

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

FCC ID: 2AOWK-5015RH

Product: Mobile Phone

Trade Mark: ulefone

Model No.: GQ5015RH

Family Model: Armor X31, Armor X31 Ultra, Armor X31E,
Armor X31S, Armor X31 Lite, Armor X31s,
Armor X31s Pro

Report No.: S24120401906006

Issue Date: Feb. 13, 2025

Prepared for

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TEST RESULT CERTIFICATION

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

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

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

Product name..... : Mobile Phone

Model and/or type reference .. : GQ5015RH

Trade Mark..... : ulefone

Family Model..... : Armor X31, Armor X31 Ultra, Armor X31E, Armor X31S, Armor X31 Lite, Armor X31s, Armor X31s Pro

Test Sample Number..... : S241204019001

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..... Dec. 04, 2024 ~ Feb. 13, 2025

Date of Issue Feb. 13, 2025

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	GQ5015RH
Family Model	Armor X31, Armor X31 Ultra, Armor X31E, Armor X31S, Armor X31 Lite, Armor X31s, Armor X31s Pro
Model Difference	All models are the same circuit and RF module, except for model names.
FCC ID:	2AOWK-5015RH
Frequency Bands:	U.S. Bands: ☒ LTE FDD Band 2, 4, 5, 12, 17, 66, 71 TDD Band 41
Frequency Range:	LTE FDD Band 2 Uplink: 1850MHz-1910MHz, Downlink: 1930MHz-1990MHz; LTE FDD Band 4 Uplink: 1710MHz-1755MHz, Downlink: 2110MHz-2155MHz; LTE FDD Band 5 Uplink: 824MHz-849MHz, Downlink: 869MHz-894MHz; LTE FDD Band 12 Uplink: 699MHz-716MHz, Downlink: 729MHz-746MHz; LTE FDD Band 17 Uplink: 704MHz-716MHz, Downlink: 734MHz-746MHz; LTE TDD Band 41 Uplink& Downlink: 2565MHz-2645MHz, LTE FDD Band 66 Uplink: 1710MHz-1780MHz, Downlink: 2110MHz-2200MHz; LTE FDD Band 71 Uplink: 663MHz-698MHz, Downlink: 617MHz-652MHz;
Type of Modulation:	QPSK/16QAM/64QAM(Only Downlink)
Power Class	Class 3
SIM Card:	SIM 1 and SIM 2 is a chipset unit and tested as a single chipset. The SIM 1 is chosen for test.
Antenna:	LDS Antenna
Antenna gain:	Band 2: -0.8dBi, Band 4: -1.15dBi, Band 5: -6.24 dBi, Band 12: -2.17dBi, Band 17: -2.17 dBi, Band 41:-2.18dBi; B66:-0.79dBi;B71:-2.78dBi
Adapter	Model: QZ-0180AA2H Input: 100-240V~50/60Hz 0.5A Output: 5.0V---3.0A 15.0W or 9.0V---2.22A 20.0W Max or 12.0V---1.67A 20.0W Max
Battery	DC 3.87V, 6050mAh, 23.41Wh
Power supply	DC 3.87V from battery or DC 5V/9V/12V 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-5015RH** filing to comply with the FCC Part 22H&24E&27.

1.3 TEST METHODOLOGY

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

1.4 TEST FACILITY

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

ShenZhen NTEK Testing Technology Co., Ltd.

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

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

FCC Registration No.:463705

IC Registration No.:9270A,

CNAS Registration No.:L5516

MEASUREMENT UNCERTAINTY

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

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

1.5 SPECIAL ACCESSORIES

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

1.6 WORST-CASE CONFIGURATION AND MODE

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

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

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	GQ5015RH	FCC ID: 2AOWK-5015RH	EUT

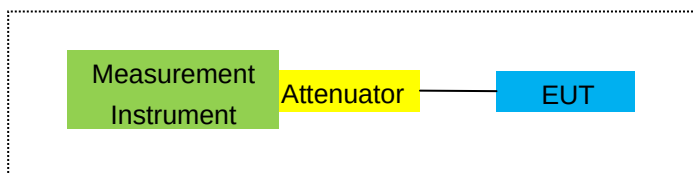
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

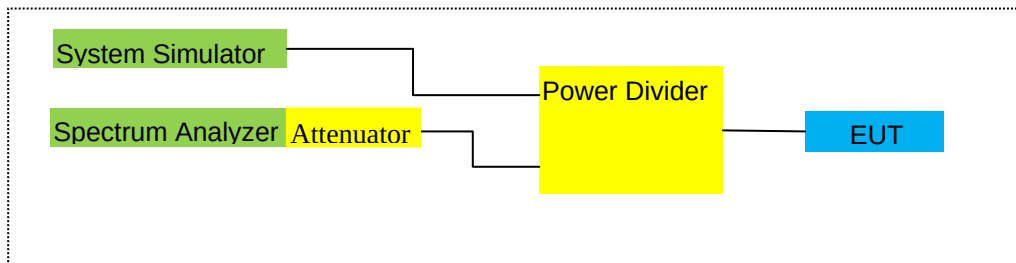
For Radiated Test Cases



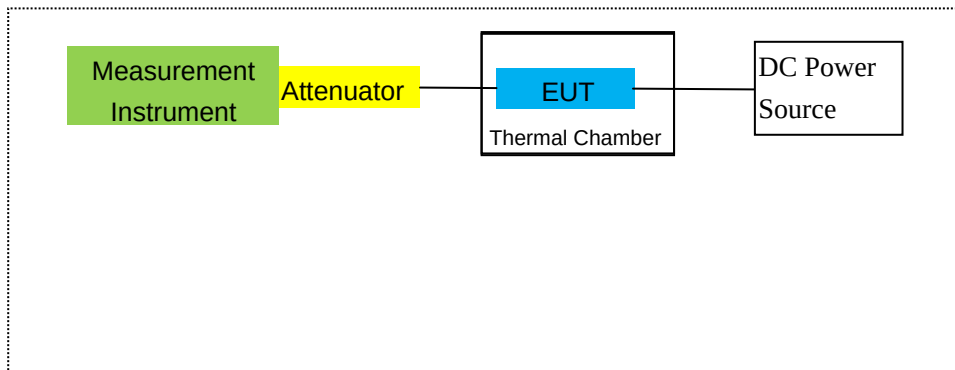
For Conducted Output Power



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

RESULTS

PASS

Test data reference attachment.

6. BANDEDGE AND EMISSION MASK

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53,
FCC: §22.359

LIMITS

FCC: §22.917, §24.238, §27.53

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

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

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

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

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 41 emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $55 + 10 \log (P)$ dB.

TEST PROCEDURE

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

For each out of band emissions measurement:

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

MODES TESTED

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

7.1 MEASUREMENT METHOD

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

Test data reference attachment.

8. RADIATED MEASUREMENT

8.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

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

LIMITS:

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

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

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

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

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

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

TEST PROCEDURE

ANSI/TIA-603-E Clause 2.2.17

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

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

MODES TESTED

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

RESULTS

Pass

8.2 LTE BAND 2

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result					Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP		
							Average		
							(mW)		
1.4MHz Band QPSK	1/#Mid	1850.7	-1.98	3.76	28.24	22.50	177.884	Horizontal	Pass
		1880	-1.92	3.91	28.22	22.39	173.346	Horizontal	Pass
		1909.3	-3.38	3.93	28.20	20.89	122.878	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-2.13	3.77	28.23	22.33	171.040	Horizontal	Pass
		1880	-2.30	3.91	28.24	22.03	159.475	Horizontal	Pass
		1908.5	-2.67	3.94	28.25	21.64	145.855	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-1.81	3.77	28.31	22.73	187.403	Horizontal	Pass
		1880	-1.88	3.91	28.22	22.43	174.877	Horizontal	Pass
		1907.5	-2.06	3.94	28.20	22.20	165.996	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-2.72	3.79	28.33	21.82	152.186	Horizontal	Pass
		1880	-2.42	3.95	28.22	21.85	153.190	Horizontal	Pass
		1905	-2.45	3.97	28.19	21.77	150.441	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-1.54	3.79	28.34	23.01	199.970	Horizontal	Pass
		1880	-0.74	3.95	28.22	23.53	225.272	Horizontal	Pass
		1902.5	-1.83	3.97	28.18	22.38	172.870	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-3.29	3.81	28.35	21.25	133.249	Horizontal	Pass
		1880	-1.77	3.96	28.22	22.49	177.362	Horizontal	Pass
		1900	-1.84	4.00	28.16	22.32	170.735	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-2.92	3.76	28.24	21.56	143.092	Vertical	Pass
		1880	-2.74	3.91	28.22	21.57	143.429	Vertical	Pass
		1909.3	-3.03	3.93	28.20	21.24	132.980	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-3.90	3.77	28.23	20.56	113.860	Vertical	Pass
		1880	-2.78	3.91	28.24	21.55	142.823	Vertical	Pass
		1908.5	-2.77	3.94	28.25	21.54	142.546	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-2.85	3.77	28.31	21.69	147.727	Vertical	Pass
		1880	-1.72	3.91	28.22	22.59	181.350	Vertical	Pass
		1907.5	-4.06	3.94	28.20	20.20	104.716	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1855	-1.91	3.79	28.33	22.63	183.424	Vertical	Pass
		1880	-2.95	3.95	28.22	21.32	135.419	Vertical	Pass
		1905	-2.81	3.97	28.19	21.41	138.481	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1857.5	-2.20	3.79	28.34	22.35	171.611	Vertical	Pass
		1880	-3.85	3.95	28.22	20.42	110.177	Vertical	Pass
		1902.5	-2.96	3.97	28.18	21.25	133.447	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1860	-2.48	3.81	28.35	22.06	160.799	Vertical	Pass
		1880	-3.43	3.96	28.22	20.83	121.193	Vertical	Pass
		1900	-2.70	4.00	28.16	21.46	140.104	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	-4.12	3.76	28.24	20.36	108.526	Horizontal	Pass
		1880	-4.18	3.91	28.22	20.13	103.013	Horizontal	Pass
		1909.3	-3.26	3.93	28.20	21.01	126.117	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-3.55	3.77	28.23	20.91	123.422	Horizontal	Pass
		1880	-3.92	3.91	28.24	20.41	109.894	Horizontal	Pass
		1908.5	-3.41	3.94	28.25	20.90	123.138	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-3.18	3.77	28.31	21.36	136.685	Horizontal	Pass
		1880	-4.38	3.91	28.22	19.93	98.485	Horizontal	Pass
		1907.5	-3.45	3.94	28.20	20.81	120.527	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-2.94	3.79	28.33	21.60	144.665	Horizontal	Pass
		1880	-3.59	3.95	28.22	20.68	116.882	Horizontal	Pass
		1905	-3.65	3.97	28.19	20.57	114.048	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-3.42	3.79	28.34	21.13	129.676	Horizontal	Pass
		1880	-3.69	3.95	28.22	20.58	114.225	Horizontal	Pass
		1902.5	-4.13	3.97	28.18	20.08	101.960	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-3.64	3.81	28.35	20.90	122.945	Horizontal	Pass
		1880	-2.86	3.96	28.22	21.40	138.147	Horizontal	Pass
		1900	-2.35	4.00	28.16	21.81	151.857	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1850.7	-5.40	3.76	28.24	19.08	80.982	Vertical	Pass
		1880	-5.44	3.91	28.22	18.87	77.083	Vertical	Pass
		1909.3	-5.42	3.93	28.20	18.85	76.743	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-4.13	3.77	28.23	20.33	107.877	Vertical	Pass
		1880	-5.15	3.91	28.24	19.18	82.702	Vertical	Pass
		1908.5	-4.76	3.94	28.25	19.55	90.098	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-6.30	3.77	28.31	18.24	66.680	Vertical	Pass
		1880	-6.29	3.91	28.22	18.02	63.324	Vertical	Pass
		1907.5	-3.86	3.94	28.20	20.40	109.576	Vertical	Pass

