

FCC Test Report

FCC ID: 2BMJMFG8002AC

Product : 4G LTE WIFI ROUTER

Model Name : FG8002AC

Brand : N/A

Report No. : NCT24046254E-2

Prepared for

Elevator Communication Specialists INC. (DBA Essential Communication Services)

26 site c-6rd,Suite b,Freeport Fl. 32439,United States

Prepared by

Shenzhen NCT Testing Technology Co., Ltd.

**A101&2F B2, Fuqiao 6th Area, Xintian Community, Fuhai Street, Baoan District,
Shenzhen, People's Republic of China**

TEL: 400-8868-419

FAX: 86-755-27790922

TEST RESULT CERTIFICATION

Applicant's name : Elevator Communication Specialists INC. (DBA Essential Communication Services)

Address : 26 site c-6rd,Suite b,Freeport Fl. 32439,United States

Manufacture's name : Shenzhen Vintelecom Technology Co.,LTD

Address : 8005,Shayuanpu bldg,Minzhi blvd,Longhua St.,Shenzhen,518131,China

Product name : 4G LTE WIFI ROUTER

Model name : FG8002AC

Applicable Standards: : FCC CFR Title 47 Part2
FCC CFR Title 47 Part22 Subpart H
FCC CFR Title 47 Part24 Subpart E
FCC CFR Title 47 Part27
FCC CFR Title 47 Part90
ANSI/ TIA/ EIA-603-E-2016
FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
ANSI C63.26:2015

Date of test : Nov. 01, 2024 to Dec. 13, 2024

Date of Issue : Dec. 16, 2024

Test Result : Pass

This device described above has been tested by NCT, 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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Test Engineer:


Keven Wu / Engineer

Technical Manager:


Henry Wang / Manager



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1. TEST SUMMARY

No.	FCC Rule	Description	Limit	Result
1	2.1046	Conducted Output Power	Reporting Only	PASS
2	22.913(d) 24.232 (d) 27.50 (d)(5)	Peak to Average Ratio	< 13dB	PASS
3	24.232 (c)	Equivalent Isotropic Radiated Power (Band 2)	EIRP < 2W	PASS
	22.913 (a)(5)	Effective Radiated Power (Band 5)	ERP < 7W	PASS
	27.50 (c)(10)	Effective Radiated Power (Band 12/71)	ERP < 3W	PASS
	27.50 (b)(10)	Effective Radiated Power (Band 13)	ERP < 3W	PASS
	27.50 (d)(4)	Equivalent Isotropic Radiated Power (Band 4/66)	EIRP < 1W	PASS
	90.542(a)(7)	Effective Radiated Power (Band 14_Part 90)	ERP < 3W	PASS
4	2.1049	Occupied Bandwidth	Reporting Only	PASS
5	2.1051 22.917 (a) 24.238 (a) 27.53 90.543(e)	Conducted Spurious Emission and Conducted Band Edge (Band 2/4/5/12/13/66/71)	< 43+10log10 (P[watt])	PASS
		Conducted Spurious Emission and Conducted Band Edge (Band 14)	Refer to 90.543(e)	PASS
6	2.1053 22.917 (a) 24.238 (a) 27.53 90.543(e)	Radiated Spurious Emission (Band 2/4/5/12/13/66/71)	< 43+10log10 (P[Watts])	PASS
		Radiated Spurious Emission (Band 14)	Refer to 90.543(e)	PASS
7	2.1055 22.335 24.235 27.54 90.213(a)	Frequency Stability	< ±2.5ppm Within the Authorized Band	PASS
				PASS

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.

2. GENERAL PRODUCT INFORMATION

2.1. Description of Device (EUT)

Product Name:	4G LTE WIFI ROUTER
Trademark	N/A
Model No.:	FG8002AC
Sample ID:	241101022
Series Model.:	/
Model Difference:	/
Frequency Bands:	U.S. Bands: LTE FDD Band 2 LTE FDD Band 4 LTE FDD Band 5 LTE FDD Band 12 LTE FDD Band 13 LTE FDD Band 14 LTE FDD Band 66 LTE FDD Band 71
Tx Frequency:	LTE Band 2: 1850~1910MHz LTE Band 4: 1710~1755MHz LTE Band 5: 824~849MHz LTE Band 12: 699-716MHz LTE Band 13: 777-787MHz LTE Band 14: 788-798MHz LTE Band 66: 1710-1780MHz LTE Band 71: 663-698MHz
Rx Frequency:	LTE Band 2: 1930-1990MHz LTE Band 4: 2110-2155MHz LTE Band 5: 869-894MHz LTE Band 12: 729-746MHz LTE Band 13: 746-756MHz LTE Band 14: 758-768MHz LTE Band 66: 2110-2200MHz LTE Band 71: 617-652MHz
Bandwidth:	LTE Band 2: 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 4: 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 5: 1.4MHz / 3MHz / 5MHz / 10MHz LTE Band 12: 1.4MHz / 3MHz / 5MHz / 10MHz LTE Band 13: 5MHz / 10MHz LTE Band 14: 5MHz / 10MHz LTE Band 66: 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 71: 5MHz / 10MHz / 15MHz / 20MHz
Modulation technology:	LTE Mode with QPSK, 16QAM, 64QAM(downlink only)
Antenna Type:	External Antenna
Antenna gain:	LTE antenna: LTE Band 2: 0.77 dBi Max. LTE Band 4: 1.38 dBi Max. LTE Band 5: 1.20 dBi Max. LTE Band 12: 4.05 dBi Max. LTE Band 13: 3.13 dBi Max. LTE Band 14: 2.29 dBi Max. LTE Band 66: 1.38 dBi Max. LTE Band 71: 4.05 dBi Max.
Power supply:	DC 12V, 2A From Adapter

	Adapter: Input: AC 100-240V, 50/60Hz, 1.0A Max Output: DC 12V, 2A
LTE Category	4
Hardware Version	N/A
Software Version	N/A

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. 1.4.Test Configuration of Equipment Under Test

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas License Digital Systems v03r01 with maximum output power.

