

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

FCC ID: 2AOWK-3289

Product: Mobile Phone

Trade Mark: ulefone

Model No.: GQ3289

Family Model: Note 20 Pro, Note 20 Ultra, Note 20,
Note 20E, Note 20S, Note 20 Lite,
Note 20s, Note 20s Pro

Report No.: S24082304507006

Issue Date: Oct. 08, 2024

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 .. : GQ3289

Trade Mark..... : ulefone

Family Model..... : Note 20 Pro, Note 20 Ultra, Note 20, Note 20E, Note 20S, Note 20 Lite, Note 20s, Note 20s Pro

Test Sample Number..... S240823045005

Standards..... : FCC CFR 47 Part 22H, Part 24E, Part 27, Part 90S

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..... Aug. 23, 2024 ~ Oct. 08, 2024

Date of Issue Oct. 08, 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	GQ3289
Family Model	Note 20 Pro, Note 20 Ultra, Note 20, Note 20E, Note 20S, Note 20 Lite, Note 20s, Note 20s Pro
Model Difference	All models are the same circuit and RF module, except for model names.
FCC ID:	2AOWK-3289
Frequency Bands:	U.S. Bands: ☒ LTE FDD Band 2, 4, 5, 7, 12, 17, 26 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 FDD Band 26 Uplink: 814MHz-849MHz, Downlink: 859MHz-894MHz; LTE TDD Band 41 Uplink& Downlink: 2496MHz-2690MHz,
Type of Modulation:	QPSK/16QAM/64QAM(Only Downlink)
Power Class	Class 3
SIM Card:	SIM 1 and SIM 2 is a chipset unit and tested as a single chipset. The SIM 1 is chosen for test.
Antenna:	PIFA Antenna
Antenna gain:	Band 2: 1.58 dBi, Band 4: 1.44dBi, Band 5: -1.71 dBi, Band 7: 1.44dBi, Band 12: -1.8dBi, Band 17: -1.8 dBi, Band 26:-1.71 dBi; Band 41:1.44 dBi
Adapter	Model: HJ-FC038K7-US Input: 100-240V~ 50/60Hz 0.6A Output: 5.0V---3.0A 15.0W OR 9.0V---2.0A 18.0W OR 12.0V---1.5A 18.0W
Battery	DC 3.87V, 6000mAh, 23.22Wh
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	S682A_V1
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-3289** filing to comply with the FCC Part 22H&24E&27&90S.

1.3 TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI/TIA-603-E-2016, FCC CFR 47 Part 2, Part 22, Part 24, Part 27, Part 90S, ANSI C63.26:2015.

1.4 TEST FACILITY

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

ShenZhen NTEK Testing Technology Co., Ltd.

1/F, Building E, Fenda Science Park Sanwei, Xixiang, Bao'an District, Shenzhen, Guangdong, China

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

FCC Registration No.:463705

IC Registration No.:9270A-1,

CNAS Registration No.:L5516

MEASUREMENT UNCERTAINTY

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

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

1.5 SPECIAL ACCESSORIES

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

1.6 WORST-CASE CONFIGURATION AND MODE

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

The device has LTE Bands of: Band 2/4/5/7/12/17/26/41

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	GQ3289	FCC ID: 2AOWK-3289	EUT

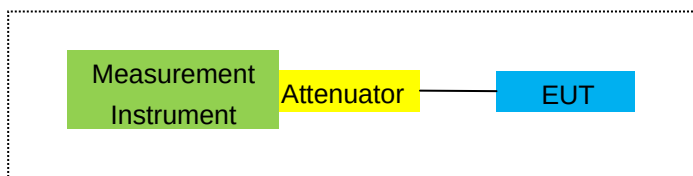
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

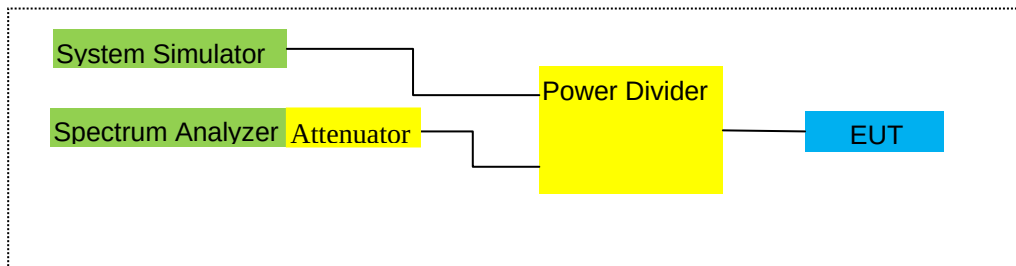
For Radiated Test Cases



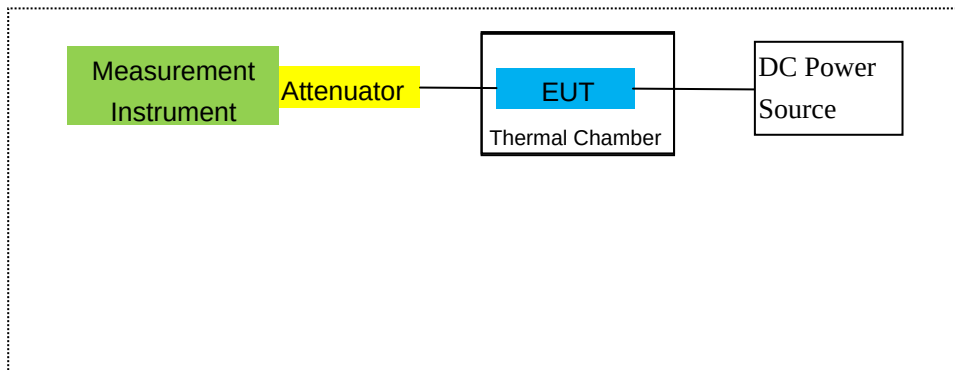
For Conducted Output Power



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	raditeq	RadiMation	2023.1.3	RadiatedTest
4	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 2/4/5/7/12/17/26/41

RESULTS

PASS

Test data reference attachment.

6. BANDEDGE AND EMISSION MASK

RULE PART(S)

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

FCC: §22.359

LIMITS

FCC: §22.917, §24.238, §27.53

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

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

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

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

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

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

TEST PROCEDURE

The transmitter output was connected to a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

For each band edge measurement:

Set the spectrum analyzer span to include the block edge frequency

Set a marker to point the corresponding band edge frequency in each test case.

Set resolution bandwidth to at least 1% of emission bandwidth.

MODES TESTED

Band 2/4/5/7/12/17/26/41

RESULTS

Test data reference attachment.

7. OUT OF BAND EMISSIONS

RULE PART(S)

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

LIMITS

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

TEST PROCEDURE

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

For each out of band emissions measurement:

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

MODES TESTED

Band 2/4/5/7/12/17/26/41

7.1 MEASUREMENT METHOD

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

Test data reference attachment.

8. RADIATED MEASUREMENT

8.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

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

LIMITS:

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

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

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

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

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

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

TEST PROCEDURE

ANSI/TIA-603-E Clause 2.2.17

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

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

MODES TESTED

Band 2/4/5/7/12/17/26/41

RESULTS

Pass

8.2 LTE BAND 2

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP	Polarization Of Max. ERP	
							Average		
							(mW)		
1.4MHz Band QPSK	1/#Mid	1850.7	-2.28	3.76	28.24	22.20	165.959	Horizontal	Pass
		1880	-1.81	3.91	28.22	22.50	177.828	Horizontal	Pass
		1909.3	-2.11	3.93	28.20	22.16	164.437	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-2.36	3.77	28.23	22.10	162.181	Horizontal	Pass
		1880	-2.12	3.91	28.24	22.21	166.341	Horizontal	Pass
		1908.5	-2.21	3.94	28.25	22.10	162.181	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-2.28	3.77	28.31	22.26	168.267	Horizontal	Pass
		1880	-1.82	3.91	28.22	22.49	177.419	Horizontal	Pass
		1907.5	-1.76	3.94	28.20	22.50	177.828	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-2.31	3.79	28.33	22.23	167.109	Horizontal	Pass
		1880	-1.77	3.95	28.22	22.50	177.828	Horizontal	Pass
		1905	-1.81	3.97	28.19	22.41	174.181	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-2.26	3.79	28.34	22.29	169.434	Horizontal	Pass
		1880	-1.58	3.95	28.22	22.69	185.780	Horizontal	Pass
		1902.5	-1.73	3.97	28.18	22.48	177.011	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-2.08	3.81	28.35	22.46	176.198	Horizontal	Pass
		1880	-1.91	3.96	28.22	22.35	171.791	Horizontal	Pass
		1900	-1.76	4.00	28.16	22.40	173.780	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-2.68	3.76	28.24	21.80	151.356	Vertical	Pass
		1880	-2.66	3.91	28.22	21.65	146.218	Vertical	Pass
		1909.3	-3.05	3.93	28.20	21.22	132.434	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-3.32	3.77	28.23	21.14	130.017	Vertical	Pass
		1880	-2.86	3.91	28.24	21.47	140.281	Vertical	Pass
		1908.5	-3.21	3.94	28.25	21.10	128.825	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-3.18	3.77	28.31	21.36	136.773	Vertical	Pass
		1880	-2.59	3.91	28.22	21.72	148.594	Vertical	Pass
		1907.5	-3.61	3.94	28.20	20.65	116.145	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1855	-2.12	3.79	28.33	22.42	174.582	Vertical	Pass
		1880	-2.55	3.95	28.22	21.72	148.594	Vertical	Pass
		1905	-3.49	3.97	28.19	20.73	118.304	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1857.5	-2.81	3.79	28.34	21.74	149.279	Vertical	Pass
		1880	-2.59	3.95	28.22	21.68	147.231	Vertical	Pass
		1902.5	-2.69	3.97	28.18	21.52	141.906	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1860	-2.86	3.81	28.35	21.68	147.231	Vertical	Pass
		1880	-2.55	3.96	28.22	21.71	148.252	Vertical	Pass
		1900	-3.08	4.00	28.16	21.08	128.233	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	-3.09	3.76	28.24	21.39	137.721	Horizontal	Pass
		1880	-3.06	3.91	28.22	21.25	133.352	Horizontal	Pass
		1909.3	-2.55	3.93	28.20	21.72	148.594	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-2.59	3.77	28.23	21.87	153.815	Horizontal	Pass
		1880	-2.71	3.91	28.24	21.62	145.211	Horizontal	Pass
		1908.5	-2.69	3.94	28.25	21.62	145.211	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-2.42	3.77	28.31	22.12	162.930	Horizontal	Pass
		1880	-2.83	3.91	28.22	21.48	140.605	Horizontal	Pass
		1907.5	-3.16	3.94	28.20	21.10	128.825	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-2.12	3.79	28.33	22.42	174.582	Horizontal	Pass
		1880	-1.96	3.95	28.22	22.31	170.216	Horizontal	Pass
		1905	-2.41	3.97	28.19	21.81	151.705	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-1.76	3.79	28.34	22.79	190.108	Horizontal	Pass
		1880	-2.41	3.95	28.22	21.86	153.462	Horizontal	Pass
		1902.5	-2.76	3.97	28.18	21.45	139.637	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-2.41	3.81	28.35	22.13	163.305	Horizontal	Pass
		1880	-1.99	3.96	28.22	22.27	168.655	Horizontal	Pass
		1900	-1.93	4.00	28.16	22.23	167.109	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1850.7	-3.41	3.76	28.24	21.07	127.938	Vertical	Pass
		1880	-3.92	3.91	28.22	20.39	109.396	Vertical	Pass
		1909.3	-4.16	3.93	28.20	20.11	102.565	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-3.41	3.77	28.23	21.05	127.350	Vertical	Pass
		1880	-3.82	3.91	28.24	20.51	112.460	Vertical	Pass
		1908.5	-4.69	3.94	28.25	19.62	91.622	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-4.58	3.77	28.31	19.96	99.083	Vertical	Pass
		1880	-4.56	3.91	28.22	19.75	94.406	Vertical	Pass
		1907.5	-3.11	3.94	28.20	21.15	130.317	Vertical	Pass

