FCC TEST REPORT
FCC ID: 2BMXP-BTW78

Product	:	**True wireless earphone**
Model Name	:	**BTW78**
Brand	:	**/**
Report No.	:	**MAX250221110P02-R02**

Prepared for

Shenzhen Sound Bass Technology Co., Ltd.

Kvance Industrial Zone, No. 6285 Longgang Avenue, Yuanshan Street, Longgang District, Shenzhen City, China

Prepared by

MAXLAB Testing Co.,Ltd.

1/F, Building B, Xinshidai GR Park,Shiyan Street, Bao'an District, Shenzhen,Guangdong, 518052, People's Republic of China

1 TEST RESULT CERTIFICATION

Applicant's name	:	Shenzhen Sound Bass Technology Co., Ltd.
Address	:	Kvance Industrial Zone, No. 6285 Longgang Avenue, Yuanshan Street, Longgang District, Shenzhen City, China
Manufacture's name	:	Shenzhen Sound Bass Technology Co., Ltd.
Address	:	Kvance Industrial Zone, No. 6285 Longgang Avenue, Yuanshan Street, Longgang District, Shenzhen City, China
Product name	:	True wireless earphone
Model name	:	BTW78
Standards	:	FCC CFR47 Part 15 Section 15.247
Test procedure	:	ANSI C63.10:2020
Date of test	:	Feb. 21, 2025 to Mar. 18, 2025
Date of Issue	:	Mar. 18, 2025

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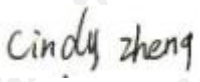
Test Engineer:



Engineer/ Cindy Zheng

Technical Manager:

RF Manager/ Vivian Jiang

Contents

2 Test Summary

Test Items	Test Requirement	Result
Conduct Emission	FCC part 15.207	PASS
Radiated Spurious Emissions	FCC part 15.205/15.209	PASS
Conducted Spurious Emission	FCC part 15. 247(d)	PASS
Band edge	FCC part 15.247(d)	PASS
6dB&99% Bandwidth	FCC part 15.247 (a)(2)	PASS
Maximum Peak Output Power	FCC part 15.247 (b)(3)	PASS
Power Spectral Density	FCC part 15.247 (e)	PASS
Antenna Requirement	FCC part 15.203/15.247 (c)	PASS

Remark:

1. “N/A” denotes test is not applicable in this Test Report.

3 TEST FACILITY

Site Description

EMC Lab.:	FCC-Registration No:562200 Designation Number: CN1338 MAXLAB Testing Co., Ltd.has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements. A2LA-Lab Cert.No:4707.01 MAXLAB Testing Co, Ltd.has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement. Industry Canada Registration Number.Is:11093A CAB identifier: CN0019 The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.
Name of Firm:	MAXLAB Testing Co, Ltd.
Site Location:	1/F, Building B, Xinshidai GR Park, Shiyan Street, Bao'an District, Shenzhen, Guangdong, 518052, People's Republic of China

4 General Information

4.1 General Description of E.U.T.

Product Name	:	True wireless earphone
Model Name	:	BTW78
Sample ID	:	20250221Z-002#
Sample(s) Status:	:	Engineer sample
Additional model	:	/
Difference	:	/
Operating frequency	:	2402-2480MHz
Numbers of Channel	:	40 channels
Type of Modulation	:	GFSK
Rate	:	1M
Antenna Type	:	Internal Antenna
Antenna Gain	:	1.60 dBi
Power supply	:	DC 3.7V from Battery; Charging input: DC 5V
Hardware Version	:	1.0
Software Version	:	1.0
Remark：the Antenna gain is provided by customer from Antenna spec. and the laboratory will not be responsible for the accumulated calculation results which covers the information provided by the applicant.		

4.2 Channel List

The EUT has been tested under its typical operating condition. Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting. Only the worst case data were reported.

The EUT has been associated with peripherals pursuant to ANSI C63.10-2020 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: radiation (9 KHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

The details of test channels and bandwidth were for RF conductive measurement.

Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	**2402**	14	2430	28	2458
01	2404	15	2432	29	2460
02	2406	16	2434	30	2462
03	2408	17	2436	31	2464
04	2410	18	2438	32	2466
05	2412	**19**	**2440**	33	2468
06	2414	20	2442	34	2470
07	2416	21	2444	35	2472
08	2418	22	2446	36	2474
09	2420	23	2448	37	2476
10	2422	24	2450	38	2478
11	2424	25	2452	39	**2480**
12	2426	26	2454		
13	2428	27	2456		

Note:

1. Test of channel was included the lowest, middle and highest frequency in highest data rate and to perform the test, then record on this report.

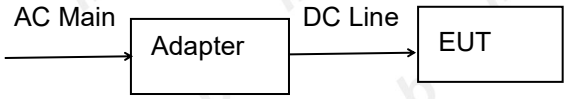
Test Channel：

	Channel	Frequency(MHz)
Low Channel	0	2402
Mid Channel	19	2440
High Channel	39	2480

4.3 Test Setup Configuration

Radiated Emission

Conducted Emission



Radiated Spurious

Conducted Spurious

4.4 Test configuration

Transmitting mode	Keep the EUT in continuously transmitting mode.
Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.	

