



TEST REPORT

FCC PART 15 SUBPART C

Report Reference No..... : **CTL2309081011-WF**

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Address..... : Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, Shenzhen, China 518055

Applicant's name : **Yuwei Technology (Dongguan) Co., Ltd.**

Address..... : Room 302, Building 1, No. 3, Buxinji Industrial Road, Fenggang, Dongguan, Guangdong, China

Test specification:

Standard : FCC Part 15C

Master TRF : Dated 2011-01

Test item description : Power Bank

FCC ID : **2AZK8-AW020P**

Trade Mark..... : N/A

Model/Type reference : AW020P

Antenna type..... : Loop Antenna

Date of receipt of test item : Sep. 11, 2023

Date of Test Date : Sep. 11, 2023–Sep. 19, 2023

Data of Issue..... : Sep. 20, 2023

Result..... : **Pass**

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TEST REPORT

Test Report No. :	CTL2309081011-WF	Sep. 20, 2023
		Date of issue

Equipment under Test : Power Bank

Type / Model(s) : AW020P

Applicant : **Yuwei Technology (Dongguan) Co., Ltd.**

Address : Room 302, Building 1, No. 3, Buxinji Industrial Road, Fenggang, Dongguan, Guangdong, China

Manufacturer : **Yuwei Technology (Dongguan) Co., Ltd.**

Address : Room 302, Building 1, No. 3, Buxinji Industrial Road, Fenggang, Dongguan, Guangdong, China

Test result	Pass *
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The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the issuing testing laboratory.

Contents

1.	<u>TEST STANDARDS</u>	<u>5</u>
2.	<u>SUMMARY</u>	<u>6</u>
2.1.	General Remarks	6
2.2.	Equipment Under Test	6
2.3.	Short description of the Equipment under Test (EUT)	6
2.4.	EUT operation mode	6
2.5.	EUT configuration	6
2.6.	Related Submittal(s) / Grant (s)	6
2.7.	Modifications	7
2.8.	Summary of Test Results	7
3.	<u>TEST ENVIRONMENT</u>	<u>8</u>
3.1.	Address of the test laboratory	8
3.2.	Test Facility	8
3.3.	Environmental conditions	8
3.4.	Statement of the measurement uncertainty	9
3.5.	Equipments Used during the Test	9
4.	<u>TEST CONDITIONS AND RESULTS.....</u>	<u>10</u>
4.1.	AC Power Conducted Emission	10
4.2.	Radiated Emission	12
4.3.	20dB Bandwidth/99% Bandwidth	16
5.	<u>TEST SETUP PHOTOS OF THE EUT</u>	<u>18</u>
6.	<u>EXTERNAL AND INTERNAL PHOTOS OF THE EUT</u>	<u>20</u>

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](#)

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	Sep 11, 2023
Testing commenced on	:	Sep 11, 2023
Testing concluded on	:	Sep 19, 2023

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage	:	Input: 5V===3A, 9V===2A
		Output 1: 5V===3A, 9V===2.22A, 12V===1.67A
		Output 2: 5V===3A, 9V===2A, 12V===1.5A
		5V===4.5A, 4.5V===5A
		Battery Capacity: 3.85V 10000mAh/38.5Wh
		Lightning Cable: 5V===2.4A
		Wireless Charging: 2.5W

2.3. Short description of the Equipment under Test (EUT)

A Power Bank work frequency range 322.3KHz.

For more details, refer to the user's manual of the EUT.

Serial number: Prototype

2.4. EUT operation mode

The EUT has been tested under typical operating condition. The Applicant provides communication tools software to control the EUT for staying in continuous transmitting mode for testing.

Test Mode 1:	AC full load mode
Test Mode 2:	DC load mode

2.5. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

- - supplied by the manufacturer
- - supplied by the lab

●	Wireless charging simulates the load	Manufacturer :	Yuwei Technology (Dongguan) Co., Ltd.
		Model No. :	N/A
○	AC adapter	Manufacturer :	Shenzhen Huntkey Chiyuan Electric Co., Ltd.
		Model No. :	HW-100200C00

2.6. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: 2AZK8-AW020P** filing to comply with FCC Part 15, Subpart C Rules.

2.7. Modifications

No modifications were implemented to meet testing criteria.

2.8. Summary of Test Results

The EUT is Power Bank , The test summary of the EUT listed as below:

	Test Standards	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
Conducted Emissions	FCC Part 15 C (Section15.207)	PASS

Remark: The measurement uncertainty is not included in the test result.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen CTL Testing Technology Co., Ltd.

Floor 1-A, Baisha Technology Park, No. 3011, Shahexi Road, Nanshan, Shenzhen 518055 China

There is one 3m semi-anechoic chamber and two line conducted labs for final test. The Test Sites meet the requirements in documents ANSI C63.4 and CISPR 22/EN 55022 requirements.

3.2. Test Facility

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

CNAS-Lab Code: L7497

Shenzhen CTL Testing Technology Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No. 4343.01

Shenzhen CTL Testing Technology Co., Ltd, EMC Laboratory 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.

IC Registration No.: 9518B

CAB identifier: CN0041

The 3m alternate test site of Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements with Registration No.: 9518B on Jan. 22, 2019.

FCC-Registration No.: 399832

Designation No.: CN1216

Shenzhen CTL Testing Technology Co., Ltd. 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 399832, December 08, 2017.

3.3. Environmental conditions

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

Temperature:	<u>15-35 ° C</u>
Humidity:	<u>30-60 %</u>
Atmospheric pressure:	<u>950-1050mbar</u>

3.4. Statement of the 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 acc. 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 Shenzhen CTL Testing Technology Co., Ltd. quality system acc. 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 CTL laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	9KHz~30MH	4.10dB	(1)
Radiated Emission	30~1000MHz	4.10dB	(1)
Radiated Emission	Above 1GHz	4.32dB	(1)
Conducted Disturbance	0.15~30MHz	3.20dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

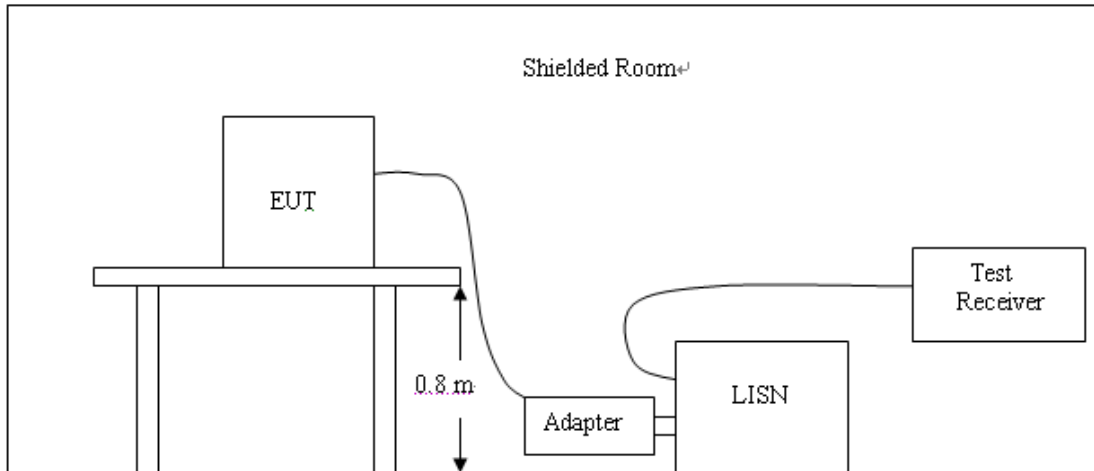
3.5. Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
LISN	R&S	ENV216	3560.6550.1 2	2023/05/04	2024/05/03
LISN	R&S	ESH2-Z5	860014/010	2023/05/04	2024/05/03
Bilog Antenna	Sunol Sciences Corp.	JB1	A061713	2023/05/04	2024/05/03
EMI Test Receiver	R&S	ESCI	1166.5950.0 3	2023/05/04	2024/05/03
Spectrum Analyzer	Agilent	E4407B	MY41440676	2023/05/05	2024/05/04
Spectrum Analyzer	Agilent	N9020A	UQR- 365220290	2023/05/05	2024/05/04
Controller	EM Electronics	EM 1000	060859	2023/05/05	2024/05/04
Horn Antenna	Sunol Sciences Corp.	DRH-118	A062013	2021/12/23	2024/12/22
Active Loop Antenna	Da Ze	ZN30900A	/	2021/05/13	2024/05/12
Amplifier	Agilent	8449B	3008A02306	2023/05/04	2024/05/03
Amplifier	Agilent	8447D	2944A10176	2023/05/04	2024/05/03
Temperature/Humidity Meter	Gangxing	CTH-608	02	2023/05/09	2024/05/08
Spectrum Analyzer	RS	FSP	1164.4391.3 8	2023/05/05	2024/05/04

