

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

FCC ID: 2BB5A-GSS

Product: KartaDashcam
Trade Mark: N/A
Model No.: GSS
Family Model: N/A
Report No.: S25061202303006
Issue Date: Jul. 26, 2025

Prepared for

Grab Technology LLC

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Prepared by

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TEST RESULT CERTIFICATION

Applicant's name : Grab Technology LLC

Address..... : 113 Cherry ST PMB 78120 Seattle, WA 98104 USA

Manufacturer's Name..... : Grabtaxi Holdings Pte. Ltd.

Address..... : 3 Media CI, Singapore 138498

Product name..... : KartaDashcam

Model and/or type reference .. : GSS

Trade Mark..... : N/A

Family Model..... : N/A

Test Sample Number..... : S250612023003

Standards..... : FCC CFR 47 Part 22H, Part 24E, Part 27, Part 90S

Test procedure : ANSI C63.26:2015
ANSI/TIA-603-E-2016

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

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Date of Test

Date (s) of performance of tests..... Jun. 12, 2025 ~Jul. 26, 2025

Date of Issue Jul. 26, 2025

Test Result..... **Pass**

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1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	KartaDashcam
Trade Mark	N/A
Model Name	GSS
Family Model	N/A
Model Difference	N/A
FCC ID:	2BB5A-GSS
Frequency Bands:	U.S. Bands: ☒ LTE FDD Band 2, 4, 5, 12, 13, 14, 66, 71 ☒ LTE TDD Band 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 12 Uplink: 699MHz-716MHz, Downlink: 729MHz-746MHz; LTE FDD Band 13 Uplink: 777MHz-787MHz, Downlink: 746MHz-756MHz; LTE FDD Band 14 Uplink: 788MHz-798MHz, Downlink: 758MHz-768MHz; LTE TDD Band 41 Uplink& Downlink: 2496MHz-2690MHz LTE FDD Band 66 Uplink: 1710MHz-1780MHz, Downlink: 2110MHz-2200MHz; LTE FDD Band 71 Uplink: 663MHz-698MHz, Downlink: 617MHz-652MHz
Type of Modulation:	QPSK/16QAM/64QAM(Only Downlink)
Power Class	Class 3
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:	FPC Antenna
Antenna gain:	Band 2: 1.45 dBi, Band 4: 1.64 dBi, Band 5: 0.99 dBi, Band 12: -0.33 dBi, Band 13: 0.55 dBi, Band 14: 0.82 dBi, Band41: 2.47 dBi, Band 66: 1.64 dBi Band 71: -0.20 dBi

Adapter	N/A
Battery	N/A
Power supply	DC 12V
Extreme Vol. Limits:	DC 10.8V to DC 13.2V (Nominal DC 12V) (Note 1)
HW Version	V1.0
FW Version	N/A
SW Version	V1.3.8.20250428_114608
** Note1: The High Voltage DC 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: 2BB5A-GSS** 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.

No. 24 Xinfu East Road, Xiangshan Community, Xinqiao Street, Baoan District, Shenzhen, Guangdong, People's Republic of 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,

CNAS Registration No.:L5516

MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement, where expanded 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 2/4/5/12/13/14/41/66/71

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

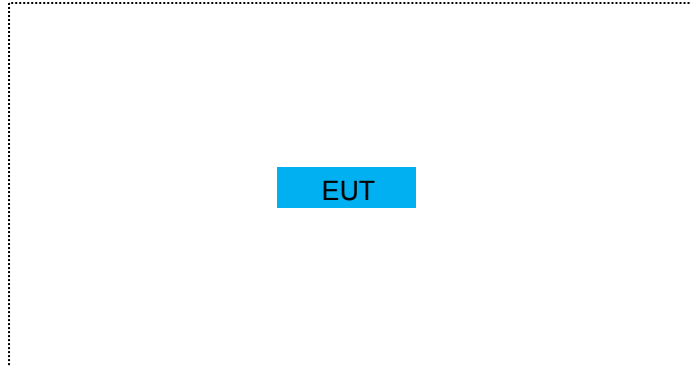
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	KartaDashcam	GSS	FCC ID: 2BB5A-GSS	EUT

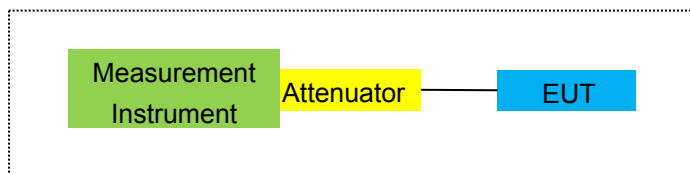
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

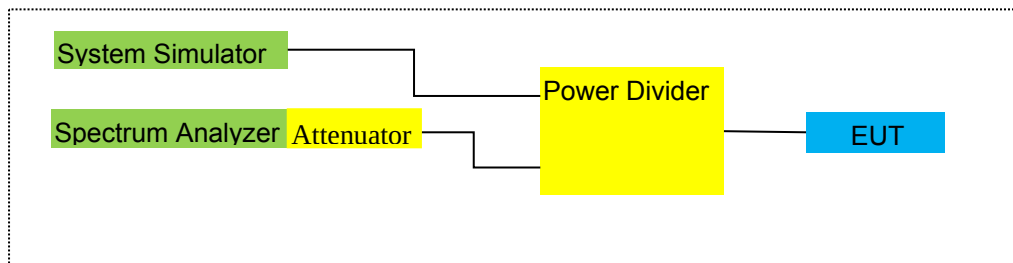
For Radiated Test Cases



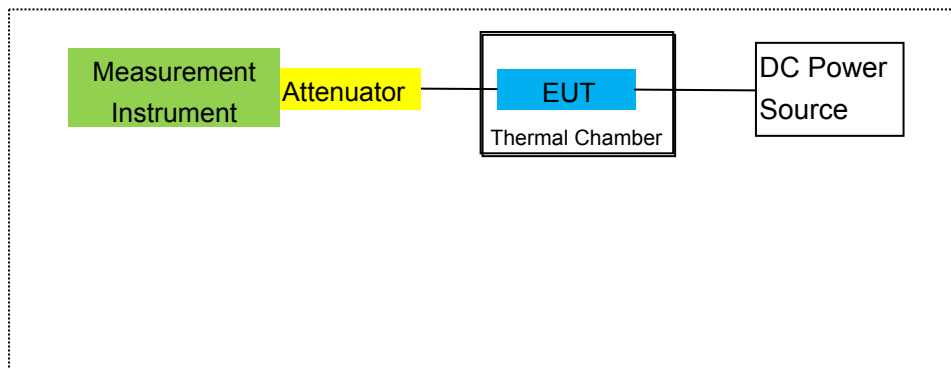
For Conducted Output Power



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	2025.04.17	2026.04.16	1 year
2	Test Receiver	R&S	ESPI	101318	2025.04.17	2026.04.16	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2025.05.11	2026.05.10	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2024.04.26	2027.04.25	3 year
5	Broadband Horn Antenna	SCHWARZBECK	BBHA 9120 D	2816	2024.5.18	2027.5.17	3 year
6	Broadband Horn Antenna	SCHWARZBECK	BBHA 9120 D	2817	2024.5.18	2027.5.17	3 year
7	Amplifier	EM	EM-30180	060538	2025.04.17	2026.04.16	1 year
8	Active Loop Antenna	SCHWARZBECK	FMZB 1519 B	055	2024.05.17	2027.05.16	3 year
9	Power Meter	R&S	NRVS	100696	2025.04.17	2026.04.16	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2025.04.17	2026.04.16	1 year
11	Test Cable	N/A	R-01	N/A	2023.06.17	2026.06.16	3 year
12	Test Cable	N/A	R-02	N/A	2023.06.17	2026.06.16	3 year
13	Test Cable	N/A	R-03	N/A	2023.06.17	2026.06.16	3 year
14	Test Receiver	R&S	ESCI	101160	2025.04.17	2026.04.16	1 year
15	LISN	R&S	ENV216	101313	2025.04.17	2026.04.16	1 year
16	LISN	EMCO	3816/2	00042990	2025.04.17	2026.04.16	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2024.04.26	2027.04.25	3 year
18	Field strength probe	narda	EP601	711WX81278	2025.04.17	2026.04.16	1 year
19	Test Cable	N/A	C01	N/A	2023.05.06	2026.05.05	3 year
20	Test Cable	N/A	C02	N/A	2023.05.06	2026.05.05	3 year
21	Test Cable	N/A	C03	N/A	2023.05.06	2026.05.05	3 year
22	Spectrum Analyzer	Agilent	E4440A	MY41000130	2025.04.17	2026.04.16	1 year
23	EMI Test Receiver	R&S	ESCI	101160	2025.04.17	2026.04.16	1 year
24	Universal Radio Communication Tester	R&S	CMU200	105747	2025.04.17	2026.04.16	1 year

25	High and Low Temperature Box	WEISS	WT 20/40 EMC Simpac	58226119460030	2024.05.30	2027.05.29	3 year
26	DC Power Source	N/A	PS-6005D	20170402923	2024.04.25	2027.04.24	3 year
27	MXG Vector Signal Generator	Agilent	N5183B	MY57280984	2025.04.17	2026.04.16	1 year
28	Log-Periodic Antenna	SCHWARZBECK	VULB 9162	584	2025.04.17	2026.04.16	1 year
29	Log-Periodic Antenna	SCHWARZBECK	VULB 9162	586	2025.04.17	2026.04.16	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

Measurement Software

Item	Manufacturer	Software Name	Software Version	Description
1	MWRFTtest	MTS 8200	2.0	RF Conducted Test
2	Farad	EZ-EMC_RE	AIT-03A	RadiatedTest
3	raditeq	RadiMation	2023.1.3	RadiatedTest

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

Band 2/4/5/12/13/14/41/66/71

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

Band 2/4/5/12/13/14/41/66/71

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

Band 2/4/5/12/13/14/41/66/71

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

Band 2/4/5/12/13/14/41/66/71

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 (dBi)	Max. EIRP	Max. EIRP Average (mW)	Polarization Of Max. ERP	
						Average			
						(dBm)			
1.4MHz Band QPSK	6/0	1850.7	16.26	3.76	8.90	21.40	137.887	Horizontal	Pass
		1880	14.49	3.91	8.90	19.48	88.774	Horizontal	Pass
		1909.3	15.49	3.93	8.90	20.46	111.270	Horizontal	Pass
3.0MHz Band QPSK	15/0	1851.5	14.05	3.77	8.90	19.18	82.828	Horizontal	Pass
		1880	14.23	3.91	8.90	19.22	83.561	Horizontal	Pass
		1908.5	15.78	3.94	8.90	20.74	118.594	Horizontal	Pass
5.0MHz Band QPSK	25/0	1852.5	16.24	3.77	8.90	21.37	137.077	Horizontal	Pass
		1880	16.62	3.91	8.90	21.61	145.007	Horizontal	Pass
		1907.5	17.17	3.94	8.90	22.13	163.321	Horizontal	Pass
10.0MHz Band QPSK	50/0	1855	16.68	3.79	8.90	21.79	150.900	Horizontal	Pass
		1880	17.83	3.95	8.90	22.78	189.723	Horizontal	Pass
		1905	15.30	3.97	8.90	20.23	105.458	Horizontal	Pass
15.0MHz Band QPSK	75/0	1857.5	15.88	3.79	8.90	20.99	125.681	Horizontal	Pass
		1880	16.85	3.95	8.90	21.80	151.319	Horizontal	Pass
		1902.5	15.61	3.97	8.90	20.54	113.182	Horizontal	Pass
20.0MHz Band QPSK	100/0	1860	17.40	3.81	8.90	22.49	177.353	Horizontal	Pass
		1880	15.06	3.96	8.90	20.00	100.092	Horizontal	Pass
		1900	17.18	4.00	8.90	22.08	161.253	Horizontal	Pass
1.4MHz Band QPSK	6/0	1850.7	16.37	3.76	8.90	21.51	141.650	Vertical	Pass
		1880	15.06	3.91	8.90	20.05	101.107	Vertical	Pass
		1909.3	16.56	3.93	8.90	21.53	142.201	Vertical	Pass
3.0MHz Band QPSK	15/0	1851.5	16.50	3.77	8.90	21.63	145.556	Vertical	Pass
		1880	16.93	3.91	8.90	21.92	155.704	Vertical	Pass
		1908.5	14.93	3.94	8.90	19.89	97.448	Vertical	Pass
5.0MHz Band QPSK	25/0	1852.5	16.09	3.77	8.90	21.22	132.291	Vertical	Pass
		1880	14.72	3.91	8.90	19.71	93.635	Vertical	Pass
		1907.5	16.40	3.94	8.90	21.36	136.700	Vertical	Pass
10.0MHz Band QPSK	50/0	1855	14.54	3.79	8.90	19.65	92.335	Vertical	Pass
		1880	14.15	3.95	8.90	19.10	81.209	Vertical	Pass
		1905	14.12	3.97	8.90	19.05	80.407	Vertical	Pass
15.0MHz	75/0	1857.5	15.28	3.79	8.90	20.39	109.509	Vertical	Pass

