

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

FCC ID: 2AAE9CAPHG58

Product: Mobile Phone
Trade Mark: CellAllure
Model Number: Earn2 CL
Family Model: N/A
Report No.: STR191009001006E

Prepared for

GNJ Manufacturing Inc.
5811 West Hallandale Beach Blvd. West Park, FL 33023 Hallandale,
FL 33023, United States

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.: +86-755-6115 6588 Fax.: +86-755-6115 6599
Website: <http://www.ntek.org.cn>

TEST RESULT CERTIFICATION

Applicant's name : GNJ Manufacturing Inc.
Address : 5811 West Hallandale Beach Blvd. West Park, FL 33023 Hallandale, FL 33023, United States
Manufacturer's Name : GNJ Manufacturing Inc. China
Address : 4/F, Building A, No.45 Industrial Park, ZhongKai HiTech Zone, HuiZhou City, GuangDong Province. 516006, China
Product name : Mobile Phone
Model and/or type reference : Earn2 CL
Family Model : N/A
Standards : FCC CFR 47 Part 22H, Part 24E, Part 27
Test procedure : ANSI C63.26:2015
ANSI/TIA-603-E-2016

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

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 : 10 Oct. 2019 ~ 07 Nov. 2019
Date of Issue : 08 Nov. 2019
Test Result : Pass

Testing Engineer : [Signature: Allen Liu]
(Allen Liu)
Technical Manager : [Signature: Jason Chen]
(Jason Chen)
Authorized Signatory : [Signature: Sam Chen]
(Sam Chen)

TABLE OF CONTENTS

1. GENERAL INFORMATION	5
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
MEASUREMENT UNCERTAINTY	6
1.5 SPECIAL ACCESSORIES.....	6
1.6 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.....	14
7.1 MEASUREMENT METHOD	14
8. RADIATED MEASUREMENT.....	15
8.1. RADIATED POWER (ERP & EIRP).....	15
8.2 LTE BAND 2	16
8.3 LTE BAND 4	20
8.4 LTE BAND 5	24

8.5 LTE BAND 7 26

8.6 LTE BAND 12 28

8.7 LTE BAND 17 30

9. SPURIOUS RADIATION EMISSION 32

9.1 LTE BAND 2 34

9.2 LTE BAND 4 35

9.3 LTE BAND 5 36

9.4 LTE BAND 7 37

9.5 LTE BAND 12 38

9.6 LTE BAND 17 39

10. FREQUENCY STABILITY 41

10.1 LTE BAND 2 42

10.2 LTE BAND 4 44

10.3 LTE BAND 5 46

10.4 LTE BAND 7 48

10.5 LTE BAND 12 50

10.6 LTE BAND 17 52

11. PEAK-TO-AVERAGE RATIO 54

11.1 Description of the PAR Measurement 54

11.2 Measuring Instruments 54

11.3 Test Procedures 54

11.4 Test Setup 54

1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	Mobile Phone
Trade Mark	CellAllure
Model Name	Earn2 CL
Family Model	N/A
Model Difference	N/A
FCC ID:	2AAE9CAPHG58
Frequency Bands:	U.S. Bands: <input checked="" type="checkbox"/> LTE FDD Band 2,4,5,7,12,17
Frequency Range:	LTE FDD Band 2 Uplink: 1850MHz-1910MHz, Downlink: 1930MHz-1990MHz; LTE FDD Band 4 Uplink: 1710MHz-1755MHz, Downlink: 2110MHz-2155MHz; LTE FDD Band 5 Uplink: 824MHz-849MHz, Downlink: 869MHz-894MHz; LTE-FDD Band 7 Uplink: 2500MHz-2570MHz, Downlink: 2620MHz-2690MHz; LTE FDD Band 12 Uplink: 699MHz-716MHz, Downlink: 729MHz-746MHz; LTE FDD Band 17 Uplink: 704MHz-716MHz, Downlink: 734MHz-746MHz;
Type of Modulation:	QPSK/16QAM
SIM Card	SIM 1 and SIM 2 is a chipset unit and tested as a single chipset. The SIM 1 is chosen for test.
Antenna:	PIFA Antenna
Antenna gain:	Band 2: -4.12dBi; Band 4: -3.18dBi; Band 5: -3.25dBi; Band 7: -3.84dBi; Band 12: -3.1dBi; Band 17: -3.0dBi
Power Supply:	DC 3.8V/2400mAh from Battery or DC 5V from USB Port.
Adapter:	Model: 853-5010 Input: 100-240V~50/60Hz 150mA Output: 5V---1A
Extreme Vol. Limits:	DC 3.4V to DC 4.4V (Nominal DC 3.8V) (Note 1)
HW Version	D3907D3_MB_V1.1
SW Version	Cellallure_D3907_Earn2 CL
** Note1: The High Voltage DC 4.4V 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: 2AAE9CAPHG58** filing to comply with the FCC Part 22H&24E &27.

1.3 TEST METHODOLOGY

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

1.4 TEST FACILITY

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

ShenZhen NTEK Testing Technology Co., Ltd.

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

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

FCC Registration No.:463705

IC Registration No.:9270A-1,

CNAS Registration No.:L5516

MEASUREMENT UNCERTAINTY

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

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

1.5 SPECIAL ACCESSORIES

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

1.6 WORST-CASE CONFIGURATION AND MODE

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

The device has LTE Bands of: Band 2, Band 4, Band 5, Band 7, Band 12, Band 17.

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

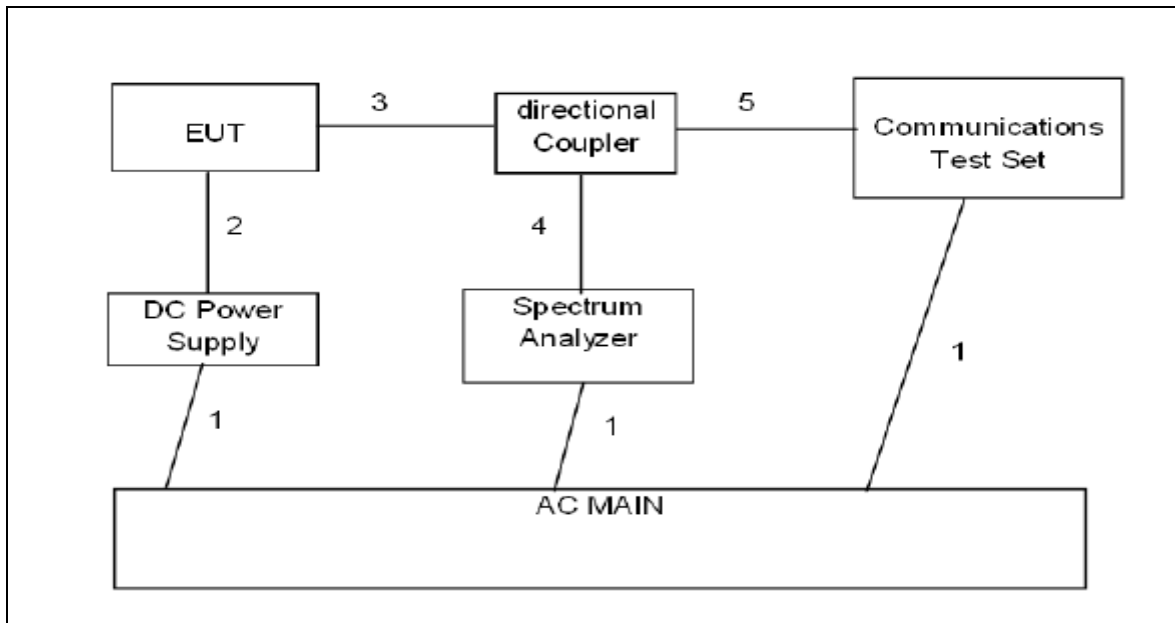
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Mobile Phone	Earn2 CL	FCC ID: 2AAE9CAPHG58	EUT

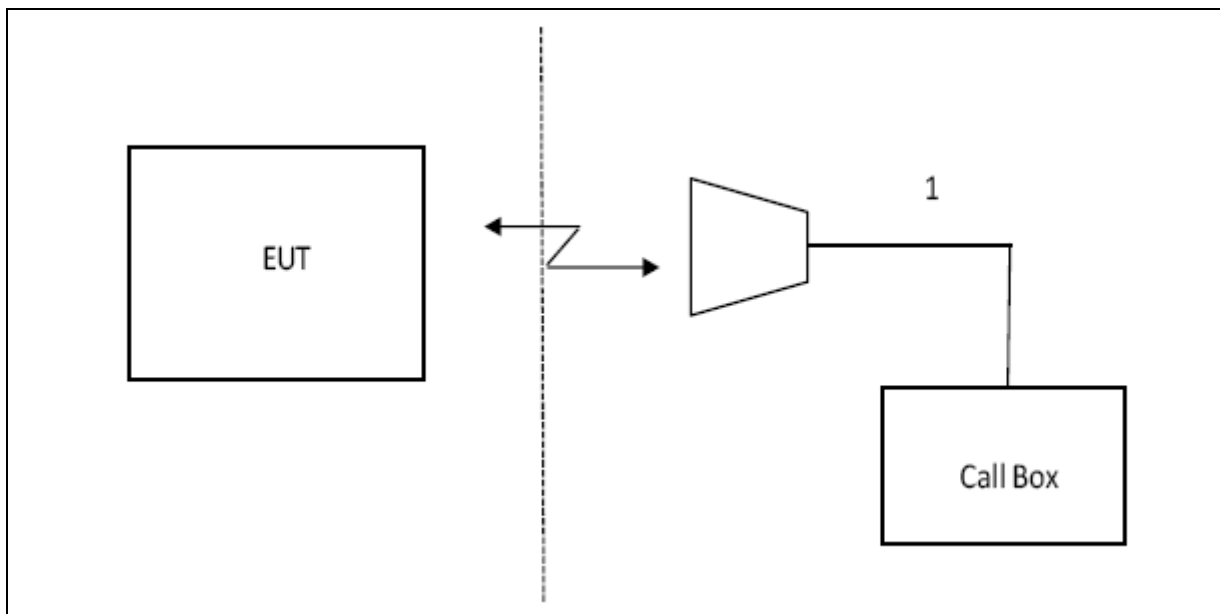
*Note: All the accessories have been used during the test.
the following “EUT” in setup diagram means EUT system.*

