

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

## **FCC ID: 2AHZ5PT**

**Product:** Smartphone  
**Trade Mark:** CUBOT  
**Model Number:** POCKET  
**Family Model:** N/A  
**Report No.:** S22050605502006

### **Prepared for**

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## TEST RESULT CERTIFICATION

<b>Applicant's name</b> .....	Shenzhen Huafurui Technology Co., Ltd
<b>Address</b> .....	Unit 1401 14/F, Jin qi zhi gu mansion, Liu xian street, Xili, Nan shan district, Shenzhen, China
<b>Manufacturer's Name</b> .....	Shenzhen Huafurui Technology Co., Ltd
<b>Address</b> .....	Unit 1401 14/F, Jin qi zhi gu mansion, Liu xian street, Xili, Nan shan district, Shenzhen, China
<b>Product name</b> .....	Smartphone
<b>Model and/or type reference</b> ..	POCKET
<b>Family Model:</b>	N/A
<b>Standards</b> .....	FCC CFR 47 Part 22H, Part 24E, Part 27
<b>Test procedure</b> .....	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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<b>Date of Test</b> .....	
<b>Date (s) of performance of tests</b> .....	May 09, 2022 ~ May 17, 2022
<b>Date of Issue</b> .....	May 18, 2022
<b>Test Result</b> .....	<b>Pass</b>

Testing Engineer :



(Allen Liu)

Authorized Signatory :



(Alex Li)

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## 1. GENERAL INFORMATION

### 1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	Smartphone
Trade Mark	CUBOT
Model Name	POCKET
Family Model	N/A
Model Difference	N/A
FCC ID:	2AHZ5PT
Frequency Bands:	U.S. Bands: <input checked="" type="checkbox"/> LTE FDD Band 2, 4, 5, 7, 12, 17, 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 7 Uplink: 2500MHz-2570MHz, Downlink: 2620MHz-2690MHz; LTE FDD Band 12 Uplink: 699MHz-716MHz, Downlink: 729MHz-746MHz; LTE FDD Band 17 Uplink: 704MHz-716MHz, Downlink: 734MHz-746MHz; LTE FDD Band 66 Uplink: 1710MHz-1780MHz, Downlink: 2110MHz-2200MHz;
Type of Modulation:	QPSK/16QAM
Power Class	Class 3
Antenna:	PIFA Antenna
Antenna gain:	Band 2: -0.58dBi, Band 4: -0.61dBi, Band 5: -0.51dBi, Band 7: -0.42dBi, Band 12: -1.13dBi, Band 17: -1.13dBi, Band 66: -0.61dBi
Adapter	Model: HJ-0502000W2-US Input: 100-240V~50/60Hz 0.3A Output: 5.0V---2.0A 10.0W
Battery	DC 3.85V, 3000mAh
Power supply	DC 3.85V from battery or DC 5V from Adapter.
Extreme Vol. Limits:	DC 3.4V to DC 4.2V (Nominal DC 3.85V) (Note 1)
HW Version	G2211E-UA-V1.0
SW Version	CUBOT_Pocket_C011C_V1.0

**\*\* Note1:** The High Voltage 4.2V and Low Voltage 3.4V was declared by manufacturer, The EUT couldn't be operate normally with higher or lower voltage.

## 1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2AHZ5PT** filing to comply with the FCC Part 22H&24E &27.

## 1.3 TEST METHODOLOGY

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

## 1.4 TEST FACILITY

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

ShenZhen NTEK Testing Technology Co., Ltd.

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

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

FCC Registration No.:463705

IC Registration No.:9270A-1,

CNAS Registration No.:L5516

## MEASUREMENT UNCERTAINTY

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

No.	Item	Uncertainty
1	Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	2.5dB
2	Conducted Emission Test	$\pm 1.38\text{dB}$
3	RF power, conducted	$\pm 0.16\text{dB}$
4	Spurious emissions, conducted	$\pm 0.21\text{dB}$
5	All emissions, radiated(<1G)	$\pm 4.68\text{dB}$
6	All emissions, radiated(>1G)	$\pm 4.89\text{dB}$
7	Temperature	$\pm 0.5^{\circ}\text{C}$
8	Humidity	$\pm 2\%$
9	Frequency error, conducted	$\pm 0.19\text{ ppm}$



### 1.5 SPECIAL ACCESSORIES

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

### 1.6 WORST-CASE CONFIGURATION AND MODE

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

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

### 1.6 SUMMARY OF TEST RESULTS

FCC Part22, Subpart H/ FCC Part24, Subpart E, FCC Part27, Subpart L, Subpart M,Subpart H KDB 971168 D01 Power Meas License Digital Systems v03			
FCC Rule	Test Item	Verdict	Remark
2.1046	Conducted Output Power	PASS	
22.913(d) 24.232(d) 27.50(d)(5) KDB 971168 D01 Clause 5.7	Peak-to-Average Ratio	PASS	
2.1049 22.917(b) 24.238(b) KDB 971168 D01 Clause 4.2	Occupied Bandwidth	PASS	
2.1051 22.917(a) 24.238(a) 27.53(m), (g), (h) KDB 971168 D01 Clause 6	Band Edge	PASS	
22.913(a)(2) 27.50(c)(10) KDB 971168 D01 Clause 5.6	Effective Radiated Power	PASS	

24.232(c) 27.50(h)(2), (d)(4) KDB 971168 D01 Clause 5.6	Equivalent Isotropic Radiated Power	PASS	
2.1053 22.917(a) 24.238(a) 27.53(g)(h)(m) KDB 971168 D01 Clause 7	Field Strength of Spurious Radiation	PASS	
2.1055 22.355 24.235 27.54 KDB 971168 D01 Clause 9	Frequency Stability for Temperature & Voltage	PASS	
2.1051 22.917(a) 24.238(a) 27.53(g)(h)(m) KDB 971168 D01 Clause 6	Conducted Emission	PASS	
<p>Remark:</p> <ol style="list-style-type: none"> <li>1. "N/A" denotes test is not applicable in this Test Report.</li> <li>2. All test items were verified and recorded according to the standards and without any deviation during the test.</li> <li>3. No modifications are made to the EUT during all test items.</li> </ol>			



## 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	Smartphone	POCKET	FCC ID: 2AHZ5PT	EUT

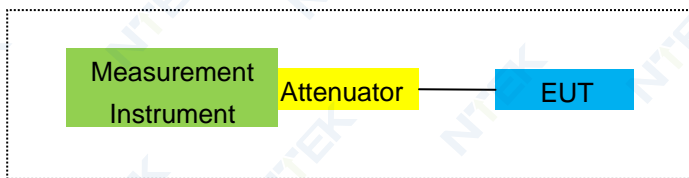
*Note: All the accessories have been used during the test.  
the following "EUT" in setup diagram means EUT system.*

## 2.4 TEST SETUP

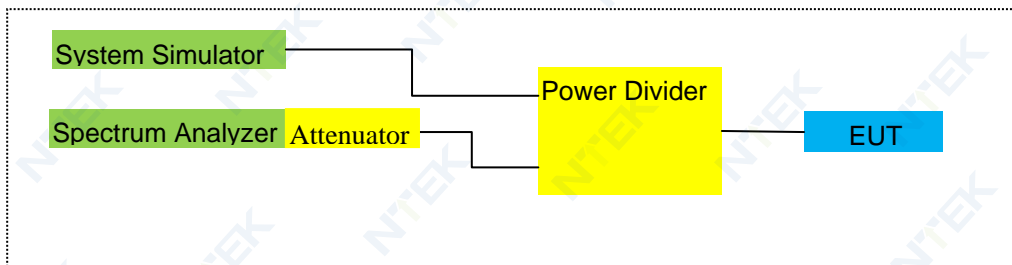
For Radiated Test Cases



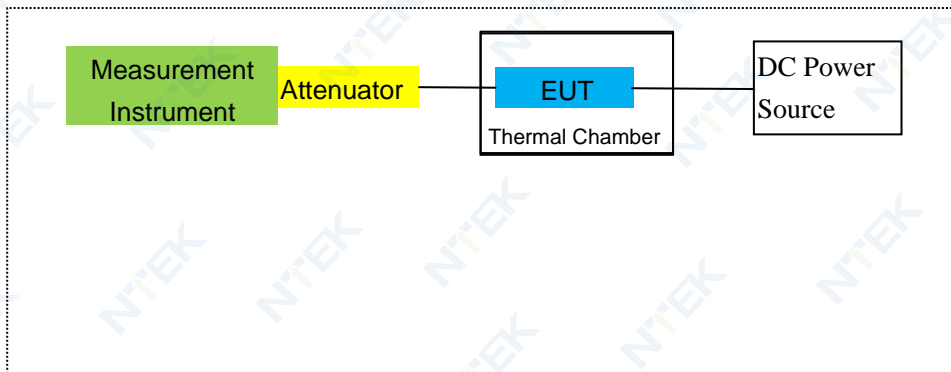
For Conducted Output Power



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	2022.04.06	2023.04.05	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2022.03.30	2023.03.29	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2020.05.11	2023.05.10	3 year
5	Horn Antenna	EM	EM-AH-1018 0	2011071402	2022.03.31	2023.03.30	1 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2021.11.07	2022.11.06	1 year
7	Amplifier	EM	EM-30180	060538	2021.07.01	2022.06.30	1 year
8	Loop Antenna	ARA	PLA-1030/B	1029	2022.04.06	2023.04.05	1 year
9	Power Meter	R&S	NRVS	100696	2021.07.01	2022.06.30	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.0 5	2022.04.06	2023.04.05	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	2022.04.06	2023.04.05	1 year
15	LISN	R&S	ENV216	101313	2022.04.06	2023.04.05	1 year
16	LISN	EMCO	3816/2	00042990	2022.04.06	2023.04.05	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2022.04.06	2023.04.05	1 year
18	Passive Voltage Probe	R&S	ESH2-Z3	100196	2022.04.06	2023.04.05	1 year
19	Test Cable	N/A	C01	N/A	2020.05.11	2023.05.10	3 year
20	Test Cable	N/A	C02	N/A	2020.05.11	2023.05.10	3 year
21	Test Cable	N/A	C03	N/A	2020.05.11	2023.05.10	3 year
22	Attenuator	MCE	24-10-34	BN9258	2020.04.07	2023.04.06	1 year
23	Spectrum Analyzer	agilent	e4440a	us44300399	2022.04.06	2023.04.05	1 year
24	test receiver	R&S	ESCI	a0304218	2022.04.06	2023.04.05	1 year
25	Communication Tester	R&S	CMU200	A0304247	2022.04.06	2023.04.05	1 year
26	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2022.04.06	2023.04.05	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
30	PSG Analog Signal Generator	Agilent	E8257D	MY51110112	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 6.6.3.3.2	13	10	Table 6.2.4-2	Table 6.2.4-2
NS_08	6.6.3.3.3	19	10, 15	> 44	$\leq 3$
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 Band2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 17
- LTE Band 66

### RESULTS

**PASS**

Test data reference attachment.

## 6. BANDEDGE AND EMISSION MASK

### RULE PART(S)

FCC: §2.1051, §22.917(a), §24.238(a), §27.53(c)(g)(h)(m)

FCC: §2.1046, §22.913, §24.232

### LIMITS

The minimum permissible attenuation level of any spurious emission is  $43 + \log_{10}(P[\text{Watts}])$ , where P is the transmitter power in Watts.

