

# FCC Test Report

**Client Name** : Shenzhen Baida Moxing Co.,Ltd.

**Client Address** : 2007 Building 11, Tianan Yungu Phase II,  
Bantian street, Longgang District, Shenzhen,  
China

**Product Name** : LiteRadio 1

**Report Date** : Dec. 01, 2022

**Shenzhen Anbotek Compliance Laboratory Limited**



**Shenzhen Anbotek Compliance Laboratory Limited**

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# TEST REPORT

Applicant : Shenzhen Baida Moxing Co.,Ltd.  
Manufacturer : Shenzhen Baida Moxing Co.,Ltd.  
Product Name : LiteRadio 1  
Model No. : LiteRadio 1  
Trade Mark : BETAFPV  
Rating(s) : Input: 5V $\overline{=}$  1A(with DC 3.7V, 1000mAh battery inside)

**Test Standard(s) : FCC Part15 Subpart C, Section 15.247**

**Test Method(s) : ANSI C63.10: 2020**

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart C requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of receipt

Oct. 19, 2022

Date of Test

Oct. 19~ 31, 2022

Prepared by

*Nian xiu Chen*

(Nianxiu Chen)

Approved & Authorized Signer

*Kingkong Jin*

(Kingkong Jin)



**Revision History**

Report Version	Description	Issued Date
R00	Original Issue.	Dec. 01, 2022



## 1. General Information

### 1.1. Client Information

Applicant	:	Shenzhen Baida Moxing Co.,Ltd.
Address	:	2007 Building 11, Tianan Yungu Phase II, Bantian street, Longgang District, Shenzhen, China
Manufacturer	:	Shenzhen Baida Moxing Co.,Ltd.
Address	:	2007 Building 11, Tianan Yungu Phase II, Bantian street, Longgang District, Shenzhen, China
Factory	:	Shenzhen Humming Technology Co.,Ltd
Address	:	Floor 6, Building B, Zone C, Shangxue Technology Industrial City, Shangxue Residents' Group, Xinxue Community, Bantian Street, Longgang District, Shenzhen, China

### 1.2. Description of Device (EUT)

Product Name	:	LiteRadio 1
Model No.	:	LiteRadio 1
Trade Mark	:	BETAFPV
Test Power Supply	:	AC 120V, 60Hz for adapter/ DC 3.7V battery inside
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)
Adapter	:	N/A
<b>RF Specification</b>		
Operation Mode	:	<input type="checkbox"/> DSSS <input checked="" type="checkbox"/> FHSS
Operation Frequency	:	2404~2474.2 MHz
Number of Channel	:	235 Channels
Modulation Type	:	GFSK
Antenna Type	:	PCB antenna
Antenna Gain(Peak)	:	3.24 dBi (Provided by customer)
<b>Remark:</b> 1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.		





### 1.3. Auxiliary Equipment Used During Test

Description	Rating(s)
Adapter	M/N: A2023 Input: AC 100-240V, 0.7A, 50-60Hz USB1 Output: DC 5V, 2.4A USB2 Output: DC 5V, 2.4A

### 1.4. Description of Test Configuration

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
01	2404.0	48	2418.1	95	2432.2	142	2446.3	189	2460.4
02	2404.3	49	2418.4	96	2432.5	143	2446.6	190	2460.7
03	2404.6	50	2418.7	97	2432.8	144	2446.9	191	2461.0
04	2404.9	51	2419	98	2433.1	145	2447.2	192	2461.3
05	2405.2	52	2419.3	99	2433.4	146	2447.5	193	2461.6
06	2405.5	53	2419.6	100	2433.7	147	2447.8	194	2461.9
07	2405.8	54	2419.9	101	2434.0	148	2448.1	195	2462.2
08	2406.1	55	2420.2	102	2434.3	149	2448.4	196	2462.5
09	2406.4	56	2420.5	103	2434.6	150	2448.7	197	2462.8
10	2406.7	57	2420.8	104	2434.9	151	2449.0	198	2463.1
11	2407.0	58	2421.1	105	2435.2	152	2449.3	199	2463.4
12	2407.3	59	2421.4	106	2435.5	153	2449.6	200	2463.7
13	2407.6	60	2421.7	107	2435.8	154	2449.9	201	2464.0
14	2407.9	61	2422.0	108	2436.1	155	2450.2	202	2464.3
15	2408.2	62	2422.3	109	2436.4	156	2450.5	203	2464.6
16	2408.5	63	2422.6	110	2436.7	157	2450.8	204	2464.9
17	2408.8	64	2422.9	111	2437	158	2451.1	205	2465.2
18	2409.1	65	2423.2	112	2437.3	159	2451.4	206	2465.5
19	2409.4	66	2423.5	113	2437.6	160	2451.7	207	2465.8
20	2409.7	67	2423.8	114	2437.9	161	2452.0	208	2466.1
21	2410.0	68	2424.1	115	2438.2	162	2452.3	209	2466.4
22	2410.3	69	2424.4	116	2438.5	163	2452.6	210	2466.7
23	2410.6	70	2424.7	117	2438.8	164	2452.9	211	2467.0



24	2410.9	71	2425.0	<b>118</b>	<b>2439.1</b>	165	2453.2	212	2467.3
25	2411.2	72	2425.3	119	2439.4	166	2453.5	213	2467.6
26	2411.5	73	2425.6	120	2439.7	167	2453.8	214	2467.9
27	2411.8	74	2425.9	121	2440.0	168	2454.1	215	2468.2
28	2412.1	75	2426.2	122	2440.3	169	2454.4	216	2468.5
29	2412.4	76	2426.5	123	2440.6	170	2454.7	217	2468.8
30	2412.7	77	2426.8	124	2440.9	171	2455.0	218	2469.1
31	2413.0	78	2427.1	125	2441.2	172	2455.3	219	2469.4
32	2413.3	79	2427.4	126	2441.5	173	2455.6	220	2469.7
33	2413.6	80	2427.7	127	2441.8	174	2455.9	221	2470.0
34	2413.9	81	2428.0	128	2442.1	175	2456.2	222	2470.3
35	2414.2	82	2428.3	129	2442.4	176	2456.5	223	2470.6
36	2414.5	83	2428.6	130	2442.7	177	2456.8	224	2470.9
37	2414.8	84	2428.9	131	2443.0	178	2457.1	225	2471.2
38	2415.1	85	2429.2	132	2443.3	179	2457.4	226	2471.5
39	2415.4	86	2429.5	133	2443.6	180	2457.7	227	2471.8
40	2415.7	87	2429.8	134	2443.9	181	2458.0	228	2472.1
41	2416.0	88	2430.1	135	2444.2	182	2458.3	229	2472.4
42	2416.3	89	2430.4	136	2444.5	183	2458.6	230	2472.7
43	2416.6	90	2430.7	137	2444.8	184	2458.9	231	2473.0
44	2416.9	91	2431.0	138	2445.1	185	2459.2	232	2473.3
45	2417.2	92	2431.3	139	2445.4	186	2459.5	233	2473.6
46	2417.5	93	2431.6	140	2445.7	187	2459.8	234	2473.9
47	2417.8	94	2431.9	141	2446.0	188	2460.1	<b>235</b>	<b>2474.2</b>