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes to find the maximum emission.

Test Items	Band	Bandwidth(MHz)						Modulation		RB Configuration			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
Conducted Output Power and ERP/EIRP	2	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	4	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	5	√	√	√	√			√	√	√	√	√	√	√	√
	12	√	√	√	√			√	√	√	√	√	√	√	√
	13			√	√			√	√	√	√	√	√	√	√
	14			√	√			√	√	√	√	√	√	√	√
	66	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	71			√	√	√	√	√	√	√	√	√	√	√	√
Peak-to-Average Ratio	2	√	√	√	√	√	√	√	√			√	√	√	√
	4	√	√	√	√	√	√	√	√			√	√	√	√
	5	√	√	√	√			√	√			√	√	√	√
	12	√	√	√	√			√	√			√	√	√	√
	13			√	√			√	√			√	√	√	√
	14			√	√			√	√			√	√	√	√
	66	√	√	√	√	√	√	√	√			√	√	√	√
	71			√	√	√	√	√	√			√	√	√	√
99% OBW and 26dB EBW	2	√	√	√	√	√	√	√	√			√	√	√	√
	4	√	√	√	√	√	√	√	√			√	√	√	√

	5	√	√	√	√			√	√			√	√	√	√
	12	√	√	√	√			√	√			√	√	√	√
	13			√	√			√	√			√	√	√	√
	14			√	√			√	√			√	√	√	√
	66	√	√	√	√	√	√	√	√			√	√	√	√
	71			√	√	√	√	√	√			√		√	
Conducted Band Edge	2	√	√	√	√	√	√	√		√		√	√		√
	4	√	√	√	√	√	√	√		√		√	√		√
	5	√	√	√	√			√		√		√	√		√
	12	√	√	√	√			√		√		√	√		√
	13			√	√			√		√		√	√		√
	14			√	√			√		√		√	√		√
	66	√	√	√	√	√	√	√		√		√	√		√
	71			√	√	√	√	√		√		√	√		√
Conducted Spurious Emission	2	√	√	√	√	√	√	√	√	√		√	√	√	√
	4	√	√	√	√	√	√	√	√	√		√	√	√	√
	5	√	√	√	√			√	√	√		√	√	√	√
	12	√	√	√	√			√	√	√		√	√	√	√
	13			√	√			√	√	√		√	√	√	√
	14			√	√			√	√	√		√	√	√	√
	66	√	√	√	√	√	√	√	√	√		√	√	√	√
	71			√	√	√	√	√	√	√		√	√	√	√
Frequency Stability	2				√			√				√		√	
	4				√			√				√		√	
	5				√			√				√		√	
	12				√			√				√		√	
	13				√			√				√		√	
	14				√			√				√		√	
	66				√			√				√		√	
	71				√			√				√		√	
Radiated Spurious Emission	2	Worst case											√		
	4	Worst case											√		
	5	Worst case											√		
	12	Worst case											√		
	13	Worst case											√		
	14	Worst case											√		
	14	Worst case											√		

	66	Worst case		√	
	71	Worst case		√	

Note 1: The mark "√" means that this configuration is chosen for testing.

Note 2: The EUT performs radiated spurious emission tests from 30MHz to 10 times the fundamental signal under different RB configurations and modulation types. Only worst-case data is reported.

Test Channel(MHz)			
Band	Low	Middle	High
LTE Band 2	1850.7	1880.0	1909.3
LTE Band 4	1710.7	1732.5	1754.3
LTE Band 5	824.7	836.5	848.3
LTE Band 12	699.7	707.5	715.3
LTE Band 13	779.5	782.0	784.5
LTE Band 14	790.5	793.0	795.5
LTE Band 66	1710.7	1745.0	1779.3
LTE Band 71	665.5	680.5	695.5

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

2: we pretest all voltage, only the DC 12V was worst mode, and the data show in the report.

2.4. Maximum ERP/EIRP, Frequency Tolerance and Emission Designator

LTE Bands	Type of Modulation	Bandwidth (MHz)	Emission Designator	Frequency Tolerance (ppm)	Maximum EIRP(dBm)	Maximum EIRP(W)
LTE Band 2	QPSK	1.4	1M08G7D	--	24.09	0.2564
LTE Band 2	16QAM	1.4	1M08W7D	--	22.89	0.1945
LTE Band 2	QPSK	3	2M68G7D	--	24.26	0.2667
LTE Band 2	16QAM	3	2M68W7D	--	23.41	0.2193
LTE Band 2	QPSK	5	4M46G7D	--	23.96	0.2489
LTE Band 2	16QAM	5	4M46W7D	--	22.81	0.1910
LTE Band 2	QPSK	10	8M93G7D	-0.028298	24.00	0.2512
LTE Band 2	16QAM	10	8M95W7D	--	22.77	0.1892
LTE Band 2	QPSK	15	13M4G7D	--	23.57	0.2275
LTE Band 2	16QAM	15	13M4W7D	--	22.83	0.1919
LTE Band 2	QPSK	20	17M8G7D	--	23.84	0.2421
LTE Band 2	16QAM	20	17M8W7D	--	22.79	0.1901
LTE Band 4	QPSK	1.4	1M08G7D	--	24.83	0.3041
LTE Band 4	16QAM	1.4	1M08W7D	--	23.72	0.2355
LTE Band 4	QPSK	3	2M69G7D	--	24.63	0.2904
LTE Band 4	16QAM	3	2M68W7D	--	23.67	0.2328
LTE Band 4	QPSK	5	4M47G7D	--	24.52	0.2831
LTE Band 4	16QAM	5	4M47W7D	--	23.43	0.2203
LTE Band 4	QPSK	10	8M94G7D	-0.015111	24.60	0.2884
LTE Band 4	16QAM	10	8M93W7D	--	23.63	0.2307

