

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

## FCC ID: 2AXDW-PD9

**Product:** PuduBot  
**Trade Mark:** PUDU  
**Model Number:** PD9  
**Family Model:** PDH  
**Report No.:** S21101800608006

### Prepared for

SHENZHEN PUDU TECHNOLOGY CO., LTD.  
Room 501, Building A, Block 1, Phase 1, Shenzhen International  
Inno Valley, Dashi 1st Road, Nanshan District, Shenzhen, China 518057

### Prepared by

Shenzhen NTEK Testing Technology Co., Ltd.  
1/F, Building E, Fenda Science Park, Sanwei Community,  
Xixiang Street Bao'an District, Shenzhen 518126 P.R. China  
Tel. 400-800-6106, 0755-2320 0050, 0755-2320 0090  
Website: <http://www.ntek.org.cn>

## TEST RESULT CERTIFICATION

**Applicant's name** ..... : SHENZHEN PUDU TECHNOLOGY CO., LTD.  
**Address**..... : Room 501, Building A, Block 1, Phase 1, Shenzhen International  
Inno Valley, Dashi 1st Road, Nanshan District, Shenzhen, China  
518057  
**Manufacturer's Name**..... : SHENZHEN PUDU TECHNOLOGY CO., LTD.  
**Address**..... : Room 501, Building A, Block 1, Phase 1, Shenzhen International  
Inno Valley, Dashi 1st Road, Nanshan District, Shenzhen, China  
518057  
**Product name**..... : PuduBot  
**Model and/or type reference** .. : PD9  
**Family Model:** PDH  
**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..... Oct 25, 2021 ~ Dec 14, 2021

Date of Issue ..... Dec 16, 2021

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

Testing Engineer :



(Allen Li)

Authorized Signatory :



(Alex Li)

## TABLE OF CONTENTS

1. GENERAL INFORMATION.....	6
1. GENERAL INFORMATION.....	6
1.1 PRODUCT DESCRIPTION .....	6
1.2 RELATED SUBMITTAL(S) / GRANT (S) .....	8
1.3 TEST METHODOLOGY.....	8
1.4 TEST FACILITY.....	8
MEASUREMENT UNCERTAINTY .....	8
1.5 SPECIAL ACCESSORIES.....	8
1.6 WORST-CASE CONFIGURATION AND MODE.....	8
2. SYSTEM TEST CONFIGURATION .....	9
2.1 EUT CONFIGURATION.....	9
2.2 EUT EXERCISE .....	9
2.3 CONFIGURATION OF EUT SYSTEM.....	9
2.4 TEST SETUP .....	10
3.TEST AND MEASUREMENT EQUIPMENT .....	11
4. OUTPUT POWER.....	13
4.1 OUTPUT POWER MEASUREMENT .....	13
6. BANDEDGE AND EMISSION MASK.....	16
7. OUT OF BAND EMISSIONS .....	18
7.1 MEASUREMENT METHOD .....	18
8. RADIATED MEASUREMENT .....	19
8.1. RADIATED POWER (ERP & EIRP).....	19
8.2 LTE BAND 2.....	20
8.3 LTE BAND 4.....	24
8.4 LTE BAND 5.....	28

<b>8.5 LTE BAND 12</b> .....	<b>30</b>
<b>8.6 LTE BAND 13</b> .....	<b>32</b>
<b>8.7 LTE BAND 25</b> .....	<b>34</b>
<b>8.8 LTE BAND 26 A</b> .....	<b>38</b>
<b>8.9 LTE BAND 26B</b> .....	<b>40</b>
<b>8.10 LTE BAND 41</b> .....	<b>43</b>
<b>8.11 LTE BAND 66</b> .....	<b>45</b>
<b>9. SPURIOUS RADIATION EMISSION</b> .....	<b>49</b>
<b>9.1 LTE BAND 2</b> .....	<b>51</b>
<b>9.2 LTE BAND 4</b> .....	<b>53</b>
<b>9.3 LTE BAND 5</b> .....	<b>55</b>
<b>9.4 LTE BAND 12</b> .....	<b>57</b>
<b>9.5 LTE BAND 13</b> .....	<b>59</b>
<b>9.6 LTE BAND 25</b> .....	<b>61</b>
<b>9.7 LTE BAND 26</b> .....	<b>63</b>
<b>9.8 LTE BAND 41</b> .....	<b>67</b>
<b>9.9 LTE BAND 66</b> .....	<b>69</b>
<b>10. FREQUENCY STABILITY</b> .....	<b>71</b>
<b>10.1 LTE BAND 2</b> .....	<b>72</b>
<b>10.2 LTE BAND 4</b> .....	<b>74</b>
<b>10.3 LTE BAND 5</b> .....	<b>76</b>
<b>10.4 LTE BAND 12</b> .....	<b>78</b>
<b>10.5 LTE BAND 13</b> .....	<b>80</b>
<b>10.6 LTE BAND 25</b> .....	<b>82</b>
<b>10.7 LTE BAND 26</b> .....	<b>84</b>
<b>10.8 LTE BAND 41</b> .....	<b>88</b>
<b>10.9 LTE BAND 66</b> .....	<b>90</b>
<b>11. PEAK-TO-AVERAGE RATIO</b> .....	<b>92</b>

11.1 Description of the PAR Measurement ..... 92

11.2 Measuring Instruments ..... 92

11.3 Test Procedures ..... 92

11.4 Test Setup ..... 93

# 1. GENERAL INFORMATION

## 1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	PuduBot
Trade Mark	PUDU
Model Name	PD9
Family Model	PDH
Model Difference	All models are the same circuit and RF module, except the model name.
FCC ID:	2AXDW-PD9
Frequency Bands:	U.S. Bands: <input checked="" type="checkbox"/> LTE FDD Band 2,4,5,12,13,25,26,41,66
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 25 Uplink: 1850MHz-1915MHz, Downlink: 1930MHz-1995MHz; LTE FDD Band 26 Uplink: 814MHz-849MHz, Downlink: 859MHz-894MHz; LTE FDD Band 41 Uplink: 2496MHz-2690MHz, LTE FDD Band 66 Uplink: 1710MHz-1780MHz, Downlink: 2110MHz-2200MHz;
Type of Modulation:	QPSK/16QAM
Antenna:	FPCB Antenna
Antenna gain:	5.64dBi;
Power Supply:	1#: DC 25.41V from battery or DC 29.4V from adapter 2#: DC 25.2V from battery or DC 29.0V from adapter

Adapter:	<input checked="" type="checkbox"/> Adapter supply: Adapter 1# : Model: HK120A-CF Input: 100-240V~50/60Hz 3.0A Max Output: 29.4V---8.0A Adapter 2# : Model: FY2903500 Input: 100-240V~50/60Hz 1.5A 150VA Output: 29.0V---3.5A 101.5W
Battery	Battery 1#: Model: 7S6P SDI 18650 26J DC 25.41V, 15.6Ah Battery 2#: Model: Pudu 7S5P 71NR19/66-5 DC 25.2V, 15.5Ah
Extreme Vol. Limits:	DC 22.87V to DC 27.95V (Nominal DC 25.41V) (Note 1)
HW Version	B03
SW Version	9.1.0.6
** Note1: The High Voltage DC 27.95V and Low Voltage DC 22.87V 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: 2AXDW-PD9** filing to comply with the FCC Part 22H&24E&27&90S.

## 1.3 TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI/TIA-603-E-2016, FCC CFR 47 Part 2, Part 22, Part 24, Part 27, Part 90S, ANSI C63.26:2015.

## 1.4 TEST FACILITY

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

ShenZhen NTEK Testing Technology Co., Ltd.

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

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

FCC Registration No.:463705

IC Registration No.:9270A-1,

CNAS Registration No.:L5516

## MEASUREMENT UNCERTAINTY

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

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

## 1.5 SPECIAL ACCESSORIES

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

## 1.6 WORST-CASE CONFIGURATION AND MODE

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

The device has LTE Bands of: Band 2, Band 4, Band 5, Band 12, Band 13, Band 25, Band 26, Band 41, Band 66.

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

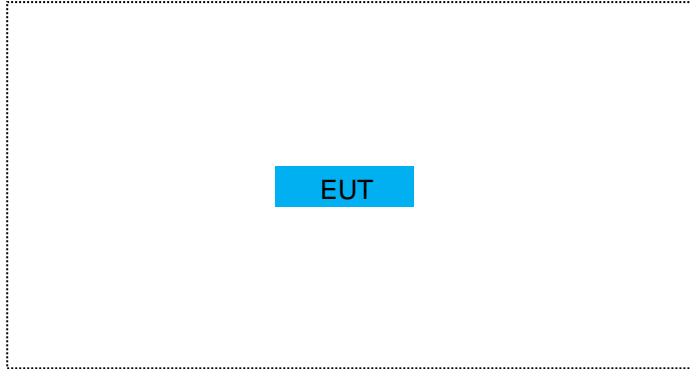
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	PuduBot	PD9	FCC ID: 2AXDW-PD9	EUT

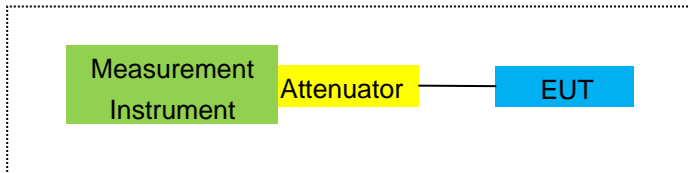
*Note: All the accessories have been used during the test.  
the following "EUT" in setup diagram means EUT system.*

## 2.4 TEST SETUP

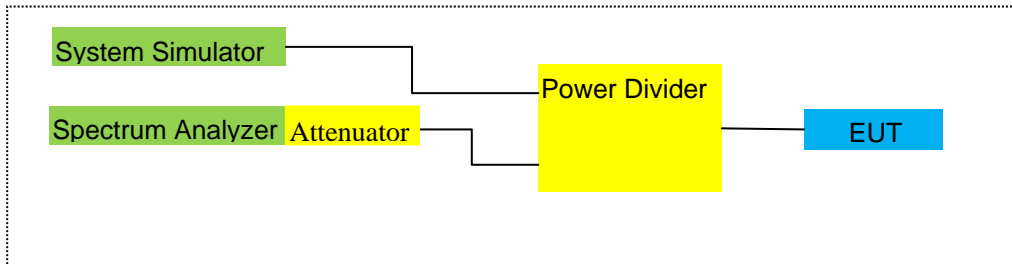
For Radiated Test Cases



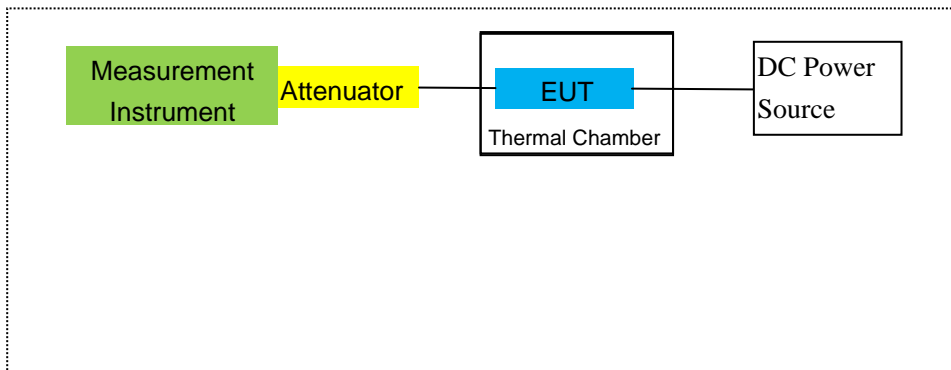
For Conducted Output Power



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	2021.07.01	2022.06.30	1 year
2	Test Receiver	R&S	ESPI	101318	2021.04.27	2022.04.26	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2021.03.29	2022.03.28	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2020.05.11	2023.05.10	3 year
5	Horn Antenna	EM	EM-AH-1018 0	2011071402	2021.03.29	2022.03.28	1 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2021.07.01	2022.06.30	1 year
7	Amplifier	EM	EM-30180	060538	2021.07.01	2022.06.30	1 year
8	Loop Antenna	ARA	PLA-1030/B	1029	2021.04.27	2022.04.26	1 year
9	Power Meter	R&S	NRVS	100696	2021.07.01	2022.06.30	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.0 5	2021.04.27	2022.04.26	1 year
11	Test Cable	N/A	R-01	N/A	2019.08.06	2022.08.05	3 year
12	Test Cable	N/A	R-02	N/A	2019.08.06	2022.08.05	3 year
13	Test Cable	N/A	R-03	N/A	2019.06.28	2022.06.27	3 year
14	Test Receiver	R&S	ESCI	101160	2021.04.27	2022.04.26	1 year
15	LISN	R&S	ENV216	101313	2021.04.27	2022.04.26	1 year
16	LISN	EMCO	3816/2	00042990	2021.04.27	2022.04.26	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2021.04.27	2022.04.26	1 year
18	Passive Voltage Probe	R&S	ESH2-Z3	100196	2021.04.27	2022.04.26	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	Attenuator	MCE	24-10-34	BN9258	2021.04.27	2022.04.26	1 year
23	Spectrum Analyzer	agilent	e4440a	us44300399	2021.04.27	2022.04.26	1 year
24	test receiver	R&S	ESCI	a0304218	2021.04.27	2022.04.26	1 year
25	Communication Tester	R&S	CMU200	A0304247	2021.07.01	2022.06.30	1 year
26	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2021.04.27	2022.04.26	1 year

27	DC Power Source	N/A	PS-6005D	2017040292 3	2020.05.11	2023.05.10	3 year
28	PSG Analog Signal Generator	Agilent	E8257D	MY51110112	2021.07.01	2022.06.30	1 year
29	Communication Tester	R&S	CMW500	148500	2021.07.01	2022.06.30	1 year

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

## 4. OUTPUT POWER

### 4.1 OUTPUT POWER MEASUREMENT

#### LTE Measurement Procedure:

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

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

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

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

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of "NS\_01".3

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

Network Signalling value	Requirements (sub-clause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks ( $N_{RB}$ )	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	NA
NS_03	6.6.2.2.1	2, 4, 10, 23, 25, 35, 36	3	>5	$\leq 1$
			5	>6	$\leq 1$
			10	>6	$\leq 1$
			15	>8	$\leq 1$
			20	>10	$\leq 1$
NS_04	6.6.2.2.2	41	5	>6	$\leq 1$
			10, 15, 20	See Table 6.2.4-4	
NS_05	6.6.3.3.1	1	10, 15, 20	$\geq 50$	$\leq 1$
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	$\leq 3$
NS_09	6.6.3.3.4	21	10, 15	> 40	$\leq 1$
				> 55	$\leq 2$
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23 <sup>1</sup>	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 12
- LTE Band 13
- LTE Band 25,
- LTE Band 26,
- LTE Band 41
- LTE Band 66

### RESULTS

**PASS**

Test data reference attachment.

## 6. BANDEDGE AND EMISSION MASK

### RULE PART(S)

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

FCC: §22.359

### LIMITS

FCC: §22.917, §24.238, §27.53

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

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

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

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

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

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

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



**TEST PROCEDURE**

The transmitter output was connected to a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

For each band edge measurement:

Set the spectrum analyzer span to include the block edge frequency

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

Set resolution bandwidth to at least 1% of emission bandwidth.

