

# **FCC CFR47 PART 22H, 24E, 27, 90S CERTIFICATION TEST REPORT FCC ID: 2AXDW-HL101**

**Product:** Pudu HolaBot  
**Trade Mark:** PUDU  
**Model Number:** HL100  
**Family Model:** HL101, HL110  
**Report No.:** S21101800631006

## **Prepared for**

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## TEST RESULT CERTIFICATION

**Applicant's name** ..... : SHENZHEN PUDU TECHNOLOGY CO., LTD.  
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**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**..... : Pudu HolaBot  
**Model and/or type reference** .. : HL100  
**Family Model:** HL101, HL110  
**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.

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**Date of Test** .....

Date (s) of performance of tests..... 01 Nov. 2021 ~ 27 Dec. 2021  
08 Dec. 2021 ~ 28 Mar. 2022

Date of Issue ..... 30 Mar. 2022

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>44</b>
<b>8.11 LTE BAND 66</b> .....	<b>46</b>
<b>9. SPURIOUS RADIATION EMISSION</b> .....	<b>50</b>
<b>9.1 LTE BAND 2</b> .....	<b>52</b>
<b>9.2 LTE BAND 4</b> .....	<b>54</b>
<b>9.3 LTE BAND 5</b> .....	<b>56</b>
<b>9.4 LTE BAND 12</b> .....	<b>58</b>
<b>9.5 LTE BAND 13</b> .....	<b>60</b>
<b>9.6 LTE BAND 25</b> .....	<b>62</b>
<b>9.7 LTE BAND 26</b> .....	<b>64</b>
<b>9.8 LTE BAND 41</b> .....	<b>68</b>
<b>9.9 LTE BAND 66</b> .....	<b>70</b>
<b>10. FREQUENCY STABILITY</b> .....	<b>72</b>
<b>10.1 LTE BAND 2</b> .....	<b>73</b>
<b>10.2 LTE BAND 4</b> .....	<b>75</b>
<b>10.3 LTE BAND 5</b> .....	<b>77</b>
<b>10.4 LTE BAND 12</b> .....	<b>79</b>
<b>10.5 LTE BAND 13</b> .....	<b>81</b>
<b>10.6 LTE BAND 25</b> .....	<b>83</b>
<b>10.7 LTE BAND 26</b> .....	<b>85</b>
<b>10.8 LTE BAND 41</b> .....	<b>89</b>
<b>10.9 LTE BAND 66</b> .....	<b>91</b>
<b>11. PEAK-TO-AVERAGE RATIO</b> .....	<b>93</b>

**11.1 Description of the PAR Measurement..... 93**

**11.2 Measuring Instruments..... 93**

**11.3 Test Procedures..... 93**

**11.4 Test Setup..... 94**

## 1. GENERAL INFORMATION

### 1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	Pudu HolaBot
Trade Mark	PUDU
Model Name	HL100
Family Model	HL101, HL110
Model Difference	All models are the same circuit and RF module, except the model name.
FCC ID:	2AXDW-HL101
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:	5.5dBi;

Power Supply:	1#: DC 25.9V from battery or DC 29.4V from adapter 2#: DC 25.2V from battery or DC 29.4V from adapter
Adapter:	Adapter 1# : Model: HK240A-CF Input: 100-240V~50/60Hz 3.0A Max Output: 29.4V $\overline{\text{---}}$ 8.0A Adapter 2# : Model: AP-PN360CH02940080 Input: 100-240V~50-60Hz 3.5A Max Output: 29.4V $\overline{\text{---}}$ 8.0A
Extreme Vol. Limits:	DC 23.31V to DC 28.49V (Nominal DC 25.9V) (Note 1)
HW Version	V33.0.15
SW Version	V5.2.0.21
** Note1: The High Voltage DC 28.49V and Low Voltage DC 23.31V 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-HL101** 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% ( $U = 2U_c(y)$ )	2.5dB

## 1.5 SPECIAL ACCESSORIES

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

## 1.6 WORST-CASE CONFIGURATION AND MODE

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

The device has LTE Bands of: Band 2, 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

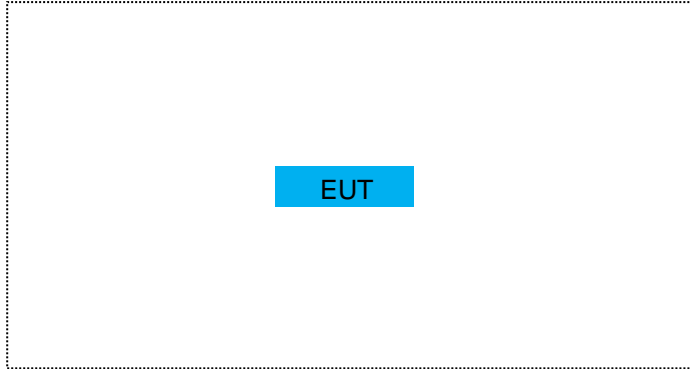
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Pudu HolaBot	HL100	FCC ID: 2AXDW-HL101	EUT

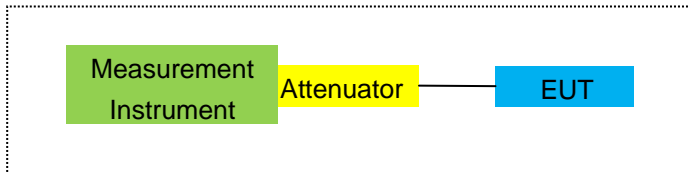
*Note: All the accessories have been used during the test.  
the following "EUT" in setup diagram means EUT system.*

## 2.4 TEST SETUP

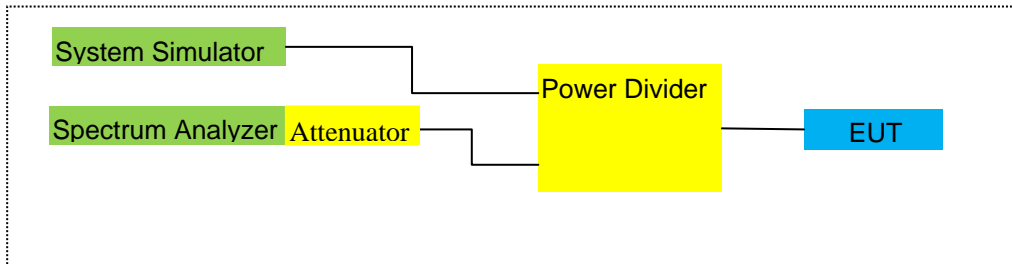
For Radiated Test Cases



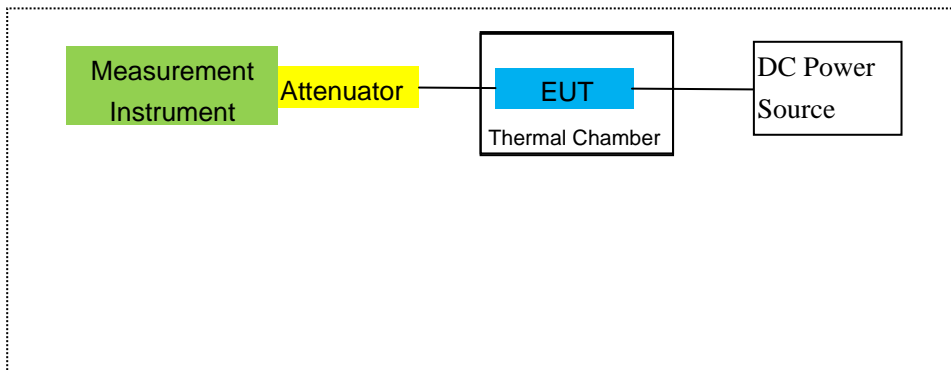
For Conducted Output Power



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-10180	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	0395.1619.05	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						Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)			
1.4MHz Band QPSK	1/#Mid	1850.7	-3.28	3.76	28.24	21.20	131.826	Horizontal	Pass	
		1880	-1.85	3.91	28.22	22.46	176.198	Horizontal	Pass	
		1909.3	-3.50	3.93	28.20	20.77	119.399	Horizontal	Pass	
3.0MHz Band QPSK	1/#Mid	1851.5	-2.10	3.77	28.23	22.36	172.187	Horizontal	Pass	
		1880	-2.40	3.91	28.24	21.93	155.955	Horizontal	Pass	
		1908.5	-2.86	3.94	28.25	21.45	139.637	Horizontal	Pass	
5.0MHz Band QPSK	1/#Mid	1852.5	-3.23	3.77	28.31	21.31	135.207	Horizontal	Pass	
		1880	-2.64	3.91	28.22	21.67	146.893	Horizontal	Pass	
		1907.5	-1.66	3.94	28.20	22.60	181.970	Horizontal	Pass	
10.0MHz Band QPSK	1/#Mid	1855	-2.50	3.79	28.33	22.04	159.956	Horizontal	Pass	
		1880	-2.45	3.95	28.22	21.82	152.055	Horizontal	Pass	
		1905	-1.79	3.97	28.19	22.43	174.985	Horizontal	Pass	
15.0MHz Band QPSK	1/#Mid	1857.5	-3.16	3.79	28.34	21.39	137.721	Horizontal	Pass	
		1880	-1.61	3.95	28.22	22.66	184.502	Horizontal	Pass	
		1902.5	-1.49	3.97	28.18	22.72	187.068	Horizontal	Pass	
20.0MHz Band QPSK	1/#Mid	1860	-1.96	3.81	28.35	22.58	181.134	Horizontal	Pass	
		1880	-2.98	3.96	28.22	21.28	134.276	Horizontal	Pass	
		1900	-2.11	4.00	28.16	22.05	160.325	Horizontal	Pass	
1.4MHz Band QPSK	1/#Mid	1850.7	-2.56	3.76	28.24	21.92	155.597	Vertical	Pass	
		1880	-1.69	3.91	28.22	22.62	182.810	Vertical	Pass	
		1909.3	-2.46	3.93	28.20	21.81	151.705	Vertical	Pass	
3.0MHz Band QPSK	1/#Mid	1851.5	-2.93	3.77	28.23	21.53	142.233	Vertical	Pass	
		1880	-2.29	3.91	28.24	22.04	159.956	Vertical	Pass	
		1908.5	-1.48	3.94	28.25	22.83	191.867	Vertical	Pass	
5.0MHz Band QPSK	1/#Mid	1852.5	-2.25	3.77	28.31	22.29	169.434	Vertical	Pass	
		1880	-1.63	3.91	28.22	22.68	185.353	Vertical	Pass	
		1907.5	-1.45	3.94	28.20	22.81	190.985	Vertical	Pass	
10.0MHz	1/#Mid	1855	-2.56	3.79	28.33	21.98	157.761	Vertical	Pass	

Band QPSK		1880	-3.23	3.95	28.22	21.04	127.057	Vertical	Pass
		1905	-3.49	3.97	28.19	20.73	118.304	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-3.44	3.79	28.34	21.11	129.122	Vertical	Pass
		1880	-2.58	3.95	28.22	21.69	147.571	Vertical	Pass
		1902.5	-2.93	3.97	28.18	21.28	134.276	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1860	-3.36	3.81	28.35	21.18	131.220	Vertical	Pass
		1880	-3.37	3.96	28.22	20.89	122.744	Vertical	Pass
		1900	-1.20	4.00	28.16	<b>22.96</b>	197.697	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					Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP		
							Average (mW)		
1.4MHz Band 16 QAM	1/#Mid	1850.7	-2.83	3.76	28.24	21.65	146.218	Horizontal	Pass
		1880	-2.24	3.91	28.22	22.07	161.065	Horizontal	Pass
		1909.3	-2.02	3.93	28.20	22.25	167.880	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-2.76	3.77	28.23	21.70	147.911	Horizontal	Pass
		1880	-2.21	3.91	28.24	22.12	162.930	Horizontal	Pass
		1908.5	-2.17	3.94	28.25	22.14	163.682	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-2.61	3.77	28.31	21.93	155.955	Horizontal	Pass
		1880	-2.35	3.91	28.22	21.96	157.036	Horizontal	Pass
		1907.5	-1.96	3.94	28.20	22.30	169.824	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-2.66	3.79	28.33	21.88	154.170	Horizontal	Pass
		1880	-2.26	3.95	28.22	22.01	158.855	Horizontal	Pass
		1905	-1.80	3.97	28.19	22.42	174.582	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-2.51	3.79	28.34	22.04	159.956	Horizontal	Pass
		1880	-2.31	3.95	28.22	21.96	157.036	Horizontal	Pass
		1902.5	-2.25	3.97	28.18	21.96	157.036	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-2.40	3.81	28.35	22.14	163.682	Horizontal	Pass
		1880	-1.76	3.96	28.22	22.50	177.828	Horizontal	Pass
		1900	-1.94	4.00	28.16	22.22	166.725	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1850.7	-2.77	3.76	28.24	21.71	148.252	Vertical	Pass
		1880	-1.99	3.91	28.22	22.32	170.608	Vertical	Pass
		1909.3	-1.88	3.93	28.20	22.39	173.380	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-2.52	3.77	28.23	21.94	156.315	Vertical	Pass
		1880	-2.38	3.91	28.24	21.95	156.675	Vertical	Pass
		1908.5	-1.99	3.94	28.25	22.32	170.608	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-2.27	3.77	28.31	22.27	168.655	Vertical	Pass
		1880	-2.58	3.91	28.22	21.73	148.936	Vertical	Pass
		1907.5	-1.81	3.94	28.20	22.45	175.792	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-2.13	3.79	28.33	22.41	174.181	Vertical	Pass
		1880	-2.44	3.95	28.22	21.83	152.405	Vertical	Pass
		1905	-2.49	3.97	28.19	21.73	148.936	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-2.18	3.79	28.34	22.37	172.584	Vertical	Pass
		1880	-3.06	3.95	28.22	21.21	132.130	Vertical	Pass
		1902.5	-1.82	3.97	28.18	22.39	173.380	Vertical	Pass
20.0MHz	1/#Mid	1860	-1.74	3.81	28.35	<b>22.80</b>	190.546	Vertical	Pass