Test Software	BT_Tool
Power level setup	0 dBm

5 Equipment During Test

5.1 Equipments List

Conducted Emission					
Test Equipment	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	MAX252	2024-10-27	2025-10-26
EMI Test Receiver	R&S	ESCI 7	MAX552	2024-10-27	2025-10-26
Coaxial Switch	ANRITSU CORP	MP59B	MAX225	2024-10-27	2025-10-26
ENV216 2-L-V-NETZNACHB.DE	ROHDE&SCHWARZ	ENV216	MAX226	2024-10-27	2025-10-26
Coaxial Cable	MAX	N/A	MAX227	N/A	N/A
Thermo meter	KTJ	TA328	MAX233	2024-10-27	2025-10-26
Absorbing clamp	Elektronik-Feinmechanik	MDS21	MAX229	2024-10-27	2025-10-26
LISN	R&S	ENV216	308	2024-10-27	2025-10-26
LISN	R&S	ENV216	314	2024-10-27	2025-10-26

Radiation Test equipment					
Test Equipment	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)*6.4(H)	MAX250	2024-10-27	2025-10-26
Control Room	ZhongYu Electron	6.2(L)*2.5(W)*2.4(H)	MAX251	N/A	N/A
EMI Test Receiver	Rohde & Schwarz	ESU26	MAX203	2024-10-27	2025-10-26
BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	MAX214	2024-10-27	2025-10-26
Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	MAX208	2024-10-27	2025-10-26
Horn Antenna	ETS-LINDGREN	3160	MAX217	2024-10-27	2025-10-26
Coaxial Cable	MAX	N/A	MAX213	2024-10-27	2025-10-26
Coaxial Cable	MAX	N/A	MAX211	2024-10-27	2025-10-26
Coaxial cable	MAX	N/A	MAX210	2024-10-27	2025-10-26
Coaxial Cable	MAX	N/A	MAX212	2024-10-27	2025-10-26
Amplifier(100kHz-3GHz)	HP	8347A	MAX204	2024-10-27	2025-10-26
Amplifier(2GHz-20GHz)	HP	84722A	MAX206	2024-10-27	2025-10-26
Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002650-30-8P-44	MAX218	2024-10-27	2025-10-26
Band filter	Amindeon	82346	MAX219	2024-10-27	2025-10-26
Power Meter	Anritsu	ML2495A	MAX540	2024-10-27	2025-10-26
Power Sensor	Anritsu	MA2411B	MAX541	2024-10-27	2025-10-26
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	MAX575	2024-10-27	2025-10-26
Splitter	Agilent	11636B	MAX237	2024-10-27	2025-10-26
Loop Antenna	ZHINAN	ZN30900A	MAX534	2024-10-27	2025-10-26
Breitband hornantenne	SCHWARZBECK	BBHA 9170	MAX579	2024-10-27	2025-10-26

Amplifier	TDK	PA-02-02	MAX574	2024-10-27	2025-10-26
Amplifier	TDK	PA-02-03	MAX576	2024-10-27	2025-10-26
PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	MAX578	2024-10-27	2025-10-26

RF Conducted Test:					
Test Equipment	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
MXA Signal Analyzer	Agilent	N9020A	MAX566	2024-10-27	2025-10-26
EMI Test Receiver	R&S	ESCI 7	MAX552	2024-10-27	2025-10-26
Spectrum Analyzer	Agilent	E4440A	MAX533	2024-10-27	2025-10-26
MXG vector Signal Generator	Agilent	N5182A	MAX567	2024-10-27	2025-10-26
ESG Analog Signal Generator	Agilent	E4428C	MAX568	2024-10-27	2025-10-26
USB RF Power Sensor	DARE	RPR3006W	MAX569	2024-10-27	2025-10-26
RF Switch Box	Shongyi	RFSW3003328	MAX571	2024-10-27	2025-10-26
Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	MAX572	2024-10-27	2025-10-26

Other

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

5.2 Measurement Uncertainty

Parameter	Uncertainty
RF output power, conducted	±1.0dB
Power Spectral Density, conducted	±2.2dB
Radio Frequency	± 1 x 10^{-6}
Bandwidth	± 1.5 x 10^{-6}
Time	±2%
Duty Cycle	±2%
Temperature	±1°C
Humidity	±5%
DC and low frequency voltages	±3%
Conducted Emissions (150kHz~30MHz)	±3.64dB
Radiated Emission(9KHz~30MHz)	±4.51dB
Radiated Emission(30MHz~1GHz)	±5.03dB
Radiated Emission(1GHz~25GHz)	±4.74dB
Radiated Emission(25GHz~40GHz)	±3.38dB
Remark: The coverage Factor (k=2), and measurement Uncertainty for a level of Confidence of 95%	

5.3 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	True wireless earphone	/	BTW78	/	EUT
E-2	QUICK CHARGE	HUAWEI	HW-090200CH0	B98787L5E00423	Auxiliary

Note: (1)The support equipment was authorized by Declaration of Confirmation.

(2) For detachable type I/O cable should be specified the length in cm in『Length』column.

6 Conducted Emission

Test Requirement	:	FCC CFR 47 Part 15 Section 15.207, RSS-Gen§8.8, RSS-247§ 3.1
Test Method	:	ANSI C63.10: 2020
Test Result	:	PASS
Frequency Range	:	150kHz to 30MHz
Class/Severity	:	Class B

