TEST REPORT

Product Name	:	Power Bank
Brand Name	:	HALO, NEBO
Model	:	HPB-RP200000F
Series Model	:	N/A
FCC ID	:	2BASY-HPBRP200
Applicant	:	**Alliance Sports Group., LP**
Address	:	700 Henrietta Creek Rd. Roanoke TX 76262 USA
Manufacturer	:	**SHENZHEN TRUSDA INDUSTRIAL CO.,LTD.**
Address	:	201-301, Building 4, Lianchuang Technology Park, No.21, Bulan Road, Nanwan Street, Longgang District, Shenzhen, Guangdong, China
Standard(s)	:	FCC CFR Title 47 Part 15 Subpart C
Date of Receipt	:	Dec. 10, 2024
Date of Test	:	Dec. 10, 2024~ Dec. 26, 2024
Issued Date	:	Dec. 27, 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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Sean She

Report Revise Record

Report Version	Issued Date	Notes
M1	Dec. 27, 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:	Power Bank
Model/Type reference:	HPB-RP200000F
Serial Model:	N/A
Power Rating:	Capacity:22.2V/9000mAh/199.8wh Rated Output Capacity: 9500mAh Min (USB C1 20V) USB C1 Input:5V/3A,9V/3A,12V/3A,15V/3A,20V/3A,60W USB C1 Output:5V/3A,9V/3A,12V/3A,15V/3A,20V/5A,28V/5A,140W USB C2 Output:5V/3A,9V/2.22A,12V/1.5A,20W(max) USB A1 Output:5V/3A,9V/2A,12V/1.5A,18W(max) USB A2 Output:5V/3A,9V/2A,12V/1.5A,18W(max) Wireless Charging: 5W, 7.5W, 10W, 15W USB C1+USB C2+(USB A1+USB A2)+TX Output=100W+20W+(15W)+15W
Adapter information:	Model: PD20W-03 Input: 100-240V~ 50/60Hz 0.6A Output:5.0V⎓3.0A/9.0V⎓2.22A/12.0V⎓1.67A
Hardware Version:	N/A
Software Version:	N/A
Sample(s) Status:	AiTSZ-241210050-1(Normal sample) AiTSZ-241210050-02(Engineer sample)
Wireless Charger:	
Operation frequency:	110kHz-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 Adapter + EUT + Phone (Battery Status: < 1%)+other line output loaded	Record
Mode 2	AC Adapter + EUT + Phone (Battery Status: < 50%)+other line output loaded	Pre-tested
Mode 3	AC Adapter + EUT + Phone (Battery Status: < 99%)+other line output loaded	Pre-tested
Mode 4	EUT+ Phone (Battery Status: < 1%)+other line output loaded	Pre-tested
Mode 5	EUT+ Phone (Battery Status: < 50%)+other line output loaded	Pre-tested
Mode 6	EUT+ Phone (Battery Status: < 99%)+other line output loaded	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
Phone	Apple	Iphone 14	/	Test lab	15W Max
Adjustable resistor	/	/	/	Test lab	50Ω 5A Max
Cement resistor	/	/	/	Test lab	8Ω 3A Max
Power Bank	/	/	/	Test lab	20W Max

2.5 Equipment List for the Test

No	Test Equipment	Manufacturer	Model No	Serial No	Cal. Date	Cal. Due Date
1	EMI Measuring Receiver	R&S	ESR	101160	2024.09.25	2025.09.24
2	Spectrum Analyzer	R&S	FSV40	101470	2024.09.23	2025.09.22
3	Low Noise Pre Amplifier	SCHWARZBECK	BBV 9745	00282	2024.09.25	2025.09.24
4	Low Noise Pre Amplifier	CESHENG	CSKJLNA231016A	CSKJLNA231016A	2024.09.25	2025.09.24
5	Passive Loop	ETS	6512	00165355	2024.08.29	2027.08.28
6	TRILOG Super Broadband test Antenna	SCHWARZBECK	VULB9168	01434	2024.08.29	2027.08.28
7	Broadband Horn Antenna	Schwarzbeck	BBHA 9120D	452	2024.08.29	2027.08.28
8	Horn Antenna 15-40GHz	SCHWARZBECK	BBHA9170	BBHA9170367	2024.08.28	2027.08.27
9	6dB Attenuator	JFW	50FPE-006	4360846-949-1	2024.09.24	2025.09.23
10	EMI Test Receiver	R&S	ESPI	100771	2024.09.25	2025.09.24
11	LISN	R&S	NNLK 8129	8130179	2024.09.24	2025.09.23
12	LISN	R&S	ESH3-Z5	892785/016	2024.09.23	2025.09.22
13	Pulse Limiter	R&S	ESH3-Z2	102789	2024.09.24	2025.09.23
14	RF Automatic Test system	TST	TSTPASS	21033016	2024.09.25	2025.09.24
15	Vector Signal Generator	Agilent	N5182A	MY50143009	2024.09.25	2025.09.24
16	Analog signal generator	Agilent	E8257	MY51554256	2024.09.25	2025.09.24
17	Spectrum Analyzer	Agilent	N9020A	MY51289843	2024.09.25	2025.09.24
18	Spectrum Analyzer	Agilent	N9020A	MY53421570	2024.09.25	2025.09.24
19	Power Sensor	Agilent	8481A	MY41097697	2024.09.25	2025.09.24
20	Wideband Radio communication tester	R&S	CMW500	1201.0002K50	2024.09.24	2025.09.23
21	DC power supply	ZHAOXIN	RXN-305D-2	28070002559	N/A	N/A
22	RE Software	EZ	EZ-EMC_RE	Ver.AIT-03A	N/A	N/A
23	CE Software	EZ	EZ-EMC_CE	Ver.AIT-03A	N/A	N/A
24	RF Software	TST	TSTPASS	Version 2.0	N/A	N/A
25	RF Software	cesheng	WCS-WCN	Version 2024.6.20	N/A	N/A
26	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

