

TEST REPORT



Report No.: TW2303094E
Applicant: LEADER PREMIUMS LIMITED
Product: MAGSAFE WIRELESS CHARGER
Model No.: WS21004
Trademark: N/A
Test Standards: FCC Part 15 Subpart C

Test Result: It is herewith confirmed and found to comply with the requirements set up by ANSI C63.4&FCC Part 15 Subpart C, for the evaluation of electromagnetic compatibility

Approved By

A handwritten signature in black ink that reads 'Terry Tang'.

Terry Tang

Manager

Dated: March 31, 2023

Results appearing herein relate only to the sample tested
The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TESTING LABORATORIES

Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China

Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com



Special Statement:

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meets with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

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

CNAS-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2017 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 744189

The EMC Laboratory 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. Registration No.: 744189.

Industry Canada (IC) —Registration No.:5205A

The EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5205A.

A2LA (Certification Number:5013.01)

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number:5013.01

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Test Report Conclusion

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1.0 General Details

1.1 Test Lab Details

Name: SHENZHEN TIMEWAY TESTING LABORATORIES.
Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China
Telephone: +86 755 83448688
Fax: +86 755 83442996
Site on File with the Federal Communications Commission – United States
Registration Number: 744189
For 3m Anechoic Chamber

1.2 Applicant Details

Applicant: LEADER PREMIUMS LIMITED
Address: ROOM 901, HENGFU MANSION, NO.858, FUMINGROAD, NINGBO, CHINA
Telephone: --
Fax: --

1.3 Description of EUT

Product: MAGSAFE WIRELESS CHARGER
Manufacturer: LEADER PREMIUMS LIMITED
Address: ROOM 901, HENGFU MANSION, NO.858, FUMINGROAD, NINGBO, CHINA
Trademark: N/A
Model Number: WS21004
Additional Model Name N/A
Additional Trade Name N/A
Rating: Input: DC5V/2A, 9V/2A; Wireless Output: DC5V/1A, DC9V/1.1A
(Note: Wireless Output: DC9V/1.1A and DC5V/1A all have been tested, only worse case DC9V/1.1A is reported)
Hardware Version: wirelesscharging-WS21008
Software Version: leader.2021.11
Serial No.: leader21004
Operation Frequency: See below table

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	0.1115	06	0.140	11	0.165	16	0.190

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2.0 Test Equipment					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2022-07-15	2023-07-14
LISN	R&S	EZH3-Z5	100294	2022-07-18	2023-07-17
LISN	R&S	EZH3-Z5	100253	2022-07-18	2023-07-17
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2022-07-18	2023-07-17
Loop Antenna	EMCO	6507	00078608	2022-07-18	2025-07-17
Spectrum	R&S	FSIQ26	100292	2022-07-15	2023-07-14
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2022-07-18	2025-07-17
Horn Antenna	R&S	BBHA 9120D	9120D-631	2022-07-18	2024-07-17
Power meter	Anritsu	ML2487A	6K00003613	2022-07-18	2023-07-17
Power sensor	Anritsu	MA2491A	32263	2022-07-18	2023-07-17
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2022-07-18	2025-07-17
9*6*6 Anechoic	--	--	N/A	2022-07-26	2025-07-25
EMI Test Receiver	RS	ESVB	826156/011	2022-07-15	2023-07-14
EMI Test Receiver	RS	ESCS 30	834115/006	2022-07-15	2023-07-14
Spectrum	HP/Agilent	E4407B	MY50441392	2022-07-15	2023-07-14
Spectrum	RS	FSP	1164.4391.38	2022-07-15	2023-07-14
RF Cable	Zhengdi	ZT26-NJ-NJ-8 M/FA	--	2022-07-15	2023-07-14
RF Cable	Zhengdi	7m	--	2022-07-15	2023-07-14
Pre-Amplifier	Schwarebeck	BBV9743	#218	2022-07-15	2023-07-14
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2022-07-15	2023-07-14
LISN	SCHAFFNER	NNB42	00012	2022-08-18	2023-07-17
ESPI Test Receiver	R&S	ESPI 3	100379	2022-07-15	2023-07-14
LISN	R&S	EZH3-Z5	100294	2022-07-18	2023-07-17

2.2 Automation Test Software

For Conducted Emission Test

Name	Version
EZ-EMC	Ver.EMC-CON 3A1.1

For Radiated Emissions

Name	Version
EMI Test Software BL410-EV18.91	V18.905
EMI Test Software BL410-EV18.806 High Frequency	V18.06

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3.0 Technical Details

3.1 Summary of test results

The EUT has been tested according to the following specifications:			
Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.203	Antenna requirements	Pass	Compliant
FCC Part 15, Paragraph 15.207	Conducted Emission Test	Pass	Compliant
FCC Part 15, Paragraph 15.209 (a) (f)	General Requirement	Pass	Compliant
FCC Part 15, Paragraph 15.215	20dB Bandwidth Testing	Pass	Compliant

3.2 Test Standards

FCC Part 15 Subpart C , ANSI C63.4 :2014 and ANSI C63.10 :2013

4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES

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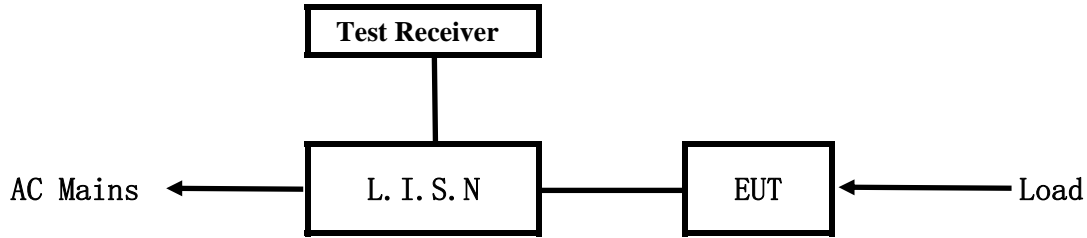
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5. Power Line Conducted Emission Test

5.1 Schematics of the test



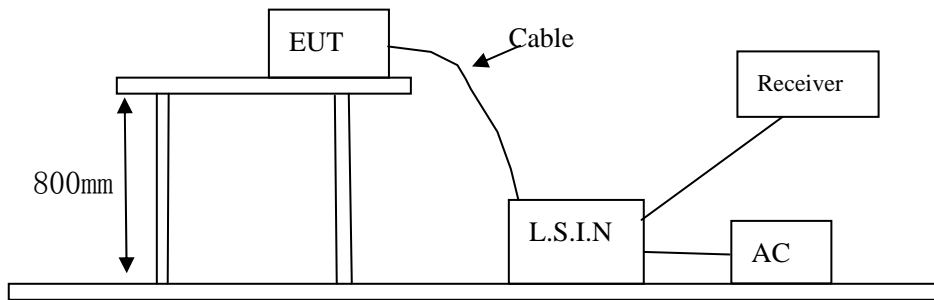
EUT: Equipment Under Test

5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2013. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.10-2013.

Test Voltage: 120V~, 60Hz

Block diagram of Test setup



5.3 Configuration of the EUT

The EUT was configured according to ANSI C63.10-2013. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

A. EUT

Device	Manufacturer	Model	FCC ID
MAGSAFE WIRELESS CHARGER	LEADER PREMIUMS LIMITED	WS21004	2APYY-WS21004

B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

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C. Peripherals

Device	Manufacturer	Model	Rating
Power Supply	Chenyang	UP0920	Input: 100-240V~, 50-60Hz, 0.5A; Output: DC5V/3A or DC9V, 2A

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10 -2013.

A Setup the EUT and simulators as shown on follow

B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency (MHz)	Limits (dB μ V)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66.0~56.0*	56.0~46.0*
0.50 ~ 5.00	56.0	46.0
5.00 ~ 30.00	60.0	50.0

- Notes: 1. *Decreasing linearly with logarithm of frequency.
 2. The tighter limit shall apply at the transition frequencies

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz. (The average detector is necessary when the Quasi-peak emission level beyond the average Limit.)