**MODES TESTED**

- LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 12
- LTE Band 13
- LTE Band 25,
- LTE Band 26,
- LTE Band 41
- LTE Band 66

**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 2/4/5/12/13/25/26/41/66
- 

#### 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 2/4/5/12/13/25/26/41/66

#### RESULTS

Pass

## 8.2 LTE BAND 2

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
				(dBm)	(mW)				
1.4MHz Band QPSK	6/0	1850.7	-1.81	3.76	28.24	22.67	184.92	Horizontal	Pass
		1880	-0.87	3.91	28.22	23.44	220.79	Horizontal	Pass
		1909.3	-1.57	3.93	28.20	22.70	186.40	Horizontal	Pass
3.0MHz Band QPSK	15/0	1851.5	-1.17	3.77	28.23	23.29	213.16	Horizontal	Pass
		1880	-2.09	3.91	28.24	22.24	167.52	Horizontal	Pass
		1908.5	-1.35	3.94	28.25	22.96	197.90	Horizontal	Pass
5.0MHz Band QPSK	25/0	1852.5	-1.79	3.77	28.31	22.75	188.25	Horizontal	Pass
		1880	-1.20	3.91	28.22	23.11	204.56	Horizontal	Pass
		1907.5	-1.48	3.94	28.20	22.78	189.86	Horizontal	Pass
10.0MHz Band QPSK	50/0	1855	-2.00	3.79	28.33	22.54	179.59	Horizontal	Pass
		1880	-0.71	3.95	28.22	23.56	226.75	Horizontal	Pass
		1905	-1.35	3.97	28.19	22.87	193.64	Horizontal	Pass
15.0MHz Band QPSK	75/0	1857.5	-1.54	3.79	28.34	23.01	200.06	Horizontal	Pass
		1880	-1.36	3.95	28.22	22.91	195.22	Horizontal	Pass
		1902.5	-1.39	3.97	28.18	22.82	191.43	Horizontal	Pass
20.0MHz Band QPSK	100/0	1860	-2.39	3.81	28.35	22.15	164.01	Horizontal	Pass
		1880	-1.76	3.96	28.22	22.50	177.97	Horizontal	Pass
		1900	-1.64	4.00	28.16	22.52	178.53	Horizontal	Pass
1.4MHz Band QPSK	6/0	1850.7	-1.85	3.76	28.24	22.63	183.11	Vertical	Pass
		1880	-1.36	3.91	28.22	22.95	197.32	Vertical	Pass
		1909.3	-0.56	3.93	28.20	23.71	234.76	Vertical	Pass
3.0MHz Band QPSK	15/0	1851.5	-1.07	3.77	28.23	23.39	218.09	Vertical	Pass
		1880	-0.73	3.91	28.24	23.60	229.21	Vertical	Pass
		1908.5	-1.24	3.94	28.25	23.07	202.59	Vertical	Pass
5.0MHz Band QPSK	25/0	1852.5	-1.12	3.77	28.31	23.42	219.67	Vertical	Pass
		1880	-0.52	3.91	28.22	23.79	239.22	Vertical	Pass
		1907.5	-1.29	3.94	28.20	22.97	198.30	Vertical	Pass
10.0MHz Band	50/0	1855	-1.39	3.79	28.33	23.15	206.44	Vertical	Pass
		1880	-1.48	3.95	28.22	22.79	190.29	Vertical	Pass

QPSK		1905	-0.83	3.97	28.19	23.39	218.27	Vertical	Pass
15.0MHz	75/0	1857.5	-2.03	3.79	28.34	22.52	178.45	Vertical	Pass
Band		1880	-0.92	3.95	28.22	23.35	216.18	Vertical	Pass
QPSK		1902.5	-0.93	3.97	28.18	23.28	212.80	Vertical	Pass
20.0MHz	100/0	1860	-1.81	3.81	28.35	22.73	187.52	Vertical	Pass
Band		1880	-0.44	3.96	28.22	23.82	241.01	Vertical	Pass
QPSK		1900	-0.45	4.00	28.16	23.71	235.00	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)

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
						(dBm)	(mW)		
1.4MHz Band 16 QAM	6/0	1850.7	-2.26	3.76	28.24	22.22	166.90	Horizontal	Pass
		1880	-1.60	3.91	28.22	22.71	186.66	Horizontal	Pass
		1909.3	-1.82	3.93	28.20	22.45	175.61	Horizontal	Pass
3.0MHz Band 16 QAM	15/0	1851.5	-2.24	3.77	28.23	22.22	166.87	Horizontal	Pass
		1880	-2.73	3.91	28.24	21.60	144.45	Horizontal	Pass
		1908.5	-2.80	3.94	28.25	21.51	141.55	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	1852.5	-2.54	3.77	28.31	22.00	158.57	Horizontal	Pass
		1880	-2.70	3.91	28.22	21.61	144.83	Horizontal	Pass
		1907.5	-2.25	3.94	28.20	22.01	158.76	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	1855	-3.23	3.79	28.33	21.31	135.32	Horizontal	Pass
		1880	-2.53	3.95	28.22	21.74	149.39	Horizontal	Pass
		1905	-1.54	3.97	28.19	22.68	185.35	Horizontal	Pass
15.0MHz Band 16 QAM	75/0	1857.5	-2.82	3.79	28.34	21.73	148.80	Horizontal	Pass
		1880	-2.38	3.95	28.22	21.89	154.61	Horizontal	Pass
		1902.5	-1.82	3.97	28.18	22.39	173.45	Horizontal	Pass
20.0MHz Band 16 QAM	100/0	1860	-3.82	3.81	28.35	20.72	118.11	Horizontal	Pass
		1880	-2.06	3.96	28.22	22.20	165.99	Horizontal	Pass
		1900	-2.97	4.00	28.16	21.19	131.66	Horizontal	Pass
1.4MHz Band 16 QAM	6/0	1850.7	-3.17	3.76	28.24	21.31	135.29	Vertical	Pass
		1880	-2.06	3.91	28.22	22.25	167.75	Vertical	Pass
		1909.3	-1.57	3.93	28.20	22.70	186.24	Vertical	Pass
3.0MHz Band 16 QAM	15/0	1851.5	-2.30	3.77	28.23	22.16	164.27	Vertical	Pass
		1880	-1.73	3.91	28.24	22.60	181.98	Vertical	Pass
		1908.5	-2.01	3.94	28.25	22.30	169.83	Vertical	Pass
5.0MHz Band 16 QAM	25/0	1852.5	-2.35	3.77	28.31	22.19	165.51	Vertical	Pass
		1880	-2.37	3.91	28.22	21.94	156.29	Vertical	Pass
		1907.5	-2.44	3.94	28.20	21.82	151.88	Vertical	Pass
10.0MHz Band 16 QAM	50/0	1855	-2.74	3.79	28.33	21.80	151.36	Vertical	Pass
		1880	-3.01	3.95	28.22	21.26	133.63	Vertical	Pass
		1905	-1.89	3.97	28.19	22.33	170.85	Vertical	Pass
15.0MHz Band 16 QAM	75/0	1857.5	-3.22	3.79	28.34	21.33	135.89	Vertical	Pass
		1880	-1.81	3.95	28.22	22.46	176.23	Vertical	Pass
		1902.5	-1.49	3.97	28.18	22.72	187.07	Vertical	Pass

20.0MHz		1860	-3.43	3.81	28.35	21.11	129.01	Vertical	Pass
Band 16	100/0	1880	-1.49	3.96	28.22	22.77	189.19	Vertical	Pass
QAM		1900	-2.00	4.00	28.16	22.16	164.60	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)	Antenna Gain (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
						(dBm)	(mW)		
1.4MHz Band QPSK	6/0	1710.7	-2.63	3.12	27.58	21.83	152.43	Horizontal	Pass
		1732.5	-1.96	3.27	27.61	22.38	173.11	Horizontal	Pass
		1754.3	-2.72	3.29	27.63	21.62	145.34	Horizontal	Pass
3.0MHz Band QPSK	15/0	1711.5	-2.81	3.13	27.61	21.67	147.02	Horizontal	Pass
		1732.5	-2.50	3.27	27.61	21.84	152.69	Horizontal	Pass
		1753.5	-2.41	3.30	27.62	21.91	155.26	Horizontal	Pass
5.0MHz Band QPSK	25/0	1712.5	-2.54	3.13	27.63	21.96	157.13	Horizontal	Pass
		1732.5	-2.27	3.27	27.61	22.07	161.12	Horizontal	Pass
		1752.5	-2.53	3.30	27.60	21.77	150.16	Horizontal	Pass
10.0MHz Band QPSK	50/0	1715	-2.75	3.15	27.64	21.74	149.22	Horizontal	Pass
		1732.5	-2.42	3.31	27.61	21.88	154.11	Horizontal	Pass
		1750	-2.58	3.33	27.59	21.68	147.38	Horizontal	Pass
15.0MHz Band QPSK	75/0	1717.5	-3.11	3.15	27.65	21.39	137.60	Horizontal	Pass
		1732.5	-2.39	3.31	27.61	21.91	155.30	Horizontal	Pass
		1747.5	-2.43	3.33	27.57	21.81	151.60	Horizontal	Pass
20.0MHz Band QPSK	100/0	1720	-3.97	3.17	27.66	20.52	112.76	Horizontal	Pass
		1732.5	-2.25	3.32	27.61	22.04	160.03	Horizontal	Pass
		1745	-2.86	3.36	27.56	21.34	136.16	Horizontal	Pass
1.4MHz Band QPSK	6/0	1710.7	-2.31	3.12	27.58	22.15	164.19	Vertical	Pass
		1732.5	-2.42	3.27	27.61	21.92	155.64	Vertical	Pass
		1754.3	-2.47	3.29	27.63	21.87	153.65	Vertical	Pass
3.0MHz Band QPSK	15/0	1711.5	-2.71	3.13	27.61	21.77	150.30	Vertical	Pass
		1732.5	-2.40	3.27	27.61	21.94	156.19	Vertical	Pass
		1753.5	-2.14	3.30	27.62	22.18	165.20	Vertical	Pass
5.0MHz Band QPSK	25/0	1712.5	-2.58	3.13	27.63	21.92	155.76	Vertical	Pass
		1732.5	-1.82	3.27	27.61	22.52	178.65	Vertical	Pass
		1752.5	-2.09	3.30	27.60	22.21	166.46	Vertical	Pass
10.0MHz Band QPSK	50/0	1715	-2.34	3.15	27.64	22.15	163.90	Vertical	Pass
		1732.5	-2.55	3.31	27.61	21.75	149.47	Vertical	Pass
		1750	-2.04	3.33	27.59	22.22	166.55	Vertical	Pass
15.0MHz	75/0	1717.5	-3.13	3.15	27.65	21.37	137.07	Vertical	Pass



Band QPSK		1732.5	-2.47	3.31	27.61	21.83	152.50	Vertical	Pass
		1747.5	-2.67	3.33	27.57	21.57	143.39	Vertical	Pass
20.0MHz Band QPSK	100/0	1720	-2.75	3.17	27.66	21.74	149.40	Vertical	Pass
		1732.5	-1.76	3.32	27.61	22.53	179.08	Vertical	Pass
		1745	-2.35	3.36	27.56	21.85	153.14	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)

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
						(dBm)	(mW)		
1.4MHz Band 16 QAM	6/0	1710.7	-2.61	3.12	27.58	21.85	153.25	Horizontal	Pass
		1732.5	-2.35	3.27	27.61	21.99	157.94	Horizontal	Pass
		1754.3	-3.37	3.29	27.63	20.97	125.10	Horizontal	Pass
3.0MHz Band 16 QAM	15/0	1711.5	-3.78	3.13	27.61	20.70	117.59	Horizontal	Pass
		1732.5	-2.91	3.27	27.61	21.43	139.01	Horizontal	Pass
		1753.5	-2.48	3.30	27.62	21.84	152.60	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	1712.5	-3.27	3.13	27.63	21.23	132.82	Horizontal	Pass
		1732.5	-3.07	3.27	27.61	21.27	133.89	Horizontal	Pass
		1752.5	-3.20	3.30	27.60	21.10	128.79	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	1715	-2.85	3.15	27.64	21.64	145.91	Horizontal	Pass
		1732.5	-3.02	3.31	27.61	21.28	134.15	Horizontal	Pass
		1750	-2.46	3.33	27.59	21.80	151.24	Horizontal	Pass
15.0MHz Band 16 QAM	75/0	1717.5	-3.01	3.15	27.65	21.49	140.99	Horizontal	Pass
		1732.5	-2.76	3.31	27.61	21.54	142.59	Horizontal	Pass
		1747.5	-3.20	3.33	27.57	21.04	127.16	Horizontal	Pass
20.0MHz Band 16 QAM	100/0	1720	-5.15	3.17	27.66	19.34	85.96	Horizontal	Pass
		1732.5	-2.62	3.32	27.61	21.67	147.01	Horizontal	Pass
		1745	-3.51	3.36	27.56	20.69	117.14	Horizontal	Pass
1.4MHz Band 16 QAM	6/0	1710.7	-3.24	3.12	27.58	21.22	132.40	Vertical	Pass
		1732.5	-2.97	3.27	27.61	21.37	137.02	Vertical	Pass
		1754.3	-2.86	3.29	27.63	21.48	140.76	Vertical	Pass
3.0MHz Band 16 QAM	15/0	1711.5	-2.07	3.13	27.61	22.41	174.25	Vertical	Pass
		1732.5	-1.58	3.27	27.61	22.76	188.85	Vertical	Pass
		1753.5	-2.40	3.30	27.62	21.92	155.45	Vertical	Pass
5.0MHz Band 16 QAM	25/0	1712.5	-3.01	3.13	27.63	21.49	140.96	Vertical	Pass
		1732.5	-3.32	3.27	27.61	21.02	126.38	Vertical	Pass
		1752.5	-2.53	3.30	27.60	21.77	150.36	Vertical	Pass
10.0MHz Band 16 QAM	50/0	1715	-2.69	3.15	27.64	21.80	151.31	Vertical	Pass
		1732.5	-3.36	3.31	27.61	20.94	124.05	Vertical	Pass
		1750	-3.08	3.33	27.59	21.18	131.16	Vertical	Pass
15.0MHz Band 16 QAM	75/0	1717.5	-3.79	3.15	27.65	20.71	117.73	Vertical	Pass
		1732.5	-2.60	3.31	27.61	21.70	147.97	Vertical	Pass
		1747.5	-1.52	3.33	27.57	22.72	187.10	Vertical	Pass

20.0MHz		1720	-2.88	3.17	27.66	21.61	144.88	Vertical	Pass
Band 16	100/0	1732.5	-2.15	3.32	27.61	22.14	163.71	Vertical	Pass
QAM		1745	-1.38	3.36	27.56	22.82	191.43	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							Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss	Antenna Gain	Correction	Max. EIRP	Max. EIRP			
			(dBm)	(dBm)	(dB)	(dB)	Average	Average			
							(dBm)	(mW)			
1.4MHz Band QPSK	6/0	824.7	6.29	2.01	19.68	2.15	21.81	151.71	Horizontal	Pass	
		836.5	5.41	2.01	19.77	2.15	21.02	126.61	Horizontal	Pass	
		848.3	6.38	2.02	19.82	2.15	22.03	159.58	Horizontal	Pass	
3.0MHz Band QPSK	15/0	825.5	5.79	2.01	19.70	2.15	21.33	135.73	Horizontal	Pass	
		836.5	5.34	2.01	19.77	2.15	20.95	124.59	Horizontal	Pass	
		847.5	6.39	2.02	19.81	2.15	22.03	159.41	Horizontal	Pass	
5.0MHz Band QPSK	25/0	826.5	6.50	2.01	19.71	2.15	22.05	160.38	Horizontal	Pass	
		836.5	4.66	2.01	19.77	2.15	20.27	106.51	Horizontal	Pass	
		846.5	6.66	2.02	19.79	2.15	22.28	169.05	Horizontal	Pass	
10.0MHz Band QPSK	50/0	829	6.32	2.01	19.73	2.15	21.89	154.57	Horizontal	Pass	
		836.5	5.42	2.01	19.77	2.15	21.03	126.83	Horizontal	Pass	
		844	5.37	2.02	19.78	2.15	20.98	125.43	Horizontal	Pass	
1.4MHz Band QPSK	6/0	824.7	6.39	2.01	19.68	2.15	21.91	155.22	Vertical	Pass	
		836.5	6.66	2.01	19.77	2.15	22.27	168.62	Vertical	Pass	
		848.3	6.51	2.02	19.82	2.15	22.16	164.29	Vertical	Pass	
3.0MHz Band QPSK	15/0	825.5	6.44	2.01	19.70	2.15	21.98	157.71	Vertical	Pass	
		836.5	7.17	2.01	19.77	2.15	22.78	189.65	Vertical	Pass	
		847.5	6.26	2.02	19.81	2.15	21.90	154.83	Vertical	Pass	
5.0MHz Band QPSK	25/0	826.5	6.02	2.01	19.71	2.15	21.57	143.52	Vertical	Pass	
		836.5	7.41	2.01	19.77	2.15	23.02	200.29	Vertical	Pass	
		846.5	6.65	2.02	19.79	2.15	22.27	168.50	Vertical	Pass	
10.0MHz Band QPSK	50/0	829	5.83	2.01	19.73	2.15	21.40	137.98	Vertical	Pass	
		836.5	7.04	2.01	19.77	2.15	22.65	183.94	Vertical	Pass	
		844	7.62	2.02	19.78	2.15	23.23	210.28	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)

