TEST REPORT

Product Name	:	Mobile power bank
Brand Name	:	N/A
Model	:	YT04-1
Series Model	:	N/A
FCC ID	:	2A2NS-YT04-1
Applicant	:	**Guanyu(Dongguan) Intelligent Technology Co.,Ltd.**
Address	:	402 Room, NO#801 Building, Zhen'an Middle Road, Changan Town, Dongguan City, Guangdong, China
Manufacturer	:	**Guanyu(Dongguan) Intelligent Technology Co.,Ltd.**
Address	:	402 Room, NO#801 Building, Zhen'an Middle Road, Changan Town, Dongguan City, Guangdong, China
Standard(s)	:	FCC CFR 47 PART 1, § 1.1310 KDB 680106 D01 Wireless Power Transfer v04
Date of Receipt	:	Oct. 09, 2024
Date of Test	:	Oct. 10, 2024~ Nov. 13, 2024
Issued Date	:	Nov. 14, 2024

Issued By: **Guangdong Asia Hongke Test Technology Limited**
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

Reviewed by: Leon Yi
Leon.yi

Approved by: Sean She
Sean She

Note: This device has been tested and found to comply with the standard(s) listed, this test report merely corresponds to the test sample. It is not permitted to copy extracts of these test result without the written permission of the test laboratory. This report shall not be reproduced except in full, without the written approval of Guangdong Asia Hongke Test Technology Limited. If there is a need to alter or revise this document, the right belongs to Guangdong Asia Hongke Test Technology Limited, and it should give a prior written notice of the revision document. This test report must not be used by the client to claim product endorsement.

Report Revise Record

Report Version	Issued Date	Notes
M1	Nov. 14, 2024	Initial Release

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1 GENGENERAL INFORMATION

1.1 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	25°C
Relative Humidity:	55 %
Air Pressure:	101 kPa

1.2 General Description of EUT

Product Name:	Mobile power bank
Model/Type reference:	YT04-1
Serial Model:	N/A
Power Supply:	Type-C Input: 5V⎓3A, 9V⎓2A, 12V⎓1.5A Type-C Output: 5V⎓3A, 9V⎓2.22A, 12V⎓1.67A Battery (Battery capacity):5000mAh Wireless Charging Output:5W, 7.5W, 10W, 15W
Adapter information:	Model:GS-W30A0973 Input: 100-240V~ 50/60HZ, 0.8A Output: 5V⎓3A or 9V⎓3A or 12V⎓2.5A or 15V⎓2A or 20V⎓1.5A Max (PPS)3.3V-11V⎓3A; 3.3V-16V⎓2A
Hardware Version:	N/A
Software Version:	N/A
Sample(s) Status:	AiTSZ-241009020-1(Normal sample) AiTSZ-241009020-2(Engineer sample)
Wireless Charger:	
Operation frequency:	110kHz-205kHz
Modulation Technology:	ASK
Antenna Type:	Loop coil antenna
Antenna gain:	0dBi
Remark: The above DUT's information was declared by manufacturer. For more detailed features description, please refer to the manufacturer's specifications or the User's Manual.	

1.3 Test Facility

Test Laboratory:
Guangdong Asia Hongke Test Technology Limited
B1/F, Building 11, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

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.

1.4 Measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report according to CISPR 16 - 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the Guangdong Asia Hongke Test Technology Limited’s quality system according to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.
Hereafter the best measurement capability for Asia Hongke laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Magnetic field expanded uncertainty	3KHz-10MHz	3.58dB	(1)
Elecric Field expanded uncertainty	3KHz-10MHz	2.41dB	(1)

The report uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty Multiplied by a coverage factor of k=2 , providing a level of confidence of approximately 95%

2.1 Description of the test mode

Equipment under test was operated during the measurement under the following conditions:
☒ Charging and communication mode

Test Modes:		
Mode 1	AC/DC Adapter+ EUT + phone(Battery Status: < 1%)	Record
Mode 2	AC/DC Adapter+ EUT + phone(Battery Status: < 50%)	Record
Mode 3	AC/DC Adapter+ EUT + phone(Battery Status: < 99%)	Record
Mode 4	EUT + phone (Battery Status: < 1%)	Record
Mode 5	EUT + phone (Battery Status: < 50%)	Pre-tested
Mode 6	EUT + phone (Battery Status: < 99%)	Pre-tested
Mode 4	Stand-by mode.	Pre-tested
Note: All test modes were pre-tested, but we only recorded the worst case in this report.		