10.0MHz Band 16 QAM	1/#Mid	1855	-5.66	3.79	28.33	18.88	77.226	Vertical	Pass
		1880	-6.03	3.95	28.22	18.24	66.610	Vertical	Pass
		1905	-4.67	3.97	28.19	19.55	90.132	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-2.82	3.79	28.34	21.73	148.950	Vertical	Pass
		1880	-3.85	3.95	28.22	20.42	110.070	Vertical	Pass
		1902.5	-3.34	3.97	28.18	20.87	122.111	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-4.48	3.81	28.35	20.06	101.463	Vertical	Pass
		1880	-4.27	3.96	28.22	19.99	99.682	Vertical	Pass
		1900	-3.88	4.00	28.16	20.28	106.589	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	-1.68	3.12	27.58	22.78	189.709	Horizontal	Pass
		1732.5	-2.35	3.27	27.61	21.99	158.275	Horizontal	Pass
		1754.3	-2.48	3.29	27.63	21.86	153.379	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-1.95	3.13	27.61	22.53	178.954	Horizontal	Pass
		1732.5	-1.28	3.27	27.61	23.06	202.218	Horizontal	Pass
		1753.5	-2.89	3.30	27.62	21.43	139.135	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-2.11	3.13	27.63	22.39	173.235	Horizontal	Pass
		1732.5	-1.86	3.27	27.61	22.48	176.826	Horizontal	Pass
		1752.5	-1.40	3.30	27.60	22.90	194.765	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-3.87	3.15	27.64	20.62	115.354	Horizontal	Pass
		1732.5	-1.06	3.31	27.61	23.24	210.895	Horizontal	Pass
		1750	-2.08	3.33	27.59	22.18	165.248	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-2.01	3.15	27.65	22.49	177.594	Horizontal	Pass
		1732.5	-2.46	3.31	27.61	21.84	152.701	Horizontal	Pass
		1747.5	-1.59	3.33	27.57	22.65	184.254	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-3.18	3.17	27.66	21.31	135.244	Horizontal	Pass
		1732.5	-1.12	3.32	27.61	23.17	207.585	Horizontal	Pass
		1745	-2.42	3.36	27.56	21.78	150.799	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-3.52	3.12	27.58	20.94	124.170	Vertical	Pass
		1732.5	-2.10	3.27	27.61	22.24	167.378	Vertical	Pass
		1754.3	-2.11	3.29	27.63	22.23	167.115	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-2.25	3.13	27.61	22.23	167.150	Vertical	Pass
		1732.5	-1.98	3.27	27.61	22.36	172.152	Vertical	Pass
		1753.5	-2.48	3.30	27.62	21.84	152.787	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-2.37	3.13	27.63	22.13	163.189	Vertical	Pass
		1732.5	-2.25	3.27	27.61	22.09	161.900	Vertical	Pass
		1752.5	-2.29	3.30	27.60	22.01	159.007	Vertical	Pass
10.0MHz Band	1/#Mid	1715	-1.84	3.15	27.64	22.65	184.009	Vertical	Pass
		1732.5	-2.80	3.31	27.61	21.50	141.240	Vertical	Pass

QPSK		1750	-1.00	3.33	27.59	23.26	212.022	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-3.18	3.15	27.65	21.32	135.627	Vertical	Pass
Band		1732.5	-2.87	3.31	27.61	21.43	139.065	Vertical	Pass
QPSK		1747.5	-1.95	3.33	27.57	22.29	169.413	Vertical	Pass
20.0MHz	1/#Mid	1720	-1.68	3.17	27.66	22.81	190.881	Vertical	Pass
Band		1732.5	-3.50	3.32	27.61	20.79	119.849	Vertical	Pass
QPSK		1745	-3.17	3.36	27.56	21.03	126.819	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	1/#Mid	1710.7	-2.56	3.12	27.58	21.90	154.882	Horizontal	Pass
Band 16		1732.5	-2.84	3.27	27.61	21.50	141.348	Horizontal	Pass
QAM		1754.3	-2.90	3.29	27.63	21.44	139.332	Horizontal	Pass
3.0MHz	1/#Mid	1711.5	-3.26	3.13	27.61	21.22	132.545	Horizontal	Pass
Band 16		1732.5	-2.74	3.27	27.61	21.60	144.613	Horizontal	Pass
QAM		1753.5	-4.46	3.30	27.62	19.86	96.773	Horizontal	Pass
5.0MHz	1/#Mid	1712.5	-3.52	3.13	27.63	20.98	125.390	Horizontal	Pass
Band 16		1732.5	-3.97	3.27	27.61	20.37	108.960	Horizontal	Pass
QAM		1752.5	-3.39	3.30	27.60	20.91	123.436	Horizontal	Pass
10.0MHz	1/#Mid	1715	-3.67	3.15	27.64	20.82	120.845	Horizontal	Pass
Band 16		1732.5	-3.79	3.31	27.61	20.51	112.366	Horizontal	Pass
QAM		1750	-2.93	3.33	27.59	21.33	135.712	Horizontal	Pass
15.0MHz	1/#Mid	1717.5	-5.35	3.15	27.65	19.15	82.217	Horizontal	Pass
Band 16		1732.5	-2.46	3.31	27.61	21.84	152.712	Horizontal	Pass
QAM		1747.5	-4.24	3.33	27.57	20.00	100.028	Horizontal	Pass
20.0MHz	1/#Mid	1720	-2.25	3.17	27.66	22.24	167.635	Horizontal	Pass
Band 16		1732.5	-2.42	3.32	27.61	21.87	153.704	Horizontal	Pass
QAM		1745	-2.80	3.36	27.56	21.40	138.007	Horizontal	Pass
1.4MHz	1/#Mid	1710.7	-4.57	3.12	27.58	19.89	97.542	Vertical	Pass
Band 16		1732.5	-4.15	3.27	27.61	20.19	104.390	Vertical	Pass
QAM		1754.3	-3.71	3.29	27.63	20.63	115.544	Vertical	Pass
3.0MHz	1/#Mid	1711.5	-5.39	3.13	27.61	19.09	81.007	Vertical	Pass
Band 16		1732.5	-4.61	3.27	27.61	19.73	93.992	Vertical	Pass
QAM		1753.5	-4.63	3.30	27.62	19.69	93.101	Vertical	Pass
5.0MHz	1/#Mid	1712.5	-4.84	3.13	27.63	19.66	92.423	Vertical	Pass
Band 16		1732.5	-3.64	3.27	27.61	20.70	117.394	Vertical	Pass

QAM		1752.5	-5.10	3.30	27.60	19.20	83.116	Vertical	Pass
10.0MHz	1/#Mid	1715	-3.49	3.15	27.64	21.00	125.959	Vertical	Pass
Band 16		1732.5	-4.49	3.31	27.61	19.81	95.618	Vertical	Pass
QAM		1750	-5.25	3.33	27.59	19.01	79.619	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-4.90	3.15	27.65	19.60	91.257	Vertical	Pass
Band 16		1732.5	-5.29	3.31	27.61	19.01	79.555	Vertical	Pass
QAM		1747.5	-3.91	3.33	27.57	20.33	107.947	Vertical	Pass
20.0MHz	1/#Mid	1720	-3.85	3.17	27.66	20.64	116.007	Vertical	Pass
Band 16		1732.5	-4.50	3.32	27.61	19.79	95.193	Vertical	Pass
QAM		1745	-3.24	3.36	27.56	20.96	124.596	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	6.51	2.01	19.68	2.15	22.03	159.598	Horizontal	Pass
		836.5	6.23	2.01	19.77	2.15	21.84	152.864	Horizontal	Pass
		848.3	6.69	2.02	19.82	2.15	22.34	171.404	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	825.5	6.80	2.01	19.70	2.15	22.34	171.272	Horizontal	Pass
		836.5	6.89	2.01	19.77	2.15	22.50	177.724	Horizontal	Pass
		847.5	7.59	2.02	19.81	2.15	23.23	210.527	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	826.5	7.29	2.01	19.71	2.15	22.84	192.402	Horizontal	Pass
		836.5	6.55	2.01	19.77	2.15	22.16	164.402	Horizontal	Pass
		846.5	6.10	2.02	19.79	2.15	21.72	148.501	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	829	6.48	2.01	19.73	2.15	22.05	160.280	Horizontal	Pass
		836.5	7.11	2.01	19.77	2.15	22.72	186.938	Horizontal	Pass
		844	6.77	2.02	19.78	2.15	22.38	173.020	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	824.7	5.97	2.01	19.68	2.15	21.49	141.045	Vertical	Pass
		836.5	6.13	2.01	19.77	2.15	21.74	149.243	Vertical	Pass
		848.3	6.24	2.02	19.82	2.15	21.89	154.364	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	825.5	6.05	2.01	19.70	2.15	21.59	144.318	Vertical	Pass
		836.5	5.12	2.01	19.77	2.15	20.73	118.184	Vertical	Pass
		847.5	5.73	2.02	19.81	2.15	21.37	137.110	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	826.5	6.17	2.01	19.71	2.15	21.72	148.424	Vertical	Pass
		836.5	6.04	2.01	19.77	2.15	21.65	146.368	Vertical	Pass
		846.5	6.07	2.02	19.79	2.15	21.69	147.435	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	829	4.60	2.01	19.73	2.15	20.17	103.934	Vertical	Pass
		836.5	6.50	2.01	19.77	2.15	22.11	162.659	Vertical	Pass
		844	6.46	2.02	19.78	2.15	22.07	160.902	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	6.25	2.01	19.68	2.15	21.77	150.151	Horizontal	Pass
		836.5	6.15	2.01	19.77	2.15	21.76	150.053	Horizontal	Pass
		848.3	6.15	2.02	19.82	2.15	21.80	151.343	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	6.60	2.01	19.70	2.15	22.14	163.740	Horizontal	Pass
		836.5	6.03	2.01	19.77	2.15	21.64	145.831	Horizontal	Pass
		847.5	4.81	2.02	19.81	2.15	20.45	110.849	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	6.51	2.01	19.71	2.15	22.06	160.841	Horizontal	Pass
		836.5	5.99	2.01	19.77	2.15	21.60	144.393	Horizontal	Pass
		846.5	6.49	2.02	19.79	2.15	22.11	162.724	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	829	6.52	2.01	19.73	2.15	22.09	161.867	Horizontal	Pass
		836.5	6.52	2.01	19.77	2.15	22.13	163.452	Horizontal	Pass
		844	6.66	2.02	19.78	2.15	22.27	168.843	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	824.7	5.23	2.01	19.68	2.15	20.75	118.782	Vertical	Pass
		836.5	6.30	2.01	19.77	2.15	21.91	155.083	Vertical	Pass
		848.3	5.25	2.02	19.82	2.15	20.90	123.109	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	4.87	2.01	19.70	2.15	20.41	109.958	Vertical	Pass
		836.5	5.21	2.01	19.77	2.15	20.82	120.730	Vertical	Pass
		847.5	6.26	2.02	19.81	2.15	21.90	154.833	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	7.00	2.01	19.71	2.15	22.55	180.078	Vertical	Pass
		836.5	5.67	2.01	19.77	2.15	21.28	134.256	Vertical	Pass
		846.5	5.61	2.02	19.79	2.15	21.23	132.633	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	829	3.33	2.01	19.73	2.15	18.90	77.677	Vertical	Pass
		836.5	4.65	2.01	19.77	2.15	20.26	106.229	Vertical	Pass
		844	6.05	2.02	19.78	2.15	21.66	146.424	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

