

FCC CFR47 PART 22H, 24E, 27 CERTIFICATION TEST REPORT FCC ID:2BMG5-MR4G-USA

Product: Muse Radio 4G USA

Trade Mark: N/A

Model Number: MR4G-USA

Family Model: N/A

Report No.: S24111905302002

Prepared for

ROS&CO

61 boulevard de Brandebourg, 94200 Ivry-sur-Seine France

Prepared by

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TEST RESULT CERTIFICATION

Applicant's name..... : ROS&CO
Address : 61 boulevard de Brandebourg, 94200 Ivry-sur-Seine France
Manufacturer's Name..... : ROS&CO
Address : 61 boulevard de Brandebourg, 94200 Ivry-sur-Seine France
Product name : Muse Radio 4G USA
Model and/or type reference : MR4G-USA
Family Model: N/A
Test sample number : S241119053001
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. 26, 2025 ~ May. 23, 2025

Date of Issue May. 23, 2025

Test Result **Pass**

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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
6. BANDEDGE AND EMISSION MASK.....	14
7. OUT OF BAND EMISSIONS	15
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 38	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 38	44
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 38	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.....	61

1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	Muse Radio 4G USA
Trade Mark	N/A
Model Name	MR4G-USA
Family Model	N/A
Model Difference	N/A
FCC ID:	2BMG5-MR4G-USA
Frequency Bands:	U.S. Bands: ☒ LTE FDD Band 2, 4, 5, 7 LTE TDD Band 38, 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 TDD Band 38 Uplink& Downlink: 2570MHz-2620MHz LTE TDD Band 41 Uplink& Downlink: 2496MHz-2690MHz
Type of Modulation:	QPSK/16QAM
Antenna:	FPC Antenna
Antenna gain:	LTE B2:4.77dBi; B4:2.65dBi; B5:2.03dBi; B7:1.54dBi; B38:1.28dBi; B41:1.54dBi
Power Supply:	DC 3.7V from battery or DC 5V from Type-C port
Battery	DC 3.7V, 4000mAh, 14.8Wh
Adapter:	N/A
Extreme Vol. Limits:	DC 3.15V to DC 4.26V (Nominal DC 3.7V) (Note 1)
HW Version	N/A
SW Version	N/A
** Note1: The High Voltage 4.26V and Low Voltage 3.15V 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: 2BMG5-MR4G-USA** 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 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, Band 4, Band 5, Band 7, Band 38, Band 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

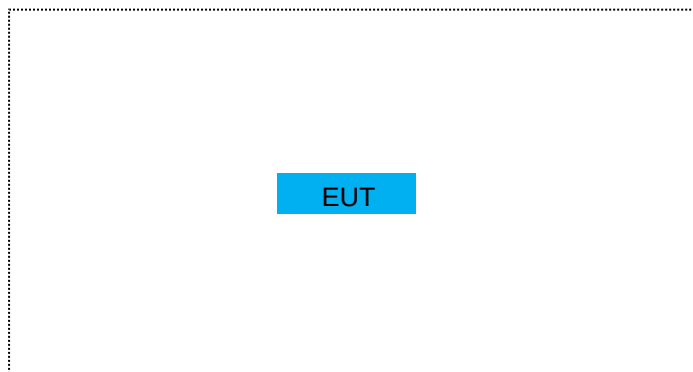
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Muse Radio 4G USA	MR4G-USA	FCC ID: 2BMG5-MR4G-USA	EUT

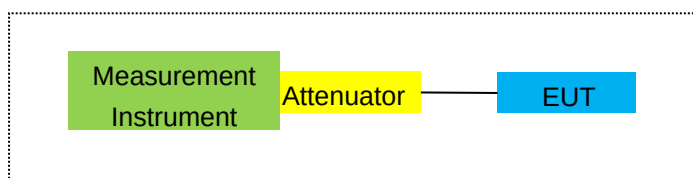
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

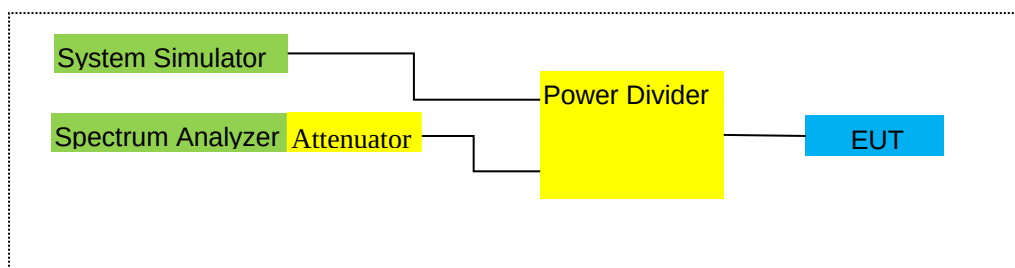
For Radiated Test Cases



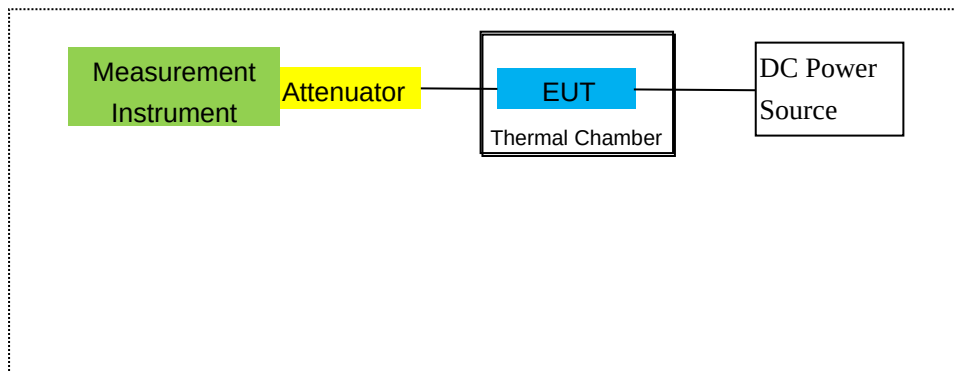
For Conducted Output Power



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	ESPI7	101318	2025.04.17	2026.04.16	1 year
3	Bilog Antenna	ETS	3142E	00214344	2024.06.01	2027.05.30	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2024.04.26	2027.04.25	3 year
5	Horn Antenna	EM	EM-AH-10180	2011071402	2024.05.12	2027.05.11	3 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2024.05.12	2027.05.11	3 year
7	Amplifier	EM	EM-30180	060538	2025.04.17	2026.04.16	1 year
8	Loop Antenna	ARA	PLA-1030/B	1029	2025.04.17	2026.04.16	1 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	2022.06.17	2025.06.16	3 year
12	Test Cable	N/A	R-02	N/A	2022.06.17	2025.06.16	3 year
13	Test Cable	N/A	R-03	N/A	2022.06.17	2025.06.16	3 year
14	Test Receiver	R&S	ESCI	101160	2024.04.26 2025.04.17	2025.04.25 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	6200264417	2025.04.17	2026.04.16	1 year
18	Passive Voltage Probe	R&S	ESH2-Z3	100196	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	Attenuator	MCE	24-10-34	BN9258	2025.04.17	2026.04.16	1 year
23	Spectrum Analyzer	agilent	e4440a	us44300399	2025.04.17	2026.04.16	1 year
24	test receiver	R&S	ESCI	a0304218	2025.04.17	2026.04.16	1 year
25	Communication Tester	R&S	CMU200	A0304247	2025.04.17	2026.04.16	1 year

26	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2025.04.17	2026.04.16	1 year
27	DC Power Source	N/A	PS-6005D	20170402923	2023.05.06	2026.05.05	3 year
28	MXG Vector Signal Generator	Agilent	N5182A	MY47070317	2025.04.17	2026.04.16	1 year
29	Communication Tester	R&S	CMW500	148500	2024.05.30	2026.05.29	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	MWRTest	MTS 8200	2.0	RF Conducted Test
2	Farad	EZ-EMC_RE	AIT-03A	RadiatedTest
3	raditeq	RadiMation	2023.1.3	RadiatedTest
4	Farad	EZ-EMC_CE	AIT-03A	AC Conducted Test

4. OUTPUT POWER

4.1 OUTPUT POWER MEASUREMENT

LTE Measurement Procedure:

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

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

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

Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
64 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

LTE Band 2, 4, 5, 7, 38, 41

RESULTS

PASS

Test data reference attachment.

6. BANDEDGE AND EMISSION MASK

RULE PART(S)

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

FCC: §2.1046, §22.913, §24.232

LIMITS

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

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

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

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

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

Per 27.53(m) for operations in the BRS/EBS bands, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth.

TEST PROCEDURE

The transmitter output was connected to a 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 display line

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

MODES TESTED

LTE Band 2, 4, 5, 7, 38, 41

RESULTS

Test data reference attachment.

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

7. OUT OF BAND EMISSIONS

RULE PART(S)

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

LIMITS

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

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

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

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

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

Per 27.53(m) for operations in the BRS/EBS bands, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth.

TEST PROCEDURE

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

For each out of band emissions measurement:

Set display line

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

MODES TESTED

LTE Band 2, 4, 5, 7, 38, 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.

