

FCC CFR47 PART 22H, 24E, 27 CERTIFICATION TEST REPORT FCC ID: 2A7DX-ACTIVE8PRO

Product: Tablet PC
Trade Mark: Blackview
Model No.: Active 8 Pro
Family Model: N/A
Report No.: S24050904103006
Issue Date: Jul. 12, 2024

Prepared for

DOKE COMMUNICATION (HK) LIMITED
19H MAXGRAND PLAZA NO 3 TAI YAU STREET SAN PO KONG KL

Prepared by

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TEST RESULT CERTIFICATION

Applicant's name : DOKE COMMUNICATION (HK) LIMITED

Address..... : 19H MAXGRAND PLAZA NO 3 TAI YAU STREET SAN PO KONG KL

Manufacturer's Name..... : Shenzhen DOKE Electronic Co., Ltd

Address..... : 801, Building3, 7th Industrial Zone, Yulv Community, Yutang Road,
Guangming District, Shenzhen, China.

Product name..... : Tablet PC

Model and/or type reference .. : Active 8 Pro

Trade Mark..... : Blackview

Family Model..... : N/A

Test Sample Number..... S240509041003

Standards..... : FCC CFR 47 Part 22H, Part 24E, Part 27

Test procedure ANSI C63.26:2015

ANSI/TIA-603-E-2016

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

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Date of Test

Date (s) of performance of tests..... Jun. 01, 2024 ~ Jul. 12, 2024

Date of Issue Jul. 12, 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 PC
Trade Mark	Blackview
Model Name	Active 8 Pro
Family Model	N/A
Model Difference	N/A
FCC ID:	2A7DX-ACTIVE8PRO
Frequency Bands:	U.S. Bands: ☒ LTE FDD Band 2,4,5,7,12,17 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 TDD Band 41 Uplink& Downlink: 2535MHz-2655MHz,
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:	PIFA Antenna
Antenna gain:	Band 2: 0.9 dBi, Band 4: 0.8dBi, Band 5: 0.3 dBi, Band 7: 1.0dBi, Band 12: 0.2dBi, Band 17: 0.2 dBi, Band 41:0.9 dBi
Adapter	Model: QZ-03002AC00 Input:100-240V~50/60Hz 0.8A Output: (PD)5.0V---3.0A or 9.0V---3.0A or 12.0V---2.5A 15.0V---2.0A or 20.0V---1.5A (PPS)3.3V-11.0V---3.0A(33.0W Max)
Battery	DC 3.87V, 22000mAh, 85.14Wh
Power supply	DC 3.87V from battery or DC 5V from Adapter.
Extreme Vol. Limits:	DC 3.29V to DC 4.45V (Nominal DC 3.87V) (Note 1)
HW Version	TP769_A1_V1.0
SW Version	Active8Pro_NEU_TP769_V1.0_01
** Note1: The High Voltage DC 4.45V and Low Voltage 3.29V 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: 2A7DX-ACTIVE8PRO** filing to comply with the FCC Part 22H&24E&27

1.3 TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI/TIA-603-E-2016, FCC CFR 47 Part 2, Part 22, Part 24, Part 27, ANSI C63.26:2015.

1.4 TEST FACILITY

The test site used to collect the radiated data is located at:

ShenZhen NTEK Testing Technology Co., Ltd.

1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen 518126 P.R.China.

The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.26:2015& ANSI C63.4: 2014.

FCC Registration No.:463705

IC Registration No.:9270A-1,

CNAS Registration No.:L5516

MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.5dB

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

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 PC	Active 8 Pro	FCC ID: 2A7DX-ACTIVE8PRO	EUT

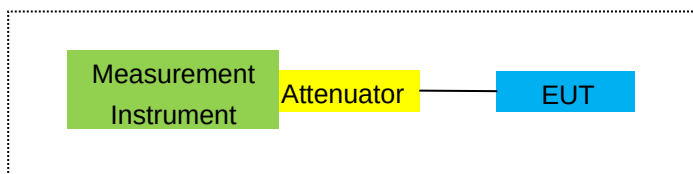
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

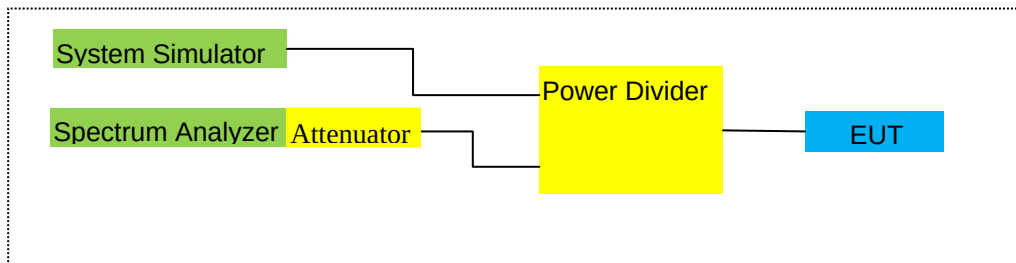
For Radiated Test Cases



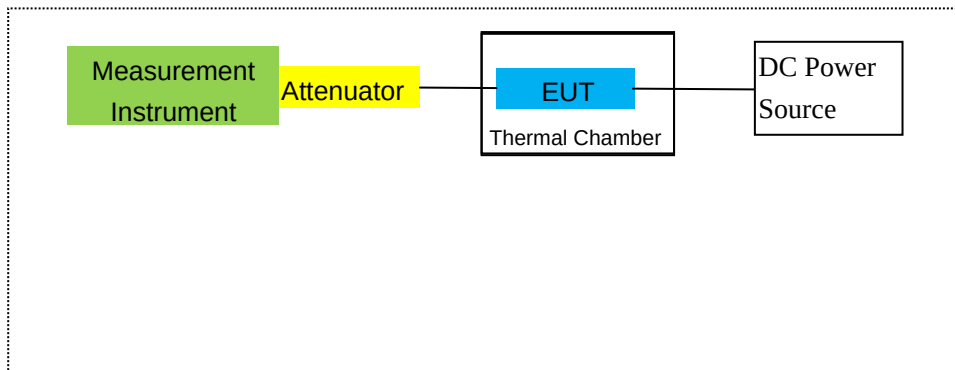
For Conducted Output Power



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	20170402923	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 6.6.3.3.2	13	10	Table 6.2.4-2	Table 6.2.4-2
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23 ¹	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
..					
NS_32	-	-	-	-	-

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

Test data reference attachment.

5. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

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

MODES TESTED

☐

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

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 than $43 + 10 \log (P)$ 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 2/4/5/7/12/17/41

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

☐

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

RESULTS

Pass

8.2 LTE BAND 2

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	1850.7	0.20	3.76	28.24	24.68	293.765	Horizontal	Pass
		1880	-0.21	3.91	28.22	24.10	257.040	Horizontal	Pass
		1909.3	0.04	3.93	28.20	24.31	269.774	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	0.28	3.77	28.23	24.74	297.852	Horizontal	Pass
		1880	-0.26	3.91	28.24	24.07	255.270	Horizontal	Pass
		1908.5	0.19	3.94	28.25	24.50	281.838	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-0.55	3.77	28.31	23.99	250.611	Horizontal	Pass
		1880	0.22	3.91	28.22	24.53	283.792	Horizontal	Pass
		1907.5	0.02	3.94	28.20	24.28	267.917	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-0.18	3.79	28.33	24.36	272.898	Horizontal	Pass
		1880	-0.22	3.95	28.22	24.05	254.097	Horizontal	Pass
		1905	-0.08	3.97	28.19	24.14	259.418	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	0.16	3.79	28.34	24.71	295.801	Horizontal	Pass
		1880	0.04	3.95	28.22	24.31	269.774	Horizontal	Pass
		1902.5	0.66	3.97	28.18	24.87	306.902	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	0.16	3.81	28.35	24.70	295.121	Horizontal	Pass
		1880	-0.06	3.96	28.22	24.20	263.027	Horizontal	Pass
		1900	-0.19	4.00	28.16	23.97	249.459	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-0.61	3.76	28.24	23.87	243.781	Vertical	Pass
		1880	-1.23	3.91	28.22	23.08	203.236	Vertical	Pass
		1909.3	-1.28	3.93	28.20	22.99	199.067	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-1.23	3.77	28.23	23.23	210.378	Vertical	Pass
		1880	-1.33	3.91	28.24	23.00	199.526	Vertical	Pass
		1908.5	-0.91	3.94	28.25	23.40	218.776	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-0.80	3.77	28.31	23.74	236.592	Vertical	Pass
		1880	-0.52	3.91	28.22	23.79	239.332	Vertical	Pass
		1907.5	-0.45	3.94	28.20	23.81	240.436	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1855	-0.86	3.79	28.33	23.68	233.346	Vertical	Pass
		1880	-0.44	3.95	28.22	23.83	241.546	Vertical	Pass
		1905	-1.18	3.97	28.19	23.04	201.372	Vertical	Pass
15.0MHz Band	1/#Mid	1857.5	-1.26	3.79	28.34	23.29	213.304	Vertical	Pass
		1880	-0.67	3.95	28.22	23.60	229.087	Vertical	Pass