The minimum permissible attenuation level for Band 7 is as following.

Per 27.53(g) for operations in the 698-746 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

Per 27.53(c.5) for operations in the 776-788 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

For all plots showing emissions in the 763 – 775MHz and 793 – 805MHz band, the FCC limit per 27.53(c.4) is  $65 + 10\log_{10}(P) = -35\text{dBm}$  in a 6.25kHz bandwidth.

Per 27.53(m) for operations in the BRS/EBS bands, 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.

### TEST PROCEDURE

The transmitter output was connected to a CMW500Test 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 display line

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

### MODES TESTED

- ☐ LTE Band 2/4/5/7/12/17/66

### RESULTS

Test data reference attachment.

## 7. OUT OF BAND EMISSIONS

### RULE PART(S)

FCC: §2.1051, §22.917(a), §24.238(a), §27.53(c)(g)(h)(m)

### LIMITS

The minimum permissible attenuation level of any spurious emission is  $43 + \log_{10}(P[\text{Watts}])$ , where P is the transmitter power in Watts.

The minimum permissible attenuation level for Band 7 is as following.

Per 27.53(g) for operations in the 698-746 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

Per 27.53(c.5) for operations in the 776-788 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

For all plots showing emissions in the 763 – 775MHz and 793 – 805MHz band, the FCC limit per 27.53(c.4) is  $65 + 10\log_{10}(P) = -35\text{dBm}$  in a 6.25kHz bandwidth.

Per 27.53(m) for operations in the BRS/EBS bands, 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.

### 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 display line
- ☐ Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

### MODES TESTED

- ☐ LTE Band2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 17
- LTE Band 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.**

Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported (LTE Band 2/4/7: above 10GHz).

## 8. RADIATED MEASUREMENT

### 8.1. RADIATED POWER (ERP & EIRP)

#### RULE PART(S)

FCC: §2.1046, §22.913(a)(2), §24.232(c) and §27.50 (h)(2), (b)(10), (c)(10), (d)(4)

#### LIMITS:

22.913(a) (2)- The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.  
24.232 (c) Mobile and portable stations are limited to 2 watts EIRP.  
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 in the 2500–2570 MHz and 2620–2690 MHz bands. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

#### 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 Band2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 17
- LTE Band 66

#### RESULTS

Pass

## 8.2 LTE BAND 2

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP	Polarization Of Max. ERP	
							Average		
							(mW)		
1.4MHz Band QPSK	1/#Mid	1850.7	-0.65	3.76	28.24	23.83	241.546	Horizontal	Pass
		1880	-0.46	3.91	28.22	23.85	242.661	Horizontal	Pass
		1909.3	-0.37	3.93	28.20	23.90	245.471	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-0.71	3.77	28.23	23.75	237.137	Horizontal	Pass
		1880	-0.56	3.91	28.24	23.77	238.232	Horizontal	Pass
		1908.5	-0.43	3.94	28.25	23.88	244.343	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-0.60	3.77	28.31	23.94	247.742	Horizontal	Pass
		1880	-0.22	3.91	28.22	24.09	256.448	Horizontal	Pass
		1907.5	-0.15	3.94	28.20	24.11	257.632	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-0.46	3.79	28.33	24.08	255.859	Horizontal	Pass
		1880	-0.16	3.95	28.22	24.11	257.632	Horizontal	Pass
		1905	-0.05	3.97	28.19	24.17	261.216	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-0.42	3.79	28.34	24.13	258.821	Horizontal	Pass
		1880	-0.21	3.95	28.22	24.06	254.683	Horizontal	Pass
		1902.5	-0.07	3.97	28.18	24.14	259.418	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-0.41	3.81	28.35	24.13	258.821	Horizontal	Pass
		1880	-0.08	3.96	28.22	24.18	261.818	Horizontal	Pass
		1900	-0.02	4.00	28.16	24.14	259.418	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-0.97	3.76	28.24	23.51	224.388	Vertical	Pass
		1880	-1.33	3.91	28.22	22.98	198.609	Vertical	Pass
		1909.3	-1.67	3.93	28.20	22.60	181.970	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-1.16	3.77	28.23	23.30	213.796	Vertical	Pass
		1880	-1.02	3.91	28.24	23.31	214.289	Vertical	Pass
		1908.5	-0.77	3.94	28.25	23.54	225.944	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-1.15	3.77	28.31	23.39	218.273	Vertical	Pass
		1880	-0.94	3.91	28.22	23.37	217.270	Vertical	Pass
		1907.5	-1.43	3.94	28.20	22.83	191.867	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1855	-1.43	3.79	28.33	23.11	204.644	Vertical	Pass
		1880	-1.27	3.95	28.22	23.00	199.526	Vertical	Pass
		1905	-1.61	3.97	28.19	22.61	182.390	Vertical	Pass
15.0MHz	1/#Mid	1857.5	-1.39	3.79	28.34	23.16	207.014	Vertical	Pass



Band QPSK		1880	-1.08	3.95	28.22	23.19	208.449	Vertical	Pass
		1902.5	-1.16	3.97	28.18	23.05	201.837	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1860	-1.56	3.81	28.35	22.98	198.609	Vertical	Pass
		1880	-1.37	3.96	28.22	22.89	194.536	Vertical	Pass
		1900	-1.21	4.00	28.16	22.95	197.242	Vertical	Pass

Note:

SG Level= Signal generator output

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

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP  Average (dBm)	Max. EIRP	Polarization  Of Max. ERP	
							Average		
							(mW)		
1.4MHz Band 16 QAM	1/#Mid	1850.7	-1.77	3.76	28.24	22.71	186.638	Horizontal	Pass
1880		-1.24	3.91	28.22	23.07	202.768	Horizontal	Pass	
1909.3		-1.17	3.93	28.20	23.10	204.174	Horizontal	Pass	
3.0MHz Band 16 QAM	1/#Mid	1851.5	-1.27	3.77	28.23	23.19	208.449	Horizontal	Pass
1880		-1.35	3.91	28.24	22.98	198.609	Horizontal	Pass	
1908.5		-1.56	3.94	28.25	22.75	188.365	Horizontal	Pass	
5.0MHz Band 16 QAM	1/#Mid	1852.5	-1.21	3.77	28.31	23.33	215.278	Horizontal	Pass
1880		-1.12	3.91	28.22	23.19	208.449	Horizontal	Pass	
1907.5		-0.80	3.94	28.20	23.46	221.820	Horizontal	Pass	
10.0MHz Band 16 QAM	1/#Mid	1855	-1.26	3.79	28.33	23.28	212.814	Horizontal	Pass
1880		-1.25	3.95	28.22	23.02	200.447	Horizontal	Pass	
1905		-0.72	3.97	28.19	23.50	223.872	Horizontal	Pass	
15.0MHz Band 16 QAM	1/#Mid	1857.5	-1.24	3.79	28.34	23.31	214.289	Horizontal	Pass
1880		-1.03	3.95	28.22	23.24	210.863	Horizontal	Pass	
1902.5		-0.99	3.97	28.18	23.22	209.894	Horizontal	Pass	
20.0MHz Band 16 QAM	1/#Mid	1860	-1.13	3.81	28.35	23.41	219.280	Horizontal	Pass
1880		-0.83	3.96	28.22	23.43	220.293	Horizontal	Pass	
1900		-0.65	4.00	28.16	23.51	224.388	Horizontal	Pass	
1.4MHz Band 16 QAM	1/#Mid	1850.7	-2.11	3.76	28.24	22.37	172.584	Vertical	Pass
1880		-2.23	3.91	28.22	22.08	161.436	Vertical	Pass	
1909.3		-2.52	3.93	28.20	21.75	149.624	Vertical	Pass	
3.0MHz Band 16 QAM	1/#Mid	1851.5	-2.70	3.77	28.23	21.76	149.968	Vertical	Pass
1880		-2.15	3.91	28.24	22.18	165.196	Vertical	Pass	
1908.5		-2.19	3.94	28.25	22.12	162.930	Vertical	Pass	
5.0MHz Band 16 QAM	1/#Mid	1852.5	-2.29	3.77	28.31	22.25	167.880	Vertical	Pass
1880		-2.38	3.91	28.22	21.93	155.955	Vertical	Pass	
1907.5		-1.85	3.94	28.20	22.41	174.181	Vertical	Pass	
10.0MHz Band 16 QAM	1/#Mid	1855	-2.56	3.79	28.33	21.98	157.761	Vertical	Pass
1880		-1.76	3.95	28.22	22.51	178.238	Vertical	Pass	
1905		-1.73	3.97	28.19	22.49	177.419	Vertical	Pass	
15.0MHz Band 16 QAM	1/#Mid	1857.5	-2.30	3.79	28.34	22.25	167.880	Vertical	Pass
1880		-2.67	3.95	28.22	21.60	144.544	Vertical	Pass	
1902.5		-2.09	3.97	28.18	22.12	162.930	Vertical	Pass	

20.0MHz		1860	-2.96	3.81	28.35	21.58	143.880	Vertical	Pass
Band 16	1/#Mid	1880	-2.65	3.96	28.22	21.61	144.877	Vertical	Pass
QAM		1900	-1.73	4.00	28.16	22.43	174.985	Vertical	Pass

Note:

SG Level= Signal generator output

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

### 8.3 LTE BAND 4

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG	Cable	Antenna	Max. EIRP	Max. EIRP	Polarization Of	
			Level	Loss	Gain			Max. ERP	
			(dBm)	(dBm)	(dB)	Average	Average		
						(dBm)	(mW)		
1.4MHz Band QPSK	1/#Mid	1710.7	-0.56	3.12	27.58	23.90	245.471	Horizontal	Pass
		1732.5	-0.55	3.27	27.61	23.79	239.332	Horizontal	Pass
		1754.3	-0.53	3.29	27.63	23.81	240.436	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-0.73	3.13	27.61	23.75	237.137	Horizontal	Pass
		1732.5	-0.65	3.27	27.61	23.69	233.884	Horizontal	Pass
		1753.5	-0.57	3.30	27.62	23.75	237.137	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-0.50	3.13	27.63	24.00	251.189	Horizontal	Pass
		1732.5	-0.40	3.27	27.61	23.94	247.742	Horizontal	Pass
		1752.5	-0.28	3.30	27.60	24.02	252.348	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-0.44	3.15	27.64	24.05	254.097	Horizontal	Pass
		1732.5	-0.21	3.31	27.61	24.09	256.448	Horizontal	Pass
		1750	-0.23	3.33	27.59	24.03	252.930	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-0.45	3.15	27.65	24.05	254.097	Horizontal	Pass
		1732.5	-0.29	3.31	27.61	24.01	251.768	Horizontal	Pass
		1747.5	-0.23	3.33	27.57	24.01	251.768	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-0.39	3.17	27.66	<b>24.10</b>	257.040	Horizontal	Pass
		1732.5	-0.22	3.32	27.61	24.07	255.270	Horizontal	Pass
		1745	-0.16	3.36	27.56	24.04	253.513	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-1.18	3.12	27.58	23.28	212.814	Vertical	Pass
		1732.5	-0.86	3.27	27.61	23.48	222.844	Vertical	Pass
		1754.3	-0.87	3.29	27.63	23.47	222.331	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-1.02	3.13	27.61	23.46	221.820	Vertical	Pass
		1732.5	-1.00	3.27	27.61	23.34	215.774	Vertical	Pass
		1753.5	-1.33	3.30	27.62	22.99	199.067	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-1.19	3.13	27.63	23.31	214.289	Vertical	Pass
		1732.5	-1.22	3.27	27.61	23.12	205.116	Vertical	Pass
		1752.5	-0.78	3.30	27.60	23.52	224.905	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-1.27	3.15	27.64	23.22	209.894	Vertical	Pass
		1732.5	-1.28	3.31	27.61	23.02	200.447	Vertical	Pass
		1750	-1.26	3.33	27.59	23.00	199.526	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1717.5	-1.16	3.15	27.65	23.34	215.774	Vertical	Pass
		1732.5	-1.56	3.31	27.61	22.74	187.932	Vertical	Pass
		1747.5	-1.34	3.33	27.57	22.90	194.984	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1720	-0.94	3.17	27.66	23.55	226.464	Vertical	Pass
		1732.5	-1.56	3.32	27.61	22.73	187.499	Vertical	Pass
		1745	-1.11	3.36	27.56	23.09	203.704	Vertical	Pass

