

FCC CFR47 PART 22H, 24E, 27 CERTIFICATION TEST REPORT FCC ID: 2AOWK-5010TH

Product: Mobile Phone

Trade Mark: ulefone

Model No.: GQ5010TH

Family Model: Armor Mini 20, Armor Mini 20T,
Armor Mini 20 Ultra, Armor Mini 20T Ultra

Report No.: S24100805606006

Issue Date: Dec. 03, 2024

Prepared for

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Prepared by

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TEST RESULT CERTIFICATION

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

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

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

Product name..... : Mobile Phone

Model and/or type reference .. : GQ5010TH

Trade Mark..... : ulefone

Family Model..... : Armor Mini 20, Armor Mini 20T, Armor Mini 20 Ultra, Armor Mini 20T Ultra

Test Sample Number..... S241008056006

Standards..... : FCC CFR 47 Part 22H, Part 24E, Part 27

Test procedure : ANSI C63.26:2015
ANSI/TIA-603-E-2016

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

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Date of Test

Date (s) of performance of tests..... Oct. 08, 2024 ~ Dec. 03, 2024

Date of Issue Dec. 03, 2024

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

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1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	Mobile Phone
Trade Mark	ulefone
Model Name	GQ5010TH
Family Model	Armor Mini 20, Armor Mini 20T, Armor Mini 20 Ultra, Armor Mini 20T Ultra
Model Difference	All models are the same circuit and RF module, except for model names.
FCC ID:	2AOWK-5010TH
Frequency Bands:	U.S. Bands: ☒ LTE FDD Band 2, 4, 5, 7, 12, 17, 66 TDD Band 41
Frequency Range:	LTE FDD Band 2 Uplink: 1850MHz-1910MHz, Downlink: 1930MHz-1990MHz; LTE FDD Band 4 Uplink: 1710MHz-1755MHz, Downlink: 2110MHz-2155MHz; LTE FDD Band 5 Uplink: 824MHz-849MHz, Downlink: 869MHz-894MHz; LTE-FDD Band 7 Uplink: 2500MHz-2570MHz, Downlink: 2620MHz-2690MHz; LTE FDD Band 12 Uplink: 699MHz-716MHz, Downlink: 729MHz-746MHz; LTE FDD Band 17 Uplink: 704MHz-716MHz, Downlink: 734MHz-746MHz; LTE TDD Band 41 Uplink& Downlink: 2535MHz-2655MHz, LTE FDD Band 66 Uplink: 1710MHz-1780MHz, Downlink: 2110MHz-2200MHz;
Type of Modulation:	QPSK/16QAM/64QAM(Only Downlink)
Power Class	Class 3
SIM Card:	SIM 1 and SIM 2 is a chipset unit and tested as a single chipset. The SIM 1 is chosen for test.
Antenna:	LDS Antenna
Antenna gain:	Band 2: -0.1 dBi, Band 4: -0.8dBi, Band 5: -3.7 dBi, Band 7: -0.9dBi, Band 12: -5.2dBi, Band 17: -5.2 dBi, Band 41:-0.9 dBi , Band 66: -0.9dBi
Adapter	Model: UF82PD3303 Input: 100-240V~50/60Hz 0.8A Output: 5.0V---3.0A 15.0W or 9.0V---3.0A 27.0W or 12.0V---2.5A 30.0W or 15.0V---2.0A 30.0W or 20.0V---1.5A 30.0W PPS: 5.0V-11.0V---3.0A or 5.0V-16.0V---2.0A 33.0W Max
Battery	DC 3.87V, 6200mAh, 23.994Wh
Power supply	DC 3.87V from battery or DC 5V/9V/12V/15V/20V from adapter
Extreme Vol. Limits:	DC 3.29V to DC 4.45V (Nominal DC 3.87V) (Note 1)
HW Version	N/A
SW Version	N/A
** Note1: The High Voltage DC 4.45V and Low Voltage 3.29V was declared by manufacturer, The EUT couldn't be operate normally with higher or lower voltage.	

1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2AOWK-5010TH** filing to comply with the FCC Part 22H&24E&27.

1.3 TEST METHODOLOGY

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

1.4 TEST FACILITY

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

ShenZhen NTEK Testing Technology Co., Ltd.

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

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

FCC Registration No.:463705

IC Registration No.:9270A,

CNAS Registration No.:L5516

MEASUREMENT UNCERTAINTY

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

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

1.5 SPECIAL ACCESSORIES

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

1.6 WORST-CASE CONFIGURATION AND MODE

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

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

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

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

2. SYSTEM TEST CONFIGURATION

2.1 EUT CONFIGURATION

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

2.2 EUT EXERCISE

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

2.3 CONFIGURATION OF EUT SYSTEM

Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Mobile Phone	GQ5010TH	FCC ID: 2AOWK-5010TH	EUT

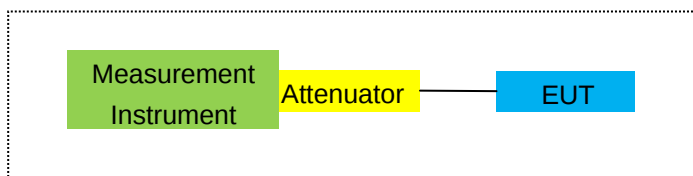
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

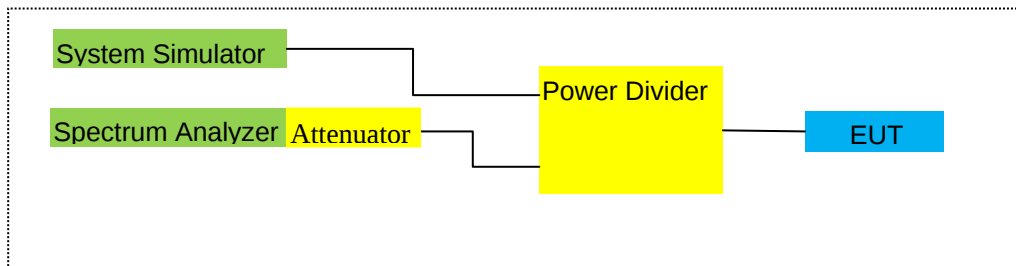
For Radiated Test Cases



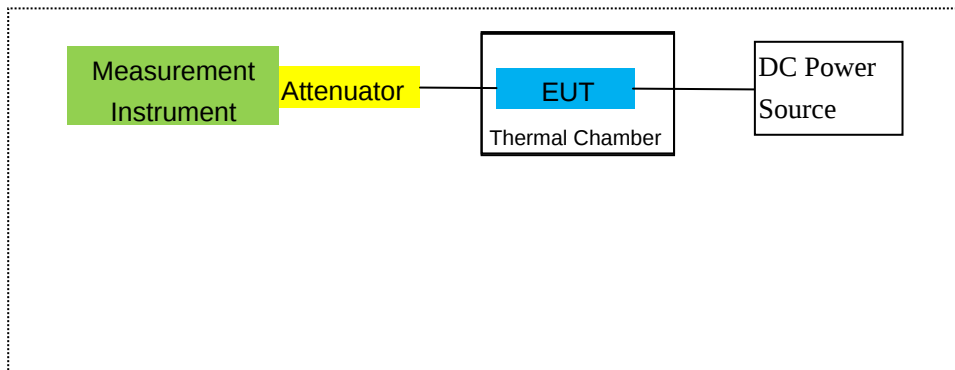
For Conducted Output Power



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



For Frequency Stability



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

3.TEST AND MEASUREMENT EQUIPMENT

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

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	MXA Signal Analyzer	Agilent	N9020A	MY49100060	2024.04.25	2025.04.24	1 year
2	Test Receiver	R&S	ESPI	101318	2024.04.26	2025.04.25	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2024.05.12	2025.05.11	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2024.04.26	2027.04.25	3 year
5	Horn Antenna	EM	EM-AH-10180	2011071402	2024.05.12	2027.05.11	3 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2024.05.12	2027.05.11	3 year
7	Amplifier	EM	EM-30180	060538	2024.04.26	2025.04.25	1 year
8	Loop Antenna	ARA	PLA-1030/B	1029	2024.03.12	2025.03.11	1 year
9	Power Meter	R&S	NRVS	100696	2024.04.26	2025.04.25	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2024.04.26	2025.04.25	1 year
11	Test Cable	N/A	R-01	N/A	2022.06.17	2025.06.16	3 year
12	Test Cable	N/A	R-02	N/A	2022.06.17	2025.06.16	3 year
13	Test Cable	N/A	R-03	N/A	2022.06.17	2025.06.16	3 year
14	Test Receiver	R&S	ESCI	101160	2024.04.26	2025.04.25	1 year
15	LISN	R&S	ENV216	101313	2024.04.25	2025.04.24	1 year
16	LISN	EMCO	3816/2	00042990	2024.04.25	2025.04.24	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2024.03.12	2025.03.11	1 year
18	Passive Voltage Probe	R&S	ESH2-Z3	100196	2024.03.12	2025.03.11	1 year
19	Test Cable	N/A	C01	N/A	2023.05.06	2026.05.05	3 year
20	Test Cable	N/A	C02	N/A	2023.05.06	2026.05.05	3 year
21	Test Cable	N/A	C03	N/A	2023.05.06	2026.05.05	3 year
22	Spectrum Analyzer	agilent	e4440a	us44300399	2024.03.12	2025.03.11	1 year
23	test receiver	R&S	ESCI	a0304218	2024.03.12	2025.03.11	1 year
24	Communication Tester	R&S	CMU200	A0304247	2024.03.12	2025.03.11	1 year
25	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2024.03.12	2025.03.11	1 year

26	DC Power Source	N/A	PS-6005D	2017040292 3	2024.04.25	2027.04.24	3 year
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Note: Each piece of equipment is scheduled for calibration once a year except the Test Cable& DC Power Source which is scheduled for calibration every 3 years.

Measurement Software

Item	Manufacturer	Software Name	Software Version	Description
1	MWRFTest	MTS 8200	2.0	RF Conducted Test
2	Farad	EZ-EMC_RE	AIT-03A	RadiatedTest
3	Farad	EZ-EMC_CE	AIT-03A	AC Conducted Test

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

RESULTS

PASS

Test data reference attachment.

6. BANDEDGE AND EMISSION MASK

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53,
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 2/4/5/7/12/17/41/66

RESULTS

Test data reference attachment.

7. OUT OF BAND EMISSIONS

RULE PART(S)

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

LIMITS

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

TEST PROCEDURE

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

For each out of band emissions measurement:

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

MODES TESTED

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

7.1 MEASUREMENT METHOD

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

Test data reference attachment.