QPSK		1902.5	-1.10	3.97	28.18	23.11	204.644	Vertical	Pass
20.0MHz	1/#Mid	1860	-1.23	3.81	28.35	23.31	214.289	Vertical	Pass
Band		1880	-0.38	3.96	28.22	23.88	244.343	Vertical	Pass
QPSK		1900	-0.43	4.00	28.16	23.73	236.048	Vertical	Pass

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	1850.7	-1.11	3.76	28.24	23.37	217.270	Horizontal	Pass
		1880	-0.91	3.91	28.22	23.40	218.776	Horizontal	Pass
		1909.3	-0.90	3.93	28.20	23.37	217.270	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-1.22	3.77	28.23	23.24	210.863	Horizontal	Pass
		1880	-0.82	3.91	28.24	23.51	224.388	Horizontal	Pass
		1908.5	-0.93	3.94	28.25	23.38	217.771	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-1.27	3.77	28.31	23.27	212.324	Horizontal	Pass
		1880	-0.44	3.91	28.22	23.87	243.781	Horizontal	Pass
		1907.5	-1.02	3.94	28.20	23.24	210.863	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-0.87	3.79	28.33	23.67	232.809	Horizontal	Pass
		1880	-0.45	3.95	28.22	23.82	240.991	Horizontal	Pass
		1905	-0.76	3.97	28.19	23.46	221.820	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-1.48	3.79	28.34	23.07	202.768	Horizontal	Pass
		1880	-1.02	3.95	28.22	23.25	211.349	Horizontal	Pass
		1902.5	-0.84	3.97	28.18	23.37	217.270	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-1.52	3.81	28.35	23.02	200.447	Horizontal	Pass
		1880	-0.69	3.96	28.22	23.57	227.510	Horizontal	Pass
		1900	-0.91	4.00	28.16	23.25	211.349	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1850.7	-1.83	3.76	28.24	22.65	184.077	Vertical	Pass
		1880	-2.10	3.91	28.22	22.21	166.341	Vertical	Pass
		1909.3	-2.15	3.93	28.20	22.12	162.930	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-2.54	3.77	28.23	21.92	155.597	Vertical	Pass
		1880	-2.02	3.91	28.24	22.31	170.216	Vertical	Pass
		1908.5	-1.69	3.94	28.25	22.62	182.810	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-2.11	3.77	28.31	22.43	174.985	Vertical	Pass
		1880	-1.82	3.91	28.22	22.49	177.419	Vertical	Pass
		1907.5	-2.07	3.94	28.20	22.19	165.577	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-2.51	3.79	28.33	22.03	159.588	Vertical	Pass
		1880	-1.74	3.95	28.22	22.53	179.061	Vertical	Pass
		1905	-1.41	3.97	28.19	22.81	190.985	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-2.01	3.79	28.34	22.54	179.473	Vertical	Pass
		1880	-1.64	3.95	28.22	22.63	183.231	Vertical	Pass
		1902.5	-2.02	3.97	28.18	22.19	165.577	Vertical	Pass

20.0MHz	1/#Mid	1860	-2.13	3.81	28.35	22.41	174.181	Vertical	Pass
Band 16		1880	-1.51	3.96	28.22	22.75	188.365	Vertical	Pass
QAM		1900	-1.69	4.00	28.16	22.47	176.604	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 Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	1710.7	-0.15	3.12	27.58	24.31	269.774	Horizontal	Pass
		1732.5	-0.48	3.27	27.61	23.86	243.220	Horizontal	Pass
		1754.3	-0.51	3.29	27.63	23.83	241.546	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-0.28	3.13	27.61	24.20	263.027	Horizontal	Pass
		1732.5	0.04	3.27	27.61	24.38	274.157	Horizontal	Pass
		1753.5	-0.46	3.30	27.62	23.86	243.220	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-0.67	3.13	27.63	23.83	241.546	Horizontal	Pass
		1732.5	-0.50	3.27	27.61	23.84	242.103	Horizontal	Pass
		1752.5	0.07	3.30	27.60	24.37	273.527	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-0.41	3.15	27.64	24.08	255.859	Horizontal	Pass
		1732.5	0.06	3.31	27.61	24.36	272.898	Horizontal	Pass
		1750	0.38	3.33	27.59	24.64	291.072	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	0.04	3.15	27.65	24.54	284.446	Horizontal	Pass
		1732.5	0.35	3.31	27.61	24.65	291.743	Horizontal	Pass
		1747.5	-0.06	3.33	27.57	24.18	261.818	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	0.22	3.17	27.66	24.71	295.801	Horizontal	Pass
		1732.5	-0.05	3.32	27.61	24.24	265.461	Horizontal	Pass
		1745	-0.02	3.36	27.56	24.18	261.818	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-1.59	3.12	27.58	22.87	193.642	Vertical	Pass
		1732.5	-0.90	3.27	27.61	23.44	220.800	Vertical	Pass
		1754.3	-1.12	3.29	27.63	23.22	209.894	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-1.12	3.13	27.61	23.36	216.770	Vertical	Pass
		1732.5	-0.93	3.27	27.61	23.41	219.280	Vertical	Pass
		1753.5	-0.58	3.30	27.62	23.74	236.592	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-0.75	3.13	27.63	23.75	237.137	Vertical	Pass
		1732.5	-1.16	3.27	27.61	23.18	207.970	Vertical	Pass
		1752.5	-0.58	3.30	27.60	23.72	235.505	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-1.46	3.15	27.64	23.03	200.909	Vertical	Pass
		1732.5	-1.36	3.31	27.61	22.94	196.789	Vertical	Pass
		1750	-1.00	3.33	27.59	23.26	211.836	Vertical	Pass

15.0MHz	1/#Mid	1717.5	-1.26	3.15	27.65	23.24	210.863	Vertical	Pass
Band		1732.5	-1.34	3.31	27.61	22.96	197.697	Vertical	Pass
QPSK		1747.5	-1.36	3.33	27.57	22.88	194.089	Vertical	Pass
20.0MHz	1/#Mid	1720	-1.50	3.17	27.66	22.99	199.067	Vertical	Pass
Band		1732.5	-1.13	3.32	27.61	23.16	207.014	Vertical	Pass
QPSK		1745	-0.76	3.36	27.56	23.44	220.800	Vertical	Pass

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	1710.7	-0.55	3.12	27.58	23.91	246.037	Horizontal	Pass
		1732.5	0.28	3.27	27.61	24.62	289.734	Horizontal	Pass
		1754.3	0.34	3.29	27.63	24.68	293.765	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-0.68	3.13	27.61	23.80	239.883	Horizontal	Pass
		1732.5	-0.04	3.27	27.61	24.30	269.153	Horizontal	Pass
		1753.5	0.15	3.30	27.62	24.47	279.898	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-0.19	3.13	27.63	24.31	269.774	Horizontal	Pass
		1732.5	-0.19	3.27	27.61	24.15	260.016	Horizontal	Pass
		1752.5	0.42	3.30	27.60	24.72	296.483	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-0.05	3.15	27.64	24.44	277.971	Horizontal	Pass
		1732.5	-0.25	3.31	27.61	24.05	254.097	Horizontal	Pass
		1750	-0.33	3.33	27.59	23.93	247.172	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-0.37	3.15	27.65	24.13	258.821	Horizontal	Pass
		1732.5	-0.05	3.31	27.61	24.25	266.073	Horizontal	Pass
		1747.5	0.31	3.33	27.57	24.55	285.102	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-0.34	3.17	27.66	24.15	260.016	Horizontal	Pass
		1732.5	-0.16	3.32	27.61	24.13	258.821	Horizontal	Pass
		1745	0.15	3.36	27.56	24.35	272.270	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-1.90	3.12	27.58	22.56	180.302	Vertical	Pass
		1732.5	-1.63	3.27	27.61	22.71	186.638	Vertical	Pass
		1754.3	-2.37	3.29	27.63	21.97	157.398	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-1.94	3.13	27.61	22.54	179.473	Vertical	Pass
		1732.5	-1.99	3.27	27.61	22.35	171.791	Vertical	Pass
		1753.5	-1.72	3.30	27.62	22.60	181.970	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-1.77	3.13	27.63	22.73	187.499	Vertical	Pass
		1732.5	-1.68	3.27	27.61	22.66	184.502	Vertical	Pass
		1752.5	-2.38	3.30	27.60	21.92	155.597	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-2.20	3.15	27.64	22.29	169.434	Vertical	Pass
		1732.5	-2.34	3.31	27.61	21.96	157.036	Vertical	Pass
		1750	-1.85	3.33	27.59	22.41	174.181	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-1.71	3.15	27.65	22.79	190.108	Vertical	Pass
		1732.5	-2.03	3.31	27.61	22.27	168.655	Vertical	Pass
		1747.5	-2.09	3.33	27.57	22.15	164.059	Vertical	Pass

