

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

FCC ID: 2AXNU-H2022

Product: Smart Phone
Trade Mark: N/A
Model Number: H2022
Family Model: N/A
Report No.: S21071601208006

Prepared for

Shenzhen Kaicheng Technology Co., Ltd.
Room 2005, 20th Floor, Block C, Dachong Business Center, Yuehai
Street, Nanshan District, Shenzhen, Guangdong, 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>

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1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	Smart Phone
Trade Mark	N/A
Model Name	H2022
Family Model	N/A
Model Difference	N/A
FCC ID:	2AXNU-H2022
Frequency Bands:	U.S. Bands: ☒ LTE FDD Band 2,4,5,7,12,17,25,26
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 12 Uplink: 699MHz-716MHz, Downlink: 729MHz-746MHz; LTE FDD Band 17 Uplink: 704MHz-716MHz, Downlink: 734MHz-746MHz; 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:	-0.93dBi
Power Supply:	DC 3.85V/4800mAh from battery or DC 5V from Adapter.
Adapter:	Model: TPA-74B050100UU Input: 100-240V~50/60Hz 0.2A Output: 5.0V---1.0A
Extreme Vol. Limits:	DC 3.4V to DC 4.2V (Nominal DC 3.85V) (Note 1)
HW Version	2000-MB-P2.1
SW Version	H2022_2201_V0238

** 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: 2AXNU-H2022** filing to comply with the FCC Part 22H&24E&27&90S.

1.3 TEST METHODOLOGY

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

1.4 TEST FACILITY

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

ShenZhen NTEK Testing Technology Co., Ltd.

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

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

FCC Registration No.:463705

IC Registration No.:9270A-1,

CNAS Registration No.:L5516

MEASUREMENT UNCERTAINTY

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

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

1.5 SPECIAL ACCESSORIES

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

1.6 WORST-CASE CONFIGURATION AND MODE

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

The device has LTE Bands of: Band 2, Band 4, Band 5, Band 7, Band 12, Band 17, 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	Smart Phone	H2022	FCC ID: 2AXNU-H2022	EUT

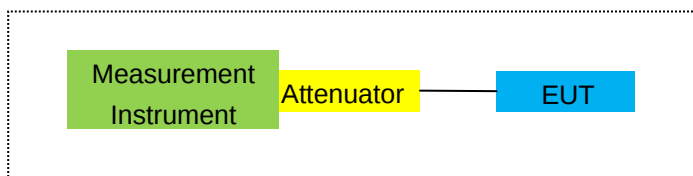
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

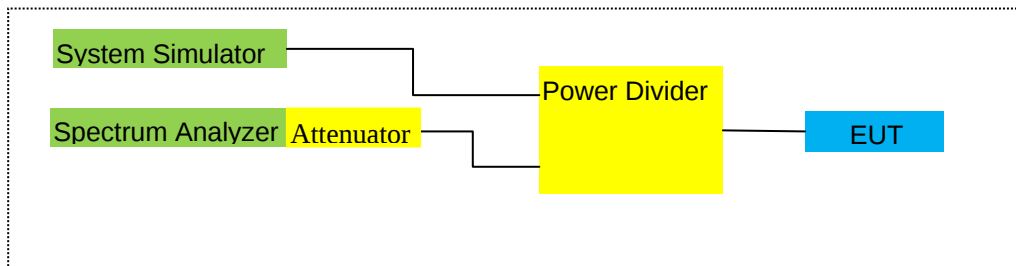
For Radiated Test Cases



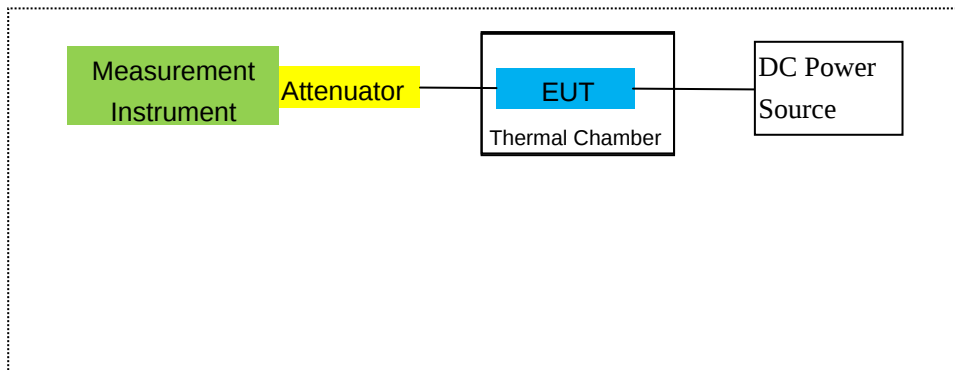
For Conducted Output Power



For Peak-to Average Ratio, Occupied Bandwidth, Conducted Band edge and Conducted Spurious Emission



For Frequency Stability



Note: EUT built-in battery-powered, the battery is fully-charged.

3.TEST AND MEASUREMENT EQUIPMENT

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

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	MXA Signal Analyzer	Agilent	N9020A	MY49100060	2021.07.01	2022.06.30	1 year
2	Test Receiver	R&S	ESPI	101318	2021.04.27	2022.04.26	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2021.03.29	2022.03.28	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2020.05.11	2023.05.10	3 year
5	Horn Antenna	EM	EM-AH-10180	2011071402	2021.03.29	2022.03.28	1 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2020.11.20	2021.11.19	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
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
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

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

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

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

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

Test data reference attachment.

5. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

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

MODES TESTED

- ☐ LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 17
- 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 than $43 + 10 \log (P)$ 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 12
- LTE Band 17
- 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 2/4/5/7/12/17/25/26
- ☐

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 2/4/5/7/12/17/25/26

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	-4.20	3.76	28.24	20.28	106.660	Horizontal	Pass
1880		-4.01	3.91	28.22	20.30	107.152	Horizontal	Pass	
1909.3		-3.92	3.93	28.20	20.35	108.393	Horizontal	Pass	
3.0MHz Band QPSK	1/#Mid	1851.5	-4.26	3.77	28.23	20.20	104.713	Horizontal	Pass
1880		-4.11	3.91	28.24	20.22	105.196	Horizontal	Pass	
1908.5		-3.98	3.94	28.25	20.33	107.895	Horizontal	Pass	
5.0MHz Band QPSK	1/#Mid	1852.5	-4.15	3.77	28.31	20.39	109.396	Horizontal	Pass
1880		-3.77	3.91	28.22	20.54	113.240	Horizontal	Pass	
1907.5		-3.70	3.94	28.20	20.56	113.763	Horizontal	Pass	
10.0MHz Band QPSK	1/#Mid	1855	-4.01	3.79	28.33	20.53	112.980	Horizontal	Pass
1880		-3.71	3.95	28.22	20.56	113.763	Horizontal	Pass	
1905		-3.60	3.97	28.19	20.62	115.345	Horizontal	Pass	
15.0MHz Band QPSK	1/#Mid	1857.5	-3.97	3.79	28.34	20.58	114.288	Horizontal	Pass
1880		-3.76	3.95	28.22	20.51	112.460	Horizontal	Pass	
1902.5		-3.62	3.97	28.18	20.59	114.551	Horizontal	Pass	
20.0MHz Band QPSK	1/#Mid	1860	-3.96	3.81	28.35	20.58	114.288	Horizontal	Pass
1880		-3.63	3.96	28.22	20.63	115.611	Horizontal	Pass	
1900		-3.57	4.00	28.16	20.59	114.551	Horizontal	Pass	
1.4MHz Band QPSK	1/#Mid	1850.7	-5.27	3.76	28.24	19.21	83.368	Vertical	Pass
1880		-4.73	3.91	28.22	19.58	90.782	Vertical	Pass	
1909.3		-4.91	3.93	28.20	19.36	86.298	Vertical	Pass	
3.0MHz Band QPSK	1/#Mid	1851.5	-4.67	3.77	28.23	19.79	95.280	Vertical	Pass
1880		-4.43	3.91	28.24	19.90	97.724	Vertical	Pass	
1908.5		-5.24	3.94	28.25	19.07	80.724	Vertical	Pass	
5.0MHz Band QPSK	1/#Mid	1852.5	-5.11	3.77	28.31	19.43	87.700	Vertical	Pass
1880		-4.57	3.91	28.22	19.74	94.189	Vertical	Pass	
1907.5		-4.95	3.94	28.20	19.31	85.310	Vertical	Pass	
10.0MHz Band QPSK	1/#Mid	1855	-4.73	3.79	28.33	19.81	95.719	Vertical	Pass
1880		-4.28	3.95	28.22	19.99	99.770	Vertical	Pass	
1905		-4.75	3.97	28.19	19.47	88.512	Vertical	Pass	

15.0MHz	Band QPSK	1/#Mid	1857.5	-4.87	3.79	28.34	19.68	92.897	Vertical	Pass
			1880	-4.67	3.95	28.22	19.60	91.201	Vertical	Pass
			1902.5	-4.53	3.97	28.18	19.68	92.897	Vertical	Pass
20.0MHz	Band QPSK	1/#Mid	1860	-4.68	3.81	28.35	19.86	96.828	Vertical	Pass
			1880	-4.29	3.96	28.22	19.97	99.312	Vertical	Pass
			1900	-4.57	4.00	28.16	19.59	90.991	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (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	-4.32	3.76	28.24	20.16	103.753	Horizontal	Pass
		1880	-3.79	3.91	28.22	20.52	112.720	Horizontal	Pass
		1909.3	-3.72	3.93	28.20	20.55	113.501	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-3.82	3.77	28.23	20.64	115.878	Horizontal	Pass
		1880	-3.90	3.91	28.24	20.43	110.408	Horizontal	Pass
		1908.5	-4.11	3.94	28.25	20.20	104.713	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-3.76	3.77	28.31	20.78	119.674	Horizontal	Pass
		1880	-3.67	3.91	28.22	20.64	115.878	Horizontal	Pass
		1907.5	-3.35	3.94	28.20	20.91	123.310	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-3.81	3.79	28.33	20.73	118.304	Horizontal	Pass
		1880	-3.80	3.95	28.22	20.47	111.429	Horizontal	Pass
		1905	-3.27	3.97	28.19	20.95	124.451	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-3.79	3.79	28.34	20.76	119.124	Horizontal	Pass
		1880	-3.58	3.95	28.22	20.69	117.220	Horizontal	Pass
		1902.5	-3.54	3.97	28.18	20.67	116.681	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-3.68	3.81	28.35	20.86	121.899	Horizontal	Pass
		1880	-3.38	3.96	28.22	20.88	122.462	Horizontal	Pass
		1900	-3.20	4.00	28.16	20.96	124.738	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1850.7	-5.31	3.76	28.24	19.17	82.604	Vertical	Pass
		1880	-4.50	3.91	28.22	19.81	95.719	Vertical	Pass
		1909.3	-4.79	3.93	28.20	19.48	88.716	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-5.45	3.77	28.23	19.01	79.616	Vertical	Pass
		1880	-4.50	3.91	28.24	19.83	96.161	Vertical	Pass
		1908.5	-5.04	3.94	28.25	19.27	84.528	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-4.86	3.77	28.31	19.68	92.897	Vertical	Pass
		1880	-5.30	3.91	28.22	19.01	79.616	Vertical	Pass
		1907.5	-4.97	3.94	28.20	19.29	84.918	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-5.25	3.79	28.33	19.29	84.918	Vertical	Pass
		1880	-4.55	3.95	28.22	19.72	93.756	Vertical	Pass
		1905	-4.95	3.97	28.19	19.27	84.528	Vertical	Pass
15.0MHz Band 16	1/#Mid	1857.5	-5.28	3.79	28.34	19.27	84.528	Vertical	Pass
		1880	-5.03	3.95	28.22	19.24	83.946	Vertical	Pass

