

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

FCC ID: WF5-BPR-10IIA

Product: Android Rugged Tablet
Trade Mark: SEWOO
Model No.: BPR-10IIA
Family Model: BPR-10IIW, BPR-08A, BPR-08W
Report No.: N25070102604E
Issue Date: Aug. 20, 2025

Prepared for

Aroot Co., Ltd.

28-6, Gajangsaneopdong-ro, Osan-si, Gyeonggi-do, Republic of Korea.

Prepared by

Shenzhen NTEK Testing Technology Co., Ltd.
No. 24 Xinfu East Road, Xiangshan Community, Xinqiao Street,
Baoan District, Shenzhen, Guangdong, People's Republic of China
Tel. 0755-23200050 Website: <http://www.ntek.org.cn>

TEST RESULT CERTIFICATION

Applicant's name: Aroot Co., Ltd.

Address: 28-6, Gajangsaneopdong-ro, Osan-si, Gyeonggi-do, Republic of Korea.

Manufacturer's Name: Aroot Co., Ltd.

Address: 28-6, Gajangsaneopdong-ro, Osan-si, Gyeonggi-do, Republic of Korea.

Product name.....: Android Rugged Tablet

Model and/or type reference ...: BPR-10IIA

Trade Mark.....: SEWOO

Family Model.....: BPR-10IIW, BPR-08A, BPR-08W

Test Sample Number..... S2507070121-1#

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.

This report shall not be reproduced except in full, without the written approval of NTEK, this document may be altered or revised by NTEK, personal only, and shall be noted in the revision of the document.

Date of Test

Date (s) of performance of tests Jul. 01, 2025 ~ Aug. 20, 2025

Date of Issue Aug. 20, 2025

Test Result..... **Pass**

Prepared : Joe. Yan
By : Joe Yan
(Project Engineer)

Reviewed : Aaron Cheng
By : Aaron Cheng
(Supervisor)

Approved : Alex Li
By : Alex Li
(Manager)

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. BANDEDGE 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 17	30
8.7 LTE BAND 41	32
9. SPURIOUS RADIATION EMISSION	34
9.1 LTE BAND 2	36
9.2 LTE BAND 4	38
9.3 LTE BAND 5	40
9.4 LTE BAND 7	42
9.5 LTE BAND 17	44
9.6 LTE BAND 41	46
10. FREQUENCY STABILITY	48
10.1 LTE BAND 2	49
10.2 LTE BAND 4	51
10.3 LTE BAND 5	53
10.4 LTE BAND 7	55
10.5 LTE BAND 17	57
10.6 LTE BAND 41	59
11. PEAK-TO-AVERAGE RATIO	61
11.1 Description of the PAR Measurement	61
11.2 Measuring Instruments	61
11.3 Test Procedures	61
11.4 Test Setup	62

1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	Android Rugged Tablet
Trade Mark	SEWOO
Model Name	BPR-10IIA
Family Model	BPR-10IIW, BPR-08A, BPR-08W
Model Difference	All models have the same circuit and RF module, except for model names.
FCC ID:	WF5-BPR-10IIA
Frequency Bands:	U.S. Bands: ☒ LTE FDD Band 2, 4, 5, 7, 17 ☒ LTE TDD Band 41,
Frequency Range:	LTE FDD Band 2 Uplink: 1850MHz-1910MHz, Downlink: 1930MHz-1990MHz; LTE FDD Band 4 Uplink: 1710MHz-1755MHz, Downlink: 2110MHz-2155MHz; LTE FDD Band 5 Uplink: 824MHz-849MHz, Downlink: 869MHz-894MHz; LTE-FDD Band 7 Uplink: 2500MHz-2570MHz, Downlink: 2620MHz-2690MHz; LTE FDD Band 17 Uplink: 704MHz-716MHz, Downlink: 734MHz-746MHz; LTE TDD Band 41 Uplink& Downlink: 2496MHz-2690MHz
Type of Modulation:	QPSK/16QAM/64QAM(Only Downlink)
Power Class	Class 3
SIM Card:	SIM 1 and SIM 2 is a chipset unit and tested as a single chipset. The SIM 1 is chosen for test.
Antenna:	PIFA Antenna
Antenna gain:	Band 2: 1.72 dBi, Band 4: 4.24 dBi, Band 5: 0.17 dBi, Band 7: -0.7 dBi, Band 17: -7.26 dBi, Band 41: -0.7dBi
Adapter	Model: J151-0503000EX Input: 100-240V~50/60Hz 0.6A Max Output: 5.0V---3.0A 15W
Battery	DC 3.8V, 12000mAh, 45.6Wh
Power supply	DC 3.8V from battery or DC 5V from adapter
Extreme Vol. Limits:	DC 3.23V to DC 4.37V (Nominal DC 3.8V) (Note 1)
HW Version	P872_MB_V2
FW Version	Android 15
SW Version	N/A
** Note1: The High Voltage DC 4.37V and Low Voltage 3.23V 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: WF5-BPR-10IIA** filing to comply with the FCC Part 22H&24E&27

1.3 TEST METHODOLOGY

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

1.4 TEST FACILITY

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

ShenZhen NTEK Testing Technology Co., Ltd.

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

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

FCC Registration No.:463705

IC Registration No.:9270A,

CNAS Registration No.:L5516

MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement, where expanded 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 2/4/5/7/17/41

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

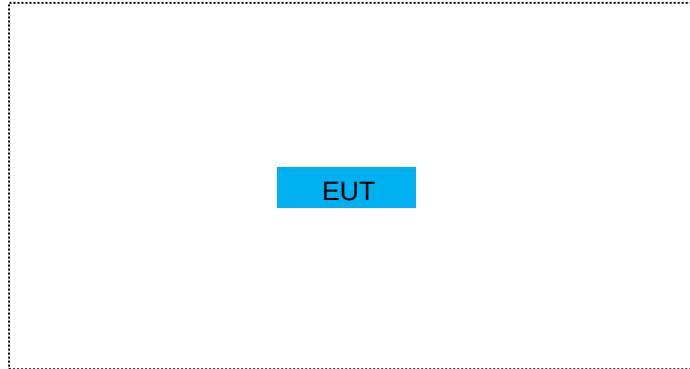
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Android Rugged Tablet	BPR-10IIA	FCC ID: WF5-BPR-10IIA	EUT

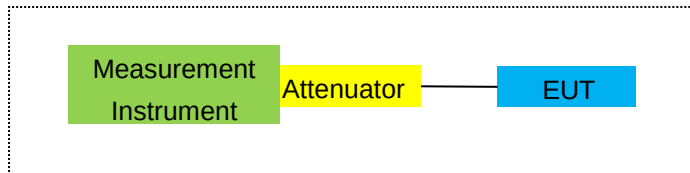
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

