TEST REPORT

Product Name	:	Portable Charger
Brand Name	:	FuelRod
Model	:	Max10
Series Model	:	P10A
FCC ID	:	2BLOD-MAX10
Applicant	:	**Tricopian, Inc. DBA FuelRod**
Address	:	11880 Community Road Suite 300, Poway, CA 92064
Manufacturer	:	**Shenzhen Enthergic Technology Co., Ltd**
Address	:	2F Building C, Wataokeng, New Planning Area, Wulian Community Longgang Street, Longgang District, Shenzhen, China
Standard(s)	:	FCC CFR Title 47 Part 15 Subpart C
Date of Receipt	:	Oct. 12, 2024
Date of Test	:	Oct. 12, 2024~ Oct. 25, 2024
Issued Date	:	Oct. 25, 2024

Issued By: **Guangdong Asia Hongke Test Technology Limited**
B1/F, Building 11, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
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Leon.yi

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Report Revise Record

Report Version	Issued Date	Notes
M1	Oct. 25, 2024	Initial Release

Contents

1 TEST SUMMARY

1.1 Test Standards

The tests were performed according to following standards:
FCC Rules Part 15.207,15.209, 15.215(c)

ANSI C63.10: 2013: American National Standard for Testing Unlicensed Wireless Devices

1.2 Test Summary

Test Item	Section in CFR 47	Test Result
Electric Field Radiated Emissions	FCC Part 15 C (Section15.209)	PASS
20dB Bandwidth/99% Bandwidth	FCC Part 15 C (Section15.215(c))	PASS
AC Power Line Conducted Emission	FCC Part 15 C (Section15.207)	PASS
Antenna Requirement	FCC Part 15 C (Section15.203	PASS

1.3 Test Facility

Test Laboratory:

Guangdong Asia Hongke Test Technology Limited
B1/F, Building 11, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

The test facility is recognized, certified or accredited by the following organizations:
FCC-Registration No.: 251906 Designation Number: CN1376
Guangdong Asia Hongke Test Technology Limited has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

IC —Registration No.: 31737 CAB identifier: CN0165
The 3m Semi-anechoic chamber of Guangdong Asia Hongke Test Technology Limited has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 31737

A2LA-Lab Cert. No.: 7133.01
Guangdong Asia Hongke Test Technology Limited has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

1.4 Measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report according to CISPR 16 - 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the Guangdong Asia Hongke Test Technology Limited’s quality system according to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.
Hereafter the best measurement capability for Asia Hongke laboratory is reported:

Test	Measurement Uncertainty	Notes
Power Line Conducted Emission	150KHz~30MHz ±1.20 dB	(1)
Radiated Emission	9KHz~30Hz ±3.10dB	(1)
Radiated Emission	9KHz~1GHz ±3.75dB	(1)
Radiated Emission	1GHz~18GHz ±3.88 dB	(1)
Radiated Emission	18GHz-40GHz ±3.88dB	(1)
RF power, conducted	30MHz~6GHz ±0.16dB	(1)
RF power density, conducted	±0.24dB	(1)
Spurious emissions, conducted	±0.21dB	(1)
Temperature	±1℃	(1)
Humidity	±3%	(1)
DC and low frequency voltages	±1.5%	(1)
Time	±2%	(1)
Duty cycle	±2%	(1)

The report uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty Multiplied by a coverage factor of k=2 , providing a level of confidence of approximately 95%

2 GENGENERAL INFORMATION

2.1 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	25°C
Relative Humidity:	55 %
Air Pressure:	101 kPa

2.2 General Description of EUT

Product Name:	Portable Charger
Model/Type reference:	Max10
Serial Model:	P10A
Power Supply:	Capacity:5000mAh/19.25Wh Type C Input:5V 3A 9V 2.2A 12V 1.67A Type C output:5V 3A 9V 2.2A 12V 1.67A Wireless Output: 5W,7.5W,10W
Hardware version:	N/A
Software version:	N/A
Sample(s) Status:	AiTSZ-240731002-01(Normal sample) AiTSZ-240731002-02(Engineer sample)
Wireless Charger:	
Operation frequency:	113kHz-205kHz
Modulation Technology:	ASK
Antenna Type:	Loop coil Antenna
Antenna gain:	0dBi
Remark: The above DUT's information was declared by manufacturer. For more detailed features description, please refer to the manufacturer's specifications or the User's Manual.	

2.3 Description of the test mode

Equipment under test was operated during the measurement under the following conditions:
☒ Charging and communication mode

Test Modes:		
Mode 1	AC/DC Adapter+ EUT + phone(Battery Status:< 1%)	Record
Mode 2	AC/DC Adapter+ EUT + phone(Battery Status:< 50%)	Pre-tested
Mode 3	AC/DC Adapter+ EUT + phone(Battery Status:< 99%)	Pre-tested
Mode 4	EUT + phone(Battery Status:< 1%)	Pre-tested
Mode 5	EUT + phone(Battery Status:< 50%)	Pre-tested
Mode 6	EUT + phone(Battery Status:< 99%)	Pre-tested
Mode 7	Stand-by mode.	Pre-tested
Note: All test modes were pre-tested, but we only recorded the worst case in this report.		

2.4 Special Accessories

Follow auxiliary equipment(s) test with EUT that provided by the manufacturer or laboratory is listed as follow:

Description	Manufacturer	Model	Serial No.	Provided by	Other
Adapter	HNT	HNT-QC530	/	Test lab	/
Phone	OSCAL	PILOT2	/	Test lab	/
/	/	/	/	/	/
/	/	/	/	/	/

2.5 Equipment List for the Test

No	Test Equipment	Manufacturer	Model No	Serial No	Pre.Cal. Date	New Cal. Date
1	Spectrum Analyzer	R&S	FSV40	101470	2024-09-24	2025-09-24
2	Spectrum Analyzer	Keysight	N9020A	MY51280643	2024-09-24	2025-09-24
3	EMI Measuring Receiver	R&S	ESR	101660	2024-09-24	2025-09-24
4	Low Noise Pre-Amplifier	HP	HP8447E	1937A01855	2024-09-24	2025-09-24
5	Low Noise Pre-Amplifier	Tsj	MLA-0120-A02-34	2648A04738	2024-09-24	2025-09-24
6	Passive Loop	ETS	6512	00165355	2024-09-24	2025-09-24
7	TRILOG Super Broadband test Antenna	SCHWARZBECK	VULB9160	9160-3206	2024.08.28	2027-08-27
8	Broadband Horn Antenna	SCHWARZBECK	BBHA9120D	452	2024.08.28	2027-08-27
9	SHF-EHF Horn Antenna 15-40GHz	SCHWARZBECK	BBHA9170	BBHA9170367d	2024.08.28	2027-08-27
10	EMI Measuring Receiver	R&S	ESR	101160	2024.09.25	2025-09-23
11	LISN	SCHWARZBECK	NNLK 8129	8130179	--	2025-10-28