Band 16		1880	-1.80	3.96	28.22	22.46	176.198	Vertical	Pass
QAM		1900	-1.88	4.00	28.16	22.28	169.044	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

### 8.3 LTE BAND 4

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
						Average (dBm)	Average (mW)		
1.4MHz Band QPSK	1/#Mid	1710.7	-1.73	3.12	27.58	22.73	187.499	Horizontal	Pass
		1732.5	-1.44	3.27	27.61	22.90	194.984	Horizontal	Pass
		1754.3	-1.89	3.29	27.63	22.45	175.792	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-3.12	3.13	27.61	21.36	136.773	Horizontal	Pass
		1732.5	-3.33	3.27	27.61	21.01	126.183	Horizontal	Pass
		1753.5	-3.62	3.30	27.62	20.70	117.490	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-2.30	3.13	27.63	22.20	165.959	Horizontal	Pass
		1732.5	-3.68	3.27	27.61	20.66	116.413	Horizontal	Pass
		1752.5	-1.35	3.30	27.60	22.95	197.242	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-2.23	3.15	27.64	22.26	168.267	Horizontal	Pass
		1732.5	-1.52	3.31	27.61	22.78	189.671	Horizontal	Pass
		1750	-1.48	3.33	27.59	22.78	189.671	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-3.07	3.15	27.65	21.43	138.995	Horizontal	Pass
		1732.5	-1.39	3.31	27.61	22.91	195.434	Horizontal	Pass
		1747.5	-1.79	3.33	27.57	22.45	175.792	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-3.18	3.17	27.66	21.31	135.207	Horizontal	Pass
		1732.5	-1.50	3.32	27.61	22.79	190.108	Horizontal	Pass
		1745	-1.83	3.36	27.56	22.37	172.584	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-1.54	3.12	27.58	22.92	195.884	Vertical	Pass
		1732.5	-2.75	3.27	27.61	21.59	144.212	Vertical	Pass
		1754.3	-3.15	3.29	27.63	21.19	131.522	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-1.49	3.13	27.61	22.99	199.067	Vertical	Pass
		1732.5	-1.83	3.27	27.61	22.51	178.238	Vertical	Pass
		1753.5	-1.69	3.30	27.62	22.63	183.231	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-3.09	3.13	27.63	21.41	138.357	Vertical	Pass
		1732.5	-2.21	3.27	27.61	22.13	163.305	Vertical	Pass
		1752.5	-3.12	3.30	27.60	21.18	131.220	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-2.92	3.15	27.64	21.57	143.549	Vertical	Pass
		1732.5	-3.04	3.31	27.61	21.26	133.660	Vertical	Pass
		1750	-1.72	3.33	27.59	22.54	179.473	Vertical	Pass



15.0MHz		1717.5	-2.98	3.15	27.65	21.52	141.906	Vertical	Pass
Band	1/#Mid	1732.5	-2.41	3.31	27.61	21.89	154.525	Vertical	Pass
QPSK		1747.5	-2.75	3.33	27.57	21.49	140.929	Vertical	Pass
20.0MHz		1720	-1.97	3.17	27.66	22.52	178.649	Vertical	Pass
Band	1/#Mid	1732.5	-1.72	3.32	27.61	22.57	180.717	Vertical	Pass
QPSK		1745	-1.16	3.36	27.56	<b>23.04</b>	201.372	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						Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP	Max. EIRP			
			(dBm)			Average	Average			
						(dBm)	(mW)			
1.4MHz Band 16 QAM	1/#Mid	1710.7	-2.52	3.12	27.58	21.94	156.315	Horizontal	Pass	
		1732.5	-2.79	3.27	27.61	21.55	142.889	Horizontal	Pass	
		1754.3	-2.64	3.29	27.63	21.70	147.911	Horizontal	Pass	
3.0MHz Band 16 QAM	1/#Mid	1711.5	-2.56	3.13	27.61	21.92	155.597	Horizontal	Pass	
		1732.5	-3.98	3.27	27.61	20.36	108.643	Horizontal	Pass	
		1753.5	-2.71	3.30	27.62	21.61	144.877	Horizontal	Pass	
5.0MHz Band 16 QAM	1/#Mid	1712.5	-2.86	3.13	27.63	21.64	145.881	Horizontal	Pass	
		1732.5	-2.91	3.27	27.61	21.43	138.995	Horizontal	Pass	
		1752.5	-2.02	3.30	27.60	22.28	169.044	Horizontal	Pass	
10.0MHz Band 16 QAM	1/#Mid	1715	-2.49	3.15	27.64	22.00	158.489	Horizontal	Pass	
		1732.5	-3.01	3.31	27.61	21.29	134.586	Horizontal	Pass	
		1750	-3.18	3.33	27.59	21.08	128.233	Horizontal	Pass	
15.0MHz Band 16 QAM	1/#Mid	1717.5	-2.91	3.15	27.65	21.59	144.212	Horizontal	Pass	
		1732.5	-2.51	3.31	27.61	21.79	151.008	Horizontal	Pass	
		1747.5	-2.31	3.33	27.57	21.93	155.955	Horizontal	Pass	
20.0MHz Band 16 QAM	1/#Mid	1720	-2.83	3.17	27.66	21.66	146.555	Horizontal	Pass	
		1732.5	-1.79	3.32	27.61	22.50	177.828	Horizontal	Pass	
		1745	-2.69	3.36	27.56	21.51	141.579	Horizontal	Pass	
1.4MHz Band 16 QAM	1/#Mid	1710.7	-2.25	3.12	27.58	22.21	166.341	Vertical	Pass	
		1732.5	-1.95	3.27	27.61	22.39	173.380	Vertical	Pass	
		1754.3	-2.48	3.29	27.63	21.86	153.462	Vertical	Pass	
3.0MHz Band 16 QAM	1/#Mid	1711.5	-3.07	3.13	27.61	21.41	138.357	Vertical	Pass	
		1732.5	-3.60	3.27	27.61	20.74	118.577	Vertical	Pass	
		1753.5	-2.84	3.30	27.62	21.48	140.605	Vertical	Pass	
5.0MHz Band 16 QAM	1/#Mid	1712.5	-2.90	3.13	27.63	21.60	144.544	Vertical	Pass	
		1732.5	-2.75	3.27	27.61	21.59	144.212	Vertical	Pass	
		1752.5	-2.92	3.30	27.60	21.38	137.404	Vertical	Pass	
10.0MHz Band 16 QAM	1/#Mid	1715	-2.38	3.15	27.64	22.11	162.555	Vertical	Pass	
		1732.5	-2.56	3.31	27.61	21.74	149.279	Vertical	Pass	
		1750	-1.85	3.33	27.59	22.41	174.181	Vertical	Pass	
15.0MHz Band 16 QAM	1/#Mid	1717.5	-2.22	3.15	27.65	22.28	169.044	Vertical	Pass	
		1732.5	-2.77	3.31	27.61	21.53	142.233	Vertical	Pass	
		1747.5	-1.74	3.33	27.57	22.50	177.828	Vertical	Pass	
20.0MHz	1/#Mid	1720	-1.82	3.17	27.66	<b>22.67</b>	184.927	Vertical	Pass	

Band 16		1732.5	-2.44	3.32	27.61	21.85	153.109	Vertical	Pass
QAM		1745	-1.89	3.36	27.56	22.31	170.216	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 (dBm)	Antenna Gain (dB)	Correction	Max. EIRP	Max. EIRP			
			(dBm)			(dB)	Average	Average			
					(dBm)	(mW)					
1.4MHz Band QPSK	1/#Mid	824.7	8.27	2.01	19.68	2.15	23.79	239.332	Horizontal	Pass	
		836.5	7.72	2.01	19.77	2.15	23.33	215.278	Horizontal	Pass	
		848.3	8.12	2.02	19.82	2.15	23.77	238.232	Horizontal	Pass	
3.0MHz Band QPSK	1/#Mid	825.5	7.87	2.01	19.70	2.15	23.41	219.280	Horizontal	Pass	
		836.5	7.85	2.01	19.77	2.15	23.46	221.820	Horizontal	Pass	
		847.5	8.19	2.02	19.81	2.15	23.83	241.546	Horizontal	Pass	
5.0MHz Band QPSK	1/#Mid	826.5	7.68	2.01	19.71	2.15	23.23	210.378	Horizontal	Pass	
		836.5	8.19	2.01	19.77	2.15	23.80	239.883	Horizontal	Pass	
		846.5	7.53	2.02	19.79	2.15	23.15	206.538	Horizontal	Pass	
10.0MHz Band QPSK	1/#Mid	829	7.85	2.01	19.73	2.15	23.42	219.786	Horizontal	Pass	
		836.5	8.13	2.01	19.77	2.15	23.74	236.592	Horizontal	Pass	
		844	8.14	2.02	19.78	2.15	23.75	237.137	Horizontal	Pass	
1.4MHz Band QPSK	1/#Mid	824.7	8.56	2.01	19.68	2.15	24.08	255.859	Vertical	Pass	
		836.5	7.54	2.01	19.77	2.15	23.15	206.538	Vertical	Pass	
		848.3	7.87	2.02	19.82	2.15	23.52	224.905	Vertical	Pass	
3.0MHz Band QPSK	1/#Mid	825.5	7.91	2.01	19.70	2.15	23.45	221.309	Vertical	Pass	
		836.5	7.82	2.01	19.77	2.15	23.43	220.293	Vertical	Pass	
		847.5	7.59	2.02	19.81	2.15	23.23	210.378	Vertical	Pass	
5.0MHz Band QPSK	1/#Mid	826.5	8.36	2.01	19.71	2.15	23.91	246.037	Vertical	Pass	
		836.5	7.48	2.01	19.77	2.15	23.09	203.704	Vertical	Pass	
		846.5	8.46	2.02	19.79	2.15	24.08	255.859	Vertical	Pass	
10.0MHz Band QPSK	1/#Mid	829	8.18	2.01	19.73	2.15	23.75	237.137	Vertical	Pass	
		836.5	8.49	2.01	19.77	2.15	<b>24.10</b>	257.040	Vertical	Pass	
		844	7.84	2.02	19.78	2.15	23.45	221.309	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 (dBm)	Antenna Gain (dB)	Correction	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			(dB)	Average	Average		
							(dBm)	(mW)		
1.4MHz Band 16 QAM	1/#Mid	824.7	7.98	2.01	19.68	2.15	23.50	223.872	Horizontal	Pass
		836.5	7.46	2.01	19.77	2.15	23.07	202.768	Horizontal	Pass
		848.3	7.27	2.02	19.82	2.15	22.92	195.884	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	7.12	2.01	19.70	2.15	22.66	184.502	Horizontal	Pass
		836.5	7.69	2.01	19.77	2.15	23.30	213.796	Horizontal	Pass
		847.5	7.73	2.02	19.81	2.15	23.37	217.270	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	7.29	2.01	19.71	2.15	22.84	192.309	Horizontal	Pass
		836.5	7.41	2.01	19.77	2.15	23.02	200.447	Horizontal	Pass
		846.5	7.63	2.02	19.79	2.15	23.25	211.349	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	829	7.55	2.01	19.73	2.15	23.12	205.116	Horizontal	Pass
		836.5	7.18	2.01	19.77	2.15	22.79	190.108	Horizontal	Pass
		844	6.91	2.02	19.78	2.15	22.52	178.649	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	824.7	7.52	2.01	19.68	2.15	23.04	201.372	Vertical	Pass
		836.5	6.45	2.01	19.77	2.15	22.06	160.694	Vertical	Pass
		848.3	6.94	2.02	19.82	2.15	22.59	181.552	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	6.66	2.01	19.70	2.15	22.20	165.959	Vertical	Pass
		836.5	7.26	2.01	19.77	2.15	22.87	193.642	Vertical	Pass
		847.5	7.05	2.02	19.81	2.15	22.69	185.780	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	6.69	2.01	19.71	2.15	22.24	167.494	Vertical	Pass
		836.5	7.31	2.01	19.77	2.15	22.92	195.884	Vertical	Pass
		846.5	7.28	2.02	19.79	2.15	22.90	194.984	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	829	7.08	2.01	19.73	2.15	22.65	184.077	Vertical	Pass
		836.5	8.05	2.01	19.77	2.15	<b>23.66</b>	232.274	Vertical	Pass
		844	6.81	2.02	19.78	2.15	22.42	174.582	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 (dBm)	Antenna Gain (dB)	Correction	Max. EIRP	Max. EIRP			
			(dBm)			(dB)	Average	Average			
					(dBm)	(mW)					
1.4MHz Band QPSK	1/#Mid	699.7	8.55	1.91	19.21	2.15	23.70	234.423	Vertical	Pass	
		707.5	7.51	1.91	19.26	2.15	22.71	186.638	Vertical	Pass	
		715.3	6.58	1.93	19.34	2.15	21.84	152.757	Vertical	Pass	
3.0MHz Band QPSK	1/#Mid	700.5	8.06	1.91	19.21	2.15	23.21	209.411	Vertical	Pass	
		707.5	7.47	1.91	19.26	2.15	22.67	184.927	Vertical	Pass	
		714.5	6.96	1.93	19.34	2.15	22.22	166.725	Vertical	Pass	
5.0MHz Band QPSK	1/#Mid	701.5	7.22	1.91	19.23	2.15	22.39	173.380	Vertical	Pass	
		707.5	8.32	1.91	19.26	2.15	23.52	224.905	Vertical	Pass	
		713.5	6.96	1.92	19.33	2.15	22.22	166.725	Vertical	Pass	
10.0MHz Band QPSK	1/#Mid	704	7.82	1.91	19.25	2.15	23.01	199.986	Vertical	Pass	
		707.5	8.21	1.91	19.26	2.15	23.41	219.280	Vertical	Pass	
		711	8.04	1.92	19.32	2.15	23.29	213.304	Vertical	Pass	
1.4MHz Band QPSK	1/#Mid	699.7	7.92	1.91	19.21	2.15	23.07	202.768	Horizontal	Pass	
		707.5	7.40	1.91	19.26	2.15	22.60	181.970	Horizontal	Pass	
		715.3	7.55	1.93	19.34	2.15	22.81	190.985	Horizontal	Pass	
3.0MHz Band QPSK	1/#Mid	700.5	7.88	1.91	19.21	2.15	23.03	200.909	Horizontal	Pass	
		707.5	7.92	1.91	19.26	2.15	23.12	205.116	Horizontal	Pass	
		714.5	7.53	1.93	19.34	2.15	22.79	190.108	Horizontal	Pass	
5.0MHz Band QPSK	1/#Mid	701.5	7.99	1.91	19.23	2.15	23.16	207.014	Horizontal	Pass	
		707.5	8.01	1.91	19.26	2.15	23.21	209.411	Horizontal	Pass	
		713.5	8.28	1.92	19.33	2.15	23.54	225.944	Horizontal	Pass	
10.0MHz Band QPSK	1/#Mid	704	8.65	1.91	19.25	2.15	<b>23.84</b>	242.103	Horizontal	Pass	
		707.5	6.90	1.91	19.26	2.15	22.10	162.181	Horizontal	Pass	
		711	7.04	1.92	19.32	2.15	22.29	169.434	Horizontal	Pass	