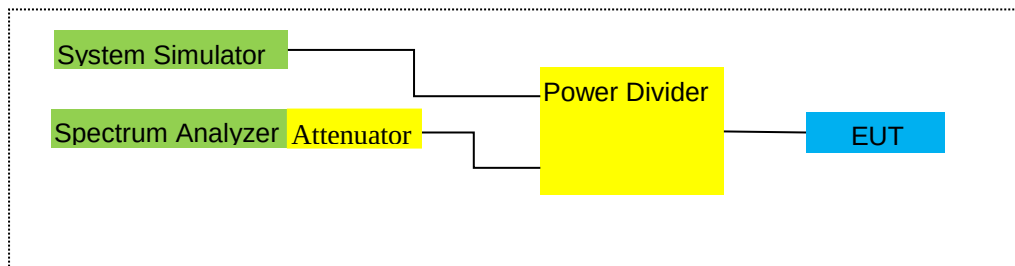
For Radiated Test Cases



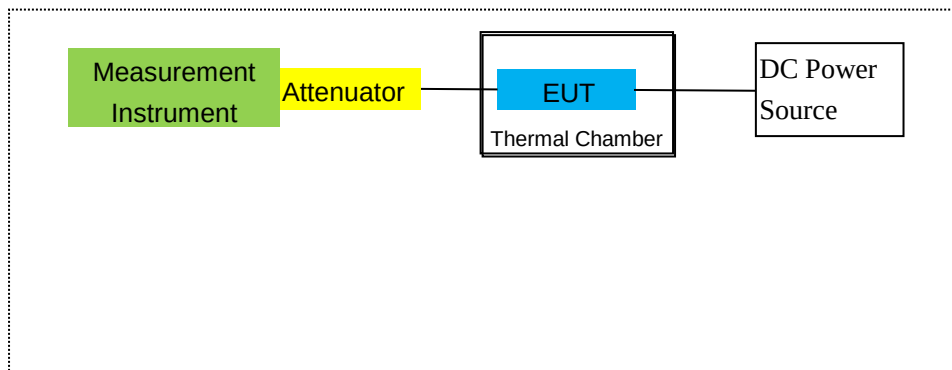
For Conducted Output Power



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	2025.04.17	2026.04.16	1 year
2	Test Receiver	R&S	ESPI	101318	2025.04.17	2026.04.16	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2025.04.17	2026.04.16	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2024.04.26	2027.04.25	3 year
5	Broadband Horn Antenna	SCHWARZBECK	BBHA 9120 D	2816	2024.5.18	2027.5.17	3 year
6	Broadband Horn Antenna	SCHWARZBECK	BBHA 9120 D	2817	2024.5.18	2027.5.17	3 year
7	Amplifier	EM	EM-30180	060538	2025.04.17	2026.04.16	1 year
8	Active Loop Antenna	SCHWARZBECK	FMZB 1519 B	055	2024.05.17	2027.05.16	3 year
9	Power Meter	R&S	NRVS	100696	2025.04.17	2026.04.16	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2025.04.17	2026.04.16	1 year
11	Test Cable	N/A	R-01	N/A	2023.06.17	2026.06.16	3 year
12	Test Cable	N/A	R-02	N/A	2023.06.17	2026.06.16	3 year
13	Test Cable	N/A	R-03	N/A	2023.06.17	2026.06.16	3 year
14	Test Receiver	R&S	ESCI	101160	2025.04.17	2026.04.16	1 year
15	LISN	R&S	ENV216	101313	2025.04.17	2026.04.16	1 year
16	LISN	EMCO	3816/2	00042990	2025.04.17	2026.04.16	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2024.04.26	2027.04.25	3 year
18	Field strength probe	narda	EP601	711WX81278	2025.04.17	2026.04.16	1 year
19	Test Cable	N/A	C01	N/A	2023.05.06	2026.05.05	3 year
20	Test Cable	N/A	C02	N/A	2023.05.06	2026.05.05	3 year
21	Test Cable	N/A	C03	N/A	2023.05.06	2026.05.05	3 year
22	Spectrum Analyzer	Agilent	E4440A	MY41000130	2025.04.17	2026.04.16	1 year
23	EMI Test Receiver	R&S	ESCI	101160	2025.04.17	2026.04.16	1 year
24	High and Low Temperature Box	WEISS	WT 20/40 EMC Simpac	58226119460030	2024.05.30	2027.05.29	3 year

25	DC Power Source	N/A	PS-6005D	20170402923	2024.04.25	2027.04.24	3 year
26	MXG Vector Signal Generator	Agilent	N5183B	MY57280984	2025.04.17	2026.04.16	1 year
27	Log-Periodic Antenna	SCHWARZBECK	VULB 9162	584	2025.04.17	2026.04.16	1 year
28	Log-Periodic Antenna	SCHWARZBECK	VULB 9162	586	2025.04.17	2026.04.16	1 year
29	Communication Tester	R&S	CMW500	148500	2025.05.06	2026.05.05	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	MWRFTtest	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 2/4/5/7/17/41

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 2/4/5/7/17/41

RESULTS

Test data reference attachment.

7. OUT OF BAND EMISSIONS

RULE PART(S)

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

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 2/4/5/7/17/41

☐

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.

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 2/4/5/7/17/41

RESULTS

Pass

8.2 LTE BAND 2

		Radiated Power (EIRP) for Band 2								
Mode	RB/RB SIZE	Frequency	Result						Limit	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dBi)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	(W)	
						Average	Average			
						(dBm)	(mW)			
1.4MHz Band QPSK	6/0	1850.7	16.48	3.76	8.90	21.62	145.139	Horizontal	2	Pass
1880		15.14	3.91	8.90	20.13	103.140	Horizontal	2	Pass	
1909.3		15.76	3.93	8.90	20.73	118.246	Horizontal	2	Pass	
3.0MHz Band QPSK	15/0	1851.5	13.57	3.77	8.90	18.70	74.065	Horizontal	2	Pass
1880		14.73	3.91	8.90	19.72	93.650	Horizontal	2	Pass	
1908.5		16.08	3.94	8.90	21.04	127.166	Horizontal	2	Pass	
5.0MHz Band QPSK	25/0	1852.5	16.10	3.77	8.90	21.23	132.878	Horizontal	2	Pass
1880		16.88	3.91	8.90	21.87	153.879	Horizontal	2	Pass	
1907.5		17.28	3.94	8.90	22.24	167.313	Horizontal	2	Pass	
10.0MHz Band QPSK	50/0	1855	17.19	3.79	8.90	22.30	169.824	Horizontal	2	Pass
1880		17.93	3.95	8.90	22.88	193.933	Horizontal	2	Pass	
1905		15.66	3.97	8.90	20.59	114.631	Horizontal	2	Pass	
15.0MHz Band QPSK	75/0	1857.5	15.42	3.79	8.90	20.53	113.053	Horizontal	2	Pass
1880		16.48	3.95	8.90	21.43	138.933	Horizontal	2	Pass	
1902.5		15.56	3.97	8.90	20.49	111.941	Horizontal	2	Pass	
20.0MHz Band QPSK	100/0	1860	17.23	3.81	8.90	22.32	170.438	Horizontal	2	Pass
1880		15.73	3.96	8.90	20.67	116.688	Horizontal	2	Pass	
1900		16.76	4.00	8.90	21.66	146.491	Horizontal	2	Pass	
1.4MHz Band QPSK	6/0	1850.7	16.35	3.76	8.90	21.49	141.044	Vertical	2	Pass
1880		14.77	3.91	8.90	19.76	94.576	Vertical	2	Pass	
1909.3		16.07	3.93	8.90	21.04	127.069	Vertical	2	Pass	
3.0MHz Band QPSK	15/0	1851.5	16.09	3.77	8.90	21.22	132.518	Vertical	2	Pass
1880		17.39	3.91	8.90	22.38	173.101	Vertical	2	Pass	
1908.5		15.65	3.94	8.90	20.61	115.106	Vertical	2	Pass	
5.0MHz Band QPSK	25/0	1852.5	15.27	3.77	8.90	20.40	109.632	Vertical	2	Pass
1880		15.06	3.91	8.90	20.05	101.147	Vertical	2	Pass	
1907.5		16.48	3.94	8.90	21.44	139.169	Vertical	2	Pass	
10.0MHz Band QPSK	50/0	1855	14.43	3.79	8.90	19.54	89.886	Vertical	2	Pass
1880		14.33	3.95	8.90	19.28	84.663	Vertical	2	Pass	
1905		14.74	3.97	8.90	19.67	92.663	Vertical	2	Pass	

15.0MHz	75/0	1857.5	15.75	3.79	8.90	20.86	121.930	Vertical	2	Pass
Band		1880	15.95	3.95	8.90	20.90	122.979	Vertical	2	Pass
QPSK		1902.5	16.45	3.97	8.90	21.38	137.486	Vertical	2	Pass
20.0MHz	100/0	1860	17.91	3.81	8.90	23.00	199.730	Vertical	2	Pass
Band		1880	15.98	3.96	8.90	20.92	123.471	Vertical	2	Pass
QPSK		1900	16.12	4.00	8.90	21.02	126.484	Vertical	2	Pass

	Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Limit	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dBi)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	(W)	
1.4MHz Band 16 QAM	6/0	1850.7	14.60	3.76	8.90	20.55	113.534	Horizontal	2	Pass
		1880	15.75	3.91	8.90	19.24	83.981	Horizontal	2	Pass
		1909.3	15.45	3.93	8.90	20.47	111.510	Horizontal	2	Pass
3.0MHz Band 16 QAM	15/0	1851.5	15.29	3.77	8.90	19.30	85.202	Horizontal	2	Pass
		1880	14.95	3.91	8.90	20.56	113.862	Horizontal	2	Pass
		1908.5	14.55	3.94	8.90	19.02	79.875	Horizontal	2	Pass
5.0MHz Band 16 QAM	25/0	1852.5	15.14	3.77	8.90	21.27	133.854	Horizontal	2	Pass
		1880	15.50	3.91	8.90	19.25	84.156	Horizontal	2	Pass
		1907.5	14.00	3.94	8.90	19.30	85.145	Horizontal	2	Pass
10.0MHz Band 16 QAM	50/0	1855	15.35	3.79	8.90	20.28	106.673	Horizontal	2	Pass
		1880	14.05	3.95	8.90	19.68	92.824	Horizontal	2	Pass
		1905	15.36	3.97	8.90	20.71	117.706	Horizontal	2	Pass
15.0MHz Band 16 QAM	75/0	1857.5	13.68	3.79	8.90	20.39	109.464	Horizontal	2	Pass
		1880	15.77	3.95	8.90	18.83	76.354	Horizontal	2	Pass
		1902.5	15.65	3.97	8.90	20.83	121.195	Horizontal	2	Pass
20.0MHz Band 16 QAM	100/0	1860	13.84	3.81	8.90	19.07	80.674	Horizontal	2	Pass
		1880	16.17	3.96	8.90	19.96	99.053	Horizontal	2	Pass
		1900	14.55	4.00	8.90	18.19	65.978	Horizontal	2	Pass
1.4MHz Band 16 QAM	6/0	1850.7	14.61	3.76	8.90	20.71	117.800	Vertical	2	Pass
		1880	15.84	3.91	8.90	19.19	83.078	Vertical	2	Pass
		1909.3	15.13	3.93	8.90	19.57	90.600	Vertical	2	Pass
3.0MHz Band 16 QAM	15/0	1851.5	13.77	3.77	8.90	19.36	86.285	Vertical	2	Pass
		1880	14.83	3.91	8.90	20.84	121.219	Vertical	2	Pass
		1908.5	14.56	3.94	8.90	19.48	88.766	Vertical	2	Pass
5.0MHz Band 16 QAM	25/0	1852.5	13.76	3.77	8.90	21.93	156.088	Vertical	2	Pass
		1880	15.05	3.91	8.90	21.32	135.558	Vertical	2	Pass
		1907.5	15.69	3.94	8.90	20.39	109.496	Vertical	2	Pass
10.0MHz Band 16 QAM	50/0	1855	13.98	3.79	8.90	20.73	118.259	Vertical	2	Pass
		1880	15.57	3.95	8.90	20.13	103.097	Vertical	2	Pass
		1905	15.12	3.97	8.90	20.61	115.079	Vertical	2	Pass
15.0MHz Band 16	75/0	1857.5	13.85	3.79	8.90	20.27	106.388	Vertical	2	Pass
		1880	14.87	3.95	8.90	21.37	137.027	Vertical	2	Pass

