

FCC CFR47 PART 22H, 24E, 27 CERTIFICATION TEST REPORT FCC ID: 2AOKUPAD8

Product: Tablet

Trade Mark: HOTWAV

Model No.: Pad 8

Family Model: P2203, Pad

Report No.: S23050501502006

Issue Date: Jun 21, 2023

Prepared for

SHENZHEN TUGAO INTELLIGENT CO.,LTD
8th Floor, Bldg A, Jinggang Science&Technology Park, Fuyong,
Bao'an District, Shenzhen, China

Prepared by

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
Tel. 400-800-6106, 0755-2320 0050, 0755-2320 0090
Website: <http://www.ntek.org.cn>

TEST RESULT CERTIFICATION

Applicant's name : SHENZHEN TUGAO INTELLIGENT CO.,LTD
Address : 8th Floor, Bldg A, Jinggang Science&Technology Park, Fuyong,
 Bao'an District, Shenzhen, China
Manufacturer's Name : SHENZHEN TUGAO INTELLIGENT CO.,LTD
Address : 8th Floor, Bldg A, Jinggang Science&Technology Park, Fuyong,
 Bao'an District, Shenzhen, China
Product name : Tablet
Trade Mark : HOTWAV
Model and/or type reference : Pad 8
Family Model : P2203, Pad
Test Sample Number S230505015003
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.

This report shall not be reproduced except in full, without the written approval of NTEK, this document may be altered or revised by NTEK, personal only, and shall be noted in the revision of the document.

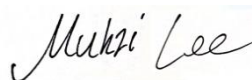
Date of Test

Date (s) of performance of tests May 05, 2023 ~ Jun 21, 2023

Date of Issue Jun 21, 2023

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

Testing Engineer :



(Mukzi Lee)

Authorized Signatory :



(Alex Li)

TABLE OF CONTENTS

1. GENERAL INFORMATION.....	6
1. GENERAL INFORMATION.....	6
1.1 PRODUCT DESCRIPTION	6
1.3 TEST METHODOLOGY	7
1.4 TEST FACILITY.....	7
MEASUREMENT UNCERTAINTY	8
1.5 SPECIAL ACCESSORIES.....	8
1.6 WORST-CASE CONFIGURATION AND MODE.....	8
2. SYSTEM TEST CONFIGURATION	8
2.1 EUT CONFIGURATION.....	8
2.2 EUT EXERCISE	9
2.3 CONFIGURATION OF EUT SYSTEM.....	9
2.4 TEST SETUP	10
3.TEST AND MEASUREMENT EQUIPMENT	11
4. OUTPUT POWER.....	13
4.1 OUTPUT POWER MEASUREMENT	13
6. BANDEDGE AND EMISSION MASK.....	16
7. OUT OF BAND EMISSIONS	18
7.1 MEASUREMENT METHOD	18
8. RADIATED MEASUREMENT	19
8.1. RADIATED POWER (ERP & EIRP).....	19
8.2 LTE BAND 2.....	20
8.3 LTE BAND 5.....	23

8.4 LTE BAND 7.....	25
8.5 LTE BAND 12	27
8.6 LTE BAND 17	29
8.7 LTE BAND 38	31
8.8 LTE BAND 40A	33
8.9 LTE BAND 40B	35
8.10 LTE BAND 41	37
9. SPURIOUS RADIATION EMISSION	39
9.1 LTE BAND 2.....	41
9.2 LTE BAND 5.....	43
9.3 LTE BAND 7.....	45
9.4 LTE BAND 12	47
9.5 LTE BAND 17	49
9.6 LTE BAND 38	51
9.7 LTE BAND 40A	53
9.8 LTE BAND 40B	55
9.9 LTE BAND 41	57
10. FREQUENCY STABILITY	59
10.1 LTE BAND 2	60
10.2 LTE BAND 5	62
10.3 LTE BAND 7	64
10.4 LTE BAND 12	66
10.5 LTE BAND 17	68
10.6 LTE BAND 38	70
10.7 LTE BAND 40A	72
10.8 LTE BAND 40B	74
10.9 LTE BAND 41	76
11. PEAK-TO-AVERAGE RATIO.....	78

11.1 Description of the PAR Measurement	78
11.2 Measuring Instruments	78
11.3 Test Procedures.....	78
11.4 Test Setup.....	79
12. DUTY CYCLE	80
12.1 LIMITS	80
The duty cycle must not exceed 38 percent	80
12.2 Measuring Instruments.....	80
12.3 Test Procedures.....	80
12.4 Test Setup	80

1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	Tablet
Trade Mark	HOTWAV
Model Name	Pad 8
Family Model	P2203, Pad
Model Difference	All the model are the same circuit and RF module, except the model names.
FCC ID:	2AOKUPAD8
Frequency Bands:	U.S. Bands: ☒ LTE FDD Band 2,5,7,12,17 TDD Band 38,40,41
Frequency Range:	LTE FDD Band 2 Uplink: 1850MHz-1910MHz, Downlink: 1930MHz-1990MHz; 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 38 Uplink&Downlink: 2570MHz-2620MHz, LTE TDD Band 40A Uplink& Downlink: 2305MHz-2315MHz, LTE TDD Band 40BUplink& Downlink: 2350MHz-2360MHz, LTE TDD Band 41 Uplink& Downlink: 2540MHz-2650MHz,
Type of Modulation:	QPSK/16QAM/64QAM(Only Downlink)
Power Class	Class 3
Antenna:	PIFA Antenna
Antenna gain:	Band 2: 0.57 dBi; Band 5: -2.52 dBi, Band 7: 1.34 dBi, Band 12: -5.44dBi; Band 17: -5.44dBi; Band 38:1.66 dBi; Band 40a:-0.01 dBi; Band 40b:-0.63dBi, Band 41: 3.73 dBi
Adapter	Adapter 1: Model: HJ-0502000W2-US Input: 100-240V~50/60Hz 0.3A Output: 5.0V---2.0A 10.0W Adapter 2: Model: 5277-20B1 Input: 100-240V~50/60Hz 0.4A Output: 5.0V---2.0A, 10.0W
Battery	DC 3.8V, 7500mAh, 28.5Wh
Power supply	DC 3.8V from battery or DC 5V from adapter
Extreme Vol. Limits:	DC 3.23V to DC 4.37V (Nominal DC 3.8V) (Note 1)

HW Version	KEP_P30A_V1.0
SW Version	HOTWAV_Pad 8_V01_20230525
** 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: 2AOKUPAD8** 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 expanded 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: LTE Band 2/5/7/12/17/38/40/41

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	Pad 8	FCC ID: 2AOKUPAD8	EUT

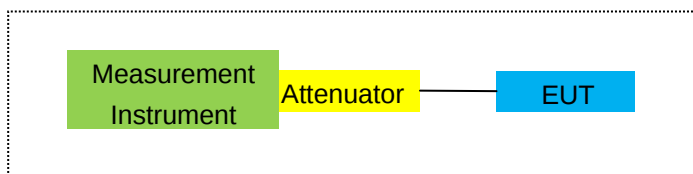
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

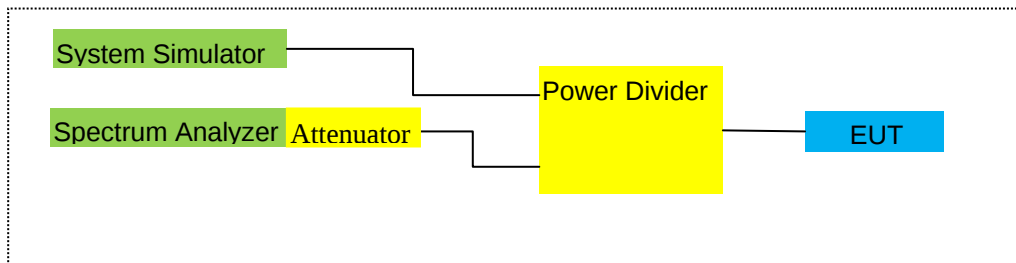
For Radiated Test Cases



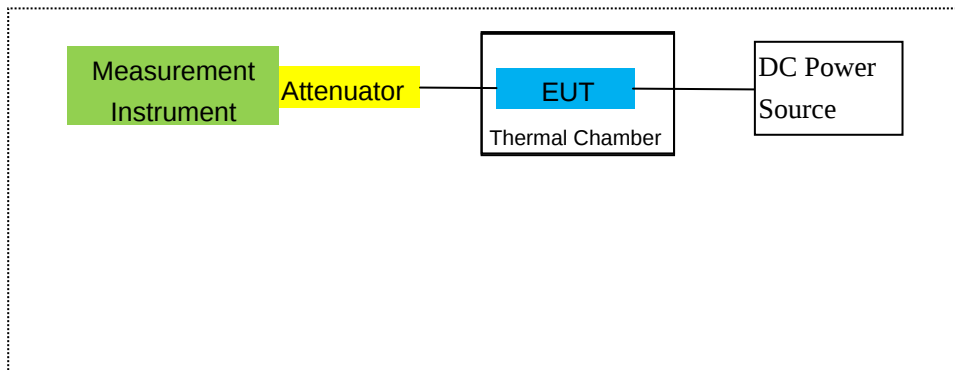
For Conducted Output Power



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



For Frequency Stability



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

3.TEST AND MEASUREMENT EQUIPMENT

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

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	MXA Signal Analyzer	Agilent	N9020A	MY49100060	2022.06.16 2023.05.29	2023.06.15 2024.05.28	1 year
2	Test Receiver	R&S	ESPI	101318	2023.03.27	2024.03.26	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2023.03.16	2024.03.15	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2023.05.06	2026.05.05	3 year
5	Horn Antenna	EM	EM-AH-1018 0	2011071402	2022.03.31	2025.03.30	1 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2022.11.07	2023.11.06	1 year
7	Amplifier	EM	EM-30180	060538	2022.06.17 2023.05.29	2023.06.16 2024.05.28	1 year
8	Loop Antenna	ARA	PLA-1030/B	1029	2022.11.04	2023.11.05	1 year
9	Power Meter	R&S	NRVS	100696	2022.06.17 2023.05.29	2023.06.16 2024.05.28	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.0 5	2022.06.17 2023.05.29	2023.06.16 2024.05.28	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	2023.03.27	2024.03.26	1 year
15	LISN	R&S	ENV216	101313	2023.03.27	2024.03.26	1 year
16	LISN	EMCO	3816/2	00042990	2023.03.27	2024.03.26	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2023.03.27	2024.03.26	1 year
18	Passive Voltage Probe	R&S	ESH2-Z3	100196	2023.03.27	2024.03.26	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	2023.03.27	2026.03.26	3 year
23	Spectrum Analyzer	agilent	e4440a	us44300399	2023.03.27	2024.03.26	1 year
24	test receiver	R&S	ESCI	a0304218	2023.03.27	2024.03.26	1 year

25	Communication Tester	R&S	CMU200	A0304247	2022.06.17 2023.05.29	2023.06.16 2024.05.28	1 year
26	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2023.03.27	2024.03.26	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	2022.06.16 2023.05.29	2023.06.15 2024.05.28	1 year
29	Communication Tester	R&S	CMW500	148500	2022.06.16 2023.05.29	2023.06.15 2024.05.28	1 year

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

4. OUTPUT POWER

4.1 OUTPUT POWER MEASUREMENT

LTE Measurement Procedure:

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

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

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

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

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

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

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

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

Test data reference attachment.

5. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

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

MODES TESTED

☐

LTE Band 2/5/7/12/17/38/40/41

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

LTE Band 2/5/7/12/17/38/40/41

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

- ☐ LTE Band 2/5/7/12/17/38/40/41
- ☐

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

- ☐ LTE Band 2/5/7/12/17/38/40/41

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 Gain (dBi)	Max. EIRP Average (dBm)	Max. EIRP		
							Average (mW)		
1.4MHz Band QPSK	1/#Mid	1850.7	-0.68	3.76	28.24	23.80	239.883	Horizontal	Pass
		1880	-0.45	3.91	28.22	23.86	243.220	Horizontal	Pass
		1909.3	-0.46	3.93	28.20	23.81	240.436	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-0.60	3.77	28.23	23.86	243.220	Horizontal	Pass
		1880	-0.54	3.91	28.24	23.79	239.332	Horizontal	Pass
		1908.5	-0.57	3.94	28.25	23.74	236.592	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-0.71	3.77	28.31	23.83	241.546	Horizontal	Pass
		1880	-0.52	3.91	28.22	23.79	239.332	Horizontal	Pass
		1907.5	-0.57	3.94	28.20	23.69	233.884	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-0.69	3.79	28.33	23.85	242.661	Horizontal	Pass
		1880	-0.49	3.95	28.22	23.78	238.781	Horizontal	Pass
		1905	-0.48	3.97	28.19	23.74	236.592	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-0.82	3.79	28.34	23.73	236.048	Horizontal	Pass
		1880	-0.43	3.95	28.22	23.84	242.103	Horizontal	Pass
		1902.5	-0.37	3.97	28.18	23.84	242.103	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-0.83	3.81	28.35	23.71	234.963	Horizontal	Pass
		1880	-0.45	3.96	28.22	23.81	240.436	Horizontal	Pass
		1900	-0.38	4.00	28.16	23.78	238.781	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-0.67	3.76	28.24	23.81	240.436	Vertical	Pass
		1880	-0.55	3.91	28.22	23.76	237.684	Vertical	Pass
		1909.3	-0.49	3.93	28.20	23.78	238.781	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-0.62	3.77	28.23	23.84	242.103	Vertical	Pass
		1880	-0.49	3.91	28.24	23.84	242.103	Vertical	Pass
		1908.5	-0.44	3.94	28.25	23.87	243.781	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-0.83	3.77	28.31	23.71	234.963	Vertical	Pass
		1880	-0.62	3.91	28.22	23.69	233.884	Vertical	Pass
		1907.5	-0.52	3.94	28.20	23.74	236.592	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1855	-0.75	3.79	28.33	23.79	239.332	Vertical	Pass
		1880	-0.47	3.95	28.22	23.80	239.883	Vertical	Pass
		1905	-0.40	3.97	28.19	23.82	240.991	Vertical	Pass

15.0MHz	1/#Mid	1857.5	-0.73	3.79	28.34	23.82	240.991	Vertical	Pass
Band		1880	-0.51	3.95	28.22	23.76	237.684	Vertical	Pass
QPSK		1902.5	-0.35	3.97	28.18	23.86	243.220	Vertical	Pass
20.0MHz	1/#Mid	1860	-0.64	3.81	28.35	23.90	245.471	Vertical	Pass
Band		1880	-0.37	3.96	28.22	23.89	244.906	Vertical	Pass
QPSK		1900	-0.28	4.00	28.16	23.88	244.343	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	1/#Mid	1850.7	-1.16	3.76	28.24	23.32	214.783	Horizontal	Pass
Band 16		1880	-1.02	3.91	28.22	23.29	213.304	Horizontal	Pass
QAM		1909.3	-0.90	3.93	28.20	23.37	217.270	Horizontal	Pass
3.0MHz	1/#Mid	1851.5	-1.19	3.77	28.23	23.27	212.324	Horizontal	Pass
Band 16		1880	-1.05	3.91	28.24	23.28	212.814	Horizontal	Pass
QAM		1908.5	-1.05	3.94	28.25	23.26	211.836	Horizontal	Pass
5.0MHz	1/#Mid	1852.5	-1.20	3.77	28.31	23.34	215.774	Horizontal	Pass
Band 16		1880	-1.11	3.91	28.22	23.20	208.930	Horizontal	Pass
QAM		1907.5	-0.93	3.94	28.20	23.33	215.278	Horizontal	Pass
10.0MHz	1/#Mid	1855	-1.19	3.79	28.33	23.35	216.272	Horizontal	Pass
Band 16		1880	-1.02	3.95	28.22	23.25	211.349	Horizontal	Pass
QAM		1905	-0.86	3.97	28.19	23.36	216.770	Horizontal	Pass
15.0MHz	1/#Mid	1857.5	-1.22	3.79	28.34	23.33	215.278	Horizontal	Pass
Band 16		1880	-0.92	3.95	28.22	23.35	216.272	Horizontal	Pass
QAM		1902.5	-0.99	3.97	28.18	23.22	209.894	Horizontal	Pass
20.0MHz	1/#Mid	1860	-1.28	3.81	28.35	23.26	211.836	Horizontal	Pass
Band 16		1880	-0.95	3.96	28.22	23.31	214.289	Horizontal	Pass
QAM		1900	-0.88	4.00	28.16	23.28	212.814	Horizontal	Pass
1.4MHz	1/#Mid	1850.7	-1.26	3.76	28.24	23.22	209.894	Vertical	Pass
Band 16		1880	-0.99	3.91	28.22	23.32	214.783	Vertical	Pass
QAM		1909.3	-0.97	3.93	28.20	23.30	213.796	Vertical	Pass
3.0MHz	1/#Mid	1851.5	-1.19	3.77	28.23	23.27	212.324	Vertical	Pass
Band 16		1880	-1.00	3.91	28.24	23.33	215.278	Vertical	Pass
QAM		1908.5	-1.04	3.94	28.25	23.27	212.324	Vertical	Pass
5.0MHz	1/#Mid	1852.5	-1.33	3.77	28.31	23.21	209.411	Vertical	Pass

Band 16 QAM		1880	-0.96	3.91	28.22	23.35	216.272	Vertical	Pass
		1907.5	-0.96	3.94	28.20	23.30	213.796	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-1.31	3.79	28.33	23.23	210.378	Vertical	Pass
		1880	-0.98	3.95	28.22	23.29	213.304	Vertical	Pass
		1905	-0.95	3.97	28.19	23.27	212.324	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-1.33	3.79	28.34	23.22	209.894	Vertical	Pass
		1880	-1.01	3.95	28.22	23.26	211.836	Vertical	Pass
		1902.5	-0.85	3.97	28.18	23.36	216.770	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-1.14	3.81	28.35	23.40	218.776	Vertical	Pass
		1880	-0.85	3.96	28.22	23.41	219.280	Vertical	Pass
		1900	-0.79	4.00	28.16	23.37	217.270	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 5

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dBi)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	824.7	3.65	2.01	19.68	2.15	19.17	82.604	Horizontal	Pass
		836.5	3.55	2.01	19.77	2.15	19.16	82.414	Horizontal	Pass
		848.3	3.52	2.02	19.82	2.15	19.17	82.604	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	825.5	3.67	2.01	19.70	2.15	19.21	83.368	Horizontal	Pass
		836.5	3.58	2.01	19.77	2.15	19.19	82.985	Horizontal	Pass
		847.5	3.59	2.02	19.81	2.15	19.23	83.753	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	826.5	3.72	2.01	19.71	2.15	19.27	84.528	Horizontal	Pass
		836.5	3.58	2.01	19.77	2.15	19.19	82.985	Horizontal	Pass
		846.5	3.55	2.02	19.79	2.15	19.17	82.604	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	829	3.64	2.01	19.73	2.15	19.21	83.368	Horizontal	Pass
		836.5	3.55	2.01	19.77	2.15	19.16	82.414	Horizontal	Pass
		844	3.50	2.02	19.78	2.15	19.11	81.470	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	824.7	3.68	2.01	19.68	2.15	19.20	83.176	Vertical	Pass
		836.5	3.61	2.01	19.77	2.15	19.22	83.560	Vertical	Pass
		848.3	3.62	2.02	19.82	2.15	19.27	84.528	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	825.5	3.67	2.01	19.70	2.15	19.21	83.368	Vertical	Pass
		836.5	3.54	2.01	19.77	2.15	19.15	82.224	Vertical	Pass
		847.5	3.62	2.02	19.81	2.15	19.26	84.333	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	826.5	3.68	2.01	19.71	2.15	19.23	83.753	Vertical	Pass
		836.5	3.59	2.01	19.77	2.15	19.20	83.176	Vertical	Pass
		846.5	3.64	2.02	19.79	2.15	19.26	84.333	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	829	3.74	2.01	19.73	2.15	19.31	85.310	Vertical	Pass
		836.5	3.70	2.01	19.77	2.15	19.31	85.310	Vertical	Pass
		844	3.71	2.02	19.78	2.15	19.32	85.507	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. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	824.7	3.57	2.01	19.68	2.15	19.09	81.096	Horizontal	Pass
		836.5	3.56	2.01	19.77	2.15	19.17	82.604	Horizontal	Pass
		848.3	3.46	2.02	19.82	2.15	19.11	81.470	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	3.54	2.01	19.70	2.15	19.08	80.910	Horizontal	Pass
		836.5	3.44	2.01	19.77	2.15	19.05	80.353	Horizontal	Pass
		847.5	3.44	2.02	19.81	2.15	19.08	80.910	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	3.56	2.01	19.71	2.15	19.11	81.470	Horizontal	Pass
		836.5	3.50	2.01	19.77	2.15	19.11	81.470	Horizontal	Pass
		846.5	3.53	2.02	19.79	2.15	19.15	82.224	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	829	3.47	2.01	19.73	2.15	19.04	80.168	Horizontal	Pass
		836.5	3.39	2.01	19.77	2.15	19.00	79.433	Horizontal	Pass
		844	3.54	2.02	19.78	2.15	19.15	82.224	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	824.7	3.64	2.01	19.68	2.15	19.16	82.414	Vertical	Pass
		836.5	3.52	2.01	19.77	2.15	19.13	81.846	Vertical	Pass
		848.3	3.51	2.02	19.82	2.15	19.16	82.414	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	3.49	2.01	19.70	2.15	19.03	79.983	Vertical	Pass
		836.5	3.46	2.01	19.77	2.15	19.07	80.724	Vertical	Pass
		847.5	3.50	2.02	19.81	2.15	19.14	82.035	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	3.52	2.01	19.71	2.15	19.07	80.724	Vertical	Pass
		836.5	3.55	2.01	19.77	2.15	19.16	82.414	Vertical	Pass
		846.5	3.46	2.02	19.79	2.15	19.08	80.910	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	829	3.61	2.01	19.73	2.15	19.18	82.794	Vertical	Pass
		836.5	3.61	2.01	19.77	2.15	19.22	83.560	Vertical	Pass
		844	3.58	2.02	19.78	2.15	19.19	82.985	Vertical	Pass

Note:

Note:

ERP=EIRP-2.15

SG Level= Signal generator output

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

8.4 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	1.39	4.54	27.75	24.60	288.403	Horizontal	Pass
		2535	1.55	4.69	27.72	24.58	287.078	Horizontal	Pass
		2567.5	1.63	4.71	27.71	24.63	290.402	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2505	1.35	4.55	27.76	24.56	285.759	Horizontal	Pass
		2535	1.48	4.69	27.72	24.51	282.488	Horizontal	Pass
		2565	1.62	4.72	27.70	24.60	288.403	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	1.26	4.55	27.77	24.48	280.543	Horizontal	Pass
		2535	1.51	4.69	27.72	24.54	284.446	Horizontal	Pass
		2562.5	1.59	4.72	27.69	24.56	285.759	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2510	1.41	4.57	27.78	24.62	289.734	Horizontal	Pass
		2535	1.51	4.73	27.72	24.50	281.838	Horizontal	Pass
		2560	1.68	4.75	27.68	24.61	289.068	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	1.33	4.54	27.75	24.54	284.446	Vertical	Pass
		2535	1.59	4.69	27.72	24.62	289.734	Vertical	Pass
		2567.5	1.60	4.71	27.71	24.60	288.403	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2505	1.41	4.55	27.76	24.62	289.734	Vertical	Pass
		2535	1.51	4.69	27.72	24.54	284.446	Vertical	Pass
		2565	1.54	4.72	27.70	24.52	283.139	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	1.26	4.55	27.77	24.48	280.543	Vertical	Pass
		2535	1.57	4.69	27.72	24.60	288.403	Vertical	Pass
		2562.5	1.59	4.72	27.69	24.56	285.759	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2510	1.44	4.57	27.78	24.65	291.743	Vertical	Pass
		2535	1.65	4.73	27.72	24.64	291.072	Vertical	Pass
		2560	1.72	4.75	27.68	24.65	291.743	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	0.19	4.54	27.75	23.40	218.776	Horizontal	Pass
		2535	0.37	4.69	27.72	23.40	218.776	Horizontal	Pass
		2567.5	0.43	4.71	27.71	23.43	220.293	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	0.12	4.55	27.76	23.33	215.278	Horizontal	Pass
		2535	0.33	4.69	27.72	23.36	216.770	Horizontal	Pass
		2565	0.34	4.72	27.70	23.32	214.783	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	0.17	4.55	27.77	23.39	218.273	Horizontal	Pass
		2535	0.36	4.69	27.72	23.39	218.273	Horizontal	Pass
		2562.5	0.38	4.72	27.69	23.35	216.272	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	0.10	4.57	27.78	23.31	214.289	Horizontal	Pass
		2535	0.42	4.73	27.72	23.41	219.280	Horizontal	Pass
		2560	0.44	4.75	27.68	23.37	217.270	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	0.08	4.54	27.75	23.29	213.304	Vertical	Pass
		2535	0.37	4.69	27.72	23.40	218.776	Vertical	Pass
		2567.5	0.34	4.71	27.71	23.34	215.774	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	0.09	4.55	27.76	23.30	213.796	Vertical	Pass
		2535	0.39	4.69	27.72	23.42	219.786	Vertical	Pass
		2565	0.37	4.72	27.70	23.35	216.272	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	0.17	4.55	27.77	23.39	218.273	Vertical	Pass
		2535	0.38	4.69	27.72	23.41	219.280	Vertical	Pass
		2562.5	0.36	4.72	27.69	23.33	215.278	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	0.27	4.57	27.78	23.48	222.844	Vertical	Pass
		2535	0.46	4.73	27.72	23.45	221.309	Vertical	Pass
		2560	0.54	4.75	27.68	23.47	222.331	Vertical	Pass

Note:

SG Level= Signal generator output

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

8.5 LTE BAND 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	1.55	1.91	19.21	2.15	16.70	46.774	Vertical	Pass
		707.5	1.44	1.91	19.26	2.15	16.64	46.132	Vertical	Pass
		715.3	1.44	1.93	19.34	2.15	16.70	46.774	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	700.5	1.47	1.91	19.21	2.15	16.62	45.920	Vertical	Pass
		707.5	1.45	1.91	19.26	2.15	16.65	46.238	Vertical	Pass
		714.5	1.38	1.93	19.34	2.15	16.64	46.132	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	701.5	1.56	1.91	19.23	2.15	16.73	47.098	Vertical	Pass
		707.5	1.41	1.91	19.26	2.15	16.61	45.814	Vertical	Pass
		713.5	1.46	1.92	19.33	2.15	16.72	46.989	Vertical	Pass
10.0Hz Band QPSK	1/#Mid	704	1.41	1.91	19.25	2.15	16.60	45.709	Vertical	Pass
		707.5	1.46	1.91	19.26	2.15	16.66	46.345	Vertical	Pass
		711	1.33	1.92	19.32	2.15	16.58	45.499	Vertical	Pass
1.4MHz Band QPSK	1/#Mid	699.7	1.57	1.91	19.21	2.15	16.72	46.989	Horizontal	Pass
		707.5	1.50	1.91	19.26	2.15	16.70	46.774	Horizontal	Pass
		715.3	1.47	1.93	19.34	2.15	16.73	47.098	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	700.5	1.50	1.91	19.21	2.15	16.65	46.238	Horizontal	Pass
		707.5	1.45	1.91	19.26	2.15	16.65	46.238	Horizontal	Pass
		714.5	1.45	1.93	19.34	2.15	16.71	46.881	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	701.5	1.45	1.91	19.23	2.15	16.62	45.920	Horizontal	Pass
		707.5	1.53	1.91	19.26	2.15	16.73	47.098	Horizontal	Pass
		713.5	1.44	1.92	19.33	2.15	16.70	46.774	Horizontal	Pass
10.0Hz Band QPSK	1/#Mid	704	1.59	1.91	19.25	2.15	16.78	47.643	Horizontal	Pass
		707.5	1.58	1.91	19.26	2.15	16.78	47.643	Horizontal	Pass
		711	1.54	1.92	19.32	2.15	16.79	47.753	Horizontal	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 Band 16 QAM	1/#Mid	699.7	1.38	1.91	19.21	2.15	16.53	44.978	Vertical	Pass
		707.5	1.40	1.91	19.26	2.15	16.60	45.709	Vertical	Pass
		715.3	1.27	1.93	19.34	2.15	16.53	44.978	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	1.39	1.91	19.21	2.15	16.54	45.082	Vertical	Pass
		707.5	1.40	1.91	19.26	2.15	16.60	45.709	Vertical	Pass
		714.5	1.39	1.93	19.34	2.15	16.65	46.238	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	1.47	1.91	19.23	2.15	16.64	46.132	Vertical	Pass
		707.5	1.33	1.91	19.26	2.15	16.53	44.978	Vertical	Pass
		713.5	1.29	1.92	19.33	2.15	16.55	45.186	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	704	1.34	1.91	19.25	2.15	16.53	44.978	Vertical	Pass
		707.5	1.43	1.91	19.26	2.15	16.63	46.026	Vertical	Pass
		711	1.34	1.92	19.32	2.15	16.59	45.604	Vertical	Pass
1.4MHz Band 16 QAM	1/#Mid	699.7	1.44	1.91	19.21	2.15	16.59	45.604	Horizontal	Pass
		707.5	1.37	1.91	19.26	2.15	16.57	45.394	Horizontal	Pass
		715.3	1.27	1.93	19.34	2.15	16.53	44.978	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	1.50	1.91	19.21	2.15	16.65	46.238	Horizontal	Pass
		707.5	1.36	1.91	19.26	2.15	16.56	45.290	Horizontal	Pass
		714.5	1.27	1.93	19.34	2.15	16.53	44.978	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	1.37	1.91	19.23	2.15	16.54	45.082	Horizontal	Pass
		707.5	1.33	1.91	19.26	2.15	16.53	44.978	Horizontal	Pass
		713.5	1.29	1.92	19.33	2.15	16.55	45.186	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	704	1.49	1.91	19.25	2.15	16.68	46.559	Horizontal	Pass
		707.5	1.48	1.91	19.26	2.15	16.68	46.559	Horizontal	Pass
		711	1.42	1.92	19.32	2.15	16.67	46.452	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

8.6 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	1.33	1.91	19.23	2.15	16.50	44.668	Vertical	Pass
		710	1.33	1.91	19.26	2.15	16.53	44.978	Vertical	Pass
		713.5	1.24	1.92	19.33	2.15	16.50	44.668	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	709	1.25	1.91	19.25	2.15	16.44	44.055	Vertical	Pass
		710	1.23	1.91	19.26	2.15	16.43	43.954	Vertical	Pass
		711	1.16	1.92	19.32	2.15	16.41	43.752	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	706.5	1.26	1.91	19.23	2.15	16.43	43.954	Horizontal	Pass
		710	1.28	1.91	19.26	2.15	16.48	44.463	Horizontal	Pass
		713.5	1.21	1.92	19.33	2.15	16.47	44.361	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	709	1.40	1.91	19.25	2.15	16.59	45.604	Horizontal	Pass
		710	1.41	1.91	19.26	2.15	16.61	45.814	Horizontal	Pass
		711	1.34	1.92	19.32	2.15	16.59	45.604	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	1.09	1.91	19.23	2.15	16.26	42.267	Vertical	Pass
		710	0.95	1.91	19.26	2.15	16.15	41.210	Vertical	Pass
		713.5	0.96	1.92	19.33	2.15	16.22	41.879	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	709	1.07	1.91	19.25	2.15	16.26	42.267	Vertical	Pass
		710	0.92	1.91	19.26	2.15	16.12	40.926	Vertical	Pass
		711	0.89	1.92	19.32	2.15	16.14	41.115	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	706.5	1.05	1.91	19.23	2.15	16.22	41.879	Horizontal	Pass
		710	0.98	1.91	19.26	2.15	16.18	41.495	Horizontal	Pass
		713.5	0.91	1.92	19.33	2.15	16.17	41.400	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	709	1.13	1.91	19.25	2.15	16.32	42.855	Horizontal	Pass
		710	1.12	1.91	19.26	2.15	16.32	42.855	Horizontal	Pass
		711	1.06	1.92	19.32	2.15	16.31	42.756	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)

8.7 LTE BAND 38

Radiated Power (EIRP) for Band38									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dBi)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	25/0	2572.5	1.45	4.44	27.75	24.76	299.226	Horizontal	Pass
		2595	1.58	4.67	27.72	24.63	290.402	Horizontal	Pass
		2617.5	1.58	4.62	27.71	24.67	293.089	Horizontal	Pass
10.0MHz Band QPSK	50/0	2575	1.45	4.51	27.76	24.70	295.121	Horizontal	Pass
		2595	1.49	4.60	27.72	24.61	289.068	Horizontal	Pass
		2615	1.71	4.70	27.70	24.71	295.801	Horizontal	Pass
15.0MHz Band QPSK	75/0	2577.5	1.30	4.47	27.77	24.60	288.403	Horizontal	Pass
		2595	1.65	4.65	27.72	24.72	296.483	Horizontal	Pass
		2612.5	1.65	4.66	27.69	24.68	293.765	Horizontal	Pass
20.0MHz Band QPSK	100/0	2580	1.38	4.50	27.78	24.66	292.415	Horizontal	Pass
		2595	1.55	4.66	27.72	24.61	289.068	Horizontal	Pass
		2610	1.62	4.68	27.68	24.62	289.734	Horizontal	Pass
5.0MHz Band QPSK	25/0	2572.5	1.34	4.48	27.75	24.61	289.068	Vertical	Pass
		2595	1.53	4.62	27.72	24.63	290.402	Vertical	Pass
		2617.5	1.60	4.63	27.71	24.68	293.765	Vertical	Pass
10.0MHz Band QPSK	50/0	2575	1.32	4.46	27.76	24.62	289.734	Vertical	Pass
		2595	1.66	4.65	27.72	24.73	297.167	Vertical	Pass
		2615	1.73	4.69	27.70	24.74	297.852	Vertical	Pass
15.0MHz Band QPSK	75/0	2577.5	1.29	4.47	27.77	24.59	287.740	Vertical	Pass
		2595	1.61	4.65	27.72	24.68	293.765	Vertical	Pass
		2612.5	1.68	4.66	27.69	24.71	295.801	Vertical	Pass
20.0MHz Band QPSK	100/0	2580	1.51	4.53	27.78	24.76	299.226	Vertical	Pass
		2595	1.70	4.66	27.72	24.76	299.226	Vertical	Pass
		2610	1.79	4.68	27.68	24.79	301.301	Vertical	Pass