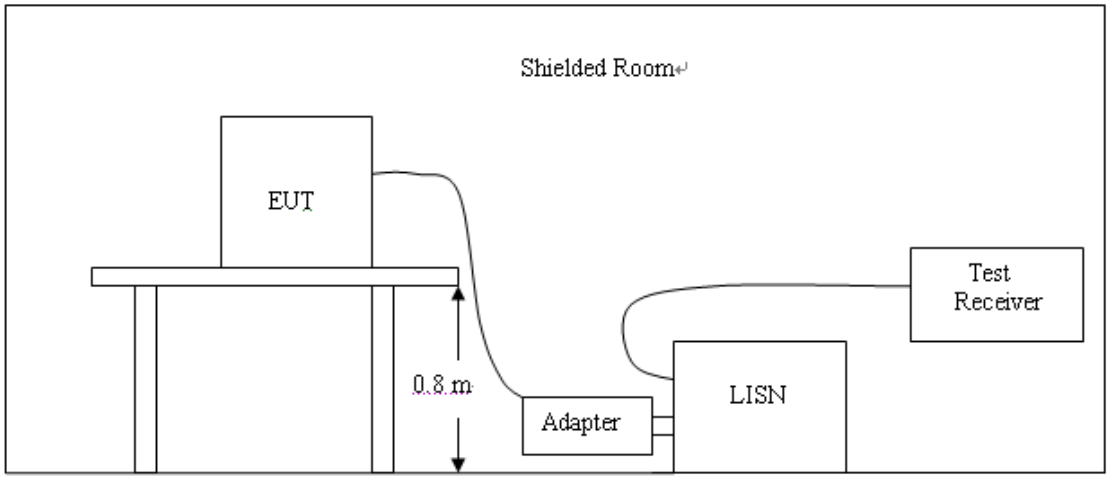
3.1 Conducted Emissions Test

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



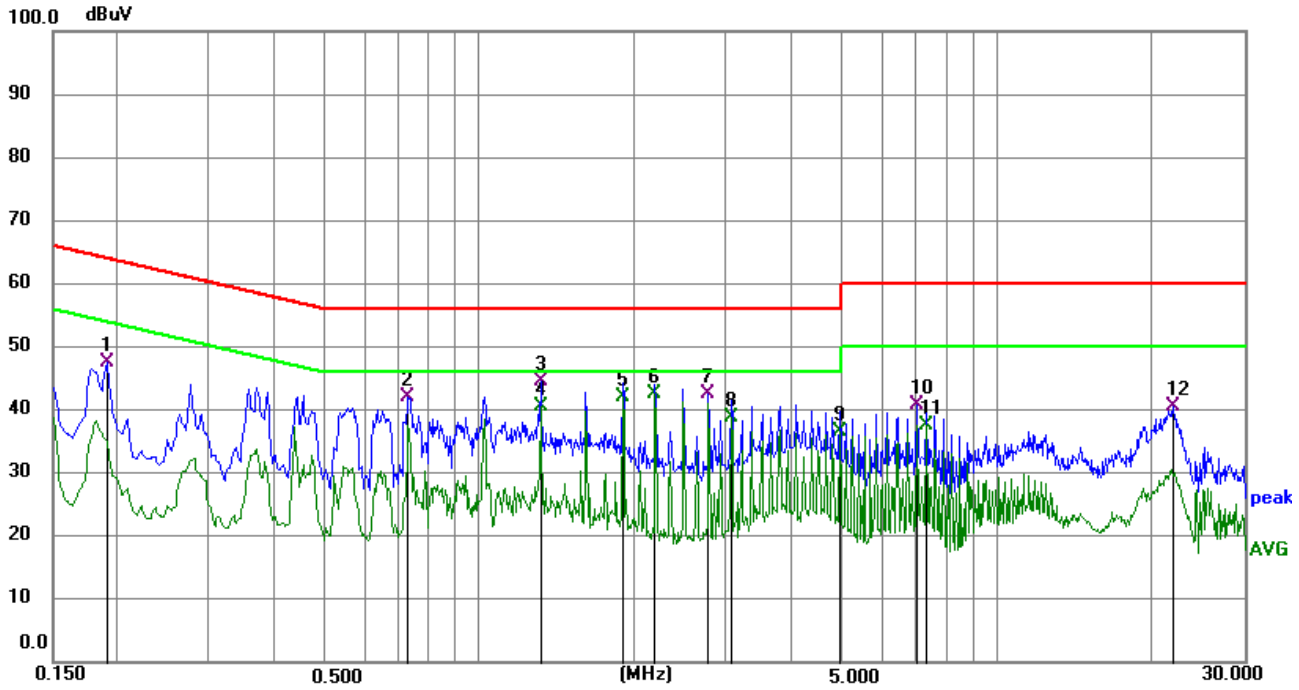
TEST PROCEDURE

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:

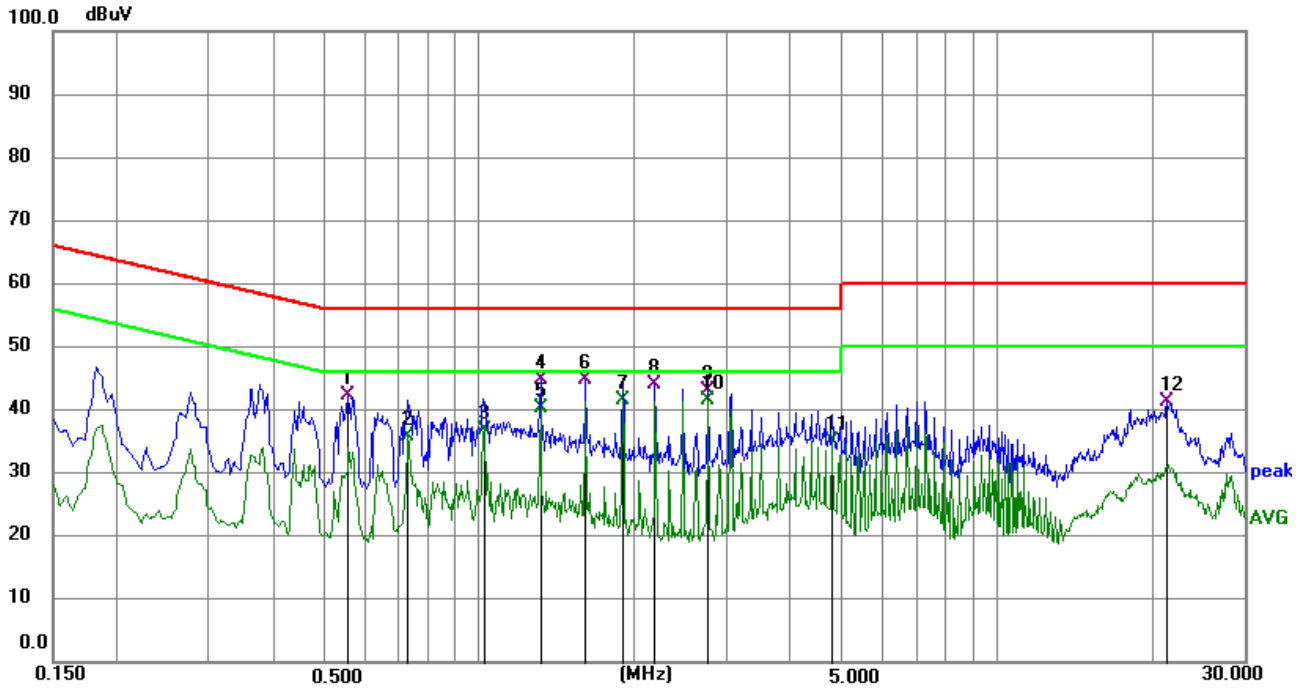
Test Mode	Mode 1	Line:	L



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	0.1905	36.84	10.69	47.53	64.01	-16.48	QP
2	0.7304	31.31	10.67	41.98	56.00	-14.02	QP
3	1.3154	33.92	10.69	44.61	56.00	-11.39	QP
4	1.3154	29.78	10.69	40.47	46.00	-5.53	AVG
5	1.8960	31.28	10.77	42.05	46.00	-3.95	AVG
6	2.1885	31.63	10.79	42.42	46.00	-3.58	AVG
7	2.7735	31.65	10.80	42.45	56.00	-13.55	QP
8	3.0705	27.93	10.79	38.72	46.00	-7.28	AVG
9	4.9740	25.45	11.02	36.47	46.00	-9.53	AVG
10	7.0035	29.83	11.04	40.87	60.00	-19.13	QP
11	7.2960	26.49	11.05	37.54	50.00	-12.46	AVG
12	21.8310	28.72	11.74	40.46	60.00	-19.54	QP

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	0.5594	31.63	10.68	42.31	56.00	-13.69	QP
2	0.7304	25.17	10.66	35.83	46.00	-10.17	AVG
3	1.0230	26.12	10.64	36.76	46.00	-9.24	AVG
4	1.3110	34.09	10.68	44.77	56.00	-11.23	QP
5	1.3110	29.50	10.68	40.18	46.00	-5.82	AVG
6	1.6034	33.96	10.72	44.68	56.00	-11.32	QP
7	1.8960	30.76	10.76	41.52	46.00	-4.48	AVG
8	2.1884	33.22	10.78	44.00	56.00	-12.00	QP
9	2.7690	32.32	10.79	43.11	56.00	-12.89	QP
10	2.7690	30.72	10.79	41.51	46.00	-4.49	AVG
11	4.8075	24.08	11.01	35.09	46.00	-10.91	AVG
12	21.3000	29.65	11.67	41.32	60.00	-18.68	QP

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.

