

**FCC CFR47 PART 27
CERTIFICATION TEST REPORT
FCC ID: ZSHR6**

Product: Mobile phone
Trade Mark: kenxinda, ken mobile, KXD, EL, E&L
Model Number: R6
Family Model: N/A
Report No.: STR190705001004E

Prepared for

SHENZHEN KENXINDA TECHNOLOGY CO.,LTD
18TH FLOOR,FUCHUN ORIENT BUILDING, SHENNAN AV 7006,
SHENZHEN, 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.: +86-755-6115 6588 Fax.: +86-755-6115 6599
Website:<http://www.ntek.org.cn>

TEST RESULT CERTIFICATION

Applicant's name : SHENZHEN KENXINDA TECHNOLOGY CO.,LTD
Address: 18TH FLOOR,FUCHUN ORIENT BUILDING, SHENNAN AV 7006, SHENZHEN, China
Manufacturer's Name: SHENZHEN KENXINDA TECHNOLOGY CO.,LTD
Address: 18TH FLOOR,FUCHUN ORIENT BUILDING, SHENNAN AV 7006, SHENZHEN, China
Product name: Mobile phone
Model and/or type reference : R6
Family Model: N/A
Standards: FCC CFR 47 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: 08 Jul. 2019 ~ 29 Jul, 2019
Date of Issue : 31 Jul, 2019
Test Result : Pass

Testing Engineer : Cheng Jiawen (Cheng Jiawen)
Technical Manager : Jason Chen (Jason Chen)
Authorized Signatory : Sam Chen (Sam Chen)

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1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	Mobile phone
Trade Mark	kenxinda, ken mobile, KXD, EL, E&L
Model Name	R6
Family Model	N/A
Model Difference	N/A
FCC ID:	ZSHR6
Frequency Bands:	U.S. Bands: <input checked="" type="checkbox"/> LTE FDD Band 4, 7, 17
Frequency Range:	LTE FDD Band 4 Uplink: 1710MHz-1755MHz, Downlink: 2110MHz-2155MHz; LTE-FDD Band 7 Uplink: 2500MHz-2570MHz, Downlink: 2620MHz-2690MHz; LTE FDD Band 17 Uplink: 704MHz-716MHz, Downlink: 734MHz-746MHz;
Type of Modulation:	QPSK/16QAM
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:	LTE FDD Band 4: 0.8dBi; LTE FDD Band 7: 0.8dBi; LTE FDD Band 17: 0.8dBi
Power Supply:	DC 3.8V/2100mAh from Battery or DC 5V from USB Port.
Adapter:	Model: K12S Input: 100-240V~50/60Hz 0.25A Output: 5V---1A
Extreme Vol. Limits:	DC 3.4V to DC 4.2V (Nominal DC 3.8V) (Note 1)
HW Version	S6_MB_V2.0
SW Version	NRD90M dev-keys
** Note1: The High Voltage DC 4.2V and Low Voltage 3.4V was declared by manufacturer, The EUT couldn't be operate normally with higher or lower voltage.	

1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: ZSHR6** filing to comply with the FCC Part 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 27, ANSI C63.26:2015.

1.4 TEST FACILITY

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

ShenZhen NTEK Testing Technology Co., Ltd.

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

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

FCC Registration No.:463705

IC Registration No.:9270A-1,

CNAS Registration No.:L5516

MEASUREMENT UNCERTAINTY

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

No.	Item	Uncertainty
1	Measuring Uncertainty for a Level of Confidence of 95% (U = 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 4, Band 7, Band 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

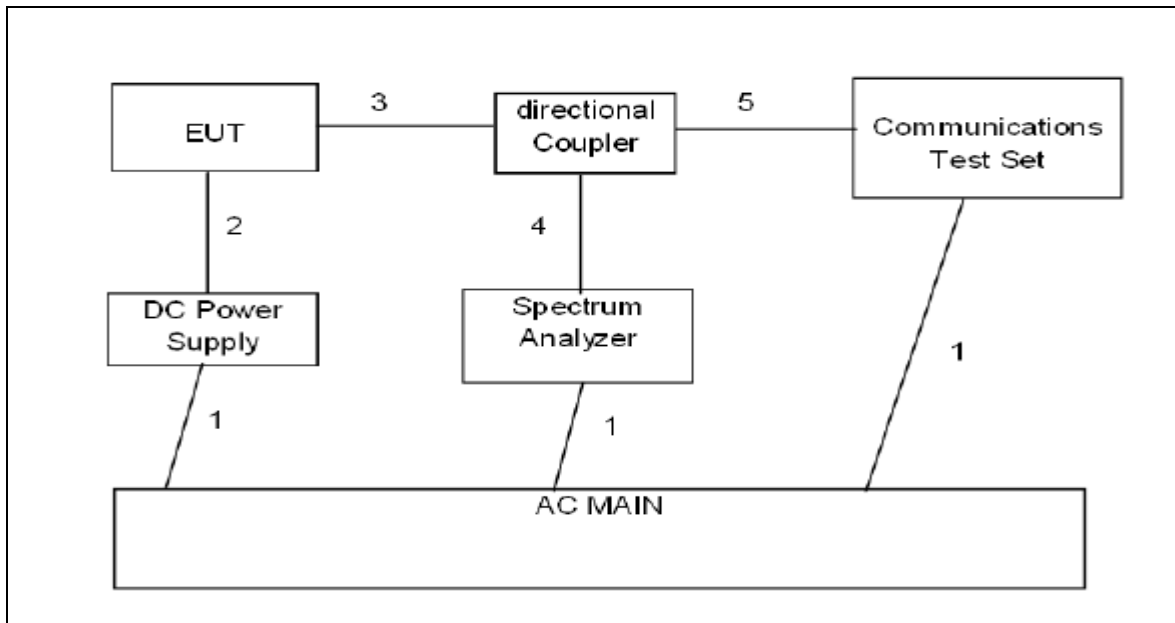
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Mobile phone	R6	FCC ID: ZSHR6	EUT

