

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

FCC ID: 2ANMU-WP10

Product: Smart Phone

Trade Mark: OUKITEL

Model Number: WP10

Family Model: N/A

Report No.: S20121001303006

Prepared for

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A-SIDE A2 BUILDING 2/F ENET NEW INDUSTRIAL PARK,
NO.20 DAFU INDUSTRIAL ZONE, AOBEL COMMUNITY, GUANLAN,
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Prepared by

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TEST RESULT CERTIFICATION

Applicant's name : SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO.,LTD
Address..... : A-SIDE A2 BUILDING 2/F ENET NEW INDUSTRIAL PARK,NO.20
DAFU INDUSTRIAL ZONE, AOBEI COMMUNITY, GUANLAN,
LONGHUA NEW DISTRICT,SHENZHEN CHINA
Manufacturer's Name..... : SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO.,LTD
Address..... : A-SIDE A2 BUILDING 2/F ENET NEW INDUSTRIAL PARK,NO.20
DAFU INDUSTRIAL ZONE, AOBEI COMMUNITY, GUANLAN,
LONGHUA NEW DISTRICT,SHENZHEN CHINA
Product name..... : Smart Phone
Model and/or type reference .. : WP10
Family Model: N/A
Standards..... : FCC CFR 47 Part 22H, Part 24E, Part 27
Test procedure : ANSI C63.46:2015
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..... 10 Dec. 2020 ~31 Dec, 2020

Date of Issue 31 Dec, 2020

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

Testing Engineer : Cheng Jiawen
(Cheng Jiawen)

Technical Manager : Jason Chen
(Jason Chen)

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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	WP10
Family Model	N/A
Model Difference	N/A
FCC ID:	2ANMU-WP10
Frequency Bands:	U.S. Bands: <input checked="" type="checkbox"/> 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
Antenna:	FPC Antenna
Antenna gain:	Band 2: 0.5dBi, Band 4: 0.2dBi, Band 5: -0.9dBi, Band 7: 1.5dBi, Band 12: -1.4dBi, Band 17: -1.4dBi
Power Supply:	DC 3.85V/8000mAh from battery or DC 9V from Adapter.
Adapter:	Model: HJ-FC017K7-US Input: 100-240V~50/60Hz 0.6A Output: 5V---2000mA 7V---2000mA 9V---2000mA 12V---1500mA 18.0W
Extreme Vol. Limits:	DC 3.4V to DC 4.4V (Nominal DC 3.85V) (Note 1)
HW Version	HCT-S1000MB-A2
SW Version	OUKITEL_WP10_EEA_V01_202001016
** Note1: The High Voltage 4.4V 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-WP10** 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 C63.46:2015.

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 C63.46:2015& 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% ($U = 2U_c(y)$)	2.5dB

1.5 SPECIAL ACCESSORIES

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

1.6 WORST-CASE CONFIGURATION AND MODE

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

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

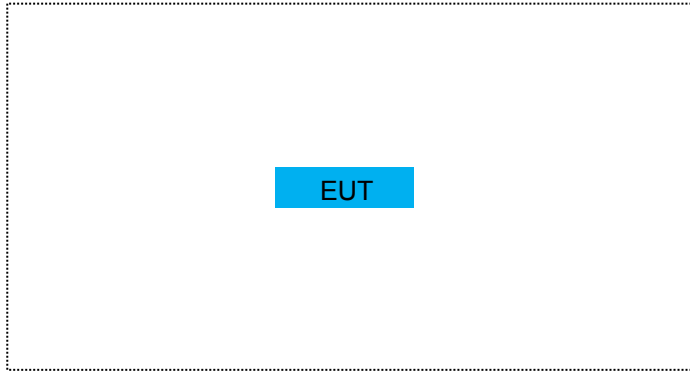
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Smart Phone	WP10	FCC ID: 2ANMU-WP10	EUT

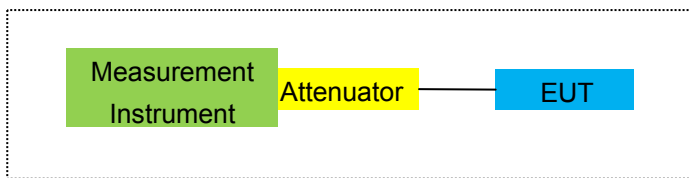
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

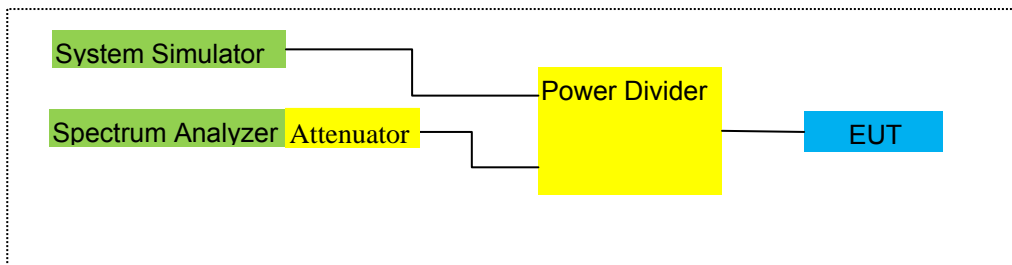
For Radiated Test Cases



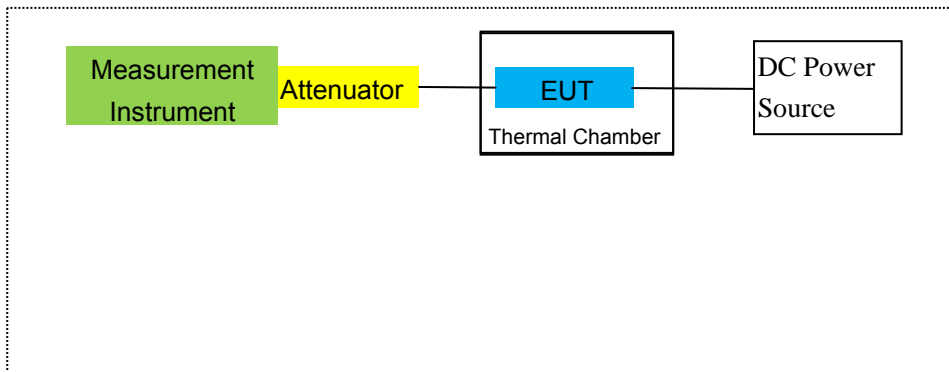
For Conducted Output Power



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	2020.07.13	2021.07.12	1 year
2	Test Receiver	R&S	ESPI	101318	2020.05.11	2021.05.10	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2020.04.11	2021.04.10	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	2020.04.11	2021.04.10	1 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2020.07.13	2021.07.12	1 year
7	Amplifier	EM	EM-30180	060538	2020.07.13	2021.07.12	1 year
8	Loop Antenna	ARA	PLA-1030/B	1029	2020.05.11	2021.05.10	1 year
9	Power Meter	R&S	NRVS	100696	2020.07.13	2021.07.12	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2020.05.11	2021.05.10	1 year
11	Test Cable	N/A	R-01	N/A	2019.08.06	2022.08.05	3 year
12	Test Cable	N/A	R-02	N/A	2020.07.13	2021.07.12	1 year
13	Test Cable	N/A	R-03	N/A	2019.06.28	2022.06.27	3 year
14	Test Receiver	R&S	ESCI	101160	2020.05.11	2021.05.10	1 year
15	LISN	R&S	ENV216	101313	2020.05.11	2021.05.10	1 year
16	LISN	EMCO	3816/2	00042990	2020.05.11	2021.05.10	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2020.05.11	2021.05.10	1 year
18	Passive Voltage Probe	R&S	ESH2-Z3	100196	2020.04.11	2021.04.10	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	2021.05.10	1 year
22	Attenuator	MCE	24-10-34	BN9258	2020.05.11	2021.05.10	1 year
23	Spectrum Analyzer	agilent	e4440a	us44300399	2020.05.11	2021.05.10	1 year
24	test receiver	R&S	ESCI	a0304218	2020.05.11	2021.05.10	1 year
25	Communication Tester	R&S	CMU200	A0304247	2020.07.13	2021.07.12	1 year
26	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2020.05.11	2021.05.10	1 year

27	DC Power Source	N/A	PS-6005D	2017040292 3	2020.07.13	2021.07.12	1 year
28	PSG Analog Signal Generator	Agilent	E8257D	MY51110112	2020.07.13	2021.07.12	1 year
29	Communication Tester	R&S	CMW500	148500	2020.05.11	2021.05.10	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	13	10	Table 6.2.4-2	Table 6.2.4-2
	6.6.3.3.2				
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23 ¹	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
..					
NS_32	-	-	-	-	-

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

Test data reference attachment.

5. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

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

MODES TESTED

- LTE Band 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 $43 + \log_{10}(P[\text{Watts}])$, where P is the transmitter power in Watts.

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

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

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

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

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

TEST PROCEDURE

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

For each band edge measurement:

Set the spectrum analyzer span to include the block edge frequency

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

Set display line

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

MODES TESTED

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

RESULTS

Test data reference attachment.

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

7. OUT OF BAND EMISSIONS

RULE PART(S)

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

LIMITS

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

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

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

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

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

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

TEST PROCEDURE

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

For each out of band emissions measurement:

Set display line

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

MODES TESTED

LTE Band 2

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.

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

8. RADIATED MEASUREMENT

8.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

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

LIMITS:

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

TEST PROCEDURE

ANSI/TIA-603-E Clause 2.2.17

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

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

MODES TESTED

LTE Band 2
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 Position	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	1850.7	-1.90	3.76	28.24	22.58	181.134	Horizontal	Pass
		1880	-1.78	3.91	28.22	22.53	179.061	Horizontal	Pass
		1909.3	-1.64	3.93	28.20	22.63	183.231	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-2.09	3.77	28.23	22.37	172.584	Horizontal	Pass
		1880	-1.83	3.91	28.24	22.50	177.828	Horizontal	Pass
		1908.5	-1.81	3.94	28.25	22.50	177.828	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-2.05	3.77	28.31	22.49	177.419	Horizontal	Pass
		1880	-1.74	3.91	28.22	22.57	180.717	Horizontal	Pass
		1907.5	-1.64	3.94	28.20	22.62	182.810	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-2.12	3.79	28.33	22.42	174.582	Horizontal	Pass
		1880	-1.70	3.95	28.22	22.57	180.717	Horizontal	Pass
		1905	-1.67	3.97	28.19	22.55	179.887	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-2.39	3.79	28.34	22.16	164.437	Horizontal	Pass
		1880	-1.80	3.95	28.22	22.47	176.604	Horizontal	Pass
		1902.5	-1.80	3.97	28.18	22.41	174.181	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-2.29	3.81	28.35	22.25	167.880	Horizontal	Pass
		1880	-1.62	3.96	28.22	22.64	183.654	Horizontal	Pass
		1900	-1.50	4.00	28.16	22.66	184.502	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-2.21	3.76	28.24	22.27	168.655	Vertical	Pass
		1880	-1.89	3.91	28.22	22.42	174.582	Vertical	Pass
		1909.3	-2.74	3.93	28.20	21.53	142.233	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-2.07	3.77	28.23	22.39	173.380	Vertical	Pass
		1880	-2.73	3.91	28.24	21.60	144.544	Vertical	Pass
		1908.5	-2.41	3.94	28.25	21.90	154.882	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-2.19	3.77	28.31	22.35	171.791	Vertical	Pass
		1880	-2.28	3.91	28.22	22.03	159.588	Vertical	Pass
		1907.5	-2.00	3.94	28.20	22.26	168.267	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1855	-2.23	3.79	28.33	22.31	170.216	Vertical	Pass
		1880	-1.97	3.95	28.22	22.30	169.824	Vertical	Pass
		1905	-2.16	3.97	28.19	22.06	160.694	Vertical	Pass
15.0MHz	1/#Mid	1857.5	-2.68	3.79	28.34	21.87	153.815	Vertical	Pass

