TEST REPORT

Product Name:	Wireless Wetsuit Heater
FCC ID:	2BQXXREMOTE
Trademark:	N/A
Model Number:	WW-HKB, WW-SURF-HKB, WW-DIVE-HKB
Prepared For:	HOTSUITS WETSUIT HEATERS
Address:	5 Layback Street, Torquay, 3228, Victoria, Australia
Manufacturer:	SHENZHEN TIANHUI XINGYE TECHNOLOGY CO., LTD
Address:	4th Floor, Building D, Baosanhe Industrial Park, Kukeng Community, Guanlan Subdistrict, Longhua District, Shenzhen City
Prepared By:	Shenzhen CTB Testing Technology Co., Ltd.
Address:	1&2/F., Building A, No.26, Xinhe Road, Xinqiao, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date:	Jun. 23, 2025
Sample tested Date:	Jun. 23, 2025 to Jul. 09, 2025
Issue Date:	Jul. 09, 2025
Report No.:	CTB25062313008RF01
Test Standards	FCC CFR Title 47 Part 15 Subpart C Section 15.231(e) ANSI C63.10:2020
Test Results	PASS
Remark:	This is 433MHz radio test report.

Compiled by:	Reviewed by:	Approved by:
Zhou Kui	Arron Liu	
Zhou Kui	Arron Liu	Bin Mei / Director

Note: If there is any objection to the inspection results in this report, please submit a written report to the company within 15 days from the date of receiving the report. The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen CTB Testing Technology Co., Ltd. this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client. "*" indicates the testing items were fulfilled by subcontracted lab. "#" indicates the items are not in CNAS accreditation scope.

TABLE OF CONTENT

Test Report Declaration Page

1. VERSION 3
2. TEST SUMMARY 4
3. MEASUREMENT UNCERTAINTY 5
4. PRODUCT INFORMATION AND TEST SETUP 6
4.1 Product Information 6
4.2 Test Setup Configuration 6
4.3 Support Equipment 6
4.5 Test Environment 7
5. TEST FACILITY AND TEST INSTRUMENT USED 8
5.1 Test Facility 8
5.2 Test Instrument Used 8
6. AC POWER LINE CONDUCTED EMISSION 11
6.1 Block Diagram Of Test Setup 11
6.2 Limit 11
6.3 Test procedure 11
6.4 Test Result 12
7. RADIATED EMISSION 14
7.1 Block Diagram Of Test Setup 14
7.2 Limit 14
7.3 Test procedure 15
7.4 Test Result 16
8. DWELL TIME 21
8.1 Block Diagram Of Test Setup 21
8.2 Limit 21
8.3 Test procedure 21
8.4 Test Result 22
9. OCCUPIED BANDWIDTH 23
9.1 Block Diagram Of Test Setup 23
9.2 Limit 23
9.3 Test procedure 23
9.4 Test Result 24
10. ANTENNA REQUIREMENT 25
11. EUT TEST SETUP PHOTOGRAPHS 26

(Note: N/A means not applicable)

1. VERSION

Report No.	Issue Date	Description	Approved
CTB25062313008RF01	Jul. 09, 2025	Original	Valid

2. TEST SUMMARY

The Product has been tested according to the following specifications:

Test Item	Test Requirement	Test method	Result
AC Power Line Conducted Emission	47 CFR Part 15 Subpart C Section 15.207	ANSI C63.10-2020	PASS
Radiated Emission	47 CFR Part 15 Subpart C Section 15.209; 15.231(e)	ANSI C63.10-2020	PASS
Dwell Time	47 CFR Part 15 Subpart C Section 15.231 (e)	ANSI C63.10-2020	PASS
Occupied Bandwidth	47 CFR Part 15 Subpart C Section 15.231(c)	ANSI C63.10-2020	PASS
Antenna requirement	47 CFR Part 15 Subpart C Section 15.203	ANSI C63.10-2020	PASS

3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Item	Uncertainty
Occupancy bandwidth	U=±54.3Hz
Conducted output power Above 1G	U=±1.0dB
Conducted output power Below 1G	U=±0.9dB
Power Spectral Density , Conduction	U=±1.0dB
Conduction spurious emissions	U=±2.8dB
Out of band emission	U=±54Hz
3m camber Radiated spurious emission(30MHz-1GHz)	U=±4.3dB
3m chamber Radiated spurious emission(1GHz-18GHz)	U=±4.5dB
humidity uncertainty	U=±5.3%
Temperature uncertainty	U=±0.59℃
Supply voltages	U=±3%
Time	U=±5%

4. PRODUCT INFORMATION AND TEST SETUP

4.1 Product Information

Model(s):	WW-HKB, WW-SURF-HKB, WW-DIVE-HKB
Model Description:	All the model are the same circuit and RF module, different brands mean different models. Test sample model: WW-HKB
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	433.903MHz
Type of Modulation:	ASK
Antenna installation:	PCB antenna
Antenna Gain:	1.0dBi
Ratings:	For Adapter: Input: 100-240V~50/60Hz 0.6A Output: 9.0V⎓3.3A 29.7W Wireless charging input DC 3.7V by battery

4.2 Test Setup Configuration

See test photographs attached in EUT TEST SETUP PHOTOGRAPHS for the actual connections between Product and support equipment.

4.3 Support Equipment

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
1.	Power Adapter	FRONTPOWER	YL301-0903300V	/	EUT

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4 Test Mode

All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst data were recorded and reported.

Test mode
Keep the EUT in transmitting mode with modulation.

