

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

FCC ID: 2A4Q3-RMP

Product: Rideshare Monitoring Platform
Trade Mark: Rideshare Monitoring Platform
Model Number: MODEL-T
Family Model: MODEL-C, MODEL-RV
Report No.: STR220120001006E

Prepared for

DisplayRide Inc

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Prepared by

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TEST RESULT CERTIFICATION

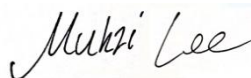
Applicant's name	DisplayRide Inc
Address	1187 Gardenside Ln, Cupertino, CA 95014 USA
Manufacturer's Name	DisplayRide Inc
Address	1187 Gardenside Ln, Cupertino, CA 95014 USA
Product name	Rideshare Monitoring Platform
Model and/or type reference ..	MODEL-T
Family Model:	MODEL-C, MODEL-RV
Standards	FCC CFR 47 Part 22H, Part 24E, Part 27
Test procedure	ANSI C63.26:2015 ANSI/TIA-603-E-2016

This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test	
Date (s) of performance of tests	Jan 20, 2022 ~Feb 25, 2022
Date of Issue	Feb 25, 2022
Test Result	Pass

Testing Engineer :



(Mukzi Lee)

Authorized Signatory :



(Alex Li)

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1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	Rideshare Monitoring Platform
Trade Mark	Rideshare Monitoring Platform
Model Name	MODEL-T
Family Model	MODEL-C, MODEL-RV
Model Difference	All the model are the same circuit and RF module, except the exterior color and model name difference.
FCC ID:	2A4Q3-RMP
Frequency Bands:	U.S. Bands: ☒ LTE FDD Band 2, 4, 5, 7, 12, 17,41
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 41 Uplink: 2535MHz-2665MHz,
Type of Modulation:	QPSK/16QAM
Power Class	Class 3
Antenna:	PIFA Antenna
Antenna gain:	2dBi
Adapter	INPUT: DC 12V 6P OUTPUT: DC 12V, 1A USB OUTPUT: DC 5V, 1.5A
Battery	DC 3.7V, 550mAh
Power supply	DC 3.7V from battery or DC 12V from car charger.
Extreme Vol. Limits:	DC 10.8V to DC 13.2V (Nominal DC 12V) (Note 1)
HW Version	CR002-MB-V1.1
SW Version	Displayride-MODEL-T-V4.0-20211231

** Note1: The High Voltage 13.2V and Low Voltage 10.8V 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: 2A4Q3-RMP** filing to comply with the FCC Part 22H&24E &27.

1.3 TEST METHODOLOGY

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

1.4 TEST FACILITY

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

ShenZhen NTEK Testing Technology Co., Ltd.

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

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

FCC Registration No.:463705

IC Registration No.:9270A-1,

CNAS Registration No.:L5516

MEASUREMENT UNCERTAINTY

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

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

1.5 SPECIAL ACCESSORIES

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

1.6 WORST-CASE CONFIGURATION AND MODE

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

The device has LTE Bands of: Band 2, Band 4, Band 5, Band 7, Band 12, Band 17, Band 41

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

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

1.6 SUMMARY OF TEST RESULTS

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

24.232(c) 27.50(h)(2), (d)(4) KDB 971168 D01 Clause 5.6	Equivalent Isotropic Radiated Power	PASS	
2.1053 22.917(a) 24.238(a) 27.53(g)(h)(m) KDB 971168 D01 Clause 7	Field Strength of Spurious Radiation	PASS	
2.1055 22.355 24.235 27.54 KDB 971168 D01 Clause 9	Frequency Stability for Temperature & Voltage	PASS	
2.1051 22.917(a) 24.238(a) 27.53(g)(h)(m) KDB 971168 D01 Clause 6	Conducted Emission	PASS	
Remark: 1. "N/A" denotes test is not applicable in this Test Report. 2. All test items were verified and recorded according to the standards and without any deviation during the test. 3. No modifications are made to the EUT during all test items.			

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	Rideshare Monitoring Platform	MODEL-T	FCC ID: 2A4Q3-RMP	EUT

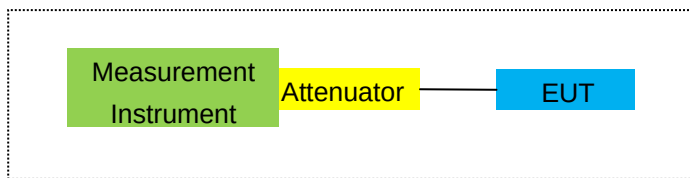
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

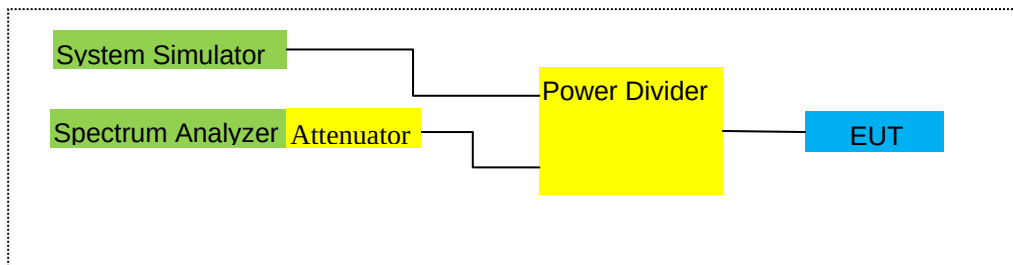
For Radiated Test Cases



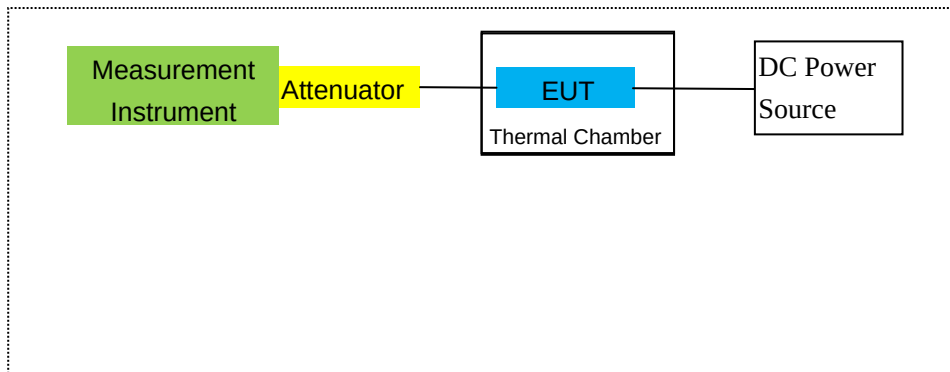
For Conducted Output Power



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



For Frequency Stability



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

3.TEST AND MEASUREMENT EQUIPMENT

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

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	MXA Signal Analyzer	Agilent	N9020A	MY49100060	2021.07.01	2022.06.30	1 year
2	Test Receiver	R&S	ESPI	101318	2021.04.27	2022.04.26	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2021.03.29	2022.03.28	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2020.05.11	2023.05.10	3 year
5	Horn Antenna	EM	EM-AH-10180	2011071402	2021.03.29	2022.03.28	1 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2021.11.07	2022.11.06	1 year
7	Amplifier	EM	EM-30180	060538	2021.07.01	2022.06.30	1 year
8	Loop Antenna	ARA	PLA-1030/B	1029	2021.04.27	2022.04.26	1 year
9	Power Meter	R&S	NRVS	100696	2021.07.01	2022.06.30	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2021.04.27	2022.04.26	1 year
11	Test Cable	N/A	R-01	N/A	2019.08.06	2022.08.05	3 year
12	Test Cable	N/A	R-02	N/A	2019.08.06	2022.08.05	3 year
13	Test Cable	N/A	R-03	N/A	2019.06.28	2022.06.27	3 year
14	Test Receiver	R&S	ESCI	101160	2021.04.27	2022.04.26	1 year
15	LISN	R&S	ENV216	101313	2021.04.27	2022.04.26	1 year
16	LISN	EMCO	3816/2	00042990	2021.04.27	2022.04.26	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2021.04.27	2022.04.26	1 year
18	Passive Voltage Probe	R&S	ESH2-Z3	100196	2021.04.27	2022.04.26	1 year
19	Test Cable	N/A	C01	N/A	2020.05.11	2023.05.10	3 year
20	Test Cable	N/A	C02	N/A	2020.05.11	2023.05.10	3 year
21	Test Cable	N/A	C03	N/A	2020.05.11	2023.05.10	3 year
22	Attenuator	MCE	24-10-34	BN9258	2020.04.07	2023.04.06	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
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

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

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

Network Signalling value	Requirements (sub-clause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	NA
NS_03	6.6.2.2.1	2, 4, 10, 23, 25, 35, 36	3	>5	≤ 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 Band2/4/5/7/12/17/41

RESULTS

PASS

Test data reference attachment.

6. BANDEDGE AND EMISSION MASK

RULE PART(S)

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

FCC: §2.1046, §22.913, §24.232

LIMITS

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

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

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

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

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

Per 27.53(m) for operations in the BRS/EBS bands, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth.

TEST PROCEDURE

The transmitter output was connected to a CMW500Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

For each band edge measurement:

Set the spectrum analyzer span to include the block edge frequency

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

Set display line

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

MODES TESTED

- ☐ LTE Band 2/4/5/7/12/17/41

RESULTS

Test data reference attachment.

7. OUT OF BAND EMISSIONS

RULE PART(S)

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

LIMITS

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

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

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

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

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

Per 27.53(m) for operations in the BRS/EBS bands, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth.

TEST PROCEDURE

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

For each out of band emissions measurement:

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

MODES TESTED

LTE Band 2/4/5/7/12/17/41

7.1 MEASUREMENT METHOD

The test set up and general procedure is similar to conducted peak output power test. Only different for setting the measurement configuration of the measuring instrument of Spectrum Analyzer.

Test data reference attachment.

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

8. RADIATED MEASUREMENT

8.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

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

LIMITS:

22.913(a) (2)- The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.
24.232 (c) Mobile and portable stations are limited to 2 watts EIRP.
27.50 (c) (10) the following power and antenna height requirements apply to stations transmitting in the 698–746 MHz band, the portable stations (hand-held devices) are limited to 3 watts ERP.
27.50 (b)(10) Portable stations (hand-held devices) transmitting in the 746–757 MHz, 758–763 MHz, 776–793 MHz, and 805–806 MHz bands are limited to 3 watts ERP.
27.50 (d)(4) The following power and antenna height requirements apply to stations transmitting in the 1710–1755 MHz and 2110–2155 MHz bands: Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.
27.50 (h)(2) Mobile and other user stations in the 2500–2570 MHz and 2620–2690 MHz bands. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

TEST PROCEDURE

ANSI/TIA-603-E Clause 2.2.17

KDB 971168 v02r01 RF power output using broadband peak and average power meter method.