Band		1880	-1.97	3.95	28.22	22.30	169.824	Vertical	Pass
QPSK		1902.5	-2.29	3.97	28.18	21.92	155.597	Vertical	Pass
20.0MHz	1/#Mid	1860	-2.96	3.81	28.35	21.58	143.880	Vertical	Pass
Band		1880	-2.06	3.96	28.22	22.20	165.959	Vertical	Pass
QPSK		1900	-2.10	4.00	28.16	22.06	160.694	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

Radiated Power (EIRP) for Band 2									
Mode	RB/ RB Position	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	1850.7	-2.93	3.76	28.24	21.55	142.889	Horizontal	Pass
		1880	-2.59	3.91	28.22	21.72	148.594	Horizontal	Pass
		1909.3	-2.54	3.93	28.20	21.73	148.936	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-3.14	3.77	28.23	21.32	135.519	Horizontal	Pass
		1880	-2.32	3.91	28.24	22.01	158.855	Horizontal	Pass
		1908.5	-2.53	3.94	28.25	21.78	150.661	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-2.65	3.77	28.31	21.89	154.525	Horizontal	Pass
		1880	-2.37	3.91	28.22	21.94	156.315	Horizontal	Pass
		1907.5	-2.36	3.94	28.20	21.90	154.882	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-3.24	3.79	28.33	21.30	134.896	Horizontal	Pass
		1880	-2.30	3.95	28.22	21.97	157.398	Horizontal	Pass
		1905	-2.48	3.97	28.19	21.74	149.279	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-2.76	3.79	28.34	21.79	151.008	Horizontal	Pass
		1880	-2.55	3.95	28.22	21.72	148.594	Horizontal	Pass
		1902.5	-2.58	3.97	28.18	21.63	145.546	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-2.81	3.81	28.35	21.73	148.936	Horizontal	Pass
		1880	-2.21	3.96	28.22	22.05	160.325	Horizontal	Pass
		1900	-2.29	4.00	28.16	21.87	153.815	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1850.7	-3.14	3.76	28.24	21.34	136.144	Vertical	Pass
		1880	-3.43	3.91	28.22	20.88	122.462	Vertical	Pass
		1909.3	-3.07	3.93	28.20	21.20	131.826	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-3.92	3.77	28.23	20.54	113.240	Vertical	Pass
		1880	-3.41	3.91	28.24	20.92	123.595	Vertical	Pass
		1908.5	-2.82	3.94	28.25	21.49	140.929	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-3.44	3.77	28.31	21.10	128.825	Vertical	Pass
		1880	-3.25	3.91	28.22	21.06	127.644	Vertical	Pass
		1907.5	-2.86	3.94	28.20	21.40	138.038	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-3.68	3.79	28.33	20.86	121.899	Vertical	Pass
		1880	-3.27	3.95	28.22	21.00	125.893	Vertical	Pass
		1905	-3.51	3.97	28.19	20.71	117.761	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-3.41	3.79	28.34	21.14	130.017	Vertical	Pass
		1880	-3.21	3.95	28.22	21.06	127.644	Vertical	Pass
		1902.5	-3.57	3.97	28.18	20.64	115.878	Vertical	Pass

20.0MHz		1860	-3.42	3.81	28.35	21.12	129.420	Vertical	Pass
Band 16	1/#Mid	1880	-2.81	3.96	28.22	21.45	139.637	Vertical	Pass
QAM		1900	-3.42	4.00	28.16	20.74	118.577	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.3 LTE BAND 4

Radiated Power (EIRP) for Band 4									
Mode	RB/ RB Position	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	1710.7	-2.10	3.12	27.58	22.36	172.187	Horizontal	Pass
		1732.5	-2.10	3.27	27.61	22.24	167.494	Horizontal	Pass
		1754.3	-1.97	3.29	27.63	22.37	172.584	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-2.23	3.13	27.61	22.25	167.880	Horizontal	Pass
		1732.5	-2.11	3.27	27.61	22.23	167.109	Horizontal	Pass
		1753.5	-1.97	3.30	27.62	22.35	171.791	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-2.12	3.13	27.63	22.38	172.982	Horizontal	Pass
		1732.5	-2.04	3.27	27.61	22.30	169.824	Horizontal	Pass
		1752.5	-1.99	3.30	27.60	22.31	170.216	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-2.11	3.15	27.64	22.38	172.982	Horizontal	Pass
		1732.5	-2.00	3.31	27.61	22.30	169.824	Horizontal	Pass
		1750	-1.94	3.33	27.59	22.32	170.608	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-2.34	3.15	27.65	22.16	164.437	Horizontal	Pass
		1732.5	-2.06	3.31	27.61	22.24	167.494	Horizontal	Pass
		1747.5	-2.02	3.33	27.57	22.22	166.725	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-2.23	3.17	27.66	22.26	168.267	Horizontal	Pass
		1732.5	-1.91	3.32	27.61	22.38	172.982	Horizontal	Pass
		1745	-1.81	3.36	27.56	22.39	173.380	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-2.73	3.12	27.58	21.73	148.936	Vertical	Pass
		1732.5	-2.64	3.27	27.61	21.70	147.911	Vertical	Pass
		1754.3	-2.17	3.29	27.63	22.17	164.816	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-3.07	3.13	27.61	21.41	138.357	Vertical	Pass
		1732.5	-2.80	3.27	27.61	21.54	142.561	Vertical	Pass
		1753.5	-2.79	3.30	27.62	21.53	142.233	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-2.99	3.13	27.63	21.51	141.579	Vertical	Pass
		1732.5	-2.76	3.27	27.61	21.58	143.880	Vertical	Pass
		1752.5	-2.72	3.30	27.60	21.58	143.880	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-2.80	3.15	27.64	21.69	147.571	Vertical	Pass
		1732.5	-2.32	3.31	27.61	21.98	157.761	Vertical	Pass
		1750	-2.95	3.33	27.59	21.31	135.207	Vertical	Pass

15.0MHz	1/#Mid	1717.5	-2.46	3.15	27.65	22.04	159.956	Vertical	Pass
Band		1732.5	-2.17	3.31	27.61	22.13	163.305	Vertical	Pass
QPSK		1747.5	-2.35	3.33	27.57	21.89	154.525	Vertical	Pass
20.0MHz	1/#Mid	1720	-2.73	3.17	27.66	21.76	149.968	Vertical	Pass
Band		1732.5	-2.09	3.32	27.61	22.20	165.959	Vertical	Pass
QPSK		1745	-2.24	3.36	27.56	21.96	157.036	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

Radiated Power (EIRP) for Band 4									
Mode	RB/ RB Position	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	1710.7	-2.90	3.12	27.58	21.56	143.219	Horizontal	Pass
		1732.5	-2.85	3.27	27.61	21.49	140.929	Horizontal	Pass
		1754.3	-2.78	3.29	27.63	21.56	143.219	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-2.70	3.13	27.61	21.78	150.661	Horizontal	Pass
		1732.5	-2.88	3.27	27.61	21.46	139.959	Horizontal	Pass
		1753.5	-3.10	3.30	27.62	21.22	132.434	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-2.76	3.13	27.63	21.74	149.279	Horizontal	Pass
		1732.5	-2.53	3.27	27.61	21.81	151.705	Horizontal	Pass
		1752.5	-2.57	3.30	27.60	21.73	148.936	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-2.96	3.15	27.64	21.53	142.233	Horizontal	Pass
		1732.5	-3.09	3.31	27.61	21.21	132.130	Horizontal	Pass
		1750	-2.54	3.33	27.59	21.72	148.594	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	-2.89	3.31	27.61	21.41	138.357	Horizontal	Pass
		1747.5	-2.84	3.33	27.57	21.40	138.038	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-3.00	3.17	27.66	21.49	140.929	Horizontal	Pass
		1732.5	-2.71	3.32	27.61	21.58	143.880	Horizontal	Pass
		1745	-2.37	3.36	27.56	21.83	152.405	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-3.46	3.12	27.58	21.00	125.893	Vertical	Pass
		1732.5	-3.41	3.27	27.61	20.93	123.880	Vertical	Pass
		1754.3	-3.16	3.29	27.63	21.18	131.220	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-3.85	3.13	27.61	20.63	115.611	Vertical	Pass
		1732.5	-3.21	3.27	27.61	21.13	129.718	Vertical	Pass
		1753.5	-3.41	3.30	27.62	20.91	123.310	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-3.44	3.13	27.63	21.06	127.644	Vertical	Pass
		1732.5	-3.68	3.27	27.61	20.66	116.413	Vertical	Pass
		1752.5	-3.23	3.30	27.60	21.07	127.938	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-3.71	3.15	27.64	20.78	119.674	Vertical	Pass
		1732.5	-4.01	3.31	27.61	20.29	106.905	Vertical	Pass
		1750	-3.48	3.33	27.59	20.78	119.674	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-3.79	3.15	27.65	20.71	117.761	Vertical	Pass
		1732.5	-3.44	3.31	27.61	20.86	121.899	Vertical	Pass
		1747.5	-3.04	3.33	27.57	21.20	131.826	Vertical	Pass

20.0MHz		1720	-3.97	3.17	27.66	20.52	112.720	Vertical	Pass
Band 16	1/#Mid	1732.5	-3.91	3.32	27.61	20.38	109.144	Vertical	Pass
QAM		1745	-3.84	3.36	27.56	20.36	108.643	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.4 LTE BAND 5