4.5 Test Environment

Humidity(%):	54
Atmospheric Pressure(kPa):	101
Normal Voltage(DC):	3.7V
Normal Temperature(℃)	23

5. TEST FACILITY AND TEST INSTRUMENT USED

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at 1&2F., Building A, No. 26, Xinhe Road, Xinqiao, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

5.2 Test Instrument Used

No.	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Calibrated Date	Calibrated until
1	Spectrum Analyzer	Agilent	N9020A	MY52090073	A.14.16	2025/5/23	2026/5/22
2	Power Sensor	Agilent	U2021XA	MY56120032	/	2025/5/23	2026/5/22
3	Power Sensor	Agilent	U2021XA	MY56120034	/	2025/5/23	2026/5/22
4	Communication test set	R&S	CMW500	108058	V3.5.80	2025/5/23	2026/5/22
5	Spectrum Analyzer	KEYSIGHT	N9020A	MY51289897	A.14.16	2025/5/23	2026/5/22
6	Signal Generator	Agilent	N5181A	MY50140365	A.01.60	2025/5/22	2026/5/21
7	Vector signal generator	Agilent	N5182A	MY47420195	A.01.87	2025/5/22	2026/5/21
8	Communication test set	Agilent	E5515C	MY50102567	B.19.07 (E1962B)	2025/5/22	2026/5/21
9	2.4 GHz Filter	Shenxiang	MSF2400-2483.5MS-1154	20181015001	/	2025/6/18	2026/6/17
10	5 GHz Filter	Shenxiang	MSF5150-5850 MS-1155	20181015001	/	2025/6/18	2026/6/17
11	Filter	Xingbo	XBLBQ-DZA120	190821-1-1	/	2025/5/24	2026/5/23
12	BT&WI-FI Automatic test software	Micowave	MTS8310	Ver. 2.0.0.0	/	/	/
13	Rohde & Schwarz SFU Broadcast Test System	R&S	SFU	101017	/	2024/10/31	2025/10/30
14	Temperature humidity chamber	Hongjing	TH-80CH	DG-15174	/	2025/5/22	2026/5/21
15	234G Automatic test software	Micowave	MTS8200	Ver. 2.0.0.0	/	/	/
16	966 chamber	C.R.T.	966	/	/	2024/6/23	2027/6/22
17	Receiver	R&S	ESPI	100362	RF_ATTEN_7 (104489/003)	2025/5/23	2026/5/22

18	Amplifier	HP	8447E	2945A02747	/	2025/5/23	2026/5/22
19	Amplifier	Agilent	8449B	3008A01838	/	2025/6/2	2026/6/1
20	TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	00869	/	2025/6/29	2026/6/28
21	Double Ridged Broadband Horn Antenna	Schwarzbeck	BBHA9120D	01911	/	2025/6/1	2026/5/31
22	EMI test software	Fala	EZ-EMC	FA-03A2 RE	/	/	/
23	Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-224	/	2025/6/2	2026/6/1
24	loop antenna	ZHINAN	ZN30900A	GTS534	/	/	/
25	40G Horn antenna	A/H/System	SAS-574	588	/	2025/6/2	2026/6/1
26	Amplifier	AEROFLEX	Aeroflex	097	/	2025/6/2	2026/6/1
27	Power Metter	KEYSIGHT	N1912AP	N/A	A.05.00	2025/6/2	2026/6/1

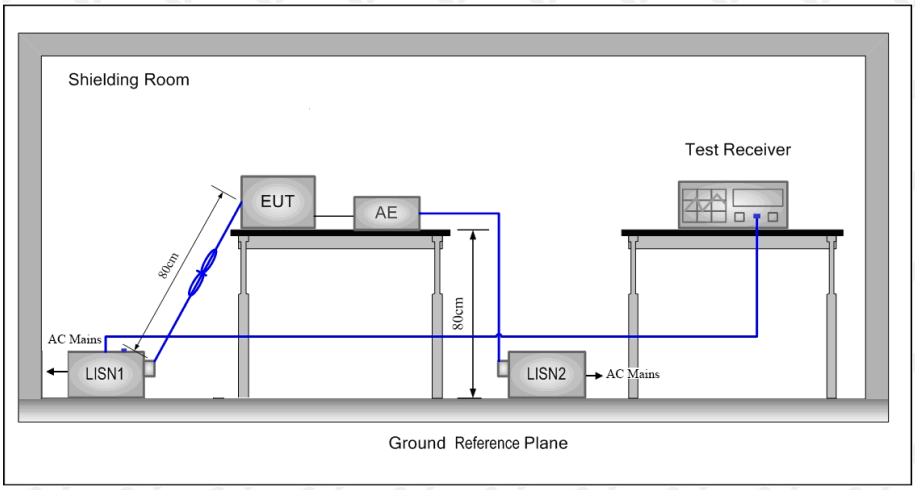
Continuous disturbance							
No.	Equipment	Manufacturer	Model No.	Serial No.	Firmware version	Calibrated Date	Calibrated until
1	843 Shield Room	C/ R/ T	843	/	/	2024/6/22	2027/6/21
2	LISN	ROHDE&SCHWARZ	ESH3-Z5	831551852	/	2025/5/22	2026/5/21
3	EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI	100428	V4.42.SP3	2025/5/22	2026/5/21
4	Coaxial cable	ZDECL	Z302S	18091904	/	2025/5/22	2026/5/21
5	ISN	Schwarzbeck	NTFM8158	183	/	2025/6/18	2026/6/17
6	Voltage sensor	Schwarzbeck	TK 9420	01189	/	2024/10/26	2025/10/25
7	EZ-EMC	Frad	EMC-con3A1.1	/	/	/	/
8	Current Probe	FCC	F-52B	199453	/	2025/5/24	2026/5/23
9	Communication test set	R&S	CMW500	108058	B.19.07 (E1962B)	2025/5/23	2026/5/22
10	Communication test set	Agilent	E5515C	MY50102567	V3.5.80	2025/5/23	2026/5/22

