

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

FCC ID: O556562923

Product: 4G Smart Phone

Trade Mark: LOGIC, iSWAG, UNONU

Model No.: L66M

Family Model: REX, 6601

Report No.: S23082106601005

Issue Date: Sep 14, 2023

Prepared for

SWAGTEK

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Prepared by

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TEST RESULT CERTIFICATION

Applicant's name..... : SWAGTEK

Address : 10205 NW 19th Street STE101 Miami, FL 33172,United States

Manufacturer's Name : SWAGTEK

Address : 10205 NW 19th Street STE101 Miami, FL 33172,United States

Product name : 4G Smart Phone

Trade Mark : LOGIC, iSWAG, UNONU

Model and/or type reference : L66M

Family Model : REX, 6601

Test Sample Number : S230821066001

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

Test procedure : ANSI C63.26:2015

ANSI/TIA-603-E-2016

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

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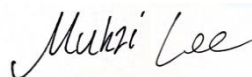
Date of Test

Date (s) of performance of tests Aug 21, 2023 ~Sep 14, 2023

Date of Issue Sep 14, 2023

Test Result **Pass**

Testing Engineer :



(Mukzi Lee)

Authorized Signatory :



(Alex Li)

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1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	4G Smart Phone
Trade Mark	LOGIC, iSWAG, UNONU
Model Name	L66M
Family Model	REX, 6601
Model Difference	All the model are the same circuit and RF module, except the model names.
FCC ID:	O556562923
Frequency Bands:	U.S. Bands: ☒ LTE FDD Band 2,4,5,7,12,17 LTE TDD Band 38,66
Frequency Range:	LTE FDD Band 2 Uplink: 1850MHz-1910MHz, Downlink: 1930MHz-1990MHz; LTE FDD Band 4 Uplink: 1710MHz-1755MHz, Downlink: 2110MHz-2155MHz; LTE FDD Band 5 Uplink: 824MHz-849MHz, Downlink: 869MHz-894MHz; LTE-FDD Band 7 Uplink: 2500MHz-2570MHz, Downlink: 2620MHz-2690MHz; LTE FDD Band 12 Uplink: 699MHz-716MHz, Downlink: 729MHz-746MHz; LTE FDD Band 17 Uplink: 704MHz-716MHz, Downlink: 734MHz-746MHz; LTE TDD Band 38 Uplink&Downlink: 2570MHz-2620MHz, LTE TDD Band 66 Uplink: 1710MHz-1780MHz, Downlink: 2110MHz-2200MHz;
Type of Modulation:	QPSK/16QAM/64QAM(Only Downlink)
Power Class	Class 3
SIM Card:	SIM 1 and SIM 2 is a chipset unit and tested as a single chipset. The SIM 1 is chosen for test.
Antenna:	PIFA Antenna
Antenna gain:	Band 2: 0dBi, Band 4: -1dBi, Band 5: -5dBi, Band 7: -1dBi, Band 12: -5dBi, Band 17: -5dBi, Band 38: -1dBi, Band 66: -2dBi
Adapter	Model: UT-681A-5200ZCY Input: 100-240V, 50-60Hz 0.35A Output: 5.0V---2.0A 10.0W
Battery	DC 3.85V, 4900mAh, 18.865Wh
Power supply	DC 3.85V from battery or DC 5V from Adapter.
Extreme Vol. Limits:	DC 3.27 to DC 4.43V (Nominal DC 3.85V) (Note 1)
HW Version	V1.0
SW Version	LOGIC_L66M_GENERIC_V1.0_02082023
** Note1: The High Voltage DC 4.43V and Low Voltage 3.27V was declared by manufacturer, The EUT couldn't be operate normally with higher or lower voltage.	

Revision History

Report No.	Version	Description	Issued Date
S23082106601005	Rev.01	Initial issue of report	Sep 14, 2023

1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: O556562923** filing to comply with the FCC Part 22H&24E&27&90S.

1.3 TEST METHODOLOGY

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

1.4 TEST FACILITY

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

ShenZhen NTEK Testing Technology Co., Ltd.

1&5/F, Building C, 1&2/F, Building E, Fenda Science Park, Sanwei Community, Hangcheng Street, Baoan 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

1.5 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

1.6 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.

1.7 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 2/4/5/7/12/17/38/66

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

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

2. SYSTEM TEST CONFIGURATION

2.1 EUT CONFIGURATION

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

2.2 EUT EXERCISE

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

2.3 CONFIGURATION OF EUT SYSTEM

Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	4G Smart Phone	L66M	FCC ID: O556562923	EUT

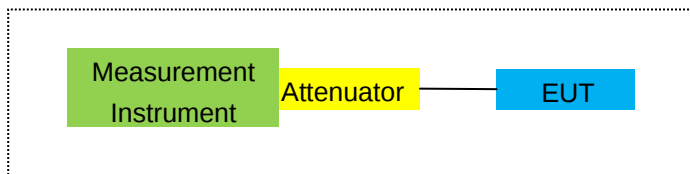
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

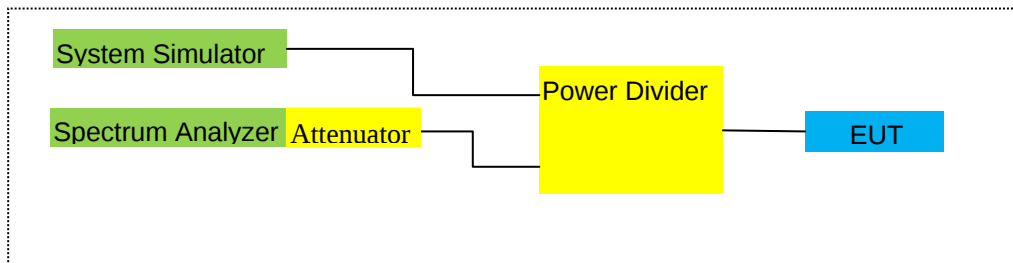
For Radiated Test Cases



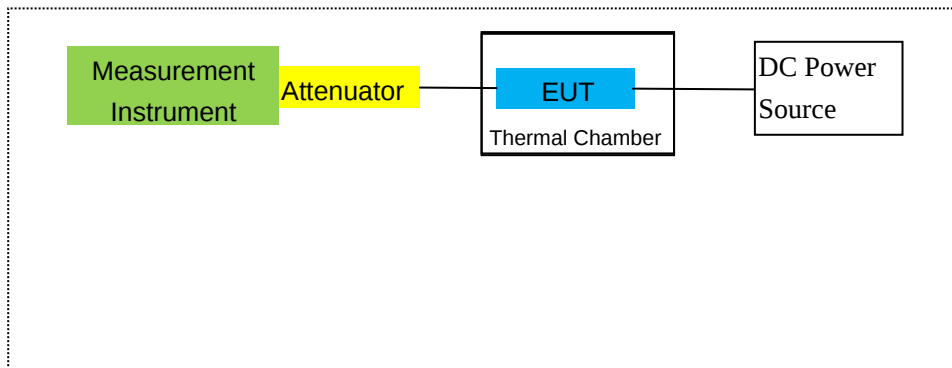
For Conducted Output Power



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



For Frequency Stability



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

3.TEST AND MEASUREMENT EQUIPMENT

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

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	MXA Signal Analyzer	Agilent	N9020A	MY49100060	2023.05.29	2024.05.28	1 year
2	Test Receiver	R&S	ESPI	101318	2023.03.27	2024.03.26	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2023.03.16	2024.03.15	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2023.05.06	2026.05.05	3 year
5	Horn Antenna	EM	EM-AH-10180	2011071402	2022.03.31	2025.03.30	3 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2022.11.07	2023.11.06	1 year
7	Amplifier	EM	EM-30180	060538	2023.05.29	2024.05.28	1 year
8	Loop Antenna	ARA	PLA-1030/B	1029	2022.11.04	2023.11.05	1 year
9	Power Meter	R&S	NRVS	100696	2023.05.29	2024.05.28	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2023.05.29	2024.05.28	1 year
11	Test Cable	N/A	R-01	N/A	2022.06.17	2025.06.16	3 year
12	Test Cable	N/A	R-02	N/A	2022.06.17	2025.06.16	3 year
13	Test Receiver	R&S	ESCI	101160	2023.03.27	2024.03.26	1 year
14	LISN	R&S	ENV216	101313	2023.03.27	2024.03.26	1 year
15	LISN	EMCO	3816/2	00042990	2023.03.27	2024.03.26	1 year
16	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2023.03.27	2024.03.26	1 year
17	Passive Voltage Probe	R&S	ESH2-Z3	100196	2023.03.27	2024.03.26	1 year
18	Test Cable	N/A	C01	N/A	2023.05.06	2026.05.05	3 year
19	Spectrum Analyzer	agilent	e4440a	us44300399	2023.03.27	2024.03.26	1 year
20	test receiver	R&S	ESCI	a0304218	2023.03.27	2024.03.26	1 year
21	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2023.03.27	2024.03.26	1 year
22	DC Power Source	N/A	PS-6005D	20170402923	2023.05.06	2026.05.05	3 year
23	Wireless Communications Test Set	R&S	CMW500	1100.008.02	2023.05.29	2024.05.28	1 year
27	Log-Periodic Antenna	SCHWARZBECK	VULB 9162	584	2023/1/11	2024/1/10	1 year

28	Log-Periodic Antenna	SCHWARZ BECK	VULB 9162	586	2023/1/11	2024/1/10	1 year
29	ESG Vetctor Signal Generator	Agilent	E4438C	MY45093347	2023/3/21	2024/3/20	1 year

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

4. OUTPUT POWER

4.1 OUTPUT POWER MEASUREMENT

LTE Measurement Procedure:

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

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

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

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

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

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

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

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

Test data reference attachment.

5. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

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

MODES TESTED

☐

Band 2/4/5/7/12/17/38/66

RESULTS

PASS

Test data reference attachment.

6. BANDEDGE AND EMISSION MASK

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53, 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 2/4/5/7/12/17/38/66

RESULTS

Test data reference attachment.

7. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53 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 2/4/5/7/12/17/38/66

☐

7.1 MEASUREMENT METHOD

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

Test data reference attachment.