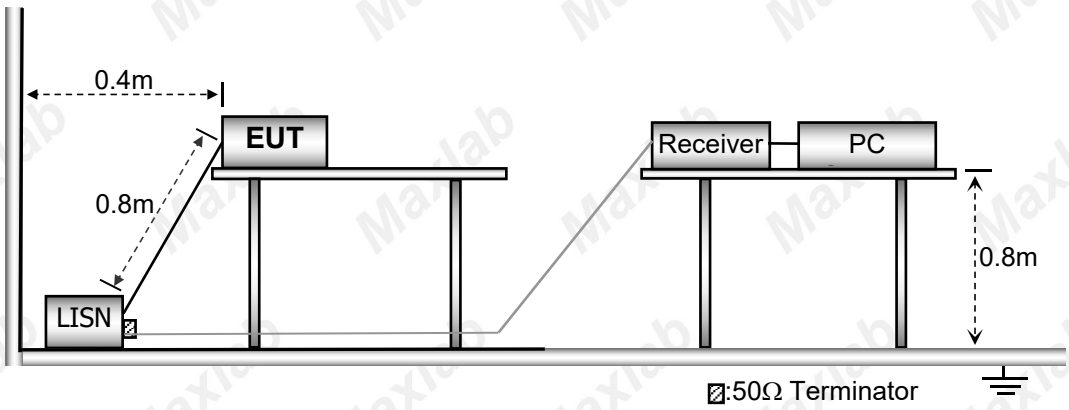
6.1 E.U.T. Operation

Operating Environment :

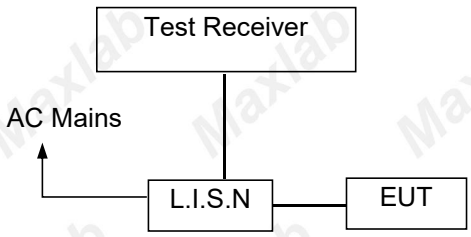
Temperature	:	25.5 °C
Humidity	:	51 % RH
Atmospheric Pressure	:	101.2kPa

6.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10:2020.



6.3 Test SET-UP (Block Diagram of Configuration)



6.4 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.

6.5 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.

6.6 Measurement Description

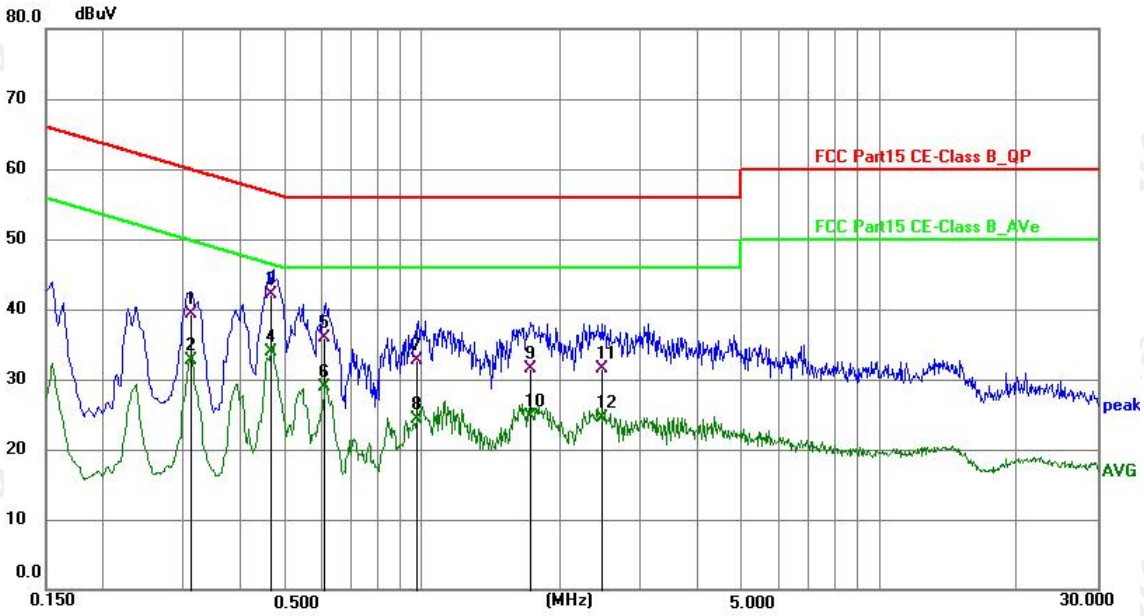
The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

6.7 Conducted Emission Test Result

Conducted emission at both 120V & 240V is assessed, and emission at 120V represents the worst case. All the modulation modes were tested the data of the worst mode (GFSK, Low channel) are recorded in the following pages and the others modulation methods do not exceed the limits.

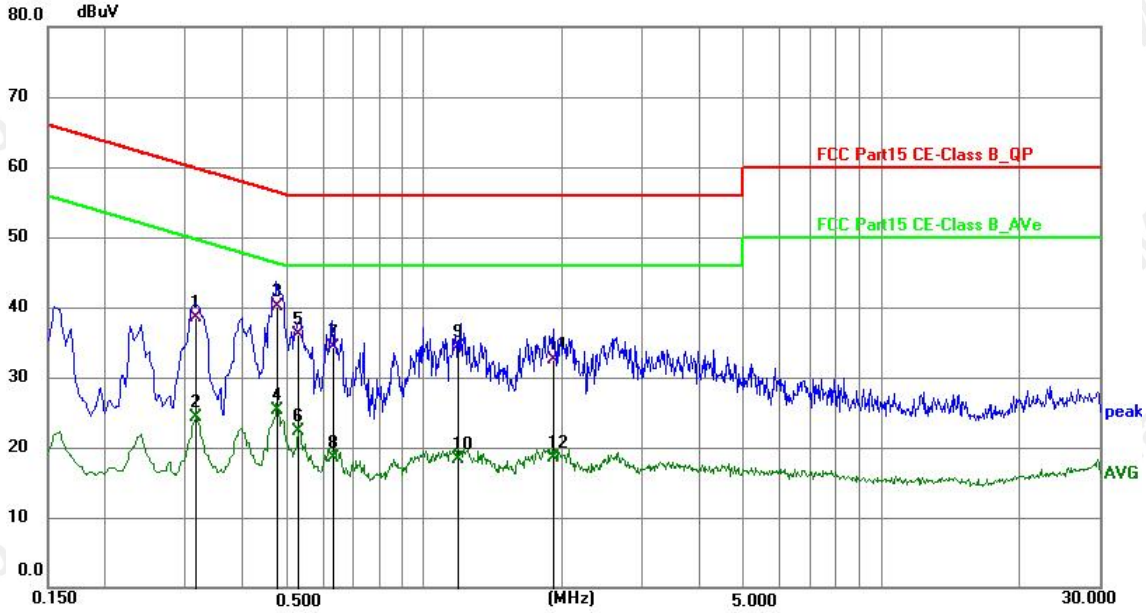
6.8 Conducted Emission Test Result

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Phase :	L
Test Voltage :	AC 120V/60Hz	Test Mode:	GFSK, Low channel