QAM		1902.5	-4.57	3.97	28.18	19.64	92.045	Vertical	Pass
20.0MHz	1/#Mid	1860	-4.90	3.81	28.35	19.64	92.045	Vertical	Pass
Band 16		1880	-5.07	3.96	28.22	19.19	82.985	Vertical	Pass
QAM		1900	-4.31	4.00	28.16	19.85	96.605	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	Cable	Antenna	Max.	Max.	Polarization	
			Level	Loss	Gain	EIRP	EIRP	Of Max. ERP	
			(dBm)	(dBm)	(dB)	Average	Average		
						(dBm)	(mW)		
1.4MHz	1/#Mid	1710.7	-2.61	3.12	27.58	21.85	153.109	Horizontal	Pass
Band		1732.5	-2.60	3.27	27.61	21.74	149.279	Horizontal	Pass
QPSK		1754.3	-2.58	3.29	27.63	21.76	149.968	Horizontal	Pass
3.0MHz	1/#Mid	1711.5	-2.78	3.13	27.61	21.70	147.911	Horizontal	Pass
Band		1732.5	-2.70	3.27	27.61	21.64	145.881	Horizontal	Pass
QPSK		1753.5	-2.62	3.30	27.62	21.70	147.911	Horizontal	Pass
5.0MHz	1/#Mid	1712.5	-2.55	3.13	27.63	21.95	156.675	Horizontal	Pass
Band		1732.5	-2.45	3.27	27.61	21.89	154.525	Horizontal	Pass
QPSK		1752.5	-2.33	3.30	27.60	21.97	157.398	Horizontal	Pass
10.0MHz	1/#Mid	1715	-2.49	3.15	27.64	22.00	158.489	Horizontal	Pass
Band		1732.5	-2.26	3.31	27.61	22.04	159.956	Horizontal	Pass
QPSK		1750	-2.28	3.33	27.59	21.98	157.761	Horizontal	Pass
15.0MHz	1/#Mid	1717.5	-2.50	3.15	27.65	22.00	158.489	Horizontal	Pass
Band		1732.5	-2.34	3.31	27.61	21.96	157.036	Horizontal	Pass
QPSK		1747.5	-2.28	3.33	27.57	21.96	157.036	Horizontal	Pass
20.0MHz	1/#Mid	1720	-2.44	3.17	27.66	22.05	160.325	Horizontal	Pass
Band		1732.5	-2.27	3.32	27.61	22.02	159.221	Horizontal	Pass
QPSK		1745	-2.21	3.36	27.56	21.99	158.125	Horizontal	Pass
1.4MHz	1/#Mid	1710.7	-3.36	3.12	27.58	21.10	128.825	Vertical	Pass
Band		1732.5	-2.84	3.27	27.61	21.50	141.254	Vertical	Pass
QPSK		1754.3	-3.29	3.29	27.63	21.05	127.350	Vertical	Pass
3.0MHz	1/#Mid	1711.5	-3.40	3.13	27.61	21.08	128.233	Vertical	Pass
Band		1732.5	-3.20	3.27	27.61	21.14	130.017	Vertical	Pass
QPSK		1753.5	-3.67	3.30	27.62	20.65	116.145	Vertical	Pass
5.0MHz	1/#Mid	1712.5	-3.10	3.13	27.63	21.40	138.038	Vertical	Pass
Band		1732.5	-2.94	3.27	27.61	21.40	138.038	Vertical	Pass
QPSK		1752.5	-3.04	3.30	27.60	21.26	133.660	Vertical	Pass
10.0MHz	1/#Mid	1715	-3.38	3.15	27.64	21.11	129.122	Vertical	Pass
Band		1732.5	-3.12	3.31	27.61	21.18	131.220	Vertical	Pass
QPSK		1750	-3.43	3.33	27.59	20.83	121.060	Vertical	Pass

15.0MHz	Band QPSK	1/#Mid	1717.5	-3.56	3.15	27.65	20.94	124.165	Vertical	Pass
			1732.5	-3.03	3.31	27.61	21.27	133.968	Vertical	Pass
			1747.5	-3.36	3.33	27.57	20.88	122.462	Vertical	Pass
20.0MHz	Band QPSK	1/#Mid	1720	-3.72	3.17	27.66	20.77	119.399	Vertical	Pass
			1732.5	-3.34	3.32	27.61	20.95	124.451	Vertical	Pass
			1745	-3.28	3.36	27.56	20.92	123.595	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG	Cable	Antenna	Max.	Max.	Polarization	
			Level	Loss	Gain	EIRP	EIRP	Of Max.	
			(dBm)	(dBm)	(dB)	Average	Average	ERP	
						(dBm)	(mW)		
1.4MHz	1/#Mid	1710.7	-3.42	3.12	27.58	21.04	127.057	Horizontal	Pass
Band 16		1732.5	-3.27	3.27	27.61	21.07	127.938	Horizontal	Pass
QAM		1754.3	-3.27	3.29	27.63	21.07	127.938	Horizontal	Pass
3.0MHz	1/#Mid	1711.5	-3.36	3.13	27.61	21.12	129.420	Horizontal	Pass
Band 16		1732.5	-3.49	3.27	27.61	20.85	121.619	Horizontal	Pass
QAM		1753.5	-3.71	3.30	27.62	20.61	115.080	Horizontal	Pass
5.0MHz	1/#Mid	1712.5	-3.19	3.13	27.63	21.31	135.207	Horizontal	Pass
Band 16		1732.5	-3.15	3.27	27.61	21.19	131.522	Horizontal	Pass
QAM		1752.5	-2.84	3.30	27.60	21.46	139.959	Horizontal	Pass
10.0MHz	1/#Mid	1715	-3.26	3.15	27.64	21.23	132.739	Horizontal	Pass
Band 16		1732.5	-3.45	3.31	27.61	20.85	121.619	Horizontal	Pass
QAM		1750	-2.83	3.33	27.59	21.43	138.995	Horizontal	Pass
15.0MHz	1/#Mid	1717.5	-3.06	3.15	27.65	21.44	139.316	Horizontal	Pass
Band 16		1732.5	-3.12	3.31	27.61	21.18	131.220	Horizontal	Pass
QAM		1747.5	-3.14	3.33	27.57	21.10	128.825	Horizontal	Pass
20.0MHz	1/#Mid	1720	-3.01	3.17	27.66	21.48	140.605	Horizontal	Pass
Band 16		1732.5	-3.02	3.32	27.61	21.27	133.968	Horizontal	Pass
QAM		1745	-2.83	3.36	27.56	21.37	137.088	Horizontal	Pass
1.4MHz	1/#Mid	1710.7	-4.62	3.12	27.58	19.84	96.383	Vertical	Pass
Band 16		1732.5	-4.11	3.27	27.61	20.23	105.439	Vertical	Pass
QAM		1754.3	-4.52	3.29	27.63	19.82	95.940	Vertical	Pass
3.0MHz	1/#Mid	1711.5	-4.18	3.13	27.61	20.30	107.152	Vertical	Pass
Band 16		1732.5	-4.22	3.27	27.61	20.12	102.802	Vertical	Pass
QAM		1753.5	-4.69	3.30	27.62	19.63	91.833	Vertical	Pass
5.0MHz	1/#Mid	1712.5	-4.47	3.13	27.63	20.03	100.693	Vertical	Pass
Band 16		1732.5	-4.01	3.27	27.61	20.33	107.895	Vertical	Pass
QAM		1752.5	-4.70	3.30	27.60	19.60	91.201	Vertical	Pass
10.0MHz	1/#Mid	1715	-4.75	3.15	27.64	19.74	94.189	Vertical	Pass
Band 16		1732.5	-4.69	3.31	27.61	19.61	91.411	Vertical	Pass
QAM		1750	-4.58	3.33	27.59	19.68	92.897	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-4.95	3.15	27.65	19.55	90.157	Vertical	Pass
Band 16		1732.5	-4.45	3.31	27.61	19.85	96.605	Vertical	Pass

QAM		1747.5	-3.95	3.33	27.57	20.29	106.905	Vertical	Pass
20.0MHz	1/#Mid	1720	-4.66	3.17	27.66	19.83	96.161	Vertical	Pass
Band 16		1732.5	-3.96	3.32	27.61	20.33	107.895	Vertical	Pass
QAM		1745	-3.81	3.36	27.56	20.39	109.396	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							Conclusion
			SG Level	Cable Loss (dBm)	Antenna Gain (dB)	Correction	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)				Average	Average		
							(dB)	(dBm)		
1.4MHz Band QPSK	3/#Mid	824.7	6.49	2.01	19.68	2.15	22.01	158.855	Horizontal	Pass
		836.5	6.37	2.01	19.77	2.15	21.98	157.761	Horizontal	Pass
		848.3	6.17	2.02	19.82	2.15	21.82	152.055	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	825.5	6.26	2.01	19.70	2.15	21.80	151.356	Horizontal	Pass
		836.5	6.16	2.01	19.77	2.15	21.77	150.314	Horizontal	Pass
		847.5	6.03	2.02	19.81	2.15	21.67	146.893	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	826.5	6.54	2.01	19.71	2.15	22.09	161.808	Horizontal	Pass
		836.5	6.42	2.01	19.77	2.15	22.03	159.588	Horizontal	Pass
		846.5	6.26	2.02	19.79	2.15	21.88	154.170	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	829	6.56	2.01	19.73	2.15	22.13	163.305	Horizontal	Pass
		836.5	6.51	2.01	19.77	2.15	22.12	162.930	Horizontal	Pass
		844	6.41	2.02	19.78	2.15	22.02	159.221	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	824.7	4.92	2.01	19.68	2.15	20.44	110.662	Vertical	Pass
		836.5	4.81	2.01	19.77	2.15	20.42	110.154	Vertical	Pass
		848.3	4.66	2.02	19.82	2.15	20.31	107.399	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	825.5	5.43	2.01	19.70	2.15	20.97	125.026	Vertical	Pass
		836.5	5.67	2.01	19.77	2.15	21.28	134.276	Vertical	Pass
		847.5	5.36	2.02	19.81	2.15	21.00	125.893	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	826.5	5.57	2.01	19.71	2.15	21.12	129.420	Vertical	Pass
		836.5	4.98	2.01	19.77	2.15	20.59	114.551	Vertical	Pass
		846.5	4.91	2.02	19.79	2.15	20.53	112.980	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	829	5.41	2.01	19.73	2.15	20.98	125.314	Vertical	Pass
		836.5	5.24	2.01	19.77	2.15	20.85	121.619	Vertical	Pass
		844	5.45	2.02	19.78	2.15	21.06	127.644	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Gain	Correction	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	Of Max. ERP	
							(dBm)	(mW)		
1.4MHz Band 16 QAM	3/#Mid	824.7	5.64	2.01	19.68	2.15	21.16	130.617	Horizontal	Pass
		836.5	5.57	2.01	19.77	2.15	21.18	131.220	Horizontal	Pass
		848.3	5.41	2.02	19.82	2.15	21.06	127.644	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	5.72	2.01	19.70	2.15	21.26	133.660	Horizontal	Pass
		836.5	5.43	2.01	19.77	2.15	21.04	127.057	Horizontal	Pass
		847.5	4.91	2.02	19.81	2.15	20.55	113.501	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	6.04	2.01	19.71	2.15	21.59	144.212	Horizontal	Pass
		836.5	5.81	2.01	19.77	2.15	21.42	138.676	Horizontal	Pass
		846.5	5.56	2.02	19.79	2.15	21.18	131.220	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	829	6.04	2.01	19.73	2.15	21.61	144.877	Horizontal	Pass
		836.5	5.76	2.01	19.77	2.15	21.37	137.088	Horizontal	Pass
		844	5.30	2.02	19.78	2.15	20.91	123.310	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	824.7	5.20	2.01	19.68	2.15	20.72	118.032	Vertical	Pass
		836.5	5.68	2.01	19.77	2.15	21.29	134.586	Vertical	Pass
		848.3	3.76	2.02	19.82	2.15	19.41	87.297	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	4.99	2.01	19.70	2.15	20.53	112.980	Vertical	Pass
		836.5	4.34	2.01	19.77	2.15	19.95	98.855	Vertical	Pass
		847.5	5.56	2.02	19.81	2.15	21.20	131.826	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	4.55	2.01	19.71	2.15	20.10	102.329	Vertical	Pass
		836.5	5.28	2.01	19.77	2.15	20.89	122.744	Vertical	Pass
		846.5	3.76	2.02	19.79	2.15	19.38	86.696	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	829	4.16	2.01	19.73	2.15	19.73	93.972	Vertical	Pass
		836.5	5.21	2.01	19.77	2.15	20.82	120.781	Vertical	Pass
		844	4.99	2.02	19.78	2.15	20.60	114.815	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						Conclusion
			SG Level	Cable Loss	Antenna Gain	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)	Average	Average	Of Max. ERP	
						(dBm)	(mW)		
5.0MHz Band QPSK	1/#Mid	2502.5	-2.29	4.54	27.75	20.92	123.595	Horizontal	Pass
		2535	-2.12	4.69	27.72	20.91	123.310	Horizontal	Pass
		2567.5	-2.05	4.71	27.71	20.95	124.451	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2505	-2.22	4.55	27.76	20.99	125.603	Horizontal	Pass
		2535	-2.03	4.69	27.72	21.00	125.893	Horizontal	Pass
		2565	-1.95	4.72	27.70	21.03	126.765	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-2.23	4.55	27.77	20.99	125.603	Horizontal	Pass
		2535	-2.09	4.69	27.72	20.94	124.165	Horizontal	Pass
		2562.5	-1.99	4.72	27.69	20.98	125.314	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2510	-2.17	4.57	27.78	21.04	127.057	Horizontal	Pass
		2535	-1.99	4.73	27.72	21.00	125.893	Horizontal	Pass
		2560	-1.95	4.75	27.68	20.98	125.314	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	-3.24	4.54	27.75	19.97	99.312	Vertical	Pass
		2535	-3.02	4.69	27.72	20.01	100.231	Vertical	Pass
		2567.5	-3.33	4.71	27.71	19.67	92.683	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2505	-3.44	4.55	27.76	19.77	94.842	Vertical	Pass
		2535	-3.51	4.69	27.72	19.52	89.536	Vertical	Pass
		2565	-3.55	4.72	27.70	19.43	87.700	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-3.99	4.55	27.77	19.23	83.753	Vertical	Pass
		2535	-3.47	4.69	27.72	19.56	90.365	Vertical	Pass
		2562.5	-2.89	4.72	27.69	20.08	101.859	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2510	-3.70	4.57	27.78	19.51	89.331	Vertical	Pass
		2535	-3.31	4.73	27.72	19.68	92.897	Vertical	Pass
		2560	-3.16	4.75	27.68	19.77	94.842	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	Cable Loss	Antenna Gain	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)	Average	Average	Of Max. ERP	
						(dBm)	(mW)		
5.0MHz	1/#Mid	2502.5	-2.98	4.54	27.75	20.23	105.439	Horizontal	Pass
Band 16		2535	-2.67	4.69	27.72	20.36	108.643	Horizontal	Pass
QAM		2567.5	-2.75	4.71	27.71	20.25	105.925	Horizontal	Pass
10.0MHz	1/#Mid	2505	-2.87	4.55	27.76	20.34	108.143	Horizontal	Pass
Band 16		2535	-2.88	4.69	27.72	20.15	103.514	Horizontal	Pass
QAM		2565	-3.15	4.72	27.70	19.83	96.161	Horizontal	Pass
15.0MHz	1/#Mid	2507.5	-3.05	4.55	27.77	20.17	103.992	Horizontal	Pass
Band 16		2535	-3.02	4.69	27.72	20.01	100.231	Horizontal	Pass
QAM		2562.5	-2.63	4.72	27.69	20.34	108.143	Horizontal	Pass
20.0MHz	1/#Mid	2510	-2.93	4.57	27.78	20.28	106.660	Horizontal	Pass
Band 16		2535	-2.60	4.73	27.72	20.39	109.396	Horizontal	Pass
QAM		2560	-2.70	4.75	27.68	20.23	105.439	Horizontal	Pass
5.0MHz	1/#Mid	2502.5	-3.11	4.54	27.75	20.10	102.329	Vertical	Pass
Band 16		2535	-3.31	4.69	27.72	19.72	93.756	Vertical	Pass
QAM		2567.5	-4.78	4.71	27.71	18.22	66.374	Vertical	Pass
10.0MHz	1/#Mid	2505	-4.97	4.55	27.76	18.24	66.681	Vertical	Pass
Band 16		2535	-3.45	4.69	27.72	19.58	90.782	Vertical	Pass
QAM		2565	-4.47	4.72	27.70	18.51	70.958	Vertical	Pass
15.0MHz	1/#Mid	2507.5	-4.23	4.55	27.77	18.99	79.250	Vertical	Pass
Band 16		2535	-2.97	4.69	27.72	20.06	101.391	Vertical	Pass
QAM		2562.5	-3.19	4.72	27.69	19.78	95.060	Vertical	Pass
20.0MHz	1/#Mid	2510	-3.38	4.57	27.78	19.83	96.161	Vertical	Pass
Band 16		2535	-3.33	4.73	27.72	19.66	92.470	Vertical	Pass
QAM		2560	-2.95	4.75	27.68	19.98	99.541	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 12