Band		1880	16.28	3.95	8.90	21.23	132.890	Vertical	Pass
QPSK		1902.5	16.85	3.97	8.90	21.78	150.785	Vertical	Pass
20.0MHz	100/0	1860	18.44	3.81	8.90	23.53	225.446	Vertical	Pass
Band		1880	16.09	3.96	8.90	21.03	126.866	Vertical	Pass
QPSK		1900	15.47	4.00	8.90	20.37	108.856	Vertical	Pass

Radiated Power (EIRP) for Band 2									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dBi)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	6/0	1850.7	14.60	3.76	8.90	20.91	123.435	Horizontal	Pass
		1880	15.75	3.91	8.90	20.03	100.598	Horizontal	Pass
		1909.3	15.45	3.93	8.90	20.57	113.923	Horizontal	Pass
3.0MHz Band 16 QAM	15/0	1851.5	15.29	3.77	8.90	18.37	68.693	Horizontal	Pass
		1880	14.95	3.91	8.90	20.86	122.034	Horizontal	Pass
		1908.5	14.55	3.94	8.90	19.09	81.045	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	1852.5	15.14	3.77	8.90	21.46	140.004	Horizontal	Pass
		1880	15.50	3.91	8.90	19.66	92.436	Horizontal	Pass
		1907.5	14.00	3.94	8.90	18.48	70.465	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	1855	15.35	3.79	8.90	20.32	107.550	Horizontal	Pass
		1880	14.05	3.95	8.90	19.77	94.793	Horizontal	Pass
		1905	15.36	3.97	8.90	20.84	121.350	Horizontal	Pass
15.0MHz Band 16 QAM	75/0	1857.5	13.68	3.79	8.90	20.20	104.709	Horizontal	Pass
		1880	15.77	3.95	8.90	19.17	82.683	Horizontal	Pass
		1902.5	15.65	3.97	8.90	21.11	129.089	Horizontal	Pass
20.0MHz Band 16 QAM	100/0	1860	13.84	3.81	8.90	18.53	71.269	Horizontal	Pass
		1880	16.17	3.96	8.90	19.46	88.268	Horizontal	Pass
		1900	14.55	4.00	8.90	18.80	75.875	Horizontal	Pass
1.4MHz Band 16 QAM	6/0	1850.7	14.61	3.76	8.90	20.83	120.927	Vertical	Pass
		1880	15.84	3.91	8.90	18.81	76.110	Vertical	Pass
		1909.3	15.13	3.93	8.90	19.58	90.815	Vertical	Pass
3.0MHz Band 16 QAM	15/0	1851.5	13.77	3.77	8.90	19.63	91.915	Vertical	Pass
		1880	14.83	3.91	8.90	20.61	114.983	Vertical	Pass
		1908.5	14.56	3.94	8.90	19.41	87.287	Vertical	Pass
5.0MHz Band 16 QAM	25/0	1852.5	13.76	3.77	8.90	21.74	149.129	Vertical	Pass
		1880	15.05	3.91	8.90	21.21	132.142	Vertical	Pass
		1907.5	15.69	3.94	8.90	19.63	91.786	Vertical	Pass
10.0MHz Band 16 QAM	50/0	1855	13.98	3.79	8.90	20.44	110.702	Vertical	Pass
		1880	15.57	3.95	8.90	20.93	123.905	Vertical	Pass
		1905	15.12	3.97	8.90	20.74	118.502	Vertical	Pass
15.0MHz Band 16	75/0	1857.5	13.85	3.79	8.90	19.89	97.530	Vertical	Pass
		1880	14.87	3.95	8.90	21.05	127.316	Vertical	Pass

QAM		1902.5	13.66	3.97	8.90	20.64	115.778	Vertical	Pass
20.0MHz	100/0	1860	14.29	3.81	8.90	22.03	159.546	Vertical	Pass
Band 16		1880	14.90	3.96	8.90	21.79	150.859	Vertical	Pass
QAM		1900	13.78	4.00	8.90	20.08	101.791	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)

8.3 LTE BAND 4

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dBi)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	6/0	1710.7	14.50	3.12	8.90	20.28	106.767	Horizontal	Pass
		1732.5	13.03	3.27	8.90	18.66	73.421	Horizontal	Pass
		1754.3	15.30	3.29	8.90	20.91	123.246	Horizontal	Pass
3.0MHz Band QPSK	15/0	1711.5	14.18	3.13	8.90	19.95	98.910	Horizontal	Pass
		1732.5	15.17	3.27	8.90	20.80	120.118	Horizontal	Pass
		1753.5	15.15	3.30	8.90	20.75	118.844	Horizontal	Pass
5.0MHz Band QPSK	25/0	1712.5	15.81	3.13	8.90	21.58	143.820	Horizontal	Pass
		1732.5	15.86	3.27	8.90	21.49	140.967	Horizontal	Pass
		1752.5	15.14	3.30	8.90	20.74	118.675	Horizontal	Pass
10.0MHz Band QPSK	50/0	1715	14.62	3.15	8.90	20.37	109.001	Horizontal	Pass
		1732.5	14.86	3.31	8.90	20.45	110.872	Horizontal	Pass
		1750	15.96	3.33	8.90	21.53	142.126	Horizontal	Pass
15.0MHz Band QPSK	75/0	1717.5	15.72	3.15	8.90	21.47	140.404	Horizontal	Pass
		1732.5	15.40	3.31	8.90	20.99	125.541	Horizontal	Pass
		1747.5	16.72	3.33	8.90	22.29	169.606	Horizontal	Pass
20.0MHz Band QPSK	100/0	1720	13.71	3.17	8.90	19.44	87.850	Horizontal	Pass
		1732.5	14.27	3.32	8.90	19.85	96.566	Horizontal	Pass
		1745	15.00	3.36	8.90	20.54	113.291	Horizontal	Pass
1.4MHz Band QPSK	6/0	1710.7	14.68	3.12	8.90	20.46	111.264	Vertical	Pass
		1732.5	15.72	3.27	8.90	21.35	136.401	Vertical	Pass
		1754.3	15.35	3.29	8.90	20.96	124.839	Vertical	Pass
3.0MHz Band QPSK	15/0	1711.5	15.56	3.13	8.90	21.33	135.830	Vertical	Pass
		1732.5	16.17	3.27	8.90	21.80	151.364	Vertical	Pass
		1753.5	16.55	3.30	8.90	22.15	163.960	Vertical	Pass
5.0MHz Band QPSK	25/0	1712.5	14.83	3.13	8.90	20.60	114.686	Vertical	Pass
		1732.5	15.66	3.27	8.90	21.29	134.544	Vertical	Pass
		1752.5	13.86	3.30	8.90	19.46	88.257	Vertical	Pass
10.0MHz Band	50/0	1715	12.84	3.15	8.90	18.59	72.338	Vertical	Pass
		1732.5	15.97	3.31	8.90	21.56	143.286	Vertical	Pass

QPSK		1750	14.82	3.33	8.90	20.39	109.399	Vertical	Pass
15.0MHz	75/0	1717.5	15.90	3.15	8.90	21.65	146.290	Vertical	Pass
Band		1732.5	16.17	3.31	8.90	21.76	150.064	Vertical	Pass
QPSK		1747.5	14.66	3.33	8.90	20.23	105.479	Vertical	Pass
20.0MHz	100/0	1720	16.88	3.17	8.90	22.61	182.491	Vertical	Pass
Band		1732.5	16.82	3.32	8.90	22.40	173.859	Vertical	Pass
QPSK		1745	14.00	3.36	8.90	19.54	89.997	Vertical	Pass

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dBi)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	6/0	1710.7	14.65	3.12	8.90	20.43	110.487	Horizontal	Pass
		1732.5	15.52	3.27	8.90	21.15	130.290	Horizontal	Pass
		1754.3	15.30	3.29	8.90	20.91	123.195	Horizontal	Pass
3.0MHz Band 16 QAM	15/0	1711.5	13.52	3.13	8.90	19.29	84.980	Horizontal	Pass
		1732.5	15.34	3.27	8.90	20.97	125.048	Horizontal	Pass
		1753.5	16.15	3.30	8.90	21.75	149.563	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	1712.5	14.45	3.13	8.90	20.22	105.111	Horizontal	Pass
		1732.5	13.33	3.27	8.90	18.96	78.739	Horizontal	Pass
		1752.5	14.88	3.30	8.90	20.48	111.797	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	1715	15.99	3.15	8.90	21.74	149.426	Horizontal	Pass
		1732.5	13.36	3.31	8.90	18.95	78.446	Horizontal	Pass
		1750	12.90	3.33	8.90	18.47	70.248	Horizontal	Pass
15.0MHz Band 16 QAM	75/0	1717.5	13.94	3.15	8.90	19.69	93.114	Horizontal	Pass
		1732.5	15.93	3.31	8.90	21.52	141.827	Horizontal	Pass
		1747.5	14.18	3.33	8.90	19.75	94.484	Horizontal	Pass
20.0MHz Band 16 QAM	100/0	1720	14.25	3.17	8.90	19.98	99.498	Horizontal	Pass
		1732.5	14.94	3.32	8.90	20.52	112.749	Horizontal	Pass
		1745	15.44	3.36	8.90	20.98	125.173	Horizontal	Pass
1.4MHz Band 16 QAM	6/0	1710.7	15.84	3.12	8.90	21.62	145.308	Vertical	Pass
		1732.5	15.00	3.27	8.90	20.63	115.683	Vertical	Pass
		1754.3	14.84	3.29	8.90	20.45	110.871	Vertical	Pass
3.0MHz Band 16 QAM	15/0	1711.5	14.57	3.13	8.90	20.34	108.088	Vertical	Pass
		1732.5	14.56	3.27	8.90	20.19	104.561	Vertical	Pass
		1753.5	15.74	3.30	8.90	21.34	136.237	Vertical	Pass
5.0MHz Band 16 QAM	25/0	1712.5	16.33	3.13	8.90	22.10	162.358	Vertical	Pass
		1732.5	15.58	3.27	8.90	21.21	131.984	Vertical	Pass
		1752.5	14.28	3.30	8.90	19.88	97.182	Vertical	Pass
10.0MHz Band 16 QAM	50/0	1715	13.81	3.15	8.90	19.56	90.442	Vertical	Pass
		1732.5	14.96	3.31	8.90	20.55	113.625	Vertical	Pass
		1750	16.12	3.33	8.90	21.69	147.593	Vertical	Pass

