

RF Exposure Evaluation

Client Information:

Applicant: Shenzhen Esorun Technology Co., LTD
Room 226, Building A, B, C, Zone B, Yuanfen Industrial Zone, Taoyuan
Applicant add.: Community, Dalang Street, Longhua District, Shenzhen
Manufacturer: Shenzhen Esorun Technology Co., LTD
Room 226, Building A, B, C, Zone B, Yuanfen Industrial Zone, Taoyuan
Manufacturer add.: Community, Dalang Street, Longhua District, Shenzhen

Product Information:

Product Name: Universal Power Charger
Model No.: DMS04
Brand Name: N/A
FCC ID: 2AP2N-DMS04

Applicable standards: FCC CFR 47 PART 1, § 1.1310
KDB 680106 D01 Wireless Power Transfer v04

Prepared By:

Guangdong Asia Hongke Test Technology Limited

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Date of Receipt: Mar. 12, 2024 Date of Test: Mar. 12, 2024 ~ Mar. 19, 2024

Date of Issue: Mar. 19, 2024 Test Result: Pass

This device described above has been tested by Guangdong Asia Hongke Test Technology Limited and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Reviewed by:



Sean She

Approved by:



Eder Zhan



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Revision History

Revision	Issue Date	Revisions	Revised By
00	Mar. 19, 2024	Initial Issue	Eder Zhan

2 TEST FACILITY

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.

2.1 Deviation from standard

None

2.2 Abnormalities from standard conditions

None

2.3 Test Location

Guangdong Asia Hongke Test Technology Limited

Address: B1/F, Building 11, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Tel.: +86 0755-230967639 Fax.: +86 0755-230967639

3 GENERAL INFORMATION

EUT Name:	Universal Power Charger
Model No:	DMS04
Serial Model:	N/A
Test sample(s) ID:	AITSZ24031201001
Sample(s) Status:	Engineer sample
Operation frequency:	Coil1: For Phone: 115kHz-205kHz Coil2: For Earphone: 115kHz-205kHz Coil3: Watch: 325kHz
Modulation Technology:	MSK
Antenna Type:	Coil Antenna
Antenna gain:	0dBi
Hardware version.:	N/A
Software version.:	N/A
Power supply:	AC Input: 100-240VAC 50/60Hz Type-C Input: 5V 3A, 9V 2A, 9V 2.22A, 9V 3A iWatch wireless charger: Type-C Input: 5V 1A Magnet Wireless power bank with bracket: Type-C Input: 5V 2.6A, 9V 2A, 12V 1.5A Pogopin Output: 9V 2A (for Magnet Wireless power bank with bracket) Type-C Output: 5V 1A (for iWatch wireless charger) AirPods Output: 5W USB-A Output: 5V 1A iWatch wireless charger: Wireless Output: 2W Magnet Wireless power bank with bracket: Type-C Output: 5V 2.4A, 9V 2.22A, 12V 1.67A USB-A Output: 5V 4.5A, 5V 3A, 9V 2A, 12V 1.5A Wireless Output: 5W, 7.5W, 10W ,15W Simultaneous Output: 5V 3A
Model different:	N/A
Note:	Power Bank and iWatch wireless charger are auxiliary peripherals for EUT. Power Bank FCC ID: 2AP2N-DOCK5, iWatch wireless charger FCC ID: 2AP2N-WA02

4 TEST METHODOLOGY

4.1 Measuring Standard

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines. According to §1.1310 and §2.1091 RF exposure is calculated. According KDB680106 D01: KDB 680106 D01 Wireless Power Transfer v04.

4.2 Requirements

According to the item 3 of KDB 680106 D01v04:

Inductive wireless power transfer applications that meet all of the following requirements are excluded from submitting an RF exposure evaluation.

- (1) Mobile Device and Portable Device Configurations
- (2) Equipment Authorization Procedures for Devices Operating at Frequencies Below 4 MHz
- (3) The aggregate H-field strengths anywhere at or beyond 15 cm surrounding the device, and 20 cm away from the top surface.

