TCT 通测检测
TESTING CENTRE TECHNOLOGY

TEST REPORT

FCC ID. ..... :	2BFIK-F001	
Test Report No..... :	TCT240318E038	
Date of issue..... :	Apr. 12, 2024	
Testing laboratory ..... :	SHENZHEN TONGCE TESTING LAB	
Testing location/ address:	2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China	
Applicant's name..... :	Shenzhen Haotiantongxun Technology Co., Ltd.	
Address..... :	2103,Tower A, Rongchaoyinglong Building, Longfu Road, Shangjing Community, Longcheng Street, Longgang Area, Shenzhen City, Guangdong Province, China	
Manufacturer's name ... :	Dongguan Yongxin Plastic Gifts Co., Ltd.	
Address..... :	China, Guangdong Province, Dongguan City, Humen Town, Daninghongmian, Road 1, No.2	
Standard(s) ..... :	FCC CFR Title 47 Part 15 Subpart C	
Product Name..... :	Wireless Power Bank	
Trade Mark ..... :	N/A	
Model/Type reference..... :	F001	
Rating(s)..... :	Rechargeable Li-ion Battery DC 3.85V	
Date of receipt of test item ..... :	Mar. 18, 2024	
Date (s) of performance of test..... :	Mar. 18, 2024 ~ Apr. 12, 2024	
Tested by (+signature) ... :	Rleo LIU	Rleo Liu
Check by (+signature).... :	Beryl ZHAO	Beryl Zhao
Approved by (+signature):	Tomsin	Tomsin

SHENZHEN TONGCE TESTING LAB TCT

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1. General Product Information

1.1. EUT description

Product Name.....:	Wireless Power Bank
Model/Type reference.....:	F001
Sample Number.....:	TCT240318E038-0101
Operation Frequency .....:	132.07KHz
Output power……...:	15W
Modulation Technology .....:	Load modulation
Antenna Type.....:	Inductive loop coil Antenna
Rating(s).....:	Rechargeable Li-ion Battery DC 3.85V

1.2. Model(s) list

None.

2. Test Result Summary

Requirement	CFR 47 Section	Result
Antenna requirement	§15.203	PASS
AC Power Line Conducted Emission	§15.207	PASS
Spurious Emission	§15.209(a)(f)	PASS

Note:

1. PASS: Test item meets the requirement.

2. Fail: Test item does not meet the requirement.

3. N/A: Test case does not apply to the test object.

4. The test result judgment is decided by the limit of test standard.

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3. General Information

3.1. Test environment and mode

Operating Environment:		
Condition	Conducted Emission	Radiated Emission
Temperature:	20.3 °C	24.9 °C
Humidity:	45 % RH	51 % RH
Atmospheric Pressure:	1010 mbar	1010 mbar
Test Mode:		
AC mode	Type-C Input + wireless discharging (battery status>95%)	
	Type-C Input + wireless discharging (battery status<50%)	
	Type-C Input + wireless discharging (battery status<1%)	
Internal Battery Mode	Wireless charging (battery status>95%)	
	Wireless charging (battery status<50%)	
	Wireless charging (battery status<1%)	
The sample was placed 0.8m for the measurement below 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(Z axis) are shown in Test Results of the following pages.		

3.2. 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.

Equipment	Model No.	Serial No.	Trade Name
Adapter	EP-TA200	R37M4PR7QD4SE3	SAMSUNG
Mobile Phone	SM-G9350	R28HA2ER3GT	SAMSUNG

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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4. Facilities and Accreditations

4.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

- FCC - Registration No.: 645098
  SHENZHEN TONGCE TESTING LAB
  Designation Number: CN1205
  The testing lab has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.
- IC - Registration No.: 10668A-1
  SHENZHEN TONGCE TESTING LAB
  CAB identifier: CN0031
  The testing lab has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.

4.2. Location

SHENZHEN TONGCE TESTING LAB
Address: 2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China
TEL: +86-755-27673339

4.3. Measurement Uncertainty

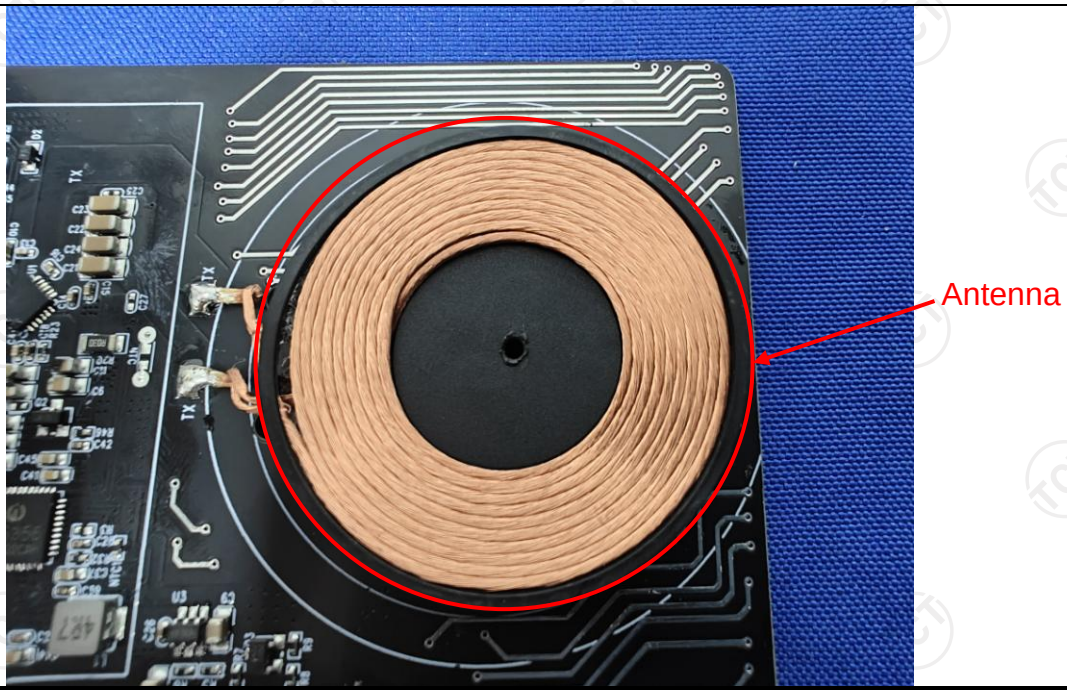
The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	± 3.10 dB
2	RF power, conducted	± 0.12 dB
3	Spurious emissions, conducted	± 0.11 dB
4	All emissions, radiated(<1 GHz)	± 4.56 dB
5	All emissions, radiated(1 GHz - 18 GHz)	± 4.22 dB
6	All emissions, radiated(18 GHz- 40 GHz)	± 4.36 dB

5. Test Results and Measurement Data

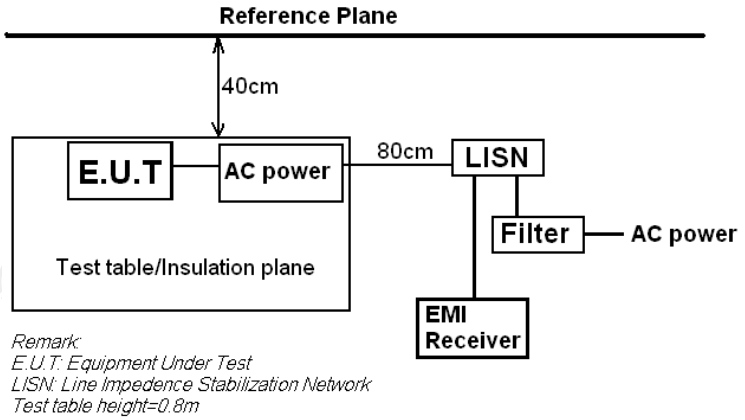
5.1. Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203
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.	
E.U.T Antenna:	
The antenna is inductive loop coil antenna which permanently attached.	



5.2. Conducted Emission

5.2.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2013
Frequency Range:	150 kHz to 30 MHz
Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto
Limits:	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
Test Setup:	
Test Mode:	AC Mode (The battery of the Mobile Phone is less than 1%)
Test Procedure:	1. The E.U.T is connected to an adapter through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to on conducted measurement.
Test Result:	PASS

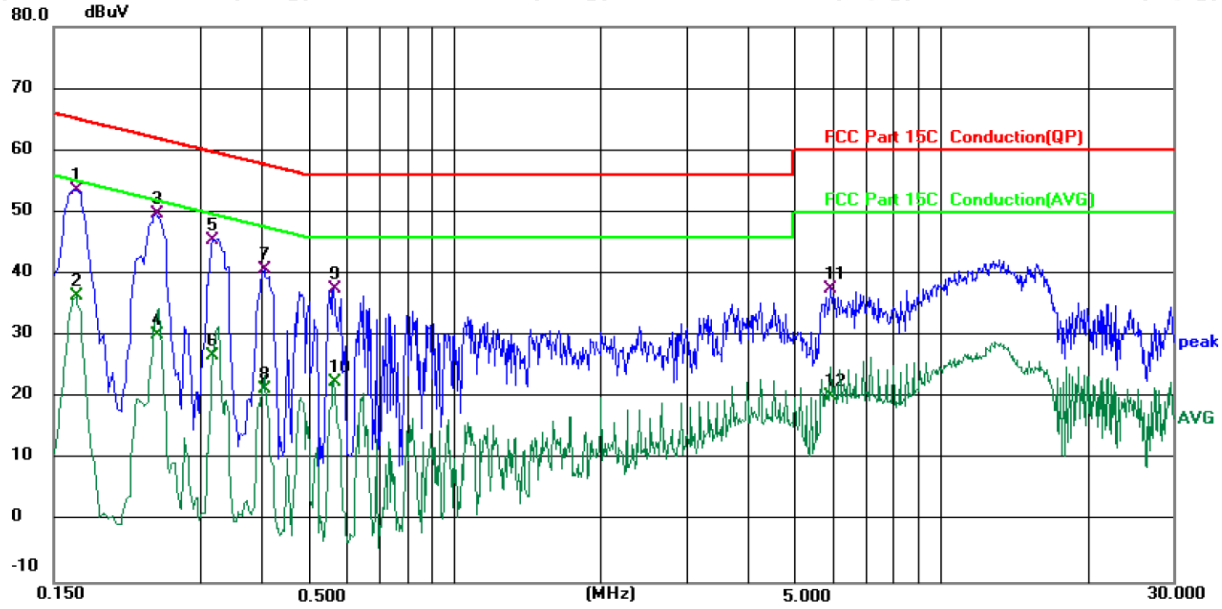
5.2.2. Test Instruments

Conducted Emission Shielding Room Test Site (843)				
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI Test Receiver	R&S	ESCI3	100898	Jun. 29, 2024
Line Impedance Stabilisation Newtork(LISN)	Schwarzbeck	NSLK 8126	8126453	Jan. 31, 2025
Line-5	TCT	CE-05	/	Jul. 03, 2024
EMI Test Software	Shurple Technology	EZ-EMC	/	/

5.2.3. Test data

Please refer to following diagram for individual

Conducted Emission on Line Terminal of the power line (9 kHz to 30MHz)



