

RF Exposure Evaluation Report

Applicant: JOGEEK TECHNOLOGY LIMITED

Address of Applicant: 2F., NO. 285, SEC. 3, ROOSEVELT RD., DA'AN DIST.,
TAIPEI CITY 106, TAIWAN (R.O.C.)

Equipment Under Test (EUT)

Product Name: POWER BANK

Model No.: JPB002

Trade mark: JOGEEK

FCC ID: 2AZ2ZJPB002

Applicable standards: 680106 D01 RF Exposure Wireless Charging App v03r01

Date of sample receipt: 21 Jan., 2021

Date of Test: 22 Jan., to 25 Oct., 2021

Date of report issue: 26 Oct., 2021

Test Result: PASS*

Authorized Signature:



Bruce Zhang
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the JYT product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

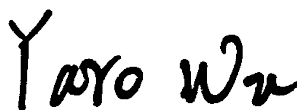
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2 Version

Version No.	Date	Description
00	03 Mar., 2021	Original
01	25 May, 2021	Update FCC ID
02	30 Sep., 2021	1. Updated test data and test setup photo. 2. Updated remark of operating mode on page 4.
03	21 Oct., 2021	1. Updated test data on page 9 to page 12. 2. Updated photo on page 15. 3. Updated limit on page 6. 4. Updated description on page 7.
04	26 Oct., 2021	1. Updated photo on page 15/18.

Tested by:



Test Engineer

Date:

26 Oct., 2021

Reviewed by:



Project Engineer

Date:

26 Oct., 2021

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4 General Information

4.1 Client Information

Applicant:	JOGEEK TECHNOLOGY LIMITED
Address:	2F., NO. 285, SEC. 3, ROOSEVELT RD., DA'AN DIST., TAIPEI CITY 106,TAIWAN (R.O.C.)
Manufacturer:	JOGEEK TECHNOLOGY LIMITED
Address:	2F., NO. 285, SEC. 3, ROOSEVELT RD., DA'AN DIST., TAIPEI CITY 106,TAIWAN (R.O.C.)
Factory:	Shenzhen Haisic Technology Co., Ltd.
Address:	Building C,Tu Yang Second Industrial zone , Kui chong street, Da Peng New District, Shenzhen.

4.2 General Description of E.U.T.

Product Name:	POWER BANK
Model No.:	JPB002
Operation Frequency:	112-148kHz
Modulation technology:	ASK
Antenna Type:	Coil Antenna
Power supply:	Rechargeable Li-ion polymer Battery DC3.7V, 10000mAh
Power supply (Wireless Charger):	Input: Micro USB: 5V/2A, 9V/2A, 12V/1.5A Type-C: 5V/3A, 9V2A, 12V/1.5A Output: USB: 5V/3A, 9V/2A, 12V/1.5A Type-C: 5V/3A, 9V2A, 12V/1.5A Wireless: 5W/7.5W/10W
Test Sample Condition:	The test samples were provided in good working order with no visible defects.

4.3 Operating Modes

Operating mode	Detail description
Full load mode	Keep the EUT in Full load mode
Remark: 1. Pre-scan input: 5V/2A, 5V/3A, 9V/2A 12V/1.5A, output: 5W, 7.5W, 10W of the Power supply, found input: 12V/1.5A, output: 10W was worse case mode. So the report only reflects the worse mode. 2. No load, mid load , full load mode all have been tested , only worse case full load mode is reported.	

4.4 Description of Support Units

Manufacturer	Description	Model	S/N	FCC ID/DoC
Huawei	Adapter	HW-050450C00	N/A	Doc
Apple	Mobile phone	iPhone 11 Pro	MWDE2CH/A	Doc

4.5 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%)
Magentic(Mode A) field measurements (3kHz ~ 300KHz)	7.8% (k=2)
Magentic(Mode B) field measurements (30kHz ~ 30MHz)	3.5% (k=2)
Electric field measurements (3kHz ~ 30MHz)	7.8% (k=2)

4.6 Additions to, deviations, or exclusions from the method

No

4.7 Laboratory Facility

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

● **FCC - Designation No.: CN1211**

JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

● **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

● **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <https://portal.a2la.org/scopepdf/4346-01.pdf>

4.8 Laboratory Location

JianYan Testing Group Shenzhen Co., Ltd.

Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.

Tel: +86-755-23118282, Fax:+86-755-23116366

Email: info@ccis-cb.com, Website: <http://www.ccis-cb.com>

4.9 Test Instruments list

Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
Electric and Magnetic field Probe - Analyzer	narda Safety Test Solutions S.r.l.	EHP-200AC	180ZX10203	02-24-2021	02-23-2022
EHP200-TS Software	narda Safety Test Solutions S.r.l.	EHP200-TS	Version: Rel 1.94	N.C.R	N.C.R

5 Technical Requirements Specification in FCC CFR Title 47 Part 2.1091

5.1 Limits

Human exposure to RF emissions from mobile devices (47 CFR §2.1091) may be evaluated based on the MPE limits adopted by the FCC for electric and magnetic field strength and/or power density, as appropriate, since exposures are assumed to occur at distances of 20 cm or more from persons.

According to KDB 680106 D01 RF Exposure Wireless Charging Apps, RF exposure evaluation should be conducted assuming a user separation distance of 15 cm for devices designed for typical desktop applications. E and H field strength measurements or numerical modelling 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.

5.2 Limits For General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW /cm ²)	Averaging Time (minutes)
0.3 ~ 3.0	614	1.63	(100)*	30
3.0 ~ 30	824/f	2.19/f	(180/f ₂)*	30
30 ~ 300	27.5	0.073	0.2	30
300~1500	-	-	f/1500	30
1500~100000	-	-	1.0	30

5.3 Test Setup Block

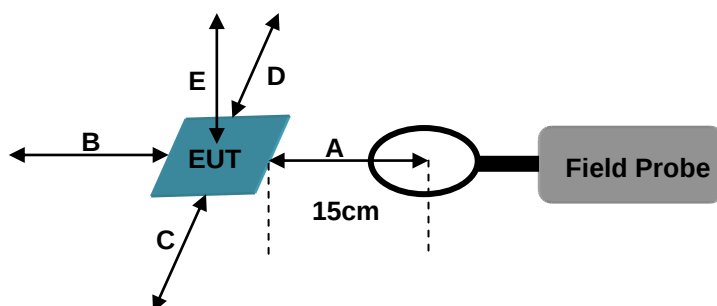


Figure 1: Mobile mode

- Remrak:** 1. The EHP 200AC probe antenna diameter is 8.8cm.
 2. A is Front side, B is Back side, C is Left side, D is Right side, E is Top side.
 3. The test distance of A, B, C, D side is 15cm, The test distance of E side is 20cm.

5.4 Test Procedure

KDB 680106 D01 Section 5(b):
(1) Power transfer frequency is less than 1 MHz. -- Yes, the device operate in the frequency 112-148kHz. (2) Output power from each primary coil is less than or equal to 15 watts. -- Yes, the maximum output power of the primary coil is 10W. (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. --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, the DUT is a portable device.. (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 less than 50% of the MPE limit.

1. Installing the probe and turn on the EHP 200AC power switch, in the testing software, select the magnetic field test mode and the A/m unit, select the peak detection mode, select the Max-Hold display.
2. Check the background noise.
3. Make DUT work at maximum transmit power.
4. During the measurement, the probe centre of the EHP 200AC is kept in 15cm distance from each test surface of the wireless charging base, and recorded the measured values of the A, B, C, D side are separately.
5. Then move the probe, the probe centre of the EHP 200AC is kept in 20cm distance from the top side of the wireless charging base, and recorded the measured values of the E side.
6. In the testing software, Select the electric field test mode and the V/m unit, select the peak detection mode, select the Max-Hold display.
7. Repeat step 2 to 4 and then get the strength of the electric field.
8. Desktop device should be installed on the edge.(table : 0.8 m (H) high table structure of nonmetallic materials).

5.5 Result

Empty load, half load and full load have been tested, the full load mode is the worst, and only the worst test data is reflected in the report.

