



# FCC TEST REPORT

## FCC ID: 2ARNP-01000SJ03P

Product	:	FirePoint
Model Name	:	SJ03P
Brand	:	尚花
Report No.	:	PTC20050901301E-FC02
<b>Prepared for</b>		
Hunan Beyondfire Technologies Co.,Ltd.		
No.104,Innovation Venture park A2,YongTai road,Liuyang HI-TECH Industrial Development Zone,Hunan Province,China.		
<b>Prepared by</b>		
Precise Testing & Certification Co., Ltd.		
Building 1, No. 6, Tongxin Road, Dongcheng Street, Dongguan, Guangdong, China		



## 1 TEST RESULT CERTIFICATION

Applicant's name : Hunan Beyondfire Technologies Co.,Ltd.  
Address : No.104,Innovation Venture park A2,YongTai road,Liuyang HI-TECH Industrial Development Zone,Hunan Province,China.  
Manufacture's name : Hunan Beyondfire Technologies Co.,Ltd.  
Address : No.104,Innovation Venture park A2,YongTai road,Liuyang HI-TECH Industrial Development Zone,Hunan Province,China.  
Product name : FirePoint  
Model name : SJ03P  
Standards : FCC Part15 Subpart C 2019, Section 15.247  
Test procedure : ANSI C63.10: 2013, KDB558074 D01 DTS Meas Guidance v05  
Test Date : August 01, 2020 to August 17, 2020  
Date of Issue : August 23, 2020  
Test Result : Pass

This device described above has been tested by PTC, 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:

A handwritten signature in black ink that reads 'Leo Yang'.

Leo Yang / Engineer

Technical Manager:

A handwritten signature in black ink that appears to read 'Chris Du'.

Chris Du / Manager



## Contents

	<b>Page</b>
<b>1 TEST RESULT CERTIFICATION.....</b>	<b>2</b>
<b>2 TEST SUMMARY .....</b>	<b>5</b>
<b>3 GENERAL INFORMATION .....</b>	<b>6</b>
3.1 GENERAL DESCRIPTION OF E.U.T.....	6
3.2 TEST METHODOLOGY .....	7
3.3 TEST SITE .....	8
<b>4 EQUIPMENT DURING TEST .....</b>	<b>9</b>
4.1 EQUIPMENTS LIST.....	9
4.2 MEASUREMENT UNCERTAINTY.....	10
4.3 DESCRIPTION OF SUPPORT UNITS.....	11
<b>5 CONDUCTED EMISSION.....</b>	<b>12</b>
5.1 E.U.T. OPERATION.....	12
5.2 EUT SETUP .....	12
5.3 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION).....	13
5.4 MEASUREMENT PROCEDURE .....	13
5.5 CONDUCTED EMISSION LIMIT .....	13
5.6 MEASUREMENT DESCRIPTION.....	13
5.7 CONDUCTED EMISSION TEST RESULT .....	13
<b>6 RADIATION SPURIOUS EMISSION AND BAND EDGE.....</b>	<b>14</b>
6.1 TEST STANDARD AND LIMIT.....	14
6.2 TEST SETUP .....	15
6.3 TEST PROCEDURE .....	16
6.4 TEST DATA.....	17
<b>7 OUTPUT POWER TEST .....</b>	<b>24</b>
7.1 TEST STANDARD AND LIMIT.....	24
7.2 TEST SETUP .....	24
7.3 TEST PROCEDURE .....	24
7.4 TEST DATA.....	24
<b>8 6DB OCCUPY BANDWIDTH TEST.....</b>	<b>27</b>



8.1 TEST STANDARD AND LIMIT.....	27
8.2 TEST SETUP .....	27
8.3 TEST PROCEDURE.....	27
8.4 TEST DATA.....	27
<b>9 POWER SPECTRAL DENSITY TEST .....</b>	<b>30</b>
9.1 TEST STANDARD AND LIMIT.....	30
9.2 TEST SETUP .....	30
9.3 TEST PROCEDURE.....	30
9.4 TEST DATA.....	30
<b>10 100KHZ BANDWIDTH OF FREQUENCY BAND EDGE REQUIREMENT .....</b>	<b>33</b>
10.1 TEST STANDARD AND LIMIT .....	33
10.2 TEST SETUP .....	33
10.3 TEST PROCEDURE.....	33
10.4 TEST DATA .....	34
<b>11 ANTENNA REQUIREMENT .....</b>	<b>39</b>
11.1 TEST STANDARD AND REQUIREMENT .....	39
11.2 ANTENNA CONNECTED CONSTRUCTION.....	39
<b>12 PENDIX I -- TEST SETUP PHOTOGRAPH.....</b>	<b>40</b>
<b>13 APPENDIX II -- EXTERNAL PHOTOGRAPH .....</b>	<b>42</b>
<b>14 APPENDIX III -- INTERNAL PHOTOGRAPH .....</b>	<b>46</b>



## 2 Test Summary

Standard Section	Test Item	Result
15.203/15.247(c)	Antenna Requirement	PASS
15.207	Conducted Emission	N/A
15.205/15.209	Spurious Emission	PASS
15.247(b)(3)	Maximum Peak Output Power	PASS
15.247(a)(2)	6dB Occupied Bandwidth	PASS
15.247(e)	Power Spectral Density	PASS
15.247(d)	Band Edge	PASS
<b>Remark:</b> "N/A" is an abbreviation for Not Applicable.		

Note:

1. The EUT only powered by battery, no need to evaluate AC Power Conducted Emission.
2. The EUT is powered by new batteries during the test.



### 3 General Information

#### 3.1 General Description of E.U.T.

Product Name	:	FirePoint
Model Name	:	SJ03P
Operation Frequency	:	2405-2480MHz
Number of Channel	:	16
Type of Modulation	:	O-QPSK
Antenna installation	:	External antenna
Antenna Gain	:	0 dBi
Power supply	:	DC 6V Battery
Hardware Version	:	V1.4
Software Version	:	N/A



### **3.2 Test Methodology**

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting and receiving mode is programmed.



Report No.: PTC20050901301E-FC02

### **3.3 Test Site**

Precise Testing & Certification Co., Ltd.