4.3 Limits

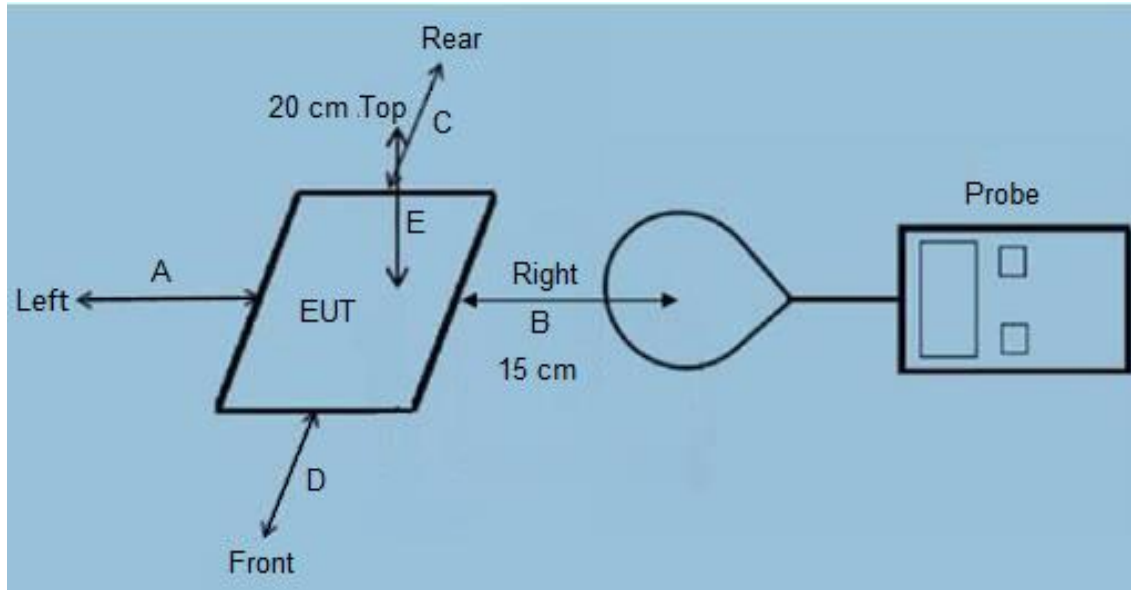
The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

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
 E=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).

