

FCC CFR47 PART 22H, 24E, 27,90S CERTIFICATION TEST REPORT

FCC ID: 2AT9T-1103

Product: Tablet
Trade Mark: ulefone
Model No.: UF1103
Family Model: Tab A11 Pro, Tab A11,
Tab A11 Ultra, Tab A11 Lite,
Tab A11P, Tab A11E, Tab A11S
Report No.: S24052104206006
Issue Date: Jul 10, 2024

Prepared for

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TEST RESULT CERTIFICATION

Applicant's name : Shenzhen Ulefone Technology Co., Ltd.
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Manufacturer's Name: Shenzhen Gotron Electronic CO.,LTD.
Address: 7B01, Building A, Block 1, Anhongji Tianyao Plaza, Longhua District, Shenzhen City, Guangdong Province China
Product name: Tablet
Model and/or type reference : UF1103
Trade Mark: ulefone
Family Model: Tab A11 Pro, Tab A11, Tab A11 Ultra, Tab A11 Lite, Tab A11P, Tab A11E, Tab A11S
Test Sample Number: S240521042006
Standards: FCC CFR 47 Part 22H, Part 24E, Part 27, Part 90S
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: May 21, 2024 ~ Jul 10, 2024

Date of Issue : Jul 10, 2024

Test Result: Pass

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1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	Tablet
Trade Mark	ulefone
Model Name	UF1103
Family Model	Tab A11 Pro, Tab A11, Tab A11 Ultra, Tab A11 Lite, Tab A11P, Tab A11E, Tab A11S
Model Difference	All models are the same circuit and RF module, except for model names.
FCC ID:	2AT9T-1103
Frequency Bands:	U.S. Bands: <input checked="" type="checkbox"/> LTE FDD Band 2,4,5,7,12,17, 26, TDD Band 41
Frequency Range:	LTE FDD Band 2 Uplink: 1850MHz-1910MHz, Downlink: 1930MHz-1990MHz; LTE FDD Band 4 Uplink: 1710MHz-1755MHz, Downlink: 2110MHz-2155MHz; LTE FDD Band 5 Uplink: 824MHz-849MHz, Downlink: 869MHz-894MHz; LTE-FDD Band 7 Uplink: 2500MHz-2570MHz, Downlink: 2620MHz-2690MHz; LTE FDD Band 12 Uplink: 699MHz-716MHz, Downlink: 729MHz-746MHz; LTE FDD Band 17 Uplink: 704MHz-716MHz, Downlink: 734MHz-746MHz; LTE FDD Band 26A Uplink: 814MHz-824MHz, Downlink: 859MHz-869MHz; LTE FDD Band 26B Uplink: 824MHz-849MHz, Downlink: 869MHz-894MHz; LTE TDD Band 41 Uplink& Downlink: 2565MHz-2645MHz,
Type of Modulation:	QPSK/16QAM/64QAM(Only Downlink)
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:	PCB Antenna
Antenna gain:	Band 2: 2.07 dBi, Band 4:0.44dBi, Band 5: -3.46 dBi, Band 7: 1.5dBi, Band 12: -6.47dBi, Band 17: -6.47 dBi, Band 26: -3.75 dBi, Band 41:1.5 dBi
Adapter	Model: HJ-FC038K7-US Input: 100-240V~50/60Hz 0.6A Output: 5.0V $\overline{\text{---}}$ 3.0A 15.0W OR 9.0V $\overline{\text{---}}$ 2.0A 18.0W OR 12.0V $\overline{\text{---}}$ 1.5A 18.0W
Battery	DC 3.8V, 8800mAh, 33.44Wh
Power supply	DC 3.8V from battery or DC 5V/9V/12V from adapter
Extreme Vol. Limits:	DC 3.23V to DC 4.37V (Nominal DC 3.8V) (Note 1)

HW Version	N/A
FW Version	N/A
SW Version	N/A
** Note1: The High Voltage DC 4.37V and Low Voltage 3.23V 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: 2AT9T-1103** filing to comply with the FCC Part 22H&24E&27&90S

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, Part 90S,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

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 2/4/5/7/12/17/26/41

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.

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

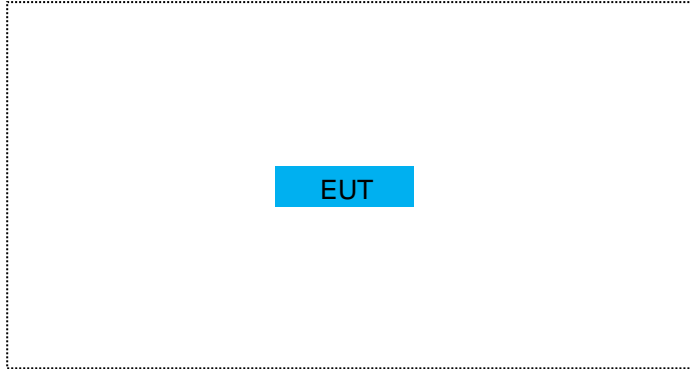
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Tablet	UF1103	FCC ID: 2AT9T-1103	EUT

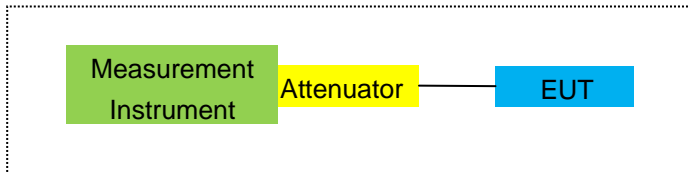
*Note: All the accessories have been used during the test.
the following “EUT” in setup diagram means EUT system.*

2.4 TEST SETUP

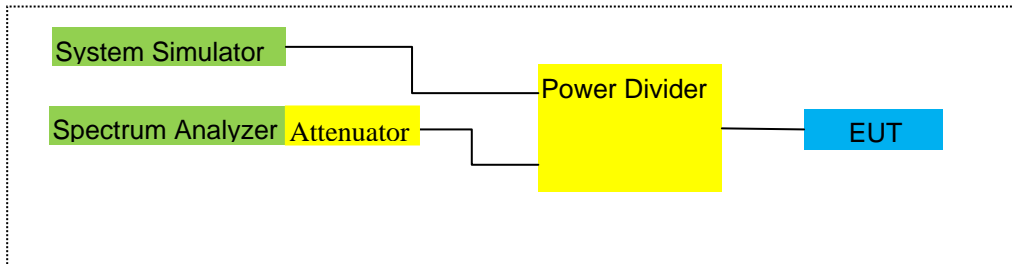
For Radiated Test Cases



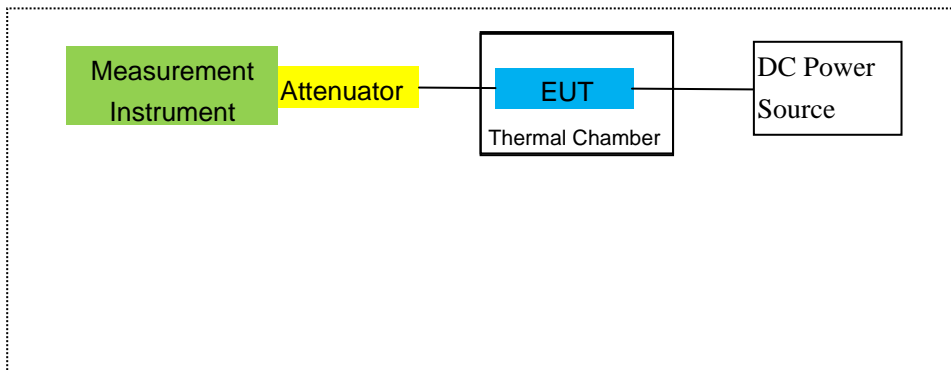
For Conducted Output Power



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	2024.04.26	2025.04.25	1 year
2	Test Receiver	R&S	ESPI	101318	2024.03.12	2025.03.11	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2024.03.11	2025.03.10	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2023.05.06	2026.05.05	3 year
5	Horn Antenna	EM	EM-AH-10180	2011071402	2024.05.12	2027.05.11	3 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2024.05.12	2027.05.11	3 year
7	Amplifier	EM	EM-30180	060538	2024.04.26	2025.04.25	1 year
8	Loop Antenna	ARA	PLA-1030/B	1029	2024.03.12	2025.03.11	1 year
9	Power Meter	R&S	NRVS	100696	2024.04.26	2025.04.25	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2024.03.12	2025.03.11	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	2024.03.12	2025.03.11	1 year
15	LISN	R&S	ENV216	101313	2024.03.12	2025.03.11	1 year
16	LISN	EMCO	3816/2	00042990	2024.03.12	2025.03.11	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2024.03.12	2025.03.11	1 year
18	Passive Voltage Probe	R&S	ESH2-Z3	100196	2024.03.12	2025.03.11	1 year
19	Test Cable	N/A	C01	N/A	2023.05.06	2026.05.05	3 year
20	Test Cable	N/A	C02	N/A	2023.05.06	2026.05.05	3 year
21	Test Cable	N/A	C03	N/A	2023.05.06	2026.05.05	3 year
22	Attenuator	MCE	24-10-34	BN9258	2024.03.12	2025.03.11	1 year
23	Spectrum Analyzer	agilent	e4440a	us44300399	2024.03.12	2025.03.11	1 year
24	test receiver	R&S	ESCI	a0304218	2024.03.12	2025.03.11	1 year
25	Communication Tester	R&S	CMU200	A0304247	2023.05.06	2026.05.05	3 year

26	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2024.03.12	2025.03.11	1 year
27	DC Power Source	N/A	PS-6005D	2017040292 3	2023.05.06	2026.05.05	3 year
28	MXG Vector Signal Generator	Agilent	N5182A	MY47070317	2024.04.25	2025.04.24	1 year
29	Communication Tester	R&S	CMW500	148500	2024.04.26	2025.04.25	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

Band 2/4/5/7/12/17/26/41

RESULTS

PASS

Test data reference attachment.

6. BANDEDGE AND EMISSION MASK

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53, and §90.691

FCC: §22.359

LIMITS

FCC: §22.917, §24.238, §27.53

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

(m)(4) For mobile digital stations, 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 as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees. Show citation box.

(c)(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;

FCC: §90.691 Emission mask requirements for EA-based systems.

(a) Out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

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 resolution bandwidth to at least 1% of emission bandwidth.

MODES TESTED

Band 2/4/5/7/12/17/26/41

RESULTS

Test data reference attachment.

7. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53 and §90.691

LIMITS

1. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.
2. The Band 7/41 emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $55 + 10 \log (P)$ dB.

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

MODES TESTED

- Band 2/4/5/7/12/17/26/41
-

7.1 MEASUREMENT METHOD

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

Test data reference attachment.

