

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

FCC ID: O55240123

Product: 4G Fixed phone

Trade Mark: LOGIC, ISWAG, UNONU

Model Number: FIXO 240L

Family Model: HEAT 240L

Report No.: STR230201002006E

Issue Date: Mar 01, 2023

Prepared for

SWAGTEK

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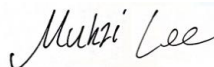
TEST RESULT CERTIFICATION	
Applicant's name	SWAGTEK
Address	10205 NW 19th Street STE101 Miami, FL 33172,United States
Manufacturer's Name	SWAGTEK
Address	10205 NW 19th Street STE101 Miami, FL 33172,United States
Product description	
Product name	4G Fixed phone
Trade Mark	LOGIC, ISWAG, UNONU
Model name	FIXO 240L
Family Model	HEAT 240L
Test Sample Number	T230201002R002
Standards	FCC CFR 47 Part 22H, Part 24E, Part 27
Test procedure	ANSI C63.26:2015 ANSI/TIA-603-E-2016

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

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Date of Test	
Date (s) of performance of tests	Feb 01, 2023 ~ Mar 01, 2023
Date of Issue	Mar 01, 2023
Test Result	Pass

Testing Engineer :



(Mukzi Lee)

Authorized Signatory :



(Alex Li)

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1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	4G Fixed phone
Trade Mark	LOGIC, ISWAG, UNONU
Model Name	FIXO 240L
Family Model	HEAT 240L
Model Difference	All the model are the same circuit and RF module,except the model name.
FCC ID:	O55240123
Frequency Bands:	U.S. Bands: <input checked="" type="checkbox"/> LTE FDD Band 2, 4, 7 LTE TDD Band 38, 42
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 7 Uplink: 2500MHz-2570MHz, Downlink: 2620MHz-2690MHz; LTE TDD Band 38 Uplink& Downlink: 2570MHz-2620MHz, LTE TDD Band 42 Uplink& Downlink: 3450MHz-3550MHz,
Type of Modulation:	QPSK/16QAM
Power Class	Class 3
SIM CARD	SIM 1 and SIM 2 is a chipset unit and tested as a single chipset. The SIM 1 is chosen for test.
Antenna:	PIFA Antenna
Antenna gain:	Band 2: 0.52 dBi; Band 4: 0.61 dBi; Band 7: 0.54 dBi; Band 38: 0.54 dBi; Band 42: 0.65 dBi;
Adapter:	Model: FIXO 240L Input: AC 100-240V~50/60Hz 0.15A Output: DC 5.0V---500mA
Battery:	DC 3.7V, 1400mAh, 5.18Wh
Power supply:	DC 3.7V from battery or DC 5V from adapter
Extreme Vol. Limits:	DC 3.15V to DC 4.26V (Nominal DC 3.7V) (Note 1)
HW Version	MM6223-MB-V1.0
SW Version	LOGIC_FIXO_240L
** Note1: The High Voltage 4.26V and Low Voltage 3.15V 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: O55240123** 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	± 1.38 dB
3	RF power, conducted	± 0.16 dB
4	Spurious emissions, conducted	± 0.21 dB
5	All emissions, radiated(<1G)	± 4.68 dB
6	All emissions, radiated(>1G)	± 4.89 dB
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 2/4/7/38/42

The RB Size was selected to measure for peak or average ERP and EIRP, which was based on the conducted power verification baseline data.

For the fundamental investigation of radiated emissions, the EUT is investigated for vertical and horizontal antenna orientations and X Y and Z orientations of the EUT alone. After the investigations the worst case was determined to be at X orientation for all LTE bands.

1.6 SUMMARY OF TEST RESULTS

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

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

Remark:

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

2. SYSTEM TEST CONFIGURATION

2.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT EXERCISE

The Transmitter was operated in the maximum output power mode through Communication Tester. The TX frequency was fixed which was for the purpose of the measurements.

2.3 CONFIGURATION OF EUT SYSTEM

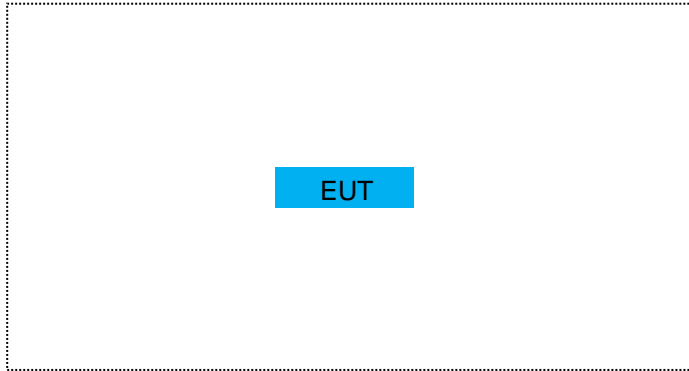
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	4G Fixed phone	FIXO 240L	FCC ID: O55240123	EUT

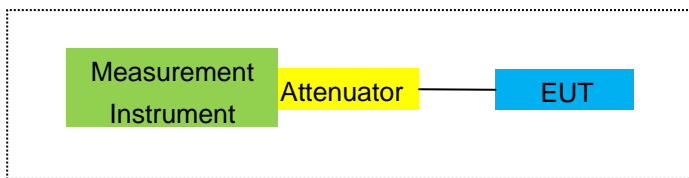
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

