

FCC CFR47 PART 22H, 24E, 27 CERTIFICATION TEST REPORT FCC ID: 2A6XG-QINF30

Product: Smart phone
Trade Mark: Qin
Model Number: Qin F30
Family Model: N/A
Report No.: STR220509001005E
Issue Date: Jun 08, 2022

Prepared for

SMARTKOSHER

Nahal yarkon 7 Kiryat Gat Israel

Prepared by

Shenzhen NTEK Testing Technology Co., Ltd.
1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street
Bao'an District, Shenzhen 518126 P.R. China
Tel. 400-800-6106, 0755-2320 0050, 0755-2320 0090
Website: <http://www.ntek.org.cn>

TEST RESULT CERTIFICATION

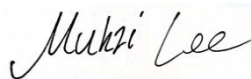
Applicant's name	SMARTKOSHER
Address	Nahal yarkon 7 Kiryat Gat Israel
Manufacturer's Name	Shenzhen Duoqin Technology Co.,Ltd.
Address	2 floor, 9 building, Dezhi Hi-Tech, Yang Tian Road, Baoan District, ShenZhen, China.
Product name	Smart phone
Model and/or type reference ..	Qin F30
Trade Mark	Qin
Family Model	N/A
Test Sample Number	T220509001R003
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	May 09, 2022 ~Jun 08, 2022
Date of Issue	Jun 08, 2022
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:	Smart phone
Trade Mark	Qin
Model Name	Qin F30
Family Model	N/A
Model Difference	N/A
FCC ID:	2A6XG-QINF30
Frequency Bands:	U.S. Bands: ☒ LTE FDD Band 2, 4, 12, 13, 17, 66, 71
Frequency Range:	LTE FDD Band 2 Uplink: 1850MHz-1910MHz, Downlink: 1930MHz-1990MHz; LTE FDD Band 4 Uplink: 1710MHz-1755MHz, Downlink: 2110MHz-2155MHz; LTE FDD Band 12 Uplink: 699MHz-716MHz, Downlink: 729MHz-746MHz; LTE FDD Band 13 Uplink: 777MHz-787MHz, Downlink: 746MHz-756MHz; LTE FDD Band 17 Uplink: 704MHz-716MHz, Downlink: 734MHz-746MHz; LTE FDD Band 66 Uplink: 1710MHz-1780MHz, Downlink: 2110MHz-2200MHz; LTE FDD Band 71 Uplink: 663MHz-698MHz, Downlink: 617MHz-652MHz;
Type of Modulation:	QPSK/16QAM
Power Class	Class 3
Antenna:	PIFA Antenna
Antenna gain:	-2.1dBi;
Power supply	DC 3.85V from battery or DC 5V from Adapter.
Battery	DC 3.85V, 2120mAh
Adapter	Model: TPA-46B050100UU Input: 100-240V, 50/60Hz 0.2A Output: 5.0V $\overline{\text{---}}$ 1000mA
Extreme Vol. Limits:	DC 3.4V to DC 4.2V (Nominal DC 3.85V) (Note 1)
HW Version	A666-MB-V0.2
SW Version	alps-mp-r0.mp1-v7.13

** Note1: The High Voltage 4.2V and Low Voltage 3.4V 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: 2A6XG-QINF30 filing to comply with the FCC Part 22H&24E &27.

1.3 TEST METHODOLOGY

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

1.4 TEST FACILITY

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

ShenZhen NTEK Testing Technology Co., Ltd.

1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen 518126 P.R.China.

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

FCC Registration No.:463705

IC Registration No.:9270A-1,

CNAS Registration No.:L5516

MEASUREMENT UNCERTAINTY

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

No.	Item	Uncertainty
1	Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.5dB
2	Conducted Emission Test	$\pm 1.38\text{dB}$
3	RF power, conducted	$\pm 0.16\text{dB}$
4	Spurious emissions, conducted	$\pm 0.21\text{dB}$
5	All emissions, radiated(<1G)	$\pm 4.68\text{dB}$
6	All emissions, radiated(>1G)	$\pm 4.89\text{dB}$
7	Temperature	$\pm 0.5^\circ\text{C}$
8	Humidity	$\pm 2\%$
9	Frequency error, conducted	$\pm 0.19\text{ ppm}$

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, Band 4, Band 12, Band 13, Band 17, Band 66, Band 71

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

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

1.6 SUMMARY OF TEST RESULTS

FCC Part22, Subpart H/ FCC Part24, Subpart E, FCC Part27, Subpart L, KDB 971168 D01 Power Meas License Digital Systems v03			
FCC Rule	Test Item	Verdict	Remark
2.1046	Conducted Output Power	PASS	
22.913(d) 24.232(d) 27.50(d)(5) KDB 971168 D01 Clause 5.7	Peak-to-Average Ratio	PASS	
2.1049 22.917(b) 24.238(b) KDB 971168 D01 Clause 4.2	Occupied Bandwidth	PASS	
2.1051 22.917(a) 24.238(a) 27.53(m), (g), (h) KDB 971168 D01 Clause 6	Band Edge	PASS	
22.913(a)(2) 27.50 (c)(10) KDB 971168 D01 Clause 5.6	Effective Radiated Power	PASS	

24.232(c) 27.50(h)(2), (d)(4) KDB 971168 D01 Clause 5.6	Equivalent Isotropic Radiated Power	PASS	
2.1053 22.917(a) 24.238(a) 27.53 (g)(h)(m) KDB 971168 D01 Clause 7	Field Strength of Spurious Radiation	PASS	
2.1055 22.355 24.235 27.54 KDB 971168 D01 Clause 9	Frequency Stability for Temperature & Voltage	PASS	
2.1051 22.917(a) 24.238(a) 27.53 (g)(h)(m) KDB 971168 D01 Clause 6	Conducted Emission	PASS	
Remark: 1. "N/A" denotes test is not applicable in this Test Report. 2. All test items were verified and recorded according to the standards and without any deviation during the test. 3. No modifications are made to the EUT during all test items.			

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	Smart phone	Qin F30	FCC ID: 2A6XG-QINF30	EUT

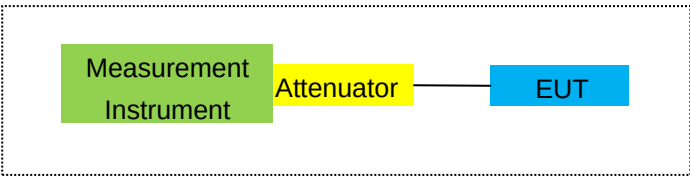
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

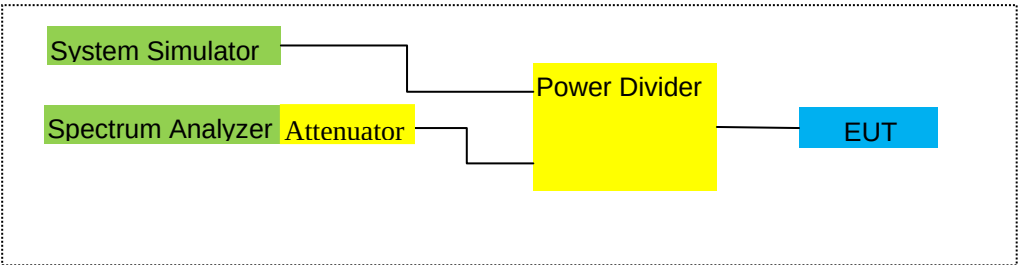
For Radiated Test Cases



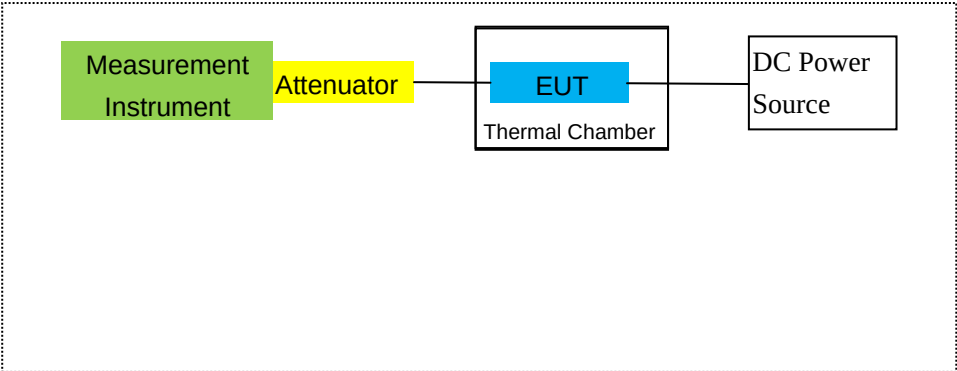
For Conducted Output Power



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	2022.04.01	2023.03.31	1 year
2	Test Receiver	R&S	ESPI	101318	2022.04.06	2023.04.05	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2022.03.30	2023.03.29	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2020.05.11	2023.05.10	3 year
5	Horn Antenna	EM	EM-AH-10180	2011071402	2022.03.31	2023.03.30	3 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2022.04.06	2023.04.05	1 year
7	Amplifier	EM	EM-30180	060538	2021.07.01	2022.06.30	1 year
8	Loop Antenna	ARA	PLA-1030/B	1029	2022.03.30	2023.03.29	1 year
9	Power Meter	R&S	NRVS	100696	2021.07.01	2022.06.30	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2022.04.06	2023.04.05	1 year
11	Test Cable	N/A	R-01	N/A	2019.08.06	2022.08.05	3 year
12	Test Cable	N/A	R-02	N/A	2019.08.06	2022.08.05	3 year
13	Test Cable	N/A	R-03	N/A	2019.08.06	2022.08.05	3 year
14	Test Receiver	R&S	ESCI	101160	2022.04.06	2023.04.05	1 year
15	LISN	R&S	ENV216	101313	2022.04.06	2023.04.05	1 year
16	LISN	EMCO	3816/2	00042990	2022.04.06	2023.04.05	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2022.04.06	2023.04.05	1 year
18	Passive Voltage Probe	R&S	ESH2-Z3	100196	2020.05.11	2023.05.10	3 year
19	Test Cable	N/A	C01	N/A	2020.05.11	2023.05.10	3 year
20	Test Cable	N/A	C02	N/A	2020.05.11	2023.05.10	3 year
21	Test Cable	N/A	C03	N/A	2020.05.11	2023.05.10	3 year
22	Spectrum Analyzer	agilent	e4440a	us44300399	2022.04.01	2023.03.31	1 year
23	test receiver	R&S	ESCI	a0304218	2022.04.06	2023.04.05	1 year
24	Communication Tester	R&S	CMU200	A0304247	2022.04.06	2023.04.05	1 year
25	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2022.04.06	2023.04.05	1 year

26	DC Power Source	N/A	PS-6005D	2017040292 3	2020.05.11	2023.05.10	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.