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Gain	Correction	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	Of Max. ERP	
							(dBm)	(mW)		
1.4MHz Band QPSK	1/#Mid	699.7	6.45	1.91	19.21	2.15	21.60	144.544	Vertical	Pass
		707.5	6.11	1.91	19.26	2.15	21.31	135.207	Vertical	Pass
		715.3	5.39	1.93	19.34	2.15	20.65	116.145	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	700.5	5.93	1.91	19.21	2.15	21.08	128.233	Vertical	Pass
		707.5	5.70	1.91	19.26	2.15	20.90	123.027	Vertical	Pass
		714.5	5.93	1.93	19.34	2.15	21.19	131.522	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	701.5	5.99	1.91	19.23	2.15	21.16	130.617	Vertical	Pass
		707.5	6.03	1.91	19.26	2.15	21.23	132.739	Vertical	Pass
		713.5	5.45	1.92	19.33	2.15	20.71	117.761	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	704	5.54	1.91	19.25	2.15	20.73	118.304	Vertical	Pass
		707.5	5.87	1.91	19.26	2.15	21.07	127.938	Vertical	Pass
		711	5.85	1.92	19.32	2.15	21.10	128.825	Vertical	Pass
1.4MHz Band QPSK	1/#Mid	699.7	6.13	1.91	19.21	2.15	21.28	134.276	Horizontal	Pass
		707.5	5.47	1.91	19.26	2.15	20.67	116.681	Horizontal	Pass
		715.3	5.67	1.93	19.34	2.15	20.93	123.880	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	700.5	5.71	1.91	19.21	2.15	20.86	121.899	Horizontal	Pass
		707.5	5.72	1.91	19.26	2.15	20.92	123.595	Horizontal	Pass
		714.5	6.38	1.93	19.34	2.15	21.64	145.881	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	701.5	6.36	1.91	19.23	2.15	21.53	142.233	Horizontal	Pass
		707.5	6.46	1.91	19.26	2.15	21.66	146.555	Horizontal	Pass
		713.5	5.95	1.92	19.33	2.15	21.21	132.130	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	704	6.82	1.91	19.25	2.15	22.01	158.855	Horizontal	Pass
		707.5	5.66	1.91	19.26	2.15	20.86	121.899	Horizontal	Pass
		711	5.86	1.92	19.32	2.15	21.11	129.122	Horizontal	Pass

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Gain	Correction	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	Of Max. ERP	
							(dBm)	(mW)		
1.4MHz Band 16 QAM	1/#Mid	699.7	6.23	1.91	19.21	2.15	21.38	137.404	Vertical	Pass
		707.5	5.97	1.91	19.26	2.15	21.17	130.918	Vertical	Pass
		715.3	5.40	1.93	19.34	2.15	20.66	116.413	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	6.17	1.91	19.21	2.15	21.32	135.519	Vertical	Pass
		707.5	6.36	1.91	19.26	2.15	21.56	143.219	Vertical	Pass
		714.5	6.77	1.93	19.34	2.15	22.03	159.588	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	6.68	1.91	19.23	2.15	21.85	153.109	Vertical	Pass
		707.5	6.43	1.91	19.26	2.15	21.63	145.546	Vertical	Pass
		713.5	6.46	1.92	19.33	2.15	21.72	148.594	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	704	6.99	1.91	19.25	2.15	22.18	165.196	Vertical	Pass
		707.5	6.00	1.91	19.26	2.15	21.20	131.826	Vertical	Pass
		711	6.66	1.92	19.32	2.15	21.91	155.239	Vertical	Pass
1.4MHz Band 16 QAM	1/#Mid	699.7	5.77	1.91	19.21	2.15	20.92	123.595	Horizontal	Pass
		707.5	6.00	1.91	19.26	2.15	21.20	131.826	Horizontal	Pass
		715.3	6.54	1.93	19.34	2.15	21.80	151.356	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	700.5	6.75	1.91	19.21	2.15	21.90	154.882	Horizontal	Pass
		707.5	7.04	1.91	19.26	2.15	22.24	167.494	Horizontal	Pass
		714.5	6.64	1.93	19.34	2.15	21.90	154.882	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	701.5	6.73	1.91	19.23	2.15	21.90	154.882	Horizontal	Pass
		707.5	6.50	1.91	19.26	2.15	21.70	147.911	Horizontal	Pass
		713.5	6.50	1.92	19.33	2.15	21.76	149.968	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	704	7.10	1.91	19.25	2.15	22.29	169.434	Horizontal	Pass
		707.5	6.68	1.91	19.26	2.15	21.88	154.170	Horizontal	Pass
		711	6.41	1.92	19.32	2.15	21.66	146.555	Horizontal	Pass

Note:

SG Level= Signal generator output

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

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

8.7 LTE BAND 17

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Gain	Correction	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)		Average	Average	Of Max. ERP	
							(dBm)	(mW)		
5.0MHz	1/#Mid	706.5	7.32	1.91	19.23	2.15	22.49	177.419	Vertical	Pass
Band		710	7.18	1.91	19.26	2.15	22.38	172.982	Vertical	Pass
QPSK		713.5	7.08	1.92	19.33	2.15	22.34	171.396	Vertical	Pass
10.0MHz	1/#Mid	709	7.33	1.91	19.25	2.15	22.52	178.649	Vertical	Pass
Band		710	7.28	1.91	19.26	2.15	22.48	177.011	Vertical	Pass
QPSK		711	7.24	1.92	19.32	2.15	22.49	177.419	Vertical	Pass
5.0MHz	1/#Mid	706.5	6.58	1.91	19.23	2.15	21.75	149.624	Horizontal	Pass
Band		710	6.42	1.91	19.26	2.15	21.62	145.211	Horizontal	Pass
QPSK		713.5	6.68	1.92	19.33	2.15	21.94	156.315	Horizontal	Pass
10.0MHz	1/#Mid	709	5.69	1.91	19.25	2.15	20.88	122.462	Horizontal	Pass
Band		710	5.29	1.91	19.26	2.15	20.49	111.944	Horizontal	Pass
QPSK		711	6.62	1.92	19.32	2.15	21.87	153.815	Horizontal	Pass

Radiated Power (ERP) for Band 17										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Gain		Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)	(dBm)	(dB)		Average	Average		
							(dBm)	(mW)		
5.0MHz Band 16 QAM	1/#Mid	706.5	6.67	1.91	19.23	2.15	21.84	152.757	Vertical	Pass
		710	6.58	1.91	19.26	2.15	21.78	150.661	Vertical	Pass
		713.5	6.38	1.92	19.33	2.15	21.64	145.881	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	709	6.21	1.91	19.25	2.15	21.40	138.038	Vertical	Pass
		710	6.74	1.91	19.26	2.15	21.94	156.315	Vertical	Pass
		711	6.47	1.92	19.32	2.15	21.72	148.594	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	706.5	5.76	1.91	19.23	2.15	20.93	123.880	Horizontal	Pass
		710	5.32	1.91	19.26	2.15	20.52	112.720	Horizontal	Pass
		713.5	5.52	1.92	19.33	2.15	20.78	119.674	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	709	5.12	1.91	19.25	2.15	20.31	107.399	Horizontal	Pass
		710	5.72	1.91	19.26	2.15	20.92	123.595	Horizontal	Pass
		711	5.67	1.92	19.32	2.15	20.92	123.595	Horizontal	Pass

Note:

SG Level= Signal generator output

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

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

8.8 LTE BAND 25

Radiated Power (EIRP) for Band 25									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			Level			Average	Average		
			(dBm)			(dBm)	(mW)		
1.4MHz Band QPSK	1/#Mid	1850.7	-4.10	3.12	27.58	20.36	108.643	Horizontal	Pass
		1882,5	-3.82	3.27	27.61	20.52	112.720	Horizontal	Pass
		1914.3	-3.90	3.29	27.63	20.44	110.662	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-5.19	3.13	27.61	19.29	84.918	Horizontal	Pass
		1882,5	-5.71	3.27	27.61	18.63	72.946	Horizontal	Pass
		1913.5	-5.71	3.30	27.62	18.61	72.611	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-4.66	3.13	27.63	19.84	96.383	Horizontal	Pass
		1882,5	-6.03	3.27	27.61	18.31	67.764	Horizontal	Pass
		1912.5	-3.91	3.30	27.60	20.39	109.396	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-4.64	3.15	27.64	19.85	96.605	Horizontal	Pass
		1882,5	-3.98	3.31	27.61	20.32	107.647	Horizontal	Pass
		1910	-3.69	3.33	27.59	20.57	114.025	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-5.00	3.15	27.65	19.50	89.125	Horizontal	Pass
		1882,5	-3.88	3.31	27.61	20.42	110.154	Horizontal	Pass
		1907.5	-4.09	3.33	27.57	20.15	103.514	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-5.39	3.17	27.66	19.10	81.283	Horizontal	Pass
		1882,5	-3.72	3.32	27.61	20.57	114.025	Horizontal	Pass
		1905	-4.08	3.36	27.56	20.12	102.802	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-3.72	3.12	27.58	20.74	118.577	Vertical	Pass
		1882,5	-4.96	3.27	27.61	19.38	86.696	Vertical	Pass
		1914.3	-5.17	3.29	27.63	19.17	82.604	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-4.11	3.13	27.61	20.37	108.893	Vertical	Pass
		1882,5	-4.03	3.27	27.61	20.31	107.399	Vertical	Pass
		1913.5	-4.02	3.30	27.62	20.30	107.152	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-5.49	3.13	27.63	19.01	79.616	Vertical	Pass
		1882,5	-4.32	3.27	27.61	20.02	100.462	Vertical	Pass
		1912.5	-5.15	3.30	27.60	19.15	82.224	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1855	-5.25	3.15	27.64	19.24	83.946	Vertical	Pass
		1882,5	-5.64	3.31	27.61	18.66	73.451	Vertical	Pass
		1910	-3.98	3.33	27.59	20.28	106.660	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1857.5	-4.99	3.15	27.65	19.51	89.331	Vertical	Pass
		1882,5	-4.70	3.31	27.61	19.60	91.201	Vertical	Pass
		1907.5	-4.73	3.33	27.57	19.51	89.331	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1860	-4.48	3.17	27.66	20.01	100.231	Vertical	Pass
		1882,5	-3.44	3.32	27.61	20.85	121.619	Vertical	Pass
		1905	-3.49	3.36	27.56	20.71	117.761	Vertical	Pass

Radiated Power (EIRP) for Band 25									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
						Average	Average		
						(dBm)	(mW)		
1.4MHz Band 16 QAM	1/##Mid	1850.7	-4.64	3.12	27.58	19.82	95.940	Horizontal	Pass
		1882,5	-4.96	3.27	27.61	19.38	86.696	Horizontal	Pass
		1914.3	-4.63	3.29	27.63	19.71	93.541	Horizontal	Pass
3.0MHz Band 16 QAM	1/##Mid	1851.5	-4.92	3.13	27.61	19.56	90.365	Horizontal	Pass
		1882,5	-5.87	3.27	27.61	18.47	70.307	Horizontal	Pass
		1913.5	-4.93	3.30	27.62	19.39	86.896	Horizontal	Pass
5.0MHz Band 16 QAM	1/##Mid	1852.5	-4.91	3.13	27.63	19.59	90.991	Horizontal	Pass
		1882,5	-5.32	3.27	27.61	19.02	79.799	Horizontal	Pass
		1912.5	-4.23	3.30	27.60	20.07	101.625	Horizontal	Pass
10.0MHz Band 16 QAM	1/##Mid	1855	-4.77	3.15	27.64	19.72	93.756	Horizontal	Pass
		1882,5	-4.86	3.31	27.61	19.44	87.902	Horizontal	Pass
		1910	-5.13	3.33	27.59	19.13	81.846	Horizontal	Pass
15.0MHz Band 16 QAM	1/##Mid	1857.5	-4.77	3.15	27.65	19.73	93.972	Horizontal	Pass
		1882,5	-4.69	3.31	27.61	19.61	91.411	Horizontal	Pass
		1907.5	-4.49	3.33	27.57	19.75	94.406	Horizontal	Pass
20.0MHz Band 16 QAM	1/##Mid	1860	-4.78	3.17	27.66	19.71	93.541	Horizontal	Pass
		1882,5	-3.86	3.32	27.61	20.43	110.408	Horizontal	Pass
		1905	-4.69	3.36	27.56	19.51	89.331	Horizontal	Pass
1.4MHz Band 16 QAM	1/##Mid	1850.7	-4.63	3.12	27.58	19.83	96.161	Vertical	Pass
		1882,5	-4.02	3.27	27.61	20.32	107.647	Vertical	Pass
		1914.3	-4.85	3.29	27.63	19.49	88.920	Vertical	Pass
3.0MHz Band 16 QAM	1/##Mid	1851.5	-5.00	3.13	27.61	19.48	88.716	Vertical	Pass
		1882,5	-5.92	3.27	27.61	18.42	69.502	Vertical	Pass
		1913.5	-4.90	3.30	27.62	19.42	87.498	Vertical	Pass
5.0MHz Band 16 QAM	1/##Mid	1852.5	-4.90	3.13	27.63	19.60	91.201	Vertical	Pass
		1882,5	-4.89	3.27	27.61	19.45	88.105	Vertical	Pass
		1912.5	-5.12	3.30	27.60	19.18	82.794	Vertical	Pass
10.0MHz Band 16 QAM	1/##Mid	1855	-4.43	3.15	27.64	20.06	101.391	Vertical	Pass
		1882,5	-4.88	3.31	27.61	19.42	87.498	Vertical	Pass
		1910	-4.24	3.33	27.59	20.02	100.462	Vertical	Pass
15.0MHz Band 16 QAM	1/##Mid	1857.5	-4.38	3.15	27.65	20.12	102.802	Vertical	Pass
		1882,5	-4.86	3.31	27.61	19.44	87.902	Vertical	Pass
		1907.5	-4.07	3.33	27.57	20.17	103.992	Vertical	Pass

20.0MHz	1/#Mid	1860	-3.76	3.17	27.66	20.73	118.304	Vertical	Pass
Band 16		1882,5	-4.53	3.32	27.61	19.76	94.624	Vertical	Pass
QAM		1905	-4.00	3.36	27.56	20.20	104.713	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)

8.9 LTE BAND 26 A

Radiated Power (ERP) for Band 26(814MHz~824MHz)										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Gain	Correction	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)	(dBm)	(dB)	(dB)	Average (dBm)	Average (mW)		
1.4MHz Band QPSK	1/#Mid	814.7	5.20	2.01	19.68	2.15	20.72	118.032	Vertical	Pass
		819	4.27	2.01	19.77	2.15	19.88	97.275	Vertical	Pass
		823.3	3.26	2.02	19.82	2.15	18.91	77.804	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	815.5	4.80	2.01	19.70	2.15	20.34	108.143	Vertical	Pass
		819	4.51	2.01	19.77	2.15	20.12	102.802	Vertical	Pass
		822.5	3.48	2.02	19.81	2.15	19.12	81.658	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	816.5	4.03	2.01	19.71	2.15	19.58	90.782	Vertical	Pass
		819	4.87	2.01	19.77	2.15	20.48	111.686	Vertical	Pass
		821.5	3.77	2.02	19.79	2.15	19.39	86.896	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	819	4.98	2.01	19.73	2.15	20.55	113.501	Vertical	Pass
1.4MHz Band QPSK	1/#Mid	814.7	4.88	2.01	19.68	2.15	20.40	109.648	Horizontal	Pass
		819	4.32	2.01	19.77	2.15	19.93	98.401	Horizontal	Pass
		823.3	4.14	2.02	19.82	2.15	19.79	95.280	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	815.5	4.45	2.01	19.70	2.15	19.99	99.770	Horizontal	Pass
		819	4.79	2.01	19.77	2.15	20.40	109.648	Horizontal	Pass
		822.5	4.44	2.02	19.81	2.15	20.08	101.859	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	816.5	4.74	2.01	19.71	2.15	20.29	106.905	Horizontal	Pass
		819	5.03	2.01	19.77	2.15	20.64	115.878	Horizontal	Pass
		821.5	5.05	2.02	19.79	2.15	20.67	116.681	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	819	5.42	2.01	19.73	2.15	20.99	125.603	Horizontal	Pass

Radiated Power (ERP) for Band 26(814MHz~824MHz)										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss (dBm)	Antenna Gain (dB)	Correction	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			(dB)	Average	Average		
							(dBm)	(mW)		
1.4MHz Band 16 QAM	1/##Mid	814.7	4.54	2.01	19.68	2.15	20.06	101.391	Vertical	Pass
		819	4.15	2.01	19.77	2.15	19.76	94.624	Vertical	Pass
		823.3	3.25	2.02	19.82	2.15	18.90	77.625	Vertical	Pass
3.0MHz Band 16 QAM	1/##Mid	815.5	4.60	2.01	19.70	2.15	20.14	103.276	Vertical	Pass
		819	4.70	2.01	19.77	2.15	20.31	107.399	Vertical	Pass
		822.5	4.02	2.02	19.81	2.15	19.66	92.470	Vertical	Pass
5.0MHz Band 16 QAM	1/##Mid	816.5	4.38	2.01	19.71	2.15	19.93	98.401	Vertical	Pass
		819	4.51	2.01	19.77	2.15	20.12	102.802	Vertical	Pass
		821.5	4.71	2.02	19.79	2.15	20.33	107.895	Vertical	Pass
10.0MHz Band 16 QAM	1/##Mid	819	4.82	2.01	19.73	2.15	20.39	109.396	Vertical	Pass
1.4MHz Band 16 QAM	1/##Mid	814.7	4.64	2.01	19.68	2.15	20.16	103.753	Horizontal	Pass
		819	4.94	2.01	19.77	2.15	20.55	113.501	Horizontal	Pass
		823.3	4.90	2.02	19.82	2.15	20.55	113.501	Horizontal	Pass
3.0MHz Band 16 QAM	1/##Mid	815.5	5.06	2.01	19.70	2.15	20.60	114.815	Horizontal	Pass
		819	4.75	2.01	19.77	2.15	20.36	108.643	Horizontal	Pass
		822.5	4.80	2.02	19.81	2.15	20.44	110.662	Horizontal	Pass
5.0MHz Band 16 QAM	1/##Mid	816.5	4.77	2.01	19.71	2.15	20.32	107.647	Horizontal	Pass
		819	4.63	2.01	19.77	2.15	20.24	105.682	Horizontal	Pass
		821.5	3.65	2.02	19.79	2.15	19.27	84.528	Horizontal	Pass
10.0MHz Band 16 QAM	1/##Mid	819	5.17	2.01	19.73	2.15	20.74	118.577	Horizontal	Pass

