FCC TEST REPORT

FCC ID: 2A86P-V-HHBS

On Behalf of

4 Dimensions Distribution Corp

Barcode Scanner

Model No.: V-HHBS-A1B, V-HHBS-A1W, V-HHBS-A1A,

V-HHBS-A1C, V-HHBS-A1G

Prepared for	:	4 Dimensions Distribution Corp
Address	:	15 Charlotte Ave, Hicksville, NY, 11801

Prepared By	:	Shenzhen Alpha Product Testing Co., Ltd.
Address	:	Building i, No.2, Lixin Road, Fuyong Street, Bao'an District, 518103, Shenzhen, Guangdong, China

Report Number	:	A2209256-C01-R01
Date of Receipt	:	September 28, 2022
Date of Test	:	September 28, 2022-October 31, 2022
Date of Report	:	October 31, 2022
Version Number	:	V0

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TEST REPORT DECLARATION

Applicant	:	4 Dimensions Distribution Corp
Address	:	15 Charlotte Ave, Hicksville, NY, 11801
Manufacturer	:	Chengdu Mind Golden Card System Co., Ltd
Address	:	Chengdu Mind Intelligent Mind Technology Park, # 600 WulianThird Road, Shuangliu, chengdu, 610061, China
EUT Description	:	Barcode Scanner
	(A) Model No.	: V-HHBS-A1B, V-HHBS-A1W, V-HHBS-A1A, V-HHBS-A1C, V-HHBS-A1G
	(B) Trademark	: N/A

Measurement Standard Used:

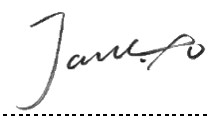
FCC Rules and Regulations Part 15 Subpart C Section 15.247

ANSI C63.10: 2013

The device described above is tested by Shenzhen Alpha Product Testing Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits both conducted and radiated emissions. The test results are contained in this test report and Shenzhen Alpha Product Testing Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

After the test, our opinion is that EUT compliance with the requirement of the above standards.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen Alpha Product Testing Co., Ltd.

Tested by (name + signature).....:	Lucas Pang Project Engineer	
Approved by (name + signature).....:	Jack Xu Project Manager	
Date of issue.....:	October 31, 2022	

Revision History

Revision	Issue Date	Revisions	Revised By
V0	October 31, 2022	Initial released Issue	Lucas Pang

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

Test Item	Standards Paragraph	Result
Maximum Peak Output Power	FCC Part 15: 15.247(b)(1) ANSI C63.10: 2013	P
Bandwidth	FCC Part 15: 15.215 ANSI C63.10: 2013	P
Carrier Frequency Separation	FCC Part 15: 15.247(a)(1) ANSI C63.10: 2013	P
Number Of Hopping Channel	FCC Part 15: 15.247(a)(1)(iii) ANSI C63.10: 2013	P
Dwell Time	FCC Part 15: 15.247(a)(1)(iii) ANSI C63.10: 2013	P
Radiated Emission	FCC Part 15: 15.209 FCC Part 15: 15.247(d) ANSI C63.10: 2013	P
Band Edge Compliance	FCC Part 15: 15.247(d) ANSI C63.10: 2013	P
Power Line Conducted Emissions	FCC Part 15: 15.207 ANSI C63.10: 2013	P
Antenna requirement	FCC Part 15: 15.203	P

Note: 1. P is an abbreviation for Pass.

2. F is an abbreviation for Fail.

3. N/A is an abbreviation for Not Applicable.

4. Decision rules for the conclusion of this test report: decision by actual test data without considering measurement uncertainty.

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

Description	:	Barcode Scanner
Model Number	:	V-HHBS-A1B, V-HHBS-A1W, V-HHBS-A1A, V-HHBS-A1C, V-HHBS-A1G
Diff	:	There is no difference except the name of the model. All tests are made with the V-HHBS-A1B model.
Trademark	:	N/A
Test Voltage	:	DC 5V from recharge stand, DC 3.7V from Battery
Operation frequency	:	2410-2470MHz
Channel No.	:	61 Channels
Modulation type	:	GFSK
Antenna Type	:	Internal Antenna, max gain 0.56dBi. Antenna information is provided by applicant.
Software version	:	V1.0
Hardware version	:	V1.0
Note	:	N/A

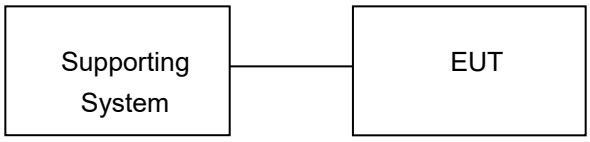
2.2. Accessories of Device (EUT)

Accessory	:	/
Model	:	/
Input	:	/
Output	:	/

2.3. Tested Supporting System Details

No.	Description	Manufacturer	Model	Serial Number	Certification or SDOC
1	Notebook PC	Thinkpad	E490	N/A	N/A

2.4. Block Diagram of connection between EUT and simulators



2.5. Test Mode Description

Tested mode, channel, and data rate information		
Mode	**Channel**	**Frequency (MHz)**
GFSK	Low :CH1	2410
	Middle: CH31	2440
	High: CH61	2470
	Hopping	2410-2470

Channel list:

CH1	2410MHz	CH17	2426MHz	CH33	2442MHz	CH49	2458MHz
CH2	2411MHz	CH18	2427MHz	CH34	2443MHz	CH50	2459MHz
CH3	2412MHz	CH19	2428MHz	CH35	2444MHz	CH51	2460MHz
CH4	2413MHz	CH20	2429MHz	CH36	2445MHz	CH52	2461MHz
CH5	2414MHz	CH21	2430MHz	CH37	2446MHz	CH53	2462MHz
CH6	2415MHz	CH22	2431MHz	CH38	2447MHz	CH54	2463MHz
CH7	2416MHz	CH23	2432MHz	CH39	2448MHz	CH55	2464MHz
CH8	2417MHz	CH24	2433MHz	CH40	2449MHz	CH56	2465MHz
CH9	2418MHz	CH25	2434MHz	CH41	2450MHz	CH57	2466MHz
CH10	2419MHz	CH26	2435MHz	CH42	2451MHz	CH58	2467MHz
CH11	2420MHz	CH27	2436MHz	CH43	2452MHz	CH59	2468MHz
CH12	2421MHz	CH28	2437MHz	CH44	2453MHz	CH60	2469MHz
CH13	2422MHz	CH29	2438MHz	CH45	2454MHz	CH61	2470MHz
CH14	2423MHz	CH30	2439MHz	CH46	2455MHz		
CH15	2424MHz	CH31	2440MHz	CH47	2456MHz		
CH16	2425MHz	CH32	2441MHz	CH48	2457MHz		

2.6. Test Conditions

Items	Required	Actual
Temperature range:	15-35℃	24℃
Humidity range:	25-75%	56%
Pressure range:	86-106kPa	98kPa

2.7. Test Facility

Shenzhen Alpha Product Testing Co., Ltd

Building i, No.2, Lixin Road, Fuyong Street, Bao'an District, 518103,
Shenzhen, Guangdong, China

June 21, 2018 File on Federal Communication Commission
Registration Number: 293961
Designation Number: CN1236

July 15, 2019 Certificated by IC
Registration Number: CN0085

2.8. Measurement Uncertainty

(95% confidence levels, k=2)

Item	**Uncertainty**
Uncertainty for Power point Conducted Emissions Test	1.63dB
Uncertainty for Radiation Emission test in 3m chamber (below 30MHz)	3.5dB
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	3.74dB(Polarize: V)
	3.76dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)	3.77dB(Polarize: V)
	3.80dB(Polarize: H)
Uncertainty for radio frequency	5.06×10^{-8}GHz
Uncertainty for conducted RF Power	0.40dB
Uncertainty for temperature	0.2℃
Uncertainty for humidity	1%
Uncertainty for DC and low frequency voltages	0.06%

2.9. Test Equipment List

Equipment	Manufacture	Model No.	Firmware version	Serial No.	Last cal.	Cal Interval
9*6*6 anechoic chamber	CHENYU	9*6*6	/	N/A	2022.05.17	3Year
Spectrum analyzer	ROHDE&SCHWARZ	FSV40-N	2.3	102137	2022.08.22	1Year
Spectrum analyzer	Agilent	N9020A	A.14.16	MY499100060	2022.08.22	1Year
Receiver	ROHDE&SCHWARZ	ESR	2.28 SP1	1316.3003K03-102082-Wa	2022.08.22	1Year
Receiver	R&S	ESCI	4.42 SP1	101165	2022.08.22	1Year
Bilog Antenna	Schwarzbeck	VULB 9168	/	VULB 9168#627	2021.08.30	2Year
Horn Antenna	SCHWARZBECK	BBHA 9120 D	/	2106	2021.08.30	2Year
Active Loop Antenna	SCHWARZBECK	FMZB 1519B	/	00059	2021.08.30	2Year
RF Cable	Resenberger	Cable 1	/	RE1	2022.08.22	1Year
RF Cable	Resenberger	Cable 2	/	RE2	2022.08.22	1Year
RF Cable	Resenberger	Cable 3	/	CE1	2022.08.22	1Year
Pre-amplifier	HP	HP8347A	/	2834A00455	2022.08.22	1Year
Pre-amplifier	Agilent	8449B	/	3008A02664	2022.08.22	1Year
L.I.S.N.#1	Schwarzbeck	NSLK8126	/	8126-466	2022.08.22	1Year
L.I.S.N.#2	ROHDE&SCHWARZ	ENV216	/	101043	2022.08.23	1 Year
Horn Antenna	SCHWARZBECK	BBHA9170	/	00946	2021.08.30	2 Year
Preamplifier	SKET	LNPA_1840-50	/	SK2018101801	2022.08.22	1 Year
Power Meter	Agilent	E9300A	/	MY41496628	2022.08.22	1 Year
Power Sensor	DARE	RPR3006W	/	15100041SNO91	2022.08.22	1 Year
Temp. & Humid. Chamber	Weihuang	WHTH-1000-40-880	/	100631	2022.08.22	1 Year
Switching Mode Power Supply	JUNKE	JK12010S	/	20140927-6	2022.08.22	1 Year
Adjustable attenuator	MWRFtest	N/A	/	N/A	N/A	N/A
10dB Attenuator	Mini-Circuits	DC-6G	/	N/A	N/A	N/A

Software Information			
Test Item	Software Name	Manufacturer	Version
RE	EZ-EMC	farad	Alpha-3A1
CE	EZ-EMC	farad	Alpha-3A1
RF-CE	MTS 8310	MWRFtest	2.0.0.0

3. MAXIMUM PEAK OUTPUT POWER

3.1. Limit

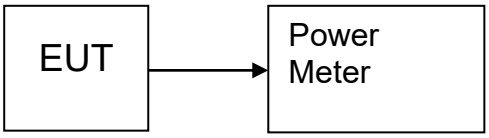
Please refer section15.247.

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, the e.i.r.p shall not exceed 4W

3.2. Test Procedure

The transmitter output is connected to the RF Power Meter. The RF Power Meter is set to the peak power detection.

3.3. Test Setup



3.4. Test Result

Mode	Freq (MHz)	PK Output Power (dBm)	PK Output Power (mW)	Limit (dBm)	Result
GFSK	2410	4.202	2.631	21.00	Pass
	2440	**5.176**	**3.293**	21.00	Pass
	2470	5.143	3.268	21.00	Pass
Conclusion: PASS					

4. BANDWIDTH

4.1. Limit

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

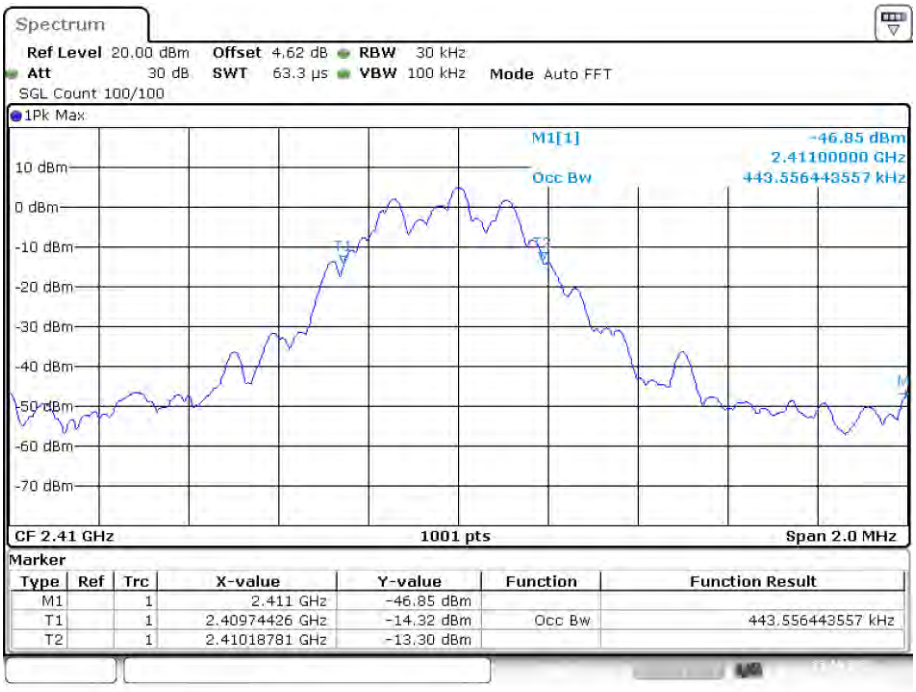
4.2. Test Procedure

The transmitter output was directly connected to a spectrum analyzer with a 50Ω cable. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 30kHz RBW and 100kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