8. RADIATED MEASUREMENT

8.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232, §27.50 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 2/4/5/7/12/17/38/66

RESULTS

Pass

8.2 LTE BAND 2

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP	Polarization Of Max. ERP	
							Average		
							(mW)		
1.4MHz Band QPSK	1/#Mid	1850.7	-2.11	3.76	28.24	22.37	172.584	Horizontal	Pass
		1880	-1.87	3.91	28.22	22.44	175.388	Horizontal	Pass
		1909.3	-1.88	3.93	28.20	22.39	173.380	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-2.03	3.77	28.23	22.43	174.985	Horizontal	Pass
		1880	-1.93	3.91	28.24	22.40	173.780	Horizontal	Pass
		1908.5	-1.82	3.94	28.25	22.49	177.419	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-2.09	3.77	28.31	22.45	175.792	Horizontal	Pass
		1880	-1.89	3.91	28.22	22.42	174.582	Horizontal	Pass
		1907.5	-1.88	3.94	28.20	22.38	172.982	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-2.11	3.79	28.33	22.43	174.985	Horizontal	Pass
		1880	-1.83	3.95	28.22	22.44	175.388	Horizontal	Pass
		1905	-1.80	3.97	28.19	22.42	174.582	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-2.06	3.79	28.34	22.49	177.419	Horizontal	Pass
		1880	-1.80	3.95	28.22	22.47	176.604	Horizontal	Pass
		1902.5	-1.86	3.97	28.18	22.35	171.791	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-2.21	3.81	28.35	22.33	171.002	Horizontal	Pass
		1880	-1.89	3.96	28.22	22.37	172.584	Horizontal	Pass
		1900	-1.78	4.00	28.16	22.38	172.982	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-2.02	3.76	28.24	22.46	176.198	Vertical	Pass
		1880	-1.82	3.91	28.22	22.49	177.419	Vertical	Pass
		1909.3	-1.90	3.93	28.20	22.37	172.584	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-2.05	3.77	28.23	22.41	174.181	Vertical	Pass
		1880	-1.85	3.91	28.24	22.48	177.011	Vertical	Pass
		1908.5	-1.94	3.94	28.25	22.37	172.584	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-2.10	3.77	28.31	22.44	175.388	Vertical	Pass
		1880	-1.82	3.91	28.22	22.49	177.419	Vertical	Pass
		1907.5	-1.86	3.94	28.20	22.40	173.780	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1855	-2.10	3.79	28.33	22.44	175.388	Vertical	Pass
		1880	-1.89	3.95	28.22	22.38	172.982	Vertical	Pass
		1905	-1.76	3.97	28.19	22.46	176.198	Vertical	Pass

15.0MHz	1/#Mid	1857.5	-2.16	3.79	28.34	22.39	173.380	Vertical	Pass
Band		1880	-1.90	3.95	28.22	22.37	172.584	Vertical	Pass
QPSK		1902.5	-1.83	3.97	28.18	22.38	172.982	Vertical	Pass
20.0MHz	1/#Mid	1860	-2.02	3.81	28.35	22.52	178.649	Vertical	Pass
Band		1880	-1.73	3.96	28.22	22.53	179.061	Vertical	Pass
QPSK		1900	-1.62	4.00	28.16	22.54	179.473	Vertical	Pass

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP	Polarization Of Max. ERP	
							Average		
							(mW)		
1.4MHz Band 16 QAM	1/#Mid	1850.7	-2.96	3.76	28.24	21.52	141.906	Horizontal	Pass
		1880	-2.81	3.91	28.22	21.50	141.254	Horizontal	Pass
		1909.3	-2.72	3.93	28.20	21.55	142.889	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-2.86	3.77	28.23	21.60	144.544	Horizontal	Pass
		1880	-2.77	3.91	28.24	21.56	143.219	Horizontal	Pass
		1908.5	-2.79	3.94	28.25	21.52	141.906	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-3.06	3.77	28.31	21.48	140.605	Horizontal	Pass
		1880	-2.82	3.91	28.22	21.49	140.929	Horizontal	Pass
		1907.5	-2.82	3.94	28.20	21.44	139.316	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-3.06	3.79	28.33	21.48	140.605	Horizontal	Pass
		1880	-2.76	3.95	28.22	21.51	141.579	Horizontal	Pass
		1905	-2.71	3.97	28.19	21.51	141.579	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-3.06	3.79	28.34	21.49	140.929	Horizontal	Pass
		1880	-2.68	3.95	28.22	21.59	144.212	Horizontal	Pass
		1902.5	-2.71	3.97	28.18	21.50	141.254	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-3.11	3.81	28.35	21.43	138.995	Horizontal	Pass
		1880	-2.76	3.96	28.22	21.50	141.254	Horizontal	Pass
		1900	-2.68	4.00	28.16	21.48	140.605	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1850.7	-2.97	3.76	28.24	21.51	141.579	Vertical	Pass
		1880	-2.72	3.91	28.22	21.59	144.212	Vertical	Pass
		1909.3	-2.80	3.93	28.20	21.47	140.281	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-2.91	3.77	28.23	21.55	142.889	Vertical	Pass
		1880	-2.77	3.91	28.24	21.56	143.219	Vertical	Pass
		1908.5	-2.86	3.94	28.25	21.45	139.637	Vertical	Pass
5.0MHz	1/#Mid	1852.5	-3.04	3.77	28.31	21.50	141.254	Vertical	Pass

Band 16		1880	-2.89	3.91	28.22	21.42	138.676	Vertical	Pass
QAM		1907.5	-2.68	3.94	28.20	21.58	143.880	Vertical	Pass
10.0MHz	1/#Mid	1855	-3.00	3.79	28.33	21.54	142.561	Vertical	Pass
Band 16		1880	-2.80	3.95	28.22	21.47	140.281	Vertical	Pass
QAM		1905	-2.72	3.97	28.19	21.50	141.254	Vertical	Pass
15.0MHz	1/#Mid	1857.5	-3.03	3.79	28.34	21.52	141.906	Vertical	Pass
Band 16		1880	-2.72	3.95	28.22	21.55	142.889	Vertical	Pass
QAM		1902.5	-2.64	3.97	28.18	21.57	143.549	Vertical	Pass
20.0MHz	1/#Mid	1860	-2.93	3.81	28.35	21.61	144.877	Vertical	Pass
Band 16		1880	-2.63	3.96	28.22	21.63	145.546	Vertical	Pass
QAM		1900	-2.54	4.00	28.16	21.62	145.211	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.3 LTE BAND 4

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
						Average	Average		
						(dBm)	(mW)		
1.4MHz Band QPSK	1/#Mid	1710.7	-2.37	3.12	27.58	22.09	161.808	Horizontal	Pass
		1732.5	-2.23	3.27	27.61	22.11	162.555	Horizontal	Pass
		1754.3	-2.26	3.29	27.63	22.08	161.436	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-2.42	3.13	27.61	22.06	160.694	Horizontal	Pass
		1732.5	-2.25	3.27	27.61	22.09	161.808	Horizontal	Pass
		1753.5	-2.15	3.30	27.62	22.17	164.816	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-2.42	3.13	27.63	22.08	161.436	Horizontal	Pass
		1732.5	-2.28	3.27	27.61	22.06	160.694	Horizontal	Pass
		1752.5	-2.18	3.30	27.60	22.12	162.930	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-2.30	3.15	27.64	22.19	165.577	Horizontal	Pass
		1732.5	-2.12	3.31	27.61	22.18	165.196	Horizontal	Pass
		1750	-2.19	3.33	27.59	22.07	161.065	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-2.37	3.15	27.65	22.13	163.305	Horizontal	Pass
		1732.5	-2.10	3.31	27.61	22.20	165.959	Horizontal	Pass
		1747.5	-2.11	3.33	27.57	22.13	163.305	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-2.42	3.17	27.66	22.07	161.065	Horizontal	Pass
		1732.5	-2.20	3.32	27.61	22.09	161.808	Horizontal	Pass
		1745	-2.05	3.36	27.56	22.15	164.059	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-2.29	3.12	27.58	22.17	164.816	Vertical	Pass
		1732.5	-2.26	3.27	27.61	22.08	161.436	Vertical	Pass
		1754.3	-2.28	3.29	27.63	22.06	160.694	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-2.41	3.13	27.61	22.07	161.065	Vertical	Pass
		1732.5	-2.17	3.27	27.61	22.17	164.816	Vertical	Pass
		1753.5	-2.22	3.30	27.62	22.10	162.181	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-2.48	3.13	27.63	22.02	159.221	Vertical	Pass
		1732.5	-2.22	3.27	27.61	22.12	162.930	Vertical	Pass
		1752.5	-2.12	3.30	27.60	22.18	165.196	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-2.31	3.15	27.64	22.18	165.196	Vertical	Pass
		1732.5	-2.21	3.31	27.61	22.09	161.808	Vertical	Pass
		1750	-2.09	3.33	27.59	22.17	164.816	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1717.5	-2.40	3.15	27.65	22.10	162.181	Vertical	Pass
		1732.5	-2.16	3.31	27.61	22.14	163.682	Vertical	Pass
		1747.5	-2.12	3.33	27.57	22.12	162.930	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1720	-2.27	3.17	27.66	22.22	166.725	Vertical	Pass
		1732.5	-2.08	3.32	27.61	22.21	166.341	Vertical	Pass
		1745	-1.98	3.36	27.56	22.22	166.725	Vertical	Pass

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
						Average	Average		
						(dBm)	(mW)		
1.4MHz Band 16 QAM	1/#Mid	1710.7	-3.46	3.12	27.58	21.00	125.893	Horizontal	Pass
		1732.5	-3.26	3.27	27.61	21.08	128.233	Horizontal	Pass
		1754.3	-3.24	3.29	27.63	21.10	128.825	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-3.43	3.13	27.61	21.05	127.350	Horizontal	Pass
		1732.5	-3.36	3.27	27.61	20.98	125.314	Horizontal	Pass
		1753.5	-3.25	3.30	27.62	21.07	127.938	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-3.42	3.13	27.63	21.08	128.233	Horizontal	Pass
		1732.5	-3.32	3.27	27.61	21.02	126.474	Horizontal	Pass
		1752.5	-3.27	3.30	27.60	21.03	126.765	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-3.44	3.15	27.64	21.05	127.350	Horizontal	Pass
		1732.5	-3.20	3.31	27.61	21.10	128.825	Horizontal	Pass
		1750	-3.19	3.33	27.59	21.07	127.938	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-3.47	3.15	27.65	21.03	126.765	Horizontal	Pass
		1732.5	-3.28	3.31	27.61	21.02	126.474	Horizontal	Pass
		1747.5	-3.21	3.33	27.57	21.03	126.765	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-3.48	3.17	27.66	21.01	126.183	Horizontal	Pass
		1732.5	-3.28	3.32	27.61	21.01	126.183	Horizontal	Pass
		1745	-3.28	3.36	27.56	20.92	123.595	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-3.43	3.12	27.58	21.03	126.765	Vertical	Pass
		1732.5	-3.24	3.27	27.61	21.10	128.825	Vertical	Pass
		1754.3	-3.30	3.29	27.63	21.04	127.057	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-3.39	3.13	27.61	21.09	128.529	Vertical	Pass
		1732.5	-3.25	3.27	27.61	21.09	128.529	Vertical	Pass
		1753.5	-3.28	3.30	27.62	21.04	127.057	Vertical	Pass
5.0MHz	1/#Mid	1712.5	-3.47	3.13	27.63	21.03	126.765	Vertical	Pass

Band 16 QAM		1732.5	-3.31	3.27	27.61	21.03	126.765	Vertical	Pass
		1752.5	-3.35	3.30	27.60	20.95	124.451	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-3.46	3.15	27.64	21.03	126.765	Vertical	Pass
		1732.5	-3.27	3.31	27.61	21.03	126.765	Vertical	Pass
		1750	-3.19	3.33	27.59	21.07	127.938	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-3.43	3.15	27.65	21.07	127.938	Vertical	Pass
		1732.5	-3.21	3.31	27.61	21.09	128.529	Vertical	Pass
		1747.5	-3.23	3.33	27.57	21.01	126.183	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-3.35	3.17	27.66	21.14	130.017	Vertical	Pass
		1732.5	-3.15	3.32	27.61	21.14	130.017	Vertical	Pass
		1745	-3.10	3.36	27.56	21.10	128.825	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.4 LTE BAND 5