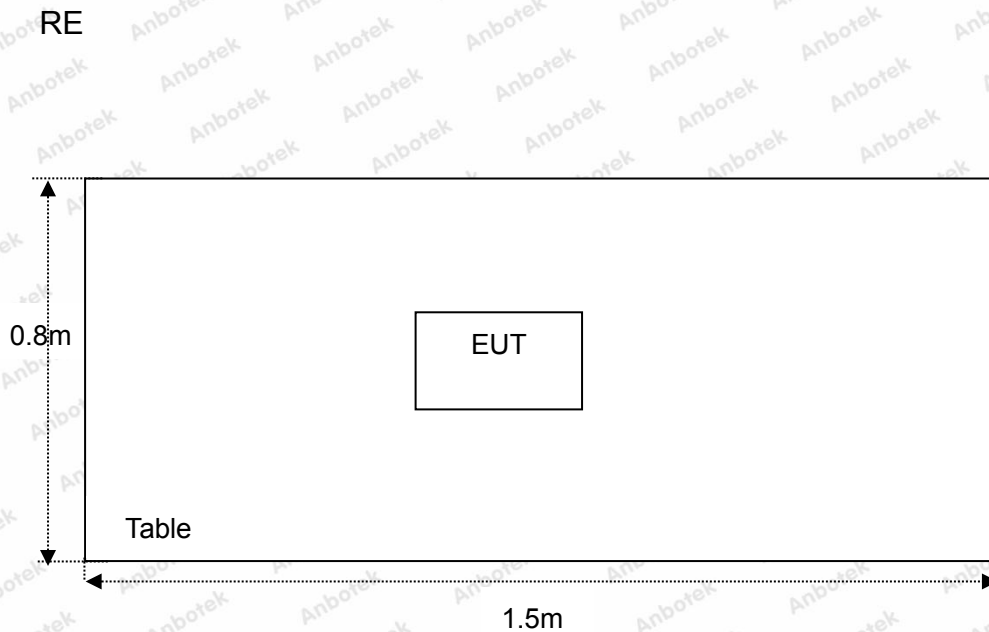
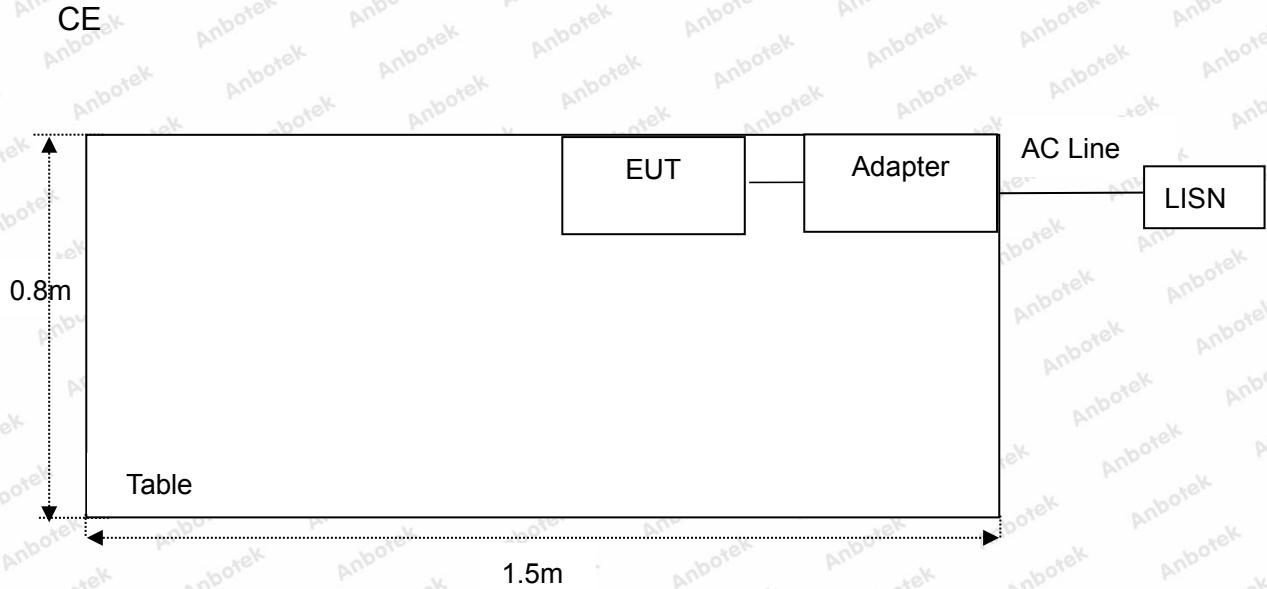
## Note:

1.EUT was tested with channel 01, 118 and 235.





## 1.5. Description Of Test Setup



### 1.6. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	Rohde & Schwarz	ENV216	100055	Oct. 23, 2022	1 Year
2.	Three Phase V-type Artificial Power Network	CYBERTEK	EM5040DT	E215040DT001	Jul. 05, 2022	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Oct. 13, 2022	1 Year
4.	EMI Test Receiver	Rohde & Schwarz	ESR26	101481	Oct. 23, 2022	1 Year
5.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Oct. 22, 2022	1 Year
6.	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Oct. 13, 2022	1 Year
7.	EMI Preamplifier	SKET Electronic	LNPA-0118G-45	SKET-PA-002	Oct. 13, 2022	1 Year
8.	Double Ridged Horn Antenna	SCHWARZBECK	BBHA 9120D	02555	Oct. 16, 2022	3 Year
9.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Oct. 23, 2022	1 Year
10.	Loop Antenna	Schwarzbeck	FMZB1519B	00053	Oct. 23, 2022	1 Year
11.	Horn Antenna	A-INFO	LB-180400-KF	J211060628	Oct. 23, 2022	1 Year
12.	Pre-amplifier	SONOMA	310N	186860	Oct. 23, 2022	1 Year
13.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
14.	MXA Spectrum Analysis	KEYSIGHT	N9020A	MY53280032	Oct. 13, 2022	1 Year
15.	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Oct. 13, 2022	1 Year
16.	Signal Generator	Agilent	E4421B	MY41000743	Oct. 13, 2022	1 Year
17.	DC Power Supply	IVYTECH	IV3605	1804D360510	Oct. 22, 2022	1 Year
18.	Constant Temperature Humidity Chamber	ZHONGJIAN	ZJ-KHWS80B	N/A	Oct. 19, 2022	1 Year



### 1.7. Measurement Uncertainty

Radiation Uncertainty	:	Ur = 3.9 dB (Horizontal)
	:	Ur = 3.8 dB (Vertical)
Conduction Uncertainty	:	Uc = 3.4 dB

### 1.8. Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

#### FCC-Registration No.: 184111

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 184111.

#### ISED-Registration No.: 8058A

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A.

#### Test Location

Shenzhen Anbotek Compliance Laboratory Limited.

1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518102





## 2. Summary of Test Results

Standard Section	Test Item	Result
15.203/15.247(c)	Antenna Requirement	PASS
15.207	Conducted Emission	PASS
15.205/15.209	Spurious Emission	PASS
15.247(b)(1)	Conducted Peak Output Power	PASS
15.247(a)(1)	20dB Occupied Bandwidth	PASS
15.247(a)(1)	Carrier Frequencies Separation	PASS
15.247(a)(1)(iii)	Number of Hopping Channel	PASS
15.247(a)(1)(iii)	Dwell Time	PASS
15.247(d)	Band Edge	PASS
<b>Remark:</b> "N/A" is an abbreviation for Not Applicable.		