For Mobile mode:

a) Magnetic Field Strength Measurement

Measured Side	Distance (cm)	Measured Value (A/m)	50 % of Limit (A/m)	Limit (A/m)
A	15	0.241	0.815	1.63
B	15	0.249	0.815	1.63
C	15	0.220	0.815	1.63
D	15	0.214	0.815	1.63
E	20	0.172	0.815	1.63

b) Electric Field Strength Measurement

Measured Side	Distance (cm)	Measured Value (V/m)	50 % of Limit (V/m)	Limit (V/m)
A	15	1.617	307.00	614
B	15	1.622	307.00	614
C	15	1.435	307.00	614
D	15	1.382	307.00	614
E	20	1.108	307.00	614

For Portable mode:

a) Magnetic Field Strength Measurement

Measured Side	Distance (cm)	Measured Value (A/m)	Limit (A/m)
A	0	0.159	1.63
B	0	0.152	1.63
C	0	0.146	1.63
D	0	0.148	1.63
E	0	0.132	1.63

Measured Side	Distance (cm)	Measured Value (A/m)	Limit (A/m)
A	2	0.151	1.63
B	2	0.149	1.63
C	2	0.137	1.63
D	2	0.133	1.63
E	2	0.125	1.63

Measured Side	Distance (cm)	Measured Value (A/m)	Limit (A/m)
A	4	0.138	1.63
B	4	0.135	1.63
C	4	0.120	1.63
D	4	0.121	1.63
E	4	0.118	1.63

Measured Side	Distance (cm)	Measured Value (A/m)	Limit (A/m)
A	6	0.125	1.63
B	6	0.127	1.63
C	6	0.108	1.63
D	6	0.106	1.63
E	6	0.095	1.63

Measured Side	Distance (cm)	Measured Value (A/m)	Limit (A/m)
A	8	0.109	1.63
B	8	0.112	1.63
C	8	0.093	1.63
D	8	0.090	1.63
E	8	0.081	1.63

Measured Side	Distance (cm)	Measured Value (A/m)	Limit (A/m)
A	10	0.088	1.63
B	10	0.090	1.63
C	10	0.076	1.63
D	10	0.079	1.63
E	10	0.065	1.63

b) Electric Field Strength Measurement

Measured Side	Distance (cm)	Measured Value (V/m)	Limit (V/m)
A	0	1.569	614
B	0	1.602	614
C	0	1.481	614
D	0	1.473	614
E	0	1.316	614

Measured Side	Distance (cm)	Measured Value (V/m)	Limit (V/m)
A	2	1.443	614
B	2	1.452	614
C	2	1.320	614
D	2	1.314	614
E	2	1.117	614

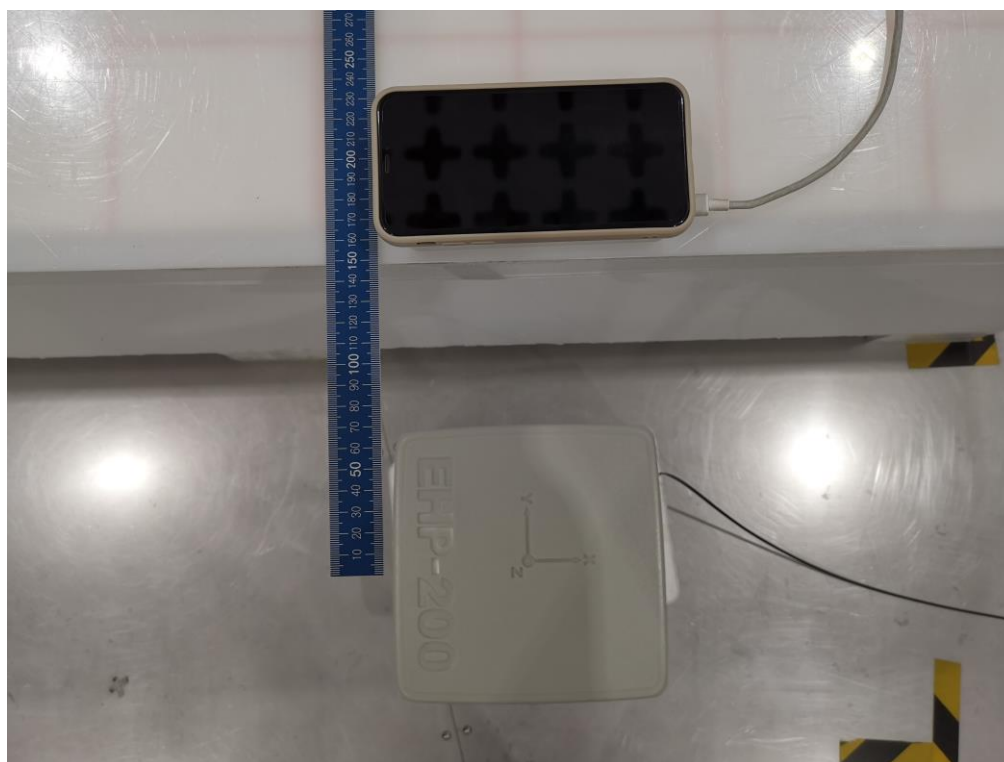
Measured Side	Distance (cm)	Measured Value (V/m)	Limit (V/m)
A	4	1.293	614
B	4	1.290	614
C	4	1.116	614
D	4	1.125	614
E	4	1.040	614