15.0MHz	75/0	1717.5	13.83	3.15	8.90	19.58	90.769	Vertical	Pass
Band 16		1732.5	14.11	3.31	8.90	19.70	93.315	Vertical	Pass
QAM		1747.5	15.09	3.33	8.90	20.66	116.433	Vertical	Pass
20.0MHz	100/0	1720	15.72	3.17	8.90	21.45	139.487	Vertical	Pass
Band 16		1732.5	16.96	3.32	8.90	22.54	179.573	Vertical	Pass
QAM		1745	15.08	3.36	8.90	20.62	115.340	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 (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	6/0	824.7	20.60	2.01	5.30	2.15	21.74	149.356	Horizontal	Pass
		836.5	21.21	2.01	5.30	2.15	22.35	171.824	Horizontal	Pass
		848.3	20.81	2.02	5.70	2.15	22.34	171.487	Horizontal	Pass
3.0MHz Band QPSK	15/0	825.5	22.09	2.01	5.30	2.15	23.23	210.336	Horizontal	Pass
		836.5	22.40	2.01	5.30	2.15	23.54	225.988	Horizontal	Pass
		847.5	20.67	2.02	5.70	2.15	22.20	165.818	Horizontal	Pass
5.0MHz Band QPSK	25/0	826.5	20.35	2.01	5.30	2.15	21.49	140.807	Horizontal	Pass
		836.5	21.30	2.01	5.30	2.15	22.44	175.493	Horizontal	Pass
		846.5	21.62	2.02	5.70	2.15	23.15	206.613	Horizontal	Pass
10.0MHz Band QPSK	50/0	829	21.06	2.01	5.30	2.15	22.20	166.000	Horizontal	Pass
		836.5	22.44	2.01	5.30	2.15	23.58	228.233	Horizontal	Pass
		844	20.63	2.02	5.70	2.15	22.16	164.342	Horizontal	Pass
1.4MHz Band QPSK	6/0	824.7	23.00	2.01	5.30	2.15	24.14	259.522	Vertical	Pass
		836.5	22.45	2.01	5.30	2.15	23.59	228.602	Vertical	Pass
		848.3	20.71	2.02	5.70	2.15	22.24	167.321	Vertical	Pass
3.0MHz Band QPSK	15/0	825.5	22.28	2.01	5.30	2.15	23.42	219.893	Vertical	Pass
		836.5	22.07	2.01	5.30	2.15	23.21	209.425	Vertical	Pass
		847.5	19.75	2.02	5.70	2.15	21.28	134.243	Vertical	Pass
5.0MHz Band QPSK	25/0	826.5	19.51	2.01	5.30	2.15	20.65	116.018	Vertical	Pass
		836.5	22.40	2.01	5.30	2.15	23.54	226.161	Vertical	Pass
		846.5	20.95	2.02	5.70	2.15	22.48	177.167	Vertical	Pass
10.0MHz Band QPSK	50/0	829	19.86	2.01	5.30	2.15	21.00	125.915	Vertical	Pass
		836.5	23.47	2.01	5.30	2.15	24.61	289.009	Vertical	Pass
		844	20.75	2.02	5.70	2.15	22.28	169.123	Vertical	Pass

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	6/0	824.7	20.29	2.01	5.30	2.15	21.43	139.143	Horizontal	Pass
		836.5	20.80	2.01	5.30	2.15	21.94	156.360	Horizontal	Pass
		848.3	20.00	2.02	5.70	2.15	21.53	142.233	Horizontal	Pass
3.0MHz Band 16 QAM	15/0	825.5	20.25	2.01	5.30	2.15	21.39	137.631	Horizontal	Pass
		836.5	19.44	2.01	5.30	2.15	20.58	114.310	Horizontal	Pass
		847.5	20.65	2.02	5.70	2.15	22.18	165.205	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	826.5	21.11	2.01	5.30	2.15	22.25	167.918	Horizontal	Pass
		836.5	19.13	2.01	5.30	2.15	20.27	106.326	Horizontal	Pass
		846.5	20.65	2.02	5.70	2.15	22.18	165.013	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	829	19.51	2.01	5.30	2.15	20.65	116.212	Horizontal	Pass
		836.5	19.49	2.01	5.30	2.15	20.63	115.500	Horizontal	Pass
		844	19.52	2.02	5.70	2.15	21.05	127.291	Horizontal	Pass
1.4MHz Band 16 QAM	6/0	824.7	21.01	2.01	5.30	2.15	22.15	163.874	Vertical	Pass
		836.5	21.42	2.01	5.30	2.15	22.56	180.189	Vertical	Pass
		848.3	20.89	2.02	5.70	2.15	22.42	174.745	Vertical	Pass
3.0MHz Band 16 QAM	15/0	825.5	19.23	2.01	5.30	2.15	20.37	108.834	Vertical	Pass
		836.5	20.23	2.01	5.30	2.15	21.37	136.966	Vertical	Pass
		847.5	19.55	2.02	5.70	2.15	21.08	128.256	Vertical	Pass
5.0MHz Band 16 QAM	25/0	826.5	20.43	2.01	5.30	2.15	21.57	143.486	Vertical	Pass
		836.5	18.50	2.01	5.30	2.15	19.64	92.037	Vertical	Pass
		846.5	20.07	2.02	5.70	2.15	21.60	144.560	Vertical	Pass
10.0MHz Band 16 QAM	50/0	829	19.77	2.01	5.30	2.15	20.91	123.262	Vertical	Pass
		836.5	22.32	2.01	5.30	2.15	23.46	221.916	Vertical	Pass
		844	21.64	2.02	5.70	2.15	23.17	207.343	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)

ERP(dBm)=EIRP-2.15

8.5 LTE BAND 12

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	6/0	699.7	17.85	1.91	5.60	2.15	19.39	86.919	Horizontal	Pass
		707.5	19.51	1.91	5.70	2.15	21.15	130.242	Horizontal	Pass
		715.3	15.99	1.93	5.80	2.15	17.71	59.083	Horizontal	Pass
3.0MHz Band QPSK	15/0	700.5	17.93	1.91	5.60	2.15	19.47	88.550	Horizontal	Pass
		707.5	17.86	1.91	5.70	2.15	19.50	89.223	Horizontal	Pass
		714.5	17.89	1.93	5.80	2.15	19.61	91.348	Horizontal	Pass
5.0MHz Band QPSK	25/0	701.5	17.55	1.91	5.60	2.15	19.09	81.008	Horizontal	Pass
		707.5	18.09	1.91	5.70	2.15	19.73	93.987	Horizontal	Pass
		713.5	17.80	1.92	5.80	2.15	19.53	89.718	Horizontal	Pass
10.0MHz Band QPSK	50/0	704	18.41	1.91	5.60	2.15	19.95	98.765	Horizontal	Pass
		707.5	17.28	1.91	5.70	2.15	18.92	77.951	Horizontal	Pass
		711	16.05	1.92	5.80	2.15	17.78	59.936	Horizontal	Pass
1.4MHz Band QPSK	6/0	699.7	17.65	1.91	5.60	2.15	19.19	82.974	Vertical	Pass
		707.5	17.22	1.91	5.70	2.15	18.86	76.967	Vertical	Pass
		715.3	16.64	1.93	5.80	2.15	18.36	68.593	Vertical	Pass
3.0MHz Band QPSK	15/0	700.5	17.92	1.91	5.60	2.15	19.46	88.292	Vertical	Pass
		707.5	16.56	1.91	5.70	2.15	18.20	66.087	Vertical	Pass
		714.5	19.52	1.93	5.80	2.15	21.24	132.977	Vertical	Pass
5.0MHz Band QPSK	25/0	701.5	17.74	1.91	5.60	2.15	19.28	84.631	Vertical	Pass
		707.5	16.86	1.91	5.70	2.15	18.50	70.854	Vertical	Pass
		713.5	17.41	1.92	5.80	2.15	19.14	81.976	Vertical	Pass
10.0MHz Band QPSK	50/0	704	18.30	1.91	5.60	2.15	19.84	96.464	Vertical	Pass
		707.5	20.13	1.91	5.70	2.15	21.77	150.246	Vertical	Pass
		711	18.99	1.92	5.80	2.15	20.72	118.046	Vertical	Pass

Radiated Power (ERP) for Band 12										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	6/0	699.7	20.44	1.91	5.60	2.15	21.98	157.839	Horizontal	Pass
		707.5	20.94	1.91	5.70	2.15	22.58	180.957	Horizontal	Pass
		715.3	20.98	1.93	5.80	2.15	22.70	186.113	Horizontal	Pass
3.0MHz Band 16 QAM	15/0	700.5	21.85	1.91	5.60	2.15	23.39	218.076	Horizontal	Pass
		707.5	18.90	1.91	5.70	2.15	20.54	113.282	Horizontal	Pass
		714.5	20.28	1.93	5.80	2.15	22.00	158.319	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	701.5	19.52	1.91	5.60	2.15	21.06	127.550	Horizontal	Pass
		707.5	22.26	1.91	5.70	2.15	23.90	245.725	Horizontal	Pass
		713.5	21.59	1.92	5.80	2.15	23.32	214.603	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	704	21.16	1.91	5.60	2.15	22.70	186.269	Horizontal	Pass
		707.5	19.37	1.91	5.70	2.15	21.01	126.242	Horizontal	Pass
		711	20.97	1.92	5.80	2.15	22.70	186.298	Horizontal	Pass
1.4MHz Band 16 QAM	6/0	699.7	19.36	1.91	5.60	2.15	20.90	122.897	Vertical	Pass
		707.5	21.42	1.91	5.70	2.15	23.06	202.156	Vertical	Pass
		715.3	20.59	1.93	5.80	2.15	22.31	170.374	Vertical	Pass
3.0MHz Band 16 QAM	15/0	700.5	22.01	1.91	5.60	2.15	23.55	226.413	Vertical	Pass
		707.5	20.67	1.91	5.70	2.15	22.31	170.348	Vertical	Pass
		714.5	22.24	1.93	5.80	2.15	23.96	249.075	Vertical	Pass
5.0MHz Band 16 QAM	25/0	701.5	20.80	1.91	5.60	2.15	22.34	171.415	Vertical	Pass
		707.5	21.96	1.91	5.70	2.15	23.60	229.038	Vertical	Pass
		713.5	19.41	1.92	5.80	2.15	21.14	129.882	Vertical	Pass
10.0MHz Band 16 QAM	50/0	704	21.02	1.91	5.60	2.15	22.56	180.489	Vertical	Pass
		707.5	22.38	1.91	5.70	2.15	24.02	252.381	Vertical	Pass
		711	20.89	1.92	5.80	2.15	22.62	182.832	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)

ERP(dBm)=EIRP-2.15

8.6 LTE BAND 13

Radiated Power (ERP) for Band 13										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	779.5	20.45	1.91	5.60	2.15	21.99	158.015	Horizontal	Pass
		782	20.36	1.91	5.70	2.15	22.00	158.387	Horizontal	Pass
		784.5	20.02	1.92	5.80	2.15	21.75	149.716	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	782	20.55	1.91	5.70	2.15	22.19	165.745	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	779.5	19.70	1.91	5.60	2.15	21.24	132.903	Vertical	Pass
		782	19.88	1.91	5.70	2.15	21.52	141.900	Vertical	Pass
		784.5	20.28	1.92	5.80	2.15	22.01	158.822	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	782	20.04	1.91	5.70	2.15	21.68	147.074	Horizontal	Pass

Radiated Power (ERP) for Band 13										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. EPR Average (dBm)	Max. EPR Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	779.5	20.08	1.91	5.60	2.15	21.62	145.304	Horizontal	Pass
		782	20.09	1.91	5.70	2.15	21.73	148.883	Horizontal	Pass
		784.5	19.77	1.92	5.80	2.15	21.50	141.240	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	782	20.55	1.91	5.70	2.15	22.19	165.745	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	779.5	19.60	1.91	5.60	2.15	21.14	130.098	Vertical	Pass
		782	20.23	1.91	5.70	2.15	21.87	153.712	Vertical	Pass
		784.5	20.35	1.92	5.80	2.15	22.08	161.318	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	782	21.06	1.91	5.70	2.15	22.70	186.121	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)

ERP(dBm)=EIRP-2.15

8.7 LTE BAND 14

Radiated Power (ERP) for Band 14										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	25/0	705.5	7.00	1.91	19.21	2.15	22.15	164.194	Horizontal	Pass
		720.5	6.95	1.93	19.34	2.15	22.21	166.245	Horizontal	Pass
		745.5	7.07	1.96	19.52	2.15	22.48	176.957	Horizontal	Pass
10.0MHz Band QPSK	50/0	793.00	7.58	1.92	19.25	2.15	22.76	188.644	Horizontal	Pass
5.0MHz Band QPSK	25/0	790.5	6.92	1.91	19.21	2.15	22.07	161.144	Vertical	Pass
		793	7.69	1.93	19.34	2.15	22.95	197.430	Vertical	Pass
		795.5	7.57	1.96	19.52	2.15	22.98	198.487	Vertical	Pass
10.0MHz Band QPSK	50/0	793.00	7.81	1.92	19.25	2.15	22.99	199.046	Vertical	Pass