Radiated emission(No.2 Chamber)							
No.	Equipment	Manufacturer	Model No.	Serial No.	Firmware version	Calibrated Date	Calibrated until
1	966 Chamber	C/ R/ T	966	/	/	2024/6/8	2027/6/7
2	Double Ridged Broadband Horn Antenna	Schwarzbeck	BBHA 9120 D	01911	/	2025/6/1	2026/5/31
3	Broadband Antenna	Schwarzbeck	VULB 9168	1471	/	2024/10/26	2025/10/25
4	Amplifier	Agilent	8449B	3008A01838	/	2025/6/3	2026/6/2
5	Preamplifier	Schwarzbeck	BBV 9743 B	00500	/	2025/5/30	2026/5/29

6	EMI TEST RECEIVER	R&S	ESCI7	100861	/	2024/10/26	2025/10/25
7	Spectrum Analyzer	KEYSIGHT	N9020A	MY51289897	A.14.16	2025/5/23	2026/5/22
8	EMI test software	Farad	EZ-EMC	/	Ver. FARAD-3A1+	/	/
9	Coaxial cable	Rosenberg	8m	/	/	2024/10/26	2025/10/25
10	Coaxial cable	Times	2m	/	/	2024/10/26	2025/10/25
11	Coaxial cable	Times	2m	/	/	2024/10/26	2025/10/25
12	Coaxial cable	Times	1m	/	/	2024/10/26	2025/10/25
13	loop antenna	Schwarzbeck	FMZB 1519B	1519B-224	/	2025/6/2	2026/6/1
14	Communication test set	R&S	CMW500	108058	B.19.07 (E1962B)	2025/5/23	2026/5/22
15	Communication test set	Agilent	E5515C	MY50102567	V3.5.80	2025/5/23	2026/5/22

6. AC POWER LINE CONDUCTED EMISSION

6.1 Block Diagram Of Test Setup



6.2 Limit

Frequency (MHz)	Maximum RF Line Voltage (dBμV)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency

6.3 Test procedure

1) The mains terminal disturbance voltage test was conducted in a shielded room.

2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.

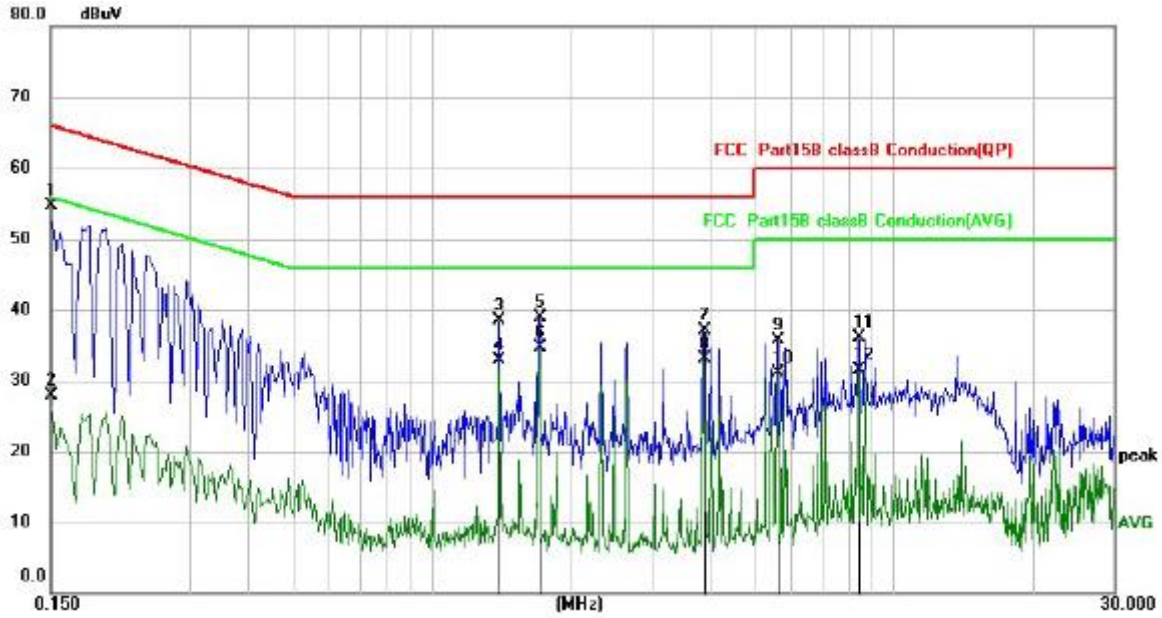
3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,

4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0,4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0,8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0,8 m from the LISN 2.