LTE Band 4	QPSK	15	13M4G7D	--	24.53	0.2838
LTE Band 4	16QAM	15	13M4W7D	--	23.64	0.2312
LTE Band 4	QPSK	20	17M8G7D	--	24.68	0.2938
LTE Band 4	16QAM	20	17M8W7D	--	23.65	0.2317
LTE Band 5	QPSK	1.4	1M08G7D	--	24.61	0.2891
LTE Band 5	16QAM	1.4	1M08W7D	--	23.60	0.2291
LTE Band 5	QPSK	3	2M69G7D	--	24.43	0.2773
LTE Band 5	16QAM	3	2M69W7D	--	23.51	0.2244
LTE Band 5	QPSK	5	4M47G7D	--	24.47	0.2799
LTE Band 5	16QAM	5	4M47W7D	--	23.38	0.2178
LTE Band 5	QPSK	10	8M95G7D	-0.025750	24.42	0.2767
LTE Band 5	16QAM	10	8M94W7D	--	23.62	0.2301
LTE Band 12	QPSK	1.4	1M08G7D	--	27.58	0.5728
LTE Band 12	16QAM	1.4	1M08W7D	--	26.20	0.4169
LTE Band 12	QPSK	3	2M68G7D	--	27.04	0.5058
LTE Band 12	16QAM	3	2M68W7D	--	26.09	0.4064
LTE Band 12	QPSK	5	4M46G7D	--	26.94	0.4943
LTE Band 12	16QAM	5	4M47W7D	--	25.88	0.3873
LTE Band 12	QPSK	10	8M94G7D	-0.021173	26.94	0.4943
LTE Band 12	16QAM	10	8M93W7D	--	26.22	0.4188
LTE Band 13	QPSK	5	4M47G7D	--	26.55	0.4519
LTE Band 13	16QAM	5	4M46W7D	--	25.65	0.3673
LTE Band 13	QPSK	10	8M93G7D	-0.017609	25.98	0.3963
LTE Band 13	16QAM	10	8M92W7D	--	25.05	0.3199
LTE Band 14	QPSK	5	4M48G7D	--	25.29	0.3381
LTE Band 14	16QAM	5	4M46W7D	--	23.95	0.2483
LTE Band 14	QPSK	10	8M92G7D	-0.017339	24.96	0.3133
LTE Band 14	16QAM	10	8M92W7D	--	23.63	0.2307
LTE Band 66	QPSK	1.4	1M08G7D	--	24.68	0.2938
LTE Band 66	16QAM	1.4	1M08W7D	--	23.46	0.2218
LTE Band 66	QPSK	3	2M69G7D	--	24.58	0.2871
LTE Band 66	16QAM	3	2M68W7D	--	23.69	0.2339
LTE Band 66	QPSK	5	4M47G7D	--	24.70	0.2951
LTE Band 66	16QAM	5	4M46W7D	--	23.41	0.2193
LTE Band 66	QPSK	10	8M94G7D	-0.014716	24.69	0.2944
LTE Band 66	16QAM	10	8M93W7D	--	23.64	0.2312
LTE Band 66	QPSK	15	13M4G7D	--	24.51	0.2825
LTE Band 66	16QAM	15	13M4W7D	--	23.59	0.2286
LTE Band 66	QPSK	20	17M8G7D	--	24.80	0.3020
LTE Band 66	16QAM	20	18M8W7D	--	23.68	0.2333
LTE Band 71	QPSK	5	4M55G7D	--	27.42	0.5521

LTE Band 71	16QAM	5	4M55W7D	--	26.23	0.4198
LTE Band 71	QPSK	10	9M04G7D	-0.020676	27.08	0.5105
LTE Band 71	16QAM	10	9M04W7D	--	26.20	0.4169
LTE Band 71	QPSK	15	13M6G7D	--	27.82	0.6053
LTE Band 71	16QAM	15	13M6W7D	--	26.03	0.4009
LTE Band 71	QPSK	20	18M1G7D	--	27.22	0.5272
LTE Band 71	16QAM	20	18M1W7D	--	26.93	0.4932



3. TEST SITES

3.1. Test Facilities

Site Description

EMC Lab. : Accredited by CNAS, 2022-09-27
The certificate is valid until 2028.01.07
The Laboratory has been assessed and proved to be in compliance with
CNAS-CL01:2006 (identical to ISO/IEC 17025:2017)
The Certificate Registration Number is L8251
Designation Number: CN1347
Test Firm Registration Number: 894804
Accredited by A2LA, June 14, 2023
The Certificate Registration Number is 6837.01

Accredited by Industry Canada, November 09, 2018
The Conformity Assessment Body Identifier is CN0150
Company Number: 30806

Name of Firm : Shenzhen NCT Testing Technology Co., Ltd.
Site Location : A101&2F B2, Fuqiao 6th Area, Xintian Community, Fuhai Street, Baoan
District, Shenzhen, People's Republic of China

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	$\pm 0.16\text{dB}$
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	Bandwidth	$\pm 0.2\text{MHz}$
9	Frequency Stability	$\pm 0.02\text{MHz}$

