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

FCC ID: 2ANMU-C90PRO

Product: Smart Phone

Trade Mark: OUKITEL

Model Number: C90 Pro

Family Model: C90, C90 S

Report No.: S22082604107006

Issue Date: Oct 18, 2022

Prepared for

SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO.,LTD

A2 2F BUILDING ENET NEW INDUSTRIAL PARK, DAFU INDUSTRIAL ZONE, GUANLAN, LONGHUA,SHENZHEN CHINA

Prepared by

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TEST RESULT CERTIFICATION	
Applicant's name .....:	SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO.,LTD
Address .....:	A2 2F BUILDING ENET NEW INDUSTRIAL PARK, DAFU INDUSTRIAL ZONE, GUANLAN, LONGHUA,SHENZHEN CHINA
Manufacturer's Name .....:	SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO.,LTD
Address .....:	A2 2F BUILDING ENET NEW INDUSTRIAL PARK, DAFU INDUSTRIAL ZONE, GUANLAN, LONGHUA,SHENZHEN CHINA
Product name .....:	Smart Phone
Model and/or type reference ...:	C90 Pro
Family Model .....:	C90, C90 S
Test Sample number.....:	S220826041004
Standards .....:	FCC CFR 47 Part 22H, Part 24E, Part 27
Test procedure.....	ANSI C63.26:2015 ANSI/TIA-603-E-2016

This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test.....	
Date (s) of performance of tests	Aug 26, 2022 ~ Oct 18, 2022
Date of Issue	Oct 18, 2022
Test Result	**Pass**

Testing Engineer : Mukzi Lee

(Mukzi Lee)

Authorized Signatory : Alex

(Alex Li)

TABLE OF CONTENTS

1.1 PRODUCT DESCRIPTION 5
1.2 RELATED SUBMITTAL(S) / GRANT (S) 6
1.3 TEST METHODOLOGY 6
1.4 TEST FACILITY 6
MEASUREMENT UNCERTAINTY 6
1.5 SPECIAL ACCESSORIES 6
1.6 WORST-CASE CONFIGURATION AND MODE 7
1.6 SUMMARY OF TEST RESULTS 7
2. SYSTEM TEST CONFIGURATION 9
2.1 EUT CONFIGURATION 9
2.2 EUT EXERCISE 9
2.3 CONFIGURATION OF EUT SYSTEM 9
2.4 TEST SETUP 10
3.TEST AND MEASUREMENT EQUIPMENT 11
4. OUTPUT POWER 13
4.1 OUTPUT POWER MEASUREMENT 13
6. BANDEDGE AND EMISSION MASK 16
7. OUT OF BAND EMISSIONS 17
7.1 MEASUREMENT METHOD 18
8. RADIATED MEASUREMENT 19
8.1. RADIATED POWER (ERP & EIRP) 19
8.2 LTE BAND 2 20
8.3 LTE BAND 4 23
8.4 LTE BAND 5 26
8.5 LTE BAND 7 28
8.6 LTE BAND 12 30

8.7 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 17 46

10. FREQUENCY STABILITY 48

10.1 LTE BAND 2 49

10.2 LTE BAND 4 51

10.3 LTE BAND 5 53

10.4 LTE BAND 7 55

10.5 LTE BAND 12 57

10.6 LTE BAND 17 59

11. PEAK-TO-AVERAGE RATIO 61

11.1 Description of the PAR Measurement 61

11.2 Measuring Instruments 61

11.3 Test Procedures 61

11.4 Test Setup 61

1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	Smart Phone
Trade Mark	OUKITEL
Model Name	C90 Pro
Family Model	C90, C90 S
Model Difference	All the model are the same circuit and RF module, except the model name.
FCC ID:	2ANMU-C90PRO
Frequency Bands:	U.S. Bands: ☒LTE FDD Band 2, 4, 5, 7, 12, 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 17 Uplink: 704MHz-716MHz, Downlink: 734MHz-746MHz;
Type of Modulation:	QPSK/16QAM
Power Class	Class 3
Antenna:	PIFA Antenna
Antenna gain:	Band 2: -3.09 dBi, Band 4: -2.21 dBi, Band 5: -2.42 dBi, Band 7: 0.9 dBi, Band 12: -4.70 dBi, Band 17: -3.50 dBi
Adapter	Model: PS20C120K1670UC Input: 100-240V~50/60Hz 0.6A Max Output: 5.0V⎓3.0A 15.0W; 9.0V⎓2.22A 19.98W; 12.0V⎓1.67A 20.0W Max
Battery	DC 3.87V, 4800mAh, 18.576Wh
Power supply	DC 3.87V from battery or DC 5V from adapter
Extreme Vol. Limits:	DC 3.4V to DC 4.2V (Nominal DC 3.87V)（Note 1）
HW Version	TF968_MAIN_PCB_V1.2
SW Version	OUKITEL_C90Pro_EEA_V01
** Note1: The High Voltage 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: 2ANMU-C90PRO** filing to comply with the FCC Part 22H&24E &27.

1.3 TEST METHODOLOGY

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

1.4 TEST FACILITY

The test site used to collect the radiated data is located at:
ShenZhen NTEK Testing Technology Co., Ltd.
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
2	Conducted Emission Test	±1.38dB
3	RF power, conducted	±0.16dB
4	Spurious emissions, conducted	±0.21dB
5	All emissions, radiated(<1G)	±4.68dB
6	All emissions, radiated(>1G)	±4.89dB
7	Temperature	±0.5°C
8	Humidity	±2%
9	Frequency error, conducted	±0.19 ppm

1.5 SPECIAL ACCESSORIES

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

1.6 WORST-CASE CONFIGURATION AND MODE

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

The device has LTE Bands of: Band 2, Band 4, Band 5, Band 7, Band 12, 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.

1.6 SUMMARY OF TEST RESULTS

FCC Part22, Subpart H/ FCC Part24, Subpart E, FCC Part27, Subpart L, KDB 971168 D01 Power Meas License Digital Systems v03			
FCC Rule	**Test Item**	**Verdict**	**Remark**
2.1046	Conducted Output Power	PASS	
22.913(d) 24.232(d) 27.50(d)(5) KDB 971168 D01 Clause 5.7	Peak-to-Average Ratio	PASS	
2.1049 22.917(b) 24.238(b) KDB 971168 D01 Clause 4.2	Occupied Bandwidth	PASS	
2.1051 22.917(a) 24.238(a) 27.53(m), (g), (h) KDB 971168 D01 Clause 6	Band Edge	PASS	
22.913(a)(2) 27.50(c)(10) KDB 971168 D01 Clause 5.6	Effective Radiated Power	PASS	
24.232(c) 27.50(h)(2), (d)(4) KDB 971168 D01 Clause 5.6	Equivalent Isotropic Radiated Power	PASS	

2.1053 22.917(a) 24.238(a) 27.53(g)(h)(m) KDB 971168 D01 Clause 7	Field Strength of Spurious Radiation	PASS	
2.1055 22.355 24.235 27.54 KDB 971168 D01 Clause 9	Frequency Stability for Temperature & Voltage	PASS	
2.1051 22.917(a) 24.238(a) 27.53(g)(h)(m) KDB 971168 D01 Clause 6	Conducted Emission	PASS	

Remark:

1. "N/A" denotes test is not applicable in this Test Report.
2. All test items were verified and recorded according to the standards and without any deviation during the test.
3. No modifications are made to the EUT during all test items.

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

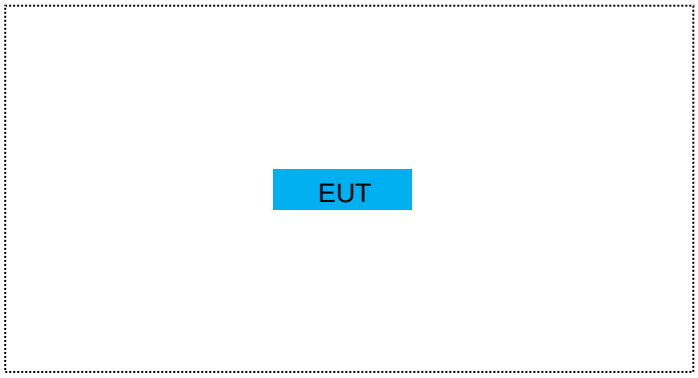
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Smart Phone	C90 Pro	FCC ID: 2ANMU-C90PRO	EUT

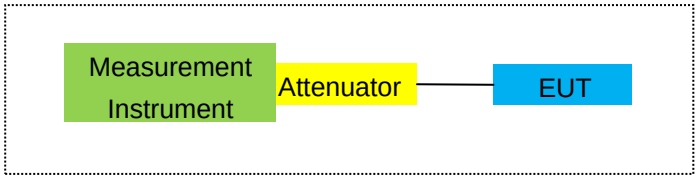
Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.