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusi on
			SG Level	Cable Loss (dBm)	Factor (dB)	Correction	Max. ERP	Max. ERP	Polarization Of Max. ERP	
						(dB)	Average	Average		
							(dBm)	(mW)		
1.4MHz Band QPSK	1/#Mid	824.7	2.03	2.01	19.68	2.15	17.55	56.885	Horizontal	Pass
		836.5	1.95	2.01	19.77	2.15	17.56	57.016	Horizontal	Pass
		848.3	1.85	2.02	19.82	2.15	17.50	56.234	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	825.5	1.97	2.01	19.70	2.15	17.51	56.364	Horizontal	Pass
		836.5	1.86	2.01	19.77	2.15	17.47	55.847	Horizontal	Pass
		847.5	1.91	2.02	19.81	2.15	17.55	56.885	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	826.5	1.96	2.01	19.71	2.15	17.51	56.364	Horizontal	Pass
		836.5	1.94	2.01	19.77	2.15	17.55	56.885	Horizontal	Pass
		846.5	1.80	2.02	19.79	2.15	17.42	55.208	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	829	1.95	2.01	19.73	2.15	17.52	56.494	Horizontal	Pass
		836.5	1.82	2.01	19.77	2.15	17.43	55.335	Horizontal	Pass
		844	1.96	2.02	19.78	2.15	17.57	57.148	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	824.7	1.95	2.01	19.68	2.15	17.47	55.847	Vertical	Pass
		836.5	1.90	2.01	19.77	2.15	17.51	56.364	Vertical	Pass
		848.3	1.82	2.02	19.82	2.15	17.47	55.847	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	825.5	1.94	2.01	19.70	2.15	17.48	55.976	Vertical	Pass
		836.5	1.92	2.01	19.77	2.15	17.53	56.624	Vertical	Pass
		847.5	1.96	2.02	19.81	2.15	17.60	57.544	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	826.5	2.03	2.01	19.71	2.15	17.58	57.280	Vertical	Pass
		836.5	1.81	2.01	19.77	2.15	17.42	55.208	Vertical	Pass
		846.5	1.93	2.02	19.79	2.15	17.55	56.885	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	829	2.03	2.01	19.73	2.15	17.60	57.544	Vertical	Pass
		836.5	1.99	2.01	19.77	2.15	17.60	57.544	Vertical	Pass
		844	2.02	2.02	19.78	2.15	17.63	57.943	Vertical	Pass

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclu sion
			SG Level	Cable Loss (dBm)	Factor (dB)	Correction	Max. ERP	Max. ERP	Polarization Of Max. ERP	
			(dBm)			(dB)	Average	Average		
							(dBm)	(mW)		
1.4MHz Band 16 QAM	1/#Mid	824.7	1.23	2.01	19.68	2.15	16.75	47.315	Horizontal	Pass
		836.5	1.25	2.01	19.77	2.15	16.86	48.529	Horizontal	Pass
		848.3	1.16	2.02	19.82	2.15	16.81	47.973	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	1.27	2.01	19.70	2.15	16.81	47.973	Horizontal	Pass
		836.5	1.22	2.01	19.77	2.15	16.83	48.195	Horizontal	Pass
		847.5	1.25	2.02	19.81	2.15	16.89	48.865	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	1.30	2.01	19.71	2.15	16.85	48.417	Horizontal	Pass
		836.5	1.25	2.01	19.77	2.15	16.86	48.529	Horizontal	Pass
		846.5	1.18	2.02	19.79	2.15	16.80	47.863	Horizontal	Pass
10.0MH z Band 16 QAM	1/#Mid	829	1.28	2.01	19.73	2.15	16.85	48.417	Horizontal	Pass
		836.5	1.17	2.01	19.77	2.15	16.78	47.643	Horizontal	Pass
		844	1.12	2.02	19.78	2.15	16.73	47.098	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	824.7	1.31	2.01	19.68	2.15	16.83	48.195	Vertical	Pass
		836.5	1.15	2.01	19.77	2.15	16.76	47.424	Vertical	Pass
		848.3	1.21	2.02	19.82	2.15	16.86	48.529	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	1.35	2.01	19.70	2.15	16.89	48.865	Vertical	Pass
		836.5	1.27	2.01	19.77	2.15	16.88	48.753	Vertical	Pass
		847.5	1.16	2.02	19.81	2.15	16.80	47.863	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	1.29	2.01	19.71	2.15	16.84	48.306	Vertical	Pass
		836.5	1.13	2.01	19.77	2.15	16.74	47.206	Vertical	Pass
		846.5	1.22	2.02	19.79	2.15	16.84	48.306	Vertical	Pass
10.0MH z Band 16 QAM	1/#Mid	829	1.35	2.01	19.73	2.15	16.92	49.204	Vertical	Pass
		836.5	1.32	2.01	19.77	2.15	16.93	49.317	Vertical	Pass
		844	1.29	2.02	19.78	2.15	16.90	48.978	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)

8.5 LTE BAND 7

Radiated Power (EIRP) for Band 7									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss	Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)	(dBm)		Average	Average		
						(dBm)	(mW)		
5.0MHz Band QPSK	1/#Mid	2502.5	-1.39	4.54	27.75	21.82	152.055	Horizontal	Pass
		2535	-1.19	4.69	27.72	21.84	152.757	Horizontal	Pass
		2567.5	-1.14	4.71	27.71	21.86	153.462	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2505	-1.40	4.55	27.76	21.81	151.705	Horizontal	Pass
		2535	-1.24	4.69	27.72	21.79	151.008	Horizontal	Pass
		2565	-1.18	4.72	27.70	21.80	151.356	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-1.33	4.55	27.77	21.89	154.525	Horizontal	Pass
		2535	-1.27	4.69	27.72	21.76	149.968	Horizontal	Pass
		2562.5	-1.23	4.72	27.69	21.74	149.279	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2510	-1.38	4.57	27.78	21.83	152.405	Horizontal	Pass
		2535	-1.22	4.73	27.72	21.77	150.314	Horizontal	Pass
		2560	-1.14	4.75	27.68	21.79	151.008	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	-1.31	4.54	27.75	21.90	154.882	Vertical	Pass
		2535	-1.18	4.69	27.72	21.85	153.109	Vertical	Pass
		2567.5	-1.14	4.71	27.71	21.86	153.462	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2505	-1.39	4.55	27.76	21.82	152.055	Vertical	Pass
		2535	-1.25	4.69	27.72	21.78	150.661	Vertical	Pass
		2565	-1.16	4.72	27.70	21.82	152.055	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-1.43	4.55	27.77	21.79	151.008	Vertical	Pass
		2535	-1.22	4.69	27.72	21.81	151.705	Vertical	Pass
		2562.5	-1.15	4.72	27.69	21.82	152.055	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2510	-1.29	4.57	27.78	21.92	155.597	Vertical	Pass
		2535	-1.05	4.73	27.72	21.94	156.315	Vertical	Pass
		2560	-1.01	4.75	27.68	21.92	155.597	Vertical	Pass

Radiated Power (EIRP) for Band 7											
Mode	RB/RB SIZE	Frequency	Result						Conclusion		
			SG Level	Cable Loss	Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP			
						(dBm)	(dBm)			Average	Average
										(dBm)	(mW)
5.0MHz Band 16 QAM	1/#Mid	2502.5	-2.43	4.54	27.75	20.78	119.674	Horizontal	Pass		
		2535	-2.36	4.69	27.72	20.67	116.681	Horizontal	Pass		
		2567.5	-2.26	4.71	27.71	20.74	118.577	Horizontal	Pass		
10.0MHz Band 16 QAM	1/#Mid	2505	-2.55	4.55	27.76	20.66	116.413	Horizontal	Pass		
		2535	-2.36	4.69	27.72	20.67	116.681	Horizontal	Pass		
		2565	-2.25	4.72	27.70	20.73	118.304	Horizontal	Pass		
15.0MHz Band 16 QAM	1/#Mid	2507.5	-2.57	4.55	27.77	20.65	116.145	Horizontal	Pass		
		2535	-2.25	4.69	27.72	20.78	119.674	Horizontal	Pass		
		2562.5	-2.32	4.72	27.69	20.65	116.145	Horizontal	Pass		
20.0MHz Band 16 QAM	1/#Mid	2510	-2.50	4.57	27.78	20.71	117.761	Horizontal	Pass		
		2535	-2.28	4.73	27.72	20.71	117.761	Horizontal	Pass		
		2560	-2.18	4.75	27.68	20.75	118.850	Horizontal	Pass		
5.0MHz Band 16 QAM	1/#Mid	2502.5	-2.52	4.54	27.75	20.69	117.220	Vertical	Pass		
		2535	-2.31	4.69	27.72	20.72	118.032	Vertical	Pass		
		2567.5	-2.24	4.71	27.71	20.76	119.124	Vertical	Pass		
10.0MHz Band 16 QAM	1/#Mid	2505	-2.54	4.55	27.76	20.67	116.681	Vertical	Pass		
		2535	-2.29	4.69	27.72	20.74	118.577	Vertical	Pass		
		2565	-2.21	4.72	27.70	20.77	119.399	Vertical	Pass		
15.0MHz Band 16 QAM	1/#Mid	2507.5	-2.58	4.55	27.77	20.64	115.878	Vertical	Pass		
		2535	-2.24	4.69	27.72	20.79	119.950	Vertical	Pass		
		2562.5	-2.32	4.72	27.69	20.65	116.145	Vertical	Pass		
20.0MHz Band 16 QAM	1/#Mid	2510	-2.41	4.57	27.78	20.80	120.226	Vertical	Pass		
		2535	-2.18	4.73	27.72	20.81	120.504	Vertical	Pass		
		2560	-2.12	4.75	27.68	20.81	120.504	Vertical	Pass		

Note:

SG Level= Signal generator output

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

8.6 LTE BAND 12

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusi on
			SG Level	Cable Loss (dBm)	Factor (dB)	Correction	Max. ERP	Max. ERP	Polarization Of Max. ERP	
			(dBm)			(dB)	Average	Average		
							(dBm)	(mW)		
1.4MH z Band QPSK	1/#Mid	699.7	2.41	1.91	19.21	2.15	17.56	57.016	Vertical	Pass
		707.5	2.31	1.91	19.26	2.15	17.51	56.364	Vertical	Pass
		715.3	2.28	1.93	19.34	2.15	17.54	56.754	Vertical	Pass
3.0MH z Band QPSK	1/#Mid	700.5	2.44	1.91	19.21	2.15	17.59	57.412	Vertical	Pass
		707.5	2.36	1.91	19.26	2.15	17.56	57.016	Vertical	Pass
		714.5	2.26	1.93	19.34	2.15	17.52	56.494	Vertical	Pass
5.0MH z Band QPSK	1/#Mid	701.5	2.29	1.91	19.23	2.15	17.46	55.719	Vertical	Pass
		707.5	2.26	1.91	19.26	2.15	17.46	55.719	Vertical	Pass
		713.5	2.30	1.92	19.33	2.15	17.56	57.016	Vertical	Pass
10.0Hz Band QPSK	1/#Mid	704	2.22	1.91	19.25	2.15	17.41	55.081	Vertical	Pass
		707.5	2.31	1.91	19.26	2.15	17.51	56.364	Vertical	Pass
		711	2.23	1.92	19.32	2.15	17.48	55.976	Vertical	Pass
1.4MH z Band QPSK	1/#Mid	699.7	2.36	1.91	19.21	2.15	17.51	56.364	Horizontal	Pass
		707.5	2.32	1.91	19.26	2.15	17.52	56.494	Horizontal	Pass
		715.3	2.23	1.93	19.34	2.15	17.49	56.105	Horizontal	Pass
3.0MH z Band QPSK	1/#Mid	700.5	2.30	1.91	19.21	2.15	17.45	55.590	Horizontal	Pass
		707.5	2.30	1.91	19.26	2.15	17.50	56.234	Horizontal	Pass
		714.5	2.24	1.93	19.34	2.15	17.50	56.234	Horizontal	Pass
5.0MH z Band QPSK	1/#Mid	701.5	2.40	1.91	19.23	2.15	17.57	57.148	Horizontal	Pass
		707.5	2.36	1.91	19.26	2.15	17.56	57.016	Horizontal	Pass
		713.5	2.31	1.92	19.33	2.15	17.57	57.148	Horizontal	Pass
10.0Hz Band QPSK	1/#Mid	704	2.43	1.91	19.25	2.15	17.62	57.810	Horizontal	Pass
		707.5	2.40	1.91	19.26	2.15	17.60	57.544	Horizontal	Pass
		711	2.35	1.92	19.32	2.15	17.60	57.544	Horizontal	Pass