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Gain	Correction	Max. EIRP	Max. EIRP	Polarization	
			(dBm)				Average	Average		
				(dBm)	(dB)	(dB)	(dBm)	(mW)	ERP	
1.4MHz Band 16 QAM	6/0	824.7	6.72	2.01	19.68	2.15	22.24	167.49	Horizontal	Pass
		836.5	7.19	2.01	19.77	2.15	22.80	190.47	Horizontal	Pass
		848.3	5.92	2.02	19.82	2.15	21.57	143.62	Horizontal	Pass
3.0MHz Band 16 QAM	15/0	825.5	6.82	2.01	19.70	2.15	22.36	172.12	Horizontal	Pass
		836.5	6.56	2.01	19.77	2.15	22.17	164.69	Horizontal	Pass
		847.5	6.96	2.02	19.81	2.15	22.60	181.87	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	826.5	6.08	2.01	19.71	2.15	21.63	145.48	Horizontal	Pass
		836.5	6.07	2.01	19.77	2.15	21.68	147.28	Horizontal	Pass
		846.5	5.93	2.02	19.79	2.15	21.55	142.74	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	829	5.52	2.01	19.73	2.15	21.09	128.60	Horizontal	Pass
		836.5	6.55	2.01	19.77	2.15	22.16	164.37	Horizontal	Pass
		844	6.90	2.02	19.78	2.15	22.51	178.09	Horizontal	Pass
1.4MHz Band 16 QAM	6/0	824.7	6.70	2.01	19.68	2.15	22.22	166.72	Vertical	Pass
		836.5	6.98	2.01	19.77	2.15	22.59	181.55	Vertical	Pass
		848.3	6.80	2.02	19.82	2.15	22.45	175.73	Vertical	Pass
3.0MHz Band 16 QAM	15/0	825.5	6.35	2.01	19.70	2.15	21.89	154.50	Vertical	Pass
		836.5	6.36	2.01	19.77	2.15	21.97	157.29	Vertical	Pass
		847.5	5.82	2.02	19.81	2.15	21.46	140.04	Vertical	Pass
5.0MHz Band 16 QAM	25/0	826.5	7.21	2.01	19.71	2.15	22.76	188.69	Vertical	Pass
		836.5	5.04	2.01	19.77	2.15	20.65	116.05	Vertical	Pass
		846.5	6.65	2.02	19.79	2.15	22.27	168.50	Vertical	Pass
10.0MHz Band 16 QAM	50/0	829	7.38	2.01	19.73	2.15	22.95	197.24	Vertical	Pass
		836.5	6.40	2.01	19.77	2.15	22.01	158.98	Vertical	Pass
		844	6.71	2.02	19.78	2.15	22.32	170.51	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							Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss	Antenna Gain	Correction	Max. EIRP	Max. EIRP			
			(dBm)	(dBm)	(dB)	(dB)	Average	Average			
							(dBm)	(mW)			
1.4MHz Band QPSK	6/0	699.7	8.14	1.91	19.21	2.15	23.29	213.18	Horizontal	Pass	
		707.5	7.99	1.91	19.26	2.15	23.19	208.58	Horizontal	Pass	
		715.3	7.77	1.93	19.34	2.15	23.03	201.00	Horizontal	Pass	
3.0MHz Band QPSK	15/0	700.5	7.82	1.91	19.21	2.15	22.97	198.04	Horizontal	Pass	
		707.5	7.25	1.91	19.26	2.15	22.45	175.97	Horizontal	Pass	
		714.5	6.58	1.93	19.34	2.15	21.84	152.80	Horizontal	Pass	
5.0MHz Band QPSK	25/0	701.5	7.19	1.91	19.23	2.15	22.36	172.22	Horizontal	Pass	
		707.5	7.58	1.91	19.26	2.15	22.78	189.85	Horizontal	Pass	
		713.5	7.05	1.92	19.33	2.15	22.31	170.15	Horizontal	Pass	
10.0MHz Band QPSK	50/0	704	7.19	1.91	19.25	2.15	22.38	173.11	Horizontal	Pass	
		707.5	7.71	1.91	19.26	2.15	22.91	195.26	Horizontal	Pass	
		711	7.38	1.92	19.32	2.15	22.63	183.03	Horizontal	Pass	
1.4MHz Band QPSK	6/0	699.7	8.34	1.91	19.21	2.15	23.49	223.59	Vertical	Pass	
		707.5	7.91	1.91	19.26	2.15	23.11	204.74	Vertical	Pass	
		715.3	7.40	1.93	19.34	2.15	22.66	184.55	Vertical	Pass	
3.0MHz Band QPSK	15/0	700.5	7.48	1.91	19.21	2.15	22.63	183.40	Vertical	Pass	
		707.5	7.73	1.91	19.26	2.15	22.93	196.51	Vertical	Pass	
		714.5	7.11	1.93	19.34	2.15	22.37	172.76	Vertical	Pass	
5.0MHz Band QPSK	25/0	701.5	7.23	1.91	19.23	2.15	22.40	173.94	Vertical	Pass	
		707.5	6.74	1.91	19.26	2.15	21.94	156.18	Vertical	Pass	
		713.5	7.42	1.92	19.33	2.15	22.68	185.55	Vertical	Pass	
10.0MHz Band QPSK	50/0	704	7.96	1.91	19.25	2.15	23.15	206.51	Vertical	Pass	
		707.5	8.40	1.91	19.26	2.15	23.60	229.16	Vertical	Pass	
		711	8.16	1.92	19.32	2.15	23.41	219.50	Vertical	Pass	

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Gain	Correction	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	Of Max. ERP	
							(dBm)	(mW)		
1.4MHz	6/0	699.7	8.01	1.91	19.21	2.15	23.16	207.04	Horizontal	Pass
Band 16		707.5	7.65	1.91	19.26	2.15	22.85	192.64	Horizontal	Pass
QAM		715.3	7.14	1.93	19.34	2.15	22.40	173.72	Horizontal	Pass
3.0MHz	15/0	700.5	7.17	1.91	19.21	2.15	22.32	170.58	Horizontal	Pass
Band 16		707.5	7.31	1.91	19.26	2.15	22.51	178.10	Horizontal	Pass
QAM		714.5	7.74	1.93	19.34	2.15	23.00	199.36	Horizontal	Pass
5.0MHz	25/0	701.5	7.46	1.91	19.23	2.15	22.63	183.34	Horizontal	Pass
Band 16		707.5	7.05	1.91	19.26	2.15	22.25	167.78	Horizontal	Pass
QAM		713.5	7.45	1.92	19.33	2.15	22.71	186.49	Horizontal	Pass
10.0MHz	50/0	704	7.51	1.91	19.25	2.15	22.70	186.01	Horizontal	Pass
Band 16		707.5	7.63	1.91	19.26	2.15	22.83	191.78	Horizontal	Pass
QAM		711	8.07	1.92	19.32	2.15	23.32	214.64	Horizontal	Pass
1.4MHz	6/0	699.7	7.98	1.91	19.21	2.15	23.13	205.55	Vertical	Pass
Band 16		707.5	7.35	1.91	19.26	2.15	22.55	179.96	Vertical	Pass
QAM		715.3	7.29	1.93	19.34	2.15	22.55	179.90	Vertical	Pass
3.0MHz	15/0	700.5	8.00	1.91	19.21	2.15	23.15	206.62	Vertical	Pass
Band 16		707.5	7.65	1.91	19.26	2.15	22.85	192.76	Vertical	Pass
QAM		714.5	7.82	1.93	19.34	2.15	23.08	203.13	Vertical	Pass
5.0MHz	25/0	701.5	7.37	1.91	19.23	2.15	22.54	179.28	Vertical	Pass
Band 16		707.5	7.75	1.91	19.26	2.15	22.95	197.36	Vertical	Pass
QAM		713.5	7.71	1.92	19.33	2.15	22.97	197.96	Vertical	Pass
10.0MHz	50/0	704	8.16	1.91	19.25	2.15	23.35	216.27	Vertical	Pass
Band 16		707.5	7.26	1.91	19.26	2.15	22.46	176.04	Vertical	Pass
QAM		711	7.38	1.92	19.32	2.15	22.63	183.16	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)

### 8.6 LTE BAND 13

Radiated Power (ERP) for Band 13										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Gain	Correction	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	Of Max. ERP	
							(dBm)	(mW)		
5.0MHz Band QPSK	25/0	779.5	5.31	1.91	19.23	2.15	20.48	111.71	Horizontal	Pass
		782	6.26	1.91	19.26	2.15	21.46	139.86	Horizontal	Pass
		784.5	6.05	1.92	19.33	2.15	21.31	135.11	Horizontal	Pass
10.0MHz Band QPSK	50/0	782	5.82	1.91	19.25	2.15	21.01	126.06	Horizontal	Pass
			6.12	1.91	19.26	2.15	21.32	135.51	Horizontal	Pass
			6.37	1.92	19.32	2.15	21.62	145.06	Horizontal	Pass
5.0MHz Band QPSK	25/0	779.5	5.97	1.91	19.23	2.15	21.14	129.90	Vertical	Pass
		782	7.06	1.91	19.26	2.15	22.26	168.43	Vertical	Pass
		784.5	6.47	1.92	19.33	2.15	21.73	149.05	Vertical	Pass
10.0MHz Band QPSK	50/0	782	6.21	1.91	19.25	2.15	21.40	138.18	Vertical	Pass
			7.15	1.91	19.26	2.15	22.35	171.79	Vertical	Pass
			6.46	1.92	19.32	2.15	21.71	148.13	Vertical	Pass



Radiated Power (ERP) for Band 13											
Mode	RB/RB SIZE	Frequency	Result							Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss	Antenna Gain	Correction	Max. EIRP	Max. EIRP			
			(dBm)	(dBm)	(dB)	(dB)	Average	Average			
							(dBm)	(mW)			
5.0MHz Band 16 QAM	25/0	779.5	7.14	1.91	19.23	2.15	22.31	170.22	Horizontal	Pass	
		782	5.44	1.91	19.26	2.15	20.64	115.81	Horizontal	Pass	
		784.5	6.65	1.92	19.33	2.15	21.91	155.22	Horizontal	Pass	
10.0MHz Band 16 QAM	50/0	782	5.40	1.91	19.25	2.15	20.59	114.60	Horizontal	Pass	
			6.48	1.91	19.26	2.15	21.68	147.11	Horizontal	Pass	
			7.04	1.92	19.32	2.15	22.29	169.42	Horizontal	Pass	
5.0MHz Band 16 QAM	25/0	779.5	6.26	1.91	19.23	2.15	21.43	139.10	Vertical	Pass	
		782	6.88	1.91	19.26	2.15	22.08	161.61	Vertical	Pass	
		784.5	7.05	1.92	19.33	2.15	22.31	170.22	Vertical	Pass	
10.0MHz Band 16 QAM	50/0	782	7.33	1.91	19.25	2.15	22.52	178.81	Vertical	Pass	
			7.11	1.91	19.26	2.15	22.31	170.22	Vertical	Pass	
			6.86	1.92	19.32	2.15	22.11	162.42	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)

### 8.7 LTE BAND 25

Radiated Power (EIRP) for Band 25									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	6/0	1850.7	-3.00	3.12	28.24	22.12	162.99	Horizontal	Pass
		1882.5	-3.38	3.27	28.22	21.57	143.49	Horizontal	Pass
		1914.3	-3.03	3.29	28.2	21.88	154.01	Horizontal	Pass
3.0MHz Band QPSK	15/0	1851.5	-3.08	3.13	28.23	22.02	159.25	Horizontal	Pass
		1882.5	-3.15	3.27	28.24	21.82	152.08	Horizontal	Pass
		1913.5	-3.64	3.30	28.25	21.31	135.06	Horizontal	Pass
5.0MHz Band QPSK	25/0	1852.5	-3.82	3.13	28.31	21.36	136.69	Horizontal	Pass
		1882.5	-3.26	3.27	28.22	21.69	147.50	Horizontal	Pass
		1912.5	-3.50	3.30	28.2	21.40	138.17	Horizontal	Pass
10.0MHz Band QPSK	50/0	1855	-3.73	3.15	28.33	21.45	139.61	Horizontal	Pass
		1882.5	-3.05	3.31	28.22	21.86	153.34	Horizontal	Pass
		1910	-3.26	3.33	28.19	21.60	144.38	Horizontal	Pass
15.0MHz Band QPSK	75/0	1857.5	-3.11	3.15	28.34	22.08	161.46	Horizontal	Pass
		1882.5	-3.51	3.31	28.22	21.40	138.10	Horizontal	Pass
		1907.5	-3.11	3.33	28.18	21.74	149.28	Horizontal	Pass
20.0MHz Band QPSK	100/0	1860	-4.56	3.17	28.35	20.62	115.36	Horizontal	Pass
		1882.5	-3.22	3.32	28.22	21.68	147.24	Horizontal	Pass
		1905	-3.69	3.36	28.16	21.11	129.16	Horizontal	Pass
1.4MHz Band QPSK	6/0	1850.7	-3.04	3.12	28.24	22.08	161.55	Vertical	Pass
		1882.5	-3.38	3.27	28.22	21.57	143.68	Vertical	Pass
		1914.3	-3.07	3.29	28.2	21.84	152.84	Vertical	Pass
3.0MHz Band QPSK	15/0	1851.5	-3.04	3.13	28.23	22.06	160.60	Vertical	Pass
		1882.5	-3.16	3.27	28.24	21.81	151.63	Vertical	Pass
		1913.5	-2.83	3.30	28.25	22.12	163.03	Vertical	Pass
5.0MHz Band QPSK	25/0	1852.5	-3.19	3.13	28.31	21.99	157.97	Vertical	Pass
		1882.5	-2.92	3.27	28.22	22.03	159.45	Vertical	Pass
		1912.5	-3.71	3.30	28.2	21.19	131.53	Vertical	Pass
10.0MHz Band QPSK	50/0	1855	-3.01	3.15	28.33	22.17	164.83	Vertical	Pass
		1882.5	-2.82	3.31	28.22	22.09	161.67	Vertical	Pass
		1910	-3.61	3.33	28.19	21.25	133.25	Vertical	Pass
15.0MHz	75/0	1857.5	-3.72	3.15	28.34	21.47	140.32	Vertical	Pass

Band		1882.5	-3.04	3.31	28.22	21.87	153.80	Vertical	Pass
QPSK		1907.5	-3.46	3.33	28.18	21.39	137.60	Vertical	Pass
20.0MHz	100/0	1860	-4.60	3.17	28.35	20.58	114.31	Vertical	Pass
Band		1882.5	-3.09	3.32	28.22	21.81	151.66	Vertical	Pass
QPSK		1905	-2.62	3.36	28.16	22.18	165.20	Vertical	Pass

