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

FCC ID: 2A7DX-BV6200

Product: Mobile Phone

Trade Mark: Blackview

Model No.: BV6200

Family Model: N/A

Report No.: S23081002901006

Issue Date: Sep 01, 2023

Prepared for

DOKE COMMUNICATION (HK) LIMITED

RM 1902 EASEY COMM BLDG 253-261 HENNESSY ROAD
WANCHAI HK CHINA

Prepared by

Shenzhen NTEK Testing Technology Co., Ltd.

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

Certificate #4298.01

TEST RESULT CERTIFICATION

Applicant's name	:	DOKE COMMUNICATION (HK) LIMITED
Address	:	RM 1902 EASEY COMM BLDG 253-261 HENNESSY ROAD WANCHAI HK CHINA
Manufacturer's Name	:	Shenzhen DOKE Electronic Co., Ltd
Address	:	801, Building3, 7th Industrial Zone, Yulv Community, Yutang Road, Guangming District, Shenzhen, China.
Product name	:	Mobile Phone
Trade Mark	:	Blackview
Model and/or type reference	:	BV6200
Family Model	:	N/A
Test Sample Number		S230810029004
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 ..... Aug 10, 2023 ~ Sep 01, 2023

Date of Issue ..... Sep 01, 2023

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

Testing Engineer : Mukzi Lee

(Mukzi Lee)

Authorized Signatory : Alex

(Alex Li)

TABLE OF CONTENTS

1.1 PRODUCT DESCRIPTION 5
1.3 TEST METHODOLOGY 7
1.4 TEST FACILITY 7
1.5 MEASUREMENT UNCERTAINTY 7
1.6 SPECIAL ACCESSORIES 7
1.7 WORST-CASE CONFIGURATION AND MODE 7
2. SYSTEM TEST CONFIGURATION 8
2.1 EUT CONFIGURATION 8
2.2 EUT EXERCISE 8
2.3 CONFIGURATION OF EUT SYSTEM 8
2.4 TEST SETUP 9
3.TEST AND MEASUREMENT EQUIPMENT 10
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 21
8.4 LTE BAND 5 24
8.5 LTE BAND 7 26

8.6 LTE BAND 12 28
8.7 LTE BAND 13 30
8.8 LTE BAND 17 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 12 44
9.6 LTE BAND 13 46
9.7 LTE BAND 17 48

10. FREQUENCY STABILITY 50
10.1 LTE BAND 2 51
10.2 LTE BAND 4 53
10.3 LTE BAND 5 55
10.4 LTE BAND 7 57
10.5 LTE BAND 12 59
10.6 LTE BAND 13 61
10.7 LTE BAND 17 63

11. PEAK-TO-AVERAGE RATIO 65
11.1 Description of the PAR Measurement 65
11.2 Measuring Instruments 65
11.3 Test Procedures 65
11.4 Test Setup 66

1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	Mobile Phone
Trade Mark	Blackview
Model Name	BV6200
Family Model	N/A
Model Difference	N/A
FCC ID:	2A7DX-BV6200
Frequency Bands:	☒LTE FDD Band 2,4,5,7,12,13,17
Frequency Range:	LTE FDD Band 2 Uplink: 1850MHz-1910MHz, Downlink: 1930MHz-1990MHz; LTE FDD Band 4 Uplink: 1710MHz-1755MHz, Downlink: 2110MHz-2155MHz; LTE FDD Band 5 Uplink: 824MHz-849MHz, Downlink: 869MHz-894MHz; LTE-FDD Band 7 Uplink: 2500MHz-2570MHz, Downlink: 2620MHz-2690MHz; LTE FDD Band 12 Uplink: 699MHz-716MHz, Downlink: 729MHz-746MHz; LTE FDD Band 13 Uplink: 777MHz-787MHz, Downlink: 746MHz-756MHz; LTE FDD Band 17 Uplink: 704MHz-716MHz, Downlink: 734MHz-746MHz;
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:-1.37dBi; Band 4:-0.83dBi; Band 5:-6.11dBi; Band 7:-2.89dBi; Band 12:-4.09dBi; Band 13:-5.67dBi; Band 17:-4.09dBi;
Adapter	Model: QZ-01800AA00 Input: 100-240V~50/60Hz 0.5A Output: 5.0V⎓3.0A or 7.0A⎓2.0A or 9.0A⎓2.0A or 12.0V⎓1.5A(18.0W Max)
Battery	DC 3.85V, 13000mAh, 50.05Wh
Power supply	DC 3.85V from battery or DC 5V from adapter
Extreme Vol. Limits:	DC 3.27 to DC 4.43V (Nominal DC 3.85V)（Note 1）
HW Version	HCT-M662MB-A2
SW Version	BV6200_NEU_M662_V1.0
** Note1: The High Voltage DC 4.43V and Low Voltage 3.27V was declared by manufacturer, The EUT couldn't be operate normally with higher or lower voltage.	

Revision History

Report No.	Version	Description	Issued Date
S23081002901006	Rev.01	Initial issue of report	Sep 01, 2023

1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2A7DX-BV6200** filing to comply with the FCC Part 22H&24E&27&90S.

1.3 TEST METHODOLOGY

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

1.4 TEST FACILITY

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

ShenZhen NTEK Testing Technology Co., Ltd.

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

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

FCC Registration No.:463705

IC Registration No.:9270A-1,

CNAS Registration No.:L5516

1.5 MEASUREMENT UNCERTAINTY

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

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

1.6 SPECIAL ACCESSORIES

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

1.7 WORST-CASE CONFIGURATION AND MODE

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

The device has LTE Bands of: Band 2/4/5/7/12/13/17

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

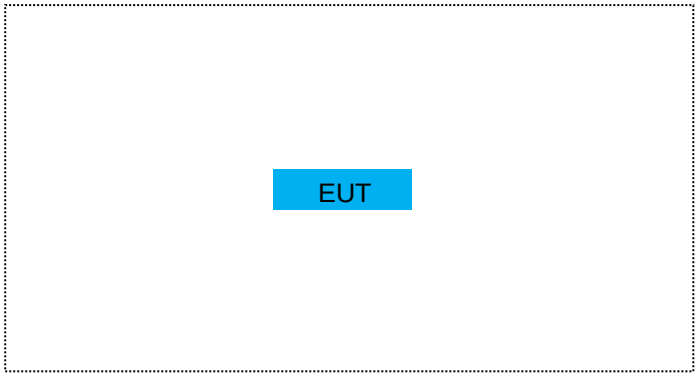
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Mobile Phone	BV6200	FCC ID: 2A7DX-BV6200	EUT

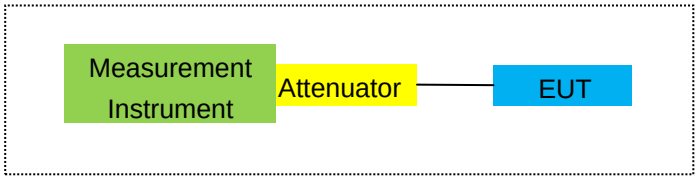
Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.

2.4 TEST SETUP

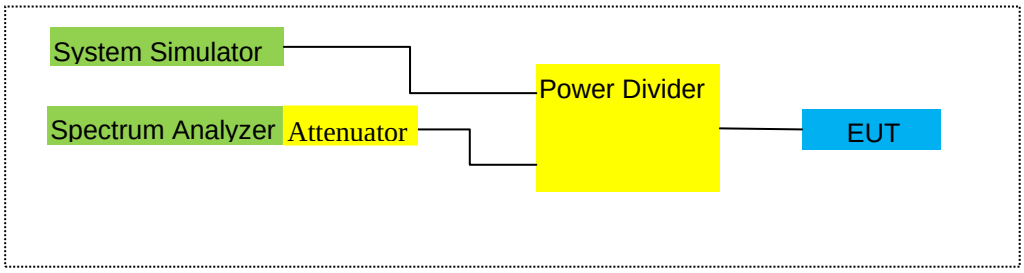
For Radiated Test Cases



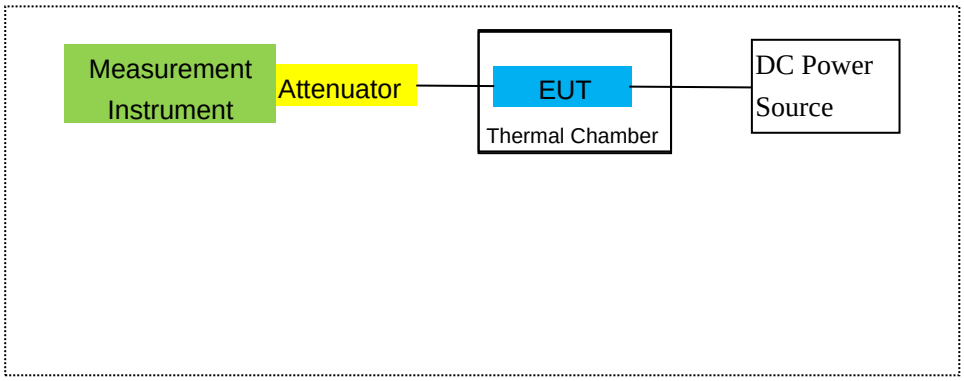
For Conducted Output Power



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



For Frequency Stability



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

3.TEST AND MEASUREMENT EQUIPMENT

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

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

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

4. OUTPUT POWER

4.1 OUTPUT POWER MEASUREMENT

LTE Measurement Procedure:

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

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

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

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

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

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

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

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

Test data reference attachment.

5. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

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

MODES TESTED

Band 2/4/5/7/12/13/17

RESULTS

PASS

Test data reference attachment.

6. BANDEDGE AND EMISSION MASK

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53, and §90.691
FCC: §22.359

LIMITS

FCC: §22.917, §24.238, §27.53
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

(m)(4) For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.Show citation box.
(c)(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations;

FCC: §90.691 Emission mask requirements for EA-based systems.
(a) Out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:
(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50 + 10 Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.
(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

TEST PROCEDURE

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

For each band edge measurement:

Set the spectrum analyzer span to include the block edge frequency

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

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

MODES TESTED

Band 2/4/5/7/12/13/17

RESULTS

Test data reference attachment.

7. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53 and §90.691

LIMITS

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

TEST PROCEDURE

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

For each out of band emissions measurement:

□

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

MODES TESTED

□ Band 2/4/5/7/12/13/17

□

7.1 MEASUREMENT METHOD

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

Test data reference attachment.

8. RADIATED MEASUREMENT

8.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232, §27.50 and §90.635

LIMITS:

22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.
27.50 (c) (10) the following power and antenna height requirements apply to stations transmitting in the 698–746 MHz band, the portable stations (hand-held devices) are limited to 3 watts ERP.
27.50 (b)(10) Portable stations (hand-held devices) transmitting in the 746–757 MHz, 758–763 MHz, 776–793 MHz, and 805–806 MHz bands are limited to 3 watts ERP.
27.50 (d)(4) The following power and antenna height requirements apply to stations transmitting in the 1710–1755 MHz and 2110–2155 MHz bands: Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.
27.50 (h)(2) Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.
90.635(b) The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

TEST PROCEDURE

ANSI/TIA-603-E Clause 2.2.17
KDB 971168 v02r01 RF power output using broadband peak and average power meter method.
KDB 971168 D01 Power Meas License Digital Systems v02r01, “Measurement Guidance for Certification of Licensed Digital Transmitters”

MODES TESTED

- Band 2/4/5/7/12/13/17

RESULTS

Pass

8.2 LTE BAND 2

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	1850.7	-3.11	3.76	28.24	21.37	137.088	Horizontal	Pass
		1880	-2.90	3.91	28.22	21.41	138.357	Horizontal	Pass
		1909.3	-2.98	3.93	28.20	21.29	134.586	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-3.06	3.77	28.23	21.40	138.038	Horizontal	Pass
		1880	-3.04	3.91	28.24	21.29	134.586	Horizontal	Pass
		1908.5	-2.95	3.94	28.25	21.36	136.773	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-3.25	3.77	28.31	21.29	134.586	Horizontal	Pass
		1880	-3.03	3.91	28.22	21.28	134.276	Horizontal	Pass
		1907.5	-2.92	3.94	28.20	21.34	136.144	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-3.22	3.79	28.33	21.32	135.519	Horizontal	Pass
		1880	-2.85	3.95	28.22	21.42	138.676	Horizontal	Pass
		1905	-2.83	3.97	28.19	21.39	137.721	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-3.27	3.79	28.34	21.28	134.276	Horizontal	Pass
		1880	-2.90	3.95	28.22	21.37	137.088	Horizontal	Pass
		1902.5	-2.80	3.97	28.18	21.41	138.357	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-3.23	3.81	28.35	21.31	135.207	Horizontal	Pass
		1880	-2.95	3.96	28.22	21.31	135.207	Horizontal	Pass
		1900	-2.73	4.00	28.16	21.43	138.995	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-3.13	3.76	28.24	21.35	136.458	Vertical	Pass
		1880	-3.02	3.91	28.22	21.29	134.586	Vertical	Pass
		1909.3	-2.88	3.93	28.20	21.39	137.721	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-3.18	3.77	28.23	21.28	134.276	Vertical	Pass
		1880	-3.00	3.91	28.24	21.33	135.831	Vertical	Pass
		1908.5	-2.98	3.94	28.25	21.33	135.831	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-3.18	3.77	28.31	21.36	136.773	Vertical	Pass
		1880	-2.98	3.91	28.22	21.33	135.831	Vertical	Pass
		1907.5	-2.97	3.94	28.20	21.29	134.586	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1855	-3.18	3.79	28.33	21.36	136.773	Vertical	Pass
		1880	-2.92	3.95	28.22	21.35	136.458	Vertical	Pass
		1905	-2.94	3.97	28.19	21.28	134.276	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1857.5	-3.15	3.79	28.34	21.40	138.038	Vertical	Pass
		1880	-2.86	3.95	28.22	21.41	138.357	Vertical	Pass
		1902.5	-2.80	3.97	28.18	21.41	138.357	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1860	-3.10	3.81	28.35	21.44	139.316	Vertical	Pass
		1880	-2.82	3.96	28.22	21.44	139.316	Vertical	Pass
		1900	-2.73	4.00	28.16	21.43	138.995	Vertical	Pass

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	1850.7	-3.92	3.76	28.24	20.56	113.763	Horizontal	Pass
		1880	-3.69	3.91	28.22	20.62	115.345	Horizontal	Pass
		1909.3	-3.76	3.93	28.20	20.51	112.460	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-3.92	3.77	28.23	20.54	113.240	Horizontal	Pass
		1880	-3.83	3.91	28.24	20.50	112.202	Horizontal	Pass
		1908.5	-3.76	3.94	28.25	20.55	113.501	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-3.94	3.77	28.31	20.60	114.815	Horizontal	Pass
		1880	-3.78	3.91	28.22	20.53	112.980	Horizontal	Pass
		1907.5	-3.64	3.94	28.20	20.62	115.345	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-4.02	3.79	28.33	20.52	112.720	Horizontal	Pass
		1880	-3.65	3.95	28.22	20.62	115.345	Horizontal	Pass
		1905	-3.64	3.97	28.19	20.58	114.288	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-4.06	3.79	28.34	20.49	111.944	Horizontal	Pass
		1880	-3.73	3.95	28.22	20.54	113.240	Horizontal	Pass
		1902.5	-3.63	3.97	28.18	20.58	114.288	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-3.96	3.81	28.35	20.58	114.288	Horizontal	Pass
		1880	-3.74	3.96	28.22	20.52	112.720	Horizontal	Pass
		1900	-3.64	4.00	28.16	20.52	112.720	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1850.7	-3.88	3.76	28.24	20.60	114.815	Vertical	Pass
		1880	-3.70	3.91	28.22	20.61	115.080	Vertical	Pass
		1909.3	-3.77	3.93	28.20	20.50	112.202	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-3.91	3.77	28.23	20.55	113.501	Vertical	Pass
		1880	-3.78	3.91	28.24	20.55	113.501	Vertical	Pass
		1908.5	-3.72	3.94	28.25	20.59	114.551	Vertical	Pass
5.0MHz	1/#Mid	1852.5	-3.94	3.77	28.31	20.60	114.815	Vertical	Pass

Band 16 QAM		1880	-3.81	3.91	28.22	20.50	112.202	Vertical	Pass
		1907.5	-3.74	3.94	28.20	20.52	112.720	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-3.97	3.79	28.33	20.57	114.025	Vertical	Pass
		1880	-3.66	3.95	28.22	20.61	115.080	Vertical	Pass
		1905	-3.69	3.97	28.19	20.53	112.980	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-3.95	3.79	28.34	20.60	114.815	Vertical	Pass
		1880	-3.78	3.95	28.22	20.49	111.944	Vertical	Pass
		1902.5	-3.70	3.97	28.18	20.51	112.460	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-3.87	3.81	28.35	20.67	116.681	Vertical	Pass
		1880	-3.62	3.96	28.22	20.64	115.878	Vertical	Pass
		1900	-3.53	4.00	28.16	20.63	115.611	Vertical	Pass

Note:
SG Level= Signal generator output
Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)
Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

8.3 LTE BAND 4

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result					Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)		
1.4MHz Band QPSK	1/#Mid	1710.7	-3.70	3.12	27.58	20.76	119.124	Horizontal	Pass
		1732.5	-3.62	3.27	27.61	20.72	118.032	Horizontal	Pass
		1754.3	-3.59	3.29	27.63	20.75	118.850	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-3.81	3.13	27.61	20.67	116.681	Horizontal	Pass
		1732.5	-3.66	3.27	27.61	20.68	116.950	Horizontal	Pass
		1753.5	-3.59	3.30	27.62	20.73	118.304	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-3.77	3.13	27.63	20.73	118.304	Horizontal	Pass
		1732.5	-3.70	3.27	27.61	20.64	115.878	Horizontal	Pass
		1752.5	-3.54	3.30	27.60	20.76	119.124	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-3.78	3.15	27.64	20.71	117.761	Horizontal	Pass
		1732.5	-3.56	3.31	27.61	20.74	118.577	Horizontal	Pass
		1750	-3.59	3.33	27.59	20.67	116.681	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-3.88	3.15	27.65	20.62	115.345	Horizontal	Pass
		1732.5	-3.65	3.31	27.61	20.65	116.145	Horizontal	Pass
		1747.5	-3.56	3.33	27.57	20.68	116.950	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-3.76	3.17	27.66	20.73	118.304	Horizontal	Pass
		1732.5	-3.63	3.32	27.61	20.66	116.413	Horizontal	Pass
		1745	-3.44	3.36	27.56	20.76	119.124	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-3.73	3.12	27.58	20.73	118.304	Vertical	Pass
		1732.5	-3.66	3.27	27.61	20.68	116.950	Vertical	Pass
		1754.3	-3.65	3.29	27.63	20.69	117.220	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-3.86	3.13	27.61	20.62	115.345	Vertical	Pass
		1732.5	-3.73	3.27	27.61	20.61	115.080	Vertical	Pass
		1753.5	-3.71	3.30	27.62	20.61	115.080	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-3.89	3.13	27.63	20.61	115.080	Vertical	Pass
		1732.5	-3.75	3.27	27.61	20.59	114.551	Vertical	Pass
		1752.5	-3.59	3.30	27.60	20.71	117.761	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-3.72	3.15	27.64	20.77	119.399	Vertical	Pass
		1732.5	-3.65	3.31	27.61	20.65	116.145	Vertical	Pass
		1750	-3.51	3.33	27.59	20.75	118.850	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1717.5	-3.76	3.15	27.65	20.74	118.577	Vertical	Pass
		1732.5	-3.66	3.31	27.61	20.64	115.878	Vertical	Pass
		1747.5	-3.54	3.33	27.57	20.70	117.490	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1720	-3.71	3.17	27.66	20.78	119.674	Vertical	Pass
		1732.5	-3.48	3.32	27.61	20.81	120.504	Vertical	Pass
		1745	-3.41	3.36	27.56	20.79	119.950	Vertical	Pass