12	Pulse Limiter	R&S	ESH3-Z2	102789	2024-09-24	2025-09-24
13	Pro.Temp&Humi.chamber	MENTEK	MHP-150-1C	MAA08112501	2024-09-24	2025-09-24
14	RF Automatic Test system	MW	MW100-RFCB	21033016	2024-09-24	2025-09-24
15	Signal Generator	Agilent	N5182A	MY50143009	2024-09-24	2025-09-24
16	Wideband Radio communication tester	R&S	CMW500	1201.0002K50	2024-09-24	2025-09-24
17	RF Automatic Test system	MW	MW100-RFCB	21033016	2024-09-24	2025-09-24
18	DC power supply	ZHAOXIN	RXN-305D-2	28070002559	N/A	N/A
19	RE Software	EZ	EZ-EMC_RE	Ver.AIT-03A	N/A	N/A
20	CE Software	EZ	EZ-EMC_CE	Ver.AIT-03A	N/A	N/A
21	RF Software	MW	MTS 8310	2.0.0.0	N/A	N/A
22	temporary antenna connector(Note)	NTS	R001	N/A	N/A	N/A
Note: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.						

3 TEST CONDITIONS AND RESULTS

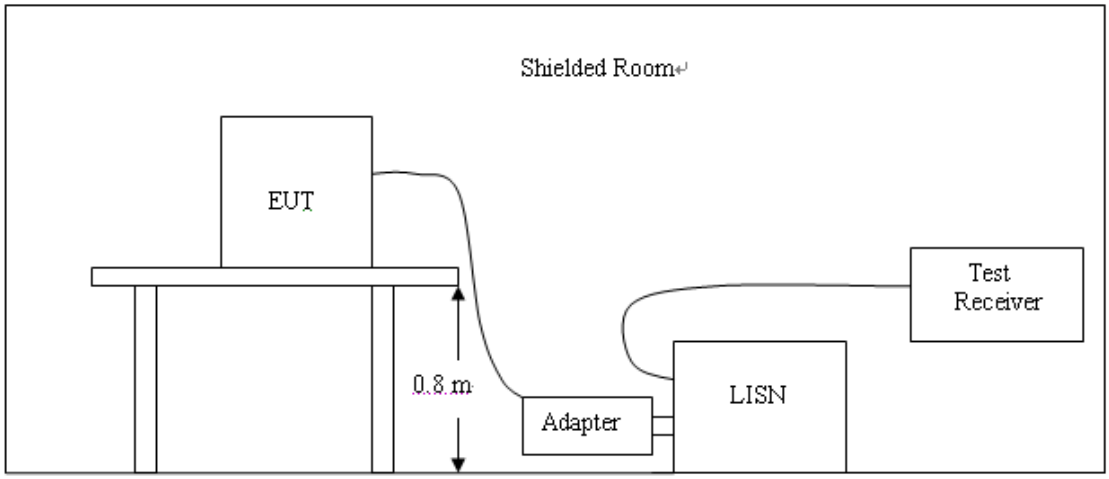
3.1 Conducted Emissions Test

LIMIT

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST CONFIGURATION



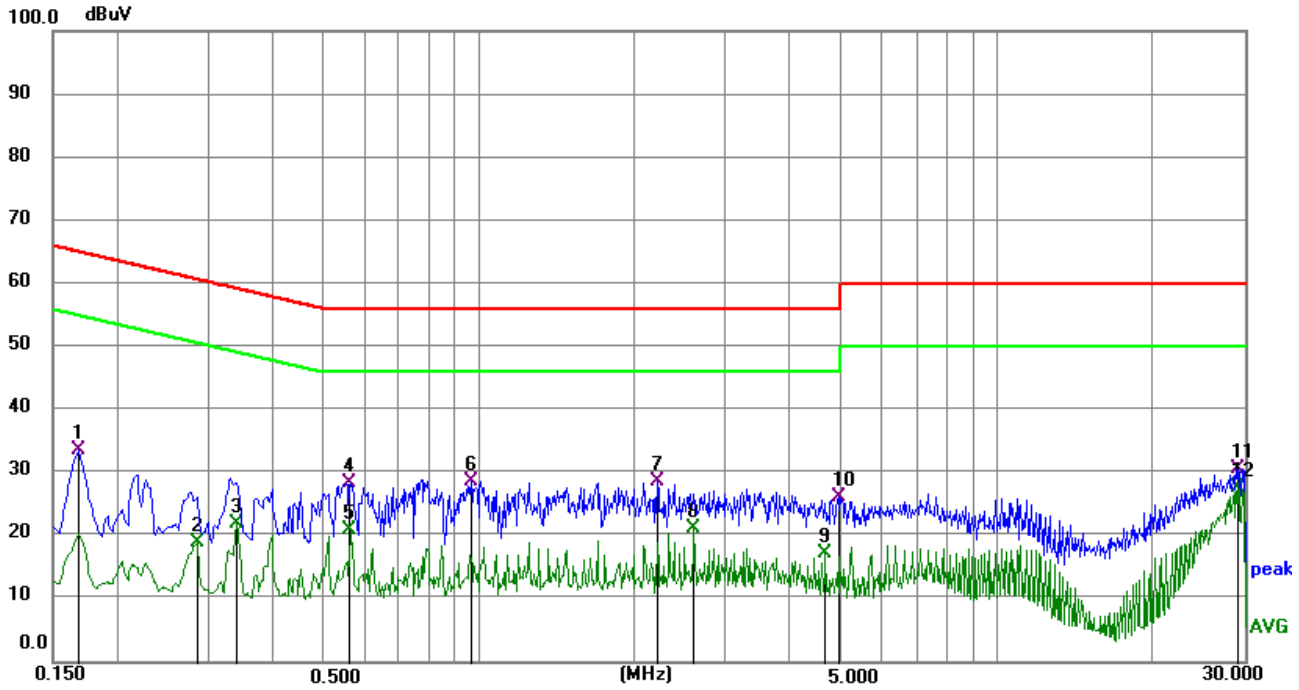
TEST PROCEDURE

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 C63.10:2013.
2. Support equipment, if needed, was placed as per ANSI C63.10:2013.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10:2013.
4. The 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.
8. During the above scans, the emissions were maximized by cable manipulation.