Radiated Power (ERP) for Band 14										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor (dB)	Correction (dB)	Max. EPR Average (dBm)	Max. EPR Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	25/0	705.5	6.06	1.91	19.21	2.15	21.21	132.037	Horizontal	Pass
		720.5	6.66	1.93	19.34	2.15	21.92	155.452	Horizontal	Pass
		745.5	5.69	1.96	19.52	2.15	21.10	128.917	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	793.00	6.75	1.92	19.25	2.15	21.93	155.891	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	790.5	6.46	1.91	19.21	2.15	21.61	144.719	Vertical	Pass
		793	5.91	1.93	19.34	2.15	21.17	130.835	Vertical	Pass
		795.5	6.47	1.96	19.52	2.15	21.88	154.259	Vertical	Pass
10.0MHz Band 16 QAM	50/0	793.00	6.78	1.92	19.25	2.15	21.96	157.028	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)

ERP(dBm)=EIRP-2.15

8.8 LTE BAND 41

Radiated Power (EIRP) for Band 41									
Mode	RB/RB 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	
5.0MHz Band QPSK	25/0	2498.5	18.08	4.54	9.00	22.54	179.557	Horizontal	Pass
		2593	18.65	4.69	9.00	22.96	197.604	Horizontal	Pass
		2687.5	16.92	4.71	9.00	21.21	132.041	Horizontal	Pass
10.0MHz Band QPSK	50/0	2501	18.67	4.55	9.00	23.12	205.278	Horizontal	Pass
		2593	17.78	4.69	9.00	22.09	161.761	Horizontal	Pass
		2685	17.76	4.72	9.00	22.04	160.119	Horizontal	Pass
15.0MHz Band QPSK	75/0	2503.5	15.69	4.55	9.00	20.14	103.254	Horizontal	Pass
		2593	18.90	4.69	9.00	23.21	209.394	Horizontal	Pass
		2682.5	18.59	4.72	9.00	22.87	193.605	Horizontal	Pass
20.0MHz Band QPSK	100/0	2506	17.54	4.57	9.00	21.97	157.344	Horizontal	Pass
		2593	17.25	4.73	9.00	21.52	142.021	Horizontal	Pass
		2680	19.21	4.75	9.00	23.46	221.735	Horizontal	Pass
5.0MHz Band QPSK	25/0	2498.5	18.22	4.54	9.00	22.68	185.361	Vertical	Pass
		2593	17.73	4.69	9.00	22.04	159.919	Vertical	Pass
		2687.5	17.72	4.71	9.00	22.01	158.898	Vertical	Pass
10.0MHz Band QPSK	50/0	2501	16.95	4.55	9.00	21.40	138.169	Vertical	Pass
		2593	17.53	4.69	9.00	21.84	152.788	Vertical	Pass
		2685	18.00	4.72	9.00	22.28	168.880	Vertical	Pass
15.0MHz Band QPSK	75/0	2503.5	16.54	4.55	9.00	20.99	125.545	Vertical	Pass
		2593	18.76	4.69	9.00	23.07	202.619	Vertical	Pass
		2682.5	17.02	4.72	9.00	21.30	134.800	Vertical	Pass
20.0MHz Band QPSK	100/0	2506	19.33	4.57	9.00	23.76	237.455	Vertical	Pass
		2593	17.40	4.73	9.00	21.67	146.851	Vertical	Pass
		2680	18.60	4.75	9.00	22.85	192.646	Vertical	Pass

Radiated Power (EIRP) for Band 41									
Mode	RB/RB 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	
5.0MHz Band 16 QAM	25/0	2498.5	16.77	4.54	9.00	21.23	132.887	Horizontal	Pass
		2593	17.27	4.69	9.00	21.58	143.968	Horizontal	Pass
		2687.5	18.36	4.71	9.00	22.65	183.907	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	2501	17.99	4.55	9.00	22.44	175.434	Horizontal	Pass
		2593	18.46	4.69	9.00	22.77	189.122	Horizontal	Pass
		2685	18.46	4.72	9.00	22.74	187.885	Horizontal	Pass
15.0MHz Band 16 QAM	75/0	2503.5	19.35	4.55	9.00	23.80	239.982	Horizontal	Pass
		2593	18.08	4.69	9.00	22.39	173.509	Horizontal	Pass
		2682.5	19.08	4.72	9.00	23.36	216.638	Horizontal	Pass
20.0MHz Band 16 QAM	100/0	2506	17.99	4.57	9.00	22.42	174.551	Horizontal	Pass
		2593	17.34	4.73	9.00	21.61	144.998	Horizontal	Pass
		2680	19.10	4.75	9.00	23.35	216.067	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	2498.5	18.41	4.54	9.00	22.87	193.832	Vertical	Pass
		2593	18.53	4.69	9.00	22.84	192.110	Vertical	Pass
		2687.5	18.52	4.71	9.00	22.81	191.055	Vertical	Pass
10.0MHz Band 16 QAM	50/0	2501	18.86	4.55	9.00	23.31	214.439	Vertical	Pass
		2593	17.58	4.69	9.00	21.89	154.684	Vertical	Pass
		2685	17.35	4.72	9.00	21.63	145.602	Vertical	Pass
15.0MHz Band 16 QAM	75/0	2503.5	17.92	4.55	9.00	22.37	172.522	Vertical	Pass
		2593	17.62	4.69	9.00	21.93	155.895	Vertical	Pass
		2682.5	18.33	4.72	9.00	22.61	182.490	Vertical	Pass
20.0MHz Band 16 QAM	100/0	2506	18.76	4.57	9.00	23.19	208.547	Vertical	Pass
		2593	19.67	4.73	9.00	23.94	247.811	Vertical	Pass
		2680	18.76	4.75	9.00	23.01	200.077	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 66

Radiated Power (EIRP) for Band 66									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	6/0	1710.7	14.64	3.12	8.90	20.42	110.244	Horizontal	Pass
		1745	13.51	3.27	8.90	19.14	82.052	Horizontal	Pass
		1779.3	16.56	3.29	8.90	22.17	164.635	Horizontal	Pass
3.0MHz Band QPSK	15/0	1711.5	14.52	3.13	8.90	20.29	106.906	Horizontal	Pass
		1745	16.03	3.27	8.90	21.66	146.515	Horizontal	Pass
		1778.5	14.82	3.30	8.90	20.42	110.149	Horizontal	Pass
5.0MHz Band QPSK	25/0	1712.5	15.99	3.13	8.90	21.76	149.835	Horizontal	Pass
		1745	16.29	3.27	8.90	21.92	155.627	Horizontal	Pass
		1777.5	14.39	3.30	8.90	19.99	99.880	Horizontal	Pass
10.0MHz Band QPSK	50/0	1715	16.09	3.15	8.90	21.84	152.885	Horizontal	Pass
		1745	15.41	3.31	8.90	21.00	125.861	Horizontal	Pass
		1775	16.06	3.33	8.90	21.63	145.623	Horizontal	Pass
15.0MHz Band QPSK	75/0	1717.5	15.55	3.15	8.90	21.30	134.952	Horizontal	Pass
		1745	16.35	3.31	8.90	21.94	156.162	Horizontal	Pass
		1772.5	16.52	3.33	8.90	22.09	161.956	Horizontal	Pass
20.0MHz Band QPSK	100/0	1720	14.97	3.17	8.90	20.70	117.494	Horizontal	Pass
		1745	15.66	3.32	8.90	21.24	132.953	Horizontal	Pass
		1770	16.02	3.36	8.90	21.56	143.197	Horizontal	Pass
1.4MHz Band QPSK	6/0	1710.7	15.31	3.12	8.90	21.09	128.612	Vertical	Pass
		1745	16.51	3.27	8.90	22.14	163.632	Vertical	Pass
		1779.3	16.13	3.29	8.90	21.74	149.330	Vertical	Pass
3.0MHz Band QPSK	15/0	1711.5	16.42	3.13	8.90	22.19	165.695	Vertical	Pass
		1745	17.03	3.27	8.90	22.66	184.435	Vertical	Pass
		1778.5	15.34	3.30	8.90	20.94	124.140	Vertical	Pass
5.0MHz Band QPSK	25/0	1712.5	15.46	3.13	8.90	21.23	132.610	Vertical	Pass
		1745	14.93	3.27	8.90	20.56	113.854	Vertical	Pass
		1777.5	14.12	3.30	8.90	19.72	93.684	Vertical	Pass
10.0MHz Band QPSK	50/0	1715	13.35	3.15	8.90	19.10	81.361	Vertical	Pass
		1745	16.80	3.31	8.90	22.39	173.464	Vertical	Pass
		1775	14.85	3.33	8.90	20.42	110.193	Vertical	Pass

15.0MHz	75/0	1717.5	16.63	3.15	8.90	22.38	173.011	Vertical	Pass
Band		1745	16.87	3.31	8.90	22.46	176.206	Vertical	Pass
QPSK		1772.5	15.62	3.33	8.90	21.19	131.521	Vertical	Pass
20.0MHz	100/0	1720	17.36	3.17	8.90	23.09	203.836	Vertical	Pass
Band		1745	16.31	3.32	8.90	21.89	154.349	Vertical	Pass
QPSK		1770	14.10	3.36	8.90	19.64	92.133	Vertical	Pass

Radiated Power (EIRP) for Band 66									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	6/0	1710.7	16.63	3.12	8.9	22.41	174.205	Horizontal	Pass
		1745	17.22	3.27	8.9	22.85	192.877	Horizontal	Pass
		1779.3	17.41	3.29	8.9	23.02	200.525	Horizontal	Pass
3.0MHz Band 16 QAM	15/0	1711.5	16.40	3.13	8.9	22.17	164.938	Horizontal	Pass
		1745	16.27	3.27	8.9	21.90	154.766	Horizontal	Pass
		1778.5	17.11	3.3	8.9	22.71	186.734	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	1712.5	15.99	3.13	8.9	21.76	150.034	Horizontal	Pass
		1745	14.43	3.27	8.9	20.06	101.449	Horizontal	Pass
		1777.5	15.17	3.3	8.9	20.77	119.535	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	1715	15.98	3.15	8.9	21.73	149.074	Horizontal	Pass
		1745	14.95	3.31	8.9	20.54	113.240	Horizontal	Pass
		1775	15.14	3.33	8.9	20.71	117.690	Horizontal	Pass
15.0MHz Band 16 QAM	75/0	1717.5	14.62	3.15	8.9	20.37	108.792	Horizontal	Pass
		1745	15.72	3.31	8.9	21.31	135.284	Horizontal	Pass
		1772.5	16.40	3.33	8.9	21.97	157.517	Horizontal	Pass
20.0MHz Band 16 QAM	100/0	1720	16.66	3.17	8.9	22.39	173.342	Horizontal	Pass
		1745	16.27	3.32	8.9	21.85	153.266	Horizontal	Pass
		1770	15.97	3.36	8.9	21.51	141.460	Horizontal	Pass
1.4MHz Band 16 QAM	6/0	1710.7	15.89	3.12	8.9	21.67	146.937	Vertical	Pass
		1745	16.79	3.27	8.9	22.42	174.576	Vertical	Pass
		1779.3	16.16	3.29	8.9	21.77	150.391	Vertical	Pass
3.0MHz Band 16 QAM	15/0	1711.5	15.19	3.13	8.9	20.96	124.682	Vertical	Pass
		1745	14.88	3.27	8.9	20.51	112.458	Vertical	Pass
		1778.5	16.59	3.3	8.9	22.19	165.602	Vertical	Pass
5.0MHz Band 16 QAM	25/0	1712.5	17.02	3.13	8.9	22.79	190.166	Vertical	Pass
		1745	17.26	3.27	8.9	22.89	194.477	Vertical	Pass
		1777.5	15.23	3.3	8.9	20.83	120.970	Vertical	Pass
10.0MHz Band 16 QAM	50/0	1715	14.55	3.15	8.9	20.30	107.230	Vertical	Pass
		1745	17.51	3.31	8.9	23.10	204.087	Vertical	Pass
		1775	16.78	3.33	8.9	22.35	171.692	Vertical	Pass
15.0MHz Band 16	75/0	1717.5	14.88	3.15	8.9	20.63	115.641	Vertical	Pass
		1745	16.45	3.31	8.9	22.04	159.828	Vertical	Pass

