

FCC CFR47 PART 22H, 24E, 27 CERTIFICATION TEST REPORT FCC ID:2AHZ5ESP

Product: Smartphone

Trade Mark: CUBOT

Model No.: KINGKONG ES PRO

Family Model: KINGKONG E1, KINGKONG E2, KINGKONG E3

Report No.: N26042708505E

Issue Date: Jul. 06, 2026

Prepared for

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Prepared by

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TEST RESULT CERTIFICATION

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Product name: Smartphone
Model and/or type reference: KINGKONG ES PRO
Trade Mark: CUBOT
Family Model: KINGKONG E1, KINGKONG E2, KINGKONG E3
Test Sample Number: S2605110197-1#

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 Apr. 27, 2026 ~ Jul. 06, 2026

Date of Issue Jul. 06, 2026

Test Result **Pass**

Prepared

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TABLE OF CONTENTS

1. GENERAL INFORMATION	5
1.1 PRODUCT DESCRIPTION	5
1.2 RELATED SUBMITTAL(S) / GRANT (S).....	6
1.3 TEST METHODOLOGY	6
1.4 TEST FACILITY	6
MEASUREMENT UNCERTAINTY	6
1.5 SPECIAL ACCESSORIES.....	6
1.6 WORST-CASE CONFIGURATION AND MODE.....	6
2. SYSTEM TEST CONFIGURATION	7
2.1 EUT CONFIGURATION	7
2.2 EUT EXERCISE	7
2.3 CONFIGURATION OF EUT SYSTEM.....	7
2.4 TEST SETUP	8
3.TEST AND MEASUREMENT EQUIPMENT	9
4. OUTPUT POWER.....	11
4.1 OUTPUT POWER MEASUREMENT	11
5. OCCUPIED BANDWIDTH.....	13
6. BANEDGE AND EMISSION MASK	14
7. OUT OF BAND EMISSIONS.....	16
7.1 MEASUREMENT METHOD	16
8. RADIATED MEASUREMENT	17
8.1. RADIATED POWER (ERP & EIRP)	17
8.2 LTE BAND 2	18
8.3 LTE BAND 4	22

8.4 LTE BAND 5	26
8.5 LTE BAND 7	28
8.6 LTE BAND 12	30
8.7 LTE BAND 17	32
8.11 LTE BAND 41	34
9. SPURIOUS RADIATION EMISSION	36
9.1 LTE BAND 2	38
9.2 LTE BAND 4	40
9.3 LTE BAND 5	42
9.4 LTE BAND 7	44
9.5 LTE BAND 12	46
9.6 LTE BAND 17	48
9.7 LTE BAND 41	50
10. FREQUENCY STABILITY	52
10.1 LTE BAND 2	53
10.2 LTE BAND 4	55
10.3 LTE BAND 5	57
10.4 LTE BAND 7	59
10.5 LTE BAND 12	61
10.6 LTE BAND 17	63
10.7 LTE BAND 41	65
11. PEAK-TO-AVERAGE RATIO	67
11.1 Description of the PAR Measurement	67
11.2 Measuring Instruments	67
11.3 Test Procedures	67
11.4 Test Setup	68

1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	Smartphone
Trade Mark	CUBOT
Model Name	KINGKONG ES PRO
Family Model	KINGKONG E1, KINGKONG E2, KINGKONG E3
Model Difference	All models have the same circuit and RF module, except for model names and colors.
FCC ID:	2AHZ5ESP
Frequency Bands:	U.S. Bands: ☒ LTE FDD Band 2, 4, 5, 7, 12, 17, 41
Frequency Range:	LTE FDD Band 2 Uplink: 1850MHz-1910MHz, Downlink: 1930MHz-1990MHz; LTE FDD Band 4 Uplink: 1710MHz-1755MHz, Downlink: 2110MHz-2155MHz; LTE FDD Band 5 Uplink: 824MHz-849MHz, Downlink: 869MHz-894MHz; LTE-FDD Band 7 Uplink: 2500MHz-2570MHz, Downlink: 2620MHz-2690MHz; LTE FDD Band 12 Uplink: 699MHz-716MHz, Downlink: 729MHz-746MHz; LTE FDD Band 17 Uplink: 704MHz-716MHz, Downlink: 734MHz-746MHz; LTE TDD Band 41 :Uplink & Downlink: 2535MHz-2655MHz
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:-0.51 dBi, Band 4: -0.04 dBi, Band 5: -3.89 dBi, Band 7: -1.57 dBi, Band 12: -4.57 dBi, Band 17: -4.02 dBi, Band41:-2.18 dBi
Adapter	Model: TPA-418G050200UU01 Input: 100-240V~50/60Hz 0.3A Output: 5.0V---2.0A 10.0W
Battery	DC 3.87V, 5100mAh, 19.737Wh
Power supply	DC 3.87V from battery or DC 5V from adapter
Extreme Vol. Limits:	DC 3.29V to DC 4.45V (Nominal DC 3.87V) (Note 1)
HW Version	S16E-MB-V1.0
SW Version	CUBOT_KINGKONG_ES_PRO_E083C_V1.0
** Note1: The High Voltage DC 4.45V and Low Voltage 3.29V was declared by manufacturer, The EUT couldn't be operate normally with higher or lower voltage.	

1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID:2AHZ5ESP** filing to comply with the FCC Part 22H&24E&27

1.3 TEST METHODOLOGY

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

1.4 TEST FACILITY

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

ShenZhen NTEK Testing Technology Co., Ltd.

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

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

FCC Registration No.:463705

IC Registration No.:9270A,

CNAS Registration No.:L5516

MEASUREMENT UNCERTAINTY

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

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

1.5 SPECIAL ACCESSORIES

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

1.6 WORST-CASE CONFIGURATION AND MODE

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

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

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

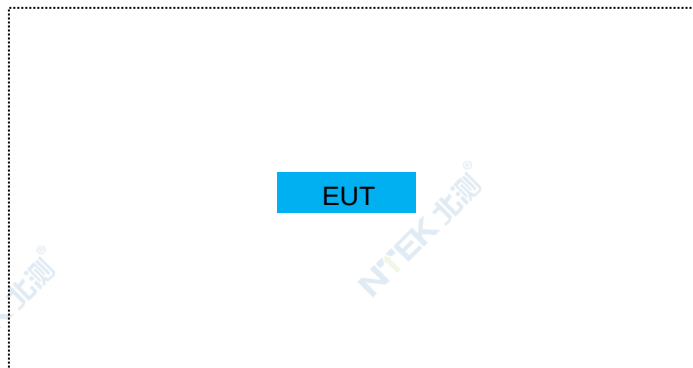
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Smartphone	KINGKONG ES PRO	FCC ID: 2AHZ5ESP	EUT

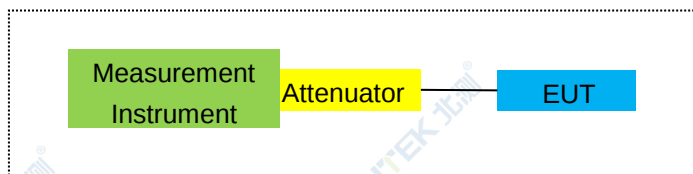
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

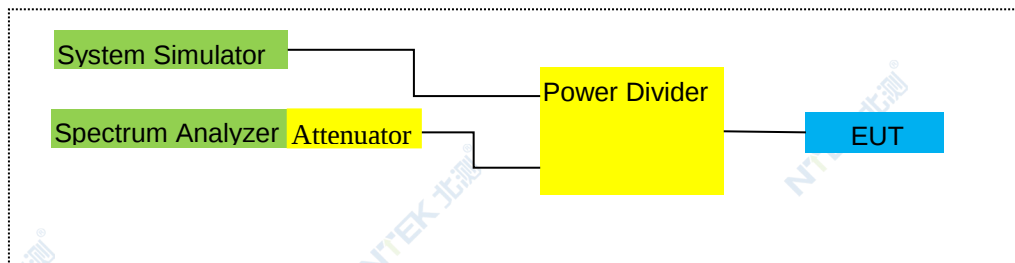
For Radiated Test Cases



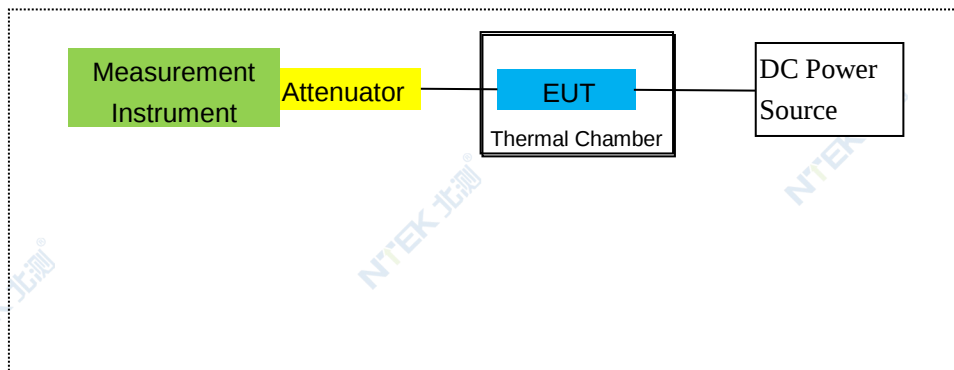
For Conducted Output Power



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	2026.04.08	2027.04.07	1 year
2	Test Receiver	R&S	ESPI3	101417	2025/7/23	2026/7/22	1 year
3	Bilog Antenna	ETS	3142E	00214344	2024/6/1	2027/5/30	3 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2024.04.26	2027.04.25	3 year
5	Horn Antenna	EM	EM-AH-10180	2011071402	2024.05.12	2027.05.11	3 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2024.05.12	2027.05.11	3 year
7	Amplifier	EM	EM-30180	060538	2026.04.08	2027.04.07	1 year
8	Loop Antenna	ARA	PLA-1030/B	1029	2026.04.08	2027.04.07	1 year
9	Power Meter	R&S	NRVS	100696	2026.04.08	2027.04.07	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2026.04.08	2027.04.07	1 year
11	Test Cable	N/A	R-01	N/A	2024.06.16	2027.06.15	3 year
12	Test Cable	N/A	R-02	N/A	2024.06.16	2027.06.15	3 year
13	Test Cable	N/A	R-03	N/A	2024.06.16	2027.06.15	3 year
14	Test Receiver	R&S	ESCI	101160	2026.04.08	2027.04.07	1 year
15	LISN	R&S	ENV216	101313	2026.04.08	2027.04.07	1 year
16	LISN	EMCO	3816/2	00042990	2026.04.08	2027.04.07	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2026.04.08	2027.04.07	1 year
18	Passive Voltage Probe	R&S	ESH2-Z3	100196	2026.04.08	2027.04.07	1 year
19	Test Cable	N/A	C01	N/A	2024.05.06	2027.05.05	3 year
20	Test Cable	N/A	C02	N/A	2024.05.06	2027.05.05	3 year
21	Test Cable	N/A	C03	N/A	2024.05.06	2027.05.05	3 year
22	Attenuator	MCE	24-10-34	BN9258	2026.04.08	2027.04.07	1 year
23	Spectrum Analyzer	agilent	e4440a	us44300399	2026.04.08	2027.04.07	1 year
24	test receiver	R&S	ESCI	a0304218	2026.04.08	2027.04.07	1 year
25	Communication Tester	R&S	CMU200	A0304247	2026.04.08	2027.04.07	1 year
26	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2026.04.08	2027.04.07	1 year

27	DC Power Source	N/A	PS-6005D	20170402923	2024.05.06	2027.05.05	3 year
28	MXG Vector Signal Generator	Agilent	N5182A	MY47070317	2026.04.08	2027.04.07	1 year
29	Communication Tester	R&S	CMW500	148500	2026.04.27	2027.04.26	1 year
30	Log-Periodic Antenna	SCHWARZBECK	VULB 9168	1742	2025/11/1	2026/10/31	1 year
31	Horn Antenna	SCHWARZBECK	BBHA 9120D	2816	2024.05.18	2027.05.17	3 year
32	PSG Analog Signal Generator	Agilent	E8257D	MY51110112	2026/4/27	2027/4/26	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

Measurement Software

Item	Manufacturer	Software Name	Software Version	Description
1	MWRFTest	MTS 8200	2.0	RF Conducted Test
2	Farad	EZ-EMC_RE	AIT-03A	RadiatedTest
3	raditeq	RadiMation	2023.1.3	RadiatedTest

4. OUTPUT POWER

4.1 OUTPUT POWER MEASUREMENT

LTE Measurement Procedure:

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

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

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

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

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

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

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

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

Test data reference attachment.

5. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

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

MODES TESTED

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

RESULTS

PASS

Test data reference attachment.

6. BANDEDGE AND EMISSION MASK

RULE PART(S)

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

LIMITS

FCC: §22.917, §24.238, §27.53

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

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

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

TEST PROCEDURE

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

For each band edge measurement:

Set the spectrum analyzer span to include the block edge frequency

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

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

MODES TESTED

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

RESULTS

Test data reference attachment.

7. OUT OF BAND EMISSIONS

RULE PART(S)

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

LIMITS

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

TEST PROCEDURE

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

For each out of band emissions measurement:

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

MODES TESTED

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

7.1 MEASUREMENT METHOD

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

Test data reference attachment.

8. RADIATED MEASUREMENT

8.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

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

LIMITS:

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

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. 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

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

RESULTS

Pass

8.2 LTE BAND 2

		Radiated Power (EIRP) for Band 2								
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP	Polarization Of Max. ERP		
							Average		Limit	
							(mW)		(W)	
1.4MHz Band QPSK	1/#Mid	1850.7	-5.09	3.76	28.24	19.39	86.896	Horizontal	2	Pass
		1880	-4.90	3.91	28.22	19.41	87.297	Horizontal	2	Pass
		1909.3	-4.81	3.93	28.20	19.46	88.308	Horizontal	2	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-5.15	3.77	28.23	19.31	85.310	Horizontal	2	Pass
		1880	-5.00	3.91	28.24	19.33	85.704	Horizontal	2	Pass
		1908.5	-4.87	3.94	28.25	19.44	87.902	Horizontal	2	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-5.04	3.77	28.31	19.50	89.125	Horizontal	2	Pass
		1880	-4.66	3.91	28.22	19.65	92.257	Horizontal	2	Pass
		1907.5	-4.59	3.94	28.20	19.67	92.683	Horizontal	2	Pass
10.0MHz Band QPSK	1/#Mid	1855	-4.90	3.79	28.33	19.64	92.045	Horizontal	2	Pass
		1880	-4.60	3.95	28.22	19.67	92.683	Horizontal	2	Pass
		1905	-4.49	3.97	28.19	19.73	93.972	Horizontal	2	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-4.86	3.79	28.34	19.69	93.111	Horizontal	2	Pass
		1880	-4.65	3.95	28.22	19.62	91.622	Horizontal	2	Pass
		1902.5	-4.51	3.97	28.18	19.70	93.325	Horizontal	2	Pass
20.0MHz Band QPSK	1/#Mid	1860	-4.85	3.81	28.35	19.69	93.111	Horizontal	2	Pass
		1880	-4.52	3.96	28.22	19.74	94.189	Horizontal	2	Pass
		1900	-4.46	4.00	28.16	19.70	93.325	Horizontal	2	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-6.26	3.76	28.24	18.22	66.374	Vertical	2	Pass
		1880	-5.72	3.91	28.22	18.59	72.277	Vertical	2	Pass
		1909.3	-5.92	3.93	28.20	18.35	68.391	Vertical	2	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-5.44	3.77	28.23	19.02	79.799	Vertical	2	Pass
		1880	-5.50	3.91	28.24	18.83	76.384	Vertical	2	Pass
		1908.5	-5.98	3.94	28.25	18.33	68.077	Vertical	2	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-6.22	3.77	28.31	18.32	67.920	Vertical	2	Pass
		1880	-5.68	3.91	28.22	18.63	72.946	Vertical	2	Pass
		1907.5	-5.63	3.94	28.20	18.63	72.946	Vertical	2	Pass
10.0MHz Band QPSK	1/#Mid	1855	-6.38	3.79	28.33	18.16	65.464	Vertical	2	Pass
		1880	-5.42	3.95	28.22	18.85	76.736	Vertical	2	Pass
		1905	-5.26	3.97	28.19	18.96	78.705	Vertical	2	Pass
15.0MHz	1/#Mid	1857.5	-6.12	3.79	28.34	18.43	69.663	Vertical	2	Pass

Band		1880	-6.06	3.95	28.22	18.21	66.222	Vertical	2	Pass
QPSK		1902.5	-6.02	3.97	28.18	18.19	65.917	Vertical	2	Pass
20.0MHz	1/#Mid	1860	-5.46	3.81	28.35	19.08	80.910	Vertical	2	Pass
Band		1880	-5.98	3.96	28.22	18.28	67.298	Vertical	2	Pass
QPSK		1900	-5.87	4.00	28.16	18.29	67.453	Vertical	2	Pass

		Radiated Power (EIRP) for Band 2								
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP	Polarization Of Max. ERP		
							Average		Limit	
							(mW)		(W)	
1.4MHz Band 16 QAM	1/#Mid	1850.7	-6.21	3.76	28.24	18.27	67.143	Horizontal	2	Pass
		1880	-5.68	3.91	28.22	18.63	72.946	Horizontal	2	Pass
		1909.3	-5.61	3.93	28.20	18.66	73.451	Horizontal	2	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-5.71	3.77	28.23	18.75	74.989	Horizontal	2	Pass
		1880	-5.79	3.91	28.24	18.54	71.450	Horizontal	2	Pass
		1908.5	-6.00	3.94	28.25	18.31	67.764	Horizontal	2	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-5.65	3.77	28.31	18.89	77.446	Horizontal	2	Pass
		1880	-5.56	3.91	28.22	18.75	74.989	Horizontal	2	Pass
		1907.5	-5.24	3.94	28.20	19.02	79.799	Horizontal	2	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-5.70	3.79	28.33	18.84	76.560	Horizontal	2	Pass
		1880	-5.69	3.95	28.22	18.58	72.111	Horizontal	2	Pass
		1905	-5.16	3.97	28.19	19.06	80.538	Horizontal	2	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-5.68	3.79	28.34	18.87	77.090	Horizontal	2	Pass
		1880	-5.47	3.95	28.22	18.80	75.858	Horizontal	2	Pass
		1902.5	-5.43	3.97	28.18	18.78	75.509	Horizontal	2	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-5.57	3.81	28.35	18.97	78.886	Horizontal	2	Pass
		1880	-5.27	3.96	28.22	18.99	79.250	Horizontal	2	Pass
		1900	-5.09	4.00	28.16	19.07	80.724	Horizontal	2	Pass
1.4MHz Band 16 QAM	1/#Mid	1850.7	-6.78	3.76	28.24	17.70	58.884	Vertical	2	Pass
		1880	-6.70	3.91	28.22	17.61	57.677	Vertical	2	Pass
		1909.3	-6.49	3.93	28.20	17.78	59.979	Vertical	2	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-6.62	3.77	28.23	17.84	60.814	Vertical	2	Pass
		1880	-6.33	3.91	28.24	18.00	63.096	Vertical	2	Pass
		1908.5	-6.95	3.94	28.25	17.36	54.450	Vertical	2	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-6.56	3.77	28.31	17.98	62.806	Vertical	2	Pass
		1880	-6.38	3.91	28.22	17.93	62.087	Vertical	2	Pass
		1907.5	-6.93	3.94	28.20	17.33	54.075	Vertical	2	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-6.96	3.79	28.33	17.58	57.280	Vertical	2	Pass
		1880	-6.83	3.95	28.22	17.44	55.463	Vertical	2	Pass
		1905	-6.83	3.97	28.19	17.39	54.828	Vertical	2	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-7.32	3.79	28.34	17.23	52.845	Vertical	2	Pass
		1880	-6.95	3.95	28.22	17.32	53.951	Vertical	2	Pass
		1902.5	-6.90	3.97	28.18	17.31	53.827	Vertical	2	Pass

20.0MHz		1860	-6.87	3.81	28.35	17.67	58.479	Vertical	2	Pass
Band 16	1/#Mid	1880	-6.82	3.96	28.22	17.44	55.463	Vertical	2	Pass
QAM		1900	-6.50	4.00	28.16	17.66	58.345	Vertical	2	Pass

Note:

SG Level= Signal generator output

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

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

8.3 LTE BAND 4

		Radiated Power (EIRP) for Band 4								
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP		
									Limit	
1.4MHz Band QPSK	1/#Mid	1710.7	-5.00	3.12	27.58	19.46	88.308	Horizontal	1	Pass
		1732.5	-4.99	3.27	27.61	19.35	86.099	Horizontal	1	Pass
		1754.3	-4.97	3.29	27.63	19.37	86.497	Horizontal	1	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-5.17	3.13	27.61	19.31	85.310	Horizontal	1	Pass
		1732.5	-5.09	3.27	27.61	19.25	84.140	Horizontal	1	Pass
		1753.5	-5.01	3.30	27.62	19.31	85.310	Horizontal	1	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-4.94	3.13	27.63	19.56	90.365	Horizontal	1	Pass
		1732.5	-4.84	3.27	27.61	19.50	89.125	Horizontal	1	Pass
		1752.5	-4.72	3.30	27.60	19.58	90.782	Horizontal	1	Pass
10.0MHz Band QPSK	1/#Mid	1715	-4.88	3.15	27.64	19.61	91.411	Horizontal	1	Pass
		1732.5	-4.65	3.31	27.61	19.65	92.257	Horizontal	1	Pass
		1750	-4.67	3.33	27.59	19.59	90.991	Horizontal	1	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-4.89	3.15	27.65	19.61	91.411	Horizontal	1	Pass
		1732.5	-4.73	3.31	27.61	19.57	90.573	Horizontal	1	Pass
		1747.5	-4.67	3.33	27.57	19.57	90.573	Horizontal	1	Pass
20.0MHz Band QPSK	1/#Mid	1720	-4.83	3.17	27.66	19.66	92.470	Horizontal	1	Pass
		1732.5	-4.66	3.32	27.61	19.63	91.833	Horizontal	1	Pass
		1745	-4.60	3.36	27.56	19.60	91.201	Horizontal	1	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-5.80	3.12	27.58	18.66	73.451	Vertical	1	Pass
		1732.5	-6.18	3.27	27.61	18.16	65.464	Vertical	1	Pass
		1754.3	-5.78	3.29	27.63	18.56	71.779	Vertical	1	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-5.70	3.13	27.61	18.78	75.509	Vertical	1	Pass
		1732.5	-5.23	3.27	27.61	19.11	81.470	Vertical	1	Pass
		1753.5	-6.07	3.30	27.62	18.25	66.834	Vertical	1	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-5.56	3.13	27.63	18.94	78.343	Vertical	1	Pass
		1732.5	-5.40	3.27	27.61	18.94	78.343	Vertical	1	Pass
		1752.5	-5.63	3.30	27.60	18.67	73.621	Vertical	1	Pass
10.0MHz Band QPSK	1/#Mid	1715	-6.13	3.15	27.64	18.36	68.549	Vertical	1	Pass
		1732.5	-5.62	3.31	27.61	18.68	73.790	Vertical	1	Pass
		1750	-5.80	3.33	27.59	18.46	70.146	Vertical	1	Pass