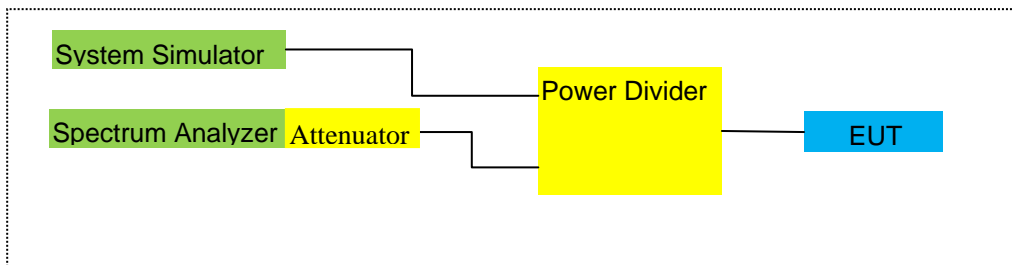
For Radiated Test Cases



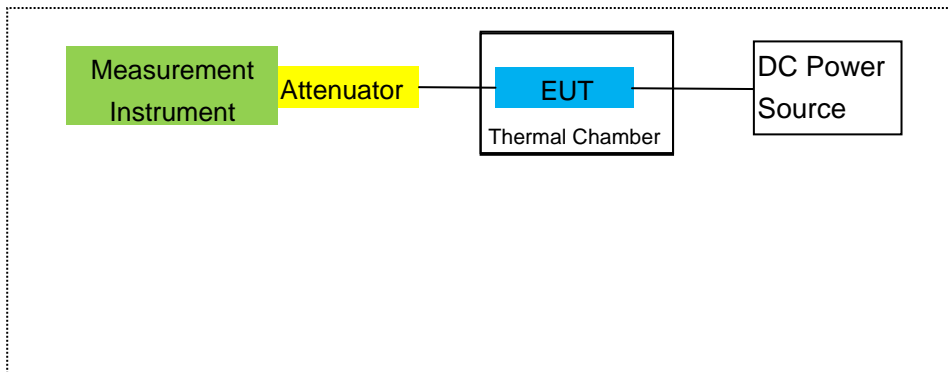
For Conducted Output Power



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



For Frequency Stability



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

3.TEST AND MEASUREMENT EQUIPMENT

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

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	MXA Signal Analyzer	Agilent	N9020A	MY49100060	2022.06.16	2023.06.17	1 year
2	Test Receiver	R&S	ESPI	101318	2022.04.06	2023.04.05	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2022.03.30	2023.03.29	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2020.05.11	2023.05.10	3 year
5	Horn Antenna	EM	EM-AH-10180	2011071402	2022.03.31	2023.03.30	1 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2022.11.07	2023.11.06	1 year
7	Amplifier	EM	EM-30180	060538	2022.06.17	2023.06.16	1 year
8	Loop Antenna	ARA	PLA-1030/B	1029	2022.04.06	2023.04.05	1 year
9	Power Meter	R&S	NRVS	100696	2022.06.17	2023.06.16	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2022.04.06	2023.04.05	1 year
11	Test Cable	N/A	R-01	N/A	2022.06.17	2025.06.16	3 year
12	Test Cable	N/A	R-02	N/A	2022.06.17	2025.06.16	3 year
13	Test Cable	N/A	R-03	N/A	2022.06.17	2025.06.16	3 year
14	Test Receiver	R&S	ESCI	101160	2022.04.06	2023.04.05	1 year
15	LISN	R&S	ENV216	101313	2022.04.06	2023.04.05	1 year
16	LISN	EMCO	3816/2	00042990	2022.04.06	2023.04.05	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2022.04.06	2023.04.05	1 year
18	Passive Voltage Probe	R&S	ESH2-Z3	100196	2022.04.06	2023.04.05	1 year
19	Test Cable	N/A	C01	N/A	2020.05.11	2023.05.10	3 year
20	Test Cable	N/A	C02	N/A	2020.05.11	2023.05.10	3 year
21	Test Cable	N/A	C03	N/A	2020.05.11	2023.05.10	3 year
22	Attenuator	MCE	24-10-34	BN9258	2022.04.01	2023.03.31	1 year
23	Spectrum Analyzer	agilent	e4440a	us44300399	2022.04.01	2023.03.31	1 year
24	test receiver	R&S	ESCI	a0304218	2022.04.06	2023.04.05	1 year
25	Communication Tester	R&S	CMU200	A0304247	2022.06.16	2023.06.15	1 year

26	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2022.04.06	2023.04.05	1 year
27	DC Power Source	N/A	PS-6005D	2017040292 3	2020.05.11	2023.05.10	3 year
28	MXG Vector Signal Generator	Agilent	N5182A	MY47070317	2022.06.16	2023.06.15	1 year
29	Communication Tester	R&S	CMW500	148500	2022.06.16	2023.06.15	1 year

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

4. OUTPUT POWER

4.1 OUTPUT POWER MEASUREMENT

LTE Measurement Procedure:

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

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

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

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

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

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

Network Signalling value	Requirements (sub-clause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	NA
NS_03	6.6.2.2.1	2, 4, 10, 23, 25, 35, 36	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.2	41	5	>6	≤ 1
			10, 15, 20	See Table 6.2.4-4	
NS_05	6.6.3.3.1	1	10, 15, 20	≥ 50	≤ 1
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.6-1	n/a
NS_07	6.6.2.2.3	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 2/4/7/38/42

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 Band 2/4/7/38/42

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 $43 + \log_{10}(P[\text{Watts}])$, 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 Band 2/4/7/38/42

7.1 MEASUREMENT METHOD

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

Test data reference attachment.

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

8. RADIATED MEASUREMENT

8.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

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

LIMITS:

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

TEST PROCEDURE

ANSI/TIA-603-E Clause 2.2.17

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

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

MODES TESTED

LTE Band Band 2/4/7/38/42

RESULTS

Pass

8.2 LTE BAND 2

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result					Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP		
							Average (mW)		
1.4MHz Band QPSK	1/#Mid	1850.7	-2.16	3.76	28.24	22.32	170.608	Horizontal	Pass
		1880	-2.00	3.91	28.22	22.31	170.216	Horizontal	Pass
		1909.3	-1.91	3.93	28.20	22.36	172.187	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-2.05	3.77	28.23	22.41	174.181	Horizontal	Pass
		1880	-2.01	3.91	28.24	22.32	170.608	Horizontal	Pass
		1908.5	-2.03	3.94	28.25	22.28	169.044	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-2.14	3.77	28.31	22.40	173.780	Horizontal	Pass
		1880	-2.07	3.91	28.22	22.24	167.494	Horizontal	Pass
		1907.5	-1.94	3.94	28.20	22.32	170.608	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-2.23	3.79	28.33	22.31	170.216	Horizontal	Pass
		1880	-1.87	3.95	28.22	22.40	173.780	Horizontal	Pass
		1905	-1.84	3.97	28.19	22.38	172.982	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-2.21	3.79	28.34	22.34	171.396	Horizontal	Pass
		1880	-1.96	3.95	28.22	22.31	170.216	Horizontal	Pass
		1902.5	-1.89	3.97	28.18	22.32	170.608	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-2.27	3.81	28.35	22.27	168.655	Horizontal	Pass
		1880	-1.95	3.96	28.22	22.31	170.216	Horizontal	Pass
		1900	-1.87	4.00	28.16	22.29	169.434	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-2.16	3.76	28.24	22.32	170.608	Vertical	Pass
		1880	-1.93	3.91	28.22	22.38	172.982	Vertical	Pass
		1909.3	-1.92	3.93	28.20	22.35	171.791	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-2.14	3.77	28.23	22.32	170.608	Vertical	Pass
		1880	-2.04	3.91	28.24	22.29	169.434	Vertical	Pass
		1908.5	-1.90	3.94	28.25	22.41	174.181	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-2.15	3.77	28.31	22.39	173.380	Vertical	Pass
		1880	-2.00	3.91	28.22	22.31	170.216	Vertical	Pass
		1907.5	-1.89	3.94	28.20	22.37	172.584	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1855	-2.20	3.79	28.33	22.34	171.396	Vertical	Pass
		1880	-1.94	3.95	28.22	22.33	171.002	Vertical	Pass
		1905	-1.86	3.97	28.19	22.36	172.187	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1857.5	-2.29	3.79	28.34	22.26	168.267	Vertical	Pass
		1880	-1.95	3.95	28.22	22.32	170.608	Vertical	Pass
		1902.5	-1.86	3.97	28.18	22.35	171.791	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1860	-2.09	3.81	28.35	22.45	175.792	Vertical	Pass
		1880	-1.81	3.96	28.22	22.45	175.792	Vertical	Pass
		1900	-1.74	4.00	28.16	22.42	174.582	Vertical	Pass

Radiated Power (EIRP) for Band 2										
Mode	RB/RB SIZE	Frequency	Result						Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP			
							Average (mW)			
1.4MHz Band 16 QAM	1/#Mid	1850.7	-2.98	3.76	28.24	21.50	141.254	Horizontal	Pass	
		1880	-2.72	3.91	28.22	21.59	144.212	Horizontal	Pass	
		1909.3	-2.68	3.93	28.20	21.59	144.212	Horizontal	Pass	
3.0MHz Band 16 QAM	1/#Mid	1851.5	-2.85	3.77	28.23	21.61	144.877	Horizontal	Pass	
		1880	-2.77	3.91	28.24	21.56	143.219	Horizontal	Pass	
		1908.5	-2.74	3.94	28.25	21.57	143.549	Horizontal	Pass	
5.0MHz Band 16 QAM	1/#Mid	1852.5	-2.96	3.77	28.31	21.58	143.880	Horizontal	Pass	
		1880	-2.74	3.91	28.22	21.57	143.549	Horizontal	Pass	
		1907.5	-2.65	3.94	28.20	21.61	144.877	Horizontal	Pass	
10.0MHz Band 16 QAM	1/#Mid	1855	-2.98	3.79	28.33	21.56	143.219	Horizontal	Pass	
		1880	-2.73	3.95	28.22	21.54	142.561	Horizontal	Pass	
		1905	-2.63	3.97	28.19	21.59	144.212	Horizontal	Pass	
15.0MHz Band 16 QAM	1/#Mid	1857.5	-3.05	3.79	28.34	21.50	141.254	Horizontal	Pass	
		1880	-2.79	3.95	28.22	21.48	140.605	Horizontal	Pass	
		1902.5	-2.68	3.97	28.18	21.53	142.233	Horizontal	Pass	
20.0MHz Band 16 QAM	1/#Mid	1860	-2.93	3.81	28.35	21.61	144.877	Horizontal	Pass	
		1880	-2.67	3.96	28.22	21.59	144.212	Horizontal	Pass	
		1900	-2.71	4.00	28.16	21.45	139.637	Horizontal	Pass	
1.4MHz Band 16 QAM	1/#Mid	1850.7	-2.90	3.76	28.24	21.58	143.880	Vertical	Pass	
		1880	-2.75	3.91	28.22	21.56	143.219	Vertical	Pass	
		1909.3	-2.80	3.93	28.20	21.47	140.281	Vertical	Pass	
3.0MHz Band 16 QAM	1/#Mid	1851.5	-2.95	3.77	28.23	21.51	141.579	Vertical	Pass	
		1880	-2.74	3.91	28.24	21.59	144.212	Vertical	Pass	
		1908.5	-2.83	3.94	28.25	21.48	140.605	Vertical	Pass	
5.0MHz	1/#Mid	1852.5	-3.06	3.77	28.31	21.48	140.605	Vertical	Pass	