8. RADIATED MEASUREMENT

8.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

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

LIMITS:

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

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

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

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

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

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

TEST PROCEDURE

ANSI/TIA-603-E Clause 2.2.17

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

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

MODES TESTED

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

RESULTS

Pass

8.2 LTE BAND 2

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result					Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP		
							Average		
							(mW)		
1.4MHz Band QPSK	1/#Mid	1850.7	-2.78	3.76	28.24	21.70	147.911	Horizontal	Pass
		1880	-2.09	3.91	28.22	22.22	166.725	Horizontal	Pass
		1909.3	-3.08	3.93	28.20	21.19	131.522	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-3.04	3.77	28.23	21.42	138.676	Horizontal	Pass
		1880	-2.90	3.91	28.24	21.43	138.995	Horizontal	Pass
		1908.5	-2.34	3.94	28.25	21.97	157.398	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-2.33	3.77	28.31	22.21	166.341	Horizontal	Pass
		1880	-2.32	3.91	28.22	21.99	158.125	Horizontal	Pass
		1907.5	-2.65	3.94	28.20	21.61	144.877	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-3.01	3.79	28.33	21.53	142.233	Horizontal	Pass
		1880	-2.46	3.95	28.22	21.81	151.705	Horizontal	Pass
		1905	-2.59	3.97	28.19	21.63	145.546	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-2.91	3.79	28.34	21.64	145.881	Horizontal	Pass
		1880	-1.84	3.95	28.22	22.43	174.985	Horizontal	Pass
		1902.5	-2.43	3.97	28.18	21.78	150.661	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-3.01	3.81	28.35	21.53	142.233	Horizontal	Pass
		1880	-2.97	3.96	28.22	21.29	134.586	Horizontal	Pass
		1900	-2.43	4.00	28.16	21.73	148.936	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-3.07	3.76	28.24	21.41	138.357	Vertical	Pass
		1880	-3.39	3.91	28.22	20.92	123.595	Vertical	Pass
		1909.3	-3.57	3.93	28.20	20.70	117.490	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-4.35	3.77	28.23	20.11	102.565	Vertical	Pass
		1880	-3.50	3.91	28.24	20.83	121.060	Vertical	Pass
		1908.5	-3.98	3.94	28.25	20.33	107.895	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-3.58	3.77	28.31	20.96	124.738	Vertical	Pass
		1880	-2.79	3.91	28.22	21.52	141.906	Vertical	Pass
		1907.5	-4.62	3.94	28.20	19.64	92.045	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1855	-2.44	3.79	28.33	22.10	162.181	Vertical	Pass
		1880	-3.12	3.95	28.22	21.15	130.317	Vertical	Pass
		1905	-3.98	3.97	28.19	20.24	105.682	Vertical	Pass

15.0MHz	1/#Mid	1857.5	-2.91	3.79	28.34	21.64	145.881	Vertical	Pass
Band		1880	-3.09	3.95	28.22	21.18	131.220	Vertical	Pass
QPSK		1902.5	-3.54	3.97	28.18	20.67	116.681	Vertical	Pass
20.0MHz	1/#Mid	1860	-3.21	3.81	28.35	21.33	135.831	Vertical	Pass
Band		1880	-3.48	3.96	28.22	20.78	119.674	Vertical	Pass
QPSK		1900	-3.40	4.00	28.16	20.76	119.124	Vertical	Pass

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP	Polarization Of Max. ERP	
							Average (mW)		
1.4MHz Band 16 QAM	1/#Mid	1850.7	-3.86	3.76	28.24	20.62	115.345	Horizontal	Pass
		1880	-3.35	3.91	28.22	20.96	124.738	Horizontal	Pass
		1909.3	-2.74	3.93	28.20	21.53	142.233	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-2.89	3.77	28.23	21.57	143.549	Horizontal	Pass
		1880	-3.38	3.91	28.24	20.95	124.451	Horizontal	Pass
		1908.5	-3.60	3.94	28.25	20.71	117.761	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-2.67	3.77	28.31	21.87	153.815	Horizontal	Pass
		1880	-3.01	3.91	28.22	21.30	134.896	Horizontal	Pass
		1907.5	-3.93	3.94	28.20	20.33	107.895	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-2.86	3.79	28.33	21.68	147.231	Horizontal	Pass
		1880	-2.27	3.95	28.22	22.00	158.489	Horizontal	Pass
		1905	-3.12	3.97	28.19	21.10	128.825	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-2.37	3.79	28.34	22.18	165.196	Horizontal	Pass
		1880	-3.17	3.95	28.22	21.10	128.825	Horizontal	Pass
		1902.5	-3.57	3.97	28.18	20.64	115.878	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-2.78	3.81	28.35	21.76	149.968	Horizontal	Pass
		1880	-2.78	3.96	28.22	21.48	140.605	Horizontal	Pass
		1900	-2.13	4.00	28.16	22.03	159.588	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1850.7	-4.20	3.76	28.24	20.28	106.660	Vertical	Pass
		1880	-4.70	3.91	28.22	19.61	91.411	Vertical	Pass
		1909.3	-4.23	3.93	28.20	20.04	100.925	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-4.45	3.77	28.23	20.01	100.231	Vertical	Pass
		1880	-4.41	3.91	28.24	19.92	98.175	Vertical	Pass
		1908.5	-4.95	3.94	28.25	19.36	86.298	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-5.39	3.77	28.31	19.15	82.224	Vertical	Pass
		1880	-5.03	3.91	28.22	19.28	84.723	Vertical	Pass
		1907.5	-3.99	3.94	28.20	20.27	106.414	Vertical	Pass

10.0MHz Band 16 QAM	1/#Mid	1855	-4.36	3.79	28.33	20.18	104.232	Vertical	Pass
		1880	-4.61	3.95	28.22	19.66	92.470	Vertical	Pass
		1905	-3.78	3.97	28.19	20.44	110.662	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-2.88	3.79	28.34	21.67	146.893	Vertical	Pass
		1880	-3.68	3.95	28.22	20.59	114.551	Vertical	Pass
		1902.5	-4.28	3.97	28.18	19.93	98.401	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-3.42	3.81	28.35	21.12	129.420	Vertical	Pass
		1880	-3.80	3.96	28.22	20.46	111.173	Vertical	Pass
		1900	-3.47	4.00	28.16	20.69	117.220	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.3 LTE BAND 4

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	1710.7	-2.69	3.12	27.58	21.77	150.314	Horizontal	Pass
		1732.5	-2.03	3.27	27.61	22.31	170.216	Horizontal	Pass
		1754.3	-2.85	3.29	27.63	21.49	140.929	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-2.91	3.13	27.61	21.57	143.549	Horizontal	Pass
		1732.5	-2.18	3.27	27.61	22.16	164.437	Horizontal	Pass
		1753.5	-3.06	3.30	27.62	21.26	133.660	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-2.24	3.13	27.63	22.26	168.267	Horizontal	Pass
		1732.5	-1.98	3.27	27.61	22.36	172.187	Horizontal	Pass
		1752.5	-1.94	3.30	27.60	22.36	172.187	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-3.02	3.15	27.64	21.47	140.281	Horizontal	Pass
		1732.5	-1.69	3.31	27.61	22.61	182.390	Horizontal	Pass
		1750	-2.13	3.33	27.59	22.13	163.305	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-1.89	3.15	27.65	22.61	182.390	Horizontal	Pass
		1732.5	-2.21	3.31	27.61	22.09	161.808	Horizontal	Pass
		1747.5	-1.81	3.33	27.57	22.43	174.985	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-3.02	3.17	27.66	21.47	140.281	Horizontal	Pass
		1732.5	-1.33	3.32	27.61	22.96	197.697	Horizontal	Pass
		1745	-2.29	3.36	27.56	21.91	155.239	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-3.95	3.12	27.58	20.51	112.460	Vertical	Pass
		1732.5	-2.73	3.27	27.61	21.61	144.877	Vertical	Pass
		1754.3	-2.03	3.29	27.63	22.31	170.216	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-2.15	3.13	27.61	22.33	171.002	Vertical	Pass
		1732.5	-2.83	3.27	27.61	21.51	141.579	Vertical	Pass
		1753.5	-2.84	3.30	27.62	21.48	140.605	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-2.72	3.13	27.63	21.78	150.661	Vertical	Pass
		1732.5	-2.76	3.27	27.61	21.58	143.880	Vertical	Pass
		1752.5	-2.74	3.30	27.60	21.56	143.219	Vertical	Pass
10.0MHz Band	1/#Mid	1715	-2.72	3.15	27.64	21.77	150.314	Vertical	Pass
		1732.5	-2.87	3.31	27.61	21.43	138.995	Vertical	Pass

QPSK		1750	-1.53	3.33	27.59	22.73	187.499	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-3.98	3.15	27.65	20.52	112.720	Vertical	Pass
Band		1732.5	-3.85	3.31	27.61	20.45	110.917	Vertical	Pass
QPSK		1747.5	-2.91	3.33	27.57	21.33	135.831	Vertical	Pass
20.0MHz	1/#Mid	1720	-2.83	3.17	27.66	21.66	146.555	Vertical	Pass
Band		1732.5	-3.34	3.32	27.61	20.95	124.451	Vertical	Pass
QPSK		1745	-3.72	3.36	27.56	20.48	111.686	Vertical	Pass

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	1710.7	-2.41	3.12	27.58	22.05	160.325	Horizontal	Pass
		1732.5	-2.98	3.27	27.61	21.36	136.773	Horizontal	Pass
		1754.3	-2.17	3.29	27.63	22.17	164.816	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-2.96	3.13	27.61	21.52	141.906	Horizontal	Pass
		1732.5	-2.91	3.27	27.61	21.43	138.995	Horizontal	Pass
		1753.5	-3.95	3.30	27.62	20.37	108.893	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-3.22	3.13	27.63	21.28	134.276	Horizontal	Pass
		1732.5	-3.35	3.27	27.61	20.99	125.603	Horizontal	Pass
		1752.5	-2.36	3.30	27.60	21.94	156.315	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-2.55	3.15	27.64	21.94	156.315	Horizontal	Pass
		1732.5	-3.02	3.31	27.61	21.28	134.276	Horizontal	Pass
		1750	-2.12	3.33	27.59	22.14	163.682	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-4.06	3.15	27.65	20.44	110.662	Horizontal	Pass
		1732.5	-2.98	3.31	27.61	21.32	135.519	Horizontal	Pass
		1747.5	-3.42	3.33	27.57	20.82	120.781	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-2.26	3.17	27.66	22.23	167.109	Horizontal	Pass
		1732.5	-2.04	3.32	27.61	22.25	167.880	Horizontal	Pass
		1745	-1.98	3.36	27.56	22.22	166.725	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-3.91	3.12	27.58	20.55	113.501	Vertical	Pass
		1732.5	-3.82	3.27	27.61	20.52	112.720	Vertical	Pass
		1754.3	-3.87	3.29	27.63	20.47	111.429	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-4.29	3.13	27.61	20.19	104.472	Vertical	Pass
		1732.5	-4.36	3.27	27.61	19.98	99.541	Vertical	Pass
		1753.5	-3.86	3.30	27.62	20.46	111.173	Vertical	Pass
5.0MHz Band 16	1/#Mid	1712.5	-4.69	3.13	27.63	19.81	95.719	Vertical	Pass
		1732.5	-3.67	3.27	27.61	20.67	116.681	Vertical	Pass

