TCT 通测检测
TESTING CENTRE TECHNOLOGY

TEST REPORT

FCC ID. ..... :	2BCUX-W0582
Test Report No..... :	TCT240612E059
Date of issue..... :	Jun. 26, 2024
Testing laboratory ..... :	SHENZHEN TONGCE TESTING LAB
Testing location/ address:	2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China
Applicant's name..... :	Shen Zhen Shi Ai Mei Ke Ke Ji You Xian Gong Si
Address..... :	Room 1615, Building C, Huangdu Plazza, No.3008, Yitian Road, Huanggang Community, Futian Street, Futian District, Shenzhen 518000, China
Manufacturer's name ... :	Dong guan Utopia-Originality Technology Co., Ltd
Address..... :	NO.2, moushan Road, Chan'an Town, Dongguan City, Guangdong Province
Standard(s) ..... :	FCC CFR Title 47 Part 1.1310 KDB 680106 D01 RF Exposure Wireless Charging App v04
Product Name..... :	GeoWallet Power Bank
Trade Mark ..... :	VEGER
Model/Type reference..... :	W0582
Rating(s)..... :	Rechargeable Li-ion Battery DC 3.85V
Date of receipt of test item ..... :	Jun. 12, 2024
Date (s) of performance of test..... :	Jun. 12, 2024 ~ Jun. 26, 2024
Tested by (+signature) ... :	Ronaldo LUO
Check by (+signature).... :	Beryl ZHAO
Approved by (+signature):	Tomsin

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1. General Product Information

1.1. EUT description

Product Name.....:	GeoWallet Power Bank
Model/Type reference.....:	W0582
Sample Number.....:	TCT240612E058-0101
Operation Frequency.....:	115.03kHz ~ 149.97kHz
Output power……...:	15W
Modulation Technology .....:	Load modulation
Antenna Type.....:	Inductive loop coil Antenna
Rating(s).....:	Rechargeable Li-ion Battery DC 3.85V

1.2. Model(s) list

None.

2. General Information

2.1. Test environment and mode

Operating Environment:		
Condition	Conducted Emission	Radiated Emission
Temperature:	22.8 °C	24.6 °C
Humidity:	49 % RH	49 % RH
Atmospheric Pressure:	1010 mbar	1010 mbar
Test Mode:		
AC mode	Type-C Input + wireless discharging (battery status>95%)	
	Type-C Input + wireless discharging (battery status<50%)	
	Type-C Input + wireless discharging (battery status<5%)	
Internal Battery Mode	Wireless charging (battery status>95%)	
	Wireless charging (battery status<50%)	
	Wireless charging (battery status<5%)	
The sample was placed 0.8m for the measurement below 1GHz above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case(Z axis) are shown in Test Results of the following pages.		

3. Facilities and Accreditations

3.1. Facilities

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

- FCC - Registration No.: 645098
  SHENZHEN TONGCE TESTING LAB
  Designation Number: CN1205
  The testing lab has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.
- IC - Registration No.: 10668A-1
  SHENZHEN TONGCE TESTING LAB
  CAB identifier: CN0031
  The testing lab has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.

3.2. Location

SHENZHEN TONGCE TESTING LAB
Address: 2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China
TEL: +86-755-27673339

4. Technical Requirements Specification

4.1. Requirements

According to the item 5 of KDB 680106 D01 RF Exposure Wireless Charging App v04:

(1) Power transfer frequency is less than 1 MHz.
Wireless power transfer operation frequency is 115.38kHz ~ 135.90kHz.

(2) Output power from each primary coil is less than or equal to 15 watts.
The output power is 15W

(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.
Device only capable of wireless power transfer between one sourse and one client at a time, only allow wireless power transfer to take place through a single pair of coils at any given time, and it use one overlapping smaller coil in a charging zone.