3.3. List of Test and Measurement Instruments

3.3.1. For radiated test

Name	Model No.	Serial No.	Manufacturer	Date of Cal.	Due Date
966 Shielded Room	966 Room	/	EMToni	2022/5/31	2025/5/30
EMI Test Receiver	ESCI	101178	Rohde & Schwarz	2024/6/17	2025/6/16
Amplifier (30MHz-1GHz)	BBV 9743 B	00374	SCHNWARZBECK	2024/6/17	2025/6/16
Bilog Antenna (30MHz-1GHz)	VULB9162	00473	SCHNWARZBECK	2023/3/19	2025/3/18
Horn antenna (1GHz-18GHz)	BBHA 9120 D	02622	SCHNWARZBECK	2023/3/19	2025/3/18
Preamplifier (1GHz-18GHz)	BBV 9718D	0024	SCHNWARZBECK	2024/6/17	2025/6/16
Spectrum Analyzer (10Hz-40GHz)	FSV 40	100952	Rohde & Schwarz	2024/6/17	2025/6/16
Preamplifier (18GHz-40GHz)	BBV 9721	0056	SCHNWARZBECK	2024/6/17	2025/6/16
Double Ridge Guide Horn Antenna (18GHz-40GHz)	SAS-574	588	A.H.System	2023/3/19	2025/3/18
Loop Antenna (9KHz-30MHz)	FMZB1519B	014	SCHNWARZBECK	2024/6/17	2025/6/16
Amplifier (9KHz-30MHz)	CVP 9222 C	00109	CHNWARZBECK	2024/6/17	2025/6/16
MXG Signal Analyzer	N9020A	MY50510202	Agilent	2024/6/17	2025/6/16
MXG Vector Signal Generator	N5182A	MY50140020	Agilent	2024/6/17	2025/6/16
MXG Analog Signal Generator	N5181A	MY47420919	Agilent	2024/6/17	2025/6/16
Power Sensor	TR1029-2	512364	Techoy	2024/6/17	2025/6/16
RF Switch	TR1029-1	512364	Techoy	2024/6/17	2025/6/16
Cable	DA800- 4000MM	NA	DA	2024/6/17	2025/6/16
Cable	DA800- 11000MM	N/A	DA	2024/6/17	2025/6/16
Oven	GX-3020-M150	N/A	GAOXN	2024/3/11	2025/3/10
Bilog Antenna (30MHz-1GHz)	VULB9162	00478	SCHNWARZBECK	2023/3/19	2025/3/18
Horn antenna (1GHz-18GHz)	BBHA 9120 D	02627	SCHNWARZBECK	2023/3/19	2025/3/18

3.3.2. For conducted emission at the mains terminals test

Name	Model No.	Serial No.	Manufacturer	Date of Cal.	Due Date
944 Shielded Room	944 Room	/	EMToni	2022/5/31	2025/5/30
EMI Test Receiver	ESPI	101604	Rohde & Schwarz	2024/6/17	2025/6/16
LISN	ENV 216	102796	Rohde & Schwarz	2024/6/17	2025/6/16
LISN	VN1-13S	004023	CRANAGE	2024/6/17	2025/6/16
Cable	RG223-1500MM	N/A	RG	2024/6/17	2025/6/16

Other

Item	Name	Manufacturer	Model	Software version
1	EMC Conduction Test System	FALA	EZ-EMC	Ver.EMC-CON 3A1.1+
2	EMC radiation test system	FALA	EZ-EMC	Ver.FA-03A2 RE+
3	RF test system	TACHOY	RFTest	V1.0.0
4	RF communication test system	TACHOY	RFTest	V1.0.0

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



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), 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 § 2.1033(c)(8). The electrical characteristics of the radio frequency load attached to the output terminals when this test is made shall be stated.

FCC part 24.232 (c), Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

FCC part 22.913(a) (5), The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

FCC part 27.50 (b) (10), Portable stations (hand-held devices) transmitting in the 746–757 MHz, 776–788 MHz, and 805–806 MHz bands are limited to 3 watts ERP.

FCC part 27.50 (c) (10), Portable stations (hand-held devices) in the 600 MHz uplink band and the 698–746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

FCC part 27.50 (d) (4), Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band and mobile and portable stations operating in the 1695–1710 MHz and 1755–1780 MHz bands are limited to 1 watt EIRP. Fixed stations operating in the 1710–1755 MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

FCC part 27.50(h) (2), for BRS and EBS: 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.

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 50 Ohm; 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.

5.2. -26dB and 99% Occupied Bandwidth

5.2.1. Limit

According to FCC section 2.1049

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 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.

5.2.3. Test Result

Pass, the table and plot please see annex.

5.3. Peak to Average Ratio

5.3.1. Limit

According to FCC section 2.1046

FCC Part 24.232 (d)

Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of § 24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13dB.

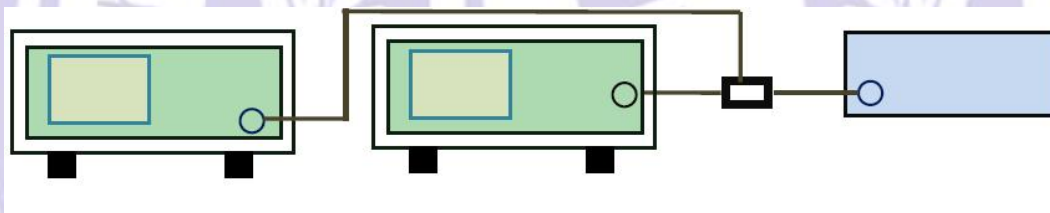
FCC Part 22.913 (d)

Power measurement. Measurement of the ERP of Cellular base transmitters and repeaters must be made using an average power measurement technique. The peak-to-average ratio (PAR) of the transmission must not exceed 13dB.

FCC Part 27.50 (d) (5)

Equipment employed must be authorized in accordance with the provisions of § 24.51. Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (d)(6) of this section. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13dB.

5.3.2. Test Setup



5.3.3. Test Procedure

According with KDB 971168 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

FCC section 24.235: The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

FCC section 22.355: Except as otherwise provided in this part, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table C–1 of this section.

