

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

## FCC ID: 2APMJA55

**Product:** Mobile Phone  
**Trade Mark:** Blackview  
**Model Number:** A55  
**Family Model:** A80,A80S,A80Plus,A95,A55Pro,A85,  
C30,C80  
**Report No.:** STR220224005006E

### Prepared for

Shenzhen DOKE Electronic Co., Ltd  
13th Floor, Weidonglong commercial building B, Meilong avenue,  
Longhua New District, Shenzhen, China

### Prepared by

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

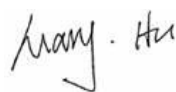

### TEST RESULT CERTIFICATION

**Applicant's name** .....: Shenzhen DOKE Electronic Co., Ltd  
**Address** .....: 13th Floor, Weidonglong commercial building B, Meilong avenue,  
 Longhua New District, Shenzhen, China  
**Manufacturer's Name** .....: Shenzhen DOKE Electronic Co.,Ltd  
**Address** .....: 801, Building3, 7th Industrial Zone, Yulv Community, Yutang Road,  
 Guangming District, Shenzhen, China  
**Product name**.....: Mobile Phone  
**Model and/or type reference** ...: A55  
**Family Model:** A80,A80S,A80Plus,A95,A55Pro,A85,C30,C80  
**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** ..... Feb 24, 2022 ~Apr 12, 2022  
**Date of Issue** ..... Apr 12, 2022  
**Test Result** ..... **Pass**

**Testing Engineer** :   
 \_\_\_\_\_  
 (Mary Hu)  
**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:	Mobile Phone
Trade Mark	Blackview
Model Name	A55
Family Model	A80,A80S,A80Plus,A95,A55Pro,A85,C30,C80
Model Difference	All models are the same circuit, RF module, motherboard and antenna, only appearance, color and model name are different
FCC ID:	2APMJA55
Frequency Bands:	U.S. Bands: <input checked="" type="checkbox"/> LTE FDD Band 2,4,5,7,25,26
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 25 Uplink: 1850MHz-1915MHz, Downlink: 1930MHz-1995MHz; LTE FDD Band 26 Uplink: 814MHz-849MHz, Downlink: 859MHz-894MHz;
Type of Modulation:	QPSK/16QAM
SIM Card	SIM 1 and SIM 2 is a chipset unit and tested as a single chipset. The SIM 1 is chosen for test.
Antenna:	PIFA Antenna
Antenna gain:	Band 2: 0.59dBi; Band 4: 0.51dBi ; Band 5: -1.2dBi ; Band 7: 0.89dBi ; Band 25: 0.55dBi; Band 26: -1.23dBi;
Power Supply:	DC 3.85V/4200mAh from battery or DC 5V from Adapter.
Adapter:	Model: HJ-0501000E1-US Input: AC 100-240V~50/60Hz 0.2A Output: DC 5V---1000mA
Extreme Vol. Limits:	DC 3.4V to DC 4.2V (Nominal DC 3.85V) (Note 1)
HW Version	M169_MBA2
SW Version	A55_US_M169_V1.0
** Note1: The High Voltage DC 4.2V and Low Voltage 3.4V was declared by manufacturer, The EUT couldn't be operate normally with higher or lower voltage.	

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

This submittal(s) (test report) is intended for **FCC ID: 2APMJA55** filing to comply with the FCC Part 22H&24E&27&90S.

**1.3 TEST METHODOLOGY**

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

**1.4 TEST FACILITY**

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

ShenZhen NTEK Testing Technology Co., Ltd.

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

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

FCC Registration No.:463705

IC Registration No.:9270A-1,

CNAS Registration No.:L5516

**MEASUREMENT UNCERTAINTY**

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

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

**1.5 SPECIAL ACCESSORIES**

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

**1.6 WORST-CASE CONFIGURATION AND MODE**

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

The device has LTE Bands of: Band 2, Band 4, Band 5, Band 7, Band 25, Band 26

The RB Size was selected to measure for peak or average ERP and EIRP, which was based on the conducted power verification baseline data.

For the fundamental investigation of radiated emissions, the EUT is investigated for vertical and horizontal antenna orientations and X Y and Z orientations of the EUT alone. After the investigations the worst case was determined to be at X orientation for all LTE bands.

## 2. SYSTEM TEST CONFIGURATION

### 2.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 2.2 EUT EXERCISE

The Transmitter was operated in the maximum output power mode through Communication Tester. The TX frequency was fixed which was for the purpose of the measurements.

### 2.3 CONFIGURATION OF EUT SYSTEM

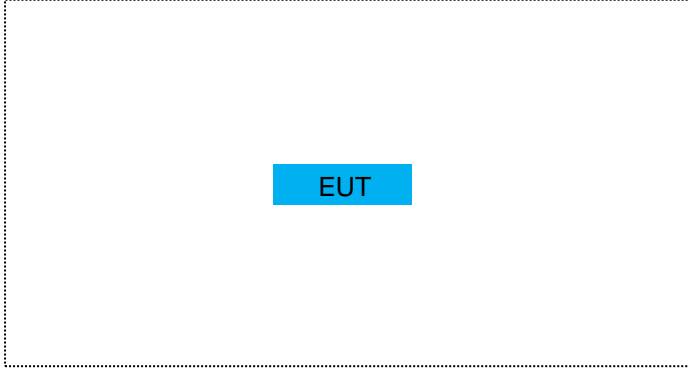
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Mobile Phone	A55	FCC ID: 2APMJA55	EUT

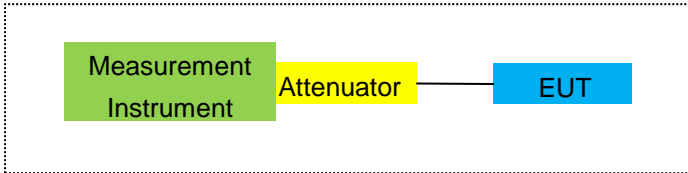
*Note: All the accessories have been used during the test.  
the following "EUT" in setup diagram means EUT system.*

## 2.4 TEST SETUP

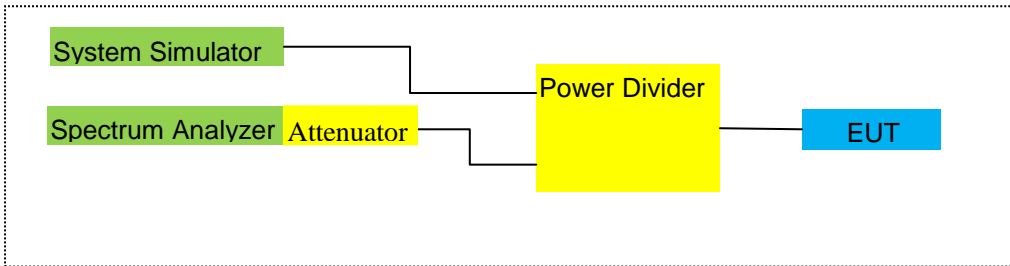
For Radiated Test Cases



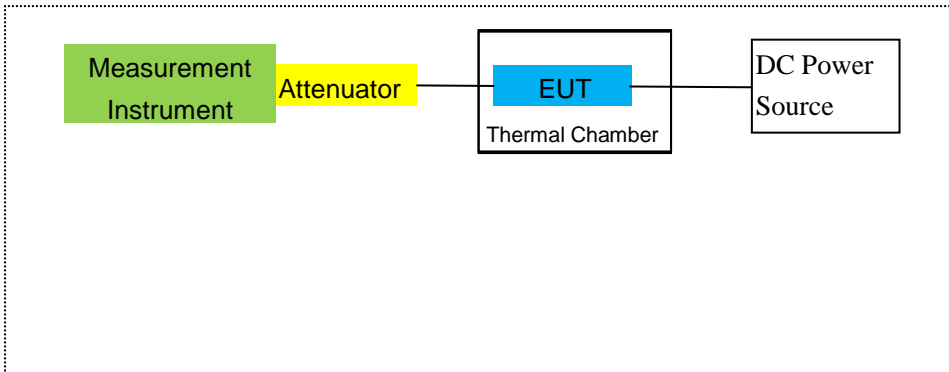
For Conducted Output Power



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	2021.04.27	2022.04.26	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	2021.04.27	2022.04.26	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	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	2021.07.01	2022.06.30	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 7
- LTE Band 25,
- LTE Band 26,

### 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 7
- LTE Band 25,
- LTE Band 26,

**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 2/4/5/7/25/26
- 

### 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 2/4/5/7/25/26

#### 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)	Factor Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)		
1.4MHz Band QPSK	1/#Mid	1850.7	-2.13	3.76	28.24	22.35	171.79	Horizontal	Pass
		1880	-4.73	3.91	28.22	19.58	90.78	Horizontal	Pass
		1909.3	-4.28	3.93	28.20	19.99	99.77	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-0.92	3.77	28.23	23.54	225.94	Horizontal	Pass
		1880	-1.28	3.91	28.24	23.05	201.84	Horizontal	Pass
		1908.5	-2.46	3.94	28.25	21.85	153.11	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-5.13	3.77	28.31	19.41	87.30	Horizontal	Pass
		1880	-0.76	3.91	28.22	23.55	226.46	Horizontal	Pass
		1907.5	-4.92	3.94	28.20	19.34	85.90	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-4.22	3.79	28.33	20.32	107.65	Horizontal	Pass
		1880	-4.85	3.95	28.22	19.42	87.50	Horizontal	Pass
		1905	-1.42	3.97	28.19	22.80	190.55	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-3.35	3.79	28.34	21.20	131.83	Horizontal	Pass
		1880	-1.01	3.95	28.22	23.26	211.84	Horizontal	Pass
		1902.5	-2.61	3.97	28.18	21.60	144.54	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-5.09	3.81	28.35	19.45	88.10	Horizontal	Pass
		1880	-4.04	3.96	28.22	20.22	105.20	Horizontal	Pass
		1900	-0.75	4.00	28.16	23.41	219.28	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-2.73	3.76	28.24	21.75	149.62	Vertical	Pass
		1880	-1.63	3.91	28.22	22.68	185.35	Vertical	Pass
		1909.3	-2.09	3.93	28.20	22.18	165.20	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-3.15	3.77	28.23	21.31	135.21	Vertical	Pass
		1880	-4.70	3.91	28.24	19.63	91.83	Vertical	Pass
		1908.5	-4.36	3.94	28.25	19.95	98.86	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-3.85	3.77	28.31	20.69	117.22	Vertical	Pass
		1880	-1.68	3.91	28.22	22.63	183.23	Vertical	Pass
		1907.5	-4.65	3.94	28.20	19.61	91.41	Vertical	Pass
10.0MHz Band	1/#Mid	1855	-4.13	3.79	28.33	20.41	109.90	Vertical	Pass
		1880	-2.82	3.95	28.22	21.45	139.64	Vertical	Pass