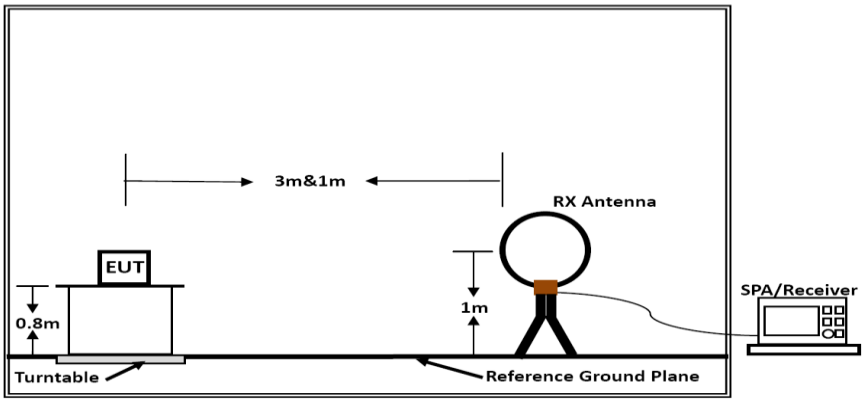
In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a)

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

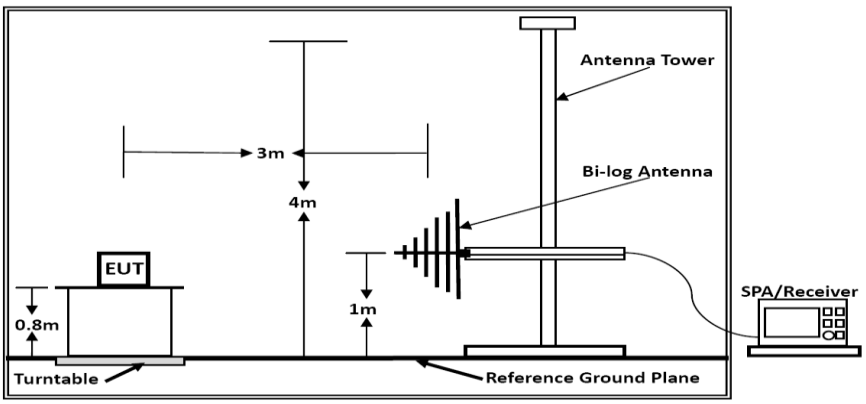
TEST CONFIGURATION

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



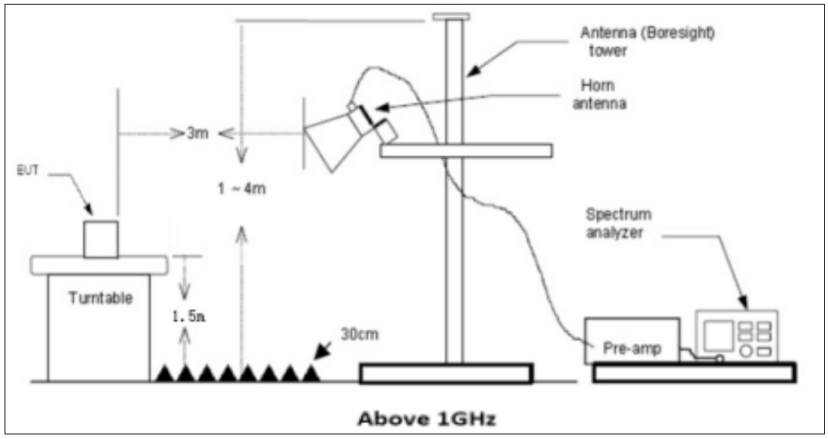
Below 30MHz

(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:

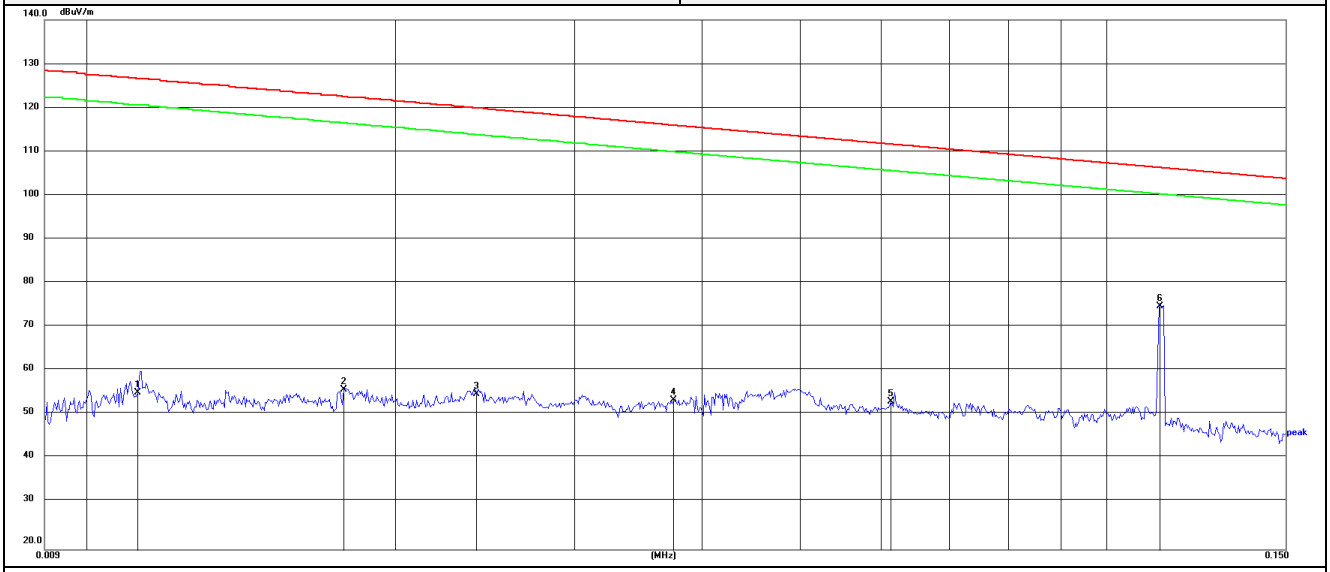
Test Frequency range	Test Receiver/Spectrum Setting	Detector
9KHz-150KHz	RBW=200Hz/VBW=3KHz,Sweep time=Auto	QP
150KHz-30MHz	RBW=9KHz/VBW=100KHz,Sweep time=Auto	QP
30MHz-1GHz	RBW=120KHz/VBW=1000KHz,Sweep time=Auto	QP

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

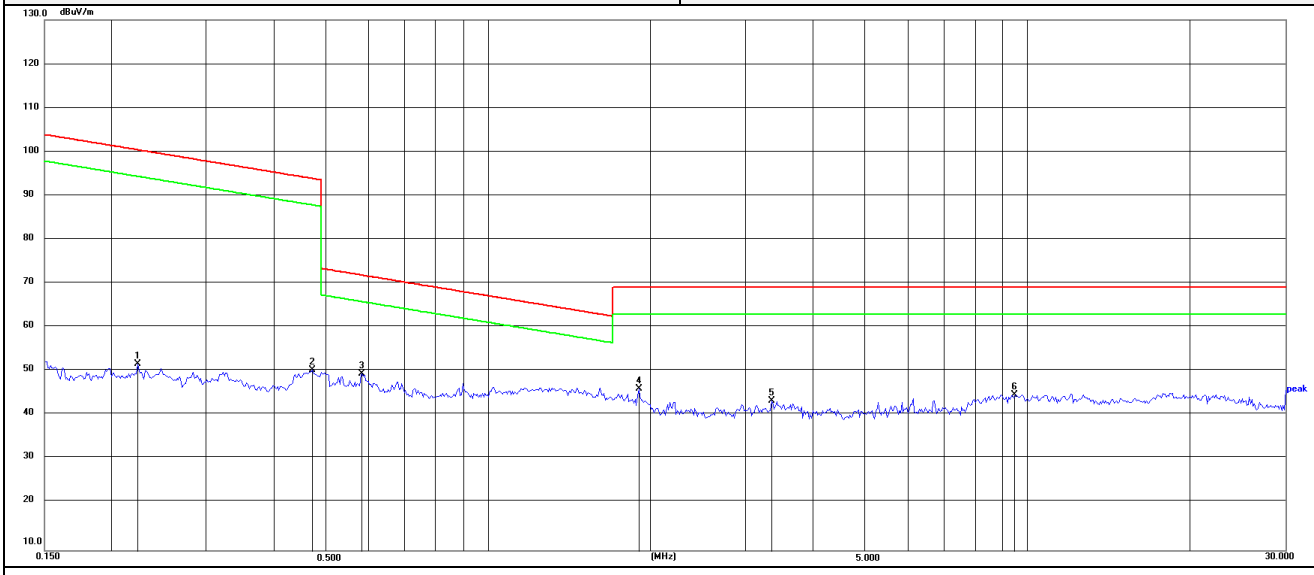


Remark:
Emission Level = Reading + Factor;
Factor = Antenna Factor + Cable Loss;
Margin= Emission Level - Limit.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	0.0111	34.25	21.36	55.61	126.70	-71.09	QP
2	0.0177	35.39	20.94	56.33	122.65	-66.32	QP
3	0.0240	34.28	21.04	55.32	120.00	-64.68	QP
4	0.0374	32.14	21.84	53.98	116.15	-62.17	QP
5	0.0613	30.89	22.64	53.53	111.86	-58.33	QP
6	0.1130	52.88	22.27	75.15	106.54	-31.39	QP

