

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

FCC ID: 2A9JS-S301

Product: Body Camera

Trade Mark: HALO

Model No.: S3

Family Model: Horizon Series

Report No.: S22110402101006

Issue Date: Dec 07, 2022

Prepared for

Halo Technologies Europe Ltd

5P Weavers Court, Belfast BT12 5GH, United Kingdom

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>

TABLE OF CONTENTS

1. GENERAL INFORMATION.....	5
1.1 PRODUCT DESCRIPTION	5
1.2 RELATED SUBMITTAL(S) / GRANT (S).....	6
1.3 TEST METHODOLOGY	6
1.4 TEST FACILITY	6
1.5 MEASUREMENT UNCERTAINTY	6
1.6 SPECIAL ACCESSORIES.....	6
1.7 WORST-CASE CONFIGURATION AND MODE.....	6
2. SYSTEM TEST CONFIGURATION	7
2.1 EUT CONFIGURATION.....	7
2.2 EUT EXERCISE	7
2.3 CONFIGURATION OF EUT SYSTEM.....	7
2.4 TEST SETUP	8
3.TEST AND MEASUREMENT EQUIPMENT	9
4. OUTPUT POWER.....	10
4.1 OUTPUT POWER MEASUREMENT	10
6. BANDEDGE AND EMISSION MASK	13
7. OUT OF BAND EMISSIONS	15
7.1 MEASUREMENT METHOD	15
8. RADIATED MEASUREMENT	16
8.1. RADIATED POWER (ERP & EIRP).....	16
8.2 LTE BAND 2.....	17
8.3 LTE BAND 4.....	21
8.4 LTE BAND 5.....	25
8.5 LTE BAND 12	27

8.6 LTE BAND 13	29
8.7 LTE BAND 14	31
8.8 LTE BAND 66	33
8.9 LTE BAND 71	37
9. SPURIOUS RADIATION EMISSION	39
9.1 LTE BAND 2.....	41
9.2 LTE BAND 4.....	43
9.3 LTE BAND 5.....	45
9.4 LTE BAND 12	47
9.5 LTE BAND 13	49
9.6 LTE BAND 14	51
9.7 LTE BAND 66	53
9.8 LTE BAND 71	55
10. FREQUENCY STABILITY	57
10.1 LTE BAND 2	58
10.2 LTE BAND 4	60
10.3 LTE BAND 5	62
10.4 LTE BAND 12	64
10.5 LTE BAND 13	66
10.6 LTE BAND 14	68
10.7 LTE BAND 66	70
10.8 LTE BAND 71	72
11. PEAK-TO-AVERAGE RATIO.....	74
11.1 Description of the PAR Measurement.....	74
11.2 Measuring Instruments	74
11.3 Test Procedures.....	74
11.4 Test Setup.....	75

TEST RESULT CERTIFICATION

Applicant's name : Halo Technologies Europe Ltd
Address..... : 5P Weavers Court, Belfast BT12 5GH, United Kingdom
Manufacturer's Name..... : Halo Technologies Europe Ltd
Address..... : 5P Weavers Court, Belfast BT12 5GH, United Kingdom
Product name..... : Body Camera
Model and/or type reference .. : S3
Family Model..... : Horizon Series
Test Sample Number..... S221104021003
Standards..... : FCC CFR 47 Part 22H, Part 24E, Part 27, Part 90S
Test procedure ANSI C63.26:2015
 ANSI/TIA-603-E-2016

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

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.

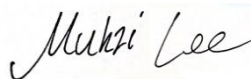
Date of Test

Date (s) of performance of tests..... Nov 04, 2022 ~ Dec 07, 2022

Date of Issue Dec 07, 2022

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

Testing Engineer :



(Mukzi Lee)

Authorized Signatory :



(Alex Li)

1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	Body Camera
Trade Mark	HALO
Model Name	S3
Family Model	Horizon Series
Model Difference	All the model are the same circuit and RF module,except the model names.
FCC ID:	2A9JS-S301
Frequency Bands:	U.S. Bands: ☒ LTE FDD Band 2,4,5,12,13,14,66,71
Frequency Range:	LTE FDD Band 2 Uplink: 1850MHz-1910MHz, Downlink: 1930MHz-1990MHz; LTE FDD Band 4 Uplink: 1710MHz-1755MHz, Downlink: 2110MHz-2155MHz; LTE FDD Band 5 Uplink: 824MHz-849MHz, Downlink: 869MHz-894MHz; LTE FDD Band 12 Uplink: 699MHz-716MHz, Downlink: 729MHz-746MHz; LTE FDD Band 13 Uplink: 777MHz-787MHz, Downlink: 746MHz-756MHz; LTE FDD Band 14 Uplink: 788MHz-798MHz, Downlink: 758MHz-768MHz; LTE FDD Band 66 Uplink: 1710MHz-1780MHz, Downlink: 2110MHz-2200MHz; LTE FDD Band 71 Uplink: 663MHz-698MHz, Downlink: 617MHz-652MHz;
Type of Modulation:	QPSK/16QAM/64QAM(Only Downlink)
Antenna:	FPCB Antenna
Antenna gain:	Band2:-1.2dBi; Band4:-1.9dBi; Band5:0.52dBi; Band12:-7.34dBi; Band13:-1.69dBi; Band14:-0.67dBi; Band66:-1.5dBi; Band71:-9.35dBi;
Adapter	Model: XS12-050200U Input: AC 100-240V~50/60Hz 0.5A Output: DC 5.0V---2.0A
Battery	DC 3.8V, 4200mAh, 15.96Wh
Power Rating	DC 3.8V from battery or DC 5V from adapter
Extreme Vol. Limits:	DC 3.4V to DC 4.2V (Nominal DC 3.8V) (Note 1)
HW Version	MB_V15
SW Version	220920_V35BIN
** Note1: The High Voltage DC 4.2V and Low Voltage 3.4V was declared by manufacturer, The EUT couldn't be operate normally with higher or lower voltage.	

1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2A9JS-S301** 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

1.5 MEASUREMENT UNCERTAINTY

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

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

1.6 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.

1.7 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 2/4/5/12/13/14/66/71

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	Body Camera	S3	FCC ID: 2A9JS-S301	EUT

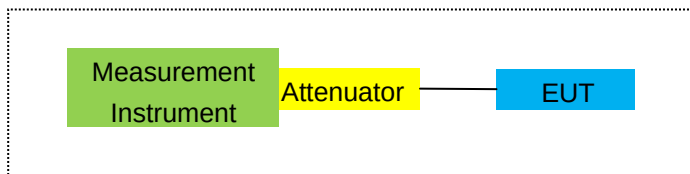
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

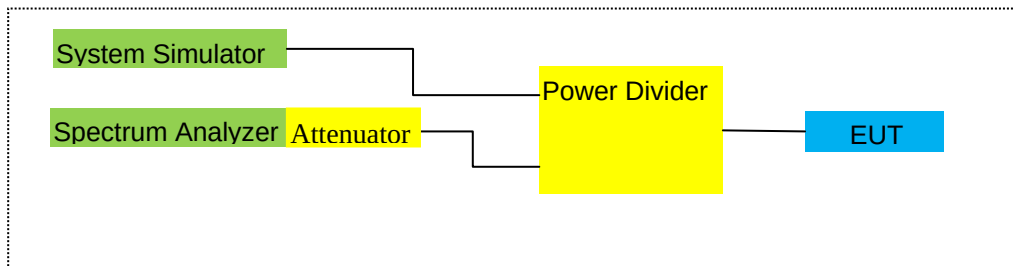
For Radiated Test Cases



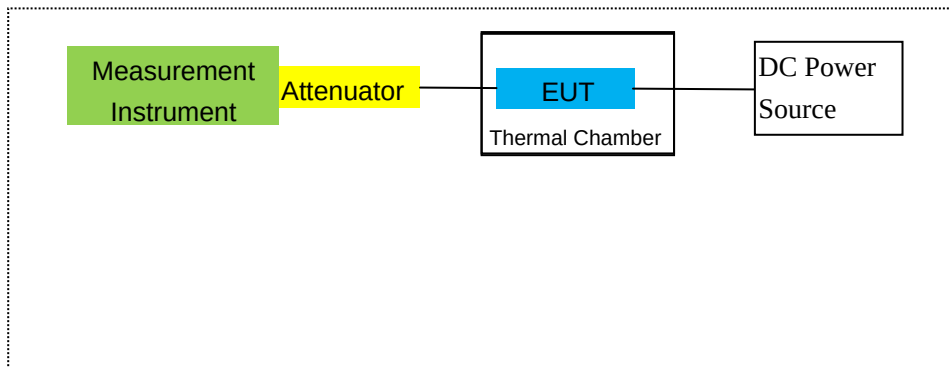
For Conducted Output Power



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



For Frequency Stability



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

3.TEST AND MEASUREMENT EQUIPMENT

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

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	MXA Signal Analyzer	Agilent	N9020A	MY49100060	2022.06.16	2023.06.17	1 year
2	Test Receiver	R&S	ESPI	101318	2022.04.06	2023.04.05	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2022.03.30	2023.03.29	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2020.05.11	2023.05.10	3 year
5	Horn Antenna	EM	EM-AH-10180	2011071402	2022.03.31	2023.03.30	3 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2021.11.07 2022.11.07	2022.11.06 2023.11.06	1 year
7	Amplifier	EM	EM-30180	060538	2022.06.17	2023.06.16	1 year
8	Loop Antenna	ARA	PLA-1030/B	1029	2022.04.06	2023.04.05	1 year
9	Power Meter	R&S	NRVS	100696	2022.06.17	2023.06.16	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2022.04.06	2023.04.05	1 year
11	Test Cable	N/A	R-01	N/A	2022.06.17	2025.06.16	3 year
12	Test Cable	N/A	R-02	N/A	2022.06.17	2025.06.16	3 year
13	Test Cable	N/A	R-03	N/A	2022.06.17	2025.06.16	3 year
14	Test Receiver	R&S	ESCI	101160	2022.04.06	2023.04.05	1 year
15	LISN	R&S	ENV216	101313	2022.04.06	2023.04.05	1 year
16	LISN	EMCO	3816/2	00042990	2022.04.06	2023.04.05	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2022.04.06	2023.04.05	1 year
18	Passive Voltage Probe	R&S	ESH2-Z3	100196	2022.04.06	2023.04.05	1 year
19	Test Cable	N/A	C01	N/A	2020.05.11	2023.05.10	3 year
20	Test Cable	N/A	C02	N/A	2020.05.11	2023.05.10	3 year
21	Test Cable	N/A	C03	N/A	2020.05.11	2023.05.10	3 year
22	Spectrum Analyzer	agilent	e4440a	us44300399	2022.04.01	2023.03.31	1 year
23	test receiver	R&S	ESCI	a0304218	2022.04.06	2023.04.05	1 year
24	Communication Tester	R&S	CMU200	A0304247	2022.04.06	2023.04.05	1 year
25	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2022.04.06	2023.04.05	1 year