Building 1, No. 6, Tongxin Road, Dongcheng Street, Dongguan, Guangdong, China

FCC Registration Number: 790290

A2LA Certificate No.: 4408.01

IC Registration Number: 12191A-1





## 4 Equipment During Test

### 4.1 Equipments List

RF Conducted Test

Name of Equipment	Manufacturer	Model	Serial No.	Characteristics	Calibration Due
MXG Signal Analyzer	Agilent	N9020A	SER MY5111038	10Hz-30GHz	Aug. 19, 2021
Coaxial Cable	CDS	79254	46107086	10Hz-30GHz	Aug. 19, 2021
Power Meter	Anritsu	ML2495A	0949003	300MHz-40GHz	Aug. 19, 2021
Power Sensor	Anritsu	MA2411B	0917017	300MHz-40GHz	Aug. 19, 2021

Remark: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

Radiated Emissions(Test Frequency from 9KHz-18GHz)

Name of Equipment	Manufacturer	Model	Serial No.	Characteristics	Calibration Due
EMI Test Receiver	Rohde&Schwarz	ESCI	101417	9KHz-3GHz	Aug. 19, 2021
Loop Antenna	Schwarzbeck	FMZB 1519	012	9 KHz -30MHz	Aug. 23, 2021
Bilog Antenna	SCHWARZBECK	VULB9160	9160-3355	25MHz-2GHz	Aug. 23, 2021
Preamplifier (low frequency)	SCHWARZBECK	BBV 9475	9745-0013	1MHz-1GHz	Aug. 19, 2021
Cable	Schwarzbeck	PLF-100	549489	9KHz-3GHz	Aug. 19, 2021
Spectrum Analyzer	Agilent	E4407B	MY45109572	9KHz-40GHz	Aug. 19, 2021
Horn Antenna	SCHWARZBECK	9120D	9120D-1246	1GHz-18GHz	Apr. 23, 2021
Power Amplifier	LUNAR EM	LNA1G18-40	J10100000081	1GHz-26.5GHz	Aug. 19, 2021
Horn Antenna	SCHWARZBECK	BBHA 9170	9170-181	14GHz-40GHz	Apr. 23, 2021
Amplifier	SCHWARZBECK	BBV 9721	9721-205	18GHz-40GHz	Aug. 19, 2021



Cable	H+S	CBL-26	N/A	1GHz-26.5GHz	Aug. 19, 2021
RF Cable	R&S	R204	R21X	1GHz-40GHz	Aug. 19, 2021

Conducted Emissions

Name of Equipment	Manufacturer	Model	Serial No.	Characteristics	Calibration Due
EMI Test Receiver	Rohde&Schwarz	ESCI	101417	9KHz-3GHz	Aug. 19, 2021
Artificial Mains Network	Rohde&Schwarz	ENV216	102453	9KHz-300MHz	Aug. 19, 2021
Artificial Mains Network	Rohde&Schwarz	ENV216	101342	9KHz-300MHz	Aug. 19, 2021

**4.2 Measurement Uncertainty**

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



### 4.3 Description of Support Units

Equipment	Model No.	Series No.
N/A	N/A	N/A

## 5 Conducted Emission

Test Requirement: : FCC CFR 47 Part 15 Section 15.207  
 Test Method: : ANSI C63.10: 2013  
 Test Result: : PASS  
 Frequency Range: : 150kHz to 30MHz  
 Class/Severity: : Class B

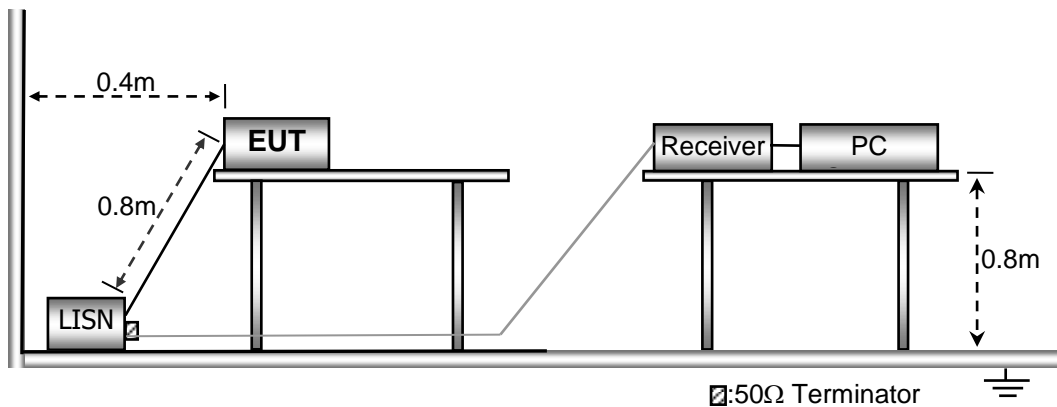
### 5.1 E.U.T. Operation

Operating Environment :

Temperature: : 25.5 °C  
 Humidity: : 51 % RH  
 Atmospheric Pressure: : 101.2kPa

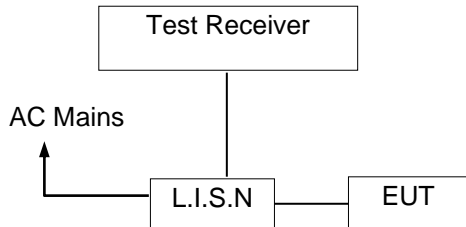
### 5.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10:2013.





### 5.3 Test SET-UP (Block Diagram of Configuration)



### 5.4 Measurement Procedure

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured was complete.

### 5.5 Conducted Emission Limit

#### Conducted Emission

Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

#### Note:

1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

### 5.6 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

### 5.7 Conducted Emission Test Result

N/A.

The EUT is only powered by battery, it no need to Conducted Emission Test.



## 6 Radiation Spurious Emission and Band Edge

### 6.1 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	3
-		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.