4. TEST CONDITIONS AND RESULTS

4.1. AC Power Conducted Emission

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 EUT received DC5V power from the adapter, 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.
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

AC Power Conducted Emission Limit

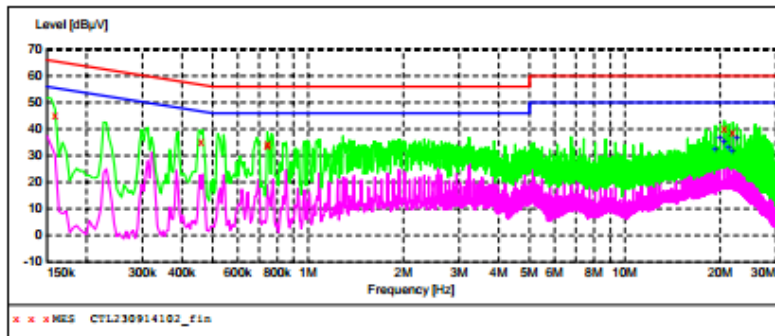
For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following :

Frequency (MHz)	Maximum RF Line Voltage (dB μ V)			
	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

TEST RESULTS

SCAN TABLE: "Voltage (9K-30M) FIN"
 Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL230914102_fin"

9/14/2023 9:02AM

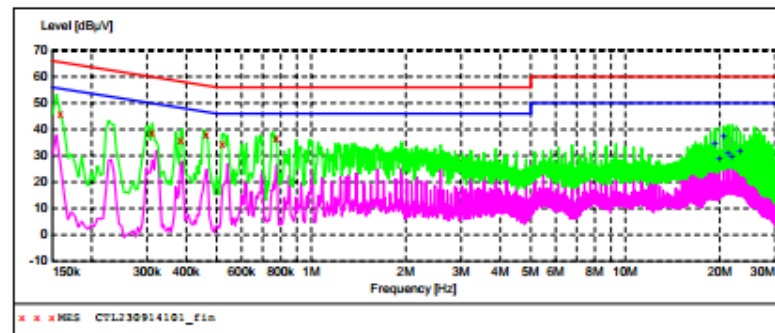
Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	FE
0.159000	45.50	10.0	66	20.0	QP	L1	GND
0.460500	35.40	10.0	57	21.3	QP	L1	GND
0.744000	34.10	10.1	56	21.9	QP	L1	GND
0.748500	34.50	10.1	56	21.5	QP	L1	GND
20.620500	39.90	11.2	60	20.1	QP	L1	GND
21.912000	38.70	11.3	60	21.3	QP	L1	GND

MEASUREMENT RESULT: "CTL230914102_fin2"

9/14/2023 9:02AM

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	FE
19.333500	32.50	11.1	50	17.5	AV	L1	GND
19.977000	36.40	11.1	50	13.6	AV	L1	GND
20.620500	35.00	11.2	50	15.0	AV	L1	GND
21.264000	33.00	11.2	50	17.0	AV	L1	GND
21.907500	31.50	11.3	50	18.5	AV	L1	GND
22.555500	36.60	11.3	50	13.4	AV	L1	GND

SCAN TABLE: "Voltage (9K-30M) FIN"
 Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL230914101_fin"

9/14/2023 8:59AM

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	FE
0.159000	46.20	10.0	66	19.3	QP	N	GND
0.312000	38.90	10.0	60	21.0	QP	N	GND
0.384000	36.10	10.0	58	22.1	QP	N	GND
0.465000	38.30	10.0	57	18.3	QP	N	GND
0.523500	34.30	10.0	56	21.7	QP	N	GND
0.775500	36.40	10.1	56	19.6	QP	N	GND

MEASUREMENT RESULT: "CTL230914101_fin2"

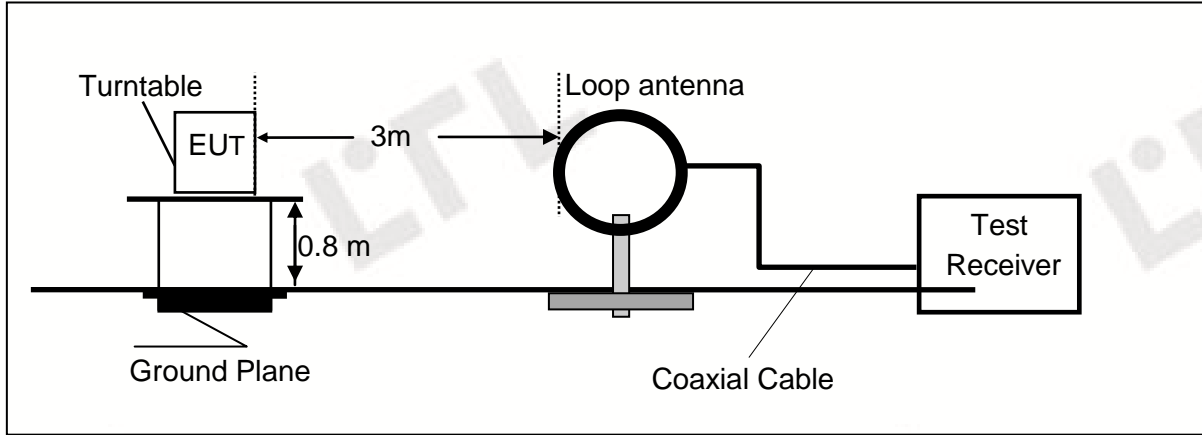
9/14/2023 8:59AM

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	FE
19.329000	34.70	11.1	50	15.3	AV	N	GND
19.977000	28.90	11.1	50	21.1	AV	N	GND
20.616000	37.00	11.2	50	13.0	AV	N	GND
21.259500	30.70	11.2	50	19.3	AV	N	GND
21.903000	29.40	11.3	50	20.6	AV	N	GND
23.194500	32.00	11.4	50	18.0	AV	N	GND

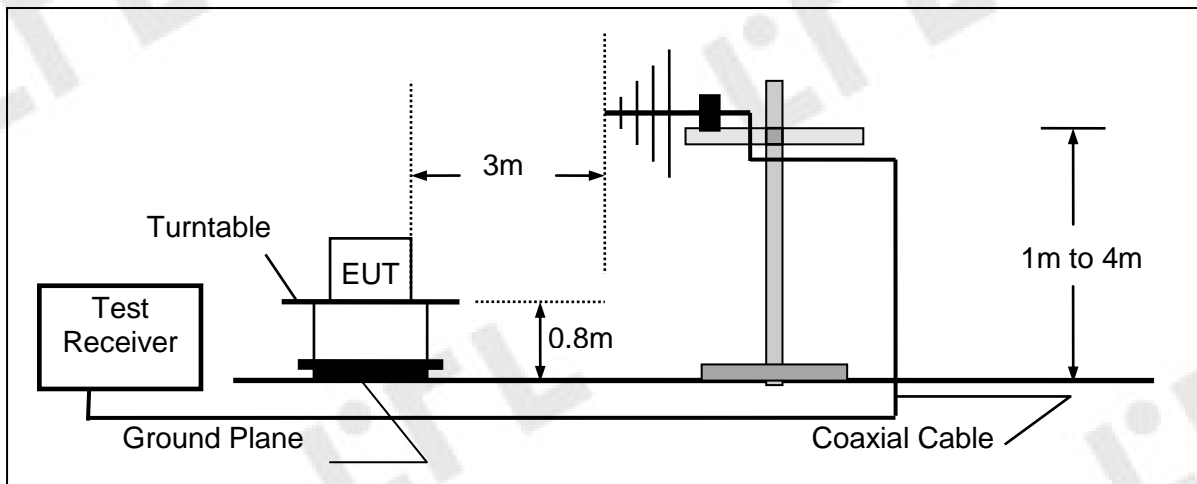
4.2. Radiated Emission

TEST CONFIGURATION

Radiated Emission Test Set-Up
Frequency range 9KHz – 30MHz



Frequency range 30MHz – 1000MHz



TEST PROCEDURE

- 1 The EUT was placed on a turn table which is 0.8m above ground plane.
- 2 Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0°C to 360°C 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.

