TEST REPORT

Application No.:	BTEK240909003AE
Applicant:	Shenzhen Charmast Technology Co.,Ltd.
Address of Applicant:	Room 10F-A10A,Shenmao Business Center,59Xinwen Road,Meiling Community,Lianhua Street,Futian District,Shenzhen 518000
Manufacturer:	Dongguan Utopia-Originality Technology Co.,Ltd.
Address of Manufacturer:	NO.2,moushan Road,Chang'an Town, Dongguan City, Guangdong Province
Equipment Under Test (EUT):	
EUT Name:	Power Bank
Test Model.:	C10
Adding Model(s):	/
Trade Mark:	charmast
FCC ID:	2BKWS-C10
Standard(s) :	47 CFR PART 1, Subpart I, Section 1.1310 47 CFR PART 2, Subpart J, Section 2.1093
Date of Receipt:	2024-09-10
Date of Test:	2024-09-11 to 2024-09-23
Date of Issue:	2024-09-24
Test Result:	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

Lion Cai/ Approved & Authorized
EMC Laboratory Manager

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
V0		*2024-09-24*		*Original*

Authorized for issue by:				
		Zora Huang **Zora Huang /Project Engineer**		
		June Li **June Li /Reviewer**		

2 Contents

Page

1 Cover Page **1**

2 Contents **3**

3 General Information **4**

3.1 Details of E.U.T. 4
3.2 Description of EUT Test Mode 5
3.3 Description of Support Units 5
3.4 Test Location 6
3.5 Deviation from Standards 6
3.6 Abnormalities from Standard Conditions 6

4 Test Requirement **7**

4.1 Equipment List 8
4.2 Assessment Result 8
4.2 Test Set-up Photo 14

3 General Information

3.1 Details of E.U.T.

Power Supply	Model: C10 Capacity:10000mAh(3.85V/38.5Wh) Type-C Input:5V⎓3.0A 9⎓2.0A 12V⎓1.5A Type-C Output:5V⎓3.0A 9V⎓2.22A 12V⎓1.67A Type-C Cable Input:5V⎓3.0A 9V⎓2.0A 12⎓1.5A Type-C Cable Output:5V⎓3.0A 9V⎓2.22A 12V⎓1.67A Lightning Cable Output:5V⎓2.4A 9V⎓2.22A Wireless Charging Output:5W/7.5W/10W/15W Wireless Charging Output (for Apple Watch): 2.5W
Modulation Type	FSK
Operating frequency	Wireless Charging:112-205KHz Apple Watch Wireless Charging: 325KHz
Antenna Type	Induction Coil Antenna
Hardware Version	V1.2
Software Version	V1.2
Sample number	BTEK240909001AE-01
Remark: The information in this section is provided by the applicant or manufacturer, BANTEK is not liable to the accuracy, suitability, reliability or/and integrity of the information.	

3.2 Description of EUT Test Mode

Test Mode List		
Test Mode	Description	Remark
1	Type-C Input:12V⎓1.5A+ Wireless output:5W/7.5W/10W/15W Load 1%	Keep the EUT Wireless output:15W worst case
2	Type-C Input:12V⎓1.5A+ Wireless output:5W/7.5W/10W/15W Load 50%	Keep the EUT Wireless output:15W worst case
3	Type-C Input:12V⎓1.5A+ Wireless output:5W/7.5W/10W/15W Load 99%	Keep the EUT Wireless output:15W worst case
4	Wireless output:5W/7.5W/10W/15W Load 1%	Keep the EUT Wireless output:15W worst case
5	Wireless output:5W/7.5W/10W/15W Load 50%	Keep the EUT Wireless output:15W worst case
6	Wireless output:5W/7.5W/10W/15W Load 99%	Keep the EUT Wireless output:15W worst case
7	Type-C Input:12V⎓1.5A+ Apple Watch Wireless output:2.5W Load 1%	Keep the EUT Apple Watch Wireless output:2.5W
8	Type-C Input:12V⎓1.5A+ Apple Watch Wireless output:2.5W Load 50%	Keep the EUT Apple Watch Wireless output:2.5W
9	Type-C Input:12V⎓1.5A+ Apple Watch Wireless output:2.5W Load 99%	Keep the EUT Apple Watch Wireless output:2.5W
10	Apple Watch Wireless output:2.5W Load 1%	Keep the EUT Apple Watch Wireless output:2.5W
11	Apple Watch Wireless output:2.5W Load 50%	Keep the EUT Apple Watch Wireless output:2.5W
12	Apple Watch Wireless output:2.5W Load 99%	Keep the EUT Apple Watch Wireless output:2.5W
Remark:1.Only show the Test Mode 01&07 worst case in the test report		

3.3 Description of Support Units

Auxiliary Equipment			
Description	Manufacturer	Model	Serial Number
Adapter	HUAWEI	HW-100400C00	/

3.4 Test Location

All tests were performed at:
Shenzhen BANTEK Testing Co., Ltd.,
A5&A6, Building B1&B2, No.45 Gangtou Road, Bogang Community, Shajing Street, Bao'an District, Shenzhen, Guangdong, China 518104
Tel:0755-2334 4200 Fax: 0755-2334 4200
FCC Registration Number: 264293
Designation Number: CN1356
No tests were sub-contracted.