26	DC Power Source	N/A	PS-6005D	20170402923	2020.05.11	2023.05.10	3 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 2/4/5/12/13/14/66/71

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 2/4/5/12/13/14/66/71

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 2/4/5/12/13/14/66/71
- ☐

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 2/4/5/12/13/14/66/71

RESULTS

Pass

8.2 LTE BAND 2

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP	Polarization Of Max. ERP	
							Average		
							(mW)		
1.4MHz Band QPSK	1/#Mid	1850.7	-5.08	3.76	28.24	19.40	87.096	Horizontal	Pass
		1880	-4.92	3.91	28.22	19.39	86.896	Horizontal	Pass
		1909.3	-4.77	3.93	28.20	19.50	89.125	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-4.97	3.77	28.23	19.49	88.920	Horizontal	Pass
		1880	-4.86	3.91	28.24	19.47	88.512	Horizontal	Pass
		1908.5	-4.96	3.94	28.25	19.35	86.099	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-5.08	3.77	28.31	19.46	88.308	Horizontal	Pass
		1880	-4.91	3.91	28.22	19.40	87.096	Horizontal	Pass
		1907.5	-4.80	3.94	28.20	19.46	88.308	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-5.06	3.79	28.33	19.48	88.716	Horizontal	Pass
		1880	-4.81	3.95	28.22	19.46	88.308	Horizontal	Pass
		1905	-4.81	3.97	28.19	19.41	87.297	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-5.15	3.79	28.34	19.40	87.096	Horizontal	Pass
		1880	-4.92	3.95	28.22	19.35	86.099	Horizontal	Pass
		1902.5	-4.82	3.97	28.18	19.39	86.896	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-5.16	3.81	28.35	19.38	86.696	Horizontal	Pass
		1880	-4.88	3.96	28.22	19.38	86.696	Horizontal	Pass
		1900	-4.76	4.00	28.16	19.40	87.096	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-5.08	3.76	28.24	19.40	87.096	Vertical	Pass
		1880	-4.91	3.91	28.22	19.40	87.096	Vertical	Pass
		1909.3	-4.80	3.93	28.20	19.47	88.512	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-5.07	3.77	28.23	19.39	86.896	Vertical	Pass
		1880	-4.87	3.91	28.24	19.46	88.308	Vertical	Pass
		1908.5	-4.94	3.94	28.25	19.37	86.497	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-5.16	3.77	28.31	19.38	86.696	Vertical	Pass
		1880	-4.98	3.91	28.22	19.33	85.704	Vertical	Pass
		1907.5	-4.83	3.94	28.20	19.43	87.700	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1855	-5.10	3.79	28.33	19.44	87.902	Vertical	Pass
		1880	-4.82	3.95	28.22	19.45	88.105	Vertical	Pass
		1905	-4.86	3.97	28.19	19.36	86.298	Vertical	Pass

15.0MHz	1/#Mid	1857.5	-5.15	3.79	28.34	19.40	87.096	Vertical	Pass
Band		1880	-4.81	3.95	28.22	19.46	88.308	Vertical	Pass
QPSK		1902.5	-4.87	3.97	28.18	19.34	85.901	Vertical	Pass
20.0MHz	1/#Mid	1860	-5.02	3.81	28.35	19.52	89.536	Vertical	Pass
Band		1880	-4.75	3.96	28.22	19.51	89.331	Vertical	Pass
QPSK		1900	-4.63	4.00	28.16	19.53	89.743	Vertical	Pass

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result					Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP		
							Average (mW)		
1.4MHz Band 16 QAM	1/#Mid	1850.7	-6.03	3.76	28.24	18.45	69.984	Horizontal	Pass
		1880	-5.74	3.91	28.22	18.57	71.945	Horizontal	Pass
		1909.3	-5.67	3.93	28.20	18.60	72.444	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-5.87	3.77	28.23	18.59	72.277	Horizontal	Pass
		1880	-5.81	3.91	28.24	18.52	71.121	Horizontal	Pass
		1908.5	-5.79	3.94	28.25	18.52	71.121	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-6.06	3.77	28.31	18.48	70.469	Horizontal	Pass
		1880	-5.79	3.91	28.22	18.52	71.121	Horizontal	Pass
		1907.5	-5.74	3.94	28.20	18.52	71.121	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-5.96	3.79	28.33	18.58	72.111	Horizontal	Pass
		1880	-5.68	3.95	28.22	18.59	72.277	Horizontal	Pass
		1905	-5.66	3.97	28.19	18.56	71.779	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-6.10	3.79	28.34	18.45	69.984	Horizontal	Pass
		1880	-5.77	3.95	28.22	18.50	70.795	Horizontal	Pass
		1902.5	-5.75	3.97	28.18	18.46	70.146	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-6.02	3.81	28.35	18.52	71.121	Horizontal	Pass
		1880	-5.74	3.96	28.22	18.52	71.121	Horizontal	Pass
		1900	-5.58	4.00	28.16	18.58	72.111	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1850.7	-5.90	3.76	28.24	18.58	72.111	Vertical	Pass
		1880	-5.73	3.91	28.22	18.58	72.111	Vertical	Pass
		1909.3	-5.74	3.93	28.20	18.53	71.285	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-5.93	3.77	28.23	18.53	71.285	Vertical	Pass
		1880	-5.76	3.91	28.24	18.57	71.945	Vertical	Pass
		1908.5	-5.79	3.94	28.25	18.52	71.121	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-5.95	3.77	28.31	18.59	72.277	Vertical	Pass
		1880	-5.73	3.91	28.22	18.58	72.111	Vertical	Pass
		1907.5	-5.80	3.94	28.20	18.46	70.146	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-6.03	3.79	28.33	18.51	70.958	Vertical	Pass
		1880	-5.73	3.95	28.22	18.54	71.450	Vertical	Pass
		1905	-5.66	3.97	28.19	18.56	71.779	Vertical	Pass
15.0MHz Band 16	1/#Mid	1857.5	-5.98	3.79	28.34	18.57	71.945	Vertical	Pass
		1880	-5.75	3.95	28.22	18.52	71.121	Vertical	Pass

QAM		1902.5	-5.72	3.97	28.18	18.49	70.632	Vertical	Pass
20.0MHz	1/#Mid	1860	-5.93	3.81	28.35	18.61	72.611	Vertical	Pass
Band 16		1880	-5.62	3.96	28.22	18.64	73.114	Vertical	Pass
QAM		1900	-5.51	4.00	28.16	18.65	73.282	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.3 LTE BAND 4

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
						Average	Average		
						(dBm)	(mW)		
1.4MHz Band QPSK	1/#Mid	1710.7	-4.68	3.12	27.58	19.78	95.060	Horizontal	Pass
		1732.5	-4.48	3.27	27.61	19.86	96.828	Horizontal	Pass
		1754.3	-4.58	3.29	27.63	19.76	94.624	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-4.62	3.13	27.61	19.86	96.828	Horizontal	Pass
		1732.5	-4.56	3.27	27.61	19.78	95.060	Horizontal	Pass
		1753.5	-4.50	3.30	27.62	19.82	95.940	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-4.68	3.13	27.63	19.82	95.940	Horizontal	Pass
		1732.5	-4.51	3.27	27.61	19.83	96.161	Horizontal	Pass
		1752.5	-4.41	3.30	27.60	19.89	97.499	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-4.65	3.15	27.64	19.84	96.383	Horizontal	Pass
		1732.5	-4.42	3.31	27.61	19.88	97.275	Horizontal	Pass
		1750	-4.45	3.33	27.59	19.81	95.719	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-4.74	3.15	27.65	19.76	94.624	Horizontal	Pass
		1732.5	-4.53	3.31	27.61	19.77	94.842	Horizontal	Pass
		1747.5	-4.35	3.33	27.57	19.89	97.499	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-4.68	3.17	27.66	19.81	95.719	Horizontal	Pass
		1732.5	-4.55	3.32	27.61	19.74	94.189	Horizontal	Pass
		1745	-4.41	3.36	27.56	19.79	95.280	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-4.71	3.12	27.58	19.75	94.406	Vertical	Pass
		1732.5	-4.50	3.27	27.61	19.84	96.383	Vertical	Pass
		1754.3	-4.45	3.29	27.63	19.89	97.499	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-4.63	3.13	27.61	19.85	96.605	Vertical	Pass
		1732.5	-4.53	3.27	27.61	19.81	95.719	Vertical	Pass
		1753.5	-4.55	3.30	27.62	19.77	94.842	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-4.68	3.13	27.63	19.82	95.940	Vertical	Pass
		1732.5	-4.50	3.27	27.61	19.84	96.383	Vertical	Pass
		1752.5	-4.41	3.30	27.60	19.89	97.499	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-4.70	3.15	27.64	19.79	95.280	Vertical	Pass
		1732.5	-4.44	3.31	27.61	19.86	96.828	Vertical	Pass
		1750	-4.48	3.33	27.59	19.78	95.060	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1717.5	-4.69	3.15	27.65	19.81	95.719	Vertical	Pass
		1732.5	-4.52	3.31	27.61	19.78	95.060	Vertical	Pass
		1747.5	-4.46	3.33	27.57	19.78	95.060	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1720	-4.54	3.17	27.66	19.95	98.855	Vertical	Pass
		1732.5	-4.38	3.32	27.61	19.91	97.949	Vertical	Pass
		1745	-4.27	3.36	27.56	19.93	98.401	Vertical	Pass

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Factor (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
						(dBm)	(mW)		
1.4MHz Band 16 QAM	1/#Mid	1710.7	-6.37	3.12	27.58	18.09	64.417	Horizontal	Pass
		1732.5	-6.21	3.27	27.61	18.13	65.013	Horizontal	Pass
		1754.3	-6.17	3.29	27.63	18.17	65.615	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-6.37	3.13	27.61	18.11	64.714	Horizontal	Pass
		1732.5	-6.20	3.27	27.61	18.14	65.163	Horizontal	Pass
		1753.5	-6.27	3.30	27.62	18.05	63.826	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-6.38	3.13	27.63	18.12	64.863	Horizontal	Pass
		1732.5	-6.24	3.27	27.61	18.10	64.565	Horizontal	Pass
		1752.5	-6.26	3.30	27.60	18.04	63.680	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-6.34	3.15	27.64	18.15	65.313	Horizontal	Pass
		1732.5	-6.13	3.31	27.61	18.17	65.615	Horizontal	Pass
		1750	-6.10	3.33	27.59	18.16	65.464	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-6.41	3.15	27.65	18.09	64.417	Horizontal	Pass
		1732.5	-6.14	3.31	27.61	18.16	65.464	Horizontal	Pass
		1747.5	-6.06	3.33	27.57	18.18	65.766	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-6.40	3.17	27.66	18.09	64.417	Horizontal	Pass
		1732.5	-6.11	3.32	27.61	18.18	65.766	Horizontal	Pass
		1745	-6.05	3.36	27.56	18.15	65.313	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-6.38	3.12	27.58	18.08	64.269	Vertical	Pass
		1732.5	-6.24	3.27	27.61	18.10	64.565	Vertical	Pass
		1754.3	-6.14	3.29	27.63	18.20	66.069	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-6.30	3.13	27.61	18.18	65.766	Vertical	Pass
		1732.5	-6.22	3.27	27.61	18.12	64.863	Vertical	Pass
		1753.5	-6.25	3.30	27.62	18.07	64.121	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-6.42	3.13	27.63	18.08	64.269	Vertical	Pass
		1732.5	-6.30	3.27	27.61	18.04	63.680	Vertical	Pass
		1752.5	-6.11	3.30	27.60	18.19	65.917	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-6.31	3.15	27.64	18.18	65.766	Vertical	Pass
		1732.5	-6.20	3.31	27.61	18.10	64.565	Vertical	Pass
		1750	-6.07	3.33	27.59	18.19	65.917	Vertical	Pass
15.0MHz Band 16	1/#Mid	1717.5	-6.33	3.15	27.65	18.17	65.615	Vertical	Pass
		1732.5	-6.15	3.31	27.61	18.15	65.313	Vertical	Pass