QAM		1902.5	13.66	3.97	8.90	19.93	98.406	Vertical	2	Pass
20.0MHz	100/0	1860	14.29	3.81	8.90	21.98	157.731	Vertical	2	Pass
Band 16		1880	14.90	3.96	8.90	22.10	162.266	Vertical	2	Pass
QAM		1900	13.78	4.00	8.90	20.06	101.506	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						Limit	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dBi)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	(W)	
1.4MHz Band QPSK	6/0	1710.7	14.00	3.12	8.90	19.78	95.134	Horizontal	1	Pass
		1732.5	12.97	3.27	8.90	18.60	72.414	Horizontal	1	Pass
		1754.3	15.63	3.29	8.90	21.24	133.143	Horizontal	1	Pass
3.0MHz Band QPSK	15/0	1711.5	13.95	3.13	8.90	19.72	93.857	Horizontal	1	Pass
		1732.5	15.05	3.27	8.90	20.68	116.984	Horizontal	1	Pass
		1753.5	14.85	3.30	8.90	20.45	110.894	Horizontal	1	Pass
5.0MHz Band QPSK	25/0	1712.5	15.82	3.13	8.90	21.59	144.274	Horizontal	1	Pass
		1732.5	15.48	3.27	8.90	21.11	129.141	Horizontal	1	Pass
		1752.5	14.76	3.30	8.90	20.36	108.583	Horizontal	1	Pass
10.0MHz Band QPSK	50/0	1715	14.63	3.15	8.90	20.38	109.243	Horizontal	1	Pass
		1732.5	14.75	3.31	8.90	20.34	108.110	Horizontal	1	Pass
		1750	16.45	3.33	8.90	22.02	159.371	Horizontal	1	Pass
15.0MHz Band QPSK	75/0	1717.5	15.43	3.15	8.90	21.18	131.140	Horizontal	1	Pass
		1732.5	15.20	3.31	8.90	20.79	119.885	Horizontal	1	Pass
		1747.5	16.32	3.33	8.90	21.89	154.689	Horizontal	1	Pass
20.0MHz Band QPSK	100/0	1720	12.99	3.17	8.90	18.72	74.454	Horizontal	1	Pass
		1732.5	14.79	3.32	8.90	20.37	108.903	Horizontal	1	Pass
		1745	15.04	3.36	8.90	20.58	114.187	Horizontal	1	Pass
1.4MHz Band QPSK	6/0	1710.7	14.56	3.12	8.90	20.34	108.230	Vertical	1	Pass
		1732.5	15.30	3.27	8.90	20.93	123.951	Vertical	1	Pass
		1754.3	16.18	3.29	8.90	21.79	150.961	Vertical	1	Pass
3.0MHz Band QPSK	15/0	1711.5	15.53	3.13	8.90	21.30	134.957	Vertical	1	Pass
		1732.5	16.07	3.27	8.90	21.70	147.990	Vertical	1	Pass
		1753.5	16.36	3.30	8.90	21.96	157.149	Vertical	1	Pass
5.0MHz Band QPSK	25/0	1712.5	14.66	3.13	8.90	20.43	110.494	Vertical	1	Pass
		1732.5	15.03	3.27	8.90	20.66	116.392	Vertical	1	Pass
		1752.5	14.05	3.30	8.90	19.65	92.195	Vertical	1	Pass
10.0MHz Band QPSK	50/0	1715	12.43	3.15	8.90	18.18	65.752	Vertical	1	Pass
		1732.5	15.77	3.31	8.90	21.36	136.686	Vertical	1	Pass
		1750	15.18	3.33	8.90	20.75	118.825	Vertical	1	Pass

15.0MHz	75/0	1717.5	15.70	3.15	8.90	21.45	139.706	Vertical	1	Pass
Band		1732.5	16.42	3.31	8.90	22.01	158.864	Vertical	1	Pass
QPSK		1747.5	14.36	3.33	8.90	19.93	98.387	Vertical	1	Pass
20.0MHz	100/0	1720	16.54	3.17	8.90	22.27	168.553	Vertical	1	Pass
Band		1732.5	16.64	3.32	8.90	22.22	166.644	Vertical	1	Pass
QPSK		1745	14.31	3.36	8.90	19.85	96.533	Vertical	1	Pass

		Radiated Power (EIRP) for Band 4								
Mode	RB/RB SIZE	Frequency	Result						Limit	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dBi)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP		
									(W)	
1.4MHz Band 16 QAM	6/0	1710.7	15.18	3.12	8.90	20.96	124.732	Horizontal	1	Pass
		1732.5	15.28	3.27	8.90	20.91	123.183	Horizontal	1	Pass
		1754.3	15.46	3.29	8.90	21.07	127.865	Horizontal	1	Pass
3.0MHz Band 16 QAM	15/0	1711.5	13.93	3.13	8.90	19.70	93.238	Horizontal	1	Pass
		1732.5	15.05	3.27	8.90	20.68	116.944	Horizontal	1	Pass
		1753.5	16.11	3.30	8.90	21.71	148.393	Horizontal	1	Pass
5.0MHz Band 16 QAM	25/0	1712.5	13.66	3.13	8.90	19.43	87.615	Horizontal	1	Pass
		1732.5	13.34	3.27	8.90	18.97	78.933	Horizontal	1	Pass
		1752.5	14.81	3.30	8.90	20.41	109.934	Horizontal	1	Pass
10.0MHz Band 16 QAM	50/0	1715	16.06	3.15	8.90	21.81	151.691	Horizontal	1	Pass
		1732.5	13.72	3.31	8.90	19.31	85.315	Horizontal	1	Pass
		1750	13.62	3.33	8.90	19.19	82.911	Horizontal	1	Pass
15.0MHz Band 16 QAM	75/0	1717.5	14.05	3.15	8.90	19.80	95.435	Horizontal	1	Pass
		1732.5	15.93	3.31	8.90	21.52	141.744	Horizontal	1	Pass
		1747.5	14.49	3.33	8.90	20.06	101.318	Horizontal	1	Pass
20.0MHz Band 16 QAM	100/0	1720	14.22	3.17	8.90	19.95	98.778	Horizontal	1	Pass
		1732.5	15.39	3.32	8.90	20.97	125.083	Horizontal	1	Pass
		1745	16.25	3.36	8.90	21.79	151.145	Horizontal	1	Pass
1.4MHz Band 16 QAM	6/0	1710.7	15.78	3.12	8.90	21.56	143.301	Vertical	1	Pass
		1732.5	15.08	3.27	8.90	20.71	117.817	Vertical	1	Pass
		1754.3	15.44	3.29	8.90	21.05	127.386	Vertical	1	Pass
3.0MHz Band 16 QAM	15/0	1711.5	14.43	3.13	8.90	20.20	104.692	Vertical	1	Pass
		1732.5	14.52	3.27	8.90	20.15	103.605	Vertical	1	Pass
		1753.5	15.77	3.30	8.90	21.37	137.191	Vertical	1	Pass
5.0MHz Band 16 QAM	25/0	1712.5	16.37	3.13	8.90	22.14	163.760	Vertical	1	Pass
		1732.5	15.52	3.27	8.90	21.15	130.333	Vertical	1	Pass
		1752.5	13.58	3.30	8.90	19.18	82.887	Vertical	1	Pass
10.0MHz Band 16 QAM	50/0	1715	13.63	3.15	8.90	19.38	86.605	Vertical	1	Pass
		1732.5	14.45	3.31	8.90	20.04	100.958	Vertical	1	Pass
		1750	16.86	3.33	8.90	22.43	175.099	Vertical	1	Pass
15.0MHz Band 16	75/0	1717.5	13.69	3.15	8.90	19.44	87.945	Vertical	1	Pass
		1732.5	14.52	3.31	8.90	20.11	102.518	Vertical	1	Pass