Band 16		1880	-2.85	3.91	28.22	21.46	139.959	Vertical	Pass
QAM		1907.5	-2.82	3.94	28.20	21.44	139.316	Vertical	Pass
10.0MHz	1/#Mid	1855	-3.02	3.79	28.33	21.52	141.906	Vertical	Pass
Band 16		1880	-2.80	3.95	28.22	21.47	140.281	Vertical	Pass
QAM		1905	-2.74	3.97	28.19	21.48	140.605	Vertical	Pass
15.0MHz	1/#Mid	1857.5	-3.09	3.79	28.34	21.46	139.959	Vertical	Pass
Band 16		1880	-2.81	3.95	28.22	21.46	139.959	Vertical	Pass
QAM		1902.5	-2.69	3.97	28.18	21.52	141.906	Vertical	Pass
20.0MHz	1/#Mid	1860	-2.90	3.81	28.35	21.64	145.881	Vertical	Pass
Band 16		1880	-2.62	3.96	28.22	21.64	145.881	Vertical	Pass
QAM		1900	-2.52	4.00	28.16	21.64	145.881	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.3 LTE BAND 4

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
						Average (dBm)	Average (mW)		
1.4MHz Band QPSK	1/#Mid	1710.7	-2.60	3.12	27.58	21.86	153.462	Horizontal	Pass
		1732.5	-2.46	3.27	27.61	21.88	154.170	Horizontal	Pass
		1754.3	-2.50	3.29	27.63	21.84	152.757	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-2.66	3.13	27.61	21.82	152.055	Horizontal	Pass
		1732.5	-2.50	3.27	27.61	21.84	152.757	Horizontal	Pass
		1753.5	-2.52	3.30	27.62	21.80	151.356	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-2.60	3.13	27.63	21.90	154.882	Horizontal	Pass
		1732.5	-2.54	3.27	27.61	21.80	151.356	Horizontal	Pass
		1752.5	-2.54	3.30	27.60	21.76	149.968	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-2.70	3.15	27.64	21.79	151.008	Horizontal	Pass
		1732.5	-2.40	3.31	27.61	21.90	154.882	Horizontal	Pass
		1750	-2.45	3.33	27.59	21.81	151.705	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-2.66	3.15	27.65	21.84	152.757	Horizontal	Pass
		1732.5	-2.47	3.31	27.61	21.83	152.405	Horizontal	Pass
		1747.5	-2.48	3.33	27.57	21.76	149.968	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-2.75	3.17	27.66	21.74	149.279	Horizontal	Pass
		1732.5	-2.53	3.32	27.61	21.76	149.968	Horizontal	Pass
		1745	-2.32	3.36	27.56	21.88	154.170	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-2.61	3.12	27.58	21.85	153.109	Vertical	Pass
		1732.5	-2.55	3.27	27.61	21.79	151.008	Vertical	Pass
		1754.3	-2.45	3.29	27.63	21.89	154.525	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-2.72	3.13	27.61	21.76	149.968	Vertical	Pass
		1732.5	-2.58	3.27	27.61	21.76	149.968	Vertical	Pass
		1753.5	-2.55	3.30	27.62	21.77	150.314	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-2.77	3.13	27.63	21.73	148.936	Vertical	Pass
		1732.5	-2.44	3.27	27.61	21.90	154.882	Vertical	Pass
		1752.5	-2.48	3.30	27.60	21.82	152.055	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-2.70	3.15	27.64	21.79	151.008	Vertical	Pass
		1732.5	-2.39	3.31	27.61	21.91	155.239	Vertical	Pass
		1750	-2.48	3.33	27.59	21.78	150.661	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1717.5	-2.72	3.15	27.65	21.78	150.661	Vertical	Pass
		1732.5	-2.46	3.31	27.61	21.84	152.757	Vertical	Pass
		1747.5	-2.39	3.33	27.57	21.85	153.109	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1720	-2.55	3.17	27.66	21.94	156.315	Vertical	Pass
		1732.5	-2.38	3.32	27.61	21.91	155.239	Vertical	Pass
		1745	-2.25	3.36	27.56	21.95	156.675	Vertical	Pass

Radiated Power (EIRP) for Band 4										
Mode	RB/RB SIZE	Frequency	Result						Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP	Max. EIRP			
						Average	Average			
						(dBm)	(mW)			
1.4MHz Band 16 QAM	1/#Mid	1710.7	-3.58	3.12	27.58	20.88	122.462	Horizontal	Pass	
		1732.5	-3.41	3.27	27.61	20.93	123.880	Horizontal	Pass	
		1754.3	-3.41	3.29	27.63	20.93	123.880	Horizontal	Pass	
3.0MHz Band 16 QAM	1/#Mid	1711.5	-3.60	3.13	27.61	20.88	122.462	Horizontal	Pass	
		1732.5	-3.42	3.27	27.61	20.92	123.595	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	-3.56	3.13	27.63	20.94	124.165	Horizontal	Pass	
		1732.5	-3.41	3.27	27.61	20.93	123.880	Horizontal	Pass	
		1752.5	-3.34	3.30	27.60	20.96	124.738	Horizontal	Pass	
10.0MHz Band 16 QAM	1/#Mid	1715	-3.50	3.15	27.64	20.99	125.603	Horizontal	Pass	
		1732.5	-3.36	3.31	27.61	20.94	124.165	Horizontal	Pass	
		1750	-3.31	3.33	27.59	20.95	124.451	Horizontal	Pass	
15.0MHz Band 16 QAM	1/#Mid	1717.5	-3.61	3.15	27.65	20.89	122.744	Horizontal	Pass	
		1732.5	-3.39	3.31	27.61	20.91	123.310	Horizontal	Pass	
		1747.5	-3.37	3.33	27.57	20.87	122.180	Horizontal	Pass	
20.0MHz Band 16 QAM	1/#Mid	1720	-3.56	3.17	27.66	20.93	123.880	Horizontal	Pass	
		1732.5	-3.40	3.32	27.61	20.89	122.744	Horizontal	Pass	
		1745	-3.34	3.36	27.56	20.86	121.899	Horizontal	Pass	
1.4MHz Band 16 QAM	1/#Mid	1710.7	-3.49	3.12	27.58	20.97	125.026	Vertical	Pass	
		1732.5	-3.37	3.27	27.61	20.97	125.026	Vertical	Pass	
		1754.3	-3.35	3.29	27.63	20.99	125.603	Vertical	Pass	
3.0MHz Band 16 QAM	1/#Mid	1711.5	-3.48	3.13	27.61	21.00	125.893	Vertical	Pass	
		1732.5	-3.49	3.27	27.61	20.85	121.619	Vertical	Pass	
		1753.5	-3.45	3.30	27.62	20.87	122.180	Vertical	Pass	
5.0MHz	1/#Mid	1712.5	-3.62	3.13	27.63	20.88	122.462	Vertical	Pass	