QAM		1772.5	15.56	3.33	8.9	21.13	129.728	Vertical	Pass
20.0MHz	100/0	1720	17.66	3.17	8.9	23.39	218.210	Vertical	Pass
Band 16		1745	16.71	3.32	8.9	22.29	169.243	Vertical	Pass
QAM		1770	16.87	3.36	8.9	22.41	173.989	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)

8.10 LTE BAND 71

Radiated Power (ERP) for Band 71										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	25/0	665.5	5.54	1.91	19.21	2.15	20.69	117.264	Horizontal	Pass
		680.5	4.92	1.91	19.26	2.15	20.12	102.915	Horizontal	Pass
		695.5	4.87	1.93	19.34	2.15	20.13	103.121	Horizontal	Pass
10.0MHz Band QPSK	50/0	668	4.72	1.91	19.21	2.15	19.87	96.991	Horizontal	Pass
		680.5	4.76	1.91	19.26	2.15	19.96	98.979	Horizontal	Pass
		693	5.14	1.93	19.34	2.15	20.40	109.624	Horizontal	Pass
15.0MHz Band QPSK	75/0	670.5	4.97	1.91	19.23	2.15	20.14	103.326	Horizontal	Pass
		680.5	5.50	1.91	19.26	2.15	20.70	117.404	Horizontal	Pass
		690.5	5.30	1.92	19.33	2.15	20.56	113.853	Horizontal	Pass
20.0MHz Band QPSK	100/0	673	5.02	1.91	19.25	2.15	20.21	104.896	Horizontal	Pass
		683	4.85	1.91	19.26	2.15	20.05	101.057	Horizontal	Pass
		688	4.96	1.92	19.32	2.15	20.21	104.968	Horizontal	Pass
5.0MHz Band QPSK	25/0	665.5	5.04	1.91	19.21	2.15	20.19	104.498	Vertical	Pass
		680.5	4.76	1.91	19.26	2.15	19.96	98.972	Vertical	Pass
		695.5	5.23	1.93	19.34	2.15	20.49	111.876	Vertical	Pass
15.0MHz Band QPSK	50/0	668	5.57	1.91	19.21	2.15	20.72	117.969	Vertical	Pass
		680.5	4.71	1.91	19.26	2.15	19.91	98.030	Vertical	Pass
		693	5.40	1.93	19.34	2.15	20.66	116.503	Vertical	Pass
15.0MHz Band QPSK	75/0	670.5	5.37	1.91	19.23	2.15	20.54	113.232	Vertical	Pass
		680.5	4.65	1.91	19.26	2.15	19.85	96.684	Vertical	Pass
		690.5	4.57	1.92	19.33	2.15	19.83	96.127	Vertical	Pass
20MHz Band QPSK	100/0	673	5.25	1.91	19.25	2.15	20.44	110.658	Vertical	Pass
		683	5.56	1.91	19.26	2.15	20.76	119.198	Vertical	Pass
		688	5.48	1.92	19.32	2.15	20.73	118.210	Vertical	Pass

Radiated Power (ERP) for Band 71										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	25/0	665.5	4.32	1.91	19.21	2.15	19.47	88.495	Horizontal	665.5
		680.5	4.23	1.91	19.26	2.15	19.43	87.719	Horizontal	680.5
		695.5	3.88	1.93	19.34	2.15	19.14	82.028	Horizontal	695.5
10.0MHz Band 16 QAM	50/0	668	4.00	1.91	19.21	2.15	19.15	82.138	Horizontal	668
		680.5	4.71	1.91	19.26	2.15	19.91	98.019	Horizontal	680.5
		693	4.08	1.93	19.34	2.15	19.34	85.959	Horizontal	693
15.0MHz Band 16 QAM	75/0	670.5	4.34	1.91	19.23	2.15	19.51	89.243	Horizontal	670.5
		680.5	3.98	1.91	19.26	2.15	19.18	82.850	Horizontal	680.5
		690.5	4.40	1.92	19.33	2.15	19.66	92.401	Horizontal	690.5
20.0MHz Band 16 QAM	100/0	673	4.61	1.91	19.25	2.15	19.80	95.543	Horizontal	673
		683	4.69	1.91	19.26	2.15	19.89	97.418	Horizontal	683
		688	4.60	1.92	19.32	2.15	19.85	96.586	Horizontal	688
5.0MHz Band 16 QAM	25/0	665.5	4.16	1.91	19.21	2.15	19.31	85.213	Vertical	665.5
		680.5	4.00	1.91	19.26	2.15	19.20	83.127	Vertical	680.5
		695.5	4.16	1.93	19.34	2.15	19.42	87.557	Vertical	695.5
10.0MHz Band 16 QAM	50/0	668	4.27	1.91	19.21	2.15	19.42	87.590	Vertical	668
		680.5	4.14	1.91	19.26	2.15	19.34	85.835	Vertical	680.5
		693	3.84	1.93	19.34	2.15	19.10	81.202	Vertical	693
15.0MHz Band 16 QAM	75/0	670.5	4.11	1.91	19.23	2.15	19.28	84.710	Vertical	670.5
		680.5	4.46	1.91	19.26	2.15	19.66	92.572	Vertical	680.5
		690.5	4.40	1.92	19.33	2.15	19.66	92.547	Vertical	690.5
20.0MHz Band 16 QAM	100/0	673	3.93	1.91	19.25	2.15	19.12	81.742	Vertical	673
		683	4.84	1.91	19.26	2.15	20.04	100.841	Vertical	683
		688	4.04	1.92	19.32	2.15	19.29	84.900	Vertical	688

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)