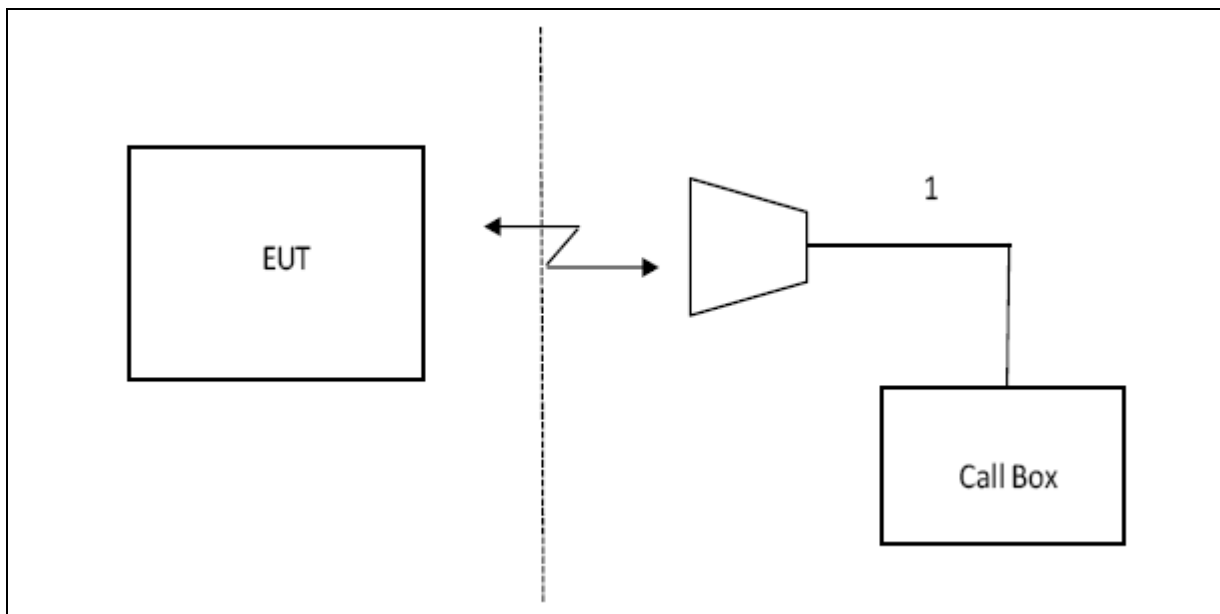
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

CONDUCTED SETUP DIAGRAM FOR TESTS



RADIATED SETUP DIAGRAM FOR TESTS



3. TEST AND MEASUREMENT EQUIPMENT

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

NAME OF EQUIPMENT	MANUFACTURER	MODEL	SERIAL NUMBER	NEXT CAL. DATE
SPECTRUM ANALYZER	AGILENT	N9020A	MY49100060	2019.10.07
TEST RECEIVER	R&S	ESCI	101318	2020.05.12
COMMUNICATION TESTER	R&S	CMU200	117858	2020.05.12
COMMUNICATION TESTER	R&S	CMW500	148500	2020.05.12
TEST RECEIVER	R&S	FCKL1528	A0304230	2020.05.12
LISN	SCHWARZBECK	NSLK8127	A0304233	2020.05.12
CLIMATE CHAMBER	ALBATROSS	--	--	2020.05.12
Loop Antenna	Daze	ZN30900N	SEL0097	2020.05.12
Biological Antenna	A.H. Systems Inc.	SAS-521-4	N/A	2020.05.12
Horn Antenna	EM	EM-AH-10180	2011071402	2020.05.12
DC Power Source	N/A	PS-6005D	20170402923	2020.05.12

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	13	10	Table 6.2.4-2	Table 6.2.4-2
	6.6.3.3.2				
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 4
- LTE Band 7
- LTE Band 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: §22.359, §24.238,

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.

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 (704, 716, 824, 849, 1710 and 1755, 1850 and 1910MHz)

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

Set display line at -13 dBm

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

MODES TESTED

LTE Band 4

LTE Band 7

LTE Band 17

RESULTS

Test data reference attachment.

7. OUT OF BAND EMISSIONS

RULE PART(S)

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

LIMITS

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.