QPSK		1905	-2.72	3.97	28.19	21.50	141.25	Vertical	Pass
15.0MHz z Band QPSK	1/#Mid	1857.5	-5.30	3.79	28.34	19.25	84.14	Vertical	Pass
		1880	-0.52	3.95	28.22	23.75	237.14	Vertical	Pass
		1902.5	-1.50	3.97	28.18	22.71	186.64	Vertical	Pass
20.0MHz z Band QPSK	1/#Mid	1860	-0.78	3.81	28.35	23.76	237.68	Vertical	Pass
		1880	-2.93	3.96	28.22	21.33	135.83	Vertical	Pass
		1900	-2.99	4.00	28.16	21.17	130.92	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)	Factor Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)		
1.4MHz Band 16 QAM	1/#Mid	1850.7	-2.40	3.76	28.24	22.08	161.44	Horizontal	Pass
		1880	-2.49	3.91	28.22	21.82	152.05	Horizontal	Pass
		1909.3	-1.15	3.93	28.20	23.12	205.12	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-2.45	3.77	28.23	22.01	158.85	Horizontal	Pass
		1880	-1.16	3.91	28.24	23.17	207.49	Horizontal	Pass
		1908.5	-2.30	3.94	28.25	22.01	158.85	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-1.44	3.77	28.31	23.10	204.17	Horizontal	Pass
		1880	-3.31	3.91	28.22	21.00	125.89	Horizontal	Pass
		1907.5	-2.57	3.94	28.20	21.69	147.57	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-4.42	3.79	28.33	20.12	102.80	Horizontal	Pass
		1880	-1.82	3.95	28.22	22.45	175.79	Horizontal	Pass
		1905	-1.48	3.97	28.19	22.74	187.93	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-2.96	3.79	28.34	21.59	144.21	Horizontal	Pass
		1880	-2.16	3.95	28.22	22.11	162.55	Horizontal	Pass
		1902.5	-1.19	3.97	28.18	23.02	200.45	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-3.23	3.81	28.35	21.31	135.21	Horizontal	Pass
		1880	-1.51	3.96	28.22	22.75	188.36	Horizontal	Pass
		1900	-1.63	4.00	28.16	22.53	179.06	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1850.7	-1.49	3.76	28.24	22.99	199.07	Vertical	Pass
		1880	-1.63	3.91	28.22	22.68	185.35	Vertical	Pass
		1909.3	-1.60	3.93	28.20	22.67	184.93	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-2.23	3.77	28.23	22.23	167.11	Vertical	Pass
		1880	-1.20	3.91	28.24	23.13	205.59	Vertical	Pass
		1908.5	-1.98	3.94	28.25	22.33	171.00	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-1.40	3.77	28.31	23.14	206.06	Vertical	Pass
		1880	-2.23	3.91	28.22	22.08	161.44	Vertical	Pass
		1907.5	-1.61	3.94	28.20	22.65	184.08	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-1.70	3.79	28.33	22.84	192.31	Vertical	Pass
		1880	-3.69	3.95	28.22	20.58	114.29	Vertical	Pass
		1905	-1.10	3.97	28.19	23.12	205.12	Vertical	Pass
15.0MHz Band	1/#Mid	1857.5	-2.21	3.79	28.34	22.34	171.40	Vertical	Pass
		1880	-1.69	3.95	28.22	22.58	181.13	Vertical	Pass

16 QAM		1902.5	-1.12	3.97	28.18	23.09	203.70	Vertical	Pass
20.0MH	1/#Mid	1860	-3.20	3.81	28.35	21.34	136.14	Vertical	Pass
z Band		1880	-1.05	3.96	28.22	23.21	209.41	Vertical	Pass
16 QAM		1900	-0.89	4.00	28.16	23.27	212.32	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	-2.20	3.12	27.58	22.26	168.45	Horizontal	Pass
		1732.5	-1.52	3.27	27.61	22.82	191.31	Horizontal	Pass
		1754.3	-3.40	3.29	27.63	20.94	124.30	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-4.27	3.13	27.61	20.21	105.02	Horizontal	Pass
		1732.5	-3.02	3.27	27.61	21.32	135.63	Horizontal	Pass
		1753.5	-2.14	3.30	27.62	22.18	165.29	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-1.95	3.13	27.63	22.55	179.70	Horizontal	Pass
		1732.5	-1.99	3.27	27.61	22.35	171.74	Horizontal	Pass
		1752.5	-2.47	3.30	27.60	21.83	152.32	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-3.54	3.15	27.64	20.95	124.39	Horizontal	Pass
		1732.5	-2.34	3.31	27.61	21.96	157.12	Horizontal	Pass
		1750	-1.67	3.33	27.59	22.59	181.52	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-3.94	3.15	27.65	20.56	113.85	Horizontal	Pass
		1732.5	-2.88	3.31	27.61	21.42	138.66	Horizontal	Pass
		1747.5	-3.06	3.33	27.57	21.18	131.12	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-4.65	3.17	27.66	19.84	96.35	Horizontal	Pass
		1732.5	-3.14	3.32	27.61	21.15	130.43	Horizontal	Pass
		1745	-5.08	3.36	27.56	19.12	81.73	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-1.89	3.12	27.58	22.57	180.82	Vertical	Pass
		1732.5	-2.83	3.27	27.61	21.51	141.70	Vertical	Pass
		1754.3	-0.91	3.29	27.63	23.43	220.07	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-2.36	3.13	27.61	22.12	162.95	Vertical	Pass
		1732.5	-1.74	3.27	27.61	22.60	182.17	Vertical	Pass
		1753.5	-3.65	3.30	27.62	20.67	116.68	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-3.10	3.13	27.63	21.40	138.13	Vertical	Pass
		1732.5	-4.68	3.27	27.61	19.66	92.44	Vertical	Pass
		1752.5	-2.66	3.30	27.60	21.64	146.04	Vertical	Pass
10.0MHz Band	1/#Mid	1715	-3.20	3.15	27.64	21.29	134.70	Vertical	Pass
		1732.5	-4.10	3.31	27.61	20.20	104.72	Vertical	Pass

QPSK		1750	-4.01	3.33	27.59	20.25	105.94	Vertical	Pass
15.0MH	1/#Mid	1717.5	-5.02	3.15	27.65	19.48	88.79	Vertical	Pass
z Band		1732.5	-2.41	3.31	27.61	21.89	154.52	Vertical	Pass
QPSK		1747.5	-1.32	3.33	27.57	22.92	195.88	Vertical	Pass
20.0MH	1/#Mid	1720	-2.84	3.17	27.66	21.65	146.25	Vertical	Pass
z Band		1732.5	-0.73	3.32	27.61	23.56	226.99	Vertical	Pass
QPSK		1745	-1.64	3.36	27.56	22.56	180.12	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	-2.13	3.12	27.58	22.33	171.15	Horizontal	Pass
		1732.5	-3.08	3.27	27.61	21.26	133.63	Horizontal	Pass
		1754.3	-4.50	3.29	27.63	19.84	96.29	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-3.97	3.13	27.61	20.51	112.51	Horizontal	Pass
		1732.5	-4.69	3.27	27.61	19.65	92.28	Horizontal	Pass
		1753.5	-3.29	3.30	27.62	21.03	126.78	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-4.09	3.13	27.63	20.41	109.89	Horizontal	Pass
		1732.5	-3.27	3.27	27.61	21.07	128.08	Horizontal	Pass
		1752.5	-1.33	3.30	27.60	22.97	198.17	Horizontal	Pass
10.0MHz z Band 16 QAM	1/#Mid	1715	-3.28	3.15	27.64	21.21	132.20	Horizontal	Pass
		1732.5	-2.68	3.31	27.61	21.62	145.05	Horizontal	Pass
		1750	-2.46	3.33	27.59	21.80	151.20	Horizontal	Pass
15.0MHz z Band 16 QAM	1/#Mid	1717.5	-4.46	3.15	27.65	20.04	100.93	Horizontal	Pass
		1732.5	-4.78	3.31	27.61	19.52	89.55	Horizontal	Pass
		1747.5	-4.33	3.33	27.57	19.91	97.91	Horizontal	Pass
20.0MHz z Band 16 QAM	1/#Mid	1720	-4.81	3.17	27.66	19.68	92.81	Horizontal	Pass
		1732.5	-1.78	3.32	27.61	22.51	178.43	Horizontal	Pass
		1745	-3.96	3.36	27.56	20.24	105.60	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-4.86	3.12	27.58	19.60	91.10	Vertical	Pass
		1732.5	-3.65	3.27	27.61	20.69	117.22	Vertical	Pass
		1754.3	-4.25	3.29	27.63	20.09	102.17	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-2.65	3.13	27.61	21.83	152.49	Vertical	Pass
		1732.5	-2.51	3.27	27.61	21.83	152.31	Vertical	Pass
		1753.5	-3.12	3.30	27.62	21.20	131.85	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-5.08	3.13	27.63	19.42	87.51	Vertical	Pass
		1732.5	-3.74	3.27	27.61	20.60	114.80	Vertical	Pass
		1752.5	-1.95	3.30	27.60	22.35	171.65	Vertical	Pass
10.0MHz z Band 16 QAM	1/#Mid	1715	-1.74	3.15	27.64	22.75	188.23	Vertical	Pass
		1732.5	-3.30	3.31	27.61	21.00	125.88	Vertical	Pass
		1750	-1.34	3.33	27.59	22.92	195.72	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-4.85	3.15	27.65	19.65	92.19	Vertical	Pass