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
			(dBm)							
1.4MHz Band 16 QAM	1/#Mid	699.7	8.22	1.91	19.21	2.15	23.37	217.270	Vertical	Pass
		707.5	8.09	1.91	19.26	2.15	23.29	213.304	Vertical	Pass
		715.3	7.27	1.93	19.34	2.15	22.53	179.061	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	8.66	1.91	19.21	2.15	23.81	240.436	Vertical	Pass
		707.5	8.48	1.91	19.26	2.15	23.68	233.346	Vertical	Pass
		714.5	7.79	1.93	19.34	2.15	23.05	201.837	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	8.32	1.91	19.23	2.15	23.49	223.357	Vertical	Pass
		707.5	8.51	1.91	19.26	2.15	23.71	234.963	Vertical	Pass
		713.5	8.60	1.92	19.33	2.15	23.86	243.220	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	704	8.83	1.91	19.25	2.15	24.02	252.348	Vertical	Pass
		707.5	8.57	1.91	19.26	2.15	23.77	238.232	Vertical	Pass
		711	9.05	1.92	19.32	2.15	24.30	269.153	Vertical	Pass
1.4MHz Band 16 QAM	1/#Mid	699.7	8.44	1.91	19.21	2.15	23.59	228.560	Horizontal	Pass
		707.5	8.83	1.91	19.26	2.15	24.03	252.930	Horizontal	Pass
		715.3	8.43	1.93	19.34	2.15	23.69	233.884	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	8.91	1.91	19.21	2.15	24.06	254.683	Horizontal	Pass
		707.5	8.87	1.91	19.26	2.15	24.07	255.270	Horizontal	Pass
		714.5	8.83	1.93	19.34	2.15	24.09	256.448	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	8.52	1.91	19.23	2.15	23.69	233.884	Horizontal	Pass
		707.5	8.65	1.91	19.26	2.15	23.85	242.661	Horizontal	Pass
		713.5	7.37	1.92	19.33	2.15	22.63	183.231	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	704	8.12	1.91	19.25	2.15	23.31	214.289	Horizontal	Pass
		707.5	9.18	1.91	19.26	2.15	<b>24.38</b>	274.157	Horizontal	Pass
		711	8.72	1.92	19.32	2.15	23.97	249.459	Horizontal	Pass

Note:

SG Level= Signal generator output

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

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

### 8.6 LTE BAND 13

Radiated Power (ERP) for Band 13										
Mode	RB/RB SIZE	Frequency	Result						Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss	Antenna Gain	Correction	Max. EIRP	Max. EIRP		
			(dBm)				(dB)	Average		
				(dBm)	(dB)	(dB)	(dBm)	(mW)		
5.0MHz Band QPSK	1/#Mid	779.5	5.66	1.91	19.23	2.15	20.83	121.060	Vertical	Pass
		782	6.11	1.91	19.26	2.15	21.31	135.207	Vertical	Pass
		784.5	6.62	1.92	19.33	2.15	21.88	154.170	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	782	4.57	1.91	19.25	2.15	19.76	94.624	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	779.5	6.28	1.91	19.23	2.15	21.45	139.637	Horizontal	Pass
		782	6.74	1.91	19.26	2.15	21.94	156.315	Horizontal	Pass
		784.5	5.97	1.92	19.33	2.15	21.23	132.739	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	782	6.85	1.91	19.25	2.15	<b>22.04</b>	159.956	Horizontal	Pass



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)				Average	Average		
				(dBm)	(dB)	(dB)	(dBm)	(mW)	Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	779.5	6.21	1.91	19.23	2.15	21.38	137.404	Vertical	Pass
		782	6.50	1.91	19.26	2.15	21.70	147.911	Vertical	Pass
		784.5	6.15	1.92	19.33	2.15	21.41	138.357	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	782	6.54	1.91	19.25	2.15	<b>21.73</b>	148.936	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	779.5	5.08	1.91	19.23	2.15	20.25	105.925	Horizontal	Pass
		782	6.07	1.91	19.26	2.15	21.27	133.968	Horizontal	Pass
		784.5	5.99	1.92	19.33	2.15	21.25	133.352	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	782	5.59	1.91	19.25	2.15	20.78	119.674	Horizontal	Pass

Note:

SG Level= Signal generator output

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

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

### 8.7 LTE BAND 25

Radiated Power (EIRP) for Band 25									
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	1/#Mid	1850.7	-0.23	3.12	27.58	24.23	264.850	Horizontal	Pass
		1882,5	0.05	3.27	27.61	24.39	274.789	Horizontal	Pass
		1914.3	-0.03	3.29	27.63	24.31	269.774	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-1.32	3.13	27.61	23.16	207.014	Horizontal	Pass
		1882,5	-1.84	3.27	27.61	22.50	177.828	Horizontal	Pass
		1913.5	-1.84	3.30	27.62	22.48	177.011	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-0.79	3.13	27.63	23.71	234.963	Horizontal	Pass
		1882,5	-2.16	3.27	27.61	22.18	165.196	Horizontal	Pass
		1912.5	-0.04	3.30	27.60	24.26	266.686	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-0.77	3.15	27.64	23.72	235.505	Horizontal	Pass
		1882,5	-0.11	3.31	27.61	24.19	262.422	Horizontal	Pass
		1910	0.18	3.33	27.59	24.44	277.971	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-1.13	3.15	27.65	23.37	217.270	Horizontal	Pass
		1882,5	-0.01	3.31	27.61	24.29	268.534	Horizontal	Pass
		1907.5	-0.22	3.33	27.57	24.02	252.348	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-1.52	3.17	27.66	22.97	198.153	Horizontal	Pass
		1882,5	0.15	3.32	27.61	24.44	277.971	Horizontal	Pass
		1905	-0.21	3.36	27.56	23.99	250.611	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	0.15	3.12	27.58	24.61	289.068	Vertical	Pass
		1882,5	-1.09	3.27	27.61	23.25	211.349	Vertical	Pass
		1914.3	-1.30	3.29	27.63	23.04	201.372	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-0.24	3.13	27.61	24.24	265.461	Vertical	Pass
		1882,5	-0.16	3.27	27.61	24.18	261.818	Vertical	Pass
		1913.5	-0.15	3.30	27.62	24.17	261.216	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-1.62	3.13	27.63	22.88	194.089	Vertical	Pass
		1882,5	-0.45	3.27	27.61	23.89	244.906	Vertical	Pass
		1912.5	-1.28	3.30	27.60	23.02	200.447	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1855	-1.38	3.15	27.64	23.11	204.644	Vertical	Pass
		1882,5	-1.77	3.31	27.61	22.53	179.061	Vertical	Pass
		1910	-0.11	3.33	27.59	24.15	260.016	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1857.5	-1.12	3.15	27.65	23.38	217.771	Vertical	Pass
		1882,5	-0.83	3.31	27.61	23.47	222.331	Vertical	Pass
		1907.5	-0.86	3.33	27.57	23.38	217.771	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1860	-0.61	3.17	27.66	23.88	244.343	Vertical	Pass
		1882,5	0.43	3.32	27.61	<b>24.72</b>	296.483	Vertical	Pass
		1905	0.38	3.36	27.56	24.58	287.078	Vertical	Pass

Radiated Power (EIRP) for Band 25										
Mode	RB/RB SIZE	Frequency	Result						Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP	Max. EIRP			
			(dBm)			Average (dBm)	Average (mW)			
1.4MHz Band 16 QAM	1/#Mid	1850.7	-1.35	3.12	27.58	23.11	204.644	Horizontal	Pass	
		1882.5	-1.67	3.27	27.61	22.67	184.927	Horizontal	Pass	
		1914.3	-1.34	3.29	27.63	23.00	199.526	Horizontal	Pass	
3.0MHz Band 16 QAM	1/#Mid	1851.5	-1.63	3.13	27.61	22.85	192.752	Horizontal	Pass	
		1882.5	-2.58	3.27	27.61	21.76	149.968	Horizontal	Pass	
		1913.5	-1.64	3.30	27.62	22.68	185.353	Horizontal	Pass	
5.0MHz Band 16 QAM	1/#Mid	1852.5	-1.62	3.13	27.63	22.88	194.089	Horizontal	Pass	
		1882.5	-2.03	3.27	27.61	22.31	170.216	Horizontal	Pass	
		1912.5	-0.94	3.30	27.60	23.36	216.770	Horizontal	Pass	
10.0MHz Band 16 QAM	1/#Mid	1855	-1.48	3.15	27.64	23.01	199.986	Horizontal	Pass	
		1882.5	-1.57	3.31	27.61	22.73	187.499	Horizontal	Pass	
		1910	-1.84	3.33	27.59	22.42	174.582	Horizontal	Pass	
15.0MHz Band 16 QAM	1/#Mid	1857.5	-1.48	3.15	27.65	23.02	200.447	Horizontal	Pass	
		1882.5	-1.40	3.31	27.61	22.90	194.984	Horizontal	Pass	
		1907.5	-1.20	3.33	27.57	23.04	201.372	Horizontal	Pass	
20.0MHz Band 16 QAM	1/#Mid	1860	-1.49	3.17	27.66	23.00	199.526	Horizontal	Pass	
		1882.5	-0.57	3.32	27.61	23.72	235.505	Horizontal	Pass	
		1905	-1.40	3.36	27.56	22.80	190.546	Horizontal	Pass	
1.4MHz Band 16 QAM	1/#Mid	1850.7	-1.34	3.12	27.58	23.12	205.116	Vertical	Pass	
		1882.5	-0.73	3.27	27.61	23.61	229.615	Vertical	Pass	
		1914.3	-1.56	3.29	27.63	22.78	189.671	Vertical	Pass	
3.0MHz Band 16 QAM	1/#Mid	1851.5	-1.71	3.13	27.61	22.77	189.234	Vertical	Pass	
		1882.5	-2.63	3.27	27.61	21.71	148.252	Vertical	Pass	
		1913.5	-1.61	3.30	27.62	22.71	186.638	Vertical	Pass	
5.0MHz Band 16 QAM	1/#Mid	1852.5	-1.61	3.13	27.63	22.89	194.536	Vertical	Pass	
		1882.5	-1.60	3.27	27.61	22.74	187.932	Vertical	Pass	
		1912.5	-1.83	3.30	27.60	22.47	176.604	Vertical	Pass	
10.0MHz Band 16 QAM	1/#Mid	1855	-1.14	3.15	27.64	23.35	216.272	Vertical	Pass	
		1882.5	-1.59	3.31	27.61	22.71	186.638	Vertical	Pass	
		1910	-0.95	3.33	27.59	23.31	214.289	Vertical	Pass	
15.0MHz Band 16 QAM	1/#Mid	1857.5	-1.09	3.15	27.65	23.41	219.280	Vertical	Pass	
		1882.5	-1.57	3.31	27.61	22.73	187.499	Vertical	Pass	
		1907.5	-0.78	3.33	27.57	23.46	221.820	Vertical	Pass	
20.0MHz	1/#Mid	1860	-0.47	3.17	27.66	<b>24.02</b>	252.348	Vertical	Pass	