20.0MHz	1/#Mid	1720	-1.90	3.17	27.66	22.59	181.552	Vertical	Pass
Band 16		1732.5	-1.58	3.32	27.61	22.71	186.638	Vertical	Pass
QAM		1745	-2.19	3.36	27.56	22.01	158.855	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 Gain (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	3/#Mid	824.7	8.41	2.01	19.68	2.15	23.93	247.172	Horizontal	Pass
		836.5	7.86	2.01	19.77	2.15	23.47	222.331	Horizontal	Pass
		848.3	8.38	2.02	19.82	2.15	24.03	252.930	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	825.5	8.62	2.01	19.70	2.15	24.16	260.615	Horizontal	Pass
		836.5	8.52	2.01	19.77	2.15	24.13	258.821	Horizontal	Pass
		847.5	7.91	2.02	19.81	2.15	23.55	226.464	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	826.5	7.95	2.01	19.71	2.15	23.50	223.872	Horizontal	Pass
		836.5	8.06	2.01	19.77	2.15	23.67	232.809	Horizontal	Pass
		846.5	7.99	2.02	19.79	2.15	23.61	229.615	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	829	8.48	2.01	19.73	2.15	24.05	254.097	Horizontal	Pass
		836.5	7.99	2.01	19.77	2.15	23.60	229.087	Horizontal	Pass
		844	8.21	2.02	19.78	2.15	23.82	240.991	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	824.7	7.53	2.01	19.68	2.15	23.05	201.837	Vertical	Pass
		836.5	7.41	2.01	19.77	2.15	23.02	200.447	Vertical	Pass
		848.3	7.15	2.02	19.82	2.15	22.80	190.546	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	825.5	6.94	2.01	19.70	2.15	22.48	177.011	Vertical	Pass
		836.5	7.26	2.01	19.77	2.15	22.87	193.642	Vertical	Pass
		847.5	7.54	2.02	19.81	2.15	23.18	207.970	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	826.5	6.80	2.01	19.71	2.15	22.35	171.791	Vertical	Pass
		836.5	6.98	2.01	19.77	2.15	22.59	181.552	Vertical	Pass
		846.5	7.16	2.02	19.79	2.15	22.78	189.671	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	829	7.38	2.01	19.73	2.15	22.95	197.242	Vertical	Pass
		836.5	6.74	2.01	19.77	2.15	22.35	171.791	Vertical	Pass
		844	6.95	2.02	19.78	2.15	22.56	180.302	Vertical	Pass

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	3/#Mid	824.7	8.51	2.01	19.68	2.15	24.03	252.930	Horizontal	Pass
		836.5	8.65	2.01	19.77	2.15	24.26	266.686	Horizontal	Pass
		848.3	7.77	2.02	19.82	2.15	23.42	219.786	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	7.83	2.01	19.70	2.15	23.37	217.270	Horizontal	Pass
		836.5	7.97	2.01	19.77	2.15	23.58	228.034	Horizontal	Pass
		847.5	8.55	2.02	19.81	2.15	24.19	262.422	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	7.77	2.01	19.71	2.15	23.32	214.783	Horizontal	Pass
		836.5	7.78	2.01	19.77	2.15	23.39	218.273	Horizontal	Pass
		846.5	7.97	2.02	19.79	2.15	23.59	228.560	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	829	8.31	2.01	19.73	2.15	23.88	244.343	Horizontal	Pass
		836.5	8.48	2.01	19.77	2.15	24.09	256.448	Horizontal	Pass
		844	8.34	2.02	19.78	2.15	23.95	248.313	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	824.7	7.14	2.01	19.68	2.15	22.66	184.502	Vertical	Pass
		836.5	6.15	2.01	19.77	2.15	21.76	149.968	Vertical	Pass
		848.3	7.30	2.02	19.82	2.15	22.95	197.242	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	5.82	2.01	19.70	2.15	21.36	136.773	Vertical	Pass
		836.5	6.83	2.01	19.77	2.15	22.44	175.388	Vertical	Pass
		847.5	6.82	2.02	19.81	2.15	22.46	176.198	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	6.72	2.01	19.71	2.15	22.27	168.655	Vertical	Pass
		836.5	7.63	2.01	19.77	2.15	23.24	210.863	Vertical	Pass
		846.5	6.15	2.02	19.79	2.15	21.77	150.314	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	829	6.30	2.01	19.73	2.15	21.87	153.815	Vertical	Pass
		836.5	7.30	2.01	19.77	2.15	22.91	195.434	Vertical	Pass
		844	6.98	2.02	19.78	2.15	22.59	181.552	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 Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	2502.5	-1.20	4.54	27.75	22.01	158.855	Horizontal	Pass
		2535	-0.34	4.69	27.72	22.69	185.780	Horizontal	Pass
		2567.5	-0.80	4.71	27.71	22.20	165.959	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2505	-0.56	4.55	27.76	22.65	184.077	Horizontal	Pass
		2535	-0.27	4.69	27.72	22.76	188.799	Horizontal	Pass
		2565	-0.57	4.72	27.70	22.41	174.181	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-0.94	4.55	27.77	22.28	169.044	Horizontal	Pass
		2535	-0.52	4.69	27.72	22.51	178.238	Horizontal	Pass
		2562.5	-0.86	4.72	27.69	22.11	162.555	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2510	-0.37	4.57	27.78	22.84	192.309	Horizontal	Pass
		2535	-0.71	4.73	27.72	22.28	169.044	Horizontal	Pass
		2560	-0.29	4.75	27.68	22.64	183.654	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	-1.67	4.54	27.75	21.54	142.561	Vertical	Pass
		2535	-1.21	4.69	27.72	21.82	152.055	Vertical	Pass
		2567.5	-1.10	4.71	27.71	21.90	154.882	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2505	-2.16	4.55	27.76	21.05	127.350	Vertical	Pass
		2535	-1.23	4.69	27.72	21.80	151.356	Vertical	Pass
		2565	-1.29	4.72	27.70	21.69	147.571	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-1.42	4.55	27.77	21.80	151.356	Vertical	Pass
		2535	-1.25	4.69	27.72	21.78	150.661	Vertical	Pass
		2562.5	-1.85	4.72	27.69	21.12	129.420	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2510	-2.19	4.57	27.78	21.02	126.474	Vertical	Pass
		2535	-1.30	4.73	27.72	21.69	147.571	Vertical	Pass
		2560	-1.42	4.75	27.68	21.51	141.579	Vertical	Pass

Radiated Power (EIRP) for Band 7									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	2502.5	-0.26	4.54	27.75	22.95	197.242	Horizontal	Pass
		2535	-0.17	4.69	27.72	22.86	193.197	Horizontal	Pass
		2567.5	-0.40	4.71	27.71	22.60	181.970	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-0.55	4.55	27.76	22.66	184.502	Horizontal	Pass
		2535	-0.15	4.69	27.72	22.88	194.089	Horizontal	Pass
		2565	-0.50	4.72	27.70	22.48	177.011	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-0.29	4.55	27.77	22.93	196.336	Horizontal	Pass
		2535	-0.65	4.69	27.72	22.38	172.982	Horizontal	Pass
		2562.5	-0.81	4.72	27.69	22.16	164.437	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-0.33	4.57	27.78	22.88	194.089	Horizontal	Pass
		2535	-0.40	4.73	27.72	22.59	181.552	Horizontal	Pass
		2560	-0.02	4.75	27.68	22.91	195.434	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	-1.87	4.54	27.75	21.34	136.144	Vertical	Pass
		2535	-1.92	4.69	27.72	21.11	129.122	Vertical	Pass
		2567.5	-1.84	4.71	27.71	21.16	130.617	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-1.56	4.55	27.76	21.65	146.218	Vertical	Pass
		2535	-1.79	4.69	27.72	21.24	133.045	Vertical	Pass
		2565	-1.02	4.72	27.70	21.96	157.036	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-2.08	4.55	27.77	21.14	130.017	Vertical	Pass
		2535	-1.66	4.69	27.72	21.37	137.088	Vertical	Pass
		2562.5	-1.77	4.72	27.69	21.20	131.826	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-1.24	4.57	27.78	21.97	157.398	Vertical	Pass
		2535	-1.56	4.73	27.72	21.43	138.995	Vertical	Pass
		2560	-1.27	4.75	27.68	21.66	146.555	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 Gain (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	699.7	9.26	1.91	19.21	2.15	24.41	276.058	Horizontal	Pass
		707.5	9.36	1.91	19.26	2.15	24.56	285.759	Horizontal	Pass
		715.3	9.84	1.93	19.34	2.15	25.10	323.594	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	700.5	9.75	1.91	19.21	2.15	24.90	309.030	Horizontal	Pass
		707.5	9.1	1.91	19.26	2.15	24.30	269.153	Horizontal	Pass
		714.5	9.56	1.93	19.34	2.15	24.82	303.389	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	701.5	9.34	1.91	19.23	2.15	24.51	282.488	Horizontal	Pass
		707.5	9.12	1.91	19.26	2.15	24.32	270.396	Horizontal	Pass
		713.5	8.97	1.92	19.33	2.15	24.23	264.850	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	704	9.77	1.91	19.25	2.15	24.96	313.329	Horizontal	Pass
		707.5	9.93	1.91	19.26	2.15	25.13	325.837	Horizontal	Pass
		711	9.92	1.92	19.32	2.15	25.17	328.852	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	699.7	8.46	1.91	19.21	2.15	23.61	229.615	Vertical	Pass
		707.5	8.87	1.91	19.26	2.15	24.07	255.270	Vertical	Pass
		715.3	8.03	1.93	19.34	2.15	23.29	213.304	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	700.5	8.64	1.91	19.21	2.15	23.79	239.332	Vertical	Pass
		707.5	8.07	1.91	19.26	2.15	23.27	212.324	Vertical	Pass
		714.5	8.18	1.93	19.34	2.15	23.44	220.800	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	701.5	8.23	1.91	19.23	2.15	23.40	218.776	Vertical	Pass
		707.5	8.26	1.91	19.26	2.15	23.46	221.820	Vertical	Pass
		713.5	8.85	1.92	19.33	2.15	24.11	257.632	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	704	8.48	1.91	19.25	2.15	23.67	232.809	Vertical	Pass
		707.5	8.36	1.91	19.26	2.15	23.56	226.986	Vertical	Pass
		711	8.17	1.92	19.32	2.15	23.42	219.786	Vertical	Pass