8. RADIATED MEASUREMENT

8.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232, §27.50 and §90.635

LIMITS:

- 22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.
- 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. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.
- 90.635(b) The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

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

- Band 2/4/5/7/12/17/26/41

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)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP		
							Average (mW)		
1.4MHz Band QPSK	1/#Mid	1850.7	-5.14	3.76	28.24	19.34	85.901	Horizontal	Pass
		1880	-4.95	3.91	28.22	19.36	86.298	Horizontal	Pass
		1909.3	-4.86	3.93	28.20	19.41	87.297	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-5.20	3.77	28.23	19.26	84.333	Horizontal	Pass
		1880	-5.05	3.91	28.24	19.28	84.723	Horizontal	Pass
		1908.5	-4.92	3.94	28.25	19.39	86.896	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-5.09	3.77	28.31	19.45	88.105	Horizontal	Pass
		1880	-4.71	3.91	28.22	19.60	91.201	Horizontal	Pass
		1907.5	-4.64	3.94	28.20	19.62	91.622	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-4.95	3.79	28.33	19.59	90.991	Horizontal	Pass
		1880	-4.65	3.95	28.22	19.62	91.622	Horizontal	Pass
		1905	-4.54	3.97	28.19	19.68	92.897	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-4.91	3.79	28.34	19.64	92.045	Horizontal	Pass
		1880	-4.70	3.95	28.22	19.57	90.573	Horizontal	Pass
		1902.5	-4.56	3.97	28.18	19.65	92.257	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-4.90	3.81	28.35	19.64	92.045	Horizontal	Pass
		1880	-4.57	3.96	28.22	19.69	93.111	Horizontal	Pass
		1900	-4.51	4.00	28.16	19.65	92.257	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-6.31	3.76	28.24	18.17	65.615	Vertical	Pass
		1880	-5.77	3.91	28.22	18.54	71.450	Vertical	Pass
		1909.3	-5.97	3.93	28.20	18.30	67.608	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-5.49	3.77	28.23	18.97	78.886	Vertical	Pass
		1880	-5.55	3.91	28.24	18.78	75.509	Vertical	Pass
		1908.5	-6.03	3.94	28.25	18.28	67.298	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-6.27	3.77	28.31	18.27	67.143	Vertical	Pass
		1880	-5.73	3.91	28.22	18.58	72.111	Vertical	Pass
		1907.5	-5.68	3.94	28.20	18.58	72.111	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1855	-6.43	3.79	28.33	18.11	64.714	Vertical	Pass
		1880	-5.47	3.95	28.22	18.80	75.858	Vertical	Pass
		1905	-5.31	3.97	28.19	18.91	77.804	Vertical	Pass
15.0MHz Band	1/#Mid	1857.5	-6.17	3.79	28.34	18.38	68.865	Vertical	Pass
		1880	-6.11	3.95	28.22	18.16	65.464	Vertical	Pass

QPSK		1902.5	-6.07	3.97	28.18	18.14	65.163	Vertical	Pass
20.0MHz	1/#Mid	1860	-5.51	3.81	28.35	19.03	79.983	Vertical	Pass
Band		1880	-6.03	3.96	28.22	18.23	66.527	Vertical	Pass
QPSK		1900	-5.92	4.00	28.16	18.24	66.681	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)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP		
							Average (mW)		
1.4MHz Band 16 QAM	1/#Mid	1850.7	-6.26	3.76	28.24	18.22	66.374	Horizontal	Pass
		1880	-5.73	3.91	28.22	18.58	72.111	Horizontal	Pass
		1909.3	-5.66	3.93	28.20	18.61	72.611	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-5.76	3.77	28.23	18.70	74.131	Horizontal	Pass
		1880	-5.84	3.91	28.24	18.49	70.632	Horizontal	Pass
		1908.5	-6.05	3.94	28.25	18.26	66.988	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-5.70	3.77	28.31	18.84	76.560	Horizontal	Pass
		1880	-5.61	3.91	28.22	18.70	74.131	Horizontal	Pass
		1907.5	-5.29	3.94	28.20	18.97	78.886	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-5.75	3.79	28.33	18.79	75.683	Horizontal	Pass
		1880	-5.74	3.95	28.22	18.53	71.285	Horizontal	Pass
		1905	-5.21	3.97	28.19	19.01	79.616	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-5.73	3.79	28.34	18.82	76.208	Horizontal	Pass
		1880	-5.52	3.95	28.22	18.75	74.989	Horizontal	Pass
		1902.5	-5.48	3.97	28.18	18.73	74.645	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-5.62	3.81	28.35	18.92	77.983	Horizontal	Pass
		1880	-5.32	3.96	28.22	18.94	78.343	Horizontal	Pass
		1900	-5.14	4.00	28.16	19.02	79.799	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1850.7	-6.83	3.76	28.24	17.65	58.210	Vertical	Pass
		1880	-6.75	3.91	28.22	17.56	57.016	Vertical	Pass
		1909.3	-6.54	3.93	28.20	17.73	59.293	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-6.67	3.77	28.23	17.79	60.117	Vertical	Pass
		1880	-6.38	3.91	28.24	17.95	62.373	Vertical	Pass
		1908.5	-7.00	3.94	28.25	17.31	53.827	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-6.61	3.77	28.31	17.93	62.087	Vertical	Pass
		1880	-6.43	3.91	28.22	17.88	61.376	Vertical	Pass
		1907.5	-6.98	3.94	28.20	17.28	53.456	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-7.01	3.79	28.33	17.53	56.624	Vertical	Pass
		1880	-6.88	3.95	28.22	17.39	54.828	Vertical	Pass
		1905	-6.88	3.97	28.19	17.34	54.200	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-7.37	3.79	28.34	17.18	52.240	Vertical	Pass
		1880	-7.00	3.95	28.22	17.27	53.333	Vertical	Pass
		1902.5	-6.95	3.97	28.18	17.26	53.211	Vertical	Pass
20.0MHz	1/#Mid	1860	-6.92	3.81	28.35	17.62	57.810	Vertical	Pass

Band 16		1880	-6.87	3.96	28.22	17.39	54.828	Vertical	Pass
QAM		1900	-6.55	4.00	28.16	17.61	57.677	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)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	1710.7	-5.05	3.12	27.58	19.41	87.297	Horizontal	Pass
		1732.5	-5.04	3.27	27.61	19.30	85.114	Horizontal	Pass
		1754.3	-5.02	3.29	27.63	19.32	85.507	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-5.22	3.13	27.61	19.26	84.333	Horizontal	Pass
		1732.5	-5.14	3.27	27.61	19.20	83.176	Horizontal	Pass
		1753.5	-5.06	3.30	27.62	19.26	84.333	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-4.99	3.13	27.63	19.51	89.331	Horizontal	Pass
		1732.5	-4.89	3.27	27.61	19.45	88.105	Horizontal	Pass
		1752.5	-4.77	3.30	27.60	19.53	89.743	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-4.93	3.15	27.64	19.56	90.365	Horizontal	Pass
		1732.5	-4.70	3.31	27.61	19.60	91.201	Horizontal	Pass
		1750	-4.72	3.33	27.59	19.54	89.950	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-4.94	3.15	27.65	19.56	90.365	Horizontal	Pass
		1732.5	-4.78	3.31	27.61	19.52	89.536	Horizontal	Pass
		1747.5	-4.72	3.33	27.57	19.52	89.536	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-4.88	3.17	27.66	19.61	91.411	Horizontal	Pass
		1732.5	-4.71	3.32	27.61	19.58	90.782	Horizontal	Pass
		1745	-4.65	3.36	27.56	19.55	90.157	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-5.85	3.12	27.58	18.61	72.611	Vertical	Pass
		1732.5	-6.23	3.27	27.61	18.11	64.714	Vertical	Pass
		1754.3	-5.83	3.29	27.63	18.51	70.958	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-5.75	3.13	27.61	18.73	74.645	Vertical	Pass
		1732.5	-5.28	3.27	27.61	19.06	80.538	Vertical	Pass
		1753.5	-6.12	3.30	27.62	18.20	66.069	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-5.61	3.13	27.63	18.89	77.446	Vertical	Pass
		1732.5	-5.45	3.27	27.61	18.89	77.446	Vertical	Pass
		1752.5	-5.68	3.30	27.60	18.62	72.778	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-6.18	3.15	27.64	18.31	67.764	Vertical	Pass
		1732.5	-5.67	3.31	27.61	18.63	72.946	Vertical	Pass
		1750	-5.85	3.33	27.59	18.41	69.343	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-6.38	3.15	27.65	18.12	64.863	Vertical	Pass

Band		1732.5	-5.95	3.31	27.61	18.35	68.391	Vertical	Pass
QPSK		1747.5	-6.11	3.33	27.57	18.13	65.013	Vertical	Pass
20.0MHz		1720	-6.34	3.17	27.66	18.15	65.313	Vertical	Pass
Band	1/#Mid	1732.5	-5.29	3.32	27.61	19.00	79.433	Vertical	Pass
QPSK		1745	-5.90	3.36	27.56	18.30	67.608	Vertical	Pass

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	1710.7	-5.86	3.12	27.58	18.60	72.444	Horizontal	Pass
		1732.5	-5.71	3.27	27.61	18.63	72.946	Horizontal	Pass
		1754.3	-5.71	3.29	27.63	18.63	72.946	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-5.80	3.13	27.61	18.68	73.790	Horizontal	Pass
		1732.5	-5.93	3.27	27.61	18.41	69.343	Horizontal	Pass
		1753.5	-6.15	3.30	27.62	18.17	65.615	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-5.63	3.13	27.63	18.87	77.090	Horizontal	Pass
		1732.5	-5.59	3.27	27.61	18.75	74.989	Horizontal	Pass
		1752.5	-5.28	3.30	27.60	19.02	79.799	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-5.70	3.15	27.64	18.79	75.683	Horizontal	Pass
		1732.5	-5.89	3.31	27.61	18.41	69.343	Horizontal	Pass
		1750	-5.27	3.33	27.59	18.99	79.250	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-5.50	3.15	27.65	19.00	79.433	Horizontal	Pass
		1732.5	-5.56	3.31	27.61	18.74	74.817	Horizontal	Pass
		1747.5	-5.58	3.33	27.57	18.66	73.451	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-5.45	3.17	27.66	19.04	80.168	Horizontal	Pass
		1732.5	-5.46	3.32	27.61	18.83	76.384	Horizontal	Pass
		1745	-5.27	3.36	27.56	18.93	78.163	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-6.50	3.12	27.58	17.96	62.517	Vertical	Pass
		1732.5	-6.76	3.27	27.61	17.58	57.280	Vertical	Pass
		1754.3	-7.00	3.29	27.63	17.34	54.200	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-6.69	3.13	27.61	17.79	60.117	Vertical	Pass
		1732.5	-6.59	3.27	27.61	17.75	59.566	Vertical	Pass
		1753.5	-6.63	3.30	27.62	17.69	58.749	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-7.25	3.13	27.63	17.25	53.088	Vertical	Pass
		1732.5	-6.96	3.27	27.61	17.38	54.702	Vertical	Pass
		1752.5	-6.57	3.30	27.60	17.73	59.293	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-7.38	3.15	27.64	17.11	51.404	Vertical	Pass
		1732.5	-6.72	3.31	27.61	17.58	57.280	Vertical	Pass
		1750	-6.85	3.33	27.59	17.41	55.081	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-7.28	3.15	27.65	17.22	52.723	Vertical	Pass
		1732.5	-7.20	3.31	27.61	17.10	51.286	Vertical	Pass
		1747.5	-7.17	3.33	27.57	17.07	50.933	Vertical	Pass

20.0MHz		1720	-6.74	3.17	27.66	17.75	59.566	Vertical	Pass
Band 16	1/#Mid	1732.5	-6.92	3.32	27.61	17.37	54.576	Vertical	Pass
QAM		1745	-6.58	3.36	27.56	17.62	57.810	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 5

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	3/#Mid	824.7	4.25	2.01	19.68	2.15	19.77	94.842	Horizontal	Pass
		836.5	4.13	2.01	19.77	2.15	19.74	94.189	Horizontal	Pass
		848.3	3.93	2.02	19.82	2.15	19.58	90.782	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	825.5	4.02	2.01	19.70	2.15	19.56	90.365	Horizontal	Pass
		836.5	3.92	2.01	19.77	2.15	19.53	89.743	Horizontal	Pass
		847.5	3.79	2.02	19.81	2.15	19.43	87.700	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	826.5	4.30	2.01	19.71	2.15	19.85	96.605	Horizontal	Pass
		836.5	4.18	2.01	19.77	2.15	19.79	95.280	Horizontal	Pass
		846.5	4.02	2.02	19.79	2.15	19.64	92.045	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	829	4.32	2.01	19.73	2.15	19.89	97.499	Horizontal	Pass
		836.5	4.27	2.01	19.77	2.15	19.88	97.275	Horizontal	Pass
		844	4.17	2.02	19.78	2.15	19.78	95.060	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	824.7	2.84	2.01	19.68	2.15	18.36	68.549	Vertical	Pass
		836.5	2.88	2.01	19.77	2.15	18.49	70.632	Vertical	Pass
		848.3	3.21	2.02	19.82	2.15	18.86	76.913	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	825.5	3.52	2.01	19.70	2.15	19.06	80.538	Vertical	Pass
		836.5	3.01	2.01	19.77	2.15	18.62	72.778	Vertical	Pass
		847.5	3.03	2.02	19.81	2.15	18.67	73.621	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	826.5	2.76	2.01	19.71	2.15	18.31	67.764	Vertical	Pass
		836.5	2.96	2.01	19.77	2.15	18.57	71.945	Vertical	Pass
		846.5	3.03	2.02	19.79	2.15	18.65	73.282	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	829	2.62	2.01	19.73	2.15	18.19	65.917	Vertical	Pass
		836.5	3.20	2.01	19.77	2.15	18.81	76.033	Vertical	Pass
		844	3.43	2.02	19.78	2.15	19.04	80.168	Vertical	Pass