KDB 971168 D01 Power Meas License Digital Systems v02r01, "Measurement Guidance for Certification of Licensed Digital Transmitters"

MODES TESTED

- ☐ LTE Band 2/4/5/7/12/17/41

RESULTS

Pass

8.2 LTE BAND 2

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result					Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP		
							Average		
							(mW)		
1.4MHz Band QPSK	1/#Mid	1850.7	-0.89	3.76	28.24	23.59	228.560	Horizontal	Pass
		1880	-0.73	3.91	28.22	23.58	228.034	Horizontal	Pass
		1909.3	-0.73	3.93	28.20	23.54	225.944	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-0.94	3.77	28.23	23.52	224.905	Horizontal	Pass
		1880	-0.89	3.91	28.24	23.44	220.800	Horizontal	Pass
		1908.5	-0.83	3.94	28.25	23.48	222.844	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-1.04	3.77	28.31	23.50	223.872	Horizontal	Pass
		1880	-0.84	3.91	28.22	23.47	222.331	Horizontal	Pass
		1907.5	-0.80	3.94	28.20	23.46	221.820	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1855	-1.06	3.79	28.33	23.48	222.844	Horizontal	Pass
		1880	-0.78	3.95	28.22	23.49	223.357	Horizontal	Pass
		1905	-0.70	3.97	28.19	23.52	224.905	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-1.05	3.79	28.34	23.50	223.872	Horizontal	Pass
		1880	-0.75	3.95	28.22	23.52	224.905	Horizontal	Pass
		1902.5	-0.63	3.97	28.18	23.58	228.034	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1860	-1.00	3.81	28.35	23.54	225.944	Horizontal	Pass
		1880	-0.71	3.96	28.22	23.55	226.464	Horizontal	Pass
		1900	-0.70	4.00	28.16	23.46	221.820	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1850.7	-0.90	3.76	28.24	23.58	228.034	Vertical	Pass
		1880	-0.74	3.91	28.22	23.57	227.510	Vertical	Pass
		1909.3	-0.81	3.93	28.20	23.46	221.820	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1851.5	-0.87	3.77	28.23	23.59	228.560	Vertical	Pass
		1880	-0.74	3.91	28.24	23.59	228.560	Vertical	Pass
		1908.5	-0.82	3.94	28.25	23.49	223.357	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1852.5	-0.95	3.77	28.31	23.59	228.560	Vertical	Pass
		1880	-0.89	3.91	28.22	23.42	219.786	Vertical	Pass
		1907.5	-0.68	3.94	28.20	23.58	228.034	Vertical	Pass
10.0MHz Band	1/#Mid	1855	-1.05	3.79	28.33	23.49	223.357	Vertical	Pass
		1880	-0.70	3.95	28.22	23.57	227.510	Vertical	Pass

QPSK		1905	-0.76	3.97	28.19	23.46	221.820	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	1857.5	-1.10	3.79	28.34	23.45	221.309	Vertical	Pass
		1880	-0.73	3.95	28.22	23.54	225.944	Vertical	Pass
		1902.5	-0.70	3.97	28.18	23.51	224.388	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1860	-0.89	3.81	28.35	23.65	231.739	Vertical	Pass
		1880	-0.66	3.96	28.22	23.60	229.087	Vertical	Pass
		1900	-0.55	4.00	28.16	23.61	229.615	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result					Polarization Of Max. ERP	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP		
							Average (mW)		
1.4MHz Band 16 QAM	1/#Mid	1850.7	-1.72	3.76	28.24	22.76	188.799	Horizontal	Pass
		1880	-1.59	3.91	28.22	22.72	187.068	Horizontal	Pass
		1909.3	-1.48	3.93	28.20	22.79	190.108	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-1.75	3.77	28.23	22.71	186.638	Horizontal	Pass
		1880	-1.69	3.91	28.24	22.64	183.654	Horizontal	Pass
		1908.5	-1.57	3.94	28.25	22.74	187.932	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-1.81	3.77	28.31	22.73	187.499	Horizontal	Pass
		1880	-1.58	3.91	28.22	22.73	187.499	Horizontal	Pass
		1907.5	-1.49	3.94	28.20	22.77	189.234	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-1.75	3.79	28.33	22.79	190.108	Horizontal	Pass
		1880	-1.57	3.95	28.22	22.70	186.209	Horizontal	Pass
		1905	-1.44	3.97	28.19	22.78	189.671	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1857.5	-1.83	3.79	28.34	22.72	187.068	Horizontal	Pass
		1880	-1.50	3.95	28.22	22.77	189.234	Horizontal	Pass
		1902.5	-1.49	3.97	28.18	22.72	187.068	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1860	-1.85	3.81	28.35	22.69	185.780	Horizontal	Pass
		1880	-1.54	3.96	28.22	22.72	187.068	Horizontal	Pass
		1900	-1.47	4.00	28.16	22.69	185.780	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1850.7	-1.70	3.76	28.24	22.78	189.671	Vertical	Pass
		1880	-1.60	3.91	28.22	22.71	186.638	Vertical	Pass
		1909.3	-1.48	3.93	28.20	22.79	190.108	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1851.5	-1.72	3.77	28.23	22.74	187.932	Vertical	Pass
		1880	-1.67	3.91	28.24	22.66	184.502	Vertical	Pass
		1908.5	-1.53	3.94	28.25	22.78	189.671	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1852.5	-1.87	3.77	28.31	22.67	184.927	Vertical	Pass
		1880	-1.61	3.91	28.22	22.70	186.209	Vertical	Pass
		1907.5	-1.50	3.94	28.20	22.76	188.799	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1855	-1.75	3.79	28.33	22.79	190.108	Vertical	Pass
		1880	-1.50	3.95	28.22	22.77	189.234	Vertical	Pass
		1905	-1.50	3.97	28.19	22.72	187.068	Vertical	Pass
15.0MHz Band	1/#Mid	1857.5	-1.91	3.79	28.34	22.64	183.654	Vertical	Pass
		1880	-1.62	3.95	28.22	22.65	184.077	Vertical	Pass

16 QAM		1902.5	-1.47	3.97	28.18	22.74	187.932	Vertical	Pass
20.0MH	1/#Mid	1860	-1.72	3.81	28.35	22.82	191.426	Vertical	Pass
z Band		1880	-1.43	3.96	28.22	22.83	191.867	Vertical	Pass
16 QAM		1900	-1.34	4.00	28.16	22.82	191.426	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/R B SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	1710.7	-1.13	3.12	27.58	23.33	215.278	Horizontal	Pass
		1732.5	-1.05	3.27	27.61	23.29	213.304	Horizontal	Pass
		1754.3	-1.01	3.29	27.63	23.33	215.278	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-1.18	3.13	27.61	23.30	213.796	Horizontal	Pass
		1732.5	-1.00	3.27	27.61	23.34	215.774	Horizontal	Pass
		1753.5	-0.95	3.30	27.62	23.37	217.270	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-1.14	3.13	27.63	23.36	216.770	Horizontal	Pass
		1732.5	-1.07	3.27	27.61	23.27	212.324	Horizontal	Pass
		1752.5	-0.94	3.30	27.60	23.36	216.770	Horizontal	Pass
10.0MH z Band QPSK	1/#Mid	1715	-1.11	3.15	27.64	23.38	217.771	Horizontal	Pass
		1732.5	-1.04	3.31	27.61	23.26	211.836	Horizontal	Pass
		1750	-0.98	3.33	27.59	23.28	212.814	Horizontal	Pass
15.0MH z Band QPSK	1/#Mid	1717.5	-1.25	3.15	27.65	23.25	211.349	Horizontal	Pass
		1732.5	-0.98	3.31	27.61	23.32	214.783	Horizontal	Pass
		1747.5	-0.91	3.33	27.57	23.33	215.278	Horizontal	Pass
20.0MH z Band QPSK	1/#Mid	1720	-1.25	3.17	27.66	23.24	210.863	Horizontal	Pass
		1732.5	-1.06	3.32	27.61	23.23	210.378	Horizontal	Pass
		1745	-0.84	3.36	27.56	23.36	216.770	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-1.20	3.12	27.58	23.26	211.836	Vertical	Pass
		1732.5	-0.94	3.27	27.61	23.40	218.776	Vertical	Pass
		1754.3	-1.06	3.29	27.63	23.28	212.814	Vertical	Pass