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz	1/#Mid	699.7	8.07	1.91	19.21	2.15	23.22	209.894	Horizontal	Pass
Band 16		707.5	8.2	1.91	19.26	2.15	23.40	218.776	Horizontal	Pass
QAM		715.3	8.85	1.93	19.34	2.15	24.11	257.632	Horizontal	Pass
3.0MHz	1/#Mid	700.5	8.72	1.91	19.21	2.15	23.87	243.781	Horizontal	Pass
Band 16		707.5	8.8	1.91	19.26	2.15	24.00	251.189	Horizontal	Pass
QAM		714.5	8.92	1.93	19.34	2.15	24.18	261.818	Horizontal	Pass
5.0MHz	1/#Mid	701.5	8.28	1.91	19.23	2.15	23.45	221.309	Horizontal	Pass
Band 16		707.5	8.73	1.91	19.26	2.15	23.93	247.172	Horizontal	Pass
QAM		713.5	8.7	1.92	19.33	2.15	23.96	248.886	Horizontal	Pass
10.0MHz	1/#Mid	704	8.58	1.91	19.25	2.15	23.77	238.232	Horizontal	Pass
Band 16		707.5	8.39	1.91	19.26	2.15	23.59	228.560	Horizontal	Pass
QAM		711	8.72	1.92	19.32	2.15	23.97	249.459	Horizontal	Pass
1.4MHz	1/#Mid	699.7	7.36	1.91	19.21	2.15	22.51	178.238	Vertical	Pass
Band 16		707.5	7.57	1.91	19.26	2.15	22.77	189.234	Vertical	Pass
QAM		715.3	7.05	1.93	19.34	2.15	22.31	170.216	Vertical	Pass
3.0MHz	1/#Mid	700.5	7.81	1.91	19.21	2.15	22.96	197.697	Vertical	Pass
Band 16		707.5	7.11	1.91	19.26	2.15	22.31	170.216	Vertical	Pass
QAM		714.5	7.53	1.93	19.34	2.15	22.79	190.108	Vertical	Pass
5.0MHz	1/#Mid	701.5	7.58	1.91	19.23	2.15	22.75	188.365	Vertical	Pass
Band 16		707.5	7.92	1.91	19.26	2.15	23.12	205.116	Vertical	Pass
QAM		713.5	7.74	1.92	19.33	2.15	23.00	199.526	Vertical	Pass
10.0MHz	1/#Mid	704	7.69	1.91	19.25	2.15	22.88	194.089	Vertical	Pass
Band 16		707.5	7.81	1.91	19.26	2.15	23.01	199.986	Vertical	Pass
QAM		711	7.65	1.92	19.32	2.15	22.90	194.984	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

8.7 LTE BAND 17

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	706.5	8.84	1.91	19.23	2.15	24.01	251.768	Horizontal	Pass
		710	8.05	1.91	19.26	2.15	23.25	211.349	Horizontal	Pass
		713.5	8.51	1.92	19.33	2.15	23.77	238.232	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	709	8.90	1.91	19.25	2.15	24.09	256.448	Horizontal	Pass
		710	8.21	1.91	19.26	2.15	23.41	219.280	Horizontal	Pass
		711	8.95	1.92	19.32	2.15	24.20	263.027	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	706.5	7.24	1.91	19.23	2.15	22.41	174.181	Vertical	Pass
		710	8.27	1.91	19.26	2.15	23.47	222.331	Vertical	Pass
		713.5	7.77	1.92	19.33	2.15	23.03	200.909	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	709	7.96	1.91	19.25	2.15	23.15	206.538	Vertical	Pass
		710	8.24	1.91	19.26	2.15	23.44	220.800	Vertical	Pass
		711	8.40	1.92	19.32	2.15	23.65	231.739	Vertical	Pass

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	706.5	7.85	1.91	19.23	2.15	23.02	200.447	Horizontal	Pass
		710	7.90	1.91	19.26	2.15	23.10	204.174	Horizontal	Pass
		713.5	7.69	1.92	19.33	2.15	22.95	197.242	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	709	7.65	1.91	19.25	2.15	22.84	192.309	Horizontal	Pass
		710	7.49	1.91	19.26	2.15	22.69	185.780	Horizontal	Pass
		711	7.09	1.92	19.32	2.15	22.34	171.396	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	706.5	7.60	1.91	19.23	2.15	22.77	189.234	Vertical	Pass
		710	7.59	1.91	19.26	2.15	22.79	190.108	Vertical	Pass
		713.5	7.71	1.92	19.33	2.15	22.97	198.153	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	709	7.37	1.91	19.25	2.15	22.56	180.302	Vertical	Pass
		710	7.75	1.91	19.26	2.15	22.95	197.242	Vertical	Pass
		711	7.12	1.92	19.32	2.15	22.37	172.584	Vertical	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 41

Radiated Power (EIRP) for Band 41									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
						(dBm)	(mW)		
5.0MHz Band QPSK	1/#Mid	2537.5	0.36	4.54	27.75	23.57	227.510	Horizontal	Pass
		2595	0.66	4.69	27.72	23.69	233.884	Horizontal	Pass
		2652.5	0.22	4.71	27.71	23.22	209.894	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2540	0.35	4.55	27.76	23.56	226.986	Horizontal	Pass
		2595	0.77	4.69	27.72	23.80	239.883	Horizontal	Pass
		2650	-0.05	4.72	27.70	22.93	196.336	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2542.5	0.05	4.55	27.77	23.27	212.324	Horizontal	Pass
		2595	0.10	4.69	27.72	23.13	205.589	Horizontal	Pass
		2647.5	0.29	4.72	27.69	23.26	211.836	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2545	0.11	4.57	27.78	23.32	214.783	Horizontal	Pass
		2595	0.65	4.73	27.72	23.64	231.206	Horizontal	Pass
		2645	0.50	4.75	27.68	23.43	220.293	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2537.5	-1.24	4.54	27.75	21.97	157.398	Vertical	Pass
		2595	-0.40	4.69	27.72	22.63	183.231	Vertical	Pass
		2652.5	-0.55	4.71	27.71	22.45	175.792	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2540	-1.05	4.55	27.76	22.16	164.437	Vertical	Pass
		2595	-0.71	4.69	27.72	22.32	170.608	Vertical	Pass
		2650	-0.44	4.72	27.70	22.54	179.473	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2542.5	-0.39	4.55	27.77	22.83	191.867	Vertical	Pass
		2595	-1.01	4.69	27.72	22.02	159.221	Vertical	Pass
		2647.5	-0.21	4.72	27.69	22.76	188.799	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2545	-0.76	4.57	27.78	22.45	175.792	Vertical	Pass
		2595	-0.31	4.73	27.72	22.68	185.353	Vertical	Pass
		2645	-0.10	4.75	27.68	22.83	191.867	Vertical	Pass