QAM		1747.5	15.59	3.33	8.90	21.16	130.588	Vertical	1	Pass
20.0MHz	100/0	1720	15.38	3.17	8.90	21.11	129.013	Vertical	1	Pass
Band 16		1732.5	16.87	3.32	8.90	22.45	175.682	Vertical	1	Pass
QAM		1745	15.51	3.36	8.90	21.05	127.289	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							Limit (W)	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP		
1.4MHz Band QPSK	6/0	824.7	20.83	2.01	5.30	2.15	21.97	157.237	Horizontal	7	Pass
		836.5	21.54	2.01	5.30	2.15	22.68	185.431	Horizontal	7	Pass
		848.3	20.13	2.02	5.70	2.15	21.66	146.569	Horizontal	7	Pass
3.0MHz Band QPSK	15/0	825.5	21.86	2.01	5.30	2.15	23.00	199.741	Horizontal	7	Pass
		836.5	21.45	2.01	5.30	2.15	22.59	181.346	Horizontal	7	Pass
		847.5	21.47	2.02	5.70	2.15	23.00	199.621	Horizontal	7	Pass
5.0MHz Band QPSK	25/0	826.5	20.92	2.01	5.30	2.15	22.06	160.740	Horizontal	7	Pass
		836.5	21.54	2.01	5.30	2.15	22.68	185.343	Horizontal	7	Pass
		846.5	21.98	2.02	5.70	2.15	23.51	224.172	Horizontal	7	Pass
10.0MHz Band QPSK	50/0	829	20.59	2.01	5.30	2.15	21.73	149.010	Horizontal	7	Pass
		836.5	21.62	2.01	5.30	2.15	22.76	188.926	Horizontal	7	Pass
		844	20.15	2.02	5.70	2.15	21.68	147.333	Horizontal	7	Pass
1.4MHz Band QPSK	6/0	824.7	22.55	2.01	5.30	2.15	23.69	233.732	Vertical	7	Pass
		836.5	22.85	2.01	5.30	2.15	23.99	250.525	Vertical	7	Pass
		848.3	20.47	2.02	5.70	2.15	22.00	158.433	Vertical	7	Pass
3.0MHz Band QPSK	15/0	825.5	22.15	2.01	5.30	2.15	23.29	213.115	Vertical	7	Pass
		836.5	21.33	2.01	5.30	2.15	22.47	176.485	Vertical	7	Pass
		847.5	19.98	2.02	5.70	2.15	21.51	141.421	Vertical	7	Pass
5.0MHz Band QPSK	25/0	826.5	19.92	2.01	5.30	2.15	21.06	127.783	Vertical	7	Pass
		836.5	22.05	2.01	5.30	2.15	23.19	208.606	Vertical	7	Pass
		846.5	21.07	2.02	5.70	2.15	22.60	181.780	Vertical	7	Pass
10.0MHz Band QPSK	50/0	829	19.74	2.01	5.30	2.15	20.88	122.426	Vertical	7	Pass
		836.5	23.28	2.01	5.30	2.15	24.42	276.992	Vertical	7	Pass
		844	20.86	2.02	5.70	2.15	22.39	173.432	Vertical	7	Pass

Radiated Power (ERP) for Band 5											
Mode	RB/RB SIZE	Frequency	Result							Limit (W)	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP		
1.4MHz Band 16 QAM	6/0	824.7	21.03	2.01	5.30	2.15	22.17	164.652	Horizontal	7	Pass
		836.5	21.07	2.01	5.30	2.15	22.21	166.522	Horizontal	7	Pass
		848.3	20.20	2.02	5.70	2.15	21.73	148.992	Horizontal	7	Pass
3.0MHz Band 16 QAM	15/0	825.5	21.03	2.01	5.30	2.15	22.17	164.863	Horizontal	7	Pass
		836.5	19.86	2.01	5.30	2.15	21.00	125.948	Horizontal	7	Pass
		847.5	20.66	2.02	5.70	2.15	22.19	165.650	Horizontal	7	Pass
5.0MHz Band 16 QAM	25/0	826.5	20.26	2.01	5.30	2.15	21.40	137.900	Horizontal	7	Pass
		836.5	20.00	2.01	5.30	2.15	21.14	130.100	Horizontal	7	Pass
		846.5	20.46	2.02	5.70	2.15	21.99	157.987	Horizontal	7	Pass
10.0MHz z Band 16 QAM	50/0	829	19.26	2.01	5.30	2.15	20.40	109.767	Horizontal	7	Pass
		836.5	19.89	2.01	5.30	2.15	21.03	126.718	Horizontal	7	Pass
		844	19.39	2.02	5.70	2.15	20.92	123.469	Horizontal	7	Pass
1.4MHz Band 16 QAM	6/0	824.7	21.60	2.01	5.30	2.15	22.74	187.802	Vertical	7	Pass
		836.5	21.13	2.01	5.30	2.15	22.27	168.628	Vertical	7	Pass
		848.3	20.35	2.02	5.70	2.15	21.88	154.306	Vertical	7	Pass
3.0MHz Band 16 QAM	15/0	825.5	18.99	2.01	5.30	2.15	20.13	103.153	Vertical	7	Pass
		836.5	20.82	2.01	5.30	2.15	21.96	157.056	Vertical	7	Pass
		847.5	19.38	2.02	5.70	2.15	20.91	123.186	Vertical	7	Pass
5.0MHz Band 16 QAM	25/0	826.5	20.44	2.01	5.30	2.15	21.58	143.918	Vertical	7	Pass
		836.5	18.19	2.01	5.30	2.15	19.33	85.630	Vertical	7	Pass
		846.5	19.77	2.02	5.70	2.15	21.30	134.888	Vertical	7	Pass
10.0MHz z Band 16 QAM	50/0	829	19.27	2.01	5.30	2.15	20.41	109.921	Vertical	7	Pass
		836.5	22.49	2.01	5.30	2.15	23.63	230.730	Vertical	7	Pass
		844	22.01	2.02	5.70	2.15	23.54	225.943	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 Gain (dBi)	Max. EIRP	Max. EIRP Average (mW)	Polarization Of Max. ERP	Limit	
						Average				
						(dBm)			(W)	
5.0MHz Band QPSK	25/0	2502.5	17.82	4.54	9.00	22.28	169.081	Horizontal	2	Pass
		2535	18.61	4.69	9.00	22.92	196.079	Horizontal	2	Pass
		2567.5	15.78	4.71	9.00	20.07	101.511	Horizontal	2	Pass
10.0MHz Band QPSK	50/0	2505	15.55	4.55	9.00	20.00	100.091	Horizontal	2	Pass
		2535	18.45	4.69	9.00	22.76	188.608	Horizontal	2	Pass
		2565	17.98	4.72	9.00	22.26	168.210	Horizontal	2	Pass
15.0MHz Band QPSK	75/0	2507.5	18.77	4.55	9.00	23.22	209.871	Horizontal	2	Pass
		2535	18.33	4.69	9.00	22.64	183.823	Horizontal	2	Pass
		2562.5	17.63	4.72	9.00	21.91	155.248	Horizontal	2	Pass
20.0MHz Band QPSK	100/0	2510	15.91	4.57	9.00	20.34	108.199	Horizontal	2	Pass
		2535	18.99	4.73	9.00	23.26	211.610	Horizontal	2	Pass
		2560	17.26	4.75	9.00	21.51	141.604	Horizontal	2	Pass
5.0MHz Band QPSK	25/0	2502.5	17.49	4.54	9.00	21.95	156.537	Vertical	2	Pass
		2535	18.86	4.69	9.00	23.17	207.651	Vertical	2	Pass
		2567.5	18.82	4.71	9.00	23.11	204.503	Vertical	2	Pass
10.0MHz Band QPSK	50/0	2505	17.15	4.55	9.00	21.60	144.622	Vertical	2	Pass
		2535	19.75	4.69	9.00	24.06	254.920	Vertical	2	Pass
		2565	18.64	4.72	9.00	22.92	196.012	Vertical	2	Pass
15.0MHz Band QPSK	75/0	2507.5	18.31	4.55	9.00	22.76	189.006	Vertical	2	Pass
		2535	19.36	4.69	9.00	23.67	232.595	Vertical	2	Pass
		2562.5	17.94	4.72	9.00	22.22	166.846	Vertical	2	Pass
20.0MHz Band QPSK	100/0	2510	19.32	4.57	9.00	23.75	237.256	Vertical	2	Pass
		2535	19.81	4.73	9.00	24.08	255.842	Vertical	2	Pass
		2560	19.79	4.75	9.00	24.04	253.516	Vertical	2	Pass

Radiated Power (EIRP) for Band 7										
Mode	RB/RB SIZE	Frequency	Result						Limit	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dBi)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	(W)	
5.0MHz Band 16 QAM	25/0	2502.5	16.47	4.54	9.00	20.93	123.983	Horizontal	2	Pass
		2535	17.63	4.69	9.00	21.94	156.322	Horizontal	2	Pass
		2567.5	17.83	4.71	9.00	22.12	162.850	Horizontal	2	Pass
10.0MHz Band 16 QAM	50/0	2505	17.34	4.55	9.00	21.79	151.158	Horizontal	2	Pass
		2535	18.14	4.69	9.00	22.45	175.757	Horizontal	2	Pass
		2565	18.66	4.72	9.00	22.94	196.697	Horizontal	2	Pass
15.0MHz Band 16 QAM	75/0	2507.5	18.25	4.55	9.00	22.70	186.131	Horizontal	2	Pass
		2535	18.45	4.69	9.00	22.76	188.669	Horizontal	2	Pass
		2562.5	16.59	4.72	9.00	20.87	122.102	Horizontal	2	Pass
20.0MHz Band 16 QAM	100/0	2510	17.61	4.57	9.00	22.04	159.891	Horizontal	2	Pass
		2535	16.44	4.73	9.00	20.71	117.695	Horizontal	2	Pass
		2560	17.87	4.75	9.00	22.12	162.908	Horizontal	2	Pass
5.0MHz Band 16 QAM	25/0	2502.5	17.80	4.54	9.00	22.26	168.249	Vertical	2	Pass
		2535	18.90	4.69	9.00	23.21	209.606	Vertical	2	Pass
		2567.5	19.09	4.71	9.00	23.38	218.015	Vertical	2	Pass
10.0MHz Band 16 QAM	50/0	2505	17.22	4.55	9.00	21.67	146.737	Vertical	2	Pass
		2535	19.37	4.69	9.00	23.68	233.125	Vertical	2	Pass
		2565	17.64	4.72	9.00	21.92	155.652	Vertical	2	Pass
15.0MHz Band 16 QAM	75/0	2507.5	17.97	4.55	9.00	22.42	174.704	Vertical	2	Pass
		2535	17.91	4.69	9.00	22.22	166.571	Vertical	2	Pass
		2562.5	16.04	4.72	9.00	20.32	107.561	Vertical	2	Pass
20.0MHz Band 16 QAM	100/0	2510	19.48	4.57	9.00	23.91	245.817	Vertical	2	Pass
		2535	17.47	4.73	9.00	21.74	149.308	Vertical	2	Pass
		2560	19.55	4.75	9.00	23.80	240.016	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 17