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 at -13 dBm
- 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 4

LTE Band 7

LTE Band 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 and §27.50

LIMITS:

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

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

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

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

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 4

LTE Band 7

LTE Band 17

RESULTS

Pass

8.2 LTE BAND 4

Radiated Power (EIRP) for Band 4									
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	
1.4MHz Band QPSK	6/0	1710.7	-1.32	3.12	27.58	23.14	205.995	Horizontal	Pass
		1732.5	-1.48	3.27	27.61	22.86	193.376	Horizontal	Pass
		1754.3	-1.26	3.29	27.63	23.08	203.277	Horizontal	Pass
3.0MHz Band QPSK	15/0	1711.5	-1.32	3.13	27.61	23.16	207.171	Horizontal	Pass
		1732.5	-1.27	3.27	27.61	23.07	202.789	Horizontal	Pass
		1753.5	-1.09	3.3	27.62	23.23	210.574	Horizontal	Pass
5.0MHz Band QPSK	25/0	1712.5	-1.90	3.13	27.63	22.60	181.875	Horizontal	Pass
		1732.5	-1.97	3.27	27.61	22.37	172.583	Horizontal	Pass
		1752.5	-1.82	3.3	27.6	22.48	177.119	Horizontal	Pass
10.0MHz Band QPSK	50/0	1715	-1.32	3.15	27.64	23.17	207.328	Horizontal	Pass
		1732.5	-1.19	3.31	27.61	23.11	204.606	Horizontal	Pass
		1750	-1.03	3.33	27.59	23.23	210.273	Horizontal	Pass
15.0MHz Band QPSK	75/0	1717.5	-1.43	3.15	27.65	23.07	202.987	Horizontal	Pass
		1732.5	-1.12	3.31	27.61	23.18	208.140	Horizontal	Pass
		1747.5	-1.09	3.33	27.57	23.15	206.437	Horizontal	Pass
20.0MHz Band QPSK	100/0	1720	-1.23	3.17	27.66	23.26	211.682	Horizontal	Pass
		1732.5	-1.19	3.32	27.61	23.10	203.996	Horizontal	Pass
		1745	-1.16	3.36	27.56	23.04	201.402	Horizontal	Pass
1.4MHz Band QPSK	6/0	1710.7	-1.32	3.12	27.58	23.14	206.140	Vertical	Pass
		1732.5	-1.39	3.27	27.61	22.95	197.466	Vertical	Pass
		1754.3	-1.07	3.29	27.63	23.27	212.120	Vertical	Pass
3.0MHz Band QPSK	15/0	1711.5	-1.20	3.13	27.61	23.28	213.050	Vertical	Pass
		1732.5	-1.11	3.27	27.61	23.23	210.409	Vertical	Pass
		1753.5	-1.12	3.3	27.62	23.20	208.805	Vertical	Pass
5.0MHz Band QPSK	25/0	1712.5	-1.97	3.13	27.63	22.53	179.261	Vertical	Pass
		1732.5	-1.93	3.27	27.61	22.41	174.269	Vertical	Pass
		1752.5	-1.05	3.3	27.6	23.25	211.395	Vertical	Pass
10.0MHz	50/0	1715	-1.32	3.15	27.64	23.17	207.556	Vertical	Pass

z Band QPSK		1732.5	-1.05	3.31	27.61	23.25	211.243	Vertical	Pass
		1750	-1.11	3.33	27.59	23.15	206.340	Vertical	Pass
15.0MH	75/0	1717.5	-1.51	3.15	27.65	22.99	198.915	Vertical	Pass
z Band QPSK		1732.5	-0.84	3.31	27.61	23.46	221.931	Vertical	Pass
		1747.5	-0.89	3.33	27.57	23.35	216.515	Vertical	Pass
20.0MH	100/0	1720	-1.29	3.17	27.66	23.20	209.083	Vertical	Pass
z Band QPSK		1732.5	-0.74	3.32	27.61	23.55	226.361	Vertical	Pass
		1745	-0.98	3.36	27.56	23.22	209.655	Vertical	Pass

Note:

SG Level= Signal generator output

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

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	6/0	1710.7	-2.58	3.12	27.58	21.88	154.148	Horizontal	Pass
		1732.5	-2.51	3.27	27.61	21.83	152.403	Horizontal	Pass
		1754.3	-2.47	3.29	27.63	21.87	153.770	Horizontal	Pass
3.0MHz Band 16 QAM	15/0	1711.5	-2.57	3.13	27.61	21.91	155.289	Horizontal	Pass
		1732.5	-2.42	3.27	27.61	21.92	155.680	Horizontal	Pass
		1753.5	-2.45	3.3	27.62	21.87	153.921	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	1712.5	-2.54	3.13	27.63	21.96	157.079	Horizontal	Pass
		1732.5	-2.37	3.27	27.61	21.97	157.235	Horizontal	Pass
		1752.5	-2.33	3.3	27.6	21.97	157.327	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	1715	-2.60	3.15	27.64	21.89	154.409	Horizontal	Pass
		1732.5	-2.42	3.31	27.61	21.88	154.223	Horizontal	Pass
		1750	-2.66	3.33	27.59	21.60	144.485	Horizontal	Pass
15.0MHz Band 16 QAM	75/0	1717.5	-2.62	3.15	27.65	21.88	154.336	Horizontal	Pass
		1732.5	-2.46	3.31	27.61	21.84	152.849	Horizontal	Pass
		1747.5	-2.42	3.33	27.57	21.82	152.155	Horizontal	Pass
20.0MHz Band 16 QAM	100/0	1720	-2.75	3.17	27.66	21.74	149.211	Horizontal	Pass
		1732.5	-2.48	3.32	27.61	21.81	151.587	Horizontal	Pass
		1745	-2.45	3.36	27.56	21.75	149.776	Horizontal	Pass
1.4MHz Band 16 QAM	6/0	1710.7	-2.74	3.12	27.58	21.72	148.704	Vertical	Pass
		1732.5	-2.49	3.27	27.61	21.85	153.121	Vertical	Pass
		1754.3	-2.62	3.29	27.63	21.72	148.670	Vertical	Pass
3.0MHz Band 16 QAM	15/0	1711.5	-3.15	3.13	27.61	21.33	135.782	Vertical	Pass
		1732.5	-3.13	3.27	27.61	21.21	132.257	Vertical	Pass
		1753.5	-3.01	3.3	27.62	21.31	135.080	Vertical	Pass
5.0MHz Band 16 QAM	25/0	1712.5	-2.53	3.13	27.63	21.97	157.288	Vertical	Pass
		1732.5	-2.45	3.27	27.61	21.89	154.699	Vertical	Pass
		1752.5	-2.33	3.3	27.6	21.97	157.256	Vertical	Pass
10.0MHz Band 16 QAM	50/0	1715	-2.58	3.15	27.64	21.91	155.204	Vertical	Pass
		1732.5	-2.46	3.31	27.61	21.84	152.924	Vertical	Pass
		1750	-2.45	3.33	27.59	21.81	151.709	Vertical	Pass