4.4 Test Setup

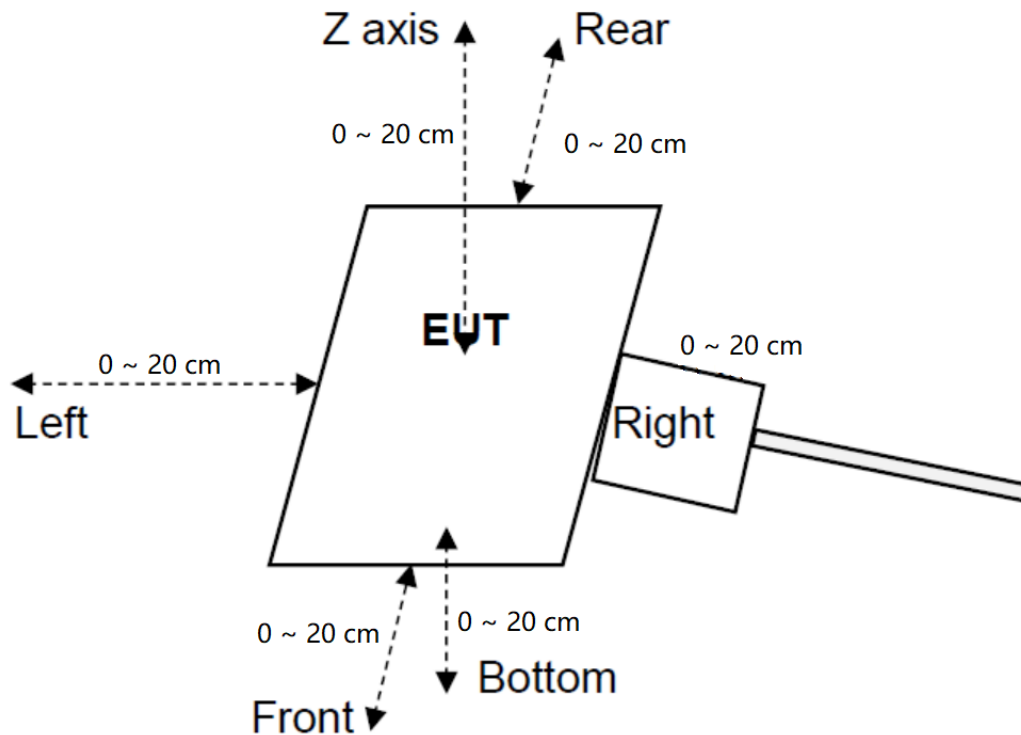


a) Test Procedure

- 1) The RF exposure test was performed in anechoic chamber.
- 2) The measurement probe was placed at test distance (15 cm from all sides and 20 cm from the top) which is between the edge of the charger and the geometric center of probe.
- 3) The highest emission level was recorded and compared with limit as soon as measurement of each points (A, B, C, D, E, F) were completed.
- 4) The EUT was measured according to the dictates of KDB 680106 D01 Wireless Power Transfer v04.

Remark: The EUT's test position A, B, C, D, E and F is valid for the E and H field measurements.

4.5 Test Setup



b) Test Procedure

- 1) The RF exposure test was performed in anechoic chamber.
- 2) The measurement probe was placed at test distance (2cm increments from 0 ~ 20 cm for all sides) which is between the edge of the charger and the geometric edge of probe.
- 3) The highest emission level was recorded and compared with limit as soon as measurement of each points (A, B, C, D, E, F) were completed.
- 4) The EUT was measured according to the dictates of KDB 680106 D01 Wireless Power Transfer v04.

Remark: The EUT's test position A, B, C, D, E and F is valid for the E and H field measurements.

5 Equipment Approval Considerations

The EUT does comply with KDB 680106 D01 as follow table1 and table2.

Table1:

Requirements of section 5 of KDB 680106 D01	Yes / No	Description
Mobile Device and Portable Device Configurations	Yes	Mobile Device and Portable Device
Equipment Authorization Procedures for Devices Operating at Frequencies Below 4 MHz	Yes	The device operate in the frequency range115-205KHz (for mobile phone & earphone) and 325KHz (for watch).
RF Exposure compliance may be ensured only for a minimum separation distance that is greater than 20 cm, while use conditions at smaller distances can still be considered unlikely.	Yes	The EUT H-field strengths at 15 cm surrounding the device and 20 cm above the top surface.

Table2:

Requirements of section 5 of KDB 680106 D01	Yes / No	Description
Power transfer frequency is less than 1 MHz	Yes	The device operate in the frequency range115-205KHz (for mobile phone & earphone) and 325KHz (for watch).
Output power from each primary coil is less than or equal to 15 watts	Yes	The maximum output power of the primary coil is 15W.
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 1 primary coils.
Client device is placed directly in contact with the transmitter	Yes	Client device is placed directly in contact with the transmitter
Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion)	Yes	EUT is a Mobile exposure condition
The aggregate E-field and H-field strengths anywhere at or beyond 15 cm surrounding the device, and 20 cm 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 E-field and H-field strengths at 20 cm surrounding the device from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.