QAM		1747.5	-6.16	3.33	27.57	18.08	64.269	Vertical	Pass
20.0MHz	1/#Mid	1720	-6.26	3.17	27.66	18.23	66.527	Vertical	Pass
Band 16		1732.5	-6.08	3.32	27.61	18.21	66.222	Vertical	Pass
QAM		1745	-5.95	3.36	27.56	18.25	66.834	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.4 LTE BAND 5

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss (dBm)	Factor (dB)	Correction	Max. ERP	Max. ERP	Polarization Of Max. ERP	
			(dBm)			(dB)	Average	Average		
						(dBm)	(mW)			
1.4MHz Band QPSK	1/#Mid	824.7	5.58	2.01	19.68	2.15	21.10	128.825	Horizontal	Pass
		836.5	5.36	2.01	19.77	2.15	20.97	125.026	Horizontal	Pass
		848.3	5.34	2.02	19.82	2.15	20.99	125.603	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	825.5	5.50	2.01	19.70	2.15	21.04	127.057	Horizontal	Pass
		836.5	5.36	2.01	19.77	2.15	20.97	125.026	Horizontal	Pass
		847.5	5.36	2.02	19.81	2.15	21.00	125.893	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	826.5	5.47	2.01	19.71	2.15	21.02	126.474	Horizontal	Pass
		836.5	5.33	2.01	19.77	2.15	20.94	124.165	Horizontal	Pass
		846.5	5.46	2.02	19.79	2.15	21.08	128.233	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	829	5.52	2.01	19.73	2.15	21.09	128.529	Horizontal	Pass
		836.5	5.42	2.01	19.77	2.15	21.03	126.765	Horizontal	Pass
		844	5.46	2.02	19.78	2.15	21.07	127.938	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	824.7	5.57	2.01	19.68	2.15	21.09	128.529	Vertical	Pass
		836.5	5.47	2.01	19.77	2.15	21.08	128.233	Vertical	Pass
		848.3	5.45	2.02	19.82	2.15	21.10	128.825	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	825.5	5.49	2.01	19.70	2.15	21.03	126.765	Vertical	Pass
		836.5	5.40	2.01	19.77	2.15	21.01	126.183	Vertical	Pass
		847.5	5.42	2.02	19.81	2.15	21.06	127.644	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	826.5	5.47	2.01	19.71	2.15	21.02	126.474	Vertical	Pass
		836.5	5.38	2.01	19.77	2.15	20.99	125.603	Vertical	Pass
		846.5	5.36	2.02	19.79	2.15	20.98	125.314	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	829	5.59	2.01	19.73	2.15	21.16	130.617	Vertical	Pass
		836.5	5.55	2.01	19.77	2.15	21.16	130.617	Vertical	Pass
		844	5.54	2.02	19.78	2.15	21.15	130.317	Vertical	Pass

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Factor	Correction	Max. ERP	Max. ERP	Polarization Of Max. ERP	
			(dBm)	(dBm)	(dB)	(dB)	Average (dBm)	Average (mW)		
1.4MHz Band 16 QAM	1/#Mid	824.7	4.97	2.01	19.68	2.15	20.49	111.944	Horizontal	Pass
		836.5	4.82	2.01	19.77	2.15	20.43	110.408	Horizontal	Pass
		848.3	4.84	2.02	19.82	2.15	20.49	111.944	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	4.85	2.01	19.70	2.15	20.39	109.396	Horizontal	Pass
		836.5	4.84	2.01	19.77	2.15	20.45	110.917	Horizontal	Pass
		847.5	4.83	2.02	19.81	2.15	20.47	111.429	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	4.85	2.01	19.71	2.15	20.40	109.648	Horizontal	Pass
		836.5	4.83	2.01	19.77	2.15	20.44	110.662	Horizontal	Pass
		846.5	4.81	2.02	19.79	2.15	20.43	110.408	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	829	4.82	2.01	19.73	2.15	20.39	109.396	Horizontal	Pass
		836.5	4.73	2.01	19.77	2.15	20.34	108.143	Horizontal	Pass
		844	4.73	2.02	19.78	2.15	20.34	108.143	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	824.7	4.98	2.01	19.68	2.15	20.50	112.202	Vertical	Pass
		836.5	4.80	2.01	19.77	2.15	20.41	109.901	Vertical	Pass
		848.3	4.81	2.02	19.82	2.15	20.46	111.173	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	4.92	2.01	19.70	2.15	20.46	111.173	Vertical	Pass
		836.5	4.91	2.01	19.77	2.15	20.52	112.720	Vertical	Pass
		847.5	4.87	2.02	19.81	2.15	20.51	112.460	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	4.91	2.01	19.71	2.15	20.46	111.173	Vertical	Pass
		836.5	4.73	2.01	19.77	2.15	20.34	108.143	Vertical	Pass
		846.5	4.76	2.02	19.79	2.15	20.38	109.144	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	829	4.96	2.01	19.73	2.15	20.53	112.980	Vertical	Pass
		836.5	4.91	2.01	19.77	2.15	20.52	112.720	Vertical	Pass
		844	4.95	2.02	19.78	2.15	20.56	113.763	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)

8.5 LTE BAND 12

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss (dBm)	Antenna Gain (dB)	Correction	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			(dB)	Average	Average		
							(dBm)	(mW)		
1.4MHz Band QPSK	1/#Mid	699.7	-0.32	1.91	19.21	2.15	14.83	30.409	Vertical	Pass
		707.5	-0.36	1.91	19.26	2.15	14.84	30.479	Vertical	Pass
		715.3	-0.47	1.93	19.34	2.15	14.79	30.130	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	700.5	-0.33	1.91	19.21	2.15	14.82	30.339	Vertical	Pass
		707.5	-0.49	1.91	19.26	2.15	14.71	29.580	Vertical	Pass
		714.5	-0.41	1.93	19.34	2.15	14.85	30.549	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	701.5	-0.48	1.91	19.23	2.15	14.69	29.444	Vertical	Pass
		707.5	-0.42	1.91	19.26	2.15	14.78	30.061	Vertical	Pass
		713.5	-0.55	1.92	19.33	2.15	14.71	29.580	Vertical	Pass
10.0Hz Band QPSK	1/#Mid	704	-0.52	1.91	19.25	2.15	14.67	29.309	Vertical	Pass
		707.5	-0.52	1.91	19.26	2.15	14.68	29.376	Vertical	Pass
		711	-0.51	1.92	19.32	2.15	14.74	29.785	Vertical	Pass
1.4MHz Band QPSK	1/#Mid	699.7	-0.30	1.91	19.21	2.15	14.85	30.549	Horizontal	Pass
		707.5	-0.47	1.91	19.26	2.15	14.73	29.717	Horizontal	Pass
		715.3	-0.54	1.93	19.34	2.15	14.72	29.648	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	700.5	-0.39	1.91	19.21	2.15	14.76	29.923	Horizontal	Pass
		707.5	-0.49	1.91	19.26	2.15	14.71	29.580	Horizontal	Pass
		714.5	-0.51	1.93	19.34	2.15	14.75	29.854	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	701.5	-0.45	1.91	19.23	2.15	14.72	29.648	Horizontal	Pass
		707.5	-0.41	1.91	19.26	2.15	14.79	30.130	Horizontal	Pass
		713.5	-0.45	1.92	19.33	2.15	14.81	30.269	Horizontal	Pass
10.0Hz Band QPSK	1/#Mid	704	-0.30	1.91	19.25	2.15	14.89	30.832	Horizontal	Pass
		707.5	-0.32	1.91	19.26	2.15	14.88	30.761	Horizontal	Pass
		711	-0.37	1.92	19.32	2.15	14.88	30.761	Horizontal	Pass

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss (dBm)	Antenna Gain (dB)	Correction	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			(dB)	Average	Average		
							(dBm)	(mW)		
1.4MHz Band 16 QAM	1/#Mid	699.7	-1.40	1.91	19.21	2.15	13.75	23.714	Vertical	Pass
		707.5	-1.57	1.91	19.26	2.15	13.63	23.067	Vertical	Pass
		715.3	-1.63	1.93	19.34	2.15	13.63	23.067	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	-1.42	1.91	19.21	2.15	13.73	23.605	Vertical	Pass
		707.5	-1.47	1.91	19.26	2.15	13.73	23.605	Vertical	Pass
		714.5	-1.51	1.93	19.34	2.15	13.75	23.714	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	-1.58	1.91	19.23	2.15	13.59	22.856	Vertical	Pass
		707.5	-1.60	1.91	19.26	2.15	13.60	22.909	Vertical	Pass
		713.5	-1.63	1.92	19.33	2.15	13.63	23.067	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	704	-1.53	1.91	19.25	2.15	13.66	23.227	Vertical	Pass
		707.5	-1.49	1.91	19.26	2.15	13.71	23.496	Vertical	Pass
		711	-1.61	1.92	19.32	2.15	13.64	23.121	Vertical	Pass
1.4MHz Band 16 QAM	1/#Mid	699.7	-1.48	1.91	19.21	2.15	13.67	23.281	Horizontal	Pass
		707.5	-1.48	1.91	19.26	2.15	13.72	23.550	Horizontal	Pass
		715.3	-1.60	1.93	19.34	2.15	13.66	23.227	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	-1.41	1.91	19.21	2.15	13.74	23.659	Horizontal	Pass
		707.5	-1.59	1.91	19.26	2.15	13.61	22.961	Horizontal	Pass
		714.5	-1.53	1.93	19.34	2.15	13.73	23.605	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	-1.48	1.91	19.23	2.15	13.69	23.388	Horizontal	Pass
		707.5	-1.45	1.91	19.26	2.15	13.75	23.714	Horizontal	Pass
		713.5	-1.66	1.92	19.33	2.15	13.60	22.909	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	704	-1.42	1.91	19.25	2.15	13.77	23.823	Horizontal	Pass
		707.5	-1.40	1.91	19.26	2.15	13.80	23.988	Horizontal	Pass
		711	-1.47	1.92	19.32	2.15	13.78	23.878	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)

