RF EXPOSURE REPORT FOR CERTIFICATION
On Behalf of

mophie LLC

Wireless Power Bank

Model Number: PSW5K

FCC ID: 2ACWB-5KWH

Prepared for:	mophie LLC
	6244 Technology Ave. Kalamazoo, MI49009 United States of America
Prepared By:	EST Technology Co., Ltd.
	Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China
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Report Number:	ESTE-R2004002
Date of Test:	Mar. 24~31, 2020
Date of Report:	Apr. 01, 2020

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Description Page

EST Technology Co., Ltd.

Applicant: **Address:**	mophie LLC 6244 Technology Ave. Kalamazoo, MI49009 United States of America
Manufacturer: **Address:**	mophie LLC 6244 Technology Ave. Kalamazoo, MI49009 United States of America
E.U.T:	Wireless Power Bank
Model Number:	PSW5K
Power Supply:	Battery Capacity: 5000mAh/3.7V 18.5Wh Type-C Input: 5V⎓3.4A Type-C Output: 5V⎓2.4A USB-A Output: 5V⎓2.4A Output: Wireless charger 5W Total Output:12W
Trade Name:	mophie Serial No.: ------
Date of Receipt:	Mar. 24, 2020 Date of Test: Mar. 24~31, 2020
Test Specification:	FCC CFR 47 Part 1.1307(b)&1.1310 KDB 680106 D01 RF Exposure Wireless Charging Apps v03
Test Result:	The device described above is tested by EST Technology Co., Ltd. The measurement results were contained in this test report and EST Technology Co., Ltd. was assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliance with the FCC CFR 47 Part 1.1307(b)&1.1310 requirements.This report applies to above tested sample only and shall not be reproduced in part without written approval of EST Technology Co., Ltd. **Date: Apr. 01, 2020**

Prepared by:	Reviewed by:	Approved by:
Ring	Seven	
Ring / Assistant	Seven / Engineer	Iceman Hu / Manager

Other Aspects:
None.

Abbreviations: OK/P=passed fail/F=failed n.a/N=not applicable E.U.T=equipment under tested

This test report is based on a single evaluation of one sample of above mentioned products ,It is not permitted to be duplicated in extracts without written approval of EST Technology Co., Ltd.

1. SUMMARY OF TEST

1.1. Summary of test result

Report Section	Description of Test Item	FCC Standard Section	Results
3	Maximum Permissible Exposure	Part 1.1307(b)&1.1310	PASS

1.2. Test Mode

Test Item	Test Mode
Maximum Permissible Exposure	Wireless Charging with Empty Load
	Wireless Charging with Half Load
	Wireless Charging with Full Load

1.3. Test Equipment List

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Electric and Magnetic Field Probe-Analyzer	Narda S.T.S./PMM	EHP-200A	EST-E106	Feb.14,20	1 Year
Simulated load(Full)	/	/	EST-306	N/A	N/A
Simulated load(Half)	/	/	EST-307	N/A	N/A
Test Software	Narda	EHP200-TS	Rel 1.92	N/A	N/A

2. MAXIMUM PERMISSIBLE EXPOSURE

2.1. Limit

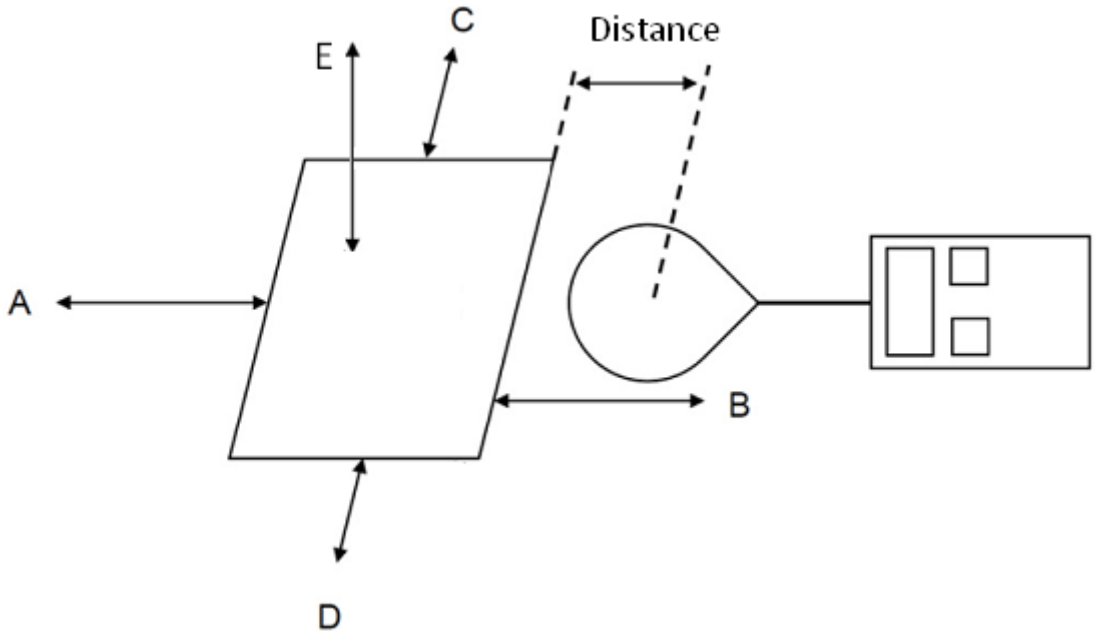
Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm2)	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