5.1 Description of the test mode

Equipment under test was operated during the measurement under the following conditions:

Test Mode	Description	
Mode 1	AC Adapter + EUT (pedestal) + Wireless charger receiver	Record
Mode 2	AC Adapter + EUT (pedestal and power bank) + Wireless charger receiver + Earphone	Record
Mode 3	AC Adapter + EUT (pedestal, power bank and Wireless watch charge) + Wireless charger receiver + Earphone + Watch wireless charger receiver	Record

5.2 Peripheral List

No.	Equipment	Manufacturer	Model No.	Serial No.	Power cord	signal cable
1	Wireless charger receiver	YBZ	15W	N/A	N/A	N/A
2	Earphone	PocBuds	K6	N/A	N/A	N/A
3	Watch wireless charger receiver	YBZ	5W	N/A	N/A	N/A
4	Adapter	HNT	HNT-QC530	N/A	N/A	N/A

5.3 Test Instruments list

Test Equipment	Manufacturer	Model No.	SN.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
Magnetic Amplitude and Gradient Probe System	SPEAG	MAGPy-8H3D+E3 D V2 & MAGPy-DAS V2	3107 & 3097	03.15.2024	03.14.2025

Parameter	Specs
PROBE DESIGN	
Diameter	60 mm
8 isotropic <i>H</i> -field sensors	concentric loops of 1 cm ² arranged at the corner of a cube of 22 mm side length
1 isotropic <i>E</i> -field sensor	orthogonal dipole/monopole (arm length: 50 mm)
Measurement center	18.5 mm from the probe tip
Temperature range	0–40 °C
Dimensions	110 × 635 × 35 mm (MAGPy-8H3D+E3D V2 & MAGPy-DAS V2)
<i>H</i>-FIELD SPECIFICATION	
Frequency range	3 kHz–10 MHz
Measurement range	0.1–3200 A/m, 0.12 μT–4 mT
Gradient range	0–80 T/m/T
<i>E</i>-FIELD SPECIFICATION	
Frequency range	3 kHz–10 MHz
Measurement range	0.08–2000 V/m

5.4 Test Result

Test Mode 1_MPE_Coil 1_ earphone

MPE				
Test distance	Battery levels	Probe from EUT Side	E-field (V/m)	H-field (A/m)
20cm	< 1%	Top	12.54	0.31
15cm	< 1%	Top	12.77	0.30
15cm	< 1%	Left	12.43	0.31
15cm	< 1%	Right	12.68	0.39
15cm	< 1%	Front	12.44	0.29
15cm	< 1%	Rear	12.54	0.38
Limit			614	1.63
Margin Limit (%)			2.08%	23.93%

MPE				
Test distance	Battery levels	Probe from EUT Side	E-field (V/m)	H-field (A/m)
20cm	< 50%	Top	11.75	0.23
15cm	< 50%	Top	10.61	0.35
15cm	< 50%	Left	11.24	0.19
15cm	< 50%	Right	11.30	0.05
15cm	< 50%	Front	11.25	0.25
15cm	< 50%	Rear	11.24	0.27
Limit			614	1.63
Margin Limit (%)			1.91%	21.47%

MPE				
Test distance	Battery levels	Probe from EUT Side	E-field (V/m)	H-field (A/m)
20cm	< 99%	Top	11.22	0.15
15cm	< 99%	Top	10.07	0.23
15cm	< 99%	Left	10.77	0.01
15cm	< 99%	Right	10.26	0.08
15cm	< 99%	Front	10.44	0.18
15cm	< 99%	Rear	10.81	0.17
Limit			614	1.63
Margin Limit (%)			1.83%	14.11%

Test Mode 2_MPE_Coil 1_phone

MPE				
Test distance	Battery levels	Probe from EUT Side	E-field (V/m)	H-field (A/m)
20cm	< 1%	Top	13.64	0.53
15cm	< 1%	Top	13.37	0.37
15cm	< 1%	Left	13.75	0.57
15cm	< 1%	Right	13.81	0.60
15cm	< 1%	Front	13.86	0.53
15cm	< 1%	Rear	13.94	0.46
Limit			614	1.63
Margin Limit (%)			2.27%	36.81%

MPE				
Test distance	Battery levels	Probe from EUT Side	E-field (V/m)	H-field (A/m)
20cm	< 50%	Top	12.89	0.50
15cm	< 50%	Top	12.17	0.63
15cm	< 50%	Left	12.19	0.37
15cm	< 50%	Right	12.15	0.47
15cm	< 50%	Front	12.30	0.52
15cm	< 50%	Rear	12.14	0.42
Limit			614	1.63
Margin Limit (%)			2.10%	38.65%