2.4 TEST SETUP

CONDUCTED SETUP DIAGRAM FOR TESTS



RADIATED SETUP DIAGRAM FOR TESTS



3. TEST AND MEASUREMENT EQUIPMENT

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

NAME OF EQUIPMENT	MANUFACTURER	MODEL	SERIAL NUMBER	NEXT CAL. DATE
SPECTRUM ANALYZER	AGILENT	N9020A	MY49100060	2020.08.27
TEST RECEIVER	R&S	ESCI	A0304218	2020.05.12
COMMUNICATION TESTER	R&S	CMU200	117858	2020.05.12
COMMUNICATION TESTER	R&S	CMW500	148500	2020.05.12
TEST RECEIVER	R&S	ESPI	101318	2020.05.12
LISN	SCHWARZBECK	NSLK8127	A0304233	2020.05.12
CLIMATE CHAMBER	ALBATROSS	--	--	2020.05.12
Loop Antenna	ARA	PLA-1030/B	1029	2020.05.12
Biological Antenna	TESEQ	CBL6111D	31216	2020.05.12
Horn Antenna	EM	EM-AH-10180	2011071402	2020.05.12
DC Power Source	N/A	PS-6005D	20170402923	2020.05.12

4. OUTPUT POWER

4.1 OUTPUT POWER MEASUREMENT

LTE Measurement Procedure:

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

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

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

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

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

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

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

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

Test data reference attachment.

5. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

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

MODES TESTED

- LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 17

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: §22.359, §24.238,

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

(m)(4) For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees. Show citation box.

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 (704, 716, 824, 849, 1710 and 1755, 1850 and 1910MHz)

Set a marker to point the corresponding band edge frequency in each test case.

MODES TESTED

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

RESULTS

Test data reference attachment.

7. OUT OF BAND EMISSIONS

RULE PART(S)

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

LIMITS

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.

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
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 17

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 and §27.50

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.

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
LTE Band 4
LTE Band 5
LTE Band 7
LTE Band 12
LTE Band 17

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 (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)			
1.4MHz Band QPSK	1/Mid	1850.7	-3.06	3.76	28.24	21.42	138.744	Horizontal	Pass	
		1880	-2.80	3.91	28.22	21.51	141.559	Horizontal	Pass	
		1909.3	-2.81	3.93	28.20	21.46	139.930	Horizontal	Pass	
3.0MHz Band QPSK	1/Mid	1851.5	-3.06	3.77	28.23	21.40	138.028	Horizontal	Pass	
		1880	-2.93	3.91	28.24	21.40	138.189	Horizontal	Pass	
		1908.5	-2.85	3.94	28.25	21.46	139.975	Horizontal	Pass	
5.0MHz Band QPSK	1/Mid	1852.5	-3.20	3.77	28.31	21.34	136.260	Horizontal	Pass	
		1880	-2.91	3.91	28.22	21.40	138.187	Horizontal	Pass	
		1907.5	-3.01	3.94	28.20	21.25	133.287	Horizontal	Pass	
10.0MHz Band QPSK	1/Mid	1855	-3.17	3.79	28.33	21.37	137.039	Horizontal	Pass	
		1880	-2.80	3.95	28.22	21.47	140.150	Horizontal	Pass	
		1905	-2.70	3.97	28.19	21.52	141.855	Horizontal	Pass	
15.0MHz Band QPSK	1/Mid	1857.5	-2.92	3.79	28.34	21.63	145.685	Horizontal	Pass	
		1880	-2.64	3.95	28.22	21.63	145.509	Horizontal	Pass	
		1902.5	-2.55	3.97	28.18	21.66	146.437	Horizontal	Pass	
20.0MHz Band QPSK	1/Mid	1860	-3.12	3.81	28.35	21.42	138.644	Horizontal	Pass	
		1880	-2.89	3.96	28.22	21.37	136.932	Horizontal	Pass	
		1900	-2.59	4.00	28.16	21.57	143.655	Horizontal	Pass	
1.4MHz Band QPSK	1/Mid	1850.7	-3.10	3.76	28.24	21.38	137.522	Vertical	Pass	
		1880	-2.90	3.91	28.22	21.41	138.344	Vertical	Pass	
		1909.3	-2.91	3.93	28.20	21.36	136.915	Vertical	Pass	
3.0MHz Band QPSK	1/Mid	1851.5	-2.92	3.77	28.23	21.54	142.575	Vertical	Pass	
		1880	-2.77	3.91	28.24	21.56	143.145	Vertical	Pass	
		1908.5	-2.70	3.94	28.25	21.61	144.994	Vertical	Pass	
5.0MHz Band QPSK	1/Mid	1852.5	-3.12	3.77	28.31	21.42	138.654	Vertical	Pass	
		1880	-2.82	3.91	28.22	21.49	141.073	Vertical	Pass	
		1907.5	-2.99	3.94	28.20	21.27	134.025	Vertical	Pass	
10.0MHz Band	1/Mid	1855	-3.06	3.79	28.33	21.48	140.745	Vertical	Pass	
		1880	-2.85	3.95	28.22	21.42	138.696	Vertical	Pass	

QPSK		1905	-2.88	3.97	28.19	21.34	136.081	Vertical	Pass
15.0MHz z Band QPSK	1/Mid	1857.5	-3.03	3.79	28.34	21.52	142.067	Vertical	Pass
		1880	-2.78	3.95	28.22	21.49	140.782	Vertical	Pass
		1902.5	-2.50	3.97	28.18	21.71	148.196	Vertical	Pass
20.0MHz z Band QPSK	1/Mid	1860	-3.04	3.81	28.35	21.50	141.326	Vertical	Pass
		1880	-2.94	3.96	28.22	21.32	135.383	Vertical	Pass
		1900	-2.42	4.00	28.16	21.74	149.443	Vertical	Pass

Note:

SG Level= Signal generator output

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

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result					Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP		
							Average (mW)		
1.4MHz Band 16 QAM	1/Mid	1850.7	-3.48	3.76	28.24	21.00	125.751	Horizontal	Pass
		1880	-3.25	3.91	28.22	21.06	127.714	Horizontal	Pass
		1909.3	-3.19	3.93	28.20	21.08	128.281	Horizontal	Pass
3.0MHz Band 16 QAM	1/Mid	1851.5	-3.48	3.77	28.23	20.98	125.393	Horizontal	Pass
		1880	-3.44	3.91	28.24	20.89	122.879	Horizontal	Pass
		1908.5	-3.29	3.94	28.25	21.02	126.414	Horizontal	Pass
5.0MHz Band 16 QAM	1/Mid	1852.5	-3.57	3.77	28.31	20.97	124.891	Horizontal	Pass
		1880	-3.17	3.91	28.22	21.14	129.881	Horizontal	Pass
		1907.5	-3.29	3.94	28.20	20.97	125.143	Horizontal	Pass
10.0MHz Band 16 QAM	1/Mid	1855	-3.51	3.79	28.33	21.03	126.726	Horizontal	Pass
		1880	-3.19	3.95	28.22	21.08	128.357	Horizontal	Pass
		1905	-3.24	3.97	28.19	20.98	125.222	Horizontal	Pass
15.0MHz Band 16 QAM	1/Mid	1857.5	-3.57	3.79	28.34	20.98	125.417	Horizontal	Pass
		1880	-3.30	3.95	28.22	20.97	125.063	Horizontal	Pass
		1902.5	-3.21	3.97	28.18	21.00	125.986	Horizontal	Pass
20.0MHz Band 16 QAM	1/Mid	1860	-3.53	3.81	28.35	21.01	126.266	Horizontal	Pass
		1880	-3.16	3.96	28.22	21.10	128.800	Horizontal	Pass
		1900	-3.27	4.00	28.16	20.89	122.759	Horizontal	Pass
1.4MHz Band 16 QAM	1/Mid	1850.7	-3.42	3.76	28.24	21.06	127.520	Vertical	Pass
		1880	-3.35	3.91	28.22	20.96	124.782	Vertical	Pass
		1909.3	-3.14	3.93	28.20	21.13	129.659	Vertical	Pass
3.0MHz Band 16 QAM	1/Mid	1851.5	-3.50	3.77	28.23	20.96	124.834	Vertical	Pass
		1880	-3.43	3.91	28.24	20.90	123.161	Vertical	Pass
		1908.5	-3.27	3.94	28.25	21.04	127.165	Vertical	Pass
5.0MHz Band 16 QAM	1/Mid	1852.5	-3.52	3.77	28.31	21.02	126.573	Vertical	Pass
		1880	-3.37	3.91	28.22	20.94	124.260	Vertical	Pass
		1907.5	-3.16	3.94	28.20	21.10	128.951	Vertical	Pass
10.0MHz Band 16 QAM	1/Mid	1855	-3.68	3.79	28.33	20.86	121.813	Vertical	Pass
		1880	-3.37	3.95	28.22	20.90	123.056	Vertical	Pass
		1905	-3.46	3.97	28.19	20.76	118.998	Vertical	Pass
15.0MHz Band	1/Mid	1857.5	-3.69	3.79	28.34	20.86	121.826	Vertical	Pass
		1880	-3.34	3.95	28.22	20.93	123.978	Vertical	Pass