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

8. RADIATED MEASUREMENT

8.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913(a)(2), §24.232(c) and §27.50 (h)(2), (b)(10), (c)(10), (d)(4)

LIMITS:

22.913(a) (2)- The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232 (c) Mobile and portable stations are limited to 2 watts EIRP.

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

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

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

27.50 (h)(2) Mobile and other user stations in the 2500–2570 MHz and 2620–2690 MHz bands. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

TEST PROCEDURE

ANSI/TIA-603-E Clause 2.2.17

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

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

MODES TESTED

LTE Band 2, 4, 5, 7, 38, 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 Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	6/0	1850.7	15.95	3.76	8.90	21.09	128.478	Horizontal	Pass
		1880	15.34	3.91	8.90	20.33	107.884	Horizontal	Pass
		1909.3	16.43	3.93	8.90	21.40	138.011	Horizontal	Pass
3.0MHz Band QPSK	15/0	1851.5	15.50	3.77	8.90	20.63	115.516	Horizontal	Pass
		1880	15.57	3.91	8.90	20.56	113.809	Horizontal	Pass
		1908.5	15.88	3.94	8.90	20.84	121.250	Horizontal	Pass
5.0MHz Band QPSK	25/0	1852.5	14.67	3.77	8.90	19.80	95.581	Horizontal	Pass
		1880	14.77	3.91	8.90	19.76	94.719	Horizontal	Pass
		1907.5	14.67	3.94	8.90	19.63	91.931	Horizontal	Pass
10.0MHz Band QPSK	50/0	1855	15.16	3.79	8.90	20.27	106.425	Horizontal	Pass
		1880	14.59	3.95	8.90	19.54	90.022	Horizontal	Pass
		1905	14.50	3.97	8.90	19.43	87.796	Horizontal	Pass
15.0MHz Band QPSK	75/0	1857.5	14.61	3.79	8.90	19.72	93.726	Horizontal	Pass
		1880	13.42	3.95	8.90	18.37	68.688	Horizontal	Pass
		1902.5	16.90	3.97	8.90	21.83	152.462	Horizontal	Pass
20.0MHz Band QPSK	100/0	1860	16.86	3.81	8.90	21.95	156.770	Horizontal	Pass
		1880	16.93	3.96	8.90	21.87	153.717	Horizontal	Pass
		1900	16.51	4.00	8.90	21.41	138.258	Horizontal	Pass
1.4MHz Band QPSK	6/0	1850.7	16.34	3.76	8.90	21.48	140.763	Vertical	Pass
		1880	16.15	3.91	8.90	21.14	130.053	Vertical	Pass
		1909.3	15.25	3.93	8.90	20.22	105.121	Vertical	Pass
3.0MHz Band QPSK	15/0	1851.5	16.12	3.77	8.90	21.25	133.504	Vertical	Pass
		1880	15.87	3.91	8.90	20.86	121.792	Vertical	Pass
		1908.5	15.43	3.94	8.90	20.39	109.331	Vertical	Pass
5.0MHz Band QPSK	25/0	1852.5	15.54	3.77	8.90	20.67	116.728	Vertical	Pass
		1880	15.85	3.91	8.90	20.84	121.418	Vertical	Pass
		1907.5	16.05	3.94	8.90	21.01	126.068	Vertical	Pass
10.0MHz Band QPSK	50/0	1855	14.88	3.79	8.90	19.99	99.767	Vertical	Pass
		1880	16.71	3.95	8.90	21.66	146.485	Vertical	Pass
		1905	16.78	3.97	8.90	21.71	148.140	Vertical	Pass

15.0MHz	75/0	1857.5	16.53	3.79	8.90	21.64	145.907	Vertical	Pass
Band		1880	16.79	3.95	8.90	21.74	149.443	Vertical	Pass
QPSK		1902.5	16.43	3.97	8.90	21.36	136.757	Vertical	Pass
20.0MHz	100/0	1860	15.96	3.81	8.90	21.05	127.372	Vertical	Pass
Band		1880	14.92	3.96	8.90	19.86	96.863	Vertical	Pass
QPSK		1900	15.76	4.00	8.90	20.66	116.318	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP	Polarization Of Max. ERP	
							Average (mW)		
1.4MHz Band 16 QAM	6/0	1850.7	14.60	3.76	8.90	20.72	118.165	Horizontal	Pass
		1880	15.75	3.91	8.90	20.31	107.428	Horizontal	Pass
		1909.3	15.45	3.93	8.90	20.39	109.465	Horizontal	Pass
3.0MHz Band 16 QAM	15/0	1851.5	15.29	3.77	8.90	20.63	115.507	Horizontal	Pass
		1880	14.95	3.91	8.90	20.53	113.072	Horizontal	Pass
		1908.5	14.55	3.94	8.90	19.79	95.196	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	1852.5	15.14	3.77	8.90	20.42	110.057	Horizontal	Pass
		1880	15.50	3.91	8.90	20.68	116.992	Horizontal	Pass
		1907.5	14.00	3.94	8.90	21.26	133.765	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	1855	15.35	3.79	8.90	19.38	86.706	Horizontal	Pass
		1880	14.05	3.95	8.90	19.78	95.018	Horizontal	Pass
		1905	15.36	3.97	8.90	20.29	106.950	Horizontal	Pass
15.0MHz Band 16 QAM	75/0	1857.5	13.68	3.79	8.90	19.89	97.593	Horizontal	Pass
		1880	15.77	3.95	8.90	19.29	84.986	Horizontal	Pass
		1902.5	15.65	3.97	8.90	18.50	70.860	Horizontal	Pass
20.0MHz Band 16 QAM	100/0	1860	13.84	3.81	8.90	18.57	72.011	Horizontal	Pass
		1880	16.17	3.96	8.90	18.35	68.322	Horizontal	Pass
		1900	14.55	4.00	8.90	19.03	80.016	Horizontal	Pass
1.4MHz Band 16 QAM	6/0	1850.7	14.61	3.76	8.90	19.33	85.733	Vertical	Pass
		1880	15.84	3.91	8.90	18.62	72.834	Vertical	Pass
		1909.3	15.13	3.93	8.90	21.16	130.547	Vertical	Pass
3.0MHz Band 16 QAM	15/0	1851.5	13.77	3.77	8.90	21.33	135.863	Vertical	Pass
		1880	14.83	3.91	8.90	21.24	132.920	Vertical	Pass
		1908.5	14.56	3.94	8.90	20.13	103.005	Vertical	Pass
5.0MHz Band 16 QAM	25/0	1852.5	13.76	3.77	8.90	19.99	99.711	Vertical	Pass
		1880	15.05	3.91	8.90	20.70	117.589	Vertical	Pass
		1907.5	15.69	3.94	8.90	19.96	99.032	Vertical	Pass
10.0MHz Band 16 QAM	50/0	1855	13.98	3.79	8.90	21.04	127.031	Vertical	Pass
		1880	15.57	3.95	8.90	21.26	133.771	Vertical	Pass
		1905	15.12	3.97	8.90	20.74	118.663	Vertical	Pass
15.0MHz Band 16 QAM	75/0	1857.5	13.85	3.79	8.90	19.89	97.404	Vertical	Pass
		1880	14.87	3.95	8.90	19.52	89.512	Vertical	Pass
		1902.5	13.66	3.97	8.90	19.79	95.374	Vertical	Pass

20.0MHz	100/0	1860	14.29	3.81	8.90	19.67	92.745	Vertical	Pass
Band 16		1880	14.90	3.96	8.90	21.76	149.930	Vertical	Pass
QAM		1900	13.78	4.00	8.90	22.03	159.679	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.3 LTE BAND 4

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	6/0	1710.7	15.36	3.12	8.90	21.14	130.056	Horizontal	Pass
		1732.5	15.39	3.27	8.90	21.02	126.576	Horizontal	Pass
		1754.3	15.55	3.29	8.90	21.16	130.557	Horizontal	Pass
3.0MHz Band QPSK	15/0	1711.5	14.96	3.13	8.90	20.73	118.306	Horizontal	Pass
		1732.5	15.47	3.27	8.90	21.10	128.694	Horizontal	Pass
		1753.5	15.23	3.30	8.90	20.83	120.991	Horizontal	Pass
5.0MHz Band QPSK	25/0	1712.5	14.73	3.13	8.90	20.50	112.325	Horizontal	Pass
		1732.5	14.84	3.27	8.90	20.47	111.471	Horizontal	Pass
		1752.5	14.90	3.30	8.90	20.50	112.226	Horizontal	Pass
10.0MHz Band QPSK	50/0	1715	14.49	3.15	8.90	20.24	105.631	Horizontal	Pass
		1732.5	14.77	3.31	8.90	20.36	108.714	Horizontal	Pass
		1750	14.41	3.33	8.90	19.98	99.628	Horizontal	Pass
15.0MHz Band QPSK	75/0	1717.5	14.40	3.15	8.90	20.15	103.568	Horizontal	Pass
		1732.5	13.41	3.31	8.90	19.00	79.459	Horizontal	Pass
		1747.5	16.89	3.33	8.90	22.46	176.287	Horizontal	Pass
20.0MHz Band QPSK	100/0	1720	16.52	3.17	8.90	22.25	168.027	Horizontal	Pass
		1732.5	16.22	3.32	8.90	21.80	151.374	Horizontal	Pass
		1745	16.11	3.36	8.90	21.65	146.386	Horizontal	Pass
1.4MHz Band QPSK	6/0	1710.7	16.32	3.12	8.90	22.10	162.070	Vertical	Pass
		1732.5	16.32	3.27	8.90	21.95	156.573	Vertical	Pass
		1754.3	15.43	3.29	8.90	21.04	127.181	Vertical	Pass
3.0MHz Band QPSK	15/0	1711.5	16.12	3.13	8.90	21.89	154.524	Vertical	Pass
		1732.5	15.46	3.27	8.90	21.09	128.481	Vertical	Pass
		1753.5	16.14	3.30	8.90	21.74	149.306	Vertical	Pass
5.0MHz Band QPSK	25/0	1712.5	15.07	3.13	8.90	20.84	121.423	Vertical	Pass
		1732.5	15.52	3.27	8.90	21.15	130.412	Vertical	Pass
		1752.5	15.32	3.30	8.90	20.92	123.556	Vertical	Pass
10.0MHz Band QPSK	50/0	1715	14.63	3.15	8.90	20.38	109.254	Vertical	Pass
		1732.5	17.14	3.31	8.90	22.73	187.499	Vertical	Pass
		1750	16.34	3.33	8.90	21.91	155.085	Vertical	Pass