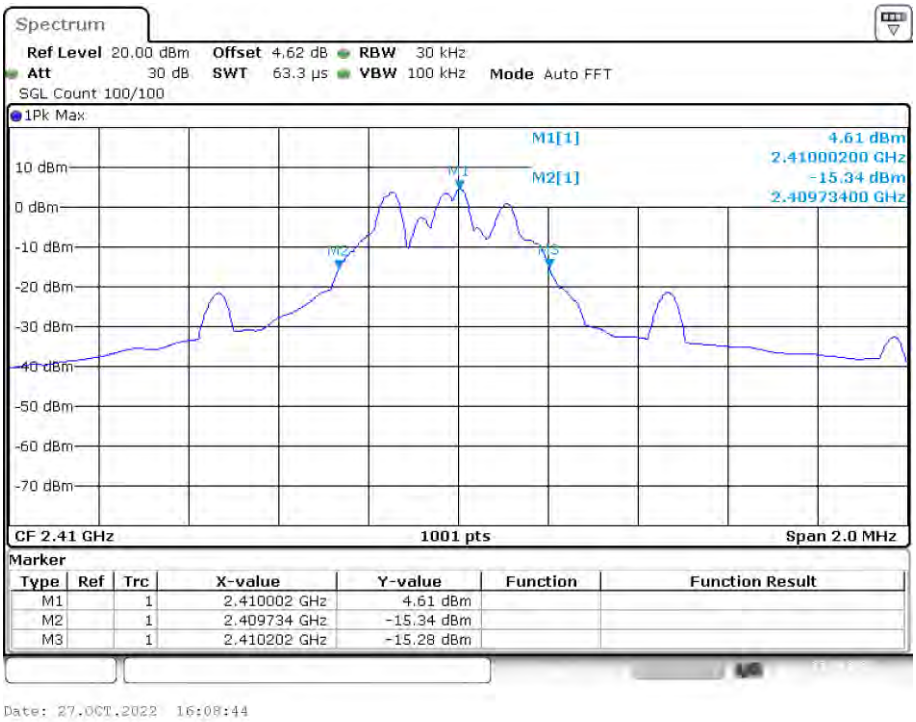
4.3. Test Result

Frequency (MHz)	Antenna	99% OBW (MHz)	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
2410	Ant 1	0.444	0.468	/	Pass
2440	Ant 1	0.474	0.41	/	Pass
2470	Ant 1	0.428	0.464	/	Pass

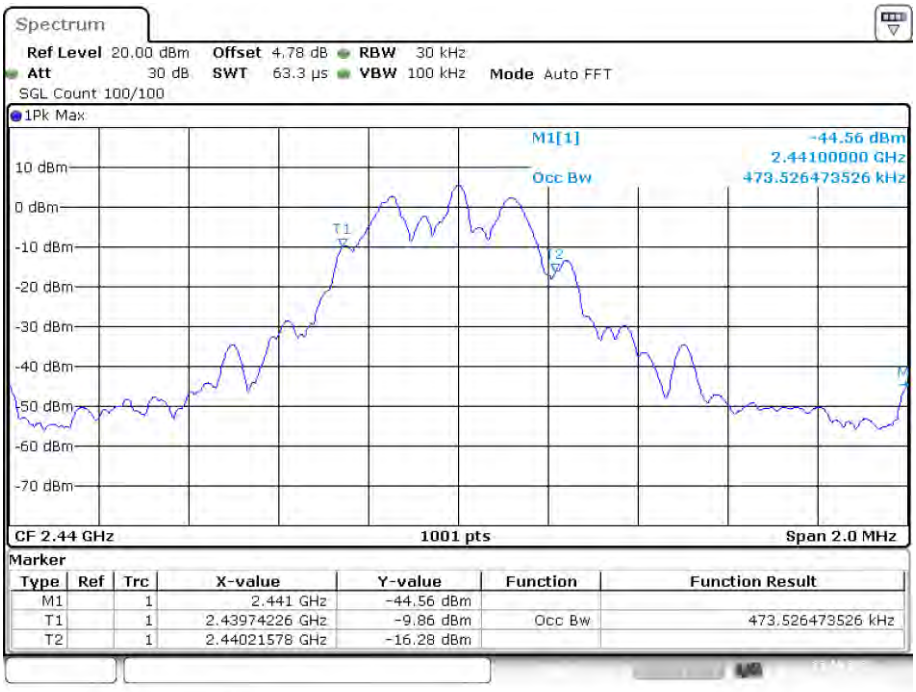
OBW NVNT 1-DH1 2410MHz Ant1



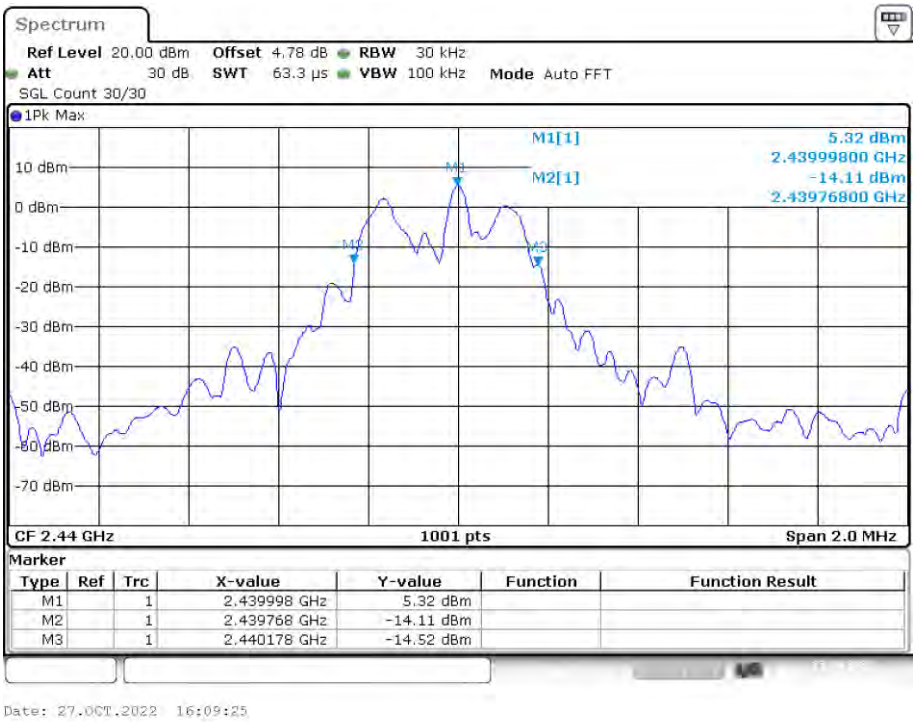
-20 dB BW NVNT 1-DH1 2410MHz Ant1



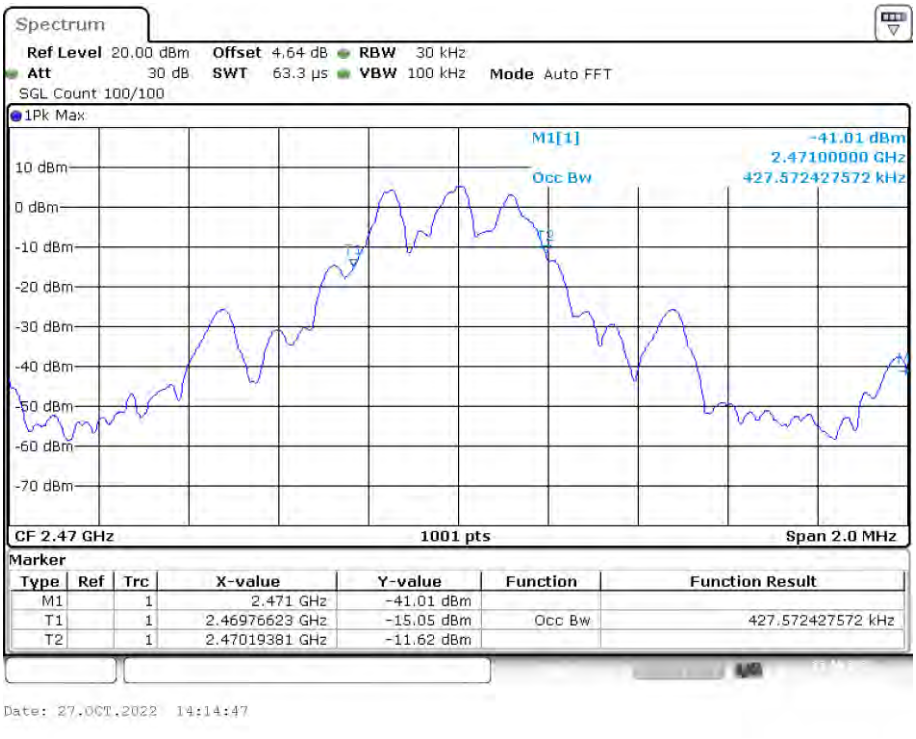
OBW NVNT 1-DH1 2440MHz Ant1



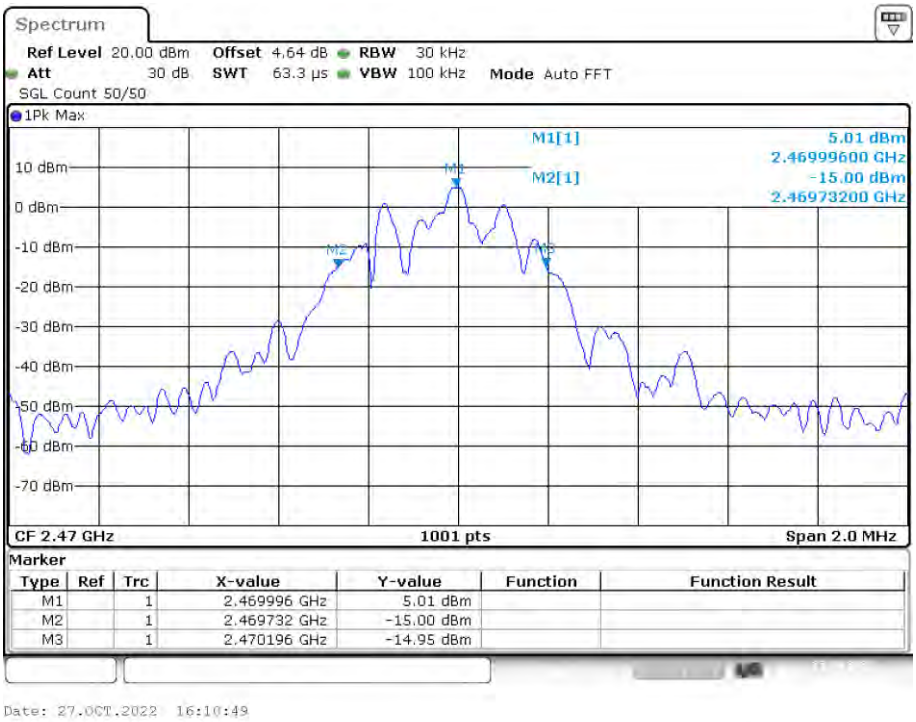
-20 dB BW NVNT 1-DH1 2440MHz Ant1



OBW NVNT 1-DH1 2470MHz Ant1



-20 dB BW NVNT 1-DH1 2470MHz Ant1



5. CARRIER FREQUENCY SEPARATION

5.1. Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW

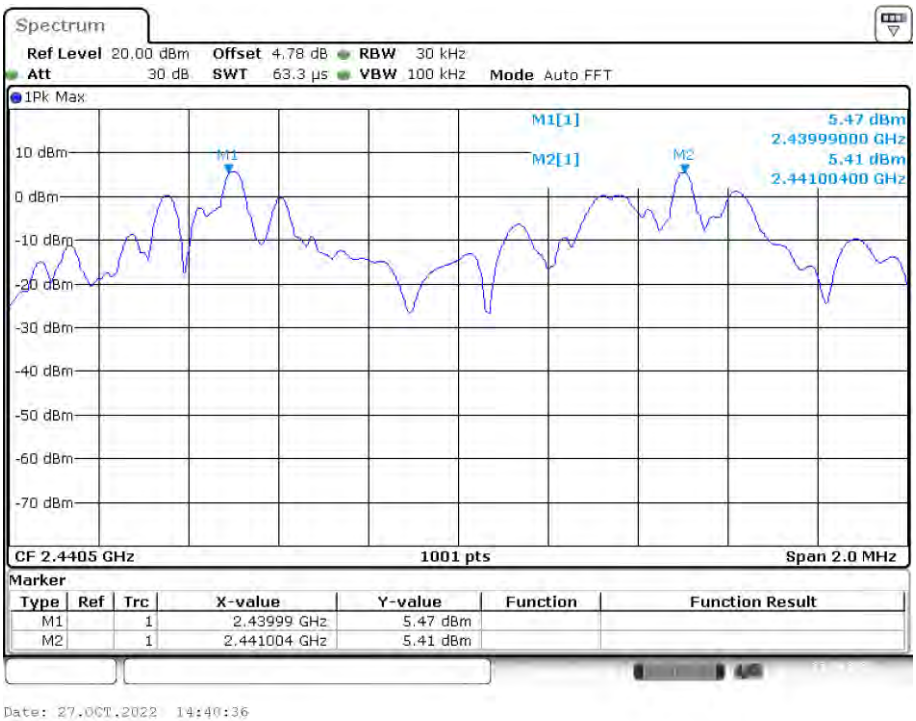
5.2. Test Procedure

The transmitter output was directly connected to a spectrum analyzer with a 50Ω cable. The carrier frequency was measured by spectrum analyzer with 30kHz RBW and 100kHz VBW.