3.0MHz Band QPSK	1/#Mid	1711.5	-1.13	3.13	27.61	23.35	216.272	Vertical	Pass
		1732.5	-0.96	3.27	27.61	23.38	217.771	Vertical	Pass
		1753.5	-0.99	3.30	27.62	23.33	215.278	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-1.24	3.13	27.63	23.26	211.836	Vertical	Pass
		1732.5	-1.05	3.27	27.61	23.29	213.304	Vertical	Pass
		1752.5	-0.99	3.30	27.60	23.31	214.289	Vertical	Pass
10.0MHz z Band QPSK	1/#Mid	1715	-1.22	3.15	27.64	23.27	212.324	Vertical	Pass
		1732.5	-0.93	3.31	27.61	23.37	217.270	Vertical	Pass
		1750	-0.91	3.33	27.59	23.35	216.272	Vertical	Pass
15.0MHz z Band QPSK	1/#Mid	1717.5	-1.24	3.15	27.65	23.26	211.836	Vertical	Pass
		1732.5	-0.92	3.31	27.61	23.38	217.771	Vertical	Pass
		1747.5	-0.89	3.33	27.57	23.35	216.272	Vertical	Pass
20.0MHz z Band QPSK	1/#Mid	1720	-1.08	3.17	27.66	23.41	219.280	Vertical	Pass
		1732.5	-0.88	3.32	27.61	23.41	219.280	Vertical	Pass
		1745	-0.77	3.36	27.56	23.43	220.293	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/R B SIZE	Frequenc y	Result						Conclusio n
			SG Level (dBm)	Cable Loss (dBm)	Antenn a Gain (dB)	Max. EIRP	Max. EIRP	Polarizatio n Of Max. ERP	
						Averag e	Averag e		
						(dBm)	(mW)		
1.4MHz Band 16 QAM	1/#Mid	1710.7	-2.24	3.12	27.58	22.22	166.725	Horizontal	Pass
		1732.5	-2.04	3.27	27.61	22.30	169.824	Horizontal	Pass
		1754.3	-2.07	3.29	27.63	22.27	168.655	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-2.31	3.13	27.61	22.17	164.816	Horizontal	Pass
		1732.5	-2.05	3.27	27.61	22.29	169.434	Horizontal	Pass
		1753.5	-2.08	3.30	27.62	22.24	167.494	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-2.21	3.13	27.63	22.29	169.434	Horizontal	Pass
		1732.5	-2.12	3.27	27.61	22.22	166.725	Horizontal	Pass
		1752.5	-2.10	3.30	27.60	22.20	165.959	Horizontal	Pass
10.0MH z Band 16 QAM	1/#Mid	1715	-2.27	3.15	27.64	22.22	166.725	Horizontal	Pass
		1732.5	-2.02	3.31	27.61	22.28	169.044	Horizontal	Pass
		1750	-2.04	3.33	27.59	22.22	166.725	Horizontal	Pass
15.0MH z Band 16 QAM	1/#Mid	1717.5	-2.26	3.15	27.65	22.24	167.494	Horizontal	Pass
		1732.5	-2.05	3.31	27.61	22.25	167.880	Horizontal	Pass
		1747.5	-1.97	3.33	27.57	22.27	168.655	Horizontal	Pass
20.0MH z Band 16 QAM	1/#Mid	1720	-2.36	3.17	27.66	22.13	163.305	Horizontal	Pass
		1732.5	-2.15	3.32	27.61	22.14	163.682	Horizontal	Pass
		1745	-2.02	3.36	27.56	22.18	165.196	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-2.22	3.12	27.58	22.24	167.494	Vertical	Pass
		1732.5	-2.07	3.27	27.61	22.27	168.655	Vertical	Pass
		1754.3	-2.12	3.29	27.63	22.22	166.725	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-2.32	3.13	27.61	22.16	164.437	Vertical	Pass
		1732.5	-2.08	3.27	27.61	22.26	168.267	Vertical	Pass
		1753.5	-2.14	3.30	27.62	22.18	165.196	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-2.27	3.13	27.63	22.23	167.109	Vertical	Pass
		1732.5	-2.05	3.27	27.61	22.29	169.434	Vertical	Pass
		1752.5	-2.02	3.30	27.60	22.28	169.044	Vertical	Pass
10.0MH z Band 16 QAM	1/#Mid	1715	-2.33	3.15	27.64	22.16	164.437	Vertical	Pass
		1732.5	-2.10	3.31	27.61	22.20	165.959	Vertical	Pass
		1750	-2.04	3.33	27.59	22.22	166.725	Vertical	Pass
15.0MH	1/#Mid	1717.5	-2.25	3.15	27.65	22.25	167.880	Vertical	Pass

z Band		1732.5	-2.08	3.31	27.61	22.22	166.725	Vertical	Pass
16 QAM		1747.5	-2.00	3.33	27.57	22.24	167.494	Vertical	Pass
20.0MH	1/#Mid	1720	-2.16	3.17	27.66	22.33	171.002	Vertical	Pass
z Band		1732.5	-1.99	3.32	27.61	22.30	169.824	Vertical	Pass
16 QAM		1745	-1.85	3.36	27.56	22.35	171.791	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/R B SIZE	Frequen cy	Result							Conclu sion
			SG Leve l	Cabl e Loss (dB m)	Anten na Gain (dB)	Correcti on	Max. EIRP	Max. EIRP	Polarizati on Of Max. ERP	
						(dB)	Avera ge	Average		
							(dBm)	(mW)		
1.4MH z Band QPSK	1/#Mi d	824.7	7.96	2.01	19.68	2.15	23.48	222.844	Horizontal	Pass
		836.5	7.86	2.01	19.77	2.15	23.47	222.331	Horizontal	Pass
		848.3	7.75	2.02	19.82	2.15	23.40	218.776	Horizontal	Pass
3.0MH z Band QPSK	1/#Mi d	825.5	7.95	2.01	19.70	2.15	23.49	223.357	Horizontal	Pass
		836.5	7.81	2.01	19.77	2.15	23.42	219.786	Horizontal	Pass
		847.5	7.84	2.02	19.81	2.15	23.48	222.844	Horizontal	Pass
5.0MH z Band QPSK	1/#Mi d	826.5	7.80	2.01	19.71	2.15	23.35	216.272	Horizontal	Pass
		836.5	7.72	2.01	19.77	2.15	23.33	215.278	Horizontal	Pass
		846.5	7.77	2.02	19.79	2.15	23.39	218.273	Horizontal	Pass
10.0Hz Band QPSK	1/#Mi d	829	7.76	2.01	19.73	2.15	23.33	215.278	Horizontal	Pass
		836.5	7.71	2.01	19.77	2.15	23.32	214.783	Horizontal	Pass
		844	7.74	2.02	19.78	2.15	23.35	216.272	Horizontal	Pass
1.4MH z Band QPSK	1/#Mi d	824.7	7.85	2.01	19.68	2.15	23.37	217.270	Vertical	Pass
		836.5	7.80	2.01	19.77	2.15	23.41	219.280	Vertical	Pass
		848.3	7.72	2.02	19.82	2.15	23.37	217.270	Vertical	Pass
3.0MH z Band QPSK	1/#Mi d	825.5	7.81	2.01	19.70	2.15	23.35	216.272	Vertical	Pass
		836.5	7.88	2.01	19.77	2.15	23.49	223.357	Vertical	Pass
		847.5	7.75	2.02	19.81	2.15	23.39	218.273	Vertical	Pass
5.0MH z Band QPSK	1/#Mi d	826.5	7.83	2.01	19.71	2.15	23.38	217.771	Vertical	Pass
		836.5	7.72	2.01	19.77	2.15	23.33	215.278	Vertical	Pass
		846.5	7.75	2.02	19.79	2.15	23.37	217.270	Vertical	Pass
10.0M Hz Band QPSK	1/#Mi d	829	7.96	2.01	19.73	2.15	23.53	225.424	Vertical	Pass
		836.5	7.93	2.01	19.77	2.15	23.54	225.944	Vertical	Pass
		844	7.90	2.02	19.78	2.15	23.51	224.388	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 Of	
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	Max. ERP	
							(dBm)	(mW)		
1.4MHz Band 16QAM	1/#Midd	824.7	6.87	2.01	19.68	2.15	22.39	173.380	Horizontal	Pass
		836.5	6.65	2.01	19.77	2.15	22.26	168.267	Horizontal	Pass
		848.3	6.66	2.02	19.82	2.15	22.31	170.216	Horizontal	Pass
3.0MHz Band 16QAM	1/#Midd	825.5	6.85	2.01	19.70	2.15	22.39	173.380	Horizontal	Pass
		836.5	6.78	2.01	19.77	2.15	22.39	173.380	Horizontal	Pass
		847.5	6.66	2.02	19.81	2.15	22.30	169.824	Horizontal	Pass
5.0MHz Band 16QAM	1/#Midd	826.5	6.76	2.01	19.71	2.15	22.31	170.216	Horizontal	Pass
		836.5	6.78	2.01	19.77	2.15	22.39	173.380	Horizontal	Pass
		846.5	6.68	2.02	19.79	2.15	22.30	169.824	Horizontal	Pass
10.0Hz Band 16QAM	1/#Midd	829	6.78	2.01	19.73	2.15	22.35	171.791	Horizontal	Pass
		836.5	6.68	2.01	19.77	2.15	22.29	169.434	Horizontal	Pass
		844	6.71	2.02	19.78	2.15	22.32	170.608	Horizontal	Pass
1.4MHz Band 16QAM	1/#Midd	824.7	6.74	2.01	19.68	2.15	22.26	168.267	Vertical	Pass
		836.5	6.66	2.01	19.77	2.15	22.27	168.655	Vertical	Pass
		848.3	6.73	2.02	19.82	2.15	22.38	172.982	Vertical	Pass
3.0MHz Band 16QAM	1/#Midd	825.5	6.83	2.01	19.70	2.15	22.37	172.584	Vertical	Pass
		836.5	6.78	2.01	19.77	2.15	22.39	173.380	Vertical	Pass
		847.5	6.68	2.02	19.81	2.15	22.32	170.608	Vertical	Pass
5.0MHz Band 16QAM	1/#Midd	826.5	6.69	2.01	19.71	2.15	22.24	167.494	Vertical	Pass
		836.5	6.72	2.01	19.77	2.15	22.33	171.002	Vertical	Pass
		846.5	6.70	2.02	19.79	2.15	22.32	170.608	Vertical	Pass
10.0Hz Band 16QAM	1/#Midd	829	6.89	2.01	19.73	2.15	22.46	176.198	Vertical	Pass
		836.5	6.83	2.01	19.77	2.15	22.44	175.388	Vertical	Pass
		844	6.81	2.02	19.78	2.15	22.42	174.582	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

