



FCC Test Report

FCC ID: 2BNEK-HWEG03G

Applicant: Zhongchuang (Shenzhen) Internet of Things Co., Ltd

Address: Room 301-I, 3rd Floor, Huihong Building, Building 18, Nanshan Ruiyuan, No. 45 Longzhu 3rd Road, Taoyuan Street, Nanshan District, Shenzhen

Manufacturer: HUIZHOU BOSHJIE TECHNOLOGY CO.,LTD.

Address: No.1, Huifeng 3rd Road(W), Zhongkai High-tech Zone, Huizhou, Guangdong, China

EUT: 4G GPS TRACKER(LTE CAT 1/GNSS)

Trade Mark: N/A

Model Number: HW-EG03G
EG03G

Date of Receipt: Dec. 09, 2024

Test Date: Dec. 09, 2024 - Dec. 31, 2024

Date of Report: Dec. 31, 2024

Prepared By: Shenzhen DL Testing Technology Co., Ltd.

Address: 101-201, Comprehensive Building, Tongzhou Electronics Longgang Factory Area, No.1 Baolong Fifth Road, Baolong Community, Baolong Street, Longgang District, Shenzhen, China

Applicable Standards: FCC CFR Title 47 Part22 Subpart H
FCC CFR Title 47 Part24 Subpart E
FCC CFR Title 47 Part27
ANSI/ TIA/ EIA-603-E-2016
KDB 971168 D01 Power Meas License Digital Systems v03r01
ANSI C63.26:2015

Test Result: Pass

Report Number: DL-241209017ER

Prepared (Test Engineer): Alisa Song

Reviewer (Supervisor): Jack Bu

Approved (Manager): Jade Yang



This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Shenzhen DL Testing Technology Co., Ltd.

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**1. TEST SUMMARY**

Test Items	Test Requirement	Result
Conducted RF Output Power	2.1046	PASS
Peak to Average Ratio	24.232 (band 2,4) 22.355 (band 5) 27.54 (band 66)	PASS
99% & -26 dB Occupied Bandwidth	2.1049 24.238 (band 2,4) 22.917 (band 5) 27.53 (band 66)	PASS
Frequency Stability	2.1055 22.355(band 5) 24.235 (band 2,4) 27.54 (band 66)	PASS
Conducted Out of Band Emissions	2.1051,2.1057 22.917 (band 5) 24.238(band 2, 4) 27.53 (band 66)	PASS
Band Edge	2.1051,2.1057 22.917 (band 5) 24.238(band 2, 4) 27.53 (band 66)	PASS
Transmitter Radiated Power (EIPR/ERP)	2.1046 24.232 (band 2, 4) 22.913 (band 5) 27.50 (band13,66)	PASS
Radiated Out of Band Emissions	2.1051,2.1057 22.917 (band 5) 24.232(band 2,4) 27.53 (band 66)	PASS



2. GENERAL PRODUCT INFORMATION

2.1. Description of Device (EUT)

Product Name:	4G GPS TRACKER(LTE CAT 1/GNSS)
Trademark	N/A
Model No.:	HW-EG03G EG03G
Test Model:	HW-EG03G
Model Difference	All models are same as the samples except model name and appearance color, they have the same structure and circuit.
Operation Frequency:	LTE Band 2: Tx: 1850.00 - 1910.00MHz; Rx: 1930.00 - 1990.00MHz LTE Band 4: Tx: 1710.00 - 1755.00MHz; Rx: 2110.00 - 2155.00MHz LTE Band 5: Tx: 824.00 - 849.00MHz; Rx: 869.00 - 894.00MHz LTE Band 66: Tx: 1710.00 - 1780.00MHz; Rx: 2110.00 - 2200.00MHz
Modulation technology:	LTE Mode with QPSK,16QAM
Antenna Type:	Internal Antenna
Antenna gain:	LTE Band 2: 0.84dBi, LTE Band 4: 1.33dBi, LTE Band 5: -4.15dBi, LTE Band 66: 1.33dBi
Power supply:	DC 3.7V from battery DC 5V from charger
LTE Category	1
Hardware Version	HV01
Software Version	SV01

Note:

- 1.For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- 2.The EUT's all information provided by client.

2.2. Product Function

Refer to Technical Construction Form and User Manual.



2.3. Independent Operation Modes

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission.

Test modes		
Band	Radiated	Conducted
LTE Band 2	Bandwidth:(MHz)1.4/3/5/10/15/20MHz Modulation: QPSK/16QAM RB:1/50%/100%	Bandwidth:(MHz)1.4/3/5/10/15/20MHz Modulation: QPSK/16QAM RB:1/50%/100%
LTE Band 4	Bandwidth:(MHz)1.4/3/5/10/15/20MHz Modulation: QPSK/16QAM RB:1/50%/100%	Bandwidth:(MHz)1.4/3/5/10/15/20MHz Modulation: QPSK/16QAM RB:1/50%/100%
LTE Band 5	Bandwidth:(MHz)1.4/3/5/10MHz Modulation: QPSK/16QAM RB:1/50%/100%	Bandwidth:(MHz)1.4/3/5/10MHz Modulation: QPSK/16QAM RB:1/50%/100%
LTE Band66	Bandwidth:(MHz)1.4/3/5/10/15/20MHz Modulation: QPSK/16QAM RB:1/50%/100%	Bandwidth:(MHz)1.4/3/5/10/15/20MHz Modulation: QPSK/16QAM RB:1/50%/100%

The product was LTE Category 1 device, the QAM16 of 10/15/20M bandwidth supports a maximum of 25 RB nodes.

Note1: for LTE mode, if the bandwidth is different, the test frequency is changed.

2: we pretest all voltage, only the DC 3.7V was worst mode, and the data show in the report.



3. TEST SITES

3.1. Test Facilities

Site Description

Name of Firm : Shenzhen DL Testing Technology Co., Ltd.
101-201, Comprehensive Building, Tongzhou Electronics
Longgang Factory Area, No.1 Baolong Fifth Road, Baolong
Site Location : Community, Baolong Street, Longgang District, Shenzhen,
China

FCC Test Firm Registration Number: 854456

Designation Number: CN1307

IC Registered No.: 27485

CAB ID.: CN0118

3.2. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, 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	Conducted Emission Test	$\pm 1.38\text{dB}$
2	RF power,conducted	$\pm 2.6\text{dB}$
3	Spurious emissions,conducted	$\pm 0.21\text{dB}$
4	All emissions,radiated(<1G)	$\pm 4.68\text{dB}$
5	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$
8	CCDF	$\pm 50\text{Hz}$
9	Bandwidth	$\pm 20\text{kHz}$



3.3. List of Test and Measurement Instruments

3.3.1. For conducted emission at the mains terminals test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
843 Shielded Room	YIHENG	843 Room	843	Nov. 05, 2023	Nov. 04, 2026
EMI Receiver	R&S	ESR	101421	Nov. 01, 2024	Oct. 31, 2025
LISN	R&S	ENV216	102417	Nov. 01, 2024	Oct. 31, 2025
843 Cable 1#	ChengYu	CE Cable	001	Nov. 01, 2024	Oct. 31, 2025
843 Cable 1#	FUJIKURA	843C1#	001	Nov. 01, 2024	Oct. 31, 2025

3.3.2. For radiated test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer (9kHz-26.5GHz)	Agilent	E4408B	MY50140780	Nov. 01, 2024	Oct. 31, 2025
Test Receiver (9kHz-7GHz)	R&S	ESRP7	101393	Nov. 01, 2024	Oct. 31, 2025
Bilog Antenna (30MHz-1GHz)	R&S	VULB9162	00306	Nov. 01, 2024	Oct. 31, 2025
Horn Antenna (1GHz-18GHz)	Schwarzbeck	BBHA9120D	02139	Nov. 01, 2024	Oct. 31, 2025
Horn Antenna (18GHz-40GHz)	A.H. Systems	SAS-574	588	Nov. 01, 2024	Oct. 31, 2025
Amplifier (9KHz-6GHz)	Schwarzbeck	BBV9743B	00153	Nov. 01, 2024	Oct. 31, 2025
Amplifier (1GHz-18GHz)	EMEC	EM01G8GA	00270	Nov. 01, 2024	Oct. 31, 2025
Amplifier(18GHz-40GHz)	Quanjuda	DLE-161	97	Nov. 01, 2024	Oct. 31, 2025
Loop Antenna(9KHz-30MHz)	Schwarzbeck	FMZB1519B	00014	Nov. 01, 2024	Oct. 31, 2025
RF cables1 (9kHz-1GHz)	ChengYu	966	004	Nov. 01, 2024	Oct. 31, 2025
RF cables2 (1GHz-40GHz)	ChengYu	966	003	Nov. 01, 2024	Oct. 31, 2025
Antenna connector	Florida RF Labs	N/A	RF 01#	Nov. 01, 2024	Oct. 31, 2025
Power probe	KEYSIGHT	U2021XA	MY55210018	Nov. 01, 2024	Oct. 31, 2025
Signal Analyzer	Agilent	N9020A	MY55370280	Nov. 01, 2024	Oct. 31, 2025
Test Receiver	R&S	ESU 40	100376	Nov. 01, 2024	Oct. 31, 2025
D.C. Power Supply	LongWei	PS-305D	010964729	Nov. 01, 2024	Oct. 31, 2025
Signal Amplifier	DAZE	ZN3380B	11235	Nov. 01, 2024	Oct. 31, 2025
High Pass filter	KANGMAI	WHKX1.0/1.5G-10SS	40	Nov. 01, 2024	Oct. 31, 2025
Filter	COM-MW	ZBSF-C836.5-25-X	BCTC042	Nov. 01, 2024	Oct. 31, 2025
Filter	COM-MW	ZBSF-C1747.5-75-X2	BCTC045	Nov. 01, 2024	Oct. 31, 2025
Filter	COM-MW	ZBSF-C1880-60-X2	BCTC047	Nov. 01, 2024	Oct. 31, 2025
Splitter	Agilent	11435B	1125162	Nov. 01, 2024	Oct. 31, 2025

RF CONDUCTED TEST

System Simulator	Agilent	E5515C	GB43130252	Nov. 01, 2024	Oct. 31, 2025
Spectrum Analyzer	Agilent	N9020A	MY45108040	Nov. 01, 2024	Oct. 31, 2025
DC Power Supply	LongWei	PS-305D	010965682	Nov. 01, 2024	Oct. 31, 2025
Constant temperature and humidity box	GF	GTH-800-40-2P	MAA9906-012	Nov. 01, 2024	Oct. 31, 2025
Universal radio communication tester	R&S	CMW500	115295	Nov. 01, 2024	Oct. 31, 2025



4. TEST SET-UP

4.1. Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

4.2. Block Diagram of Test Set-up

System Diagram of Connections between EUT and Simulators

EUT

4.3. Test Environment:

Ambient conditions in the test laboratory:

Items	Actual
Temperature (°C)	21~23
Humidity (%RH)	50~65



5. EMISSION TEST RESULTS

5.1. Conducted RF Output Power

5.1.1. Limit

According to FCC section 2.1046(a), FCC part 22.913(a) and FCC part 24.232(a), FCC part 27.53, for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in FCC section 2.1033(c)(8).

5.1.2. Test Setup

The EUT, which is powered by the adapter, is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power.

5.1.3. Test Result

Here the lowest, middle and highest channels are selected to perform testing to verify the conducted RF output power of the EUT.

Pass, the table and plot please see annex.