Radiated Power (EIRP) for Band 25									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss	Antenna Gain	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
				(dBm)	(dB)	(dBm)	(mW)		
1.4MHz Band 16 QAM	6/0	1850.7	-3.58	3.12	28.24	21.54	142.46	Horizontal	Pass
		1882.5	-3.38	3.27	28.22	21.57	143.61	Horizontal	Pass
		1914.3	-3.43	3.29	28.2	21.48	140.50	Horizontal	Pass
3.0MHz Band 16 QAM	15/0	1851.5	-3.63	3.13	28.23	21.47	140.12	Horizontal	Pass
		1882.5	-3.68	3.27	28.24	21.29	134.44	Horizontal	Pass
		1913.5	-3.52	3.30	28.25	21.43	139.00	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	1852.5	-3.50	3.13	28.31	21.68	147.38	Horizontal	Pass
		1882.5	-3.42	3.27	28.22	21.53	142.16	Horizontal	Pass
		1912.5	-3.29	3.30	28.2	21.61	144.97	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	1855	-3.52	3.15	28.33	21.66	146.43	Horizontal	Pass
		1882.5	-3.59	3.31	28.22	21.32	135.58	Horizontal	Pass
		1910	-3.67	3.33	28.19	21.19	131.60	Horizontal	Pass
15.0MHz Band 16 QAM	75/0	1857.5	-3.43	3.15	28.34	21.76	149.92	Horizontal	Pass
		1882.5	-3.66	3.31	28.22	21.25	133.32	Horizontal	Pass
		1907.5	-3.43	3.33	28.18	21.42	138.55	Horizontal	Pass
20.0MHz Band 16 QAM	100/0	1860	-3.69	3.17	28.35	21.49	141.08	Horizontal	Pass
		1882.5	-3.55	3.32	28.22	21.35	136.57	Horizontal	Pass
		1905	-3.84	3.36	28.16	20.96	124.85	Horizontal	Pass
1.4MHz Band 16 QAM	6/0	1850.7	-3.28	3.12	28.24	21.84	152.92	Vertical	Pass
		1882.5	-3.90	3.27	28.22	21.05	127.21	Vertical	Pass
		1914.3	-3.38	3.29	28.2	21.53	142.36	Vertical	Pass
3.0MHz Band 16 QAM	15/0	1851.5	-3.69	3.13	28.23	21.41	138.35	Vertical	Pass
		1882.5	-3.77	3.27	28.24	21.20	131.78	Vertical	Pass
		1913.5	-3.23	3.30	28.25	21.72	148.75	Vertical	Pass
5.0MHz Band 16 QAM	25/0	1852.5	-3.23	3.13	28.31	21.95	156.81	Vertical	Pass
		1882.5	-3.73	3.27	28.22	21.22	132.37	Vertical	Pass
		1912.5	-3.28	3.30	28.2	21.62	145.35	Vertical	Pass
10.0MHz Band 16 QAM	50/0	1855	-3.92	3.15	28.33	21.26	133.56	Vertical	Pass
		1882.5	-3.30	3.31	28.22	21.61	145.01	Vertical	Pass
		1910	-3.35	3.33	28.19	21.51	141.66	Vertical	Pass
15.0MHz Band 16 QAM	75/0	1857.5	-3.87	3.15	28.34	21.32	135.57	Vertical	Pass
		1882.5	-3.30	3.31	28.22	21.61	144.78	Vertical	Pass
		1907.5	-3.16	3.33	28.18	21.69	147.60	Vertical	Pass
20.0MHz	100/0	1860	-3.05	3.17	28.35	22.13	163.12	Vertical	Pass

Band 16		1882.5	-2.74	3.32	28.22	22.16	164.49	Vertical	Pass
QAM		1905	-3.28	3.36	28.16	21.52	141.86	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

### 8.8 LTE BAND 26 A

Radiated Power (ERP) for Band 26(814-824)										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Gain	Correction	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	Of Max. ERP	
						(dBm)	(mW)			
1.4MHz BW QPSK	6/0	814.7	-0.30	3.76	28.24	2.15	22.03	159.62	Horizontal	Pass
		819	0.09	3.91	28.22	2.15	22.25	167.96	Horizontal	Pass
		823.3	-0.06	3.93	28.20	2.15	22.06	160.62	Horizontal	Pass
3.0MHz BW QPSK	15/0	815.5	-0.12	3.77	28.23	2.15	22.19	165.47	Horizontal	Pass
		819	-0.01	3.91	28.24	2.15	22.17	164.74	Horizontal	Pass
		822.5	0.04	3.94	28.25	2.15	22.20	165.80	Horizontal	Pass
5.0MHz BW QPSK	25/0	816.5	-0.82	3.77	28.31	2.15	21.57	143.45	Horizontal	Pass
		819	-0.38	3.91	28.22	2.15	21.78	150.80	Horizontal	Pass
		821.5	0.04	3.94	28.20	2.15	22.15	164.06	Horizontal	Pass
10.0MHz BW QPSK	50/0	819	0.06	3.91	28.22	2.15	22.22	166.72	Horizontal	Pass
1.4MHz BW QPSK	6/0	814.7	-0.20	3.79	28.34	2.15	22.20	165.96	Vertical	Pass
		819	-0.14	3.95	28.22	2.15	21.98	157.59	Vertical	Pass
		823.3	-0.09	3.97	28.18	2.15	21.97	157.41	Vertical	Pass
3.0MHz BW QPSK	15/0	815.5	-0.52	3.77	28.23	2.15	21.79	150.92	Vertical	Pass
		819	0.04	3.91	28.24	2.15	22.22	166.70	Vertical	Pass
		822.5	0.09	3.94	28.25	2.15	22.25	167.88	Vertical	Pass
5.0MHz BW QPSK	25/0	816.5	-0.16	3.77	28.31	2.15	22.23	166.97	Vertical	Pass
		819	0.10	3.91	28.22	2.15	22.26	168.10	Vertical	Pass
		821.5	0.04	3.94	28.20	2.15	22.15	164.06	Vertical	Pass
10.0MHz BW QPSK	50/0	819	0.19	3.91	28.22	2.15	22.35	171.79	Vertical	Pass

Radiated Power (ERP) for Band 26(814-824)											
Mode	RB/RB SIZE	Frequency	Result							Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss (dBm)	Antenna Gain (dB)	Correction	Max. EIRP	Max. EIRP			
			(dBm)			(dB)	Average	Average			
						(dBm)	(mW)				
1.4MHz BW 16 QAM	6/0	814.7	-0.12	3.76	28.24	2.15	22.21	166.31	Horizontal	Pass	
		819	0.15	3.91	28.22	2.15	22.31	170.22	Horizontal	Pass	
		823.3	0.24	3.93	28.20	2.15	22.36	172.16	Horizontal	Pass	
3.0MHz BW 16 QAM	15/0	815.5	-0.09	3.77	28.23	2.15	22.22	166.72	Horizontal	Pass	
		819	0.12	3.91	28.24	2.15	22.30	169.82	Horizontal	Pass	
		822.5	-0.13	3.94	28.25	2.15	22.03	159.70	Horizontal	Pass	
5.0MHz BW 16 QAM	25/0	816.5	-0.18	3.77	28.31	2.15	22.21	166.31	Horizontal	Pass	
		819	-0.42	3.91	28.22	2.15	21.74	149.12	Horizontal	Pass	
		821.5	-0.03	3.94	28.20	2.15	22.08	161.29	Horizontal	Pass	
10.0MHz BW 16 QAM	50/0	819	0.08	3.91	28.24	2.15	22.26	168.29	Horizontal	Pass	
1.4MHz BW 16 QAM	6/0	814.7	-0.10	3.79	28.34	2.15	22.30	169.82	Vertical	Pass	
		819	0.08	3.95	28.22	2.15	22.20	165.96	Vertical	Pass	
		823.3	0.04	3.97	28.18	2.15	22.10	162.10	Vertical	Pass	
3.0MHz BW 16 QAM	15/0	815.5	0.00	3.77	28.23	2.15	22.31	170.22	Vertical	Pass	
		819	0.13	3.91	28.24	2.15	22.31	170.22	Vertical	Pass	
		822.5	-0.32	3.94	28.25	2.15	21.84	152.60	Vertical	Pass	
5.0MHz BW 16 QAM	25/0	816.5	-0.58	3.77	28.31	2.15	21.81	151.80	Vertical	Pass	
		819	-0.52	3.91	28.22	2.15	21.64	145.82	Vertical	Pass	
		821.5	0.23	3.94	28.20	2.15	22.34	171.40	Vertical	Pass	
10.0MHz BW 16 QAM	50/0	819	0.20	3.91	28.24	2.15	22.38	172.98	Vertical	Pass	

### 8.9 LTE BAND 26B

Radiated Power (ERP) for Band 26(824-849)											
Mode	RB/RB SIZE	Frequency	Result							Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss (dBm)	Antenna Gain (dB)	Correction	Max. EIRP	Max. EIRP			
			(dBm)			(dB)	Average	Average			
							(dBm)	(mW)			
1.4MHz Band QPSK	6/0	824.7	7.22	2.01	19.68	2.15	22.74	187.80	Horizontal	Pass	
		836.5	5.88	2.01	19.77	2.15	21.49	140.78	Horizontal	Pass	
		848.3	7.30	2.02	19.82	2.15	22.95	197.36	Horizontal	Pass	
3.0MHz Band QPSK	15/0	825.5	6.14	2.01	19.70	2.15	21.68	147.37	Horizontal	Pass	
		836.5	6.51	2.01	19.77	2.15	22.12	162.86	Horizontal	Pass	
		847.5	6.48	2.02	19.81	2.15	22.12	163.00	Horizontal	Pass	
5.0MHz Band QPSK	25/0	826.5	6.36	2.01	19.71	2.15	21.91	155.17	Horizontal	Pass	
		836.5	5.85	2.01	19.77	2.15	21.46	139.93	Horizontal	Pass	
		846.5	6.77	2.02	19.79	2.15	22.39	173.25	Horizontal	Pass	
10.0MHz Band QPSK	50/0	829	6.14	2.01	19.73	2.15	21.71	148.11	Horizontal	Pass	
		836.5	6.00	2.01	19.77	2.15	21.61	145.02	Horizontal	Pass	
		844	5.91	2.02	19.78	2.15	21.52	141.79	Horizontal	Pass	
15.0MHz Band QPSK	75/0	831.5	6.79	2.01	19.73	2.15	22.36	172.00	Horizontal	Pass	
		836.5	6.08	2.01	19.77	2.15	21.69	147.68	Horizontal	Pass	
		841.5	6.62	2.02	19.78	2.15	22.23	167.25	Horizontal	Pass	
1.4MHz Band QPSK	6/0	824.7	7.72	2.01	19.68	2.15	23.24	211.00	Vertical	Pass	
		836.5	7.05	2.01	19.77	2.15	22.66	184.31	Vertical	Pass	
		848.3	6.90	2.02	19.82	2.15	22.55	179.98	Vertical	Pass	
3.0MHz Band QPSK	15/0	825.5	6.58	2.01	19.70	2.15	22.12	162.75	Vertical	Pass	
		836.5	7.09	2.01	19.77	2.15	22.70	186.35	Vertical	Pass	
		847.5	7.07	2.02	19.81	2.15	22.71	186.46	Vertical	Pass	
5.0MHz Band QPSK	25/0	826.5	6.77	2.01	19.71	2.15	22.32	170.51	Vertical	Pass	
		836.5	7.80	2.01	19.77	2.15	23.41	219.33	Vertical	Pass	
		846.5	6.62	2.02	19.79	2.15	22.24	167.36	Vertical	Pass	
10.0MHz Band QPSK	50/0	829	6.85	2.01	19.73	2.15	22.42	174.42	Vertical	Pass	
		836.5	7.60	2.01	19.77	2.15	23.21	209.58	Vertical	Pass	
		844	7.70	2.02	19.78	2.15	23.31	214.10	Vertical	Pass	
15.0MHz Band QPSK	75/0	831.5	6.38	2.01	19.73	2.15	21.95	156.65	Vertical	Pass	
		836.5	7.75	2.01	19.77	2.15	23.36	216.65	Vertical	Pass	
		841.5	8.09	2.02	19.78	2.15	23.70	234.34	Vertical	Pass	



Radiated Power (ERP) for Band 26(824-849)											
Mode	RB/RB SIZE	Frequency	Result							Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. EIRP	Max. EIRP			
			(dBm)				Average	Average			
							(dBm)	(mW)			
1.4MHz Band 16 QAM	6/0	824.7	7.26	2.01	19.68	2.15	22.78	189.65	Horizontal	Pass	
		836.5	6.18	2.01	19.77	2.15	21.79	150.97	Horizontal	Pass	
		848.3	5.51	2.02	19.82	2.15	21.16	130.71	Horizontal	Pass	
3.0MHz Band 16 QAM	15/0	825.5	5.74	2.01	19.70	2.15	21.28	134.37	Horizontal	Pass	
		836.5	6.09	2.01	19.77	2.15	21.70	147.95	Horizontal	Pass	
		847.5	6.12	2.02	19.81	2.15	21.76	150.11	Horizontal	Pass	
5.0MHz Band 16 QAM	25/0	826.5	5.60	2.01	19.71	2.15	21.15	130.26	Horizontal	Pass	
		836.5	5.99	2.01	19.77	2.15	21.60	144.58	Horizontal	Pass	
		846.5	5.61	2.02	19.79	2.15	21.23	132.69	Horizontal	Pass	
10.0MHz Band 16 QAM	50/0	829	6.06	2.01	19.73	2.15	21.63	145.62	Horizontal	Pass	
		836.5	6.39	2.01	19.77	2.15	22.00	158.66	Horizontal	Pass	
		844	6.53	2.02	19.78	2.15	22.14	163.81	Horizontal	Pass	
15.0MHz Band QPSK	75/0	831.5	5.93	2.01	19.73	2.15	21.50	141.18	Horizontal	Pass	
		836.5	6.08	2.01	19.77	2.15	21.69	147.69	Horizontal	Pass	
		841.5	6.19	2.02	19.78	2.15	21.80	151.50	Horizontal	Pass	
1.4MHz Band 16 QAM	6/0	824.7	6.47	2.01	19.68	2.15	21.99	158.01	Vertical	Pass	
		836.5	6.88	2.01	19.77	2.15	22.49	177.49	Vertical	Pass	
		848.3	6.71	2.02	19.82	2.15	22.36	172.32	Vertical	Pass	
3.0MHz Band 16 QAM	15/0	825.5	5.51	2.01	19.70	2.15	21.05	127.27	Vertical	Pass	
		836.5	5.99	2.01	19.77	2.15	21.60	144.42	Vertical	Pass	
		847.5	6.39	2.02	19.81	2.15	22.03	159.55	Vertical	Pass	
5.0MHz Band 16 QAM	25/0	826.5	6.35	2.01	19.71	2.15	21.90	154.77	Vertical	Pass	
		836.5	5.57	2.01	19.77	2.15	21.18	131.33	Vertical	Pass	
		846.5	6.98	2.02	19.79	2.15	22.60	181.90	Vertical	Pass	
10.0MHz Band 16 QAM	50/0	829	7.36	2.01	19.73	2.15	22.93	196.20	Vertical	Pass	
		836.5	6.50	2.01	19.77	2.15	22.11	162.58	Vertical	Pass	
		844	6.14	2.02	19.78	2.15	21.75	149.51	Vertical	Pass	

15.0MHz		831.5	6.78	2.01	19.73	2.15	22.35	171.63	Vertical	Pass
Band	75/0	836.5	6.68	2.01	19.77	2.15	22.29	169.31	Vertical	Pass
QPSK		841.5	7.75	2.02	19.78	2.15	23.36	216.65	Vertical	Pass