Note:

1. f = frequency in MHz * = Plane-wave equivalent power density.
2. For devices designed for typical desktop applications, such a wireless charging pads, RF exposure evaluation should be conducted assuming a user separation distance of 15 cm. E and H field strength measurements or numerical modeling may be used to demonstrate compliance. Measurements should be made from all sides and the top of the primary/client pair, with the 15 cm measured from the center of the probe(s) to the edge of the device. Emissions between 100 kHz to 300 kHz should be assessed versus the limits at 300 kHz in Table 1 of Section 1.1310: 614 V/m and 1.63 A/m. A KDB inquiry is required to determine the applicable exposure limits below 100 kHz.

2.2. Test Setup



2.3. Test Procedure

a. The test was performed on turn table in anechoic chamber with a dummy load.
b. The dummy load must be placed horizontal of the EUT at the top (Parallel to the coil).
c. The probe was placed at 15 cm surrounding the device and 20 cm above the top of the charger and the geometric centre of the probe.
d. The highest emission level was recorded and compared with limit as soon as measurement of each point; A, B, C, D, E were completed.

2.4. Equipment Approval Considerations

Inductive wireless power transfer applications with supporting field strength results and meeting all of the following requirements are not required to submit a KDB inquiry for devices approved using SDoC or a PAG for equipment approved using certification to address RF exposure compliance.

1	Power transfer frequency is less that 1 MHz
	YES; the device operated in the frequency range from 110.5-205KHz.
2	Output power from each primary coil is less than or equal to 15 watts.
	NO; the maximum output power of the primary coil is 5W.
3	The transfer system includes only single primary and secondary coils. This includes charging systems that may have multiple primary coils and clients that are able to detect and allow coupling only between individual pairs of coils.
	YES; the transfer system includes only single primary and secondary coils.
4	Client device is placed directly in contact with the transmitter.
	YES; 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.
6	The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.
	YES; The EUT field strength levels are 50% x MPE limts.

2.5. Test Result for Test setup A:

E-field strength			
Frequency range (KHz)	110.5 to 205		
Test Mode	Full Load	Half Load	Empty Load
Position A(V/m)	0.370	0.345	0.337
Position B(V/m)	0.343	0.343	0.334
Position C(V/m)	0.345	0.338	0.338
Position D(V/m)	0.361	0.355	0.342
Position E(V/m)	0.742	0.542	0.338
Limits (V/m)	614		
50% Limits(V/m)	307		

H-field strength			
Frequency range (KHz)	110.5 to 205		
Test Mode	Full Load	Half Load	Empty Load
Position A(A/m)	0.043	0.045	0.047
Position B(A/m)	0.051	0.047	0.045
Position C(A/m)	0.049	0.043	0.047
Position D(A/m)	0.047	0.045	0.045
Position E(A/m)	0.049	0.045	0.049
Limits (A/m)	1.630		
50% Limits (A/m)	0.815		

2.6. Test Result for Test setup B:

Empty , Half , Full load all have been tested ,only worse case Max load (Full) is reported.

E-Filed Strength at (distance 10cm to 1cm at 1cm iteration, i.e. at a distance of 10cm, 9cm, 8cm, ……. 1cm, Which is between the edge of the charger and the edge of of probe,) surrounding the EUT (V/m)