**Note:**

SG Level= Signal generator output

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

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable	Antenna	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	Loss	Gain	Average	Average	Of Max. ERP	
				(dBm)	(dB)	(dBm)	(mW)		
1.4MHz Band 16 QAM	1/#Mid	1710.7	-1.37	3.12	27.58	23.09	203.704	Horizontal	Pass
		1732.5	-1.22	3.27	27.61	23.12	205.116	Horizontal	Pass
		1754.3	-1.22	3.29	27.63	23.12	205.116	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-1.31	3.13	27.61	23.17	207.491	Horizontal	Pass
		1732.5	-1.44	3.27	27.61	22.90	194.984	Horizontal	Pass
		1753.5	-1.66	3.30	27.62	22.66	184.502	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-1.14	3.13	27.63	23.36	216.770	Horizontal	Pass
		1732.5	-1.10	3.27	27.61	23.24	210.863	Horizontal	Pass
		1752.5	-0.79	3.30	27.60	23.51	224.388	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-1.21	3.15	27.64	23.28	212.814	Horizontal	Pass
		1732.5	-1.40	3.31	27.61	22.90	194.984	Horizontal	Pass
		1750	-0.78	3.33	27.59	23.48	222.844	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-1.01	3.15	27.65	23.49	223.357	Horizontal	Pass
		1732.5	-1.07	3.31	27.61	23.23	210.378	Horizontal	Pass
		1747.5	-1.09	3.33	27.57	23.15	206.538	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-0.96	3.17	27.66	23.53	225.424	Horizontal	Pass
		1732.5	-0.97	3.32	27.61	23.32	214.783	Horizontal	Pass
		1745	-0.78	3.36	27.56	23.42	219.786	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-2.72	3.12	27.58	21.74	149.279	Vertical	Pass
		1732.5	-2.13	3.27	27.61	22.21	166.341	Vertical	Pass
		1754.3	-1.81	3.29	27.63	22.53	179.061	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-2.55	3.13	27.61	21.93	155.955	Vertical	Pass
		1732.5	-2.59	3.27	27.61	21.75	149.624	Vertical	Pass
		1753.5	-2.14	3.30	27.62	22.18	165.196	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-2.71	3.13	27.63	21.79	151.008	Vertical	Pass
		1732.5	-2.12	3.27	27.61	22.22	166.725	Vertical	Pass
		1752.5	-2.68	3.30	27.60	21.62	145.211	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-2.15	3.15	27.64	22.34	171.396	Vertical	Pass
		1732.5	-2.65	3.31	27.61	21.65	146.218	Vertical	Pass
		1750	-1.85	3.33	27.59	22.41	174.181	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-2.44	3.15	27.65	22.06	160.694	Vertical	Pass
		1732.5	-2.12	3.31	27.61	22.18	165.196	Vertical	Pass
		1747.5	-2.44	3.33	27.57	21.80	151.356	Vertical	Pass



20.0MHz		1720	-2.30	3.17	27.66	22.19	165.577	Vertical	Pass
Band 16	1/#Mid	1732.5	-2.10	3.32	27.61	22.19	165.577	Vertical	Pass
QAM		1745	-2.24	3.36	27.56	21.96	157.036	Vertical	Pass

Note:

SG Level= Signal generator output

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

## 8.4 LTE BAND 5

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG	Cable	Antenna	Correction	Max. ERP	Max. ERP	Polarization Of	
			Level	Loss	Gain				Max. ERP	
			(dBm)	(dBm)	(dB)		Average	Average		
						(dB)	(dBm)	(mW)		
1.4MHz	3/#Mid	824.7	8.29	2.01	19.68	2.15	23.81	240.436	Horizontal	Pass
Band		836.5	8.17	2.01	19.77	2.15	23.78	238.781	Horizontal	Pass
QPSK		848.3	7.97	2.02	19.82	2.15	23.62	230.144	Horizontal	Pass
3.0MHz	1/#Mid	825.5	8.06	2.01	19.70	2.15	23.60	229.087	Horizontal	Pass
Band		836.5	7.96	2.01	19.77	2.15	23.57	227.510	Horizontal	Pass
QPSK		847.5	7.83	2.02	19.81	2.15	23.47	222.331	Horizontal	Pass
5.0MHz	1/#Mid	826.5	8.34	2.01	19.71	2.15	23.89	244.906	Horizontal	Pass
Band		836.5	8.22	2.01	19.77	2.15	23.83	241.546	Horizontal	Pass
QPSK		846.5	8.06	2.02	19.79	2.15	23.68	233.346	Horizontal	Pass
10.0MHz	1/#Mid	829	8.36	2.01	19.73	2.15	23.93	247.172	Horizontal	Pass
Band		836.5	8.31	2.01	19.77	2.15	23.92	246.604	Horizontal	Pass
QPSK		844	8.21	2.02	19.78	2.15	23.82	240.991	Horizontal	Pass
1.4MHz	1/#Mid	824.7	6.79	2.01	19.68	2.15	22.31	170.216	Vertical	Pass
Band		836.5	6.90	2.01	19.77	2.15	22.51	178.238	Vertical	Pass
QPSK		848.3	6.68	2.02	19.82	2.15	22.33	171.002	Vertical	Pass
3.0MHz	1/#Mid	825.5	6.81	2.01	19.70	2.15	22.35	171.791	Vertical	Pass
Band		836.5	6.64	2.01	19.77	2.15	22.25	167.880	Vertical	Pass
QPSK		847.5	6.90	2.02	19.81	2.15	22.54	179.473	Vertical	Pass
5.0MHz	1/#Mid	826.5	6.78	2.01	19.71	2.15	22.33	171.002	Vertical	Pass
Band		836.5	7.32	2.01	19.77	2.15	22.93	196.336	Vertical	Pass
QPSK		846.5	6.58	2.02	19.79	2.15	22.20	165.959	Vertical	Pass
10.0MHz	1/#Mid	829	7.24	2.01	19.73	2.15	22.81	190.985	Vertical	Pass
Band		836.5	6.51	2.01	19.77	2.15	22.12	162.930	Vertical	Pass
QPSK		844	7.41	2.02	19.78	2.15	23.02	200.447	Vertical	Pass

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Gain	Correction	Max. ERP	Max.ERP	Polarization	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	Of Max. ERP	
							(dBm)	(mW)		
1.4MHz	3#Mid	824.7	7.44	2.01	19.68	2.15	22.96	197.697	Horizontal	Pass
Band 16		836.5	7.37	2.01	19.77	2.15	22.98	198.609	Horizontal	Pass
QAM		848.3	7.21	2.02	19.82	2.15	22.86	193.197	Horizontal	Pass
3.0MHz	1#Mid	825.5	7.52	2.01	19.70	2.15	23.06	202.302	Horizontal	Pass
Band 16		836.5	7.23	2.01	19.77	2.15	22.84	192.309	Horizontal	Pass
QAM		847.5	6.71	2.02	19.81	2.15	22.35	171.791	Horizontal	Pass
5.0MHz	1#Mid	826.5	7.84	2.01	19.71	2.15	23.39	218.273	Horizontal	Pass
Band 16		836.5	7.61	2.01	19.77	2.15	23.22	209.894	Horizontal	Pass
QAM		846.5	7.36	2.02	19.79	2.15	22.98	198.609	Horizontal	Pass
10.0MHz	1#Mid	829	7.84	2.01	19.73	2.15	23.41	219.280	Horizontal	Pass
Band 16		836.5	7.56	2.01	19.77	2.15	23.17	207.491	Horizontal	Pass
QAM		844	7.10	2.02	19.78	2.15	22.71	186.638	Horizontal	Pass
1.4MHz	1#Mid	824.7	6.02	2.01	19.68	2.15	21.54	142.561	Vertical	Pass
Band 16		836.5	5.77	2.01	19.77	2.15	21.38	137.404	Vertical	Pass
QAM		848.3	6.93	2.02	19.82	2.15	22.58	181.134	Vertical	Pass
3.0MHz	1#Mid	825.5	6.04	2.01	19.70	2.15	21.58	143.880	Vertical	Pass
Band 16		836.5	5.97	2.01	19.77	2.15	21.58	143.880	Vertical	Pass
QAM		847.5	6.44	2.02	19.81	2.15	22.08	161.436	Vertical	Pass
5.0MHz	1#Mid	826.5	6.97	2.01	19.71	2.15	22.52	178.649	Vertical	Pass
Band 16		836.5	6.71	2.01	19.77	2.15	22.32	170.608	Vertical	Pass
QAM		846.5	5.82	2.02	19.79	2.15	21.44	139.316	Vertical	Pass
10.0MHz	1#Mid	829	6.44	2.01	19.73	2.15	22.01	158.855	Vertical	Pass
Band 16		836.5	7.33	2.01	19.77	2.15	22.94	196.789	Vertical	Pass
QAM		844	6.28	2.02	19.78	2.15	21.89	154.525	Vertical	Pass

Note:

SG Level= Signal generator output

Max. ERP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)-2.15

## 8.5 LTE BAND 7

Radiated Power (EIRP) for Band 7									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss	Antenna Gain	Max. EIRP	Max. EIRP	Polarization Of	
			(dBm)	(dBm)	(dB)	Average	Average	Max. ERP	
						(dBm)	(mW)		
5.0MHz Band QPSK	1/#Mid	2502.5	0.71	4.54	27.75	23.92	246.604	Horizontal	Pass
		2535	0.88	4.69	27.72	23.91	246.037	Horizontal	Pass
		2567.5	0.95	4.71	27.71	23.95	248.313	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2505	0.78	4.55	27.76	23.99	250.611	Horizontal	Pass
		2535	0.97	4.69	27.72	24.00	251.189	Horizontal	Pass
		2565	1.05	4.72	27.70	24.03	252.930	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	0.77	4.55	27.77	23.99	250.611	Horizontal	Pass
		2535	0.91	4.69	27.72	23.94	247.742	Horizontal	Pass
		2562.5	1.01	4.72	27.69	23.98	250.035	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2510	0.83	4.57	27.78	24.04	253.513	Horizontal	Pass
		2535	1.01	4.73	27.72	24.00	251.189	Horizontal	Pass
		2560	1.05	4.75	27.68	23.98	250.035	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	-0.41	4.54	27.75	22.80	190.546	Vertical	Pass
		2535	0.00	4.69	27.72	23.03	200.909	Vertical	Pass
		2567.5	-0.44	4.71	27.71	22.56	180.302	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2505	-0.77	4.55	27.76	22.44	175.388	Vertical	Pass
		2535	-0.56	4.69	27.72	22.47	176.604	Vertical	Pass
		2565	-0.23	4.72	27.70	22.75	188.365	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-0.89	4.55	27.77	22.33	171.002	Vertical	Pass
		2535	0.01	4.69	27.72	23.04	201.372	Vertical	Pass
		2562.5	-0.43	4.72	27.69	22.54	179.473	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2510	-0.36	4.57	27.78	22.85	192.752	Vertical	Pass
		2535	-0.07	4.73	27.72	22.92	195.884	Vertical	Pass
		2560	-0.61	4.75	27.68	22.32	170.608	Vertical	Pass