Radiated Power (ERP) for Band 5										
Mode	RB/ RB Position	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor Gain (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	3/#Mid	824.7	6.22	2.01	19.68	2.15	21.74	149.279	Horizontal	Pass
		836.5	6.03	2.01	19.77	2.15	21.64	145.881	Horizontal	Pass
		848.3	5.97	2.02	19.82	2.15	21.62	145.211	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	825.5	6.21	2.01	19.70	2.15	21.75	149.624	Horizontal	Pass
		836.5	6.03	2.01	19.77	2.15	21.64	145.881	Horizontal	Pass
		847.5	5.93	2.02	19.81	2.15	21.57	143.549	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	826.5	6.27	2.01	19.71	2.15	21.82	152.055	Horizontal	Pass
		836.5	6.08	2.01	19.77	2.15	21.69	147.571	Horizontal	Pass
		846.5	6.03	2.02	19.79	2.15	21.65	146.218	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	829	6.28	2.01	19.73	2.15	21.85	153.109	Horizontal	Pass
		836.5	6.05	2.01	19.77	2.15	21.66	146.555	Horizontal	Pass
		844	6.01	2.02	19.78	2.15	21.62	145.211	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	824.7	5.06	2.01	19.68	2.15	20.58	114.288	Vertical	Pass
		836.5	5.19	2.01	19.77	2.15	20.80	120.226	Vertical	Pass
		848.3	5.15	2.02	19.82	2.15	20.80	120.226	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	825.5	4.92	2.01	19.70	2.15	20.46	111.173	Vertical	Pass
		836.5	4.79	2.01	19.77	2.15	20.40	109.648	Vertical	Pass
		847.5	4.74	2.02	19.81	2.15	20.38	109.144	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	826.5	5.40	2.01	19.71	2.15	20.95	124.451	Vertical	Pass
		836.5	5.30	2.01	19.77	2.15	20.91	123.310	Vertical	Pass
		846.5	5.06	2.02	19.79	2.15	20.68	116.950	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	829	5.42	2.01	19.73	2.15	20.99	125.603	Vertical	Pass
		836.5	5.44	2.01	19.77	2.15	21.05	127.350	Vertical	Pass
		844	5.11	2.02	19.78	2.15	20.72	118.032	Vertical	Pass

Radiated Power (ERP) for Band 5

Mode	RB/ RB Position	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor Gain (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	3/#Mid	824.7	5.40	2.01	19.68	2.15	20.92	123.595	Horizontal	Pass
		836.5	5.23	2.01	19.77	2.15	20.84	121.339	Horizontal	Pass
		848.3	5.06	2.02	19.82	2.15	20.71	117.761	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	5.42	2.01	19.70	2.15	20.96	124.738	Horizontal	Pass
		836.5	4.97	2.01	19.77	2.15	20.58	114.288	Horizontal	Pass
		847.5	5.37	2.02	19.81	2.15	21.01	126.183	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	5.65	2.01	19.71	2.15	21.20	131.826	Horizontal	Pass
		836.5	5.42	2.01	19.77	2.15	21.03	126.765	Horizontal	Pass
		846.5	5.52	2.02	19.79	2.15	21.14	130.017	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	829	5.65	2.01	19.73	2.15	21.22	132.434	Horizontal	Pass
		836.5	5.26	2.01	19.77	2.15	20.87	122.180	Horizontal	Pass
		844	4.91	2.02	19.78	2.15	20.52	112.720	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	824.7	4.70	2.01	19.68	2.15	20.22	105.196	Vertical	Pass
		836.5	5.16	2.01	19.77	2.15	20.77	119.399	Vertical	Pass
		848.3	4.99	2.02	19.82	2.15	20.64	115.878	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	5.15	2.01	19.70	2.15	20.69	117.220	Vertical	Pass
		836.5	5.34	2.01	19.77	2.15	20.95	124.451	Vertical	Pass
		847.5	4.86	2.02	19.81	2.15	20.50	112.202	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	4.75	2.01	19.71	2.15	20.30	107.152	Vertical	Pass
		836.5	4.99	2.01	19.77	2.15	20.60	114.815	Vertical	Pass
		846.5	5.44	2.02	19.79	2.15	21.06	127.644	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	829	5.05	2.01	19.73	2.15	20.62	115.345	Vertical	Pass
		836.5	4.98	2.01	19.77	2.15	20.59	114.551	Vertical	Pass
		844	4.88	2.02	19.78	2.15	20.49	111.944	Vertical	Pass

Note:

ERP=EIRP-2.15

SG Level= Signal generator output

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

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

8.5 LTE BAND 7

Radiated Power (EIRP) for Band 7									
Mode	RB/ RB Position	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	2502.5	1.48	4.54	27.75	24.69	294.442	Horizontal	Pass
		2535	1.72	4.69	27.72	24.75	298.538	Horizontal	Pass
		2567.5	1.83	4.71	27.71	24.83	304.089	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2505	1.48	4.55	27.76	24.69	294.442	Horizontal	Pass
		2535	1.63	4.69	27.72	24.66	292.415	Horizontal	Pass
		2565	1.86	4.72	27.70	24.84	304.789	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	1.32	4.55	27.77	24.54	284.446	Horizontal	Pass
		2535	1.71	4.69	27.72	24.74	297.852	Horizontal	Pass
		2562.5	1.75	4.72	27.69	24.72	296.483	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2510	1.45	4.57	27.78	24.66	292.415	Horizontal	Pass
		2535	1.80	4.73	27.72	24.79	301.301	Horizontal	Pass
		2560	1.92	4.75	27.68	24.85	305.492	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	1.00	4.54	27.75	24.21	263.633	Vertical	Pass
		2535	0.68	4.69	27.72	23.71	234.963	Vertical	Pass
		2567.5	1.14	4.71	27.71	24.14	259.418	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2505	0.55	4.55	27.76	23.76	237.684	Vertical	Pass
		2535	1.03	4.69	27.72	24.06	254.683	Vertical	Pass
		2565	1.09	4.72	27.70	24.07	255.270	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	0.51	4.55	27.77	23.73	236.048	Vertical	Pass
		2535	1.07	4.69	27.72	24.10	257.040	Vertical	Pass
		2562.5	0.57	4.72	27.69	23.54	225.944	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2510	0.35	4.57	27.78	23.56	226.986	Vertical	Pass
		2535	0.78	4.73	27.72	23.77	238.232	Vertical	Pass
		2560	0.90	4.75	27.68	23.83	241.546	Vertical	Pass

Radiated Power (EIRP) for Band 7									
Mode	RB/ RB Position	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	2502.5	0.95	4.54	27.75	24.16	260.615	Horizontal	Pass
		2535	1.03	4.69	27.72	24.06	254.683	Horizontal	Pass
		2567.5	1.17	4.71	27.71	24.17	261.216	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	0.64	4.55	27.76	23.85	242.661	Horizontal	Pass
		2535	0.64	4.69	27.72	23.67	232.809	Horizontal	Pass
		2565	1.16	4.72	27.70	24.14	259.418	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	0.68	4.55	27.77	23.90	245.471	Horizontal	Pass
		2535	1.11	4.69	27.72	24.14	259.418	Horizontal	Pass
		2562.5	0.95	4.72	27.69	23.92	246.604	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	0.72	4.57	27.78	23.93	247.172	Horizontal	Pass
		2535	0.99	4.73	27.72	23.98	250.035	Horizontal	Pass
		2560	1.29	4.75	27.68	24.22	264.241	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	0.05	4.54	27.75	23.26	211.836	Vertical	Pass
		2535	-0.30	4.69	27.72	22.73	187.499	Vertical	Pass
		2567.5	-0.27	4.71	27.71	22.73	187.499	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	0.22	4.55	27.76	23.43	220.293	Vertical	Pass
		2535	-0.15	4.69	27.72	22.88	194.089	Vertical	Pass
		2565	-0.03	4.72	27.70	22.95	197.242	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-0.14	4.55	27.77	23.08	203.236	Vertical	Pass
		2535	-0.49	4.69	27.72	22.54	179.473	Vertical	Pass
		2562.5	0.11	4.72	27.69	23.08	203.236	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-0.34	4.57	27.78	22.87	193.642	Vertical	Pass
		2535	0.47	4.73	27.72	23.46	221.820	Vertical	Pass
		2560	-0.40	4.75	27.68	22.53	179.061	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.5 LTE BAND 12

Radiated Power (ERP) for Band 12									
Mode	RB/ RB Position	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	699.7	6.12	1.91	19.21	2.15	21.27	133.968	Vertical
		707.5	6.05	1.91	19.26	2.15	21.25	133.352	Vertical
		715.3	5.92	1.93	19.34	2.15	21.18	131.220	Vertical
3.0MHz Band QPSK	1/#Mid	700.5	6.04	1.91	19.21	2.15	21.19	131.522	Vertical
		707.5	6.07	1.91	19.26	2.15	21.27	133.968	Vertical
		714.5	5.95	1.93	19.34	2.15	21.21	132.130	Vertical
5.0MHz Band QPSK	1/#Mid	701.5	6.08	1.91	19.23	2.15	21.25	133.352	Vertical
		707.5	6.04	1.91	19.26	2.15	21.24	133.045	Vertical
		713.5	5.93	1.92	19.33	2.15	21.19	131.522	Vertical
10.0MHz Band QPSK	1/#Mid	704	6.11	1.91	19.25	2.15	21.30	134.896	Vertical
		707.5	5.98	1.91	19.26	2.15	21.18	131.220	Vertical
		711	6.03	1.92	19.32	2.15	21.28	134.276	Vertical
1.4MHz Band QPSK	1/#Mid	699.7	5.10	1.91	19.21	2.15	20.25	105.925	Horizontal
		707.5	5.07	1.91	19.26	2.15	20.27	106.414	Horizontal
		715.3	4.62	1.93	19.34	2.15	19.88	97.275	Horizontal
3.0MHz Band QPSK	1/#Mid	700.5	5.05	1.91	19.21	2.15	20.20	104.713	Horizontal
		707.5	5.08	1.91	19.26	2.15	20.28	106.660	Horizontal
		714.5	4.83	1.93	19.34	2.15	20.09	102.094	Horizontal
5.0MHz Band QPSK	1/#Mid	701.5	5.30	1.91	19.23	2.15	20.47	111.429	Horizontal
		707.5	4.81	1.91	19.26	2.15	20.01	100.231	Horizontal
		713.5	5.08	1.92	19.33	2.15	20.34	108.143	Horizontal
10.0MHz Band QPSK	1/#Mid	704	4.86	1.91	19.25	2.15	20.05	101.158	Horizontal
		707.5	5.35	1.91	19.26	2.15	20.55	113.501	Horizontal
		711	5.02	1.92	19.32	2.15	20.27	106.414	Horizontal