8.10 LTE BAND 26B

Radiated Power (ERP) for Band 26(824MHz~849MHz)										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Gain	Correction	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	Of Max. ERP	
							(dBm)	(mW)		
1.4MHz Band QPSK	1/#Mid	824.7	6.70	2.01	19.68	2.15	22.22	166.725	Vertical	Pass
		836.5	5.55	2.01	19.77	2.15	21.16	130.617	Vertical	Pass
		848.3	4.56	2.02	19.82	2.15	20.21	104.954	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	825.5	6.28	2.01	19.70	2.15	21.82	152.055	Vertical	Pass
		836.5	5.64	2.01	19.77	2.15	21.25	133.352	Vertical	Pass
		847.5	5.13	2.02	19.81	2.15	20.77	119.399	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	826.5	5.42	2.01	19.71	2.15	20.97	125.026	Vertical	Pass
		836.5	6.28	2.01	19.77	2.15	21.89	154.525	Vertical	Pass
		846.5	4.99	2.02	19.79	2.15	20.61	115.080	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	829	6.03	2.01	19.73	2.15	21.60	144.544	Vertical	Pass
		836.5	6.31	2.01	19.77	2.15	21.92	155.597	Vertical	Pass
		844	5.83	2.02	19.78	2.15	21.44	139.316	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	831.5	6.21	2.01	19.73	2.15	21.78	150.661	Vertical	Pass
		836.5	6.31	2.01	19.77	2.15	21.92	155.597	Vertical	Pass
		841.5	6.14	2.02	19.78	2.15	21.75	149.624	Vertical	Pass
1.4MHz Band QPSK	1/#Mid	824.7	6.16	2.01	19.68	2.15	21.68	147.231	Horizontal	Pass
		836.5	5.40	2.01	19.77	2.15	21.01	126.183	Horizontal	Pass
		848.3	5.52	2.02	19.82	2.15	21.17	130.918	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	825.5	5.93	2.01	19.70	2.15	21.47	140.281	Horizontal	Pass
		836.5	5.86	2.01	19.77	2.15	21.47	140.281	Horizontal	Pass
		847.5	5.78	2.02	19.81	2.15	21.42	138.676	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	826.5	6.10	2.01	19.71	2.15	21.65	146.218	Horizontal	Pass
		836.5	6.30	2.01	19.77	2.15	21.91	155.239	Horizontal	Pass
		846.5	6.51	2.02	19.79	2.15	22.13	163.305	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	829	6.92	2.01	19.73	2.15	22.49	177.419	Horizontal	Pass
		836.5	5.24	2.01	19.77	2.15	20.85	121.619	Horizontal	Pass
		844	5.48	2.02	19.78	2.15	21.09	128.529	Horizontal	Pass

15.0MHz	1/#Mid	831.5	6.64	2.01	19.73	2.15	22.21	166.341	Horizontal	Pass
Band		836.5	7.02	2.01	19.77	2.15	22.63	183.231	Horizontal	Pass
QPSK		841.5	6.58	2.02	19.78	2.15	22.19	165.577	Horizontal	Pass

Radiated Power (ERP) for Band 26(824MHz~849MHz)										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Gain	Correction	Max. EIRP	Max. EIRP	Polarization	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	Of Max. ERP	
							(dBm)	(mW)		
1.4MHz	1/#Mid	824.7	6.50	2.01	19.68	2.15	22.02	159.221	Vertical	Pass
Band 16		836.5	6.07	2.01	19.77	2.15	21.68	147.231	Vertical	Pass
QAM		848.3	5.55	2.02	19.82	2.15	21.20	131.826	Vertical	Pass
3.0MHz	1/#Mid	825.5	6.62	2.01	19.70	2.15	22.16	164.437	Vertical	Pass
Band 16		836.5	6.71	2.01	19.77	2.15	22.32	170.608	Vertical	Pass
QAM		847.5	6.29	2.02	19.81	2.15	21.93	155.955	Vertical	Pass
5.0MHz	1/#Mid	826.5	6.48	2.01	19.71	2.15	22.03	159.588	Vertical	Pass
Band 16		836.5	6.50	2.01	19.77	2.15	22.11	162.555	Vertical	Pass
QAM		846.5	6.62	2.02	19.79	2.15	22.24	167.494	Vertical	Pass
10.0MHz	1/#Mid	829	7.02	2.01	19.73	2.15	22.59	181.552	Vertical	Pass
Band 16		836.5	6.42	2.01	19.77	2.15	22.03	159.588	Vertical	Pass
QAM		844	7.09	2.02	19.78	2.15	22.70	186.209	Vertical	Pass
15.0MHz	1/#Mid	831.5	6.76	2.01	19.73	2.15	22.33	171.002	Vertical	Pass
Band 16		836.5	6.39	2.01	19.77	2.15	22.00	158.489	Vertical	Pass
QAM		841.5	7.23	2.02	19.78	2.15	22.84	192.309	Vertical	Pass
1.4MHz	1/#Mid	824.7	6.72	2.01	19.68	2.15	22.24	167.494	Horizontal	Pass
Band 16		836.5	6.71	2.01	19.77	2.15	22.32	170.608	Horizontal	Pass
QAM		848.3	6.61	2.02	19.82	2.15	22.26	168.267	Horizontal	Pass
3.0MHz	1/#Mid	825.5	6.81	2.01	19.70	2.15	22.35	171.791	Horizontal	Pass
Band 16		836.5	6.74	2.01	19.77	2.15	22.35	171.791	Horizontal	Pass
QAM		847.5	6.67	2.02	19.81	2.15	22.31	170.216	Horizontal	Pass
5.0MHz	1/#Mid	826.5	6.65	2.01	19.71	2.15	22.20	165.959	Horizontal	Pass
Band 16		836.5	6.55	2.01	19.77	2.15	22.16	164.437	Horizontal	Pass
QAM		846.5	5.88	2.02	19.79	2.15	21.50	141.254	Horizontal	Pass
10.0MHz	1/#Mid	829	6.30	2.01	19.73	2.15	21.87	153.815	Horizontal	Pass
Band 16		836.5	7.01	2.01	19.77	2.15	22.62	182.810	Horizontal	Pass
QAM		844	6.81	2.02	19.78	2.15	22.42	174.582	Horizontal	Pass

15.0MHz	1/#Mid	831.5	7.42	2.01	19.73	2.15	22.99	199.067	Horizontal	Pass
Band 16		836.5	7.32	2.01	19.77	2.15	22.93	196.336	Horizontal	Pass
QAM		841.5	6.82	2.02	19.78	2.15	22.43	174.985	Horizontal	Pass

Note:

SG Level= Signal generator output

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

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

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 $43 + 10 \log_{10}(p)$, 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 Band 2
LTE Band 4
- ☐ LTE Band 5
LTE Band 7
LTE Band 12
LTE Band 17
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	-51.59	4.04	33.51	-22.12	-13	-9.12	Horizontal
3701.4	-46.49	4.04	33.51	-17.02	-13	-4.02	Vertical
5552.1	-52.73	5.24	35.84	-22.13	-13	-9.13	Vertical
5552.1	-50.04	5.24	35.84	-19.44	-13	-6.44	Horizontal
188.6	-37.79	1.43	16.02	-23.20	-13	-10.20	Vertical
269.6	-38.46	1.30	17.99	-21.77	-13	-8.77	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-44.15	4.04	33.56	-14.63	-13	-1.63	Horizontal
3760.0	-44.82	4.04	33.56	-15.30	-13	-2.30	Vertical
5640.0	-47.41	5.24	35.91	-16.74	-13	-3.74	Vertical
5640.0	-50.52	5.24	35.91	-19.85	-13	-6.85	Horizontal
202.2	-43.34	1.62	16.97	-27.99	-13	-14.99	Vertical
394.7	-42.66	1.74	15.98	-28.43	-13	-15.43	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-49.03	4.04	34.00	-19.07	-13	-6.07	Horizontal
3818.6	-49.86	4.04	34.00	-19.90	-13	-6.90	Vertical
5727.9	-50.25	5.24	36.04	-19.45	-13	-6.45	Vertical
5727.9	-52.09	5.24	36.04	-21.29	-13	-8.29	Horizontal
203.6	-36.96	1.42	17.29	-21.09	-13	-8.09	Vertical
460.0	-37.31	1.50	17.90	-20.90	-13	-7.90	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	-44.88	4.07	33.54	-15.41	-13	-2.41	Horizontal
3720.0	-52.32	4.07	33.54	-22.85	-13	-9.85	Vertical
5580.0	-46.13	5.28	35.86	-15.55	-13	-2.55	Vertical
5580.0	-53.53	5.28	35.86	-22.95	-13	-9.95	Horizontal
199.4	-42.63	1.58	16.89	-27.31	-13	-14.31	Vertical
392.0	-39.97	1.76	17.26	-24.47	-13	-11.47	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-45.12	4.04	33.56	-15.60	-13	-2.60	Horizontal
3760.0	-48.69	4.04	33.56	-19.17	-13	-6.17	Vertical
5640.0	-49.29	5.24	35.91	-18.62	-13	-5.62	Vertical
5640.0	-53.40	5.24	35.91	-22.73	-13	-9.73	Horizontal
212.3	-39.18	1.46	16.27	-24.37	-13	-11.37	Vertical
325.5	-35.20	1.59	15.15	-21.64	-13	-8.64	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-51.07	4.04	34.00	-21.11	-13	-8.11	Horizontal
3800.0	-49.07	4.04	34.00	-19.11	-13	-6.11	Vertical
5700.0	-48.68	5.24	36.04	-17.88	-13	-4.88	Vertical
5700.0	-52.08	5.24	36.04	-21.28	-13	-8.28	Horizontal
198.9	-44.89	1.36	17.39	-28.85	-13	-15.85	Vertical
444.6	-34.15	1.66	15.39	-20.42	-13	-7.42	Horizontal

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

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

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

9.2 LTE BAND 4

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

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	-46.46	4.02	29.80	-20.68	-13	-7.68	Horizontal
3421.4	-52.53	4.02	29.80	-26.75	-13	-13.75	Vertical
5132.1	-53.38	5.24	35.84	-22.78	-13	-9.78	Vertical
5132.1	-49.37	5.24	35.84	-18.77	-13	-5.77	Horizontal
203.9	-41.50	1.68	16.04	-27.14	-13	-14.14	Vertical
234.7	-36.95	1.78	17.74	-20.99	-13	-7.99	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-47.37	4.03	30.00	-21.40	-13	-8.40	Horizontal
3465.0	-53.99	4.03	30.00	-28.02	-13	-15.02	Vertical
5197.5	-46.21	5.25	35.86	-15.60	-13	-2.60	Vertical
5197.5	-49.62	5.25	35.86	-19.01	-13	-6.01	Horizontal
197.5	-37.85	1.72	17.69	-21.88	-13	-8.88	Vertical
292.2	-36.76	1.62	16.02	-22.35	-13	-9.35	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-46.91	4.05	30.01	-20.95	-13	-7.95	Horizontal
3508.6	-49.43	4.05	30.01	-23.47	-13	-10.47	Vertical
5262.9	-48.37	5.26	35.86	-17.77	-13	-4.77	Vertical
5262.9	-51.81	5.26	35.86	-21.21	-13	-8.21	Horizontal
188.1	-35.19	1.80	16.69	-20.30	-13	-7.30	Vertical
424.9	-35.11	1.75	16.66	-20.21	-13	-7.21	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	-48.32	4.02	29.80	-22.54	-13	-9.54	Horizontal
3440.0	-48.12	4.02	29.80	-22.34	-13	-9.34	Vertical
5160.0	-46.18	5.24	35.84	-15.58	-13	-2.58	Vertical
5160.0	-51.88	5.24	35.84	-21.28	-13	-8.28	Horizontal
204.0	-42.43	1.57	17.26	-26.74	-13	-13.74	Vertical
464.3	-34.33	1.78	16.35	-19.76	-13	-6.76	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-49.37	4.03	30.00	-23.40	-13	-10.40	Horizontal
3465.0	-53.57	4.03	30.00	-27.60	-13	-14.60	Vertical
5197.5	-52.04	5.25	35.86	-21.43	-13	-8.43	Vertical
5197.5	-53.14	5.25	35.86	-22.53	-13	-9.53	Horizontal
198.2	-44.71	1.44	17.95	-28.20	-13	-15.20	Vertical
293.8	-42.81	1.65	16.09	-28.37	-13	-15.37	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-45.46	2.91	27.68	-20.69	-13	-7.69	Horizontal
3490.0	-52.56	2.91	27.68	-27.79	-13	-14.79	Vertical
5235.0	-51.76	5.26	35.86	-21.16	-13	-8.16	Vertical
5235.0	-52.59	5.26	35.86	-21.99	-13	-8.99	Horizontal
186.7	-42.98	1.61	16.85	-27.74	-13	-14.74	Vertical
292.2	-41.46	1.61	15.19	-27.88	-13	-14.88	Horizontal

Note: P_{Mea}(dBm)= Power(dBm)+ AR_{pl} (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.