5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

6.4 Test Result

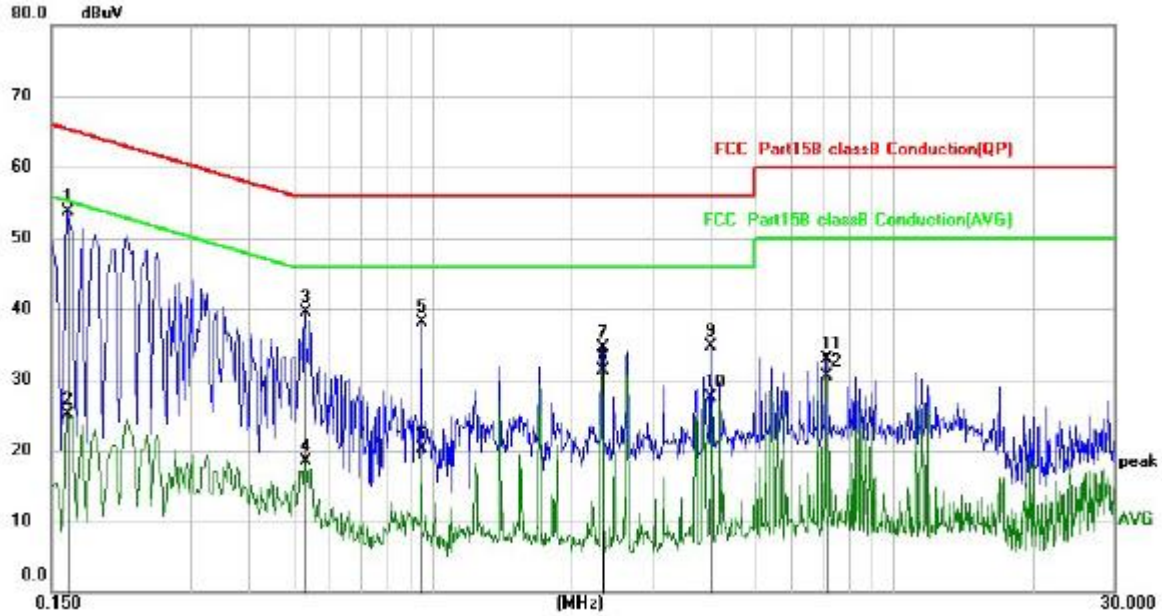
Temperature:	23℃	Relative Humidity:	54%
Pressure:	101.6kPa	Phase :	L
Test Mode	1(the worst data)	Remark:	N/A



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.1500	44.63	10.03	54.66	66.00	-11.34	QP
2		0.1500	17.94	10.03	27.97	56.00	-28.03	AVG
3		1.4020	28.46	10.06	38.52	56.00	-17.48	QP
4		1.4020	22.87	10.06	32.93	46.00	-13.07	AVG
5		1.7140	28.92	10.06	38.98	56.00	-17.02	QP
6	*	1.7140	24.65	10.06	34.71	46.00	-11.29	AVG
7		3.8940	26.90	10.13	37.03	56.00	-18.97	QP
8		3.8940	22.94	10.13	33.07	46.00	-12.93	AVG
9		5.6100	25.47	10.18	35.65	60.00	-24.35	QP
10		5.6100	21.00	10.18	31.18	50.00	-18.82	AVG
11		8.4100	25.80	10.25	36.05	60.00	-23.95	QP
12		8.4100	21.21	10.25	31.46	50.00	-18.54	AVG

Remark: Result=Reading +Factor
Over Limit=Result -Limit

Temperature:	23℃	Relative Humidity:	54%
Pressure:	101.6kPa	Phase :	N
Test Mode	1(the worst data)	Remark:	N/A



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	*	0.1620	43.70	10.03	53.73	65.36	-11.63	QP
2		0.1620	15.15	10.03	25.18	55.36	-30.18	AVG
3		0.5299	29.43	10.03	39.46	56.00	-16.54	QP
4		0.5299	8.50	10.03	18.53	46.00	-27.47	AVG
5		0.9500	28.13	10.05	38.18	56.00	-17.82	QP
6		0.9500	10.22	10.05	20.27	46.00	-25.73	AVG
7		2.3380	24.40	10.08	34.48	56.00	-21.52	QP
8		2.3380	21.22	10.08	31.30	46.00	-14.70	AVG
9		4.0260	24.52	10.13	34.65	56.00	-21.35	QP
10		4.0260	17.33	10.13	27.46	46.00	-18.54	AVG
11		7.1660	22.62	10.24	32.86	60.00	-27.14	QP
12		7.1660	20.20	10.24	30.44	50.00	-19.56	AVG