10.0MHz Band 16 QAM	1/#Mid	1855	-3.45	3.79	28.33	21.09	128.529	Vertical	Pass
		1880	-3.76	3.95	28.22	20.51	112.460	Vertical	Pass
		1905	-3.46	3.97	28.19	20.76	119.124	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-2.71	3.79	28.34	21.84	152.757	Vertical	Pass
		1880	-3.16	3.95	28.22	21.11	129.122	Vertical	Pass
		1902.5	-3.39	3.97	28.18	20.82	120.781	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-3.11	3.81	28.35	21.43	138.995	Vertical	Pass
		1880	-3.19	3.96	28.22	21.07	127.938	Vertical	Pass
		1900	-3.12	4.00	28.16	21.04	127.057	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	-1.75	3.12	27.58	22.71	186.638	Horizontal	Pass
		1732.5	-1.38	3.27	27.61	22.96	197.697	Horizontal	Pass
		1754.3	-1.93	3.29	27.63	22.41	174.181	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-2.33	3.13	27.61	22.15	164.059	Horizontal	Pass
		1732.5	-1.65	3.27	27.61	22.69	185.780	Horizontal	Pass
		1753.5	-2.10	3.30	27.62	22.22	166.725	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-1.94	3.13	27.63	22.56	180.302	Horizontal	Pass
		1732.5	-1.63	3.27	27.61	22.71	186.638	Horizontal	Pass
		1752.5	-1.76	3.30	27.60	22.54	179.473	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-2.02	3.15	27.64	22.47	176.604	Horizontal	Pass
		1732.5	-1.67	3.31	27.61	22.63	183.231	Horizontal	Pass
		1750	-1.85	3.33	27.59	22.41	174.181	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-1.47	3.15	27.65	23.03	200.909	Horizontal	Pass
		1732.5	-1.41	3.31	27.61	22.89	194.536	Horizontal	Pass
		1747.5	-0.90	3.33	27.57	23.34	215.774	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-2.09	3.17	27.66	22.40	173.780	Horizontal	Pass
		1732.5	-1.23	3.32	27.61	23.06	202.302	Horizontal	Pass
		1745	-1.97	3.36	27.56	22.23	167.109	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-3.36	3.12	27.58	21.10	128.825	Vertical	Pass
		1732.5	-2.29	3.27	27.61	22.05	160.325	Vertical	Pass
		1754.3	-1.78	3.29	27.63	22.56	180.302	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-1.83	3.13	27.61	22.65	184.077	Vertical	Pass
		1732.5	-1.51	3.27	27.61	22.83	191.867	Vertical	Pass
		1753.5	-1.95	3.30	27.62	22.37	172.584	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-2.55	3.13	27.63	21.95	156.675	Vertical	Pass
		1732.5	-2.63	3.27	27.61	21.71	148.252	Vertical	Pass
		1752.5	-2.25	3.30	27.60	22.05	160.325	Vertical	Pass
10.0MHz Band	1/#Mid	1715	-2.43	3.15	27.64	22.06	160.694	Vertical	Pass
		1732.5	-2.36	3.31	27.61	21.94	156.315	Vertical	Pass

QPSK		1750	-2.74	3.33	27.59	21.52	141.906	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-1.35	3.15	27.65	23.15	206.538	Vertical	Pass
Band		1732.5	-3.23	3.31	27.61	21.07	127.938	Vertical	Pass
QPSK		1747.5	-3.21	3.33	27.57	21.03	126.765	Vertical	Pass
20.0MHz	1/#Mid	1720	-2.40	3.17	27.66	22.09	161.808	Vertical	Pass
Band		1732.5	-2.52	3.32	27.61	21.77	150.314	Vertical	Pass
QPSK		1745	-3.11	3.36	27.56	21.09	128.529	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	-1.92	3.12	27.58	22.54	179.473	Horizontal	Pass
Band 16		1732.5	-2.93	3.27	27.61	21.41	138.357	Horizontal	Pass
QAM		1754.3	-2.11	3.29	27.63	22.23	167.109	Horizontal	Pass
3.0MHz	1/#Mid	1711.5	-2.13	3.13	27.61	22.35	171.791	Horizontal	Pass
Band 16		1732.5	-2.46	3.27	27.61	21.88	154.170	Horizontal	Pass
QAM		1753.5	-3.23	3.30	27.62	21.09	128.529	Horizontal	Pass
5.0MHz	1/#Mid	1712.5	-2.65	3.13	27.63	21.85	153.109	Horizontal	Pass
Band 16		1732.5	-2.91	3.27	27.61	21.43	138.995	Horizontal	Pass
QAM		1752.5	-1.65	3.30	27.60	22.65	184.077	Horizontal	Pass
10.0MHz	1/#Mid	1715	-2.25	3.15	27.64	22.24	167.494	Horizontal	Pass
Band 16		1732.5	-2.82	3.31	27.61	21.48	140.605	Horizontal	Pass
QAM		1750	-1.32	3.33	27.59	22.94	196.789	Horizontal	Pass
15.0MHz	1/#Mid	1717.5	-3.12	3.15	27.65	21.38	137.404	Horizontal	Pass
Band 16		1732.5	-2.25	3.31	27.61	22.05	160.325	Horizontal	Pass
QAM		1747.5	-2.48	3.33	27.57	21.76	149.968	Horizontal	Pass
20.0MHz	1/#Mid	1720	-1.51	3.17	27.66	22.98	198.609	Horizontal	Pass
Band 16		1732.5	-1.99	3.32	27.61	22.30	169.824	Horizontal	Pass
QAM		1745	-1.53	3.36	27.56	22.67	184.927	Horizontal	Pass
1.4MHz	1/#Mid	1710.7	-3.45	3.12	27.58	21.01	126.183	Vertical	Pass
Band 16		1732.5	-3.39	3.27	27.61	20.95	124.451	Vertical	Pass
QAM		1754.3	-3.10	3.29	27.63	21.24	133.045	Vertical	Pass
3.0MHz	1/#Mid	1711.5	-3.53	3.13	27.61	20.95	124.451	Vertical	Pass
Band 16		1732.5	-3.78	3.27	27.61	20.56	113.763	Vertical	Pass
QAM		1753.5	-3.83	3.30	27.62	20.49	111.944	Vertical	Pass
5.0MHz	1/#Mid	1712.5	-3.79	3.13	27.63	20.71	117.761	Vertical	Pass
Band 16		1732.5	-3.46	3.27	27.61	20.88	122.462	Vertical	Pass