Radiated Power (EIRP) for Band 7									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable	Antenna	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	Loss	Gain	Average	Average	Of Max. ERP	
				(dBm)	(dB)	(dBm)	(mW)		
5.0MHz	1/#Mid	2502.5	0.02	4.54	27.75	23.23	210.378	Horizontal	Pass
Band 16		2535	0.33	4.69	27.72	23.36	216.770	Horizontal	Pass
QAM		2567.5	0.25	4.71	27.71	23.25	211.349	Horizontal	Pass
10.0MHz	1/#Mid	2505	0.13	4.55	27.76	23.34	215.774	Horizontal	Pass
Band 16		2535	0.12	4.69	27.72	23.15	206.538	Horizontal	Pass
QAM		2565	-0.15	4.72	27.70	22.83	191.867	Horizontal	Pass
15.0MHz	1/#Mid	2507.5	-0.05	4.55	27.77	23.17	207.491	Horizontal	Pass
Band 16		2535	-0.02	4.69	27.72	23.01	199.986	Horizontal	Pass
QAM		2562.5	0.37	4.72	27.69	23.34	215.774	Horizontal	Pass
20.0MHz	1/#Mid	2510	0.07	4.57	27.78	23.28	212.814	Horizontal	Pass
Band 16		2535	0.40	4.73	27.72	23.39	218.273	Horizontal	Pass
QAM		2560	0.30	4.75	27.68	23.23	210.378	Horizontal	Pass
5.0MHz	1/#Mid	2502.5	-0.56	4.54	27.75	22.65	184.077	Vertical	Pass
Band 16		2535	-0.28	4.69	27.72	22.75	188.365	Vertical	Pass
QAM		2567.5	-1.04	4.71	27.71	21.96	157.036	Vertical	Pass
10.0MHz	1/#Mid	2505	-1.09	4.55	27.76	22.12	162.930	Vertical	Pass
Band 16		2535	-1.83	4.69	27.72	21.20	131.826	Vertical	Pass
QAM		2565	-0.83	4.72	27.70	22.15	164.059	Vertical	Pass
15.0MHz	1/#Mid	2507.5	-1.70	4.55	27.77	21.52	141.906	Vertical	Pass
Band 16		2535	-1.10	4.69	27.72	21.93	155.955	Vertical	Pass
QAM		2562.5	-0.03	4.72	27.69	22.94	196.789	Vertical	Pass
20.0MHz	1/#Mid	2510	-0.88	4.57	27.78	22.33	171.002	Vertical	Pass
Band 16		2535	-1.66	4.73	27.72	21.33	135.831	Vertical	Pass
QAM		2560	-0.52	4.75	27.68	22.41	174.181	Vertical	Pass

Note:

SG Level= Signal generator output

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

## 8.5 LTE BAND 12

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG	Cable	Antenna	Correction	Max. ERP	Max. ERP	Polarization Of Max. ERP	
			Level	Loss	Gain		Average	Average		
			(dBm)	(dBm)	(dB)		(dB)	(dBm)		
1.4MHz	1/#Mid	699.7	7.90	1.91	19.21	2.15	23.05	201.837	Vertical	Pass
Band		707.5	7.82	1.91	19.26	2.15	23.02	200.447	Vertical	Pass
QPSK		715.3	7.60	1.93	19.34	2.15	22.86	193.197	Vertical	Pass
3.0MHz	1/#Mid	700.5	7.69	1.91	19.21	2.15	22.84	192.309	Vertical	Pass
Band		707.5	7.61	1.91	19.26	2.15	22.81	190.985	Vertical	Pass
QPSK		714.5	7.45	1.93	19.34	2.15	22.71	186.638	Vertical	Pass
5.0MHz	1/#Mid	701.5	7.96	1.91	19.23	2.15	23.13	205.589	Vertical	Pass
Band		707.5	7.87	1.91	19.26	2.15	23.07	202.768	Vertical	Pass
QPSK		713.5	7.66	1.92	19.33	2.15	22.92	195.884	Vertical	Pass
10.0MHz	1/#Mid	704	7.98	1.91	19.25	2.15	23.17	207.491	Vertical	Pass
Band		707.5	7.96	1.91	19.26	2.15	23.16	207.014	Vertical	Pass
QPSK		711	7.81	1.92	19.32	2.15	23.06	202.302	Vertical	Pass
1.4MHz	1/#Mid	699.7	7.07	1.91	19.21	2.15	22.22	166.725	Horizontal	Pass
Band		707.5	6.75	1.91	19.26	2.15	21.95	156.675	Horizontal	Pass
QPSK		715.3	6.63	1.93	19.34	2.15	21.89	154.525	Horizontal	Pass
3.0MHz	1/#Mid	700.5	6.49	1.91	19.21	2.15	21.64	145.881	Horizontal	Pass
Band		707.5	6.95	1.91	19.26	2.15	22.15	164.059	Horizontal	Pass
QPSK		714.5	6.50	1.93	19.34	2.15	21.76	149.968	Horizontal	Pass
5.0MHz	1/#Mid	701.5	6.61	1.91	19.23	2.15	21.78	150.661	Horizontal	Pass
Band		707.5	7.12	1.91	19.26	2.15	22.32	170.608	Horizontal	Pass
QPSK		713.5	6.36	1.92	19.33	2.15	21.62	145.211	Horizontal	Pass
10.0MHz	1/#Mid	704	6.77	1.91	19.25	2.15	21.96	157.036	Horizontal	Pass
Band		707.5	6.16	1.91	19.26	2.15	21.36	136.773	Horizontal	Pass
QPSK		711	6.91	1.92	19.32	2.15	22.16	164.437	Horizontal	Pass



Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Gain	Correction	Max. ERP	Max.ERP	Polarization	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	Of Max. ERP	
							(dBm)	(mW)		
1.4MHz	1/#Mid	699.7	7.85	1.91	19.21	2.15	23.00	199.526	Vertical	Pass
Band 16		707.5	7.77	1.91	19.26	2.15	22.97	198.153	Vertical	Pass
QAM		715.3	7.55	1.93	19.34	2.15	22.81	190.985	Vertical	Pass
3.0MHz	1/#Mid	700.5	7.64	1.91	19.21	2.15	22.79	190.108	Vertical	Pass
Band 16		707.5	7.56	1.91	19.26	2.15	22.76	188.799	Vertical	Pass
QAM		714.5	7.40	1.93	19.34	2.15	22.66	184.502	Vertical	Pass
5.0MHz	1/#Mid	701.5	7.91	1.91	19.23	2.15	23.08	203.236	Vertical	Pass
Band 16		707.5	7.82	1.91	19.26	2.15	23.02	200.447	Vertical	Pass
QAM		713.5	7.61	1.92	19.33	2.15	22.87	193.642	Vertical	Pass
10.0MHz	1/#Mid	704	7.93	1.91	19.25	2.15	23.12	205.116	Vertical	Pass
Band 16		707.5	7.91	1.91	19.26	2.15	23.11	204.644	Vertical	Pass
QAM		711	7.76	1.92	19.32	2.15	23.01	199.986	Vertical	Pass
1.4MHz	1/#Mid	699.7	7.07	1.91	19.21	2.15	22.22	166.725	Horizontal	Pass
Band 16		707.5	6.98	1.91	19.26	2.15	22.18	165.196	Horizontal	Pass
QAM		715.3	6.49	1.93	19.34	2.15	21.75	149.624	Horizontal	Pass
3.0MHz	1/#Mid	700.5	6.76	1.91	19.21	2.15	21.91	155.239	Horizontal	Pass
Band 16		707.5	6.75	1.91	19.26	2.15	21.95	156.675	Horizontal	Pass
QAM		714.5	6.38	1.93	19.34	2.15	21.64	145.881	Horizontal	Pass
5.0MHz	1/#Mid	701.5	6.59	1.91	19.23	2.15	21.76	149.968	Horizontal	Pass
Band 16		707.5	6.65	1.91	19.26	2.15	21.85	153.109	Horizontal	Pass
QAM		713.5	6.84	1.92	19.33	2.15	22.10	162.181	Horizontal	Pass
10.0MHz	1/#Mid	704	6.55	1.91	19.25	2.15	21.74	149.279	Horizontal	Pass
Band 16		707.5	6.84	1.91	19.26	2.15	22.04	159.956	Horizontal	Pass
QAM		711	6.07	1.92	19.32	2.15	21.32	135.519	Horizontal	Pass

Note:

SG Level= Signal generator output

Max. ERP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)-2.15

## 8.6 LTE BAND 17

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG	Cable	Antenna	Correction	Max. ERP	Max. ERP	Polarization Of	
			Level	Loss	Gain		Average	Average	Max. ERP	
			(dBm)	(dBm)	(dB)		(dBm)	(mW)		
5.0MHz  Band QPSK	1/#Mid	706.5	8.31	1.91	19.23	2.15	23.48	222.844	Vertical	Pass
		710	8.17	1.91	19.26	2.15	23.37	217.270	Vertical	Pass
		713.5	8.07	1.92	19.33	2.15	23.33	215.278	Vertical	Pass
10.0MHz  Band QPSK	1/#Mid	709	8.32	1.91	19.25	2.15	23.51	224.388	Vertical	Pass
		710	8.27	1.91	19.26	2.15	23.47	222.331	Vertical	Pass
		711	8.23	1.92	19.32	2.15	23.48	222.844	Vertical	Pass
5.0MHz  Band QPSK	1/#Mid	706.5	6.85	1.91	19.23	2.15	22.02	159.221	Horizontal	Pass
		710	7.50	1.91	19.26	2.15	22.70	186.209	Horizontal	Pass
		713.5	7.77	1.92	19.33	2.15	23.03	200.909	Horizontal	Pass
10.0MHz  Band QPSK	1/#Mid	709	7.47	1.91	19.25	2.15	22.66	184.502	Horizontal	Pass
		710	7.16	1.91	19.26	2.15	22.36	172.187	Horizontal	Pass
		711	7.98	1.92	19.32	2.15	23.23	210.378	Horizontal	Pass