Site 844 Shielding Room | Phase: *L1* | Temperature: 20.3 (℃) | Humidity: 45 %

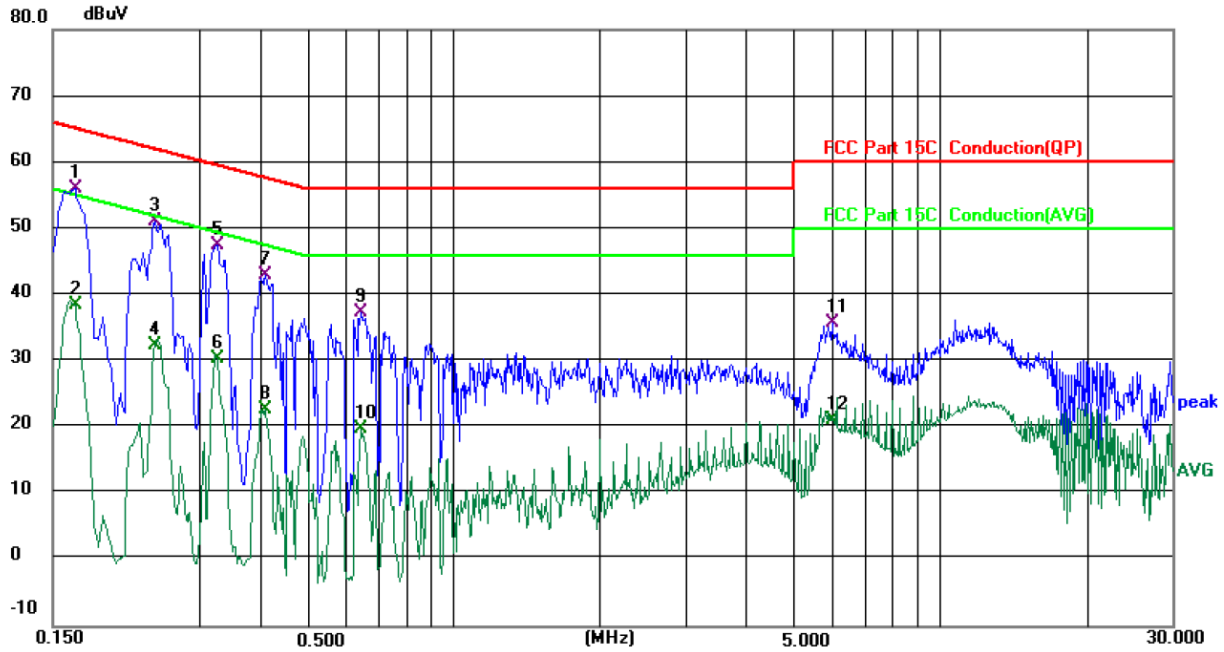
Limit: FCC Part 15C Conduction(QP) | Power: DC 5V(Adapter Input AC 120V/60Hz)

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1660	43.55	10.03	53.58	65.16	-11.58	QP	
2		0.1660	26.37	10.03	36.40	55.16	-18.76	AVG	
3		0.2420	39.85	9.84	49.69	62.03	-12.34	QP	
4		0.2420	20.32	9.84	30.16	52.03	-21.87	AVG	
5		0.3180	35.73	9.84	45.57	59.76	-14.19	QP	
6		0.3180	16.94	9.84	26.78	49.76	-22.98	AVG	
7		0.4060	31.25	9.42	40.67	57.73	-17.06	QP	
8		0.4060	12.07	9.42	21.49	47.73	-26.24	AVG	
9		0.5660	28.27	9.28	37.55	56.00	-18.45	QP	
10		0.5660	13.23	9.28	22.51	46.00	-23.49	AVG	
11		5.9500	27.21	10.45	37.66	60.00	-22.34	QP	
12		5.9500	9.78	10.45	20.23	50.00	-29.77	AVG	

Note:

Freq. = Emission frequency in MHz
Reading level (dBµV) = Receiver reading
Corr. Factor (dB) = LISN factor + Cable loss
Measurement (dBµV) = Reading level (dBµV) + Corr. Factor (dB)
Limit (dBµV) = Limit stated in standard
Margin (dB) = Measurement (dBµV) – Limits (dBµV)
Q.P. =Quasi-Peak
AVG =average
** is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz*

Conducted Emission on Neutral Terminal of the power line (9 kHz to 30MHz)



Site 844 Shielding Room | Phase: *N* | Temperature: 20.3 (℃) | Humidity: 45 %

Limit: FCC Part 15C Conduction(QP) | Power: DC 5V(Adapter Input AC 120V/60Hz)

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1660	45.95	10.01	55.96	65.16	-9.20	QP	
2		0.1660	28.49	10.01	38.50	55.16	-16.66	AVG	
3		0.2419	41.18	9.82	51.00	62.03	-11.03	QP	
4		0.2419	22.70	9.82	32.52	52.03	-19.51	AVG	
5		0.3260	38.10	9.49	47.59	59.55	-11.96	QP	
6		0.3260	20.93	9.49	30.42	49.55	-19.13	AVG	
7		0.4100	33.51	9.40	42.91	57.65	-14.74	QP	
8		0.4100	13.40	9.40	22.80	47.65	-24.85	AVG	
9		0.6460	28.27	9.18	37.45	56.00	-18.55	QP	
10		0.6460	10.55	9.18	19.73	46.00	-26.27	AVG	
11		6.0060	25.32	10.40	35.72	60.00	-24.28	QP	
12		6.0060	10.74	10.40	21.14	50.00	-28.86	AVG	

Note:

Freq. = Emission frequency in MHz
Reading level (dBµV) = Receiver reading
Corr. Factor (dB) = LISN factor + Cable loss
Measurement (dBµV) = Reading level (dBµV) + Corr. Factor (dB)
Limit (dBµV) = Limit stated in standard
Margin (dB) = Measurement (dBµV) – Limits (dBµV)
Q.P. =Quasi-Peak
AVG =average
** is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.*

5.3. Radiated Spurious Emission Measurement

5.3.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.209
Test Method:	ANSI C63.10: 2013
Frequency Range:	9 kHz to 25 GHz
Measurement Distance:	3 m
Antenna Polarization:	Horizontal & Vertical
Operation mode:	Refer to item 3.1
Receiver Setup:	

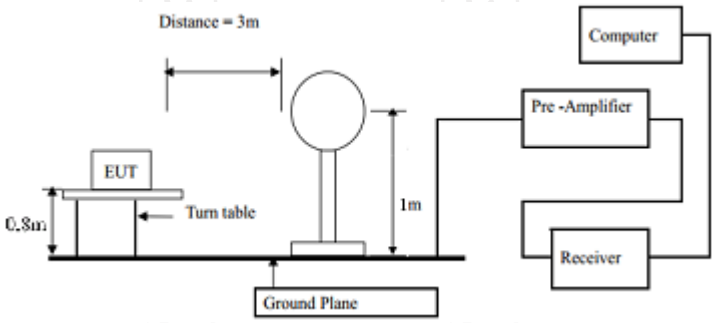
Frequency	Detector	RBW	VBW	Remark
9kHz- 150kHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value
150kHz-30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value

Limit:

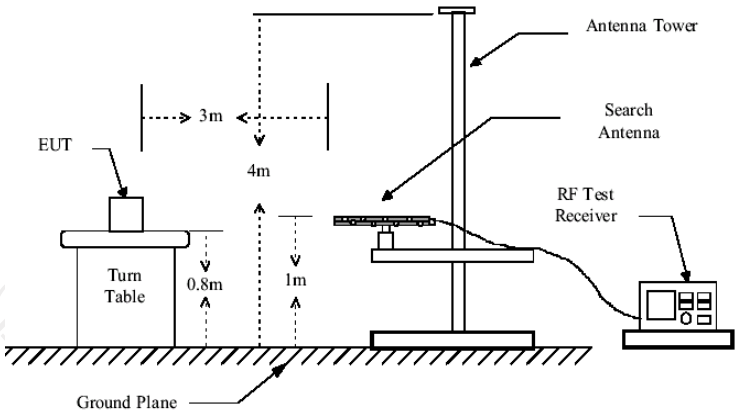
Frequency	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009-0.490	2400/F(KHz)	300
0.490-1.705	24000/F(KHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test setup:

For radiated emissions below 30MHz



30MHz to 1GHz

	
Test Procedure:	1. For the radiated emission test below 1GHz: The EUT was placed on a turntable with 0.8 meter above ground. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high PASS filter are used for the test in order to get better signal level. 2. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level 3. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported. 4. Use the following spectrum analyzer settings: (1) Span shall wide enough to fully capture the emission being measured; (2) Set RBW=120 kHz for f < 1 GHz; VBW ≥RBW; Sweep = auto; Detector function = peak; Trace = max hold; For average measurement: VBW = 10 Hz, when duty cycle is no less than 98 percent. VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
Test mode:	Refer to section 3.1 for details
Test results:	PASS

5.3.2. Test Instruments

Radiated Emission Test Site (966)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI Test Receiver	R&S	ESIB7	100197	Jun. 29, 2024
Spectrum Analyzer	R&S	FSQ40	200061	Jun. 29, 2024
Pre-amplifier	SKET	LNPA_0118G-45	SK2021012102	Jan. 31, 2025
Pre-amplifier	SKET	LNPA_1840G-50	SK202109203500	Jan. 31, 2025
Pre-amplifier	HP	8447D	2727A05017	Jun. 27, 2024
Loop antenna	Schwarzbeck	FMZB1519B	00191	Jul. 02, 2024
Broadband Antenna	Schwarzbeck	VULB9163	340	Jul. 01, 2024
Antenna Mast	Keleto	RE-AM	/	/
Coaxial cable	SKET	RC-18G-N-M	/	Jan. 31, 2025
Coaxial cable	SKET	RC_40G-K-M	/	Jan. 31, 2025
EMI Test Software	Shurple Technology	EZ-EMC	/	/