8.6 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	7.74	1.91	19.21	2.15	22.89	194.540	Vertical	Pass
		707.5	7.05	1.91	19.26	2.15	22.25	167.736	Vertical	Pass
		715.3	7.10	1.93	19.34	2.15	22.36	172.000	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	700.5	6.94	1.91	19.21	2.15	22.09	161.957	Vertical	Pass
		707.5	7.12	1.91	19.26	2.15	22.32	170.722	Vertical	Pass
		714.5	6.56	1.93	19.34	2.15	21.82	152.088	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	701.5	7.22	1.91	19.23	2.15	22.39	173.237	Vertical	Pass
		707.5	7.19	1.91	19.26	2.15	22.39	173.438	Vertical	Pass
		713.5	5.97	1.92	19.33	2.15	21.23	132.874	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	704	6.39	1.91	19.25	2.15	21.58	143.991	Vertical	Pass
		707.5	7.60	1.91	19.26	2.15	22.80	190.402	Vertical	Pass
		711	7.28	1.92	19.32	2.15	22.53	179.107	Vertical	Pass
1.4MHz Band QPSK	1/#Mid	699.7	5.79	1.91	19.21	2.15	20.94	124.097	Horizontal	Pass
		707.5	6.04	1.91	19.26	2.15	21.24	132.977	Horizontal	Pass
		715.3	5.28	1.93	19.34	2.15	20.54	113.214	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	700.5	6.10	1.91	19.21	2.15	21.25	133.204	Horizontal	Pass
		707.5	6.16	1.91	19.26	2.15	21.36	136.641	Horizontal	Pass
		714.5	5.06	1.93	19.34	2.15	20.32	107.612	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	701.5	6.36	1.91	19.23	2.15	21.53	142.080	Horizontal	Pass
		707.5	5.42	1.91	19.26	2.15	20.62	115.363	Horizontal	Pass
		713.5	5.65	1.92	19.33	2.15	20.91	123.277	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	704	5.65	1.91	19.25	2.15	20.84	121.359	Horizontal	Pass
		707.5	5.46	1.91	19.26	2.15	20.66	116.311	Horizontal	Pass
		711	6.13	1.92	19.32	2.15	21.38	137.546	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	7.53	1.91	19.21	2.15	22.68	185.279	Vertical	Pass
		707.5	6.34	1.91	19.26	2.15	21.54	142.405	Vertical	Pass
		715.3	5.81	1.93	19.34	2.15	21.07	128.054	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	6.25	1.91	19.21	2.15	21.40	137.985	Vertical	Pass
		707.5	6.80	1.91	19.26	2.15	22.00	158.432	Vertical	Pass
		714.5	6.97	1.93	19.34	2.15	22.23	167.050	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	6.69	1.91	19.23	2.15	21.86	153.636	Vertical	Pass
		707.5	7.34	1.91	19.26	2.15	22.54	179.522	Vertical	Pass
		713.5	5.98	1.92	19.33	2.15	21.24	133.023	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	704	7.35	1.91	19.25	2.15	22.54	179.272	Vertical	Pass
		707.5	7.68	1.91	19.26	2.15	22.88	194.032	Vertical	Pass
		711	7.12	1.92	19.32	2.15	22.37	172.598	Vertical	Pass
1.4MHz Band 16 QAM	1/#Mid	699.7	6.59	1.91	19.21	2.15	21.74	149.370	Horizontal	Pass
		707.5	7.10	1.91	19.26	2.15	22.30	169.807	Horizontal	Pass
		715.3	5.17	1.93	19.34	2.15	20.43	110.473	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	6.93	1.91	19.21	2.15	22.08	161.569	Horizontal	Pass
		707.5	5.79	1.91	19.26	2.15	20.99	125.632	Horizontal	Pass
		714.5	6.18	1.93	19.34	2.15	21.44	139.188	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	7.64	1.91	19.23	2.15	22.81	191.201	Horizontal	Pass
		707.5	6.85	1.91	19.26	2.15	22.05	160.437	Horizontal	Pass
		713.5	6.75	1.92	19.33	2.15	22.01	158.784	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	704	4.52	1.91	19.25	2.15	19.71	93.525	Horizontal	Pass
		707.5	6.66	1.91	19.26	2.15	21.86	153.605	Horizontal	Pass
		711	5.83	1.92	19.32	2.15	21.08	128.208	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	8.25	1.91	19.23	2.15	23.42	219.595	Vertical	Pass
		710	8.40	1.91	19.26	2.15	23.60	229.032	Vertical	Pass
		713.5	6.58	1.92	19.33	2.15	21.84	152.685	Vertical	Pass
10.0MHz Band QPSK	1#Mid	709	8.04	1.91	19.25	2.15	23.23	210.198	Vertical	Pass
		710	6.89	1.91	19.26	2.15	22.09	161.927	Vertical	Pass
		711	7.60	1.92	19.32	2.15	22.85	192.878	Vertical	Pass
5.0MHz Band QPSK	1#Mid	706.5	7.24	1.91	19.23	2.15	22.41	174.285	Horizontal	Pass
		710	6.09	1.91	19.26	2.15	21.29	134.487	Horizontal	Pass
		713.5	6.44	1.92	19.33	2.15	21.70	147.989	Horizontal	Pass
10.0MHz Band QPSK	1#Mid	709	6.90	1.91	19.25	2.15	22.09	161.682	Horizontal	Pass
		710	6.34	1.91	19.26	2.15	21.54	142.659	Horizontal	Pass
		711	5.43	1.92	19.32	2.15	20.68	116.817	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	7.45	1.91	19.23	2.15	22.62	182.640	Vertical	Pass
		710	6.36	1.91	19.26	2.15	21.56	143.078	Vertical	Pass
		713.5	6.87	1.92	19.33	2.15	22.13	163.206	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	709	6.75	1.91	19.25	2.15	21.94	156.345	Vertical	Pass
		710	7.17	1.91	19.26	2.15	22.37	172.672	Vertical	Pass
		711	6.35	1.92	19.32	2.15	21.60	144.657	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	706.5	5.73	1.91	19.23	2.15	20.90	122.958	Horizontal	Pass
		710	4.44	1.91	19.26	2.15	19.64	92.124	Horizontal	Pass
		713.5	6.39	1.92	19.33	2.15	21.65	146.300	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	709	5.77	1.91	19.25	2.15	20.96	124.708	Horizontal	Pass
		710	6.72	1.91	19.26	2.15	21.92	155.457	Horizontal	Pass
		711	5.65	1.92	19.32	2.15	20.90	123.090	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	2567.5	-1.18	4.54	27.75	22.03	159.592	Horizontal	Pass
		2605	-1.74	4.69	27.72	21.29	134.686	Horizontal	Pass
		2642.5	-1.62	4.71	27.71	21.38	137.465	Horizontal	Pass
10.0MHz Band QPSK	1/##Mid	2570	-1.35	4.55	27.76	21.86	153.405	Horizontal	Pass
		2605	-1.42	4.69	27.72	21.61	144.786	Horizontal	Pass
		2640	-0.42	4.72	27.70	22.56	180.179	Horizontal	Pass
15.0MHz Band QPSK	1/##Mid	2572.5	-1.54	4.55	27.77	21.68	147.299	Horizontal	Pass
		2605	-0.58	4.69	27.72	22.45	175.636	Horizontal	Pass
		2637.5	-1.34	4.72	27.69	21.63	145.547	Horizontal	Pass
20.0MHz Band QPSK	1/##Mid	2575	-1.48	4.57	27.78	21.73	148.912	Horizontal	Pass
		2605	-1.61	4.73	27.72	21.38	137.527	Horizontal	Pass
		2635	-2.36	4.75	27.68	20.57	114.082	Horizontal	Pass
5.0MHz Band QPSK	1/##Mid	2567.5	-1.86	4.54	27.75	21.35	136.570	Vertical	Pass
		2605	-1.97	4.69	27.72	21.06	127.731	Vertical	Pass
		2642.5	-1.75	4.71	27.71	21.25	133.346	Vertical	Pass
10.0MHz Band QPSK	1/##Mid	2570	-1.60	4.55	27.76	21.61	144.793	Vertical	Pass
		2605	-1.45	4.69	27.72	21.58	143.815	Vertical	Pass
		2640	-1.56	4.72	27.70	21.42	138.659	Vertical	Pass
15.0MHz Band QPSK	1/##Mid	2572.5	-1.72	4.55	27.77	21.50	141.373	Vertical	Pass
		2605	-1.39	4.69	27.72	21.64	145.717	Vertical	Pass
		2637.5	-1.34	4.72	27.69	21.63	145.658	Vertical	Pass
20.0MHz Band QPSK	1/##Mid	2575	-2.19	4.57	27.78	21.02	126.337	Vertical	Pass
		2605	-2.23	4.73	27.72	20.76	119.249	Vertical	Pass
		2635	-0.92	4.75	27.68	22.01	159.031	Vertical	Pass