2.4 TEST SETUP

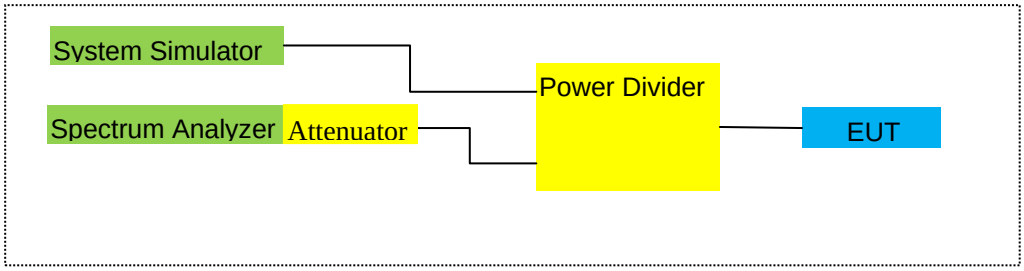
For Radiated Test Cases



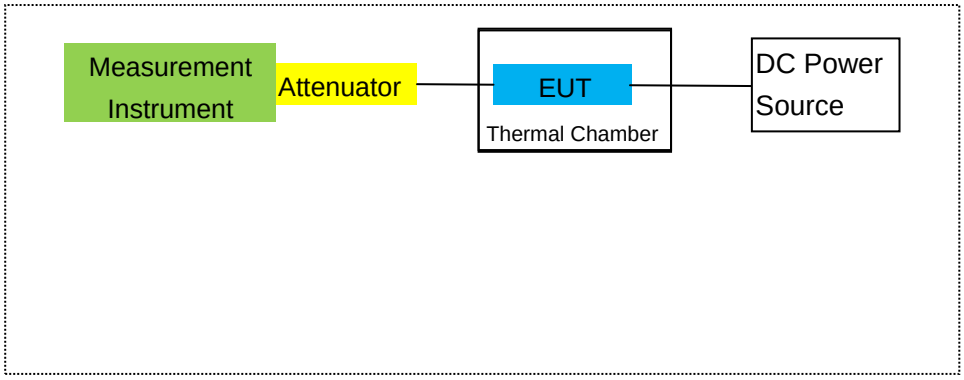
For Conducted Output Power



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	2022.06.16	2023.06.17	1 year
2	Test Receiver	R&S	ESPI	101318	2022.04.06	2023.04.05	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2022.03.30	2023.03.29	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2020.05.11	2023.05.10	3 year
5	Horn Antenna	EM	EM-AH-10180	2011071402	2022.03.31	2023.03.30	1 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2021.11.07	2022.11.06	1 year
7	Amplifier	EM	EM-30180	060538	2022.06.17	2023.06.16	1 year
8	Loop Antenna	ARA	PLA-1030/B	1029	2022.04.06	2023.04.05	1 year
9	Power Meter	R&S	NRVS	100696	2022.06.17	2023.06.16	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2022.04.06	2023.04.05	1 year
11	Test Cable	N/A	R-01	N/A	2022.06.17	2025.06.16	3 year
12	Test Cable	N/A	R-02	N/A	2022.06.17	2025.06.16	3 year
13	Test Cable	N/A	R-03	N/A	2022.06.17	2025.06.16	3 year
14	Test Receiver	R&S	ESCI	101160	2022.04.06	2023.04.05	1 year
15	LISN	R&S	ENV216	101313	2022.04.06	2023.04.05	1 year
16	LISN	EMCO	3816/2	00042990	2022.04.06	2023.04.05	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2022.04.06	2023.04.05	1 year
18	Passive Voltage Probe	R&S	ESH2-Z3	100196	2022.04.06	2023.04.05	1 year
19	Test Cable	N/A	C01	N/A	2020.05.11	2023.05.10	3 year
20	Test Cable	N/A	C02	N/A	2020.05.11	2023.05.10	3 year
21	Test Cable	N/A	C03	N/A	2020.05.11	2023.05.10	3 year
22	Attenuator	MCE	24-10-34	BN9258	2022.04.01	2023.03.31	1 year
23	Spectrum Analyzer	agilent	e4440a	us44300399	2022.04.01	2023.03.31	1 year
24	test receiver	R&S	ESCI	a0304218	2022.04.06	2023.04.05	1 year
25	Communication Tester	R&S	CMU200	A0304247	2022.06.16	2023.06.15	1 year

26	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2022.04.06	2023.04.05	1 year
27	DC Power Source	N/A	PS-6005D	20170402923	2020.05.11	2023.05.10	3 year
28	MXG Vector Signal Generator	Agilent	N5182A	MY47070317	2022.06.16	2023.06.15	1 year
29	Communication Tester	R&S	CMW500	148500	2022.06.16	2023.06.15	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

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

RESULTS

PASS

Test data reference attachment.

6. BANDEDGE AND EMISSION MASK

RULE PART(S)

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

FCC: §2.1046, §22.913, §24.232

LIMITS

The minimum permissible attenuation level of any spurious emission is 43 + log10(P[Watts]), where P is the transmitter power in Watts.

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

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

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

For all plots showing emissions in the 763 – 775MHz and 793 – 805MHz band, the FCC limit per 27.53(c.4) is 65 + 10log10(P) = -35dBm in a 6.25kHz bandwidth.

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

TEST PROCEDURE

The transmitter output was connected to a CMW500Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

For each band edge measurement:

Set the spectrum analyzer span to include the block edge frequency

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

Set display line

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

MODES TESTED

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

RESULTS

Test data reference attachment.

7. OUT OF BAND EMISSIONS

RULE PART(S)

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

LIMITS

The minimum permissible attenuation level of any spurious emission is 43 + log10(P[Watts]), where P is the transmitter power in Watts.

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

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

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

For all plots showing emissions in the 763 – 775MHz and 793 – 805MHz band, the FCC limit per 27.53(c.4) is 65 + 10log10(P) = -35dBm in a 6.25kHz bandwidth.

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

TEST PROCEDURE

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

For each out of band emissions measurement:

Set display line

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

MODES TESTED

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

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.

Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported (LTE Band 2/4/7: above 10GHz).

8. RADIATED MEASUREMENT

8.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

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

LIMITS:

22.913(a) (2)- The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.
24.232 (c) Mobile and portable stations are limited to 2 watts EIRP.
27.50 (c) (10) the following power and antenna height requirements apply to stations transmitting in the 698–746 MHz band, the portable stations (hand-held devices) are limited to 3 watts ERP.
27.50 (b)(10) Portable stations (hand-held devices) transmitting in the 746–757 MHz, 758–763 MHz, 776–793 MHz, and 805–806 MHz bands are limited to 3 watts ERP.
27.50 (d)(4) The following power and antenna height requirements apply to stations transmitting in the 1710–1755 MHz and 2110–2155 MHz bands: Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.
27.50 (h)(2)Mobile and other user stations in the 2500–2570 MHz and 2620–2690 MHz bands. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

TEST PROCEDURE

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

MODES TESTED

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

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	-4.98	3.76	28.24	19.50	89.125	Horizontal	Pass
		1880	-4.82	3.91	28.22	19.49	88.920	Horizontal	Pass
		1909.3	-4.71	3.93	28.20	19.56	90.365	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-4.88	3.77	28.23	19.58	90.782	Horizontal	Pass
		1880	-4.86	3.91	28.24	19.47	88.512	Horizontal	Pass
		1908.5	-4.75	3.94	28.25	19.56	90.365	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-5.07	3.77	28.31	19.47	88.512	Horizontal	Pass
		1880	-4.76	3.91	28.22	19.55	90.157	Horizontal	Pass
		1907.5	-4.73	3.94	28.20	19.53	89.743	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-5.08	3.79	28.33	19.46	88.308	Horizontal	Pass
		1880	-4.81	3.95	28.22	19.46	88.308	Horizontal	Pass
		1905	-4.66	3.97	28.19	19.56	90.365	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-5.03	3.79	28.34	19.52	89.536	Horizontal	Pass
		1880	-4.68	3.95	28.22	19.59	90.991	Horizontal	Pass
		1902.5	-4.70	3.97	28.18	19.51	89.331	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-5.00	3.81	28.35	19.54	89.950	Horizontal	Pass
		1880	-4.70	3.96	28.22	19.56	90.365	Horizontal	Pass
		1900	-4.74	4.00	28.16	19.42	87.498	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-4.95	3.76	28.24	19.53	89.743	Vertical	Pass
		1880	-4.79	3.91	28.22	19.52	89.536	Vertical	Pass
		1909.3	-4.70	3.93	28.20	19.57	90.573	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-4.86	3.77	28.23	19.60	91.201	Vertical	Pass
		1880	-4.86	3.91	28.24	19.47	88.512	Vertical	Pass
		1908.5	-4.76	3.94	28.25	19.55	90.157	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-5.07	3.77	28.31	19.47	88.512	Vertical	Pass
		1880	-4.77	3.91	28.22	19.54	89.950	Vertical	Pass
		1907.5	-4.69	3.94	28.20	19.57	90.573	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1855	-5.06	3.79	28.33	19.48	88.716	Vertical	Pass
		1880	-4.78	3.95	28.22	19.49	88.920	Vertical	Pass
		1905	-4.70	3.97	28.19	19.52	89.536	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1857.5	-4.98	3.79	28.34	19.57	90.573	Vertical	Pass
		1880	-4.72	3.95	28.22	19.55	90.157	Vertical	Pass
		1902.5	-4.62	3.97	28.18	19.59	90.991	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1860	-4.91	3.81	28.35	19.63	91.833	Vertical	Pass
		1880	-4.65	3.96	28.22	19.61	91.411	Vertical	Pass
		1900	-4.55	4.00	28.16	19.61	91.411	Vertical	Pass