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A: Conducted Emission on Live Terminal (150kHz to 30MHz)

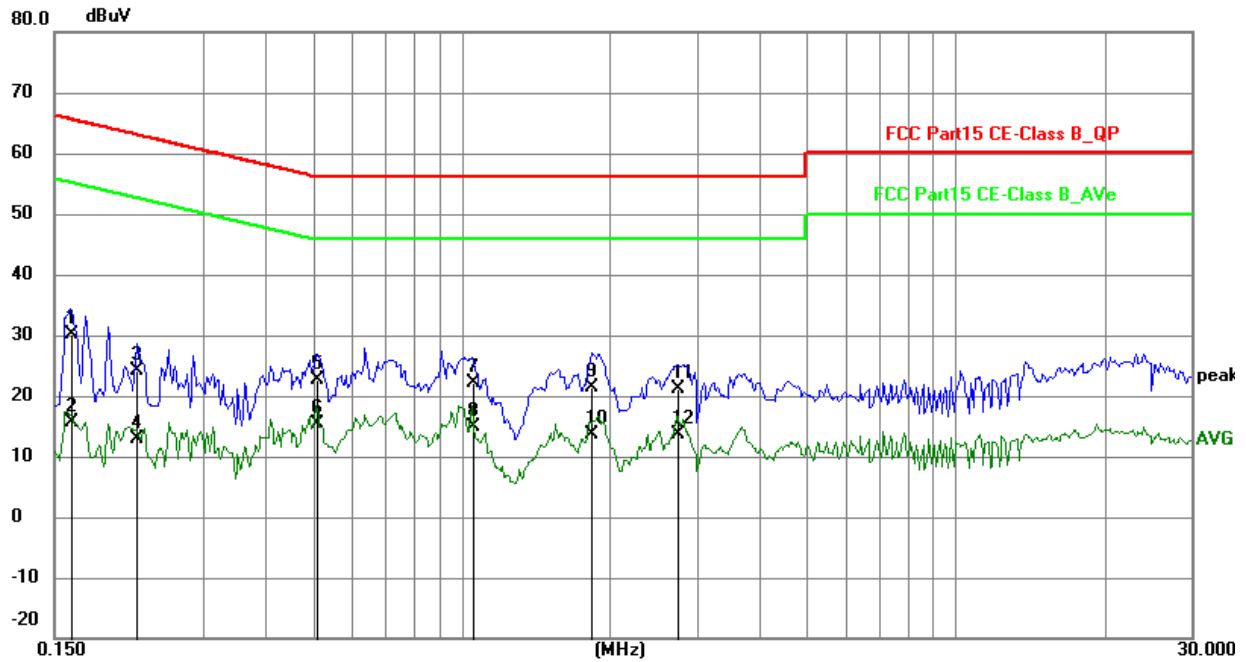
EUT Operating Environment

Temperature: 25°C Humidity:75%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Keep Transmitting

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1617	20.35	9.78	30.13	65.38	-35.25	QP	P
2	0.1617	5.77	9.78	15.55	55.38	-39.83	AVG	P
3	0.2202	14.26	9.75	24.01	62.81	-38.80	QP	P
4	0.2202	3.07	9.75	12.82	52.81	-39.99	AVG	P
5	0.5088	12.83	9.77	22.60	56.00	-33.40	QP	P
6	0.5088	5.68	9.77	15.45	46.00	-30.55	AVG	P
7	1.0509	12.26	9.79	22.05	56.00	-33.95	QP	P
8	1.0509	5.18	9.79	14.97	46.00	-31.03	AVG	P
9	1.8348	11.70	9.80	21.50	56.00	-34.50	QP	P
10	1.8348	3.85	9.80	13.65	46.00	-32.35	AVG	P
11	2.7279	11.37	9.83	21.20	56.00	-34.80	QP	P
12	2.7279	3.82	9.83	13.65	46.00	-32.35	AVG	P

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B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

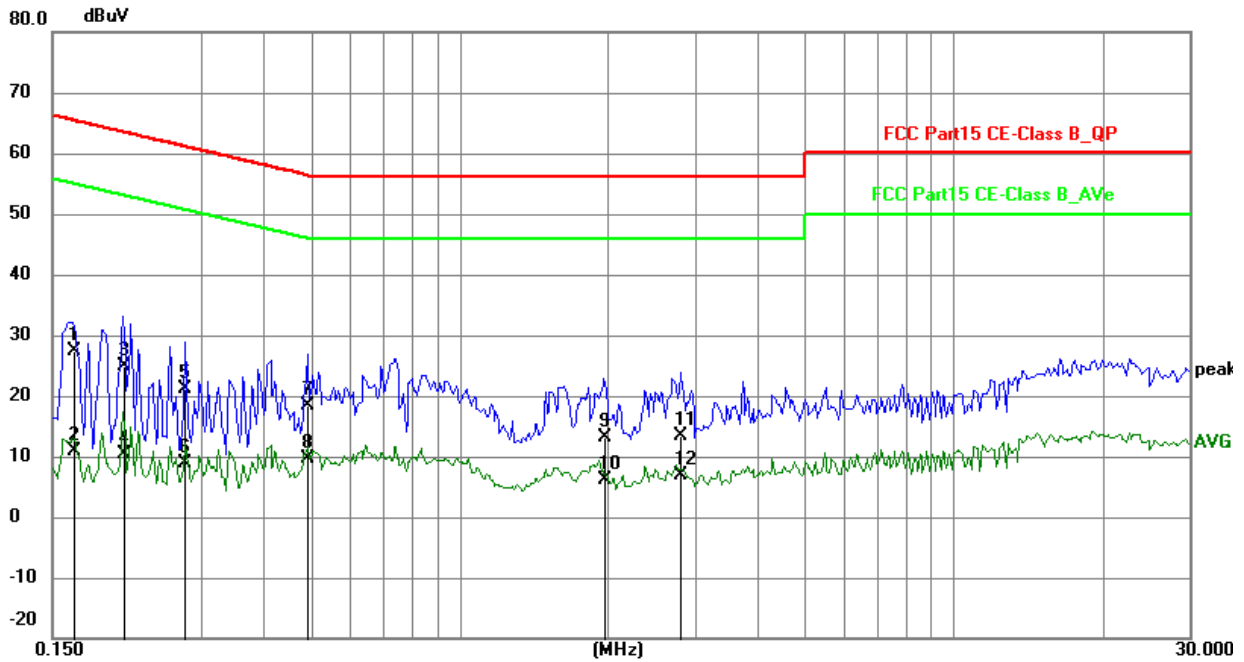
EUT Operating Environment

Temperature: 25°C Humidity:75%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Keep Transmitting

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1655	17.54	9.77	27.31	65.18	-37.87	QP	P
2	0.1655	1.21	9.77	10.98	55.18	-44.20	AVG	P
3	0.2085	15.11	9.75	24.86	63.26	-38.40	QP	P
4	0.2085	0.57	9.75	10.32	53.26	-42.94	AVG	P
5	0.2787	11.41	9.76	21.17	60.85	-39.68	QP	P
6	0.2787	-0.93	9.76	8.83	50.85	-42.02	AVG	P
7	0.4932	8.71	9.77	18.48	56.11	-37.63	QP	P
8	0.4932	-0.18	9.77	9.59	46.11	-36.52	AVG	P
9	1.9674	3.41	9.80	13.21	56.00	-42.79	QP	P
10	1.9674	-3.73	9.80	6.07	46.00	-39.93	AVG	P
11	2.8059	3.65	9.83	13.48	56.00	-42.52	QP	P
12	2.8059	-3.02	9.83	6.81	46.00	-39.19	AVG	P