Band 16		1732.5	-3.45	3.27	27.61	20.89	122.744	Vertical	Pass
QAM		1752.5	-3.33	3.30	27.60	20.97	125.026	Vertical	Pass
10.0MHz	1/#Mid	1715	-3.53	3.15	27.64	20.96	124.738	Vertical	Pass
Band 16		1732.5	-3.44	3.31	27.61	20.86	121.899	Vertical	Pass
QAM		1750	-3.39	3.33	27.59	20.87	122.180	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-3.56	3.15	27.65	20.94	124.165	Vertical	Pass
Band 16		1732.5	-3.43	3.31	27.61	20.87	122.180	Vertical	Pass
QAM		1747.5	-3.24	3.33	27.57	21.00	125.893	Vertical	Pass
20.0MHz	1/#Mid	1720	-3.44	3.17	27.66	21.05	127.350	Vertical	Pass
Band 16		1732.5	-3.27	3.32	27.61	21.02	126.474	Vertical	Pass
QAM		1745	-3.16	3.36	27.56	21.04	127.057	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.4 LTE BAND 7

Radiated Power (EIRP) for Band 7									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
						(dBm)	(mW)		
5.0MHz Band QPSK	1/#Mid	2502.5	-1.92	4.54	27.75	21.29	134.586	Horizontal	Pass
		2535	-1.74	4.69	27.72	21.29	134.586	Horizontal	Pass
		2567.5	-1.76	4.71	27.71	21.24	133.045	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2505	-1.97	4.55	27.76	21.24	133.045	Horizontal	Pass
		2535	-1.82	4.69	27.72	21.21	132.130	Horizontal	Pass
		2565	-1.64	4.72	27.70	21.34	136.144	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-1.92	4.55	27.77	21.30	134.896	Horizontal	Pass
		2535	-1.86	4.69	27.72	21.17	130.918	Horizontal	Pass
		2562.5	-1.68	4.72	27.69	21.29	134.586	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2510	-1.93	4.57	27.78	21.28	134.276	Horizontal	Pass
		2535	-1.75	4.73	27.72	21.24	133.045	Horizontal	Pass
		2560	-1.73	4.75	27.68	21.20	131.826	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	-1.92	4.54	27.75	21.29	134.586	Vertical	Pass
		2535	-1.80	4.69	27.72	21.23	132.739	Vertical	Pass
		2567.5	-1.81	4.71	27.71	21.19	131.522	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2505	-2.00	4.55	27.76	21.21	132.130	Vertical	Pass
		2535	-1.85	4.69	27.72	21.18	131.220	Vertical	Pass
		2565	-1.77	4.72	27.70	21.21	132.130	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-2.00	4.55	27.77	21.22	132.434	Vertical	Pass
		2535	-1.71	4.69	27.72	21.32	135.519	Vertical	Pass
		2562.5	-1.80	4.72	27.69	21.17	130.918	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2510	-1.86	4.57	27.78	21.35	136.458	Vertical	Pass
		2535	-1.62	4.73	27.72	21.37	137.088	Vertical	Pass
		2560	-1.56	4.75	27.68	21.37	137.088	Vertical	Pass

Radiated Power (EIRP) for Band 7									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss	Antenna Factor	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
						(dBm)	(mW)		
5.0MHz Band 16 QAM	1/#Mid	2502.5	-2.34	4.54	27.75	20.87	122.180	Horizontal	Pass
		2535	-2.22	4.69	27.72	20.81	120.504	Horizontal	Pass
		2567.5	-2.14	4.71	27.71	20.86	121.899	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-2.39	4.55	27.76	20.82	120.781	Horizontal	Pass
		2535	-2.21	4.69	27.72	20.82	120.781	Horizontal	Pass
		2565	-2.07	4.72	27.70	20.91	123.310	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-2.36	4.55	27.77	20.86	121.899	Horizontal	Pass
		2535	-2.21	4.69	27.72	20.82	120.781	Horizontal	Pass
		2562.5	-2.09	4.72	27.69	20.88	122.462	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-2.36	4.57	27.78	20.85	121.619	Horizontal	Pass
		2535	-2.11	4.73	27.72	20.88	122.462	Horizontal	Pass
		2560	-1.99	4.75	27.68	20.94	124.165	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	-2.35	4.54	27.75	20.86	121.899	Vertical	Pass
		2535	-2.13	4.69	27.72	20.90	123.027	Vertical	Pass
		2567.5	-2.16	4.71	27.71	20.84	121.339	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-2.30	4.55	27.76	20.91	123.310	Vertical	Pass
		2535	-2.11	4.69	27.72	20.92	123.595	Vertical	Pass
		2565	-2.19	4.72	27.70	20.79	119.950	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-2.30	4.55	27.77	20.92	123.595	Vertical	Pass
		2535	-2.12	4.69	27.72	20.91	123.310	Vertical	Pass
		2562.5	-2.14	4.72	27.69	20.83	121.060	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-2.26	4.57	27.78	20.95	124.451	Vertical	Pass
		2535	-2.02	4.73	27.72	20.97	125.026	Vertical	Pass
		2560	-1.95	4.75	27.68	20.98	125.314	Vertical	Pass

Note:

SG Level= Signal generator output

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

8.5 LTE BAND 38

Radiated Power (EIRP) for Band 38									
Mode	RB/RB SIZE	Frequency	Result					Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss (dBm)	Factor (dB)	Max. EIRP	Max. EIRP		
			(dBm)			Average	Average		
						(dBm)	(mW)		
5.0MHz Band QPSK	1/#Mid	2572.5	-2.51	4.44	27.75	20.80	120.226	Horizontal	Pass
		2595	-2.16	4.67	27.72	20.89	122.744	Horizontal	Pass
		2617.5	-2.29	4.62	27.71	20.80	120.226	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2575	-2.35	4.51	27.76	20.90	123.027	Horizontal	Pass
		2595	-2.27	4.60	27.72	20.85	121.619	Horizontal	Pass
		2615	-2.20	4.70	27.70	20.80	120.226	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2577.5	-2.47	4.47	27.77	20.83	121.060	Horizontal	Pass
		2595	-2.13	4.65	27.72	20.94	124.165	Horizontal	Pass
		2612.5	-2.26	4.66	27.69	20.77	119.399	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2580	-2.49	4.50	27.78	20.79	119.950	Horizontal	Pass
		2595	-2.13	4.66	27.72	20.93	123.880	Horizontal	Pass
		2610	-2.16	4.68	27.68	20.84	121.339	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2572.5	-2.47	4.48	27.75	20.80	120.226	Vertical	Pass
		2595	-2.28	4.62	27.72	20.82	120.781	Vertical	Pass
		2617.5	-2.28	4.63	27.71	20.80	120.226	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2575	-2.52	4.46	27.76	20.78	119.674	Vertical	Pass
		2595	-2.14	4.65	27.72	20.93	123.880	Vertical	Pass
		2615	-2.09	4.69	27.70	20.92	123.595	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2577.5	-2.41	4.47	27.77	20.89	122.744	Vertical	Pass
		2595	-2.26	4.65	27.72	20.81	120.504	Vertical	Pass
		2612.5	-2.22	4.66	27.69	20.81	120.504	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2580	-2.29	4.53	27.78	20.96	124.738	Vertical	Pass
		2595	-2.10	4.66	27.72	20.96	124.738	Vertical	Pass
		2610	-2.03	4.68	27.68	20.97	125.026	Vertical	Pass

