

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

FCC ID: 2A9JS-HS-40

Product: Body Camera
Trade Mark: HALOS
Model No.: HS-40
Family Model: N/A
Report No.: N25071403348E
Issue Date: Oct. 22, 2025

Prepared for

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Prepared by

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TEST RESULT CERTIFICATION

Applicant's name: Halo Technologies Europe Ltd.

Address: Unit 11a Weavers Business Park, Linfield Road, Belfast, Antrim BT12 5GH, Northern Ireland, United Kingdom

Manufacturer's Name: Halo Technologies Europe Ltd.

Address: Unit 11a Weavers Business Park, Linfield Road, Belfast, Antrim BT12 5GH, Northern Ireland, United Kingdom

Product name.....: Body Camera

Model and/or type reference ...: HS-40

Trade Mark.....: HALOS

Family Model.....: N/A

Test Sample Number..... S2508300102-1#

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

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

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

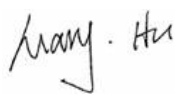
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Date of Test

Date (s) of performance of tests Jul. 14, 2025 ~ Oct. 22, 2025

Date of Issue Oct. 22, 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:	Body Camera
Trade Mark	HALOS
Model Name	HS-40
Family Model	N/A
Model Difference	N/A
FCC ID:	2A9JS-HS-40
Frequency Bands:	U.S. Bands: ☒ LTE FDD Band 2, 4, 5, 7, 12, 13, 19, 66 ☒ 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 7 Uplink: 2500MHz-2570MHz, Downlink: 2620MHz-2690MHz; LTE FDD Band 12 Uplink: 699MHz-716MHz, Downlink: 729MHz-746MHz; LTE FDD Band 13 Uplink: 777MHz-787MHz, Downlink: 746MHz-756MHz; LTE FDD Band 19 Uplink: 830MHz-845MHz, Downlink: 875MHz-890MHz; LTE TDD Band 41 Uplink& Downlink: 2496MHz-2690MHz LTE FDD Band 66 Uplink: 1710MHz-1780MHz, Downlink: 2110MHz-2200MHz;
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:	PIFA Antenna
Antenna gain:	Band 2: 1.45 dBi, Band 4: 1.64 dBi, Band 5: 0.99 dBi, Band 7: 0.99 dBi, Band 12: -0.33 dBi, Band 13: 0.55 dBi, Band 19: 0.82 dBi, Band41: 2.47 dBi, Band 66: 1.64 dBi

Adapter	MODEL: XS12-050200U INPUT: 100-240V~50/60Hz 0.5A OUTPUT: DC 5.0V $\overline{\text{---}}$ 2.0A 10.0W
Battery	DC 3.85V, 4600mAh, 17.71Wh
Power supply	DC 3.85V from battery or DC 5V from adapter
Extreme Vol. Limits:	DC 3.27V to DC 4.43V (Nominal DC 3.85V) (Note 1)
HW Version	V12
FW Version	N/A
SW Version	V1.2.0-2025101615
** Note1: The High Voltage DC 4.43V and Low Voltage 3.27V 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: 2A9JS-HS-40** filing to comply with the FCC Part 22H&24E&27

1.3 TEST METHODOLOGY

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

1.4 TEST FACILITY

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

ShenZhen NTEK Testing Technology Co., Ltd.

No. 24 Xinfa 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 expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

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

1.5 SPECIAL ACCESSORIES

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

1.6 WORST-CASE CONFIGURATION AND MODE

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

The device has LTE Bands of: Band 2/4/5/7/12/13/19/41/66

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

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

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	Body Camera	HS-40	FCC ID: 2A9JS-HS-40	EUT

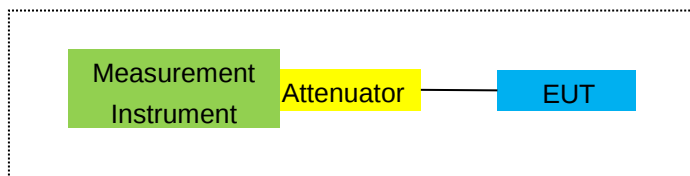
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

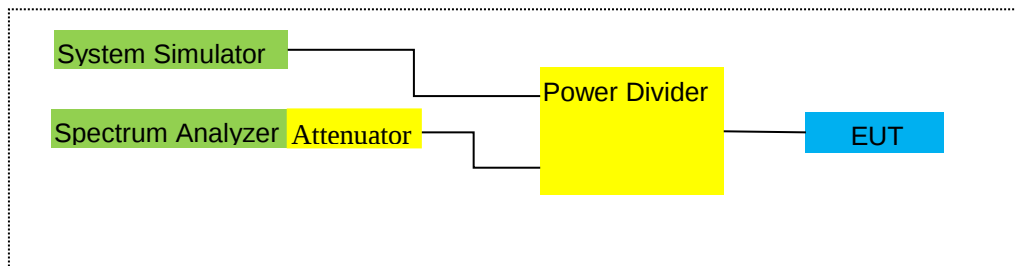
For Radiated Test Cases



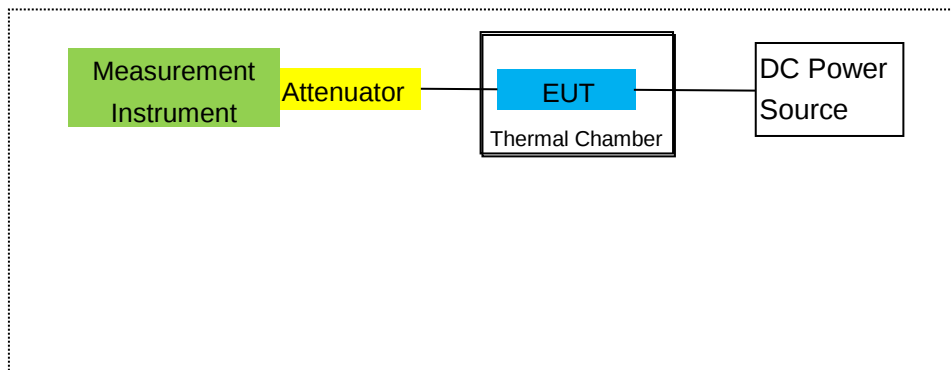
For Conducted Output Power



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	MWRFTest	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 2/4/5/7/12/13/19/41/66

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

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;

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 2/4/5/7/12/13/19/41/66

RESULTS

Test data reference attachment.

7. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53

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 2/4/5/7/12/13/19/41/66

☐

7.1 MEASUREMENT METHOD

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

Test data reference attachment.

8. RADIATED MEASUREMENT

8.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232, §27.50

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.

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 2/4/5/7/12/13/19/41/66

RESULTS

Pass

8.2 LTE BAND 2

Radiated Power (EIRP) for Band 2										
Mode	RB/RB SIZE	Frequency	Result						Limit	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dBi)	Max. EIRP	Max. EIRP Average (mW)	Polarization Of Max. ERP		
						Average				
						(dBm)				
1.4MHz Band QPSK	6/0	1850.7	16.61	3.76	8.90	21.75	149.624	Horizontal	2	Pass
1880		14.83	3.91	8.90	19.82	95.940	Horizontal	2	Pass	
1909.3		14.81	3.93	8.90	19.78	95.060	Horizontal	2	Pass	
3.0MHz Band QPSK	15/0	1851.5	13.42	3.77	8.90	18.55	71.614	Horizontal	2	Pass
1880		14.41	3.91	8.90	19.4	87.096	Horizontal	2	Pass	
1908.5		15.53	3.94	8.90	20.49	111.944	Horizontal	2	Pass	
5.0MHz Band QPSK	25/0	1852.5	15.87	3.77	8.90	21	125.893	Horizontal	2	Pass
1880		17.23	3.91	8.90	22.22	166.725	Horizontal	2	Pass	
1907.5		16.66	3.94	8.90	21.62	145.211	Horizontal	2	Pass	
10.0MHz Band QPSK	50/0	1855	15.68	3.79	8.90	20.79	119.950	Horizontal	2	Pass
1880		17.76	3.95	8.90	22.71	186.638	Horizontal	2	Pass	
1905		15.50	3.97	8.90	20.43	110.408	Horizontal	2	Pass	
15.0MHz Band QPSK	75/0	1857.5	15.06	3.79	8.90	20.17	103.992	Horizontal	2	Pass
1880		16.09	3.95	8.90	21.04	127.057	Horizontal	2	Pass	
1902.5		15.25	3.97	8.90	20.18	104.232	Horizontal	2	Pass	
20.0MHz Band QPSK	100/0	1860	15.52	3.81	8.90	20.61	115.080	Horizontal	2	Pass
1880		14.76	3.96	8.90	19.7	93.325	Horizontal	2	Pass	
1900		16.54	4.00	8.90	21.44	139.316	Horizontal	2	Pass	
1.4MHz Band QPSK	6/0	1850.7	15.59	3.76	8.90	20.73	118.304	Vertical	2	Pass
1880		14.64	3.91	8.90	19.63	91.833	Vertical	2	Pass	
1909.3		15.60	3.93	8.90	20.57	114.025	Vertical	2	Pass	
3.0MHz Band QPSK	15/0	1851.5	15.64	3.77	8.90	20.77	119.399	Vertical	2	Pass
1880		16.18	3.91	8.90	21.17	130.918	Vertical	2	Pass	
1908.5		14.30	3.94	8.90	19.26	84.333	Vertical	2	Pass	
5.0MHz Band QPSK	25/0	1852.5	16.02	3.77	8.90	21.15	130.317	Vertical	2	Pass
1880		14.88	3.91	8.90	19.87	97.051	Vertical	2	Pass	
1907.5		16.18	3.94	8.90	21.14	130.017	Vertical	2	Pass	
10.0MHz Band QPSK	50/0	1855	15.04	3.79	8.90	20.15	103.514	Vertical	2	Pass
1880		12.92	3.95	8.90	17.87	61.235	Vertical	2	Pass	
1905		13.81	3.97	8.90	18.74	74.817	Vertical	2	Pass	

15.0MHz	75/0	1857.5	14.07	3.79	8.90	19.18	82.794	Vertical	2	Pass
Band		1880	15.53	3.95	8.90	20.48	111.686	Vertical	2	Pass
QPSK		1902.5	16.36	3.97	8.90	21.29	134.586	Vertical	2	Pass
20.0MHz	100/0	1860	17.73	3.81	8.90	22.82	191.426	Vertical	2	Pass
Band		1880	14.92	3.96	8.90	19.86	96.828	Vertical	2	Pass
QPSK		1900	15.65	4.00	8.90	20.55	113.501	Vertical	2	Pass