Radiated Power (ERP) for Band 17											
Mode	RB/RB SIZE	Frequency	Result							Limit (W)	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dBi)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP		
5.0MHz Band QPSK	25/0	706.5	16.65	1.91	5.60	2.15	18.19	65.844	Vertical	3	Pass
		710	18.12	1.91	5.70	2.15	19.76	94.656	Vertical	3	Pass
		713.5	19.14	1.92	5.80	2.15	20.87	122.249	Vertical	3	Pass
10.0MHz Band QPSK	50/0	709	16.11	1.91	5.60	2.15	17.65	58.161	Vertical	3	Pass
		710	18.12	1.91	5.70	2.15	19.76	94.723	Vertical	3	Pass
		711	15.27	1.92	5.80	2.15	17.00	50.093	Vertical	3	Pass
5.0MHz Band QPSK	25/0	706.5	16.39	1.91	5.60	2.15	17.93	62.027	Horizontal	3	Pass
		710	15.55	1.91	5.70	2.15	17.19	52.340	Horizontal	3	Pass
		713.5	16.89	1.92	5.80	2.15	18.62	72.740	Horizontal	3	Pass
10.0MHz Band QPSK	50/0	709	18.46	1.91	5.60	2.15	20.00	100.030	Horizontal	3	Pass
		710	19.64	1.91	5.70	2.15	21.28	134.381	Horizontal	3	Pass
		711	17.93	1.92	5.80	2.15	19.66	92.551	Horizontal	3	Pass

Radiated Power (ERP) for Band 17											
Mode	RB/RB SIZE	Frequency	Result							Limit (W)	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dBi)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP		
5.0MHz Band 16 QAM	25/0	706.5	20.67	1.91	5.6	2.15	22.21	166.467	Vertical	3	Pass
		710	19.24	1.91	5.7	2.15	20.88	122.374	Vertical	3	Pass
		713.5	20.47	1.92	5.8	2.15	22.20	165.862	Vertical	3	Pass
10.0MHz Band 16 QAM	50/0	709	19.76	1.91	5.6	2.15	21.30	135.045	Vertical	3	Pass
		710	20.92	1.91	5.7	2.15	22.56	180.340	Vertical	3	Pass
		711	20.11	1.92	5.8	2.15	21.84	152.727	Vertical	3	Pass
5.0MHz Band 16 QAM	25/0	706.5	20.09	1.91	5.6	2.15	21.63	145.477	Horizontal	3	Pass
		710	20.20	1.91	5.7	2.15	21.84	152.684	Horizontal	3	Pass
		713.5	20.05	1.92	5.8	2.15	21.78	150.686	Horizontal	3	Pass
10.0MHz Band 16 QAM	50/0	709	20.79	1.91	5.6	2.15	22.33	170.934	Horizontal	3	Pass
		710	20.99	1.91	5.7	2.15	22.63	183.033	Horizontal	3	Pass
		711	21.27	1.92	5.8	2.15	23.00	199.725	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)

8.7 LTE BAND 41

	Radiated Power (EIRP) for Band 41									
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	Limit	
									(W)	
5.0MHz Band QPSK	25/0	2498.5	18.35	4.54	9.00	22.81	191.154	Horizontal	2	Pass
		2593	18.01	4.69	9.00	22.32	170.727	Horizontal	2	Pass
		2687.5	16.60	4.71	9.00	20.89	122.761	Horizontal	2	Pass
10.0MHz Band QPSK	50/0	2501	18.34	4.55	9.00	22.79	190.063	Horizontal	2	Pass
		2593	18.04	4.69	9.00	22.35	171.736	Horizontal	2	Pass
		2685	17.06	4.72	9.00	21.34	136.275	Horizontal	2	Pass
15.0MHz Band QPSK	75/0	2503.5	16.23	4.55	9.00	20.68	116.943	Horizontal	2	Pass
		2593	18.95	4.69	9.00	23.26	211.601	Horizontal	2	Pass
		2682.5	18.38	4.72	9.00	22.66	184.445	Horizontal	2	Pass
20.0MHz Band QPSK	100/0	2506	16.68	4.57	9.00	21.11	129.105	Horizontal	2	Pass
		2593	17.86	4.73	9.00	22.13	163.373	Horizontal	2	Pass
		2680	18.68	4.75	9.00	22.93	196.437	Horizontal	2	Pass
5.0MHz Band QPSK	25/0	2498.5	18.19	4.54	9.00	22.65	184.197	Vertical	2	Pass
		2593	17.31	4.69	9.00	21.62	145.145	Vertical	2	Pass
		2687.5	17.25	4.71	9.00	21.54	142.706	Vertical	2	Pass
10.0MHz Band QPSK	50/0	2501	17.24	4.55	9.00	21.69	147.650	Vertical	2	Pass
		2593	17.81	4.69	9.00	22.12	162.952	Vertical	2	Pass
		2685	17.52	4.72	9.00	21.80	151.217	Vertical	2	Pass
15.0MHz Band QPSK	75/0	2503.5	16.45	4.55	9.00	20.90	123.115	Vertical	2	Pass
		2593	19.16	4.69	9.00	23.47	222.419	Vertical	2	Pass
		2682.5	16.96	4.72	9.00	21.24	132.967	Vertical	2	Pass
20.0MHz Band QPSK	100/0	2506	19.77	4.57	9.00	24.20	262.955	Vertical	2	Pass
		2593	17.89	4.73	9.00	22.16	164.599	Vertical	2	Pass
		2680	18.11	4.75	9.00	22.36	172.077	Vertical	2	Pass

Radiated Power (EIRP) for Band 41										
Mode	RB/RB SIZE	Frequency	Result						Limit (W)	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP		
5.0MHz Band 16 QAM	25/0	2498.5	16.44	4.54	9.00	20.90	123.146	Horizontal	2	Pass
		2593	16.80	4.69	9.00	21.11	129.253	Horizontal	2	Pass
		2687.5	17.48	4.71	9.00	21.77	150.166	Horizontal	2	Pass
10.0MHz Band 16 QAM	50/0	2501	17.80	4.55	9.00	22.25	167.963	Horizontal	2	Pass
		2593	18.52	4.69	9.00	22.83	192.059	Horizontal	2	Pass
		2685	18.10	4.72	9.00	22.38	172.966	Horizontal	2	Pass
15.0MHz Band 16 QAM	75/0	2503.5	19.02	4.55	9.00	23.47	222.557	Horizontal	2	Pass
		2593	18.71	4.69	9.00	23.02	200.305	Horizontal	2	Pass
		2682.5	18.64	4.72	9.00	22.92	195.668	Horizontal	2	Pass
20.0MHz Band 16 QAM	100/0	2506	17.91	4.57	9.00	22.34	171.310	Horizontal	2	Pass
		2593	17.61	4.73	9.00	21.88	154.318	Horizontal	2	Pass
		2680	19.33	4.75	9.00	23.58	228.019	Horizontal	2	Pass
5.0MHz Band 16 QAM	25/0	2498.5	18.83	4.54	9.00	23.29	213.300	Vertical	2	Pass
		2593	18.05	4.69	9.00	22.36	171.994	Vertical	2	Pass
		2687.5	18.20	4.71	9.00	22.49	177.430	Vertical	2	Pass
10.0MHz Band 16 QAM	50/0	2501	19.41	4.55	9.00	23.86	243.207	Vertical	2	Pass
		2593	17.24	4.69	9.00	21.55	143.024	Vertical	2	Pass
		2685	16.92	4.72	9.00	21.20	131.795	Vertical	2	Pass
15.0MHz Band 16 QAM	75/0	2503.5	18.22	4.55	9.00	22.67	184.724	Vertical	2	Pass
		2593	17.74	4.69	9.00	22.05	160.497	Vertical	2	Pass
		2682.5	17.78	4.72	9.00	22.06	160.878	Vertical	2	Pass
20.0MHz Band 16 QAM	100/0	2506	18.13	4.57	9.00	22.56	180.269	Vertical	2	Pass
		2593	19.70	4.73	9.00	23.97	249.629	Vertical	2	Pass
		2680	18.30	4.75	9.00	22.55	179.763	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: 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 2/4/5/7/17/41

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
3701.6	-48.39	4.04	33.51	-18.92	-13	-5.92	Horizontal
3701.6	-50.63	4.04	33.51	-21.16	-13	-8.16	Vertical
5552.4	-46.86	5.24	35.84	-16.26	-13	-3.26	Vertical
5552.4	-49.32	5.24	35.84	-18.72	-13	-5.72	Horizontal
185.1	-39.57	1.43	16.02	-24.98	-13	-11.98	Vertical
454.0	-32.64	1.30	17.99	-15.94	-13	-2.94	Horizontal
Test Results for Mid Channel 1880MHz							
3760.9	-46.76	4.04	33.56	-17.24	-13	-4.24	Horizontal
3760.9	-50.87	4.04	33.56	-21.35	-13	-8.35	Vertical
5640.4	-48.22	5.24	35.91	-17.55	-13	-4.55	Vertical
5640.4	-50.50	5.24	35.91	-19.83	-13	-6.83	Horizontal
184.3	-34.52	1.62	16.97	-19.17	-13	-6.17	Vertical
290.4	-34.85	1.74	15.98	-20.61	-13	-7.61	Horizontal
Test Results for High Channel 1909.3MHz							
3819.4	-45.76	4.04	34.00	-15.80	-13	-2.80	Horizontal
3819.4	-46.19	4.04	34.00	-16.23	-13	-3.23	Vertical
5728.2	-49.87	5.24	36.04	-19.07	-13	-6.07	Vertical
5728.2	-48.07	5.24	36.04	-17.27	-13	-4.27	Horizontal
194.3	-40.02	1.42	17.29	-24.15	-13	-11.15	Vertical
343.3	-34.02	1.50	17.90	-17.62	-13	-4.62	Horizontal