## 6.2 Test Setup

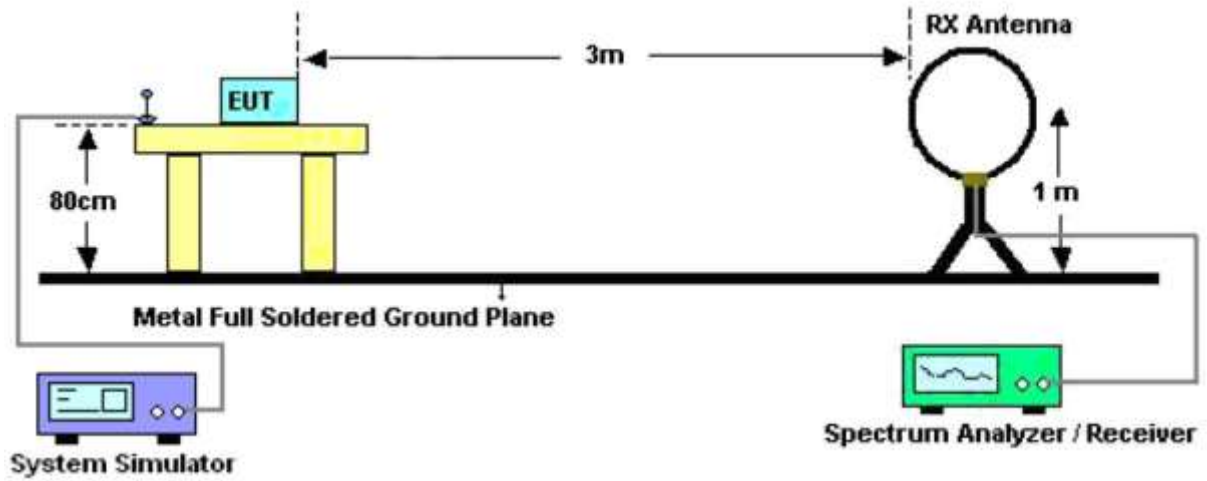


Figure 1. Below 30MHz

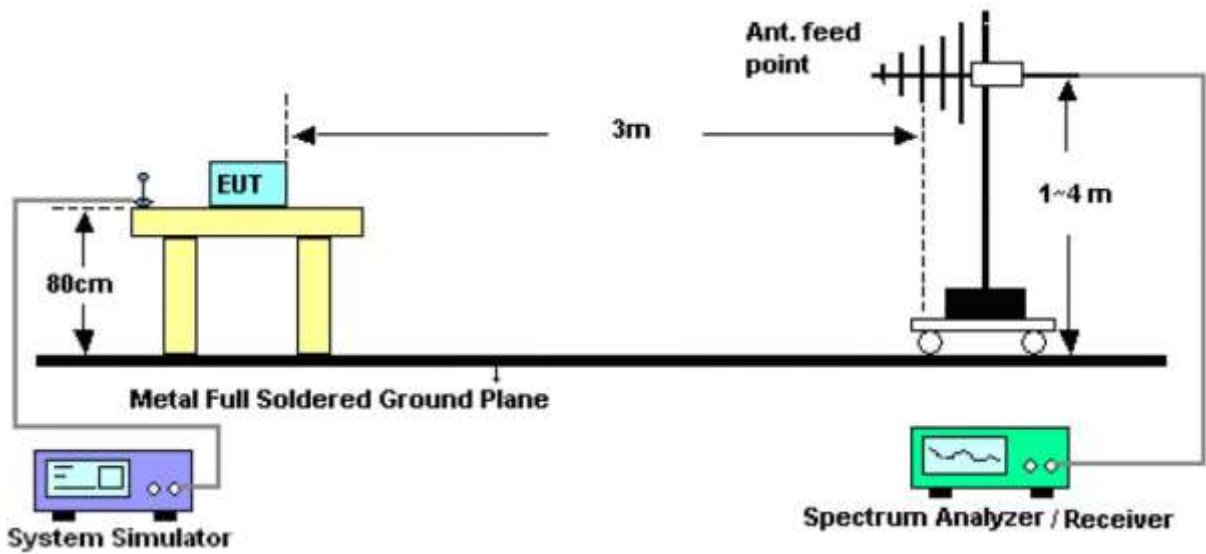


Figure 2. 30MHz to 1GHz

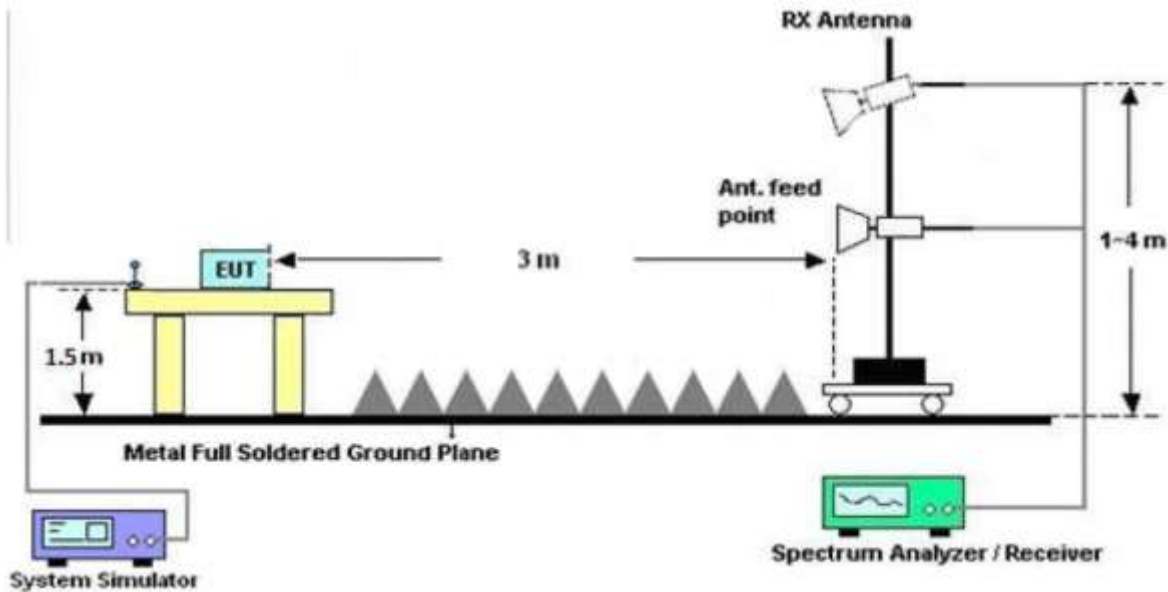


Figure 3. Above 1 GHz

### 6.3 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 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 = 100kHz, 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.

RBW =1MHz, VBW =3MHz, Detector= Average, Trace mode= Max hold, Sweep- auto couple.

## **6.4 Test Data**

### **PASS**

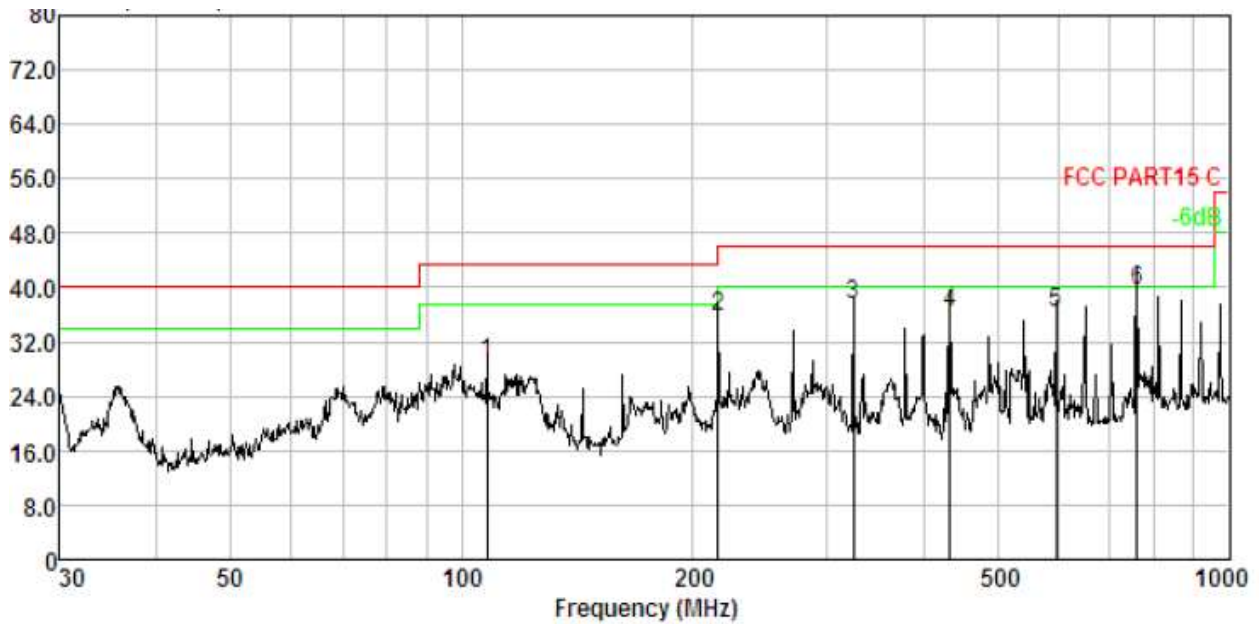
During the test, pre-scan all the modes, and found the Middle channel(TX Mode) which is the worst case, only the worst case is recorded in the report.