15.0MH	75/0	1717.5	-2.83	3.15	27.65	21.67	146.936	Vertical	Pass
z Band		1732.5	-2.52	3.31	27.61	21.78	150.587	Vertical	Pass
16 QAM		1747.5	-2.51	3.33	27.57	21.73	148.802	Vertical	Pass
20.0MH	100/0	1720	-2.71	3.17	27.66	21.78	150.555	Vertical	Pass
z Band		1732.5	-2.61	3.32	27.61	21.68	147.243	Vertical	Pass
16 QAM		1745	-2.22	3.36	27.56	21.98	157.823	Vertical	Pass

Note:

SG Level= Signal generator output

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

8.3 LTE BAND 7

Radiated Power (EIRP) for Band 7									
Mode	RB/ RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cabl e Loss (dBm)	Antenn a Gain (dB)	Max. EIRP Averag e (dBm)	Max. EIRP Averag e (mW)	Polarizati on Of Max. ERP	
5.0MHz Band QPSK	25/0	2502.5	-1.34	4.54	27.75	21.87	153.688	Horizontal	Pass
		2535	-1.31	4.69	27.72	21.72	148.630	Horizontal	Pass
		2567.5	-1.13	4.71	27.71	21.87	153.700	Horizontal	Pass
10.0MH z Band QPSK	50/0	2505	-1.28	4.55	27.76	21.93	155.845	Horizontal	Pass
		2535	-1.22	4.69	27.72	21.81	151.701	Horizontal	Pass
		2565	-1.09	4.72	27.7	21.89	154.666	Horizontal	Pass
15.0MH z Band QPSK	75/0	2507.5	-1.35	4.55	27.77	21.87	153.867	Horizontal	Pass
		2535	-1.21	4.69	27.72	21.82	152.109	Horizontal	Pass
		2562.5	-1.05	4.72	27.69	21.92	155.463	Horizontal	Pass
20.0MH z Band QPSK	100/ 0	2510	-1.54	4.57	27.78	21.67	146.914	Horizontal	Pass
		2535	-1.55	4.73	27.72	21.44	139.406	Horizontal	Pass
		2560	-1.30	4.75	27.68	21.63	145.559	Horizontal	Pass
5.0MHz Band QPSK	25/0	2502.5	-1.57	4.54	27.75	21.64	145.924	Vertical	Pass
		2535	-1.18	4.69	27.72	21.85	153.144	Vertical	Pass
		2567.5	-1.31	4.71	27.71	21.69	147.476	Vertical	Pass
10.0MH z Band QPSK	50/0	2505	-1.73	4.55	27.76	21.48	140.731	Vertical	Pass
		2535	-1.15	4.69	27.72	21.88	154.162	Vertical	Pass
		2565	-1.39	4.72	27.7	21.59	144.373	Vertical	Pass
15.0MH z Band QPSK	75/0	2507.5	-1.50	4.55	27.77	21.72	148.690	Vertical	Pass
		2535	-1.12	4.69	27.72	21.91	155.270	Vertical	Pass
		2562.5	-1.10	4.72	27.69	21.87	153.647	Vertical	Pass
20.0MH z Band QPSK	100/ 0	2510	-1.24	4.57	27.78	21.97	157.386	Vertical	Pass
		2535	-1.12	4.73	27.72	21.87	153.668	Vertical	Pass
		2560	-1.00	4.75	27.68	21.93	155.921	Vertical	Pass

Note:

SG Level= Signal generator output

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

Radiated Power (EIRP) for Band 7									
Mode	RB/ RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cabl e Loss (dBm)	Antenn a Gain (dB)	Max. EIRP Averag e (dBm)	Max. EIRP Averag e (mW)	Polarizati on Of Max. ERP	
5.0MHz Band 16 QAM	25/0	2502.5	-2.40	4.54	27.75	20.81	120.504	Horizontal	Pass
		2535	-2.21	4.69	27.72	20.82	120.781	Horizontal	Pass
		2567.5	-2.17	4.71	27.71	20.83	121.060	Horizontal	Pass
10.0MH z Band 16 QAM	50/0	2505	-2.18	4.55	27.76	21.03	126.765	Horizontal	Pass
		2535	-2.06	4.69	27.72	20.97	125.026	Horizontal	Pass
		2565	-2.05	4.72	27.7	20.93	123.880	Horizontal	Pass
15.0MH z Band 16 QAM	75/0	2507.5	-2.29	4.55	27.77	20.93	123.880	Horizontal	Pass
		2535	-2.16	4.69	27.72	20.87	122.180	Horizontal	Pass
		2562.5	-2.19	4.72	27.69	20.78	119.674	Horizontal	Pass
20.0MH z Band 16 QAM	100/ 0	2510	-2.49	4.57	27.78	20.72	118.032	Horizontal	Pass
		2535	-2.23	4.73	27.72	20.76	119.124	Horizontal	Pass
		2560	-2.35	4.75	27.68	20.58	114.288	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	2502.5	-2.49	4.54	27.75	20.72	118.032	Vertical	Pass
		2535	-2.35	4.69	27.72	20.68	116.950	Vertical	Pass
		2567.5	-2.24	4.71	27.71	20.76	119.124	Vertical	Pass
10.0MH z Band 16 QAM	50/0	2505	-2.27	4.55	27.76	20.94	124.165	Vertical	Pass
		2535	-2.10	4.69	27.72	20.93	123.880	Vertical	Pass
		2565	-2.11	4.72	27.7	20.87	122.180	Vertical	Pass
15.0MH z Band 16 QAM	75/0	2507.5	-2.49	4.55	27.77	20.73	118.304	Vertical	Pass
		2535	-2.35	4.69	27.72	20.68	116.950	Vertical	Pass
		2562.5	-2.30	4.72	27.69	20.67	116.681	Vertical	Pass
20.0MH z Band 16 QAM	100/ 0	2510	-2.17	4.57	27.78	21.04	127.057	Vertical	Pass
		2535	-1.93	4.73	27.72	21.06	127.644	Vertical	Pass
		2560	-1.92	4.75	27.68	21.01	126.183	Vertical	Pass

Note:

SG Level= Signal generator output

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

8.4 LTE BAND 17

Radiated Power (ERP) for Band 17											
Mode	RB/ RB SIZE	Frequ ncy	Result							Polarizati on Of Max. ERP	Conclu sion
			SG Level (dBm)	Cable Loss (dBm)	Anten na Gain (dB)	Corre ction (dB)	Max. ERP Averag e (dBm)	Max. ERP Averag e (mW)			
5.0MHz Band QPSK	25/0	706.5	8.18	1.91	19.23	2.15	23.35	216.286	Vertical	Pass	
		710	8.03	1.91	19.26	2.15	23.23	210.476	Vertical	Pass	
		713.5	8.02	1.92	19.33	2.15	23.28	212.574	Vertical	Pass	
10.0MH z Band QPSK	50/0	709	8.12	1.91	19.25	2.15	23.31	214.058	Vertical	Pass	
		710	8.23	1.91	19.26	2.15	23.43	220.179	Vertical	Pass	
		711	8.19	1.92	19.32	2.15	23.44	220.592	Vertical	Pass	
5.0MHz Band QPSK	25/0	706.5	8.21	1.91	19.23	2.15	23.38	217.681	Horizontal	Pass	
		710	7.98	1.91	19.26	2.15	23.18	207.979	Horizontal	Pass	
		713.5	8.04	1.92	19.33	2.15	23.30	213.762	Horizontal	Pass	
10.0MH z Band QPSK	50/0	709	8.12	1.91	19.25	2.15	23.31	214.217	Horizontal	Pass	
		710	8.29	1.91	19.26	2.15	23.49	223.304	Horizontal	Pass	
		711	7.92	1.92	19.32	2.15	23.17	207.379	Horizontal	Pass	

Radiated Power (ERP) for Band 17											
Mode	RB/ RB SIZE	Frequ ncy	Result							Polarizati on Of Max. ERP	Conclu sion
			SG Level (dBm)	Cable Loss (dBm)	Anten na Gain (dB)	Corre ction (dB)	Max. ERP Averag e (dBm)	Max. ERP Averag e (mW)			
5.0MHz Band 16 QAM	25/0	706.5	6.92	1.91	19.23	2.15	22.09	161.936	Vertical	Pass	
		710	6.90	1.91	19.26	2.15	22.10	162.095	Vertical	Pass	
		713.5	6.75	1.92	19.33	2.15	22.01	158.849	Vertical	Pass	
10.0MH z Band 16 QAM	50/0	709	6.94	1.91	19.25	2.15	22.13	163.346	Vertical	Pass	
		710	6.84	1.91	19.26	2.15	22.04	160.041	Vertical	Pass	
		711	6.78	1.92	19.32	2.15	22.03	159.471	Vertical	Pass	
5.0MHz Band 16 QAM	25/0	706.5	6.87	1.91	19.23	2.15	22.04	159.814	Horizontal	Pass	
		710	6.95	1.91	19.26	2.15	22.15	163.871	Horizontal	Pass	
		713.5	6.85	1.92	19.33	2.15	22.11	162.590	Horizontal	Pass	
10.0MH z Band 16 QAM	50/0	709	7.04	1.91	19.25	2.15	22.23	166.992	Horizontal	Pass	
		710	6.98	1.91	19.26	2.15	22.18	165.302	Horizontal	Pass	
		711	6.94	1.92	19.32	2.15	22.19	165.585	Horizontal	Pass	

Note:

SG Level= Signal generator output

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

9. SPURIOUS RADIATION EMISSION

RULE PART(S)

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

LIMIT

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

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

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

TEST PROCEDURE

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

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

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

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

- a. for base station and subscriber equipment, other than mobile subscriber equipment, the attenuation shall not be less than $43 + 10 \text{ Log}_{10}(p)$, dB; and
- b. for mobile subscriber equipment, the attenuation shall not be less than $43 + 10 \text{ Log}_{10}(p)$, dB at the channel edges and $55 + 10 \text{ Log}_{10}(p)$ 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 4
- LTE Band 7
- LTE Band 17