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, Band 4, Band 12 Band 13, Band 17, Band 66, Band 71

RESULTS

PASS

Test data reference attachment.

6. BANDEDGE AND EMISSION MASK

RULE PART(S)

FCC: §2.1051, §22.917(a), §24.238(a), §27.53(m) (g)(h)

FCC: §2.1046, §22.913, §24.232

LIMITS

The minimum permissible attenuation level of any spurious emission is $43 + \log_{10}(P[\text{Watts}])$, where P is the transmitter power in Watts.

The minimum permissible attenuation level for Band 7 is as following.

Per 27.53(g) for operations in the 698-746 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

Per 27.53(c.5) for operations in the 776-788 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

For all plots showing emissions in the 763 – 775MHz and 793 – 805MHz band, the FCC limit per 27.53(c.4) is $65 + 10\log_{10}(P) = -35\text{dBm}$ in a 6.25kHz bandwidth.

Per 27.53(m) for operations in the BRS/EBS bands, 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.

TEST PROCEDURE

The transmitter output was connected to a CMW500Test 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 display line

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

MODES TESTED

- ☐ LTE Band 2/4/12/13/17/66/71

RESULTS

Test data reference attachment.

7. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.917(a), §24.238(a), §27.53(c)(g)(h)(m)

LIMITS

The minimum permissible attenuation level of any spurious emission is $43 + \log_{10}(P[\text{Watts}])$, where P is the transmitter power in Watts.

The minimum permissible attenuation level for Band 7 is as following.

Per 27.53(g) for operations in the 698-746 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

Per 27.53(c.5) for operations in the 776-788 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

For all plots showing emissions in the 763 – 775MHz and 793 – 805MHz band, the FCC limit per 27.53(c.4) is $65 + 10\log_{10}(P) = -35\text{dBm}$ in a 6.25kHz bandwidth.

Per 27.53(m) for operations in the BRS/EBS bands, 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.

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

MODES TESTED

- ☒ LTE Band 2/4/12/13/17/66/71

7.1 MEASUREMENT METHOD

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

Test data reference attachment.

8. RADIATED MEASUREMENT

8.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913(a)(2), §24.232(c) and §27.50 (c)(10)

LIMITS:

22.913(a) (2)- The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.
24.232 (c) Mobile and portable stations are limited to 2 watts EIRP.
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 in the 2500–2570 MHz and 2620–2690 MHz bands. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

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

- ☐ LTE Band 2/4/12/13/17/66/71

RESULTS

Pass

8.2 LTE BAND 2

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	1850.7	-4.81	3.76	28.24	19.67	92.683	Horizontal	Pass
		1880	-4.61	3.91	28.22	19.70	93.325	Horizontal	Pass
		1909.3	-4.50	3.93	28.20	19.77	94.842	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-4.73	3.77	28.23	19.73	93.972	Horizontal	Pass
		1880	-4.59	3.91	28.24	19.74	94.189	Horizontal	Pass
		1908.5	-4.68	3.94	28.25	19.63	91.833	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-4.83	3.77	28.31	19.71	93.541	Horizontal	Pass
		1880	-4.67	3.91	28.22	19.64	92.045	Horizontal	Pass
		1907.5	-4.66	3.94	28.20	19.60	91.201	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-4.82	3.79	28.33	19.72	93.756	Horizontal	Pass
		1880	-4.59	3.95	28.22	19.68	92.897	Horizontal	Pass
		1905	-4.55	3.97	28.19	19.67	92.683	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-4.84	3.79	28.34	19.71	93.541	Horizontal	Pass
		1880	-4.61	3.95	28.22	19.66	92.470	Horizontal	Pass
		1902.5	-4.56	3.97	28.18	19.65	92.257	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-4.89	3.81	28.35	19.65	92.257	Horizontal	Pass
		1880	-4.66	3.96	28.22	19.60	91.201	Horizontal	Pass
		1900	-4.51	4.00	28.16	19.65	92.257	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-4.70	3.76	28.24	19.78	95.060	Vertical	Pass
		1880	-4.56	3.91	28.22	19.75	94.406	Vertical	Pass
		1909.3	-4.64	3.93	28.20	19.63	91.833	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-4.72	3.77	28.23	19.74	94.189	Vertical	Pass
		1880	-4.58	3.91	28.24	19.75	94.406	Vertical	Pass
		1908.5	-4.58	3.94	28.25	19.73	93.972	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-4.81	3.77	28.31	19.73	93.972	Vertical	Pass
		1880	-4.58	3.91	28.22	19.73	93.972	Vertical	Pass
		1907.5	-4.49	3.94	28.20	19.77	94.842	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1855	-4.86	3.79	28.33	19.68	92.897	Vertical	Pass
		1880	-4.59	3.95	28.22	19.68	92.897	Vertical	Pass
		1905	-4.53	3.97	28.19	19.69	93.111	Vertical	Pass
15.0MHz	1/#Mid	1857.5	-4.84	3.79	28.34	19.71	93.541	Vertical	Pass

Band QPSK		1880	-4.60	3.95	28.22	19.67	92.683	Vertical	Pass
		1902.5	-4.55	3.97	28.18	19.66	92.470	Vertical	Pass
20.0MHz	1/#Mid	1860	-4.72	3.81	28.35	19.82	95.940	Vertical	Pass
Band		1880	-4.46	3.96	28.22	19.80	95.499	Vertical	Pass
QPSK		1900	-4.36	4.00	28.16	19.80	95.499	Vertical	Pass

Note:

SG Level= Signal generator output

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

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	1850.7	-5.69	3.76	28.24	18.79	75.683	Horizontal	Pass
		1880	-5.42	3.91	28.22	18.89	77.446	Horizontal	Pass
		1909.3	-5.44	3.93	28.20	18.83	76.384	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-5.70	3.77	28.23	18.76	75.162	Horizontal	Pass
		1880	-5.44	3.91	28.24	18.89	77.446	Horizontal	Pass
		1908.5	-5.44	3.94	28.25	18.87	77.090	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-5.66	3.77	28.31	18.88	77.268	Horizontal	Pass
		1880	-5.44	3.91	28.22	18.87	77.090	Horizontal	Pass
		1907.5	-5.53	3.94	28.20	18.73	74.645	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-5.67	3.79	28.33	18.87	77.090	Horizontal	Pass
		1880	-5.50	3.95	28.22	18.77	75.336	Horizontal	Pass
		1905	-5.33	3.97	28.19	18.89	77.446	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-5.69	3.79	28.34	18.86	76.913	Horizontal	Pass
		1880	-5.44	3.95	28.22	18.83	76.384	Horizontal	Pass
		1902.5	-5.32	3.97	28.18	18.89	77.446	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-5.81	3.81	28.35	18.73	74.645	Horizontal	Pass
		1880	-5.37	3.96	28.22	18.89	77.446	Horizontal	Pass
		1900	-5.41	4.00	28.16	18.75	74.989	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1850.7	-5.62	3.76	28.24	18.86	76.913	Vertical	Pass
		1880	-5.44	3.91	28.22	18.87	77.090	Vertical	Pass
		1909.3	-5.45	3.93	28.20	18.82	76.208	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-5.68	3.77	28.23	18.78	75.509	Vertical	Pass
		1880	-5.50	3.91	28.24	18.83	76.384	Vertical	Pass
		1908.5	-5.54	3.94	28.25	18.77	75.336	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-5.73	3.77	28.31	18.81	76.033	Vertical	Pass
		1880	-5.46	3.91	28.22	18.85	76.736	Vertical	Pass
		1907.5	-5.49	3.94	28.20	18.77	75.336	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-5.65	3.79	28.33	18.89	77.446	Vertical	Pass
		1880	-5.43	3.95	28.22	18.84	76.560	Vertical	Pass
		1905	-5.34	3.97	28.19	18.88	77.268	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-5.70	3.79	28.34	18.85	76.736	Vertical	Pass
		1880	-5.43	3.95	28.22	18.84	76.560	Vertical	Pass
		1902.5	-5.37	3.97	28.18	18.84	76.560	Vertical	Pass

20.0MHz	1/#Mid	1860	-5.63	3.81	28.35	18.91	77.804	Vertical	Pass
Band 16		1880	-5.32	3.96	28.22	18.94	78.343	Vertical	Pass
QAM		1900	-5.23	4.00	28.16	18.93	78.163	Vertical	Pass

Note:

SG Level= Signal generator output

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

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	-4.80	3.12	27.58	19.66	92.470	Horizontal	Pass
		1732.5	-4.55	3.27	27.61	19.79	95.280	Horizontal	Pass
		1754.3	-4.59	3.29	27.63	19.75	94.406	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-4.72	3.13	27.61	19.76	94.624	Horizontal	Pass
		1732.5	-4.55	3.27	27.61	19.79	95.280	Horizontal	Pass
		1753.5	-4.56	3.30	27.62	19.76	94.624	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-4.72	3.13	27.63	19.78	95.060	Horizontal	Pass
		1732.5	-4.67	3.27	27.61	19.67	92.683	Horizontal	Pass
		1752.5	-4.68	3.30	27.60	19.62	91.622	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-4.70	3.15	27.64	19.79	95.280	Horizontal	Pass
		1732.5	-4.58	3.31	27.61	19.72	93.756	Horizontal	Pass
		1750	-4.51	3.33	27.59	19.75	94.406	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-4.77	3.15	27.65	19.73	93.972	Horizontal	Pass
		1732.5	-4.65	3.31	27.61	19.65	92.257	Horizontal	Pass
		1747.5	-4.46	3.33	27.57	19.78	95.060	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-4.72	3.17	27.66	19.77	94.842	Horizontal	Pass
		1732.5	-4.59	3.32	27.61	19.70	93.325	Horizontal	Pass
		1745	-4.48	3.36	27.56	19.72	93.756	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-4.82	3.12	27.58	19.64	92.045	Vertical	Pass
		1732.5	-4.65	3.27	27.61	19.69	93.111	Vertical	Pass
		1754.3	-4.63	3.29	27.63	19.71	93.541	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-4.73	3.13	27.61	19.75	94.406	Vertical	Pass
		1732.5	-4.56	3.27	27.61	19.78	95.060	Vertical	Pass
		1753.5	-4.65	3.30	27.62	19.67	92.683	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-4.73	3.13	27.63	19.77	94.842	Vertical	Pass
		1732.5	-4.59	3.27	27.61	19.75	94.406	Vertical	Pass
		1752.5	-4.68	3.30	27.60	19.62	91.622	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-4.76	3.15	27.64	19.73	93.972	Vertical	Pass
		1732.5	-4.60	3.31	27.61	19.70	93.325	Vertical	Pass
		1750	-4.58	3.33	27.59	19.68	92.897	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1717.5	-4.78	3.15	27.65	19.72	93.756	Vertical	Pass
		1732.5	-4.63	3.31	27.61	19.67	92.683	Vertical	Pass
		1747.5	-4.56	3.33	27.57	19.68	92.897	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1720	-4.70	3.17	27.66	19.79	95.280	Vertical	Pass
		1732.5	-4.50	3.32	27.61	19.79	95.280	Vertical	Pass
		1745	-4.39	3.36	27.56	19.81	95.719	Vertical	Pass

Note:

SG Level= Signal generator output

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

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	1710.7	-5.48	3.12	27.58	18.98	79.068	Horizontal	Pass
		1732.5	-5.37	3.27	27.61	18.97	78.886	Horizontal	Pass
		1754.3	-5.25	3.29	27.63	19.09	81.096	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-5.43	3.13	27.61	19.05	80.353	Horizontal	Pass
		1732.5	-5.26	3.27	27.61	19.08	80.910	Horizontal	Pass
		1753.5	-5.24	3.30	27.62	19.08	80.910	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-5.53	3.13	27.63	18.97	78.886	Horizontal	Pass
		1732.5	-5.29	3.27	27.61	19.05	80.353	Horizontal	Pass
		1752.5	-5.21	3.30	27.60	19.09	81.096	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-5.43	3.15	27.64	19.06	80.538	Horizontal	Pass
		1732.5	-5.20	3.31	27.61	19.10	81.283	Horizontal	Pass
		1750	-5.20	3.33	27.59	19.06	80.538	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-5.42	3.15	27.65	19.08	80.910	Horizontal	Pass
		1732.5	-5.26	3.31	27.61	19.04	80.168	Horizontal	Pass
		1747.5	-5.21	3.33	27.57	19.03	79.983	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-5.42	3.17	27.66	19.07	80.724	Horizontal	Pass
		1732.5	-5.29	3.32	27.61	19.00	79.433	Horizontal	Pass
		1745	-5.15	3.36	27.56	19.05	80.353	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-5.49	3.12	27.58	18.97	78.886	Vertical	Pass
		1732.5	-5.32	3.27	27.61	19.02	79.799	Vertical	Pass
		1754.3	-5.38	3.29	27.63	18.96	78.705	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-5.48	3.13	27.61	19.00	79.433	Vertical	Pass
		1732.5	-5.34	3.27	27.61	19.00	79.433	Vertical	Pass
		1753.5	-5.25	3.30	27.62	19.07	80.724	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-5.45	3.13	27.63	19.05	80.353	Vertical	Pass
		1732.5	-5.26	3.27	27.61	19.08	80.910	Vertical	Pass
		1752.5	-5.26	3.30	27.60	19.04	80.168	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-5.42	3.15	27.64	19.07	80.724	Vertical	Pass
		1732.5	-5.29	3.31	27.61	19.01	79.616	Vertical	Pass
		1750	-5.28	3.33	27.59	18.98	79.068	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-5.54	3.15	27.65	18.96	78.705	Vertical	Pass
		1732.5	-5.22	3.31	27.61	19.08	80.910	Vertical	Pass
		1747.5	-5.14	3.33	27.57	19.10	81.283	Vertical	Pass

20.0MHz	1/#Mid	1720	-5.36	3.17	27.66	19.13	81.846	Vertical	Pass
Band 16		1732.5	-5.14	3.32	27.61	19.15	82.224	Vertical	Pass
QAM		1745	-5.06	3.36	27.56	19.14	82.035	Vertical	Pass

Note:

SG Level= Signal generator output

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

8.4 LTE BAND 12

Radiated Power (ERP) for Band 12										
Mode	RB/R B SIZE	Frequenc y	Result							Conclusio n
			SG	Cabl e Loss (dBm)	Factor (dB)	Correctio n	Max. EPR	Max. EPR	Polarizatio n Of Max. ERP	
			(dBm)			(dB)	Averag e	Averag e		
							(dBm)	(mW)		
1.4MHz Band QPSK	1/#Mi d	699.7	4.26	1.91	19.21	2.15	19.41	87.297	Vertical	Pass
		707.5	4.27	1.91	19.26	2.15	19.47	88.512	Vertical	Pass
		715.3	4.24	1.93	19.34	2.15	19.50	89.125	Vertical	Pass
3.0MHz Band QPSK	1/#Mi d	700.5	4.24	1.91	19.21	2.15	19.39	86.896	Vertical	Pass
		707.5	4.19	1.91	19.26	2.15	19.39	86.896	Vertical	Pass
		714.5	4.13	1.93	19.34	2.15	19.39	86.896	Vertical	Pass
5.0MHz Band QPSK	1/#Mi d	701.5	4.27	1.91	19.23	2.15	19.44	87.902	Vertical	Pass
		707.5	4.14	1.91	19.26	2.15	19.34	85.901	Vertical	Pass
		713.5	4.09	1.92	19.33	2.15	19.35	86.099	Vertical	Pass
10.0MH z Band QPSK	1/#Mi d	704	4.26	1.91	19.25	2.15	19.45	88.105	Vertical	Pass
		707.5	4.22	1.91	19.26	2.15	19.42	87.498	Vertical	Pass
		711	4.17	1.92	19.32	2.15	19.42	87.498	Vertical	Pass
1.4MHz Band QPSK	1/#Mi d	699.7	4.28	1.91	19.21	2.15	19.43	87.700	Horizontal	Pass
		707.5	4.27	1.91	19.26	2.15	19.47	88.512	Horizontal	Pass
		715.3	4.13	1.93	19.34	2.15	19.39	86.896	Horizontal	Pass
3.0MHz Band QPSK	1/#Mi d	700.5	4.35	1.91	19.21	2.15	19.50	89.125	Horizontal	Pass
		707.5	4.15	1.91	19.26	2.15	19.35	86.099	Horizontal	Pass
		714.5	4.20	1.93	19.34	2.15	19.46	88.308	Horizontal	Pass
5.0MHz Band QPSK	1/#Mi d	701.5	4.32	1.91	19.23	2.15	19.49	88.920	Horizontal	Pass
		707.5	4.23	1.91	19.26	2.15	19.43	87.700	Horizontal	Pass
		713.5	4.08	1.92	19.33	2.15	19.34	85.901	Horizontal	Pass
10.0MH z Band QPSK	1/#Mi d	704	4.34	1.91	19.25	2.15	19.53	89.743	Horizontal	Pass
		707.5	4.33	1.91	19.26	2.15	19.53	89.743	Horizontal	Pass
		711	4.28	1.92	19.32	2.15	19.53	89.743	Horizontal	Pass

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Factor	Correction	Max. EPR	Max. EPR	Polarization Of Max. ERP	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average		
							(dBm)	(mW)		
1.4MHz Band 16 QAM	1/#Mid	699.7	3.51	1.91	19.21	2.15	18.66	73.451	Vertical	Pass
		707.5	3.38	1.91	19.26	2.15	18.58	72.111	Vertical	Pass
		715.3	3.40	1.93	19.34	2.15	18.66	73.451	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	3.53	1.91	19.21	2.15	18.68	73.790	Vertical	Pass
		707.5	3.45	1.91	19.26	2.15	18.65	73.282	Vertical	Pass
		714.5	3.32	1.93	19.34	2.15	18.58	72.111	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	3.36	1.91	19.23	2.15	18.53	71.285	Vertical	Pass
		707.5	3.37	1.91	19.26	2.15	18.57	71.945	Vertical	Pass
		713.5	3.44	1.92	19.33	2.15	18.70	74.131	Vertical	Pass
10.0MHz z Band 16 QAM	1/#Mid	704	3.40	1.91	19.25	2.15	18.59	72.277	Vertical	Pass
		707.5	3.34	1.91	19.26	2.15	18.54	71.450	Vertical	Pass
		711	3.30	1.92	19.32	2.15	18.55	71.614	Vertical	Pass
1.4MHz Band 16 QAM	1/#Mid	699.7	3.47	1.91	19.21	2.15	18.62	72.778	Horizontal	Pass
		707.5	3.42	1.91	19.26	2.15	18.62	72.778	Horizontal	Pass
		715.3	3.29	1.93	19.34	2.15	18.55	71.614	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	3.47	1.91	19.21	2.15	18.62	72.778	Horizontal	Pass
		707.5	3.39	1.91	19.26	2.15	18.59	72.277	Horizontal	Pass
		714.5	3.34	1.93	19.34	2.15	18.60	72.444	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	3.42	1.91	19.23	2.15	18.59	72.277	Horizontal	Pass
		707.5	3.38	1.91	19.26	2.15	18.58	72.111	Horizontal	Pass
		713.5	3.38	1.92	19.33	2.15	18.64	73.114	Horizontal	Pass
10.0MHz z Band 16 QAM	1/#Mid	704	3.52	1.91	19.25	2.15	18.71	74.302	Horizontal	Pass
		707.5	3.51	1.91	19.26	2.15	18.71	74.302	Horizontal	Pass
		711	3.47	1.92	19.32	2.15	18.72	74.473	Horizontal	Pass

Note:

ERP=EIRP-2.15

SG Level= Signal generator output

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

8.5 LTE BAND 13

Radiated Power (ERP) for Band 13										
Mode	RB/R B SIZE	Frequenc y	Result							Conclusi on
			SG Level	Cable Loss (dBm)	Factor (dB)	Correctio n	Max. EPR	Max. EPR	Polarizatio n Of Max. ERP	
			(dBm)				Averag e	Averag e		
							(dB)	(dBm)		
5.0MHz Band QPSK	1/#Mid	779.5	4.47	1.95	19.23	2.15	19.60	91.201	Vertical	Pass
		782	4.44	1.95	19.26	2.15	19.60	91.201	Vertical	Pass
		784.5	4.43	1.96	19.33	2.15	19.65	92.257	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	782	4.43	1.95	19.25	2.15	19.58	90.782	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	779.5	4.46	1.95	19.23	2.15	19.59	90.991	Horizontal	Pass
		782	4.45	1.95	19.26	2.15	19.61	91.411	Horizontal	Pass
		784.5	4.38	1.96	19.33	2.15	19.60	91.201	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	782	4.59	1.95	19.25	2.15	19.74	94.189	Horizontal	Pass

Radiated Power (ERP) for Band 13										
Mode	RB/R B SIZE	Frequenc y	Result							Conclusio n
			SG Level	Cable Loss (dBm)	Facto r (dB)	Correctio n	Max. EPR	Max. EPR	Polarizatio n Of Max. ERP	
			(dBm)				Averag e	Averag e		
							(dB)	(dBm)		
5.0MHz Band QPSK	1/#Mid	779.5	3.97	1.95	19.23	2.15	19.10	81.283	Vertical	Pass
		782	3.94	1.95	19.26	2.15	19.10	81.283	Vertical	Pass
		784.5	3.83	1.96	19.33	2.15	19.05	80.353	Vertical	Pass
10.0MH z Band QPSK	1/#Mid	782	3.82	1.95	19.25	2.15	18.97	78.886	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	779.5	3.95	1.95	19.23	2.15	19.08	80.910	Horizontal	Pass
		782	3.89	1.95	19.26	2.15	19.05	80.353	Horizontal	Pass
		784.5	3.88	1.96	19.33	2.15	19.10	81.283	Horizontal	Pass
10.0MH z Band QPSK	1/#Mid	782	3.99	1.95	19.25	2.15	19.14	82.035	Horizontal	Pass

Note:

ERP=EIRP-2.15

SG Level= Signal generator output

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

8.6 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. EPR Average (dBm)	Max. EPR Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	706.5	4.21	1.91	19.23	2.15	19.38	86.696	Vertical	Pass
		710	4.29	1.91	19.26	2.15	19.49	88.920	Vertical	Pass
		713.5	4.10	1.92	19.33	2.15	19.36	86.298	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	709	4.18	1.91	19.25	2.15	19.37	86.497	Vertical	Pass
		710	4.21	1.91	19.26	2.15	19.41	87.297	Vertical	Pass
		711	4.10	1.92	19.32	2.15	19.35	86.099	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	706.5	4.19	1.91	19.23	2.15	19.36	86.298	Horizontal	Pass
		710	4.15	1.91	19.26	2.15	19.35	86.099	Horizontal	Pass
		713.5	4.14	1.92	19.33	2.15	19.40	87.096	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	709	4.33	1.91	19.25	2.15	19.52	89.536	Horizontal	Pass
		710	4.33	1.91	19.26	2.15	19.53	89.743	Horizontal	Pass
		711	4.28	1.92	19.32	2.15	19.53	89.743	Horizontal	Pass

Radiated Power (ERP) for Band 17										
Mode	RB/R B SIZE	Frequenc y	Result							Conclu sion
			SG Level	Cable Loss (dBm)	Factor (dB)	Correctio n	Max. EPR	Max. EPR	Polarizatio n Of Max. ERP	
			(dBm)				Averag e	Averag e		
							(dB)	(dBm)		
5.0MHz Band 16 QAM	1/#Mid	706.5	3.43	1.91	19.23	2.15	18.60	72.444	Vertical	Pass
		710	3.47	1.91	19.26	2.15	18.67	73.621	Vertical	Pass
		713.5	3.39	1.92	19.33	2.15	18.65	73.282	Vertical	Pass
10.0MH z Band 16 QAM	1/#Mid	709	3.51	1.91	19.25	2.15	18.70	74.131	Vertical	Pass
		710	3.37	1.91	19.26	2.15	18.57	71.945	Vertical	Pass
		711	3.43	1.92	19.32	2.15	18.68	73.790	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	706.5	3.49	1.91	19.23	2.15	18.66	73.451	Horizontal	Pass
		710	3.45	1.91	19.26	2.15	18.65	73.282	Horizontal	Pass
		713.5	3.43	1.92	19.33	2.15	18.69	73.961	Horizontal	Pass
10.0MH z Band 16 QAM	1/#Mid	709	3.51	1.91	19.25	2.15	18.70	74.131	Horizontal	Pass
		710	3.55	1.91	19.26	2.15	18.75	74.989	Horizontal	Pass
		711	3.46	1.92	19.32	2.15	18.71	74.302	Horizontal	Pass

Note:

ERP=EIRP-2.15

SG Level= Signal generator output

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

8.7 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	-4.87	3.76	28.24	19.61	91.411	Horizontal	Pass
1745			-4.61	3.91	28.22	19.70	93.325	Horizontal	Pass	
1779.3			-4.66	3.93	28.2	19.61	91.411	Horizontal	Pass	
3.0MHz	Band QPSK	1/#Mid	1711.5	-4.85	3.77	28.23	19.61	91.411	Horizontal	Pass
1745			-4.64	3.91	28.24	19.69	93.111	Horizontal	Pass	
1778.5			-4.66	3.94	28.25	19.65	92.257	Horizontal	Pass	
5.0MHz	Band QPSK	1/#Mid	1712.5	-4.81	3.77	28.31	19.73	93.972	Horizontal	Pass
1745			-4.61	3.91	28.22	19.70	93.325	Horizontal	Pass	
1777.5			-4.56	3.94	28.2	19.70	93.325	Horizontal	Pass	
10.0MHz	Band QPSK	1/#Mid	1715	-4.82	3.79	28.33	19.72	93.756	Horizontal	Pass
1745			-4.65	3.95	28.22	19.62	91.622	Horizontal	Pass	
1775			-4.62	3.97	28.19	19.60	91.201	Horizontal	Pass	
15.0MHz	Band QPSK	1/#Mid	1717.5	-4.85	3.79	28.34	19.70	93.325	Horizontal	Pass
1745			-4.68	3.95	28.22	19.59	90.991	Horizontal	Pass	
1772.5			-4.56	3.97	28.18	19.65	92.257	Horizontal	Pass	
20.0MHz	Band QPSK	1/#Mid	1720	-4.96	3.81	28.35	19.58	90.782	Horizontal	Pass
1745			-4.62	3.96	28.22	19.64	92.045	Horizontal	Pass	
1770			-4.44	4	28.16	19.72	93.756	Horizontal	Pass	
1.4MHz	Band QPSK	1/#Mid	1710.7	-4.84	3.76	28.24	19.64	92.045	Vertical	Pass
1745			-4.59	3.91	28.22	19.72	93.756	Vertical	Pass	
1779.3			-4.62	3.93	28.2	19.65	92.257	Vertical	Pass	
3.0MHz	Band QPSK	1/#Mid	1711.5	-4.87	3.77	28.23	19.59	90.991	Vertical	Pass
1745			-4.64	3.91	28.24	19.69	93.111	Vertical	Pass	
1778.5			-4.67	3.94	28.25	19.64	92.045	Vertical	Pass	
5.0MHz	Band QPSK	1/#Mid	1712.5	-4.93	3.77	28.31	19.61	91.411	Vertical	Pass
1745			-4.70	3.91	28.22	19.61	91.411	Vertical	Pass	
1777.5			-4.68	3.94	28.2	19.58	90.782	Vertical	Pass	
10.0MHz	Band	1/#Mid	1715	-4.85	3.79	28.34	19.70	93.325	Vertical	Pass
			1745	-4.69	3.95	28.22	19.58	90.782	Vertical	Pass

QPSK		1775	-4.50	3.97	28.18	19.71	93.541	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-4.88	3.81	28.35	19.66	92.470	Vertical	Pass
Band		1745	-4.60	3.96	28.22	19.66	92.470	Vertical	Pass
QPSK		1772.5	-4.48	4	28.16	19.68	92.897	Vertical	Pass
20.0MHz	1/#Mid	1720	-4.77	3.79	28.34	19.78	95.060	Vertical	Pass
Band		1745	-4.49	3.95	28.22	19.78	95.060	Vertical	Pass
QPSK		1770	-4.43	3.97	28.18	19.78	95.060	Vertical	Pass

Radiated Power (EIRP) for Band 66									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP	Polarization Of Max. ERP	
							Average		
							(mW)		
1.4MHz Band 16 QAM	1/#Mid	1710.7	-6.00	3.76	28.24	18.48	70.469	Horizontal	Pass
		1745	-5.72	3.91	28.22	18.59	72.277	Horizontal	Pass
		1779.3	-5.77	3.93	28.2	18.50	70.795	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-5.95	3.77	28.23	18.51	70.958	Horizontal	Pass
		1745	-5.73	3.91	28.24	18.60	72.444	Horizontal	Pass
		1778.5	-5.83	3.94	28.25	18.48	70.469	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-5.93	3.77	28.31	18.61	72.611	Horizontal	Pass
		1745	-5.77	3.91	28.22	18.54	71.450	Horizontal	Pass
		1777.5	-5.82	3.94	28.2	18.44	69.823	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-6.02	3.79	28.33	18.52	71.121	Horizontal	Pass
		1745	-5.77	3.95	28.22	18.50	70.795	Horizontal	Pass
		1775	-5.76	3.97	28.19	18.46	70.146	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-6.00	3.79	28.34	18.55	71.614	Horizontal	Pass
		1745	-5.81	3.95	28.22	18.46	70.146	Horizontal	Pass
		1772.5	-5.62	3.97	28.18	18.59	72.277	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-5.95	3.81	28.35	18.59	72.277	Horizontal	Pass
		1745	-5.82	3.96	28.22	18.44	69.823	Horizontal	Pass
		1770	-5.62	4	28.16	18.54	71.450	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-6.00	3.76	28.24	18.48	70.469	Vertical	Pass
		1745	-5.70	3.91	28.22	18.61	72.611	Vertical	Pass
		1779.3	-5.79	3.93	28.2	18.48	70.469	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-5.91	3.77	28.23	18.55	71.614	Vertical	Pass
		1745	-5.73	3.91	28.24	18.60	72.444	Vertical	Pass
		1778.5	-5.77	3.94	28.25	18.54	71.450	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-6.09	3.77	28.31	18.45	69.984	Vertical	Pass
		1745	-5.74	3.91	28.22	18.57	71.945	Vertical	Pass
		1777.5	-5.82	3.94	28.2	18.44	69.823	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-5.97	3.79	28.34	18.58	72.111	Vertical	Pass
		1745	-5.70	3.95	28.22	18.57	71.945	Vertical	Pass
		1775	-5.63	3.97	28.18	18.58	72.111	Vertical	Pass
15.0MHz Band 16	1/#Mid	1717.5	-6.05	3.81	28.35	18.49	70.632	Vertical	Pass
		1745	-5.73	3.96	28.22	18.53	71.285	Vertical	Pass