Measured Side	Distance (cm)	Measured Value (V/m)	Limit (V/m)
A	6	1.105	614
B	6	1.097	614
C	6	1.002	614
D	6	1.009	614
E	6	0.973	614

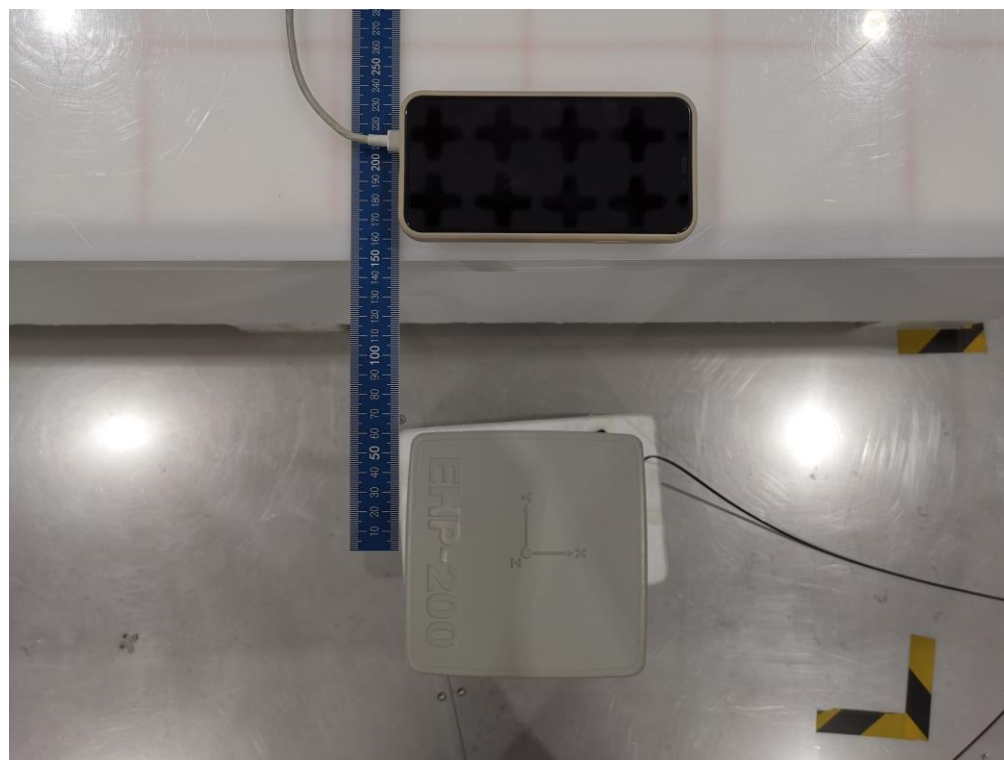
Measured Side	Distance (cm)	Measured Value (V/m)	Limit (V/m)
A	8	0.912	614
B	8	0.899	614
C	8	0.762	614
D	8	0.781	614
E	8	0.744	614

Measured Side	Distance (cm)	Measured Value (V/m)	Limit (V/m)
A	10	0.783	614
B	10	0.781	614
C	10	0.611	614
D	10	0.603	614
E	10	0.542	614