15.0MHz Band QPSK	1/#Mid	1717.5	-6.33	3.15	27.65	18.17	65.615	Vertical	1	Pass
		1732.5	-5.90	3.31	27.61	18.40	69.183	Vertical	1	Pass
		1747.5	-6.06	3.33	27.57	18.18	65.766	Vertical	1	Pass
20.0MHz Band QPSK	1/#Mid	1720	-6.29	3.17	27.66	18.20	66.069	Vertical	1	Pass
		1732.5	-5.24	3.32	27.61	19.05	80.353	Vertical	1	Pass
		1745	-5.85	3.36	27.56	18.35	68.391	Vertical	1	Pass

		Radiated Power (EIRP) for Band 4								
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP		
									Limit	
1.4MHz Band 16 QAM	1/#Mid	1710.7	-5.81	3.12	27.58	18.65	73.282	Horizontal	1	Pass
		1732.5	-5.66	3.27	27.61	18.68	73.790	Horizontal	1	Pass
		1754.3	-5.66	3.29	27.63	18.68	73.790	Horizontal	1	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-5.75	3.13	27.61	18.73	74.645	Horizontal	1	Pass
		1732.5	-5.88	3.27	27.61	18.46	70.146	Horizontal	1	Pass
		1753.5	-6.10	3.30	27.62	18.22	66.374	Horizontal	1	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-5.58	3.13	27.63	18.92	77.983	Horizontal	1	Pass
		1732.5	-5.54	3.27	27.61	18.80	75.858	Horizontal	1	Pass
		1752.5	-5.23	3.30	27.60	19.07	80.724	Horizontal	1	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-5.65	3.15	27.64	18.84	76.560	Horizontal	1	Pass
		1732.5	-5.84	3.31	27.61	18.46	70.146	Horizontal	1	Pass
		1750	-5.22	3.33	27.59	19.04	80.168	Horizontal	1	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-5.45	3.15	27.65	19.05	80.353	Horizontal	1	Pass
		1732.5	-5.51	3.31	27.61	18.79	75.683	Horizontal	1	Pass
		1747.5	-5.53	3.33	27.57	18.71	74.302	Horizontal	1	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-5.40	3.17	27.66	19.09	81.096	Horizontal	1	Pass
		1732.5	-5.41	3.32	27.61	18.88	77.268	Horizontal	1	Pass
		1745	-5.22	3.36	27.56	18.98	79.068	Horizontal	1	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-6.45	3.12	27.58	18.01	63.241	Vertical	1	Pass
		1732.5	-6.71	3.27	27.61	17.63	57.943	Vertical	1	Pass
		1754.3	-6.95	3.29	27.63	17.39	54.828	Vertical	1	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-6.64	3.13	27.61	17.84	60.814	Vertical	1	Pass
		1732.5	-6.54	3.27	27.61	17.80	60.256	Vertical	1	Pass
		1753.5	-6.58	3.30	27.62	17.74	59.429	Vertical	1	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-7.20	3.13	27.63	17.30	53.703	Vertical	1	Pass
		1732.5	-6.91	3.27	27.61	17.43	55.335	Vertical	1	Pass
		1752.5	-6.52	3.30	27.60	17.78	59.979	Vertical	1	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-7.33	3.15	27.64	17.16	52.000	Vertical	1	Pass
		1732.5	-6.67	3.31	27.61	17.63	57.943	Vertical	1	Pass
		1750	-6.80	3.33	27.59	17.46	55.719	Vertical	1	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-7.23	3.15	27.65	17.27	53.333	Vertical	1	Pass
		1732.5	-7.15	3.31	27.61	17.15	51.880	Vertical	1	Pass
		1747.5	-7.12	3.33	27.57	17.12	51.523	Vertical	1	Pass

20.0MHz		1720	-6.69	3.17	27.66	17.80	60.256	Vertical	1	Pass
Band 16	1/#Mid	1732.5	-6.87	3.32	27.61	17.42	55.208	Vertical	1	Pass
QAM		1745	-6.53	3.36	27.56	17.67	58.479	Vertical	1	Pass

Note:

SG Level= Signal generator output

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

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

8.4 LTE BAND 5

Radiated Power (ERP) for Band 5											
Mode	RB/RB SIZE	Frequency	Result								Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP		
										Limit	
1.4MHz Band QPSK	3/#Mid	824.7	4.30	2.01	19.68	2.15	19.82	95.940	Horizontal	7	Pass
		836.5	4.18	2.01	19.77	2.15	19.79	95.280	Horizontal	7	Pass
		848.3	3.98	2.02	19.82	2.15	19.63	91.833	Horizontal	7	Pass
3.0MHz Band QPSK	1/#Mid	825.5	4.07	2.01	19.70	2.15	19.61	91.411	Horizontal	7	Pass
		836.5	3.97	2.01	19.77	2.15	19.58	90.782	Horizontal	7	Pass
		847.5	3.84	2.02	19.81	2.15	19.48	88.716	Horizontal	7	Pass
5.0MHz Band QPSK	1/#Mid	826.5	4.35	2.01	19.71	2.15	19.90	97.724	Horizontal	7	Pass
		836.5	4.23	2.01	19.77	2.15	19.84	96.383	Horizontal	7	Pass
		846.5	4.07	2.02	19.79	2.15	19.69	93.111	Horizontal	7	Pass
10.0MHz Band QPSK	1/#Mid	829	4.37	2.01	19.73	2.15	19.94	98.628	Horizontal	7	Pass
		836.5	4.32	2.01	19.77	2.15	19.93	98.401	Horizontal	7	Pass
		844	4.22	2.02	19.78	2.15	19.83	96.161	Horizontal	7	Pass
1.4MHz Band QPSK	1/#Mid	824.7	2.89	2.01	19.68	2.15	18.41	69.343	Vertical	7	Pass
		836.5	2.93	2.01	19.77	2.15	18.54	71.450	Vertical	7	Pass
		848.3	3.26	2.02	19.82	2.15	18.91	77.804	Vertical	7	Pass
3.0MHz Band QPSK	1/#Mid	825.5	3.57	2.01	19.70	2.15	19.11	81.470	Vertical	7	Pass
		836.5	3.06	2.01	19.77	2.15	18.67	73.621	Vertical	7	Pass
		847.5	3.08	2.02	19.81	2.15	18.72	74.473	Vertical	7	Pass
5.0MHz Band QPSK	1/#Mid	826.5	2.81	2.01	19.71	2.15	18.36	68.549	Vertical	7	Pass
		836.5	3.01	2.01	19.77	2.15	18.62	72.778	Vertical	7	Pass
		846.5	3.08	2.02	19.79	2.15	18.70	74.131	Vertical	7	Pass
10.0MHz Band QPSK	1/#Mid	829	2.67	2.01	19.73	2.15	18.24	66.681	Vertical	7	Pass
		836.5	3.25	2.01	19.77	2.15	18.86	76.913	Vertical	7	Pass
		844	3.48	2.02	19.78	2.15	19.09	81.096	Vertical	7	Pass

		Radiated Power (ERP) for Band 5									
Mode	RB/RB SIZE	Frequency	Result								Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP		
										Limit	
1.4MHz Band 16 QAM	3/#Mid	824.7	3.45	2.01	19.68	2.15	18.97	78.886	Horizontal	7	Pass
		836.5	3.38	2.01	19.77	2.15	18.99	79.250	Horizontal	7	Pass
		848.3	3.22	2.02	19.82	2.15	18.87	77.090	Horizontal	7	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	3.53	2.01	19.70	2.15	19.07	80.724	Horizontal	7	Pass
		836.5	3.24	2.01	19.77	2.15	18.85	76.736	Horizontal	7	Pass
		847.5	2.72	2.02	19.81	2.15	18.36	68.549	Horizontal	7	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	3.85	2.01	19.71	2.15	19.40	87.096	Horizontal	7	Pass
		836.5	3.62	2.01	19.77	2.15	19.23	83.753	Horizontal	7	Pass
		846.5	3.37	2.02	19.79	2.15	18.99	79.250	Horizontal	7	Pass
10.0MHz Band 16 QAM	1/#Mid	829	3.85	2.01	19.73	2.15	19.42	87.498	Horizontal	7	Pass
		836.5	3.57	2.01	19.77	2.15	19.18	82.794	Horizontal	7	Pass
		844	3.11	2.02	19.78	2.15	18.72	74.473	Horizontal	7	Pass
1.4MHz Band 16 QAM	1/#Mid	824.7	2.59	2.01	19.68	2.15	18.11	64.714	Vertical	7	Pass
		836.5	3.50	2.01	19.77	2.15	19.11	81.470	Vertical	7	Pass
		848.3	3.02	2.02	19.82	2.15	18.67	73.621	Vertical	7	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	2.90	2.01	19.70	2.15	18.44	69.823	Vertical	7	Pass
		836.5	1.84	2.01	19.77	2.15	17.45	55.590	Vertical	7	Pass
		847.5	2.51	2.02	19.81	2.15	18.15	65.313	Vertical	7	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	2.55	2.01	19.71	2.15	18.10	64.565	Vertical	7	Pass
		836.5	2.09	2.01	19.77	2.15	17.70	58.884	Vertical	7	Pass
		846.5	1.51	2.02	19.79	2.15	17.13	51.642	Vertical	7	Pass
10.0MHz Band 16 QAM	1/#Mid	829	2.06	2.01	19.73	2.15	17.63	57.943	Vertical	7	Pass
		836.5	1.93	2.01	19.77	2.15	17.54	56.754	Vertical	7	Pass
		844	2.33	2.02	19.78	2.15	17.94	62.230	Vertical	7	Pass