2.2 Special Accessories

Follow auxiliary equipment(s) test with EUT that provided by the manufacturer or laboratory is listed as follow:

Description	Manufacturer	Model	Serial No.	Provided by	Other
Phone	Apple	IPhone 14	/	Test lab	/
/	/	/	/	/	/

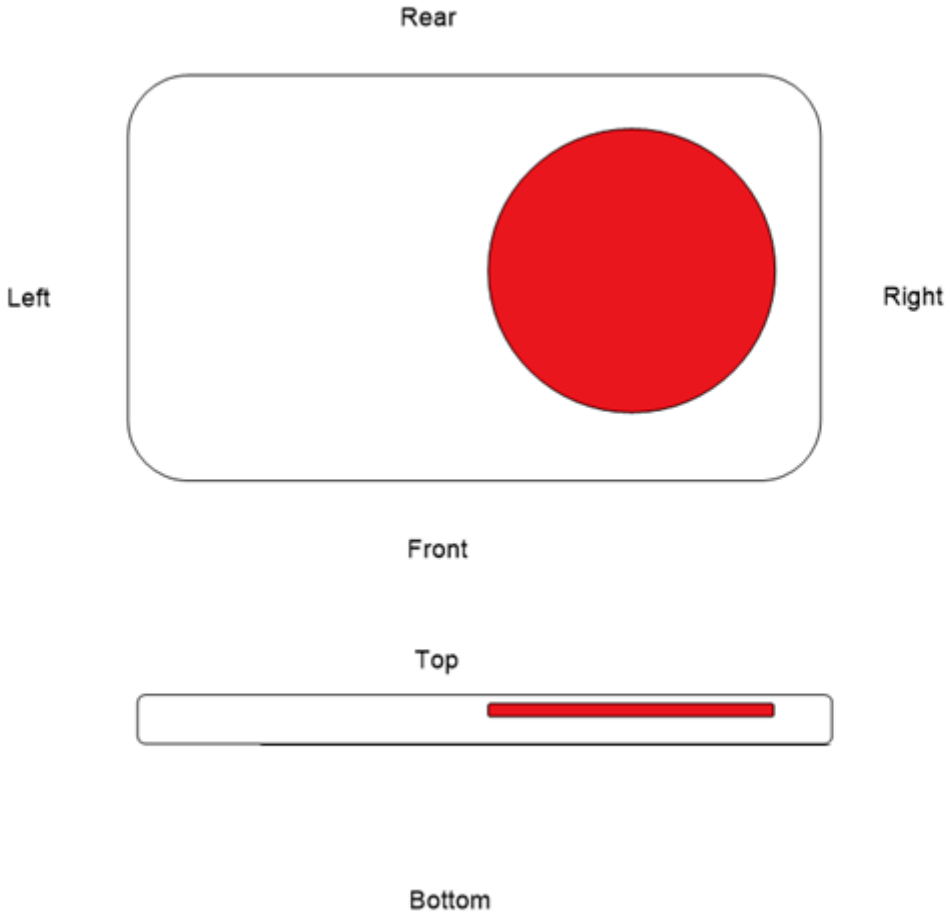
2.3 Equipment List for the Test

No	Test Equipment	Manufacturer	Model No	Serial No	Cal. Date	Cal. Due Date
1	Magnetic Amplitude and Gradient Probe System	SPEAG	MAGPy-8H3D+E3D V2.6 & MAGPy-DAS V2.6	3107 & 3097	2024.03.15	2025.03.14

2.4 Antenna Location(s)

The distance from the antenna to each surface of the product's casing as follow:

Front A	Rear B	Left C	Right D	Top E	Bottom F
10mm	10mm	55mm	10mm	3mm	15mm



3 TEST CONDITIONS AND RESULTS

3.1 Applicable 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 KDB 680106 D01 RF Exposure Wireless Charging App v04