QAM		1752.5	-4.04	3.30	27.60	20.26	106.170	Vertical	Pass
10.0MHz	1/#Mid	1715	-3.83	3.15	27.64	20.66	116.413	Vertical	Pass
Band 16		1732.5	-3.28	3.31	27.61	21.02	126.474	Vertical	Pass
QAM		1750	-4.75	3.33	27.59	19.51	89.331	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-4.32	3.15	27.65	20.18	104.232	Vertical	Pass
Band 16		1732.5	-4.94	3.31	27.61	19.36	86.298	Vertical	Pass
QAM		1747.5	-3.07	3.33	27.57	21.17	130.918	Vertical	Pass
20.0MHz	1/#Mid	1720	-3.60	3.17	27.66	20.89	122.744	Vertical	Pass
Band 16		1732.5	-3.76	3.32	27.61	20.53	112.980	Vertical	Pass
QAM		1745	-2.99	3.36	27.56	21.21	132.130	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.4 LTE BAND 5

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	3#Mid	824.7	7.89	2.01	19.68	2.15	23.41	219.280	Horizontal	Pass
		836.5	7.82	2.01	19.77	2.15	23.43	220.293	Horizontal	Pass
		848.3	7.09	2.02	19.82	2.15	22.74	187.932	Horizontal	Pass
3.0MHz Band QPSK	1#Mid	825.5	7.47	2.01	19.70	2.15	23.01	199.986	Horizontal	Pass
		836.5	7.19	2.01	19.77	2.15	22.80	190.546	Horizontal	Pass
		847.5	7.87	2.02	19.81	2.15	23.51	224.388	Horizontal	Pass
5.0MHz Band QPSK	1#Mid	826.5	7.91	2.01	19.71	2.15	23.46	221.820	Horizontal	Pass
		836.5	7.94	2.01	19.77	2.15	23.55	226.464	Horizontal	Pass
		846.5	6.92	2.02	19.79	2.15	22.54	179.473	Horizontal	Pass
10.0MHz Band QPSK	1#Mid	829	7.34	2.01	19.73	2.15	22.91	195.434	Horizontal	Pass
		836.5	7.33	2.01	19.77	2.15	22.94	196.789	Horizontal	Pass
		844	7.85	2.02	19.78	2.15	23.46	221.820	Horizontal	Pass
1.4MHz Band QPSK	1#Mid	824.7	6.59	2.01	19.68	2.15	22.11	162.555	Vertical	Pass
		836.5	6.55	2.01	19.77	2.15	22.16	164.437	Vertical	Pass
		848.3	6.54	2.02	19.82	2.15	22.19	165.577	Vertical	Pass
3.0MHz Band QPSK	1#Mid	825.5	6.02	2.01	19.70	2.15	21.56	143.219	Vertical	Pass
		836.5	5.25	2.01	19.77	2.15	20.86	121.899	Vertical	Pass
		847.5	6.45	2.02	19.81	2.15	22.09	161.808	Vertical	Pass
5.0MHz Band QPSK	1#Mid	826.5	6.64	2.01	19.71	2.15	22.19	165.577	Vertical	Pass
		836.5	6.99	2.01	19.77	2.15	22.60	181.970	Vertical	Pass
		846.5	6.85	2.02	19.79	2.15	22.47	176.604	Vertical	Pass
10.0MHz Band QPSK	1#Mid	829	5.74	2.01	19.73	2.15	21.31	135.207	Vertical	Pass
		836.5	6.76	2.01	19.77	2.15	22.37	172.584	Vertical	Pass
		844	6.03	2.02	19.78	2.15	21.64	145.881	Vertical	Pass

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	3/#Mid	824.7	6.53	2.01	19.68	2.15	22.05	160.325	Horizontal	Pass
		836.5	6.51	2.01	19.77	2.15	22.12	162.930	Horizontal	Pass
		848.3	6.54	2.02	19.82	2.15	22.19	165.577	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	7.36	2.01	19.70	2.15	22.90	194.984	Horizontal	Pass
		836.5	6.26	2.01	19.77	2.15	21.87	153.815	Horizontal	Pass
		847.5	5.76	2.02	19.81	2.15	21.40	138.038	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	7.88	2.01	19.71	2.15	23.43	220.293	Horizontal	Pass
		836.5	7.75	2.01	19.77	2.15	23.36	216.770	Horizontal	Pass
		846.5	7.90	2.02	19.79	2.15	23.52	224.905	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	829	7.09	2.01	19.73	2.15	22.66	184.502	Horizontal	Pass
		836.5	7.43	2.01	19.77	2.15	23.04	201.372	Horizontal	Pass
		844	7.91	2.02	19.78	2.15	23.52	224.905	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	824.7	5.55	2.01	19.68	2.15	21.07	127.938	Vertical	Pass
		836.5	6.37	2.01	19.77	2.15	21.98	157.761	Vertical	Pass
		848.3	5.51	2.02	19.82	2.15	21.16	130.617	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	5.99	2.01	19.70	2.15	21.53	142.233	Vertical	Pass
		836.5	5.23	2.01	19.77	2.15	20.84	121.339	Vertical	Pass
		847.5	6.95	2.02	19.81	2.15	22.59	181.552	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	7.22	2.01	19.71	2.15	22.77	189.234	Vertical	Pass
		836.5	6.06	2.01	19.77	2.15	21.67	146.893	Vertical	Pass
		846.5	6.48	2.02	19.79	2.15	22.10	162.181	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	829	4.37	2.01	19.73	2.15	19.94	98.628	Vertical	Pass
		836.5	5.53	2.01	19.77	2.15	21.14	130.017	Vertical	Pass
		844	6.83	2.02	19.78	2.15	22.44	175.388	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

ERP(dBm)=EIRP-2.15

8.5 LTE BAND 7

Radiated Power (EIRP) for Band 7									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	2502.5	-0.97	4.54	27.75	22.24	167.494	Horizontal	Pass
		2535	-0.62	4.69	27.72	22.41	174.181	Horizontal	Pass
		2567.5	-0.23	4.71	27.71	22.77	189.234	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2505	-0.44	4.55	27.76	22.77	189.234	Horizontal	Pass
		2535	-0.24	4.69	27.72	22.79	190.108	Horizontal	Pass
		2565	-1.14	4.72	27.70	21.84	152.757	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-0.62	4.55	27.77	22.60	181.970	Horizontal	Pass
		2535	-1.02	4.69	27.72	22.01	158.855	Horizontal	Pass
		2562.5	-0.19	4.72	27.69	22.78	189.671	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2510	-0.21	4.57	27.78	23.00	199.526	Horizontal	Pass
		2535	-0.08	4.73	27.72	22.91	195.434	Horizontal	Pass
		2560	-1.45	4.75	27.68	21.48	140.605	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	-1.85	4.54	27.75	21.36	136.773	Vertical	Pass
		2535	-1.77	4.69	27.72	21.26	133.660	Vertical	Pass
		2567.5	-2.02	4.71	27.71	20.98	125.314	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2505	-3.24	4.55	27.76	19.97	99.312	Vertical	Pass
		2535	-2.55	4.69	27.72	20.48	111.686	Vertical	Pass
		2565	-2.10	4.72	27.70	20.88	122.462	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-1.80	4.55	27.77	21.42	138.676	Vertical	Pass
		2535	-1.43	4.69	27.72	21.60	144.544	Vertical	Pass
		2562.5	-1.71	4.72	27.69	21.26	133.660	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2510	-2.14	4.57	27.78	21.07	127.938	Vertical	Pass
		2535	-1.68	4.73	27.72	21.31	135.207	Vertical	Pass
		2560	-2.18	4.75	27.68	20.75	118.850	Vertical	Pass

Radiated Power (EIRP) for Band 7									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	2502.5	-2.30	4.54	27.75	20.91	123.310	Horizontal	Pass
		2535	-1.21	4.69	27.72	21.82	152.055	Horizontal	Pass
		2567.5	-1.81	4.71	27.71	21.19	131.522	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-1.63	4.55	27.76	21.58	143.880	Horizontal	Pass
		2535	-0.97	4.69	27.72	22.06	160.694	Horizontal	Pass
		2565	-1.90	4.72	27.70	21.08	128.233	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-2.22	4.55	27.77	21.00	125.893	Horizontal	Pass
		2535	-2.39	4.69	27.72	20.64	115.878	Horizontal	Pass
		2562.5	-0.60	4.72	27.69	22.37	172.584	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-2.28	4.57	27.78	20.93	123.880	Horizontal	Pass
		2535	-1.17	4.73	27.72	21.82	152.055	Horizontal	Pass
		2560	-1.67	4.75	27.68	21.26	133.660	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	-2.31	4.54	27.75	20.90	123.027	Vertical	Pass
		2535	-3.73	4.69	27.72	19.30	85.114	Vertical	Pass
		2567.5	-2.98	4.71	27.71	20.02	100.462	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-2.46	4.55	27.76	20.75	118.850	Vertical	Pass
		2535	-1.64	4.69	27.72	21.39	137.721	Vertical	Pass
		2565	-1.86	4.72	27.70	21.12	129.420	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-1.57	4.55	27.77	21.65	146.218	Vertical	Pass
		2535	-2.38	4.69	27.72	20.65	116.145	Vertical	Pass
		2562.5	-3.08	4.72	27.69	19.89	97.499	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-3.80	4.57	27.78	19.41	87.297	Vertical	Pass
		2535	-2.63	4.73	27.72	20.36	108.643	Vertical	Pass
		2560	-2.12	4.75	27.68	20.81	120.504	Vertical	Pass

Note:

SG Level= Signal generator output

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

8.6 LTE BAND 12

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	699.7	7.84	1.91	19.21	2.15	22.99	199.067	Vertical	Pass
		707.5	7.72	1.91	19.26	2.15	22.92	195.884	Vertical	Pass
		715.3	7.30	1.93	19.34	2.15	22.56	180.302	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	700.5	7.90	1.91	19.21	2.15	23.05	201.837	Vertical	Pass
		707.5	7.82	1.91	19.26	2.15	23.02	200.447	Vertical	Pass
		714.5	7.46	1.93	19.34	2.15	22.72	187.068	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	701.5	7.71	1.91	19.23	2.15	22.88	194.089	Vertical	Pass
		707.5	7.90	1.91	19.26	2.15	23.10	204.174	Vertical	Pass
		713.5	6.64	1.92	19.33	2.15	21.90	154.882	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	704	7.24	1.91	19.25	2.15	22.43	174.985	Vertical	Pass
		707.5	7.89	1.91	19.26	2.15	23.09	203.704	Vertical	Pass
		711	7.71	1.92	19.32	2.15	22.96	197.697	Vertical	Pass
1.4MHz Band QPSK	1/#Mid	699.7	6.47	1.91	19.21	2.15	21.62	145.211	Horizontal	Pass
		707.5	6.75	1.91	19.26	2.15	21.95	156.675	Horizontal	Pass
		715.3	6.23	1.93	19.34	2.15	21.49	140.929	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	700.5	6.70	1.91	19.21	2.15	21.85	153.109	Horizontal	Pass
		707.5	6.78	1.91	19.26	2.15	21.98	157.761	Horizontal	Pass
		714.5	5.59	1.93	19.34	2.15	20.85	121.619	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	701.5	7.10	1.91	19.23	2.15	22.27	168.655	Horizontal	Pass
		707.5	6.10	1.91	19.26	2.15	21.30	134.896	Horizontal	Pass
		713.5	6.25	1.92	19.33	2.15	21.51	141.579	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	704	5.99	1.91	19.25	2.15	21.18	131.220	Horizontal	Pass
		707.5	6.09	1.91	19.26	2.15	21.29	134.586	Horizontal	Pass
		711	6.69	1.92	19.32	2.15	21.94	156.315	Horizontal	Pass