The conducted power tables are as follows:



Average Conducted Power dBm						
Band	LTE Band 2			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	18607/1850.7	18900/1880	19193/1909.3
1.4MHz	QPSK	1	0	22.24	22.58	22.21
		1	2	22.56	22.73	22.23
		1	5	22.52	22.54	22.64
		6	0	22.41	22.61	22.21
	16QAM	1	0	22.46	22.21	22.53
		1	2	22.41	22.96	22.67
		1	5	22.43	22.52	22.53
		6	0	22.64	22.77	22.41
Bandwidth	Modulation	RB size	RB offset	18615/1851.5	18900/1880	19185/1908.5
3MHz	QPSK	1	0	22.21	22.52	22.52
		1	7	22.73	22.83	22.01
		1	14	22.44	22.64	22.76
		15	0	22.46	22.68	22.74
	16QAM	1	0	22.67	22.66	22.93
		1	7	22.02	22.05	22.24
		1	14	22.21	22.66	22.96
		15	0	22.33	22.57	22.87
Bandwidth	Modulation	RB size	RB offset	18625/1852.5	18900/1880	19175/1907.5
5MHz	QPSK	1	0	22.28	22.85	22.52
		1	13	22.72	22.61	22.47
		1	24	22.46	22.26	22.23
		25	0	22.47	22.61	22.56
	16QAM	1	0	22.66	22.76	22.76
		1	13	22.24	22.17	22.58
		1	24	22.82	22.72	22.74
		25	0	22.53	22.56	22.76



Average Conducted Power dBm						
Band	LTE Band 2			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	18650/1855	18900/1880	19150/1905
10MHz	QPSK	1	0	22.24	22.53	22.52
		1	25	22.23	22.68	22.83
		1	49	22.48	22.66	22.68
		50	0	22.56	22.27	22.56
	16QAM	1	0	22.28	22.63	22.34
		1	25	22.83	22.88	22.17
		1	49	22.75	22.73	22.36
Bandwidth	Modulation	RB size	RB offset	18675/1857.5	18900/1880	19125/1902.5
15MHz	QPSK	1	0	22.58	22.41	22.52
		1	38	22.73	22.76	22.86
		1	74	22.17	22.68	22.84
		75	0	22.33	22.66	22.63
	16QAM	1	0	22.34	22.55	22.58
		1	38	22.58	22.57	22.66
		1	74	22.43	22.46	22.48
Bandwidth	Modulation	RB size	RB offset	18700/1860	18900/1880	19100/1900
20MHz	QPSK	1	0	22.21	22.56	22.52
		1	38	22.66	22.72	22.66
		1	74	22.48	22.63	22.18
		75	0	22.53	22.44	22.74
	16QAM	1	0	22.86	22.39	22.21
		1	38	22.47	22.15	22.63
		1	74	22.34	22.43	22.89

Note: Measurement Uncertainty: ± 2.6 dB.



Average Conducted Power dBm						
Band	LTE Band 4			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	19957/1710.7	20175/1732.5	20393/1754.3
1.4MHz	QPSK	1	0	22.53	22.41	22.51
		1	2	22.58	22.76	22.83
		1	5	22.47	22.68	22.58
		6	0	22.53	22.66	22.64
	16QAM	1	0	22.64	22.27	21.21
		1	2	22.76	22.63	22.06
		1	5	22.52	22.75	22.27
		6	0	22.59	22.66	22.76
Bandwidth	Modulation	RB size	RB offset	19965/1711.5	20175/1732.5	20385/1753.5
3MHz	QPSK	1	0	22.58	22.21	22.52
		1	7	22.33	22.56	22.83
		1	14	22.48	22.85	22.77
		15	0	22.63	22.73	22.63
	16QAM	1	0	22.68	22.48	22.45
		1	7	22.86	22.86	22.13
		1	14	22.68	22.77	22.94
		15	0	22.63	22.74	22.88
Bandwidth	Modulation	RB size	RB offset	19975/1712.5	20175/1732.5	20375/1752.5
5MHz	QPSK	1	0	22.52	22.52	22.21
		1	13	22.46	22.56	22.63
		1	24	22.37	22.43	22.58
		25	0	22.26	22.85	22.56
	16QAM	1	0	22.46	22.46	22.85
		1	13	22.37	22.41	22.96
		1	24	22.52	22.53	22.77
		25	0	22.43	22.74	22.56



Average Conducted Power dBm						
Band	LTE Band 4			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	20000/1715	20175/1732.5	20350/1750
10MHz	QPSK	1	0	22.24	22.52	22.63
		1	25	22.46	22.63	22.68
		1	49	22.85	22.17	22.54
		50	0	22.43	22.56	22.56
	16QAM	1	0	22.54	22.14	21.87
		1	25	22.66	22.63	21.93
		1	49	22.18	22.28	22.75
Bandwidth	Modulation	RB size	RB offset	20025/1717.5	20175/1732.5	20325/1747.5
15MHz	QPSK	1	0	22.24	22.52	22.58
		1	38	22.42	22.66	22.56
		1	74	22.36	22.24	22.63
		75	0	22.47	22.52	22.67
	16QAM	1	0	22.06	22.26	22.41
		1	38	22.34	22.47	22.56
		1	74	22.13	22.33	22.37
Bandwidth	Modulation	RB size	RB offset	20050/1720	20175/1732.5	20300/1745
20MHz	QPSK	1	0	22.25	22.56	22.21
		1	50	22.53	22.63	22.36
		1	99	22.35	22.57	22.52
		100	0	22.46	22.56	22.56
	16QAM	1	0	22.14	22.15	22.47
		1	50	22.56	22.43	22.63
		1	99	22.27	22.37	22.37

Note: Measurement Uncertainty: ± 2.6 dB.



Average Conducted Power dBm						
Band	LTE Band 5			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	20407/824.7	20525/836.5	20643/848.3
1.4MHz	QPSK	1	0	22.63	22.54	22.52
		1	2	22.18	22.79	22.86
		1	5	22.43	22.68	22.64
		6	0	22.15	22.66	22.67
	16QAM	1	0	22.66	22.52	22.06
		1	2	22.74	22.71	22.05
		1	5	22.73	22.63	22.36
		6	0	22.48	22.77	22.52
Bandwidth	Modulation	RB size	RB offset	20415/825.5	20525/836.5	20635/847.5
3MHz	QPSK	1	0	22.54	22.96	22.14
		1	7	22.33	22.65	22.66
		1	14	22.47	22.33	22.64
		15	0	22.53	22.54	22.66
	16QAM	1	0	22.46	22.63	21.85
		1	7	22.37	22.77	22.21
		1	14	22.56	22.26	22.63
		15	0	22.68	22.68	22.74
Bandwidth	Modulation	RB size	RB offset	20425/826.5	20525/836.5	20625/846.5
5MHz	QPSK	1	0	22.69	22.53	22.54
		1	13	22.54	22.78	22.88
		1	24	22.43	22.52	22.66
		25	0	22.58	22.61	22.65
	16QAM	1	0	22.53	22.56	21.92
		1	13	22.52	22.74	22.01
		1	24	22.63	22.66	22.83
		25	0	22.57	22.33	22.58
Bandwidth	Modulation	RB size	RB offset	20450/829	20525/836.5	20600/844
10MHz	QPSK	1	0	22.21	22.63	22.76
		1	25	22.63	22.58	22.88
		1	49	22.48	22.63	22.63
		50	0	22.56	22.68	22.41
	16QAM	1	0	22.64	22.54	22.03
		1	25	22.83	22.86	22.48
		1	49	22.85	22.78	22.96

Note: Measurement Uncertainty: ± 2.6 dB.



Average Conducted Power dBm						
Band	LTE Band 66			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	131979/1710.7	132322/1745	132665/1779.3
1.4MHz	QPSK	1	0	22.21	22.36	22.29
		1	2	22.66	22.65	22.85
		1	5	22.58	22.61	22.76
		6	0	22.63	22.96	22.27
	16QAM	1	0	22.68	22.15	22.04
		1	2	22.86	22.66	22.16
		1	5	22.34	22.77	22.93
		6	0	22.68	22.76	22.88
Bandwidth	Modulation	RB size	RB offset	131987/1711.5	132322/1745	132657/1778.5
3MHz	QPSK	1	0	22.21	21.21	21.23
		1	7	22.16	22.63	22.24
		1	14	21.88	21.84	21.84
		15	0	22.41	20.85	21.96
	16QAM	1	0	21.13	21.06	21.22
		1	7	21.89	21.34	21.63
		1	14	21.94	21.97	21.97
		15	0	21.73	21.63	21.54
Bandwidth	Modulation	RB size	RB offset	131997/1712.5	132322/1745	132647/1777.5
5MHz	QPSK	1	0	21.36	21.36	21.52
		1	12	22.18	22.85	22.33
		1	24	21.86	21.84	21.54
		25	0	21.98	21.52	21.98
	16QAM	1	0	21.35	21.73	21.63
		1	12	21.53	21.52	21.52
		1	24	21.34	21.74	21.46
		25	0	21.98	21.98	21.94



Average Conducted Power dBm						
Band	LTE Band 66			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	132022/1715	132322/1745	132622/1775
10MHz	QPSK	1	0	21.36	22.52	22.15
		1	24	22.08	22.06	22.13
		1	49	22.86	22.97	22.52
		50	0	21.04	22.06	22.01
	16QAM	1	0	21.02	22.04	22.29
		1	24	21.29	22.12	22.21
		1	49	21.65	22.09	22.29
Bandwidth	Modulation	RB size	RB offset	132047/1717.5	132322/1745	132597/1772.5
15MHz	QPSK	1	0	21.52	21.52	22.06
		1	38	22.69	22.23	22.24
		1	74	21.75	21.84	21.98
		75	0	22.62	22.13	21.13
	16QAM	1	0	21.38	22.07	22.04
		1	38	21.86	21.13	21.62
		1	74	21.58	21.58	21.74
Bandwidth	Modulation	RB size	RB offset	132072/1720	132322/1745	132572/1770
20MHz	QPSK	1	0	21.36	21.63	21.52
		1	50	22.55	22.04	22.03
		1	99	21.68	21.56	21.64
		100	0	21.99	22.08	22.85
	16QAM	1	0	21.52	21.36	21.73
		1	50	21.63	21.45	21.44
		1	99	21.57	21.56	21.74

Note: Measurement Uncertainty: ± 2.6 dB.



5.2. -26dB and 99% Occupied Bandwidth

5.2.1. Limit

According to FCC section 2.1049 and FCC part 22.99, the occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

Occupied bandwidth is also known as the 99% emission bandwidth,

5.2.2. Test Setup

The EUT, which is powered by the adapter, is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ω; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power.

5.2.3. Test Result

Pass, the table and plot please see annex.

Note: The data only show the worst mode(max RB).

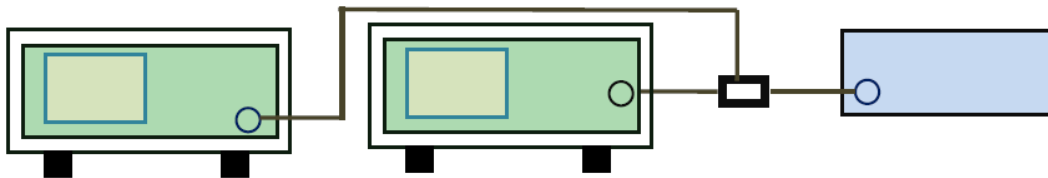


5.3. Peak to Average Ratio

5.3.1. Limit

According to FCC section part 27.53/24.232/22.913 the peak to average ratio (PAR) of the transmission may not exceed 13dB.

5.3.2. Test Setup



5.3.3. Test Procedure

KDB 971168 D01 Power Meas License Digital Systems v03r01

1. The signal analyzer's CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW > Emission bandwidth of signal
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

5.3.4. Test Result

Pass, the table and plot please see annex.