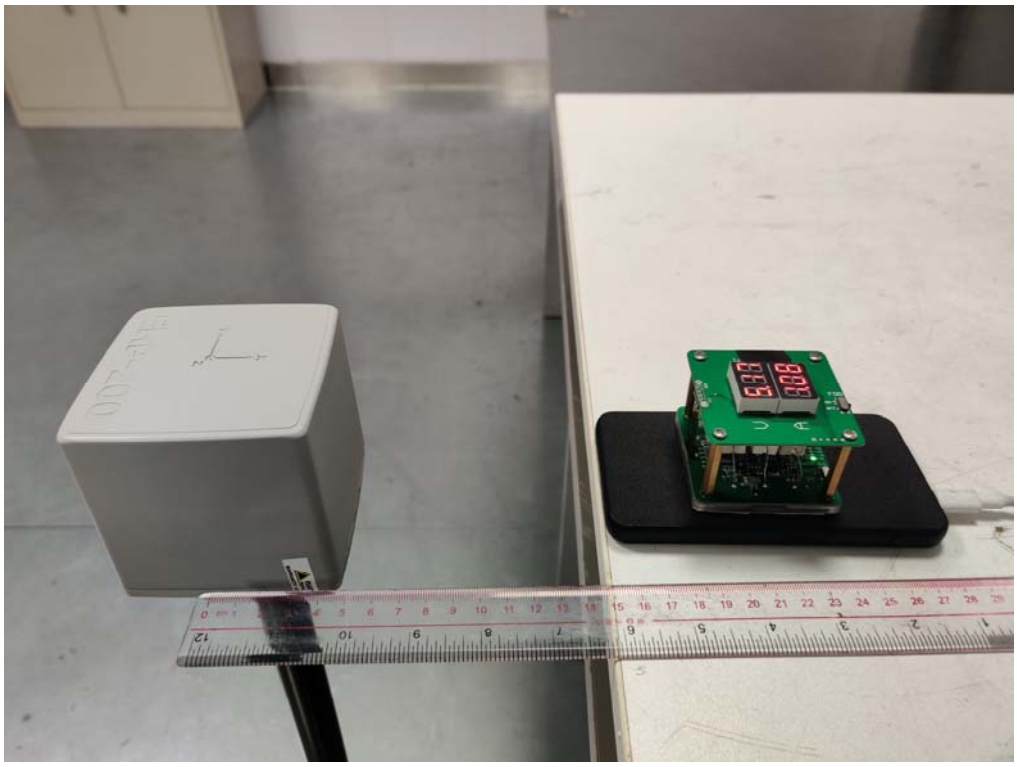
Test distance (cm)	Position A (V/m)	Position B (V/m)	Position C (V/m)	Position D (V/m)	Position E (V/m)	Limits (V/m)
1	7.250	2.643	6.916	2.342	63.145	614
2	2.987	1.568	4.872	1.648	52.126	614
3	2.675	1.117	3.184	0.919	40.235	614
4	2.378	0.733	2.268	0.417	29.134	614
5	1.647	0.520	2.014	0.404	17.837	614
6	1.410	0.507	1.382	0.04	12.060	614
7	1.159	0.441	1.102	0.340	9.595	614
8	1.063	0.361	0.792	0.340	6.316	614
9	0.704	0.338	0.573	0.352	4.255	614
10	0.517	0.345	0.517	0.338	3.212	614

H-Filed Strength at (distance 10cm to 1cm at 1cm iteration, i.e. at a distance of 10cm, 9cm, 8cm, ……. 1cm, Which is between the edge of the charger and the edge of of probe,) surrounding the EUT (A/m)