Radiated Power (EIRP) for Band 12										
Mode	RB/ RB Position	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor Gain (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	699.7	5.01	1.91	19.21	2.15	20.16	103.753	Vertical	Pass
		707.5	5.14	1.91	19.26	2.15	20.34	108.143	Vertical	Pass
		715.3	5.13	1.93	19.34	2.15	20.39	109.396	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	5.49	1.91	19.21	2.15	20.64	115.878	Vertical	Pass
		707.5	5.19	1.91	19.26	2.15	20.39	109.396	Vertical	Pass
		714.5	4.82	1.93	19.34	2.15	20.08	101.859	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	5.45	1.91	19.23	2.15	20.62	115.345	Vertical	Pass
		707.5	5.50	1.91	19.26	2.15	20.70	117.490	Vertical	Pass
		713.5	5.35	1.92	19.33	2.15	20.61	115.080	Vertical	Pass
10.0MHz z Band 16 QAM	1/#Mid	704	5.52	1.91	19.25	2.15	20.71	117.761	Vertical	Pass
		707.5	5.15	1.91	19.26	2.15	20.35	108.393	Vertical	Pass
		711	4.93	1.92	19.32	2.15	20.18	104.232	Vertical	Pass
1.4MHz Band 16 QAM	1/#Mid	699.7	5.37	1.91	19.21	2.15	20.52	112.720	Horizontal	Pass
		707.5	4.18	1.91	19.26	2.15	19.38	86.696	Horizontal	Pass
		715.3	3.87	1.93	19.34	2.15	19.13	81.846	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	4.49	1.91	19.21	2.15	19.64	92.045	Horizontal	Pass
		707.5	4.06	1.91	19.26	2.15	19.26	84.333	Horizontal	Pass
		714.5	4.15	1.93	19.34	2.15	19.41	87.297	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	3.79	1.91	19.23	2.15	18.96	78.705	Horizontal	Pass
		707.5	3.73	1.91	19.26	2.15	18.93	78.163	Horizontal	Pass
		713.5	4.45	1.92	19.33	2.15	19.71	93.541	Horizontal	Pass
10.0MHz z Band 16 QAM	1/#Mid	704	4.24	1.91	19.25	2.15	19.43	87.700	Horizontal	Pass
		707.5	4.36	1.91	19.26	2.15	19.56	90.365	Horizontal	Pass
		711	4.60	1.92	19.32	2.15	19.85	96.605	Horizontal	Pass

Note:

ERP=EIRP-2.15

SG Level= Signal generator output

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

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

8.6 LTE BAND 17

Radiated Power (ERP) for Band 17											
Mode	RB/ RB Position	Frequency	Result							Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor Gain (dB)	Correct ion (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)			
5.0MHz Band QPSK	1/#Mid	706.5	6.13	1.91	19.23	2.15	21.30	134.896	Vertical	Pass	
		710	6.01	1.91	19.26	2.15	21.21	132.130	Vertical	Pass	
		713.5	5.94	1.92	19.33	2.15	21.20	131.826	Vertical	Pass	
10.0MHz Band QPSK	1/#Mid	709	6.00	1.91	19.25	2.15	21.19	131.522	Vertical	Pass	
		710	6.01	1.91	19.26	2.15	21.21	132.130	Vertical	Pass	
		711	6.07	1.92	19.32	2.15	21.32	135.519	Vertical	Pass	
5.0MHz Band QPSK	1/#Mid	706.5	4.70	1.91	19.23	2.15	19.87	97.051	Horizontal	Pass	
		710	5.35	1.91	19.26	2.15	20.55	113.501	Horizontal	Pass	
		713.5	4.34	1.92	19.33	2.15	19.60	91.201	Horizontal	Pass	
10.0MHz Band QPSK	1/#Mid	709	4.50	1.91	19.25	2.15	19.69	93.111	Horizontal	Pass	
		710	4.91	1.91	19.26	2.15	20.11	102.565	Horizontal	Pass	
		711	4.47	1.92	19.32	2.15	19.72	93.756	Horizontal	Pass	

Radiated Power (ERP) for Band 17										
Mode	RB/ RB Positi on	Freque ncy	Result							Conclu sion
			SG Level (dBm)	Cable Loss (dBm)	Factor Gain (dB)	Correct ion (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mi d	706.5	5.55	1.91	19.23	2.15	20.72	118.032	Vertical	Pass
		710	5.37	1.91	19.26	2.15	20.57	114.025	Vertical	Pass
		713.5	5.26	1.92	19.33	2.15	20.52	112.720	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mi d	709	5.16	1.91	19.25	2.15	20.35	108.393	Vertical	Pass
		710	4.88	1.91	19.26	2.15	20.08	101.859	Vertical	Pass
		711	5.50	1.92	19.32	2.15	20.75	118.850	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mi d	706.5	5.00	1.91	19.23	2.15	20.17	103.992	Horizontal	Pass
		710	5.15	1.91	19.26	2.15	20.35	108.393	Horizontal	Pass
		713.5	4.34	1.92	19.33	2.15	19.60	91.201	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mi d	709	4.93	1.91	19.25	2.15	20.12	102.802	Horizontal	Pass
		710	5.33	1.91	19.26	2.15	20.53	112.980	Horizontal	Pass
		711	5.26	1.92	19.32	2.15	20.51	112.460	Horizontal	Pass

Note:

ERP=EIRP-2.15

SG Level= Signal generator output

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

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

9. SPURIOUS RADIATION EMISSION

RULE PART(S)

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

LIMIT

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

The minimum permissible attenuation level of any spurious emission is $43 + \log_{10}(P)$ [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 $43 + 10 \text{ Log}_{10}(p)$, dB; and
- b. for mobile subscriber equipment, the attenuation shall not be less than $43 + 10 \text{ Log}_{10}(p)$, dB at the channel edges and $55 + 10 \text{ Log}_{10}(p)$ at 5.5 MHz away and beyond the channel edges where p in (a) and (b) is the transmitter power measured in watts.

MODES TESTED

- LTE Band 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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3701.4	-53.59	4.04	33.51	-24.12	-13	-11.12	Horizontal
3701.4	-45.14	4.04	33.51	-15.67	-13	-2.67	Vertical
5552.1	-53.84	5.24	35.84	-23.24	-13	-10.24	Vertical
5552.1	-52.92	5.24	35.84	-22.32	-13	-9.32	Horizontal
183.6	-43.84	1.43	16.02	-29.25	-13	-16.25	Vertical
322.1	-39.70	1.30	17.99	-23.01	-13	-10.01	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-50.29	4.04	33.56	-20.77	-13	-7.77	Horizontal
3760.0	-47.78	4.04	33.56	-18.26	-13	-5.26	Vertical
5640.0	-53.51	5.24	35.91	-22.84	-13	-9.84	Vertical
5640.0	-50.44	5.24	35.91	-19.77	-13	-6.77	Horizontal
212.2	-35.60	1.62	16.97	-20.25	-13	-7.25	Vertical
274.1	-40.59	1.74	15.98	-26.36	-13	-13.36	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-48.96	4.04	34.00	-19.00	-13	-6.00	Horizontal
3818.6	-51.55	4.04	34.00	-21.59	-13	-8.59	Vertical
5727.9	-52.02	5.24	36.04	-21.22	-13	-8.22	Vertical
5727.9	-49.76	5.24	36.04	-18.96	-13	-5.96	Horizontal
197.4	-39.26	1.42	17.29	-23.39	-13	-10.39	Vertical
287.5	-35.59	1.50	17.90	-19.18	-13	-6.18	Horizontal

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

Test Results for Low Channel 1860MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3720.0	-51.16	4.07	33.54	-21.69	-13	-8.69	Horizontal
3720.0	-45.99	4.07	33.54	-16.52	-13	-3.52	Vertical
5580.0	-44.35	5.28	35.86	-13.77	-13	-0.77	Vertical
5580.0	-53.90	5.28	35.86	-23.32	-13	-10.32	Horizontal
206.3	-38.66	1.58	16.89	-23.34	-13	-10.34	Vertical
245.1	-37.57	1.76	17.26	-22.07	-13	-9.07	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-44.71	4.04	33.56	-15.19	-13	-2.19	Horizontal
3760.0	-49.94	4.04	33.56	-20.42	-13	-7.42	Vertical
5640.0	-50.88	5.24	35.91	-20.21	-13	-7.21	Vertical
5640.0	-51.43	5.24	35.91	-20.76	-13	-7.76	Horizontal
181.1	-40.52	1.46	16.27	-25.71	-13	-12.71	Vertical
269.9	-39.51	1.59	15.15	-25.95	-13	-12.95	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-51.20	4.04	34.00	-21.24	-13	-8.24	Horizontal
3800.0	-46.06	4.04	34.00	-16.10	-13	-3.10	Vertical
5700.0	-53.28	5.24	36.04	-22.48	-13	-9.48	Vertical
5700.0	-53.24	5.24	36.04	-22.44	-13	-9.44	Horizontal
197.0	-38.79	1.36	17.39	-22.75	-13	-9.75	Vertical
322.8	-37.54	1.66	15.39	-23.81	-13	-10.81	Horizontal

16QAM EIRP POWER FOR LTE BAND 2 (1.4MHZ BANDWIDTH)

Test Results for Low Channel 1850.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3701.4	-51.46	4.04	33.51	-21.99	-13	-8.99	Horizontal
3701.4	-52.32	4.04	33.51	-22.85	-13	-9.85	Vertical
5552.1	-50.36	5.24	35.84	-19.76	-13	-6.76	Vertical
5552.1	-51.86	5.24	35.84	-21.26	-13	-8.26	Horizontal
201.4	-37.87	1.43	16.02	-23.28	-13	-10.28	Vertical
243.8	-40.06	1.30	17.99	-23.37	-13	-10.37	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-49.22	4.04	33.56	-19.70	-13	-6.70	Horizontal
3760.0	-50.74	4.04	33.56	-21.22	-13	-8.22	Vertical
5640.0	-53.72	5.24	35.91	-23.05	-13	-10.05	Vertical
5640.0	-50.80	5.24	35.91	-20.13	-13	-7.13	Horizontal
203.4	-38.25	1.62	16.97	-22.90	-13	-9.90	Vertical
285.7	-34.07	1.74	15.98	-19.84	-13	-6.84	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-45.95	4.04	34.00	-15.99	-13	-2.99	Horizontal
3818.6	-48.06	4.04	34.00	-18.10	-13	-5.10	Vertical
5727.9	-53.03	5.24	36.04	-22.23	-13	-9.23	Vertical
5727.9	-49.57	5.24	36.04	-18.77	-13	-5.77	Horizontal
187.2	-41.54	1.42	17.29	-25.67	-13	-12.67	Vertical
319.5	-44.58	1.50	17.90	-28.17	-13	-15.17	Horizontal

16QAM EIRP POWER FOR LTE BAND 2 (20.0MHZ BANDWIDTH)

Test Results for Low Channel 1860MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3720.0	-47.65	4.07	33.54	-18.18	-13	-5.18	Horizontal
3720.0	-51.32	4.07	33.54	-21.85	-13	-8.85	Vertical
5580.0	-49.75	5.28	35.86	-19.17	-13	-6.17	Vertical
5580.0	-51.10	5.28	35.86	-20.52	-13	-7.52	Horizontal
179.6	-36.06	1.58	16.89	-20.74	-13	-7.74	Vertical
343.2	-43.13	1.76	17.26	-27.63	-13	-14.63	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-45.04	4.04	33.56	-15.52	-13	-2.52	Horizontal
3760.0	-51.52	4.04	33.56	-22.00	-13	-9.00	Vertical
5640.0	-51.39	5.24	35.91	-20.72	-13	-7.72	Vertical
5640.0	-52.85	5.24	35.91	-22.18	-13	-9.18	Horizontal
210.5	-37.31	1.46	16.27	-22.50	-13	-9.50	Vertical
294.7	-39.46	1.59	15.15	-25.90	-13	-12.90	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-49.76	4.04	34.00	-19.80	-13	-6.80	Horizontal
3800.0	-53.80	4.04	34.00	-23.84	-13	-10.84	Vertical
5700.0	-46.21	5.24	36.04	-15.41	-13	-2.41	Vertical
5700.0	-50.12	5.24	36.04	-19.32	-13	-6.32	Horizontal
180.8	-40.02	1.36	17.39	-23.98	-13	-10.98	Vertical
247.6	-38.17	1.66	15.39	-24.44	-13	-11.44	Horizontal