TEST RESULTS

Remark: Both 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz power supply have been tested, only the worst result of 120 VAC, 60 Hz was reported as below:

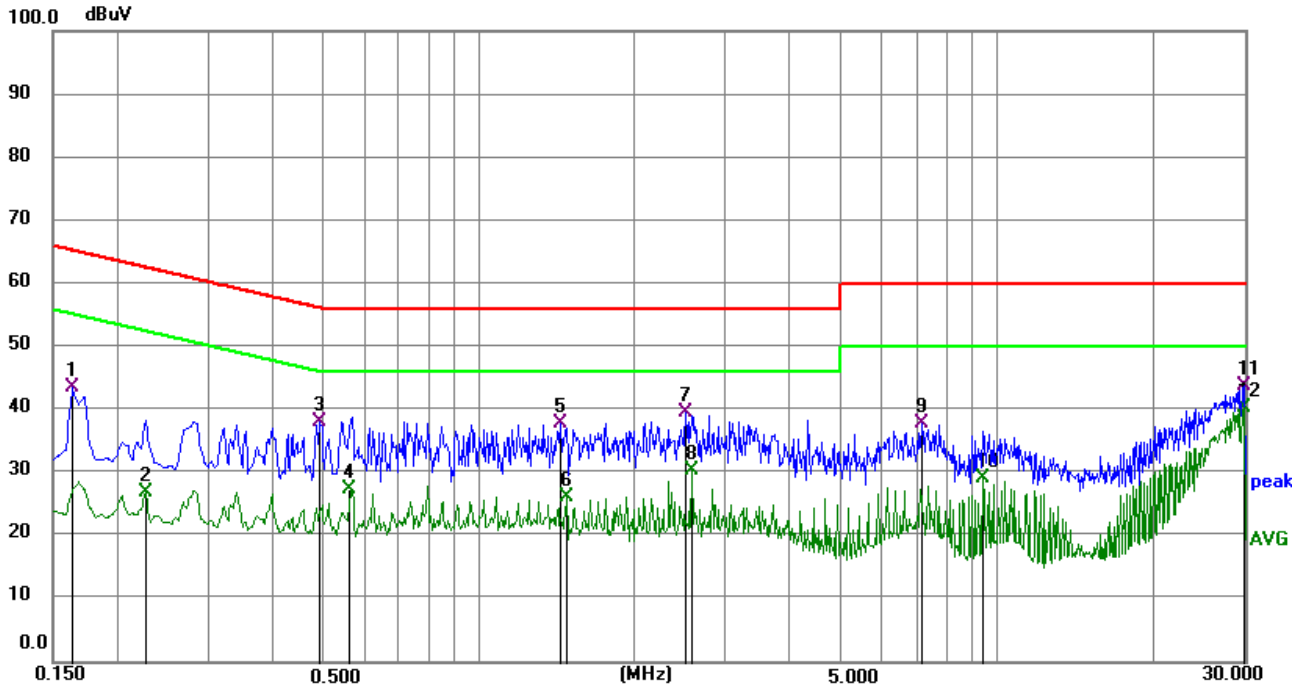
Test Mode	Mode 1	Line:	L



Remark: Correct Factor = Insertion loss of LISN + Cable loss + Insertion loss of Pulse Limiter;
Measurement Result = Reading Level +Correct Factor;
Margin = Measurement Result- Limit

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1680	22.90	10.67	33.57	65.06	-31.49	QP
2	0.2850	8.27	10.70	18.97	50.67	-31.70	AVG
3	0.3390	11.32	10.70	22.02	49.23	-27.21	AVG
4	0.5639	17.84	10.68	28.52	56.00	-27.48	QP
5	0.5639	10.27	10.68	20.95	46.00	-25.05	AVG
6	0.9645	18.06	10.64	28.70	56.00	-27.30	QP
7	2.2110	17.89	10.79	28.68	56.00	-27.32	QP
8	2.5980	10.41	10.79	21.20	46.00	-24.80	AVG
9	4.6635	6.25	11.01	17.26	46.00	-28.74	AVG
10	4.9470	15.21	11.02	26.23	56.00	-29.77	QP
11	29.2065	19.04	11.70	30.74	60.00	-29.26	QP
12	29.2065	15.88	11.70	27.58	50.00	-22.42	AVG

Test Mode	Mode 1	Line:	N



Remark: Correct Factor = Insertion loss of LISN + Cable loss + Insertion loss of Pulse Limiter;
Measurement Result = Reading Level +Correct Factor;

Margin = Measurement Result- Limit

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1635	32.81	10.67	43.48	65.28	-21.80	QP
2	0.2265	16.32	10.69	27.01	52.58	-25.57	AVG
3	0.4920	27.30	10.69	37.99	56.13	-18.14	QP
4	0.5639	16.66	10.68	27.34	46.00	-18.66	AVG
5	1.4370	27.20	10.69	37.89	56.00	-18.11	QP
6	1.4730	15.35	10.71	26.06	46.00	-19.94	AVG
7	2.5080	28.76	10.78	39.54	56.00	-16.46	QP
8	2.5755	19.50	10.79	30.29	46.00	-15.71	AVG
9	7.1745	26.88	11.03	37.91	60.00	-22.09	QP
10	9.3975	18.08	10.97	29.05	50.00	-20.95	AVG
11	29.9355	32.17	11.63	43.80	60.00	-16.20	QP
12	29.9355	28.58	11.63	40.21	50.00	-9.79	AVG

3.2 Radiated Emissions

Limit

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission out of authorized band shall not exceed the following table at a 3 meters measurement distance.

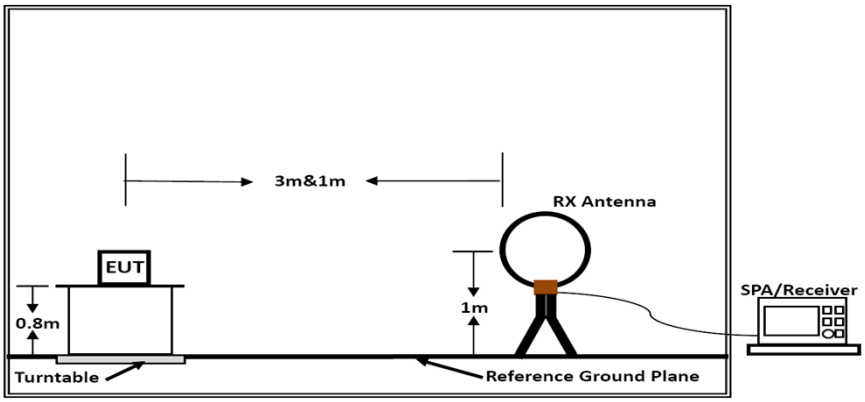
In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a)

Radiated emission limits

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
1.705-30	3	20log(30)+ 40log(30/3)	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