9.3 LTE BAND 5

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

Test Results for Low Channel 824.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1649.4	-45.31	2.78	27.50	-20.59	-13	-7.59	Horizontal
1649.4	-44.99	2.78	27.50	-20.27	-13	-7.27	Vertical
2474.1	-44.08	2.90	27.80	-19.18	-13	-6.18	Vertical
2474.1	-50.25	2.90	27.80	-25.35	-13	-12.35	Horizontal
186.0	-43.54	1.76	17.59	-27.71	-13	-14.71	Vertical
339.7	-42.44	1.63	15.87	-28.20	-13	-15.20	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-46.01	2.80	27.48	-21.33	-13	-8.33	Horizontal
1673.0	-45.60	2.80	27.48	-20.92	-13	-7.92	Vertical
2509.5	-44.60	2.91	27.70	-19.81	-13	-6.81	Vertical
2509.5	-50.61	2.91	27.70	-25.82	-13	-12.82	Horizontal
197.2	-43.38	1.61	15.68	-29.31	-13	-16.31	Vertical
381.0	-38.64	1.59	17.52	-22.72	-13	-9.72	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-44.78	2.82	27.43	-20.17	-13	-7.17	Horizontal
1696.6	-44.33	2.82	27.43	-19.72	-13	-6.72	Vertical
2544.9	-50.57	2.92	27.74	-25.75	-13	-12.75	Vertical
2544.9	-50.35	2.92	27.74	-25.53	-13	-12.53	Horizontal
197.9	-44.80	1.69	16.67	-29.81	-13	-16.81	Vertical
255.8	-35.66	1.70	17.18	-20.18	-13	-7.18	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	-45.82	2.78	27.50	-21.10	-13	-8.10	Horizontal
1658.0	-52.44	2.78	27.50	-27.72	-13	-14.72	Vertical
2487.0	-48.23	2.90	27.80	-23.33	-13	-10.33	Vertical
2487.0	-53.44	2.90	27.80	-28.54	-13	-15.54	Horizontal
198.4	-41.31	1.71	15.57	-27.45	-13	-14.45	Vertical
405.4	-39.19	1.34	16.40	-24.13	-13	-11.13	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-48.89	2.80	27.48	-24.21	-13	-11.21	Horizontal
1673.0	-45.61	2.80	27.48	-20.93	-13	-7.93	Vertical
2509.5	-45.18	2.91	27.70	-20.39	-13	-7.39	Vertical
2509.5	-50.83	2.91	27.70	-26.04	-13	-13.04	Horizontal
186.0	-34.25	1.44	17.04	-18.65	-13	-5.65	Vertical
416.7	-35.15	1.76	17.62	-19.29	-13	-6.29	Horizontal
Test Results for High Channel 844MHz							
1688.0	-49.94	2.82	27.43	-25.33	-13	-12.33	Horizontal
1688.0	-45.40	2.82	27.43	-20.79	-13	-7.79	Vertical
2532.0	-50.94	2.92	27.74	-26.12	-13	-13.12	Vertical
2532.0	-50.26	2.92	27.74	-25.44	-13	-12.44	Horizontal
197.9	-39.71	1.74	17.70	-23.75	-13	-10.75	Vertical
310.9	-39.39	1.41	17.46	-23.33	-13	-10.33	Horizontal

Note: P_{Mea}(dBm)= Power(dBm)+ AR_{pl} (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
5005.0	-63.50	5.23	35.81	-32.92	-25	-7.92	Horizontal
5005.0	-59.91	5.23	35.81	-29.33	-25	-4.33	Vertical
7507.5	-63.19	5.67	36.85	-32.01	-25	-7.01	Vertical
7507.5	-64.07	5.67	36.85	-32.89	-25	-7.89	Horizontal
198.7	-49.67	1.73	17.97	-33.43	-25	-8.43	Vertical
300.9	-52.58	1.38	15.11	-38.85	-25	-13.85	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-60.96	5.23	35.82	-30.37	-25	-5.37	Horizontal
5070.0	-64.87	5.23	35.82	-34.28	-25	-9.28	Vertical
7605.0	-60.87	5.67	36.85	-29.69	-25	-4.69	Vertical
7605.0	-63.61	5.67	36.85	-32.43	-25	-7.43	Horizontal
200.7	-50.90	1.77	16.17	-36.49	-25	-11.49	Vertical
233.9	-51.84	1.63	15.21	-38.26	-25	-13.26	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-63.21	5.24	35.83	-32.62	-25	-7.62	Horizontal
5135.0	-64.41	5.24	35.83	-33.82	-25	-8.82	Vertical
7702.5	-63.47	5.68	36.87	-32.28	-25	-7.28	Vertical
7702.5	-60.92	5.68	36.87	-29.73	-25	-4.73	Horizontal
177.4	-47.27	1.58	17.56	-31.29	-25	-6.29	Vertical
408.5	-52.43	1.45	16.58	-37.30	-25	-12.30	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	-59.53	5.23	35.82	-28.94	-25	-3.94	Horizontal
5020.0	-60.02	5.23	35.82	-29.43	-25	-4.43	Vertical
7530.0	-64.54	5.67	36.86	-33.35	-25	-8.35	Vertical
7530.0	-62.14	5.67	36.86	-30.95	-25	-5.95	Horizontal
211.3	-48.58	1.63	15.76	-34.45	-25	-9.45	Vertical
247.2	-51.30	1.71	15.44	-37.57	-25	-12.57	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-60.25	5.23	35.82	-29.66	-25	-4.66	Horizontal
5070.0	-64.81	5.23	35.82	-34.22	-25	-9.22	Vertical
7605.0	-63.02	5.67	36.85	-31.84	-25	-6.84	Vertical
7605.0	-61.85	5.67	36.85	-30.67	-25	-5.67	Horizontal
196.5	-45.30	1.79	16.84	-30.24	-25	-5.24	Vertical
421.5	-51.07	1.71	17.64	-35.14	-25	-10.14	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-59.97	5.24	35.83	-29.38	-25	-4.38	Horizontal
5120.0	-64.77	5.24	35.83	-34.18	-25	-9.18	Vertical
7680.0	-59.02	5.70	36.88	-27.84	-25	-2.84	Vertical
7680.0	-61.21	5.70	36.88	-30.03	-25	-5.03	Horizontal
184.4	-45.35	1.79	16.84	-30.29	-25	-5.29	Vertical
410.3	-44.27	1.71	17.64	-28.34	-25	-3.34	Horizontal

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

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

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

9.5 LTE BAND 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	-44.87	2.60	27.20	-20.27	-13	-7.27	Horizontal
1399.4	-48.37	2.60	27.20	-23.77	-13	-10.77	Vertical
2099.1	-53.37	2.85	27.54	-28.68	-13	-15.68	Vertical
2099.1	-52.23	2.85	27.54	-27.54	-13	-14.54	Horizontal
188.5	-43.47	1.49	17.78	-27.18	-13	-14.18	Vertical
316.5	-40.66	1.36	17.33	-24.69	-13	-11.69	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-45.78	2.61	27.28	-21.11	-13	-8.11	Horizontal
1415.0	-46.58	2.61	27.28	-21.91	-13	-8.91	Vertical
2122.5	-53.71	2.87	27.59	-28.99	-13	-15.99	Vertical
2122.5	-50.67	2.87	27.59	-25.95	-13	-12.95	Horizontal
196.5	-41.09	1.73	15.74	-27.08	-13	-14.08	Vertical
354.1	-38.85	1.62	15.79	-24.68	-13	-11.68	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-50.29	2.63	27.28	-25.64	-13	-12.64	Horizontal
1430.6	-50.12	2.63	27.28	-25.47	-13	-12.47	Vertical
2145.9	-50.65	2.88	27.60	-25.93	-13	-12.93	Vertical
2145.9	-49.81	2.88	27.60	-25.09	-13	-12.09	Horizontal
212.2	-44.51	1.61	18.00	-28.12	-13	-15.12	Vertical
434.2	-40.03	1.45	15.49	-26.00	-13	-13.00	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	-45.97	2.61	27.26	-21.32	-13	-8.32	Horizontal
1408.0	-45.51	2.61	27.26	-20.86	-13	-7.86	Vertical
2112.0	-52.83	2.87	27.58	-28.12	-13	-15.12	Vertical
2112.0	-53.85	2.87	27.58	-29.14	-13	-16.14	Horizontal
185.6	-44.33	1.31	16.97	-28.67	-13	-15.67	Vertical
303.5	-36.37	1.65	16.70	-21.32	-13	-8.32	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-46.87	2.61	27.28	-22.20	-13	-9.20	Horizontal
1415.0	-46.77	2.61	27.28	-22.10	-13	-9.10	Vertical
2122.5	-45.95	2.87	27.59	-21.23	-13	-8.23	Vertical
2122.5	-52.12	2.87	27.59	-27.40	-13	-14.40	Horizontal
202.3	-36.57	1.72	17.99	-20.30	-13	-7.30	Vertical
254.8	-42.16	1.73	17.94	-25.95	-13	-12.95	Horizontal
Test Results for High Channel 711MHz							
1422.0	-49.46	2.62	27.28	-24.80	-13	-11.80	Horizontal
1422.0	-51.52	2.62	27.28	-26.86	-13	-13.86	Vertical
2133.0	-45.09	2.87	27.60	-20.36	-13	-7.36	Vertical
2133.0	-53.82	2.87	27.60	-29.09	-13	-16.09	Horizontal
203.9	-36.66	1.58	15.93	-22.31	-13	-9.31	Vertical
342.1	-44.57	1.36	15.59	-30.34	-13	-17.34	Horizontal

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

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

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

9.6 LTE BAND 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	-45.72	2.61	27.28	-21.05	-13	-8.05	Horizontal
1413.0	-49.54	2.61	27.28	-24.87	-13	-11.87	Vertical
2119.5	-50.42	2.87	27.59	-25.70	-13	-12.70	Vertical
2119.5	-53.22	2.87	27.59	-28.50	-13	-15.50	Horizontal
175.2	-42.29	1.71	16.15	-27.85	-13	-14.85	Vertical
356.1	-41.18	1.41	17.32	-25.27	-13	-12.27	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-51.54	2.62	27.30	-26.86	-13	-13.86	Horizontal
1420.0	-44.99	2.62	27.30	-20.31	-13	-7.31	Vertical
2130.0	-46.51	2.87	27.62	-21.76	-13	-8.76	Vertical
2130.0	-52.43	2.87	27.62	-27.68	-13	-14.68	Horizontal
187.2	-34.83	1.42	15.25	-21.01	-13	-8.01	Vertical
403.9	-39.01	1.36	17.19	-23.18	-13	-10.18	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-48.07	2.66	27.28	-23.45	-13	-10.45	Horizontal
1427.0	-52.52	2.66	27.28	-27.90	-13	-14.90	Vertical
2140.5	-51.30	2.88	27.60	-26.58	-13	-13.58	Vertical
2140.5	-53.68	2.88	27.60	-28.96	-13	-15.96	Horizontal
186.2	-40.44	1.32	17.29	-24.47	-13	-11.47	Vertical
257.1	-37.32	1.72	16.89	-22.15	-13	-9.15	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	-53.37	2.62	27.30	-28.69	-13	-15.69	Horizontal
1418.0	-45.20	2.62	27.30	-20.52	-13	-7.52	Vertical
2127.0	-52.78	2.87	27.62	-28.03	-13	-15.03	Vertical
2127.0	-52.94	2.87	27.62	-28.19	-13	-15.19	Horizontal
204.4	-35.03	1.35	16.91	-19.47	-13	-6.47	Vertical
364.4	-34.13	1.62	16.31	-19.44	-13	-6.44	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-50.26	2.62	27.30	-25.58	-13	-12.58	Horizontal
1420.0	-46.62	2.62	27.30	-21.94	-13	-8.94	Vertical
2130.0	-52.18	2.87	27.62	-27.43	-13	-14.43	Vertical
2130.0	-50.91	2.87	27.62	-26.16	-13	-13.16	Horizontal
187.2	-36.96	1.51	17.14	-21.33	-13	-8.33	Vertical
342.7	-41.79	1.77	16.88	-26.68	-13	-13.68	Horizontal
Test Results for High Channel 711MHz							
1422.0	-52.79	2.62	27.30	-28.11	-13	-15.11	Horizontal
1422.0	-46.85	2.62	27.30	-22.17	-13	-9.17	Vertical
2133.0	-50.52	2.87	27.62	-25.77	-13	-12.77	Vertical
2133.0	-52.54	2.87	27.62	-27.79	-13	-14.79	Horizontal
191.9	-41.52	1.78	15.95	-27.35	-13	-14.35	Vertical
279.3	-35.60	1.34	17.95	-19.00	-13	-6.00	Horizontal

Note: P_{Mea}(dBm)= Power(dBm)+ AR_{pl} (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.

