

FCC CFR47 PART 22H, 24E, 27 CERTIFICATION TEST REPORT FCC ID: 2AWCN-UNI10X

Product: Smart phone

Trade Mark: uniqcell

Model Number: UNI 10X

Family Model: N/A

Report No.: S21123100901006

Prepared for

4G NET INC

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Prepared by

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TEST RESULT CERTIFICATION

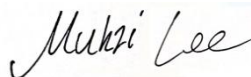
Applicant's name	4G NET INC
Address	3000 NW 72 AVENUE MIAMI FLORIDA 33122 UNITED STATES
Manufacturer's Name	SHENZHEN TR ELECTRONIC CO.,LTD
Address	Second floor A, Four floor B, Sailian Industrial Park, NO.50 Zhulong Tian Road, Fourth Industrial Zone, Shuitiancommunity,Shiyan Street, Baoan District, Shenzhen City.
Product name	Smart phone
Model and/or type reference ..	UNI 10X
Family Model:	N/A
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	Jan 03, 2022 ~Jan 22, 2022
Date of Issue	Jan 22, 2022
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:	Smart phone
Trade Mark	uniqcell
Model Name	UNI 10X
Family Model	N/A
Model Difference	N/A
FCC ID:	2AWCN-UNI10X
Frequency Bands:	U.S. Bands: ☒ LTE FDD Band 2, 4, 5, 7, 17, 38, 66
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 17 Uplink: 704MHz-716MHz, Downlink: 734MHz-746MHz; LTE FDD Band 38 Uplink& Downlink: 2570MHz-2620MHz, LTE FDD Band 66 Uplink: 1710MHz-1780MHz, Downlink: 2110MHz-2200MHz;
Type of Modulation:	QPSK/16QAM
Power Class	Class 3
Antenna:	PIFA Antenna
Antenna gain:	Band 2: 0.74dBi; Band 4: 0.85dBi; Band 5: 0.32dBi; Band 7: 1.54dBi; Band 17: -1.14dBi; Band 38: 1.54dBi; Band 66: 0.85dBi;
Adapter	Model: MST-0502000-FCC Input: AC 100-240V~50/60Hz 0.3A Output: DC 5V---2000mA
Battery	DC 3.85V, 4200mAh, 16.17Wh
Power supply	DC 3.85V from battery or DC 5V from Adapter.
Extreme Vol. Limits:	DC 3.4V to DC 4.2V (Nominal DC 3.85V) (Note 1)
HW Version	G2062U-PT-V1.0
SW Version	S6505L-AM-R-MV06404-09_27122021
** Note1: The High Voltage 4.2V and Low Voltage 3.4V was declared by manufacturer, The EUT couldn't be operate normally with higher or lower voltage.	

1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2AWCN-UNI10X** 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% ($U = 2U_c(y)$)	2.5dB
2	Conducted Emission Test	$\pm 1.38\text{dB}$
3	RF power, conducted	$\pm 0.16\text{dB}$
4	Spurious emissions, conducted	$\pm 0.21\text{dB}$
5	All emissions, radiated(<1G)	$\pm 4.68\text{dB}$
6	All emissions, radiated(>1G)	$\pm 4.89\text{dB}$
7	Temperature	$\pm 0.5^\circ\text{C}$
8	Humidity	$\pm 2\%$
9	Frequency error, conducted	$\pm 0.19\text{ ppm}$

1.5 SPECIAL ACCESSORIES

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

1.6 WORST-CASE CONFIGURATION AND MODE

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

The device has LTE Bands of: Band 2, Band 4, Band 5, Band 7, Band 17, Band 38, Band 66

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

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

1.6 SUMMARY OF TEST RESULTS

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

2.1053 22.917(a) 24.238(a) 27.53(g)(h)(m) KDB 971168 D01 Clause 7	Field Strength of Spurious Radiation	PASS	
2.1055 22.355 24.235 27.54 KDB 971168 D01 Clause 9	Frequency Stability for Temperature & Voltage	PASS	
2.1051 22.917(a) 24.238(a) 27.53(g)(h)(m) KDB 971168 D01 Clause 6	Conducted Emission	PASS	
Remark: 1. "N/A" denotes test is not applicable in this Test Report. 2. All test items were verified and recorded according to the standards and without any deviation during the test. 3. No modifications are made to the EUT during all test items.			

2. SYSTEM TEST CONFIGURATION

2.1 EUT CONFIGURATION

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

2.2 EUT EXERCISE

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

2.3 CONFIGURATION OF EUT SYSTEM

Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Smart phone	UNI 10X	FCC ID: 2AWCN-UNI10X	EUT

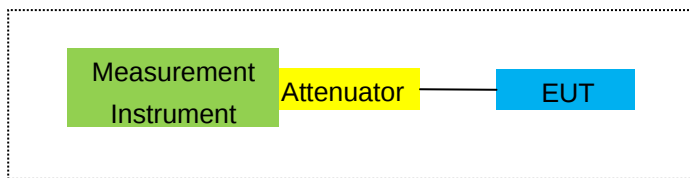
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

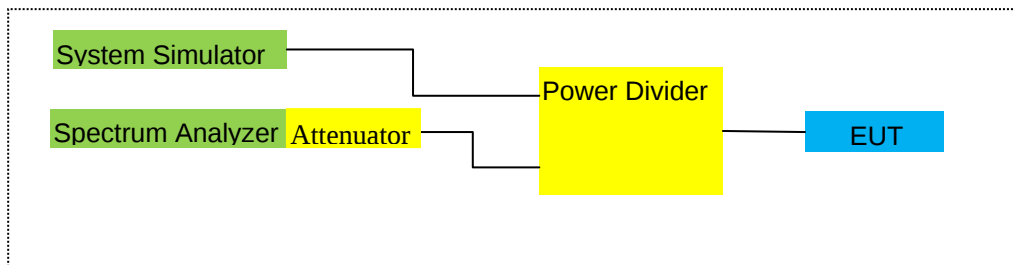
For Radiated Test Cases



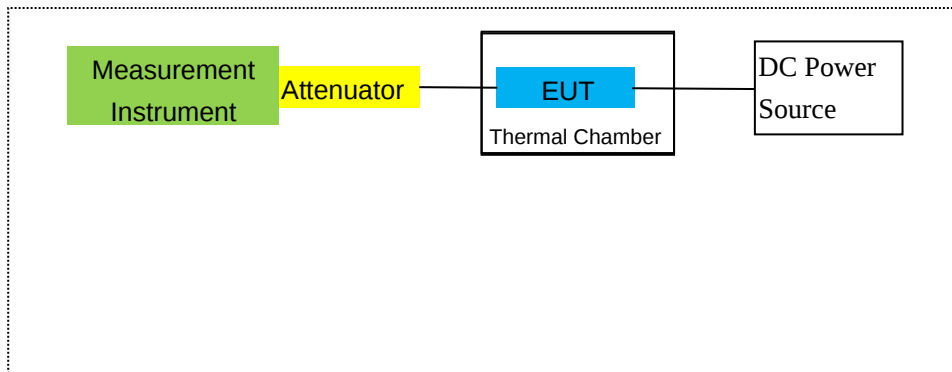
For Conducted Output Power



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	2021.07.01	2022.06.30	1 year
2	Test Receiver	R&S	ESPI	101318	2021.04.27	2022.04.26	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2021.03.29	2022.03.28	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	2021.03.29	2022.03.28	1 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2021.11.07	2022.11.06	1 year
7	Amplifier	EM	EM-30180	060538	2021.07.01	2022.06.30	1 year
8	Loop Antenna	ARA	PLA-1030/B	1029	2021.04.27	2022.04.26	1 year
9	Power Meter	R&S	NRVS	100696	2021.07.01	2022.06.30	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2021.04.27	2022.04.26	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	2019.08.06	2022.08.05	3 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	2021.04.27	2022.04.26	1 year
15	LISN	R&S	ENV216	101313	2021.04.27	2022.04.26	1 year
16	LISN	EMCO	3816/2	00042990	2021.04.27	2022.04.26	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2021.04.27	2022.04.26	1 year
18	Passive Voltage Probe	R&S	ESH2-Z3	100196	2021.04.27	2022.04.26	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	2020.04.07	2023.04.06	1 year
23	Spectrum Analyzer	agilent	e4440a	us44300399	2021.04.27	2022.04.26	1 year
24	test receiver	R&S	ESCI	a0304218	2021.04.27	2022.04.26	1 year
25	Communication Tester	R&S	CMU200	A0304247	2021.07.01	2022.06.30	1 year
26	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2021.04.27	2022.04.26	1 year

27	DC Power Source	N/A	PS-6005D	2017040292 3	2020.05.11	2023.05.10	3 year
28	PSG Analog Signal Generator	Agilent	E8257D	MY51110112	2021.07.01	2022.06.30	1 year
29	Communication Tester	R&S	CMW500	148500	2021.07.01	2022.06.30	1 year
30	PSG Analog Signal Generator	Agilent	E8257D	MY51110112	2021.07.01	2022.06.30	1 year

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

4. OUTPUT POWER

4.1 OUTPUT POWER MEASUREMENT

LTE Measurement Procedure:

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

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

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

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

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

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

Network Signalling value	Requirements (sub-clause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	NA
NS_03	6.6.2.2.1	2, 4, 10, 23, 25, 35, 36	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.2	41	5	>6	≤ 1
			10, 15, 20	See Table 6.2.4-4	
NS_05	6.6.3.3.1	1	10, 15, 20	≥ 50	≤ 1
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.6-1	n/a
NS_07	6.6.2.2.3 6.6.3.3.2	13	10	Table 6.2.4-2	Table 6.2.4-2
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23 ¹	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
..					
NS_32	-	-	-	-	-

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

Test data reference attachment.

5. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

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

MODES TESTED

- ☐ LTE Band2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 17
- LTE Band 38
- LTE Band 66

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 2/4/5/7/17/38/66

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 Band2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 17
- LTE Band 38
- LTE Band 66

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 Band2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 17
- LTE Band 38
- LTE Band 66

RESULTS

Pass

8.2 LTE BAND 2

Radiated Power (EIRP) for Band 2									
Mode	RB Size/RB Position	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Max. EIRP Average (dBm)	Max. EIRP	Polarization	
							Average		
							(mW)		
1.4MHz Band QPSK	1/#Mid	1850.7	-2.95	3.76	28.24	21.53	142.233	Horizontal	Pass
		1880	-2.88	3.91	28.22	21.43	138.995	Horizontal	Pass
		1909.3	-2.83	3.93	28.20	21.44	139.316	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-2.97	3.77	28.23	21.49	140.929	Horizontal	Pass
		1880	-2.91	3.91	28.24	21.42	138.676	Horizontal	Pass
		1908.5	-2.87	3.94	28.25	21.44	139.316	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-3.11	3.77	28.31	21.43	138.995	Horizontal	Pass
		1880	-2.80	3.91	28.22	21.51	141.579	Horizontal	Pass
		1907.5	-2.73	3.94	28.20	21.53	142.233	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-3.09	3.79	28.33	21.45	139.637	Horizontal	Pass
		1880	-2.75	3.95	28.22	21.52	141.906	Horizontal	Pass
		1905	-2.81	3.97	28.19	21.41	138.357	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-3.12	3.79	28.34	21.43	138.995	Horizontal	Pass
		1880	-2.81	3.95	28.22	21.46	139.959	Horizontal	Pass
		1902.5	-2.80	3.97	28.18	21.41	138.357	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-3.18	3.81	28.35	21.36	136.773	Horizontal	Pass
		1880	-2.86	3.96	28.22	21.40	138.038	Horizontal	Pass
		1900	-2.67	4.00	28.16	21.49	140.929	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-2.95	3.76	28.24	21.53	142.233	Vertical	Pass
		1880	-2.80	3.91	28.22	21.51	141.579	Vertical	Pass
		1909.3	-2.73	3.93	28.20	21.54	142.561	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-2.96	3.77	28.23	21.50	141.254	Vertical	Pass
		1880	-2.85	3.91	28.24	21.48	140.605	Vertical	Pass
		1908.5	-2.84	3.94	28.25	21.47	140.281	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-3.13	3.77	28.31	21.41	138.357	Vertical	Pass
		1880	-2.93	3.91	28.22	21.38	137.404	Vertical	Pass
		1907.5	-2.87	3.94	28.20	21.39	137.721	Vertical	Pass
10.0MHz Band	1/#Mid	1855	-3.10	3.79	28.33	21.44	139.316	Vertical	Pass
		1880	-2.76	3.95	28.22	21.51	141.579	Vertical	Pass

QPSK		1905	-2.69	3.97	28.19	21.53	142.233	Vertical	Pass
15.0MHz	1/#Mid	1857.5	-3.12	3.79	28.34	21.43	138.995	Vertical	Pass
z Band		1880	-2.81	3.95	28.22	21.46	139.959	Vertical	Pass
QPSK		1902.5	-2.82	3.97	28.18	21.39	137.721	Vertical	Pass
20.0MHz	1/#Mid	1860	-2.97	3.81	28.35	21.57	143.549	Vertical	Pass
z Band		1880	-2.70	3.96	28.22	21.56	143.219	Vertical	Pass
QPSK		1900	-2.60	4.00	28.16	21.56	143.219	Vertical	Pass

Note:

SG Level= Signal generator output

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

Radiated Power (EIRP) for Band 2									
Mode	RB Size/RB Position	Frequency	Result					Polarization	Conclusion
			SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Max. EIRP Average (dBm)	Max. EIRP		
							Average (mW)		
1.4MHz Band 16 QAM	1/#Mid	1850.7	-4.31	3.76	28.24	20.17	103.992	Horizontal	Pass
		1880	-4.12	3.91	28.22	20.19	104.472	Horizontal	Pass
		1909.3	-4.04	3.93	28.20	20.23	105.439	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-4.27	3.77	28.23	20.19	104.472	Horizontal	Pass
		1880	-4.12	3.91	28.24	20.21	104.954	Horizontal	Pass
		1908.5	-4.17	3.94	28.25	20.14	103.276	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-4.38	3.77	28.31	20.16	103.753	Horizontal	Pass
		1880	-4.19	3.91	28.22	20.12	102.802	Horizontal	Pass
		1907.5	-4.16	3.94	28.20	20.10	102.329	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-4.44	3.79	28.33	20.10	102.329	Horizontal	Pass
		1880	-4.11	3.95	28.22	20.16	103.753	Horizontal	Pass
		1905	-4.12	3.97	28.19	20.10	102.329	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-4.31	3.79	28.34	20.24	105.682	Horizontal	Pass
		1880	-4.13	3.95	28.22	20.14	103.276	Horizontal	Pass
		1902.5	-4.07	3.97	28.18	20.14	103.276	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-4.41	3.81	28.35	20.13	103.039	Horizontal	Pass
		1880	-4.04	3.96	28.22	20.22	105.196	Horizontal	Pass
		1900	-3.98	4.00	28.16	20.18	104.232	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1850.7	-4.25	3.76	28.24	20.23	105.439	Vertical	Pass
		1880	-4.08	3.91	28.22	20.23	105.439	Vertical	Pass
		1909.3	-4.17	3.93	28.20	20.10	102.329	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-4.26	3.77	28.23	20.20	104.713	Vertical	Pass
		1880	-4.19	3.91	28.24	20.14	103.276	Vertical	Pass
		1908.5	-4.11	3.94	28.25	20.20	104.713	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-4.41	3.77	28.31	20.13	103.039	Vertical	Pass
		1880	-4.08	3.91	28.22	20.23	105.439	Vertical	Pass
		1907.5	-4.07	3.94	28.20	20.19	104.472	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-4.30	3.79	28.33	20.24	105.682	Vertical	Pass
		1880	-4.14	3.95	28.22	20.13	103.039	Vertical	Pass
		1905	-4.04	3.97	28.19	20.18	104.232	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-4.47	3.79	28.34	20.08	101.859	Vertical	Pass
		1880	-4.10	3.95	28.22	20.17	103.992	Vertical	Pass
		1902.5	-4.05	3.97	28.18	20.16	103.753	Vertical	Pass

20.0MHz Band 16 QAM	1/#Mid	1860	-4.26	3.81	28.35	20.28	106.660	Vertical	Pass
		1880	-3.98	3.96	28.22	20.28	106.660	Vertical	Pass
		1900	-3.92	4.00	28.16	20.24	105.682	Vertical	Pass

Note:

SG Level= Signal generator output

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

8.3 LTE BAND 4

Radiated Power (EIRP) for Band 4									
Mode	RB Size/RB Position	Frequency	Result					Polarization	Conclusion
			SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Max. EIRP Average (dBm)	Max. EIRP		
							Average (mW)		
1.4MHz Band QPSK	1/#Mid	1710.7	-3.49	3.12	27.58	20.97	125.026	Horizontal	Pass
		1732.5	-3.33	3.27	27.61	21.01	126.183	Horizontal	Pass
		1754.3	-3.38	3.29	27.63	20.96	124.738	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-3.45	3.13	27.61	21.03	126.765	Horizontal	Pass
		1732.5	-3.43	3.27	27.61	20.91	123.310	Horizontal	Pass
		1753.5	-3.43	3.30	27.62	20.89	122.744	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-3.55	3.13	27.63	20.95	124.451	Horizontal	Pass
		1732.5	-3.37	3.27	27.61	20.97	125.026	Horizontal	Pass
		1752.5	-3.30	3.30	27.60	21.00	125.893	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-3.50	3.15	27.64	20.99	125.603	Horizontal	Pass
		1732.5	-3.40	3.31	27.61	20.90	123.027	Horizontal	Pass
		1750	-3.27	3.33	27.59	20.99	125.603	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-3.50	3.15	27.65	21.00	125.893	Horizontal	Pass
		1732.5	-3.32	3.31	27.61	20.98	125.314	Horizontal	Pass
		1747.5	-3.26	3.33	27.57	20.98	125.314	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-3.55	3.17	27.66	20.94	124.165	Horizontal	Pass
		1732.5	-3.36	3.32	27.61	20.93	123.880	Horizontal	Pass
		1745	-3.28	3.36	27.56	20.92	123.595	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-3.49	3.12	27.58	20.97	125.026	Vertical	Pass
		1732.5	-3.41	3.27	27.61	20.93	123.880	Vertical	Pass
		1754.3	-3.41	3.29	27.63	20.93	123.880	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-3.51	3.13	27.61	20.97	125.026	Vertical	Pass
		1732.5	-3.45	3.27	27.61	20.89	122.744	Vertical	Pass
		1753.5	-3.38	3.30	27.62	20.94	124.165	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-3.60	3.13	27.63	20.90	123.027	Vertical	Pass
		1732.5	-3.41	3.27	27.61	20.93	123.880	Vertical	Pass
		1752.5	-3.39	3.30	27.60	20.91	123.310	Vertical	Pass
10.0MHz Band	1/#Mid	1715	-3.45	3.15	27.64	21.04	127.057	Vertical	Pass
		1732.5	-3.36	3.31	27.61	20.94	124.165	Vertical	Pass

QPSK		1750	-3.35	3.33	27.59	20.91	123.310	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-3.45	3.15	27.65	21.05	127.350	Vertical	Pass
z Band		1732.5	-3.38	3.31	27.61	20.92	123.595	Vertical	Pass
QPSK		1747.5	-3.28	3.33	27.57	20.96	124.738	Vertical	Pass
20.0MHz	1/#Mid	1720	-3.41	3.17	27.66	21.08	128.233	Vertical	Pass
z Band		1732.5	-3.21	3.32	27.61	21.08	128.233	Vertical	Pass
QPSK		1745	-3.10	3.36	27.56	21.10	128.825	Vertical	Pass

Note:

SG Level= Signal generator output

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

Radiated Power (EIRP) for Band 4									
Mode	RB Size/RB Position	Frequency	Result					Polarization	Conclusion
			SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Max. EIRP Average (dBm)	Max. EIRP		
							Average (mW)		
1.4MHz Band 16 QAM	1/#Mid	1710.7	-4.35	3.12	27.58	20.11	102.565	Horizontal	Pass
		1732.5	-4.20	3.27	27.61	20.14	103.276	Horizontal	Pass
		1754.3	-4.19	3.29	27.63	20.15	103.514	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-4.47	3.13	27.61	20.01	100.231	Horizontal	Pass
		1732.5	-4.24	3.27	27.61	20.10	102.329	Horizontal	Pass
		1753.5	-4.31	3.30	27.62	20.01	100.231	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-4.52	3.13	27.63	19.98	99.541	Horizontal	Pass
		1732.5	-4.27	3.27	27.61	20.07	101.625	Horizontal	Pass
		1752.5	-4.25	3.30	27.60	20.05	101.158	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-4.38	3.15	27.64	20.11	102.565	Horizontal	Pass
		1732.5	-4.18	3.31	27.61	20.12	102.802	Horizontal	Pass
		1750	-4.20	3.33	27.59	20.06	101.391	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-4.44	3.15	27.65	20.06	101.391	Horizontal	Pass
		1732.5	-4.17	3.31	27.61	20.13	103.039	Horizontal	Pass
		1747.5	-4.23	3.33	27.57	20.01	100.231	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-4.49	3.17	27.66	20.00	100.000	Horizontal	Pass
		1732.5	-4.21	3.32	27.61	20.08	101.859	Horizontal	Pass
		1745	-4.23	3.36	27.56	19.97	99.312	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-4.34	3.12	27.58	20.12	102.802	Vertical	Pass
		1732.5	-4.20	3.27	27.61	20.14	103.276	Vertical	Pass
		1754.3	-4.20	3.29	27.63	20.14	103.276	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-4.40	3.13	27.61	20.08	101.859	Vertical	Pass
		1732.5	-4.27	3.27	27.61	20.07	101.625	Vertical	Pass
		1753.5	-4.27	3.30	27.62	20.05	101.158	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-4.48	3.13	27.63	20.02	100.462	Vertical	Pass
		1732.5	-4.24	3.27	27.61	20.10	102.329	Vertical	Pass
		1752.5	-4.29	3.30	27.60	20.01	100.231	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-4.42	3.15	27.64	20.07	101.625	Vertical	Pass
		1732.5	-4.18	3.31	27.61	20.12	102.802	Vertical	Pass
		1750	-4.12	3.33	27.59	20.14	103.276	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-4.42	3.15	27.65	20.08	101.859	Vertical	Pass
		1732.5	-4.21	3.31	27.61	20.09	102.094	Vertical	Pass
		1747.5	-4.16	3.33	27.57	20.08	101.859	Vertical	Pass