QAM		1752.5	-3.47	3.30	27.60	20.83	121.060	Vertical	Pass
10.0MHz	1/#Mid	1715	-3.69	3.15	27.64	20.80	120.226	Vertical	Pass
Band 16		1732.5	-2.88	3.31	27.61	21.42	138.676	Vertical	Pass
QAM		1750	-3.79	3.33	27.59	20.47	111.429	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-3.40	3.15	27.65	21.10	128.825	Vertical	Pass
Band 16		1732.5	-4.01	3.31	27.61	20.29	106.905	Vertical	Pass
QAM		1747.5	-2.52	3.33	27.57	21.72	148.594	Vertical	Pass
20.0MHz	1/#Mid	1720	-2.79	3.17	27.66	21.70	147.911	Vertical	Pass
Band 16		1732.5	-3.15	3.32	27.61	21.14	130.017	Vertical	Pass
QAM		1745	-2.32	3.36	27.56	21.88	154.170	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	7.20	2.01	19.68	2.15	22.72	187.068	Horizontal	Pass
		836.5	7.40	2.01	19.77	2.15	23.01	199.986	Horizontal	Pass
		848.3	7.95	2.02	19.82	2.15	23.60	229.087	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	825.5	7.10	2.01	19.70	2.15	22.64	183.654	Horizontal	Pass
		836.5	7.01	2.01	19.77	2.15	22.62	182.810	Horizontal	Pass
		847.5	7.79	2.02	19.81	2.15	23.43	220.293	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	826.5	7.90	2.01	19.71	2.15	23.45	221.309	Horizontal	Pass
		836.5	7.83	2.01	19.77	2.15	23.44	220.800	Horizontal	Pass
		846.5	6.93	2.02	19.79	2.15	22.55	179.887	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	829	7.87	2.01	19.73	2.15	23.44	220.800	Horizontal	Pass
		836.5	7.58	2.01	19.77	2.15	23.19	208.449	Horizontal	Pass
		844	7.23	2.02	19.78	2.15	22.84	192.309	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	824.7	6.46	2.01	19.68	2.15	21.98	157.761	Vertical	Pass
		836.5	6.15	2.01	19.77	2.15	21.76	149.968	Vertical	Pass
		848.3	6.63	2.02	19.82	2.15	22.28	169.044	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	825.5	6.77	2.01	19.70	2.15	22.31	170.216	Vertical	Pass
		836.5	5.46	2.01	19.77	2.15	21.07	127.938	Vertical	Pass
		847.5	6.29	2.02	19.81	2.15	21.93	155.955	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	826.5	6.95	2.01	19.71	2.15	22.50	177.828	Vertical	Pass
		836.5	6.91	2.01	19.77	2.15	22.52	178.649	Vertical	Pass
		846.5	6.25	2.02	19.79	2.15	21.87	153.815	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	829	5.47	2.01	19.73	2.15	21.04	127.057	Vertical	Pass
		836.5	6.19	2.01	19.77	2.15	21.80	151.356	Vertical	Pass
		844	6.64	2.02	19.78	2.15	22.25	167.880	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	6.85	2.01	19.68	2.15	22.37	172.584	Horizontal	Pass
		836.5	6.58	2.01	19.77	2.15	22.19	165.577	Horizontal	Pass
		848.3	6.27	2.02	19.82	2.15	21.92	155.597	Horizontal	Pass
3.0MHz Band 16 QAM	1/##Mid	825.5	7.22	2.01	19.70	2.15	22.76	188.799	Horizontal	Pass
		836.5	6.07	2.01	19.77	2.15	21.68	147.231	Horizontal	Pass
		847.5	5.81	2.02	19.81	2.15	21.45	139.637	Horizontal	Pass
5.0MHz Band 16 QAM	1/##Mid	826.5	7.21	2.01	19.71	2.15	22.76	188.799	Horizontal	Pass
		836.5	7.23	2.01	19.77	2.15	22.84	192.309	Horizontal	Pass
		846.5	7.47	2.02	19.79	2.15	23.09	203.704	Horizontal	Pass
10.0MHz Band 16 QAM	1/##Mid	829	7.21	2.01	19.73	2.15	22.78	189.671	Horizontal	Pass
		836.5	7.11	2.01	19.77	2.15	22.72	187.068	Horizontal	Pass
		844	7.13	2.02	19.78	2.15	22.74	187.932	Horizontal	Pass
1.4MHz Band 16 QAM	1/##Mid	824.7	5.24	2.01	19.68	2.15	20.76	119.124	Vertical	Pass
		836.5	6.39	2.01	19.77	2.15	22.00	158.489	Vertical	Pass
		848.3	5.84	2.02	19.82	2.15	21.49	140.929	Vertical	Pass
3.0MHz Band 16 QAM	1/##Mid	825.5	5.97	2.01	19.70	2.15	21.51	141.579	Vertical	Pass
		836.5	5.42	2.01	19.77	2.15	21.03	126.765	Vertical	Pass
		847.5	6.89	2.02	19.81	2.15	22.53	179.061	Vertical	Pass
5.0MHz Band 16 QAM	1/##Mid	826.5	7.06	2.01	19.71	2.15	22.61	182.390	Vertical	Pass
		836.5	5.90	2.01	19.77	2.15	21.51	141.579	Vertical	Pass
		846.5	6.06	2.02	19.79	2.15	21.68	147.231	Vertical	Pass
10.0MHz Band 16 QAM	1/##Mid	829	4.70	2.01	19.73	2.15	20.27	106.414	Vertical	Pass
		836.5	5.97	2.01	19.77	2.15	21.58	143.880	Vertical	Pass
		844	6.49	2.02	19.78	2.15	22.10	162.181	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	-0.12	4.54	27.75	23.09	203.704	Horizontal	Pass
		2535	-0.24	4.69	27.72	22.79	190.108	Horizontal	Pass
		2567.5	-0.21	4.71	27.71	22.79	190.108	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2505	-0.19	4.55	27.76	23.02	200.447	Horizontal	Pass
		2535	-0.21	4.69	27.72	22.82	191.426	Horizontal	Pass
		2565	-0.29	4.72	27.70	22.69	185.780	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-0.28	4.55	27.77	22.94	196.789	Horizontal	Pass
		2535	-0.24	4.69	27.72	22.79	190.108	Horizontal	Pass
		2562.5	-0.16	4.72	27.69	22.81	190.985	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2510	-0.11	4.57	27.78	23.10	204.174	Horizontal	Pass
		2535	-0.06	4.73	27.72	22.93	196.336	Horizontal	Pass
		2560	-0.51	4.75	27.68	22.42	174.582	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	-1.81	4.54	27.75	21.40	138.038	Vertical	Pass
		2535	-1.19	4.69	27.72	21.84	152.757	Vertical	Pass
		2567.5	-1.52	4.71	27.71	21.48	140.605	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2505	-2.38	4.55	27.76	20.83	121.060	Vertical	Pass
		2535	-1.81	4.69	27.72	21.22	132.434	Vertical	Pass
		2565	-1.43	4.72	27.70	21.55	142.889	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-1.42	4.55	27.77	21.80	151.356	Vertical	Pass
		2535	-1.39	4.69	27.72	21.64	145.881	Vertical	Pass
		2562.5	-1.54	4.72	27.69	21.43	138.995	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2510	-1.36	4.57	27.78	21.85	153.109	Vertical	Pass
		2535	-1.16	4.73	27.72	21.83	152.405	Vertical	Pass
		2560	-1.21	4.75	27.68	21.72	148.594	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	-1.49	4.54	27.75	21.72	148.594	Horizontal	Pass
		2535	-0.91	4.69	27.72	22.12	162.930	Horizontal	Pass
		2567.5	-1.12	4.71	27.71	21.88	154.170	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-0.93	4.55	27.76	22.28	169.044	Horizontal	Pass
		2535	-0.65	4.69	27.72	22.38	172.982	Horizontal	Pass
		2565	-1.71	4.72	27.70	21.27	133.968	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-1.68	4.55	27.77	21.54	142.561	Horizontal	Pass
		2535	-1.39	4.69	27.72	21.64	145.881	Horizontal	Pass
		2562.5	-0.51	4.72	27.69	22.46	176.198	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-1.52	4.57	27.78	21.69	147.571	Horizontal	Pass
		2535	-0.31	4.73	27.72	22.68	185.353	Horizontal	Pass
		2560	-0.96	4.75	27.68	21.97	157.398	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	-1.51	4.54	27.75	21.70	147.911	Vertical	Pass
		2535	-2.76	4.69	27.72	20.27	106.414	Vertical	Pass
		2567.5	-2.71	4.71	27.71	20.29	106.905	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-2.06	4.55	27.76	21.15	130.317	Vertical	Pass
		2535	-1.31	4.69	27.72	21.72	148.594	Vertical	Pass
		2565	-1.54	4.72	27.70	21.44	139.316	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-1.31	4.55	27.77	21.91	155.239	Vertical	Pass
		2535	-2.36	4.69	27.72	20.67	116.681	Vertical	Pass
		2562.5	-2.19	4.72	27.69	20.78	119.674	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-3.19	4.57	27.78	20.02	100.462	Vertical	Pass
		2535	-2.11	4.73	27.72	20.88	122.462	Vertical	Pass
		2560	-1.31	4.75	27.68	21.62	145.211	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	7.67	1.91	19.21	2.15	22.82	191.426	Vertical	Pass
		707.5	7.24	1.91	19.26	2.15	22.44	175.388	Vertical	Pass
		715.3	7.09	1.93	19.34	2.15	22.35	171.791	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	700.5	7.42	1.91	19.21	2.15	22.57	180.717	Vertical	Pass
		707.5	7.25	1.91	19.26	2.15	22.45	175.792	Vertical	Pass
		714.5	7.86	1.93	19.34	2.15	23.12	205.116	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	701.5	7.20	1.91	19.23	2.15	22.37	172.584	Vertical	Pass
		707.5	7.79	1.91	19.26	2.15	22.99	199.067	Vertical	Pass
		713.5	6.86	1.92	19.33	2.15	22.12	162.930	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	704	7.56	1.91	19.25	2.15	22.75	188.365	Vertical	Pass
		707.5	7.32	1.91	19.26	2.15	22.52	178.649	Vertical	Pass
		711	7.58	1.92	19.32	2.15	22.83	191.867	Vertical	Pass
1.4MHz Band QPSK	1/#Mid	699.7	6.64	1.91	19.21	2.15	21.79	151.008	Horizontal	Pass
		707.5	6.84	1.91	19.26	2.15	22.04	159.956	Horizontal	Pass
		715.3	6.15	1.93	19.34	2.15	21.41	138.357	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	700.5	6.62	1.91	19.21	2.15	21.77	150.314	Horizontal	Pass
		707.5	6.65	1.91	19.26	2.15	21.85	153.109	Horizontal	Pass
		714.5	5.53	1.93	19.34	2.15	20.79	119.950	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	701.5	7.24	1.91	19.23	2.15	22.41	174.181	Horizontal	Pass
		707.5	6.06	1.91	19.26	2.15	21.26	133.660	Horizontal	Pass
		713.5	6.95	1.92	19.33	2.15	22.21	166.341	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	704	5.66	1.91	19.25	2.15	20.85	121.619	Horizontal	Pass
		707.5	6.15	1.91	19.26	2.15	21.35	136.458	Horizontal	Pass
		711	6.73	1.92	19.32	2.15	21.98	157.761	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	7.20	1.91	19.21	2.15	22.35	171.791	Vertical	Pass
		707.5	6.82	1.91	19.26	2.15	22.02	159.221	Vertical	Pass
		715.3	6.90	1.93	19.34	2.15	22.16	164.437	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	6.80	1.91	19.21	2.15	21.95	156.675	Vertical	Pass
		707.5	7.15	1.91	19.26	2.15	22.35	171.791	Vertical	Pass
		714.5	7.53	1.93	19.34	2.15	22.79	190.108	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	7.15	1.91	19.23	2.15	22.32	170.608	Vertical	Pass
		707.5	7.03	1.91	19.26	2.15	22.23	167.109	Vertical	Pass
		713.5	6.59	1.92	19.33	2.15	21.85	153.109	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	704	7.99	1.91	19.25	2.15	23.18	207.970	Vertical	Pass
		707.5	8.06	1.91	19.26	2.15	23.26	211.836	Vertical	Pass
		711	7.23	1.92	19.32	2.15	22.48	177.011	Vertical	Pass
1.4MHz Band 16 QAM	1/#Mid	699.7	7.02	1.91	19.21	2.15	22.17	164.816	Horizontal	Pass
		707.5	7.46	1.91	19.26	2.15	22.66	184.502	Horizontal	Pass
		715.3	6.60	1.93	19.34	2.15	21.86	153.462	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	7.05	1.91	19.21	2.15	22.20	165.959	Horizontal	Pass
		707.5	6.43	1.91	19.26	2.15	21.63	145.546	Horizontal	Pass
		714.5	6.79	1.93	19.34	2.15	22.05	160.325	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	7.46	1.91	19.23	2.15	22.63	183.231	Horizontal	Pass
		707.5	7.55	1.91	19.26	2.15	22.75	188.365	Horizontal	Pass
		713.5	6.72	1.92	19.33	2.15	21.98	157.761	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	704	5.63	1.91	19.25	2.15	20.82	120.781	Horizontal	Pass
		707.5	7.05	1.91	19.26	2.15	22.25	167.880	Horizontal	Pass
		711	6.09	1.92	19.32	2.15	21.34	136.144	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	8.03	1.91	19.23	2.15	23.20	208.930	Vertical	Pass
		710	8.44	1.91	19.26	2.15	23.64	231.206	Vertical	Pass
		713.5	7.62	1.92	19.33	2.15	22.88	194.089	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	709	8.23	1.91	19.25	2.15	23.42	219.786	Vertical	Pass
		710	7.73	1.91	19.26	2.15	22.93	196.336	Vertical	Pass
		711	7.44	1.92	19.32	2.15	22.69	185.780	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	706.5	7.88	1.91	19.23	2.15	23.05	201.837	Horizontal	Pass
		710	6.85	1.91	19.26	2.15	22.05	160.325	Horizontal	Pass
		713.5	7.65	1.92	19.33	2.15	22.91	195.434	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	709	7.05	1.91	19.25	2.15	22.24	167.494	Horizontal	Pass
		710	6.67	1.91	19.26	2.15	21.87	153.815	Horizontal	Pass
		711	5.61	1.92	19.32	2.15	20.86	121.899	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	7.69	1.91	19.23	2.15	22.86	193.197	Vertical	Pass
		710	7.74	1.91	19.26	2.15	22.94	196.789	Vertical	Pass
		713.5	7.58	1.92	19.33	2.15	22.84	192.309	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	709	7.25	1.91	19.25	2.15	22.44	175.388	Vertical	Pass
		710	7.11	1.91	19.26	2.15	22.31	170.216	Vertical	Pass
		711	6.88	1.92	19.32	2.15	22.13	163.305	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	706.5	6.58	1.91	19.23	2.15	21.75	149.624	Horizontal	Pass
		710	5.75	1.91	19.26	2.15	20.95	124.451	Horizontal	Pass
		713.5	6.06	1.92	19.33	2.15	21.32	135.519	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	709	6.95	1.91	19.25	2.15	22.14	163.682	Horizontal	Pass
		710	6.93	1.91	19.26	2.15	22.13	163.305	Horizontal	Pass
		711	6.14	1.92	19.32	2.15	21.39	137.721	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 26A