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



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

Temp.(°C)/Hum.(%RH): 23.4°C/ 50%RH      Power Source: DC 6V Battery  
 Test Mode: CH11      Polarization: Vertical

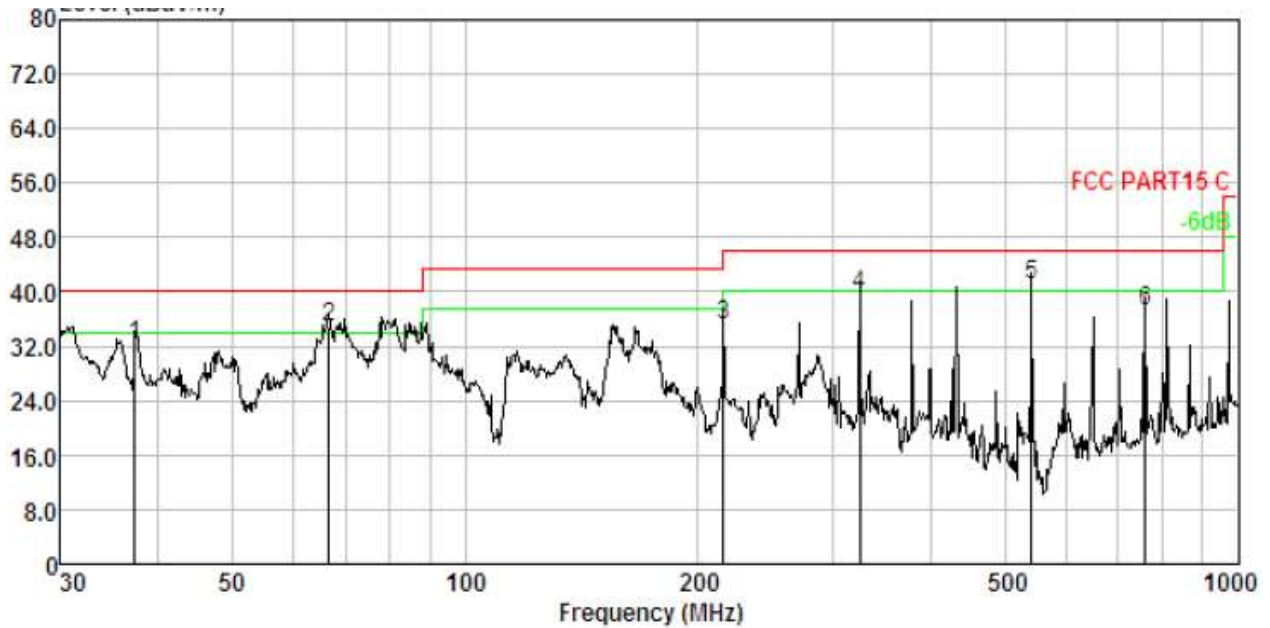


No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	107.888	2.21	10.90	46.38	30.42	29.07	43.50	-14.43	QP
2.	216.024	2.84	10.69	52.70	30.66	35.57	46.00	-10.43	QP
3.	324.456	3.21	13.75	51.47	30.80	37.63	46.00	-8.37	QP
4.	432.546	3.47	16.02	47.83	30.90	36.42	46.00	-9.58	QP
5.	595.133	3.76	19.03	44.41	31.01	36.19	46.00	-9.81	QP
6.	758.041	3.98	21.37	45.40	31.09	39.66	46.00	-6.34	QP



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

Temp.(°C)/Humidity: 23.4°C/ 50%RH  
 Power Source: DC 6V Battery  
 Test Mode: CH11  
 Polarization: Horizontal



No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	37.416	1.26	13.51	47.48	30.05	32.20	40.00	-7.80	QP
2.	66.733	1.78	11.18	52.20	30.25	34.91	40.00	-5.09	QP
3.	216.024	2.84	10.69	52.33	30.66	35.20	46.00	-10.80	QP
4.	324.456	3.21	13.75	53.48	30.80	39.64	46.00	-6.36	QP
5.	541.373	3.67	17.71	50.51	30.98	40.91	46.00	-5.09	QP
6.	758.041	3.98	21.37	42.94	31.09	37.20	46.00	-8.80	QP



**Test Results (Above 1000MHz)**

Test Mode: CH11					Test channel: Lowest			
Peak Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
4810.00	48.33	30.72	6.79	40.82	45.02	74	-28.98	V
7215.00	48.12	31.15	6.83	40.95	45.15	74	-28.85	V
9620.00	47.95	32.06	6.85	41.05	45.81	74	-28.19	V
12025.00	*					74.00		V
14430.00	*					74.00		V
4810.00	47.95	30.72	6.79	40.82	44.64	74	-29.36	H
7215.00	47.86	31.15	6.83	40.95	44.89	74	-29.11	H
9620.00	46.15	32.06	6.85	41.05	44.01	74	-29.99	H
12025.00	*					74.00		H
14430.00	*					74.00		H
Average Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
4810.00	36.54	30.72	6.79	40.82	33.23	54	-20.77	V
7215.00	35.22	31.15	6.83	40.95	32.25	54	-21.75	V
9620.00	34.09	32.06	6.85	41.05	31.95	54	-22.05	V
4810.00	36.82	30.72	6.79	40.82	33.51	54	-20.49	H
7215.00	35.16	31.15	6.83	40.95	32.19	54	-21.81	H
9620.00	34.25	32.06	6.85	41.05	32.11	54	-21.89	H