Radiated Power (EIRP) for Band 2										
Mode	RB/RB SIZE	Frequency	Result						Limit	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (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	21.6	144.544	Horizontal	2	Pass
		1880	15.75	3.91	8.90	21.2	131.826	Horizontal	2	Pass
		1909.3	15.45	3.93	8.90	21.46	139.959	Horizontal	2	Pass
3.0MHz Band 16 QAM	15/0	1851.5	15.29	3.77	8.90	19.71	93.541	Horizontal	2	Pass
		1880	14.95	3.91	8.90	21.26	133.660	Horizontal	2	Pass
		1908.5	14.55	3.94	8.90	20.82	120.781	Horizontal	2	Pass
5.0MHz Band 16 QAM	25/0	1852.5	15.14	3.77	8.90	18.26	66.988	Horizontal	2	Pass
		1880	15.50	3.91	8.90	20.97	125.026	Horizontal	2	Pass
		1907.5	14.00	3.94	8.90	20.01	100.231	Horizontal	2	Pass
10.0MHz Band 16 QAM	50/0	1855	15.35	3.79	8.90	19.96	99.083	Horizontal	2	Pass
		1880	14.05	3.95	8.90	20.43	110.408	Horizontal	2	Pass
		1905	15.36	3.97	8.90	21.62	145.211	Horizontal	2	Pass
15.0MHz Band 16 QAM	75/0	1857.5	13.68	3.79	8.90	21	125.893	Horizontal	2	Pass
		1880	15.77	3.95	8.90	20.32	107.647	Horizontal	2	Pass
		1902.5	15.65	3.97	8.90	20.32	107.647	Horizontal	2	Pass
20.0MHz Band 16 QAM	100/0	1860	13.84	3.81	8.90	20.5	112.202	Horizontal	2	Pass
		1880	16.17	3.96	8.90	21	125.893	Horizontal	2	Pass
		1900	14.55	4.00	8.90	19.35	86.099	Horizontal	2	Pass
1.4MHz Band 16 QAM	6/0	1850.7	14.61	3.76	8.90	21.16	130.617	Vertical	2	Pass
		1880	15.84	3.91	8.90	19.58	90.782	Vertical	2	Pass
		1909.3	15.13	3.93	8.90	20.8	120.226	Vertical	2	Pass
3.0MHz Band 16 QAM	15/0	1851.5	13.77	3.77	8.90	19.96	99.083	Vertical	2	Pass
		1880	14.83	3.91	8.90	20.32	107.647	Vertical	2	Pass
		1908.5	14.56	3.94	8.90	19.99	99.770	Vertical	2	Pass
5.0MHz Band 16 QAM	25/0	1852.5	13.76	3.77	8.90	21.21	132.130	Vertical	2	Pass
		1880	15.05	3.91	8.90	20.13	103.039	Vertical	2	Pass
		1907.5	15.69	3.94	8.90	21.09	128.529	Vertical	2	Pass
10.0MHz Band 16 QAM	50/0	1855	13.98	3.79	8.90	20.11	102.565	Vertical	2	Pass
		1880	15.57	3.95	8.90	20.43	110.408	Vertical	2	Pass
		1905	15.12	3.97	8.90	20.7	117.490	Vertical	2	Pass
15.0MHz Band 16	75/0	1857.5	13.85	3.79	8.90	20.19	104.472	Vertical	2	Pass
		1880	14.87	3.95	8.90	20.11	102.565	Vertical	2	Pass

QAM		1902.5	13.66	3.97	8.90	20.63	115.611	Vertical	2	Pass
20.0MHz	100/0	1860	14.29	3.81	8.90	21.69	147.571	Vertical	2	Pass
Band 16		1880	14.90	3.96	8.90	20.13	103.039	Vertical	2	Pass
QAM		1900	13.78	4.00	8.90	19.87	97.051	Vertical	2	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 Factor (dBi)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP		
									Limit	
1.4MHz	6/0	1710.7	14.08	3.12	8.90	19.86	96.828	Horizontal	1	Pass
Band		1732.5	15.11	3.27	8.90	20.74	118.577	Horizontal	1	Pass
QPSK		1754.3	16.56	3.29	8.90	22.17	164.816	Horizontal	1	Pass
3.0MHz	15/0	1711.5	14.01	3.13	8.90	19.78	95.060	Horizontal	1	Pass
Band		1732.5	15.43	3.27	8.90	21.06	127.644	Horizontal	1	Pass
QPSK		1753.5	15.03	3.30	8.90	20.63	115.611	Horizontal	1	Pass
5.0MHz	25/0	1712.5	15.20	3.13	8.90	20.97	125.026	Horizontal	1	Pass
Band		1732.5	15.16	3.27	8.90	20.79	119.950	Horizontal	1	Pass
QPSK		1752.5	12.68	3.30	8.90	18.28	67.298	Horizontal	1	Pass
10.0MHz	50/0	1715	14.76	3.15	8.90	20.51	112.460	Horizontal	1	Pass
Band		1732.5	15.91	3.31	8.90	21.5	141.254	Horizontal	1	Pass
QPSK		1750	15.17	3.33	8.90	20.74	118.577	Horizontal	1	Pass
15.0MHz	75/0	1717.5	16.11	3.15	8.90	21.86	153.462	Horizontal	1	Pass
Band		1732.5	16.49	3.31	8.90	22.08	161.436	Horizontal	1	Pass
QPSK		1747.5	15.34	3.33	8.90	20.91	123.310	Horizontal	1	Pass
20.0MHz	100/0	1720	14.94	3.17	8.90	20.67	116.681	Horizontal	1	Pass
Band		1732.5	13.71	3.32	8.90	19.29	84.918	Horizontal	1	Pass
QPSK		1745	14.47	3.36	8.90	20.01	100.231	Horizontal	1	Pass
1.4MHz	6/0	1710.7	14.36	3.12	8.90	20.14	103.276	Vertical	1	Pass
Band		1732.5	15.20	3.27	8.90	20.83	121.060	Vertical	1	Pass
QPSK		1754.3	14.76	3.29	8.90	20.37	108.893	Vertical	1	Pass
3.0MHz	15/0	1711.5	16.32	3.13	8.90	22.09	161.808	Vertical	1	Pass
Band		1732.5	15.45	3.27	8.90	21.08	128.233	Vertical	1	Pass
QPSK		1753.5	17.44	3.30	8.90	23.04	201.372	Vertical	1	Pass
5.0MHz	25/0	1712.5	14.02	3.13	8.90	19.79	95.280	Vertical	1	Pass
Band		1732.5	15.85	3.27	8.90	21.48	140.605	Vertical	1	Pass
QPSK		1752.5	13.07	3.30	8.90	18.67	73.621	Vertical	1	Pass
10.0MHz	50/0	1715	13.44	3.15	8.90	19.19	82.985	Vertical	1	Pass

Band	QPSK	1732.5	14.85	3.31	8.90	20.44	110.662	Vertical	1	Pass
		1750	15.49	3.33	8.90	21.06	127.644	Vertical	1	Pass
15.0MHz	75/0	1717.5	16.36	3.15	8.90	22.11	162.555	Vertical	1	Pass
Band		1732.5	15.81	3.31	8.90	21.4	138.038	Vertical	1	Pass
QPSK		1747.5	14.34	3.33	8.90	19.91	97.949	Vertical	1	Pass
20.0MHz	100/0	1720	17.63	3.17	8.90	23.36	216.770	Vertical	1	Pass
Band		1732.5	17.85	3.32	8.90	23.43	220.293	Vertical	1	Pass
QPSK		1745	14.07	3.36	8.90	19.61	91.411	Vertical	1	Pass

Radiated Power (EIRP) for Band 4										
Mode	RB/RB SIZE	Frequency	Result						Limit	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dBi)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP		
1.4MHz Band 16 QAM	6/0	1710.7	15.93	3.12	8.90	21.71	148.252	Horizontal	1	Pass
		1732.5	17.15	3.27	8.90	22.78	189.671	Horizontal	1	Pass
		1754.3	14.83	3.29	8.90	20.44	110.662	Horizontal	1	Pass
3.0MHz Band 16 QAM	15/0	1711.5	14.86	3.13	8.90	20.63	115.611	Horizontal	1	Pass
		1732.5	14.79	3.27	8.90	20.42	110.154	Horizontal	1	Pass
		1753.5	15.31	3.30	8.90	20.91	123.310	Horizontal	1	Pass
5.0MHz Band 16 QAM	25/0	1712.5	15.62	3.13	8.90	21.39	137.721	Horizontal	1	Pass
		1732.5	13.29	3.27	8.90	18.92	77.983	Horizontal	1	Pass
		1752.5	15.89	3.30	8.90	21.49	140.929	Horizontal	1	Pass
10.0MHz Band 16 QAM	50/0	1715	16.87	3.15	8.90	22.62	182.810	Horizontal	1	Pass
		1732.5	14.84	3.31	8.90	20.43	110.408	Horizontal	1	Pass
		1750	13.77	3.33	8.90	19.34	85.901	Horizontal	1	Pass
15.0MHz Band 16 QAM	75/0	1717.5	14.91	3.15	8.90	20.66	116.413	Horizontal	1	Pass
		1732.5	15.29	3.31	8.90	20.88	122.462	Horizontal	1	Pass
		1747.5	16.92	3.33	8.90	22.49	177.419	Horizontal	1	Pass
20.0MHz Band 16 QAM	100/0	1720	15.14	3.17	8.90	20.87	122.180	Horizontal	1	Pass
		1732.5	17.04	3.32	8.90	22.62	182.810	Horizontal	1	Pass
		1745	15.46	3.36	8.90	21	125.893	Horizontal	1	Pass
1.4MHz Band 16 QAM	6/0	1710.7	16.00	3.12	8.90	21.78	150.661	Vertical	1	Pass
		1732.5	14.88	3.27	8.90	20.51	112.460	Vertical	1	Pass
		1754.3	14.59	3.29	8.90	20.2	104.713	Vertical	1	Pass
3.0MHz Band 16 QAM	15/0	1711.5	14.80	3.13	8.90	20.57	114.025	Vertical	1	Pass
		1732.5	15.64	3.27	8.90	21.27	133.968	Vertical	1	Pass
		1753.5	16.50	3.30	8.90	22.1	162.181	Vertical	1	Pass
5.0MHz Band 16 QAM	25/0	1712.5	15.54	3.13	8.90	21.31	135.207	Vertical	1	Pass
		1732.5	16.21	3.27	8.90	21.84	152.757	Vertical	1	Pass
		1752.5	14.07	3.30	8.90	19.67	92.683	Vertical	1	Pass
10.0MHz Band 16 QAM	50/0	1715	14.46	3.15	8.90	20.21	104.954	Vertical	1	Pass
		1732.5	17.19	3.31	8.90	22.78	189.671	Vertical	1	Pass
		1750	15.99	3.33	8.90	21.56	143.219	Vertical	1	Pass