Band 16		1882.5	-1.24	3.32	27.61	23.05	201.837	Vertical	Pass
QAM		1905	-0.71	3.36	27.56	23.49	223.357	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(814MHz~824MHz)											
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	1/#Mid	814.7	7.94	2.01	19.68	2.15	23.46	221.820	Vertical	Pass	
		819	7.01	2.01	19.77	2.15	22.62	182.810	Vertical	Pass	
		823.3	6.00	2.02	19.82	2.15	21.65	146.218	Vertical	Pass	
3.0MHz Band QPSK	1/#Mid	815.5	7.54	2.01	19.70	2.15	23.08	203.236	Vertical	Pass	
		819	7.25	2.01	19.77	2.15	22.86	193.197	Vertical	Pass	
		822.5	6.22	2.02	19.81	2.15	21.86	153.462	Vertical	Pass	
5.0MHz Band QPSK	1/#Mid	816.5	6.77	2.01	19.71	2.15	22.32	170.608	Vertical	Pass	
		819	7.61	2.01	19.77	2.15	23.22	209.894	Vertical	Pass	
		821.5	6.51	2.02	19.79	2.15	22.13	163.305	Vertical	Pass	
10.0MHz Band QPSK	1/#Mid	819	7.72	2.01	19.73	2.15	23.29	213.304	Vertical	Pass	
1.4MHz Band QPSK	1/#Mid	814.7	7.62	2.01	19.68	2.15	23.14	206.063	Horizontal	Pass	
		819	7.06	2.01	19.77	2.15	22.67	184.927	Horizontal	Pass	
		823.3	6.88	2.02	19.82	2.15	22.53	179.061	Horizontal	Pass	
3.0MHz Band QPSK	1/#Mid	815.5	7.19	2.01	19.70	2.15	22.73	187.499	Horizontal	Pass	
		819	7.53	2.01	19.77	2.15	23.14	206.063	Horizontal	Pass	
		822.5	7.18	2.02	19.81	2.15	22.82	191.426	Horizontal	Pass	
5.0MHz Band QPSK	1/#Mid	816.5	7.48	2.01	19.71	2.15	23.03	200.909	Horizontal	Pass	
		819	7.77	2.01	19.77	2.15	23.38	217.771	Horizontal	Pass	
		821.5	7.79	2.02	19.79	2.15	23.41	219.280	Horizontal	Pass	
10.0MHz Band QPSK	1/#Mid	819	8.16	2.01	19.73	2.15	<b>23.73</b>	236.048	Horizontal	Pass	

Radiated Power (ERP) for Band 26(814MHz~824MHz)											
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			
						(dB)	(dBm)	(mW)			
1.4MHz	1/#Mid QAM	814.7	6.86	2.01	19.68	2.15	22.38	172.982	Vertical	Pass	
Band 16		819	6.47	2.01	19.77	2.15	22.08	161.436	Vertical	Pass	
QAM		823.3	5.57	2.02	19.82	2.15	21.22	132.434	Vertical	Pass	
3.0MHz	1/#Mid QAM	815.5	6.92	2.01	19.70	2.15	22.46	176.198	Vertical	Pass	
Band 16		819	7.02	2.01	19.77	2.15	22.63	183.231	Vertical	Pass	
QAM		822.5	6.34	2.02	19.81	2.15	21.98	157.761	Vertical	Pass	
5.0MHz	1/#Mid QAM	816.5	6.70	2.01	19.71	2.15	22.25	167.880	Vertical	Pass	
Band 16		819	6.83	2.01	19.77	2.15	22.44	175.388	Vertical	Pass	
QAM		821.5	7.03	2.02	19.79	2.15	22.65	184.077	Vertical	Pass	
10.0MHz	1/#Mid QAM	819	7.14	2.01	19.73	2.15	22.71	186.638	Vertical	Pass	
1.4MHz	1/#Mid QAM	814.7	6.96	2.01	19.68	2.15	22.48	177.011	Horizontal	Pass	
Band 16		819	7.26	2.01	19.77	2.15	22.87	193.642	Horizontal	Pass	
QAM		823.3	7.22	2.02	19.82	2.15	22.87	193.642	Horizontal	Pass	
3.0MHz	1/#Mid QAM	815.5	7.38	2.01	19.70	2.15	22.92	195.884	Horizontal	Pass	
Band 16		819	7.07	2.01	19.77	2.15	22.68	185.353	Horizontal	Pass	
QAM		822.5	7.12	2.02	19.81	2.15	22.76	188.799	Horizontal	Pass	
5.0MHz	1/#Mid QAM	816.5	7.09	2.01	19.71	2.15	22.64	183.654	Horizontal	Pass	
Band 16		819	6.95	2.01	19.77	2.15	22.56	180.302	Horizontal	Pass	
QAM		821.5	5.97	2.02	19.79	2.15	21.59	144.212	Horizontal	Pass	
10.0MHz	1/#Mid QAM	819	7.49	2.01	19.73	2.15	<b>23.06</b>	202.302	Horizontal	Pass	

### 8.9 LTE BAND 26B

Radiated Power (ERP) for Band 26(824MHz~849MHz)											
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	1/#Mid	824.7	7.03	2.01	19.68	2.15	22.55	179.887	Vertical	Pass	
		836.5	5.88	2.01	19.77	2.15	21.49	140.929	Vertical	Pass	
		848.3	4.89	2.02	19.82	2.15	20.54	113.240	Vertical	Pass	
3.0MHz Band QPSK	1/#Mid	825.5	6.61	2.01	19.70	2.15	22.15	164.059	Vertical	Pass	
		836.5	5.97	2.01	19.77	2.15	21.58	143.880	Vertical	Pass	
		847.5	5.46	2.02	19.81	2.15	21.10	128.825	Vertical	Pass	
5.0MHz Band QPSK	1/#Mid	826.5	5.75	2.01	19.71	2.15	21.30	134.896	Vertical	Pass	
		836.5	6.61	2.01	19.77	2.15	22.22	166.725	Vertical	Pass	
		846.5	5.32	2.02	19.79	2.15	20.94	124.165	Vertical	Pass	
10.0MHz Band QPSK	1/#Mid	829	6.36	2.01	19.73	2.15	21.93	155.955	Vertical	Pass	
		836.5	6.64	2.01	19.77	2.15	22.25	167.880	Vertical	Pass	
		844	6.16	2.02	19.78	2.15	21.77	150.314	Vertical	Pass	
15.0MHz Band QPSK	1/#Mid	831.5	6.54	2.01	19.73	2.15	22.11	162.555	Vertical	Pass	
		836.5	6.64	2.01	19.77	2.15	22.25	167.880	Vertical	Pass	
		841.5	6.47	2.02	19.78	2.15	22.08	161.436	Vertical	Pass	
1.4MHz Band QPSK	1/#Mid	824.7	6.49	2.01	19.68	2.15	22.01	158.855	Horizontal	Pass	
		836.5	5.73	2.01	19.77	2.15	21.34	136.144	Horizontal	Pass	
		848.3	5.85	2.02	19.82	2.15	21.50	141.254	Horizontal	Pass	
3.0MHz Band QPSK	1/#Mid	825.5	6.26	2.01	19.70	2.15	21.80	151.356	Horizontal	Pass	
		836.5	6.19	2.01	19.77	2.15	21.80	151.356	Horizontal	Pass	
		847.5	6.11	2.02	19.81	2.15	21.75	149.624	Horizontal	Pass	
5.0MHz Band QPSK	1/#Mid	826.5	6.43	2.01	19.71	2.15	21.98	157.761	Horizontal	Pass	
		836.5	6.63	2.01	19.77	2.15	22.24	167.494	Horizontal	Pass	
		846.5	6.84	2.02	19.79	2.15	22.46	176.198	Horizontal	Pass	
10.0MHz Band QPSK	1/#Mid	829	7.25	2.01	19.73	2.15	22.82	191.426	Horizontal	Pass	
		836.5	5.57	2.01	19.77	2.15	21.18	131.220	Horizontal	Pass	
		844	5.81	2.02	19.78	2.15	21.42	138.676	Horizontal	Pass	
15.0MHz Band	1/#Mid	831.5	6.97	2.01	19.73	2.15	22.54	179.473	Horizontal	Pass	
		836.5	7.35	2.01	19.77	2.15	<b>22.96</b>	197.697	Horizontal	Pass	



QPSK		841.5	6.91	2.02	19.78	2.15	22.52	178.649	Horizontal	Pass
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Radiated Power (ERP) for Band 26(824MHz-849MHz)										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Gain	Correction	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			(dB)	Average	Average		
							(dBm)	(mW)		
1.4MHz Band 16 QAM	1/#Mid	824.7	5.77	2.01	19.68	2.15	21.29	134.586	Vertical	Pass
		836.5	5.34	2.01	19.77	2.15	20.95	124.451	Vertical	Pass
		848.3	4.82	2.02	19.82	2.15	20.47	111.429	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	5.89	2.01	19.70	2.15	21.43	138.995	Vertical	Pass
		836.5	5.98	2.01	19.77	2.15	21.59	144.212	Vertical	Pass
		847.5	5.56	2.02	19.81	2.15	21.20	131.826	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	5.75	2.01	19.71	2.15	21.30	134.896	Vertical	Pass
		836.5	5.77	2.01	19.77	2.15	21.38	137.404	Vertical	Pass
		846.5	5.89	2.02	19.79	2.15	21.51	141.579	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	829	6.29	2.01	19.73	2.15	21.86	153.462	Vertical	Pass
		836.5	5.69	2.01	19.77	2.15	21.30	134.896	Vertical	Pass
		844	6.36	2.02	19.78	2.15	21.97	157.398	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	831.5	6.03	2.01	19.73	2.15	21.60	144.544	Vertical	Pass
		836.5	5.66	2.01	19.77	2.15	21.27	133.968	Vertical	Pass
		841.5	6.50	2.02	19.78	2.15	22.11	162.555	Vertical	Pass
1.4MHz Band 16 QAM	1/#Mid	824.7	5.99	2.01	19.68	2.15	21.51	141.579	Horizontal	Pass
		836.5	5.98	2.01	19.77	2.15	21.59	144.212	Horizontal	Pass
		848.3	5.88	2.02	19.82	2.15	21.53	142.233	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	6.08	2.01	19.70	2.15	21.62	145.211	Horizontal	Pass
		836.5	6.01	2.01	19.77	2.15	21.62	145.211	Horizontal	Pass
		847.5	5.94	2.02	19.81	2.15	21.58	143.880	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	5.92	2.01	19.71	2.15	21.47	140.281	Horizontal	Pass
		836.5	5.82	2.01	19.77	2.15	21.43	138.995	Horizontal	Pass
		846.5	5.15	2.02	19.79	2.15	20.77	119.399	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	829	5.57	2.01	19.73	2.15	21.14	130.017	Horizontal	Pass
		836.5	6.28	2.01	19.77	2.15	21.89	154.525	Horizontal	Pass
		844	6.08	2.02	19.78	2.15	21.69	147.571	Horizontal	Pass

15.0MHz		831.5	6.69	2.01	19.73	2.15	<b>22.26</b>	168.267	Horizontal	Pass
Band 16	1/#Mid	836.5	6.59	2.01	19.77	2.15	22.20	165.959	Horizontal	Pass
QAM		841.5	6.09	2.02	19.78	2.15	21.70	147.911	Horizontal	Pass

Note:

SG Level= Signal generator output

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

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

### 8.10 LTE BAND 41

Radiated Power (EIRP) for Band 41									
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)		
5.0MHz Band QPSK	1/#Mid	2572.5	-0.56	4.54	27.75	22.65	184.077	Horizontal	Pass
		2595	0.12	4.69	27.72	23.15	206.538	Horizontal	Pass
		2617.5	-0.18	4.71	27.71	22.82	191.426	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2575	-0.72	4.55	27.76	22.49	177.419	Horizontal	Pass
		2595	-1.03	4.69	27.72	22.00	158.489	Horizontal	Pass
		2615	-0.64	4.72	27.70	22.34	171.396	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2577.5	0.18	4.55	27.77	23.40	218.776	Horizontal	Pass
		2595	-0.15	4.69	27.72	22.88	194.089	Horizontal	Pass
		2612.5	-0.59	4.72	27.69	22.38	172.982	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2580	-0.85	4.57	27.78	22.36	172.187	Horizontal	Pass
		2595	-1.16	4.73	27.72	21.83	152.405	Horizontal	Pass
		2610	0.56	4.75	27.68	<b>23.49</b>	223.357	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2572.5	-0.57	4.54	27.75	22.64	183.654	Vertical	Pass
		2595	-0.70	4.69	27.72	22.33	171.002	Vertical	Pass
		2617.5	-1.13	4.71	27.71	21.87	153.815	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2575	-0.28	4.55	27.76	22.93	196.336	Vertical	Pass
		2595	-0.21	4.69	27.72	22.82	191.426	Vertical	Pass
		2615	-1.53	4.72	27.70	21.45	139.637	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2577.5	-0.78	4.55	27.77	22.44	175.388	Vertical	Pass
		2595	-0.88	4.69	27.72	22.15	164.059	Vertical	Pass
		2612.5	-0.45	4.72	27.69	22.52	178.649	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2580	-0.63	4.57	27.78	22.58	181.134	Vertical	Pass
		2595	-0.03	4.73	27.72	22.96	197.697	Vertical	Pass
		2610	-0.14	4.75	27.68	22.79	190.108	Vertical	Pass