Radiated Power (EIRP) for Band38									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dBi)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	25/0	2572.5	0.41	4.44	27.75	23.72	235.505	Horizontal	Pass
		2595	0.78	4.67	27.72	23.83	241.546	Horizontal	Pass
		2617.5	0.75	4.62	27.71	23.84	242.103	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	2575	0.57	4.51	27.76	23.82	240.991	Horizontal	Pass
		2595	0.60	4.60	27.72	23.72	235.505	Horizontal	Pass
		2615	0.79	4.70	27.70	23.79	239.332	Horizontal	Pass
15.0MHz Band 16 QAM	75/0	2577.5	0.44	4.47	27.77	23.74	236.592	Horizontal	Pass
		2595	0.72	4.65	27.72	23.79	239.332	Horizontal	Pass
		2612.5	0.81	4.66	27.69	23.84	242.103	Horizontal	Pass
20.0MHz Band 16 QAM	100/0	2580	0.49	4.50	27.78	23.77	238.232	Horizontal	Pass
		2595	0.71	4.66	27.72	23.77	238.232	Horizontal	Pass
		2610	0.75	4.68	27.68	23.75	237.137	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	2572.5	0.58	4.48	27.75	23.85	242.661	Vertical	Pass
		2595	0.72	4.62	27.72	23.82	240.991	Vertical	Pass
		2617.5	0.65	4.63	27.71	23.73	236.048	Vertical	Pass
10.0MHz Band 16 QAM	50/0	2575	0.46	4.46	27.76	23.76	237.684	Vertical	Pass
		2595	0.74	4.65	27.72	23.81	240.436	Vertical	Pass
		2615	0.75	4.69	27.70	23.76	237.684	Vertical	Pass
15.0MHz Band 16 QAM	75/0	2577.5	0.48	4.47	27.77	23.78	238.781	Vertical	Pass
		2595	0.65	4.65	27.72	23.72	235.505	Vertical	Pass
		2612.5	0.73	4.66	27.69	23.76	237.684	Vertical	Pass
20.0MHz Band 16 QAM	100/0	2580	0.63	4.53	27.78	23.88	244.343	Vertical	Pass
		2595	0.85	4.66	27.72	23.91	246.037	Vertical	Pass
		2610	0.90	4.68	27.68	23.90	245.471	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)

8.8 LTE BAND 40A

Radiated Power (EIRP) for Band 40A									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	2307.5	-1.80	4.54	27.75	21.41	138.357	Horizontal	Pass
		2310	-1.60	4.69	27.72	21.43	138.995	Horizontal	Pass
		2312.5	-1.52	4.71	27.71	21.48	140.605	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2310	-1.87	4.55	27.77	21.35	136.458	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2307.5	-1.82	4.54	27.75	21.39	137.721	Vertical	Pass
		2310	-1.62	4.69	27.72	21.41	138.357	Vertical	Pass
		2312.5	-1.61	4.71	27.71	21.39	137.721	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2310	-1.69	4.55	27.77	21.53	142.233	Vertical	Pass

Radiated Power (EIRP) for Band 40A									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	2307.5	-2.85	4.54	27.75	20.36	108.643	Horizontal	Pass
		2310	-2.78	4.69	27.72	20.25	105.925	Horizontal	Pass
		2312.5	-2.65	4.71	27.71	20.35	108.393	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2310	-2.90	4.55	27.77	20.32	107.647	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2307.5	-2.88	4.54	27.75	20.33	107.895	Vertical	Pass
		2310	-2.69	4.69	27.72	20.34	108.143	Vertical	Pass
		2312.5	-2.73	4.71	27.71	20.27	106.414	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2310	-2.81	4.55	27.77	20.41	109.901	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)

8.9 LTE BAND 40B

Radiated Power (EIRP) for Band 40b									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	2352.5	-2.39	4.54	27.75	20.82	120.781	Horizontal	Pass
		2355	-2.20	4.69	27.72	20.83	121.060	Horizontal	Pass
		2357.5	-2.09	4.71	27.71	20.91	123.310	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2355	-2.37	4.55	27.77	20.85	121.619	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2352.5	-2.31	4.54	27.75	20.90	123.027	Vertical	Pass
		2355	-2.09	4.69	27.72	20.94	124.165	Vertical	Pass
		2357.5	-2.07	4.71	27.71	20.93	123.880	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2355	-2.22	4.55	27.77	21.00	125.893	Vertical	Pass

Radiated Power (EIRP) for Band 40b									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	2352.5	-3.66	4.54	27.75	19.55	90.157	Horizontal	Pass
		2355	-3.59	4.69	27.72	19.44	87.902	Horizontal	Pass
		2357.5	-3.49	4.71	27.71	19.51	89.331	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2355	-3.65	4.55	27.77	19.57	90.573	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2352.5	-3.67	4.54	27.75	19.54	89.950	Vertical	Pass
		2355	-3.57	4.69	27.72	19.46	88.308	Vertical	Pass
		2357.5	-3.43	4.71	27.71	19.57	90.573	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2355	-3.64	4.55	27.77	19.58	90.782	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)

8.10 LTE BAND 41

Radiated Power (EIRP) for Band 41									
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	2542.5	2.97	4.54	27.75	26.18	414.954	Horizontal	Pass
		2595	3.19	4.69	27.72	26.22	418.794	Horizontal	Pass
		2647.5	3.23	4.71	27.71	26.23	419.759	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2542.5	2.98	4.55	27.76	26.19	415.911	Horizontal	Pass
		2595	3.12	4.69	27.72	26.15	412.098	Horizontal	Pass
		2647.5	3.16	4.72	27.70	26.14	411.150	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2547.5	2.94	4.55	27.77	26.16	413.048	Horizontal	Pass
		2595	3.07	4.69	27.72	26.10	407.380	Horizontal	Pass
		2642.5	3.14	4.72	27.69	26.11	408.319	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2550	2.88	4.57	27.78	26.09	406.443	Horizontal	Pass
		2595	3.20	4.73	27.72	26.19	415.911	Horizontal	Pass
		2640	3.20	4.75	27.68	26.13	410.204	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2542.5	2.99	4.54	27.75	26.20	416.869	Vertical	Pass
		2595	3.08	4.69	27.72	26.11	408.319	Vertical	Pass
		2647.5	3.17	4.71	27.71	26.17	414.000	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2542.5	2.90	4.55	27.76	26.11	408.319	Vertical	Pass
		2595	3.09	4.69	27.72	26.12	409.261	Vertical	Pass
		2647.5	3.18	4.72	27.70	26.16	413.048	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2547.5	2.86	4.55	27.77	26.08	405.509	Vertical	Pass
		2595	3.04	4.69	27.72	26.07	404.576	Vertical	Pass
		2642.5	3.13	4.72	27.69	26.10	407.380	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2550	3.06	4.57	27.78	26.27	423.643	Vertical	Pass
		2595	3.26	4.73	27.72	26.25	421.697	Vertical	Pass
		2640	3.33	4.75	27.68	26.26	422.669	Vertical	Pass

Radiated Power (EIRP) for Band 41									
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	2542.5	1.60	4.54	27.75	24.81	302.691	Horizontal	Pass
		2595	1.76	4.69	27.72	24.79	301.301	Horizontal	Pass
		2647.5	1.83	4.71	27.71	24.83	304.089	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2542.5	1.61	4.55	27.76	24.82	303.389	Horizontal	Pass
		2595	1.78	4.69	27.72	24.81	302.691	Horizontal	Pass
		2647.5	1.82	4.72	27.70	24.80	301.995	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2547.5	1.65	4.55	27.77	24.87	306.902	Horizontal	Pass
		2595	1.80	4.69	27.72	24.83	304.089	Horizontal	Pass
		2642.5	1.85	4.72	27.69	24.82	303.389	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2550	1.67	4.57	27.78	24.88	307.610	Horizontal	Pass
		2595	1.88	4.73	27.72	24.87	306.902	Horizontal	Pass
		2640	1.87	4.75	27.68	24.80	301.995	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2542.5	1.65	4.54	27.75	24.86	306.196	Vertical	Pass
		2595	1.86	4.69	27.72	24.89	308.319	Vertical	Pass
		2647.5	1.87	4.71	27.71	24.87	306.902	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2542.5	1.62	4.55	27.76	24.83	304.089	Vertical	Pass
		2595	1.78	4.69	27.72	24.81	302.691	Vertical	Pass
		2647.5	1.79	4.72	27.70	24.77	299.916	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2547.5	1.54	4.55	27.77	24.76	299.226	Vertical	Pass
		2595	1.83	4.69	27.72	24.86	306.196	Vertical	Pass
		2642.5	1.80	4.72	27.69	24.77	299.916	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2550	1.73	4.57	27.78	24.94	311.889	Vertical	Pass
		2595	1.99	4.73	27.72	24.98	314.775	Vertical	Pass
		2640	2.00	4.75	27.68	24.93	311.172	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 2/5/7/12/17/38/40/41

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	-52.56	4.04	33.51	-23.09	-13	-10.09	Horizontal
3701.4	-48.95	4.04	33.51	-19.48	-13	-6.48	Vertical
5552.1	-51.98	5.24	35.84	-21.38	-13	-8.38	Vertical
5552.1	-53.53	5.24	35.84	-22.93	-13	-9.93	Horizontal
182.1	-34.28	1.43	16.02	-19.69	-13	-6.69	Vertical
352.2	-39.96	1.30	17.99	-23.27	-13	-10.27	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-50.45	4.04	33.56	-20.93	-13	-7.93	Horizontal
3760.0	-53.53	4.04	33.56	-24.01	-13	-11.01	Vertical
5640.0	-44.13	5.24	35.91	-13.46	-13	-0.46	Vertical
5640.0	-51.88	5.24	35.91	-21.21	-13	-8.21	Horizontal
206.0	-37.20	1.62	16.97	-21.85	-13	-8.85	Vertical
301.8	-42.21	1.74	15.98	-27.98	-13	-14.98	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-45.92	4.04	34.00	-15.96	-13	-2.96	Horizontal
3818.6	-47.24	4.04	34.00	-17.28	-13	-4.28	Vertical
5727.9	-53.64	5.24	36.04	-22.84	-13	-9.84	Vertical
5727.9	-49.89	5.24	36.04	-19.09	-13	-6.09	Horizontal
208.9	-39.19	1.42	17.29	-23.32	-13	-10.32	Vertical
272.4	-34.89	1.50	17.90	-18.48	-13	-5.48	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	-49.74	4.07	33.54	-20.27	-13	-7.27	Horizontal
3720.0	-52.93	4.07	33.54	-23.46	-13	-10.46	Vertical
5580.0	-48.79	5.28	35.86	-18.21	-13	-5.21	Vertical
5580.0	-50.75	5.28	35.86	-20.17	-13	-7.17	Horizontal
191.3	-37.81	1.58	16.89	-22.49	-13	-9.49	Vertical
365.3	-44.46	1.76	17.26	-28.96	-13	-15.96	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-48.02	4.04	33.56	-18.50	-13	-5.50	Horizontal
3760.0	-50.96	4.04	33.56	-21.44	-13	-8.44	Vertical
5640.0	-45.54	5.24	35.91	-14.87	-13	-1.87	Vertical
5640.0	-49.03	5.24	35.91	-18.36	-13	-5.36	Horizontal
195.4	-44.03	1.46	16.27	-29.22	-13	-16.22	Vertical
449.5	-34.12	1.59	15.15	-20.56	-13	-7.56	Horizontal
Test Results for High Channel 1890MHz							
3800.0	-47.15	4.04	34.00	-17.19	-13	-4.19	Horizontal
3800.0	-53.72	4.04	34.00	-23.76	-13	-10.76	Vertical
5700.0	-44.22	5.24	36.04	-13.42	-13	-0.42	Vertical
5700.0	-52.90	5.24	36.04	-22.10	-13	-9.10	Horizontal
188.4	-44.94	1.36	17.39	-28.90	-13	-15.90	Vertical
231.7	-37.60	1.66	15.39	-23.87	-13	-10.87	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.