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss (dBm)	Factor (dB)	Correction	Max. ERP	Max. ERP	Polarization Of Max. ERP	
			(dBm)			(dB)	Average	Average		
							(dBm)	(mW)		
1.4MHz Band 16 QAM	1/#Mid	699.7	2.16	1.91	19.21	2.15	17.31	53.827	Vertical	Pass
		707.5	2.09	1.91	19.26	2.15	17.29	53.580	Vertical	Pass
		715.3	2.11	1.93	19.34	2.15	17.37	54.576	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	2.20	1.91	19.21	2.15	17.35	54.325	Vertical	Pass
		707.5	2.14	1.91	19.26	2.15	17.34	54.200	Vertical	Pass
		714.5	2.06	1.93	19.34	2.15	17.32	53.951	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	2.11	1.91	19.23	2.15	17.28	53.456	Vertical	Pass
		707.5	2.07	1.91	19.26	2.15	17.27	53.333	Vertical	Pass
		713.5	2.12	1.92	19.33	2.15	17.38	54.702	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	704	2.09	1.91	19.25	2.15	17.28	53.456	Vertical	Pass
		707.5	2.09	1.91	19.26	2.15	17.29	53.580	Vertical	Pass
		711	2.10	1.92	19.32	2.15	17.35	54.325	Vertical	Pass
1.4MHz Band 16 QAM	1/#Mid	699.7	2.23	1.91	19.21	2.15	17.38	54.702	Horizontal	Pass
		707.5	2.12	1.91	19.26	2.15	17.32	53.951	Horizontal	Pass
		715.3	2.10	1.93	19.34	2.15	17.36	54.450	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	2.24	1.91	19.21	2.15	17.39	54.828	Horizontal	Pass
		707.5	2.10	1.91	19.26	2.15	17.30	53.703	Horizontal	Pass
		714.5	2.09	1.93	19.34	2.15	17.35	54.325	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	2.14	1.91	19.23	2.15	17.31	53.827	Horizontal	Pass
		707.5	2.08	1.91	19.26	2.15	17.28	53.456	Horizontal	Pass
		713.5	2.08	1.92	19.33	2.15	17.34	54.200	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	704	2.26	1.91	19.25	2.15	17.45	55.590	Horizontal	Pass
		707.5	2.21	1.91	19.26	2.15	17.41	55.081	Horizontal	Pass
		711	2.16	1.92	19.32	2.15	17.41	55.081	Horizontal	Pass

Note:

SG Level= Signal generator output

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

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

8.8 LTE BAND 17

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP	Max. ERP	Polarization Of Max. ERP	
							Average	Average		
							(dBm)	(mW)		
5.0MHz Band QPSK	1/#Mid	706.5	2.09	1.91	19.23	2.15	17.26	53.211	Vertical	Pass
		710	2.08	1.91	19.26	2.15	17.28	53.456	Vertical	Pass
		713.5	2.04	1.92	19.33	2.15	17.30	53.703	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	709	2.10	1.91	19.25	2.15	17.29	53.580	Vertical	Pass
		710	2.14	1.91	19.26	2.15	17.34	54.200	Vertical	Pass
		711	2.05	1.92	19.32	2.15	17.30	53.703	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	706.5	2.13	1.91	19.23	2.15	17.30	53.703	Horizontal	Pass
		710	2.18	1.91	19.26	2.15	17.38	54.702	Horizontal	Pass
		713.5	2.07	1.92	19.33	2.15	17.33	54.075	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	709	2.22	1.91	19.25	2.15	17.41	55.081	Horizontal	Pass
		710	2.25	1.91	19.26	2.15	17.45	55.590	Horizontal	Pass
		711	2.19	1.92	19.32	2.15	17.44	55.463	Horizontal	Pass

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Factor	Correction	Max. ERP	Max. ERP	Polarization	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	Of Max. ERP	
							(dBm)	(mW)		
5.0MHz Band 16 QAM	1/#Mid	706.5	1.01	1.91	19.23	2.15	16.18	41.495	Vertical	Pass
		710	1.08	1.91	19.26	2.15	16.28	42.462	Vertical	Pass
		713.5	0.95	1.92	19.33	2.15	16.21	41.783	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	709	1.01	1.91	19.25	2.15	16.20	41.687	Vertical	Pass
		710	1.10	1.91	19.26	2.15	16.30	42.658	Vertical	Pass
		711	1.02	1.92	19.32	2.15	16.27	42.364	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	706.5	1.11	1.91	19.23	2.15	16.28	42.462	Horizontal	Pass
		710	1.02	1.91	19.26	2.15	16.22	41.879	Horizontal	Pass
		713.5	0.95	1.92	19.33	2.15	16.21	41.783	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	709	1.12	1.91	19.25	2.15	16.31	42.756	Horizontal	Pass
		710	1.14	1.91	19.26	2.15	16.34	43.053	Horizontal	Pass
		711	1.10	1.92	19.32	2.15	16.35	43.152	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)

8.9 LTE BAND 38

Radiated Power (EIRP) for Band38									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	25/0	2572.5	-0.54	4.44	27.75	22.77	189.234	Horizontal	Pass
		2595	-0.28	4.67	27.72	22.77	189.234	Horizontal	Pass
		2617.5	-0.40	4.62	27.71	22.69	185.780	Horizontal	Pass
10.0MHz Band QPSK	50/0	2575	-0.48	4.51	27.76	22.77	189.234	Horizontal	Pass
		2595	-0.47	4.60	27.72	22.65	184.077	Horizontal	Pass
		2615	-0.35	4.70	27.70	22.65	184.077	Horizontal	Pass
15.0MHz Band QPSK	75/0	2577.5	-0.54	4.47	27.77	22.76	188.799	Horizontal	Pass
		2595	-0.37	4.65	27.72	22.70	186.209	Horizontal	Pass
		2612.5	-0.40	4.66	27.69	22.63	183.231	Horizontal	Pass
20.0MHz Band QPSK	100/0	2580	-0.51	4.50	27.78	22.77	189.234	Horizontal	Pass
		2595	-0.35	4.66	27.72	22.71	186.638	Horizontal	Pass
		2610	-0.23	4.68	27.68	22.77	189.234	Horizontal	Pass
5.0MHz Band QPSK	25/0	2572.5	-0.54	4.48	27.75	22.73	187.499	Vertical	Pass
		2595	-0.32	4.62	27.72	22.78	189.671	Vertical	Pass
		2617.5	-0.32	4.63	27.71	22.76	188.799	Vertical	Pass
10.0MHz Band QPSK	50/0	2575	-0.56	4.46	27.76	22.74	187.932	Vertical	Pass
		2595	-0.29	4.65	27.72	22.78	189.671	Vertical	Pass
		2615	-0.27	4.69	27.70	22.74	187.932	Vertical	Pass
15.0MHz Band QPSK	75/0	2577.5	-0.66	4.47	27.77	22.64	183.654	Vertical	Pass
		2595	-0.28	4.65	27.72	22.79	190.108	Vertical	Pass
		2612.5	-0.38	4.66	27.69	22.65	184.077	Vertical	Pass
20.0MHz Band QPSK	100/0	2580	-0.44	4.53	27.78	22.81	190.985	Vertical	Pass
		2595	-0.24	4.66	27.72	22.82	191.426	Vertical	Pass
		2610	-0.20	4.68	27.68	22.80	190.546	Vertical	Pass

Radiated Power (EIRP) for Band38									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	25/0	2572.5	-1.55	4.44	27.75	21.76	149.968	Horizontal	Pass
		2595	-1.18	4.67	27.72	21.87	153.815	Horizontal	Pass
		2617.5	-1.23	4.62	27.71	21.86	153.462	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	2575	-1.50	4.51	27.76	21.75	149.624	Horizontal	Pass
		2595	-1.24	4.60	27.72	21.88	154.170	Horizontal	Pass
		2615	-1.19	4.70	27.70	21.81	151.705	Horizontal	Pass
15.0MHz Band 16 QAM	75/0	2577.5	-1.53	4.47	27.77	21.77	150.314	Horizontal	Pass
		2595	-1.33	4.65	27.72	21.74	149.279	Horizontal	Pass
		2612.5	-1.21	4.66	27.69	21.82	152.055	Horizontal	Pass
20.0MHz Band 16 QAM	100/0	2580	-1.43	4.50	27.78	21.85	153.109	Horizontal	Pass
		2595	-1.30	4.66	27.72	21.76	149.968	Horizontal	Pass
		2610	-1.16	4.68	27.68	21.84	152.757	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	2572.5	-1.46	4.48	27.75	21.81	151.705	Vertical	Pass
		2595	-1.26	4.62	27.72	21.84	152.757	Vertical	Pass
		2617.5	-1.19	4.63	27.71	21.89	154.525	Vertical	Pass
10.0MHz Band 16 QAM	50/0	2575	-1.49	4.46	27.76	21.81	151.705	Vertical	Pass
		2595	-1.23	4.65	27.72	21.84	152.757	Vertical	Pass
		2615	-1.23	4.69	27.70	21.78	150.661	Vertical	Pass
15.0MHz Band 16 QAM	75/0	2577.5	-1.55	4.47	27.77	21.75	149.624	Vertical	Pass
		2595	-1.23	4.65	27.72	21.84	152.757	Vertical	Pass
		2612.5	-1.24	4.66	27.69	21.79	151.008	Vertical	Pass
20.0MHz Band 16 QAM	100/0	2580	-1.34	4.53	27.78	21.91	155.239	Vertical	Pass
		2595	-1.15	4.66	27.72	21.91	155.239	Vertical	Pass
		2610	-1.09	4.68	27.68	21.91	155.239	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)