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

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	-5.80	3.76	28.24	18.68	73.790	Horizontal	Pass
		1880	-5.56	3.91	28.22	18.75	74.989	Horizontal	Pass
		1909.3	-5.51	3.93	28.20	18.76	75.162	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-5.80	3.77	28.23	18.66	73.451	Horizontal	Pass
		1880	-5.55	3.91	28.24	18.78	75.509	Horizontal	Pass
		1908.5	-5.54	3.94	28.25	18.77	75.336	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-5.85	3.77	28.31	18.69	73.961	Horizontal	Pass
		1880	-5.62	3.91	28.22	18.69	73.961	Horizontal	Pass
		1907.5	-5.48	3.94	28.20	18.78	75.509	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-5.80	3.79	28.33	18.74	74.817	Horizontal	Pass
		1880	-5.61	3.95	28.22	18.66	73.451	Horizontal	Pass
		1905	-5.54	3.97	28.19	18.68	73.790	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-5.84	3.79	28.34	18.71	74.302	Horizontal	Pass
		1880	-5.61	3.95	28.22	18.66	73.451	Horizontal	Pass
		1902.5	-5.44	3.97	28.18	18.77	75.336	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-5.78	3.81	28.35	18.76	75.162	Horizontal	Pass
		1880	-5.48	3.96	28.22	18.78	75.509	Horizontal	Pass
		1900	-5.38	4.00	28.16	18.78	75.509	Horizontal	Pass
1.4MHz Band 16	1/#Mid	1850.7	-5.73	3.76	28.24	18.75	74.989	Vertical	Pass
		1880	-5.58	3.91	28.22	18.73	74.645	Vertical	Pass

QAM		1909.3	-5.48	3.93	28.20	18.79	75.683	Vertical	Pass
3.0MHz		1851.5	-5.81	3.77	28.23	18.65	73.282	Vertical	Pass
Band 16	1/#Mid	1880	-5.63	3.91	28.24	18.70	74.131	Vertical	Pass
QAM		1908.5	-5.66	3.94	28.25	18.65	73.282	Vertical	Pass
5.0MHz		1852.5	-5.79	3.77	28.31	18.75	74.989	Vertical	Pass
Band 16	1/#Mid	1880	-5.56	3.91	28.22	18.75	74.989	Vertical	Pass
QAM		1907.5	-5.46	3.94	28.20	18.80	75.858	Vertical	Pass
10.0MHz		1855	-5.84	3.79	28.33	18.70	74.131	Vertical	Pass
Band 16	1/#Mid	1880	-5.52	3.95	28.22	18.75	74.989	Vertical	Pass
QAM		1905	-5.53	3.97	28.19	18.69	73.961	Vertical	Pass
15.0MHz		1857.5	-5.90	3.79	28.34	18.65	73.282	Vertical	Pass
Band 16	1/#Mid	1880	-5.63	3.95	28.22	18.64	73.114	Vertical	Pass
QAM		1902.5	-5.44	3.97	28.18	18.77	75.336	Vertical	Pass
20.0MHz		1860	-5.73	3.81	28.35	18.81	76.033	Vertical	Pass
Band 16	1/#Mid	1880	-5.43	3.96	28.22	18.83	76.384	Vertical	Pass
QAM		1900	-5.33	4.00	28.16	18.83	76.384	Vertical	Pass

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

8.3 LTE BAND 4

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 QPSK	1/#Mid	1710.7	-2.45	3.12	27.58	22.01	158.855	Horizontal	Pass
		1732.5	-2.25	3.27	27.61	22.09	161.808	Horizontal	Pass
		1754.3	-2.28	3.29	27.63	22.06	160.694	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-2.42	3.13	27.61	22.06	160.694	Horizontal	Pass
		1732.5	-2.32	3.27	27.61	22.02	159.221	Horizontal	Pass
		1753.5	-2.33	3.30	27.62	21.99	158.125	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-2.47	3.13	27.63	22.03	159.588	Horizontal	Pass
		1732.5	-2.36	3.27	27.61	21.98	157.761	Horizontal	Pass
		1752.5	-2.28	3.30	27.60	22.02	159.221	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-2.43	3.15	27.64	22.06	160.694	Horizontal	Pass
		1732.5	-2.31	3.31	27.61	21.99	158.125	Horizontal	Pass
		1750	-2.21	3.33	27.59	22.05	160.325	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-2.52	3.15	27.65	21.98	157.761	Horizontal	Pass
		1732.5	-2.29	3.31	27.61	22.01	158.855	Horizontal	Pass
		1747.5	-2.23	3.33	27.57	22.01	158.855	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-2.44	3.17	27.66	22.05	160.325	Horizontal	Pass
		1732.5	-2.33	3.32	27.61	21.96	157.036	Horizontal	Pass
		1745	-2.22	3.36	27.56	21.98	157.761	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-2.44	3.12	27.58	22.02	159.221	Vertical	Pass
		1732.5	-2.33	3.27	27.61	22.01	158.855	Vertical	Pass
		1754.3	-2.24	3.29	27.63	22.10	162.181	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-2.53	3.13	27.61	21.95	156.675	Vertical	Pass
		1732.5	-2.24	3.27	27.61	22.10	162.181	Vertical	Pass
		1753.5	-2.31	3.30	27.62	22.01	158.855	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-2.43	3.13	27.63	22.07	161.065	Vertical	Pass
		1732.5	-2.29	3.27	27.61	22.05	160.325	Vertical	Pass
		1752.5	-2.30	3.30	27.60	22.00	158.489	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-2.43	3.15	27.64	22.06	160.694	Vertical	Pass
		1732.5	-2.29	3.31	27.61	22.01	158.855	Vertical	Pass
		1750	-2.16	3.33	27.59	22.10	162.181	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1717.5	-2.56	3.15	27.65	21.94	156.315	Vertical	Pass
		1732.5	-2.30	3.31	27.61	22.00	158.489	Vertical	Pass
		1747.5	-2.18	3.33	27.57	22.06	160.694	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1720	-2.36	3.17	27.66	22.13	163.305	Vertical	Pass
		1732.5	-2.17	3.32	27.61	22.12	162.930	Vertical	Pass
		1745	-2.08	3.36	27.56	22.12	162.930	Vertical	Pass

Note:
SG Level= Signal generator output
Max. EIRP Average (dBm)= Antenna Factor (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)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	1710.7	-3.26	3.12	27.58	21.20	131.826	Horizontal	Pass
		1732.5	-3.16	3.27	27.61	21.18	131.220	Horizontal	Pass
		1754.3	-3.23	3.29	27.63	21.11	129.122	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-3.38	3.13	27.61	21.10	128.825	Horizontal	Pass
		1732.5	-3.19	3.27	27.61	21.15	130.317	Horizontal	Pass
		1753.5	-3.20	3.30	27.62	21.12	129.420	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-3.38	3.13	27.63	21.12	129.420	Horizontal	Pass
		1732.5	-3.17	3.27	27.61	21.17	130.918	Horizontal	Pass
		1752.5	-3.27	3.30	27.60	21.03	126.765	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-3.43	3.15	27.64	21.06	127.644	Horizontal	Pass
		1732.5	-3.12	3.31	27.61	21.18	131.220	Horizontal	Pass
		1750	-3.13	3.33	27.59	21.13	129.718	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-3.38	3.15	27.65	21.12	129.420	Horizontal	Pass
		1732.5	-3.18	3.31	27.61	21.12	129.420	Horizontal	Pass
		1747.5	-3.14	3.33	27.57	21.10	128.825	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-3.32	3.17	27.66	21.17	130.918	Horizontal	Pass
		1732.5	-3.13	3.32	27.61	21.16	130.617	Horizontal	Pass
		1745	-3.15	3.36	27.56	21.05	127.350	Horizontal	Pass
1.4MHz Band 16	1/#Mid	1710.7	-3.32	3.12	27.58	21.14	130.017	Vertical	Pass
		1732.5	-3.21	3.27	27.61	21.13	129.718	Vertical	Pass