(4) Client device is placed directly in contact with the transmitter.
Direct contact

(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

Limits

The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

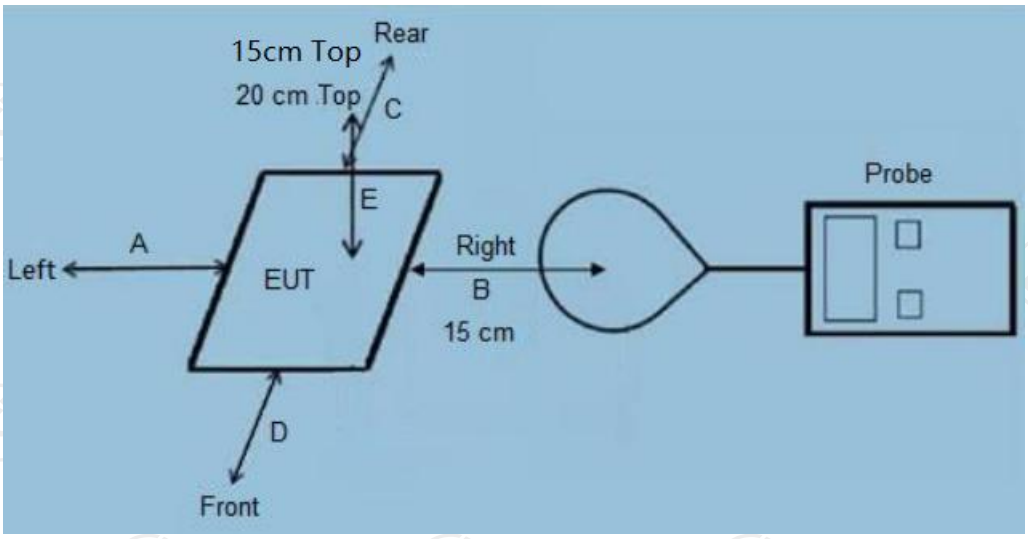
Limits for Maximum Permissible Exposure (MPE)

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 Exposures				
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
300-1500	/	/	f/300	6
1500-100,000	/	/	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
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

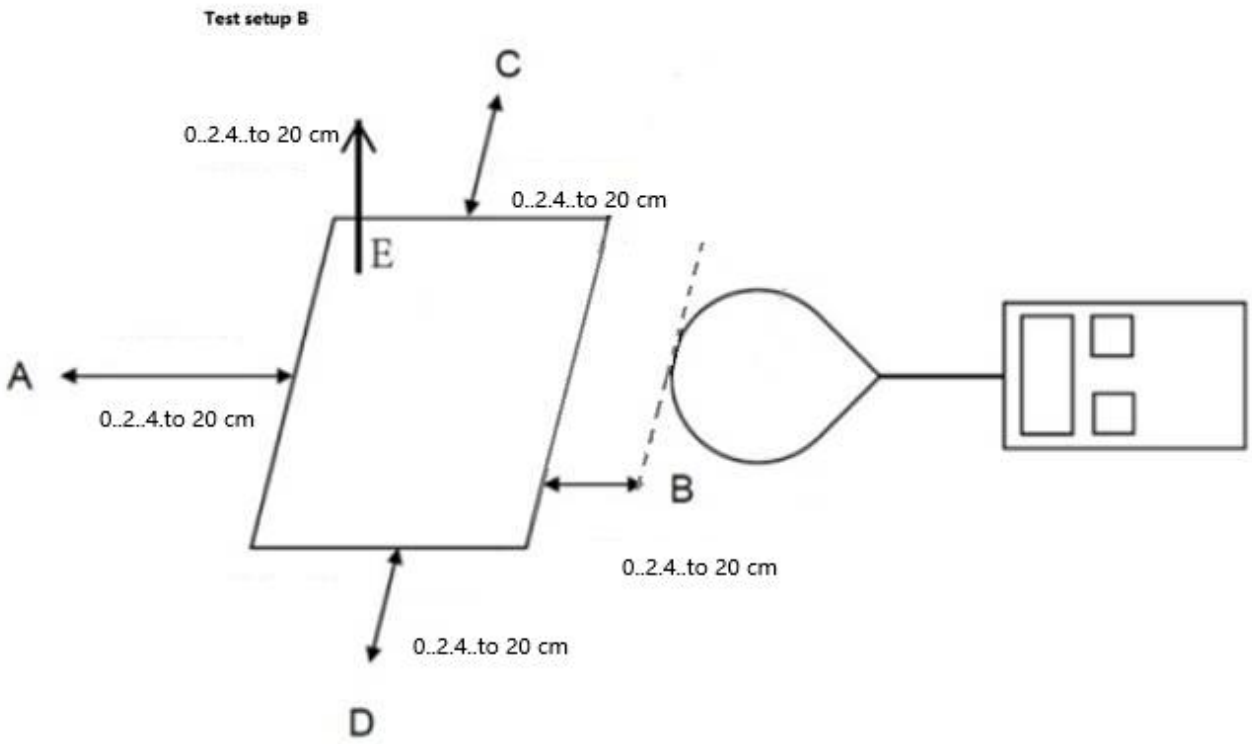
F=frequency in MHz
*=Plane-wave equivalent power density
RF exposure compliance will need to be determined with respect to 1.1307(c) and (d) of the FCC rules. The emissions should be within the limits at 300kHz in Table 1 of 1.1310(use the 300kHz limits for 150kHz:614V/m,1.63A/m).