Radiated Power (ERP) for Band 26(814-824)										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG	Cable	Antenna	Correction	Max. EIRP	Max.	Polarization	
			Level	Loss	Factor		EIRP	Of Max.		
			(dBm)	(dBm)	(dB)		Average	Average	ERP	
							(dBm)	(mW)		
1.4MHz	6/0	814.7	-0.18	3.76	28.24	2.15	22.15	164.059	Horizontal	Pass
BW		819	0.05	3.91	28.22	2.15	22.21	166.341	Horizontal	Pass
QPSK		823.3	-0.12	3.93	28.20	2.15	22.00	158.489	Horizontal	Pass
3.0MHz	15/0	815.5	-0.31	3.77	28.23	2.15	22.00	158.489	Horizontal	Pass
BW		819	-0.50	3.91	28.24	2.15	21.68	147.231	Horizontal	Pass
QPSK		822.5	-0.25	3.94	28.25	2.15	21.91	155.239	Horizontal	Pass
5.0MHz	25/0	816.5	-0.06	3.77	28.31	2.15	22.33	171.002	Horizontal	Pass
BW		819	0.09	3.91	28.22	2.15	22.25	167.880	Horizontal	Pass
QPSK		821.5	-0.06	3.94	28.20	2.15	22.05	160.325	Horizontal	Pass
10.0MHz	50/0	819	0.11	3.91	28.22	2.15	22.27	168.655	Horizontal	Pass
1.4MHz	6/0	814.7	-0.05	3.79	28.34	2.15	22.35	171.791	Vertical	Pass
BW		819	0.06	3.95	28.22	2.15	22.18	165.196	Vertical	Pass
QPSK		823.3	-0.47	3.97	28.18	2.15	21.59	144.212	Vertical	Pass
3.0MHz	15/0	815.5	-1.55	3.77	28.23	2.15	20.76	119.124	Vertical	Pass
BW		819	-1.29	3.91	28.24	2.15	20.89	122.744	Vertical	Pass
QPSK		822.5	-1.36	3.94	28.25	2.15	20.80	120.226	Vertical	Pass
5.0MHz	25/0	816.5	-0.82	3.77	28.31	2.15	21.57	143.549	Vertical	Pass
BW		819	-1.07	3.91	28.22	2.15	21.09	128.529	Vertical	Pass
QPSK		821.5	-0.81	3.94	28.20	2.15	21.30	134.896	Vertical	Pass
10.0MHz	50/0	819	-1.29	3.91	28.22	2.15	20.87	122.180	Vertical	Pass

Radiated Power (ERP) for Band 26(814-824)										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Factor	Correction	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	Of Max. ERP	
							(dBm)	(mW)		
1.4MHz	6/0	814.7	-0.11	3.76	28.24	2.15	22.22	166.725	Horizontal	Pass
BW 16		819	-0.07	3.91	28.22	2.15	22.09	161.808	Horizontal	Pass
QAM		823.3	-0.11	3.93	28.20	2.15	22.01	158.855	Horizontal	Pass
3.0MHz	15/0	815.5	-0.31	3.77	28.23	2.15	22.00	158.489	Horizontal	Pass
BW 16		819	-0.28	3.91	28.24	2.15	21.90	154.882	Horizontal	Pass
QAM		822.5	-0.31	3.94	28.25	2.15	21.85	153.109	Horizontal	Pass
5.0MHz	25/0	816.5	-0.14	3.77	28.31	2.15	22.25	167.880	Horizontal	Pass
BW 16		819	0.06	3.91	28.22	2.15	22.22	166.725	Horizontal	Pass
QAM		821.5	-0.16	3.94	28.20	2.15	21.95	156.675	Horizontal	Pass
10.0MHz	50/0	819	0.08	3.91	28.24	2.15	22.26	168.267	Horizontal	Pass
1.4MHz	6/0	814.7	-0.14	3.79	28.34	2.15	22.26	168.267	Vertical	Pass
BW 16		819	0.07	3.95	28.22	2.15	22.19	165.577	Vertical	Pass
QAM		823.3	-1.57	3.97	28.18	2.15	20.49	111.944	Vertical	Pass
3.0MHz	15/0	815.5	-1.58	3.77	28.23	2.15	20.73	118.304	Vertical	Pass
BW 16		819	-0.82	3.91	28.24	2.15	21.36	136.773	Vertical	Pass
QAM		822.5	-0.88	3.94	28.25	2.15	21.28	134.276	Vertical	Pass
5.0MHz	25/0	816.5	-1.05	3.77	28.31	2.15	21.34	136.144	Vertical	Pass
BW 16		819	-1.02	3.91	28.22	2.15	21.14	130.017	Vertical	Pass
QAM		821.5	-1.47	3.94	28.20	2.15	20.64	115.878	Vertical	Pass
10.0MHz	50/0	819	-0.88	3.91	28.24	2.15	21.30	134.896	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 26B

Radiated Power (ERP) for Band 26(824-849)										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG	Cable	Antenna	Correction	Max. EIRP	Max.	Polarization	
			Level	Loss	Factor		EIRP	Of Max.		
			(dBm)	(dBm)	(dB)		Average	Average	ERP	
							(dBm)	(mW)		
1.4MHz	6/0	824.7	5.54	2.01	19.68	2.15	21.06	127.644	Horizontal	Pass
Band		836.5	5.41	2.01	19.77	2.15	21.02	126.474	Horizontal	Pass
QPSK		848.3	5.32	2.02	19.82	2.15	20.97	125.026	Horizontal	Pass
3.0MHz	15/0	825.5	5.42	2.01	19.70	2.15	20.96	124.738	Horizontal	Pass
Band		836.5	5.22	2.01	19.77	2.15	20.83	121.060	Horizontal	Pass
QPSK		847.5	5.56	2.02	19.81	2.15	21.20	131.826	Horizontal	Pass
5.0MHz	25/0	826.5	5.81	2.01	19.71	2.15	21.36	136.773	Horizontal	Pass
Band		836.5	5.65	2.01	19.77	2.15	21.26	133.660	Horizontal	Pass
QPSK		846.5	5.11	2.02	19.79	2.15	20.73	118.304	Horizontal	Pass
10.0MHz	50/0	829	5.09	2.01	19.73	2.15	20.66	116.413	Horizontal	Pass
Band		836.5	5.28	2.01	19.77	2.15	20.89	122.744	Horizontal	Pass
QPSK		844	5.83	2.02	19.78	2.15	21.44	139.316	Horizontal	Pass
15.0MHz	75/0	831.5	4.88	2.01	19.73	2.15	20.45	110.917	Horizontal	Pass
Band		836.5	5.74	2.01	19.77	2.15	21.35	136.458	Horizontal	Pass
QPSK		841.5	5.42	2.02	19.78	2.15	21.03	126.765	Horizontal	Pass
1.4MHz	6/0	824.7	5.09	2.01	19.68	2.15	20.61	115.080	Vertical	Pass
Band		836.5	5.11	2.01	19.77	2.15	20.72	118.032	Vertical	Pass
QPSK		848.3	5.26	2.02	19.82	2.15	20.91	123.310	Vertical	Pass
3.0MHz	15/0	825.5	5.24	2.01	19.70	2.15	20.78	119.674	Vertical	Pass
Band		836.5	4.86	2.01	19.77	2.15	20.47	111.429	Vertical	Pass
QPSK		847.5	5.02	2.02	19.81	2.15	20.66	116.413	Vertical	Pass
5.0MHz	25/0	826.5	5.28	2.01	19.71	2.15	20.83	121.060	Vertical	Pass
Band		836.5	5.07	2.01	19.77	2.15	20.68	116.950	Vertical	Pass
QPSK		846.5	5.16	2.02	19.79	2.15	20.78	119.674	Vertical	Pass
10.0MHz	50/0	829	4.95	2.01	19.73	2.15	20.52	112.720	Vertical	Pass
Band		836.5	5.28	2.01	19.77	2.15	20.89	122.744	Vertical	Pass
QPSK		844	5.09	2.02	19.78	2.15	20.70	117.490	Vertical	Pass
15.0MHz	75/0	831.5	4.91	2.01	19.73	2.15	20.48	111.686	Vertical	Pass
Band		836.5	5.71	2.01	19.77	2.15	21.32	135.519	Vertical	Pass
QPSK		841.5	5.28	2.02	19.78	2.15	20.89	122.744	Vertical	Pass

Radiated Power (ERP) for Band 26(824-849)										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG	Cable	Antenna		Max.	Max.	Polarization	
			Level	Loss	Factor	Correction	EIRP	EIRP	Of Max.	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	ERP	
							(dBm)	(mW)		
1.4MHz	6/0	824.7	6.07	2.01	19.68	2.15	21.59	144.212	Horizontal	Pass
Band 16		836.5	5.21	2.01	19.77	2.15	20.82	120.781	Horizontal	Pass
QAM		848.3	5.29	2.02	19.82	2.15	20.94	124.165	Horizontal	Pass
3.0MHz	15/0	825.5	5.34	2.01	19.70	2.15	20.88	122.462	Horizontal	Pass
Band 16		836.5	5.58	2.01	19.77	2.15	21.19	131.522	Horizontal	Pass
QAM		847.5	5.29	2.02	19.81	2.15	20.93	123.880	Horizontal	Pass
5.0MHz	25/0	826.5	5.60	2.01	19.71	2.15	21.15	130.317	Horizontal	Pass
Band 16		836.5	5.39	2.01	19.77	2.15	21.00	125.893	Horizontal	Pass
QAM		846.5	5.22	2.02	19.79	2.15	20.84	121.339	Horizontal	Pass
10.0MHz	50/0	829	5.61	2.01	19.73	2.15	21.18	131.220	Horizontal	Pass
Band 16		836.5	6.02	2.01	19.77	2.15	21.63	145.546	Horizontal	Pass
QAM		844	5.25	2.02	19.78	2.15	20.86	121.899	Horizontal	Pass
15.0MHz	75/0	831.5	6.09	2.01	19.73	2.15	21.66	146.555	Horizontal	Pass
Band		836.5	5.21	2.01	19.77	2.15	20.82	120.781	Horizontal	Pass
QPSK		841.5	5.06	2.02	19.78	2.15	20.67	116.681	Horizontal	Pass
1.4MHz	6/0	824.7	5.45	2.01	19.68	2.15	20.97	125.026	Vertical	Pass
Band 16		836.5	5.86	2.01	19.77	2.15	21.47	140.281	Vertical	Pass
QAM		848.3	5.72	2.02	19.82	2.15	21.37	137.088	Vertical	Pass
3.0MHz	15/0	825.5	5.48	2.01	19.70	2.15	21.02	126.474	Vertical	Pass
Band 16		836.5	5.29	2.01	19.77	2.15	20.90	123.027	Vertical	Pass
QAM		847.5	5.81	2.02	19.81	2.15	21.45	139.637	Vertical	Pass
5.0MHz	25/0	826.5	5.08	2.01	19.71	2.15	20.63	115.611	Vertical	Pass
Band 16		836.5	5.54	2.01	19.77	2.15	21.15	130.317	Vertical	Pass
QAM		846.5	5.21	2.02	19.79	2.15	20.83	121.060	Vertical	Pass

10.0MHz	50/0	829	5.63	2.01	19.73	2.15	21.20	131.826	Vertical	Pass
Band 16		836.5	5.74	2.01	19.77	2.15	21.35	136.458	Vertical	Pass
QAM		844	5.21	2.02	19.78	2.15	20.82	120.781	Vertical	Pass
15.0MHz	75/0	831.5	5.18	2.01	19.73	2.15	20.75	118.850	Vertical	Pass
Band		836.5	5.09	2.01	19.77	2.15	20.70	117.490	Vertical	Pass
QPSK		841.5	5.36	2.02	19.78	2.15	20.97	125.026	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 41