3.5 Deviation from Standards

None

3.6 Abnormalities from Standard Conditions

None

4 Test Requirement

KDB 680106 D01 Wireless Power Transfer v04
According to KDB 680106 D01:

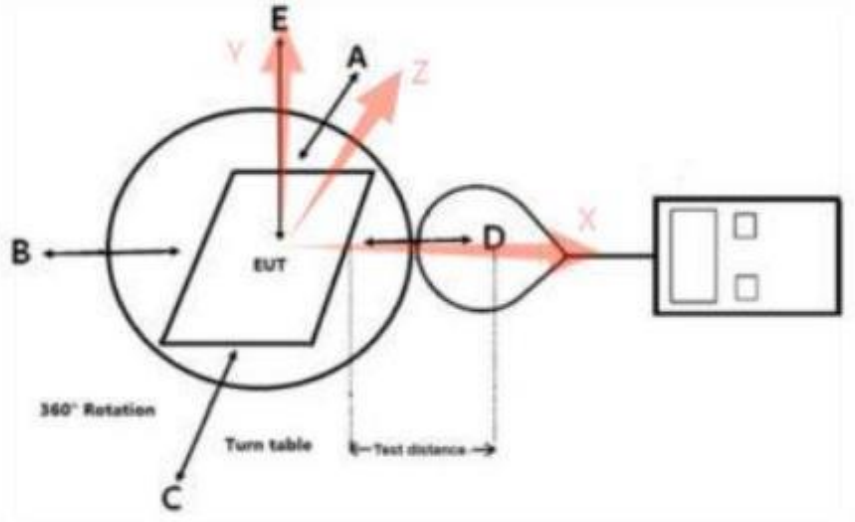
Requirements of KDB 680106 D01	Description
1.Power transfer frequency is less than 1 MHz	Wireless Charging:112-205KHz Apple Watch Wireless Charging: 325KHz
2. Output power from each primary coil is less than or equal to 15 watts	Wireless output:Maximum 15W Apple Watch Wireless output:2.5W
3. The system may consist of more than one source primary coils, charging one or more clients. If more than one primary coil is present, the coil pairs may be powered on at the same time.	One radiated Coil
4. Client device is placed directly in contact with the transmitter.	Yes. The client device is placed directly in contact with the transmitter.
5.Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion)	No, The EUT can be carried on the person and can be touched by the body, so this device is evaluated as a portable WPT
6. The aggregate H-field strengths anywhere at or beyond 20 cm surrounding the device, and 20cm away from the surface from all coils that by design can simultaneously transmit, and while those coils are simultaneously energized, are demonstrated to be less than 50% of the applicable MPE limit.	Yes, The H-field measurements for each edge/top surface of the host/client pair at every 2cm, starting from as close as possible out to 20cmwerealsoevaluated for portable use condition.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f^2	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f^2	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

Test Setup



Note: The distance of the points A/B/C/D/E/F is 0,2,4,6,8,10,12,14,16,18, 20cm.
The values tested by the probe are X, Y, and Z on three axes perpendicular to the Edge of the device.Top and bottom side coincident with the axis(Y) of the main coil.

For mobile exposure conditions:

a. The RF exposure test was performed in anechoic chamber.
b. E and H-field measurements should be made with the center of the probe at a distance of 15 cm surrounding the EUT and 20 cm above the top surface of the primary/client pair.
c. The highest emission level was recorded and compared with limit.
d. The EUT was measured according to the KDB 680106 D01 Wireless Power Transfer v04.

For portable exposure conditions:

a. The RF exposure test was performed in anechoic chamber.
b. Perform H-field measurements for each edge/top surface of the host/client pair at every 2 cm, starting from as close as possible out to 20 cm
c. The highest emission level was recorded and compared with limit.
d. The EUT was measured according to the KDB 680106 D01 Wireless Power Transfer v04.