5.3. Test Result

Condition	Mode	Freq(MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	User	2440.5	1.014	0.816	Pass

CFS NVNT user 2440MHz



6. NUMBER OF HOPPING CHANNEL

6.1. Limit

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels

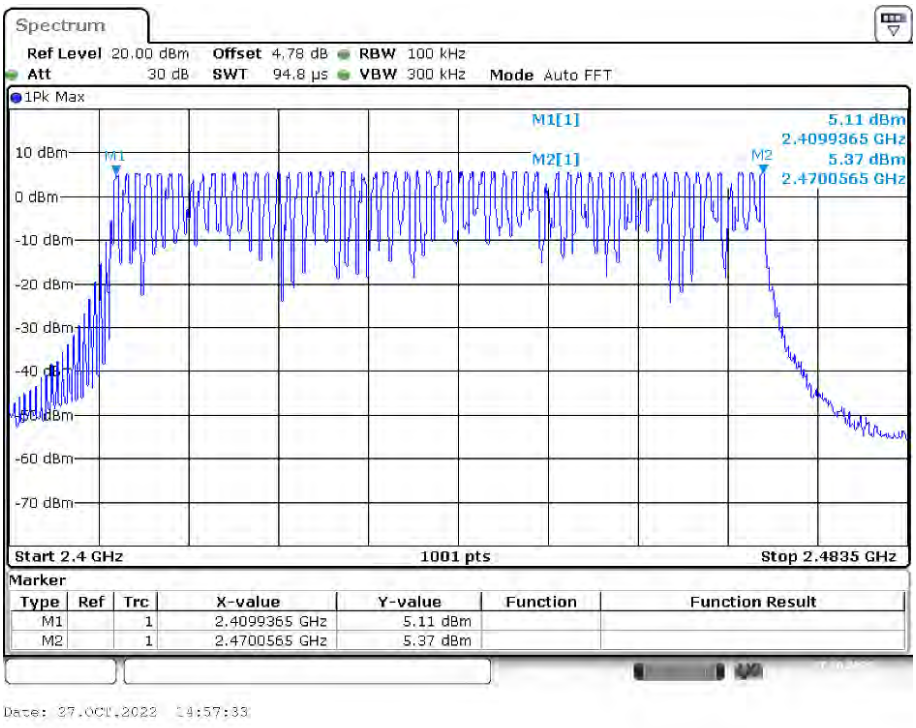
6.2. Test Procedure

The transmitter output was directly connected to a spectrum analyzer with a 50Ω cable. The number of hopping channel was measured by spectrum analyzer with 100kHz RBW and 300KHz VBW.

6.3. Test Result

Condition	Mode	Hopping Number	Limit	Verdict
NVNT	user	61	15	Pass

Hopping No. NVNT user 2440MHz



7. DWELL TIME

7.1. Test limit

Please refer section15.247

According to §15.247(a)(1)(iii), Frequency hopping systems operating in the 2400MHz-2483.5 MHz. The average time of occupancy on any frequency shall not greater than 0.4 s within period of 0.4 sec- onds multiplied by the number of hopping channel employed.

7.2. Test Procedure

7.2.1. Place the EUT on the table and set it in transmitting mode.

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

7.2.3. Set center frequency of spectrum analyzer = operating frequency.

7.2.4. Set the spectrum analyzer as RBW=1MHz, VBW=1MHz, Span = 0Hz, Sweep = auto.

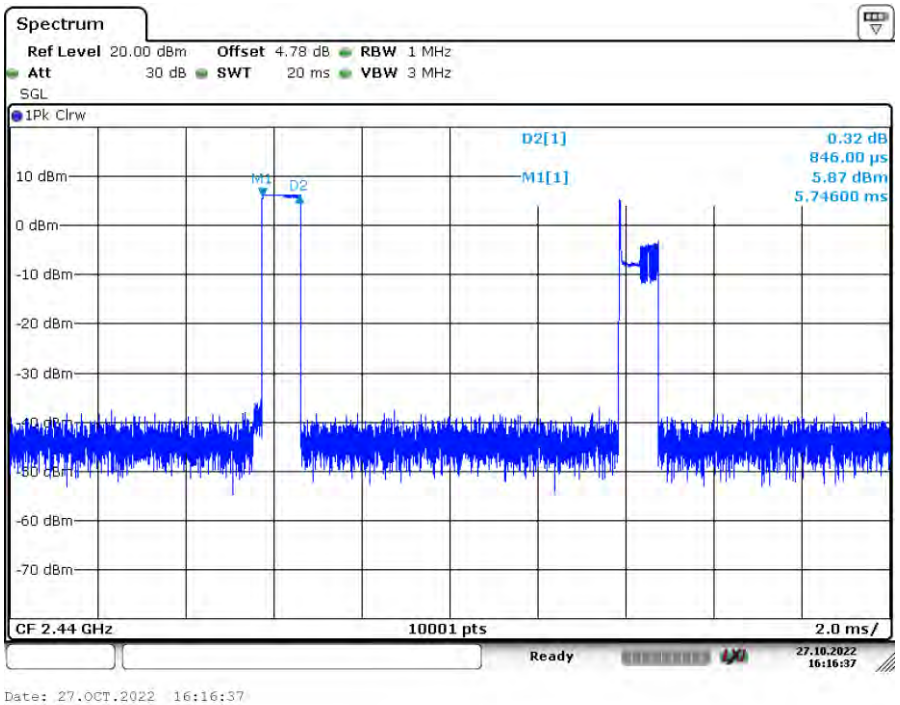
7.2.5. Repeat above procedures until all frequency measured were complete.

7.3. Test Result

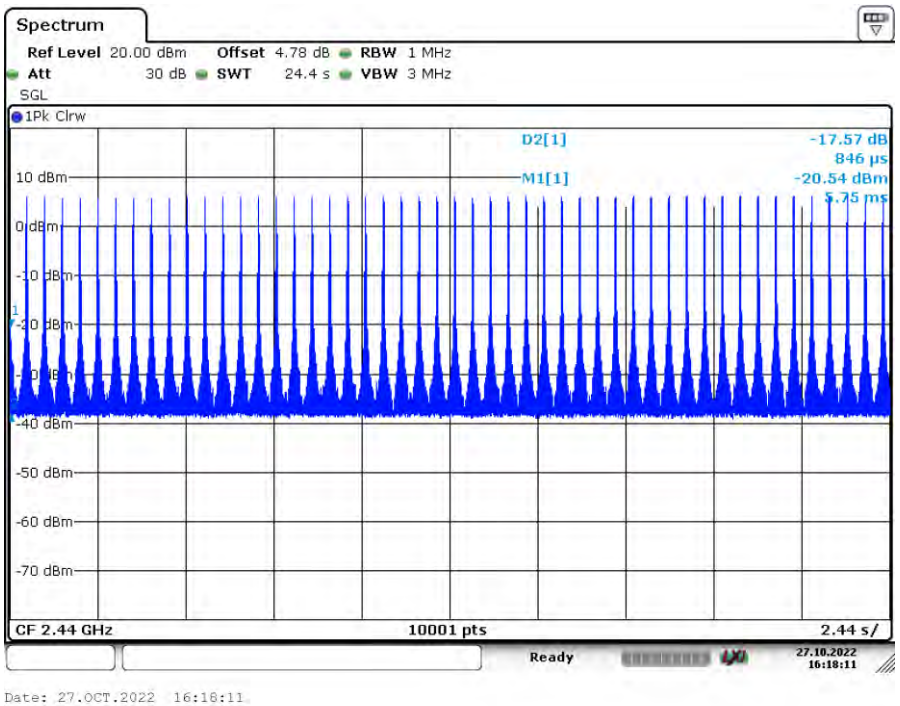
PASS.

Detailed information please see the following page.

Mode	Frequency (MHz)	Pulse Duration (ms)	Dwell Time (ms)	Limit (ms)	Conclusion
GFSK	2440	0.846	41.454	<400	PASS
Note: Dwell time= 49*0.846=41.454ms					



Date: 27.OCT.2022 16:16:37



Date: 27.OCT.2022 16:18:11

Scan time: 61*0.4=24.4s

Times: 49

8. RADIATED EMISSIONS

8.1. Limit

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

15.205 Restricted frequency band

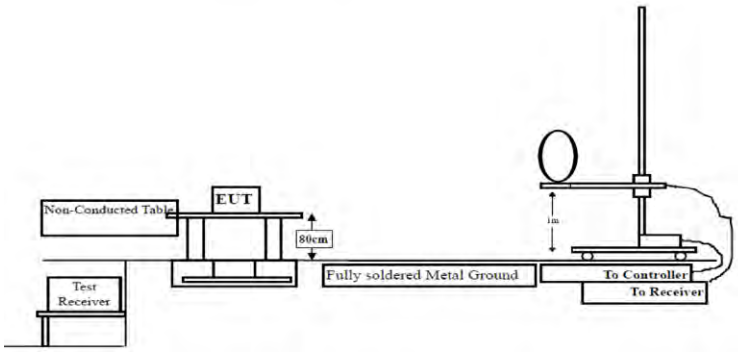
MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])

15.209 Limit

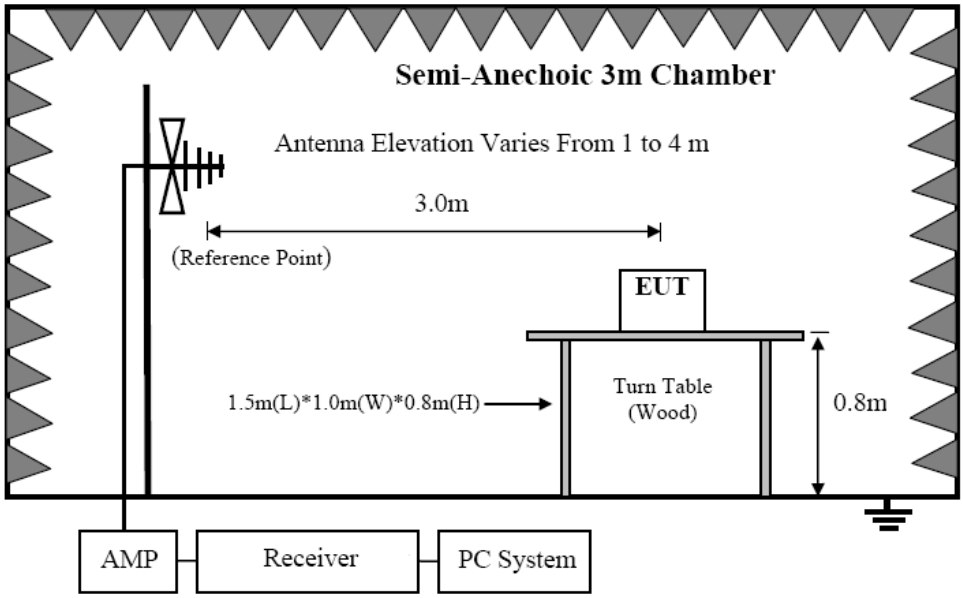
FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
0.009-0.490	300	2400/F(KHz)	/
0.490-1.705	30	24000/F(KHz)	/
1.705-30	30	30	29.5
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

8.2. Block Diagram of Test setup

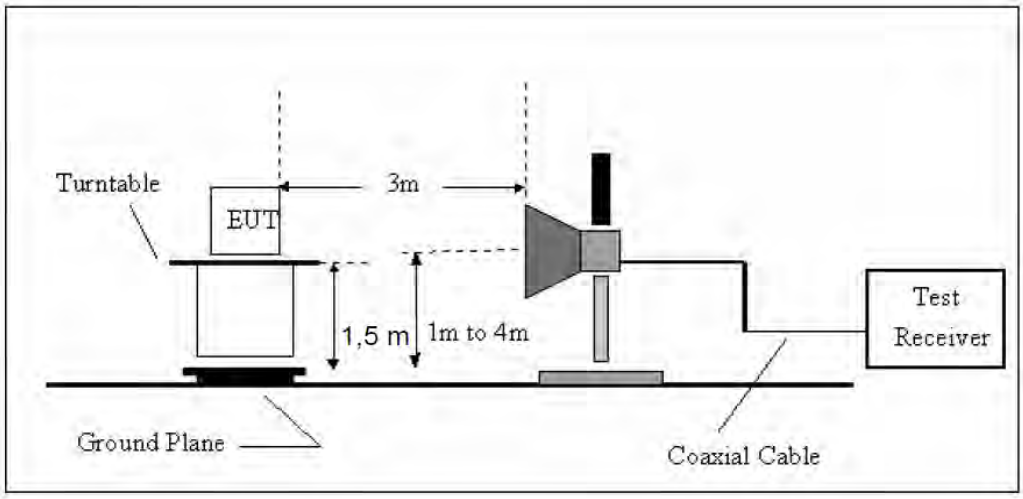
8.2.1 In 3m Anechoic Chamber Test Setup Diagram for 9KHzHz to 30MHz



8.2.2 In 3m Anechoic Chamber Test Setup Diagram for 30MHz to 1GHz



8.2.3 In 3m Anechoic Chamber Test Setup Diagram for frequency above 1GHz



Note: For harmonic emissions test a appropriate high pass filter was inserted in the input port of AMP.