3.2 Limit

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	6
3.0 – 30	1842/f	4.89/f	(900/f)*	6
30 – 300	61.4	0.163	1.0	6
300 – 1500	/	/	f/300	6
1500 – 100,000	/	/	5	6

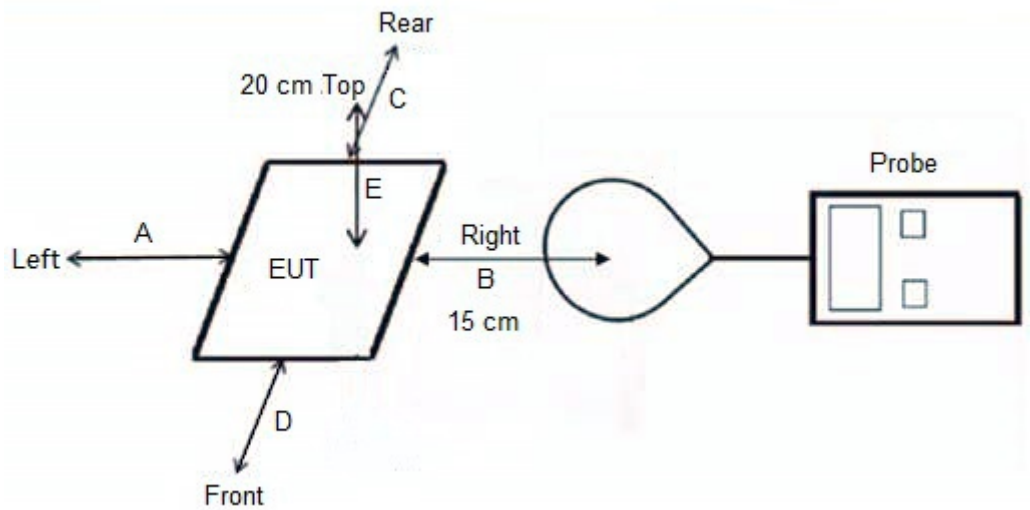
Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	30
3.0 – 30	824/f	2.19/f	(180/f)*	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	/	/	f/1500	30
1500 – 100,000	/	/	1.0	30

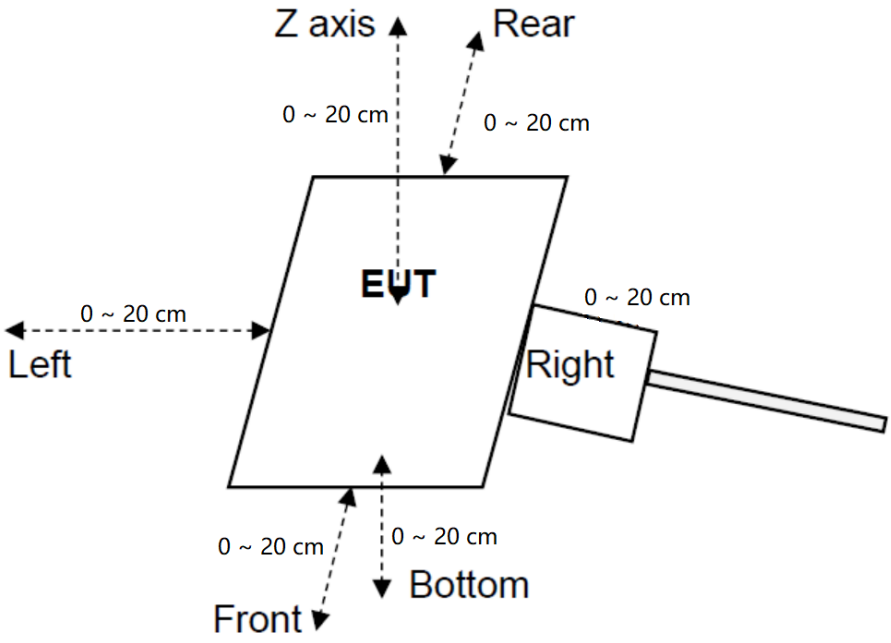
F=frequency in MHz
*=Plane-wave equivalent power density

3.3 Test Setup

For mobile exposure conditions:



For portable exposure conditions:



Note: A, B, C, D, E, F for six surfaces of the product.