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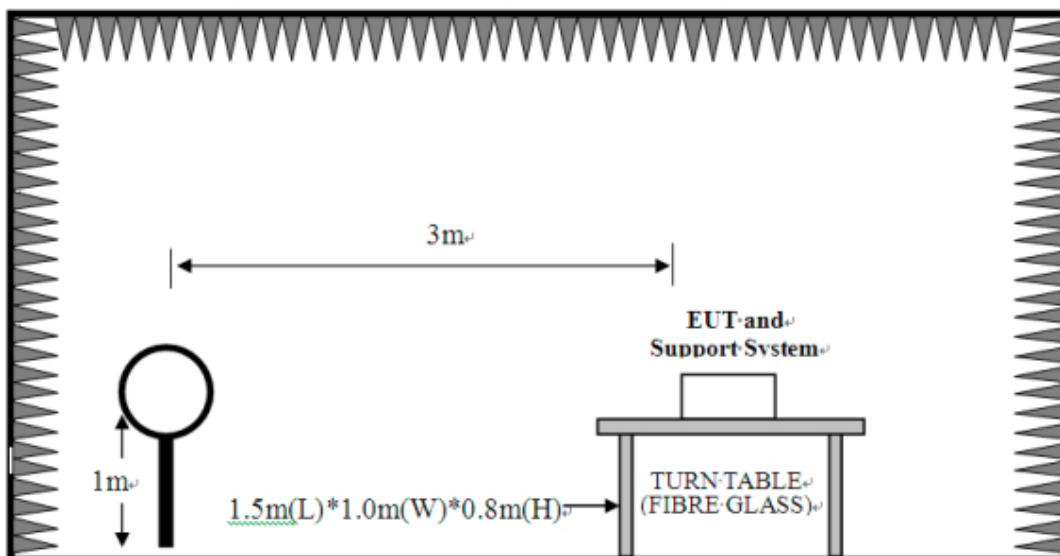
6 Radiated Emission Test

6.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at TIMEWAY EMC Laboratory. This site is on file with the FCC laboratory division, Registration No.744189
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.
- (3) The frequency spectrum from 9 kHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with RBW=120 kHz/VBW=300 kHz; All readings from 9 kHz to 30 MHz are quasi-peak values with RBW=10 kHz/VBW=30 kHz. For the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz Radiated emission test in these three bands are based on measurements employing an average detector. Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "QP" in the data table.
- (6) The antenna polarization: Vertical polarization and Horizontal polarization.

Block diagram of Test setup

9kHz-30MHz



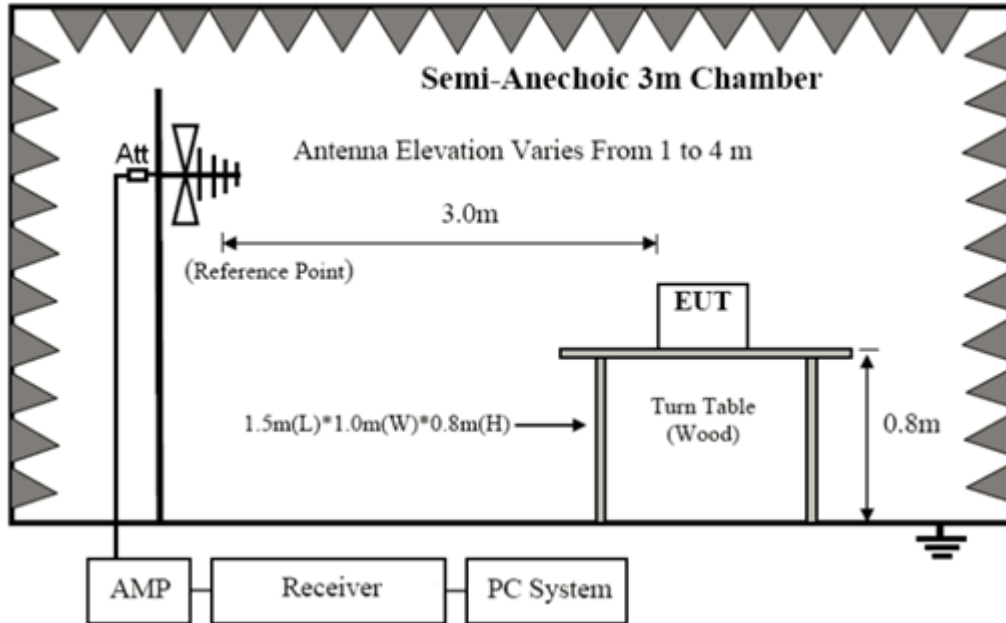
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30MHz-1000MHz



6.2 Configuration of The EUT

Same as section 5.3 of this report

6.3 EUT Operating Condition

Same as section 5.4 of this report.

6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

B. Frequencies in restricted band are compiled to limit on Paragraph 15.209.

Limits for frequency below 30MHz

Frequency Range (MHz)	Distance (m)	Field strength (V/m)
0.009-0.490	300	2400/F(kHz)
0.490-1.705	30	24000/F(kHz)
1.705-30	30	30

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Limits for frequency above 30MHz

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

- Note:
1. RF Voltage (dBuV) = 20 log RF Voltage (μ V)
 2. In the Above Table, the tighter limit applies at the band edges.
 3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
 4. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.

6.5 Test result

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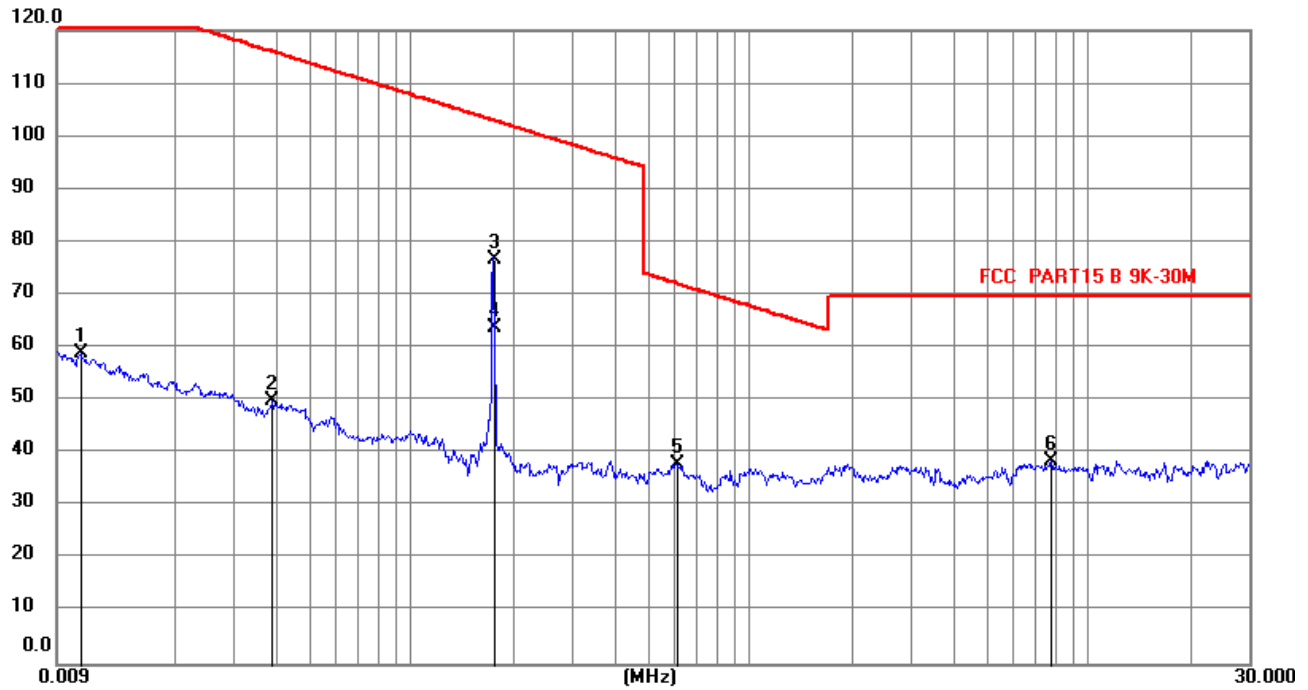


Measurement data:

Note: Limit dBuV/m @3m = Limit dBuV/m @300m+ 80

Limit dBuV/m @3m = Limit dBuV/m @30m + 40

9 kHz~30 MHz



No.	Frequency (MHz)	Reading ()	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.0106	48.98	10.02	59.00	126.91	-67.91	peak	P
2	0.0388	40.02	10.01	50.03	115.70	-65.67	peak	P
3	0.1753	66.74	9.77	76.51	102.68	-26.17	peak	P
4	0.1753	53.98	9.77	63.75	102.68	-38.93	AVG	P
5	0.6124	28.18	9.78	37.96	71.87	-33.91	peak	P
6	7.7500	28.37	10.05	38.42	69.55	-31.13	peak	P

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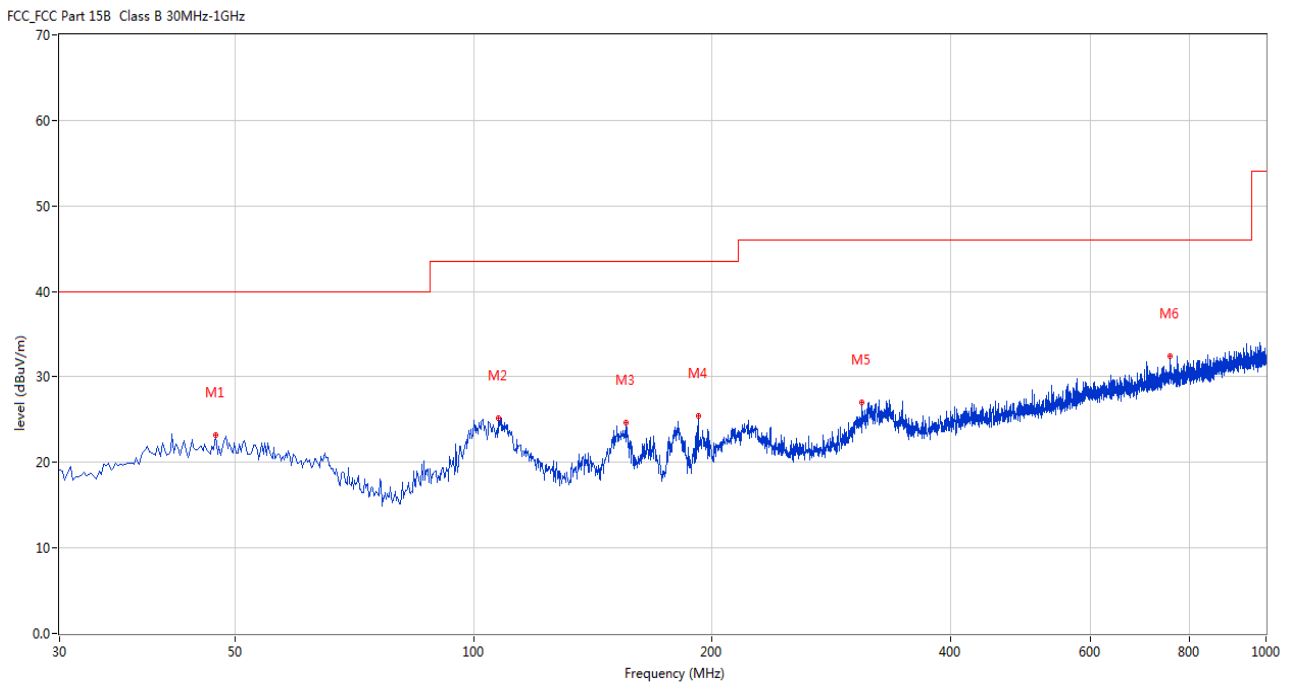
A. General Radiated Emission Data

Radiated Emission In Horizontal (30MHz---1000MHz)

EUT set Condition: Keep Transmitting

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	47.213	23.19	-11.41	40.0	-16.81	Peak	142.00	100	Horizontal	Pass
2	107.338	25.14	-13.39	43.5	-18.36	Peak	360.00	200	Horizontal	Pass
3	155.826	24.69	-16.65	43.5	-18.81	Peak	42.00	200	Horizontal	Pass
4	191.950	25.39	-14.07	43.5	-18.11	Peak	360.00	200	Horizontal	Pass
5	309.290	27.08	-10.79	46.0	-18.92	Peak	259.00	100	Horizontal	Pass
6	756.106	32.44	-3.25	46.0	-13.56	Peak	47.00	100	Horizontal	Pass

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B. General Radiated Emission Data

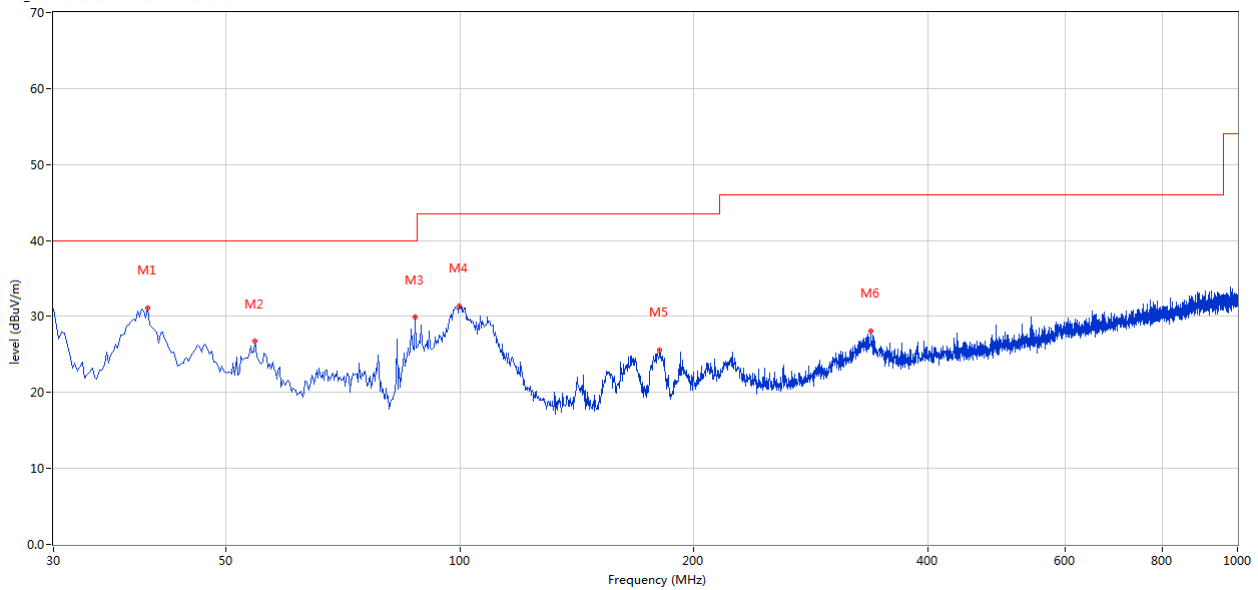
Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: Keep Transmitting

Results: Pass

Please refer to following diagram for individual

FCC_FCC Part 15B Class B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	39.698	31.11	-12.47	40.0	-8.89	Peak	280.00	100	Vertical	Pass
2	54.486	26.70	-11.66	40.0	-13.30	Peak	316.00	100	Vertical	Pass
3	87.458	29.87	-15.72	40.0	-10.13	Peak	330.00	100	Vertical	Pass
4	99.823	31.40	-13.56	43.5	-12.10	Peak	359.00	100	Vertical	Pass
5	180.555	25.63	-15.23	43.5	-17.87	Peak	330.00	100	Vertical	Pass
6	337.413	28.06	-9.83	46.0	-17.94	Peak	261.00	200	Vertical	Pass

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7.0 20dB Bandwidth Testing

7.1 Test Procedure

With the EUT's antenna attached, the EUT's 20dB Bandwidth was received by the test antenna which was connected to the spectrum analyzer with the START and STOP frequencies set to the EUT's operation band.