QAM		1754.3	-3.21	3.29	27.63	21.13	129.718	Vertical	Pass
3.0MHz		1711.5	-3.33	3.13	27.61	21.15	130.317	Vertical	Pass
Band 16	1/#Mid	1732.5	-3.15	3.27	27.61	21.19	131.522	Vertical	Pass
QAM		1753.5	-3.20	3.30	27.62	21.12	129.420	Vertical	Pass
5.0MHz		1712.5	-3.37	3.13	27.63	21.13	129.718	Vertical	Pass
Band 16	1/#Mid	1732.5	-3.29	3.27	27.61	21.05	127.350	Vertical	Pass
QAM		1752.5	-3.17	3.30	27.60	21.13	129.718	Vertical	Pass
10.0MHz		1715	-3.34	3.15	27.64	21.15	130.317	Vertical	Pass
Band 16	1/#Mid	1732.5	-3.18	3.31	27.61	21.12	129.420	Vertical	Pass
QAM		1750	-3.06	3.33	27.59	21.20	131.826	Vertical	Pass
15.0MHz		1717.5	-3.30	3.15	27.65	21.20	131.826	Vertical	Pass
Band 16	1/#Mid	1732.5	-3.22	3.31	27.61	21.08	128.233	Vertical	Pass
QAM		1747.5	-3.13	3.33	27.57	21.11	129.122	Vertical	Pass
20.0MHz		1720	-3.27	3.17	27.66	21.22	132.434	Vertical	Pass
Band 16	1/#Mid	1732.5	-3.06	3.32	27.61	21.23	132.739	Vertical	Pass
QAM		1745	-2.98	3.36	27.56	21.22	132.434	Vertical	Pass

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

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. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	3/#Mid	824.7	3.95	2.01	19.68	2.15	19.47	88.512	Horizontal	Pass
		836.5	3.97	2.01	19.77	2.15	19.58	90.782	Horizontal	Pass
		848.3	3.86	2.02	19.82	2.15	19.51	89.331	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	825.5	3.98	2.01	19.70	2.15	19.52	89.536	Horizontal	Pass
		836.5	3.98	2.01	19.77	2.15	19.59	90.991	Horizontal	Pass
		847.5	3.94	2.02	19.81	2.15	19.58	90.782	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	826.5	3.95	2.01	19.71	2.15	19.50	89.125	Horizontal	Pass
		836.5	3.84	2.01	19.77	2.15	19.45	88.105	Horizontal	Pass
		846.5	3.83	2.02	19.79	2.15	19.45	88.105	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	829	3.95	2.01	19.73	2.15	19.52	89.536	Horizontal	Pass
		836.5	3.89	2.01	19.77	2.15	19.50	89.125	Horizontal	Pass
		844	3.82	2.02	19.78	2.15	19.43	87.700	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	824.7	4.08	2.01	19.68	2.15	19.60	91.201	Vertical	Pass
		836.5	3.89	2.01	19.77	2.15	19.50	89.125	Vertical	Pass
		848.3	3.92	2.02	19.82	2.15	19.57	90.573	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	825.5	3.97	2.01	19.70	2.15	19.51	89.331	Vertical	Pass
		836.5	3.89	2.01	19.77	2.15	19.50	89.125	Vertical	Pass
		847.5	3.81	2.02	19.81	2.15	19.45	88.105	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	826.5	3.96	2.01	19.71	2.15	19.51	89.331	Vertical	Pass
		836.5	3.90	2.01	19.77	2.15	19.51	89.331	Vertical	Pass
		846.5	3.93	2.02	19.79	2.15	19.55	90.157	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	829	4.06	2.01	19.73	2.15	19.63	91.833	Vertical	Pass
		836.5	4.01	2.01	19.77	2.15	19.62	91.622	Vertical	Pass
		844	4.02	2.02	19.78	2.15	19.63	91.833	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. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	3/#Mid	824.7	3.22	2.01	19.68	2.15	18.74	74.817	Horizontal	Pass
		836.5	3.15	2.01	19.77	2.15	18.76	75.162	Horizontal	Pass
		848.3	3.10	2.02	19.82	2.15	18.75	74.989	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	3.12	2.01	19.70	2.15	18.66	73.451	Horizontal	Pass
		836.5	3.08	2.01	19.77	2.15	18.69	73.961	Horizontal	Pass
		847.5	3.06	2.02	19.81	2.15	18.70	74.131	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	3.22	2.01	19.71	2.15	18.77	75.336	Horizontal	Pass
		836.5	3.08	2.01	19.77	2.15	18.69	73.961	Horizontal	Pass
		846.5	3.18	2.02	19.79	2.15	18.80	75.858	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	829	3.17	2.01	19.73	2.15	18.74	74.817	Horizontal	Pass
		836.5	3.05	2.01	19.77	2.15	18.66	73.451	Horizontal	Pass
		844	3.08	2.02	19.78	2.15	18.69	73.961	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	824.7	3.26	2.01	19.68	2.15	18.78	75.509	Vertical	Pass
		836.5	3.12	2.01	19.77	2.15	18.73	74.645	Vertical	Pass
		848.3	3.11	2.02	19.82	2.15	18.76	75.162	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	3.14	2.01	19.70	2.15	18.68	73.790	Vertical	Pass
		836.5	3.09	2.01	19.77	2.15	18.70	74.131	Vertical	Pass
		847.5	3.09	2.02	19.81	2.15	18.73	74.645	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	3.23	2.01	19.71	2.15	18.78	75.509	Vertical	Pass
		836.5	3.13	2.01	19.77	2.15	18.74	74.817	Vertical	Pass
		846.5	3.10	2.02	19.79	2.15	18.72	74.473	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	829	3.25	2.01	19.73	2.15	18.82	76.208	Vertical	Pass
		836.5	3.21	2.01	19.77	2.15	18.82	76.208	Vertical	Pass
		844	3.20	2.02	19.78	2.15	18.81	76.033	Vertical	Pass

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

8.5 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	-1.04	4.54	27.75	22.17	164.816	Horizontal	Pass
		2535	-0.86	4.69	27.72	22.17	164.816	Horizontal	Pass
		2567.5	-0.85	4.71	27.71	22.15	164.059	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2505	-1.17	4.55	27.76	22.04	159.956	Horizontal	Pass
		2535	-0.87	4.69	27.72	22.16	164.437	Horizontal	Pass
		2565	-0.86	4.72	27.70	22.12	162.930	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-1.14	4.55	27.77	22.08	161.436	Horizontal	Pass
		2535	-0.92	4.69	27.72	22.11	162.555	Horizontal	Pass
		2562.5	-0.94	4.72	27.69	22.03	159.588	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2510	-1.04	4.57	27.78	22.17	164.816	Horizontal	Pass
		2535	-0.88	4.73	27.72	22.11	162.555	Horizontal	Pass
		2560	-0.74	4.75	27.68	22.19	165.577	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	-1.07	4.54	27.75	22.14	163.682	Vertical	Pass
		2535	-0.89	4.69	27.72	22.14	163.682	Vertical	Pass
		2567.5	-0.83	4.71	27.71	22.17	164.816	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2505	-1.08	4.55	27.76	22.13	163.305	Vertical	Pass
		2535	-0.86	4.69	27.72	22.17	164.816	Vertical	Pass
		2565	-0.84	4.72	27.70	22.14	163.682	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-1.10	4.55	27.77	22.12	162.930	Vertical	Pass
		2535	-1.01	4.69	27.72	22.02	159.221	Vertical	Pass
		2562.5	-0.86	4.72	27.69	22.11	162.555	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2510	-0.97	4.57	27.78	22.24	167.494	Vertical	Pass
		2535	-0.76	4.73	27.72	22.23	167.109	Vertical	Pass
		2560	-0.73	4.75	27.68	22.20	165.959	Vertical	Pass