20.0MHz Band 16 QAM	1/#Mid	1720	-4.33	3.17	27.66	20.16	103.753	Vertical	Pass
		1732.5	-4.11	3.32	27.61	20.18	104.232	Vertical	Pass
		1745	-4.02	3.36	27.56	20.18	104.232	Vertical	Pass

Note:

SG Level= Signal generator output

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

8.4 LTE BAND 5

Radiated Power (ERP) for Band 5										
Mode	RB Size/RB Position	Frequency	Result						Polarization	Conclusion
			SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Correction (dB)	Max. ERP	Max. ERP		
							Average (dBm)	Average		
								(mW)		
1.4MHz Band QPSK	1/##Mid	824.7	5.68	2.01	19.68	2.15	21.20	131.826	Horizontal	Pass
		836.5	5.58	2.01	19.77	2.15	21.19	131.522	Horizontal	Pass
		848.3	5.58	2.02	19.82	2.15	21.23	132.739	Horizontal	Pass
3.0MHz Band QPSK	1/##Mid	825.5	5.63	2.01	19.70	2.15	21.17	130.918	Horizontal	Pass
		836.5	5.70	2.01	19.77	2.15	21.31	135.207	Horizontal	Pass
		847.5	5.56	2.02	19.81	2.15	21.20	131.826	Horizontal	Pass
5.0MHz Band QPSK	1/##Mid	826.5	5.76	2.01	19.71	2.15	21.31	135.207	Horizontal	Pass
		836.5	5.57	2.01	19.77	2.15	21.18	131.220	Horizontal	Pass
		846.5	5.70	2.02	19.79	2.15	21.32	135.519	Horizontal	Pass
10.0MHz Band QPSK	1/##Mid	829	5.67	2.01	19.73	2.15	21.24	133.045	Horizontal	Pass
		836.5	5.63	2.01	19.77	2.15	21.24	133.045	Horizontal	Pass
		844	5.67	2.02	19.78	2.15	21.28	134.276	Horizontal	Pass
1.4MHz Band QPSK	1/##Mid	824.7	5.73	2.01	19.68	2.15	21.25	133.352	Vertical	Pass
		836.5	5.57	2.01	19.77	2.15	21.18	131.220	Vertical	Pass
		848.3	5.58	2.02	19.82	2.15	21.23	132.739	Vertical	Pass
3.0MHz Band QPSK	1/##Mid	825.5	5.65	2.01	19.70	2.15	21.19	131.522	Vertical	Pass
		836.5	5.69	2.01	19.77	2.15	21.30	134.896	Vertical	Pass
		847.5	5.59	2.02	19.81	2.15	21.23	132.739	Vertical	Pass
5.0MHz Band QPSK	1/##Mid	826.5	5.72	2.01	19.71	2.15	21.27	133.968	Vertical	Pass
		836.5	5.65	2.01	19.77	2.15	21.26	133.660	Vertical	Pass
		846.5	5.52	2.02	19.79	2.15	21.14	130.017	Vertical	Pass
10.0MHz Band QPSK	1/##Mid	829	5.78	2.01	19.73	2.15	21.35	136.458	Vertical	Pass
		836.5	5.72	2.01	19.77	2.15	21.33	135.831	Vertical	Pass
		844	5.75	2.02	19.78	2.15	21.36	136.773	Vertical	Pass

Radiated Power (ERP) for Band 5										
Mode	RB Size/RB Position	Frequency	Result						Polarization	Conclusion
			SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP		
								Average		
								(mW)		
1.4MHz Band 16 QAM	1/##Mid	824.7	4.58	2.01	19.68	2.15	20.10	102.329	Horizontal	Pass
		836.5	4.37	2.01	19.77	2.15	19.98	99.541	Horizontal	Pass
		848.3	4.34	2.02	19.82	2.15	19.99	99.770	Horizontal	Pass
3.0MHz Band 16 QAM	1/##Mid	825.5	4.57	2.01	19.70	2.15	20.11	102.565	Horizontal	Pass
		836.5	4.44	2.01	19.77	2.15	20.05	101.158	Horizontal	Pass
		847.5	4.47	2.02	19.81	2.15	20.11	102.565	Horizontal	Pass
5.0MHz Band 16 QAM	1/##Mid	826.5	4.54	2.01	19.71	2.15	20.09	102.094	Horizontal	Pass
		836.5	4.33	2.01	19.77	2.15	19.94	98.628	Horizontal	Pass
		846.5	4.43	2.02	19.79	2.15	20.05	101.158	Horizontal	Pass
10.0MHz Band 16 QAM	1/##Mid	829	4.42	2.01	19.73	2.15	19.99	99.770	Horizontal	Pass
		836.5	4.39	2.01	19.77	2.15	20.00	100.000	Horizontal	Pass
		844	4.49	2.02	19.78	2.15	20.10	102.329	Horizontal	Pass
1.4MHz Band 16 QAM	1/##Mid	824.7	4.56	2.01	19.68	2.15	20.08	101.859	Vertical	Pass
		836.5	4.46	2.01	19.77	2.15	20.07	101.625	Vertical	Pass
		848.3	4.39	2.02	19.82	2.15	20.04	100.925	Vertical	Pass
3.0MHz Band 16 QAM	1/##Mid	825.5	4.56	2.01	19.70	2.15	20.10	102.329	Vertical	Pass
		836.5	4.40	2.01	19.77	2.15	20.01	100.231	Vertical	Pass
		847.5	4.44	2.02	19.81	2.15	20.08	101.859	Vertical	Pass
5.0MHz Band 16 QAM	1/##Mid	826.5	4.44	2.01	19.71	2.15	19.99	99.770	Vertical	Pass
		836.5	4.40	2.01	19.77	2.15	20.01	100.231	Vertical	Pass
		846.5	4.43	2.02	19.79	2.15	20.05	101.158	Vertical	Pass
10.0MHz Band 16 QAM	1/##Mid	829	4.58	2.01	19.73	2.15	20.15	103.514	Vertical	Pass
		836.5	4.52	2.01	19.77	2.15	20.13	103.039	Vertical	Pass
		844	4.55	2.02	19.78	2.15	20.16	103.753	Vertical	Pass

Note:

ERP=EIRP-2.15

SG Level= Signal generator output

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

8.5 LTE BAND 7

Radiated Power (EIRP) for Band 7									
Mode	RB Size/RB Position	Frequency	Result					Polarization	Conclusion
			SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Max. EIRP Average (dBm)	Max. EIRP		
							Average (mW)		
5.0MHz Band QPSK	1/#Mid	2502.5	-1.75	4.54	27.75	21.46	139.959	Horizontal	Pass
		2535	-1.50	4.69	27.72	21.53	142.233	Horizontal	Pass
		2567.5	-1.56	4.71	27.71	21.44	139.316	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2505	-1.80	4.55	27.76	21.41	138.357	Horizontal	Pass
		2535	-1.52	4.69	27.72	21.51	141.579	Horizontal	Pass
		2565	-1.48	4.72	27.70	21.50	141.254	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-1.86	4.55	27.77	21.36	136.773	Horizontal	Pass
		2535	-1.64	4.69	27.72	21.39	137.721	Horizontal	Pass
		2562.5	-1.44	4.72	27.69	21.53	142.233	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2510	-1.77	4.57	27.78	21.44	139.316	Horizontal	Pass
		2535	-1.48	4.73	27.72	21.51	141.579	Horizontal	Pass
		2560	-1.46	4.75	27.68	21.47	140.281	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	-1.76	4.54	27.75	21.45	139.637	Vertical	Pass
		2535	-1.53	4.69	27.72	21.50	141.254	Vertical	Pass
		2567.5	-1.56	4.71	27.71	21.44	139.316	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2505	-1.75	4.55	27.76	21.46	139.959	Vertical	Pass
		2535	-1.58	4.69	27.72	21.45	139.637	Vertical	Pass
		2565	-1.58	4.72	27.70	21.40	138.038	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-1.75	4.55	27.77	21.47	140.281	Vertical	Pass
		2535	-1.53	4.69	27.72	21.50	141.254	Vertical	Pass
		2562.5	-1.52	4.72	27.69	21.45	139.637	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2510	-1.65	4.57	27.78	21.56	143.219	Vertical	Pass
		2535	-1.41	4.73	27.72	21.58	143.880	Vertical	Pass
		2560	-1.39	4.75	27.68	21.54	142.561	Vertical	Pass

Radiated Power (EIRP) for Band 7									
Mode	RB Size/RB Position	Frequency	Result					Polarization	Conclusion
			SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Max. EIRP Average (dBm)	Max. EIRP		
							Average (mW)		
5.0MHz Band 16 QAM	1/#Mid	2502.5	-2.51	4.54	27.75	20.70	117.490	Horizontal	Pass
		2535	-2.24	4.69	27.72	20.79	119.950	Horizontal	Pass
		2567.5	-2.22	4.71	27.71	20.78	119.674	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-2.38	4.55	27.76	20.83	121.060	Horizontal	Pass
		2535	-2.29	4.69	27.72	20.74	118.577	Horizontal	Pass
		2565	-2.21	4.72	27.70	20.77	119.399	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-2.42	4.55	27.77	20.80	120.226	Horizontal	Pass
		2535	-2.30	4.69	27.72	20.73	118.304	Horizontal	Pass
		2562.5	-2.23	4.72	27.69	20.74	118.577	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-2.48	4.57	27.78	20.73	118.304	Horizontal	Pass
		2535	-2.23	4.73	27.72	20.76	119.124	Horizontal	Pass
		2560	-2.19	4.75	27.68	20.74	118.577	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	-2.38	4.54	27.75	20.83	121.060	Vertical	Pass
		2535	-2.33	4.69	27.72	20.70	117.490	Vertical	Pass
		2567.5	-2.20	4.71	27.71	20.80	120.226	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-2.45	4.55	27.76	20.76	119.124	Vertical	Pass
		2535	-2.22	4.69	27.72	20.81	120.504	Vertical	Pass
		2565	-2.19	4.72	27.70	20.79	119.950	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-2.56	4.55	27.77	20.66	116.413	Vertical	Pass
		2535	-2.21	4.69	27.72	20.82	120.781	Vertical	Pass
		2562.5	-2.30	4.72	27.69	20.67	116.681	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-2.35	4.57	27.78	20.86	121.899	Vertical	Pass
		2535	-2.14	4.73	27.72	20.85	121.619	Vertical	Pass
		2560	-2.08	4.75	27.68	20.85	121.619	Vertical	Pass