z Band 16 QAM		1732.5	-1.89	3.31	27.61	22.41	174.12	Vertical	Pass
		1747.5	-1.38	3.33	27.57	22.86	193.25	Vertical	Pass
20.0MH	1/#Mid	1720	-0.53	3.17	27.66	23.96	248.89	Vertical	Pass
z Band		1732.5	-1.77	3.32	27.61	22.52	178.72	Vertical	Pass
16 QAM		1745	-1.44	3.36	27.56	22.76	188.75	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 (dB)	Max. EIRP	Max. EIRP			
			(dBm)				Average	Average			
							(dBm)	(mW)			
1.4MHz Band QPSK	1/#Midd	824.7	4.04	2.01	19.68	2.15	19.56	90.36	Horizontal	Pass	
		836.5	3.44	2.01	19.77	2.15	19.05	80.35	Horizontal	Pass	
		848.3	3.94	2.02	19.82	2.15	19.59	90.99	Horizontal	Pass	
3.0MHz Band QPSK	1/#Midd	825.5	5.06	2.01	19.70	2.15	20.60	114.82	Horizontal	Pass	
		836.5	4.00	2.01	19.77	2.15	19.61	91.41	Horizontal	Pass	
		847.5	5.80	2.02	19.81	2.15	21.44	139.32	Horizontal	Pass	
5.0MHz Band QPSK	1/#Midd	826.5	4.42	2.01	19.71	2.15	19.97	99.31	Horizontal	Pass	
		836.5	4.09	2.01	19.77	2.15	19.70	93.33	Horizontal	Pass	
		846.5	6.70	2.02	19.79	2.15	22.32	170.61	Horizontal	Pass	
10.0MHz Band QPSK	1/#Midd	829	4.94	2.01	19.73	2.15	20.51	112.46	Horizontal	Pass	
		836.5	4.25	2.01	19.77	2.15	19.86	96.83	Horizontal	Pass	
		844	4.16	2.02	19.78	2.15	19.77	94.84	Horizontal	Pass	
1.4MHz Band QPSK	1/#Midd	824.7	4.86	2.01	19.68	2.15	20.38	109.14	Vertical	Pass	
		836.5	3.91	2.01	19.77	2.15	19.52	89.54	Vertical	Pass	
		848.3	5.69	2.02	19.82	2.15	21.34	136.14	Vertical	Pass	
3.0MHz Band QPSK	1/#Midd	825.5	4.80	2.01	19.70	2.15	20.34	108.14	Vertical	Pass	
		836.5	5.34	2.01	19.77	2.15	20.95	124.45	Vertical	Pass	
		847.5	3.87	2.02	19.81	2.15	19.51	89.33	Vertical	Pass	
5.0MHz Band QPSK	1/#Midd	826.5	4.12	2.01	19.71	2.15	19.67	92.68	Vertical	Pass	
		836.5	6.26	2.01	19.77	2.15	21.87	153.82	Vertical	Pass	
		846.5	6.21	2.02	19.79	2.15	21.83	152.41	Vertical	Pass	
10.0MHz Band QPSK	1/#Midd	829	4.24	2.01	19.73	2.15	19.81	95.72	Vertical	Pass	
		836.5	6.12	2.01	19.77	2.15	21.73	148.94	Vertical	Pass	
		844	7.32	2.02	19.78	2.15	22.93	196.34	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							Polarization Of Max. ERP	Conclusion
			SG Level	Cable Loss	Antenna Gain	Correction	Max. EIRP	Max. EIRP			
			(dBm)	(dBm)	(dB)	(dB)	Average (dBm)	Average (mW)			
1.4MHz Band 16QAM	1/#Midd	824.7	4.98	2.01	19.68	2.15	20.50	112.20	Horizontal	Pass	
		836.5	5.97	2.01	19.77	2.15	21.58	143.88	Horizontal	Pass	
		848.3	4.79	2.02	19.82	2.15	20.44	110.66	Horizontal	Pass	
3.0MHz Band 16QAM	1/#Midd	825.5	5.95	2.01	19.70	2.15	21.49	140.93	Horizontal	Pass	
		836.5	5.70	2.01	19.77	2.15	21.31	135.21	Horizontal	Pass	
		847.5	7.32	2.02	19.81	2.15	22.96	197.70	Horizontal	Pass	
5.0MHz Band 16QAM	1/#Midd	826.5	6.01	2.01	19.71	2.15	21.56	143.22	Horizontal	Pass	
		836.5	4.77	2.01	19.77	2.15	20.38	109.14	Horizontal	Pass	
		846.5	4.88	2.02	19.79	2.15	20.50	112.20	Horizontal	Pass	
10.0Hz Band 16QAM	1/#Midd	829	3.67	2.01	19.73	2.15	19.24	83.95	Horizontal	Pass	
		836.5	7.01	2.01	19.77	2.15	22.62	182.81	Horizontal	Pass	
		844	5.48	2.02	19.78	2.15	21.09	128.53	Horizontal	Pass	
1.4MHz Band 16QAM	1/#Midd	824.7	5.55	2.01	19.68	2.15	21.07	127.94	Vertical	Pass	
		836.5	6.12	2.01	19.77	2.15	21.73	148.94	Vertical	Pass	
		848.3	6.08	2.02	19.82	2.15	21.73	148.94	Vertical	Pass	
3.0MHz Band 16QAM	1/#Midd	825.5	4.33	2.01	19.70	2.15	19.87	97.05	Vertical	Pass	
		836.5	5.00	2.01	19.77	2.15	20.61	115.08	Vertical	Pass	
		847.5	3.97	2.02	19.81	2.15	19.61	91.41	Vertical	Pass	
5.0MHz Band 16QAM	1/#Midd	826.5	5.13	2.01	19.71	2.15	20.68	116.95	Vertical	Pass	
		836.5	4.17	2.01	19.77	2.15	19.78	95.06	Vertical	Pass	
		846.5	5.50	2.02	19.79	2.15	21.12	129.42	Vertical	Pass	
10.0Hz Band 16QAM	1/#Midd	829	7.40	2.01	19.73	2.15	22.97	198.15	Vertical	Pass	
		836.5	6.67	2.01	19.77	2.15	22.28	169.04	Vertical	Pass	
		844	6.85	2.02	19.78	2.15	22.46	176.20	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 7

Radiated Power (EIRP) for Band 7										
Mode	RB/RB SIZE	Frequency	Result						Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)			
5.0MHz Band QPSK	1/#Mid	2502.5	-0.91	4.54	27.75	22.30	169.82	Horizontal	Pass	
		2535	-1.16	4.69	27.72	21.87	153.82	Horizontal	Pass	
		2567.5	-1.71	4.71	27.71	21.29	134.59	Horizontal	Pass	
10.0MHz Band QPSK	1/#Mid	2505	-0.74	4.55	27.76	22.47	176.60	Horizontal	Pass	
		2535	-2.06	4.69	27.72	20.97	125.03	Horizontal	Pass	
		2565	0.92	4.72	27.7	23.90	245.47	Horizontal	Pass	
15.0MHz Band QPSK	1/#Mid	2507.5	-1.85	4.55	27.77	21.37	137.09	Horizontal	Pass	
		2535	-1.55	4.69	27.72	21.48	140.60	Horizontal	Pass	
		2562.5	-0.57	4.72	27.69	22.40	173.78	Horizontal	Pass	
20.0MHz Band QPSK	1/#Mid	2510	-0.16	4.57	27.78	23.05	201.84	Horizontal	Pass	
		2535	-0.80	4.73	27.72	22.19	165.58	Horizontal	Pass	
		2560	-1.53	4.75	27.68	21.40	138.04	Horizontal	Pass	
5.0MHz Band QPSK	1/#Mid	2502.5	-2.16	4.54	27.75	21.05	127.35	Vertical	Pass	
		2535	-0.02	4.69	27.72	23.01	199.99	Vertical	Pass	
		2567.5	-1.77	4.71	27.71	21.23	132.74	Vertical	Pass	
10.0MHz Band QPSK	1/#Mid	2505	-0.22	4.55	27.76	22.99	199.07	Vertical	Pass	
		2535	-0.68	4.69	27.72	22.35	171.79	Vertical	Pass	
		2565	-1.26	4.72	27.70	21.72	148.59	Vertical	Pass	
15.0MHz Band QPSK	1/#Mid	2507.5	-1.49	4.55	27.77	21.73	148.94	Vertical	Pass	
		2535	0.48	4.69	27.72	23.51	224.39	Vertical	Pass	
		2562.5	-1.11	4.72	27.69	21.86	153.46	Vertical	Pass	
20.0MHz Band QPSK	1/#Mid	2510	0.75	4.57	27.78	23.96	248.89	Vertical	Pass	
		2535	-1.20	4.73	27.72	21.79	151.01	Vertical	Pass	
		2560	-0.09	4.75	27.68	22.84	192.31	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 7									
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)		
5.0MHz Band 16 QAM	1/#Mid	2502.5	-1.87	4.54	27.75	21.34	136.14	Horizontal	Pass
		2535	-2.68	4.69	27.72	20.35	108.39	Horizontal	Pass
		2567.5	-1.16	4.71	27.71	21.84	152.76	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-0.11	4.55	27.76	23.10	204.17	Horizontal	Pass
		2535	-0.13	4.69	27.72	22.90	194.98	Horizontal	Pass
		2565	-1.58	4.72	27.7	21.40	138.04	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-1.31	4.55	27.77	21.91	155.24	Horizontal	Pass
		2535	-2.03	4.69	27.72	21.00	125.89	Horizontal	Pass
		2562.5	-2.01	4.72	27.69	20.96	124.74	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-1.92	4.57	27.78	21.29	134.59	Horizontal	Pass
		2535	-1.04	4.73	27.72	21.95	156.68	Horizontal	Pass
		2560	-2.56	4.75	27.68	20.37	108.89	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	-1.27	4.54	27.75	21.94	156.31	Vertical	Pass
		2535	-1.00	4.69	27.72	22.03	159.59	Vertical	Pass
		2567.5	-0.85	4.71	27.71	22.15	164.06	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-2.21	4.55	27.76	21.00	125.89	Vertical	Pass
		2535	0.65	4.69	27.72	23.68	233.35	Vertical	Pass
		2565	-1.94	4.72	27.70	21.04	127.06	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-0.98	4.55	27.77	22.24	167.49	Vertical	Pass
		2535	0.28	4.69	27.72	23.31	214.29	Vertical	Pass
		2562.5	-1.02	4.72	27.69	21.95	156.68	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-1.77	4.57	27.78	21.44	139.32	Vertical	Pass
		2535	0.70	4.73	27.72	23.69	233.88	Vertical	Pass
		2560	-1.04	4.75	27.68	21.89	154.53	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.6 LTE BAND 25