8.6 LTE BAND 13

Radiated Power (ERP) for Band 13										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss (dBm)	Factor (dB)	Correction	Max. EPR	Max. EPR	Polarization Of Max. ERP	
			(dBm)				Average	Average		
							(dB)	(dBm)		
5.0MHz Band QPSK	1/#Mid	779.5	5.37	1.95	19.23	2.15	20.50	112.202	Vertical	Pass
		782	5.45	1.95	19.26	2.15	20.61	115.080	Vertical	Pass
		784.5	5.31	1.96	19.33	2.15	20.53	112.980	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	782	5.29	1.95	19.25	2.15	20.44	110.662	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	779.5	5.34	1.95	19.23	2.15	20.47	111.429	Horizontal	Pass
		782	5.42	1.95	19.26	2.15	20.58	114.288	Horizontal	Pass
		784.5	5.35	1.96	19.33	2.15	20.57	114.025	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	782	5.49	1.95	19.25	2.15	20.64	115.878	Horizontal	Pass

Radiated Power (ERP) for Band 13										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. EPR	Max. EPR	Polarization Of Max. ERP	
			(dBm)				Average	Average		
							(dBm)	(mW)		
5.0MHz Band 16 QAM	1/#Mid	779.5	4.14	1.95	19.23	2.15	19.27	84.528	Vertical	Pass
		782	4.11	1.95	19.26	2.15	19.27	84.528	Vertical	Pass
		784.5	3.95	1.96	19.33	2.15	19.17	82.604	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	782	4.12	1.95	19.25	2.15	19.27	84.528	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	779.5	4.03	1.95	19.23	2.15	19.16	82.414	Horizontal	Pass
		782	4.04	1.95	19.26	2.15	19.20	83.176	Horizontal	Pass
		784.5	3.96	1.96	19.33	2.15	19.18	82.794	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	782	4.16	1.95	19.25	2.15	19.31	85.310	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)

8.7 LTE BAND 14

Radiated Power (ERP) for Band 14										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss (dBm)	Factor (dB)	Correction	Max. EPR	Max. EPR	Polarization Of Max. ERP	
			(dBm)				Average	Average		
							(dB)	(dBm)		
5.0MHz Band QPSK	1/#Mid	790.5	5.38	1.91	19.23	2.15	20.55	113.501	Vertical	Pass
		793	5.42	1.91	19.26	2.15	20.62	115.345	Vertical	Pass
		795.5	5.34	1.92	19.33	2.15	20.60	114.815	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	793	5.34	1.91	19.25	2.15	20.53	112.980	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	790.5	5.35	1.91	19.23	2.15	20.52	112.720	Horizontal	Pass
		793	5.32	1.91	19.26	2.15	20.52	112.720	Horizontal	Pass
		795.5	5.36	1.92	19.33	2.15	20.62	115.345	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	793	5.46	1.91	19.25	2.15	20.65	116.145	Horizontal	Pass

Radiated Power (ERP) for Band 14										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss (dBm)	Factor (dB)	Correction	Max. EPR	Max. EPR	Polarization Of Max. ERP	
			(dBm)				Average	Average		
							(dB)	(dBm)		
5.0MHz Band 16 QAM	1/#Mid	790.5	4.35	1.91	19.23	2.15	19.52	89.536	Vertical	Pass
		793	4.20	1.91	19.26	2.15	19.40	87.096	Vertical	Pass
		795.5	4.22	1.92	19.33	2.15	19.48	88.716	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	793	4.34	1.91	19.25	2.15	19.53	89.743	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	790.5	4.22	1.91	19.23	2.15	19.39	86.896	Horizontal	Pass
		793	4.26	1.91	19.26	2.15	19.46	88.308	Horizontal	Pass
		795.5	4.22	1.92	19.33	2.15	19.48	88.716	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	793	4.38	1.91	19.25	2.15	19.57	90.573	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)

8.8 LTE BAND 66

Radiated Power (EIRP) for Band 66									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss	Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP	Polarization Of Max. ERP	
				(mW)					
1.4MHz Band QPSK	1/#Mid	1710.7	-4.73	3.76	28.24	19.75	94.406	Horizontal	Pass
		1745	-4.62	3.91	28.22	19.69	93.111	Horizontal	Pass
		1779.3	-4.61	3.93	28.2	19.66	92.470	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-4.67	3.77	28.23	19.79	95.280	Horizontal	Pass
		1745	-4.63	3.91	28.24	19.70	93.325	Horizontal	Pass
		1778.5	-4.56	3.94	28.25	19.75	94.406	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-4.86	3.77	28.31	19.68	92.897	Horizontal	Pass
		1745	-4.55	3.91	28.22	19.76	94.624	Horizontal	Pass
		1777.5	-4.46	3.94	28.2	19.80	95.499	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-4.75	3.79	28.33	19.79	95.280	Horizontal	Pass
		1745	-4.47	3.95	28.22	19.80	95.499	Horizontal	Pass
		1775	-4.43	3.97	28.19	19.79	95.280	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-4.77	3.79	28.34	19.78	95.060	Horizontal	Pass
		1745	-4.61	3.95	28.22	19.66	92.470	Horizontal	Pass
		1772.5	-4.46	3.97	28.18	19.75	94.406	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-4.82	3.81	28.35	19.72	93.756	Horizontal	Pass
		1745	-4.57	3.96	28.22	19.69	93.111	Horizontal	Pass
		1770	-4.44	4	28.16	19.72	93.756	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-4.71	3.76	28.24	19.77	94.842	Vertical	Pass
		1745	-4.63	3.91	28.22	19.68	92.897	Vertical	Pass
		1779.3	-4.57	3.93	28.2	19.70	93.325	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-4.77	3.77	28.23	19.69	93.111	Vertical	Pass
		1745	-4.58	3.91	28.24	19.75	94.406	Vertical	Pass
		1778.5	-4.63	3.94	28.25	19.68	92.897	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-4.92	3.77	28.31	19.62	91.622	Vertical	Pass
		1745	-4.63	3.91	28.22	19.68	92.897	Vertical	Pass
		1777.5	-4.54	3.94	28.2	19.72	93.756	Vertical	Pass
10.0MHz	1/#Mid	1715	-4.81	3.79	28.34	19.74	94.189	Vertical	Pass

Band QPSK		1745	-4.57	3.95	28.22	19.70	93.325	Vertical	Pass
		1775	-4.52	3.97	28.18	19.69	93.111	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-4.85	3.81	28.35	19.69	93.111	Vertical	Pass
		1745	-4.57	3.96	28.22	19.69	93.111	Vertical	Pass
		1772.5	-4.45	4	28.16	19.71	93.541	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1720	-4.72	3.79	28.34	19.83	96.161	Vertical	Pass
		1745	-4.46	3.95	28.22	19.81	95.719	Vertical	Pass
		1770	-4.38	3.97	28.18	19.83	96.161	Vertical	Pass

Radiated Power (EIRP) for Band 66									
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	
1.4MHz Band 16 QAM	1/#Mid	1710.7	-5.85	3.76	28.24	18.63	72.946	Horizontal	Pass
		1745	-5.66	3.91	28.22	18.65	73.282	Horizontal	Pass
		1779.3	-5.69	3.93	28.2	18.58	72.111	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-5.86	3.77	28.23	18.60	72.444	Horizontal	Pass
		1745	-5.74	3.91	28.24	18.59	72.277	Horizontal	Pass
		1778.5	-5.77	3.94	28.25	18.54	71.450	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-6.00	3.77	28.31	18.54	71.450	Horizontal	Pass
		1745	-5.66	3.91	28.22	18.65	73.282	Horizontal	Pass
		1777.5	-5.61	3.94	28.2	18.65	73.282	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-5.85	3.79	28.33	18.69	73.961	Horizontal	Pass
		1745	-5.59	3.95	28.22	18.68	73.790	Horizontal	Pass
		1775	-5.63	3.97	28.19	18.59	72.277	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-5.96	3.79	28.34	18.59	72.277	Horizontal	Pass
		1745	-5.65	3.95	28.22	18.62	72.778	Horizontal	Pass
		1772.5	-5.61	3.97	28.18	18.60	72.444	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-5.98	3.81	28.35	18.56	71.779	Horizontal	Pass
		1745	-5.70	3.96	28.22	18.56	71.779	Horizontal	Pass
		1770	-5.49	4	28.16	18.67	73.621	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-5.92	3.76	28.24	18.56	71.779	Vertical	Pass
		1745	-5.68	3.91	28.22	18.63	72.946	Vertical	Pass
		1779.3	-5.61	3.93	28.2	18.66	73.451	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-5.77	3.77	28.23	18.69	73.961	Vertical	Pass
		1745	-5.74	3.91	28.24	18.59	72.277	Vertical	Pass
		1778.5	-5.70	3.94	28.25	18.61	72.611	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-5.99	3.77	28.31	18.55	71.614	Vertical	Pass
		1745	-5.67	3.91	28.22	18.64	73.114	Vertical	Pass
		1777.5	-5.68	3.94	28.2	18.58	72.111	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-5.99	3.79	28.34	18.56	71.779	Vertical	Pass
		1745	-5.60	3.95	28.22	18.67	73.621	Vertical	Pass
		1775	-5.58	3.97	28.18	18.63	72.946	Vertical	Pass
15.0MHz Band 16	1/#Mid	1717.5	-5.88	3.81	28.35	18.66	73.451	Vertical	Pass
		1745	-5.63	3.96	28.22	18.63	72.946	Vertical	Pass

QAM		1772.5	-5.62	4	28.16	18.54	71.450	Vertical	Pass
20.0MHz	1/#Mid	1720	-5.84	3.79	28.34	18.71	74.302	Vertical	Pass
Band 16		1745	-5.57	3.95	28.22	18.70	74.131	Vertical	Pass
QAM		1770	-5.46	3.97	28.18	18.75	74.989	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 71