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

Test Results for Low Channel 1860MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3720.7	-45.57	4.07	33.54	-16.10	-13	-3.10	Horizontal
3720.7	-48.92	4.07	33.54	-19.45	-13	-6.45	Vertical
5580.8	-46.86	5.28	35.86	-16.28	-13	-3.28	Vertical
5580.8	-49.74	5.28	35.86	-19.16	-13	-6.16	Horizontal
208.8	-37.06	1.58	16.89	-21.74	-13	-8.74	Vertical
357.9	-41.77	1.76	17.26	-26.27	-13	-13.27	Horizontal
Test Results for Mid Channel 1880MHz							
3760.7	-45.93	4.04	33.56	-16.41	-13	-3.41	Horizontal
3760.7	-45.82	4.04	33.56	-16.30	-13	-3.30	Vertical
5640.0	-49.85	5.24	35.91	-19.18	-13	-6.18	Vertical
5640.0	-49.96	5.24	35.91	-19.29	-13	-6.29	Horizontal
201.5	-43.16	1.46	16.27	-28.35	-13	-15.35	Vertical
345.6	-38.41	1.59	15.15	-24.85	-13	-11.85	Horizontal
Test Results for High Channel 1900MHz							
3800.4	-48.50	4.04	34.00	-18.54	-13	-5.54	Horizontal
3800.4	-46.41	4.04	34.00	-16.45	-13	-3.45	Vertical
5700.1	-46.46	5.24	36.04	-15.66	-13	-2.66	Vertical
5700.1	-50.38	5.24	36.04	-19.58	-13	-6.58	Horizontal
212.6	-33.82	1.36	17.39	-17.78	-13	-4.78	Vertical
313.5	-40.11	1.66	15.39	-26.38	-13	-13.38	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	-48.64	4.02	29.80	-22.86	-13	-9.86	Horizontal
3421.4	-46.44	4.02	29.80	-20.66	-13	-7.66	Vertical
5133.0	-50.41	5.24	35.84	-19.81	-13	-6.81	Vertical
5133.0	-50.58	5.24	35.84	-19.98	-13	-6.98	Horizontal
197.8	-40.34	1.68	16.04	-25.97	-13	-12.97	Vertical
454.9	-33.95	1.78	17.74	-17.99	-13	-4.99	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.6	-48.36	4.03	30.00	-22.39	-13	-9.39	Horizontal
3465.6	-42.11	4.03	30.00	-16.14	-13	-3.14	Vertical
5198.2	-46.21	5.25	35.86	-15.60	-13	-2.60	Vertical
5198.2	-47.54	5.25	35.86	-16.93	-13	-3.93	Horizontal
208.0	-40.62	1.72	17.69	-24.65	-13	-11.65	Vertical
346.4	-41.77	1.62	16.02	-27.36	-13	-14.36	Horizontal
Test Results for High Channel 1754.3MHz							
3509.6	-48.02	4.05	30.01	-22.06	-13	-9.06	Horizontal
3509.6	-45.82	4.05	30.01	-19.86	-13	-6.86	Vertical
5263.7	-48.62	5.26	35.86	-18.02	-13	-5.02	Vertical
5263.7	-48.09	5.26	35.86	-17.49	-13	-4.49	Horizontal
183.8	-31.61	1.80	16.69	-16.72	-13	-3.72	Vertical
332.9	-38.99	1.75	16.66	-24.09	-13	-11.09	Horizontal

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

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.4	-48.22	4.02	29.80	-22.44	-13	-9.44	Horizontal
3440.4	-47.17	4.02	29.80	-21.39	-13	-8.39	Vertical
5160.1	-50.94	5.24	35.84	-20.34	-13	-7.34	Vertical
5160.1	-49.37	5.24	35.84	-18.77	-13	-5.77	Horizontal
183.3	-38.81	1.57	17.26	-23.12	-13	-10.12	Vertical
311.1	-34.09	1.78	16.35	-19.52	-13	-6.52	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.5	-48.23	4.03	30.00	-22.26	-13	-9.26	Horizontal
3465.5	-49.45	4.03	30.00	-23.48	-13	-10.48	Vertical
5197.9	-46.80	5.25	35.86	-16.19	-13	-3.19	Vertical
5197.9	-47.21	5.25	35.86	-16.60	-13	-3.60	Horizontal
209.6	-39.06	1.44	17.95	-22.55	-13	-9.55	Vertical
270.3	-31.07	1.65	16.09	-16.63	-13	-3.63	Horizontal
Test Results for High Channel 1745MHz							
3490.3	-43.65	2.91	27.68	-18.88	-13	-5.88	Horizontal
3490.3	-44.77	2.91	27.68	-20.00	-13	-7.00	Vertical
5235.4	-46.55	5.26	35.86	-15.95	-13	-2.95	Vertical
5235.4	-51.49	5.26	35.86	-20.89	-13	-7.89	Horizontal
184.8	-39.36	1.61	16.85	-24.11	-13	-11.11	Vertical
291.6	-38.83	1.61	15.19	-25.25	-13	-12.25	Horizontal