15.0MHz	75/0	1717.5	16.65	3.15	8.90	22.40	173.960	Vertical	Pass
Band		1732.5	17.02	3.31	8.90	22.61	182.499	Vertical	Pass
QPSK		1747.5	16.98	3.33	8.90	22.55	179.757	Vertical	Pass
20.0MHz	100/0	1720	17.01	3.17	8.90	22.74	187.820	Vertical	Pass
Band		1732.5	15.55	3.32	8.90	21.13	129.649	Vertical	Pass
QPSK		1745	16.53	3.36	8.90	22.07	161.022	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	6/0	1710.7	15.81	3.12	8.90	21.59	144.289	Horizontal	Pass
		1732.5	16.47	3.27	8.90	22.10	162.275	Horizontal	Pass
		1754.3	15.59	3.29	8.90	21.20	131.745	Horizontal	Pass
3.0MHz Band 16 QAM	15/0	1711.5	15.44	3.13	8.90	21.21	132.101	Horizontal	Pass
		1732.5	16.09	3.27	8.90	21.72	148.712	Horizontal	Pass
		1753.5	14.61	3.30	8.90	20.21	104.933	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	1712.5	15.69	3.13	8.90	21.46	140.072	Horizontal	Pass
		1732.5	15.58	3.27	8.90	21.21	132.146	Horizontal	Pass
		1752.5	15.33	3.30	8.90	20.93	123.957	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	1715	14.08	3.15	8.90	19.83	96.142	Horizontal	Pass
		1732.5	14.92	3.31	8.90	20.51	112.543	Horizontal	Pass
		1750	14.43	3.33	8.90	20.00	99.935	Horizontal	Pass
15.0MHz Band 16 QAM	75/0	1717.5	14.56	3.15	8.90	20.31	107.503	Horizontal	Pass
		1732.5	14.37	3.31	8.90	19.96	99.027	Horizontal	Pass
		1747.5	14.53	3.33	8.90	20.10	102.387	Horizontal	Pass
20.0MHz Band 16 QAM	100/0	1720	15.08	3.17	8.90	20.81	120.541	Horizontal	Pass
		1732.5	13.62	3.32	8.90	19.20	83.083	Horizontal	Pass
		1745	13.54	3.36	8.90	19.08	80.882	Horizontal	Pass
1.4MHz Band 16 QAM	6/0	1710.7	13.43	3.12	8.90	19.21	83.461	Vertical	Pass
		1732.5	13.39	3.27	8.90	19.02	79.709	Vertical	Pass
		1754.3	16.84	3.29	8.90	22.45	175.986	Vertical	Pass
3.0MHz Band 16 QAM	15/0	1711.5	16.62	3.13	8.90	22.39	173.237	Vertical	Pass
		1732.5	15.92	3.27	8.90	21.55	143.019	Vertical	Pass
		1753.5	15.22	3.30	8.90	20.82	120.674	Vertical	Pass
5.0MHz Band 16 QAM	25/0	1712.5	15.66	3.13	8.90	21.43	139.138	Vertical	Pass
		1732.5	15.46	3.27	8.90	21.09	128.472	Vertical	Pass
		1752.5	15.38	3.30	8.90	20.98	125.376	Vertical	Pass
10.0MHz Band 16 QAM	50/0	1715	15.94	3.15	8.90	21.69	147.688	Vertical	Pass
		1732.5	16.03	3.31	8.90	21.62	145.163	Vertical	Pass
		1750	15.36	3.33	8.90	20.93	123.864	Vertical	Pass
15.0MHz Band 16 QAM	75/0	1717.5	14.52	3.15	8.90	20.27	106.358	Vertical	Pass
		1732.5	14.25	3.31	8.90	19.84	96.374	Vertical	Pass
		1747.5	14.28	3.33	8.90	19.85	96.553	Vertical	Pass

20.0MHz	100/0	1720	14.36	3.17	8.90	20.09	102.088	Vertical	Pass
Band 16		1732.5	16.92	3.32	8.90	22.50	177.699	Vertical	Pass
QAM		1745	16.43	3.36	8.90	21.97	157.367	Vertical	Pass

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Factor 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. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	6/0	824.7	20.50	2.01	5.30	2.15	21.64	145.955	Horizontal	Pass
		836.5	20.78	2.01	5.30	2.15	21.92	155.542	Horizontal	Pass
		848.3	19.90	2.02	5.70	2.15	21.43	138.901	Horizontal	Pass
3.0MHz Band QPSK	15/0	825.5	20.34	2.01	5.30	2.15	21.48	140.725	Horizontal	Pass
		836.5	20.25	2.01	5.30	2.15	21.39	137.565	Horizontal	Pass
		847.5	20.39	2.02	5.70	2.15	21.92	155.586	Horizontal	Pass
5.0MHz Band QPSK	25/0	826.5	20.36	2.01	5.30	2.15	21.50	141.264	Horizontal	Pass
		836.5	21.41	2.01	5.30	2.15	22.55	179.926	Horizontal	Pass
		846.5	20.13	2.02	5.70	2.15	21.66	146.607	Horizontal	Pass
10.0MHz Band QPSK	50/0	829	20.60	2.01	5.30	2.15	21.74	149.269	Horizontal	Pass
		836.5	20.83	2.01	5.30	2.15	21.97	157.254	Horizontal	Pass
		844	19.92	2.02	5.70	2.15	21.45	139.611	Horizontal	Pass
1.4MHz Band QPSK	6/0	824.7	20.33	2.01	5.30	2.15	21.47	140.198	Vertical	Pass
		836.5	19.51	2.01	5.30	2.15	20.65	116.135	Vertical	Pass
		848.3	20.43	2.02	5.70	2.15	21.96	157.213	Vertical	Pass
3.0MHz Band QPSK	15/0	825.5	21.11	2.01	5.30	2.15	22.25	167.779	Vertical	Pass
		836.5	21.27	2.01	5.30	2.15	22.41	173.998	Vertical	Pass
		847.5	20.99	2.02	5.70	2.15	22.52	178.574	Vertical	Pass
5.0MHz Band QPSK	25/0	826.5	20.47	2.01	5.30	2.15	21.61	144.906	Vertical	Pass
		836.5	20.79	2.01	5.30	2.15	21.93	156.075	Vertical	Pass
		846.5	20.23	2.02	5.70	2.15	21.76	150.066	Vertical	Pass
10.0MHz Band QPSK	50/0	829	21.64	2.01	5.30	2.15	22.78	189.703	Vertical	Pass
		836.5	21.50	2.01	5.30	2.15	22.64	183.677	Vertical	Pass
		844	20.88	2.02	5.70	2.15	22.41	174.343	Vertical	Pass

Radiated Power (ERP) for 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. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	6/0	824.7	20.90	2.01	5.30	2.15	22.04	159.973	Horizontal	Pass
		836.5	19.68	2.01	5.30	2.15	20.82	120.762	Horizontal	Pass
		848.3	20.74	2.02	5.70	2.15	22.27	168.639	Horizontal	Pass
3.0MHz Band 16 QAM	15/0	825.5	20.77	2.01	5.30	2.15	21.91	155.242	Horizontal	Pass
		836.5	20.70	2.01	5.30	2.15	21.84	152.747	Horizontal	Pass
		847.5	20.13	2.02	5.70	2.15	21.66	146.562	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	826.5	21.40	2.01	5.30	2.15	22.54	179.566	Horizontal	Pass
		836.5	21.26	2.01	5.30	2.15	22.40	173.672	Horizontal	Pass
		846.5	21.18	2.02	5.70	2.15	22.71	186.714	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	829	21.72	2.01	5.30	2.15	22.86	193.061	Horizontal	Pass
		836.5	21.22	2.01	5.30	2.15	22.36	172.107	Horizontal	Pass
		844	21.42	2.02	5.70	2.15	22.95	197.465	Horizontal	Pass
1.4MHz Band 16 QAM	6/0	824.7	21.17	2.01	5.30	2.15	22.31	170.173	Vertical	Pass
		836.5	21.14	2.01	5.30	2.15	22.28	168.950	Vertical	Pass
		848.3	20.24	2.02	5.70	2.15	21.77	150.327	Vertical	Pass
3.0MHz Band 16 QAM	15/0	825.5	20.56	2.01	5.30	2.15	21.70	147.787	Vertical	Pass
		836.5	20.26	2.01	5.30	2.15	21.40	138.122	Vertical	Pass
		847.5	20.59	2.02	5.70	2.15	22.12	162.785	Vertical	Pass
5.0MHz Band 16 QAM	25/0	826.5	20.73	2.01	5.30	2.15	21.87	153.877	Vertical	Pass
		836.5	20.20	2.01	5.30	2.15	21.34	136.301	Vertical	Pass
		846.5	19.84	2.02	5.70	2.15	21.37	137.127	Vertical	Pass
10.0MHz Band 16 QAM	50/0	829	20.74	2.01	5.30	2.15	21.88	154.226	Vertical	Pass
		836.5	20.80	2.01	5.30	2.15	21.94	156.324	Vertical	Pass
		844	19.81	2.02	5.70	2.15	21.34	136.038	Vertical	Pass