Radiated Power (EIRP) for Band 41									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
						Average	Average		
						(dBm)	(mW)		
5.0MHz Band 16 QAM	1/#Mid	2537.5	0.45	4.54	27.75	23.66	232.274	Horizontal	Pass
		2595	0.41	4.69	27.72	23.44	220.800	Horizontal	Pass
		2652.5	0.52	4.71	27.71	23.52	224.905	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2540	0.19	4.55	27.76	23.40	218.776	Horizontal	Pass
		2595	0.54	4.69	27.72	23.57	227.510	Horizontal	Pass
		2650	0.60	4.72	27.70	23.58	228.034	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2542.5	-0.23	4.55	27.77	22.99	199.067	Horizontal	Pass
		2595	0.01	4.69	27.72	23.04	201.372	Horizontal	Pass
		2647.5	0.27	4.72	27.69	23.24	210.863	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2545	0.22	4.57	27.78	23.43	220.293	Horizontal	Pass
		2595	0.01	4.73	27.72	23.00	199.526	Horizontal	Pass
		2645	0.23	4.75	27.68	23.16	207.014	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2537.5	-0.64	4.54	27.75	22.57	180.717	Vertical	Pass
		2595	-0.18	4.69	27.72	22.85	192.752	Vertical	Pass
		2652.5	-0.97	4.71	27.71	22.03	159.588	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2540	-0.60	4.55	27.76	22.61	182.390	Vertical	Pass
		2595	-0.69	4.69	27.72	22.34	171.396	Vertical	Pass
		2650	-0.36	4.72	27.70	22.62	182.810	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2542.5	-0.71	4.55	27.77	22.51	178.238	Vertical	Pass
		2595	-0.40	4.69	27.72	22.63	183.231	Vertical	Pass
		2647.5	-0.54	4.72	27.69	22.43	174.985	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2545	-1.15	4.57	27.78	22.06	160.694	Vertical	Pass
		2595	-0.49	4.73	27.72	22.50	177.828	Vertical	Pass
		2645	-1.01	4.75	27.68	21.92	155.597	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 $43 + 10 \log_{10}(p)$, dB; and
- b. for mobile subscriber equipment, the attenuation shall not be less than $43 + 10 \log_{10}(p)$, dB at the channel edges and $55 + 10 \log_{10}(p)$ at 5.5 MHz away and beyond the channel edges where p in (a) and (b) is the transmitter power measured in watts.

MODES TESTED

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

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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3701.4	-45.50	4.04	33.51	-16.03	-13	-3.03	Horizontal
3701.4	-47.80	4.04	33.51	-18.33	-13	-5.33	Vertical
5552.1	-50.23	5.24	35.84	-19.63	-13	-6.63	Vertical
5552.1	-50.67	5.24	35.84	-20.07	-13	-7.07	Horizontal
201.4	-37.36	1.43	16.02	-22.77	-13	-9.77	Vertical
244.4	-38.77	1.30	17.99	-22.08	-13	-9.08	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-46.74	4.04	33.56	-17.22	-13	-4.22	Horizontal
3760.0	-46.20	4.04	33.56	-16.68	-13	-3.68	Vertical
5640.0	-47.34	5.24	35.91	-16.67	-13	-3.67	Vertical
5640.0	-52.49	5.24	35.91	-21.82	-13	-8.82	Horizontal
180.5	-44.74	1.62	16.97	-29.39	-13	-16.39	Vertical
391.9	-42.91	1.74	15.98	-28.68	-13	-15.68	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-50.61	4.04	34.00	-20.65	-13	-7.65	Horizontal
3818.6	-51.96	4.04	34.00	-22.00	-13	-9.00	Vertical
5727.9	-50.26	5.24	36.04	-19.46	-13	-6.46	Vertical
5727.9	-53.39	5.24	36.04	-22.59	-13	-9.59	Horizontal
205.9	-42.56	1.42	17.29	-26.69	-13	-13.69	Vertical
343.8	-34.05	1.50	17.90	-17.64	-13	-4.64	Horizontal

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

Test Results for Low Channel 1860MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3720.0	-50.03	4.07	33.54	-20.56	-13	-7.56	Horizontal
3720.0	-44.87	4.07	33.54	-15.40	-13	-2.40	Vertical
5580.0	-45.09	5.28	35.86	-14.51	-13	-1.51	Vertical
5580.0	-49.09	5.28	35.86	-18.51	-13	-5.51	Horizontal
211.4	-35.09	1.58	16.89	-19.77	-13	-6.77	Vertical
302.7	-38.94	1.76	17.26	-23.44	-13	-10.44	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-51.84	4.04	33.56	-22.32	-13	-9.32	Horizontal
3760.0	-44.86	4.04	33.56	-15.34	-13	-2.34	Vertical
5640.0	-50.31	5.24	35.91	-19.64	-13	-6.64	Vertical
5640.0	-52.39	5.24	35.91	-21.72	-13	-8.72	Horizontal
189.0	-44.48	1.46	16.27	-29.67	-13	-16.67	Vertical
401.9	-38.13	1.59	15.15	-24.57	-13	-11.57	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-46.08	4.04	34.00	-16.12	-13	-3.12	Horizontal
3800.0	-49.73	4.04	34.00	-19.77	-13	-6.77	Vertical
5700.0	-44.31	5.24	36.04	-13.51	-13	-0.51	Vertical
5700.0	-53.31	5.24	36.04	-22.51	-13	-9.51	Horizontal
204.3	-39.90	1.36	17.39	-23.86	-13	-10.86	Vertical
435.2	-36.06	1.66	15.39	-22.33	-13	-9.33	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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-53.42	4.02	29.80	-27.64	-13	-14.64	Horizontal
3421.4	-49.68	4.02	29.80	-23.90	-13	-10.90	Vertical
5132.1	-46.54	5.24	35.84	-15.94	-13	-2.94	Vertical
5132.1	-53.73	5.24	35.84	-23.13	-13	-10.13	Horizontal
186.9	-37.78	1.68	16.04	-23.42	-13	-10.42	Vertical
367.7	-42.51	1.78	17.74	-26.55	-13	-13.55	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-49.62	4.03	30.00	-23.65	-13	-10.65	Horizontal
3465.0	-47.57	4.03	30.00	-21.60	-13	-8.60	Vertical
5197.5	-52.78	5.25	35.86	-22.17	-13	-9.17	Vertical
5197.5	-50.37	5.25	35.86	-19.76	-13	-6.76	Horizontal
197.2	-40.70	1.72	17.69	-24.73	-13	-11.73	Vertical
243.3	-43.71	1.62	16.02	-29.30	-13	-16.30	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-46.35	4.05	30.01	-20.39	-13	-7.39	Horizontal
3508.6	-51.65	4.05	30.01	-25.69	-13	-12.69	Vertical
5262.9	-52.43	5.26	35.86	-21.83	-13	-8.83	Vertical
5262.9	-51.80	5.26	35.86	-21.20	-13	-8.20	Horizontal
178.5	-36.24	1.80	16.69	-21.35	-13	-8.35	Vertical
376.4	-40.97	1.75	16.66	-26.07	-13	-13.07	Horizontal

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

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-51.67	4.02	29.80	-25.89	-13	-12.89	Horizontal
3440.0	-51.86	4.02	29.80	-26.08	-13	-13.08	Vertical
5160.0	-46.67	5.24	35.84	-16.07	-13	-3.07	Vertical
5160.0	-49.30	5.24	35.84	-18.70	-13	-5.70	Horizontal
203.4	-35.35	1.57	17.26	-19.66	-13	-6.66	Vertical
244.6	-39.40	1.78	16.35	-24.83	-13	-11.83	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-44.34	4.03	30.00	-18.37	-13	-5.37	Horizontal
3465.0	-50.79	4.03	30.00	-24.82	-13	-11.82	Vertical
5197.5	-48.55	5.25	35.86	-17.94	-13	-4.94	Vertical
5197.5	-51.46	5.25	35.86	-20.85	-13	-7.85	Horizontal
195.0	-43.90	1.44	17.95	-27.39	-13	-14.39	Vertical
241.1	-34.95	1.65	16.09	-20.51	-13	-7.51	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-45.00	2.91	27.68	-20.23	-13	-7.23	Horizontal
3490.0	-48.76	2.91	27.68	-23.99	-13	-10.99	Vertical
5235.0	-48.17	5.26	35.86	-17.57	-13	-4.57	Vertical
5235.0	-53.13	5.26	35.86	-22.53	-13	-9.53	Horizontal
175.0	-40.93	1.61	16.85	-25.69	-13	-12.69	Vertical
264.9	-39.61	1.61	15.19	-26.03	-13	-13.03	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.