Table C–1—Frequency Tolerance for Transmitters in the Public Mobile Services

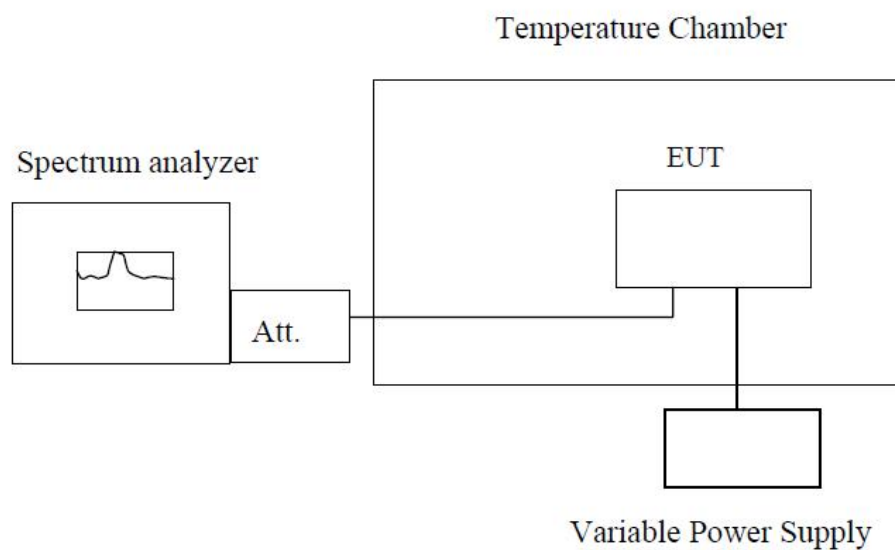
Frequency range (MHz)	Base, fixed (ppm)	Mobile >3 watts (ppm)	Mobile ≤3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929	5.0	n/a	n/a
929 to 960	1.5	n/a	n/a
2110 to 2220	10.0	n/a	n/a

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°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, 4.07VDC and 3.33VDC 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.

Please see the attachment for the data.

5.5. Conducted Spurious Emissions

5.5.1. Limit

According to FCC section 22.917(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.

FCC section 24.238(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.

FCC section 27.53 (c)

For operations in the 746–758 MHz band and the 776–788 MHz band, the power of any emission outside the 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, in accordance with the following:

- (1) On any frequency outside the 746–758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB;
- (2) On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB;
- (3) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than $76 + 10 \log(P)$ dB in a 6.25 kHz band segment, for base and fixed stations;
- (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;
- (5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;
- (6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

FCC section 27.53 (g)

For operations in the 600 MHz band and 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. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

FCC section 27.53 (h)

AWS emission limits:

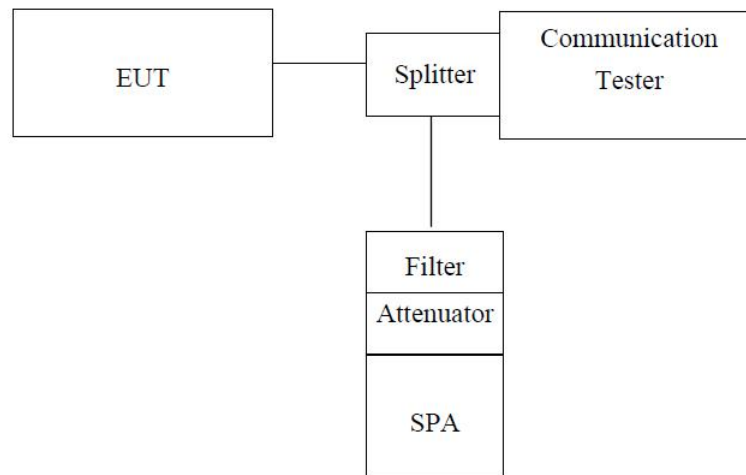
- (1) General protection levels. Except as otherwise specified below, for operations in the 1695–1710 MHz, 1710–1755 MHz, 1755–1780 MHz, 1915–1920 MHz, 1995–2000 MHz, 2000–2020 MHz, 2110–2155 MHz, 2155–2180 MHz, and 2180–2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.
- (2) Additional protection levels. Notwithstanding the foregoing paragraph (h)(1) of this section:
 - (i) Operations in the 2180–2200 MHz band are subject to the out-of-band emission requirements set forth in § 27.1134 for the protection of federal government operations operating in the 2200–2290 MHz band.
 - (ii) For operations in the 2000–2020 MHz band, the power of any emissions below 2000 MHz shall be attenuated below the transmitter power (P) in watts by at least $70 + 10 \log_{10}(P)$ dB.
 - (iii) For operations in the 1915–1920 MHz band, the power of any emission between 1930–1995 MHz shall be attenuated below the transmitter power (P) in watts by at least $70 + 10 \log_{10}(P)$ dB.
 - (iv) For operations in the 1995–2000 MHz band, the power of any emission between 2005–2020 MHz shall be attenuated below the transmitter power (P) in watts by at least $70 + 10 \log_{10}(P)$ dB.

FCC section 27.53 (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.

5.5.2. Test Setup



Note: Measurement setup for testing on Antenna connector

5.5.3. Measurement Procedure

The testing according to FCC KDB 971168 D01 v03r01 Section 6.0 and ANSI C63.26 2015 Section 5.72, FCC Part 22.917, 24.238, 27.53

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(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.

FCC section 24.238(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.

FCC section 27.53 (c)

For operations in the 746–758 MHz band and the 776–788 MHz band, the power of any emission outside the 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, in accordance with the following:

- (1) On any frequency outside the 746–758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB;
- (2) On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB;
- (3) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than $76 + 10 \log(P)$ dB in a 6.25 kHz band segment, for base and fixed stations;
- (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;
- (5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;
- (6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

FCC section 27.53 (g)

For operations in the 600 MHz band and 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. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

FCC section 27.53 (h)

AWS emission limits:

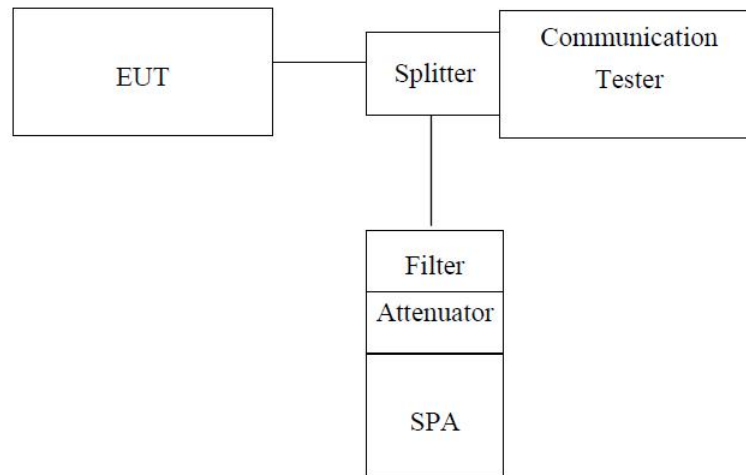
- (1) General protection levels. Except as otherwise specified below, for operations in the 1695–1710 MHz, 1710–1755 MHz, 1755–1780 MHz, 1915–1920 MHz, 1995–2000 MHz, 2000–2020 MHz, 2110–2155 MHz, 2155–2180 MHz, and 2180–2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.
- (2) Additional protection levels. Notwithstanding the foregoing paragraph (h)(1) of this section:
 - (i) Operations in the 2180–2200 MHz band are subject to the out-of-band emission requirements set forth in § 27.1134 for the protection of federal government operations operating in the 2200–2290 MHz band.
 - (ii) For operations in the 2000–2020 MHz band, the power of any emissions below 2000 MHz shall be attenuated below the transmitter power (P) in watts by at least $70 + 10 \log_{10}(P)$ dB.
 - (iii) For operations in the 1915–1920 MHz band, the power of any emission between 1930–1995 MHz shall be attenuated below the transmitter power (P) in watts by at least $70 + 10 \log_{10}(P)$ dB.
 - (iv) For operations in the 1995–2000 MHz band, the power of any emission between 2005–2020 MHz shall be attenuated below the transmitter power (P) in watts by at least $70 + 10 \log_{10}(P)$ dB.

FCC section 27.53 (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.

5.6.2. Test Setup



Note: Measurement setup for testing on Antenna connector

5.6.3. Measurement Procedure

The testing according to FCC KDB 971168 D01 v03r01 Section 6.0 and ANSI C63.26 2015 Section 5.72, FCC Part 22.917, 24.238, 27.53

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.

5.7. Transmitter Radiated Power (EIRP/ERP)

5.7.1. Limit

According to FCC section 2.1046(a), 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 § 2.1033(c)(8). The electrical characteristics of the radio frequency load attached to the output terminals when this test is made shall be stated.

FCC part 24.232 (c), Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

FCC part 22.913(a) (5), The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

FCC part 27.50 (b) (10), Portable stations (hand-held devices) transmitting in the 746–757 MHz, 776–788 MHz, and 805–806 MHz bands are limited to 3 watts ERP.

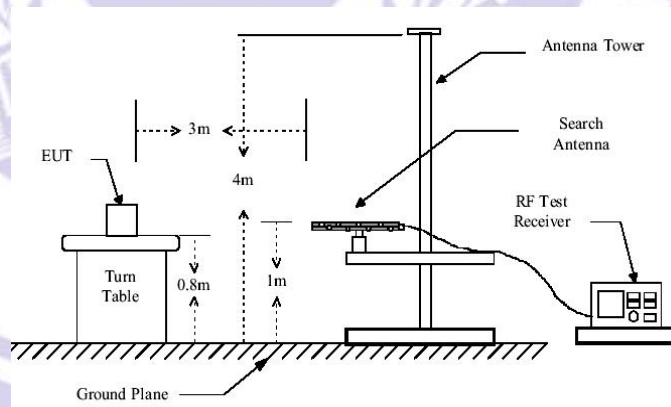
FCC part 27.50 (c) (10), Portable stations (hand-held devices) in the 600 MHz uplink band and the 698–746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

FCC part 27.50 (d) (4), Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band and mobile and portable stations operating in the 1695–1710 MHz and 1755–1780 MHz bands are limited to 1 watt EIRP. Fixed stations operating in the 1710–1755 MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

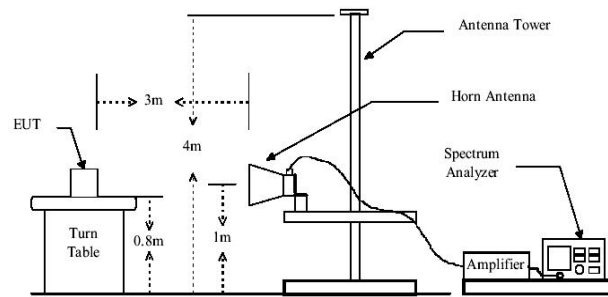
FCC part 27.50(h) (2), for BRS and EBS: Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

5.7.2. Test Setup

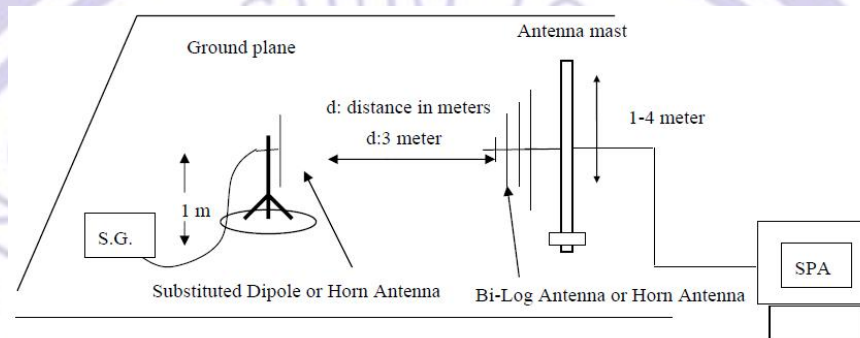
Below 1GHz



Above 1GHz



Substituted method:



5.7.3. Measurement Procedure

The EUT was placed on an 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 test in Full-Anechoic Chamber.

During the measurement, the EUT was 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 –848.80.8MHz 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.



5.8. Radiated Out of Band Emissions

5.8.1. Limit

According to FCC section 22.917(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.

FCC section 24.238(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.