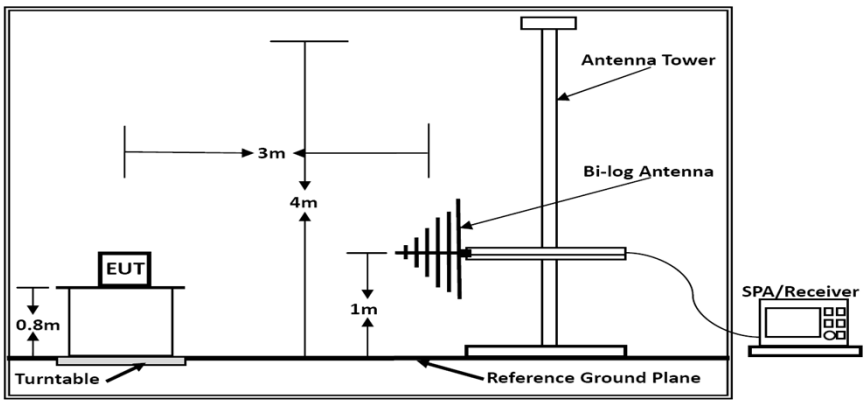
TEST CONFIGURATION

(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



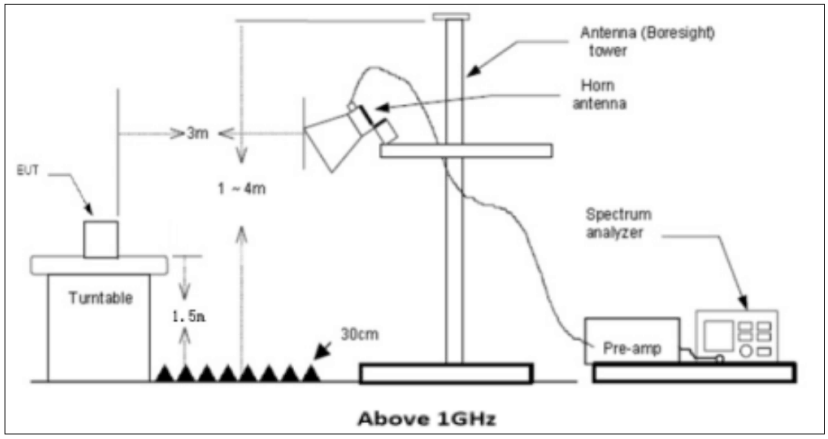
Below 30MHz

(B) Radiated Emission Test Set-Up, Frequency below 1000MHz



Below 1GHz

(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



Test Procedure

1. Below 1GHz measurement the EUT is placed on a turntable which is 0.8m above ground plane, and above 1GHz measurement EUT was placed on a low permittivity and low loss tangent turn table which is 1.5m above ground plane.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0℃ to 360℃ to acquire the highest emissions from EUT
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.
5. Radiated emission test frequency band from 9KHz to 1000MHz.
6. The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance
9KHz-30MHz	Active Loop Antenna	3
30MHz-1GHz	Bilog Antenna	3

7. Setting test receiver/spectrum as following table states:

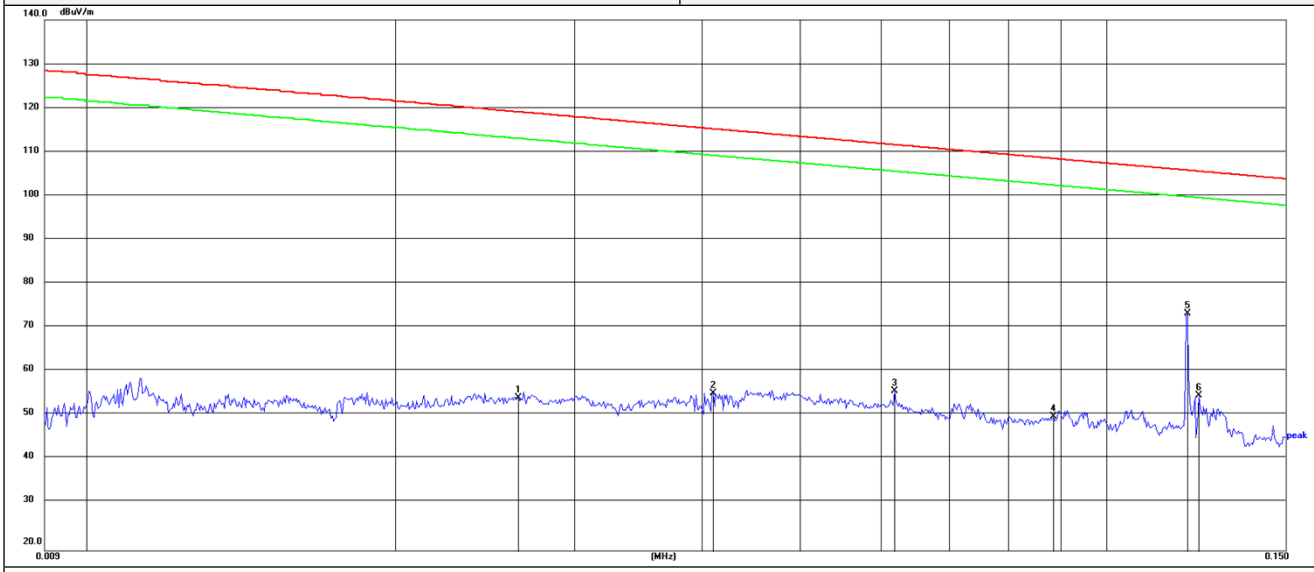
Test Frequency range	Test Receiver/Spectrum Setting	Detector
9KHz-150KHz	RBW=200Hz/VBW=3KHz,Sweep time=Auto	QP
150KHz-30MHz	RBW=9KHz/VBW=100KHz,Sweep time=Auto	QP
30MHz-1GHz	RBW=120KHz/VBW=1000KHz,Sweep time=Auto	QP

TEST RESULTS

Remark:
All test modes descripted in section 2.3 has been tested, only the worst result of Mode 1 is recorded as below:

For 9KHz-150KHz

Test mode:	Mode 1

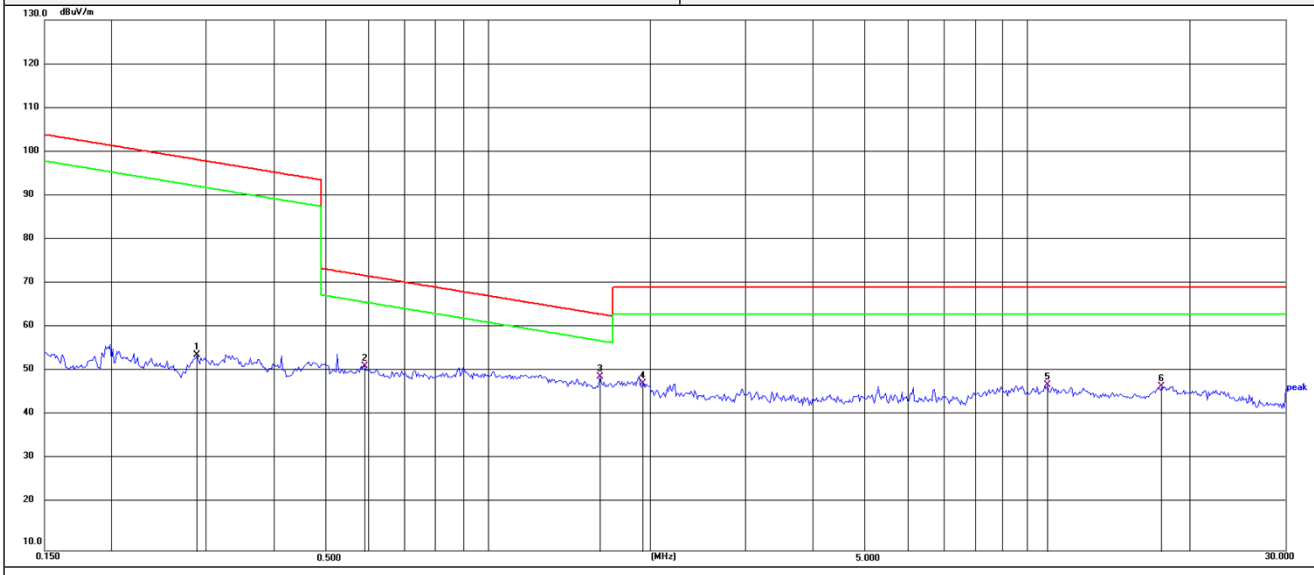


Remark:
Emission Level = Reading + Factor;
Factor = Antenna Factor + Cable Loss;
Margin= Emission Level - Limit.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	0.0263	33.33	21.18	54.51	119.21	-64.70	QP
2	0.0410	33.58	22.06	55.64	115.35	-59.71	QP
3	0.0618	33.52	22.64	56.16	111.78	-55.62	QP
4	0.0884	27.81	22.57	50.38	108.68	-58.30	QP
5	0.1200	51.38	22.20	73.58	106.02	-32.44	QP
6	0.1231	32.92	22.17	55.09	105.80	-50.71	QP

For 150KHz-30MHz

Test mode:	Mode 1



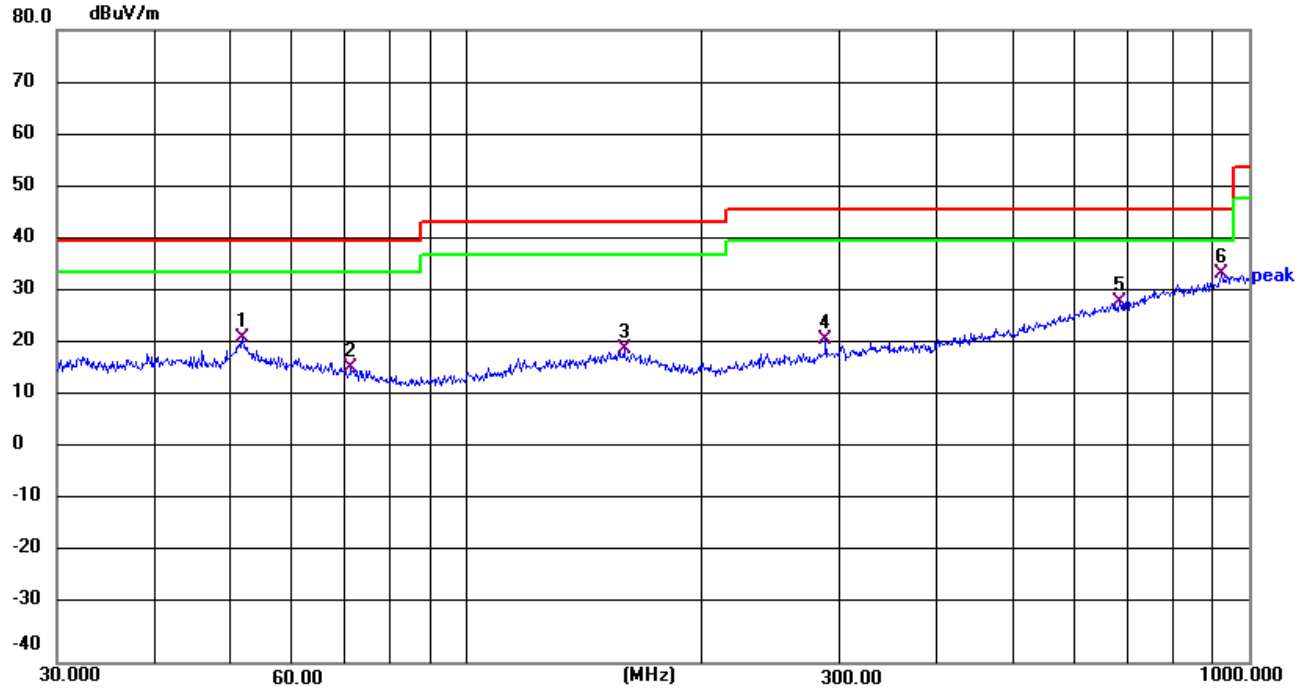
Remark:
Emission Level = Reading + Factor;
Factor = Antenna Factor + Cable Loss;
Margin= Emission Level - Limit.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	0.2878	32.74	21.46	54.20	98.42	-44.22	QP
2	0.5885	29.65	22.05	51.70	72.21	-20.51	QP
3	1.6104	26.82	22.48	49.30	63.47	-14.17	QP
4	1.9280	25.49	22.41	47.90	69.54	-21.64	QP
5	10.8473	24.69	22.77	47.46	69.54	-22.08	QP
6	17.7549	23.63	23.49	47.12	69.54	-22.42	QP

Note: Pre-scan in the all of mode, the worst case in of was recorded.

For 30MHz-1GHz

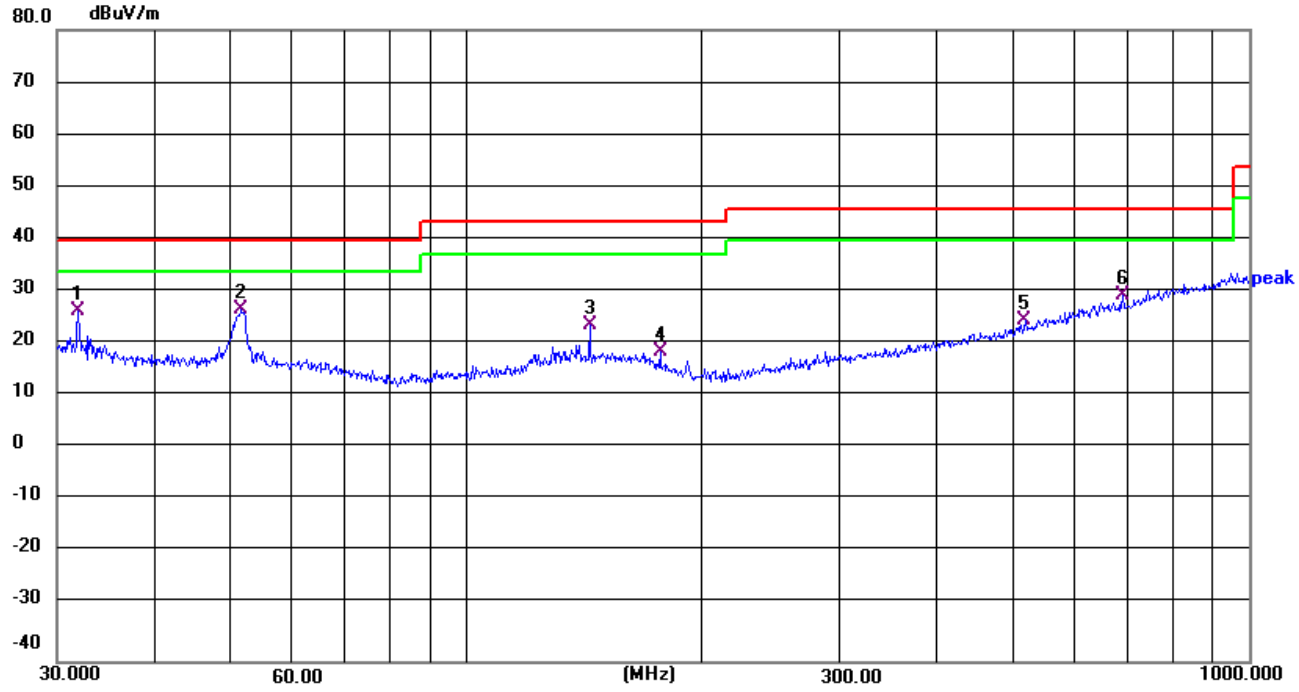
Test mode:	Mode 1	Polarization:	Horizontal