Radiated Power (EIRP) for Band 41										
Mode	RB/RB SIZE	Frequency	Result						Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP	Max. EIRP			
			(dBm)			Average	Average			
						(dBm)	(mW)			
5.0MHz Band 16 QAM	1/#Mid	2572.5	-1.96	4.54	27.75	21.25	133.352	Horizontal	Pass	
		2595	-1.25	4.69	27.72	21.78	150.661	Horizontal	Pass	
		2617.5	-1.08	4.71	27.71	21.92	155.597	Horizontal	Pass	
10.0MHz Band 16 QAM	1/#Mid	2575	-1.16	4.55	27.76	22.05	160.325	Horizontal	Pass	
		2595	-1.21	4.69	27.72	21.82	152.055	Horizontal	Pass	
		2615	-1.20	4.72	27.70	21.78	150.661	Horizontal	Pass	
15.0MHz Band 16 QAM	1/#Mid	2577.5	-1.45	4.55	27.77	21.77	150.314	Horizontal	Pass	
		2595	-1.26	4.69	27.72	21.77	150.314	Horizontal	Pass	
		2612.5	-0.81	4.72	27.69	22.16	164.437	Horizontal	Pass	
20.0MHz Band 16 QAM	1/#Mid	2580	-0.86	4.57	27.78	<b>22.35</b>	171.791	Horizontal	Pass	
		2595	-1.20	4.73	27.72	21.79	151.008	Horizontal	Pass	
		2610	-2.05	4.75	27.68	20.88	122.462	Horizontal	Pass	
5.0MHz Band 16 QAM	1/#Mid	2572.5	-1.59	4.54	27.75	21.62	145.211	Vertical	Pass	
		2595	-1.18	4.69	27.72	21.85	153.109	Vertical	Pass	
		2617.5	-1.58	4.71	27.71	21.42	138.676	Vertical	Pass	
10.0MHz Band 16 QAM	1/#Mid	2575	-1.96	4.55	27.76	21.25	133.352	Vertical	Pass	
		2595	-2.54	4.69	27.72	20.49	111.944	Vertical	Pass	
		2615	-0.80	4.72	27.70	22.18	165.196	Vertical	Pass	
15.0MHz Band 16 QAM	1/#Mid	2577.5	-1.14	4.55	27.77	22.08	161.436	Vertical	Pass	
		2595	-0.76	4.69	27.72	22.27	168.655	Vertical	Pass	
		2612.5	-0.95	4.72	27.69	22.02	159.221	Vertical	Pass	
20.0MHz Band 16 QAM	1/#Mid	2580	-0.93	4.57	27.78	22.28	169.044	Vertical	Pass	
		2595	-0.94	4.73	27.72	22.05	160.325	Vertical	Pass	
		2610	-1.16	4.75	27.68	21.77	150.314	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	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
						(dBm)	(mW)		
1.4MHz Band QPSK	1/#Mid	1710.7	-2.76	3.12	27.58	21.70	147.911	Horizontal	Pass
		1745	-2.55	3.27	27.61	21.79	151.008	Horizontal	Pass
		1779.3	-2.92	3.29	27.63	21.42	138.676	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-3.88	3.13	27.61	20.60	114.815	Horizontal	Pass
		1745	-4.14	3.27	27.61	20.20	104.713	Horizontal	Pass
		1778.5	-4.40	3.30	27.62	19.92	98.175	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-3.16	3.13	27.63	21.34	136.144	Horizontal	Pass
		1745	-4.52	3.27	27.61	19.82	95.940	Horizontal	Pass
		1777.5	-2.54	3.30	27.60	21.76	149.968	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-3.42	3.15	27.64	21.07	127.938	Horizontal	Pass
		1745	-2.61	3.31	27.61	21.69	147.571	Horizontal	Pass
		1775	-2.21	3.33	27.59	22.05	160.325	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-3.77	3.15	27.65	20.73	118.304	Horizontal	Pass
		1745	-2.77	3.31	27.61	21.53	142.233	Horizontal	Pass
		1772.5	-2.77	3.33	27.57	21.47	140.281	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-3.98	3.17	27.66	20.51	112.460	Horizontal	Pass
		1745	-2.74	3.32	27.61	21.55	142.889	Horizontal	Pass
		1770	-3.11	3.36	27.56	21.09	128.529	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-2.35	3.12	27.58	22.11	162.555	Vertical	Pass
		1745	-3.84	3.27	27.61	20.50	112.202	Vertical	Pass
		1779.3	-4.10	3.29	27.63	20.24	105.682	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-2.50	3.13	27.61	21.98	157.761	Vertical	Pass
		1745	-2.45	3.27	27.61	21.89	154.525	Vertical	Pass
		1778.5	-2.54	3.30	27.62	21.78	150.661	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-3.86	3.13	27.63	20.64	115.878	Vertical	Pass
		1745	-3.30	3.27	27.61	21.04	127.057	Vertical	Pass
		1777.5	-4.02	3.30	27.60	20.28	106.660	Vertical	Pass
10.0MHz Band	1/#Mid	1715	-3.89	3.15	27.64	20.60	114.815	Vertical	Pass
		1745	-4.13	3.31	27.61	20.17	103.992	Vertical	Pass

QPSK		1775	-2.71	3.33	27.59	21.55	142.889	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-3.51	3.15	27.65	20.99	125.603	Vertical	Pass
Band		1745	-3.29	3.31	27.61	21.01	126.183	Vertical	Pass
QPSK		1772.5	-3.70	3.33	27.57	20.54	113.240	Vertical	Pass
20.0MHz	1/#Mid	1720	-2.92	3.17	27.66	21.57	143.549	Vertical	Pass
Band		1745	-2.12	3.32	27.61	<b>22.17</b>	164.816	Vertical	Pass
QPSK		1770	-2.61	3.36	27.56	21.59	144.212	Vertical	Pass

Radiated Power (EIRP) for Band 66										
Mode	RB/RB SIZE	Frequency	Result						Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP	Max. EIRP			
			(dBm)			Average	Average			
						(dBm)	(mW)			
1.4MHz Band 16 QAM	1/#Mid	1710.7	-3.68	3.12	27.58	20.78	119.674	Horizontal	Pass	
		1745	-3.96	3.27	27.61	20.38	109.144	Horizontal	Pass	
		1779.3	-3.93	3.29	27.63	20.41	109.901	Horizontal	Pass	
3.0MHz Band 16 QAM	1/#Mid	1711.5	-3.80	3.13	27.61	20.68	116.950	Horizontal	Pass	
		1745	-5.04	3.27	27.61	19.30	85.114	Horizontal	Pass	
		1778.5	-3.62	3.30	27.62	20.70	117.490	Horizontal	Pass	
5.0MHz Band 16 QAM	1/#Mid	1712.5	-3.96	3.13	27.63	20.54	113.240	Horizontal	Pass	
		1745	-3.94	3.27	27.61	20.40	109.648	Horizontal	Pass	
		1777.5	-3.31	3.30	27.60	20.99	125.603	Horizontal	Pass	
10.0MHz Band 16 QAM	1/#Mid	1715	-4.01	3.15	27.64	20.48	111.686	Horizontal	Pass	
		1745	-3.62	3.31	27.61	20.68	116.950	Horizontal	Pass	
		1775	-3.96	3.33	27.59	20.30	107.152	Horizontal	Pass	
15.0MHz Band 16 QAM	1/#Mid	1717.5	-4.08	3.15	27.65	20.42	110.154	Horizontal	Pass	
		1745	-3.97	3.31	27.61	20.33	107.895	Horizontal	Pass	
		1772.5	-3.60	3.33	27.57	20.64	115.878	Horizontal	Pass	
20.0MHz Band 16 QAM	1/#Mid	1720	-3.77	3.17	27.66	20.72	118.032	Horizontal	Pass	
		1745	-3.20	3.32	27.61	21.09	128.529	Horizontal	Pass	
		1770	-3.85	3.36	27.56	20.35	108.393	Horizontal	Pass	
1.4MHz Band 16 QAM	1/#Mid	1710.7	-3.30	3.12	27.58	21.16	130.617	Vertical	Pass	
		1745	-3.18	3.27	27.61	21.16	130.617	Vertical	Pass	
		1779.3	-3.79	3.29	27.63	20.55	113.501	Vertical	Pass	
3.0MHz Band 16 QAM	1/#Mid	1711.5	-3.93	3.13	27.61	20.55	113.501	Vertical	Pass	
		1745	-4.81	3.27	27.61	19.53	89.743	Vertical	Pass	
		1778.5	-3.78	3.30	27.62	20.54	113.240	Vertical	Pass	
5.0MHz Band 16 QAM	1/#Mid	1712.5	-3.90	3.13	27.63	20.60	114.815	Vertical	Pass	
		1745	-3.77	3.27	27.61	20.57	114.025	Vertical	Pass	
		1777.5	-4.01	3.30	27.60	20.29	106.905	Vertical	Pass	
10.0MHz Band 16 QAM	1/#Mid	1715	-3.51	3.15	27.64	20.98	125.314	Vertical	Pass	
		1745	-3.88	3.31	27.61	20.42	110.154	Vertical	Pass	
		1775	-3.34	3.33	27.59	20.92	123.595	Vertical	Pass	
15.0MHz Band 16 QAM	1/#Mid	1717.5	-3.35	3.15	27.65	21.15	130.317	Vertical	Pass	
		1745	-3.73	3.31	27.61	20.57	114.025	Vertical	Pass	
		1772.5	-3.17	3.33	27.57	21.07	127.938	Vertical	Pass	



20.0MHz		1720	-3.40	3.17	27.66	21.09	128.529	Vertical	Pass
Band 16	1/#Mid	1745	-3.61	3.32	27.61	20.68	116.950	Vertical	Pass
QAM		1770	-3.03	3.36	27.56	21.17	130.918	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	-46.51	4.04	33.51	-17.04	-13	-4.04	Horizontal
3701.4	-53.07	4.04	33.51	-23.60	-13	-10.60	Vertical
5552.1	-46.23	5.24	35.84	-15.63	-13	-2.63	Vertical
5552.1	-50.17	5.24	35.84	-19.57	-13	-6.57	Horizontal
197.2	-38.01	1.43	16.02	-23.42	-13	-10.42	Vertical
362.1	-36.33	1.30	17.99	-19.64	-13	-6.64	Horizontal
<b>Test Results for Mid Channel 1880MHz</b>							
3760.0	-51.90	4.04	33.56	-22.38	-13	-9.38	Horizontal
3760.0	-52.85	4.04	33.56	-23.33	-13	-10.33	Vertical
5640.0	-44.49	5.24	35.91	-13.82	-13	-0.82	Vertical
5640.0	-49.78	5.24	35.91	-19.11	-13	-6.11	Horizontal
175.1	-44.98	1.62	16.97	-29.63	-13	-16.63	Vertical
440.7	-41.39	1.74	15.98	-27.16	-13	-14.16	Horizontal
<b>Test Results for High Channel 1909.3MHz</b>							
3818.6	-47.69	4.04	34.00	-17.73	-13	-4.73	Horizontal
3818.6	-45.29	4.04	34.00	-15.33	-13	-2.33	Vertical
5727.9	-46.25	5.24	36.04	-15.45	-13	-2.45	Vertical
5727.9	-52.15	5.24	36.04	-21.35	-13	-8.35	Horizontal
204.4	-35.66	1.42	17.29	-19.79	-13	-6.79	Vertical
234.2	-39.99	1.50	17.90	-23.58	-13	-10.58	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	-52.81	4.07	33.54	-23.34	-13	-10.34	Horizontal
3720.0	-47.49	4.07	33.54	-18.02	-13	-5.02	Vertical
5580.0	-47.94	5.28	35.86	-17.36	-13	-4.36	Vertical
5580.0	-50.60	5.28	35.86	-20.02	-13	-7.02	Horizontal
184.6	-39.17	1.58	16.89	-23.85	-13	-10.85	Vertical
239.6	-35.72	1.76	17.26	-20.22	-13	-7.22	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-49.42	4.04	33.56	-19.90	-13	-6.90	Horizontal
3760.0	-46.53	4.04	33.56	-17.01	-13	-4.01	Vertical
5640.0	-46.77	5.24	35.91	-16.10	-13	-3.10	Vertical
5640.0	-51.83	5.24	35.91	-21.16	-13	-8.16	Horizontal
187.2	-36.21	1.46	16.27	-21.40	-13	-8.40	Vertical
350.5	-40.58	1.59	15.15	-27.02	-13	-14.02	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-51.75	4.04	34.00	-21.79	-13	-8.79	Horizontal
3800.0	-52.65	4.04	34.00	-22.69	-13	-9.69	Vertical
5700.0	-49.06	5.24	36.04	-18.26	-13	-5.26	Vertical
5700.0	-53.09	5.24	36.04	-22.29	-13	-9.29	Horizontal
205.2	-40.69	1.36	17.39	-24.65	-13	-11.65	Vertical
312.6	-38.43	1.66	15.39	-24.70	-13	-11.70	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.