**Test Results (Above 1000MHz)**

Test Mode: CH18					Test channel: Middle			
Peak Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
4880.00	47.12	30.77	6.81	40.91	43.79	74	-30.21	V
7320.00	46.33	31.23	6.86	41.03	43.39	74	-30.61	V
9760.00	45.16	32.19	6.91	41.72	42.54	74	-31.46	V
12200.00	*					74.00		V
14640.00	*					74.00		V
4880.00	48.05	30.77	6.81	40.91	44.72	74	-29.28	H
7320.00	45.82	31.23	6.86	41.03	42.88	74	-31.12	H
9760.00	44.29	32.19	6.91	41.72	41.67	74	-32.33	H
12200.00	*					74.00		H
14640.00	*					74.00		H
Average Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
4880.00	38.24	30.77	6.81	40.91	34.91	54	-19.09	V
7320.00	36.25	31.23	6.86	41.03	33.31	54	-20.69	V
9760.00	34.29	32.19	6.91	41.72	31.67	54	-22.33	V
14640.00	*					54.00		V
4880.00	37.12	30.77	6.81	40.91	33.79	54	-20.21	H
7320.00	35.65	31.23	6.86	41.03	32.71	54	-21.29	H
9760.00	33.18	32.19	6.91	41.72	30.56	54	-23.44	H
14640.00	*					54.00		H



**Test Results (Above 1000MHz)**

Test Mode: CH26					Test channel: Highest			
Peak Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
4960.00	48.52	30.94	6.88	41.92	44.42	74	-29.58	V
7440.00	48.68	31.35	6.94	42.06	44.91	74	-29.09	V
9920.00	50.24	32.68	6.98	42.17	47.73	74	-26.27	V
12400.00	*					74.00		V
14880.00	*					74.00		V
4960.00	49.13	30.94	6.88	41.92	45.03	74	-28.97	H
7440.00	49.25	31.35	6.94	42.06	45.48	74	-28.52	H
9920.00	50.68	32.68	6.98	42.17	48.17	74	-25.83	H
12400.00	*					74.00		H
14880.00	*					74.00		H
Average Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
4960.00	39.25	30.94	6.88	41.92	35.15	54	-18.85	V
7440.00	36.25	31.35	6.94	42.06	32.48	54	-21.52	V
9920.00	36.65	32.68	6.98	42.17	34.14	54	-19.86	V
4960.00	38.47	30.94	6.88	41.92	34.37	54	-19.63	H
7440.00	37.14	31.35	6.94	42.06	33.37	54	-20.63	H
9920.00	37.54	32.68	6.98	42.17	35.03	54	-18.97	H

Remark:

1. Level =Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor
2. “\*”, means this data is the too weak instrument of signal is unable to test.



**Radiated Band Edge:**

Test Mode: Low Channel 2405MHz									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over (dB)	Polarity H/V	Test Value
2390.00	45.62	29.15	3.41	34.01	44.17	74.00	-29.83	H	Peak
2400.00	62.80	29.16	3.43	34.01	61.38	74.00	-12.62	H	Peak
2390.00	46.43	29.15	3.41	34.01	44.98	74.00	-29.02	V	Peak
2400.00	65.13	29.16	3.43	34.01	63.71	74.00	-10.29	V	Peak
2390.00	35.55	29.15	3.41	34.01	34.10	54.00	-19.90	H	AV
2400.00	46.95	29.16	3.43	34.01	45.53	54.00	-8.47	H	AV
2390.00	35.69	29.15	3.41	34.01	34.24	54.00	-19.76	V	AV
2400.00	43.86	29.16	3.43	34.01	42.44	54.00	-11.56	V	AV

Test Mode: High Channel 2480MHz									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over (dB)	Polarity H/V	Test Value
2483.50	48.05	29.28	3.53	34.03	46.83	74.00	-27.17	H	Peak
2500.00	46.70	29.30	3.56	34.03	45.53	74.00	-28.47	H	Peak
2483.50	49.35	29.28	3.53	34.03	48.13	74.00	-25.87	V	Peak
2500.00	47.96	29.30	3.56	34.03	46.79	74.00	-27.21	V	Peak
2483.50	38.41	29.28	3.53	34.03	37.19	54.00	-16.81	H	AV
2500.00	36.02	29.30	3.56	34.03	34.85	54.00	-19.15	H	AV
2483.50	39.85	29.28	3.53	34.03	38.63	54.00	-15.37	V	AV
2500.00	36.17	29.30	3.56	34.03	35.00	54.00	-19.00	V	AV

Remark:

1. Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

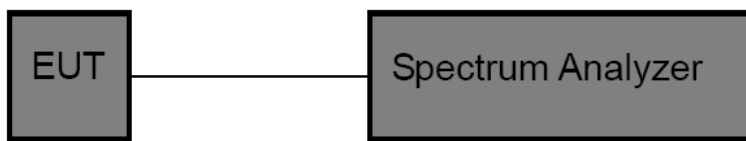


## 7 Output Power Test

### 7.1 Test Standard and Limit

Test Standard	FCC Part15 C Section 15.247 (b)(3)
Test Limit	30dBm

### 7.2 Test Setup



### 7.3 Test Procedure

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above,
- 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

### 7.4 Test Data

Test Item	: Output power	Test Mode	: CH Low ~ CH High
Test Voltage	: DC 6V Battery	Temperature	: 24°C
Test Result	: PASS	Humidity	: 55%RH





Channel Frequency (MHz)	Peak Power output (dBm)	Limit (dBm)	Results
2405	-1.420	30	PASS
2440	-2.530	30	PASS
2480	0.229	30	PASS

For power test the duty cycle is 100% in continuous transmitting mode



Test Mode: Low



Test Mode: Middle



Test Mode: High

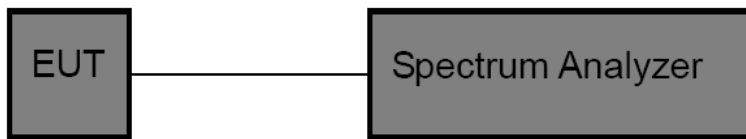


## 8 6DB Occupy Bandwidth Test

### 8.1 Test Standard and Limit

Test Standard	FCC Part15 C Section 15.247 (a)(2)
Test Limit	>500kHz

### 8.2 Test Setup



### 8.3 Test Procedure

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as:  
 RBW = 100kHz, VBW $\geq$ 3\*RBW =300kHz,  
 Detector= Peak  
 Trace mode= Max hold.  
 Sweep- auto couple.
4. Mark the peak frequency and –6dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