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

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	51.8430	38.42	-16.75	21.67	40.00	-18.33	QP
2	71.3300	35.12	-19.18	15.94	40.00	-24.06	QP
3	159.2251	36.04	-16.54	19.50	43.50	-24.00	QP
4	287.9904	38.63	-17.28	21.35	46.00	-24.65	QP
5	682.3484	37.03	-8.50	28.53	46.00	-17.47	QP
6	922.5157	38.08	-4.23	33.85	46.00	-12.15	QP

Test mode:	Mode 1	Polarization:	Vertical



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

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	31.9546	44.06	-17.43	26.63	40.00	-13.37	QP
2	51.6616	43.66	-16.74	26.92	40.00	-13.08	QP
3	143.8295	40.97	-17.00	23.97	43.50	-19.53	QP
4	176.8878	36.71	-17.86	18.85	43.50	-24.65	QP
5	519.0649	37.14	-12.11	25.03	46.00	-20.97	QP
6	689.5644	38.17	-8.39	29.78	46.00	-16.22	QP

3.3 20dB Bandwidth

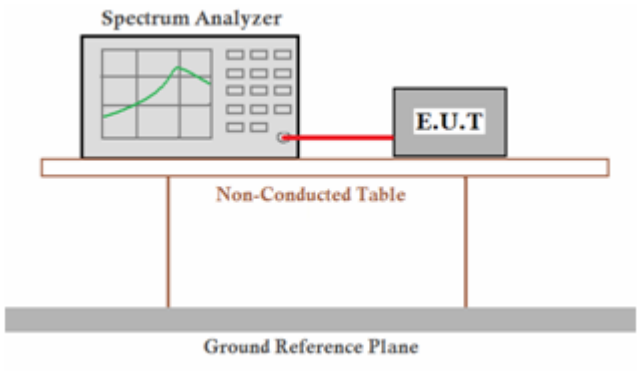
Limit

The 20dB bandwidth shall be less than 80% of the permitted frequency band.

Test Procedure

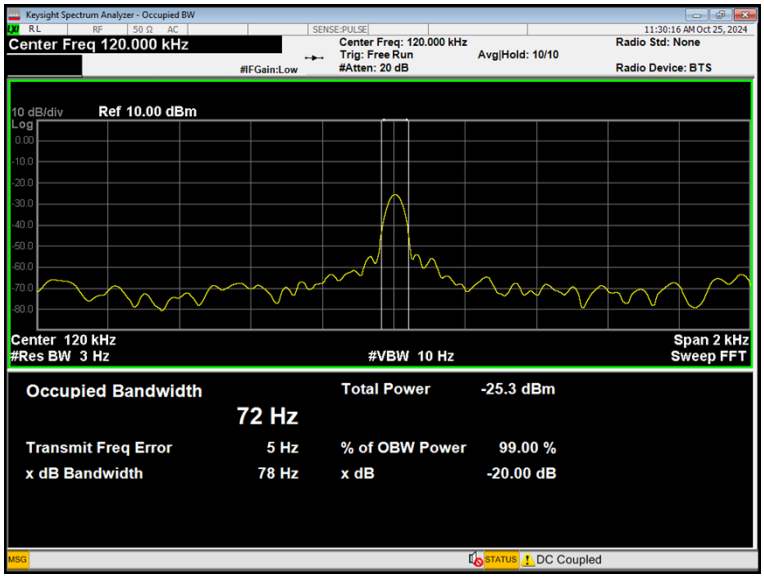
1. Set RBW = 3Hz.
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper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

Test setup



Test Results

Mode	Frequency (KHz)	20dB Bandwidth (KHz)	99% OBW (KHz)	Conclusion
Tx Mode	120	0.078	0.072	PASS



3.4 Antenna Requirement

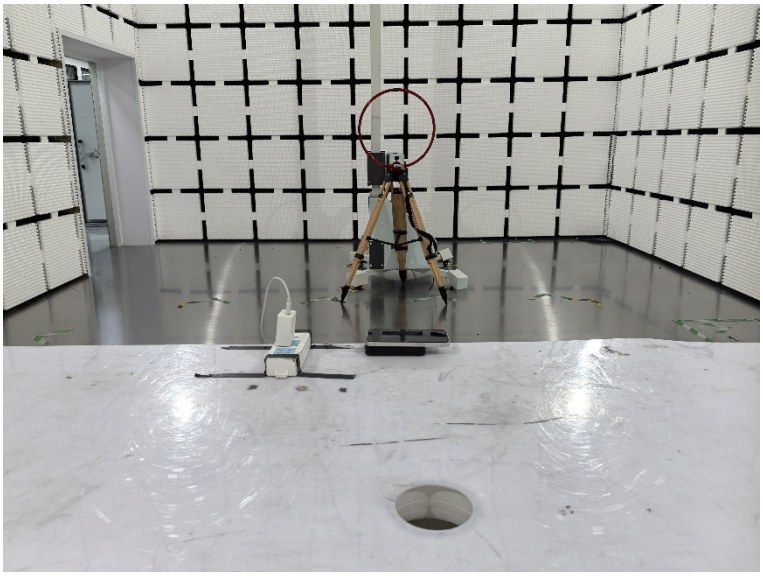
Standard Applicable

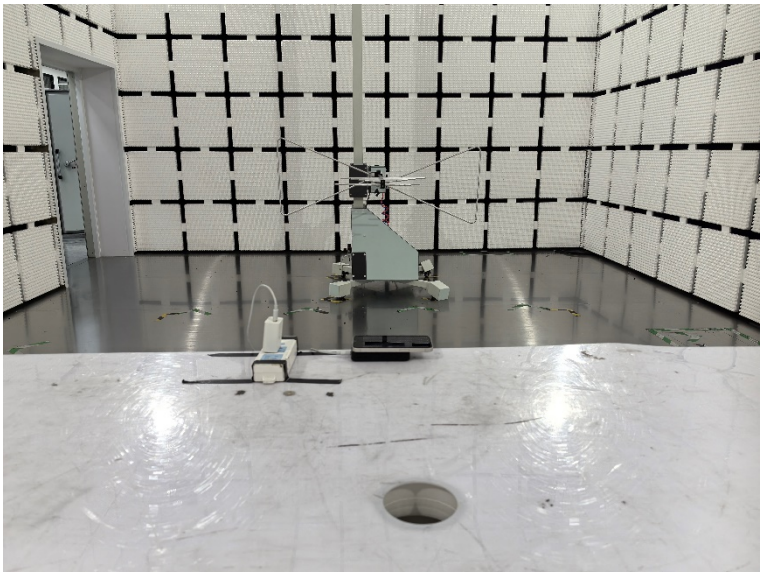
For intentional device, according to FCC 47 CFR Section 15.203:
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling 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