FCC section 27.53 (c)

For operations in the 746–758 MHz band and the 776–788 MHz band, the power of any emission outside the 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, in accordance with the following:

- (1) On any frequency outside the 746–758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB;
- (2) On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB;
- (3) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than $76 + 10 \log(P)$ dB in a 6.25 kHz band segment, for base and fixed stations;
- (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;
- (5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;
- (6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

FCC section 27.53 (g)

For operations in the 600 MHz band and 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. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

FCC section 27.53 (h)

AWS emission limits:

- (1) General protection levels. Except as otherwise specified below, for operations in the 1695–1710 MHz, 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.
- (2) Additional protection levels. Notwithstanding the foregoing paragraph (h)(1) of this section:
 - (i) Operations in the 2180–2200 MHz band are subject to the out-of-band emission requirements set forth in § 27.1134 for the protection of federal government operations operating in the 2200–2290 MHz band.
 - (ii) For operations in the 2000–2020 MHz band, the power of any emissions below 2000 MHz shall be attenuated below the transmitter power (P) in watts by at least $70 + 10 \log_{10}(P)$ dB.
 - (iii) For operations in the 1915–1920 MHz band, the power of any emission between 1930–1995 MHz shall be attenuated below the transmitter power (P) in watts by at least $70 + 10 \log_{10}(P)$ dB.
 - (iv) For operations in the 1995–2000 MHz band, the power of any emission between 2005–2020 MHz shall be attenuated below the transmitter power (P) in watts by at least $70 + 10 \log_{10}(P)$ dB.

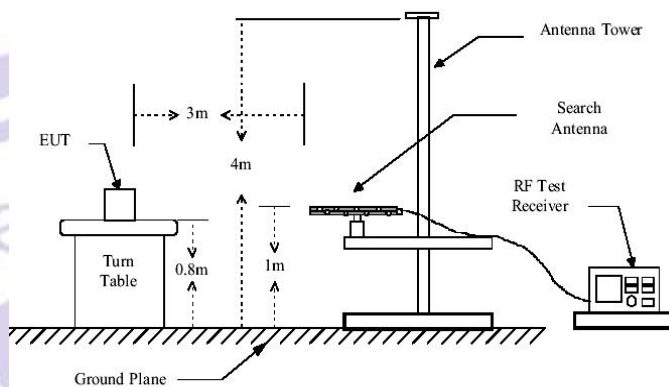
FCC section 27.53 (m) (4)

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

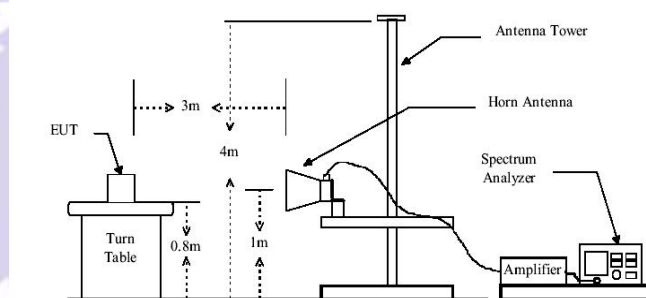
complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

5.8.2. Test Setup

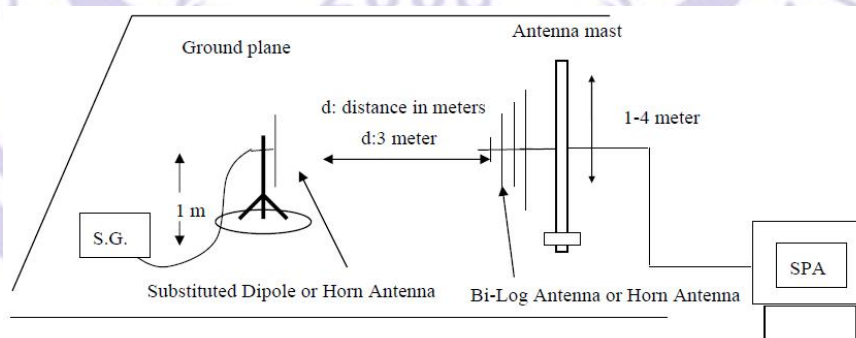
Below 1GHz



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 20MHz Middle	87.20	Vertical	-74.29	3.35	0.38	-71.32	-13	PASS
	5015.07	Vertical	-45.56	7.76	3.75	-41.55		
	7522.53	Vertical	-46.6	9.84	4.94	-41.7		
	10029.93	Vertical	-39.19	10.21	5.32	-34.3		
	12537.4	Vertical	-42.4	11.36	6.02	-37.06		
	15045.07	Vertical	-44	14.52	6.68	-36.16		
LTE BAND 2 20MHz Middle	88.94	Horizontal	-74.25	3.35	0.38	-71.28	-13	PASS
	5069.95	Horizontal	-46.78	7.76	3.75	-42.77		
	7604.97	Horizontal	-46.38	9.84	4.94	-41.48		
	10139.95	Horizontal	-42.12	10.21	5.32	-37.23		
	12674.91	Horizontal	-41.52	11.36	6.02	-36.18		
	15209.98	Horizontal	-45.3	14.52	6.68	-37.46		
LTE BAND 4 20MHz Middle	88.26	Vertical	-74.34	3.35	0.38	-71.37	-13	PASS
	5124.99	Vertical	-46.3	7.79	3.53	-42.04		
	7687.41	Vertical	-40.87	9.88	5.02	-36.01		
	10250.02	Vertical	-37.22	10.25	5.54	-32.51		
	12812.59	Vertical	-43.92	11.38	6.16	-38.7		
	15375.09	Vertical	-46.32	14.56	6.72	-38.48		
LTE BAND 4 20MHz Middle	87.73	Horizontal	-74.3	3.35	0.38	-71.33	-13	PASS
	5020.02	Horizontal	-45.44	7.76	3.75	-41.43		
	7529.95	Horizontal	-46.61	9.84	4.94	-41.71		
	10040.09	Horizontal	-39.03	10.21	5.32	-34.14		
	12549.92	Horizontal	-42.52	11.36	6.02	-37.18		
	15060	Horizontal	-43.92	14.52	6.68	-36.08		
LTE BAND 5 10MHz Middle	88.57	Vertical	-74.46	3.35	0.38	-71.49	-13	PASS
	5070.02	Vertical	-46.87	7.76	3.75	-42.86		
	7604.94	Vertical	-46.44	9.84	4.94	-41.54		
	10139.92	Vertical	-42.13	10.21	5.32	-37.24		
	12674.93	Vertical	-41.62	11.36	6.02	-36.28		
	15209.93	Vertical	-45.5	14.52	6.68	-37.66		
LTE BAND 5 10MHz Middle	88.14	Horizontal	-74.43	3.35	0.38	-71.46	-13	PASS
	5120.01	Horizontal	-46.49	7.79	3.53	-42.23		
	7679.94	Horizontal	-40.95	9.88	5.02	-36.09		
	10239.93	Horizontal	-37.36	10.25	5.54	-32.65		
	12799.90	Horizontal	-44.06	11.38	6.16	-38.84		
	15359.92	Horizontal	-46.37	14.56	6.72	-38.53		
LTE BAND 12 10MHz Middle	87.17	Vertical	-74.33	3.35	0.38	-71.36	-13	PASS
	5014.98	Vertical	-45.48	7.76	3.75	-41.47		
	7522.59	Vertical	-46.64	9.84	4.94	-41.74		
	10029.93	Vertical	-39.14	10.21	5.32	-34.25		
	12537.58	Vertical	-42.55	11.36	6.02	-37.21		