15.0MHz	75/0	1717.5	13.62	3.15	8.90	19.37	86.497	Vertical	1	Pass
Band 16		1732.5	13.78	3.31	8.90	19.37	86.497	Vertical	1	Pass
QAM		1747.5	15.83	3.33	8.90	21.4	138.038	Vertical	1	Pass
20.0MHz	100/0	1720	16.08	3.17	8.90	21.81	151.705	Vertical	1	Pass
Band 16		1732.5	17.33	3.32	8.90	22.91	195.434	Vertical	1	Pass
QAM		1745	16.63	3.36	8.90	22.17	164.816	Vertical	1	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							Limit	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP		
1.4MHz Band QPSK	6/0	824.7	20.34	2.01	5.30	2.15	21.48	140.605	Horizontal	7	Pass
		836.5	21.15	2.01	5.30	2.15	22.29	169.434	Horizontal	7	Pass
		848.3	19.99	2.02	5.70	2.15	21.52	141.906	Horizontal	7	Pass
3.0MHz Band QPSK	15/0	825.5	21.45	2.01	5.30	2.15	22.59	181.552	Horizontal	7	Pass
		836.5	21.41	2.01	5.30	2.15	22.55	179.887	Horizontal	7	Pass
		847.5	20.57	2.02	5.70	2.15	22.1	162.181	Horizontal	7	Pass
5.0MHz Band QPSK	25/0	826.5	20.10	2.01	5.30	2.15	21.24	133.045	Horizontal	7	Pass
		836.5	21.17	2.01	5.30	2.15	22.31	170.216	Horizontal	7	Pass
		846.5	21.21	2.02	5.70	2.15	22.74	187.932	Horizontal	7	Pass
10.0MHz Band QPSK	50/0	829	20.32	2.01	5.30	2.15	21.46	139.959	Horizontal	7	Pass
		836.5	21.47	2.01	5.30	2.15	22.61	182.390	Horizontal	7	Pass
		844	19.92	2.02	5.70	2.15	21.45	139.637	Horizontal	7	Pass
1.4MHz Band QPSK	6/0	824.7	22.20	2.01	5.30	2.15	23.34	215.774	Vertical	7	Pass
		836.5	21.91	2.01	5.30	2.15	23.05	201.837	Vertical	7	Pass
		848.3	20.36	2.02	5.70	2.15	21.89	154.525	Vertical	7	Pass
3.0MHz Band QPSK	15/0	825.5	21.52	2.01	5.30	2.15	22.66	184.502	Vertical	7	Pass
		836.5	21.10	2.01	5.30	2.15	22.24	167.494	Vertical	7	Pass
		847.5	19.27	2.02	5.70	2.15	20.8	120.226	Vertical	7	Pass
5.0MHz Band QPSK	25/0	826.5	19.30	2.01	5.30	2.15	20.44	110.662	Vertical	7	Pass
		836.5	21.41	2.01	5.30	2.15	22.55	179.887	Vertical	7	Pass
		846.5	20.25	2.02	5.70	2.15	21.78	150.661	Vertical	7	Pass
10.0MHz Band QPSK	50/0	829	19.21	2.01	5.30	2.15	20.35	108.393	Vertical	7	Pass
		836.5	22.69	2.01	5.30	2.15	23.83	241.546	Vertical	7	Pass
		844	19.94	2.02	5.70	2.15	21.47	140.281	Vertical	7	Pass

Radiated Power (ERP) for Band 5											
Mode	RB/RB SIZE	Frequency	Result							Limit	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP		
1.4MHz Band 16 QAM	6/0	824.7	19.97	2.01	5.30	2.15	21.11	129.122	Horizontal	7	Pass
		836.5	20.53	2.01	5.30	2.15	21.67	146.893	Horizontal	7	Pass
		848.3	18.78	2.02	5.70	2.15	20.31	107.399	Horizontal	7	Pass
3.0MHz Band 16 QAM	15/0	825.5	19.73	2.01	5.30	2.15	20.87	122.180	Horizontal	7	Pass
		836.5	19.02	2.01	5.30	2.15	20.16	103.753	Horizontal	7	Pass
		847.5	19.79	2.02	5.70	2.15	21.32	135.519	Horizontal	7	Pass
5.0MHz Band 16 QAM	25/0	826.5	19.36	2.01	5.30	2.15	20.5	112.202	Horizontal	7	Pass
		836.5	18.42	2.01	5.30	2.15	19.56	90.365	Horizontal	7	Pass
		846.5	19.13	2.02	5.70	2.15	20.66	116.413	Horizontal	7	Pass
10.0MHz Band 16 QAM	50/0	829	18.52	2.01	5.30	2.15	19.66	92.470	Horizontal	7	Pass
		836.5	18.27	2.01	5.30	2.15	19.41	87.297	Horizontal	7	Pass
		844	18.36	2.02	5.70	2.15	19.89	97.499	Horizontal	7	Pass
1.4MHz Band 16 QAM	6/0	824.7	20.32	2.01	5.30	2.15	21.46	139.959	Vertical	7	Pass
		836.5	20.35	2.01	5.30	2.15	21.49	140.929	Vertical	7	Pass
		848.3	19.50	2.02	5.70	2.15	21.03	126.765	Vertical	7	Pass
3.0MHz Band 16 QAM	15/0	825.5	18.14	2.01	5.30	2.15	19.28	84.723	Vertical	7	Pass
		836.5	19.44	2.01	5.30	2.15	20.58	114.288	Vertical	7	Pass
		847.5	18.09	2.02	5.70	2.15	19.62	91.622	Vertical	7	Pass
5.0MHz Band 16 QAM	25/0	826.5	18.99	2.01	5.30	2.15	20.13	103.039	Vertical	7	Pass
		836.5	17.36	2.01	5.30	2.15	18.5	70.795	Vertical	7	Pass
		846.5	19.12	2.02	5.70	2.15	20.65	116.145	Vertical	7	Pass
10.0MHz Band 16 QAM	50/0	829	18.86	2.01	5.30	2.15	20	100.000	Vertical	7	Pass
		836.5	21.44	2.01	5.30	2.15	22.58	181.134	Vertical	7	Pass
		844	20.42	2.02	5.70	2.15	21.95	156.675	Vertical	7	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 7

Radiated Power (EIRP) for Band 7										
Mode	RB/RB SIZE	Frequency	Result						Limit	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dBi)	Max. EIRP	Max. EIRP Average (mW)	Polarization Of Max. ERP		
						Average (dBm)				
5.0MHz Band QPSK	25/0	2502.5	17.32	4.54	9.00	21.78	150.661	Horizontal	2	Pass
		2535	16.23	4.69	9.00	20.54	113.240	Horizontal	2	Pass
		2567.5	14.83	4.71	9.00	19.12	81.658	Horizontal	2	Pass
10.0MHz Band QPSK	50/0	2505	12.63	4.55	9.00	17.08	51.050	Horizontal	2	Pass
		2535	16.27	4.69	9.00	20.58	114.288	Horizontal	2	Pass
		2565	15.08	4.72	9.00	19.36	86.298	Horizontal	2	Pass
15.0MHz Band QPSK	75/0	2507.5	16.59	4.55	9.00	21.04	127.057	Horizontal	2	Pass
		2535	16.09	4.69	9.00	20.4	109.648	Horizontal	2	Pass
		2562.5	18.41	4.72	9.00	22.69	185.780	Horizontal	2	Pass
20.0MHz Band QPSK	100/0	2510	14.94	4.57	9.00	19.37	86.497	Horizontal	2	Pass
		2535	16.87	4.73	9.00	21.14	130.017	Horizontal	2	Pass
		2560	16.27	4.75	9.00	20.52	112.720	Horizontal	2	Pass
5.0MHz Band QPSK	25/0	2502.5	15.62	4.54	9.00	20.08	101.859	Vertical	2	Pass
		2535	17.80	4.69	9.00	22.11	162.555	Vertical	2	Pass
		2567.5	16.75	4.71	9.00	21.04	127.057	Vertical	2	Pass
10.0MHz Band QPSK	50/0	2505	16.69	4.55	9.00	21.14	130.017	Vertical	2	Pass
		2535	17.56	4.69	9.00	21.87	153.815	Vertical	2	Pass
		2565	17.13	4.72	9.00	21.41	138.357	Vertical	2	Pass
15.0MHz Band QPSK	75/0	2507.5	16.25	4.55	9.00	20.7	117.490	Vertical	2	Pass
		2535	17.78	4.69	9.00	22.09	161.808	Vertical	2	Pass
		2562.5	15.03	4.72	9.00	19.31	85.310	Vertical	2	Pass
20.0MHz Band QPSK	100/0	2510	17.79	4.57	9.00	22.22	166.725	Vertical	2	Pass
		2535	15.69	4.73	9.00	19.96	99.083	Vertical	2	Pass
		2560	18.96	4.75	9.00	23.21	209.411	Vertical	2	Pass

Radiated Power (EIRP) for Band 7										
Mode	RB/RB SIZE	Frequency	Result						Limit	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dBi)	Max. EIRP Average (dBm)	Max. EIRP	Polarization Of Max. ERP		
							Average (mW)			
5.0MHz Band 16 QAM	25/0	2502.5	15.87	4.54	9.00	20.33	107.895	Horizontal	2	Pass
		2535	15.76	4.69	9.00	20.07	101.625	Horizontal	2	Pass
		2567.5	16.89	4.71	9.00	21.18	131.220	Horizontal	2	Pass
10.0MHz Band 16 QAM	50/0	2505	16.73	4.55	9.00	21.18	131.220	Horizontal	2	Pass
		2535	17.44	4.69	9.00	21.75	149.624	Horizontal	2	Pass
		2565	16.41	4.72	9.00	20.69	117.220	Horizontal	2	Pass
15.0MHz Band 16 QAM	75/0	2507.5	17.00	4.55	9.00	21.45	139.637	Horizontal	2	Pass
		2535	17.40	4.69	9.00	21.71	148.252	Horizontal	2	Pass
		2562.5	15.89	4.72	9.00	20.17	103.992	Horizontal	2	Pass
20.0MHz Band 16 QAM	100/0	2510	15.77	4.57	9.00	20.2	104.713	Horizontal	2	Pass
		2535	15.20	4.73	9.00	19.47	88.512	Horizontal	2	Pass
		2560	17.49	4.75	9.00	21.74	149.279	Horizontal	2	Pass
5.0MHz Band 16 QAM	25/0	2502.5	15.70	4.54	9.00	20.16	103.753	Vertical	2	Pass
		2535	17.08	4.69	9.00	21.39	137.721	Vertical	2	Pass
		2567.5	17.02	4.71	9.00	21.31	135.207	Vertical	2	Pass
10.0MHz Band 16 QAM	50/0	2505	17.36	4.55	9.00	21.81	151.705	Vertical	2	Pass
		2535	17.24	4.69	9.00	21.55	142.889	Vertical	2	Pass
		2565	15.19	4.72	9.00	19.47	88.512	Vertical	2	Pass
15.0MHz Band 16 QAM	75/0	2507.5	16.43	4.55	9.00	20.88	122.462	Vertical	2	Pass
		2535	15.78	4.69	9.00	20.09	102.094	Vertical	2	Pass
		2562.5	15.85	4.72	9.00	20.13	103.039	Vertical	2	Pass
20.0MHz Band 16 QAM	100/0	2510	16.06	4.57	9.00	20.49	111.944	Vertical	2	Pass
		2535	17.67	4.73	9.00	21.94	156.315	Vertical	2	Pass
		2560	16.61	4.75	9.00	20.86	121.899	Vertical	2	Pass

Note:

SG Level= Signal generator output

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

8.6 LTE BAND 12

Radiated Power (ERP) for Band 12											
Mode	RB/RB SIZE	Frequency	Result							Limit	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP		
1.4MHz Band QPSK	6/0	699.7	19.95	1.91	5.60	2.15	21.49	140.929	Horizontal	3	Pass
		707.5	20.71	1.91	5.70	2.15	22.35	171.791	Horizontal	3	Pass
		715.3	17.78	1.93	5.80	2.15	19.5	89.125	Horizontal	3	Pass
3.0MHz Band QPSK	15/0	700.5	17.77	1.91	5.60	2.15	19.31	85.310	Horizontal	3	Pass
		707.5	18.70	1.91	5.70	2.15	20.34	108.143	Horizontal	3	Pass
		714.5	19.57	1.93	5.80	2.15	21.29	134.586	Horizontal	3	Pass
5.0MHz Band QPSK	25/0	701.5	19.21	1.91	5.60	2.15	20.75	118.850	Horizontal	3	Pass
		707.5	20.17	1.91	5.70	2.15	21.81	151.705	Horizontal	3	Pass
		713.5	19.21	1.92	5.80	2.15	20.94	124.165	Horizontal	3	Pass
10.0MHz Band QPSK	50/0	704	19.54	1.91	5.60	2.15	21.08	128.233	Horizontal	3	Pass
		707.5	18.36	1.91	5.70	2.15	20	100.000	Horizontal	3	Pass
		711	17.77	1.92	5.80	2.15	19.5	89.125	Horizontal	3	Pass
1.4MHz Band QPSK	6/0	699.7	18.14	1.91	5.60	2.15	19.68	92.897	Vertical	3	Pass
		707.5	18.67	1.91	5.70	2.15	20.31	107.399	Vertical	3	Pass
		715.3	17.36	1.93	5.80	2.15	19.08	80.910	Vertical	3	Pass
3.0MHz Band QPSK	15/0	700.5	19.03	1.91	5.60	2.15	20.57	114.025	Vertical	3	Pass
		707.5	18.40	1.91	5.70	2.15	20.04	100.925	Vertical	3	Pass
		714.5	20.81	1.93	5.80	2.15	22.53	179.061	Vertical	3	Pass
5.0MHz Band QPSK	25/0	701.5	18.33	1.91	5.60	2.15	19.87	97.051	Vertical	3	Pass
		707.5	19.47	1.91	5.70	2.15	21.11	129.122	Vertical	3	Pass
		713.5	19.21	1.92	5.80	2.15	20.94	124.165	Vertical	3	Pass
10.0MHz Band QPSK	50/0	704	18.08	1.91	5.60	2.15	19.62	91.622	Vertical	3	Pass
		707.5	20.98	1.91	5.70	2.15	22.62	182.810	Vertical	3	Pass
		711	19.84	1.92	5.80	2.15	21.57	143.549	Vertical	3	Pass

Radiated Power (ERP) for Band 12											
Mode	RB/RB SIZE	Frequency	Result							Limit	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP		
1.4MHz Band 16 QAM	6/0	699.7	18.67	1.91	5.60	2.15	20.21	104.954	Horizontal	3	Pass
		707.5	19.27	1.91	5.70	2.15	20.91	123.310	Horizontal	3	Pass
		715.3	19.02	1.93	5.80	2.15	20.74	118.577	Horizontal	3	Pass
3.0MHz Band 16 QAM	15/0	700.5	19.70	1.91	5.60	2.15	21.24	133.045	Horizontal	3	Pass
		707.5	17.28	1.91	5.70	2.15	18.92	77.983	Horizontal	3	Pass
		714.5	17.70	1.93	5.80	2.15	19.42	87.498	Horizontal	3	Pass
5.0MHz Band 16 QAM	25/0	701.5	18.09	1.91	5.60	2.15	19.63	91.833	Horizontal	3	Pass
		707.5	20.38	1.91	5.70	2.15	22.02	159.221	Horizontal	3	Pass
		713.5	19.71	1.92	5.80	2.15	21.44	139.316	Horizontal	3	Pass
10.0MHz Band 16 QAM	50/0	704	19.31	1.91	5.60	2.15	20.85	121.619	Horizontal	3	Pass
		707.5	17.62	1.91	5.70	2.15	19.26	84.333	Horizontal	3	Pass
		711	19.52	1.92	5.80	2.15	21.25	133.352	Horizontal	3	Pass
1.4MHz Band 16 QAM	6/0	699.7	17.11	1.91	5.60	2.15	18.65	73.282	Vertical	3	Pass
		707.5	19.97	1.91	5.70	2.15	21.61	144.877	Vertical	3	Pass
		715.3	19.47	1.93	5.80	2.15	21.19	131.522	Vertical	3	Pass
3.0MHz Band 16 QAM	15/0	700.5	20.01	1.91	5.60	2.15	21.55	142.889	Vertical	3	Pass
		707.5	19.06	1.91	5.70	2.15	20.7	117.490	Vertical	3	Pass
		714.5	19.90	1.93	5.80	2.15	21.62	145.211	Vertical	3	Pass
5.0MHz Band 16 QAM	25/0	701.5	19.04	1.91	5.60	2.15	20.58	114.288	Vertical	3	Pass
		707.5	19.82	1.91	5.70	2.15	21.46	139.959	Vertical	3	Pass
		713.5	17.86	1.92	5.80	2.15	19.59	90.991	Vertical	3	Pass
10.0MHz Band 16 QAM	50/0	704	19.86	1.91	5.60	2.15	21.4	138.038	Vertical	3	Pass
		707.5	20.51	1.91	5.70	2.15	22.15	164.059	Vertical	3	Pass
		711	19.56	1.92	5.80	2.15	21.29	134.586	Vertical	3	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 13

Radiated Power (ERP) for Band 13											
Mode	RB/RB SIZE	Frequency	Result							Limit	Conclusion
			SG Level	Cable Loss	Antenna Factor	Correction	Max. EIRP	Max. EIRP	Polarization		
			(dBm)	(dBm)	(dB)	(dB)	Average	Average	Of Max. ERP		
5.0MHz Band QPSK	25/0	779.5	18.51	1.91	5.80	2.15	20.25	105.925	Horizontal	3	Pass
		782	20.03	1.91	5.60	2.15	21.57	143.549	Horizontal	3	Pass
		784.5	20.13	1.92	5.70	2.15	21.76	149.968	Horizontal	3	Pass
10.0MHz Band QPSK	50/0	782	20.15	1.91	5.8	2.15	21.89	154.525	Horizontal	3	Pass
5.0MHz Band QPSK	25/0	779.5	19.07	1.91	5.80	2.15	20.81	120.504	Vertical	3	Pass
		782	19.54	1.91	5.60	2.15	21.08	128.233	Vertical	3	Pass
		784.5	19.35	1.92	5.70	2.15	20.98	125.314	Vertical	3	Pass
10.0MHz Band QPSK	50/0	782	20.57	1.91	5.8	2.15	22.31	170.216	Vertical	3	Pass

Radiated Power (ERP) for Band 13											
Mode	RB/RB SIZE	Frequency	Result								Conclusion
			SG Level	Cable Loss (dBm)	Antenna Factor (dB)	Correction	Max. EIRP	Max. EIRP	Polarization Of Max. ERP	Limit	
						(dB)	Average	Average			
							(dBm)	(mW)			
5.0MHz Band 16 QAM	25/0	779.5	19.06	1.91	5.80	2.15	20.8	120.226	Horizontal	3	Pass
		782	19.11	1.91	5.60	2.15	20.65	116.145	Horizontal	3	Pass
		784.5	18.96	1.92	5.70	2.15	20.59	114.551	Horizontal	3	Pass
10.0MHz Band 16 QAM	50/0	782	19.45	1.91	5.8	2.15	21.19	131.522	Horizontal	3	Pass
5.0MHz Band 16 QAM	25/0	779.5	19.77	1.91	5.80	2.15	21.51	141.579	Vertical	3	Pass
		782	19.49	1.91	5.60	2.15	21.03	126.765	Vertical	3	Pass
		784.5	19.84	1.92	5.70	2.15	21.47	140.281	Vertical	3	Pass
10.0MHz Band 16 QAM	50/0	782	19.78	1.91	5.8	2.15	21.52	141.906	Vertical	3	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 19

Radiated Power (ERP) for Band 19(830-845)											
Mode	RB/RB SIZE	Frequency	Result							Limit (W)	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP		
5.0MHz Band QPSK	25/0	832.5	17.98	2.01	5.30	2.15	19.12	81.66	Horizontal	7	Pass
		837.5	18.38	2.01	5.30	2.15	19.52	89.54	Horizontal	7	Pass
		842.5	19.86	2.02	5.70	2.15	21.39	137.72	Horizontal	7	Pass
10.0MHz Band QPSK	50/0	835	18.11	2.01	5.30	2.15	19.25	84.14	Horizontal	7	Pass
		837.5	19.04	2.01	5.30	2.15	20.18	104.23	Horizontal	7	Pass
		840	18.13	2.02	5.70	2.15	19.66	92.47	Horizontal	7	Pass
15.0MHz Band QPSK	75/0	837.5	19.04	2.01	5.30	2.15	20.18	104.23	Horizontal	7	Pass
5.0MHz Band QPSK	25/0	832.5	18.78	2.01	5.30	2.15	19.92	98.17	Vertical	7	Pass
		837.5	20.02	2.01	5.30	2.15	21.16	130.62	Vertical	7	Pass
		842.5	19.58	2.02	5.70	2.15	21.11	129.12	Vertical	7	Pass
10.0MHz Band QPSK	50/0	835	19.94	2.01	5.30	2.15	21.08	128.23	Vertical	7	Pass
		837.5	20.99	2.01	5.30	2.15	22.13	163.31	Vertical	7	Pass
		840	20.61	2.02	5.70	2.15	22.14	163.68	Vertical	7	Pass
15.0MHz Band QPSK	75/0	837.50	21.06	2.01	5.30	2.15	22.2	165.96	Vertical	7	Pass

Radiated Power (ERP) for Band 19(830-845)											
Mode	RB/RB SIZE	Frequency	Result							Limit (W)	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP		
5.0MHz Band 16 QAM	25/0	832.5	19.67	2.01	5.30	2.15	20.81	120.50	Horizontal	7	Pass
		837.5	19.62	2.01	5.30	2.15	20.76	119.12	Horizontal	7	Pass
		842.5	19.00	2.02	5.70	2.15	20.53	112.98	Horizontal	7	Pass
10.0MHz Band 16 QAM	50/0	835	19.59	2.01	5.30	2.15	20.73	118.30	Horizontal	7	Pass
		837.5	20.40	2.01	5.30	2.15	21.54	142.56	Horizontal	7	Pass
		840	19.55	2.02	5.70	2.15	21.08	128.23	Horizontal	7	Pass
15.0MHz Band QPSK	75/0	837.5	19.39	2.01	5.30	2.15	20.53	112.98	Horizontal	7	Pass
5.0MHz Band 16 QAM	25/0	832.5	20.64	2.01	5.30	2.15	21.78	150.66	Vertical	7	Pass
		837.5	19.70	2.01	5.30	2.15	20.84	121.34	Vertical	7	Pass
		842.5	20.12	2.02	5.70	2.15	21.65	146.22	Vertical	7	Pass
10.0MHz Band 16 QAM	50/0	835	20.07	2.01	5.30	2.15	21.21	132.13	Vertical	7	Pass
		837.5	20.51	2.01	5.30	2.15	21.65	146.22	Vertical	7	Pass
		840	19.40	2.02	5.70	2.15	20.93	123.88	Vertical	7	Pass
15.0MHz Band QPSK	75/0	837.5	21.16	2.01	5.30	2.15	22.3	169.82	Vertical	7	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