Confirmation

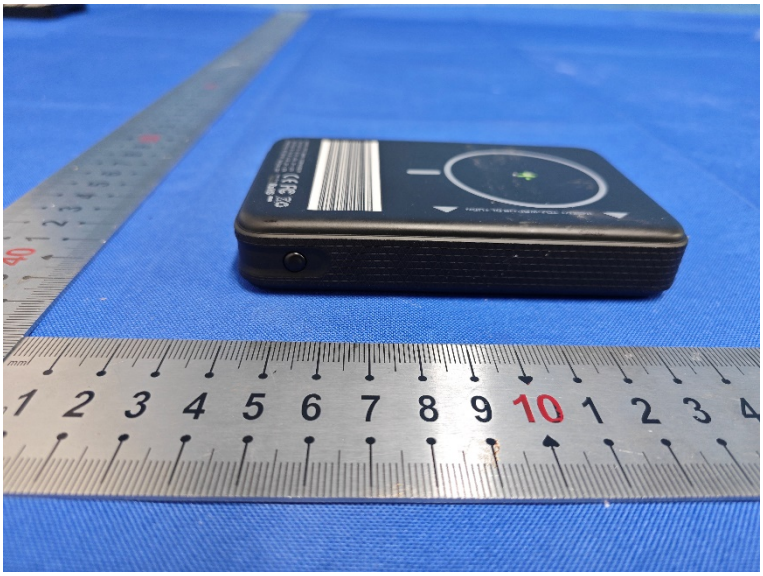
The EUT's antenna is an Inductive Loop coil Antenna, the best case gain of the antenna is 0dBi.