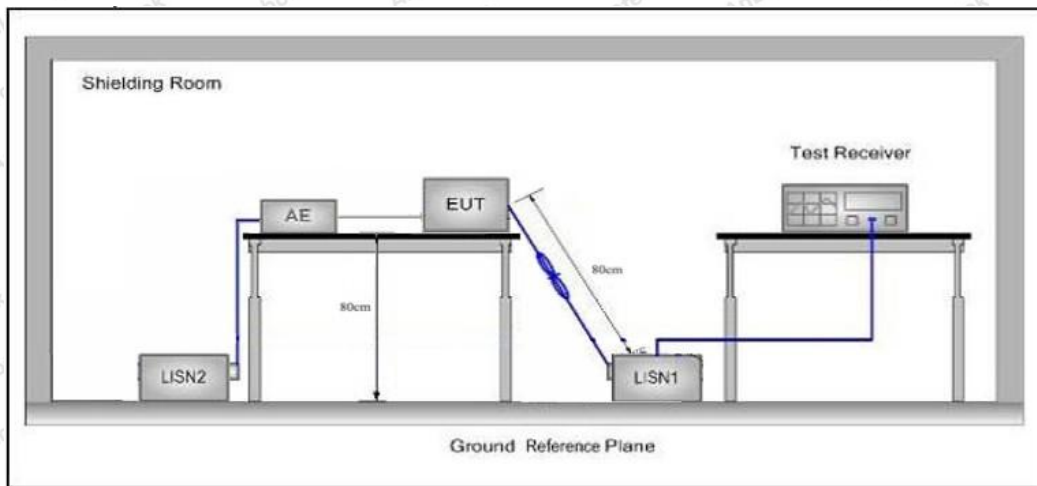
## 3. Conducted Emission Test

### 3.1. Test Standard and Limit

Test Standard	FCC Part15 Section 15.207		
	Frequency	Maximum RF Line Voltage (dBuV)	
		Quasi-peak Level	Average Level
Test Limit	150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
	500kHz~5MHz	56	46
	5MHz~30MHz	60	50

**Remark:** (1) \*Decreasing linearly with logarithm of the frequency.  
 (2) The lower limit shall apply at the transition frequency.

### 3.2. Test Setup



### 3.3. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.10: 2020 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

### 3.4. Test Data

#### PASS

During the test, pre-scan all modes, only the worst case is recorded in the report.

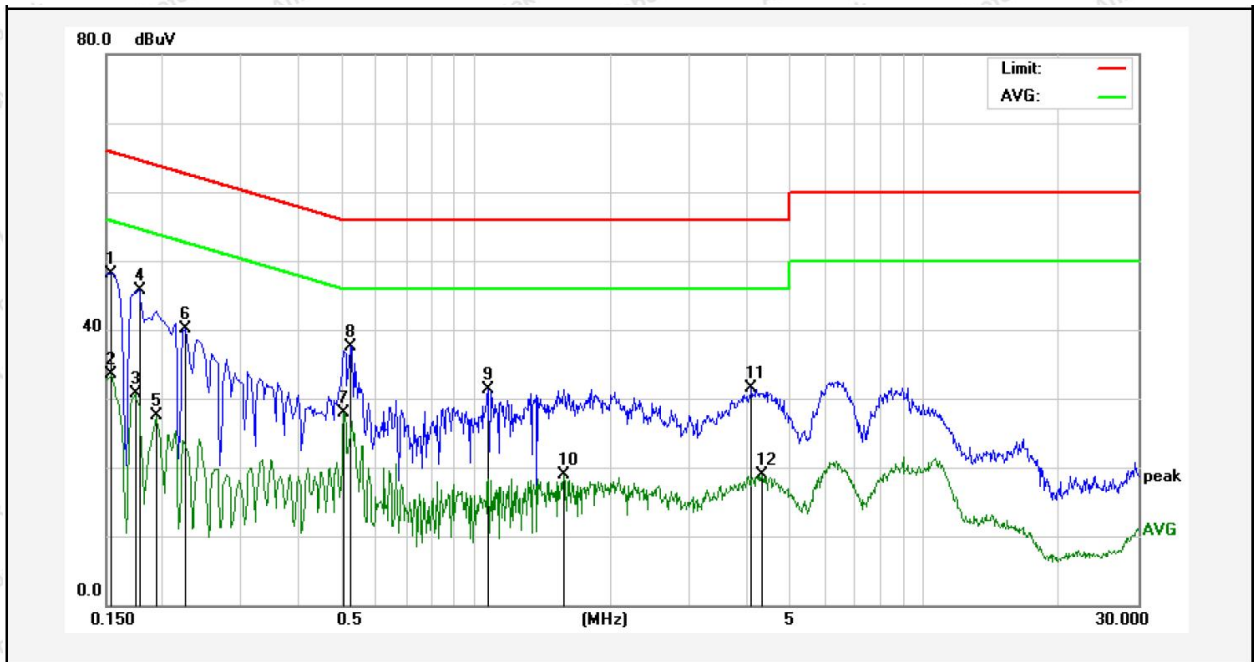
AC conducted emission pre-test at both at AC 120V/60Hz and AC 240V/60Hz modes, recorded worst case AC 120V/60Hz.

Please to see the following pages.



### Conducted Emission Test Data

Test Site: 1# Shielded Room  
 Operating Condition: Low CH (2404MHz)  
 Test Specification: AC 120V, 60Hz for adapter  
 Comment: Live Line  
 Temp.(°C)/Hum.(%RH): 24.5°C/51%RH