Note:

ERP=EIRP-2.15

SG Level= Signal generator output

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

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

8.5 LTE BAND 7

Radiated Power (EIRP) for Band 7									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	25/0	2502.5	17.70	4.54	9.00	22.16	164.314	Horizontal	Pass
		2535	17.50	4.69	9.00	21.81	151.875	Horizontal	Pass
		2567.5	18.27	4.71	9.00	22.56	180.277	Horizontal	Pass
10.0MHz Band QPSK	50/0	2505	17.50	4.55	9.00	21.95	156.797	Horizontal	Pass
		2535	17.50	4.69	9.00	21.81	151.633	Horizontal	Pass
		2565	17.88	4.72	9.00	22.16	164.472	Horizontal	Pass
15.0MHz Band QPSK	75/0	2507.5	17.45	4.55	9.00	21.90	154.839	Horizontal	Pass
		2535	17.07	4.69	9.00	21.38	137.376	Horizontal	Pass
		2562.5	18.03	4.72	9.00	22.31	170.120	Horizontal	Pass
20.0MHz Band QPSK	100/0	2510	18.18	4.57	9.00	22.61	182.422	Horizontal	Pass
		2535	16.76	4.73	9.00	21.03	126.644	Horizontal	Pass
		2560	16.22	4.75	9.00	20.47	111.384	Horizontal	Pass
5.0MHz Band QPSK	25/0	2502.5	16.14	4.54	9.00	20.60	114.943	Vertical	Pass
		2535	16.36	4.69	9.00	20.67	116.792	Vertical	Pass
		2567.5	17.70	4.71	9.00	21.99	158.083	Vertical	Pass
10.0MHz Band QPSK	50/0	2505	17.38	4.55	9.00	21.83	152.447	Vertical	Pass
		2535	17.75	4.69	9.00	22.06	160.602	Vertical	Pass
		2565	16.74	4.72	9.00	21.02	126.492	Vertical	Pass
15.0MHz Band QPSK	75/0	2507.5	16.96	4.55	9.00	21.41	138.401	Vertical	Pass
		2535	16.94	4.69	9.00	21.25	133.282	Vertical	Pass
		2562.5	17.23	4.72	9.00	21.51	141.424	Vertical	Pass
20.0MHz Band QPSK	100/0	2510	16.84	4.57	9.00	21.27	134.056	Vertical	Pass
		2535	17.48	4.73	9.00	21.75	149.655	Vertical	Pass
		2560	16.85	4.75	9.00	21.10	128.879	Vertical	Pass

Radiated Power (EIRP) for Band 7									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	25/0	2502.5	17.11	4.54	9.00	21.57	143.514	Horizontal	Pass
		2535	17.79	4.69	9.00	22.10	162.181	Horizontal	Pass
		2567.5	17.74	4.71	9.00	22.03	159.732	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	2505	16.95	4.55	9.00	21.40	138.060	Horizontal	Pass
		2535	16.71	4.69	9.00	21.02	126.447	Horizontal	Pass
		2565	16.72	4.72	9.00	21.00	125.776	Horizontal	Pass
15.0MHz Band 16 QAM	75/0	2507.5	15.98	4.55	9.00	20.43	110.305	Horizontal	Pass
		2535	16.32	4.69	9.00	20.63	115.700	Horizontal	Pass
		2562.5	18.62	4.72	9.00	22.90	194.972	Horizontal	Pass
20.0MHz Band 16 QAM	100/0	2510	19.23	4.57	9.00	23.66	232.272	Horizontal	Pass
		2535	18.56	4.73	9.00	22.83	192.028	Horizontal	Pass
		2560	17.55	4.75	9.00	21.80	151.186	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	2502.5	17.50	4.54	9.00	21.96	157.122	Vertical	Pass
		2535	17.18	4.69	9.00	21.49	140.902	Vertical	Pass
		2567.5	17.73	4.71	9.00	22.02	159.210	Vertical	Pass
10.0MHz Band 16 QAM	50/0	2505	17.10	4.55	9.00	21.55	142.791	Vertical	Pass
		2535	17.14	4.69	9.00	21.45	139.687	Vertical	Pass
		2565	18.38	4.72	9.00	22.66	184.439	Vertical	Pass
15.0MHz Band 16 QAM	75/0	2507.5	15.86	4.55	9.00	20.31	107.367	Vertical	Pass
		2535	16.46	4.69	9.00	20.77	119.507	Vertical	Pass
		2562.5	16.14	4.72	9.00	20.42	110.104	Vertical	Pass
20.0MHz Band 16 QAM	100/0	2510	15.94	4.57	9.00	20.37	108.830	Vertical	Pass
		2535	16.96	4.73	9.00	21.23	132.773	Vertical	Pass
		2560	18.07	4.75	9.00	22.32	170.412	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.6 LTE BAND 38

Radiated Power (EIRP) for Band 38									
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	
5.0MHz Band QPSK	25/0	2572.5	17.23	4.54	9.00	21.69	147.492	Horizontal	Pass
		2595	16.80	4.69	9.00	21.11	129.078	Horizontal	Pass
		2617.5	16.99	4.71	9.00	21.28	134.322	Horizontal	Pass
10.0MHz Band QPSK	50/0	2575	16.68	4.55	9.00	21.13	129.569	Horizontal	Pass
		2595	16.94	4.69	9.00	21.25	133.267	Horizontal	Pass
		2615	16.63	4.72	9.00	20.91	123.170	Horizontal	Pass
15.0MHz Band QPSK	75/0	2577.5	16.91	4.55	9.00	21.36	136.657	Horizontal	Pass
		2595	16.93	4.69	9.00	21.24	133.145	Horizontal	Pass
		2612.5	17.48	4.72	9.00	21.76	150.067	Horizontal	Pass
20.0MHz Band QPSK	100/0	2580	16.60	4.57	9.00	21.03	126.716	Horizontal	Pass
		2595	16.99	4.73	9.00	21.26	133.788	Horizontal	Pass
		2610	17.53	4.75	9.00	21.78	150.556	Horizontal	Pass
5.0MHz Band QPSK	25/0	2572.5	16.71	4.54	9.00	21.17	130.833	Vertical	Pass
		2595	17.08	4.69	9.00	21.39	137.586	Vertical	Pass
		2617.5	16.27	4.71	9.00	20.56	113.892	Vertical	Pass
10.0MHz Band QPSK	50/0	2575	17.08	4.55	9.00	21.53	142.353	Vertical	Pass
		2595	17.23	4.69	9.00	21.54	142.518	Vertical	Pass
		2615	17.16	4.72	9.00	21.44	139.203	Vertical	Pass
15.0MHz Band QPSK	75/0	2577.5	16.90	4.55	9.00	21.35	136.556	Vertical	Pass
		2595	16.80	4.69	9.00	21.11	129.103	Vertical	Pass
		2612.5	17.01	4.72	9.00	21.29	134.500	Vertical	Pass
20.0MHz Band QPSK	100/0	2580	16.86	4.57	9.00	21.29	134.598	Vertical	Pass
		2595	17.29	4.73	9.00	21.56	143.273	Vertical	Pass
		2610	17.21	4.75	9.00	21.46	139.818	Vertical	Pass