16 QAM		1902.5	-3.29	3.97	28.18	20.92	123.708	Vertical	Pass
20.0MH	1/Mid	1860	-3.48	3.81	28.35	21.06	127.573	Vertical	Pass
z Band		1880	-3.11	3.96	28.22	21.15	130.442	Vertical	Pass
16 QAM		1900	-3.15	4.00	28.16	21.01	126.314	Vertical	Pass

Note:

SG Level= Signal generator output

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

8.3 LTE BAND 4

Radiated Power (EIRP) for Band 4										
Mode	RB/RB SIZE	Frequency	Result						Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)			
1.4MHz Band QPSK	1/Mid	1710.7	-1.52	3.12	27.58	22.94	196.877	Horizontal	Pass	
		1732.5	-1.61	3.27	27.61	22.73	187.642	Horizontal	Pass	
		1754.3	-1.25	3.29	27.63	23.09	203.929	Horizontal	Pass	
3.0MHz Band QPSK	1/Mid	1711.5	-1.64	3.13	27.61	22.84	192.356	Horizontal	Pass	
		1732.5	-1.41	3.27	27.61	22.93	196.512	Horizontal	Pass	
		1753.5	-1.33	3.30	27.62	22.99	198.949	Horizontal	Pass	
5.0MHz Band QPSK	1/Mid	1712.5	-1.31	3.13	27.63	23.19	208.467	Horizontal	Pass	
		1732.5	-1.01	3.27	27.61	23.33	215.068	Horizontal	Pass	
		1752.5	-1.07	3.30	27.60	23.23	210.177	Horizontal	Pass	
10.0MHz Band QPSK	1/Mid	1715	-1.35	3.15	27.64	23.14	206.115	Horizontal	Pass	
		1732.5	-1.34	3.31	27.61	22.96	197.642	Horizontal	Pass	
		1750	-1.24	3.33	27.59	23.02	200.670	Horizontal	Pass	
15.0MHz Band QPSK	1/Mid	1717.5	-1.66	3.15	27.65	22.84	192.271	Horizontal	Pass	
		1732.5	-1.24	3.31	27.61	23.06	202.303	Horizontal	Pass	
		1747.5	-1.26	3.33	27.57	22.98	198.604	Horizontal	Pass	
20.0MHz Band QPSK	1/Mid	1720	-1.48	3.17	27.66	23.01	199.782	Horizontal	Pass	
		1732.5	-1.25	3.32	27.61	23.04	201.291	Horizontal	Pass	
		1745	-1.36	3.36	27.56	22.84	192.145	Horizontal	Pass	
1.4MHz Band QPSK	1/Mid	1710.7	-1.47	3.12	27.58	22.99	198.989	Vertical	Pass	
		1732.5	-1.41	3.27	27.61	22.93	196.214	Vertical	Pass	
		1754.3	-1.39	3.29	27.63	22.95	197.197	Vertical	Pass	
3.0MHz Band QPSK	1/Mid	1711.5	-1.45	3.13	27.61	23.03	200.855	Vertical	Pass	
		1732.5	-1.27	3.27	27.61	23.07	202.803	Vertical	Pass	
		1753.5	-1.43	3.30	27.62	22.89	194.688	Vertical	Pass	
5.0MHz Band QPSK	1/Mid	1712.5	-1.19	3.13	27.63	23.31	214.371	Vertical	Pass	
		1732.5	-1.10	3.27	27.61	23.24	210.664	Vertical	Pass	
		1752.5	-1.02	3.30	27.60	23.28	212.633	Vertical	Pass	
10.0MHz Band QPSK	1/Mid	1715	-1.46	3.15	27.64	23.03	200.721	Vertical	Pass	
		1732.5	-1.31	3.31	27.61	22.99	199.184	Vertical	Pass	
		1750	-1.24	3.33	27.59	23.02	200.551	Vertical	Pass	

15.0MH z Band QPSK	1/Mid	1717.5	-1.59	3.15	27.65	22.91	195.351	Vertical	Pass
		1732.5	-1.19	3.31	27.61	23.11	204.785	Vertical	Pass
		1747.5	-1.13	3.33	27.57	23.11	204.462	Vertical	Pass
20.0MH z Band QPSK	1/Mid	1720	-1.10	3.17	27.66	23.39	218.097	Vertical	Pass
		1732.5	-1.28	3.32	27.61	23.01	199.850	Vertical	Pass
		1745	-1.25	3.36	27.56	22.95	197.426	Vertical	Pass

Note:

SG Level= Signal generator output

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

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
						Average (dBm)	Average (mW)		
1.4MHz Band 16 QAM	1/Mid	1710.7	-1.87	3.12	27.58	22.59	181.542	Horizontal	Pass
		1732.5	-1.74	3.27	27.61	22.60	181.820	Horizontal	Pass
		1754.3	-1.86	3.29	27.63	22.48	177.195	Horizontal	Pass
3.0MHz Band 16 QAM	1/Mid	1711.5	-2.66	3.13	27.61	21.82	152.197	Horizontal	Pass
		1732.5	-2.52	3.27	27.61	21.82	152.136	Horizontal	Pass
		1753.5	-2.43	3.30	27.62	21.89	154.359	Horizontal	Pass
5.0MHz Band 16 QAM	1/Mid	1712.5	-2.80	3.13	27.63	21.70	147.984	Horizontal	Pass
		1732.5	-2.67	3.27	27.61	21.67	146.781	Horizontal	Pass
		1752.5	-1.68	3.30	27.60	22.62	182.752	Horizontal	Pass
10.0MHz Band 16 QAM	1/Mid	1715	-2.03	3.15	27.64	22.46	176.222	Horizontal	Pass
		1732.5	-1.73	3.31	27.61	22.57	180.623	Horizontal	Pass
		1750	-1.94	3.33	27.59	22.32	170.527	Horizontal	Pass
15.0MHz Band 16 QAM	1/Mid	1717.5	-1.87	3.15	27.65	22.63	183.056	Horizontal	Pass
		1732.5	-1.70	3.31	27.61	22.60	181.906	Horizontal	Pass
		1747.5	-1.60	3.33	27.57	22.64	183.474	Horizontal	Pass
20.0MHz Band 16 QAM	1/Mid	1720	-2.12	3.17	27.66	22.37	172.758	Horizontal	Pass
		1732.5	-1.90	3.32	27.61	22.39	173.327	Horizontal	Pass
		1745	-1.73	3.36	27.56	22.47	176.717	Horizontal	Pass
1.4MHz Band 16 QAM	1/Mid	1710.7	-1.92	3.12	27.58	22.54	179.667	Vertical	Pass
		1732.5	-1.79	3.27	27.61	22.55	179.743	Vertical	Pass
		1754.3	-1.80	3.29	27.63	22.54	179.417	Vertical	Pass
3.0MHz Band 16 QAM	1/Mid	1711.5	-2.51	3.13	27.61	21.97	157.256	Vertical	Pass
		1732.5	-2.46	3.27	27.61	21.88	154.230	Vertical	Pass
		1753.5	-2.39	3.30	27.62	21.93	156.020	Vertical	Pass
5.0MHz Band 16 QAM	1/Mid	1712.5	-2.72	3.13	27.63	21.78	150.704	Vertical	Pass
		1732.5	-2.50	3.27	27.61	21.84	152.894	Vertical	Pass
		1752.5	-2.62	3.30	27.60	21.68	147.370	Vertical	Pass
10.0MHz Band 16 QAM	1/Mid	1715	-1.91	3.15	27.64	22.58	181.042	Vertical	Pass
		1732.5	-1.70	3.31	27.61	22.60	181.872	Vertical	Pass
		1750	-1.89	3.33	27.59	22.37	172.472	Vertical	Pass
15.0MHz Band	1/Mid	1717.5	-2.06	3.15	27.65	22.44	175.383	Vertical	Pass
		1732.5	-1.91	3.31	27.61	22.39	173.450	Vertical	Pass

16 QAM		1747.5	-1.92	3.33	27.57	22.32	170.662	Vertical	Pass
20.0MH	1/Mid	1720	-1.98	3.17	27.66	22.51	178.431	Vertical	Pass
z Band		1732.5	-1.82	3.32	27.61	22.47	176.673	Vertical	Pass
16 QAM		1745	-1.52	3.36	27.56	22.68	185.492	Vertical	Pass

Note:

SG Level= Signal generator output

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

8.4 LTE BAND 5

Radiated Power (ERP) for Band 5											
Mode	RB/ RB SIZE	Frequ ncy	Result							Polarizati on Of Max. ERP	Conclu sion
			SG Level (dBm)	Cable Loss (dBm)	Anten na Gain (dB)	Corre ction (dB)	Max. ERP Averag e (dBm)	Max. ERP Averag e (mW)			
1.4MHz Band QPSK	1/Mi d	824.7	7.60	2.01	19.68	2.15	23.12	205.323	Horizontal	Pass	
		836.5	7.65	2.01	19.77	2.15	23.26	212.073	Horizontal	Pass	
		848.3	7.58	2.02	19.82	2.15	23.23	210.163	Horizontal	Pass	
3.0MHz Band QPSK	1/Mi d	825.5	7.72	2.01	19.7	2.15	23.26	211.965	Horizontal	Pass	
		836.5	7.64	2.01	19.77	2.15	23.25	211.227	Horizontal	Pass	
		847.5	7.57	2.02	19.81	2.15	23.21	209.493	Horizontal	Pass	
5.0MHz Band QPSK	1/Mi d	826.5	7.47	2.01	19.71	2.15	23.02	200.591	Horizontal	Pass	
		836.5	7.44	2.01	19.77	2.15	23.05	202.010	Horizontal	Pass	
		846.5	7.41	2.02	19.79	2.15	23.03	200.894	Horizontal	Pass	
10.0MH z Band QPSK	1/Mi d	829	7.47	2.01	19.73	2.15	23.04	201.484	Horizontal	Pass	
		836.5	7.44	2.01	19.77	2.15	23.05	201.659	Horizontal	Pass	
		844	7.46	2.02	19.78	2.15	23.07	202.747	Horizontal	Pass	
1.4MHz Band QPSK	1/Mi d	824.7	7.74	2.01	19.68	2.15	23.26	211.984	Vertical	Pass	
		836.5	7.64	2.01	19.77	2.15	23.25	211.438	Vertical	Pass	
		848.3	7.56	2.02	19.82	2.15	23.21	209.582	Vertical	Pass	
3.0MHz Band QPSK	1/Mi d	825.5	7.70	2.01	19.7	2.15	23.24	210.784	Vertical	Pass	
		836.5	7.51	2.01	19.77	2.15	23.12	205.247	Vertical	Pass	
		847.5	7.54	2.02	19.81	2.15	23.18	207.786	Vertical	Pass	
5.0MHz Band QPSK	1/Mi d	826.5	7.45	2.01	19.71	2.15	23.00	199.338	Vertical	Pass	
		836.5	7.34	2.01	19.77	2.15	22.95	197.330	Vertical	Pass	
		846.5	7.53	2.02	19.79	2.15	23.15	206.378	Vertical	Pass	
10.0MH z Band QPSK	1/Mi d	829	7.62	2.01	19.73	2.15	23.19	208.371	Vertical	Pass	
		836.5	7.51	2.01	19.77	2.15	23.12	204.993	Vertical	Pass	
		844	7.80	2.02	19.78	2.15	23.41	219.396	Vertical	Pass	

Note:

SG Level= Signal generator output

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

Radiated Power (ERP) for Band 5											
Mode	RB/ RB SIZE	Freque ncy	Result							Polarizati on Of Max. ERP	Conclu sion
			SG Level (dBm)	Cable Loss (dBm)	Anten na Gain (dB)	Corre ction (dB)	Max. ERP Averag e (dBm)	Max. ERP Averag e (mW)			
1.4MHz Band 16 QAM	1/Mi d	824.7	7.48	2.01	19.68	2.15	23.00	199.608	Horizontal	Pass	
		836.5	7.56	2.01	19.77	2.15	23.17	207.354	Horizontal	Pass	
		848.3	7.54	2.02	19.82	2.15	23.19	208.350	Horizontal	Pass	
3.0MHz Band 16 QAM	1/Mi d	825.5	7.80	2.01	19.7	2.15	23.34	215.559	Horizontal	Pass	
		836.5	7.62	2.01	19.77	2.15	23.23	210.451	Horizontal	Pass	
		847.5	7.52	2.02	19.81	2.15	23.16	206.942	Horizontal	Pass	
5.0MHz Band 16 QAM	1/Mi d	826.5	7.61	2.01	19.71	2.15	23.16	206.988	Horizontal	Pass	
		836.5	7.65	2.01	19.77	2.15	23.26	211.702	Horizontal	Pass	
		846.5	7.55	2.02	19.79	2.15	23.17	207.286	Horizontal	Pass	
10.0MH z Band 16 QAM	1/Mi d	829	7.78	2.01	19.73	2.15	23.35	216.312	Horizontal	Pass	
		836.5	7.66	2.01	19.77	2.15	23.27	212.496	Horizontal	Pass	
		844	7.69	2.02	19.78	2.15	23.30	213.642	Horizontal	Pass	
1.4MHz Band 16 QAM	1/Mi d	824.7	7.62	2.01	19.68	2.15	23.14	206.168	Vertical	Pass	
		836.5	7.51	2.01	19.77	2.15	23.12	205.348	Vertical	Pass	
		848.3	7.56	2.02	19.82	2.15	23.21	209.410	Vertical	Pass	
3.0MHz Band 16 QAM	1/Mi d	825.5	7.64	2.01	19.7	2.15	23.18	208.209	Vertical	Pass	
		836.5	7.63	2.01	19.77	2.15	23.24	210.687	Vertical	Pass	
		847.5	7.43	2.02	19.81	2.15	23.07	202.848	Vertical	Pass	
5.0MHz Band 16 QAM	1/Mi d	826.5	7.70	2.01	19.71	2.15	23.25	211.227	Vertical	Pass	
		836.5	7.65	2.01	19.77	2.15	23.26	211.908	Vertical	Pass	
		846.5	7.58	2.02	19.79	2.15	23.20	209.086	Vertical	Pass	
10.0MH z Band 16 QAM	1/Mi d	829	7.82	2.01	19.73	2.15	23.39	218.042	Vertical	Pass	
		836.5	7.77	2.01	19.77	2.15	23.38	217.597	Vertical	Pass	
		844	7.70	2.02	19.78	2.15	23.31	214.185	Vertical	Pass	

Note:

SG Level= Signal generator output

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

8.5 LTE BAND 7

Radiated Power (EIRP) for Band 7										
Mode	RB/ RB SIZE	Frequency	Result						Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss	Antenna Gain	Max. EIRP	Max. EIRP			
			(dBm)	(dBm)	(dB)	Average (dBm)	Average (mW)			
5.0MHz Band QPSK	1/Mid	2502.5	-1.42	4.54	27.75	21.79	151.008	Horizontal	Pass	
		2535	-1.30	4.69	27.72	21.73	148.936	Horizontal	Pass	
		2567.5	-1.39	4.71	27.71	21.61	144.877	Horizontal	Pass	
5.0MHz Band 16 QAM	1/Mid	2502.5	-2.56	4.54	27.75	20.65	116.145	Horizontal	Pass	
		2535	-2.37	4.69	27.72	20.66	116.413	Horizontal	Pass	
		2567.5	-2.33	4.71	27.71	20.67	116.681	Horizontal	Pass	
10.0MHz z Band QPSK	1/Mid	2505	-1.41	4.55	27.76	21.80	151.356	Horizontal	Pass	
		2535	-1.10	4.69	27.72	21.93	155.955	Horizontal	Pass	
		2565	-1.23	4.72	27.70	21.75	149.624	Horizontal	Pass	
10.0MHz z Band 16 QAM	1/Mid	2505	-2.34	4.55	27.76	20.87	122.180	Horizontal	Pass	
		2535	-2.12	4.69	27.72	20.91	123.310	Horizontal	Pass	
		2565	-2.21	4.72	27.70	20.77	119.399	Horizontal	Pass	
15.0MHz z Band QPSK	1/Mid	2507.5	-1.24	4.55	27.77	21.98	157.761	Horizontal	Pass	
		2535	-1.13	4.69	27.72	21.90	154.882	Horizontal	Pass	
		2562.5	-1.31	4.72	27.69	21.66	146.555	Horizontal	Pass	
15.0MHz z Band 16 QAM	1/Mid	2507.5	-2.45	4.55	27.77	20.77	119.399	Horizontal	Pass	
		2535	-2.32	4.69	27.72	20.71	117.761	Horizontal	Pass	
		2562.5	-2.35	4.72	27.69	20.62	115.345	Horizontal	Pass	
20.0MHz z Band QPSK	1/Mid	2510	-1.68	4.57	27.78	21.53	142.233	Horizontal	Pass	
		2535	-1.57	4.73	27.72	21.42	138.676	Horizontal	Pass	
		2560	-1.35	4.75	27.68	21.58	143.880	Horizontal	Pass	
20.0MHz z Band 16 QAM	1/Mid	2510	-1.18	4.57	27.78	22.03	159.588	Horizontal	Pass	
		2535	-2.39	4.73	27.72	20.60	114.815	Horizontal	Pass	
		2560	-2.51	4.75	27.68	20.42	110.154	Horizontal	Pass	

Note:

SG Level= Signal generator output

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

Radiated Power (EIRP) for Band 7										
Mode	RB/ RB SIZE	Frequency	Result						Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)			
			5.0MHz Band QPSK	1/Mid	2502.5	-1.86	4.54	27.75		
		2535	-1.53	4.69	27.72	21.50	141.37	Vertical	Pass	
		2567.5	-1.51	4.71	27.71	21.49	140.92	Vertical	Pass	
5.0MHz Band 16 QAM	1/Mid	2502.5	-2.74	4.54	27.75	20.47	111.33	Vertical	Pass	
		2535	-1.89	4.69	27.72	21.14	130.02	Vertical	Pass	
		2567.5	-2.55	4.71	27.71	20.45	110.95	Vertical	Pass	
10.0MHz z Band QPSK	1/Mid	2505	-1.69	4.55	27.76	21.52	141.88	Vertical	Pass	
		2535	-1.59	4.69	27.72	21.44	139.25	Vertical	Pass	
		2565	-1.68	4.72	27.70	21.30	134.86	Vertical	Pass	
10.0MHz z Band 16 QAM	1/Mid	2505	-2.92	4.55	27.76	20.29	106.82	Vertical	Pass	
		2535	-2.46	4.69	27.72	20.57	114.09	Vertical	Pass	
		2565	-2.68	4.72	27.70	20.30	107.15	Vertical	Pass	
15.0MHz z Band QPSK	1/Mid	2507.5	-2.04	4.55	27.77	21.18	131.10	Vertical	Pass	
		2535	-1.50	4.69	27.72	21.53	142.24	Vertical	Pass	
		2562.5	-2.05	4.72	27.69	20.92	123.58	Vertical	Pass	
15.0MHz z Band 16 QAM	1/Mid	2507.5	-2.61	4.55	27.77	20.61	115.02	Vertical	Pass	
		2535	-3.08	4.69	27.72	19.95	98.94	Vertical	Pass	
		2562.5	-2.28	4.72	27.69	20.69	117.25	Vertical	Pass	
20.0MHz z Band QPSK	1/Mid	2510	-1.99	4.57	27.78	21.22	132.57	Vertical	Pass	
		2535	-1.66	4.73	27.72	21.33	135.98	Vertical	Pass	
		2560	-1.45	4.75	27.68	21.48	140.60	Vertical	Pass	
20.0MHz z Band 16 QAM	1/Mid	2510	-2.17	4.57	27.78	21.04	127.06	Vertical	Pass	
		2535	-1.28	4.73	27.72	21.71	148.25	Vertical	Pass	
		2560	-1.61	4.75	27.68	21.32	135.52	Vertical	Pass	

Note:

SG Level= Signal generator output

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

8.6 LTE BAND 12

Radiated Power (ERP) for Band 12											
Mode	RB/ RB SIZE	Frequ ncy	Result							Polarizati on Of Max. ERP	Conclu sion
			SG Level (dBm)	Cable Loss (dBm)	Anten na Gain (dB)	Corre ction (dB)	Max. ERP Averag e (dBm)	Max. ERP Averag e (mW)			
1.4MHz Band QPSK	1/Mi d	699.7	7.23	1.91	19.21	2.15	22.38	172.924	Vertical	Pass	
		707.5	7.19	1.91	19.26	2.15	22.39	173.566	Vertical	Pass	
		715.3	7.08	1.93	19.34	2.15	22.34	171.336	Vertical	Pass	
3.0MHz Band QPSK	1/Mi d	700.5	6.98	1.91	19.21	2.15	22.13	163.442	Vertical	Pass	
		707.5	7.06	1.91	19.26	2.15	22.26	168.414	Vertical	Pass	
		714.5	7.09	1.93	19.34	2.15	22.35	171.934	Vertical	Pass	
5.0MHz Band QPSK	1/Mi d	701.5	7.29	1.91	19.23	2.15	22.46	176.130	Vertical	Pass	
		707.5	7.25	1.91	19.26	2.15	22.45	175.602	Vertical	Pass	
		713.5	6.93	1.92	19.33	2.15	22.19	165.617	Vertical	Pass	
10.0MH z Band QPSK	1/Mi d	704	7.09	1.91	19.25	2.15	22.28	169.068	Vertical	Pass	
		707.5	6.94	1.91	19.26	2.15	22.14	163.528	Vertical	Pass	
		711	7.14	1.92	19.32	2.15	22.39	173.510	Vertical	Pass	
1.4MHz Band QPSK	1/Mi d	699.7	7.26	1.91	19.21	2.15	22.41	174.227	Horizontal	Pass	
		707.5	7.23	1.91	19.26	2.15	22.43	175.154	Horizontal	Pass	
		715.3	7.21	1.93	19.34	2.15	22.47	176.550	Horizontal	Pass	
3.0MHz Band QPSK	1/Mi d	700.5	7.20	1.91	19.21	2.15	22.35	171.787	Horizontal	Pass	
		707.5	7.05	1.91	19.26	2.15	22.25	167.935	Horizontal	Pass	
		714.5	7.25	1.93	19.34	2.15	22.51	178.050	Horizontal	Pass	
5.0MHz Band QPSK	1/Mi d	701.5	7.39	1.91	19.23	2.15	22.56	180.357	Horizontal	Pass	
		707.5	7.40	1.91	19.26	2.15	22.60	182.018	Horizontal	Pass	
		713.5	6.95	1.92	19.33	2.15	22.21	166.181	Horizontal	Pass	
10.0MH z Band QPSK	1/Mi d	704	7.16	1.91	19.25	2.15	22.35	171.807	Horizontal	Pass	
		707.5	7.12	1.91	19.26	2.15	22.32	170.449	Horizontal	Pass	
		711	7.44	1.92	19.32	2.15	22.69	185.943	Horizontal	Pass	

Radiated Power (EIRP) for Band 12											
Mode	RB/ RB SIZE	Freque ncy	Result							Polarizati on Of Max. ERP	Conclu sion
			SG Level	Cable Loss (dBm)	Anten na Gain (dB)	Corre ction (dB)	Max. ERP	Max. ERP			
			(dBm)				Averag e	Averag e			
							(dBm)	(mW)			
1.4MHz Band 16 QAM	1/Mi d	699.7	6.98	1.91	19.21	2.15	22.13	163.476	Vertical	Pass	
		707.5	6.79	1.91	19.26	2.15	21.99	158.180	Vertical	Pass	
		715.3	6.75	1.93	19.34	2.15	22.01	158.975	Vertical	Pass	
3.0MHz Band 16 QAM	1/Mi d	700.5	7.26	1.91	19.21	2.15	22.41	174.257	Vertical	Pass	
		707.5	7.23	1.91	19.26	2.15	22.43	174.966	Vertical	Pass	
		714.5	7.24	1.93	19.34	2.15	22.50	177.891	Vertical	Pass	
5.0MHz Band 16 QAM	1/Mi d	701.5	7.15	1.91	19.23	2.15	22.32	170.739	Vertical	Pass	
		707.5	7.34	1.91	19.26	2.15	22.54	179.498	Vertical	Pass	
		713.5	7.26	1.92	19.33	2.15	22.52	178.843	Vertical	Pass	
10.0MH z Band 16 QAM	1/Mi d	704	7.47	1.91	19.25	2.15	22.66	184.357	Vertical	Pass	
		707.5	7.33	1.91	19.26	2.15	22.53	179.234	Vertical	Pass	
		711	7.38	1.92	19.32	2.15	22.63	183.260	Vertical	Pass	
1.4MHz Band 16 QAM	1/Mi d	699.7	7.06	1.91	19.21	2.15	22.21	166.153	Horizontal	Pass	
		707.5	7.07	1.91	19.26	2.15	22.27	168.500	Horizontal	Pass	
		715.3	6.89	1.93	19.34	2.15	22.15	164.048	Horizontal	Pass	
3.0MHz Band 16 QAM	1/Mi d	700.5	7.31	1.91	19.21	2.15	22.46	176.357	Horizontal	Pass	
		707.5	7.18	1.91	19.26	2.15	22.38	173.114	Horizontal	Pass	
		714.5	7.35	1.93	19.34	2.15	22.61	182.500	Horizontal	Pass	
5.0MHz Band 16 QAM	1/Mi d	701.5	7.26	1.91	19.23	2.15	22.43	175.148	Horizontal	Pass	
		707.5	7.44	1.91	19.26	2.15	22.64	183.640	Horizontal	Pass	
		713.5	7.31	1.92	19.33	2.15	22.57	180.526	Horizontal	Pass	
10.0MH z Band 16 QAM	1/Mi d	704	7.54	1.91	19.25	2.15	22.73	187.714	Horizontal	Pass	
		707.5	7.31	1.91	19.26	2.15	22.51	178.186	Horizontal	Pass	
		711	7.44	1.92	19.32	2.15	22.69	185.855	Horizontal	Pass	

Note:

SG Level= Signal generator output

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

8.7 LTE BAND 17

Radiated Power (ERP) for Band 17											
Mode	RB/ RB SIZE	Frequ ncy	Result							Polarizati on Of Max. ERP	Conclu sion
			SG Level (dBm)	Cable Loss (dBm)	Anten na Gain (dB)	Corre ction (dB)	Max. ERP Averag e (dBm)	Max. ERP Averag e (mW)			
5.0MHz Band QPSK	1/Mi d	706.5	5.27	1.91	19.23	2.15	20.44	110.557	Vertical	Pass	
		710	5.16	1.91	19.26	2.15	20.36	108.705	Vertical	Pass	
		713.5	5.18	1.92	19.33	2.15	20.44	110.585	Vertical	Pass	
10.0MH z Band QPSK	1/Mi d	709	5.40	1.91	19.25	2.15	20.59	114.529	Vertical	Pass	
		710	5.44	1.91	19.26	2.15	20.64	115.776	Vertical	Pass	
		711	5.16	1.92	19.32	2.15	20.41	109.959	Vertical	Pass	
5.0MHz Band QPSK	1/Mi d	706.5	5.38	1.91	19.23	2.15	20.55	113.486	Horizontal	Pass	
		710	5.22	1.91	19.26	2.15	20.42	110.087	Horizontal	Pass	
		713.5	5.23	1.92	19.33	2.15	20.49	111.823	Horizontal	Pass	
10.0MH z Band QPSK	1/Mi d	709	5.36	1.91	19.25	2.15	20.55	113.484	Horizontal	Pass	
		710	5.47	1.91	19.26	2.15	20.67	116.606	Horizontal	Pass	
		711	5.11	1.92	19.32	2.15	20.36	108.568	Horizontal	Pass	