8.5 LTE BAND 7

Radiated Power (EIRP) for Band 7									
Mode	RB/R B SIZE	Frequenc y	Result						Conclusio n
			SG Level	Cable Loss (dBm)	Antenn a Gain (dB)	Max. EIRP	Max. EIRP	Polarizatio n Of Max. ERP	
			(dBm)			Averag e	Averag e		
						(dBm)	(mW)		
5.0MHz Band QPSK	1/#Mid	2502.5	1.46	4.54	27.75	24.67	293.089	Horizontal	Pass
		2535	1.54	4.69	27.72	24.57	286.418	Horizontal	Pass
		2567.5	1.57	4.71	27.71	24.57	286.418	Horizontal	Pass
10.0MH z Band QPSK	1/#Mid	2505	1.34	4.55	27.76	24.55	285.102	Horizontal	Pass
		2535	1.60	4.69	27.72	24.63	290.402	Horizontal	Pass
		2565	1.60	4.72	27.70	24.58	287.078	Horizontal	Pass
15.0MH z Band QPSK	1/#Mid	2507.5	1.31	4.55	27.77	24.53	283.792	Horizontal	Pass
		2535	1.59	4.69	27.72	24.62	289.734	Horizontal	Pass
		2562.5	1.61	4.72	27.69	24.58	287.078	Horizontal	Pass
20.0MH z Band QPSK	1/#Mid	2510	1.49	4.57	27.78	24.70	295.121	Horizontal	Pass
		2535	1.71	4.73	27.72	24.70	295.121	Horizontal	Pass
		2560	1.72	4.75	27.68	24.65	291.743	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	1.46	4.54	27.75	24.67	293.089	Vertical	Pass
		2535	1.66	4.69	27.72	24.69	294.442	Vertical	Pass
		2567.5	1.66	4.71	27.71	24.66	292.415	Vertical	Pass
10.0MH z Band QPSK	1/#Mid	2505	1.35	4.55	27.76	24.56	285.759	Vertical	Pass
		2535	1.57	4.69	27.72	24.60	288.403	Vertical	Pass
		2565	1.69	4.72	27.70	24.67	293.089	Vertical	Pass
15.0MH z Band QPSK	1/#Mid	2507.5	1.38	4.55	27.77	24.60	288.403	Vertical	Pass
		2535	1.62	4.69	27.72	24.65	291.743	Vertical	Pass
		2562.5	1.67	4.72	27.69	24.64	291.072	Vertical	Pass
20.0MH z Band QPSK	1/#Mid	2510	1.50	4.57	27.78	24.71	295.801	Vertical	Pass
		2535	1.73	4.73	27.72	24.72	296.483	Vertical	Pass
		2560	1.82	4.75	27.68	24.75	298.538	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/R B SIZE	Frequenc y	Result						Conclusio n
			SG Level (dBm)	Cable Loss (dBm)	Antenn a Gain (dB)	Max. EIRP	Max. EIRP	Polarizatio n Of Max. ERP	
						Averag e	Averag e		
						(dBm)	(mW)		
5.0MHz Band 16 QAM	1/#Mid	2502.5	0.71	4.54	27.75	23.92	246.604	Horizontal	Pass
		2535	0.91	4.69	27.72	23.94	247.742	Horizontal	Pass
		2567.5	0.99	4.71	27.71	23.99	250.611	Horizontal	Pass
10.0MH z Band 16 QAM	1/#Mid	2505	0.66	4.55	27.76	23.87	243.781	Horizontal	Pass
		2535	0.96	4.69	27.72	23.99	250.611	Horizontal	Pass
		2565	0.97	4.72	27.70	23.95	248.313	Horizontal	Pass
15.0MH z Band 16 QAM	1/#Mid	2507.5	0.62	4.55	27.77	23.84	242.103	Horizontal	Pass
		2535	0.94	4.69	27.72	23.97	249.459	Horizontal	Pass
		2562.5	0.92	4.72	27.69	23.89	244.906	Horizontal	Pass
20.0MH z Band 16 QAM	1/#Mid	2510	0.73	4.57	27.78	23.94	247.742	Horizontal	Pass
		2535	0.94	4.73	27.72	23.93	247.172	Horizontal	Pass
		2560	0.97	4.75	27.68	23.90	245.471	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	0.64	4.54	27.75	23.85	242.661	Vertical	Pass
		2535	0.95	4.69	27.72	23.98	250.035	Vertical	Pass
		2567.5	0.95	4.71	27.71	23.95	248.313	Vertical	Pass
10.0MH z Band 16 QAM	1/#Mid	2505	0.70	4.55	27.76	23.91	246.037	Vertical	Pass
		2535	0.81	4.69	27.72	23.84	242.103	Vertical	Pass
		2565	0.92	4.72	27.70	23.90	245.471	Vertical	Pass
15.0MH z Band 16 QAM	1/#Mid	2507.5	0.66	4.55	27.77	23.88	244.343	Vertical	Pass
		2535	0.96	4.69	27.72	23.99	250.611	Vertical	Pass
		2562.5	0.91	4.72	27.69	23.88	244.343	Vertical	Pass
20.0MH z Band 16 QAM	1/#Mid	2510	0.82	4.57	27.78	24.03	252.930	Vertical	Pass
		2535	1.02	4.73	27.72	24.01	251.768	Vertical	Pass
		2560	1.08	4.75	27.68	24.01	251.768	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 Of	
			(dBm)	(dBm)	(dB)	(dB)	Average (dBm)	Average (mW)	Max. ERP	
1.4MHz Band QPSK	1/#Midd	699.7	7.60	1.91	19.21	2.15	22.75	188.365	Vertical	Pass
		707.5	7.52	1.91	19.26	2.15	22.72	187.068	Vertical	Pass
		715.3	7.44	1.93	19.34	2.15	22.70	186.209	Vertical	Pass
3.0MHz Band QPSK	1/#Midd	700.5	7.51	1.91	19.21	2.15	22.66	184.502	Vertical	Pass
		707.5	7.57	1.91	19.26	2.15	22.77	189.234	Vertical	Pass
		714.5	7.52	1.93	19.34	2.15	22.78	189.671	Vertical	Pass
5.0MHz Band QPSK	1/#Midd	701.5	7.53	1.91	19.23	2.15	22.70	186.209	Vertical	Pass
		707.5	7.58	1.91	19.26	2.15	22.78	189.671	Vertical	Pass
		713.5	7.40	1.92	19.33	2.15	22.66	184.502	Vertical	Pass
10.0Hz Band QPSK	1/#Midd	704	7.43	1.91	19.25	2.15	22.62	182.810	Vertical	Pass
		707.5	7.53	1.91	19.26	2.15	22.73	187.499	Vertical	Pass
		711	7.48	1.92	19.32	2.15	22.73	187.499	Vertical	Pass
1.4MHz Band QPSK	1/#Midd	699.7	7.57	1.91	19.21	2.15	22.72	187.068	Horizontal	Pass
		707.5	7.60	1.91	19.26	2.15	22.80	190.546	Horizontal	Pass
		715.3	7.48	1.93	19.34	2.15	22.74	187.932	Horizontal	Pass
3.0MHz Band QPSK	1/#Midd	700.5	7.55	1.91	19.21	2.15	22.70	186.209	Horizontal	Pass
		707.5	7.48	1.91	19.26	2.15	22.68	185.353	Horizontal	Pass
		714.5	7.54	1.93	19.34	2.15	22.80	190.546	Horizontal	Pass
5.0MHz Band QPSK	1/#Midd	701.5	7.57	1.91	19.23	2.15	22.74	187.932	Horizontal	Pass
		707.5	7.48	1.91	19.26	2.15	22.68	185.353	Horizontal	Pass
		713.5	7.51	1.92	19.33	2.15	22.77	189.234	Horizontal	Pass
10.0Hz Band QPSK	1/#Midd	704	7.66	1.91	19.25	2.15	22.85	192.752	Horizontal	Pass
		707.5	7.60	1.91	19.26	2.15	22.80	190.546	Horizontal	Pass
		711	7.58	1.92	19.32	2.15	22.83	191.867	Horizontal	Pass

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16QAM	1/#Mid	699.7	6.73	1.91	19.21	2.15	21.88	154.170	Vertical	Pass
		707.5	6.68	1.91	19.26	2.15	21.88	154.170	Vertical	Pass
		715.3	6.50	1.93	19.34	2.15	21.76	149.968	Vertical	Pass
3.0MHz Band 16QAM	1/#Mid	700.5	6.60	1.91	19.21	2.15	21.75	149.624	Vertical	Pass
		707.5	6.65	1.91	19.26	2.15	21.85	153.109	Vertical	Pass
		714.5	6.54	1.93	19.34	2.15	21.80	151.356	Vertical	Pass
5.0MHz Band 16QAM	1/#Mid	701.5	6.62	1.91	19.23	2.15	21.79	151.008	Vertical	Pass
		707.5	6.69	1.91	19.26	2.15	21.89	154.525	Vertical	Pass
		713.5	6.61	1.92	19.33	2.15	21.87	153.815	Vertical	Pass
10.0MHz Band 16QAM	1/#Mid	704	6.58	1.91	19.25	2.15	21.77	150.314	Vertical	Pass
		707.5	6.69	1.91	19.26	2.15	21.89	154.525	Vertical	Pass
		711	6.49	1.92	19.32	2.15	21.74	149.279	Vertical	Pass
1.4MHz Band 16QAM	1/#Mid	699.7	6.64	1.91	19.21	2.15	21.79	151.008	Horizontal	Pass
		707.5	6.67	1.91	19.26	2.15	21.87	153.815	Horizontal	Pass
		715.3	6.57	1.93	19.34	2.15	21.83	152.405	Horizontal	Pass
3.0MHz Band 16QAM	1/#Mid	700.5	6.65	1.91	19.21	2.15	21.80	151.356	Horizontal	Pass
		707.5	6.66	1.91	19.26	2.15	21.86	153.462	Horizontal	Pass
		714.5	6.51	1.93	19.34	2.15	21.77	150.314	Horizontal	Pass
5.0MHz Band 16QAM	1/#Mid	701.5	6.69	1.91	19.23	2.15	21.86	153.462	Horizontal	Pass
		707.5	6.55	1.91	19.26	2.15	21.75	149.624	Horizontal	Pass
		713.5	6.60	1.92	19.33	2.15	21.86	153.462	Horizontal	Pass
10.0Hz Band 16QAM	1/#Mid	704	6.75	1.91	19.25	2.15	21.94	156.315	Horizontal	Pass
		707.5	6.72	1.91	19.26	2.15	21.92	155.597	Horizontal	Pass
		711	6.70	1.92	19.32	2.15	21.95	156.675	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	Freque ncy	Result							Conclu sion
			SG Level	Cable Loss	Factor Gain	Corr ectio n	Max. ERP	Max. ERP	Polarizati on Of Max. ERP	
			(dBm)	(dBm)	(dB)	(dB)	Averag e (dBm)	Averag e (mW)		
5.0MHz Band QPSK	25/0	706.5	7.86	1.91	19.23	2.15	23.03	200.909	Vertical	Pass
		710	7.80	1.91	19.26	2.15	23.00	199.526	Vertical	Pass
		713.5	7.72	1.92	19.33	2.15	22.98	198.609	Vertical	Pass
10.0MH z Band QPSK	50/0	709	7.78	1.91	19.25	2.15	22.97	198.153	Vertical	Pass
		710	7.86	1.91	19.26	2.15	23.06	202.302	Vertical	Pass
		711	7.82	1.92	19.32	2.15	23.07	202.768	Vertical	Pass
5.0MHz Band QPSK	25/0	706.5	7.80	1.91	19.23	2.15	22.97	198.153	Horizontal	Pass
		710	7.83	1.91	19.26	2.15	23.03	200.909	Horizontal	Pass
		713.5	7.80	1.92	19.33	2.15	23.06	202.302	Horizontal	Pass
10.0MH z Band QPSK	50/0	709	7.93	1.91	19.25	2.15	23.12	205.116	Horizontal	Pass
		710	7.95	1.91	19.26	2.15	23.15	206.538	Horizontal	Pass
		711	7.90	1.92	19.32	2.15	23.15	206.538	Horizontal	Pass