8.11 LTE BAND 66

Radiated Power (EIRP) for Band 66									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	1710.7	-3.26	3.76	28.24	21.22	132.434	Horizontal	Pass
		1745	-3.03	3.91	28.22	21.28	134.276	Horizontal	Pass
		1779.3	-3.05	3.93	28.2	21.22	132.434	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-3.18	3.77	28.23	21.28	134.276	Horizontal	Pass
		1745	-3.14	3.91	28.24	21.19	131.522	Horizontal	Pass
		1778.5	-3.06	3.94	28.25	21.25	133.352	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-3.38	3.77	28.31	21.16	130.617	Horizontal	Pass
		1745	-3.07	3.91	28.22	21.24	133.045	Horizontal	Pass
		1777.5	-3.03	3.94	28.2	21.23	132.739	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-3.31	3.79	28.33	21.23	132.739	Horizontal	Pass
		1745	-3.04	3.95	28.22	21.23	132.739	Horizontal	Pass
		1775	-3.06	3.97	28.19	21.16	130.617	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-3.28	3.79	28.34	21.27	133.968	Horizontal	Pass
		1745	-3.10	3.95	28.22	21.17	130.918	Horizontal	Pass
		1772.5	-3.07	3.97	28.18	21.14	130.017	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-3.39	3.81	28.35	21.15	130.317	Horizontal	Pass
		1745	-3.06	3.96	28.22	21.20	131.826	Horizontal	Pass
		1770	-3.00	4	28.16	21.16	130.617	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-3.18	3.76	28.24	21.30	134.896	Vertical	Pass
		1745	-3.09	3.91	28.22	21.22	132.434	Vertical	Pass
		1779.3	-3.00	3.93	28.2	21.27	133.968	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-3.23	3.77	28.23	21.23	132.739	Vertical	Pass
		1745	-3.10	3.91	28.24	21.23	132.739	Vertical	Pass
		1778.5	-3.14	3.94	28.25	21.17	130.918	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-3.32	3.77	28.31	21.22	132.434	Vertical	Pass
		1745	-3.16	3.91	28.22	21.15	130.317	Vertical	Pass
		1777.5	-3.12	3.94	28.2	21.14	130.017	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-3.25	3.79	28.34	21.30	134.896	Vertical	Pass
		1745	-3.07	3.95	28.22	21.20	131.826	Vertical	Pass
		1775	-2.93	3.97	28.18	21.28	134.276	Vertical	Pass

15.0MHz	1/#Mid	1717.5	-3.26	3.81	28.35	21.28	134.276	Vertical	Pass
Band		1745	-3.00	3.96	28.22	21.26	133.660	Vertical	Pass
QPSK		1772.5	-2.86	4	28.16	21.30	134.896	Vertical	Pass
20.0MHz	1/#Mid	1720	-3.21	3.79	28.34	21.34	136.144	Vertical	Pass
Band		1745	-2.93	3.95	28.22	21.34	136.144	Vertical	Pass
QPSK		1770	-2.88	3.97	28.18	21.33	135.831	Vertical	Pass

Radiated Power (EIRP) for Band 66									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz	1/#Mid	1710.7	-5.09	3.76	28.24	19.39	86.896	Horizontal	Pass
Band 16		1745	-4.91	3.91	28.22	19.40	87.096	Horizontal	Pass
QAM		1779.3	-4.94	3.93	28.2	19.33	85.704	Horizontal	Pass
3.0MHz	1/#Mid	1711.5	-5.21	3.77	28.23	19.25	84.140	Horizontal	Pass
Band 16		1745	-4.98	3.91	28.24	19.35	86.099	Horizontal	Pass
QAM		1778.5	-4.98	3.94	28.25	19.33	85.704	Horizontal	Pass
5.0MHz	1/#Mid	1712.5	-5.28	3.77	28.31	19.26	84.333	Horizontal	Pass
Band 16		1745	-5.04	3.91	28.22	19.27	84.528	Horizontal	Pass
QAM		1777.5	-4.92	3.94	28.2	19.34	85.901	Horizontal	Pass
10.0MHz	1/#Mid	1715	-5.21	3.79	28.33	19.33	85.704	Horizontal	Pass
Band 16		1745	-4.99	3.95	28.22	19.28	84.723	Horizontal	Pass
QAM		1775	-4.89	3.97	28.19	19.33	85.704	Horizontal	Pass
15.0MHz	1/#Mid	1717.5	-5.16	3.79	28.34	19.39	86.896	Horizontal	Pass
Band 16		1745	-5.00	3.95	28.22	19.27	84.528	Horizontal	Pass
QAM		1772.5	-4.95	3.97	28.18	19.26	84.333	Horizontal	Pass
20.0MHz	1/#Mid	1720	-5.16	3.81	28.35	19.38	86.696	Horizontal	Pass
Band 16		1745	-5.02	3.96	28.22	19.24	83.946	Horizontal	Pass
QAM		1770	-4.79	4	28.16	19.37	86.497	Horizontal	Pass
1.4MHz	1/#Mid	1710.7	-5.11	3.76	28.24	19.37	86.497	Vertical	Pass
Band 16		1745	-4.98	3.91	28.22	19.33	85.704	Vertical	Pass
QAM		1779.3	-5.01	3.93	28.2	19.26	84.333	Vertical	Pass
3.0MHz	1/#Mid	1711.5	-5.10	3.77	28.23	19.36	86.298	Vertical	Pass
Band 16		1745	-5.01	3.91	28.24	19.32	85.507	Vertical	Pass
QAM		1778.5	-5.01	3.94	28.25	19.30	85.114	Vertical	Pass
5.0MHz	1/#Mid	1712.5	-5.27	3.77	28.31	19.27	84.528	Vertical	Pass

Band 16 QAM		1745	-5.06	3.91	28.22	19.25	84.140	Vertical	Pass
		1777.5	-5.03	3.94	28.2	19.23	83.753	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-5.21	3.79	28.34	19.34	85.901	Vertical	Pass
		1745	-4.93	3.95	28.22	19.34	85.901	Vertical	Pass
		1775	-4.96	3.97	28.18	19.25	84.140	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-5.28	3.81	28.35	19.26	84.333	Vertical	Pass
		1745	-4.90	3.96	28.22	19.36	86.298	Vertical	Pass
		1772.5	-4.85	4	28.16	19.31	85.310	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-5.12	3.79	28.34	19.43	87.700	Vertical	Pass
		1745	-4.85	3.95	28.22	19.42	87.498	Vertical	Pass
		1770	-4.78	3.97	28.18	19.43	87.700	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 2/4/5/7/12/17/38/66

RESULTS

PASS

9.1 LTE BAND 2

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

Test Results for Low Channel 1850.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3701.4	-51.76	4.04	33.51	-22.29	-13	-9.29	Horizontal
3701.4	-52.85	4.04	33.51	-23.38	-13	-10.38	Vertical
5552.1	-53.46	5.24	35.84	-22.86	-13	-9.86	Vertical
5552.1	-49.05	5.24	35.84	-18.45	-13	-5.45	Horizontal
211.7	-42.86	1.43	16.02	-28.27	-13	-15.27	Vertical
320.9	-35.76	1.30	17.99	-19.07	-13	-6.07	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-50.48	4.04	33.56	-20.96	-13	-7.96	Horizontal
3760.0	-46.25	4.04	33.56	-16.73	-13	-3.73	Vertical
5640.0	-50.44	5.24	35.91	-19.77	-13	-6.77	Vertical
5640.0	-51.39	5.24	35.91	-20.72	-13	-7.72	Horizontal
209.1	-40.24	1.62	16.97	-24.89	-13	-11.89	Vertical
392.4	-44.33	1.74	15.98	-30.10	-13	-17.10	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-51.40	4.04	34.00	-21.44	-13	-8.44	Horizontal
3818.6	-48.10	4.04	34.00	-18.14	-13	-5.14	Vertical
5727.9	-51.28	5.24	36.04	-20.48	-13	-7.48	Vertical
5727.9	-51.61	5.24	36.04	-20.81	-13	-7.81	Horizontal
198.0	-34.85	1.42	17.29	-18.98	-13	-5.98	Vertical
351.7	-43.86	1.50	17.90	-27.45	-13	-14.45	Horizontal

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

Test Results for Low Channel 1860MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3720.0	-44.17	4.07	33.54	-14.70	-13	-1.70	Horizontal
3720.0	-45.44	4.07	33.54	-15.97	-13	-2.97	Vertical
5580.0	-51.05	5.28	35.86	-20.47	-13	-7.47	Vertical
5580.0	-51.19	5.28	35.86	-20.61	-13	-7.61	Horizontal
193.8	-43.10	1.58	16.89	-27.78	-13	-14.78	Vertical
456.4	-44.14	1.76	17.26	-28.64	-13	-15.64	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-49.20	4.04	33.56	-19.68	-13	-6.68	Horizontal
3760.0	-46.43	4.04	33.56	-16.91	-13	-3.91	Vertical
5640.0	-48.42	5.24	35.91	-17.75	-13	-4.75	Vertical
5640.0	-50.13	5.24	35.91	-19.46	-13	-6.46	Horizontal
202.2	-41.94	1.46	16.27	-27.13	-13	-14.13	Vertical
303.8	-40.55	1.59	15.15	-26.99	-13	-13.99	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-49.97	4.04	34.00	-20.01	-13	-7.01	Horizontal
3800.0	-53.62	4.04	34.00	-23.66	-13	-10.66	Vertical
5700.0	-48.31	5.24	36.04	-17.51	-13	-4.51	Vertical
5700.0	-51.39	5.24	36.04	-20.59	-13	-7.59	Horizontal
178.9	-34.05	1.36	17.39	-18.01	-13	-5.01	Vertical
434.3	-40.91	1.66	15.39	-27.18	-13	-14.18	Horizontal

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

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

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

9.2 LTE BAND 4

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

Test Results for Low Channel 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-48.13	4.02	29.80	-22.35	-13	-9.35	Horizontal
3421.4	-48.65	4.02	29.80	-22.87	-13	-9.87	Vertical
5132.1	-47.62	5.24	35.84	-17.02	-13	-4.02	Vertical
5132.1	-52.94	5.24	35.84	-22.34	-13	-9.34	Horizontal
178.5	-34.24	1.68	16.04	-19.88	-13	-6.88	Vertical
346.6	-34.76	1.78	17.74	-18.80	-13	-5.80	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-47.76	4.03	30.00	-21.79	-13	-8.79	Horizontal
3465.0	-46.00	4.03	30.00	-20.03	-13	-7.03	Vertical
5197.5	-47.18	5.25	35.86	-16.57	-13	-3.57	Vertical
5197.5	-52.48	5.25	35.86	-21.87	-13	-8.87	Horizontal
180.2	-43.55	1.72	17.69	-27.58	-13	-14.58	Vertical
251.2	-35.99	1.62	16.02	-21.58	-13	-8.58	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-46.09	4.05	30.01	-20.13	-13	-7.13	Horizontal
3508.6	-44.01	4.05	30.01	-18.05	-13	-5.05	Vertical
5262.9	-48.62	5.26	35.86	-18.02	-13	-5.02	Vertical
5262.9	-50.29	5.26	35.86	-19.69	-13	-6.69	Horizontal
186.6	-39.22	1.80	16.69	-24.33	-13	-11.33	Vertical
374.7	-34.12	1.75	16.66	-19.22	-13	-6.22	Horizontal