7.3 Test Data

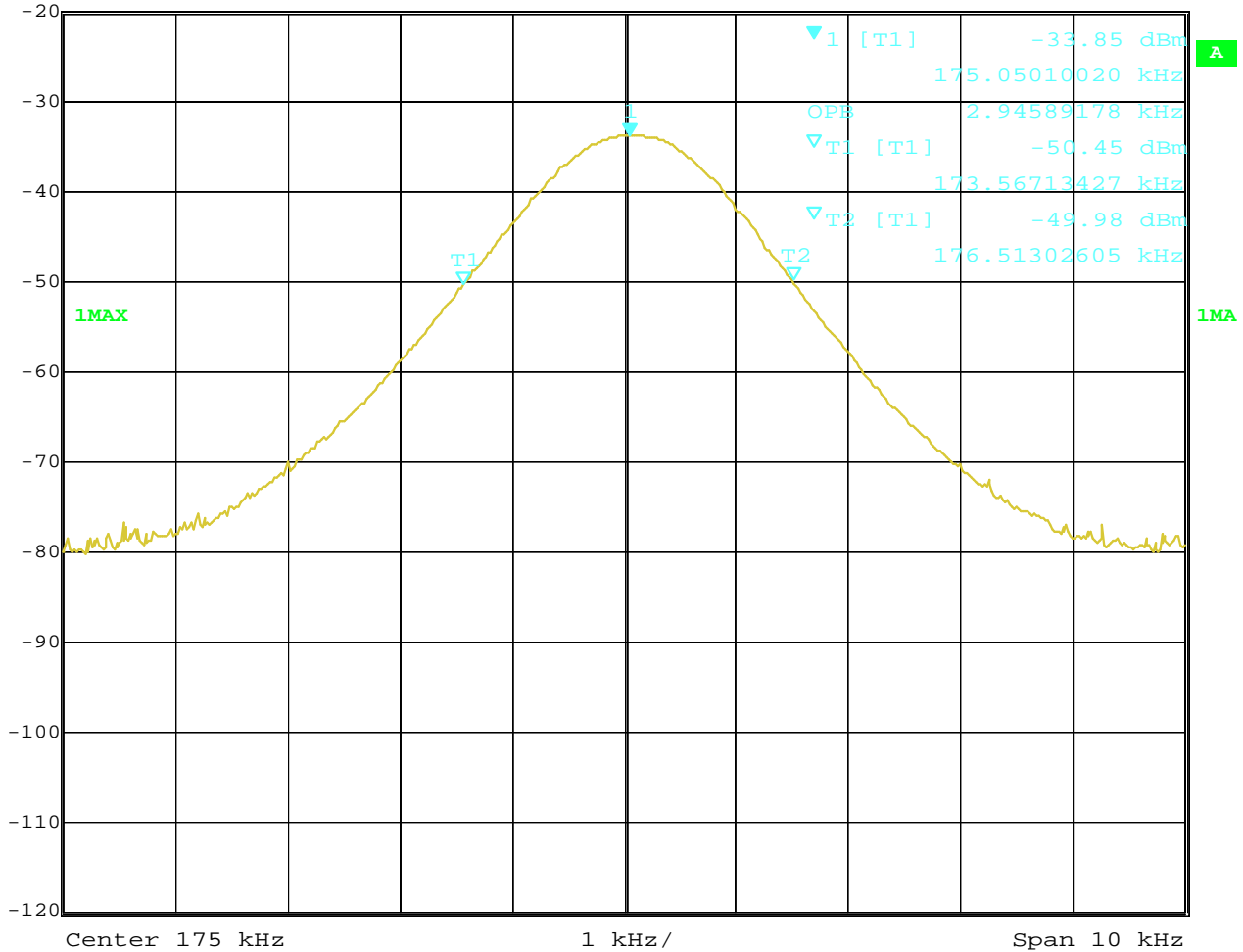
Frequency (MHz)	20dB Bandwidth Emission (kHz)	Limit (kHz)	Result
0.175	2.946	--	Pass

Refer to attached plots:



20dB Bandwidth

	Max/Ref Lvl	Marker 1 [T1]	RBW	1 kHz	RF Att	10 dB
	-20 dBm	-33.85 dBm	VBW	3 kHz		
	-20 dBm	175.05010020 kHz	SWT	150 ms	Unit	dBm



Date: 25.MAR.2023 13:40:20

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8.0 Antenna Requirement

8.1 Standard Applicable

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 shall be considered sufficient to comply with the provisions of this Section. 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

8.2 Antenna Connected constructions

The antenna is Inductive Loop Antenna. The antenna gain is 0dBi. So it meets the requirement of 15.203

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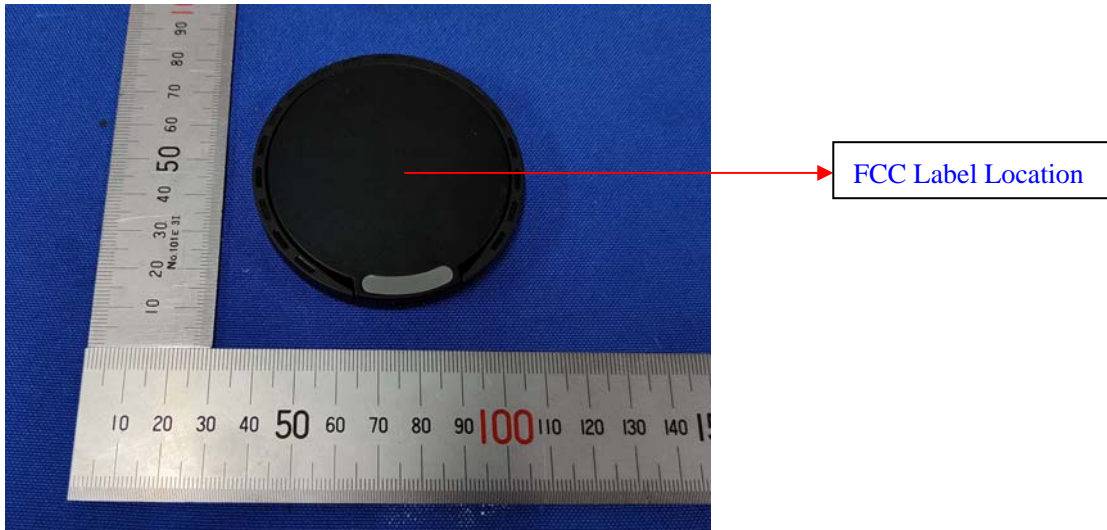
9.0 FCC ID Label

FCC ID: 2APYY-WS21004

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Mark Location:



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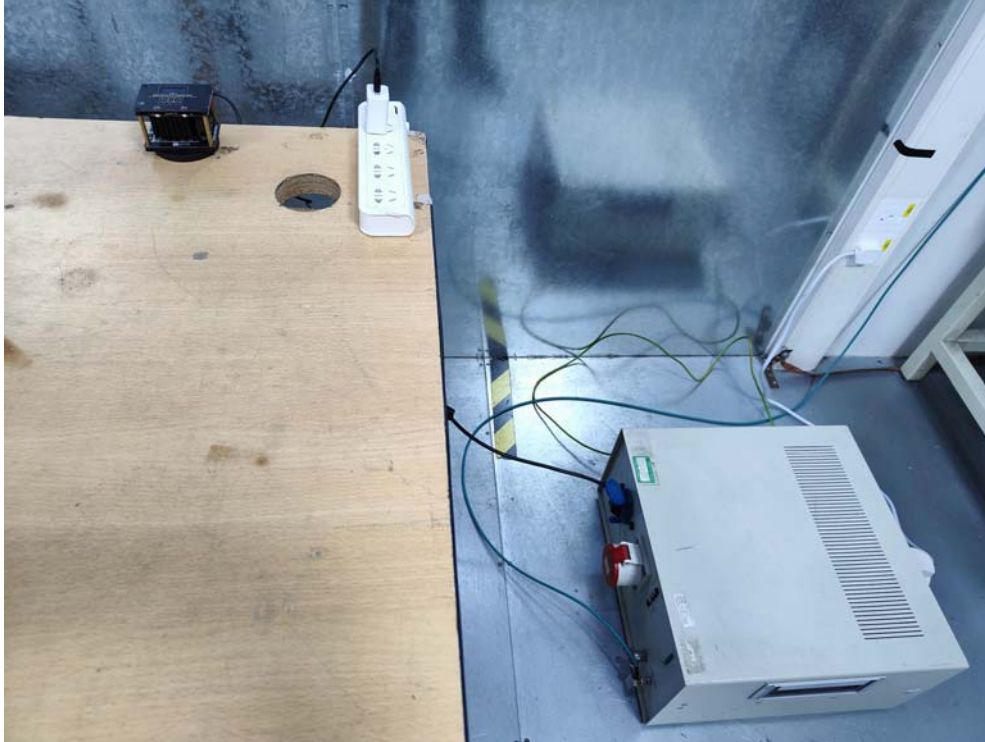
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10.0 Photo of testing

