FCC CFR47 PART 22H, 24E, 27
CERTIFICATION TEST REPORT
FCC ID: 2ANMU-WP20PRO

Product：	Smart Phone
Trade Mark：	OUKITEL
Model Number：	WP20 Pro
Family Model：	N/A
Report No.：	S22081703702006

Prepared for

SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO.,LTD

A2 2F BUILDING ENET NEW INDUSTRIAL PARK, DAFU INDUSTRIAL ZONE, GUANLAN, LONGHUA SHENZHEN, 518XXX 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, 518XXX China
Manufacturer's Name ..... :	SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO.,LTD
Address..... :	A2 2F BUILDING ENET NEW INDUSTRIAL PARK, DAFU INDUSTRIAL ZONE, GUANLAN, LONGHUA SHENZHEN, 518XXX China
Product name ..... :	Smart Phone
Model and/or type reference ..... :	WP20 Pro
Family Model:	N/A
Sample number	S220817037002
Standards ..... :	FCC CFR 47 Part 22H, Part 24E, Part 27
Test procedure	ANSI C63.26:2015 ANSI/TIA-603-E-2016
This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report. This report shall not be reproduced except in full, without the written approval of NTEK, this document may be altered or revised by NTEK, personal only, and shall be noted in the revision of the document.	
Date of Test.....	
Date (s) of performance of tests.....	Aug 17. 2022 ~ Aug 30, 2022
Date of Issue	Aug 31, 2022
Test Result	**Pass**

Testing Engineer : 

(Allen Liu)

Authorized Signatory : 

(Alex Li)

TABLE OF CONTENTS

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	WP20 Pro
Family Model	N/A
Model Difference	N/A
FCC ID:	2ANMU-WP20PRO
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: 0.19dBi, Band 4: 0.18dBi, Band 5: 2.29dBi, Band 7: 0.14dBi, Band 12: 2.32dBi, Band 17: 2.28dBi
Power Supply:	DC 3.87V/6300mAh from battery or DC 5V from Adapter.
Adapter:	Model:PS10UA050K2000UU Input: 100-240V~50/60Hz 0.35A Max Output: 5.0V⎓2.0A 10.0W
Extreme Vol. Limits:	DC 3.4V to DC 4.2V (Nominal DC 3.87V)（Note 1）
HW Version	TE656_MAIN_PCB_V1.1
SW Version	OUKITEL_WP20Pro_EEA_V03
** 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-WP20PRO** 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(c), (g), (h) KDB 971168 D01 Clause 6	Band Edge	PASS	
22.913(a)(2) 27.50(b)(10), (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(c)(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(c)(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

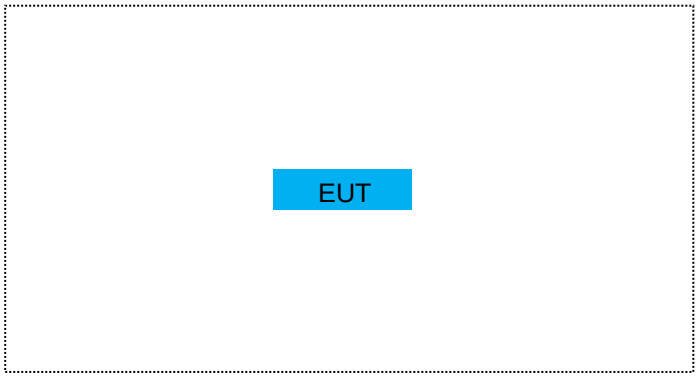
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Smart Phone	WP20 Pro	FCC ID: 2ANMU-WP20PRO	EUT

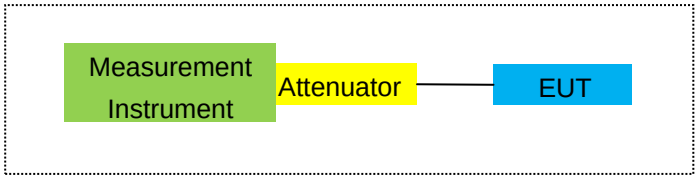
Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.

2.4 TEST SETUP

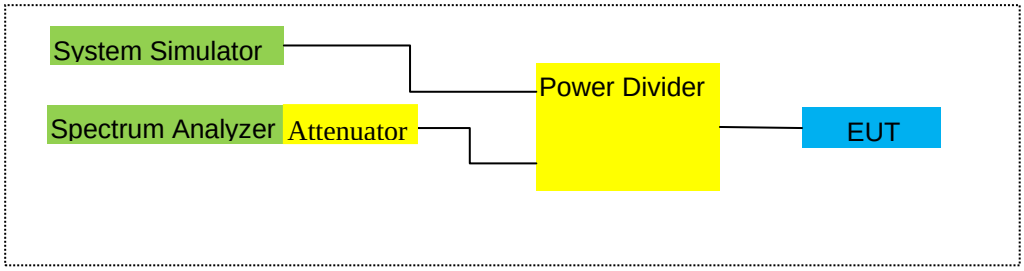
For Radiated Test Cases



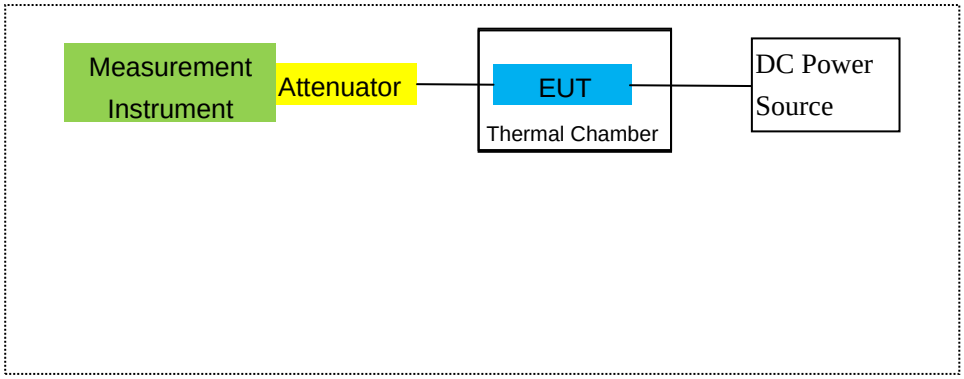
For Conducted Output Power



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	2022.04.06	2023.04.05	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	2020.05.11	2023.05.10	3 year
12	Test Cable	N/A	R-02	N/A	2020.05.11	2023.05.10	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	2022.06.17	2023.06.16	1 year
23	Spectrum Analyzer	agilent	e4440a	us44300399	2022.04.06	2023.04.05	1 year
24	test receiver	R&S	ESCI	a0304218	2022.04.06	2023.04.05	1 year
25	Communication Tester	R&S	CMU200	A0304247	2022.06.17	2023.06.16	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	2017040292 3	2020.05.11	2023.05.10	3 year
28	PSG Analog Signal Generator	Agilent	E8257D	MY51110112	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
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 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 Band2