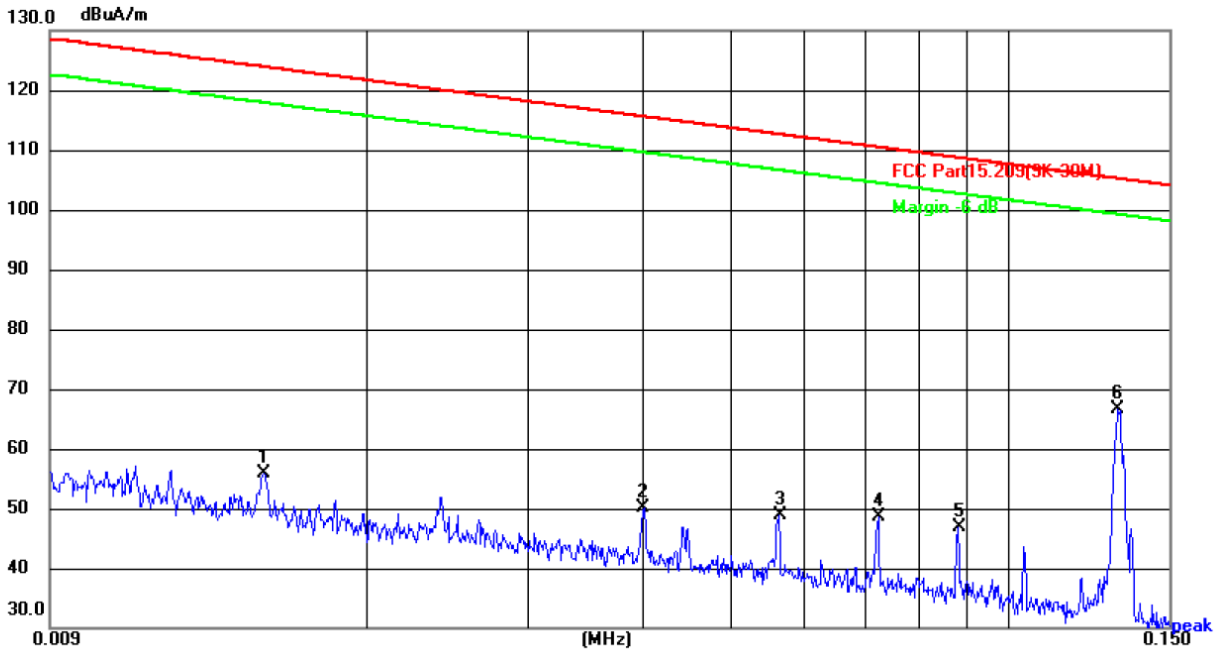
5.3.3. Test Data

Please refer to following diagram for individual

9KHz-30MHz

9KHz-150KHz:

coaxial

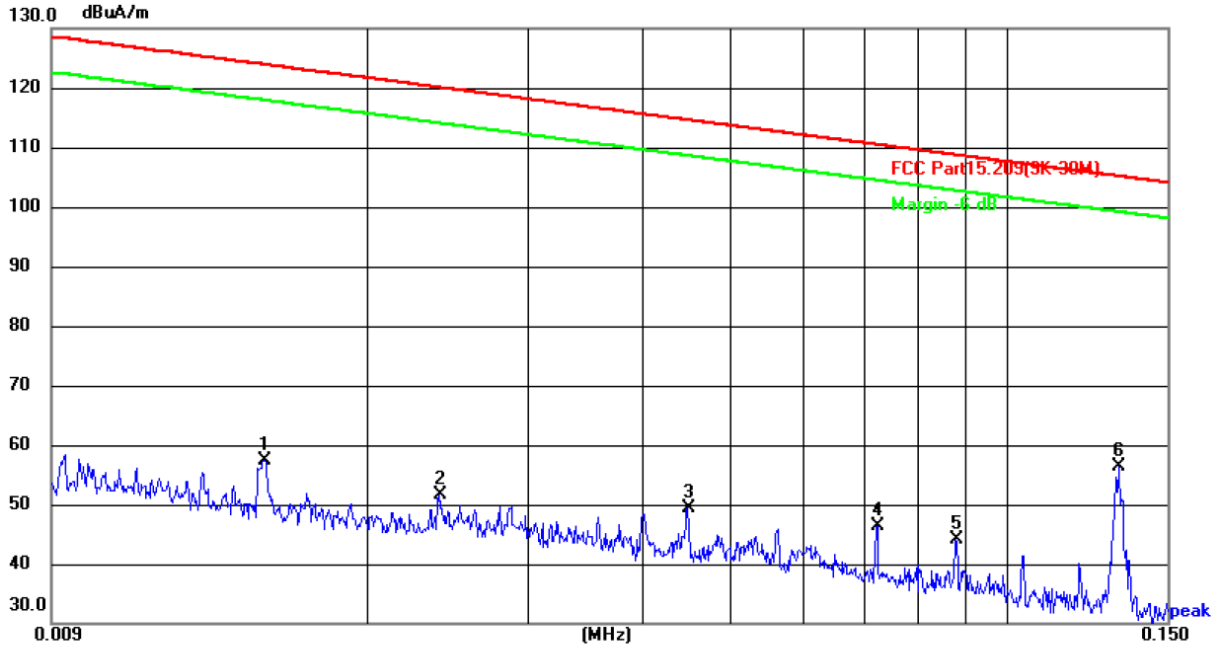


Site: 3m Anechoic Chamber Polarization: ***Coaxial*** Temperature: 21.9(℃) Humidity: 62 %

Limit: FCC Part15.209(9K-30M) Power:DC 3.85V

No.	Frequency (MHz)	Reading (dBuA)	Factor (dB/m)	Level (dBuA/m)	Limit (dBuA/m)	Margin (dB)	Detector	P/F	Remark
1	0.0154	35.64	20.32	55.96	123.85	-67.89	peak	P	
2	0.0400	29.95	20.29	50.24	115.56	-65.32	peak	P	
3	0.0561	28.50	20.30	48.80	112.63	-63.83	peak	P	
4	0.0721	28.43	20.25	48.68	110.45	-61.77	peak	P	
5	0.0881	26.47	20.30	46.77	108.70	-61.93	peak	P	
6 *	0.1317	46.37	20.35	66.72	105.21	-38.49	peak	P	

coplanar



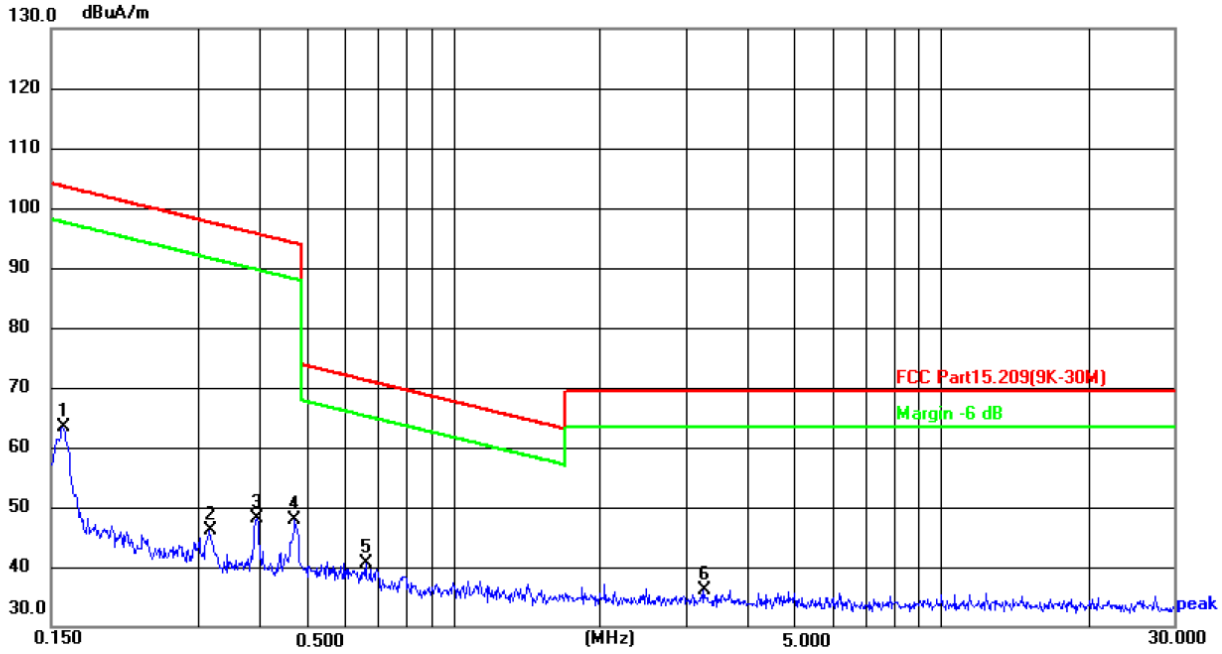
Site: 3m Anechoic Chamber Polarization: ***Conplanar*** Temperature: 21.9(℃) Humidity: 62 %

Limit: FCC Part15.209(9K-30M) Power:DC 3.85V

No.	Frequency (MHz)	Reading (dBuA)	Factor (dB/m)	Level (dBuA/m)	Limit (dBuA/m)	Margin (dB)	Detector	P/F	Remark
1	0.0154	37.18	20.32	57.50	123.85	-66.35	peak	P	
2	0.0239	31.25	20.28	51.53	120.04	-68.51	peak	P	
3	0.0447	29.21	20.29	49.50	114.60	-65.10	peak	P	
4	0.0720	26.02	20.25	46.27	110.46	-64.19	peak	P	
5	0.0879	23.91	20.30	44.21	108.72	-64.51	peak	P	
6 *	0.1324	35.98	20.34	56.32	105.17	-48.85	peak	P	

150KHz-30MHz:

coaxial

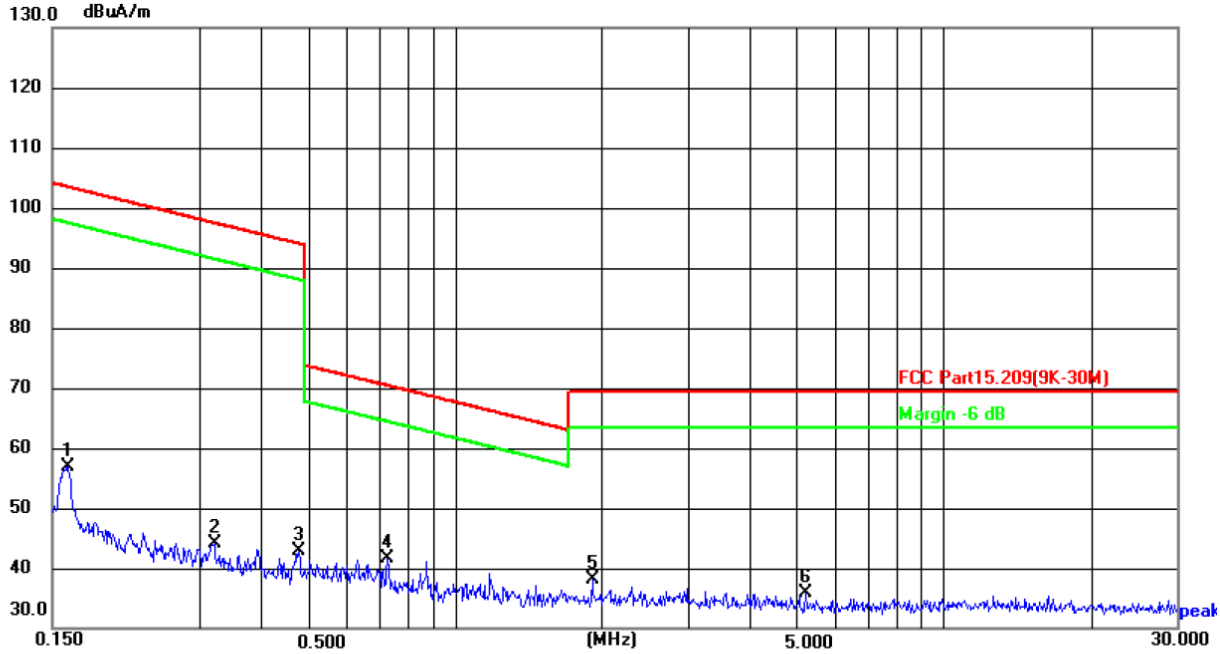


Site: 3m Anechoic Chamber Polarization: ***Coaxial*** Temperature: 21.9(℃) Humidity: 62 %