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

For example

Frequency (MHz)	FS (dB μ V/m)	RA (dB μ V/m)	AF (dB)	CL (dB)	AG (dB)	Transd (dB)
300.00	40	58.1	12.2	1.6	31.90	-18.1

$$\text{Transd} = \text{AF} + \text{CL} - \text{AG}$$

RADIATION LIMIT

Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

9k~30MHz:

Frequency Range (MHz)	E-field Strength Limit @ 30m (mV/m)	E-field Strength Limit @ 3m (dB μ V/m)
0.009-0.490	2400/F(kHz)	129-94
0.490-1.705	24000/F(kHz)	74-63
1.705-30	30	70

Note: Where the limits have been defined at one distance, and a signal level measured at another, the limits have been extrapolated using the following formula:

$$\text{Extrapolation(dB)} = 40 \log_{10}(\text{Measurement Distance} / \text{Specification Distance})$$

Note:

- (1) The tighter limit shall apply at the edge between two frequency bands.
- (2) dB μ V/m = 20*log(uV/m)

30M~1GHz:

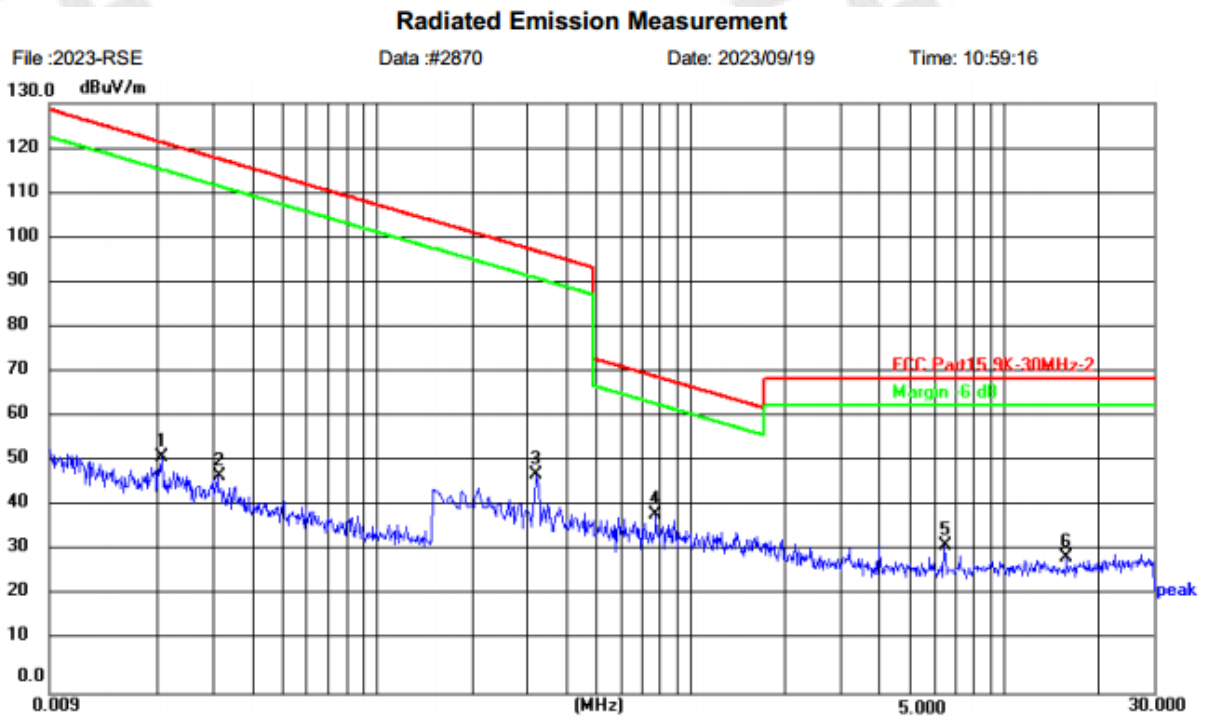
Frequency (MHz)	Distance (Meters)	Radiated (dB μ V/m)	Radiated (μ V/m)
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

Note:

- (1) The tighter limit shall apply at the edge between two frequency bands.
- (2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

TEST RESULTS

WORST-CASE RADIATED EMISSION BELOW 30 MHz
Test Mode 1

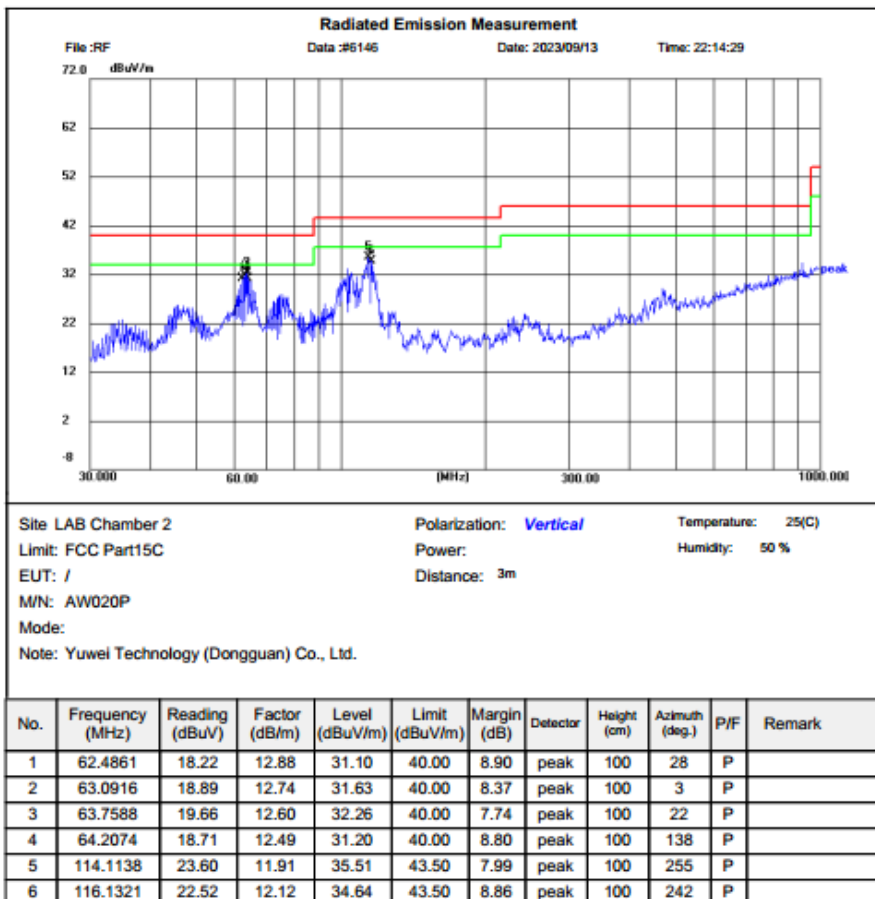
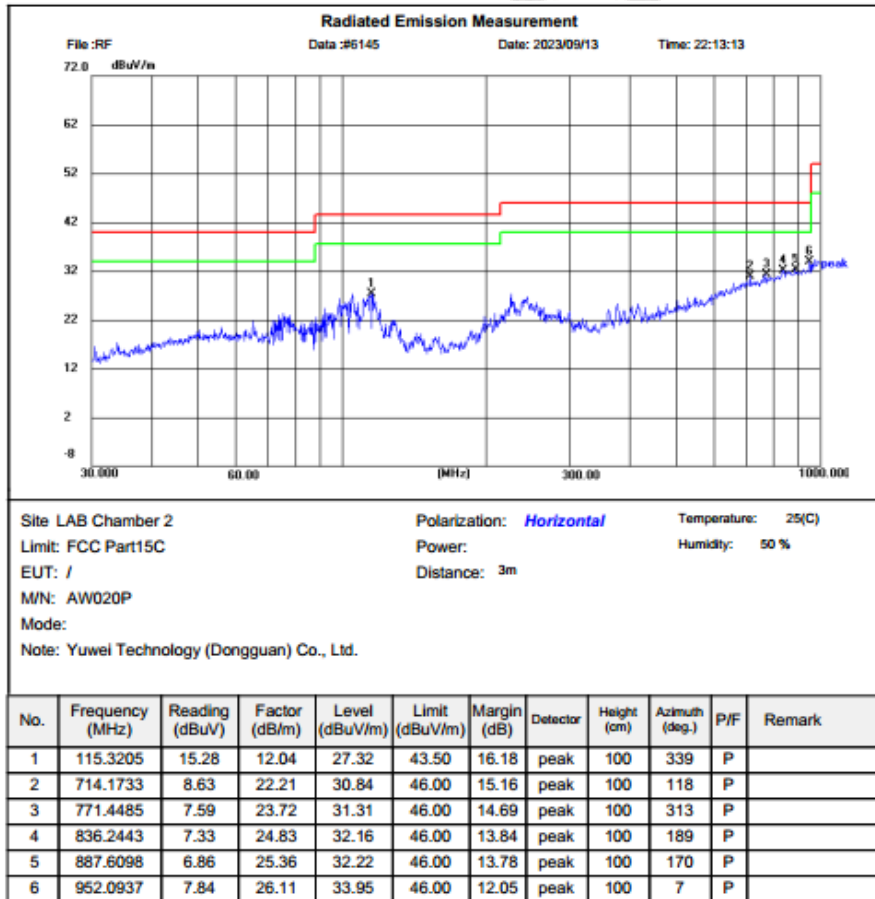