LTE Band 4
LTE Band 5
LTE Band 7
LTE Band 12
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(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 Band2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 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)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	1850.7	-2.40	3.76	28.24	22.08	161.436	Horizontal	Pass
		1880	-2.21	3.91	28.22	22.10	162.181	Horizontal	Pass
		1909.3	-2.12	3.93	28.20	22.15	164.059	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-2.46	3.77	28.23	22.00	158.489	Horizontal	Pass
		1880	-2.31	3.91	28.24	22.02	159.221	Horizontal	Pass
		1908.5	-2.18	3.94	28.25	22.13	163.305	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-2.35	3.77	28.31	22.19	165.577	Horizontal	Pass
		1880	-1.97	3.91	28.22	22.34	171.396	Horizontal	Pass
		1907.5	-1.90	3.94	28.20	22.36	172.187	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-2.21	3.79	28.33	22.33	171.002	Horizontal	Pass
		1880	-1.91	3.95	28.22	22.36	172.187	Horizontal	Pass
		1905	-1.80	3.97	28.19	22.42	174.582	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-2.17	3.79	28.34	22.38	172.982	Horizontal	Pass
		1880	-1.96	3.95	28.22	22.31	170.216	Horizontal	Pass
		1902.5	-1.82	3.97	28.18	22.39	173.380	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-2.16	3.81	28.35	22.38	172.982	Horizontal	Pass
		1880	-1.83	3.96	28.22	**22.43**	174.985	Horizontal	Pass
		1900	-1.77	4.00	28.16	22.39	173.380	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-3.66	3.76	28.24	20.82	120.781	Vertical	Pass
		1880	-2.81	3.91	28.22	21.50	141.254	Vertical	Pass
		1909.3	-2.88	3.93	28.20	21.39	137.721	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-3.27	3.77	28.23	21.19	131.522	Vertical	Pass
		1880	-3.09	3.91	28.24	21.24	133.045	Vertical	Pass
		1908.5	-3.48	3.94	28.25	20.83	121.060	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-3.06	3.77	28.31	21.48	140.605	Vertical	Pass
		1880	-3.17	3.91	28.22	21.14	130.017	Vertical	Pass
		1907.5	-3.43	3.94	28.20	20.83	121.060	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1855	-3.61	3.79	28.33	20.93	123.880	Vertical	Pass
		1880	-3.07	3.95	28.22	21.20	131.826	Vertical	Pass

		1905	-3.40	3.97	28.19	20.82	120.781	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-2.96	3.79	28.34	21.59	144.212	Vertical	Pass
		1880	-3.42	3.95	28.22	20.85	121.619	Vertical	Pass
		1902.5	-2.61	3.97	28.18	21.60	144.544	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1860	-3.47	3.81	28.35	21.07	127.938	Vertical	Pass
		1880	-2.73	3.96	28.22	21.53	142.233	Vertical	Pass
		1900	-3.29	4.00	28.16	20.87	122.180	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 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz	1/#Mid	1850.7	-3.52	3.76	28.24	20.96	124.738	Horizontal	Pass
Band 16		1880	-2.99	3.91	28.22	21.32	135.519	Horizontal	Pass
QAM		1909.3	-2.92	3.93	28.20	21.35	136.458	Horizontal	Pass
3.0MHz	1/#Mid	1851.5	-3.02	3.77	28.23	21.44	139.316	Horizontal	Pass
Band 16		1880	-3.10	3.91	28.24	21.23	132.739	Horizontal	Pass
QAM		1908.5	-3.31	3.94	28.25	21.00	125.893	Horizontal	Pass
5.0MHz	1/#Mid	1852.5	-2.96	3.77	28.31	21.58	143.880	Horizontal	Pass
Band 16		1880	-2.87	3.91	28.22	21.44	139.316	Horizontal	Pass
QAM		1907.5	-2.55	3.94	28.20	21.71	148.252	Horizontal	Pass
10.0MHz	1/#Mid	1855	-3.01	3.79	28.33	21.53	142.233	Horizontal	Pass
Band 16		1880	-3.00	3.95	28.22	21.27	133.968	Horizontal	Pass
QAM		1905	-2.47	3.97	28.19	21.75	149.624	Horizontal	Pass
15.0MHz	1/#Mid	1857.5	-2.99	3.79	28.34	21.56	143.219	Horizontal	Pass
Band 16		1880	-2.78	3.95	28.22	21.49	140.929	Horizontal	Pass
QAM		1902.5	-2.74	3.97	28.18	21.47	140.281	Horizontal	Pass
20.0MHz	1/#Mid	1860	-2.88	3.81	28.35	21.66	146.555	Horizontal	Pass
Band 16		1880	-2.58	3.96	28.22	21.68	147.231	Horizontal	Pass
QAM		1900	-2.40	4.00	28.16	**21.76**	149.968	Horizontal	Pass
1.4MHz	1/#Mid	1850.7	-4.65	3.76	28.24	19.83	96.161	Vertical	Pass
Band 16		1880	-3.78	3.91	28.22	20.53	112.980	Vertical	Pass
QAM		1909.3	-3.83	3.93	28.20	20.44	110.662	Vertical	Pass
3.0MHz	1/#Mid	1851.5	-3.95	3.77	28.23	20.51	112.460	Vertical	Pass
Band 16		1880	-3.90	3.91	28.24	20.43	110.408	Vertical	Pass
QAM		1908.5	-4.30	3.94	28.25	20.01	100.231	Vertical	Pass
5.0MHz	1/#Mid	1852.5	-4.06	3.77	28.31	20.48	111.686	Vertical	Pass
Band 16		1880	-4.45	3.91	28.22	19.86	96.828	Vertical	Pass
QAM		1907.5	-4.12	3.94	28.20	20.14	103.276	Vertical	Pass
10.0MHz	1/#Mid	1855	-4.28	3.79	28.33	20.26	106.170	Vertical	Pass
Band 16		1880	-4.46	3.95	28.22	19.81	95.719	Vertical	Pass
QAM		1905	-3.90	3.97	28.19	20.32	107.647	Vertical	Pass
15.0MHz	1/#Mid	1857.5	-4.08	3.79	28.34	20.47	111.429	Vertical	Pass
Band 16		1880	-3.61	3.95	28.22	20.66	116.413	Vertical	Pass

QAM		1902.5	-4.14	3.97	28.18	20.07	101.625	Vertical	Pass
20.0MHz		1860	-4.52	3.81	28.35	20.02	100.462	Vertical	Pass
Band 16	1/#Mid	1880	-4.36	3.96	28.22	19.90	97.724	Vertical	Pass
QAM		1900	-3.54	4.00	28.16	20.62	115.345	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 4