Note:

SG Level= Signal generator output

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

8.6 LTE BAND 17

Radiated Power (ERP) for Band 17										
Mode	RB Size/RB Position	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP	Polarization	
								Average		
								(mW)		
5.0MHz Band QPSK	1/#Mid	706.5	5.11	1.91	19.23	2.15	20.28	106.660	Vertical	Pass
		710	5.07	1.91	19.26	2.15	20.27	106.414	Vertical	Pass
		713.5	5.03	1.92	19.33	2.15	20.29	106.905	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	709	5.00	1.91	19.25	2.15	20.19	104.472	Vertical	Pass
		710	5.15	1.91	19.26	2.15	20.35	108.393	Vertical	Pass
		711	5.06	1.92	19.32	2.15	20.31	107.399	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	706.5	5.13	1.91	19.23	2.15	20.30	107.152	Horizontal	Pass
		710	5.14	1.91	19.26	2.15	20.34	108.143	Horizontal	Pass
		713.5	5.06	1.92	19.33	2.15	20.32	107.647	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	709	5.21	1.91	19.25	2.15	20.40	109.648	Horizontal	Pass
		710	5.18	1.91	19.26	2.15	20.38	109.144	Horizontal	Pass
		711	5.12	1.92	19.32	2.15	20.37	108.893	Horizontal	Pass

Radiated Power (ERP) for Band 17										
Mode	RB Size/RB Position	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP	Polarization	
								Average		
								(mW)		
5.0MHz Band 16 QAM	1/#Mid	706.5	4.15	1.91	19.23	2.15	19.32	85.507	Vertical	Pass
		710	4.03	1.91	19.26	2.15	19.23	83.753	Vertical	Pass
		713.5	4.02	1.92	19.33	2.15	19.28	84.723	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	709	4.10	1.91	19.25	2.15	19.29	84.918	Vertical	Pass
		710	4.04	1.91	19.26	2.15	19.24	83.946	Vertical	Pass
		711	4.08	1.92	19.32	2.15	19.33	85.704	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	706.5	4.04	1.91	19.23	2.15	19.21	83.368	Horizontal	Pass
		710	4.01	1.91	19.26	2.15	19.21	83.368	Horizontal	Pass
		713.5	3.96	1.92	19.33	2.15	19.22	83.560	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	709	4.20	1.91	19.25	2.15	19.39	86.896	Horizontal	Pass
		710	4.19	1.91	19.26	2.15	19.39	86.896	Horizontal	Pass
		711	4.13	1.92	19.32	2.15	19.38	86.696	Horizontal	Pass

Note:

ERP=EIRP-2.15

SG Level= Signal generator output

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

8.7 LTE BAND 38

Radiated Power (EIRP) for Band 38									
Mode	RB Size/RB Position	Frequency	Result					Polarization	Conclusion
			SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Max. EIRP Average (dBm)	Max. EIRP		
							Average (mW)		
5.0MHz Band QPSK	1/#Mid	2572.5	-1.24	4.54	27.75	21.97	157.398	Horizontal	Pass
		2595	-1.00	4.69	27.72	22.03	159.588	Horizontal	Pass
		2617.5	-1.06	4.71	27.71	21.94	156.315	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2575	-1.18	4.55	27.76	22.03	159.588	Horizontal	Pass
		2595	-1.01	4.69	27.72	22.02	159.221	Horizontal	Pass
		2615	-1.01	4.72	27.70	21.97	157.398	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2577.5	-1.23	4.55	27.77	21.99	158.125	Horizontal	Pass
		2595	-1.13	4.69	27.72	21.90	154.882	Horizontal	Pass
		2612.5	-0.94	4.72	27.69	22.03	159.588	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2580	-1.26	4.57	27.78	21.95	156.675	Horizontal	Pass
		2595	-0.96	4.73	27.72	22.03	159.588	Horizontal	Pass
		2610	-0.95	4.75	27.68	21.98	157.761	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2572.5	-1.24	4.54	27.75	21.97	157.398	Vertical	Pass
		2595	-1.00	4.69	27.72	22.03	159.588	Vertical	Pass
		2617.5	-0.97	4.71	27.71	22.03	159.588	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2575	-1.22	4.55	27.76	21.99	158.125	Vertical	Pass
		2595	-1.15	4.69	27.72	21.88	154.170	Vertical	Pass
		2615	-1.08	4.72	27.70	21.90	154.882	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2577.5	-1.26	4.55	27.77	21.96	157.036	Vertical	Pass
		2595	-1.15	4.69	27.72	21.88	154.170	Vertical	Pass
		2612.5	-0.95	4.72	27.69	22.02	159.221	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2580	-1.14	4.57	27.78	22.07	161.065	Vertical	Pass
		2595	-0.92	4.73	27.72	22.07	161.065	Vertical	Pass
		2610	-0.88	4.75	27.68	22.05	160.325	Vertical	Pass

Radiated Power (EIRP) for Band 38									
Mode	RB Size/RB Position	Frequency	Result					Polarization	Conclusion
			SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Max. EIRP Average (dBm)	Max. EIRP		
							Average (mW)		
5.0MHz Band 16 QAM	1/#Mid	2502.5	-1.92	4.54	27.75	21.29	134.586	Horizontal	Pass
		2535	-1.78	4.69	27.72	21.25	133.352	Horizontal	Pass
		2567.5	-1.78	4.71	27.71	21.22	132.434	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-1.93	4.55	27.76	21.28	134.276	Horizontal	Pass
		2535	-1.71	4.69	27.72	21.32	135.519	Horizontal	Pass
		2565	-1.64	4.72	27.70	21.34	136.144	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-2.04	4.55	27.77	21.18	131.220	Horizontal	Pass
		2535	-1.84	4.69	27.72	21.19	131.522	Horizontal	Pass
		2562.5	-1.66	4.72	27.69	21.31	135.207	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-1.93	4.57	27.78	21.28	134.276	Horizontal	Pass
		2535	-1.72	4.73	27.72	21.27	133.968	Horizontal	Pass
		2560	-1.60	4.75	27.68	21.33	135.831	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	-1.95	4.54	27.75	21.26	133.660	Vertical	Pass
		2535	-1.74	4.69	27.72	21.29	134.586	Vertical	Pass
		2567.5	-1.76	4.71	27.71	21.24	133.045	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-1.99	4.55	27.76	21.22	132.434	Vertical	Pass
		2535	-1.71	4.69	27.72	21.32	135.519	Vertical	Pass
		2565	-1.68	4.72	27.70	21.30	134.896	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-1.96	4.55	27.77	21.26	133.660	Vertical	Pass
		2535	-1.75	4.69	27.72	21.28	134.276	Vertical	Pass
		2562.5	-1.64	4.72	27.69	21.33	135.831	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-1.85	4.57	27.78	21.36	136.773	Vertical	Pass
		2535	-1.63	4.73	27.72	21.36	136.773	Vertical	Pass
		2560	-1.56	4.75	27.68	21.37	137.088	Vertical	Pass

Note:

SG Level= Signal generator output

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

8.8 LTE BAND66

Radiated Power (EIRP) for Band66									
Mode	RB Size/RB Position	Frequency	Result					Polarization	Conclusion
			SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Max. EIRP Average (dBm)	Max. EIRP		
							Average (mW)		
1.4MHz Band QPSK	1/#Mid	1710.7	-3.84	3.76	28.24	20.64	115.878	Horizontal	Pass
		1745	-3.72	3.91	28.22	20.59	114.551	Horizontal	Pass
		1779.3	-3.68	3.93	28.2	20.59	114.551	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-3.82	3.77	28.23	20.64	115.878	Horizontal	Pass
		1745	-3.83	3.91	28.24	20.50	112.202	Horizontal	Pass
		1778.5	-3.72	3.94	28.25	20.59	114.551	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-4.05	3.77	28.31	20.49	111.944	Horizontal	Pass
		1745	-3.67	3.91	28.22	20.64	115.878	Horizontal	Pass
		1777.5	-3.77	3.94	28.2	20.49	111.944	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-3.94	3.79	28.33	20.60	114.815	Horizontal	Pass
		1745	-3.63	3.95	28.22	20.64	115.878	Horizontal	Pass
		1775	-3.62	3.97	28.19	20.60	114.815	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-3.98	3.79	28.34	20.57	114.025	Horizontal	Pass
		1745	-3.64	3.95	28.22	20.63	115.611	Horizontal	Pass
		1772.5	-3.69	3.97	28.18	20.52	112.720	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-4.06	3.81	28.35	20.48	111.686	Horizontal	Pass
		1745	-3.68	3.96	28.22	20.58	114.288	Horizontal	Pass
		1770	-3.59	4	28.16	20.57	114.025	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-3.84	3.76	28.24	20.64	115.878	Vertical	Pass
		1745	-3.77	3.91	28.22	20.54	113.240	Vertical	Pass
		1779.3	-3.70	3.93	28.2	20.57	114.025	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-3.97	3.77	28.23	20.49	111.944	Vertical	Pass
		1745	-3.69	3.91	28.24	20.64	115.878	Vertical	Pass
		1778.5	-3.81	3.94	28.25	20.50	112.202	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-3.92	3.77	28.31	20.62	115.345	Vertical	Pass
		1745	-3.71	3.91	28.22	20.60	114.815	Vertical	Pass
		1777.5	-3.63	3.94	28.2	20.63	115.611	Vertical	Pass
10.0MHz	1/#Mid	1715	-3.95	3.79	28.34	20.60	114.815	Vertical	Pass

z Band QPSK		1745	-3.76	3.95	28.22	20.51	112.460	Vertical	Pass
		1775	-3.64	3.97	28.18	20.57	114.025	Vertical	Pass
15.0MH	1/#Mid	1717.5	-3.92	3.81	28.35	20.62	115.345	Vertical	Pass
z Band QPSK		1745	-3.65	3.96	28.22	20.61	115.080	Vertical	Pass
		1772.5	-3.54	4	28.16	20.62	115.345	Vertical	Pass
20.0MH	1/#Mid	1720	-3.86	3.79	28.34	20.69	117.220	Vertical	Pass
z Band QPSK		1745	-3.59	3.95	28.22	20.68	116.950	Vertical	Pass
		1770	-3.51	3.97	28.18	20.70	117.490	Vertical	Pass