9.2 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	-48.05	4.02	29.80	-22.27	-13	-9.27	Horizontal
3421.4	-50.59	4.02	29.80	-24.81	-13	-11.81	Vertical
5132.1	-44.05	5.24	35.84	-13.45	-13	-0.45	Vertical
5132.1	-52.05	5.24	35.84	-21.45	-13	-8.45	Horizontal
193.2	-41.66	1.68	16.04	-27.30	-13	-14.30	Vertical
256.1	-41.65	1.78	17.74	-25.69	-13	-12.69	Horizontal
<b>Test Results for Mid Channel 1732.5MHz</b>							
3465.0	-47.44	4.03	30.00	-21.47	-13	-8.47	Horizontal
3465.0	-48.97	4.03	30.00	-23.00	-13	-10.00	Vertical
5197.5	-49.19	5.25	35.86	-18.58	-13	-5.58	Vertical
5197.5	-52.59	5.25	35.86	-21.98	-13	-8.98	Horizontal
191.8	-41.76	1.72	17.69	-25.79	-13	-12.79	Vertical
379.4	-44.27	1.62	16.02	-29.86	-13	-16.86	Horizontal
<b>Test Results for High Channel 1754.3MHz</b>							
3508.6	-53.37	4.05	30.01	-27.41	-13	-14.41	Horizontal
3508.6	-44.50	4.05	30.01	-18.54	-13	-5.54	Vertical
5262.9	-51.49	5.26	35.86	-20.89	-13	-7.89	Vertical
5262.9	-52.70	5.26	35.86	-22.10	-13	-9.10	Horizontal
181.4	-36.47	1.80	16.69	-21.58	-13	-8.58	Vertical
358.2	-36.30	1.75	16.66	-21.40	-13	-8.40	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	-52.73	4.02	29.80	-26.95	-13	-13.95	Horizontal
3440.0	-44.35	4.02	29.80	-18.57	-13	-5.57	Vertical
5160.0	-44.06	5.24	35.84	-13.46	-13	-0.46	Vertical
5160.0	-51.63	5.24	35.84	-21.03	-13	-8.03	Horizontal
190.8	-42.27	1.57	17.26	-26.58	-13	-13.58	Vertical
309.8	-35.06	1.78	16.35	-20.49	-13	-7.49	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-49.58	4.03	30.00	-23.61	-13	-10.61	Horizontal
3465.0	-44.75	4.03	30.00	-18.78	-13	-5.78	Vertical
5197.5	-47.96	5.25	35.86	-17.35	-13	-4.35	Vertical
5197.5	-50.95	5.25	35.86	-20.34	-13	-7.34	Horizontal
194.5	-38.53	1.44	17.95	-22.02	-13	-9.02	Vertical
423.2	-34.65	1.65	16.09	-20.21	-13	-7.21	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-53.30	2.91	27.68	-28.53	-13	-15.53	Horizontal
3490.0	-49.82	2.91	27.68	-25.05	-13	-12.05	Vertical
5235.0	-52.13	5.26	35.86	-21.53	-13	-8.53	Vertical
5235.0	-52.75	5.26	35.86	-22.15	-13	-9.15	Horizontal
190.8	-38.09	1.61	16.85	-22.85	-13	-9.85	Vertical
269.9	-43.60	1.61	15.19	-30.02	-13	-17.02	Horizontal

Note: P<sub>Mea</sub>(dBm)= Power(dBm)+ ARpl (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)**

<b>Test Results for Low Channel 824.7MHz</b>							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1649.4	-44.21	2.78	27.50	-19.49	-13	-6.49	Horizontal
1649.4	-51.86	2.78	27.50	-27.14	-13	-14.14	Vertical
2474.1	-44.28	2.90	27.80	-19.38	-13	-6.38	Vertical
2474.1	-53.65	2.90	27.80	-28.75	-13	-15.75	Horizontal
183.0	-44.42	1.76	17.59	-28.59	-13	-15.59	Vertical
341.7	-37.71	1.63	15.87	-23.47	-13	-10.47	Horizontal
<b>Test Results For Mid Channel 836.5MHz</b>							
1673.0	-53.56	2.80	27.48	-28.88	-13	-15.88	Horizontal
1673.0	-51.97	2.80	27.48	-27.29	-13	-14.29	Vertical
2509.5	-53.45	2.91	27.70	-28.66	-13	-15.66	Vertical
2509.5	-49.45	2.91	27.70	-24.66	-13	-11.66	Horizontal
211.9	-44.09	1.61	15.68	-30.02	-13	-17.02	Vertical
252.5	-42.85	1.59	17.52	-26.93	-13	-13.93	Horizontal
<b>Test Results for High Channel 848.3MHz</b>							
1696.6	-53.16	2.82	27.43	-28.55	-13	-15.55	Horizontal
1696.6	-44.39	2.82	27.43	-19.78	-13	-6.78	Vertical
2544.9	-45.78	2.92	27.74	-20.96	-13	-7.96	Vertical
2544.9	-50.49	2.92	27.74	-25.67	-13	-12.67	Horizontal
188.0	-39.98	1.69	16.67	-24.99	-13	-11.99	Vertical
337.2	-38.78	1.70	17.18	-23.30	-13	-10.30	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	-48.95	2.78	27.50	-24.23	-13	-11.23	Horizontal
1658.0	-53.43	2.78	27.50	-28.71	-13	-15.71	Vertical
2487.0	-47.55	2.90	27.80	-22.65	-13	-9.65	Vertical
2487.0	-49.81	2.90	27.80	-24.91	-13	-11.91	Horizontal
193.5	-37.23	1.71	15.57	-23.37	-13	-10.37	Vertical
349.1	-34.58	1.34	16.40	-19.52	-13	-6.52	Horizontal
<b>Test Results for Mid Channel 836.5MHz</b>							
1673.0	-51.48	2.80	27.48	-26.80	-13	-13.80	Horizontal
1673.0	-47.81	2.80	27.48	-23.13	-13	-10.13	Vertical
2509.5	-48.26	2.91	27.70	-23.47	-13	-10.47	Vertical
2509.5	-53.23	2.91	27.70	-28.44	-13	-15.44	Horizontal
201.2	-44.24	1.44	17.04	-28.64	-13	-15.64	Vertical
414.7	-34.82	1.76	17.62	-18.96	-13	-5.96	Horizontal
<b>Test Results for High Channel 844MHz</b>							
1688.0	-44.29	2.82	27.43	-19.68	-13	-6.68	Horizontal
1688.0	-47.88	2.82	27.43	-23.27	-13	-10.27	Vertical
2532.0	-50.58	2.92	27.74	-25.76	-13	-12.76	Vertical
2532.0	-53.31	2.92	27.74	-28.49	-13	-15.49	Horizontal
207.3	-42.81	1.74	17.70	-26.85	-13	-13.85	Vertical
458.0	-34.80	1.41	17.46	-18.74	-13	-5.74	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	-53.88	2.60	27.20	-29.28	-13	-16.28	Horizontal
1399.4	-52.58	2.60	27.20	-27.98	-13	-14.98	Vertical
2099.1	-47.32	2.85	27.54	-22.63	-13	-9.63	Vertical
2099.1	-49.69	2.85	27.54	-25.00	-13	-12.00	Horizontal
193.4	-35.72	1.49	17.78	-19.43	-13	-6.43	Vertical
364.9	-36.74	1.36	17.33	-20.77	-13	-7.77	Horizontal
<b>Test Results For Mid Channel 707.5MHz</b>							
1415.0	-51.25	2.61	27.28	-26.58	-13	-13.58	Horizontal
1415.0	-45.43	2.61	27.28	-20.76	-13	-7.76	Vertical
2122.5	-51.25	2.87	27.59	-26.53	-13	-13.53	Vertical
2122.5	-49.82	2.87	27.59	-25.10	-13	-12.10	Horizontal
177.7	-36.62	1.73	15.74	-22.61	-13	-9.61	Vertical
397.4	-39.47	1.62	15.79	-25.30	-13	-12.30	Horizontal
<b>Test Results for High Channel 715.3MHz</b>							
1430.6	-51.35	2.63	27.28	-26.70	-13	-13.70	Horizontal
1430.6	-52.92	2.63	27.28	-28.27	-13	-15.27	Vertical
2145.9	-53.37	2.88	27.60	-28.65	-13	-15.65	Vertical
2145.9	-49.39	2.88	27.60	-24.67	-13	-11.67	Horizontal
188.8	-41.11	1.61	18.00	-24.72	-13	-11.72	Vertical
253.1	-44.59	1.45	15.49	-30.56	-13	-17.56	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	-44.59	2.61	27.26	-19.94	-13	-6.94	Horizontal
1408.0	-50.67	2.61	27.26	-26.02	-13	-13.02	Vertical
2112.0	-53.45	2.87	27.58	-28.74	-13	-15.74	Vertical
2112.0	-50.80	2.87	27.58	-26.09	-13	-13.09	Horizontal
175.1	-37.36	1.31	16.97	-21.70	-13	-8.70	Vertical
274.7	-43.24	1.65	16.70	-28.19	-13	-15.19	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-45.26	2.61	27.28	-20.59	-13	-7.59	Horizontal
1415.0	-47.55	2.61	27.28	-22.88	-13	-9.88	Vertical
2122.5	-47.53	2.87	27.59	-22.81	-13	-9.81	Vertical
2122.5	-49.17	2.87	27.59	-24.45	-13	-11.45	Horizontal
184.3	-35.64	1.72	17.99	-19.37	-13	-6.37	Vertical
396.2	-44.64	1.73	17.94	-28.43	-13	-15.43	Horizontal
Test Results for High Channel 711MHz							
1422.0	-48.40	2.62	27.28	-23.74	-13	-10.74	Horizontal
1422.0	-53.13	2.62	27.28	-28.47	-13	-15.47	Vertical
2133.0	-49.14	2.87	27.60	-24.41	-13	-11.41	Vertical
2133.0	-50.97	2.87	27.60	-26.24	-13	-13.24	Horizontal
190.9	-41.86	1.58	15.93	-27.51	-13	-14.51	Vertical
378.9	-38.08	1.36	15.59	-23.85	-13	-10.85	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.