Radiated Power (EIRP) for Band 41									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
						(dBm)	(mW)		
5.0MHz Band 16 QAM	1/#Mid	2567.5	-1.76	4.54	27.75	21.45	139.676	Horizontal	Pass
		2605	-2.77	4.69	27.72	20.26	106.111	Horizontal	Pass
		2642.5	-1.13	4.71	27.71	21.87	153.800	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2570	-2.21	4.55	27.76	21.00	125.944	Horizontal	Pass
		2605	-2.06	4.69	27.72	20.97	124.920	Horizontal	Pass
		2640	-2.10	4.72	27.70	20.88	122.556	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2572.5	-2.15	4.55	27.77	21.07	128.070	Horizontal	Pass
		2605	-2.36	4.69	27.72	20.67	116.780	Horizontal	Pass
		2637.5	-2.30	4.72	27.69	20.67	116.575	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2575	-2.83	4.57	27.78	20.38	109.262	Horizontal	Pass
		2605	-2.33	4.73	27.72	20.66	116.349	Horizontal	Pass
		2635	-2.21	4.75	27.68	20.72	118.073	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2567.5	-2.27	4.54	27.75	20.94	124.245	Vertical	Pass
		2605	-1.67	4.69	27.72	21.36	136.823	Vertical	Pass
		2642.5	-3.43	4.71	27.71	19.57	90.598	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2570	-3.61	4.55	27.76	19.60	91.203	Vertical	Pass
		2605	-3.10	4.69	27.72	19.93	98.309	Vertical	Pass
		2640	-2.61	4.72	27.70	20.37	108.935	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2572.5	-2.15	4.55	27.77	21.07	128.073	Vertical	Pass
		2605	-2.63	4.69	27.72	20.40	109.603	Vertical	Pass
		2637.5	-2.67	4.72	27.69	20.30	107.213	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2575	-2.32	4.57	27.78	20.89	122.694	Vertical	Pass
		2605	-1.97	4.73	27.72	21.02	126.391	Vertical	Pass
		2635	-2.79	4.75	27.68	20.14	103.187	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 Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	1710.7 1745 1779.3	-2.74 -2.30 -2.37	3.76 3.91 3.93	28.24 28.22 28.2	21.74 22.01 21.90	149.185 158.709 154.903	Horizontal Horizontal Horizontal	Pass Pass Pass
3.0MHz Band QPSK	1/#Mid	1711.5 1745 1778.5	-2.51 -2.56 -2.59	3.77 3.91 3.94	28.23 28.24 28.25	21.95 21.77 21.72	156.595 150.313 148.493	Horizontal Horizontal Horizontal	Pass Pass Pass
5.0MHz Band QPSK	1/#Mid	1712.5 1745 1777.5	-2.18 -2.73 -2.90	3.77 3.91 3.94	28.31 28.22 28.2	22.36 21.58 21.36	172.252 143.875 136.699	Horizontal Horizontal Horizontal	Pass Pass Pass
10.0MHz Band QPSK	1/#Mid	1715 1745 1775	-2.65 -2.51 -1.46	3.79 3.95 3.97	28.33 28.22 28.19	21.89 21.76 22.76	154.629 150.094 188.683	Horizontal Horizontal Horizontal	Pass Pass Pass
15.0MHz Band QPSK	1/#Mid	1717.5 1745 1772.5	-2.40 -1.82 -2.38	3.79 3.95 3.97	28.34 28.22 28.18	22.15 22.45 21.83	164.221 175.956 152.266	Horizontal Horizontal Horizontal	Pass Pass Pass
20.0MHz Band QPSK	1/#Mid	1720 1745 1770	-3.35 -1.86 -2.01	3.81 3.96 4	28.35 28.22 28.16	21.19 22.40 22.15	131.389 173.633 164.091	Horizontal Horizontal Horizontal	Pass Pass Pass
1.4MHz Band QPSK	1/#Mid	1710.7 1745 1779.3	-2.49 -2.43 -1.98	3.76 3.91 3.93	28.24 28.22 28.2	21.99 21.88 22.29	157.983 154.051 169.267	Vertical Vertical Vertical	Pass Pass Pass
3.0MHz Band QPSK	1/#Mid	1711.5 1745 1778.5	-2.60 -3.28 -1.72	3.77 3.91 3.94	28.23 28.24 28.25	21.86 21.05 22.59	153.360 127.422 181.436	Vertical Vertical Vertical	Pass Pass Pass
5.0MHz Band QPSK	1/#Mid	1712.5 1745 1777.5	-2.37 -2.28 -1.85	3.77 3.91 3.94	28.31 28.22 28.2	22.17 22.03 22.41	164.889 159.410 174.278	Vertical Vertical Vertical	Pass Pass Pass
10.0MHz Band QPSK	1/#Mid	1715 1745 1775	-1.98 -2.31 -1.86	3.79 3.95 3.97	28.34 28.22 28.18	22.57 21.96 22.35	180.851 156.890 171.970	Vertical Vertical Vertical	Pass Pass Pass

15.0MHz Band QPSK	1/#Mid	1717.5	-2.69	3.81	28.35	21.85	153.266	Vertical	Pass
		1745	-2.02	3.96	28.22	22.24	167.383	Vertical	Pass
		1772.5	-1.91	4	28.16	22.25	167.691	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1720	-2.76	3.79	28.34	21.79	151.029	Vertical	Pass
		1745	-1.99	3.95	28.22	22.28	168.981	Vertical	Pass
		1770	-2.58	3.97	28.18	21.63	145.381	Vertical	Pass

Radiated Power (EIRP) for Band 66									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
						Average (dBm)	Average		
				(mW)					
1.4MHz Band 16 QAM	1/#Mid	1710.7	-3.87	3.76	28.24	20.61	115.193	Horizontal	Pass
		1745	-3.40	3.91	28.22	20.91	123.337	Horizontal	Pass
		1779.3	-3.91	3.93	28.2	20.36	108.672	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-2.83	3.77	28.23	21.63	145.586	Horizontal	Pass
		1745	-4.16	3.91	28.24	20.17	104.018	Horizontal	Pass
		1778.5	-3.85	3.94	28.25	20.46	111.115	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-2.97	3.77	28.31	21.57	143.679	Horizontal	Pass
		1745	-2.73	3.91	28.22	21.58	143.792	Horizontal	Pass
		1777.5	-3.89	3.94	28.2	20.37	108.923	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-4.06	3.79	28.33	20.48	111.719	Horizontal	Pass
		1745	-3.80	3.95	28.22	20.47	111.385	Horizontal	Pass
		1775	-3.43	3.97	28.19	20.79	120.081	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-3.80	3.79	28.34	20.75	118.927	Horizontal	Pass
		1745	-3.35	3.95	28.22	20.92	123.675	Horizontal	Pass
		1772.5	-3.71	3.97	28.18	20.50	112.246	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-3.01	3.81	28.35	21.53	142.314	Horizontal	Pass
		1745	-3.54	3.96	28.22	20.72	118.008	Horizontal	Pass
		1770	-3.24	4	28.16	20.92	123.639	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-3.32	3.76	28.24	21.16	130.490	Vertical	Pass
		1745	-3.30	3.91	28.22	21.01	126.313	Vertical	Pass
		1779.3	-3.70	3.93	28.2	20.57	114.100	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-3.21	3.77	28.23	21.25	133.484	Vertical	Pass
		1745	-3.42	3.91	28.24	20.91	123.293	Vertical	Pass
		1778.5	-3.30	3.94	28.25	21.01	126.043	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-4.05	3.77	28.31	20.49	111.877	Vertical	Pass
		1745	-3.71	3.91	28.22	20.60	114.772	Vertical	Pass
		1777.5	-3.00	3.94	28.2	21.26	133.609	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-4.05	3.79	28.34	20.50	112.074	Vertical	Pass
		1745	-3.32	3.95	28.22	20.95	124.506	Vertical	Pass
		1775	-3.20	3.97	28.18	21.01	126.238	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-3.28	3.81	28.35	21.26	133.754	Vertical	Pass
		1745	-2.88	3.96	28.22	21.38	137.464	Vertical	Pass
		1772.5	-2.76	4	28.16	21.40	138.062	Vertical	Pass

20.0MHz	1/#Mid	1720	-3.49	3.79	28.34	21.06	127.629	Vertical	Pass
Band 16		1745	-3.00	3.95	28.22	21.27	134.057	Vertical	Pass
QAM		1770	-3.34	3.97	28.18	20.87	122.253	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	Cable Loss	Factor	Correction	Max. EPR	Max. EPR	Polarization Of Max. ERP	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average		
							(dBm)	(mW)		
5.0MHz Band QPSK	1/#Mid	665.5	5.21	1.91	19.21	2.15	20.36	108.632	Vertical	Pass
		680.5	5.54	1.91	19.26	2.15	20.74	118.588	Vertical	Pass
		695.5	5.52	1.93	19.34	2.15	20.78	119.771	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	668	4.83	1.91	19.21	2.15	19.98	99.532	Vertical	Pass
		680.5	4.98	1.91	19.26	2.15	20.18	104.218	Vertical	Pass
		693	4.98	1.93	19.34	2.15	20.24	105.706	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	670.5	4.61	1.91	19.23	2.15	19.78	95.131	Vertical	Pass
		680.5	5.18	1.91	19.26	2.15	20.38	109.268	Vertical	Pass
		690.5	5.00	1.92	19.33	2.15	20.26	106.160	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	673	5.25	1.91	19.25	2.15	20.44	110.583	Vertical	Pass
		683	5.37	1.91	19.26	2.15	20.57	114.002	Vertical	Pass
		688	4.89	1.92	19.32	2.15	20.14	103.256	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	665.5	5.34	1.91	19.21	2.15	20.49	111.912	Horizontal	Pass
		680.5	5.42	1.91	19.26	2.15	20.62	115.301	Horizontal	Pass
		695.5	5.46	1.93	19.34	2.15	20.72	118.063	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	668	4.67	1.91	19.21	2.15	19.82	95.942	Horizontal	Pass
		680.5	5.10	1.91	19.26	2.15	20.30	107.188	Horizontal	Pass
		693	5.15	1.93	19.34	2.15	20.41	109.998	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	670.5	4.69	1.91	19.23	2.15	19.86	96.802	Horizontal	Pass
		680.5	5.46	1.91	19.26	2.15	20.66	116.371	Horizontal	Pass
		690.5	4.91	1.92	19.33	2.15	20.17	104.070	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	673	5.51	1.91	19.25	2.15	20.70	117.412	Horizontal	Pass
		683	4.93	1.91	19.26	2.15	20.13	103.064	Horizontal	Pass
		688	4.79	1.92	19.32	2.15	20.04	101.004	Horizontal	Pass