### 8.4 Test Data

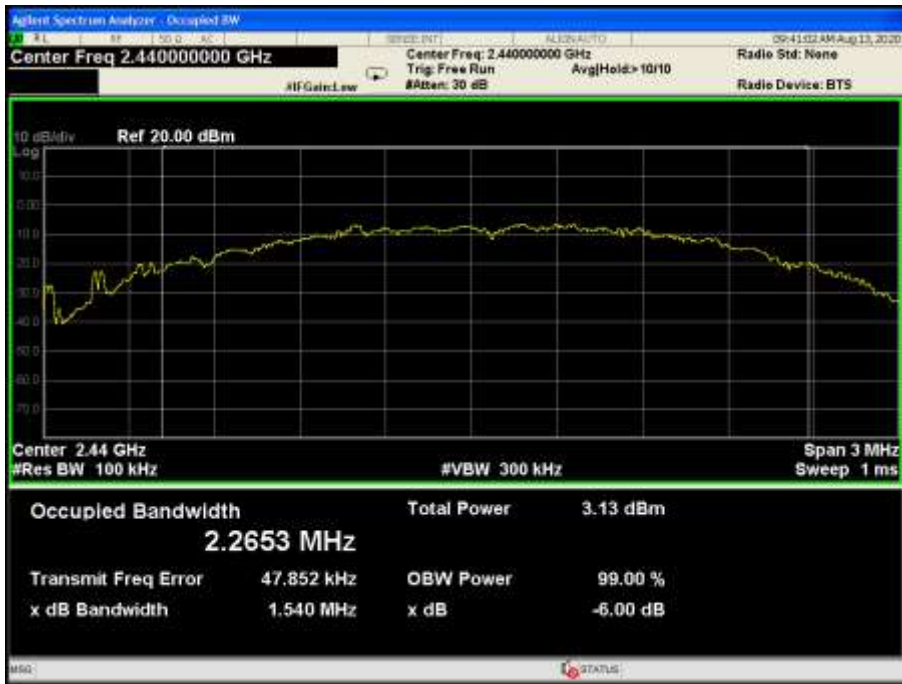
Test Item	: 6dB Bandwidth	Test Mode	: CH Low ~ CH High
Test Voltage	: DC 6V Battery	Temperature	: 24°C
Test Result	: PASS	Humidity	: 55%RH



Channel	Frequency(MHz)	Bandwidth (kHz)	Limit (kHz)	Results
Low	2405	1415	>500	PASS
Middle	2440	1540		PASS
High	2480	1577		PASS



CH: Low



CH: Middle



CH: High

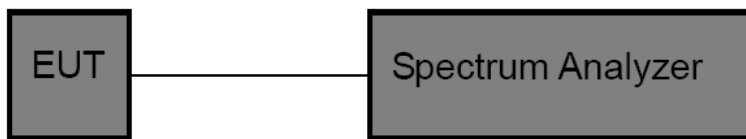


## 9 Power Spectral Density Test

### 9.1 Test Standard and Limit

Test Standard	FCC Part15 C Section 15.247 (e)
Test Limit	8dBm

### 9.2 Test Setup



### 9.3 Test Procedure

1. Place the EUT on the table and set it in transmitting mode. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, Span = 1.5xDTS BW
3. Record the max. reading.
4. Repeat the above procedure until the measurements for all frequencies are completed.

### 9.4 Test Data

Test Item	: Power Spectral Density	Test Mode	: CH Low ~ CH High
Test Voltage	: DC 6V Battery	Temperature	: 24°C
Test Result	: PASS	Humidity	: 55%RH

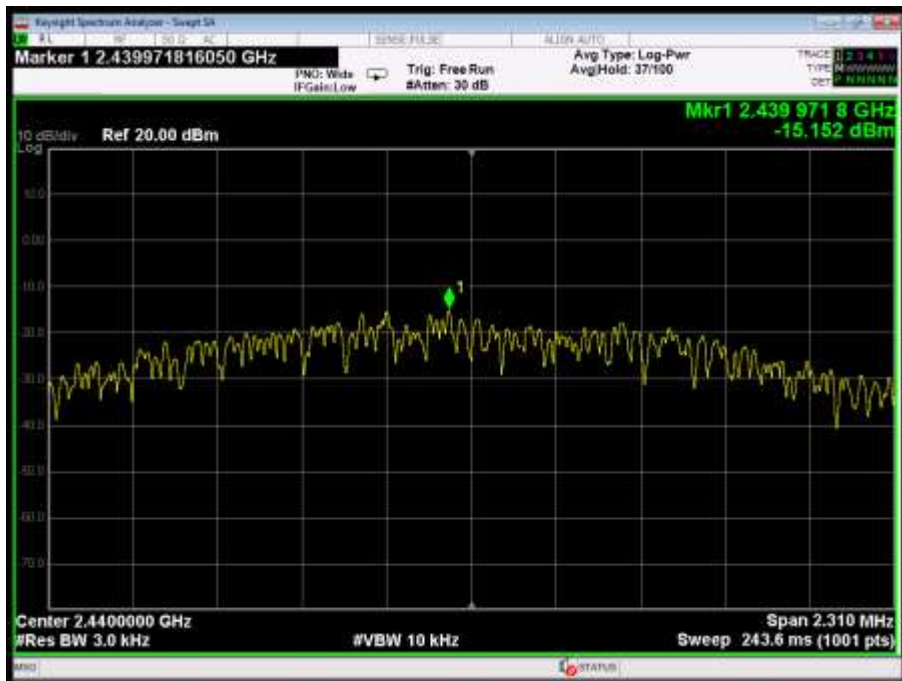
Channel	Frequency (MHz)	PSD (dBm/3KHz)	Limit (dBm/3KHz)	Results
Low	2405	-16.388	8	PASS
Middle	2440	-15.152	8	PASS
High	2480	-16.620	8	PASS



CH: Low



CH: Middle



CH: High





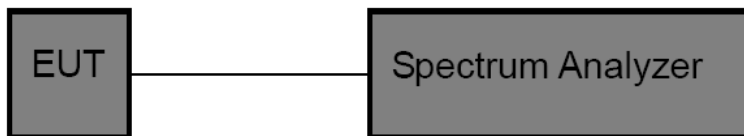


## 10 100kHz Bandwidth of Frequency Band Edge Requirement

### 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 in 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 in15.209(a).

### 10.2 Test Setup



### 10.3 Test Procedure

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

Test Item	: Band edge	Test Mode	: CH Low ~ CH High
Test Voltage	: DC 6V Battery	Temperature	: 24°C
Test Result	: PASS	Humidity	: 55%RH

Frequency Band (MHz)	Delta Peak to Band Emission (dBc)	Limit (dBc)	Results
2400	41.057	>30	PASS
2483.5	43.063	>30	PASS