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.3118	19.91	19.49	39.40	59.92	-20.52	QP
2	0.3118	13.23	19.49	32.72	49.92	-17.20	AVG
3	0.4679	22.63	19.48	42.11	56.55	-14.44	QP
4 *	0.4679	14.48	19.48	33.96	46.55	-12.59	AVG
5	0.6097	16.42	19.49	35.91	56.00	-20.09	QP
6	0.6097	9.35	19.49	28.84	46.00	-17.16	AVG
7	0.9784	13.26	19.50	32.76	56.00	-23.24	QP
8	0.9784	4.80	19.50	24.30	46.00	-21.70	AVG
9	1.7255	11.97	19.53	31.50	56.00	-24.50	QP
10	1.7255	5.18	19.53	24.71	46.00	-21.29	AVG
11	2.4696	11.92	19.54	31.46	56.00	-24.54	QP
12	2.4696	4.88	19.54	24.42	46.00	-21.58	AVG

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Phase :	N
Test Voltage :	AC 120V/60Hz	Test Mode:	GFSK, Low channel



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.3161	19.02	19.48	38.50	59.81	-21.31	QP
2	0.3161	4.82	19.48	24.30	49.81	-25.51	AVG
3 *	0.4768	20.61	19.49	40.10	56.39	-16.29	QP
4	0.4768	5.81	19.49	25.30	46.39	-21.09	AVG
5	0.5318	16.71	19.49	36.20	56.00	-19.80	QP
6	0.5318	2.81	19.49	22.30	46.00	-23.70	AVG
7	0.6335	14.80	19.50	34.30	56.00	-21.70	QP
8	0.6335	-0.90	19.50	18.60	46.00	-27.40	AVG
9	1.1880	14.79	19.51	34.30	56.00	-21.70	QP
10	1.1880	-1.21	19.51	18.30	46.00	-27.70	AVG
11	1.9227	12.95	19.55	32.50	56.00	-23.50	QP
12	1.9227	-0.95	19.55	18.60	46.00	-27.40	AVG

Notes: 1.An initial pre-scan was performed on the line and neutral lines with peak detector.

2.Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.

3.Mesurement Level = Reading level + Correct Factor

7 Radiated Spurious Emissions

Test Requirement	:	FCC CFR47 Part 15 Section 15.209 & 15.247, RSS-Gen §8.9, RSS-Gen §8.10
Test Method	:	ANSI C63.10:2020
Test Result	:	PASS
Measurement Distance	:	3m
Limit	:	See the follow table

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	$20\log^{(2400/F(kHz))}$ + 80
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	$20\log^{(24000/F(kHz))}$ + 40
1.705 ~ 30	30	30	100 * 30	$20\log^{(30)}$ + 40
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

7.1 EUT Operation

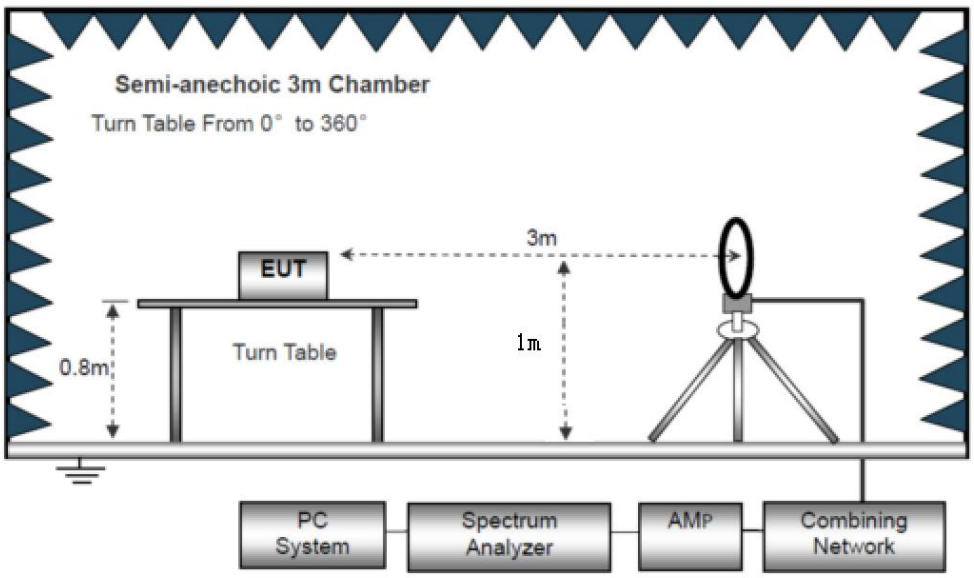
Operating Environment :