Radiated Power (ERP) for Band 71										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Factor	Correction	Max. EPR	Max. EPR	Polarization Of Max. ERP	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average		
							(dBm)	(mW)		
5.0MHz	1/#Mid	665.5	4.03	1.91	19.21	2.15	19.18	82.761	Vertical	Pass
Band 16		680.5	4.49	1.91	19.26	2.15	19.69	93.197	Vertical	Pass
QAM		695.5	4.59	1.93	19.34	2.15	19.85	96.578	Vertical	Pass
10.0MHz	1/#Mid	668	4.21	1.91	19.21	2.15	19.36	86.226	Vertical	Pass
Band 16		680.5	4.22	1.91	19.26	2.15	19.42	87.519	Vertical	Pass
QAM		693	4.61	1.93	19.34	2.15	19.87	96.999	Vertical	Pass
15.0MHz	1/#Mid	670.5	4.07	1.91	19.23	2.15	19.24	83.850	Vertical	Pass
Band 16		680.5	4.24	1.91	19.26	2.15	19.44	87.914	Vertical	Pass
QAM		690.5	4.12	1.92	19.33	2.15	19.38	86.784	Vertical	Pass
20.0MHz	1/#Mid	673	3.83	1.91	19.25	2.15	19.02	79.752	Vertical	Pass
Band 16		683	4.74	1.91	19.26	2.15	19.94	98.640	Vertical	Pass
QAM		688	4.45	1.92	19.32	2.15	19.70	93.413	Vertical	Pass
5.0MHz	1/#Mid	665.5	3.99	1.91	19.21	2.15	19.14	81.977	Horizontal	Pass
Band 16		680.5	4.51	1.91	19.26	2.15	19.71	93.569	Horizontal	Pass
QAM		695.5	3.85	1.93	19.34	2.15	19.11	81.547	Horizontal	Pass
10.0MHz	1/#Mid	668	4.69	1.91	19.21	2.15	19.84	96.320	Horizontal	Pass
Band 16		680.5	3.97	1.91	19.26	2.15	19.17	82.666	Horizontal	Pass
QAM		693	3.98	1.93	19.34	2.15	19.24	84.012	Horizontal	Pass
15.0MHz	1/#Mid	670.5	4.08	1.91	19.23	2.15	19.25	84.191	Horizontal	Pass
Band 16		680.5	3.87	1.91	19.26	2.15	19.07	80.783	Horizontal	Pass
QAM		690.5	4.05	1.92	19.33	2.15	19.31	85.270	Horizontal	Pass
20.0MHz	1/#Mid	673	4.75	1.91	19.25	2.15	19.94	98.588	Horizontal	Pass
Band 16		683	4.13	1.91	19.26	2.15	19.33	85.729	Horizontal	Pass
QAM		688	4.76	1.92	19.32	2.15	20.01	100.141	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 Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3702.2	-48.19	4.04	33.51	-18.72	-13	-5.72	Horizontal
3702.2	-50.68	4.04	33.51	-21.21	-13	-8.21	Vertical
5552.8	-46.69	5.24	35.84	-16.09	-13	-3.09	Vertical
5552.8	-48.69	5.24	35.84	-18.09	-13	-5.09	Horizontal
185.9	-39.68	1.43	16.02	-25.09	-13	-12.09	Vertical
454.6	-32.67	1.30	17.99	-15.98	-13	-2.98	Horizontal
Test Results for Mid Channel 1880MHz							
3760.7	-46.10	4.04	33.56	-16.58	-13	-3.58	Horizontal
3760.7	-51.16	4.04	33.56	-21.64	-13	-8.64	Vertical
5640.7	-48.86	5.24	35.91	-18.19	-13	-5.19	Vertical
5640.7	-49.66	5.24	35.91	-18.99	-13	-5.99	Horizontal
183.7	-34.49	1.62	16.97	-19.14	-13	-6.14	Vertical
290.1	-34.30	1.74	15.98	-20.06	-13	-7.06	Horizontal
Test Results for High Channel 1909.3MHz							
3818.9	-45.63	4.04	34.00	-15.67	-13	-2.67	Horizontal
3818.9	-46.33	4.04	34.00	-16.37	-13	-3.37	Vertical
5728.5	-50.57	5.24	36.04	-19.77	-13	-6.77	Vertical
5728.5	-47.50	5.24	36.04	-16.70	-13	-3.70	Horizontal
194.7	-39.89	1.42	17.29	-24.01	-13	-11.01	Vertical
343.3	-33.82	1.50	17.90	-17.42	-13	-4.42	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
3720.7	-45.69	4.07	33.54	-16.22	-13	-3.22	Horizontal
3720.7	-49.26	4.07	33.54	-19.79	-13	-6.79	Vertical
5580.3	-47.05	5.28	35.86	-16.47	-13	-3.47	Vertical
5580.3	-49.61	5.28	35.86	-19.03	-13	-6.03	Horizontal
208.5	-36.91	1.58	16.89	-21.59	-13	-8.59	Vertical
357.9	-41.61	1.76	17.26	-26.11	-13	-13.11	Horizontal
Test Results for Mid Channel 1880MHz							
3760.7	-45.34	4.04	33.56	-15.82	-13	-2.82	Horizontal
3760.7	-46.16	4.04	33.56	-16.64	-13	-3.64	Vertical
5640.1	-49.67	5.24	35.91	-19.00	-13	-6.00	Vertical
5640.1	-50.45	5.24	35.91	-19.78	-13	-6.78	Horizontal
200.8	-42.79	1.46	16.27	-27.98	-13	-14.98	Vertical
345.1	-38.78	1.59	15.15	-25.23	-13	-12.23	Horizontal
Test Results for High Channel 1900MHz							
3800.5	-48.72	4.04	34.00	-18.76	-13	-5.76	Horizontal
3800.5	-46.06	4.04	34.00	-16.10	-13	-3.10	Vertical
5700.1	-46.72	5.24	36.04	-15.92	-13	-2.92	Vertical
5700.1	-50.45	5.24	36.04	-19.65	-13	-6.65	Horizontal
212.6	-34.18	1.36	17.39	-18.14	-13	-5.14	Vertical
313.0	-40.00	1.66	15.39	-26.28	-13	-13.28	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
3421.8	-47.97	4.02	29.80	-22.19	-13	-9.19	Horizontal
3421.8	-46.67	4.02	29.80	-20.89	-13	-7.89	Vertical
5133.0	-50.13	5.24	35.84	-19.53	-13	-6.53	Vertical
5133.0	-50.55	5.24	35.84	-19.95	-13	-6.95	Horizontal
198.0	-40.79	1.68	16.04	-26.42	-13	-13.42	Vertical
455.0	-34.00	1.78	17.74	-18.03	-13	-5.03	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.7	-48.62	4.03	30.00	-22.65	-13	-9.65	Horizontal
3465.7	-42.29	4.03	30.00	-16.32	-13	-3.32	Vertical
5197.7	-46.35	5.25	35.86	-15.74	-13	-2.74	Vertical
5197.7	-47.89	5.25	35.86	-17.28	-13	-4.28	Horizontal
208.5	-40.60	1.72	17.69	-24.63	-13	-11.63	Vertical
346.7	-42.13	1.62	16.02	-27.73	-13	-14.73	Horizontal
Test Results for High Channel 1754.3MHz							
3508.7	-47.57	4.05	30.01	-21.61	-13	-8.61	Horizontal
3508.7	-45.40	4.05	30.01	-19.44	-13	-6.44	Vertical
5263.7	-47.79	5.26	35.86	-17.19	-13	-4.19	Vertical
5263.7	-48.53	5.26	35.86	-17.93	-13	-4.93	Horizontal
183.1	-30.90	1.80	16.69	-16.01	-13	-3.01	Vertical
332.6	-39.12	1.75	16.66	-24.22	-13	-11.22	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
3440.4	-47.90	4.02	29.80	-22.12	-13	-9.12	Horizontal
3440.4	-47.34	4.02	29.80	-21.56	-13	-8.56	Vertical
5160.4	-50.80	5.24	35.84	-20.20	-13	-7.20	Vertical
5160.4	-49.00	5.24	35.84	-18.40	-13	-5.40	Horizontal
182.7	-38.26	1.57	17.26	-22.58	-13	-9.58	Vertical
310.6	-33.75	1.78	16.35	-19.18	-13	-6.18	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.6	-48.99	4.03	30.00	-23.02	-13	-10.02	Horizontal
3465.6	-49.40	4.03	30.00	-23.43	-13	-10.43	Vertical
5198.1	-46.92	5.25	35.86	-16.31	-13	-3.31	Vertical
5198.1	-47.76	5.25	35.86	-17.15	-13	-4.15	Horizontal
209.5	-39.24	1.44	17.95	-22.73	-13	-9.73	Vertical
269.9	-31.95	1.65	16.09	-17.51	-13	-4.51	Horizontal
Test Results for High Channel 1745MHz							
3490.1	-44.43	2.91	27.68	-19.66	-13	-6.66	Horizontal
3490.1	-44.93	2.91	27.68	-20.16	-13	-7.16	Vertical
5235.3	-46.56	5.26	35.86	-15.96	-13	-2.96	Vertical
5235.3	-52.10	5.26	35.86	-21.50	-13	-8.50	Horizontal
185.1	-40.10	1.61	16.85	-24.86	-13	-11.86	Vertical
291.5	-39.11	1.61	15.19	-25.53	-13	-12.53	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
1649.8	-46.03	2.78	27.50	-21.31	-13	-8.31	Horizontal
1649.8	-48.82	2.78	27.50	-24.10	-13	-11.10	Vertical
2474.2	-45.20	2.90	27.80	-20.30	-13	-7.30	Vertical
2474.2	-50.90	2.90	27.80	-26.00	-13	-13.00	Horizontal
179.0	-36.24	1.76	17.59	-20.41	-13	-7.41	Vertical
460.4	-39.13	1.63	15.87	-24.89	-13	-11.89	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-45.78	2.80	27.48	-21.10	-13	-8.10	Horizontal
1673.0	-44.92	2.80	27.48	-20.24	-13	-7.24	Vertical
2509.6	-42.62	2.91	27.70	-17.83	-13	-4.83	Vertical
2509.6	-49.00	2.91	27.70	-24.21	-13	-11.21	Horizontal
213.6	-40.23	1.61	15.68	-26.16	-13	-13.16	Vertical
431.7	-35.02	1.59	17.52	-19.09	-13	-6.09	Horizontal
Test Results for High Channel 848.3MHz							