Radiated Power (EIRP) for Band 41									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
						Average	Average		
						(dBm)	(mW)		
5.0MHz Band QPSK	1/#Mid	2498.5	-1.31	4.54	27.75	21.90	154.882	Horizontal	Pass
		2593	-0.76	4.69	27.72	22.27	168.655	Horizontal	Pass
		2687.5	-0.91	4.71	27.71	22.09	161.808	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2501	-1.51	4.55	27.76	21.70	147.911	Horizontal	Pass
		2593	-1.48	4.69	27.72	21.55	142.889	Horizontal	Pass
		2685	-1.22	4.72	27.70	21.76	149.968	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2503.5	-1.55	4.55	27.77	21.67	146.893	Horizontal	Pass
		2593	-1.22	4.69	27.72	21.81	151.705	Horizontal	Pass
		2682.5	-1.05	4.72	27.69	21.92	155.597	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2506	-1.31	4.57	27.78	21.90	154.882	Horizontal	Pass
		2593	-1.76	4.73	27.72	21.23	132.739	Horizontal	Pass
		2680	-1.71	4.75	27.68	21.22	132.434	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2498.5	-1.61	4.54	27.75	21.60	144.544	Vertical	Pass
		2593	-1.65	4.69	27.72	21.38	137.404	Vertical	Pass
		2687.5	-1.58	4.71	27.71	21.42	138.676	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2501	-1.21	4.55	27.76	22.00	158.489	Vertical	Pass
		2593	-1.87	4.69	27.72	21.16	130.617	Vertical	Pass
		2685	-1.41	4.72	27.70	21.57	143.549	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2503.5	-1.96	4.55	27.77	21.26	133.660	Vertical	Pass
		2593	-1.31	4.69	27.72	21.72	148.594	Vertical	Pass
		2682.5	-1.81	4.72	27.69	21.16	130.617	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2506	-2.32	4.57	27.78	20.89	122.744	Vertical	Pass
		2593	-1.94	4.73	27.72	21.05	127.350	Vertical	Pass
		2680	-1.38	4.75	27.68	21.55	142.889	Vertical	Pass

Radiated Power (EIRP) for Band 41									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss	Antenna Factor	Max. EIRP	Max. EIRP	Polarization	
			(dBm)			Average	Average	Of Max. ERP	
				(dBm)	(dB)	(dBm)	(mW)		
5.0MHz Band 16 QAM	1/#Mid	2498.5	-1.09	4.54	27.75	22.12	162.930	Horizontal	Pass
		2593	-1.41	4.69	27.72	21.62	145.211	Horizontal	Pass
		2687.5	-1.12	4.71	27.71	21.88	154.170	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2501	-1.09	4.55	27.76	22.12	162.930	Horizontal	Pass
		2593	-1.26	4.69	27.72	21.77	150.314	Horizontal	Pass
		2685	-1.21	4.72	27.70	21.77	150.314	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2503.5	-1.29	4.55	27.77	21.93	155.955	Horizontal	Pass
		2593	-0.89	4.69	27.72	22.14	163.682	Horizontal	Pass
		2682.5	-1.25	4.72	27.69	21.72	148.594	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2506	-1.76	4.57	27.78	21.45	139.637	Horizontal	Pass
		2593	-1.61	4.73	27.72	21.38	137.404	Horizontal	Pass
		2680	-1.16	4.75	27.68	21.77	150.314	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2498.5	-1.28	4.54	27.75	21.93	155.955	Vertical	Pass
		2593	-1.12	4.69	27.72	21.91	155.239	Vertical	Pass
		2687.5	-1.66	4.71	27.71	21.34	136.144	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2501	-1.74	4.55	27.76	21.47	140.281	Vertical	Pass
		2593	-1.91	4.69	27.72	21.12	129.420	Vertical	Pass
		2685	-1.61	4.72	27.70	21.37	137.088	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2503.5	-1.58	4.55	27.77	21.64	145.881	Vertical	Pass
		2593	-1.74	4.69	27.72	21.29	134.586	Vertical	Pass
		2682.5	-1.62	4.72	27.69	21.35	136.458	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2506	-1.75	4.57	27.78	21.46	139.959	Vertical	Pass
		2593	-1.62	4.73	27.72	21.37	137.088	Vertical	Pass
		2680	-2.48	4.75	27.68	20.45	110.917	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 2/4/5/7/12/17/26/41

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	-48.89	4.04	33.51	-19.42	-13	-6.42	Horizontal
3701.4	-51.94	4.04	33.51	-22.47	-13	-9.47	Vertical
5552.1	-45.62	5.24	35.84	-15.02	-13	-2.02	Vertical
5552.1	-50.48	5.24	35.84	-19.88	-13	-6.88	Horizontal
185.1	-40.60	1.43	16.02	-26.01	-13	-13.01	Vertical
453.7	-34.18	1.30	17.99	-17.49	-13	-4.49	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-47.30	4.04	33.56	-17.78	-13	-4.78	Horizontal
3760.0	-52.11	4.04	33.56	-22.59	-13	-9.59	Vertical
5640.0	-48.52	5.24	35.91	-17.85	-13	-4.85	Vertical
5640.0	-51.16	5.24	35.91	-20.49	-13	-7.49	Horizontal
183.5	-35.26	1.62	16.97	-19.91	-13	-6.91	Vertical
289.4	-35.16	1.74	15.98	-20.93	-13	-7.93	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-46.40	4.04	34.00	-16.44	-13	-3.44	Horizontal
3818.6	-45.55	4.04	34.00	-15.59	-13	-2.59	Vertical
5727.9	-50.74	5.24	36.04	-19.94	-13	-6.94	Vertical
5727.9	-47.78	5.24	36.04	-16.98	-13	-3.98	Horizontal
193.8	-41.00	1.42	17.29	-25.13	-13	-12.13	Vertical
342.6	-34.88	1.50	17.90	-18.47	-13	-5.47	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	-43.53	4.07	33.54	-14.06	-13	-1.06	Horizontal
3720.0	-50.41	4.07	33.54	-20.94	-13	-7.94	Vertical
5580.0	-46.22	5.28	35.86	-15.64	-13	-2.64	Vertical
5580.0	-50.65	5.28	35.86	-20.07	-13	-7.07	Horizontal
208.5	-39.04	1.58	16.89	-23.72	-13	-10.72	Vertical
357.0	-41.43	1.76	17.26	-25.93	-13	-12.93	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-46.56	4.04	33.56	-17.04	-13	-4.04	Horizontal
3760.0	-47.74	4.04	33.56	-18.22	-13	-5.22	Vertical
5640.0	-50.51	5.24	35.91	-19.84	-13	-6.84	Vertical
5640.0	-51.16	5.24	35.91	-20.49	-13	-7.49	Horizontal
200.6	-44.13	1.46	16.27	-29.32	-13	-16.32	Vertical
344.7	-40.40	1.59	15.15	-26.84	-13	-13.84	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-49.48	4.04	34.00	-19.52	-13	-6.52	Horizontal
3800.0	-46.95	4.04	34.00	-16.99	-13	-3.99	Vertical
5700.0	-46.15	5.24	36.04	-15.35	-13	-2.35	Vertical
5700.0	-51.68	5.24	36.04	-20.88	-13	-7.88	Horizontal
212.0	-35.26	1.36	17.39	-19.22	-13	-6.22	Vertical
312.7	-42.43	1.66	15.39	-28.70	-13	-15.70	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.

9.2 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	-49.17	4.02	29.80	-23.39	-13	-10.39	Horizontal
3421.4	-48.26	4.02	29.80	-22.48	-13	-9.48	Vertical
5132.1	-50.95	5.24	35.84	-20.35	-13	-7.35	Vertical
5132.1	-50.90	5.24	35.84	-20.30	-13	-7.30	Horizontal
197.8	-41.14	1.68	16.04	-26.78	-13	-13.78	Vertical
454.4	-35.08	1.78	17.74	-19.12	-13	-6.12	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-49.21	4.03	30.00	-23.24	-13	-10.24	Horizontal
3465.0	-43.21	4.03	30.00	-17.24	-13	-4.24	Vertical
5197.5	-45.29	5.25	35.86	-14.68	-13	-1.68	Vertical
5197.5	-48.86	5.25	35.86	-18.25	-13	-5.25	Horizontal
207.5	-42.19	1.72	17.69	-26.22	-13	-13.22	Vertical
345.7	-42.98	1.62	16.02	-28.57	-13	-15.57	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-48.97	4.05	30.01	-23.01	-13	-10.01	Horizontal
3508.6	-46.46	4.05	30.01	-20.50	-13	-7.50	Vertical
5262.9	-49.31	5.26	35.86	-18.71	-13	-5.71	Vertical
5262.9	-49.71	5.26	35.86	-19.11	-13	-6.11	Horizontal
182.9	-31.77	1.80	16.69	-16.88	-13	-3.88	Vertical
332.1	-39.67	1.75	16.66	-24.77	-13	-11.77	Horizontal