3.4 Measurement Procedure

For portable exposure conditions:

a) The RF exposure test was performed in anechoic chamber.

b) 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 centre of probe.

c) The highest emission level was recorded and compared with limit as soon as measurement of each points (A, B, C, D, E) were completed.

d) The EUT were measured according to the dictates of KDB 680106 D01 RF Exposure Wireless Charging App v04.

For portable exposure condition:

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.

3.5 Test Result of E and H field Strength

3.5.1 For mobile exposure condition:

MPE				
Test distance	Battery levels	Probe from EUT Side	E-field (V/m)	H-field (A/m)
20cm	< 1%	Top	1.094	0.089
15cm	< 1%	Top	1.161	0.095
15cm	< 1%	Left	0.073	0.050
15cm	< 1%	Right	1.139	0.079
15cm	< 1%	Front	1.099	0.082
15cm	< 1%	Rear	1.103	0.085
Limit			614	1.63
Margin Limit (%)			0.18%	5.45%

MPE				
Test distance	Battery levels	Probe from EUT Side	E-field (V/m)	H-field (A/m)
20cm	< 50%	Top	1.073	0.085
15cm	< 50%	Top	1.047	0.088
15cm	< 50%	Left	0.067	0.049
15cm	< 50%	Right	1.060	0.075
15cm	< 50%	Front	1.069	0.081
15cm	< 50%	Rear	0.996	0.079
Limit			614	1.63
Margin Limit (%)			0.17%	5.24%

MPE				
Test distance	Battery levels	Probe from EUT Side	E-field (V/m)	H-field (A/m)
20cm	< 99%	Top	1.064	0.079
15cm	< 99%	Top	1.004	0.083
15cm	< 99%	Left	0.064	0.047
15cm	< 99%	Right	0.971	0.070
15cm	< 99%	Front	1.020	0.074
15cm	< 99%	Rear	0.944	0.077
Limit			614	1.63
Margin Limit (%)			0.17%	4.86%

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

3.5.2 For portable exposure condition:

Note：

(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 1% battery status of client device.

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

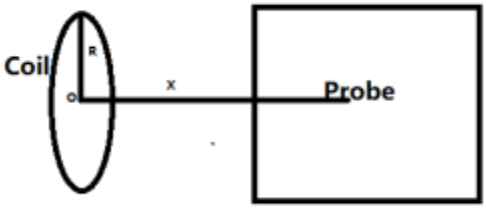
(4) H-field measurements are taken along all three axes the device from 0cm~20cm in 2cm minimum increment for each edge surface of the host/client pair. If the center of the probe sensing element is more than 5mm from the probe outer edge, the field strengths need to be estimated for the positions that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

(5) According to the requirements if KDB 680106 D01 v04, If the center of the probe sensing element is located more than 5mm from the probe outer surface, the field strengths need to be estimated through modeling for those positions that are not reachable. (The sensitive elements are located approximately 18.5 mm below the external surface specified in user manual of MAGPy-8H3D+E3D)

(6) The actual 0cm field strengths need to be estimated for the positions that are not reachable via numerical calculation.

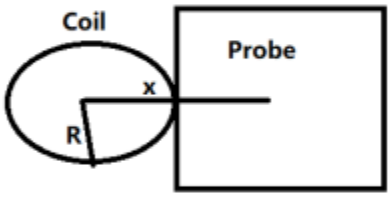
(7) Use Biot-Savart formula theory to estimate the strength of the magnetic field that the measuring instrument cannot measure. According to Biot-Savart formula:

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;

R(Unit:m): means the Radius of radiated coil, according to provided Antenna specification: R=0.20m;

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. (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.