9.2 LTE BAND 5

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

Test Results for Low Channel 824.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1649.4	-53.79	2.78	27.50	-29.07	-13	-16.07	Horizontal
1649.4	-53.30	2.78	27.50	-28.58	-13	-15.58	Vertical
2474.1	-49.19	2.90	27.80	-24.29	-13	-11.29	Vertical
2474.1	-53.50	2.90	27.80	-28.60	-13	-15.60	Horizontal
210.6	-39.38	1.76	17.59	-23.55	-13	-10.55	Vertical
360.1	-44.78	1.63	15.87	-30.54	-13	-17.54	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-44.74	2.80	27.48	-20.06	-13	-7.06	Horizontal
1673.0	-49.78	2.80	27.48	-25.10	-13	-12.10	Vertical
2509.5	-44.09	2.91	27.70	-19.30	-13	-6.30	Vertical
2509.5	-50.60	2.91	27.70	-25.81	-13	-12.81	Horizontal
208.9	-43.97	1.61	15.68	-29.90	-13	-16.90	Vertical
341.3	-39.14	1.59	17.52	-23.22	-13	-10.22	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-52.25	2.82	27.43	-27.64	-13	-14.64	Horizontal
1696.6	-52.98	2.82	27.43	-28.37	-13	-15.37	Vertical
2544.9	-49.59	2.92	27.74	-24.77	-13	-11.77	Vertical
2544.9	-53.18	2.92	27.74	-28.36	-13	-15.36	Horizontal
205.4	-35.32	1.69	16.67	-20.33	-13	-7.33	Vertical
371.2	-39.68	1.70	17.18	-24.20	-13	-11.20	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	-46.49	2.78	27.50	-21.77	-13	-8.77	Horizontal
1658.0	-45.16	2.78	27.50	-20.44	-13	-7.44	Vertical
2487.0	-46.38	2.90	27.80	-21.48	-13	-8.48	Vertical
2487.0	-51.69	2.90	27.80	-26.79	-13	-13.79	Horizontal
205.0	-34.82	1.71	15.57	-20.96	-13	-7.96	Vertical
390.9	-44.80	1.34	16.40	-29.74	-13	-16.74	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-44.10	2.80	27.48	-19.42	-13	-6.42	Horizontal
1673.0	-49.38	2.80	27.48	-24.70	-13	-11.70	Vertical
2509.5	-53.46	2.91	27.70	-28.67	-13	-15.67	Vertical
2509.5	-53.21	2.91	27.70	-28.42	-13	-15.42	Horizontal
212.8	-37.37	1.44	17.04	-21.77	-13	-8.77	Vertical
291.0	-37.88	1.76	17.62	-22.02	-13	-9.02	Horizontal
Test Results for High Channel 844MHz							
1688.0	-52.23	2.82	27.43	-27.62	-13	-14.62	Horizontal
1688.0	-47.14	2.82	27.43	-22.53	-13	-9.53	Vertical
2532.0	-51.16	2.92	27.74	-26.34	-13	-13.34	Vertical
2532.0	-49.41	2.92	27.74	-24.59	-13	-11.59	Horizontal
195.4	-35.84	1.74	17.70	-19.88	-13	-6.88	Vertical
285.8	-40.96	1.41	17.46	-24.90	-13	-11.90	Horizontal

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

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

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

9.3 LTE BAND 7

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

Test Results for Low Channel 2502.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5005.0	-62.99	5.23	35.81	-32.41	-25	-7.41	Horizontal
5005.0	-63.12	5.23	35.81	-32.54	-25	-7.54	Vertical
7507.5	-59.74	5.67	36.85	-28.56	-25	-3.56	Vertical
7507.5	-61.82	5.67	36.85	-30.64	-25	-5.64	Horizontal
202.5	-51.18	1.73	17.97	-34.94	-25	-9.94	Vertical
396.6	-48.29	1.38	15.11	-34.56	-25	-9.56	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-64.73	5.23	35.82	-34.14	-25	-9.14	Horizontal
5070.0	-60.93	5.23	35.82	-30.34	-25	-5.34	Vertical
7605.0	-63.01	5.67	36.85	-31.83	-25	-6.83	Vertical
7605.0	-59.63	5.67	36.85	-28.45	-25	-3.45	Horizontal
200.8	-54.90	1.77	16.17	-40.49	-25	-15.49	Vertical
300.8	-47.64	1.63	15.21	-34.06	-25	-9.06	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-61.53	5.24	35.83	-30.94	-25	-5.94	Horizontal
5135.0	-62.77	5.24	35.83	-32.18	-25	-7.18	Vertical
7702.5	-59.88	5.68	36.87	-28.69	-25	-3.69	Vertical
7702.5	-63.83	5.68	36.87	-32.64	-25	-7.64	Horizontal
204.9	-52.97	1.58	17.56	-36.99	-25	-11.99	Vertical
425.8	-44.53	1.45	16.58	-29.40	-25	-4.40	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	-60.00	5.23	35.82	-29.41	-25	-4.41	Horizontal
5020.0	-59.73	5.23	35.82	-29.14	-25	-4.14	Vertical
7530.0	-63.19	5.67	36.86	-32.00	-25	-7.00	Vertical
7530.0	-59.99	5.67	36.86	-28.80	-25	-3.80	Horizontal
177.5	-49.57	1.63	15.76	-35.44	-25	-10.44	Vertical
252.1	-51.32	1.71	15.44	-37.59	-25	-12.59	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-62.64	5.23	35.82	-32.05	-25	-7.05	Horizontal
5070.0	-62.23	5.23	35.82	-31.64	-25	-6.64	Vertical
7605.0	-60.90	5.67	36.85	-29.72	-25	-4.72	Vertical
7605.0	-64.50	5.67	36.85	-33.32	-25	-8.32	Horizontal
212.5	-48.58	1.79	16.84	-33.52	-25	-8.52	Vertical
298.9	-50.55	1.71	17.64	-34.62	-25	-9.62	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-59.42	5.24	35.83	-28.83	-25	-3.83	Horizontal
5120.0	-59.22	5.24	35.83	-28.63	-25	-3.63	Vertical
7680.0	-60.48	5.70	36.88	-29.30	-25	-4.30	Vertical
7680.0	-64.69	5.70	36.88	-33.51	-25	-8.51	Horizontal
181.2	-48.82	1.79	16.84	-33.76	-25	-8.76	Vertical
342.1	-48.03	1.71	17.64	-32.10	-25	-7.10	Horizontal

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

. Margin = Spurious Emission Level - Limit

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

9.4 LTE BAND 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	-52.29	2.60	27.20	-27.69	-13	-14.69	Horizontal
1399.4	-46.02	2.60	27.20	-21.42	-13	-8.42	Vertical
2099.1	-53.24	2.85	27.54	-28.55	-13	-15.55	Vertical
2099.1	-52.39	2.85	27.54	-27.70	-13	-14.70	Horizontal
197.3	-36.11	1.49	17.78	-19.82	-13	-6.82	Vertical
239.1	-36.37	1.36	17.33	-20.40	-13	-7.40	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-48.65	2.61	27.28	-23.98	-13	-10.98	Horizontal
1415.0	-51.27	2.61	27.28	-26.60	-13	-13.60	Vertical
2122.5	-46.29	2.87	27.59	-21.57	-13	-8.57	Vertical
2122.5	-49.86	2.87	27.59	-25.14	-13	-12.14	Horizontal
198.4	-43.84	1.73	15.74	-29.83	-13	-16.83	Vertical
255.9	-35.66	1.62	15.79	-21.49	-13	-8.49	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-50.37	2.63	27.28	-25.72	-13	-12.72	Horizontal
1430.6	-44.59	2.63	27.28	-19.94	-13	-6.94	Vertical
2145.9	-47.10	2.88	27.60	-22.38	-13	-9.38	Vertical
2145.9	-52.98	2.88	27.60	-28.26	-13	-15.26	Horizontal
188.9	-40.01	1.61	18.00	-23.62	-13	-10.62	Vertical
314.1	-38.45	1.45	15.49	-24.42	-13	-11.42	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	-46.49	2.61	27.26	-21.84	-13	-8.84	Horizontal
1408.0	-44.28	2.61	27.26	-19.63	-13	-6.63	Vertical
2112.0	-44.68	2.87	27.58	-19.97	-13	-6.97	Vertical
2112.0	-52.84	2.87	27.58	-28.13	-13	-15.13	Horizontal
197.6	-42.73	1.31	16.97	-27.07	-13	-14.07	Vertical
468.7	-39.90	1.65	16.70	-24.85	-13	-11.85	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-50.70	2.61	27.28	-26.03	-13	-13.03	Horizontal
1415.0	-49.94	2.61	27.28	-25.27	-13	-12.27	Vertical
2122.5	-49.36	2.87	27.59	-24.64	-13	-11.64	Vertical
2122.5	-50.24	2.87	27.59	-25.52	-13	-12.52	Horizontal
188.3	-42.38	1.72	17.99	-26.11	-13	-13.11	Vertical
427.5	-40.72	1.73	17.94	-24.51	-13	-11.51	Horizontal
Test Results for High Channel 711MHz							
1422.0	-52.69	2.62	27.28	-28.03	-13	-15.03	Horizontal
1422.0	-50.12	2.62	27.28	-25.46	-13	-12.46	Vertical
2133.0	-44.82	2.87	27.60	-20.09	-13	-7.09	Vertical
2133.0	-49.39	2.87	27.60	-24.66	-13	-11.66	Horizontal
207.1	-41.91	1.58	15.93	-27.56	-13	-14.56	Vertical
420.6	-43.36	1.36	15.59	-29.13	-13	-16.13	Horizontal