10.1 Conducted test View



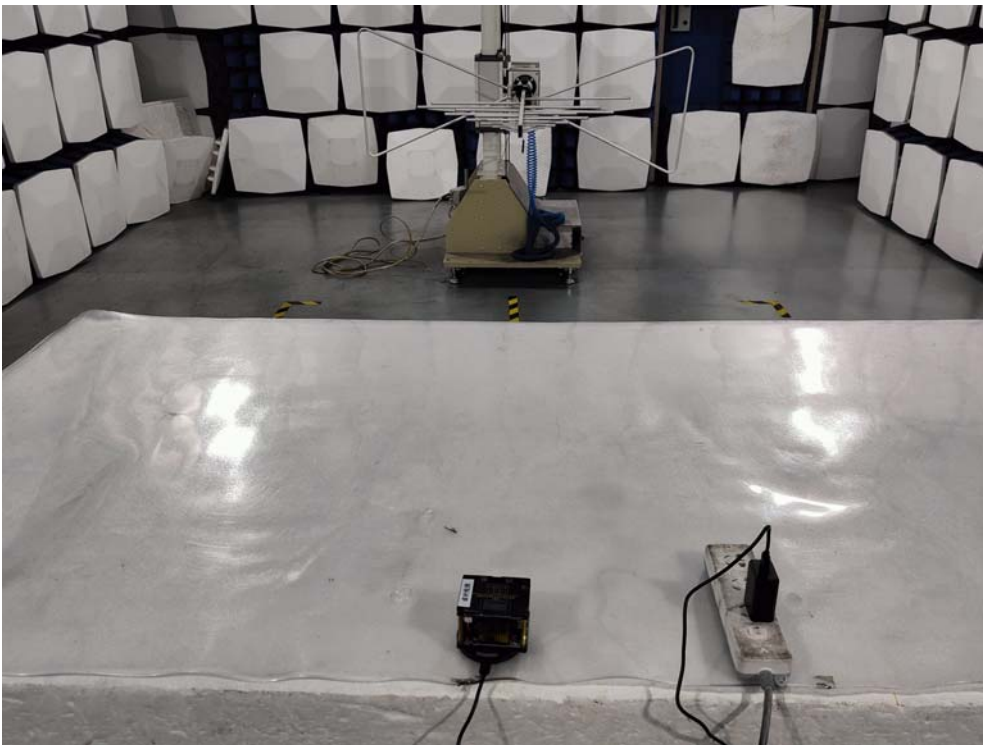
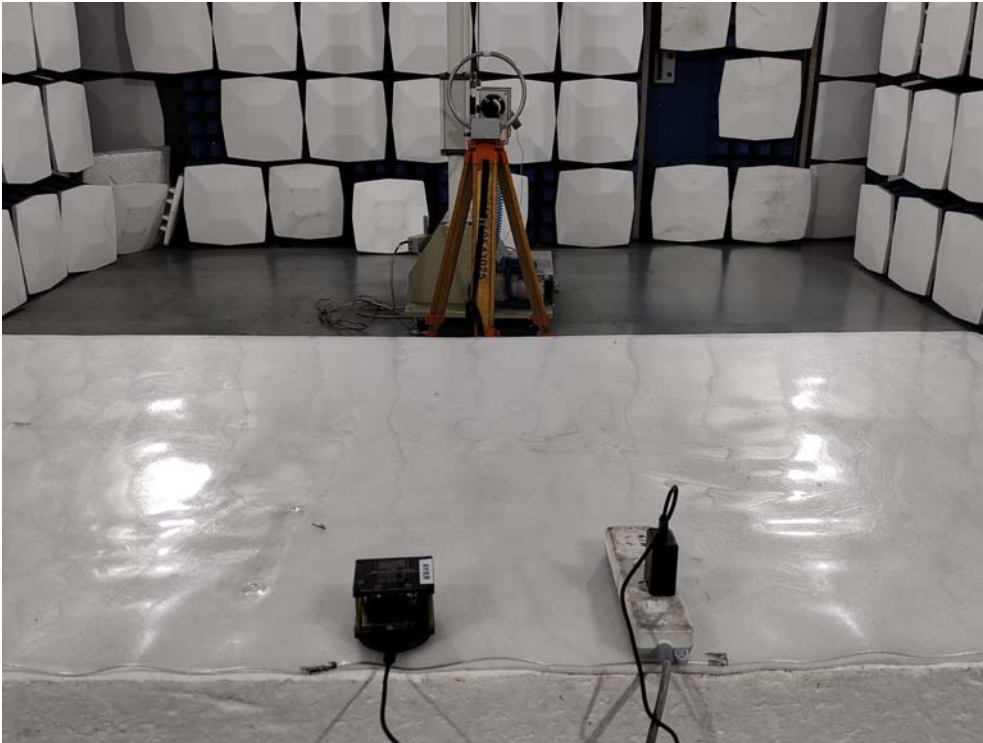
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10.2 Radiated emission test view



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Photographs – EUT

Outside View



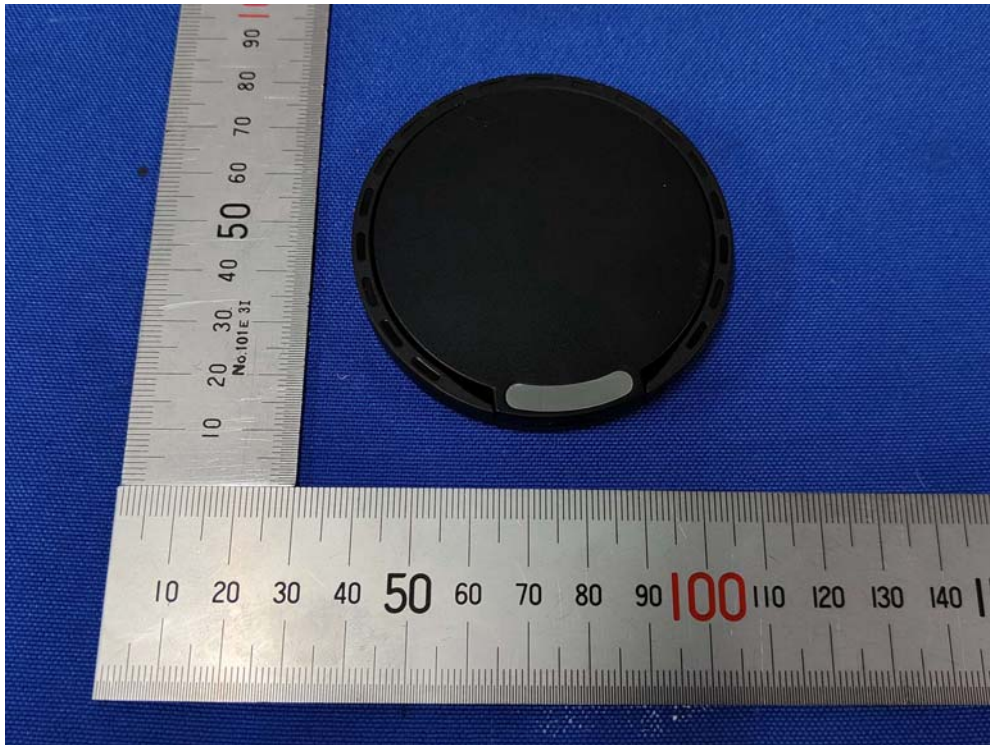
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Outside View