ERP=EIRP-2.15

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 2/4/5/12/13/14/41/66/71

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 Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3701.5	-48.52	4.04	33.51	-19.05	-13	-6.05	Horizontal
3701.5	-51.27	4.04	33.51	-21.80	-13	-8.80	Vertical
5552.3	-46.30	5.24	35.84	-15.70	-13	-2.70	Vertical
5552.3	-49.08	5.24	35.84	-18.48	-13	-5.48	Horizontal
185.2	-40.09	1.43	16.02	-25.49	-13	-12.49	Vertical
454.0	-32.95	1.30	17.99	-16.26	-13	-3.26	Horizontal
Test Results for Mid Channel 1880MHz							
3760.5	-46.95	4.04	33.56	-17.43	-13	-4.43	Horizontal
3760.5	-51.07	4.04	33.56	-21.55	-13	-8.55	Vertical
5640.7	-49.08	5.24	35.91	-18.41	-13	-5.41	Vertical
5640.7	-50.27	5.24	35.91	-19.60	-13	-6.60	Horizontal
184.3	-35.06	1.62	16.97	-19.71	-13	-6.71	Vertical
289.8	-34.11	1.74	15.98	-19.88	-13	-6.88	Horizontal
Test Results for High Channel 1909.3MHz							
3819.0	-45.89	4.04	34.00	-15.93	-13	-2.93	Horizontal
3819.0	-45.40	4.04	34.00	-15.44	-13	-2.44	Vertical
5728.2	-50.47	5.24	36.04	-19.67	-13	-6.67	Vertical
5728.2	-47.71	5.24	36.04	-16.91	-13	-3.91	Horizontal
194.2	-40.13	1.42	17.29	-24.25	-13	-11.25	Vertical
342.8	-34.22	1.50	17.90	-17.81	-13	-4.81	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 Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3720.1	-45.13	4.07	33.54	-15.66	-13	-2.66	Horizontal
3720.1	-49.28	4.07	33.54	-19.81	-13	-6.81	Vertical
5580.9	-46.93	5.28	35.86	-16.35	-13	-3.35	Vertical
5580.9	-49.71	5.28	35.86	-19.13	-13	-6.13	Horizontal
208.7	-36.97	1.58	16.89	-21.66	-13	-8.66	Vertical
357.0	-41.77	1.76	17.26	-26.27	-13	-13.27	Horizontal
Test Results for Mid Channel 1880MHz							
3760.3	-45.39	4.04	33.56	-15.87	-13	-2.87	Horizontal
3760.3	-45.50	4.04	33.56	-15.98	-13	-2.98	Vertical
5640.9	-50.22	5.24	35.91	-19.55	-13	-6.55	Vertical
5640.9	-50.37	5.24	35.91	-19.70	-13	-6.70	Horizontal
200.8	-43.30	1.46	16.27	-28.49	-13	-15.49	Vertical
345.1	-38.55	1.59	15.15	-25.00	-13	-12.00	Horizontal
Test Results for High Channel 1900MHz							
3800.9	-48.20	4.04	34.00	-18.24	-13	-5.24	Horizontal
3800.9	-45.86	4.04	34.00	-15.90	-13	-2.90	Vertical
5700.0	-46.35	5.24	36.04	-15.55	-13	-2.55	Vertical
5700.0	-50.29	5.24	36.04	-19.49	-13	-6.49	Horizontal
212.8	-33.82	1.36	17.39	-17.79	-13	-4.79	Vertical
313.2	-39.92	1.66	15.39	-26.20	-13	-13.20	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 Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3422.0	-48.24	4.02	29.80	-22.46	-13	-9.46	Horizontal
3422.0	-46.15	4.02	29.80	-20.37	-13	-7.37	Vertical
5132.2	-49.57	5.24	35.84	-18.97	-13	-5.97	Vertical
5132.2	-50.48	5.24	35.84	-19.88	-13	-6.88	Horizontal
198.5	-40.35	1.68	16.04	-25.98	-13	-12.98	Vertical
454.7	-33.98	1.78	17.74	-18.02	-13	-5.02	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.1	-48.52	4.03	30.00	-22.55	-13	-9.55	Horizontal
3465.1	-42.45	4.03	30.00	-16.48	-13	-3.48	Vertical
5198.1	-46.59	5.25	35.86	-15.98	-13	-2.98	Vertical
5198.1	-48.13	5.25	35.86	-17.52	-13	-4.52	Horizontal
208.5	-40.60	1.72	17.69	-24.63	-13	-11.63	Vertical
346.3	-41.55	1.62	16.02	-27.15	-13	-14.15	Horizontal
Test Results for High Channel 1754.3MHz							
3509.0	-48.07	4.05	30.01	-22.11	-13	-9.11	Horizontal
3509.0	-45.60	4.05	30.01	-19.64	-13	-6.64	Vertical
5263.2	-47.72	5.26	35.86	-17.12	-13	-4.12	Vertical
5263.2	-48.37	5.26	35.86	-17.77	-13	-4.77	Horizontal
183.3	-31.37	1.80	16.69	-16.47	-13	-3.47	Vertical
333.0	-38.92	1.75	16.66	-24.01	-13	-11.01	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 Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.8	-48.19	4.02	29.80	-22.41	-13	-9.41	Horizontal
3440.8	-47.27	4.02	29.80	-21.49	-13	-8.49	Vertical
5160.1	-51.28	5.24	35.84	-20.68	-13	-7.68	Vertical
5160.1	-49.77	5.24	35.84	-19.17	-13	-6.17	Horizontal
183.5	-39.13	1.57	17.26	-23.44	-13	-10.44	Vertical
310.3	-33.76	1.78	16.35	-19.19	-13	-6.19	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.3	-48.67	4.03	30.00	-22.70	-13	-9.70	Horizontal
3465.3	-49.54	4.03	30.00	-23.57	-13	-10.57	Vertical
5198.3	-46.72	5.25	35.86	-16.11	-13	-3.11	Vertical
5198.3	-46.97	5.25	35.86	-16.36	-13	-3.36	Horizontal
209.0	-39.90	1.44	17.95	-23.39	-13	-10.39	Vertical
269.6	-31.26	1.65	16.09	-16.82	-13	-3.82	Horizontal
Test Results for High Channel 1745MHz							
3490.1	-43.55	2.91	27.68	-18.78	-13	-5.78	Horizontal
3490.1	-44.78	2.91	27.68	-20.01	-13	-7.01	Vertical
5235.9	-46.81	5.26	35.86	-16.21	-13	-3.21	Vertical
5235.9	-51.94	5.26	35.86	-21.34	-13	-8.34	Horizontal
185.6	-39.54	1.61	16.85	-24.29	-13	-11.29	Vertical
291.3	-39.37	1.61	15.19	-25.79	-13	-12.79	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 Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1649.9	-46.24	2.78	27.50	-21.52	-13	-8.52	Horizontal
1649.9	-49.17	2.78	27.50	-24.45	-13	-11.45	Vertical
2474.5	-44.94	2.90	27.80	-20.04	-13	-7.04	Vertical
2474.5	-50.97	2.90	27.80	-26.07	-13	-13.07	Horizontal
180.0	-35.82	1.76	17.59	-19.99	-13	-6.99	Vertical
460.8	-39.12	1.63	15.87	-24.88	-13	-11.88	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.8	-46.16	2.80	27.48	-21.48	-13	-8.48	Horizontal
1673.8	-45.18	2.80	27.48	-20.50	-13	-7.50	Vertical
2510.0	-42.64	2.91	27.70	-17.85	-13	-4.85	Vertical
2510.0	-49.36	2.91	27.70	-24.57	-13	-11.57	Horizontal
213.0	-40.59	1.61	15.68	-26.52	-13	-13.52	Vertical
431.8	-35.87	1.59	17.52	-19.95	-13	-6.95	Horizontal
Test Results for High Channel 848.3MHz							
1696.7	-48.18	2.82	27.43	-23.57	-13	-10.57	Horizontal
1696.7	-50.27	2.82	27.43	-25.66	-13	-12.66	Vertical
2545.6	-43.05	2.92	27.74	-18.23	-13	-5.23	Vertical
2545.6	-50.66	2.92	27.74	-25.84	-13	-12.84	Horizontal
193.6	-33.93	1.69	16.67	-18.94	-13	-5.94	Vertical
366.9	-34.12	1.70	17.18	-18.64	-13	-5.64	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 Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1658.2	-50.65	2.78	27.50	-25.93	-13	-12.93	Horizontal
1658.2	-41.14	2.78	27.50	-16.42	-13	-3.42	Vertical
2487.0	-52.25	2.90	27.80	-27.35	-13	-14.35	Vertical
2487.0	-48.11	2.90	27.80	-23.21	-13	-10.21	Horizontal
200.4	-41.37	1.71	15.57	-27.50	-13	-14.50	Vertical
364.4	-31.42	1.34	16.40	-16.36	-13	-3.36	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-41.50	2.80	27.48	-16.82	-13	-3.82	Horizontal
1673.0	-42.08	2.80	27.48	-17.40	-13	-4.40	Vertical
2509.8	-50.21	2.91	27.70	-25.42	-13	-12.42	Vertical
2509.8	-46.24	2.91	27.70	-21.45	-13	-8.45	Horizontal
212.6	-31.40	1.44	17.04	-15.80	-13	-2.80	Vertical
343.8	-41.49	1.76	17.62	-25.64	-13	-12.64	Horizontal
Test Results for High Channel 844MHz							
1688.9	-45.64	2.82	27.43	-21.03	-13	-8.03	Horizontal
1688.9	-46.38	2.82	27.43	-21.77	-13	-8.77	Vertical
2532.5	-50.15	2.92	27.74	-25.33	-13	-12.33	Vertical
2532.5	-46.87	2.92	27.74	-22.05	-13	-9.05	Horizontal
205.7	-34.47	1.74	17.70	-18.50	-13	-5.50	Vertical
393.8	-34.74	1.41	17.46	-18.69	-13	-5.69	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 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 Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1400.0	-42.18	2.60	27.20	-17.58	-13	-4.58	Horizontal
1400.0	-42.25	2.60	27.20	-17.65	-13	-4.65	Vertical
2099.9	-49.07	2.85	27.54	-24.38	-13	-11.38	Vertical
2099.9	-47.47	2.85	27.54	-22.78	-13	-9.78	Horizontal
212.1	-35.65	1.49	17.78	-19.37	-13	-6.37	Vertical
386.5	-40.05	1.36	17.33	-24.08	-13	-11.08	Horizontal
Test Results For Mid Channel 707.5MHz							
1415.0	-44.48	2.61	27.28	-19.81	-13	-6.81	Horizontal
1415.0	-43.67	2.61	27.28	-19.00	-13	-6.00	Vertical
2122.8	-49.58	2.87	27.59	-24.86	-13	-11.86	Vertical
2122.8	-48.50	2.87	27.59	-23.78	-13	-10.78	Horizontal
208.1	-38.66	1.73	15.74	-24.65	-13	-11.65	Vertical
385.3	-32.22	1.62	15.79	-18.05	-13	-5.05	Horizontal
Test Results for High Channel 715.3MHz							
1431.1	-50.53	2.63	27.28	-25.88	-13	-12.88	Horizontal
1431.1	-45.98	2.63	27.28	-21.33	-13	-8.33	Vertical
2146.3	-43.10	2.88	27.60	-18.38	-13	-5.38	Vertical
2146.3	-47.49	2.88	27.60	-22.77	-13	-9.77	Horizontal
186.6	-32.92	1.61	18.00	-16.53	-13	-3.53	Vertical
281.2	-35.46	1.45	15.49	-21.42	-13	-8.42	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 Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1408.7	-51.90	2.61	27.26	-27.25	-13	-14.25	Horizontal
1408.7	-45.35	2.61	27.26	-20.70	-13	-7.70	Vertical
2112.3	-47.34	2.87	27.58	-22.63	-13	-9.63	Vertical
2112.3	-50.09	2.87	27.58	-25.38	-13	-12.38	Horizontal
197.3	-39.54	1.31	16.97	-23.88	-13	-10.88	Vertical
469.6	-41.77	1.65	16.70	-26.71	-13	-13.71	Horizontal
Test Results for Mid Channel 707.5MHz							
1415.2	-44.14	2.61	27.28	-19.47	-13	-6.47	Horizontal
1415.2	-50.01	2.61	27.28	-25.34	-13	-12.34	Vertical
2123.1	-50.97	2.87	27.59	-26.25	-13	-13.25	Vertical
2123.1	-50.05	2.87	27.59	-25.33	-13	-12.33	Horizontal
176.0	-35.34	1.72	17.99	-19.07	-13	-6.07	Vertical
363.6	-39.52	1.73	17.94	-23.31	-13	-10.31	Horizontal
Test Results for High Channel 711MHz							
1422.6	-46.87	2.62	27.28	-22.21	-13	-9.21	Horizontal
1422.6	-42.01	2.62	27.28	-17.35	-13	-4.35	Vertical
2133.0	-51.71	2.87	27.60	-26.98	-13	-13.98	Vertical
2133.0	-48.17	2.87	27.60	-23.44	-13	-10.44	Horizontal
209.1	-35.86	1.58	15.93	-21.51	-13	-8.51	Vertical
361.3	-31.73	1.36	15.59	-17.50	-13	-4.50	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 13

LTE BAND 13 (5MHZ BANDWIDTH)

Test Results for Low Channel 779.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1558.2	-70.70	2.61	27.28	-46.03	-40	-6.03	Horizontal
1558.2	-73.72	2.61	27.28	-49.05	-40	-9.05	Vertical
2338.5	-40.98	2.87	27.59	-16.26	-13	-3.26	Vertical
2338.5	-41.58	2.87	27.59	-16.86	-13	-3.86	Horizontal
119.7	-39.17	1.54	15.61	-25.10	-13	-12.10	Vertical
197.2	-37.81	1.51	15.21	-24.11	-13	-11.11	Horizontal
Test Results For Mid Channel 782MHz							
1563.5	-71.94	2.62	27.30	-47.26	-40	-7.26	Horizontal
1563.5	-71.16	2.62	27.30	-46.48	-40	-6.48	Vertical
2345.2	-42.16	2.87	27.62	-17.41	-13	-4.41	Vertical
2345.2	-40.41	2.87	27.62	-15.66	-13	-2.66	Horizontal
130.7	-35.94	1.65	16.17	-21.42	-13	-8.42	Vertical
267.3	-38.04	1.48	16.88	-22.64	-13	-9.64	Horizontal
Test Results for High Channel 784.5MHz							
1569.0	-73.01	2.66	27.28	-48.39	-40	-8.39	Horizontal
1569.0	-70.62	2.66	27.28	-46.00	-40	-6.00	Vertical
2352.8	-43.98	2.88	27.60	-19.26	-13	-6.26	Vertical
2352.8	-44.28	2.88	27.60	-19.56	-13	-6.56	Horizontal
80.1	-37.03	1.54	16.40	-22.17	-13	-9.17	Vertical
155.5	-37.37	1.43	15.77	-23.03	-13	-10.03	Horizontal

LTE BAND 13 (10MHZ BANDWIDTH)

Test Results for Channel 782MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1563.1	-73.82	2.62	27.30	-49.14	-40	-9.14	Horizontal
1563.1	-69.47	2.62	27.30	-44.79	-40	-4.79	Vertical
2345.2	-43.27	2.87	27.62	-18.52	-13	-5.52	Vertical
2345.2	-44.40	2.87	27.62	-19.65	-13	-6.65	Horizontal
129.1	-38.48	1.43	17.03	-22.88	-13	-9.88	Vertical
86.6	-40.88	1.62	16.63	-25.87	-13	-12.87	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 14

LTE BAND 14 (5MHZ BANDWIDTH)

Test Results for Low Channel 790.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1581	-48.90	2.61	27.28	-24.23	-13	-11.23	Horizontal
1581	-54.71	2.61	27.28	-30.04	-13	-17.04	Vertical
2371.5	-51.75	2.87	27.59	-27.03	-13	-14.03	Vertical
2371.5	-55.44	2.87	27.59	-30.72	-13	-17.72	Horizontal
Test Results For Mid Channel 793MHz							
1586	-51.19	2.62	27.30	-26.51	-13	-13.51	Horizontal
1586	-53.93	2.62	27.30	-29.25	-13	-16.25	Vertical
2379	-56.39	2.87	27.62	-31.64	-13	-18.64	Vertical
2379	-51.58	2.87	27.62	-26.83	-13	-13.83	Horizontal
Test Results for High Channel 795.5MHz							
1591	-52.68	2.66	27.28	-28.06	-13	-15.06	Horizontal
1591	-55.18	2.66	27.28	-30.56	-13	-17.56	Vertical
2386.5	-58.55	2.88	27.60	-33.83	-13	-20.83	Vertical
2386.5	-49.52	2.88	27.60	-24.80	-13	-11.80	Horizontal

LTE BAND 14 (10MHZ BANDWIDTH)

Test Results for Channel 793MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1586	-54.62	2.62	27.30	-29.94	-13	-16.94	Horizontal
1586	-48.25	2.62	27.30	-23.57	-13	-10.57	Vertical
2379	-53.47	2.87	27.62	-28.72	-13	-15.72	Vertical
2379	-57.78	2.87	27.62	-33.03	-13	-20.03	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

LTE BAND 41 (5MHZ BANDWIDTH)