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	1710.7	-4.63	3.12	27.58	19.83	96.161	Horizontal	Pass
		1732.5	-4.46	3.27	27.61	19.88	97.275	Horizontal	Pass
		1754.3	-4.37	3.29	27.63	19.97	99.312	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-4.63	3.13	27.61	19.85	96.605	Horizontal	Pass
		1732.5	-4.43	3.27	27.61	19.91	97.949	Horizontal	Pass
		1753.5	-4.49	3.30	27.62	19.83	96.161	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-4.60	3.13	27.63	19.90	97.724	Horizontal	Pass
		1732.5	-4.50	3.27	27.61	19.84	96.383	Horizontal	Pass
		1752.5	-4.49	3.30	27.60	19.81	95.719	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-4.53	3.15	27.64	19.96	99.083	Horizontal	Pass
		1732.5	-4.34	3.31	27.61	19.96	99.083	Horizontal	Pass
		1750	-4.31	3.33	27.59	19.95	98.855	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-4.64	3.15	27.65	19.86	96.828	Horizontal	Pass
		1732.5	-4.42	3.31	27.61	19.88	97.275	Horizontal	Pass
		1747.5	-4.32	3.33	27.57	19.92	98.175	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-4.62	3.17	27.66	19.87	97.051	Horizontal	Pass
		1732.5	-4.32	3.32	27.61	19.97	99.312	Horizontal	Pass
		1745	-4.36	3.36	27.56	19.84	96.383	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-4.50	3.12	27.58	19.96	99.083	Vertical	Pass
		1732.5	-4.45	3.27	27.61	19.89	97.499	Vertical	Pass
		1754.3	-4.44	3.29	27.63	19.90	97.724	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-4.60	3.13	27.61	19.88	97.275	Vertical	Pass
		1732.5	-4.40	3.27	27.61	19.94	98.628	Vertical	Pass
		1753.5	-4.40	3.30	27.62	19.92	98.175	Vertical	Pass
5.0MHz	1/#Mid	1712.5	-4.60	3.13	27.63	19.90	97.724	Vertical	Pass

Band 16 QAM		1732.5	-4.47	3.27	27.61	19.87	97.051	Vertical	Pass
		1752.5	-4.36	3.30	27.60	19.94	98.628	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-4.65	3.15	27.64	19.84	96.383	Vertical	Pass
		1732.5	-4.46	3.31	27.61	19.84	96.383	Vertical	Pass
		1750	-4.31	3.33	27.59	19.95	98.855	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-4.54	3.15	27.65	19.96	99.083	Vertical	Pass
		1732.5	-4.41	3.31	27.61	19.89	97.499	Vertical	Pass
		1747.5	-4.36	3.33	27.57	19.88	97.275	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-4.49	3.17	27.66	20.00	100.000	Vertical	Pass
		1732.5	-4.29	3.32	27.61	20.00	100.000	Vertical	Pass
		1745	-4.19	3.36	27.56	20.01	100.231	Vertical	Pass

Note:
SG Level= Signal generator output
Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)
Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

8.4 LTE BAND 5

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	824.7	0.37	2.01	19.68	2.15	15.89	38.815	Horizontal	Pass
		836.5	0.17	2.01	19.77	2.15	15.78	37.844	Horizontal	Pass
		848.3	0.17	2.02	19.82	2.15	15.82	38.194	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	825.5	0.29	2.01	19.70	2.15	15.83	38.282	Horizontal	Pass
		836.5	0.14	2.01	19.77	2.15	15.75	37.584	Horizontal	Pass
		847.5	0.22	2.02	19.81	2.15	15.86	38.548	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	826.5	0.30	2.01	19.71	2.15	15.85	38.459	Horizontal	Pass
		836.5	0.25	2.01	19.77	2.15	15.86	38.548	Horizontal	Pass
		846.5	0.23	2.02	19.79	2.15	15.85	38.459	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	829	0.32	2.01	19.73	2.15	15.89	38.815	Horizontal	Pass
		836.5	0.16	2.01	19.77	2.15	15.77	37.757	Horizontal	Pass
		844	0.25	2.02	19.78	2.15	15.86	38.548	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	824.7	0.32	2.01	19.68	2.15	15.84	38.371	Vertical	Pass
		836.5	0.23	2.01	19.77	2.15	15.84	38.371	Vertical	Pass
		848.3	0.20	2.02	19.82	2.15	15.85	38.459	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	825.5	0.34	2.01	19.70	2.15	15.88	38.726	Vertical	Pass
		836.5	0.27	2.01	19.77	2.15	15.88	38.726	Vertical	Pass
		847.5	0.22	2.02	19.81	2.15	15.86	38.548	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	826.5	0.30	2.01	19.71	2.15	15.85	38.459	Vertical	Pass
		836.5	0.17	2.01	19.77	2.15	15.78	37.844	Vertical	Pass
		846.5	0.12	2.02	19.79	2.15	15.74	37.497	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	829	0.35	2.01	19.73	2.15	15.92	39.084	Vertical	Pass
		836.5	0.31	2.01	19.77	2.15	15.92	39.084	Vertical	Pass
		844	0.32	2.02	19.78	2.15	15.93	39.174	Vertical	Pass

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	824.7	-0.23	2.01	19.68	2.15	15.29	33.806	Horizontal	Pass
		836.5	-0.41	2.01	19.77	2.15	15.20	33.113	Horizontal	Pass
		848.3	-0.51	2.02	19.82	2.15	15.14	32.659	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	-0.31	2.01	19.70	2.15	15.23	33.343	Horizontal	Pass
		836.5	-0.39	2.01	19.77	2.15	15.22	33.266	Horizontal	Pass
		847.5	-0.42	2.02	19.81	2.15	15.22	33.266	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	-0.36	2.01	19.71	2.15	15.19	33.037	Horizontal	Pass
		836.5	-0.42	2.01	19.77	2.15	15.19	33.037	Horizontal	Pass
		846.5	-0.44	2.02	19.79	2.15	15.18	32.961	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	829	-0.29	2.01	19.73	2.15	15.28	33.729	Horizontal	Pass
		836.5	-0.39	2.01	19.77	2.15	15.22	33.266	Horizontal	Pass
		844	-0.48	2.02	19.78	2.15	15.13	32.584	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	824.7	-0.28	2.01	19.68	2.15	15.24	33.420	Vertical	Pass
		836.5	-0.40	2.01	19.77	2.15	15.21	33.189	Vertical	Pass
		848.3	-0.37	2.02	19.82	2.15	15.28	33.729	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	-0.38	2.01	19.70	2.15	15.16	32.810	Vertical	Pass
		836.5	-0.41	2.01	19.77	2.15	15.20	33.113	Vertical	Pass
		847.5	-0.41	2.02	19.81	2.15	15.23	33.343	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	-0.31	2.01	19.71	2.15	15.24	33.420	Vertical	Pass
		836.5	-0.49	2.01	19.77	2.15	15.12	32.509	Vertical	Pass
		846.5	-0.40	2.02	19.79	2.15	15.22	33.266	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	829	-0.26	2.01	19.73	2.15	15.31	33.963	Vertical	Pass
		836.5	-0.31	2.01	19.77	2.15	15.30	33.884	Vertical	Pass
		844	-0.30	2.02	19.78	2.15	15.31	33.963	Vertical	Pass

Note:
SG Level= Signal generator output
Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)
Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