Radiated Power (EIRP) for Band 25									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
						Average (dBm)	Average (mW)		
1.4MHz Band QPSK	1/#Mid	1850.7	-6.24	3.12	28.24	18.88	77.27	Horizontal	Pass
		1882.5	-8.13	3.27	28.22	16.82	48.08	Horizontal	Pass
		1914.3	-6.08	3.29	28.2	18.83	76.38	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-6.52	3.13	28.23	18.58	72.11	Horizontal	Pass
		1882.5	-8.13	3.27	28.24	16.84	48.31	Horizontal	Pass
		1913.5	-7.86	3.30	28.25	17.09	51.17	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-8.44	3.13	28.31	16.74	47.21	Horizontal	Pass
		1882.5	-5.09	3.27	28.22	19.86	96.83	Horizontal	Pass
		1912.5	-4.73	3.30	28.2	20.17	103.99	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-6.42	3.15	28.33	18.76	75.16	Horizontal	Pass
		1882.5	-7.79	3.31	28.22	17.12	51.52	Horizontal	Pass
		1910	-5.15	3.33	28.19	19.71	93.54	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-7.44	3.15	28.34	17.75	59.57	Horizontal	Pass
		1882.5	-5.58	3.31	28.22	19.33	85.70	Horizontal	Pass
		1907.5	-3.94	3.33	28.18	20.91	123.31	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-5.50	3.17	28.35	19.68	92.90	Horizontal	Pass
		1882.5	-7.06	3.32	28.22	17.84	60.81	Horizontal	Pass
		1905	-9.24	3.36	28.16	15.56	35.97	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-6.87	3.12	28.24	18.25	66.83	Vertical	Pass
		1882.5	-6.07	3.27	28.22	18.88	77.27	Vertical	Pass
		1914.3	-8.28	3.29	28.2	16.63	46.03	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-4.89	3.13	28.23	20.21	104.95	Vertical	Pass
		1882.5	-6.17	3.27	28.24	18.8	75.86	Vertical	Pass
		1913.5	-5.64	3.30	28.25	19.31	85.31	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-7.95	3.13	28.31	17.23	52.84	Vertical	Pass
		1882.5	-4.69	3.27	28.22	20.26	106.17	Vertical	Pass
		1912.5	-6.23	3.30	28.2	18.67	73.62	Vertical	Pass
10.0MHz	1/#Mid	1855	-4.96	3.15	28.33	20.22	105.20	Vertical	Pass

z Band QPSK		1882.5	-5.58	3.31	28.22	19.33	85.70	Vertical	Pass
		1910	-7.15	3.33	28.19	17.71	59.02	Vertical	Pass
15.0MH z Band QPSK	1/#Mid	1857.5	-5.80	3.15	28.34	19.39	86.90	Vertical	Pass
		1882.5	-5.27	3.31	28.22	19.64	92.04	Vertical	Pass
		1907.5	-6.77	3.33	28.18	18.08	64.27	Vertical	Pass
20.0MH z Band QPSK	1/#Mid	1860	-8.72	3.17	28.35	16.46	44.26	Vertical	Pass
		1882.5	-7.39	3.32	28.22	17.51	56.36	Vertical	Pass
		1905	-2.01	3.36	28.16	22.79	190.11	Vertical	Pass

Radiated Power (EIRP) for Band 25										
Mode	RB/RB SIZE	Frequency	Result						Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP	Max. EIRP			
						Average (dBm)	Average (mW)			
1.4MHz Band 16 QAM	1/#Mid	1850.7	-5.59	3.12	28.24	19.53	89.74	Horizontal	Pass	
		1882.5	-5.23	3.27	28.22	19.72	93.76	Horizontal	Pass	
		1914.3	-2.78	3.29	28.2	22.13	163.31	Horizontal	Pass	
3.0MHz Band 16 QAM	1/#Mid	1851.5	-6.34	3.13	28.23	18.76	75.16	Horizontal	Pass	
		1882.5	-4.25	3.27	28.24	20.72	118.03	Horizontal	Pass	
		1913.5	-4.23	3.30	28.25	20.72	118.03	Horizontal	Pass	
5.0MHz Band 16 QAM	1/#Mid	1852.5	-4.12	3.13	28.31	21.06	127.64	Horizontal	Pass	
		1882.5	-3.58	3.27	28.22	21.37	137.09	Horizontal	Pass	
		1912.5	-4.42	3.30	28.2	20.48	111.69	Horizontal	Pass	
10.0MHz Band 16 QAM	1/#Mid	1855	-3.37	3.15	28.33	21.81	151.71	Horizontal	Pass	
		1882.5	-3.25	3.31	28.22	21.66	146.55	Horizontal	Pass	
		1910	-5.19	3.33	28.19	19.67	92.68	Horizontal	Pass	
15.0MHz Band 16 QAM	1/#Mid	1857.5	-3.34	3.15	28.34	21.85	153.11	Horizontal	Pass	
		1882.5	-3.28	3.31	28.22	21.63	145.55	Horizontal	Pass	
		1907.5	-4.25	3.33	28.18	20.6	114.82	Horizontal	Pass	
20.0MHz Band 16 QAM	1/#Mid	1860	-4.45	3.17	28.35	20.73	118.30	Horizontal	Pass	
		1882.5	-4.31	3.32	28.22	20.59	114.55	Horizontal	Pass	
		1905	-4.04	3.36	28.16	20.76	119.12	Horizontal	Pass	
1.4MHz Band 16 QAM	1/#Mid	1850.7	-4.60	3.12	28.24	20.52	112.72	Vertical	Pass	
		1882.5	-5.00	3.27	28.22	19.95	98.86	Vertical	Pass	
		1914.3	-4.55	3.29	28.2	20.36	108.64	Vertical	Pass	
3.0MHz Band 16 QAM	1/#Mid	1851.5	-4.72	3.13	28.23	20.38	109.14	Vertical	Pass	
		1882.5	-4.26	3.27	28.24	20.71	117.76	Vertical	Pass	
		1913.5	-4.36	3.30	28.25	20.59	114.55	Vertical	Pass	
5.0MHz Band 16 QAM	1/#Mid	1852.5	-4.87	3.13	28.31	20.31	107.40	Vertical	Pass	
		1882.5	-3.74	3.27	28.22	21.21	132.13	Vertical	Pass	
		1912.5	-3.27	3.30	28.2	21.63	145.55	Vertical	Pass	
10.0MHz Band 16 QAM	1/#Mid	1855	-4.60	3.15	28.33	20.58	114.29	Vertical	Pass	
		1882.5	-3.89	3.31	28.22	21.02	126.47	Vertical	Pass	
		1910	-4.55	3.33	28.19	20.31	107.40	Vertical	Pass	
15.0MHz Band	1/#Mid	1857.5	-4.65	3.15	28.34	20.54	113.24	Vertical	Pass	
		1882.5	-3.54	3.31	28.22	21.37	137.09	Vertical	Pass	