9.5 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	-73.33	2.61	27.28	-48.66	-40	-8.66	Horizontal
1559.0	-71.92	2.61	27.28	-47.25	-40	-7.25	Vertical
2338.5	-39.31	2.87	27.59	-14.59	-13	-1.59	Vertical
2338.5	-40.17	2.87	27.59	-15.45	-13	-2.45	Horizontal
120.1	-35.99	1.54	15.61	-21.92	-13	-8.92	Vertical
197.8	-35.69	1.51	15.21	-21.99	-13	-8.99	Horizontal
Test Results For Mid Channel 782MHz							
1564.0	-71.19	2.62	27.30	-46.51	-40	-6.51	Horizontal
1564.0	-71.43	2.62	27.30	-46.75	-40	-6.75	Vertical
2346.0	-40.51	2.87	27.62	-15.76	-13	-2.76	Vertical
2346.0	-43.61	2.87	27.62	-18.86	-13	-5.86	Horizontal
131.2	-34.78	1.65	16.17	-20.26	-13	-7.26	Vertical
267.5	-35.97	1.48	16.88	-20.57	-13	-7.57	Horizontal
Test Results for High Channel 784.5MHz							
1569.0	-74.93	2.66	27.28	-50.31	-40	-10.31	Horizontal
1569.0	-69.45	2.66	27.28	-44.83	-40	-4.83	Vertical
2353.5	-41.27	2.88	27.60	-16.55	-13	-3.55	Vertical
2353.5	-41.90	2.88	27.60	-17.18	-13	-4.18	Horizontal
80.8	-38.16	1.54	16.40	-23.30	-13	-10.30	Vertical
155.6	-39.51	1.43	15.77	-25.17	-13	-12.17	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	-74.32	2.62	27.30	-49.64	-40	-9.64	Horizontal
1564.0	-73.38	2.62	27.30	-48.70	-40	-8.70	Vertical
2346.0	-43.54	2.87	27.62	-18.79	-13	-5.79	Vertical
2346.0	-41.53	2.87	27.62	-16.78	-13	-3.78	Horizontal
129.1	-36.24	1.43	17.03	-20.64	-13	-7.64	Vertical
86.9	-37.16	1.62	16.63	-22.15	-13	-9.15	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	-48.99	4.02	29.80	-23.21	-13	-10.21	Horizontal
3701.4	-43.32	4.02	29.80	-17.54	-13	-4.54	Vertical
5552.1	-49.14	5.24	35.84	-18.54	-13	-5.54	Vertical
5552.1	-49.51	5.24	35.84	-18.91	-13	-5.91	Horizontal
93.9	-33.61	1.59	15.11	-20.09	-13	-7.09	Vertical
119.7	-32.03	1.80	15.61	-18.22	-13	-5.22	Horizontal
Test Results for Mid Channel 1732.5MHz							
3765.0	-47.50	4.03	30.00	-21.53	-13	-8.53	Horizontal
3765.0	-47.32	4.03	30.00	-21.35	-13	-8.35	Vertical
5647.5	-46.52	5.25	35.86	-15.91	-13	-2.91	Vertical
5647.5	-47.55	5.25	35.86	-16.94	-13	-3.94	Horizontal
166.1	-34.73	1.37	15.62	-20.48	-13	-7.48	Vertical
274.4	-34.28	1.55	17.51	-18.32	-13	-5.32	Horizontal
Test Results for High Channel 1754.3MHz							
3828.6	-47.58	4.05	30.01	-21.62	-13	-8.62	Horizontal
3828.6	-41.78	4.05	30.01	-15.82	-13	-2.82	Vertical
5742.9	-49.12	5.26	35.86	-18.52	-13	-5.52	Vertical
5742.9	-49.48	5.26	35.86	-18.88	-13	-5.88	Horizontal
108.6	-33.61	1.66	17.19	-18.08	-13	-5.08	Vertical
138.7	-33.98	1.35	17.94	-17.39	-13	-4.39	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	-47.86	4.02	29.80	-22.08	-13	-9.08	Horizontal
3720.0	-43.48	4.02	29.80	-17.70	-13	-4.70	Vertical
5580.0	-47.77	5.24	35.84	-17.17	-13	-4.17	Vertical
5580.0	-48.58	5.24	35.84	-17.98	-13	-4.98	Horizontal
146.2	-32.44	1.70	15.24	-18.90	-13	-5.90	Vertical
215.4	-32.92	1.42	16.58	-17.76	-13	-4.76	Horizontal
Test Results for Mid Channel 1732.5MHz							
3765.0	-47.13	4.03	30.00	-21.16	-13	-8.16	Horizontal
3765.0	-46.78	4.03	30.00	-20.81	-13	-7.81	Vertical
5647.5	-46.23	5.25	35.86	-15.62	-13	-2.62	Vertical
5647.5	-49.27	5.25	35.86	-18.66	-13	-5.66	Horizontal
132.2	-33.45	1.64	16.16	-18.93	-13	-5.93	Vertical
133.3	-32.30	1.62	17.37	-16.55	-13	-3.55	Horizontal
Test Results for High Channel 1745MHz							
3810.0	-48.68	2.91	27.68	-23.91	-13	-10.91	Horizontal
3810.0	-41.40	2.91	27.68	-16.63	-13	-3.63	Vertical
5715.0	-49.26	5.26	35.86	-18.66	-13	-5.66	Vertical
5715.0	-47.02	5.26	35.86	-16.42	-13	-3.42	Horizontal
212.6	-33.38	1.49	15.29	-19.58	-13	-6.58	Vertical
275.8	-34.85	1.79	16.42	-20.22	-13	-7.22	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	-48.06	2.78	27.50	-23.34	-13	-10.34	Horizontal
1629.4	-42.98	2.78	27.50	-18.26	-13	-5.26	Vertical
2444.1	-46.42	2.90	27.80	-21.52	-13	-8.52	Vertical
2444.1	-47.46	2.90	27.80	-22.56	-13	-9.56	Horizontal
229.6	-34.06	1.54	16.98	-18.62	-13	-5.62	Vertical
83.3	-33.06	1.47	15.82	-18.71	-13	-5.71	Horizontal
Test Results For Mid Channel 819MHz							
1638.0	-48.37	2.80	27.48	-23.69	-13	-10.69	Horizontal
1638.0	-44.13	2.80	27.48	-19.45	-13	-6.45	Vertical
2457.0	-49.07	2.91	27.70	-24.28	-13	-11.28	Vertical
2457.0	-48.45	2.91	27.70	-23.66	-13	-10.66	Horizontal
168.2	-32.89	1.74	16.19	-18.44	-13	-5.44	Vertical
92.9	-32.39	1.46	15.43	-18.42	-13	-5.42	Horizontal
Test Results for High Channel 823.3MHz							
1646.6	-46.22	2.82	27.43	-21.61	-13	-8.61	Horizontal
1646.6	-43.10	2.82	27.43	-18.49	-13	-5.49	Vertical
2469.9	-46.17	2.92	27.74	-21.35	-13	-8.35	Vertical
2469.9	-46.63	2.92	27.74	-21.81	-13	-8.81	Horizontal
213.1	-32.08	1.67	17.05	-16.70	-13	-3.70	Vertical
121.7	-33.00	1.42	16.12	-18.30	-13	-5.30	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	-49.94	2.78	27.50	-25.22	-13	-12.22	Horizontal
1638.0	-43.03	2.78	27.50	-18.31	-13	-5.31	Vertical
2457.0	-49.65	2.90	27.80	-24.75	-13	-11.75	Vertical
2457.0	-49.91	2.90	27.80	-25.01	-13	-12.01	Horizontal
253.7	-32.73	1.43	17.34	-16.82	-13	-3.82	Vertical
256.8	-32.04	1.56	15.71	-17.89	-13	-4.89	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	-47.59	2.78	27.50	-22.87	-13	-9.87	Horizontal
1649.4	-47.94	2.78	27.50	-23.22	-13	-10.22	Vertical
2474.1	-48.87	2.90	27.80	-23.97	-13	-10.97	Vertical
2474.1	-48.20	2.90	27.80	-23.30	-13	-10.30	Horizontal
237.0	-34.32	1.33	17.34	-18.31	-13	-5.31	Vertical
180.5	-32.42	1.47	16.80	-17.09	-13	-4.09	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-49.24	2.80	27.48	-24.56	-13	-11.56	Horizontal
1673.0	-44.97	2.80	27.48	-20.29	-13	-7.29	Vertical
2509.5	-49.10	2.91	27.70	-24.31	-13	-11.31	Vertical
2509.5	-49.18	2.91	27.70	-24.39	-13	-11.39	Horizontal
140.8	-33.06	1.75	15.46	-19.35	-13	-6.35	Vertical
90.6	-33.34	1.52	16.14	-18.72	-13	-5.72	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-47.70	2.82	27.43	-23.09	-13	-10.09	Horizontal
1696.6	-48.01	2.82	27.43	-23.40	-13	-10.40	Vertical
2544.9	-46.31	2.92	27.74	-21.49	-13	-8.49	Vertical
2544.9	-49.15	2.92	27.74	-24.33	-13	-11.33	Horizontal
171.4	-34.23	1.67	16.09	-19.81	-13	-6.81	Vertical
247.2	-32.06	1.80	17.55	-16.31	-13	-3.31	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	-47.56	2.78	27.50	-22.84	-13	-9.84	Horizontal
1663.0	-46.04	2.78	27.50	-21.32	-13	-8.32	Vertical
2494.5	-48.79	2.90	27.80	-23.89	-13	-10.89	Vertical
2494.5	-49.16	2.90	27.80	-24.26	-13	-11.26	Horizontal
255.4	-32.03	1.52	15.72	-17.83	-13	-4.83	Vertical
163.1	-33.51	1.40	17.03	-17.88	-13	-4.88	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-47.05	2.80	27.48	-22.37	-13	-9.37	Horizontal
1673.0	-45.37	2.80	27.48	-20.69	-13	-7.69	Vertical
2509.5	-48.79	2.91	27.70	-24.00	-13	-11.00	Vertical
2509.5	-46.62	2.91	27.70	-21.83	-13	-8.83	Horizontal
227.1	-34.02	1.74	16.38	-19.38	-13	-6.38	Vertical
101.3	-34.28	1.79	15.20	-20.87	-13	-7.87	Horizontal
Test Results for High Channel 841.5MHz							
1683.0	-48.55	2.82	27.43	-23.94	-13	-10.94	Horizontal
1683.0	-49.77	2.82	27.43	-25.16	-13	-12.16	Vertical
2524.5	-46.17	2.92	27.74	-21.35	-13	-8.35	Vertical
2524.5	-47.21	2.92	27.74	-22.39	-13	-9.39	Horizontal
261.1	-34.62	1.78	17.44	-18.96	-13	-5.96	Vertical
120.1	-32.81	1.70	15.93	-18.58	-13	-5.58	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	-62.53	5.23	35.81	-31.95	-25	-6.95	Horizontal
5145.0	-63.32	5.23	35.81	-32.74	-25	-7.74	Vertical
7717.5	-62.15	5.67	36.85	-30.97	-25	-5.97	Vertical
7717.5	-61.97	5.67	36.85	-30.79	-25	-5.79	Horizontal
435.3	-47.88	1.38	15.98	-33.28	-25	-8.28	Vertical
465.8	-46.79	1.62	15.66	-32.75	-25	-7.75	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-60.16	5.23	35.82	-29.57	-25	-4.57	Horizontal
5190.0	-60.68	5.23	35.82	-30.09	-25	-5.09	Vertical
7785.0	-62.61	5.67	36.85	-31.43	-25	-6.43	Vertical
7785.0	-61.17	5.67	36.85	-29.99	-25	-4.99	Horizontal
510.4	-45.59	1.62	16.17	-31.04	-25	-6.04	Vertical
562.9	-45.55	1.74	17.63	-29.66	-25	-4.66	Horizontal
Test Results for High Channel 2617.5MHz							
5235.0	-62.14	5.24	35.83	-31.55	-25	-6.55	Horizontal
5235.0	-59.48	5.24	35.83	-28.89	-25	-3.89	Vertical
7852.5	-59.26	5.68	36.87	-28.07	-25	-3.07	Vertical
7852.5	-63.62	5.68	36.87	-32.43	-25	-7.43	Horizontal
197.6	-48.84	1.55	15.84	-34.55	-25	-9.55	Vertical
353.1	-44.10	1.51	17.06	-28.55	-25	-3.55	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	-64.89	5.23	35.82	-34.30	-25	-9.30	Horizontal
5160.0	-64.78	5.23	35.82	-34.19	-25	-9.19	Vertical
7740.0	-62.13	5.67	36.86	-30.94	-25	-5.94	Vertical
7740.0	-62.76	5.67	36.86	-31.57	-25	-6.57	Horizontal
128.9	-49.51	1.43	15.51	-35.43	-25	-10.43	Vertical
344.8	-44.43	1.40	16.97	-28.86	-25	-3.86	Horizontal
Test Results for Mid Channel 2595MHz							
5190.0	-64.17	5.23	35.82	-33.58	-25	-8.58	Horizontal
5190.0	-61.40	5.23	35.82	-30.81	-25	-5.81	Vertical
7785.0	-60.70	5.67	36.85	-29.52	-25	-4.52	Vertical
7785.0	-63.87	5.67	36.85	-32.69	-25	-7.69	Horizontal
100.8	-47.07	1.77	16.72	-32.12	-25	-7.12	Vertical
263.5	-46.75	1.31	16.99	-31.07	-25	-6.07	Horizontal
Test Results for High Channel 2610MHz							
5220.0	-61.62	5.24	35.83	-31.03	-25	-6.03	Horizontal
5220.0	-59.84	5.24	35.83	-29.25	-25	-4.25	Vertical
7830.0	-59.95	5.70	36.88	-28.77	-25	-3.77	Vertical
7830.0	-63.71	5.70	36.88	-32.53	-25	-7.53	Horizontal
349.9	-44.95	1.70	15.73	-30.92	-25	-5.92	Vertical
110.3	-45.77	1.75	17.33	-30.19	-25	-5.19	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	-44.61	4.02	29.80	-18.83	-13	-5.83	Horizontal
3421.4	-48.51	4.02	29.80	-22.73	-13	-9.73	Vertical
5132.1	-50.00	5.24	35.84	-19.40	-13	-6.40	Vertical
5132.1	-52.21	5.24	35.84	-21.61	-13	-8.61	Horizontal
112.6	-53.14	1.52	15.57	-39.09	-13	-26.09	Vertical
220.5	-50.22	1.33	17.14	-34.41	-13	-21.41	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-46.46	4.03	30.00	-20.49	-13	-7.49	Horizontal
3490.0	-46.67	4.03	30.00	-20.70	-13	-7.70	Vertical
5235.0	-52.75	5.25	35.86	-22.14	-13	-9.14	Vertical
5235.0	-54.11	5.25	35.86	-23.50	-13	-10.50	Horizontal
157.3	-54.10	1.53	17.13	-38.50	-13	-25.50	Vertical
213.1	-48.47	1.41	15.95	-33.93	-13	-20.93	Horizontal
Test Results for High Channel 1779.3MHz							
3558.6	-46.38	4.05	30.01	-20.42	-13	-7.42	Horizontal
3558.6	-51.04	4.05	30.01	-25.08	-13	-12.08	Vertical
5337.9	-49.35	5.26	35.86	-18.75	-13	-5.75	Vertical
5337.9	-50.72	5.26	35.86	-20.12	-13	-7.12	Horizontal
170.6	-50.96	1.44	15.51	-36.89	-13	-23.89	Vertical
169.0	-52.56	1.78	15.76	-38.58	-13	-25.58	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	-48.24	4.02	29.80	-22.46	-13	-9.46	Horizontal
3440.0	-49.20	4.02	29.80	-23.42	-13	-10.42	Vertical
5160.0	-52.89	5.24	35.84	-22.29	-13	-9.29	Vertical
5160.0	-54.06	5.24	35.84	-23.46	-13	-10.46	Horizontal
268.8	-51.45	1.62	17.02	-36.05	-13	-23.05	Vertical
161.4	-44.72	1.32	17.31	-28.73	-13	-15.73	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-50.43	4.03	30.00	-24.46	-13	-11.46	Horizontal
3490.0	-50.75	4.03	30.00	-24.78	-13	-11.78	Vertical
5235.0	-54.44	5.25	35.86	-23.83	-13	-10.83	Vertical
5235.0	-52.90	5.25	35.86	-22.29	-13	-9.29	Horizontal
159.9	-53.50	1.45	15.17	-39.78	-13	-26.78	Vertical
172.1	-45.27	1.48	17.82	-28.93	-13	-15.93	Horizontal
Test Results for High Channel 1770MHz							
3540.0	-45.38	2.91	27.68	-20.61	-13	-7.61	Horizontal
3540.0	-49.54	2.91	27.68	-24.77	-13	-11.77	Vertical
5310.0	-51.56	5.26	35.86	-20.96	-13	-7.96	Vertical
5310.0	-47.28	5.26	35.86	-16.68	-13	-3.68	Horizontal
197.3	-46.06	1.76	16.38	-31.44	-13	-18.44	Vertical
158.5	-47.71	1.43	17.13	-32.01	-13	-19.01	Horizontal

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

. Over Limit= : P<sub>Mea</sub>(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 23.31V, Normal, DC 25.9V and High voltage, DC 28.49V .