MPE				
Test distance	Battery levels	Probe from EUT Side	E-field (V/m)	H-field (A/m)
20cm	< 99%	Top	12.25	0.45
15cm	< 99%	Top	11.17	0.47
15cm	< 99%	Left	11.91	0.30
15cm	< 99%	Right	11.41	0.64
15cm	< 99%	Front	12.04	0.38
15cm	< 99%	Rear	11.56	0.63
Limit			614	1.63
Margin Limit (%)			2.00%	39.26%

Test Mode 2_MPE_Coil 2_ earphone

MPE				
Test distance	Battery levels	Probe from EUT Side	E-field (V/m)	H-field (A/m)
20cm	< 1%	Top	11.58	0.40
15cm	< 1%	Top	11.93	0.57
15cm	< 1%	Left	11.61	0.28
15cm	< 1%	Right	11.85	0.35
15cm	< 1%	Front	11.44	0.39
15cm	< 1%	Rear	11.20	0.57
Limit			614	1.63
Margin Limit (%)			1.94%	34.97%

MPE				
Test distance	Battery levels	Probe from EUT Side	E-field (V/m)	H-field (A/m)
20cm	< 50%	Top	10.62	0.51
15cm	< 50%	Top	9.31	0.61
15cm	< 50%	Left	10.53	0.55
15cm	< 50%	Right	9.89	0.63
15cm	< 50%	Front	10.08	0.55
15cm	< 50%	Rear	10.03	0.59
Limit			614	1.63
Margin Limit (%)			1.73%	38.65%

MPE				
Test distance	Battery levels	Probe from EUT Side	E-field (V/m)	H-field (A/m)
20cm	< 99%	Top	10.22	0.40
15cm	< 99%	Top	9.50	0.40
15cm	< 99%	Left	9.78	0.45
15cm	< 99%	Right	9.50	0.29
15cm	< 99%	Front	9.26	0.36
15cm	< 99%	Rear	9.86	0.50
Limit			614	1.63
Margin Limit (%)			1.66%	30.67%

Test Mode 3_MPE_Coil 1_phone

MPE				
Test distance	Battery levels	Probe from EUT Side	E-field (V/m)	H-field (A/m)
20cm	< 1%	Top	13.77	0.39
15cm	< 1%	Top	13.83	0.36
15cm	< 1%	Left	13.82	0.41
15cm	< 1%	Right	13.70	0.45
15cm	< 1%	Front	13.71	0.35
15cm	< 1%	Rear	13.64	0.54
Limit			614	1.63
Margin Limit (%)			2.25%	33.13%

MPE				
Test distance	Battery levels	Probe from EUT Side	E-field (V/m)	H-field (A/m)
20cm	< 50%	Top	12.99	0.25
15cm	< 50%	Top	11.69	0.23
15cm	< 50%	Left	12.89	0.24
15cm	< 50%	Right	12.39	0.24
15cm	< 50%	Front	12.45	0.13
15cm	< 50%	Rear	12.36	0.22
Limit			614	1.63
Margin Limit (%)			2.12%	15.34%

MPE				
Test distance	Battery levels	Probe from EUT Side	E-field (V/m)	H-field (A/m)
20cm	< 99%	Top	12.25	0.21
15cm	< 99%	Top	11.16	0.30
15cm	< 99%	Left	11.71	0.20
15cm	< 99%	Right	11.82	0.06
15cm	< 99%	Front	11.43	0.14
15cm	< 99%	Rear	11.75	0.24
Limit			614	1.63
Margin Limit (%)			2.00%	18.40%

Test Mode 3_MPE_Coil 2_ earphone

MPE				
Test distance	Battery levels	Probe from EUT Side	E-field (V/m)	H-field (A/m)
20cm	< 1%	Top	11.62	0.31
15cm	< 1%	Top	11.35	0.41
15cm	< 1%	Left	11.87	0.39
15cm	< 1%	Right	11.63	0.30
15cm	< 1%	Front	11.41	0.36
15cm	< 1%	Rear	11.57	0.29
Limit			614	1.63
Margin Limit (%)			1.93%	25.15%