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss (dBm)	Antenna Factor (dB)	Correction	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			(dB)	Average	Average		
							(dBm)	(mW)		
1.4MHz Band 16 QAM	1/#Mid	699.7	7.73	1.91	19.21	2.15	22.88	194.089	Vertical	Pass
		707.5	6.91	1.91	19.26	2.15	22.11	162.555	Vertical	Pass
		715.3	6.62	1.93	19.34	2.15	21.88	154.170	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	6.53	1.91	19.21	2.15	21.68	147.231	Vertical	Pass
		707.5	7.23	1.91	19.26	2.15	22.43	174.985	Vertical	Pass
		714.5	7.09	1.93	19.34	2.15	22.35	171.791	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	7.52	1.91	19.23	2.15	22.69	185.780	Vertical	Pass
		707.5	7.51	1.91	19.26	2.15	22.71	186.638	Vertical	Pass
		713.5	6.61	1.92	19.33	2.15	21.87	153.815	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	704	7.56	1.91	19.25	2.15	22.75	188.365	Vertical	Pass
		707.5	8.80	1.91	19.26	2.15	24.00	251.189	Vertical	Pass
		711	7.37	1.92	19.32	2.15	22.62	182.810	Vertical	Pass
1.4MHz Band 16 QAM	1/#Mid	699.7	7.39	1.91	19.21	2.15	22.54	179.473	Horizontal	Pass
		707.5	7.94	1.91	19.26	2.15	23.14	206.063	Horizontal	Pass
		715.3	6.07	1.93	19.34	2.15	21.33	135.831	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	7.75	1.91	19.21	2.15	22.90	194.984	Horizontal	Pass
		707.5	6.09	1.91	19.26	2.15	21.29	134.586	Horizontal	Pass
		714.5	6.86	1.93	19.34	2.15	22.12	162.930	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	7.81	1.91	19.23	2.15	22.98	198.609	Horizontal	Pass
		707.5	7.35	1.91	19.26	2.15	22.55	179.887	Horizontal	Pass
		713.5	6.96	1.92	19.33	2.15	22.22	166.725	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	704	5.39	1.91	19.25	2.15	20.58	114.288	Horizontal	Pass
		707.5	7.90	1.91	19.26	2.15	23.10	204.174	Horizontal	Pass
		711	6.14	1.92	19.32	2.15	21.39	137.721	Horizontal	Pass

Note:

SG Level= Signal generator output

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

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

ERP(dBm)=EIRP-2.15

8.7 LTE BAND 17

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	706.5	8.48	1.91	19.23	2.15	23.65	231.739	Vertical	Pass
		710	8.59	1.91	19.26	2.15	23.79	239.332	Vertical	Pass
		713.5	7.47	1.92	19.33	2.15	22.73	187.499	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	709	8.64	1.91	19.25	2.15	23.83	241.546	Vertical	Pass
		710	7.61	1.91	19.26	2.15	22.81	190.985	Vertical	Pass
		711	7.87	1.92	19.32	2.15	23.12	205.116	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	706.5	7.58	1.91	19.23	2.15	22.75	188.365	Horizontal	Pass
		710	6.29	1.91	19.26	2.15	21.49	140.929	Horizontal	Pass
		713.5	7.27	1.92	19.33	2.15	22.53	179.061	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	709	7.02	1.91	19.25	2.15	22.21	166.341	Horizontal	Pass
		710	6.85	1.91	19.26	2.15	22.05	160.325	Horizontal	Pass
		711	5.89	1.92	19.32	2.15	21.14	130.017	Horizontal	Pass

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	706.5	7.62	1.91	19.23	2.15	22.79	190.108	Vertical	Pass
		710	7.31	1.91	19.26	2.15	22.51	178.238	Vertical	Pass
		713.5	7.64	1.92	19.33	2.15	22.90	194.984	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	709	7.81	1.91	19.25	2.15	23.00	199.526	Vertical	Pass
		710	7.68	1.91	19.26	2.15	22.88	194.089	Vertical	Pass
		711	6.46	1.92	19.32	2.15	21.71	148.252	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	706.5	6.57	1.91	19.23	2.15	21.74	149.279	Horizontal	Pass
		710	5.23	1.91	19.26	2.15	20.43	110.408	Horizontal	Pass
		713.5	6.46	1.92	19.33	2.15	21.72	148.594	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	709	6.60	1.91	19.25	2.15	21.79	151.008	Horizontal	Pass
		710	6.94	1.91	19.26	2.15	22.14	163.682	Horizontal	Pass
		711	6.38	1.92	19.32	2.15	21.63	145.546	Horizontal	Pass

Note:

ERP=EIRP-2.15

SG Level= Signal generator output

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

8.8 LTE BAND 41

Radiated Power (EIRP) for Band 41									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
						(dBm)	(mW)		
5.0MHz Band QPSK	1/##Mid	2537.5	-1.05	4.54	27.75	22.16	164.437	Horizontal	Pass
		2595	-0.65	4.69	27.72	22.38	172.982	Horizontal	Pass
		2652.5	-0.63	4.71	27.71	22.37	172.584	Horizontal	Pass
10.0MHz Band QPSK	1/##Mid	2540	-0.69	4.55	27.76	22.52	178.649	Horizontal	Pass
		2595	-1.31	4.69	27.72	21.72	148.594	Horizontal	Pass
		2650	-0.24	4.72	27.70	22.74	187.932	Horizontal	Pass
15.0MHz Band QPSK	1/##Mid	2542.5	-0.63	4.55	27.77	22.59	181.552	Horizontal	Pass
		2595	-0.28	4.69	27.72	22.75	188.365	Horizontal	Pass
		2647.5	-0.42	4.72	27.69	22.55	179.887	Horizontal	Pass
20.0MHz Band QPSK	1/##Mid	2545	-0.84	4.57	27.78	22.37	172.584	Horizontal	Pass
		2595	-0.95	4.73	27.72	22.04	159.956	Horizontal	Pass
		2645	-1.59	4.75	27.68	21.34	136.144	Horizontal	Pass
5.0MHz Band QPSK	1/##Mid	2537.5	-0.98	4.54	27.75	22.23	167.109	Vertical	Pass
		2595	-1.15	4.69	27.72	21.88	154.170	Vertical	Pass
		2652.5	-1.49	4.71	27.71	21.51	141.579	Vertical	Pass
10.0MHz Band QPSK	1/##Mid	2540	-0.68	4.55	27.76	22.53	179.061	Vertical	Pass
		2595	-1.05	4.69	27.72	21.98	157.761	Vertical	Pass
		2650	-1.10	4.72	27.70	21.88	154.170	Vertical	Pass
15.0MHz Band QPSK	1/##Mid	2542.5	-1.63	4.55	27.77	21.59	144.212	Vertical	Pass
		2595	-0.83	4.69	27.72	22.20	165.959	Vertical	Pass
		2647.5	-1.35	4.72	27.69	21.62	145.211	Vertical	Pass
20.0MHz Band QPSK	1/##Mid	2545	-1.61	4.57	27.78	21.60	144.544	Vertical	Pass
		2595	-1.07	4.73	27.72	21.92	155.597	Vertical	Pass
		2645	-0.55	4.75	27.68	22.38	172.982	Vertical	Pass

Radiated Power (EIRP) for Band 41									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
						(dBm)	(mW)		
5.0MHz	1/#Mid	2537.5	-1.56	4.54	27.75	21.65	146.218	Horizontal	Pass
Band 16		2595	-2.05	4.69	27.72	20.98	125.314	Horizontal	Pass
QAM		2652.5	-1.12	4.71	27.71	21.88	154.170	Horizontal	Pass
10.0MHz	1/#Mid	2540	-2.06	4.55	27.76	21.15	130.317	Horizontal	Pass
Band 16		2595	-1.95	4.69	27.72	21.08	128.233	Horizontal	Pass
QAM		2650	-1.29	4.72	27.70	21.69	147.571	Horizontal	Pass
15.0MHz	1/#Mid	2542.5	-1.53	4.55	27.77	21.69	147.571	Horizontal	Pass
Band 16		2595	-1.56	4.69	27.72	21.47	140.281	Horizontal	Pass
QAM		2647.5	-1.71	4.72	27.69	21.26	133.660	Horizontal	Pass
20.0MHz	1/#Mid	2545	-2.48	4.57	27.78	20.73	118.304	Horizontal	Pass
Band 16		2595	-1.71	4.73	27.72	21.28	134.276	Horizontal	Pass
QAM		2645	-1.39	4.75	27.68	21.54	142.561	Horizontal	Pass
5.0MHz	1/#Mid	2537.5	-1.38	4.54	27.75	21.83	152.405	Vertical	Pass
Band 16		2595	-1.58	4.69	27.72	21.45	139.637	Vertical	Pass
QAM		2652.5	-2.51	4.71	27.71	20.49	111.944	Vertical	Pass
10.0MHz	1/#Mid	2540	-2.65	4.55	27.76	20.56	113.763	Vertical	Pass
Band 16		2595	-2.13	4.69	27.72	20.90	123.027	Vertical	Pass
QAM		2650	-2.53	4.72	27.70	20.45	110.917	Vertical	Pass
15.0MHz	1/#Mid	2542.5	-1.68	4.55	27.77	21.54	142.561	Vertical	Pass
Band 16		2595	-2.58	4.69	27.72	20.45	110.917	Vertical	Pass
QAM		2647.5	-2.33	4.72	27.69	20.64	115.878	Vertical	Pass
20.0MHz	1/#Mid	2545	-1.79	4.57	27.78	21.42	138.676	Vertical	Pass
Band 16		2595	-1.93	4.73	27.72	21.06	127.644	Vertical	Pass
QAM		2645	-2.61	4.75	27.68	20.32	107.647	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)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP	Polarization Of Max. ERP	
							Average		
							(mW)		
1.4MHz Band QPSK	1/#Mid	1710.7	-1.98	3.76	28.24	22.50	177.828	Horizontal	Pass
		1745	-2.02	3.91	28.22	22.29	169.434	Horizontal	Pass
		1779.3	-2.12	3.93	28.2	22.15	164.059	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-2.14	3.77	28.23	22.32	170.608	Horizontal	Pass
		1745	-1.67	3.91	28.24	22.66	184.502	Horizontal	Pass
		1778.5	-1.64	3.94	28.25	22.67	184.927	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-1.93	3.77	28.31	22.61	182.390	Horizontal	Pass
		1745	-2.05	3.91	28.22	22.26	168.267	Horizontal	Pass
		1777.5	-2.13	3.94	28.2	22.13	163.305	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-2.46	3.79	28.33	22.08	161.436	Horizontal	Pass
		1745	-1.64	3.95	28.22	22.63	183.231	Horizontal	Pass
		1775	-1.38	3.97	28.19	22.84	192.309	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-1.77	3.79	28.34	22.78	189.671	Horizontal	Pass
		1745	-1.47	3.95	28.22	22.80	190.546	Horizontal	Pass
		1772.5	-1.86	3.97	28.18	22.35	171.791	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-2.38	3.81	28.35	22.16	164.437	Horizontal	Pass
		1745	-1.77	3.96	28.22	22.49	177.419	Horizontal	Pass
		1770	-1.71	4	28.16	22.45	175.792	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-2.39	3.76	28.24	22.09	161.808	Vertical	Pass
		1745	-2.20	3.91	28.22	22.11	162.555	Vertical	Pass
		1779.3	-1.88	3.93	28.2	22.39	173.380	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-1.68	3.77	28.23	22.78	189.671	Vertical	Pass
		1745	-2.31	3.91	28.24	22.02	159.221	Vertical	Pass
		1778.5	-1.24	3.94	28.25	23.07	202.768	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-1.89	3.77	28.31	22.65	184.077	Vertical	Pass
		1745	-1.84	3.91	28.22	22.47	176.604	Vertical	Pass
		1777.5	-1.47	3.94	28.2	22.79	190.108	Vertical	Pass
10.0MHz	1/#Mid	1715	-1.64	3.79	28.34	22.91	195.434	Vertical	Pass

