FCC TEST REPORT

Test report
On Behalf of
Orbital Works Co.,Ltd.
For
Gaming mouse
Model No.: Pathfinder I, Pathfinder II, Pathfinder Pro

FCC ID: 2BOAN-PATHFINDERI

Prepared for :	**Orbital Works Co.,Ltd.** **71 G.P. House Building, 2nd Floor, Room 2/2, Sap Road, Si Phraya, Bang Rak, Bangkok, 10500 Thailand**
Prepared By :	**Shenzhen HUAK Testing Technology Co., Ltd.** **1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China**

Date of Test:	**Mar. 17, 2025 ~ Mar. 26, 2025**
Date of Report:	**Mar. 26, 2025**
Report Number:	**HK2503171231-E**

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TEST RESULT CERTIFICATION

Applicant's name ..... :	Orbital Works Co.,Ltd.
Address..... :	71 G.P. House Building, 2nd Floor, Room 2/2, Sap Road, Si Phraya, Bang Rak, Bangkok, 10500 Thailand
Manufacturer's Name..... :	Mototech Technology Group Limited
Address..... :	Block A5,Haosi NanPu Industrial Area, Linpokeng,ShangLiao Community Xinqiao street,BaoAn ShenZhen P.R.china
Product description	
Trade Mark..... :	Orbital Works
Product name ..... :	Gaming mouse
Model and/or type reference .. :	Pathfinder I, Pathfinder II, Pathfinder Pro
Standards ..... :	FCC Rules and Regulations Part 15 Subpart C Section 15.249 ANSI C63.10: 2013

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Date of Test ..... :	
Date (s) of performance of tests..... :	**Mar. 17, 2025 ~ Mar. 26, 2025**
Date of Issue ..... :	**Mar. 26, 2025**
Test Result..... :	**Pass**

Testing Engineer : Len Liao
(Len Liao)

Technical Manager : Sliver Wan
(Sliver Wan)

Authorized Signatory : Jason Zhou
(Jason Zhou)

HUAK TESTING CERTIFICATION HKTC APPROVAL

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** Modified History **

Revision	Description	Issued Data	Remark
Revision 1.0	Initial Test Report Release	Mar. 26, 2024	Jason Zhou

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1. TEST SUMMARY

1.1 Test Procedures And Results

DESCRIPTION OF TEST		RESULT
CONDUCTED EMISSIONS TEST	§ 15.207	COMPLIANT
RADIATED EMISSION TEST	§ 15.249 (a) / §15.209	COMPLIANT
BAND EDGE	§ 15.249 (d)/ §15.209	COMPLIANT
OCCUPIED BANDWIDTH MEASUREMENT	§ 15.215 (c)	COMPLIANT
ANTENNA REQUIREMENT	§ 15.203	COMPLIANT

1.2 Information of The Test Laboratory

Shenzhen HUAK Testing Technology Co., Ltd.
Add.: 1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Testing Laboratory Authorization：
A2LA Accreditation Code is 4781.01.
FCC Designation Number is CN1229.
Canada IC CAB identifier is CN0045.
CNAS Registration Number is L9589.

1.3 Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2
Radiated emission expanded uncertainty(9kHz-30MHz) = 3.08dB, k=2
Radiated emission expanded uncertainty(30MHz-1000MHz) = 4.42dB, k=2
Radiated emission expanded uncertainty(Above 1GHz) = 4.06dB, k=2

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2. GENERAL INFORMATION

2.1 General Description of EUT

Equipment	Gaming mouse
Model Name	Pathfinder I
Serial Model	Pathfinder II, Pathfinder Pro
Model Difference	All model's the function, software and electric circuit are the same, only with appearance and model named different. Test sample model: Pathfinder I.
FCC ID	2BOAN-PATHFINDERI
Antenna Type	PCB Antenna
Antenna Gain	1.87dBi
Equipment	Gaming mouse
Operation frequency	2403MHz~2477MHz
Number of Channels	38CH
Modulation Type	GFSK
Power Source	DC 5V from Type-C or DC 3.7V from Battery
Power Rating	DC 5V from Type-C or DC 3.7V from Battery
Firmware Version	V2.0
Hardware Version	V2.0

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2. Antenna gain Refer to the antenna specifications.
3. The cable loss data is obtained from the supplier.
4. The test results in the report only apply to the tested sample.

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2.2 Carrier Frequency of Channels

Description of Channel:							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2403	11	2423	21	2475	31	2463
2	2405	12	2425	22	2477	32	2465
3	2407	13	2427	23	2443	33	2467
4	2409	14	2429	24	2445	34	2469
5	2411	15	2431	25	2447	35	2471
6	2413	16	2433	26	2449	36	2473
7	2415	17	2435	27	2451	37	2475
8	2417	18	2437	28	2453	38	2477
9	2419	19	2439	29	2455		
10	2421	20	2441	30	2457		

2.3 Operation of EUT during testing

Operating Mode
The mode is used: **Transmitting mode**

Channel1: 2403MHz
Channel20: 2441MHz
Channel38: 2477MHz

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2.4 Description of Test Setup

Operation of EUT during below 1GHz Radiation testing and Conducted testing:

Operation of EUT during above 1GHz Radiation testing:

The sample was placed (0.8m below 1GHz, 1.5m above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages. The worst case is X position

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2.5 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.	Specification	Note
1	Gaming mouse	Orbital Works	Pathfinder I	N/A	EUT
2	Laptop	Lenovo	Thinkpad E450	Input: 20V 2.25A/3.25A	Peripheral

Note:

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.
3. For conducted measurements (Output Power, 6dB Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.