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG	Cable	Antenna	Correction	Max. ERP	Max.ERP	Polarization	
			Level	Loss	Gain				Of Max.	
			(dBm)	(dBm)	(dB)		Average	Average	ERP	
						(dB)	(dBm)	(mW)		
5.0MHz  Band 16  QAM	1/#Mid	706.5	7.66	1.91	19.23	2.15	22.83	191.867	Vertical	Pass
		710	7.57	1.91	19.26	2.15	22.77	189.234	Vertical	Pass
		713.5	7.37	1.92	19.33	2.15	22.63	183.231	Vertical	Pass
10.0MHz  Band 16  QAM	1/#Mid	709	7.20	1.91	19.25	2.15	22.39	173.380	Vertical	Pass
		710	7.73	1.91	19.26	2.15	22.93	196.336	Vertical	Pass
		711	7.46	1.92	19.32	2.15	22.71	186.638	Vertical	Pass
5.0MHz  Band 16  QAM	1/#Mid	706.5	7.06	1.91	19.23	2.15	22.23	167.109	Horizontal	Pass
		710	6.60	1.91	19.26	2.15	21.80	151.356	Horizontal	Pass
		713.5	6.87	1.92	19.33	2.15	22.13	163.305	Horizontal	Pass
10.0MHz  Band 16  QAM	1/#Mid	709	6.76	1.91	19.25	2.15	21.95	156.675	Horizontal	Pass
		710	6.54	1.91	19.26	2.15	21.74	149.279	Horizontal	Pass
		711	6.25	1.92	19.32	2.15	21.50	141.254	Horizontal	Pass

Note:

SG Level= Signal generator output

Max. ERP Average (dBm)= Antenna Gain(dB)+ SG Level (dBm)- Cable Loss(dBm)-2.15

## 8.7 LTE BAND 66

Radiated Power (EIRP) for Band 66									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP	Polarization Of Max. ERP	
							Average		
							(mW)		
1.4MHz	Band 1/#Mid QPSK	1710.7	-0.86	3.76	28.24	23.62	230.144	Horizontal	Pass
1745		-0.72	3.91	28.22	23.59	228.560	Horizontal	Pass	
1779.3		-0.59	3.93	28.2	23.68	233.346	Horizontal	Pass	
3.0MHz	Band 1/#Mid QPSK	1711.5	-0.92	3.77	28.23	23.54	225.944	Horizontal	Pass
1745		-0.83	3.91	28.24	23.50	223.872	Horizontal	Pass	
1778.5		-0.85	3.94	28.25	23.46	221.820	Horizontal	Pass	
5.0MHz	Band 1/#Mid QPSK	1712.5	-0.82	3.77	28.31	23.72	235.505	Horizontal	Pass
1745		-0.50	3.91	28.22	23.81	240.436	Horizontal	Pass	
1777.5		-0.56	3.94	28.2	23.70	234.423	Horizontal	Pass	
10.0MHz	Band 1/#Mid QPSK	1715	-0.71	3.79	28.33	23.83	241.546	Horizontal	Pass
1745		-0.44	3.95	28.22	23.83	241.546	Horizontal	Pass	
1775		-0.45	3.97	28.19	23.77	238.232	Horizontal	Pass	
15.0MHz	Band 1/#Mid QPSK	1717.5	-0.73	3.79	28.34	23.82	240.991	Horizontal	Pass
1745		-0.54	3.95	28.22	23.73	236.048	Horizontal	Pass	
1772.5		-0.49	3.97	28.18	23.72	235.505	Horizontal	Pass	
20.0MHz	Band 1/#Mid QPSK	1720	-0.70	3.81	28.35	23.84	242.103	Horizontal	Pass
1745		-0.44	3.96	28.22	23.82	240.991	Horizontal	Pass	
1770		-0.46	4	28.16	23.70	234.423	Horizontal	Pass	
1.4MHz	Band 1/#Mid QPSK	1710.7	-2.18	3.76	28.24	22.30	169.824	Vertical	Pass
1745		-1.73	3.91	28.22	22.58	181.134	Vertical	Pass	
1779.3		-1.58	3.93	28.2	22.69	185.780	Vertical	Pass	
3.0MHz	Band 1/#Mid QPSK	1711.5	-1.43	3.77	28.23	23.03	200.909	Vertical	Pass
1745		-1.62	3.91	28.24	22.71	186.638	Vertical	Pass	
1778.5		-1.55	3.94	28.25	22.76	188.799	Vertical	Pass	
5.0MHz	Band 1/#Mid QPSK	1712.5	-1.53	3.77	28.31	23.01	199.986	Vertical	Pass
1745		-1.24	3.91	28.22	23.07	202.768	Vertical	Pass	
1777.5		-1.28	3.94	28.2	22.98	198.609	Vertical	Pass	
10.0MHz	Band 1/#Mid	1715	-2.18	3.79	28.34	22.37	172.584	Vertical	Pass
1745		-1.50	3.95	28.22	22.77	189.234	Vertical	Pass	

QPSK		1775	-1.33	3.97	28.18	22.88	194.089	Vertical	Pass
15.0MHz		1717.5	-1.79	3.81	28.35	22.75	188.365	Vertical	Pass
Band	1/#Mid	1745	-1.40	3.96	28.22	22.86	193.197	Vertical	Pass
QPSK		1772.5	-1.66	4	28.16	22.50	177.828	Vertical	Pass
20.0MHz		1720	-2.18	3.79	28.34	22.37	172.584	Vertical	Pass
Band	1/#Mid	1745	-1.56	3.95	28.22	22.71	186.638	Vertical	Pass
QPSK		1770	-1.91	3.97	28.18	22.30	169.824	Vertical	Pass

Radiated Power (EIRP) for Band 66									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable	Antenna	Max. EIRP Average (dBm)	Max. EIRP	Polarization Of Max. ERP	
				Loss	Gain		Average		
				(dBm)	(dB)		(mW)		
1.4MHz	1/#Mid	1710.7	-1.69	3.76	28.24	22.79	190.108	Horizontal	Pass
Band 16		1745	-1.30	3.91	28.22	23.01	199.986	Horizontal	Pass
QAM		1779.3	-1.48	3.93	28.2	22.79	190.108	Horizontal	Pass
3.0MHz	1/#Mid	1711.5	-2.08	3.77	28.23	22.38	172.982	Horizontal	Pass
Band 16		1745	-1.33	3.91	28.24	23.00	199.526	Horizontal	Pass
QAM		1778.5	-1.62	3.94	28.25	22.69	185.780	Horizontal	Pass
5.0MHz	1/#Mid	1712.5	-1.50	3.77	28.31	23.04	201.372	Horizontal	Pass
Band 16		1745	-1.56	3.91	28.22	22.75	188.365	Horizontal	Pass
QAM		1777.5	-1.23	3.94	28.2	23.03	200.909	Horizontal	Pass
10.0MHz	1/#Mid	1715	-1.55	3.79	28.33	22.99	199.067	Horizontal	Pass
Band 16		1745	-1.21	3.95	28.22	23.06	202.302	Horizontal	Pass
QAM		1775	-1.53	3.97	28.19	22.69	185.780	Horizontal	Pass
15.0MHz	1/#Mid	1717.5	-1.54	3.79	28.34	23.01	199.986	Horizontal	Pass
Band 16		1745	-1.36	3.95	28.22	22.91	195.434	Horizontal	Pass
QAM		1772.5	-1.15	3.97	28.18	23.06	202.302	Horizontal	Pass
20.0MHz	1/#Mid	1720	-1.37	3.81	28.35	23.17	207.491	Horizontal	Pass
Band 16		1745	-1.15	3.96	28.22	23.11	204.644	Horizontal	Pass
QAM		1770	-1.09	4	28.16	23.07	202.768	Horizontal	Pass
1.4MHz	1/#Mid	1710.7	-1.66	3.76	28.24	22.82	191.426	Vertical	Pass
Band 16		1745	-1.36	3.91	28.22	22.95	197.242	Vertical	Pass
QAM		1779.3	-2.37	3.93	28.2	21.90	154.882	Vertical	Pass
3.0MHz	1/#Mid	1711.5	-2.00	3.77	28.23	22.46	176.198	Vertical	Pass
Band 16		1745	-2.08	3.91	28.24	22.25	167.880	Vertical	Pass
QAM		1778.5	-1.44	3.94	28.25	22.87	193.642	Vertical	Pass
5.0MHz	1/#Mid	1712.5	-1.97	3.77	28.31	22.57	180.717	Vertical	Pass
Band 16		1745	-1.47	3.91	28.22	22.84	192.309	Vertical	Pass
QAM		1777.5	-1.31	3.94	28.2	22.95	197.242	Vertical	Pass
10.0MHz	1/#Mid	1715	-2.74	3.79	28.34	21.81	151.705	Vertical	Pass
Band 16		1745	-2.14	3.95	28.22	22.13	163.305	Vertical	Pass
QAM		1775	-1.30	3.97	28.18	22.91	195.434	Vertical	Pass

15.0MHz		1717.5	-3.35	3.81	28.35	21.19	131.522	Vertical	Pass
Band 16	1/#Mid	1745	-3.04	3.96	28.22	21.22	132.434	Vertical	Pass
QAM		1772.5	-2.95	4	28.16	21.21	132.130	Vertical	Pass
20.0MHz		1720	-2.36	3.79	28.34	22.19	165.577	Vertical	Pass
Band 16	1/#Mid	1745	-2.32	3.95	28.22	21.95	156.675	Vertical	Pass
QAM		1770	-1.48	3.97	28.18	22.73	187.499	Vertical	Pass

Note:

ERP=EIRP-2.15

SG Level= Signal generator output

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



## 9. SPURIOUS RADIATION EMISSION

### RULE PART(S)

FCC: §2.1051, §22.917(a), §24.238(a), §27.53(c)(g)(h)(m)

### LIMIT

For Band 7, the minimum permissible attenuation level of any spurious emission is  $55 + \log_{10}(P)$  [Watts].

The minimum permissible attenuation level of any spurious emission is  $43 + \log_{10}(P)$  [Watts], where P is the transmitter power in Watts.

### TEST PROCEDURE

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

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

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

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

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

**MODES TESTED**

- ☐ LTE Band2
- LTE Band 4
- ☐ LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 17
- LTE Band 66

**RESULTS**

PASS

## 9.1 LTE BAND 2

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

Test Results for Low Channel 1850.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3701.4	-46.90	4.04	33.51	-17.43	-13	-4.43	Horizontal
3701.4	-46.70	4.04	33.51	-17.23	-13	-4.23	Vertical
5552.1	-47.40	5.24	35.84	-16.80	-13	-3.80	Vertical
5552.1	-53.73	5.24	35.84	-23.13	-13	-10.13	Horizontal
209.6	-44.32	1.43	16.02	-29.73	-13	-16.73	Vertical
439.3	-37.76	1.30	17.99	-21.07	-13	-8.07	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-46.49	4.04	33.56	-16.97	-13	-3.97	Horizontal
3760.0	-53.54	4.04	33.56	-24.02	-13	-11.02	Vertical
5640.0	-53.13	5.24	35.91	-22.46	-13	-9.46	Vertical
5640.0	-52.20	5.24	35.91	-21.53	-13	-8.53	Horizontal
189.5	-39.86	1.62	16.97	-24.51	-13	-11.51	Vertical
333.5	-37.33	1.74	15.98	-23.10	-13	-10.10	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-44.84	4.04	34.00	-14.88	-13	-1.88	Horizontal
3818.6	-47.26	4.04	34.00	-17.30	-13	-4.30	Vertical
5727.9	-53.17	5.24	36.04	-22.37	-13	-9.37	Vertical
5727.9	-53.16	5.24	36.04	-22.36	-13	-9.36	Horizontal
192.8	-37.37	1.42	17.29	-21.50	-13	-8.50	Vertical
280.9	-40.55	1.50	17.90	-24.14	-13	-11.14	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	-53.43	4.07	33.54	-23.96	-13	-10.96	Horizontal
3720.0	-45.33	4.07	33.54	-15.86	-13	-2.86	Vertical
5580.0	-50.24	5.28	35.86	-19.66	-13	-6.66	Vertical
5580.0	-49.59	5.28	35.86	-19.01	-13	-6.01	Horizontal
182.2	-34.00	1.58	16.89	-18.68	-13	-5.68	Vertical
282.1	-39.47	1.76	17.26	-23.97	-13	-10.97	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-52.65	4.04	33.56	-23.13	-13	-10.13	Horizontal
3760.0	-51.36	4.04	33.56	-21.84	-13	-8.84	Vertical
5640.0	-51.68	5.24	35.91	-21.01	-13	-8.01	Vertical
5640.0	-52.99	5.24	35.91	-22.32	-13	-9.32	Horizontal
212.0	-43.89	1.46	16.27	-29.08	-13	-16.08	Vertical
408.3	-41.53	1.59	15.15	-27.97	-13	-14.97	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-44.65	4.04	34.00	-14.69	-13	-1.69	Horizontal
3800.0	-46.49	4.04	34.00	-16.53	-13	-3.53	Vertical
5700.0	-46.69	5.24	36.04	-15.89	-13	-2.89	Vertical
5700.0	-52.22	5.24	36.04	-21.42	-13	-8.42	Horizontal
195.4	-35.21	1.36	17.39	-19.17	-13	-6.17	Vertical
407.9	-44.04	1.66	15.39	-30.31	-13	-17.31	Horizontal