Note:

SG Level= Signal generator output

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

Radiated Power (EIRP) for Band 2									
Mode	RB Size/RB Position	Frequency	Result					Polarization	Conclusion
			SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Max. EIRP Average (dBm)	Max. EIRP		
							Average (mW)		
1.4MHz Band 16 QAM	1/#Mid	1710.7	-4.53	3.76	28.24	19.95	98.855	Horizontal	Pass
		1745	-4.44	3.91	28.22	19.87	97.051	Horizontal	Pass
		1779.3	-4.34	3.93	28.2	19.93	98.401	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-4.66	3.77	28.23	19.80	95.499	Horizontal	Pass
		1745	-4.45	3.91	28.24	19.88	97.275	Horizontal	Pass
		1778.5	-4.45	3.94	28.25	19.86	96.828	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-4.65	3.77	28.31	19.89	97.499	Horizontal	Pass
		1745	-4.40	3.91	28.22	19.91	97.949	Horizontal	Pass
		1777.5	-4.48	3.94	28.2	19.78	95.060	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-4.73	3.79	28.33	19.81	95.719	Horizontal	Pass
		1745	-4.37	3.95	28.22	19.90	97.724	Horizontal	Pass
		1775	-4.39	3.97	28.19	19.83	96.161	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-4.64	3.79	28.34	19.91	97.949	Horizontal	Pass
		1745	-4.43	3.95	28.22	19.84	96.383	Horizontal	Pass
		1772.5	-4.28	3.97	28.18	19.93	98.401	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-4.75	3.81	28.35	19.79	95.280	Horizontal	Pass
		1745	-4.41	3.96	28.22	19.85	96.605	Horizontal	Pass
		1770	-4.32	4	28.16	19.84	96.383	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-4.56	3.76	28.24	19.92	98.175	Vertical	Pass
		1745	-4.50	3.91	28.22	19.81	95.719	Vertical	Pass
		1779.3	-4.34	3.93	28.2	19.93	98.401	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-4.51	3.77	28.23	19.95	98.855	Vertical	Pass
		1745	-4.48	3.91	28.24	19.85	96.605	Vertical	Pass
		1778.5	-4.36	3.94	28.25	19.95	98.855	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-4.67	3.77	28.31	19.87	97.051	Vertical	Pass
		1745	-4.54	3.91	28.22	19.77	94.842	Vertical	Pass
		1777.5	-4.41	3.94	28.2	19.85	96.605	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-4.67	3.79	28.34	19.88	97.275	Vertical	Pass
		1745	-4.47	3.95	28.22	19.80	95.499	Vertical	Pass
		1775	-4.36	3.97	28.18	19.85	96.605	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-4.64	3.81	28.35	19.90	97.724	Vertical	Pass
		1745	-4.45	3.96	28.22	19.81	95.719	Vertical	Pass
		1772.5	-4.26	4	28.16	19.90	97.724	Vertical	Pass

20.0MHz Band 16 QAM	1/#Mid	1720	-4.59	3.79	28.34	19.96	99.083	Vertical	Pass
		1745	-4.29	3.95	28.22	19.98	99.541	Vertical	Pass
		1770	-4.25	3.97	28.18	19.96	99.083	Vertical	Pass

Note:

SG Level= Signal generator output

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

9. SPURIOUS RADIATION EMISSION

RULE PART(S)

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

LIMIT

For Band 7, the minimum permissible attenuation level of any spurious emission is $55 + \log_{10}(P)$ [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 $43 + 10 \log_{10}(p)$, dB; and
- b. for mobile subscriber equipment, the attenuation shall not be less than $43 + 10 \log_{10}(p)$, dB at the channel edges and $55 + 10 \log_{10}(p)$ 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 Band2
LTE Band 4
- ☐ LTE Band 5
LTE Band 7
LTE Band 17
LTE Band 38
LTE Band 66

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)	Spectrum Analyzer (dBm)	Cable Loss (dB)	Antenna Factor (dB/m)	Spurious Emission Level (dBm)	Limit (dBm)	Margin (dB)	Polarity
3701.4	-79.56	4.04	33.51	-30.27	-13	-17.27	Horizontal
3701.4	-79.43	4.04	33.51	-30.14	-13	-17.14	Vertical
5552.1	-81.28	5.24	35.84	-28.46	-13	-15.46	Vertical
5552.1	-79.52	5.24	35.84	-26.70	-13	-13.70	Horizontal
234.2	-66.72	1.73	17.12	-36.13	-13	-23.13	Vertical
120.6	-59.55	1.58	16.63	-29.60	-13	-16.60	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-77.06	4.04	33.56	-27.72	-13	-14.72	Horizontal
3760.0	-75.08	4.04	33.56	-25.74	-13	-12.74	Vertical
5640.0	-78.36	5.24	35.91	-25.47	-13	-12.47	Vertical
5640.0	-84.37	5.24	35.91	-31.48	-13	-18.48	Horizontal
234.2	-59.51	1.30	15.24	-31.23	-13	-18.23	Vertical
144.0	-59.14	1.32	16.46	-29.62	-13	-16.62	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-78.33	4.04	34.00	-28.55	-13	-15.55	Horizontal
3818.6	-82.99	4.04	34.00	-33.21	-13	-20.21	Vertical
5727.9	-75.59	5.24	36.04	-22.57	-13	-9.57	Vertical
5727.9	-78.24	5.24	36.04	-25.22	-13	-12.22	Horizontal
212.2	-65.92	1.33	17.47	-35.38	-13	-22.38	Vertical
114.0	-67.66	1.30	17.22	-37.40	-13	-24.40	Horizontal

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

Test Results for Low Channel 1860MHz							
Frequency (MHz)	Spectrum Analyzer (dBm)	Cable Loss (dB)	Antenna Factor (dB/m)	Spurious Emission Level (dBm)	Limit (dBm)	Margin (dB)	Polarity
3720.0	-78.33	4.07	33.54	-28.98	-13	-15.98	Horizontal
3720.0	-78.85	4.07	33.54	-29.50	-13	-16.50	Vertical
5580.0	-80.39	5.28	35.86	-27.51	-13	-14.51	Vertical
5580.0	-80.75	5.28	35.86	-27.87	-13	-14.87	Horizontal
241.1	-62.46	1.42	16.09	-33.21	-13	-20.21	Vertical
200.3	-65.18	1.61	17.59	-34.24	-13	-21.24	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-77.64	4.04	33.56	-28.30	-13	-15.30	Horizontal
3760.0	-78.14	4.04	33.56	-28.80	-13	-15.80	Vertical
5640.0	-76.97	5.24	35.91	-24.08	-13	-11.08	Vertical
5640.0	-78.65	5.24	35.91	-25.76	-13	-12.76	Horizontal
208.6	-58.82	1.48	15.27	-30.33	-13	-17.33	Vertical
273.8	-64.43	1.75	17.85	-33.09	-13	-20.09	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-75.09	4.04	34.00	-25.31	-13	-12.31	Horizontal
3800.0	-79.15	4.04	34.00	-29.37	-13	-16.37	Vertical
5700.0	-76.61	5.24	36.04	-23.59	-13	-10.59	Vertical
5700.0	-83.23	5.24	36.04	-30.21	-13	-17.21	Horizontal
115.6	-64.50	1.73	15.71	-35.32	-13	-22.32	Vertical
107.0	-60.57	1.34	17.17	-30.32	-13	-17.32	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)	Spectrum Analyzer (dBm)	Cable Loss (dB)	Antenna Factor (dB/m)	Spurious Emission Level (dBm)	Limit (dBm)	Margin (dB)	Polarity
3421.4	-78.27	4.02	29.80	-32.71	-13	-19.71	Horizontal
3421.4	-76.28	4.02	29.80	-30.72	-13	-17.72	Vertical
5132.1	-77.94	5.24	35.84	-25.12	-13	-12.12	Vertical
5132.1	-75.48	5.24	35.84	-22.66	-13	-9.66	Horizontal
202.0	-64.66	1.68	16.24	-35.00	-13	-22.00	Vertical
244.5	-60.29	1.59	15.20	-31.76	-13	-18.76	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-77.48	4.03	30.00	-31.71	-13	-18.71	Horizontal
3465.0	-75.70	4.03	30.00	-29.93	-13	-16.93	Vertical
5197.5	-80.29	5.25	35.86	-27.44	-13	-14.44	Vertical
5197.5	-80.05	5.25	35.86	-27.20	-13	-14.20	Horizontal
135.6	-65.39	1.52	17.43	-34.70	-13	-21.70	Vertical
261.0	-57.83	1.60	15.83	-28.66	-13	-15.66	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-80.04	4.05	30.01	-34.24	-13	-21.24	Horizontal
3508.6	-73.93	4.05	30.01	-28.13	-13	-15.13	Vertical
5262.9	-74.33	5.26	35.86	-21.47	-13	-8.47	Vertical
5262.9	-77.78	5.26	35.86	-24.92	-13	-11.92	Horizontal
244.1	-65.95	1.41	15.40	-37.40	-13	-24.40	Vertical
141.6	-62.35	1.70	16.60	-32.31	-13	-19.31	Horizontal

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

Test Results for Low Channel 1720MHz							
Frequency (MHz)	Spectrum Analyzer (dBm)	Cable Loss (dB)	Antenna Factor (dB/m)	Spurious Emission Level (dBm)	Limit (dBm)	Margin (dB)	Polarity
3440.0	-75.20	4.02	29.80	-29.64	-13	-16.64	Horizontal
3440.0	-71.74	4.02	29.80	-26.18	-13	-13.18	Vertical
5160.0	-79.07	5.24	35.84	-26.25	-13	-13.25	Vertical
5160.0	-72.99	5.24	35.84	-20.17	-13	-7.17	Horizontal
260.6	-64.03	1.77	15.17	-35.35	-13	-22.35	Vertical
201.9	-64.78	1.75	15.47	-35.82	-13	-22.82	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-81.00	4.03	30.00	-35.23	-13	-22.23	Horizontal
3465.0	-76.40	4.03	30.00	-30.63	-13	-17.63	Vertical
5197.5	-78.88	5.25	35.86	-26.03	-13	-13.03	Vertical
5197.5	-76.26	5.25	35.86	-23.41	-13	-10.41	Horizontal
166.8	-62.98	1.37	15.13	-34.74	-13	-21.74	Vertical
191.8	-66.58	1.49	17.21	-36.14	-13	-23.14	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-77.00	2.91	27.68	-34.67	-13	-21.67	Horizontal
3490.0	-81.24	2.91	27.68	-38.91	-13	-25.91	Vertical
5235.0	-78.54	5.26	35.86	-25.68	-13	-12.68	Vertical
5235.0	-80.00	5.26	35.86	-27.14	-13	-14.14	Horizontal
92.4	-63.84	1.53	16.61	-33.96	-13	-20.96	Vertical
191.5	-66.47	1.76	16.17	-36.80	-13	-23.80	Horizontal