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.0206	31.63	20.48	52.11	121.33	69.22	peak	P	
2	0.0311	27.38	20.44	47.82	117.75	69.93	peak	P	
3	0.3220	28.29	20.12	48.41	97.45	49.04	peak	P	
4	0.7780	19.33	20.06	39.39	69.78	30.39	peak	P	
5	6.4460	12.86	19.91	32.77	69.54	36.77	peak	P	
6	15.8580	10.22	19.75	29.97	69.54	39.57	peak	P	

Note:

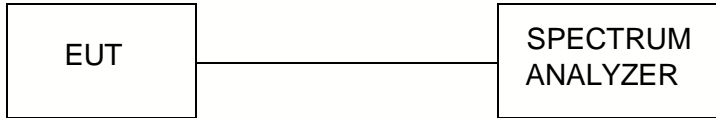
- 1. Both Mode 1 and Mode 2 were tested and only the worst mode was recorded as Mode 1 in the report.
- 2. Emission level dB μ V/m for 0.009~30MHz = 20log (15) + 40log (300/3) dB μ V/m;

Radiated Emission Test Data 30-1000MHz:



4.3. 20dB Bandwidth/99% Bandwidth

TEST CONFIGURATION



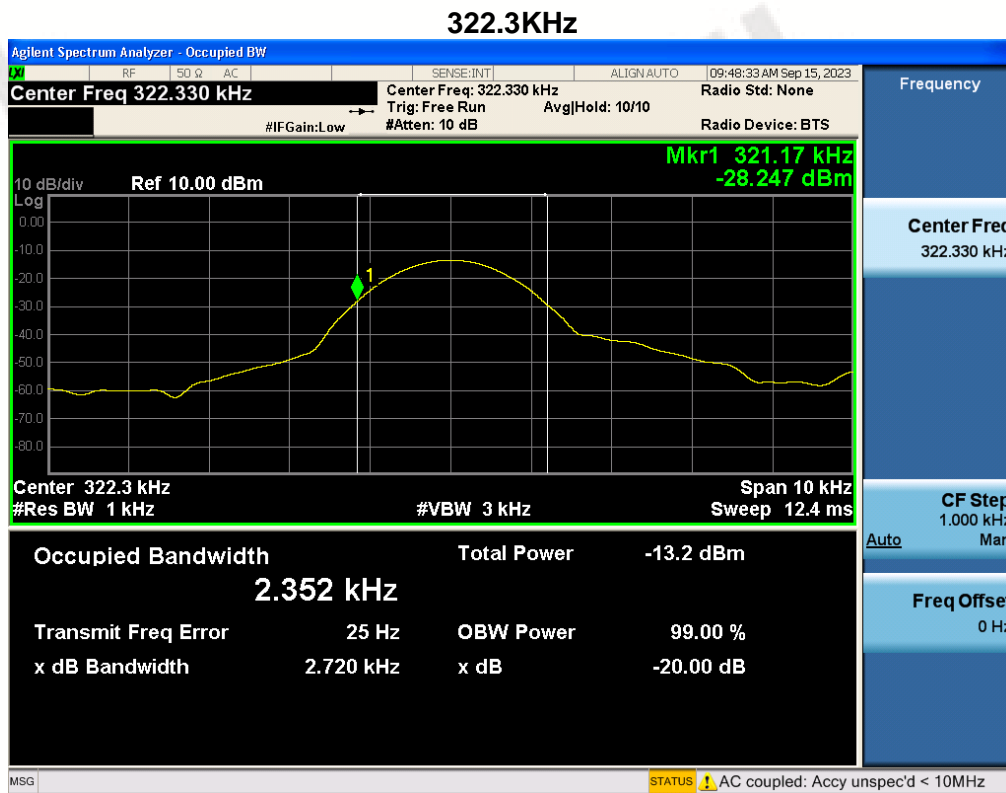
TEST PROCEDURE

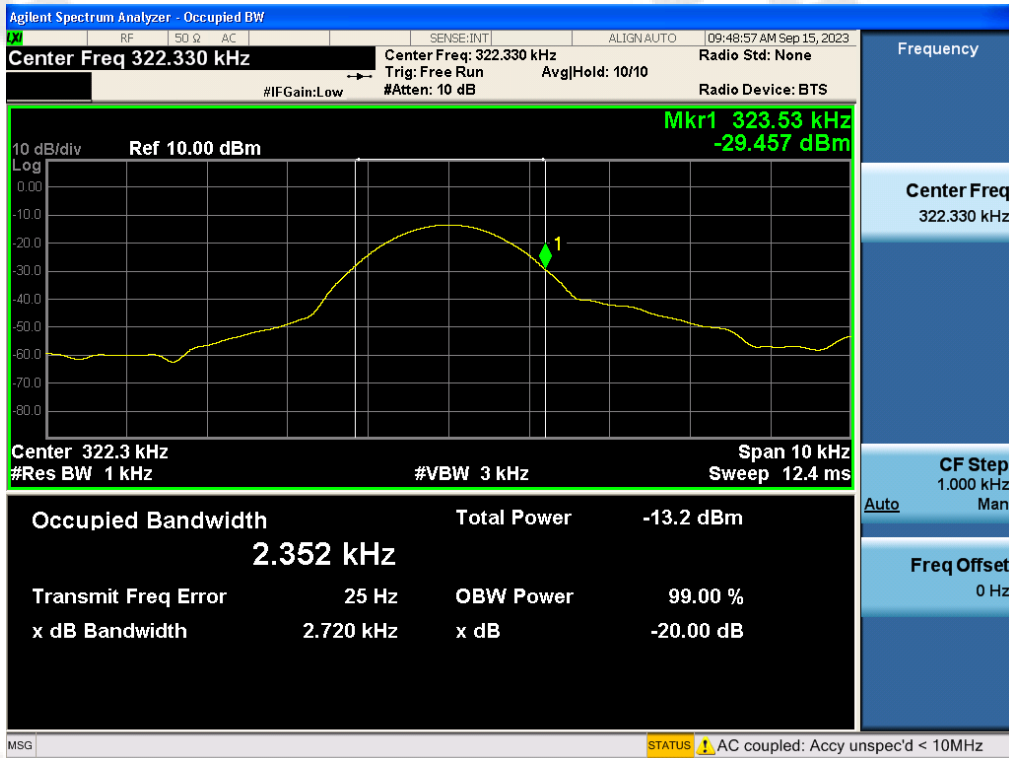
The bandwidth of the fundamental frequency was measured by spectrum analyzer with 1KHz RBW and 3KHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

LIMIT

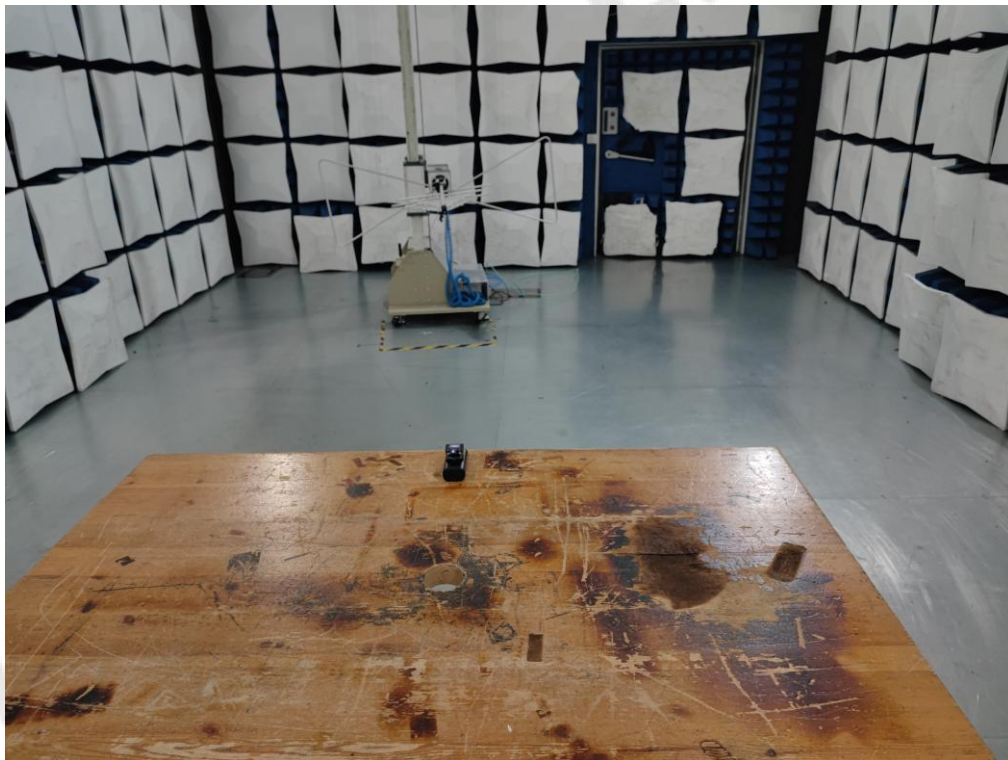
The 20dB bandwidth shall be less than 80% of the permitted frequency band.