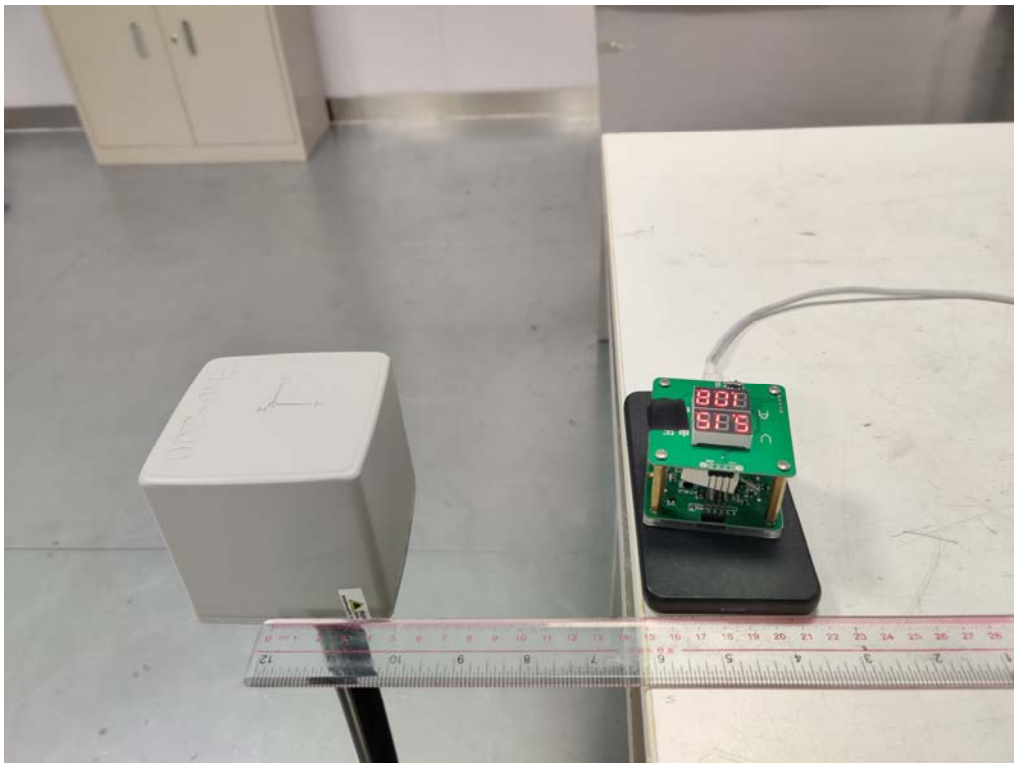
Test distance (cm)	Position A (A/m)	Position B (A/m)	Position C (A/m)	Position D (A/m)	Position E (A/m)	Limits (A/m)
1	0.269	0.129	0.345	0.148	0.545	1.63
2	0.137	0.111	0.318	0.129	0.485	1.63
3	0.121	0.094	0.289	0.098	0.403	1.63
4	0.095	0.076	0.242	0.094	0.302	1.63
5	0.074	0.061	0.202	0.072	0.193	1.63
6	0.065	0.051	0.151	0.071	0.167	1.63
7	0.061	0.058	0.137	0.058	0.139	1.63
8	0.057	0.052	0.106	0.057	0.119	1.63
9	0.047	0.049	0.082	0.056	0.089	1.63
10	0.043	0.045	0.071	0.047	0.067	1.63