8.9 LTE BAND 41

Radiated Power (EIRP) for Band 41										
Mode	RB/RB SIZE	Frequency	Result						Limit	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP		
5.0MHz Band QPSK	25/0	2498.50	16.22	4.54	9.00	20.68	116.950	Horizontal	2	Pass
		2593.00	14.63	4.69	9.00	18.94	78.343	Horizontal	2	Pass
		2687.50	13.95	4.71	9.00	18.24	66.681	Horizontal	2	Pass
10.0MHz Band QPSK	50/0	2501.00	15.72	4.55	9.00	20.17	103.992	Horizontal	2	Pass
		2593.00	15.31	4.69	9.00	19.62	91.622	Horizontal	2	Pass
		2685.00	14.51	4.72	9.00	18.79	75.683	Horizontal	2	Pass
15.0MHz Band QPSK	75/0	2503.50	12.81	4.55	9.00	17.26	53.211	Horizontal	2	Pass
		2593.00	15.43	4.69	9.00	19.74	94.189	Horizontal	2	Pass
		2682.50	15.22	4.72	9.00	19.5	89.125	Horizontal	2	Pass
20.0MHz Band QPSK	100/0	2506.00	13.63	4.57	9.00	18.06	63.973	Horizontal	2	Pass
		2593.00	15.04	4.73	9.00	19.31	85.310	Horizontal	2	Pass
		2680.00	14.99	4.75	9.00	19.24	83.946	Horizontal	2	Pass
5.0MHz Band QPSK	25/0	2498.50	16.41	4.54	9.00	20.87	122.180	Vertical	2	Pass
		2593.00	13.71	4.69	9.00	18.02	63.387	Vertical	2	Pass
		2687.50	13.25	4.71	9.00	17.54	56.754	Vertical	2	Pass
10.0MHz Band QPSK	50/0	2501.00	12.57	4.55	9.00	17.02	50.350	Vertical	2	Pass
		2593.00	14.36	4.69	9.00	18.67	73.621	Vertical	2	Pass
		2685.00	14.54	4.72	9.00	18.82	76.208	Vertical	2	Pass
15.0MHz Band QPSK	75/0	2503.50	13.22	4.55	9.00	17.67	58.479	Vertical	2	Pass
		2593.00	15.47	4.69	9.00	19.78	95.060	Vertical	2	Pass
		2682.50	16.04	4.72	9.00	20.32	107.647	Vertical	2	Pass
20.0MHz Band QPSK	100/0	2506.00	17.26	4.57	9.00	21.69	147.571	Vertical	2	Pass
		2593.00	17.08	4.73	9.00	21.35	136.458	Vertical	2	Pass
		2680.00	16.77	4.75	9.00	21.02	126.474	Vertical	2	Pass

Radiated Power (EIRP) for Band 41										
Mode	RB/RB SIZE	Frequency	Result						Limit	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP		
5.0MHz Band 16 QAM	25/0	2498.50	13.76	4.54	9.00	18.22	66.374	Horizontal	2	Pass
		2593.00	15.49	4.69	9.00	19.8	95.499	Horizontal	2	Pass
		2687.50	15.62	4.71	9.00	19.91	97.949	Horizontal	2	Pass
10.0MHz Band 16 QAM	50/0	2501.00	14.64	4.55	9.00	19.09	81.096	Horizontal	2	Pass
		2593.00	14.99	4.69	9.00	19.3	85.114	Horizontal	2	Pass
		2685.00	16.40	4.72	9.00	20.68	116.950	Horizontal	2	Pass
15.0MHz Band 16 QAM	75/0	2503.50	14.64	4.55	9.00	19.09	81.096	Horizontal	2	Pass
		2593.00	14.95	4.69	9.00	19.26	84.333	Horizontal	2	Pass
		2682.50	15.57	4.72	9.00	19.85	96.605	Horizontal	2	Pass
20.0MHz Band 16 QAM	100/0	2506.00	14.65	4.57	9.00	19.08	80.910	Horizontal	2	Pass
		2593.00	16.63	4.73	9.00	20.9	123.027	Horizontal	2	Pass
		2680.00	14.90	4.75	9.00	19.15	82.224	Horizontal	2	Pass
5.0MHz Band 16 QAM	25/0	2498.50	16.18	4.54	9.00	20.64	115.878	Vertical	2	Pass
		2593.00	13.77	4.69	9.00	18.08	64.269	Vertical	2	Pass
		2687.50	16.32	4.71	9.00	20.61	115.080	Vertical	2	Pass
10.0MHz Band 16 QAM	50/0	2501.00	16.14	4.55	9.00	20.59	114.551	Vertical	2	Pass
		2593.00	15.78	4.69	9.00	20.09	102.094	Vertical	2	Pass
		2685.00	12.81	4.72	9.00	17.09	51.168	Vertical	2	Pass
15.0MHz Band 16 QAM	75/0	2503.50	14.44	4.55	9.00	18.89	77.446	Vertical	2	Pass
		2593.00	16.39	4.69	9.00	20.7	117.490	Vertical	2	Pass
		2682.50	14.02	4.72	9.00	18.3	67.608	Vertical	2	Pass
20.0MHz Band 16 QAM	100/0	2506.00	15.89	4.57	9.00	20.32	107.647	Vertical	2	Pass
		2593.00	16.17	4.73	9.00	20.44	110.662	Vertical	2	Pass
		2680.00	16.74	4.75	9.00	20.99	125.603	Vertical	2	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 66

Radiated Power (EIRP) for Band 66										
Mode	RB/RB SIZE	Frequency	Result						Limit	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP		
1.4MHz Band QPSK	6/0	1710.7	15.09	3.12	8.90	19.8	95.499	Horizontal	1	Pass
		1745	13.86	3.27	8.90	18.7	74.131	Horizontal	1	Pass
		1779.3	16.28	3.29	8.90	20.55	113.501	Horizontal	1	Pass
3.0MHz Band QPSK	15/0	1711.5	14.20	3.13	8.90	19.41	87.297	Horizontal	1	Pass
		1745	14.87	3.27	8.90	20.15	103.514	Horizontal	1	Pass
		1778.5	15.56	3.30	8.90	19.57	90.573	Horizontal	1	Pass
5.0MHz Band QPSK	25/0	1712.5	16.05	3.13	8.90	20.36	108.643	Horizontal	1	Pass
		1745	16.21	3.27	8.90	20.93	123.880	Horizontal	1	Pass
		1777.5	14.87	3.30	8.90	19.91	97.949	Horizontal	1	Pass
10.0MHz Band QPSK	50/0	1715	15.19	3.15	8.90	19.7	93.325	Horizontal	1	Pass
		1745	15.29	3.31	8.90	20.84	121.339	Horizontal	1	Pass
		1775	16.10	3.33	8.90	21.2	131.826	Horizontal	1	Pass
15.0MHz Band QPSK	75/0	1717.5	15.36	3.15	8.90	21.18	131.220	Horizontal	1	Pass
		1745	15.89	3.31	8.90	21.41	138.357	Horizontal	1	Pass
		1772.5	16.64	3.33	8.90	21.65	146.218	Horizontal	1	Pass
20.0MHz Band QPSK	100/0	1720	13.97	3.17	8.90	19.24	83.946	Horizontal	1	Pass
		1745	15.42	3.32	8.90	21.53	142.233	Horizontal	1	Pass
		1770	15.22	3.36	8.90	21.08	128.233	Horizontal	1	Pass
1.4MHz Band QPSK	6/0	1710.7	15.71	3.12	8.90	18.73	74.645	Vertical	1	Pass
		1745	16.21	3.27	8.90	22.13	163.305	Vertical	1	Pass
		1779.3	15.56	3.29	8.90	21.37	137.088	Vertical	1	Pass
3.0MHz Band QPSK	15/0	1711.5	16.08	3.13	8.90	20.72	118.032	Vertical	1	Pass
		1745	16.14	3.27	8.90	21.63	145.546	Vertical	1	Pass
		1778.5	16.41	3.30	8.90	19.89	97.499	Vertical	1	Pass
5.0MHz Band QPSK	25/0	1712.5	15.17	3.13	8.90	19.73	93.972	Vertical	1	Pass
		1745	15.65	3.27	8.90	18.96	78.705	Vertical	1	Pass
		1777.5	14.24	3.30	8.90	19.06	80.538	Vertical	1	Pass
10.0MHz Band	50/0	1715	12.72	3.15	8.90	17.6	57.544	Vertical	1	Pass
		1745	16.63	3.31	8.90	21.14	130.017	Vertical	1	Pass

QPSK		1775	15.66	3.33	8.90	20.71	117.761	Vertical	1	Pass
15.0MHz	75/0	1717.5	16.69	3.15	8.90	21.2	131.826	Vertical	1	Pass
Band		1745	16.08	3.31	8.90	21.1	128.825	Vertical	1	Pass
QPSK		1772.5	15.30	3.33	8.90	20.23	105.439	Vertical	1	Pass
20.0MHz	100/0	1720	17.39	3.17	8.90	21.95	156.675	Vertical	1	Pass
Band		1745	17.54	3.32	8.90	22.36	172.187	Vertical	1	Pass
QPSK		1770	14.41	3.36	8.90	17.44	55.463	Vertical	1	Pass

Radiated Power (EIRP) for Band 66										
Mode	RB/RB SIZE	Frequency	Result						Limit	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP		
1.4MHz Band 16 QAM	6/0	1710.7	15.29	3.12	8.9	21.07	127.938	Horizontal	1	Pass
		1745	13.19	3.27	8.9	18.82	76.208	Horizontal	1	Pass
		1779.3	14.07	3.29	8.9	19.68	92.897	Horizontal	1	Pass
3.0MHz Band 16 QAM	15/0	1711.5	14.23	3.13	8.9	20	100.000	Horizontal	1	Pass
		1745	13.67	3.27	8.9	19.3	85.114	Horizontal	1	Pass
		1778.5	14.07	3.3	8.9	19.67	92.683	Horizontal	1	Pass
5.0MHz Band 16 QAM	25/0	1712.5	14.88	3.13	8.9	20.65	116.145	Horizontal	1	Pass
		1745	11.70	3.27	8.9	17.33	54.075	Horizontal	1	Pass
		1777.5	13.92	3.3	8.9	19.52	89.536	Horizontal	1	Pass
10.0MHz Band 16 QAM	50/0	1715	13.93	3.15	8.9	19.68	92.897	Horizontal	1	Pass
		1745	12.00	3.31	8.9	17.59	57.412	Horizontal	1	Pass
		1775	11.78	3.33	8.9	17.35	54.325	Horizontal	1	Pass
15.0MHz Band 16 QAM	75/0	1717.5	13.15	3.15	8.9	18.9	77.625	Horizontal	1	Pass
		1745	13.66	3.31	8.9	19.25	84.140	Horizontal	1	Pass
		1772.5	13.56	3.33	8.9	19.13	81.846	Horizontal	1	Pass
20.0MHz Band 16 QAM	100/0	1720	14.24	3.17	8.9	19.97	99.312	Horizontal	1	Pass
		1745	14.70	3.32	8.9	20.28	106.660	Horizontal	1	Pass
		1770	14.35	3.36	8.9	19.89	97.499	Horizontal	1	Pass
1.4MHz Band 16 QAM	6/0	1710.7	14.49	3.12	8.9	20.27	106.414	Vertical	1	Pass
		1745	15.49	3.27	8.9	21.12	129.420	Vertical	1	Pass
		1779.3	13.15	3.29	8.9	18.76	75.162	Vertical	1	Pass
3.0MHz Band 16 QAM	15/0	1711.5	11.74	3.13	8.9	17.51	56.364	Vertical	1	Pass
		1745	13.53	3.27	8.9	19.16	82.414	Vertical	1	Pass
		1778.5	13.95	3.3	8.9	19.55	90.157	Vertical	1	Pass
5.0MHz Band 16 QAM	25/0	1712.5	14.59	3.13	8.9	20.36	108.643	Vertical	1	Pass
		1745	14.46	3.27	8.9	20.09	102.094	Vertical	1	Pass
		1777.5	12.93	3.3	8.9	18.53	71.285	Vertical	1	Pass
10.0MHz Band 16 QAM	50/0	1715	12.12	3.15	8.9	17.87	61.235	Vertical	1	Pass
		1745	14.70	3.31	8.9	20.29	106.905	Vertical	1	Pass
		1775	14.62	3.33	8.9	20.19	104.472	Vertical	1	Pass
15.0MHz Band 16	75/0	1717.5	12.71	3.15	8.9	18.46	70.146	Vertical	1	Pass
		1745	13.68	3.31	8.9	19.27	84.528	Vertical	1	Pass