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

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-49.34	4.02	29.80	-23.56	-13	-10.56	Horizontal
3440.0	-47.60	4.02	29.80	-21.82	-13	-8.82	Vertical
5160.0	-51.51	5.24	35.84	-20.91	-13	-7.91	Vertical
5160.0	-50.18	5.24	35.84	-19.58	-13	-6.58	Horizontal
182.5	-39.14	1.57	17.26	-23.45	-13	-10.45	Vertical
310.2	-35.84	1.78	16.35	-21.27	-13	-8.27	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-49.71	4.03	30.00	-23.74	-13	-10.74	Horizontal
3465.0	-50.79	4.03	30.00	-24.82	-13	-11.82	Vertical
5197.5	-48.38	5.25	35.86	-17.77	-13	-4.77	Vertical
5197.5	-48.47	5.25	35.86	-17.86	-13	-4.86	Horizontal
208.7	-40.60	1.44	17.95	-24.09	-13	-11.09	Vertical
269.5	-32.73	1.65	16.09	-18.29	-13	-5.29	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-45.06	2.91	27.68	-20.29	-13	-7.29	Horizontal
3490.0	-45.04	2.91	27.68	-20.27	-13	-7.27	Vertical
5235.0	-45.69	5.26	35.86	-15.09	-13	-2.09	Vertical
5235.0	-52.46	5.26	35.86	-21.86	-13	-8.86	Horizontal
184.8	-40.33	1.61	16.85	-25.09	-13	-12.09	Vertical
290.8	-40.19	1.61	15.19	-26.61	-13	-13.61	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	-47.51	2.78	27.50	-22.79	-13	-9.79	Horizontal
1649.4	-50.49	2.78	27.50	-25.77	-13	-12.77	Vertical
2474.1	-46.31	2.90	27.80	-21.41	-13	-8.41	Vertical
2474.1	-51.03	2.90	27.80	-26.13	-13	-13.13	Horizontal
179.0	-37.06	1.76	17.59	-21.23	-13	-8.23	Vertical
460.3	-40.03	1.63	15.87	-25.79	-13	-12.79	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-46.20	2.80	27.48	-21.52	-13	-8.52	Horizontal
1673.0	-46.43	2.80	27.48	-21.75	-13	-8.75	Vertical
2509.5	-43.67	2.91	27.70	-18.88	-13	-5.88	Vertical
2509.5	-50.63	2.91	27.70	-25.84	-13	-12.84	Horizontal
212.9	-40.77	1.61	15.68	-26.70	-13	-13.70	Vertical
431.5	-36.08	1.59	17.52	-20.16	-13	-7.16	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-49.94	2.82	27.43	-25.33	-13	-12.33	Horizontal
1696.6	-50.34	2.82	27.43	-25.73	-13	-12.73	Vertical
2544.9	-43.74	2.92	27.74	-18.92	-13	-5.92	Vertical
2544.9	-51.31	2.92	27.74	-26.49	-13	-13.49	Horizontal
192.7	-35.07	1.69	16.67	-20.08	-13	-7.08	Vertical
366.5	-34.36	1.70	17.18	-18.88	-13	-5.88	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	-51.54	2.78	27.50	-26.82	-13	-13.82	Horizontal
1658.0	-42.69	2.78	27.50	-17.97	-13	-4.97	Vertical
2487.0	-51.93	2.90	27.80	-27.03	-13	-14.03	Vertical
2487.0	-47.79	2.90	27.80	-22.89	-13	-9.89	Horizontal
199.8	-41.63	1.71	15.57	-27.77	-13	-14.77	Vertical
363.9	-33.54	1.34	16.40	-18.48	-13	-5.48	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-42.52	2.80	27.48	-17.84	-13	-4.84	Horizontal
1673.0	-43.33	2.80	27.48	-18.65	-13	-5.65	Vertical
2509.5	-50.23	2.91	27.70	-25.44	-13	-12.44	Vertical
2509.5	-47.62	2.91	27.70	-22.83	-13	-9.83	Horizontal
212.0	-33.24	1.44	17.04	-17.64	-13	-4.64	Vertical
343.3	-42.06	1.76	17.62	-26.20	-13	-13.20	Horizontal
Test Results for High Channel 844MHz							
1688.0	-46.63	2.82	27.43	-22.02	-13	-9.02	Horizontal
1688.0	-48.01	2.82	27.43	-23.40	-13	-10.40	Vertical
2532.0	-51.27	2.92	27.74	-26.45	-13	-13.45	Vertical
2532.0	-47.36	2.92	27.74	-22.54	-13	-9.54	Horizontal
205.3	-34.50	1.74	17.70	-18.54	-13	-5.54	Vertical
393.0	-34.91	1.41	17.46	-18.85	-13	-5.85	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	-63.50	5.23	35.81	-32.92	-25	-7.92	Horizontal
5005.0	-62.32	5.23	35.81	-31.74	-25	-6.74	Vertical
7507.5	-62.53	5.67	36.85	-31.35	-25	-6.35	Vertical
7507.5	-62.09	5.67	36.85	-30.91	-25	-5.91	Horizontal
202.7	-50.78	1.73	17.97	-34.54	-25	-9.54	Vertical
450.7	-49.55	1.38	15.11	-35.82	-25	-10.82	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-58.96	5.23	35.82	-28.37	-25	-3.37	Horizontal
5070.0	-63.48	5.23	35.82	-32.89	-25	-7.89	Vertical
7605.0	-62.51	5.67	36.85	-31.33	-25	-6.33	Vertical
7605.0	-63.18	5.67	36.85	-32.00	-25	-7.00	Horizontal
210.9	-43.33	1.77	16.17	-28.92	-25	-3.92	Vertical
232.7	-49.26	1.63	15.21	-35.68	-25	-10.68	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-58.67	5.24	35.83	-28.08	-25	-3.08	Horizontal
5135.0	-57.41	5.24	35.83	-26.82	-25	-1.82	Vertical
7702.5	-61.55	5.68	36.87	-30.36	-25	-5.36	Vertical
7702.5	-59.29	5.68	36.87	-28.10	-25	-3.10	Horizontal
186.4	-43.45	1.58	17.56	-27.47	-25	-2.47	Vertical
263.7	-48.43	1.45	16.58	-33.30	-25	-8.30	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	-59.73	5.23	35.82	-29.14	-25	-4.14	Horizontal
5020.0	-62.27	5.23	35.82	-31.68	-25	-6.68	Vertical
7530.0	-61.27	5.67	36.86	-30.08	-25	-5.08	Vertical
7530.0	-59.43	5.67	36.86	-28.24	-25	-3.24	Horizontal
192.6	-49.05	1.63	15.76	-34.92	-25	-9.92	Vertical
379.3	-50.66	1.71	15.44	-36.93	-25	-11.93	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-61.49	5.23	35.82	-30.90	-25	-5.90	Horizontal
5070.0	-58.20	5.23	35.82	-27.61	-25	-2.61	Vertical
7605.0	-60.52	5.67	36.85	-29.34	-25	-4.34	Vertical
7605.0	-59.11	5.67	36.85	-27.93	-25	-2.93	Horizontal
198.7	-45.91	1.79	16.84	-30.85	-25	-5.85	Vertical
346.1	-44.46	1.71	17.64	-28.53	-25	-3.53	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-59.41	5.24	35.83	-28.82	-25	-3.82	Horizontal
5120.0	-60.80	5.24	35.83	-30.21	-25	-5.21	Vertical
7680.0	-59.76	5.70	36.88	-28.58	-25	-3.58	Vertical
7680.0	-60.99	5.70	36.88	-29.81	-25	-4.81	Horizontal
193.4	-45.11	1.79	16.84	-30.05	-25	-5.05	Vertical
349.4	-43.34	1.71	17.64	-27.41	-25	-2.41	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	-43.49	2.60	27.20	-18.89	-13	-5.89	Horizontal
1399.4	-43.05	2.60	27.20	-18.45	-13	-5.45	Vertical
2099.1	-49.11	2.85	27.54	-24.42	-13	-11.42	Vertical
2099.1	-48.56	2.85	27.54	-23.87	-13	-10.87	Horizontal
211.7	-36.20	1.49	17.78	-19.91	-13	-6.91	Vertical
386.4	-40.45	1.36	17.33	-24.48	-13	-11.48	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-45.74	2.61	27.28	-21.07	-13	-8.07	Horizontal
1415.0	-44.09	2.61	27.28	-19.42	-13	-6.42	Vertical
2122.5	-51.42	2.87	27.59	-26.70	-13	-13.70	Vertical
2122.5	-49.42	2.87	27.59	-24.70	-13	-11.70	Horizontal
207.5	-38.81	1.73	15.74	-24.80	-13	-11.80	Vertical
384.6	-33.86	1.62	15.79	-19.69	-13	-6.69	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-51.64	2.63	27.28	-26.99	-13	-13.99	Horizontal
1430.6	-47.22	2.63	27.28	-22.57	-13	-9.57	Vertical
2145.9	-43.86	2.88	27.60	-19.14	-13	-6.14	Vertical
2145.9	-48.32	2.88	27.60	-23.60	-13	-10.60	Horizontal
186.4	-33.58	1.61	18.00	-17.19	-13	-4.19	Vertical
280.4	-34.70	1.45	15.49	-20.67	-13	-7.67	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	-51.92	2.61	27.26	-27.27	-13	-14.27	Horizontal
1408.0	-46.56	2.61	27.26	-21.91	-13	-8.91	Vertical
2112.0	-47.87	2.87	27.58	-23.16	-13	-10.16	Vertical
2112.0	-50.57	2.87	27.58	-25.86	-13	-12.86	Horizontal
197.3	-40.49	1.31	16.97	-24.83	-13	-11.83	Vertical
468.6	-42.78	1.65	16.70	-27.73	-13	-14.73	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-45.76	2.61	27.28	-21.09	-13	-8.09	Horizontal
1415.0	-51.75	2.61	27.28	-27.08	-13	-14.08	Vertical
2122.5	-51.44	2.87	27.59	-26.72	-13	-13.72	Vertical
2122.5	-50.28	2.87	27.59	-25.56	-13	-12.56	Horizontal
175.4	-36.29	1.72	17.99	-20.02	-13	-7.02	Vertical
362.7	-39.30	1.73	17.94	-23.09	-13	-10.09	Horizontal
Test Results for High Channel 711MHz							
1422.0	-48.40	2.62	27.28	-23.74	-13	-10.74	Horizontal
1422.0	-44.03	2.62	27.28	-19.37	-13	-6.37	Vertical
2133.0	-51.68	2.87	27.60	-26.95	-13	-13.95	Vertical
2133.0	-48.99	2.87	27.60	-24.26	-13	-11.26	Horizontal
209.0	-36.90	1.58	15.93	-22.55	-13	-9.55	Vertical
360.9	-32.42	1.36	15.59	-18.19	-13	-5.19	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	-49.32	2.61	27.28	-24.65	-13	-11.65	Horizontal
1413.0	-44.85	2.61	27.28	-20.18	-13	-7.18	Vertical
2119.5	-50.15	2.87	27.59	-25.43	-13	-12.43	Vertical
2119.5	-49.48	2.87	27.59	-24.76	-13	-11.76	Horizontal
209.6	-34.08	1.71	16.15	-19.64	-13	-6.64	Vertical
420.5	-43.30	1.41	17.32	-27.39	-13	-14.39	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-44.37	2.62	27.30	-19.69	-13	-6.69	Horizontal
1420.0	-47.69	2.62	27.30	-23.01	-13	-10.01	Vertical
2130.0	-43.27	2.87	27.62	-18.52	-13	-5.52	Vertical
2130.0	-49.79	2.87	27.62	-25.04	-13	-12.04	Horizontal
201.1	-36.89	1.42	15.25	-23.07	-13	-10.07	Vertical
320.8	-40.47	1.36	17.19	-24.64	-13	-11.64	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-51.23	2.66	27.28	-26.61	-13	-13.61	Horizontal
1427.0	-45.37	2.66	27.28	-20.75	-13	-7.75	Vertical
2140.5	-45.56	2.88	27.60	-20.84	-13	-7.84	Vertical
2140.5	-50.71	2.88	27.60	-25.99	-13	-12.99	Horizontal
175.6	-40.46	1.32	17.29	-24.49	-13	-11.49	Vertical
445.7	-37.62	1.72	16.89	-22.45	-13	-9.45	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	-48.96	2.62	27.30	-24.28	-13	-11.28	Horizontal
1418.0	-52.30	2.62	27.30	-27.62	-13	-14.62	Vertical
2127.0	-47.24	2.87	27.62	-22.49	-13	-9.49	Vertical
2127.0	-47.88	2.87	27.62	-23.13	-13	-10.13	Horizontal
196.4	-35.01	1.35	16.91	-19.45	-13	-6.45	Vertical
269.0	-41.30	1.62	16.31	-26.61	-13	-13.61	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-43.23	2.62	27.30	-18.55	-13	-5.55	Horizontal
1420.0	-42.46	2.62	27.30	-17.78	-13	-4.78	Vertical
2130.0	-47.22	2.87	27.62	-22.47	-13	-9.47	Vertical
2130.0	-49.94	2.87	27.62	-25.19	-13	-12.19	Horizontal
202.1	-43.62	1.51	17.14	-27.99	-13	-14.99	Vertical
398.2	-38.86	1.77	16.88	-23.75	-13	-10.75	Horizontal
Test Results for High Channel 711MHz							
1422.0	-46.91	2.62	27.30	-22.23	-13	-9.23	Horizontal
1422.0	-51.18	2.62	27.30	-26.50	-13	-13.50	Vertical
2133.0	-42.97	2.87	27.62	-18.22	-13	-5.22	Vertical
2133.0	-51.95	2.87	27.62	-27.20	-13	-14.20	Horizontal
201.8	-37.17	1.78	15.95	-23.00	-13	-10.00	Vertical
411.8	-37.61	1.34	17.95	-21.01	-13	-8.01	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 26

QPSK EIRP POWER FOR LTE BAND 26(814MHz~824MHz) (1.4MHZ BANDWIDTH)