Note:

SG Level= Signal generator output

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

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

ERP(dBm)=EIRP-2.15

8.5 LTE BAND 7

		Radiated Power (EIRP) for Band 7								
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP		
									Limit	
									(W)	
5.0MHz Band QPSK	1/#Mid	2502.5	-3.28	4.54	27.75	19.93	98.401	Horizontal	2	Pass
		2535	-3.11	4.69	27.72	19.92	98.175	Horizontal	2	Pass
		2567.5	-3.04	4.71	27.71	19.96	99.083	Horizontal	2	Pass
10.0MHz Band QPSK	1/#Mid	2505	-3.21	4.55	27.76	20.00	100.000	Horizontal	2	Pass
		2535	-3.02	4.69	27.72	20.01	100.231	Horizontal	2	Pass
		2565	-2.94	4.72	27.70	20.04	100.925	Horizontal	2	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-3.22	4.55	27.77	20.00	100.000	Horizontal	2	Pass
		2535	-3.08	4.69	27.72	19.95	98.855	Horizontal	2	Pass
		2562.5	-2.98	4.72	27.69	19.99	99.770	Horizontal	2	Pass
20.0MHz Band QPSK	1/#Mid	2510	-3.16	4.57	27.78	20.05	101.158	Horizontal	2	Pass
		2535	-2.98	4.73	27.72	20.01	100.231	Horizontal	2	Pass
		2560	-2.94	4.75	27.68	19.99	99.770	Horizontal	2	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	-5.08	4.54	27.75	18.13	65.013	Vertical	2	Pass
		2535	-4.85	4.69	27.72	18.18	65.766	Vertical	2	Pass
		2567.5	-4.20	4.71	27.71	18.80	75.858	Vertical	2	Pass
10.0MHz Band QPSK	1/#Mid	2505	-4.48	4.55	27.76	18.73	74.645	Vertical	2	Pass
		2535	-4.14	4.69	27.72	18.89	77.446	Vertical	2	Pass
		2565	-4.75	4.72	27.70	18.23	66.527	Vertical	2	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-4.38	4.55	27.77	18.84	76.560	Vertical	2	Pass
		2535	-4.08	4.69	27.72	18.95	78.524	Vertical	2	Pass
		2562.5	-4.86	4.72	27.69	18.11	64.714	Vertical	2	Pass
20.0MHz Band QPSK	1/#Mid	2510	-4.17	4.57	27.78	19.04	80.168	Vertical	2	Pass
		2535	-4.63	4.73	27.72	18.36	68.549	Vertical	2	Pass
		2560	-4.81	4.75	27.68	18.12	64.863	Vertical	2	Pass

		Radiated Power (EIRP) for Band 7								
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP		
									Limit	
									(W)	
5.0MHz Band 16 QAM	1/#Mid	2502.5	-3.97	4.54	27.75	19.24	83.946	Horizontal	2	Pass
		2535	-3.66	4.69	27.72	19.37	86.497	Horizontal	2	Pass
		2567.5	-3.74	4.71	27.71	19.26	84.333	Horizontal	2	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-3.86	4.55	27.76	19.35	86.099	Horizontal	2	Pass
		2535	-3.87	4.69	27.72	19.16	82.414	Horizontal	2	Pass
		2565	-4.14	4.72	27.70	18.84	76.560	Horizontal	2	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-4.04	4.55	27.77	19.18	82.794	Horizontal	2	Pass
		2535	-4.01	4.69	27.72	19.02	79.799	Horizontal	2	Pass
		2562.5	-3.62	4.72	27.69	19.35	86.099	Horizontal	2	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-3.92	4.57	27.78	19.29	84.918	Horizontal	2	Pass
		2535	-3.59	4.73	27.72	19.40	87.096	Horizontal	2	Pass
		2560	-3.69	4.75	27.68	19.24	83.946	Horizontal	2	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	-5.34	4.54	27.75	17.87	61.235	Vertical	2	Pass
		2535	-5.42	4.69	27.72	17.61	57.677	Vertical	2	Pass
		2567.5	-4.12	4.71	27.71	18.88	77.268	Vertical	2	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-4.23	4.55	27.76	18.98	79.068	Vertical	2	Pass
		2535	-4.67	4.69	27.72	18.36	68.549	Vertical	2	Pass
		2565	-4.71	4.72	27.70	18.27	67.143	Vertical	2	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-4.61	4.55	27.77	18.61	72.611	Vertical	2	Pass
		2535	-4.87	4.69	27.72	18.16	65.464	Vertical	2	Pass
		2562.5	-5.05	4.72	27.69	17.92	61.944	Vertical	2	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-5.60	4.57	27.78	17.61	57.677	Vertical	2	Pass
		2535	-5.35	4.73	27.72	17.64	58.076	Vertical	2	Pass
		2560	-4.46	4.75	27.68	18.47	70.307	Vertical	2	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								Conclusio n
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP		
										Limit	
1.4MHz Band QPSK	1/##Mid	699.7	2.64	4.61	1.91	19.21	2.15	19.76	Vertical	3	Pass
		707.5	2.56	4.53	1.91	19.26	2.15	19.73	Vertical	3	Pass
		715.3	2.34	4.31	1.93	19.34	2.15	19.57	Vertical	3	Pass
3.0MHz Band QPSK	1/##Mid	700.5	2.43	4.40	1.91	19.21	2.15	19.55	Vertical	3	Pass
		707.5	2.35	4.32	1.91	19.26	2.15	19.52	Vertical	3	Pass
		714.5	2.19	4.16	1.93	19.34	2.15	19.42	Vertical	3	Pass
5.0MHz Band QPSK	1/##Mid	701.5	2.70	4.67	1.91	19.23	2.15	19.84	Vertical	3	Pass
		707.5	2.61	4.58	1.91	19.26	2.15	19.78	Vertical	3	Pass
		713.5	2.40	4.37	1.92	19.33	2.15	19.63	Vertical	3	Pass
10.0MHz Band QPSK	1/##Mid	704	2.72	4.69	1.91	19.25	2.15	19.88	Vertical	3	Pass
		707.5	2.70	4.67	1.91	19.26	2.15	19.87	Vertical	3	Pass
		711	2.55	4.52	1.92	19.32	2.15	19.77	Vertical	3	Pass
1.4MHz Band QPSK	1/##Mid	699.7	1.56	3.53	1.91	19.21	2.15	18.68	Horizontal	3	Pass
		707.5	1.87	3.84	1.91	19.26	2.15	19.04	Horizontal	3	Pass
		715.3	1.71	3.68	1.93	19.34	2.15	18.94	Horizontal	3	Pass
3.0MHz Band QPSK	1/##Mid	700.5	0.94	2.91	1.91	19.21	2.15	18.06	Horizontal	3	Pass
		707.5	0.98	2.95	1.91	19.26	2.15	18.15	Horizontal	3	Pass
		714.5	1.12	3.09	1.93	19.34	2.15	18.35	Horizontal	3	Pass
5.0MHz Band QPSK	1/##Mid	701.5	1.49	3.46	1.91	19.23	2.15	18.63	Horizontal	3	Pass
		707.5	1.17	3.14	1.91	19.26	2.15	18.34	Horizontal	3	Pass
		713.5	1.50	3.47	1.92	19.33	2.15	18.73	Horizontal	3	Pass
10.0MHz Band QPSK	1/##Mid	704	1.72	3.69	1.91	19.25	2.15	18.88	Horizontal	3	Pass
		707.5	1.39	3.36	1.91	19.26	2.15	18.56	Horizontal	3	Pass
		711	1.58	3.55	1.92	19.32	2.15	18.80	Horizontal	3	Pass

		Radiated Power (ERP) for Band 12									
Mode	RB/RB SIZE	Frequency	Result								Conclusion
			SG Level	Cable Loss (dBm)	Antenna Factor (dB)	Correction	Max. EIRP	Max. EIRP	Polarization Of Max. ERP		
						(dB)	Average	Average		Limit	
							(dBm)	(mW)		(W)	
1.4MHz Band 16 QAM	1/##Mid	699.7	4.57	1.91	19.21	2.15	19.72	93.756	Vertical	3	Pass
		707.5	4.49	1.91	19.26	2.15	19.69	93.111	Vertical	3	Pass
		715.3	4.27	1.93	19.34	2.15	19.53	89.743	Vertical	3	Pass
3.0MHz Band 16 QAM	1/##Mid	700.5	4.36	1.91	19.21	2.15	19.51	89.331	Vertical	3	Pass
		707.5	4.28	1.91	19.26	2.15	19.48	88.716	Vertical	3	Pass
		714.5	4.12	1.93	19.34	2.15	19.38	86.696	Vertical	3	Pass
5.0MHz Band 16 QAM	1/##Mid	701.5	4.63	1.91	19.23	2.15	19.80	95.499	Vertical	3	Pass
		707.5	4.54	1.91	19.26	2.15	19.74	94.189	Vertical	3	Pass
		713.5	4.33	1.92	19.33	2.15	19.59	90.991	Vertical	3	Pass
10.0MHz Band 16 QAM	1/##Mid	704	4.65	1.91	19.25	2.15	19.84	96.383	Vertical	3	Pass
		707.5	4.63	1.91	19.26	2.15	19.83	96.161	Vertical	3	Pass
		711	4.48	1.92	19.32	2.15	19.73	93.972	Vertical	3	Pass
1.4MHz Band 16 QAM	1/##Mid	699.7	3.21	1.91	19.21	2.15	18.36	68.549	Horizontal	3	Pass
		707.5	3.23	1.91	19.26	2.15	18.43	69.663	Horizontal	3	Pass
		715.3	3.28	1.93	19.34	2.15	18.54	71.450	Horizontal	3	Pass
3.0MHz Band 16 QAM	1/##Mid	700.5	3.27	1.91	19.21	2.15	18.42	69.502	Horizontal	3	Pass
		707.5	3.38	1.91	19.26	2.15	18.58	72.111	Horizontal	3	Pass
		714.5	3.11	1.93	19.34	2.15	18.37	68.707	Horizontal	3	Pass
5.0MHz Band 16 QAM	1/##Mid	701.5	3.61	1.91	19.23	2.15	18.78	75.509	Horizontal	3	Pass
		707.5	3.45	1.91	19.26	2.15	18.65	73.282	Horizontal	3	Pass
		713.5	3.61	1.92	19.33	2.15	18.87	77.090	Horizontal	3	Pass
10.0MHz Band 16 QAM	1/##Mid	704	3.09	1.91	19.25	2.15	18.28	67.298	Horizontal	3	Pass
		707.5	2.86	1.91	19.26	2.15	18.06	63.973	Horizontal	3	Pass
		711	3.02	1.92	19.32	2.15	18.27	67.143	Horizontal	3	Pass

Note:

SG Level= Signal generator output

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

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

ERP(dBm)=EIRP-2.15

8.7 LTE BAND 17

		Radiated Power (ERP) for Band 17									
Mode	RB/RB SIZE	Frequency	Result								Conclusio n
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP		
										Limit	
										(W)	
5.0MHz Band QPSK	1/#Mid	706.5	4.80	1.91	19.23	2.15	19.97	99.312	Vertical	3	Pass
		710	4.66	1.91	19.26	2.15	19.86	96.828	Vertical	3	Pass
		713.5	4.56	1.92	19.33	2.15	19.82	95.940	Vertical	3	Pass
10.0MHz Band QPSK	1/#Mid	709	4.81	1.91	19.25	2.15	20.00	100.000	Vertical	3	Pass
		710	4.76	1.91	19.26	2.15	19.96	99.083	Vertical	3	Pass
		711	4.72	1.92	19.32	2.15	19.97	99.312	Vertical	3	Pass
5.0MHz Band QPSK	1/#Mid	706.5	3.37	1.91	19.23	2.15	18.54	71.450	Horizontal	3	Pass
		710	3.19	1.91	19.26	2.15	18.39	69.024	Horizontal	3	Pass
		713.5	3.60	1.92	19.33	2.15	18.86	76.913	Horizontal	3	Pass
10.0MHz Band QPSK	1/#Mid	709	4.41	1.91	19.25	2.15	19.60	91.201	Horizontal	3	Pass
		710	4.07	1.91	19.26	2.15	19.27	84.528	Horizontal	3	Pass
		711	3.16	1.92	19.32	2.15	18.41	69.343	Horizontal	3	Pass

		Radiated Power (ERP) for Band 17									
Mode	RB/RB SIZE	Frequency	Result								Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP		
										Limit	
										(W)	
5.0MHz Band 16 QAM	1/#Mid	706.5	4.08	1.91	19.23	2.15	19.25	84.140	Vertical	3	Pass
		710	3.99	1.91	19.26	2.15	19.19	82.985	Vertical	3	Pass
		713.5	3.79	1.92	19.33	2.15	19.05	80.353	Vertical	3	Pass
10.0MHz Band 16 QAM	1/#Mid	709	3.62	1.91	19.25	2.15	18.81	76.033	Vertical	3	Pass
		710	4.15	1.91	19.26	2.15	19.35	86.099	Vertical	3	Pass
		711	3.88	1.92	19.32	2.15	19.13	81.846	Vertical	3	Pass
5.0MHz Band 16 QAM	1/#Mid	706.5	3.17	1.91	19.23	2.15	18.34	68.234	Horizontal	3	Pass
		710	3.03	1.91	19.26	2.15	18.23	66.527	Horizontal	3	Pass
		713.5	2.62	1.92	19.33	2.15	17.88	61.376	Horizontal	3	Pass
10.0MHz Band 16 QAM	1/#Mid	709	2.72	1.91	19.25	2.15	17.91	61.802	Horizontal	3	Pass
		710	2.52	1.91	19.26	2.15	17.72	59.156	Horizontal	3	Pass
		711	2.76	1.92	19.32	2.15	18.01	63.241	Horizontal	3	Pass

Note:

ERP=EIRP-2.15

SG Level= Signal generator output

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

8.11 LTE BAND 41

		Radiated Power (EIRP) for Band 41								
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP		
						Average	Average		Limit	
						(dBm)	(mW)		(W)	
5.0MHz Band QPSK	1/#Mid	2572.5	-4.07	4.54	27.75	19.14	82.035	Horizontal	2	Pass
		2595	-3.92	4.69	27.72	19.11	81.470	Horizontal	2	Pass
		2617.5	-3.80	4.71	27.71	19.20	83.176	Horizontal	2	Pass
10.0MHz Band QPSK	1/#Mid	2575	-4.15	4.55	27.76	19.06	80.538	Horizontal	2	Pass
		2595	-4.01	4.69	27.72	19.02	79.799	Horizontal	2	Pass
		2615	-4.00	4.72	27.70	18.98	79.068	Horizontal	2	Pass
15.0MHz Band QPSK	1/#Mid	2577.5	-3.98	4.55	27.77	19.24	83.946	Horizontal	2	Pass
		2595	-3.70	4.69	27.72	19.33	85.704	Horizontal	2	Pass
		2612.5	-3.75	4.72	27.69	19.22	83.560	Horizontal	2	Pass
20.0MHz Band QPSK	1/#Mid	2580	-3.59	4.57	27.78	19.62	91.622	Horizontal	2	Pass
		2595	-3.64	4.73	27.72	19.35	86.099	Horizontal	2	Pass
		2610	-3.64	4.75	27.68	19.29	84.918	Horizontal	2	Pass
5.0MHz Band QPSK	1/#Mid	2572.5	-3.87	4.54	27.75	19.34	85.901	Vertical	2	Pass
		2595	-3.78	4.69	27.72	19.25	84.140	Vertical	2	Pass
		2617.5	-3.76	4.71	27.71	19.24	83.946	Vertical	2	Pass
10.0MHz Band QPSK	1/#Mid	2575	-3.85	4.55	27.76	19.36	86.298	Vertical	2	Pass
		2595	-3.69	4.69	27.72	19.34	85.901	Vertical	2	Pass
		2615	-3.76	4.72	27.70	19.22	83.560	Vertical	2	Pass
15.0MHz Band QPSK	1/#Mid	2577.5	-5.24	4.55	27.77	17.98	62.806	Vertical	2	Pass
		2595	-4.73	4.69	27.72	18.30	67.608	Vertical	2	Pass
		2612.5	-4.42	4.72	27.69	18.55	71.614	Vertical	2	Pass
20.0MHz Band QPSK	1/#Mid	2580	-4.78	4.57	27.78	18.43	69.663	Vertical	2	Pass
		2595	-4.55	4.73	27.72	18.44	69.823	Vertical	2	Pass
		2610	-5.20	4.75	27.68	17.73	59.293	Vertical	2	Pass

		Radiated Power (EIRP) for Band 41								
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP		
						Average	Average		Limit	
						(dBm)	(mW)		(W)	
5.0MHz Band 16 QAM	1/#Mid	2572.5	-4.10	4.54	27.75	19.11	81.470	Horizontal	2	Pass
		2595	-3.95	4.69	27.72	19.08	80.910	Horizontal	2	Pass
		2617.5	-3.83	4.71	27.71	19.17	82.604	Horizontal	2	Pass
10.0MHz Band 16 QAM	1/#Mid	2575	-4.18	4.55	27.76	19.03	79.983	Horizontal	2	Pass
		2595	-4.04	4.69	27.72	18.99	79.250	Horizontal	2	Pass
		2615	-4.03	4.72	27.70	18.95	78.524	Horizontal	2	Pass
15.0MHz Band 16 QAM	1/#Mid	2577.5	-4.01	4.55	27.77	19.21	83.368	Horizontal	2	Pass
		2595	-3.73	4.69	27.72	19.30	85.114	Horizontal	2	Pass
		2612.5	-3.78	4.72	27.69	19.19	82.985	Horizontal	2	Pass
20.0MHz Band 16 QAM	1/#Mid	2580	-3.73	4.57	27.78	19.48	88.716	Horizontal	2	Pass
		2595	-3.67	4.73	27.72	19.32	85.507	Horizontal	2	Pass
		2610	-3.67	4.75	27.68	19.26	84.333	Horizontal	2	Pass
5.0MHz Band 16 QAM	1/#Mid	2572.5	-3.90	4.54	27.75	19.31	85.310	Vertical	2	Pass
		2595	-3.81	4.69	27.72	19.22	83.560	Vertical	2	Pass
		2617.5	-3.79	4.71	27.71	19.21	83.368	Vertical	2	Pass
10.0MHz Band 16 QAM	1/#Mid	2575	-3.88	4.55	27.76	19.33	85.704	Vertical	2	Pass
		2595	-3.72	4.69	27.72	19.31	85.310	Vertical	2	Pass
		2615	-3.79	4.72	27.70	19.19	82.985	Vertical	2	Pass
15.0MHz Band 16 QAM	1/#Mid	2577.5	-5.57	4.55	27.77	17.65	58.210	Vertical	2	Pass
		2595	-4.80	4.69	27.72	18.23	66.527	Vertical	2	Pass
		2612.5	-4.52	4.72	27.69	18.45	69.984	Vertical	2	Pass
20.0MHz Band 16 QAM	1/#Mid	2580	-5.53	4.57	27.78	17.68	58.614	Vertical	2	Pass
		2595	-4.77	4.73	27.72	18.22	66.374	Vertical	2	Pass
		2610	-4.60	4.75	27.68	18.33	68.077	Vertical	2	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

LIMIT

§22.917 (e) and §24.238 and §90.691 (a): Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

§27.53 (g) For operations in the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB.

§27.53 (h) For operations in the 1710–1755 MHz and 2110–2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB.

TEST PROCEDURE

For Cellular equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

For PCS equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

The unwanted emission power shall be measured with a resolution bandwidth of at least 1% of the occupied bandwidth in the 1 MHz band immediately outside and adjacent to the channel edge of the equipment. Beyond the 1 MHz band immediately outside the channel edge of the equipment, a resolution bandwidth of 1 MHz shall be employed. A narrower resolution bandwidth is allowed to be used provided that the measured power is integrated over the full required measurement bandwidth of 1 MHz or 1% of the occupied bandwidth as applicable.

The power of any unwanted emissions measured from the channel edge of the equipment shall be attenuated below the transmitter power, P (dBW), as follows:

- a. for base station and subscriber equipment, other than mobile subscriber equipment, the attenuation shall not be less than $43 + 10 \log_{10}(p)$, dB; and
- b. for mobile subscriber equipment, the attenuation shall not be less than $43 + 10 \log_{10}(p)$, dB at the channel edges and $55 + 10 \log_{10}(p)$ at 5.5 MHz away and beyond the channel edges where p in (a) and (b) is the transmitter power measured in watts.