16 QAM		1907.5	-3.75	3.33	28.18	21.1	128.82	Vertical	Pass
20.0MHz Band 16 QAM	1/#Midd	1860	-2.61	3.17	28.35	22.57	180.72	Vertical	Pass
		1882.5	-4.49	3.32	28.22	20.41	109.90	Vertical	Pass
		1905	-4.68	3.36	28.16	20.12	102.80	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.7 LTE BAND 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 (dB)	Max. EIRP	Max. EIRP			
			(dBm)				Average	Average			
							(dBm)	(mW)			
1.4MHz Band QPSK	1/#Mid	814.7	-1.78	3.76	28.24	2.15	20.55	113.50	Horizontal	Pass	
		819	-1.38	3.91	28.22	2.15	20.78	119.67	Horizontal	Pass	
		823.3	-1.31	3.93	28.20	2.15	20.81	120.50	Horizontal	Pass	
3.0MHz Band QPSK	1/#Mid	815.5	-0.11	3.77	28.23	2.15	22.20	165.96	Horizontal	Pass	
		819	0.69	3.91	28.24	2.15	22.87	193.64	Horizontal	Pass	
		822.5	-1.57	3.94	28.25	2.15	20.59	114.55	Horizontal	Pass	
5.0MHz Band QPSK	1/#Mid	816.5	-3.03	3.77	28.31	2.15	19.36	86.30	Horizontal	Pass	
		819	-0.33	3.91	28.22	2.15	21.83	152.41	Horizontal	Pass	
		821.5	-1.10	3.94	28.20	2.15	21.01	126.18	Horizontal	Pass	
10.0MHz Band QPSK	1/#Mid	819	0.48	3.91	28.22	2.15	22.64	183.65	Horizontal	Pass	
1.4MHz Band QPSK	1/#Mid	814.7	-1.70	3.79	28.34	2.15	20.70	117.49	Vertical	Pass	
		819	-1.64	3.95	28.22	2.15	20.48	111.69	Vertical	Pass	
		823.3	0.09	3.97	28.18	2.15	22.15	164.06	Vertical	Pass	
3.0MHz Band QPSK	1/#Mid	815.5	-0.01	3.77	28.23	2.15	22.30	169.82	Vertical	Pass	
		819	0.43	3.91	28.24	2.15	22.61	182.39	Vertical	Pass	
		822.5	-1.44	3.94	28.25	2.15	20.72	118.03	Vertical	Pass	
5.0MHz Band QPSK	1/#Mid	816.5	-0.94	3.77	28.31	2.15	21.45	139.64	Vertical	Pass	
		819	-0.75	3.91	28.22	2.15	21.41	138.36	Vertical	Pass	
		821.5	-0.82	3.94	28.20	2.15	21.29	134.59	Vertical	Pass	
10.0MHz Band QPSK	1/#Mid	819	0.83	3.91	28.22	2.15	22.99	199.07	Vertical	Pass	

Radiated Power (ERP) for Band 26(814MHz~824MHz)											
Mode	RB/RB SIZE	Frequency	Result							Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)			
			1.4MHz Band 16 QAM	1/#Mid	814.7	-2.31	3.76	28.24	2.15		
		819	-1.16	3.91	28.22	2.15	21	125.89	Horizontal	Pass	
		823.3	-0.30	3.93	28.20	2.15	21.82	152.05	Horizontal	Pass	
3.0MHz Band 16 QAM	1/#Mid	815.5	-2.11	3.77	28.23	2.15	20.2	104.71	Horizontal	Pass	
		819	-0.28	3.91	28.24	2.15	21.9	154.88	Horizontal	Pass	
		822.5	-1.76	3.94	28.25	2.15	20.4	109.65	Horizontal	Pass	
5.0MHz Band 16 QAM	1/#Mid	816.5	-2.84	3.77	28.31	2.15	19.55	90.16	Horizontal	Pass	
		819	-1.81	3.91	28.22	2.15	20.35	108.39	Horizontal	Pass	
		821.5	-0.44	3.94	28.20	2.15	21.67	146.89	Horizontal	Pass	
10.0MHz Band 16 QAM	1/#Mid	819	-0.88	3.91	28.24	2.15	21.3	134.90	Horizontal	Pass	
1.4MHz Band 16 QAM	1/#Mid	814.7	-1.51	3.79	28.34	2.15	20.89	122.74	Vertical	Pass	
		819	-1.12	3.95	28.22	2.15	21	125.89	Vertical	Pass	
		823.3	-1.92	3.97	28.18	2.15	20.14	103.28	Vertical	Pass	
3.0MHz Band 16 QAM	1/#Mid	815.5	-0.85	3.77	28.23	2.15	21.46	139.96	Vertical	Pass	
		819	-0.73	3.91	28.24	2.15	21.45	139.64	Vertical	Pass	
		822.5	-1.93	3.94	28.25	2.15	20.23	105.44	Vertical	Pass	
5.0MHz Band 16 QAM	1/#Mid	816.5	-1.04	3.77	28.31	2.15	21.35	136.46	Vertical	Pass	
		819	-2.67	3.91	28.22	2.15	19.49	88.92	Vertical	Pass	
		821.5	0.10	3.94	28.20	2.15	22.21	166.34	Vertical	Pass	
10.0MHz Band 16 QAM	1/#Mid	819	0.38	3.91	28.24	2.15	22.56	180.30	Vertical	Pass	

8.8 LTE BAND 26B

Radiated Power (ERP) for Band 26(824MHz~849MHz)											
Mode	RB/RB SIZE	Frequency	Result							Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. EIRP	Max. EIRP			
							Average	Average			
							(dBm)	(mW)			
1.4MHz Band QPSK	1#Mid	824.7	4.84	2.01	19.68	2.15	20.36	108.64	Horizontal	Pass	
		836.5	4.71	2.01	19.77	2.15	20.32	107.65	Horizontal	Pass	
		848.3	6.25	2.02	19.82	2.15	21.90	154.88	Horizontal	Pass	
3.0MHz Band QPSK	1#Mid	825.5	5.81	2.01	19.70	2.15	21.35	136.46	Horizontal	Pass	
		836.5	5.46	2.01	19.77	2.15	21.07	127.94	Horizontal	Pass	
		847.5	5.37	2.02	19.81	2.15	21.01	126.18	Horizontal	Pass	
5.0MHz Band QPSK	1#Mid	826.5	7.04	2.01	19.71	2.15	22.59	181.55	Horizontal	Pass	
		836.5	4.92	2.01	19.77	2.15	20.53	112.98	Horizontal	Pass	
		846.5	4.96	2.02	19.79	2.15	20.58	114.29	Horizontal	Pass	
10.0MHz Band QPSK	1#Mid	829	4.77	2.01	19.73	2.15	20.34	108.14	Horizontal	Pass	
		836.5	4.42	2.01	19.77	2.15	20.03	100.69	Horizontal	Pass	
		844	2.16	2.02	19.78	2.15	17.77	59.84	Horizontal	Pass	
15.0MHz Band QPSK	1#Mid	831.5	5.58	2.01	19.73	2.15	21.15	130.32	Horizontal	Pass	
		836.5	4.08	2.01	19.77	2.15	19.69	93.11	Horizontal	Pass	
		841.5	6.25	2.02	19.78	2.15	21.86	153.46	Horizontal	Pass	
1.4MHz Band QPSK	1#Mid	824.7	5.49	2.01	19.68	2.15	21.01	126.18	Vertical	Pass	
		836.5	5.27	2.01	19.77	2.15	20.88	122.46	Vertical	Pass	
		848.3	6.05	2.02	19.82	2.15	21.70	147.91	Vertical	Pass	
3.0MHz Band QPSK	1#Mid	825.5	3.44	2.01	19.70	2.15	18.98	79.07	Vertical	Pass	
		836.5	7.05	2.01	19.77	2.15	22.66	184.50	Vertical	Pass	
		847.5	4.54	2.02	19.81	2.15	20.18	104.23	Vertical	Pass	
5.0MHz Band QPSK	1#Mid	826.5	6.75	2.01	19.71	2.15	22.30	169.82	Vertical	Pass	
		836.5	5.93	2.01	19.77	2.15	21.54	142.56	Vertical	Pass	
		846.5	6.52	2.02	19.79	2.15	22.14	163.68	Vertical	Pass	
10.0MHz Band	1#Mid	829	7.29	2.01	19.73	2.15	22.86	193.20	Vertical	Pass	
		836.5	5.90	2.01	19.77	2.15	21.51	141.58	Vertical	Pass	
		844	4.81	2.02	19.78	2.15	20.42	110.15	Vertical	Pass	

QPSK										
15.0M Hz Band QPSK	1/#M id	831.5	6.46	2.01	19.73	2.15	22.03	159.59	Vertical	Pass
		836.5	7.32	2.01	19.77	2.15	22.93	196.34	Vertical	Pass
		841.5	4.82	2.02	19.78	2.15	20.43	110.41	Vertical	Pass