Remark: Result=Reading +Factor
Over Limit=Result –Limit

7. RADIATED EMISSION

7.1 Block Diagram Of Test Setup

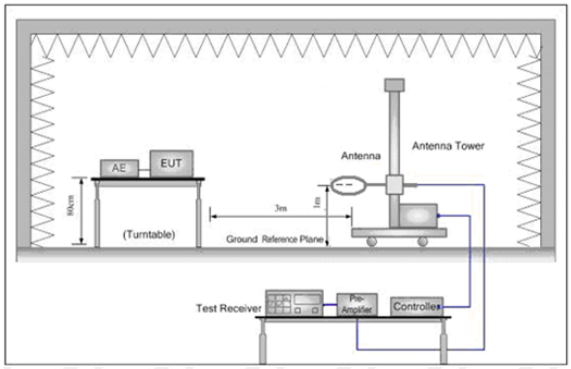


Figure 1. Below 30MHz

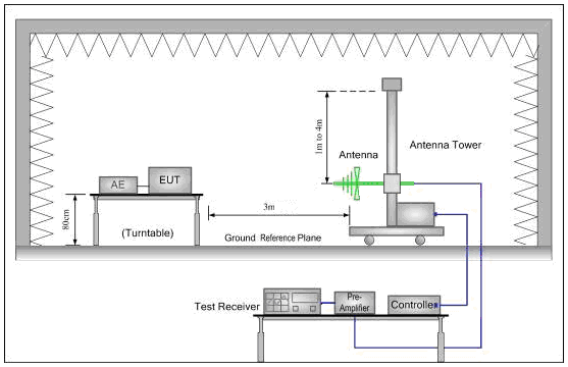


Figure 2. 30MHz to 1GHz

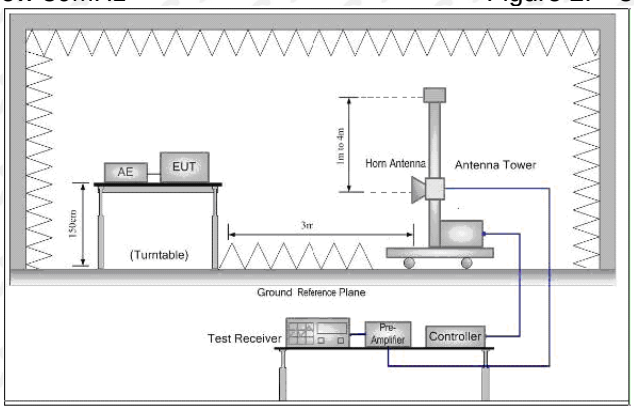


Figure 3. Above 1GHz

7.2 Limit

Spurious Emissions:

Frequency	Field strength (dBµV/m)	Remark	Measurement distance (m)
0.009MHz-0.490MHz	20log 2400/F (kHz) + 80	-	3
0.490MHz-1.705MHz	20log 24000/F (kHz) + 40	-	3
1.705MHz-30MHz	20log 30 + 40	-	3
30MHz-88MHz	40.0	Quasi-peak	3
88MHz-216MHz	43.5	Quasi-peak	3
216MHz-960MHz	46.0	Quasi-peak	3
960MHz-1GHz	54.0	Quasi-peak	3
Above 1GHz	54.0	Average	3

Note: 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.

Field Strength of Fundamental Limit:

Fundamental and harmonics emission limits Frequency(MHz)	Field strength of Fundamental((microvolts/meter)	Field strength of spurious emissions(microvolts/meter)
40.66-40.70	1000	100
70-130	500	50
130-174	500 to 1500**	50 to 150**
174-260	1500	150
260-470	1500 to 5000**	150 to 500**
Above 470	5000	500

** linear interpolations
[Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows: for the band 130-174 MHz, µV/m at 3 meters = 22.72727(F)+500; for the band 260-470 MHz, µV/m at 3 meters = 16.66667(F) -2833.33 The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.]

Frequency	Limit (dBµV/m @3m)	Remark
433.903MHz	72.87	Average Value
	92.87	Peak Value

7.3 Test procedure

Below 1GHz test procedure as below:
a.The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
b.The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c.The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d.For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rota table table was turned from 0 degrees to 360 degrees to find the maximum reading.
e.The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f.If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Above 1GHz test procedure as below:
g.Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter).
h.Test the EUT in the lowest channel ,the middle channel ,the Highest channel
j.Repeat above procedures until all frequencies measured was complete.

Receiver set:

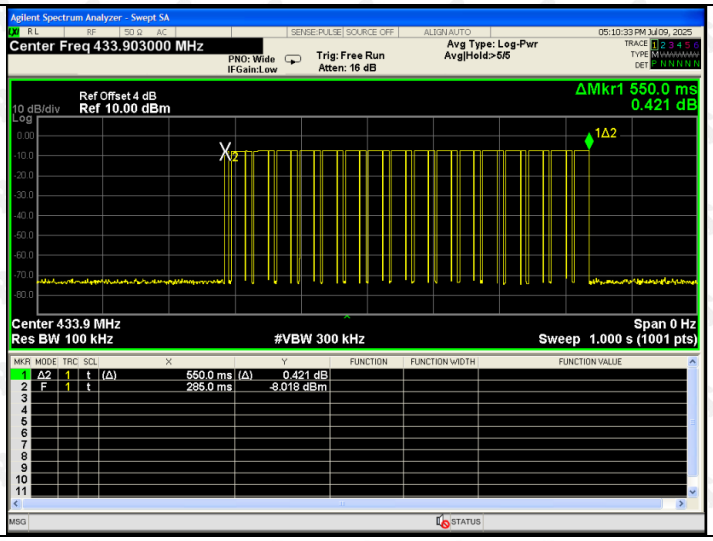
Frequency	Detector	RBW	VBW	Remark
0.009MHz-0.090MHz	Peak	10kHz	30KHz	Peak
0.009MHz-0.090MHz	Average	10kHz	30KHz	Average
0.090MHz-0.110MHz	Quasi-peak	10kHz	30KHz	Quasi-peak
0.110MHz-0.490MHz	Peak	10kHz	30KHz	Peak
0.110MHz-0.490MHz	Average	10kHz	30KHz	Average
0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak

30MHz-1GHz	Quasi-peak	100 kHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

7.4 Test Result

7.4.1 Calculation of average factor

The output field strengths of specification in accordance with the FCC rules specify measurements with an average detector. During the test, a spectrum analyzer incorporating a peak detector was used. Therefore, a reduction factor can be applied to the resultant peak signal level and compared to the limit for measurement instrumentation incorporating an average detector.
The duty cycle is measured in 100 ms or the repetition cycle period, whichever is a shorter time frame. The duty cycle is measured by placing the spectrum analyzer to set zero span at 100kHz resolution bandwidth.