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

9.2 LTE BAND 4

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

Test Results for Low Channel 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-51.80	4.02	29.80	-26.02	-13	-13.02	Horizontal
3421.4	-50.93	4.02	29.80	-25.15	-13	-12.15	Vertical
5132.1	-51.21	5.24	35.84	-20.61	-13	-7.61	Vertical
5132.1	-50.59	5.24	35.84	-19.99	-13	-6.99	Horizontal
196.2	-40.89	1.68	16.04	-26.53	-13	-13.53	Vertical
338.8	-36.60	1.78	17.74	-20.64	-13	-7.64	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-52.97	4.03	30.00	-27.00	-13	-14.00	Horizontal
3465.0	-48.20	4.03	30.00	-22.23	-13	-9.23	Vertical
5197.5	-44.17	5.25	35.86	-13.56	-13	-0.56	Vertical
5197.5	-49.70	5.25	35.86	-19.09	-13	-6.09	Horizontal
199.2	-36.94	1.72	17.69	-20.97	-13	-7.97	Vertical
437.6	-36.48	1.62	16.02	-22.07	-13	-9.07	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-49.75	4.05	30.01	-23.79	-13	-10.79	Horizontal
3508.6	-50.64	4.05	30.01	-24.68	-13	-11.68	Vertical
5262.9	-53.21	5.26	35.86	-22.61	-13	-9.61	Vertical
5262.9	-51.29	5.26	35.86	-20.69	-13	-7.69	Horizontal
191.3	-43.43	1.80	16.69	-28.54	-13	-15.54	Vertical
233.7	-35.88	1.75	16.66	-20.98	-13	-7.98	Horizontal

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

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-48.64	4.02	29.80	-22.86	-13	-9.86	Horizontal
3440.0	-47.65	4.02	29.80	-21.87	-13	-8.87	Vertical
5160.0	-45.09	5.24	35.84	-14.49	-13	-1.49	Vertical
5160.0	-49.86	5.24	35.84	-19.26	-13	-6.26	Horizontal
211.8	-36.99	1.57	17.26	-21.30	-13	-8.30	Vertical
366.2	-38.70	1.78	16.35	-24.13	-13	-11.13	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-48.61	4.03	30.00	-22.64	-13	-9.64	Horizontal
3465.0	-51.31	4.03	30.00	-25.34	-13	-12.34	Vertical
5197.5	-49.45	5.25	35.86	-18.84	-13	-5.84	Vertical
5197.5	-49.89	5.25	35.86	-19.28	-13	-6.28	Horizontal
202.9	-35.96	1.44	17.95	-19.45	-13	-6.45	Vertical
284.1	-43.64	1.65	16.09	-29.20	-13	-16.20	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-46.98	2.91	27.68	-22.21	-13	-9.21	Horizontal
3490.0	-48.88	2.91	27.68	-24.11	-13	-11.11	Vertical
5235.0	-45.85	5.26	35.86	-15.25	-13	-2.25	Vertical
5235.0	-52.65	5.26	35.86	-22.05	-13	-9.05	Horizontal
189.5	-43.99	1.61	16.85	-28.75	-13	-15.75	Vertical
322.6	-43.21	1.61	15.19	-29.63	-13	-16.63	Horizontal

16QAM EIRP POWER FOR LTE BAND 4 (1.4MHZ BANDWIDTH)

Test Results for Low Channel 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-47.62	4.02	29.80	-21.84	-13	-8.84	Horizontal
3421.4	-52.87	4.02	29.80	-27.09	-13	-14.09	Vertical
5132.1	-45.26	5.24	35.84	-14.66	-13	-1.66	Vertical
5132.1	-53.74	5.24	35.84	-23.14	-13	-10.14	Horizontal
203.3	-43.11	1.68	16.04	-28.75	-13	-15.75	Vertical
314.0	-42.27	1.78	17.74	-26.31	-13	-13.31	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-51.30	4.03	30.00	-25.33	-13	-12.33	Horizontal
3465.0	-48.13	4.03	30.00	-22.16	-13	-9.16	Vertical
5197.5	-47.94	5.25	35.86	-17.33	-13	-4.33	Vertical
5197.5	-52.26	5.25	35.86	-21.65	-13	-8.65	Horizontal
206.6	-36.35	1.72	17.69	-20.38	-13	-7.38	Vertical
415.7	-37.47	1.62	16.02	-23.06	-13	-10.06	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-44.37	4.05	30.01	-18.41	-13	-5.41	Horizontal
3508.6	-44.58	4.05	30.01	-18.62	-13	-5.62	Vertical
5262.9	-52.19	5.26	35.86	-21.59	-13	-8.59	Vertical
5262.9	-49.97	5.26	35.86	-19.37	-13	-6.37	Horizontal
203.6	-43.84	1.80	16.69	-28.95	-13	-15.95	Vertical
437.6	-42.31	1.75	16.66	-27.41	-13	-14.41	Horizontal

16QAM EIRP POWER FOR LTE BAND 4 (20.0MHZ BANDWIDTH)

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-48.45	4.02	29.80	-22.67	-13	-9.67	Horizontal
3440.0	-49.49	4.02	29.80	-23.71	-13	-10.71	Vertical
5160.0	-50.60	5.24	35.84	-20.00	-13	-7.00	Vertical
5160.0	-53.13	5.24	35.84	-22.53	-13	-9.53	Horizontal
208.8	-40.59	1.57	17.26	-24.90	-13	-11.90	Vertical
413.9	-37.41	1.78	16.35	-22.84	-13	-9.84	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-48.57	4.03	30.00	-22.60	-13	-9.60	Horizontal
3465.0	-49.14	4.03	30.00	-23.17	-13	-10.17	Vertical
5197.5	-50.60	5.25	35.86	-19.99	-13	-6.99	Vertical
5197.5	-52.15	5.25	35.86	-21.54	-13	-8.54	Horizontal
187.1	-43.28	1.44	17.95	-26.77	-13	-13.77	Vertical
348.7	-44.40	1.65	16.09	-29.96	-13	-16.96	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-47.15	2.91	27.68	-22.38	-13	-9.38	Horizontal
3490.0	-45.18	2.91	27.68	-20.41	-13	-7.41	Vertical
5235.0	-45.25	5.26	35.86	-14.65	-13	-1.65	Vertical
5235.0	-51.84	5.26	35.86	-21.24	-13	-8.24	Horizontal
183.2	-43.61	1.61	16.85	-28.37	-13	-15.37	Vertical
395.9	-40.50	1.61	15.19	-26.92	-13	-13.92	Horizontal

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

9.3 LTE BAND 5

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

Test Results for Low Channel 824.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1649.4	-53.05	2.78	27.50	-28.33	-13	-15.33	Horizontal
1649.4	-53.26	2.78	27.50	-28.54	-13	-15.54	Vertical
2474.1	-52.54	2.90	27.80	-27.64	-13	-14.64	Vertical
2474.1	-49.26	2.90	27.80	-24.36	-13	-11.36	Horizontal
185.8	-37.02	1.76	17.59	-21.19	-13	-8.19	Vertical
270.9	-43.89	1.63	15.87	-29.65	-13	-16.65	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-51.56	2.80	27.48	-26.88	-13	-13.88	Horizontal
1673.0	-44.03	2.80	27.48	-19.35	-13	-6.35	Vertical
2509.5	-46.96	2.91	27.70	-22.17	-13	-9.17	Vertical
2509.5	-53.55	2.91	27.70	-28.76	-13	-15.76	Horizontal
211.1	-44.96	1.61	15.68	-30.89	-13	-17.89	Vertical
456.1	-44.45	1.59	17.52	-28.53	-13	-15.53	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-44.58	2.82	27.43	-19.97	-13	-6.97	Horizontal
1696.6	-50.53	2.82	27.43	-25.92	-13	-12.92	Vertical
2544.9	-46.10	2.92	27.74	-21.28	-13	-8.28	Vertical
2544.9	-49.78	2.92	27.74	-24.96	-13	-11.96	Horizontal
188.3	-43.96	1.69	16.67	-28.97	-13	-15.97	Vertical
437.1	-38.29	1.70	17.18	-22.81	-13	-9.81	Horizontal

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

Test Results for Low Channel 829MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1658.0	-52.49	2.78	27.50	-27.77	-13	-14.77	Horizontal
1658.0	-46.21	2.78	27.50	-21.49	-13	-8.49	Vertical
2487.0	-46.12	2.90	27.80	-21.22	-13	-8.22	Vertical
2487.0	-53.60	2.90	27.80	-28.70	-13	-15.70	Horizontal
176.2	-42.85	1.71	15.57	-28.99	-13	-15.99	Vertical
431.1	-42.15	1.34	16.40	-27.09	-13	-14.09	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-49.93	2.80	27.48	-25.25	-13	-12.25	Horizontal
1673.0	-49.03	2.80	27.48	-24.35	-13	-11.35	Vertical
2509.5	-47.97	2.91	27.70	-23.18	-13	-10.18	Vertical
2509.5	-51.57	2.91	27.70	-26.78	-13	-13.78	Horizontal
190.5	-44.85	1.44	17.04	-29.25	-13	-16.25	Vertical
357.6	-35.98	1.76	17.62	-20.12	-13	-7.12	Horizontal
Test Results for High Channel 844MHz							
1688.0	-47.88	2.82	27.43	-23.27	-13	-10.27	Horizontal
1688.0	-48.14	2.82	27.43	-23.53	-13	-10.53	Vertical
2532.0	-47.45	2.92	27.74	-22.63	-13	-9.63	Vertical
2532.0	-52.08	2.92	27.74	-27.26	-13	-14.26	Horizontal
211.8	-35.64	1.74	17.70	-19.68	-13	-6.68	Vertical
450.8	-44.76	1.41	17.46	-28.70	-13	-15.70	Horizontal

16QAM EIRP POWER FOR LTE BAND 5 (1.4MHZ BANDWIDTH)

Test Results for Low Channel 824.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1649.4	-51.72	2.78	27.50	-27.00	-13	-14.00	Horizontal
1649.4	-49.56	2.78	27.50	-24.84	-13	-11.84	Vertical
2474.1	-46.52	2.90	27.80	-21.62	-13	-8.62	Vertical
2474.1	-50.03	2.90	27.80	-25.13	-13	-12.13	Horizontal
201.5	-43.81	1.76	17.59	-27.98	-13	-14.98	Vertical
461.8	-40.11	1.63	15.87	-25.87	-13	-12.87	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-44.05	2.80	27.48	-19.37	-13	-6.37	Horizontal
1673.0	-50.60	2.80	27.48	-25.92	-13	-12.92	Vertical
2509.5	-52.08	2.91	27.70	-27.29	-13	-14.29	Vertical
2509.5	-50.16	2.91	27.70	-25.37	-13	-12.37	Horizontal
195.8	-34.18	1.61	15.68	-20.11	-13	-7.11	Vertical
353.5	-43.24	1.59	17.52	-27.32	-13	-14.32	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-51.82	2.82	27.43	-27.21	-13	-14.21	Horizontal
1696.6	-44.52	2.82	27.43	-19.91	-13	-6.91	Vertical
2544.9	-50.65	2.92	27.74	-25.83	-13	-12.83	Vertical
2544.9	-52.67	2.92	27.74	-27.85	-13	-14.85	Horizontal
212.1	-42.45	1.69	16.67	-27.46	-13	-14.46	Vertical
343.7	-42.54	1.70	17.18	-27.06	-13	-14.06	Horizontal