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

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

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

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
1649.9	-45.94	2.78	27.50	-21.22	-13	-8.22	Horizontal
1649.9	-49.53	2.78	27.50	-24.81	-13	-11.81	Vertical
2474.1	-44.84	2.90	27.80	-19.94	-13	-6.94	Vertical
2474.1	-50.84	2.90	27.80	-25.94	-13	-12.94	Horizontal
179.0	-36.21	1.76	17.59	-20.38	-13	-7.38	Vertical
460.5	-39.33	1.63	15.87	-25.09	-13	-12.09	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-45.55	2.80	27.48	-20.87	-13	-7.87	Horizontal
1673.0	-44.87	2.80	27.48	-20.19	-13	-7.19	Vertical
2510.2	-42.93	2.91	27.70	-18.14	-13	-5.14	Vertical
2510.2	-49.03	2.91	27.70	-24.24	-13	-11.24	Horizontal
213.4	-40.35	1.61	15.68	-26.28	-13	-13.28	Vertical
432.4	-35.04	1.59	17.52	-19.12	-13	-6.12	Horizontal
Test Results for High Channel 848.3MHz							
1697.0	-47.65	2.82	27.43	-23.04	-13	-10.04	Horizontal
1697.0	-49.82	2.82	27.43	-25.21	-13	-12.21	Vertical
2545.6	-42.52	2.92	27.74	-17.70	-13	-4.70	Vertical
2545.6	-50.04	2.92	27.74	-25.22	-13	-12.22	Horizontal
193.7	-33.52	1.69	16.67	-18.53	-13	-5.53	Vertical
367.4	-34.11	1.70	17.18	-18.63	-13	-5.63	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
1658.4	-50.29	2.78	27.50	-25.57	-13	-12.57	Horizontal
1658.4	-40.95	2.78	27.50	-16.23	-13	-3.23	Vertical
2487.2	-52.45	2.90	27.80	-27.55	-13	-14.55	Vertical
2487.2	-47.94	2.90	27.80	-23.04	-13	-10.04	Horizontal
200.2	-41.70	1.71	15.57	-27.84	-13	-14.84	Vertical
364.9	-31.27	1.34	16.40	-16.21	-13	-3.21	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.5	-41.32	2.80	27.48	-16.64	-13	-3.64	Horizontal
1673.5	-42.41	2.80	27.48	-17.73	-13	-4.73	Vertical
2510.3	-49.95	2.91	27.70	-25.16	-13	-12.16	Vertical
2510.3	-46.89	2.91	27.70	-22.10	-13	-9.10	Horizontal
213.0	-31.68	1.44	17.04	-16.08	-13	-3.08	Vertical
343.9	-41.85	1.76	17.62	-25.99	-13	-12.99	Horizontal
Test Results for High Channel 844MHz							
1688.9	-45.09	2.82	27.43	-20.48	-13	-7.48	Horizontal
1688.9	-46.47	2.82	27.43	-21.86	-13	-8.86	Vertical
2532.4	-49.38	2.92	27.74	-24.56	-13	-11.56	Vertical
2532.4	-46.28	2.92	27.74	-21.46	-13	-8.46	Horizontal
206.1	-34.25	1.74	17.70	-18.29	-13	-5.29	Vertical
393.9	-34.46	1.41	17.46	-18.41	-13	-5.41	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
5005.2	-62.81	5.23	35.81	-32.23	-25	-7.23	Horizontal
5005.2	-61.48	5.23	35.81	-30.90	-25	-5.90	Vertical
7508.4	-62.06	5.67	36.85	-30.88	-25	-5.88	Vertical
7508.4	-61.19	5.67	36.85	-30.01	-25	-5.01	Horizontal
203.0	-50.50	1.73	17.97	-34.26	-25	-9.26	Vertical
451.6	-49.16	1.38	15.11	-35.43	-25	-10.43	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-57.65	5.23	35.82	-27.06	-25	-2.06	Horizontal
5070.0	-63.42	5.23	35.82	-32.83	-25	-7.83	Vertical
7605.6	-60.65	5.67	36.85	-29.47	-25	-4.47	Vertical
7605.6	-62.30	5.67	36.85	-31.12	-25	-6.12	Horizontal
210.9	-42.50	1.77	16.17	-28.10	-25	-3.10	Vertical
232.8	-49.23	1.63	15.21	-35.65	-25	-10.65	Horizontal
Test Results for High Channel 2567.5MHz							
5135.9	-58.68	5.24	35.83	-28.09	-25	-3.09	Horizontal
5135.9	-59.01	5.24	35.83	-28.42	-25	-3.42	Vertical
7702.8	-60.00	5.68	36.87	-28.81	-25	-3.81	Vertical
7702.8	-59.32	5.68	36.87	-28.13	-25	-3.13	Horizontal
187.3	-43.93	1.58	17.56	-27.94	-25	-2.94	Vertical
264.7	-48.32	1.45	16.58	-33.19	-25	-8.19	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
5020.9	-58.07	5.23	35.82	-27.48	-25	-2.48	Horizontal
5020.9	-60.14	5.23	35.82	-29.55	-25	-4.55	Vertical
7530.1	-60.40	5.67	36.86	-29.21	-25	-4.21	Vertical
7530.1	-58.72	5.67	36.86	-27.53	-25	-2.53	Horizontal
193.1	-47.80	1.63	15.76	-33.67	-25	-8.67	Vertical
380.2	-49.93	1.71	15.44	-36.20	-25	-11.20	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-60.34	5.23	35.82	-29.75	-25	-4.75	Horizontal
5070.0	-59.08	5.23	35.82	-28.49	-25	-3.49	Vertical
7605.1	-59.04	5.67	36.85	-27.86	-25	-2.86	Vertical
7605.1	-59.33	5.67	36.85	-28.15	-25	-3.15	Horizontal
199.2	-44.72	1.79	16.84	-29.66	-25	-4.66	Vertical
346.8	-43.71	1.71	17.64	-27.77	-25	-2.77	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-59.61	5.24	35.83	-29.02	-25	-4.02	Horizontal
5120.0	-59.53	5.24	35.83	-28.94	-25	-3.94	Vertical
7680.8	-59.15	5.70	36.88	-27.97	-25	-2.97	Vertical
7680.8	-60.06	5.70	36.88	-28.88	-25	-3.88	Horizontal
193.4	-44.22	1.79	16.84	-29.16	-25	-4.16	Vertical
350.1	-44.23	1.71	17.64	-28.30	-25	-3.30	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 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
1413.3	-48.74	2.61	27.28	-24.07	-13	-11.07	Horizontal
1413.3	-44.19	2.61	27.28	-19.52	-13	-6.52	Vertical
2120.1	-49.33	2.87	27.59	-24.61	-13	-11.61	Vertical
2120.1	-48.11	2.87	27.59	-23.39	-13	-10.39	Horizontal
210.1	-33.39	1.71	16.15	-18.96	-13	-5.96	Vertical
421.0	-43.54	1.41	17.32	-27.63	-13	-14.63	Horizontal
Test Results For Mid Channel 710MHz							
1420.2	-43.88	2.62	27.30	-19.20	-13	-6.20	Horizontal
1420.2	-46.52	2.62	27.30	-21.84	-13	-8.84	Vertical
2130.8	-41.95	2.87	27.62	-17.20	-13	-4.20	Vertical
2130.8	-48.57	2.87	27.62	-23.82	-13	-10.82	Horizontal
201.2	-36.16	1.42	15.25	-22.34	-13	-9.34	Vertical
321.1	-39.22	1.36	17.19	-23.38	-13	-10.38	Horizontal
Test Results for High Channel 713.5MHz							
1427.5	-49.59	2.66	27.28	-24.97	-13	-11.97	Horizontal
1427.5	-43.42	2.66	27.28	-18.80	-13	-5.80	Vertical
2141.0	-43.44	2.88	27.60	-18.72	-13	-5.72	Vertical
2141.0	-49.72	2.88	27.60	-25.00	-13	-12.00	Horizontal
176.4	-39.76	1.32	17.29	-23.79	-13	-10.79	Vertical
446.1	-37.26	1.72	16.89	-22.09	-13	-9.09	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
1418.9	-47.36	2.62	27.30	-22.68	-13	-9.68	Horizontal
1418.9	-50.98	2.62	27.30	-26.30	-13	-13.30	Vertical
2127.8	-47.28	2.87	27.62	-22.53	-13	-9.53	Vertical
2127.8	-47.58	2.87	27.62	-22.83	-13	-9.83	Horizontal
196.7	-33.24	1.35	16.91	-17.68	-13	-4.68	Vertical
269.9	-40.96	1.62	16.31	-26.27	-13	-13.27	Horizontal
Test Results for Mid Channel 710MHz							
1420.8	-43.33	2.62	27.30	-18.65	-13	-5.65	Horizontal
1420.8	-41.28	2.62	27.30	-16.60	-13	-3.60	Vertical
2130.2	-45.62	2.87	27.62	-20.87	-13	-7.87	Vertical
2130.2	-48.78	2.87	27.62	-24.03	-13	-11.03	Horizontal
202.4	-42.24	1.51	17.14	-26.61	-13	-13.61	Vertical
398.6	-38.15	1.77	16.88	-23.04	-13	-10.04	Horizontal
Test Results for High Channel 711MHz							
1422.5	-44.98	2.62	27.30	-20.30	-13	-7.30	Horizontal
1422.5	-51.46	2.62	27.30	-26.78	-13	-13.78	Vertical
2133.5	-42.53	2.87	27.62	-17.78	-13	-4.78	Vertical
2133.5	-42.23	2.87	27.62	-17.48	-13	-4.48	Horizontal
202.5	-36.09	1.78	15.95	-21.92	-13	-8.92	Vertical
412.0	-35.13	1.34	17.95	-18.53	-13	-5.53	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.

9.6 LTE BAND 41

LTE BAND 41 (5MHZ BANDWIDTH)

Test Results for Low Channel 2498.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5145.7	-59.08	5.23	35.81	-28.50	-25	-3.50	Horizontal
5145.7	-60.09	5.23	35.81	-29.51	-25	-4.51	Vertical
7717.8	-58.78	5.67	36.85	-27.60	-25	-2.60	Vertical
7717.8	-61.79	5.67	36.85	-30.61	-25	-5.61	Horizontal
435.6	-43.04	1.38	15.98	-28.44	-25	-3.44	Vertical
466.6	-42.10	1.62	15.66	-28.06	-25	-3.06	Horizontal
Test Results for Mid Channel 2593MHz							
5190.3	-62.79	5.23	35.82	-32.20	-25	-7.20	Horizontal
5190.3	-59.10	5.23	35.82	-28.51	-25	-3.51	Vertical
7785.4	-60.62	5.67	36.85	-29.44	-25	-4.44	Vertical
7785.4	-61.50	5.67	36.85	-30.32	-25	-5.32	Horizontal
510.9	-45.81	1.62	16.17	-31.26	-25	-6.26	Vertical
563.5	-43.45	1.74	17.63	-27.56	-25	-2.56	Horizontal
Test Results for High Channel 2687.5MHz							
5235.6	-58.41	5.24	35.83	-27.82	-25	-2.82	Horizontal
5235.6	-59.65	5.24	35.83	-29.06	-25	-4.06	Vertical
7853.1	-60.99	5.68	36.87	-29.80	-25	-4.80	Vertical
7853.1	-59.66	5.68	36.87	-28.47	-25	-3.47	Horizontal
197.6	-42.12	1.55	15.84	-27.83	-25	-2.83	Vertical
354.0	-45.49	1.51	17.06	-29.94	-25	-4.94	Horizontal

LTE BAND 41 (20MHZ BANDWIDTH)

Test Results for Low Channel 2506MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5160.9	-60.53	5.23	35.82	-29.94	-25	-4.94	Horizontal
5160.9	-59.24	5.23	35.82	-28.65	-25	-3.65	Vertical
7740.2	-61.14	5.67	36.86	-29.95	-25	-4.95	Vertical
7740.2	-60.40	5.67	36.86	-29.21	-25	-4.21	Horizontal
129.6	-42.81	1.43	15.51	-28.73	-25	-3.73	Vertical
345.0	-44.19	1.40	16.97	-28.62	-25	-3.62	Horizontal
Test Results for Mid Channel 2593MHz							
5190.8	-60.05	5.23	35.82	-29.46	-25	-4.46	Horizontal
5190.8	-58.65	5.23	35.82	-28.06	-25	-3.06	Vertical
7785.5	-59.02	5.67	36.85	-27.84	-25	-2.84	Vertical
7785.5	-58.93	5.67	36.85	-27.75	-25	-2.75	Horizontal
101.7	-47.80	1.77	16.72	-32.85	-25	-7.85	Vertical
263.8	-47.36	1.31	16.99	-31.68	-25	-6.68	Horizontal
Test Results for High Channel 2680MHz							
5220.8	-62.41	5.24	35.83	-31.82	-25	-6.82	Horizontal
5220.8	-61.09	5.24	35.83	-30.50	-25	-5.50	Vertical
7830.7	-59.38	5.70	36.88	-28.20	-25	-3.20	Vertical
7830.7	-60.51	5.70	36.88	-29.33	-25	-4.33	Horizontal
350.4	-45.54	1.70	15.73	-31.51	-25	-6.51	Vertical
110.9	-43.59	1.75	17.33	-28.01	-25	-3.01	Horizontal

Note: Spurious Emission Level = Spectrum Analyzer Read Value + Cable Loss+ Antenna Factor + 11.74
 . Margin = Spurious Emission Level - Limit
 . Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.