4.2. Test Setup

A:



B:



4.3. Test Procedure

1) The RF exposure test was performed in an echoic chamber;

2) The measurement probe was placed at test distance(15 cm from edges, 20 cm and 15cm from top) Which is between the edge of the charger and the geometric center of probe, for test setup A;

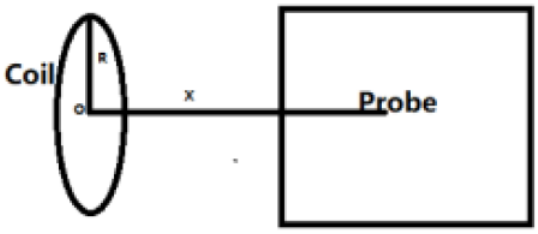
3) In addition to what is described in KDB 680106 D01, please measure and provide magnetic and electrical field strength at a distance 0cm to 20cm at 2cm iteration, i.e. at a distance of 0cm, 2cm, 4cm, ……. 20cm. Which is between the edge of the charger and the edge of of probe, for test setup B;

4) The highest emission leve laws recorded and compared with limit as soon as measurement of each points (A,B, C,D, E)were completed;

5) According to the requirements if KDB 680106 D01 v04, If the center of the probe sensing element is located more than 5 mm (The sensitive elements are located approximately 8 mm below the external surface specified in user manual of EHP-200A) from the probe outer surface, the field strengths need to be estimated through modeling for those positions that are not reachable;

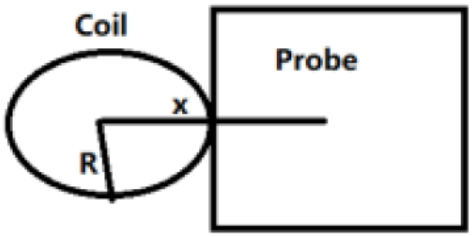
6) Use **Biot-Savart Law**, the value of 0 cm can be estimated through the results of 2 cm, according to the formula:

Top & Bottom Side:



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

Front, left, right & rear Side:



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

Remark:
B: H-field(Unit:T)
u_0: Space permeability=4*pi*10^{-7}
I (Unit: A): The current element passing through a radiated coil.
R: Radius of radiated coil, according to the coil specification: R=0.02m
X: The distance from the sensing elements of the probe to the edge of the radiated coil (the dimensions of EUT and load are take into account) (Unit: m)
N: Turns of the radiated coil, according to the coil specification: N=14.