For 150KHz-30MHz

Test mode:	Mode 1

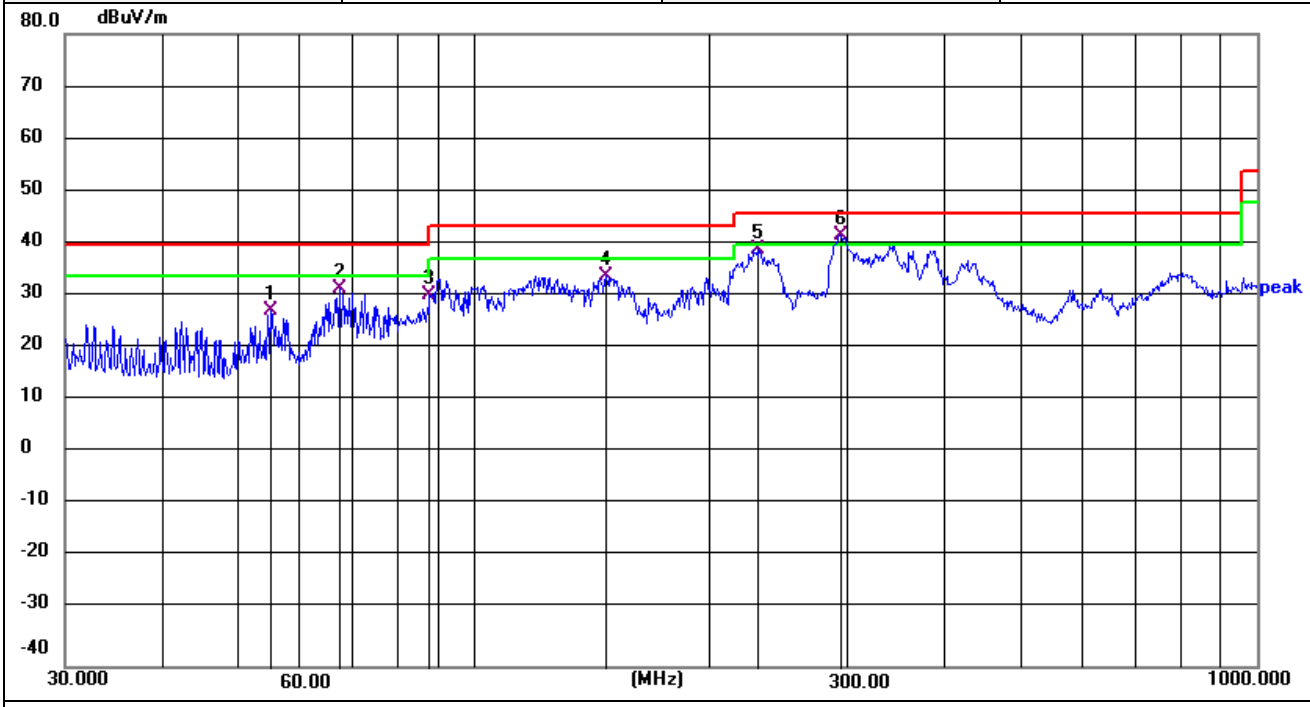


Remark:
Emission Level = Reading + Factor;
Factor = Antenna Factor + Cable Loss;
Margin= Emission Level - Limit.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	0.2230	30.75	21.53	52.28	100.64	-48.36	QP
2	0.4711	29.19	21.75	50.94	94.14	-43.20	QP
3	0.5823	28.06	22.03	50.09	72.30	-22.21	QP
4	1.8980	24.18	22.42	46.60	69.54	-22.94	QP
5	3.3456	21.17	22.70	43.87	69.54	-25.67	QP
6	9.5014	22.67	22.67	45.34	69.54	-24.20	QP

For 30MHz-1GHz

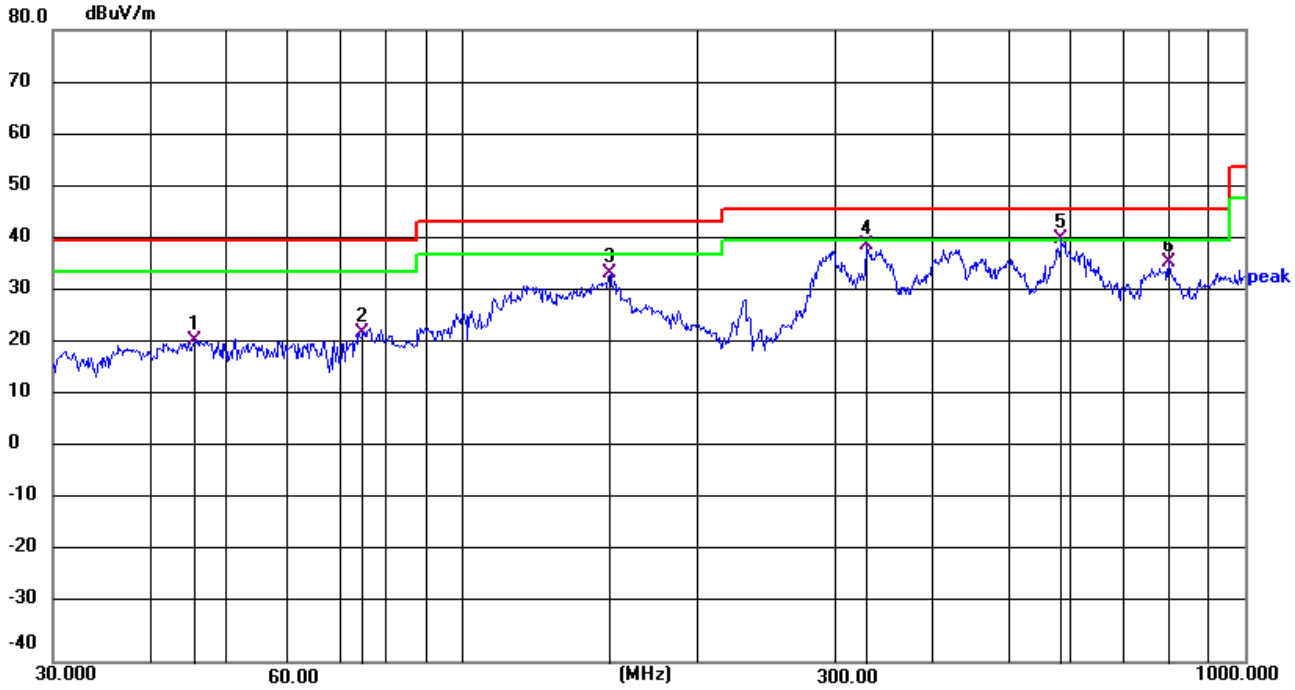
Test mode:	Mode 1	Polarization:	Horizontal



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	55.0274	44.66	-17.05	27.61	40.00	-12.39	QP
2	67.2021	50.26	-18.45	31.81	40.00	-8.19	QP
3	87.7246	51.65	-20.98	30.67	40.00	-9.33	QP
4	147.4036	50.97	-16.72	34.25	43.50	-9.25	QP
5	230.9067	59.03	-19.79	39.24	46.00	-6.76	QP
6	294.1136	58.88	-17.11	41.77	46.00	-4.23	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	45.5347	37.74	-16.70	21.04	40.00	-18.96	QP
2	74.6568	42.29	-19.85	22.44	40.00	-17.56	QP
3	154.8204	50.35	-16.51	33.84	43.50	-9.66	QP
4	329.0390	55.28	-16.15	39.13	46.00	-6.87	QP
5	582.7423	50.51	-10.18	40.33	46.00	-5.67	QP
6	798.9796	41.99	-5.99	36.00	46.00	-10.00	QP