QAM		1772.5	14.66	3.33	8.9	20.23	105.439	Vertical	1	Pass
20.0MHz	100/0	1720	14.37	3.17	8.9	20.1	102.329	Vertical	1	Pass
Band 16		1745	15.22	3.32	8.9	20.8	120.226	Vertical	1	Pass
QAM		1770	16.28	3.36	8.9	21.82	152.055	Vertical	1	Pass

Note:

SG Level= Signal generator output

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

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

9. SPURIOUS RADIATION EMISSION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238, §27.53

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 2/4/5/7/12/13/19/41/66

RESULTS

PASS

9.1 LTE BAND 2

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

Test Results for Low Channel 1850.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3701.4	-53.08	4.04	33.51	-23.61	-13	-10.61	Horizontal
3701.4	-54.18	4.04	33.51	-24.71	-13	-11.71	Vertical
5552.1	-56.52	5.24	35.84	-25.92	-13	-12.92	Vertical
5552.1	-55.58	5.24	35.84	-24.98	-13	-11.98	Horizontal
Test Results for Mid Channel 1880MHz							
3760	-48.98	4.04	33.56	-19.46	-13	-6.46	Horizontal
3760	-51.88	4.04	33.56	-22.36	-13	-9.36	Vertical
5640	-55.40	5.24	35.91	-24.73	-13	-11.73	Vertical
5640	-49.95	5.24	35.91	-19.28	-13	-6.28	Horizontal
Test Results for High Channel 1909.3MHz							
3818.6	-50.88	4.04	34.00	-20.92	-13	-7.92	Horizontal
3818.6	-48.11	4.04	34.00	-18.15	-13	-5.15	Vertical
5727.9	-52.98	5.24	36.04	-22.18	-13	-9.18	Vertical
5727.9	-51.38	5.24	36.04	-20.58	-13	-7.58	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	-49.22	4.07	33.54	-19.75	-13	-6.75	Horizontal
3720	-50.91	4.07	33.54	-21.44	-13	-8.44	Vertical
5580	-57.39	5.28	35.86	-26.81	-13	-13.81	Vertical
5580	-53.10	5.28	35.86	-22.52	-13	-9.52	Horizontal
Test Results for Mid Channel 1880MHz							
3760	-53.27	4.04	33.56	-23.75	-13	-10.75	Horizontal
3760	-52.59	4.04	33.56	-23.07	-13	-10.07	Vertical
5640	-55.95	5.24	35.91	-25.28	-13	-12.28	Vertical
5640	-54.28	5.24	35.91	-23.61	-13	-10.61	Horizontal
Test Results for High Channel 1900MHz							
3800	-51.71	4.04	34.00	-21.75	-13	-8.75	Horizontal
3800	-54.63	4.04	34.00	-24.67	-13	-11.67	Vertical
5700	-54.60	5.24	36.04	-23.80	-13	-10.80	Vertical
5700	-53.40	5.24	36.04	-22.60	-13	-9.60	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
3421.4	-52.46	4.02	29.80	-26.68	-13	-13.68	Horizontal
3421.4	-53.95	4.02	29.80	-28.17	-13	-15.17	Vertical
5132.1	-55.66	5.24	35.84	-25.06	-13	-12.06	Vertical
5132.1	-57.91	5.24	35.84	-27.31	-13	-14.31	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465	-54.03	4.03	30.00	-28.06	-13	-15.06	Horizontal
3465	-51.71	4.03	30.00	-25.74	-13	-12.74	Vertical
5197.5	-50.11	5.25	35.86	-19.50	-13	-6.50	Vertical
5197.5	-50.60	5.25	35.86	-19.99	-13	-6.99	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-52.41	4.05	30.01	-26.45	-13	-13.45	Horizontal
3508.6	-49.65	4.05	30.01	-23.69	-13	-10.69	Vertical
5262.9	-52.03	5.26	35.86	-21.43	-13	-8.43	Vertical
5262.9	-56.90	5.26	35.86	-26.30	-13	-13.30	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	-52.83	4.02	29.80	-27.05	-13	-14.05	Horizontal
3440	-50.85	4.02	29.80	-25.07	-13	-12.07	Vertical
5160	-49.38	5.24	35.84	-18.78	-13	-5.78	Vertical
5160	-54.61	5.24	35.84	-24.01	-13	-11.01	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465	-50.01	4.03	30.00	-24.04	-13	-11.04	Horizontal
3465	-49.82	4.03	30.00	-23.85	-13	-10.85	Vertical
5197.5	-55.70	5.25	35.86	-25.09	-13	-12.09	Vertical
5197.5	-53.60	5.25	35.86	-22.99	-13	-9.99	Horizontal
Test Results for High Channel 1745MHz							
2490	-50.49	2.91	27.68	-25.72	-13	-12.72	Horizontal
3490	-50.81	2.91	27.68	-26.04	-13	-13.04	Vertical
5235	-57.45	5.26	35.86	-26.85	-13	-13.85	Vertical
5235	-51.61	5.26	35.86	-21.01	-13	-8.01	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
1649.4	-48.81	2.78	27.50	-24.09	-13	-11.09	Horizontal
1649.4	-48.09	2.78	27.50	-23.37	-13	-10.37	Vertical
2474.1	-54.68	2.90	27.80	-29.78	-13	-16.78	Vertical
2474.1	-52.32	2.90	27.80	-27.42	-13	-14.42	Horizontal
Test Results For Mid Channel 836.5MHz							
1673	-54.11	2.78	27.48	-29.41	-13	-16.41	Horizontal
1673	-51.51	2.78	27.48	-26.81	-13	-13.81	Vertical
2509.5	-50.58	2.91	27.70	-25.79	-13	-12.79	Vertical
2509.5	-49.42	2.91	27.70	-24.63	-13	-11.63	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-49.85	2.78	27.43	-25.20	-13	-12.20	Horizontal
1696.6	-52.69	2.78	27.43	-28.04	-13	-15.04	Vertical
2544.9	-57.99	2.92	27.74	-33.17	-13	-20.17	Vertical
2544.9	-56.84	2.92	27.74	-32.02	-13	-19.02	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	-53.25	2.78	27.50	-28.53	-13	-15.53	Horizontal
1658	-50.78	2.78	27.50	-26.06	-13	-13.06	Vertical
2487	-50.43	2.90	27.80	-25.53	-13	-12.53	Vertical
2487	-54.58	2.90	27.80	-29.68	-13	-16.68	Horizontal
Test Results for Mid Channel 836.5MHz							
1673	-52.05	2.78	27.48	-27.35	-13	-14.35	Horizontal
1673	-51.92	2.78	27.48	-27.22	-13	-14.22	Vertical
2509.5	-49.74	2.91	27.70	-24.95	-13	-11.95	Vertical
2509.5	-50.83	2.91	27.70	-26.04	-13	-13.04	Horizontal
Test Results for High Channel 844MHz							
1688	-52.97	2.78	27.43	-28.32	-13	-15.32	Horizontal
1688	-50.87	2.78	27.43	-26.22	-13	-13.22	Vertical
2532	-49.47	2.92	27.74	-24.65	-13	-11.65	Vertical
2532	-52.63	2.92	27.74	-27.81	-13	-14.81	Horizontal

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

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

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

9.4 LTE BAND 7

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

Test Results for Low Channel 2502.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5005	-58.27	5.23	35.81	-27.69	-25	-2.69	Horizontal
5005	-61.07	5.23	35.81	-30.49	-25	-5.49	Vertical
7507.5	-61.84	5.67	36.85	-30.66	-25	-5.66	Vertical
7507.5	-59.33	5.67	36.85	-28.15	-25	-3.15	Horizontal
Test Results for Mid Channel 2535MHz							
5070	-60.61	5.23	35.82	-30.02	-25	-5.02	Horizontal
5070	-58.43	5.23	35.82	-27.84	-25	-2.84	Vertical
7605	-64.64	5.67	36.85	-33.46	-25	-8.46	Vertical
7605	-62.76	5.67	36.85	-31.58	-25	-6.58	Horizontal
Test Results for High Channel 2567.5MHz							
5135	-59.77	5.24	35.83	-29.18	-25	-4.18	Horizontal
5135	-58.90	5.24	35.83	-28.31	-25	-3.31	Vertical
7702.5	-61.40	5.68	36.87	-30.21	-25	-5.21	Vertical
7702.5	-60.99	5.68	36.87	-29.80	-25	-4.80	Horizontal

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

Test Results for Low Channel 2510MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5020	-60.27	5.23	35.82	-29.68	-25	-4.68	Horizontal
5020	-58.96	5.23	35.82	-28.37	-25	-3.37	Vertical
7530	-64.31	5.67	36.86	-33.12	-25	-8.12	Vertical
7530	-63.77	5.67	36.86	-32.58	-25	-7.58	Horizontal
Test Results for Mid Channel 2535MHz							
5070	-61.19	5.23	35.82	-30.60	-25	-5.60	Horizontal
5070	-58.54	5.23	35.82	-27.95	-25	-2.95	Vertical
7605	-59.12	5.67	36.85	-27.94	-25	-2.94	Vertical
7605	-59.87	5.67	36.85	-28.69	-25	-3.69	Horizontal
Test Results for High Channel 2560MHz							
5120	-58.94	5.24	35.83	-28.35	-25	-3.35	Horizontal
5120	-59.05	5.24	35.83	-28.46	-25	-3.46	Vertical
7680	-62.48	5.70	36.88	-31.30	-25	-6.30	Vertical
7680	-60.97	5.70	36.88	-29.79	-25	-4.79	Horizontal

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

. Margin = Spurious Emission Level - Limit

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

9.5 LTE BAND 12

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

Test Results for Low Channel 699.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1399.4	-48.52	2.60	27.2	-23.92	-13	-10.92	Horizontal
1399.4	-48.16	2.60	27.2	-23.56	-13	-10.56	Vertical
2099.1	-55.50	2.85	27.54	-30.81	-13	-17.81	Vertical
2099.1	-51.77	2.85	27.54	-27.08	-13	-14.08	Horizontal
Test Results For Mid Channel 707.5MHz							
1415	-52.32	2.61	27.28	-27.65	-13	-14.65	Horizontal
1415	-49.92	2.61	27.28	-25.25	-13	-12.25	Vertical
2122.5	-56.83	2.87	27.59	-32.11	-13	-19.11	Vertical
2122.5	-49.60	2.87	27.59	-24.88	-13	-11.88	Horizontal
Test Results for High Channel 715.3MHz							
1430.6	-49.53	2.63	27.28	-24.88	-13	-11.88	Horizontal
1430.6	-54.88	2.63	27.28	-30.23	-13	-17.23	Vertical
2145.9	-50.47	2.88	27.60	-25.75	-13	-12.75	Vertical
2145.9	-49.69	2.88	27.60	-24.97	-13	-11.97	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	-49.83	2.61	27.26	-25.18	-13	-12.18	Horizontal
1408	-47.23	2.61	27.26	-22.58	-13	-9.58	Vertical
2112	-52.03	2.87	27.58	-27.32	-13	-14.32	Vertical
2112	-57.03	2.87	27.58	-32.32	-13	-19.32	Horizontal
Test Results for Mid Channel 707.5MHz							
1415	-54.35	2.61	27.28	-29.68	-13	-16.68	Horizontal
1415	-47.67	2.61	27.28	-23.00	-13	-10.00	Vertical
2122.5	-53.05	2.87	27.59	-28.33	-13	-15.33	Vertical
2122.5	-52.80	2.87	27.59	-28.08	-13	-15.08	Horizontal
Test Results for High Channel 711MHz							
1422	-51.81	2.62	27.28	-27.15	-13	-14.15	Horizontal
1422	-53.54	2.62	27.28	-28.88	-13	-15.88	Vertical
2133	-49.35	2.87	27.60	-24.62	-13	-11.62	Vertical
2133	-55.62	2.87	27.60	-30.89	-13	-17.89	Horizontal