8.3. Test Procedure

(1) EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber for below 1GHz test, 150 cm above the ground plane inside a semi-anechoic chamber for above 1GHz test

(2) Setup EUT and simulator as shown in section 1.4 and 6.1

(3) Test antenna was located 3m from the EUT on an adjustable mast. Below pre-scan procedure was first performed in order to find prominent radiated emissions.

(a) Change work frequency or channel of device if practicable.

(b) Change modulation type of device if practicable.

(c) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions

(4) Spectrum frequency from 9KHz to 25GHz (tenth harmonic of fundamental frequency) was investigated

(5) For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10: 2013on Radiated Emission test.

(6) For emissions above 1GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1MHz, VBW is set at 3MHz for Peak measure; RBW is set at 1MHz, VBW is set at 10Hz for Average measure.

8.4. Test Result

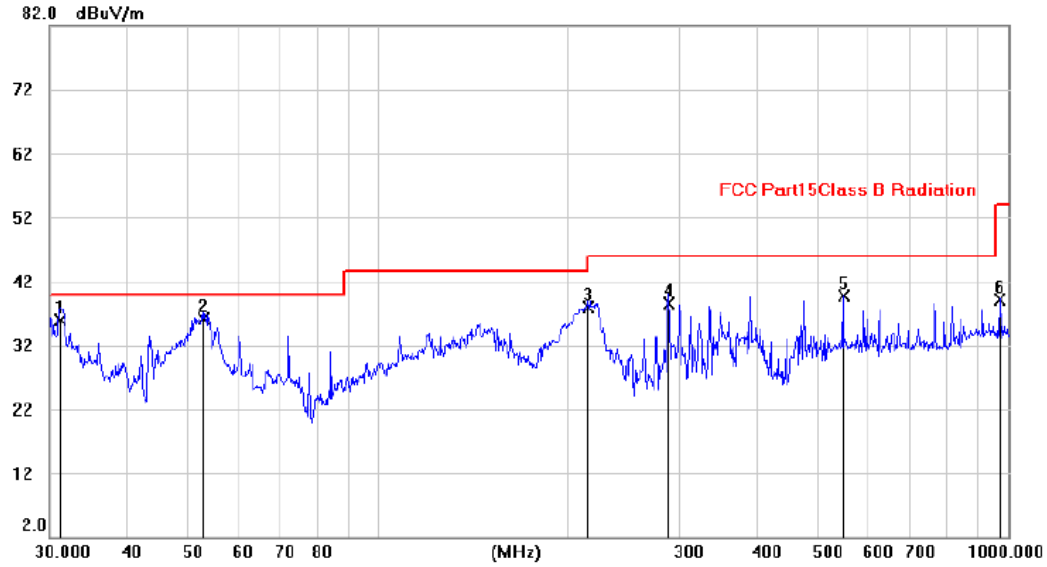
We have scanned the 10th harmonic from 9KHz to the EUT's highest frequency.
Detailed information please see the following page.

From 9KHz to 30MHz: Conclusion: PASS

Note: Theamplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

From 30MHz to 1000MHz: Conclusion: PASS

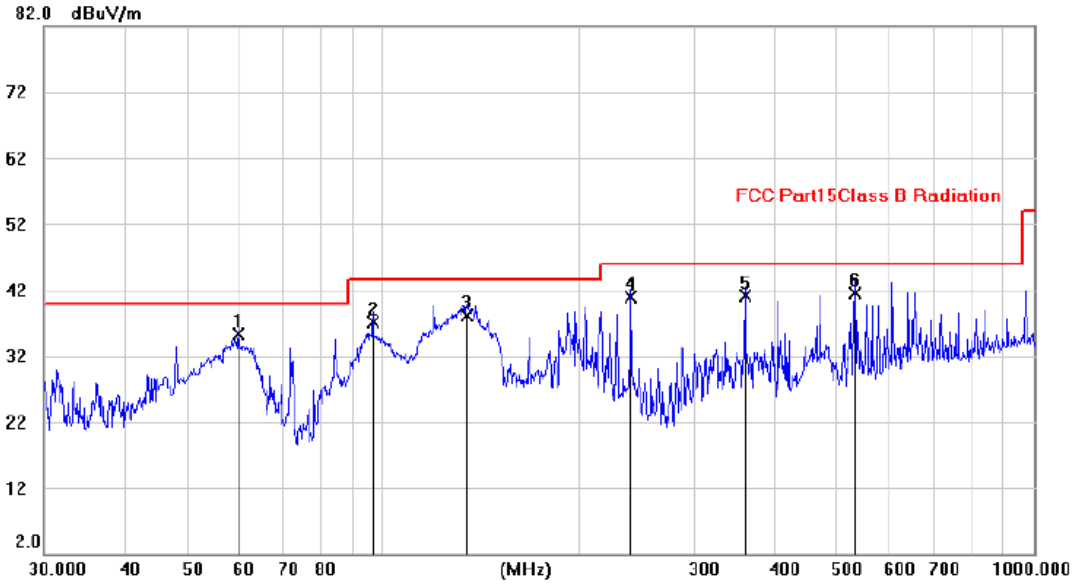
Polarization: ***Vertical***



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		31.1834	22.39	13.59	35.98	40.00	-4.02	QP			
2	*	52.6491	22.24	13.78	36.02	40.00	-3.98	QP			
3		215.4440	26.46	11.43	37.89	43.50	-5.61	QP			
4		289.1034	24.59	13.85	38.44	46.00	-7.56	QP			
5		548.1216	20.59	19.16	39.75	46.00	-6.25	peak			
6		972.1100	14.50	24.70	39.20	54.00	-14.80	peak			

Note:1. *:Maximum data; x:Over limit; I:over margin.
2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

Polarization: ***Horizontal***



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		59.7679	21.97	13.25	35.22	40.00	-4.78	QP			
2		96.3798	26.43	10.58	37.01	43.50	-6.49	QP			
3		134.1508	24.16	13.89	38.05	43.50	-5.45	QP			
4		240.2400	28.32	12.55	40.87	46.00	-5.13	QP			
5		360.3213	25.58	15.44	41.02	46.00	-4.98	QP			
6	*	530.2253	22.73	18.86	41.59	46.00	-4.41	QP			

Note:1. *:Maximum data; x:Over limit; !:over margin.
2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

Remark: All modes have been tested, and only worst data of GFSK Channel low mode was listed in this report.

From 1G-25GHz

Test Mode: GFSK TX Low									
Freq (MHz)	Read Level (dBuV/m)	Polar (H/V)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4820	46.62	V	33.95	10.18	34.26	56.49	74	-17.51	PK
4820	35.80	V	33.95	10.18	34.26	45.67	54	-8.33	AV
7230	/	/	/	/	/	/	/	/	/
9640	/	/	/	/	/	/	/	/	/
4820	47.99	H	33.95	10.18	34.26	57.86	74	-16.14	PK
4820	34.87	H	33.95	10.18	34.26	44.74	54	-9.26	AV
7230	/	/	/	/	/	/	/	/	/
9640	/	/	/	/	/	/	/	/	/
Test Mode: GFSK TX Mid									
4880	49.48	V	33.95	10.20	34.26	59.37	74	-14.63	PK
4880	34.39	V	33.95	10.20	34.26	44.28	54	-9.72	AV
7320	/	/	/	/	/	/	/	/	/
9760	/	/	/	/	/	/	/	/	/
4880	48.64	H	33.95	10.20	34.26	58.53	74	-15.47	PK
4880	32.10	H	33.95	10.20	34.26	41.99	54	-12.01	AV
7320	/	/	/	/	/	/	/	/	/
9760	/	/	/	/	/	/	/	/	/
Test Mode: GFSK TX High									
4940	46.54	V	33.98	10.22	34.25	56.49	74	-17.51	PK
4940	33.78	V	33.98	10.22	34.25	43.73	54	-10.27	AV
7410	/	/	/	/	/	/	/	/	/
9880	/	/	/	/	/	/	/	/	/
4940	47.84	H	33.98	10.22	34.25	57.79	74	-16.21	PK
4940	32.69	H	33.98	10.22	34.25	42.64	54	-11.36	AV
7410	/	/	/	/	/	/	/	/	/
9880	/	/	/	/	/	/	/	/	/

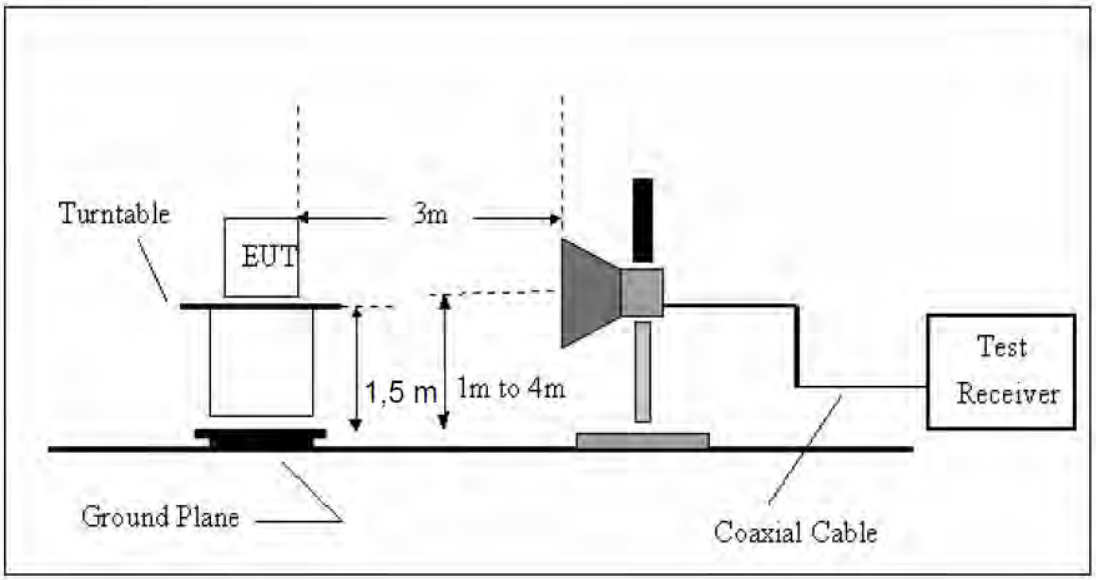
Note:

1, Result = Read level + Antenna factor + cable loss-Amp factor

2, All the other emissions not reported were too low to read and deemed to comply with FCC limit.

9. BAND EDGE COMPLIANCE

9.1. Block Diagram of Test Setup



9.2. Limit

All the lower and upper band-edges emissions appearing within restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

9.3. Test Procedure

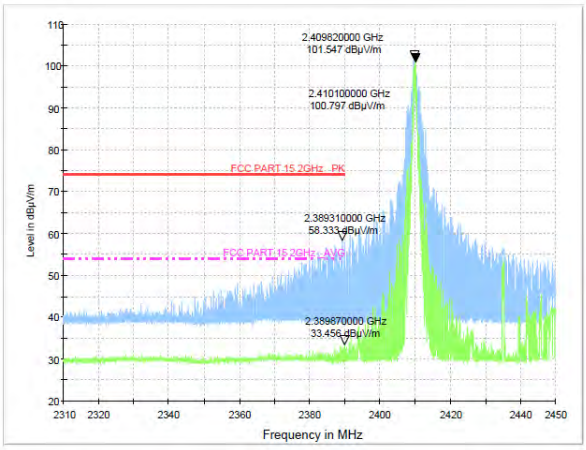
All restriction band and non- restriction band have been tested ， only worse case is reported.