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

. Margin = Spurious Emission Level - Limit

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

9.3 LTE BAND 5

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

Test Results for Low Channel 824.7MHz							
Frequency (MHz)	Spectrum Analyzer (dBm)	Cable Loss (dB)	Antenna Factor (dB/m)	Spurious Emission Level (dBm)	Limit (dBm)	Margin (dB)	Polarity
1649.4	-75.57	2.78	27.50	-33.55	-13	-20.55	Horizontal
1649.4	-72.26	2.78	27.50	-30.24	-13	-17.24	Vertical
2474.1	-69.42	2.90	27.80	-26.98	-13	-13.98	Vertical
2474.1	-71.84	2.90	27.80	-29.40	-13	-16.40	Horizontal
127.1	-58.32	1.54	16.73	-28.31	-13	-15.31	Vertical
88.8	-62.58	1.71	15.79	-33.34	-13	-20.34	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-70.20	2.80	27.48	-28.18	-13	-15.18	Horizontal
1673.0	-71.78	2.80	27.48	-29.76	-13	-16.76	Vertical
2509.5	-73.56	2.91	27.70	-31.21	-13	-18.21	Vertical
2509.5	-67.21	2.91	27.70	-24.86	-13	-11.86	Horizontal
179.9	-57.15	1.49	15.02	-28.90	-13	-15.90	Vertical
133.2	-64.23	1.42	17.27	-33.80	-13	-20.80	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-70.43	2.82	27.43	-28.44	-13	-15.44	Horizontal
1696.6	-73.42	2.82	27.43	-31.43	-13	-18.43	Vertical
2544.9	-70.85	2.92	27.74	-28.45	-13	-15.45	Vertical
2544.9	-71.49	2.92	27.74	-29.09	-13	-16.09	Horizontal
146.7	-64.44	1.56	17.32	-33.82	-13	-20.82	Vertical
84.0	-63.77	1.52	15.58	-34.93	-13	-21.93	Horizontal

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

Test Results for Low Channel 829MHz							
Frequency (MHz)	Spectrum Analyzer (dBm)	Cable Loss (dB)	Antenna Factor (dB/m)	Spurious Emission Level (dBm)	Limit (dBm)	Margin (dB)	Polarity
1658.0	-71.44	2.78	27.50	-29.42	-13	-16.42	Horizontal
1658.0	-66.77	2.78	27.50	-24.75	-13	-11.75	Vertical
2487.0	-74.76	2.90	27.80	-32.32	-13	-19.32	Vertical
2487.0	-75.38	2.90	27.80	-32.94	-13	-19.94	Horizontal
130.9	-58.52	1.74	16.90	-28.14	-13	-15.14	Vertical
154.1	-58.78	1.39	16.11	-29.54	-13	-16.54	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-72.30	2.80	27.48	-30.28	-13	-17.28	Horizontal
1673.0	-75.77	2.80	27.48	-33.75	-13	-20.75	Vertical
2509.5	-72.07	2.91	27.70	-29.72	-13	-16.72	Vertical
2509.5	-75.64	2.91	27.70	-33.29	-13	-20.29	Horizontal
250.7	-66.66	1.55	15.51	-37.86	-13	-24.86	Vertical
278.4	-60.89	1.40	16.58	-31.17	-13	-18.17	Horizontal
Test Results for High Channel 844MHz							
1688.0	-70.31	2.82	27.43	-28.32	-13	-15.32	Horizontal
1688.0	-68.85	2.82	27.43	-26.86	-13	-13.86	Vertical
2532.0	-71.44	2.92	27.74	-29.04	-13	-16.04	Vertical
2532.0	-65.37	2.92	27.74	-22.97	-13	-9.97	Horizontal
80.2	-62.05	1.46	17.95	-30.90	-13	-17.90	Vertical
188.7	-63.55	1.77	16.50	-33.54	-13	-20.54	Horizontal

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

. Margin = Spurious Emission Level - Limit

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

9.4 LTE BAND 7

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

Test Results for Low Channel 2502.5MHz							
Frequency (MHz)	Spectrum Analyzer (dBm)	Cable Loss (dB)	Antenna Factor (dB/m)	Spurious Emission Level (dBm)	Limit (dBm)	Margin (dB)	Polarity
5005.0	-86.99	5.23	35.81	-34.21	-25	-9.21	Horizontal
5005.0	-87.92	5.23	35.81	-35.14	-25	-10.14	Vertical
7507.5	-88.25	5.67	36.85	-33.99	-25	-8.99	Vertical
7507.5	-88.56	5.67	36.85	-34.30	-25	-9.30	Horizontal
385.5	-71.26	1.75	17.11	-40.66	-25	-15.66	Vertical
470.3	-70.61	1.39	16.39	-41.09	-25	-16.09	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-86.32	5.23	35.82	-33.53	-25	-8.53	Horizontal
5070.0	-91.70	5.23	35.82	-38.91	-25	-13.91	Vertical
7605.0	-91.11	5.67	36.85	-36.85	-25	-11.85	Vertical
7605.0	-89.00	5.67	36.85	-34.74	-25	-9.74	Horizontal
240.9	-77.12	1.74	17.03	-46.61	-25	-21.61	Vertical
556.2	-72.75	1.71	16.74	-42.56	-25	-17.56	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-86.23	5.24	35.83	-33.42	-25	-8.42	Horizontal
5135.0	-90.26	5.24	35.83	-37.45	-25	-12.45	Vertical
7702.5	-87.62	5.68	36.87	-33.33	-25	-8.33	Vertical
7702.5	-90.76	5.68	36.87	-36.47	-25	-11.47	Horizontal
545.2	-79.57	1.66	17.36	-48.81	-25	-23.81	Vertical
475.3	-72.39	1.54	15.79	-43.32	-25	-18.32	Horizontal

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

Test Results for Low Channel 2510MHz							
Frequency (MHz)	Spectrum Analyzer (dBm)	Cable Loss (dB)	Antenna Factor (dB/m)	Spurious Emission Level (dBm)	Limit (dBm)	Margin (dB)	Polarity
5020.0	-95.04	5.23	35.82	-42.25	-25	-17.25	Horizontal
5020.0	-96.28	5.23	35.82	-43.49	-25	-18.49	Vertical
7530.0	-93.01	5.67	36.86	-38.74	-25	-13.74	Vertical
7530.0	-97.38	5.67	36.86	-43.11	-25	-18.11	Horizontal
212.6	-77.76	1.40	17.02	-47.60	-25	-22.60	Vertical
406.6	-74.55	1.79	17.99	-43.03	-25	-18.03	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-91.11	5.23	35.82	-38.32	-25	-13.32	Horizontal
5070.0	-91.55	5.23	35.82	-38.76	-25	-13.76	Vertical
7605.0	-93.31	5.67	36.85	-39.05	-25	-14.05	Vertical
7605.0	-88.89	5.67	36.85	-34.63	-25	-9.63	Horizontal
215.1	-78.11	1.56	17.87	-46.94	-25	-21.94	Vertical
553.6	-79.98	1.33	17.37	-49.54	-25	-24.54	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-84.32	5.24	35.83	-31.51	-25	-6.51	Horizontal
5120.0	-87.59	5.24	35.83	-34.78	-25	-9.78	Vertical
7680.0	-93.76	5.70	36.88	-39.44	-25	-14.44	Vertical
7680.0	-87.86	5.70	36.88	-33.54	-25	-8.54	Horizontal
470.6	-76.64	1.71	17.73	-45.46	-25	-20.46	Vertical
173.4	-76.22	1.47	16.81	-46.20	-25	-21.20	Horizontal

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

. Margin = Spurious Emission Level - Limit

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

9.5 LTE BAND 17

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

Test Results for Low Channel 706.5MHz							
Frequency (MHz)	Spectrum Analyzer (dBm)	Cable Loss (dB)	Antenna Factor (dB/m)	Spurious Emission Level (dBm)	Limit (dBm)	Margin (dB)	Polarity
1413.0	-69.98	2.61	27.28	-28.35	-13	-15.35	Horizontal
1413.0	-76.74	2.61	27.28	-35.11	-13	-22.11	Vertical
2119.5	-71.36	2.87	27.59	-29.16	-13	-16.16	Vertical
2119.5	-75.43	2.87	27.59	-33.23	-13	-20.23	Horizontal
96.1	-64.77	1.40	17.13	-34.50	-13	-21.50	Vertical
220.7	-64.25	1.45	16.74	-34.32	-13	-21.32	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-72.99	2.62	27.30	-31.33	-13	-18.33	Horizontal
1420.0	-70.90	2.62	27.30	-29.24	-13	-16.24	Vertical
2130.0	-71.44	2.87	27.62	-29.21	-13	-16.21	Vertical
2130.0	-74.71	2.87	27.62	-32.48	-13	-19.48	Horizontal
216.2	-63.04	1.65	17.20	-32.45	-13	-19.45	Vertical
171.9	-66.80	1.37	16.51	-37.18	-13	-24.18	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-72.51	2.66	27.28	-30.83	-13	-17.83	Horizontal
1427.0	-68.85	2.66	27.28	-27.17	-13	-14.17	Vertical
2140.5	-71.04	2.88	27.60	-28.82	-13	-15.82	Vertical
2140.5	-70.29	2.88	27.60	-28.07	-13	-15.07	Horizontal
132.3	-68.19	1.65	16.91	-37.89	-13	-24.89	Vertical
190.6	-63.50	1.47	17.07	-33.22	-13	-20.22	Horizontal