QAM		1772.5	-5.59	4	28.16	18.57	71.945	Vertical	Pass
20.0MHz	1/#Mid	1720	-5.90	3.79	28.34	18.65	73.282	Vertical	Pass
Band 16		1745	-5.61	3.95	28.22	18.66	73.451	Vertical	Pass
QAM		1770	-5.56	3.97	28.18	18.65	73.282	Vertical	Pass

Note:

SG Level= Signal generator output

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

8.8 LTE BAND 71

Radiated Power (ERP) for Band 71										
Mode	RB/R B SIZE	Frequenc y	Result							Conclusio n
			SG Level	Cable Loss (dBm)	Facto r (dB)	Correctio n	Max. EPR	Max. EPR	Polarizatio n Of Max. ERP	
			(dBm)			(dB)	Averag e	Averag e		
							(dBm)	(mW)		
5.0MHz Band QPSK	1/#Mid	665.5	4.19	1.91	19.21	2.15	19.34	85.901	Vertical	Pass
		680.5	4.12	1.91	19.26	2.15	19.32	85.507	Vertical	Pass
		695.5	4.09	1.93	19.34	2.15	19.35	86.099	Vertical	Pass
10.0MH z Band QPSK	1/#Mid	668	4.27	1.91	19.21	2.15	19.42	87.498	Vertical	Pass
		680.5	4.13	1.91	19.26	2.15	19.33	85.704	Vertical	Pass
		693	4.18	1.93	19.34	2.15	19.44	87.902	Vertical	Pass
15.0MH z Band QPSK	1/#Mid	670.5	4.19	1.91	19.23	2.15	19.36	86.298	Vertical	Pass
		680.5	4.23	1.91	19.26	2.15	19.43	87.700	Vertical	Pass
		690.5	4.19	1.92	19.33	2.15	19.45	88.105	Vertical	Pass
20.0MH z Band QPSK	1/#Mid	673	4.18	1.91	19.25	2.15	19.37	86.497	Vertical	Pass
		683	4.09	1.91	19.26	2.15	19.29	84.918	Vertical	Pass
		688	4.21	1.92	19.32	2.15	19.46	88.308	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	665.5	4.18	1.91	19.21	2.15	19.33	85.704	Horizontal	Pass
		680.5	4.22	1.91	19.26	2.15	19.42	87.498	Horizontal	Pass
		695.5	4.17	1.93	19.34	2.15	19.43	87.700	Horizontal	Pass
10.0MH z Band QPSK	1/#Mid	668	4.22	1.91	19.21	2.15	19.37	86.497	Horizontal	Pass
		680.5	4.23	1.91	19.26	2.15	19.43	87.700	Horizontal	Pass
		693	4.12	1.93	19.34	2.15	19.38	86.696	Horizontal	Pass
15.0MH z Band QPSK	1/#Mid	670.5	4.17	1.91	19.23	2.15	19.34	85.901	Horizontal	Pass
		680.5	4.20	1.91	19.26	2.15	19.40	87.096	Horizontal	Pass
		690.5	4.03	1.92	19.33	2.15	19.29	84.918	Horizontal	Pass
20.0MH z Band QPSK	1/#Mid	673	4.28	1.91	19.25	2.15	19.47	88.512	Horizontal	Pass
		683	4.32	1.91	19.26	2.15	19.52	89.536	Horizontal	Pass
		688	4.24	1.92	19.32	2.15	19.49	88.920	Horizontal	Pass

Radiated Power (ERP) for Band 71										
Mode	RB/R B SIZE	Frequenc y	Result							Conclusio n
			SG Level	Cable Loss (dBm)	Facto r (dB)	Correctio n	Max. EPR	Max. EPR	Polarizatio n Of Max. ERP	
			(dBm)			(dB)	Averag e	Averag e		
							(dBm)	(mW)		
5.0MHz Band 16 QAM	1/#Mid	665.5	3.28	1.91	19.21	2.15	18.43	69.663	Vertical	Pass
		680.5	3.23	1.91	19.26	2.15	18.43	69.663	Vertical	Pass
		695.5	3.22	1.93	19.34	2.15	18.48	70.469	Vertical	Pass
10.0MH z Band 16 QAM	1/#Mid	668	3.26	1.91	19.21	2.15	18.41	69.343	Vertical	Pass
		680.5	3.22	1.91	19.26	2.15	18.42	69.502	Vertical	Pass
		693	3.15	1.93	19.34	2.15	18.41	69.343	Vertical	Pass
15.0MH z Band 16 QAM	1/#Mid	670.5	3.28	1.91	19.23	2.15	18.45	69.984	Vertical	Pass
		680.5	3.17	1.91	19.26	2.15	18.37	68.707	Vertical	Pass
		690.5	3.28	1.92	19.33	2.15	18.54	71.450	Vertical	Pass
20.0MH z Band 16 QAM	1/#Mid	673	3.29	1.91	19.25	2.15	18.48	70.469	Vertical	Pass
		683	3.18	1.91	19.26	2.15	18.38	68.865	Vertical	Pass
		688	3.10	1.92	19.32	2.15	18.35	68.391	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	665.5	3.39	1.91	19.21	2.15	18.54	71.450	Horizontal	Pass
		680.5	3.26	1.91	19.26	2.15	18.46	70.146	Horizontal	Pass
		695.5	3.26	1.93	19.34	2.15	18.52	71.121	Horizontal	Pass
10.0MH z Band 16 QAM	1/#Mid	668	3.37	1.91	19.21	2.15	18.52	71.121	Horizontal	Pass
		680.5	3.29	1.91	19.26	2.15	18.49	70.632	Horizontal	Pass
		693	3.16	1.93	19.34	2.15	18.42	69.502	Horizontal	Pass
15.0MH z Band 16 QAM	1/#Mid	670.5	3.26	1.91	19.23	2.15	18.43	69.663	Horizontal	Pass
		680.5	3.17	1.91	19.26	2.15	18.37	68.707	Horizontal	Pass
		690.5	3.21	1.92	19.33	2.15	18.47	70.307	Horizontal	Pass
20.0MH z Band 16 QAM	1/#Mid	673	3.35	1.91	19.25	2.15	18.54	71.450	Horizontal	Pass
		683	3.39	1.91	19.26	2.15	18.59	72.277	Horizontal	Pass
		688	3.29	1.92	19.32	2.15	18.54	71.450	Horizontal	Pass

Note:

SG Level= Signal generator output

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

9. SPURIOUS RADIATION EMISSION

RULE PART(S)

FCC: §2.1051, §22.917(a), §24.238(a), §27.53 (g)(h)(m)

LIMIT

For Band 7, the minimum permissible attenuation level of any spurious emission is $55 + \log_{10} (P \text{ [Watts]})$.

The minimum permissible attenuation level of any spurious emission is $43 + \log_{10} (P \text{ [Watts]})$, where P is the transmitter power in Watts.

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 24/12/13/17/66/71

RESULTS

PASS

9.1 LTE BAND 2

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

Test Results for Low Channel 1850.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3701.4	-52.85	4.04	33.51	-23.38	-13	-10.38	Horizontal
3701.4	-44.52	4.04	33.51	-15.05	-13	-2.05	Vertical
5552.1	-44.69	5.24	35.84	-14.09	-13	-1.09	Vertical
5552.1	-49.92	5.24	35.84	-19.32	-13	-6.32	Horizontal
212.5	-36.80	1.43	16.02	-22.21	-13	-9.21	Vertical
384.2	-38.01	1.30	17.99	-21.32	-13	-8.32	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-50.21	4.04	33.56	-20.69	-13	-7.69	Horizontal
3760.0	-51.07	4.04	33.56	-21.55	-13	-8.55	Vertical
5640.0	-47.96	5.24	35.91	-17.29	-13	-4.29	Vertical
5640.0	-51.92	5.24	35.91	-21.25	-13	-8.25	Horizontal
194.9	-43.23	1.62	16.97	-27.88	-13	-14.88	Vertical
283.6	-42.79	1.74	15.98	-28.56	-13	-15.56	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-44.88	4.04	34.00	-14.92	-13	-1.92	Horizontal
3818.6	-49.57	4.04	34.00	-19.61	-13	-6.61	Vertical
5727.9	-51.95	5.24	36.04	-21.15	-13	-8.15	Vertical
5727.9	-51.26	5.24	36.04	-20.46	-13	-7.46	Horizontal
183.2	-42.73	1.42	17.29	-26.86	-13	-13.86	Vertical
392.9	-43.40	1.50	17.90	-26.99	-13	-13.99	Horizontal