Temperature	:	23.5 °C
Humidity	:	51.1 % RH
Atmospheric Pressure	:	101.2kPa

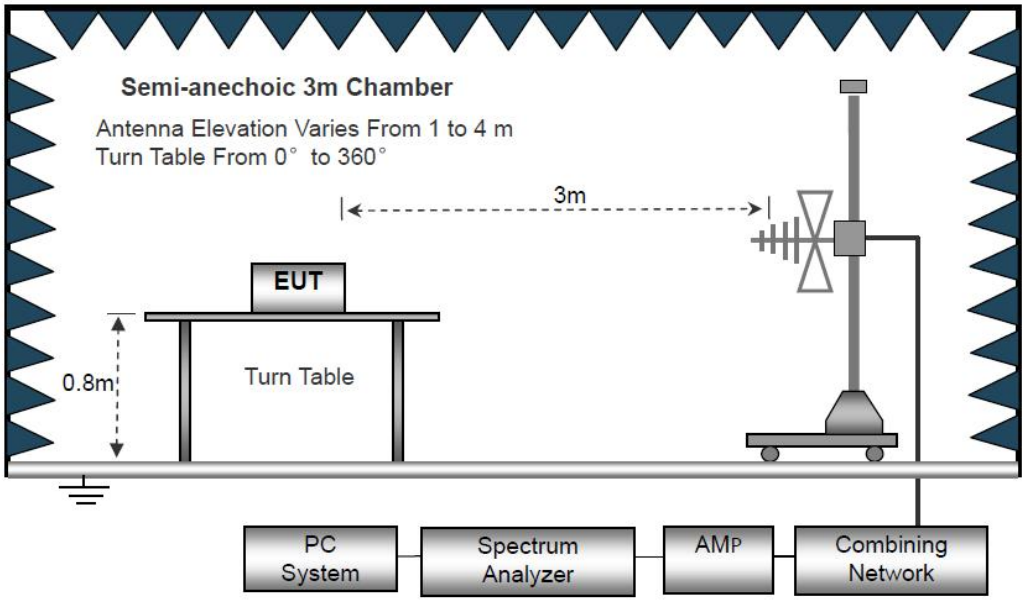
7.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site

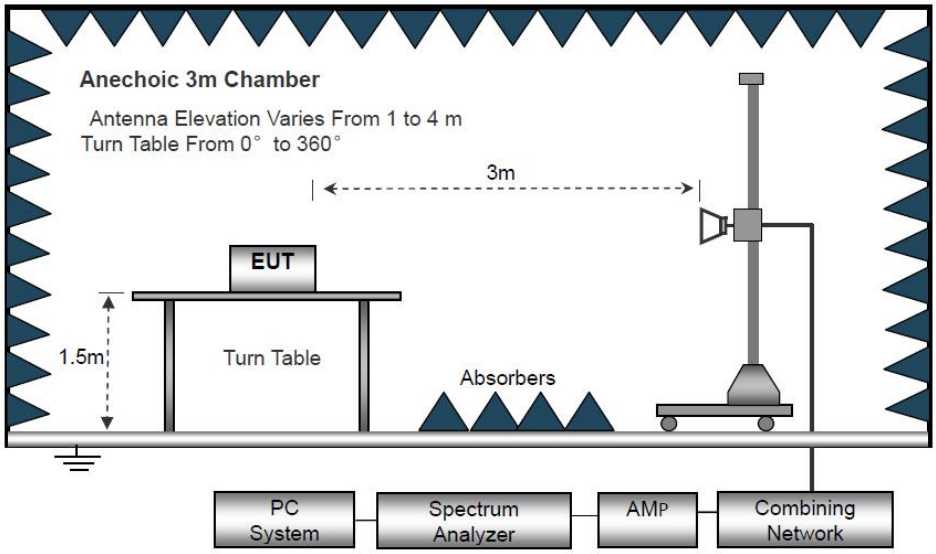
The test setup for emission measurement below 30MHz



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz



7.3 Spectrum Analyzer Setup

	Frequency	Detector	RBW	VBW	Remark
Receiver Setup	Below 30MHz	--	10kHz	10kHz	--
	30MHz ~ 1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		RMS	1MHz	3MHz	Average Value

7.4 Test Procedure

1. The testing follows the guidelines in Spurious Radiated Emissions of ANSI C63.10-2020.

2. Below 1000MHz, The EUT was placed on a turn table which is 0.8m above ground plane. And above 1000MHz, The EUT was placed on a styrofoam table which is 1.5m above ground plane.

3. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (From 1m to 4m) and turntable (from 0 degree to 360 degree) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.

5. Set to the maximum power setting and enable the EUT transmit continuously.

6. Final measurement (Above 1GHz): The frequency range will be divided into different sub ranges depending of the frequency range of the used horn antenna. The EMI Receiver set to peak and average mode and a resolution bandwidth of 1MHz. The measurement will be performed in horizontal and vertical polarization of the measuring antenna and while rotating the EUT in its vertical axis in the range of 0 degree to 360 degree in order to have the antenna inside the cone of radiation.

7. Test Procedure of measurement (For Above 1GHz):

1) Monitor the frequency range at horizontal polarization and move the antenna over all sides of the EUT(if necessary move the EUT to another orthogonal axis).

2) Change the antenna polarization and repeat 1) with vertical polarization.

3) Make a hardcopy of the spectrum.

4) Measure the frequency of the detected emissions with a lower span and resolution bandwidth to increase the accuracy and note the frequency value.

5) Change the analyser mode to Clear/ Write and found the cone of emission.

6) Rotate and move the EUT, so that the measuring distance can be enlarged to 3m and the antenna will be still inside the cone of emission.

7) Measure the level of the detected frequency with the correct resolution bandwidth, with the antenna polarization and azimuth and the peak and average detector, which causes the maximum emission.