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

Test Results for Low Channel 709MHz							
Frequency (MHz)	Spectrum Analyzer (dBm)	Cable Loss (dB)	Antenna Factor (dB/m)	Spurious Emission Level (dBm)	Limit (dBm)	Margin (dB)	Polarity
1418.0	-69.89	2.62	27.30	-28.23	-13	-15.23	Horizontal
1418.0	-71.32	2.62	27.30	-29.66	-13	-16.66	Vertical
2127.0	-73.23	2.87	27.62	-31.00	-13	-18.00	Vertical
2127.0	-75.54	2.87	27.62	-33.31	-13	-20.31	Horizontal
140.4	-64.91	1.59	17.16	-34.42	-13	-21.42	Vertical
270.4	-58.88	1.60	15.14	-30.40	-13	-17.40	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-76.52	2.62	27.30	-34.86	-13	-21.86	Horizontal
1420.0	-72.12	2.62	27.30	-30.46	-13	-17.46	Vertical
2130.0	-75.47	2.87	27.62	-33.24	-13	-20.24	Vertical
2130.0	-72.01	2.87	27.62	-29.78	-13	-16.78	Horizontal
219.5	-66.93	1.37	17.35	-36.47	-13	-23.47	Vertical
217.4	-58.11	1.79	16.49	-28.09	-13	-15.09	Horizontal
Test Results for High Channel 711MHz							
1422.0	-69.56	2.62	27.30	-27.90	-13	-14.90	Horizontal
1422.0	-73.25	2.62	27.30	-31.59	-13	-18.59	Vertical
2133.0	-74.01	2.87	27.62	-31.78	-13	-18.78	Vertical
2133.0	-73.82	2.87	27.62	-31.59	-13	-18.59	Horizontal
254.8	-59.88	1.47	17.90	-28.77	-13	-15.77	Vertical
162.5	-60.24	1.46	15.39	-31.65	-13	-18.65	Horizontal

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

. Margin = Spurious Emission Level - Limit

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

9.6 LTE BAND 38

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

Test Results for Low Channel 2572.5MHz							
Frequency (MHz)	Spectrum Analyzer (dBm)	Cable Loss (dB)	Antenna Factor (dB/m)	Spurious Emission Level (dBm)	Limit (dBm)	Margin (dB)	Polarity
5145.0	-89.79	5.23	35.81	-37.01	-25	-12.01	Horizontal
5145.0	-89.15	5.23	35.81	-36.37	-25	-11.37	Vertical
7717.5	-93.93	5.67	36.85	-39.67	-25	-14.67	Vertical
7717.5	-86.17	5.67	36.85	-31.91	-25	-6.91	Horizontal
169.2	-70.43	1.57	15.76	-41.36	-25	-16.36	Vertical
456.3	-69.64	1.48	15.05	-41.37	-25	-16.37	Horizontal
Test Results For Mid Channel 2595MHz							
5190.0	-92.63	5.23	35.82	-39.84	-25	-14.84	Horizontal
5190.0	-85.48	5.23	35.82	-32.69	-25	-7.69	Vertical
7785.0	-90.90	5.67	36.85	-36.64	-25	-11.64	Vertical
7785.0	-86.99	5.67	36.85	-32.73	-25	-7.73	Horizontal
265.0	-76.05	1.72	17.54	-45.05	-25	-20.05	Vertical
494.6	-73.60	1.63	15.30	-44.93	-25	-19.93	Horizontal
Test Results for High Channel 2617.5MHz							
5235.0	-90.56	5.24	35.83	-37.75	-25	-12.75	Horizontal
5235.0	-93.23	5.24	35.83	-40.42	-25	-15.42	Vertical
7852.5	-89.43	5.68	36.87	-35.14	-25	-10.14	Vertical
7852.5	-92.40	5.68	36.87	-38.11	-25	-13.11	Horizontal
407.5	-75.67	1.63	17.26	-45.04	-25	-20.04	Vertical
347.0	-72.32	1.47	16.74	-42.37	-25	-17.37	Horizontal

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

Test Results for Low Channel 2580MHz							
Frequency (MHz)	Spectrum Analyzer (dBm)	Cable Loss (dB)	Antenna Factor (dB/m)	Spurious Emission Level (dBm)	Limit (dBm)	Margin (dB)	Polarity
5160.0	-91.95	5.23	35.82	-39.16	-25	-14.16	Horizontal
5160.0	-96.32	5.23	35.82	-43.53	-25	-18.53	Vertical
7740.0	-93.92	5.67	36.86	-39.65	-25	-14.65	Vertical
7740.0	-97.09	5.67	36.86	-42.82	-25	-17.82	Horizontal
384.1	-71.04	1.75	15.92	-41.63	-25	-16.63	Vertical
218.1	-72.50	1.44	16.60	-42.72	-25	-17.72	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-91.35	5.23	35.82	-38.56	-25	-13.56	Horizontal
5190.0	-88.24	5.23	35.82	-35.45	-25	-10.45	Vertical
7785.0	-89.80	5.67	36.85	-35.54	-25	-10.54	Vertical
7785.0	-88.30	5.67	36.85	-34.04	-25	-9.04	Horizontal
233.2	-79.31	1.60	17.48	-48.49	-25	-23.49	Vertical
248.6	-74.09	1.43	17.41	-43.51	-25	-18.51	Horizontal
Test Results for High Channel 2610MHz							
5220.0	-86.12	5.24	35.83	-33.31	-25	-8.31	Horizontal
5220.0	-90.30	5.24	35.83	-37.49	-25	-12.49	Vertical
7830.0	-95.00	5.70	36.88	-40.68	-25	-15.68	Vertical
7830.0	-91.92	5.70	36.88	-37.60	-25	-12.60	Horizontal
146.6	-80.76	1.33	17.26	-50.43	-25	-25.43	Vertical
257.9	-75.68	1.69	16.93	-45.32	-25	-20.32	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.

9.7 LTE BAND 66

QPSK EIRP POWER FOR LTE BAND 66 (1.4MHZ BANDWIDTH)

Test Results for Low Channel 1710.7MHz							
Frequency (MHz)	Spectrum Analyzer (dBm)	Cable Loss (dB)	Antenna Factor (dB/m)	Spurious Emission Level (dBm)	Limit (dBm)	Margin (dB)	Polarity
3421.4	-71.01	4.02	29.80	-25.45	-13	-12.45	Horizontal
3421.4	-76.55	4.02	29.80	-30.99	-13	-17.99	Vertical
5132.1	-78.57	5.24	35.84	-25.75	-13	-12.75	Vertical
5132.1	-73.56	5.24	35.84	-20.74	-13	-7.74	Horizontal
229.4	-61.71	1.44	17.28	-31.25	-13	-18.25	Vertical
145.0	-66.84	1.39	17.61	-36.10	-13	-23.10	Horizontal
Test Results For Mid Channel 1745MHz							
3490.0	-79.66	4.03	30.00	-33.89	-13	-20.89	Horizontal
3490.0	-80.04	4.03	30.00	-34.27	-13	-21.27	Vertical
5235.0	-77.53	5.25	35.86	-24.68	-13	-11.68	Vertical
5235.0	-76.30	5.25	35.86	-23.45	-13	-10.45	Horizontal
89.9	-63.15	1.51	15.99	-33.91	-13	-20.91	Vertical
273.3	-68.48	1.45	17.06	-38.23	-13	-25.23	Horizontal
Test Results for High Channel 1779.3MHz							
3558.6	-81.13	4.05	30.01	-35.33	-13	-22.33	Horizontal
3558.6	-78.83	4.05	30.01	-33.03	-13	-20.03	Vertical
5337.9	-75.40	5.26	35.86	-22.54	-13	-9.54	Vertical
5337.9	-81.50	5.26	35.86	-28.64	-13	-15.64	Horizontal
224.1	-66.31	1.31	15.81	-37.45	-13	-24.45	Vertical
347.0	-72.32	1.47	16.74	-42.37	-13	-29.37	Horizontal

QPSK EIRP POWER FOR LTE BAND 66 (20MHZ BANDWIDTH)

Test Results for Low Channel 1720MHz							
Frequency (MHz)	Spectrum Analyzer (dBm)	Cable Loss (dB)	Antenna Factor (dB/m)	Spurious Emission Level (dBm)	Limit (dBm)	Margin (dB)	Polarity
3440.0	-77.76	4.02	29.80	-32.20	-13	-19.20	Horizontal
3440.0	-77.77	4.02	29.80	-32.21	-13	-19.21	Vertical
5160.0	-72.39	5.24	35.84	-19.57	-13	-6.57	Vertical
5160.0	-75.98	5.24	35.84	-23.16	-13	-10.16	Horizontal
157.4	-61.93	1.33	16.35	-32.51	-13	-19.51	Vertical
198.0	-66.17	1.40	15.01	-38.02	-13	-25.02	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-80.84	4.03	30.00	-35.07	-13	-22.07	Horizontal
3490.0	-79.83	4.03	30.00	-34.06	-13	-21.06	Vertical
5235.0	-76.66	5.25	35.86	-23.81	-13	-10.81	Vertical
5235.0	-78.70	5.25	35.86	-25.85	-13	-12.85	Horizontal
238.6	-67.30	1.67	17.90	-35.99	-13	-22.99	Vertical
87.5	-63.58	1.30	15.42	-35.12	-13	-22.12	Horizontal
Test Results for High Channel 1770MHz							
3540.0	-75.04	2.91	27.68	-32.71	-13	-19.71	Horizontal
3540.0	-75.80	2.91	27.68	-33.47	-13	-20.47	Vertical
5310.0	-78.51	5.26	35.86	-25.65	-13	-12.65	Vertical
5310.0	-78.74	5.26	35.86	-25.88	-13	-12.88	Horizontal
210.7	-59.00	1.73	17.67	-27.86	-13	-14.86	Vertical
182.0	-63.39	1.68	15.02	-34.95	-13	-21.95	Horizontal

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

. Margin = Spurious Emission Level - Limit

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

10. FREQUENCY STABILITY

RULE PART(S)

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

LIMITS

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

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

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- ☐ Temp. = -30° to $+50^{\circ}\text{C}$
- ☐ Voltage = low voltage, DC 3.27V, Normal, DC 3.85V and High voltage, DC 4.43V.

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 Band2
LTE Band 4
- ☐ LTE Band5
LTE Band 7
LTE Band 17
LTE Band 38
LTE Band 66

RESULTS

See the following pages.