9.4. Test Result

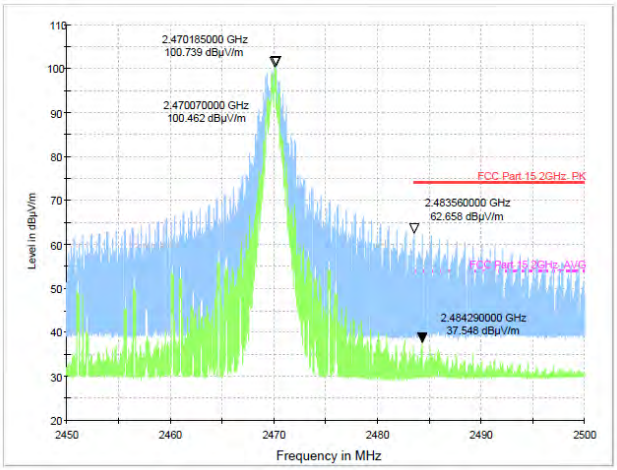
PASS. (See below detailed test data)

No-hopping

CH-L

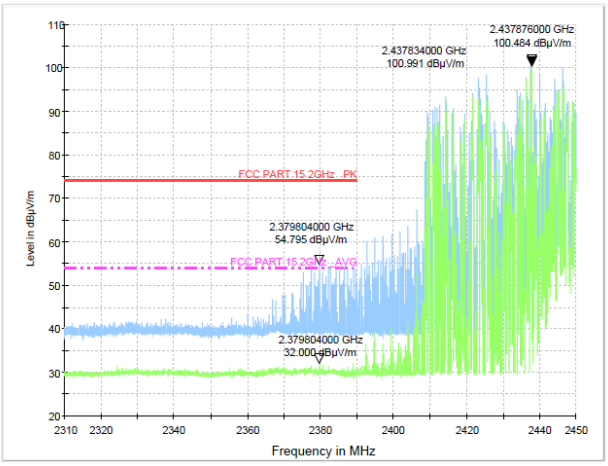


CH-H

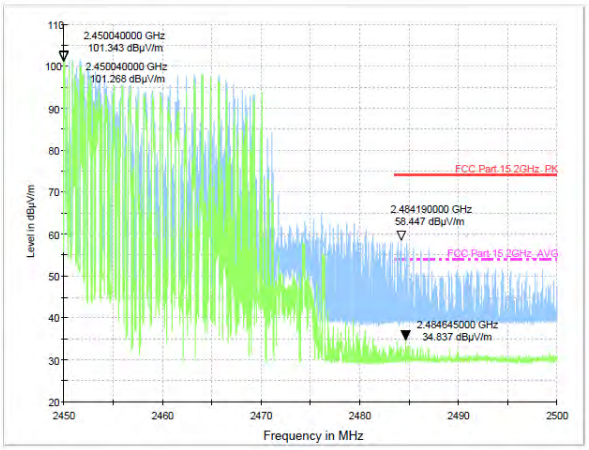


Hopping

CH-L

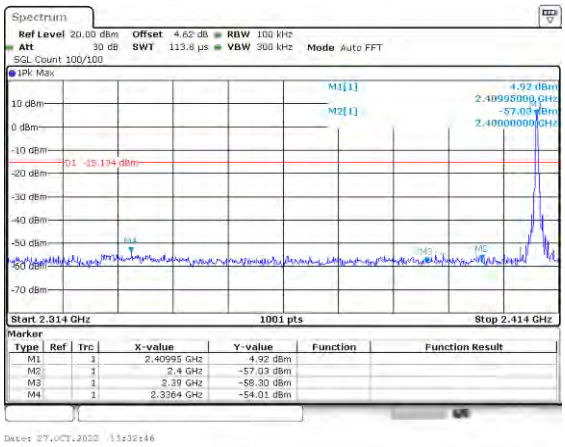


CH-H

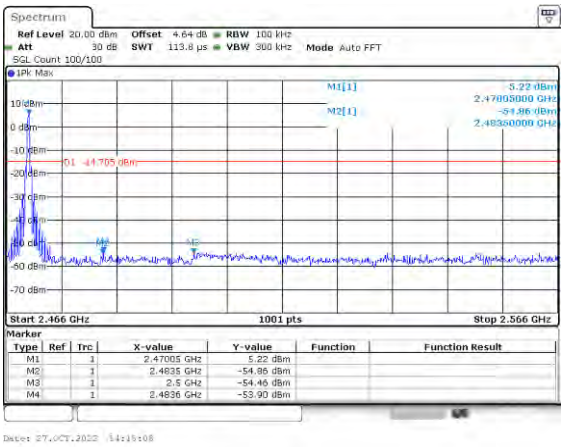


No-hopping

CH-L

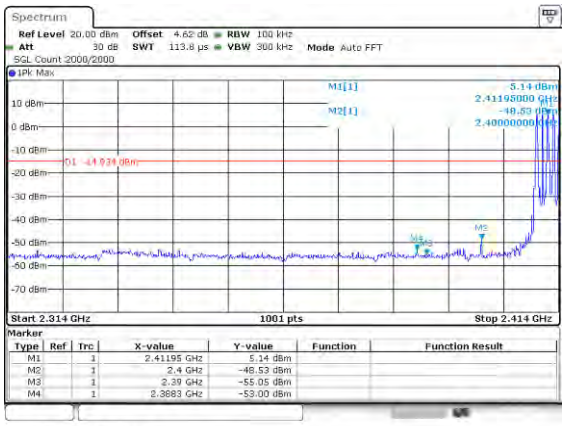


CH-H

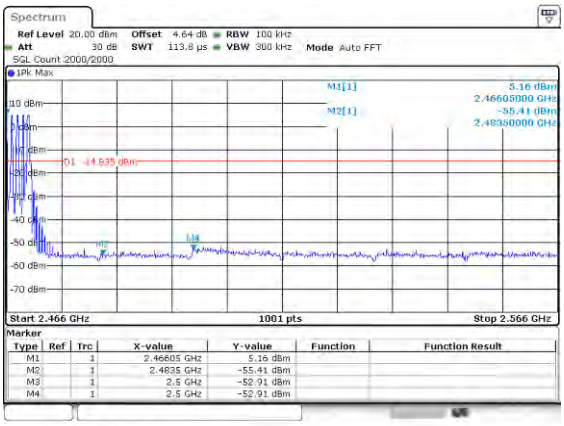


Hopping

CH-L

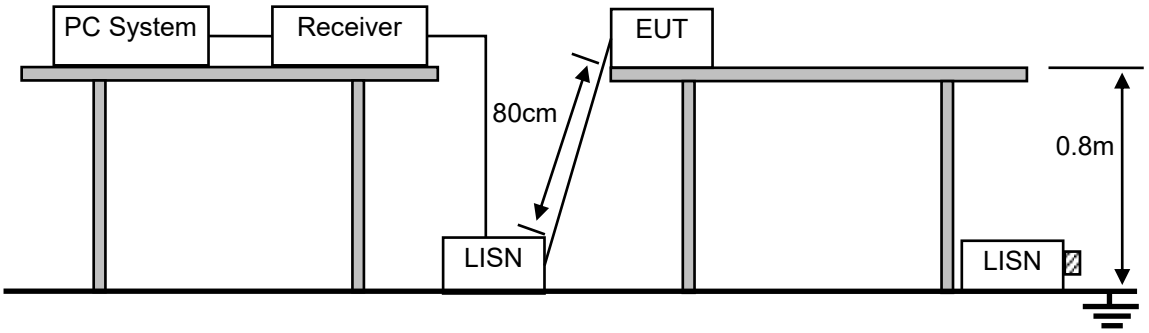


CH-H



10. POWER LINE CONDUCTED EMISSIONS

10.1. Block Diagram of Test Setup



:50Ω Terminator

10.2. Limit

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Notes: 1. * Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

10.3. Test Procedure

(1) The EUT was placed on a non-metallic table, 80cm above the ground plane.

(2) Setup the EUT and simulator as shown in 10.1

(3) The EUT Power connected to the power mains through a power adapter and a line impedance stabilization network (L.I.S.N1). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N2), this provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). Both sides of power line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10: 2013on conducted Emission test.

(4) The bandwidth of test receiver is set at 10KHz.

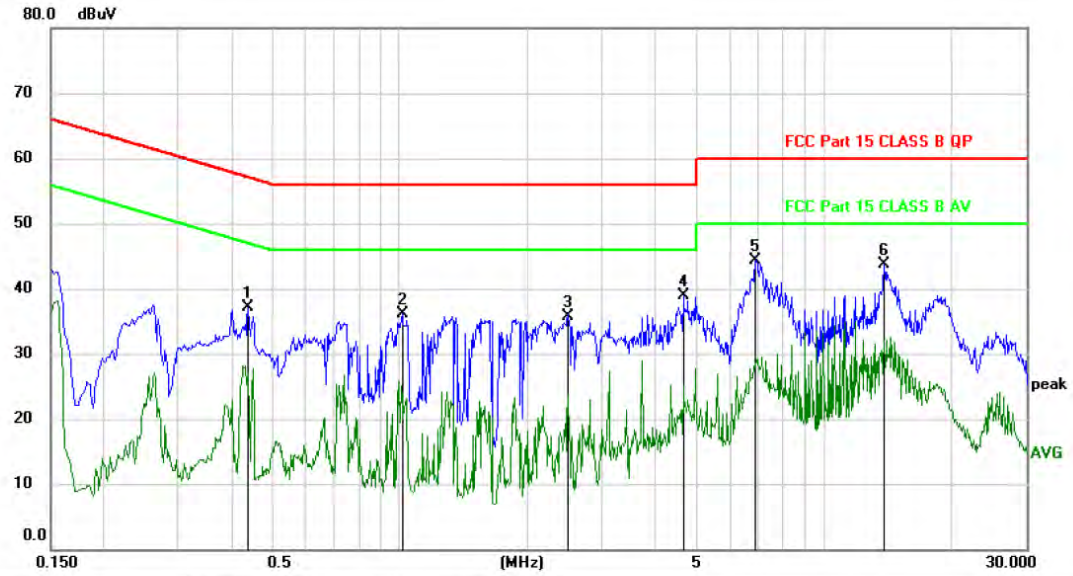
(5) The frequency range from 150 KHz to 30MHz is checked.

10.4. Test Result

Pass

The results are shown on the next page.

Polarization: ***L***

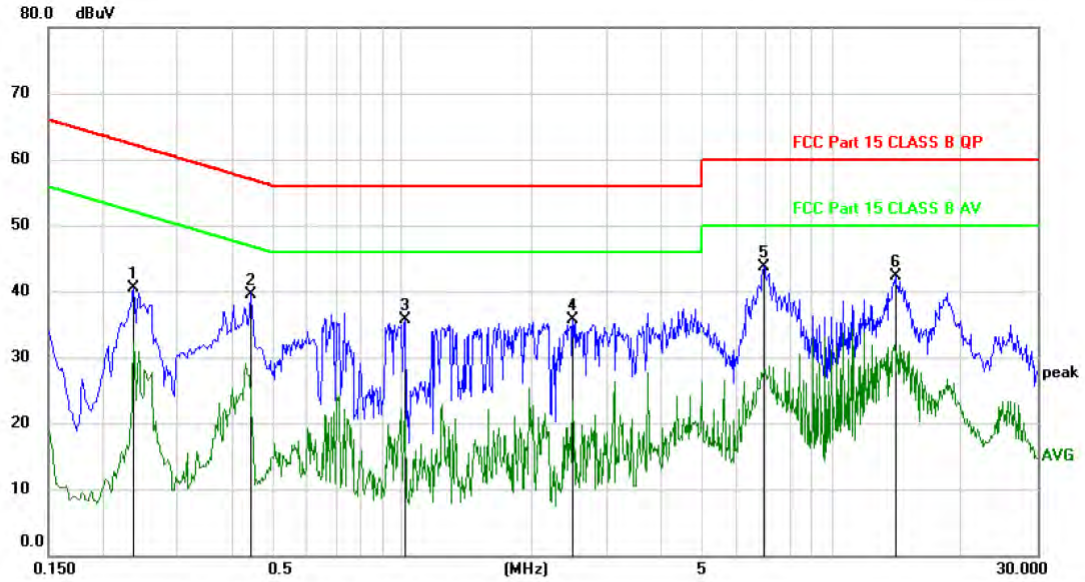


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.4380	27.13	9.95	37.08	57.10	-20.02	peak	
2		1.0140	26.09	9.92	36.01	56.00	-19.99	peak	
3		2.4870	25.89	9.91	35.80	56.00	-20.20	peak	
4		4.6650	28.95	10.02	38.97	56.00	-17.03	peak	
5	*	6.9030	34.17	10.12	44.29	60.00	-15.71	peak	
6		13.8420	33.39	10.30	43.69	60.00	-16.31	peak	

*:Maximum data x:Over limit !:over margin (Reference Only

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

Polarization: ***N***



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2370	30.62	9.96	40.58	62.20	-21.62	peak	
2		0.4440	29.65	9.95	39.60	56.99	-17.39	peak	
3		1.0170	25.79	9.92	35.71	56.00	-20.29	peak	
4		2.4870	25.86	9.91	35.77	56.00	-20.23	peak	
5	*	6.9300	33.60	10.12	43.72	60.00	-16.28	peak	
6		13.9950	32.06	10.31	42.37	60.00	-17.63	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

Remark: All modes have been tested, and only worst data of Charging mode was listed in this report.