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	1710.7	-2.31	3.12	27.58	22.15	164.059	Horizontal	Pass
		1732.5	-2.30	3.27	27.61	22.04	159.956	Horizontal	Pass
		1754.3	-2.28	3.29	27.63	22.06	160.694	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-2.48	3.13	27.61	22.00	158.489	Horizontal	Pass
		1732.5	-2.40	3.27	27.61	21.94	156.315	Horizontal	Pass
		1753.5	-2.32	3.30	27.62	22.00	158.489	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-2.25	3.13	27.63	22.25	167.880	Horizontal	Pass
		1732.5	-2.15	3.27	27.61	22.19	165.577	Horizontal	Pass
		1752.5	-2.03	3.30	27.60	22.27	168.655	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-2.19	3.15	27.64	22.30	169.824	Horizontal	Pass
		1732.5	-1.96	3.31	27.61	22.34	171.396	Horizontal	Pass
		1750	-1.98	3.33	27.59	22.28	169.044	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-2.20	3.15	27.65	22.30	169.824	Horizontal	Pass
		1732.5	-2.04	3.31	27.61	22.26	168.267	Horizontal	Pass
		1747.5	-1.98	3.33	27.57	22.26	168.267	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-2.14	3.17	27.66	**22.35**	171.791	Horizontal	Pass
		1732.5	-1.97	3.32	27.61	22.32	170.608	Horizontal	Pass
		1745	-1.91	3.36	27.56	22.29	169.434	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-2.81	3.12	27.58	21.65	146.218	Vertical	Pass
		1732.5	-3.48	3.27	27.61	20.86	121.899	Vertical	Pass
		1754.3	-3.44	3.29	27.63	20.90	123.027	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-3.66	3.13	27.61	20.82	120.781	Vertical	Pass
		1732.5	-3.29	3.27	27.61	21.05	127.350	Vertical	Pass
		1753.5	-3.29	3.30	27.62	21.03	126.765	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-2.74	3.13	27.63	21.76	149.968	Vertical	Pass
		1732.5	-3.29	3.27	27.61	21.05	127.350	Vertical	Pass
		1752.5	-3.11	3.30	27.60	21.19	131.522	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-3.33	3.15	27.64	21.16	130.617	Vertical	Pass
		1732.5	-3.14	3.31	27.61	21.16	130.617	Vertical	Pass
		1750	-2.74	3.33	27.59	21.52	141.906	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1717.5	-3.39	3.15	27.65	21.11	129.122	Vertical	Pass
		1732.5	-2.72	3.31	27.61	21.58	143.880	Vertical	Pass
		1747.5	-2.72	3.33	27.57	21.52	141.906	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1720	-2.71	3.17	27.66	21.78	150.661	Vertical	Pass
		1732.5	-2.86	3.32	27.61	21.43	138.995	Vertical	Pass
		1745	-2.97	3.36	27.56	21.23	132.739	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 Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	1710.7	-3.12	3.12	27.58	21.34	136.144	Horizontal	Pass
		1732.5	-2.97	3.27	27.61	21.37	137.088	Horizontal	Pass
		1754.3	-2.97	3.29	27.63	21.37	137.088	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-3.06	3.13	27.61	21.42	138.676	Horizontal	Pass
		1732.5	-3.19	3.27	27.61	21.15	130.317	Horizontal	Pass
		1753.5	-3.41	3.30	27.62	20.91	123.310	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-2.89	3.13	27.63	21.61	144.877	Horizontal	Pass
		1732.5	-2.85	3.27	27.61	21.49	140.929	Horizontal	Pass
		1752.5	-2.54	3.30	27.60	21.76	149.968	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-2.96	3.15	27.64	21.53	142.233	Horizontal	Pass
		1732.5	-3.15	3.31	27.61	21.15	130.317	Horizontal	Pass
		1750	-2.53	3.33	27.59	21.73	148.936	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-2.76	3.15	27.65	21.74	149.279	Horizontal	Pass
		1732.5	-2.82	3.31	27.61	21.48	140.605	Horizontal	Pass
		1747.5	-2.84	3.33	27.57	21.40	138.038	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-2.71	3.17	27.66	**21.78**	150.661	Horizontal	Pass
		1732.5	-2.72	3.32	27.61	21.57	143.549	Horizontal	Pass
		1745	-2.53	3.36	27.56	21.67	146.893	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-4.41	3.12	27.58	20.05	101.158	Vertical	Pass
		1732.5	-4.22	3.27	27.61	20.12	102.802	Vertical	Pass
		1754.3	-3.80	3.29	27.63	20.54	113.240	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-4.16	3.13	27.61	20.32	107.647	Vertical	Pass
		1732.5	-4.13	3.27	27.61	20.21	104.954	Vertical	Pass
		1753.5	-4.32	3.30	27.62	20.00	100.000	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-4.32	3.13	27.63	20.18	104.232	Vertical	Pass
		1732.5	-3.95	3.27	27.61	20.39	109.396	Vertical	Pass
		1752.5	-3.86	3.30	27.60	20.44	110.662	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-4.07	3.15	27.64	20.42	110.154	Vertical	Pass
		1732.5	-4.42	3.31	27.61	19.88	97.275	Vertical	Pass
		1750	-3.83	3.33	27.59	20.43	110.408	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-4.36	3.15	27.65	20.14	103.276	Vertical	Pass
		1732.5	-4.03	3.31	27.61	20.27	106.414	Vertical	Pass
		1747.5	-3.59	3.33	27.57	20.65	116.145	Vertical	Pass

20.0MHz	1/#Mid	1720	-3.90	3.17	27.66	20.59	114.551	Vertical	Pass
Band 16		1732.5	-3.99	3.32	27.61	20.30	107.152	Vertical	Pass
QAM		1745	-4.25	3.36	27.56	19.95	98.855	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 5

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	3/#Mid	824.7	6.89	2.01	19.68	2.15	22.41	174.181	Horizontal	Pass
		836.5	6.77	2.01	19.77	2.15	22.38	172.982	Horizontal	Pass
		848.3	6.57	2.02	19.82	2.15	22.22	166.725	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	825.5	6.66	2.01	19.70	2.15	22.20	165.959	Horizontal	Pass
		836.5	6.56	2.01	19.77	2.15	22.17	164.816	Horizontal	Pass
		847.5	6.43	2.02	19.81	2.15	22.07	161.065	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	826.5	6.94	2.01	19.71	2.15	22.49	177.419	Horizontal	Pass
		836.5	6.82	2.01	19.77	2.15	22.43	174.985	Horizontal	Pass
		846.5	6.66	2.02	19.79	2.15	22.28	169.044	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	829	6.96	2.01	19.73	2.15	**22.53**	179.061	Horizontal	Pass
		836.5	6.91	2.01	19.77	2.15	22.52	178.649	Horizontal	Pass
		844	6.81	2.02	19.78	2.15	22.42	174.582	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	824.7	5.58	2.01	19.68	2.15	21.10	128.825	Vertical	Pass
		836.5	5.40	2.01	19.77	2.15	21.01	126.183	Vertical	Pass
		848.3	5.61	2.02	19.82	2.15	21.26	133.660	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	825.5	5.57	2.01	19.70	2.15	21.11	129.122	Vertical	Pass
		836.5	5.80	2.01	19.77	2.15	21.41	138.357	Vertical	Pass
		847.5	5.33	2.02	19.81	2.15	20.97	125.026	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	826.5	6.00	2.01	19.71	2.15	21.55	142.889	Vertical	Pass
		836.5	6.05	2.01	19.77	2.15	21.66	146.555	Vertical	Pass
		846.5	5.80	2.02	19.79	2.15	21.42	138.676	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	829	5.34	2.01	19.73	2.15	20.91	123.310	Vertical	Pass
		836.5	5.40	2.01	19.77	2.15	21.01	126.183	Vertical	Pass
		844	5.28	2.02	19.78	2.15	20.89	122.744	Vertical	Pass

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	3/#Mid	824.7	6.04	2.01	19.68	2.15	21.56	143.219	Horizontal	Pass
		836.5	5.97	2.01	19.77	2.15	21.58	143.880	Horizontal	Pass
		848.3	5.81	2.02	19.82	2.15	21.46	139.959	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	6.12	2.01	19.70	2.15	21.66	146.555	Horizontal	Pass
		836.5	5.83	2.01	19.77	2.15	21.44	139.316	Horizontal	Pass
		847.5	5.31	2.02	19.81	2.15	20.95	124.451	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	6.44	2.01	19.71	2.15	21.99	158.125	Horizontal	Pass
		836.5	6.21	2.01	19.77	2.15	21.82	152.055	Horizontal	Pass
		846.5	5.96	2.02	19.79	2.15	21.58	143.880	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	829	6.44	2.01	19.73	2.15	**22.01**	158.855	Horizontal	Pass
		836.5	6.16	2.01	19.77	2.15	21.77	150.314	Horizontal	Pass
		844	5.70	2.02	19.78	2.15	21.31	135.207	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	824.7	6.04	2.01	19.68	2.15	21.56	143.219	Vertical	Pass
		836.5	4.51	2.01	19.77	2.15	20.12	102.802	Vertical	Pass
		848.3	4.20	2.02	19.82	2.15	19.85	96.605	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	4.81	2.01	19.70	2.15	20.35	108.393	Vertical	Pass
		836.5	5.04	2.01	19.77	2.15	20.65	116.145	Vertical	Pass
		847.5	5.76	2.02	19.81	2.15	21.40	138.038	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	4.57	2.01	19.71	2.15	20.12	102.802	Vertical	Pass
		836.5	4.10	2.01	19.77	2.15	19.71	93.541	Vertical	Pass
		846.5	5.04	2.02	19.79	2.15	20.66	116.413	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	829	4.36	2.01	19.73	2.15	19.93	98.401	Vertical	Pass
		836.5	4.32	2.01	19.77	2.15	19.93	98.401	Vertical	Pass
		844	5.77	2.02	19.78	2.15	21.38	137.404	Vertical	Pass