Radiated Power (EIRP) for Band 7									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	2502.5	-1.74	4.54	27.75	21.47	140.281	Horizontal	Pass
		2535	-1.64	4.69	27.72	21.39	137.721	Horizontal	Pass
		2567.5	-1.62	4.71	27.71	21.38	137.404	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-1.83	4.55	27.76	21.38	137.404	Horizontal	Pass
		2535	-1.67	4.69	27.72	21.36	136.773	Horizontal	Pass
		2565	-1.59	4.72	27.70	21.39	137.721	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-1.73	4.55	27.77	21.49	140.929	Horizontal	Pass
		2535	-1.66	4.69	27.72	21.37	137.088	Horizontal	Pass
		2562.5	-1.63	4.72	27.69	21.34	136.144	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-1.86	4.57	27.78	21.35	136.458	Horizontal	Pass
		2535	-1.50	4.73	27.72	21.49	140.929	Horizontal	Pass
		2560	-1.53	4.75	27.68	21.40	138.038	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	-1.79	4.54	27.75	21.42	138.676	Vertical	Pass
		2535	-1.60	4.69	27.72	21.43	138.995	Vertical	Pass
		2567.5	-1.51	4.71	27.71	21.49	140.929	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-1.84	4.55	27.76	21.37	137.088	Vertical	Pass
		2535	-1.65	4.69	27.72	21.38	137.404	Vertical	Pass
		2565	-1.56	4.72	27.70	21.42	138.676	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-1.80	4.55	27.77	21.42	138.676	Vertical	Pass
		2535	-1.58	4.69	27.72	21.45	139.637	Vertical	Pass
		2562.5	-1.57	4.72	27.69	21.40	138.038	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-1.67	4.57	27.78	21.54	142.561	Vertical	Pass
		2535	-1.46	4.73	27.72	21.53	142.233	Vertical	Pass
		2560	-1.42	4.75	27.68	21.51	141.579	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. EPR Average (dBm)	Max. EPR Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	699.7	3.11	1.91	19.21	2.15	18.26	66.988	Vertical	Pass
		707.5	3.06	1.91	19.26	2.15	18.26	66.988	Vertical	Pass
		715.3	3.03	1.93	19.34	2.15	18.29	67.453	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	700.5	3.23	1.91	19.21	2.15	18.38	68.865	Vertical	Pass
		707.5	3.12	1.91	19.26	2.15	18.32	67.920	Vertical	Pass
		714.5	3.00	1.93	19.34	2.15	18.26	66.988	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	701.5	3.11	1.91	19.23	2.15	18.28	67.298	Vertical	Pass
		707.5	3.08	1.91	19.26	2.15	18.28	67.298	Vertical	Pass
		713.5	3.01	1.92	19.33	2.15	18.27	67.143	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	704	3.02	1.91	19.25	2.15	18.21	66.222	Vertical	Pass
		707.5	3.15	1.91	19.26	2.15	18.35	68.391	Vertical	Pass
		711	3.00	1.92	19.32	2.15	18.25	66.834	Vertical	Pass
1.4MHz Band QPSK	1/#Mid	699.7	3.25	1.91	19.21	2.15	18.40	69.183	Horizontal	Pass
		707.5	3.06	1.91	19.26	2.15	18.26	66.988	Horizontal	Pass
		715.3	3.13	1.93	19.34	2.15	18.39	69.024	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	700.5	3.22	1.91	19.21	2.15	18.37	68.707	Horizontal	Pass
		707.5	3.19	1.91	19.26	2.15	18.39	69.024	Horizontal	Pass
		714.5	3.02	1.93	19.34	2.15	18.28	67.298	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	701.5	3.19	1.91	19.23	2.15	18.36	68.549	Horizontal	Pass
		707.5	3.08	1.91	19.26	2.15	18.28	67.298	Horizontal	Pass
		713.5	3.03	1.92	19.33	2.15	18.29	67.453	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	704	3.23	1.91	19.25	2.15	18.42	69.502	Horizontal	Pass
		707.5	3.22	1.91	19.26	2.15	18.42	69.502	Horizontal	Pass
		711	3.19	1.92	19.32	2.15	18.44	69.823	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. EPR Average (dBm)	Max. EPR Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	699.7	2.39	1.91	19.21	2.15	17.54	56.754	Vertical	Pass
		707.5	2.38	1.91	19.26	2.15	17.58	57.280	Vertical	Pass
		715.3	2.21	1.93	19.34	2.15	17.47	55.847	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	2.32	1.91	19.21	2.15	17.47	55.847	Vertical	Pass
		707.5	2.28	1.91	19.26	2.15	17.48	55.976	Vertical	Pass
		714.5	2.23	1.93	19.34	2.15	17.49	56.105	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	2.40	1.91	19.23	2.15	17.57	57.148	Vertical	Pass
		707.5	2.37	1.91	19.26	2.15	17.57	57.148	Vertical	Pass
		713.5	2.24	1.92	19.33	2.15	17.50	56.234	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	704	2.34	1.91	19.25	2.15	17.53	56.624	Vertical	Pass
		707.5	2.40	1.91	19.26	2.15	17.60	57.544	Vertical	Pass
		711	2.21	1.92	19.32	2.15	17.46	55.719	Vertical	Pass
1.4MHz Band 16 QAM	1/#Mid	699.7	2.38	1.91	19.21	2.15	17.53	56.624	Horizontal	Pass
		707.5	2.37	1.91	19.26	2.15	17.57	57.148	Horizontal	Pass
		715.3	2.23	1.93	19.34	2.15	17.49	56.105	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	2.44	1.91	19.21	2.15	17.59	57.412	Horizontal	Pass
		707.5	2.27	1.91	19.26	2.15	17.47	55.847	Horizontal	Pass
		714.5	2.29	1.93	19.34	2.15	17.55	56.885	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	2.36	1.91	19.23	2.15	17.53	56.624	Horizontal	Pass
		707.5	2.33	1.91	19.26	2.15	17.53	56.624	Horizontal	Pass
		713.5	2.21	1.92	19.33	2.15	17.47	55.847	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	704	2.42	1.91	19.25	2.15	17.61	57.677	Horizontal	Pass
		707.5	2.41	1.91	19.26	2.15	17.61	57.677	Horizontal	Pass
		711	2.39	1.92	19.32	2.15	17.64	58.076	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)

8.7 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. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	706.5	2.76	1.91	19.23	2.15	17.93	62.087	Vertical	Pass
		710	2.69	1.91	19.26	2.15	17.89	61.518	Vertical	Pass
		713.5	2.68	1.92	19.33	2.15	17.94	62.230	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	709	2.71	1.91	19.25	2.15	17.90	61.660	Vertical	Pass
		710	2.67	1.91	19.26	2.15	17.87	61.235	Vertical	Pass
		711	2.70	1.92	19.32	2.15	17.95	62.373	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	706.5	2.80	1.91	19.23	2.15	17.97	62.661	Horizontal	Pass
		710	2.72	1.91	19.26	2.15	17.92	61.944	Horizontal	Pass
		713.5	2.68	1.92	19.33	2.15	17.94	62.230	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	709	2.84	1.91	19.25	2.15	18.03	63.533	Horizontal	Pass
		710	2.80	1.91	19.26	2.15	18.00	63.096	Horizontal	Pass
		711	2.76	1.92	19.32	2.15	18.01	63.241	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. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	706.5	1.94	1.91	19.23	2.15	17.11	51.404	Vertical	Pass
		710	1.90	1.91	19.26	2.15	17.10	51.286	Vertical	Pass
		713.5	1.82	1.92	19.33	2.15	17.08	51.050	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	709	1.90	1.91	19.25	2.15	17.09	51.168	Vertical	Pass
		710	1.98	1.91	19.26	2.15	17.18	52.240	Vertical	Pass
		711	1.92	1.92	19.32	2.15	17.17	52.119	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	706.5	1.93	1.91	19.23	2.15	17.10	51.286	Horizontal	Pass
		710	1.92	1.91	19.26	2.15	17.12	51.523	Horizontal	Pass
		713.5	1.86	1.92	19.33	2.15	17.12	51.523	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	709	2.02	1.91	19.25	2.15	17.21	52.602	Horizontal	Pass
		710	2.02	1.91	19.26	2.15	17.22	52.723	Horizontal	Pass
		711	2.00	1.92	19.32	2.15	17.25	53.088	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: §2.1051,§22.917(a), §24.238(a), §27.53(c)(g)(h)(m)

LIMIT

For Band 7, the minimum permissible attenuation level of any spurious emission is 55 + log10 (P [Watts]).
The minimum permissible attenuation level of any spurious emission is 43 + log10 (P [Watts]), where P is the transmitter power in Watts.

TEST PROCEDURE

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

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

The power of any unwanted emissions measured from the channel edge of the equipment shall be attenuated below the transmitter power, P (dBW), as follows:
a. for base station and subscriber equipment, other than mobile subscriber equipment, the attenuation shall not be less than 43 + 10 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 2/4/5/7/12/17

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 Factor(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
3701.4	-53.88	4.04	33.51	-24.41	-13	-11.41	Horizontal
3701.4	-49.35	4.04	33.51	-19.88	-13	-6.88	Vertical
5552.1	-46.71	5.24	35.84	-16.11	-13	-3.11	Vertical
5552.1	-49.66	5.24	35.84	-19.06	-13	-6.06	Horizontal
212.8	-43.66	1.43	16.02	-29.07	-13	-16.07	Vertical
272.5	-38.62	1.30	17.99	-21.93	-13	-8.93	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-50.53	4.04	33.56	-21.01	-13	-8.01	Horizontal
3760.0	-50.11	4.04	33.56	-20.59	-13	-7.59	Vertical
5640.0	-44.66	5.24	35.91	-13.99	-13	-0.99	Vertical
5640.0	-51.21	5.24	35.91	-20.54	-13	-7.54	Horizontal
208.6	-44.90	1.62	16.97	-29.55	-13	-16.55	Vertical
285.3	-44.35	1.74	15.98	-30.12	-13	-17.12	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-53.18	4.04	34.00	-23.22	-13	-10.22	Horizontal
3818.6	-49.19	4.04	34.00	-19.23	-13	-6.23	Vertical
5727.9	-49.94	5.24	36.04	-19.14	-13	-6.14	Vertical
5727.9	-51.37	5.24	36.04	-20.57	-13	-7.57	Horizontal
201.9	-34.47	1.42	17.29	-18.60	-13	-5.60	Vertical
368.5	-39.16	1.50	17.90	-22.75	-13	-9.75	Horizontal

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

Test Results for Low Channel 1860MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
3720.0	-52.86	4.07	33.54	-23.39	-13	-10.39	Horizontal
3720.0	-45.17	4.07	33.54	-15.70	-13	-2.70	Vertical
5580.0	-50.98	5.28	35.86	-20.40	-13	-7.40	Vertical
5580.0	-53.55	5.28	35.86	-22.97	-13	-9.97	Horizontal
208.9	-43.40	1.58	16.89	-28.08	-13	-15.08	Vertical
380.4	-43.24	1.76	17.26	-27.74	-13	-14.74	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-47.65	4.04	33.56	-18.13	-13	-5.13	Horizontal
3760.0	-45.74	4.04	33.56	-16.22	-13	-3.22	Vertical
5640.0	-51.86	5.24	35.91	-21.19	-13	-8.19	Vertical
5640.0	-53.50	5.24	35.91	-22.83	-13	-9.83	Horizontal
181.1	-41.94	1.46	16.27	-27.13	-13	-14.13	Vertical
297.2	-44.20	1.59	15.15	-30.64	-13	-17.64	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-48.09	4.04	34.00	-18.13	-13	-5.13	Horizontal
3800.0	-48.76	4.04	34.00	-18.80	-13	-5.80	Vertical
5700.0	-47.58	5.24	36.04	-16.78	-13	-3.78	Vertical
5700.0	-53.89	5.24	36.04	-23.09	-13	-10.09	Horizontal
185.0	-38.20	1.36	17.39	-22.16	-13	-9.16	Vertical
435.2	-37.20	1.66	15.39	-23.47	-13	-10.47	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.