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2.6 Measurement Instruments List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N.	R&S	ENV216	HKE-002	Feb. 19, 2025	1 Year
2	L.I.S.N.	R&S	ENV216	HKE-059	Feb. 19, 2025	1 Year
3	EMI Test Receiver	R&S	ESR	HKE-005	Feb. 19, 2025	1 Year
4	Spectrum analyzer	Agilent	N9020A	HKE-048	Feb. 19, 2025	1 Year
5	Spectrum analyzer	R&S	FSV3044	HKE-126	Feb. 19, 2025	1 Year
6	Preamplifier	EMCI	EMC051845S	HKE-006	Feb. 19, 2025	1 Year
7	Preamplifier	Schwarzbeck	BBV 9743	HKE-016	Feb. 19, 2025	1 Year
8	Preamplifier	A.H. Systems	SAS-574	HKE-182	Feb. 19, 2025	1 Year
9	6d Attenuator	Pasternack	6db	HKE-184	Feb. 19, 2025	1 Year
10	EMI Test Receiver	Rohde & Schwarz	ESR-7	HKE-010	Feb. 19, 2025	1 Year
11	Broadband Antenna	Schwarzbeck	VULB9168	HKE-167	Feb. 21, 2024	2 Year
12	Loop Antenna	COM-POWER	AL-130R	HKE-014	Feb. 21, 2024	2 Year
13	Horn Antenna	Schewarzbeck	9120D	HKE-013	Feb. 21, 2024	2 Year
14	EMI Test Software	Tonscend	JS32-CE 2.5.0.6	HKE-081	N/A	N/A
15	EMI Test Software	Tonscend	JS32-RE 5.0.0	HKE-082	N/A	N/A
16	RF Automatic control unit	Tonscend	JS0806-1	HKE-096	Feb. 19, 2025	1 Year
17	High pass filter unit	Tonscend	JS0806-F	HKE-055	Feb. 19, 2025	1 Year
18	Wireless Communication Test Set	R&S	CMU200	HKE-026	Dec. 09, 2021	3 Year
19	Wireless Communication Test Set	R&S	CMW500	HKE-027	Feb. 19, 2025	1 Year
20	High-low temperature chamber	Guangke	HT-80L	HKE-118	Jun. 10, 2024	1 Year
21	Temperature and humidity meter	Boyang	HTC-1	HKE-075	Jun. 10, 2024	1 Year
22	RF Test Software	Tonscend	JS1120-3 Version 3.3.23	HKE-083	N/A	N/A
23	10dB Attenuator	Schwarzbeck	VTSD9561F	HKE-153	Feb. 19, 2025	1 Year
24	RSE Test Software	Tonscend	JS36-RSE 5.0.0	HKE-184	N/A	N/A

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3. CONDUCTED EMISSIONS TEST

3.1 Conducted Power Line Emission Limit

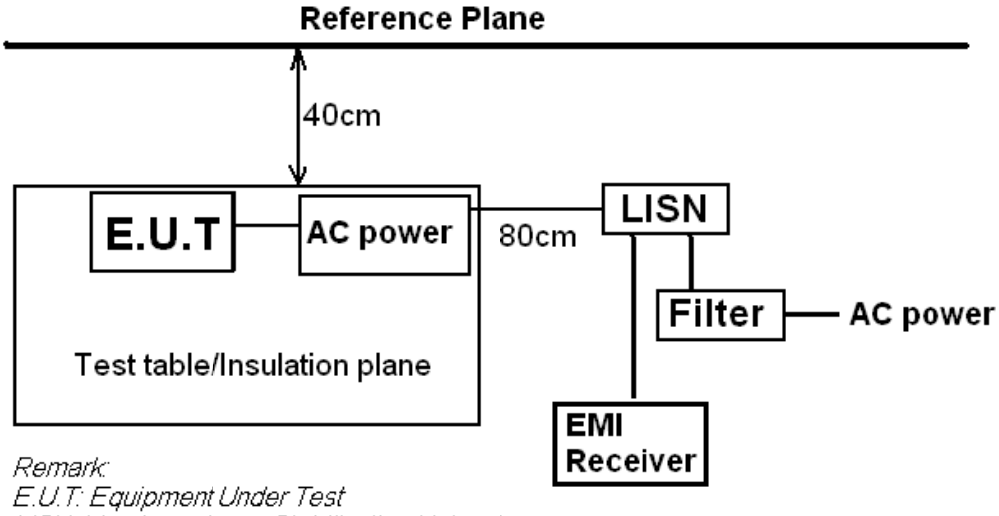
For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following

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

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

3.2 Test Setup



Remark:
E.U.T: Equipment Under Test
LISN: Line Impedence Stabilization Network
Test table height=0.8m

3.3 Test Procedure

1, The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10.
2, Support equipment, if needed, was placed as per ANSI C63.10.
3, All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4, If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5, All support equipments received AC power from a second LISN, if any.
6, The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7, Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.