Band QPSK		1745	-1.39	3.95	28.22	22.88	194.089	Vertical	Pass
		1775	-1.31	3.97	28.18	22.90	194.984	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-2.17	3.81	28.35	22.37	172.584	Vertical	Pass
		1745	-1.41	3.96	28.22	22.85	192.752	Vertical	Pass
		1772.5	-1.71	4	28.16	22.45	175.792	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1720	-2.29	3.79	28.34	22.26	168.267	Vertical	Pass
		1745	-1.83	3.95	28.22	22.44	175.388	Vertical	Pass
		1770	-1.81	3.97	28.18	22.40	173.780	Vertical	Pass

Radiated Power (EIRP) for Band 66									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP	Polarization Of Max. ERP	
							Average (mW)		
1.4MHz Band 16 QAM	1/#Mid	1710.7	-3.21	3.76	28.24	21.27	133.968	Horizontal	Pass
		1745	-2.94	3.91	28.22	21.37	137.088	Horizontal	Pass
		1779.3	-3.33	3.93	28.2	20.94	124.165	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-2.89	3.77	28.23	21.57	143.549	Horizontal	Pass
		1745	-3.42	3.91	28.24	20.91	123.310	Horizontal	Pass
		1778.5	-3.21	3.94	28.25	21.10	128.825	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-2.91	3.77	28.31	21.63	145.546	Horizontal	Pass
		1745	-2.44	3.91	28.22	21.87	153.815	Horizontal	Pass
		1777.5	-3.09	3.94	28.2	21.17	130.918	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-3.19	3.79	28.33	21.35	136.458	Horizontal	Pass
		1745	-3.20	3.95	28.22	21.07	127.938	Horizontal	Pass
		1775	-3.17	3.97	28.19	21.05	127.350	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-2.97	3.79	28.34	21.58	143.880	Horizontal	Pass
		1745	-2.74	3.95	28.22	21.53	142.233	Horizontal	Pass
		1772.5	-2.94	3.97	28.18	21.27	133.968	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-2.61	3.81	28.35	21.93	155.955	Horizontal	Pass
		1745	-2.95	3.96	28.22	21.31	135.207	Horizontal	Pass
		1770	-2.90	4	28.16	21.26	133.660	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-2.94	3.76	28.24	21.54	142.561	Vertical	Pass
		1745	-2.80	3.91	28.22	21.51	141.579	Vertical	Pass
		1779.3	-2.52	3.93	28.2	21.75	149.624	Vertical	Pass
3.0MHz Band 16	1/#Mid	1711.5	-2.89	3.77	28.23	21.57	143.549	Vertical	Pass
		1745	-3.18	3.91	28.24	21.15	130.317	Vertical	Pass

QAM		1778.5	-3.13	3.94	28.25	21.18	131.220	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-3.05	3.77	28.31	21.49	140.929	Vertical	Pass
		1745	-2.99	3.91	28.22	21.32	135.519	Vertical	Pass
		1777.5	-2.73	3.94	28.2	21.53	142.233	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-3.32	3.79	28.34	21.23	132.739	Vertical	Pass
		1745	-2.93	3.95	28.22	21.34	136.144	Vertical	Pass
		1775	-2.36	3.97	28.18	21.85	153.109	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-2.85	3.81	28.35	21.69	147.571	Vertical	Pass
		1745	-2.70	3.96	28.22	21.56	143.219	Vertical	Pass
		1772.5	-2.34	4	28.16	21.82	152.055	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-3.30	3.79	28.34	21.25	133.352	Vertical	Pass
		1745	-2.24	3.95	28.22	22.03	159.588	Vertical	Pass
		1770	-3.11	3.97	28.18	21.10	128.825	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 $43 + 10 \log_{10}(p)$, 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 2/4/5/7/12/17/41/66

RESULTS

PASS

9.1 LTE BAND 2

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

Test Results for Low Channel 1850.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3701.4	-49.30	4.04	33.51	-19.83	-13	-6.83	Horizontal
3701.4	-51.71	4.04	33.51	-22.24	-13	-9.24	Vertical
5552.1	-46.53	5.24	35.84	-15.93	-13	-2.93	Vertical
5552.1	-50.33	5.24	35.84	-19.73	-13	-6.73	Horizontal
185.1	-40.62	1.43	16.02	-26.03	-13	-13.03	Vertical
453.7	-33.94	1.30	17.99	-17.25	-13	-4.25	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-47.57	4.04	33.56	-18.05	-13	-5.05	Horizontal
3760.0	-52.23	4.04	33.56	-22.71	-13	-9.71	Vertical
5640.0	-49.25	5.24	35.91	-18.58	-13	-5.58	Vertical
5640.0	-50.75	5.24	35.91	-20.08	-13	-7.08	Horizontal
183.5	-35.92	1.62	16.97	-20.57	-13	-7.57	Vertical
289.4	-35.54	1.74	15.98	-21.31	-13	-8.31	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-46.31	4.04	34.00	-16.35	-13	-3.35	Horizontal
3818.6	-46.87	4.04	34.00	-16.91	-13	-3.91	Vertical
5727.9	-51.02	5.24	36.04	-20.22	-13	-7.22	Vertical
5727.9	-48.29	5.24	36.04	-17.49	-13	-4.49	Horizontal
193.8	-41.08	1.42	17.29	-25.21	-13	-12.21	Vertical
342.6	-35.52	1.50	17.90	-19.11	-13	-6.11	Horizontal

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

Test Results for Low Channel 1860MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3720.0	-44.85	4.07	33.54	-15.38	-13	-2.38	Horizontal
3720.0	-50.12	4.07	33.54	-20.65	-13	-7.65	Vertical
5580.0	-46.86	5.28	35.86	-16.28	-13	-3.28	Vertical
5580.0	-50.56	5.28	35.86	-19.98	-13	-6.98	Horizontal
208.5	-38.28	1.58	16.89	-22.96	-13	-9.96	Vertical
357.0	-41.83	1.76	17.26	-26.33	-13	-13.33	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-46.15	4.04	33.56	-16.63	-13	-3.63	Horizontal
3760.0	-47.13	4.04	33.56	-17.61	-13	-4.61	Vertical
5640.0	-51.07	5.24	35.91	-20.40	-13	-7.40	Vertical
5640.0	-50.79	5.24	35.91	-20.12	-13	-7.12	Horizontal
200.6	-44.08	1.46	16.27	-29.27	-13	-16.27	Vertical
344.7	-39.62	1.59	15.15	-26.06	-13	-13.06	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-49.43	4.04	34.00	-19.47	-13	-6.47	Horizontal
3800.0	-47.11	4.04	34.00	-17.15	-13	-4.15	Vertical
5700.0	-46.37	5.24	36.04	-15.57	-13	-2.57	Vertical
5700.0	-51.41	5.24	36.04	-20.61	-13	-7.61	Horizontal
212.0	-35.59	1.36	17.39	-19.55	-13	-6.55	Vertical
312.7	-41.80	1.66	15.39	-28.07	-13	-15.07	Horizontal

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

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

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

9.2 LTE BAND 4

QPSK EIRP POWER FOR LTE BAND 4 (1.4MHZ BANDWIDTH)

Test Results for Low Channel 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-48.99	4.02	29.80	-23.21	-13	-10.21	Horizontal
3421.4	-47.68	4.02	29.80	-21.90	-13	-8.90	Vertical
5132.1	-50.98	5.24	35.84	-20.38	-13	-7.38	Vertical
5132.1	-51.26	5.24	35.84	-20.66	-13	-7.66	Horizontal
197.8	-41.59	1.68	16.04	-27.23	-13	-14.23	Vertical
454.4	-35.06	1.78	17.74	-19.10	-13	-6.10	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-49.44	4.03	30.00	-23.47	-13	-10.47	Horizontal
3465.0	-43.76	4.03	30.00	-17.79	-13	-4.79	Vertical
5197.5	-45.57	5.25	35.86	-14.96	-13	-1.96	Vertical
5197.5	-48.48	5.25	35.86	-17.87	-13	-4.87	Horizontal
207.5	-41.82	1.72	17.69	-25.85	-13	-12.85	Vertical
345.7	-43.08	1.62	16.02	-28.67	-13	-15.67	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-48.82	4.05	30.01	-22.86	-13	-9.86	Horizontal
3508.6	-46.80	4.05	30.01	-20.84	-13	-7.84	Vertical
5262.9	-49.39	5.26	35.86	-18.79	-13	-5.79	Vertical
5262.9	-49.70	5.26	35.86	-19.10	-13	-6.10	Horizontal
182.9	-32.13	1.80	16.69	-17.24	-13	-4.24	Vertical
332.1	-40.06	1.75	16.66	-25.16	-13	-12.16	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 Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-48.71	4.02	29.80	-22.93	-13	-9.93	Horizontal
3440.0	-47.98	4.02	29.80	-22.20	-13	-9.20	Vertical
5160.0	-51.58	5.24	35.84	-20.98	-13	-7.98	Vertical
5160.0	-50.16	5.24	35.84	-19.56	-13	-6.56	Horizontal
182.5	-39.89	1.57	17.26	-24.20	-13	-11.20	Vertical
310.2	-35.20	1.78	16.35	-20.63	-13	-7.63	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-49.86	4.03	30.00	-23.89	-13	-10.89	Horizontal
3465.0	-50.25	4.03	30.00	-24.28	-13	-11.28	Vertical
5197.5	-48.22	5.25	35.86	-17.61	-13	-4.61	Vertical
5197.5	-48.04	5.25	35.86	-17.43	-13	-4.43	Horizontal
208.7	-40.79	1.44	17.95	-24.28	-13	-11.28	Vertical
269.5	-32.32	1.65	16.09	-17.88	-13	-4.88	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-44.63	2.91	27.68	-19.86	-13	-6.86	Horizontal
3490.0	-45.43	2.91	27.68	-20.66	-13	-7.66	Vertical
5235.0	-45.58	5.26	35.86	-14.98	-13	-1.98	Vertical
5235.0	-52.61	5.26	35.86	-22.01	-13	-9.01	Horizontal
184.8	-40.25	1.61	16.85	-25.01	-13	-12.01	Vertical
290.8	-40.28	1.61	15.19	-26.70	-13	-13.70	Horizontal