Radiated Power (ERP) for Band 17										
Mode	RB/ RB SIZE	Freque ncy	Result							Conclu sion
			SG Level	Cable Loss	Factor Gain	Corr ectio n	Max. ERP	Max. ERP	Polarizati on Of Max. ERP	
			(dBm)	(dBm)	(dB)	(dB)	Averag e	Averag e		
							(dBm)	(mW)		
5.0MHz Band 16 QAM	25/0	706.5	7.04	1.91	19.23	2.15	22.21	166.341	Vertical	706.5
		710	6.95	1.91	19.26	2.15	22.15	164.059	Vertical	710
		713.5	6.99	1.92	19.33	2.15	22.25	167.880	Vertical	713.5
10.0MH z Band 16 QAM	50/0	709	7.07	1.91	19.25	2.15	22.26	168.267	Vertical	709
		710	7.09	1.91	19.26	2.15	22.29	169.434	Vertical	710
		711	6.90	1.92	19.32	2.15	22.15	164.059	Vertical	711
5.0MHz Band 16 QAM	25/0	706.5	7.09	1.91	19.23	2.15	22.26	168.267	Horizontal	706.5
		710	7.02	1.91	19.26	2.15	22.22	166.725	Horizontal	710
		713.5	6.93	1.92	19.33	2.15	22.19	165.577	Horizontal	713.5
10.0MH z Band 16 QAM	50/0	709	7.16	1.91	19.25	2.15	22.35	171.791	Horizontal	709
		710	7.12	1.91	19.26	2.15	22.32	170.608	Horizontal	710
		711	7.07	1.92	19.32	2.15	22.32	170.608	Horizontal	711

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 41

Radiated Power (EIRP) for Band 41									
Mode	RB/R B SIZE	Frequenc y	Result						Conclusio n
			SG	Cable Loss (dBm)	Antenn a Gain (dB)	Max. EIRP	Max. EIRP	Polarizatio n Of Max. ERP	
			(dBm)			Averag e	Averag e		
						(dBm)	(mW)		
5.0MHz Band QPSK	1/#Mid	2537.5	1.25	4.54	27.75	24.46	279.254	Horizontal	Pass
		2593	1.40	4.69	27.72	24.43	277.332	Horizontal	Pass
		2662.5	1.41	4.71	27.71	24.41	276.058	Horizontal	Pass
10.0MH z Band QPSK	1/#Mid	2540	1.21	4.55	27.76	24.42	276.694	Horizontal	Pass
		2593	1.35	4.69	27.72	24.38	274.157	Horizontal	Pass
		2660	1.43	4.72	27.70	24.41	276.058	Horizontal	Pass
15.0MH z Band QPSK	1/#Mid	2542.5	1.15	4.55	27.77	24.37	273.527	Horizontal	Pass
		2593	1.32	4.69	27.72	24.35	272.270	Horizontal	Pass
		2657.5	1.41	4.72	27.69	24.38	274.157	Horizontal	Pass
20.0MH z Band QPSK	1/#Mid	2545	1.26	4.57	27.78	24.47	279.898	Horizontal	Pass
		2593	1.38	4.73	27.72	24.37	273.527	Horizontal	Pass
		2655	1.45	4.75	27.68	24.38	274.157	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2537.5	1.23	4.54	27.75	24.44	277.971	Vertical	Pass
		2593	1.41	4.69	27.72	24.44	277.971	Vertical	Pass
		2662.5	1.47	4.71	27.71	24.47	279.898	Vertical	Pass
10.0MH z Band QPSK	1/#Mid	2540	1.21	4.55	27.76	24.42	276.694	Vertical	Pass
		2593	1.31	4.69	27.72	24.34	271.644	Vertical	Pass
		2660	1.51	4.72	27.70	24.49	281.190	Vertical	Pass
15.0MH z Band QPSK	1/#Mid	2542.5	1.15	4.55	27.77	24.37	273.527	Vertical	Pass
		2593	1.37	4.69	27.72	24.40	275.423	Vertical	Pass
		2657.5	1.40	4.72	27.69	24.37	273.527	Vertical	Pass
20.0MH z Band QPSK	1/#Mid	2545	1.32	4.57	27.78	24.53	283.792	Vertical	Pass
		2593	1.54	4.73	27.72	24.53	283.792	Vertical	Pass
		2655	1.61	4.75	27.68	24.54	284.446	Vertical	Pass

Radiated Power (EIRP) for Band 41									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	
			(dBm)			Average	Average		
						(dBm)	(mW)		
5.0MHz Band 16 QAM	1/#Mid	2537.5	2498.5	4.54	27.75	23.50	223.872	Horizontal	Pass
		2593	2593	4.69	27.72	23.55	226.464	Horizontal	Pass
		2662.5	2687.5	4.71	27.71	23.56	226.986	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2540	2501	4.55	27.76	23.54	225.944	Horizontal	Pass
		2593	2593	4.69	27.72	23.52	224.905	Horizontal	Pass
		2660	2685	4.72	27.70	23.47	222.331	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2542.5	2503.5	4.55	27.77	23.42	219.786	Horizontal	Pass
		2593	2593	4.69	27.72	23.53	225.424	Horizontal	Pass
		2657.5	2682.5	4.72	27.69	23.45	221.309	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2545	2506	4.57	27.78	23.56	226.986	Horizontal	Pass
		2593	2593	4.73	27.72	23.56	226.986	Horizontal	Pass
		2655	2680	4.75	27.68	23.52	224.905	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2537.5	2498.5	4.54	27.75	23.46	221.820	Vertical	Pass
		2593	2593	4.69	27.72	23.56	226.986	Vertical	Pass
		2662.5	2687.5	4.71	27.71	23.59	228.560	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2540	2501	4.55	27.76	23.46	221.820	Vertical	Pass
		2593	2593	4.69	27.72	23.58	228.034	Vertical	Pass
		2660	2685	4.72	27.70	23.58	228.034	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2542.5	2503.5	4.55	27.77	23.48	222.844	Vertical	Pass
		2593	2593	4.69	27.72	23.55	226.464	Vertical	Pass
		2657.5	2682.5	4.72	27.69	23.54	225.944	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2545	2506	4.57	27.78	23.63	230.675	Vertical	Pass
		2593	2593	4.73	27.72	23.63	230.675	Vertical	Pass
		2655	2680	4.75	27.68	23.62	230.144	Vertical	Pass

Note:

SG Level= Signal generator output

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

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

9. SPURIOUS RADIATION EMISSION

RULE PART(S)

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

LIMIT

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

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

TEST PROCEDURE

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

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

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

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

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

MODES TESTED

- ☐ LTE Band2/4/5/7/12/17/41

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	-47.44	4.04	33.51	-17.97	-13	-4.97	Horizontal
3701.4	-47.07	4.04	33.51	-17.60	-13	-4.60	Vertical
5552.1	-45.17	5.24	35.84	-14.57	-13	-1.57	Vertical
5552.1	-52.26	5.24	35.84	-21.66	-13	-8.66	Horizontal
211.3	-44.45	1.43	16.02	-29.86	-13	-16.86	Vertical
374.8	-38.85	1.30	17.99	-22.16	-13	-9.16	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-48.56	4.04	33.56	-19.04	-13	-6.04	Horizontal
3760.0	-45.87	4.04	33.56	-16.35	-13	-3.35	Vertical
5640.0	-52.35	5.24	35.91	-21.68	-13	-8.68	Vertical
5640.0	-53.21	5.24	35.91	-22.54	-13	-9.54	Horizontal
183.5	-43.46	1.62	16.97	-28.11	-13	-15.11	Vertical
424.2	-34.98	1.74	15.98	-20.75	-13	-7.75	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-50.16	4.04	34.00	-20.20	-13	-7.20	Horizontal
3818.6	-44.08	4.04	34.00	-14.12	-13	-1.12	Vertical
5727.9	-53.02	5.24	36.04	-22.22	-13	-9.22	Vertical
5727.9	-49.10	5.24	36.04	-18.30	-13	-5.30	Horizontal
188.9	-36.08	1.42	17.29	-20.21	-13	-7.21	Vertical
379.2	-39.61	1.50	17.90	-23.20	-13	-10.20	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	-46.69	4.07	33.54	-17.22	-13	-4.22	Horizontal
3720.0	-50.50	4.07	33.54	-21.03	-13	-8.03	Vertical
5580.0	-53.40	5.28	35.86	-22.82	-13	-9.82	Vertical
5580.0	-49.55	5.28	35.86	-18.97	-13	-5.97	Horizontal
176.0	-43.85	1.58	16.89	-28.53	-13	-15.53	Vertical
317.0	-43.53	1.76	17.26	-28.03	-13	-15.03	Horizontal
Test Results for Mid Channel 1880MHz							
3760.0	-45.39	4.04	33.56	-15.87	-13	-2.87	Horizontal
3760.0	-51.60	4.04	33.56	-22.08	-13	-9.08	Vertical
5640.0	-51.17	5.24	35.91	-20.50	-13	-7.50	Vertical
5640.0	-51.49	5.24	35.91	-20.82	-13	-7.82	Horizontal
177.2	-38.46	1.46	16.27	-23.65	-13	-10.65	Vertical
273.7	-35.36	1.59	15.15	-21.80	-13	-8.80	Horizontal
Test Results for High Channel 1900MHz							
3800.0	-48.03	4.04	34.00	-18.07	-13	-5.07	Horizontal
3800.0	-50.18	4.04	34.00	-20.22	-13	-7.22	Vertical
5700.0	-51.65	5.24	36.04	-20.85	-13	-7.85	Vertical
5700.0	-49.54	5.24	36.04	-18.74	-13	-5.74	Horizontal
194.1	-38.98	1.36	17.39	-22.94	-13	-9.94	Vertical
296.4	-42.62	1.66	15.39	-28.89	-13	-15.89	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	-52.51	4.02	29.80	-26.73	-13	-13.73	Horizontal
3421.4	-48.34	4.02	29.80	-22.56	-13	-9.56	Vertical
5132.1	-46.80	5.24	35.84	-16.20	-13	-3.20	Vertical
5132.1	-49.29	5.24	35.84	-18.69	-13	-5.69	Horizontal
205.9	-36.99	1.68	16.04	-22.63	-13	-9.63	Vertical
404.8	-37.17	1.78	17.74	-21.21	-13	-8.21	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-51.81	4.03	30.00	-25.84	-13	-12.84	Horizontal
3465.0	-44.47	4.03	30.00	-18.50	-13	-5.50	Vertical
5197.5	-52.31	5.25	35.86	-21.70	-13	-8.70	Vertical
5197.5	-51.29	5.25	35.86	-20.68	-13	-7.68	Horizontal
208.0	-40.40	1.72	17.69	-24.43	-13	-11.43	Vertical
357.1	-41.29	1.62	16.02	-26.88	-13	-13.88	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-49.69	4.05	30.01	-23.73	-13	-10.73	Horizontal
3508.6	-45.49	4.05	30.01	-19.53	-13	-6.53	Vertical
5262.9	-46.29	5.26	35.86	-15.69	-13	-2.69	Vertical
5262.9	-52.07	5.26	35.86	-21.47	-13	-8.47	Horizontal
182.0	-39.90	1.80	16.69	-25.01	-13	-12.01	Vertical
343.8	-34.41	1.75	16.66	-19.51	-13	-6.51	Horizontal