8.5 LTE BAND 7

Radiated Power (EIRP) for Band 7									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	2502.5	-3.19	4.54	27.75	20.02	100.462	Horizontal	Pass
		2535	-2.99	4.69	27.72	20.04	100.925	Horizontal	Pass
		2567.5	-2.92	4.71	27.71	20.08	101.859	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2505	-3.11	4.55	27.76	20.10	102.329	Horizontal	Pass
		2535	-2.94	4.69	27.72	20.09	102.094	Horizontal	Pass
		2565	-2.98	4.72	27.70	20.00	100.000	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-3.14	4.55	27.77	20.08	101.859	Horizontal	Pass
		2535	-3.09	4.69	27.72	19.94	98.628	Horizontal	Pass
		2562.5	-2.98	4.72	27.69	19.99	99.770	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2510	-3.15	4.57	27.78	20.06	101.391	Horizontal	Pass
		2535	-2.96	4.73	27.72	20.03	100.693	Horizontal	Pass
		2560	-2.86	4.75	27.68	20.07	101.625	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	-3.21	4.54	27.75	20.00	100.000	Vertical	Pass
		2535	-3.00	4.69	27.72	20.03	100.693	Vertical	Pass
		2567.5	-2.90	4.71	27.71	20.10	102.329	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2505	-3.22	4.55	27.76	19.99	99.770	Vertical	Pass
		2535	-2.96	4.69	27.72	20.07	101.625	Vertical	Pass
		2565	-3.02	4.72	27.70	19.96	99.083	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-3.13	4.55	27.77	20.09	102.094	Vertical	Pass
		2535	-3.09	4.69	27.72	19.94	98.628	Vertical	Pass
		2562.5	-2.96	4.72	27.69	20.01	100.231	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2510	-3.06	4.57	27.78	20.15	103.514	Vertical	Pass
		2535	-2.85	4.73	27.72	20.14	103.276	Vertical	Pass
		2560	-2.80	4.75	27.68	20.13	103.039	Vertical	Pass

Radiated Power (EIRP) for Band 7									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	2502.5	-3.84	4.54	27.75	19.37	86.497	Horizontal	Pass
		2535	-3.68	4.69	27.72	19.35	86.099	Horizontal	Pass
		2567.5	-3.71	4.71	27.71	19.29	84.918	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-3.94	4.55	27.76	19.27	84.528	Horizontal	Pass
		2535	-3.72	4.69	27.72	19.31	85.310	Horizontal	Pass
		2565	-3.63	4.72	27.70	19.35	86.099	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-3.98	4.55	27.77	19.24	83.946	Horizontal	Pass
		2535	-3.71	4.69	27.72	19.32	85.507	Horizontal	Pass
		2562.5	-3.72	4.72	27.69	19.25	84.140	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-3.83	4.57	27.78	19.38	86.696	Horizontal	Pass
		2535	-3.73	4.73	27.72	19.26	84.333	Horizontal	Pass
		2560	-3.61	4.75	27.68	19.32	85.507	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	-3.83	4.54	27.75	19.38	86.696	Vertical	Pass
		2535	-3.62	4.69	27.72	19.41	87.297	Vertical	Pass
		2567.5	-3.70	4.71	27.71	19.30	85.114	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-3.93	4.55	27.76	19.28	84.723	Vertical	Pass
		2535	-3.66	4.69	27.72	19.37	86.497	Vertical	Pass
		2565	-3.72	4.72	27.70	19.26	84.333	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-3.83	4.55	27.77	19.39	86.896	Vertical	Pass
		2535	-3.75	4.69	27.72	19.28	84.723	Vertical	Pass
		2562.5	-3.66	4.72	27.69	19.31	85.310	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-3.80	4.57	27.78	19.41	87.297	Vertical	Pass
		2535	-3.57	4.73	27.72	19.42	87.498	Vertical	Pass
		2560	-3.51	4.75	27.68	19.42	87.498	Vertical	Pass

Note:

SG Level= Signal generator output

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

8.6 LTE BAND 12

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	699.7	3.13	1.91	19.21	2.15	18.28	67.298	Vertical	Pass
		707.5	3.10	1.91	19.26	2.15	18.30	67.608	Vertical	Pass
		715.3	3.13	1.93	19.34	2.15	18.39	69.024	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	700.5	3.12	1.91	19.21	2.15	18.27	67.143	Vertical	Pass
		707.5	3.15	1.91	19.26	2.15	18.35	68.391	Vertical	Pass
		714.5	3.13	1.93	19.34	2.15	18.39	69.024	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	701.5	3.10	1.91	19.23	2.15	18.27	67.143	Vertical	Pass
		707.5	3.18	1.91	19.26	2.15	18.38	68.865	Vertical	Pass
		713.5	3.03	1.92	19.33	2.15	18.29	67.453	Vertical	Pass
10.0Hz Band QPSK	1/#Mid	704	3.21	1.91	19.25	2.15	18.40	69.183	Vertical	Pass
		707.5	3.14	1.91	19.26	2.15	18.34	68.234	Vertical	Pass
		711	2.98	1.92	19.32	2.15	18.23	66.527	Vertical	Pass
1.4MHz Band QPSK	1/#Mid	699.7	3.24	1.91	19.21	2.15	18.39	69.024	Horizontal	Pass
		707.5	3.10	1.91	19.26	2.15	18.30	67.608	Horizontal	Pass
		715.3	3.09	1.93	19.34	2.15	18.35	68.391	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	700.5	3.23	1.91	19.21	2.15	18.38	68.865	Horizontal	Pass
		707.5	3.20	1.91	19.26	2.15	18.40	69.183	Horizontal	Pass
		714.5	3.08	1.93	19.34	2.15	18.34	68.234	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	701.5	3.08	1.91	19.23	2.15	18.25	66.834	Horizontal	Pass
		707.5	3.08	1.91	19.26	2.15	18.28	67.298	Horizontal	Pass
		713.5	2.98	1.92	19.33	2.15	18.24	66.681	Horizontal	Pass
10.0Hz Band QPSK	1/#Mid	704	3.24	1.91	19.25	2.15	18.43	69.663	Horizontal	Pass
		707.5	3.24	1.91	19.26	2.15	18.44	69.823	Horizontal	Pass
		711	3.21	1.92	19.32	2.15	18.46	70.146	Horizontal	Pass

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	699.7	2.44	1.91	19.21	2.15	17.59	57.412	Vertical	Pass
		707.5	2.46	1.91	19.26	2.15	17.66	58.345	Vertical	Pass
		715.3	2.39	1.93	19.34	2.15	17.65	58.210	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	2.51	1.91	19.21	2.15	17.66	58.345	Vertical	Pass
		707.5	2.37	1.91	19.26	2.15	17.57	57.148	Vertical	Pass
		714.5	2.41	1.93	19.34	2.15	17.67	58.479	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	2.47	1.91	19.23	2.15	17.64	58.076	Vertical	Pass
		707.5	2.43	1.91	19.26	2.15	17.63	57.943	Vertical	Pass
		713.5	2.31	1.92	19.33	2.15	17.57	57.148	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	704	2.42	1.91	19.25	2.15	17.61	57.677	Vertical	Pass
		707.5	2.40	1.91	19.26	2.15	17.60	57.544	Vertical	Pass
		711	2.42	1.92	19.32	2.15	17.67	58.479	Vertical	Pass
1.4MHz Band 16 QAM	1/#Mid	699.7	2.53	1.91	19.21	2.15	17.68	58.614	Horizontal	Pass
		707.5	2.38	1.91	19.26	2.15	17.58	57.280	Horizontal	Pass
		715.3	2.38	1.93	19.34	2.15	17.64	58.076	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	2.51	1.91	19.21	2.15	17.66	58.345	Horizontal	Pass
		707.5	2.48	1.91	19.26	2.15	17.68	58.614	Horizontal	Pass
		714.5	2.32	1.93	19.34	2.15	17.58	57.280	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	2.48	1.91	19.23	2.15	17.65	58.210	Horizontal	Pass
		707.5	2.45	1.91	19.26	2.15	17.65	58.210	Horizontal	Pass
		713.5	2.41	1.92	19.33	2.15	17.67	58.479	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	704	2.53	1.91	19.25	2.15	17.72	59.156	Horizontal	Pass
		707.5	2.51	1.91	19.26	2.15	17.71	59.020	Horizontal	Pass
		711	2.46	1.92	19.32	2.15	17.71	59.020	Horizontal	Pass

Note:
SG Level= Signal generator output
Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)
Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

8.7 LTE BAND 13

Radiated Power (ERP) for Band 13										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	779.5	1.51	1.95	19.23	2.15	16.64	46.132	Vertical	Pass
		782	1.51	1.95	19.26	2.15	16.67	46.452	Vertical	Pass
		784.5	1.42	1.96	19.33	2.15	16.64	46.132	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	782	1.53	1.95	19.25	2.15	16.68	46.559	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	779.5	1.53	1.95	19.23	2.15	16.66	46.345	Horizontal	Pass
		782	1.45	1.95	19.26	2.15	16.61	45.814	Horizontal	Pass
		784.5	1.48	1.96	19.33	2.15	16.70	46.774	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	782	1.61	1.95	19.25	2.15	16.76	47.424	Horizontal	Pass

Radiated Power (ERP) for Band 13										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. EPR	Max. EPR	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	779.5	0.97	1.95	19.23	2.15	16.10	40.738	Vertical	Pass
		782	0.93	1.95	19.26	2.15	16.09	40.644	Vertical	Pass
		784.5	0.88	1.96	19.33	2.15	16.10	40.738	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	782	0.92	1.95	19.25	2.15	16.07	40.458	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	779.5	0.97	1.95	19.23	2.15	16.10	40.738	Horizontal	Pass
		782	0.84	1.95	19.26	2.15	16.00	39.811	Horizontal	Pass
		784.5	0.91	1.96	19.33	2.15	16.13	41.020	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	782	1	1.95	19.25	2.15	16.15	41.210	Horizontal	Pass

Note:
SG Level= Signal generator output
Max. EIRP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)
Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