Test Results for Low Channel 2572.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5145.1	-58.57	5.23	35.81	-27.99	-25	-2.99	Horizontal
5145.1	-59.71	5.23	35.81	-29.13	-25	-4.13	Vertical
7718.1	-58.68	5.67	36.85	-27.50	-25	-2.50	Vertical
7718.1	-61.55	5.67	36.85	-30.37	-25	-5.37	Horizontal
436.3	-42.94	1.38	15.98	-28.34	-25	-3.34	Vertical
465.9	-41.38	1.62	15.66	-27.34	-25	-2.34	Horizontal
Test Results for Mid Channel 2595MHz							
5190.7	-63.48	5.23	35.82	-32.89	-25	-7.89	Horizontal
5190.7	-59.09	5.23	35.82	-28.50	-25	-3.50	Vertical
7785.3	-60.68	5.67	36.85	-29.50	-25	-4.50	Vertical
7785.3	-61.89	5.67	36.85	-30.71	-25	-5.71	Horizontal
510.9	-46.57	1.62	16.17	-32.02	-25	-7.02	Vertical
563.2	-43.29	1.74	17.63	-27.40	-25	-2.40	Horizontal
Test Results for High Channel 2617.5MHz							
5235.5	-58.45	5.24	35.83	-27.86	-25	-2.86	Horizontal
5235.5	-59.45	5.24	35.83	-28.86	-25	-3.86	Vertical
7852.8	-60.62	5.68	36.87	-29.43	-25	-4.43	Vertical
7852.8	-58.90	5.68	36.87	-27.71	-25	-2.71	Horizontal
198.2	-42.97	1.55	15.84	-28.68	-25	-3.68	Vertical
353.4	-45.27	1.51	17.06	-29.72	-25	-4.72	Horizontal

LTE BAND 41 (20MHZ BANDWIDTH)

Test Results for Low Channel 2580MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5160.5	-60.39	5.23	35.82	-29.80	-25	-4.80	Horizontal
5160.5	-58.41	5.23	35.82	-27.82	-25	-2.82	Vertical
7740.6	-61.25	5.67	36.86	-30.06	-25	-5.06	Vertical
7740.6	-59.99	5.67	36.86	-28.80	-25	-3.80	Horizontal
128.9	-42.26	1.43	15.51	-28.18	-25	-3.18	Vertical
344.9	-44.19	1.40	16.97	-28.62	-25	-3.62	Horizontal
Test Results for Mid Channel 2595MHz							
5190.6	-59.97	5.23	35.82	-29.38	-25	-4.38	Horizontal
5190.6	-59.30	5.23	35.82	-28.71	-25	-3.71	Vertical
7785.2	-59.51	5.67	36.85	-28.33	-25	-3.33	Vertical
7785.2	-59.51	5.67	36.85	-28.33	-25	-3.33	Horizontal
101.2	-47.19	1.77	16.72	-32.24	-25	-7.24	Vertical
264.3	-47.60	1.31	16.99	-31.92	-25	-6.92	Horizontal
Test Results for High Channel 2610MHz							
5220.4	-62.45	5.24	35.83	-31.86	-25	-6.86	Horizontal
5220.4	-60.99	5.24	35.83	-30.40	-25	-5.40	Vertical
7830.1	-59.51	5.70	36.88	-28.33	-25	-3.33	Vertical
7830.1	-60.46	5.70	36.88	-29.28	-25	-4.28	Horizontal
350.3	-46.28	1.70	15.73	-32.25	-25	-7.25	Vertical
111.1	-43.67	1.75	17.33	-28.09	-25	-3.09	Horizontal

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

Margin = Spurious Emission Level - Limit

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

9.8 LTE BAND 66

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

Test Results for Low Channel 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-57.74	3.84	35.81	-25.77	-13	-12.77	Horizontal
3421.4	-59.98	3.84	35.81	-28.01	-13	-15.01	Vertical
5132.5	-61.60	5.18	36.85	-29.93	-13	-16.93	Vertical
5132.5	-60.67	5.18	36.85	-29.00	-13	-16.00	Horizontal
203.9	-47.70	1.56	17.97	-31.29	-13	-18.29	Vertical
306.0	-51.23	1.33	15.11	-37.44	-13	-24.44	Horizontal
Test Results for Mid Channel 1745MHz							
3490.5	-61.16	3.85	35.82	-29.19	-13	-16.19	Horizontal
3490.5	-60.09	3.85	35.82	-28.12	-13	-15.12	Vertical
5235.9	-58.94	5.21	36.85	-27.30	-13	-14.30	Vertical
5235.9	-60.80	5.21	36.85	-29.16	-13	-16.16	Horizontal
187.8	-47.38	1.77	16.17	-32.97	-13	-19.97	Vertical
390.5	-47.66	1.63	15.21	-34.08	-13	-21.08	Horizontal
Test Results for High Channel 1779.3MHz							
3559.6	-58.48	3.86	35.83	-26.51	-13	-13.51	Horizontal
3559.6	-57.68	3.86	35.83	-25.71	-13	-12.71	Vertical
5338.1	-56.72	5.24	36.87	-25.09	-13	-12.09	Vertical
5338.1	-59.96	5.24	36.87	-28.33	-13	-15.33	Horizontal
198.8	-45.45	1.58	17.56	-29.46	-13	-16.46	Vertical
268.6	-49.25	1.45	16.58	-34.12	-13	-21.12	Horizontal

QPSK EIRP POWER FOR LTE BAND 66 (20MHZ BANDWIDTH)

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.8	-61.27	3.84	35.82	-29.29	-13	-16.29	Horizontal
3440.8	-61.79	3.84	35.82	-29.81	-13	-16.81	Vertical
5160.7	-59.13	5.18	36.86	-27.45	-13	-14.45	Vertical
5160.7	-62.46	5.18	36.86	-30.78	-13	-17.78	Horizontal
181.0	-50.20	1.56	15.76	-36.00	-13	-23.00	Vertical
323.6	-45.77	1.33	15.44	-31.66	-13	-18.66	Horizontal
Test Results for Mid Channel 1745MHz							
3490.8	-58.11	3.85	35.82	-26.14	-13	-13.14	Horizontal
3490.8	-60.99	3.85	35.82	-29.02	-13	-16.02	Vertical
5235.0	-62.35	5.21	36.85	-30.71	-13	-17.71	Vertical
5235.0	-56.98	5.21	36.85	-25.34	-13	-12.34	Horizontal
183.4	-44.85	1.77	16.84	-29.77	-13	-16.77	Vertical
251.9	-51.57	1.63	17.64	-35.56	-13	-22.56	Horizontal
Test Results for High Channel 1770MHz							
3540.2	-57.12	3.86	35.83	-25.15	-13	-12.15	Horizontal
3540.2	-60.15	3.86	35.83	-28.18	-13	-15.18	Vertical
5310.8	-58.80	5.24	36.88	-27.16	-13	-14.16	Vertical
5310.8	-58.11	5.24	36.88	-26.47	-13	-13.47	Horizontal
182.9	-46.46	1.58	16.84	-31.19	-13	-18.19	Vertical
310.4	-47.71	1.45	17.64	-31.53	-13	-18.53	Horizontal

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

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

We test both H direction and V direction, recorded worst case direction.

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

9.9 LTE BAND 71

QPSK EIRP POWER FOR LTE BAND 71 (5MHZ BANDWIDTH)

Test Results for Low Channel 665.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1331.3	-64.21	2.16	35.81	-30.56	-13	-17.56	Horizontal
1331.3	-59.28	2.16	35.81	-25.63	-13	-12.63	Vertical
1997.2	-61.79	2.89	36.85	-27.83	-13	-14.83	Vertical
1997.2	-59.04	2.89	36.85	-25.08	-13	-12.08	Horizontal
199.7	-43.68	1.56	17.97	-27.27	-13	-14.27	Vertical
468.1	-44.01	1.33	15.11	-30.23	-13	-17.23	Horizontal
Test Results for Mid Channel 680.5MHz							
1361.2	-64.43	2.17	35.82	-30.78	-13	-17.78	Horizontal
1361.2	-59.15	2.17	35.82	-25.50	-13	-12.50	Vertical
2042.4	-58.50	2.90	36.85	-24.55	-13	-11.55	Vertical
2042.4	-63.37	2.90	36.85	-29.42	-13	-16.42	Horizontal
206.7	-44.16	1.77	16.17	-29.76	-13	-16.76	Vertical
339.2	-47.55	1.63	15.21	-33.97	-13	-20.97	Horizontal
Test Results for High Channel 695.5MHz							
1391.6	-61.97	2.19	35.83	-28.33	-13	-15.33	Horizontal
1391.6	-63.20	2.19	35.83	-29.56	-13	-16.56	Vertical
2087.3	-62.66	2.95	36.87	-28.74	-13	-15.74	Vertical
2087.3	-60.31	2.95	36.87	-26.39	-13	-13.39	Horizontal
180.0	-48.11	1.58	17.56	-32.13	-13	-19.13	Vertical
298.9	-44.11	1.45	16.58	-28.98	-13	-15.98	Horizontal

QPSK EIRP POWER FOR LTE BAND 71 (20MHZ BANDWIDTH)

Test Results for Low Channel 673MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1346.1	-61.83	2.16	35.82	-28.17	-13	-15.17	Horizontal
1346.1	-58.44	2.16	35.82	-24.78	-13	-11.78	Vertical
2019.1	-58.39	2.89	36.86	-24.42	-13	-11.42	Vertical
2019.1	-59.47	2.89	36.86	-25.50	-13	-12.50	Horizontal
212.4	-43.61	1.56	15.76	-29.41	-13	-16.41	Vertical
325.1	-46.49	1.33	15.44	-32.38	-13	-19.38	Horizontal
Test Results for Mid Channel 683MHz							
1366.2	-61.44	2.17	35.82	-27.79	-13	-14.79	Horizontal
1366.2	-58.20	2.17	35.82	-24.55	-13	-11.55	Vertical
2049.5	-61.13	2.90	36.85	-27.18	-13	-14.18	Vertical
2049.5	-60.06	2.90	36.85	-26.11	-13	-13.11	Horizontal
205.2	-49.98	1.77	16.84	-34.90	-13	-21.90	Vertical
418.5	-51.54	1.63	17.64	-35.53	-13	-22.53	Horizontal
Test Results for High Channel 688MHz							
1376.6	-59.12	2.19	35.83	-25.48	-13	-12.48	Horizontal
1376.6	-61.96	2.19	35.83	-28.32	-13	-15.32	Vertical
2064.0	-60.97	2.95	36.88	-27.04	-13	-14.04	Vertical
2064.0	-61.28	2.95	36.88	-27.35	-13	-14.35	Horizontal
189.9	-46.73	1.58	16.84	-31.47	-13	-18.47	Vertical
305.9	-46.64	1.45	17.64	-30.46	-13	-17.46	Horizontal

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

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

We test both H direction and V direction, recorded worst case direction.

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

10. FREQUENCY STABILITY

RULE PART(S)

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

LIMITS

§22.355 - The carrier frequency shall not depart from the reference frequency in excess of ± 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 10.8V, Normal, DC 12V and High voltage, DC 13.2V.