CH: Low



CH: High



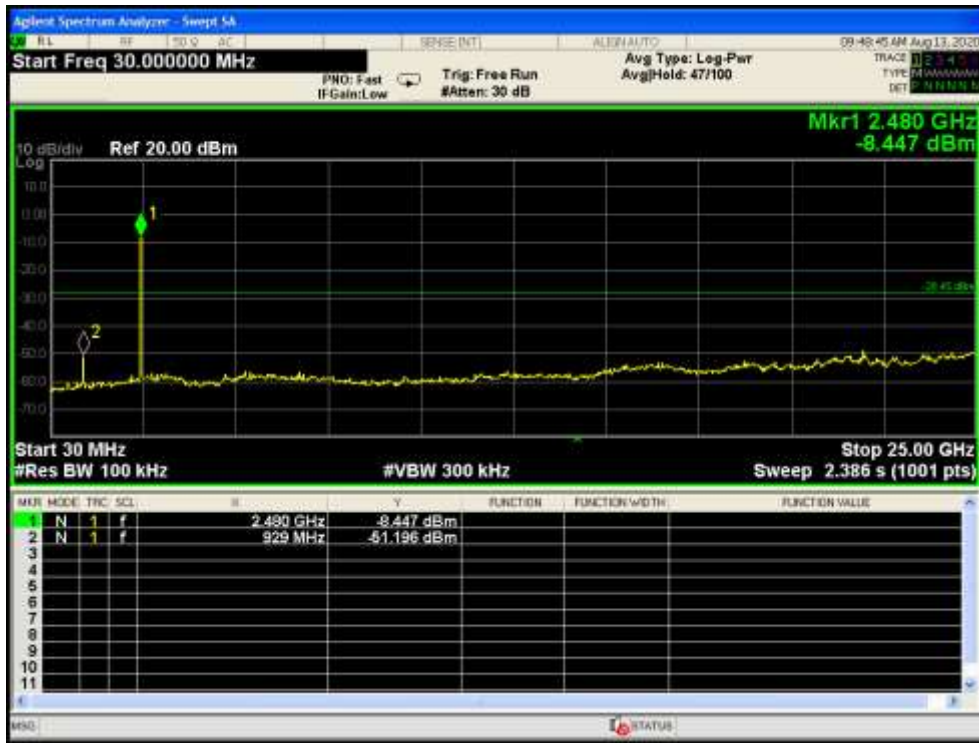
Conducted Emission Method



CH: Low



CH: Middle



CH: High

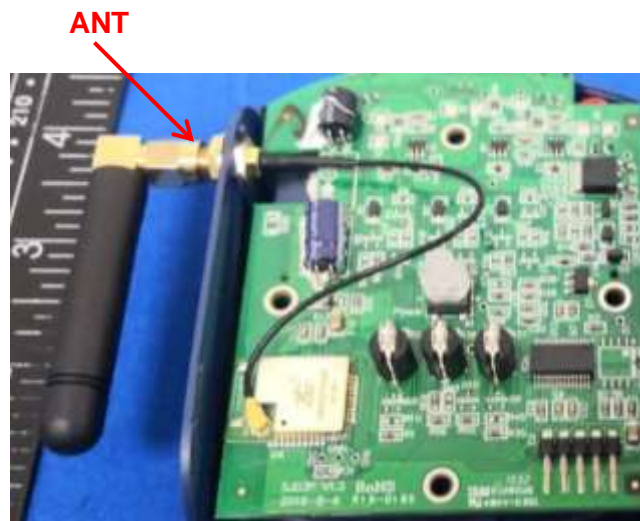
# 11 Antenna Requirement

## 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>

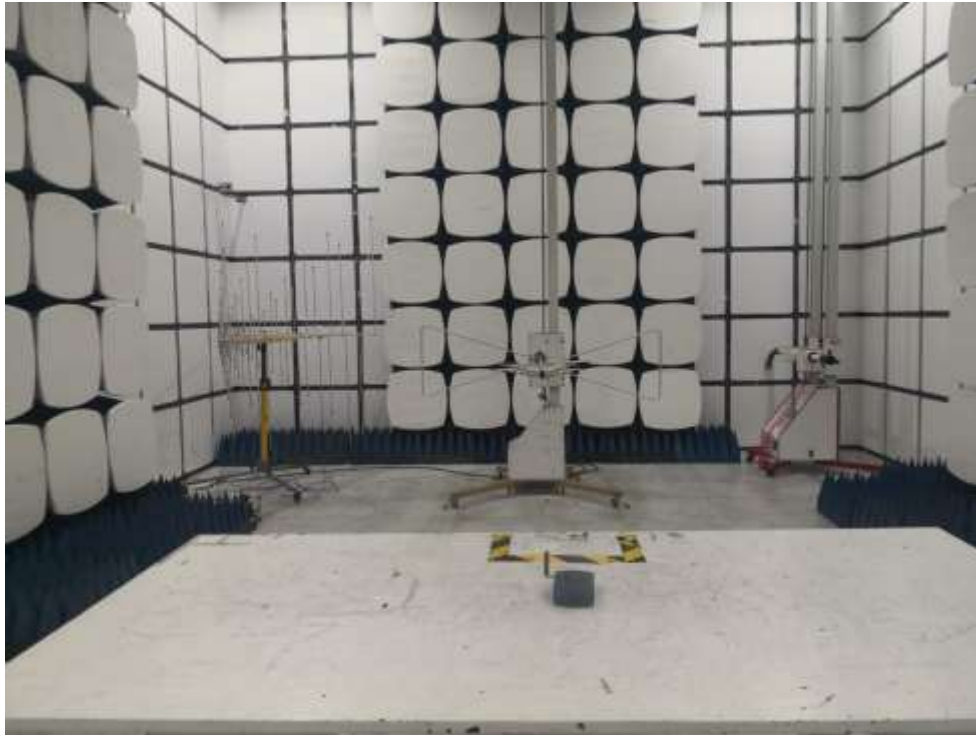
## 11.2 Antenna Connected Construction

The antenna is a external antenna which uses a unique coupling to the intentional radiator, and the best case gain of the antenna is 0 dBi. It complies with the standard requirement.