Cycle	

Average factor:	
Calculate Formula:	Average value=Peak value + PDCF
	PDCF=20 log(Duty cycle)
	Duty cycle = T on time / T period
Calculated average factor:	Ton time =0(ms); T period =550(ms)
	PDCF = 0dB

7.4.2 Radiated Spurious Emission

Frequency Range (9 kHz-30MHz)

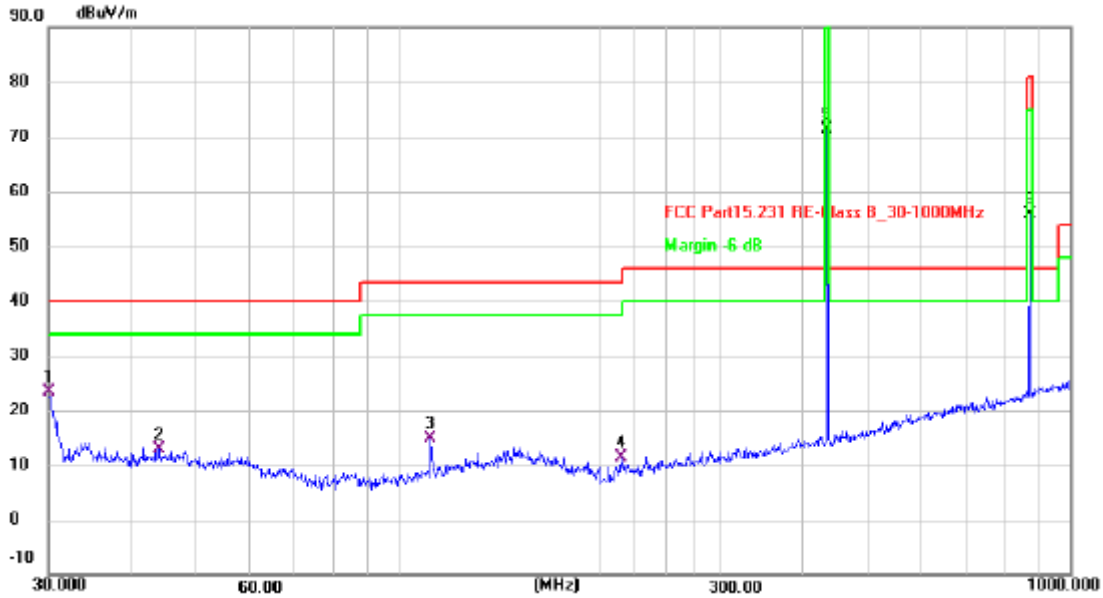
Frequency (MHz)	Level@3m (dBμV/m)	Limit@3m (dBμV/m)
--	--	--
--	--	--
--	--	--
--	--	--

Note: *1. Emission Level=Reading+ Cable loss-Antenna factor-Amp factor*

2. The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement

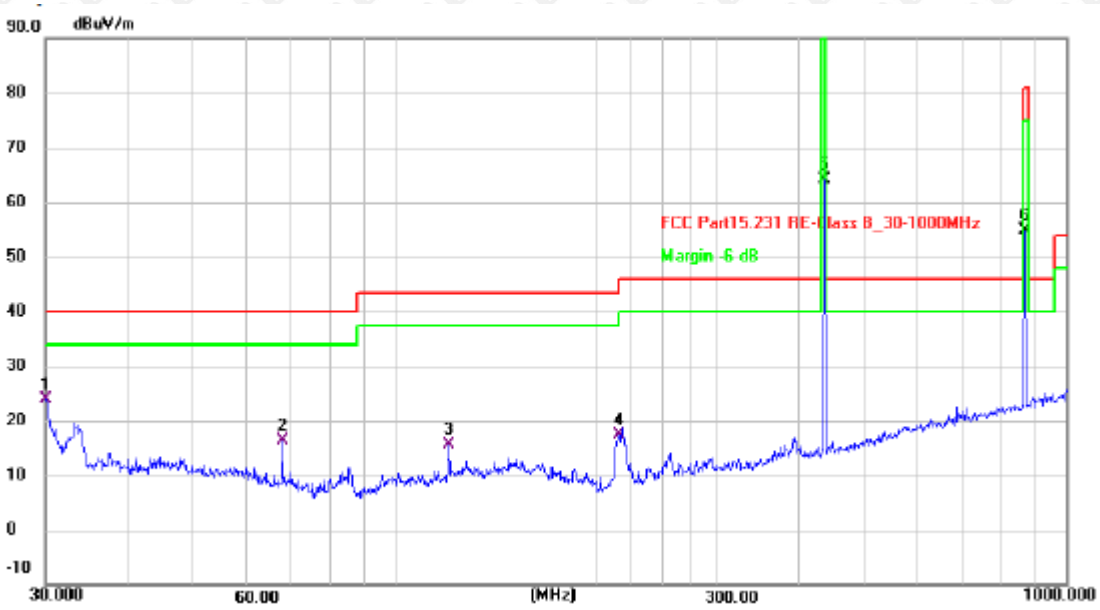
About 30MHz-1GHz Test Results:

Antenna polarity: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	30.0000	37.04	-13.75	23.29	40.00	-16.71	QP
2	43.9658	26.41	-13.45	12.96	40.00	-27.04	QP
3	111.3468	31.46	-16.51	14.95	43.50	-28.55	QP
4	213.7632	27.81	-16.47	11.34	43.50	-32.16	QP
5	434.0650	81.80	-10.42	71.38	100.80	-29.42	peak
6	869.1300	57.57	-1.68	55.89	80.80	-24.91	peak