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

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

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

9.3 LTE BAND 5

QPSK EIRP POWER FOR LTE BAND 5 (1.4MHZ BANDWIDTH)

Test Results for Low Channel 824.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1649.4	-46.92	2.78	27.50	-22.20	-13	-9.20	Horizontal
1649.4	-49.85	2.78	27.50	-25.13	-13	-12.13	Vertical
2474.1	-46.44	2.90	27.80	-21.54	-13	-8.54	Vertical
2474.1	-51.38	2.90	27.80	-26.48	-13	-13.48	Horizontal
179.0	-36.91	1.76	17.59	-21.08	-13	-8.08	Vertical
460.3	-40.34	1.63	15.87	-26.10	-13	-13.10	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-46.78	2.80	27.48	-22.10	-13	-9.10	Horizontal
1673.0	-45.75	2.80	27.48	-21.07	-13	-8.07	Vertical
2509.5	-43.25	2.91	27.70	-18.46	-13	-5.46	Vertical
2509.5	-50.35	2.91	27.70	-25.56	-13	-12.56	Horizontal
212.9	-41.12	1.61	15.68	-27.05	-13	-14.05	Vertical
431.5	-36.57	1.59	17.52	-20.65	-13	-7.65	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-49.24	2.82	27.43	-24.63	-13	-11.63	Horizontal
1696.6	-50.85	2.82	27.43	-26.24	-13	-13.24	Vertical
2544.9	-43.84	2.92	27.74	-19.02	-13	-6.02	Vertical
2544.9	-51.23	2.92	27.74	-26.41	-13	-13.41	Horizontal
192.7	-34.43	1.69	16.67	-19.44	-13	-6.44	Vertical
366.5	-34.47	1.70	17.18	-18.99	-13	-5.99	Horizontal

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

Test Results for Low Channel 829MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1658.0	-51.26	2.78	27.50	-26.54	-13	-13.54	Horizontal
1658.0	-42.12	2.78	27.50	-17.40	-13	-4.40	Vertical
2487.0	-52.56	2.90	27.80	-27.66	-13	-14.66	Vertical
2487.0	-48.31	2.90	27.80	-23.41	-13	-10.41	Horizontal
199.8	-42.49	1.71	15.57	-28.63	-13	-15.63	Vertical
363.9	-33.06	1.34	16.40	-18.00	-13	-5.00	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-42.10	2.80	27.48	-17.42	-13	-4.42	Horizontal
1673.0	-42.71	2.80	27.48	-18.03	-13	-5.03	Vertical
2509.5	-50.96	2.91	27.70	-26.17	-13	-13.17	Vertical
2509.5	-47.53	2.91	27.70	-22.74	-13	-9.74	Horizontal
212.0	-33.12	1.44	17.04	-17.52	-13	-4.52	Vertical
343.3	-42.53	1.76	17.62	-26.67	-13	-13.67	Horizontal
Test Results for High Channel 844MHz							
1688.0	-46.63	2.82	27.43	-22.02	-13	-9.02	Horizontal
1688.0	-47.74	2.82	27.43	-23.13	-13	-10.13	Vertical
2532.0	-50.78	2.92	27.74	-25.96	-13	-12.96	Vertical
2532.0	-47.93	2.92	27.74	-23.11	-13	-10.11	Horizontal
205.3	-34.99	1.74	17.70	-19.03	-13	-6.03	Vertical
393.0	-35.03	1.41	17.46	-18.97	-13	-5.97	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.

9.4 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	-63.97	5.23	35.81	-33.39	-25	-8.39	Horizontal
5005.0	-62.55	5.23	35.81	-31.97	-25	-6.97	Vertical
7507.5	-63.02	5.67	36.85	-31.84	-25	-6.84	Vertical
7507.5	-62.59	5.67	36.85	-31.41	-25	-6.41	Horizontal
202.7	-51.74	1.73	17.97	-35.50	-25	-10.50	Vertical
450.7	-49.38	1.38	15.11	-35.65	-25	-10.65	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-59.23	5.23	35.82	-28.64	-25	-3.64	Horizontal
5070.0	-63.71	5.23	35.82	-33.12	-25	-8.12	Vertical
7605.0	-62.17	5.67	36.85	-30.99	-25	-5.99	Vertical
7605.0	-62.67	5.67	36.85	-31.49	-25	-6.49	Horizontal
210.9	-42.94	1.77	16.17	-28.53	-25	-3.53	Vertical
232.7	-49.52	1.63	15.21	-35.94	-25	-10.94	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-58.26	5.24	35.83	-27.67	-25	-2.67	Horizontal
5135.0	-57.75	5.24	35.83	-27.16	-25	-2.16	Vertical
7702.5	-61.15	5.68	36.87	-29.96	-25	-4.96	Vertical
7702.5	-58.85	5.68	36.87	-27.66	-25	-2.66	Horizontal
186.4	-43.02	1.58	17.56	-27.04	-25	-2.04	Vertical
263.7	-48.52	1.45	16.58	-33.39	-25	-8.39	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	-59.41	5.23	35.82	-28.82	-25	-3.82	Horizontal
5020.0	-61.68	5.23	35.82	-31.09	-25	-6.09	Vertical
7530.0	-61.41	5.67	36.86	-30.22	-25	-5.22	Vertical
7530.0	-59.36	5.67	36.86	-28.17	-25	-3.17	Horizontal
192.6	-48.70	1.63	15.76	-34.57	-25	-9.57	Vertical
379.3	-50.49	1.71	15.44	-36.76	-25	-11.76	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-61.89	5.23	35.82	-31.30	-25	-6.30	Horizontal
5070.0	-59.06	5.23	35.82	-28.47	-25	-3.47	Vertical
7605.0	-59.88	5.67	36.85	-28.70	-25	-3.70	Vertical
7605.0	-59.39	5.67	36.85	-28.21	-25	-3.21	Horizontal
198.7	-46.46	1.79	16.84	-31.40	-25	-6.40	Vertical
346.1	-44.59	1.71	17.64	-28.66	-25	-3.66	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-59.85	5.24	35.83	-29.26	-25	-4.26	Horizontal
5120.0	-60.47	5.24	35.83	-29.88	-25	-4.88	Vertical
7680.0	-60.36	5.70	36.88	-29.18	-25	-4.18	Vertical
7680.0	-60.70	5.70	36.88	-29.52	-25	-4.52	Horizontal
193.4	-44.94	1.79	16.84	-29.88	-25	-4.88	Vertical
349.4	-43.83	1.71	17.64	-27.90	-25	-2.90	Horizontal

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

Margin = Spurious Emission Level - Limit

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

9.5 LTE BAND 12

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

Test Results for Low Channel 699.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1399.4	-43.19	2.60	27.20	-18.59	-13	-5.59	Horizontal
1399.4	-43.75	2.60	27.20	-19.15	-13	-6.15	Vertical
2099.1	-49.25	2.85	27.54	-24.56	-13	-11.56	Vertical
2099.1	-48.76	2.85	27.54	-24.07	-13	-11.07	Horizontal
211.7	-36.52	1.49	17.78	-20.23	-13	-7.23	Vertical
386.4	-40.21	1.36	17.33	-24.24	-13	-11.24	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-45.69	2.61	27.28	-21.02	-13	-8.02	Horizontal
1415.0	-44.13	2.61	27.28	-19.46	-13	-6.46	Vertical
2122.5	-51.29	2.87	27.59	-26.57	-13	-13.57	Vertical
2122.5	-49.71	2.87	27.59	-24.99	-13	-11.99	Horizontal
207.5	-39.09	1.73	15.74	-25.08	-13	-12.08	Vertical
384.6	-33.52	1.62	15.79	-19.35	-13	-6.35	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-51.66	2.63	27.28	-27.01	-13	-14.01	Horizontal
1430.6	-46.94	2.63	27.28	-22.29	-13	-9.29	Vertical
2145.9	-43.69	2.88	27.60	-18.97	-13	-5.97	Vertical
2145.9	-48.39	2.88	27.60	-23.67	-13	-10.67	Horizontal
186.4	-33.73	1.61	18.00	-17.34	-13	-4.34	Vertical
280.4	-35.47	1.45	15.49	-21.44	-13	-8.44	Horizontal