4.1 Equipment List

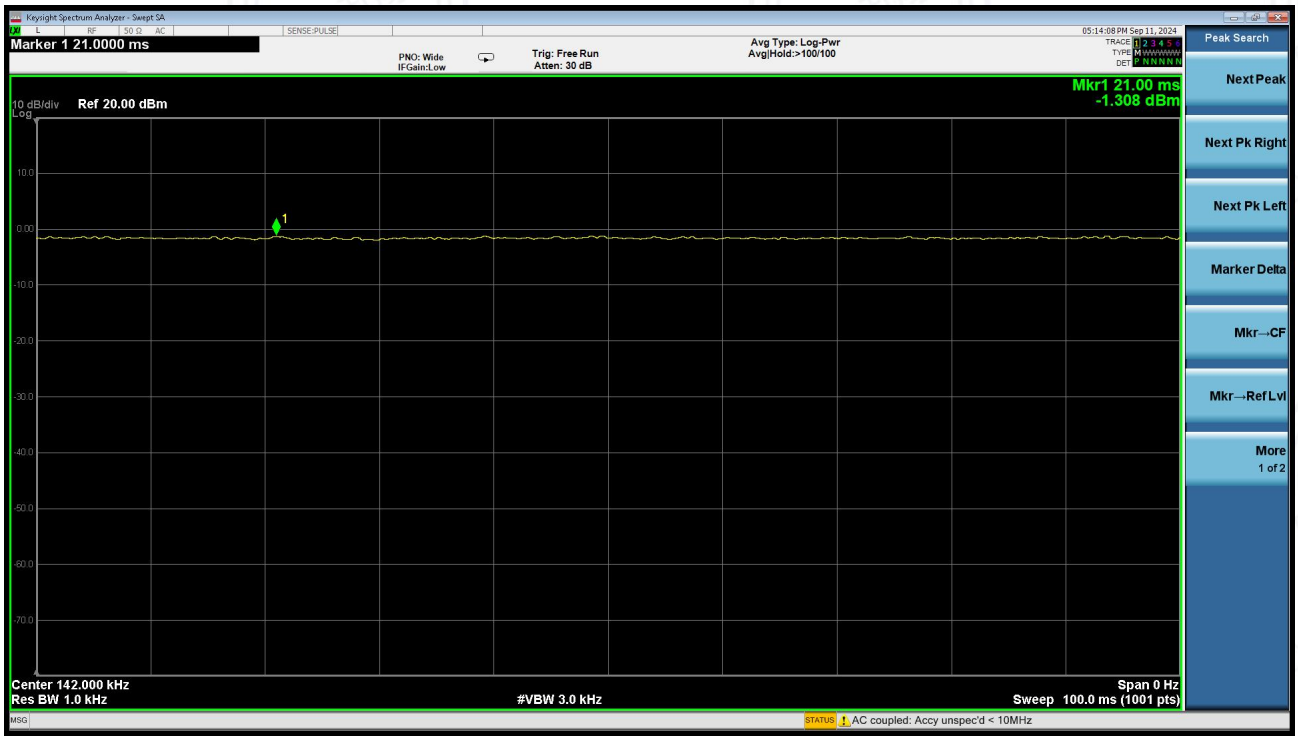
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Exposure Level Tester	Narda	ELT-400	N-0219	2024-06-10	2025-06-09
B-Field Probe	Narda	100cm²	M-0753	2024-06-10	2025-06-09