MODES TESTED

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

RESULTS

PASS

9.1 LTE BAND 2

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

Test Results for Low Channel 1850.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3701.4	-45.32	4.04	33.51	-15.85	-13	-2.85	Horizontal
3701.4	-51.18	4.04	33.51	-21.71	-13	-8.71	Vertical
5552.1	-53.70	5.24	35.84	-23.10	-13	-10.10	Vertical
5552.1	-51.27	5.24	35.84	-20.67	-13	-7.67	Horizontal
209.2	-43.00	1.43	16.02	-28.41	-13	-15.41	Vertical
238.2	-39.28	1.30	17.99	-22.59	-13	-9.59	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-53.59	4.04	33.56	-24.07	-13	-11.07	Horizontal
3760.0	-53.72	4.04	33.56	-24.20	-13	-11.20	Vertical
5640.0	-50.94	5.24	35.91	-20.27	-13	-7.27	Vertical
5640.0	-49.90	5.24	35.91	-19.23	-13	-6.23	Horizontal
189.4	-42.05	1.62	16.97	-26.70	-13	-13.70	Vertical
315.7	-39.07	1.74	15.98	-24.84	-13	-11.84	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-48.76	4.04	34.00	-18.80	-13	-5.80	Horizontal
3818.6	-52.69	4.04	34.00	-22.73	-13	-9.73	Vertical
5727.9	-45.59	5.24	36.04	-14.79	-13	-1.79	Vertical
5727.9	-49.02	5.24	36.04	-18.22	-13	-5.22	Horizontal
180.3	-43.35	1.42	17.29	-27.48	-13	-14.48	Vertical
243.3	-34.11	1.50	17.90	-17.70	-13	-4.70	Horizontal

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

Test Results for Low Channel 1860MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3720.0	-47.42	4.07	33.54	-17.95	-13	-4.95	Horizontal
3720.0	-49.57	4.07	33.54	-20.10	-13	-7.10	Vertical
5580.0	-50.66	5.28	35.86	-20.08	-13	-7.08	Vertical
5580.0	-51.42	5.28	35.86	-20.84	-13	-7.84	Horizontal
186.4	-40.41	1.58	16.89	-25.09	-13	-12.09	Vertical
233.8	-36.85	1.76	17.26	-21.35	-13	-8.35	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-47.58	4.04	33.56	-18.06	-13	-5.06	Horizontal
3760.0	-48.38	4.04	33.56	-18.86	-13	-5.86	Vertical
5640.0	-47.98	5.24	35.91	-17.31	-13	-4.31	Vertical
5640.0	-51.37	5.24	35.91	-20.70	-13	-7.70	Horizontal
176.2	-36.25	1.46	16.27	-21.44	-13	-8.44	Vertical
241.6	-42.64	1.59	15.15	-29.08	-13	-16.08	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-45.24	4.04	34.00	-15.28	-13	-2.28	Horizontal
3800.0	-50.98	4.04	34.00	-21.02	-13	-8.02	Vertical
5700.0	-45.51	5.24	36.04	-14.71	-13	-1.71	Vertical
5700.0	-51.35	5.24	36.04	-20.55	-13	-7.55	Horizontal
176.6	-36.86	1.36	17.39	-20.82	-13	-7.82	Vertical
404.1	-43.91	1.66	15.39	-30.18	-13	-17.18	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 Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-50.32	4.02	29.80	-24.54	-13	-11.54	Horizontal
3421.4	-44.81	4.02	29.80	-19.03	-13	-6.03	Vertical
5132.1	-50.61	5.24	35.84	-20.01	-13	-7.01	Vertical
5132.1	-53.76	5.24	35.84	-23.16	-13	-10.16	Horizontal
198.7	-42.86	1.68	16.04	-28.50	-13	-15.50	Vertical
390.7	-36.41	1.78	17.74	-20.45	-13	-7.45	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-48.16	4.03	30.00	-22.19	-13	-9.19	Horizontal
3465.0	-45.00	4.03	30.00	-19.03	-13	-6.03	Vertical
5197.5	-48.04	5.25	35.86	-17.43	-13	-4.43	Vertical
5197.5	-49.47	5.25	35.86	-18.86	-13	-5.86	Horizontal
194.9	-44.92	1.72	17.69	-28.95	-13	-15.95	Vertical
434.3	-38.94	1.62	16.02	-24.53	-13	-11.53	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-53.43	4.05	30.01	-27.47	-13	-14.47	Horizontal
3508.6	-52.30	4.05	30.01	-26.34	-13	-13.34	Vertical
5262.9	-47.61	5.26	35.86	-17.01	-13	-4.01	Vertical
5262.9	-52.54	5.26	35.86	-21.94	-13	-8.94	Horizontal
192.1	-36.46	1.80	16.69	-21.57	-13	-8.57	Vertical
400.6	-34.39	1.75	16.66	-19.49	-13	-6.49	Horizontal

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

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-52.01	4.02	29.80	-26.23	-13	-13.23	Horizontal
3440.0	-48.80	4.02	29.80	-23.02	-13	-10.02	Vertical
5160.0	-44.84	5.24	35.84	-14.24	-13	-1.24	Vertical
5160.0	-53.74	5.24	35.84	-23.14	-13	-10.14	Horizontal
202.6	-35.43	1.57	17.26	-19.74	-13	-6.74	Vertical
403.3	-42.82	1.78	16.35	-28.25	-13	-15.25	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-49.90	4.03	30.00	-23.93	-13	-10.93	Horizontal
3465.0	-48.30	4.03	30.00	-22.33	-13	-9.33	Vertical
5197.5	-53.46	5.25	35.86	-22.85	-13	-9.85	Vertical
5197.5	-50.07	5.25	35.86	-19.46	-13	-6.46	Horizontal
188.3	-41.37	1.44	17.95	-24.86	-13	-11.86	Vertical
364.1	-43.10	1.65	16.09	-28.66	-13	-15.66	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-53.08	2.91	27.68	-28.31	-13	-15.31	Horizontal
3490.0	-44.14	2.91	27.68	-19.37	-13	-6.37	Vertical
5235.0	-45.15	5.26	35.86	-14.55	-13	-1.55	Vertical
5235.0	-52.76	5.26	35.86	-22.16	-13	-9.16	Horizontal
176.4	-36.14	1.61	16.85	-20.90	-13	-7.90	Vertical
269.2	-40.06	1.61	15.19	-26.48	-13	-13.48	Horizontal

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

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

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

9.3 LTE BAND 5

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

Test Results for Low Channel 824.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1649.4	-52.56	2.78	27.50	-27.84	-13	-14.84	Horizontal
1649.4	-50.75	2.78	27.50	-26.03	-13	-13.03	Vertical
2474.1	-48.56	2.90	27.80	-23.66	-13	-10.66	Vertical
2474.1	-49.01	2.90	27.80	-24.11	-13	-11.11	Horizontal
202.6	-44.69	1.76	17.59	-28.86	-13	-15.86	Vertical
275.6	-34.89	1.63	15.87	-20.65	-13	-7.65	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-45.16	2.80	27.48	-20.48	-13	-7.48	Horizontal
1673.0	-48.98	2.80	27.48	-24.30	-13	-11.30	Vertical
2509.5	-45.30	2.91	27.70	-20.51	-13	-7.51	Vertical
2509.5	-49.28	2.91	27.70	-24.49	-13	-11.49	Horizontal
210.4	-37.68	1.61	15.68	-23.61	-13	-10.61	Vertical
377.4	-43.35	1.59	17.52	-27.43	-13	-14.43	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-49.34	2.82	27.43	-24.73	-13	-11.73	Horizontal
1696.6	-50.63	2.82	27.43	-26.02	-13	-13.02	Vertical
2544.9	-46.32	2.92	27.74	-21.50	-13	-8.50	Vertical
2544.9	-51.63	2.92	27.74	-26.81	-13	-13.81	Horizontal
200.3	-37.55	1.69	16.67	-22.56	-13	-9.56	Vertical
336.1	-35.48	1.70	17.18	-20.00	-13	-7.00	Horizontal

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

Test Results for Low Channel 829MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1658.0	-50.46	2.78	27.50	-25.74	-13	-12.74	Horizontal
1658.0	-45.51	2.78	27.50	-20.79	-13	-7.79	Vertical
2487.0	-50.63	2.90	27.80	-25.73	-13	-12.73	Vertical
2487.0	-50.74	2.90	27.80	-25.84	-13	-12.84	Horizontal
190.9	-41.31	1.71	15.57	-27.45	-13	-14.45	Vertical
428.9	-35.11	1.34	16.40	-20.05	-13	-7.05	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-47.89	2.80	27.48	-23.21	-13	-10.21	Horizontal
1673.0	-51.63	2.80	27.48	-26.95	-13	-13.95	Vertical
2509.5	-45.18	2.91	27.70	-20.39	-13	-7.39	Vertical
2509.5	-53.74	2.91	27.70	-28.95	-13	-15.95	Horizontal
209.0	-39.24	1.44	17.04	-23.64	-13	-10.64	Vertical
337.8	-35.46	1.76	17.62	-19.60	-13	-6.60	Horizontal
Test Results for High Channel 844MHz							
1688.0	-51.52	2.82	27.43	-26.91	-13	-13.91	Horizontal
1688.0	-49.03	2.82	27.43	-24.42	-13	-11.42	Vertical
2532.0	-49.07	2.92	27.74	-24.25	-13	-11.25	Vertical
2532.0	-50.12	2.92	27.74	-25.30	-13	-12.30	Horizontal
209.5	-44.71	1.74	17.70	-28.75	-13	-15.75	Vertical
286.5	-39.72	1.41	17.46	-23.66	-13	-10.66	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	-64.97	5.23	35.81	-34.39	-25	-9.39	Horizontal
5005.0	-64.30	5.23	35.81	-33.72	-25	-8.72	Vertical
7507.5	-63.36	5.67	36.85	-32.18	-25	-7.18	Vertical
7507.5	-60.92	5.67	36.85	-29.74	-25	-4.74	Horizontal
188.0	-44.87	1.73	17.97	-28.63	-25	-3.63	Vertical
330.2	-54.56	1.38	15.11	-40.83	-25	-15.83	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-61.65	5.23	35.82	-31.06	-25	-6.06	Horizontal
5070.0	-64.58	5.23	35.82	-33.99	-25	-8.99	Vertical
7605.0	-62.72	5.67	36.85	-31.54	-25	-6.54	Vertical
7605.0	-63.23	5.67	36.85	-32.05	-25	-7.05	Horizontal
183.2	-52.97	1.77	16.17	-38.56	-25	-13.56	Vertical
468.0	-53.38	1.63	15.21	-39.80	-25	-14.80	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-64.15	5.24	35.83	-33.56	-25	-8.56	Horizontal
5135.0	-59.92	5.24	35.83	-29.33	-25	-4.33	Vertical
7702.5	-60.99	5.68	36.87	-29.80	-25	-4.80	Vertical
7702.5	-63.79	5.68	36.87	-32.60	-25	-7.60	Horizontal
181.0	-50.34	1.58	17.56	-34.36	-25	-9.36	Vertical
269.2	-45.93	1.45	16.58	-30.80	-25	-5.80	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	-60.49	5.23	35.82	-29.90	-25	-4.90	Horizontal
5020.0	-64.53	5.23	35.82	-33.94	-25	-8.94	Vertical
7530.0	-63.76	5.67	36.86	-32.57	-25	-7.57	Vertical
7530.0	-63.19	5.67	36.86	-32.00	-25	-7.00	Horizontal
181.0	-48.61	1.63	15.76	-34.48	-25	-9.48	Vertical
365.3	-45.49	1.71	15.44	-31.76	-25	-6.76	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-60.24	5.23	35.82	-29.65	-25	-4.65	Horizontal
5070.0	-64.98	5.23	35.82	-34.39	-25	-9.39	Vertical
7605.0	-60.78	5.67	36.85	-29.60	-25	-4.60	Vertical
7605.0	-60.01	5.67	36.85	-28.83	-25	-3.83	Horizontal
184.5	-45.12	1.79	16.84	-30.06	-25	-5.06	Vertical
335.2	-50.73	1.71	17.64	-34.80	-25	-9.80	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-59.08	5.24	35.83	-28.49	-25	-3.49	Horizontal
5120.0	-62.88	5.24	35.83	-32.29	-25	-7.29	Vertical
7680.0	-59.12	5.70	36.88	-27.94	-25	-2.94	Vertical
7680.0	-63.25	5.70	36.88	-32.07	-25	-7.07	Horizontal
202.2	-48.27	1.79	16.84	-33.21	-25	-8.21	Vertical
326.4	-45.61	1.71	17.64	-29.68	-25	-4.68	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.