Test Results for Low Channel 814.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1629.4	-46.65	2.78	27.50	-21.93	-13	-8.93	Horizontal
1629.4	-46.73	2.78	27.50	-22.01	-13	-9.01	Vertical
2444.1	-46.25	2.90	27.80	-21.35	-13	-8.35	Vertical
2444.1	-48.13	2.90	27.80	-23.23	-13	-10.23	Horizontal
229.6	-34.03	1.54	16.98	-18.59	-13	-5.59	Vertical
83.3	-32.87	1.47	15.82	-18.52	-13	-5.52	Horizontal
Test Results For Mid Channel 819MHz							
1638.0	-47.21	2.80	27.48	-22.53	-13	-9.53	Horizontal
1638.0	-42.21	2.80	27.48	-17.53	-13	-4.53	Vertical
2457.0	-46.87	2.91	27.70	-22.08	-13	-9.08	Vertical
2457.0	-49.51	2.91	27.70	-24.72	-13	-11.72	Horizontal
168.2	-32.58	1.74	16.19	-18.13	-13	-5.13	Vertical
92.9	-34.45	1.46	15.43	-20.48	-13	-7.48	Horizontal
Test Results for High Channel 823.3MHz							
1646.6	-49.22	2.82	27.43	-24.61	-13	-11.61	Horizontal
1646.6	-44.86	2.82	27.43	-20.25	-13	-7.25	Vertical
2469.9	-46.68	2.92	27.74	-21.86	-13	-8.86	Vertical
2469.9	-45.84	2.92	27.74	-21.02	-13	-8.02	Horizontal
213.1	-34.46	1.67	17.05	-19.08	-13	-6.08	Vertical
121.7	-32.22	1.42	16.12	-17.52	-13	-4.52	Horizontal

QPSK EIRP POWER FOR LTE BAND 26(814MHz~824MHz) (10MHZ BANDWIDTH)

Test Results for Channel 819MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1638.0	-48.36	2.78	27.50	-23.64	-13	-10.64	Horizontal
1638.0	-45.33	2.78	27.50	-20.61	-13	-7.61	Vertical
2457.0	-46.10	2.90	27.80	-21.20	-13	-8.20	Vertical
2457.0	-49.46	2.90	27.80	-24.56	-13	-11.56	Horizontal
253.7	-32.51	1.43	17.34	-16.60	-13	-3.60	Vertical
256.8	-32.98	1.56	15.71	-18.83	-13	-5.83	Horizontal

QPSK EIRP POWER FOR LTE BAND 26(824MHz~849MHz) (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	-45.76	2.78	27.50	-21.04	-13	-8.04	Horizontal
1649.4	-45.70	2.78	27.50	-20.98	-13	-7.98	Vertical
2474.1	-47.61	2.90	27.80	-22.71	-13	-9.71	Vertical
2474.1	-49.27	2.90	27.80	-24.37	-13	-11.37	Horizontal
237.0	-32.76	1.33	17.34	-16.75	-13	-3.75	Vertical
180.5	-32.82	1.47	16.80	-17.49	-13	-4.49	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-46.03	2.80	27.48	-21.35	-13	-8.35	Horizontal
1673.0	-44.01	2.80	27.48	-19.33	-13	-6.33	Vertical
2509.5	-48.93	2.91	27.70	-24.14	-13	-11.14	Vertical
2509.5	-46.01	2.91	27.70	-21.22	-13	-8.22	Horizontal
140.8	-31.41	1.75	15.46	-17.70	-13	-4.70	Vertical
90.6	-31.84	1.52	16.14	-17.22	-13	-4.22	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-45.60	2.82	27.43	-20.99	-13	-7.99	Horizontal
1696.6	-48.40	2.82	27.43	-23.79	-13	-10.79	Vertical
2544.9	-47.28	2.92	27.74	-22.46	-13	-9.46	Vertical
2544.9	-48.97	2.92	27.74	-24.15	-13	-11.15	Horizontal
171.4	-33.03	1.67	16.09	-18.61	-13	-5.61	Vertical
247.2	-33.40	1.80	17.55	-17.65	-13	-4.65	Horizontal

QPSK EIRP POWER FOR LTE BAND 26(824MHz~849MHz) (15MHZ BANDWIDTH)

Test Results for Low Channel 831.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1663.0	-49.18	2.78	27.50	-24.46	-13	-11.46	Horizontal
1663.0	-41.93	2.78	27.50	-17.21	-13	-4.21	Vertical
2494.5	-48.04	2.90	27.80	-23.14	-13	-10.14	Vertical
2494.5	-46.56	2.90	27.80	-21.66	-13	-8.66	Horizontal
255.4	-34.53	1.52	15.72	-20.33	-13	-7.33	Vertical
163.1	-31.87	1.40	17.03	-16.24	-13	-3.24	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-49.09	2.80	27.48	-24.41	-13	-11.41	Horizontal
1673.0	-43.28	2.80	27.48	-18.60	-13	-5.60	Vertical
2509.5	-49.20	2.91	27.70	-24.41	-13	-11.41	Vertical
2509.5	-47.52	2.91	27.70	-22.73	-13	-9.73	Horizontal
227.1	-32.46	1.74	16.38	-17.82	-13	-4.82	Vertical
101.3	-32.91	1.79	15.20	-19.50	-13	-6.50	Horizontal
Test Results for High Channel 841.5MHz							
1683.0	-45.78	2.82	27.43	-21.17	-13	-8.17	Horizontal
1683.0	-43.97	2.82	27.43	-19.36	-13	-6.36	Vertical
2524.5	-47.59	2.92	27.74	-22.77	-13	-9.77	Vertical
2524.5	-49.19	2.92	27.74	-24.37	-13	-11.37	Horizontal
261.1	-32.24	1.78	17.44	-16.58	-13	-3.58	Vertical
120.1	-32.20	1.70	15.93	-17.97	-13	-4.97	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 41

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

Test Results for Low Channel 2498.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5145.0	-59.64	5.23	35.81	-29.06	-25	-4.06	Horizontal
5145.0	-60.26	5.23	35.81	-29.68	-25	-4.68	Vertical
7717.5	-58.10	5.67	36.85	-26.92	-25	-1.92	Vertical
7717.5	-62.81	5.67	36.85	-31.63	-25	-6.63	Horizontal
435.3	-43.18	1.38	15.98	-28.58	-25	-3.58	Vertical
465.8	-42.51	1.62	15.66	-28.47	-25	-3.47	Horizontal
Test Results for Mid Channel 2593MHz							
5190.0	-63.52	5.23	35.82	-32.93	-25	-7.93	Horizontal
5190.0	-58.49	5.23	35.82	-27.90	-25	-2.90	Vertical
7785.0	-61.10	5.67	36.85	-29.92	-25	-4.92	Vertical
7785.0	-61.57	5.67	36.85	-30.39	-25	-5.39	Horizontal
510.4	-46.79	1.62	16.17	-32.24	-25	-7.24	Vertical
562.9	-42.97	1.74	17.63	-27.08	-25	-2.08	Horizontal
Test Results for High Channel 2687.5MHz							
5235.0	-57.95	5.24	35.83	-27.36	-25	-2.36	Horizontal
5235.0	-59.92	5.24	35.83	-29.33	-25	-4.33	Vertical
7852.5	-61.24	5.68	36.87	-30.05	-25	-5.05	Vertical
7852.5	-59.16	5.68	36.87	-27.97	-25	-2.97	Horizontal
197.6	-42.45	1.55	15.84	-28.16	-25	-3.16	Vertical
353.1	-46.04	1.51	17.06	-30.49	-25	-5.49	Horizontal

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

Test Results for Low Channel 2506MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5160.0	-62.16	5.23	35.82	-31.57	-25	-6.57	Horizontal
5160.0	-58.97	5.23	35.82	-28.38	-25	-3.38	Vertical
7740.0	-61.71	5.67	36.86	-30.52	-25	-5.52	Vertical
7740.0	-61.40	5.67	36.86	-30.21	-25	-5.21	Horizontal
128.9	-44.43	1.43	15.51	-30.35	-25	-5.35	Vertical
344.8	-42.90	1.40	16.97	-27.33	-25	-2.33	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-60.62	5.23	35.82	-30.03	-25	-5.03	Horizontal
5190.0	-59.21	5.23	35.82	-28.62	-25	-3.62	Vertical
7785.0	-58.80	5.67	36.85	-27.62	-25	-2.62	Vertical
7785.0	-61.15	5.67	36.85	-29.97	-25	-4.97	Horizontal
100.8	-48.41	1.77	16.72	-33.46	-25	-8.46	Vertical
263.5	-47.72	1.31	16.99	-32.04	-25	-7.04	Horizontal
Test Results for High Channel 2680MHz							
5220.0	-63.23	5.24	35.83	-32.64	-25	-7.64	Horizontal
5220.0	-61.90	5.24	35.83	-31.31	-25	-6.31	Vertical
7830.0	-59.45	5.70	36.88	-28.27	-25	-3.27	Vertical
7830.0	-61.39	5.70	36.88	-30.21	-25	-5.21	Horizontal
349.9	-47.16	1.70	15.73	-33.13	-25	-8.13	Vertical
110.3	-43.09	1.75	17.33	-27.51	-25	-2.51	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 2/4/5/7/12/17/26/41