MPE				
Test distance	Battery levels	Probe from EUT Side	E-field (V/m)	H-field (A/m)
20cm	< 50%	Top	10.58	0.38
15cm	< 50%	Top	9.38	0.33
15cm	< 50%	Left	10.18	0.32
15cm	< 50%	Right	10.11	0.51
15cm	< 50%	Front	9.96	0.38
15cm	< 50%	Rear	9.98	0.38
Limit			614	1.63
Margin Limit (%)			1.72%	31.29%

MPE				
Test distance	Battery levels	Probe from EUT Side	E-field (V/m)	H-field (A/m)
20cm	< 99%	Top	10.19	0.34
15cm	< 99%	Top	9.21	0.29
15cm	< 99%	Left	10.06	0.43
15cm	< 99%	Right	10.04	0.33
15cm	< 99%	Front	10.09	0.36
15cm	< 99%	Rear	9.83	0.40
Limit			614	1.63
Margin Limit (%)			1.66%	26.38%

Test Mode 3_MPE_Coil 3_Watch

MPE				
Test distance	Battery levels	Probe from EUT Side	E-field (V/m)	H-field (A/m)
20cm	< 1%	Top	11.51	0.29
15cm	< 1%	Top	11.41	0.44
15cm	< 1%	Left	11.95	0.33
15cm	< 1%	Right	11.38	0.25
15cm	< 1%	Front	11.30	0.37
15cm	< 1%	Rear	11.41	0.27
Limit			614	1.63
Margin Limit (%)			1.95%	26.99%

MPE				
Test distance	Battery levels	Probe from EUT Side	E-field (V/m)	H-field (A/m)
20cm	< 50%	Top	11.10	0.23
15cm	< 50%	Top	10.37	0.31
15cm	< 50%	Left	10.65	0.35
15cm	< 50%	Right	10.75	0.12
15cm	< 50%	Front	10.76	0.30
15cm	< 50%	Rear	10.60	0.20
Limit			614	1.63
Margin Limit (%)			1.81%	21.47%

MPE				
Test distance	Battery levels	Probe from EUT Side	E-field (V/m)	H-field (A/m)
20cm	< 99%	Top	10.77	0.14
15cm	< 99%	Top	9.66	0.16
15cm	< 99%	Left	10.04	0.01
15cm	< 99%	Right	10.01	0.15
15cm	< 99%	Front	10.47	0.11
15cm	< 99%	Rear	10.63	0.26
Limit			614	1.63
Margin Limit (%)			1.75%	15.95%

Total exposure**MPE-based total exposure ratio (Mode 2):**

E-field:

$$\text{Coil 1+Coil 2} = 0.0227 + 0.0194 = 0.0421 < 1$$

H-field:

$$\text{Coil 1+Coil 2} = 0.3926 + 0.3865 = 0.7791 < 1$$

MPE-based total exposure ratio (Mode 3):

E-field:

$$\text{Coil 1+Coil 2+ Coil 3} = 0.0225 + 0.0193 + 0.0195 = 0.0613 < 1$$

H-field:

$$\text{Coil 1+Coil 2+ Coil 3} = 0.3313 + 0.3129 + 0.2699 = 0.9141 < 1$$

MPE-based total exposure ratio (Mode 3):

E-field:

$$\text{Coil 1+Coil 2} = 0.0211 + 0.0198 = 0.0409 < 1$$

H-field:

$$\text{Coil 1+Coil 2} = 0.4724 + 0.3558 = 0.8282 < 1$$

6 Test Setup photo

Mode 1

Front



Left



Rear



Right



Top

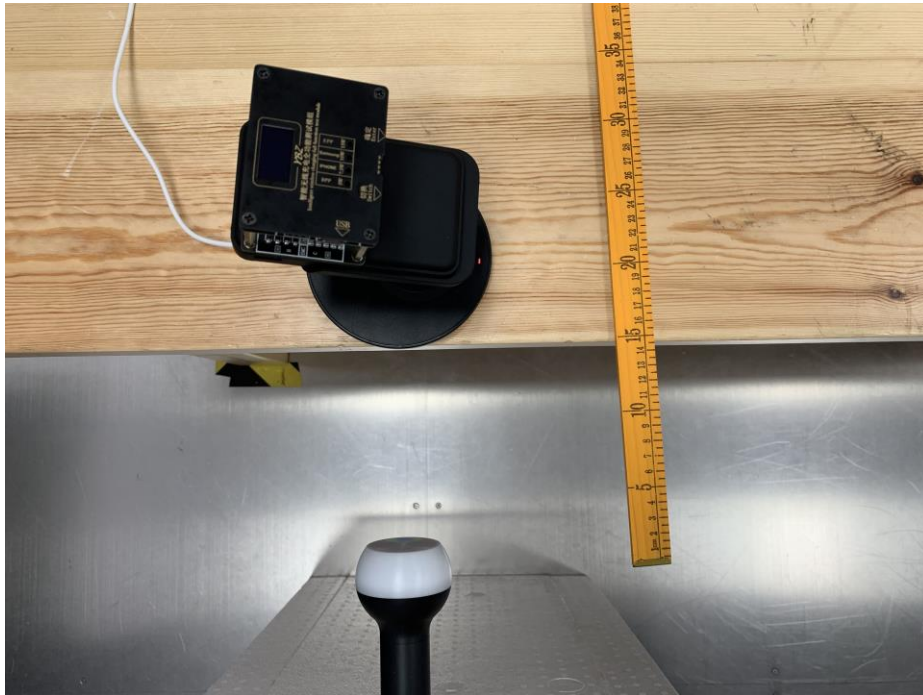


Mode 2

Front



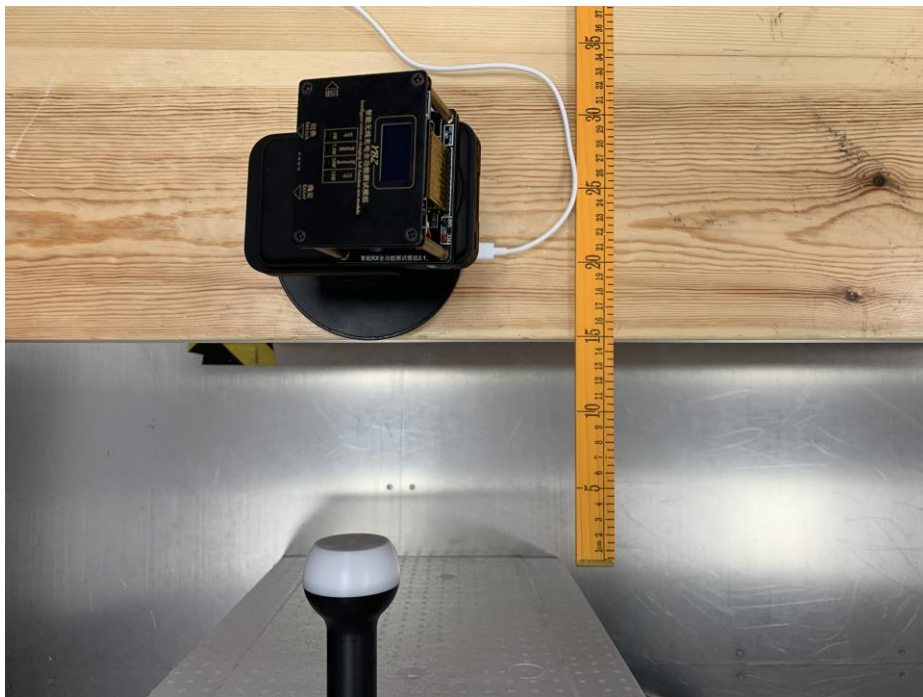
Left



Rear



Right



Top



Mode 3

Front



Left



Rear



Right



Top



End of report