Limit: FCC Part15.209(9K-30M) Power:DC 3.85V

No.	Frequency (MHz)	Reading (dBuA)	Factor (dB/m)	Level (dBuA/m)	Limit (dBuA/m)	Margin (dB)	Detector	P/F	Remark
1	0.1581	43.12	20.14	63.26	103.63	-40.37	peak	P	
2	0.3166	25.71	20.40	46.11	97.59	-51.48	peak	P	
3	0.3955	27.57	20.54	48.11	95.66	-47.55	peak	P	
4	0.4736	27.15	20.67	47.82	94.10	-46.28	peak	P	
5 *	0.6613	19.70	21.01	40.71	71.20	-30.49	peak	P	
6	3.2583	10.04	26.15	36.19	69.50	-33.31	peak	P	

coplanar



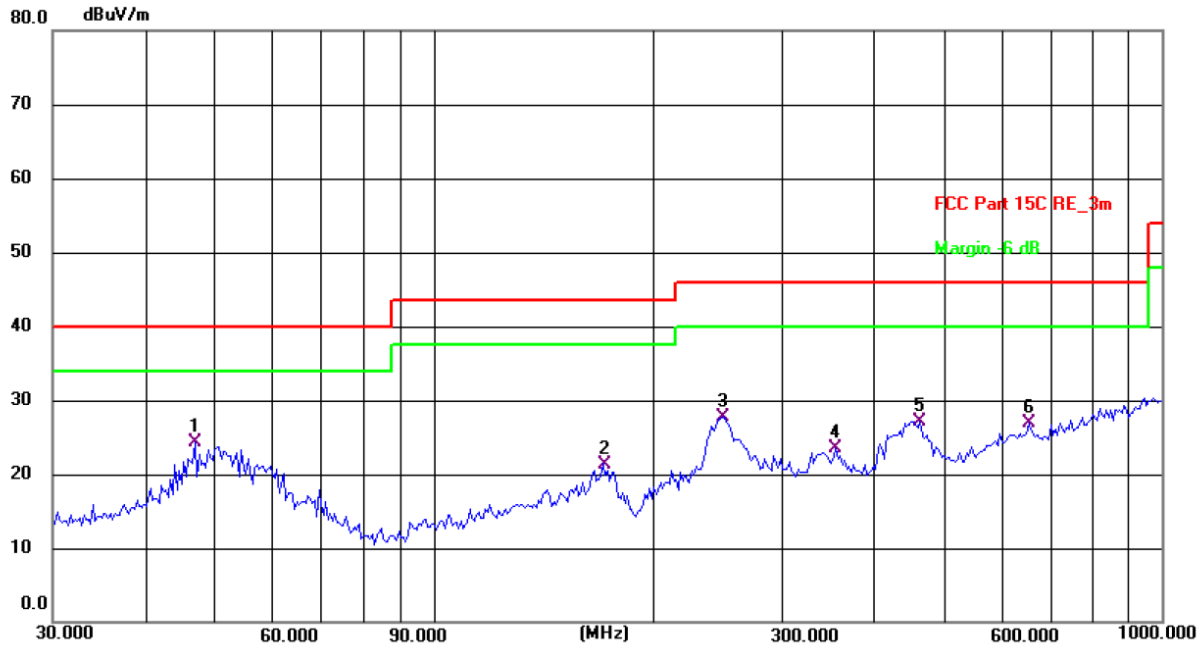
Site: 3m Anechoic Chamber Polarization: ***Conplanar*** Temperature: 21.9(℃) Humidity: 62 %

Limit: FCC Part15.209(9K-30M) Power:DC 3.85V

No.	Frequency (MHz)	Reading (dBuA)	Factor (dB/m)	Level (dBuA/m)	Limit (dBuA/m)	Margin (dB)	Detector	P/F	Remark
1	0.1606	36.83	20.14	56.97	103.49	-46.52	peak	P	
2	0.3215	23.80	20.40	44.20	97.46	-53.26	peak	P	
3	0.4786	22.19	20.69	42.88	94.00	-51.12	peak	P	
4 *	0.7273	20.53	21.13	41.66	70.38	-28.72	peak	P	
5	1.9080	14.61	23.45	38.06	69.50	-31.44	peak	P	
6	5.2213	5.91	30.07	35.98	69.50	-33.52	peak	P	

30MHz-1GHz

Horizontal:

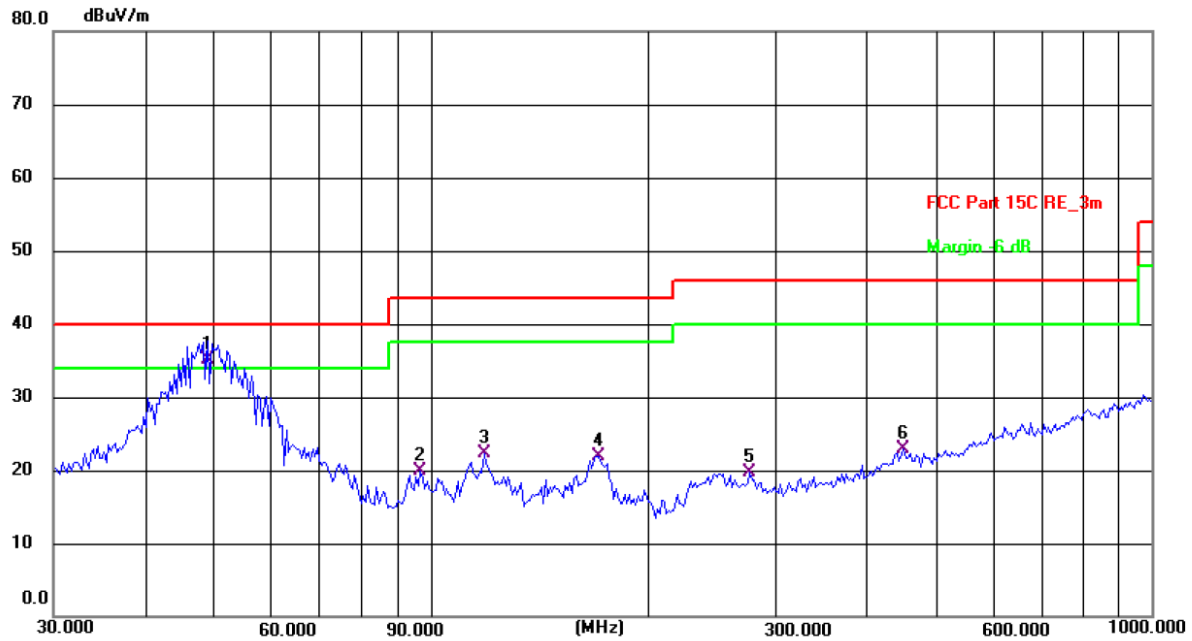


Site: #1 3m Anechoic Chamber Polarization: ***Horizontal*** Temperature: 24.9(C) Humidity: 51 %

Limit: FCC Part 15C RE_3m Power: DC 5 V(Adapter Input AC 120 V/60 Hz)

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	46.9947	36.89	-12.59	24.30	40.00	-15.70	QP	P	
2	170.7925	32.76	-11.36	21.40	43.50	-22.10	QP	P	
3	249.4250	40.15	-12.51	27.64	46.00	-18.36	QP	P	
4	356.6757	32.67	-9.25	23.42	46.00	-22.58	QP	P	
5	465.5994	34.55	-7.39	27.16	46.00	-18.84	QP	P	
6	656.5300	30.04	-3.19	26.85	46.00	-19.15	QP	P	

Vertical:



Site: #1 3m Anechoic Chamber Polarization: ***Vertical*** Temperature: 24.9(C) Humidity: 51 %

Limit: FCC Part 15C RE_3m Power: DC 5 V(Adapter Input AC 120 V/60 Hz)

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	49.0044	47.80	-12.66	35.14	40.00	-4.86	QP	P	
2	96.7749	35.75	-15.79	19.96	43.50	-23.54	QP	P	
3	118.6012	35.75	-13.47	22.28	43.50	-21.22	QP	P	
4	169.5989	33.28	-11.29	21.99	43.50	-21.51	QP	P	
5	277.0935	30.90	-11.15	19.75	46.00	-26.25	QP	P	
6	452.7196	30.45	-7.46	22.99	46.00	-23.01	QP	P	

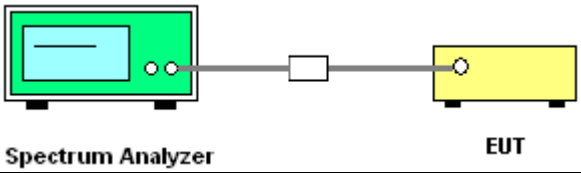
Note:

1. Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier

2. Both AC mode and Internal Battery Mode have been tested, only the worse mode (AC mode which is the battery of the Mobile Phone is less than 1%) reported.

5.4. 20dB Occupy Bandwidth

5.4.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	KDB 558074 D01 v05r02
Limit:	N/A
Test Setup:	
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement. 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Use the following spectrum analyzer settings for 20dB Bandwidth measurement. Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a hopping channel; 1%≤RBW≤5% of the 20 dB bandwidth; VBW≥3RBW; Sweep = auto; Detector function = peak; Trace = max hold. 4. Measure and record the results in the test report.
Test Result:	PASS

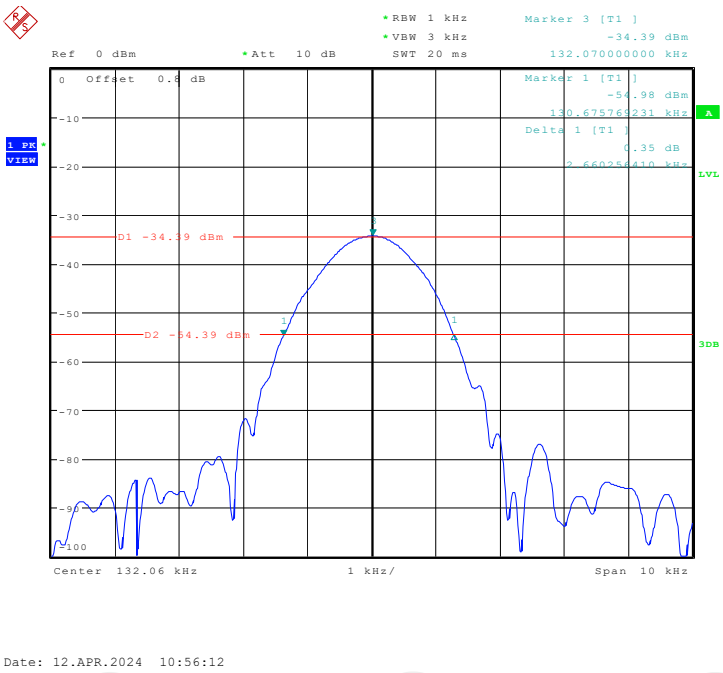
5.4.2. Test Instruments

Name	Manufacturer	Model No.	Serial Number	Calibration Due
Spectrum Analyzer	R&S	FSU	200054	Jun. 27, 2024