Note:
ERP=EIRP-2.15
SG Level= Signal generator output
Max. EIRP Average (dBm)= Antenna Gain(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)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	2502.5	-0.59	4.54	27.75	22.62	182.810	Horizontal	Pass
		2535	-0.42	4.69	27.72	22.61	182.390	Horizontal	Pass
		2567.5	-0.35	4.71	27.71	22.65	184.077	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2505	-0.52	4.55	27.76	22.69	185.780	Horizontal	Pass
		2535	-0.33	4.69	27.72	22.70	186.209	Horizontal	Pass
		2565	-0.25	4.72	27.70	22.73	187.499	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-0.53	4.55	27.77	22.69	185.780	Horizontal	Pass
		2535	-0.39	4.69	27.72	22.64	183.654	Horizontal	Pass
		2562.5	-0.29	4.72	27.69	22.68	185.353	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2510	-0.47	4.57	27.78	**22.74**	187.932	Horizontal	Pass
		2535	-0.29	4.73	27.72	22.70	186.209	Horizontal	Pass
		2560	-0.25	4.75	27.68	22.68	185.353	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	-2.21	4.54	27.75	21.00	125.893	Vertical	Pass
		2535	-1.90	4.69	27.72	21.13	129.718	Vertical	Pass
		2567.5	-2.15	4.71	27.71	20.85	121.619	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2505	-1.65	4.55	27.76	21.56	143.219	Vertical	Pass
		2535	-2.21	4.69	27.72	20.82	120.781	Vertical	Pass
		2565	-1.65	4.72	27.70	21.33	135.831	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-1.79	4.55	27.77	21.43	138.995	Vertical	Pass
		2535	-1.76	4.69	27.72	21.27	133.968	Vertical	Pass
		2562.5	-1.51	4.72	27.69	21.46	139.959	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2510	-1.76	4.57	27.78	21.45	139.637	Vertical	Pass
		2535	-1.71	4.73	27.72	21.28	134.276	Vertical	Pass
		2560	-1.19	4.75	27.68	21.74	149.279	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	-1.28	4.54	27.75	21.93	155.955	Horizontal	Pass
		2535	-0.97	4.69	27.72	22.06	160.694	Horizontal	Pass
		2567.5	-1.05	4.71	27.71	21.95	156.675	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-1.17	4.55	27.76	22.04	159.956	Horizontal	Pass
		2535	-1.18	4.69	27.72	21.85	153.109	Horizontal	Pass
		2565	-1.45	4.72	27.70	21.53	142.233	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-1.35	4.55	27.77	21.87	153.815	Horizontal	Pass
		2535	-1.32	4.69	27.72	21.71	148.252	Horizontal	Pass
		2562.5	-0.93	4.72	27.69	22.04	159.956	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-1.23	4.57	27.78	21.98	157.761	Horizontal	Pass
		2535	-0.90	4.73	27.72	**22.09**	161.808	Horizontal	Pass
		2560	-1.00	4.75	27.68	21.93	155.955	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	-3.16	4.54	27.75	20.05	101.158	Vertical	Pass
		2535	-2.56	4.69	27.72	20.47	111.429	Vertical	Pass
		2567.5	-2.21	4.71	27.71	20.79	119.950	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-2.67	4.55	27.76	20.54	113.240	Vertical	Pass
		2535	-1.47	4.69	27.72	21.56	143.219	Vertical	Pass
		2565	-2.41	4.72	27.70	20.57	114.025	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-1.70	4.55	27.77	21.52	141.906	Vertical	Pass
		2535	-1.94	4.69	27.72	21.09	128.529	Vertical	Pass
		2562.5	-2.10	4.72	27.69	20.87	122.180	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-1.95	4.57	27.78	21.26	133.660	Vertical	Pass
		2535	-3.10	4.73	27.72	19.89	97.499	Vertical	Pass
		2560	-2.34	4.75	27.68	20.59	114.551	Vertical	Pass

Note:

SG Level= Signal generator output

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

8.5 LTE BAND 12

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	699.7	7.26	1.91	19.21	2.15	22.41	174.181	Vertical	Pass
		707.5	7.18	1.91	19.26	2.15	22.38	172.982	Vertical	Pass
		715.3	6.96	1.93	19.34	2.15	22.22	166.725	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	700.5	7.05	1.91	19.21	2.15	22.20	165.959	Vertical	Pass
		707.5	6.97	1.91	19.26	2.15	22.17	164.816	Vertical	Pass
		714.5	6.81	1.93	19.34	2.15	22.07	161.065	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	701.5	7.32	1.91	19.23	2.15	22.49	177.419	Vertical	Pass
		707.5	7.23	1.91	19.26	2.15	22.43	174.985	Vertical	Pass
		713.5	7.02	1.92	19.33	2.15	22.28	169.044	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	704	7.34	1.91	19.25	2.15	**22.53**	179.061	Vertical	Pass
		707.5	7.32	1.91	19.26	2.15	22.52	178.649	Vertical	Pass
		711	7.17	1.92	19.32	2.15	22.42	174.582	Vertical	Pass
1.4MHz Band QPSK	1/#Mid	699.7	6.19	1.91	19.21	2.15	21.34	136.144	Horizontal	Pass
		707.5	6.01	1.91	19.26	2.15	21.21	132.130	Horizontal	Pass
		715.3	5.51	1.93	19.34	2.15	20.77	119.399	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	700.5	5.91	1.91	19.21	2.15	21.06	127.644	Horizontal	Pass
		707.5	6.41	1.91	19.26	2.15	21.61	144.877	Horizontal	Pass
		714.5	6.38	1.93	19.34	2.15	21.64	145.881	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	701.5	5.77	1.91	19.23	2.15	20.94	124.165	Horizontal	Pass
		707.5	5.68	1.91	19.26	2.15	20.88	122.462	Horizontal	Pass
		713.5	6.37	1.92	19.33	2.15	21.63	145.546	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	704	5.82	1.91	19.25	2.15	21.01	126.183	Horizontal	Pass
		707.5	6.27	1.91	19.26	2.15	21.47	140.281	Horizontal	Pass
		711	5.95	1.92	19.32	2.15	21.20	131.826	Horizontal	Pass

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	699.7	7.21	1.91	19.21	2.15	22.36	172.187	Vertical	Pass
		707.5	7.13	1.91	19.26	2.15	22.33	171.002	Vertical	Pass
		715.3	6.91	1.93	19.34	2.15	22.17	164.816	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	7.00	1.91	19.21	2.15	22.15	164.059	Vertical	Pass
		707.5	6.92	1.91	19.26	2.15	22.12	162.930	Vertical	Pass
		714.5	6.76	1.93	19.34	2.15	22.02	159.221	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	7.27	1.91	19.23	2.15	22.44	175.388	Vertical	Pass
		707.5	7.18	1.91	19.26	2.15	22.38	172.982	Vertical	Pass
		713.5	6.97	1.92	19.33	2.15	22.23	167.109	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	704	7.29	1.91	19.25	2.15	**22.48**	177.011	Vertical	Pass
		707.5	7.27	1.91	19.26	2.15	22.47	176.604	Vertical	Pass
		711	7.12	1.92	19.32	2.15	22.37	172.584	Vertical	Pass
1.4MHz Band 16 QAM	1/#Mid	699.7	5.62	1.91	19.21	2.15	20.77	119.399	Horizontal	Pass
		707.5	6.22	1.91	19.26	2.15	21.42	138.676	Horizontal	Pass
		715.3	5.61	1.93	19.34	2.15	20.87	122.180	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	5.68	1.91	19.21	2.15	20.83	121.060	Horizontal	Pass
		707.5	6.27	1.91	19.26	2.15	21.47	140.281	Horizontal	Pass
		714.5	6.27	1.93	19.34	2.15	21.53	142.233	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	6.09	1.91	19.23	2.15	21.26	133.660	Horizontal	Pass
		707.5	5.64	1.91	19.26	2.15	20.84	121.339	Horizontal	Pass
		713.5	5.43	1.92	19.33	2.15	20.69	117.220	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	704	6.23	1.91	19.25	2.15	21.42	138.676	Horizontal	Pass
		707.5	5.88	1.91	19.26	2.15	21.08	128.233	Horizontal	Pass
		711	6.31	1.92	19.32	2.15	21.56	143.219	Horizontal	Pass