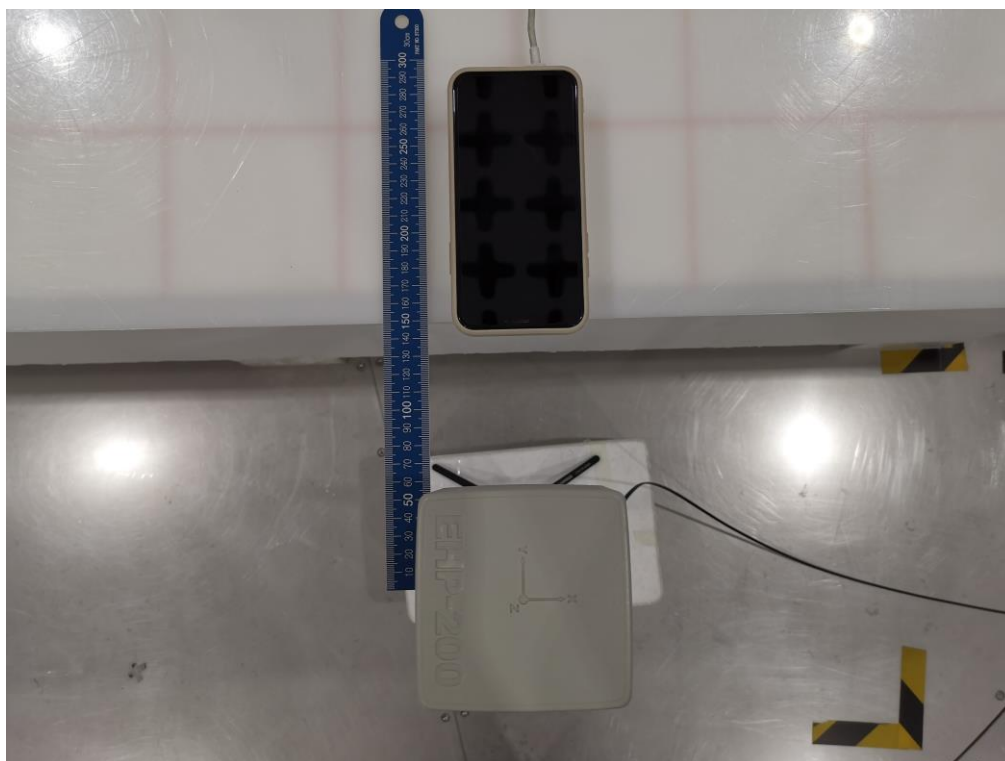
6 Test setup photo



Test setup of A side(Mobile mode)



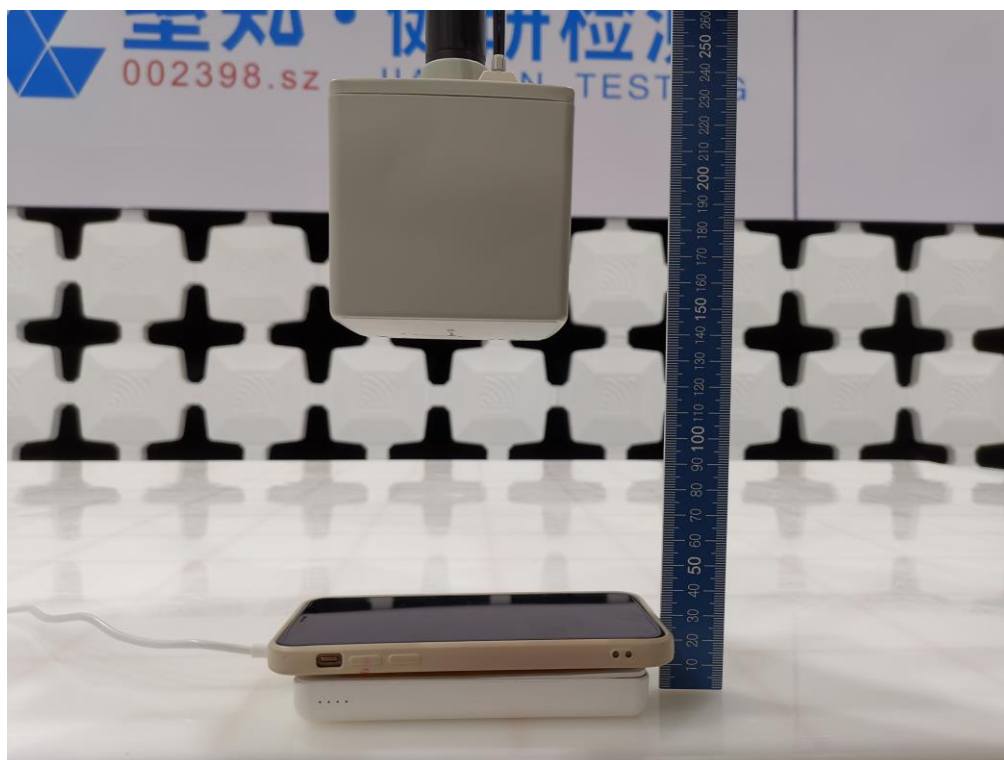
Test setup of B side(Mobile mode)