9.5 LTE BAND 12

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

Test Results for Low Channel 699.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1399.4	-50.18	2.60	27.20	-25.58	-13	-12.58	Horizontal
1399.4	-48.91	2.60	27.20	-24.31	-13	-11.31	Vertical
2099.1	-44.89	2.85	27.54	-20.20	-13	-7.20	Vertical
2099.1	-52.00	2.85	27.54	-27.31	-13	-14.31	Horizontal
209.5	-43.34	1.49	17.78	-27.05	-13	-14.05	Vertical
461.0	-36.78	1.36	17.33	-20.81	-13	-7.81	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-45.76	2.61	27.28	-21.09	-13	-8.09	Horizontal
1415.0	-52.29	2.61	27.28	-27.62	-13	-14.62	Vertical
2122.5	-47.80	2.87	27.59	-23.08	-13	-10.08	Vertical
2122.5	-51.43	2.87	27.59	-26.71	-13	-13.71	Horizontal
183.8	-34.76	1.73	15.74	-20.75	-13	-7.75	Vertical
452.2	-39.17	1.62	15.79	-25.00	-13	-12.00	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-45.41	2.63	27.28	-20.76	-13	-7.76	Horizontal
1430.6	-48.99	2.63	27.28	-24.34	-13	-11.34	Vertical
2145.9	-46.92	2.88	27.60	-22.20	-13	-9.20	Vertical
2145.9	-53.35	2.88	27.60	-28.63	-13	-15.63	Horizontal
209.0	-36.60	1.61	18.00	-20.21	-13	-7.21	Vertical
464.8	-39.81	1.45	15.49	-25.78	-13	-12.78	Horizontal

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

Test Results for Low Channel 704MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1408.0	-51.66	2.61	27.26	-27.01	-13	-14.01	Horizontal
1408.0	-48.20	2.61	27.26	-23.55	-13	-10.55	Vertical
2112.0	-51.94	2.87	27.58	-27.23	-13	-14.23	Vertical
2112.0	-50.53	2.87	27.58	-25.82	-13	-12.82	Horizontal
182.1	-42.69	1.31	16.97	-27.03	-13	-14.03	Vertical
359.0	-44.10	1.65	16.70	-29.05	-13	-16.05	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-51.84	2.61	27.28	-27.17	-13	-14.17	Horizontal
1415.0	-51.29	2.61	27.28	-26.62	-13	-13.62	Vertical
2122.5	-50.47	2.87	27.59	-25.75	-13	-12.75	Vertical
2122.5	-50.08	2.87	27.59	-25.36	-13	-12.36	Horizontal
176.4	-36.59	1.72	17.99	-20.32	-13	-7.32	Vertical
298.8	-40.91	1.73	17.94	-24.70	-13	-11.70	Horizontal
Test Results for High Channel 711MHz							
1422.0	-52.05	2.62	27.28	-27.39	-13	-14.39	Horizontal
1422.0	-50.50	2.62	27.28	-25.84	-13	-12.84	Vertical
2133.0	-47.48	2.87	27.60	-22.75	-13	-9.75	Vertical
2133.0	-49.60	2.87	27.60	-24.87	-13	-11.87	Horizontal
187.8	-40.05	1.58	15.93	-25.70	-13	-12.70	Vertical
305.9	-41.07	1.36	15.59	-26.84	-13	-13.84	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.

9.6 LTE BAND 17

QPSK EIRP POWER FOR LTE BAND 17 (5MHZ BANDWIDTH)

Test Results for Low Channel 706.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1413.0	-46.19	2.61	27.28	-21.52	-13	-8.52	Horizontal
1413.0	-52.25	2.61	27.28	-27.58	-13	-14.58	Vertical
2119.5	-47.92	2.87	27.59	-23.20	-13	-10.20	Vertical
2119.5	-53.54	2.87	27.59	-28.82	-13	-15.82	Horizontal
182.8	-42.71	1.71	16.15	-28.27	-13	-15.27	Vertical
249.4	-36.14	1.41	17.32	-20.23	-13	-7.23	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-51.22	2.62	27.30	-26.54	-13	-13.54	Horizontal
1420.0	-44.05	2.62	27.30	-19.37	-13	-6.37	Vertical
2130.0	-44.18	2.87	27.62	-19.43	-13	-6.43	Vertical
2130.0	-51.87	2.87	27.62	-27.12	-13	-14.12	Horizontal
204.0	-42.64	1.42	15.25	-28.82	-13	-15.82	Vertical
239.1	-36.34	1.36	17.19	-20.51	-13	-7.51	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-48.11	2.66	27.28	-23.49	-13	-10.49	Horizontal
1427.0	-48.68	2.66	27.28	-24.06	-13	-11.06	Vertical
2140.5	-51.81	2.88	27.60	-27.09	-13	-14.09	Vertical
2140.5	-49.11	2.88	27.60	-24.39	-13	-11.39	Horizontal
194.3	-37.59	1.32	17.29	-21.62	-13	-8.62	Vertical
317.4	-40.73	1.72	16.89	-25.56	-13	-12.56	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	-50.13	2.62	27.30	-25.45	-13	-12.45	Horizontal
1418.0	-46.67	2.62	27.30	-21.99	-13	-8.99	Vertical
2127.0	-45.89	2.87	27.62	-21.14	-13	-8.14	Vertical
2127.0	-52.77	2.87	27.62	-28.02	-13	-15.02	Horizontal
178.4	-43.29	1.35	16.91	-27.73	-13	-14.73	Vertical
327.1	-36.40	1.62	16.31	-21.71	-13	-8.71	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-51.94	2.62	27.30	-27.26	-13	-14.26	Horizontal
1420.0	-53.61	2.62	27.30	-28.93	-13	-15.93	Vertical
2130.0	-47.91	2.87	27.62	-23.16	-13	-10.16	Vertical
2130.0	-51.65	2.87	27.62	-26.90	-13	-13.90	Horizontal
211.4	-36.32	1.51	17.14	-20.69	-13	-7.69	Vertical
290.0	-40.68	1.77	16.88	-25.57	-13	-12.57	Horizontal
Test Results for High Channel 711MHz							
1422.0	-49.38	2.62	27.30	-24.70	-13	-11.70	Horizontal
1422.0	-49.89	2.62	27.30	-25.21	-13	-12.21	Vertical
2133.0	-49.03	2.87	27.62	-24.28	-13	-11.28	Vertical
2133.0	-51.03	2.87	27.62	-26.28	-13	-13.28	Horizontal
184.1	-37.66	1.78	15.95	-23.49	-13	-10.49	Vertical
292.3	-34.66	1.34	17.95	-18.06	-13	-5.06	Horizontal

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

Margin = Spurious Emission Level - Limit

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

9.7 LTE BAND 41

LTE BAND 41 (5MHZ BANDWIDTH)

Test Results for Low Channel 2572.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5145.0	-64.38	5.23	35.81	-33.80	-25	-8.80	Horizontal
5145.0	-64.91	5.23	35.81	-34.33	-25	-9.33	Vertical
7717.5	-60.42	5.67	36.85	-29.24	-25	-4.24	Vertical
7717.5	-60.78	5.67	36.85	-29.60	-25	-4.60	Horizontal
435.3	-49.65	1.38	15.98	-35.05	-25	-10.05	Vertical
465.8	-48.79	1.62	15.66	-34.75	-25	-9.75	Horizontal
Test Results For Mid Channel 2595MHz							
5190.0	-63.04	5.23	35.82	-32.45	-25	-7.45	Horizontal
5190.0	-61.44	5.23	35.82	-30.85	-25	-5.85	Vertical
7785.0	-61.25	5.67	36.85	-30.07	-25	-5.07	Vertical
7785.0	-60.48	5.67	36.85	-29.30	-25	-4.30	Horizontal
510.4	-44.49	1.62	16.17	-29.94	-25	-4.94	Vertical
562.9	-49.12	1.74	17.63	-33.23	-25	-8.23	Horizontal
Test Results for High Channel 2617.5MHz							
5235.0	-59.94	5.24	35.83	-29.35	-25	-4.35	Horizontal
5235.0	-59.75	5.24	35.83	-29.16	-25	-4.16	Vertical
7852.5	-62.62	5.68	36.87	-31.43	-25	-6.43	Vertical
7852.5	-61.19	5.68	36.87	-30.00	-25	-5.00	Horizontal
197.6	-44.27	1.55	15.84	-29.98	-25	-4.98	Vertical
353.1	-44.55	1.51	17.06	-29.00	-25	-4.00	Horizontal

LTE BAND 41 (20MHZ BANDWIDTH)

Test Results for Channel 2580MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5160.0	-61.04	5.23	35.82	-30.45	-25	-5.45	Horizontal
5160.0	-59.23	5.23	35.82	-28.64	-25	-3.64	Vertical
7740.0	-61.01	5.67	36.86	-29.82	-25	-4.82	Vertical
7740.0	-61.46	5.67	36.86	-30.27	-25	-5.27	Horizontal
128.9	-45.04	1.43	15.51	-30.96	-25	-5.96	Vertical
344.8	-48.45	1.40	16.97	-32.88	-25	-7.88	Horizontal
Test Results For Mid Channel 2595MHz							
5190.0	-62.63	5.23	35.82	-32.04	-25	-7.04	Horizontal
5190.0	-64.26	5.23	35.82	-33.67	-25	-8.67	Vertical
7785.0	-62.54	5.67	36.85	-31.36	-25	-6.36	Vertical
7785.0	-62.46	5.67	36.85	-31.28	-25	-6.28	Horizontal
100.8	-48.49	1.77	16.72	-33.54	-25	-8.54	Vertical
263.5	-47.75	1.31	16.99	-32.07	-25	-7.07	Horizontal
Test Results for High Channel 2610MHz							
5220.0	-60.79	5.24	35.83	-30.20	-25	-5.20	Horizontal
5220.0	-59.29	5.24	35.83	-28.70	-25	-3.70	Vertical
7830.0	-63.27	5.70	36.88	-32.09	-25	-7.09	Vertical
7830.0	-64.71	5.70	36.88	-33.53	-25	-8.53	Horizontal
349.9	-47.50	1.70	15.73	-33.47	-25	-8.47	Vertical
110.3	-49.47	1.75	17.33	-33.89	-25	-8.89	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.

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 3.29V, Normal, DC 3.87V and High voltage, DC 4.45V.

Frequency Stability vs Temperature:

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

Frequency Stability vs Voltage:

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

MODES TESTED

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

RESULTS

See the following pages.