**Note:**

SG Level= Signal generator output

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

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

### 8.10 LTE BAND 41

Radiated Power (EIRP) for Band 41										
Mode	RB/RB SIZE	Frequency	Result						Polarization Of Max. ERP	Conclusion
			SG Level	Cable	Antenna	Max. EIRP	Max. EIRP			
			(dBm)	Loss	Gain	Average	Average			
				(dBm)	(dB)	(dBm)	(mW)			
5.0MHz Band QPSK	25/0	2498.5	-1.07	4.54	27.75	22.14	163.52	Horizontal	Pass	
		2593	-1.45	4.69	27.72	21.58	143.88	Horizontal	Pass	
		2687.5	-0.82	4.71	27.71	22.18	165.03	Horizontal	Pass	
10.0MHz Band QPSK	50/0	2685	-1.33	4.55	27.76	21.88	154.06	Horizontal	Pass	
		2593	-0.72	4.69	27.72	22.31	170.07	Horizontal	Pass	
		2501	-0.96	4.72	27.7	22.02	159.39	Horizontal	Pass	
15.0MHz Band QPSK	75/0	2503.5	-0.59	4.55	27.77	22.63	183.08	Horizontal	Pass	
		2593	-1.00	4.69	27.72	22.03	159.73	Horizontal	Pass	
		2682.5	-1.21	4.72	27.69	21.76	149.94	Horizontal	Pass	
20.0MHz Band QPSK	100/0	2506	-1.29	4.57	27.78	21.92	155.75	Horizontal	Pass	
		2593	-0.83	4.73	27.72	22.16	164.56	Horizontal	Pass	
		2680	-0.69	4.75	27.68	22.24	167.42	Horizontal	Pass	
5.0MHz Band QPSK	25/0	2498.5	-0.71	4.54	27.75	22.50	177.71	Vertical	Pass	
		2593	-0.95	4.69	27.72	22.08	161.44	Vertical	Pass	
		2687.5	-1.09	4.71	27.71	21.91	155.37	Vertical	Pass	
10.0MHz Band QPSK	50/0	2685	-1.04	4.55	27.76	22.17	164.65	Vertical	Pass	
		2593	-1.00	4.69	27.72	22.03	159.58	Vertical	Pass	
		2501	-0.49	4.72	27.7	22.49	177.60	Vertical	Pass	
15.0MHz Band QPSK	75/0	2503.5	-0.63	4.55	27.77	22.59	181.51	Vertical	Pass	
		2593	-0.92	4.69	27.72	22.11	162.70	Vertical	Pass	
		2682.5	-0.85	4.72	27.69	22.12	162.92	Vertical	Pass	
20.0MHz Band QPSK	100/0	2506	-1.02	4.57	27.78	22.19	165.47	Vertical	Pass	
		2593	-0.67	4.73	27.72	22.32	170.45	Vertical	Pass	
		2680	-0.29	4.75	27.68	22.64	183.67	Vertical	Pass	

Radiated Power (EIRP) for Band 41									
Mode	RB/RB SIZE	Frequency	Result					Polarization Of Max. ERP	Conclusion
			SG Level	Cable	Antenna	Max. EIRP	Max. EIRP		
			(dBm)	Loss	Gain	Average	Average		
				(dBm)	(dB)	(dBm)	(mW)		
5.0MHz Band 16 QAM	25/0	2498.5	-1.11	4.54	27.75	22.10	162.02	Horizontal	Pass
		2593	-1.49	4.69	27.72	21.54	142.56	Horizontal	Pass
		2687.5	-0.86	4.71	27.71	22.14	163.54	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	2685	-1.37	4.55	27.76	21.84	152.64	Horizontal	Pass
		2593	-0.76	4.69	27.72	22.27	168.54	Horizontal	Pass
		2501	-1.00	4.72	27.7	21.98	157.92	Horizontal	Pass
15.0MHz Band 16 QAM	75/0	2503.5	-0.63	4.55	27.77	22.59	181.38	Horizontal	Pass
		2593	-1.04	4.69	27.72	21.99	158.24	Horizontal	Pass
		2682.5	-1.25	4.72	27.69	21.72	148.55	Horizontal	Pass
20.0MHz Band 16 QAM	100/0	2506	-1.33	4.57	27.78	21.88	154.31	Horizontal	Pass
		2593	-0.87	4.73	27.72	22.12	163.05	Horizontal	Pass
		2680	-0.73	4.75	27.68	22.20	165.88	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	2498.5	-0.75	4.54	27.75	22.46	176.08	Vertical	Pass
		2593	-0.99	4.69	27.72	22.04	159.98	Vertical	Pass
		2687.5	-1.13	4.71	27.71	21.87	153.95	Vertical	Pass
10.0MHz Band 16 QAM	50/0	2685	-1.08	4.55	27.76	22.13	163.13	Vertical	Pass
		2593	-1.04	4.69	27.72	21.99	158.12	Vertical	Pass
		2501	-0.53	4.72	27.7	22.45	175.95	Vertical	Pass
15.0MHz Band 16 QAM	75/0	2503.5	-0.67	4.55	27.77	22.55	179.82	Vertical	Pass
		2593	-0.96	4.69	27.72	22.07	161.22	Vertical	Pass
		2682.5	-0.89	4.72	27.69	22.08	161.44	Vertical	Pass
20.0MHz Band 16 QAM	100/0	2506	-1.06	4.57	27.78	22.15	163.93	Vertical	Pass
		2593	-0.71	4.73	27.72	22.28	168.89	Vertical	Pass
		2680	-0.33	4.75	27.68	22.60	181.98	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)

### 8.11 LTE BAND 66

Radiated Power (EIRP) for Band 66									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable	Antenna	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
				Loss	Gain	Average	Average		
				(dBm)	(dB)	(dBm)	(mW)		
1.4MHz Band QPSK	6/0	1710.7	-2.34	3.76	28.24	22.13	163.33	Horizontal	Pass
		1745	-2.03	3.91	28.22	22.27	168.68	Horizontal	Pass
		1779.3	-2.39	3.93	28.2	21.87	153.83	Horizontal	Pass
3.0MHz Band QPSK	15/0	1711.5	-2.86	3.77	28.23	21.59	144.21	Horizontal	Pass
		1745	-2.67	3.91	28.24	21.65	146.24	Horizontal	Pass
		1778.5	-2.4	3.94	28.25	21.90	154.91	Horizontal	Pass
5.0MHz Band QPSK	25/0	1712.5	-2.44	3.77	28.31	22.09	161.83	Horizontal	Pass
		1745	-2.82	3.91	28.22	21.48	140.62	Horizontal	Pass
		1777.5	-2.26	3.94	28.2	21.99	158.16	Horizontal	Pass
10.0MHz Band QPSK	50/0	1715	-2.4	3.79	28.33	22.13	163.31	Horizontal	Pass
		1745	-1.9	3.95	28.22	22.36	172.21	Horizontal	Pass
		1775	-2.08	3.97	28.19	22.13	163.34	Horizontal	Pass
15.0MHz Band QPSK	75/0	1717.5	-2.72	3.79	28.34	21.82	152.07	Horizontal	Pass
		1745	-1.96	3.95	28.22	22.30	169.85	Horizontal	Pass
		1772.5	-2.62	3.97	28.18	21.58	143.89	Horizontal	Pass
20.0MHz Band QPSK	100/0	1720	-2.9	3.81	28.35	21.63	145.56	Horizontal	Pass
		1745	-2.59	3.96	28.22	21.66	146.57	Horizontal	Pass
		1770	-2.6	4	28.16	21.55	142.90	Horizontal	Pass
1.4MHz Band QPSK	6/0	1710.7	-2.74	3.76	28.24	21.73	148.94	Vertical	Pass
		1745	-2.97	3.91	28.22	21.33	135.84	Vertical	Pass
		1779.3	-2.91	3.93	28.2	21.35	136.46	Vertical	Pass
3.0MHz Band QPSK	15/0	1711.5	-2.31	3.77	28.23	22.14	163.70	Vertical	Pass
		1745	-2.48	3.91	28.24	21.84	152.77	Vertical	Pass
		1778.5	-2.03	3.94	28.25	22.27	168.67	Vertical	Pass
5.0MHz Band QPSK	25/0	1712.5	-2.35	3.77	28.31	22.18	165.22	Vertical	Pass
		1745	-2.42	3.91	28.22	21.88	154.20	Vertical	Pass
		1777.5	-2.7	3.94	28.2	21.55	142.91	Vertical	Pass
10.0MHz Band	50/0	1715	-2.25	3.79	28.34	22.29	169.47	Vertical	Pass
		1745	-2.49	3.95	28.22	21.77	150.34	Vertical	Pass

QPSK		1775	-1.72	3.97	28.18	22.48	177.02	Vertical	Pass
15.0MHz	75/0	1717.5	-3.03	3.81	28.35	21.50	141.27	Vertical	Pass
Band		1745	-2.54	3.96	28.22	21.71	148.27	Vertical	Pass
QPSK		1772.5	-1.58	4	28.16	22.57	180.76	Vertical	Pass
20.0MHz	100/0	1720	-2.25	3.79	28.34	22.31	170.22	Vertical	Pass
Band		1745	-2.49	3.95	28.22	21.77	150.34	Vertical	Pass
QPSK		1770	-1.72	3.97	28.18	22.58	181.13	Vertical	Pass

Radiated Power (EIRP) for Band 66									
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	6/0	1710.7	-3.6	3.76	28.24	20.87	122.19	Horizontal	Pass
		1745	-2.73	3.91	28.22	21.57	143.58	Horizontal	Pass
		1779.3	-2.97	3.93	28.2	21.29	134.59	Horizontal	Pass
3.0MHz Band 16 QAM	15/0	1711.5	-3.32	3.77	28.23	21.13	129.75	Horizontal	Pass
		1745	-3.41	3.91	28.24	20.91	123.33	Horizontal	Pass
		1778.5	-2.91	3.94	28.25	21.39	137.73	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	1712.5	-3.16	3.77	28.31	21.37	137.10	Horizontal	Pass
		1745	-2.6	3.91	28.22	21.70	147.94	Horizontal	Pass
		1777.5	-2.76	3.94	28.2	21.49	140.94	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	1715	-3.28	3.79	28.33	21.25	133.38	Horizontal	Pass
		1745	-3.14	3.95	28.22	21.12	129.43	Horizontal	Pass
		1775	-3.08	3.97	28.19	21.13	129.73	Horizontal	Pass
15.0MHz Band 16 QAM	75/0	1717.5	-3.72	3.79	28.34	20.82	120.80	Horizontal	Pass
		1745	-3.08	3.95	28.22	21.18	131.24	Horizontal	Pass
		1772.5	-3.3	3.97	28.18	20.90	123.03	Horizontal	Pass
20.0MHz Band 16 QAM	100/0	1720	-2.71	3.81	28.35	21.82	152.07	Horizontal	Pass
		1745	-2.94	3.96	28.22	21.31	135.22	Horizontal	Pass
		1770	-3.08	4	28.16	21.07	127.94	Horizontal	Pass
1.4MHz Band 16 QAM	6/0	1710.7	-3.18	3.76	28.24	21.29	134.59	Vertical	Pass
		1745	-2.98	3.91	28.22	21.32	135.55	Vertical	Pass
		1779.3	-2.53	3.93	28.2	21.73	148.94	Vertical	Pass
3.0MHz Band 16 QAM	15/0	1711.5	-2.94	3.77	28.23	21.51	141.60	Vertical	Pass
		1745	-2.87	3.91	28.24	21.45	139.64	Vertical	Pass
		1778.5	-3.16	3.94	28.25	21.14	130.02	Vertical	Pass
5.0MHz Band 16 QAM	25/0	1712.5	-3.34	3.77	28.31	21.19	131.55	Vertical	Pass
		1745	-2.88	3.91	28.22	21.42	138.70	Vertical	Pass
		1777.5	-2.49	3.94	28.2	21.76	150.00	Vertical	Pass
10.0MHz Band 16 QAM	50/0	1715	-3.82	3.79	28.33	20.71	117.78	Vertical	Pass
		1745	-2.57	3.95	28.22	21.69	147.60	Vertical	Pass
		1775	-3.6	3.97	28.19	20.61	115.09	Vertical	Pass
15.0MHz Band 16	75/0	1717.5	-3.52	3.79	28.34	21.02	126.49	Vertical	Pass
		1745	-3.48	3.95	28.22	20.78	119.69	Vertical	Pass

QAM		1772.5	-3.4	3.97	28.18	20.80	120.25	Vertical	Pass
20.0MHz	100/0	1720	-2.95	3.81	28.35	21.58	143.90	Vertical	Pass
Band 16		1745	-2.42	3.96	28.22	21.83	152.44	Vertical	Pass
QAM		1770	-2.51	4	28.16	21.64	145.90	Vertical	Pass

**Note:**

SG Level= Signal generator output

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

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



## 9. SPURIOUS RADIATION EMISSION

### RULE PART(S)

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

### LIMIT

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

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

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

### TEST PROCEDURE

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

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

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

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

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

**MODES TESTED**

- LTE Band 2  
LTE Band 4
- LTE Band 5  
LTE Band 12  
LTE Band 13  
LTE Band 25,  
LTE Band 26,  
LTE Band 41,  
LTE Band 66

**RESULTS**

PASS

9.1 LTE BAND 2

**QPSK EIRP POWER FOR LTE BAND 2 (1.4MHZ BANDWIDTH)**

<b>Test Results for Low Channel 1850.7MHz</b>							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3701.4	-50.28	4.04	33.51	-20.81	-13	-7.81	Horizontal
3701.4	-46.44	4.04	33.51	-16.97	-13	-3.97	Vertical
5552.1	-50.45	5.24	35.84	-19.85	-13	-6.85	Vertical
5552.1	-52.75	5.24	35.84	-22.15	-13	-9.15	Horizontal
183.3	-40.87	1.43	16.02	-26.28	-13	-13.28	Vertical
422.6	-41.35	1.30	17.99	-24.66	-13	-11.66	Horizontal
<b>Test Results for Mid Channel 1880MHz</b>							
3760.0	-48.08	4.04	33.56	-18.56	-13	-5.56	Horizontal
3760.0	-47.33	4.04	33.56	-17.81	-13	-4.81	Vertical
5640.0	-48.09	5.24	35.91	-17.42	-13	-4.42	Vertical
5640.0	-53.34	5.24	35.91	-22.67	-13	-9.67	Horizontal
180.3	-38.22	1.62	16.97	-22.87	-13	-9.87	Vertical
465.3	-41.45	1.74	15.98	-27.22	-13	-14.22	Horizontal
<b>Test Results for High Channel 1909.3MHz</b>							
3818.6	-53.49	4.04	34.00	-23.53	-13	-10.53	Horizontal
3818.6	-47.52	4.04	34.00	-17.56	-13	-4.56	Vertical
5727.9	-49.41	5.24	36.04	-18.61	-13	-5.61	Vertical
5727.9	-49.66	5.24	36.04	-18.86	-13	-5.86	Horizontal
190.5	-42.11	1.42	17.29	-26.24	-13	-13.24	Vertical
354.3	-36.50	1.50	17.90	-20.09	-13	-7.09	Horizontal

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

Test Results for Low Channel 1860MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3720.0	-49.62	4.07	33.54	-20.15	-13	-7.15	Horizontal
3720.0	-50.86	4.07	33.54	-21.39	-13	-8.39	Vertical
5580.0	-49.81	5.28	35.86	-19.23	-13	-6.23	Vertical
5580.0	-50.36	5.28	35.86	-19.78	-13	-6.78	Horizontal
179.8	-44.65	1.58	16.89	-29.33	-13	-16.33	Vertical
351.0	-41.03	1.76	17.26	-25.53	-13	-12.53	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-47.18	4.04	33.56	-17.66	-13	-4.66	Horizontal
3760.0	-53.81	4.04	33.56	-24.29	-13	-11.29	Vertical
5640.0	-48.64	5.24	35.91	-17.97	-13	-4.97	Vertical
5640.0	-49.54	5.24	35.91	-18.87	-13	-5.87	Horizontal
182.5	-40.85	1.46	16.27	-26.04	-13	-13.04	Vertical
430.8	-37.53	1.59	15.15	-23.97	-13	-10.97	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-52.59	4.04	34.00	-22.63	-13	-9.63	Horizontal
3800.0	-46.67	4.04	34.00	-16.71	-13	-3.71	Vertical
5700.0	-53.42	5.24	36.04	-22.62	-13	-9.62	Vertical
5700.0	-51.50	5.24	36.04	-20.70	-13	-7.70	Horizontal
199.4	-39.35	1.36	17.39	-23.31	-13	-10.31	Vertical
245.0	-43.82	1.66	15.39	-30.09	-13	-17.09	Horizontal