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

8.6 LTE BAND 17

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	706.5	7.00	1.91	19.23	2.15	22.17	164.816	Vertical	Pass
		710	6.86	1.91	19.26	2.15	22.06	160.694	Vertical	Pass
		713.5	6.76	1.92	19.33	2.15	22.02	159.221	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	709	7.01	1.91	19.25	2.15	**22.20**	165.959	Vertical	Pass
		710	6.96	1.91	19.26	2.15	22.16	164.437	Vertical	Pass
		711	6.92	1.92	19.32	2.15	22.17	164.816	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	706.5	4.87	1.91	19.23	2.15	20.04	100.925	Horizontal	Pass
		710	4.92	1.91	19.26	2.15	20.12	102.802	Horizontal	Pass
		713.5	6.54	1.92	19.33	2.15	21.80	151.356	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	709	6.46	1.91	19.25	2.15	21.65	146.218	Horizontal	Pass
		710	5.38	1.91	19.26	2.15	20.58	114.288	Horizontal	Pass
		711	5.89	1.92	19.32	2.15	21.14	130.017	Horizontal	Pass

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna 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	6.26	1.91	19.23	2.15	21.43	138.995	Vertical	Pass
		710	6.17	1.91	19.26	2.15	21.37	137.088	Vertical	Pass
		713.5	5.97	1.92	19.33	2.15	21.23	132.739	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	709	5.80	1.91	19.25	2.15	20.99	125.603	Vertical	Pass
		710	6.33	1.91	19.26	2.15	**21.53**	142.233	Vertical	Pass
		711	6.06	1.92	19.32	2.15	21.31	135.207	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	706.5	4.81	1.91	19.23	2.15	19.98	99.541	Horizontal	Pass
		710	5.48	1.91	19.26	2.15	20.68	116.950	Horizontal	Pass
		713.5	5.51	1.92	19.33	2.15	20.77	119.399	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	709	5.45	1.91	19.25	2.15	20.64	115.878	Horizontal	Pass
		710	5.47	1.91	19.26	2.15	20.67	116.681	Horizontal	Pass
		711	4.72	1.92	19.32	2.15	19.97	99.312	Horizontal	Pass

Note:

ERP=EIRP-2.15

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Gain(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
- LTE Band 4
- ☐ LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 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	-48.64	4.04	33.51	-19.17	-13	-6.17	Horizontal
3701.4	-49.48	4.04	33.51	-20.01	-13	-7.01	Vertical
5552.1	-52.95	5.24	35.84	-22.35	-13	-9.35	Vertical
5552.1	-52.97	5.24	35.84	-22.37	-13	-9.37	Horizontal
178.3	-34.68	1.43	16.02	-20.09	-13	-7.09	Vertical
461.5	-41.53	1.30	17.99	-24.84	-13	-11.84	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-51.14	4.04	33.56	-21.62	-13	-8.62	Horizontal
3760.0	-46.73	4.04	33.56	-17.21	-13	-4.21	Vertical
5640.0	-47.15	5.24	35.91	-16.48	-13	-3.48	Vertical
5640.0	-52.88	5.24	35.91	-22.21	-13	-9.21	Horizontal
180.9	-35.14	1.62	16.97	-19.79	-13	-6.79	Vertical
417.1	-41.58	1.74	15.98	-27.35	-13	-14.35	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-52.34	4.04	34.00	-22.38	-13	-9.38	Horizontal
3818.6	-53.88	4.04	34.00	-23.92	-13	-10.92	Vertical
5727.9	-46.86	5.24	36.04	-16.06	-13	-3.06	Vertical
5727.9	-50.99	5.24	36.04	-20.19	-13	-7.19	Horizontal
186.5	-39.02	1.42	17.29	-23.15	-13	-10.15	Vertical
349.2	-41.53	1.50	17.90	-25.12	-13	-12.12	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	-51.92	4.07	33.54	-22.45	-13	-9.45	Horizontal
3720.0	-45.00	4.07	33.54	-15.53	-13	-2.53	Vertical
5580.0	-51.64	5.28	35.86	-21.06	-13	-8.06	Vertical
5580.0	-51.48	5.28	35.86	-20.90	-13	-7.90	Horizontal
206.5	-36.32	1.58	16.89	-21.00	-13	-8.00	Vertical
442.5	-34.06	1.76	17.26	-18.56	-13	-5.56	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-45.93	4.04	33.56	-16.41	-13	-3.41	Horizontal
3760.0	-53.02	4.04	33.56	-23.50	-13	-10.50	Vertical
5640.0	-49.08	5.24	35.91	-18.41	-13	-5.41	Vertical
5640.0	-53.83	5.24	35.91	-23.16	-13	-10.16	Horizontal
195.2	-36.24	1.46	16.27	-21.43	-13	-8.43	Vertical
395.9	-36.66	1.59	15.15	-23.10	-13	-10.10	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-50.16	4.04	34.00	-20.20	-13	-7.20	Horizontal
3800.0	-50.25	4.04	34.00	-20.29	-13	-7.29	Vertical
5700.0	-51.17	5.24	36.04	-20.37	-13	-7.37	Vertical
5700.0	-52.46	5.24	36.04	-21.66	-13	-8.66	Horizontal
175.2	-42.70	1.36	17.39	-26.66	-13	-13.66	Vertical
354.9	-44.25	1.66	15.39	-30.52	-13	-17.52	Horizontal

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

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

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

9.2 LTE BAND 4

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

Test Results for Low Channel 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
3421.4	-45.46	4.02	29.80	-19.68	-13	-6.68	Horizontal
3421.4	-50.35	4.02	29.80	-24.57	-13	-11.57	Vertical
5132.1	-46.60	5.24	35.84	-16.00	-13	-3.00	Vertical
5132.1	-52.77	5.24	35.84	-22.17	-13	-9.17	Horizontal
212.5	-40.66	1.68	16.04	-26.30	-13	-13.30	Vertical
341.2	-42.03	1.78	17.74	-26.07	-13	-13.07	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-53.59	4.03	30.00	-27.62	-13	-14.62	Horizontal
3465.0	-51.18	4.03	30.00	-25.21	-13	-12.21	Vertical
5197.5	-47.39	5.25	35.86	-16.78	-13	-3.78	Vertical
5197.5	-51.79	5.25	35.86	-21.18	-13	-8.18	Horizontal
176.6	-34.88	1.72	17.69	-18.91	-13	-5.91	Vertical
463.2	-43.39	1.62	16.02	-28.98	-13	-15.98	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-47.34	4.05	30.01	-21.38	-13	-8.38	Horizontal
3508.6	-45.91	4.05	30.01	-19.95	-13	-6.95	Vertical
5262.9	-51.73	5.26	35.86	-21.13	-13	-8.13	Vertical
5262.9	-53.06	5.26	35.86	-22.46	-13	-9.46	Horizontal
200.0	-35.39	1.80	16.69	-20.50	-13	-7.50	Vertical
404.6	-37.57	1.75	16.66	-22.67	-13	-9.67	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	-46.78	4.02	29.80	-21.00	-13	-8.00	Horizontal
3440.0	-52.72	4.02	29.80	-26.94	-13	-13.94	Vertical
5160.0	-51.03	5.24	35.84	-20.43	-13	-7.43	Vertical
5160.0	-53.44	5.24	35.84	-22.84	-13	-9.84	Horizontal
178.7	-40.57	1.57	17.26	-24.88	-13	-11.88	Vertical
345.5	-34.60	1.78	16.35	-20.03	-13	-7.03	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-51.95	4.03	30.00	-25.98	-13	-12.98	Horizontal
3465.0	-44.15	4.03	30.00	-18.18	-13	-5.18	Vertical
5197.5	-53.87	5.25	35.86	-23.26	-13	-10.26	Vertical
5197.5	-52.71	5.25	35.86	-22.10	-13	-9.10	Horizontal
197.3	-43.46	1.44	17.95	-26.95	-13	-13.95	Vertical
450.4	-39.45	1.65	16.09	-25.01	-13	-12.01	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-44.21	2.91	27.68	-19.44	-13	-6.44	Horizontal
3490.0	-52.76	2.91	27.68	-27.99	-13	-14.99	Vertical
5235.0	-46.68	5.26	35.86	-16.08	-13	-3.08	Vertical
5235.0	-53.19	5.26	35.86	-22.59	-13	-9.59	Horizontal
183.5	-42.78	1.61	16.85	-27.54	-13	-14.54	Vertical
279.1	-41.95	1.61	15.19	-28.37	-13	-15.37	Horizontal