3.3 20dB Bandwidth

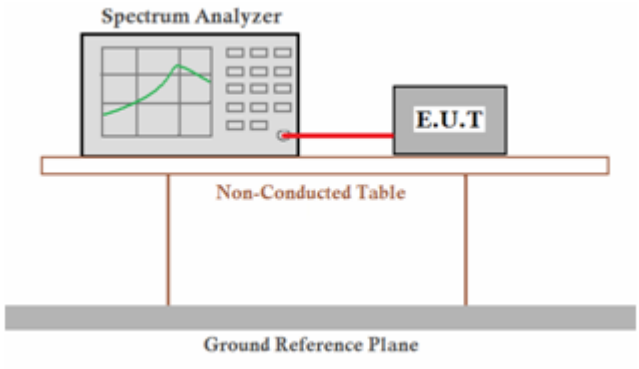
Limit

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

Test Procedure

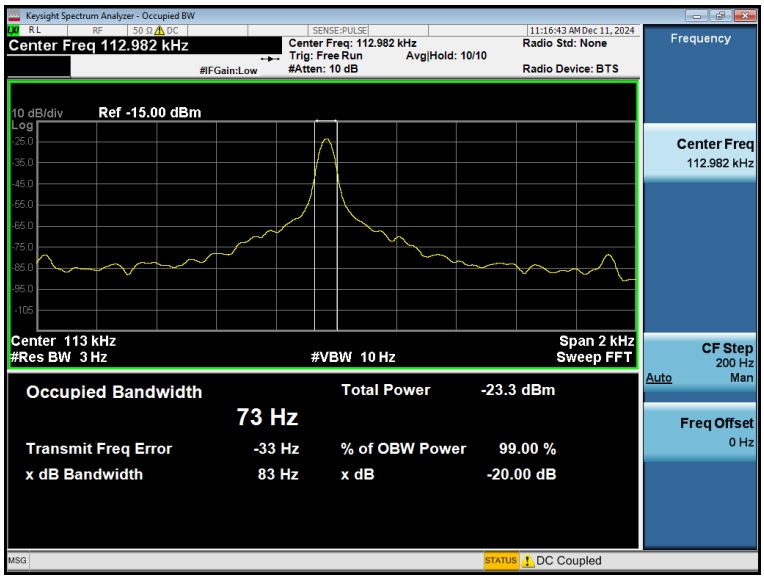
1. Set RBW = 30Hz.
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (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	112.982	0.083	0.073	PASS


Keysight Spectrum Analyzer - Occupied BW
Center Freq 112.982 kHz
Center Freq: 112.982 kHz
Trig: Free Run
Avg|Hold: 10/10
#Atten: 10 dB
Radio Std: None
Radio Device: BTS
11:16:43 AM Dec 11, 2024
Frequency
10 dB/div
Log
Ref -15.00 dBm
Center 113 kHz
#Res BW 3 Hz
#VBW 10 Hz
Span 2 kHz
Sweep FFT
Occupied Bandwidth
73 Hz
Total Power
-23.3 dBm
Transmit Freq Error
-33 Hz
% of OBW Power
99.00 %
x dB Bandwidth
83 Hz
x dB
-20.00 dB
Center Freq
112.982 kHz
CF Step
200 Hz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS
DC Coupled

3.4 Antenna Requirement

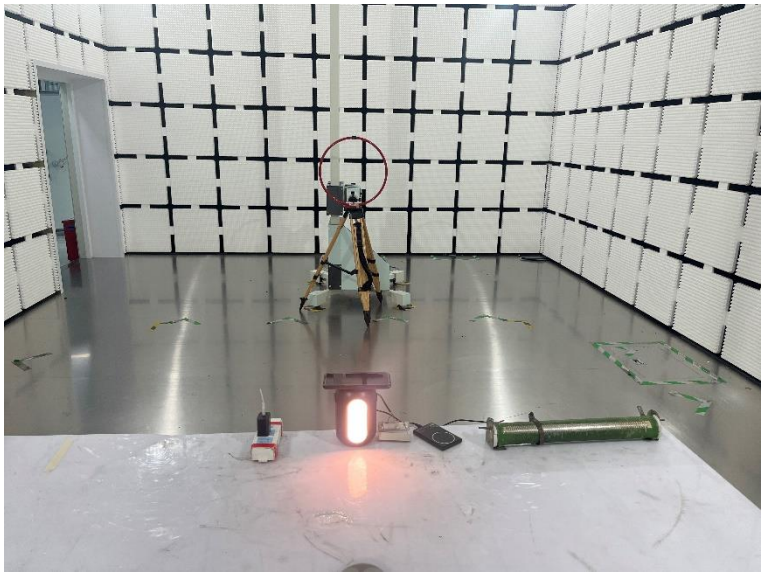
Standard Applicable

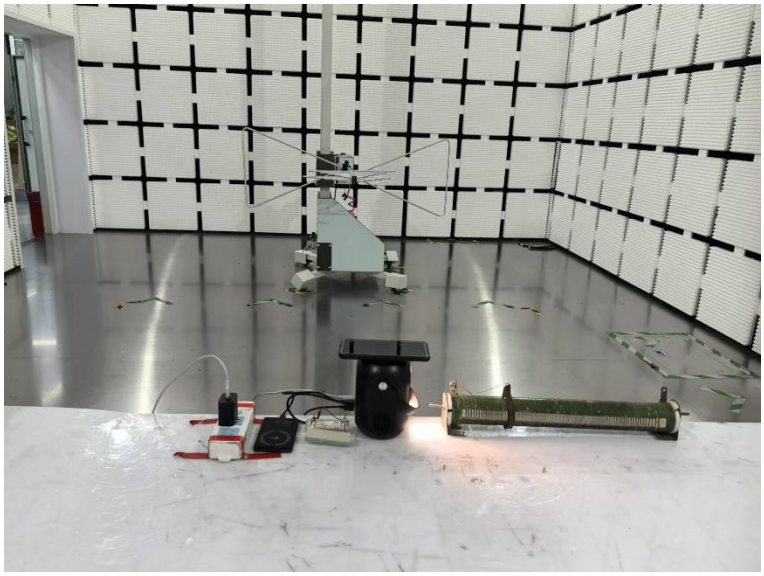
For intentional device, according to FCC 47 CFR Section 15.203:
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling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