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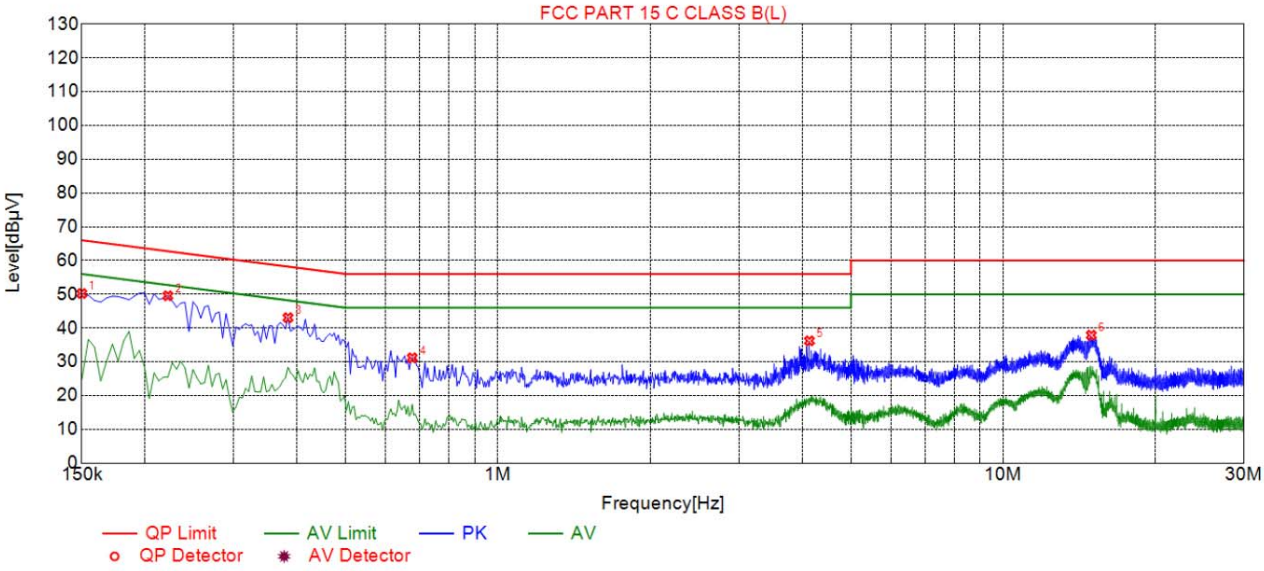
3.4 Test Result

All modes have been tested, only the worst result was reported as below:

Test Specification: Line



Suspected List								
NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Reading [dBµV]	Detector	Type
1	0.1500	50.22	19.83	66.00	15.78	30.39	PK	L
2	0.2220	49.56	19.84	62.82	13.26	29.72	PK	L
3	0.3840	43.07	19.85	58.26	15.19	23.22	PK	L
4	0.6765	31.18	19.86	56.00	24.82	11.32	PK	L
5	4.1370	36.20	20.09	56.00	19.80	16.11	PK	L
6	14.9550	37.89	19.81	60.00	22.11	18.08	PK	L

Remark: Margin = Limit – Level

Correction factor = Cable lose + ISN insertion loss

Level=Test receiver reading + correction factor

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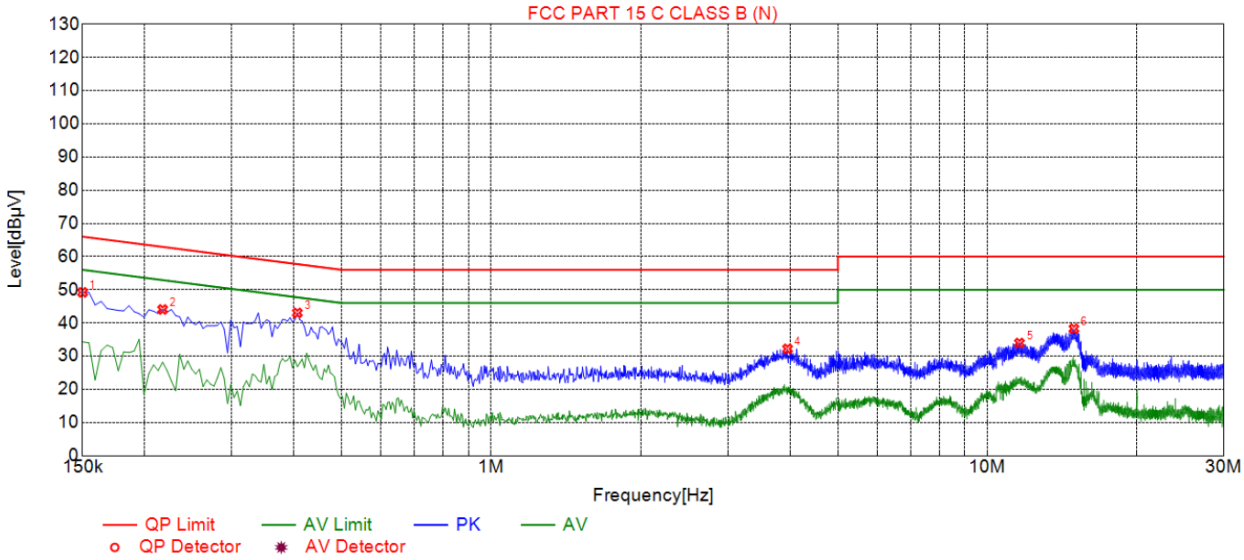
Test Specification: Neutral



Suspected List								
NO.	Freq. [MHz]	Level [dBμV]	Factor [dB]	Limit [dBμV]	Margin [dB]	Reading [dBμV]	Detector	Type
1	0.1500	49.21	19.73	66.00	16.79	29.48	PK	N
2	0.2175	44.07	19.75	62.91	18.84	24.32	PK	N
3	0.4065	43.03	19.73	57.72	14.69	23.30	PK	N
4	3.9570	32.20	19.97	56.00	23.80	12.23	PK	N
5	11.6115	33.95	19.82	60.00	26.05	14.13	PK	N
6	14.9550	38.26	19.80	60.00	21.74	18.46	PK	N