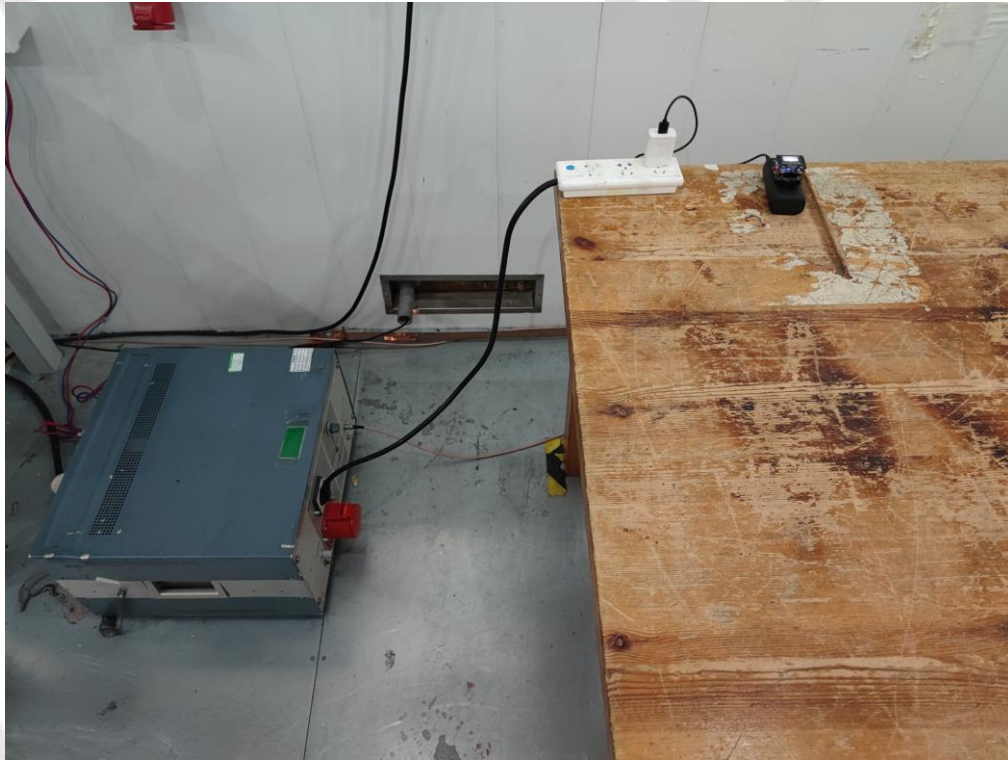
TEST RESULTS





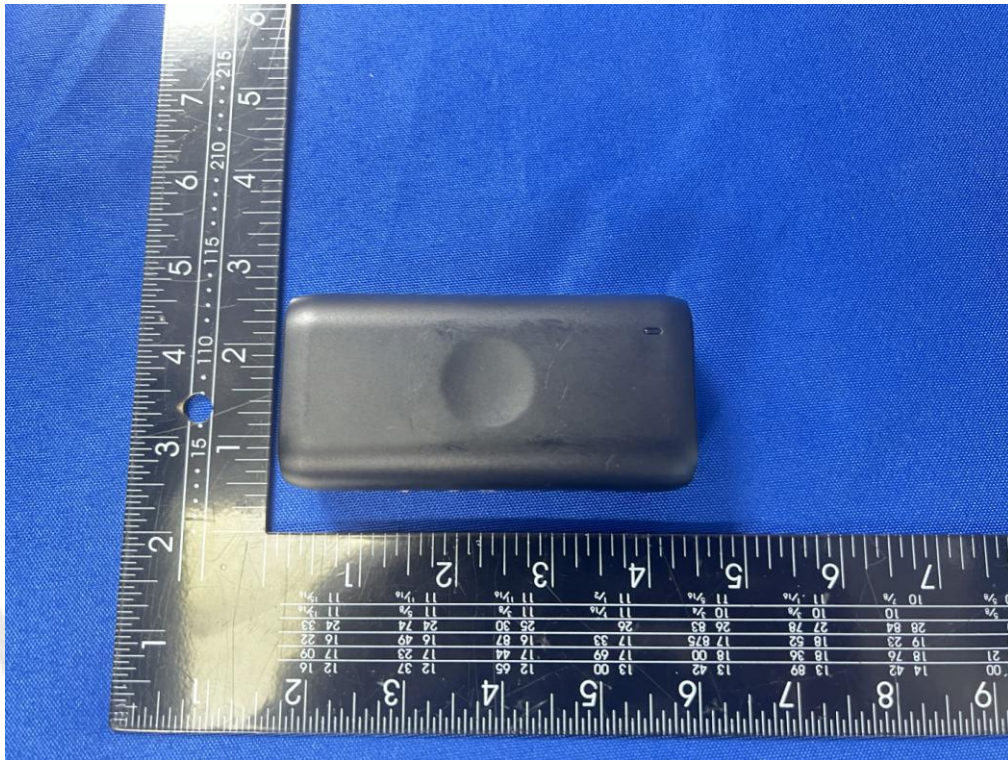
5. Test Setup Photos of the EUT

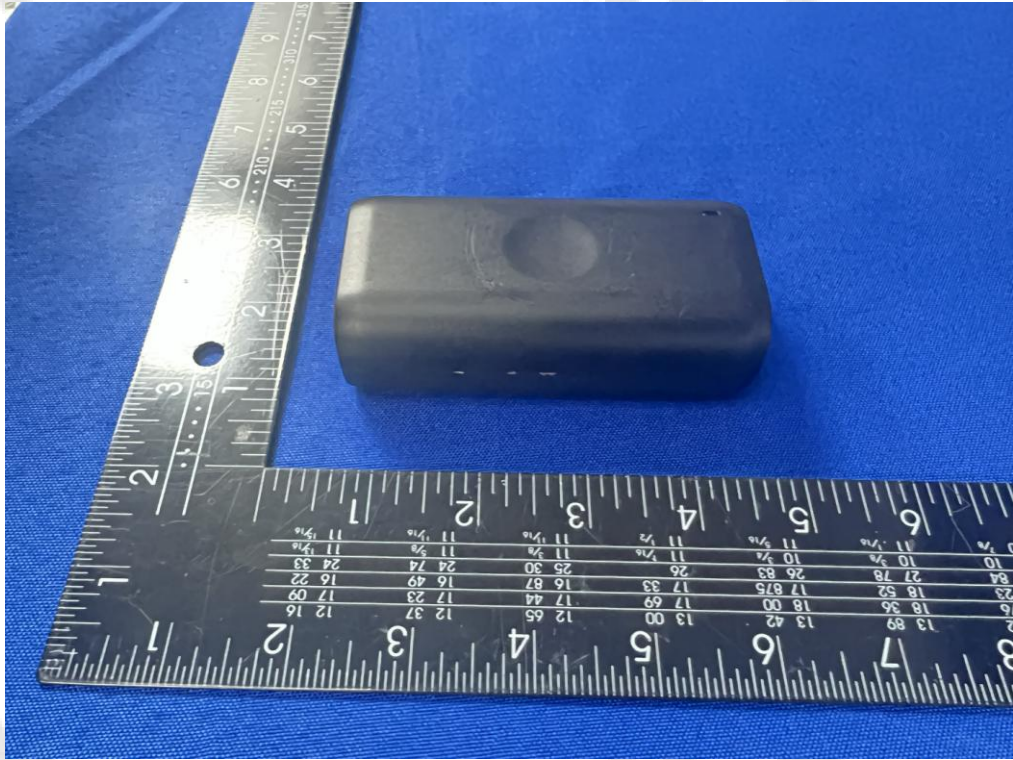


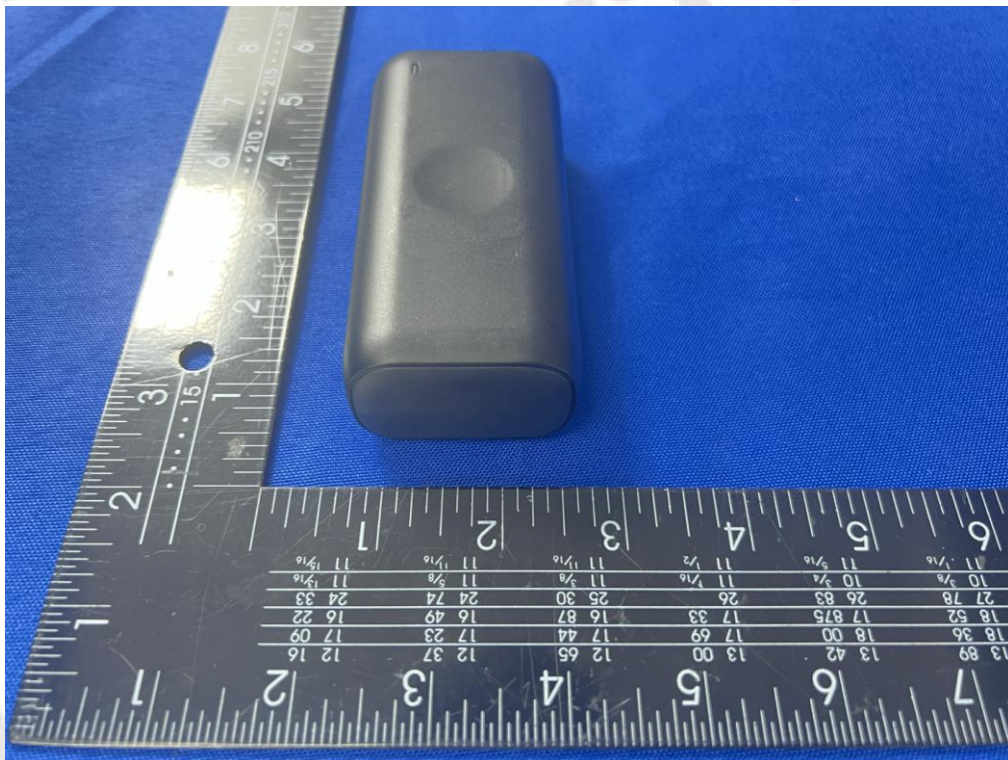