H-Field Strength result

Note: <1%, 50%, >95% load all have been tested, only worse case Max load (<1%) 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 edge and the probe's tip) 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)	Limit (A/m)
2	0.104	0.120	0.076	0.137	0.414	0.111	1.63
4	0.089	0.092	0.057	0.095	0.114	0.041	
6	0.088	0.090	0.052	0.087	0.110	0.040	
8	0.087	0.089	0.047	0.084	0.110	0.039	
10	0.083	0.086	0.047	0.077	0.104	0.038	
12	0.082	0.085	0.046	0.077	0.097	0.036	
14	0.081	0.082	0.046	0.072	0.091	0.034	
16	0.078	0.080	0.043	0.071	0.087	0.031	
18	0.073	0.077	0.038	0.066	0.084	0.029	
20	0.071	0.072	0.037	0.062	0.082	0.028	

Use the Biot-Sacart Law to estimate the results of 2cm through 4cm.

Test position	Measure Value (A/m)	Estimated Value (A/m)	Agreement Ratio	Limits
A	0.104	0.125	-17.09%	30%
B	0.12	0.129	-7.49%	30%
C	0.076	0.069	9.69%	30%
D	0.137	0.133	3.00%	30%
E	0.414	0.429	-3.80%	30%
F	0.111	0.125	-11.99%	30%

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

Test position	Estimated Value (A/m)	Limits (A/m)
A	0.173	1.63
B	0.200	
C	0.096	
D	0.228	
E	1.417	
F	0.465	

3.6 Equipment Approval Considerations

The EUT does comply with KDB 680106 D01 as follow table.

Requirements of KDB 680106 D01	Yes / No	Description
The power transfer frequency is below 1 MHz.	Yes	The device operate in the frequency range is below 1MHz.
The output power from each transmitting element (e.g., coil) is less than or equal to 15 watts.	Yes	The maximum output power of the transmitting element is 10W
A client device providing the maximum permitted load is placed in physical contact with the transmitter (i.e., the surfaces of the transmitter and client device enclosures need to be in physical contact)	Yes	Client device is placed directly in contact with the transmitter.
Only § 2.1091-Mobile exposure conditions apply (i.e., this provision does not cover § 2.1093-Portable exposure conditions).	No	Mobile and Portable exposure conditions.
The E-field and H-field strengths, at and beyond 20 cm surrounding the device surface, are demonstrated to be less than 50% of the applicable MPE limit,	Yes	The E-field and H-field strengths at and beyond 20 cm surrounding the device from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.
For systems with more than one radiating structure, the conditions specified in (5) must be met when the system is fully loaded.	Yes	The EUT equipped one radiating structure only.

3.7 Conclusion

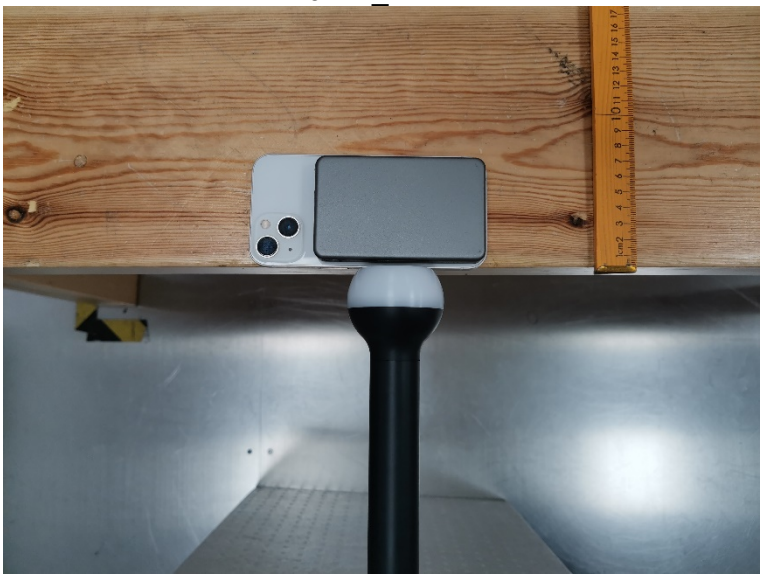
For Mobile exposure conditions, the detected emissions with a distance of 15cm surrounding the device and 20 cm above the top surface of the device are below the FCC E-Field Strength & H-Field Strength limits; and comply with the requirements of FCC KDB 680106 D01.