9.7 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	-47.01	4.02	29.80	-21.23	-13	-8.23	Horizontal
3701.4	-48.55	4.02	29.80	-22.77	-13	-9.77	Vertical
5552.1	-48.87	5.24	35.84	-18.27	-13	-5.27	Vertical
5552.1	-48.59	5.24	35.84	-17.99	-13	-4.99	Horizontal
93.9	-33.03	1.59	15.11	-19.51	-13	-6.51	Vertical
119.7	-33.84	1.80	15.61	-20.03	-13	-7.03	Horizontal
Test Results for Mid Channel 1732.5MHz							
3765.0	-49.23	4.03	30.00	-23.26	-13	-10.26	Horizontal
3765.0	-45.94	4.03	30.00	-19.97	-13	-6.97	Vertical
5647.5	-49.27	5.25	35.86	-18.66	-13	-5.66	Vertical
5647.5	-48.41	5.25	35.86	-17.80	-13	-4.80	Horizontal
166.1	-32.02	1.37	15.62	-17.77	-13	-4.77	Vertical
274.4	-34.96	1.55	17.51	-19.00	-13	-6.00	Horizontal
Test Results for High Channel 1754.3MHz							
3828.6	-47.36	4.05	30.01	-21.40	-13	-8.40	Horizontal
3828.6	-43.69	4.05	30.01	-17.73	-13	-4.73	Vertical
5742.9	-47.94	5.26	35.86	-17.34	-13	-4.34	Vertical
5742.9	-46.22	5.26	35.86	-15.62	-13	-2.62	Horizontal
108.6	-32.23	1.66	17.19	-16.70	-13	-3.70	Vertical
138.7	-34.02	1.35	17.94	-17.43	-13	-4.43	Horizontal

QPSK EIRP POWER FOR LTE BAND 25 (20MHZ BANDWIDTH)

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3720.0	-49.01	4.02	29.80	-23.23	-13	-10.23	Horizontal
3720.0	-43.96	4.02	29.80	-18.18	-13	-5.18	Vertical
5580.0	-48.58	5.24	35.84	-17.98	-13	-4.98	Vertical
5580.0	-47.86	5.24	35.84	-17.26	-13	-4.26	Horizontal
146.2	-33.09	1.70	15.24	-19.55	-13	-6.55	Vertical
215.4	-33.51	1.42	16.58	-18.35	-13	-5.35	Horizontal
Test Results for Mid Channel 1732.5MHz							
3765.0	-46.93	4.03	30.00	-20.96	-13	-7.96	Horizontal
3765.0	-46.61	4.03	30.00	-20.64	-13	-7.64	Vertical
5647.5	-49.07	5.25	35.86	-18.46	-13	-5.46	Vertical
5647.5	-46.13	5.25	35.86	-15.52	-13	-2.52	Horizontal
132.2	-33.65	1.64	16.16	-19.13	-13	-6.13	Vertical
133.3	-33.88	1.62	17.37	-18.13	-13	-5.13	Horizontal
Test Results for High Channel 1745MHz							
3810.0	-48.97	2.91	27.68	-24.20	-13	-11.20	Horizontal
3810.0	-45.18	2.91	27.68	-20.41	-13	-7.41	Vertical
5715.0	-49.27	5.26	35.86	-18.67	-13	-5.67	Vertical
5715.0	-48.15	5.26	35.86	-17.55	-13	-4.55	Horizontal
212.6	-34.61	1.49	15.29	-20.81	-13	-7.81	Vertical
275.8	-32.69	1.79	16.42	-18.06	-13	-5.06	Horizontal

9.8 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	-46.03	2.78	27.50	-21.31	-13	-8.31	Horizontal
1629.4	-46.09	2.78	27.50	-21.37	-13	-8.37	Vertical
2444.1	-48.33	2.90	27.80	-23.43	-13	-10.43	Vertical
2444.1	-46.58	2.90	27.80	-21.68	-13	-8.68	Horizontal
229.6	-34.75	1.54	16.98	-19.31	-13	-6.31	Vertical
83.3	-34.35	1.47	15.82	-20.00	-13	-7.00	Horizontal
Test Results For Mid Channel 819MHz							
1638.0	-49.90	2.80	27.48	-25.22	-13	-12.22	Horizontal
1638.0	-44.42	2.80	27.48	-19.74	-13	-6.74	Vertical
2457.0	-46.69	2.91	27.70	-21.90	-13	-8.90	Vertical
2457.0	-47.63	2.91	27.70	-22.84	-13	-9.84	Horizontal
168.2	-33.58	1.74	16.19	-19.13	-13	-6.13	Vertical
92.9	-33.65	1.46	15.43	-19.68	-13	-6.68	Horizontal
Test Results for High Channel 823.3MHz							
1646.6	-49.20	2.82	27.43	-24.59	-13	-11.59	Horizontal
1646.6	-42.45	2.82	27.43	-17.84	-13	-4.84	Vertical
2469.9	-48.02	2.92	27.74	-23.20	-13	-10.20	Vertical
2469.9	-48.12	2.92	27.74	-23.30	-13	-10.30	Horizontal
213.1	-32.53	1.67	17.05	-17.15	-13	-4.15	Vertical
121.7	-34.60	1.42	16.12	-19.90	-13	-6.90	Horizontal

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

Test Results for Channel 819MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1638.0	-47.01	2.78	27.50	-22.29	-13	-9.29	Horizontal
1638.0	-49.78	2.78	27.50	-25.06	-13	-12.06	Vertical
2457.0	-49.36	2.90	27.80	-24.46	-13	-11.46	Vertical
2457.0	-49.76	2.90	27.80	-24.86	-13	-11.86	Horizontal
253.7	-33.57	1.43	17.34	-17.66	-13	-4.66	Vertical
256.8	-34.48	1.56	15.71	-20.33	-13	-7.33	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	-49.63	2.78	27.50	-24.91	-13	-11.91	Horizontal
1649.4	-48.61	2.78	27.50	-23.89	-13	-10.89	Vertical
2474.1	-46.12	2.90	27.80	-21.22	-13	-8.22	Vertical
2474.1	-47.41	2.90	27.80	-22.51	-13	-9.51	Horizontal
237.0	-33.54	1.33	17.34	-17.53	-13	-4.53	Vertical
180.5	-33.16	1.47	16.80	-17.83	-13	-4.83	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-48.16	2.80	27.48	-23.48	-13	-10.48	Horizontal
1673.0	-49.57	2.80	27.48	-24.89	-13	-11.89	Vertical
2509.5	-47.63	2.91	27.70	-22.84	-13	-9.84	Vertical
2509.5	-48.84	2.91	27.70	-24.05	-13	-11.05	Horizontal
140.8	-32.18	1.75	15.46	-18.47	-13	-5.47	Vertical
90.6	-32.94	1.52	16.14	-18.32	-13	-5.32	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-48.79	2.82	27.43	-24.18	-13	-11.18	Horizontal
1696.6	-49.11	2.82	27.43	-24.50	-13	-11.50	Vertical
2544.9	-46.58	2.92	27.74	-21.76	-13	-8.76	Vertical
2544.9	-47.41	2.92	27.74	-22.59	-13	-9.59	Horizontal
171.4	-34.13	1.67	16.09	-19.71	-13	-6.71	Vertical
247.2	-33.73	1.80	17.55	-17.98	-13	-4.98	Horizontal

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

Test Results for Low Channel 831.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1663.0	-46.26	2.78	27.50	-21.54	-13	-8.54	Horizontal
1663.0	-47.99	2.78	27.50	-23.27	-13	-10.27	Vertical
2494.5	-47.74	2.90	27.80	-22.84	-13	-9.84	Vertical
2494.5	-46.18	2.90	27.80	-21.28	-13	-8.28	Horizontal
255.4	-32.08	1.52	15.72	-17.88	-13	-4.88	Vertical
163.1	-33.99	1.40	17.03	-18.36	-13	-5.36	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-49.17	2.80	27.48	-24.49	-13	-11.49	Horizontal
1673.0	-49.94	2.80	27.48	-25.26	-13	-12.26	Vertical
2509.5	-49.45	2.91	27.70	-24.66	-13	-11.66	Vertical
2509.5	-46.40	2.91	27.70	-21.61	-13	-8.61	Horizontal
227.1	-33.27	1.74	16.38	-18.63	-13	-5.63	Vertical
101.3	-34.51	1.79	15.20	-21.10	-13	-8.10	Horizontal
Test Results for High Channel 841.5MHz							
1683.0	-48.66	2.82	27.43	-24.05	-13	-11.05	Horizontal
1683.0	-47.11	2.82	27.43	-22.50	-13	-9.50	Vertical
2524.5	-48.23	2.92	27.74	-23.41	-13	-10.41	Vertical
2524.5	-48.68	2.92	27.74	-23.86	-13	-10.86	Horizontal
261.1	-32.51	1.78	17.44	-16.85	-13	-3.85	Vertical
120.1	-32.18	1.70	15.93	-17.95	-13	-4.95	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 ± 2.5 ppm for mobile stations.

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

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- ☐ Temp. = -30° to $+50^{\circ}\text{C}$
- ☐ 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°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 12
LTE Band 17
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]
BAND 2 QPSK, (CH 18900 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.4	1880	12.7	0.006734	2.5
3.85	1880	13.3	0.007088	2.5
4.2	1880	13.0	0.006905	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 2 QPSK, (CH 18900 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	1880	12.3	0.006537	2.5
Extreme (50C)	1880	11.5	0.006104	2.5
Extreme (40C)	1880	13.6	0.007229	2.5
Extreme (30C)	1880	13.5	0.007180	2.5
Extreme (10C)	1880	14.4	0.007640	2.5
Extreme (0C)	1880	12.1	0.006420	2.5
Extreme (-10C)	1880	12.5	0.006660	2.5
Extreme (-20C)	1880	14.0	0.007423	2.5
Extreme (-30C)	1880	15.1	0.008027	2.5

16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 2 16QAM, (CH 18900 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.4	1880	10.0	0.005321	2.5
3.85	1880	8.5	0.004541	2.5
4.2	1880	8.1	0.004298	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 2 16QAM, (CH 18900 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	1880	9.8	0.005217	2.5
Extreme (50C)	1880	8.5	0.004510	2.5
Extreme (40C)	1880	8.2	0.004365	2.5
Extreme (30C)	1880	9.1	0.004844	2.5
Extreme (10C)	1880	8.7	0.004653	2.5
Extreme (0C)	1880	8.0	0.004281	2.5
Extreme (-10C)	1880	9.5	0.005053	2.5
Extreme (-20C)	1880	8.5	0.004514	2.5
Extreme (-30C)	1880	7.9	0.004218	2.5

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

10.2 LTE BAND 4

QPSK, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 4 QPSK, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.4	1732.5	9.0	0.005184	2.5
3.85	1732.5	9.0	0.005179	2.5
4.2	1732.5	8.3	0.004812	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 4 QPSK, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	1732.5	8.8	0.005094	2.5
Extreme (50C)	1732.5	9.2	0.005287	2.5
Extreme (40C)	1732.5	7.7	0.004422	2.5
Extreme (30C)	1732.5	5.6	0.003259	2.5
Extreme (10C)	1732.5	7.0	0.004014	2.5
Extreme (0C)	1732.5	9.7	0.005587	2.5
Extreme (-10C)	1732.5	8.2	0.004736	2.5
Extreme (-20C)	1732.5	6.7	0.003840	2.5
Extreme (-30C)	1732.5	8.6	0.004992	2.5

16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 4 16QAM, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.4	1732.5	10.0	0.005790	2.5
3.85	1732.5	9.3	0.005395	2.5
4.2	1732.5	7.8	0.004473	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 4 16QAM, (CH 20175 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	1732.5	10.1	0.005832	2.5
Extreme (50C)	1732.5	9.2	0.005307	2.5
Extreme (40C)	1732.5	7.8	0.004524	2.5
Extreme (30C)	1732.5	9.3	0.005381	2.5
Extreme (10C)	1732.5	8.6	0.004977	2.5
Extreme (0C)	1732.5	8.4	0.004850	2.5
Extreme (-10C)	1732.5	8.8	0.005052	2.5
Extreme (-20C)	1732.5	8.4	0.004877	2.5
Extreme (-30C)	1732.5	8.1	0.004687	2.5