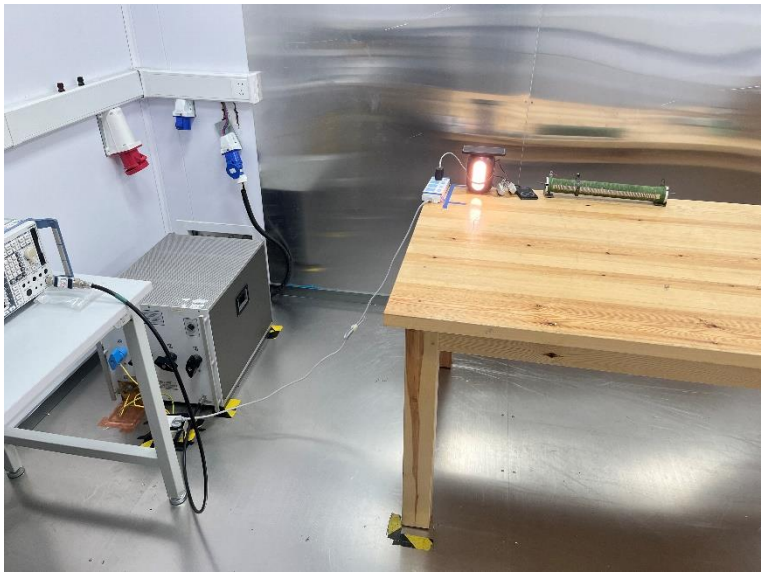
Confirmation

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

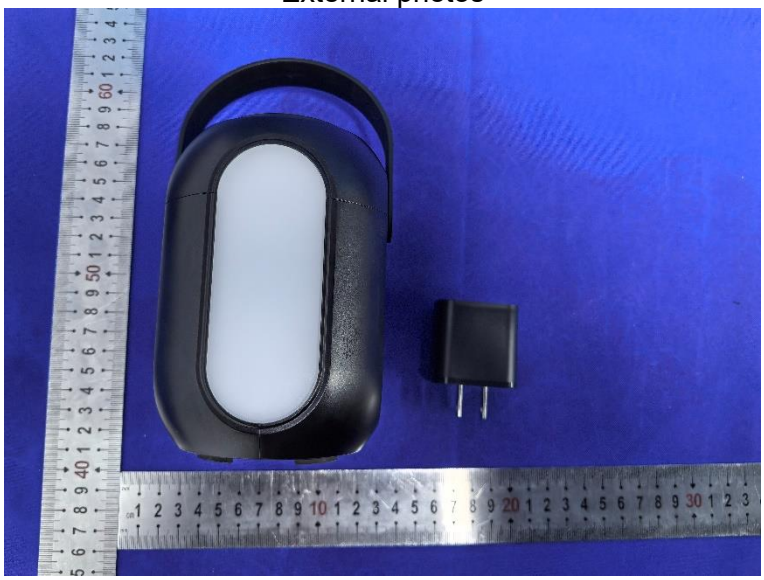






5 External Photographs of EUT

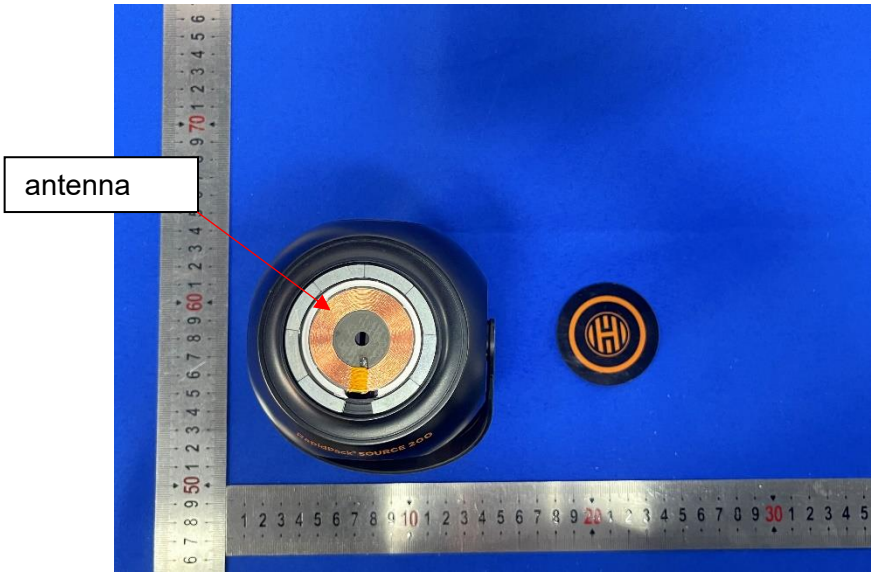
External photos

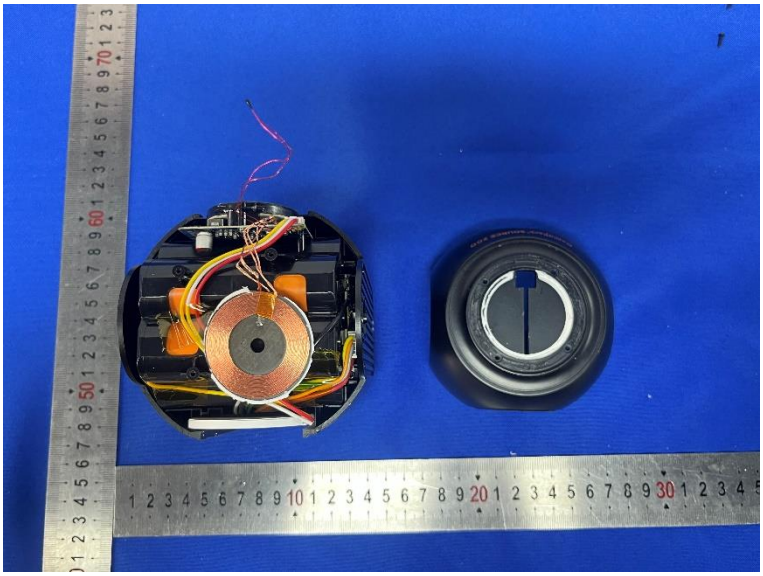


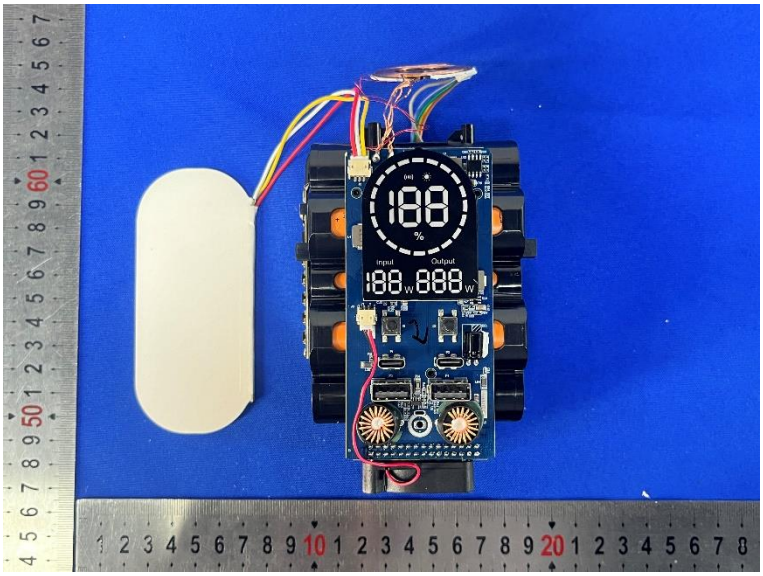

HALO

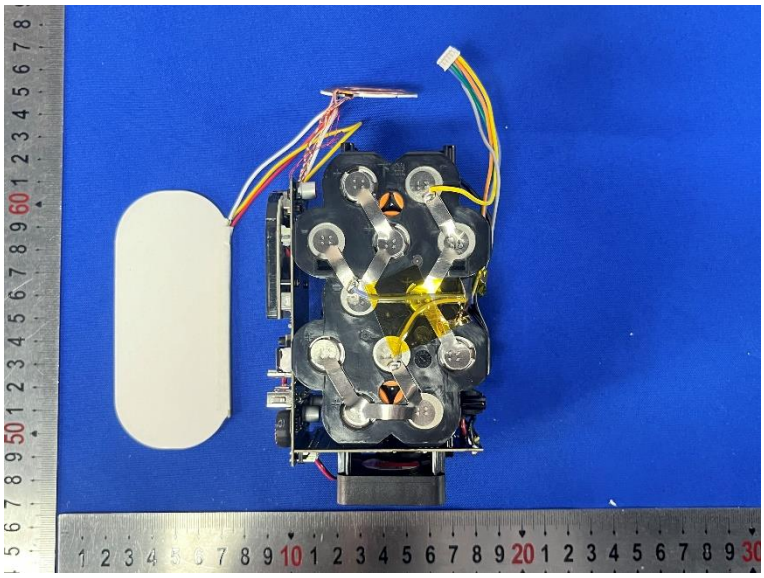

AC ADAPTER
MODEL: PD20W-03
INPUT: 100-240V~ 50/60Hz 0.6A
OUTPUT: 5V⎓3A / 9V⎓2.22A / 12V⎓1.67A
HALO
Intertek
5001727
CONFORMS TO STD.62368-1
CERTIFIED TO CSA STD.C22.2 NO.62368-1
Dongguan Asun Electronic Co.,Ltd
MADE IN CHINA