8) Repeat steps 1) to 7) for the next antenna spot if the EUT is larger than the antenna beamwidth.

8. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.

For Average Measurement:

VBW=10Hz, when duty cycle is no less than 98 percent.

VBW≥1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

7.5 Summary of Test Results

Test Frequency: 9KHz-30MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)
--	--	--	--	>20

Note:

The amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

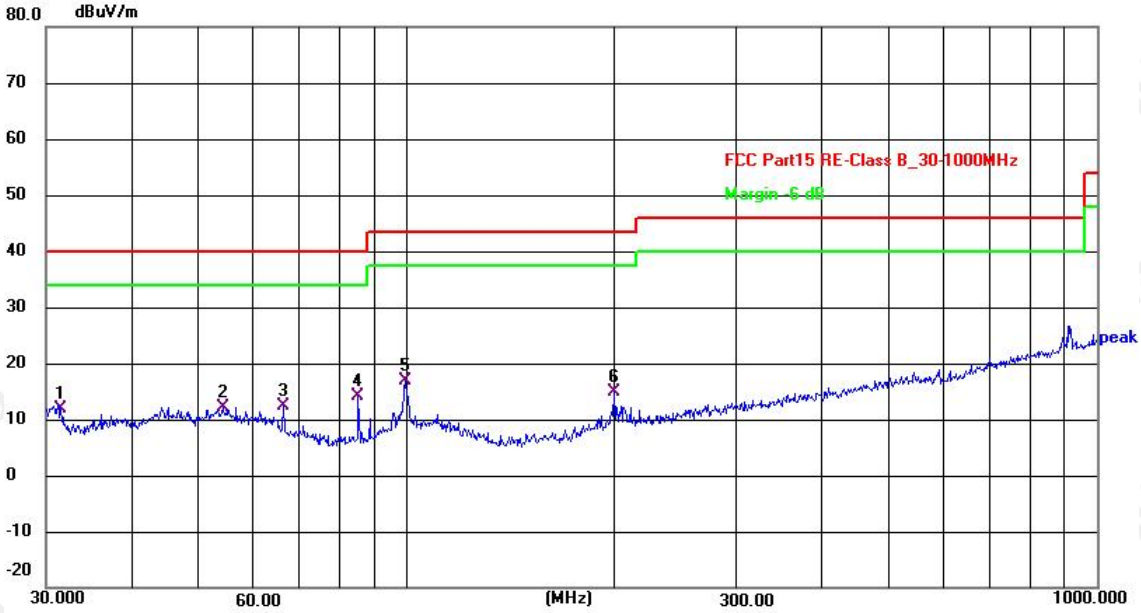
Distance extrapolation factor =40log(Specific distance/ test distance)(dB);
Limit line=Specific limits(dBuV) + distance extrapolation factor.

Test Frequency: 30MHz ~ 1GHz

Pass.

Please refer to the following test plots for the worst test mode (GFSK, Lowest Channel).

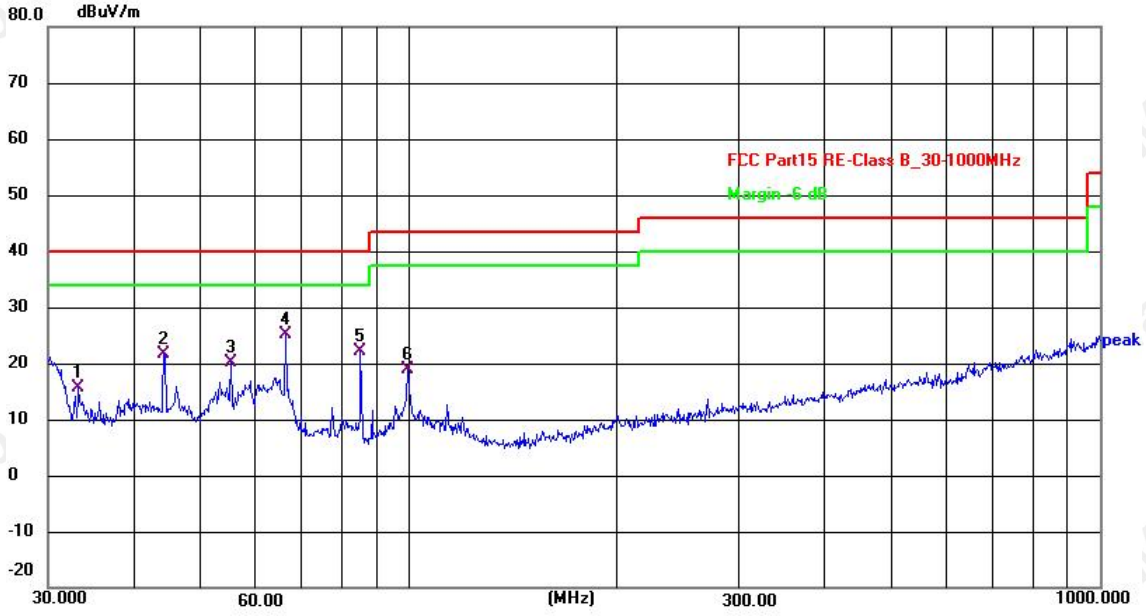
Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 3.7V	Test Mode:	GFSK, Low Channel



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	31.5093	28.25	-16.38	11.87	40.00	-28.13	QP
2	54.0710	26.78	-14.55	12.23	40.00	-27.77	QP
3	66.2662	29.23	-16.95	12.28	40.00	-27.72	QP
4	84.9995	33.21	-19.17	14.04	40.00	-25.96	QP
5	99.5281	32.92	-16.00	16.92	43.50	-26.58	QP
6	199.9855	31.21	-16.44	14.77	43.50	-28.73	QP