Radiated Power (EIRP) for Band 38									
Mode	RB/RB SIZE	Frequency	Result					Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss (dBm)	Factor (dB)	Max. EIRP	Max. EIRP		
			(dBm)			Average (dBm)	Average (mW)		
5.0MHz Band 16 QAM	1/#Mid	2572.5	-3.23	4.44	27.75	20.08	101.859	Horizontal	Pass
		2595	-2.92	4.67	27.72	20.13	103.039	Horizontal	Pass
		2617.5	-3.09	4.62	27.71	20.00	100.000	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2575	-3.19	4.51	27.76	20.06	101.391	Horizontal	Pass
		2595	-2.99	4.60	27.72	20.13	103.039	Horizontal	Pass
		2615	-2.88	4.70	27.70	20.12	102.802	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2577.5	-3.18	4.47	27.77	20.12	102.802	Horizontal	Pass
		2595	-2.96	4.65	27.72	20.11	102.565	Horizontal	Pass
		2612.5	-3.00	4.66	27.69	20.03	100.693	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2580	-3.25	4.50	27.78	20.03	100.693	Horizontal	Pass
		2595	-3.04	4.66	27.72	20.02	100.462	Horizontal	Pass
		2610	-2.94	4.68	27.68	20.06	101.391	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2572.5	-3.16	4.48	27.75	20.11	102.565	Vertical	Pass
		2595	-2.98	4.62	27.72	20.12	102.802	Vertical	Pass
		2617.5	-2.95	4.63	27.71	20.13	103.039	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2575	-3.17	4.46	27.76	20.13	103.039	Vertical	Pass
		2595	-2.94	4.65	27.72	20.13	103.039	Vertical	Pass
		2615	-2.90	4.69	27.70	20.11	102.565	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2577.5	-3.34	4.47	27.77	19.96	99.083	Vertical	Pass
		2595	-2.95	4.65	27.72	20.12	102.802	Vertical	Pass
		2612.5	-2.92	4.66	27.69	20.11	102.565	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2580	-3.07	4.53	27.78	20.18	104.232	Vertical	Pass
		2595	-2.92	4.66	27.72	20.14	103.276	Vertical	Pass
		2610	-2.86	4.68	27.68	20.14	103.276	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.6 LTE BAND 42

Radiated Power (EIRP) for Band 42										
Mode	RB/RB SIZE	Frequency	Result						Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss (dBm)	Factor (dB)	Max. EIRP	Max. EIRP			
			(dBm)			Average	Average			
						(dBm)	(mW)			
5.0MHz Band QPSK	1/#Mid	3452.5	-2.30	5.24	27.89	20.35	108.393	Horizontal	Pass	
		3500	-2.25	5.39	27.86	20.22	105.196	Horizontal	Pass	
		3547.5	-2.16	5.41	27.85	20.28	106.660	Horizontal	Pass	
10.0MHz Band QPSK	1/#Mid	3455	-2.33	5.25	27.90	20.32	107.647	Horizontal	Pass	
		3500	-2.21	5.39	27.86	20.26	106.170	Horizontal	Pass	
		3545	-2.09	5.42	27.84	20.33	107.895	Horizontal	Pass	
15.0MHz Band QPSK	1/#Mid	3457.5	-2.48	5.25	27.91	20.18	104.232	Horizontal	Pass	
		3500	-2.18	5.39	27.86	20.29	106.905	Horizontal	Pass	
		3542.5	-2.16	5.42	27.83	20.25	105.925	Horizontal	Pass	
20.0MHz Band QPSK	1/#Mid	3460	-2.41	5.27	27.92	20.24	105.682	Horizontal	Pass	
		3500	-2.11	5.43	27.86	20.32	107.647	Horizontal	Pass	
		3540	-2.11	5.45	27.82	20.26	106.170	Horizontal	Pass	
5.0MHz Band QPSK	1/#Mid	3452.5	-2.36	5.24	27.89	20.29	106.905	Vertical	Pass	
		3500	-2.24	5.39	27.86	20.23	105.439	Vertical	Pass	
		3547.5	-2.22	5.41	27.85	20.22	105.196	Vertical	Pass	
10.0MHz Band QPSK	1/#Mid	3455	-2.39	5.25	27.90	20.26	106.170	Vertical	Pass	
		3500	-2.25	5.39	27.86	20.22	105.196	Vertical	Pass	
		3545	-2.14	5.42	27.84	20.28	106.660	Vertical	Pass	
15.0MHz Band QPSK	1/#Mid	3457.5	-2.36	5.25	27.91	20.30	107.152	Vertical	Pass	
		3500	-2.20	5.39	27.86	20.27	106.414	Vertical	Pass	
		3542.5	-2.11	5.42	27.83	20.30	107.152	Vertical	Pass	
20.0MHz Band QPSK	1/#Mid	3460	-2.29	5.27	27.92	20.36	108.643	Vertical	Pass	
		3500	-2.07	5.43	27.86	20.36	108.643	Vertical	Pass	
		3540	-1.98	5.45	27.82	20.39	109.396	Vertical	Pass	

Radiated Power (EIRP) for Band 42										
Mode	RB/RB SIZE	Frequency	Result						Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss (dBm)	Factor (dB)	Max. EIRP	Max. EIRP			
			(dBm)			Average	Average			
						(dBm)	(mW)			
5.0MHz Band 16 QAM	1/#Mid	3452.5	-2.68	5.24	27.89	19.97	99.312	Horizontal	Pass	
		3500	-2.48	5.39	27.86	19.99	99.770	Horizontal	Pass	
		3547.5	-2.50	5.41	27.85	19.94	98.628	Horizontal	Pass	
10.0MHz Band 16 QAM	1/#Mid	3455	-2.66	5.25	27.90	19.99	99.770	Horizontal	Pass	
		3500	-2.55	5.39	27.86	19.92	98.175	Horizontal	Pass	
		3545	-2.45	5.42	27.84	19.97	99.312	Horizontal	Pass	
15.0MHz Band 16 QAM	1/#Mid	3457.5	-2.63	5.25	27.91	20.03	100.693	Horizontal	Pass	
		3500	-2.58	5.39	27.86	19.89	97.499	Horizontal	Pass	
		3542.5	-2.36	5.42	27.83	20.05	101.158	Horizontal	Pass	
20.0MHz Band 16 QAM	1/#Mid	3460	-2.61	5.27	27.92	20.04	100.925	Horizontal	Pass	
		3500	-2.53	5.43	27.86	19.90	97.724	Horizontal	Pass	
		3540	-2.41	5.45	27.82	19.96	99.083	Horizontal	Pass	
5.0MHz Band 16 QAM	1/#Mid	3452.5	-2.66	5.24	27.89	19.99	99.770	Vertical	Pass	
		3500	-2.44	5.39	27.86	20.03	100.693	Vertical	Pass	
		3547.5	-2.45	5.41	27.85	19.99	99.770	Vertical	Pass	
10.0MHz Band 16 QAM	1/#Mid	3455	-2.65	5.25	27.90	20.00	100.000	Vertical	Pass	
		3500	-2.48	5.39	27.86	19.99	99.770	Vertical	Pass	
		3545	-2.50	5.42	27.84	19.92	98.175	Vertical	Pass	
15.0MHz Band 16 QAM	1/#Mid	3457.5	-2.65	5.25	27.91	20.01	100.231	Vertical	Pass	
		3500	-2.49	5.39	27.86	19.98	99.541	Vertical	Pass	
		3542.5	-2.52	5.42	27.83	19.89	97.499	Vertical	Pass	
20.0MHz Band 16 QAM	1/#Mid	3460	-2.58	5.27	27.92	20.07	101.625	Vertical	Pass	
		3500	-2.35	5.43	27.86	20.08	101.859	Vertical	Pass	
		3540	-2.31	5.45	27.82	20.06	101.391	Vertical	Pass	

Note:

SG Level= Signal generator output

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

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

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 2/4/7/38/42

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	-51.14	4.04	33.51	-21.67	-13	-8.67	Horizontal
3701.4	-49.04	4.04	33.51	-19.57	-13	-6.57	Vertical
5552.1	-47.90	5.24	35.84	-17.30	-13	-4.30	Vertical
5552.1	-52.57	5.24	35.84	-21.97	-13	-8.97	Horizontal
196.8	-43.41	1.43	16.02	-28.82	-13	-15.82	Vertical
446.7	-34.11	1.30	17.99	-17.42	-13	-4.42	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-44.85	4.04	33.56	-15.33	-13	-2.33	Horizontal
3760.0	-53.91	4.04	33.56	-24.39	-13	-11.39	Vertical
5640.0	-44.12	5.24	35.91	-13.45	-13	-0.45	Vertical
5640.0	-51.29	5.24	35.91	-20.62	-13	-7.62	Horizontal
186.5	-37.13	1.62	16.97	-21.78	-13	-8.78	Vertical
424.4	-43.36	1.74	15.98	-29.13	-13	-16.13	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-45.08	4.04	34.00	-15.12	-13	-2.12	Horizontal
3818.6	-46.16	4.04	34.00	-16.20	-13	-3.20	Vertical
5727.9	-44.76	5.24	36.04	-13.96	-13	-0.96	Vertical
5727.9	-53.47	5.24	36.04	-22.67	-13	-9.67	Horizontal
190.6	-41.44	1.42	17.29	-25.57	-13	-12.57	Vertical
389.3	-43.28	1.50	17.90	-26.87	-13	-13.87	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	-45.04	4.07	33.54	-15.57	-13	-2.57	Horizontal
3720.0	-46.70	4.07	33.54	-17.23	-13	-4.23	Vertical
5580.0	-44.26	5.28	35.86	-13.68	-13	-0.68	Vertical
5580.0	-50.86	5.28	35.86	-20.28	-13	-7.28	Horizontal
189.8	-37.24	1.58	16.89	-21.92	-13	-8.92	Vertical
325.6	-35.41	1.76	17.26	-19.91	-13	-6.91	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-46.71	4.04	33.56	-17.19	-13	-4.19	Horizontal
3760.0	-51.68	4.04	33.56	-22.16	-13	-9.16	Vertical
5640.0	-50.41	5.24	35.91	-19.74	-13	-6.74	Vertical
5640.0	-51.18	5.24	35.91	-20.51	-13	-7.51	Horizontal
195.1	-35.46	1.46	16.27	-20.65	-13	-7.65	Vertical
331.0	-44.84	1.59	15.15	-31.28	-13	-18.28	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-48.30	4.04	34.00	-18.34	-13	-5.34	Horizontal
3800.0	-45.83	4.04	34.00	-15.87	-13	-2.87	Vertical
5700.0	-53.65	5.24	36.04	-22.85	-13	-9.85	Vertical
5700.0	-53.02	5.24	36.04	-22.22	-13	-9.22	Horizontal
189.1	-44.80	1.36	17.39	-28.76	-13	-15.76	Vertical
349.8	-38.07	1.66	15.39	-24.34	-13	-11.34	Horizontal

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

. Margin = Spurious Emission Level - Limit

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

9.2 LTE BAND 4

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

Test Results for Low Channel 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-51.66	4.02	29.80	-25.88	-13	-12.88	Horizontal
3421.4	-46.55	4.02	29.80	-20.77	-13	-7.77	Vertical
5132.1	-48.61	5.24	35.84	-18.01	-13	-5.01	Vertical
5132.1	-49.38	5.24	35.84	-18.78	-13	-5.78	Horizontal
182.1	-38.31	1.68	16.04	-23.95	-13	-10.95	Vertical
306.4	-40.95	1.78	17.74	-24.99	-13	-11.99	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-48.21	4.03	30.00	-22.24	-13	-9.24	Horizontal
3465.0	-45.54	4.03	30.00	-19.57	-13	-6.57	Vertical
5197.5	-45.53	5.25	35.86	-14.92	-13	-1.92	Vertical
5197.5	-50.49	5.25	35.86	-19.88	-13	-6.88	Horizontal
187.5	-34.83	1.72	17.69	-18.86	-13	-5.86	Vertical
268.2	-41.84	1.62	16.02	-27.43	-13	-14.43	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-48.70	4.05	30.01	-22.74	-13	-9.74	Horizontal
3508.6	-47.88	4.05	30.01	-21.92	-13	-8.92	Vertical
5262.9	-52.84	5.26	35.86	-22.24	-13	-9.24	Vertical
5262.9	-49.89	5.26	35.86	-19.29	-13	-6.29	Horizontal
175.4	-34.64	1.80	16.69	-19.75	-13	-6.75	Vertical
301.0	-37.03	1.75	16.66	-22.13	-13	-9.13	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	-51.51	4.02	29.80	-25.73	-13	-12.73	Horizontal
3440.0	-50.68	4.02	29.80	-24.90	-13	-11.90	Vertical
5160.0	-44.45	5.24	35.84	-13.85	-13	-0.85	Vertical
5160.0	-53.54	5.24	35.84	-22.94	-13	-9.94	Horizontal
179.1	-36.93	1.57	17.26	-21.24	-13	-8.24	Vertical
442.9	-35.05	1.78	16.35	-20.48	-13	-7.48	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-49.43	4.03	30.00	-23.46	-13	-10.46	Horizontal
3465.0	-44.46	4.03	30.00	-18.49	-13	-5.49	Vertical
5197.5	-50.45	5.25	35.86	-19.84	-13	-6.84	Vertical
5197.5	-52.33	5.25	35.86	-21.72	-13	-8.72	Horizontal
187.8	-37.18	1.44	17.95	-20.67	-13	-7.67	Vertical
307.7	-44.58	1.65	16.09	-30.14	-13	-17.14	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-48.90	4.05	27.68	-25.27	-13	-12.27	Horizontal
3490.0	-45.08	4.05	27.68	-21.45	-13	-8.45	Vertical
5235.0	-44.16	5.26	35.86	-13.56	-13	-0.56	Vertical
5235.0	-52.95	5.26	35.86	-22.35	-13	-9.35	Horizontal
175.5	-38.05	1.61	16.85	-22.81	-13	-9.81	Vertical
339.7	-37.24	1.61	15.19	-23.66	-13	-10.66	Horizontal

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

Over Limit= : P_{Mea}(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 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	-59.49	5.23	35.81	-28.91	-25	-3.91	Horizontal
5005.0	-64.51	5.23	35.81	-33.93	-25	-8.93	Vertical
7507.5	-62.53	5.67	36.85	-31.35	-25	-6.35	Vertical
7507.5	-62.42	5.67	36.85	-31.24	-25	-6.24	Horizontal
189.0	-52.41	1.73	17.97	-36.17	-25	-11.17	Vertical
397.2	-54.79	1.38	15.11	-41.06	-25	-16.06	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-61.98	5.23	35.82	-31.39	-25	-6.39	Horizontal
5070.0	-61.05	5.23	35.82	-30.46	-25	-5.46	Vertical
7605.0	-63.17	5.67	36.85	-31.99	-25	-6.99	Vertical
7605.0	-59.57	5.67	36.85	-28.39	-25	-3.39	Horizontal
186.1	-47.32	1.77	16.17	-32.91	-25	-7.91	Vertical
445.3	-52.55	1.63	15.21	-38.97	-25	-13.97	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-61.81	5.24	35.83	-31.22	-25	-6.22	Horizontal
5135.0	-61.75	5.24	35.83	-31.16	-25	-6.16	Vertical
7702.5	-62.87	5.68	36.87	-31.68	-25	-6.68	Vertical
7702.5	-64.69	5.68	36.87	-33.50	-25	-8.50	Horizontal
198.8	-52.38	1.58	17.56	-36.40	-25	-11.40	Vertical
341.9	-51.76	1.45	16.58	-36.63	-25	-11.63	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	-61.73	5.23	35.82	-31.14	-25	-6.14	Horizontal
5020.0	-61.39	5.23	35.82	-30.80	-25	-5.80	Vertical
7530.0	-62.68	5.67	36.86	-31.49	-25	-6.49	Vertical
7530.0	-60.23	5.67	36.86	-29.04	-25	-4.04	Horizontal
203.0	-51.97	1.63	15.76	-37.84	-25	-12.84	Vertical
303.9	-52.16	1.71	15.44	-38.43	-25	-13.43	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-61.70	5.23	35.82	-31.11	-25	-6.11	Horizontal
5070.0	-62.41	5.23	35.82	-31.82	-25	-6.82	Vertical
7605.0	-62.25	5.67	36.85	-31.07	-25	-6.07	Vertical
7605.0	-59.24	5.67	36.85	-28.06	-25	-3.06	Horizontal
187.0	-54.17	1.79	16.84	-39.11	-25	-14.11	Vertical
299.7	-44.01	1.71	17.64	-28.08	-25	-3.08	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-64.93	5.24	35.83	-34.34	-25	-9.34	Horizontal
5120.0	-61.31	5.24	35.83	-30.72	-25	-5.72	Vertical
7680.0	-62.12	5.70	36.88	-30.94	-25	-5.94	Vertical
7680.0	-63.86	5.70	36.88	-32.68	-25	-7.68	Horizontal
210.4	-46.71	1.79	16.84	-31.65	-25	-6.65	Vertical
349.4	-44.11	1.71	17.64	-28.18	-25	-3.18	Horizontal