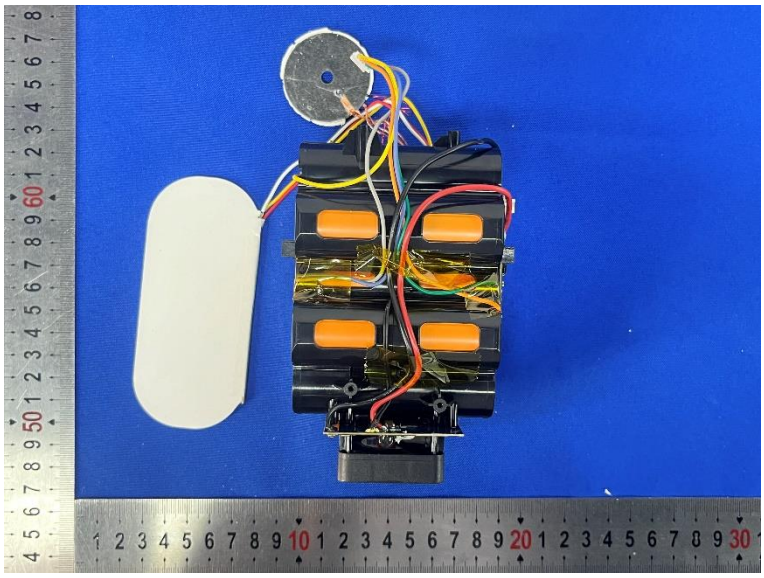
6 Internal Photographs of EUT

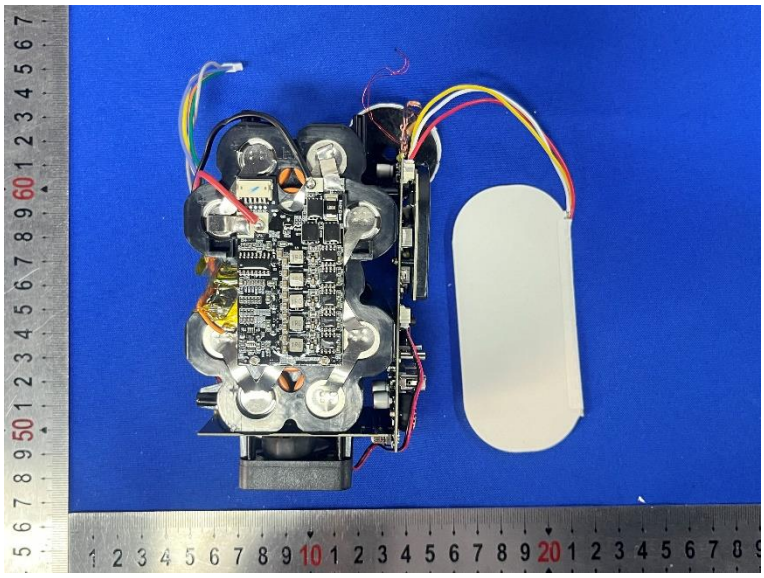


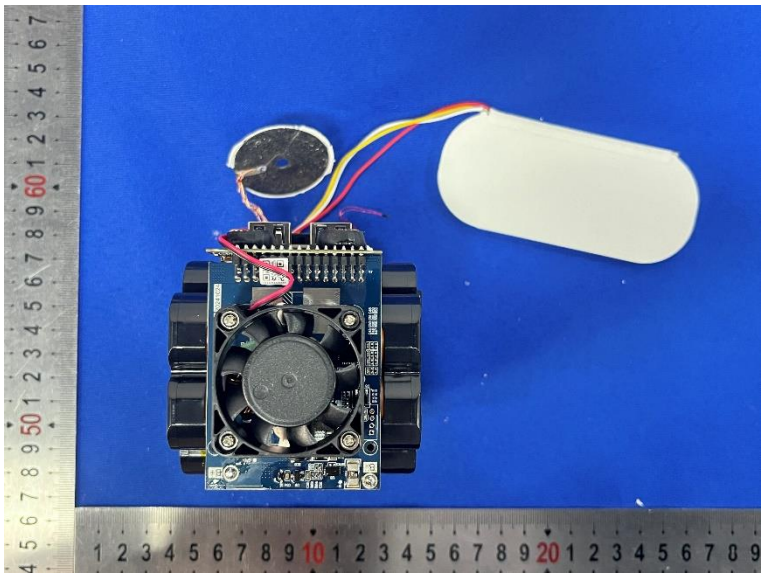


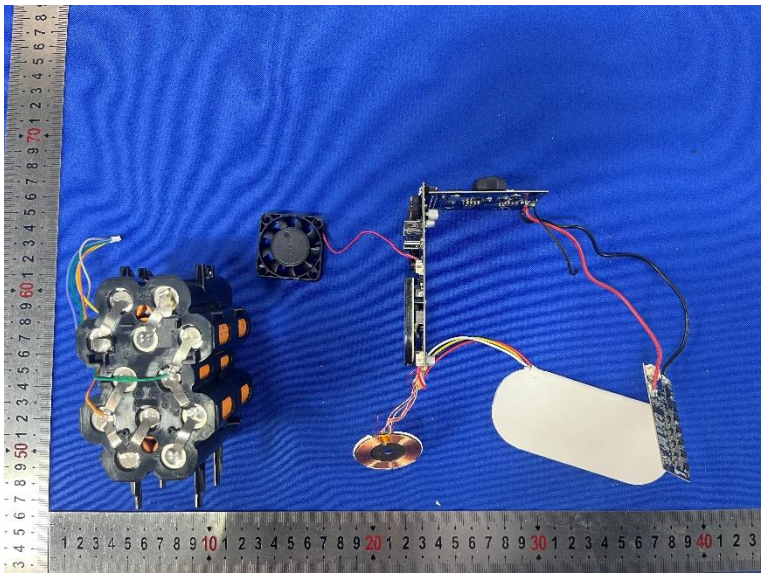


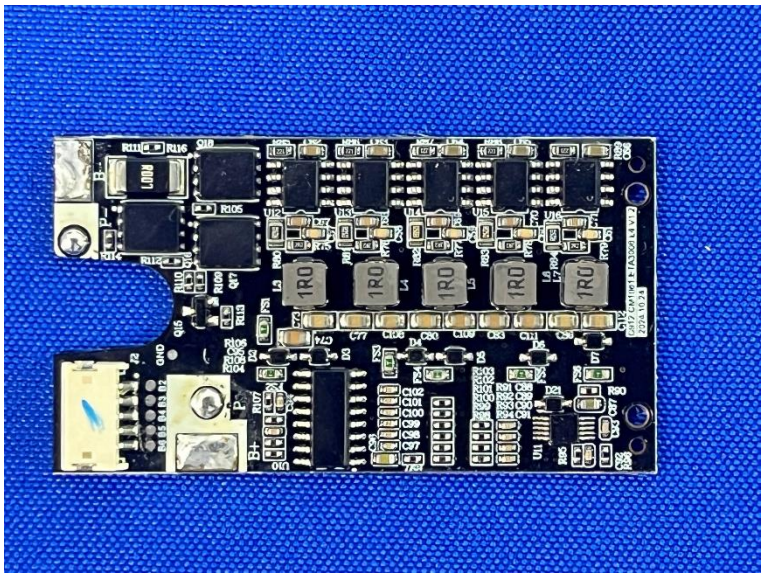


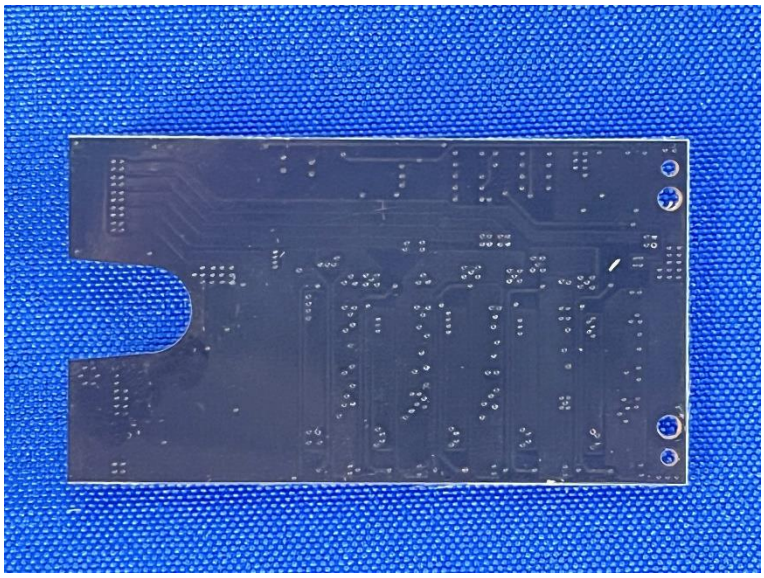


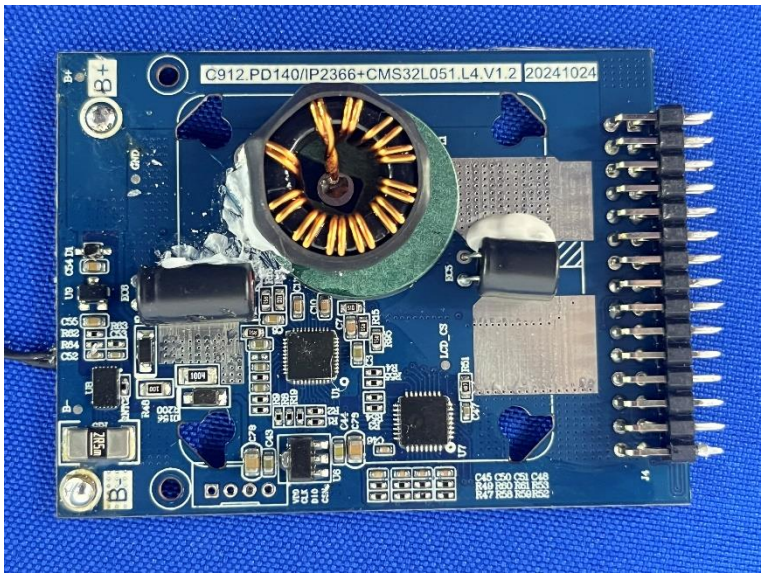