QPSK EIRP POWER FOR LTE BAND 4 (20.0MHZ BANDWIDTH)

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-44.86	4.02	29.80	-19.08	-13	-6.08	Horizontal
3440.0	-51.78	4.02	29.80	-26.00	-13	-13.00	Vertical
5160.0	-48.31	5.24	35.84	-17.71	-13	-4.71	Vertical
5160.0	-53.15	5.24	35.84	-22.55	-13	-9.55	Horizontal
181.8	-43.63	1.57	17.26	-27.94	-13	-14.94	Vertical
299.5	-35.78	1.78	16.35	-21.21	-13	-8.21	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-48.95	4.03	30.00	-22.98	-13	-9.98	Horizontal
3465.0	-52.81	4.03	30.00	-26.84	-13	-13.84	Vertical
5197.5	-46.15	5.25	35.86	-15.54	-13	-2.54	Vertical
5197.5	-50.72	5.25	35.86	-20.11	-13	-7.11	Horizontal
210.7	-36.41	1.44	17.95	-19.90	-13	-6.90	Vertical
386.6	-37.10	1.65	16.09	-22.66	-13	-9.66	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-44.29	4.05	27.68	-20.66	-13	-7.66	Horizontal
3490.0	-49.89	4.05	27.68	-26.26	-13	-13.26	Vertical
5235.0	-52.64	5.26	35.86	-22.04	-13	-9.04	Vertical
5235.0	-51.45	5.26	35.86	-20.85	-13	-7.85	Horizontal
191.8	-37.86	1.61	16.85	-22.62	-13	-9.62	Vertical
400.0	-36.04	1.61	15.19	-22.46	-13	-9.46	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	-48.15	2.78	27.50	-23.43	-13	-10.43	Horizontal
1649.4	-45.52	2.78	27.50	-20.80	-13	-7.80	Vertical
2474.1	-46.04	2.90	27.80	-21.14	-13	-8.14	Vertical
2474.1	-53.83	2.90	27.80	-28.93	-13	-15.93	Horizontal
203.5	-36.83	1.76	17.59	-21.00	-13	-8.00	Vertical
459.3	-38.60	1.63	15.87	-24.36	-13	-11.36	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-45.08	2.80	27.48	-20.40	-13	-7.40	Horizontal
1673.0	-45.47	2.80	27.48	-20.79	-13	-7.79	Vertical
2509.5	-44.57	2.91	27.70	-19.78	-13	-6.78	Vertical
2509.5	-53.55	2.91	27.70	-28.76	-13	-15.76	Horizontal
191.1	-34.41	1.61	15.68	-20.34	-13	-7.34	Vertical
311.9	-41.90	1.59	17.52	-25.98	-13	-12.98	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-50.65	2.82	27.43	-26.04	-13	-13.04	Horizontal
1696.6	-46.63	2.82	27.43	-22.02	-13	-9.02	Vertical
2544.9	-49.15	2.92	27.74	-24.33	-13	-11.33	Vertical
2544.9	-51.48	2.92	27.74	-26.66	-13	-13.66	Horizontal
188.5	-38.20	1.69	16.67	-23.21	-13	-10.21	Vertical
335.7	-44.20	1.70	17.18	-28.72	-13	-15.72	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	-45.09	2.78	27.50	-20.37	-13	-7.37	Horizontal
1658.0	-51.13	2.78	27.50	-26.41	-13	-13.41	Vertical
2487.0	-45.64	2.90	27.80	-20.74	-13	-7.74	Vertical
2487.0	-53.93	2.90	27.80	-29.03	-13	-16.03	Horizontal
208.1	-34.56	1.71	15.57	-20.70	-13	-7.70	Vertical
281.5	-39.53	1.34	16.40	-24.47	-13	-11.47	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-45.61	2.80	27.48	-20.93	-13	-7.93	Horizontal
1673.0	-50.88	2.80	27.48	-26.20	-13	-13.20	Vertical
2509.5	-48.64	2.91	27.70	-23.85	-13	-10.85	Vertical
2509.5	-53.76	2.91	27.70	-28.97	-13	-15.97	Horizontal
185.2	-44.73	1.44	17.04	-29.13	-13	-16.13	Vertical
408.3	-36.37	1.76	17.62	-20.51	-13	-7.51	Horizontal
Test Results for High Channel 844MHz							
1688.0	-49.85	2.82	27.43	-25.24	-13	-12.24	Horizontal
1688.0	-45.38	2.82	27.43	-20.77	-13	-7.77	Vertical
2532.0	-49.58	2.92	27.74	-24.76	-13	-11.76	Vertical
2532.0	-53.56	2.92	27.74	-28.74	-13	-15.74	Horizontal
185.8	-41.33	1.74	17.70	-25.37	-13	-12.37	Vertical
430.6	-41.92	1.41	17.46	-25.86	-13	-12.86	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	-60.08	5.23	35.81	-29.50	-25	-4.50	Horizontal
5005.0	-60.74	5.23	35.81	-30.16	-25	-5.16	Vertical
7507.5	-64.46	5.67	36.85	-33.28	-25	-8.28	Vertical
7507.5	-62.23	5.67	36.85	-31.05	-25	-6.05	Horizontal
190.4	-47.03	1.73	17.97	-30.79	-25	-5.79	Vertical
445.6	-50.62	1.38	15.11	-36.89	-25	-11.89	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-59.58	5.23	35.82	-28.99	-25	-3.99	Horizontal
5070.0	-63.42	5.23	35.82	-32.83	-25	-7.83	Vertical
7605.0	-60.15	5.67	36.85	-28.97	-25	-3.97	Vertical
7605.0	-63.83	5.67	36.85	-32.65	-25	-7.65	Horizontal
180.7	-48.10	1.77	16.17	-33.69	-25	-8.69	Vertical
285.5	-54.33	1.63	15.21	-40.75	-25	-15.75	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-61.59	5.24	35.83	-31.00	-25	-6.00	Horizontal
5135.0	-59.93	5.24	35.83	-29.34	-25	-4.34	Vertical
7702.5	-64.02	5.68	36.87	-32.83	-25	-7.83	Vertical
7702.5	-59.55	5.68	36.87	-28.36	-25	-3.36	Horizontal
207.8	-47.80	1.58	17.56	-31.82	-25	-6.82	Vertical
346.7	-48.85	1.45	16.58	-33.72	-25	-8.72	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	-61.67	5.23	35.82	-31.08	-25	-6.08	Horizontal
5020.0	-64.41	5.23	35.82	-33.82	-25	-8.82	Vertical
7530.0	-60.91	5.67	36.86	-29.72	-25	-4.72	Vertical
7530.0	-64.50	5.67	36.86	-33.31	-25	-8.31	Horizontal
195.4	-49.33	1.63	15.76	-35.20	-25	-10.20	Vertical
416.9	-53.23	1.71	15.44	-39.50	-25	-14.50	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-64.66	5.23	35.82	-34.07	-25	-9.07	Horizontal
5070.0	-62.03	5.23	35.82	-31.44	-25	-6.44	Vertical
7605.0	-63.98	5.67	36.85	-32.80	-25	-7.80	Vertical
7605.0	-64.82	5.67	36.85	-33.64	-25	-8.64	Horizontal
203.1	-44.24	1.79	16.84	-29.18	-25	-4.18	Vertical
349.7	-47.55	1.71	17.64	-31.62	-25	-6.62	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-63.07	5.24	35.83	-32.48	-25	-7.48	Horizontal
5120.0	-64.27	5.24	35.83	-33.68	-25	-8.68	Vertical
7680.0	-62.36	5.70	36.88	-31.18	-25	-6.18	Vertical
7680.0	-62.85	5.70	36.88	-31.67	-25	-6.67	Horizontal
181.4	-44.06	1.79	16.84	-29.00	-25	-4.00	Vertical
306.7	-49.90	1.71	17.64	-33.97	-25	-8.97	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	-48.72	2.60	27.20	-24.12	-13	-11.12	Horizontal
1399.4	-48.12	2.60	27.20	-23.52	-13	-10.52	Vertical
2099.1	-48.92	2.85	27.54	-24.23	-13	-11.23	Vertical
2099.1	-53.75	2.85	27.54	-29.06	-13	-16.06	Horizontal
207.5	-37.57	1.49	17.78	-21.28	-13	-8.28	Vertical
394.5	-34.90	1.36	17.33	-18.93	-13	-5.93	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-51.25	2.61	27.28	-26.58	-13	-13.58	Horizontal
1415.0	-48.43	2.61	27.28	-23.76	-13	-10.76	Vertical
2122.5	-44.77	2.87	27.59	-20.05	-13	-7.05	Vertical
2122.5	-51.32	2.87	27.59	-26.60	-13	-13.60	Horizontal
209.7	-40.62	1.73	15.74	-26.61	-13	-13.61	Vertical
284.8	-37.97	1.62	15.79	-23.80	-13	-10.80	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-44.15	2.63	27.28	-19.50	-13	-6.50	Horizontal
1430.6	-46.13	2.63	27.28	-21.48	-13	-8.48	Vertical
2145.9	-50.98	2.88	27.60	-26.26	-13	-13.26	Vertical
2145.9	-53.31	2.88	27.60	-28.59	-13	-15.59	Horizontal
196.7	-41.22	1.61	18.00	-24.83	-13	-11.83	Vertical
249.6	-44.93	1.45	15.49	-30.90	-13	-17.90	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	-51.22	2.61	27.26	-26.57	-13	-13.57	Horizontal
1408.0	-47.48	2.61	27.26	-22.83	-13	-9.83	Vertical
2112.0	-52.41	2.87	27.58	-27.70	-13	-14.70	Vertical
2112.0	-53.72	2.87	27.58	-29.01	-13	-16.01	Horizontal
211.1	-38.78	1.31	16.97	-23.12	-13	-10.12	Vertical
233.9	-38.09	1.65	16.70	-23.04	-13	-10.04	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.0	-47.07	2.61	27.28	-22.40	-13	-9.40	Horizontal
1415.0	-53.63	2.61	27.28	-28.96	-13	-15.96	Vertical
2122.5	-49.64	2.87	27.59	-24.92	-13	-11.92	Vertical
2122.5	-53.24	2.87	27.59	-28.52	-13	-15.52	Horizontal
181.3	-42.11	1.72	17.99	-25.84	-13	-12.84	Vertical
258.4	-34.10	1.73	17.94	-17.89	-13	-4.89	Horizontal
Test Results for High Channel 711MHz							
1422.0	-51.48	2.62	27.28	-26.82	-13	-13.82	Horizontal
1422.0	-52.58	2.62	27.28	-27.92	-13	-14.92	Vertical
2133.0	-51.11	2.87	27.60	-26.38	-13	-13.38	Vertical
2133.0	-49.67	2.87	27.60	-24.94	-13	-11.94	Horizontal
198.9	-44.11	1.58	15.93	-29.76	-13	-16.76	Vertical
432.0	-34.86	1.36	15.59	-20.63	-13	-7.63	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	-45.57	2.61	27.28	-20.90	-13	-7.90	Horizontal
1413.0	-53.82	2.61	27.28	-29.15	-13	-16.15	Vertical
2119.5	-50.82	2.87	27.59	-26.10	-13	-13.10	Vertical
2119.5	-53.53	2.87	27.59	-28.81	-13	-15.81	Horizontal
209.2	-38.76	1.71	16.15	-24.32	-13	-11.32	Vertical
446.1	-43.41	1.41	17.32	-27.50	-13	-14.50	Horizontal
Test Results For Mid Channel 710MHz							
1420.0	-53.21	2.62	27.30	-28.53	-13	-15.53	Horizontal
1420.0	-44.31	2.62	27.30	-19.63	-13	-6.63	Vertical
2130.0	-52.98	2.87	27.62	-28.23	-13	-15.23	Vertical
2130.0	-50.35	2.87	27.62	-25.60	-13	-12.60	Horizontal
194.7	-36.29	1.42	15.25	-22.47	-13	-9.47	Vertical
270.4	-37.71	1.36	17.19	-21.88	-13	-8.88	Horizontal
Test Results for High Channel 713.5MHz							
1427.0	-52.79	2.66	27.28	-28.17	-13	-15.17	Horizontal
1427.0	-47.33	2.66	27.28	-22.71	-13	-9.71	Vertical
2140.5	-51.91	2.88	27.60	-27.19	-13	-14.19	Vertical
2140.5	-52.70	2.88	27.60	-27.98	-13	-14.98	Horizontal
201.8	-38.69	1.32	17.29	-22.72	-13	-9.72	Vertical
284.7	-41.91	1.72	16.89	-26.74	-13	-13.74	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	-46.96	2.62	27.30	-22.28	-13	-9.28	Horizontal
1418.0	-49.68	2.62	27.30	-25.00	-13	-12.00	Vertical
2127.0	-45.04	2.87	27.62	-20.29	-13	-7.29	Vertical
2127.0	-53.67	2.87	27.62	-28.92	-13	-15.92	Horizontal
209.1	-42.25	1.35	16.91	-26.69	-13	-13.69	Vertical
236.9	-40.78	1.62	16.31	-26.09	-13	-13.09	Horizontal
Test Results for Mid Channel 710MHz							
1420.0	-46.12	2.62	27.30	-21.44	-13	-8.44	Horizontal
1420.0	-47.26	2.62	27.30	-22.58	-13	-9.58	Vertical
2130.0	-51.73	2.87	27.62	-26.98	-13	-13.98	Vertical
2130.0	-52.65	2.87	27.62	-27.90	-13	-14.90	Horizontal
183.8	-37.65	1.51	17.14	-22.02	-13	-9.02	Vertical
307.2	-42.22	1.77	16.88	-27.11	-13	-14.11	Horizontal
Test Results for High Channel 711MHz							
1422.0	-46.63	2.62	27.30	-21.95	-13	-8.95	Horizontal
1422.0	-47.53	2.62	27.30	-22.85	-13	-9.85	Vertical
2133.0	-48.76	2.87	27.62	-24.01	-13	-11.01	Vertical
2133.0	-52.93	2.87	27.62	-28.18	-13	-15.18	Horizontal
175.3	-40.84	1.78	15.95	-26.67	-13	-13.67	Vertical
372.7	-35.51	1.34	17.95	-18.91	-13	-5.91	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 41