8.8 LTE BAND 17

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	706.5	2.93	1.91	19.23	2.15	18.10	64.565	Vertical	Pass
		710	2.88	1.91	19.26	2.15	18.08	64.269	Vertical	Pass
		713.5	2.75	1.92	19.33	2.15	18.01	63.241	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	709	2.79	1.91	19.25	2.15	17.98	62.806	Vertical	Pass
		710	2.76	1.91	19.26	2.15	17.96	62.517	Vertical	Pass
		711	2.74	1.92	19.32	2.15	17.99	62.951	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	706.5	2.84	1.91	19.23	2.15	18.01	63.241	Horizontal	Pass
		710	2.86	1.91	19.26	2.15	18.06	63.973	Horizontal	Pass
		713.5	2.84	1.92	19.33	2.15	18.10	64.565	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	709	2.95	1.91	19.25	2.15	18.14	65.163	Horizontal	Pass
		710	2.95	1.91	19.26	2.15	18.15	65.313	Horizontal	Pass
		711	2.86	1.92	19.32	2.15	18.11	64.714	Horizontal	Pass

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	706.5	2.14	1.91	19.23	2.15	17.31	53.827	Vertical	Pass
		710	2.17	1.91	19.26	2.15	17.37	54.576	Vertical	Pass
		713.5	2.14	1.92	19.33	2.15	17.40	54.954	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	709	2.16	1.91	19.25	2.15	17.35	54.325	Vertical	Pass
		710	2.09	1.91	19.26	2.15	17.29	53.580	Vertical	Pass
		711	2.07	1.92	19.32	2.15	17.32	53.951	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	706.5	2.18	1.91	19.23	2.15	17.35	54.325	Horizontal	Pass
		710	2.15	1.91	19.26	2.15	17.35	54.325	Horizontal	Pass
		713.5	2.04	1.92	19.33	2.15	17.30	53.703	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	709	2.25	1.91	19.25	2.15	17.44	55.463	Horizontal	Pass
		710	2.25	1.91	19.26	2.15	17.45	55.590	Horizontal	Pass
		711	2.20	1.92	19.32	2.15	17.45	55.590	Horizontal	Pass

Note:
ERP=EIRP-2.15
SG Level= Signal generator output
Max. EIRP Average (dBm)= Antenna Factor (dB)+ SG Level (dBm)- Cable Loss(dBm)

9. SPURIOUS RADIATION EMISSION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238, §27.53 and §90.691

LIMIT

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

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

§27.53 (h) For operations in the 1710–1755 MHz and 2110–2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 + 10 log10(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 Log10 (p), dB; and
b. for mobile subscriber equipment, the attenuation shall not be less than 43 + 10 Log10 (p), dB at the channel edges and 55 + 10 Log10 (p) at 5.5 MHz away and beyond the channel edges where p in (a) and (b) is the transmitter power measured in watts.

MODES TESTED

LTE Band 2/4/5/7/12/13/17

RESULTS

PASS

9.1 LTE BAND 2

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

Test Results for Low Channel 1850.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
3701.4	-46.90	4.04	33.51	-17.43	-13	-4.43	Horizontal
3701.4	-46.30	4.04	33.51	-16.83	-13	-3.83	Vertical
5552.1	-53.59	5.24	35.84	-22.99	-13	-9.99	Vertical
5552.1	-50.57	5.24	35.84	-19.97	-13	-6.97	Horizontal
184.5	-34.18	1.43	16.02	-19.59	-13	-6.59	Vertical
249.2	-43.08	1.30	17.99	-26.39	-13	-13.39	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-45.88	4.04	33.56	-16.36	-13	-3.36	Horizontal
3760.0	-45.51	4.04	33.56	-15.99	-13	-2.99	Vertical
5640.0	-47.81	5.24	35.91	-17.14	-13	-4.14	Vertical
5640.0	-53.13	5.24	35.91	-22.46	-13	-9.46	Horizontal
205.4	-41.80	1.62	16.97	-26.45	-13	-13.45	Vertical
254.0	-37.20	1.74	15.98	-22.97	-13	-9.97	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-50.34	4.04	34.00	-20.38	-13	-7.38	Horizontal
3818.6	-53.15	4.04	34.00	-23.19	-13	-10.19	Vertical
5727.9	-50.04	5.24	36.04	-19.24	-13	-6.24	Vertical
5727.9	-51.10	5.24	36.04	-20.30	-13	-7.30	Horizontal
186.7	-43.66	1.42	17.29	-27.79	-13	-14.79	Vertical
450.6	-39.13	1.50	17.90	-22.72	-13	-9.72	Horizontal

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

Test Results for Low Channel 1860MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
3720.0	-51.10	4.07	33.54	-21.63	-13	-8.63	Horizontal
3720.0	-49.31	4.07	33.54	-19.84	-13	-6.84	Vertical
5580.0	-47.25	5.28	35.86	-16.67	-13	-3.67	Vertical
5580.0	-52.87	5.28	35.86	-22.29	-13	-9.29	Horizontal
185.1	-37.86	1.58	16.89	-22.54	-13	-9.54	Vertical
462.5	-40.15	1.76	17.26	-24.65	-13	-11.65	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-46.12	4.04	33.56	-16.60	-13	-3.60	Horizontal
3760.0	-46.28	4.04	33.56	-16.76	-13	-3.76	Vertical
5640.0	-47.57	5.24	35.91	-16.90	-13	-3.90	Vertical
5640.0	-49.05	5.24	35.91	-18.38	-13	-5.38	Horizontal
176.2	-37.85	1.46	16.27	-23.04	-13	-10.04	Vertical
434.0	-38.40	1.59	15.15	-24.84	-13	-11.84	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-50.80	4.04	34.00	-20.84	-13	-7.84	Horizontal
3800.0	-48.03	4.04	34.00	-18.07	-13	-5.07	Vertical
5700.0	-47.19	5.24	36.04	-16.39	-13	-3.39	Vertical
5700.0	-49.70	5.24	36.04	-18.90	-13	-5.90	Horizontal
186.8	-40.97	1.36	17.39	-24.93	-13	-11.93	Vertical
348.9	-35.75	1.66	15.39	-22.02	-13	-9.02	Horizontal

Note: PMea(dBm)= Power(dBm)+ ARpl (dBm)

. Over Limit= : PMea(dBm)-Limit(dBm)

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

9.2 LTE BAND 4

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

Test Results for Low Channel 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
3421.4	-45.55	4.02	29.80	-19.77	-13	-6.77	Horizontal
3421.4	-49.31	4.02	29.80	-23.53	-13	-10.53	Vertical
5132.1	-44.62	5.24	35.84	-14.02	-13	-1.02	Vertical
5132.1	-52.76	5.24	35.84	-22.16	-13	-9.16	Horizontal
208.9	-34.61	1.68	16.04	-20.25	-13	-7.25	Vertical
248.9	-40.49	1.78	17.74	-24.53	-13	-11.53	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-46.26	4.03	30.00	-20.29	-13	-7.29	Horizontal
3465.0	-53.49	4.03	30.00	-27.52	-13	-14.52	Vertical
5197.5	-50.34	5.25	35.86	-19.73	-13	-6.73	Vertical
5197.5	-52.35	5.25	35.86	-21.74	-13	-8.74	Horizontal
180.9	-42.39	1.72	17.69	-26.42	-13	-13.42	Vertical
375.4	-34.60	1.62	16.02	-20.19	-13	-7.19	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-49.50	4.05	30.01	-23.54	-13	-10.54	Horizontal
3508.6	-46.89	4.05	30.01	-20.93	-13	-7.93	Vertical
5262.9	-48.53	5.26	35.86	-17.93	-13	-4.93	Vertical
5262.9	-49.59	5.26	35.86	-18.99	-13	-5.99	Horizontal
176.7	-36.95	1.80	16.69	-22.06	-13	-9.06	Vertical
287.2	-44.65	1.75	16.66	-29.75	-13	-16.75	Horizontal

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

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
3440.0	-44.41	4.02	29.80	-18.63	-13	-5.63	Horizontal
3440.0	-53.00	4.02	29.80	-27.22	-13	-14.22	Vertical
5160.0	-44.16	5.24	35.84	-13.56	-13	-0.56	Vertical
5160.0	-53.88	5.24	35.84	-23.28	-13	-10.28	Horizontal
184.4	-43.29	1.57	17.26	-27.60	-13	-14.60	Vertical
431.3	-43.76	1.78	16.35	-29.19	-13	-16.19	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-46.35	4.03	30.00	-20.38	-13	-7.38	Horizontal
3465.0	-51.05	4.03	30.00	-25.08	-13	-12.08	Vertical
5197.5	-52.15	5.25	35.86	-21.54	-13	-8.54	Vertical
5197.5	-49.99	5.25	35.86	-19.38	-13	-6.38	Horizontal
207.2	-39.42	1.44	17.95	-22.91	-13	-9.91	Vertical
243.5	-41.75	1.65	16.09	-27.31	-13	-14.31	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-52.92	4.05	27.68	-29.29	-13	-16.29	Horizontal
3490.0	-46.66	4.05	27.68	-23.03	-13	-10.03	Vertical
5235.0	-50.95	5.26	35.86	-20.35	-13	-7.35	Vertical
5235.0	-50.76	5.26	35.86	-20.16	-13	-7.16	Horizontal
189.1	-41.13	1.61	16.85	-25.89	-13	-12.89	Vertical
464.2	-43.90	1.61	15.19	-30.32	-13	-17.32	Horizontal