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	3/#Mid	824.7	3.40	2.01	19.68	2.15	18.92	77.983	Horizontal	Pass
		836.5	3.33	2.01	19.77	2.15	18.94	78.343	Horizontal	Pass
		848.3	3.17	2.02	19.82	2.15	18.82	76.208	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	3.48	2.01	19.70	2.15	19.02	79.799	Horizontal	Pass
		836.5	3.19	2.01	19.77	2.15	18.80	75.858	Horizontal	Pass
		847.5	2.67	2.02	19.81	2.15	18.31	67.764	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	3.80	2.01	19.71	2.15	19.35	86.099	Horizontal	Pass
		836.5	3.57	2.01	19.77	2.15	19.18	82.794	Horizontal	Pass
		846.5	3.32	2.02	19.79	2.15	18.94	78.343	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	829	3.80	2.01	19.73	2.15	19.37	86.497	Horizontal	Pass
		836.5	3.52	2.01	19.77	2.15	19.13	81.846	Horizontal	Pass
		844	3.06	2.02	19.78	2.15	18.67	73.621	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	824.7	2.54	2.01	19.68	2.15	18.06	63.973	Vertical	Pass
		836.5	3.45	2.01	19.77	2.15	19.06	80.538	Vertical	Pass
		848.3	2.97	2.02	19.82	2.15	18.62	72.778	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	2.85	2.01	19.70	2.15	18.39	69.024	Vertical	Pass
		836.5	1.79	2.01	19.77	2.15	17.40	54.954	Vertical	Pass
		847.5	2.46	2.02	19.81	2.15	18.10	64.565	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	2.50	2.01	19.71	2.15	18.05	63.826	Vertical	Pass
		836.5	2.04	2.01	19.77	2.15	17.65	58.210	Vertical	Pass
		846.5	1.46	2.02	19.79	2.15	17.08	51.050	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	829	2.01	2.01	19.73	2.15	17.58	57.280	Vertical	Pass
		836.5	1.88	2.01	19.77	2.15	17.49	56.105	Vertical	Pass
		844	2.28	2.02	19.78	2.15	17.89	61.518	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)

ERP(dBm)=EIRP-2.15

8.5 LTE BAND 7

Radiated Power (EIRP) for Band 7									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	2502.5	-3.44	4.54	27.75	19.77	94.842	Horizontal	Pass
		2535	-3.27	4.69	27.72	19.76	94.624	Horizontal	Pass
		2567.5	-3.20	4.71	27.71	19.80	95.499	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2505	-3.37	4.55	27.76	19.84	96.383	Horizontal	Pass
		2535	-3.18	4.69	27.72	19.85	96.605	Horizontal	Pass
		2565	-3.10	4.72	27.70	19.88	97.275	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-3.38	4.55	27.77	19.84	96.383	Horizontal	Pass
		2535	-3.24	4.69	27.72	19.79	95.280	Horizontal	Pass
		2562.5	-3.14	4.72	27.69	19.83	96.161	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2510	-3.32	4.57	27.78	19.89	97.499	Horizontal	Pass
		2535	-3.14	4.73	27.72	19.85	96.605	Horizontal	Pass
		2560	-3.10	4.75	27.68	19.83	96.161	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	-5.24	4.54	27.75	17.97	62.661	Vertical	Pass
		2535	-5.01	4.69	27.72	18.02	63.387	Vertical	Pass
		2567.5	-4.36	4.71	27.71	18.64	73.114	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2505	-4.64	4.55	27.76	18.57	71.945	Vertical	Pass
		2535	-4.30	4.69	27.72	18.73	74.645	Vertical	Pass
		2565	-4.91	4.72	27.70	18.07	64.121	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-4.54	4.55	27.77	18.68	73.790	Vertical	Pass
		2535	-4.24	4.69	27.72	18.79	75.683	Vertical	Pass
		2562.5	-5.02	4.72	27.69	17.95	62.373	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2510	-4.33	4.57	27.78	18.88	77.268	Vertical	Pass
		2535	-4.79	4.73	27.72	18.20	66.069	Vertical	Pass
		2560	-4.97	4.75	27.68	17.96	62.517	Vertical	Pass

Radiated Power (EIRP) for Band 7									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	2502.5	-4.02	4.54	27.75	19.19	82.985	Horizontal	Pass
		2535	-3.71	4.69	27.72	19.32	85.507	Horizontal	Pass
		2567.5	-3.79	4.71	27.71	19.21	83.368	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-3.91	4.55	27.76	19.30	85.114	Horizontal	Pass
		2535	-3.92	4.69	27.72	19.11	81.470	Horizontal	Pass
		2565	-4.19	4.72	27.70	18.79	75.683	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-4.09	4.55	27.77	19.13	81.846	Horizontal	Pass
		2535	-4.06	4.69	27.72	18.97	78.886	Horizontal	Pass
		2562.5	-3.67	4.72	27.69	19.30	85.114	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-3.97	4.57	27.78	19.24	83.946	Horizontal	Pass
		2535	-3.64	4.73	27.72	19.35	86.099	Horizontal	Pass
		2560	-3.74	4.75	27.68	19.19	82.985	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	-5.39	4.54	27.75	17.82	60.534	Vertical	Pass
		2535	-5.47	4.69	27.72	17.56	57.016	Vertical	Pass
		2567.5	-4.17	4.71	27.71	18.83	76.384	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-4.28	4.55	27.76	18.93	78.163	Vertical	Pass
		2535	-4.72	4.69	27.72	18.31	67.764	Vertical	Pass
		2565	-4.76	4.72	27.70	18.22	66.374	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-4.66	4.55	27.77	18.56	71.779	Vertical	Pass
		2535	-4.92	4.69	27.72	18.11	64.714	Vertical	Pass
		2562.5	-5.10	4.72	27.69	17.87	61.235	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-5.65	4.57	27.78	17.56	57.016	Vertical	Pass
		2535	-5.40	4.73	27.72	17.59	57.412	Vertical	Pass
		2560	-4.51	4.75	27.68	18.42	69.502	Vertical	Pass

Note:

SG Level= Signal generator output

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

8.6 LTE BAND 12

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	699.7	4.51	1.91	19.21	2.15	19.66	92.470	Vertical	Pass
		707.5	4.43	1.91	19.26	2.15	19.63	91.833	Vertical	Pass
		715.3	4.21	1.93	19.34	2.15	19.47	88.512	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	700.5	4.30	1.91	19.21	2.15	19.45	88.105	Vertical	Pass
		707.5	4.22	1.91	19.26	2.15	19.42	87.498	Vertical	Pass
		714.5	4.06	1.93	19.34	2.15	19.32	85.507	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	701.5	4.57	1.91	19.23	2.15	19.74	94.189	Vertical	Pass
		707.5	4.48	1.91	19.26	2.15	19.68	92.897	Vertical	Pass
		713.5	4.27	1.92	19.33	2.15	19.53	89.743	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	704	4.59	1.91	19.25	2.15	19.78	95.060	Vertical	Pass
		707.5	4.57	1.91	19.26	2.15	19.77	94.842	Vertical	Pass
		711	4.42	1.92	19.32	2.15	19.67	92.683	Vertical	Pass
1.4MHz Band QPSK	1/#Mid	699.7	3.43	1.91	19.21	2.15	18.58	72.111	Horizontal	Pass
		707.5	3.74	1.91	19.26	2.15	18.94	78.343	Horizontal	Pass
		715.3	3.58	1.93	19.34	2.15	18.84	76.560	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	700.5	2.81	1.91	19.21	2.15	17.96	62.517	Horizontal	Pass
		707.5	2.85	1.91	19.26	2.15	18.05	63.826	Horizontal	Pass
		714.5	2.99	1.93	19.34	2.15	18.25	66.834	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	701.5	3.36	1.91	19.23	2.15	18.53	71.285	Horizontal	Pass
		707.5	3.04	1.91	19.26	2.15	18.24	66.681	Horizontal	Pass
		713.5	3.37	1.92	19.33	2.15	18.63	72.946	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	704	3.59	1.91	19.25	2.15	18.78	75.509	Horizontal	Pass
		707.5	3.26	1.91	19.26	2.15	18.46	70.146	Horizontal	Pass
		711	3.45	1.92	19.32	2.15	18.70	74.131	Horizontal	Pass

Radiated Power (ERP) for Band 12											
Mode	RB/RB SIZE	Frequency	Result							Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss	Antenna Factor	Correction	Max. EIRP	Max. EIRP			
			(dBm)				(dB)	Average	Average		
				(dBm)	(dB)	(dBm)	(mW)				
1.4MHz Band 16 QAM	1/#Mid	699.7	4.58	1.91	19.21	2.15	19.73	93.972	Vertical	Pass	
		707.5	4.50	1.91	19.26	2.15	19.70	93.325	Vertical	Pass	
		715.3	4.28	1.93	19.34	2.15	19.54	89.950	Vertical	Pass	
3.0MHz Band 16 QAM	1/#Mid	700.5	4.37	1.91	19.21	2.15	19.52	89.536	Vertical	Pass	
		707.5	4.29	1.91	19.26	2.15	19.49	88.920	Vertical	Pass	
		714.5	4.13	1.93	19.34	2.15	19.39	86.896	Vertical	Pass	
5.0MHz Band 16 QAM	1/#Mid	701.5	4.64	1.91	19.23	2.15	19.81	95.719	Vertical	Pass	
		707.5	4.55	1.91	19.26	2.15	19.75	94.406	Vertical	Pass	
		713.5	4.34	1.92	19.33	2.15	19.60	91.201	Vertical	Pass	
10.0MHz Band 16 QAM	1/#Mid	704	4.66	1.91	19.25	2.15	19.85	96.605	Vertical	Pass	
		707.5	4.64	1.91	19.26	2.15	19.84	96.383	Vertical	Pass	
		711	4.49	1.92	19.32	2.15	19.74	94.189	Vertical	Pass	
1.4MHz Band 16 QAM	1/#Mid	699.7	3.22	1.91	19.21	2.15	18.37	68.707	Horizontal	Pass	
		707.5	3.24	1.91	19.26	2.15	18.44	69.823	Horizontal	Pass	
		715.3	3.29	1.93	19.34	2.15	18.55	71.614	Horizontal	Pass	
3.0MHz Band 16 QAM	1/#Mid	700.5	3.28	1.91	19.21	2.15	18.43	69.663	Horizontal	Pass	
		707.5	3.39	1.91	19.26	2.15	18.59	72.277	Horizontal	Pass	
		714.5	3.12	1.93	19.34	2.15	18.38	68.865	Horizontal	Pass	
5.0MHz Band 16 QAM	1/#Mid	701.5	3.62	1.91	19.23	2.15	18.79	75.683	Horizontal	Pass	
		707.5	3.46	1.91	19.26	2.15	18.66	73.451	Horizontal	Pass	
		713.5	3.62	1.92	19.33	2.15	18.88	77.268	Horizontal	Pass	
10.0MHz Band 16 QAM	1/#Mid	704	3.10	1.91	19.25	2.15	18.29	67.453	Horizontal	Pass	
		707.5	2.87	1.91	19.26	2.15	18.07	64.121	Horizontal	Pass	
		711	3.03	1.92	19.32	2.15	18.28	67.298	Horizontal	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)

ERP(dBm)=EIRP-2.15

8.7 LTE BAND 17

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	706.5	4.14	1.91	19.23	2.15	19.31	85.310	Vertical	Pass
		710	4.00	1.91	19.26	2.15	19.20	83.176	Vertical	Pass
		713.5	3.90	1.92	19.33	2.15	19.16	82.414	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	709	4.15	1.91	19.25	2.15	19.34	85.901	Vertical	Pass
		710	4.10	1.91	19.26	2.15	19.30	85.114	Vertical	Pass
		711	4.06	1.92	19.32	2.15	19.31	85.310	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	706.5	2.71	1.91	19.23	2.15	17.88	61.376	Horizontal	Pass
		710	2.53	1.91	19.26	2.15	17.73	59.293	Horizontal	Pass
		713.5	2.94	1.92	19.33	2.15	18.20	66.069	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	709	3.75	1.91	19.25	2.15	18.94	78.343	Horizontal	Pass
		710	3.41	1.91	19.26	2.15	18.61	72.611	Horizontal	Pass
		711	2.50	1.92	19.32	2.15	17.75	59.566	Horizontal	Pass