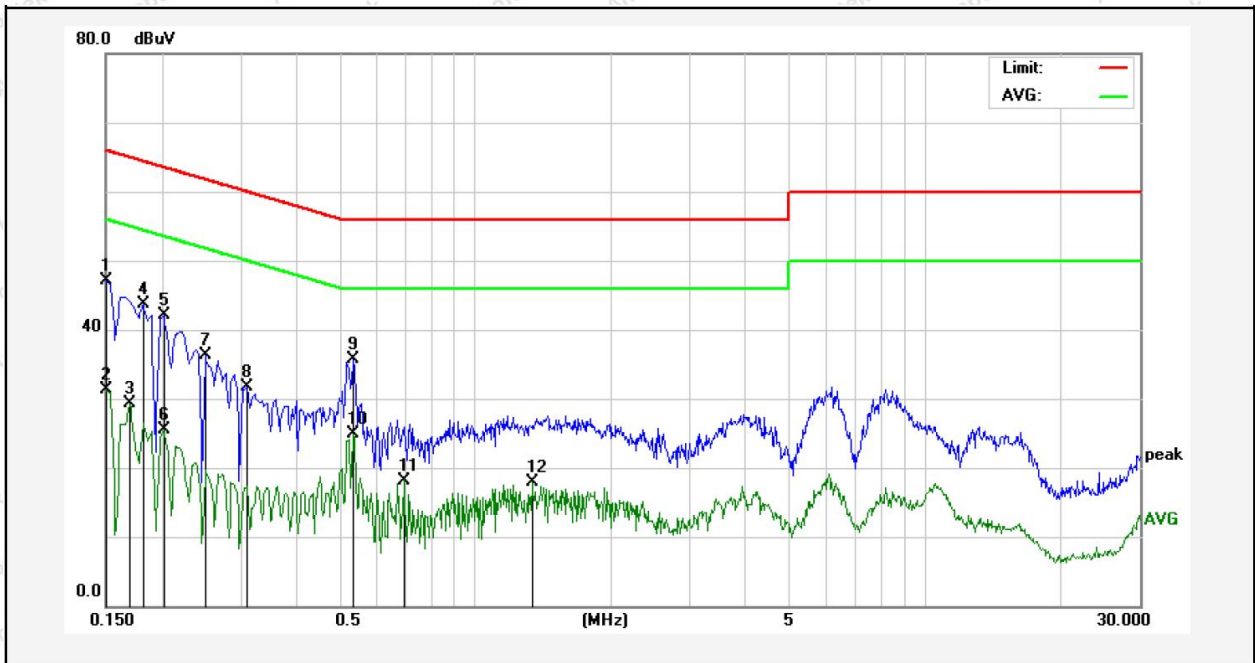
No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1539	38.49	9.70	48.19	65.78	-17.59	QP	
2	0.1539	23.81	9.70	33.51	55.78	-22.27	AVG	
3	0.1740	20.90	9.71	30.61	54.76	-24.15	AVG	
4	0.1780	36.07	9.71	45.78	64.57	-18.79	QP	
5	0.1940	17.75	9.71	27.46	53.86	-26.40	AVG	
6	0.2260	30.32	9.71	40.03	62.59	-22.56	QP	
7	0.5100	18.17	9.76	27.93	46.00	-18.07	AVG	
8	0.5260	27.80	9.76	37.56	56.00	-18.44	QP	
9	1.0660	21.65	9.74	31.39	56.00	-24.61	QP	
10	1.5700	9.26	9.73	18.99	46.00	-27.01	AVG	
11	4.1180	21.71	9.73	31.44	56.00	-24.56	QP	
12	4.3380	9.20	9.73	18.93	46.00	-27.07	AVG	





### Conducted Emission Test Data

Test Site: 1# Shielded Room  
 Operating Condition: Low CH (2404MHz)  
 Test Specification: AC 120V, 60Hz for adapter  
 Comment: Neutral Line  
 Temp.(°C)/Hum.(%RH): 24.5°C/51%RH



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1500	37.38	9.69	47.07	65.99	-18.92	QP	
2	0.1500	21.54	9.69	31.23	55.99	-24.76	AVG	
3	0.1700	19.62	9.71	29.33	54.96	-25.63	AVG	
4	0.1819	34.03	9.71	43.74	64.39	-20.65	QP	
5	0.2020	32.30	9.71	42.01	63.52	-21.51	QP	
6	0.2020	15.72	9.71	25.43	53.52	-28.09	AVG	
7	0.2500	26.54	9.71	36.25	61.75	-25.50	QP	
8	0.3100	22.06	9.73	31.79	59.97	-28.18	QP	
9	0.5340	25.92	9.76	35.68	56.00	-20.32	QP	
10	0.5340	15.05	9.76	24.81	46.00	-21.19	AVG	
11	0.6900	8.45	9.75	18.20	46.00	-27.80	AVG	
12	1.3340	8.15	9.73	17.88	46.00	-28.12	AVG	



## 4. Radiation Spurious Emission and Band Edge

### 4.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.209 and 15.205				
Test Limit	Frequency (MHz)	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz~0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz~1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz~30MHz	30	-	-	30
	30MHz~88MHz	100	40.0	Quasi-peak	3
	88MHz~216MHz	150	43.5	Quasi-peak	3
	216MHz~960MHz	200	46.0	Quasi-peak	3
	960MHz~1000MHz	500	54.0	Quasi-peak	3
	Above 1000MHz		500	54.0	Average
		-	74.0	Peak	3

**Remark:**

- (1)The lower limit shall apply at the transition frequency.
- (2) 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