Note: PMea(dBm)= Power(dBm)+ ARpl (dBm)

. Over Limit= : PMea(dBm)-Limit(dBm)

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

9.3 LTE BAND 5

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

Test Results for Low Channel 824.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
1649.4	-46.07	2.78	27.50	-21.35	-13	-8.35	Horizontal
1649.4	-48.85	2.78	27.50	-24.13	-13	-11.13	Vertical
2474.1	-45.75	2.90	27.80	-20.85	-13	-7.85	Vertical
2474.1	-49.34	2.90	27.80	-24.44	-13	-11.44	Horizontal
202.3	-40.04	1.76	17.59	-24.21	-13	-11.21	Vertical
369.4	-39.53	1.63	15.87	-25.29	-13	-12.29	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-50.03	2.80	27.48	-25.35	-13	-12.35	Horizontal
1673.0	-48.61	2.80	27.48	-23.93	-13	-10.93	Vertical
2509.5	-50.45	2.91	27.70	-25.66	-13	-12.66	Vertical
2509.5	-49.70	2.91	27.70	-24.91	-13	-11.91	Horizontal
212.4	-36.68	1.61	15.68	-22.61	-13	-9.61	Vertical
388.7	-39.08	1.59	17.52	-23.16	-13	-10.16	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-46.54	2.82	27.43	-21.93	-13	-8.93	Horizontal
1696.6	-48.65	2.82	27.43	-24.04	-13	-11.04	Vertical
2544.9	-48.10	2.92	27.74	-23.28	-13	-10.28	Vertical
2544.9	-50.52	2.92	27.74	-25.70	-13	-12.70	Horizontal
178.2	-36.86	1.69	16.67	-21.87	-13	-8.87	Vertical
287.2	-43.86	1.70	17.18	-28.38	-13	-15.38	Horizontal

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

Test Results for Low Channel 829MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
1658.0	-46.39	2.78	27.50	-21.67	-13	-8.67	Horizontal
1658.0	-51.69	2.78	27.50	-26.97	-13	-13.97	Vertical
2487.0	-45.99	2.90	27.80	-21.09	-13	-8.09	Vertical
2487.0	-51.51	2.90	27.80	-26.61	-13	-13.61	Horizontal
190.6	-39.39	1.71	15.57	-25.53	-13	-12.53	Vertical
428.2	-42.55	1.34	16.40	-27.49	-13	-14.49	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-44.05	2.80	27.48	-19.37	-13	-6.37	Horizontal
1673.0	-49.04	2.80	27.48	-24.36	-13	-11.36	Vertical
2509.5	-47.28	2.91	27.70	-22.49	-13	-9.49	Vertical
2509.5	-49.82	2.91	27.70	-25.03	-13	-12.03	Horizontal
210.5	-36.60	1.44	17.04	-21.00	-13	-8.00	Vertical
442.9	-39.21	1.76	17.62	-23.35	-13	-10.35	Horizontal
Test Results for High Channel 844MHz							
1688.0	-48.08	2.82	27.43	-23.47	-13	-10.47	Horizontal
1688.0	-51.18	2.82	27.43	-26.57	-13	-13.57	Vertical
2532.0	-46.47	2.92	27.74	-21.65	-13	-8.65	Vertical
2532.0	-53.53	2.92	27.74	-28.71	-13	-15.71	Horizontal
211.3	-40.58	1.74	17.70	-24.62	-13	-11.62	Vertical
462.2	-34.77	1.41	17.46	-18.71	-13	-5.71	Horizontal

Note: PMea(dBm)= Power(dBm)+ ARpl (dBm)

. Over Limit= : PMea(dBm)-Limit(dBm)

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

9.4 LTE BAND 7

QPSK EIRP POWER FOR LTE BAND 7 (5.0MHZ BANDWIDTH)

Test Results for Low Channel 2502.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
5005.0	-61.97	5.23	35.81	-31.39	-25	-6.39	Horizontal
5005.0	-61.98	5.23	35.81	-31.40	-25	-6.40	Vertical
7507.5	-64.76	5.67	36.85	-33.58	-25	-8.58	Vertical
7507.5	-64.23	5.67	36.85	-33.05	-25	-8.05	Horizontal
191.9	-48.64	1.73	17.97	-32.40	-25	-7.40	Vertical
424.2	-48.19	1.38	15.11	-34.46	-25	-9.46	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-64.77	5.23	35.82	-34.18	-25	-9.18	Horizontal
5070.0	-60.40	5.23	35.82	-29.81	-25	-4.81	Vertical
7605.0	-59.38	5.67	36.85	-28.20	-25	-3.20	Vertical
7605.0	-63.10	5.67	36.85	-31.92	-25	-6.92	Horizontal
194.7	-44.49	1.77	16.17	-30.08	-25	-5.08	Vertical
389.1	-51.19	1.63	15.21	-37.61	-25	-12.61	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-59.02	5.24	35.83	-28.43	-25	-3.43	Horizontal
5135.0	-59.69	5.24	35.83	-29.10	-25	-4.10	Vertical
7702.5	-61.67	5.68	36.87	-30.48	-25	-5.48	Vertical
7702.5	-60.13	5.68	36.87	-28.94	-25	-3.94	Horizontal
205.5	-51.63	1.58	17.56	-35.65	-25	-10.65	Vertical
347.6	-49.16	1.45	16.58	-34.03	-25	-9.03	Horizontal

QPSK EIRP POWER FOR LTE BAND 7 (20.0MHZ BANDWIDTH)

Test Results for Low Channel 2510MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
5020.0	-60.41	5.23	35.82	-29.82	-25	-4.82	Horizontal
5020.0	-59.20	5.23	35.82	-28.61	-25	-3.61	Vertical
7530.0	-62.35	5.67	36.86	-31.16	-25	-6.16	Vertical
7530.0	-59.98	5.67	36.86	-28.79	-25	-3.79	Horizontal
194.5	-44.58	1.63	15.76	-30.45	-25	-5.45	Vertical
383.4	-44.72	1.71	15.44	-30.99	-25	-5.99	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-63.96	5.23	35.82	-33.37	-25	-8.37	Horizontal
5070.0	-62.00	5.23	35.82	-31.41	-25	-6.41	Vertical
7605.0	-59.34	5.67	36.85	-28.16	-25	-3.16	Vertical
7605.0	-60.77	5.67	36.85	-29.59	-25	-4.59	Horizontal
184.0	-47.22	1.79	16.84	-32.16	-25	-7.16	Vertical
356.1	-46.63	1.71	17.64	-30.70	-25	-5.70	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-62.90	5.24	35.83	-32.31	-25	-7.31	Horizontal
5120.0	-64.29	5.24	35.83	-33.70	-25	-8.70	Vertical
7680.0	-63.28	5.70	36.88	-32.10	-25	-7.10	Vertical
7680.0	-63.10	5.70	36.88	-31.92	-25	-6.92	Horizontal
204.7	-44.88	1.79	16.84	-29.82	-25	-4.82	Vertical
269.6	-44.97	1.71	17.64	-29.04	-25	-4.04	Horizontal

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

. Margin = Spurious Emission Level - Limit

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

9.5 LTE BAND 12

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

Test Results for Low Channel 699.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
1399.4	-52.84	2.60	27.20	-28.24	-13	-15.24	Horizontal
1399.4	-52.55	2.60	27.20	-27.95	-13	-14.95	Vertical
2099.1	-44.59	2.85	27.54	-19.90	-13	-6.90	Vertical
2099.1	-49.22	2.85	27.54	-24.53	-13	-11.53	Horizontal
212.1	-34.76	1.49	17.78	-18.47	-13	-5.47	Vertical
254.1	-43.01	1.36	17.33	-27.04	-13	-14.04	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-53.40	2.61	27.28	-28.73	-13	-15.73	Horizontal
1415.0	-53.73	2.61	27.28	-29.06	-13	-16.06	Vertical
2122.5	-53.79	2.87	27.59	-29.07	-13	-16.07	Vertical
2122.5	-53.29	2.87	27.59	-28.57	-13	-15.57	Horizontal
186.0	-41.11	1.73	15.74	-27.10	-13	-14.10	Vertical
350.7	-35.24	1.62	15.79	-21.07	-13	-8.07	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-51.55	2.63	27.28	-26.90	-13	-13.90	Horizontal
1430.6	-46.02	2.63	27.28	-21.37	-13	-8.37	Vertical
2145.9	-53.48	2.88	27.60	-28.76	-13	-15.76	Vertical
2145.9	-51.85	2.88	27.60	-27.13	-13	-14.13	Horizontal
206.5	-43.44	1.61	18.00	-27.05	-13	-14.05	Vertical
268.0	-40.91	1.45	15.49	-26.88	-13	-13.88	Horizontal