4.2 Assessment Result

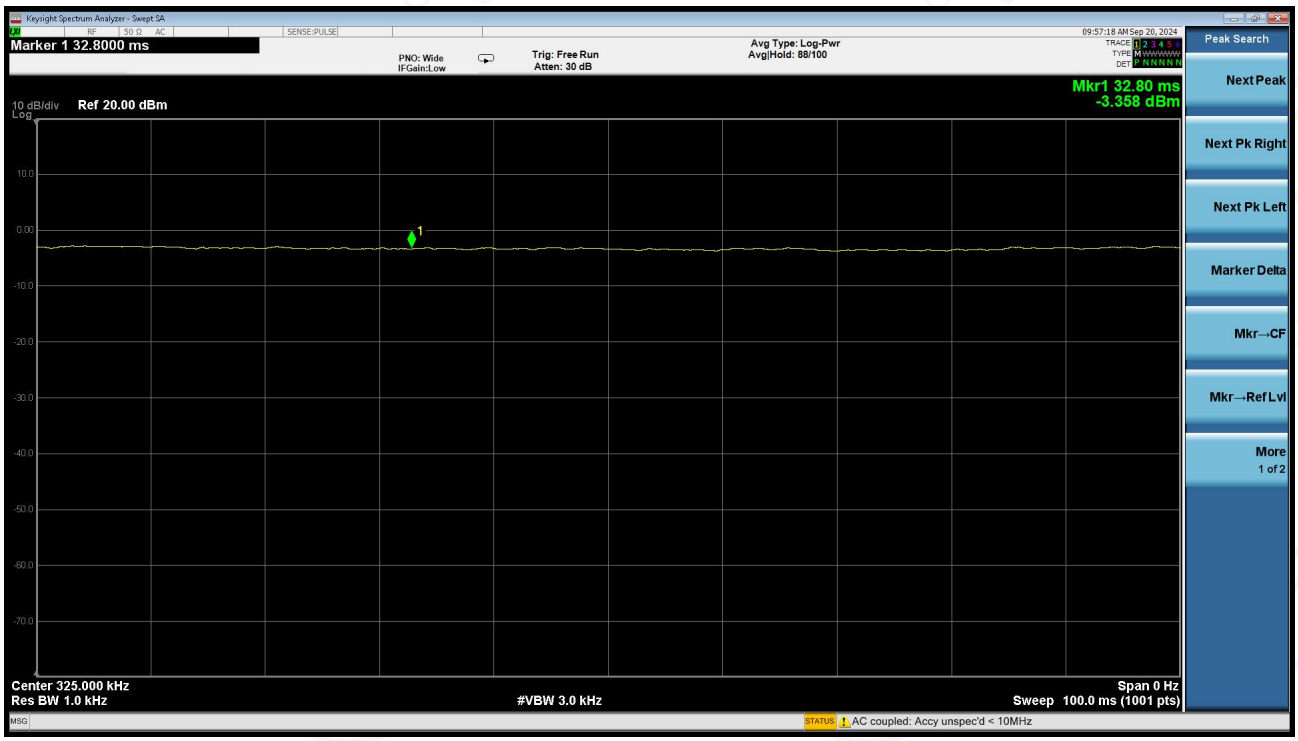
☒ **Passed** ☐ **Not Applicable**

Duty cycle=100%

Wost case at mode 1



Wost case at mode 7



Note： All test modes were pre-tested, but we only recorded the worst case in this report.

For portable exposure condition:

(1). The portable test modes have covered the considerations of the mobile test, only record the test data of the portable conditions in this report.

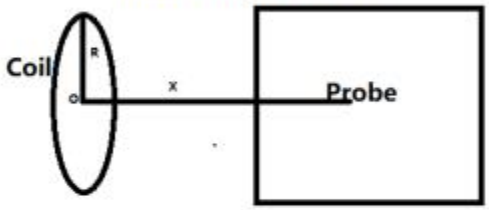
(2) Operating modes with client device (1 %, 50%, 99% battery status of client device) have been test, only show the data of worst case of 99% battery status of client device.

(3) Test performed with all the radiating structures operating at maximum power at the same time.

(4) H-field measurements are taken along all three axes the device from 0cm~20cm in 2cm minimum increment for each edge surface of the host/client pair. If the center of the probe sensing element is more than 5mm from the probe outer edge, the field strengths need to be estimated for the positions that are not reachable.

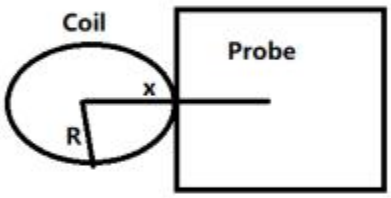
(5) According to Calibration information and specification about ETL-400 Probe, The Probe ETL-400 Probe's sensitive elements center is located in the probe's center, and the distance from the sensitive elements center to the tip of probe is 6.25cm.
(6) The actral 0cm, 2cm, 4cm and 6cm field strengths need to be estimated for the positions that are not reachable via numerical calculation.
(7) Use Biot-Savart formula theory to estimate the strength of the magnetic field that the measuring instrument cannot measure. According to Biot-Savart formula:

Top & Bottom Side:



$$B = \frac{\mu_0 * I * N * R^2}{2 * (R^2 + x^2)^{3/2}}$$

Front, left, right & rear Side:



$$B = \frac{\mu_0 * I * N}{2 * x}$$

B(Unit:A/m): means H-field value;
μ0 is space permeability; $\mu_0=4\pi*10^{-7}$;
I(Unit:A)：A current element passing through a radiated coil I；
R(Unit:m)：means the Radius of radiated coil,According to provided Antenna specification: R=40/2=20mm=0.02m;
Test Distance(Unit:m)：The distance from the sensing element of the probe to the edge of the device surface.
x(Unit:m): means the center of the coil to the sensing elements of the probe. (For top & bottom side: x=test distance; For other side: x=test distance+R)
N: Number of turns, according to providing “Antenna specification” files: N=10.
(8) For validation purposes: If the value to show a 30% agreement between the mode and the probe measurements for the two closest points to the device surface, and with 2cm increments. Then this extrapolation method is reasonable.
3.1 Validation results for the numerical calculation model
a) Measure with probe directed contact(test distace:6.25cm)
b) Using Biot-Savart formula to calculate estimated results at test distace of 8cm and 10 cm;
c) measure at test distace of 8 cm and 10cm;
d) Compares the estimated results and measured result, the varation should not be greater than 30%;
Conclusion: The numerical calculation model is valid.