16QAM EIRP POWER FOR LTE BAND 5 (10MHZ BANDWIDTH)

Test Results for Low Channel 829MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1658.0	-51.15	2.78	27.50	-26.43	-13	-13.43	Horizontal
1658.0	-48.02	2.78	27.50	-23.30	-13	-10.30	Vertical
2487.0	-47.39	2.90	27.80	-22.49	-13	-9.49	Vertical
2487.0	-50.93	2.90	27.80	-26.03	-13	-13.03	Horizontal
198.6	-43.91	1.71	15.57	-30.05	-13	-17.05	Vertical
336.2	-42.07	1.34	16.40	-27.01	-13	-14.01	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-47.91	2.80	27.48	-23.23	-13	-10.23	Horizontal
1673.0	-46.80	2.80	27.48	-22.12	-13	-9.12	Vertical
2509.5	-50.17	2.91	27.70	-25.38	-13	-12.38	Vertical
2509.5	-50.73	2.91	27.70	-25.94	-13	-12.94	Horizontal
195.4	-42.26	1.44	17.04	-26.66	-13	-13.66	Vertical
270.1	-42.84	1.76	17.62	-26.98	-13	-13.98	Horizontal
Test Results for High Channel 844MHz							
1688.0	-47.13	2.82	27.43	-22.52	-13	-9.52	Horizontal
1688.0	-51.63	2.82	27.43	-27.02	-13	-14.02	Vertical
2532.0	-53.96	2.92	27.74	-29.14	-13	-16.14	Vertical
2532.0	-53.07	2.92	27.74	-28.25	-13	-15.25	Horizontal
209.2	-40.78	1.74	17.70	-24.82	-13	-11.82	Vertical
339.0	-41.00	1.41	17.46	-24.94	-13	-11.94	Horizontal

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

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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5005.0	-62.95	5.23	35.81	-32.37	-25	-7.37	Horizontal
5005.0	-60.14	5.23	35.81	-29.56	-25	-4.56	Vertical
7507.5	-64.20	5.67	36.85	-33.02	-25	-8.02	Vertical
7507.5	-62.38	5.67	36.85	-31.20	-25	-6.20	Horizontal
182.2	-52.09	1.73	17.97	-35.85	-25	-10.85	Vertical
284.5	-45.95	1.38	15.11	-32.22	-25	-7.22	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-60.13	5.23	35.82	-29.54	-25	-4.54	Horizontal
5070.0	-64.53	5.23	35.82	-33.94	-25	-8.94	Vertical
7605.0	-60.41	5.67	36.85	-29.23	-25	-4.23	Vertical
7605.0	-61.05	5.67	36.85	-29.87	-25	-4.87	Horizontal
180.9	-44.83	1.77	16.17	-30.42	-25	-5.42	Vertical
405.1	-50.47	1.63	15.21	-36.89	-25	-11.89	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-62.46	5.24	35.83	-31.87	-25	-6.87	Horizontal
5135.0	-62.85	5.24	35.83	-32.26	-25	-7.26	Vertical
7702.5	-63.21	5.68	36.87	-32.02	-25	-7.02	Vertical
7702.5	-60.25	5.68	36.87	-29.06	-25	-4.06	Horizontal
196.2	-48.36	1.58	17.56	-32.38	-25	-7.38	Vertical
380.4	-46.25	1.45	16.58	-31.12	-25	-6.12	Horizontal

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

Test Results for Low Channel 2510MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5020.0	-59.85	5.23	35.82	-29.26	-25	-4.26	Horizontal
5020.0	-59.38	5.23	35.82	-28.79	-25	-3.79	Vertical
7530.0	-60.54	5.67	36.86	-29.35	-25	-4.35	Vertical
7530.0	-63.18	5.67	36.86	-31.99	-25	-6.99	Horizontal
181.2	-46.01	1.63	15.76	-31.88	-25	-6.88	Vertical
436.4	-44.52	1.71	15.44	-30.79	-25	-5.79	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-63.53	5.23	35.82	-32.94	-25	-7.94	Horizontal
5070.0	-60.51	5.23	35.82	-29.92	-25	-4.92	Vertical
7605.0	-59.65	5.67	36.85	-28.47	-25	-3.47	Vertical
7605.0	-60.75	5.67	36.85	-29.57	-25	-4.57	Horizontal
198.9	-49.33	1.79	16.84	-34.27	-25	-9.27	Vertical
325.1	-50.41	1.71	17.64	-34.48	-25	-9.48	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-59.73	5.24	35.83	-29.14	-25	-4.14	Horizontal
5120.0	-64.10	5.24	35.83	-33.51	-25	-8.51	Vertical
7680.0	-60.81	5.70	36.88	-29.63	-25	-4.63	Vertical
7680.0	-59.03	5.70	36.88	-27.85	-25	-2.85	Horizontal
189.5	-49.62	1.79	16.84	-34.56	-25	-9.56	Vertical
253.1	-45.39	1.71	17.64	-29.46	-25	-4.46	Horizontal

16QAM EIRP POWER FOR LTE BAND 7 (5.0MHZ BANDWIDTH)

Test Results for Low Channel 2502.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5005.0	-62.77	5.23	35.81	-32.19	-25	-7.19	Horizontal
5005.0	-61.11	5.23	35.81	-30.53	-25	-5.53	Vertical
7507.5	-62.52	5.67	36.85	-31.34	-25	-6.34	Vertical
7507.5	-64.12	5.67	36.85	-32.94	-25	-7.94	Horizontal
198.4	-44.46	1.73	17.97	-28.22	-25	-3.22	Vertical
425.3	-46.56	1.38	15.11	-32.83	-25	-7.83	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-59.62	5.23	35.82	-29.03	-25	-4.03	Horizontal
5070.0	-61.32	5.23	35.82	-30.73	-25	-5.73	Vertical
7605.0	-64.43	5.67	36.85	-33.25	-25	-8.25	Vertical
7605.0	-63.92	5.67	36.85	-32.74	-25	-7.74	Horizontal
201.0	-54.31	1.77	16.17	-39.90	-25	-14.90	Vertical
433.9	-44.26	1.63	15.21	-30.68	-25	-5.68	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-64.30	5.24	35.83	-33.71	-25	-8.71	Horizontal
5135.0	-59.48	5.24	35.83	-28.89	-25	-3.89	Vertical
7702.5	-60.73	5.68	36.87	-29.54	-25	-4.54	Vertical
7702.5	-63.49	5.68	36.87	-32.30	-25	-7.30	Horizontal
188.8	-54.78	1.58	17.56	-38.80	-25	-13.80	Vertical
370.2	-46.61	1.45	16.58	-31.48	-25	-6.48	Horizontal

16QAM EIRP POWER FOR LTE BAND 7 (20.0MHZ BANDWIDTH)

Test Results for Low Channel 2510MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5020.0	-61.28	5.23	35.82	-30.69	-25	-5.69	Horizontal
5020.0	-60.52	5.23	35.82	-29.93	-25	-4.93	Vertical
7530.0	-59.56	5.67	36.86	-28.37	-25	-3.37	Vertical
7530.0	-61.71	5.67	36.86	-30.52	-25	-5.52	Horizontal
202.5	-49.05	1.63	15.76	-34.92	-25	-9.92	Vertical
438.1	-45.96	1.71	15.44	-32.23	-25	-7.23	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-64.26	5.23	35.82	-33.67	-25	-8.67	Horizontal
5070.0	-61.51	5.23	35.82	-30.92	-25	-5.92	Vertical
7605.0	-64.47	5.67	36.85	-33.29	-25	-8.29	Vertical
7605.0	-59.89	5.67	36.85	-28.71	-25	-3.71	Horizontal
200.9	-47.38	1.79	16.84	-32.32	-25	-7.32	Vertical
459.3	-46.78	1.71	17.64	-30.85	-25	-5.85	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-59.52	5.24	35.83	-28.93	-25	-3.93	Horizontal
5120.0	-60.57	5.24	35.83	-29.98	-25	-4.98	Vertical
7680.0	-59.06	5.70	36.88	-27.88	-25	-2.88	Vertical
7680.0	-64.54	5.70	36.88	-33.36	-25	-8.36	Horizontal
198.8	-49.91	1.79	16.84	-34.85	-25	-9.85	Vertical
297.5	-44.08	1.71	17.64	-28.15	-25	-3.15	Horizontal

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

9.5 LTE BAND 12

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

Test Results for Low Channel 699.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1399.4	-48.89	2.60	27.20	-24.29	-13	-11.29	Horizontal
1399.4	-50.76	2.60	27.20	-26.16	-13	-13.16	Vertical
2099.1	-48.52	2.85	27.54	-23.83	-13	-10.83	Vertical
2099.1	-50.48	2.85	27.54	-25.79	-13	-12.79	Horizontal
198.6	-44.94	1.49	17.78	-28.65	-13	-15.65	Vertical
431.6	-34.04	1.36	17.33	-18.07	-13	-5.07	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-53.34	2.61	27.28	-28.67	-13	-15.67	Horizontal
1415.0	-46.53	2.61	27.28	-21.86	-13	-8.86	Vertical
2122.5	-49.05	2.87	27.59	-24.33	-13	-11.33	Vertical
2122.5	-51.85	2.87	27.59	-27.13	-13	-14.13	Horizontal
199.1	-37.08	1.73	15.74	-23.07	-13	-10.07	Vertical
468.0	-43.30	1.62	15.79	-29.13	-13	-16.13	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-52.52	2.63	27.28	-27.87	-13	-14.87	Horizontal
1430.6	-47.96	2.63	27.28	-23.31	-13	-10.31	Vertical
2145.9	-45.24	2.88	27.60	-20.52	-13	-7.52	Vertical
2145.9	-51.12	2.88	27.60	-26.40	-13	-13.40	Horizontal
177.8	-37.76	1.61	18.00	-21.37	-13	-8.37	Vertical
345.3	-40.13	1.45	15.49	-26.10	-13	-13.10	Horizontal