Note: P_{Mea}(dBm)= Power(dBm)+ A_{Rpl} (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 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
1559	-67.30	2.61	27.28	-42.63	-40	-2.63	Horizontal
1559	-71.39	2.61	27.28	-46.72	-40	-6.72	Vertical
2338.5	-55.05	2.87	27.59	-30.33	-13	-17.33	Vertical
2338.5	-52.08	2.87	27.59	-27.36	-13	-14.36	Horizontal
Test Results For Mid Channel 782MHz							
1564	-70.33	2.62	27.30	-45.65	-40	-5.65	Horizontal
1564	-69.00	2.62	27.30	-44.32	-40	-4.32	Vertical
2346	-49.70	2.87	27.62	-24.95	-13	-11.95	Vertical
2346	-50.07	2.87	27.62	-25.32	-13	-12.32	Horizontal
Test Results for High Channel 784.5MHz							
1569	-68.58	2.66	27.28	-43.96	-40	-3.96	Horizontal
1569	-70.07	2.66	27.28	-45.45	-40	-5.45	Vertical
2353.5	-57.00	2.88	27.60	-32.28	-13	-19.28	Vertical
2353.5	-52.42	2.88	27.60	-27.70	-13	-14.70	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
1564	-70.29	2.62	27.30	-45.61	-40	-5.61	Horizontal
1564	-70.22	2.62	27.30	-45.54	-40	-5.54	Vertical
2346	-49.91	2.87	27.62	-25.16	-13	-12.16	Vertical
2346	-50.32	2.87	27.62	-25.57	-13	-12.57	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 19

LTE BAND 19 (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
1665	-49.12	2.78	27.28	-24.62	-13	-11.62	Horizontal
1665	-47.59	2.78	27.28	-23.09	-13	-10.09	Vertical
2474.1	-56.10	2.9	27.59	-31.41	-13	-18.41	Vertical
2474.1	-55.83	2.9	27.59	-31.14	-13	-18.14	Horizontal
Test Results For Mid Channel 836.5MHz							
1675	-47.28	2.78	27.3	-22.76	-13	-9.76	Horizontal
1675	-53.17	2.78	27.3	-28.65	-13	-15.65	Vertical
2512.5	-56.63	2.91	27.62	-31.92	-13	-18.92	Vertical
2512.5	-56.87	2.91	27.62	-32.16	-13	-19.16	Horizontal
Test Results for High Channel 848.3MHz							
1685	-51.06	2.78	27.28	-26.56	-13	-13.56	Horizontal
1685	-50.68	2.78	27.28	-26.18	-13	-13.18	Vertical
2572.5	-54.61	2.92	27.6	-29.93	-13	-16.93	Vertical
2572.5	-49.13	2.92	27.6	-24.45	-13	-11.45	Horizontal

LTE BAND 19 (15MHZ BANDWIDTH)

Test Results for Low Channel 821.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1670	-47.08	2.78	27.3	-22.56	-13	-9.56	Horizontal
1670	-48.48	2.78	27.3	-23.96	-13	-10.96	Vertical
2505	-51.27	2.9	27.62	-26.55	-13	-13.55	Vertical
2505	-57.62	2.9	27.62	-32.90	-13	-19.90	Horizontal
Test Results For Mid Channel 836.5MHz							
1675	-50.17	2.78	27.3	-25.65	-13	-12.65	Horizontal
1675	-54.68	2.78	27.3	-30.16	-13	-17.16	Vertical
2512.5	-53.26	2.91	27.62	-28.55	-13	-15.55	Vertical
2512.5	-54.10	2.91	27.62	-29.39	-13	-16.39	Horizontal
Test Results for High Channel 841.5MHz							
1680	-52.87	2.78	27.3	-28.35	-13	-15.35	Horizontal
1680	-53.28	2.78	27.3	-28.76	-13	-15.76	Vertical
2520	-51.50	2.92	27.62	-26.80	-13	-13.80	Vertical
2520	-50.70	2.92	27.62	-26.00	-13	-13.00	Horizontal

Note: P_{Mea}(dBm)= Power(dBm)+ A_{Rpl} (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.

9.8 LTE BAND 41

LTE BAND 41 (5MHZ BANDWIDTH)

Test Results for Low Channel 2537..5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
4997	-56.61	2.63	27.26	-31.98	-25	-6.98	Horizontal
4997	-56.74	2.63	27.26	-32.11	-25	-7.11	Vertical
7495.5	-59.54	2.67	27.58	-34.63	-25	-9.63	Vertical
7495.5	-57.46	2.67	27.58	-32.55	-25	-7.55	Horizontal
Test Results for Mid Channel 2593MHz							
5186	-53.54	2.62	27.28	-28.88	-25	-3.88	Horizontal
5186	-55.62	2.62	27.28	-30.96	-25	-5.96	Vertical
7779	-57.22	2.85	27.62	-32.45	-25	-7.45	Vertical
7779	-60.46	2.85	27.62	-35.69	-25	-10.69	Horizontal
Test Results for High Channel 2687.5MHz							
5375	-53.45	2.64	27.28	-28.81	-25	-3.81	Horizontal
5375	-57.51	2.64	27.28	-32.87	-25	-7.87	Vertical
8062.5	-55.38	2.85	27.70	-30.53	-25	-5.53	Vertical
8062.5	-57.82	2.85	27.70	-32.97	-25	-7.97	Horizontal

LTE BAND 41 (20MHZ BANDWIDTH)

Test Results for Low Channel 2545MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5012	-55.17	2.63	27.30	-30.50	-25	-5.50	Horizontal
5012	-57.91	2.63	27.30	-33.24	-25	-8.24	Vertical
7518	-58.89	2.67	27.62	-33.94	-25	-8.94	Vertical
7518	-61.09	2.67	27.62	-36.14	-25	-11.14	Horizontal
Test Results for Mid Channel 2593MHz							
5186	-55.67	2.62	27.33	-30.96	-25	-5.96	Horizontal
5186	-55.66	2.62	27.33	-30.95	-25	-5.95	Vertical
7779	-60.67	2.85	27.67	-35.85	-25	-10.85	Vertical
7779	-59.44	2.85	27.67	-34.62	-25	-9.62	Horizontal
Test Results for High Channel 2680MHz							
5360	-55.78	2.64	27.33	-31.09	-25	-6.09	Horizontal
5360	-54.44	2.64	27.33	-29.75	-25	-4.75	Vertical
8040	-54.92	2.85	27.67	-30.10	-25	-5.10	Vertical
8040	-59.81	2.85	27.67	-34.99	-25	-9.99	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.

9.9 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	-48.13	2.61	27.28	-23.46	-13	-10.46	Horizontal
3421.4	-52.21	2.61	27.28	-27.54	-13	-14.54	Vertical
5132.1	-51.45	2.87	27.59	-26.73	-13	-13.73	Vertical
5132.1	-56.56	2.87	27.59	-31.84	-13	-18.84	Horizontal
Test Results for Mid Channel 1745MHz							
3490	-52.60	2.62	27.3	-27.92	-13	-14.92	Horizontal
3490	-51.76	2.62	27.3	-27.08	-13	-14.08	Vertical
5337.9	-51.29	2.87	27.62	-26.54	-13	-13.54	Vertical
5337.9	-55.81	2.87	27.62	-31.06	-13	-18.06	Horizontal
Test Results for High Channel 1779.3MHz							
3558.6	-51.95	2.66	27.28	-27.33	-13	-14.33	Horizontal
3558.6	-52.10	2.66	27.28	-27.48	-13	-14.48	Vertical
5337.9	-53.34	2.88	27.6	-28.62	-13	-15.62	Vertical
5337.9	-50.44	2.88	27.6	-25.72	-13	-12.72	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	-47.74	2.62	27.3	-23.06	-13	-10.06	Horizontal
3440	-48.63	2.62	27.3	-23.95	-13	-10.95	Vertical
5160	-49.97	2.87	27.62	-25.22	-13	-12.22	Vertical
5160	-50.81	2.87	27.62	-26.06	-13	-13.06	Horizontal
Test Results for Mid Channel 1745MHz							
3490	-52.99	2.62	27.3	-28.31	-13	-15.31	Horizontal
3490	-51.77	2.62	27.3	-27.09	-13	-14.09	Vertical
5337.9	-49.47	2.87	27.62	-24.72	-13	-11.72	Vertical
5337.9	-52.72	2.87	27.62	-27.97	-13	-14.97	Horizontal
Test Results for High Channel 1770MHz							
3540	-49.42	2.62	27.3	-24.74	-13	-11.74	Horizontal
3540	-47.20	2.62	27.3	-22.52	-13	-9.52	Vertical
5310	-51.21	2.87	27.62	-26.46	-13	-13.46	Vertical
5310	-52.89	2.87	27.62	-28.14	-13	-15.14	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

LIMITS

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

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

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- ☐ Temp. = -30° to $+50^{\circ}\text{C}$
- ☐ Voltage = low voltage, DC 3.27V, Normal, DC 3.85V and High voltage, DC 4.43V.

Frequency Stability vs Temperature:

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

Frequency Stability vs Voltage:

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

MODES TESTED

LTE Band 2/4/5/7/12/13/19/41/66

RESULTS

See the following pages.