5.4.3. Test data

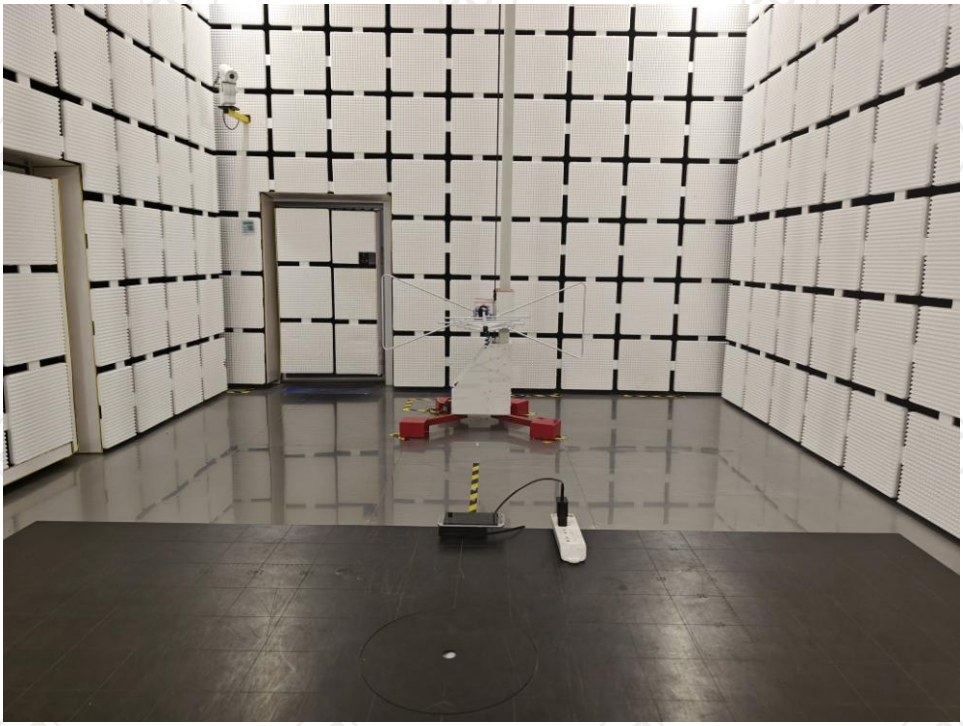
Frequency (KHz)	20dB Occupy Bandwidth (kHz)	Conclusion
132.07KHz	2.66	PASS

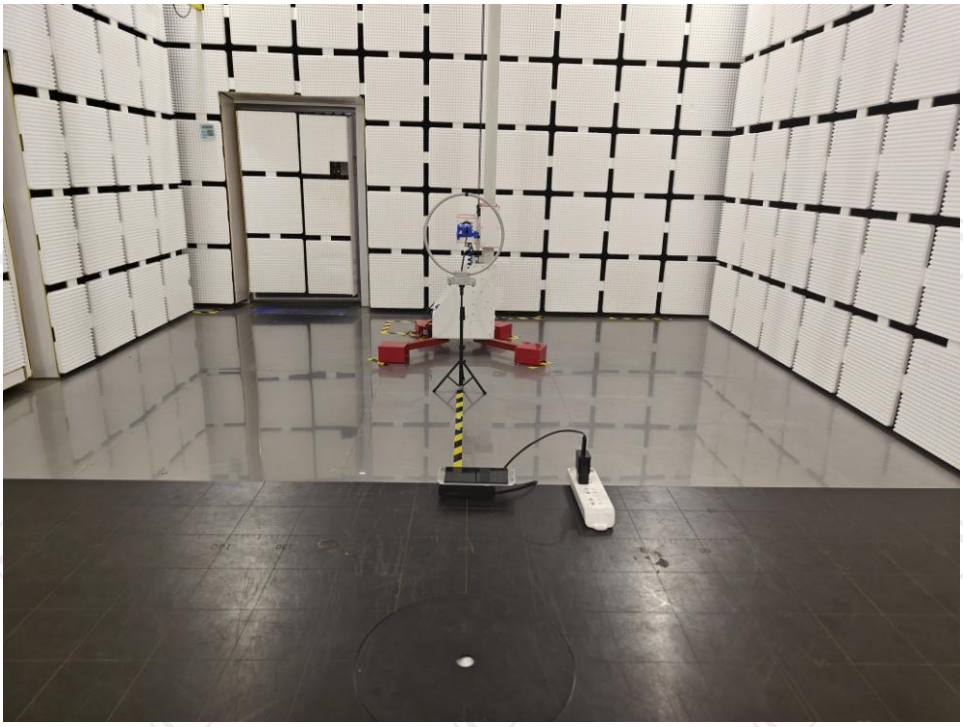
Test plots as follows:

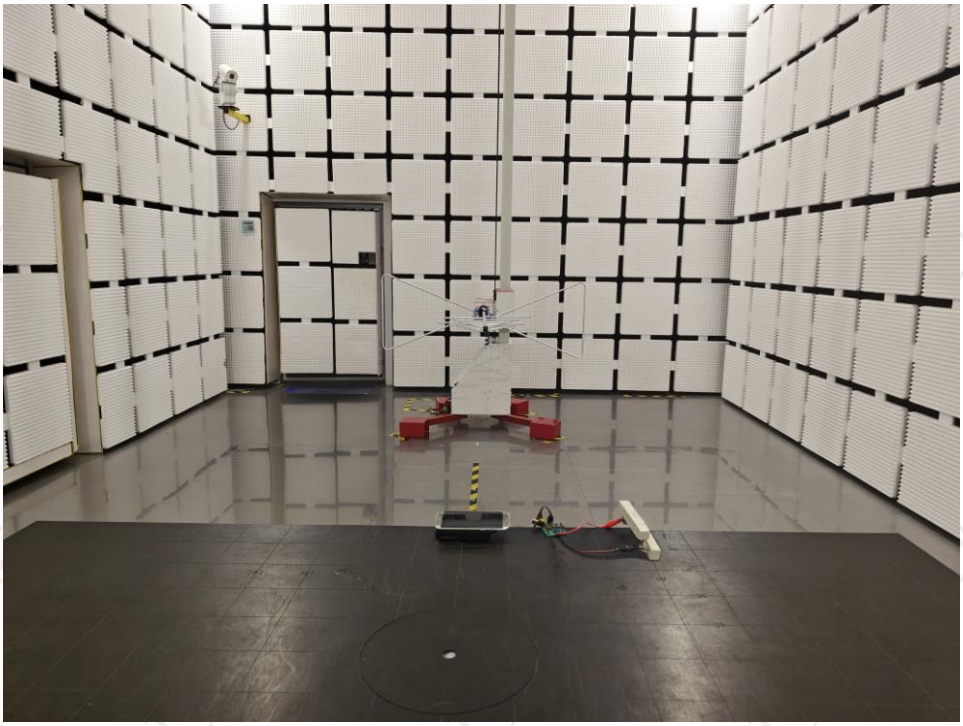


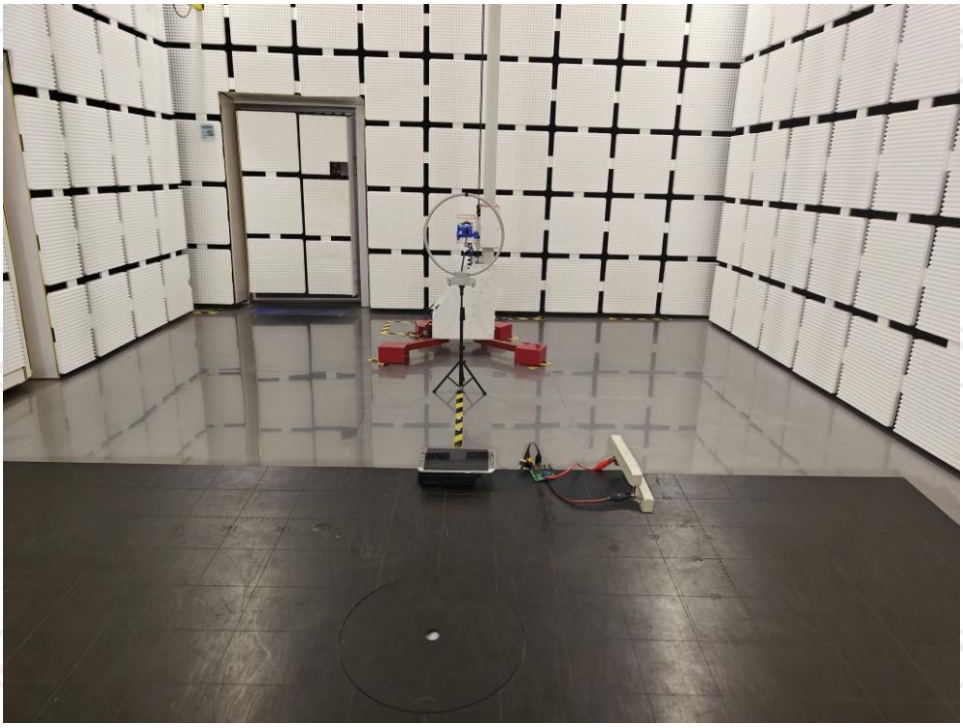
Appendix A: Photographs of Test Setup

Product: Wireless Power Bank
Model: F001
Radiated Emission









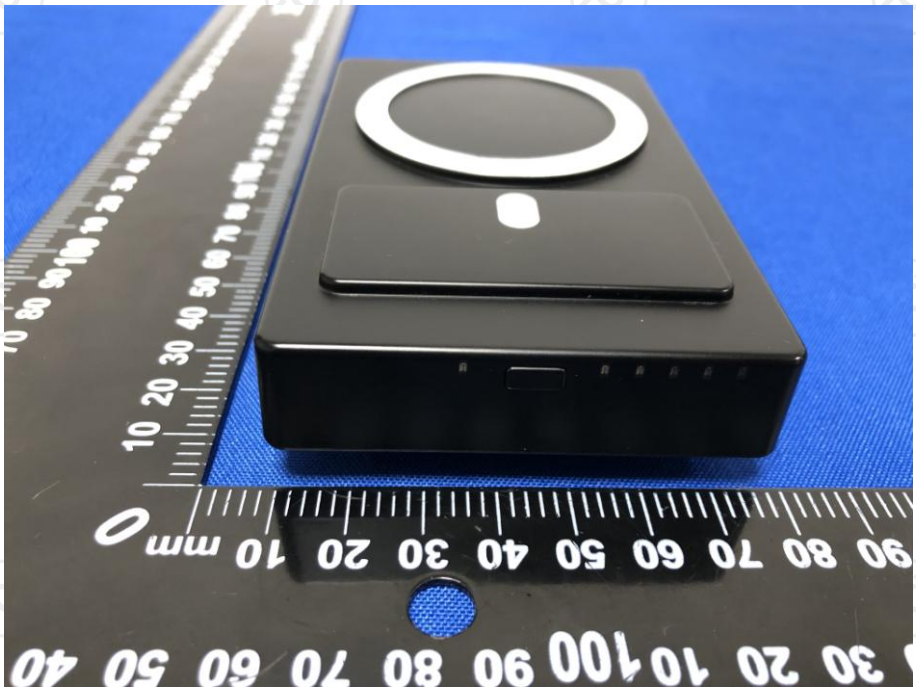
Conducted Emission

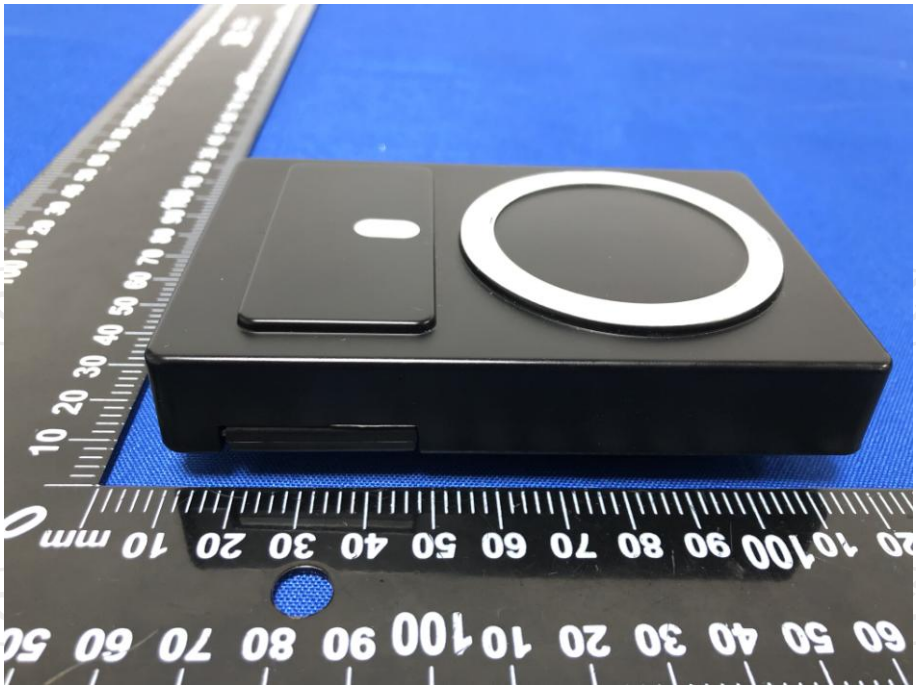
Appendix B: Photographs of EUT

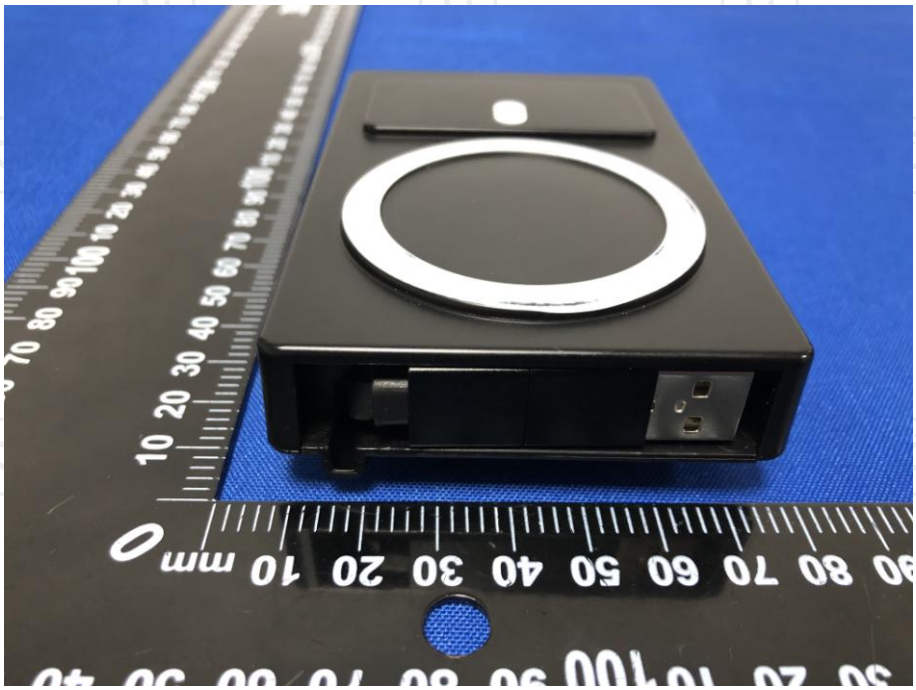
Product: Wireless Power Bank

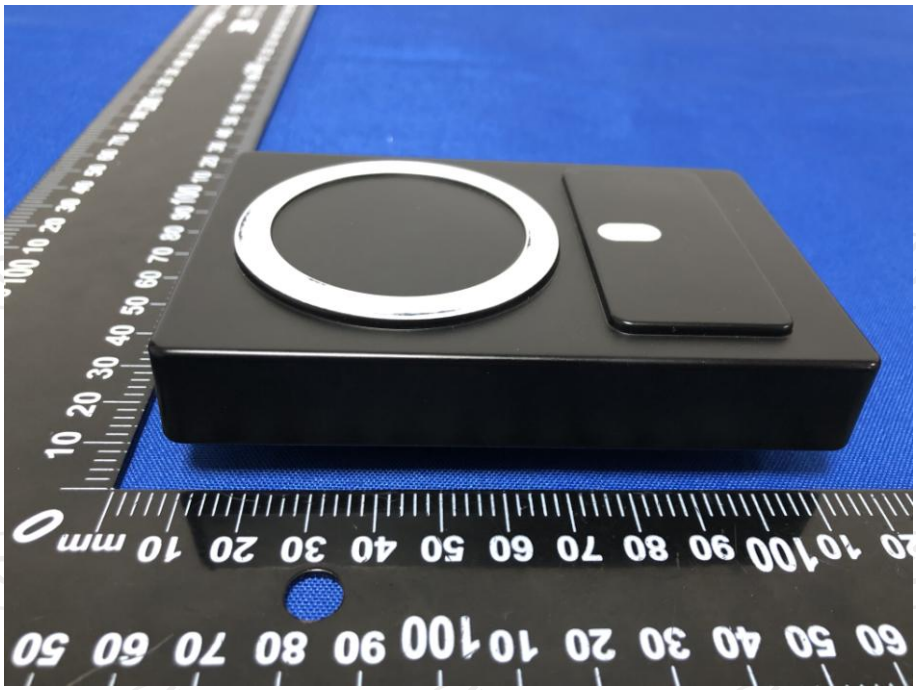
Model: F001

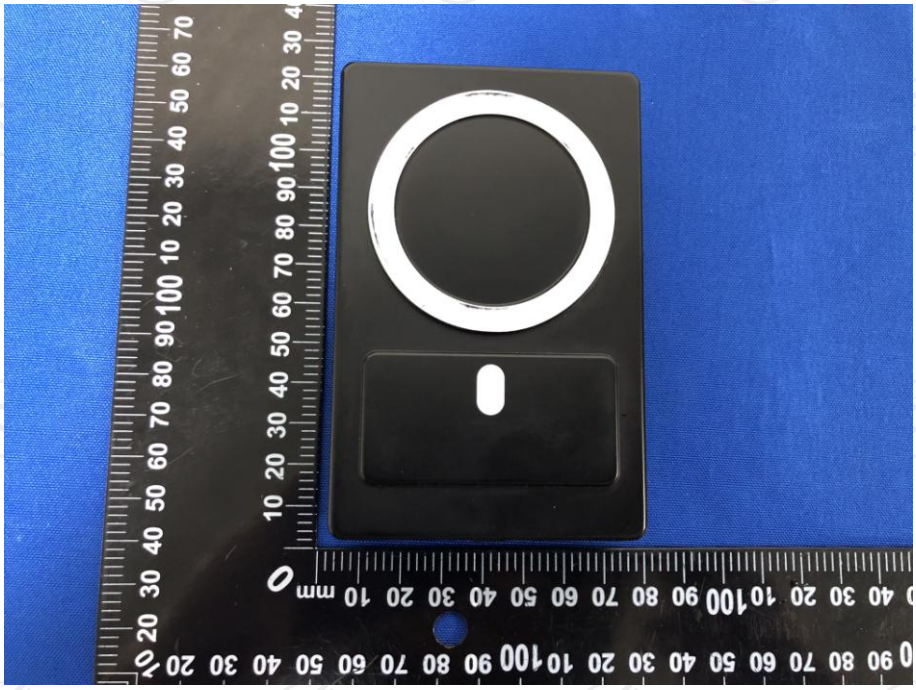