## 12 PENDIX I -- TEST SETUP PHOTOGRAPH

Photo of Radiation Emission Test

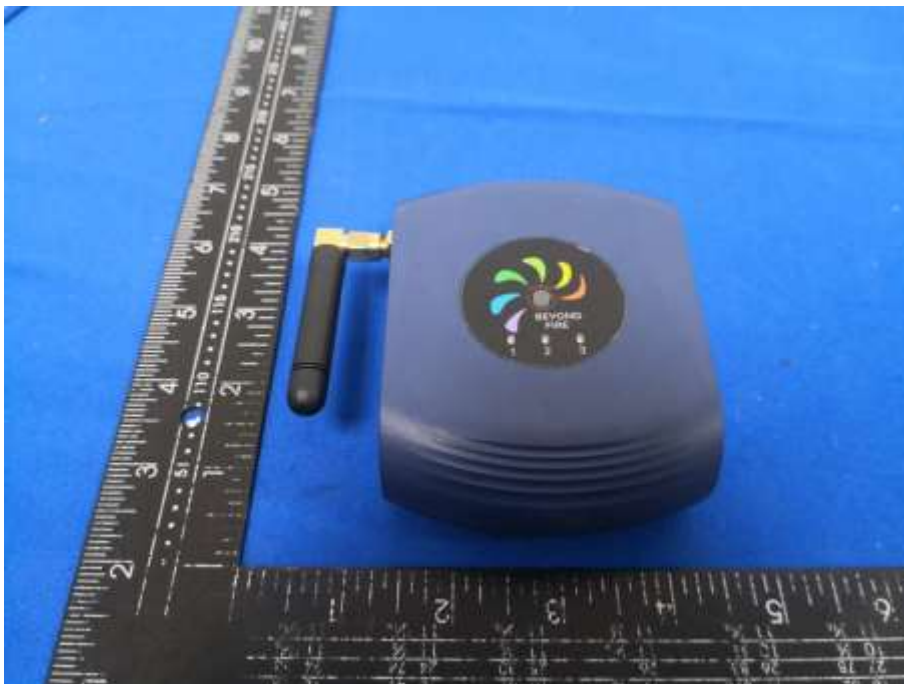
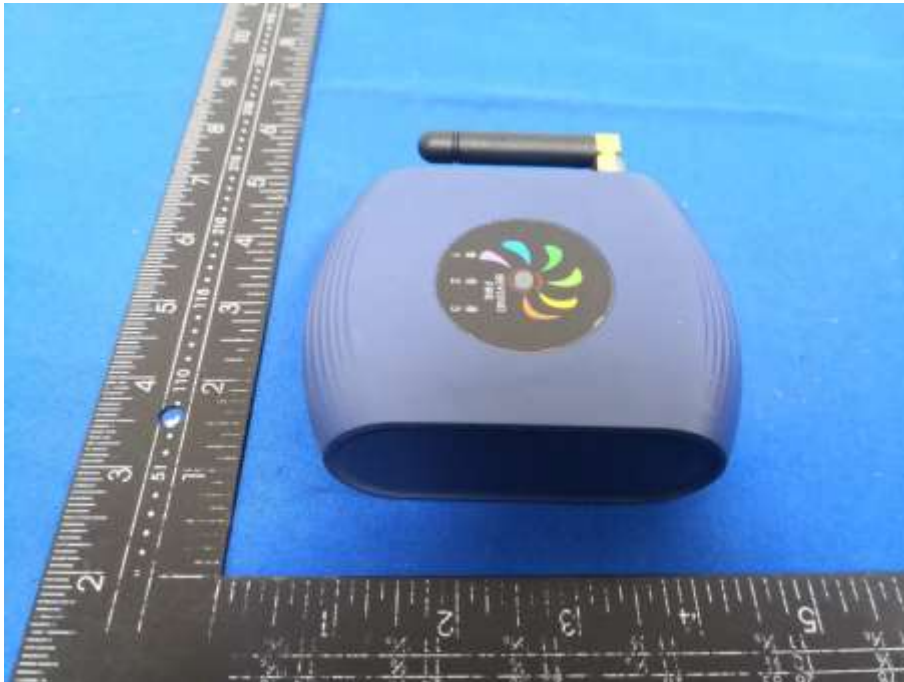






### 13 APPENDIX II -- EXTERNAL PHOTOGRAPH





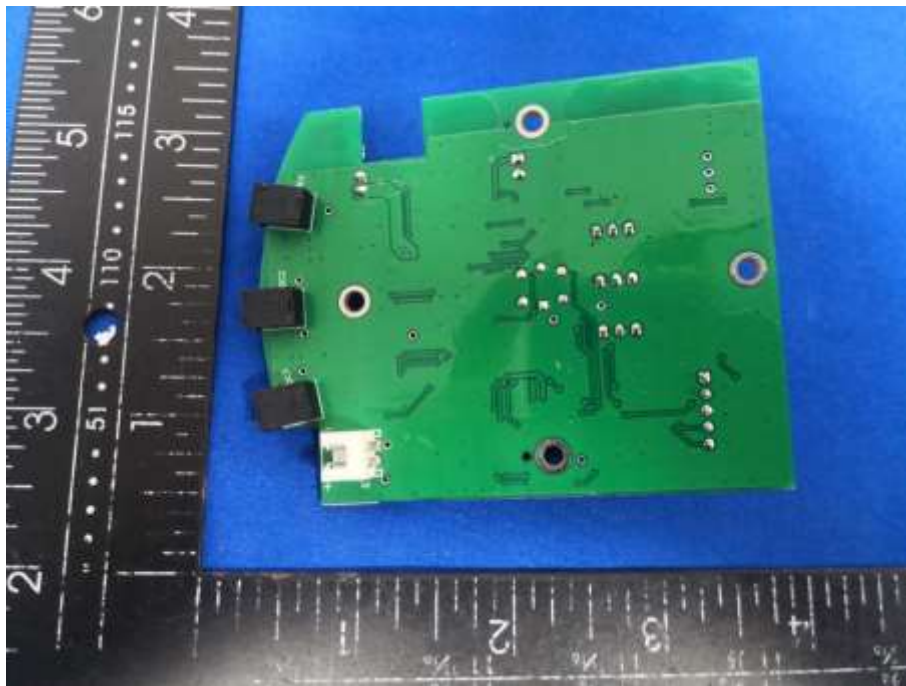
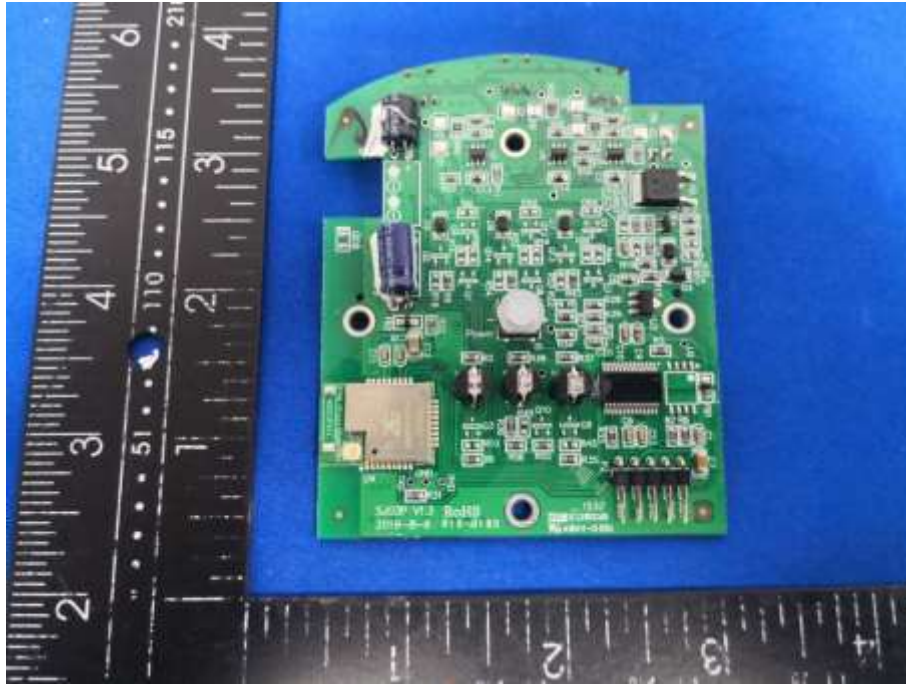






## 14 APPENDIX III -- INTERNAL PHOTOGRAPH







\*\*\*\*\*THE END REPORT\*\*\*\*\*