3. TEST SETUP PHOTO

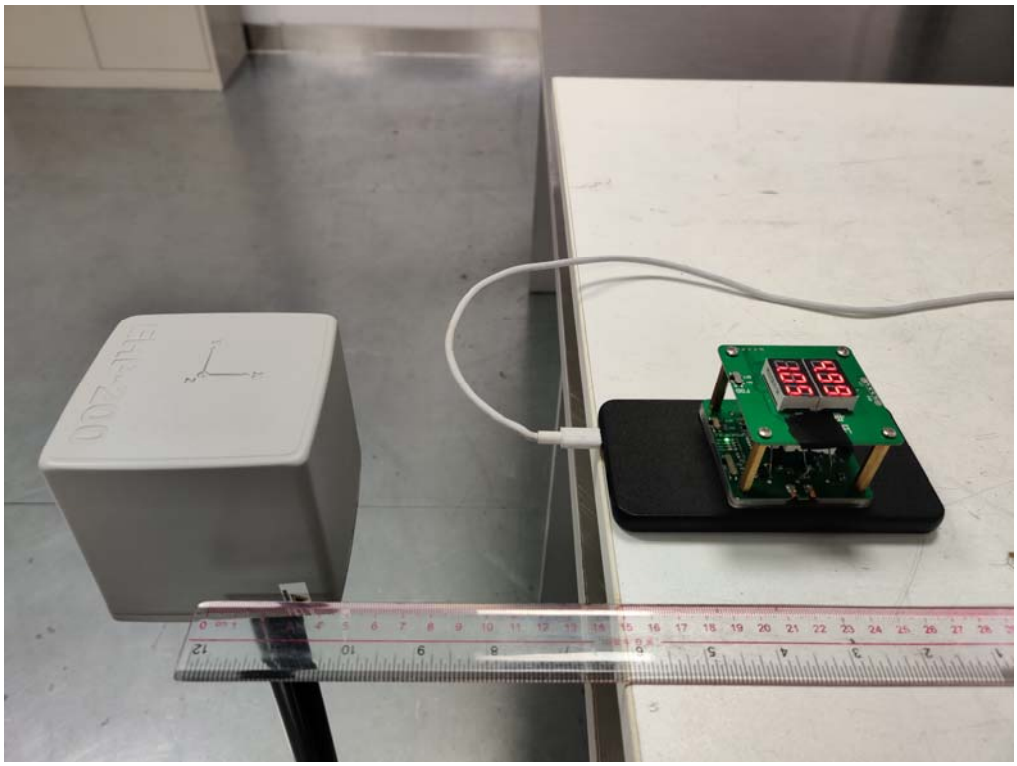
setup A
Position A



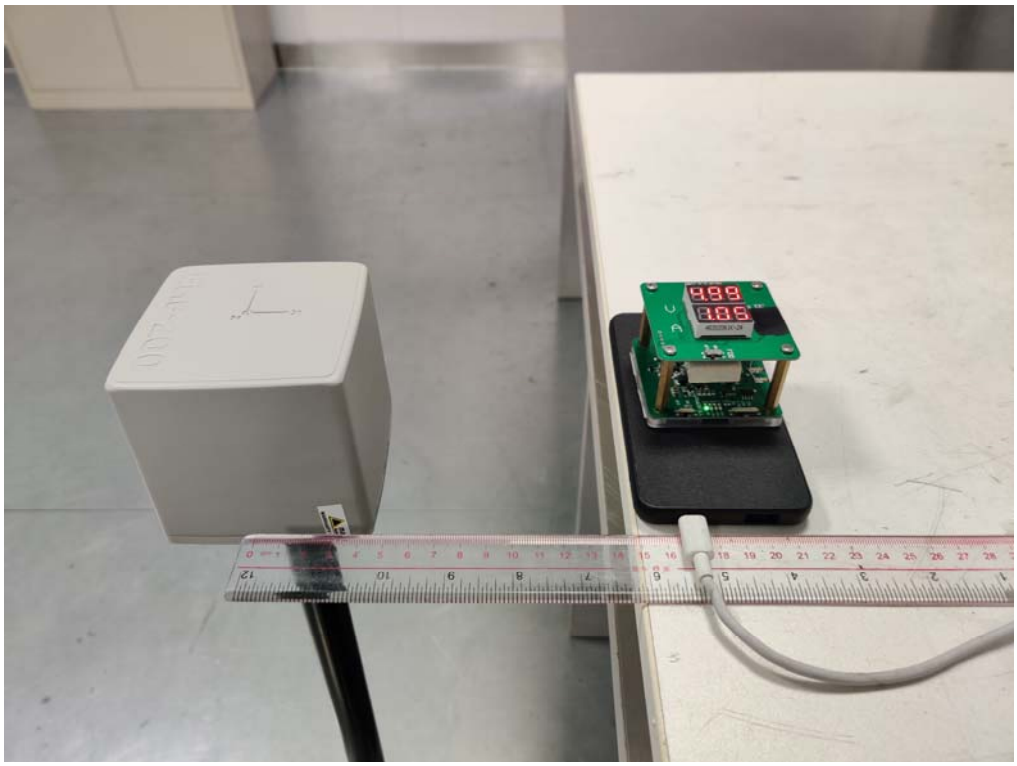