10.1 LTE BAND 2

Band 2 QPSK, (20MHz BANDWIDTH RB size 100 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	1880	12.4	0.006578	2.5
3.85	1880	14.3	0.007590	2.5
4.2	1880	13.2	0.007011	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	13.2	0.007006	2.5
Extreme (50C)	1880	11.5	0.006118	2.5
Extreme (40C)	1880	13.6	0.007233	2.5
Extreme (30C)	1880	13.7	0.007285	2.5
Extreme (10C)	1880	13.5	0.007193	2.5
Extreme (0C)	1880	11.6	0.006181	2.5
Extreme (-10C)	1880	12.6	0.006692	2.5
Extreme (-20C)	1880	14.5	0.007697	2.5
Extreme (-30C)	1880	14.6	0.007784	2.5

Band 2 16QAM, (20MHz BANDWIDTH RB size 100 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	1880	9.6	0.005122	2.5
3.85	1880	8.9	0.004746	2.5
4.2	1880	8.2	0.004354	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	9.9	0.005248	2.5
Extreme (50C)	1880	8.5	0.004533	2.5
Extreme (40C)	1880	8.2	0.004341873	2.5
Extreme (30C)	1880	9.2	0.004871178	2.5
Extreme (10C)	1880	8.9	0.004726059	2.5
Extreme (0C)	1880	8.1	0.004323515	2.5
Extreme (-10C)	1880	8.6	0.004555559	2.5
Extreme (-20C)	1880	8.9	0.004711088	2.5
Extreme (-30C)	1880	8.2	0.004359816	2.5

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

10.2 LTE BAND 4

Band 4 QPSK, (20MHz BANDWIDTH RB size 100 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	1732.5	8.6	0.004981	2.5
3.85	1732.5	9.2	0.005336	2.5
4.2	1732.5	8.9	0.005130	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.6	0.004984	2.5
Extreme (50C)	1732.5	8.8	0.005077	2.5
Extreme (40C)	1732.5	6.9	0.003985	2.5
Extreme (30C)	1732.5	5.9	0.003389	2.5
Extreme (10C)	1732.5	7.0	0.004027	2.5
Extreme (0C)	1732.5	9.0	0.005192	2.5
Extreme (-10C)	1732.5	8.1	0.004652	2.5
Extreme (-20C)	1732.5	7.1	0.004099	2.5
Extreme (-30C)	1732.5	8.6	0.004940	2.5

Band 4 16QAM, (20MHz BANDWIDTH RB size 100 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	1732.5	10.2	0.005887	2.5
3.85	1732.5	9.1	0.005256	2.5
4.2	1732.5	8.4	0.004847	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	9.8	0.005643	2.5
Extreme (50C)	1732.5	9.2	0.005301	2.5
Extreme (40C)	1732.5	8.3	0.004779	2.5
Extreme (30C)	1732.5	9.4	0.005399	2.5
Extreme (10C)	1732.5	8.7	0.005033	2.5
Extreme (0C)	1732.5	8.4	0.004821	2.5
Extreme (-10C)	1732.5	8.5	0.004916	2.5
Extreme (-20C)	1732.5	8.8	0.005085	2.5
Extreme (-30C)	1732.5	8.3	0.004781	2.5

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

10.3 LTE BAND 5

Band 5 QPSK, (10MHz BANDWIDTH RB size 50 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	836.5	6.0	0.007149	2.5
3.85	836.5	6.9	0.008296	2.5
4.2	836.5	4.7	0.005588	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.4	0.007643	2.5
Extreme (50C)	836.5	5.7	0.006840	2.5
Extreme (40C)	836.5	6.4	0.007702	2.5
Extreme (30C)	836.5	6.4	0.007691	2.5
Extreme (10C)	836.5	5.6	0.006695	2.5
Extreme (0C)	836.5	5.0	0.006025	2.5
Extreme (-10C)	836.5	5.7	0.006757	2.5
Extreme (-20C)	836.5	5.9	0.007000	2.5
Extreme (-30C)	836.5	6.1	0.007245	2.5

Band 5 16QAM, (10MHz BANDWIDTH RB size 50 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	836.5	5.3	0.006341	2.5
3.85	836.5	6.4	0.007651	2.5
4.2	836.5	4.8	0.005774	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.5	0.007730	2.5
Extreme (50C)	836.5	5.8	0.006974	2.5
Extreme (40C)	836.5	6.3	0.007559	2.5
Extreme (30C)	836.5	6.2	0.007362	2.5
Extreme (10C)	836.5	5.1	0.006045	2.5
Extreme (0C)	836.5	5.2	0.006242	2.5
Extreme (-10C)	836.5	5.2	0.006255	2.5
Extreme (-20C)	836.5	6.6	0.007832	2.5
Extreme (-30C)	836.5	6.2	0.007402	2.5

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

10.4 LTE BAND 7

Band 7 QPSK, (20MHz BANDWIDTH RB size 100 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	2535	9.6	0.003775	2.5
3.85	2535	8.8	0.003455	2.5
4.2	2535	8.0	0.003169	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	9.7	0.003810	2.5
Extreme (50C)	2535	8.7	0.003444	2.5
Extreme (40C)	2535	8.7	0.003438	2.5
Extreme (30C)	2535	9.1	0.003573	2.5
Extreme (10C)	2535	8.3	0.003292	2.5
Extreme (0C)	2535	8.6	0.003386	2.5
Extreme (-10C)	2535	9.0	0.003541	2.5
Extreme (-20C)	2535	8.5	0.003339	2.5
Extreme (-30C)	2535	8.6	0.003408	2.5

Band 7 16QAM, (20MHz BANDWIDTH RB size 100 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	2535	6.9	0.002722	2.5
3.85	2535	6.4	0.002538	2.5
4.2	2535	5.5	0.002155	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	5.8	0.002285	2.5
Extreme (40C)	2535	5.1	0.001998	2.5
Extreme (30C)	2535	6.5	0.002570	2.5
Extreme (10C)	2535	5.8	0.002284	2.5
Extreme (0C)	2535	4.8	0.001905	2.5
Extreme (-10C)	2535	5.0	0.001956	2.5
Extreme (-20C)	2535	5.7	0.002254	2.5
Extreme (-30C)	2535	5.5	0.002178	2.5

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

10.5 LTE BAND 17

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	710.0	9.4	0.013305	2.5
3.85	710.0	9.2	0.012926	2.5
4.2	710.0	8.0	0.011206	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.9	0.013909	2.5
Extreme (50C)	710.0	9.2	0.012978	2.5
Extreme (40C)	710.0	7.9	0.011098	2.5
Extreme (30C)	710.0	9.3	0.013105	2.5
Extreme (10C)	710.0	8.6	0.012068	2.5
Extreme (0C)	710.0	8.5	0.011914	2.5
Extreme (-10C)	710.0	8.9	0.012539	2.5
Extreme (-20C)	710.0	8.6	0.012051	2.5
Extreme (-30C)	710.0	8.1	0.011388	2.5

Band 17 16QAM, (10MHz BANDWIDTH RB size 50 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	710.0	10.5	0.014780	2.5
3.85	710.0	9.2	0.013024	2.5
4.2	710.0	8.6	0.012118	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.7	0.013707	2.5
Extreme (50C)	710.0	8.5	0.011909	2.5
Extreme (40C)	710.0	8.0	0.011296	2.5
Extreme (30C)	710.0	9.4	0.013191	2.5
Extreme (10C)	710.0	7.7	0.010787	2.5
Extreme (0C)	710.0	8.9	0.012473	2.5
Extreme (-10C)	710.0	9.1	0.012864	2.5
Extreme (-20C)	710.0	9.1	0.012871	2.5
Extreme (-30C)	710.0	8.8	0.012421	2.5

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

10.6 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]
3.4	2595	9.8	0.003770	2.5
3.85	2595	9.2	0.003555	2.5
4.2	2595	7.9	0.003046	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	9.7	0.003743	2.5
Extreme (50C)	2595	9.1	0.003510	2.5
Extreme (40C)	2595	8.7	0.003361	2.5
Extreme (30C)	2595	8.7	0.003358	2.5
Extreme (10C)	2595	7.7	0.002955	2.5
Extreme (0C)	2595	8.8	0.003381	2.5
Extreme (-10C)	2595	9.5	0.003662	2.5
Extreme (-20C)	2595	9.0	0.003464	2.5
Extreme (-30C)	2595	8.2	0.003175	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]
3.4	2595	6.9	0.002659	2.5
3.85	2595	6.5	0.002513	2.5
4.2	2595	6.2	0.002389	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	5.2	0.001993	2.5
Extreme (40C)	2595	5.6	0.002141	2.5
Extreme (30C)	2595	6.7	0.002568	2.5
Extreme (10C)	2595	5.9	0.002284	2.5
Extreme (0C)	2595	4.9	0.001888	2.5
Extreme (-10C)	2595	4.9	0.001884	2.5
Extreme (-20C)	2595	5.6	0.002168	2.5
Extreme (-30C)	2595	6.2	0.002374	2.5

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

10.7 LTE BAND 66

Band 66 QPSK, (20MHz BANDWIDTH RB size 100 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	1745	6.4	0.003667	2.5
3.85	1745	7.1	0.004041	2.5
4.2	1745	7.7	0.004399	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	5.9	0.003384	2.5
Extreme (50C)	1745	7.2	0.004103	2.5
Extreme (40C)	1745	6.4	0.003666	2.5
Extreme (30C)	1745	6.9	0.003974	2.5
Extreme (10C)	1745	7.7	0.004411	2.5
Extreme (0C)	1745	6.4	0.003680	2.5
Extreme (-10C)	1745	5.9	0.003398	2.5
Extreme (-20C)	1745	6.6	0.003775	2.5
Extreme (-30C)	1745	5.1	0.002936	2.5

Band 66 16QAM, (20MHz BANDWIDTH RB size 100 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	1745	8.6	0.004905	2.5
3.85	1745	7.2	0.004110	2.5
4.2	1745	9.2	0.005246	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	8.5	0.004845	2.5
Extreme (50C)	1745	8.0	0.004606	2.5
Extreme (40C)	1745	8.2	0.004692	2.5
Extreme (30C)	1745	8.4	0.004803	2.5
Extreme (10C)	1745	8.7	0.004968	2.5
Extreme (0C)	1745	6.6	0.003759	2.5
Extreme (-10C)	1745	8.4	0.004810	2.5
Extreme (-20C)	1745	8.3	0.004782	2.5
Extreme (-30C)	1745	6.0	0.003437	2.5

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

11. Peak-to-Average Ratio

11.1 Description of the PAR Measurement

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

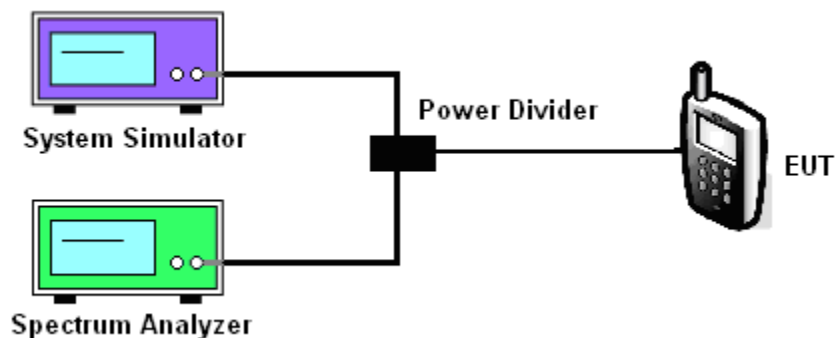
11.2 Measuring Instruments

See list of measuring instruments of this test report.

11.3 Test Procedures

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

11.4 Test Setup



MODES TESTED

- ☒ LTE Band 2/4/5/7/17/38/66
- ☐

Test data reference attachment.

-----END OF REPORT-----