Wost case at mode 1

Test Distance	Measured E-Field Strength Values (A/m)																	
	Test Position A			Test Position B			Test Position C			Test Position D			Test Position E			Test Position F		
	Mea.	Est.	Var.	Mea.	Est.	Var.	Mea.	Est.	Var.	Mea.	Est.	Var.	Mea.	Est.	Var.	Mea.	Est.	Var.
10	0.031	0.0472	20.73	0.034	0.0492	18.30	0.039	0.0508	13.15	0.031	0.0445	17.84	0.045	0.0556	10.52	0.036	0.0586	23.90
8	0.048	0.0553	7.05	0.0540	0.0588	4.21	0.078	0.0674	7.30	0.036	0.0536	19.61	0.052	0.0778	19.85	0.085	0.0642	13.94
6.25	0.0837	/	/	0.0945	/	/	0.136	/	/	0.0732	/	/	0.0987	/	/	0.1645	/	/

Note :Mea.-Measured H-field(A/m); Est.-Estimated H-field(A/m);
Var.-Varation between measured and estimated value(%);

Note: All test modes were pre-tested, but we only recorded the worst case in this report.

Test Distance	Charging Battery Level	Unit	Measured E-Field Strength Values (A/m)						FCC H-Field Strength 50% Limits (A/m)	FCC H-Field Strength Limits (A/m)
			Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Test Position F		
20	100%	A/m	0.022	0.027	0.025	0.023	0.028	0.029	0.815	1.63
18	100%	A/m	0.027	0.027	0.029	0.026	0.035	0.027	0.815	1.63
16	100%	A/m	0.038	0.029	0.026	0.024	0.033	0.035	0.815	1.63
14	100%	A/m	0.022	0.031	0.031	0.023	0.032	0.035	0.815	1.63
12	100%	A/m	0.029	0.031	0.032	0.028	0.035	0.036	0.815	1.63
10	100%	A/m	0.031	0.034	0.039	0.031	0.045	0.033	0.815	1.63
8	100%	A/m	0.048	0.034	0.078	0.036	0.052	0.036	0.815	1.63
6	100%	A/m	0.0975	0.1055	0.1523	0.0703	0.1016	0.1726	0.815	1.63
4	100%	A/m	0.1680	0.2062	0.2228	0.2204	0.0830	0.1433	0.815	1.63
2	100%	A/m	0.3099	0.3004	0.3274	0.3105	0.3004	0.2632	0.815	1.63
0	100%	A/m	0.4695	0.7896	0.7608	0.7576	0.9040	0.5702	0.815	1.63

Note :1.Mea.-Measured H-field(A/m); Est.-Estimated H-field(A/m);
2.All test modes were pre-tested, but we only recorded the worst case in this report.