Radiated Power (EIRP) for Band 38									
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	
5.0MHz Band 16 QAM	25/0	2572.5	16.00	4.54	9.00	20.46	111.282	Horizontal	Pass
		2595	15.58	4.69	9.00	19.89	97.390	Horizontal	Pass
		2617.5	15.72	4.71	9.00	20.01	100.160	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	2575	15.22	4.55	9.00	19.67	92.623	Horizontal	Pass
		2595	15.10	4.69	9.00	19.41	87.256	Horizontal	Pass
		2615	15.29	4.72	9.00	19.57	90.511	Horizontal	Pass
15.0MHz Band 16 QAM	75/0	2577.5	15.44	4.55	9.00	19.89	97.410	Horizontal	Pass
		2595	16.36	4.69	9.00	20.67	116.622	Horizontal	Pass
		2612.5	16.32	4.72	9.00	20.60	114.825	Horizontal	Pass
20.0MHz Band 16 QAM	100/0	2580	16.08	4.57	9.00	20.51	112.451	Horizontal	Pass
		2595	16.40	4.73	9.00	20.67	116.773	Horizontal	Pass
		2610	15.61	4.75	9.00	19.86	96.762	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	2572.5	14.82	4.54	9.00	19.28	84.809	Vertical	Pass
		2595	15.79	4.69	9.00	20.10	102.388	Vertical	Pass
		2617.5	15.21	4.71	9.00	19.50	89.203	Vertical	Pass
10.0MHz Band 16 QAM	50/0	2575	14.73	4.55	9.00	19.18	82.827	Vertical	Pass
		2595	14.70	4.69	9.00	19.01	79.562	Vertical	Pass
		2615	14.83	4.72	9.00	19.11	81.471	Vertical	Pass
15.0MHz Band 16 QAM	75/0	2577.5	15.73	4.55	9.00	20.18	104.287	Vertical	Pass
		2595	15.37	4.69	9.00	19.68	92.828	Vertical	Pass
		2612.5	15.30	4.72	9.00	19.58	90.871	Vertical	Pass
20.0MHz Band 16 QAM	100/0	2580	15.98	4.57	9.00	20.41	109.962	Vertical	Pass
		2595	16.46	4.73	9.00	20.73	118.192	Vertical	Pass
		2610	15.79	4.75	9.00	20.04	100.906	Vertical	Pass

Note:

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	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP		
						(dBm)	Average			Average
							(dBm)			(mW)
5.0MHz Band QPSK	25/0	2498.5	16.21	4.54	9.00	20.67	116.574	Horizontal	Pass	
		2593	16.42	4.69	9.00	20.73	118.196	Horizontal	Pass	
		2687.5	14.82	4.71	9.00	19.11	81.380	Horizontal	Pass	
10.0MHz Band QPSK	50/0	2501	16.64	4.55	9.00	21.09	128.465	Horizontal	Pass	
		2593	16.64	4.69	9.00	20.95	124.377	Horizontal	Pass	
		2685	15.40	4.72	9.00	19.68	92.843	Horizontal	Pass	
15.0MHz Band QPSK	75/0	2503.5	13.93	4.55	9.00	18.38	68.834	Horizontal	Pass	
		2593	16.78	4.69	9.00	21.09	128.415	Horizontal	Pass	
		2682.5	15.80	4.72	9.00	20.08	101.935	Horizontal	Pass	
20.0MHz Band QPSK	100/0	2506	15.36	4.57	9.00	19.79	95.347	Horizontal	Pass	
		2593	15.64	4.73	9.00	19.91	97.904	Horizontal	Pass	
		2680	17.06	4.75	9.00	21.31	135.358	Horizontal	Pass	
5.0MHz Band QPSK	25/0	2498.5	16.16	4.54	9.00	20.62	115.401	Vertical	Pass	
		2593	15.37	4.69	9.00	19.68	92.911	Vertical	Pass	
		2687.5	14.98	4.71	9.00	19.27	84.579	Vertical	Pass	
10.0MHz Band QPSK	50/0	2501	14.99	4.55	9.00	19.44	87.948	Vertical	Pass	
		2593	15.43	4.69	9.00	19.74	94.208	Vertical	Pass	
		2685	16.27	4.72	9.00	20.55	113.609	Vertical	Pass	
15.0MHz Band QPSK	75/0	2503.5	14.40	4.55	9.00	18.85	76.737	Vertical	Pass	
		2593	16.63	4.69	9.00	20.94	124.060	Vertical	Pass	
		2682.5	14.94	4.72	9.00	19.22	83.603	Vertical	Pass	
20.0MHz Band QPSK	100/0	2506	17.88	4.57	9.00	22.31	170.079	Vertical	Pass	
		2593	15.59	4.73	9.00	19.86	96.801	Vertical	Pass	
		2680	16.68	4.75	9.00	20.93	123.762	Vertical	Pass	

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	
			(dBm)			Average (dBm)	Average (mW)	Of Max. ERP	
5.0MHz Band 16 QAM	25/0	2498.5	14.85	4.54	9.00	19.31	85.357	Horizontal	Pass
		2593	14.53	4.69	9.00	18.84	76.621	Horizontal	Pass
		2687.5	16.28	4.71	9.00	20.57	114.142	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	2501	15.93	4.55	9.00	20.38	109.178	Horizontal	Pass
		2593	16.94	4.69	9.00	21.25	133.405	Horizontal	Pass
		2685	16.82	4.72	9.00	21.10	128.940	Horizontal	Pass
15.0MHz Band 16 QAM	75/0	2503.5	16.76	4.55	9.00	21.21	132.019	Horizontal	Pass
		2593	16.26	4.69	9.00	20.57	113.908	Horizontal	Pass
		2682.5	17.01	4.72	9.00	21.29	134.612	Horizontal	Pass
20.0MHz Band 16 QAM	100/0	2506	15.66	4.57	9.00	20.09	102.015	Horizontal	Pass
		2593	15.85	4.73	9.00	20.12	102.717	Horizontal	Pass
		2680	17.28	4.75	9.00	21.53	142.210	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	2498.5	16.95	4.54	9.00	21.41	138.478	Vertical	Pass
		2593	16.13	4.69	9.00	20.44	110.690	Vertical	Pass
		2687.5	16.27	4.71	9.00	20.56	113.775	Vertical	Pass
10.0MHz Band 16 QAM	50/0	2501	16.76	4.55	9.00	21.21	132.080	Vertical	Pass
		2593	16.17	4.69	9.00	20.48	111.794	Vertical	Pass
		2685	15.01	4.72	9.00	19.29	84.952	Vertical	Pass
15.0MHz Band 16 QAM	75/0	2503.5	15.60	4.55	9.00	20.05	101.226	Vertical	Pass
		2593	15.10	4.69	9.00	19.41	87.388	Vertical	Pass
		2682.5	16.07	4.72	9.00	20.35	108.463	Vertical	Pass
20.0MHz Band 16 QAM	100/0	2506	15.99	4.57	9.00	20.42	110.033	Vertical	Pass
		2593	17.48	4.73	9.00	21.75	149.556	Vertical	Pass
		2680	16.73	4.75	9.00	20.98	125.448	Vertical	Pass

9. SPURIOUS RADIATION EMISSION

RULE PART(S)

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

LIMIT

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

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

TEST PROCEDURE

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

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

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

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

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

MODES TESTED

LTE Band 2, 4, 5, 7, 38, 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	-48.35	4.04	33.51	-18.88	-13	-5.88	Horizontal
3701.6	-51.33	4.04	33.51	-21.86	-13	-8.86	Vertical
5552.9	-46.09	5.24	35.84	-15.49	-13	-2.49	Vertical
5552.9	-48.52	5.24	35.84	-17.92	-13	-4.92	Horizontal
185.3	-39.28	1.43	16.02	-24.69	-13	-11.69	Vertical
453.8	-33.25	1.30	17.99	-16.56	-13	-3.56	Horizontal
Test Results for Mid Channel 1880MHz							
3760.1	-46.15	4.04	33.56	-16.63	-13	-3.63	Horizontal
3760.1	-50.91	4.04	33.56	-21.39	-13	-8.39	Vertical
5640.6	-48.68	5.24	35.91	-18.01	-13	-5.01	Vertical
5640.6	-50.19	5.24	35.91	-19.52	-13	-6.52	Horizontal
183.5	-34.62	1.62	16.97	-19.27	-13	-6.27	Vertical
289.9	-34.70	1.74	15.98	-20.46	-13	-7.46	Horizontal
Test Results for High Channel 1909.3MHz							
3819.4	-46.48	4.04	34.00	-16.52	-13	-3.52	Horizontal
3819.4	-45.87	4.04	34.00	-15.91	-13	-2.91	Vertical
5728.1	-50.46	5.24	36.04	-19.66	-13	-6.66	Vertical
5728.1	-47.21	5.24	36.04	-16.41	-13	-3.41	Horizontal
194.0	-40.35	1.42	17.29	-24.48	-13	-11.48	Vertical
343.3	-34.22	1.50	17.90	-17.81	-13	-4.81	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
3720.5	-45.04	4.07	33.54	-15.57	-13	-2.57	Horizontal
3720.5	-48.96	4.07	33.54	-19.49	-13	-6.49	Vertical
5580.6	-46.51	5.28	35.86	-15.93	-13	-2.93	Vertical
5580.6	-49.80	5.28	35.86	-19.22	-13	-6.22	Horizontal
208.8	-36.96	1.58	16.89	-21.65	-13	-8.65	Vertical
357.9	-41.46	1.76	17.26	-25.96	-13	-12.96	Horizontal
Test Results for Mid Channel 1880MHz							
3760.3	-46.23	4.04	33.56	-16.71	-13	-3.71	Horizontal
3760.3	-45.70	4.04	33.56	-16.18	-13	-3.18	Vertical
5640.5	-49.95	5.24	35.91	-19.28	-13	-6.28	Vertical
5640.5	-50.12	5.24	35.91	-19.45	-13	-6.45	Horizontal
200.7	-43.26	1.46	16.27	-28.45	-13	-15.45	Vertical
345.2	-38.40	1.59	15.15	-24.84	-13	-11.84	Horizontal
Test Results for High Channel 1900MHz							
3800.7	-48.90	4.04	34.00	-18.94	-13	-5.94	Horizontal
3800.7	-45.91	4.04	34.00	-15.95	-13	-2.95	Vertical
5700.6	-46.52	5.24	36.04	-15.72	-13	-2.72	Vertical
5700.6	-49.63	5.24	36.04	-18.83	-13	-5.83	Horizontal
212.7	-33.81	1.36	17.39	-17.77	-13	-4.77	Vertical
313.1	-40.16	1.66	15.39	-26.43	-13	-13.43	Horizontal