Remark:Emission Level=Reading+Cable Loss+ANT Factor-AMP Factor

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Vertical
Test Voltage:	DC 3.7V	Test Mode:	GFSK, Low Channel



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	33.2112	31.87	-16.34	15.53	40.00	-24.47	QP
2	44.1202	35.96	-14.45	21.51	40.00	-18.49	QP
3	55.2207	34.72	-14.64	20.08	40.00	-19.92	QP
4	66.2661	42.12	-16.95	25.17	40.00	-14.83	QP
5	84.9993	41.42	-19.17	22.25	40.00	-17.75	QP
6	99.5281	34.76	-16.00	18.76	43.50	-24.74	QP

Remark:Emission Level=Reading+Cable Loss+ANT Factor-AMP Factor

Test Frequency 1GHz-25GHz:

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel:2402MHz									
V	4804.00	51.33	34.12	5.03	32.39	54.63	74.00	-19.37	Pk
V	4804.00	38.43	34.12	5.03	32.39	41.73	54.00	-12.27	AV
V	7206.00	44.27	32.54	6.29	35.86	53.88	74.00	-20.12	Pk
V	7206.00	33.84	32.54	6.29	35.86	43.45	54.00	-10.55	AV
V	9608.00	43.36	32.98	7.55	38.40	56.33	74.00	-17.67	Pk
V	9608.00	33.20	32.98	7.55	38.40	46.17	54.00	-7.83	AV
V	12010.00	43.10	32.09	8.93	39.00	58.94	74.00	-15.06	Pk
V	12010.00	30.93	32.09	8.93	39.00	46.77	54.00	-7.23	AV
H	4804.00	46.42	34.12	5.03	32.39	49.72	74.00	-24.28	Pk
H	4804.00	38.28	34.12	5.03	32.39	41.58	54.00	-12.42	AV
H	7206.00	44.50	32.54	6.29	35.86	54.11	74.00	-19.89	Pk
H	7206.00	34.47	32.54	6.29	35.86	44.08	54.00	-9.92	AV
H	9608.00	43.45	32.98	7.55	38.40	56.42	74.00	-17.58	Pk
H	9608.00	30.75	32.98	7.55	38.40	43.72	54.00	-10.28	AV
H	12010.00	37.31	32.09	8.93	39.00	53.15	74.00	-20.85	Pk
H	12010.00	28.81	32.09	8.93	39.00	44.65	54.00	-9.35	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Middle Channel:2440MHz									
V	4880.00	48.66	34.07	5.09	32.59	52.27	74.00	-21.73	Pk
V	4880.00	35.97	34.07	5.09	32.59	39.58	54.00	-14.42	AV
V	7320.00	45.74	32.63	6.34	35.96	55.41	74.00	-18.59	Pk
V	7320.00	33.12	32.63	6.34	35.96	42.79	54.00	-11.21	AV
V	9760.00	38.76	32.92	7.59	38.40	51.83	74.00	-22.17	Pk
V	9760.00	28.90	32.92	7.59	38.40	41.97	54.00	-12.03	AV
V	12200.00	39.51	31.96	8.88	39.04	55.47	74.00	-18.53	Pk
V	12200.00	29.29	31.96	8.88	39.04	45.25	54.00	-8.75	AV
H	4880.00	49.25	34.07	5.09	32.59	52.86	74.00	-21.14	Pk
H	4880.00	37.85	34.07	5.09	32.59	41.46	54.00	-12.54	AV
H	7320.00	42.88	32.63	6.34	35.96	52.55	74.00	-21.45	Pk
H	7320.00	31.96	32.63	6.34	35.96	41.63	54.00	-12.37	AV
H	9760.00	39.18	32.92	7.59	38.40	52.25	74.00	-21.75	Pk
H	9760.00	27.95	32.92	7.59	38.40	41.02	54.00	-12.98	AV
H	12200.00	36.40	31.96	8.88	39.04	52.36	74.00	-21.64	Pk
H	12200.00	28.98	31.96	8.88	39.04	44.94	54.00	-9.06	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
High Channel:2480MHz									
V	4960.00	46.34	34.02	5.15	32.80	50.27	74.00	-23.73	Pk
V	4960.00	36.16	34.02	5.15	32.80	40.09	54.00	-13.91	AV
V	7440.00	45.13	32.71	6.40	36.05	54.87	74.00	-19.13	Pk
V	7440.00	30.80	32.71	6.40	36.05	40.54	54.00	-13.46	AV
V	9920.00	43.55	32.86	7.62	38.40	56.71	74.00	-17.29	Pk
V	9920.00	30.27	32.86	7.62	38.40	43.43	54.00	-10.57	AV
V	12400.00	41.88	31.82	8.84	39.08	57.98	74.00	-16.02	Pk
V	12400.00	27.12	31.82	8.84	39.08	43.22	54.00	-10.78	AV
H	4960.00	49.51	34.02	5.15	32.80	53.44	74.00	-20.56	Pk
H	4960.00	37.25	34.02	5.15	32.80	41.18	54.00	-12.82	AV
H	7440.00	44.99	32.71	6.40	36.05	54.73	74.00	-19.27	Pk
H	7440.00	31.51	32.71	6.40	36.05	41.25	54.00	-12.75	AV
H	9920.00	42.83	32.86	7.62	38.40	55.99	74.00	-18.01	Pk
H	9920.00	31.78	32.86	7.62	38.40	44.94	54.00	-9.06	AV
H	12400.00	38.56	31.82	8.84	39.08	54.66	74.00	-19.34	Pk
H	12400.00	27.53	31.82	8.84	39.08	43.63	54.00	-10.37	AV