Position B



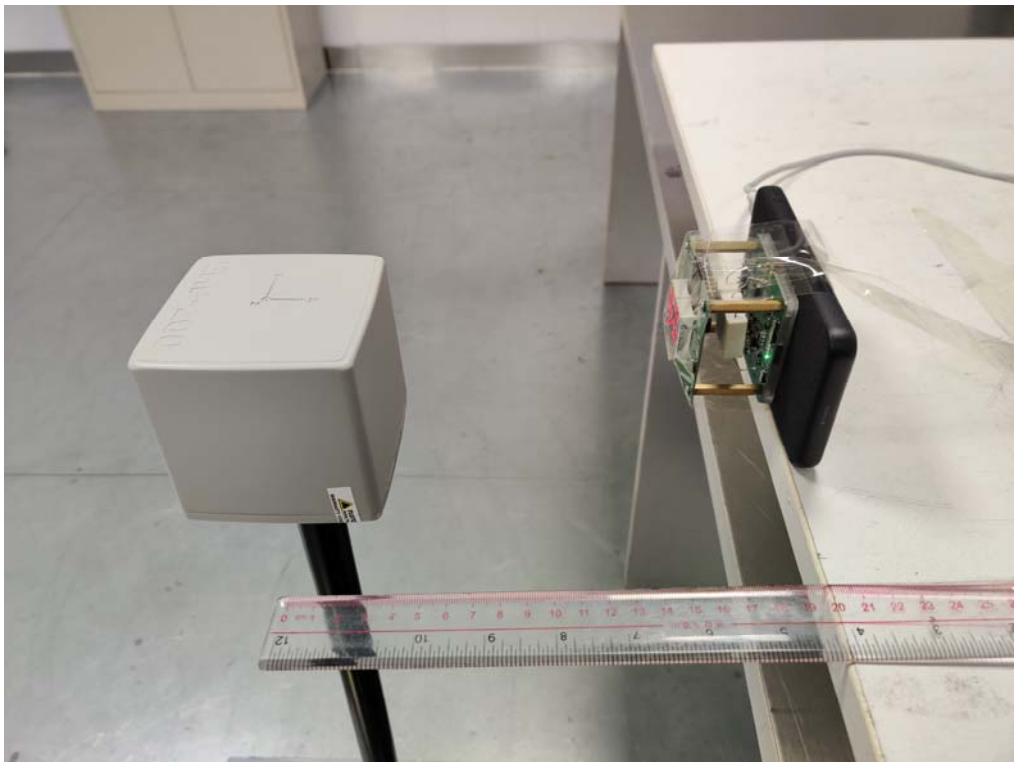
Position C



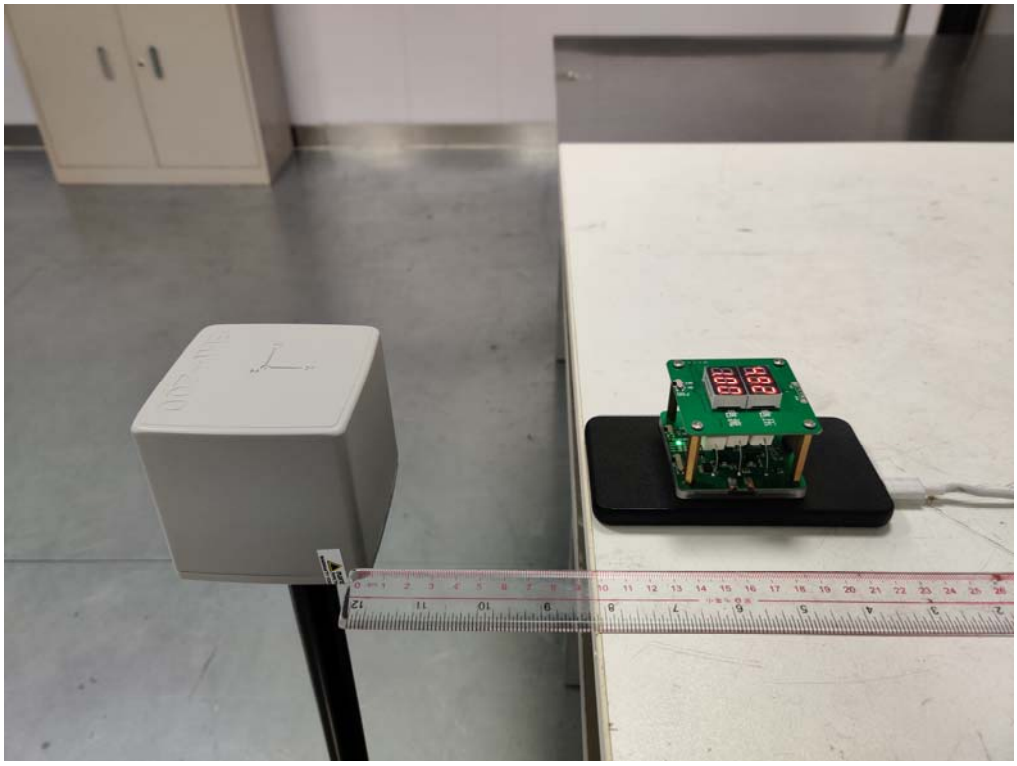
Position D