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

Test Results for Low Channel 704MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
1408.0	-46.58	2.61	27.26	-21.93	-13	-8.93	Horizontal
1408.0	-50.95	2.61	27.26	-26.30	-13	-13.30	Vertical
2112.0	-47.73	2.87	27.58	-23.02	-13	-10.02	Vertical
2112.0	-52.91	2.87	27.58	-28.20	-13	-15.20	Horizontal
175.0	-41.54	1.31	16.97	-25.88	-13	-12.88	Vertical
366.3	-42.34	1.65	16.70	-27.29	-13	-14.29	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-49.07	2.61	27.28	-24.40	-13	-11.40	Horizontal
1415.0	-45.36	2.61	27.28	-20.69	-13	-7.69	Vertical
2122.5	-52.00	2.87	27.59	-27.28	-13	-14.28	Vertical
2122.5	-53.15	2.87	27.59	-28.43	-13	-15.43	Horizontal
184.5	-38.63	1.72	17.99	-22.36	-13	-9.36	Vertical
430.8	-43.50	1.73	17.94	-27.29	-13	-14.29	Horizontal
Test Results for High Channel 711MHz							
1422.0	-46.45	2.62	27.28	-21.79	-13	-8.79	Horizontal
1422.0	-44.80	2.62	27.28	-20.14	-13	-7.14	Vertical
2133.0	-45.69	2.87	27.60	-20.96	-13	-7.96	Vertical
2133.0	-49.36	2.87	27.60	-24.63	-13	-11.63	Horizontal
207.9	-43.28	1.58	15.93	-28.93	-13	-15.93	Vertical
373.7	-39.28	1.36	15.59	-25.05	-13	-12.05	Horizontal

Note: PMea(dBm)= Power(dBm)+ ARpl (dBm)

. Over Limit= : PMea(dBm)-Limit(dBm)

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

9.6 LTE BAND 13

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

Test Results for Low Channel 779.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
1559.0	-74.54	2.61	27.28	-49.87	-40	-9.87	Horizontal
1559.0	-70.56	2.61	27.28	-45.89	-40	-5.89	Vertical
2338.5	-73.64	2.87	27.59	-48.92	-13	-35.92	Vertical
2338.5	-74.71	2.87	27.59	-49.99	-13	-36.99	Horizontal
180.9	-69.01	1.71	16.15	-54.57	-13	-41.57	Vertical
371.6	-69.38	1.41	17.32	-53.47	-13	-40.47	Horizontal
Test Results For Mid Channel 782MHz							
1564.0	-71.55	2.62	27.30	-46.87	-40	-6.87	Horizontal
1564.0	-75.35	2.62	27.30	-50.67	-40	-10.67	Vertical
2346.0	-68.37	2.87	27.62	-43.62	-13	-30.62	Vertical
2346.0	-72.97	2.87	27.62	-48.22	-13	-35.22	Horizontal
178.8	-73.50	1.42	15.25	-59.68	-13	-46.68	Vertical
264.0	-67.20	1.36	17.19	-51.37	-13	-38.37	Horizontal
Test Results for High Channel 784.5MHz							
1569.0	-76.52	2.66	27.28	-51.90	-40	-11.90	Horizontal
1569.0	-71.76	2.66	27.28	-47.14	-40	-7.14	Vertical
2353.5	-67.85	2.88	27.60	-43.13	-13	-30.13	Vertical
2353.5	-72.27	2.88	27.60	-47.55	-13	-34.55	Horizontal
190.6	-72.26	1.32	17.29	-56.29	-13	-43.29	Vertical
447.2	-71.21	1.72	16.89	-56.04	-13	-43.04	Horizontal

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

Test Results for Low Channel 782MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
1564.0	-71.49	2.62	27.30	-46.81	-40	-6.81	Horizontal
1564.0	-76.09	2.62	27.30	-51.41	-40	-11.41	Vertical
2346.0	-73.61	2.87	27.62	-48.86	-13	-35.86	Vertical
2346.0	-67.41	2.87	27.62	-42.66	-13	-29.66	Horizontal
177.0	-68.57	1.35	16.91	-53.01	-13	-40.01	Vertical
276.3	-73.42	1.62	16.31	-58.73	-13	-45.73	Horizontal

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

. Margin = Spurious Emission Level - Limit

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

9.7 LTE BAND 17

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

Test Results for Low Channel 706.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
1413.0	-46.52	2.61	27.28	-21.85	-13	-8.85	Horizontal
1413.0	-44.80	2.61	27.28	-20.13	-13	-7.13	Vertical
2119.5	-48.35	2.87	27.59	-23.63	-13	-10.63	Vertical
2119.5	-49.89	2.87	27.59	-25.17	-13	-12.17	Horizontal
183.1	-43.49	1.71	16.15	-29.05	-13	-16.05	Vertical
440.1	-40.34	1.41	17.32	-24.43	-13	-11.43	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-47.44	2.62	27.30	-22.76	-13	-9.76	Horizontal
1420.0	-47.62	2.62	27.30	-22.94	-13	-9.94	Vertical
2130.0	-44.84	2.87	27.62	-20.09	-13	-7.09	Vertical
2130.0	-53.55	2.87	27.62	-28.80	-13	-15.80	Horizontal
183.9	-41.25	1.42	15.25	-27.43	-13	-14.43	Vertical
269.2	-40.80	1.36	17.19	-24.97	-13	-11.97	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-44.55	2.66	27.28	-19.93	-13	-6.93	Horizontal
1427.0	-51.48	2.66	27.28	-26.86	-13	-13.86	Vertical
2140.5	-49.15	2.88	27.60	-24.43	-13	-11.43	Vertical
2140.5	-51.34	2.88	27.60	-26.62	-13	-13.62	Horizontal
175.8	-34.00	1.32	17.29	-18.03	-13	-5.03	Vertical
323.7	-39.57	1.72	16.89	-24.40	-13	-11.40	Horizontal

QPSK EIRP POWER FOR LTE BAND 17 (10MHZ BANDWIDTH)

Test Results for Low Channel 709MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
1418.0	-44.74	2.62	27.30	-20.06	-13	-7.06	Horizontal
1418.0	-53.04	2.62	27.30	-28.36	-13	-15.36	Vertical
2127.0	-44.81	2.87	27.62	-20.06	-13	-7.06	Vertical
2127.0	-51.66	2.87	27.62	-26.91	-13	-13.91	Horizontal
186.9	-42.25	1.35	16.91	-26.69	-13	-13.69	Vertical
426.8	-34.90	1.62	16.31	-20.21	-13	-7.21	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-47.32	2.62	27.30	-22.64	-13	-9.64	Horizontal
1420.0	-48.71	2.62	27.30	-24.03	-13	-11.03	Vertical
2130.0	-47.60	2.87	27.62	-22.85	-13	-9.85	Vertical
2130.0	-52.49	2.87	27.62	-27.74	-13	-14.74	Horizontal
175.4	-39.44	1.51	17.14	-23.81	-13	-10.81	Vertical
396.1	-44.74	1.77	16.88	-29.63	-13	-16.63	Horizontal
Test Results for High Channel 711MHz							
1422.0	-51.19	2.62	27.30	-26.51	-13	-13.51	Horizontal
1422.0	-51.36	2.62	27.30	-26.68	-13	-13.68	Vertical
2133.0	-50.68	2.87	27.62	-25.93	-13	-12.93	Vertical
2133.0	-49.63	2.87	27.62	-24.88	-13	-11.88	Horizontal
207.5	-37.18	1.78	15.95	-23.01	-13	-10.01	Vertical
368.8	-36.58	1.34	17.95	-19.98	-13	-6.98	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, §90.213

LIMITS

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

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

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- Temp. = −30° to +50°C
- Voltage =low voltage, DC 3.27V, Normal, DC 3.85V and High voltage, DC 4.43V.

Frequency Stability vs Temperature:

The EUT is place inside a temperature chamber. The temperature is set to -30ºC 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 +50ºC is reached.

Frequency Stability vs Voltage:

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

MODES TESTED

LTE Band 2/4/5/7/12/13/17

RESULTS

See the following pages.

10.1 LTE BAND 2

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	1880	12.7	0.006747	2.5
3.85	1880	14.0	0.007471	2.5
4.43	1880	13.5	0.007160	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	12.3	0.006557	2.5
Extreme (50C)	1880	12.0	0.006372	2.5
Extreme (40C)	1880	13.8	0.007350	2.5
Extreme (30C)	1880	13.1	0.006959	2.5
Extreme (10C)	1880	14.0	0.007451	2.5
Extreme (0C)	1880	11.9	0.006324	2.5
Extreme (-10C)	1880	12.8	0.006802	2.5
Extreme (-20C)	1880	14.5	0.007733	2.5
Extreme (-30C)	1880	15.0	0.008001	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	1880	9.4	0.005014	2.5
3.85	1880	9.3	0.004937	2.5
4.43	1880	8.3	0.004437	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	9.1	0.004855	2.5
Extreme (50C)	1880	8.6	0.004593	2.5
Extreme (40C)	1880	7.8	0.004165941	2.5
Extreme (30C)	1880	9.0	0.004785917	2.5
Extreme (10C)	1880	9.2	0.004910267	2.5
Extreme (0C)	1880	8.5	0.004510958	2.5
Extreme (-10C)	1880	9.4	0.00499533	2.5
Extreme (-20C)	1880	8.8	0.004661443	2.5
Extreme (-30C)	1880	8.1	0.004322168	2.5