Remark: Margin = Limit – Level

Correction factor = Cable lose + ISN insertion loss

Level=Test receiver reading + correction factor

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4 RADIATED EMISSION TEST

4.1 Radiation Limit

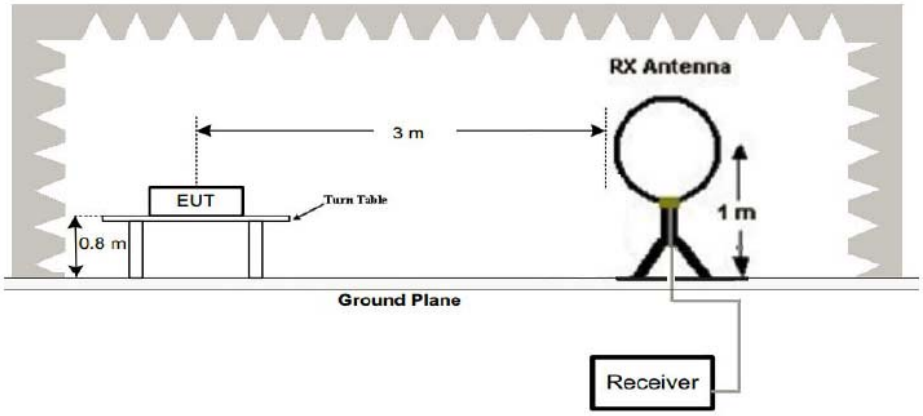
For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values：

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
30-88	3	40	100
88-216	3	43.5	150
216-960	3	46	200
Above 960	3	54	500

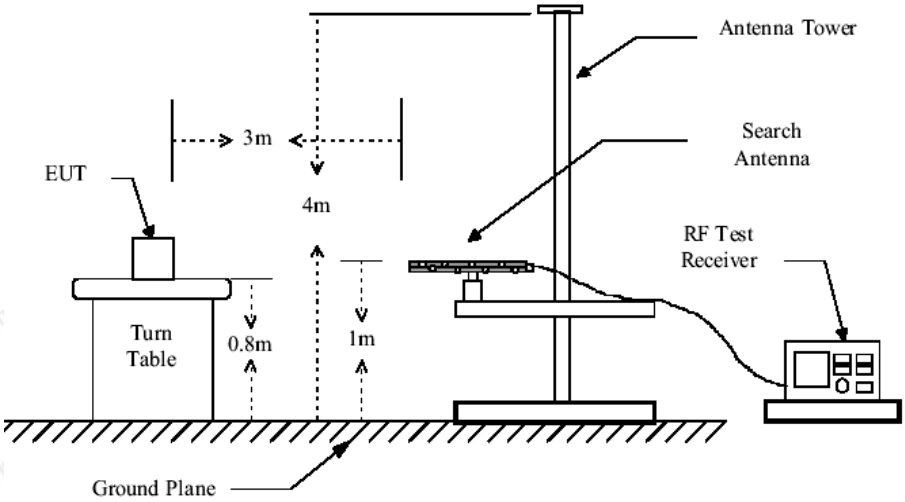
For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

4.2 Test Setup

（1）Radiated Emission Test-Up Frequency Below 30MHz



（2）Radiated Emission Test-Up Frequency 30MHz~1GHz



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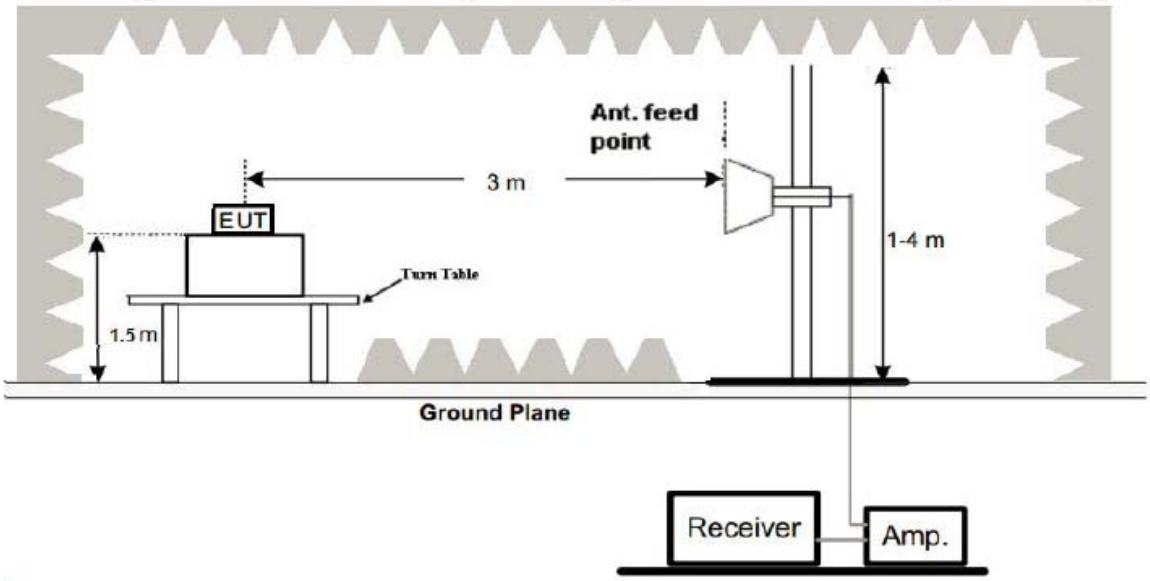
（3）Radiated Emission Test-Up Frequency Above 1GHz



4.3 Test Procedure

1. Below 1GHz measurement the EUT is placed on turntable which is 0.8m above ground plane. And above 1GHz measurement EUT was placed on low permittivity and low tangent turn table which is 1.5m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The test frequency range from 9KHz to 25GHz per FCC PART 15.33(a).

Note:
For battery operated equipment, the equipment tests shall be performed using a new battery.