Test setup of C side(Mobile mode)



Test setup of D side(Mobile mode)



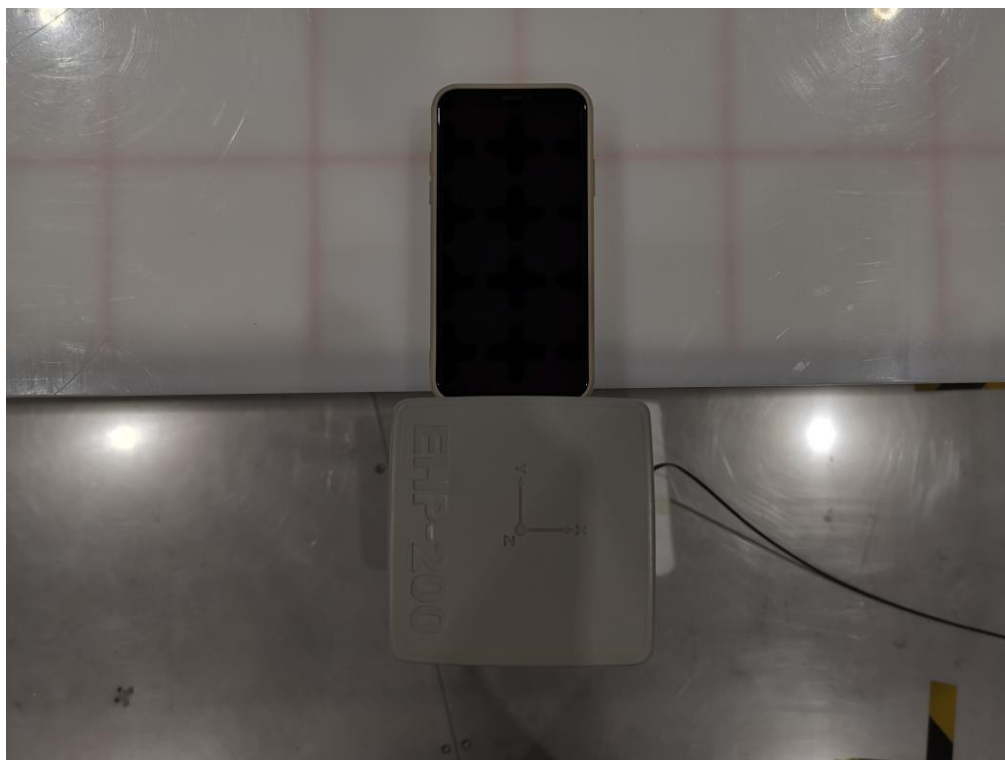
Test setup of E side(Mobile mode)