### 4.2. Test Setup

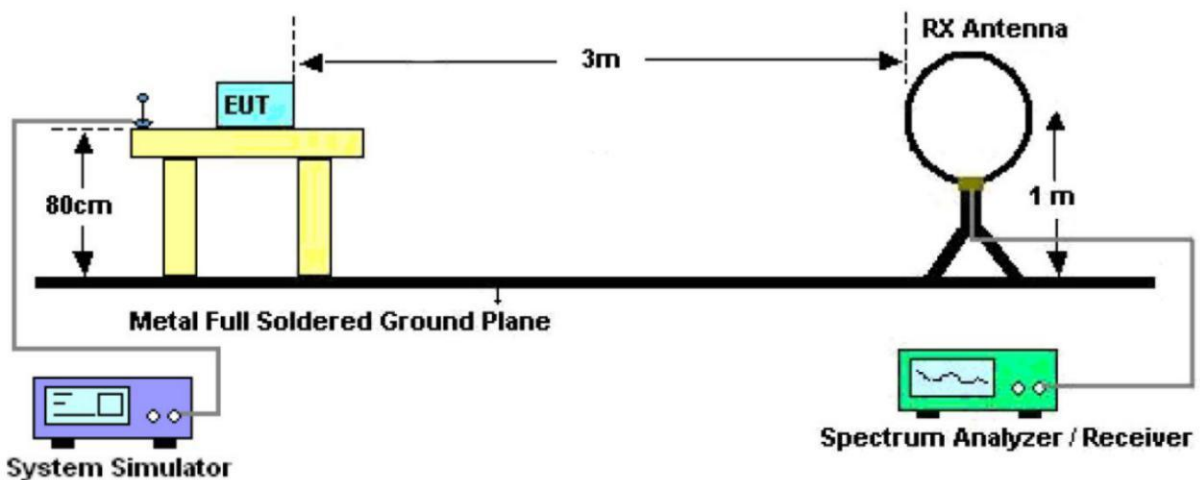


Figure 1. Below 30MHz



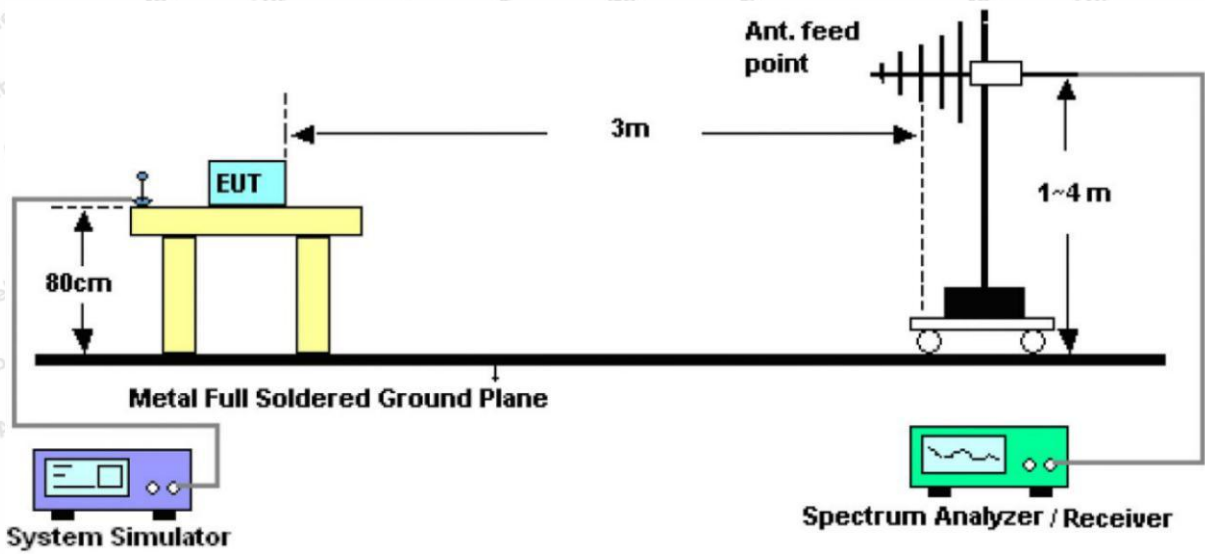


Figure 2. 30MHz to 1GHz

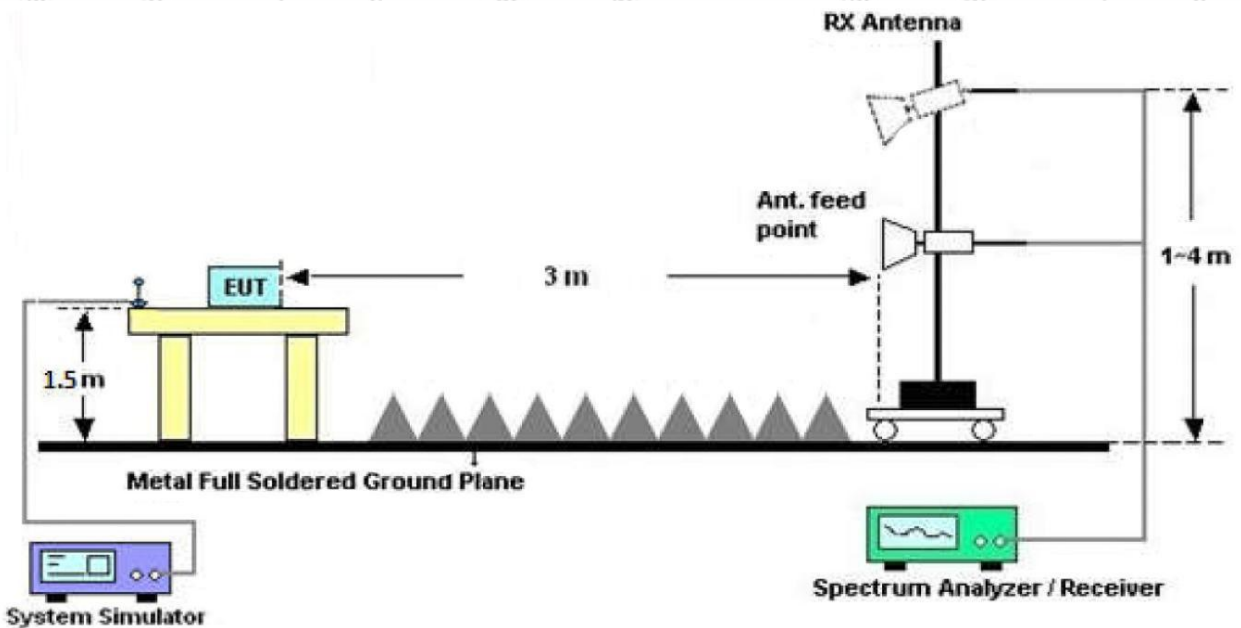


Figure 3. Above 1 GHz

### 4.3. Test Procedure

For below 1GHz: The EUT is placed on a turntable, which is 0.8m above the ground plane.

For above 1GHz: The EUT is placed on a turntable, which is 1.5m above the ground plane.

The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Rotated the EUT through three orthogonal axes to determine the maximum emissions, both horizontal and vertical polarization of the antenna are set on test. The EUT is tested in 9\*6\*6 Chamber. The device is evaluated in xyz orientation.





For the radiated emission test above 1GHz:

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

For 9kHz to 150kHz, Set the spectrum analyzer as:

RBW = 200Hz, VBW =1kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 150kHz to 30MHz, Set the spectrum analyzer as:

RBW = 9KHz, VBW =30kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 30MHz to 1000MHz, Set the spectrum analyzer as:

RBW = 120kHz, VBW =300kHz,Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For above 1GHz,Set the spectrum analyzer as:

RBW =1MHz, VBW =1MHz, Detector= Peak, Trace mode= Max hold, Sweep- auto couple.

For average measurement: use duty cycle correction factor method (DCCF)

Average level = Peak level + DCCF

#### 4.4. Test Data

PASS

During the test, Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the X-axis is the worst case.

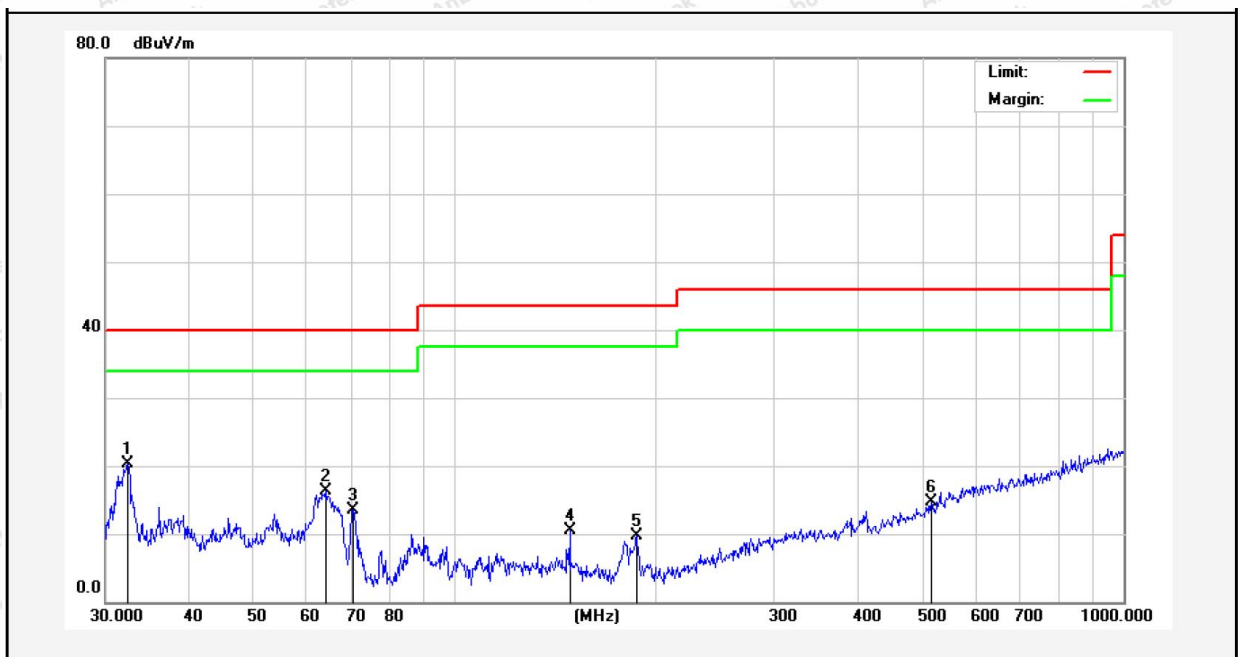
The test results of 9kHz-30MHz was attenuated more than 20dB below the permissible limits, so the results don't record in the report.

During the test, pre-scan all modes, only the worst case is recorded in the report.