4.4 Test Result

PASS

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Below 1GHz Test Results:

Antenna polarity: H

Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	167.87787	-17.31	35.99	18.68	43.50	24.82	100	101	Horizontal
2	264.00400	-13.15	41.61	28.46	46.00	17.54	100	216	Horizontal
3	308.66866	-11.86	39.91	28.05	46.00	17.95	100	75	Horizontal
4	476.64664	-8.23	34.22	25.99	46.00	20.01	100	358	Horizontal
5	722.30230	-4.17	37.47	33.30	46.00	12.70	100	225	Horizontal
6	960.19019	-0.54	31.07	30.53	54.00	23.47	100	29	Horizontal

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = L imit – Level

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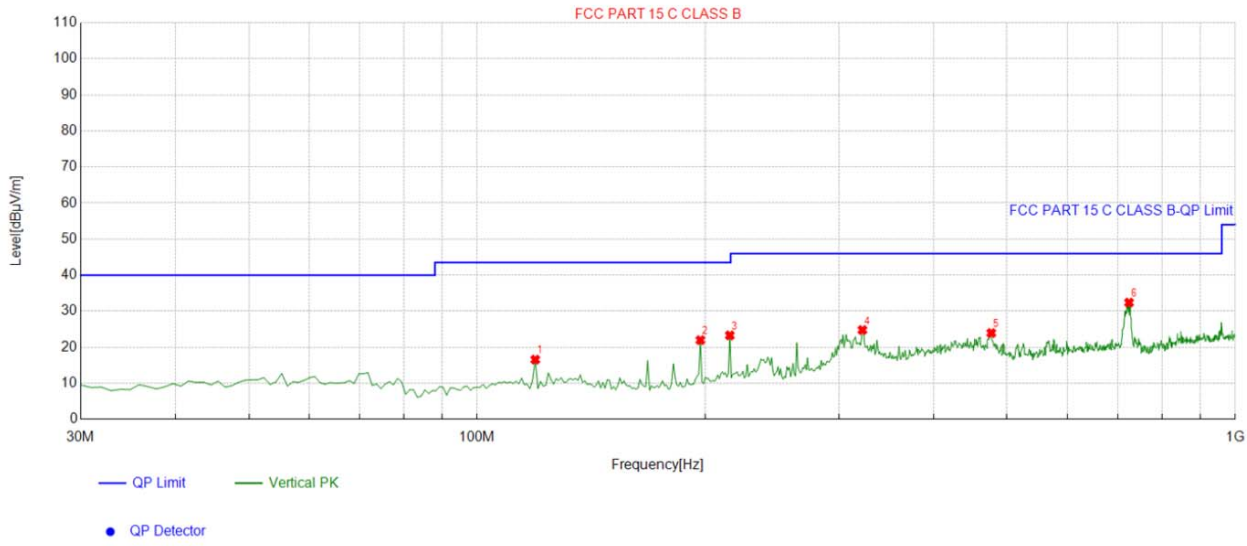
Antenna polarity: V



Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	119.32932	-15.94	32.50	16.56	43.50	26.94	100	100	Vertical
2	197.00700	-14.97	36.94	21.97	43.50	21.53	100	171	Vertical
3	215.45545	-14.72	38.00	23.28	43.50	20.22	100	237	Vertical
4	322.26226	-11.12	35.89	24.77	46.00	21.23	100	200	Vertical
5	476.64664	-8.23	32.16	23.93	46.00	22.07	100	354	Vertical
6	724.24424	-4.10	36.50	32.40	46.00	13.60	100	80	Vertical

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = L imit – Level

Remark:
(1) Measuring frequencies from 9 KHz to the 1 GHz, Radiated emission test from 9KHz to 30MHz was verified, and no any emission was found except system noise floor.
(2) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
(3) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.

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Above 1 GHz Test Results:

CH Middle (2403MHz)

Horizontal:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2403	97.95	-5.71	92.24	114	-21.76	peak
2403	77.66	-5.71	71.95	94	-22.05	AVG
4806	45.62	-3.51	42.11	74	-31.89	peak
4806	35.99	-3.51	32.48	54	-21.52	AVG
7209	48.02	-0.82	47.2	74	-26.8	peak
7209	33.33	-0.82	32.51	54	-21.49	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier; Level = Reading + Factor; Margin = Limit – Level						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2403	97.68	-5.71	91.97	114	-22.03	peak
2403	76.14	-5.71	70.43	94	-23.57	AVG
4806	44.21	-3.51	40.7	74	-33.3	peak
4806	34.54	-3.51	31.03	54	-22.97	AVG
7209	47.78	-0.82	46.96	74	-27.04	peak
7209	35.54	-0.82	34.72	54	-19.28	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier; Level = Reading + Factor; Margin = Limit – Level						

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CH Middle (2441MHz)

Horizontal:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2441	98.31	-5.71	92.6	114	-21.4	peak
2441	80.29	-5.71	74.58	94	-19.42	AVG
4882	48.72	-3.51	45.21	74	-28.79	peak
4882	36.59	-3.51	33.08	54	-20.92	AVG
7323	52.92	-0.82	52.1	74	-21.9	peak
7323	36.26	-0.82	35.44	54	-18.56	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier; Level = Reading + Factor; Margin = Limit – Level						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2440	97.55	-5.71	91.84	114	-22.16	peak
2440	75.17	-5.71	69.46	94	-24.54	AVG
4880	45.25	-3.51	41.74	74	-32.26	peak
4880	36.87	-3.51	33.36	54	-20.64	AVG
7320	50.07	-0.82	49.25	74	-24.75	peak
7320	34.38	-0.82	33.56	54	-20.44	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier; Level = Reading + Factor; Margin = Limit – Level						

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CH High (2477MHz)