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	706.5	3.49	1.91	19.23	2.15	18.66	73.451	Vertical	Pass
		710	3.40	1.91	19.26	2.15	18.60	72.444	Vertical	Pass
		713.5	3.20	1.92	19.33	2.15	18.46	70.146	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	709	3.03	1.91	19.25	2.15	18.22	66.374	Vertical	Pass
		710	3.56	1.91	19.26	2.15	18.76	75.162	Vertical	Pass
		711	3.29	1.92	19.32	2.15	18.54	71.450	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	706.5	2.58	1.91	19.23	2.15	17.75	59.566	Horizontal	Pass
		710	2.44	1.91	19.26	2.15	17.64	58.076	Horizontal	Pass
		713.5	2.03	1.92	19.33	2.15	17.29	53.580	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	709	2.13	1.91	19.25	2.15	17.32	53.951	Horizontal	Pass
		710	1.93	1.91	19.26	2.15	17.13	51.642	Horizontal	Pass
		711	2.17	1.92	19.32	2.15	17.42	55.208	Horizontal	Pass

Note:

ERP=EIRP-2.15

SG Level= Signal generator output

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

8.8 LTE BAND 26 A

Radiated Power (ERP) for Band 26(814-824)										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz BW QPSK	6/0	814.7	-3.34	3.76	28.24	2.15	18.99	79.25	Horizontal	Pass
		819	-3.20	3.91	28.22	2.15	18.96	78.70	Horizontal	Pass
		823.3	-3.32	3.93	28.20	2.15	18.80	75.86	Horizontal	Pass
3.0MHz BW QPSK	15/0	815.5	-3.53	3.77	28.23	2.15	18.78	75.51	Horizontal	Pass
		819	-3.43	3.91	28.24	2.15	18.75	74.99	Horizontal	Pass
		822.5	-3.51	3.94	28.25	2.15	18.65	73.28	Horizontal	Pass
5.0MHz BW QPSK	25/0	816.5	-3.32	3.77	28.31	2.15	19.07	80.72	Horizontal	Pass
		819	-3.15	3.91	28.22	2.15	19.01	79.62	Horizontal	Pass
		821.5	-3.25	3.94	28.20	2.15	18.86	76.91	Horizontal	Pass
10.0MHz BW QPSK	50/0	819	-3.05	3.91	28.22	2.15	19.11	81.47	Horizontal	Pass
1.4MHz BW QPSK	6/0	814.7	-3.30	3.79	28.34	2.15	19.10	81.28	Vertical	Pass
		819	-3.12	3.95	28.22	2.15	19.00	79.43	Vertical	Pass
		823.3	-3.87	3.97	28.18	2.15	18.19	65.92	Vertical	Pass
3.0MHz BW QPSK	15/0	815.5	-4.87	3.77	28.23	2.15	17.44	55.46	Vertical	Pass
		819	-4.51	3.91	28.24	2.15	17.67	58.48	Vertical	Pass
		822.5	-4.51	3.94	28.25	2.15	17.65	58.21	Vertical	Pass
5.0MHz BW QPSK	25/0	816.5	-4.13	3.77	28.31	2.15	18.26	66.99	Vertical	Pass
		819	-4.29	3.91	28.22	2.15	17.87	61.24	Vertical	Pass
		821.5	-4.14	3.94	28.20	2.15	17.97	62.66	Vertical	Pass
10.0MHz BW QPSK	50/0	819	-4.50	3.91	28.22	2.15	17.66	58.34	Vertical	Pass

Radiated Power (ERP) for Band 26(814-824)										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz BW 16 QAM	6/0	814.7	-3.31	3.76	28.24	2.15	19.02	79.80	Horizontal	Pass
		819	-3.17	3.91	28.22	2.15	18.99	79.25	Horizontal	Pass
		823.3	-3.29	3.93	28.20	2.15	18.83	76.38	Horizontal	Pass
3.0MHz BW 16 QAM	15/0	815.5	-3.50	3.77	28.23	2.15	18.81	76.03	Horizontal	Pass
		819	-3.40	3.91	28.24	2.15	18.78	75.51	Horizontal	Pass
		822.5	-3.48	3.94	28.25	2.15	18.68	73.79	Horizontal	Pass
5.0MHz BW 16 QAM	25/0	816.5	-3.29	3.77	28.31	2.15	19.10	81.28	Horizontal	Pass
		819	-3.12	3.91	28.22	2.15	19.04	80.17	Horizontal	Pass
		821.5	-3.22	3.94	28.20	2.15	18.89	77.45	Horizontal	Pass
10.0MHz BW 16 QAM	50/0	819	-3.04	3.91	28.24	2.15	19.14	82.04	Horizontal	Pass
1.4MHz BW 16 QAM	6/0	814.7	-3.27	3.79	28.34	2.15	19.13	81.85	Vertical	Pass
		819	-3.09	3.95	28.22	2.15	19.03	79.98	Vertical	Pass
		823.3	-4.67	3.97	28.18	2.15	17.39	54.83	Vertical	Pass
3.0MHz BW 16 QAM	15/0	815.5	-4.78	3.77	28.23	2.15	17.53	56.62	Vertical	Pass
		819	-4.03	3.91	28.24	2.15	18.15	65.31	Vertical	Pass
		822.5	-4.05	3.94	28.25	2.15	18.11	64.71	Vertical	Pass
5.0MHz BW 16 QAM	25/0	816.5	-4.26	3.77	28.31	2.15	18.13	65.01	Vertical	Pass
		819	-4.14	3.91	28.22	2.15	18.02	63.39	Vertical	Pass
		821.5	-4.65	3.94	28.20	2.15	17.46	55.72	Vertical	Pass
10.0MHz BW 16 QAM	50/0	819	-4.06	3.91	28.24	2.15	18.12	64.86	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)

ERP(dBm)=EIRP-2.15

8.9 LTE BAND 26 B

Radiated Power (ERP) for Band 26(824-849)										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	6/0	824.7	2.46	2.01	19.68	2.15	17.98	62.81	Horizontal	Pass
		836.5	2.40	2.01	19.77	2.15	18.01	63.24	Horizontal	Pass
		848.3	2.34	2.02	19.82	2.15	17.99	62.95	Horizontal	Pass
3.0MHz Band QPSK	15/0	825.5	2.50	2.01	19.70	2.15	18.04	63.68	Horizontal	Pass
		836.5	2.13	2.01	19.77	2.15	17.74	59.43	Horizontal	Pass
		847.5	2.58	2.02	19.81	2.15	18.22	66.37	Horizontal	Pass
5.0MHz Band QPSK	25/0	826.5	2.76	2.01	19.71	2.15	18.31	67.76	Horizontal	Pass
		836.5	2.58	2.01	19.77	2.15	18.19	65.92	Horizontal	Pass
		846.5	1.95	2.02	19.79	2.15	17.57	57.15	Horizontal	Pass
10.0MHz Band QPSK	50/0	829	1.97	2.01	19.73	2.15	17.54	56.75	Horizontal	Pass
		836.5	2.09	2.01	19.77	2.15	17.70	58.88	Horizontal	Pass
		844	2.69	2.02	19.78	2.15	18.30	67.61	Horizontal	Pass
15.0MHz Band QPSK	75/0	831.5	1.78	2.01	19.73	2.15	17.35	54.33	Horizontal	Pass
		836.5	2.71	2.01	19.77	2.15	18.32	67.92	Horizontal	Pass
		841.5	2.44	2.02	19.78	2.15	18.05	63.83	Horizontal	Pass
1.4MHz Band QPSK	6/0	824.7	2.04	2.01	19.68	2.15	17.56	57.02	Vertical	Pass
		836.5	1.98	2.01	19.77	2.15	17.59	57.41	Vertical	Pass
		848.3	2.24	2.02	19.82	2.15	17.89	61.52	Vertical	Pass
3.0MHz Band QPSK	15/0	825.5	2.18	2.01	19.70	2.15	17.72	59.16	Vertical	Pass
		836.5	1.80	2.01	19.77	2.15	17.41	55.08	Vertical	Pass
		847.5	2.05	2.02	19.81	2.15	17.69	58.75	Vertical	Pass
5.0MHz Band QPSK	25/0	826.5	2.20	2.01	19.71	2.15	17.75	59.57	Vertical	Pass
		836.5	1.95	2.01	19.77	2.15	17.56	57.02	Vertical	Pass
		846.5	2.07	2.02	19.79	2.15	17.69	58.75	Vertical	Pass
10.0MHz Band QPSK	50/0	829	1.84	2.01	19.73	2.15	17.41	55.08	Vertical	Pass
		836.5	2.18	2.01	19.77	2.15	17.79	60.12	Vertical	Pass
		844	2.02	2.02	19.78	2.15	17.63	57.94	Vertical	Pass
15.0MHz Band QPSK	75/0	831.5	1.85	2.01	19.73	2.15	17.42	55.21	Vertical	Pass
		836.5	2.60	2.01	19.77	2.15	18.21	66.22	Vertical	Pass
		841.5	2.20	2.02	19.78	2.15	17.81	60.39	Vertical	Pass

Radiated Power (ERP) for Band 26(824-849)										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	6/0	824.7	2.50	2.01	19.68	2.15	18.02	63.39	Horizontal	Pass
		836.5	1.73	2.01	19.77	2.15	17.34	54.20	Horizontal	Pass
		848.3	1.67	2.02	19.82	2.15	17.32	53.95	Horizontal	Pass
3.0MHz Band 16 QAM	15/0	825.5	1.76	2.01	19.70	2.15	17.30	53.70	Horizontal	Pass
		836.5	2.06	2.01	19.77	2.15	17.67	58.48	Horizontal	Pass
		847.5	1.76	2.02	19.81	2.15	17.40	54.95	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	826.5	1.92	2.01	19.71	2.15	17.47	55.85	Horizontal	Pass
		836.5	1.89	2.01	19.77	2.15	17.50	56.23	Horizontal	Pass
		846.5	1.73	2.02	19.79	2.15	17.35	54.33	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	829	2.13	2.01	19.73	2.15	17.70	58.88	Horizontal	Pass
		836.5	2.45	2.01	19.77	2.15	18.06	63.97	Horizontal	Pass
		844	1.69	2.02	19.78	2.15	17.30	53.70	Horizontal	Pass
15.0MHz Band QPSK	75/0	831.5	2.51	2.01	19.73	2.15	18.08	64.27	Horizontal	Pass
		836.5	1.69	2.01	19.77	2.15	17.30	53.70	Horizontal	Pass
		841.5	1.49	2.02	19.78	2.15	17.10	51.29	Horizontal	Pass
1.4MHz Band 16 QAM	6/0	824.7	2.01	2.01	19.68	2.15	17.53	56.62	Vertical	Pass
		836.5	2.40	2.01	19.77	2.15	18.01	63.24	Vertical	Pass
		848.3	2.15	2.02	19.82	2.15	17.80	60.26	Vertical	Pass
3.0MHz Band 16 QAM	15/0	825.5	1.95	2.01	19.70	2.15	17.49	56.10	Vertical	Pass
		836.5	1.77	2.01	19.77	2.15	17.38	54.70	Vertical	Pass
		847.5	2.37	2.02	19.81	2.15	18.01	63.24	Vertical	Pass
5.0MHz Band 16 QAM	25/0	826.5	1.64	2.01	19.71	2.15	17.19	52.36	Vertical	Pass
		836.5	2.08	2.01	19.77	2.15	17.69	58.75	Vertical	Pass
		846.5	1.70	2.02	19.79	2.15	17.32	53.95	Vertical	Pass
10.0MHz Band 16 QAM	50/0	829	2.11	2.01	19.73	2.15	17.68	58.61	Vertical	Pass
		836.5	2.33	2.01	19.77	2.15	17.94	62.23	Vertical	Pass
		844	1.71	2.02	19.78	2.15	17.32	53.95	Vertical	Pass
15.0MHz Band QPSK	75/0	831.5	1.65	2.01	19.73	2.15	17.22	52.72	Vertical	Pass
		836.5	1.58	2.01	19.77	2.15	17.19	52.36	Vertical	Pass
		841.5	1.84	2.02	19.78	2.15	17.45	55.59	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)