### Test Results (30~1000MHz)

Test Mode: Low CH (2404MHz)  
 Power Source: DC 3.7V battery inside  
 Polarization: Vertical  
 Temp.(°C)/Hum.(%RH): 22.6°C/56%RH

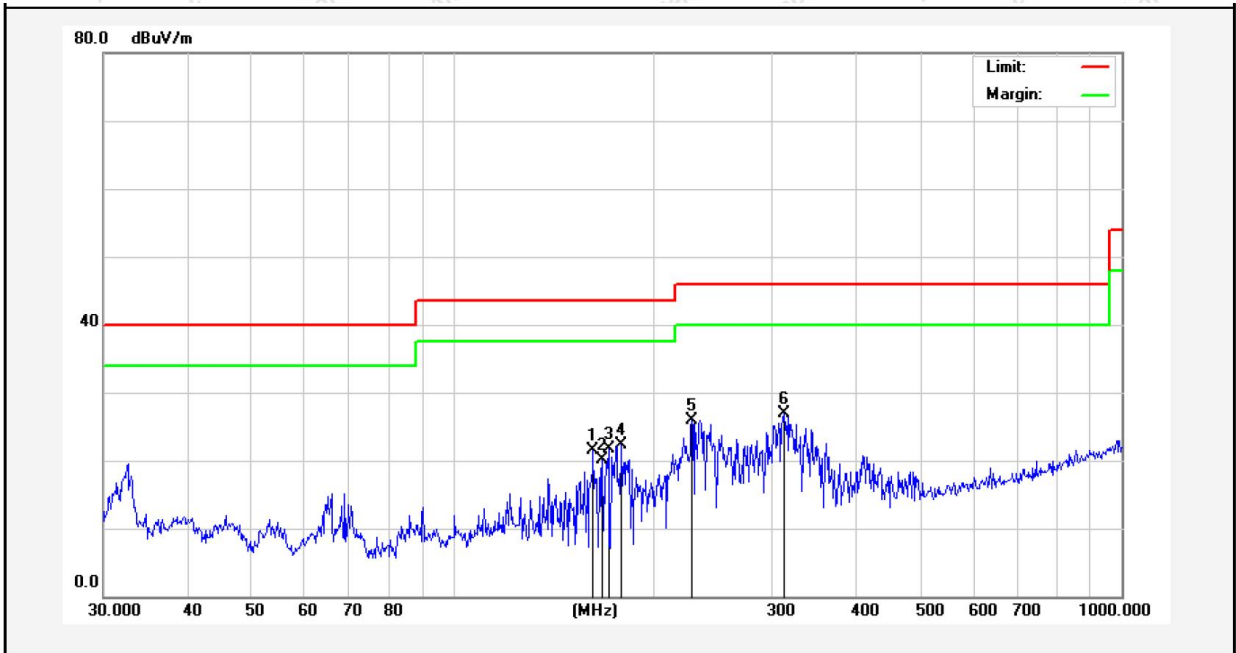


No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	32.4059	37.78	-17.57	20.21	40.00	-19.79	QP			
2	64.2074	35.35	-19.03	16.32	40.00	-23.68	QP			
3	70.3365	33.45	-19.96	13.49	40.00	-26.51	QP			
4	148.4410	32.61	-22.10	10.51	43.50	-32.99	QP			
5	187.0958	30.02	-20.27	9.75	43.50	-33.75	QP			
6	515.4374	26.75	-12.08	14.67	46.00	-31.33	QP			



**Test Results (30~1000MHz)**

Test Mode: Low CH (2404MHz)  
 Power Source: DC 3.7V battery inside  
 Polarization: Horizontal  
 Temp.(°C)/Hum.(%RH): 22.6°C/56%RH



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	162.0414	45.35	-23.94	21.41	43.50	-22.09	QP			
2	167.2368	43.75	-23.71	20.04	43.50	-23.46	QP			
3	170.7926	45.29	-23.57	21.72	43.50	-21.78	QP			
4	178.7584	45.53	-23.23	22.30	43.50	-21.20	QP			
5	227.6906	47.71	-21.87	25.84	46.00	-20.16	QP			
6	312.1794	43.79	-16.88	26.91	46.00	-19.09	QP			





**Test Results (1GHz-25GHz)**

Test channel: Lowest						
Peak value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4808.00	30.56	15.27	45.83	74.00	-28.17	Vertical
7212.00	31.64	18.09	49.73	74.00	-24.27	Vertical
9616.00	33.21	23.76	56.97	74.00	-17.04	Vertical
12020.00	*			74.00		Vertical
14424.00	*			74.00		Vertical
4808.00	30.90	15.27	46.17	74.00	-27.83	Horizontal
7212.00	31.48	18.09	49.57	74.00	-24.43	Horizontal
9616.00	30.07	23.76	53.83	74.00	-20.17	Horizontal
12020.00	*			74.00		Horizontal
14424.00	*			74.00		Horizontal
Average value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
4808.00	19.94	15.27	35.21	54.00	-18.79	Vertical
7212.00	20.67	18.09	38.76	54.00	-15.24	Vertical
9616.00	22.23	23.76	45.99	54.00	-8.02	Vertical
12020.00	*			54.00		Vertical
14424.00	*			54.00		Vertical
4808.00	19.25	15.27	34.52	54.00	-19.48	Horizontal
7212.00	20.54	18.09	38.63	54.00	-15.37	Horizontal
9616.00	19.38	23.76	43.14	54.00	-10.86	Horizontal
12020.00	*			54.00		Horizontal
14424.00	*			54.00		Horizontal



**Test Results (1GHz-25GHz)**

Test channel: Middle						
Peak value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4878.20	30.58	15.42	46.00	74.00	-28.00	Vertical
7317.30	31.49	18.02	49.51	74.00	-24.49	Vertical
9756.40	32.22	23.80	56.02	74.00	-17.99	Vertical
12195.50	*			74.00		Vertical
14634.60	*			74.00		Vertical
4878.20	30.60	15.42	46.02	74.00	-27.98	Horizontal
7317.30	31.47	18.02	49.49	74.00	-24.51	Horizontal
9756.40	29.77	23.80	53.57	74.00	-20.43	Horizontal
12195.50	*			74.00		Horizontal
14634.60	*			74.00		Horizontal
Average value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
4878.20	19.67	15.42	35.09	54.00	-18.91	Vertical
7317.30	20.77	18.02	38.79	54.00	-15.21	Vertical
9756.40	22.09	23.80	45.89	54.00	-8.11	Vertical
12195.50	*			54.00		Vertical
14634.60	*			54.00		Vertical
4878.20	19.16	15.42	34.58	54.00	-19.42	Horizontal
7317.30	20.10	18.02	38.12	54.00	-15.88	Horizontal
9756.40	19.89	23.80	43.69	54.00	-10.31	Horizontal
12195.50	*			54.00		Horizontal
14634.60	*			54.00		Horizontal