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

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

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

9.5 LTE BAND 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	-53.49	2.61	27.28	-28.82	-13	-15.82	Horizontal
1413.0	-53.24	2.61	27.28	-28.57	-13	-15.57	Vertical
2119.5	-52.65	2.87	27.59	-27.93	-13	-14.93	Vertical
2119.5	-52.10	2.87	27.59	-27.38	-13	-14.38	Horizontal
202.1	-38.09	1.71	16.15	-23.65	-13	-10.65	Vertical
420.0	-38.56	1.41	17.32	-22.65	-13	-9.65	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-46.94	2.62	27.30	-22.26	-13	-9.26	Horizontal
1420.0	-47.72	2.62	27.30	-23.04	-13	-10.04	Vertical
2130.0	-45.64	2.87	27.62	-20.89	-13	-7.89	Vertical
2130.0	-49.70	2.87	27.62	-24.95	-13	-11.95	Horizontal
205.4	-38.08	1.42	15.25	-24.26	-13	-11.26	Vertical
276.1	-37.90	1.36	17.19	-22.07	-13	-9.07	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-45.16	2.66	27.28	-20.54	-13	-7.54	Horizontal
1427.0	-52.88	2.66	27.28	-28.26	-13	-15.26	Vertical
2140.5	-49.37	2.88	27.60	-24.65	-13	-11.65	Vertical
2140.5	-51.34	2.88	27.60	-26.62	-13	-13.62	Horizontal
185.1	-35.41	1.32	17.29	-19.44	-13	-6.44	Vertical
422.7	-34.61	1.72	16.89	-19.44	-13	-6.44	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	-46.97	2.62	27.30	-22.29	-13	-9.29	Horizontal
1418.0	-44.46	2.62	27.30	-19.78	-13	-6.78	Vertical
2127.0	-50.20	2.87	27.62	-25.45	-13	-12.45	Vertical
2127.0	-49.51	2.87	27.62	-24.76	-13	-11.76	Horizontal
184.3	-35.81	1.35	16.91	-20.25	-13	-7.25	Vertical
260.7	-34.57	1.62	16.31	-19.88	-13	-6.88	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-46.44	2.62	27.30	-21.76	-13	-8.76	Horizontal
1420.0	-46.68	2.62	27.30	-22.00	-13	-9.00	Vertical
2130.0	-53.54	2.87	27.62	-28.79	-13	-15.79	Vertical
2130.0	-49.00	2.87	27.62	-24.25	-13	-11.25	Horizontal
175.3	-41.64	1.51	17.14	-26.01	-13	-13.01	Vertical
460.5	-42.29	1.77	16.88	-27.18	-13	-14.18	Horizontal
Test Results for High Channel 711MHz							
1422.0	-49.22	2.62	27.30	-24.54	-13	-11.54	Horizontal
1422.0	-53.90	2.62	27.30	-29.22	-13	-16.22	Vertical
2133.0	-46.58	2.87	27.62	-21.83	-13	-8.83	Vertical
2133.0	-49.78	2.87	27.62	-25.03	-13	-12.03	Horizontal
178.1	-41.03	1.78	15.95	-26.86	-13	-13.86	Vertical
395.3	-39.66	1.34	17.95	-23.06	-13	-10.06	Horizontal

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

. Margin = Spurious Emission Level - Limit

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

9.6 LTE BAND 38

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

Test Results for Low Channel 2572.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5145.0	-62.63	5.13	35.81	-31.95	-25	-6.95	Horizontal
5145.0	-62.50	5.13	35.81	-31.82	-25	-6.82	Vertical
7717.5	-63.92	5.42	36.85	-32.49	-25	-7.49	Vertical
7717.5	-60.20	5.42	36.85	-28.77	-25	-3.77	Horizontal
181.0	-48.89	1.56	17.97	-32.48	-25	-7.48	Vertical
460.3	-53.74	1.33	15.11	-39.96	-25	-14.96	Horizontal
Test Results For Mid Channel 2595MHz							
5190.0	-61.06	5.16	35.82	-30.40	-25	-5.40	Horizontal
5190.0	-60.19	5.16	35.82	-29.53	-25	-4.53	Vertical
7785.0	-63.23	5.53	36.85	-31.91	-25	-6.91	Vertical
7785.0	-61.16	5.53	36.85	-29.84	-25	-4.84	Horizontal
179.3	-52.13	1.77	16.17	-37.72	-25	-12.72	Vertical
383.0	-47.38	1.63	15.21	-33.80	-25	-8.80	Horizontal
Test Results for High Channel 2617.5MHz							
5235.0	-61.52	5.23	35.83	-30.92	-25	-5.92	Horizontal
5235.0	-64.77	5.23	35.83	-34.17	-25	-9.17	Vertical
7852.5	-61.86	5.62	36.87	-30.61	-25	-5.61	Vertical
7852.5	-62.83	5.62	36.87	-31.58	-25	-6.58	Horizontal
212.6	-46.10	1.58	17.56	-30.12	-25	-5.12	Vertical
357.0	-50.58	1.45	16.58	-35.45	-25	-10.45	Horizontal

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

Test Results for Low Channel 2580MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5160.0	-60.31	5.23	35.82	-29.72	-25	-4.72	Horizontal
5160.0	-61.71	5.23	35.82	-31.12	-25	-6.12	Vertical
7740.0	-61.40	5.67	36.86	-30.21	-25	-5.21	Vertical
7740.0	-60.64	5.67	36.86	-29.45	-25	-4.45	Horizontal
209.9	-46.87	1.55	15.76	-32.66	-25	-7.66	Vertical
270.4	-49.91	1.62	15.44	-36.09	-25	-11.09	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-64.91	5.16	35.82	-34.25	-25	-9.25	Horizontal
5190.0	-59.14	5.16	35.82	-28.48	-25	-3.48	Vertical
7785.0	-62.36	5.53	36.85	-31.04	-25	-6.04	Vertical
7785.0	-60.15	5.53	36.85	-28.83	-25	-3.83	Horizontal
199.7	-54.40	1.58	16.84	-39.14	-25	-14.14	Vertical
335.9	-53.08	1.61	17.64	-37.05	-25	-12.05	Horizontal
Test Results for High Channel 2610MHz							
5220.0	-60.19	5.24	35.83	-29.60	-25	-4.60	Horizontal
5220.0	-62.20	5.24	35.83	-31.61	-25	-6.61	Vertical
7830.0	-63.81	5.70	36.88	-32.63	-25	-7.63	Vertical
7830.0	-59.99	5.70	36.88	-28.81	-25	-3.81	Horizontal
188.9	-47.09	1.48	16.84	-31.73	-25	-6.73	Vertical
333.7	-44.51	1.59	17.64	-28.46	-25	-3.46	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.

9.7 LTE BAND 40A

QPSK EIRP POWER FOR LTE BAND 40A (5MHZ BANDWIDTH)

Test Results for Low Channel 2307.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
4615.0	-64.89	5.13	35.81	-34.21	-25	-9.21	Horizontal
4615.0	-64.61	5.13	35.81	-33.93	-25	-8.93	Vertical
6922.5	-59.08	5.42	36.85	-27.65	-25	-2.65	Vertical
6922.5	-62.17	5.42	36.85	-30.74	-25	-5.74	Horizontal
176.1	-50.63	1.56	17.97	-34.22	-25	-9.22	Vertical
367.7	-51.54	1.33	15.11	-37.76	-25	-12.76	Horizontal
Test Results for Mid Channel 2310MHz							
4620.0	-61.07	5.16	35.82	-30.41	-25	-5.41	Horizontal
4620.0	-60.46	5.16	35.82	-29.80	-25	-4.80	Vertical
6930.0	-64.16	5.53	36.85	-32.84	-25	-7.84	Vertical
6930.0	-59.93	5.53	36.85	-28.61	-25	-3.61	Horizontal
211.1	-50.82	1.77	16.17	-36.41	-25	-11.41	Vertical
370.0	-45.53	1.63	15.21	-31.95	-25	-6.95	Horizontal
Test Results for High Channel 2312.5MHz							
4625.0	-59.20	5.23	35.83	-28.60	-25	-3.60	Horizontal
4625.0	-62.34	5.23	35.83	-31.74	-25	-6.74	Vertical
6937.5	-63.61	5.62	36.87	-32.36	-25	-7.36	Vertical
6937.5	-63.08	5.62	36.87	-31.83	-25	-6.83	Horizontal
189.0	-46.84	1.58	17.56	-30.86	-25	-5.86	Vertical
461.1	-53.38	1.45	16.58	-38.25	-25	-13.25	Horizontal

QPSK EIRP POWER FOR LTE BAND 40A (10MHZ BANDWIDTH)

Test Results for Mid Channel 2310MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
4620.0	-60.74	5.16	35.82	-30.08	-25	-5.08	Horizontal
4620.0	-62.99	5.16	35.82	-32.33	-25	-7.33	Vertical
6930.0	-60.67	5.53	36.85	-29.35	-25	-4.35	Vertical
6930.0	-64.15	5.53	36.85	-32.83	-25	-7.83	Horizontal
176.0	-51.02	1.58	16.84	-35.76	-25	-10.76	Vertical
268.3	-45.59	1.61	17.64	-29.56	-25	-4.56	Horizontal

9.8 LTE BAND 40B

QPSK EIRP POWER FOR LTE BAND 40B (5MHZ BANDWIDTH)

Test Results for Low Channel 2352.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
4705.0	-63.42	5.13	35.81	-32.74	-25	-7.74	Horizontal
4705.0	-60.68	5.13	35.81	-30.00	-25	-5.00	Vertical
7057.5	-64.73	5.42	36.85	-33.30	-25	-8.30	Vertical
7057.5	-63.33	5.42	36.85	-31.90	-25	-6.90	Horizontal
178.1	-51.37	1.56	17.97	-34.96	-25	-9.96	Vertical
459.8	-48.54	1.33	15.11	-34.76	-25	-9.76	Horizontal
Test Results for Mid Channel 2355MHz							
4710.0	-61.58	5.16	35.82	-30.92	-25	-5.92	Horizontal
4710.0	-59.91	5.16	35.82	-29.25	-25	-4.25	Vertical
7065.0	-63.52	5.53	36.85	-32.20	-25	-7.20	Vertical
7065.0	-59.17	5.53	36.85	-27.85	-25	-2.85	Horizontal
193.6	-47.58	1.77	16.17	-33.17	-25	-8.17	Vertical
411.5	-45.68	1.63	15.21	-32.10	-25	-7.10	Horizontal
Test Results for High Channel 2357.5MHz							
4715.0	-59.45	5.23	35.83	-28.85	-25	-3.85	Horizontal
4715.0	-60.96	5.23	35.83	-30.36	-25	-5.36	Vertical
7072.5	-62.57	5.62	36.87	-31.32	-25	-6.32	Vertical
7072.5	-60.21	5.62	36.87	-28.96	-25	-3.96	Horizontal
185.3	-44.16	1.58	17.56	-28.18	-25	-3.18	Vertical
435.9	-46.26	1.45	16.58	-31.13	-25	-6.13	Horizontal

QPSK EIRP POWER FOR LTE BAND 40B (10MHZ BANDWIDTH)

Test Results for Mid Channel 2355MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
4710.0	-61.23	5.16	35.82	-30.57	-25	-5.57	Horizontal
4710.0	-64.58	5.16	35.82	-33.92	-25	-8.92	Vertical
7065.0	-59.21	5.53	36.85	-27.89	-25	-2.89	Vertical
7065.0	-60.94	5.53	36.85	-29.62	-25	-4.62	Horizontal
185.1	-44.50	1.58	16.84	-29.24	-25	-4.24	Vertical
352.2	-48.01	1.61	17.64	-31.98	-25	-6.98	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.