Antenna polarity: V



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	30.1051	37.54	-13.75	23.79	40.00	-16.21	QP
2	67.6751	32.73	-16.47	16.26	40.00	-23.74	QP
3	119.8555	30.95	-15.29	15.66	43.50	-27.84	QP
4	215.2676	33.86	-16.40	17.46	43.50	-26.04	QP
5	435.5898	74.49	-10.38	64.11	100.80	-36.69	peak
6	866.0880	56.59	-1.73	54.86	80.80	-25.94	peak

Remark: Factor = Cable lose + Antenna factor - Pre-amplifier; Margin = Limit – Level

For average Emission

Frequency MHz	Peak Level dBuV/m	Duty cycle factor	AverageLevel dBuV/m	Limit AV	Margin	Polarization
434.07	71.38	0	71.38	72.87	-1.49	Horizontal
869.13	55.89	0	55.89	52.87	3.02	Horizontal
435.59	64.11	0	64.11	72.87	-8.76	Vertical
866.09	54.86	0	54.86	52.87	1.99	Vertical

Notes: Average emission Level = Peak Level + Duty cycle factor

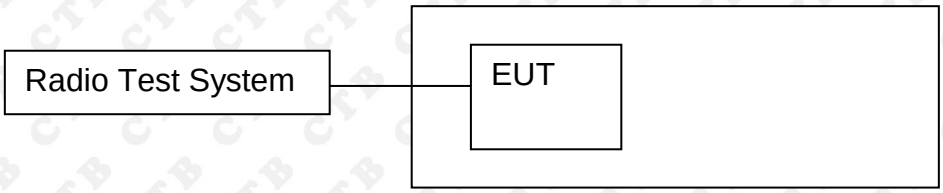
Above 1GHz Test Results

Frequency MHz	Peak Level dBuV/m	Duty cycle factor	Average Level dBuV/m	Limit		Margin dB		Polarization
				PK	AV	PK	AV	
1302.21	49.73	0	49.73	72.87	52.87	-23.14	-3.14	Vertical
1736.28	46.29	0	46.29	72.87	52.87	-26.58	-6.58	Vertical
2170.35	44.80	0	44.80	72.87	52.87	-28.07	-8.07	Vertical
2604.42	42.96	0	42.96	72.87	52.87	-29.91	-9.91	Vertical
3038.49	40.51	0	40.51	72.87	52.87	-32.36	-12.36	Vertical
3472.56	41.09	0	41.09	72.87	52.87	-31.78	-11.78	Vertical
1306.77	50.63	0	50.63	72.87	52.87	-22.24	-2.24	Horizontal
1742.36	47.01	0	47.01	72.87	52.87	-25.86	-5.86	Horizontal
2177.95	44.00	0	44.00	72.87	52.87	-28.87	-8.87	Horizontal
2613.54	43.07	0	43.07	72.87	52.87	-29.80	-9.80	Horizontal
3049.13	41.55	0	41.55	72.87	52.87	-31.32	-11.32	Horizontal
3484.72	41.63	0	41.63	72.87	52.87	-31.24	-11.24	Horizontal

Notes: Average emission Level = Peak Level + Duty cycle factor

8. DWELL TIME

8.1 Block Diagram Of Test Setup



8.2 Limit

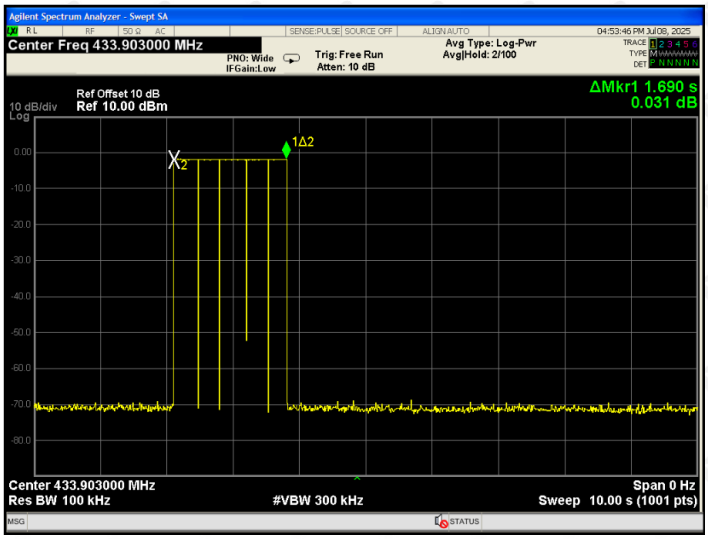
According to FCC 15.231(e):
In addition, devices operated under the provisions of this paragraph shall be provided with a means for automatically limiting operation so that the duration of each transmission shall not be greater than one second and the silent period between transmissions shall be at least 30 times the duration of the transmission but in no case less than 10 seconds.

8.3 Test procedure

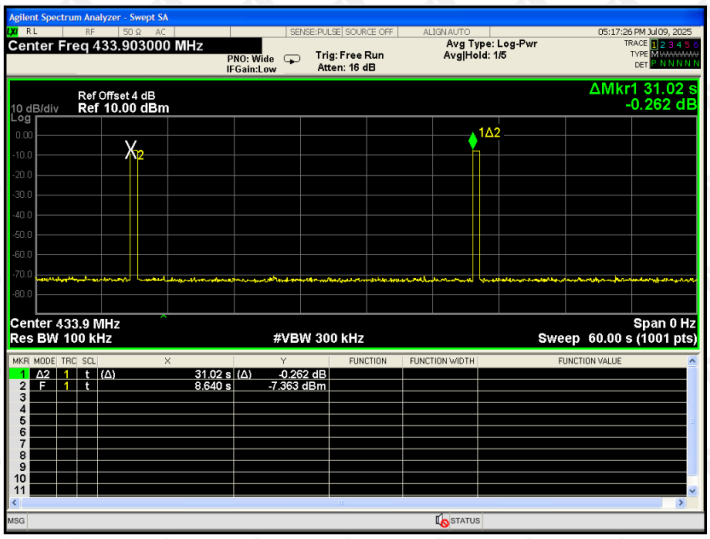
With the EUT's antenna attached, the EUT's output signal was received by the test antenna, which was connected to the spectrum analyzer. Set the center frequency, than set the spectrum analyzer to Zero Span for the release time reading. During the testing, the transmission duration was measured and recorded.