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

Test Results for Low Channel 704MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1408.0	-51.99	2.61	27.26	-27.34	-13	-14.34	Horizontal
1408.0	-46.33	2.61	27.26	-21.68	-13	-8.68	Vertical
2112.0	-48.47	2.87	27.58	-23.76	-13	-10.76	Vertical
2112.0	-50.93	2.87	27.58	-26.22	-13	-13.22	Horizontal
197.3	-40.87	1.31	16.97	-25.21	-13	-12.21	Vertical
468.6	-42.95	1.65	16.70	-27.90	-13	-14.90	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-45.45	2.61	27.28	-20.78	-13	-7.78	Horizontal
1415.0	-51.48	2.61	27.28	-26.81	-13	-13.81	Vertical
2122.5	-51.34	2.87	27.59	-26.62	-13	-13.62	Vertical
2122.5	-50.47	2.87	27.59	-25.75	-13	-12.75	Horizontal
175.4	-35.97	1.72	17.99	-19.70	-13	-6.70	Vertical
362.7	-39.77	1.73	17.94	-23.56	-13	-10.56	Horizontal
Test Results for High Channel 711MHz							
1422.0	-48.22	2.62	27.28	-23.56	-13	-10.56	Horizontal
1422.0	-43.27	2.62	27.28	-18.61	-13	-5.61	Vertical
2133.0	-52.61	2.87	27.60	-27.88	-13	-14.88	Vertical
2133.0	-49.28	2.87	27.60	-24.55	-13	-11.55	Horizontal
209.0	-36.91	1.58	15.93	-22.56	-13	-9.56	Vertical
360.9	-33.14	1.36	15.59	-18.91	-13	-5.91	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	-49.62	2.61	27.28	-24.95	-13	-11.95	Horizontal
1413.0	-44.88	2.61	27.28	-20.21	-13	-7.21	Vertical
2119.5	-50.14	2.87	27.59	-25.42	-13	-12.42	Vertical
2119.5	-49.54	2.87	27.59	-24.82	-13	-11.82	Horizontal
209.6	-34.40	1.71	16.15	-19.96	-13	-6.96	Vertical
420.5	-44.09	1.41	17.32	-28.18	-13	-15.18	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-44.63	2.62	27.30	-19.95	-13	-6.95	Horizontal
1420.0	-47.38	2.62	27.30	-22.70	-13	-9.70	Vertical
2130.0	-43.51	2.87	27.62	-18.76	-13	-5.76	Vertical
2130.0	-49.58	2.87	27.62	-24.83	-13	-11.83	Horizontal
201.1	-36.81	1.42	15.25	-22.99	-13	-9.99	Vertical
320.8	-40.57	1.36	17.19	-24.74	-13	-11.74	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-50.71	2.66	27.28	-26.09	-13	-13.09	Horizontal
1427.0	-45.14	2.66	27.28	-20.52	-13	-7.52	Vertical
2140.5	-45.35	2.88	27.60	-20.63	-13	-7.63	Vertical
2140.5	-51.24	2.88	27.60	-26.52	-13	-13.52	Horizontal
175.6	-40.74	1.32	17.29	-24.77	-13	-11.77	Vertical
445.7	-37.93	1.72	16.89	-22.76	-13	-9.76	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	-48.48	2.62	27.30	-23.80	-13	-10.80	Horizontal
1418.0	-51.78	2.62	27.30	-27.10	-13	-14.10	Vertical
2127.0	-47.44	2.87	27.62	-22.69	-13	-9.69	Vertical
2127.0	-48.57	2.87	27.62	-23.82	-13	-10.82	Horizontal
196.4	-34.63	1.35	16.91	-19.07	-13	-6.07	Vertical
269.0	-42.11	1.62	16.31	-27.42	-13	-14.42	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-43.60	2.62	27.30	-18.92	-13	-5.92	Horizontal
1420.0	-42.52	2.62	27.30	-17.84	-13	-4.84	Vertical
2130.0	-46.90	2.87	27.62	-22.15	-13	-9.15	Vertical
2130.0	-49.98	2.87	27.62	-25.23	-13	-12.23	Horizontal
202.1	-43.18	1.51	17.14	-27.55	-13	-14.55	Vertical
398.2	-39.35	1.77	16.88	-24.24	-13	-11.24	Horizontal
Test Results for High Channel 711MHz							
1422.0	-46.37	2.62	27.30	-21.69	-13	-8.69	Horizontal
1422.0	-52.05	2.62	27.30	-27.37	-13	-14.37	Vertical
2133.0	-43.34	2.87	27.62	-18.59	-13	-5.59	Vertical
2133.0	-50.46	2.87	27.62	-25.71	-13	-12.71	Horizontal
201.8	-37.69	1.78	15.95	-23.52	-13	-10.52	Vertical
411.8	-36.93	1.34	17.95	-20.33	-13	-7.33	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 2572.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5145.0	-58.96	5.23	35.81	-28.38	-25	-3.38	Horizontal
5145.0	-60.50	5.23	35.81	-29.92	-25	-4.92	Vertical
7717.5	-57.99	5.67	36.85	-26.81	-25	-1.81	Vertical
7717.5	-62.48	5.67	36.85	-31.30	-25	-6.30	Horizontal
435.3	-43.41	1.38	15.98	-28.81	-25	-3.81	Vertical
465.8	-41.75	1.62	15.66	-27.71	-25	-2.71	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-63.67	5.23	35.82	-33.08	-25	-8.08	Horizontal
5190.0	-57.95	5.23	35.82	-27.36	-25	-2.36	Vertical
7785.0	-61.23	5.67	36.85	-30.05	-25	-5.05	Vertical
7785.0	-62.09	5.67	36.85	-30.91	-25	-5.91	Horizontal
510.4	-46.86	1.62	16.17	-32.31	-25	-7.31	Vertical
562.9	-43.30	1.74	17.63	-27.41	-25	-2.41	Horizontal
Test Results for High Channel 2617.5MHz							
5235.0	-57.76	5.24	35.83	-27.17	-25	-2.17	Horizontal
5235.0	-60.49	5.24	35.83	-29.90	-25	-4.90	Vertical
7852.5	-61.55	5.68	36.87	-30.36	-25	-5.36	Vertical
7852.5	-59.36	5.68	36.87	-28.17	-25	-3.17	Horizontal
197.6	-41.98	1.55	15.84	-27.69	-25	-2.69	Vertical
353.1	-46.25	1.51	17.06	-30.70	-25	-5.70	Horizontal

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

Test Results for Low Channel 2580MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5160.0	-62.15	5.23	35.82	-31.56	-25	-6.56	Horizontal
5160.0	-59.09	5.23	35.82	-28.50	-25	-3.50	Vertical
7740.0	-61.86	5.67	36.86	-30.67	-25	-5.67	Vertical
7740.0	-61.48	5.67	36.86	-30.29	-25	-5.29	Horizontal
128.9	-44.04	1.43	15.51	-29.96	-25	-4.96	Vertical
344.8	-43.53	1.40	16.97	-27.96	-25	-2.96	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-60.38	5.23	35.82	-29.79	-25	-4.79	Horizontal
5190.0	-59.29	5.23	35.82	-28.70	-25	-3.70	Vertical
7785.0	-58.64	5.67	36.85	-27.46	-25	-2.46	Vertical
7785.0	-60.60	5.67	36.85	-29.42	-25	-4.42	Horizontal
100.8	-48.59	1.77	16.72	-33.64	-25	-8.64	Vertical
263.5	-48.02	1.31	16.99	-32.34	-25	-7.34	Horizontal
Test Results for High Channel 2610MHz							
5220.0	-63.04	5.24	35.83	-32.45	-25	-7.45	Horizontal
5220.0	-62.03	5.24	35.83	-31.44	-25	-6.44	Vertical
7830.0	-59.19	5.70	36.88	-28.01	-25	-3.01	Vertical
7830.0	-60.95	5.70	36.88	-29.77	-25	-4.77	Horizontal
349.9	-47.32	1.70	15.73	-33.29	-25	-8.29	Vertical
110.3	-42.62	1.75	17.33	-27.04	-25	-2.04	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 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-58.39	3.84	35.81	-26.42	-13	-13.42	Horizontal
3421.4	-61.23	3.84	35.81	-29.26	-13	-16.26	Vertical
5132.1	-62.08	5.18	36.85	-30.41	-13	-17.41	Vertical
5132.1	-60.70	5.18	36.85	-29.03	-13	-16.03	Horizontal
203.9	-49.05	1.56	17.97	-32.64	-13	-19.64	Vertical
305.7	-52.48	1.33	15.11	-38.70	-13	-25.70	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-62.18	3.85	35.82	-30.21	-13	-17.21	Horizontal
3490.0	-61.06	3.85	35.82	-29.09	-13	-16.09	Vertical
5235.0	-60.28	5.21	36.85	-28.64	-13	-15.64	Vertical
5235.0	-61.99	5.21	36.85	-30.35	-13	-17.35	Horizontal
187.3	-47.80	1.77	16.17	-33.39	-13	-20.39	Vertical
390.0	-47.96	1.63	15.21	-34.38	-13	-21.38	Horizontal
Test Results for High Channel 1779.3MHz							
3558.6	-59.52	3.86	35.83	-27.55	-13	-14.55	Horizontal
3558.6	-58.80	3.86	35.83	-26.83	-13	-13.83	Vertical
5337.9	-57.56	5.24	36.87	-25.93	-13	-12.93	Vertical
5337.9	-60.70	5.24	36.87	-29.07	-13	-16.07	Horizontal
198.1	-46.26	1.58	17.56	-30.28	-13	-17.28	Vertical
268.4	-50.54	1.45	16.58	-35.41	-13	-22.41	Horizontal

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

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-62.25	3.84	35.82	-30.27	-13	-17.27	Horizontal
3440.0	-62.68	3.84	35.82	-30.70	-13	-17.70	Vertical
5160.0	-60.38	5.18	36.86	-28.70	-13	-15.70	Vertical
5160.0	-63.69	5.18	36.86	-32.01	-13	-19.01	Horizontal
180.4	-51.50	1.56	15.76	-37.30	-13	-24.30	Vertical
323.5	-46.74	1.33	15.44	-32.63	-13	-19.63	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-59.51	3.85	35.82	-27.54	-13	-14.54	Horizontal
3490.0	-62.33	3.85	35.82	-30.36	-13	-17.36	Vertical
5235.0	-63.03	5.21	36.85	-31.39	-13	-18.39	Vertical
5235.0	-57.81	5.21	36.85	-26.17	-13	-13.17	Horizontal
182.6	-46.21	1.77	16.84	-31.13	-13	-18.13	Vertical
251.6	-52.41	1.63	17.64	-36.40	-13	-23.40	Horizontal
Test Results for High Channel 1770MHz							
3540.0	-58.64	3.86	35.83	-26.67	-13	-13.67	Horizontal
3540.0	-60.87	3.86	35.83	-28.90	-13	-15.90	Vertical
5310.0	-59.55	5.24	36.88	-27.91	-13	-14.91	Vertical
5310.0	-59.12	5.24	36.88	-27.48	-13	-14.48	Horizontal
182.3	-46.89	1.58	16.84	-31.62	-13	-18.62	Vertical
310.2	-47.95	1.45	17.64	-31.76	-13	-18.76	Horizontal

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

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

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

10. FREQUENCY STABILITY

RULE PART(S)

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

LIMITS

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

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

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

Temp. = -30° to $+50^{\circ}\text{C}$

Voltage = low voltage, DC 3.29V, Normal, DC 3.87V and High voltage, DC 4.45V.

Frequency Stability vs Temperature:

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

Frequency Stability vs Voltage:

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

MODES TESTED

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

RESULTS

See the following pages.