10.1 LTE BAND 2

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	1880	12.8	0.006792	2.5
3.87	1880	14.1	0.007482	2.5
4.45	1880	13.2	0.007003	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	12.8	0.006812	2.5
Extreme (50C)	1880	11.8	0.006284	2.5
Extreme (40C)	1880	13.4	0.007142	2.5
Extreme (30C)	1880	13.9	0.007387	2.5
Extreme (10C)	1880	14.0	0.007447	2.5
Extreme (0C)	1880	11.8	0.006275	2.5
Extreme (-10C)	1880	13.5	0.007167	2.5
Extreme (-20C)	1880	13.7	0.007302	2.5
Extreme (-30C)	1880	15.2	0.008078	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	1880	9.3	0.004957	2.5
3.87	1880	8.9	0.004723	2.5
4.45	1880	8.1	0.004326	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	9.5	0.005034	2.5
Extreme (50C)	1880	8.8	0.004698	2.5
Extreme (40C)	1880	8.1	0.004314	2.5
Extreme (30C)	1880	8.9	0.004721	2.5
Extreme (10C)	1880	9.1	0.004854	2.5
Extreme (0C)	1880	7.7	0.004103	2.5
Extreme (-10C)	1880	8.5	0.004537	2.5
Extreme (-20C)	1880	8.6	0.004588	2.5
Extreme (-30C)	1880	7.9	0.004194	2.5

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

10.2 LTE BAND 4

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	1732.5	8.6	0.004942	2.5
3.87	1732.5	8.5	0.004935	2.5
4.45	1732.5	8.5	0.004882	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.9	0.005134	2.5
Extreme (50C)	1732.5	8.9	0.005164	2.5
Extreme (40C)	1732.5	7.0	0.004025	2.5
Extreme (30C)	1732.5	6.2	0.003572	2.5
Extreme (10C)	1732.5	7.0	0.004062	2.5
Extreme (0C)	1732.5	9.6	0.005515	2.5
Extreme (-10C)	1732.5	8.6	0.004992	2.5
Extreme (-20C)	1732.5	7.2	0.004159	2.5
Extreme (-30C)	1732.5	8.1	0.004659	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	1732.5	10.2	0.005907	2.5
3.87	1732.5	8.8	0.005094	2.5
4.45	1732.5	8.4	0.004865	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	9.5	0.005499	2.5
Extreme (50C)	1732.5	8.7	0.005035	2.5
Extreme (40C)	1732.5	7.6	0.004392	2.5
Extreme (30C)	1732.5	9.4	0.005406	2.5
Extreme (10C)	1732.5	8.7	0.004994	2.5
Extreme (0C)	1732.5	7.7	0.004439	2.5
Extreme (-10C)	1732.5	9.0	0.005216	2.5
Extreme (-20C)	1732.5	8.7	0.005026	2.5
Extreme (-30C)	1732.5	8.3	0.004816	2.5

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

10.3 LTE BAND 5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	836.5	5.4	0.006398	2.5
3.87	836.5	6.4	0.007596	2.5
4.45	836.5	5.3	0.006320	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.0	0.007137	2.5
Extreme (50C)	836.5	6.2	0.007400	2.5
Extreme (40C)	836.5	6.2	0.007426	2.5
Extreme (30C)	836.5	6.9	0.008205	2.5
Extreme (10C)	836.5	5.8	0.006938	2.5
Extreme (0C)	836.5	4.8	0.005781	2.5
Extreme (-10C)	836.5	5.3	0.006315	2.5
Extreme (-20C)	836.5	5.7	0.006798	2.5
Extreme (-30C)	836.5	5.9	0.007013	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	836.5	5.9	0.007060	2.5
3.87	836.5	7.1	0.008451	2.5
4.45	836.5	5.1	0.006096	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.5	0.007829	2.5
Extreme (50C)	836.5	6.4	0.007594	2.5
Extreme (40C)	836.5	5.9	0.007056	2.5
Extreme (30C)	836.5	6.7	0.008044	2.5
Extreme (10C)	836.5	5.8	0.006910	2.5
Extreme (0C)	836.5	5.4	0.006421	2.5
Extreme (-10C)	836.5	5.7	0.006789	2.5
Extreme (-20C)	836.5	6.4	0.007659	2.5
Extreme (-30C)	836.5	6.5	0.007812	2.5

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

10.4 LTE BAND 7

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	2535	10.1	0.003990	2.5
3.87	2535	9.1	0.003582	2.5
4.45	2535	8.8	0.003485	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	9.0	0.003552	2.5
Extreme (50C)	2535	9.2	0.003642	2.5
Extreme (40C)	2535	8.6	0.003395	2.5
Extreme (30C)	2535	8.6	0.003393	2.5
Extreme (10C)	2535	8.4	0.003309	2.5
Extreme (0C)	2535	8.4	0.003306	2.5
Extreme (-10C)	2535	9.8	0.003879	2.5
Extreme (-20C)	2535	8.6	0.003407	2.5
Extreme (-30C)	2535	8.2	0.003253	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	2535	7.2	0.002821	2.5
3.87	2535	6.2	0.002449	2.5
4.45	2535	6.0	0.002359	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	7.0	0.002746	2.5
Extreme (50C)	2535	6.0	0.002350	2.5
Extreme (40C)	2535	5.8	0.002278	2.5
Extreme (30C)	2535	6.4	0.002538	2.5
Extreme (10C)	2535	6.1	0.002393	2.5
Extreme (0C)	2535	5.5	0.002181	2.5
Extreme (-10C)	2535	5.0	0.001980	2.5
Extreme (-20C)	2535	6.1	0.002393	2.5
Extreme (-30C)	2535	5.5	0.002161	2.5

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

10.5 LTE BAND 12

Band 12 QPSK, (10MHz BANDWIDTH RB size 50 RB Offset 0

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	707.5	8.6	0.012214	2.5
3.87	707.5	10.5	0.014779	2.5
4.45	707.5	8.7	0.012324	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	8.3	0.011762	2.5
Extreme (50C)	707.5	8.0	0.011295	2.5
Extreme (40C)	707.5	7.3	0.010279	2.5
Extreme (30C)	707.5	8.4	0.011861	2.5
Extreme (10C)	707.5	7.7	0.010835	2.5
Extreme (0C)	707.5	9.4	0.013223	2.5
Extreme (-10C)	707.5	8.5	0.011996	2.5
Extreme (-20C)	707.5	9.3	0.013192	2.5
Extreme (-30C)	707.5	8.0	0.011326	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	707.5	7.1	0.009994	2.5
3.87	707.5	8.2	0.011561	2.5
4.45	707.5	7.4	0.010456	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	9.1	0.012933	2.5
Extreme (50C)	707.5	8.3	0.011790	2.5
Extreme (40C)	707.5	9.3	0.013183	2.5
Extreme (30C)	707.5	8.0	0.011308	2.5
Extreme (10C)	707.5	9.1	0.012929	2.5
Extreme (0C)	707.5	7.6	0.010704	2.5
Extreme (-10C)	707.5	7.0	0.009860	2.5
Extreme (-20C)	707.5	9.1	0.012823	2.5
Extreme (-30C)	707.5	7.9	0.011193	2.5

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

10.6 LTE BAND 17

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	710.0	10.2	0.014330	2.5
3.87	710.0	9.2	0.012916	2.5
4.45	710.0	7.7	0.010817	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.2	0.012971	2.5
Extreme (50C)	710.0	9.2	0.012938	2.5
Extreme (40C)	710.0	8.4	0.011842	2.5
Extreme (30C)	710.0	9.2	0.012926	2.5
Extreme (10C)	710.0	8.7	0.012271	2.5
Extreme (0C)	710.0	7.9	0.011105	2.5
Extreme (-10C)	710.0	8.5	0.011992	2.5
Extreme (-20C)	710.0	8.4	0.011873	2.5
Extreme (-30C)	710.0	8.6	0.012059	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	710.0	10.2	0.014337	2.5
3.87	710.0	9.0	0.012741	2.5
4.45	710.0	8.6	0.012094	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.3	0.013161	2.5
Extreme (50C)	710.0	8.8	0.012329	2.5
Extreme (40C)	710.0	8.4	0.011772	2.5
Extreme (30C)	710.0	9.1	0.012858	2.5
Extreme (10C)	710.0	8.2	0.011485	2.5
Extreme (0C)	710.0	8.9	0.012481	2.5
Extreme (-10C)	710.0	9.6	0.013497	2.5
Extreme (-20C)	710.0	8.6	0.012154	2.5
Extreme (-30C)	710.0	8.1	0.011355	2.5

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

10.7 LTE BAND 41

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	2593	8.3	0.003186	2.5
3.87	2593	6.4	0.002487	2.5
4.45	2593	7.4	0.002843	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	7.5	0.002892	2.5
Extreme (50C)	2593	4.7	0.001794	2.5
Extreme (40C)	2593	5.7	0.002187	2.5
Extreme (30C)	2593	4.9	0.001882	2.5
Extreme (10C)	2593	6.3	0.002420	2.5
Extreme (0C)	2593	4.4	0.001689	2.5
Extreme (-10C)	2593	10.0	0.003849	2.5
Extreme (-20C)	2593	11.2	0.004327	2.5
Extreme (-30C)	2593	5.7	0.002200	2.5

Band 41 16QAM, (20MHz BANDWIDTH RB size 100 RB Offset 0)**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	2593	8.5	0.003262	2.5
3.87	2593	6.9	0.002667	2.5
4.45	2593	6.0	0.002328	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	7.0	0.002715	2.5
Extreme (50C)	2593	4.8	0.001835	2.5
Extreme (40C)	2593	4.9	0.001905	2.5
Extreme (30C)	2593	4.9	0.001889	2.5
Extreme (10C)	2593	6.0	0.002319	2.5
Extreme (0C)	2593	4.8	0.001842	2.5
Extreme (-10C)	2593	9.6	0.003687	2.5
Extreme (-20C)	2593	11.1	0.004289	2.5
Extreme (-30C)	2593	5.7	0.002200	2.5

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

11. Peak-to-Average Ratio

11.1 Description of the PAR Measurement

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

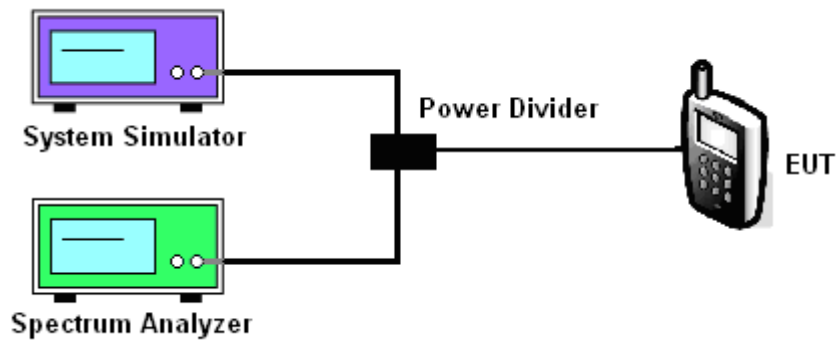
11.2 Measuring Instruments

See list of measuring instruments of this test report.

11.3 Test Procedures

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

11.4 Test Setup



MODES TESTED

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

Test data reference attachment.

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