Radiated Power (ERP) for Band 17											
Mode	RB/ RB SIZE	Frequ ncy	Result							Polarizati on Of Max. ERP	Conclu sion
			SG Level (dBm)	Cable Loss (dBm)	Anten na Gain (dB)	Corre ction (dB)	Max. ERP Averag e (dBm)	Max. ERP Averag e (mW)			
			5.0MHz Band 16 QAM	1/Mi d	706.5	5.17	1.91	19.23	2.15		
		710	5.14	1.91	19.26	2.15	20.34	108.209	Vertical	Pass	
		713.5	5.08	1.92	19.33	2.15	20.34	108.029	Vertical	Pass	
10.0MH z Band 16 QAM	1/Mi d	709	5.06	1.91	19.25	2.15	20.25	106.013	Vertical	Pass	
		710	4.96	1.91	19.26	2.15	20.16	103.724	Vertical	Pass	
		711	4.99	1.92	19.32	2.15	20.24	105.668	Vertical	Pass	
5.0MHz Band 16 QAM	1/Mi d	706.5	5.07	1.91	19.23	2.15	20.24	105.616	Horizontal	Pass	
		710	5.14	1.91	19.26	2.15	20.34	108.187	Horizontal	Pass	
		713.5	5.09	1.92	19.33	2.15	20.35	108.348	Horizontal	Pass	
10.0MH z Band 16 QAM	1/Mi d	709	5.04	1.91	19.25	2.15	20.23	105.477	Horizontal	Pass	
		710	5.25	1.91	19.26	2.15	20.45	110.987	Horizontal	Pass	
		711	4.92	1.92	19.32	2.15	20.17	104.040	Horizontal	Pass	

Note:

SG Level= Signal generator output

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

9. SPURIOUS RADIATION EMISSION

RULE PART(S)

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

LIMIT

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

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

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

TEST PROCEDURE

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

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

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

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

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

MODES TESTED

- LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 17

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	-56.96	4.04	33.51	-27.49	-13	-14.49	Horizontal
3701.4	-57.69	4.04	33.51	-28.22	-13	-15.22	Vertical
5552.1	-55.33	5.24	35.84	-24.73	-13	-11.73	Vertical
5552.1	-55.66	5.24	35.84	-25.06	-13	-12.06	Horizontal
Test Results for Mid Channel 1880MHz							
3760	-56.66	4.04	33.56	-27.14	-13	-14.14	Horizontal
3760	-54.96	4.04	33.56	-25.44	-13	-12.44	Vertical
5640	-56.09	5.24	35.91	-25.42	-13	-12.42	Vertical
5640	-55.33	5.24	35.91	-24.66	-13	-11.66	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-56.79	4.04	34.00	-26.83	-13	-13.83	Horizontal
3818.6	-55.97	4.04	34.00	-26.01	-13	-13.01	Vertical
5727.9	-55.49	5.24	36.04	-24.69	-13	-11.69	Vertical
5727.9	-56.05	5.24	36.04	-25.25	-13	-12.25	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	-54.41	4.07	33.54	-24.94	-13	-11.94	Horizontal
3720	-54.30	4.07	33.54	-24.83	-13	-11.83	Vertical
5580	-56.00	5.28	35.86	-25.42	-13	-12.42	Vertical
5580	-57.05	5.28	35.86	-26.47	-13	-13.47	Horizontal
Test Results for Mid Channel 1880MHz							
3760	-55.33	4.04	33.56	-25.81	-13	-12.81	Horizontal
3760	-55.76	4.04	33.56	-26.24	-13	-13.24	Vertical
5640	-56.96	5.24	35.91	-26.29	-13	-13.29	Vertical
5640	-55.66	5.24	35.91	-24.99	-13	-11.99	Horizontal
Test Results for High Channel 1900MHz							
3800	-55.76	4.04	34.00	-25.80	-13	-12.80	Horizontal
3800	-55.33	4.04	34.00	-25.37	-13	-12.37	Vertical
5700	-55.76	5.24	36.04	-24.96	-13	-11.96	Vertical
5700	-56.97	5.24	36.04	-26.17	-13	-13.17	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.

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	-51.99	4.02	29.80	-26.21	-13	-13.21	Horizontal
3421.4	-52.66	4.02	29.80	-26.88	-13	-13.88	Vertical
5132.1	-55.76	5.24	35.84	-25.16	-13	-12.16	Vertical
5132.1	-57.08	5.24	35.84	-26.48	-13	-13.48	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465	-49.70	4.03	30.00	-23.73	-13	-10.73	Horizontal
3465	-50.42	4.03	30.00	-24.45	-13	-11.45	Vertical
5197.5	-54.76	5.25	35.86	-24.15	-13	-11.15	Vertical
5197.5	-55.05	5.25	35.86	-24.44	-13	-11.44	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-52.76	4.05	30.01	-26.80	-13	-13.80	Horizontal
3508.6	-54.52	4.05	30.01	-28.56	-13	-15.56	Vertical
5262.9	-54.87	5.26	35.86	-24.27	-13	-11.27	Vertical
5262.9	-54.28	5.26	35.86	-23.68	-13	-10.68	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	-54.66	4.02	29.80	-28.88	-13	-15.88	Horizontal
3440	-53.00	4.02	29.80	-27.22	-13	-14.22	Vertical
5160	-55.75	5.24	35.84	-25.15	-13	-12.15	Vertical
5160	-56.96	5.24	35.84	-26.36	-13	-13.36	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465	-51.97	4.03	30.00	-26.00	-13	-13.00	Horizontal
3465	-53.19	4.03	30.00	-27.22	-13	-14.22	Vertical
5197.5	-55.30	5.25	35.86	-24.69	-13	-11.69	Vertical
5197.5	-55.79	5.25	35.86	-25.18	-13	-12.18	Horizontal
Test Results for High Channel 1745MHz							
3490	-51.97	2.91	27.68	-27.20	-13	-14.20	Horizontal
3490	-55.33	2.91	27.68	-30.56	-13	-17.56	Vertical
5235	-55.97	5.26	35.86	-25.37	-13	-12.37	Vertical
5235	-56.66	5.26	35.86	-26.06	-13	-13.06	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.

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	-55.66	2.78	27.50	-30.94	-13	-17.94	Horizontal
1649.4	-50.20	2.78	27.50	-25.48	-13	-12.48	Vertical
2474.1	-53.16	2.90	27.80	-28.26	-13	-15.26	Vertical
2474.1	-54.32	2.90	27.80	-29.42	-13	-16.42	Horizontal
Test Results For Mid Channel 836.5MHz							
1673	-55.84	2.80	27.48	-31.16	-13	-18.16	Horizontal
1673	-53.94	2.80	27.48	-29.26	-13	-16.26	Vertical
2509.5	-56.50	2.91	27.70	-31.71	-13	-18.71	Vertical
2509.5	-52.98	2.91	27.70	-28.19	-13	-15.19	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-54.47	2.82	27.43	-29.86	-13	-16.86	Horizontal
1696.6	-53.88	2.82	27.43	-29.27	-13	-16.27	Vertical
2544.9	-50.07	2.92	27.74	-25.25	-13	-12.25	Vertical
2544.9	-56.16	2.92	27.74	-31.34	-13	-18.34	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	-53.81	2.78	27.50	-29.09	-13	-16.09	Horizontal
1658	-56.36	2.78	27.50	-31.64	-13	-18.64	Vertical
2487	-56.86	2.90	27.80	-31.96	-13	-18.96	Vertical
2487	-49.84	2.90	27.80	-24.94	-13	-11.94	Horizontal
Test Results For Mid Channel 836.5MHz							
1673	-53.47	2.80	27.48	-28.79	-13	-15.79	Horizontal
1673	-56.27	2.80	27.48	-31.59	-13	-18.59	Vertical
2509.5	-57.09	2.91	27.70	-32.30	-13	-19.30	Vertical
2509.5	-56.48	2.91	27.70	-31.69	-13	-18.69	Horizontal
Test Results for High Channel 844MHz							
1688	-55.51	2.82	27.43	-30.90	-13	-17.90	Horizontal
1688	-56.31	2.82	27.43	-31.70	-13	-18.70	Vertical
2532	-55.12	2.92	27.74	-30.30	-13	-17.30	Vertical
2532	-56.83	2.92	27.74	-32.01	-13	-19.01	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.