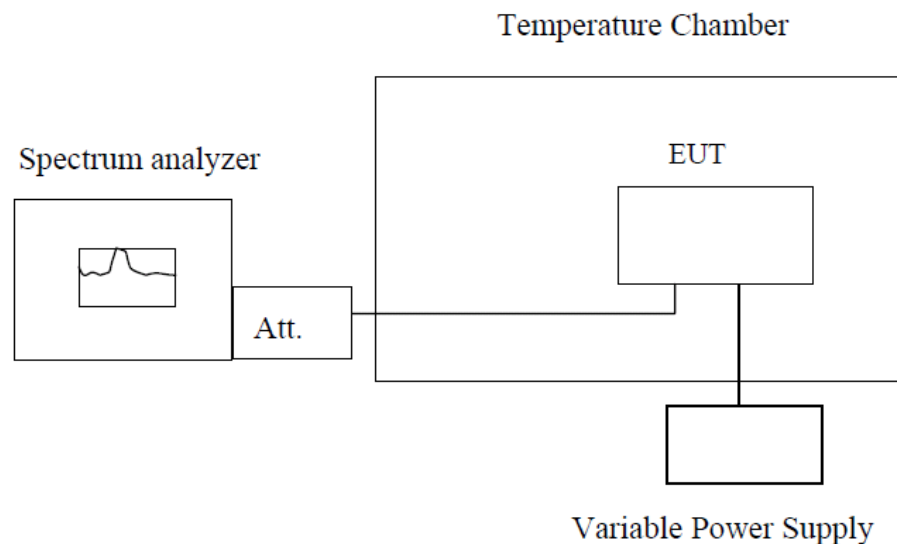
5.4. Frequency Stability

5.4.1. Limit

According to FCC section 22.355 and FCC section 24.235, FCC section 27.54 the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. According to FCC section 2.1055, the test conditions are:

- (a) The temperature is varied from -40°C to $+80^{\circ}\text{C}$ at intervals of not more than 10°C .
- (b) For hand carried battery powered equipment, the primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacture. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

5.4.2. Test Setup



Note : Measurement setup for testing on Antenna connector

The EUT, which is powered by the DC Power Supply directly, is located in the Temperature Chamber.

The EUT is commanded by the System Simulator (SS) to operate at the maximum output power

5.4.3. Test Result

The nominal, highest and lowest extreme voltages are separately 3.7VDC, 4.25VDC and 3.34VDC

which are specified by the applicant; the normal temperature here used is 25°C . The frequency

deviation limit of 850MHz band is $\pm 2.5\text{ppm}$, and 1900MHz is $\pm 1\text{ppm}$

For LTE mode, only test the max bandwidth.

The table and plot please see annex.



Test Conditions			Frequency Deviation			Result
Band	Power(Vdc)	Temperature(°C)	Frequency Error(Hz)	ppm	Limit ppm	
LTE Band 2 Bandwidth 20MHz QPSK Middle channel 1880MHz	3.70	-40	64	0.0336	within the authorized frequency	PASS
	3.70	-30	35	0.0174		
	3.70	-20	78	0.0463		
	3.70	-10	66	0.0325		
	3.70	0	65	0.0369		
	3.70	10	46	0.0212		
	3.70	20	67	0.0369		
	3.70	30	98	0.0547		
	3.70	40	73	0.0369		
	3.70	50	67	0.0352		
	3.70	60	54	0.0246		
	3.70	70	56	0.0225		
	3.70	80	79	0.0458		
	4.26	25	54	0.0216		
	3.70	25	66	0.0341		
	3.15	25	178	0.0956		
LTE Band 2 Bandwidth 20MHz 16QAM Middle channel 1880MHz	3.70	-40	67	0.0358	within the authorized frequency	PASS
	3.70	-30	83	0.0441		
	3.70	-20	72	0.0241		
	3.70	-10	73	0.0322		
	3.70	0	43	0.0263		
	3.70	10	67	0.0347		
	3.70	20	82	0.0469		
	3.70	30	36	0.0152		
	3.70	40	55	0.0269		
	3.70	50	39	0.0244		
	3.70	60	54	0.0221		
	3.70	70	53	0.0269		
	3.70	80	21	0.0152		
	4.26	25	67	0.0336		
	3.70	25	21	0.0141		
	3.15	25	98	0.0563		



Test Conditions			Frequency Deviation			Result
Band	Power(Vdc)	Temperature(°C)	Frequency Error(Hz)	ppm	Limit ppm	
LTE Band 4 Bandwidth 15MHz QPSK Middle channel 1732.5MHz	3.70	-40	65	0.0385	within the authorized frequency	PASS
	3.70	-30	56	0.0374		
	3.70	-20	34	0.0163		
	3.70	-10	52	0.0352		
	3.70	0	42	0.0269		
	3.70	10	23	0.0152		
	3.70	20	63	0.0314		
	3.70	30	34	0.0163		
	3.70	40	21	0.0158		
	3.70	50	64	0.0336		
	3.70	60	25	0.0152		
	3.70	70	45	0.0236		
	3.70	80	65	0.0352		
	4.26	25	67	0.0374		
	3.70	25	53	0.0369		
	3.15	25	124	0.0752		
LTE Band 4 Bandwidth 15MHz 16QAM Middle channel 1732.5MHz	3.70	-40	65	0.0369	within the authorized frequency	PASS
	3.70	-30	64	0.0354		
	3.70	-20	52	0.0333		
	3.70	-10	87	0.0547		
	3.70	0	34	0.0135		
	3.70	10	63	0.0347		
	3.70	20	78	0.0421		
	3.70	30	57	0.0396		
	3.70	40	42	0.0254		
	3.70	50	87	0.0526		
	3.70	60	24	0.0147		
	3.70	70	86	0.0463		
	3.70	80	46	0.0241		
	4.26	25	86	0.0425		
	3.70	25	33	0.0169		
	3.15	25	108	0.0641		

Note: Measurement Uncertainty: $\pm 20\text{Hz}$.



Test Conditions			Frequency Deviation			Result
Band	Power(Vdc)	Temperature(°C)	Frequency Error(Hz)	ppm	Limit ppm	
LTE Band 5 Bandwidth 10MHz QPSK Middle channel 836.5MHz	3.70	-40	65	0.0735	±2.5	PASS
	3.70	-30	43	0.0541		
	3.70	-20	45	0.0569		
	3.70	-10	32	0.0235		
	3.70	0	67	0.0844		
	3.70	10	75	0.0814		
	3.70	20	35	0.0469		
	3.70	30	68	0.0852		
	3.70	40	32	0.0331		
	3.70	50	56	0.0647		
	3.70	60	78	0.0936		
	3.70	70	46	0.0555		
	3.70	80	87	0.1048		
	4.26	25	35	0.0452		
	3.70	25	87	0.1041		
	3.15	25	43	0.0513		
LTE Band 5 Bandwidth 10MHz 16QAM Middle channel 836.5MHz	3.70	-40	34	0.0458	±2.5	PASS
	3.70	-30	65	0.0747		
	3.70	-20	67	0.0836		
	3.70	-10	67	0.0852		
	3.70	0	87	0.1014		
	3.70	10	54	0.0636		
	3.70	20	21	0.0285		
	3.70	30	67	0.0841		
	3.70	40	43	0.0536		
	3.70	50	89	0.1052		
	3.70	60	54	0.0636		
	3.70	70	78	0.0941		
	3.70	80	45	0.0521		
	4.26	25	89	0.1038		
	3.70	25	46	0.0541		
	3.15	25	89	0.1036		

Note: Measurement Uncertainty: ±20Hz.



Test Conditions			Frequency Deviation			Result
Band	Power(Vdc)	Temperature(°C)	Frequency Error(Hz)	ppm	Limit ppm	
LTE Band 66 Bandwidth 20MHz QPSK Middle channel 1745MHz	3.70	-40	67	0.0341	within the authorized frequency	PASS
	3.70	-30	54	0.0336		
	3.70	-20	57	0.0358		
	3.70	-10	75	0.0463		
	3.70	0	78	0.0414		
	3.70	10	43	0.0236		
	3.70	20	75	0.0452		
	3.70	30	34	0.0114		
	3.70	40	75	0.0436		
	3.70	50	67	0.0347		
	3.70	60	66	0.0336		
	3.70	70	76	0.0452		
	3.70	80	54	0.0314		
	4.26	25	46	0.0236		
	3.70	25	68	0.0341		
	3.15	25	65	0.0336		
LTE Band 66 Bandwidth 20MHz 16QAM Middle channel 1745MHz	3.70	-40	43	0.0252	within the authorized frequency	PASS
	3.70	-30	78	0.0458		
	3.70	-20	78	0.0436		
	3.70	-10	97	0.0541		
	3.70	0	33	0.0136		
	3.70	10	65	0.0352		
	3.70	20	66	0.0336		
	3.70	30	76	0.0452		
	3.70	40	47	0.0214		
	3.70	50	87	0.0436		
	3.70	60	54	0.0341		
	3.70	70	65	0.0336		
	3.70	80	34	0.0141		
	4.26	25	54	0.0336		
	3.70	25	65	0.0327		
	3.15	25	51	0.0263		

Note: Measurement Uncertainty: $\pm 20\text{Hz}$.

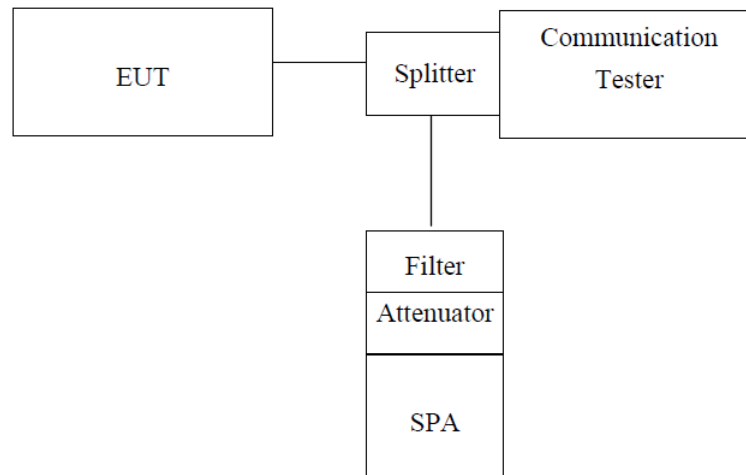


5.5. Conducted Spurious Emissions

5.5.1. Limit

According to FCC section 22.917(a) and FCC section 24.238(a), 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. This calculated to be -13dBm.

5.5.2. Test Setup



Note: Measurement setup for testing on Antenna connector

5.5.3. Measurement Procedure

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.

For the out of band: Set the RBW, VBW = 100KHz, Start=30MHz, Stop= 10th harmonic.

Limit = -13dBm

5.5.4. Test Result

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the out of band emissions.

For LTE mode, the plot only show the min and max bandwidth's data.

Pass, the table and plot please see annex.



5.6. Conducted Out of Band Emissions

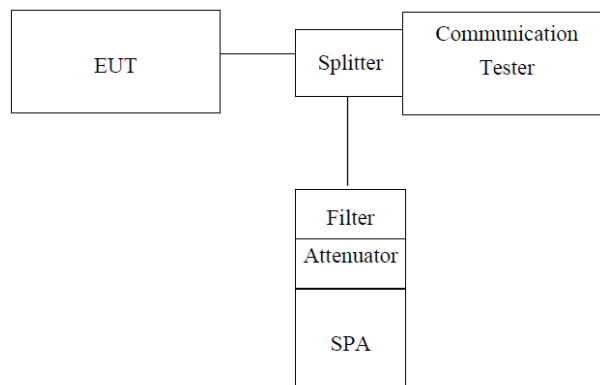
5.6.1. Limit

According to FCC section 22.917(b) and FCC section 24.238(b), 27.53(c) in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth (26dB emission bandwidth) of the fundamental emission of the transmitter may be employed.

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.