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

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-50.25	4.02	29.80	-24.47	-13	-11.47	Horizontal
3440.0	-47.08	4.02	29.80	-21.30	-13	-8.30	Vertical
5160.0	-46.86	5.24	35.84	-16.26	-13	-3.26	Vertical
5160.0	-52.40	5.24	35.84	-21.80	-13	-8.80	Horizontal
190.4	-43.17	1.57	17.26	-27.48	-13	-14.48	Vertical
394.2	-36.67	1.78	16.35	-22.10	-13	-9.10	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-46.87	4.03	30.00	-20.90	-13	-7.90	Horizontal
3465.0	-44.59	4.03	30.00	-18.62	-13	-5.62	Vertical
5197.5	-49.42	5.25	35.86	-18.81	-13	-5.81	Vertical
5197.5	-50.21	5.25	35.86	-19.60	-13	-6.60	Horizontal
212.2	-38.98	1.44	17.95	-22.47	-13	-9.47	Vertical
377.8	-44.57	1.65	16.09	-30.13	-13	-17.13	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-44.05	4.05	27.68	-20.42	-13	-7.42	Horizontal
3490.0	-44.02	4.05	27.68	-20.39	-13	-7.39	Vertical
5235.0	-48.71	5.26	35.86	-18.11	-13	-5.11	Vertical
5235.0	-52.28	5.26	35.86	-21.68	-13	-8.68	Horizontal
204.9	-38.91	1.61	16.85	-23.67	-13	-10.67	Vertical
361.2	-39.88	1.61	15.19	-26.30	-13	-13.30	Horizontal

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

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

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

9.3 LTE BAND 5

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

Test Results for Low Channel 824.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1649.4	-49.54	2.78	27.50	-24.82	-13	-11.82	Horizontal
1649.4	-53.16	2.78	27.50	-28.44	-13	-15.44	Vertical
2474.1	-50.69	2.90	27.80	-25.79	-13	-12.79	Vertical
2474.1	-49.25	2.90	27.80	-24.35	-13	-11.35	Horizontal
181.2	-43.05	1.76	17.59	-27.22	-13	-14.22	Vertical
304.2	-34.70	1.63	15.87	-20.46	-13	-7.46	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-52.21	2.80	27.48	-27.53	-13	-14.53	Horizontal
1673.0	-44.46	2.80	27.48	-19.78	-13	-6.78	Vertical
2509.5	-52.01	2.91	27.70	-27.22	-13	-14.22	Vertical
2509.5	-52.84	2.91	27.70	-28.05	-13	-15.05	Horizontal
195.6	-39.54	1.61	15.68	-25.47	-13	-12.47	Vertical
416.6	-34.64	1.59	17.52	-18.72	-13	-5.72	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-50.05	2.82	27.43	-25.44	-13	-12.44	Horizontal
1696.6	-45.66	2.82	27.43	-21.05	-13	-8.05	Vertical
2544.9	-52.07	2.92	27.74	-27.25	-13	-14.25	Vertical
2544.9	-53.98	2.92	27.74	-29.16	-13	-16.16	Horizontal
190.6	-42.44	1.69	16.67	-27.45	-13	-14.45	Vertical
441.4	-38.44	1.70	17.18	-22.96	-13	-9.96	Horizontal

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

Test Results for Low Channel 829MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1658.0	-53.89	2.78	27.50	-29.17	-13	-16.17	Horizontal
1658.0	-45.69	2.78	27.50	-20.97	-13	-7.97	Vertical
2487.0	-47.64	2.90	27.80	-22.74	-13	-9.74	Vertical
2487.0	-52.08	2.90	27.80	-27.18	-13	-14.18	Horizontal
185.6	-43.28	1.71	15.57	-29.42	-13	-16.42	Vertical
393.8	-34.08	1.34	16.40	-19.02	-13	-6.02	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-46.18	2.80	27.48	-21.50	-13	-8.50	Horizontal
1673.0	-51.42	2.80	27.48	-26.74	-13	-13.74	Vertical
2509.5	-52.73	2.91	27.70	-27.94	-13	-14.94	Vertical
2509.5	-52.44	2.91	27.70	-27.65	-13	-14.65	Horizontal
175.9	-37.14	1.44	17.04	-21.54	-13	-8.54	Vertical
399.7	-40.62	1.76	17.62	-24.76	-13	-11.76	Horizontal
Test Results for High Channel 844MHz							
1688.0	-50.97	2.82	27.43	-26.36	-13	-13.36	Horizontal
1688.0	-50.45	2.82	27.43	-25.84	-13	-12.84	Vertical
2532.0	-48.60	2.92	27.74	-23.78	-13	-10.78	Vertical
2532.0	-53.21	2.92	27.74	-28.39	-13	-15.39	Horizontal
194.9	-44.24	1.74	17.70	-28.28	-13	-15.28	Vertical
407.3	-37.02	1.41	17.46	-20.96	-13	-7.96	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	-62.06	5.23	35.81	-31.48	-25	-6.48	Horizontal
5005.0	-64.13	5.23	35.81	-33.55	-25	-8.55	Vertical
7507.5	-64.24	5.67	36.85	-33.06	-25	-8.06	Vertical
7507.5	-62.97	5.67	36.85	-31.79	-25	-6.79	Horizontal
186.1	-44.94	1.73	17.97	-28.70	-25	-3.70	Vertical
329.4	-47.74	1.38	15.11	-34.01	-25	-9.01	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-64.01	5.23	35.82	-33.42	-25	-8.42	Horizontal
5070.0	-62.70	5.23	35.82	-32.11	-25	-7.11	Vertical
7605.0	-61.36	5.67	36.85	-30.18	-25	-5.18	Vertical
7605.0	-64.35	5.67	36.85	-33.17	-25	-8.17	Horizontal
212.6	-47.58	1.77	16.17	-33.17	-25	-8.17	Vertical
330.8	-52.85	1.63	15.21	-39.27	-25	-14.27	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-64.88	5.24	35.83	-34.29	-25	-9.29	Horizontal
5135.0	-64.41	5.24	35.83	-33.82	-25	-8.82	Vertical
7702.5	-61.63	5.68	36.87	-30.44	-25	-5.44	Vertical
7702.5	-59.98	5.68	36.87	-28.79	-25	-3.79	Horizontal
189.5	-44.95	1.58	17.56	-28.97	-25	-3.97	Vertical
408.0	-52.90	1.45	16.58	-37.77	-25	-12.77	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	-60.45	5.23	35.82	-29.86	-25	-4.86	Horizontal
5020.0	-60.23	5.23	35.82	-29.64	-25	-4.64	Vertical
7530.0	-61.83	5.67	36.86	-30.64	-25	-5.64	Vertical
7530.0	-59.37	5.67	36.86	-28.18	-25	-3.18	Horizontal
185.2	-52.28	1.63	15.76	-38.15	-25	-13.15	Vertical
401.8	-52.47	1.71	15.44	-38.74	-25	-13.74	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-64.87	5.23	35.82	-34.28	-25	-9.28	Horizontal
5070.0	-60.13	5.23	35.82	-29.54	-25	-4.54	Vertical
7605.0	-63.37	5.67	36.85	-32.19	-25	-7.19	Vertical
7605.0	-62.26	5.67	36.85	-31.08	-25	-6.08	Horizontal
175.6	-49.76	1.79	16.84	-34.70	-25	-9.70	Vertical
436.1	-54.51	1.71	17.64	-38.58	-25	-13.58	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-60.42	5.24	35.83	-29.83	-25	-4.83	Horizontal
5120.0	-59.88	5.24	35.83	-29.29	-25	-4.29	Vertical
7680.0	-64.76	5.70	36.88	-33.58	-25	-8.58	Vertical
7680.0	-64.76	5.70	36.88	-33.58	-25	-8.58	Horizontal
212.8	-49.05	1.79	16.84	-33.99	-25	-8.99	Vertical
366.7	-48.72	1.71	17.64	-32.79	-25	-7.79	Horizontal

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

. Margin = Spurious Emission Level - Limit

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

9.5 LTE BAND 12

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

Test Results for Low Channel 699.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1399.4	-48.12	2.60	27.20	-23.52	-13	-10.52	Horizontal
1399.4	-44.73	2.60	27.20	-20.13	-13	-7.13	Vertical
2099.1	-44.75	2.85	27.54	-20.06	-13	-7.06	Vertical
2099.1	-52.70	2.85	27.54	-28.01	-13	-15.01	Horizontal
202.0	-37.25	1.49	17.78	-20.96	-13	-7.96	Vertical
234.0	-36.34	1.36	17.33	-20.37	-13	-7.37	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-53.68	2.61	27.28	-29.01	-13	-16.01	Horizontal
1415.0	-44.29	2.61	27.28	-19.62	-13	-6.62	Vertical
2122.5	-53.75	2.87	27.59	-29.03	-13	-16.03	Vertical
2122.5	-53.24	2.87	27.59	-28.52	-13	-15.52	Horizontal
199.5	-34.42	1.73	15.74	-20.41	-13	-7.41	Vertical
422.0	-36.19	1.62	15.79	-22.02	-13	-9.02	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-51.18	2.63	27.28	-26.53	-13	-13.53	Horizontal
1430.6	-47.21	2.63	27.28	-22.56	-13	-9.56	Vertical
2145.9	-48.18	2.88	27.60	-23.46	-13	-10.46	Vertical
2145.9	-53.78	2.88	27.60	-29.06	-13	-16.06	Horizontal
178.2	-34.94	1.61	18.00	-18.55	-13	-5.55	Vertical
284.0	-39.13	1.45	15.49	-25.10	-13	-12.10	Horizontal

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

Test Results for Low Channel 704MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1408.0	-45.44	2.61	27.26	-20.79	-13	-7.79	Horizontal
1408.0	-44.43	2.61	27.26	-19.78	-13	-6.78	Vertical
2112.0	-51.55	2.87	27.58	-26.84	-13	-13.84	Vertical
2112.0	-51.09	2.87	27.58	-26.38	-13	-13.38	Horizontal
190.5	-41.77	1.31	16.97	-26.11	-13	-13.11	Vertical
375.9	-43.07	1.65	16.70	-28.02	-13	-15.02	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-47.38	2.61	27.28	-22.71	-13	-9.71	Horizontal
1415.0	-51.10	2.61	27.28	-26.43	-13	-13.43	Vertical
2122.5	-51.96	2.87	27.59	-27.24	-13	-14.24	Vertical
2122.5	-53.67	2.87	27.59	-28.95	-13	-15.95	Horizontal
205.1	-36.14	1.72	17.99	-19.87	-13	-6.87	Vertical
333.5	-39.52	1.73	17.94	-23.31	-13	-10.31	Horizontal
Test Results for High Channel 711MHz							
1422.0	-52.66	2.62	27.28	-28.00	-13	-15.00	Horizontal
1422.0	-49.97	2.62	27.28	-25.31	-13	-12.31	Vertical
2133.0	-53.84	2.87	27.60	-29.11	-13	-16.11	Vertical
2133.0	-52.79	2.87	27.60	-28.06	-13	-15.06	Horizontal
189.5	-35.99	1.58	15.93	-21.64	-13	-8.64	Vertical
257.4	-40.67	1.36	15.59	-26.44	-13	-13.44	Horizontal