RESULTS

PASS

9.1 LTE BAND 4

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

Test Results for Low Channel 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-50.81	4.02	29.80	-25.03	-13	-12.03	Horizontal
3421.4	-50.91	4.02	29.80	-25.13	-13	-12.13	Vertical
5132.1	-50.98	5.24	35.84	-20.38	-13	-7.38	Vertical
5132.1	-56.37	5.24	35.84	-25.77	-13	-12.77	Horizontal
273.5	-46.73	1.75	15.23	-33.25	-13	-20.25	Vertical
390.4	-71.42	1.54	16.22	-56.74	-13	-43.74	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465	-48.37	4.03	30.00	-22.40	-13	-9.40	Horizontal
3465	-46.58	4.03	30.00	-20.61	-13	-7.61	Vertical
5197.5	-51.88	5.25	35.86	-21.27	-13	-8.27	Vertical
5197.5	-50.59	5.25	35.86	-19.98	-13	-6.98	Horizontal
115.2	-53.48	1.61	15.77	-39.32	-13	-26.32	Vertical
511.5	-72.33	1.79	17.76	-56.36	-13	-43.36	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-49.31	4.05	30.01	-23.35	-13	-10.35	Horizontal
3508.6	-47.37	4.05	30.01	-21.41	-13	-8.41	Vertical
5262.9	-48.96	5.26	35.86	-18.36	-13	-5.36	Vertical
5262.9	-49.06	5.26	35.86	-18.46	-13	-5.46	Horizontal
243.2	-48.06	1.30	15.99	-33.38	-13	-20.38	Vertical
407.9	-49.96	1.41	16.56	-34.80	-13	-21.80	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	-47.93	4.02	29.80	-22.15	-13	-9.15	Horizontal
3440	-51.79	4.02	29.80	-26.01	-13	-13.01	Vertical
5160	-56.82	5.24	35.84	-26.22	-13	-13.22	Vertical
5160	-49.79	5.24	35.84	-19.19	-13	-6.19	Horizontal
455.4	-61.52	1.45	17.85	-45.12	-13	-32.12	Vertical
344.0	-55.96	1.34	16.96	-40.34	-13	-27.34	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465	-48.97	4.03	30.00	-23.00	-13	-10.00	Horizontal
3465	-45.57	4.03	30.00	-19.60	-13	-6.60	Vertical
5197.5	-56.42	5.25	35.86	-25.81	-13	-12.81	Vertical
5197.5	-55.53	5.25	35.86	-24.92	-13	-11.92	Horizontal
105.8	-64.69	1.37	16.60	-49.46	-13	-36.46	Vertical
329.3	-68.44	1.70	15.78	-54.36	-13	-41.36	Horizontal
Test Results for High Channel 1745MHz							
3490	-50.27	2.91	27.68	-25.50	-13	-12.50	Horizontal
3490	-45.15	2.91	27.68	-20.38	-13	-7.38	Vertical
5235	-51.87	5.26	35.86	-21.27	-13	-8.27	Vertical
5235	-55.44	5.26	35.86	-24.84	-13	-11.84	Horizontal
316.3	-62.07	1.49	16.49	-47.06	-13	-34.06	Vertical
287.9	-52.27	1.45	15.63	-38.09	-13	-25.09	Horizontal

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

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

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

9.2 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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5005	-73.20	5.23	35.81	-42.62	-25	-17.62	Horizontal
5005	-70.06	5.23	35.81	-39.48	-25	-14.48	Vertical
7507.5	-72.01	5.67	36.85	-40.83	-25	-15.83	Vertical
7507.5	-71.09	5.67	36.85	-39.91	-25	-14.91	Horizontal
551.0	-75.21	1.71	16.79	-60.13	-25	-35.13	Vertical
291.2	-84.93	1.33	17.26	-69.00	-25	-44.00	Horizontal
Test Results for Mid Channel 2535MHz							
5070	-75.93	5.23	35.82	-45.34	-25	-20.34	Horizontal
5070	-72.24	5.23	35.82	-41.65	-25	-16.65	Vertical
7605	-70.45	5.67	36.85	-39.27	-25	-14.27	Vertical
7605	-73.12	5.67	36.85	-41.94	-25	-16.94	Horizontal
389.5	-70.73	1.75	16.30	-56.18	-25	-31.18	Vertical
529.5	-70.21	1.53	15.54	-56.20	-25	-31.20	Horizontal
Test Results for High Channel 2567.5MHz							
5135	-76.10	5.24	35.83	-45.51	-25	-20.51	Horizontal
5135	-76.28	5.24	35.83	-45.69	-25	-20.69	Vertical
7702.5	-72.63	5.68	36.87	-41.44	-25	-16.44	Vertical
7702.5	-76.63	5.68	36.87	-45.44	-25	-20.44	Horizontal
397.9	-73.09	1.57	16.34	-58.32	-25	-33.32	Vertical
131.2	-65.73	1.69	16.47	-50.95	-25	-25.95	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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5020	-77.78	5.23	35.82	-47.19	-25	-22.19	Horizontal
5020	-75.19	5.23	35.82	-44.60	-25	-19.60	Vertical
7530	-69.92	5.67	36.86	-38.73	-25	-13.73	Vertical
7530	-74.31	5.67	36.86	-43.12	-25	-18.12	Horizontal
576.7	-83.16	1.51	16.11	-68.56	-25	-43.56	Vertical
494.6	-68.08	1.39	16.77	-52.69	-25	-27.69	Horizontal
Test Results for Mid Channel 2535MHz							
5070	-70.25	5.23	35.82	-39.66	-25	-14.66	Horizontal
5070	-73.60	5.23	35.82	-43.01	-25	-18.01	Vertical
7605	-73.06	5.67	36.85	-41.88	-25	-16.88	Vertical
7605	-76.64	5.67	36.85	-45.46	-25	-20.46	Horizontal
505.1	-71.12	1.46	15.16	-57.42	-25	-32.42	Vertical
543.9	-62.42	1.63	17.47	-46.59	-25	-21.59	Horizontal
Test Results for High Channel 2560MHz							
5120	-71.17	5.24	35.83	-40.58	-25	-15.58	Horizontal
5120	-73.90	5.24	35.83	-43.31	-25	-18.31	Vertical
7680	-71.90	5.70	36.88	-40.72	-25	-15.72	Vertical
7680	-78.80	5.70	36.88	-47.62	-25	-22.62	Horizontal
509.5	-72.65	1.33	16.38	-57.60	-25	-32.60	Vertical
355.6	-67.82	1.33	17.59	-51.56	-25	-26.56	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.