General protection levels. Except as otherwise specified below, for operations in the 1695-1710MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

5.6.2. Test Setup



Note: Measurement setup for testing on Antenna connector

5.6.3. Measurement Procedure

The EUT, which is powered by the adapter, is coupled to the Spectrum Analyzer and the System Simulator with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ω; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the System Simulator to operate at the maximum output power i.e. Power Control Level (PCL) = 5 and Power Class = 4. A call is established between the EUT and the System Simulator.

RBW is set to 15 kHz, VBW is set to 51 kHz for LTE Band 2, 4, 5, 66 (1.4MHz),
RBW is set to 30 kHz, VBW is set to 100 kHz for LTE Band 2, 4, 5, 66 (3MHz),
RBW is set to 51 kHz, VBW is set to 160 kHz for LTE Band 2, 4, 5, 66 (5MHz),
RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 2, 4, 5, 66 (10MHz),
RBW is set to 150 kHz, VBW is set to 510 kHz for LTE Band 2, 4, 66(15MHz).
RBW is set to 200 kHz, VBW is set to 620 kHz for LTE Band 2, 4, 66 (20MHz)

5.6.4. Test Result

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the out of band emissions.

Pass, the table and plot please see annex.

Note: The measured values at 10-20GHz are all background, and the distance limit exceeds 20dB, so they do not reflect the data

5.7. Transmitter Radiated Power (EIRP/ERP)

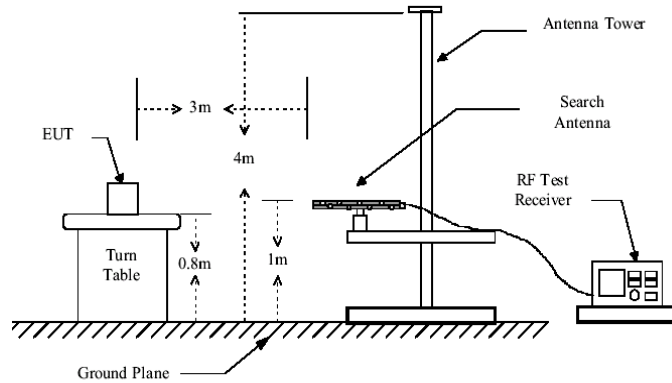
5.7.1. Limit

According to FCC section 22.913, the Effective Radiated Power (ERP) of mobile transmitters and auxiliary test transmitters must not exceed 7Watts, and FCC section 24.232, FCC section 27.50 d (4) the broadband station is limited to 1 Watts e.i.r.p. peak power.

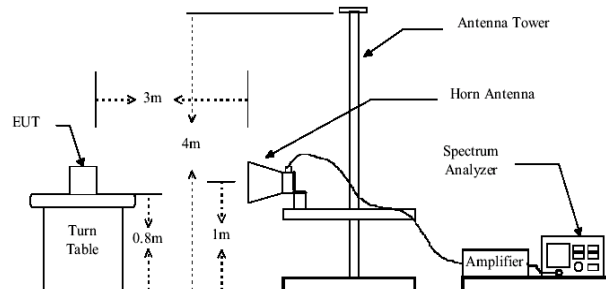


5.7.2. Test Setup

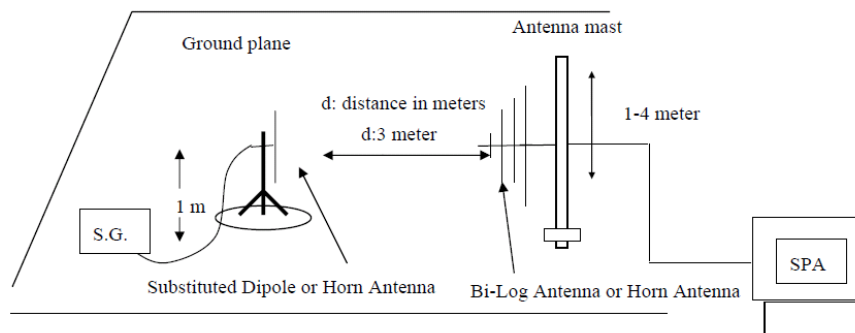
Below 1GHz



Above 1GHz



Substituted method:



5.7.3. Measurement Procedure

The EUT was placed on a non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. All tests were conducted in a Full-Anechoic Chamber.

During the measurement, the EUT was in communication with the station. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength (E in dBuV/m) was calculated.

ERP in frequency band 824.2 – 848.80.8 MHz were measured using a substitution method. The EUT



was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated as follows:

EIRP in frequency band 1850.2 –1909.8MHz were measured using a substitution method. The EUT was replaced by or horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows:

$$\text{ERP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable Loss (dB)} - 2.15$$

$$\text{EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable Loss (dB)}$$

5.7.4. Test Result

Pass, the table and plot please see annex.



EUT mode	Channel	Antenna Pol.	S.G. output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)	Result
LTE BAND 2 1.4MHz QPSK	Lowest	V	9.41	12.54	2.54	19.41	33.00	Pass
		H	9.23	12.54	2.54	19.23		
	Middle	V	9.85	12.34	2.62	19.57	33.00	Pass
		H	9.53	12.34	2.62	19.25		
	Highest	V	9.14	12.48	2.69	18.93	33.00	Pass
		H	9.36	12.49	2.69	19.16		
LTE BAND 2 3MHz QPSK	Lowest	V	9.57	12.54	2.54	19.57	33.00	Pass
		H	9.23	12.54	2.54	19.23		
	Middle	V	9.58	12.34	2.62	19.30	33.00	Pass
		H	9.23	12.34	2.62	18.95		
	Highest	V	9.28	12.48	2.69	19.07	33.00	Pass
		H	9.41	12.49	2.69	19.21		
LTE BAND 2 5MHz QPSK	Lowest	V	9.26	12.54	2.54	19.26	33.00	Pass
		H	9.67	12.54	2.54	19.67		
	Middle	V	9.23	12.34	2.62	18.95	33.00	Pass
		H	9.38	12.34	2.62	19.10		
	Highest	V	9.36	12.48	2.69	19.15	33.00	Pass
		H	9.44	12.49	2.69	19.24		
LTE BAND 2 10MHz QPSK	Lowest	V	9.38	12.54	2.54	19.38	33.00	Pass
		H	9.53	12.54	2.54	19.53		
	Middle	V	9.32	12.34	2.62	19.04	33.00	Pass
		H	9.85	12.34	2.62	19.57		
	Highest	V	9.56	12.48	2.69	19.35	33.00	Pass
		H	9.24	12.49	2.69	19.04		
LTE BAND 2 15MHz QPSK	Lowest	V	9.85	12.54	2.54	19.85	33.00	Pass
		H	9.63	12.54	2.54	19.63		
	Middle	V	9.64	12.34	2.62	19.36	33.00	Pass
		H	9.58	12.34	2.62	19.30		
	Highest	V	9.13	12.48	2.69	18.92	33.00	Pass
		H	9.94	12.49	2.69	19.74		
LTE BAND 2 20MHz QPSK	Lowest	V	9.63	12.54	2.54	19.63	33.00	Pass
		H	9.31	12.54	2.54	19.31		
	Middle	V	9.58	12.34	2.62	19.30	33.00	Pass
		H	9.56	12.34	2.62	19.28		
	Highest	V	9.85	12.48	2.69	19.64	33.00	Pass
		H	9.33	12.49	2.69	19.13		



EUT mode	Channel	Antenna Pol.	S.G. output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)	Result
LTE BAND 2 1.4MHz 16QAM	Lowest	V	9.28	12.54	2.54	19.28	33.00	Pass
		H	9.96	12.54	2.54	19.96		
	Middle	V	9.22	12.34	2.62	18.94	33.00	Pass
		H	9.58	12.34	2.62	19.30		
	Highest	V	9.66	12.48	2.69	19.45	33.00	Pass
		H	9.23	12.49	2.69	19.03		
LTE BAND 2 3MHz 16QAM	Lowest	V	9.53	12.54	2.54	19.53	33.00	Pass
		H	9.74	12.54	2.54	19.74		
	Middle	V	9.62	12.34	2.62	19.34	33.00	Pass
		H	9.23	12.34	2.62	18.95		
	Highest	V	9.58	12.48	2.69	19.37	33.00	Pass
		H	9.36	12.49	2.69	19.16		
LTE BAND 2 5MHz 16QAM	Lowest	V	9.84	12.54	2.54	19.84	33.00	Pass
		H	9.21	12.54	2.54	19.21		
	Middle	V	9.59	12.34	2.62	19.31	33.00	Pass
		H	9.62	12.34	2.62	19.34		
	Highest	V	9.63	12.48	2.69	19.42	33.00	Pass
		H	9.64	12.49	2.69	19.44		
LTE BAND 2 10MHz 16QAM	Lowest	V	9.27	12.54	2.52	19.29	33.00	Pass
		H	9.62	12.54	2.52	19.64		
	Middle	V	9.36	12.34	2.6	19.10	33.00	Pass
		H	9.04	12.34	2.6	18.78		
	Highest	V	9.38	12.48	2.71	19.15	33.00	Pass
		H	9.33	12.49	2.71	19.11		
LTE BAND 2 15MHz 16QAM	Lowest	V	9.14	12.54	2.52	19.16	33.00	Pass
		H	9.56	12.54	2.52	19.58		
	Middle	V	9.52	12.34	2.6	19.26	33.00	Pass
		H	9.33	12.34	2.6	19.07		
	Highest	V	9.58	12.48	2.71	19.35	33.00	Pass
		H	9.14	12.49	2.71	18.92		
LTE BAND 2 20MHz 16QAM	Lowest	V	9.33	12.54	2.52	19.35	33.00	Pass
		H	9.28	12.54	2.52	19.30		
	Middle	V	9.86	12.34	2.6	19.60	33.00	Pass
		H	9.82	12.34	2.6	19.56		
	Highest	V	9.63	12.48	2.71	19.40	33.00	Pass
		H	9.61	12.49	2.71	19.39		



EUT mode	Channel	Antenna Pol.	S.G. output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)	Result
LTE BAND 4 1.4MHz QPSK	Lowest	V	9.16	12.54	2.54	19.16	30.00	Pass
		H	9.47	12.54	2.54	19.47		
	Middle	V	9.83	12.34	2.62	19.55	30.00	Pass
		H	9.84	12.34	2.62	19.56		
	Highest	V	9.68	12.48	2.69	19.47	30.00	Pass
		H	9.83	12.49	2.69	19.63		
LTE BAND 4 3MHz QPSK	Lowest	V	9.38	12.54	2.54	19.38	30.00	Pass
		H	9.53	12.54	2.54	19.53		
	Middle	V	9.68	12.34	2.62	19.40	30.00	Pass
		H	9.16	12.34	2.62	18.88		
	Highest	V	9.32	12.48	2.69	19.11	30.00	Pass
		H	9.49	12.49	2.69	19.29		
LTE BAND 4 5MHz QPSK	Lowest	V	9.67	12.54	2.54	19.67	30.00	Pass
		H	9.26	12.54	2.54	19.26		
	Middle	V	9.54	12.34	2.62	19.26	30.00	Pass
		H	9.37	12.34	2.62	19.09		
	Highest	V	9.33	12.48	2.69	19.12	30.00	Pass
		H	9.48	12.49	2.69	19.28		
LTE BAND 4 10MHz QPSK	Lowest	V	9.63	12.54	2.52	19.65	30.00	Pass
		H	9.34	12.54	2.52	19.36		
	Middle	V	9.18	12.34	2.6	18.92	30.00	Pass
		H	9.36	12.34	2.6	19.10		
	Highest	V	9.57	12.48	2.71	19.34	30.00	Pass
		H	9.56	12.49	2.71	19.34		
LTE BAND 4 15MHz QPSK	Lowest	V	9.28	12.54	2.52	19.30	30.00	Pass
		H	9.56	12.54	2.52	19.58		
	Middle	V	9.54	12.34	2.6	19.28	30.00	Pass
		H	9.18	12.34	2.6	18.92		
	Highest	V	9.39	12.48	2.71	19.16	30.00	Pass
		H	9.58	12.49	2.71	19.36		
LTE BAND 4 20MHz QPSK	Lowest	V	9.13	12.54	2.52	19.15	30.00	Pass
		H	9.34	12.54	2.52	19.36		
	Middle	V	9.27	12.34	2.6	19.01	30.00	Pass
		H	9.46	12.34	2.6	19.20		
	Highest	V	9.83	12.48	2.71	19.60	30.00	Pass
		H	9.34	12.49	2.71	19.12		