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

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

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

9.3 LTE BAND 5

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

Test Results for Low Channel 824.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
1649.4	-45.11	2.78	27.50	-20.39	-13	-7.39	Horizontal
1649.4	-47.13	2.78	27.50	-22.41	-13	-9.41	Vertical
2474.1	-46.87	2.90	27.80	-21.97	-13	-8.97	Vertical
2474.1	-53.70	2.90	27.80	-28.80	-13	-15.80	Horizontal
211.6	-40.97	1.76	17.59	-25.14	-13	-12.14	Vertical
427.5	-37.69	1.63	15.87	-23.45	-13	-10.45	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-48.65	2.80	27.48	-23.97	-13	-10.97	Horizontal
1673.0	-47.89	2.80	27.48	-23.21	-13	-10.21	Vertical
2509.5	-45.46	2.91	27.70	-20.67	-13	-7.67	Vertical
2509.5	-50.38	2.91	27.70	-25.59	-13	-12.59	Horizontal
193.9	-38.46	1.61	15.68	-24.39	-13	-11.39	Vertical
326.2	-38.08	1.59	17.52	-22.16	-13	-9.16	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-52.32	2.82	27.43	-27.71	-13	-14.71	Horizontal
1696.6	-45.23	2.82	27.43	-20.62	-13	-7.62	Vertical
2544.9	-48.85	2.92	27.74	-24.03	-13	-11.03	Vertical
2544.9	-51.04	2.92	27.74	-26.22	-13	-13.22	Horizontal
175.8	-34.08	1.69	16.67	-19.09	-13	-6.09	Vertical
239.4	-38.14	1.70	17.18	-22.66	-13	-9.66	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	-44.31	2.78	27.50	-19.59	-13	-6.59	Horizontal
1658.0	-49.96	2.78	27.50	-25.24	-13	-12.24	Vertical
2487.0	-53.75	2.90	27.80	-28.85	-13	-15.85	Vertical
2487.0	-50.12	2.90	27.80	-25.22	-13	-12.22	Horizontal
202.6	-44.40	1.71	15.57	-30.54	-13	-17.54	Vertical
243.0	-37.81	1.34	16.40	-22.75	-13	-9.75	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-46.11	2.80	27.48	-21.43	-13	-8.43	Horizontal
1673.0	-44.09	2.80	27.48	-19.41	-13	-6.41	Vertical
2509.5	-45.72	2.91	27.70	-20.93	-13	-7.93	Vertical
2509.5	-51.85	2.91	27.70	-27.06	-13	-14.06	Horizontal
201.2	-39.75	1.44	17.04	-24.15	-13	-11.15	Vertical
405.3	-35.79	1.76	17.62	-19.93	-13	-6.93	Horizontal
Test Results for High Channel 844MHz							
1688.0	-51.27	2.82	27.43	-26.66	-13	-13.66	Horizontal
1688.0	-47.22	2.82	27.43	-22.61	-13	-9.61	Vertical
2532.0	-50.42	2.92	27.74	-25.60	-13	-12.60	Vertical
2532.0	-51.76	2.92	27.74	-26.94	-13	-13.94	Horizontal
175.5	-42.27	1.74	17.70	-26.31	-13	-13.31	Vertical
236.9	-41.12	1.41	17.46	-25.06	-13	-12.06	Horizontal

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

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

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

9.4 LTE BAND 7

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

Test Results for Low Channel 2502.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
5005.0	-61.30	5.23	35.81	-30.72	-25	-5.72	Horizontal
5005.0	-60.72	5.23	35.81	-30.14	-25	-5.14	Vertical
7507.5	-61.41	5.67	36.85	-30.23	-25	-5.23	Vertical
7507.5	-59.41	5.67	36.85	-28.23	-25	-3.23	Horizontal
199.0	-48.19	1.73	17.97	-31.95	-25	-6.95	Vertical
246.1	-50.32	1.38	15.11	-36.59	-25	-11.59	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-62.18	5.23	35.82	-31.59	-25	-6.59	Horizontal
5070.0	-64.42	5.23	35.82	-33.83	-25	-8.83	Vertical
7605.0	-64.07	5.67	36.85	-32.89	-25	-7.89	Vertical
7605.0	-64.31	5.67	36.85	-33.13	-25	-8.13	Horizontal
185.3	-45.78	1.77	16.17	-31.37	-25	-6.37	Vertical
439.2	-44.90	1.63	15.21	-31.32	-25	-6.32	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-62.01	5.24	35.83	-31.42	-25	-6.42	Horizontal
5135.0	-61.45	5.24	35.83	-30.86	-25	-5.86	Vertical
7702.5	-62.49	5.68	36.87	-31.30	-25	-6.30	Vertical
7702.5	-62.33	5.68	36.87	-31.14	-25	-6.14	Horizontal
191.2	-51.60	1.58	17.56	-35.62	-25	-10.62	Vertical
370.8	-49.09	1.45	16.58	-33.96	-25	-8.96	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	-61.04	5.23	35.82	-30.45	-25	-5.45	Horizontal
5020.0	-61.43	5.23	35.82	-30.84	-25	-5.84	Vertical
7530.0	-63.74	5.67	36.86	-32.55	-25	-7.55	Vertical
7530.0	-62.44	5.67	36.86	-31.25	-25	-6.25	Horizontal
202.9	-47.87	1.63	15.76	-33.74	-25	-8.74	Vertical
429.3	-48.67	1.71	15.44	-34.94	-25	-9.94	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-62.22	5.23	35.82	-31.63	-25	-6.63	Horizontal
5070.0	-62.46	5.23	35.82	-31.87	-25	-6.87	Vertical
7605.0	-60.55	5.67	36.85	-29.37	-25	-4.37	Vertical
7605.0	-61.23	5.67	36.85	-30.05	-25	-5.05	Horizontal
192.3	-49.10	1.79	16.84	-34.04	-25	-9.04	Vertical
318.1	-48.88	1.71	17.64	-32.95	-25	-7.95	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-59.88	5.24	35.83	-29.29	-25	-4.29	Horizontal
5120.0	-64.50	5.24	35.83	-33.91	-25	-8.91	Vertical
7680.0	-60.32	5.70	36.88	-29.14	-25	-4.14	Vertical
7680.0	-59.11	5.70	36.88	-27.93	-25	-2.93	Horizontal
186.3	-47.67	1.79	16.84	-32.61	-25	-7.61	Vertical
233.7	-49.53	1.71	17.64	-33.60	-25	-8.60	Horizontal