11. ANTENNA REQUIREMENTS

11.1. Limit

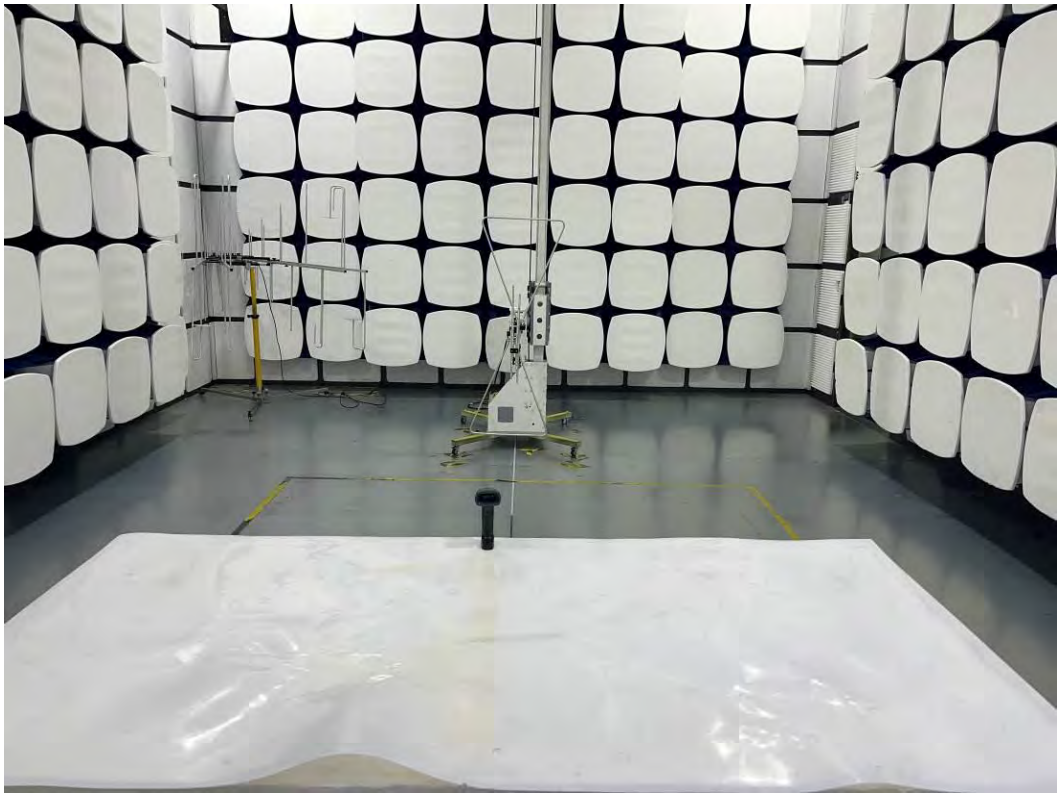
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

11.2. Result

The EUT antenna is fixed antenna. It complies with the standard requirement.

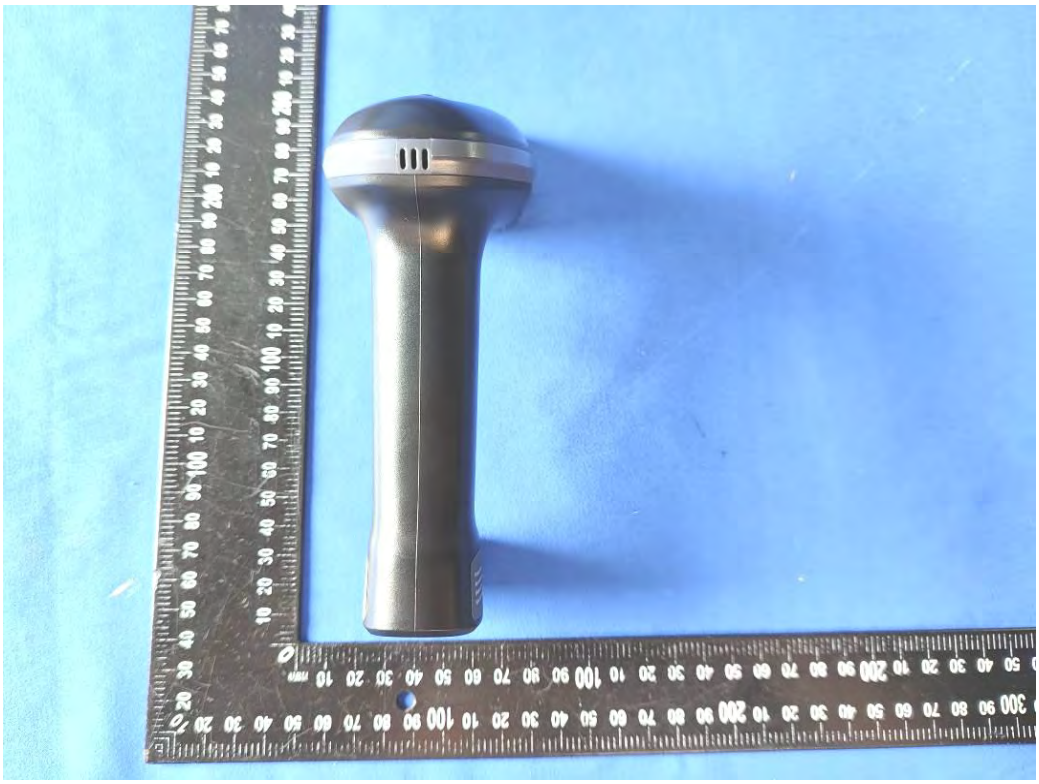
12. TEST SETUP PHOTO

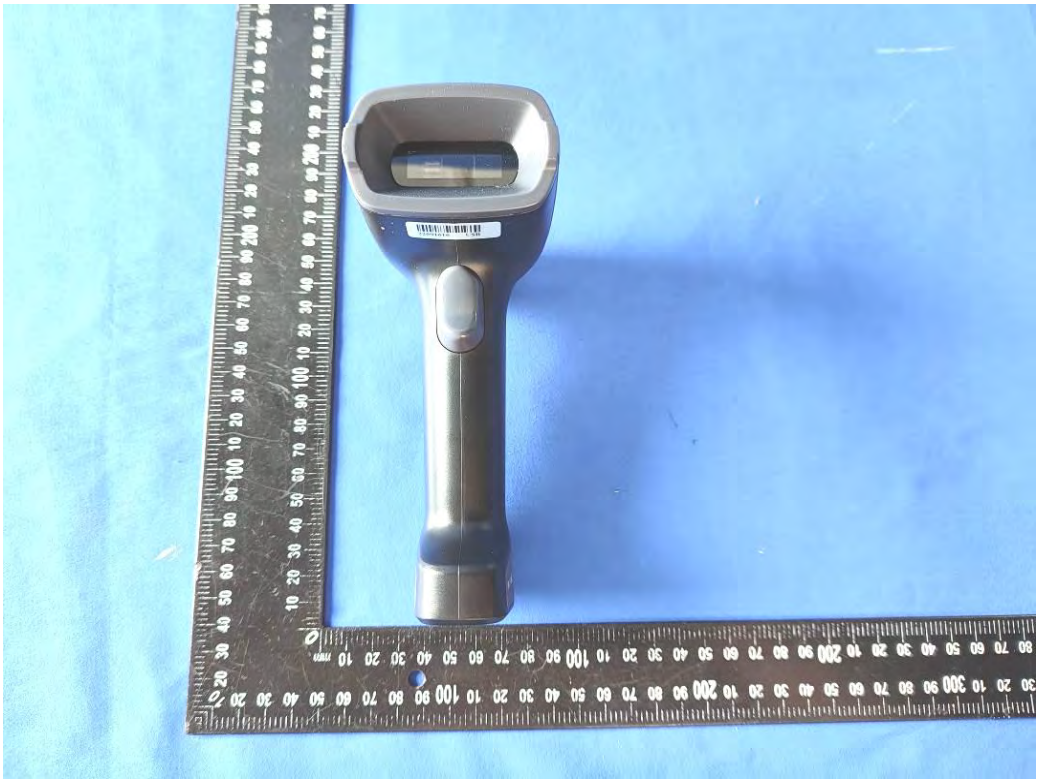
12.1. Photos of Radiated emission



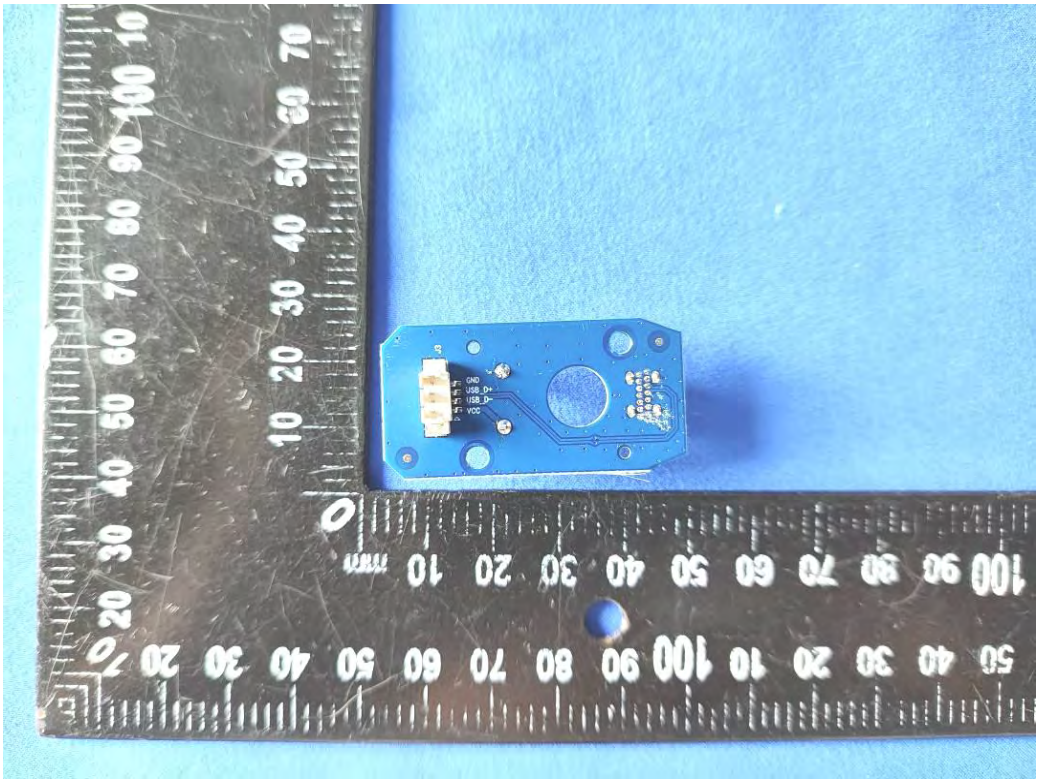
12.2. Photos of Power Line Conducted Emission Test