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
3422.0	-48.54	4.02	29.80	-22.76	-13	-9.76	Horizontal
3422.0	-46.55	4.02	29.80	-20.77	-13	-7.77	Vertical
5132.9	-50.13	5.24	35.84	-19.53	-13	-6.53	Vertical
5132.9	-49.99	5.24	35.84	-19.39	-13	-6.39	Horizontal
197.8	-40.09	1.68	16.04	-25.73	-13	-12.73	Vertical
454.4	-33.51	1.78	17.74	-17.55	-13	-4.55	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.2	-48.80	4.03	30.00	-22.83	-13	-9.83	Horizontal
3465.2	-42.22	4.03	30.00	-16.25	-13	-3.25	Vertical
5198.5	-46.70	5.25	35.86	-16.09	-13	-3.09	Vertical
5198.5	-47.44	5.25	35.86	-16.83	-13	-3.83	Horizontal
208.4	-40.85	1.72	17.69	-24.88	-13	-11.88	Vertical
346.2	-41.49	1.62	16.02	-27.08	-13	-14.08	Horizontal
Test Results for High Channel 1754.3MHz							
3508.7	-47.28	4.05	30.01	-21.32	-13	-8.32	Horizontal
3508.7	-45.93	4.05	30.01	-19.97	-13	-6.97	Vertical
5263.1	-48.11	5.26	35.86	-17.51	-13	-4.51	Vertical
5263.1	-48.13	5.26	35.86	-17.53	-13	-4.53	Horizontal
183.4	-31.49	1.80	16.69	-16.60	-13	-3.60	Vertical
332.6	-39.52	1.75	16.66	-24.62	-13	-11.62	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
3440.7	-48.31	4.02	29.80	-22.53	-13	-9.53	Horizontal
3440.7	-46.83	4.02	29.80	-21.05	-13	-8.05	Vertical
5160.3	-50.77	5.24	35.84	-20.17	-13	-7.17	Vertical
5160.3	-49.54	5.24	35.84	-18.94	-13	-5.94	Horizontal
183.2	-38.84	1.57	17.26	-23.15	-13	-10.15	Vertical
311.2	-34.33	1.78	16.35	-19.76	-13	-6.76	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.4	-48.37	4.03	30.00	-22.40	-13	-9.40	Horizontal
3465.4	-49.31	4.03	30.00	-23.34	-13	-10.34	Vertical
5197.8	-47.26	5.25	35.86	-16.65	-13	-3.65	Vertical
5197.8	-47.29	5.25	35.86	-16.68	-13	-3.68	Horizontal
209.1	-39.53	1.44	17.95	-23.03	-13	-10.03	Vertical
269.7	-31.05	1.65	16.09	-16.61	-13	-3.61	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-44.46	2.91	27.68	-19.69	-13	-6.69	Horizontal
3490.0	-44.19	2.91	27.68	-19.42	-13	-6.42	Vertical
5235.8	-47.21	5.26	35.86	-16.61	-13	-3.61	Vertical
5235.8	-51.25	5.26	35.86	-20.65	-13	-7.65	Horizontal
184.8	-39.90	1.61	16.85	-24.66	-13	-11.66	Vertical
290.9	-39.25	1.61	15.19	-25.67	-13	-12.67	Horizontal

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
1649.6	-45.96	2.78	27.50	-21.24	-13	-8.24	Horizontal
1649.6	-48.74	2.78	27.50	-24.02	-13	-11.02	Vertical
2475.0	-45.25	2.90	27.80	-20.35	-13	-7.35	Vertical
2475.0	-51.09	2.90	27.80	-26.19	-13	-13.19	Horizontal
179.9	-35.72	1.76	17.59	-19.89	-13	-6.89	Vertical
461.2	-39.25	1.63	15.87	-25.02	-13	-12.02	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.9	-46.13	2.80	27.48	-21.45	-13	-8.45	Horizontal
1673.9	-45.12	2.80	27.48	-20.44	-13	-7.44	Vertical
2509.6	-42.37	2.91	27.70	-17.58	-13	-4.58	Vertical
2509.6	-49.64	2.91	27.70	-24.85	-13	-11.85	Horizontal
213.4	-40.73	1.61	15.68	-26.66	-13	-13.66	Vertical
432.4	-35.53	1.59	17.52	-19.61	-13	-6.61	Horizontal
Test Results for High Channel 848.3MHz							
1697.4	-47.52	2.82	27.43	-22.91	-13	-9.91	Horizontal
1697.4	-49.82	2.82	27.43	-25.21	-13	-12.21	Vertical
2545.7	-42.34	2.92	27.74	-17.52	-13	-4.52	Vertical
2545.7	-50.72	2.92	27.74	-25.90	-13	-12.90	Horizontal
192.8	-33.97	1.69	16.67	-18.98	-13	-5.98	Vertical
367.5	-33.20	1.70	17.18	-17.72	-13	-4.72	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
1658.6	-50.59	2.78	27.50	-25.87	-13	-12.87	Horizontal
1658.6	-40.76	2.78	27.50	-16.04	-13	-3.04	Vertical
2487.1	-51.63	2.90	27.80	-26.73	-13	-13.73	Vertical
2487.1	-47.21	2.90	27.80	-22.31	-13	-9.31	Horizontal
200.2	-42.17	1.71	15.57	-28.31	-13	-15.31	Vertical
364.1	-31.26	1.34	16.40	-16.20	-13	-3.20	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.1	-41.47	2.80	27.48	-16.79	-13	-3.79	Horizontal
1673.1	-42.60	2.80	27.48	-17.92	-13	-4.92	Vertical
2510.1	-50.32	2.91	27.70	-25.53	-13	-12.53	Vertical
2510.1	-46.59	2.91	27.70	-21.80	-13	-8.80	Horizontal
212.5	-31.45	1.44	17.04	-15.85	-13	-2.85	Vertical
343.5	-41.66	1.76	17.62	-25.80	-13	-12.80	Horizontal
Test Results for High Channel 844MHz							
1688.0	-45.78	2.82	27.43	-21.17	-13	-8.17	Horizontal
1688.0	-46.47	2.82	27.43	-21.86	-13	-8.86	Vertical
2532.7	-49.97	2.92	27.74	-25.15	-13	-12.15	Vertical
2532.7	-46.27	2.92	27.74	-21.45	-13	-8.45	Horizontal
205.9	-34.34	1.74	17.70	-18.38	-13	-5.38	Vertical
393.5	-34.78	1.41	17.46	-18.72	-13	-5.72	Horizontal

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
5005.4	-63.11	5.23	35.81	-32.53	-25	-7.53	Horizontal
5005.4	-61.90	5.23	35.81	-31.32	-25	-6.32	Vertical
7507.9	-62.23	5.67	36.85	-31.05	-25	-6.05	Vertical
7507.9	-61.47	5.67	36.85	-30.29	-25	-5.29	Horizontal
203.3	-50.76	1.73	17.97	-34.52	-25	-9.52	Vertical
451.2	-49.06	1.38	15.11	-35.32	-25	-10.32	Horizontal
Test Results for Mid Channel 2535MHz							
5070.2	-58.24	5.23	35.82	-27.65	-25	-2.65	Horizontal
5070.2	-63.53	5.23	35.82	-32.94	-25	-7.94	Vertical
7605.7	-61.38	5.67	36.85	-30.20	-25	-5.20	Vertical
7605.7	-62.18	5.67	36.85	-31.00	-25	-6.00	Horizontal
211.0	-42.10	1.77	16.17	-27.70	-25	-2.70	Vertical
233.2	-48.34	1.63	15.21	-34.76	-25	-9.76	Horizontal
Test Results for High Channel 2567.5MHz							
5135.6	-58.82	5.24	35.83	-28.23	-25	-3.23	Horizontal
5135.6	-58.49	5.24	35.83	-27.90	-25	-2.90	Vertical
7702.6	-60.18	5.68	36.87	-28.99	-25	-3.99	Vertical
7702.6	-59.94	5.68	36.87	-28.75	-25	-3.75	Horizontal
187.0	-44.30	1.58	17.56	-28.32	-25	-3.32	Vertical
264.1	-47.53	1.45	16.58	-32.40	-25	-7.40	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
5020.7	-58.13	5.23	35.82	-27.54	-25	-2.54	Horizontal
5020.7	-60.58	5.23	35.82	-29.99	-25	-4.99	Vertical
7530.2	-60.33	5.67	36.86	-29.14	-25	-4.14	Vertical
7530.2	-59.15	5.67	36.86	-27.96	-25	-2.96	Horizontal
193.4	-47.43	1.63	15.76	-33.31	-25	-8.31	Vertical
380.1	-50.09	1.71	15.44	-36.36	-25	-11.36	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-60.78	5.23	35.82	-30.19	-25	-5.19	Horizontal
5070.0	-59.31	5.23	35.82	-28.72	-25	-3.72	Vertical
7605.3	-59.56	5.67	36.85	-28.38	-25	-3.38	Vertical
7605.3	-60.04	5.67	36.85	-28.86	-25	-3.86	Horizontal
199.4	-45.39	1.79	16.84	-30.34	-25	-5.34	Vertical
346.5	-44.45	1.71	17.64	-28.52	-25	-3.52	Horizontal
Test Results for High Channel 2560MHz							
5120.4	-59.15	5.24	35.83	-28.56	-25	-3.56	Horizontal
5120.4	-60.09	5.24	35.83	-29.50	-25	-4.50	Vertical
7680.6	-59.60	5.70	36.88	-28.42	-25	-3.42	Vertical
7680.6	-60.27	5.70	36.88	-29.09	-25	-4.09	Horizontal
194.2	-44.13	1.79	16.84	-29.08	-25	-4.08	Vertical
349.5	-44.00	1.71	17.64	-28.06	-25	-3.06	Horizontal