9.3 LTE BAND 17

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

Test Results for Low Channel 706.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1413	-51.61	2.61	27.28	-26.94	-13	-13.94	Horizontal
1413	-54.37	2.61	27.28	-29.70	-13	-16.70	Vertical
2119.5	-48.39	2.87	27.59	-23.67	-13	-10.67	Vertical
2119.5	-56.24	2.87	27.59	-31.52	-13	-18.52	Horizontal
578.5	-67.27	1.41	16.59	-52.09	-13	-39.09	Vertical
218.9	-48.92	1.69	16.03	-34.58	-13	-21.58	Horizontal
Test Results For Mid Channel 710MHz							
1420	-55.38	2.62	27.30	-30.70	-13	-17.70	Horizontal
1420	-53.26	2.62	27.30	-28.58	-13	-15.58	Vertical
2130	-52.37	2.87	27.62	-27.62	-13	-14.62	Vertical
2130	-58.03	2.87	27.62	-33.28	-13	-20.28	Horizontal
83.1	-71.73	1.68	16.86	-56.56	-13	-43.56	Vertical
561.6	-53.17	1.36	17.60	-36.93	-13	-23.93	Horizontal
Test Results for High Channel 713.5MHz							
1427	-54.26	2.66	27.28	-29.64	-13	-16.64	Horizontal
1427	-51.81	2.66	27.28	-27.19	-13	-14.19	Vertical
2140.5	-57.19	2.88	27.60	-32.47	-13	-19.47	Vertical
2140.5	-51.88	2.88	27.60	-27.16	-13	-14.16	Horizontal
123.7	-72.97	1.49	17.00	-57.45	-13	-44.45	Vertical
324.6	-59.87	1.49	17.01	-44.34	-13	-31.34	Horizontal

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

Test Results for Low Channel 709MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1418	-55.78	2.62	27.30	-31.10	-13	-18.10	Horizontal
1418	-51.13	2.62	27.30	-26.45	-13	-13.45	Vertical
2127	-51.43	2.87	27.62	-26.68	-13	-13.68	Vertical
2127	-50.57	2.87	27.62	-25.82	-13	-12.82	Horizontal
569.2	-54.64	1.52	16.29	-39.87	-13	-26.87	Vertical
335.2	-66.79	1.74	15.04	-53.50	-13	-40.50	Horizontal
Test Results for Mid Channel 710MHz							
1420	-53.03	2.62	27.30	-28.35	-13	-15.35	Horizontal
1420	-49.57	2.62	27.30	-24.89	-13	-11.89	Vertical
2130	-49.01	2.87	27.62	-24.26	-13	-11.26	Vertical
2130	-52.52	2.87	27.62	-27.77	-13	-14.77	Horizontal
432.1	-58.82	1.34	16.04	-44.13	-13	-31.13	Vertical
166.1	-63.40	1.55	17.55	-47.41	-13	-34.41	Horizontal
Test Results for High Channel 711MHz							
1422	-55.64	2.62	27.30	-30.96	-13	-17.96	Horizontal
1422	-56.49	2.62	27.30	-31.81	-13	-18.81	Vertical
2133	-53.68	2.87	27.62	-28.93	-13	-15.93	Vertical
2133	-53.22	2.87	27.62	-28.47	-13	-15.47	Horizontal
300.7	-73.55	1.44	17.93	-57.06	-13	-44.06	Vertical
286.3	-66.90	1.75	15.21	-53.44	-13	-40.44	Horizontal

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

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

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

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 3.4V, Normal, DC 3.8V and High voltage, DC 4.2V.

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 4
- LTE Band 7
- LTE Band 17

RESULTS

See the following pages.