4.4. Test Instruments List

Equipment	Manufacturer	Model No.	Serial No.	Calibration Due
Electric and Magnetic Field Analyzer	Narda	EHP-200A	180ZX20511	Jul. 04, 2024
Adapter	SAMSUNG	EP-TA200	R37M4PR7QD4SE3	/
Mobile Phone	SAMSUNG	SM-G9350	R28HA2ER3GT	/

4.5. Test Result

Note: EUT mode: wireless output 15 W
Test Result for Test setup A:
AC power in mode

E-Filed Strength at (15 cm from edges A, B, C, D, 20 cm and 15cm from top E) surrounding the EUT (V/m)

Charging Load Worse case	Test Position A (V/m)	Test Position B (V/m)	Test Position C (V/m)	Test Position D (V/m)	Test Position E (V/m)20cm	Test Position E (V/m)15cm	Limits (V/m)
<1%	0.57	0.61	0.63	0.74	0.69	0.71	614
50%	0.49	0.54	0.58	0.68	0.84	0.66	614
>95%	0.39	0.51	0.52	0.58	0.61	0.69	614

H-Filed Strength at (15 cm from edges A, B, C, D, 20 cm and 15cm from top E) surrounding the EUT (A/m)

Charging Load Worse case	Test Position A(A/m)	Test Position B(A/m)	Test Position C(A/m)	Test Position D(A/m)	Test Position E(A/m)20cm	Test Position E(A/m)15cm	Limits (A/m)
<1%	0.036	0.021	0.035	0.035	0.029	0.026	1.63
50%	0.028	0.027	0.024	0.025	0.029	0.024	1.63
>95%	0.025	0.023	0.021	0.025	0.021	0.025	1.63

Test Result for Test setup B:

Internal battery power mode.

<5%, 50%, >95% load all have been tested, only worse case Max load (<5%) is reported.

H-Filed Strength at (distance 0cm to 20cm at 2cm iteration, i.e. at a distance of 20cm, 18cm, 16cm, ……. 0cm, Which is between the edge of the charger and the edge of of probe,) surrounding the EUT (A/m)

Test distance (cm)	Test Position A(A/m)	Test Position B(A/m)	Test Position C(A/m)	Test Position D(A/m)	Test Position E(A/m)	Test Position F(A/m)	Limits (A/m)
2	0.395	0.284	0.157	0.122	0.130	0.121	1.63
4	0.352	0.245	0.139	0.094	0.118	0.113	1.63
6	0.323	0.264	0.114	0.096	0.111	0.128	1.63
8	0.342	0.265	0.098	0.086	0.096	0.117	1.63
10	0.221	0.215	0.098	0.084	0.094	0.117	1.63
12	0.253	0.231	0.094	0.077	0.085	0.105	1.63
14	0.291	0.164	0.091	0.098	0.080	0.110	1.63
16	0.279	0.119	0.112	0.125	0.124	0.116	1.63
18	0.212	0.194	0.103	0.110	0.098	0.098	1.63
20	0.281	0.177	0.085	0.095	0.096	0.076	1.63

Use the Biot-Savart Law to estimated the results of 2cm through 4 cm.