Radiated Power (ERP) for Band 71										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Factor	Correction	Max. EPR	Max. EPR	Polarization Of Max. ERP	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average		
							(dBm)	(mW)		
5.0MHz Band QPSK	1/#Mid	665.5	-2.24	1.91	19.21	2.15	12.91	19.543	Vertical	Pass
		680.5	-2.38	1.91	19.26	2.15	12.82	19.143	Vertical	Pass
		695.5	-2.37	1.93	19.34	2.15	12.89	19.454	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	668	-2.27	1.91	19.21	2.15	12.88	19.409	Vertical	Pass
		680.5	-2.38	1.91	19.26	2.15	12.82	19.143	Vertical	Pass
		693	-2.31	1.93	19.34	2.15	12.95	19.724	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	670.5	-2.27	1.91	19.23	2.15	12.90	19.498	Vertical	Pass
		680.5	-2.32	1.91	19.26	2.15	12.88	19.409	Vertical	Pass
		690.5	-2.47	1.92	19.33	2.15	12.79	19.011	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	673	-2.44	1.91	19.25	2.15	12.75	18.836	Vertical	Pass
		683	-2.37	1.91	19.26	2.15	12.83	19.187	Vertical	Pass
		688	-2.37	1.92	19.32	2.15	12.88	19.409	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	665.5	-2.21	1.91	19.21	2.15	12.94	19.679	Horizontal	Pass
		680.5	-2.26	1.91	19.26	2.15	12.94	19.679	Horizontal	Pass
		695.5	-2.46	1.93	19.34	2.15	12.80	19.055	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	668	-2.28	1.91	19.21	2.15	12.87	19.364	Horizontal	Pass
		680.5	-2.31	1.91	19.26	2.15	12.89	19.454	Horizontal	Pass
		693	-2.37	1.93	19.34	2.15	12.89	19.454	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	670.5	-2.26	1.91	19.23	2.15	12.91	19.543	Horizontal	Pass
		680.5	-2.32	1.91	19.26	2.15	12.88	19.409	Horizontal	Pass
		690.5	-2.46	1.92	19.33	2.15	12.80	19.055	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	673	-2.22	1.91	19.25	2.15	12.97	19.815	Horizontal	Pass
		683	-2.22	1.91	19.26	2.15	12.98	19.861	Horizontal	Pass
		688	-2.25	1.92	19.32	2.15	13.00	19.953	Horizontal	Pass

Radiated Power (ERP) for Band 71										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Factor	Correction	Max. EPR	Max. EPR	Polarization Of Max. ERP	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average		
							(dBm)	(mW)		
5.0MHz	1/#Mid	665.5	3.75	1.91	19.21	2.15	18.90	77.625	Vertical	Pass
Band 16		680.5	3.75	1.91	19.26	2.15	18.95	78.524	Vertical	Pass
QAM		695.5	3.66	1.93	19.34	2.15	18.92	77.983	Vertical	Pass
10.0MHz	1/#Mid	668	3.79	1.91	19.21	2.15	18.94	78.343	Vertical	Pass
Band 16		680.5	3.66	1.91	19.26	2.15	18.86	76.913	Vertical	Pass
QAM		693	3.56	1.93	19.34	2.15	18.82	76.208	Vertical	Pass
15.0MHz	1/#Mid	670.5	3.75	1.91	19.23	2.15	18.92	77.983	Vertical	Pass
Band 16		680.5	3.68	1.91	19.26	2.15	18.88	77.268	Vertical	Pass
QAM		690.5	3.57	1.92	19.33	2.15	18.83	76.384	Vertical	Pass
20.0MHz	1/#Mid	673	3.66	1.91	19.25	2.15	18.85	76.736	Vertical	Pass
Band 16		683	3.67	1.91	19.26	2.15	18.87	77.090	Vertical	Pass
QAM		688	3.65	1.92	19.32	2.15	18.90	77.625	Vertical	Pass
5.0MHz	1/#Mid	665.5	3.70	1.91	19.21	2.15	18.85	76.736	Horizontal	Pass
Band 16		680.5	3.76	1.91	19.26	2.15	18.96	78.705	Horizontal	Pass
QAM		695.5	3.64	1.93	19.34	2.15	18.90	77.625	Horizontal	Pass
10.0MHz	1/#Mid	668	3.68	1.91	19.21	2.15	18.83	76.384	Horizontal	Pass
Band 16		680.5	3.72	1.91	19.26	2.15	18.92	77.983	Horizontal	Pass
QAM		693	3.58	1.93	19.34	2.15	18.84	76.560	Horizontal	Pass
15.0MHz	1/#Mid	670.5	3.65	1.91	19.23	2.15	18.82	76.208	Horizontal	Pass
Band 16		680.5	3.62	1.91	19.26	2.15	18.82	76.208	Horizontal	Pass
QAM		690.5	3.69	1.92	19.33	2.15	18.95	78.524	Horizontal	Pass
20.0MHz	1/#Mid	673	3.79	1.91	19.25	2.15	18.98	79.068	Horizontal	Pass
Band 16		683	3.78	1.91	19.26	2.15	18.98	79.068	Horizontal	Pass
QAM		688	3.73	1.92	19.32	2.15	18.98	79.068	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)

9. SPURIOUS RADIATION EMISSION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238, §27.53 and §90.691

LIMIT

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

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

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

TEST PROCEDURE

For Cellular equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

For PCS equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

The unwanted emission power shall be measured with a resolution bandwidth of at least 1% of the occupied bandwidth in the 1 MHz band immediately outside and adjacent to the channel edge of the equipment. Beyond the 1 MHz band immediately outside the channel edge of the equipment, a resolution bandwidth of 1 MHz shall be employed. A narrower resolution bandwidth is allowed to be used provided that the measured power is integrated over the full required measurement bandwidth of 1 MHz or 1% of the occupied bandwidth as applicable.

The power of any unwanted emissions measured from the channel edge of the equipment shall be attenuated below the transmitter power, P (dBW), as follows:

- a. for base station and subscriber equipment, other than mobile subscriber equipment, the attenuation shall not be less than $43 + 10 \log_{10}(p)$, dB; and
- b. for mobile subscriber equipment, the attenuation shall not be less than $43 + 10 \log_{10}(p)$, dB at the channel edges and $55 + 10 \log_{10}(p)$ at 5.5 MHz away and beyond the channel edges where p in (a) and (b) is the transmitter power measured in watts.

MODES TESTED

LTE Band 2/4/5/12/13/14/66/71

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	-46.46	4.04	33.51	-16.99	-13	-3.99	Horizontal
3701.4	-50.96	4.04	33.51	-21.49	-13	-8.49	Vertical
5552.1	-50.57	5.24	35.84	-19.97	-13	-6.97	Vertical
5552.1	-53.01	5.24	35.84	-22.41	-13	-9.41	Horizontal
176.4	-38.11	1.43	16.02	-23.52	-13	-10.52	Vertical
467.8	-39.97	1.30	17.99	-23.28	-13	-10.28	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-50.47	4.04	33.56	-20.95	-13	-7.95	Horizontal
3760.0	-53.67	4.04	33.56	-24.15	-13	-11.15	Vertical
5640.0	-46.77	5.24	35.91	-16.10	-13	-3.10	Vertical
5640.0	-50.65	5.24	35.91	-19.98	-13	-6.98	Horizontal
178.9	-42.62	1.62	16.97	-27.27	-13	-14.27	Vertical
364.1	-42.81	1.74	15.98	-28.58	-13	-15.58	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-50.37	4.04	34.00	-20.41	-13	-7.41	Horizontal
3818.6	-45.06	4.04	34.00	-15.10	-13	-2.10	Vertical
5727.9	-48.39	5.24	36.04	-17.59	-13	-4.59	Vertical
5727.9	-49.32	5.24	36.04	-18.52	-13	-5.52	Horizontal
177.1	-42.05	1.42	17.29	-26.18	-13	-13.18	Vertical
464.6	-44.95	1.50	17.90	-28.54	-13	-15.54	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	-46.91	4.07	33.54	-17.44	-13	-4.44	Horizontal
3720.0	-48.86	4.07	33.54	-19.39	-13	-6.39	Vertical
5580.0	-47.25	5.28	35.86	-16.67	-13	-3.67	Vertical
5580.0	-52.21	5.28	35.86	-21.63	-13	-8.63	Horizontal
203.8	-43.86	1.58	16.89	-28.54	-13	-15.54	Vertical
252.7	-34.59	1.76	17.26	-19.09	-13	-6.09	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-51.85	4.04	33.56	-22.33	-13	-9.33	Horizontal
3760.0	-49.45	4.04	33.56	-19.93	-13	-6.93	Vertical
5640.0	-46.02	5.24	35.91	-15.35	-13	-2.35	Vertical
5640.0	-49.86	5.24	35.91	-19.19	-13	-6.19	Horizontal
212.2	-35.22	1.46	16.27	-20.41	-13	-7.41	Vertical
428.1	-43.50	1.59	15.15	-29.94	-13	-16.94	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-52.58	4.04	34.00	-22.62	-13	-9.62	Horizontal
3800.0	-50.75	4.04	34.00	-20.79	-13	-7.79	Vertical
5700.0	-48.37	5.24	36.04	-17.57	-13	-4.57	Vertical
5700.0	-49.13	5.24	36.04	-18.33	-13	-5.33	Horizontal
202.5	-38.92	1.36	17.39	-22.88	-13	-9.88	Vertical
265.2	-36.19	1.66	15.39	-22.46	-13	-9.46	Horizontal

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

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

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

9.2 LTE BAND 4

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

Test Results for Low Channel 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-52.23	4.02	29.80	-26.45	-13	-13.45	Horizontal
3421.4	-49.60	4.02	29.80	-23.82	-13	-10.82	Vertical
5132.1	-47.75	5.24	35.84	-17.15	-13	-4.15	Vertical
5132.1	-50.74	5.24	35.84	-20.14	-13	-7.14	Horizontal
204.7	-41.35	1.68	16.04	-26.99	-13	-13.99	Vertical
296.9	-43.00	1.78	17.74	-27.04	-13	-14.04	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-52.12	4.03	30.00	-26.15	-13	-13.15	Horizontal
3465.0	-51.65	4.03	30.00	-25.68	-13	-12.68	Vertical
5197.5	-50.84	5.25	35.86	-20.23	-13	-7.23	Vertical
5197.5	-52.39	5.25	35.86	-21.78	-13	-8.78	Horizontal
176.5	-40.95	1.72	17.69	-24.98	-13	-11.98	Vertical
382.4	-40.80	1.62	16.02	-26.39	-13	-13.39	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-48.22	4.05	30.01	-22.26	-13	-9.26	Horizontal
3508.6	-46.36	4.05	30.01	-20.40	-13	-7.40	Vertical
5262.9	-46.93	5.26	35.86	-16.33	-13	-3.33	Vertical
5262.9	-49.06	5.26	35.86	-18.46	-13	-5.46	Horizontal
194.2	-35.18	1.80	16.69	-20.29	-13	-7.29	Vertical
261.2	-43.74	1.75	16.66	-28.84	-13	-15.84	Horizontal