ERP(dBm)=EIRP-2.15

8.10 LTE BAND 41

Radiated Power (EIRP) for Band 41										
Mode	RB/RB SIZE	Frequency	Result						Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP	ERP		
			(dBm)			Average	Average			
						(dBm)	(mW)			
5.0MHz Band QPSK	1/#Mid	2567.5	-4.57	4.54	27.75	18.64	73.114	Horizontal	Pass	
		2605	-4.42	4.69	27.72	18.61	72.611	Horizontal	Pass	
		2642.5	-4.30	4.71	27.71	18.70	74.131	Horizontal	Pass	
10.0MHz Band QPSK	1/#Mid	2570	-4.65	4.55	27.76	18.56	71.779	Horizontal	Pass	
		2605	-4.51	4.69	27.72	18.52	71.121	Horizontal	Pass	
		2640	-4.50	4.72	27.70	18.48	70.469	Horizontal	Pass	
15.0MHz Band QPSK	1/#Mid	2572.5	-4.48	4.55	27.77	18.74	74.817	Horizontal	Pass	
		2605	-4.20	4.69	27.72	18.83	76.384	Horizontal	Pass	
		2637.5	-4.25	4.72	27.69	18.72	74.473	Horizontal	Pass	
20.0MHz Band QPSK	1/#Mid	2575	-4.09	4.57	27.78	19.12	81.658	Horizontal	Pass	
		2605	-4.14	4.73	27.72	18.85	76.736	Horizontal	Pass	
		2635	-4.14	4.75	27.68	18.79	75.683	Horizontal	Pass	
5.0MHz Band QPSK	1/#Mid	2567.5	-4.37	4.54	27.75	18.84	76.560	Vertical	Pass	
		2605	-4.28	4.69	27.72	18.75	74.989	Vertical	Pass	
		2642.5	-4.26	4.71	27.71	18.74	74.817	Vertical	Pass	
10.0MHz Band QPSK	1/#Mid	2570	-4.35	4.55	27.76	18.86	76.913	Vertical	Pass	
		2605	-4.19	4.69	27.72	18.84	76.560	Vertical	Pass	
		2640	-4.26	4.72	27.70	18.72	74.473	Vertical	Pass	
15.0MHz Band QPSK	1/#Mid	2572.5	-6.10	4.55	27.77	17.12	51.523	Vertical	Pass	
		2605	-5.44	4.69	27.72	17.59	57.412	Vertical	Pass	
		2637.5	-5.56	4.72	27.69	17.41	55.081	Vertical	Pass	
20.0MHz Band QPSK	1/#Mid	2575	-6.02	4.57	27.78	17.19	52.360	Vertical	Pass	
		2605	-5.56	4.73	27.72	17.43	55.335	Vertical	Pass	
		2635	-5.40	4.75	27.68	17.53	56.624	Vertical	Pass	

Radiated Power (EIRP) for Band 41										
Mode	RB/RB SIZE	Frequency	Result						Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP			
			(dBm)			Average (dBm)	Average (mW)			
5.0MHz Band 16 QAM	1/#Mid	2567.5	-4.41	4.54	27.75	18.80	75.858	Horizontal	Pass	
		2605	-4.26	4.69	27.72	18.77	75.336	Horizontal	Pass	
		2642.5	-4.14	4.71	27.71	18.86	76.913	Horizontal	Pass	
10.0MHz Band 16 QAM	1/#Mid	2570	-4.49	4.55	27.76	18.72	74.473	Horizontal	Pass	
		2605	-4.35	4.69	27.72	18.68	73.790	Horizontal	Pass	
		2640	-4.34	4.72	27.70	18.64	73.114	Horizontal	Pass	
15.0MHz Band 16 QAM	1/#Mid	2572.5	-4.32	4.55	27.77	18.90	77.625	Horizontal	Pass	
		2605	-4.04	4.69	27.72	18.99	79.250	Horizontal	Pass	
		2637.5	-4.09	4.72	27.69	18.88	77.268	Horizontal	Pass	
20.0MHz Band 16 QAM	1/#Mid	2575	-4.04	4.57	27.78	19.17	82.604	Horizontal	Pass	
		2605	-3.98	4.73	27.72	19.01	79.616	Horizontal	Pass	
		2635	-3.98	4.75	27.68	18.95	78.524	Horizontal	Pass	
5.0MHz Band 16 QAM	1/#Mid	2567.5	-4.21	4.54	27.75	19.00	79.433	Vertical	Pass	
		2605	-4.12	4.69	27.72	18.91	77.804	Vertical	Pass	
		2642.5	-4.10	4.71	27.71	18.90	77.625	Vertical	Pass	
10.0MHz Band 16 QAM	1/#Mid	2570	-4.19	4.55	27.76	19.02	79.799	Vertical	Pass	
		2605	-4.03	4.69	27.72	19.00	79.433	Vertical	Pass	
		2640	-4.10	4.72	27.70	18.88	77.268	Vertical	Pass	
15.0MHz Band 16 QAM	1/#Mid	2572.5	-5.82	4.55	27.77	17.40	54.954	Vertical	Pass	
		2605	-5.65	4.69	27.72	17.38	54.702	Vertical	Pass	
		2637.5	-4.86	4.72	27.69	18.11	64.714	Vertical	Pass	
20.0MHz Band 16 QAM	1/#Mid	2575	-5.24	4.57	27.78	17.97	62.661	Vertical	Pass	
		2605	-4.90	4.73	27.72	18.09	64.417	Vertical	Pass	
		2635	-5.07	4.75	27.68	17.86	61.094	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: §2.1053, §22.917, §24.238, §27.53 and §90.691

LIMIT

§22.917 (e) and §24.238 and §90.691 (a): Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

§27.53 (g) For operations in the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB.

§27.53 (h) For operations in the 1710–1755 MHz and 2110–2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB.

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 2/4/5/7/12/17/26/41

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	-46.14	4.04	33.51	-16.67	-13	-3.67	Horizontal
3701.4	-50.81	4.04	33.51	-21.34	-13	-8.34	Vertical
5552.1	-45.79	5.24	35.84	-15.19	-13	-2.19	Vertical
5552.1	-49.21	5.24	35.84	-18.61	-13	-5.61	Horizontal
188.5	-34.71	1.43	16.02	-20.12	-13	-7.12	Vertical
388.5	-43.99	1.30	17.99	-27.30	-13	-14.30	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-45.77	4.04	33.56	-16.25	-13	-3.25	Horizontal
3760.0	-51.86	4.04	33.56	-22.34	-13	-9.34	Vertical
5640.0	-48.67	5.24	35.91	-18.00	-13	-5.00	Vertical
5640.0	-51.48	5.24	35.91	-20.81	-13	-7.81	Horizontal
192.6	-36.20	1.62	16.97	-20.85	-13	-7.85	Vertical
456.8	-39.82	1.74	15.98	-25.59	-13	-12.59	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-49.65	4.04	34.00	-19.69	-13	-6.69	Horizontal
3818.6	-51.38	4.04	34.00	-21.42	-13	-8.42	Vertical
5727.9	-49.35	5.24	36.04	-18.55	-13	-5.55	Vertical
5727.9	-49.47	5.24	36.04	-18.67	-13	-5.67	Horizontal
198.1	-42.32	1.42	17.29	-26.45	-13	-13.45	Vertical
449.1	-43.65	1.50	17.90	-27.24	-13	-14.24	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	-46.05	4.07	33.54	-16.58	-13	-3.58	Horizontal
3720.0	-46.97	4.07	33.54	-17.50	-13	-4.50	Vertical
5580.0	-53.15	5.28	35.86	-22.57	-13	-9.57	Vertical
5580.0	-49.43	5.28	35.86	-18.85	-13	-5.85	Horizontal
200.7	-35.82	1.58	16.89	-20.50	-13	-7.50	Vertical
262.9	-44.00	1.76	17.26	-28.50	-13	-15.50	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-50.46	4.04	33.56	-20.94	-13	-7.94	Horizontal
3760.0	-51.25	4.04	33.56	-21.73	-13	-8.73	Vertical
5640.0	-53.19	5.24	35.91	-22.52	-13	-9.52	Vertical
5640.0	-53.25	5.24	35.91	-22.58	-13	-9.58	Horizontal
187.2	-40.77	1.46	16.27	-25.96	-13	-12.96	Vertical
277.7	-36.79	1.59	15.15	-23.23	-13	-10.23	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-50.66	4.04	34.00	-20.70	-13	-7.70	Horizontal
3800.0	-49.72	4.04	34.00	-19.76	-13	-6.76	Vertical
5700.0	-52.78	5.24	36.04	-21.98	-13	-8.98	Vertical
5700.0	-49.15	5.24	36.04	-18.35	-13	-5.35	Horizontal
193.3	-39.56	1.36	17.39	-23.52	-13	-10.52	Vertical
247.6	-41.93	1.66	15.39	-28.20	-13	-15.20	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.

9.2 LTE BAND 4

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

Test Results for Low Channel 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-52.00	4.02	29.80	-26.22	-13	-13.22	Horizontal
3421.4	-46.71	4.02	29.80	-20.93	-13	-7.93	Vertical
5132.1	-52.98	5.24	35.84	-22.38	-13	-9.38	Vertical
5132.1	-50.62	5.24	35.84	-20.02	-13	-7.02	Horizontal
203.8	-42.57	1.68	16.04	-28.21	-13	-15.21	Vertical
384.2	-40.81	1.78	17.74	-24.85	-13	-11.85	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-50.07	4.03	30.00	-24.10	-13	-11.10	Horizontal
3465.0	-47.82	4.03	30.00	-21.85	-13	-8.85	Vertical
5197.5	-46.29	5.25	35.86	-15.68	-13	-2.68	Vertical
5197.5	-53.92	5.25	35.86	-23.31	-13	-10.31	Horizontal
201.4	-39.65	1.72	17.69	-23.68	-13	-10.68	Vertical
429.2	-40.94	1.62	16.02	-26.53	-13	-13.53	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-53.18	4.05	30.01	-27.22	-13	-14.22	Horizontal
3508.6	-44.03	4.05	30.01	-18.07	-13	-5.07	Vertical
5262.9	-51.28	5.26	35.86	-20.68	-13	-7.68	Vertical
5262.9	-51.47	5.26	35.86	-20.87	-13	-7.87	Horizontal
205.6	-44.25	1.80	16.69	-29.36	-13	-16.36	Vertical
265.1	-37.79	1.75	16.66	-22.89	-13	-9.89	Horizontal

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

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-44.35	4.02	29.80	-18.57	-13	-5.57	Horizontal
3440.0	-50.67	4.02	29.80	-24.89	-13	-11.89	Vertical
5160.0	-47.04	5.24	35.84	-16.44	-13	-3.44	Vertical
5160.0	-53.07	5.24	35.84	-22.47	-13	-9.47	Horizontal
205.7	-35.19	1.57	17.26	-19.50	-13	-6.50	Vertical
413.2	-34.57	1.78	16.35	-20.00	-13	-7.00	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-51.02	4.03	30.00	-25.05	-13	-12.05	Horizontal
3465.0	-52.01	4.03	30.00	-26.04	-13	-13.04	Vertical
5197.5	-53.03	5.25	35.86	-22.42	-13	-9.42	Vertical
5197.5	-51.66	5.25	35.86	-21.05	-13	-8.05	Horizontal
177.2	-35.67	1.44	17.95	-19.16	-13	-6.16	Vertical
252.1	-34.43	1.65	16.09	-19.99	-13	-6.99	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-44.61	2.91	27.68	-19.84	-13	-6.84	Horizontal
3490.0	-46.72	2.91	27.68	-21.95	-13	-8.95	Vertical
5235.0	-47.36	5.26	35.86	-16.76	-13	-3.76	Vertical
5235.0	-51.48	5.26	35.86	-20.88	-13	-7.88	Horizontal
178.0	-42.31	1.61	16.85	-27.07	-13	-14.07	Vertical
391.2	-41.95	1.61	15.19	-28.37	-13	-15.37	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 5