1696.7	-47.52	2.82	27.43	-22.91	-13	-9.91	Horizontal
1696.7	-50.22	2.82	27.43	-25.61	-13	-12.61	Vertical
2545.6	-42.52	2.92	27.74	-17.70	-13	-4.70	Vertical
2545.6	-50.48	2.92	27.74	-25.66	-13	-12.66	Horizontal
193.5	-33.40	1.69	16.67	-18.41	-13	-5.41	Vertical
367.2	-33.35	1.70	17.18	-17.87	-13	-4.87	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
1658.7	-49.85	2.78	27.50	-25.13	-13	-12.13	Horizontal
1658.7	-41.02	2.78	27.50	-16.30	-13	-3.30	Vertical
2487.2	-52.03	2.90	27.80	-27.13	-13	-14.13	Vertical
2487.2	-48.15	2.90	27.80	-23.25	-13	-10.25	Horizontal
200.7	-41.93	1.71	15.57	-28.07	-13	-15.07	Vertical
364.5	-31.43	1.34	16.40	-16.38	-13	-3.38	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.8	-41.61	2.80	27.48	-16.93	-13	-3.93	Horizontal
1673.8	-41.85	2.80	27.48	-17.17	-13	-4.17	Vertical
2510.3	-49.95	2.91	27.70	-25.16	-13	-12.16	Vertical
2510.3	-46.16	2.91	27.70	-21.37	-13	-8.37	Horizontal
212.4	-31.42	1.44	17.04	-15.82	-13	-2.82	Vertical
344.3	-41.87	1.76	17.62	-26.01	-13	-13.01	Horizontal
Test Results for High Channel 844MHz							
1688.0	-45.18	2.82	27.43	-20.57	-13	-7.57	Horizontal
1688.0	-46.42	2.82	27.43	-21.81	-13	-8.81	Vertical
2532.1	-49.91	2.92	27.74	-25.09	-13	-12.09	Vertical
2532.1	-46.75	2.92	27.74	-21.93	-13	-8.93	Horizontal
205.8	-34.05	1.74	17.70	-18.09	-13	-5.09	Vertical
393.4	-34.73	1.41	17.46	-18.68	-13	-5.68	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 Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1399.7	-42.28	2.60	27.20	-17.68	-13	-4.68	Horizontal
1399.7	-42.61	2.60	27.20	-18.01	-13	-5.01	Vertical
2099.5	-48.15	2.85	27.54	-23.46	-13	-10.46	Vertical
2099.5	-47.41	2.85	27.54	-22.72	-13	-9.72	Horizontal
212.5	-36.08	1.49	17.78	-19.80	-13	-6.80	Vertical
387.1	-39.92	1.36	17.33	-23.95	-13	-10.95	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.9	-44.46	2.61	27.28	-19.79	-13	-6.79	Horizontal
1415.9	-43.37	2.61	27.28	-18.70	-13	-5.70	Vertical
2122.6	-49.79	2.87	27.59	-25.07	-13	-12.07	Vertical
2122.6	-48.94	2.87	27.59	-24.22	-13	-11.22	Horizontal
207.7	-38.13	1.73	15.74	-24.12	-13	-11.12	Vertical
385.0	-31.97	1.62	15.79	-17.80	-13	-4.80	Horizontal
Test Results for High Channel 715.3MHz							
1430.9	-50.10	2.63	27.28	-25.45	-13	-12.45	Horizontal
1430.9	-46.40	2.63	27.28	-21.75	-13	-8.75	Vertical
2146.2	-42.88	2.88	27.60	-18.16	-13	-5.16	Vertical
2146.2	-47.53	2.88	27.60	-22.81	-13	-9.81	Horizontal
187.2	-33.15	1.61	18.00	-16.77	-13	-3.77	Vertical
280.9	-34.82	1.45	15.49	-20.79	-13	-7.79	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
1408.3	-51.41	2.61	27.26	-26.76	-13	-13.76	Horizontal
1408.3	-45.06	2.61	27.26	-20.41	-13	-7.41	Vertical
2112.8	-47.59	2.87	27.58	-22.88	-13	-9.88	Vertical
2112.8	-49.89	2.87	27.58	-25.18	-13	-12.18	Horizontal
198.1	-40.05	1.31	16.97	-24.39	-13	-11.39	Vertical
468.9	-42.05	1.65	16.70	-27.00	-13	-14.00	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.1	-43.56	2.61	27.28	-18.89	-13	-5.89	Horizontal
1415.1	-50.83	2.61	27.28	-26.16	-13	-13.16	Vertical
2123.2	-50.66	2.87	27.59	-25.94	-13	-12.94	Vertical
2123.2	-49.77	2.87	27.59	-25.05	-13	-12.05	Horizontal
175.4	-35.17	1.72	17.99	-18.90	-13	-5.90	Vertical
363.5	-39.25	1.73	17.94	-23.04	-13	-10.04	Horizontal
Test Results for High Channel 711MHz							
1422.8	-46.78	2.62	27.28	-22.12	-13	-9.12	Horizontal
1422.8	-41.54	2.62	27.28	-16.88	-13	-3.88	Vertical
2133.4	-51.16	2.87	27.60	-26.43	-13	-13.43	Vertical
2133.4	-48.68	2.87	27.60	-23.95	-13	-10.95	Horizontal
209.2	-35.73	1.58	15.93	-21.38	-13	-8.38	Vertical
361.4	-32.51	1.36	15.59	-18.27	-13	-5.27	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
1413.9	-48.44	2.61	27.28	-23.77	-13	-10.77	Horizontal
1413.9	-43.75	2.61	27.28	-19.08	-13	-6.08	Vertical
2119.8	-49.70	2.87	27.59	-24.98	-13	-11.98	Vertical
2119.8	-48.50	2.87	27.59	-23.78	-13	-10.78	Horizontal
210.5	-33.78	1.71	16.15	-19.35	-13	-6.35	Vertical
421.4	-42.97	1.41	17.32	-27.06	-13	-14.06	Horizontal
Test Results For Mid Channel 710MHz							
1421.0	-43.77	2.62	27.30	-19.09	-13	-6.09	Horizontal
1421.0	-45.85	2.62	27.30	-21.17	-13	-8.17	Vertical
2130.6	-42.14	2.87	27.62	-17.39	-13	-4.39	Vertical
2130.6	-48.74	2.87	27.62	-23.99	-13	-10.99	Horizontal
201.3	-36.32	1.42	15.25	-22.50	-13	-9.50	Vertical
321.6	-39.29	1.36	17.19	-23.46	-13	-10.46	Horizontal
Test Results for High Channel 713.5MHz							
1427.4	-49.36	2.66	27.28	-24.74	-13	-11.74	Horizontal
1427.4	-43.77	2.66	27.28	-19.15	-13	-6.15	Vertical
2140.6	-43.56	2.88	27.60	-18.84	-13	-5.84	Vertical
2140.6	-49.79	2.88	27.60	-25.07	-13	-12.07	Horizontal
176.2	-39.78	1.32	17.29	-23.81	-13	-10.81	Vertical
446.0	-36.54	1.72	16.89	-21.37	-13	-8.37	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
1418.1	-47.95	2.62	27.30	-23.27	-13	-10.27	Horizontal
1418.1	-50.74	2.62	27.30	-26.06	-13	-13.06	Vertical
2127.7	-46.39	2.87	27.62	-21.64	-13	-8.64	Vertical
2127.7	-47.56	2.87	27.62	-22.81	-13	-9.81	Horizontal
196.6	-32.78	1.35	16.91	-17.21	-13	-4.21	Vertical
269.0	-40.93	1.62	16.31	-26.24	-13	-13.24	Horizontal
Test Results for Mid Channel 710MHz							
1420.6	-42.81	2.62	27.30	-18.13	-13	-5.13	Horizontal
1420.6	-41.69	2.62	27.30	-17.01	-13	-4.01	Vertical
2130.2	-45.35	2.87	27.62	-20.60	-13	-7.60	Vertical
2130.2	-48.85	2.87	27.62	-24.10	-13	-11.10	Horizontal
202.1	-42.54	1.51	17.14	-26.90	-13	-13.90	Vertical
398.3	-38.09	1.77	16.88	-22.98	-13	-9.98	Horizontal
Test Results for High Channel 711MHz							
1422.4	-44.65	2.62	27.30	-19.97	-13	-6.97	Horizontal
1422.4	-50.94	2.62	27.30	-26.26	-13	-13.26	Vertical
2133.8	-42.86	2.87	27.62	-18.11	-13	-5.11	Vertical
2133.8	-42.48	2.87	27.62	-17.73	-13	-4.73	Horizontal
202.1	-36.30	1.78	15.95	-22.13	-13	-9.13	Vertical
412.7	-35.92	1.34	17.95	-19.32	-13	-6.32	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 2542.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5146.0	-59.15	5.23	35.81	-28.57	-25	-3.57	Horizontal
5146.0	-59.65	5.23	35.81	-29.07	-25	-4.07	Vertical
7718.5	-58.70	5.67	36.85	-27.52	-25	-2.52	Vertical
7718.5	-61.52	5.67	36.85	-30.34	-25	-5.34	Horizontal
435.8	-42.52	1.38	15.98	-27.92	-25	-2.92	Vertical
466.2	-41.91	1.62	15.66	-27.87	-25	-2.87	Horizontal
Test Results for Mid Channel 2595MHz							
5190.8	-63.33	5.23	35.82	-32.74	-25	-7.74	Horizontal
5190.8	-58.22	5.23	35.82	-27.63	-25	-2.63	Vertical
7785.2	-60.63	5.67	36.85	-29.45	-25	-4.45	Vertical
7785.2	-61.44	5.67	36.85	-30.26	-25	-5.26	Horizontal
511.2	-46.22	1.62	16.17	-31.67	-25	-6.67	Vertical
563.5	-43.77	1.74	17.63	-27.88	-25	-2.88	Horizontal
Test Results for High Channel 2647.5MHz							
5235.2	-59.07	5.24	35.83	-28.48	-25	-3.48	Horizontal
5235.2	-59.27	5.24	35.83	-28.68	-25	-3.68	Vertical
7852.8	-61.05	5.68	36.87	-29.86	-25	-4.86	Vertical
7852.8	-59.57	5.68	36.87	-28.38	-25	-3.38	Horizontal
197.7	-42.35	1.55	15.84	-28.06	-25	-3.06	Vertical
353.8	-45.77	1.51	17.06	-30.22	-25	-5.22	Horizontal