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

Margin = Spurious Emission Level - Limit

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

## 9.2 LTE BAND 4

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

Test Results for Low Channel 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-53.43	4.02	29.80	-27.65	-13	-14.65	Horizontal
3421.4	-52.47	4.02	29.80	-26.69	-13	-13.69	Vertical
5132.1	-49.43	5.24	35.84	-18.83	-13	-5.83	Vertical
5132.1	-52.83	5.24	35.84	-22.23	-13	-9.23	Horizontal
209.7	-34.10	1.68	16.04	-19.74	-13	-6.74	Vertical
393.6	-43.51	1.78	17.74	-27.55	-13	-14.55	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-49.12	4.03	30.00	-23.15	-13	-10.15	Horizontal
3465.0	-49.46	4.03	30.00	-23.49	-13	-10.49	Vertical
5197.5	-53.10	5.25	35.86	-22.49	-13	-9.49	Vertical
5197.5	-52.57	5.25	35.86	-21.96	-13	-8.96	Horizontal
175.3	-39.86	1.72	17.69	-23.89	-13	-10.89	Vertical
442.9	-39.14	1.62	16.02	-24.73	-13	-11.73	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-49.54	4.05	30.01	-23.58	-13	-10.58	Horizontal
3508.6	-46.95	4.05	30.01	-20.99	-13	-7.99	Vertical
5262.9	-44.05	5.26	35.86	-13.45	-13	-0.45	Vertical
5262.9	-52.63	5.26	35.86	-22.03	-13	-9.03	Horizontal
207.5	-39.78	1.80	16.69	-24.89	-13	-11.89	Vertical
377.0	-34.17	1.75	16.66	-19.27	-13	-6.27	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	-51.18	4.02	29.80	-25.40	-13	-12.40	Horizontal
3440.0	-51.47	4.02	29.80	-25.69	-13	-12.69	Vertical
5160.0	-49.37	5.24	35.84	-18.77	-13	-5.77	Vertical
5160.0	-52.39	5.24	35.84	-21.79	-13	-8.79	Horizontal
199.9	-40.12	1.57	17.26	-24.43	-13	-11.43	Vertical
308.6	-40.63	1.78	16.35	-26.06	-13	-13.06	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-44.28	4.03	30.00	-18.31	-13	-5.31	Horizontal
3465.0	-52.63	4.03	30.00	-26.66	-13	-13.66	Vertical
5197.5	-44.71	5.25	35.86	-14.10	-13	-1.10	Vertical
5197.5	-50.91	5.25	35.86	-20.30	-13	-7.30	Horizontal
203.0	-44.76	1.44	17.95	-28.25	-13	-15.25	Vertical
406.1	-36.37	1.65	16.09	-21.93	-13	-8.93	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-47.74	2.91	27.68	-22.97	-13	-9.97	Horizontal
3490.0	-52.26	2.91	27.68	-27.49	-13	-14.49	Vertical
5235.0	-52.66	5.26	35.86	-22.06	-13	-9.06	Vertical
5235.0	-53.27	5.26	35.86	-22.67	-13	-9.67	Horizontal
212.9	-41.70	1.61	16.85	-26.46	-13	-13.46	Vertical
437.1	-41.43	1.61	15.19	-27.85	-13	-14.85	Horizontal

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

. Margin = Spurious Emission Level - Limit

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



### 9.3 LTE BAND 5

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

Test Results for Low Channel 824.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1649.4	-47.00	2.78	27.50	-22.28	-13	-9.28	Horizontal
1649.4	-50.34	2.78	27.50	-25.62	-13	-12.62	Vertical
2474.1	-52.93	2.90	27.80	-28.03	-13	-15.03	Vertical
2474.1	-49.83	2.90	27.80	-24.93	-13	-11.93	Horizontal
177.8	-43.68	1.76	17.59	-27.85	-13	-14.85	Vertical
351.0	-39.66	1.63	15.87	-25.42	-13	-12.42	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-49.09	2.80	27.48	-24.41	-13	-11.41	Horizontal
1673.0	-45.74	2.80	27.48	-21.06	-13	-8.06	Vertical
2509.5	-46.83	2.91	27.70	-22.04	-13	-9.04	Vertical
2509.5	-49.56	2.91	27.70	-24.77	-13	-11.77	Horizontal
199.4	-38.27	1.61	15.68	-24.20	-13	-11.20	Vertical
408.4	-43.43	1.59	17.52	-27.51	-13	-14.51	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-45.71	2.82	27.43	-21.10	-13	-8.10	Horizontal
1696.6	-48.11	2.82	27.43	-23.50	-13	-10.50	Vertical
2544.9	-51.26	2.92	27.74	-26.44	-13	-13.44	Vertical
2544.9	-52.98	2.92	27.74	-28.16	-13	-15.16	Horizontal
207.7	-37.20	1.69	16.67	-22.21	-13	-9.21	Vertical
443.7	-41.30	1.70	17.18	-25.82	-13	-12.82	Horizontal



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

Test Results for Low Channel 829MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1658.0	-50.58	2.78	27.50	-25.86	-13	-12.86	Horizontal
1658.0	-51.31	2.78	27.50	-26.59	-13	-13.59	Vertical
2487.0	-47.10	2.90	27.80	-22.20	-13	-9.20	Vertical
2487.0	-53.58	2.90	27.80	-28.68	-13	-15.68	Horizontal
177.9	-37.00	1.71	15.57	-23.14	-13	-10.14	Vertical
350.1	-37.12	1.34	16.40	-22.06	-13	-9.06	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-49.06	2.80	27.48	-24.38	-13	-11.38	Horizontal
1673.0	-49.19	2.80	27.48	-24.51	-13	-11.51	Vertical
2509.5	-50.38	2.91	27.70	-25.59	-13	-12.59	Vertical
2509.5	-49.37	2.91	27.70	-24.58	-13	-11.58	Horizontal
212.1	-38.27	1.44	17.04	-22.67	-13	-9.67	Vertical
235.2	-37.54	1.76	17.62	-21.68	-13	-8.68	Horizontal
Test Results for High Channel 844MHz							
1688.0	-47.41	2.82	27.43	-22.80	-13	-9.80	Horizontal
1688.0	-50.09	2.82	27.43	-25.48	-13	-12.48	Vertical
2532.0	-44.10	2.92	27.74	-19.28	-13	-6.28	Vertical
2532.0	-51.51	2.92	27.74	-26.69	-13	-13.69	Horizontal
191.1	-40.85	1.74	17.70	-24.89	-13	-11.89	Vertical
291.2	-34.61	1.41	17.46	-18.55	-13	-5.55	Horizontal

Note: Spurious Emission Level = Spectrum Analyzer Read Value + Cable Loss+ Antenna Factor + 11.74  
 . Margin = Spurious Emission Level - Limit  
 . Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.

## 9.4 LTE BAND 7

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

Test Results for Low Channel 2502.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5005.0	-60.41	5.23	35.81	-29.83	-25	-4.83	Horizontal
5005.0	-64.48	5.23	35.81	-33.90	-25	-8.90	Vertical
7507.5	-59.59	5.67	36.85	-28.41	-25	-3.41	Vertical
7507.5	-60.57	5.67	36.85	-29.39	-25	-4.39	Horizontal
176.7	-45.03	1.73	17.97	-28.79	-25	-3.79	Vertical
333.8	-49.12	1.38	15.11	-35.39	-25	-10.39	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-63.94	5.23	35.82	-33.35	-25	-8.35	Horizontal
5070.0	-61.03	5.23	35.82	-30.44	-25	-5.44	Vertical
7605.0	-64.46	5.67	36.85	-33.28	-25	-8.28	Vertical
7605.0	-62.80	5.67	36.85	-31.62	-25	-6.62	Horizontal
176.5	-51.40	1.77	16.17	-36.99	-25	-11.99	Vertical
287.0	-45.04	1.63	15.21	-31.46	-25	-6.46	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-63.47	5.24	35.83	-32.88	-25	-7.88	Horizontal
5135.0	-64.82	5.24	35.83	-34.23	-25	-9.23	Vertical
7702.5	-62.73	5.68	36.87	-31.54	-25	-6.54	Vertical
7702.5	-60.02	5.68	36.87	-28.83	-25	-3.83	Horizontal
182.0	-45.74	1.58	17.56	-29.76	-25	-4.76	Vertical
443.2	-46.63	1.45	16.58	-31.50	-25	-6.50	Horizontal

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

Test Results for Low Channel 2510MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5020.0	-64.78	5.23	35.82	-34.19	-25	-9.19	Horizontal
5020.0	-60.36	5.23	35.82	-29.77	-25	-4.77	Vertical
7530.0	-63.42	5.67	36.86	-32.23	-25	-7.23	Vertical
7530.0	-64.70	5.67	36.86	-33.51	-25	-8.51	Horizontal
186.5	-48.97	1.63	15.76	-34.84	-25	-9.84	Vertical
335.8	-52.25	1.71	15.44	-38.52	-25	-13.52	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-64.11	5.23	35.82	-33.52	-25	-8.52	Horizontal
5070.0	-59.43	5.23	35.82	-28.84	-25	-3.84	Vertical
7605.0	-60.09	5.67	36.85	-28.91	-25	-3.91	Vertical
7605.0	-60.82	5.67	36.85	-29.64	-25	-4.64	Horizontal
194.3	-45.48	1.79	16.84	-30.42	-25	-5.42	Vertical
311.1	-46.70	1.71	17.64	-30.77	-25	-5.77	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-61.83	5.24	35.83	-31.24	-25	-6.24	Horizontal
5120.0	-62.11	5.24	35.83	-31.52	-25	-6.52	Vertical
7680.0	-63.72	5.70	36.88	-32.54	-25	-7.54	Vertical
7680.0	-59.03	5.70	36.88	-27.85	-25	-2.85	Horizontal
188.4	-49.92	1.79	16.84	-34.86	-25	-9.86	Vertical
375.2	-45.19	1.71	17.64	-29.26	-25	-4.26	Horizontal