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

Test Results for Low Channel 824.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1649.4	-52.49	2.78	27.50	-27.77	-13	-14.77	Horizontal
1649.4	-45.84	2.78	27.50	-21.12	-13	-8.12	Vertical
2474.1	-50.27	2.90	27.80	-25.37	-13	-12.37	Vertical
2474.1	-53.73	2.90	27.80	-28.83	-13	-15.83	Horizontal
185.7	-36.89	1.76	17.59	-21.06	-13	-8.06	Vertical
302.3	-44.61	1.63	15.87	-30.37	-13	-17.37	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-53.03	2.80	27.48	-28.35	-13	-15.35	Horizontal
1673.0	-44.58	2.80	27.48	-19.90	-13	-6.90	Vertical
2509.5	-50.71	2.91	27.70	-25.92	-13	-12.92	Vertical
2509.5	-52.20	2.91	27.70	-27.41	-13	-14.41	Horizontal
191.8	-36.27	1.61	15.68	-22.20	-13	-9.20	Vertical
348.9	-36.83	1.59	17.52	-20.91	-13	-7.91	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-47.76	2.82	27.43	-23.15	-13	-10.15	Horizontal
1696.6	-44.33	2.82	27.43	-19.72	-13	-6.72	Vertical
2544.9	-50.89	2.92	27.74	-26.07	-13	-13.07	Vertical
2544.9	-53.69	2.92	27.74	-28.87	-13	-15.87	Horizontal
176.6	-34.92	1.69	16.67	-19.93	-13	-6.93	Vertical
245.9	-42.31	1.70	17.18	-26.83	-13	-13.83	Horizontal

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

Test Results for Low Channel 829MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1658.0	-46.40	2.78	27.50	-21.68	-13	-8.68	Horizontal
1658.0	-47.60	2.78	27.50	-22.88	-13	-9.88	Vertical
2487.0	-46.26	2.90	27.80	-21.36	-13	-8.36	Vertical
2487.0	-49.43	2.90	27.80	-24.53	-13	-11.53	Horizontal
192.8	-43.31	1.71	15.57	-29.45	-13	-16.45	Vertical
460.0	-34.84	1.34	16.40	-19.78	-13	-6.78	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-47.95	2.80	27.48	-23.27	-13	-10.27	Horizontal
1673.0	-53.17	2.80	27.48	-28.49	-13	-15.49	Vertical
2509.5	-53.52	2.91	27.70	-28.73	-13	-15.73	Vertical
2509.5	-51.28	2.91	27.70	-26.49	-13	-13.49	Horizontal
202.9	-38.86	1.44	17.04	-23.26	-13	-10.26	Vertical
312.3	-37.59	1.76	17.62	-21.73	-13	-8.73	Horizontal
Test Results for High Channel 844MHz							
1688.0	-52.54	2.82	27.43	-27.93	-13	-14.93	Horizontal
1688.0	-46.43	2.82	27.43	-21.82	-13	-8.82	Vertical
2532.0	-49.61	2.92	27.74	-24.79	-13	-11.79	Vertical
2532.0	-51.82	2.92	27.74	-27.00	-13	-14.00	Horizontal
196.7	-38.51	1.74	17.70	-22.55	-13	-9.55	Vertical
458.1	-38.09	1.41	17.46	-22.03	-13	-9.03	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.

9.4 LTE BAND 7

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

Test Results for Low Channel 2502.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5005.0	-62.64	5.23	35.81	-32.06	-25	-7.06	Horizontal
5005.0	-62.75	5.23	35.81	-32.17	-25	-7.17	Vertical
7507.5	-61.67	5.67	36.85	-30.49	-25	-5.49	Vertical
7507.5	-61.74	5.67	36.85	-30.56	-25	-5.56	Horizontal
198.8	-54.13	1.73	17.97	-37.89	-25	-12.89	Vertical
420.9	-52.55	1.38	15.11	-38.82	-25	-13.82	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-59.47	5.23	35.82	-28.88	-25	-3.88	Horizontal
5070.0	-59.08	5.23	35.82	-28.49	-25	-3.49	Vertical
7605.0	-61.34	5.67	36.85	-30.16	-25	-5.16	Vertical
7605.0	-60.41	5.67	36.85	-29.23	-25	-4.23	Horizontal
187.8	-47.61	1.77	16.17	-33.20	-25	-8.20	Vertical
363.5	-44.64	1.63	15.21	-31.06	-25	-6.06	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-61.56	5.24	35.83	-30.97	-25	-5.97	Horizontal
5135.0	-61.18	5.24	35.83	-30.59	-25	-5.59	Vertical
7702.5	-63.15	5.68	36.87	-31.96	-25	-6.96	Vertical
7702.5	-63.08	5.68	36.87	-31.89	-25	-6.89	Horizontal
187.8	-45.16	1.58	17.56	-29.18	-25	-4.18	Vertical
314.7	-48.84	1.45	16.58	-33.71	-25	-8.71	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	-61.36	5.23	35.82	-30.77	-25	-5.77	Horizontal
5020.0	-62.86	5.23	35.82	-32.27	-25	-7.27	Vertical
7530.0	-62.49	5.67	36.86	-31.30	-25	-6.30	Vertical
7530.0	-63.84	5.67	36.86	-32.65	-25	-7.65	Horizontal
204.8	-45.38	1.63	15.76	-31.25	-25	-6.25	Vertical
307.6	-48.65	1.71	15.44	-34.92	-25	-9.92	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-61.72	5.23	35.82	-31.13	-25	-6.13	Horizontal
5070.0	-64.92	5.23	35.82	-34.33	-25	-9.33	Vertical
7605.0	-59.75	5.67	36.85	-28.57	-25	-3.57	Vertical
7605.0	-59.70	5.67	36.85	-28.52	-25	-3.52	Horizontal
188.1	-53.87	1.79	16.84	-38.81	-25	-13.81	Vertical
460.7	-46.25	1.71	17.64	-30.32	-25	-5.32	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-59.39	5.24	35.83	-28.80	-25	-3.80	Horizontal
5120.0	-60.18	5.24	35.83	-29.59	-25	-4.59	Vertical
7680.0	-62.48	5.70	36.88	-31.30	-25	-6.30	Vertical
7680.0	-60.04	5.70	36.88	-28.86	-25	-3.86	Horizontal
207.3	-49.29	1.79	16.84	-34.23	-25	-9.23	Vertical
464.3	-49.07	1.71	17.64	-33.14	-25	-8.14	Horizontal

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

. Margin = Spurious Emission Level - Limit

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

9.5 LTE BAND 12

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

Test Results for Low Channel 699.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1399.4	-47.25	2.60	27.20	-22.65	-13	-9.65	Horizontal
1399.4	-50.78	2.60	27.20	-26.18	-13	-13.18	Vertical
2099.1	-45.59	2.85	27.54	-20.90	-13	-7.90	Vertical
2099.1	-50.11	2.85	27.54	-25.42	-13	-12.42	Horizontal
185.7	-34.89	1.49	17.78	-18.60	-13	-5.60	Vertical
369.9	-39.94	1.36	17.33	-23.97	-13	-10.97	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-53.50	2.61	27.28	-28.83	-13	-15.83	Horizontal
1415.0	-52.63	2.61	27.28	-27.96	-13	-14.96	Vertical
2122.5	-52.05	2.87	27.59	-27.33	-13	-14.33	Vertical
2122.5	-53.54	2.87	27.59	-28.82	-13	-15.82	Horizontal
180.7	-38.75	1.73	15.74	-24.74	-13	-11.74	Vertical
234.4	-39.47	1.62	15.79	-25.30	-13	-12.30	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-52.47	2.63	27.28	-27.82	-13	-14.82	Horizontal
1430.6	-44.95	2.63	27.28	-20.30	-13	-7.30	Vertical
2145.9	-48.98	2.88	27.60	-24.26	-13	-11.26	Vertical
2145.9	-50.73	2.88	27.60	-26.01	-13	-13.01	Horizontal
193.5	-44.83	1.61	18.00	-28.44	-13	-15.44	Vertical
331.5	-42.60	1.45	15.49	-28.57	-13	-15.57	Horizontal

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

Test Results for Low Channel 704MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1408.0	-53.47	2.61	27.26	-28.82	-13	-15.82	Horizontal
1408.0	-47.14	2.61	27.26	-22.49	-13	-9.49	Vertical
2112.0	-48.23	2.87	27.58	-23.52	-13	-10.52	Vertical
2112.0	-49.63	2.87	27.58	-24.92	-13	-11.92	Horizontal
186.8	-34.19	1.31	16.97	-18.53	-13	-5.53	Vertical
392.8	-40.59	1.65	16.70	-25.54	-13	-12.54	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-52.38	2.61	27.28	-27.71	-13	-14.71	Horizontal
1415.0	-47.32	2.61	27.28	-22.65	-13	-9.65	Vertical
2122.5	-47.91	2.87	27.59	-23.19	-13	-10.19	Vertical
2122.5	-50.64	2.87	27.59	-25.92	-13	-12.92	Horizontal
195.5	-38.51	1.72	17.99	-22.24	-13	-9.24	Vertical
287.7	-41.62	1.73	17.94	-25.41	-13	-12.41	Horizontal
Test Results for High Channel 711MHz							
1422.0	-45.31	2.62	27.28	-20.65	-13	-7.65	Horizontal
1422.0	-50.63	2.62	27.28	-25.97	-13	-12.97	Vertical
2133.0	-50.24	2.87	27.60	-25.51	-13	-12.51	Vertical
2133.0	-49.05	2.87	27.60	-24.32	-13	-11.32	Horizontal
202.8	-43.09	1.58	15.93	-28.74	-13	-15.74	Vertical
273.0	-43.14	1.36	15.59	-28.91	-13	-15.91	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.

9.6 LTE BAND 17

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

Test Results for Low Channel 706.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1413.0	-44.97	2.61	27.28	-20.30	-13	-7.30	Horizontal
1413.0	-53.87	2.61	27.28	-29.20	-13	-16.20	Vertical
2119.5	-45.49	2.87	27.59	-20.77	-13	-7.77	Vertical
2119.5	-50.58	2.87	27.59	-25.86	-13	-12.86	Horizontal
204.6	-44.62	1.71	16.15	-30.18	-13	-17.18	Vertical
436.9	-44.87	1.41	17.32	-28.96	-13	-15.96	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-51.04	2.62	27.30	-26.36	-13	-13.36	Horizontal
1420.0	-53.89	2.62	27.30	-29.21	-13	-16.21	Vertical
2130.0	-47.22	2.87	27.62	-22.47	-13	-9.47	Vertical
2130.0	-52.73	2.87	27.62	-27.98	-13	-14.98	Horizontal
182.7	-36.57	1.42	15.25	-22.75	-13	-9.75	Vertical
261.4	-41.07	1.36	17.19	-25.24	-13	-12.24	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-48.16	2.66	27.28	-23.54	-13	-10.54	Horizontal
1427.0	-49.35	2.66	27.28	-24.73	-13	-11.73	Vertical
2140.5	-46.19	2.88	27.60	-21.47	-13	-8.47	Vertical
2140.5	-51.94	2.88	27.60	-27.22	-13	-14.22	Horizontal
193.2	-37.99	1.32	17.29	-22.02	-13	-9.02	Vertical
370.3	-36.62	1.72	16.89	-21.45	-13	-8.45	Horizontal

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

Test Results for Low Channel 709MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1418.0	-48.28	2.62	27.30	-23.60	-13	-10.60	Horizontal
1418.0	-50.51	2.62	27.30	-25.83	-13	-12.83	Vertical
2127.0	-49.47	2.87	27.62	-24.72	-13	-11.72	Vertical
2127.0	-50.76	2.87	27.62	-26.01	-13	-13.01	Horizontal
211.1	-41.65	1.35	16.91	-26.09	-13	-13.09	Vertical
422.4	-44.52	1.62	16.31	-29.83	-13	-16.83	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-53.17	2.62	27.30	-28.49	-13	-15.49	Horizontal
1420.0	-46.32	2.62	27.30	-21.64	-13	-8.64	Vertical
2130.0	-48.39	2.87	27.62	-23.64	-13	-10.64	Vertical
2130.0	-49.75	2.87	27.62	-25.00	-13	-12.00	Horizontal
185.8	-42.42	1.51	17.14	-26.79	-13	-13.79	Vertical
401.9	-37.02	1.77	16.88	-21.91	-13	-8.91	Horizontal
Test Results for High Channel 711MHz							
1422.0	-48.54	2.62	27.30	-23.86	-13	-10.86	Horizontal
1422.0	-51.93	2.62	27.30	-27.25	-13	-14.25	Vertical
2133.0	-44.01	2.87	27.62	-19.26	-13	-6.26	Vertical
2133.0	-52.67	2.87	27.62	-27.92	-13	-14.92	Horizontal
203.3	-42.52	1.78	15.95	-28.35	-13	-15.35	Vertical
317.3	-34.05	1.34	17.95	-17.45	-13	-4.45	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 26 A