9.5 LTE BAND 38

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

Test Results for Low Channel 2572.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5145.7	-51.32	4.01	27.5	-27.83	-25	-2.83	Horizontal
5145.8	-56.94	4.01	27.5	-33.45	-25	-8.45	Vertical
7718.0	-54.24	5.09	27.8	-31.53	-25	-6.53	Vertical
7718.3	-51.95	5.09	27.8	-29.24	-25	-4.24	Horizontal
194.2	-44.21	1.63	16.84	-29.00	-25	-4.00	Vertical
349.9	-44.07	1.71	17.64	-28.15	-25	-3.15	Horizontal
Test Results For Mid Channel 2595MHz							
5190.2	-51.48	4.1	27.48	-28.10	-25	-3.10	Horizontal
5190.9	-54.25	4.1	27.48	-30.87	-25	-5.87	Vertical
7785.3	-53.75	5.42	27.7	-31.47	-25	-6.47	Vertical
7785.0	-51.94	5.42	27.7	-29.66	-25	-4.66	Horizontal
199.2	-43.95	1.79	16.84	-28.89	-25	-3.89	Vertical
346.3	-43.73	1.71	17.64	-27.79	-25	-2.79	Horizontal
Test Results for High Channel 2617.5MHz							
5234.3	-54.80	4.11	27.43	-31.48	-25	-6.48	Horizontal
5234.7	-52.00	4.11	27.43	-28.68	-25	-3.68	Vertical
7851.4	-52.55	5.31	27.74	-30.12	-25	-5.12	Vertical
7851.1	-59.48	5.31	27.74	-37.05	-25	-12.05	Horizontal
194.2	-44.50	1.63	15.76	-30.37	-25	-5.37	Vertical
380.3	-44.28	1.71	15.44	-30.55	-25	-5.55	Horizontal

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

Test Results for Low Channel 2580MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5160.2	-56.35	3.89	27.5	-32.74	-25	-7.74	Horizontal
5160.3	-55.39	3.89	27.5	-31.78	-25	-6.78	Vertical
7740.8	-60.14	5.33	27.8	-37.67	-25	-12.67	Vertical
7740.3	-55.87	5.33	27.8	-33.40	-25	-8.40	Horizontal
203.7	-44.75	1.73	17.97	-28.51	-25	-3.51	Vertical
451.4	-44.41	1.38	15.11	-30.67	-25	-5.67	Horizontal
Test Results for Mid Channel 2595MHz							
5191.0	-59.62	4.1	27.48	-36.24	-25	-11.24	Horizontal
5190.1	-57.23	4.1	27.48	-33.85	-25	-8.85	Vertical
7785.0	-60.44	5.42	27.7	-38.16	-25	-13.16	Vertical
7785.4	-60.27	5.42	27.7	-37.99	-25	-12.99	Horizontal
211.8	-44.53	1.77	16.17	-30.12	-25	-5.12	Vertical
233.5	-44.42	1.63	15.21	-30.84	-25	-5.84	Horizontal
Test Results for High Channel 2610MHz							
5220.4	-62.52	4.01	27.43	-39.10	-25	-14.10	Horizontal
5220.4	-61.73	4.01	27.43	-38.31	-25	-13.31	Vertical
7830.5	-58.94	5.34	27.74	-36.54	-25	-11.54	Vertical
7830.0	-57.94	5.34	27.74	-35.54	-25	-10.54	Horizontal
187.4	-44.08	1.58	17.56	-28.09	-25	-3.09	Vertical
264.9	-44.07	1.45	16.58	-28.94	-25	-3.94	Horizontal

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

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

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

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

LTE BAND 41

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

Test Results for Low Channel 2472.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5145.2	-58.77	5.23	35.81	-28.19	-25	-3.19	Horizontal
5145.2	-60.10	5.23	35.81	-29.52	-25	-4.52	Vertical
7717.9	-58.93	5.67	36.85	-27.75	-25	-2.75	Vertical
7717.9	-61.56	5.67	36.85	-30.38	-25	-5.38	Horizontal
435.4	-42.46	1.38	15.98	-27.86	-25	-2.86	Vertical
465.9	-41.34	1.62	15.66	-27.30	-25	-2.30	Horizontal
Test Results for Mid Channel 2595MHz							
5190.1	-63.02	5.23	35.82	-32.43	-25	-7.43	Horizontal
5190.1	-58.39	5.23	35.82	-27.80	-25	-2.80	Vertical
7785.8	-60.06	5.67	36.85	-28.88	-25	-3.88	Vertical
7785.8	-61.16	5.67	36.85	-29.98	-25	-4.98	Horizontal
510.6	-46.39	1.62	16.17	-31.84	-25	-6.84	Vertical
563.1	-43.50	1.74	17.63	-27.61	-25	-2.61	Horizontal
Test Results for High Channel 2617.5MHz							
5235.9	-58.80	5.24	35.83	-28.21	-25	-3.21	Horizontal
5235.9	-60.25	5.24	35.83	-29.66	-25	-4.66	Vertical
7853.3	-61.01	5.68	36.87	-29.82	-25	-4.82	Vertical
7853.3	-58.95	5.68	36.87	-27.76	-25	-2.76	Horizontal
198.3	-42.59	1.55	15.84	-28.30	-25	-3.30	Vertical
353.9	-45.73	1.51	17.06	-30.18	-25	-5.18	Horizontal

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

Test Results for Low Channel 2580MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5160.0	-60.87	5.23	35.82	-30.28	-25	-5.28	Horizontal
5160.0	-58.69	5.23	35.82	-28.10	-25	-3.10	Vertical
7740.9	-60.94	5.67	36.86	-29.75	-25	-4.75	Vertical
7740.9	-60.16	5.67	36.86	-28.97	-25	-3.97	Horizontal
129.4	-42.62	1.43	15.51	-28.54	-25	-3.54	Vertical
345.0	-43.35	1.40	16.97	-27.78	-25	-2.78	Horizontal
Test Results for Mid Channel 2595MHz							
5190.2	-59.27	5.23	35.82	-28.68	-25	-3.68	Horizontal
5190.2	-59.23	5.23	35.82	-28.64	-25	-3.64	Vertical
7785.2	-59.07	5.67	36.85	-27.89	-25	-2.89	Vertical
7785.2	-59.41	5.67	36.85	-28.23	-25	-3.23	Horizontal
101.2	-47.26	1.77	16.72	-32.31	-25	-7.31	Vertical
263.8	-47.62	1.31	16.99	-31.94	-25	-6.94	Horizontal
Test Results for High Channel 2610MHz							
5220.5	-61.70	5.24	35.83	-31.11	-25	-6.11	Horizontal
5220.5	-60.61	5.24	35.83	-30.02	-25	-5.02	Vertical
7830.5	-59.52	5.70	36.88	-28.34	-25	-3.34	Vertical
7830.5	-60.26	5.70	36.88	-29.08	-25	-4.08	Horizontal
350.2	-45.87	1.70	15.73	-31.84	-25	-6.84	Vertical
110.5	-44.07	1.75	17.33	-28.49	-25	-3.49	Horizontal

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

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

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

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

10. FREQUENCY STABILITY

RULE PART(S)

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

LIMITS

§22.355 - The carrier frequency shall not depart from the reference frequency in excess of ± 2.5 ppm for mobile stations.

§24.235 - The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

Temp. = -30° to $+50^{\circ}\text{C}$

Voltage = low voltage, DC 3.23V, 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, 38, 41

RESULTS

See the following pages.