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

Margin = Spurious Emission Level - Limit

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

## 9.5 LTE BAND 12

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

Test Results for Low Channel 699.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1399.4	-48.88	2.60	27.20	-24.28	-13	-11.28	Horizontal
1399.4	-52.84	2.60	27.20	-28.24	-13	-15.24	Vertical
2099.1	-44.28	2.85	27.54	-19.59	-13	-6.59	Vertical
2099.1	-51.29	2.85	27.54	-26.60	-13	-13.60	Horizontal
176.9	-35.85	1.49	17.78	-19.56	-13	-6.56	Vertical
288.7	-41.22	1.36	17.33	-25.25	-13	-12.25	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-52.48	2.61	27.28	-27.81	-13	-14.81	Horizontal
1415.0	-47.08	2.61	27.28	-22.41	-13	-9.41	Vertical
2122.5	-45.64	2.87	27.59	-20.92	-13	-7.92	Vertical
2122.5	-53.33	2.87	27.59	-28.61	-13	-15.61	Horizontal
187.7	-34.47	1.73	15.74	-20.46	-13	-7.46	Vertical
329.8	-34.08	1.62	15.79	-19.91	-13	-6.91	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-52.84	2.63	27.28	-28.19	-13	-15.19	Horizontal
1430.6	-51.99	2.63	27.28	-27.34	-13	-14.34	Vertical
2145.9	-44.52	2.88	27.60	-19.80	-13	-6.80	Vertical
2145.9	-50.47	2.88	27.60	-25.75	-13	-12.75	Horizontal
181.3	-42.48	1.61	18.00	-26.09	-13	-13.09	Vertical
408.0	-37.67	1.45	15.49	-23.64	-13	-10.64	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	-48.97	2.61	27.26	-24.32	-13	-11.32	Horizontal
1408.0	-47.09	2.61	27.26	-22.44	-13	-9.44	Vertical
2112.0	-53.05	2.87	27.58	-28.34	-13	-15.34	Vertical
2112.0	-51.82	2.87	27.58	-27.11	-13	-14.11	Horizontal
191.9	-42.15	1.31	16.97	-26.49	-13	-13.49	Vertical
298.6	-35.87	1.65	16.70	-20.82	-13	-7.82	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-49.10	2.61	27.28	-24.43	-13	-11.43	Horizontal
1415.0	-44.32	2.61	27.28	-19.65	-13	-6.65	Vertical
2122.5	-51.71	2.87	27.59	-26.99	-13	-13.99	Vertical
2122.5	-52.05	2.87	27.59	-27.33	-13	-14.33	Horizontal
205.7	-41.86	1.72	17.99	-25.59	-13	-12.59	Vertical
363.8	-39.23	1.73	17.94	-23.02	-13	-10.02	Horizontal
Test Results for High Channel 711MHz							
1422.0	-46.75	2.62	27.28	-22.09	-13	-9.09	Horizontal
1422.0	-52.00	2.62	27.28	-27.34	-13	-14.34	Vertical
2133.0	-45.27	2.87	27.60	-20.54	-13	-7.54	Vertical
2133.0	-49.69	2.87	27.60	-24.96	-13	-11.96	Horizontal
208.6	-40.52	1.58	15.93	-26.17	-13	-13.17	Vertical
263.5	-36.60	1.36	15.59	-22.37	-13	-9.37	Horizontal

Note: Spurious Emission Level = Spectrum Analyzer Read Value + Cable Loss+ Antenna Factor + 11.74  
 . Margin = Spurious Emission Level - Limit  
 . Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.

## 9.6 LTE BAND 17

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

Test Results for Low Channel 706.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1413.0	-44.44	2.61	27.28	-19.77	-13	-6.77	Horizontal
1413.0	-44.67	2.61	27.28	-20.00	-13	-7.00	Vertical
2119.5	-49.33	2.87	27.59	-24.61	-13	-11.61	Vertical
2119.5	-53.91	2.87	27.59	-29.19	-13	-16.19	Horizontal
207.4	-43.27	1.71	16.15	-28.83	-13	-15.83	Vertical
253.0	-39.29	1.41	17.32	-23.38	-13	-10.38	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-49.71	2.62	27.30	-25.03	-13	-12.03	Horizontal
1420.0	-48.15	2.62	27.30	-23.47	-13	-10.47	Vertical
2130.0	-51.07	2.87	27.62	-26.32	-13	-13.32	Vertical
2130.0	-50.69	2.87	27.62	-25.94	-13	-12.94	Horizontal
183.7	-37.91	1.42	15.25	-24.09	-13	-11.09	Vertical
409.0	-35.42	1.36	17.19	-19.59	-13	-6.59	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-45.89	2.66	27.28	-21.27	-13	-8.27	Horizontal
1427.0	-46.19	2.66	27.28	-21.57	-13	-8.57	Vertical
2140.5	-46.33	2.88	27.60	-21.61	-13	-8.61	Vertical
2140.5	-50.70	2.88	27.60	-25.98	-13	-12.98	Horizontal
175.3	-38.02	1.32	17.29	-22.05	-13	-9.05	Vertical
238.3	-42.92	1.72	16.89	-27.75	-13	-14.75	Horizontal



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

Test Results for Low Channel 709MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1418.0	-52.13	2.62	27.30	-27.45	-13	-14.45	Horizontal
1418.0	-46.59	2.62	27.30	-21.91	-13	-8.91	Vertical
2127.0	-49.65	2.87	27.62	-24.90	-13	-11.90	Vertical
2127.0	-51.81	2.87	27.62	-27.06	-13	-14.06	Horizontal
181.1	-38.98	1.35	16.91	-23.42	-13	-10.42	Vertical
326.4	-38.96	1.62	16.31	-24.27	-13	-11.27	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-46.26	2.62	27.30	-21.58	-13	-8.58	Horizontal
1420.0	-51.25	2.62	27.30	-26.57	-13	-13.57	Vertical
2130.0	-49.34	2.87	27.62	-24.59	-13	-11.59	Vertical
2130.0	-49.86	2.87	27.62	-25.11	-13	-12.11	Horizontal
206.5	-39.09	1.51	17.14	-23.46	-13	-10.46	Vertical
469.1	-38.80	1.77	16.88	-23.69	-13	-10.69	Horizontal
Test Results for High Channel 711MHz							
1422.0	-44.24	2.62	27.30	-19.56	-13	-6.56	Horizontal
1422.0	-47.61	2.62	27.30	-22.93	-13	-9.93	Vertical
2133.0	-51.71	2.87	27.62	-26.96	-13	-13.96	Vertical
2133.0	-52.20	2.87	27.62	-27.45	-13	-14.45	Horizontal
186.6	-42.71	1.78	15.95	-28.54	-13	-15.54	Vertical
272.8	-44.02	1.34	17.95	-27.42	-13	-14.42	Horizontal

Note: Spurious Emission Level = Spectrum Analyzer Read Value + Cable Loss+ Antenna Factor + 11.74  
 . Margin = Spurious Emission Level - Limit  
 . Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.



## 9.7 LTE BAND 66

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

Test Results for Low Channel 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-52.83	4.02	29.80	-27.05	-13	-14.05	Horizontal
3421.4	-54.07	4.02	29.80	-28.29	-13	-15.29	Vertical
5132.1	-53.33	5.24	35.84	-22.73	-13	-9.73	Vertical
5132.1	-49.61	5.24	35.84	-19.01	-13	-6.01	Horizontal
112.6	-50.05	1.52	15.57	-36.00	-13	-23.00	Vertical
220.5	-44.37	1.33	17.14	-28.56	-13	-15.56	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-52.51	4.03	30.00	-26.54	-13	-13.54	Horizontal
3490.0	-48.08	4.03	30.00	-22.11	-13	-9.11	Vertical
5235.0	-52.72	5.25	35.86	-22.11	-13	-9.11	Vertical
5235.0	-49.78	5.25	35.86	-19.17	-13	-6.17	Horizontal
157.3	-47.42	1.53	17.13	-31.82	-13	-18.82	Vertical
213.1	-45.86	1.41	15.95	-31.32	-13	-18.32	Horizontal
Test Results for High Channel 1779.3MHz							
3558.6	-51.40	4.05	30.01	-25.44	-13	-12.44	Horizontal
3558.6	-52.25	4.05	30.01	-26.29	-13	-13.29	Vertical
5337.9	-49.83	5.26	35.86	-19.23	-13	-6.23	Vertical
5337.9	-52.74	5.26	35.86	-22.14	-13	-9.14	Horizontal
170.6	-50.59	1.44	15.51	-36.52	-13	-23.52	Vertical
169.0	-48.54	1.78	15.76	-34.56	-13	-21.56	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	-50.75	4.02	29.80	-24.97	-13	-11.97	Horizontal
3440.0	-54.69	4.02	29.80	-28.91	-13	-15.91	Vertical
5160.0	-54.86	5.24	35.84	-24.26	-13	-11.26	Vertical
5160.0	-53.94	5.24	35.84	-23.34	-13	-10.34	Horizontal
268.8	-51.94	1.62	17.02	-36.54	-13	-23.54	Vertical
161.4	-53.81	1.32	17.31	-37.82	-13	-24.82	Horizontal
Test Results for Mid Channel 1745MHz							
3490.0	-45.21	4.03	30.00	-19.24	-13	-6.24	Horizontal
3490.0	-54.91	4.03	30.00	-28.94	-13	-15.94	Vertical
5235.0	-51.22	5.25	35.86	-20.61	-13	-7.61	Vertical
5235.0	-48.38	5.25	35.86	-17.77	-13	-4.77	Horizontal
159.9	-45.53	1.45	15.17	-31.81	-13	-18.81	Vertical
172.1	-50.31	1.48	17.82	-33.97	-13	-20.97	Horizontal
Test Results for High Channel 1770MHz							
3540.0	-50.73	2.91	27.68	-25.96	-13	-12.96	Horizontal
3540.0	-53.01	2.91	27.68	-28.24	-13	-15.24	Vertical
5310.0	-54.94	5.26	35.86	-24.34	-13	-11.34	Vertical
5310.0	-47.84	5.26	35.86	-17.24	-13	-4.24	Horizontal
197.3	-47.65	1.76	16.38	-33.03	-13	-20.03	Vertical
158.5	-51.27	1.43	17.13	-35.57	-13	-22.57	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

### LIMITS

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

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

### TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

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

### Frequency Stability vs Temperature:

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

### Frequency Stability vs Voltage:

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

### MODES TESTED

- ☐ LTE Band2  
LTE Band 4
- ☐ LTE Band5  
LTE Band 7  
LTE Band 12  
LTE Band 17  
LTE Band 66

### RESULTS

See the following pages.