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

. 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)**

<b>Test Results for Low Channel 1710.7MHz</b>							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-50.00	4.02	29.80	-24.22	-13	-11.22	Horizontal
3421.4	-44.91	4.02	29.80	-19.13	-13	-6.13	Vertical
5132.1	-51.40	5.24	35.84	-20.80	-13	-7.80	Vertical
5132.1	-53.34	5.24	35.84	-22.74	-13	-9.74	Horizontal
187.5	-34.01	1.68	16.04	-19.65	-13	-6.65	Vertical
425.7	-43.32	1.78	17.74	-27.36	-13	-14.36	Horizontal
<b>Test Results for Mid Channel 1732.5MHz</b>							
3465.0	-45.86	4.03	30.00	-19.89	-13	-6.89	Horizontal
3465.0	-44.32	4.03	30.00	-18.35	-13	-5.35	Vertical
5197.5	-52.19	5.25	35.86	-21.58	-13	-8.58	Vertical
5197.5	-53.22	5.25	35.86	-22.61	-13	-9.61	Horizontal
207.4	-35.90	1.72	17.69	-19.93	-13	-6.93	Vertical
368.4	-41.82	1.62	16.02	-27.41	-13	-14.41	Horizontal
<b>Test Results for High Channel 1754.3MHz</b>							
3508.6	-44.92	4.05	30.01	-18.96	-13	-5.96	Horizontal
3508.6	-46.37	4.05	30.01	-20.41	-13	-7.41	Vertical
5262.9	-51.44	5.26	35.86	-20.84	-13	-7.84	Vertical
5262.9	-49.04	5.26	35.86	-18.44	-13	-5.44	Horizontal
184.3	-43.34	1.80	16.69	-28.45	-13	-15.45	Vertical
414.5	-40.81	1.75	16.66	-25.91	-13	-12.91	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	-46.47	4.02	29.80	-20.69	-13	-7.69	Horizontal
3440.0	-48.79	4.02	29.80	-23.01	-13	-10.01	Vertical
5160.0	-52.10	5.24	35.84	-21.50	-13	-8.50	Vertical
5160.0	-53.83	5.24	35.84	-23.23	-13	-10.23	Horizontal
184.5	-44.09	1.57	17.26	-28.40	-13	-15.40	Vertical
292.6	-42.54	1.78	16.35	-27.97	-13	-14.97	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-44.53	4.03	30.00	-18.56	-13	-5.56	Horizontal
3465.0	-52.27	4.03	30.00	-26.30	-13	-13.30	Vertical
5197.5	-50.80	5.25	35.86	-20.19	-13	-7.19	Vertical
5197.5	-52.78	5.25	35.86	-22.17	-13	-9.17	Horizontal
176.2	-41.48	1.44	17.95	-24.97	-13	-11.97	Vertical
325.7	-42.96	1.65	16.09	-28.52	-13	-15.52	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-49.63	2.91	27.68	-24.86	-13	-11.86	Horizontal
3490.0	-49.88	2.91	27.68	-25.11	-13	-12.11	Vertical
5235.0	-47.78	5.26	35.86	-17.18	-13	-4.18	Vertical
5235.0	-51.29	5.26	35.86	-20.69	-13	-7.69	Horizontal
209.0	-43.92	1.61	16.85	-28.68	-13	-15.68	Vertical
334.9	-36.60	1.61	15.19	-23.02	-13	-10.02	Horizontal

Note: P<sub>Mea</sub>(dBm)= Power(dBm)+ AR<sub>pl</sub> (dBm)

. Over Limit= : P<sub>Mea</sub>(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	-45.46	2.78	27.50	-20.74	-13	-7.74	Horizontal
1649.4	-53.44	2.78	27.50	-28.72	-13	-15.72	Vertical
2474.1	-49.08	2.90	27.80	-24.18	-13	-11.18	Vertical
2474.1	-50.89	2.90	27.80	-25.99	-13	-12.99	Horizontal
204.4	-35.36	1.76	17.59	-19.53	-13	-6.53	Vertical
414.4	-41.42	1.63	15.87	-27.18	-13	-14.18	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-44.55	2.80	27.48	-19.87	-13	-6.87	Horizontal
1673.0	-44.90	2.80	27.48	-20.22	-13	-7.22	Vertical
2509.5	-47.82	2.91	27.70	-23.03	-13	-10.03	Vertical
2509.5	-52.83	2.91	27.70	-28.04	-13	-15.04	Horizontal
200.0	-34.86	1.61	15.68	-20.79	-13	-7.79	Vertical
448.0	-40.75	1.59	17.52	-24.83	-13	-11.83	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-53.84	2.82	27.43	-29.23	-13	-16.23	Horizontal
1696.6	-53.91	2.82	27.43	-29.30	-13	-16.30	Vertical
2544.9	-45.79	2.92	27.74	-20.97	-13	-7.97	Vertical
2544.9	-51.30	2.92	27.74	-26.48	-13	-13.48	Horizontal
188.1	-39.47	1.69	16.67	-24.48	-13	-11.48	Vertical
449.9	-40.97	1.70	17.18	-25.49	-13	-12.49	Horizontal

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

<b>Test Results for Low Channel 829MHz</b>							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1658.0	-46.75	2.78	27.50	-22.03	-13	-9.03	Horizontal
1658.0	-47.38	2.78	27.50	-22.66	-13	-9.66	Vertical
2487.0	-45.14	2.90	27.80	-20.24	-13	-7.24	Vertical
2487.0	-51.01	2.90	27.80	-26.11	-13	-13.11	Horizontal
182.1	-44.26	1.71	15.57	-30.40	-13	-17.40	Vertical
262.0	-44.06	1.34	16.40	-29.00	-13	-16.00	Horizontal
<b>Test Results for Mid Channel 836.5MHz</b>							
1673.0	-47.35	2.80	27.48	-22.67	-13	-9.67	Horizontal
1673.0	-49.75	2.80	27.48	-25.07	-13	-12.07	Vertical
2509.5	-51.94	2.91	27.70	-27.15	-13	-14.15	Vertical
2509.5	-49.86	2.91	27.70	-25.07	-13	-12.07	Horizontal
175.8	-41.50	1.44	17.04	-25.90	-13	-12.90	Vertical
368.7	-39.66	1.76	17.62	-23.80	-13	-10.80	Horizontal
<b>Test Results for High Channel 844MHz</b>							
1688.0	-44.74	2.82	27.43	-20.13	-13	-7.13	Horizontal
1688.0	-50.55	2.82	27.43	-25.94	-13	-12.94	Vertical
2532.0	-44.09	2.92	27.74	-19.27	-13	-6.27	Vertical
2532.0	-50.65	2.92	27.74	-25.83	-13	-12.83	Horizontal
177.8	-43.99	1.74	17.70	-28.03	-13	-15.03	Vertical
409.6	-36.02	1.41	17.46	-19.96	-13	-6.96	Horizontal

Note: P<sub>Mea</sub>(dBm)= Power(dBm)+ AR<sub>pl</sub> (dBm)

. Over Limit= : P<sub>Mea</sub>(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)**

<b>Test Results for Low Channel 699.7MHz</b>							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1399.4	-49.77	2.60	27.20	-25.17	-13	-12.17	Horizontal
1399.4	-53.44	2.60	27.20	-28.84	-13	-15.84	Vertical
2099.1	-45.92	2.85	27.54	-21.23	-13	-8.23	Vertical
2099.1	-53.91	2.85	27.54	-29.22	-13	-16.22	Horizontal
180.9	-36.06	1.49	17.78	-19.77	-13	-6.77	Vertical
405.5	-34.23	1.36	17.33	-18.26	-13	-5.26	Horizontal
<b>Test Results For Mid Channel 707.5MHz</b>							
1415.0	-49.33	2.61	27.28	-24.66	-13	-11.66	Horizontal
1415.0	-53.97	2.61	27.28	-29.30	-13	-16.30	Vertical
2122.5	-53.12	2.87	27.59	-28.40	-13	-15.40	Vertical
2122.5	-51.53	2.87	27.59	-26.81	-13	-13.81	Horizontal
177.8	-36.41	1.73	15.74	-22.40	-13	-9.40	Vertical
429.2	-44.49	1.62	15.79	-30.32	-13	-17.32	Horizontal
<b>Test Results for High Channel 715.3MHz</b>							
1430.6	-51.54	2.63	27.28	-26.89	-13	-13.89	Horizontal
1430.6	-50.43	2.63	27.28	-25.78	-13	-12.78	Vertical
2145.9	-51.49	2.88	27.60	-26.77	-13	-13.77	Vertical
2145.9	-50.31	2.88	27.60	-25.59	-13	-12.59	Horizontal
213.0	-35.11	1.61	18.00	-18.72	-13	-5.72	Vertical
354.4	-36.70	1.45	15.49	-22.67	-13	-9.67	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	-47.77	2.61	27.26	-23.12	-13	-10.12	Horizontal
1408.0	-47.34	2.61	27.26	-22.69	-13	-9.69	Vertical
2112.0	-49.20	2.87	27.58	-24.49	-13	-11.49	Vertical
2112.0	-52.10	2.87	27.58	-27.39	-13	-14.39	Horizontal
201.4	-39.64	1.31	16.97	-23.98	-13	-10.98	Vertical
282.3	-41.29	1.65	16.70	-26.24	-13	-13.24	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-44.28	2.61	27.28	-19.61	-13	-6.61	Horizontal
1415.0	-47.28	2.61	27.28	-22.61	-13	-9.61	Vertical
2122.5	-47.46	2.87	27.59	-22.74	-13	-9.74	Vertical
2122.5	-53.45	2.87	27.59	-28.73	-13	-15.73	Horizontal
212.6	-38.98	1.72	17.99	-22.71	-13	-9.71	Vertical
402.6	-34.88	1.73	17.94	-18.67	-13	-5.67	Horizontal
Test Results for High Channel 711MHz							
1422.0	-53.36	2.62	27.28	-28.70	-13	-15.70	Horizontal
1422.0	-46.72	2.62	27.28	-22.06	-13	-9.06	Vertical
2133.0	-46.63	2.87	27.60	-21.90	-13	-8.90	Vertical
2133.0	-52.91	2.87	27.60	-28.18	-13	-15.18	Horizontal
209.0	-34.94	1.58	15.93	-20.59	-13	-7.59	Vertical
253.2	-42.12	1.36	15.59	-27.89	-13	-14.89	Horizontal

Note: P<sub>Mea</sub>(dBm)= Power(dBm)+ AR<sub>pl</sub> (dBm)

. Over Limit= : P<sub>Mea</sub>(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	-70.69	2.61	27.28	-46.02	-40	-6.02	Horizontal
1559.0	-71.93	2.61	27.28	-47.26	-40	-7.26	Vertical
2338.5	-40.74	2.87	27.59	-16.02	-13	-3.02	Vertical
2338.5	-42.33	2.87	27.59	-17.61	-13	-4.61	Horizontal
120.1	-39.20	1.54	15.61	-25.13	-13	-12.13	Vertical
197.8	-35.76	1.51	15.21	-22.06	-13	-9.06	Horizontal
Test Results For Mid Channel 782MHz							
1564.0	-70.74	2.62	27.30	-46.06	-40	-6.06	Horizontal
1564.0	-71.82	2.62	27.30	-47.14	-40	-7.14	Vertical
2346.0	-42.84	2.87	27.62	-18.09	-13	-5.09	Vertical
2346.0	-42.47	2.87	27.62	-17.72	-13	-4.72	Horizontal
131.2	-34.78	1.65	16.17	-20.26	-13	-7.26	Vertical
267.5	-34.91	1.48	16.88	-19.51	-13	-6.51	Horizontal
Test Results for High Channel 784.5MHz							
1569.0	-71.82	2.66	27.28	-47.20	-40	-7.20	Horizontal
1569.0	-73.06	2.66	27.28	-48.44	-40	-8.44	Vertical
2353.5	-43.07	2.88	27.60	-18.35	-13	-5.35	Vertical
2353.5	-41.80	2.88	27.60	-17.08	-13	-4.08	Horizontal
80.8	-37.64	1.54	16.40	-22.78	-13	-9.78	Vertical
155.6	-39.28	1.43	15.77	-24.94	-13	-11.94	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	-70.76	2.62	27.30	-46.08	-40	-6.08	Horizontal
1564.0	-69.47	2.62	27.30	-44.79	-40	-4.79	Vertical
2346.0	-44.13	2.87	27.62	-19.38	-13	-6.38	Vertical
2346.0	-43.58	2.87	27.62	-18.83	-13	-5.83	Horizontal
129.1	-36.25	1.43	17.03	-20.65	-13	-7.65	Vertical
86.9	-36.25	1.62	16.63	-21.24	-13	-8.24	Horizontal

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

. 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 25

**QPSK EIRP POWER FOR LTE BAND 25 (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
3701.4	-48.83	4.02	29.80	-23.05	-13	-10.05	Horizontal
3701.4	-48.25	4.02	29.80	-22.47	-13	-9.47	Vertical
5552.1	-49.19	5.24	35.84	-18.59	-13	-5.59	Vertical
5552.1	-46.92	5.24	35.84	-16.32	-13	-3.32	Horizontal
93.9	-34.19	1.59	15.11	-20.67	-13	-7.67	Vertical
119.7	-33.33	1.80	15.61	-19.52	-13	-6.52	Horizontal
Test Results for Mid Channel 1732.5MHz							
3765.0	-49.79	4.03	30.00	-23.82	-13	-10.82	Horizontal
3765.0	-43.21	4.03	30.00	-17.24	-13	-4.24	Vertical
5647.5	-49.58	5.25	35.86	-18.97	-13	-5.97	Vertical
5647.5	-48.08	5.25	35.86	-17.47	-13	-4.47	Horizontal
166.1	-32.98	1.37	15.62	-18.73	-13	-5.73	Vertical
274.4	-33.89	1.55	17.51	-17.93	-13	-4.93	Horizontal
Test Results for High Channel 1754.3MHz							
3828.6	-48.06	4.05	30.01	-22.10	-13	-9.10	Horizontal
3828.6	-47.56	4.05	30.01	-21.60	-13	-8.60	Vertical
5742.9	-49.56	5.26	35.86	-18.96	-13	-5.96	Vertical
5742.9	-49.98	5.26	35.86	-19.38	-13	-6.38	Horizontal
108.6	-33.92	1.66	17.19	-18.39	-13	-5.39	Vertical
138.7	-32.77	1.35	17.94	-16.18	-13	-3.18	Horizontal

**QPSK EIRP POWER FOR LTE BAND 25 (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
3720.0	-48.01	4.02	29.80	-22.23	-13	-9.23	Horizontal
3720.0	-46.39	4.02	29.80	-20.61	-13	-7.61	Vertical
5580.0	-49.53	5.24	35.84	-18.93	-13	-5.93	Vertical
5580.0	-48.39	5.24	35.84	-17.79	-13	-4.79	Horizontal
146.2	-32.03	1.70	15.24	-18.49	-13	-5.49	Vertical
215.4	-34.61	1.42	16.58	-19.45	-13	-6.45	Horizontal
Test Results for Mid Channel 1732.5MHz							
3765.0	-46.68	4.03	30.00	-20.71	-13	-7.71	Horizontal
3765.0	-48.37	4.03	30.00	-22.40	-13	-9.40	Vertical
5647.5	-48.04	5.25	35.86	-17.43	-13	-4.43	Vertical
5647.5	-48.36	5.25	35.86	-17.75	-13	-4.75	Horizontal
132.2	-33.20	1.64	16.16	-18.68	-13	-5.68	Vertical
133.3	-32.76	1.62	17.37	-17.01	-13	-4.01	Horizontal
Test Results for High Channel 1745MHz							
3810.0	-49.08	2.91	27.68	-24.31	-13	-11.31	Horizontal
3810.0	-44.49	2.91	27.68	-19.72	-13	-6.72	Vertical
5715.0	-48.36	5.26	35.86	-17.76	-13	-4.76	Vertical
5715.0	-47.78	5.26	35.86	-17.18	-13	-4.18	Horizontal
212.6	-32.75	1.49	15.29	-18.95	-13	-5.95	Vertical
275.8	-33.22	1.79	16.42	-18.59	-13	-5.59	Horizontal