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

Test Results for Low Channel 2572.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5075.0	-59.65	5.13	35.81	-28.97	-25	-3.97	Horizontal
5075.0	-63.39	5.13	35.81	-32.71	-25	-7.71	Vertical
7612.5	-63.93	5.42	36.85	-32.50	-25	-7.50	Vertical
7612.5	-62.28	5.42	36.85	-30.85	-25	-5.85	Horizontal
197.6	-44.20	1.56	17.97	-27.79	-25	-2.79	Vertical
440.8	-45.50	1.33	15.11	-31.72	-25	-6.72	Horizontal
Test Results for Mid Channel 2595MHz							
5186.0	-62.86	5.16	35.82	-32.20	-25	-7.20	Horizontal
5186.0	-59.88	5.16	35.82	-29.22	-25	-4.22	Vertical
7779.0	-60.28	5.53	36.85	-28.96	-25	-3.96	Vertical
7779.0	-62.21	5.53	36.85	-30.89	-25	-5.89	Horizontal
176.2	-50.93	1.77	16.17	-36.52	-25	-11.52	Vertical
337.9	-52.90	1.63	15.21	-39.32	-25	-14.32	Horizontal
Test Results for High Channel 2617.5MHz							
5325.0	-62.55	5.23	35.83	-31.95	-25	-6.95	Horizontal
5325.0	-63.65	5.23	35.83	-33.05	-25	-8.05	Vertical
7987.5	-59.90	5.62	36.87	-28.65	-25	-3.65	Vertical
7987.5	-62.75	5.62	36.87	-31.50	-25	-6.50	Horizontal
195.8	-54.28	1.58	17.56	-38.30	-25	-13.30	Vertical
302.0	-47.36	1.45	16.58	-32.23	-25	-7.23	Horizontal

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

Test Results for Low Channel 2580MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5090.0	-64.64	5.23	35.82	-34.05	-25	-9.05	Horizontal
5090.0	-63.97	5.23	35.82	-33.38	-25	-8.38	Vertical
7635.0	-60.26	5.67	36.86	-29.07	-25	-4.07	Vertical
7635.0	-64.93	5.67	36.86	-33.74	-25	-8.74	Horizontal
204.8	-53.87	1.55	15.76	-39.66	-25	-14.66	Vertical
347.9	-48.42	1.62	15.44	-34.60	-25	-9.60	Horizontal
Test Results for Mid Channel 2595MHz							
5186.0	-59.63	5.16	35.82	-28.97	-25	-3.97	Horizontal
5186.0	-63.09	5.16	35.82	-32.43	-25	-7.43	Vertical
7779.0	-61.27	5.53	36.85	-29.95	-25	-4.95	Vertical
7779.0	-61.50	5.53	36.85	-30.18	-25	-5.18	Horizontal
198.2	-46.25	1.58	16.84	-30.99	-25	-5.99	Vertical
231.4	-47.10	1.61	17.64	-31.07	-25	-6.07	Horizontal
Test Results for High Channel 2610MHz							
5310.0	-61.07	5.24	35.83	-30.48	-25	-5.48	Horizontal
5310.0	-59.81	5.24	35.83	-29.22	-25	-4.22	Vertical
7965.0	-62.10	5.70	36.88	-30.92	-25	-5.92	Vertical
7965.0	-62.81	5.70	36.88	-31.63	-25	-6.63	Horizontal
187.5	-46.28	1.48	16.84	-30.92	-25	-5.92	Vertical
378.5	-48.59	1.59	17.64	-32.54	-25	-7.54	Horizontal

10. FREQUENCY STABILITY

RULE PART(S)

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

LIMITS

§22.355 - The carrier frequency shall not depart from the reference frequency in excess of ± 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 3.27V, Normal, DC 12V and High voltage, DC 4.43V.

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 Band2/4/5/7/12/17/41

RESULTS

See the following pages.