8.4 Test Result

Duration (ms)	Limit (S)	Results
1.69	<1	Pass

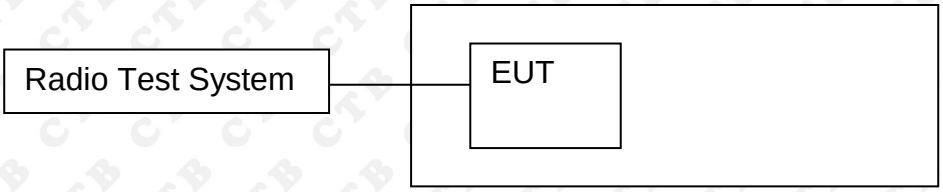


the silent period between transmissions (s)	Limit (S)	Results
31.02	> 10S	Pass



9. OCCUPIED BANDWIDTH

9.1 Block Diagram Of Test Setup



9.2 Limit

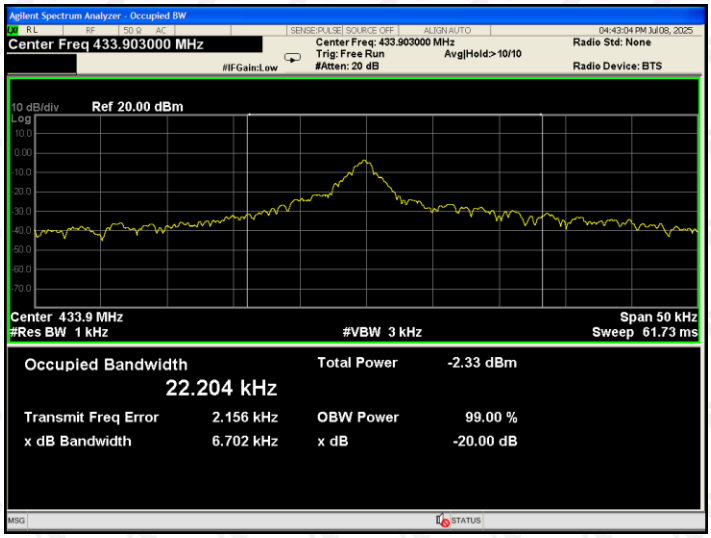
The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.
B.W (20dBc) Limit = 0.25% * f(MHz) = 0.25% * 433.92MHz = 1.0848MHz

9.3 Test procedure

1. Set RBW = 10 kHz.
2. Set the video bandwidth (VBW) ≥RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

9.4 Test Result

20dB bandwidth (kHz)	Limit (MHz)	Results
6.702	1.0848	Pass



10. 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.

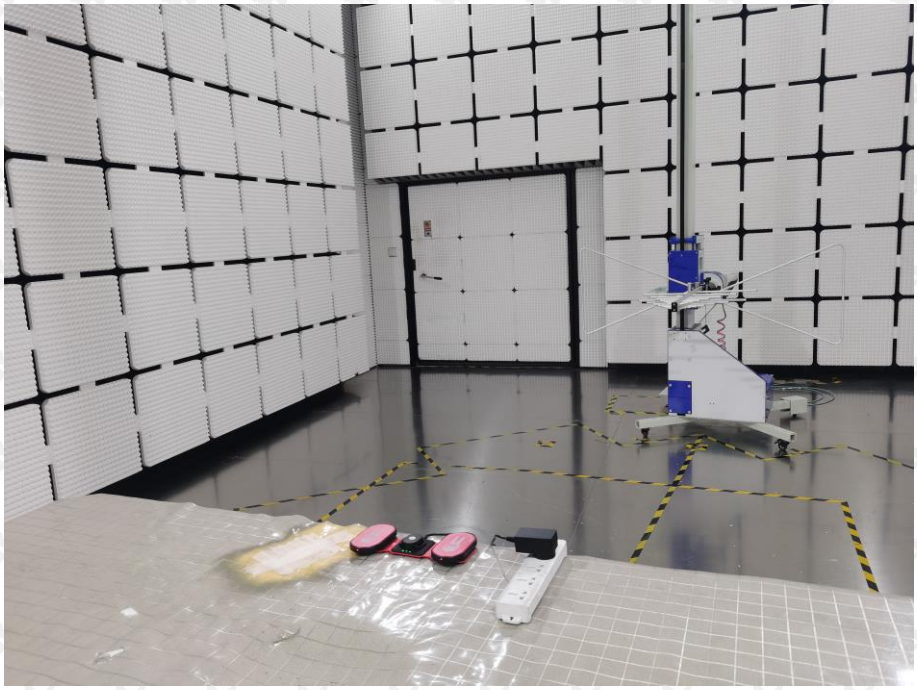
EUT Antenna:

The antenna is PCB antenna and no consideration of replacement. The best case gain of the antenna is 1dBi.

11. EUT TEST SETUP PHOTOGRAPHS

Radiated Emission

Below 1GHz



Above 1GHz

Conducted emission

※※※※※ **END OF REPORT** ※※※※※