**Test Results (1GHz-25GHz)**

Test channel: Highest						
Peak value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4948.40	30.85	15.58	46.43	74.00	-27.57	Vertical
7422.60	31.50	17.93	49.43	74.00	-24.57	Vertical
9896.80	32.77	23.83	56.60	74.00	-17.41	Vertical
12371.00	*			74.00		Vertical
14845.20	*			74.00		Vertical
4948.40	30.67	15.58	46.25	74.00	-27.75	Horizontal
7422.60	31.50	17.93	49.43	74.00	-24.57	Horizontal
9896.80	30.45	23.83	54.28	74.00	-19.72	Horizontal
12371.00	*			74.00		Horizontal
14845.20	*			74.00		Horizontal
Average value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
4948.40	20.79	15.58	36.37	54.00	-17.63	Vertical
7422.60	21.78	17.93	39.71	54.00	-14.29	Vertical
9896.80	22.64	23.83	46.47	54.00	-7.54	Vertical
12371.00	*			54.00		Vertical
14845.20	*			54.00		Vertical
4948.40	20.60	15.58	36.18	54.00	-17.82	Horizontal
7422.60	21.47	17.93	39.40	54.00	-14.60	Horizontal
9896.80	19.79	23.83	43.62	54.00	-10.38	Horizontal
12371.00	*			54.00		Horizontal
14845.20	*			54.00		Horizontal

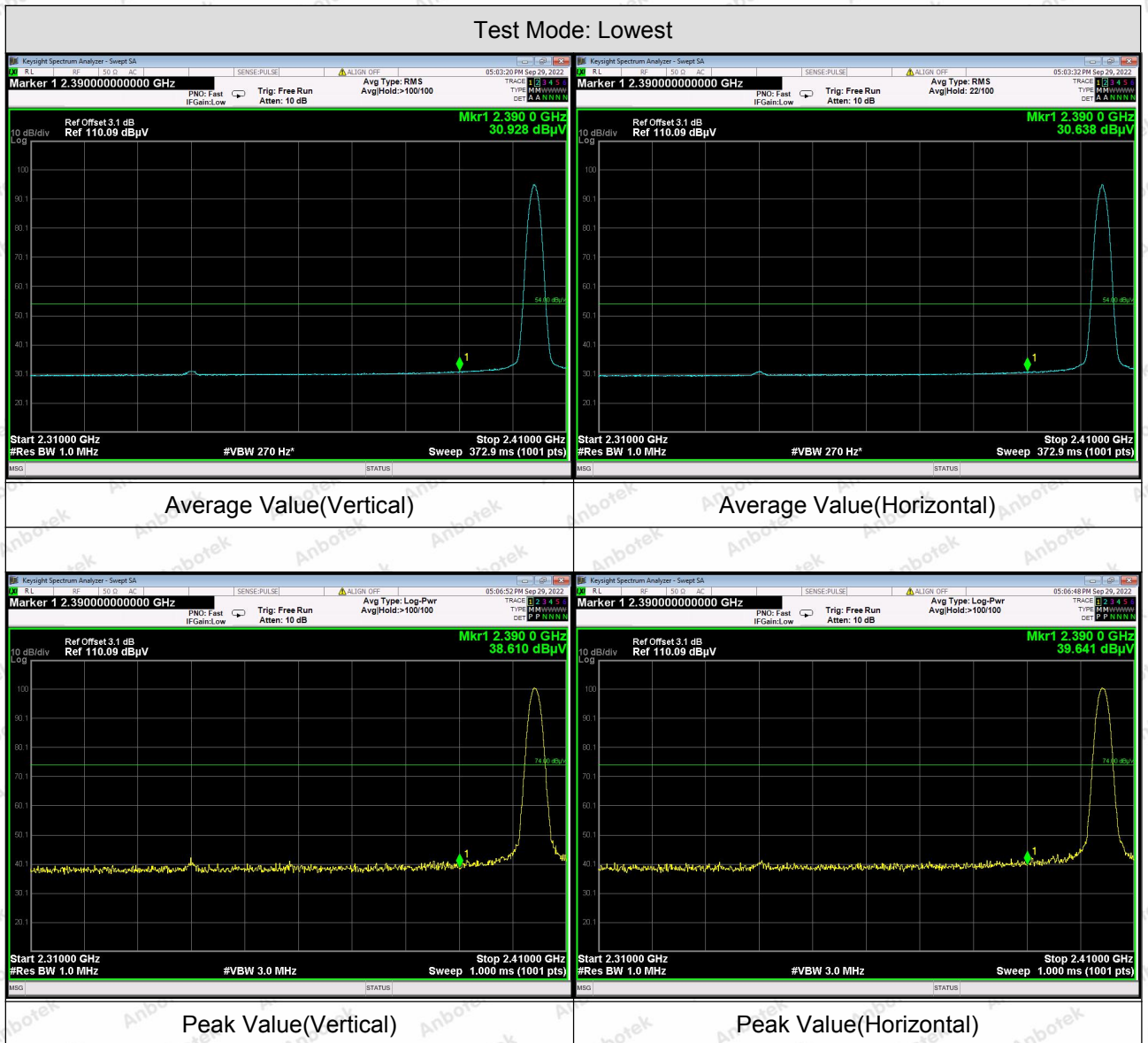
Remark:

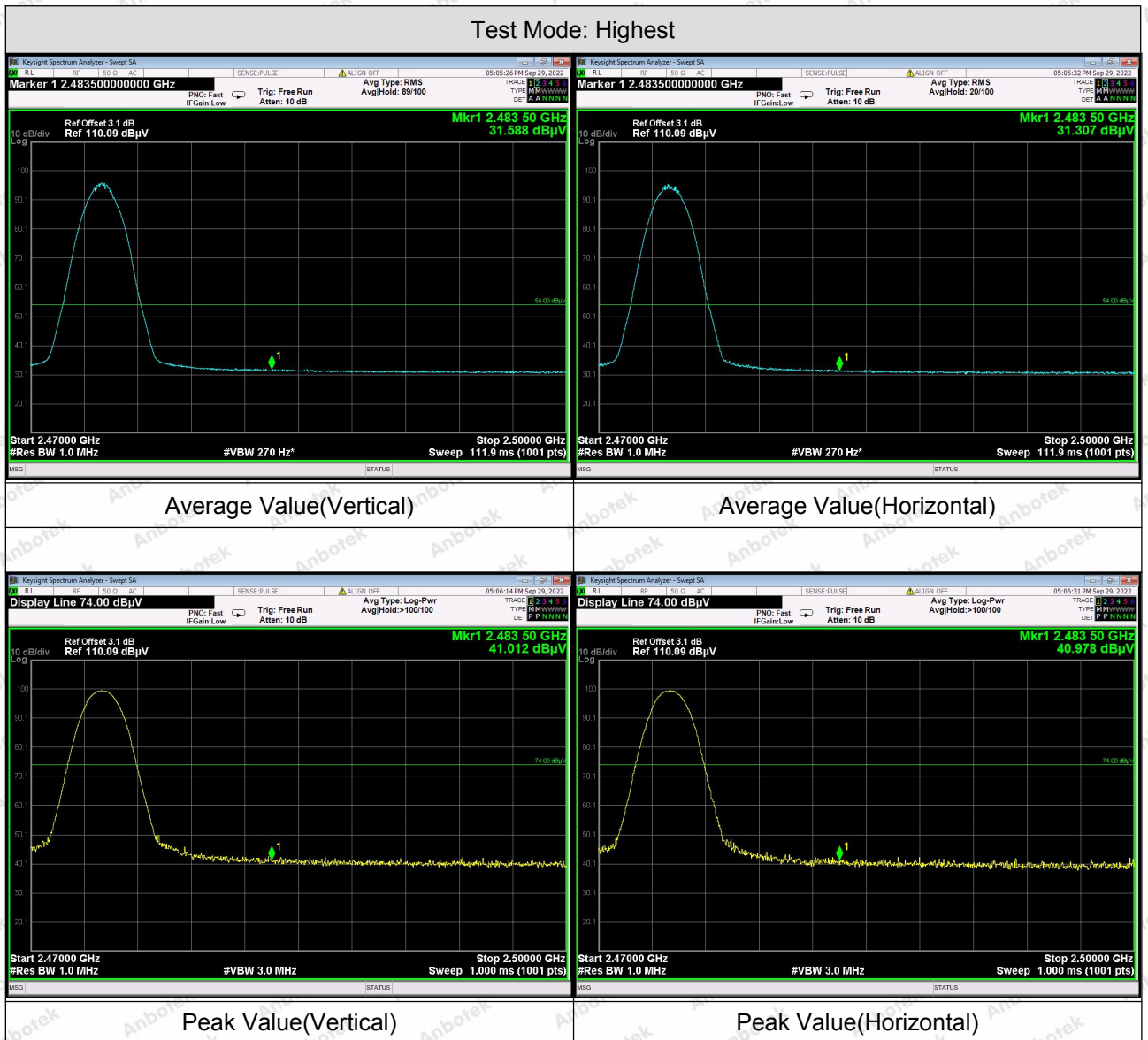
1. Result = Reading + Factor
2. "\*" means the test results were attenuated more than 20dB below the permissible limits, so the results don't record in the report.