External Photos



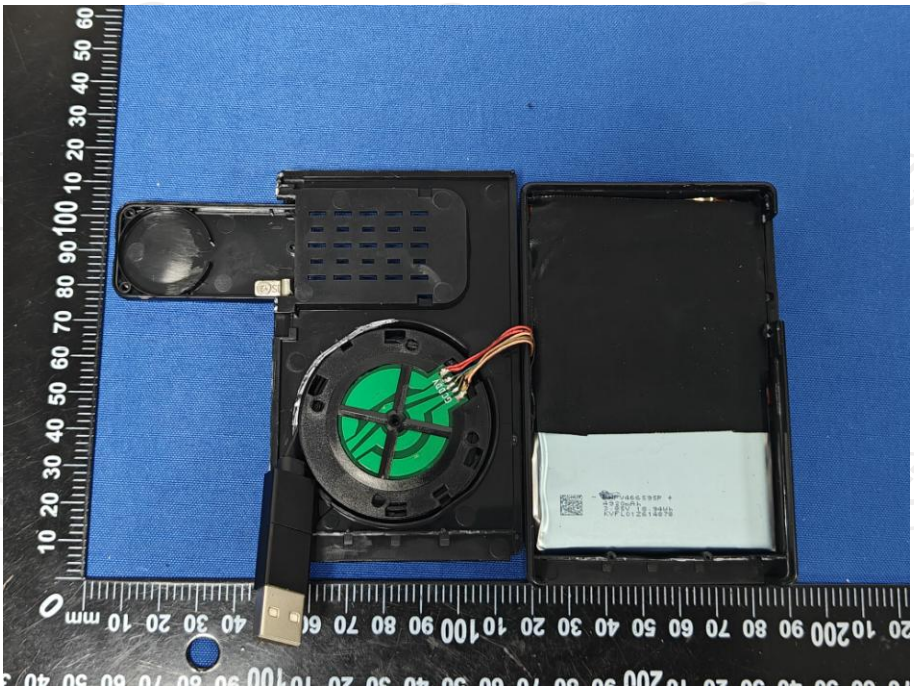


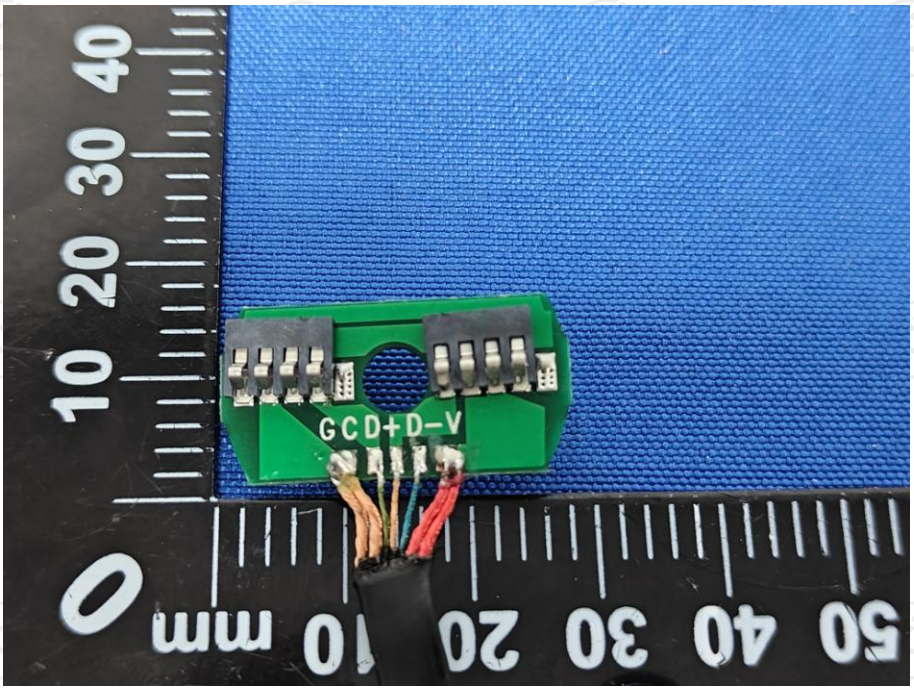


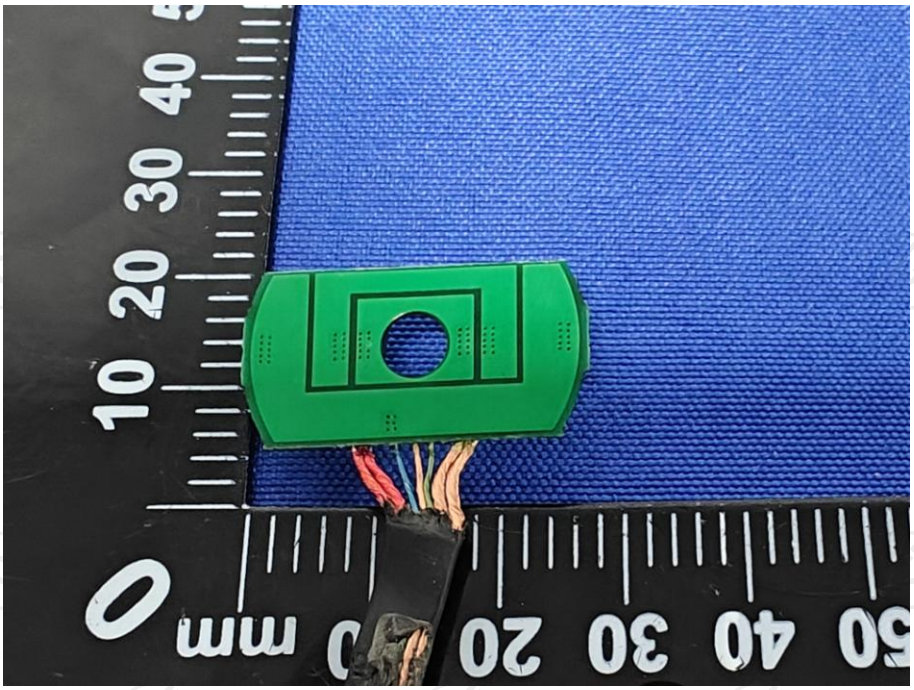




Product: Wireless Power Bank
Model: F001
Internal Photos



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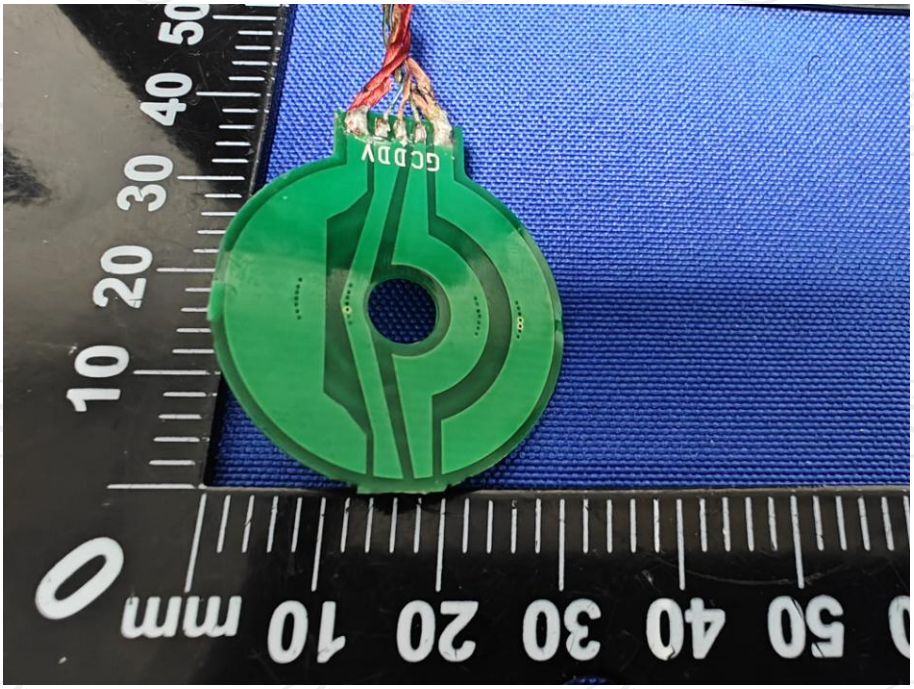
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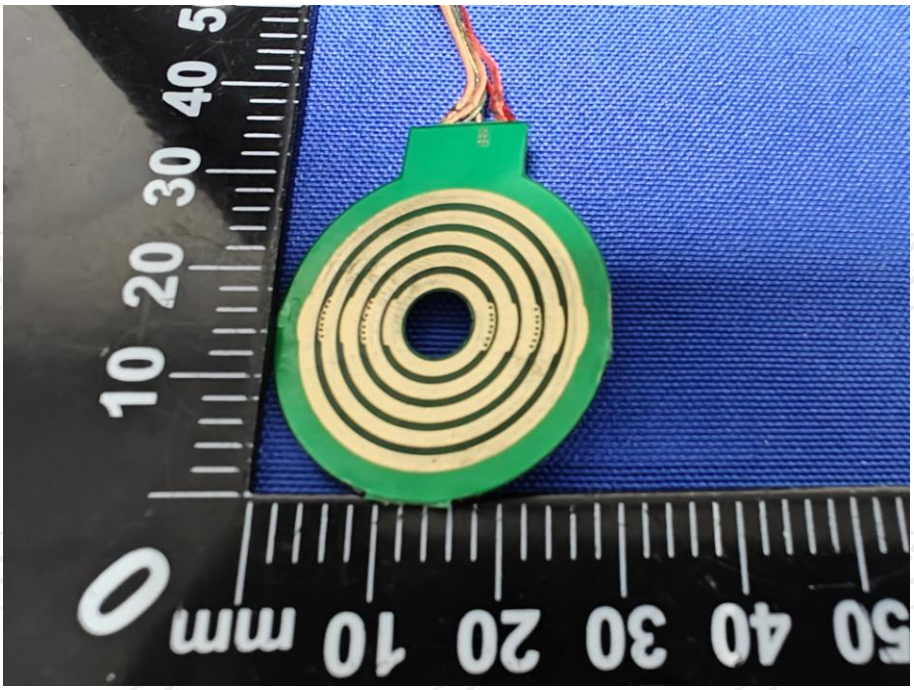
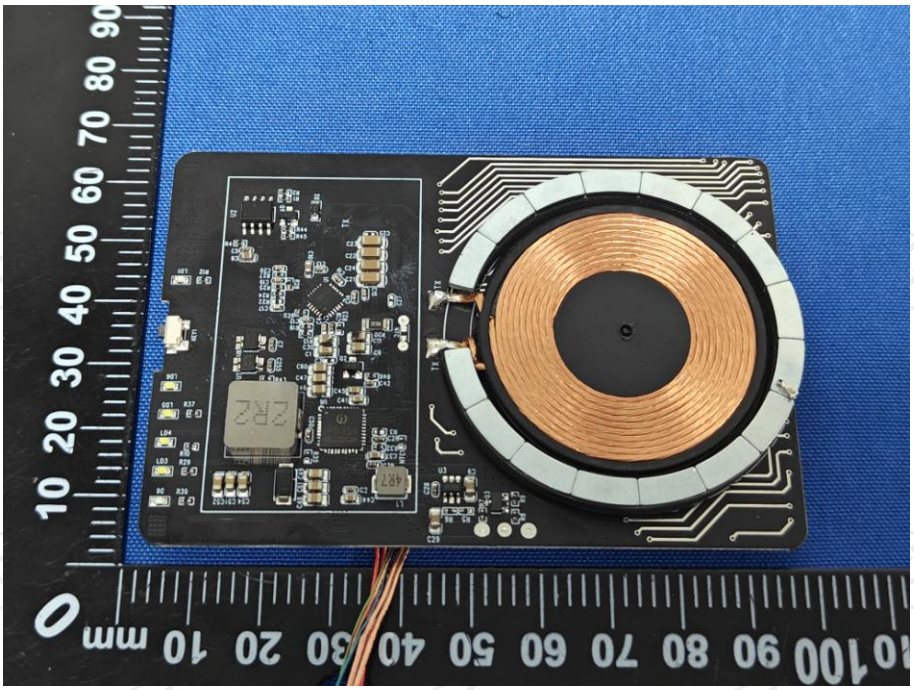
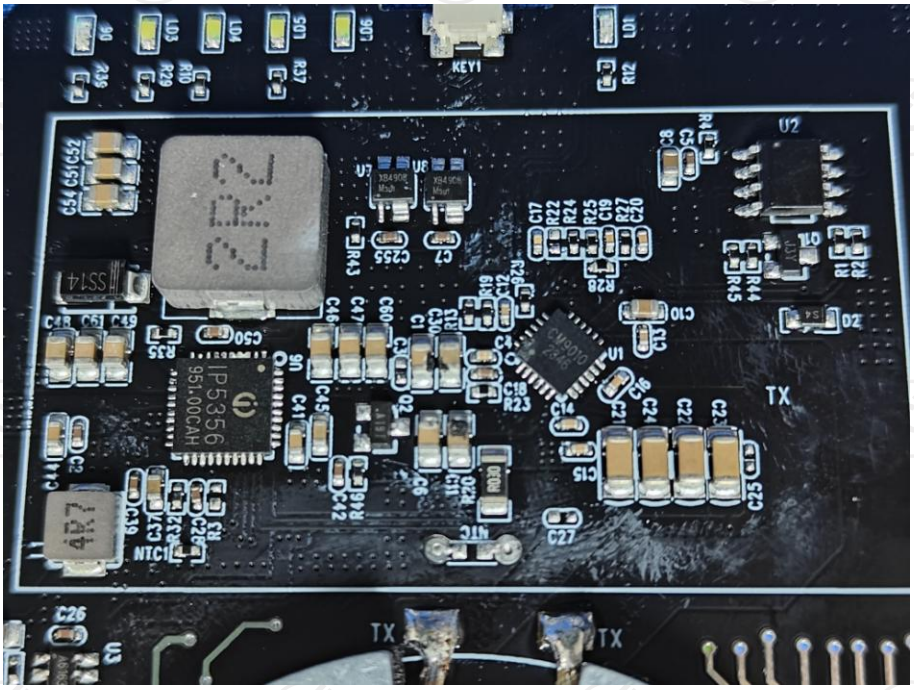
GCDDY