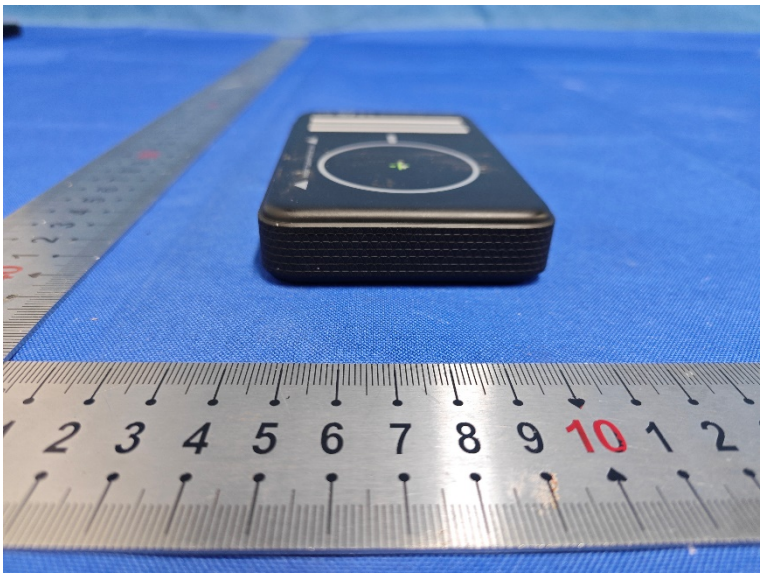
4 Test Setup Photographs of EUT

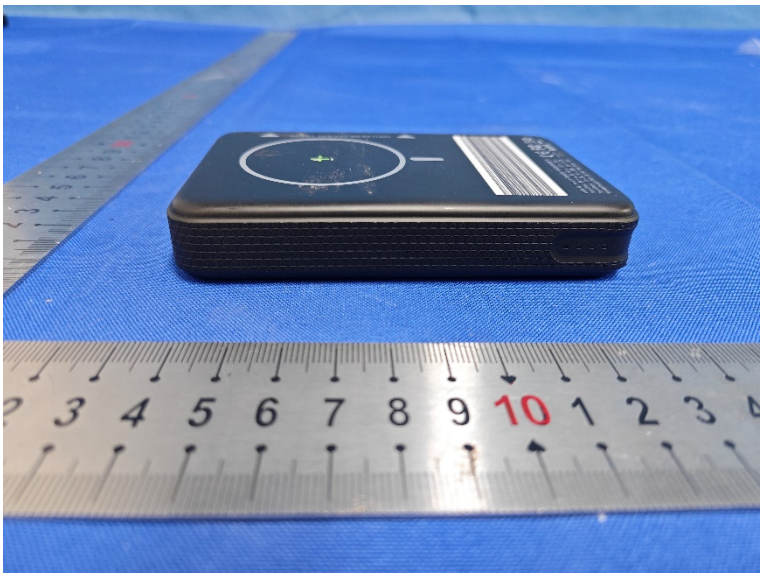


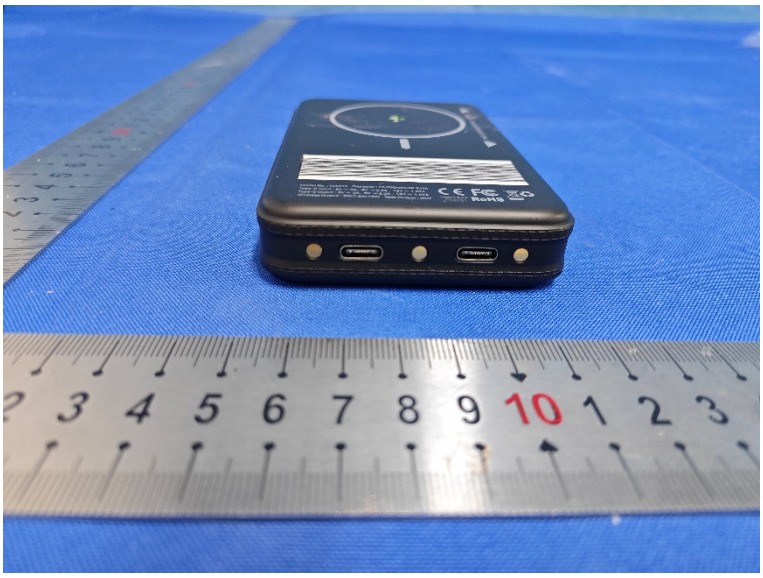


5 External Photographs of EUT

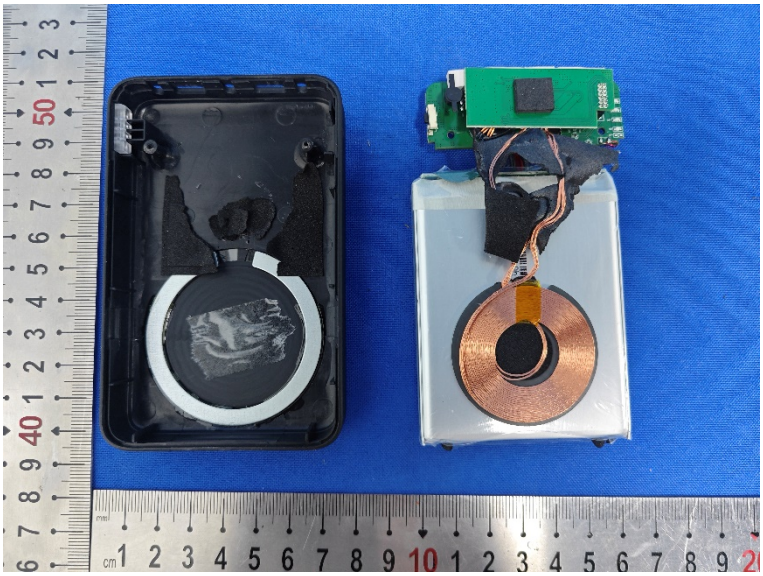


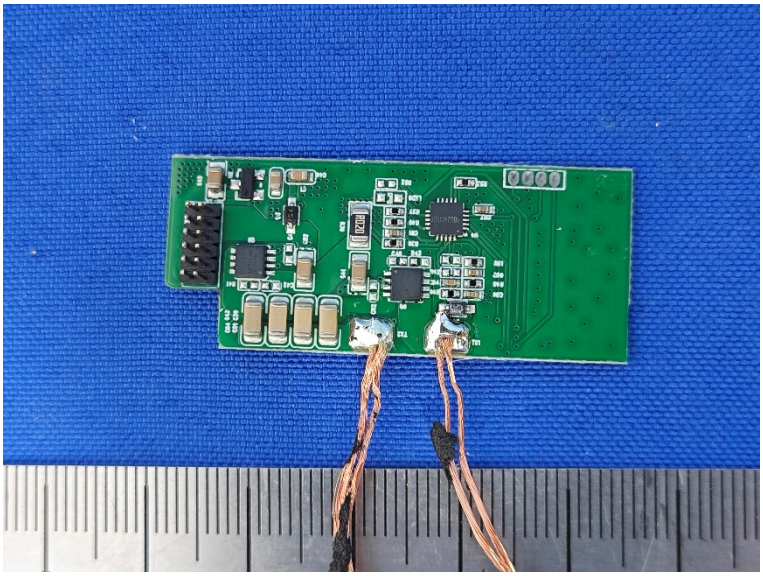


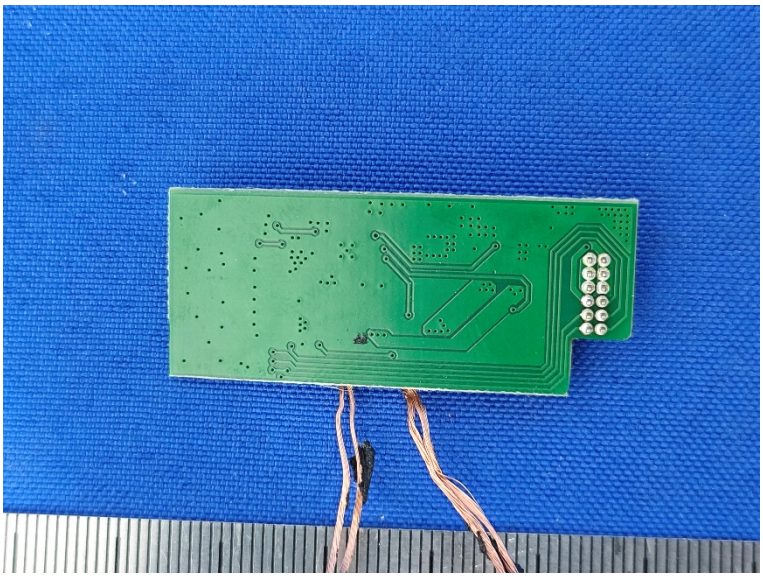


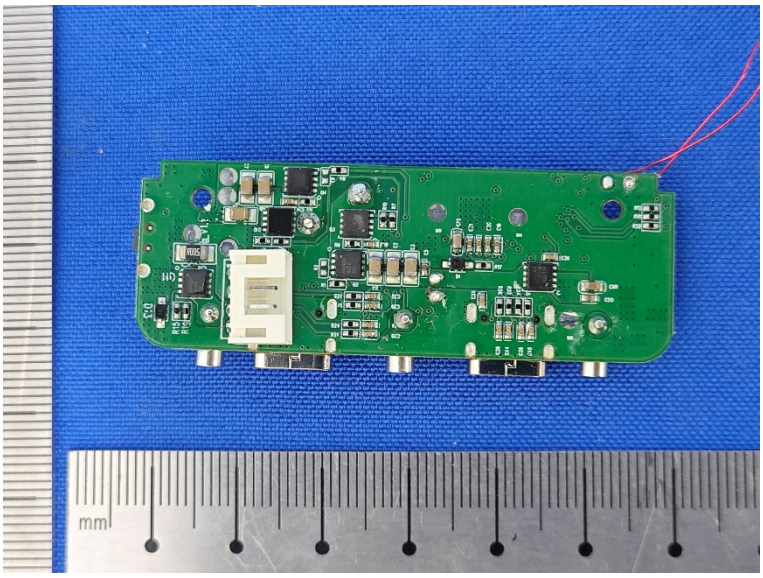


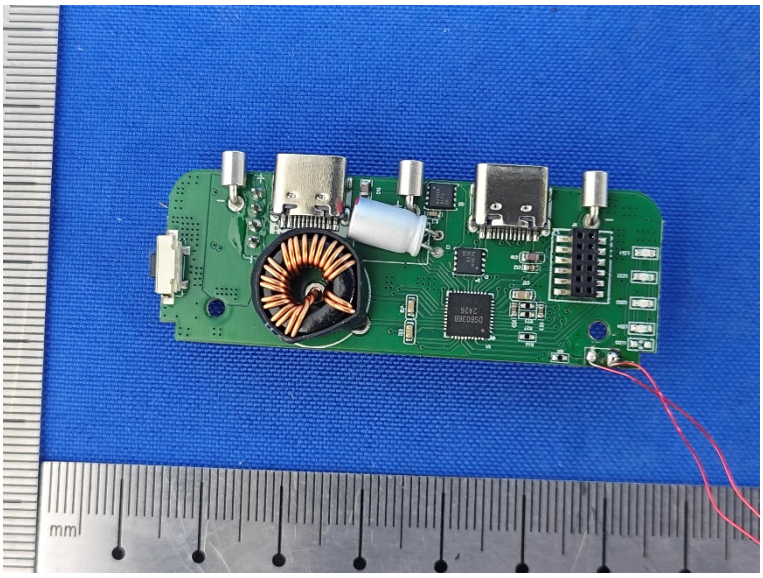
6 Internal Photographs of EUT











********** End of Report **********