EUT mode	Channel	Antenna Pol.	S.G. output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)	Result
LTE BAND 4 1.4MHz 16QAM	Lowest	V	9.19	12.54	2.54	19.19	30.00	Pass
		H	9.52	12.54	2.54	19.52		
	Middle	V	9.63	12.34	2.62	19.35	30.00	Pass
		H	9.87	12.34	2.62	19.59		
	Highest	V	9.38	12.48	2.69	19.17	30.00	Pass
		H	9.16	12.49	2.69	18.96		
LTE BAND 4 3MHz 16QAM	Lowest	V	9.37	12.54	2.54	19.37	30.00	Pass
		H	9.23	12.54	2.54	19.23		
	Middle	V	9.44	12.34	2.62	19.16	30.00	Pass
		H	9.96	12.34	2.62	19.68		
	Highest	V	9.52	12.48	2.69	19.31	30.00	Pass
		H	9.31	12.49	2.69	19.11		
LTE BAND 4 5MHz 16QAM	Lowest	V	9.39	12.54	2.54	19.39	30.00	Pass
		H	9.65	12.54	2.54	19.65		
	Middle	V	9.21	12.34	2.62	18.93	30.00	Pass
		H	9.38	12.34	2.62	19.10		
	Highest	V	9.53	12.48	2.69	19.32	30.00	Pass
		H	9.37	12.49	2.69	19.17		
LTE BAND 4 10MHz 16QAM	Lowest	V	9.59	12.54	2.52	19.61	30.00	Pass
		H	9.88	12.54	2.52	19.90		
	Middle	V	9.52	12.34	2.6	19.26	30.00	Pass
		H	9.38	12.34	2.6	19.12		
	Highest	V	9.16	12.48	2.71	18.93	30.00	Pass
		H	9.37	12.49	2.71	19.15		
LTE BAND 4 15MHz 16QAM	Lowest	V	9.21	12.54	2.52	19.23	30.00	Pass
		H	9.96	12.54	2.52	19.98		
	Middle	V	9.45	12.34	2.6	19.19	30.00	Pass
		H	9.36	12.34	2.6	19.10		
	Highest	V	9.77	12.48	2.71	19.54	30.00	Pass
		H	9.68	12.49	2.71	19.46		
LTE BAND 4 20MHz 16QAM	Lowest	V	9.43	12.54	2.52	19.45	30.00	Pass
		H	9.34	12.54	2.52	19.36		
	Middle	V	9.69	12.34	2.6	19.43	30.00	Pass
		H	9.18	12.34	2.6	18.92		
	Highest	V	9.43	12.48	2.71	19.20	30.00	Pass
		H	9.37	12.49	2.71	19.15		



EUT mode	Channel	Antenna Pol.	S.G. output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)	Result
LTE BAND 5 1.4MHz QPSK	Lowest	V	1.15	15.68	1.65	15.18	38.45	Pass
		H	1.06	15.68	1.65	15.09		
	Middle	V	1.18	15.7	1.67	15.21	38.45	Pass
		H	1.25	15.7	1.67	15.28		
	Highest	V	1.05	15.7	1.71	15.04	38.45	Pass
		H	1.03	15.7	1.71	15.02		
LTE BAND 5 3MHz QPSK	Lowest	V	1.15	15.68	1.65	15.18	38.45	Pass
		H	1.06	15.68	1.65	15.09		
	Middle	V	1.28	15.7	1.67	15.31	38.45	Pass
		H	1.24	15.7	1.67	15.27		
	Highest	V	1.32	15.7	1.71	15.31	38.45	Pass
		H	1.41	15.7	1.71	15.4		
LTE BAND 5 5MHz QPSK	Lowest	V	1.36	15.68	1.65	15.39	38.45	Pass
		H	1.25	15.68	1.65	15.28		
	Middle	V	1.04	15.7	1.67	15.07	38.45	Pass
		H	1.27	15.7	1.67	15.3		
	Highest	V	1.06	15.7	1.71	15.05	38.45	Pass
		H	1.17	15.7	1.71	15.16		
LTE BAND 5 10MHz QPSK	Lowest	V	1.23	15.68	1.65	15.26	38.45	Pass
		H	1.05	15.68	1.65	15.08		
	Middle	V	1.08	15.7	1.67	15.11	38.45	Pass
		H	1.34	15.7	1.67	15.37		
	Highest	V	1.27	15.7	1.71	15.26	38.45	Pass
		H	1.38	15.7	1.71	15.37		
LTE BAND 5 1.4MHz 16QAM	Lowest	V	1.28	15.68	1.65	15.31	38.45	Pass
		H	1.07	15.68	1.65	15.1		
	Middle	V	1.36	15.7	1.67	15.39	38.45	Pass
		H	1.35	15.7	1.67	15.38		
	Highest	V	1.47	15.7	1.71	15.46	38.45	Pass
		H	1.35	15.7	1.71	15.34		
LTE BAND 5 3MHz 16QAM	Lowest	V	1.36	15.68	1.65	15.39	38.45	Pass
		H	1.22	15.68	1.65	15.25		
	Middle	V	1.34	15.7	1.67	15.37	38.45	Pass
		H	1.52	15.7	1.67	15.55		
	Highest	V	1.23	15.7	1.71	15.22	38.45	Pass
		H	1.15	15.7	1.71	15.14		
LTE BAND 5 5MHz 16QAM	Lowest	V	1.27	15.68	1.65	15.3	38.45	Pass
		H	1.32	15.68	1.65	15.35		
	Middle	V	1.22	15.7	1.67	15.25	38.45	Pass
		H	1.03	15.7	1.67	15.06		
	Highest	V	1.26	15.7	1.71	15.25	38.45	Pass
		H	1.25	15.7	1.71	15.24		
LTE BAND 5 10MHz 16QAM	Lowest	V	1.14	15.68	1.65	15.17	38.45	Pass
		H	1.23	15.68	1.65	15.26		
	Middle	V	1.17	15.7	1.67	15.2	38.45	Pass
		H	1.25	15.7	1.67	15.28		
	Highest	V	1.38	15.7	1.71	15.37	38.45	Pass
		H	1.28	15.7	1.71	15.27		



EUT mode	Channel	Antenna Pol.	S.G. output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)	Result
LTE BAND 66 1.4MHz QPSK	Lowest	V	9.23	12.54	2.54	19.23	30.00	Pass
		H	9.28	12.54	2.54	19.28		
	Middle	V	9.84	12.34	2.62	19.56	30.00	Pass
		H	9.58	12.34	2.62	19.30		
	Highest	V	9.16	12.48	2.69	18.95	30.00	Pass
		H	9.34	12.49	2.69	19.14		
LTE BAND 66 3MHz QPSK	Lowest	V	9.58	12.54	2.54	19.58	30.00	Pass
		H	9.22	12.54	2.54	19.22		
	Middle	V	9.57	12.34	2.62	19.29	30.00	Pass
		H	9.26	12.34	2.62	18.98		
	Highest	V	9.52	12.48	2.69	19.31	30.00	Pass
		H	9.49	12.49	2.69	19.29		
LTE BAND 66 5MHz QPSK	Lowest	V	9.52	12.54	2.54	19.52	30.00	Pass
		H	9.21	12.54	2.54	19.21		
	Middle	V	9.29	12.34	2.62	19.01	30.00	Pass
		H	9.34	12.34	2.62	19.06		
	Highest	V	9.37	12.48	2.69	19.16	30.00	Pass
		H	9.46	12.49	2.69	19.26		
LTE BAND 66 10MHz QPSK	Lowest	V	9.41	12.54	2.54	19.41	30.00	Pass
		H	9.53	12.54	2.54	19.53		
	Middle	V	9.38	12.34	2.62	19.10	30.00	Pass
		H	9.21	12.34	2.62	18.93		
	Highest	V	9.53	12.48	2.69	19.32	30.00	Pass
		H	9.85	12.49	2.69	19.65		
LTE BAND 66 15MHz QPSK	Lowest	V	9.36	12.54	2.54	19.36	30.00	Pass
		H	9.41	12.54	2.54	19.41		
	Middle	V	9.68	12.34	2.62	19.40	30.00	Pass
		H	9.21	12.34	2.62	18.93		
	Highest	V	9.18	12.48	2.69	18.97	30.00	Pass
		H	9.63	12.49	2.69	19.43		
LTE BAND 66 20MHz QPSK	Lowest	V	9.52	12.54	2.54	19.52	30.00	Pass
		H	9.85	12.54	2.54	19.85		
	Middle	V	9.53	12.34	2.62	19.25	30.00	Pass
		H	9.51	12.34	2.62	19.23		
	Highest	V	9.84	12.48	2.69	19.63	30.00	Pass
		H	9.63	12.49	2.69	19.43		



EUT mode	Channel	Antenna Pol.	S.G. output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)	Result
LTE BAND 66 1.4MHz 16QAM	Lowest	V	9.24	12.54	2.54	19.24	30.00	Pass
		H	9.97	12.54	2.54	19.97		
	Middle	V	9.26	12.34	2.62	18.98	30.00	Pass
		H	9.57	12.34	2.62	19.29		
	Highest	V	9.62	12.48	2.69	19.41	30.00	Pass
		H	9.26	12.49	2.69	19.06		
LTE BAND 66 3MHz 16QAM	Lowest	V	9.52	12.54	2.54	19.52	30.00	Pass
		H	9.79	12.54	2.54	19.79		
	Middle	V	9.65	12.34	2.62	19.37	30.00	Pass
		H	9.21	12.34	2.62	18.93		
	Highest	V	9.57	12.48	2.69	19.36	30.00	Pass
		H	9.33	12.49	2.69	19.13		
LTE BAND 66 5MHz 16QAM	Lowest	V	9.88	12.54	2.54	19.88	30.00	Pass
		H	9.63	12.54	2.54	19.63		
	Middle	V	9.54	12.34	2.62	19.26	30.00	Pass
		H	9.85	12.34	2.62	19.57		
	Highest	V	9.36	12.48	2.69	19.15	30.00	Pass
		H	9.14	12.49	2.69	18.94		
LTE BAND 66 10MHz 16QAM	Lowest	V	9.63	12.54	2.52	19.65	30.00	Pass
		H	9.21	12.54	2.52	19.23		
	Middle	V	9.32	12.34	2.6	19.06	30.00	Pass
		H	9.08	12.34	2.6	18.82		
	Highest	V	9.33	12.48	2.71	19.10	30.00	Pass
		H	9.58	12.49	2.71	19.36		
LTE BAND 66 15MHz 16QAM	Lowest	V	9.63	12.54	2.52	19.65	30.00	Pass
		H	9.54	12.54	2.52	19.56		
	Middle	V	9.21	12.34	2.6	18.95	30.00	Pass
		H	9.74	12.34	2.6	19.48		
	Highest	V	9.63	12.48	2.71	19.40	30.00	Pass
		H	9.25	12.49	2.71	19.03		
LTE BAND 66 20MHz 16QAM	Lowest	V	9.58	12.54	2.52	19.60	30.00	Pass
		H	9.23	12.54	2.52	19.25		
	Middle	V	9.21	12.34	2.6	18.95	30.00	Pass
		H	9.89	12.34	2.6	19.63		
	Highest	V	9.65	12.48	2.71	19.42	30.00	Pass
		H	9.69	12.49	2.71	19.47		



5.8. Radiated Out of Band Emissions

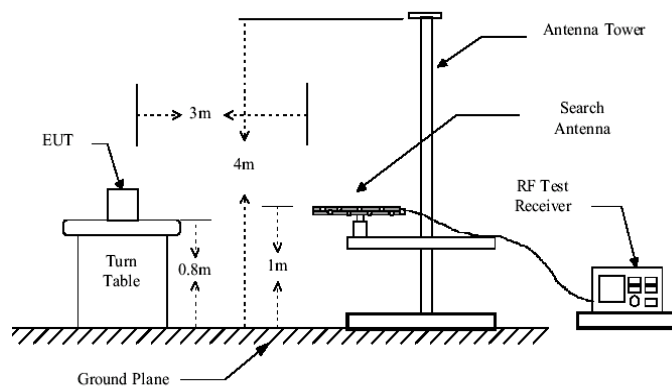
5.8.1. Limit

According to FCC section 22.917(a) and section 24.238(a), 27.53(g) 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. This calculated to be -13dBm.