Wost case at mode 7

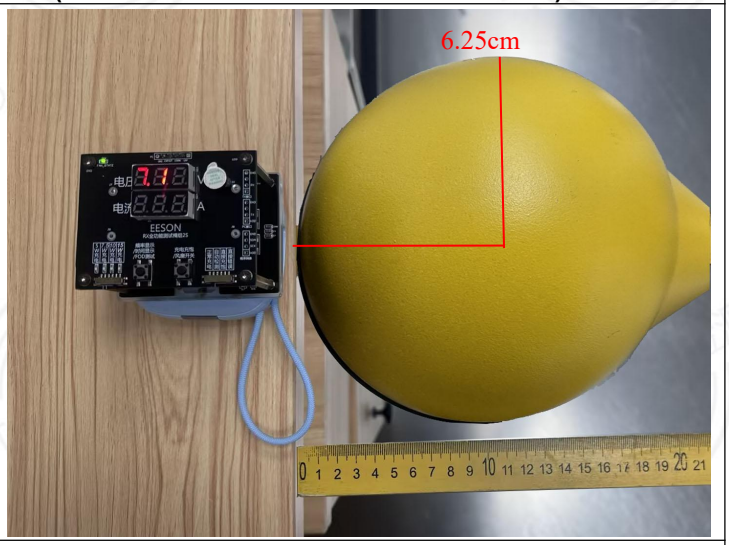
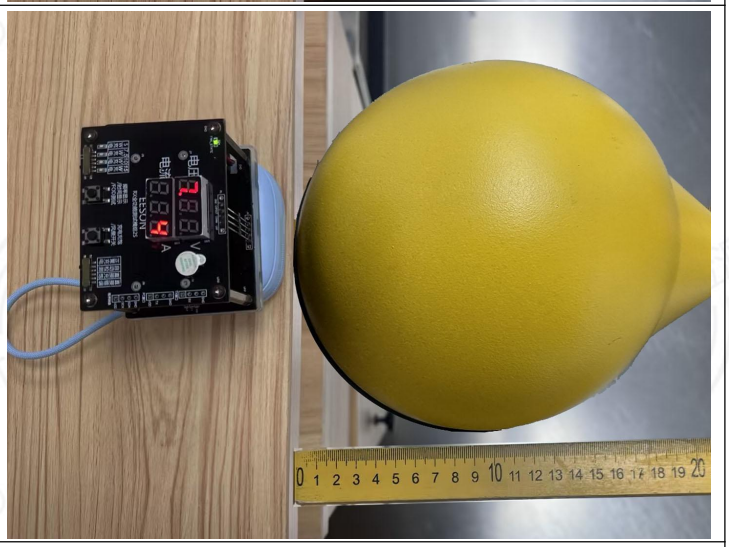
Test Distance	Measured E-Field Strength Values (A/m)																	
	Test Position A			Test Position B			Test Position C			Test Position D			Test Position E			Test Position F		
	Mea.	Est.	Var.	Mea.	Est.	Var.	Mea.	Est.	Var.	Mea.	Est.	Var.	Mea.	Est.	Var.	Mea.	Est.	Var.
10	0.034	0.0521	21.02	0.031	0.0492	22.72	0.036	0.0556	21.38	0.034	0.0492	18.30	0.049	0.0603	10.37	0.039	0.0635	23.90
8	0.05	0.0606	9.61	0.0560	0.0536	2.22	0.08	0.0622	12.51	0.038	0.0588	21.45	0.054	0.0847	22.12	0.088	0.0696	11.71
6.25	0.0837	/	/	0.0945	/	/	0.136	/	/	0.0732	/	/	0.0987	/	/	0.1645	/	/

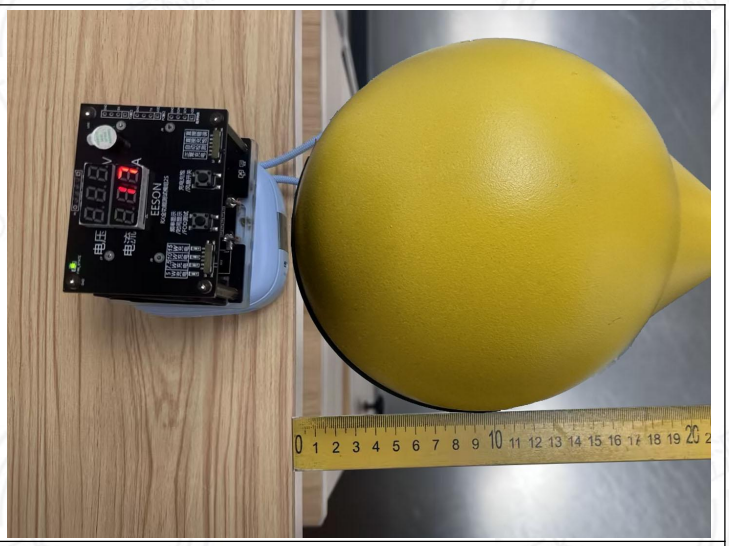
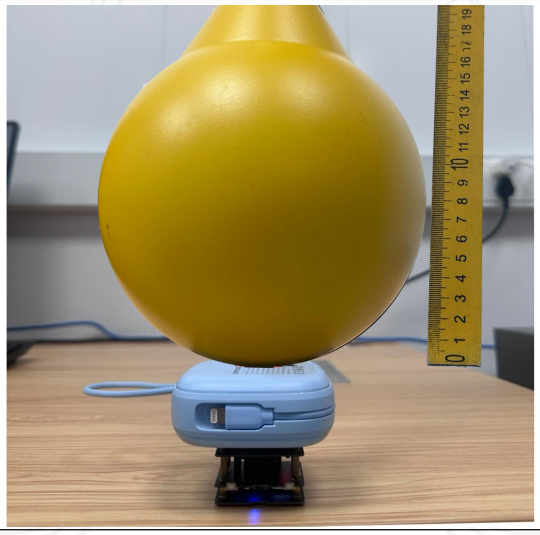
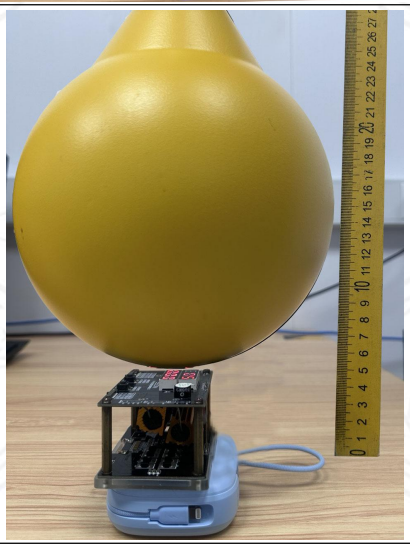
Note :Mea.-Measured H-field(A/m); Est.-Estimated H-field(A/m);
Var.-Varation between measured and estimated value(%);