QPSK EIRP POWER FOR LTE BAND 26A(814MHz~824MHz) (1.4MHZ BANDWIDTH)

Test Results for Low Channel 814.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1629.4	-48.93	2.78	27.50	-24.21	-13	-11.21	Horizontal
1629.4	-46.06	2.78	27.50	-21.34	-13	-8.34	Vertical
2444.1	-48.31	2.90	27.80	-23.41	-13	-10.41	Vertical
2444.1	-47.66	2.90	27.80	-22.76	-13	-9.76	Horizontal
229.6	-33.65	1.54	16.98	-18.21	-13	-5.21	Vertical
83.3	-32.38	1.47	15.82	-18.03	-13	-5.03	Horizontal
Test Results For Mid Channel 819MHz							
1638.0	-46.75	2.80	27.48	-22.07	-13	-9.07	Horizontal
1638.0	-41.20	2.80	27.48	-16.52	-13	-3.52	Vertical
2457.0	-46.09	2.91	27.70	-21.30	-13	-8.30	Vertical
2457.0	-47.25	2.91	27.70	-22.46	-13	-9.46	Horizontal
168.2	-33.74	1.74	16.19	-19.29	-13	-6.29	Vertical
92.9	-32.91	1.46	15.43	-18.94	-13	-5.94	Horizontal
Test Results for High Channel 823.3MHz							
1646.6	-49.76	2.82	27.43	-25.15	-13	-12.15	Horizontal
1646.6	-46.13	2.82	27.43	-21.52	-13	-8.52	Vertical
2469.9	-48.90	2.92	27.74	-24.08	-13	-11.08	Vertical
2469.9	-47.35	2.92	27.74	-22.53	-13	-9.53	Horizontal
213.1	-33.09	1.67	17.05	-17.71	-13	-4.71	Vertical
121.7	-34.49	1.42	16.12	-19.79	-13	-6.79	Horizontal

QPSK EIRP POWER FOR LTE BAND 26A(814MHz~824MHz) (10MHZ BANDWIDTH)

Test Results for Channel 819MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1638.0	-47.53	2.78	27.50	-22.81	-13	-9.81	Horizontal
1638.0	-41.02	2.78	27.50	-16.30	-13	-3.30	Vertical
2457.0	-46.05	2.90	27.80	-21.15	-13	-8.15	Vertical
2457.0	-49.33	2.90	27.80	-24.43	-13	-11.43	Horizontal
253.7	-33.66	1.43	17.34	-17.75	-13	-4.75	Vertical
256.8	-33.15	1.56	15.71	-19.00	-13	-6.00	Horizontal

9.8 LTE BAND 26 B

QPSK EIRP POWER FOR LTE BAND 26B(824MHz~849MHz) (1.4MHZ BANDWIDTH)

Test Results for Low Channel 824.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1649.4	-48.59	2.78	27.50	-23.87	-13	-10.87	Horizontal
1649.4	-47.09	2.78	27.50	-22.37	-13	-9.37	Vertical
2474.1	-46.26	2.90	27.80	-21.36	-13	-8.36	Vertical
2474.1	-48.59	2.90	27.80	-23.69	-13	-10.69	Horizontal
237.0	-33.47	1.33	17.34	-17.46	-13	-4.46	Vertical
180.5	-33.61	1.47	16.80	-18.28	-13	-5.28	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-46.05	2.80	27.48	-21.37	-13	-8.37	Horizontal
1673.0	-45.31	2.80	27.48	-20.63	-13	-7.63	Vertical
2509.5	-47.23	2.91	27.70	-22.44	-13	-9.44	Vertical
2509.5	-48.60	2.91	27.70	-23.81	-13	-10.81	Horizontal
140.8	-34.34	1.75	15.46	-20.63	-13	-7.63	Vertical
90.6	-33.64	1.52	16.14	-19.02	-13	-6.02	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-46.26	2.82	27.43	-21.65	-13	-8.65	Horizontal
1696.6	-41.08	2.82	27.43	-16.47	-13	-3.47	Vertical
2544.9	-47.23	2.92	27.74	-22.41	-13	-9.41	Vertical
2544.9	-48.15	2.92	27.74	-23.33	-13	-10.33	Horizontal
171.4	-34.51	1.67	16.09	-20.09	-13	-7.09	Vertical
247.2	-34.73	1.80	17.55	-18.98	-13	-5.98	Horizontal

QPSK EIRP POWER FOR LTE BAND 26B(824MHz~849MHz) (15MHZ BANDWIDTH)

Test Results for Low Channel 831.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1663.0	-48.77	2.78	27.50	-24.05	-13	-11.05	Horizontal
1663.0	-47.21	2.78	27.50	-22.49	-13	-9.49	Vertical
2494.5	-48.23	2.90	27.80	-23.33	-13	-10.33	Vertical
2494.5	-47.21	2.90	27.80	-22.31	-13	-9.31	Horizontal
255.4	-33.53	1.52	15.72	-19.33	-13	-6.33	Vertical
163.1	-33.37	1.40	17.03	-17.74	-13	-4.74	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-47.00	2.80	27.48	-22.32	-13	-9.32	Horizontal
1673.0	-43.95	2.80	27.48	-19.27	-13	-6.27	Vertical
2509.5	-46.84	2.91	27.70	-22.05	-13	-9.05	Vertical
2509.5	-48.90	2.91	27.70	-24.11	-13	-11.11	Horizontal
227.1	-33.75	1.74	16.38	-19.11	-13	-6.11	Vertical
101.3	-32.84	1.79	15.20	-19.43	-13	-6.43	Horizontal
Test Results for High Channel 841.5MHz							
1683.0	-49.33	2.82	27.43	-24.72	-13	-11.72	Horizontal
1683.0	-41.02	2.82	27.43	-16.41	-13	-3.41	Vertical
2524.5	-48.16	2.92	27.74	-23.34	-13	-10.34	Vertical
2524.5	-49.84	2.92	27.74	-25.02	-13	-12.02	Horizontal
261.1	-34.12	1.78	17.44	-18.46	-13	-5.46	Vertical
120.1	-34.61	1.70	15.93	-20.38	-13	-7.38	Horizontal

9.9 LTE BAND 41

QPSK EIRP POWER FOR LTE BAND 41 (5MHZ BANDWIDTH)

Test Results for Low Channel 2567.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5135.0	-59.22	5.23	35.81	-28.64	-25	-3.64	Horizontal
5135.0	-63.30	5.23	35.81	-32.72	-25	-7.72	Vertical
7702.5	-59.15	5.67	36.85	-27.97	-25	-2.97	Vertical
7702.5	-64.68	5.67	36.85	-33.50	-25	-8.50	Horizontal
435.3	-46.89	1.38	15.98	-32.29	-25	-7.29	Vertical
465.8	-49.74	1.62	15.66	-35.70	-25	-10.70	Horizontal
Test Results for Mid Channel 2605MHz							
5210.0	-61.28	5.23	35.82	-30.69	-25	-5.69	Horizontal
5210.0	-63.49	5.23	35.82	-32.90	-25	-7.90	Vertical
7815.0	-61.11	5.67	36.85	-29.93	-25	-4.93	Vertical
7815.0	-62.61	5.67	36.85	-31.43	-25	-6.43	Horizontal
510.4	-47.19	1.62	16.17	-32.64	-25	-7.64	Vertical
562.9	-44.14	1.74	17.63	-28.25	-25	-3.25	Horizontal
Test Results for High Channel 2642.5MHz							
5285.0	-62.64	5.24	35.83	-32.05	-25	-7.05	Horizontal
5285.0	-61.66	5.24	35.83	-31.07	-25	-6.07	Vertical
7927.5	-64.78	5.68	36.87	-33.59	-25	-8.59	Vertical
7927.5	-61.91	5.68	36.87	-30.72	-25	-5.72	Horizontal
197.6	-46.31	1.55	15.84	-32.02	-25	-7.02	Vertical
353.1	-44.81	1.51	17.06	-29.26	-25	-4.26	Horizontal

QPSK EIRP POWER FOR LTE BAND 41 (20MHZ BANDWIDTH)

Test Results for Low Channel 2575MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5150.0	-62.27	5.23	35.82	-31.68	-25	-6.68	Horizontal
5150.0	-63.53	5.23	35.82	-32.94	-25	-7.94	Vertical
7725.0	-62.70	5.67	36.86	-31.51	-25	-6.51	Vertical
7725.0	-61.35	5.67	36.86	-30.16	-25	-5.16	Horizontal
128.9	-47.42	1.43	15.51	-33.34	-25	-8.34	Vertical
344.8	-45.60	1.40	16.97	-30.03	-25	-5.03	Horizontal
Test Results for Mid Channel 2605MHz							
5210.0	-61.57	5.23	35.82	-30.98	-25	-5.98	Horizontal
5210.0	-63.46	5.23	35.82	-32.87	-25	-7.87	Vertical
7815.0	-64.86	5.67	36.85	-33.68	-25	-8.68	Vertical
7815.0	-63.42	5.67	36.85	-32.24	-25	-7.24	Horizontal
100.8	-47.34	1.77	16.72	-32.39	-25	-7.39	Vertical
263.5	-45.13	1.31	16.99	-29.45	-25	-4.45	Horizontal
Test Results for High Channel 2635MHz							
5270.0	-62.10	5.24	35.83	-31.51	-25	-6.51	Horizontal
5270.0	-61.54	5.24	35.83	-30.95	-25	-5.95	Vertical
7905.0	-63.84	5.70	36.88	-32.66	-25	-7.66	Vertical
7905.0	-61.54	5.70	36.88	-30.36	-25	-5.36	Horizontal
349.9	-44.85	1.70	15.73	-30.82	-25	-5.82	Vertical
110.3	-48.92	1.75	17.33	-33.34	-25	-8.34	Horizontal

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

. Over Limit= : P_{Mea}(dBm)-Limit(dBm)

. We test both H direction and V direction, recorded worst case direction.

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, §90.213

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 3.3V, Normal, DC 3.8V and High voltage, DC 4.37V.