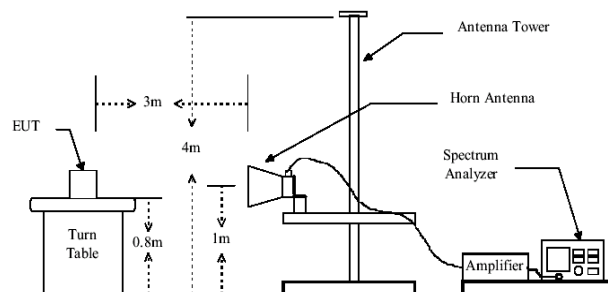
The spurious emission with frequency band 1900 according to FCC section 2.1057.

5.8.2. Test Setup

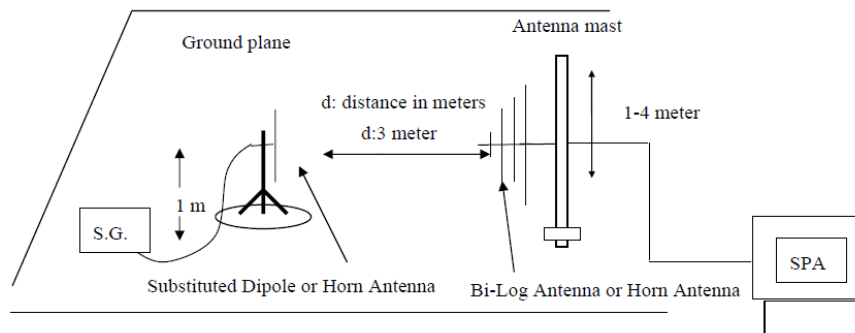
Below 1GHz



Above 1GHz



Substituted method:





5.8.3. Measurement Procedure

The EUT was placed on a non-conductive, The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations. all test in Full-Anechoic Chamber.

The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method.

The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency.

$EIRP \text{ (Level)} = S.G. \text{ output (dBm)} + \text{Antenna Gain(dBi)} - \text{Cable Loss (dB)}$

Note: Measurement Uncertainty: $\pm 3.6 \text{ dB}$.

The data show only the worst results, and the other results are very low and not shown in the report.

5.8.4. Test Result



Band	Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
		Polarization	S.G. output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Level (dBm)		
LTE BAND 2 1.4MHz Lowest	87.15	Vertical	-75.35	3.35	0.38	-72.38	-13	PASS
	3701.40	Vertical	-45.54	7.76	3.75	-41.53		
	5552.10	Vertical	-47.18	9.84	4.94	-42.28		
	7402.80	Vertical	-39.53	10.21	5.32	-34.64		
	9253.50	Vertical	-42.28	11.36	6.02	-36.94		
	11104.20	Vertical	-44.59	14.52	6.68	-36.75		
LTE BAND 2 1.4MHz Middle	88.27	Vertical	-75.34	3.35	0.38	-72.37	-13	PASS
	3760.00	Vertical	-47.58	7.76	3.75	-43.57		
	5640.00	Vertical	-46.33	9.84	4.94	-41.43		
	7520.00	Vertical	-42.88	10.21	5.32	-37.99		
	9400.00	Vertical	-41.94	11.36	6.02	-36.60		
	11280.00	Vertical	-45.89	14.52	6.68	-38.05		
LTE BAND 2 1.4MHz Highest	88.21	Vertical	-75.85	3.35	0.38	-72.88	-13	PASS
	3819.60	Vertical	-46.21	7.79	3.53	-41.95		
	5729.40	Vertical	-41.38	9.88	5.02	-36.52		
	7639.20	Vertical	-37.53	10.25	5.54	-32.82		
	9549.00	Vertical	-44.48	11.38	6.16	-39.26		
	11458.80	Vertical	-46.84	14.56	6.72	-39.00		
LTE BAND 2 3MHz Lowest	87.33	Vertical	-75.96	3.35	0.38	-72.99	-13	PASS
	3700.40	Vertical	-45.74	7.76	3.75	-41.73		
	5550.60	Vertical	-46.36	9.84	4.94	-41.46		
	7400.80	Vertical	-39.25	10.21	5.32	-34.36		
	9251.00	Vertical	-42.47	11.36	6.02	-37.13		
	11101.20	Vertical	-44.16	14.52	6.68	-36.32		
LTE BAND 2 3MHz Middle	88.32	Vertical	-74.85	3.35	0.38	-71.88	-13	PASS
	3760.00	Vertical	-47.69	7.76	3.75	-43.68		
	5640.00	Vertical	-46.21	9.84	4.94	-41.31		
	7520.00	Vertical	-42.44	10.21	5.32	-37.55		
	9400.00	Vertical	-41.96	11.36	6.02	-36.62		
	11280.00	Vertical	-45.54	14.52	6.68	-37.70		
LTE BAND 2 3MHz Highest	88.45	Vertical	-74.33	3.35	0.38	-71.36	-13	PASS
	3819.60	Vertical	-46.89	7.79	3.53	-42.63		
	5729.40	Vertical	-41.21	9.88	5.02	-36.35		
	7639.20	Vertical	-37.55	10.25	5.54	-32.84		
	9549.00	Vertical	-44.63	11.38	6.16	-39.41		
	11458.80	Vertical	-46.58	14.56	6.72	-38.74		



Band	Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
		Polarization	S.G. output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Level (dBm)		
LTE BAND 2 5MHz Lowest	87.54	Vertical	-74.41	3.35	0.38	-71.44	-13	PASS
	3700.40	Vertical	-45.63	7.76	3.75	-41.62		
	5550.60	Vertical	-46.68	9.84	4.94	-41.78		
	7400.80	Vertical	-39.66	10.21	5.32	-34.77		
	9251.00	Vertical	-42.48	11.36	6.02	-37.14		
	11101.20	Vertical	-44.69	14.52	6.68	-36.85		
LTE BAND 2 5MHz Middle	88.76	Vertical	-74.25	3.35	0.38	-71.28	-13	PASS
	3760.00	Vertical	-47.09	7.76	3.75	-43.08		
	5640.00	Vertical	-46.85	9.84	4.94	-41.95		
	7520.00	Vertical	-42.35	10.21	5.32	-37.46		
	9400.00	Vertical	-41.26	11.36	6.02	-35.92		
	11280.00	Vertical	-45.41	14.52	6.68	-37.57		
LTE BAND 2 5MHz Highest	88.56	Vertical	-74.83	3.35	0.38	-71.86	-13	PASS
	3819.60	Vertical	-46.27	7.79	3.53	-42.01		
	5729.40	Vertical	-41.21	9.88	5.02	-36.35		
	7639.20	Vertical	-37.89	10.25	5.54	-33.18		
	9549.00	Vertical	-44.15	11.38	6.16	-38.93		
	11458.80	Vertical	-46.58	14.56	6.72	-38.74		
LTE BAND 2 10MHz Lowest	87.23	Vertical	-74.66	3.35	0.38	-71.69	-13	PASS
	3700.40	Vertical	-45.87	7.76	3.75	-41.86		
	5550.60	Vertical	-46.36	9.84	4.94	-41.46		
	7400.80	Vertical	-39.85	10.21	5.32	-34.96		
	9251.00	Vertical	-42.44	11.36	6.02	-37.10		
	11101.20	Vertical	-44.19	14.52	6.68	-36.35		
LTE BAND 2 10MHz Middle	88.56	Vertical	-74.54	3.35	0.38	-71.57	-13	PASS
	3760.00	Vertical	-47.89	7.76	3.75	-43.88		
	5640.00	Vertical	-46.57	9.84	4.94	-41.67		
	7520.00	Vertical	-42.36	10.21	5.32	-37.47		
	9400.00	Vertical	-41.52	11.36	6.02	-36.18		
	11280.00	Vertical	-45.67	14.52	6.68	-37.83		
LTE BAND 2 10MHz Highest	88.54	Vertical	-74.52	3.35	0.38	-71.55	-13	PASS
	3819.60	Vertical	-46.64	7.79	3.53	-42.38		
	5729.40	Vertical	-41.87	9.88	5.02	-37.01		
	7639.20	Vertical	-37.85	10.25	5.54	-33.14		
	9549.00	Vertical	-44.92	11.38	6.16	-39.70		
	11458.80	Vertical	-46.64	14.56	6.72	-38.80		



Band	Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
		Polarization	S.G. output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Level (dBm)		
LTE BAND 2 15MHz Lowest	87.41	Vertical	-74.21	3.35	0.38	-71.24	-13	PASS
	3700.40	Vertical	-45.96	7.76	3.75	-41.95		
	5550.60	Vertical	-46.75	9.84	4.94	-41.85		
	7400.80	Vertical	-39.96	10.21	5.32	-35.07		
	9251.00	Vertical	-42.65	11.36	6.02	-37.31		
	11101.20	Vertical	-44.67	14.52	6.68	-36.83		
LTE BAND 2 15MHz Middle	88.14	Vertical	-74.69	3.35	0.38	-71.72	-13	PASS
	3760.00	Vertical	-46.52	7.76	3.75	-42.51		
	5640.00	Vertical	-46.69	9.84	4.94	-41.79		
	7520.00	Vertical	-42.41	10.21	5.32	-37.52		
	9400.00	Vertical	-41.23	11.36	6.02	-35.89		
	11280.00	Vertical	-45.74	14.52	6.68	-37.90		
LTE BAND 2 15MHz Highest	88.62	Vertical	-74.69	3.35	0.38	-71.72	-13	PASS
	3819.60	Vertical	-46.52	7.79	3.53	-42.26		
	5729.40	Vertical	-41.24	9.88	5.02	-36.38		
	7639.20	Vertical	-37.33	10.25	5.54	-32.62		
	9549.00	Vertical	-44.18	11.38	6.16	-38.96		
	11458.80	Vertical	-46.56	14.56	6.72	-38.72		
LTE BAND 2 20MHz Lowest	87.53	Vertical	-74.57	3.35	0.38	-71.60	-13	PASS
	3700.40	Vertical	-45.63	7.76	3.75	-41.62		
	5550.60	Vertical	-46.78	9.84	4.94	-41.88		
	7400.80	Vertical	-39.25	10.21	5.32	-34.36		
	9251.00	Vertical	-42.66	11.36	6.02	-37.32		
	11101.20	Vertical	-44.36	14.52	6.68	-36.52		
LTE BAND 2 20MHz Middle	88.65	Vertical	-74.57	3.35	0.38	-71.60	-13	PASS
	3760.00	Vertical	-46.96	7.76	3.75	-42.95		
	5640.00	Vertical	-46.54	9.84	4.94	-41.64		
	7520.00	Vertical	-42.33	10.21	5.32	-37.44		
	9400.00	Vertical	-41.68	11.36	6.02	-36.34		
	11280.00	Vertical	-45.56	14.52	6.68	-37.72		
LTE BAND 2 20MHz Highest	88.34	Vertical	-74.28	3.35	0.38	-71.31	-13	PASS
	3819.60	Vertical	-46.94	7.79	3.53	-42.68		
	5729.40	Vertical	-41.85	9.88	5.02	-36.99		
	7639.20	Vertical	-37.33	10.25	5.54	-32.62		
	9549.00	Vertical	-44.88	11.38	6.16	-39.66		
	11458.80	Vertical	-46.54	14.56	6.72	-38.70		