9.2 LTE BAND 4

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

Test Results for Low Channel 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
3421.4	-53.48	4.02	29.80	-27.70	-13	-14.70	Horizontal
3421.4	-44.87	4.02	29.80	-19.09	-13	-6.09	Vertical
5132.1	-48.15	5.24	35.84	-17.55	-13	-4.55	Vertical
5132.1	-49.52	5.24	35.84	-18.92	-13	-5.92	Horizontal
177.6	-39.81	1.68	16.04	-25.45	-13	-12.45	Vertical
461.1	-39.72	1.78	17.74	-23.76	-13	-10.76	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-51.70	4.03	30.00	-25.73	-13	-12.73	Horizontal
3465.0	-50.50	4.03	30.00	-24.53	-13	-11.53	Vertical
5197.5	-46.48	5.25	35.86	-15.87	-13	-2.87	Vertical
5197.5	-50.27	5.25	35.86	-19.66	-13	-6.66	Horizontal
201.5	-34.32	1.72	17.69	-18.35	-13	-5.35	Vertical
310.4	-44.01	1.62	16.02	-29.60	-13	-16.60	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-52.90	4.05	30.01	-26.94	-13	-13.94	Horizontal
3508.6	-45.99	4.05	30.01	-20.03	-13	-7.03	Vertical
5262.9	-49.99	5.26	35.86	-19.39	-13	-6.39	Vertical
5262.9	-52.30	5.26	35.86	-21.70	-13	-8.70	Horizontal
178.3	-37.25	1.80	16.69	-22.36	-13	-9.36	Vertical
345.2	-38.27	1.75	16.66	-23.37	-13	-10.37	Horizontal

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

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
3440.0	-48.53	4.02	29.80	-22.75	-13	-9.75	Horizontal
3440.0	-49.28	4.02	29.80	-23.50	-13	-10.50	Vertical
5160.0	-51.71	5.24	35.84	-21.11	-13	-8.11	Vertical
5160.0	-52.50	5.24	35.84	-21.90	-13	-8.90	Horizontal
204.2	-35.34	1.57	17.26	-19.65	-13	-6.65	Vertical
260.2	-43.83	1.78	16.35	-29.26	-13	-16.26	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-44.83	4.03	30.00	-18.86	-13	-5.86	Horizontal
3465.0	-45.86	4.03	30.00	-19.89	-13	-6.89	Vertical
5197.5	-49.02	5.25	35.86	-18.41	-13	-5.41	Vertical
5197.5	-52.40	5.25	35.86	-21.79	-13	-8.79	Horizontal
210.3	-44.06	1.44	17.95	-27.55	-13	-14.55	Vertical
337.0	-35.29	1.65	16.09	-20.85	-13	-7.85	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-51.11	4.05	27.68	-27.48	-13	-14.48	Horizontal
3490.0	-50.17	4.05	27.68	-26.54	-13	-13.54	Vertical
5235.0	-52.67	5.26	35.86	-22.07	-13	-9.07	Vertical
5235.0	-51.02	5.26	35.86	-20.42	-13	-7.42	Horizontal
203.0	-39.22	1.61	16.85	-23.98	-13	-10.98	Vertical
262.4	-38.88	1.61	15.19	-25.30	-13	-12.30	Horizontal

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

. Margin = Spurious Emission Level - Limit

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

9.3 LTE BAND 5

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

Test Results for Low Channel 824.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
1649.4	-47.84	2.78	27.50	-23.12	-13	-10.12	Horizontal
1649.4	-50.58	2.78	27.50	-25.86	-13	-12.86	Vertical
2474.1	-53.96	2.90	27.80	-29.06	-13	-16.06	Vertical
2474.1	-52.95	2.90	27.80	-28.05	-13	-15.05	Horizontal
206.6	-35.60	1.76	17.59	-19.77	-13	-6.77	Vertical
294.0	-37.06	1.63	15.87	-22.82	-13	-9.82	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-50.51	2.80	27.48	-25.83	-13	-12.83	Horizontal
1673.0	-51.67	2.80	27.48	-26.99	-13	-13.99	Vertical
2509.5	-52.96	2.91	27.70	-28.17	-13	-15.17	Vertical
2509.5	-49.46	2.91	27.70	-24.67	-13	-11.67	Horizontal
192.6	-37.18	1.61	15.68	-23.11	-13	-10.11	Vertical
424.9	-42.75	1.59	17.52	-26.83	-13	-13.83	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-51.37	2.82	27.43	-26.76	-13	-13.76	Horizontal
1696.6	-50.41	2.82	27.43	-25.80	-13	-12.80	Vertical
2544.9	-46.38	2.92	27.74	-21.56	-13	-8.56	Vertical
2544.9	-52.00	2.92	27.74	-27.18	-13	-14.18	Horizontal
178.5	-35.11	1.69	16.67	-20.12	-13	-7.12	Vertical
249.4	-39.66	1.70	17.18	-24.18	-13	-11.18	Horizontal

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

Test Results for Low Channel 829MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
1658.0	-47.80	2.78	27.50	-23.08	-13	-10.08	Horizontal
1658.0	-44.56	2.78	27.50	-19.84	-13	-6.84	Vertical
2487.0	-52.94	2.90	27.80	-28.04	-13	-15.04	Vertical
2487.0	-50.96	2.90	27.80	-26.06	-13	-13.06	Horizontal
183.2	-42.01	1.71	15.57	-28.15	-13	-15.15	Vertical
288.3	-36.18	1.34	16.40	-21.12	-13	-8.12	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-45.18	2.80	27.48	-20.50	-13	-7.50	Horizontal
1673.0	-48.27	2.80	27.48	-23.59	-13	-10.59	Vertical
2509.5	-46.17	2.91	27.70	-21.38	-13	-8.38	Vertical
2509.5	-49.45	2.91	27.70	-24.66	-13	-11.66	Horizontal
212.7	-41.27	1.44	17.04	-25.67	-13	-12.67	Vertical
378.5	-41.32	1.76	17.62	-25.46	-13	-12.46	Horizontal
Test Results for High Channel 844MHz							
1688.0	-45.38	2.82	27.43	-20.77	-13	-7.77	Horizontal
1688.0	-52.64	2.82	27.43	-28.03	-13	-15.03	Vertical
2532.0	-46.46	2.92	27.74	-21.64	-13	-8.64	Vertical
2532.0	-53.23	2.92	27.74	-28.41	-13	-15.41	Horizontal
207.7	-34.10	1.74	17.70	-18.14	-13	-5.14	Vertical
418.4	-34.45	1.41	17.46	-18.39	-13	-5.39	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.