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 2/4/5/12/13/14/41/66/71

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	14.8	0.007890	2.5
12	1880	15.2	0.008092	2.5
13.2	1880	11.0	0.005852	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	10.9	0.005801	2.5
Extreme (50C)	1880	6.4	0.003414	2.5
Extreme (40C)	1880	9.1	0.004849	2.5
Extreme (30C)	1880	8.3	0.004411	2.5
Extreme (10C)	1880	14.1	0.007479	2.5
Extreme (0C)	1880	9.8	0.005204	2.5
Extreme (-10C)	1880	8.8	0.004705	2.5
Extreme (-20C)	1880	5.7	0.003050	2.5
Extreme (-30C)	1880	12.0	0.006396	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	4.5	0.002382	2.5
12	1880	15.3	0.008128	2.5
13.2	1880	4.7	0.002482	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	7.6	0.004027	2.5
Extreme (50C)	1880	10.1	0.005389	2.5
Extreme (40C)	1880	13.2	0.007030	2.5
Extreme (30C)	1880	15.8	0.008417	2.5
Extreme (10C)	1880	5.3	0.002824	2.5
Extreme (0C)	1880	9.0	0.004784	2.5
Extreme (-10C)	1880	12.3	0.006528	2.5
Extreme (-20C)	1880	3.1	0.001636	2.5
Extreme (-30C)	1880	8.4	0.004453	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	15.0	0.008643	2.5
12	1732.5	3.6	0.002081	2.5
13.2	1732.5	8.4	0.004821	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	5.3	0.003048	2.5
Extreme (50C)	1732.5	6.6	0.003800	2.5
Extreme (40C)	1732.5	9.9	0.005699	2.5
Extreme (30C)	1732.5	12.7	0.007357	2.5
Extreme (10C)	1732.5	10.8	0.006228	2.5
Extreme (0C)	1732.5	6.7	0.003878	2.5
Extreme (-10C)	1732.5	7.7	0.004448	2.5
Extreme (-20C)	1732.5	14.8	0.008526	2.5
Extreme (-30C)	1732.5	3.5	0.002001	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	7.1	0.004096	2.5
12	1732.5	8.4	0.004821	2.5
13.2	1732.5	12.3	0.007078	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.2	0.004709	2.5
Extreme (50C)	1732.5	9.3	0.005355	2.5
Extreme (40C)	1732.5	3.7	0.002146	2.5
Extreme (30C)	1732.5	14.7	0.008488	2.5
Extreme (10C)	1732.5	11.7	0.006743	2.5
Extreme (0C)	1732.5	14.8	0.008517	2.5
Extreme (-10C)	1732.5	7.9	0.004531	2.5
Extreme (-20C)	1732.5	10.7	0.006177	2.5
Extreme (-30C)	1732.5	9.7	0.005607	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	13.7	0.016411	2.5
12	836.5	6.8	0.008124	2.5
13.2	836.5	15.8	0.018894	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	15.3	0.018236	2.5
Extreme (50C)	836.5	12.0	0.014363	2.5
Extreme (40C)	836.5	8.6	0.010238	2.5
Extreme (30C)	836.5	5.3	0.006370	2.5
Extreme (10C)	836.5	5.6	0.006643	2.5
Extreme (0C)	836.5	15.2	0.018139	2.5
Extreme (-10C)	836.5	4.1	0.004928	2.5
Extreme (-20C)	836.5	6.9	0.008277	2.5
Extreme (-30C)	836.5	12.2	0.014585	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	6.2	0.007413	2.5
12	836.5	3.6	0.004275	2.5
13.2	836.5	6.2	0.007442	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	4.7	0.005624	2.5
Extreme (50C)	836.5	9.2	0.011052	2.5
Extreme (40C)	836.5	8.0	0.009539	2.5
Extreme (30C)	836.5	15.8	0.018892	2.5
Extreme (10C)	836.5	8.6	0.010225	2.5
Extreme (0C)	836.5	11.8	0.014119	2.5
Extreme (-10C)	836.5	4.3	0.005115	2.5
Extreme (-20C)	836.5	6.9	0.008235	2.5
Extreme (-30C)	836.5	8.9	0.010615	2.5

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

10.4 LTE BAND 12

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	6.6	0.009263	2.5
12	707.5	13.7	0.019382	2.5
13.2	707.5	9.7	0.013770	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	15.2	0.021481	2.5
Extreme (50C)	707.5	5.8	0.008248	2.5
Extreme (40C)	707.5	11.5	0.016206	2.5
Extreme (30C)	707.5	5.3	0.007473	2.5
Extreme (10C)	707.5	14.7	0.020800	2.5
Extreme (0C)	707.5	5.8	0.008199	2.5
Extreme (-10C)	707.5	11.9	0.016809	2.5
Extreme (-20C)	707.5	6.4	0.009093	2.5
Extreme (-30C)	707.5	7.6	0.010743	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	10.9	0.015353	2.5
12	707.5	10.5	0.014908	2.5
13.2	707.5	5.5	0.007843	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	13.9	0.019677	2.5
Extreme (50C)	707.5	6.8	0.009574	2.5
Extreme (40C)	707.5	12.7	0.017957	2.5
Extreme (30C)	707.5	10.7	0.015171	2.5
Extreme (10C)	707.5	15.9	0.022421	2.5
Extreme (0C)	707.5	8.4	0.011827	2.5
Extreme (-10C)	707.5	14.6	0.020649	2.5
Extreme (-20C)	707.5	15.0	0.021236	2.5
Extreme (-30C)	707.5	11.9	0.016863	2.5

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

10.5 LTE BAND 13

Band 13 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	14.5	0.020469	2.5
12	710.0	11.4	0.016046	2.5
13.2	710.0	9.9	0.013927	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	15.8	0.022298	2.5
Extreme (50C)	710.0	15.5	0.021817	2.5
Extreme (40C)	710.0	15.3	0.021555	2.5
Extreme (30C)	710.0	14.8	0.020776	2.5
Extreme (10C)	710.0	12.0	0.016969	2.5
Extreme (0C)	710.0	12.0	0.016935	2.5
Extreme (-10C)	710.0	8.6	0.012163	2.5
Extreme (-20C)	710	11.7	0.016438	2.5
Extreme (-30C)	710	11.3	0.015928	2.5

Band 13 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	3.4	0.004735	2.5
12	710.0	8.8	0.012426	2.5
13.2	710.0	3.9	0.005478	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	710.0	13.5	0.018960	2.5
Extreme (50C)	710.0	14.8	0.020868	2.5
Extreme (40C)	710.0	4.6	0.006414	2.5
Extreme (30C)	710.0	9.0	0.012658	2.5
Extreme (10C)	710.0	3.7	0.005173	2.5
Extreme (0C)	710.0	15.9	0.022385	2.5
Extreme (-10C)	710.0	9.2	0.012942	2.5
Extreme (-20C)	710.0	14.4	0.020266	2.5
Extreme (-30C)	710.0	9.4	0.013279	2.5

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

10.6 LTE BAND 14

Band 14 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	728	12.9	0.017755	2.5
12	728	7.2	0.009951	2.5
13.2	728	6.0	0.008225	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	728	7.4	0.010162	2.5
Extreme (50C)	728	13.2	0.018146	2.5
Extreme (40C)	728	15.1	0.020749	2.5
Extreme (30C)	728	5.0	0.006857	2.5
Extreme (10C)	728	14.8	0.020352	2.5
Extreme (0C)	728	6.6	0.009019	2.5
Extreme (-10C)	728	14.5	0.019873	2.5
Extreme (-20C)	728	15.7	0.021523	2.5
Extreme (-30C)	728	13.0	0.017859	2.5

Band 14 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	728	11.9	0.016362	2.5
12	728	3.4	0.004685	2.5
13.2	728	10.6	0.014598	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	728	3.6	0.004952	2.5
Extreme (50C)	728	10.3	0.014158	2.5
Extreme (40C)	728	14.9	0.020499	2.5
Extreme (30C)	728	12.7	0.017472	2.5
Extreme (10C)	728	6.8	0.009299	2.5
Extreme (0C)	728	6.5	0.008913	2.5
Extreme (-10C)	728	11.6	0.015903	2.5
Extreme (-20C)	728	8.3	0.011404	2.5
Extreme (-30C)	728	8.9	0.012269	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

Band 41 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	2593	13.0	0.005001	2.5
12	2593	5.8	0.002240	2.5
13.2	2593	4.0	0.001529	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	13.6	0.005249	2.5
Extreme (50C)	2593	14.4	0.005563	2.5
Extreme (40C)	2593	14.5	0.005608	2.5
Extreme (30C)	2593	11.3	0.004346	2.5
Extreme (10C)	2593	13.3	0.005133	2.5
Extreme (0C)	2593	4.5	0.001754	2.5
Extreme (-10C)	2593	8.3	0.003186	2.5
Extreme (-20C)	2593	8.5	0.003287	2.5
Extreme (-30C)	2593	13.8	0.005329	2.5

Band 41 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	2593	13.5	0.005198	2.5
12	2593	12.7	0.004889	2.5
13.2	2593	11.0	0.004235	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	13.4	0.005163	2.5
Extreme (50C)	2593	14.3	0.005512	2.5
Extreme (40C)	2593	5.1	0.001960	2.5
Extreme (30C)	2593	9.0	0.003486	2.5
Extreme (10C)	2593	14.3	0.005505	2.5
Extreme (0C)	2593	7.0	0.002681	2.5
Extreme (-10C)	2593	14.3	0.005506	2.5
Extreme (-20C)	2593	10.8	0.004169	2.5
Extreme (-30C)	2593	7.5	0.002909	2.5

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

10.8 LTE BAND 66

Band 66 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]
BAND 66 QPSK, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
10.8	1745	14.6	0.008353	2.5
12	1745	10.3	0.005895	2.5
13.2	1745	10.8	0.006201	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 66 QPSK, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	1745	5.5	0.003130	2.5
Extreme (50C)	1745	4.7	0.002691	2.5
Extreme (40C)	1745	9.9	0.005665	2.5
Extreme (30C)	1745	3.0	0.001735	2.5
Extreme (10C)	1745	8.8	0.005019	2.5
Extreme (0C)	1745	15.9	0.009119	2.5
Extreme (-10C)	1745	11.1	0.006361	2.5
Extreme (-20C)	1745	5.6	0.003223	2.5
Extreme (-30C)	1745	16.0	0.009148	2.5

Band 66 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]
BAND 66 16QAM, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
10.8	1745	12.6	0.007195	2.5
12	1745	12.4	0.007113	2.5
13.2	1745	15.8	0.009082	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 66 16QAM, (CH 132322 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	1745	4.9	0.002834	2.5
Extreme (50C)	1745	7.2	0.004116	2.5
Extreme (40C)	1745	5.4	0.003076	2.5
Extreme (30C)	1745	10.2	0.005852	2.5
Extreme (10C)	1745	7.6	0.004340	2.5
Extreme (0C)	1745	13.8	0.007903	2.5
Extreme (-10C)	1745	15.0	0.008581	2.5
Extreme (-20C)	1745	14.0	0.008038	2.5
Extreme (-30C)	1745	6.7	0.003827	2.5

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

10.9 LTE BAND 71

Band 71 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	1745	14.1	0.008057	2.5
12	1745	14.4	0.008263	2.5
13.2	1745	8.3	0.004749	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	10.0	0.005747	2.5
Extreme (50C)	1745	11.1	0.006377	2.5
Extreme (40C)	1745	11.9	0.006804	2.5
Extreme (30C)	1745	10.0	0.005730	2.5
Extreme (10C)	1745	9.2	0.005268	2.5
Extreme (0C)	1745	14.4	0.008249	2.5
Extreme (-10C)	1745	10.4	0.005944	2.5
Extreme (-20C)	1745	5.3	0.003048	2.5
Extreme (-30C)	1745	12.6	0.007232	2.5

Band 71 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	1745	10.8	0.006217	2.5
12	1745	9.7	0.005560	2.5
13.2	1745	10.2	0.005834	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1745	12.9	0.007418	2.5
Extreme (50C)	1745	5.1	0.002900	2.5
Extreme (40C)	1745	4.6	0.002636	2.5
Extreme (30C)	1745	4.6	0.002656	2.5
Extreme (10C)	1745	14.5	0.008321	2.5
Extreme (0C)	1745	4.7	0.002680	2.5
Extreme (-10C)	1745	9.8	0.005591	2.5
Extreme (-20C)	1745	8.5	0.004895	2.5
Extreme (-30C)	1745	10.8	0.006172	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.

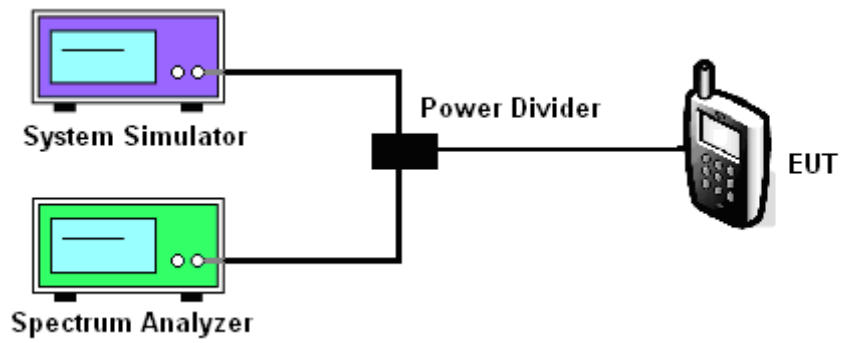
11.2 Measuring Instruments

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 2/4/5/12/13/14/41/66/71

Test data reference attachment.

-----END OF REPORT-----