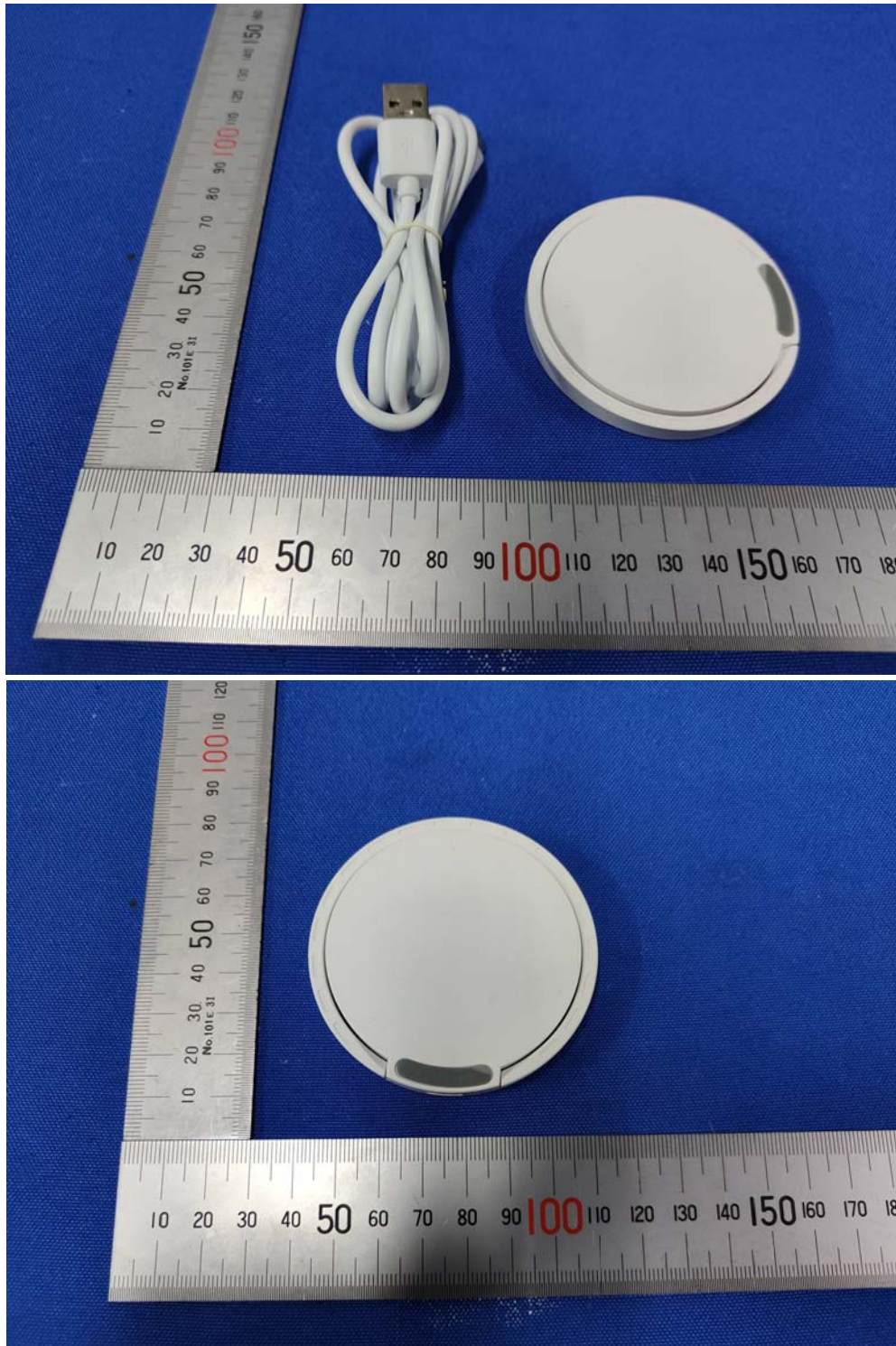
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Outside View



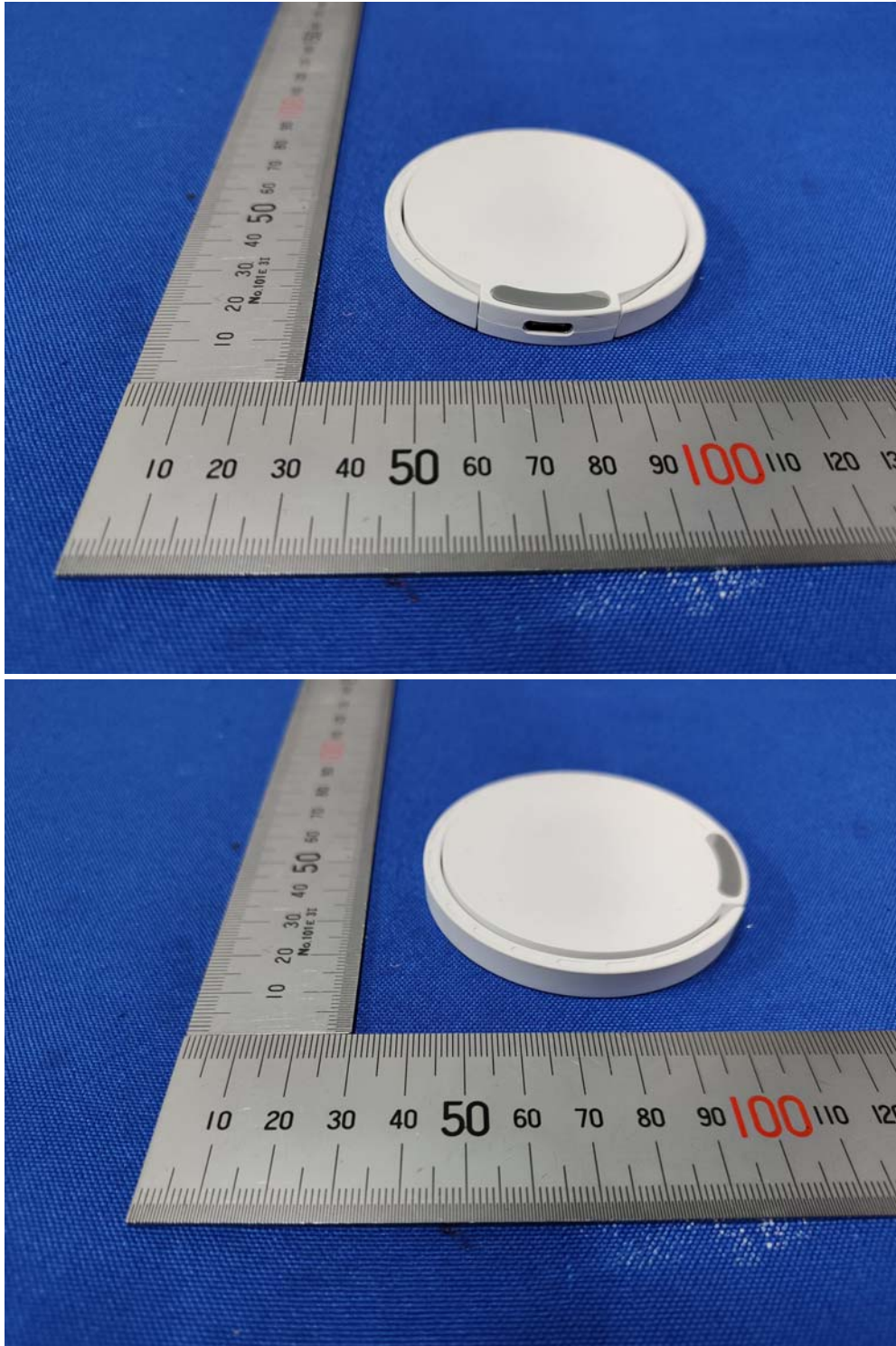
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Outside View