9.4 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	-62.91	5.23	35.81	-32.33	-25	-7.33	Horizontal
5005.0	-62.61	5.23	35.81	-32.03	-25	-7.03	Vertical
7507.5	-64.61	5.67	36.85	-33.43	-25	-8.43	Vertical
7507.5	-63.97	5.67	36.85	-32.79	-25	-7.79	Horizontal
190.1	-49.51	1.73	17.97	-33.27	-25	-8.27	Vertical
446.8	-44.34	1.38	15.11	-30.61	-25	-5.61	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-63.49	5.23	35.82	-32.90	-25	-7.90	Horizontal
5070.0	-62.70	5.23	35.82	-32.11	-25	-7.11	Vertical
7605.0	-59.22	5.67	36.85	-28.04	-25	-3.04	Vertical
7605.0	-64.44	5.67	36.85	-33.26	-25	-8.26	Horizontal
178.6	-53.00	1.77	16.17	-38.59	-25	-13.59	Vertical
348.0	-44.31	1.63	15.21	-30.73	-25	-5.73	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-64.80	5.24	35.83	-34.21	-25	-9.21	Horizontal
5135.0	-64.86	5.24	35.83	-34.27	-25	-9.27	Vertical
7702.5	-64.35	5.68	36.87	-33.16	-25	-8.16	Vertical
7702.5	-64.54	5.68	36.87	-33.35	-25	-8.35	Horizontal
212.3	-51.74	1.58	17.56	-35.76	-25	-10.76	Vertical
317.4	-45.87	1.45	16.58	-30.74	-25	-5.74	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	-62.28	5.23	35.82	-31.69	-25	-6.69	Horizontal
5020.0	-64.49	5.23	35.82	-33.90	-25	-8.90	Vertical
7530.0	-63.36	5.67	36.86	-32.17	-25	-7.17	Vertical
7530.0	-64.56	5.67	36.86	-33.37	-25	-8.37	Horizontal
209.8	-51.67	1.63	15.76	-37.54	-25	-12.54	Vertical
407.1	-46.61	1.71	15.44	-32.88	-25	-7.88	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-60.66	5.23	35.82	-30.07	-25	-5.07	Horizontal
5070.0	-60.91	5.23	35.82	-30.32	-25	-5.32	Vertical
7605.0	-59.86	5.67	36.85	-28.68	-25	-3.68	Vertical
7605.0	-59.15	5.67	36.85	-27.97	-25	-2.97	Horizontal
175.7	-50.35	1.79	16.84	-35.29	-25	-10.29	Vertical
259.5	-51.70	1.71	17.64	-35.77	-25	-10.77	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-60.96	5.24	35.83	-30.37	-25	-5.37	Horizontal
5120.0	-63.40	5.24	35.83	-32.81	-25	-7.81	Vertical
7680.0	-59.80	5.70	36.88	-28.62	-25	-3.62	Vertical
7680.0	-61.81	5.70	36.88	-30.63	-25	-5.63	Horizontal
205.8	-48.44	1.79	16.84	-33.38	-25	-8.38	Vertical
414.4	-48.65	1.71	17.64	-32.72	-25	-7.72	Horizontal

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

. Margin = Spurious Emission Level - Limit

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

9.5 LTE BAND 12

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

Test Results for Low Channel 699.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
1399.4	-51.57	2.60	27.20	-26.97	-13	-13.97	Horizontal
1399.4	-48.72	2.60	27.20	-24.12	-13	-11.12	Vertical
2099.1	-48.37	2.85	27.54	-23.68	-13	-10.68	Vertical
2099.1	-50.31	2.85	27.54	-25.62	-13	-12.62	Horizontal
209.3	-36.79	1.49	17.78	-20.50	-13	-7.50	Vertical
414.1	-36.08	1.36	17.33	-20.11	-13	-7.11	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-48.57	2.61	27.28	-23.90	-13	-10.90	Horizontal
1415.0	-46.30	2.61	27.28	-21.63	-13	-8.63	Vertical
2122.5	-49.91	2.87	27.59	-25.19	-13	-12.19	Vertical
2122.5	-49.59	2.87	27.59	-24.87	-13	-11.87	Horizontal
200.1	-37.56	1.73	15.74	-23.55	-13	-10.55	Vertical
247.4	-41.53	1.62	15.79	-27.36	-13	-14.36	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-53.62	2.63	27.28	-28.97	-13	-15.97	Horizontal
1430.6	-48.29	2.63	27.28	-23.64	-13	-10.64	Vertical
2145.9	-51.35	2.88	27.60	-26.63	-13	-13.63	Vertical
2145.9	-52.13	2.88	27.60	-27.41	-13	-14.41	Horizontal
177.7	-42.64	1.61	18.00	-26.25	-13	-13.25	Vertical
284.9	-41.29	1.45	15.49	-27.26	-13	-14.26	Horizontal

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

Test Results for Low Channel 704MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
1408.0	-45.69	2.61	27.26	-21.04	-13	-8.04	Horizontal
1408.0	-48.32	2.61	27.26	-23.67	-13	-10.67	Vertical
2112.0	-49.18	2.87	27.58	-24.47	-13	-11.47	Vertical
2112.0	-49.39	2.87	27.58	-24.68	-13	-11.68	Horizontal
197.0	-39.23	1.31	16.97	-23.57	-13	-10.57	Vertical
455.6	-44.82	1.65	16.70	-29.77	-13	-16.77	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-53.92	2.61	27.28	-29.25	-13	-16.25	Horizontal
1415.0	-45.65	2.61	27.28	-20.98	-13	-7.98	Vertical
2122.5	-52.20	2.87	27.59	-27.48	-13	-14.48	Vertical
2122.5	-50.22	2.87	27.59	-25.50	-13	-12.50	Horizontal
192.5	-40.25	1.72	17.99	-23.98	-13	-10.98	Vertical
379.2	-37.96	1.73	17.94	-21.75	-13	-8.75	Horizontal
Test Results for High Channel 711MHz							
1422.0	-49.51	2.62	27.28	-24.85	-13	-11.85	Horizontal
1422.0	-50.53	2.62	27.28	-25.87	-13	-12.87	Vertical
2133.0	-47.01	2.87	27.60	-22.28	-13	-9.28	Vertical
2133.0	-50.50	2.87	27.60	-25.77	-13	-12.77	Horizontal
184.6	-42.45	1.58	15.93	-28.10	-13	-15.10	Vertical
340.8	-36.66	1.36	15.59	-22.43	-13	-9.43	Horizontal

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

. Margin = Spurious Emission Level - Limit

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

9.6 LTE BAND 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	-46.74	2.61	27.28	-22.07	-13	-9.07	Horizontal
1413.0	-52.34	2.61	27.28	-27.67	-13	-14.67	Vertical
2119.5	-51.49	2.87	27.59	-26.77	-13	-13.77	Vertical
2119.5	-52.06	2.87	27.59	-27.34	-13	-14.34	Horizontal
202.6	-40.07	1.71	16.15	-25.63	-13	-12.63	Vertical
389.8	-39.60	1.41	17.32	-23.69	-13	-10.69	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-53.58	2.62	27.30	-28.90	-13	-15.90	Horizontal
1420.0	-50.62	2.62	27.30	-25.94	-13	-12.94	Vertical
2130.0	-48.24	2.87	27.62	-23.49	-13	-10.49	Vertical
2130.0	-50.90	2.87	27.62	-26.15	-13	-13.15	Horizontal
195.8	-35.17	1.42	15.25	-21.35	-13	-8.35	Vertical
408.3	-39.42	1.36	17.19	-23.59	-13	-10.59	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-50.21	2.66	27.28	-25.59	-13	-12.59	Horizontal
1427.0	-44.41	2.66	27.28	-19.79	-13	-6.79	Vertical
2140.5	-48.67	2.88	27.60	-23.95	-13	-10.95	Vertical
2140.5	-53.67	2.88	27.60	-28.95	-13	-15.95	Horizontal
176.9	-34.89	1.32	17.29	-18.92	-13	-5.92	Vertical
427.0	-34.76	1.72	16.89	-19.59	-13	-6.59	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	-45.36	2.62	27.30	-20.68	-13	-7.68	Horizontal
1418.0	-48.63	2.62	27.30	-23.95	-13	-10.95	Vertical
2127.0	-45.15	2.87	27.62	-20.40	-13	-7.40	Vertical
2127.0	-51.05	2.87	27.62	-26.30	-13	-13.30	Horizontal
211.2	-37.55	1.35	16.91	-21.99	-13	-8.99	Vertical
252.9	-35.77	1.62	16.31	-21.08	-13	-8.08	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-47.59	2.62	27.30	-22.91	-13	-9.91	Horizontal
1420.0	-52.75	2.62	27.30	-28.07	-13	-15.07	Vertical
2130.0	-48.78	2.87	27.62	-24.03	-13	-11.03	Vertical
2130.0	-53.86	2.87	27.62	-29.11	-13	-16.11	Horizontal
175.4	-34.59	1.51	17.14	-18.96	-13	-5.96	Vertical
431.4	-44.90	1.77	16.88	-29.79	-13	-16.79	Horizontal
Test Results for High Channel 711MHz							
1422.0	-52.20	2.62	27.30	-27.52	-13	-14.52	Horizontal
1422.0	-51.27	2.62	27.30	-26.59	-13	-13.59	Vertical
2133.0	-50.42	2.87	27.62	-25.67	-13	-12.67	Vertical
2133.0	-52.13	2.87	27.62	-27.38	-13	-14.38	Horizontal
179.8	-40.21	1.78	15.95	-26.04	-13	-13.04	Vertical
261.8	-38.85	1.34	17.95	-22.25	-13	-9.25	Horizontal

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

. Margin = Spurious Emission Level - Limit

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

10. FREQUENCY STABILITY

RULE PART(S)

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

LIMITS

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

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

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- Temp. = −30° to +50°C
- Voltage =low voltage, DC 3.4V, Normal, DC3.87V and High voltage, DC 4.2V.