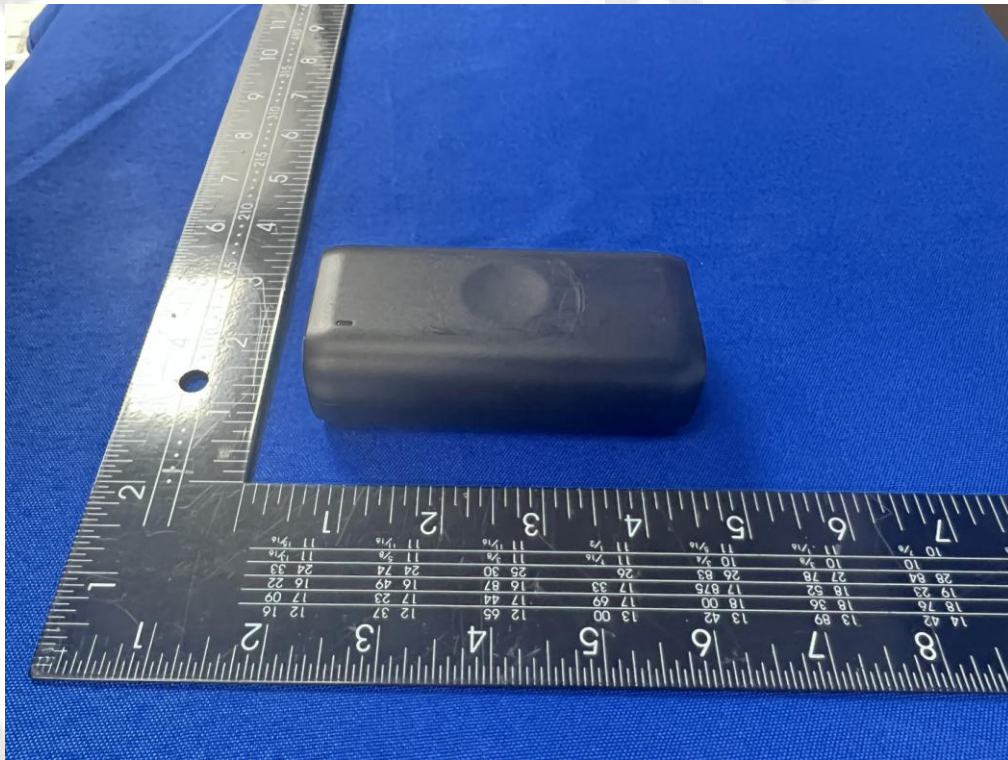


6. External and Internal Photos of the EUT

External Photos of EUT

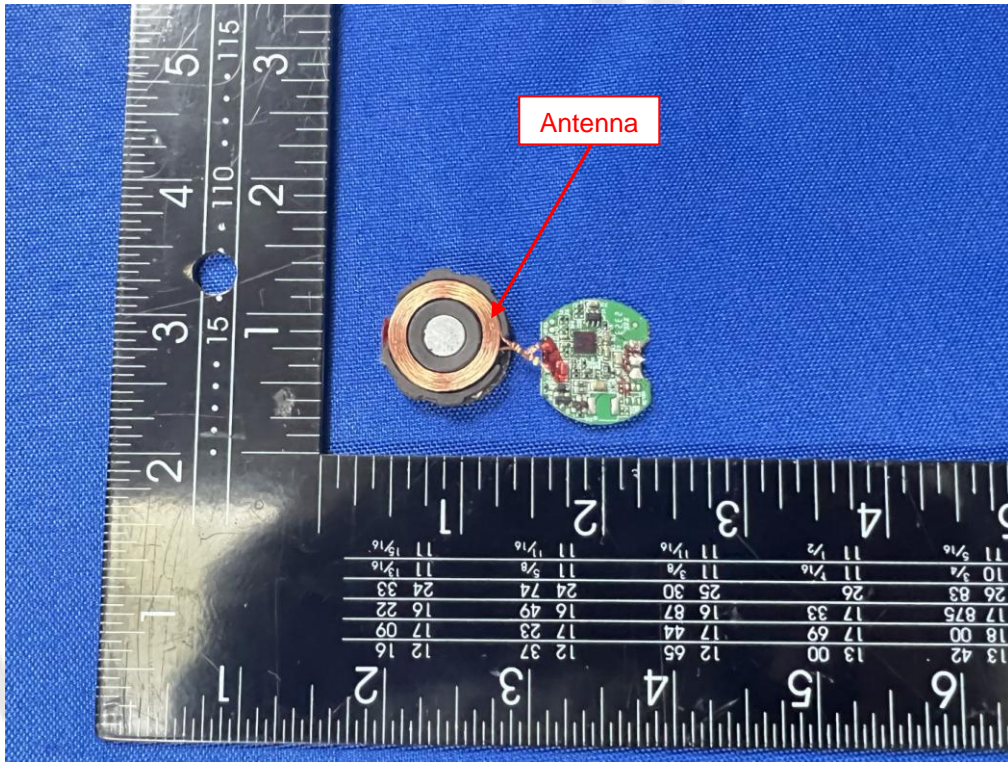
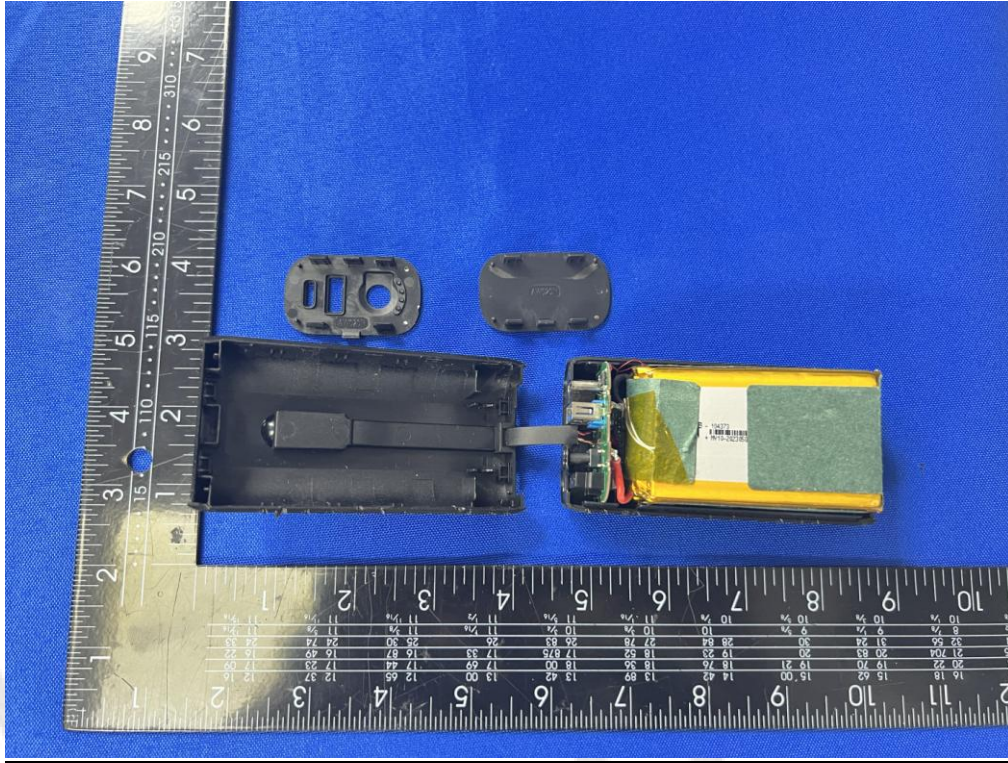