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	7.4	0.003936	2.5
3.87	1880	9.5	0.005053	2.5
4.45	1880	8.8	0.004681	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	15.1	0.008032	2.5
Extreme (50C)	1880	14.1	0.007500	2.5
Extreme (40C)	1880	6.5	0.003457	2.5
Extreme (30C)	1880	12.7	0.006755	2.5
Extreme (10C)	1880	7.4	0.003936	2.5
Extreme (0C)	1880	8.5	0.004521	2.5
Extreme (-10C)	1880	15.1	0.008032	2.5
Extreme (-20C)	1880	9.5	0.005053	2.5
Extreme (-30C)	1880	11.7	0.006223	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	11	0.005851	2.5
3.87	1880	9.2	0.004894	2.5
4.45	1880	11.6	0.006170	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	15.6	0.008298	2.5
Extreme (50C)	1880	13.2	0.007021	2.5
Extreme (40C)	1880	14.6	0.007766	2.5
Extreme (30C)	1880	9.9	0.005266	2.5
Extreme (10C)	1880	14.1	0.007500	2.5
Extreme (0C)	1880	6.1	0.003245	2.5
Extreme (-10C)	1880	13.6	0.007234	2.5
Extreme (-20C)	1880	9.4	0.005000	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	13.8	0.007965	2.5
3.87	1732.5	12.5	0.007215	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	11.1	0.006407	2.5
Extreme (50C)	1732.5	9.4	0.005426	2.5
Extreme (40C)	1732.5	12.6	0.007273	2.5
Extreme (30C)	1732.5	13.5	0.007792	2.5
Extreme (10C)	1732.5	12.4	0.007157	2.5
Extreme (0C)	1732.5	10.6	0.006118	2.5
Extreme (-10C)	1732.5	11.3	0.006522	2.5
Extreme (-20C)	1732.5	6.2	0.003579	2.5
Extreme (-30C)	1732.5	11.2	0.006465	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	11.1	0.006407	2.5
3.87	1732.5	10.3	0.005945	2.5
4.45	1732.5	13.7	0.007908	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	14.7	0.008485	2.5
Extreme (50C)	1732.5	11.8	0.006811	2.5
Extreme (40C)	1732.5	11.2	0.006465	2.5
Extreme (30C)	1732.5	7.8	0.004502	2.5
Extreme (10C)	1732.5	11.6	0.006696	2.5
Extreme (0C)	1732.5	12.6	0.007273	2.5
Extreme (-10C)	1732.5	11.1	0.006407	2.5
Extreme (-20C)	1732.5	7.1	0.004098	2.5
Extreme (-30C)	1732.5	12.7	0.007330	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	11.1	0.013270	2.5
3.87	836.5	8.8	0.010520	2.5
4.45	836.5	15.5	0.018530	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	11.7	0.013987	2.5
Extreme (50C)	836.5	9.4	0.011237	2.5
Extreme (40C)	836.5	6.1	0.007292	2.5
Extreme (30C)	836.5	13.5	0.016139	2.5
Extreme (10C)	836.5	6.8	0.008129	2.5
Extreme (0C)	836.5	9.4	0.011237	2.5
Extreme (-10C)	836.5	10.6	0.012672	2.5
Extreme (-20C)	836.5	13.1	0.015660	2.5
Extreme (-30C)	836.5	9.9	0.011835	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	11.4	0.013628	2.5
3.87	836.5	10.6	0.012672	2.5
4.45	836.5	8.8	0.010520	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	13.6	0.016258	2.5
Extreme (50C)	836.5	11.2	0.013389	2.5
Extreme (40C)	836.5	11.4	0.013628	2.5
Extreme (30C)	836.5	15.9	0.019008	2.5
Extreme (10C)	836.5	13.1	0.015660	2.5
Extreme (0C)	836.5	10.2	0.012194	2.5
Extreme (-10C)	836.5	13.5	0.016139	2.5
Extreme (-20C)	836.5	11.2	0.013389	2.5
Extreme (-30C)	836.5	11.8	0.014106	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	11.1	0.004379	2.5
4.45	2535	13.2	0.005207	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	10.1	0.003984	2.5
Extreme (50C)	2535	6.9	0.002722	2.5
Extreme (40C)	2535	15.7	0.006193	2.5
Extreme (30C)	2535	12.3	0.004852	2.5
Extreme (10C)	2535	10.7	0.004221	2.5
Extreme (0C)	2535	11.2	0.004418	2.5
Extreme (-10C)	2535	8.5	0.003353	2.5
Extreme (-20C)	2535	11.7	0.004615	2.5
Extreme (-30C)	2535	11.3	0.004458	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	11.6	0.004576	2.5
3.87	2535	15.7	0.006193	2.5
4.45	2535	12.2	0.004813	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	11.8	0.004655	2.5
Extreme (50C)	2535	15.1	0.005957	2.5
Extreme (40C)	2535	12.9	0.005089	2.5
Extreme (30C)	2535	5.4	0.002130	2.5
Extreme (10C)	2535	11.7	0.004615	2.5
Extreme (0C)	2535	14.5	0.005720	2.5
Extreme (-10C)	2535	15.5	0.006114	2.5
Extreme (-20C)	2535	12.5	0.004931	2.5
Extreme (-30C)	2535	12.4	0.004892	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	7.5	0.010601	2.5
3.87	707.5	7.6	0.010742	2.5
4.45	707.5	13.6	0.019223	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	8.5	0.012014	2.5
Extreme (50C)	707.5	6.9	0.009753	2.5
Extreme (40C)	707.5	11.8	0.016678	2.5
Extreme (30C)	707.5	8.5	0.012014	2.5
Extreme (10C)	707.5	5.6	0.007915	2.5
Extreme (0C)	707.5	10.9	0.015406	2.5
Extreme (-10C)	707.5	10.2	0.014417	2.5
Extreme (-20C)	707.5	10.6	0.014982	2.5
Extreme (-30C)	707.5	9.4	0.013286	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	10.8	0.015265	2.5
3.87	707.5	7.4	0.010459	2.5
4.45	707.5	11.5	0.016254	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	14.8	0.020919	2.5
Extreme (50C)	707.5	11.6	0.016396	2.5
Extreme (40C)	707.5	10.7	0.015124	2.5
Extreme (30C)	707.5	13.9	0.019647	2.5
Extreme (10C)	707.5	7.6	0.010742	2.5
Extreme (0C)	707.5	7.9	0.011166	2.5
Extreme (-10C)	707.5	12.2	0.017244	2.5
Extreme (-20C)	707.5	12.1	0.017102	2.5
Extreme (-30C)	707.5	15.4	0.021767	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	6.9	0.009718	2.5
3.87	710	5.7	0.008028	2.5
4.45	710	12.7	0.017887	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710	18.6	0.026197	2.5
Extreme (50C)	710	10.2	0.014366	2.5
Extreme (40C)	710	10.9	0.015352	2.5
Extreme (30C)	710	10.7	0.015070	2.5
Extreme (10C)	710	13.5	0.019014	2.5
Extreme (0C)	710	12.1	0.017042	2.5
Extreme (-10C)	710	15.1	0.021268	2.5
Extreme (-20C)	710	13.7	0.019296	2.5
Extreme (-30C)	710	12.5	0.017606	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	9.6	0.013521	2.5
3.87	710	7.6	0.010704	2.5
4.45	710	10.9	0.015352	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710	9.6	0.013521	2.5
Extreme (50C)	710	15.6	0.021972	2.5
Extreme (40C)	710	12.6	0.017746	2.5
Extreme (30C)	710	12.8	0.018028	2.5
Extreme (10C)	710	12.7	0.017887	2.5
Extreme (0C)	710	10.6	0.014930	2.5
Extreme (-10C)	710	11.1	0.015634	2.5
Extreme (-20C)	710	9.3	0.013099	2.5
Extreme (-30C)	710	8.5	0.011972	2.5

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

10.7 LTE BAND 26

Band 26 A (814MHz~824MHz) QPSK,10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 26A QPSK, (CH 26740 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	819	6.6	0.008059	2.5
3.85	819	5.8	0.007082	2.5
4.4	819	7.2	0.008791	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 26A QPSK, (CH 26740RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	819	9.8	0.011966	2.5
Extreme (50C)	819	1.2	0.001465	2.5
Extreme (40C)	819	2.6	0.003175	2.5
Extreme (30C)	819	7.5	0.009158	2.5
Extreme (10C)	819	5.5	0.006716	2.5
Extreme (0C)	819	6.7	0.008181	2.5
Extreme (-10C)	819	8.4	0.010256	2.5
Extreme (-20C)	819	6.9	0.008425	2.5
Extreme (-30C)	819	4.7	0.005739	2.5

Band 26A (814MHz~824MHz) 16QAM, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 26A 16QAM, (CH 26740 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	819	3.5	0.004274	2.5
3.85	819	6.9	0.008425	2.5
4.4	819	5.1	0.006227	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 26A 16QAM, (CH 26740 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	819	6.2	0.007570	2.5
Extreme (50C)	819	9.4	0.011477	2.5
Extreme (40C)	819	6.4	0.007814	2.5
Extreme (30C)	819	4.5	0.005495	2.5
Extreme (10C)	819	6.1	0.007448	2.5
Extreme (0C)	819	5.3	0.006471	2.5
Extreme (-10C)	819	8.6	0.010501	2.5
Extreme (-20C)	819	6.7	0.008181	2.5
Extreme (-30C)	819	7.5	0.009158	2.5

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

Band 26B ((824MHz~849MHz) QPSK,15MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 26B QPSK, (CH 26915 RB size 75 RB Offset 0 15MHz BANDWIDTH)				
3.4	836.5	8.8	0.010520	2.5
3.85	836.5	6.9	0.008249	2.5
4.4	836.5	9.1	0.010879	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 26B QPSK, (CH 26915 RB size 75 RB Offset 0 15MHz BANDWIDTH)				
Normal (25C)	836.5	10.2	0.012194	2.5
Extreme (50C)	836.5	9.1	0.010879	2.5
Extreme (40C)	836.5	6.2	0.007412	2.5
Extreme (30C)	836.5	8.4	0.010042	2.5
Extreme (10C)	836.5	7.5	0.008966	2.5
Extreme (0C)	836.5	10.3	0.012313	2.5
Extreme (-10C)	836.5	1.9	0.002271	2.5
Extreme (-20C)	836.5	8.6	0.010281	2.5
Extreme (-30C)	836.5	7.2	0.008607	2.5

Band 26B (824MHz~849MHz) 16QAM, (15MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 26B 16QAM, (CH 26915 RB size 75 RB Offset 0 15MHz BANDWIDTH)				
3.4	836.5	9.5	0.011357	2.5
3.85	836.5	11.6	0.013867	2.5
4.4	836.5	10.2	0.012194	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 26B 16QAM, (CH 26915 RB size 75 RB Offset 0 15MHz BANDWIDTH)				
Normal (25C)	836.5	6.1	0.007292	2.5
Extreme (50C)	836.5	8.4	0.010042	2.5
Extreme (40C)	836.5	7.2	0.008607	2.5
Extreme (30C)	836.5	6.5	0.007770	2.5
Extreme (10C)	836.5	6.1	0.007292	2.5
Extreme (0C)	836.5	5.2	0.006216	2.5
Extreme (-10C)	836.5	4.8	0.005738	2.5
Extreme (-20C)	836.5	3.9	0.004662	2.5
Extreme (-30C)	836.5	7.4	0.008846	2.5

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

10.8 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	11.1	0.004281	2.5
3.87	2593	12.6	0.004859	2.5
4.45	2593	13.1	0.005052	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	7.7	0.002970	2.5
Extreme (50C)	2593	5.9	0.002275	2.5
Extreme (40C)	2593	13.3	0.005129	2.5
Extreme (30C)	2593	7.5	0.002892	2.5
Extreme (10C)	2593	6.8	0.002622	2.5
Extreme (0C)	2593	4.9	0.001890	2.5
Extreme (-10C)	2593	9.9	0.003818	2.5
Extreme (-20C)	2593	11.8	0.004551	2.5
Extreme (-30C)	2593	6.1	0.002352	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	13.2	0.005091	2.5
3.87	2593	11.6	0.004474	2.5
4.45	2593	6.1	0.002352	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	11.2	0.004319	2.5
Extreme (40C)	2593	15.2	0.005862	2.5
Extreme (30C)	2593	5.8	0.002237	2.5
Extreme (10C)	2593	6.1	0.002352	2.5
Extreme (0C)	2593	4.5	0.001735	2.5
Extreme (-10C)	2593	12.2	0.004705	2.5
Extreme (-20C)	2593	15.2	0.005862	2.5
Extreme (-30C)	2593	5.9	0.002275	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.

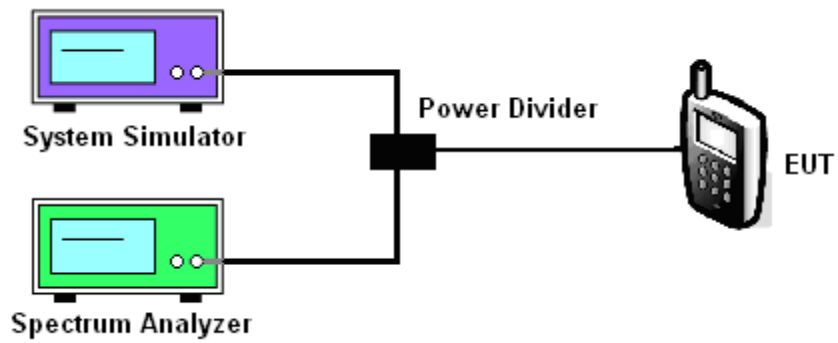
11.2 Measuring Instruments

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 2/4/5/7/12/17/26/41

Test data reference attachment.

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