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 2/4/5/7/12/17

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]
3.4	1880	12.6	0.006692	2.5
3.87	1880	13.7	0.007291	2.5
4.2	1880	13.6	0.007224	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	12.8	0.006820	2.5
Extreme (50C)	1880	11.6	0.006156	2.5
Extreme (40C)	1880	13.5	0.007157	2.5
Extreme (30C)	1880	13.6	0.007228	2.5
Extreme (10C)	1880	14.0	0.007424	2.5
Extreme (0C)	1880	12.5	0.006632	2.5
Extreme (-10C)	1880	13.4	0.007105	2.5
Extreme (-20C)	1880	14.2	0.007564	2.5
Extreme (-30C)	1880	14.4	0.007659	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]
3.4	1880	10.0	0.005321	2.5
3.87	1880	9.1	0.004843	2.5
4.2	1880	7.9	0.004218	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	9.2	0.004895	2.5
Extreme (50C)	1880	8.9	0.004740	2.5
Extreme (40C)	1880	8.5	0.004533302	2.5
Extreme (30C)	1880	9.3	0.004924063	2.5
Extreme (10C)	1880	8.9	0.004740731	2.5
Extreme (0C)	1880	7.9	0.00420715	2.5
Extreme (-10C)	1880	9.2	0.004889618	2.5
Extreme (-20C)	1880	9.3	0.004945043	2.5
Extreme (-30C)	1880	8.2	0.004360042	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]
3.4	1732.5	9.0	0.005209	2.5
3.87	1732.5	9.0	0.005186	2.5
4.2	1732.5	8.6	0.004966	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.4	0.004830	2.5
Extreme (50C)	1732.5	8.5	0.004911	2.5
Extreme (40C)	1732.5	7.7	0.004463	2.5
Extreme (30C)	1732.5	5.5	0.003177	2.5
Extreme (10C)	1732.5	6.8	0.003935	2.5
Extreme (0C)	1732.5	9.2	0.005333	2.5
Extreme (-10C)	1732.5	7.9	0.004570	2.5
Extreme (-20C)	1732.5	6.6	0.003812	2.5
Extreme (-30C)	1732.5	8.2	0.004710	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]
3.4	1732.5	9.9	0.005698	2.5
3.87	1732.5	9.1	0.005248	2.5
4.2	1732.5	8.3	0.004789	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	9.8	0.005667	2.5
Extreme (50C)	1732.5	9.1	0.005236	2.5
Extreme (40C)	1732.5	7.9	0.004545	2.5
Extreme (30C)	1732.5	8.7	0.005014	2.5
Extreme (10C)	1732.5	9.2	0.005284	2.5
Extreme (0C)	1732.5	7.6	0.004410	2.5
Extreme (-10C)	1732.5	8.9	0.005150	2.5
Extreme (-20C)	1732.5	9.1	0.005246	2.5
Extreme (-30C)	1732.5	8.1	0.004650	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]
3.4	836.5	5.3	0.006350	2.5
3.87	836.5	6.4	0.007615	2.5
4.2	836.5	5.2	0.006188	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	5.8	0.006891	2.5
Extreme (50C)	836.5	6.3	0.007476	2.5
Extreme (40C)	836.5	5.7	0.006864	2.5
Extreme (30C)	836.5	6.4	0.007665	2.5
Extreme (10C)	836.5	5.1	0.006150	2.5
Extreme (0C)	836.5	5.8	0.006886	2.5
Extreme (-10C)	836.5	5.1	0.006152	2.5
Extreme (-20C)	836.5	5.8	0.006968	2.5
Extreme (-30C)	836.5	5.8	0.006970	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]
3.4	836.5	5.5	0.006530	2.5
3.87	836.5	7.1	0.008531	2.5
4.2	836.5	4.4	0.005266	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.6	0.007841	2.5
Extreme (50C)	836.5	6.0	0.007217	2.5
Extreme (40C)	836.5	6.3	0.007527	2.5
Extreme (30C)	836.5	6.0	0.007204	2.5
Extreme (10C)	836.5	5.6	0.006669	2.5
Extreme (0C)	836.5	4.9	0.005885	2.5
Extreme (-10C)	836.5	5.5	0.006633	2.5
Extreme (-20C)	836.5	5.7	0.006760	2.5
Extreme (-30C)	836.5	6.6	0.007908	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]
3.4	2535	9.7	0.003828	2.5
3.87	2535	9.2	0.003631	2.5
4.2	2535	8.3	0.003277	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	9.8	0.003852	2.5
Extreme (50C)	2535	8.9	0.003507	2.5
Extreme (40C)	2535	7.9	0.003125	2.5
Extreme (30C)	2535	9.2	0.003647	2.5
Extreme (10C)	2535	7.9	0.003121	2.5
Extreme (0C)	2535	8.4	0.003324	2.5
Extreme (-10C)	2535	9.2	0.003640	2.5
Extreme (-20C)	2535	9.0	0.003559	2.5
Extreme (-30C)	2535	8.3	0.003267	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]
3.4	2535	6.9	0.002722	2.5
3.87	2535	6.8	0.002672	2.5
4.2	2535	5.3	0.002079	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	5.5	0.002162	2.5
Extreme (40C)	2535	5.5	0.002175	2.5
Extreme (30C)	2535	7.1	0.002788	2.5
Extreme (10C)	2535	6.1	0.002413	2.5
Extreme (0C)	2535	5.2	0.002061	2.5
Extreme (-10C)	2535	5.3	0.002100	2.5
Extreme (-20C)	2535	5.6	0.002198	2.5
Extreme (-30C)	2535	6.0	0.002378	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]
3.4	707.5	8.6	0.012167	2.5
3.87	707.5	9.7	0.013757	2.5
4.2	707.5	8.9	0.012579	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	8.4	0.011852	2.5
Extreme (50C)	707.5	7.4	0.010410	2.5
Extreme (40C)	707.5	6.9	0.009757	2.5
Extreme (30C)	707.5	8.4	0.011868	2.5
Extreme (10C)	707.5	7.5	0.010539	2.5
Extreme (0C)	707.5	9.1	0.012795	2.5
Extreme (-10C)	707.5	8.3	0.011758	2.5
Extreme (-20C)	707.5	8.8	0.012391	2.5
Extreme (-30C)	707.5	7.6	0.010756	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]
3.4	707.5	7.4	0.010493	2.5
3.87	707.5	8.3	0.011782	2.5
4.2	707.5	7.2	0.010154	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	9.2	0.013061	2.5
Extreme (50C)	707.5	8.8	0.012428	2.5
Extreme (40C)	707.5	9.2	0.013038	2.5
Extreme (30C)	707.5	7.6	0.010744	2.5
Extreme (10C)	707.5	9.0	0.012726	2.5
Extreme (0C)	707.5	7.2	0.010214	2.5
Extreme (-10C)	707.5	7.1	0.010103	2.5
Extreme (-20C)	707.5	8.7	0.012232	2.5
Extreme (-30C)	707.5	8.6	0.012199	2.5

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

10.6 LTE BAND 17

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	710.0	9.5	0.013449	2.5
3.87	710.0	9.1	0.012790	2.5
4.2	710.0	8.5	0.011966	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	10.2	0.014364	2.5
Extreme (50C)	710.0	8.6	0.012071	2.5
Extreme (40C)	710.0	8.2	0.011565	2.5
Extreme (30C)	710.0	8.7	0.012280	2.5
Extreme (10C)	710.0	8.8	0.012326	2.5
Extreme (0C)	710.0	7.6	0.010733	2.5
Extreme (-10C)	710.0	8.9	0.012604	2.5
Extreme (-20C)	710.0	9.0	0.012685	2.5
Extreme (-30C)	710.0	7.8	0.010936	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]
3.4	710.0	9.9	0.013920	2.5
3.87	710.0	8.5	0.012008	2.5
4.2	710.0	8.8	0.012361	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.0	0.012642	2.5
Extreme (50C)	710.0	8.6	0.012096	2.5
Extreme (40C)	710.0	8.7	0.012216	2.5
Extreme (30C)	710.0	8.5	0.011928	2.5
Extreme (10C)	710.0	7.7	0.010785	2.5
Extreme (0C)	710.0	8.5	0.012001	2.5
Extreme (-10C)	710.0	9.6	0.013537	2.5
Extreme (-20C)	710.0	9.4	0.013204	2.5
Extreme (-30C)	710.0	8.7	0.012209	2.5

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

11. Peak-to-Average Ratio

11.1 Description of the PAR Measurement

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

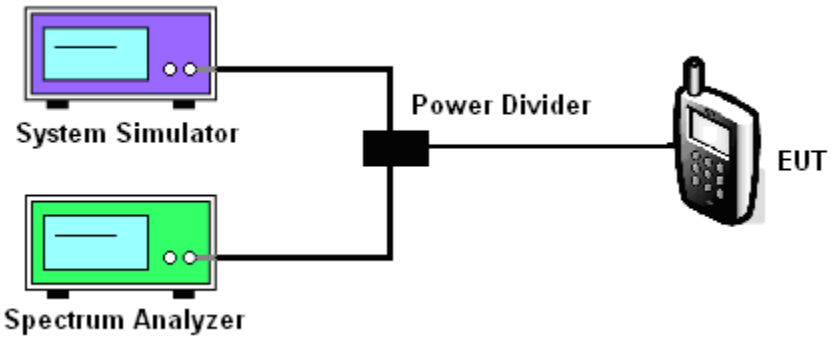
11.2 Measuring Instruments

See list of measuring instruments of this test report.

11.3 Test Procedures

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

11.4 Test Setup



MODES TESTED

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

Test data reference attachment.

----END OF REPORT----