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

Test Results for Low Channel 1860MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3720.0	-53.88	4.07	33.54	-24.41	-13	-11.41	Horizontal
3720.0	-48.61	4.07	33.54	-19.14	-13	-6.14	Vertical
5580.0	-48.70	5.28	35.86	-18.12	-13	-5.12	Vertical
5580.0	-51.43	5.28	35.86	-20.85	-13	-7.85	Horizontal
205.7	-38.06	1.58	16.89	-22.74	-13	-9.74	Vertical
237.3	-42.98	1.76	17.26	-27.48	-13	-14.48	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-51.57	4.04	33.56	-22.05	-13	-9.05	Horizontal
3760.0	-51.15	4.04	33.56	-21.63	-13	-8.63	Vertical
5640.0	-49.46	5.24	35.91	-18.79	-13	-5.79	Vertical
5640.0	-50.76	5.24	35.91	-20.09	-13	-7.09	Horizontal
203.2	-42.87	1.46	16.27	-28.06	-13	-15.06	Vertical
379.0	-42.74	1.59	15.15	-29.18	-13	-16.18	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-49.65	4.04	34.00	-19.69	-13	-6.69	Horizontal
3800.0	-45.67	4.04	34.00	-15.71	-13	-2.71	Vertical
5700.0	-45.42	5.24	36.04	-14.62	-13	-1.62	Vertical
5700.0	-49.32	5.24	36.04	-18.52	-13	-5.52	Horizontal
188.9	-35.87	1.36	17.39	-19.83	-13	-6.83	Vertical
434.0	-43.57	1.66	15.39	-29.84	-13	-16.84	Horizontal

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

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

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

9.2 LTE BAND 4

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

Test Results for Low Channel 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-50.75	4.02	29.80	-24.97	-13	-11.97	Horizontal
3421.4	-45.02	4.02	29.80	-19.24	-13	-6.24	Vertical
5132.1	-48.08	5.24	35.84	-17.48	-13	-4.48	Vertical
5132.1	-49.08	5.24	35.84	-18.48	-13	-5.48	Horizontal
189.9	-40.23	1.68	16.04	-25.87	-13	-12.87	Vertical
331.4	-36.63	1.78	17.74	-20.67	-13	-7.67	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-49.77	4.03	30.00	-23.80	-13	-10.80	Horizontal
3465.0	-50.36	4.03	30.00	-24.39	-13	-11.39	Vertical
5197.5	-44.85	5.25	35.86	-14.24	-13	-1.24	Vertical
5197.5	-53.30	5.25	35.86	-22.69	-13	-9.69	Horizontal
204.1	-34.18	1.72	17.69	-18.21	-13	-5.21	Vertical
422.7	-42.30	1.62	16.02	-27.89	-13	-14.89	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-46.39	4.05	30.01	-20.43	-13	-7.43	Horizontal
3508.6	-44.73	4.05	30.01	-18.77	-13	-5.77	Vertical
5262.9	-46.99	5.26	35.86	-16.39	-13	-3.39	Vertical
5262.9	-51.77	5.26	35.86	-21.17	-13	-8.17	Horizontal
197.4	-37.59	1.80	16.69	-22.70	-13	-9.70	Vertical
325.4	-38.48	1.75	16.66	-23.58	-13	-10.58	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	-46.64	4.02	29.80	-20.86	-13	-7.86	Horizontal
3440.0	-44.39	4.02	29.80	-18.61	-13	-5.61	Vertical
5160.0	-52.56	5.24	35.84	-21.96	-13	-8.96	Vertical
5160.0	-51.50	5.24	35.84	-20.90	-13	-7.90	Horizontal
203.2	-40.14	1.57	17.26	-24.45	-13	-11.45	Vertical
464.8	-37.81	1.78	16.35	-23.24	-13	-10.24	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-47.72	4.03	30.00	-21.75	-13	-8.75	Horizontal
3465.0	-48.47	4.03	30.00	-22.50	-13	-9.50	Vertical
5197.5	-53.10	5.25	35.86	-22.49	-13	-9.49	Vertical
5197.5	-52.88	5.25	35.86	-22.27	-13	-9.27	Horizontal
192.7	-37.15	1.44	17.95	-20.64	-13	-7.64	Vertical
269.7	-38.83	1.65	16.09	-24.39	-13	-11.39	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-50.80	4.05	27.68	-27.17	-13	-14.17	Horizontal
3490.0	-53.25	4.05	27.68	-29.62	-13	-16.62	Vertical
5235.0	-48.96	5.26	35.86	-18.36	-13	-5.36	Vertical
5235.0	-49.44	5.26	35.86	-18.84	-13	-5.84	Horizontal
192.3	-38.33	1.61	16.85	-23.09	-13	-10.09	Vertical
240.1	-43.82	1.61	15.19	-30.24	-13	-17.24	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 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	-46.64	2.60	27.20	-22.04	-13	-9.04	Horizontal
1399.4	-48.97	2.60	27.20	-24.37	-13	-11.37	Vertical
2099.1	-45.23	2.85	27.54	-20.54	-13	-7.54	Vertical
2099.1	-50.31	2.85	27.54	-25.62	-13	-12.62	Horizontal
183.0	-36.92	1.49	17.78	-20.63	-13	-7.63	Vertical
409.3	-43.03	1.36	17.33	-27.06	-13	-14.06	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-47.54	2.61	27.28	-22.87	-13	-9.87	Horizontal
1415.0	-52.22	2.61	27.28	-27.55	-13	-14.55	Vertical
2122.5	-53.20	2.87	27.59	-28.48	-13	-15.48	Vertical
2122.5	-50.82	2.87	27.59	-26.10	-13	-13.10	Horizontal
191.0	-41.61	1.73	15.74	-27.60	-13	-14.60	Vertical
285.3	-35.75	1.62	15.79	-21.58	-13	-8.58	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-46.33	2.63	27.28	-21.68	-13	-8.68	Horizontal
1430.6	-45.30	2.63	27.28	-20.65	-13	-7.65	Vertical
2145.9	-46.00	2.88	27.60	-21.28	-13	-8.28	Vertical
2145.9	-50.70	2.88	27.60	-25.98	-13	-12.98	Horizontal
183.8	-43.84	1.61	18.00	-27.45	-13	-14.45	Vertical
336.8	-37.03	1.45	15.49	-23.00	-13	-10.00	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	-45.38	2.61	27.26	-20.73	-13	-7.73	Horizontal
1408.0	-44.88	2.61	27.26	-20.23	-13	-7.23	Vertical
2112.0	-46.73	2.87	27.58	-22.02	-13	-9.02	Vertical
2112.0	-51.78	2.87	27.58	-27.07	-13	-14.07	Horizontal
188.1	-42.69	1.31	16.97	-27.03	-13	-14.03	Vertical
263.2	-43.69	1.65	16.70	-28.64	-13	-15.64	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-46.20	2.61	27.28	-21.53	-13	-8.53	Horizontal
1415.0	-53.77	2.61	27.28	-29.10	-13	-16.10	Vertical
2122.5	-45.35	2.87	27.59	-20.63	-13	-7.63	Vertical
2122.5	-49.43	2.87	27.59	-24.71	-13	-11.71	Horizontal
187.9	-39.27	1.72	17.99	-23.00	-13	-10.00	Vertical
288.6	-37.76	1.73	17.94	-21.55	-13	-8.55	Horizontal
Test Results for High Channel 711MHz							
1422.0	-45.24	2.62	27.28	-20.58	-13	-7.58	Horizontal
1422.0	-49.42	2.62	27.28	-24.76	-13	-11.76	Vertical
2133.0	-44.72	2.87	27.60	-19.99	-13	-6.99	Vertical
2133.0	-51.46	2.87	27.60	-26.73	-13	-13.73	Horizontal
200.0	-37.18	1.58	15.93	-22.83	-13	-9.83	Vertical
268.3	-41.65	1.36	15.59	-27.42	-13	-14.42	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 13

QPSK EIRP POWER FOR LTE BAND 13 (5MHZ BANDWIDTH)

Test Results for Low Channel 779.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1559.0	-70.24	2.61	27.28	-45.57	-40	-5.57	Horizontal
1559.0	-68.04	2.61	27.28	-43.37	-40	-3.37	Vertical
2338.5	-68.63	2.87	27.59	-43.91	-13	-30.91	Vertical
2338.5	-67.75	2.87	27.59	-43.03	-13	-30.03	Horizontal
212.1	-68.97	1.71	16.15	-54.53	-13	-41.53	Vertical
268.0	-73.83	1.41	17.32	-57.92	-13	-44.92	Horizontal
Test Results For Mid Channel 782MHz							
1564.0	-71.58	2.62	27.30	-46.90	-40	-6.90	Horizontal
1564.0	-70.29	2.62	27.30	-45.61	-40	-5.61	Vertical
2346.0	-67.14	2.87	27.62	-42.39	-13	-29.39	Vertical
2346.0	-67.82	2.87	27.62	-43.07	-13	-30.07	Horizontal
199.2	-67.80	1.42	15.25	-53.98	-13	-40.98	Vertical
272.9	-70.08	1.36	17.19	-54.25	-13	-41.25	Horizontal
Test Results for High Channel 784.5MHz							
1569.0	-74.63	2.66	27.28	-50.01	-40	-10.01	Horizontal
1569.0	-67.27	2.66	27.28	-42.65	-40	-2.65	Vertical
2353.5	-72.09	2.88	27.60	-47.37	-13	-34.37	Vertical
2353.5	-71.32	2.88	27.60	-46.60	-13	-33.60	Horizontal
180.6	-71.13	1.32	17.29	-55.16	-13	-42.16	Vertical
251.6	-71.36	1.72	16.89	-56.19	-13	-43.19	Horizontal

QPSK EIRP POWER FOR LTE BAND 13 (10MHZ BANDWIDTH)

Test Results for Channel 782MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1564.0	-71.25	2.62	27.30	-46.57	-40	-6.57	Horizontal
1564.0	-70.15	2.62	27.30	-45.47	-40	-5.47	Vertical
2346.0	-72.99	2.87	27.62	-48.24	-13	-35.24	Vertical
2346.0	-68.23	2.87	27.62	-43.48	-13	-30.48	Horizontal
175.9	-72.97	1.35	16.91	-57.41	-13	-44.41	Vertical
455.9	-72.69	1.62	16.31	-58.00	-13	-45.00	Horizontal