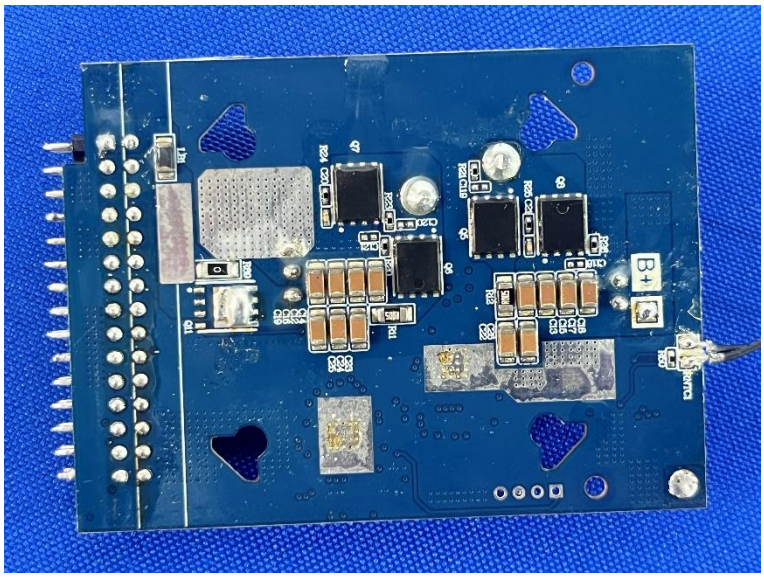


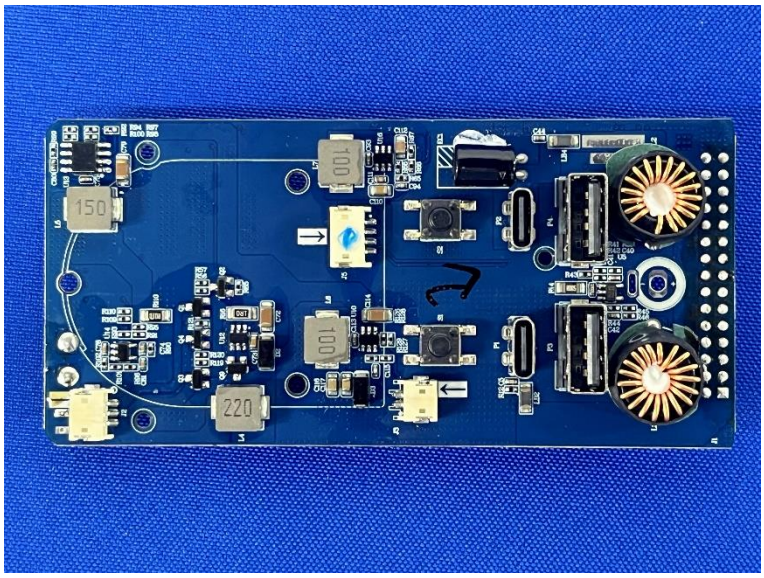


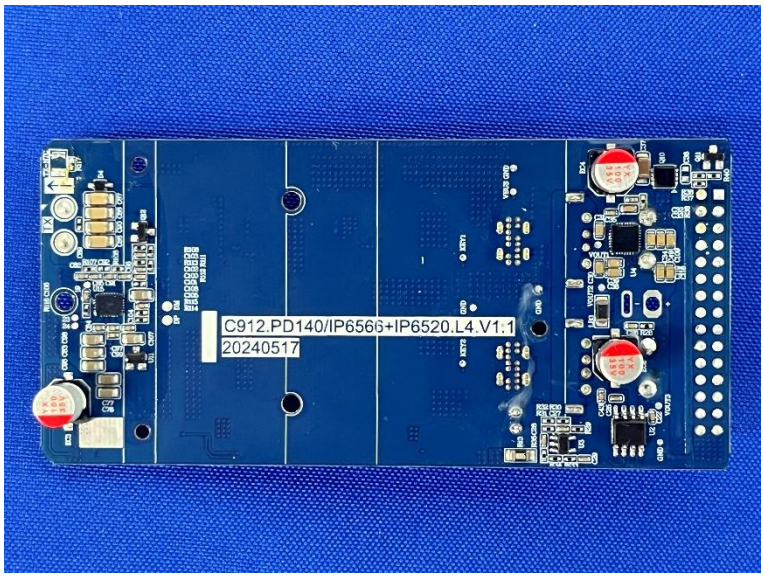


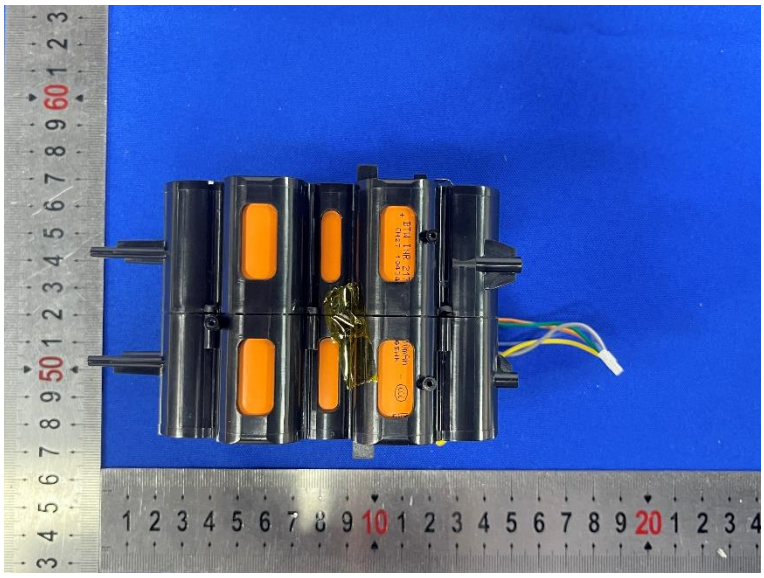



C912.PD140/IP2366+CMS32L051.L4.V1.2 20241024
B+
B-


B+







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