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

. Margin = Spurious Emission Level - Limit

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

9.4 LTE BAND 38

QPSK EIRP POWER FOR LTE BAND 38 (5MHZ BANDWIDTH)

Test Results for Low Channel 2572.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5145.0	-62.01	5.13	35.81	-31.33	-25	-6.33	Horizontal
5145.0	-61.79	5.13	35.81	-31.11	-25	-6.11	Vertical
7717.5	-62.46	5.42	36.85	-31.03	-25	-6.03	Vertical
7717.5	-62.39	5.42	36.85	-30.96	-25	-5.96	Horizontal
201.5	-44.91	1.56	17.97	-28.50	-25	-3.50	Vertical
330.4	-44.58	1.33	15.11	-30.80	-25	-5.80	Horizontal
Test Results For Mid Channel 2595MHz							
5190.0	-62.63	5.16	35.82	-31.97	-25	-6.97	Horizontal
5190.0	-60.62	5.16	35.82	-29.96	-25	-4.96	Vertical
7785.0	-59.26	5.53	36.85	-27.94	-25	-2.94	Vertical
7785.0	-59.08	5.53	36.85	-27.76	-25	-2.76	Horizontal
210.5	-52.74	1.77	16.17	-38.33	-25	-13.33	Vertical
381.9	-51.98	1.63	15.21	-38.40	-25	-13.40	Horizontal
Test Results for High Channel 2617.5MHz							
5235.0	-59.74	5.23	35.83	-29.14	-25	-4.14	Horizontal
5235.0	-64.17	5.23	35.83	-33.57	-25	-8.57	Vertical
7852.5	-64.58	5.62	36.87	-33.33	-25	-8.33	Vertical
7852.5	-59.00	5.62	36.87	-27.75	-25	-2.75	Horizontal
203.7	-49.62	1.58	17.56	-33.64	-25	-8.64	Vertical
453.7	-54.45	1.45	16.58	-39.32	-25	-14.32	Horizontal

QPSK EIRP POWER FOR LTE BAND 38 (20MHZ BANDWIDTH)

Test Results for Low Channel 2580MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5160.0	-61.84	5.23	35.82	-31.25	-25	-6.25	Horizontal
5160.0	-63.61	5.23	35.82	-33.02	-25	-8.02	Vertical
7740.0	-64.04	5.67	36.86	-32.85	-25	-7.85	Vertical
7740.0	-64.72	5.67	36.86	-33.53	-25	-8.53	Horizontal
206.5	-54.38	1.55	15.76	-40.17	-25	-15.17	Vertical
335.0	-51.89	1.62	15.44	-38.07	-25	-13.07	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-59.20	5.16	35.82	-28.54	-25	-3.54	Horizontal
5190.0	-62.64	5.16	35.82	-31.98	-25	-6.98	Vertical
7785.0	-59.92	5.53	36.85	-28.60	-25	-3.60	Vertical
7785.0	-60.42	5.53	36.85	-29.10	-25	-4.10	Horizontal
212.4	-51.82	1.58	16.84	-36.56	-25	-11.56	Vertical
246.0	-50.08	1.61	17.64	-34.05	-25	-9.05	Horizontal
Test Results for High Channel 2610MHz							
5220.0	-61.08	5.24	35.83	-30.49	-25	-5.49	Horizontal
5220.0	-60.43	5.24	35.83	-29.84	-25	-4.84	Vertical
7830.0	-61.31	5.70	36.88	-30.13	-25	-5.13	Vertical
7830.0	-62.60	5.70	36.88	-31.42	-25	-6.42	Horizontal
197.4	-49.55	1.48	16.84	-34.19	-25	-9.19	Vertical
413.1	-46.36	1.59	17.64	-30.31	-25	-5.31	Horizontal

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

. Over Limit= : P_{Mea}(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 42

QPSK EIRP POWER FOR LTE BAND 42 (5MHZ BANDWIDTH)

Test Results for Low Channel 3452.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
6905.0	-62.41	6.17	35.67	-32.91	-25	-7.91	Horizontal
6905.0	-64.26	6.17	35.67	-34.76	-25	-9.76	Vertical
10357.5	-60.31	6.46	36.71	-30.06	-25	-5.06	Vertical
10357.5	-63.73	6.46	36.71	-33.48	-25	-8.48	Horizontal
179.6	-44.11	1.56	17.97	-27.70	-25	-2.70	Vertical
428.4	-51.55	1.33	15.11	-37.77	-25	-12.77	Horizontal
Test Results For Mid Channel 3500MHz							
7000.0	-61.40	6.20	35.68	-31.92	-25	-6.92	Horizontal
7000.0	-63.47	6.20	35.68	-33.99	-25	-8.99	Vertical
10500.0	-63.70	6.57	36.71	-33.56	-25	-8.56	Vertical
10500.0	-63.41	6.57	36.71	-33.27	-25	-8.27	Horizontal
193.1	-53.18	1.77	16.17	-38.77	-25	-13.77	Vertical
407.0	-54.52	1.63	15.21	-40.94	-25	-15.94	Horizontal
Test Results for High Channel 3547.5MHz							
7095.0	-63.91	6.27	35.69	-34.49	-25	-9.49	Horizontal
7095.0	-59.76	6.27	35.69	-30.34	-25	-5.34	Vertical
10642.5	-61.55	6.66	36.73	-31.48	-25	-6.48	Vertical
10642.5	-61.51	6.66	36.73	-31.44	-25	-6.44	Horizontal
177.5	-45.89	1.58	17.56	-29.91	-25	-4.91	Vertical
235.0	-52.94	1.45	16.58	-37.81	-25	-12.81	Horizontal

QPSK EIRP POWER FOR LTE BAND 42 (10MHZ BANDWIDTH)

Test Results for Low Channel 3460MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
6920.0	-61.15	6.27	35.68	-31.74	-25	-6.74	Horizontal
6920.0	-59.81	6.27	35.68	-30.40	-25	-5.40	Vertical
10380.0	-63.42	6.71	36.72	-33.41	-25	-8.41	Vertical
10380.0	-60.41	6.71	36.72	-30.40	-25	-5.40	Horizontal
188.4	-53.75	1.55	15.76	-39.54	-25	-14.54	Vertical
335.3	-48.16	1.62	15.44	-34.34	-25	-9.34	Horizontal
Test Results For Mid Channel 3500MHz							
7000.0	-62.16	6.20	35.68	-32.68	-25	-7.68	Horizontal
7000.0	-59.91	6.20	35.68	-30.43	-25	-5.43	Vertical
10500.0	-64.48	6.57	36.71	-34.34	-25	-9.34	Vertical
10500.0	-63.41	6.57	36.71	-33.27	-25	-8.27	Horizontal
195.0	-47.16	1.58	16.84	-31.90	-25	-6.90	Vertical
354.8	-44.81	1.61	17.64	-28.78	-25	-3.78	Horizontal
Test Results for High Channel 3540MHz							
7080.0	-61.64	6.28	35.69	-32.23	-25	-7.23	Horizontal
7080.0	-62.39	6.28	35.69	-32.98	-25	-7.98	Vertical
10620.0	-60.48	6.74	36.74	-30.48	-25	-5.48	Vertical
10620.0	-61.28	6.74	36.74	-31.28	-25	-6.28	Horizontal
199.4	-49.68	1.48	16.84	-34.32	-25	-9.32	Vertical
464.5	-48.23	1.59	17.64	-32.18	-25	-7.18	Horizontal

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

. Over Limit= : P_{Mea}(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 $+50^{\circ}\text{C}$
- Voltage = low voltage, DC 3.15V, Normal, DC 3.7V and High voltage, DC 4.26V.