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

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

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

9.5 LTE BAND 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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1413.0	-44.54	2.61	27.28	-19.87	-13	-6.87	Horizontal
1413.0	-52.17	2.61	27.28	-27.50	-13	-14.50	Vertical
2119.5	-46.37	2.87	27.59	-21.65	-13	-8.65	Vertical
2119.5	-52.38	2.87	27.59	-27.66	-13	-14.66	Horizontal
188.5	-42.07	1.71	16.15	-27.63	-13	-14.63	Vertical
358.3	-35.38	1.41	17.32	-19.47	-13	-6.47	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-52.88	2.62	27.30	-28.20	-13	-15.20	Horizontal
1420.0	-46.95	2.62	27.30	-22.27	-13	-9.27	Vertical
2130.0	-48.87	2.87	27.62	-24.12	-13	-11.12	Vertical
2130.0	-53.04	2.87	27.62	-28.29	-13	-15.29	Horizontal
207.2	-44.97	1.42	15.25	-31.15	-13	-18.15	Vertical
413.1	-37.52	1.36	17.19	-21.69	-13	-8.69	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-45.58	2.66	27.28	-20.96	-13	-7.96	Horizontal
1427.0	-51.76	2.66	27.28	-27.14	-13	-14.14	Vertical
2140.5	-51.21	2.88	27.60	-26.49	-13	-13.49	Vertical
2140.5	-50.84	2.88	27.60	-26.12	-13	-13.12	Horizontal
176.9	-38.94	1.32	17.29	-22.97	-13	-9.97	Vertical
349.3	-39.41	1.72	16.89	-24.24	-13	-11.24	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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1418.0	-53.02	2.62	27.30	-28.34	-13	-15.34	Horizontal
1418.0	-45.54	2.62	27.30	-20.86	-13	-7.86	Vertical
2127.0	-44.07	2.87	27.62	-19.32	-13	-6.32	Vertical
2127.0	-50.54	2.87	27.62	-25.79	-13	-12.79	Horizontal
204.3	-42.43	1.35	16.91	-26.87	-13	-13.87	Vertical
317.7	-37.75	1.62	16.31	-23.06	-13	-10.06	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-51.39	2.62	27.30	-26.71	-13	-13.71	Horizontal
1420.0	-44.96	2.62	27.30	-20.28	-13	-7.28	Vertical
2130.0	-46.42	2.87	27.62	-21.67	-13	-8.67	Vertical
2130.0	-53.27	2.87	27.62	-28.52	-13	-15.52	Horizontal
182.7	-39.05	1.51	17.14	-23.42	-13	-10.42	Vertical
395.2	-44.83	1.77	16.88	-29.72	-13	-16.72	Horizontal
Test Results for High Channel 711MHz							
1422.0	-51.22	2.62	27.30	-26.54	-13	-13.54	Horizontal
1422.0	-50.34	2.62	27.30	-25.66	-13	-12.66	Vertical
2133.0	-46.34	2.87	27.62	-21.59	-13	-8.59	Vertical
2133.0	-50.96	2.87	27.62	-26.21	-13	-13.21	Horizontal
199.7	-38.15	1.78	15.95	-23.98	-13	-10.98	Vertical
366.9	-37.41	1.34	17.95	-20.81	-13	-7.81	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 66

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

Test Results for Low Channel 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-64.27	3.84	35.81	-32.30	-13	-19.30	Horizontal
3421.4	-60.43	3.84	35.81	-28.46	-13	-15.46	Vertical
5132.1	-64.81	5.18	36.85	-33.14	-13	-20.14	Vertical
5132.1	-59.59	5.18	36.85	-27.92	-13	-14.92	Horizontal
182.0	-51.78	1.56	17.97	-35.37	-13	-22.37	Vertical
421.4	-46.04	1.33	15.11	-32.26	-13	-19.26	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-64.94	3.85	35.82	-32.97	-13	-19.97	Horizontal
3490.0	-62.67	3.85	35.82	-30.70	-13	-17.70	Vertical
5235.0	-60.19	5.21	36.85	-28.55	-13	-15.55	Vertical
5235.0	-61.65	5.21	36.85	-30.01	-13	-17.01	Horizontal
193.4	-44.04	1.77	16.17	-29.63	-13	-16.63	Vertical
454.9	-50.76	1.63	15.21	-37.18	-13	-24.18	Horizontal
Test Results for High Channel 1779.3MHz							
3558.6	-64.77	3.86	35.83	-32.80	-13	-19.80	Horizontal
3558.6	-63.30	3.86	35.83	-31.33	-13	-18.33	Vertical
5337.9	-60.54	5.24	36.87	-28.91	-13	-15.91	Vertical
5337.9	-62.74	5.24	36.87	-31.11	-13	-18.11	Horizontal
180.7	-50.02	1.58	17.56	-34.04	-13	-21.04	Vertical
345.6	-47.97	1.45	16.58	-32.84	-13	-19.84	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	-59.02	3.84	35.82	-27.04	-13	-14.04	Horizontal
3440.0	-61.65	3.84	35.82	-29.67	-13	-16.67	Vertical
5160.0	-62.51	5.18	36.86	-30.83	-13	-17.83	Vertical
5160.0	-63.78	5.18	36.86	-32.10	-13	-19.10	Horizontal
181.3	-51.11	1.56	15.76	-36.91	-13	-23.91	Vertical
237.6	-47.30	1.33	15.44	-33.19	-13	-20.19	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-60.11	3.85	35.82	-28.14	-13	-15.14	Horizontal
3490.0	-63.78	3.85	35.82	-31.81	-13	-18.81	Vertical
5235.0	-59.16	5.21	36.85	-27.52	-13	-14.52	Vertical
5235.0	-59.26	5.21	36.85	-27.62	-13	-14.62	Horizontal
188.0	-45.77	1.77	16.84	-30.69	-13	-17.69	Vertical
336.0	-53.54	1.63	17.64	-37.53	-13	-24.53	Horizontal
Test Results for High Channel 1770MHz							
3540.0	-60.62	3.86	35.83	-28.65	-13	-15.65	Horizontal
3540.0	-60.95	3.86	35.83	-28.98	-13	-15.98	Vertical
5310.0	-62.12	5.24	36.88	-30.48	-13	-17.48	Vertical
5310.0	-62.90	5.24	36.88	-31.26	-13	-18.26	Horizontal
200.0	-48.29	1.58	16.84	-33.02	-13	-20.02	Vertical
283.0	-46.59	1.45	17.64	-30.40	-13	-17.40	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.

9.7 LTE BAND 71

QPSK EIRP POWER FOR LTE BAND 71 (5MHZ BANDWIDTH)

Test Results for Low Channel 665.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1331.0	-62.25	2.16	35.81	-28.60	-25	-3.60	Horizontal
1331.0	-63.99	2.16	35.81	-30.34	-25	-5.34	Vertical
1996.5	-62.58	2.89	36.85	-28.62	-25	-3.62	Vertical
1996.5	-61.60	2.89	36.85	-27.64	-25	-2.64	Horizontal
191.5	-52.15	1.56	17.97	-35.74	-25	-10.74	Vertical
363.2	-48.16	1.33	15.11	-34.38	-25	-9.38	Horizontal
Test Results For Mid Channel 680.5MHz							
1361.0	-60.96	2.17	35.82	-27.31	-25	-2.31	Horizontal
1361.0	-63.46	2.17	35.82	-29.81	-25	-4.81	Vertical
2041.5	-59.13	2.90	36.85	-25.18	-25	-0.18	Vertical
2041.5	-63.57	2.90	36.85	-29.62	-25	-4.62	Horizontal
195.3	-47.74	1.77	16.17	-33.33	-25	-8.33	Vertical
468.0	-52.34	1.63	15.21	-38.76	-25	-13.76	Horizontal
Test Results for High Channel 695.5MHz							
1391.0	-63.74	2.19	35.83	-30.10	-25	-5.10	Horizontal
1391.0	-63.61	2.19	35.83	-29.97	-25	-4.97	Vertical
2086.5	-59.96	2.95	36.87	-26.04	-25	-1.04	Vertical
2086.5	-62.48	2.95	36.87	-28.56	-25	-3.56	Horizontal
194.7	-47.52	1.58	17.56	-31.54	-25	-6.54	Vertical
433.1	-52.95	1.45	16.58	-37.82	-25	-12.82	Horizontal

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

Test Results for Low Channel 673MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1346.0	-64.97	2.16	35.82	-31.31	-25	-6.31	Horizontal
1346.0	-60.28	2.16	35.82	-26.62	-25	-1.62	Vertical
2019.0	-64.95	2.89	36.86	-30.98	-25	-5.98	Vertical
2019.0	-64.90	2.89	36.86	-30.93	-25	-5.93	Horizontal
189.7	-49.53	1.56	15.76	-35.33	-25	-10.33	Vertical
258.7	-46.43	1.33	15.44	-32.32	-25	-7.32	Horizontal
Test Results for Mid Channel 683MHz							
1366.0	-62.09	2.17	35.82	-28.44	-25	-3.44	Horizontal
1366.0	-64.69	2.17	35.82	-31.04	-25	-6.04	Vertical
2049.0	-61.31	2.90	36.85	-27.36	-25	-2.36	Vertical
2049.0	-62.29	2.90	36.85	-28.34	-25	-3.34	Horizontal
189.1	-53.98	1.77	16.84	-38.90	-25	-13.90	Vertical
446.7	-44.28	1.63	17.64	-28.27	-25	-3.27	Horizontal
Test Results for High Channel 688MHz							
1376.0	-61.73	2.19	35.83	-28.09	-25	-3.09	Horizontal
1376.0	-62.39	2.19	35.83	-28.75	-25	-3.75	Vertical
2064.0	-59.79	2.95	36.88	-25.86	-25	-0.86	Vertical
2064.0	-60.51	2.95	36.88	-26.58	-25	-1.58	Horizontal
208.6	-48.29	1.58	16.84	-33.02	-25	-8.02	Vertical
263.6	-45.17	1.45	17.64	-28.98	-25	-3.98	Horizontal

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

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

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

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

10. FREQUENCY STABILITY

RULE PART(S)

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

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 3.66V, Normal, DC 3.87V 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 2/4/12/13/17/69/17

