)	1745	5.9	0.003394	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	8.8	0.005015	2.5
3.8	1745	7.5	0.004278	2.5
4.37	1745	9.3	0.005353	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	8.4	0.004830	2.5
Extreme (50C)	1745	8.3	0.004774	2.5
Extreme (40C)	1745	8.1	0.004628	2.5
Extreme (30C)	1745	8.1	0.004646	2.5
Extreme (10C)	1745	8.6	0.004911	2.5
Extreme (0C)	1745	6.8	0.003910	2.5
Extreme (-10C)	1745	8.6	0.004956	2.5
Extreme (-20C)	1745	8.3	0.004778	2.5
Extreme (-30C)	1745	5.8	0.003301	2.5

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

11. Peak-to-Average Ratio

11.1 Description of the PAR Measurement

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

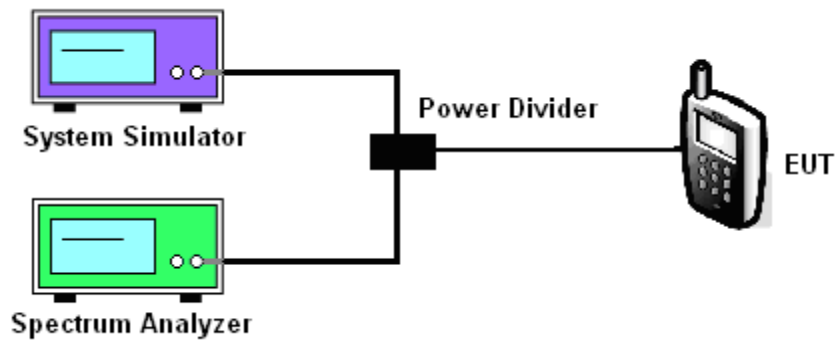
11.2 Measuring Instruments

See list of measuring instruments of this test report.

11.3 Test Procedures

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

11.4 Test Setup



MODES TESTED

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

Test data reference attachment.

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