	15044.97	Vertical	-43.88	14.52	6.68	-36.04		
LTE BAND 12 10MHz Middle	88.82	Horizontal	-74.26	3.35	0.38	-71.29	-13	PASS
	5070.04	Horizontal	-46.83	7.76	3.75	-42.82		
	7605.00	Horizontal	-46.47	9.84	4.94	-41.57		
	10140.04	Horizontal	-42.12	10.21	5.32	-37.23		
	12675.03	Horizontal	-41.49	11.36	6.02	-36.15		
	15210.07	Horizontal	-45.32	14.52	6.68	-37.48		
LTE BAND 13 10MHz Middle	88.37	Vertical	-74.36	3.35	0.38	-71.39	-13	PASS
	5124.99	Vertical	-46.37	7.79	3.53	-42.11		
	7687.44	Vertical	-40.89	9.88	5.02	-36.03		
	10249.94	Vertical	-37.24	10.25	5.54	-32.53		
	12812.58	Vertical	-43.92	11.38	6.16	-38.7		
	15375.02	Vertical	-46.38	14.56	6.72	-38.54		
LTE BAND 13 10MHz Middle	87.79	Horizontal	-74.27	3.35	0.38	-71.3	-13	PASS
	5020.00	Horizontal	-45.53	7.76	3.75	-41.52		
	7529.96	Horizontal	-46.57	9.84	4.94	-41.67		
	10040.07	Horizontal	-39.15	10.21	5.32	-34.26		
	12549.99	Horizontal	-42.4	11.36	6.02	-37.06		
	15060.02	Horizontal	-44.03	14.52	6.68	-36.19		
LTE BAND 14 10MHz Middle	88.62	Vertical	-74.48	3.35	0.38	-71.51	-13	PASS
	5069.97	Vertical	-46.85	7.76	3.75	-42.84		
	7604.91	Vertical	-46.45	9.84	4.94	-41.55		
	10139.94	Vertical	-42.23	10.21	5.32	-37.34		
	12674.95	Vertical	-41.58	11.36	6.02	-36.24		
	15210.03	Vertical	-45.45	14.52	6.68	-37.61		
LTE BAND 14 10MHz Middle	88.30	Horizontal	-74.54	3.35	0.38	-71.57	-13	PASS
	5119.95	Horizontal	-46.4	7.79	3.53	-42.14		
	7679.91	Horizontal	-40.94	9.88	5.02	-36.08		
	10239.90	Horizontal	-37.35	10.25	5.54	-32.64		
	12799.97	Horizontal	-44.13	11.38	6.16	-38.91		
	15360.09	Horizontal	-46.43	14.56	6.72	-38.59		
LTE BAND 66 20MHz Middle	87.10	Vertical	-74.35	3.35	0.38	-71.38	-13	PASS
	5015.00	Vertical	-45.49	7.76	3.75	-41.48		
	7522.47	Vertical	-46.57	9.84	4.94	-41.67		
	10030.08	Vertical	-39.15	10.21	5.32	-34.26		
	12537.50	Vertical	-42.42	11.36	6.02	-37.08		
	15044.96	Vertical	-44.04	14.52	6.68	-36.2		
LTE BAND 66 20MHz	88.91	Horizontal	-74.31	3.35	0.38	-71.34	-13	PASS
	5070.07	Horizontal	-46.86	7.76	3.75	-42.85		
	7604.96	Horizontal	-46.35	9.84	4.94	-41.45		

Middle	10139.95	Horizontal	-42.13	10.21	5.32	-37.24		
	12675.03	Horizontal	-41.46	11.36	6.02	-36.12		
	15210.03	Horizontal	-45.31	14.52	6.68	-37.47		
LTE BAND 71 20MHz Middle	88.22	Vertical	-74.34	3.35	0.38	-71.37	-13	PASS
	5124.98	Vertical	-46.47	7.79	3.53	-42.21		
	7687.53	Vertical	-40.89	9.88	5.02	-36.03		
	10249.97	Vertical	-37.22	10.25	5.54	-32.51		
	12812.50	Vertical	-43.88	11.38	6.16	-38.66		
	15374.96	Vertical	-46.37	14.56	6.72	-38.53		
LTE BAND 71 20MHz Middle	87.84	Horizontal	-74.29	3.35	0.38	-71.32	-13	PASS
	5019.99	Horizontal	-45.52	7.76	3.75	-41.51		
	7530.06	Horizontal	-46.56	9.84	4.94	-41.66		
	10040.00	Horizontal	-39.19	10.21	5.32	-34.3		
	12549.94	Horizontal	-42.4	11.36	6.02	-37.06		
	15060.06	Horizontal	-43.88	14.52	6.68	-36.04		

6. PHOTOGRAPHS OF TEST SET-UP

Reference to the appendix I for details.

7. PHOTOGRAPHS OF THE EUT

Reference to the appendix II for details.

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