9.7 LTE BAND 26

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

Test Results for Low Channel 814.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1629.4	-49.00	2.78	27.50	-24.28	-13	-11.28	Horizontal
1629.4	-47.52	2.78	27.50	-22.80	-13	-9.80	Vertical
2444.1	-49.24	2.90	27.80	-24.34	-13	-11.34	Vertical
2444.1	-47.54	2.90	27.80	-22.64	-13	-9.64	Horizontal
229.6	-33.35	1.54	16.98	-17.91	-13	-4.91	Vertical
83.3	-32.38	1.47	15.82	-18.03	-13	-5.03	Horizontal
Test Results For Mid Channel 819MHz							
1638.0	-49.49	2.80	27.48	-24.81	-13	-11.81	Horizontal
1638.0	-46.62	2.80	27.48	-21.94	-13	-8.94	Vertical
2457.0	-46.11	2.91	27.70	-21.32	-13	-8.32	Vertical
2457.0	-47.73	2.91	27.70	-22.94	-13	-9.94	Horizontal
168.2	-34.77	1.74	16.19	-20.32	-13	-7.32	Vertical
92.9	-32.87	1.46	15.43	-18.90	-13	-5.90	Horizontal
Test Results for High Channel 823.3MHz							
1646.6	-46.87	2.82	27.43	-22.26	-13	-9.26	Horizontal
1646.6	-41.12	2.82	27.43	-16.51	-13	-3.51	Vertical
2469.9	-47.93	2.92	27.74	-23.11	-13	-10.11	Vertical
2469.9	-47.98	2.92	27.74	-23.16	-13	-10.16	Horizontal
213.1	-34.98	1.67	17.05	-19.60	-13	-6.60	Vertical
121.7	-32.43	1.42	16.12	-17.73	-13	-4.73	Horizontal

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

Test Results for Channel 819MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1638.0	-49.18	2.78	27.50	-24.46	-13	-11.46	Horizontal
1638.0	-44.86	2.78	27.50	-20.14	-13	-7.14	Vertical
2457.0	-47.64	2.90	27.80	-22.74	-13	-9.74	Vertical
2457.0	-48.51	2.90	27.80	-23.61	-13	-10.61	Horizontal
253.7	-33.66	1.43	17.34	-17.75	-13	-4.75	Vertical
256.8	-34.42	1.56	15.71	-20.27	-13	-7.27	Horizontal



**QPSK EIRP POWER FOR LTE BAND 26(824MHz~849MHz) (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	-47.12	2.78	27.50	-22.40	-13	-9.40	Horizontal
1649.4	-49.33	2.78	27.50	-24.61	-13	-11.61	Vertical
2474.1	-49.68	2.90	27.80	-24.78	-13	-11.78	Vertical
2474.1	-46.17	2.90	27.80	-21.27	-13	-8.27	Horizontal
237.0	-33.61	1.33	17.34	-17.60	-13	-4.60	Vertical
180.5	-32.44	1.47	16.80	-17.11	-13	-4.11	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-47.52	2.80	27.48	-22.84	-13	-9.84	Horizontal
1673.0	-46.28	2.80	27.48	-21.60	-13	-8.60	Vertical
2509.5	-46.49	2.91	27.70	-21.70	-13	-8.70	Vertical
2509.5	-48.51	2.91	27.70	-23.72	-13	-10.72	Horizontal
140.8	-32.65	1.75	15.46	-18.94	-13	-5.94	Vertical
90.6	-32.96	1.52	16.14	-18.34	-13	-5.34	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-49.63	2.82	27.43	-25.02	-13	-12.02	Horizontal
1696.6	-41.81	2.82	27.43	-17.20	-13	-4.20	Vertical
2544.9	-47.22	2.92	27.74	-22.40	-13	-9.40	Vertical
2544.9	-49.73	2.92	27.74	-24.91	-13	-11.91	Horizontal
171.4	-33.09	1.67	16.09	-18.67	-13	-5.67	Vertical
247.2	-33.64	1.80	17.55	-17.89	-13	-4.89	Horizontal

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

Test Results for Low Channel 831.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1663.0	-49.23	2.78	27.50	-24.51	-13	-11.51	Horizontal
1663.0	-47.78	2.78	27.50	-23.06	-13	-10.06	Vertical
2494.5	-49.62	2.90	27.80	-24.72	-13	-11.72	Vertical
2494.5	-49.37	2.90	27.80	-24.47	-13	-11.47	Horizontal
255.4	-32.15	1.52	15.72	-17.95	-13	-4.95	Vertical
163.1	-32.86	1.40	17.03	-17.23	-13	-4.23	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-46.53	2.80	27.48	-21.85	-13	-8.85	Horizontal
1673.0	-41.06	2.80	27.48	-16.38	-13	-3.38	Vertical
2509.5	-48.20	2.91	27.70	-23.41	-13	-10.41	Vertical
2509.5	-47.10	2.91	27.70	-22.31	-13	-9.31	Horizontal
227.1	-34.09	1.74	16.38	-19.45	-13	-6.45	Vertical
101.3	-32.22	1.79	15.20	-18.81	-13	-5.81	Horizontal
Test Results for High Channel 841.5MHz							
1683.0	-49.76	2.82	27.43	-25.15	-13	-12.15	Horizontal
1683.0	-42.55	2.82	27.43	-17.94	-13	-4.94	Vertical
2524.5	-47.35	2.92	27.74	-22.53	-13	-9.53	Vertical
2524.5	-47.11	2.92	27.74	-22.29	-13	-9.29	Horizontal
261.1	-32.48	1.78	17.44	-16.82	-13	-3.82	Vertical
120.1	-32.72	1.70	15.93	-18.49	-13	-5.49	Horizontal

9.8 LTE BAND 41

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

Test Results for Low Channel 2572.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5145.0	-62.26	5.23	35.81	-31.68	-25	-6.68	Horizontal
5145.0	-60.59	5.23	35.81	-30.01	-25	-5.01	Vertical
7717.5	-64.28	5.67	36.85	-33.10	-25	-8.10	Vertical
7717.5	-59.66	5.67	36.85	-28.48	-25	-3.48	Horizontal
435.3	-47.20	1.38	15.98	-32.60	-25	-7.60	Vertical
465.8	-47.08	1.62	15.66	-33.04	-25	-8.04	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-61.93	5.23	35.82	-31.34	-25	-6.34	Horizontal
5190.0	-63.78	5.23	35.82	-33.19	-25	-8.19	Vertical
7785.0	-63.60	5.67	36.85	-32.42	-25	-7.42	Vertical
7785.0	-59.71	5.67	36.85	-28.53	-25	-3.53	Horizontal
510.4	-49.91	1.62	16.17	-35.36	-25	-10.36	Vertical
562.9	-48.24	1.74	17.63	-32.35	-25	-7.35	Horizontal
Test Results for High Channel 2617.5MHz							
5235.0	-63.45	5.24	35.83	-32.86	-25	-7.86	Horizontal
5235.0	-60.59	5.24	35.83	-30.00	-25	-5.00	Vertical
7852.5	-64.94	5.68	36.87	-33.75	-25	-8.75	Vertical
7852.5	-62.78	5.68	36.87	-31.59	-25	-6.59	Horizontal
197.6	-46.32	1.55	15.84	-32.03	-25	-7.03	Vertical
353.1	-45.53	1.51	17.06	-29.98	-25	-4.98	Horizontal

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

Test Results for Low Channel 2580MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5160.0	-63.36	5.23	35.82	-32.77	-25	-7.77	Horizontal
5160.0	-64.11	5.23	35.82	-33.52	-25	-8.52	Vertical
7740.0	-62.85	5.67	36.86	-31.66	-25	-6.66	Vertical
7740.0	-60.88	5.67	36.86	-29.69	-25	-4.69	Horizontal
128.9	-49.53	1.43	15.51	-35.45	-25	-10.45	Vertical
344.8	-46.31	1.40	16.97	-30.74	-25	-5.74	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-63.95	5.23	35.82	-33.36	-25	-8.36	Horizontal
5190.0	-59.86	5.23	35.82	-29.27	-25	-4.27	Vertical
7785.0	-63.53	5.67	36.85	-32.35	-25	-7.35	Vertical
7785.0	-60.98	5.67	36.85	-29.80	-25	-4.80	Horizontal
100.8	-49.89	1.77	16.72	-34.94	-25	-9.94	Vertical
263.5	-46.13	1.31	16.99	-30.45	-25	-5.45	Horizontal
Test Results for High Channel 2610MHz							
5220.0	-62.33	5.24	35.83	-31.74	-25	-6.74	Horizontal
5220.0	-59.91	5.24	35.83	-29.32	-25	-4.32	Vertical
7830.0	-62.49	5.70	36.88	-31.31	-25	-6.31	Vertical
7830.0	-60.96	5.70	36.88	-29.78	-25	-4.78	Horizontal
349.9	-47.36	1.70	15.73	-33.33	-25	-8.33	Vertical
110.3	-47.50	1.75	17.33	-31.92	-25	-6.92	Horizontal

9.9 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	-48.51	4.02	29.80	-22.73	-13	-9.73	Horizontal
3421.4	-53.80	4.02	29.80	-28.02	-13	-15.02	Vertical
5132.1	-53.68	5.24	35.84	-23.08	-13	-10.08	Vertical
5132.1	-48.12	5.24	35.84	-17.52	-13	-4.52	Horizontal
112.6	-44.84	1.52	15.57	-30.79	-13	-17.79	Vertical
220.5	-45.65	1.33	17.14	-29.84	-13	-16.84	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-46.08	4.03	30.00	-20.11	-13	-7.11	Horizontal
3490.0	-47.99	4.03	30.00	-22.02	-13	-9.02	Vertical
5235.0	-51.84	5.25	35.86	-21.23	-13	-8.23	Vertical
5235.0	-51.20	5.25	35.86	-20.59	-13	-7.59	Horizontal
157.3	-46.31	1.53	17.13	-30.71	-13	-17.71	Vertical
213.1	-54.87	1.41	15.95	-40.33	-13	-27.33	Horizontal
Test Results for High Channel 1779.3MHz							
3558.6	-49.24	4.05	30.01	-23.28	-13	-10.28	Horizontal
3558.6	-47.04	4.05	30.01	-21.08	-13	-8.08	Vertical
5337.9	-49.02	5.26	35.86	-18.42	-13	-5.42	Vertical
5337.9	-51.30	5.26	35.86	-20.70	-13	-7.70	Horizontal
170.6	-47.06	1.44	15.51	-32.99	-13	-19.99	Vertical
169.0	-51.01	1.78	15.76	-37.03	-13	-24.03	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	-53.35	4.02	29.80	-27.57	-13	-14.57	Horizontal
3440.0	-46.28	4.02	29.80	-20.50	-13	-7.50	Vertical
5160.0	-54.58	5.24	35.84	-23.98	-13	-10.98	Vertical
5160.0	-52.84	5.24	35.84	-22.24	-13	-9.24	Horizontal
268.8	-52.35	1.62	17.02	-36.95	-13	-23.95	Vertical
161.4	-46.34	1.32	17.31	-30.35	-13	-17.35	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-49.24	4.03	30.00	-23.27	-13	-10.27	Horizontal
3490.0	-51.84	4.03	30.00	-25.87	-13	-12.87	Vertical
5235.0	-53.79	5.25	35.86	-23.18	-13	-10.18	Vertical
5235.0	-54.11	5.25	35.86	-23.50	-13	-10.50	Horizontal
159.9	-47.81	1.45	15.17	-34.09	-13	-21.09	Vertical
172.1	-53.39	1.48	17.82	-37.05	-13	-24.05	Horizontal
Test Results for High Channel 1770MHz							
3540.0	-51.91	2.91	27.68	-27.14	-13	-14.14	Horizontal
3540.0	-46.70	2.91	27.68	-21.93	-13	-8.93	Vertical
5310.0	-50.30	5.26	35.86	-19.70	-13	-6.70	Vertical
5310.0	-47.62	5.26	35.86	-17.02	-13	-4.02	Horizontal
197.3	-45.65	1.76	16.38	-31.03	-13	-18.03	Vertical
158.5	-45.78	1.43	17.13	-30.08	-13	-17.08	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.

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  $\pm 2.5$  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. =  $-30^{\circ}$  to  $+50^{\circ}\text{C}$
- Voltage = low voltage, DC 3.4V, Normal, DC 3.85V and High voltage, DC 4.2V.

### Frequency Stability vs Temperature:

The EUT is placed inside a temperature chamber. The temperature is set to  $-30^{\circ}\text{C}$  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  
LTE Band 4
- LTE Band 5  
LTE Band 12  
LTE Band 13  
LTE Band 25,  
LTE Band 26,  
LTE Band 41,  
LTE Band 66

## 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]
<b>BAND 2 QPSK, (CH 18900 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
22.87	1880	8.2	0.00436	2.5
25.41	1880	6.8	0.00364	2.5
27.95	1880	5.0	0.00268	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 2 QPSK, (CH 18900 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
Normal (25C)	1880	6.3	0.00336	2.5
Extreme (50C)	1880	6.4	0.00343	2.5
Extreme (40C)	1880	8.0	0.00427	2.5
Extreme (30C)	1880	8.7	0.00461	2.5
Extreme (10C)	1880	8.4	0.00446	2.5
Extreme (0C)	1880	6.4	0.00340	2.5
Extreme (-10C)	1880	8.1	0.00430	2.5
Extreme (-20C)	1880	8.0	0.00424	2.5
Extreme (-30C)	1880	5.9	0.00313	2.5



**16QAM, (20MHz BANDWIDTH)**

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 2 16QAM, (CH 18900 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
22.87	1880	8.3	0.00441	2.5
25.41	1880	5.7	0.00304	2.5
27.95	1880	6.7	0.00354	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 2 16QAM, (CH 18900 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
Normal (25C)	1880	7.4	0.00393	2.5
Extreme (50C)	1880	7.0	0.00371	2.5
Extreme (40C)	1880	5.7	0.00302	2.5
Extreme (30C)	1880	7.1	0.00378	2.5
Extreme (10C)	1880	6.0	0.00320	2.5
Extreme (0C)	1880	4.5	0.00242	2.5
Extreme (-10C)	1880	10.0	0.00533	2.5
Extreme (-20C)	1880	5.9	0.00312	2.5
Extreme (-30C)	1880	5.7	0.00304	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]
<b>BAND 4 QPSK, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
22.87	1732.5	6.4	0.00369	2.5
25.41	1732.5	5.7	0.00330	2.5
27.95	1732.5	6.1	0.00351	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 4 QPSK, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
Normal (25C)	1732.5	4.7	0.00271	2.5
Extreme (50C)	1732.5	9.3	0.00537	2.5
Extreme (40C)	1732.5	6.1	0.00355	2.5
Extreme (30C)	1732.5	5.8	0.00332	2.5
Extreme (10C)	1732.5	6.3	0.00364	2.5
Extreme (0C)	1732.5	9.0	0.00522	2.5
Extreme (-10C)	1732.5	6.0	0.00348	2.5
Extreme (-20C)	1732.5	6.5	0.00376	2.5
Extreme (-30C)	1732.5	6.6	0.00382	2.5