9.4 LTE BAND 7

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

Test Results for Low Channel 2502.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5005	-81.76	5.23	35.81	-51.18	-25.00	-26.18	Horizontal
5005	-81.05	5.23	35.81	-50.47	-25.00	-25.47	Vertical
7507.5	-80.06	5.67	36.85	-48.88	-25.00	-23.88	Vertical
7507.5	-79.65	5.67	36.85	-48.47	-25.00	-23.47	Horizontal
Test Results for Mid Channel 2535MHz							
5070	-78.45	5.23	35.82	-47.86	-25.00	-22.86	Horizontal
5070	-79.54	5.23	35.82	-48.95	-25.00	-23.95	Vertical
7605	-80.09	5.67	36.85	-48.91	-25.00	-23.91	Vertical
7605	-80.57	5.67	36.85	-49.39	-25.00	-24.39	Horizontal
Test Results for High Channel 2567.5MHz							
5135	-82.66	5.24	35.83	-52.07	-25.00	-27.07	Horizontal
5135	-80.22	5.24	35.83	-49.63	-25.00	-24.63	Vertical
7702.5	-81.05	5.68	36.87	-49.86	-25.00	-24.86	Vertical
7702.5	-81.39	5.68	36.87	-50.20	-25.00	-25.20	Horizontal

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

Test Results for Low Channel 2510MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5020	-79.42	5.23	35.82	-48.83	-25.00	-23.83	Horizontal
5020	-78.85	5.23	35.82	-48.26	-25.00	-23.26	Vertical
7530	-79.81	5.67	36.86	-48.62	-25.00	-23.62	Vertical
7530	-79.84	5.67	36.86	-48.65	-25.00	-23.65	Horizontal
Test Results for Mid Channel 2535MHz							
5070	-81.29	5.23	35.82	-50.70	-25.00	-25.70	Horizontal
5070	-80.62	5.23	35.82	-50.03	-25.00	-25.03	Vertical
7605	-80.42	5.67	36.85	-49.24	-25.00	-24.24	Vertical
7605	-81.96	5.67	36.85	-50.78	-25.00	-25.78	Horizontal
Test Results for High Channel 2560MHz							
5120	-79.14	5.24	35.83	-48.55	-25.00	-23.55	Horizontal
5120	-79.09	5.24	35.83	-48.50	-25.00	-23.50	Vertical
7680	-79.41	5.70	36.88	-48.23	-25.00	-23.23	Vertical
7680	-78.81	5.70	36.88	-47.63	-25.00	-22.63	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.

9.5 LTE BAND 12

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

Test Results for Low Channel 699.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1399.4	-49.00	2.60	27.20	-24.40	-13	-11.40	Horizontal
1399.4	-50.37	2.60	27.20	-25.77	-13	-12.77	Vertical
2099.1	-49.71	2.85	27.54	-25.02	-13	-12.02	Vertical
2099.1	-49.75	2.85	27.54	-25.06	-13	-12.06	Horizontal
Test Results For Mid Channel 707.5MHz							
1415	-51.89	2.61	27.28	-27.22	-13	-14.22	Horizontal
1415	-49.49	2.61	27.28	-24.82	-13	-11.82	Vertical
2122.5	-50.68	2.87	27.59	-25.96	-13	-12.96	Vertical
2122.5	-52.11	2.87	27.59	-27.39	-13	-14.39	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-52.18	2.63	27.28	-27.53	-13	-14.53	Horizontal
1430.6	-56.60	2.63	27.28	-31.95	-13	-18.95	Vertical
2145.9	-53.39	2.88	27.60	-28.67	-13	-15.67	Vertical
2145.9	-50.79	2.88	27.60	-26.07	-13	-13.07	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	-49.25	2.61	27.26	-24.60	-13	-11.60	Horizontal
1408	-52.41	2.61	27.26	-27.76	-13	-14.76	Vertical
2112	-51.31	2.87	27.58	-26.60	-13	-13.60	Vertical
2112	-52.12	2.87	27.58	-27.41	-13	-14.41	Horizontal
Test Results for Mid Channel 707.5MHz							
1415	-50.57	2.61	27.28	-25.90	-13	-12.90	Horizontal
1415	-54.51	2.61	27.28	-29.84	-13	-16.84	Vertical
2122.5	-53.07	2.87	27.59	-28.35	-13	-15.35	Vertical
2122.5	-52.57	2.87	27.59	-27.85	-13	-14.85	Horizontal
Test Results for High Channel 711MHz							
1422	-54.43	2.62	27.28	-29.77	-13	-16.77	Horizontal
1422	-49.61	2.62	27.28	-24.95	-13	-11.95	Vertical
2133	-52.71	2.87	27.60	-27.98	-13	-14.98	Vertical
2133	-52.32	2.87	27.60	-27.59	-13	-14.59	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.

9.6 LTE BAND 17

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

Test Results for Low Channel 706.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1413	-50.75	2.61	27.28	-26.08	-13	-13.08	Horizontal
1413	-51.66	2.61	27.28	-26.99	-13	-13.99	Vertical
2119.5	-51.11	2.87	27.59	-26.39	-13	-13.39	Vertical
2119.5	-50.77	2.87	27.59	-26.05	-13	-13.05	Horizontal
Test Results For Mid Channel 710MHz							
1420	-50.22	2.62	27.30	-25.54	-13	-12.54	Horizontal
1420	-52.08	2.62	27.30	-27.40	-13	-14.40	Vertical
2130	-52.80	2.87	27.62	-28.05	-13	-15.05	Vertical
2130	-55.45	2.87	27.62	-30.70	-13	-17.70	Horizontal
Test Results for High Channel 713.5MHz							
1427	-52.38	2.66	27.28	-27.76	-13	-14.76	Horizontal
1427	-53.83	2.66	27.28	-29.21	-13	-16.21	Vertical
2140.5	-50.95	2.88	27.60	-26.23	-13	-13.23	Vertical
2140.5	-49.65	2.88	27.60	-24.93	-13	-11.93	Horizontal

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

Test Results for Low Channel 709MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1418	-53.28	2.62	27.30	-28.60	-13	-15.60	Horizontal
1418	-51.14	2.62	27.30	-26.46	-13	-13.46	Vertical
2127	-52.31	2.87	27.62	-27.56	-13	-14.56	Vertical
2127	-55.40	2.87	27.62	-30.65	-13	-17.65	Horizontal
Test Results for Mid Channel 710MHz							
1420	-52.84	2.62	27.30	-28.16	-13	-15.16	Horizontal
1420	-50.35	2.62	27.30	-25.67	-13	-12.67	Vertical
2130	-54.71	2.87	27.62	-29.96	-13	-16.96	Vertical
2130	-50.29	2.87	27.62	-25.54	-13	-12.54	Horizontal
Test Results for High Channel 711MHz							
1422	-51.33	2.62	27.30	-26.65	-13	-13.65	Horizontal
1422	-51.94	2.62	27.30	-27.26	-13	-14.26	Vertical
2133	-50.89	2.87	27.62	-26.14	-13	-13.14	Vertical
2133	-53.84	2.87	27.62	-29.09	-13	-16.09	Horizontal

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

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

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

9.7 Below 1G BAND 2

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
279.26	-59.35	1.81	19.2	-41.96	-13	-28.96	Horizontal
398.24	-60.28	1.82	19.31	-42.79	-13	-29.79	Vertical
294.79	-59.96	1.82	19.22	-42.56	-13	-29.56	Vertical
399.04	-59.31	1.81	19.24	-41.88	-13	-28.88	Horizontal
Test Results for Mid Channel 1880MHz							
222.32	-61.59	1.81	18.11	-45.29	-13	-32.29	Horizontal
279.26	-59.6	1.91	19.2	-42.31	-13	-29.31	Vertical
598.49	-60.21	1.91	19.34	-42.78	-13	-29.78	Vertical
719.21	-60.42	1.91	19.21	-43.12	-13	-30.12	Horizontal
Test Results for High Channel 1909.3MHz							
276.56	-57.96	1.91	19.2	-40.67	-13	-27.67	Horizontal
402.47	-57.31	1.92	19.33	-39.9	-13	-26.9	Vertical
563.57	-57.51	1.91	19.22	-40.2	-13	-27.2	Vertical
760.85	-57.52	1.91	19.21	-40.22	-13	-27.22	Horizontal

10. FREQUENCY STABILITY

RULE PART(S)

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

LIMITS

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

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

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

Temp. = -30° to $+50^{\circ}$ C

Voltage = low voltage, DC 3.3V, Normal, DC 3.8V and High voltage, DC 4.4V.

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 $+50^{\circ}$ C is reached.

Frequency Stability vs Voltage:

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

MODES TESTED

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

RESULTS

See the following pages.

10.1 LTE BAND 2

QPSK, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 2 QPSK, (CH 18900 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.4	1880	-14.99	-0.007973	2.5
3.8	1880	-15.09	-0.008027	2.5
4.4	1880	-14.59	-0.007761	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 2 QPSK, (CH 18900 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	1880	-11.21	-0.005963	2.5
Extreme (50C)	1880	-9.11	-0.004846	2.5
Extreme (40C)	1880	-9.21	-0.004899	2.5
Extreme (30C)	1880	-11.31	-0.006016	2.5
Extreme (10C)	1880	-11.81	-0.006282	2.5
Extreme (0C)	1880	-11.71	-0.006229	2.5
Extreme (-10C)	1880	-13.41	-0.007133	2.5
Extreme (-20C)	1880	-12.61	-0.006707	2.5
Extreme (-30C)	1880	-13.31	-0.007080	2.5

16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 2 16QAM, (CH 18900 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.4	1880	-17.1	-0.009101	2.5
3.8	1880	-13.5	-0.007186	2.5
4.4	1880	-16.7	-0.008888	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 2 16QAM, (CH 18900 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	1880	-17.41	-0.009261	2.5
Extreme (50C)	1880	-18.61	-0.009899	2.5
Extreme (40C)	1880	-18.21	-0.009686	2.5
Extreme (30C)	1880	-16.71	-0.008888	2.5
Extreme (10C)	1880	-17.31	-0.009207	2.5
Extreme (0C)	1880	-16.21	-0.008622	2.5
Extreme (-10C)	1880	-15.61	-0.008303	2.5
Extreme (-20C)	1880	-15.41	-0.008197	2.5
Extreme (-30C)	1880	-14.71	-0.007824	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