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

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

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

9.5 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	-48.84	2.60	27.20	-24.24	-13	-11.24	Horizontal
1399.4	-45.55	2.60	27.20	-20.95	-13	-7.95	Vertical
2099.1	-46.20	2.85	27.54	-21.51	-13	-8.51	Vertical
2099.1	-49.47	2.85	27.54	-24.78	-13	-11.78	Horizontal
210.0	-40.99	1.49	17.78	-24.70	-13	-11.70	Vertical
272.1	-42.27	1.36	17.33	-26.30	-13	-13.30	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-46.80	2.61	27.28	-22.13	-13	-9.13	Horizontal
1415.0	-52.93	2.61	27.28	-28.26	-13	-15.26	Vertical
2122.5	-45.52	2.87	27.59	-20.80	-13	-7.80	Vertical
2122.5	-51.72	2.87	27.59	-27.00	-13	-14.00	Horizontal
205.6	-35.66	1.73	15.74	-21.65	-13	-8.65	Vertical
329.9	-38.02	1.62	15.79	-23.85	-13	-10.85	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-52.98	2.63	27.28	-28.33	-13	-15.33	Horizontal
1430.6	-51.58	2.63	27.28	-26.93	-13	-13.93	Vertical
2145.9	-49.31	2.88	27.60	-24.59	-13	-11.59	Vertical
2145.9	-49.91	2.88	27.60	-25.19	-13	-12.19	Horizontal
212.8	-39.67	1.61	18.00	-23.28	-13	-10.28	Vertical
420.3	-38.01	1.45	15.49	-23.98	-13	-10.98	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	-51.31	2.61	27.26	-26.66	-13	-13.66	Horizontal
1408.0	-52.95	2.61	27.26	-28.30	-13	-15.30	Vertical
2112.0	-49.50	2.87	27.58	-24.79	-13	-11.79	Vertical
2112.0	-52.46	2.87	27.58	-27.75	-13	-14.75	Horizontal
177.3	-44.85	1.31	16.97	-29.19	-13	-16.19	Vertical
294.4	-44.68	1.65	16.70	-29.63	-13	-16.63	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-46.83	2.61	27.28	-22.16	-13	-9.16	Horizontal
1415.0	-53.65	2.61	27.28	-28.98	-13	-15.98	Vertical
2122.5	-44.11	2.87	27.59	-19.39	-13	-6.39	Vertical
2122.5	-51.20	2.87	27.59	-26.48	-13	-13.48	Horizontal
200.4	-42.87	1.72	17.99	-26.60	-13	-13.60	Vertical
436.2	-35.27	1.73	17.94	-19.06	-13	-6.06	Horizontal
Test Results for High Channel 711MHz							
1422.0	-44.37	2.62	27.28	-19.71	-13	-6.71	Horizontal
1422.0	-51.74	2.62	27.28	-27.08	-13	-14.08	Vertical
2133.0	-48.19	2.87	27.60	-23.46	-13	-10.46	Vertical
2133.0	-51.81	2.87	27.60	-27.08	-13	-14.08	Horizontal
176.4	-44.77	1.58	15.93	-30.42	-13	-17.42	Vertical
285.7	-36.92	1.36	15.59	-22.69	-13	-9.69	Horizontal

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

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

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

9.6 LTE BAND 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	-48.68	2.61	27.28	-24.01	-13	-11.01	Horizontal
1413.0	-52.78	2.61	27.28	-28.11	-13	-15.11	Vertical
2119.5	-53.38	2.87	27.59	-28.66	-13	-15.66	Vertical
2119.5	-51.83	2.87	27.59	-27.11	-13	-14.11	Horizontal
197.6	-43.01	1.71	16.15	-28.57	-13	-15.57	Vertical
360.1	-37.33	1.41	17.32	-21.42	-13	-8.42	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-46.56	2.62	27.30	-21.88	-13	-8.88	Horizontal
1420.0	-53.77	2.62	27.30	-29.09	-13	-16.09	Vertical
2130.0	-48.50	2.87	27.62	-23.75	-13	-10.75	Vertical
2130.0	-52.78	2.87	27.62	-28.03	-13	-15.03	Horizontal
202.3	-45.00	1.42	15.25	-31.18	-13	-18.18	Vertical
348.8	-42.32	1.36	17.19	-26.49	-13	-13.49	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-53.13	2.66	27.28	-28.51	-13	-15.51	Horizontal
1427.0	-46.05	2.66	27.28	-21.43	-13	-8.43	Vertical
2140.5	-49.34	2.88	27.60	-24.62	-13	-11.62	Vertical
2140.5	-51.29	2.88	27.60	-26.57	-13	-13.57	Horizontal
192.5	-34.04	1.32	17.29	-18.07	-13	-5.07	Vertical
449.7	-35.22	1.72	16.89	-20.05	-13	-7.05	Horizontal

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

Test Results for Low Channel 709MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
1418.0	-44.67	2.62	27.30	-19.99	-13	-6.99	Horizontal
1418.0	-51.82	2.62	27.30	-27.14	-13	-14.14	Vertical
2127.0	-51.34	2.87	27.62	-26.59	-13	-13.59	Vertical
2127.0	-49.04	2.87	27.62	-24.29	-13	-11.29	Horizontal
181.4	-40.54	1.35	16.91	-24.98	-13	-11.98	Vertical
325.1	-38.16	1.62	16.31	-23.47	-13	-10.47	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-44.21	2.62	27.30	-19.53	-13	-6.53	Horizontal
1420.0	-52.96	2.62	27.30	-28.28	-13	-15.28	Vertical
2130.0	-49.24	2.87	27.62	-24.49	-13	-11.49	Vertical
2130.0	-51.93	2.87	27.62	-27.18	-13	-14.18	Horizontal
180.7	-38.13	1.51	17.14	-22.50	-13	-9.50	Vertical
404.5	-38.15	1.77	16.88	-23.04	-13	-10.04	Horizontal
Test Results for High Channel 711MHz							
1422.0	-45.79	2.62	27.30	-21.11	-13	-8.11	Horizontal
1422.0	-47.66	2.62	27.30	-22.98	-13	-9.98	Vertical
2133.0	-44.58	2.87	27.62	-19.83	-13	-6.83	Vertical
2133.0	-53.75	2.87	27.62	-29.00	-13	-16.00	Horizontal
184.5	-35.88	1.78	15.95	-21.71	-13	-8.71	Vertical
453.8	-34.46	1.34	17.95	-17.86	-13	-4.86	Horizontal

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

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

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

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, DC 3.87V 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