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

Test Results for Low Channel 2550MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5160.6	-60.44	5.23	35.82	-29.85	-25	-4.85	Horizontal
5160.6	-58.63	5.23	35.82	-28.04	-25	-3.04	Vertical
7740.4	-61.41	5.67	36.86	-30.22	-25	-5.22	Vertical
7740.4	-60.72	5.67	36.86	-29.53	-25	-4.53	Horizontal
129.4	-42.98	1.43	15.51	-28.90	-25	-3.90	Vertical
345.1	-43.46	1.40	16.97	-27.89	-25	-2.89	Horizontal
Test Results for Mid Channel 2595MHz							
5190.3	-59.40	5.23	35.82	-28.81	-25	-3.81	Horizontal
5190.3	-59.23	5.23	35.82	-28.64	-25	-3.64	Vertical
7785.3	-59.52	5.67	36.85	-28.34	-25	-3.34	Vertical
7785.3	-58.85	5.67	36.85	-27.67	-25	-2.67	Horizontal
101.6	-48.14	1.77	16.72	-33.19	-25	-8.19	Vertical
264.1	-47.56	1.31	16.99	-31.88	-25	-6.88	Horizontal
Test Results for High Channel 2640MHz							
5220.0	-62.49	5.24	35.83	-31.90	-25	-6.90	Horizontal
5220.0	-60.91	5.24	35.83	-30.32	-25	-5.32	Vertical
7830.2	-59.56	5.70	36.88	-28.38	-25	-3.38	Vertical
7830.2	-60.49	5.70	36.88	-29.31	-25	-4.31	Horizontal
350.7	-45.82	1.70	15.73	-31.79	-25	-6.79	Vertical
110.4	-43.60	1.75	17.33	-28.02	-25	-3.02	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
3421.9	-57.52	3.84	35.81	-25.55	-13	-12.55	Horizontal
3421.9	-60.37	3.84	35.81	-28.40	-13	-15.40	Vertical
5132.8	-61.49	5.18	36.85	-29.82	-13	-16.82	Vertical
5132.8	-60.15	5.18	36.85	-28.48	-13	-15.48	Horizontal
204.5	-47.72	1.56	17.97	-31.31	-13	-18.31	Vertical
305.8	-50.62	1.33	15.11	-36.84	-13	-23.84	Horizontal
Test Results for Mid Channel 1745MHz							
3490.7	-60.85	3.85	35.82	-28.88	-13	-15.88	Horizontal
3490.7	-59.76	3.85	35.82	-27.79	-13	-14.79	Vertical
5235.7	-58.59	5.21	36.85	-26.95	-13	-13.95	Vertical
5235.7	-60.32	5.21	36.85	-28.68	-13	-15.68	Horizontal
187.9	-47.34	1.77	16.17	-32.93	-13	-19.93	Vertical
390.8	-46.99	1.63	15.21	-33.41	-13	-20.41	Horizontal
Test Results for High Channel 1779.3MHz							
3559.6	-58.19	3.86	35.83	-26.22	-13	-13.22	Horizontal
3559.6	-57.32	3.86	35.83	-25.35	-13	-12.35	Vertical
5338.2	-56.66	5.24	36.87	-25.03	-13	-12.03	Vertical
5338.2	-60.01	5.24	36.87	-28.38	-13	-15.38	Horizontal
198.6	-45.33	1.58	17.56	-29.34	-13	-16.34	Vertical
268.4	-49.29	1.45	16.58	-34.16	-13	-21.16	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
3440.1	-61.09	3.84	35.82	-29.11	-13	-16.11	Horizontal
3440.1	-61.54	3.84	35.82	-29.56	-13	-16.56	Vertical
5160.2	-58.52	5.18	36.86	-26.84	-13	-13.84	Vertical
5160.2	-62.04	5.18	36.86	-30.36	-13	-17.36	Horizontal
180.6	-50.20	1.56	15.76	-36.01	-13	-23.01	Vertical
324.2	-45.58	1.33	15.44	-31.46	-13	-18.46	Horizontal
Test Results for Mid Channel 1745MHz							
3490.5	-57.94	3.85	35.82	-25.97	-13	-12.97	Horizontal
3490.5	-61.61	3.85	35.82	-29.64	-13	-16.64	Vertical
5235.1	-61.67	5.21	36.85	-30.03	-13	-17.03	Vertical
5235.1	-56.72	5.21	36.85	-25.08	-13	-12.08	Horizontal
182.7	-45.22	1.77	16.84	-30.15	-13	-17.15	Vertical
251.9	-51.97	1.63	17.64	-35.95	-13	-22.95	Horizontal
Test Results for High Channel 1770MHz							
3540.1	-57.55	3.86	35.83	-25.58	-13	-12.58	Horizontal
3540.1	-60.07	3.86	35.83	-28.10	-13	-15.10	Vertical
5310.5	-58.45	5.24	36.88	-26.81	-13	-13.81	Vertical
5310.5	-58.42	5.24	36.88	-26.78	-13	-13.78	Horizontal
182.4	-46.56	1.58	16.84	-31.30	-13	-18.30	Vertical
310.3	-47.17	1.45	17.64	-30.98	-13	-17.98	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
LTE BAND 71 (5MHZ BANDWIDTH)

Test Results for Low Channel 665.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1331.6	-63.83	2.16	35.81	-30.18	-13	-17.18	Horizontal
1331.6	-58.95	2.16	35.81	-25.30	-13	-12.30	Vertical
1996.8	-61.31	2.89	36.85	-27.35	-13	-14.35	Vertical
1996.8	-58.66	2.89	36.85	-24.70	-13	-11.70	Horizontal
199.9	-43.83	1.56	17.97	-27.42	-13	-14.42	Vertical
467.7	-43.99	1.33	15.11	-30.21	-13	-17.21	Horizontal
Test Results for Mid Channel 680.5MHz							
1361.7	-63.73	2.17	35.82	-30.08	-13	-17.08	Horizontal
1361.7	-59.77	2.17	35.82	-26.12	-13	-13.12	Vertical
2041.9	-58.97	2.90	36.85	-25.02	-13	-12.02	Vertical
2041.9	-63.81	2.90	36.85	-29.86	-13	-16.86	Horizontal
206.7	-44.96	1.77	16.17	-30.55	-13	-17.55	Vertical
338.3	-47.89	1.63	15.21	-34.31	-13	-21.31	Horizontal
Test Results for High Channel 695.5MHz							
1391.6	-61.09	2.19	35.83	-27.45	-13	-14.45	Horizontal
1391.6	-62.67	2.19	35.83	-29.03	-13	-16.03	Vertical
2087.4	-62.52	2.95	36.87	-28.60	-13	-15.60	Vertical
2087.4	-60.10	2.95	36.87	-26.18	-13	-13.18	Horizontal
179.7	-48.60	1.58	17.56	-32.61	-13	-19.61	Vertical
299.1	-44.20	1.45	16.58	-29.07	-13	-16.07	Horizontal

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
1346.9	-61.19	2.16	35.82	-27.53	-13	-14.53	Horizontal
1346.9	-57.85	2.16	35.82	-24.19	-13	-11.19	Vertical
2020.0	-58.70	2.89	36.86	-24.73	-13	-11.73	Vertical
2020.0	-60.17	2.89	36.86	-26.20	-13	-13.20	Horizontal
211.9	-44.49	1.56	15.76	-30.30	-13	-17.30	Vertical
325.1	-46.12	1.33	15.44	-32.01	-13	-19.01	Horizontal
Test Results for Mid Channel 683MHz							
1366.5	-61.07	2.17	35.82	-27.42	-13	-14.42	Horizontal
1366.5	-58.49	2.17	35.82	-24.84	-13	-11.84	Vertical
2050.0	-61.39	2.90	36.85	-27.44	-13	-14.44	Vertical
2050.0	-60.86	2.90	36.85	-26.91	-13	-13.91	Horizontal
205.4	-49.71	1.77	16.84	-34.63	-13	-21.63	Vertical
417.7	-51.10	1.63	17.64	-35.09	-13	-22.09	Horizontal
Test Results for High Channel 688MHz							
1376.8	-59.43	2.19	35.83	-25.79	-13	-12.79	Horizontal
1376.8	-61.89	2.19	35.83	-28.25	-13	-15.25	Vertical
2064.6	-60.59	2.95	36.88	-26.66	-13	-13.66	Vertical
2064.6	-60.90	2.95	36.88	-26.97	-13	-13.97	Horizontal
189.5	-46.95	1.58	16.84	-31.69	-13	-18.69	Vertical
305.7	-45.91	1.45	17.64	-29.72	-13	-16.72	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 3.29V, 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 2/4/5/12/17/41/66/71