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]
3.4	1880	13.0	0.006919	2.5
3.85	1880	14.2	0.007560	2.5
4.2	1880	13.1	0.006951	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	12.5	0.006636	2.5
Extreme (50C)	1880	11.3	0.006033	2.5
Extreme (40C)	1880	13.7	0.007292	2.5
Extreme (30C)	1880	13.4	0.007108	2.5
Extreme (10C)	1880	14.1	0.007509	2.5
Extreme (0C)	1880	12.2	0.006489	2.5
Extreme (-10C)	1880	12.9	0.006873	2.5
Extreme (-20C)	1880	14.1	0.007495	2.5
Extreme (-30C)	1880	15.1	0.008053	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]
3.4	1880	10.2	0.005417	2.5
3.87	1880	9.2	0.004909	2.5
4.2	1880	8.0	0.004277	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	9.4	0.005018	2.5
Extreme (50C)	1880	9.3	0.004958	2.5
Extreme (40C)	1880	8.1	0.004303771	2.5
Extreme (30C)	1880	9.5	0.005042259	2.5
Extreme (10C)	1880	9.2	0.004882955	2.5
Extreme (0C)	1880	8.4	0.004449455	2.5
Extreme (-10C)	1880	8.6	0.004551101	2.5
Extreme (-20C)	1880	8.9	0.00472001	2.5
Extreme (-30C)	1880	8.1	0.00429835	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]
3.4	1732.5	8.8	0.005079	2.5
3.85	1732.5	9.1	0.005239	2.5
4.2	1732.5	8.7	0.005050	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.3	0.004772	2.5
Extreme (50C)	1732.5	8.6	0.004990	2.5
Extreme (40C)	1732.5	7.3	0.004229	2.5
Extreme (30C)	1732.5	6.1	0.003544	2.5
Extreme (10C)	1732.5	7.0	0.004040	2.5
Extreme (0C)	1732.5	9.8	0.005648	2.5
Extreme (-10C)	1732.5	7.9	0.004566	2.5
Extreme (-20C)	1732.5	7.2	0.004140	2.5
Extreme (-30C)	1732.5	8.3	0.004784	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]
3.4	1732.5	9.6	0.005520	2.5
3.85	1732.5	8.7	0.005009	2.5
4.2	1732.5	7.7	0.004432	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	9.6	0.005538	2.5
Extreme (50C)	1732.5	8.8	0.005084	2.5
Extreme (40C)	1732.5	8.3	0.004766	2.5
Extreme (30C)	1732.5	8.7	0.005037	2.5
Extreme (10C)	1732.5	9.0	0.005211	2.5
Extreme (0C)	1732.5	8.0	0.004620	2.5
Extreme (-10C)	1732.5	8.6	0.004982	2.5
Extreme (-20C)	1732.5	8.6	0.004978	2.5
Extreme (-30C)	1732.5	7.7	0.004434	2.5

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

10.3 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]
3.4	707.5	8.4	0.011849	2.5
3.85	707.5	9.5	0.013455	2.5
4.2	707.5	8.8	0.012486	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	8.4	0.011843	2.5
Extreme (50C)	707.5	7.1	0.010099	2.5
Extreme (40C)	707.5	7.3	0.010325	2.5
Extreme (30C)	707.5	8.5	0.011963	2.5
Extreme (10C)	707.5	7.8	0.011048	2.5
Extreme (0C)	707.5	9.1	0.012906	2.5
Extreme (-10C)	707.5	8.4	0.011933	2.5
Extreme (-20C)	707.5	9.1	0.012846	2.5
Extreme (-30C)	707.5	8.0	0.011259	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]
3.4	707.5	7.5	0.010598	2.5
3.85	707.5	8.5	0.012031	2.5
4.2	707.5	7.8	0.011086	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	8.5	0.012083	2.5
Extreme (50C)	707.5	8.5	0.012069	2.5
Extreme (40C)	707.5	9.4	0.013217	2.5
Extreme (30C)	707.5	7.5	0.010586	2.5
Extreme (10C)	707.5	9.2	0.012980	2.5
Extreme (0C)	707.5	7.8	0.010992	2.5
Extreme (-10C)	707.5	7.4	0.010473	2.5
Extreme (-20C)	707.5	9.0	0.012763	2.5
Extreme (-30C)	707.5	7.9	0.011235	2.5

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

10.4 LTE BAND 13

QPSK, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	782.0	12.3	0.015693	2.5
3.85	782.0	14.1	0.018016	2.5
4.2	782.0	13.5	0.017265	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	782.0	14.6	0.018680	2.5
Extreme (50C)	782.0	13.3	0.016955	2.5
Extreme (40C)	782.0	15.1	0.019282	2.5
Extreme (30C)	782.0	13.7	0.017569	2.5
Extreme (10C)	782.0	14.2	0.018189	2.5
Extreme (0C)	782.0	14.3	0.018305	2.5
Extreme (-10C)	782.0	14.4	0.018428	2.5
Extreme (-20C)	782.0	13.9	0.017738	2.5
Extreme (-30C)	782.0	13.9	0.017714	2.5

16QAM, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 13 16QAM, (CH 23230 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	782.0	12.3	0.015688	2.5
3.85	782.0	13.6	0.017454	2.5
4.2	782.0	13.2	0.016880	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 13 QPSK, (CH 23230 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	782.0	12.5	0.015922	2.5
Extreme (50C)	782.0	11.6	0.014884	2.5
Extreme (40C)	782.0	13.8	0.017696	2.5
Extreme (30C)	782.0	13.4	0.017119	2.5
Extreme (10C)	782.0	13.4	0.017147	2.5
Extreme (0C)	782.0	11.8	0.015143	2.5
Extreme (-10C)	782.0	12.6	0.016054	2.5
Extreme (-20C)	782.0	14.3	0.018330	2.5
Extreme (-30C)	782.0	14.7	0.018851	2.5

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

10.5 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]
3.4	710.0	10.0	0.014101	2.5
3.85	710.0	8.8	0.012396	2.5
4.2	710.0	7.8	0.011040	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	10.0	0.014129	2.5
Extreme (50C)	710.0	8.6	0.012123	2.5
Extreme (40C)	710.0	8.6	0.012064	2.5
Extreme (30C)	710.0	9.4	0.013262	2.5
Extreme (10C)	710.0	8.6	0.012116	2.5
Extreme (0C)	710.0	7.6	0.010706	2.5
Extreme (-10C)	710.0	9.0	0.012606	2.5
Extreme (-20C)	710.0	8.5	0.011992	2.5
Extreme (-30C)	710.0	8.0	0.011271	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]
3.4	710.0	9.6	0.013529	2.5
3.85	710.0	8.5	0.011910	2.5
4.2	710.0	8.0	0.011222	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.9	0.013890	2.5
Extreme (50C)	710.0	8.6	0.012129	2.5
Extreme (40C)	710.0	8.8	0.012342	2.5
Extreme (30C)	710.0	8.5	0.011954	2.5
Extreme (10C)	710.0	8.6	0.012043	2.5
Extreme (0C)	710.0	8.6	0.012166	2.5
Extreme (-10C)	710.0	9.4	0.013174	2.5
Extreme (-20C)	710.0	9.0	0.012641	2.5
Extreme (-30C)	710.0	8.8	0.012379	2.5

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

10.6 LTE BAND 66

QPSK, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	1745	6.8	0.003906	2.5
3.85	1745	6.9	0.003926	2.5
4.2	1745	7.9	0.004512	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	5.5	0.003126	2.5
Extreme (50C)	1745	7.7	0.004413	2.5
Extreme (40C)	1745	6.2	0.003538	2.5
Extreme (30C)	1745	7.3	0.004210	2.5
Extreme (10C)	1745	7.4	0.004257	2.5
Extreme (0C)	1745	6.4	0.003655	2.5
Extreme (-10C)	1745	5.5	0.003157	2.5
Extreme (-20C)	1745	6.7	0.003827	2.5
Extreme (-30C)	1745	5.6	0.003191	2.5

16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	1745	9.0	0.005154	2.5
3.85	1745	7.7	0.004395	2.5
4.2	1745	9.7	0.005586	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	8.7	0.004969	2.5
Extreme (50C)	1745	7.9	0.004510	2.5
Extreme (40C)	1745	8.6	0.004952	2.5
Extreme (30C)	1745	8.4	0.004842	2.5
Extreme (10C)	1745	8.9	0.005078	2.5
Extreme (0C)	1745	6.3	0.003599	2.5
Extreme (-10C)	1745	8.2	0.004704	2.5
Extreme (-20C)	1745	8.5	0.004846	2.5
Extreme (-30C)	1745	5.7	0.003268	2.5

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

10.7 LTE BAND 71

QPSK, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	1745	6.9	0.003941	2.5
3.85	1745	7.1	0.004047	2.5
4.2	1745	8.0	0.004563	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	5.3	0.003021	2.5
Extreme (50C)	1745	7.1	0.004052	2.5
Extreme (40C)	1745	6.3	0.003601	2.5
Extreme (30C)	1745	6.6	0.003806	2.5
Extreme (10C)	1745	7.9	0.004517	2.5
Extreme (0C)	1745	6.3	0.003637	2.5
Extreme (-10C)	1745	5.6	0.003211	2.5
Extreme (-20C)	1745	7.0	0.004007	2.5
Extreme (-30C)	1745	5.6	0.003197	2.5

16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	1745	9.0	0.005140	2.5
3.85	1745	7.9	0.004521	2.5
4.2	1745	9.7	0.005532	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	8.5	0.004897	2.5
Extreme (50C)	1745	8.4	0.004796	2.5
Extreme (40C)	1745	8.5	0.004854	2.5
Extreme (30C)	1745	7.7	0.004387	2.5
Extreme (10C)	1745	8.4	0.004806	2.5
Extreme (0C)	1745	6.8	0.003893	2.5
Extreme (-10C)	1745	8.1	0.004634	2.5
Extreme (-20C)	1745	8.9	0.005119	2.5
Extreme (-30C)	1745	5.3	0.003035	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.

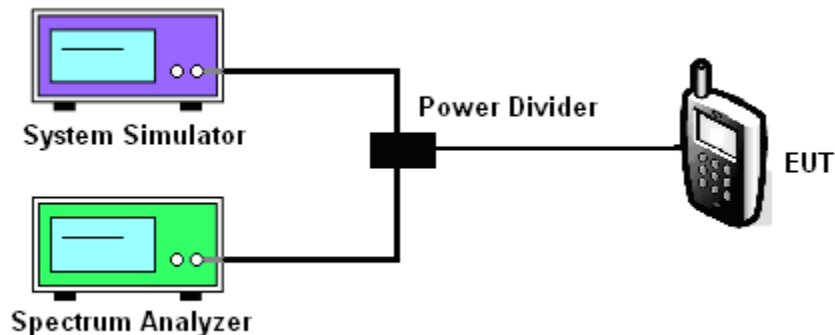
11.2 Measuring Instruments

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 2/4/12/13/17/66/71
- ☐

Test data reference attachment.

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