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

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-47.01	4.02	29.80	-21.23	-13	-8.23	Horizontal
3440.0	-50.26	4.02	29.80	-24.48	-13	-11.48	Vertical
5160.0	-53.93	5.24	35.84	-23.33	-13	-10.33	Vertical
5160.0	-53.85	5.24	35.84	-23.25	-13	-10.25	Horizontal
181.5	-42.75	1.57	17.26	-27.06	-13	-14.06	Vertical
232.7	-43.71	1.78	16.35	-29.14	-13	-16.14	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-50.52	4.03	30.00	-24.55	-13	-11.55	Horizontal
3465.0	-44.58	4.03	30.00	-18.61	-13	-5.61	Vertical
5197.5	-46.16	5.25	35.86	-15.55	-13	-2.55	Vertical
5197.5	-53.36	5.25	35.86	-22.75	-13	-9.75	Horizontal
188.1	-37.17	1.44	17.95	-20.66	-13	-7.66	Vertical
417.4	-36.80	1.65	16.09	-22.36	-13	-9.36	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-50.53	4.05	27.68	-26.90	-13	-13.90	Horizontal
3490.0	-50.92	4.05	27.68	-27.29	-13	-14.29	Vertical
5235.0	-44.40	5.26	35.86	-13.80	-13	-0.80	Vertical
5235.0	-49.48	5.26	35.86	-18.88	-13	-5.88	Horizontal
197.1	-39.30	1.61	16.85	-24.06	-13	-11.06	Vertical
271.0	-36.96	1.61	15.19	-23.38	-13	-10.38	Horizontal

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

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

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

9.3 LTE BAND 5

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

Test Results for Low Channel 824.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1649.4	-50.45	2.78	27.50	-25.73	-13	-12.73	Horizontal
1649.4	-48.41	2.78	27.50	-23.69	-13	-10.69	Vertical
2474.1	-44.95	2.90	27.80	-20.05	-13	-7.05	Vertical
2474.1	-53.88	2.90	27.80	-28.98	-13	-15.98	Horizontal
175.0	-38.70	1.76	17.59	-22.87	-13	-9.87	Vertical
379.2	-34.59	1.63	15.87	-20.35	-13	-7.35	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-48.85	2.80	27.48	-24.17	-13	-11.17	Horizontal
1673.0	-48.67	2.80	27.48	-23.99	-13	-10.99	Vertical
2509.5	-47.99	2.91	27.70	-23.20	-13	-10.20	Vertical
2509.5	-50.83	2.91	27.70	-26.04	-13	-13.04	Horizontal
212.0	-37.23	1.61	15.68	-23.16	-13	-10.16	Vertical
266.4	-42.74	1.59	17.52	-26.82	-13	-13.82	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-50.02	2.82	27.43	-25.41	-13	-12.41	Horizontal
1696.6	-50.80	2.82	27.43	-26.19	-13	-13.19	Vertical
2544.9	-51.85	2.92	27.74	-27.03	-13	-14.03	Vertical
2544.9	-53.35	2.92	27.74	-28.53	-13	-15.53	Horizontal
211.8	-34.58	1.69	16.67	-19.59	-13	-6.59	Vertical
449.9	-38.05	1.70	17.18	-22.57	-13	-9.57	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	-50.73	2.78	27.50	-26.01	-13	-13.01	Horizontal
1658.0	-50.47	2.78	27.50	-25.75	-13	-12.75	Vertical
2487.0	-53.26	2.90	27.80	-28.36	-13	-15.36	Vertical
2487.0	-50.77	2.90	27.80	-25.87	-13	-12.87	Horizontal
188.6	-42.43	1.71	15.57	-28.57	-13	-15.57	Vertical
306.9	-34.11	1.34	16.40	-19.05	-13	-6.05	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-48.26	2.80	27.48	-23.58	-13	-10.58	Horizontal
1673.0	-50.72	2.80	27.48	-26.04	-13	-13.04	Vertical
2509.5	-50.96	2.91	27.70	-26.17	-13	-13.17	Vertical
2509.5	-51.85	2.91	27.70	-27.06	-13	-14.06	Horizontal
202.2	-39.06	1.44	17.04	-23.46	-13	-10.46	Vertical
264.2	-41.82	1.76	17.62	-25.96	-13	-12.96	Horizontal
Test Results for High Channel 844MHz							
1688.0	-46.66	2.82	27.43	-22.05	-13	-9.05	Horizontal
1688.0	-52.14	2.82	27.43	-27.53	-13	-14.53	Vertical
2532.0	-52.36	2.92	27.74	-27.54	-13	-14.54	Vertical
2532.0	-52.47	2.92	27.74	-27.65	-13	-14.65	Horizontal
198.5	-34.22	1.74	17.70	-18.26	-13	-5.26	Vertical
304.3	-41.34	1.41	17.46	-25.28	-13	-12.28	Horizontal

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

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

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

9.4 LTE BAND 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	-45.28	2.60	27.20	-20.68	-13	-7.68	Horizontal
1399.4	-44.57	2.60	27.20	-19.97	-13	-6.97	Vertical
2099.1	-47.67	2.85	27.54	-22.98	-13	-9.98	Vertical
2099.1	-51.02	2.85	27.54	-26.33	-13	-13.33	Horizontal
208.0	-38.82	1.49	17.78	-22.53	-13	-9.53	Vertical
432.3	-38.19	1.36	17.33	-22.22	-13	-9.22	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-53.38	2.61	27.28	-28.71	-13	-15.71	Horizontal
1415.0	-53.07	2.61	27.28	-28.40	-13	-15.40	Vertical
2122.5	-48.94	2.87	27.59	-24.22	-13	-11.22	Vertical
2122.5	-53.28	2.87	27.59	-28.56	-13	-15.56	Horizontal
211.0	-34.14	1.73	15.74	-20.13	-13	-7.13	Vertical
417.7	-41.83	1.62	15.79	-27.66	-13	-14.66	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-50.58	2.63	27.28	-25.93	-13	-12.93	Horizontal
1430.6	-45.41	2.63	27.28	-20.76	-13	-7.76	Vertical
2145.9	-47.74	2.88	27.60	-23.02	-13	-10.02	Vertical
2145.9	-52.67	2.88	27.60	-27.95	-13	-14.95	Horizontal
187.8	-36.67	1.61	18.00	-20.28	-13	-7.28	Vertical
397.6	-39.86	1.45	15.49	-25.83	-13	-12.83	Horizontal

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

Test Results for Low Channel 704MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1408.0	-52.99	2.61	27.26	-28.34	-13	-15.34	Horizontal
1408.0	-46.73	2.61	27.26	-22.08	-13	-9.08	Vertical
2112.0	-49.15	2.87	27.58	-24.44	-13	-11.44	Vertical
2112.0	-52.73	2.87	27.58	-28.02	-13	-15.02	Horizontal
195.5	-40.65	1.31	16.97	-24.99	-13	-11.99	Vertical
309.2	-34.99	1.65	16.70	-19.94	-13	-6.94	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-44.67	2.61	27.28	-20.00	-13	-7.00	Horizontal
1415.0	-44.65	2.61	27.28	-19.98	-13	-6.98	Vertical
2122.5	-47.56	2.87	27.59	-22.84	-13	-9.84	Vertical
2122.5	-50.33	2.87	27.59	-25.61	-13	-12.61	Horizontal
185.0	-42.91	1.72	17.99	-26.64	-13	-13.64	Vertical
271.3	-40.50	1.73	17.94	-24.29	-13	-11.29	Horizontal
Test Results for High Channel 711MHz							
1422.0	-46.49	2.62	27.28	-21.83	-13	-8.83	Horizontal
1422.0	-51.97	2.62	27.28	-27.31	-13	-14.31	Vertical
2133.0	-48.98	2.87	27.60	-24.25	-13	-11.25	Vertical
2133.0	-52.95	2.87	27.60	-28.22	-13	-15.22	Horizontal
179.4	-42.33	1.58	15.93	-27.98	-13	-14.98	Vertical
302.3	-36.82	1.36	15.59	-22.59	-13	-9.59	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 13

QPSK EIRP POWER FOR LTE BAND 13 (5MHZ BANDWIDTH)

Test Results for Low Channel 779.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1559.0	-67.82	2.61	27.28	-43.15	-40	-3.15	Horizontal
1559.0	-73.52	2.61	27.28	-48.85	-40	-8.85	Vertical
2338.5	-69.49	2.87	27.59	-44.77	-13	-31.77	Vertical
2338.5	-68.26	2.87	27.59	-43.54	-13	-30.54	Horizontal
202.2	-72.81	1.71	16.15	-58.37	-13	-45.37	Vertical
303.2	-71.89	1.41	17.32	-55.98	-13	-42.98	Horizontal
Test Results For Mid Channel 782MHz							
1564.0	-67.37	2.62	27.30	-42.69	-40	-2.69	Horizontal
1564.0	-68.45	2.62	27.30	-43.77	-40	-3.77	Vertical
2346.0	-68.56	2.87	27.62	-43.81	-13	-30.81	Vertical
2346.0	-72.01	2.87	27.62	-47.26	-13	-34.26	Horizontal
188.7	-73.46	1.42	15.25	-59.64	-13	-46.64	Vertical
384.1	-70.72	1.36	17.19	-54.89	-13	-41.89	Horizontal
Test Results for High Channel 784.5MHz							
1569.0	-73.30	2.66	27.28	-48.68	-40	-8.68	Horizontal
1569.0	-75.88	2.66	27.28	-51.26	-40	-11.26	Vertical
2353.5	-71.80	2.88	27.60	-47.08	-13	-34.08	Vertical
2353.5	-70.35	2.88	27.60	-45.63	-13	-32.63	Horizontal
181.8	-69.24	1.32	17.29	-53.27	-13	-40.27	Vertical
456.5	-74.11	1.72	16.89	-58.94	-13	-45.94	Horizontal

QPSK EIRP POWER FOR LTE BAND 13 (10MHZ BANDWIDTH)

Test Results for Channel 782MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1564.0	-72.25	2.62	27.30	-47.57	-40	-7.57	Horizontal
1564.0	-72.58	2.62	27.30	-47.90	-40	-7.90	Vertical
2346.0	-73.63	2.87	27.62	-48.88	-13	-35.88	Vertical
2346.0	-67.06	2.87	27.62	-42.31	-13	-29.31	Horizontal
194.1	-69.20	1.35	16.91	-53.64	-13	-40.64	Vertical
429.7	-70.61	1.62	16.31	-55.92	-13	-42.92	Horizontal

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

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

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

9.6 LTE BAND 14

QPSK EIRP POWER FOR LTE BAND 14 (5MHZ BANDWIDTH)