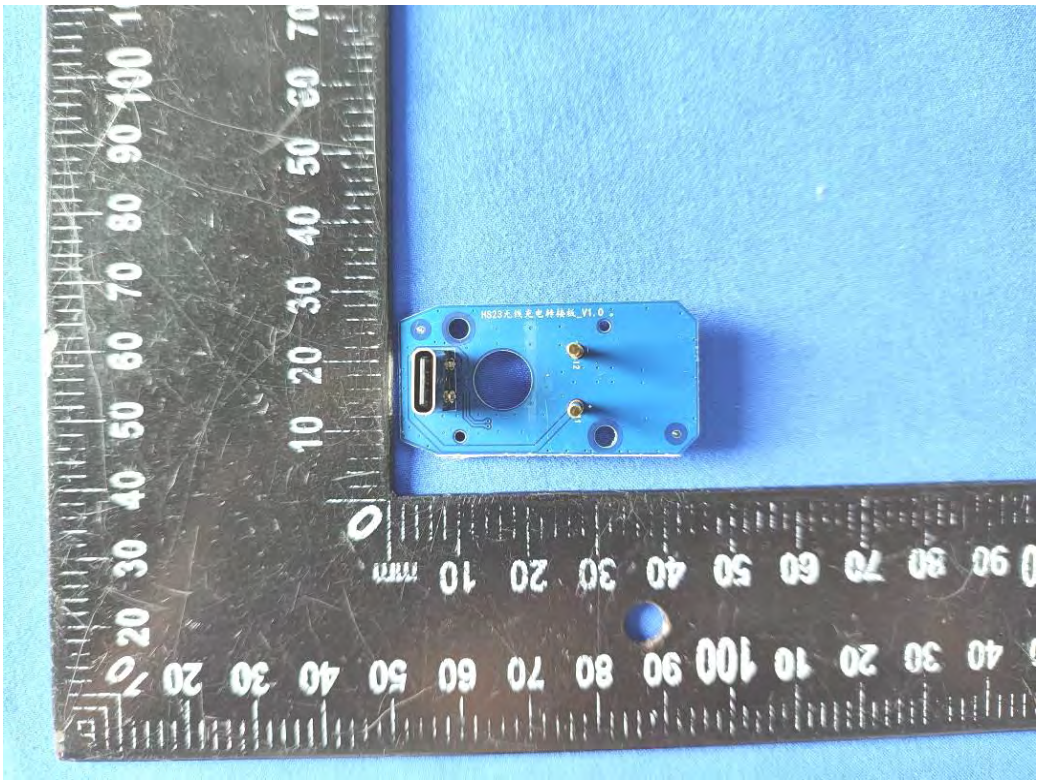
13. PHOTOS OF EUT

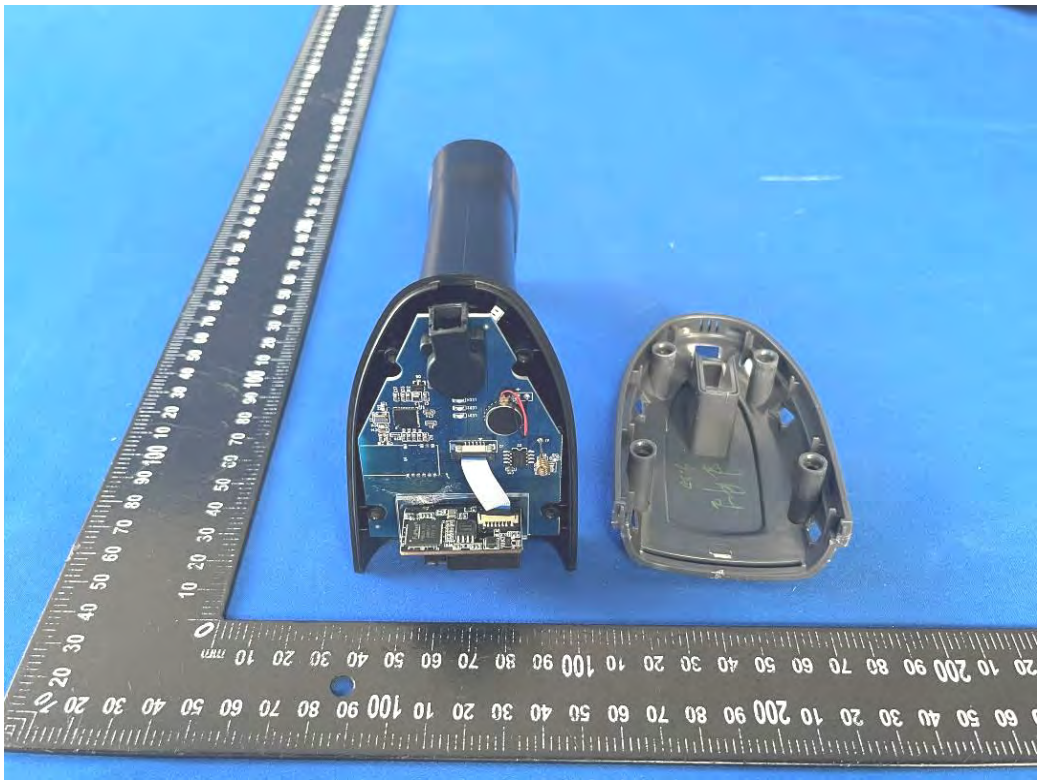


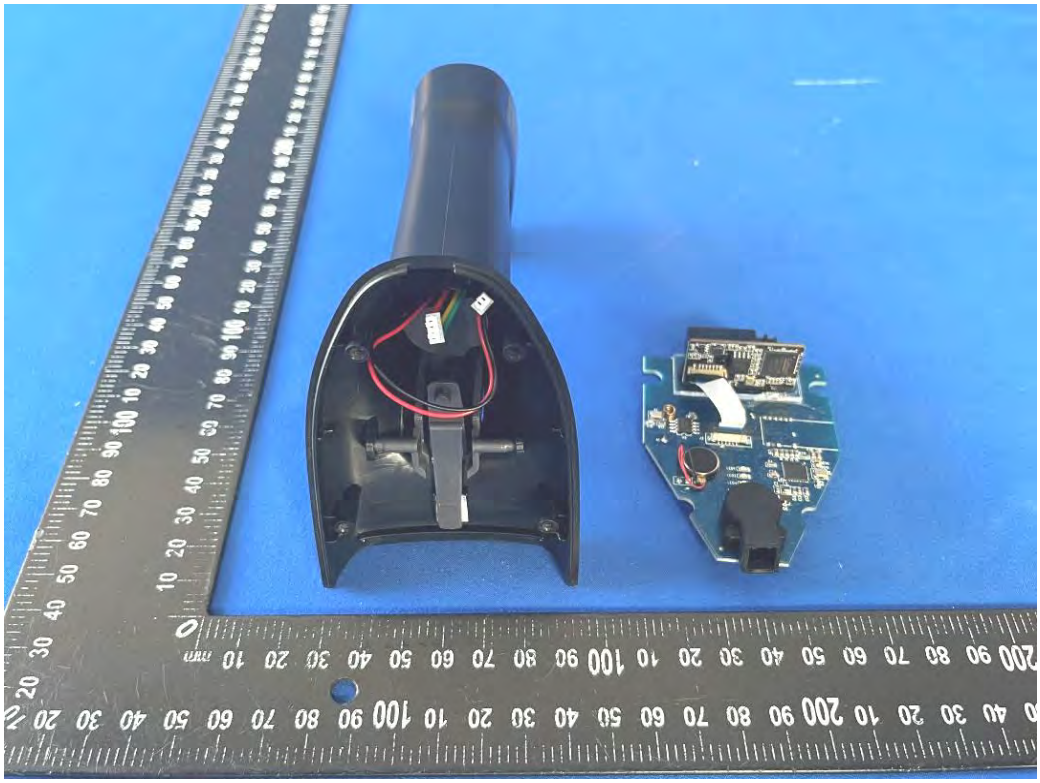


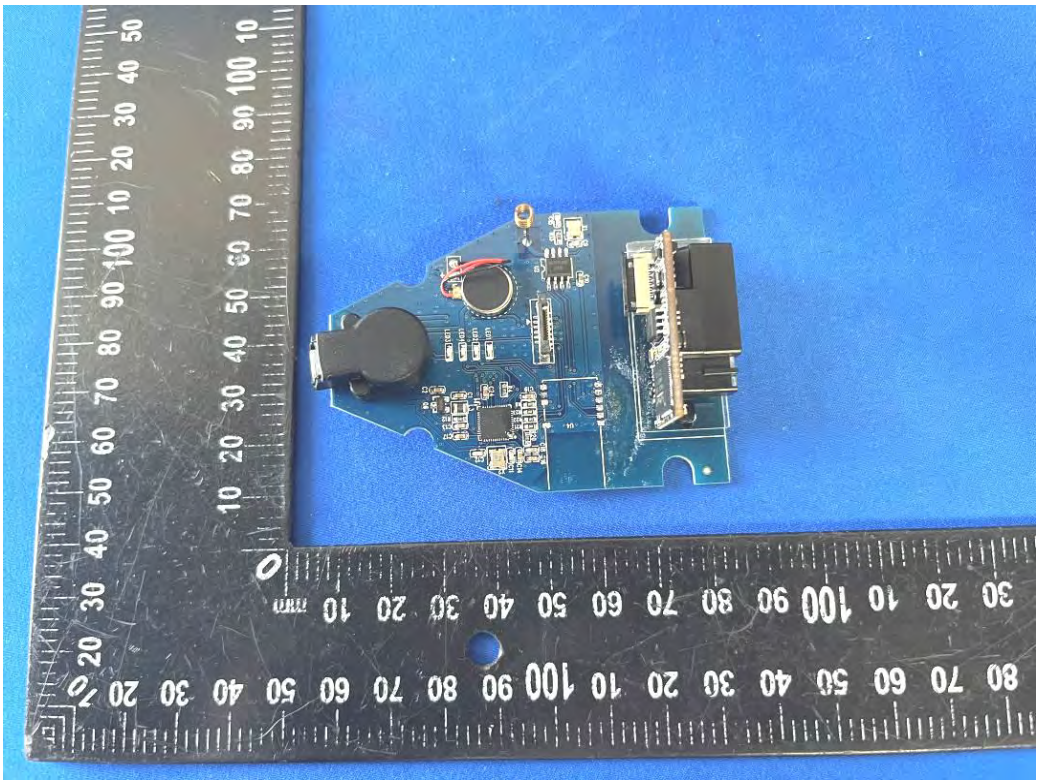

VOLCORA

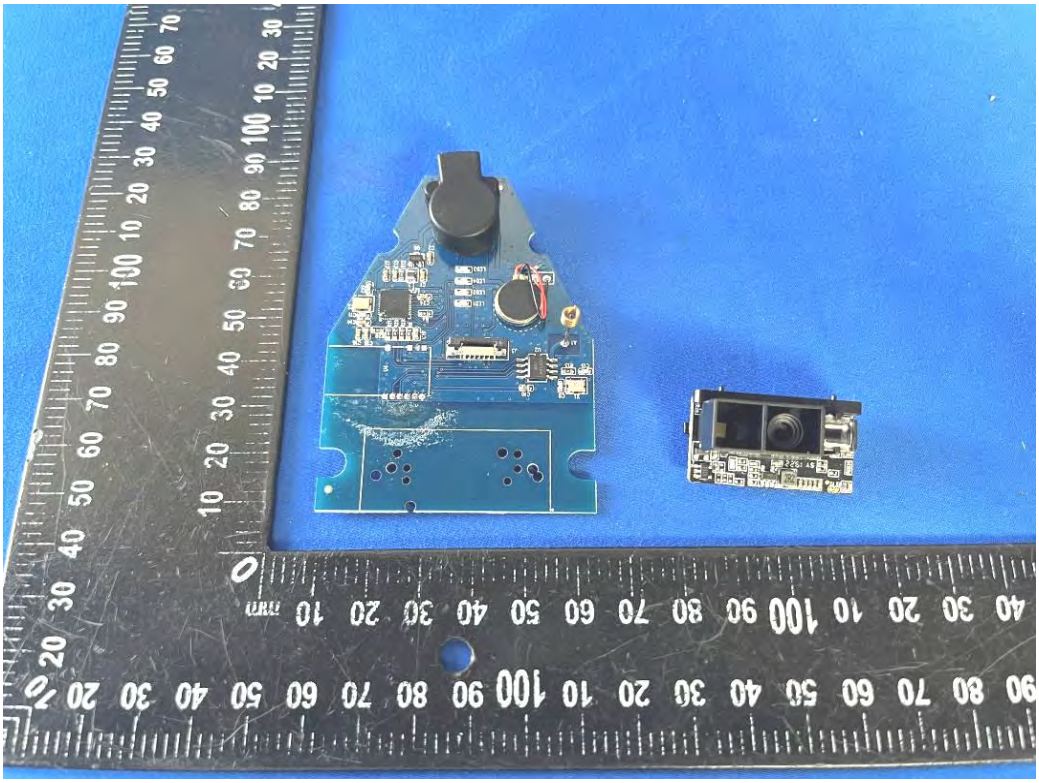

GND
USB_D+
USB_D-
VCC

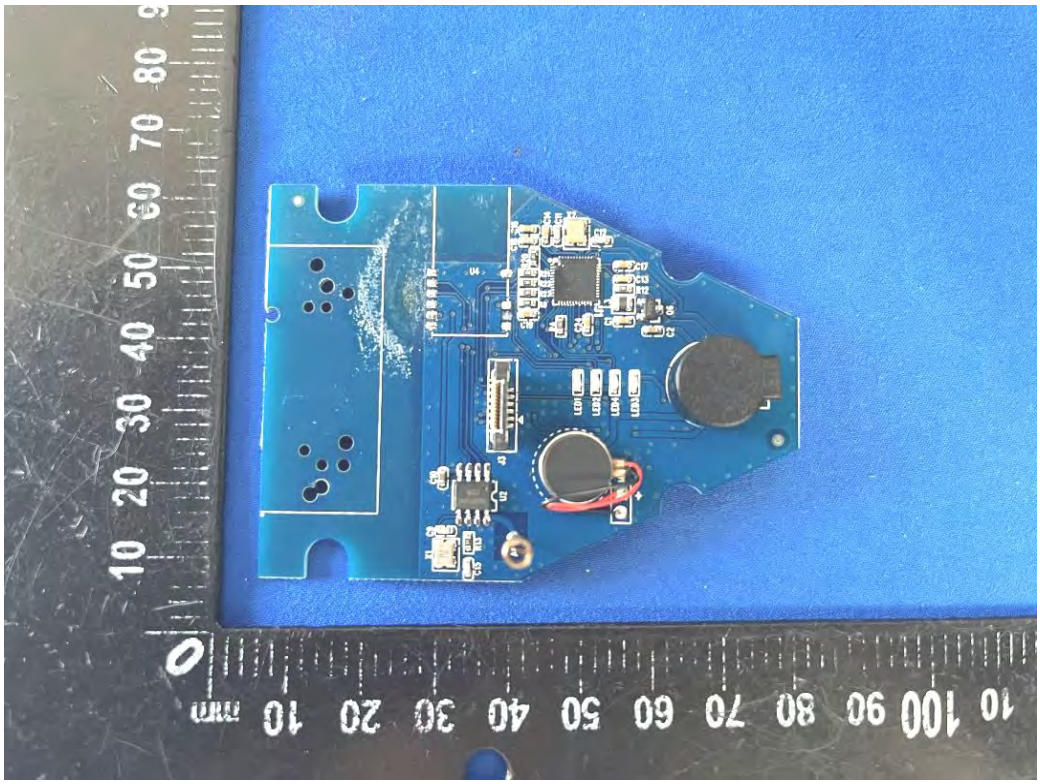