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

Test Results for Low Channel 704MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1408.0	-51.16	2.61	27.26	-26.51	-13	-13.51	Horizontal
1408.0	-49.98	2.61	27.26	-25.33	-13	-12.33	Vertical
2112.0	-46.02	2.87	27.58	-21.31	-13	-8.31	Vertical
2112.0	-51.24	2.87	27.58	-26.53	-13	-13.53	Horizontal
196.8	-44.64	1.31	16.97	-28.98	-13	-15.98	Vertical
296.8	-42.18	1.65	16.70	-27.13	-13	-14.13	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-50.20	2.61	27.28	-25.53	-13	-12.53	Horizontal
1415.0	-45.08	2.61	27.28	-20.41	-13	-7.41	Vertical
2122.5	-50.75	2.87	27.59	-26.03	-13	-13.03	Vertical
2122.5	-53.64	2.87	27.59	-28.92	-13	-15.92	Horizontal
200.4	-38.84	1.72	17.99	-22.57	-13	-9.57	Vertical
433.7	-39.51	1.73	17.94	-23.30	-13	-10.30	Horizontal
Test Results for High Channel 711MHz							
1422.0	-49.94	2.62	27.28	-25.28	-13	-12.28	Horizontal
1422.0	-46.23	2.62	27.28	-21.57	-13	-8.57	Vertical
2133.0	-51.47	2.87	27.60	-26.74	-13	-13.74	Vertical
2133.0	-49.26	2.87	27.60	-24.53	-13	-11.53	Horizontal
176.0	-41.19	1.58	15.93	-26.84	-13	-13.84	Vertical
417.2	-35.15	1.36	15.59	-20.92	-13	-7.92	Horizontal

16QAM EIRP POWER FOR LTE BAND 12 (1.4MHZ BANDWIDTH)

Test Results for Low Channel 699.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1399.4	-47.69	2.60	27.20	-23.09	-13	-10.09	Horizontal
1399.4	-51.24	2.60	27.20	-26.64	-13	-13.64	Vertical
2099.1	-48.32	2.85	27.54	-23.63	-13	-10.63	Vertical
2099.1	-49.60	2.85	27.54	-24.91	-13	-11.91	Horizontal
184.3	-34.99	1.49	17.78	-18.70	-13	-5.70	Vertical
367.7	-38.81	1.36	17.33	-22.84	-13	-9.84	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-51.57	2.61	27.28	-26.90	-13	-13.90	Horizontal
1415.0	-52.09	2.61	27.28	-27.42	-13	-14.42	Vertical
2122.5	-50.46	2.87	27.59	-25.74	-13	-12.74	Vertical
2122.5	-52.02	2.87	27.59	-27.30	-13	-14.30	Horizontal
179.7	-36.44	1.73	15.74	-22.43	-13	-9.43	Vertical
361.4	-44.80	1.62	15.79	-30.63	-13	-17.63	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-53.21	2.63	27.28	-28.56	-13	-15.56	Horizontal
1430.6	-49.63	2.63	27.28	-24.98	-13	-11.98	Vertical
2145.9	-53.78	2.88	27.60	-29.06	-13	-16.06	Vertical
2145.9	-49.00	2.88	27.60	-24.28	-13	-11.28	Horizontal
179.7	-35.40	1.61	18.00	-19.01	-13	-6.01	Vertical
357.3	-34.30	1.45	15.49	-20.27	-13	-7.27	Horizontal

16QAM EIRP POWER FOR LTE BAND 12 (10MHZ BANDWIDTH)

Test Results for Low Channel 704MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1408.0	-51.45	2.61	27.26	-26.80	-13	-13.80	Horizontal
1408.0	-48.05	2.61	27.26	-23.40	-13	-10.40	Vertical
2112.0	-53.47	2.87	27.58	-28.76	-13	-15.76	Vertical
2112.0	-53.46	2.87	27.58	-28.75	-13	-15.75	Horizontal
181.6	-38.71	1.31	16.97	-23.05	-13	-10.05	Vertical
453.8	-40.16	1.65	16.70	-25.11	-13	-12.11	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-45.09	2.61	27.28	-20.42	-13	-7.42	Horizontal
1415.0	-52.54	2.61	27.28	-27.87	-13	-14.87	Vertical
2122.5	-49.44	2.87	27.59	-24.72	-13	-11.72	Vertical
2122.5	-52.14	2.87	27.59	-27.42	-13	-14.42	Horizontal
176.1	-40.84	1.72	17.99	-24.57	-13	-11.57	Vertical
261.7	-43.39	1.73	17.94	-27.18	-13	-14.18	Horizontal
Test Results for High Channel 711MHz							
1422.0	-51.60	2.62	27.28	-26.94	-13	-13.94	Horizontal
1422.0	-46.59	2.62	27.28	-21.93	-13	-8.93	Vertical
2133.0	-44.51	2.87	27.60	-19.78	-13	-6.78	Vertical
2133.0	-53.50	2.87	27.60	-28.77	-13	-15.77	Horizontal
204.0	-40.17	1.58	15.93	-25.82	-13	-12.82	Vertical
390.0	-41.08	1.36	15.59	-26.85	-13	-13.85	Horizontal

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

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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1413.0	-52.58	2.61	27.28	-27.91	-13	-14.91	Horizontal
1413.0	-44.82	2.61	27.28	-20.15	-13	-7.15	Vertical
2119.5	-49.79	2.87	27.59	-25.07	-13	-12.07	Vertical
2119.5	-54.00	2.87	27.59	-29.28	-13	-16.28	Horizontal
187.3	-42.24	1.71	16.15	-27.80	-13	-14.80	Vertical
439.8	-34.87	1.41	17.32	-18.96	-13	-5.96	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-50.63	2.62	27.30	-25.95	-13	-12.95	Horizontal
1420.0	-51.35	2.62	27.30	-26.67	-13	-13.67	Vertical
2130.0	-48.75	2.87	27.62	-24.00	-13	-11.00	Vertical
2130.0	-52.10	2.87	27.62	-27.35	-13	-14.35	Horizontal
196.1	-41.59	1.42	15.25	-27.77	-13	-14.77	Vertical
448.0	-35.34	1.36	17.19	-19.51	-13	-6.51	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-51.80	2.66	27.28	-27.18	-13	-14.18	Horizontal
1427.0	-50.96	2.66	27.28	-26.34	-13	-13.34	Vertical
2140.5	-52.07	2.88	27.60	-27.35	-13	-14.35	Vertical
2140.5	-51.32	2.88	27.60	-26.60	-13	-13.60	Horizontal
176.9	-38.17	1.32	17.29	-22.20	-13	-9.20	Vertical
460.5	-43.74	1.72	16.89	-28.57	-13	-15.57	Horizontal

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

Test Results for Low Channel 709MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1418.0	-45.86	2.62	27.30	-21.18	-13	-8.18	Horizontal
1418.0	-45.27	2.62	27.30	-20.59	-13	-7.59	Vertical
2127.0	-50.53	2.87	27.62	-25.78	-13	-12.78	Vertical
2127.0	-51.85	2.87	27.62	-27.10	-13	-14.10	Horizontal
203.3	-34.03	1.35	16.91	-18.47	-13	-5.47	Vertical
467.2	-44.02	1.62	16.31	-29.33	-13	-16.33	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-48.25	2.62	27.30	-23.57	-13	-10.57	Horizontal
1420.0	-47.47	2.62	27.30	-22.79	-13	-9.79	Vertical
2130.0	-50.12	2.87	27.62	-25.37	-13	-12.37	Vertical
2130.0	-50.59	2.87	27.62	-25.84	-13	-12.84	Horizontal
202.8	-44.20	1.51	17.14	-28.57	-13	-15.57	Vertical
386.8	-34.54	1.77	16.88	-19.43	-13	-6.43	Horizontal
Test Results for High Channel 711MHz							
1422.0	-49.31	2.62	27.30	-24.63	-13	-11.63	Horizontal
1422.0	-48.07	2.62	27.30	-23.39	-13	-10.39	Vertical
2133.0	-47.64	2.87	27.62	-22.89	-13	-9.89	Vertical
2133.0	-52.06	2.87	27.62	-27.31	-13	-14.31	Horizontal
211.7	-35.81	1.78	15.95	-21.64	-13	-8.64	Vertical
460.3	-43.20	1.34	17.95	-26.60	-13	-13.60	Horizontal

16QAM EIRP POWER FOR LTE BAND 17 (5MHZ BANDWIDTH)

Test Results for Low Channel 706.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1413.0	-52.11	2.61	27.28	-27.44	-13	-14.44	Horizontal
1413.0	-53.29	2.61	27.28	-28.62	-13	-15.62	Vertical
2119.5	-53.19	2.87	27.59	-28.47	-13	-15.47	Vertical
2119.5	-49.44	2.87	27.59	-24.72	-13	-11.72	Horizontal
211.2	-35.08	1.71	16.15	-20.64	-13	-7.64	Vertical
445.9	-34.82	1.41	17.32	-18.91	-13	-5.91	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-46.65	2.62	27.30	-21.97	-13	-8.97	Horizontal
1420.0	-47.97	2.62	27.30	-23.29	-13	-10.29	Vertical
2130.0	-48.41	2.87	27.62	-23.66	-13	-10.66	Vertical
2130.0	-53.63	2.87	27.62	-28.88	-13	-15.88	Horizontal
179.4	-40.80	1.42	15.25	-26.98	-13	-13.98	Vertical
397.3	-36.24	1.36	17.19	-20.41	-13	-7.41	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-45.90	2.66	27.28	-21.28	-13	-8.28	Horizontal
1427.0	-50.94	2.66	27.28	-26.32	-13	-13.32	Vertical
2140.5	-46.12	2.88	27.60	-21.40	-13	-8.40	Vertical
2140.5	-50.43	2.88	27.60	-25.71	-13	-12.71	Horizontal
183.1	-37.43	1.32	17.29	-21.46	-13	-8.46	Vertical
396.5	-37.93	1.72	16.89	-22.76	-13	-9.76	Horizontal

16QAM EIRP POWER FOR LTE BAND 17 (10MHZ BANDWIDTH)

Test Results for Low Channel 709MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1418.0	-44.54	2.62	27.30	-19.86	-13	-6.86	Horizontal
1418.0	-49.06	2.62	27.30	-24.38	-13	-11.38	Vertical
2127.0	-52.11	2.87	27.62	-27.36	-13	-14.36	Vertical
2127.0	-50.57	2.87	27.62	-25.82	-13	-12.82	Horizontal
183.0	-35.51	1.35	16.91	-19.95	-13	-6.95	Vertical
275.6	-44.84	1.62	16.31	-30.15	-13	-17.15	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-49.85	2.62	27.30	-25.17	-13	-12.17	Horizontal
1420.0	-46.13	2.62	27.30	-21.45	-13	-8.45	Vertical
2130.0	-48.61	2.87	27.62	-23.86	-13	-10.86	Vertical
2130.0	-51.98	2.87	27.62	-27.23	-13	-14.23	Horizontal
194.1	-43.51	1.51	17.14	-27.88	-13	-14.88	Vertical
323.0	-40.52	1.77	16.88	-25.41	-13	-12.41	Horizontal
Test Results for High Channel 711MHz							
1422.0	-52.92	2.62	27.30	-28.24	-13	-15.24	Horizontal
1422.0	-45.89	2.62	27.30	-21.21	-13	-8.21	Vertical
2133.0	-46.91	2.87	27.62	-22.16	-13	-9.16	Vertical
2133.0	-52.35	2.87	27.62	-27.60	-13	-14.60	Horizontal
188.6	-36.01	1.78	15.95	-21.84	-13	-8.84	Vertical
452.0	-44.41	1.34	17.95	-27.81	-13	-14.81	Horizontal

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

10. FREQUENCY STABILITY

RULE PART(S)

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

LIMITS

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

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

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

Temp. = -30° to $+50^{\circ}$ C

Voltage = low voltage, DC 3.4V, Normal, DC 3.85V and High voltage, DC 4.2V.