Frequency Stability vs Temperature:

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

Frequency Stability vs Voltage:

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

MODES TESTED

LTE Band 2/4/7/38/42

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]
3.15	1880	12.8	0.006790	2.5
3.7	1880	14.1	0.007479	2.5
4.26	1880	13.1	0.006991	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	12.8	0.006811	2.5
Extreme (50C)	1880	11.6	0.006174	2.5
Extreme (40C)	1880	13.3	0.007082	2.5
Extreme (30C)	1880	13.4	0.007107	2.5
Extreme (10C)	1880	14.4	0.007637	2.5
Extreme (0C)	1880	12.5	0.006642	2.5
Extreme (-10C)	1880	12.6	0.006682	2.5
Extreme (-20C)	1880	14.2	0.007543	2.5
Extreme (-30C)	1880	14.2	0.007555	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]
3.15	1880	9.7	0.005136	2.5
3.7	1880	9.0	0.004801	2.5
4.26	1880	7.8	0.004154	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	10.1	0.005356	2.5
Extreme (50C)	1880	9.0	0.004764	2.5
Extreme (40C)	1880	7.7	0.004082747	2.5
Extreme (30C)	1880	8.9	0.004711336	2.5
Extreme (10C)	1880	8.8	0.004667253	2.5
Extreme (0C)	1880	7.8	0.004174845	2.5
Extreme (-10C)	1880	9.5	0.005029936	2.5
Extreme (-20C)	1880	8.7	0.004604466	2.5
Extreme (-30C)	1880	8.1	0.004313304	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]
3.15	1732.5	9.1	0.005266	2.5
3.7	1732.5	8.5	0.004927	2.5
4.26	1732.5	8.8	0.005106	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.9	0.005120	2.5
Extreme (50C)	1732.5	8.8	0.005059	2.5
Extreme (40C)	1732.5	7.0	0.004050	2.5
Extreme (30C)	1732.5	5.7	0.003318	2.5
Extreme (10C)	1732.5	7.5	0.004313	2.5
Extreme (0C)	1732.5	9.1	0.005229	2.5
Extreme (-10C)	1732.5	8.1	0.004670	2.5
Extreme (-20C)	1732.5	6.5	0.003769	2.5
Extreme (-30C)	1732.5	8.6	0.004941	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]
3.15	1732.5	9.9	0.005695	2.5
3.7	1732.5	9.2	0.005329	2.5
4.26	1732.5	7.8	0.004524	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	9.7	0.005597	2.5
Extreme (50C)	1732.5	9.0	0.005170	2.5
Extreme (40C)	1732.5	7.8	0.004486	2.5
Extreme (30C)	1732.5	9.2	0.005329	2.5
Extreme (10C)	1732.5	9.0	0.005217	2.5
Extreme (0C)	1732.5	7.8	0.004504	2.5
Extreme (-10C)	1732.5	8.8	0.005105	2.5
Extreme (-20C)	1732.5	8.8	0.005101	2.5
Extreme (-30C)	1732.5	8.5	0.004903	2.5

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

10.3 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]
3.15	2535	9.6	0.003791	2.5
3.7	2535	9.3	0.003688	2.5
4.26	2535	8.2	0.003252	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	9.3	0.003668	2.5
Extreme (50C)	2535	8.5	0.003372	2.5
Extreme (40C)	2535	7.9	0.003128	2.5
Extreme (30C)	2535	9.2	0.003627	2.5
Extreme (10C)	2535	7.9	0.003098	2.5
Extreme (0C)	2535	8.2	0.003219	2.5
Extreme (-10C)	2535	9.5	0.003760	2.5
Extreme (-20C)	2535	9.0	0.003567	2.5
Extreme (-30C)	2535	8.1	0.003208	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]
3.15	2535	6.9	0.002722	2.5
3.7	2535	6.2	0.002442	2.5
4.26	2535	5.6	0.002212	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	0.002181	2.5
Extreme (40C)	2535	5.5	0.002178	2.5
Extreme (30C)	2535	7.1	0.002784	2.5
Extreme (10C)	2535	5.7	0.002247	2.5
Extreme (0C)	2535	5.5	0.002181	2.5
Extreme (-10C)	2535	4.8	0.001901	2.5
Extreme (-20C)	2535	6.1	0.002398	2.5
Extreme (-30C)	2535	6.1	0.002424	2.5

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

10.4 LTE BAND 38

Band 38 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]
3.15	2595	10.0	0.003835	2.5
3.7	2595	8.5	0.003292	2.5
4.26	2595	8.0	0.003067	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	9.5	0.003659	2.5
Extreme (50C)	2595	9.2	0.003531	2.5
Extreme (40C)	2595	8.9	0.003412	2.5
Extreme (30C)	2595	9.0	0.003460	2.5
Extreme (10C)	2595	8.0	0.003102	2.5
Extreme (0C)	2595	8.1	0.003139	2.5
Extreme (-10C)	2595	9.9	0.003812	2.5
Extreme (-20C)	2595	8.5	0.003260	2.5
Extreme (-30C)	2595	8.0	0.003074	2.5

Band 38 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]
3.15	2595	6.9	0.002659	2.5
3.7	2595	6.7	0.002583	2.5
4.26	2595	5.2	0.002011	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	6.9	0.002659	2.5
Extreme (50C)	2595	5.6	0.002151	2.5
Extreme (40C)	2595	5.0	0.001938	2.5
Extreme (30C)	2595	7.1	0.002736	2.5
Extreme (10C)	2595	5.8	0.002221	2.5
Extreme (0C)	2595	4.9	0.001902	2.5
Extreme (-10C)	2595	5.3	0.002031	2.5
Extreme (-20C)	2595	6.0	0.002299	2.5
Extreme (-30C)	2595	5.3	0.002045	2.5

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

10.5 LTE BAND 42

Band 42 QPSK, (20MHz BANDWIDTH RB size 10 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.15	3500	10.0	0.002843	2.5
3.7	3500	8.5	0.002441	2.5
4.26	3500	8.0	0.002274	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	3500	9.5	0.002713	2.5
Extreme (50C)	3500	9.2	0.002618	2.5
Extreme (40C)	3500	8.9	0.002530	2.5
Extreme (30C)	3500	9.0	0.002565	2.5
Extreme (10C)	3500	8.0	0.002300	2.5
Extreme (0C)	3500	8.1	0.002327	2.5
Extreme (-10C)	3500	9.9	0.002826	2.5
Extreme (-20C)	3500	8.5	0.002417	2.5
Extreme (-30C)	3500	8.0	0.002279	2.5

Band 42 16QAM, (20MHz BANDWIDTH RB size 10 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.15	3500	6.6	0.001894	2.5
3.7	3500	6.7	0.001915	2.5
4.26	3500	5.2	0.001491	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	3500	6.5	0.001867	2.5
Extreme (50C)	3500	5.6	0.001595	2.5
Extreme (40C)	3500	5.0	0.001437	2.5
Extreme (30C)	3500	7.1	0.002028	2.5
Extreme (10C)	3500	5.8	0.001646	2.5
Extreme (0C)	3500	4.9	0.001410	2.5
Extreme (-10C)	3500	5.3	0.001506	2.5
Extreme (-20C)	3500	6.0	0.001704	2.5
Extreme (-30C)	3500	5.3	0.001516	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.

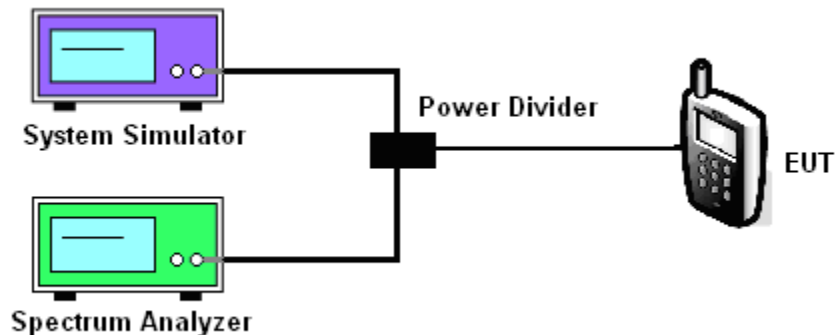
11.2 Measuring Instruments

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 2/4/7/38/42

Test data reference attachment.

----END OF REPORT----