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

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

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

9.7 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	-44.14	2.61	27.28	-19.47	-13	-6.47	Horizontal
1413.0	-52.95	2.61	27.28	-28.28	-13	-15.28	Vertical
2119.5	-47.94	2.87	27.59	-23.22	-13	-10.22	Vertical
2119.5	-53.45	2.87	27.59	-28.73	-13	-15.73	Horizontal
183.5	-38.51	1.71	16.15	-24.07	-13	-11.07	Vertical
344.1	-40.63	1.41	17.32	-24.72	-13	-11.72	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-51.05	2.62	27.30	-26.37	-13	-13.37	Horizontal
1420.0	-48.82	2.62	27.30	-24.14	-13	-11.14	Vertical
2130.0	-49.46	2.87	27.62	-24.71	-13	-11.71	Vertical
2130.0	-49.57	2.87	27.62	-24.82	-13	-11.82	Horizontal
207.4	-42.51	1.42	15.25	-28.69	-13	-15.69	Vertical
253.4	-42.46	1.36	17.19	-26.63	-13	-13.63	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-50.66	2.66	27.28	-26.04	-13	-13.04	Horizontal
1427.0	-49.56	2.66	27.28	-24.94	-13	-11.94	Vertical
2140.5	-47.92	2.88	27.60	-23.20	-13	-10.20	Vertical
2140.5	-53.54	2.88	27.60	-28.82	-13	-15.82	Horizontal
183.9	-41.97	1.32	17.29	-26.00	-13	-13.00	Vertical
253.7	-34.75	1.72	16.89	-19.58	-13	-6.58	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	-53.48	2.62	27.30	-28.80	-13	-15.80	Horizontal
1418.0	-48.83	2.62	27.30	-24.15	-13	-11.15	Vertical
2127.0	-45.78	2.87	27.62	-21.03	-13	-8.03	Vertical
2127.0	-52.89	2.87	27.62	-28.14	-13	-15.14	Horizontal
194.4	-41.04	1.35	16.91	-25.48	-13	-12.48	Vertical
328.1	-37.86	1.62	16.31	-23.17	-13	-10.17	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-53.06	2.62	27.30	-28.38	-13	-15.38	Horizontal
1420.0	-51.60	2.62	27.30	-26.92	-13	-13.92	Vertical
2130.0	-51.32	2.87	27.62	-26.57	-13	-13.57	Vertical
2130.0	-52.80	2.87	27.62	-28.05	-13	-15.05	Horizontal
190.6	-39.37	1.51	17.14	-23.74	-13	-10.74	Vertical
336.3	-36.39	1.77	16.88	-21.28	-13	-8.28	Horizontal
Test Results for High Channel 711MHz							
1422.0	-44.34	2.62	27.30	-19.66	-13	-6.66	Horizontal
1422.0	-52.39	2.62	27.30	-27.71	-13	-14.71	Vertical
2133.0	-44.70	2.87	27.62	-19.95	-13	-6.95	Vertical
2133.0	-51.66	2.87	27.62	-26.91	-13	-13.91	Horizontal
192.0	-38.86	1.78	15.95	-24.69	-13	-11.69	Vertical
257.7	-37.28	1.34	17.95	-20.68	-13	-7.68	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.

9.8 LTE BAND 38

QPSK EIRP POWER FOR LTE BAND 38 (5MHZ BANDWIDTH)

Test Results for Low Channel 2572.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5145.0	-62.21	5.13	35.81	-31.53	-25	-6.53	Horizontal
5145.0	-60.43	5.13	35.81	-29.75	-25	-4.75	Vertical
7717.5	-63.74	5.42	36.85	-32.31	-25	-7.31	Vertical
7717.5	-61.57	5.42	36.85	-30.14	-25	-5.14	Horizontal
197.9	-53.30	1.56	17.97	-36.89	-25	-11.89	Vertical
253.5	-48.88	1.33	15.11	-35.10	-25	-10.10	Horizontal
Test Results For Mid Channel 2595MHz							
5190.0	-62.82	5.16	35.82	-32.16	-25	-7.16	Horizontal
5190.0	-62.94	5.16	35.82	-32.28	-25	-7.28	Vertical
7785.0	-64.97	5.53	36.85	-33.65	-25	-8.65	Vertical
7785.0	-62.97	5.53	36.85	-31.65	-25	-6.65	Horizontal
175.1	-50.19	1.77	16.17	-35.78	-25	-10.78	Vertical
284.3	-46.76	1.63	15.21	-33.18	-25	-8.18	Horizontal
Test Results for High Channel 2617.5MHz							
5235.0	-59.08	5.23	35.83	-28.48	-25	-3.48	Horizontal
5235.0	-61.62	5.23	35.83	-31.02	-25	-6.02	Vertical
7852.5	-64.82	5.62	36.87	-33.57	-25	-8.57	Vertical
7852.5	-63.52	5.62	36.87	-32.27	-25	-7.27	Horizontal
192.2	-54.11	1.58	17.56	-38.13	-25	-13.13	Vertical
415.5	-44.14	1.45	16.58	-29.01	-25	-4.01	Horizontal

QPSK EIRP POWER FOR LTE BAND 38 (20MHZ BANDWIDTH)

Test Results for Low Channel 2580MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5160.0	-61.70	5.23	35.82	-31.11	-25	-6.11	Horizontal
5160.0	-62.77	5.23	35.82	-32.18	-25	-7.18	Vertical
7740.0	-62.14	5.67	36.86	-30.95	-25	-5.95	Vertical
7740.0	-59.41	5.67	36.86	-28.22	-25	-3.22	Horizontal
207.4	-46.86	1.55	15.76	-32.65	-25	-7.65	Vertical
439.7	-49.93	1.62	15.44	-36.11	-25	-11.11	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-61.28	5.16	35.82	-30.62	-25	-5.62	Horizontal
5190.0	-60.46	5.16	35.82	-29.80	-25	-4.80	Vertical
7785.0	-60.67	5.53	36.85	-29.35	-25	-4.35	Vertical
7785.0	-60.63	5.53	36.85	-29.31	-25	-4.31	Horizontal
206.7	-51.94	1.58	16.84	-36.68	-25	-11.68	Vertical
413.3	-52.91	1.61	17.64	-36.88	-25	-11.88	Horizontal
Test Results for High Channel 2610MHz							
5220.0	-59.59	5.24	35.83	-29.00	-25	-4.00	Horizontal
5220.0	-62.63	5.24	35.83	-32.04	-25	-7.04	Vertical
7830.0	-59.96	5.70	36.88	-28.78	-25	-3.78	Vertical
7830.0	-64.65	5.70	36.88	-33.47	-25	-8.47	Horizontal
202.3	-45.06	1.48	16.84	-29.70	-25	-4.70	Vertical
466.0	-45.28	1.59	17.64	-29.23	-25	-4.23	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.

9.10 LTE BAND 66

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

Test Results for Low Channel 1710.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-60.16	3.84	35.81	-28.19	-13	-15.19	Horizontal
3421.4	-64.64	3.84	35.81	-32.67	-13	-19.67	Vertical
5132.1	-61.75	5.18	36.85	-30.08	-13	-17.08	Vertical
5132.1	-61.08	5.18	36.85	-29.41	-13	-16.41	Horizontal
195.3	-44.92	1.56	17.97	-28.51	-13	-15.51	Vertical
270.3	-49.04	1.33	15.11	-35.26	-13	-22.26	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-62.48	3.85	35.82	-30.51	-13	-17.51	Horizontal
3490.0	-63.82	3.85	35.82	-31.85	-13	-18.85	Vertical
5235.0	-61.65	5.21	36.85	-30.01	-13	-17.01	Vertical
5235.0	-61.87	5.21	36.85	-30.23	-13	-17.23	Horizontal
187.4	-45.51	1.77	16.17	-31.10	-13	-18.10	Vertical
405.3	-54.01	1.63	15.21	-40.43	-13	-27.43	Horizontal
Test Results for High Channel 1779.3MHz							
3558.6	-61.79	3.86	35.83	-29.82	-13	-16.82	Horizontal
3558.6	-62.94	3.86	35.83	-30.97	-13	-17.97	Vertical
5337.9	-59.35	5.24	36.87	-27.72	-13	-14.72	Vertical
5337.9	-60.11	5.24	36.87	-28.48	-13	-15.48	Horizontal
176.5	-47.44	1.58	17.56	-31.46	-13	-18.46	Vertical
243.2	-53.96	1.45	16.58	-38.83	-13	-25.83	Horizontal

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

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-61.07	3.84	35.82	-29.09	-13	-16.09	Horizontal
3440.0	-61.34	3.84	35.82	-29.36	-13	-16.36	Vertical
5160.0	-63.58	5.18	36.86	-31.90	-13	-18.90	Vertical
5160.0	-59.69	5.18	36.86	-28.01	-13	-15.01	Horizontal
180.6	-54.21	1.56	15.76	-40.01	-13	-27.01	Vertical
436.6	-52.87	1.33	15.44	-38.76	-13	-25.76	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-62.27	3.85	35.82	-30.30	-13	-17.30	Horizontal
3490.0	-63.44	3.85	35.82	-31.47	-13	-18.47	Vertical
5235.0	-61.65	5.21	36.85	-30.01	-13	-17.01	Vertical
5235.0	-62.67	5.21	36.85	-31.03	-13	-18.03	Horizontal
197.6	-45.94	1.77	16.84	-30.86	-13	-17.86	Vertical
373.0	-51.86	1.63	17.64	-35.85	-13	-22.85	Horizontal
Test Results for High Channel 1770MHz							
3540.0	-63.06	3.86	35.83	-31.09	-13	-18.09	Horizontal
3540.0	-64.44	3.86	35.83	-32.47	-13	-19.47	Vertical
5310.0	-62.55	5.24	36.88	-30.91	-13	-17.91	Vertical
5310.0	-59.05	5.24	36.88	-27.41	-13	-14.41	Horizontal
180.9	-46.28	1.58	16.84	-31.01	-13	-18.01	Vertical
231.6	-48.44	1.45	17.64	-32.25	-13	-19.25	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 3.2V, Normal, DC 3.85V and High voltage, DC 4.43V.

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 2/4/5/7/12/17/38/66

RESULTS

See the following pages.