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 2/4/5/7/12/17/26/41

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]
3.23	1880	12.4	0.006591	2.5
3.8	1880	13.4	0.007141	2.5
4.37	1880	13.4	0.007151	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	12.6	0.006717	2.5
Extreme (50C)	1880	11.8	0.006297	2.5
Extreme (40C)	1880	13.3	0.007082	2.5
Extreme (30C)	1880	13.9	0.007412	2.5
Extreme (10C)	1880	13.9	0.007408	2.5
Extreme (0C)	1880	12.6	0.006677	2.5
Extreme (-10C)	1880	13.3	0.007058	2.5
Extreme (-20C)	1880	13.6	0.007251	2.5
Extreme (-30C)	1880	14.9	0.007931	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]
3.23	1880	10.0	0.005338	2.5
3.8	1880	9.4	0.004992	2.5
4.37	1880	8.2	0.004363	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	9.9	0.005259	2.5
Extreme (50C)	1880	8.7	0.004641	2.5
Extreme (40C)	1880	7.7	0.004102	2.5
Extreme (30C)	1880	9.4	0.004976	2.5
Extreme (10C)	1880	9.2	0.004904	2.5
Extreme (0C)	1880	8.2	0.004369	2.5
Extreme (-10C)	1880	8.7	0.004611	2.5
Extreme (-20C)	1880	9.0	0.004793	2.5
Extreme (-30C)	1880	8.1	0.004330	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]
3.23	1732.5	8.8	0.005091	2.5
3.8	1732.5	8.5	0.004897	2.5
4.37	1732.5	8.0	0.004645	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.5	0.004929	2.5
Extreme (50C)	1732.5	8.9	0.005119	2.5
Extreme (40C)	1732.5	7.7	0.004464	2.5
Extreme (30C)	1732.5	5.8	0.003328	2.5
Extreme (10C)	1732.5	7.2	0.004133	2.5
Extreme (0C)	1732.5	9.4	0.005447	2.5
Extreme (-10C)	1732.5	8.7	0.005005	2.5
Extreme (-20C)	1732.5	6.9	0.003962	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]
3.23	1732.5	9.9	0.005707	2.5
3.8	1732.5	9.1	0.005251	2.5
4.37	1732.5	7.9	0.004541	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	9.8	0.005657	2.5
Extreme (50C)	1732.5	8.9	0.005139	2.5
Extreme (40C)	1732.5	8.4	0.004840	2.5
Extreme (30C)	1732.5	9.5	0.005477	2.5
Extreme (10C)	1732.5	8.8	0.005093	2.5
Extreme (0C)	1732.5	8.6	0.004955	2.5
Extreme (-10C)	1732.5	8.8	0.005064	2.5
Extreme (-20C)	1732.5	8.9	0.005118	2.5
Extreme (-30C)	1732.5	8.1	0.004701	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]
3.23	836.5	5.9	0.007110	2.5
3.8	836.5	6.2	0.007420	2.5
4.37	836.5	4.9	0.005852	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.4	0.007592	2.5
Extreme (50C)	836.5	5.8	0.006967	2.5
Extreme (40C)	836.5	6.5	0.007752	2.5
Extreme (30C)	836.5	6.0	0.007158	2.5
Extreme (10C)	836.5	5.2	0.006253	2.5
Extreme (0C)	836.5	5.3	0.006314	2.5
Extreme (-10C)	836.5	5.2	0.006212	2.5
Extreme (-20C)	836.5	6.4	0.007669	2.5
Extreme (-30C)	836.5	6.4	0.007617	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]
3.23	836.5	5.8	0.006925	2.5
3.8	836.5	6.9	0.008233	2.5
4.37	836.5	5.1	0.006076	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	5.9	0.007106	2.5
Extreme (50C)	836.5	6.4	0.007636	2.5
Extreme (40C)	836.5	6.2	0.007355	2.5
Extreme (30C)	836.5	6.7	0.007975	2.5
Extreme (10C)	836.5	5.7	0.006800	2.5
Extreme (0C)	836.5	5.0	0.006027	2.5
Extreme (-10C)	836.5	5.8	0.006934	2.5
Extreme (-20C)	836.5	6.2	0.007450	2.5
Extreme (-30C)	836.5	6.1	0.007244	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]
3.23	2535	10.0	0.003954	2.5
3.8	2535	8.9	0.003505	2.5
4.37	2535	8.4	0.003299	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	9.1	0.003570	2.5
Extreme (50C)	2535	8.8	0.003460	2.5
Extreme (40C)	2535	8.5	0.003367	2.5
Extreme (30C)	2535	8.8	0.003490	2.5
Extreme (10C)	2535	8.3	0.003268	2.5
Extreme (0C)	2535	8.6	0.003388	2.5
Extreme (-10C)	2535	9.3	0.003685	2.5
Extreme (-20C)	2535	8.4	0.003332	2.5
Extreme (-30C)	2535	8.4	0.003314	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]
3.23	2535	6.9	0.002736	2.5
3.8	2535	5.9	0.002341	2.5
4.37	2535	5.7	0.002268	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	7.0	0.002770	2.5
Extreme (50C)	2535	5.9	0.002328	2.5
Extreme (40C)	2535	5.9	0.002315	2.5
Extreme (30C)	2535	6.4	0.002532	2.5
Extreme (10C)	2535	5.6	0.002198	2.5
Extreme (0C)	2535	4.9	0.001924	2.5
Extreme (-10C)	2535	5.7	0.002237	2.5
Extreme (-20C)	2535	6.2	0.002452	2.5
Extreme (-30C)	2535	5.8	0.002297	2.5

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

10.5 LTE BAND 12

Band 12 QPSK, (10MHz BANDWIDTH RB size 50 RB Offset 0

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	707.5	8.9	0.012625	2.5
3.8	707.5	10.2	0.014472	2.5
4.37	707.5	9.0	0.012754	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	9.3	0.013132	2.5
Extreme (50C)	707.5	7.1	0.010079	2.5
Extreme (40C)	707.5	7.1	0.009995	2.5
Extreme (30C)	707.5	8.3	0.011735	2.5
Extreme (10C)	707.5	6.9	0.009763	2.5
Extreme (0C)	707.5	8.9	0.012602	2.5
Extreme (-10C)	707.5	8.4	0.011850	2.5
Extreme (-20C)	707.5	9.2	0.013042	2.5
Extreme (-30C)	707.5	7.3	0.010354	2.5

Band 12 16QAM, (10MHz BANDWIDTH RB size 50 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	707.5	7.6	0.010805	2.5
3.8	707.5	8.1	0.011470	2.5
4.37	707.5	7.8	0.011072	2.5

Frequency error vs. Temperature

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

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

10.6 LTE BAND 17

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	710.0	9.8	0.013873	2.5
3.8	710.0	8.7	0.012232	2.5
4.37	710.0	8.5	0.011922	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	10.2	0.014358	2.5
Extreme (50C)	710.0	8.9	0.012594	2.5
Extreme (40C)	710.0	8.4	0.011785	2.5
Extreme (30C)	710.0	8.9	0.012580	2.5
Extreme (10C)	710.0	8.8	0.012357	2.5
Extreme (0C)	710.0	7.6	0.010747	2.5
Extreme (-10C)	710.0	9.2	0.012890	2.5
Extreme (-20C)	710.0	9.3	0.013055	2.5
Extreme (-30C)	710.0	8.4	0.011817	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]
3.23	710.0	9.9	0.014010	2.5
3.8	710.0	9.3	0.013086	2.5
4.37	710.0	8.4	0.011796	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.6	0.013523	2.5
Extreme (50C)	710.0	9.2	0.013009	2.5
Extreme (40C)	710.0	7.9	0.011167	2.5
Extreme (30C)	710.0	9.4	0.013205	2.5
Extreme (10C)	710.0	8.6	0.012048	2.5
Extreme (0C)	710.0	7.9	0.011187	2.5
Extreme (-10C)	710.0	9.7	0.013596	2.5
Extreme (-20C)	710.0	9.2	0.012982	2.5
Extreme (-30C)	710.0	8.5	0.012033	2.5

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

10.7 LTE BAND 26 A

Band 26A 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]
3.23	819	8.8	0.010772	2.5
3.8	819	5.6	0.006871	2.5
4.37	819	6.9	0.008379	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	819	8.3	0.010146	2.5
Extreme (50C)	819	1.5	0.001855	2.5
Extreme (40C)	819	2.1	0.002517	2.5
Extreme (30C)	819	6.6	0.008015	2.5
Extreme (10C)	819	6.0	0.007280	2.5
Extreme (0C)	819	6.7	0.008176	2.5
Extreme (-10C)	819	8.9	0.010851	2.5
Extreme (-20C)	819	6.2	0.007577	2.5
Extreme (-30C)	819	4.6	0.005628	2.5

Band 26A 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]
3.23	819	2.4	0.002969	2.5
3.8	819	6.5	0.007977	2.5
4.37	819	5.6	0.006869	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	819	6.5	0.007917	2.5
Extreme (50C)	819	8.2	0.010007	2.5
Extreme (40C)	819	7.0	0.008517	2.5
Extreme (30C)	819	4.6	0.005573	2.5
Extreme (10C)	819	6.1	0.007457	2.5
Extreme (0C)	819	5.5	0.006741	2.5
Extreme (-10C)	819	8.7	0.010671	2.5
Extreme (-20C)	819	6.1	0.007416	2.5
Extreme (-30C)	819	7.2	0.008786	2.5

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

10.8 LTE BAND 26 B

Band 26B QPSK, (15MHz BANDWIDTH RB size 75 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	836.5	8.9	0.010659	2.5
3.8	836.5	6.0	0.007228	2.5
4.37	836.5	8.9	0.010643	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	10.3	0.012315	2.5
Extreme (50C)	836.5	9.0	0.010777	2.5
Extreme (40C)	836.5	6.4	0.007705	2.5
Extreme (30C)	836.5	8.4	0.010061	2.5
Extreme (10C)	836.5	7.0	0.008408	2.5
Extreme (0C)	836.5	10.0	0.011906	2.5
Extreme (-10C)	836.5	1.9	0.002275	2.5
Extreme (-20C)	836.5	8.7	0.010433	2.5
Extreme (-30C)	836.5	7.5	0.009019	2.5

Band 26B 16QAM, (15MHz BANDWIDTH RB size 75 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	836.5	9.8	0.011686	2.5
3.8	836.5	11.5	0.013732	2.5
4.37	836.5	10.6	0.012727	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.1	0.007311	2.5
Extreme (50C)	836.5	8.6	0.010307	2.5
Extreme (40C)	836.5	7.6	0.009081	2.5
Extreme (30C)	836.5	7.8	0.009378	2.5
Extreme (10C)	836.5	6.2	0.007463	2.5
Extreme (0C)	836.5	5.5	0.006631	2.5
Extreme (-10C)	836.5	5.3	0.006322	2.5
Extreme (-20C)	836.5	3.1	0.011237	2.5
Extreme (-30C)	836.5	8.1	0.007292	2.5

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

10.9 LTE BAND 41

Band 41 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]
3.23	2605	8.5	0.003284	2.5
3.8	2605	6.6	0.002562	2.5
4.37	2605	7.4	0.002839	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2605	7.5	0.002905	2.5
Extreme (50C)	2605	5.3	0.002030	2.5
Extreme (40C)	2605	5.7	0.002207	2.5
Extreme (30C)	2605	5.0	0.001940	2.5
Extreme (10C)	2605	6.9	0.002646	2.5
Extreme (0C)	2605	4.6	0.001768	2.5
Extreme (-10C)	2605	9.5	0.003664	2.5
Extreme (-20C)	2605	10.6	0.004105	2.5
Extreme (-30C)	2605	6.4	0.002452	2.5

Band 41 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]
3.23	2605	8.7	0.003359	2.5
3.8	2605	6.2	0.002401	2.5
4.37	2605	6.3	0.002422	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2605	7.1	0.002737	2.5
Extreme (50C)	2605	4.8	0.001838	2.5
Extreme (40C)	2605	4.9	0.001892	2.5
Extreme (30C)	2605	4.3	0.001659	2.5
Extreme (10C)	2605	6.2	0.002396	2.5
Extreme (0C)	2605	4.8	0.001832	2.5
Extreme (-10C)	2605	10.0	0.003863	2.5
Extreme (-20C)	2605	11.0	0.004231	2.5
Extreme (-30C)	2605	6.0	0.002309	2.5

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

11. Peak-to-Average Ratio

11.1 Description of the PAR Measurement

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

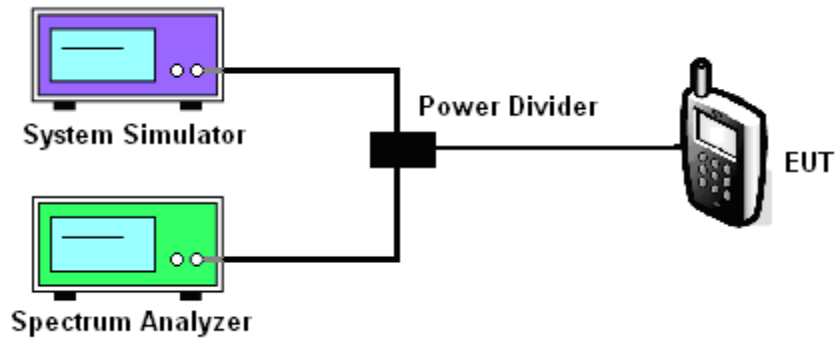
11.2 Measuring Instruments

See list of measuring instruments of this test report.

11.3 Test Procedures

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

11.4 Test Setup



MODES TESTED

LTE Band 2/4/5/7/12/17/26/41

Test data reference attachment.

----END OF REPORT----