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]
3.29	1880	7.2	0.003821	2.5
3.87	1880	5.9	0.003137	2.5
4.45	1880	9.4	0.004979	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	5.0	0.002667	2.5
Extreme (50C)	1880	12.3	0.006537	2.5
Extreme (40C)	1880	3.8	0.002000	2.5
Extreme (30C)	1880	14.3	0.007587	2.5
Extreme (10C)	1880	3.1	0.001647	2.5
Extreme (0C)	1880	6.1	0.003247	2.5
Extreme (-10C)	1880	10.6	0.005634	2.5
Extreme (-20C)	1880	3.4	0.001786	2.5
Extreme (-30C)	1880	6.7	0.003583	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	13.4	0.007106	2.5
3.87	1880	9.1	0.004860	2.5
4.45	1880	15.6	0.008290	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	4.7	0.002505	2.5
Extreme (50C)	1880	14.1	0.007521	2.5
Extreme (40C)	1880	4.3	0.002288	2.5
Extreme (30C)	1880	3.8	0.002018	2.5
Extreme (10C)	1880	8.7	0.004618	2.5
Extreme (0C)	1880	14.8	0.007877	2.5
Extreme (-10C)	1880	13.4	0.007136	2.5
Extreme (-20C)	1880	5.2	0.002766	2.5
Extreme (-30C)	1880	12.1	0.006419	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	13.7	0.007905	2.5
3.87	1732.5	13.5	0.007805	2.5
4.45	1732.5	14.8	0.008567	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	4.9	0.002828	2.5
Extreme (50C)	1732.5	6.8	0.003935	2.5
Extreme (40C)	1732.5	6.4	0.003678	2.5
Extreme (30C)	1732.5	14.4	0.008335	2.5
Extreme (10C)	1732.5	11.7	0.006738	2.5
Extreme (0C)	1732.5	5.4	0.003100	2.5
Extreme (-10C)	1732.5	15.7	0.009058	2.5
Extreme (-20C)	1732.5	10.5	0.006087	2.5
Extreme (-30C)	1732.5	4.3	0.002477	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	10.6	0.006146	2.5
3.87	1732.5	5.5	0.003164	2.5
4.45	1732.5	8.8	0.005056	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	13.4	0.007721	2.5
Extreme (50C)	1732.5	9.1	0.005226	2.5
Extreme (40C)	1732.5	14.4	0.008292	2.5
Extreme (30C)	1732.5	6.8	0.003897	2.5
Extreme (10C)	1732.5	6.1	0.003506	2.5
Extreme (0C)	1732.5	9.1	0.005267	2.5
Extreme (-10C)	1732.5	15.1	0.008723	2.5
Extreme (-20C)	1732.5	4.8	0.002748	2.5
Extreme (-30C)	1732.5	4.5	0.002604	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	5.5	0.006609	2.5
3.87	836.5	12.6	0.015109	2.5
4.45	836.5	3.6	0.004264	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	9.7	0.011608	2.5
Extreme (50C)	836.5	10.8	0.012960	2.5
Extreme (40C)	836.5	5.9	0.007050	2.5
Extreme (30C)	836.5	9.7	0.011563	2.5
Extreme (10C)	836.5	6.1	0.007347	2.5
Extreme (0C)	836.5	6.5	0.007746	2.5
Extreme (-10C)	836.5	15.6	0.018656	2.5
Extreme (-20C)	836.5	4.6	0.005490	2.5
Extreme (-30C)	836.5	7.1	0.008461	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	3.5	0.004191	2.5
3.87	836.5	12.1	0.014413	2.5
4.45	836.5	11.9	0.014193	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	12.3	0.014664	2.5
Extreme (50C)	836.5	8.2	0.009826	2.5
Extreme (40C)	836.5	8.9	0.010690	2.5
Extreme (30C)	836.5	10.5	0.012573	2.5
Extreme (10C)	836.5	9.7	0.011567	2.5
Extreme (0C)	836.5	12.6	0.015059	2.5
Extreme (-10C)	836.5	9.8	0.011726	2.5
Extreme (-20C)	836.5	14.6	0.017498	2.5
Extreme (-30C)	836.5	11.9	0.014242	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	4.5	0.006389	2.5
3.87	707.5	9.8	0.013917	2.5
4.45	707.5	9.4	0.013303	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	6.8	0.009648	2.5
Extreme (50C)	707.5	15.8	0.022267	2.5
Extreme (40C)	707.5	10.1	0.014248	2.5
Extreme (30C)	707.5	9.4	0.013320	2.5
Extreme (10C)	707.5	14.1	0.019931	2.5
Extreme (0C)	707.5	6.8	0.009649	2.5
Extreme (-10C)	707.5	7.1	0.009995	2.5
Extreme (-20C)	707.5	10.0	0.014132	2.5
Extreme (-30C)	707.5	10.9	0.015350	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	11.9	0.016856	2.5
3.87	707.5	15.6	0.021998	2.5
4.45	707.5	3.2	0.004590	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	14.9	0.021113	2.5
Extreme (50C)	707.5	14.7	0.020761	2.5
Extreme (40C)	707.5	5.8	0.008269	2.5
Extreme (30C)	707.5	6.7	0.009448	2.5
Extreme (10C)	707.5	3.2	0.004523	2.5
Extreme (0C)	707.5	14.7	0.020779	2.5
Extreme (-10C)	707.5	12.5	0.017733	2.5
Extreme (-20C)	707.5	6.7	0.009524	2.5
Extreme (-30C)	707.5	8.0	0.011302	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	13.5	0.018950	2.5
3.87	710	14.7	0.020635	2.5
4.45	710	10.1	0.014294	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710	6.0	0.008412	2.5
Extreme (50C)	710	11.9	0.016736	2.5
Extreme (40C)	710	8.0	0.011244	2.5
Extreme (30C)	710	7.6	0.010691	2.5
Extreme (10C)	710	8.6	0.012047	2.5
Extreme (0C)	710	7.1	0.009970	2.5
Extreme (-10C)	710	4.8	0.006709	2.5
Extreme (-20C)	710	8.4	0.011828	2.5
Extreme (-30C)	710	3.8	0.005290	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	9.8	0.013759	2.5
3.87	710	12.8	0.018043	2.5
4.45	710	7.6	0.010713	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710	9.7	0.013595	2.5
Extreme (50C)	710	3.3	0.004610	2.5
Extreme (40C)	710	11.5	0.016244	2.5
Extreme (30C)	710	15.4	0.021682	2.5
Extreme (10C)	710	8.0	0.011282	2.5
Extreme (0C)	710	11.4	0.016114	2.5
Extreme (-10C)	710	7.5	0.010616	2.5
Extreme (-20C)	710	10.1	0.014206	2.5
Extreme (-30C)	710	6.9	0.009669	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	2605	3.6	0.001378	2.5
3.87	2605	14.5	0.005587	2.5
4.45	2605	13.2	0.005091	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2605	10.2	0.003943	2.5
Extreme (50C)	2605	13.5	0.005202	2.5
Extreme (40C)	2605	10.5	0.004034	2.5
Extreme (30C)	2605	14.7	0.005672	2.5
Extreme (10C)	2605	12.3	0.004751	2.5
Extreme (0C)	2605	5.9	0.002264	2.5
Extreme (-10C)	2605	13.0	0.005030	2.5
Extreme (-20C)	2605	13.9	0.005352	2.5
Extreme (-30C)	2605	8.9	0.003435	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	2605	14.1	0.005423	2.5
3.87	2605	7.0	0.002686	2.5
4.45	2605	8.6	0.003300	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2605	7.4	0.002842	2.5
Extreme (50C)	2605	9.2	0.003535	2.5
Extreme (40C)	2605	7.1	0.002734	2.5
Extreme (30C)	2605	12.9	0.004966	2.5
Extreme (10C)	2605	5.8	0.002252	2.5
Extreme (0C)	2605	12.7	0.004890	2.5
Extreme (-10C)	2605	7.4	0.002867	2.5
Extreme (-20C)	2605	13.6	0.005254	2.5
Extreme (-30C)	2605	3.4	0.001328	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

QPSK, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	1745	9.7	0.005531	2.5
3.87	1745	10.0	0.005752	2.5
4.45	1745	7.4	0.004240	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	14.2	0.008134	2.5
Extreme (50C)	1745	6.4	0.003675	2.5
Extreme (40C)	1745	9.1	0.005218	2.5
Extreme (30C)	1745	6.2	0.003565	2.5
Extreme (10C)	1745	14.5	0.008313	2.5
Extreme (0C)	1745	7.5	0.004297	2.5
Extreme (-10C)	1745	14.3	0.008212	2.5
Extreme (-20C)	1745	8.4	0.004788	2.5
Extreme (-30C)	1745	14.2	0.008158	2.5

16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	1745	13.6	0.007790	2.5
3.87	1745	12.9	0.007402	2.5
4.45	1745	12.7	0.007266	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	3.2	0.001846	2.5
Extreme (50C)	1745	6.1	0.003496	2.5
Extreme (40C)	1745	5.4	0.003090	2.5
Extreme (30C)	1745	11.9	0.006834	2.5
Extreme (10C)	1745	8.4	0.004828	2.5
Extreme (0C)	1745	6.4	0.003641	2.5
Extreme (-10C)	1745	6.1	0.003503	2.5
Extreme (-20C)	1745	14.3	0.008216	2.5
Extreme (-30C)	1745	10.0	0.005736	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]
3.29	683	10.2	0.005824	2.5
3.87	683	10.0	0.005712	2.5
4.45	683	15.7	0.008999	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	683	9.5	0.005447	2.5
Extreme (50C)	683	14.7	0.008400	2.5
Extreme (40C)	683	10.3	0.005929	2.5
Extreme (30C)	683	5.0	0.002867	2.5
Extreme (10C)	683	14.1	0.008104	2.5
Extreme (0C)	683	8.5	0.004868	2.5
Extreme (-10C)	683	14.3	0.008173	2.5
Extreme (-20C)	683	8.9	0.005111	2.5
Extreme (-30C)	683	9.5	0.005447	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]
3.29	683	14.7	0.008452	2.5
3.87	683	9.3	0.005332	2.5
4.45	683	11.8	0.006742	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	683	10.6	0.006082	2.5
Extreme (50C)	683	8.1	0.004645	2.5
Extreme (40C)	683	6.9	0.003953	2.5
Extreme (30C)	683	9.4	0.005414	2.5
Extreme (10C)	683	10.6	0.006092	2.5
Extreme (0C)	683	7.1	0.004043	2.5
Extreme (-10C)	683	9.3	0.005354	2.5
Extreme (-20C)	683	11.5	0.006592	2.5
Extreme (-30C)	683	10.6	0.006082	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.

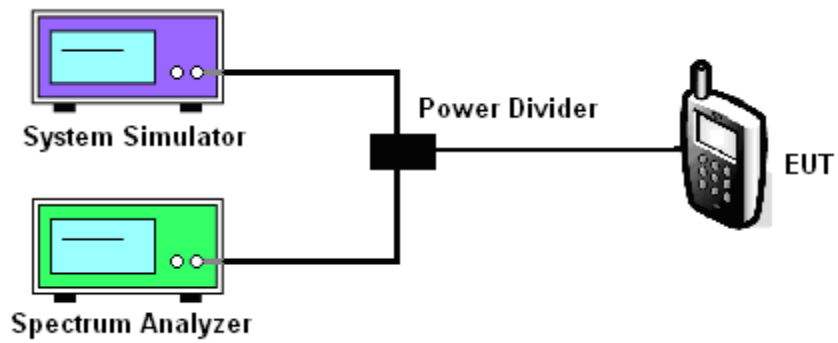
11.2 Measuring Instruments

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-----