9.3 LTE BAND 5

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

Test Results for Low Channel 824.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1649.4	-50.67	2.78	27.50	-25.95	-13	-12.95	Horizontal
1649.4	-52.21	2.78	27.50	-27.49	-13	-14.49	Vertical
2474.1	-51.36	2.90	27.80	-26.46	-13	-13.46	Vertical
2474.1	-49.75	2.90	27.80	-24.85	-13	-11.85	Horizontal
201.7	-44.94	1.76	17.59	-29.11	-13	-16.11	Vertical
423.1	-38.87	1.63	15.87	-24.63	-13	-11.63	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-52.14	2.80	27.48	-27.46	-13	-14.46	Horizontal
1673.0	-44.70	2.80	27.48	-20.02	-13	-7.02	Vertical
2509.5	-44.75	2.91	27.70	-19.96	-13	-6.96	Vertical
2509.5	-50.49	2.91	27.70	-25.70	-13	-12.70	Horizontal
211.1	-39.86	1.61	15.68	-25.79	-13	-12.79	Vertical
403.3	-38.76	1.59	17.52	-22.84	-13	-9.84	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-49.82	2.82	27.43	-25.21	-13	-12.21	Horizontal
1696.6	-47.32	2.82	27.43	-22.71	-13	-9.71	Vertical
2544.9	-48.60	2.92	27.74	-23.78	-13	-10.78	Vertical
2544.9	-53.03	2.92	27.74	-28.21	-13	-15.21	Horizontal
191.7	-35.42	1.69	16.67	-20.43	-13	-7.43	Vertical
375.7	-38.45	1.70	17.18	-22.97	-13	-9.97	Horizontal

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

Test Results for Low Channel 829MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1658.0	-44.00	2.78	27.50	-19.28	-13	-6.28	Horizontal
1658.0	-45.60	2.78	27.50	-20.88	-13	-7.88	Vertical
2487.0	-47.35	2.90	27.80	-22.45	-13	-9.45	Vertical
2487.0	-50.75	2.90	27.80	-25.85	-13	-12.85	Horizontal
176.4	-35.61	1.71	15.57	-21.75	-13	-8.75	Vertical
402.4	-41.25	1.34	16.40	-26.19	-13	-13.19	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-50.61	2.80	27.48	-25.93	-13	-12.93	Horizontal
1673.0	-45.38	2.80	27.48	-20.70	-13	-7.70	Vertical
2509.5	-46.06	2.91	27.70	-21.27	-13	-8.27	Vertical
2509.5	-52.16	2.91	27.70	-27.37	-13	-14.37	Horizontal
198.9	-37.74	1.44	17.04	-22.14	-13	-9.14	Vertical
414.3	-44.28	1.76	17.62	-28.42	-13	-15.42	Horizontal
Test Results for High Channel 844MHz							
1688.0	-46.47	2.82	27.43	-21.86	-13	-8.86	Horizontal
1688.0	-44.85	2.82	27.43	-20.24	-13	-7.24	Vertical
2532.0	-53.41	2.92	27.74	-28.59	-13	-15.59	Vertical
2532.0	-51.88	2.92	27.74	-27.06	-13	-14.06	Horizontal
210.4	-35.51	1.74	17.70	-19.55	-13	-6.55	Vertical
327.4	-42.31	1.41	17.46	-26.25	-13	-13.25	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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5005.0	-59.70	5.23	35.81	-29.12	-25	-4.12	Horizontal
5005.0	-59.38	5.23	35.81	-28.80	-25	-3.80	Vertical
7507.5	-61.98	5.67	36.85	-30.80	-25	-5.80	Vertical
7507.5	-63.46	5.67	36.85	-32.28	-25	-7.28	Horizontal
208.9	-47.98	1.73	17.97	-31.74	-25	-6.74	Vertical
425.8	-52.73	1.38	15.11	-39.00	-25	-14.00	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-60.10	5.23	35.82	-29.51	-25	-4.51	Horizontal
5070.0	-61.92	5.23	35.82	-31.33	-25	-6.33	Vertical
7605.0	-63.62	5.67	36.85	-32.44	-25	-7.44	Vertical
7605.0	-59.54	5.67	36.85	-28.36	-25	-3.36	Horizontal
175.7	-51.85	1.77	16.17	-37.44	-25	-12.44	Vertical
387.4	-51.94	1.63	15.21	-38.36	-25	-13.36	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-60.71	5.24	35.83	-30.12	-25	-5.12	Horizontal
5135.0	-64.36	5.24	35.83	-33.77	-25	-8.77	Vertical
7702.5	-61.55	5.68	36.87	-30.36	-25	-5.36	Vertical
7702.5	-59.83	5.68	36.87	-28.64	-25	-3.64	Horizontal
188.5	-44.18	1.58	17.56	-28.20	-25	-3.20	Vertical
452.6	-47.58	1.45	16.58	-32.45	-25	-7.45	Horizontal

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

Test Results for Low Channel 2510MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5020.0	-61.49	5.23	35.82	-30.90	-25	-5.90	Horizontal
5020.0	-61.11	5.23	35.82	-30.52	-25	-5.52	Vertical
7530.0	-60.30	5.67	36.86	-29.11	-25	-4.11	Vertical
7530.0	-62.53	5.67	36.86	-31.34	-25	-6.34	Horizontal
192.5	-45.54	1.63	15.76	-31.41	-25	-6.41	Vertical
314.0	-53.85	1.71	15.44	-40.12	-25	-15.12	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-60.65	5.23	35.82	-30.06	-25	-5.06	Horizontal
5070.0	-62.56	5.23	35.82	-31.97	-25	-6.97	Vertical
7605.0	-64.64	5.67	36.85	-33.46	-25	-8.46	Vertical
7605.0	-60.65	5.67	36.85	-29.47	-25	-4.47	Horizontal
206.5	-52.56	1.79	16.84	-37.50	-25	-12.50	Vertical
455.9	-49.67	1.71	17.64	-33.74	-25	-8.74	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-64.89	5.24	35.83	-34.30	-25	-9.30	Horizontal
5120.0	-59.76	5.24	35.83	-29.17	-25	-4.17	Vertical
7680.0	-64.10	5.70	36.88	-32.92	-25	-7.92	Vertical
7680.0	-60.22	5.70	36.88	-29.04	-25	-4.04	Horizontal
206.0	-45.53	1.79	16.84	-30.47	-25	-5.47	Vertical
447.7	-47.38	1.71	17.64	-31.45	-25	-6.45	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.

9.5 LTE BAND 12

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

Test Results for Low Channel 699.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1399.4	-47.70	2.60	27.20	-23.10	-13	-10.10	Horizontal
1399.4	-47.78	2.60	27.20	-23.18	-13	-10.18	Vertical
2099.1	-49.91	2.85	27.54	-25.22	-13	-12.22	Vertical
2099.1	-53.43	2.85	27.54	-28.74	-13	-15.74	Horizontal
212.4	-35.69	1.49	17.78	-19.40	-13	-6.40	Vertical
261.0	-35.90	1.36	17.33	-19.93	-13	-6.93	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-48.20	2.61	27.28	-23.53	-13	-10.53	Horizontal
1415.0	-53.75	2.61	27.28	-29.08	-13	-16.08	Vertical
2122.5	-46.87	2.87	27.59	-22.15	-13	-9.15	Vertical
2122.5	-49.45	2.87	27.59	-24.73	-13	-11.73	Horizontal
195.4	-38.44	1.73	15.74	-24.43	-13	-11.43	Vertical
416.5	-42.49	1.62	15.79	-28.32	-13	-15.32	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-50.64	2.63	27.28	-25.99	-13	-12.99	Horizontal
1430.6	-45.29	2.63	27.28	-20.64	-13	-7.64	Vertical
2145.9	-49.68	2.88	27.60	-24.96	-13	-11.96	Vertical
2145.9	-53.49	2.88	27.60	-28.77	-13	-15.77	Horizontal
201.1	-39.11	1.61	18.00	-22.72	-13	-9.72	Vertical
382.6	-38.87	1.45	15.49	-24.84	-13	-11.84	Horizontal