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

10.3 LTE BAND 5

QPSK, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 5 QPSK, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	836.5	5.4	0.006428	2.5
3.85	836.5	7.1	0.008547	2.5
4.2	836.5	4.4	0.005304	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 5 QPSK, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	836.5	6.0	0.007214	2.5
Extreme (50C)	836.5	5.5	0.006531	2.5
Extreme (40C)	836.5	5.7	0.006809	2.5
Extreme (30C)	836.5	6.4	0.007643	2.5
Extreme (10C)	836.5	5.8	0.006943	2.5
Extreme (0C)	836.5	5.6	0.006713	2.5
Extreme (-10C)	836.5	6.1	0.007275	2.5
Extreme (-20C)	836.5	6.0	0.007222	2.5
Extreme (-30C)	836.5	6.3	0.007490	2.5

16QAM, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 5 16QAM, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	836.5	6.2	0.007352	2.5
3.85	836.5	6.9	0.008201	2.5
4.2	836.5	4.7	0.005645	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 5 16QAM, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	836.5	6.1	0.007275	2.5
Extreme (50C)	836.5	5.5	0.006584	2.5
Extreme (40C)	836.5	6.0	0.007120	2.5
Extreme (30C)	836.5	6.0	0.007142	2.5
Extreme (10C)	836.5	5.0	0.006037	2.5
Extreme (0C)	836.5	5.4	0.006486	2.5
Extreme (-10C)	836.5	6.0	0.007231	2.5
Extreme (-20C)	836.5	5.8	0.006878	2.5
Extreme (-30C)	836.5	6.5	0.007780	2.5

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

10.4 LTE BAND 7

QPSK, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 7 QPSK, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.4	2535	10.0	0.003928	2.5
3.85	2535	8.8	0.003472	2.5
4.2	2535	8.3	0.003255	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 7 QPSK, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	2535	9.0	0.003557	2.5
Extreme (50C)	2535	8.6	0.003383	2.5
Extreme (40C)	2535	8.8	0.003467	2.5
Extreme (30C)	2535	9.2	0.003631	2.5
Extreme (10C)	2535	8.6	0.003386	2.5
Extreme (0C)	2535	8.5	0.003338	2.5
Extreme (-10C)	2535	9.3	0.003663	2.5
Extreme (-20C)	2535	8.8	0.003475	2.5
Extreme (-30C)	2535	8.3	0.003258	2.5

16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 7 16QAM, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.4	2535	6.9	0.002722	2.5
3.85	2535	6.3	0.002493	2.5
4.2	2535	5.7	0.002268	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 7 16QAM, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	2535	6.9	0.002722	2.5
Extreme (50C)	2535	5.9	0.002340	2.5
Extreme (40C)	2535	5.3	0.002077	2.5
Extreme (30C)	2535	7.0	0.002750	2.5
Extreme (10C)	2535	5.2	0.002055	2.5
Extreme (0C)	2535	5.0	0.001985	2.5
Extreme (-10C)	2535	5.1	0.001999	2.5
Extreme (-20C)	2535	5.8	0.002279	2.5
Extreme (-30C)	2535	5.6	0.002201	2.5

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

10.5 LTE BAND 12

QPSK, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 12 QPSK, (CH 23095 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	707.5	9.1	0.012868	2.5
3.85	707.5	9.7	0.013722	2.5
4.2	707.5	8.3	0.011678	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 12 QPSK, (CH 23095 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	707.5	8.8	0.012394	2.5
Extreme (50C)	707.5	7.4	0.010430	2.5
Extreme (40C)	707.5	6.9	0.009796	2.5
Extreme (30C)	707.5	8.4	0.011868	2.5
Extreme (10C)	707.5	7.9	0.011160	2.5
Extreme (0C)	707.5	9.4	0.013236	2.5
Extreme (-10C)	707.5	8.6	0.012213	2.5
Extreme (-20C)	707.5	9.1	0.012834	2.5
Extreme (-30C)	707.5	7.7	0.010828	2.5

16QAM, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 12 16QAM, (CH 23095 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	707.5	7.3	0.010331	2.5
3.85	707.5	7.8	0.011077	2.5
4.2	707.5	7.6	0.010721	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 12 QPSK, (CH 23095 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	707.5	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

QPSK, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 17 QPSK, (CH 23790 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	710.0	9.9	0.013956	2.5
3.85	710.0	9.1	0.012794	2.5
4.2	710.0	8.0	0.011260	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 17 QPSK, (CH 23790 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	710.0	9.6	0.013475	2.5
Extreme (50C)	710.0	8.9	0.012512	2.5
Extreme (40C)	710.0	8.2	0.011527	2.5
Extreme (30C)	710.0	9.0	0.012706	2.5
Extreme (10C)	710.0	9.3	0.013149	2.5
Extreme (0C)	710.0	8.0	0.011305	2.5
Extreme (-10C)	710.0	9.1	0.012819	2.5
Extreme (-20C)	710.0	9.0	0.012732	2.5
Extreme (-30C)	710.0	8.0	0.011206	2.5

16QAM, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 17 16QAM, (CH 23790 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	710.0	10.2	0.014353	2.5
3.85	710.0	8.9	0.012563	2.5
4.2	710.0	8.0	0.011285	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 17 QPSK, (CH 23790 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	710.0	9.8	0.013753	2.5
Extreme (50C)	710.0	9.2	0.013003	2.5
Extreme (40C)	710.0	8.0	0.011317	2.5
Extreme (30C)	710.0	9.0	0.012615	2.5
Extreme (10C)	710.0	8.5	0.011910	2.5
Extreme (0C)	710.0	8.1	0.011348	2.5
Extreme (-10C)	710.0	9.5	0.013436	2.5
Extreme (-20C)	710.0	8.4	0.011865	2.5
Extreme (-30C)	710.0	8.7	0.012251	2.5

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

10.7 LTE BAND 25

QPSK, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 25 QPSK, (CH 26365 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.4	1882.5	8.5	0.004498	2.5
3.85	1882.5	7.9	0.004205	2.5
4.2	1882.5	9.0	0.004804	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 25 QPSK, (CH 26365 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	1882.5	8.6	0.004565	2.5
Extreme (50C)	1882.5	7.8	0.004138	2.5
Extreme (40C)	1882.5	9.0	0.004757	2.5
Extreme (30C)	1882.5	8.3	0.004397	2.5
Extreme (10C)	1882.5	8.7	0.004644	2.5
Extreme (0C)	1882.5	6.9	0.003676	2.5
Extreme (-10C)	1882.5	8.6	0.004578	2.5
Extreme (-20C)	1882.5	8.7	0.004621	2.5
Extreme (-30C)	1882.5	5.3	0.002800	2.5

16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 25 16QAM, (CH 26365 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
3.4	1882.5	7.3	0.003885	2.5
3.85	1882.5	9.0	0.004807	2.5
4.2	1882.5	0.0	0.000000	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 25 16QAM, (CH 26365 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	1882.5	8.4	0.004478	2.5
Extreme (50C)	1882.5	8.8	0.004683	2.5
Extreme (40C)	1882.5	8.2	0.004337	2.5
Extreme (30C)	1882.5	8.1	0.004290	2.5
Extreme (10C)	1882.5	6.8	0.003619	2.5
Extreme (0C)	1882.5	8.2	0.004377	2.5
Extreme (-10C)	1882.5	8.4	0.004467	2.5
Extreme (-20C)	1882.5	5.8	0.003075	2.5
Extreme (-30C)	1882.5	0.0	0.000000	2.5

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

10.8 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]
BAND 26A QPSK, (CH 26740 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	819	6.0	0.007370	2.5
3.85	819	7.3	0.008953	2.5
4.2	819	8.0	0.009766	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 26A QPSK, (CH 26740RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	819	5.4	0.006593	2.5
Extreme (50C)	819	7.6	0.009266	2.5
Extreme (40C)	819	6.1	0.007472	2.5
Extreme (30C)	819	7.3	0.008892	2.5
Extreme (10C)	819	7.8	0.009465	2.5
Extreme (0C)	819	6.6	0.008114	2.5
Extreme (-10C)	819	5.8	0.007093	2.5
Extreme (-20C)	819	6.1	0.007434	2.5
Extreme (-30C)	819	6.0	0.007315	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]
BAND 26A 16QAM, (CH 26740 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
3.4	819	8.9	0.010846	2.5
3.85	819	7.0	0.008562	2.5
4.2	819	9.8	0.012019	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 26A 16QAM, (CH 26740 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	819	8.5	0.010421	2.5
Extreme (50C)	819	7.7	0.009459	2.5
Extreme (40C)	819	8.6	0.010475	2.5
Extreme (30C)	819	8.4	0.010243	2.5
Extreme (10C)	819	8.3	0.010170	2.5
Extreme (0C)	819	6.1	0.007448	2.5
Extreme (-10C)	819	8.4	0.010278	2.5
Extreme (-20C)	819	8.9	0.010840	2.5
Extreme (-30C)	819	5.2	0.006294	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]
BAND 26B QPSK, (CH 26915 RB size 75 RB Offset 0 15MHz BANDWIDTH)				
3.4	836.5	8.1	0.009684	2.5
3.85	836.5	7.8	0.009289	2.5
4.2	836.5	9.4	0.011271	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 26B QPSK, (CH 26915 RB size 75 RB Offset 0 15MHz BANDWIDTH)				
Normal (25C)	836.5	8.7	0.010423	2.5
Extreme (50C)	836.5	8.3	0.009955	2.5
Extreme (40C)	836.5	8.1	0.009734	2.5
Extreme (30C)	836.5	7.8	0.009320	2.5
Extreme (10C)	836.5	8.8	0.010556	2.5
Extreme (0C)	836.5	7.0	0.008357	2.5
Extreme (-10C)	836.5	8.9	0.010699	2.5
Extreme (-20C)	836.5	8.8	0.010510	2.5
Extreme (-30C)	836.5	5.2	0.006216	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]
BAND 26B 16QAM, (CH 26915 RB size 75 RB Offset 0 15MHz BANDWIDTH)				
3.4	836.5	8.7	0.010343	2.5
3.85	836.5	7.2	0.008602	2.5
4.2	836.5	9.8	0.011689	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 26B 16QAM, (CH 26915 RB size 75 RB Offset 0 15MHz BANDWIDTH)				
Normal (25C)	836.5	8.8	0.010497	2.5
Extreme (50C)	836.5	8.0	0.009593	2.5
Extreme (40C)	836.5	8.1	0.009708	2.5
Extreme (30C)	836.5	7.7	0.009191	2.5
Extreme (10C)	836.5	8.6	0.010334	2.5
Extreme (0C)	836.5	6.1	0.007344	2.5
Extreme (-10C)	836.5	8.4	0.010048	2.5
Extreme (-20C)	836.5	8.8	0.010471	2.5
Extreme (-30C)	836.5	5.3	0.006317	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.

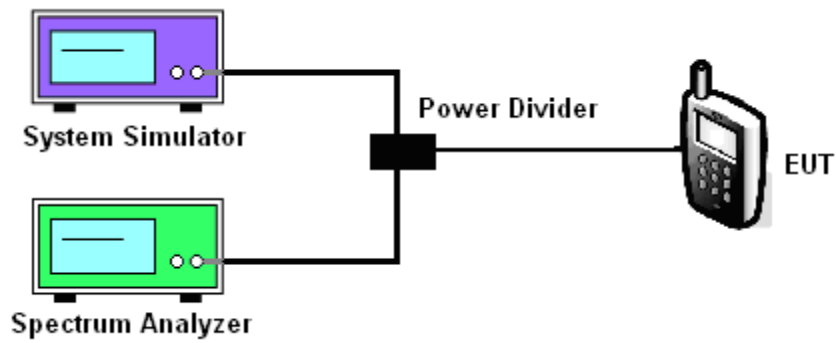
11.2 Measuring Instruments

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 12
- LTE Band 17
- LTE Band 25,
- LTE Band 26,

Test data reference attachment.

----END OF REPORT----