Radiated Power (ERP) for Band 26(824MHz~849MHz)											
Mode	RB/R B SIZE	Frequen cy	Result								Conclu sion
			SG Leve l (dB m)	Cabl e Loss (dB m)	Anten na Gain (dB)	Correcti on (dB)	Max. EIRP	Max. EIRP	Polarizatio n Of Max. ERP		
							Avera ge	Averag e			
							(dBm)	(mW)			
1.4MH z Band 16QAM	1/#M id	824.7	6.30	2.01	19.68	2.15	21.82	152.05	Horizontal	Pass	
		836.5	5.24	2.01	19.77	2.15	20.85	121.62	Horizontal	Pass	
		848.3	4.94	2.02	19.82	2.15	20.59	114.55	Horizontal	Pass	
3.0MH z Band 16QAM	1/#M id	825.5	5.50	2.01	19.70	2.15	21.04	127.06	Horizontal	Pass	
		836.5	6.12	2.01	19.77	2.15	21.73	148.94	Horizontal	Pass	
		847.5	4.15	2.02	19.81	2.15	19.79	95.28	Horizontal	Pass	
5.0MH z Band 16QAM	1/#M id	826.5	5.96	2.01	19.71	2.15	21.51	141.58	Horizontal	Pass	
		836.5	2.79	2.01	19.77	2.15	18.4	69.18	Horizontal	Pass	
		846.5	4.25	2.02	19.79	2.15	19.87	97.05	Horizontal	Pass	
10.0m Hz Band 16QAM	1/#M id	829	4.77	2.01	19.73	2.15	20.34	108.14	Horizontal	Pass	
		836.5	4.75	2.01	19.77	2.15	20.36	108.64	Horizontal	Pass	
		844	4.57	2.02	19.78	2.15	20.18	104.23	Horizontal	Pass	
15.0M Hz Band 16QAM	1/#M id	831.5	6.37	2.01	19.73	2.15	21.94	156.31	Horizontal	Pass	
		836.5	4.17	2.01	19.77	2.15	19.78	95.06	Horizontal	Pass	
		841.5	6.53	2.02	19.78	2.15	22.14	163.68	Horizontal	Pass	
1.4MH z Band 16QAM	1/#M id	824.7	5.89	2.01	19.68	2.15	21.41	138.36	Vertical	Pass	
		836.5	4.94	2.01	19.77	2.15	20.55	113.50	Vertical	Pass	
		848.3	6.35	2.02	19.82	2.15	22	158.49	Vertical	Pass	
3.0MH z Band 16QAM	1/#M id	825.5	4.90	2.01	19.70	2.15	20.44	110.66	Vertical	Pass	
		836.5	5.29	2.01	19.77	2.15	20.9	123.03	Vertical	Pass	
		847.5	5.73	2.02	19.81	2.15	21.37	137.09	Vertical	Pass	
5.0MH z Band	1/#M id	826.5	5.14	2.01	19.71	2.15	20.69	117.22	Vertical	Pass	
		836.5	4.49	2.01	19.77	2.15	20.1	102.33	Vertical	Pass	

16 QAM		846.5	4.13	2.02	19.79	2.15	19.75	94.41	Vertical	Pass
10.0M Hz Band 16QAM	1/#Midd	829	6.42	2.01	19.73	2.15	21.99	158.12	Vertical	Pass
		836.5	6.30	2.01	19.77	2.15	21.91	155.24	Vertical	Pass
		844	3.49	2.02	19.78	2.15	19.1	81.28	Vertical	Pass
15.0M Hz Band 16QAM	1/#Midd	831.5	6.75	2.01	19.73	2.15	22.32	170.61	Vertical	Pass
		836.5	6.15	2.01	19.77	2.15	21.76	149.97	Vertical	Pass
		841.5	4.90	2.02	19.78	2.15	20.51	112.46	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 7  
LTE Band 25,  
LTE Band 26,

**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	-49.35	4.04	33.51	-19.88	-13	-6.88	Horizontal
3701.4	-50.43	4.04	33.51	-20.96	-13	-7.96	Vertical
5552.1	-53.76	5.24	35.84	-23.16	-13	-10.16	Vertical
5552.1	-64.06	5.24	35.84	-33.46	-13	-20.46	Horizontal
Test Results for Mid Channel 1880MHz							
3760	-51.24	4.04	33.56	-21.72	-13	-8.72	Horizontal
3760	-53.23	4.04	33.56	-23.71	-13	-10.71	Vertical
5640	-51.09	5.24	35.91	-20.42	-13	-7.42	Vertical
5640	-52.81	5.24	35.91	-22.14	-13	-9.14	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-50.46	4.04	34.00	-20.50	-13	-7.50	Horizontal
3818.6	-52.87	4.04	34.00	-22.91	-13	-9.91	Vertical
5727.9	-55.93	5.24	36.04	-25.13	-13	-12.13	Vertical
5727.9	-54.03	5.24	36.04	-23.23	-13	-10.23	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	-53.73	4.07	33.54	-24.26	-13	-11.26	Horizontal
3720	-48.21	4.07	33.54	-18.74	-13	-5.74	Vertical
5580	-55.41	5.28	35.86	-24.83	-13	-11.83	Vertical
5580	-58.14	5.28	35.86	-27.56	-13	-14.56	Horizontal
Test Results for Mid Channel 1880MHz							
3760	-52.62	4.04	33.56	-23.10	-13	-10.10	Horizontal
3760	-50.14	4.04	33.56	-20.62	-13	-7.62	Vertical
5640	-54.62	5.24	35.91	-23.95	-13	-10.95	Vertical
5640	-55.90	5.24	35.91	-25.23	-13	-12.23	Horizontal
Test Results for High Channel 1900MHz							
3800	-51.89	4.04	34.00	-21.93	-13	-8.93	Horizontal
3800	-53.67	4.04	34.00	-23.71	-13	-10.71	Vertical
5700	-54.99	5.24	36.04	-24.19	-13	-11.19	Vertical
5700	-54.82	5.24	36.04	-24.02	-13	-11.02	Horizontal

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

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

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

9.2 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	-55.75	4.02	29.80	-29.97	-13	-16.97	Horizontal
3421.4	-55.20	4.02	29.80	-29.42	-13	-16.42	Vertical
5132.1	-58.32	5.24	35.84	-27.72	-13	-14.72	Vertical
5132.1	-61.08	5.24	35.84	-30.48	-13	-17.48	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465	-47.38	4.03	30.00	-21.41	-13	-8.41	Horizontal
3465	-52.44	4.03	30.00	-26.47	-13	-13.47	Vertical
5197.5	-54.55	5.25	35.86	-23.94	-13	-10.94	Vertical
5197.5	-53.54	5.25	35.86	-22.93	-13	-9.93	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-48.43	4.05	30.01	-22.47	-13	-9.47	Horizontal
3508.6	-55.71	4.05	30.01	-29.75	-13	-16.75	Vertical
5262.9	-54.31	5.26	35.86	-23.71	-13	-10.71	Vertical
5262.9	-52.11	5.26	35.86	-21.51	-13	-8.51	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	-53.49	4.02	29.80	-27.71	-13	-14.71	Horizontal
3440	-54.65	4.02	29.80	-28.87	-13	-15.87	Vertical
5160	-57.30	5.24	35.84	-26.70	-13	-13.70	Vertical
5160	-59.08	5.24	35.84	-28.48	-13	-15.48	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465	-48.06	4.03	30.00	-22.09	-13	-9.09	Horizontal
3465	-51.45	4.03	30.00	-25.48	-13	-12.48	Vertical
5197.5	-57.95	5.25	35.86	-27.34	-13	-14.34	Vertical
5197.5	-55.17	5.25	35.86	-24.56	-13	-11.56	Horizontal
Test Results for High Channel 1745MHz							
2490	-51.01	2.91	27.68	-26.24	-13	-13.24	Horizontal
3490	-52.73	2.91	27.68	-27.96	-13	-14.96	Vertical
5235	-55.85	5.26	35.86	-25.25	-13	-12.25	Vertical
5235	-54.94	5.26	35.86	-24.34	-13	-11.34	Horizontal

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

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

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

9.3 LTE BAND 5

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

Test Results for Low Channel 824.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1649.4	-48.07	2.78	27.50	-23.35	-13	-10.35	Horizontal
1649.4	-53.85	2.78	27.50	-29.13	-13	-16.13	Vertical
2474.1	-50.95	2.90	27.80	-26.05	-13	-13.05	Vertical
2474.1	-50.71	2.90	27.80	-25.81	-13	-12.81	Horizontal
Test Results For Mid Channel 836.5MHz							
1673	-49.80	2.78	27.48	-25.10	-13	-12.10	Horizontal
1673	-47.72	2.78	27.48	-23.02	-13	-10.02	Vertical
2509.5	-49.44	2.91	27.70	-24.65	-13	-11.65	Vertical
2509.5	-48.44	2.91	27.70	-23.65	-13	-10.65	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-50.60	2.78	27.43	-25.95	-13	-12.95	Horizontal
1696.6	-50.83	2.78	27.43	-26.18	-13	-13.18	Vertical
2544.9	-48.92	2.92	27.74	-24.10	-13	-11.10	Vertical
2544.9	-49.06	2.92	27.74	-24.24	-13	-11.24	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	-49.98	2.78	27.50	-25.26	-13	-12.26	Horizontal
1658	-48.38	2.78	27.50	-23.66	-13	-10.66	Vertical
2487	-52.30	2.90	27.80	-27.40	-13	-14.40	Vertical
2487	-50.50	2.90	27.80	-25.60	-13	-12.60	Horizontal
Test Results for Mid Channel 836.5MHz							
1673	-49.63	2.78	27.48	-24.93	-13	-11.93	Horizontal
1673	-48.16	2.78	27.48	-23.46	-13	-10.46	Vertical
2509.5	-54.17	2.91	27.70	-29.38	-13	-16.38	Vertical
2509.5	-49.09	2.91	27.70	-24.30	-13	-11.30	Horizontal
Test Results for High Channel 844MHz							
1688	-52.58	2.78	27.43	-27.93	-13	-14.93	Horizontal
1688	-46.00	2.78	27.43	-21.35	-13	-8.35	Vertical
2532	-47.76	2.92	27.74	-22.94	-13	-9.94	Vertical
2532	-48.29	2.92	27.74	-23.47	-13	-10.47	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.