Horizontal:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2480	97.28	-5.65	91.63	114	-22.37	peak
2480	75.51	-5.65	69.86	94	-24.14	AVG
4960	46.92	-3.43	43.49	74	-30.51	peak
4960	36.38	-3.43	32.95	54	-21.05	AVG
7440	47.36	-0.75	46.61	74	-27.39	peak
7440	34.32	-0.75	33.57	54	-20.43	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier; Level = Reading + Factor; Margin = Limit – Level

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2480	96.98	-5.65	91.33	114	-22.67	peak
2480	75.13	-5.65	69.48	94	-24.52	AVG
4960	46.40	-3.43	42.97	74	-31.03	peak
4960	37.46	-3.43	34.03	54	-19.97	AVG
7440	47.54	-0.75	46.79	74	-27.21	peak
7440	35.54	-0.75	34.79	54	-19.21	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier; Level = Reading + Factor; Margin = Limit – Level

Remark：
(1) Measuring frequencies from 1 GHz to the 25 GHz。
(2) “F” denotes fundamental frequency; “H” denotes spurious frequency. “E” denotes band edge frequency.
(3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
(4)The emissions are attenuated more than 20dB below the permissible limits are not record in the re port.
(5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
(6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.

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5 BAND EDGE

5.1 Limits

FCC PART 15.249(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

5.2 Test Procedure

The band edge compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW to 1MHz and VBM to 3MHz to measure the peak field strength and set RBW to 1MHz and VBW to 10Hz to measure the average radiated field strength.The conducted RF band edge was measured by using a spectrum analyzer. Set span wide enough to capture the highest in-band emission and the emission at the band edge. Set RBW to 1MHz and VBW to 3MHz, to measure the conducted peak band edge.

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5.3 Test Result

PASS

Radiated Band Edge Test:

Operation Mode: TX CH Low (2403MHz)

Horizontal (Worst case)

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2310	57.25	-5.81	51.44	74	-22.56	peak
2310	/	-5.81	/	54	/	AVG
2390	56.32	-5.84	50.48	74	-23.52	peak
2390	/	-5.84	/	54	/	AVG
2400	54.16	-5.84	48.32	74	-25.68	peak
2400	/	-5.84	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier; Level = Reading + Factor; Margin = Limit – Level						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2310	55.25	-5.81	49.44	74	-24.56	peak
2310	/	-5.81	/	54	/	AVG
2390	56.17	-5.84	50.33	74	-23.67	peak
2390	/	-5.84	/	54	/	AVG
2400	56.33	-5.84	50.49	74	-23.51	peak
2400	/	-5.84	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier; Level = Reading + Factor; Margin = Limit – Level						

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Operation Mode: TX CH High (2477MHz)
Horizontal (Worst case)

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.50	54.98	-5.65	49.33	74	-24.67	peak
2483.50	/	-5.65	/	54	/	AVG
2500.00	55.32	-5.65	49.67	74	-24.33	peak
2500.00	/	-5.65	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier; Level = Reading + Factor; Margin = Limit – Level						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.50	55.02	-5.65	49.37	74	-24.63	peak
2483.50	/	-5.65	/	54	/	AVG
2500.00	52.34	-5.65	46.69	74	-27.31	peak
2500.00	/	-5.65	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier; Level = Reading + Factor; Margin = Limit – Level						
Remark: All the other emissions not reported were too low to read and deemed to comply with FCC limit.						

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6 OCCUPIED BANDWIDTH MEASUREMENT

6.1 Test Setup

Same as Radiated Emission Measurement

6.2 Test Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as normal operation.
3. Based on ANSI C63.10 section 6.9.2: RBW= 30KHz. VBW= 91KHz, Span=6MHz.
4. The useful radiated emission from the EUT was detected by the spectrum analyser with peak detector.

6.3 Measurement Equipment Used

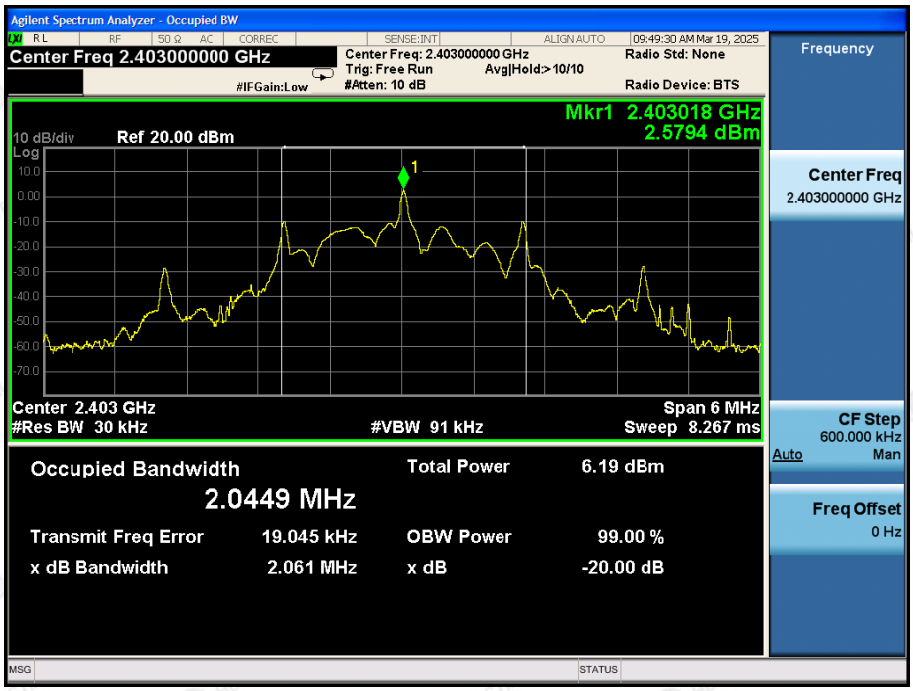
Same as Radiated Emission Measurement

6.4 Test Result

PASS

Frequency	20dB Bandwidth (MHz)	Result
2403 MHz	2.061	**PASS**
2441 MHz	2.062	
2477 MHz	2.062	