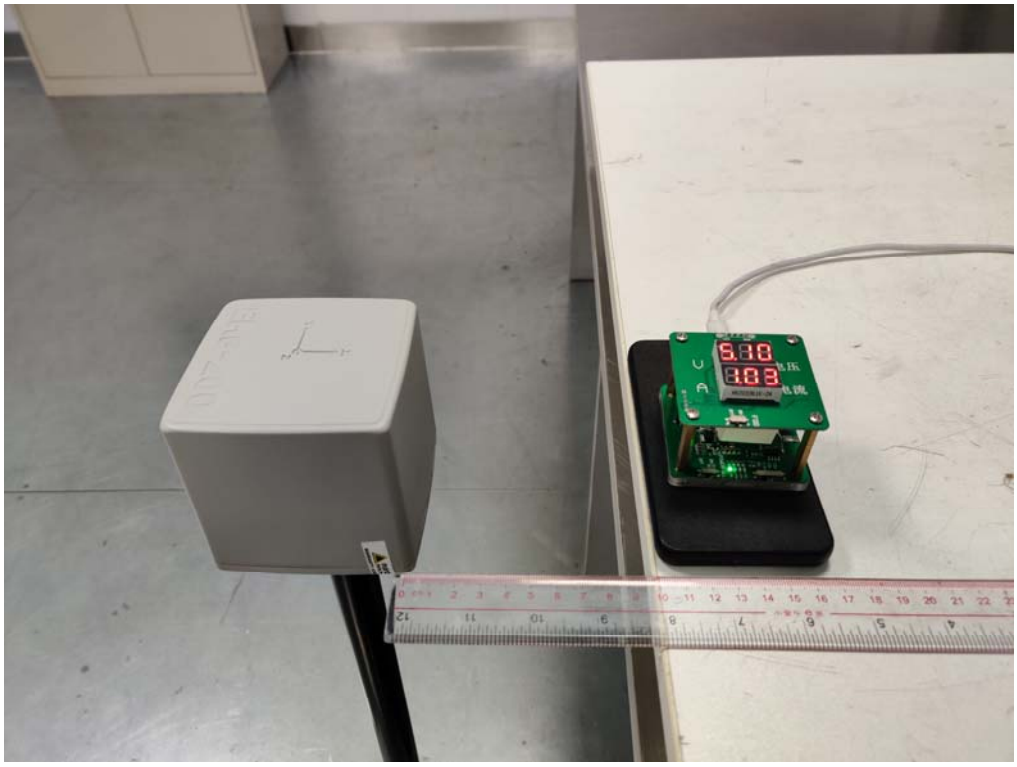
Position E



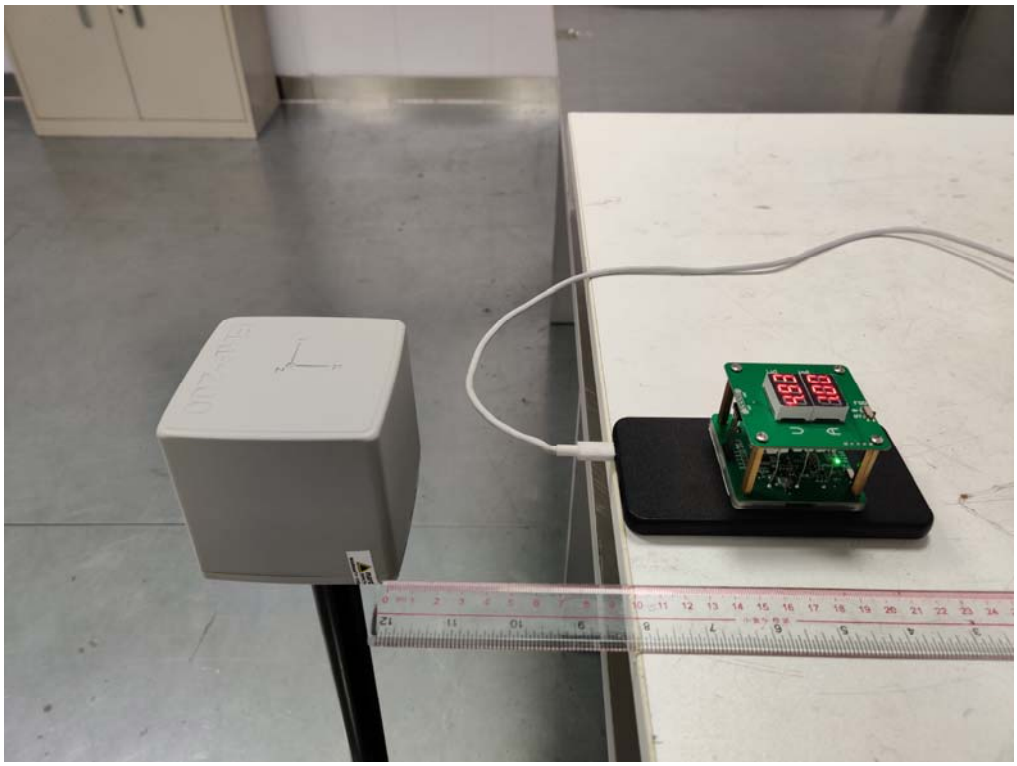
setup B
Position A



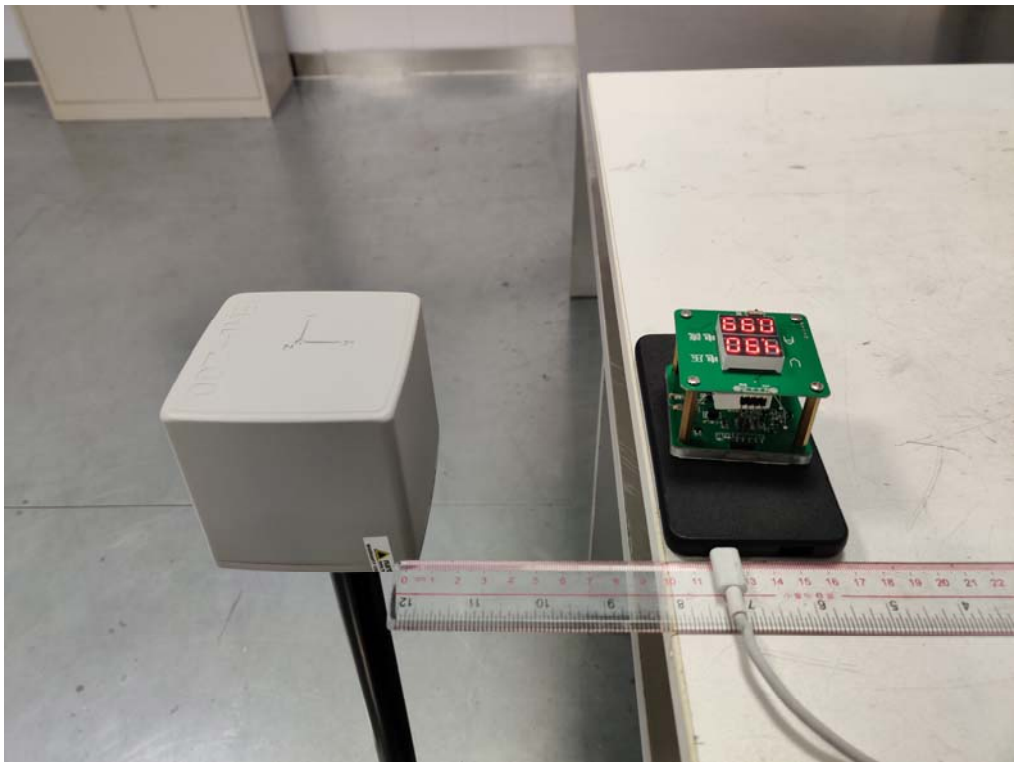