9.4 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	-65.75	5.23	35.81	-35.17	-25	-10.17	Horizontal
5005	-64.28	5.23	35.81	-33.70	-25	-8.70	Vertical
7507.5	-68.44	5.67	36.85	-37.26	-25	-12.26	Vertical
7507.5	-64.45	5.67	36.85	-33.27	-25	-8.27	Horizontal
Test Results for Mid Channel 2535MHz							
5070	-62.94	5.23	35.82	-32.35	-25	-7.35	Horizontal
5070	-64.87	5.23	35.82	-34.28	-25	-9.28	Vertical
7605	-65.55	5.67	36.85	-34.37	-25	-9.37	Vertical
7605	-67.08	5.67	36.85	-35.90	-25	-10.90	Horizontal
Test Results for High Channel 2567.5MHz							
5135	-65.66	5.24	35.83	-35.07	-25	-10.07	Horizontal
5135	-63.57	5.24	35.83	-32.98	-25	-7.98	Vertical
7702.5	-65.78	5.68	36.87	-34.59	-25	-9.59	Vertical
7702.5	-66.81	5.68	36.87	-35.62	-25	-10.62	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	-65.43	5.23	35.82	-34.84	-25	-9.84	Horizontal
5020	-62.37	5.23	35.82	-31.78	-25	-6.78	Vertical
7530	-66.01	5.67	36.86	-34.82	-25	-9.82	Vertical
7530	-62.09	5.67	36.86	-30.90	-25	-5.90	Horizontal
Test Results for Mid Channel 2535MHz							
5070	-62.66	5.23	35.82	-32.07	-25	-7.07	Horizontal
5070	-62.02	5.23	35.82	-31.43	-25	-6.43	Vertical
7605	-65.61	5.67	36.85	-34.43	-25	-9.43	Vertical
7605	-66.29	5.67	36.85	-35.11	-25	-10.11	Horizontal
Test Results for High Channel 2560MHz							
5120	-61.13	5.24	35.83	-30.54	-25	-5.54	Horizontal
5120	-66.27	5.24	35.83	-35.68	-25	-10.68	Vertical
7680	-66.22	5.70	36.88	-35.04	-25	-10.04	Vertical
7680	-66.09	5.70	36.88	-34.91	-25	-9.91	Horizontal

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

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

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



9.5 LTE BAND 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	-50.76	2.61	27.26	-26.11	-13	-13.11	Horizontal
3701.4	-50.76	2.61	27.26	-26.11	-13	-13.11	Vertical
5552.1	-53.74	2.87	27.58	-29.03	-13	-16.03	Vertical
5552.1	-51.61	2.87	27.58	-26.90	-13	-13.90	Horizontal
Test Results for Mid Channel 1732.5MHz							
3765	-50.07	2.63	27.28	-25.42	-13	-12.42	Horizontal
3765	-52.51	2.63	27.28	-27.86	-13	-14.86	Vertical
5647.5	-49.98	2.88	27.62	-25.24	-13	-12.24	Vertical
5647.5	-50.96	2.88	27.62	-26.22	-13	-13.22	Horizontal
Test Results for High Channel 1754.3MHz							
3828.6	-52.98	2.65	27.28	-28.35	-13	-15.35	Horizontal
3828.6	-52.86	2.65	27.28	-28.23	-13	-15.23	Vertical
5742.9	-51.69	2.88	27.70	-26.87	-13	-13.87	Vertical
5742.9	-51.78	2.88	27.70	-26.96	-13	-13.96	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	-52.77	2.62	27.30	-28.09	-13	-15.09	Horizontal
3720	-53.33	2.62	27.30	-28.65	-13	-15.65	Vertical
5580	-53.32	2.87	27.62	-28.57	-13	-15.57	Vertical
5580	-51.84	2.87	27.62	-27.09	-13	-14.09	Horizontal
Test Results for Mid Channel 1732.5MHz							
3765	-53.89	2.64	27.33	-29.20	-13	-16.20	Horizontal
3765	-53.00	2.64	27.33	-28.31	-13	-15.31	Vertical
5647.5	-54.04	2.88	27.67	-29.25	-13	-16.25	Vertical
5647.5	-52.80	2.88	27.67	-28.01	-13	-15.01	Horizontal
Test Results for High Channel 1745MHz							
3810	-50.18	2.64	27.33	-25.49	-13	-12.49	Horizontal
3810	-53.39	2.64	27.33	-28.70	-13	-15.70	Vertical
5715	-52.10	2.88	27.67	-27.31	-13	-14.31	Vertical
5715	-51.71	2.88	27.67	-26.92	-13	-13.92	Horizontal

9.6 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	-47.61	2.78	27.5	-22.89	-13	-9.89	Horizontal
1629.4	-49.23	2.78	27.5	-24.51	-13	-11.51	Vertical
2444.1	-50.80	2.9	27.8	-25.90	-13	-12.90	Vertical
2444.1	-62.11	2.9	27.8	-37.21	-13	-24.21	Horizontal
Test Results For Mid Channel 819MHz							
1638	-48.64	2.8	27.48	-23.96	-13	-10.96	Horizontal
1638	-50.46	2.8	27.48	-25.78	-13	-12.78	Vertical
2457.5	-50.44	2.91	27.7	-25.65	-13	-12.65	Vertical
2457.5	-51.41	2.91	27.7	-26.62	-13	-13.62	Horizontal
Test Results for High Channel 823.3MHz							
1646.6	-48.28	2.82	27.43	-23.67	-13	-10.67	Horizontal
1646.6	-52.18	2.82	27.43	-27.57	-13	-14.57	Vertical
2469.9	-51.16	2.92	27.74	-26.34	-13	-13.34	Vertical
2469.9	-52.48	2.92	27.74	-27.66	-13	-14.66	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	-51.21	2.82	27.43	-26.60	-13	-13.60	Horizontal
1638	-51.75	2.82	27.43	-27.14	-13	-14.14	Vertical
2457.5	-54.22	2.91	27.74	-29.39	-13	-16.39	Vertical
2457.5	-52.56	2.91	27.74	-27.73	-13	-14.73	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	-54.37	2.78	27.28	-29.87	-13	-16.87	Horizontal
1649.4	-66.98	2.78	27.28	-42.48	-13	-29.48	Vertical
2474.1	-62.77	2.9	27.59	-38.08	-13	-25.08	Vertical
2474.1	-50.79	2.9	27.59	-26.10	-13	-13.10	Horizontal
Test Results For Mid Channel 836.5MHz							
1673	-51.83	2.78	27.3	-27.31	-13	-14.31	Horizontal
1673	-60.69	2.78	27.3	-36.17	-13	-23.17	Vertical
2509.4	-59.41	2.91	27.62	-34.70	-13	-21.70	Vertical
2509.4	-57.26	2.91	27.62	-32.55	-13	-19.55	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-59.77	2.78	27.28	-35.27	-13	-22.27	Horizontal
1696.6	-54.72	2.78	27.28	-30.22	-13	-17.22	Vertical
2544.9	-54.99	2.92	27.6	-30.31	-13	-17.31	Vertical
2544.9	-58.54	2.92	27.6	-33.86	-13	-20.86	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	-49.55	2.78	27.3	-25.03	-13	-12.03	Horizontal
1663	-56.24	2.78	27.3	-31.72	-13	-18.72	Vertical
2494.5	-59.03	2.9	27.62	-34.31	-13	-21.31	Vertical
2494.5	-56.46	2.9	27.62	-31.74	-13	-18.74	Horizontal
Test Results for Mid Channel 836.5MHz							
1673	-55.59	2.78	27.3	-31.07	-13	-18.07	Horizontal
1673	-53.50	2.78	27.3	-28.98	-13	-15.98	Vertical
2509.5	-60.88	2.91	27.62	-36.17	-13	-23.17	Vertical
2509.5	-57.41	2.91	27.62	-32.70	-13	-19.70	Horizontal
Test Results for High Channel 841.5MHz							
1683	-55.48	2.78	27.3	-30.96	-13	-17.96	Horizontal
1683	-52.94	2.78	27.3	-28.42	-13	-15.42	Vertical
2524.5	-54.94	2.92	27.62	-30.24	-13	-17.24	Vertical
2524.5	-51.29	2.92	27.62	-26.59	-13	-13.59	Horizontal

## 10. FREQUENCY STABILITY

### RULE PART(S)

FCC: §2.1055, §22.355, §24.235, §27.54, §90.213

### LIMITS

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

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

### TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

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

### Frequency Stability vs Temperature:

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

### Frequency Stability vs Voltage:

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

### MODES TESTED

- LTE Band 2  
LTE Band 4
- LTE Band 5  
LTE Band 7  
LTE Band 25,  
LTE Band 26,