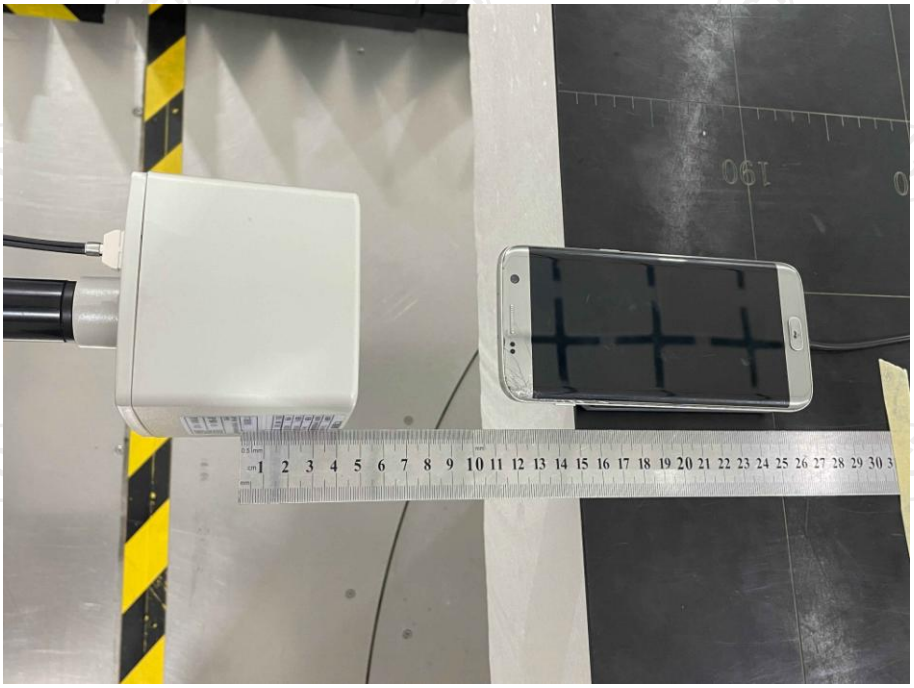
Test position	Measure Value(A/m)	Estimated Value (A/m)	Agreement Ratio	Limits
A	0.326	0.348	6.75%	30%
B	0.379	0.486	28.23%	30%
C	0.122	0.134	9.84%	30%
D	0.211	0.271	28.44%	30%
E	0.538	0.679	26.21%	30%
F	0.436	0.566	29.82%	30%

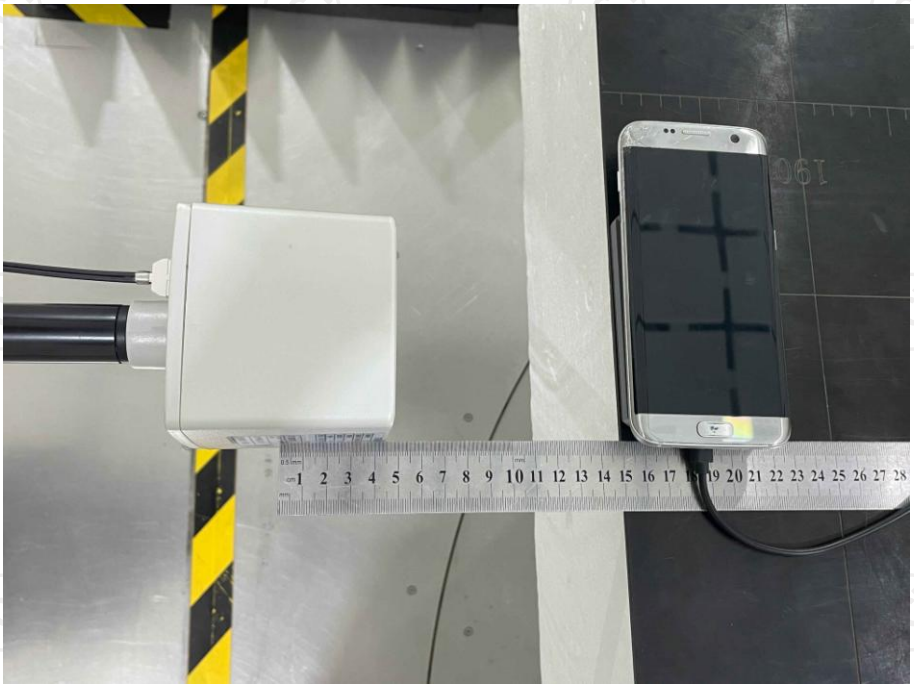
As the model is sufficient, the value of 0cm can be estimated through the results of 2 cm