CH: 2403MHz



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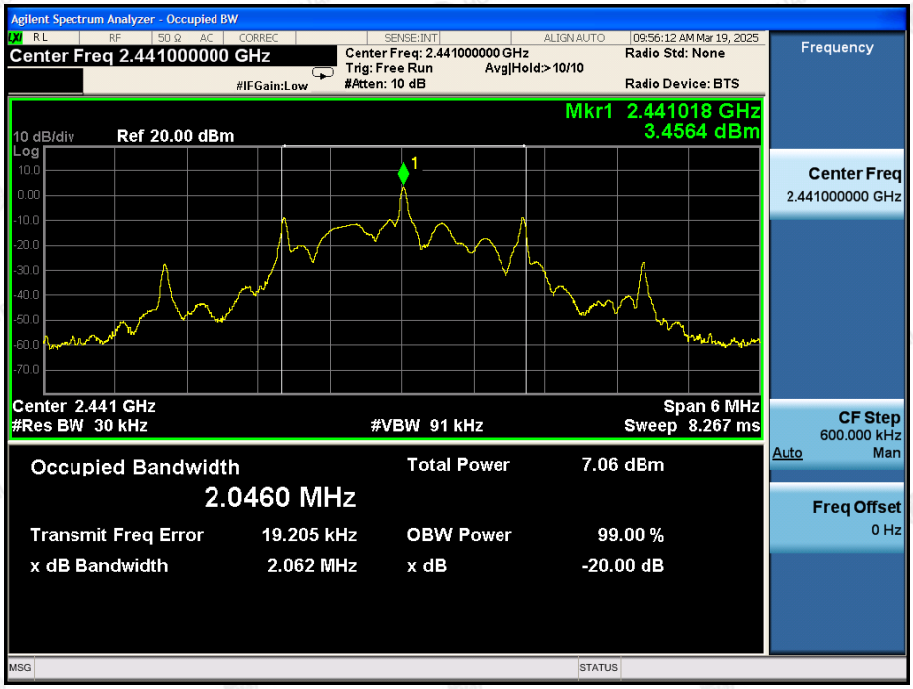
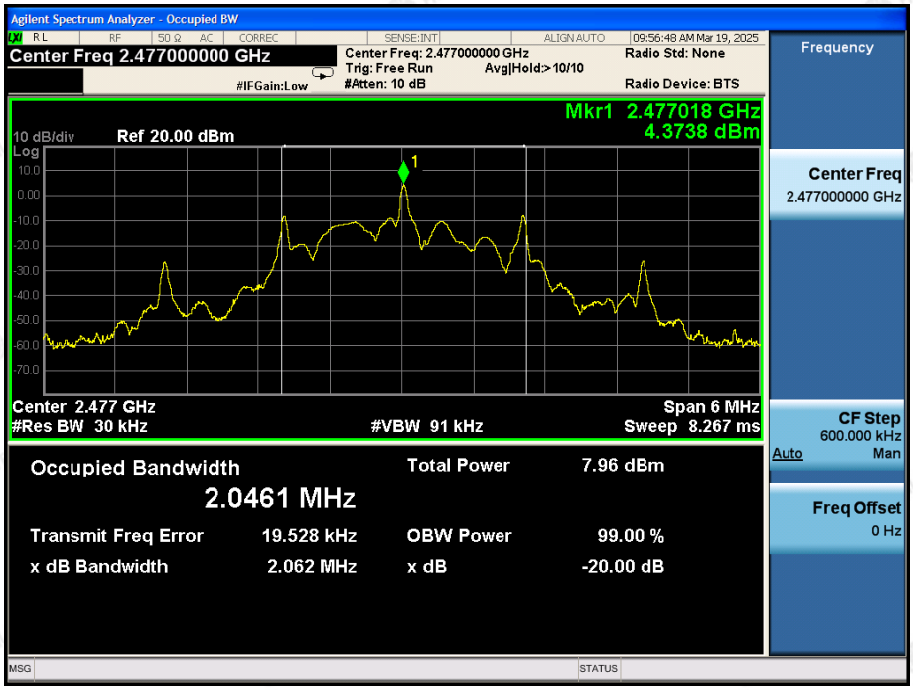
CH: 2441MHz