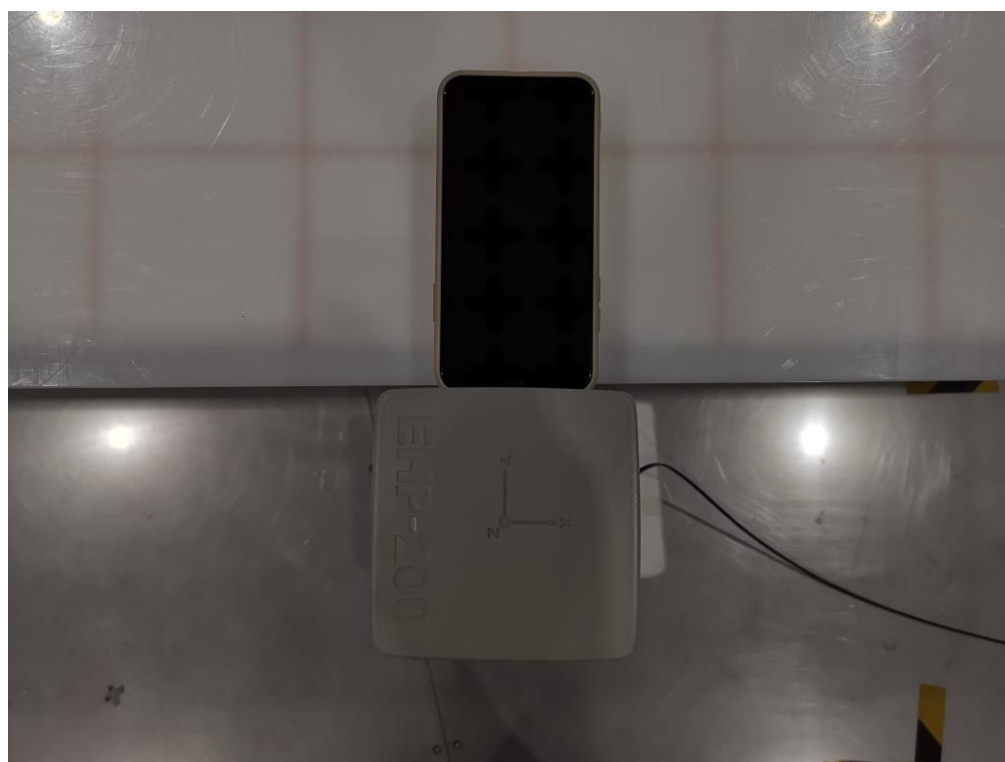
Test setup of A side(Portable mode, test distance: 0mm)



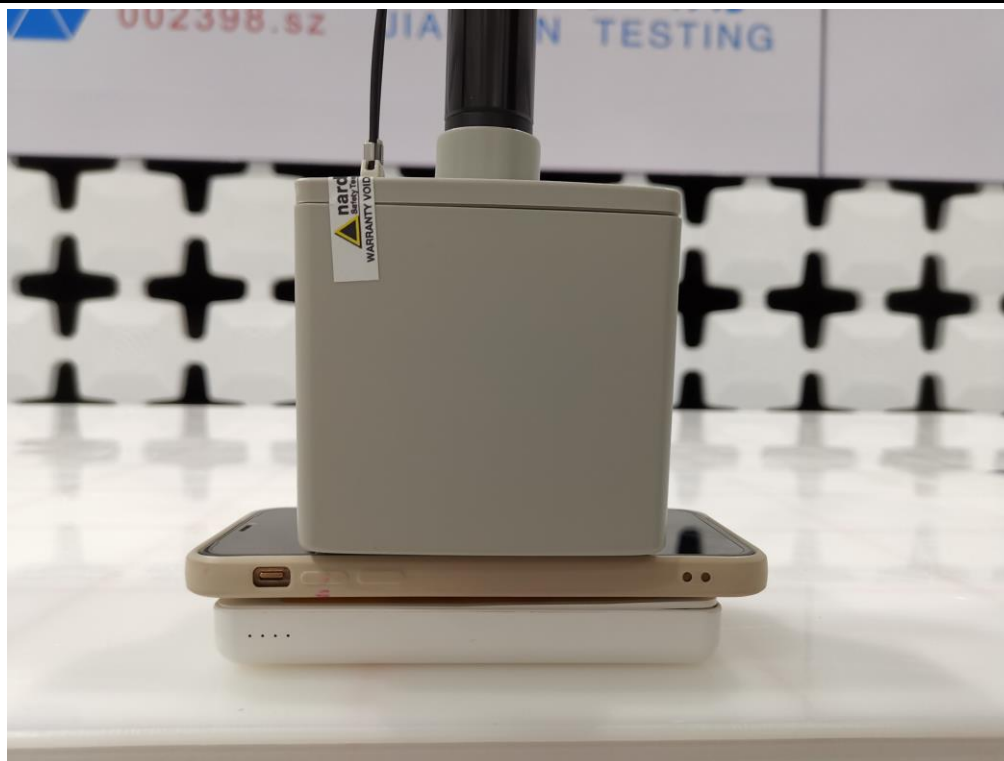
Test setup of B side(Portable mode, test distance: 0mm)



Test setup of C side(Portable mode, test distance: 0mm)



Test setup of D side(Portable mode, test distance: 0mm)



Test setup of E side(Portable mode, test distance: 0mm)

-----End of report-----