Band	Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
		Polarization	S.G. output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Level (dBm)		
LTE BAND 4 1.4MHz Lowest	87.28	Vertical	-74.36	3.35	0.38	-71.39	-13	PASS
	3421.40	Vertical	-45.78	7.76	3.75	-41.77		
	5132.10	Vertical	-46.21	9.84	4.94	-41.31		
	6842.80	Vertical	-39.48	10.21	5.32	-34.59		
	8553.50	Vertical	-42.66	11.36	6.02	-37.32		
	10264.20	Vertical	-44.74	14.52	6.68	-36.90		
LTE BAND 4 1.4MHz Middle	88.21	Vertical	-74.36	3.35	0.38	-71.39	-13	PASS
	3465.00	Vertical	-47.85	7.76	3.75	-43.84		
	5197.50	Vertical	-46.16	9.84	4.94	-41.26		
	6930.00	Vertical	-42.85	10.21	5.32	-37.96		
	8662.50	Vertical	-41.73	11.36	6.02	-36.39		
	10395.00	Vertical	-45.67	14.52	6.68	-37.83		
LTE BAND 4 1.4MHz Highest	88.43	Vertical	-74.69	3.35	0.38	-71.72	-13	PASS
	3508.60	Vertical	-46.62	7.79	3.53	-42.36		
	5262.90	Vertical	-41.16	9.88	5.02	-36.30		
	7017.20	Vertical	-37.37	10.25	5.54	-32.66		
	8771.50	Vertical	-44.15	11.38	6.16	-38.93		
	10525.80	Vertical	-46.36	14.56	6.72	-38.52		
LTE BAND 4 3MHz Lowest	87.45	Vertical	-74.58	3.35	0.38	-71.61	-13	PASS
	3423.00	Vertical	-45.36	7.76	3.75	-41.35		
	5134.50	Vertical	-46.85	9.84	4.94	-41.95		
	6846.00	Vertical	-39.37	10.21	5.32	-34.48		
	8557.50	Vertical	-42.63	11.36	6.02	-37.29		
	10269.00	Vertical	-44.28	14.52	6.68	-36.44		
LTE BAND 4 3MHz Middle	88.21	Vertical	-74.76	3.35	0.38	-71.79	-13	PASS
	3508.60	Vertical	-47.52	7.76	3.75	-43.51		
	5262.90	Vertical	-46.14	9.84	4.94	-41.24		
	7017.20	Vertical	-42.63	10.21	5.32	-37.74		
	8771.50	Vertical	-41.21	11.36	6.02	-35.87		
	10525.80	Vertical	-45.66	14.52	6.68	-37.82		
LTE BAND 4 3MHz Highest	88.33	Vertical	-74.68	3.35	0.38	-71.71	-13	PASS
	3507.00	Vertical	-46.36	7.79	3.53	-42.10		
	5260.50	Vertical	-41.17	9.88	5.02	-36.31		
	7014.00	Vertical	-37.96	10.25	5.54	-33.25		
	8767.50	Vertical	-44.25	11.38	6.16	-39.03		
	10521.00	Vertical	-46.53	14.56	6.72	-38.69		



Band	Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
		Polarization	S.G. output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Level (dBm)		
LTE BAND 4 5MHz Lowest	87.34	Vertical	-74.58	3.35	0.38	-71.61	-13	PASS
	3425.00	Vertical	-45.21	7.76	3.75	-41.20		
	5137.50	Vertical	-46.86	9.84	4.94	-41.96		
	6850.00	Vertical	-39.85	10.21	5.32	-34.96		
	8562.50	Vertical	-42.36	11.36	6.02	-37.02		
	10275.00	Vertical	-44.14	14.52	6.68	-36.30		
LTE BAND 4 5MHz Middle	88.24	Vertical	-74.21	3.35	0.38	-71.24	-13	PASS
	3423.00	Vertical	-47.03	7.76	3.75	-43.02		
	5134.50	Vertical	-46.85	9.84	4.94	-41.95		
	6846.00	Vertical	-42.23	10.21	5.32	-37.34		
	8557.50	Vertical	-41.32	11.36	6.02	-35.98		
	10269.00	Vertical	-45.69	14.52	6.68	-37.85		
LTE BAND 4 5MHz Highest	88.34	Vertical	-74.52	3.35	0.38	-71.55	-13	PASS
	3505.00	Vertical	-46.21	7.79	3.53	-41.95		
	5257.50	Vertical	-41.13	9.88	5.02	-36.27		
	7010.00	Vertical	-37.37	10.25	5.54	-32.66		
	8762.50	Vertical	-44.16	11.38	6.16	-38.94		
	10515.00	Vertical	-46.54	14.56	6.72	-38.70		
LTE BAND 4 10MHz Lowest	87.21	Vertical	-74.36	3.35	0.38	-71.39	-13	PASS
	3430.00	Vertical	-45.75	7.76	3.75	-41.74		
	5145.00	Vertical	-46.87	9.84	4.94	-41.97		
	6860.00	Vertical	-39.26	10.21	5.32	-34.37		
	8575.00	Vertical	-42.64	11.36	6.02	-37.30		
	10290.00	Vertical	-44.18	14.52	6.68	-36.34		
LTE BAND 4 10MHz Middle	88.41	Vertical	-74.63	3.35	0.38	-71.66	-13	PASS
	3505.00	Vertical	-47.52	7.76	3.75	-43.51		
	5257.50	Vertical	-46.21	9.84	4.94	-41.31		
	7010.00	Vertical	-42.28	10.21	5.32	-37.39		
	8762.50	Vertical	-41.46	11.36	6.02	-36.12		
	10515.00	Vertical	-45.64	14.52	6.68	-37.80		
LTE BAND 4 10MHz Highest	88.34	Vertical	-74.58	3.35	0.38	-71.61	-13	PASS
	3500.00	Vertical	-46.36	7.79	3.53	-42.10		
	5250.00	Vertical	-41.15	9.88	5.02	-36.29		
	7000.00	Vertical	-37.34	10.25	5.54	-32.63		
	8750.00	Vertical	-44.17	11.38	6.16	-38.95		
	10500.00	Vertical	-46.56	14.56	6.72	-38.72		



Band	Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
		Polarization	S.G. output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Level (dBm)		
LTE BAND 4 15MHz Lowest	87.32	Vertical	-74.58	3.35	0.38	-71.61	-13	PASS
	3435.00	Vertical	-45.63	7.76	3.75	-41.62		
	5152.50	Vertical	-46.52	9.84	4.94	-41.62		
	6870.00	Vertical	-39.34	10.21	5.32	-34.45		
	8587.50	Vertical	-42.68	11.36	6.02	-37.34		
	10305.00	Vertical	-44.16	14.52	6.68	-36.32		
LTE BAND 4 15MHz Middle	88.32	Vertical	-74.64	3.35	0.38	-71.67	-13	PASS
	3505.00	Vertical	-46.63	7.76	3.75	-42.62		
	5257.50	Vertical	-46.57	9.84	4.94	-41.67		
	7010.00	Vertical	-42.52	10.21	5.32	-37.63		
	8762.50	Vertical	-41.36	11.36	6.02	-36.02		
	10515.00	Vertical	-45.57	14.52	6.68	-37.73		
LTE BAND 4 15MHz Highest	88.32	Vertical	-74.63	3.35	0.38	-71.66	-13	PASS
	3495.00	Vertical	-46.21	7.79	3.53	-41.95		
	5242.50	Vertical	-41.28	9.88	5.02	-36.42		
	6990.00	Vertical	-37.63	10.25	5.54	-32.92		
	8737.50	Vertical	-44.84	11.38	6.16	-39.62		
	10485.00	Vertical	-46.57	14.56	6.72	-38.73		
LTE BAND 4 20MHz Lowest	87.34	Vertical	-74.63	3.35	0.38	-71.66	-13	PASS
	3440.00	Vertical	-45.21	7.76	3.75	-41.20		
	5160.00	Vertical	-46.37	9.84	4.94	-41.47		
	6880.00	Vertical	-39.33	10.21	5.32	-34.44		
	8600.00	Vertical	-42.67	11.36	6.02	-37.33		
	10320.00	Vertical	-44.16	14.52	6.68	-36.32		
LTE BAND 4 20MHz Middle	88.45	Vertical	-74.21	3.35	0.38	-71.24	-13	PASS
	3505.00	Vertical	-46.58	7.76	3.75	-42.57		
	5257.50	Vertical	-46.36	9.84	4.94	-41.46		
	7010.00	Vertical	-42.74	10.21	5.32	-37.85		
	8762.50	Vertical	-41.66	11.36	6.02	-36.32		
	10515.00	Vertical	-45.85	14.52	6.68	-38.01		
LTE BAND 4 20MHz Highest	88.56	Vertical	-74.69	3.35	0.38	-71.72	-13	PASS
	3490.00	Vertical	-46.34	7.79	3.53	-42.08		
	5235.00	Vertical	-41.63	9.88	5.02	-36.77		
	6980.00	Vertical	-37.85	10.25	5.54	-33.14		
	8725.00	Vertical	-44.63	11.38	6.16	-39.41		
	10470.00	Vertical	-46.54	14.56	6.72	-38.70		



Band	Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
		Polarization	S.G. output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Level (dBm)		
LTE BAND 5 1.4MHz Lowest	87.45	Vertical	-74.52	3.35	0.38	-71.55	-13	PASS
	3700.40	Vertical	-45.63	7.76	3.75	-41.62		
	5550.60	Vertical	-46.41	9.84	4.94	-41.51		
	7400.80	Vertical	-39.38	10.21	5.32	-34.49		
	9251.00	Vertical	-42.83	11.36	6.02	-37.49		
	11101.20	Vertical	-44.67	14.52	6.68	-36.83		
LTE BAND 5 1.4MHz Middle	88.21	Vertical	-74.36	3.35	0.38	-71.39	-13	PASS
	3760.00	Vertical	-47.65	7.76	3.75	-43.64		
	5640.00	Vertical	-46.56	9.84	4.94	-41.66		
	7520.00	Vertical	-42.85	10.21	5.32	-37.96		
	9400.00	Vertical	-41.14	11.36	6.02	-35.8		
	11280.00	Vertical	-45.63	14.52	6.68	-37.79		
LTE BAND 5 1.4MHz Highest	88.77	Vertical	-74.58	3.35	0.38	-71.61	-13	PASS
	3819.60	Vertical	-46.66	7.79	3.53	-42.4		
	5729.40	Vertical	-41.57	9.88	5.02	-36.71		
	7639.20	Vertical	-37.62	10.25	5.54	-32.91		
	9549.00	Vertical	-44.13	11.38	6.16	-38.91		
	11458.80	Vertical	-46.68	14.56	6.72	-38.84		
LTE BAND 5 3MHz Lowest	87.98	Vertical	-74.43	3.35	0.38	-71.46	-13	PASS
	3700.40	Vertical	-45.85	7.76	3.75	-41.84		
	5550.60	Vertical	-46.66	9.84	4.94	-41.76		
	7400.80	Vertical	-39.64	10.21	5.32	-34.75		
	9251.00	Vertical	-42.85	11.36	6.02	-37.51		
	11101.20	Vertical	-44.33	14.52	6.68	-36.49		
LTE BAND 5 3MHz Middle	88.78	Vertical	-75.25	3.35	0.38	-72.28	-13	PASS
	3760.00	Vertical	-47.63	7.76	3.75	-43.62		
	5640.00	Vertical	-46.28	9.84	4.94	-41.38		
	7520.00	Vertical	-42.65	10.21	5.32	-37.76		
	9400.00	Vertical	-41.66	11.36	6.02	-36.32		
	11280.00	Vertical	-45.26	14.52	6.68	-37.42		
LTE BAND 5 3MHz Highest	88.67	Vertical	-74.38	3.35	0.38	-71.41	-13	PASS
	3819.60	Vertical	-46.54	7.79	3.53	-42.28		
	5729.40	Vertical	-41.36	9.88	5.02	-36.5		
	7639.20	Vertical	-37.25	10.25	5.54	-32.54		
	9549.00	Vertical	-44.56	11.38	6.16	-39.34		
	11458.80	Vertical	-46.66	14.56	6.72	-38.82		