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 3.23V, Normal, DC 3.8V and High voltage, DC 4.37V.

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 2/4/5/7/17/41

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]
3.23	1880	7.7	0.004084	2.5
3.8	1880	7.7	0.004099	2.5
4.37	1880	11.0	0.005854	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	15.1	0.008013	2.5
Extreme (50C)	1880	3.1	0.001652	2.5
Extreme (40C)	1880	15.4	0.008180	2.5
Extreme (30C)	1880	10.9	0.005790	2.5
Extreme (10C)	1880	11.1	0.005910	2.5
Extreme (0C)	1880	7.9	0.004188	2.5
Extreme (-10C)	1880	3.9	0.002096	2.5
Extreme (-20C)	1880	8.4	0.004464	2.5
Extreme (-30C)	1880	11.0	0.005854	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]
3.23	1880	15.5	0.008251	2.5
3.8	1880	12.6	0.006721	2.5
4.37	1880	4.8	0.002534	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	8.1	0.004300	2.5
Extreme (50C)	1880	10.6	0.005614	2.5
Extreme (40C)	1880	14.6	0.007748	2.5
Extreme (30C)	1880	7.7	0.004083	2.5
Extreme (10C)	1880	15.2	0.008081	2.5
Extreme (0C)	1880	4.2	0.002221	2.5
Extreme (-10C)	1880	5.7	0.003019	2.5
Extreme (-20C)	1880	15.5	0.008259	2.5
Extreme (-30C)	1880	9.0	0.004768	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]
3.23	1732.5	14.7	0.008486	2.5
3.8	1732.5	9.4	0.005419	2.5
4.37	1732.5	9.3	0.005379	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	14.0	0.008064	2.5
Extreme (50C)	1732.5	3.5	0.002025	2.5
Extreme (40C)	1732.5	8.1	0.004648	2.5
Extreme (30C)	1732.5	13.2	0.007631	2.5
Extreme (10C)	1732.5	8.0	0.004612	2.5
Extreme (0C)	1732.5	6.6	0.003818	2.5
Extreme (-10C)	1732.5	11.9	0.006892	2.5
Extreme (-20C)	1732.5	13.1	0.007537	2.5
Extreme (-30C)	1732.5	14.7	0.008508	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]
3.23	1732.5	11.4	0.006572	2.5
3.8	1732.5	7.0	0.004012	2.5
4.37	1732.5	12.9	0.007458	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	5.8	0.003325	2.5
Extreme (50C)	1732.5	7.4	0.004276	2.5
Extreme (40C)	1732.5	7.2	0.004132	2.5
Extreme (30C)	1732.5	15.1	0.008708	2.5
Extreme (10C)	1732.5	8.5	0.004931	2.5
Extreme (0C)	1732.5	4.7	0.002711	2.5
Extreme (-10C)	1732.5	8.5	0.004885	2.5
Extreme (-20C)	1732.5	10.6	0.006106	2.5
Extreme (-30C)	1732.5	7.9	0.004545	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]
3.23	836.5	3.1	0.003670	2.5
3.8	836.5	12.7	0.015176	2.5
4.37	836.5	15.2	0.018115	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	3.6	0.004356	2.5
Extreme (50C)	836.5	5.3	0.006300	2.5
Extreme (40C)	836.5	5.8	0.006928	2.5
Extreme (30C)	836.5	11.0	0.013136	2.5
Extreme (10C)	836.5	14.6	0.017487	2.5
Extreme (0C)	836.5	13.1	0.015686	2.5
Extreme (-10C)	836.5	11.7	0.013969	2.5
Extreme (-20C)	836.5	3.2	0.003795	2.5
Extreme (-30C)	836.5	14.5	0.017319	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]
3.23	836.5	10.7	0.012786	2.5
3.8	836.5	3.0	0.003634	2.5
4.37	836.5	14.5	0.017336	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	8.0	0.009586	2.5
Extreme (50C)	836.5	11.4	0.013590	2.5
Extreme (40C)	836.5	13.8	0.016440	2.5
Extreme (30C)	836.5	3.1	0.003740	2.5
Extreme (10C)	836.5	5.9	0.007070	2.5
Extreme (0C)	836.5	8.8	0.010470	2.5
Extreme (-10C)	836.5	6.7	0.007975	2.5
Extreme (-20C)	836.5	14.5	0.017362	2.5
Extreme (-30C)	836.5	8.0	0.009562	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]
3.23	2535	15.1	0.005943	2.5
3.8	2535	3.3	0.001315	2.5
4.37	2535	9.4	0.003695	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	12.7	0.005014	2.5
Extreme (50C)	2535	5.4	0.002120	2.5
Extreme (40C)	2535	9.4	0.003694	2.5
Extreme (30C)	2535	15.5	0.006118	2.5
Extreme (10C)	2535	5.2	0.002035	2.5
Extreme (0C)	2535	10.9	0.004283	2.5
Extreme (-10C)	2535	6.8	0.002698	2.5
Extreme (-20C)	2535	3.6	0.001407	2.5
Extreme (-30C)	2535	7.7	0.003056	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]
3.23	2535	5.9	0.002313	2.5
3.8	2535	7.2	0.002834	2.5
4.37	2535	8.4	0.003317	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	14.2	0.005595	2.5
Extreme (50C)	2535	4.8	0.001897	2.5
Extreme (40C)	2535	13.9	0.005474	2.5
Extreme (30C)	2535	8.9	0.003511	2.5
Extreme (10C)	2535	11.3	0.004465	2.5
Extreme (0C)	2535	5.8	0.002277	2.5
Extreme (-10C)	2535	11.3	0.004477	2.5
Extreme (-20C)	2535	10.9	0.004286	2.5
Extreme (-30C)	2535	7.5	0.002972	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]
3.23	710	12.1	0.017027	2.5
3.8	710	7.7	0.010872	2.5
4.37	710	7.1	0.010043	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710	9.5	0.013450	2.5
Extreme (50C)	710	12.8	0.018042	2.5
Extreme (40C)	710	5.4	0.007536	2.5
Extreme (30C)	710	14.3	0.020174	2.5
Extreme (10C)	710	9.6	0.013478	2.5
Extreme (0C)	710	11.4	0.016082	2.5
Extreme (-10C)	710	13.3	0.018770	2.5
Extreme (-20C)	710	3.3	0.004681	2.5
Extreme (-30C)	710	8.1	0.011459	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]
3.23	710	4.7	0.006594	2.5
3.8	710	8.3	0.011650	2.5
4.37	710	13.2	0.018531	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710	15.4	0.021732	2.5
Extreme (50C)	710	14.2	0.020053	2.5
Extreme (40C)	710	12.9	0.018168	2.5
Extreme (30C)	710	8.3	0.011625	2.5
Extreme (10C)	710	6.5	0.009121	2.5
Extreme (0C)	710	3.7	0.005151	2.5
Extreme (-10C)	710	8.1	0.011452	2.5
Extreme (-20C)	710	3.3	0.004655	2.5
Extreme (-30C)	710	9.9	0.013978	2.5

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

10.6 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]
3.23	2593	15.8	0.006087	2.5
3.8	2593	13.5	0.005191	2.5
4.37	2593	15.0	0.005793	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	12.4	0.004787	2.5
Extreme (50C)	2593	11.5	0.004416	2.5
Extreme (40C)	2593	10.4	0.003999	2.5
Extreme (30C)	2593	12.7	0.004883	2.5
Extreme (10C)	2593	8.7	0.003338	2.5
Extreme (0C)	2593	9.8	0.003782	2.5
Extreme (-10C)	2593	14.4	0.005538	2.5
Extreme (-20C)	2593	4.1	0.001579	2.5
Extreme (-30C)	2593	13.0	0.005021	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]
3.23	2593	5.8	0.002222	2.5
3.8	2593	9.1	0.003501	2.5
4.37	2593	10.4	0.004000	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	6.9	0.002650	2.5
Extreme (50C)	2593	8.9	0.003424	2.5
Extreme (40C)	2593	5.4	0.002097	2.5
Extreme (30C)	2593	5.4	0.002097	2.5
Extreme (10C)	2593	5.9	0.002262	2.5
Extreme (0C)	2593	6.5	0.002522	2.5
Extreme (-10C)	2593	4.3	0.001660	2.5
Extreme (-20C)	2593	10.3	0.003989	2.5
Extreme (-30C)	2593	9.7	0.003740	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.

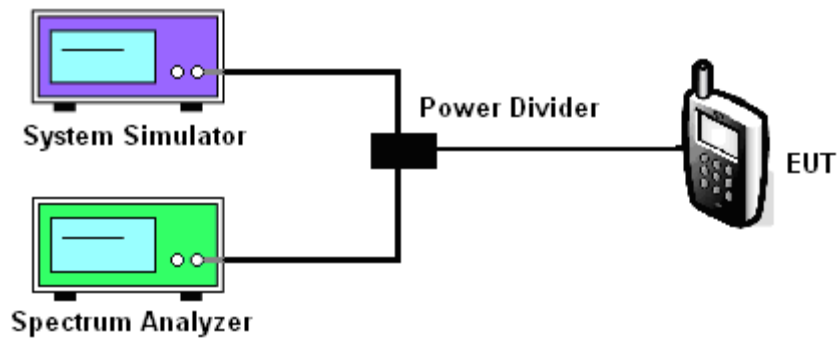
11.2 Measuring Instruments

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 2/4/5/7/17/41

Test data reference attachment.

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