**16QAM, (20MHz BANDWIDTH)**

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 4 16QAM, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
22.87	1732.5	6.3	0.00365	2.5
25.41	1732.5	6.0	0.00348	2.5
27.95	1732.5	5.8	0.00335	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 4 16QAM, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
Normal (25C)	1732.5	-6.9	-0.00400	2.5
Extreme (50C)	1732.5	-3.9	-0.00226	2.5
Extreme (40C)	1732.5	5.6	0.00323	2.5
Extreme (30C)	1732.5	-3.8	-0.00218	2.5
Extreme (10C)	1732.5	6.3	0.00365	2.5
Extreme (0C)	1732.5	5.3	0.00306	2.5
Extreme (-10C)	1732.5	9.6	0.00551	2.5
Extreme (-20C)	1732.5	10.6	0.00614	2.5
Extreme (-30C)	1732.5	5.9	0.00338	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]
<b>BAND 5 QPSK, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b>				
22.87	836.5	6.4	0.00769	2.5
25.41	836.5	8.7	0.01039	2.5
27.95	836.5	4.2	0.00500	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 5 QPSK, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b>				
Normal (25C)	836.5	6.9	0.00820	2.5
Extreme (50C)	836.5	8.7	0.01039	2.5
Extreme (40C)	836.5	9.7	0.01165	2.5
Extreme (30C)	836.5	5.4	0.00646	2.5
Extreme (10C)	836.5	6.2	0.00740	2.5
Extreme (0C)	836.5	4.9	0.00586	2.5
Extreme (-10C)	836.5	3.6	0.00426	2.5
Extreme (-20C)	836.5	5.1	0.00608	2.5
Extreme (-30C)	836.5	6.7	0.00795	2.5

**16QAM, (10MHz BANDWIDTH)**

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 5 16QAM, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b>				
22.87	836.5	8.4	0.01007	2.5
25.41	836.5	9.5	0.01140	2.5
27.95	836.5	7.2	0.00864	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 5 16QAM, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b>				
Normal (25C)	836.5	6.9	0.00827	2.5
Extreme (50C)	836.5	5.2	0.00620	2.5
Extreme (40C)	836.5	3.2	0.00378	2.5
Extreme (30C)	836.5	2.9	0.00350	2.5
Extreme (10C)	836.5	6.8	0.00809	2.5
Extreme (0C)	836.5	3.0	0.00353	2.5
Extreme (-10C)	836.5	9.7	0.01163	2.5
Extreme (-20C)	836.5	6.6	0.00787	2.5
Extreme (-30C)	836.5	6.5	0.00776	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

QPSK, (10MHz BANDWIDTH)

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 12 QPSK, (CH 23095 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b>				
22.87	707.5	13.2	0.01862	2.5
25.41	707.5	13.7	0.01937	2.5
27.95	707.5	13.6	0.01925	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 12 QPSK, (CH 23095 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b>				
Normal (25C)	707.5	-6.9	-0.00974	2.5
Extreme (50C)	707.5	-4.3	-0.00604	2.5
Extreme (40C)	707.5	5.2	0.00738	2.5
Extreme (30C)	707.5	-4.0	-0.00566	2.5
Extreme (10C)	707.5	6.7	0.00950	2.5
Extreme (0C)	707.5	4.9	0.00696	2.5
Extreme (-10C)	707.5	9.5	0.01341	2.5
Extreme (-20C)	707.5	11.2	0.01586	2.5
Extreme (-30C)	707.5	6.5	0.00921	2.5

**16QAM, (10MHz BANDWIDTH)**

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 12 16QAM, (CH 23095 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b>				
22.87	707.5	9.9	0.01397	2.5
25.41	707.5	5.5	0.00781	2.5
27.95	707.5	5.0	0.00705	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 12 QPSK, (CH 23095 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b>				
Normal (25C)	707.5	5.4	0.00765	2.5
Extreme (50C)	707.5	9.5	0.01336	2.5
Extreme (40C)	707.5	6.3	0.00894	2.5
Extreme (30C)	707.5	7.1	0.01000	2.5
Extreme (10C)	707.5	6.4	0.00899	2.5
Extreme (0C)	707.5	5.2	0.00732	2.5
Extreme (-10C)	707.5	6.2	0.00875	2.5
Extreme (-20C)	707.5	8.2	0.01158	2.5
Extreme (-30C)	707.5	6.3	0.00893	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

QPSK, (10MHz BANDWIDTH)

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 13 QPSK, (CH 23230 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b>				
22.87	782	6.2	0.00796	2.5
25.41	782	6.6	0.00843	2.5
27.95	782	4.6	0.00591	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 13 QPSK, (CH 23230 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b>				
Normal (25C)	782	4.8	0.00616	2.5
Extreme (50C)	782	9.8	0.01247	2.5
Extreme (40C)	782	7.3	0.00929	2.5
Extreme (30C)	782	5.9	0.00759	2.5
Extreme (10C)	782	6.8	0.00875	2.5
Extreme (0C)	782	4.4	0.00565	2.5
Extreme (-10C)	782	9.6	0.01222	2.5
Extreme (-20C)	782	8.5	0.01087	2.5
Extreme (-30C)	782	6.2	0.00795	2.5



**16QAM, (10MHz BANDWIDTH)**

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 13 16QAM, (CH 23230 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b>				
22.87	782	6.5	0.00831	2.5
25.41	782	9.8	0.01257	2.5
27.95	782	6.4	0.00821	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 13 QPSK, (CH 23230 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b>				
Normal (25C)	782	7.0	0.00892	2.5
Extreme (50C)	782	7.1	0.00914	2.5
Extreme (40C)	782	5.5	0.00708	2.5
Extreme (30C)	782	6.7	0.00852	2.5
Extreme (10C)	782	6.0	0.00773	2.5
Extreme (0C)	782	4.9	0.00632	2.5
Extreme (-10C)	782	9.6	0.01224	2.5
Extreme (-20C)	782	6.9	0.00886	2.5
Extreme (-30C)	782	6.5	0.00834	2.5

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

10.6 LTE BAND 25

**QPSK, (20MHz BANDWIDTH)**

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 25 QPSK, (CH 26365 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
22.87	1882.5	6.3	0.00332	2.5
25.41	1882.5	4.9	0.00260	2.5
27.95	1882.5	6.2	0.00327	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 25 QPSK, (CH 26365 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
Normal (25C)	1882.5	5.5	0.00292	2.5
Extreme (50C)	1882.5	3.5	0.00185	2.5
Extreme (40C)	1882.5	5.7	0.00303	2.5
Extreme (30C)	1882.5	2.5	0.00130	2.5
Extreme (10C)	1882.5	4.3	0.00227	2.5
Extreme (0C)	1882.5	6.3	0.00333	2.5
Extreme (-10C)	1882.5	6.6	0.00351	2.5
Extreme (-20C)	1882.5	6.0	0.00318	2.5
Extreme (-30C)	1882.5	6.1	0.00326	2.5

**16QAM, (20MHz BANDWIDTH)**

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 25 16QAM, (CH 26365 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
22.87	1882.5	9.5	0.00503	2.5
25.41	1882.5	6.8	0.00363	2.5
27.95	1882.5	6.3	0.00332	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 25 16QAM, (CH 26365 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
Normal (25C)	1882.5	7.1	0.00375	2.5
Extreme (50C)	1882.5	4.9	0.00261	2.5
Extreme (40C)	1882.5	5.3	0.00280	2.5
Extreme (30C)	1882.5	4.8	0.00253	2.5
Extreme (10C)	1882.5	6.8	0.00363	2.5
Extreme (0C)	1882.5	5.2	0.00278	2.5
Extreme (-10C)	1882.5	9.5	0.00504	2.5
Extreme (-20C)	1882.5	7.3	0.00387	2.5
Extreme (-30C)	1882.5	5.7	0.00303	2.5

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

10.7 LTE BAND 26

**Band 26 A (814MHz~824MHz) QPSK,10MHz BANDWIDTH)**

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 26A QPSK, (CH 26740 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b>				
22.87	819	12.5	0.01530	2.5
25.41	819	14.0	0.01710	2.5
27.95	819	13.2	0.01611	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 26A QPSK, (CH 26740RB size 50 RB Offset 0 10MHz BANDWIDTH)</b>				
Normal (25C)	819	7.4	0.00902	2.5
Extreme (50C)	819	-4.0	-0.00489	2.5
Extreme (40C)	819	5.0	0.00617	2.5
Extreme (30C)	819	-3.9	-0.00480	2.5
Extreme (10C)	819	6.9	0.00846	2.5
Extreme (0C)	819	5.1	0.00626	2.5
Extreme (-10C)	819	9.4	0.01147	2.5
Extreme (-20C)	819	11.2	0.01367	2.5
Extreme (-30C)	819	6.0	0.00729	2.5

**Band 26A (814MHz~824MHz) 16QAM, (10MHz BANDWIDTH)**

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 26A 16QAM, (CH 26740 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b>				
22.87	819	8.3	0.01015	2.5
25.41	819	6.1	0.00744	2.5
27.95	819	5.4	0.00659	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 26A 16QAM, (CH 26740 RB size 50 RB Offset 0 10MHz BANDWIDTH)</b>				
Normal (25C)	819	7.5	0.00914	2.5
Extreme (50C)	819	5.1	0.00627	2.5
Extreme (40C)	819	5.2	0.00631	2.5
Extreme (30C)	819	4.5	0.00550	2.5
Extreme (10C)	819	6.9	0.00842	2.5
Extreme (0C)	819	4.9	0.00593	2.5
Extreme (-10C)	819	9.8	0.01197	2.5
Extreme (-20C)	819	11.0	0.01338	2.5
Extreme (-30C)	819	5.9	0.00719	2.5

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

**Band 26B ((824MHz~849MHz) QPSK,15MHz BANDWIDTH)**

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 26B QPSK, (CH 26915 RB size 75 RB Offset 0 15MHz BANDWIDTH)</b>				
22.87	836.5	12.9	0.01543	2.5
25.41	836.5	13.6	0.01631	2.5
27.95	836.5	13.2	0.01575	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 26B QPSK, (CH 26915 RB size 75 RB Offset 0 15MHz BANDWIDTH)</b>				
Normal (25C)	836.5	7.2	0.00860	2.5
Extreme (50C)	836.5	5.0	0.00596	2.5
Extreme (40C)	836.5	5.7	0.00683	2.5
Extreme (30C)	836.5	4.5	0.00537	2.5
Extreme (10C)	836.5	6.2	0.00747	2.5
Extreme (0C)	836.5	4.9	0.00591	2.5
Extreme (-10C)	836.5	9.8	0.01169	2.5
Extreme (-20C)	836.5	10.8	0.01285	2.5
Extreme (-30C)	836.5	6.4	0.00760	2.5

**Band 26B (824MHz~849MHz) 16QAM, (15MHz BANDWIDTH)**

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 26B 16QAM, (CH 26915 RB size 75 RB Offset 0 15MHz BANDWIDTH)</b>				
22.87	836.5	12.6	0.01511	2.5
25.41	836.5	13.6	0.01623	2.5
27.95	836.5	13.8	0.01648	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 26B 16QAM, (CH 26915 RB size 75 RB Offset 0 15MHz BANDWIDTH)</b>				
Normal (25C)	836.5	7.9	0.00939	2.5
Extreme (50C)	836.5	4.8	0.00576	2.5
Extreme (40C)	836.5	5.6	0.00668	2.5
Extreme (30C)	836.5	4.9	0.00589	2.5
Extreme (10C)	836.5	6.2	0.00739	2.5
Extreme (0C)	836.5	4.7	0.00567	2.5
Extreme (-10C)	836.5	9.6	0.01150	2.5
Extreme (-20C)	836.5	11.0	0.01315	2.5
Extreme (-30C)	836.5	6.4	0.00771	2.5

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

10.8 LTE BAND 41

QPSK, (20MHz BANDWIDTH)

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 41 QPSK, (CH 40640 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
22.87	2595	8.2	0.00317	2.5
25.41	2595	6.1	0.00234	2.5
27.95	2595	7.9	0.00306	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 41 QPSK, (CH 40640 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
Normal (25C)	2595	7.3	0.00282	2.5
Extreme (50C)	2595	4.3	0.00167	2.5
Extreme (40C)	2595	5.6	0.00218	2.5
Extreme (30C)	2595	5.0	0.00194	2.5
Extreme (10C)	2595	6.0	0.00232	2.5
Extreme (0C)	2595	5.3	0.00205	2.5
Extreme (-10C)	2595	9.8	0.00376	2.5
Extreme (-20C)	2595	11.2	0.00432	2.5
Extreme (-30C)	2595	6.2	0.00241	2.5



**16QAM, (20MHz BANDWIDTH)**

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 41 16QAM, (CH 40640 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
22.87	2595	8.6	0.00332	2.5
25.41	2595	6.6	0.00255	2.5
27.95	2595	6.9	0.00264	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 41 16QAM, (CH 40640 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
Normal (25C)	2595	7.2	0.00277	2.5
Extreme (50C)	2595	4.5	0.00175	2.5
Extreme (40C)	2595	5.2	0.00200	2.5
Extreme (30C)	2595	5.0	0.00191	2.5
Extreme (10C)	2595	6.9	0.00267	2.5
Extreme (0C)	2595	5.2	0.00201	2.5
Extreme (-10C)	2595	9.5	0.00365	2.5
Extreme (-20C)	2595	10.8	0.00415	2.5
Extreme (-30C)	2595	5.9	0.00227	2.5

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

10.9 LTE BAND 66

QPSK, (20MHz BANDWIDTH)

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 66 QPSK, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
22.87	1745	13.0	0.00746	2.5
25.41	1745	14.0	0.00803	2.5
27.95	1745	13.0	0.00748	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 66 QPSK, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
Normal (25C)	1745	7.5	0.00428	2.5
Extreme (50C)	1745	5.3	0.00302	2.5
Extreme (40C)	1745	5.3	0.00306	2.5
Extreme (30C)	1745	4.8	0.00277	2.5
Extreme (10C)	1745	6.8	0.00391	2.5
Extreme (0C)	1745	5.3	0.00302	2.5
Extreme (-10C)	1745	9.3	0.00532	2.5
Extreme (-20C)	1745	11.0	0.00629	2.5
Extreme (-30C)	1745	6.1	0.00352	2.5

**16QAM, (20MHz BANDWIDTH)**

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 66 16QAM, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
22.87	1745	13.0	0.00746	2.5
25.41	1745	13.3	0.00764	2.5
27.95	1745	13.0	0.00747	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 66 16QAM, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
Normal (25C)	1745	7.3	0.00418	2.5
Extreme (50C)	1745	5.3	0.00301	2.5
Extreme (40C)	1745	5.1	0.00293	2.5
Extreme (30C)	1745	4.3	0.00248	2.5
Extreme (10C)	1745	6.8	0.00392	2.5
Extreme (0C)	1745	4.5	0.00260	2.5
Extreme (-10C)	1745	9.5	0.00545	2.5
Extreme (-20C)	1745	10.4	0.00594	2.5
Extreme (-30C)	1745	6.4	0.00367	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.

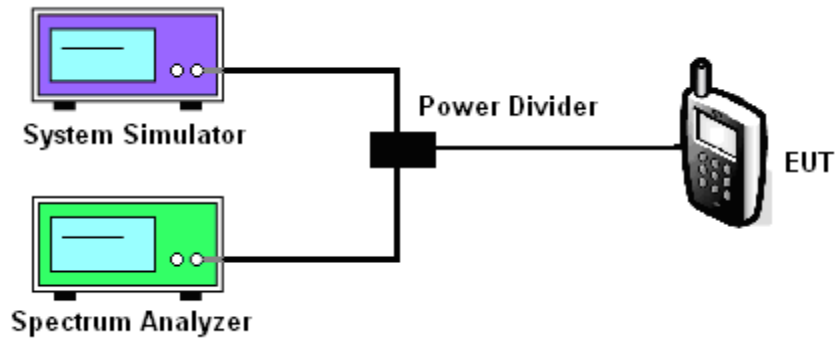
### 11.2 Measuring Instruments

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  
LTE Band 4
- LTE Band 5  
LTE Band 12  
LTE Band 13  
LTE Band 25,  
LTE Band 26,  
LTE Band 41,  
LTE Band 66

Test data reference attachment.

----END OF REPORT----