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

Test Results for Low Channel 704MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1408.0	-52.00	2.61	27.26	-27.35	-13	-14.35	Horizontal
1408.0	-51.10	2.61	27.26	-26.45	-13	-13.45	Vertical
2112.0	-46.45	2.87	27.58	-21.74	-13	-8.74	Vertical
2112.0	-50.32	2.87	27.58	-25.61	-13	-12.61	Horizontal
194.7	-42.89	1.31	16.97	-27.23	-13	-14.23	Vertical
304.3	-38.46	1.65	16.70	-23.41	-13	-10.41	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-53.42	2.61	27.28	-28.75	-13	-15.75	Horizontal
1415.0	-47.22	2.61	27.28	-22.55	-13	-9.55	Vertical
2122.5	-48.50	2.87	27.59	-23.78	-13	-10.78	Vertical
2122.5	-50.27	2.87	27.59	-25.55	-13	-12.55	Horizontal
182.1	-42.05	1.72	17.99	-25.78	-13	-12.78	Vertical
404.0	-44.85	1.73	17.94	-28.64	-13	-15.64	Horizontal
Test Results for High Channel 711MHz							
1422.0	-52.82	2.62	27.28	-28.16	-13	-15.16	Horizontal
1422.0	-47.57	2.62	27.28	-22.91	-13	-9.91	Vertical
2133.0	-51.84	2.87	27.60	-27.11	-13	-14.11	Vertical
2133.0	-52.64	2.87	27.60	-27.91	-13	-14.91	Horizontal
202.6	-36.36	1.58	15.93	-22.01	-13	-9.01	Vertical
264.6	-41.10	1.36	15.59	-26.87	-13	-13.87	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 Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1413.0	-45.88	2.61	27.28	-21.21	-13	-8.21	Horizontal
1413.0	-49.15	2.61	27.28	-24.48	-13	-11.48	Vertical
2119.5	-51.02	2.87	27.59	-26.30	-13	-13.30	Vertical
2119.5	-49.94	2.87	27.59	-25.22	-13	-12.22	Horizontal
190.8	-34.62	1.71	16.15	-20.18	-13	-7.18	Vertical
286.2	-41.25	1.41	17.32	-25.34	-13	-12.34	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-49.27	2.62	27.30	-24.59	-13	-11.59	Horizontal
1420.0	-47.25	2.62	27.30	-22.57	-13	-9.57	Vertical
2130.0	-46.59	2.87	27.62	-21.84	-13	-8.84	Vertical
2130.0	-51.83	2.87	27.62	-27.08	-13	-14.08	Horizontal
209.6	-40.32	1.42	15.25	-26.50	-13	-13.50	Vertical
231.7	-35.09	1.36	17.19	-19.26	-13	-6.26	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-52.42	2.66	27.28	-27.80	-13	-14.80	Horizontal
1427.0	-45.10	2.66	27.28	-20.48	-13	-7.48	Vertical
2140.5	-49.26	2.88	27.60	-24.54	-13	-11.54	Vertical
2140.5	-53.96	2.88	27.60	-29.24	-13	-16.24	Horizontal
196.7	-44.28	1.32	17.29	-28.31	-13	-15.31	Vertical
368.7	-37.10	1.72	16.89	-21.93	-13	-8.93	Horizontal

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

Test Results for Low Channel 709MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1418.0	-49.11	2.62	27.30	-24.43	-13	-11.43	Horizontal
1418.0	-46.22	2.62	27.30	-21.54	-13	-8.54	Vertical
2127.0	-47.93	2.87	27.62	-23.18	-13	-10.18	Vertical
2127.0	-52.91	2.87	27.62	-28.16	-13	-15.16	Horizontal
177.5	-41.00	1.35	16.91	-25.44	-13	-12.44	Vertical
236.0	-40.41	1.62	16.31	-25.72	-13	-12.72	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-44.38	2.62	27.30	-19.70	-13	-6.70	Horizontal
1420.0	-52.80	2.62	27.30	-28.12	-13	-15.12	Vertical
2130.0	-51.03	2.87	27.62	-26.28	-13	-13.28	Vertical
2130.0	-53.22	2.87	27.62	-28.47	-13	-15.47	Horizontal
185.7	-34.58	1.51	17.14	-18.95	-13	-5.95	Vertical
404.5	-39.49	1.77	16.88	-24.38	-13	-11.38	Horizontal
Test Results for High Channel 711MHz							
1422.0	-49.28	2.62	27.30	-24.60	-13	-11.60	Horizontal
1422.0	-51.54	2.62	27.30	-26.86	-13	-13.86	Vertical
2133.0	-50.83	2.87	27.62	-26.08	-13	-13.08	Vertical
2133.0	-50.36	2.87	27.62	-25.61	-13	-12.61	Horizontal
177.4	-40.07	1.78	15.95	-25.90	-13	-12.90	Vertical
363.8	-41.03	1.34	17.95	-24.43	-13	-11.43	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 41

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

Test Results for Low Channel 2537.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5145.0	-61.67	5.23	35.81	-31.09	-25	-6.09	Horizontal
5145.0	-62.71	5.23	35.81	-32.13	-25	-7.13	Vertical
7717.5	-61.63	5.67	36.85	-30.45	-25	-5.45	Vertical
7717.5	-64.73	5.67	36.85	-33.55	-25	-8.55	Horizontal
207.4	-49.58	1.38	15.98	-34.98	-25	-9.98	Vertical
289.5	-44.19	1.62	15.66	-30.15	-25	-5.15	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-64.81	5.23	35.82	-34.22	-25	-9.22	Horizontal
5190.0	-62.28	5.23	35.82	-31.69	-25	-6.69	Vertical
7785.0	-63.71	5.67	36.85	-32.53	-25	-7.53	Vertical
7785.0	-62.11	5.67	36.85	-30.93	-25	-5.93	Horizontal
192.9	-47.68	1.62	16.17	-33.13	-25	-8.13	Vertical
436.7	-48.62	1.74	17.63	-32.73	-25	-7.73	Horizontal
Test Results for High Channel 2652.5MHz							
5235.0	-64.28	5.24	35.83	-33.69	-25	-8.69	Horizontal
5235.0	-60.19	5.24	35.83	-29.60	-25	-4.60	Vertical
7852.5	-61.33	5.68	36.87	-30.14	-25	-5.14	Vertical
7852.5	-64.86	5.68	36.87	-33.67	-25	-8.67	Horizontal
209.7	-48.98	1.55	15.84	-34.69	-25	-9.69	Vertical
310.6	-45.13	1.51	17.06	-29.58	-25	-4.58	Horizontal

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

Test Results for Low Channel 2545MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5160.0	-63.53	5.23	35.82	-32.94	-25	-7.94	Horizontal
5160.0	-60.42	5.23	35.82	-29.83	-25	-4.83	Vertical
7740.0	-60.57	5.67	36.86	-29.38	-25	-4.38	Vertical
7740.0	-64.75	5.67	36.86	-33.56	-25	-8.56	Horizontal
195.9	-50.65	1.43	15.51	-36.57	-25	-11.57	Vertical
421.7	-50.78	1.40	16.97	-35.21	-25	-10.21	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-59.35	5.23	35.82	-28.76	-25	-3.76	Horizontal
5190.0	-62.65	5.23	35.82	-32.06	-25	-7.06	Vertical
7785.0	-60.49	5.67	36.85	-29.31	-25	-4.31	Vertical
7785.0	-60.90	5.67	36.85	-29.72	-25	-4.72	Horizontal
202.5	-51.10	1.77	16.72	-36.15	-25	-11.15	Vertical
459.5	-47.83	1.31	16.99	-32.15	-25	-7.15	Horizontal
Test Results for High Channel 2645MHz							
5220.0	-64.31	5.24	35.83	-33.72	-25	-8.72	Horizontal
5220.0	-59.37	5.24	35.83	-28.78	-25	-3.78	Vertical
7830.0	-61.60	5.70	36.88	-30.42	-25	-5.42	Vertical
7830.0	-60.45	5.70	36.88	-29.27	-25	-4.27	Horizontal
183.3	-45.46	1.70	15.73	-31.43	-25	-6.43	Vertical
436.5	-44.85	1.75	17.33	-29.27	-25	-4.27	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 3.29V, Normal, DC 3.87V and High voltage, DC 4.45V.