### 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>				
23.31	1880	8.9	0.00473	2.5
25.9	1880	6.5	0.00346	2.5
28.49	1880	5.3	0.00282	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	6.7	0.00356	2.5
Extreme (50C)	1880	6.9	0.00367	2.5
Extreme (40C)	1880	8.3	0.00441	2.5
Extreme (30C)	1880	9.1	0.00484	2.5
Extreme (10C)	1880	8.9	0.00473	2.5
Extreme (0C)	1880	6.4	0.00340	2.5
Extreme (-10C)	1880	8	0.00426	2.5
Extreme (-20C)	1880	8.4	0.00445	2.5
Extreme (-30C)	1880	6.3	0.00333	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>				
23.31	1880	7.4	0.00394	2.5
25.9	1880	6	0.00319	2.5
28.49	1880	6.6	0.00351	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	7.9	0.00420	2.5
Extreme (50C)	1880	7.2	0.00383	2.5
Extreme (40C)	1880	5	0.00266	2.5
Extreme (30C)	1880	7.2	0.00383	2.5
Extreme (10C)	1880	6.5	0.00346	2.5
Extreme (0C)	1880	4.7	0.00250	2.5
Extreme (-10C)	1880	9.4	0.00500	2.5
Extreme (-20C)	1880	5.8	0.00307	2.5
Extreme (-30C)	1880	6.0	0.00318	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>				
23.31	1732.5	6	0.00346	2.5
25.9	1732.5	5.4	0.00312	2.5
28.49	1732.5	6.5	0.00375	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	5.3	0.00306	2.5
Extreme (50C)	1732.5	9.9	0.00571	2.5
Extreme (40C)	1732.5	6.1	0.00352	2.5
Extreme (30C)	1732.5	6.6	0.00381	2.5
Extreme (10C)	1732.5	6.7	0.00387	2.5
Extreme (0C)	1732.5	9.8	0.00566	2.5
Extreme (-10C)	1732.5	5.9	0.00341	2.5
Extreme (-20C)	1732.5	3.8	0.00219	2.5
Extreme (-30C)	1732.5	5.2	0.00300	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>				
23.31	1732.5	5.7	0.00329	2.5
25.9	1732.5	7	0.00404	2.5
28.49	1732.5	5.7	0.00329	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	5.1	0.00294	2.5
Extreme (50C)	1732.5	5.1	0.00294	2.5
Extreme (40C)	1732.5	3.5	0.00202	2.5
Extreme (30C)	1732.5	-6.4	-0.00369	2.5
Extreme (10C)	1732.5	-3.1	-0.00179	2.5
Extreme (0C)	1732.5	4.3	0.00248	2.5
Extreme (-10C)	1732.5	6.3	0.00364	2.5
Extreme (-20C)	1732.5	3.9	0.00225	2.5
Extreme (-30C)	1732.5	3.8	0.00219	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>				
23.31	836.5	6.4	0.00765	2.5
25.9	836.5	8.2	0.00980	2.5
28.49	836.5	4.4	0.00526	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	6.7	0.00801	2.5
Extreme (50C)	836.5	8.2	0.00980	2.5
Extreme (40C)	836.5	9.9	0.01184	2.5
Extreme (30C)	836.5	5.5	0.00658	2.5
Extreme (10C)	836.5	6.1	0.00729	2.5
Extreme (0C)	836.5	4.7	0.00562	2.5
Extreme (-10C)	836.5	8.2	0.00980	2.5
Extreme (-20C)	836.5	1.8	0.00215	2.5
Extreme (-30C)	836.5	6.9	0.00825	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>				
23.31	836.5	8.3	0.00992	2.5
25.9	836.5	6	0.00717	2.5
28.49	836.5	7.8	0.00932	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	6.5	0.00777	2.5
Extreme (50C)	836.5	5.4	0.00646	2.5
Extreme (40C)	836.5	3.9	0.00466	2.5
Extreme (30C)	836.5	2.1	0.00251	2.5
Extreme (10C)	836.5	6.9	0.00825	2.5
Extreme (0C)	836.5	2.5	0.00299	2.5
Extreme (-10C)	836.5	9.4	0.01124	2.5
Extreme (-20C)	836.5	3.6	0.00430	2.5
Extreme (-30C)	836.5	6.7	0.00801	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>				
23.31	707.5	12.7	0.01795	2.5
25.9	707.5	13.4	0.01894	2.5
28.49	707.5	13.4	0.01894	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	-6.8	-0.00961	2.5
Extreme (50C)	707.5	-3.6	-0.00509	2.5
Extreme (40C)	707.5	5.9	0.00834	2.5
Extreme (30C)	707.5	-3.5	-0.00495	2.5
Extreme (10C)	707.5	6.8	0.00961	2.5
Extreme (0C)	707.5	4.5	0.00636	2.5
Extreme (-10C)	707.5	9.4	0.01329	2.5
Extreme (-20C)	707.5	6.9	0.00975	2.5
Extreme (-30C)	707.5	5.7	0.00806	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>				
23.31	707.5	9.1	0.01286	2.5
25.9	707.5	5.1	0.00721	2.5
28.49	707.5	4.1	0.00580	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	0.00763	2.5
Extreme (50C)	707.5	9	0.01272	2.5
Extreme (40C)	707.5	6.8	0.00961	2.5
Extreme (30C)	707.5	7.2	0.01018	2.5
Extreme (10C)	707.5	6.8	0.00961	2.5
Extreme (0C)	707.5	5.1	0.00721	2.5
Extreme (-10C)	707.5	6.8	0.00961	2.5
Extreme (-20C)	707.5	5.2	0.00735	2.5
Extreme (-30C)	707.5	5.9	0.00834	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>				
23.31	782	6.6	0.00844	2.5
25.9	782	6.4	0.00818	2.5
28.49	782	4.8	0.00614	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	4.5	0.00575	2.5
Extreme (50C)	782	9.7	0.01240	2.5
Extreme (40C)	782	7.3	0.00934	2.5
Extreme (30C)	782	6	0.00767	2.5
Extreme (10C)	782	6.5	0.00831	2.5
Extreme (0C)	782	4.7	0.00601	2.5
Extreme (-10C)	782	9.4	0.01202	2.5
Extreme (-20C)	782	8.7	0.01113	2.5
Extreme (-30C)	782	3.3	0.00422	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>				
23.31	782	6.3	0.00806	2.5
25.9	782	9.7	0.01240	2.5
28.49	782	6.7	0.00857	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	7.2	0.00921	2.5
Extreme (50C)	782	7.2	0.00921	2.5
Extreme (40C)	782	5.5	0.00703	2.5
Extreme (30C)	782	6.6	0.00844	2.5
Extreme (10C)	782	6.5	0.00831	2.5
Extreme (0C)	782	4.8	0.00614	2.5
Extreme (-10C)	782	9.5	0.01215	2.5
Extreme (-20C)	782	1.7	0.00217	2.5
Extreme (-30C)	782	6.2	0.00793	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>				
23.31	1882.5	6.7	0.00356	2.5
25.9	1882.5	5.1	0.00271	2.5
28.49	1882.5	6.1	0.00324	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	5.4	0.00287	2.5
Extreme (50C)	1882.5	3.6	0.00191	2.5
Extreme (40C)	1882.5	5.6	0.00297	2.5
Extreme (30C)	1882.5	3.1	0.00165	2.5
Extreme (10C)	1882.5	4.1	0.00218	2.5
Extreme (0C)	1882.5	6.7	0.00356	2.5
Extreme (-10C)	1882.5	6.5	0.00345	2.5
Extreme (-20C)	1882.5	3.5	0.00186	2.5
Extreme (-30C)	1882.5	1.9	0.00101	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>				
23.31	1882.5	9.3	0.00494	2.5
25.9	1882.5	6.4	0.00340	2.5
28.49	1882.5	6.2	0.00329	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	7.5	0.00398	2.5
Extreme (50C)	1882.5	4.6	0.00244	2.5
Extreme (40C)	1882.5	5.1	0.00271	2.5
Extreme (30C)	1882.5	5	0.00266	2.5
Extreme (10C)	1882.5	6.6	0.00351	2.5
Extreme (0C)	1882.5	4.8	0.00255	2.5
Extreme (-10C)	1882.5	9.5	0.00505	2.5
Extreme (-20C)	1882.5	6.6	0.00351	2.5
Extreme (-30C)	1882.5	3.8	0.00202	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>				
23.31	819	12.7	0.01551	2.5
25.9	819	13.6	0.01660	2.5
28.49	819	12.8	0.01565	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	7.0	0.00859	2.5
Extreme (50C)	819	-4.0	-0.00486	2.5
Extreme (40C)	819	5.4	0.00654	2.5
Extreme (30C)	819	-3.8	-0.00469	2.5
Extreme (10C)	819	6.6	0.00802	2.5
Extreme (0C)	819	5.1	0.00627	2.5
Extreme (-10C)	819	9.2	0.01128	2.5
Extreme (-20C)	819	10.4	0.01273	2.5
Extreme (-30C)	819	6.1	0.00744	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>				
23.31	819	8.0	0.00978	2.5
25.9	819	6.3	0.00768	2.5
28.49	819	5.5	0.00671	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	7.1	0.00864	2.5
Extreme (50C)	819	5.3	0.00643	2.5
Extreme (40C)	819	5.7	0.00696	2.5
Extreme (30C)	819	4.7	0.00570	2.5
Extreme (10C)	819	6.4	0.00783	2.5
Extreme (0C)	819	4.7	0.00575	2.5
Extreme (-10C)	819	9.2	0.01119	2.5
Extreme (-20C)	819	11.2	0.01368	2.5
Extreme (-30C)	819	6.4	0.00784	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>				
23.31	836.5	12.6	0.01503	2.5
25.9	836.5	14.0	0.01679	2.5
28.49	836.5	13.0	0.01550	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	7.5	0.00896	2.5
Extreme (50C)	836.5	5.1	0.00605	2.5
Extreme (40C)	836.5	4.9	0.00586	2.5
Extreme (30C)	836.5	4.3	0.00514	2.5
Extreme (10C)	836.5	6.7	0.00797	2.5
Extreme (0C)	836.5	5.0	0.00602	2.5
Extreme (-10C)	836.5	9.2	0.01101	2.5
Extreme (-20C)	836.5	10.6	0.01270	2.5
Extreme (-30C)	836.5	6.3	0.00755	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>				
23.31	836.5	12.5	0.01497	2.5
25.9	836.5	13.7	0.01632	2.5
28.49	836.5	13.2	0.01573	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	7.4	0.00883	2.5
Extreme (50C)	836.5	5.3	0.00630	2.5
Extreme (40C)	836.5	5.6	0.00667	2.5
Extreme (30C)	836.5	5.0	0.00598	2.5
Extreme (10C)	836.5	6.1	0.00723	2.5
Extreme (0C)	836.5	5.3	0.00637	2.5
Extreme (-10C)	836.5	9.1	0.01085	2.5
Extreme (-20C)	836.5	11.2	0.01334	2.5
Extreme (-30C)	836.5	6.3	0.00752	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>				
23.31	2595	8.6	0.00332	2.5
25.9	2595	6.7	0.00258	2.5
28.49	2595	7.7	0.00297	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	7.5	0.00289	2.5
Extreme (50C)	2595	4.6	0.00177	2.5
Extreme (40C)	2595	5.2	0.00201	2.5
Extreme (30C)	2595	10.7	0.00413	2.5
Extreme (10C)	2595	6.6	0.00255	2.5
Extreme (0C)	2595	5.2	0.00201	2.5
Extreme (-10C)	2595	9.6	0.00370	2.5
Extreme (-20C)	2595	5.2	0.00201	2.5
Extreme (-30C)	2595	5.9	0.00228	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>				
23.31	2595	8.2	0.00316	2.5
25.9	2595	6.5	0.00251	2.5
28.49	2595	6.6	0.00255	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	7.7	0.00297	2.5
Extreme (50C)	2595	4.8	0.00185	2.5
Extreme (40C)	2595	5.4	0.00208	2.5
Extreme (30C)	2595	10.7	0.00413	2.5
Extreme (10C)	2595	6	0.00231	2.5
Extreme (0C)	2595	4.7	0.00181	2.5
Extreme (-10C)	2595	9.1	0.00351	2.5
Extreme (-20C)	2595	4.3	0.00166	2.5
Extreme (-30C)	2595	6.6	0.00255	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>				
23.31	1745	12.7	0.00728	2.5
25.9	1745	13.4	0.00768	2.5
28.49	1745	13	0.00745	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	7.7	0.00441	2.5
Extreme (50C)	1745	5.2	0.00298	2.5
Extreme (40C)	1745	5.1	0.00292	2.5
Extreme (30C)	1745	5	0.00287	2.5
Extreme (10C)	1745	6.6	0.00378	2.5
Extreme (0C)	1745	4.8	0.00275	2.5
Extreme (-10C)	1745	9.8	0.00562	2.5
Extreme (-20C)	1745	2.8	0.00160	2.5
Extreme (-30C)	1745	2.9	0.00166	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>				
23.31	1745	12.3	0.00705	2.5
25.9	1745	14.2	0.00814	2.5
28.49	1745	13.5	0.00774	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	7.7	0.00441	2.5
Extreme (50C)	1745	4.7	0.00269	2.5
Extreme (40C)	1745	5.9	0.00338	2.5
Extreme (30C)	1745	5.2	0.00298	2.5
Extreme (10C)	1745	6.3	0.00361	2.5
Extreme (0C)	1745	4.7	0.00269	2.5
Extreme (-10C)	1745	9.4	0.00539	2.5
Extreme (-20C)	1745	1.5	0.00086	2.5
Extreme (-30C)	1745	6.3	0.00361	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.

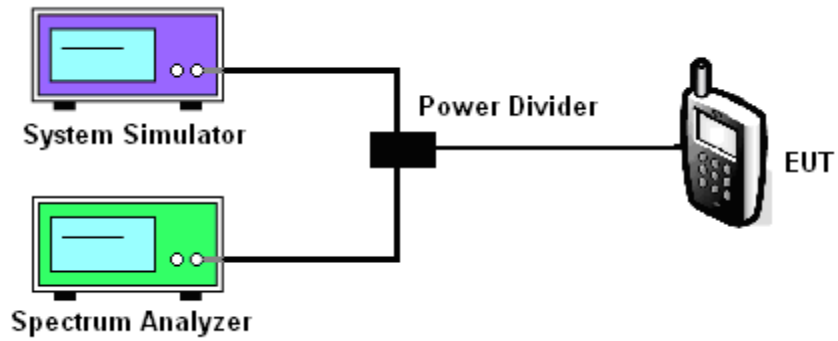
### 11.2 Measuring Instruments

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 Band5  
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----