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

10.2 LTE BAND 4

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	1732.5	8.6	0.004979	2.5
3.85	1732.5	9.1	0.005271	2.5
4.43	1732.5	8.4	0.004821	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.7	0.005019	2.5
Extreme (50C)	1732.5	8.4	0.004849	2.5
Extreme (40C)	1732.5	7.2	0.004170	2.5
Extreme (30C)	1732.5	6.1	0.003547	2.5
Extreme (10C)	1732.5	6.9	0.003967	2.5
Extreme (0C)	1732.5	9.8	0.005635	2.5
Extreme (-10C)	1732.5	8.6	0.004953	2.5
Extreme (-20C)	1732.5	7.3	0.004219	2.5
Extreme (-30C)	1732.5	8.4	0.004852	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	1732.5	9.3	0.005373	2.5
3.85	1732.5	8.6	0.004937	2.5
4.43	1732.5	7.7	0.004438	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	10.1	0.005851	2.5
Extreme (50C)	1732.5	9.3	0.005375	2.5
Extreme (40C)	1732.5	8.1	0.004678	2.5
Extreme (30C)	1732.5	8.7	0.005031	2.5
Extreme (10C)	1732.5	8.5	0.004879	2.5
Extreme (0C)	1732.5	8.4	0.004849	2.5
Extreme (-10C)	1732.5	8.7	0.005001	2.5
Extreme (-20C)	1732.5	9.4	0.005408	2.5
Extreme (-30C)	1732.5	8.5	0.004888	2.5

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

10.3 LTE BAND 5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	836.5	6.1	0.007246	2.5
3.85	836.5	6.9	0.008243	2.5
4.43	836.5	4.5	0.005347	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.5	0.007775	2.5
Extreme (50C)	836.5	5.5	0.006517	2.5
Extreme (40C)	836.5	5.6	0.006745	2.5
Extreme (30C)	836.5	6.6	0.007871	2.5
Extreme (10C)	836.5	5.5	0.006623	2.5
Extreme (0C)	836.5	4.9	0.005883	2.5
Extreme (-10C)	836.5	5.8	0.006976	2.5
Extreme (-20C)	836.5	5.9	0.007111	2.5
Extreme (-30C)	836.5	6.7	0.008057	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	836.5	6.1	0.007275	2.5
3.85	836.5	6.2	0.007459	2.5
4.43	836.5	4.4	0.005211	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.6	0.007879	2.5
Extreme (50C)	836.5	5.6	0.006661	2.5
Extreme (40C)	836.5	5.7	0.006820	2.5
Extreme (30C)	836.5	6.2	0.007359	2.5
Extreme (10C)	836.5	5.3	0.006278	2.5
Extreme (0C)	836.5	5.0	0.005967	2.5
Extreme (-10C)	836.5	5.8	0.006986	2.5
Extreme (-20C)	836.5	6.5	0.007814	2.5
Extreme (-30C)	836.5	6.3	0.007569	2.5

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

10.4 LTE BAND 7

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	2535	10.2	0.004023	2.5
3.85	2535	9.2	0.003646	2.5
4.43	2535	8.9	0.003494	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	9.9	0.003887	2.5
Extreme (50C)	2535	8.9	0.003507	2.5
Extreme (40C)	2535	8.0	0.003142	2.5
Extreme (30C)	2535	9.2	0.003616	2.5
Extreme (10C)	2535	7.9	0.003107	2.5
Extreme (0C)	2535	8.6	0.003386	2.5
Extreme (-10C)	2535	9.0	0.003532	2.5
Extreme (-20C)	2535	8.8	0.003477	2.5
Extreme (-30C)	2535	8.6	0.003405	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	2535	6.9	0.002722	2.5
3.85	2535	6.0	0.002359	2.5
4.43	2535	6.1	0.002407	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	6.9	0.002722	2.5
Extreme (50C)	2535	5.2	0.002052	2.5
Extreme (40C)	2535	5.3	0.002075	2.5
Extreme (30C)	2535	7.2	0.002832	2.5
Extreme (10C)	2535	6.1	0.002422	2.5
Extreme (0C)	2535	5.4	0.002132	2.5
Extreme (-10C)	2535	5.5	0.002166	2.5
Extreme (-20C)	2535	5.7	0.002253	2.5
Extreme (-30C)	2535	5.3	0.002093	2.5

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

10.5 LTE BAND 12

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	707.5	8.8	0.012425	2.5
3.85	707.5	9.8	0.013844	2.5
4.43	707.5	8.7	0.012366	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	8.3	0.011800	2.5
Extreme (50C)	707.5	7.6	0.010800	2.5
Extreme (40C)	707.5	7.0	0.009961	2.5
Extreme (30C)	707.5	8.3	0.011788	2.5
Extreme (10C)	707.5	7.1	0.010039	2.5
Extreme (0C)	707.5	9.4	0.013256	2.5
Extreme (-10C)	707.5	8.9	0.012552	2.5
Extreme (-20C)	707.5	8.7	0.012326	2.5
Extreme (-30C)	707.5	8.2	0.011627	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	707.5	7.6	0.010674	2.5
3.85	707.5	8.5	0.012046	2.5
4.43	707.5	7.7	0.010903	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	9.4	0.013331	2.5
Extreme (50C)	707.5	8.4	0.011935	2.5
Extreme (40C)	707.5	8.6	0.012116	2.5
Extreme (30C)	707.5	7.7	0.010826	2.5
Extreme (10C)	707.5	8.5	0.012004	2.5
Extreme (0C)	707.5	7.3	0.010346	2.5
Extreme (-10C)	707.5	7.4	0.010433	2.5
Extreme (-20C)	707.5	8.8	0.012395	2.5
Extreme (-30C)	707.5	8.3	0.011727	2.5

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

10.6 LTE BAND 13

Band 13 QPSK, (10MHz BANDWIDTH RB size 50 RB Offset 0

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	782.0	13.0	0.016580	2.5
3.85	782.0	13.7	0.017523	2.5
4.43	782.0	13.0	0.016683	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	782.0	14.8	0.018895	2.5
Extreme (50C)	782.0	13.9	0.017730	2.5
Extreme (40C)	782.0	14.9	0.019000	2.5
Extreme (30C)	782.0	14.5	0.018528	2.5
Extreme (10C)	782.0	14.1	0.018054	2.5
Extreme (0C)	782.0	14.0	0.017847	2.5
Extreme (-10C)	782.0	14.4	0.018430	2.5
Extreme (-20C)	782.0	14.3	0.018235	2.5
Extreme (-30C)	782.0	13.8	0.017692	2.5

Band 13 16QAM, (10MHz BANDWIDTH RB size 50 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	782.0	12.4	0.015795	2.5
3.85	782.0	13.7	0.017563	2.5
4.43	782.0	12.9	0.016555	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	782.0	12.5	0.016024	2.5
Extreme (50C)	782.0	11.6	0.014837	2.5
Extreme (40C)	782.0	13.4	0.017107	2.5
Extreme (30C)	782.0	14.0	0.017871	2.5
Extreme (10C)	782.0	14.2	0.018100	2.5
Extreme (0C)	782.0	11.7	0.015021	2.5
Extreme (-10C)	782.0	13.4	0.017184	2.5
Extreme (-20C)	782.0	14.2	0.018175	2.5
Extreme (-30C)	782.0	14.7	0.018781	2.5

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

10.7 LTE BAND 17

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	710.0	10.2	0.014422	2.5
3.85	710.0	8.8	0.012393	2.5
4.43	710.0	8.0	0.011264	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.6	0.013502	2.5
Extreme (50C)	710.0	9.4	0.013238	2.5
Extreme (40C)	710.0	8.6	0.012107	2.5
Extreme (30C)	710.0	9.0	0.012670	2.5
Extreme (10C)	710.0	8.6	0.012060	2.5
Extreme (0C)	710.0	8.1	0.011419	2.5
Extreme (-10C)	710.0	8.8	0.012360	2.5
Extreme (-20C)	710.0	8.9	0.012466	2.5
Extreme (-30C)	710.0	8.2	0.011550	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	710.0	10.2	0.014351	2.5
3.85	710.0	8.6	0.012125	2.5
4.43	710.0	8.2	0.011516	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.4	0.013196	2.5
Extreme (50C)	710.0	8.9	0.012474	2.5
Extreme (40C)	710.0	7.9	0.011191	2.5
Extreme (30C)	710.0	9.4	0.013199	2.5
Extreme (10C)	710.0	7.8	0.010981	2.5
Extreme (0C)	710.0	8.6	0.012073	2.5
Extreme (-10C)	710.0	9.6	0.013585	2.5
Extreme (-20C)	710.0	9.3	0.013090	2.5
Extreme (-30C)	710.0	8.1	0.011417	2.5

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

11. Peak-to-Average Ratio

11.1 Description of the PAR Measurement

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

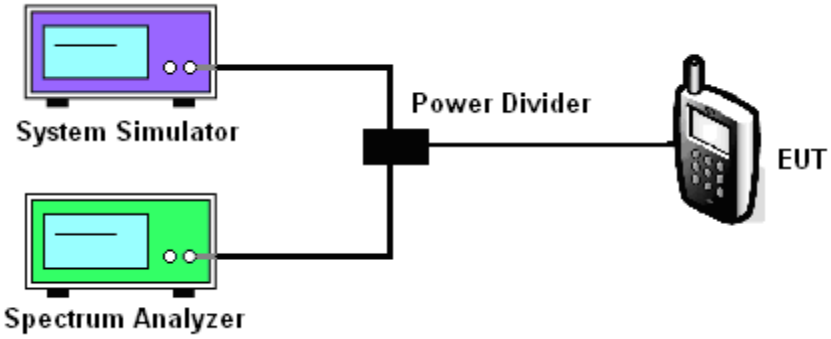
11.2 Measuring Instruments

See list of measuring instruments of this test report.

11.3 Test Procedures

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

11.4 Test Setup



MODES TESTED

LTE Band 2/4/5/7/12/13/17

Test data reference attachment.

----END OF REPORT----