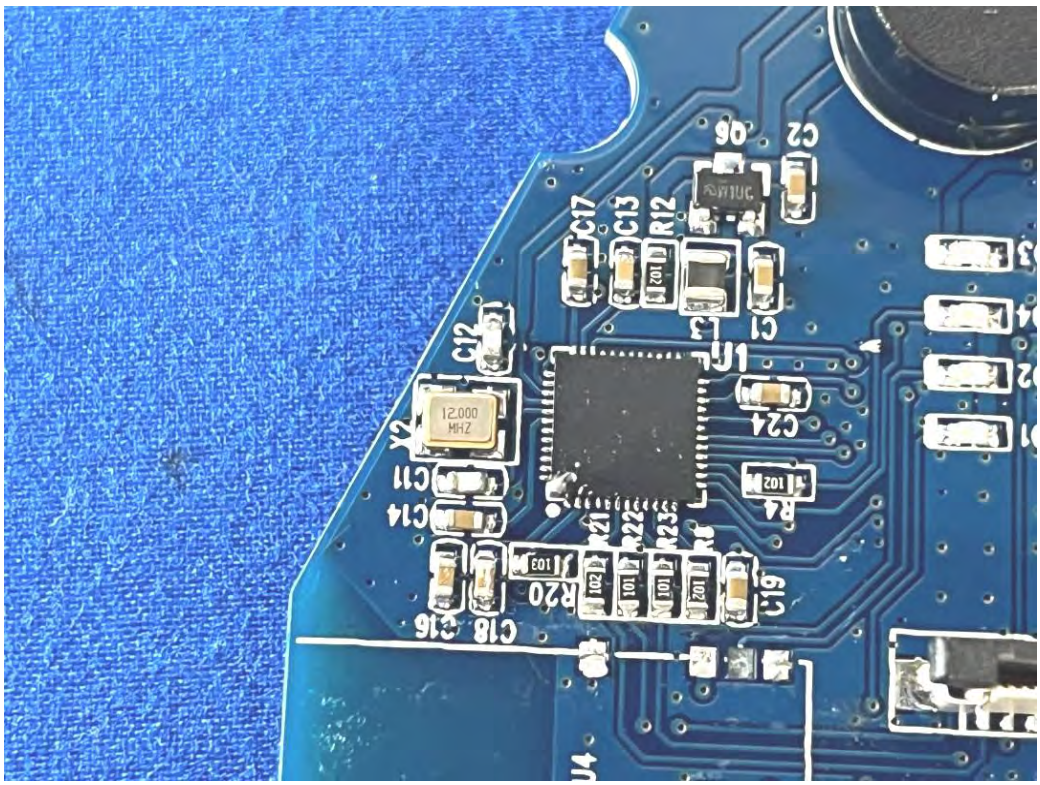


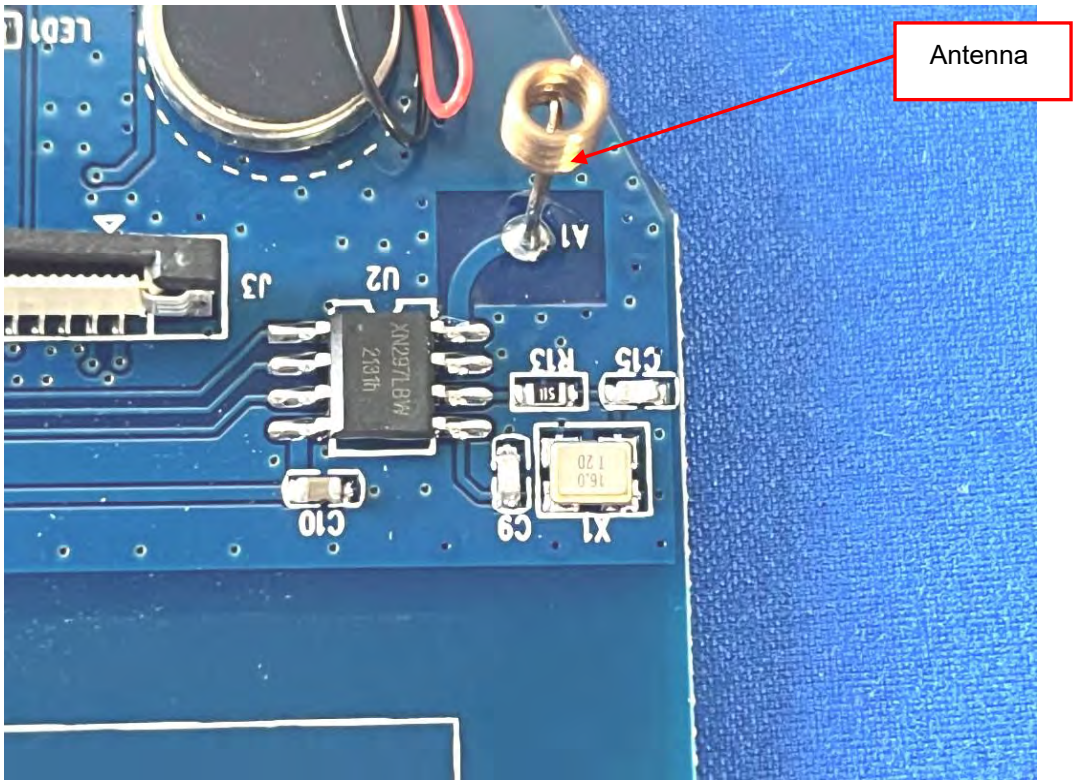


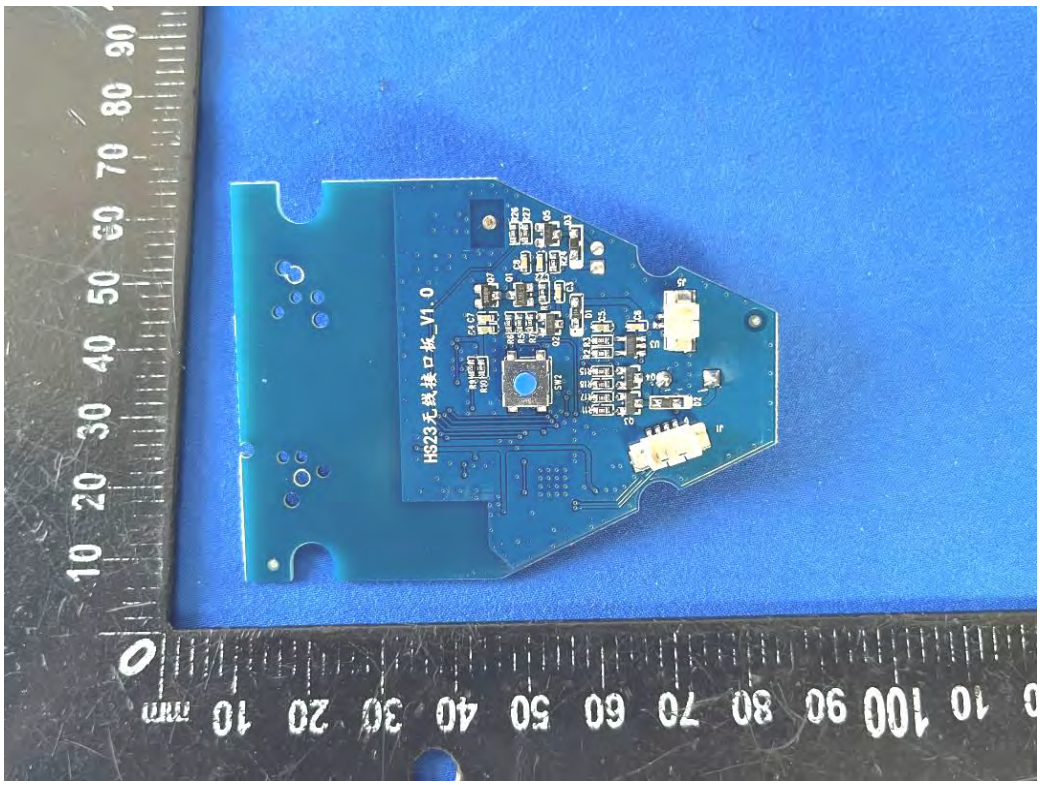


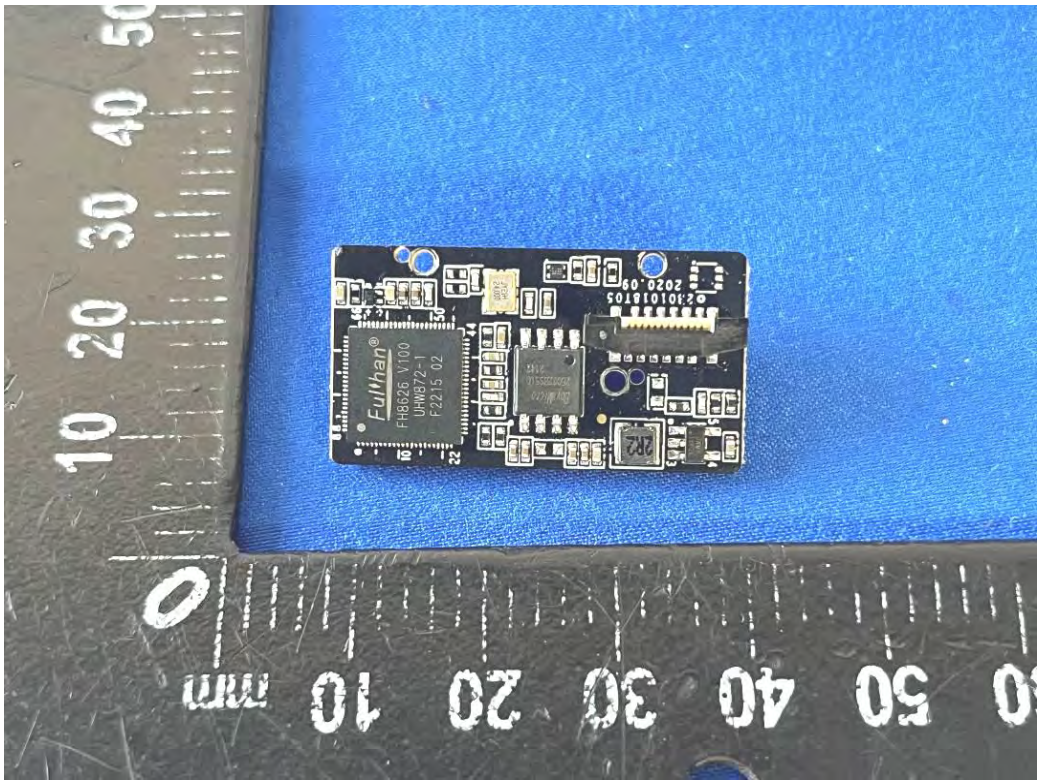


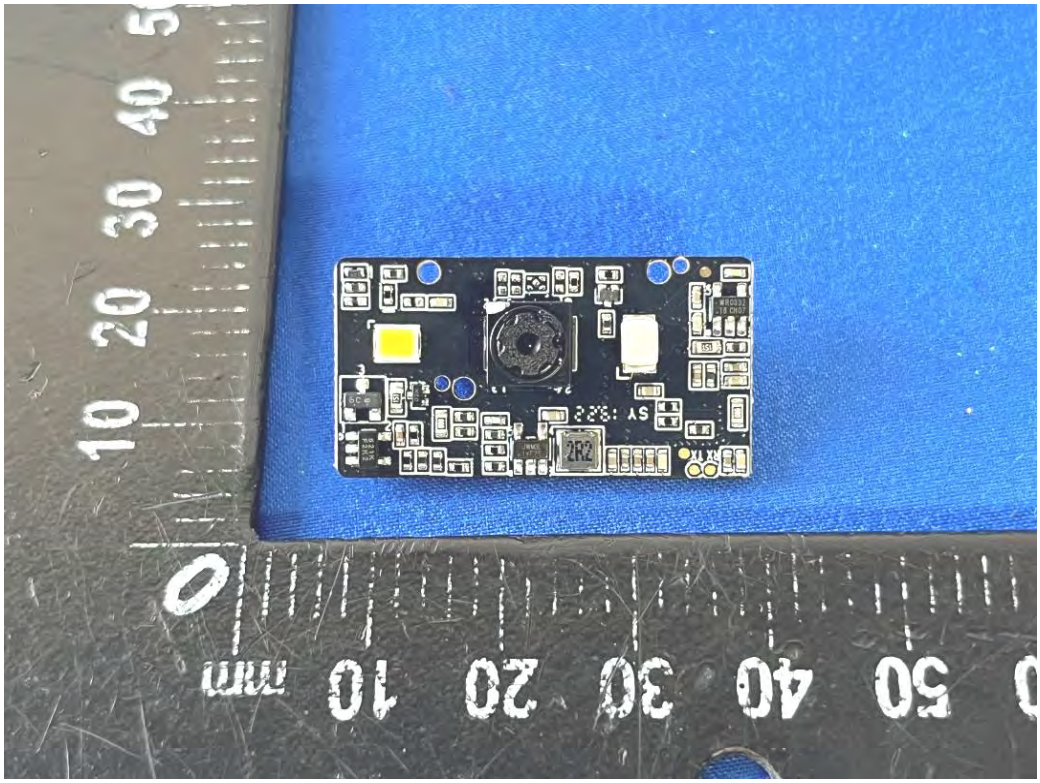



12.000
MHZ


Antenna
A1
J3
U2
C15
R13
C10
C9
X1


HS23无线读卡板_V1.0





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