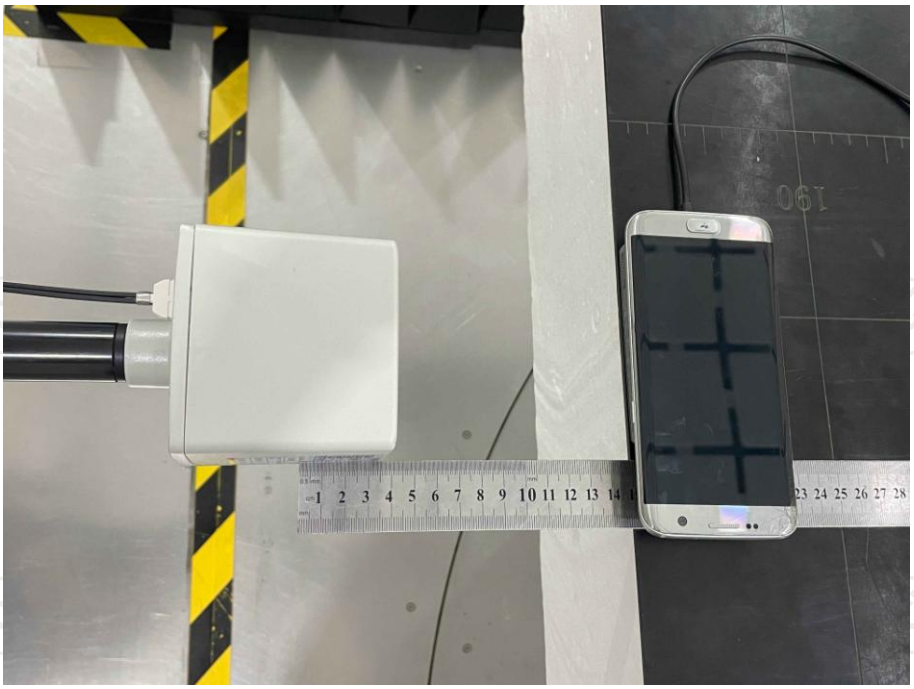
Test position	Estimated Value (A/m)	Limits(A/m)
A	0.416	1.63
B	0.451	
C	0.154	
D	0.269	
E	0.697	
F	0.563	