10.1 LTE BAND 4

QPSK, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 4 QPSK, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.4	1732.5	-4.42	-0.002551	2.5
3.8	1732.5	-4.32	-0.002494	2.5
4.2	1732.5	-5.42	-0.003128	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 4 QPSK, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	1732.5	-5.43	-0.003134	2.5
Extreme (50C)	1732.5	-4.15	-0.002395	2.5
Extreme (40C)	1732.5	-4.83	-0.002788	2.5
Extreme (30C)	1732.5	-7.82	-0.004514	2.5
Extreme (10C)	1732.5	-6.11	-0.003527	2.5
Extreme (0C)	1732.5	-5.37	-0.003100	2.5
Extreme (-10C)	1732.5	-5.61	-0.003238	2.5
Extreme (-20C)	1732.5	-6.82	-0.003937	2.5
Extreme (-30C)	1732.5	-4.28	-0.002470	2.5

16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 4 16QAM, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.4	1732.5	1.12	0.000646	2.5
3.8	1732.5	1.19	0.000687	2.5
4.2	1732.5	1.17	0.000675	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 4 16QAM, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	1732.5	1.98	0.001143	2.5
Extreme (50C)	1732.5	1.68	0.000970	2.5
Extreme (40C)	1732.5	0.39	0.000225	2.5
Extreme (30C)	1732.5	2.86	0.001651	2.5
Extreme (10C)	1732.5	1.92	0.001108	2.5
Extreme (0C)	1732.5	0.89	0.000514	2.5
Extreme (-10C)	1732.5	1.71	0.000987	2.5
Extreme (-20C)	1732.5	1.87	0.001079	2.5
Extreme (-30C)	1732.5	2.86	0.001651	2.5

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

10.2 LTE BAND 7

QPSK, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 7 QPSK, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.4	2535	-8.26	-0.003258	2.5
3.8	2535	-9.11	-0.003594	2.5
4.2	2535	-8.14	-0.003211	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 7 QPSK, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	2535	-10.31	-0.004067	2.5
Extreme (50C)	2535	-4.13	-0.001629	2.5
Extreme (40C)	2535	-6.23	-0.002458	2.5
Extreme (30C)	2535	-10.29	-0.004059	2.5
Extreme (10C)	2535	-10.83	-0.004272	2.5
Extreme (0C)	2535	-9.94	-0.003921	2.5
Extreme (-10C)	2535	-3.15	-0.001243	2.5
Extreme (-20C)	2535	-10.63	-0.004193	2.5
Extreme (-30C)	2535	-4.77	-0.001882	2.5

16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 7 16QAM, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.4	2535	2.05	0.000809	2.5
3.8	2535	1.93	0.000761	2.5
4.2	2535	1.55	0.000611	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 7 16QAM, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	2535	2.02	0.000797	2.5
Extreme (50C)	2535	2.17	0.000856	2.5
Extreme (40C)	2535	1.32	0.000521	2.5
Extreme (30C)	2535	2.03	0.000801	2.5
Extreme (10C)	2535	2.04	0.000805	2.5
Extreme (0C)	2535	2.11	0.000832	2.5
Extreme (-10C)	2535	1.19	0.000469	2.5
Extreme (-20C)	2535	1.15	0.000454	2.5
Extreme (-30C)	2535	1.22	0.000481	2.5

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

10.3 LTE BAND 17

QPSK, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 17 QPSK, (CH 23790 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	710.0	1.04	0.001465	2.5
3.8	710.0	0.83	0.001169	2.5
4.2	710.0	0.61	0.000859	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 17 QPSK, (CH 23790 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	710.0	0.97	0.001366	2.5
Extreme (50C)	710.0	0.54	0.000761	2.5
Extreme (40C)	710.0	0.79	0.001113	2.5
Extreme (30C)	710.0	0.97	0.001366	2.5
Extreme (10C)	710.0	1.06	0.001493	2.5
Extreme (0C)	710.0	1.57	0.002211	2.5
Extreme (-10C)	710.0	1.78	0.002507	2.5
Extreme (-20C)	710.0	0.93	0.001310	2.5
Extreme (-30C)	710.0	0.82	0.001155	2.5

16QAM, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 17 16QAM, (CH 23790 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	710.0	1.47	0.002070	2.5
3.8	710.0	1.44	0.002028	2.5
4.2	710.0	1.45	0.002042	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 17 QPSK, (CH 23790 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	710.0	1.45	0.002042	2.5
Extreme (50C)	710.0	1.66	0.002338	2.5
Extreme (40C)	710.0	1.71	0.002408	2.5
Extreme (30C)	710.0	1.46	0.002056	2.5
Extreme (10C)	710.0	1.47	0.002070	2.5
Extreme (0C)	710.0	1.41	0.001986	2.5
Extreme (-10C)	710.0	1.74	0.002451	2.5
Extreme (-20C)	710.0	1.69	0.002380	2.5
Extreme (-30C)	710.0	1.53	0.002155	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.

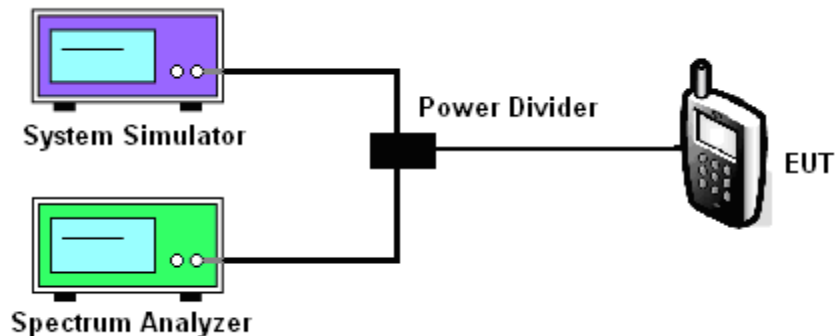
11.2 Measuring Instruments

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 4
- LTE Band 7
- LTE Band 17

Test data reference attachment.

----END OF REPORT----