## 10.1 LTE BAND 2

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

#### Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	1880	12.7	0.006768	2.5
3.85	1880	13.4	0.007149	2.5
4.2	1880	13.3	0.007078	2.5

#### Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	13.0	0.006933	2.5
Extreme (50C)	1880	11.1	0.005909	2.5
Extreme (40C)	1880	13.7	0.007308	2.5
Extreme (30C)	1880	13.6	0.007228	2.5
Extreme (10C)	1880	14.2	0.007571	2.5
Extreme (0C)	1880	12.4	0.006576	2.5
Extreme (-10C)	1880	12.7	0.006756	2.5
Extreme (-20C)	1880	13.8	0.007323	2.5
Extreme (-30C)	1880	14.7	0.007813	2.5

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

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	1880	10.0	0.005296	2.5
3.85	1880	8.9	0.004714	2.5
4.2	1880	7.7	0.004116	2.5

**Frequency error vs. Temperature**

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	9.6	0.005114	2.5
Extreme (50C)	1880	9.1	0.004818	2.5
Extreme (40C)	1880	8.5	0.004511	2.5
Extreme (30C)	1880	9.3	0.004937	2.5
Extreme (10C)	1880	8.4	0.004471	2.5
Extreme (0C)	1880	8.5	0.004531	2.5
Extreme (-10C)	1880	9.3	0.004958	2.5
Extreme (-20C)	1880	9.0	0.004762	2.5
Extreme (-30C)	1880	8.6	0.004557	2.5

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

## 10.2 LTE BAND 4

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

#### Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	1732.5	8.8	0.005054	2.5
3.85	1732.5	8.8	0.005081	2.5
4.2	1732.5	8.4	0.004824	2.5

#### Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.4	0.004842	2.5
Extreme (50C)	1732.5	8.9	0.005125	2.5
Extreme (40C)	1732.5	7.1	0.004123	2.5
Extreme (30C)	1732.5	5.5	0.003155	2.5
Extreme (10C)	1732.5	6.9	0.004000	2.5
Extreme (0C)	1732.5	9.8	0.005662	2.5
Extreme (-10C)	1732.5	8.8	0.005054	2.5
Extreme (-20C)	1732.5	7.1	0.004121	2.5
Extreme (-30C)	1732.5	8.7	0.005007	2.5

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

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	1732.5	9.9	0.005695	2.5
3.85	1732.5	9.4	0.005415	2.5
4.2	1732.5	8.2	0.004717	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	9.5	0.005512	2.5
Extreme (50C)	1732.5	8.7	0.005036	2.5
Extreme (40C)	1732.5	7.7	0.004435	2.5
Extreme (30C)	1732.5	9.2	0.005326	2.5
Extreme (10C)	1732.5	8.7	0.004998	2.5
Extreme (0C)	1732.5	7.9	0.004577	2.5
Extreme (-10C)	1732.5	8.9	0.005160	2.5
Extreme (-20C)	1732.5	9.2	0.005300	2.5
Extreme (-30C)	1732.5	8.5	0.004913	2.5

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



### 10.3 LTE BAND 5

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

##### Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	836.5	5.6	0.006650	2.5
3.85	836.5	6.4	0.007632	2.5
4.2	836.5	4.9	0.005820	2.5

##### Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	5.7	0.006820	2.5
Extreme (50C)	836.5	6.0	0.007194	2.5
Extreme (40C)	836.5	5.8	0.006878	2.5
Extreme (30C)	836.5	6.5	0.007825	2.5
Extreme (10C)	836.5	5.3	0.006296	2.5
Extreme (0C)	836.5	5.0	0.005940	2.5
Extreme (-10C)	836.5	5.6	0.006732	2.5
Extreme (-20C)	836.5	6.0	0.007155	2.5
Extreme (-30C)	836.5	6.7	0.008064	2.5

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

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	836.5	5.7	0.006778	2.5
3.85	836.5	6.5	0.007768	2.5
4.2	836.5	4.7	0.005671	2.5

**Frequency error vs. Temperature**

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	5.6	0.006709	2.5
Extreme (50C)	836.5	5.8	0.006881	2.5
Extreme (40C)	836.5	6.1	0.007346	2.5
Extreme (30C)	836.5	6.9	0.008229	2.5
Extreme (10C)	836.5	5.1	0.006076	2.5
Extreme (0C)	836.5	5.6	0.006645	2.5
Extreme (-10C)	836.5	5.4	0.006508	2.5
Extreme (-20C)	836.5	5.9	0.006999	2.5
Extreme (-30C)	836.5	6.7	0.008019	2.5

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

# 10.4 LTE BAND 7

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

### Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	2535	9.7	0.003816	2.5
3.85	2535	8.8	0.003474	2.5
4.2	2535	7.9	0.003133	2.5

### Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	8.9	0.003516	2.5
Extreme (50C)	2535	9.2	0.003615	2.5
Extreme (40C)	2535	8.8	0.003465	2.5
Extreme (30C)	2535	9.0	0.003558	2.5
Extreme (10C)	2535	7.8	0.003061	2.5
Extreme (0C)	2535	8.4	0.003329	2.5
Extreme (-10C)	2535	9.3	0.003668	2.5
Extreme (-20C)	2535	8.9	0.003508	2.5
Extreme (-30C)	2535	7.9	0.003126	2.5

**Band 7 16QAM, (20MHz BANDWIDTH RB size 100 RB Offset 0)**

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	2535	6.9	0.002722	2.5
3.85	2535	6.1	0.002413	2.5
4.2	2535	5.5	0.002166	2.5

**Frequency error vs. Temperature**

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	6.9	0.002722	2.5
Extreme (50C)	2535	5.6	0.002191	2.5
Extreme (40C)	2535	5.3	0.002099	2.5
Extreme (30C)	2535	6.2	0.002447	2.5
Extreme (10C)	2535	5.2	0.002062	2.5
Extreme (0C)	2535	4.7	0.001848	2.5
Extreme (-10C)	2535	5.5	0.002165	2.5
Extreme (-20C)	2535	6.4	0.002512	2.5
Extreme (-30C)	2535	5.3	0.002085	2.5

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

## 10.5 LTE BAND 12

### Band 12 QPSK, (10MHz BANDWIDTH RB size 50 RB Offset 0)

#### Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	707.5	9.0	0.012763	2.5
3.85	707.5	10.1	0.014248	2.5
4.2	707.5	8.8	0.012452	2.5

#### Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	8.4	0.011856	2.5
Extreme (50C)	707.5	7.6	0.010701	2.5
Extreme (40C)	707.5	7.0	0.009872	2.5
Extreme (30C)	707.5	8.6	0.012166	2.5
Extreme (10C)	707.5	7.0	0.009824	2.5
Extreme (0C)	707.5	9.3	0.013185	2.5
Extreme (-10C)	707.5	8.7	0.012238	2.5
Extreme (-20C)	707.5	9.2	0.013015	2.5
Extreme (-30C)	707.5	7.4	0.010410	2.5

**Band 12 16QAM, (10MHz BANDWIDTH RB size 50 RB Offset 0)**

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	707.5	7.5	0.010610	2.5
3.85	707.5	8.3	0.011776	2.5
4.2	707.5	6.9	0.009771	2.5

**Frequency error vs. Temperature**

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	6.5	0.009175	2.5
Extreme (50C)	707.5	5.5	0.007765	2.5
Extreme (40C)	707.5	6.4	0.009110	2.5
Extreme (30C)	707.5	-7.7	-0.010912	2.5
Extreme (10C)	707.5	-8.2	-0.011590	2.5
Extreme (0C)	707.5	2.9	0.004100	2.5
Extreme (-10C)	707.5	-5.2	-0.007292	2.5
Extreme (-20C)	707.5	-8.7	-0.012302	2.5
Extreme (-30C)	707.5	-10.2	-0.014350	2.5

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

## 10.6 LTE BAND 17

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

#### Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	710.0	9.9	0.014000	2.5
3.85	710.0	9.2	0.012917	2.5
4.2	710.0	8.4	0.011780	2.5

#### Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.3	0.013111	2.5
Extreme (50C)	710.0	9.2	0.012944	2.5
Extreme (40C)	710.0	8.6	0.012079	2.5
Extreme (30C)	710.0	8.5	0.012001	2.5
Extreme (10C)	710.0	9.3	0.013122	2.5
Extreme (0C)	710.0	8.0	0.011253	2.5
Extreme (-10C)	710.0	8.8	0.012409	2.5
Extreme (-20C)	710.0	9.3	0.013103	2.5
Extreme (-30C)	710.0	8.4	0.011869	2.5



**Band 17 16QAM, (10MHz BANDWIDTH RB size 50 RB Offset 0)**

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.4	710.0	10.3	0.014449	2.5
3.85	710.0	8.6	0.012115	2.5
4.2	710.0	8.8	0.012362	2.5

**Frequency error vs. Temperature**

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.3	0.013162	2.5
Extreme (50C)	710.0	8.9	0.012491	2.5
Extreme (40C)	710.0	8.3	0.011735	2.5
Extreme (30C)	710.0	8.5	0.011941	2.5
Extreme (10C)	710.0	8.2	0.011601	2.5
Extreme (0C)	710.0	8.9	0.012497	2.5
Extreme (-10C)	710.0	9.8	0.013822	2.5
Extreme (-20C)	710.0	9.1	0.012801	2.5
Extreme (-30C)	710.0	8.0	0.011250	2.5

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

## 10.7 LTE BAND 66

### 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>				
3.4	1745	7.0	0.003915	2.5
3.85	1745	7.6	0.003812	2.5
4.2	1745	7.4	0.004172	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	5.8	0.002985	2.5
Extreme (50C)	1745	8.1	0.004317	2.5
Extreme (40C)	1745	6.2	0.003454	2.5
Extreme (30C)	1745	7.1	0.003974	2.5
Extreme (10C)	1745	8.4	0.004509	2.5
Extreme (0C)	1745	6.7	0.003463	2.5
Extreme (-10C)	1745	6.4	0.003313	2.5
Extreme (-20C)	1745	6.8	0.003852	2.5
Extreme (-30C)	1745	6.9	0.003423	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>				
3.4	1745	8.8	0.004620	2.5
3.85	1745	8.4	0.004436	2.5
4.2	1745	9.7	0.005194	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	9.3	0.005061	2.5
Extreme (50C)	1745	8.6	0.004447	2.5
Extreme (40C)	1745	9.3	0.004757	2.5
Extreme (30C)	1745	7.9	0.004539	2.5
Extreme (10C)	1745	8.4	0.004636	2.5
Extreme (0C)	1745	6.8	0.003824	2.5
Extreme (-10C)	1745	9.1	0.004745	2.5
Extreme (-20C)	1745	9.3	0.004918	2.5
Extreme (-30C)	1745	5.8	0.003037	2.5

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

## 11. Peak-to-Average Ratio

### 11.1 Description of the PAR Measurement

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

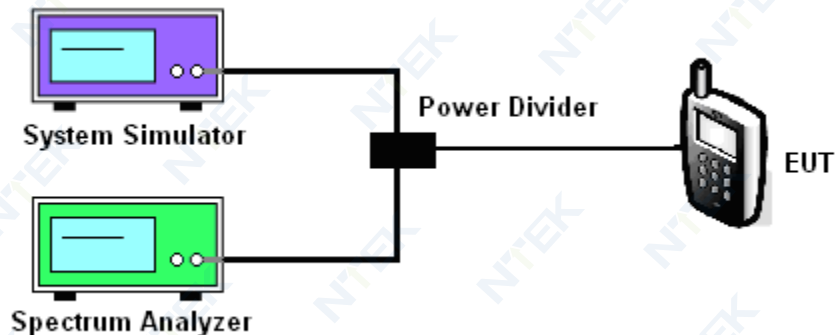
### 11.2 Measuring Instruments

See list of measuring instruments of this test report.

### 11.3 Test Procedures

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

### 11.4 Test Setup



### MODES TESTED

- ☒ LTE Band 2/4/5/7/12/17/66
- ☐

Test data reference attachment.

----END OF REPORT----