Band	Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
		Polarization	S.G. output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Level (dBm)		
LTE BAND 5 5MHz Lowest	87.66	Vertical	-74.58	3.35	0.38	-71.61	-13	PASS
	3700.40	Vertical	-45.66	7.76	3.75	-41.65		
	5550.60	Vertical	-46.24	9.84	4.94	-41.34		
	7400.80	Vertical	-39.66	10.21	5.32	-34.77		
	9251.00	Vertical	-42.85	11.36	6.02	-37.51		
	11101.20	Vertical	-44.76	14.52	6.68	-36.92		
LTE BAND 5 5MHz Middle	88.32	Vertical	-74.41	3.35	0.38	-71.44	-13	PASS
	3760.00	Vertical	-46.66	7.76	3.75	-42.65		
	5640.00	Vertical	-46.68	9.84	4.94	-41.78		
	7520.00	Vertical	-42.25	10.21	5.32	-37.36		
	9400.00	Vertical	-41.23	11.36	6.02	-35.89		
	11280.00	Vertical	-45.64	14.52	6.68	-37.8		
LTE BAND 5 5MHz Highest	88.32	Vertical	-74.57	3.35	0.38	-71.6	-13	PASS
	3819.60	Vertical	-46.63	7.79	3.53	-42.37		
	5729.40	Vertical	-41.25	9.88	5.02	-36.39		
	7639.20	Vertical	-37.61	10.25	5.54	-32.9		
	9549.00	Vertical	-44.53	11.38	6.16	-39.31		
	11458.80	Vertical	-46.58	14.56	6.72	-38.74		
LTE BAND 5 10MHz Lowest	87.23	Vertical	-74.33	3.35	0.38	-71.36	-13	PASS
	3700.40	Vertical	-45.35	7.76	3.75	-41.34		
	5550.60	Vertical	-46.57	9.84	4.94	-41.67		
	7400.80	Vertical	-39.63	10.21	5.32	-34.74		
	9251.00	Vertical	-42.14	11.36	6.02	-36.8		
	11101.20	Vertical	-44.38	14.52	6.68	-36.54		
LTE BAND 5 10MHz Middle	88.21	Vertical	-74.63	3.35	0.38	-71.66	-13	PASS
	3760.00	Vertical	-46.87	7.76	3.75	-42.86		
	5640.00	Vertical	-46.53	9.84	4.94	-41.63		
	7520.00	Vertical	-42.28	10.21	5.32	-37.39		
	9400.00	Vertical	-41.23	11.36	6.02	-35.89		
	11280.00	Vertical	-45.78	14.52	6.68	-37.94		
LTE BAND 5 10MHz Highest	88.15	Vertical	-74.63	3.35	0.38	-71.66	-13	PASS
	3819.60	Vertical	-46.68	7.79	3.53	-42.42		
	5729.40	Vertical	-41.54	9.88	5.02	-36.68		
	7639.20	Vertical	-37.23	10.25	5.54	-32.52		
	9549.00	Vertical	-44.68	11.38	6.16	-39.46		
	11458.80	Vertical	-46.63	14.56	6.72	-38.79		



Band	Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
		Polarization	S.G. output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Level (dBm)		
LTE BAND 66 1.4MHz Lowest	87.18	Vertical	-75.25	3.35	0.38	-72.28	-13	PASS
	3421.40	Vertical	-45.69	7.76	3.75	-41.68		
	5132.10	Vertical	-47.52	9.84	4.94	-42.62		
	6842.80	Vertical	-39.58	10.21	5.32	-34.69		
	8553.50	Vertical	-42.27	11.36	6.02	-36.93		
	10264.20	Vertical	-44.59	14.52	6.68	-36.75		
LTE BAND 66 1.4MHz Middle	88.32	Vertical	-75.38	3.35	0.38	-72.41	-13	PASS
	3490.00	Vertical	-47.41	7.76	3.75	-43.40		
	5235.00	Vertical	-46.38	9.84	4.94	-41.48		
	6980.00	Vertical	-42.83	10.21	5.32	-37.94		
	8725.00	Vertical	-41.98	11.36	6.02	-36.64		
	10470.00	Vertical	-45.84	14.52	6.68	-38.00		
LTE BAND 66 1.4MHz Highest	88.11	Vertical	-75.21	3.35	0.38	-72.24	-13	PASS
	3558.60	Vertical	-46.28	7.79	3.53	-42.02		
	5337.90	Vertical	-41.33	9.88	5.02	-36.47		
	7117.20	Vertical	-37.85	10.25	5.54	-33.14		
	8896.50	Vertical	-44.43	11.38	6.16	-39.21		
	10675.80	Vertical	-46.85	14.56	6.72	-39.01		
LTE BAND 66 3MHz Lowest	87.32	Vertical	-75.93	3.35	0.38	-72.96	-13	PASS
	3423.00	Vertical	-45.85	7.76	3.75	-41.84		
	5134.50	Vertical	-46.33	9.84	4.94	-41.43		
	6846.00	Vertical	-39.85	10.21	5.32	-34.96		
	8557.50	Vertical	-42.49	11.36	6.02	-37.15		
	10269.00	Vertical	-44.85	14.52	6.68	-37.01		
LTE BAND 66 3MHz Middle	88.21	Vertical	-74.21	3.35	0.38	-71.24	-13	PASS
	3490.00	Vertical	-47.63	7.76	3.75	-43.62		
	5235.00	Vertical	-46.28	9.84	4.94	-41.38		
	6980.00	Vertical	-42.46	10.21	5.32	-37.57		
	8725.00	Vertical	-41.98	11.36	6.02	-36.64		
	10470.00	Vertical	-45.21	14.52	6.68	-37.37		
LTE BAND 66 3MHz Highest	88.76	Vertical	-74.36	3.35	0.38	-71.39	-13	PASS
	3557.00	Vertical	-46.52	7.79	3.53	-42.26		
	5335.50	Vertical	-41.28	9.88	5.02	-36.42		
	7114.00	Vertical	-37.53	10.25	5.54	-32.82		
	8892.50	Vertical	-44.68	11.38	6.16	-39.46		
	10671.00	Vertical	-46.54	14.56	6.72	-38.70		



Band	Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
		Polarization	S.G. output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Level (dBm)		
LTE BAND 66 5MHz Lowest	87.45	Vertical	-74.63	3.35	0.38	-71.66	-13	PASS
	3425.00	Vertical	-45.85	7.76	3.75	-41.84		
	5137.50	Vertical	-46.64	9.84	4.94	-41.74		
	6850.00	Vertical	-39.36	10.21	5.32	-34.47		
	8562.50	Vertical	-42.44	11.36	6.02	-37.10		
	10275.00	Vertical	-44.67	14.52	6.68	-36.83		
LTE BAND 66 5MHz Middle	88.65	Vertical	-74.63	3.35	0.38	-71.66	-13	PASS
	3490.00	Vertical	-47.09	7.76	3.75	-43.08		
	5235.00	Vertical	-46.52	9.84	4.94	-41.62		
	6980.00	Vertical	-42.36	10.21	5.32	-37.47		
	8725.00	Vertical	-41.24	11.36	6.02	-35.90		
	10470.00	Vertical	-45.48	14.52	6.68	-37.64		
LTE BAND 66 5MHz Highest	88.36	Vertical	-74.63	3.35	0.38	-71.66	-13	PASS
	3555.00	Vertical	-46.25	7.79	3.53	-41.99		
	5332.50	Vertical	-41.28	9.88	5.02	-36.42		
	7110.00	Vertical	-37.83	10.25	5.54	-33.12		
	8887.50	Vertical	-44.52	11.38	6.16	-39.30		
	10665.00	Vertical	-46.53	14.56	6.72	-38.69		
LTE BAND 66 10MHz Lowest	87.11	Vertical	-74.64	3.35	0.38	-71.67	-13	PASS
	3430.00	Vertical	-45.85	7.76	3.75	-41.84		
	5145.00	Vertical	-46.36	9.84	4.94	-41.46		
	6860.00	Vertical	-39.82	10.21	5.32	-34.93		
	8575.00	Vertical	-42.48	11.36	6.02	-37.14		
	10290.00	Vertical	-44.63	14.52	6.68	-36.79		
LTE BAND 66 10MHz Middle	88.21	Vertical	-74.21	3.35	0.38	-71.24	-13	PASS
	3490.00	Vertical	-47.87	7.76	3.75	-43.86		
	5235.00	Vertical	-46.56	9.84	4.94	-41.66		
	6980.00	Vertical	-42.34	10.21	5.32	-37.45		
	8725.00	Vertical	-41.58	11.36	6.02	-36.24		
	10470.00	Vertical	-45.66	14.52	6.68	-37.82		
LTE BAND 66 10MHz Highest	88.54	Vertical	-74.58	3.35	0.38	-71.61	-13	PASS
	3550.00	Vertical	-46.63	7.79	3.53	-42.37		
	5325.00	Vertical	-41.21	9.88	5.02	-36.35		
	7100.00	Vertical	-37.74	10.25	5.54	-33.03		
	8875.00	Vertical	-44.99	11.38	6.16	-39.77		
	10650.00	Vertical	-46.66	14.56	6.72	-38.82		



Band	Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
		Polarization	S.G. output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Level (dBm)		
LTE BAND 66 20MHz Lowest	87.18	Vertical	-74.58	3.35	0.38	-71.61	-13	PASS
	3440.00	Vertical	-45.36	7.76	3.75	-41.35		
	5160.00	Vertical	-46.52	9.84	4.94	-41.62		
	6880.00	Vertical	-39.94	10.21	5.32	-35.05		
	8600.00	Vertical	-42.67	11.36	6.02	-37.33		
	10320.00	Vertical	-44.66	14.52	6.68	-36.82		
LTE BAND 66 20MHz Middle	88.43	Vertical	-74.21	3.35	0.38	-71.24	-13	PASS
	3490.00	Vertical	-46.63	7.76	3.75	-42.62		
	5235.00	Vertical	-46.74	9.84	4.94	-41.84		
	6980.00	Vertical	-42.46	10.21	5.32	-37.57		
	8725.00	Vertical	-41.85	11.36	6.02	-36.51		
	10470.00	Vertical	-45.76	14.52	6.68	-37.92		
LTE BAND 66 20MHz Highest	88.12	Vertical	-74.74	3.35	0.38	-71.77	-13	PASS
	3540.00	Vertical	-46.21	7.79	3.53	-41.95		
	5310.00	Vertical	-41.63	9.88	5.02	-36.77		
	7080.00	Vertical	-37.52	10.25	5.54	-32.81		
	8850.00	Vertical	-44.13	11.38	6.16	-38.91		
	10620.00	Vertical	-46.57	14.56	6.72	-38.73		



6. PHOTOGRAPHS OF TEST SET-UP

Please see setup photo.

7. PHOTOGRAPHS OF THE EUT

Please see external photo and internal photo.

***** END OF REPORT *****