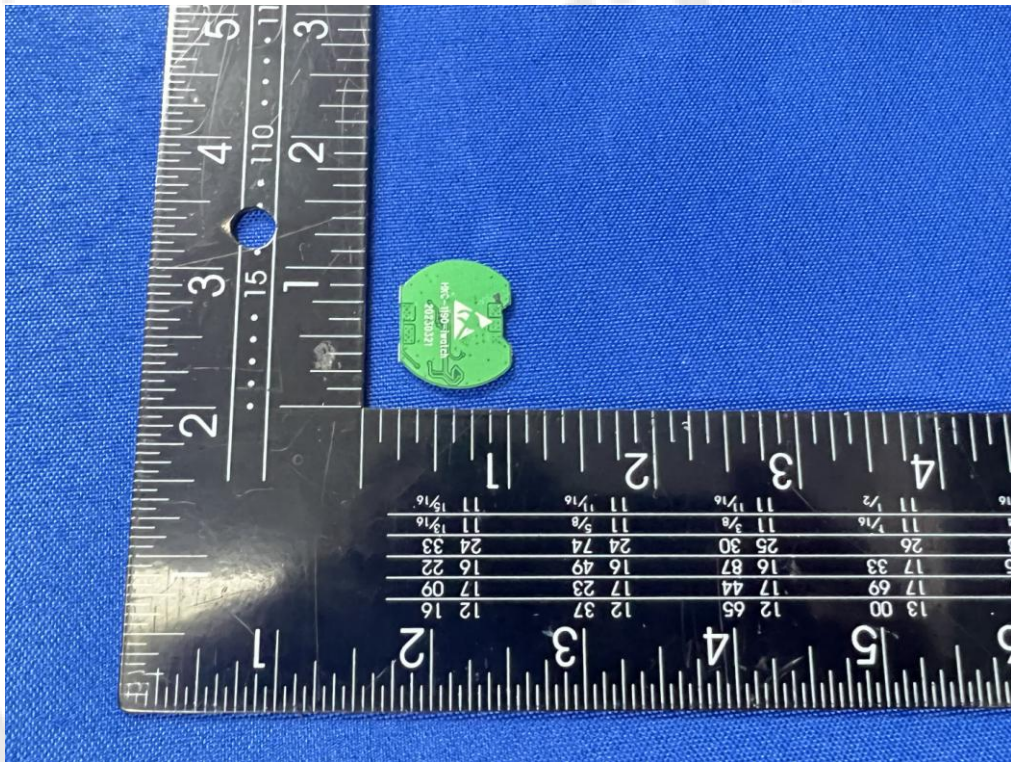
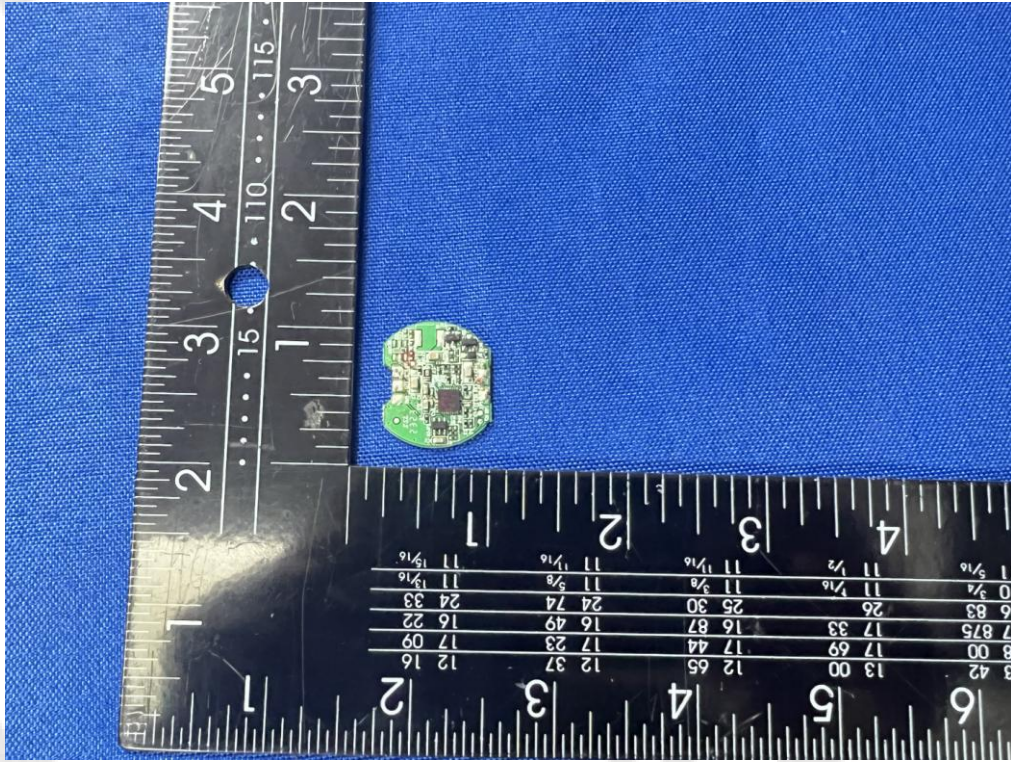