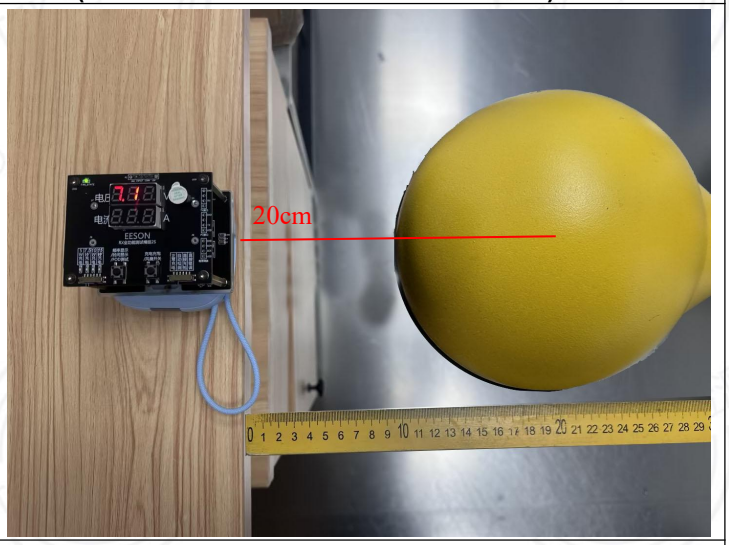
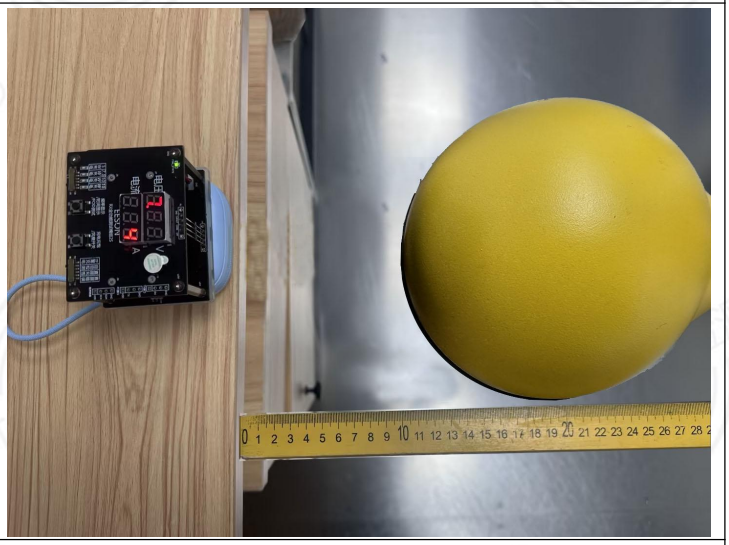
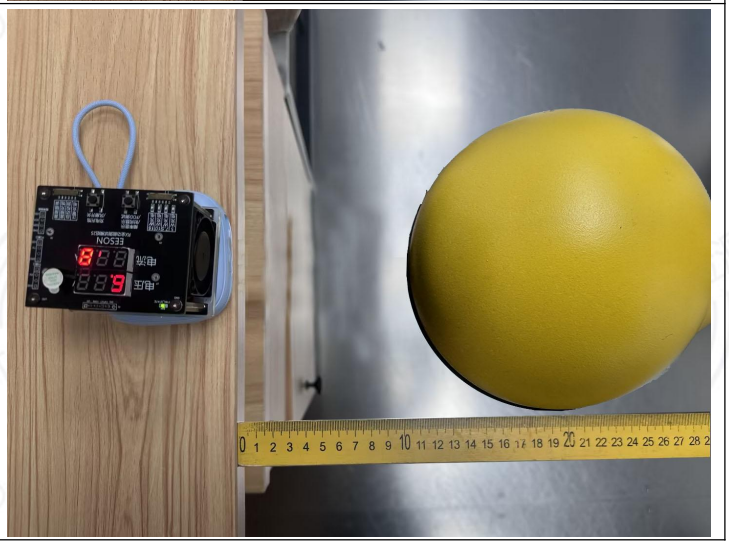
Note： All test modes were pre-tested, but we only recorded the worst case in this report.