Position B



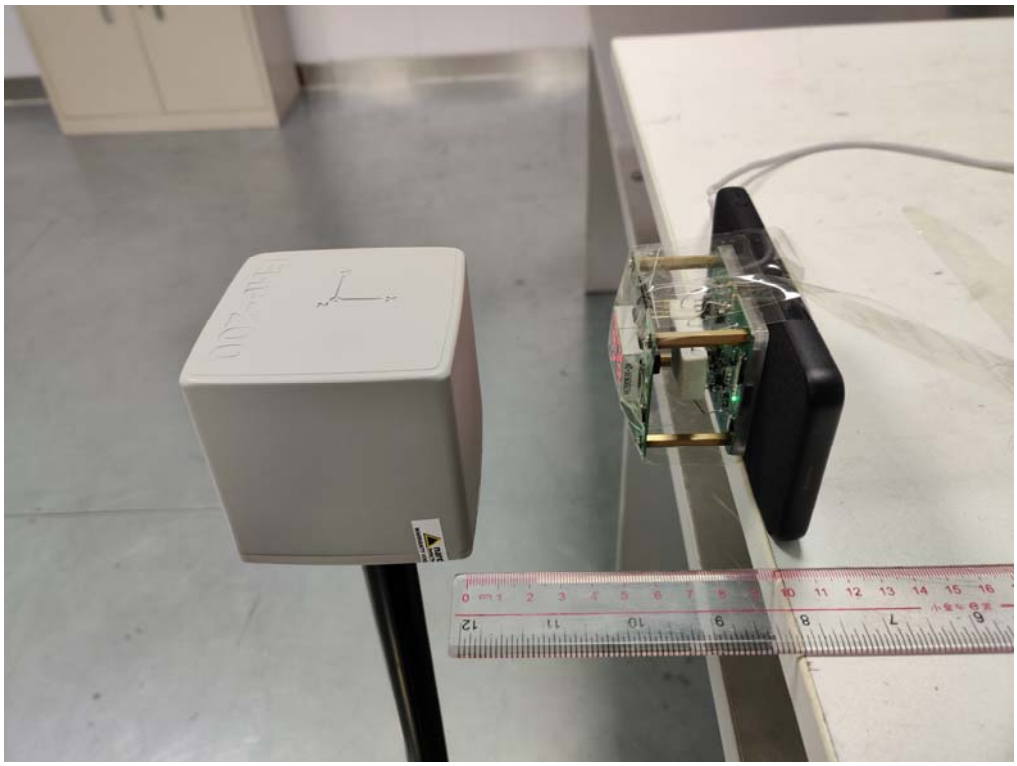
Position C



Position D



Position E



End of Test Report