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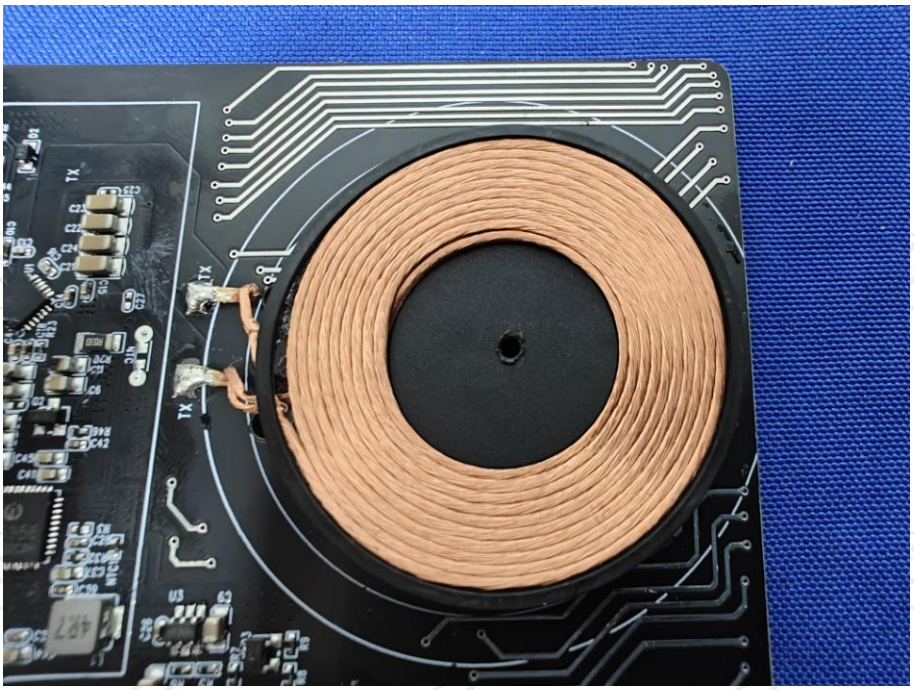
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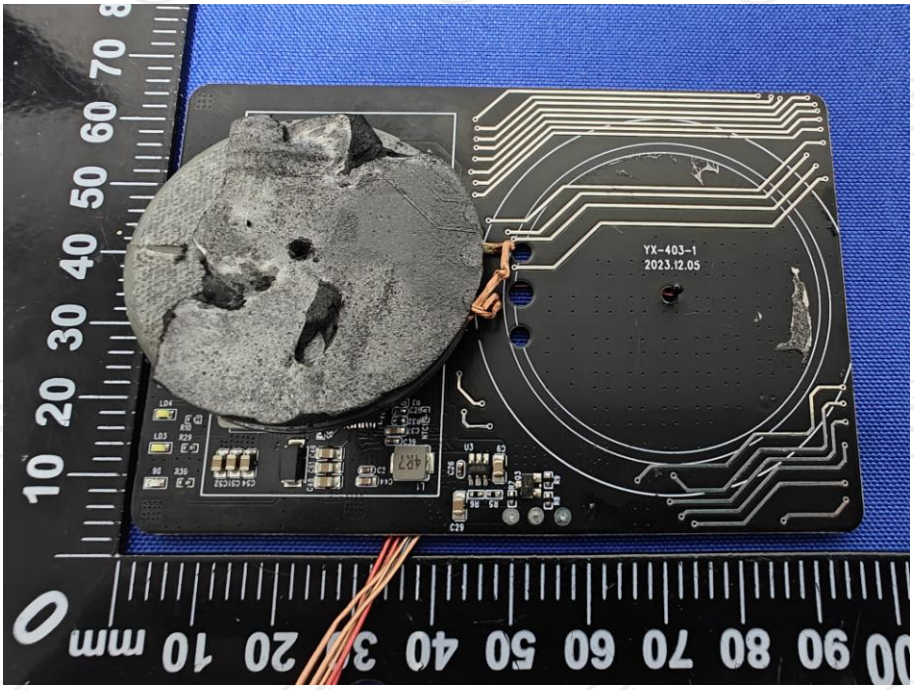
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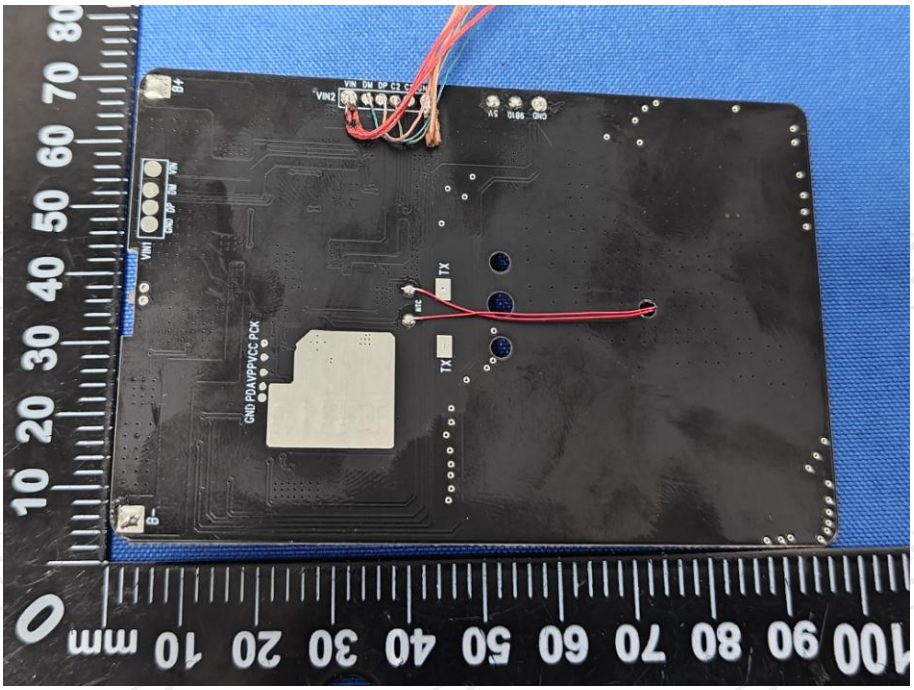
2023.12.05
mm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CC
CC
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TX
TX
mic
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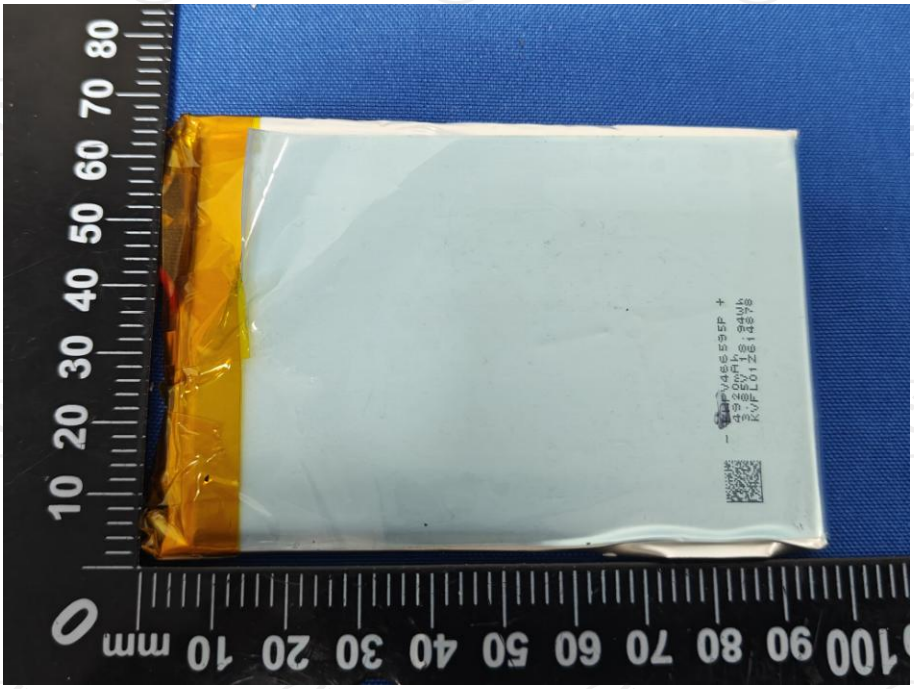
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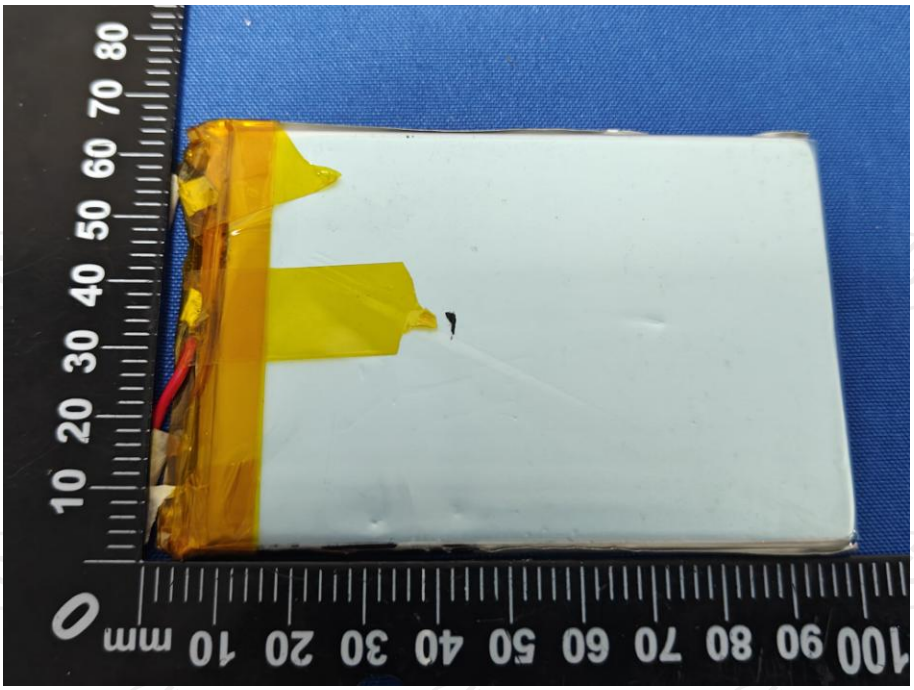

********END OF REPORT********