LTE Band 4

- LTE Band5

LTE Band 7

LTE Band 12

LTE Band 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	12.3	0.006553	2.5
3.87	1880	13.9	0.007375	2.5
4.2	1880	13.4	0.007112	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	12.4	0.006612	2.5
Extreme (50C)	1880	12.1	0.006420	2.5
Extreme (40C)	1880	13.3	0.007069	2.5
Extreme (30C)	1880	13.2	0.007018	2.5
Extreme (10C)	1880	14.0	0.007451	2.5
Extreme (0C)	1880	12.2	0.006488	2.5
Extreme (-10C)	1880	12.9	0.006849	2.5
Extreme (-20C)	1880	13.9	0.007377	2.5
Extreme (-30C)	1880	15.1	0.008034	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	9.6	0.005118	2.5
3.87	1880	9.4	0.004990	2.5
4.2	1880	8.6	0.004573	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	9.3	0.004963	2.5
Extreme (50C)	1880	8.4	0.004485	2.5
Extreme (40C)	1880	7.6	0.004054	2.5
Extreme (30C)	1880	9.3	0.004954	2.5
Extreme (10C)	1880	8.8	0.004685	2.5
Extreme (0C)	1880	8.6	0.004567	2.5
Extreme (-10C)	1880	8.8	0.004687	2.5
Extreme (-20C)	1880	9.2	0.004920	2.5
Extreme (-30C)	1880	8.3	0.004416	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	9.2	0.005322	2.5
3.87	1732.5	8.8	0.005080	2.5
4.2	1732.5	8.0	0.004630	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.3	0.004782	2.5
Extreme (50C)	1732.5	9.3	0.005344	2.5
Extreme (40C)	1732.5	6.9	0.004000	2.5
Extreme (30C)	1732.5	6.2	0.003603	2.5
Extreme (10C)	1732.5	6.7	0.003847	2.5
Extreme (0C)	1732.5	9.6	0.005537	2.5
Extreme (-10C)	1732.5	8.6	0.004990	2.5
Extreme (-20C)	1732.5	7.0	0.004046	2.5
Extreme (-30C)	1732.5	8.8	0.005056	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	9.5	0.005465	2.5
3.87	1732.5	9.0	0.005175	2.5
4.2	1732.5	8.2	0.004755	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	9.7	0.005575	2.5
Extreme (50C)	1732.5	9.0	0.005195	2.5
Extreme (40C)	1732.5	8.0	0.004628	2.5
Extreme (30C)	1732.5	9.3	0.005393	2.5
Extreme (10C)	1732.5	8.7	0.005025	2.5
Extreme (0C)	1732.5	8.1	0.004688	2.5
Extreme (-10C)	1732.5	9.0	0.005174	2.5
Extreme (-20C)	1732.5	9.2	0.005293	2.5
Extreme (-30C)	1732.5	8.4	0.004869	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	6.2	0.007408	2.5
3.87	836.5	7.0	0.008331	2.5
4.2	836.5	4.3	0.005153	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.1	0.007256	2.5
Extreme (50C)	836.5	6.4	0.007619	2.5
Extreme (40C)	836.5	6.2	0.007434	2.5
Extreme (30C)	836.5	6.1	0.007330	2.5
Extreme (10C)	836.5	4.9	0.005887	2.5
Extreme (0C)	836.5	5.5	0.006543	2.5
Extreme (-10C)	836.5	5.2	0.006210	2.5
Extreme (-20C)	836.5	6.1	0.007336	2.5
Extreme (-30C)	836.5	6.5	0.007813	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	0.006574	2.5
3.87	836.5	6.8	0.008132	2.5
4.2	836.5	4.8	0.005709	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	5.7	0.006823	2.5
Extreme (50C)	836.5	5.6	0.006705	2.5
Extreme (40C)	836.5	6.4	0.007707	2.5
Extreme (30C)	836.5	6.6	0.007946	2.5
Extreme (10C)	836.5	5.0	0.006005	2.5
Extreme (0C)	836.5	5.6	0.006700	2.5
Extreme (-10C)	836.5	5.9	0.007034	2.5
Extreme (-20C)	836.5	6.3	0.007474	2.5
Extreme (-30C)	836.5	6.5	0.007773	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	10.3	0.004075	2.5
3.87	2535	8.9	0.003519	2.5
4.2	2535	8.6	0.003374	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	9.3	0.003677	2.5
Extreme (50C)	2535	8.9	0.003498	2.5
Extreme (40C)	2535	8.8	0.003470	2.5
Extreme (30C)	2535	9.2	0.003631	2.5
Extreme (10C)	2535	7.8	0.003066	2.5
Extreme (0C)	2535	8.1	0.003202	2.5
Extreme (-10C)	2535	9.9	0.003890	2.5
Extreme (-20C)	2535	9.0	0.003565	2.5
Extreme (-30C)	2535	8.3	0.003269	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	6.5	0.002570	2.5
4.2	2535	5.9	0.002323	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	0.002154	2.5
Extreme (40C)	2535	5.3	0.002074	2.5
Extreme (30C)	2535	6.9	0.002725	2.5
Extreme (10C)	2535	6.1	0.002392	2.5
Extreme (0C)	2535	4.8	0.001879	2.5
Extreme (-10C)	2535	5.3	0.002107	2.5
Extreme (-20C)	2535	5.5	0.002152	2.5
Extreme (-30C)	2535	5.3	0.002082	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	8.5	0.011973	2.5
3.87	707.5	10.1	0.014310	2.5
4.2	707.5	8.3	0.011710	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	8.9	0.012583	2.5
Extreme (50C)	707.5	7.6	0.010707	2.5
Extreme (40C)	707.5	7.3	0.010281	2.5
Extreme (30C)	707.5	8.3	0.011775	2.5
Extreme (10C)	707.5	7.5	0.010665	2.5
Extreme (0C)	707.5	9.5	0.013373	2.5
Extreme (-10C)	707.5	8.0	0.011279	2.5
Extreme (-20C)	707.5	9.2	0.013003	2.5
Extreme (-30C)	707.5	7.4	0.010390	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	7.3	0.010387	2.5
3.87	707.5	8.4	0.011923	2.5
4.2	707.5	7.7	0.010895	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	6.5	0.009175	2.5
Extreme (50C)	707.5	5.5	0.007765	2.5
Extreme (40C)	707.5	6.4	0.009110	2.5
Extreme (30C)	707.5	-7.7	-0.010912	2.5
Extreme (10C)	707.5	-8.2	-0.011590	2.5
Extreme (0C)	707.5	2.9	0.004100	2.5
Extreme (-10C)	707.5	-5.2	-0.007292	2.5
Extreme (-20C)	707.5	-8.7	-0.012302	2.5
Extreme (-30C)	707.5	-10.2	-0.014350	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	10.1	0.014227	2.5
3.87	710.0	9.2	0.012943	2.5
4.2	710.0	8.1	0.011350	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.9	0.013938	2.5
Extreme (50C)	710.0	8.4	0.011895	2.5
Extreme (40C)	710.0	8.4	0.011823	2.5
Extreme (30C)	710.0	9.2	0.012942	2.5
Extreme (10C)	710.0	9.2	0.013014	2.5
Extreme (0C)	710.0	8.6	0.012083	2.5
Extreme (-10C)	710.0	9.0	0.012720	2.5
Extreme (-20C)	710.0	9.2	0.012941	2.5
Extreme (-30C)	710.0	7.7	0.010797	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	10.5	0.014750	2.5
3.87	710.0	9.2	0.012949	2.5
4.2	710.0	8.4	0.011837	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.9	0.013900	2.5
Extreme (50C)	710.0	9.0	0.012616	2.5
Extreme (40C)	710.0	8.7	0.012302	2.5
Extreme (30C)	710.0	9.1	0.012858	2.5
Extreme (10C)	710.0	7.7	0.010784	2.5
Extreme (0C)	710.0	8.2	0.011602	2.5
Extreme (-10C)	710.0	9.8	0.013854	2.5
Extreme (-20C)	710.0	9.0	0.012610	2.5
Extreme (-30C)	710.0	7.9	0.011139	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.

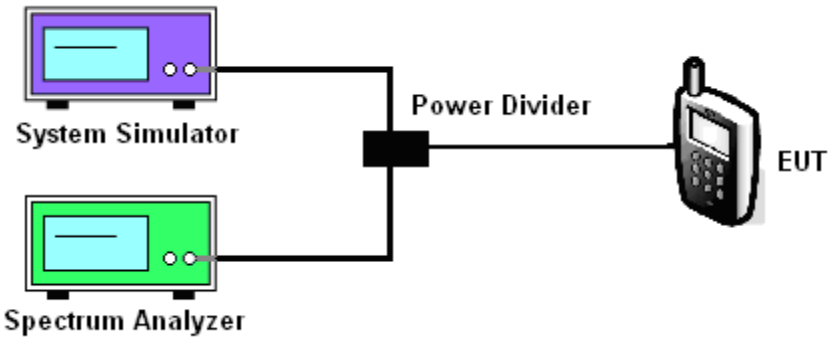
11.2 Measuring Instruments

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
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Test data reference attachment.

----END OF REPORT----