Note: 1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,

Margin= Emission Level - Limit

2. If peak below the average limit, the average emission was no test.

3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Spurious Emission in Restricted Band 2310-2390MHz and 2483.5-2500MHz

	Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV/m)	Detector Type	Result
GFSK	Low Channel: 2402MHz									
	H	2390.00	58.05	35.17	3.48	27.49	53.85	74.00	PK	PASS
	H	2390.00	49.82	35.17	3.48	27.49	45.62	54.00	AV	PASS
	H	2400.00	59.94	35.16	3.49	27.52	55.79	74.00	PK	PASS
	H	2400.00	49.56	35.16	3.49	27.52	45.41	54.00	AV	PASS
	V	2390.00	57.95	35.17	3.48	27.49	53.75	74.00	PK	PASS
	V	2390.00	49.39	35.17	3.48	27.49	45.19	54.00	AV	PASS
	V	2400.00	59.78	35.16	3.49	27.52	55.63	74.00	PK	PASS
	V	2400.00	49.39	35.16	3.49	27.52	45.24	54.00	AV	PASS
	High Channel: 2480MHz									
	H	2483.50	58.03	35.11	3.56	27.75	54.23	74.00	PK	PASS
	H	2483.50	48.66	35.11	3.56	27.75	44.86	54.00	AV	PASS
	H	2500.00	58.80	35.10	3.57	27.80	55.07	74.00	PK	PASS
	H	2500.00	49.92	35.10	3.57	27.80	46.19	54.00	AV	PASS
	V	2483.50	58.88	35.11	3.56	27.75	55.08	74.00	PK	PASS
	V	2483.50	50.47	35.11	3.56	27.75	46.67	54.00	AV	PASS
	V	2500.00	58.49	35.10	3.57	27.80	54.76	74.00	PK	PASS
	V	2500.00	49.91	35.10	3.57	27.80	46.18	54.00	AV	PASS

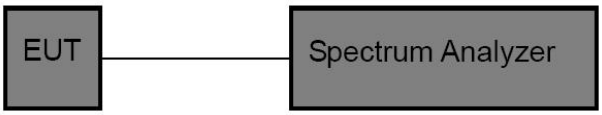
Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit

8 Conduct Band Edge And Spurious Emissions Measurement

Test Requirement	:	Section 15.247(d) In addition, radiated emissions which fall in the restricted bands. as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)). RSS-247 § 5.5
Test Method	:	ANSI C63.10:2020
Test Limit	:	Regulation 15.247 (d),In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. 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) (see §15.205(c)). RSS-247 § 5.5： In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

8.1 Test Setup



8.2 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz, Sweep = auto
Detector function = peak, Trace = max hold

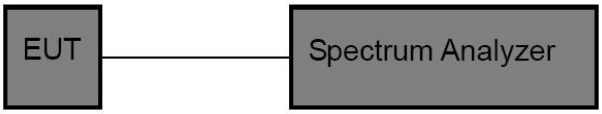
8.3 Test Result

Please see the Appendix for the BLE data

9 6dB Bandwidth Measurement

Test Requirement	:	FCC CFR47 Part 15 Section 15.247, RSS-247
Test Method	:	ANSI C63.10:2020
Test Limit		Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

9.1 Test Setup



9.2 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz

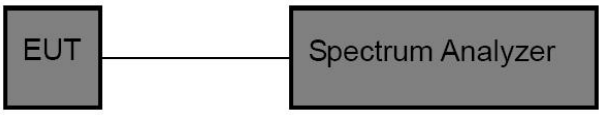
9.3 Test Result

Please see the Appendix for the BLE data

10 Maximum Peak Output Power

Test Requirement	:	FCC CFR47 Part 15 Section 15.247, RSS-247 § 5.4
Test Method	:	ANSI C63.10:2020
Test Limit	:	Regulation 15.247 (b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. RSS-247 § 5.4 For DTSs employing digital modulation techniques operating in the bands 902-928 MHz and 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1 W. The e.i.r.p. shall not exceed 4 W, except as provided in section 5.4(e).

10.1 Test Setup



10.2 Test Procedure

1. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Measure the conducted output power and record the results in the test report.

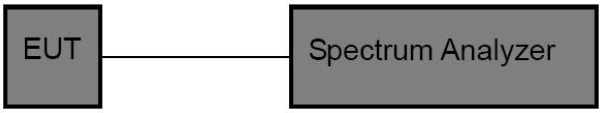
10.3 Test Result

Please see the Appendix for the BLE data

11 Power Spectral density

Test Requirement	:	FCC CFR47 Part 15 Section 15.247,RSS-247 §5.2 (b)
Test Method	:	ANSI C63.10:2020
Test Limit	:	Regulation 15.247(f) The power spectral density conducted from the intentional radiator to the antenna due to the digital modulation operation of the hybrid system, with the frequency hopping operation turned off, shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. RSS-247 §5.2 (b) The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of section 5.4(d), (i.e. the power spectral density shall be determined using the same method as is used to determine the conducted output power).

11.1 Test Setup



11.2 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.

2. Set the spectrum analyzer: RBW = 3kHz. VBW = 10kHz , Span = 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.

3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

11.3 Test Result

Please see the Appendix for the BLE data

12 Antenna Application

12.1 Antenna Requirement

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.

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 6dBi.

According to RSS-GEN section 6.8

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).

12.2 Result

The antenna is Internal Antenna, the Max gain of the antennas is 1.60 dBi, reference to the attachment for details.

13 Test Setup Photos and EUT Photos

Please see the attachment for details.

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