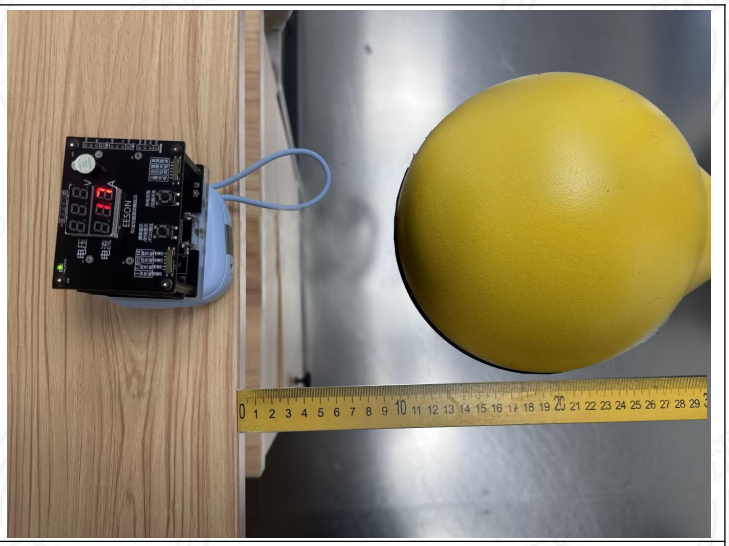
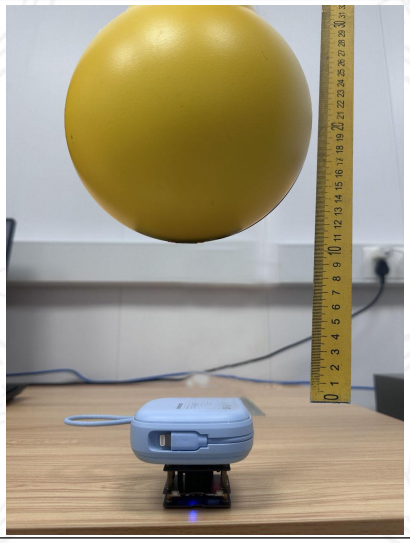
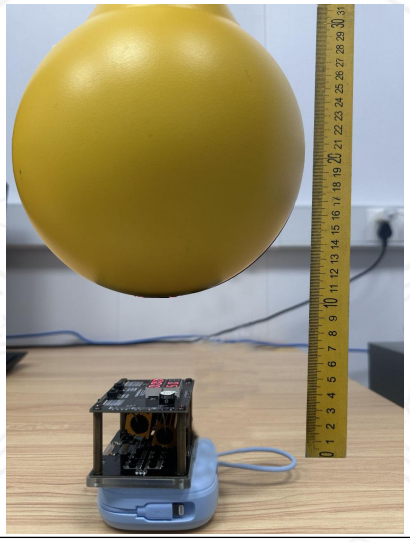
Test Distance	Charging Battery Level	Unit	Measured E-Field Strength Values (A/m)						FCC H-Field Strength 50% Limits (A/m)	FCC H-Field Strength Limits (A/m)
			Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Test Position F		
20	100%	A/m	0.021	0.025	0.0259	0.025	0.022	0.028	0.815	1.63
18	100%	A/m	0.024	0.028	0.022	0.027	0.035	0.029	0.815	1.63
16	100%	A/m	0.037	0.023	0.028	0.022	0.036	0.031	0.815	1.63
14	100%	A/m	0.022	0.036	0.032	0.028	0.032	0.035	0.815	1.63
12	100%	A/m	0.032	0.089	0.035	0.031	0.038	0.039	0.815	1.63
10	100%	A/m	0.031	0.031	0.036	0.034	0.049	0.033	0.815	1.63
8	100%	A/m	0.05	0.031	0.08	0.038	0.054	0.039	0.815	1.63
6	100%	A/m	0.1016	0.1094	0.1563	0.0742	0.1055	0.1787	0.815	1.63
4	100%	A/m	0.1631	0.2015	0.2181	0.2157	0.0837	0.1384	0.815	1.63
2	100%	A/m	0.3065	0.2970	0.3240	0.3071	0.3038	0.2665	0.815	1.63
0	100%	A/m	0.4737	0.7904	0.7616	0.7584	0.9120	0.5744	0.815	1.63

4.2 Test Set-up Photo

0cm Remark(Probe center to the EUT side is 6.25cm)	
A	
B	
C	

D	
E	
F	

20cm Remark(Probe center to the EUT side is20cm)	
A	
B	
C	

D	
E	
F	

- End of the Report -