9.9 LTE BAND 41

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

Test Results for Low Channel 2542.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5085.0	-61.98	5.13	35.81	-31.30	-25	-6.30	Horizontal
5085.0	-62.81	5.13	35.81	-32.13	-25	-7.13	Vertical
7627.5	-59.63	5.42	36.85	-28.20	-25	-3.20	Vertical
7627.5	-60.76	5.42	36.85	-29.33	-25	-4.33	Horizontal
187.2	-47.76	1.56	17.97	-31.35	-25	-6.35	Vertical
444.0	-48.80	1.33	15.11	-35.02	-25	-10.02	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-59.55	5.16	35.82	-28.89	-25	-3.89	Horizontal
5190.0	-59.89	5.16	35.82	-29.23	-25	-4.23	Vertical
7785.0	-64.96	5.53	36.85	-33.64	-25	-8.64	Vertical
7785.0	-63.91	5.53	36.85	-32.59	-25	-7.59	Horizontal
200.0	-47.94	1.77	16.17	-33.53	-25	-8.53	Vertical
360.3	-47.36	1.63	15.21	-33.78	-25	-8.78	Horizontal
Test Results for High Channel 2647.5MHz							
5190.0	-63.06	5.23	35.83	-32.46	-25	-7.46	Horizontal
5190.0	-61.99	5.23	35.83	-31.39	-25	-6.39	Vertical
7785.0	-61.32	5.62	36.87	-30.07	-25	-5.07	Vertical
7785.0	-61.58	5.62	36.87	-30.33	-25	-5.33	Horizontal
195.5	-44.45	1.58	17.56	-28.47	-25	-3.47	Vertical
273.6	-45.63	1.45	16.58	-30.50	-25	-5.50	Horizontal

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

Test Results for Low Channel 2550MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5100.0	-59.06	5.23	35.82	-28.47	-25	-3.47	Horizontal
5100.0	-60.52	5.23	35.82	-29.93	-25	-4.93	Vertical
7650.0	-60.57	5.67	36.86	-29.38	-25	-4.38	Vertical
7650.0	-59.71	5.67	36.86	-28.52	-25	-3.52	Horizontal
210.0	-48.78	1.55	15.76	-34.57	-25	-9.57	Vertical
431.9	-54.80	1.62	15.44	-40.98	-25	-15.98	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-64.29	5.16	35.82	-33.63	-25	-8.63	Horizontal
5190.0	-61.10	5.16	35.82	-30.44	-25	-5.44	Vertical
7785.0	-59.18	5.53	36.85	-27.86	-25	-2.86	Vertical
7785.0	-60.31	5.53	36.85	-28.99	-25	-3.99	Horizontal
191.6	-45.90	1.58	16.84	-30.64	-25	-5.64	Vertical
316.7	-53.44	1.61	17.64	-37.41	-25	-12.41	Horizontal
Test Results for High Channel 2640MHz							
5280.0	-63.48	5.24	35.83	-32.89	-25	-7.89	Horizontal
5280.0	-63.39	5.24	35.83	-32.80	-25	-7.80	Vertical
7920.0	-60.94	5.70	36.88	-29.76	-25	-4.76	Vertical
7920.0	-60.19	5.70	36.88	-29.01	-25	-4.01	Horizontal
189.7	-45.28	1.48	16.84	-29.92	-25	-4.92	Vertical
259.7	-49.50	1.59	17.64	-33.45	-25	-8.45	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 3.2V, 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 2/5/7/12/17/38/40/41

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	12.9	0.006835	2.5
3.8	1880	14.1	0.007497	2.5
4.37	1880	13.3	0.007095	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	12.6	0.006712	2.5
Extreme (50C)	1880	11.7	0.006201	2.5
Extreme (40C)	1880	13.6	0.007218	2.5
Extreme (30C)	1880	13.5	0.007193	2.5
Extreme (10C)	1880	14.3	0.007603	2.5
Extreme (0C)	1880	12.2	0.006514	2.5
Extreme (-10C)	1880	12.8	0.006830	2.5
Extreme (-20C)	1880	14.1	0.007501	2.5
Extreme (-30C)	1880	14.6	0.007753	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	9.7	0.005166	2.5
3.8	1880	9.1	0.004825	2.5
4.37	1880	8.6	0.004570	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	9.8	0.005201	2.5
Extreme (50C)	1880	8.7	0.004642	2.5
Extreme (40C)	1880	8.6	0.004558888	2.5
Extreme (30C)	1880	9.0	0.004792844	2.5
Extreme (10C)	1880	8.8	0.004672779	2.5
Extreme (0C)	1880	7.6	0.004059211	2.5
Extreme (-10C)	1880	9.1	0.004824745	2.5
Extreme (-20C)	1880	8.5	0.004522816	2.5
Extreme (-30C)	1880	7.8	0.004170101	2.5

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

10.2 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	5.5	0.006551	2.5
3.8	836.5	6.9	0.008230	2.5
4.37	836.5	4.9	0.005828	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.0	0.007190	2.5
Extreme (50C)	836.5	5.5	0.006597	2.5
Extreme (40C)	836.5	6.3	0.007583	2.5
Extreme (30C)	836.5	6.6	0.007931	2.5
Extreme (10C)	836.5	5.8	0.006933	2.5
Extreme (0C)	836.5	5.6	0.006642	2.5
Extreme (-10C)	836.5	5.7	0.006786	2.5
Extreme (-20C)	836.5	6.1	0.007316	2.5
Extreme (-30C)	836.5	6.6	0.007918	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	5.9	0.007053	2.5
3.8	836.5	6.3	0.007531	2.5
4.37	836.5	5.0	0.006013	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.3	0.007549	2.5
Extreme (50C)	836.5	5.7	0.006853	2.5
Extreme (40C)	836.5	6.4	0.007697	2.5
Extreme (30C)	836.5	6.7	0.008045	2.5
Extreme (10C)	836.5	5.0	0.005926	2.5
Extreme (0C)	836.5	4.9	0.005876	2.5
Extreme (-10C)	836.5	5.5	0.006541	2.5
Extreme (-20C)	836.5	6.3	0.007567	2.5
Extreme (-30C)	836.5	6.4	0.007700	2.5

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

10.3 LTE BAND 7

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	2535	9.9	0.003921	2.5
3.8	2535	8.8	0.003476	2.5
4.37	2535	8.8	0.003463	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	9.8	0.003882	2.5
Extreme (50C)	2535	9.3	0.003659	2.5
Extreme (40C)	2535	8.7	0.003444	2.5
Extreme (30C)	2535	9.4	0.003702	2.5
Extreme (10C)	2535	8.3	0.003280	2.5
Extreme (0C)	2535	8.1	0.003185	2.5
Extreme (-10C)	2535	9.0	0.003567	2.5
Extreme (-20C)	2535	9.3	0.003670	2.5
Extreme (-30C)	2535	8.7	0.003437	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	0.002722	2.5
3.8	2535	6.8	0.002675	2.5
4.37	2535	5.6	0.002226	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	5.6	0.002192	2.5
Extreme (40C)	2535	5.6	0.002210	2.5
Extreme (30C)	2535	6.4	0.002518	2.5
Extreme (10C)	2535	5.5	0.002160	2.5
Extreme (0C)	2535	4.7	0.001837	2.5
Extreme (-10C)	2535	5.5	0.002182	2.5
Extreme (-20C)	2535	6.3	0.002502	2.5
Extreme (-30C)	2535	5.5	0.002180	2.5

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

10.4 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	9.1	0.012864	2.5
3.8	707.5	9.5	0.013483	2.5
4.37	707.5	8.3	0.011703	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	8.9	0.012562	2.5
Extreme (50C)	707.5	7.7	0.010885	2.5
Extreme (40C)	707.5	7.7	0.010937	2.5
Extreme (30C)	707.5	8.4	0.011938	2.5
Extreme (10C)	707.5	7.7	0.010902	2.5
Extreme (0C)	707.5	8.9	0.012597	2.5
Extreme (-10C)	707.5	8.0	0.011249	2.5
Extreme (-20C)	707.5	8.8	0.012404	2.5
Extreme (-30C)	707.5	7.8	0.011080	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	7.2	0.010185	2.5
3.8	707.5	7.9	0.011145	2.5
4.37	707.5	7.3	0.010338	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	9.1	0.012834	2.5
Extreme (50C)	707.5	8.3	0.011799	2.5
Extreme (40C)	707.5	8.4	0.011929	2.5
Extreme (30C)	707.5	8.0	0.011308	2.5
Extreme (10C)	707.5	8.4	0.011866	2.5
Extreme (0C)	707.5	8.0	0.011265	2.5
Extreme (-10C)	707.5	7.9	0.011141	2.5
Extreme (-20C)	707.5	9.4	0.013227	2.5
Extreme (-30C)	707.5	8.5	0.011999	2.5

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

10.5 LTE BAND 17

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	710.0	10.1	0.014284	2.5
3.8	710.0	8.9	0.012569	2.5
4.37	710.0	8.4	0.011847	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	10.0	0.014116	2.5
Extreme (50C)	710.0	9.0	0.012719	2.5
Extreme (40C)	710.0	8.4	0.011839	2.5
Extreme (30C)	710.0	9.3	0.013130	2.5
Extreme (10C)	710.0	8.9	0.012511	2.5
Extreme (0C)	710.0	7.9	0.011100	2.5
Extreme (-10C)	710.0	9.2	0.013001	2.5
Extreme (-20C)	710.0	8.9	0.012534	2.5
Extreme (-30C)	710.0	7.9	0.011086	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	10.0	0.014031	2.5
3.8	710.0	9.0	0.012730	2.5
4.37	710.0	8.0	0.011328	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.1	0.012881	2.5
Extreme (50C)	710.0	8.7	0.012238	2.5
Extreme (40C)	710.0	8.1	0.011452	2.5
Extreme (30C)	710.0	9.3	0.013124	2.5
Extreme (10C)	710.0	8.0	0.011233	2.5
Extreme (0C)	710.0	8.6	0.012107	2.5
Extreme (-10C)	710.0	9.3	0.013088	2.5
Extreme (-20C)	710.0	8.4	0.011898	2.5
Extreme (-30C)	710.0	8.4	0.011781	2.5

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

10.6 LTE BAND 38

Band 38 QPSK, (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	2595	10.0	0.003845	2.5
3.8	2595	8.5	0.003269	2.5
4.37	2595	8.1	0.003105	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	9.5	0.003658	2.5
Extreme (50C)	2595	9.3	0.003566	2.5
Extreme (40C)	2595	8.5	0.003287	2.5
Extreme (30C)	2595	9.2	0.003526	2.5
Extreme (10C)	2595	8.1	0.003118	2.5
Extreme (0C)	2595	8.4	0.003220	2.5
Extreme (-10C)	2595	9.0	0.003461	2.5
Extreme (-20C)	2595	9.3	0.003576	2.5
Extreme (-30C)	2595	8.3	0.003194	2.5

Band 38 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	2595	6.9	0.002659	2.5
3.8	2595	6.8	0.002608	2.5
4.37	2595	5.4	0.002071	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	6.9	0.002659	2.5
Extreme (50C)	2595	6.0	0.002319	2.5
Extreme (40C)	2595	5.7	0.002206	2.5
Extreme (30C)	2595	7.0	0.002689	2.5
Extreme (10C)	2595	6.1	0.002337	2.5
Extreme (0C)	2595	5.2	0.002004	2.5
Extreme (-10C)	2595	4.9	0.001870	2.5
Extreme (-20C)	2595	6.3	0.002435	2.5
Extreme (-30C)	2595	5.6	0.002159	2.5

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

10.7 LTE BAND 40A

Band 40A 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	2310.0	9.5	0.004125	2.5
3.8	2310.0	8.7	0.003756	2.5
4.37	2310.0	8.4	0.003645	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2310.0	9.6	0.004134	2.5
Extreme (50C)	2310.0	9.0	0.003893	2.5
Extreme (40C)	2310.0	7.7	0.003344	2.5
Extreme (30C)	2310.0	8.7	0.003741	2.5
Extreme (10C)	2310.0	8.9	0.003836	2.5
Extreme (0C)	2310.0	8.3	0.003570	2.5
Extreme (-10C)	2310.0	8.8	0.003825	2.5
Extreme (-20C)	2310.0	8.6	0.003716	2.5
Extreme (-30C)	2310.0	7.9	0.003427	2.5