QPSK, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 4 QPSK, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.4	1732.5	-13.01	-0.007509	2.5
3.8	1732.5	-13.01	-0.007509	2.5
4.4	1732.5	-13.11	-0.007567	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 4 QPSK, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	1732.5	-9.91	-0.005720	2.5
Extreme (50C)	1732.5	-11.61	-0.006701	2.5
Extreme (40C)	1732.5	-11.31	-0.006528	2.5
Extreme (30C)	1732.5	-11.31	-0.006528	2.5
Extreme (10C)	1732.5	-9.61	-0.005547	2.5
Extreme (0C)	1732.5	-8.81	-0.005085	2.5
Extreme (-10C)	1732.5	-9.11	-0.005258	2.5
Extreme (-20C)	1732.5	-13.31	-0.007683	2.5
Extreme (-30C)	1732.5	-11.71	-0.006759	2.5

16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 4 16QAM, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.4	1732.5	-10.71	-0.006182	2.5
3.8	1732.5	-11.41	-0.006586	2.5
4.4	1732.5	-11.21	-0.006470	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 4 16QAM, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	1732.5	-11.31	-0.006528	2.5
Extreme (50C)	1732.5	-8.31	-0.004797	2.5
Extreme (40C)	1732.5	-8.81	-0.005085	2.5
Extreme (30C)	1732.5	-10.11	-0.005835	2.5
Extreme (10C)	1732.5	-10.71	-0.006182	2.5
Extreme (0C)	1732.5	-10.41	-0.006009	2.5
Extreme (-10C)	1732.5	-8.61	-0.004970	2.5
Extreme (-20C)	1732.5	-10.21	-0.005893	2.5
Extreme (-30C)	1732.5	-10.11	-0.005835	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

QPSK, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 5 QPSK, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	836.5	-12.51	-0.014955	2.5
3.8	836.5	-12.11	-0.014477	2.5
4.4	836.5	-12.71	-0.015194	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 5 QPSK, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	836.5	-12.21	-0.014597	2.5
Extreme (50C)	836.5	-13.21	-0.015792	2.5
Extreme (40C)	836.5	-12.71	-0.015194	2.5
Extreme (30C)	836.5	-12.51	-0.014955	2.5
Extreme (10C)	836.5	-12.41	-0.014836	2.5
Extreme (0C)	836.5	-11.31	-0.013521	2.5
Extreme (-10C)	836.5	-12.91	-0.015433	2.5
Extreme (-20C)	836.5	-15.71	-0.018781	2.5
Extreme (-30C)	836.5	-16.91	-0.020215	2.5

16QAM, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 5 16QAM, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	836.5	-12.91	-0.015433	2.5
3.8	836.5	-13.11	-0.015672	2.5
4.4	836.5	-13.51	-0.016151	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 5 16QAM, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	836.5	-13.41	-0.016031	2.5
Extreme (50C)	836.5	-14.51	-0.017346	2.5
Extreme (40C)	836.5	-14.51	-0.017346	2.5
Extreme (30C)	836.5	-13.71	-0.016390	2.5
Extreme (10C)	836.5	-12.91	-0.015433	2.5
Extreme (0C)	836.5	-11.91	-0.014238	2.5
Extreme (-10C)	836.5	-13.71	-0.016390	2.5
Extreme (-20C)	836.5	-13.51	-0.016151	2.5
Extreme (-30C)	836.5	-12.41	-0.014836	2.5

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

10.4 LTE BAND 7

QPSK, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 7 QPSK, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.4	2535	-20.1	-0.007933	2.5
3.8	2535	-20.5	-0.008091	2.5
4.4	2535	-20.9	-0.008249	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 7 QPSK, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	2535	-20.81	-0.008209	2.5
Extreme (50C)	2535	-23.61	-0.009314	2.5
Extreme (40C)	2535	-25.71	-0.010142	2.5
Extreme (30C)	2535	-20.71	-0.008170	2.5
Extreme (10C)	2535	-20.31	-0.008012	2.5
Extreme (0C)	2535	-19.41	-0.007657	2.5
Extreme (-10C)	2535	-22.61	-0.008919	2.5
Extreme (-20C)	2535	-21.11	-0.008327	2.5
Extreme (-30C)	2535	-24.21	-0.009550	2.5

16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 7 16QAM, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.4	2535	-22.01	-0.008682	2.5
3.8	2535	-22.41	-0.008840	2.5
4.4	2535	-22.41	-0.008840	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 7 16QAM, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	2535	-21.71	-0.008564	2.5
Extreme (50C)	2535	-23.21	-0.009156	2.5
Extreme (40C)	2535	-24.71	-0.009748	2.5
Extreme (30C)	2535	-21.81	-0.008604	2.5
Extreme (10C)	2535	-21.91	-0.008643	2.5
Extreme (0C)	2535	-22.61	-0.008919	2.5
Extreme (-10C)	2535	-23.41	-0.009235	2.5
Extreme (-20C)	2535	-23.01	-0.009077	2.5
Extreme (-30C)	2535	-23.71	-0.009353	2.5

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

10.5 LTE BAND 12

QPSK, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 12 QPSK, (CH 23095 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	707.5	-2.51	-0.003548	2.5
3.8	707.5	-3.11	-0.004396	2.5
4.4	707.5	-2.71	-0.003830	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 12 QPSK, (CH 23095 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	707.5	-2.91	-0.004113	2.5
Extreme (50C)	707.5	-3.71	-0.005244	2.5
Extreme (40C)	707.5	-3.21	-0.004537	2.5
Extreme (30C)	707.5	-4.01	-0.005668	2.5
Extreme (10C)	707.5	-3.41	-0.004820	2.5
Extreme (0C)	707.5	-0.81	-0.001145	2.5
Extreme (-10C)	707.5	-3.21	-0.004537	2.5
Extreme (-20C)	707.5	-2.81	-0.003972	2.5
Extreme (-30C)	707.5	-3.51	-0.004961	2.5

16QAM, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 12 16QAM, (CH 23095 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	707.5	-8.91	-0.012594	2.5
3.8	707.5	-8.31	-0.011746	2.5
4.4	707.5	-8.51	-0.012028	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 12 QPSK, (CH 23095 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	707.5	-8.21	-0.011604	2.5
Extreme (50C)	707.5	-9.01	-0.012735	2.5
Extreme (40C)	707.5	-8.41	-0.011887	2.5
Extreme (30C)	707.5	-8.51	-0.012028	2.5
Extreme (10C)	707.5	-8.61	-0.012170	2.5
Extreme (0C)	707.5	-8.11	-0.011463	2.5
Extreme (-10C)	707.5	-9.11	-0.012876	2.5
Extreme (-20C)	707.5	-8.71	-0.012311	2.5
Extreme (-30C)	707.5	-8.21	-0.011604	2.5

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

10.6 LTE BAND 17

QPSK, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 17 QPSK, (CH 23790 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	710.0	-5.61	-0.007901	2.5
3.8	710.0	-5.01	-0.007056	2.5
4.4	710.0	-4.81	-0.006775	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 17 QPSK, (CH 23790 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	710.0	-5.11	-0.007197	2.5
Extreme (50C)	710.0	-5.61	-0.007901	2.5
Extreme (40C)	710.0	-5.11	-0.007197	2.5
Extreme (30C)	710.0	-5.91	-0.008324	2.5
Extreme (10C)	710.0	-5.81	-0.008183	2.5
Extreme (0C)	710.0	-5.91	-0.008324	2.5
Extreme (-10C)	710.0	-5.01	-0.007056	2.5
Extreme (-20C)	710.0	-5.51	-0.007761	2.5
Extreme (-30C)	710.0	-5.41	-0.007620	2.5

16QAM, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 17 16QAM, (CH 23790 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	710.0	-6.91	-0.009732	2.5
3.8	710.0	-7.21	-0.010155	2.5
4.4	710.0	-6.71	-0.009451	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 17 QPSK, (CH 23790 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	710.0	-6.71	-0.009451	2.5
Extreme (50C)	710.0	-7.81	-0.011000	2.5
Extreme (40C)	710.0	-7.31	-0.010296	2.5
Extreme (30C)	710.0	-6.81	-0.009592	2.5
Extreme (10C)	710.0	-6.91	-0.009732	2.5
Extreme (0C)	710.0	-7.31	-0.010296	2.5
Extreme (-10C)	710.0	-7.61	-0.010718	2.5
Extreme (-20C)	710.0	-7.11	-0.010014	2.5
Extreme (-30C)	710.0	-7.51	-0.010577	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.

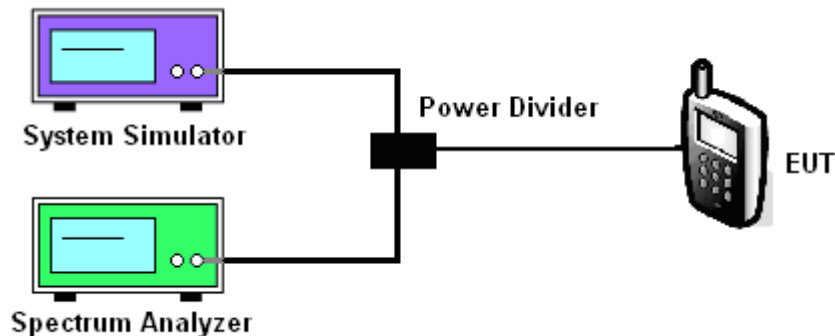
11.2 Measuring Instruments

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 GSM/EGPRS operating modes:
 - a. Set the RBW = 1MHz, VBW = 1MHz, Peak detector in spectrum analyzer.
 - b. Set EUT in maximum power output, and triggered the burst signal.
 - c. Measured respectively the Peak level and Mean level, and the deviation was recorded as Peak to Average Ratio.
4. For UMTS 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
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 17

Test data reference attachment.

----END OF REPORT----