10.1 LTE BAND 2

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	1880	5	0.002660	2.5
3.85	1880	6	0.003191	2.5
4.43	1880	14	0.007447	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	8	0.004255	2.5
Extreme (50C)	1880	26	0.013830	2.5
Extreme (40C)	1880	22	0.011702	2.5
Extreme (30C)	1880	13	0.006915	2.5
Extreme (10C)	1880	0	0.000000	2.5
Extreme (0C)	1880	22	0.011702	2.5
Extreme (-10C)	1880	10	0.005319	2.5
Extreme (-20C)	1880	17	0.009043	2.5
Extreme (-30C)	1880	18	0.009574	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	1880	16	0.008511	2.5
3.85	1880	3	0.001596	2.5
4.43	1880	11	0.005851	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	16	0.008511	2.5
Extreme (50C)	1880	3	0.001596	2.5
Extreme (40C)	1880	21	0.011170	2.5
Extreme (30C)	1880	8	0.004255	2.5
Extreme (10C)	1880	7	0.003723	2.5
Extreme (0C)	1880	8	0.004255	2.5
Extreme (-10C)	1880	6	0.003191	2.5
Extreme (-20C)	1880	18	0.009574	2.5
Extreme (-30C)	1880	15	0.007979	2.5

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

10.2 LTE BAND 4

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	1732.5	26	0.015007	2.5
3.85	1732.5	13	0.007504	2.5
4.43	1732.5	16	0.009235	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	12	0.006926	2.5
Extreme (50C)	1732.5	10	0.005772	2.5
Extreme (40C)	1732.5	11	0.006349	2.5
Extreme (30C)	1732.5	22	0.012698	2.5
Extreme (10C)	1732.5	26	0.015007	2.5
Extreme (0C)	1732.5	7	0.004040	2.5
Extreme (-10C)	1732.5	3	0.001732	2.5
Extreme (-20C)	1732.5	24	0.013853	2.5
Extreme (-30C)	1732.5	22	0.012698	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	1732.5	15	0.008658	2.5
3.85	1732.5	19	0.010967	2.5
4.43	1732.5	12	0.006926	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	13	0.007504	2.5
Extreme (50C)	1732.5	13	0.007504	2.5
Extreme (40C)	1732.5	26	0.015007	2.5
Extreme (30C)	1732.5	11	0.006349	2.5
Extreme (10C)	1732.5	26	0.015007	2.5
Extreme (0C)	1732.5	13	0.007504	2.5
Extreme (-10C)	1732.5	3	0.001732	2.5
Extreme (-20C)	1732.5	4	0.002309	2.5
Extreme (-30C)	1732.5	16	0.009235	2.5

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

10.3 LTE BAND 5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	836.5	9	0.010759	2.5
3.85	836.5	8	0.009564	2.5
4.43	836.5	13	0.015541	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	10	0.011955	2.5
Extreme (50C)	836.5	19	0.022714	2.5
Extreme (40C)	836.5	13	0.015541	2.5
Extreme (30C)	836.5	20	0.023909	2.5
Extreme (10C)	836.5	4	0.004782	2.5
Extreme (0C)	836.5	13	0.015541	2.5
Extreme (-10C)	836.5	12	0.014345	2.5
Extreme (-20C)	836.5	10	0.011955	2.5
Extreme (-30C)	836.5	22	0.026300	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	836.5	3	0.003586	2.5
3.85	836.5	13	0.015541	2.5
4.43	836.5	2	0.002391	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6	0.007173	2.5
Extreme (50C)	836.5	14	0.016736	2.5
Extreme (40C)	836.5	5	0.005977	2.5
Extreme (30C)	836.5	19	0.022714	2.5
Extreme (10C)	836.5	6	0.007173	2.5
Extreme (0C)	836.5	15	0.017932	2.5
Extreme (-10C)	836.5	1	0.001195	2.5
Extreme (-20C)	836.5	20	0.023909	2.5
Extreme (-30C)	836.5	17	0.020323	2.5

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

10.4 LTE BAND 7

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	2535	8	0.003156	2.5
3.85	2535	1	0.000394	2.5
4.43	2535	4	0.001578	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	3	0.001183	2.5
Extreme (50C)	2535	9	0.003550	2.5
Extreme (40C)	2535	20	0.007890	2.5
Extreme (30C)	2535	4	0.001578	2.5
Extreme (10C)	2535	11	0.004339	2.5
Extreme (0C)	2535	8	0.003156	2.5
Extreme (-10C)	2535	10	0.003945	2.5
Extreme (-20C)	2535	9	0.003550	2.5
Extreme (-30C)	2535	9	0.003550	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	2535	22	0.008679	2.5
3.85	2535	26	0.010256	2.5
4.43	2535	26	0.010256	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	12	0.004734	2.5
Extreme (50C)	2535	26	0.010256	2.5
Extreme (40C)	2535	15	0.005917	2.5
Extreme (30C)	2535	16	0.006312	2.5
Extreme (10C)	2535	16	0.006312	2.5
Extreme (0C)	2535	13	0.005128	2.5
Extreme (-10C)	2535	21	0.008284	2.5
Extreme (-20C)	2535	12	0.004734	2.5
Extreme (-30C)	2535	14	0.005523	2.5

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

10.5 LTE BAND 12

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	707.5	13	0.018375	2.5
3.85	707.5	12	0.016961	2.5
4.43	707.5	15	0.021201	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	16	0.022615	2.5
Extreme (50C)	707.5	6	0.008481	2.5
Extreme (40C)	707.5	26	0.036749	2.5
Extreme (30C)	707.5	6	0.008481	2.5
Extreme (10C)	707.5	2	0.002827	2.5
Extreme (0C)	707.5	22	0.031095	2.5
Extreme (-10C)	707.5	12	0.016961	2.5
Extreme (-20C)	707.5	24	0.033922	2.5
Extreme (-30C)	707.5	12	0.016961	2.5

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

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	707.5	22	0.031095	2.5
3.85	707.5	19	0.026855	2.5
4.43	707.5	23	0.032509	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	707.5	11	0.015548	2.5
Extreme (50C)	707.5	22	0.031095	2.5
Extreme (40C)	707.5	19	0.026855	2.5
Extreme (30C)	707.5	14	0.019788	2.5
Extreme (10C)	707.5	5	0.007067	2.5
Extreme (0C)	707.5	3	0.004240	2.5
Extreme (-10C)	707.5	16	0.022615	2.5
Extreme (-20C)	707.5	16	0.022615	2.5
Extreme (-30C)	707.5	15	0.021201	2.5

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

10.6 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]
3.27	782.0	17	0.02174	2.5
3.85	782.0	3	0.00384	2.5
4.43	782.0	18	0.02302	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	782.0	9	0.01151	2.5
Extreme (50C)	782.0	23	0.02941	2.5
Extreme (40C)	782.0	4	0.00512	2.5
Extreme (30C)	782.0	16	0.02046	2.5
Extreme (10C)	782.0	22	0.02813	2.5
Extreme (0C)	782.0	19	0.02430	2.5
Extreme (-10C)	782.0	3	0.00384	2.5
Extreme (-20C)	782.0	12	0.01535	2.5
Extreme (-30C)	782.0	6	0.00767	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]
3.27	782.0	5	0.00639	2.5
3.85	782.0	0	0.00000	2.5
4.43	782.0	27	0.03453	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	782.0	2	0.00256	2.5
Extreme (50C)	782.0	4	0.00512	2.5
Extreme (40C)	782.0	11	0.01407	2.5
Extreme (30C)	782.0	11	0.01407	2.5
Extreme (10C)	782.0	6	0.00767	2.5
Extreme (0C)	782.0	27	0.03453	2.5
Extreme (-10C)	782.0	1	0.00128	2.5
Extreme (-20C)	782.0	5	0.00639	2.5
Extreme (-30C)	782.0	13	0.01662	2.5

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

10.7 LTE BAND 19

Band 19 QPSK, (10MHz BANDWIDTH RB size 50 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	837.5	10	0.01194	2.5
3.85	837.5	15	0.01791	2.5
4.43	837.5	16	0.01910	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	837.5	0	0.00000	2.5
Extreme (50C)	837.5	11	0.01313	2.5
Extreme (40C)	837.5	24	0.02866	2.5
Extreme (30C)	837.5	15	0.01791	2.5
Extreme (10C)	837.5	17	0.02030	2.5
Extreme (0C)	837.5	23	0.02746	2.5
Extreme (-10C)	837.5	2	0.00239	2.5
Extreme (-20C)	837.5	4	0.00478	2.5
Extreme (-30C)	837.5	2	0.00239	2.5

Band 19 16QAM, (10MHz BANDWIDTH RB size 50 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.27	837.5	15	0.01791	2.5
3.85	837.5	16	0.01910	2.5
4.43	837.5	6	0.00716	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	837.5	0	0.00000	2.5
Extreme (50C)	837.5	16	0.01910	2.5
Extreme (40C)	837.5	14	0.01672	2.5
Extreme (30C)	837.5	13	0.01552	2.5
Extreme (10C)	837.5	3	0.00358	2.5
Extreme (0C)	837.5	22	0.02627	2.5
Extreme (-10C)	837.5	11	0.01313	2.5
Extreme (-20C)	837.5	17	0.02030	2.5
Extreme (-30C)	837.5	3	0.00358	2.5

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

10.8 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]
3.27	2593	0	0.00000	2.5
3.85	2593	13	0.00501	2.5
4.43	2593	17	0.00656	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	7	0.00270	2.5
Extreme (50C)	2593	7	0.00270	2.5
Extreme (40C)	2593	6	0.00231	2.5
Extreme (30C)	2593	1	0.00039	2.5
Extreme (10C)	2593	15	0.00578	2.5
Extreme (0C)	2593	26	0.01003	2.5
Extreme (-10C)	2593	10	0.00386	2.5
Extreme (-20C)	2593	23	0.00887	2.5
Extreme (-30C)	2593	1	0.00039	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]
3.27	2593	13	0.005013	2.5
3.85	2593	21	0.008099	2.5
4.43	2593	12	0.004628	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2593	13	0.005013	2.5
Extreme (50C)	2593	9	0.003471	2.5
Extreme (40C)	2593	19	0.007327	2.5
Extreme (30C)	2593	13	0.005013	2.5
Extreme (10C)	2593	15	0.005785	2.5
Extreme (0C)	2593	23	0.008870	2.5
Extreme (-10C)	2593	14	0.005399	2.5
Extreme (-20C)	2593	19	0.007327	2.5
Extreme (-30C)	2593	6	0.002314	2.5

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

10.9 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)				
3.27	1745	13	0.007450	2.5
3.85	1745	9	0.005158	2.5
4.43	1745	12	0.006877	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	9	0.005158	2.5
Extreme (50C)	1745	20	0.011461	2.5
Extreme (40C)	1745	0	0.000000	2.5
Extreme (30C)	1745	1	0.000573	2.5
Extreme (10C)	1745	15	0.008596	2.5
Extreme (0C)	1745	9	0.005158	2.5
Extreme (-10C)	1745	14	0.008023	2.5
Extreme (-20C)	1745	14	0.008023	2.5
Extreme (-30C)	1745	27	0.015473	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)				
3.27	1745	0	0.000000	2.5
3.85	1745	19	0.010888	2.5
4.43	1745	1	0.000573	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	14	0.008023	2.5
Extreme (50C)	1745	21	0.012034	2.5
Extreme (40C)	1745	26	0.014900	2.5
Extreme (30C)	1745	4	0.002292	2.5
Extreme (10C)	1745	11	0.006304	2.5
Extreme (0C)	1745	27	0.015473	2.5
Extreme (-10C)	1745	11	0.006304	2.5
Extreme (-20C)	1745	23	0.013181	2.5
Extreme (-30C)	1745	23	0.013181	2.5

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

11. Peak-to-Average Ratio

11.1 Description of the PAR Measurement

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

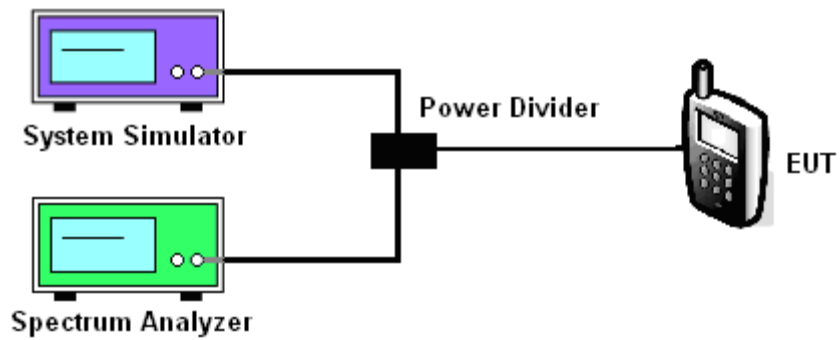
11.2 Measuring Instruments

See list of measuring instruments of this test report.

11.3 Test Procedures

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

11.4 Test Setup



MODES TESTED

LTE Band 2/4/5/7/12/13/19/41/66

Test data reference attachment.

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