10.1 LTE BAND 2

Band 2 QPSK, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.15	1880	13.4	0.007103	2.5
3.70	1880	15.5	0.008229	2.5
4.26	1880	14.7	0.007838	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	7.4	0.003921	2.5
Extreme (50C)	1880	13.5	0.007179	2.5
Extreme (40C)	1880	4.1	0.002200	2.5
Extreme (30C)	1880	7.2	0.003806	2.5
Extreme (10C)	1880	7.9	0.004207	2.5
Extreme (0C)	1880	4.4	0.002335	2.5
Extreme (-10C)	1880	11.4	0.006038	2.5
Extreme (-20C)	1880	7.5	0.003995	2.5
Extreme (-30C)	1880	5.9	0.003143	2.5

Band 2 16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.15	1880	3.8	0.002000	2.5
3.70	1880	9.1	0.004856	2.5
4.26	1880	8.8	0.004697	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	9.7	0.005144	2.5
Extreme (50C)	1880	15.1	0.008033	2.5
Extreme (40C)	1880	12.4	0.006616	2.5
Extreme (30C)	1880	12.4	0.006580	2.5
Extreme (10C)	1880	11.1	0.005927	2.5
Extreme (0C)	1880	10.3	0.005467	2.5
Extreme (-10C)	1880	5.1	0.002715	2.5
Extreme (-20C)	1880	14.5	0.007691	2.5
Extreme (-30C)	1880	6.2	0.003318	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, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.15	1732.5	8.8	0.005101	2.5
3.70	1732.5	11.0	0.006335	2.5
4.26	1732.5	4.5	0.002601	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	15.2	0.008794	2.5
Extreme (50C)	1732.5	8.8	0.005062	2.5
Extreme (40C)	1732.5	7.2	0.004129	2.5
Extreme (30C)	1732.5	9.9	0.005719	2.5
Extreme (10C)	1732.5	3.2	0.001856	2.5
Extreme (0C)	1732.5	5.0	0.002872	2.5
Extreme (-10C)	1732.5	8.9	0.005113	2.5
Extreme (-20C)	1732.5	3.5	0.002010	2.5
Extreme (-30C)	1732.5	6.8	0.003950	2.5

Band 4 16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.15	1732.5	10.7	0.006190	2.5
3.70	1732.5	7.2	0.004161	2.5
4.26	1732.5	6.2	0.003579	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.8	0.005090	2.5
Extreme (50C)	1732.5	3.9	0.002250	2.5
Extreme (40C)	1732.5	12.8	0.007411	2.5
Extreme (30C)	1732.5	6.9	0.003964	2.5
Extreme (10C)	1732.5	10.1	0.005842	2.5
Extreme (0C)	1732.5	8.0	0.004644	2.5
Extreme (-10C)	1732.5	8.4	0.004869	2.5
Extreme (-20C)	1732.5	4.2	0.002425	2.5
Extreme (-30C)	1732.5	9.1	0.005277	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)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.15	836.5	4.3	0.005086	2.5
3.70	836.5	12.6	0.015105	2.5
4.26	836.5	7.9	0.009476	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	4.1	0.004937	2.5
Extreme (50C)	836.5	8.5	0.010210	2.5
Extreme (40C)	836.5	10.5	0.012561	2.5
Extreme (30C)	836.5	12.8	0.015352	2.5
Extreme (10C)	836.5	7.8	0.009281	2.5
Extreme (0C)	836.5	15.9	0.019000	2.5
Extreme (-10C)	836.5	7.2	0.008623	2.5
Extreme (-20C)	836.5	3.8	0.004542	2.5
Extreme (-30C)	836.5	13.5	0.016174	2.5

Band 5 16QAM, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.15	836.5	10.4	0.012376	2.5
3.70	836.5	14.7	0.017608	2.5
4.26	836.5	10.9	0.013001	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	9.8	0.011657	2.5
Extreme (50C)	836.5	8.7	0.010425	2.5
Extreme (40C)	836.5	3.1	0.003740	2.5
Extreme (30C)	836.5	7.4	0.008793	2.5
Extreme (10C)	836.5	12.3	0.014705	2.5
Extreme (0C)	836.5	5.7	0.006834	2.5
Extreme (-10C)	836.5	7.8	0.009318	2.5
Extreme (-20C)	836.5	6.4	0.007692	2.5
Extreme (-30C)	836.5	6.3	0.007553	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)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.15	2535	9.6	0.003786	2.5
3.70	2535	7.7	0.003037	2.5
4.26	2535	13.3	0.005250	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	4.9	0.001931	2.5
Extreme (50C)	2535	10.3	0.004080	2.5
Extreme (40C)	2535	4.7	0.001873	2.5
Extreme (30C)	2535	5.4	0.002124	2.5
Extreme (10C)	2535	6.6	0.002620	2.5
Extreme (0C)	2535	5.7	0.002246	2.5
Extreme (-10C)	2535	9.6	0.003802	2.5
Extreme (-20C)	2535	8.4	0.003306	2.5
Extreme (-30C)	2535	15.3	0.006044	2.5

Band 7 16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.15	2535	8.8	0.003465	2.5
3.70	2535	13.9	0.005472	2.5
4.26	2535	13.8	0.005460	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	8.1	0.003212	2.5
Extreme (50C)	2535	13.1	0.005176	2.5
Extreme (40C)	2535	15.1	0.005953	2.5
Extreme (30C)	2535	3.1	0.001211	2.5
Extreme (10C)	2535	12.7	0.005027	2.5
Extreme (0C)	2535	15.6	0.006139	2.5
Extreme (-10C)	2535	9.2	0.003629	2.5
Extreme (-20C)	2535	7.2	0.002856	2.5
Extreme (-30C)	2535	5.5	0.002151	2.5

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

10.5 LTE BAND 38

Band 38 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]
3.15	2595	6.9	0.002644	2.5
3.70	2595	10.2	0.003917	2.5
4.26	2595	14.5	0.005583	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	14.5	0.005576	2.5
Extreme (50C)	2595	7.8	0.002991	2.5
Extreme (40C)	2595	8.5	0.003276	2.5
Extreme (30C)	2595	12.7	0.004901	2.5
Extreme (10C)	2595	8.5	0.003280	2.5
Extreme (0C)	2595	13.6	0.005233	2.5
Extreme (-10C)	2595	8.3	0.003187	2.5
Extreme (-20C)	2595	14.1	0.005426	2.5
Extreme (-30C)	2595	15.3	0.005887	2.5

Band 38 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]
3.15	2595	13.8	0.005327	2.5
3.70	2595	6.2	0.002408	2.5
4.26	2595	9.6	0.003703	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	12.5	0.004800	2.5
Extreme (50C)	2595	8.1	0.003126	2.5
Extreme (40C)	2595	9.9	0.003820	2.5
Extreme (30C)	2595	15.4	0.005923	2.5
Extreme (10C)	2595	6.8	0.002612	2.5
Extreme (0C)	2595	12.7	0.004893	2.5
Extreme (-10C)	2595	10.9	0.004201	2.5
Extreme (-20C)	2595	11.1	0.004261	2.5
Extreme (-30C)	2595	4.9	0.001907	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]
3.15	2593	12.2	0.004708	2.5
3.70	2593	10.9	0.004207	2.5
4.26	2593	9.1	0.003517	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	13.1	0.005040	2.5
Extreme (50C)	2593	12.6	0.004866	2.5
Extreme (40C)	2593	8.8	0.003384	2.5
Extreme (30C)	2593	14.3	0.005503	2.5
Extreme (10C)	2593	4.8	0.001851	2.5
Extreme (0C)	2593	5.5	0.002131	2.5
Extreme (-10C)	2593	5.8	0.002234	2.5
Extreme (-20C)	2593	9.8	0.003765	2.5
Extreme (-30C)	2593	15.6	0.006017	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]
3.15	2593	4.3	0.001652	2.5
3.70	2593	15.3	0.005917	2.5
4.26	2593	4.5	0.001737	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	7.4	0.002839	2.5
Extreme (50C)	2593	12.1	0.004671	2.5
Extreme (40C)	2593	8.4	0.003247	2.5
Extreme (30C)	2593	15.4	0.005926	2.5
Extreme (10C)	2593	13.1	0.005050	2.5
Extreme (0C)	2593	13.7	0.005284	2.5
Extreme (-10C)	2593	14.9	0.005739	2.5
Extreme (-20C)	2593	14.5	0.005592	2.5
Extreme (-30C)	2593	4.2	0.001637	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.

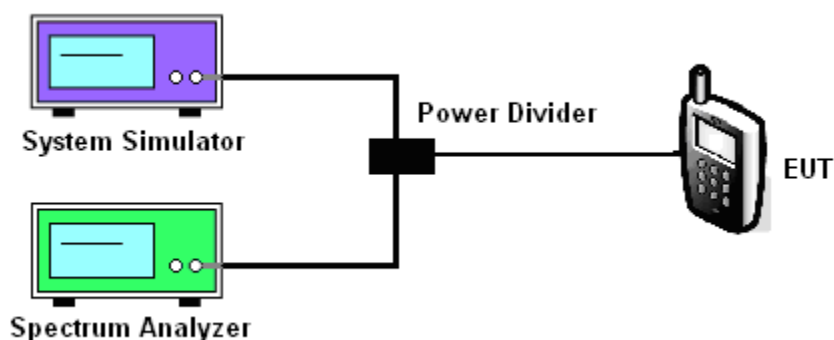
11.2 Measuring Instruments

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 GSM/EGPRS operating modes:
 - a. Set the RBW = 1MHz, VBW = 1MHz, Peak detector in spectrum analyzer.
 - b. Set EUT in maximum power output, and triggered the burst signal.
 - c. Measured respectively the Peak level and Mean level, and the deviation was recorded as Peak to Average Ratio.
4. For UMTS 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, 38, 41

Test data reference attachment.

----END OF REPORT----