### Radiated Band Edge:



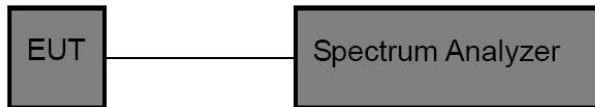


## 5. Maximum Peak Output Power Test

### 5.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.247 (b)(1)
Test Limit	For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

### 5.2. Test Setup



### 5.3. Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above,
2. Spectrum Setting:
  - RBW > the 20 dB bandwidth of the emission being measured
  - Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel
  - VBW ≥ RBW
  - Sweep = auto
  - Detector function = peak
  - Trace = max hold

### 5.4. Test Data

Pass

*Please refer to Appendix C of the Appendix Test Data.*



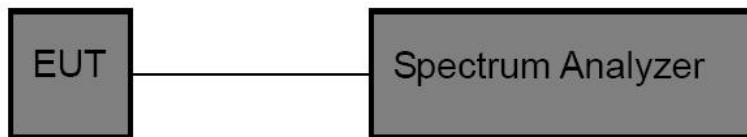


## 6. 20DB Occupy Bandwidth Test

### 6.1. Test Standard

Test Standard	FCC Part15 C Section 15.247 (a)(1)
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### 6.2. Test Setup



### 6.3. Test Procedure

Using the following spectrum analyzer settings:

1. Span= approximately 2 to 3 times the 20dB bandwidth, centered on a hopping channel.
2. Set the RBW  $\geq 1\%$  of the 20 dB bandwidth.
3. Set the VBW  $\geq$ RBW
4. Sweep time = auto couple.
5. Detector function = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.

### 6.4. Test Data

Pass

*Please refer to Appendix A of the Appendix Test Data.*

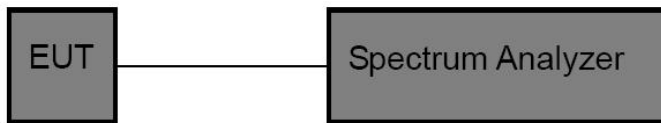


## 7. Carrier Frequency Separation Test

### 7.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.247 (a)(1)
Test Limit	2/3 of the 20dB bandwidth base on the transmission power is less than 0.125W.

### 7.2. Test Setup



### 7.3. Test Procedure

The EUT must have its hopping function enabled. Using the following spectrum analyzer settings:

1. Span= Wide enough to capture the peaks of two adjacent channels
2. Set the RBW =approximately 30% of the channel spacing.
3. Set the VBW  $\geq$  RBW.
4. Sweep time = auto couple.
5. Detector function = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.

### 7.4. Test Data

Pass

*Please refer to Appendix D of the Appendix Test Data.*

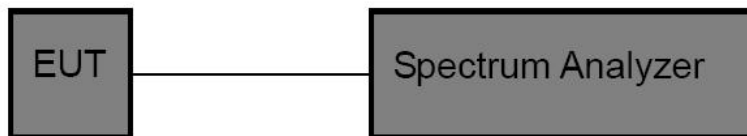


## 8. Number of Hopping Channel Test

### 8.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.247 (a)(1)(iii)
Test Limit	>15 channels

### 8.2. Test Setup



### 8.3. Test Procedure

The EUT must have its hopping function enabled. Using the following spectrum analyzer setting:

1. Span= the frequency band of operation
2. Set the RBW = less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
3. Set the VBW  $\geq$  RBW.
4. Sweep time = auto couple.
5. Detector function = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.

### 8.4. Test Data

Pass

*Please refer to Appendix F of the Appendix Test Data.*



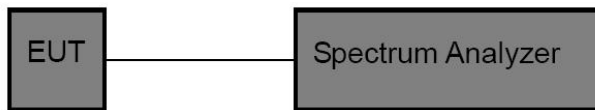


## 9. Dwell Time Test

### 9.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.247 (a)(1)(iii)
Test Limit	0.4 s

### 9.2. Test Setup



### 9.3. Test Procedure

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

1. Span= zero span, centered on a hopping channel
2. Set the RBW = 1 MHz.
3. Set the VBW  $\geq$  RBW.
4. Sweep time = as necessary to capture the entire dwell time per hopping channel.
5. Detector function = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.

### 9.4. Test Data

Pass

*Please refer to Appendix E of the Appendix Test Data.*

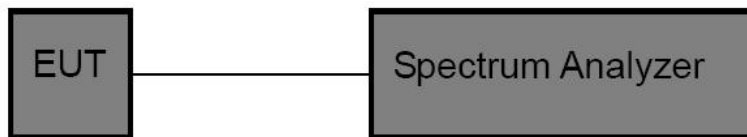


## 10. 100kHz Bandwidth of Frequency Band Edge Requirement

### 10.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.247 (d)
Test Limit	In any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a).

### 10.2. Test Setup



### 10.3. Test Procedure

The EUT must have its hopping/Non-hopping function enabled. Using the following spectrum analyzer setting:

1. Set the RBW = 100kHz.
2. Set the VBW = 300kHz.
3. Sweep time = auto couple.
4. Detector function = peak.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.

### 10.4. Test Data

Pass

Please refer to Appendix G & Appendix H of the Appendix Test Data.



## 11. Antenna Requirement

### 11.1. Test Standard and Requirement

Test Standard	FCC Part15 Section 15.203 /247(c)
Requirement	<p>1) 15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</p> <p>2) 15.247(c) (1)(i) requirement: Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.</p>

### 11.2. Antenna Connected Construction

The antenna is PCB Antenna which permanently attached, and the best case gain of the antenna is 3.24dBi. It complies with the standard requirement.





## **APPENDIX I -- TEST SETUP PHOTOGRAPH**

Please refer to separated files Appendix I -- Test Setup Photograph

## **APPENDIX II -- EXTERNAL PHOTOGRAPH**

Please refer to separated files Appendix II -- External Photograph

## **APPENDIX III -- INTERNAL PHOTOGRAPH**

Please refer to separated files Appendix III -- Internal Photograph

----- End of Report -----