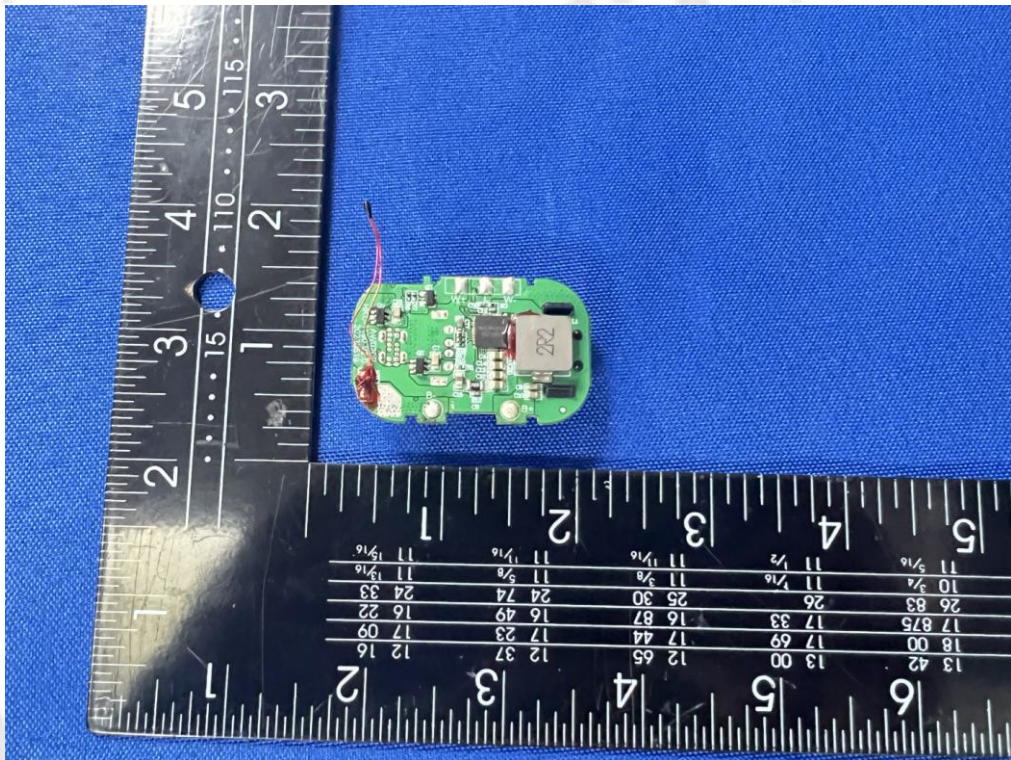
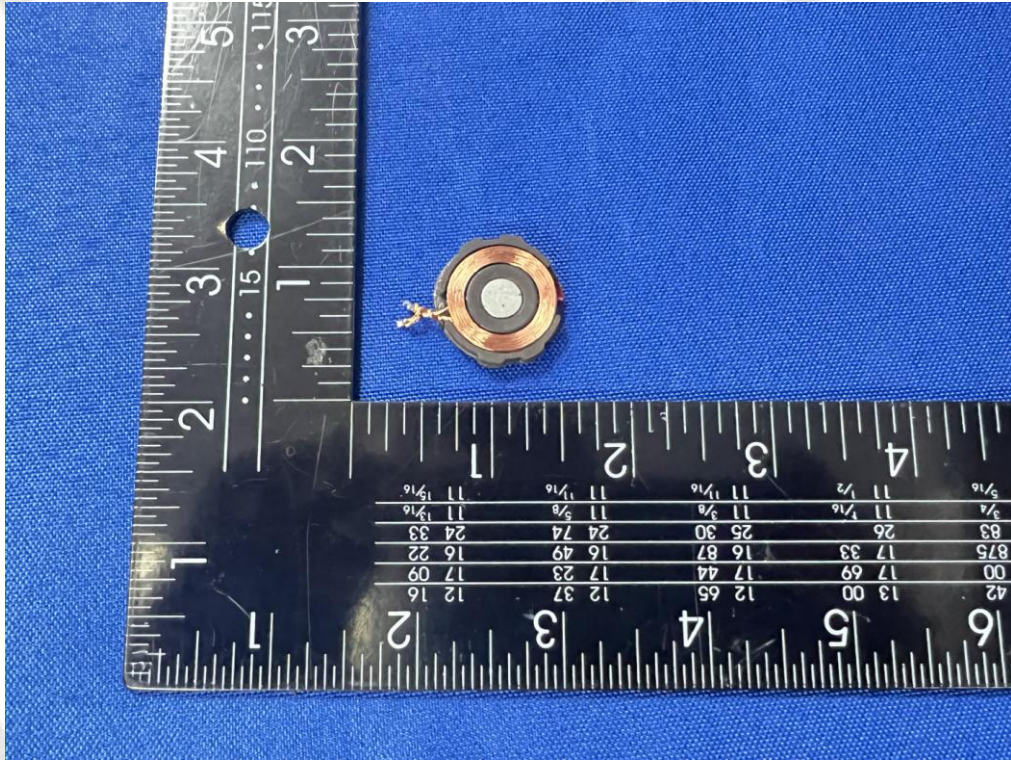


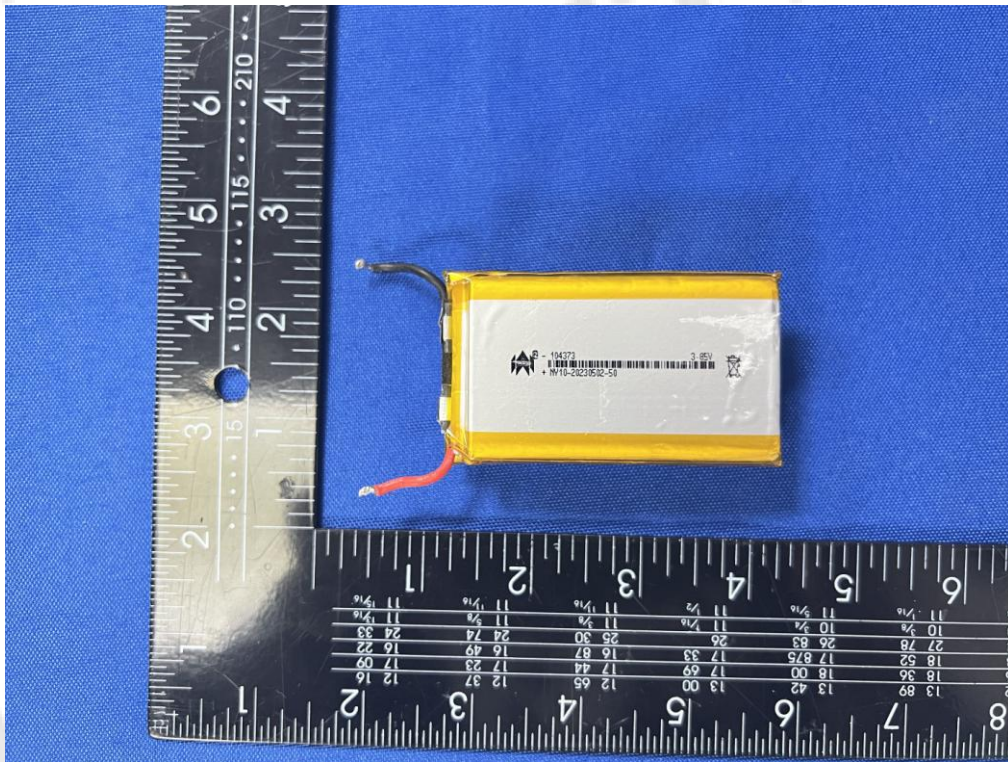
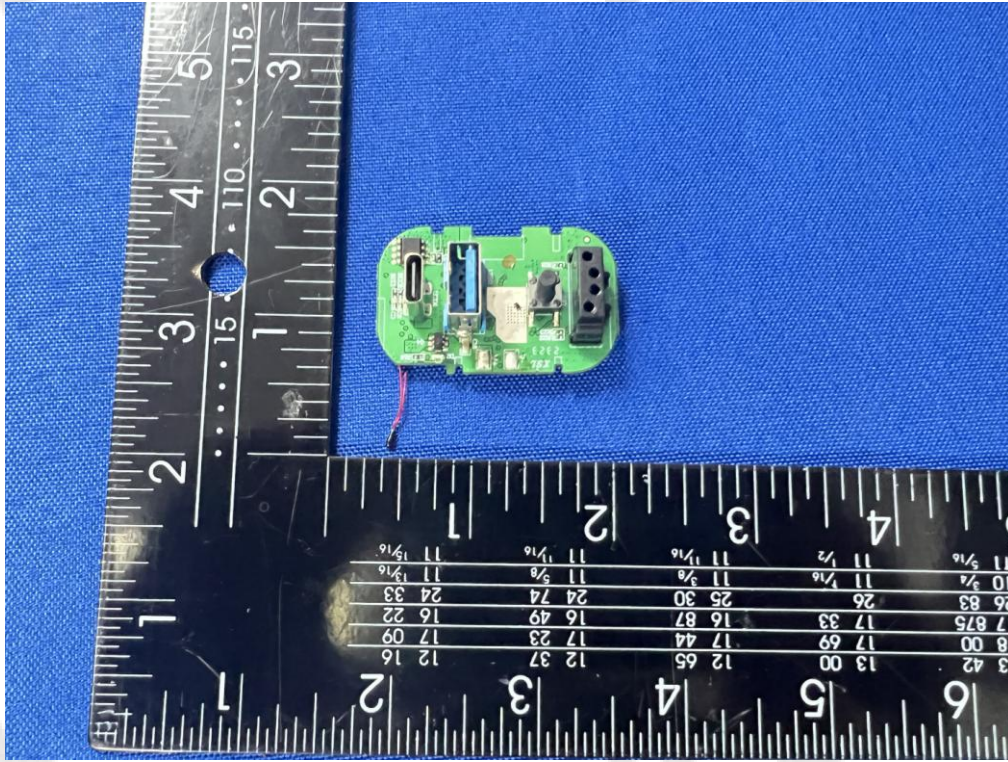


Internal Photos of EUT









.....End of Report.....