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

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]
3.29	1880	12.3	0.006566	2.5
3.87	1880	13.5	0.007182	2.5
4.45	1880	13.2	0.007012	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	13.1	0.006943	2.5
Extreme (50C)	1880	12.0	0.006401	2.5
Extreme (40C)	1880	14.0	0.007465	2.5
Extreme (30C)	1880	13.6	0.007242	2.5
Extreme (10C)	1880	13.5	0.007175	2.5
Extreme (0C)	1880	11.8	0.006301	2.5
Extreme (-10C)	1880	13.2	0.007014	2.5
Extreme (-20C)	1880	13.8	0.007340	2.5
Extreme (-30C)	1880	14.9	0.007923	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]
3.29	1880	9.5	0.005069	2.5
3.87	1880	8.6	0.004575	2.5
4.45	1880	8.0	0.004272	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	10.1	0.005355	2.5
Extreme (50C)	1880	9.0	0.004772	2.5
Extreme (40C)	1880	8.2	0.004379205	2.5
Extreme (30C)	1880	9.2	0.004913996	2.5
Extreme (10C)	1880	9.2	0.004871797	2.5
Extreme (0C)	1880	8.3	0.004407132	2.5
Extreme (-10C)	1880	9.3	0.004953512	2.5
Extreme (-20C)	1880	8.7	0.004640006	2.5
Extreme (-30C)	1880	7.8	0.004138902	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]
3.29	1732.5	9.2	0.005329	2.5
3.87	1732.5	8.7	0.005046	2.5
4.45	1732.5	8.8	0.005057	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.3	0.004786	2.5
Extreme (50C)	1732.5	9.1	0.005263	2.5
Extreme (40C)	1732.5	7.0	0.004052	2.5
Extreme (30C)	1732.5	6.1	0.003538	2.5
Extreme (10C)	1732.5	7.1	0.004092	2.5
Extreme (0C)	1732.5	9.8	0.005650	2.5
Extreme (-10C)	1732.5	8.5	0.004911	2.5
Extreme (-20C)	1732.5	6.6	0.003833	2.5
Extreme (-30C)	1732.5	8.3	0.004781	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]
3.29	1732.5	9.8	0.005678	2.5
3.87	1732.5	8.5	0.004898	2.5
4.45	1732.5	8.3	0.004804	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	9.6	0.005538	2.5
Extreme (50C)	1732.5	9.3	0.005389	2.5
Extreme (40C)	1732.5	8.4	0.004875	2.5
Extreme (30C)	1732.5	8.6	0.004944	2.5
Extreme (10C)	1732.5	9.3	0.005387	2.5
Extreme (0C)	1732.5	7.7	0.004443	2.5
Extreme (-10C)	1732.5	8.6	0.004985	2.5
Extreme (-20C)	1732.5	8.9	0.005115	2.5
Extreme (-30C)	1732.5	8.5	0.004915	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]
3.29	836.5	5.8	0.006876	2.5
3.87	836.5	7.1	0.008476	2.5
4.45	836.5	4.8	0.005721	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.5	0.007777	2.5
Extreme (50C)	836.5	5.6	0.006698	2.5
Extreme (40C)	836.5	6.6	0.007878	2.5
Extreme (30C)	836.5	6.5	0.007726	2.5
Extreme (10C)	836.5	4.9	0.005902	2.5
Extreme (0C)	836.5	5.3	0.006383	2.5
Extreme (-10C)	836.5	5.4	0.006417	2.5
Extreme (-20C)	836.5	6.6	0.007879	2.5
Extreme (-30C)	836.5	5.8	0.006935	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]
3.29	836.5	5.8	0.006942	2.5
3.87	836.5	6.2	0.007441	2.5
4.45	836.5	4.6	0.005496	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.2	0.007419	2.5
Extreme (50C)	836.5	6.4	0.007636	2.5
Extreme (40C)	836.5	6.5	0.007807	2.5
Extreme (30C)	836.5	6.8	0.008177	2.5
Extreme (10C)	836.5	5.8	0.006982	2.5
Extreme (0C)	836.5	5.3	0.006303	2.5
Extreme (-10C)	836.5	5.7	0.006853	2.5
Extreme (-20C)	836.5	6.4	0.007681	2.5
Extreme (-30C)	836.5	6.7	0.007993	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]
3.29	2535	10.4	0.004099	2.5
3.87	2535	8.7	0.003427	2.5
4.45	2535	8.2	0.003216	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	9.3	0.003671	2.5
Extreme (50C)	2535	8.7	0.003426	2.5
Extreme (40C)	2535	8.8	0.003474	2.5
Extreme (30C)	2535	8.4	0.003320	2.5
Extreme (10C)	2535	8.3	0.003291	2.5
Extreme (0C)	2535	8.2	0.003235	2.5
Extreme (-10C)	2535	9.7	0.003836	2.5
Extreme (-20C)	2535	8.9	0.003516	2.5
Extreme (-30C)	2535	8.5	0.003344	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]
3.29	2535	6.9	0.002722	2.5
3.87	2535	6.4	0.002515	2.5
4.45	2535	5.4	0.002111	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	6.9	0.002722	2.5
Extreme (50C)	2535	5.7	0.002256	2.5
Extreme (40C)	2535	5.1	0.002010	2.5
Extreme (30C)	2535	6.6	0.002608	2.5
Extreme (10C)	2535	5.7	0.002245	2.5
Extreme (0C)	2535	4.7	0.001872	2.5
Extreme (-10C)	2535	5.1	0.002006	2.5
Extreme (-20C)	2535	6.3	0.002488	2.5
Extreme (-30C)	2535	5.9	0.002309	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]
3.29	707.5	8.8	0.012426	2.5
3.87	707.5	10.2	0.014419	2.5
4.45	707.5	8.7	0.012323	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	8.7	0.012299	2.5
Extreme (50C)	707.5	7.9	0.011114	2.5
Extreme (40C)	707.5	7.5	0.010555	2.5
Extreme (30C)	707.5	8.5	0.011977	2.5
Extreme (10C)	707.5	7.4	0.010494	2.5
Extreme (0C)	707.5	9.4	0.013343	2.5
Extreme (-10C)	707.5	8.5	0.011989	2.5
Extreme (-20C)	707.5	8.8	0.012463	2.5
Extreme (-30C)	707.5	7.9	0.011179	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]
3.29	707.5	7.0	0.009929	2.5
3.87	707.5	8.4	0.011880	2.5
4.45	707.5	7.8	0.010996	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]
3.29	710.0	9.6	0.013457	2.5
3.87	710.0	8.6	0.012088	2.5
4.45	710.0	7.7	0.010879	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.9	0.013987	2.5
Extreme (50C)	710.0	8.4	0.011860	2.5
Extreme (40C)	710.0	8.4	0.011868	2.5
Extreme (30C)	710.0	9.4	0.013182	2.5
Extreme (10C)	710.0	8.9	0.012562	2.5
Extreme (0C)	710.0	8.1	0.011410	2.5
Extreme (-10C)	710.0	9.3	0.013043	2.5
Extreme (-20C)	710.0	9.0	0.012628	2.5
Extreme (-30C)	710.0	7.9	0.011186	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]
3.29	710.0	9.7	0.013695	2.5
3.87	710.0	8.5	0.011967	2.5
4.45	710.0	8.6	0.012162	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.6	0.013530	2.5
Extreme (50C)	710.0	8.4	0.011868	2.5
Extreme (40C)	710.0	8.0	0.011241	2.5
Extreme (30C)	710.0	8.5	0.012001	2.5
Extreme (10C)	710.0	8.5	0.011943	2.5
Extreme (0C)	710.0	8.4	0.011809	2.5
Extreme (-10C)	710.0	9.9	0.013921	2.5
Extreme (-20C)	710.0	8.6	0.012141	2.5
Extreme (-30C)	710.0	8.2	0.011523	2.5

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

10.7 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]
3.29	2595	9.3	0.003572	2.5
3.87	2595	9.4	0.003619	2.5
4.45	2595	7.9	0.003054	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	8.7	0.003359	2.5
Extreme (50C)	2595	8.3	0.003187	2.5
Extreme (40C)	2595	8.6	0.003312	2.5
Extreme (30C)	2595	7.8	0.003014	2.5
Extreme (10C)	2595	8.6	0.003296	2.5
Extreme (0C)	2595	6.1	0.002338	2.5
Extreme (-10C)	2595	8.5	0.003257	2.5
Extreme (-20C)	2595	8.5	0.003269	2.5
Extreme (-30C)	2595	5.9	0.002263	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]
3.29	2595	9.1	0.003504	2.5
3.87	2595	8.6	0.003307	2.5
4.45	2595	8.1	0.003126	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	8.7	0.003362	2.5
Extreme (50C)	2595	8.4	0.003245	2.5
Extreme (40C)	2595	8.6	0.003298	2.5
Extreme (30C)	2595	8.2	0.003165	2.5
Extreme (10C)	2595	8.7	0.003355	2.5
Extreme (0C)	2595	6.4	0.002462	2.5
Extreme (-10C)	2595	8.7	0.003341	2.5
Extreme (-20C)	2595	8.3	0.003195	2.5
Extreme (-30C)	2595	5.6	0.002142	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.

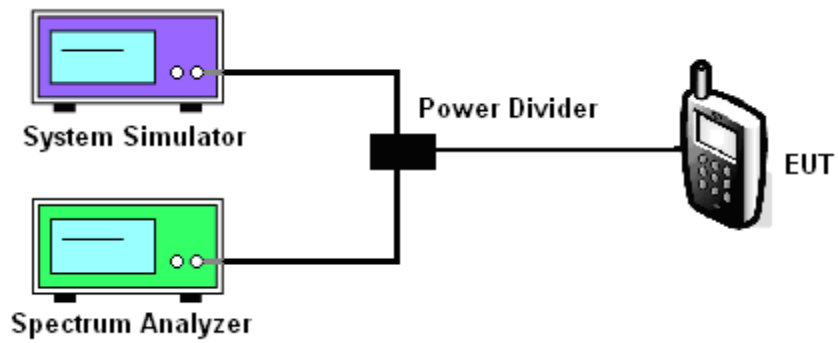
11.2 Measuring Instruments

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

Test data reference attachment.

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