Test Results for Low Channel 790.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1581.0	-76.64	2.63	27.28	-51.99	-40	-11.99	Horizontal
1581.0	-73.01	2.63	27.28	-48.36	-40	-8.36	Vertical
2371.5	-72.31	2.89	27.59	-47.61	-13	-34.61	Vertical
2371.5	-69.17	2.89	27.59	-44.47	-13	-31.47	Horizontal
181.8	-71.64	1.71	16.15	-57.20	-13	-44.20	Vertical
237.2	-73.32	1.41	17.32	-57.41	-13	-44.41	Horizontal
Test Results for Mid Channel 793MHz							
1586.0	-71.22	2.63	27.30	-46.55	-40	-6.55	Horizontal
1586.0	-76.37	2.63	27.30	-51.70	-40	-11.70	Vertical
2379.0	-74.66	2.91	27.62	-49.95	-13	-36.95	Vertical
2379.0	-74.21	2.91	27.62	-49.50	-13	-36.50	Horizontal
202.5	-67.33	1.42	15.25	-53.51	-13	-40.51	Vertical
273.0	-71.84	1.36	17.19	-56.01	-13	-43.01	Horizontal
Test Results for High Channel 795.5MHz							
1591.0	-77.99	2.66	27.28	-53.37	-40	-13.37	Horizontal
1591.0	-75.64	2.66	27.28	-51.02	-40	-11.02	Vertical
2386.5	-67.24	2.91	27.60	-42.55	-13	-29.55	Vertical
2386.5	-70.58	2.91	27.60	-45.89	-13	-32.89	Horizontal
186.5	-68.71	1.32	17.29	-52.74	-13	-39.74	Vertical
269.2	-72.40	1.72	16.89	-57.23	-13	-44.23	Horizontal

QPSK EIRP POWER FOR LTE BAND 14 (10MHZ BANDWIDTH)

Test Results for Channel 793MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1586.0	-74.48	2.63	27.30	-49.81	-40	-9.81	Horizontal
1586.0	-67.38	2.63	27.30	-42.71	-40	-2.71	Vertical
2379.0	-72.41	2.91	27.62	-47.70	-13	-34.70	Vertical
2379.0	-73.73	2.91	27.62	-49.02	-13	-36.02	Horizontal
176.0	-71.48	1.35	16.91	-55.92	-13	-42.92	Vertical
450.7	-72.53	1.62	16.31	-57.84	-13	-44.84	Horizontal

9.7 LTE BAND 66

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

Test Results for Low Channel 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-63.10	3.84	35.81	-31.13	-13	-18.13	Horizontal
3421.4	-64.96	3.84	35.81	-32.99	-13	-19.99	Vertical
5132.1	-60.78	5.18	36.85	-29.11	-13	-16.11	Vertical
5132.1	-59.41	5.18	36.85	-27.74	-13	-14.74	Horizontal
206.9	-49.70	1.56	17.97	-33.29	-13	-20.29	Vertical
301.0	-46.51	1.33	15.11	-32.73	-13	-19.73	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-63.25	3.85	35.82	-31.28	-13	-18.28	Horizontal
3490.0	-61.70	3.85	35.82	-29.73	-13	-16.73	Vertical
5235.0	-63.69	5.21	36.85	-32.05	-13	-19.05	Vertical
5235.0	-63.22	5.21	36.85	-31.58	-13	-18.58	Horizontal
209.9	-50.16	1.77	16.17	-35.75	-13	-22.75	Vertical
263.2	-48.24	1.63	15.21	-34.66	-13	-21.66	Horizontal
Test Results for High Channel 1779.3MHz							
3558.6	-63.33	3.86	35.83	-31.36	-13	-18.36	Horizontal
3558.6	-63.12	3.86	35.83	-31.15	-13	-18.15	Vertical
5337.9	-62.02	5.24	36.87	-30.39	-13	-17.39	Vertical
5337.9	-64.24	5.24	36.87	-32.61	-13	-19.61	Horizontal
210.9	-50.68	1.58	17.56	-34.70	-13	-21.70	Vertical
390.9	-52.26	1.45	16.58	-37.13	-13	-24.13	Horizontal

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

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-64.44	3.84	35.82	-32.46	-13	-19.46	Horizontal
3440.0	-62.97	3.84	35.82	-30.99	-13	-17.99	Vertical
5160.0	-60.60	5.18	36.86	-28.92	-13	-15.92	Vertical
5160.0	-60.35	5.18	36.86	-28.67	-13	-15.67	Horizontal
184.5	-51.65	1.56	15.76	-37.45	-13	-24.45	Vertical
236.9	-50.55	1.33	15.44	-36.44	-13	-23.44	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-63.70	3.85	35.82	-31.73	-13	-18.73	Horizontal
3490.0	-64.50	3.85	35.82	-32.53	-13	-19.53	Vertical
5235.0	-60.02	5.21	36.85	-28.38	-13	-15.38	Vertical
5235.0	-64.70	5.21	36.85	-33.06	-13	-20.06	Horizontal
198.6	-45.26	1.77	16.84	-30.18	-13	-17.18	Vertical
403.6	-50.02	1.63	17.64	-34.01	-13	-21.01	Horizontal
Test Results for High Channel 1770MHz							
3540.0	-64.95	3.86	35.83	-32.98	-13	-19.98	Horizontal
3540.0	-61.38	3.86	35.83	-29.41	-13	-16.41	Vertical
5310.0	-61.19	5.24	36.88	-29.55	-13	-16.55	Vertical
5310.0	-63.63	5.24	36.88	-31.99	-13	-18.99	Horizontal
209.3	-49.07	1.58	16.84	-33.80	-13	-20.80	Vertical
353.0	-46.92	1.45	17.64	-30.73	-13	-17.73	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.

9.8 LTE BAND 71

QPSK EIRP POWER FOR LTE BAND 71 (5MHZ BANDWIDTH)

Test Results for Low Channel 665.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1331.0	-59.05	2.16	35.81	-25.40	-13	-12.40	Horizontal
1331.0	-60.23	2.16	35.81	-26.58	-13	-13.58	Vertical
1996.5	-64.57	2.89	36.85	-30.61	-13	-17.61	Vertical
1996.5	-63.78	2.89	36.85	-29.82	-13	-16.82	Horizontal
203.7	-52.02	1.56	17.97	-35.61	-13	-22.61	Vertical
335.1	-44.49	1.33	15.11	-30.71	-13	-17.71	Horizontal
Test Results for Mid Channel 680.5MHz							
1361.0	-63.51	2.17	35.82	-29.86	-13	-16.86	Horizontal
1361.0	-64.66	2.17	35.82	-31.01	-13	-18.01	Vertical
2041.5	-62.82	2.90	36.85	-28.87	-13	-15.87	Vertical
2041.5	-63.62	2.90	36.85	-29.67	-13	-16.67	Horizontal
187.5	-54.61	1.77	16.17	-40.20	-13	-27.20	Vertical
319.7	-45.20	1.63	15.21	-31.62	-13	-18.62	Horizontal
Test Results for High Channel 695.5MHz							
1391.0	-64.37	2.19	35.83	-30.73	-13	-17.73	Horizontal
1391.0	-60.43	2.19	35.83	-26.79	-13	-13.79	Vertical
2086.5	-64.25	2.95	36.87	-30.33	-13	-17.33	Vertical
2086.5	-61.21	2.95	36.87	-27.29	-13	-14.29	Horizontal
201.9	-53.54	1.58	17.56	-37.56	-13	-24.56	Vertical
358.8	-48.76	1.45	16.58	-33.63	-13	-20.63	Horizontal

QPSK EIRP POWER FOR LTE BAND 71 (20MHZ BANDWIDTH)

Test Results for Low Channel 673MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1346.0	-59.10	2.16	35.82	-25.44	-13	-12.44	Horizontal
1346.0	-64.47	2.16	35.82	-30.81	-13	-17.81	Vertical
2019.0	-60.62	2.89	36.86	-26.65	-13	-13.65	Vertical
2019.0	-61.05	2.89	36.86	-27.08	-13	-14.08	Horizontal
204.5	-50.48	1.56	15.76	-36.28	-13	-23.28	Vertical
444.9	-49.04	1.33	15.44	-34.93	-13	-21.93	Horizontal
Test Results for Mid Channel 683MHz							
1366.0	-63.42	2.17	35.82	-29.77	-13	-16.77	Horizontal
1366.0	-60.79	2.17	35.82	-27.14	-13	-14.14	Vertical
2049.0	-60.84	2.90	36.85	-26.89	-13	-13.89	Vertical
2049.0	-62.90	2.90	36.85	-28.95	-13	-15.95	Horizontal
190.8	-52.60	1.77	16.84	-37.52	-13	-24.52	Vertical
337.6	-54.90	1.63	17.64	-38.89	-13	-25.89	Horizontal
Test Results for High Channel 688MHz							
1376.0	-61.70	2.19	35.83	-28.06	-13	-15.06	Horizontal
1376.0	-62.44	2.19	35.83	-28.80	-13	-15.80	Vertical
2064.0	-61.74	2.95	36.88	-27.81	-13	-14.81	Vertical
2064.0	-61.77	2.95	36.88	-27.84	-13	-14.84	Horizontal
192.5	-46.37	1.58	16.84	-31.10	-13	-18.10	Vertical
247.1	-49.78	1.45	17.64	-33.59	-13	-20.59	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°C to $+50^{\circ}\text{C}$
- ☐ Voltage = low voltage, DC 3.4V, Normal, DC 38V and High voltage, DC 4.2V.

Frequency Stability vs Temperature:

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

Frequency Stability vs Voltage:

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

MODES TESTED

LTE Band 2/4/5/12/13/14/66/71

RESULTS

See the following pages.

10.1 LTE BAND 2

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	1880	12.9	0.006852	2.5
3.8	1880	13.7	0.007261	2.5
4.2	1880	13.6	0.007236	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	12.9	0.006846	2.5
Extreme (50C)	1880	11.3	0.006033	2.5
Extreme (40C)	1880	14.0	0.007439	2.5
Extreme (30C)	1880	13.4	0.007129	2.5
Extreme (10C)	1880	13.7	0.007280	2.5
Extreme (0C)	1880	12.3	0.006553	2.5
Extreme (-10C)	1880	13.1	0.006976	2.5
Extreme (-20C)	1880	14.6	0.007751	2.5
Extreme (-30C)	1880	15.2	0.008059	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	1880	9.5	0.005038	2.5
3.8	1880	8.8	0.004705	2.5
4.2	1880	8.5	0.004502	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	9.9	0.005251	2.5
Extreme (50C)	1880	8.5	0.004538	2.5
Extreme (40C)	1880	8.6	0.004548754	2.5
Extreme (30C)	1880	9.0	0.004793506	2.5
Extreme (10C)	1880	9.0	0.004781047	2.5
Extreme (0C)	1880	7.7	0.004091101	2.5
Extreme (-10C)	1880	9.2	0.004879099	2.5
Extreme (-20C)	1880	9.0	0.004781476	2.5
Extreme (-30C)	1880	8.4	0.004469483	2.5