Frequency Stability vs Temperature:

The EUT is placed inside a temperature chamber. The temperature is set to -30° C and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until $+50^{\circ}$ C is reached.

Frequency Stability vs Voltage:

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

MODES TESTED

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

RESULTS

See the following pages.

10.1 LTE BAND 2

QPSK, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 2 QPSK, (CH 18900 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.4	1880	12.8	0.006795	2.5
3.85	1880	14.1	0.007510	2.5
4.4	1880	12.9	0.006845	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 2 QPSK, (CH 18900 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	1880	12.8	0.006826	2.5
Extreme (50C)	1880	11.6	0.006157	2.5
Extreme (40C)	1880	14.0	0.007460	2.5
Extreme (30C)	1880	13.1	0.006949	2.5
Extreme (10C)	1880	14.3	0.007597	2.5
Extreme (0C)	1880	12.0	0.006380	2.5
Extreme (-10C)	1880	13.0	0.006941	2.5
Extreme (-20C)	1880	14.3	0.007622	2.5
Extreme (-30C)	1880	14.8	0.007899	2.5

16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 2 16QAM, (CH 18900 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.4	1880	10.0	0.005306	2.5
3.85	1880	9.3	0.004965	2.5
4.4	1880	7.8	0.004145	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 2 16QAM, (CH 18900 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	1880	10.0	0.005305	2.5
Extreme (50C)	1880	9.1	0.004834	2.5
Extreme (40C)	1880	7.9	0.004197508	2.5
Extreme (30C)	1880	8.7	0.004648595	2.5
Extreme (10C)	1880	8.9	0.004738233	2.5
Extreme (0C)	1880	7.7	0.004095353	2.5
Extreme (-10C)	1880	9.4	0.004990653	2.5
Extreme (-20C)	1880	8.7	0.004641472	2.5
Extreme (-30C)	1880	8.2	0.004336321	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

QPSK, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 4 QPSK, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.4	1732.5	8.3	0.004802	2.5
3.85	1732.5	9.1	0.005249	2.5
4.4	1732.5	8.0	0.004623	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 4 QPSK, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	1732.5	8.6	0.004966	2.5
Extreme (50C)	1732.5	8.4	0.004864	2.5
Extreme (40C)	1732.5	7.7	0.004426	2.5
Extreme (30C)	1732.5	6.2	0.003558	2.5
Extreme (10C)	1732.5	6.9	0.003958	2.5
Extreme (0C)	1732.5	9.6	0.005564	2.5
Extreme (-10C)	1732.5	8.0	0.004591	2.5
Extreme (-20C)	1732.5	7.2	0.004169	2.5
Extreme (-30C)	1732.5	8.7	0.005012	2.5

16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 4 16QAM, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.4	1732.5	9.5	0.005493	2.5
3.85	1732.5	9.3	0.005377	2.5
4.4	1732.5	7.8	0.004485	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 4 16QAM, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	1732.5	9.6	0.005558	2.5
Extreme (50C)	1732.5	8.4	0.004874	2.5
Extreme (40C)	1732.5	7.6	0.004392	2.5
Extreme (30C)	1732.5	8.5	0.004923	2.5
Extreme (10C)	1732.5	9.0	0.005183	2.5
Extreme (0C)	1732.5	7.8	0.004523	2.5
Extreme (-10C)	1732.5	9.0	0.005202	2.5
Extreme (-20C)	1732.5	9.1	0.005241	2.5
Extreme (-30C)	1732.5	7.9	0.004533	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

QPSK, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 5 QPSK, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	836.5	5.7	0.006816	2.5
3.85	836.5	7.2	0.008551	2.5
4.4	836.5	4.9	0.005799	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 5 QPSK, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	836.5	6.6	0.007833	2.5
Extreme (50C)	836.5	6.1	0.007331	2.5
Extreme (40C)	836.5	5.9	0.007059	2.5
Extreme (30C)	836.5	6.4	0.007598	2.5
Extreme (10C)	836.5	5.6	0.006667	2.5
Extreme (0C)	836.5	5.5	0.006592	2.5
Extreme (-10C)	836.5	5.7	0.006819	2.5
Extreme (-20C)	836.5	6.5	0.007824	2.5
Extreme (-30C)	836.5	5.8	0.006974	2.5

16QAM, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 5 16QAM, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	836.5	5.4	0.006476	2.5
3.85	836.5	6.9	0.008200	2.5
4.4	836.5	5.3	0.006334	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 5 16QAM, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	836.5	6.2	0.007408	2.5
Extreme (50C)	836.5	5.9	0.007019	2.5
Extreme (40C)	836.5	6.1	0.007266	2.5
Extreme (30C)	836.5	6.8	0.008137	2.5
Extreme (10C)	836.5	5.8	0.006939	2.5
Extreme (0C)	836.5	5.1	0.006115	2.5
Extreme (-10C)	836.5	5.4	0.006407	2.5
Extreme (-20C)	836.5	6.5	0.007726	2.5
Extreme (-30C)	836.5	6.5	0.007821	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

QPSK, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 7 QPSK, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.4	2535	10.1	0.003991	2.5
3.85	2535	8.8	0.003462	2.5
4.4	2535	8.8	0.003465	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 7 QPSK, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	2535	9.7	0.003845	2.5
Extreme (50C)	2535	9.2	0.003619	2.5
Extreme (40C)	2535	8.5	0.003351	2.5
Extreme (30C)	2535	9.2	0.003641	2.5
Extreme (10C)	2535	8.5	0.003337	2.5
Extreme (0C)	2535	8.7	0.003415	2.5
Extreme (-10C)	2535	9.2	0.003613	2.5
Extreme (-20C)	2535	8.8	0.003455	2.5
Extreme (-30C)	2535	8.4	0.003333	2.5

16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 7 16QAM, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.4	2535	6.9	0.002722	2.5
3.85	2535	6.3	0.002485	2.5
4.4	2535	6.1	0.002399	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 7 16QAM, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	2535	6.9	0.002722	2.5
Extreme (50C)	2535	5.8	0.002286	2.5
Extreme (40C)	2535	5.7	0.002258	2.5
Extreme (30C)	2535	6.6	0.002615	2.5
Extreme (10C)	2535	5.9	0.002340	2.5
Extreme (0C)	2535	5.4	0.002150	2.5
Extreme (-10C)	2535	5.2	0.002035	2.5
Extreme (-20C)	2535	6.0	0.002368	2.5
Extreme (-30C)	2535	5.5	0.002155	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

QPSK, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 12 QPSK, (CH 23095 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	707.5	8.3	0.011744	2.5
3.85	707.5	10.0	0.014137	2.5
4.4	707.5	8.2	0.011571	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 12 QPSK, (CH 23095 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	707.5	8.5	0.012017	2.5
Extreme (50C)	707.5	7.7	0.010841	2.5
Extreme (40C)	707.5	7.5	0.010587	2.5
Extreme (30C)	707.5	7.9	0.011142	2.5
Extreme (10C)	707.5	7.5	0.010540	2.5
Extreme (0C)	707.5	9.0	0.012786	2.5
Extreme (-10C)	707.5	8.0	0.011258	2.5
Extreme (-20C)	707.5	9.1	0.012855	2.5
Extreme (-30C)	707.5	7.3	0.010367	2.5

16QAM, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 12 16QAM, (CH 23095 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	707.5	7.6	0.010701	2.5
3.85	707.5	8.4	0.011907	2.5
4.4	707.5	7.0	0.009890	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 12 QPSK, (CH 23095 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
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

QPSK, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 17 QPSK, (CH 23790 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	710.0	9.3	0.013115	2.5
3.85	710.0	9.4	0.013170	2.5
4.4	710.0	8.0	0.011290	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 17 QPSK, (CH 23790 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	710.0	10.0	0.014076	2.5
Extreme (50C)	710.0	8.7	0.012299	2.5
Extreme (40C)	710.0	7.9	0.011192	2.5
Extreme (30C)	710.0	9.4	0.013184	2.5
Extreme (10C)	710.0	8.7	0.012200	2.5
Extreme (0C)	710.0	7.8	0.010990	2.5
Extreme (-10C)	710.0	9.1	0.012751	2.5
Extreme (-20C)	710.0	8.9	0.012522	2.5
Extreme (-30C)	710.0	7.8	0.011014	2.5

16QAM, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 17 16QAM, (CH 23790 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	710.0	9.7	0.013647	2.5
3.85	710.0	9.3	0.013081	2.5
4.4	710.0	8.2	0.011580	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 17 QPSK, (CH 23790 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	710.0	9.9	0.013940	2.5
Extreme (50C)	710.0	9.3	0.013144	2.5
Extreme (40C)	710.0	8.1	0.011436	2.5
Extreme (30C)	710.0	8.9	0.012509	2.5
Extreme (10C)	710.0	8.0	0.011251	2.5
Extreme (0C)	710.0	8.2	0.011531	2.5
Extreme (-10C)	710.0	9.8	0.013842	2.5
Extreme (-20C)	710.0	9.4	0.013189	2.5
Extreme (-30C)	710.0	8.2	0.011521	2.5

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

11. Peak-to-Average Ratio

11.1 Description of the PAR Measurement

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

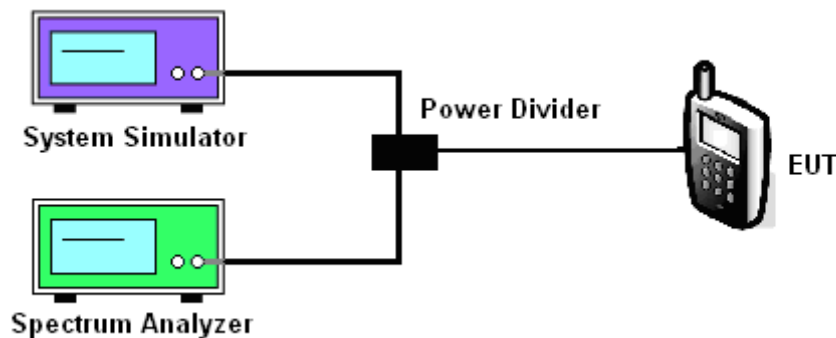
11.2 Measuring Instruments

See list of measuring instruments of this test report.

11.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. For GSM/EGPRS operating modes:
 - a. Set the RBW = 1MHz, VBW = 1MHz, Peak detector in spectrum analyzer.
 - b. Set EUT in maximum power output, and triggered the burst signal.
 - c. Measured respectively the Peak level and Mean level, and the deviation was recorded as Peak to Average Ratio.
4. For UMTS operating modes:
 - a. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
 - b. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.

11.4 Test Setup



MODES TESTED

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

Test data reference attachment.

----END OF REPORT----