For Portable exposure conditions, a minimum safety distance of 0 cm to the antenna is required when the device is charging a smart phone for portable exposure. The detected emissions are below the limitations according FCC KDB 680106 D01.

4 Test Setup Photographs of EUT

Portable mode:

0mm_Front



0mm_Rear

0mm Left

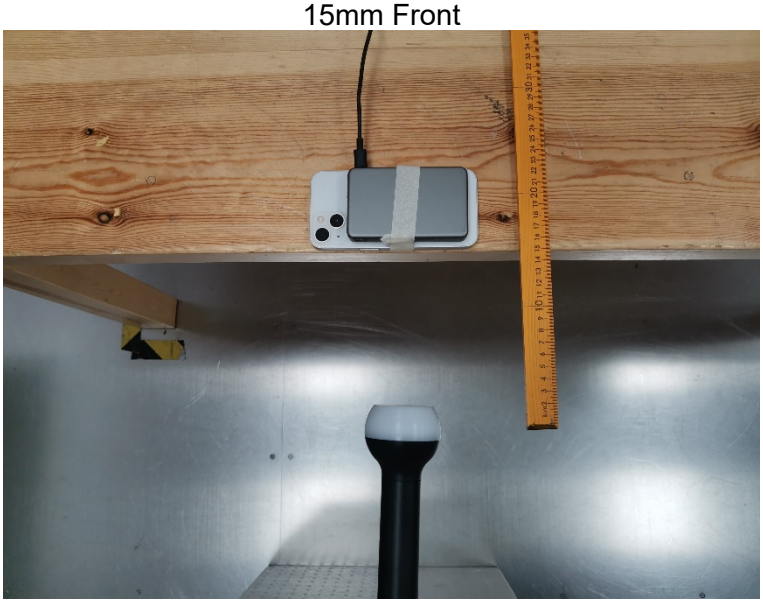
0mm right

0mm Top

0mm bottom

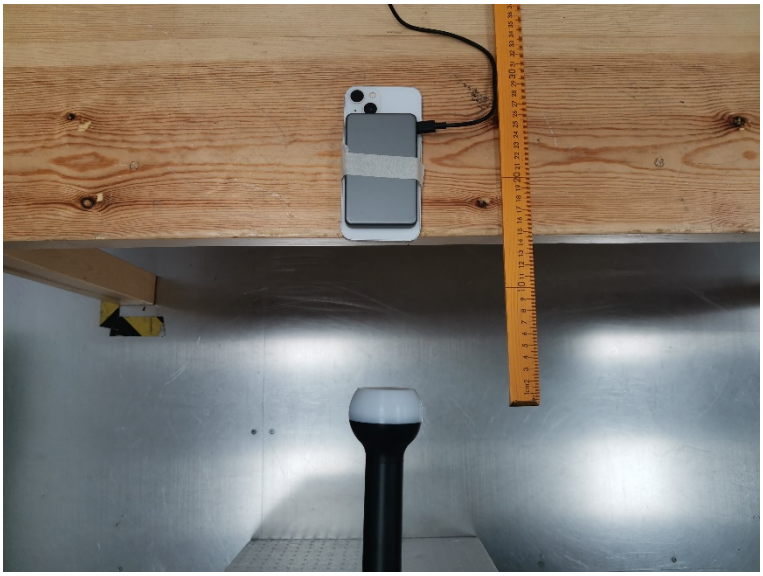
Mobile mode:

15mm Front

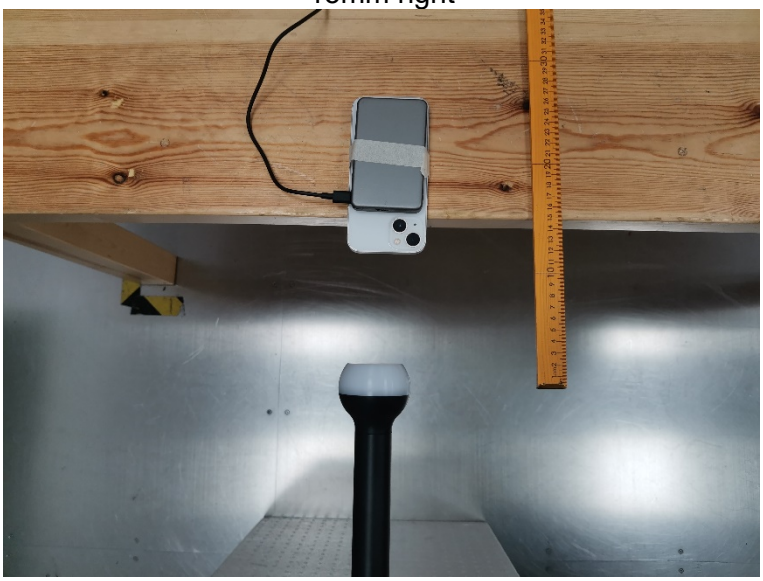


15mm Rear

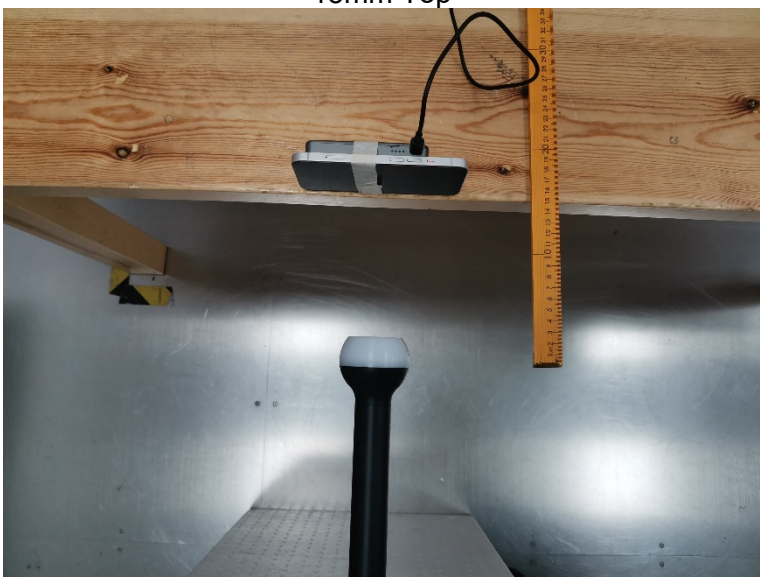
15mm Left



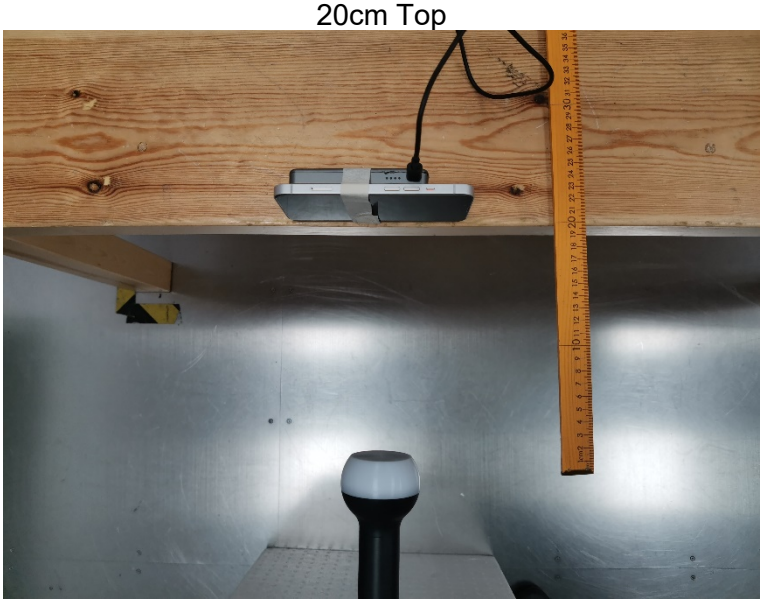
15mm right



15mm Top



20cm Top



5 Photographs of EUT

Please refer to the test report AiTSZ-241009020FW1.

********** **End of Report** **********