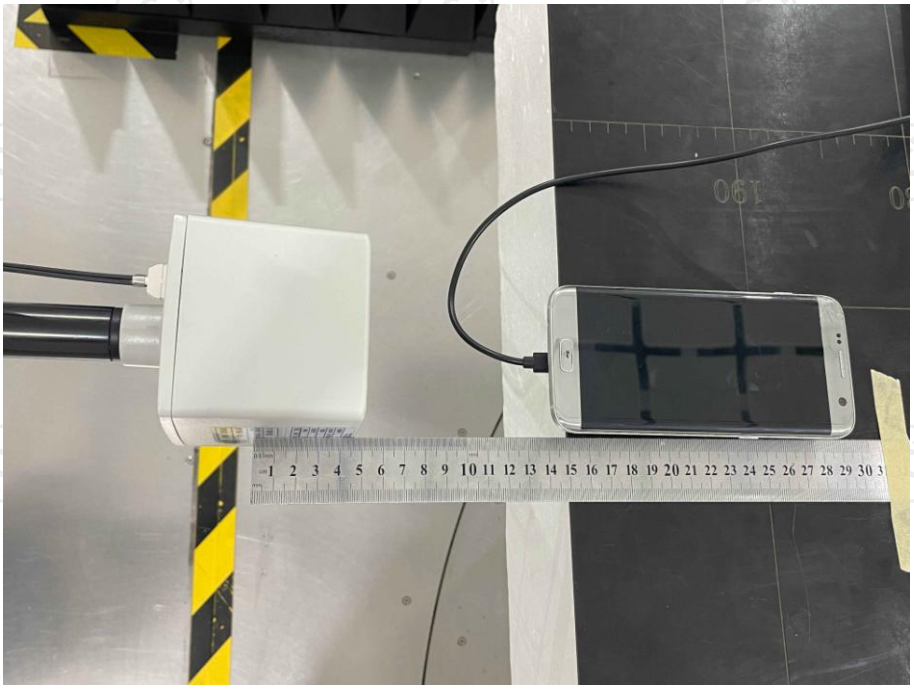
4.6. Test Set-up Photo

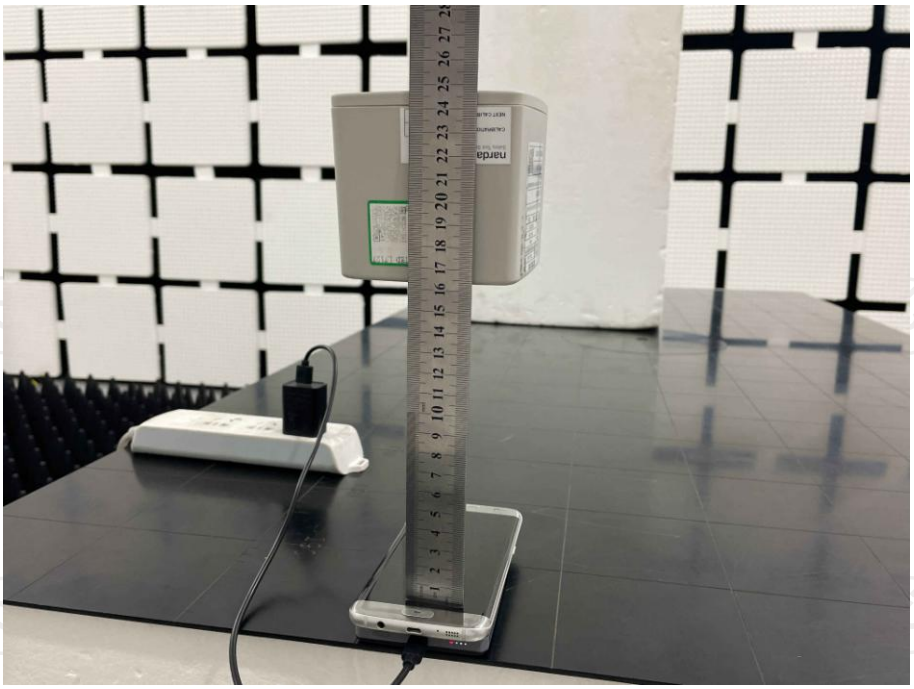
AC in mode



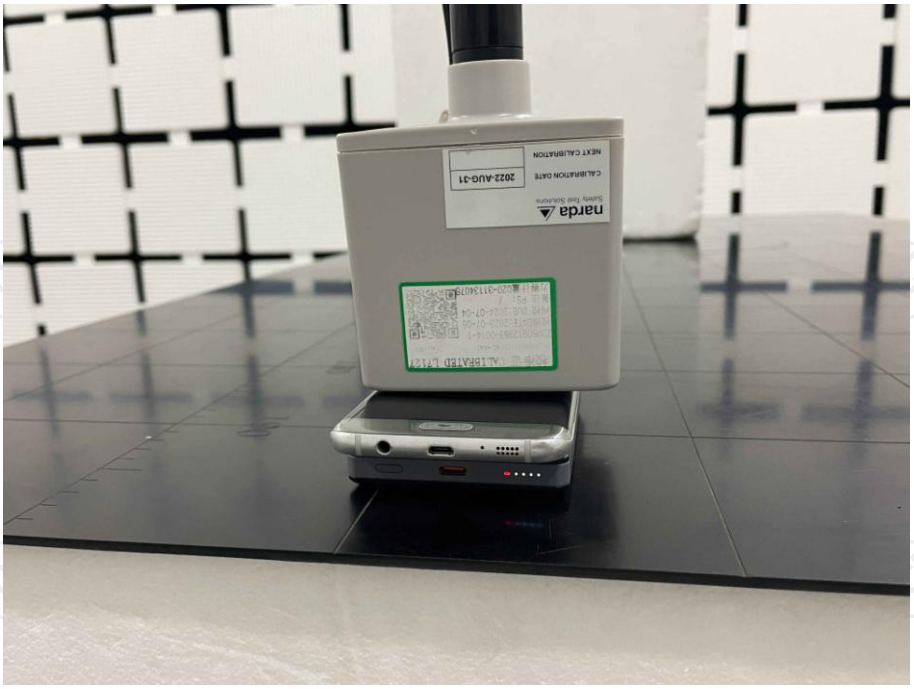








Internal battery mode



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