## 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>				
3.4	1880	21.0	0.01117	2.5
3.85	1880	16.0	0.00851	2.5
4.2	1880	13.0	0.00691	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	15.0	0.00798	2.5
Extreme (50C)	1880	19.0	0.01011	2.5
Extreme (40C)	1880	12.0	0.00638	2.5
Extreme (30C)	1880	13.0	0.00691	2.5
Extreme (10C)	1880	14.0	0.00745	2.5
Extreme (0C)	1880	16.0	0.00851	2.5
Extreme (-10C)	1880	15.0	0.00798	2.5
Extreme (-20C)	1880	17.0	0.00904	2.5
Extreme (-30C)	1880	9.0	0.00479	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>				
3.4	1880	14.0	0.00745	2.5
3.85	1880	23.0	0.01223	2.5
4.2	1880	12.0	0.00638	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	8.0	0.00426	2.5
Extreme (50C)	1880	16.0	0.00851	2.5
Extreme (40C)	1880	14.0	0.00745	2.5
Extreme (30C)	1880	19.0	0.01011	2.5
Extreme (10C)	1880	20.0	0.01064	2.5
Extreme (0C)	1880	21.0	0.01117	2.5
Extreme (-10C)	1880	22.0	0.01170	2.5
Extreme (-20C)	1880	17.0	0.00904	2.5
Extreme (-30C)	1880	17.0	0.00904	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>				
3.4	1732.5	17.0	0.00981	2.5
3.85	1732.5	10.0	0.00577	2.5
4.2	1732.5	16.0	0.00924	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	15.0	0.00866	2.5
Extreme (50C)	1732.5	11.0	0.00635	2.5
Extreme (40C)	1732.5	14.0	0.00808	2.5
Extreme (30C)	1732.5	8.0	0.00462	2.5
Extreme (10C)	1732.5	14.0	0.00808	2.5
Extreme (0C)	1732.5	17.0	0.00983	2.5
Extreme (-10C)	1732.5	13.0	0.00750	2.5
Extreme (-20C)	1732.5	16.0	0.00924	2.5
Extreme (-30C)	1732.5	8.0	0.00462	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>				
3.4	1732.5	23.0	0.01328	2.5
3.85	1732.5	18.0	0.01039	2.5
4.2	1732.5	11.0	0.00635	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	14.0	0.00808	2.5
Extreme (50C)	1732.5	14.0	0.00808	2.5
Extreme (40C)	1732.5	15.0	0.00866	2.5
Extreme (30C)	1732.5	10.0	0.00577	2.5
Extreme (10C)	1732.5	13.0	0.00750	2.5
Extreme (0C)	1732.5	11.0	0.00635	2.5
Extreme (-10C)	1732.5	17.0	0.00983	2.5
Extreme (-20C)	1732.5	19.0	0.01097	2.5
Extreme (-30C)	1732.5	9.0	0.00519	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>				
3.4	836.5	10.0	0.01195	2.5
3.85	836.5	21.0	0.02510	2.5
4.2	836.5	7.0	0.00837	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	7.0	0.00837	2.5
Extreme (50C)	836.5	9.0	0.01076	2.5
Extreme (40C)	836.5	14.0	0.01674	2.5
Extreme (30C)	836.5	5.0	0.00598	2.5
Extreme (10C)	836.5	7.0	0.00837	2.5
Extreme (0C)	836.5	10.0	0.01195	2.5
Extreme (-10C)	836.5	8.0	0.00956	2.5
Extreme (-20C)	836.5	7.0	0.00837	2.5
Extreme (-30C)	836.5	12.0	0.01435	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>				
3.4	836.5	18.0	0.02152	2.5
3.85	836.5	10.0	0.01195	2.5
4.2	836.5	14.0	0.01674	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	7.0	0.00837	2.5
Extreme (50C)	836.5	11.0	0.01315	2.5
Extreme (40C)	836.5	8.0	0.00956	2.5
Extreme (30C)	836.5	8.0	0.00956	2.5
Extreme (10C)	836.5	10.0	0.01195	2.5
Extreme (0C)	836.5	9.0	0.01076	2.5
Extreme (-10C)	836.5	17.0	0.02035	2.5
Extreme (-20C)	836.5	12.0	0.01435	2.5
Extreme (-30C)	836.5	11.0	0.01315	2.5

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

10.4 LTE BAND 7

QPSK, (20MHz BANDWIDTH)

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 7 QPSK, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
3.4	2535	19.0	0.00750	2.5
3.85	2535	21.0	0.00828	2.5
4.2	2535	11.0	0.00434	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 7 QPSK, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
Normal (25C)	2535	16.0	0.00630	2.5
Extreme (50C)	2535	13.0	0.00513	2.5
Extreme (40C)	2535	6.0	0.00237	2.5
Extreme (30C)	2535	15.0	0.00592	2.5
Extreme (10C)	2535	16.0	0.00631	2.5
Extreme (0C)	2535	10.0	0.00394	2.5
Extreme (-10C)	2535	15.0	0.00592	2.5
Extreme (-20C)	2535	5.0	0.00197	2.5
Extreme (-30C)	2535	13.0	0.00513	2.5

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

**Frequency error vs. Voltage**

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 7 16QAM, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
3.4	2535	14.0	0.00552	2.5
3.85	2535	24.0	0.00947	2.5
4.2	2535	15.0	0.00592	2.5

**Frequency error vs. Temperature**

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
<b>BAND 7 16QAM, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)</b>				
Normal (25C)	2535	14.0	0.00551	2.5
Extreme (50C)	2535	11.0	0.00434	2.5
Extreme (40C)	2535	17.0	0.00671	2.5
Extreme (30C)	2535	10.0	0.00394	2.5
Extreme (10C)	2535	13.0	0.00513	2.5
Extreme (0C)	2535	8.0	0.00316	2.5
Extreme (-10C)	2535	11.0	0.00434	2.5
Extreme (-20C)	2535	18.0	0.00710	2.5
Extreme (-30C)	2535	11.0	0.00434	2.5

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

10.5 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>				
3.4	1882.5	15.0	0.00797	2.5
3.85	1882.5	14.0	0.00744	2.5
4.2	1882.5	22.0	0.01169	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	13.0	0.00691	2.5
Extreme (50C)	1882.5	17.0	0.00904	2.5
Extreme (40C)	1882.5	13.0	0.00691	2.5
Extreme (30C)	1882.5	12.0	0.00637	2.5
Extreme (10C)	1882.5	8.0	0.00425	2.5
Extreme (0C)	1882.5	14.0	0.00744	2.5
Extreme (-10C)	1882.5	4.0	0.00212	2.5
Extreme (-20C)	1882.5	6.0	0.00319	2.5
Extreme (-30C)	1882.5	14.0	0.00744	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>				
3.4	1882.5	13.0	0.00692	2.5
3.85	1882.5	16.0	0.00850	2.5
4.2	1882.5	15.0	0.00797	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	14.0	0.00742	2.5
Extreme (50C)	1882.5	11.0	0.00584	2.5
Extreme (40C)	1882.5	16.0	0.00850	2.5
Extreme (30C)	1882.5	6.0	0.00319	2.5
Extreme (10C)	1882.5	9.0	0.00478	2.5
Extreme (0C)	1882.5	15.0	0.00797	2.5
Extreme (-10C)	1882.5	7.0	0.00372	2.5
Extreme (-20C)	1882.5	14.0	0.00744	2.5
Extreme (-30C)	1882.5	9.0	0.00478	2.5

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



10.6 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>				
3.4	819	14.0	0.01709	2.5
3.85	819	23.0	0.02808	2.5
4.2	819	14.0	0.01709	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	14.0	0.01709	2.5
Extreme (50C)	819	3.0	0.00366	2.5
Extreme (40C)	819	5.0	0.00611	2.5
Extreme (30C)	819	10.0	0.01221	2.5
Extreme (10C)	819	7.0	0.00855	2.5
Extreme (0C)	819	9.0	0.01099	2.5
Extreme (-10C)	819	13.0	0.01587	2.5
Extreme (-20C)	819	10.0	0.01221	2.5
Extreme (-30C)	819	6.0	0.00733	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>				
3.4	819	6.0	0.00733	2.5
3.85	819	14.0	0.01709	2.5
4.2	819	11.0	0.01343	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	11.0	0.01343	2.5
Extreme (50C)	819	10.0	0.01221	2.5
Extreme (40C)	819	9.0	0.01099	2.5
Extreme (30C)	819	8.0	0.00977	2.5
Extreme (10C)	819	12.0	0.01465	2.5
Extreme (0C)	819	7.0	0.00855	2.5
Extreme (-10C)	819	14.0	0.01709	2.5
Extreme (-20C)	819	10.0	0.01221	2.5
Extreme (-30C)	819	9.0	0.01099	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>				
3.4	836.5	12.0	0.01435	2.5
3.85	836.5	15.0	0.01793	2.5
4.2	836.5	19.0	0.02271	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	16.0	0.01913	2.5
Extreme (50C)	836.5	17.0	0.02032	2.5
Extreme (40C)	836.5	8.0	0.00956	2.5
Extreme (30C)	836.5	11.0	0.01315	2.5
Extreme (10C)	836.5	16.0	0.01913	2.5
Extreme (0C)	836.5	14.0	0.01674	2.5
Extreme (-10C)	836.5	5.0	0.00598	2.5
Extreme (-20C)	836.5	15.0	0.01793	2.5
Extreme (-30C)	836.5	13.0	0.01554	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>				
3.4	836.5	14.0	0.01674	2.5
3.85	836.5	20.0	0.02391	2.5
4.2	836.5	14.0	0.01674	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	9.0	0.01076	2.5
Extreme (50C)	836.5	18.0	0.02152	2.5
Extreme (40C)	836.5	14.0	0.01674	2.5
Extreme (30C)	836.5	11.0	0.01311	2.5
Extreme (10C)	836.5	9.0	0.01076	2.5
Extreme (0C)	836.5	16.0	0.01913	2.5
Extreme (-10C)	836.5	7.0	0.00837	2.5
Extreme (-20C)	836.5	4.0	0.01124	2.5
Extreme (-30C)	836.5	17.0	0.00729	2.5

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

## 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.

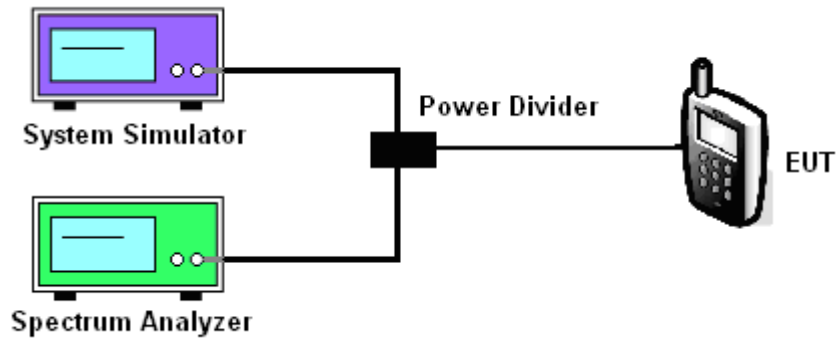
### 11.2 Measuring Instruments

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 7
- LTE Band 25,
- LTE Band 26,

Test data reference attachment.

----END OF REPORT----