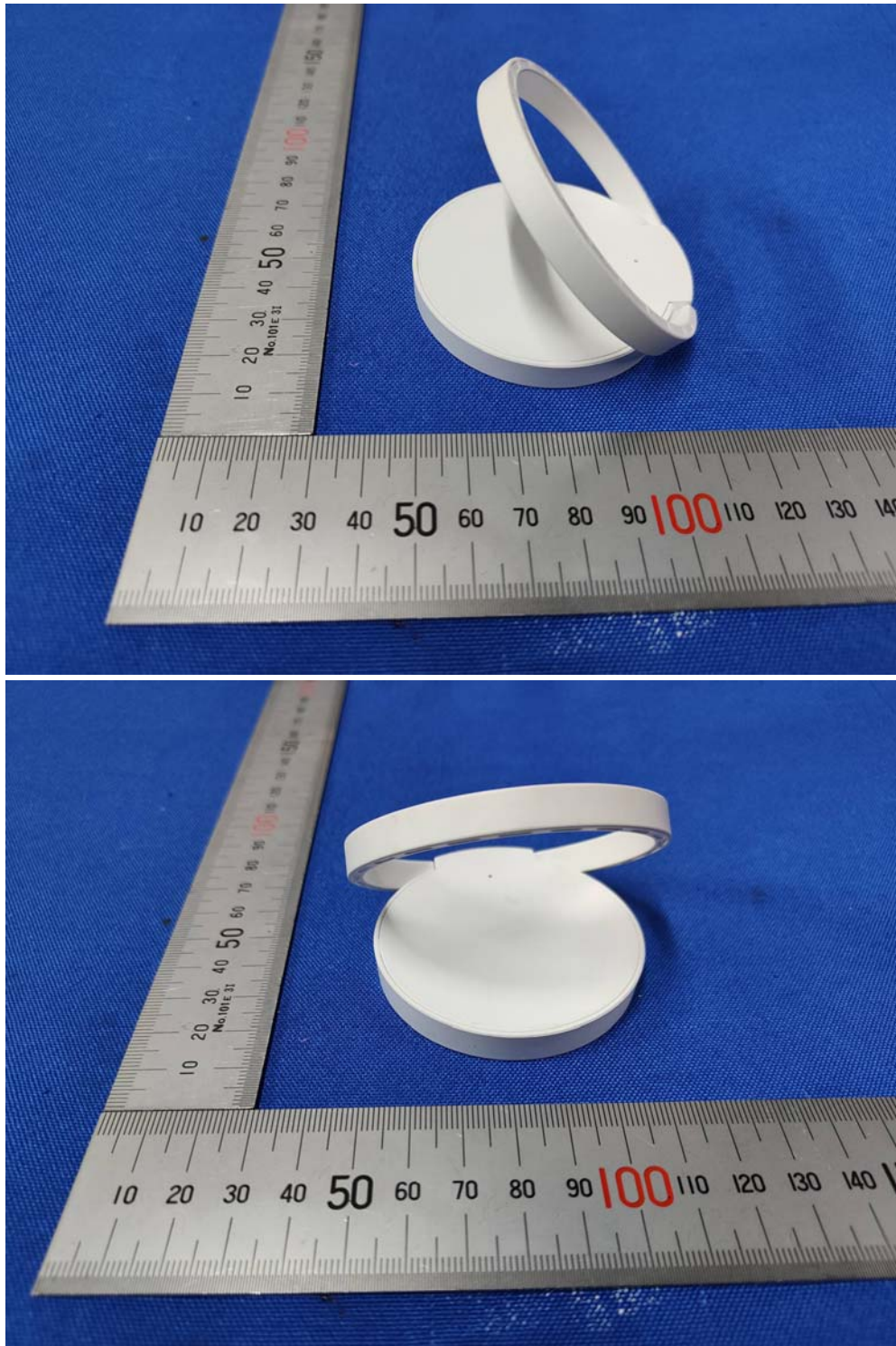
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Inside View



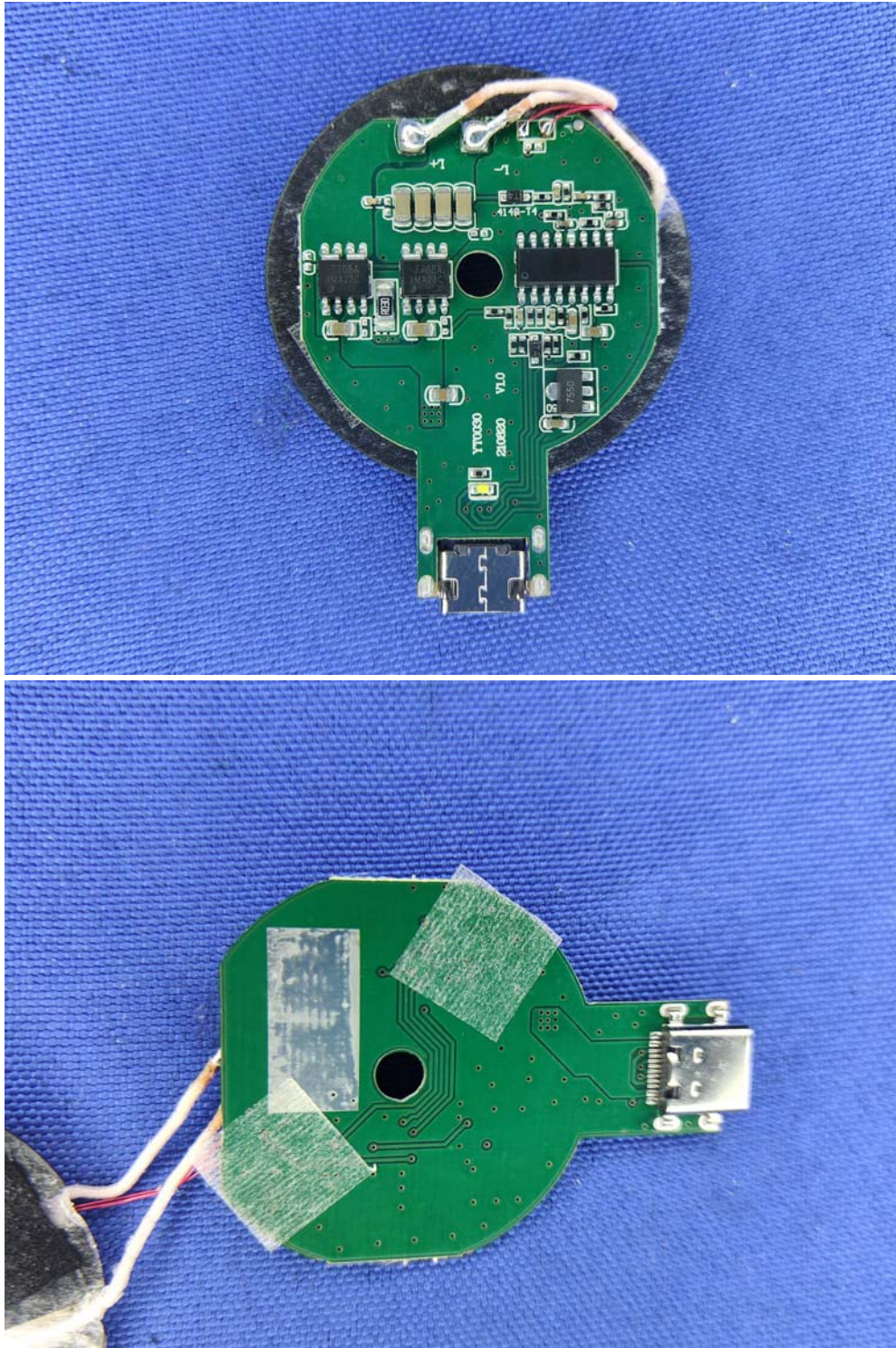
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Inside View



-End of the report-

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