10.1 LTE BAND 2

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	1880	7.5	0.003989	2.5
3.87	1880	9.1	0.004840	2.5
4.45	1880	8.2	0.004362	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	16.6	0.008830	2.5
Extreme (50C)	1880	13.2	0.007021	2.5
Extreme (40C)	1880	12.3	0.006543	2.5
Extreme (30C)	1880	7.3	0.003883	2.5
Extreme (10C)	1880	3.6	0.001915	2.5
Extreme (0C)	1880	8.6	0.004574	2.5
Extreme (-10C)	1880	5.5	0.002926	2.5
Extreme (-20C)	1880	5.9	0.003138	2.5
Extreme (-30C)	1880	11.6	0.006170	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	1880	12.2	0.006489	2.5
3.87	1880	9.6	0.005106	2.5
4.45	1880	15.6	0.008298	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	15.7	0.008351	2.5
Extreme (50C)	1880	12.2	0.006489	2.5
Extreme (40C)	1880	15.6	0.008298	2.5
Extreme (30C)	1880	10.6	0.005638	2.5
Extreme (10C)	1880	14.6	0.007766	2.5
Extreme (0C)	1880	11.2	0.005957	2.5
Extreme (-10C)	1880	15.6	0.008298	2.5
Extreme (-20C)	1880	9.5	0.005053	2.5
Extreme (-30C)	1880	11.9	0.006330	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]
3.29	1732.5	6.8	0.003925	2.5
3.87	1732.5	11.9	0.006869	2.5
4.45	1732.5	11.5	0.006638	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	14.2	0.008196	2.5
Extreme (50C)	1732.5	9.8	0.005657	2.5
Extreme (40C)	1732.5	15.8	0.009120	2.5
Extreme (30C)	1732.5	13.6	0.007850	2.5
Extreme (10C)	1732.5	15.2	0.008773	2.5
Extreme (0C)	1732.5	13.6	0.007850	2.5
Extreme (-10C)	1732.5	14.3	0.008254	2.5
Extreme (-20C)	1732.5	8.2	0.004733	2.5
Extreme (-30C)	1732.5	11.6	0.006696	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	1732.5	11.3	0.006522	2.5
3.87	1732.5	13.6	0.007850	2.5
4.45	1732.5	13.9	0.008023	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	13.8	0.007965	2.5
Extreme (50C)	1732.5	14.2	0.008196	2.5
Extreme (40C)	1732.5	6.6	0.003810	2.5
Extreme (30C)	1732.5	12.7	0.007330	2.5
Extreme (10C)	1732.5	15.4	0.008889	2.5
Extreme (0C)	1732.5	9.8	0.005657	2.5
Extreme (-10C)	1732.5	12.7	0.007330	2.5
Extreme (-20C)	1732.5	12.3	0.007100	2.5
Extreme (-30C)	1732.5	13.8	0.007965	2.5

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

10.3 LTE BAND 5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	836.5	15.2	0.018171	2.5
3.87	836.5	8.8	0.010520	2.5
4.45	836.5	15.2	0.018171	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	14.7	0.017573	2.5
Extreme (50C)	836.5	12.2	0.014585	2.5
Extreme (40C)	836.5	5.6	0.006695	2.5
Extreme (30C)	836.5	12.5	0.014943	2.5
Extreme (10C)	836.5	6.2	0.007412	2.5
Extreme (0C)	836.5	5.3	0.006336	2.5
Extreme (-10C)	836.5	12.8	0.015302	2.5
Extreme (-20C)	836.5	12.6	0.015063	2.5
Extreme (-30C)	836.5	10.3	0.012313	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	836.5	14.7	0.017573	2.5
3.87	836.5	14.2	0.016975	2.5
4.45	836.5	6.9	0.008249	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	9.8	0.011715	2.5
Extreme (50C)	836.5	12.4	0.014824	2.5
Extreme (40C)	836.5	8.2	0.009803	2.5
Extreme (30C)	836.5	13.9	0.016617	2.5
Extreme (10C)	836.5	14.2	0.016975	2.5
Extreme (0C)	836.5	13.6	0.016258	2.5
Extreme (-10C)	836.5	15.8	0.018888	2.5
Extreme (-20C)	836.5	10.8	0.012911	2.5
Extreme (-30C)	836.5	14.9	0.017812	2.5

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

10.4 LTE BAND 7

Band 7 QPSK, (20MHz BANDWIDTH RB size 100 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	2535	13.5	0.005325	2.5
3.87	2535	15.1	0.005957	2.5
4.45	2535	5.8	0.002288	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	13.2	0.005207	2.5
Extreme (50C)	2535	10.6	0.004181	2.5
Extreme (40C)	2535	13.7	0.005404	2.5
Extreme (30C)	2535	9.2	0.003629	2.5
Extreme (10C)	2535	10.6	0.004181	2.5
Extreme (0C)	2535	15.2	0.005996	2.5
Extreme (-10C)	2535	8.3	0.003274	2.5
Extreme (-20C)	2535	10.6	0.004181	2.5
Extreme (-30C)	2535	11.9	0.004694	2.5

Band 7 16QAM, (20MHz BANDWIDTH RB size 100 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	2535	6.2	0.002446	2.5
3.87	2535	15.8	0.006233	2.5
4.45	2535	11.6	0.004576	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	15.3	0.006036	2.5
Extreme (50C)	2535	13.9	0.005483	2.5
Extreme (40C)	2535	13.2	0.005207	2.5
Extreme (30C)	2535	5.1	0.002012	2.5
Extreme (10C)	2535	5.6	0.002209	2.5
Extreme (0C)	2535	14.8	0.005838	2.5
Extreme (-10C)	2535	11.2	0.004418	2.5
Extreme (-20C)	2535	15.9	0.006272	2.5
Extreme (-30C)	2535	12.7	0.005010	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]
3.29	707.5	13.6	0.019223	2.5
3.87	707.5	12.8	0.018092	2.5
4.45	707.5	12.6	0.017809	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	15.1	0.021343	2.5
Extreme (50C)	707.5	7.6	0.010742	2.5
Extreme (40C)	707.5	13.5	0.019081	2.5
Extreme (30C)	707.5	8.7	0.012297	2.5
Extreme (10C)	707.5	5.8	0.008198	2.5
Extreme (0C)	707.5	13.2	0.018657	2.5
Extreme (-10C)	707.5	12.5	0.017668	2.5
Extreme (-20C)	707.5	10.6	0.014982	2.5
Extreme (-30C)	707.5	9.8	0.013852	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	707.5	13.2	0.018657	2.5
3.87	707.5	15.4	0.021767	2.5
4.45	707.5	11.7	0.016537	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	12.1	0.017102	2.5
Extreme (50C)	707.5	11.7	0.016537	2.5
Extreme (40C)	707.5	14.2	0.020071	2.5
Extreme (30C)	707.5	11.3	0.015972	2.5
Extreme (10C)	707.5	14.4	0.020353	2.5
Extreme (0C)	707.5	8.8	0.012438	2.5
Extreme (-10C)	707.5	15.2	0.021484	2.5
Extreme (-20C)	707.5	15.3	0.021625	2.5
Extreme (-30C)	707.5	12.4	0.017527	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]
3.29	710	6.8	0.009577	2.5
3.87	710	13.2	0.018592	2.5
4.45	710	12.5	0.017606	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710	7.6	0.010704	2.5
Extreme (50C)	710	13.7	0.019296	2.5
Extreme (40C)	710	10.6	0.014930	2.5
Extreme (30C)	710	7.7	0.010845	2.5
Extreme (10C)	710	13.7	0.019296	2.5
Extreme (0C)	710	14.2	0.020000	2.5
Extreme (-10C)	710	11.1	0.015634	2.5
Extreme (-20C)	710	11.2	0.015775	2.5
Extreme (-30C)	710	8.8	0.012394	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]
3.29	710	9.5	0.013380	2.5
3.87	710	10.8	0.015211	2.5
4.45	710	13.2	0.018592	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710	15.2	0.021408	2.5
Extreme (50C)	710	11.6	0.016338	2.5
Extreme (40C)	710	8.8	0.012394	2.5
Extreme (30C)	710	10.2	0.014366	2.5
Extreme (10C)	710	12.6	0.017746	2.5
Extreme (0C)	710	8.8	0.012394	2.5
Extreme (-10C)	710	10.2	0.014366	2.5
Extreme (-20C)	710	14.3	0.020141	2.5
Extreme (-30C)	710	8.1	0.011408	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]
3.29	2593	8.7	0.003355	2.5
3.87	2593	14.2	0.005476	2.5
4.45	2593	13.6	0.005245	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	12.6	0.004859	2.5
Extreme (50C)	2593	14.3	0.005515	2.5
Extreme (40C)	2593	13.9	0.005361	2.5
Extreme (30C)	2593	10.7	0.004126	2.5
Extreme (10C)	2593	12.2	0.004705	2.5
Extreme (0C)	2593	3.5	0.001350	2.5
Extreme (-10C)	2593	11.2	0.004319	2.5
Extreme (-20C)	2593	11.8	0.004551	2.5
Extreme (-30C)	2593	6.3	0.002430	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	2593	14.3	0.005515	2.5
3.87	2593	11.4	0.004396	2.5
4.45	2593	6.5	0.002507	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	15.2	0.005862	2.5
Extreme (50C)	2593	10.3	0.003972	2.5
Extreme (40C)	2593	10.5	0.004049	2.5
Extreme (30C)	2593	5.2	0.002005	2.5
Extreme (10C)	2593	6.3	0.002430	2.5
Extreme (0C)	2593	4.5	0.001735	2.5
Extreme (-10C)	2593	10.6	0.004088	2.5
Extreme (-20C)	2593	5.9	0.002275	2.5
Extreme (-30C)	2593	5.2	0.002005	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]
3.29	1745	6.1	0.003496	2.5
3.87	1745	7.2	0.004126	2.5
4.45	1745	5.8	0.003324	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	5.4	0.003095	2.5
Extreme (50C)	1745	7.9	0.004527	2.5
Extreme (40C)	1745	6.7	0.003840	2.5
Extreme (30C)	1745	5.8	0.003324	2.5
Extreme (10C)	1745	5.6	0.003209	2.5
Extreme (0C)	1745	5.9	0.003381	2.5
Extreme (-10C)	1745	11.2	0.006418	2.5
Extreme (-20C)	1745	7.9	0.004527	2.5
Extreme (-30C)	1745	9.8	0.005616	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	1745	7.2	0.004126	2.5
3.87	1745	6.8	0.003897	2.5
4.45	1745	8.1	0.004642	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	8.1	0.004642	2.5
Extreme (50C)	1745	7.5	0.004298	2.5
Extreme (40C)	1745	7.2	0.004126	2.5
Extreme (30C)	1745	9.8	0.005616	2.5
Extreme (10C)	1745	8.8	0.005043	2.5
Extreme (0C)	1745	6.7	0.003840	2.5
Extreme (-10C)	1745	7.6	0.004355	2.5
Extreme (-20C)	1745	8.2	0.004699	2.5
Extreme (-30C)	1745	4.7	0.002693	2.5

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

11. Peak-to-Average Ratio

11.1 Description of the PAR Measurement

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

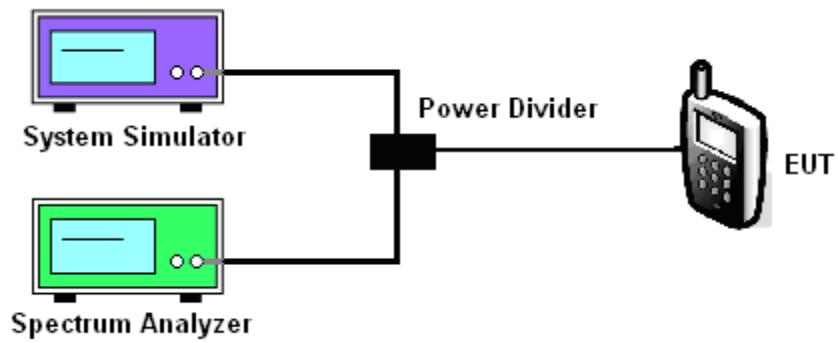
11.2 Measuring Instruments

See list of measuring instruments of this test report.

11.3 Test Procedures

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

11.4 Test Setup



MODES TESTED

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

Test data reference attachment.

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