Band 40A 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	2310.0	10.0	0.004305	2.5
3.8	2310.0	8.7	0.003764	2.5
4.37	2310.0	8.8	0.003823	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2310.0	9.8	0.004218	2.5
Extreme (50C)	2310.0	8.9	0.003846	2.5
Extreme (40C)	2310.0	8.0	0.003444	2.5
Extreme (30C)	2310.0	8.6	0.003712	2.5
Extreme (10C)	2310.0	8.2	0.003558	2.5
Extreme (0C)	2310.0	8.9	0.003833	2.5
Extreme (-10C)	2310.0	9.9	0.004268	2.5
Extreme (-20C)	2310.0	8.6	0.003732	2.5
Extreme (-30C)	2310.0	8.4	0.003615	2.5

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

10.8 LTE BAND 40B

Band 40B 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	2355	10.1	0.004286	2.5
3.8	2355	9.1	0.003847	2.5
4.37	2355	7.7	0.003254	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2355	9.3	0.003951	2.5
Extreme (50C)	2355	8.9	0.003788	2.5
Extreme (40C)	2355	8.1	0.003433	2.5
Extreme (30C)	2355	8.7	0.003684	2.5
Extreme (10C)	2355	9.4	0.003986	2.5
Extreme (0C)	2355	7.8	0.003298	2.5
Extreme (-10C)	2355	9.5	0.004030	2.5
Extreme (-20C)	2355	9.1	0.003886	2.5
Extreme (-30C)	2355	8.4	0.003552	2.5

Band 40B 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	2355	10.1	0.004301	2.5
3.8	2355	8.5	0.003605	2.5
4.37	2355	8.0	0.003382	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2355	9.8	0.004155	2.5
Extreme (50C)	2355	9.2	0.003895	2.5
Extreme (40C)	2355	8.4	0.003589	2.5
Extreme (30C)	2355	9.3	0.003951	2.5
Extreme (10C)	2355	7.8	0.003308	2.5
Extreme (0C)	2355	8.6	0.003646	2.5
Extreme (-10C)	2355	9.3	0.003941	2.5
Extreme (-20C)	2355	9.1	0.003860	2.5
Extreme (-30C)	2355	8.3	0.003538	2.5

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

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	2595	10.4	0.004006	2.5
3.8	2595	9.2	0.003554	2.5
4.37	2595	8.4	0.003227	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	9.7	0.003732	2.5
Extreme (50C)	2595	8.6	0.003298	2.5
Extreme (40C)	2595	8.3	0.003213	2.5
Extreme (30C)	2595	8.7	0.003336	2.5
Extreme (10C)	2595	7.7	0.002971	2.5
Extreme (0C)	2595	8.0	0.003099	2.5
Extreme (-10C)	2595	9.6	0.003702	2.5
Extreme (-20C)	2595	8.8	0.003380	2.5
Extreme (-30C)	2595	8.0	0.003098	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	2595	6.9	0.002661	2.5
3.8	2595	6.0	0.002330	2.5
4.37	2595	5.2	0.002016	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	6.9	0.002661	2.5
Extreme (50C)	2595	6.0	0.002329	2.5
Extreme (40C)	2595	5.8	0.002225	2.5
Extreme (30C)	2595	6.7	0.002597	2.5
Extreme (10C)	2595	6.1	0.002361	2.5
Extreme (0C)	2595	5.0	0.001932	2.5
Extreme (-10C)	2595	5.3	0.002045	2.5
Extreme (-20C)	2595	6.1	0.002353	2.5
Extreme (-30C)	2595	6.2	0.002378	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.

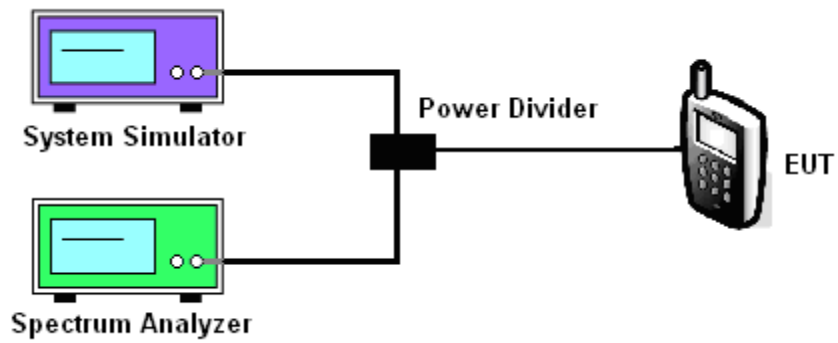
11.2 Measuring Instruments

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 2/5/7/12/17/38/40/41

Test data reference attachment.

12. Duty Cycle

12.1 LIMITS

The duty cycle must not exceed 38 percent

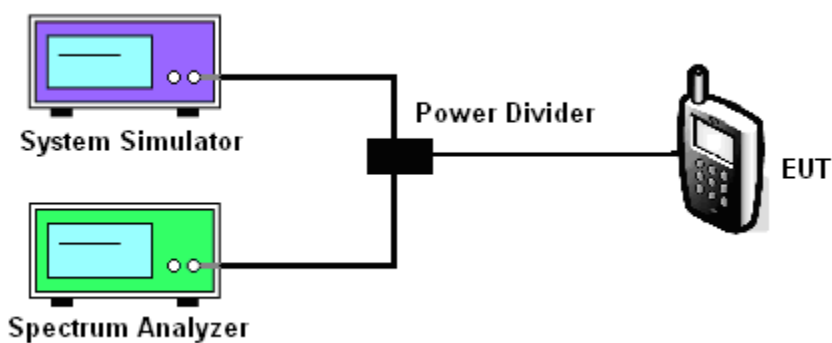
12.2 Measuring Instruments

See list of measuring instruments of this test report.

12.3 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.

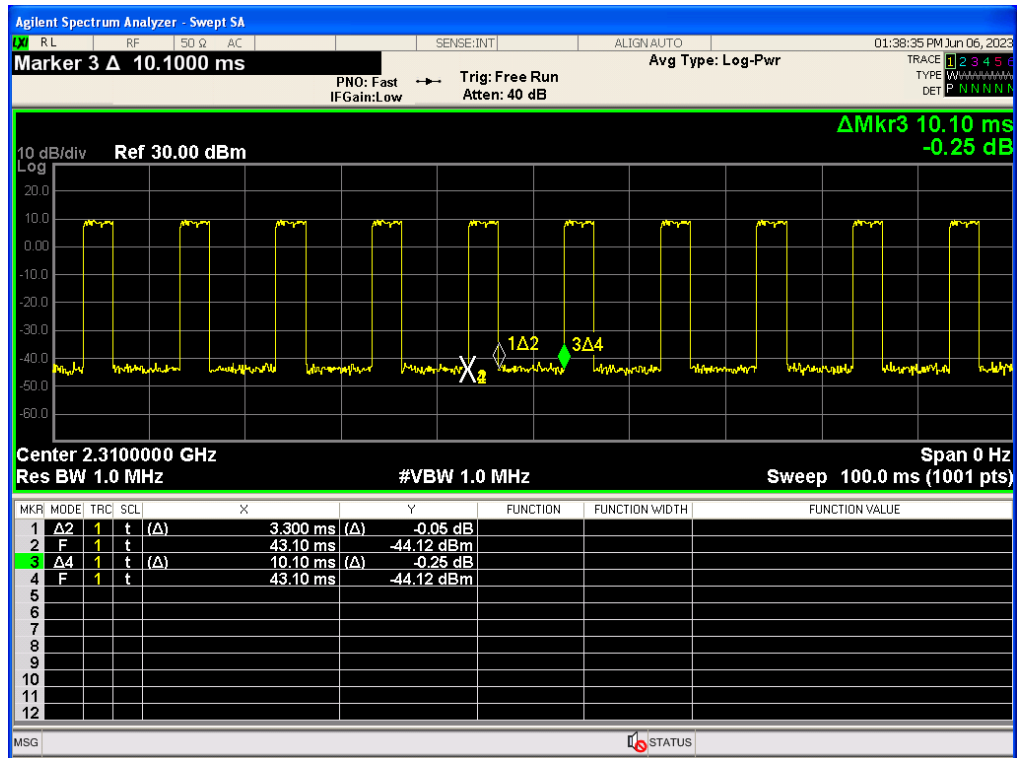
12.4 Test Setup



MODES TESTED

- ☐ LTE Band 40a/40b

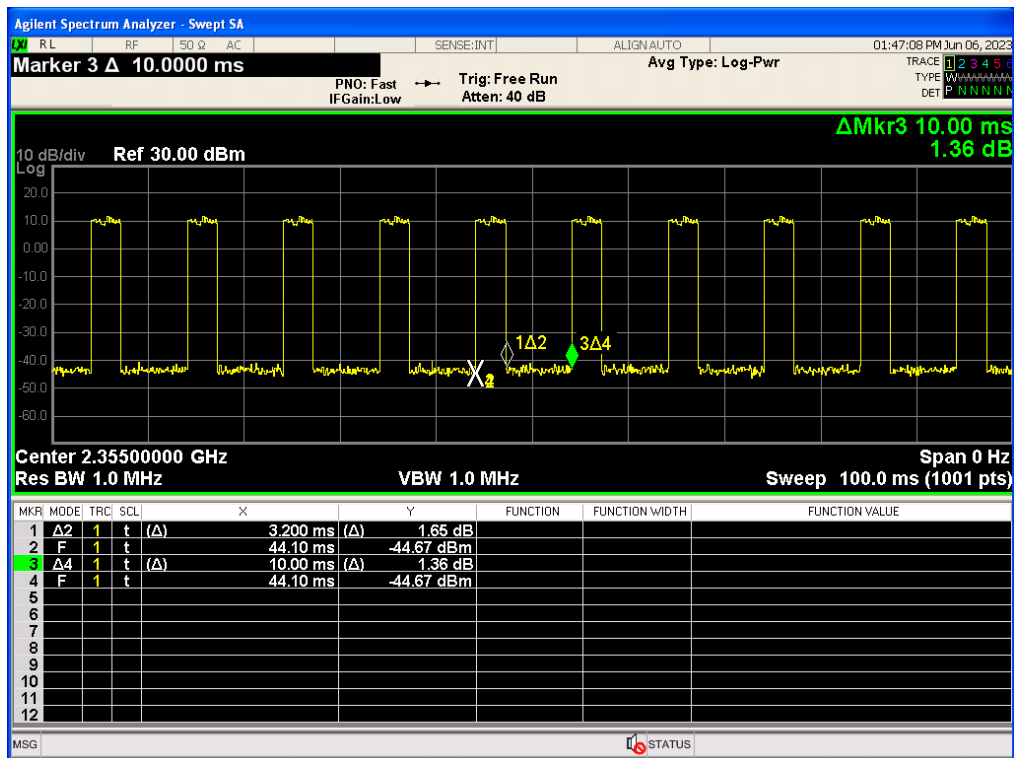
LTE band 40a



$$T_{on}=3.3ms \quad T_{total}=10.10ms$$

$$\text{Duty cycle}=T_{on}/T_{total}=3.3ms/10.10ms=32.7\%$$

LTE band 40b



$$T_{on}=3.2ms \quad T_{total}=10.0ms$$

$$\text{Duty cycle}=T_{on}/T_{total}=3.2ms/10.0ms=32 \%$$

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