10.1 LTE BAND 2

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	1880	12.4	0.006600	2.5
3.85	1880	13.4	0.007103	2.5
4.43	1880	12.9	0.006881	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	13.0	0.006895	2.5
Extreme (50C)	1880	11.4	0.006054	2.5
Extreme (40C)	1880	13.8	0.007352	2.5
Extreme (30C)	1880	13.4	0.007111	2.5
Extreme (10C)	1880	14.3	0.007598	2.5
Extreme (0C)	1880	12.0	0.006377	2.5
Extreme (-10C)	1880	12.5	0.006663	2.5
Extreme (-20C)	1880	14.0	0.007431	2.5
Extreme (-30C)	1880	14.3	0.007589	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]
3.27	1880	10.0	0.005339	2.5
3.85	1880	9.2	0.004868	2.5
4.43	1880	8.2	0.004349	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	9.8	0.005212	2.5
Extreme (50C)	1880	9.2	0.004898	2.5
Extreme (40C)	1880	7.6	0.004065749	2.5
Extreme (30C)	1880	8.7	0.004623225	2.5
Extreme (10C)	1880	9.4	0.004986634	2.5
Extreme (0C)	1880	8.6	0.004564159	2.5
Extreme (-10C)	1880	9.0	0.004762724	2.5
Extreme (-20C)	1880	9.1	0.004820753	2.5
Extreme (-30C)	1880	8.5	0.0045013	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]
3.27	1732.5	9.3	0.005355	2.5
3.85	1732.5	9.1	0.005224	2.5
4.43	1732.5	8.3	0.004807	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.9	0.005117	2.5
Extreme (50C)	1732.5	8.5	0.004926	2.5
Extreme (40C)	1732.5	7.0	0.004029	2.5
Extreme (30C)	1732.5	5.5	0.003169	2.5
Extreme (10C)	1732.5	7.5	0.004324	2.5
Extreme (0C)	1732.5	9.2	0.005311	2.5
Extreme (-10C)	1732.5	8.6	0.004959	2.5
Extreme (-20C)	1732.5	6.5	0.003744	2.5
Extreme (-30C)	1732.5	8.6	0.004974	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]
3.27	1732.5	10.0	0.005746	2.5
3.85	1732.5	9.1	0.005242	2.5
4.43	1732.5	8.2	0.004762	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	9.5	0.005471	2.5
Extreme (50C)	1732.5	9.0	0.005212	2.5
Extreme (40C)	1732.5	7.9	0.004551	2.5
Extreme (30C)	1732.5	9.1	0.005224	2.5
Extreme (10C)	1732.5	8.9	0.005145	2.5
Extreme (0C)	1732.5	8.2	0.004727	2.5
Extreme (-10C)	1732.5	8.5	0.004907	2.5
Extreme (-20C)	1732.5	9.2	0.005305	2.5
Extreme (-30C)	1732.5	8.1	0.004677	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]
3.27	836.5	6.2	0.007385	2.5
3.85	836.5	6.4	0.007645	2.5
4.43	836.5	4.9	0.005874	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	5.9	0.007032	2.5
Extreme (50C)	836.5	6.1	0.007283	2.5
Extreme (40C)	836.5	6.6	0.007842	2.5
Extreme (30C)	836.5	6.2	0.007358	2.5
Extreme (10C)	836.5	5.5	0.006604	2.5
Extreme (0C)	836.5	5.8	0.006899	2.5
Extreme (-10C)	836.5	5.5	0.006561	2.5
Extreme (-20C)	836.5	6.1	0.007294	2.5
Extreme (-30C)	836.5	5.9	0.007107	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]
3.27	836.5	5.4	0.006436	2.5
3.85	836.5	7.0	0.008379	2.5
4.43	836.5	4.7	0.005673	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.6	0.007857	2.5
Extreme (50C)	836.5	5.5	0.006563	2.5
Extreme (40C)	836.5	6.4	0.007610	2.5
Extreme (30C)	836.5	6.2	0.007435	2.5
Extreme (10C)	836.5	5.1	0.006111	2.5
Extreme (0C)	836.5	4.8	0.005758	2.5
Extreme (-10C)	836.5	5.3	0.006353	2.5
Extreme (-20C)	836.5	6.1	0.007245	2.5
Extreme (-30C)	836.5	6.4	0.007685	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]
3.27	2535	10.0	0.003939	2.5
3.85	2535	8.9	0.003517	2.5
4.43	2535	8.9	0.003506	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	9.6	0.003779	2.5
Extreme (50C)	2535	9.0	0.003555	2.5
Extreme (40C)	2535	8.2	0.003251	2.5
Extreme (30C)	2535	8.5	0.003337	2.5
Extreme (10C)	2535	7.8	0.003081	2.5
Extreme (0C)	2535	8.9	0.003500	2.5
Extreme (-10C)	2535	8.9	0.003516	2.5
Extreme (-20C)	2535	8.7	0.003446	2.5
Extreme (-30C)	2535	8.3	0.003281	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]
3.27	2535	6.9	0.002722	2.5
3.85	2535	6.2	0.002444	2.5
4.43	2535	5.8	0.002304	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	6.9	0.002722	2.5
Extreme (50C)	2535	5.2	0.002038	2.5
Extreme (40C)	2535	5.9	0.002309	2.5
Extreme (30C)	2535	7.2	0.002825	2.5
Extreme (10C)	2535	5.9	0.002316	2.5
Extreme (0C)	2535	5.5	0.002186	2.5
Extreme (-10C)	2535	5.1	0.001994	2.5
Extreme (-20C)	2535	6.0	0.002358	2.5
Extreme (-30C)	2535	5.3	0.002072	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]
3.27	707.5	8.5	0.012062	2.5
3.85	707.5	10.5	0.014837	2.5
4.43	707.5	8.9	0.012629	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	8.8	0.012418	2.5
Extreme (50C)	707.5	7.7	0.010815	2.5
Extreme (40C)	707.5	7.8	0.010972	2.5
Extreme (30C)	707.5	8.7	0.012268	2.5
Extreme (10C)	707.5	7.7	0.010920	2.5
Extreme (0C)	707.5	8.5	0.012029	2.5
Extreme (-10C)	707.5	8.3	0.011671	2.5
Extreme (-20C)	707.5	8.9	0.012588	2.5
Extreme (-30C)	707.5	8.0	0.011286	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]
3.27	707.5	7.9	0.011160	2.5
3.85	707.5	8.3	0.011790	2.5
4.43	707.5	7.8	0.010972	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	8.9	0.012524	2.5
Extreme (50C)	707.5	8.9	0.012577	2.5
Extreme (40C)	707.5	9.1	0.012866	2.5
Extreme (30C)	707.5	7.6	0.010760	2.5
Extreme (10C)	707.5	8.9	0.012642	2.5
Extreme (0C)	707.5	7.2	0.010158	2.5
Extreme (-10C)	707.5	7.1	0.010044	2.5
Extreme (-20C)	707.5	9.0	0.012778	2.5
Extreme (-30C)	707.5	8.8	0.012382	2.5

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

10.7 LTE BAND 17

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	710.0	10.2	0.014380	2.5
3.85	710.0	9.2	0.012916	2.5
4.43	710.0	7.9	0.011092	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.5	0.013364	2.5
Extreme (50C)	710.0	9.0	0.012686	2.5
Extreme (40C)	710.0	8.1	0.011420	2.5
Extreme (30C)	710.0	9.5	0.013377	2.5
Extreme (10C)	710.0	9.4	0.013186	2.5
Extreme (0C)	710.0	7.8	0.010933	2.5
Extreme (-10C)	710.0	9.4	0.013236	2.5
Extreme (-20C)	710.0	8.5	0.012026	2.5
Extreme (-30C)	710.0	8.1	0.011344	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	710.0	10.3	0.014575	2.5
3.85	710.0	9.3	0.013164	2.5
4.43	710.0	8.0	0.011259	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.9	0.013894	2.5
Extreme (50C)	710.0	9.1	0.012788	2.5
Extreme (40C)	710.0	8.7	0.012191	2.5
Extreme (30C)	710.0	9.2	0.012960	2.5
Extreme (10C)	710.0	8.3	0.011641	2.5
Extreme (0C)	710.0	8.4	0.011827	2.5
Extreme (-10C)	710.0	9.6	0.013493	2.5
Extreme (-20C)	710.0	9.1	0.012786	2.5
Extreme (-30C)	710.0	8.4	0.011797	2.5

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

10.8 LTE BAND 38

Band 38 QPSK, (10MHz BANDWIDTH RB size 50 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	2595	9.9	0.003820	2.5
3.85	2595	8.6	0.003300	2.5
4.43	2595	8.8	0.003406	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	9.7	0.003740	2.5
Extreme (50C)	2595	9.1	0.003506	2.5
Extreme (40C)	2595	7.9	0.003045	2.5
Extreme (30C)	2595	8.9	0.003443	2.5
Extreme (10C)	2595	8.0	0.003068	2.5
Extreme (0C)	2595	8.7	0.003343	2.5
Extreme (-10C)	2595	9.6	0.003693	2.5
Extreme (-20C)	2595	8.5	0.003258	2.5
Extreme (-30C)	2595	8.5	0.003293	2.5

Band 38 16QAM, (10MHz BANDWIDTH RB size 50 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	2595	6.9	0.002659	2.5
3.85	2595	6.2	0.002393	2.5
4.43	2595	5.5	0.002104	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	6.9	0.002659	2.5
Extreme (50C)	2595	5.7	0.002187	2.5
Extreme (40C)	2595	5.5	0.002116	2.5
Extreme (30C)	2595	7.1	0.002726	2.5
Extreme (10C)	2595	5.8	0.002229	2.5
Extreme (0C)	2595	5.4	0.002063	2.5
Extreme (-10C)	2595	5.5	0.002132	2.5
Extreme (-20C)	2595	5.6	0.002172	2.5
Extreme (-30C)	2595	5.8	0.002226	2.5

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

10.10 LTE BAND 66

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	1745	6.6	0.003768	2.5
3.85	1745	6.6	0.003799	2.5
4.43	1745	7.1	0.004045	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	5.5	0.003172	2.5
Extreme (50C)	1745	7.5	0.004299	2.5
Extreme (40C)	1745	6.1	0.003498	2.5
Extreme (30C)	1745	7.3	0.004168	2.5
Extreme (10C)	1745	7.5	0.004299	2.5
Extreme (0C)	1745	6.3	0.003629	2.5
Extreme (-10C)	1745	5.5	0.003125	2.5
Extreme (-20C)	1745	6.9	0.003973	2.5
Extreme (-30C)	1745	5.2	0.002991	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	1745	8.6	0.004913	2.5
3.85	1745	8.0	0.004558	2.5
4.43	1745	9.8	0.005594	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	8.3	0.004774	2.5
Extreme (50C)	1745	8.1	0.004628	2.5
Extreme (40C)	1745	8.8	0.005044	2.5
Extreme (30C)	1745	7.9	0.004556	2.5
Extreme (10C)	1745	8.7	0.004978	2.5
Extreme (0C)	1745	6.4	0.003688	2.5
Extreme (-10C)	1745	8.8	0.005049	2.5
Extreme (-20C)	1745	8.9	0.005078	2.5
Extreme (-30C)	1745	5.4	0.003110	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.

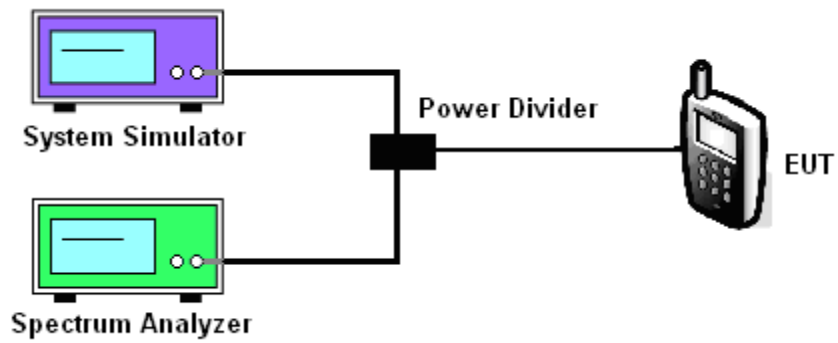
11.2 Measuring Instruments

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 2/4/5/7/12/17/38/66

Test data reference attachment.

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