10.1 LTE BAND 2

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
10.8	1880	12.6	0.006685	2.5
12	1880	14.0	0.007452	2.5
13.2	1880	12.9	0.006884	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	12.6	0.006703	2.5
Extreme (50C)	1880	11.8	0.006290	2.5
Extreme (40C)	1880	13.5	0.007182	2.5
Extreme (30C)	1880	13.1	0.006967	2.5
Extreme (10C)	1880	14.1	0.007518	2.5
Extreme (0C)	1880	12.0	0.006385	2.5
Extreme (-10C)	1880	12.7	0.006771	2.5
Extreme (-20C)	1880	13.9	0.007404	2.5
Extreme (-30C)	1880	14.9	0.007943	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
10.8	1880	9.7	0.005157	2.5
12	1880	9.4	0.004999	2.5
13.2	1880	8.0	0.004269	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	9.4	0.005014	2.5
Extreme (50C)	1880	9.0	0.004768	2.5
Extreme (40C)	1880	8.5	0.004540526	2.5
Extreme (30C)	1880	8.6	0.004565805	2.5
Extreme (10C)	1880	8.9	0.004734497	2.5
Extreme (0C)	1880	7.8	0.004140892	2.5
Extreme (-10C)	1880	8.6	0.00458114	2.5
Extreme (-20C)	1880	9.0	0.004788945	2.5
Extreme (-30C)	1880	7.7	0.004074846	2.5

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

10.2 LTE BAND 4

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
10.8	1732.5	8.9	0.005140	2.5
12	1732.5	9.2	0.005307	2.5
13.2	1732.5	8.2	0.004733	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.0	0.004641	2.5
Extreme (50C)	1732.5	8.5	0.004915	2.5
Extreme (40C)	1732.5	7.7	0.004437	2.5
Extreme (30C)	1732.5	6.2	0.003552	2.5
Extreme (10C)	1732.5	7.6	0.004360	2.5
Extreme (0C)	1732.5	9.0	0.005218	2.5
Extreme (-10C)	1732.5	8.7	0.005029	2.5
Extreme (-20C)	1732.5	6.6	0.003805	2.5
Extreme (-30C)	1732.5	8.5	0.004910	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
10.8	1732.5	10.1	0.005833	2.5
12	1732.5	9.0	0.005168	2.5
13.2	1732.5	7.9	0.004551	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	9.2	0.005326	2.5
Extreme (50C)	1732.5	8.8	0.005059	2.5
Extreme (40C)	1732.5	7.8	0.004521	2.5
Extreme (30C)	1732.5	8.8	0.005073	2.5
Extreme (10C)	1732.5	8.9	0.005152	2.5
Extreme (0C)	1732.5	8.5	0.004929	2.5
Extreme (-10C)	1732.5	8.7	0.005019	2.5
Extreme (-20C)	1732.5	9.3	0.005372	2.5
Extreme (-30C)	1732.5	8.5	0.004894	2.5

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

10.3 LTE BAND 5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
10.8	836.5	5.7	0.006767	2.5
12	836.5	6.3	0.007517	2.5
13.2	836.5	4.6	0.005530	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.1	0.007268	2.5
Extreme (50C)	836.5	5.8	0.006905	2.5
Extreme (40C)	836.5	6.2	0.007386	2.5
Extreme (30C)	836.5	6.2	0.007439	2.5
Extreme (10C)	836.5	5.6	0.006722	2.5
Extreme (0C)	836.5	5.0	0.005990	2.5
Extreme (-10C)	836.5	5.9	0.007108	2.5
Extreme (-20C)	836.5	5.9	0.007015	2.5
Extreme (-30C)	836.5	6.2	0.007424	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
10.8	836.5	5.7	0.006764	2.5
12	836.5	7.1	0.008509	2.5
13.2	836.5	4.6	0.005541	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	5.8	0.006928	2.5
Extreme (50C)	836.5	5.9	0.007069	2.5
Extreme (40C)	836.5	5.8	0.006919	2.5
Extreme (30C)	836.5	6.1	0.007299	2.5
Extreme (10C)	836.5	5.2	0.006217	2.5
Extreme (0C)	836.5	5.6	0.006717	2.5
Extreme (-10C)	836.5	5.5	0.006519	2.5
Extreme (-20C)	836.5	5.9	0.007045	2.5
Extreme (-30C)	836.5	5.8	0.006989	2.5

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

10.4 LTE BAND 7

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
10.8	2535	9.7	0.003835	2.5
12	2535	8.6	0.003380	2.5
13.2	2535	8.0	0.003166	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	9.5	0.003756	2.5
Extreme (50C)	2535	9.0	0.003537	2.5
Extreme (40C)	2535	8.5	0.003362	2.5
Extreme (30C)	2535	8.5	0.003357	2.5
Extreme (10C)	2535	8.4	0.003296	2.5
Extreme (0C)	2535	8.1	0.003190	2.5
Extreme (-10C)	2535	9.2	0.003647	2.5
Extreme (-20C)	2535	9.4	0.003690	2.5
Extreme (-30C)	2535	8.9	0.003498	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
10.8	2535	6.9	0.002722	2.5
12	2535	6.5	0.002561	2.5
13.2	2535	5.4	0.002141	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	6.9	0.002722	2.5
Extreme (50C)	2535	5.4	0.002133	2.5
Extreme (40C)	2535	5.0	0.001963	2.5
Extreme (30C)	2535	7.1	0.002807	2.5
Extreme (10C)	2535	5.2	0.002052	2.5
Extreme (0C)	2535	5.4	0.002133	2.5
Extreme (-10C)	2535	5.1	0.002015	2.5
Extreme (-20C)	2535	6.3	0.002502	2.5
Extreme (-30C)	2535	5.4	0.002117	2.5

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

10.5 LTE BAND 12

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
10.8	707.5	9.1	0.012906	2.5
12	707.5	9.6	0.013544	2.5
13.2	707.5	8.1	0.011493	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	9.0	0.012703	2.5
Extreme (50C)	707.5	7.5	0.010530	2.5
Extreme (40C)	707.5	7.0	0.009827	2.5
Extreme (30C)	707.5	7.9	0.011193	2.5
Extreme (10C)	707.5	6.9	0.009756	2.5
Extreme (0C)	707.5	9.0	0.012785	2.5
Extreme (-10C)	707.5	8.1	0.011473	2.5
Extreme (-20C)	707.5	8.6	0.012195	2.5
Extreme (-30C)	707.5	8.0	0.011320	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
10.8	707.5	7.2	0.010220	2.5
12	707.5	8.6	0.012134	2.5
13.2	707.5	7.7	0.010950	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	9.4	0.013299	2.5
Extreme (50C)	707.5	7.9	0.011167	2.5
Extreme (40C)	707.5	8.7	0.012353	2.5
Extreme (30C)	707.5	7.7	0.010925	2.5
Extreme (10C)	707.5	9.2	0.013004	2.5
Extreme (0C)	707.5	7.9	0.011100	2.5
Extreme (-10C)	707.5	7.5	0.010604	2.5
Extreme (-20C)	707.5	9.0	0.012711	2.5
Extreme (-30C)	707.5	8.7	0.012307	2.5

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

10.6 LTE BAND 17

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
10.8	710.0	9.7	0.013685	2.5
12	710.0	8.6	0.012086	2.5
13.2	710.0	7.9	0.011179	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.7	0.013728	2.5
Extreme (50C)	710.0	9.1	0.012883	2.5
Extreme (40C)	710.0	8.3	0.011625	2.5
Extreme (30C)	710.0	9.4	0.013260	2.5
Extreme (10C)	710.0	8.5	0.011970	2.5
Extreme (0C)	710.0	8.4	0.011862	2.5
Extreme (-10C)	710.0	9.0	0.012606	2.5
Extreme (-20C)	710.0	8.9	0.012530	2.5
Extreme (-30C)	710.0	8.1	0.011474	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
10.8	710.0	10.4	0.014680	2.5
12	710.0	9.4	0.013238	2.5
13.2	710.0	8.7	0.012319	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	9.8	0.013863	2.5
Extreme (50C)	710.0	9.3	0.013088	2.5
Extreme (40C)	710.0	8.2	0.011492	2.5
Extreme (30C)	710.0	9.0	0.012641	2.5
Extreme (10C)	710.0	7.8	0.011005	2.5
Extreme (0C)	710.0	8.6	0.012060	2.5
Extreme (-10C)	710.0	9.0	0.012706	2.5
Extreme (-20C)	710.0	9.2	0.012898	2.5
Extreme (-30C)	710.0	8.8	0.012462	2.5

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

10.7 LTE BAND 41

QPSK, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
10.8	2593	9.7	0.003742	2.5
12	2593	8.4	0.003242	2.5
13.2	2593	8.5	0.003290	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	9.4	0.003607	2.5
Extreme (50C)	2593	8.8	0.003387	2.5
Extreme (40C)	2593	8.1	0.003112	2.5
Extreme (30C)	2593	9.3	0.003594	2.5
Extreme (10C)	2593	8.4	0.003253	2.5
Extreme (0C)	2593	8.3	0.003187	2.5
Extreme (-10C)	2593	9.0	0.003487	2.5
Extreme (-20C)	2593	9.4	0.003608	2.5
Extreme (-30C)	2593	8.7	0.003337	2.5

16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
10.8	2593	6.9	0.002661	2.5
12	2593	6.4	0.002452	2.5
13.2	2593	5.7	0.002197	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	6.9	0.002661	2.5
Extreme (50C)	2593	5.6	0.002143	2.5
Extreme (40C)	2593	5.8	0.002240	2.5
Extreme (30C)	2593	6.7	0.002574	2.5
Extreme (10C)	2593	5.9	0.002286	2.5
Extreme (0C)	2593	5.3	0.002059	2.5
Extreme (-10C)	2593	5.4	0.002075	2.5
Extreme (-20C)	2593	5.7	0.002201	2.5
Extreme (-30C)	2593	5.7	0.002214	2.5

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

11. Peak-to-Average Ratio

11.1 Description of the PAR Measurement

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

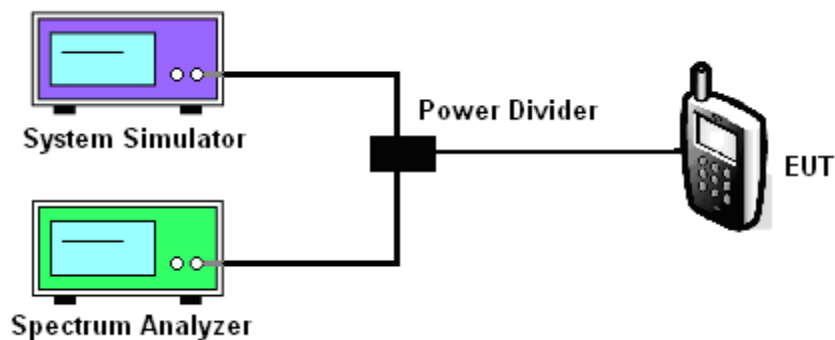
11.2 Measuring Instruments

See list of measuring instruments of this test report.

11.3 Test Procedures

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

11.4 Test Setup



MODES TESTED

☒ LTE Band 2/4/5/7/12/17/41

☐

Test data reference attachment.

----END OF REPORT----