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

10.2 LTE BAND 4

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	1732.5	8.7	0.005030	2.5
3.8	1732.5	9.2	0.005297	2.5
4.2	1732.5	8.7	0.005047	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.2	0.004718	2.5
Extreme (50C)	1732.5	9.2	0.005316	2.5
Extreme (40C)	1732.5	7.9	0.004548	2.5
Extreme (30C)	1732.5	6.1	0.003520	2.5
Extreme (10C)	1732.5	7.2	0.004179	2.5
Extreme (0C)	1732.5	9.3	0.005349	2.5
Extreme (-10C)	1732.5	8.4	0.004867	2.5
Extreme (-20C)	1732.5	6.5	0.003739	2.5
Extreme (-30C)	1732.5	7.9	0.004565	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	1732.5	9.5	0.005489	2.5
3.8	1732.5	8.9	0.005116	2.5
4.2	1732.5	8.4	0.004857	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	10.1	0.005829	2.5
Extreme (50C)	1732.5	8.7	0.005030	2.5
Extreme (40C)	1732.5	8.6	0.004949	2.5
Extreme (30C)	1732.5	9.3	0.005372	2.5
Extreme (10C)	1732.5	9.0	0.005172	2.5
Extreme (0C)	1732.5	7.7	0.004472	2.5
Extreme (-10C)	1732.5	9.2	0.005308	2.5
Extreme (-20C)	1732.5	9.0	0.005168	2.5
Extreme (-30C)	1732.5	8.4	0.004865	2.5

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

10.3 LTE BAND 5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	836.5	6.1	0.007337	2.5
3.8	836.5	7.1	0.008485	2.5
4.2	836.5	4.4	0.005255	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	5.6	0.006752	2.5
Extreme (50C)	836.5	5.7	0.006848	2.5
Extreme (40C)	836.5	6.4	0.007676	2.5
Extreme (30C)	836.5	6.6	0.007936	2.5
Extreme (10C)	836.5	4.9	0.005913	2.5
Extreme (0C)	836.5	4.9	0.005849	2.5
Extreme (-10C)	836.5	5.3	0.006281	2.5
Extreme (-20C)	836.5	5.8	0.006978	2.5
Extreme (-30C)	836.5	5.9	0.007109	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	836.5	5.4	0.006400	2.5
3.8	836.5	6.7	0.007992	2.5
4.2	836.5	4.7	0.005584	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.4	0.007594	2.5
Extreme (50C)	836.5	6.2	0.007457	2.5
Extreme (40C)	836.5	5.9	0.007074	2.5
Extreme (30C)	836.5	6.8	0.008071	2.5
Extreme (10C)	836.5	5.6	0.006645	2.5
Extreme (0C)	836.5	4.8	0.005776	2.5
Extreme (-10C)	836.5	5.3	0.006374	2.5
Extreme (-20C)	836.5	6.2	0.007407	2.5
Extreme (-30C)	836.5	6.6	0.007896	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]
3.4	707.5	9.1	0.012867	2.5
3.8	707.5	10.3	0.014512	2.5
4.2	707.5	8.7	0.012348	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	8.6	0.012127	2.5
Extreme (50C)	707.5	7.5	0.010535	2.5
Extreme (40C)	707.5	7.5	0.010598	2.5
Extreme (30C)	707.5	7.9	0.011145	2.5
Extreme (10C)	707.5	7.5	0.010671	2.5
Extreme (0C)	707.5	8.7	0.012309	2.5
Extreme (-10C)	707.5	7.9	0.011186	2.5
Extreme (-20C)	707.5	9.4	0.013258	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]
3.4	707.5	7.4	0.010510	2.5
3.8	707.5	8.1	0.011510	2.5
4.2	707.5	7.1	0.010014	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	8.7	0.012362	2.5
Extreme (50C)	707.5	8.8	0.012467	2.5
Extreme (40C)	707.5	8.6	0.012134	2.5
Extreme (30C)	707.5	8.3	0.011669	2.5
Extreme (10C)	707.5	8.6	0.012209	2.5
Extreme (0C)	707.5	7.3	0.010363	2.5
Extreme (-10C)	707.5	7.1	0.009981	2.5
Extreme (-20C)	707.5	9.0	0.012683	2.5
Extreme (-30C)	707.5	8.3	0.011729	2.5

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

10.5 LTE BAND 13

Band 13 QPSK, (10MHz BANDWIDTH RB size 50 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	782.0	12.6	0.016080	2.5
3.8	782.0	13.6	0.017400	2.5
4.2	782.0	13.2	0.016926	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	782.0	14.7	0.018773	2.5
Extreme (50C)	782.0	13.5	0.017256	2.5
Extreme (40C)	782.0	15.3	0.019599	2.5
Extreme (30C)	782.0	13.8	0.017709	2.5
Extreme (10C)	782.0	14.0	0.017937	2.5
Extreme (0C)	782.0	13.8	0.017672	2.5
Extreme (-10C)	782.0	13.9	0.017751	2.5
Extreme (-20C)	782.0	13.6	0.017396	2.5
Extreme (-30C)	782.0	14.0	0.017887	2.5

Band 13 16QAM, (10MHz BANDWIDTH RB size 50 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	782.0	12.7	0.016181	2.5
3.8	782.0	13.5	0.017251	2.5
4.2	782.0	13.8	0.017635	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	782.0	13.1	0.016779	2.5
Extreme (50C)	782.0	11.4	0.014592	2.5
Extreme (40C)	782.0	13.9	0.017774	2.5
Extreme (30C)	782.0	13.6	0.017428	2.5
Extreme (10C)	782.0	14.1	0.018092	2.5
Extreme (0C)	782.0	12.5	0.015931	2.5
Extreme (-10C)	782.0	13.3	0.017041	2.5
Extreme (-20C)	782.0	14.3	0.018310	2.5
Extreme (-30C)	782.0	14.4	0.018430	2.5

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

10.6 LTE BAND 14

Band 14 QPSK, (10MHz BANDWIDTH RB size 50 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	793.0	9.8	0.013784	2.5
3.8	793.0	8.8	0.012334	2.5
4.2	793.0	8.3	0.011725	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	793.0	10.0	0.014091	2.5
Extreme (50C)	793.0	9.4	0.013178	2.5
Extreme (40C)	793.0	7.6	0.010729	2.5
Extreme (30C)	793.0	9.1	0.012827	2.5
Extreme (10C)	793.0	8.8	0.012448	2.5
Extreme (0C)	793.0	7.8	0.011046	2.5
Extreme (-10C)	793.0	9.3	0.013151	2.5
Extreme (-20C)	793.0	8.4	0.011899	2.5
Extreme (-30C)	793.0	8.0	0.011265	2.5

Band 14 16QAM, (10MHz BANDWIDTH RB size 50 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	793.0	10.5	0.014719	2.5
3.8	793.0	8.5	0.011942	2.5
4.2	793.0	8.1	0.011436	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	793.0	8.9	0.012551	2.5
Extreme (50C)	793.0	9.4	0.013176	2.5
Extreme (40C)	793.0	8.0	0.011235	2.5
Extreme (30C)	793.0	8.5	0.012003	2.5
Extreme (10C)	793.0	7.7	0.010846	2.5
Extreme (0C)	793.0	8.1	0.011367	2.5
Extreme (-10C)	793.0	9.5	0.013450	2.5
Extreme (-20C)	793.0	9.0	0.012626	2.5
Extreme (-30C)	793.0	8.0	0.011225	2.5

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

10.7 LTE BAND 66

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	1745	6.8	0.003910	2.5
3.8	1745	6.5	0.003751	2.5
4.2	1745	7.4	0.004245	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	5.8	0.003333	2.5
Extreme (50C)	1745	8.0	0.004575	2.5
Extreme (40C)	1745	6.6	0.003763	2.5
Extreme (30C)	1745	6.5	0.003733	2.5
Extreme (10C)	1745	7.5	0.004306	2.5
Extreme (0C)	1745	6.6	0.003774	2.5
Extreme (-10C)	1745	5.2	0.002977	2.5
Extreme (-20C)	1745	6.8	0.003886	2.5
Extreme (-30C)	1745	5.1	0.002932	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	1745	8.1	0.004618	2.5
3.8	1745	7.6	0.004357	2.5
4.2	1745	10.0	0.005709	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	8.9	0.005101	2.5
Extreme (50C)	1745	7.7	0.004430	2.5
Extreme (40C)	1745	8.5	0.004879	2.5
Extreme (30C)	1745	8.4	0.004807	2.5
Extreme (10C)	1745	8.4	0.004791	2.5
Extreme (0C)	1745	6.5	0.003730	2.5
Extreme (-10C)	1745	8.4	0.004815	2.5
Extreme (-20C)	1745	8.7	0.005007	2.5
Extreme (-30C)	1745	5.6	0.003190	2.5

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

10.8 LTE BAND 71

Band 71 QPSK, (20MHz BANDWIDTH RB size 100 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	1745	6.3	0.003614	2.5
3.8	1745	6.7	0.003819	2.5
4.2	1745	7.1	0.004057	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	5.1	0.002907	2.5
Extreme (50C)	1745	7.3	0.004209	2.5
Extreme (40C)	1745	6.3	0.003603	2.5
Extreme (30C)	1745	6.6	0.003764	2.5
Extreme (10C)	1745	7.4	0.004248	2.5
Extreme (0C)	1745	6.4	0.003690	2.5
Extreme (-10C)	1745	5.5	0.003145	2.5
Extreme (-20C)	1745	6.7	0.003823	2.5
Extreme (-30C)	1745	5.7	0.003253	2.5

Band 71 16QAM, (20MHz BANDWIDTH RB size 100 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	1745	8.2	0.004722	2.5
3.8	1745	7.2	0.004114	2.5
4.2	1745	9.4	0.005375	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	9.1	0.005217	2.5
Extreme (50C)	1745	8.0	0.004601	2.5
Extreme (40C)	1745	8.7	0.004988	2.5
Extreme (30C)	1745	7.7	0.004406	2.5
Extreme (10C)	1745	8.1	0.004620	2.5
Extreme (0C)	1745	6.3	0.003598	2.5
Extreme (-10C)	1745	8.8	0.005017	2.5
Extreme (-20C)	1745	8.4	0.004823	2.5
Extreme (-30C)	1745	5.1	0.002934	2.5

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

11. Peak-to-Average Ratio

11.1 Description of the PAR Measurement

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

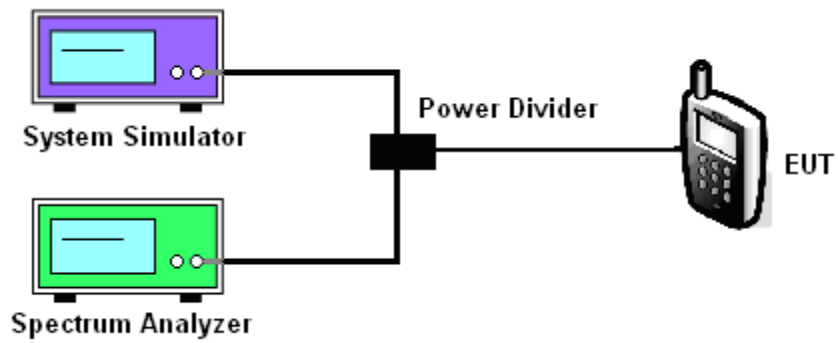
11.2 Measuring Instruments

See list of measuring instruments of this test report.

11.3 Test Procedures

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

11.4 Test Setup



MODES TESTED

LTE Band 2/4/5/12/13/14/66/71

Test data reference attachment.

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