CH: 2477MHz



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7 ANTENNA REQUIREMENT

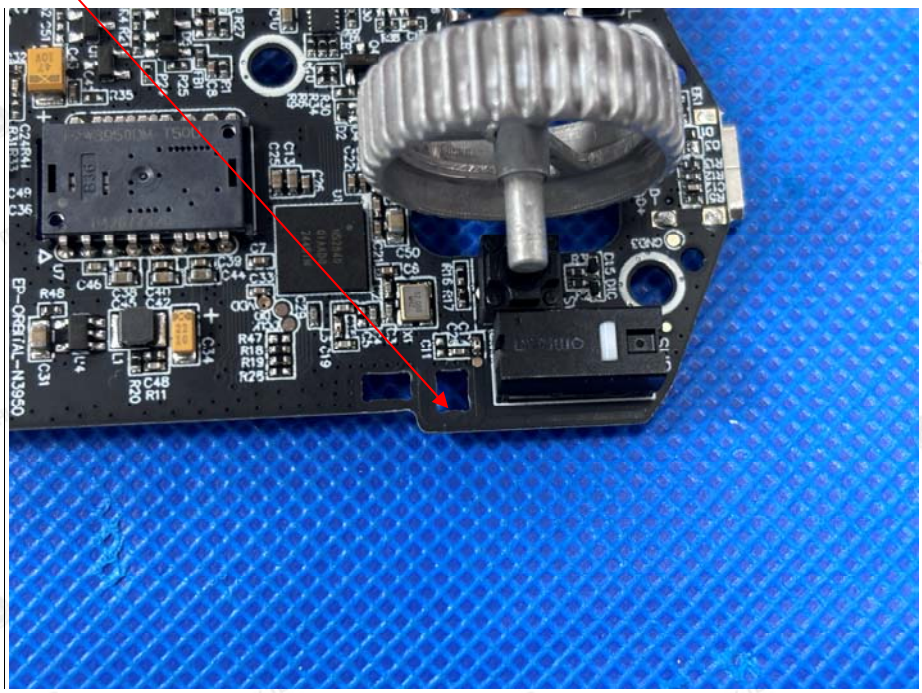
Standard Applicable

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.

Antenna Connected Construction

The antenna used in this product is a PCB Antenna which permanently attached. It conforms to the standard requirements, The directional gains of antenna used for transmitting is 1.87dBi.

ANTENNA



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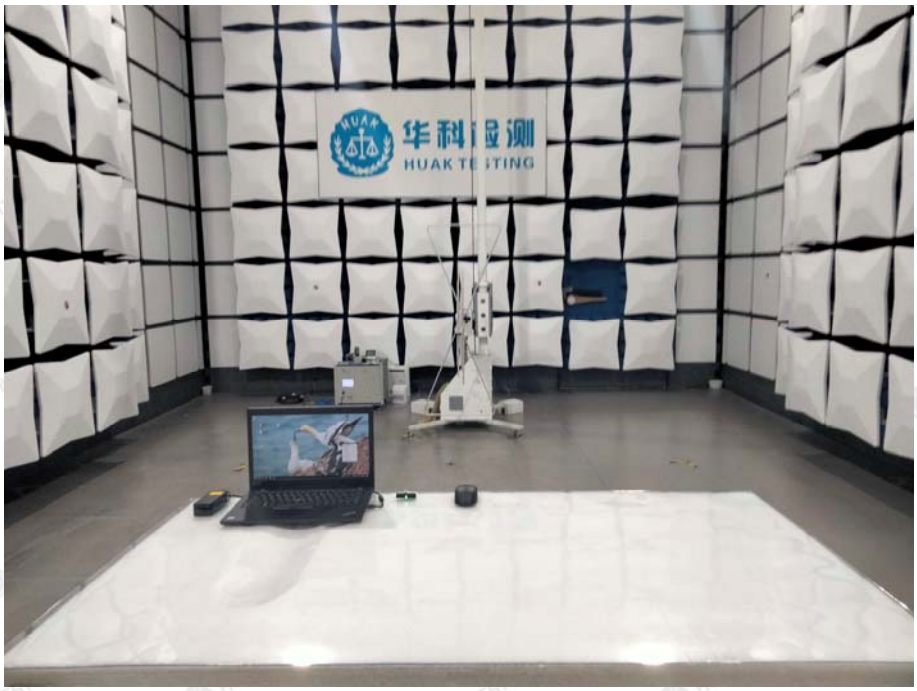
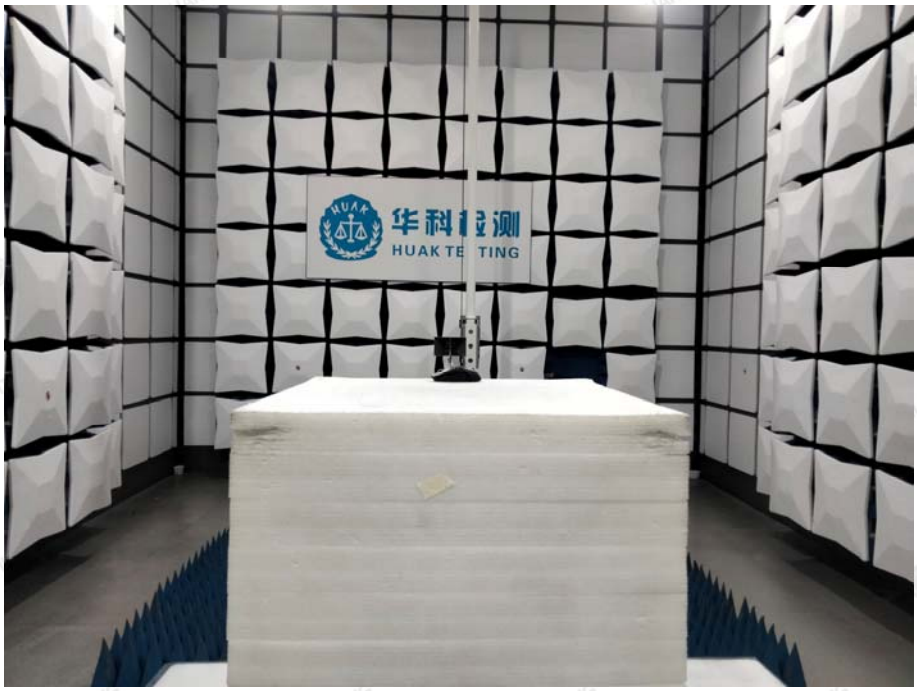
8 PHOTOGRAPH OF TEST

8.1 Radiated Emission





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8.2 Conducted Emission

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9 PHOTOS OF THE EUT

Reference to the report: ANNEX A of external photos and ANNEX B of internal photos

---------End of test report---------

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