FCC TEST REPORT

Client Name	:	Shenzhen Blue Craftsman Technology Co., Ltd.
Address	:	7th Floor, Building 5, Jianjin Bicycle Co., Ltd., south of Donghuan 2nd Road, Fukang Community, Longhua Street, Longhua District, Shenzhen, China
Product Name	:	Magnetic wireless charger
Date	:	Mar. 22, 2022

Shenzhen Anbotek Compliance Laboratory Limited

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TEST REPORT

Applicant	:	Shenzhen Blue Craftsman Technology Co., Ltd.
Manufacturer	:	Shenzhen USV Technology Co.,Ltd
Product Name	:	Magnetic wireless charger
Model No.	:	X7, M7
Trade Mark	:	N.A.
Rating(s)	:	Input: 5V/2A, 9V/2A, 12V, 1.67A Output: 5W/7.5W/10W/15W
Test Standard(s)	**:**	**FCC Part 1.1310, 1.1307(b)**
Test Method(s)	**:**	**KDB680106 D01 RF Exposure Wireless Charging Apps v03r01 TCB Workshop November 2019**

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 1.1307 & KDB680106 D01 requirements.
This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Receipt	Feb. 24, 2022
Date of Test	Feb. 24~ Mar. 22, 2022
Prepared By	(TuTu Hong)
Approved & Authorized Signer	(Kingkong Jin)

1. General Information

1.1. Client Information

Applicant	:	Shenzhen Blue Craftsman Technology Co., Ltd.
Address	:	7th Floor, Building 5, Jianjin Bicycle Co., Ltd., south of Donghuan 2nd Road, Fukang Community, Longhua Street, Longhua District, Shenzhen, China
Manufacturer	:	Shenzhen USV Technology Co.,Ltd
Address	:	4F, Building B20, Hengfeng Industrial City,Hangchen, Bao'an District, Shenzhen City, Guangdong Province, China
Factory	:	Shenzhen Blue Craftsman Technology Co., Ltd.
Address	:	7th Floor, Building 5, Jianjin Bicycle Co., Ltd., south of Donghuan 2nd Road, Fukang Community, Longhua Street, Longhua District, Shenzhen, China

1.2. Description of Device (EUT)

Product Name	:	Magnetic wireless charger	
Model No.	:	X7, M7 (Note: All samples are the same except the model number, so we prepare "X7 for test only.)	
Trade Mark	:	N.A	
Test Power Supply	:	DC 12V	
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)	
Product Description	:	Operation Frequency:	110.1-205KHz
		Modulation Type:	ASK
		Antenna Type:	Inductive loop coil Antenna
		Antenna Gain(Peak):	0 dBi (Provided by customer)
		adapter	N.A
Remark: 1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.			

1.3. Auxiliary Equipment Used During Test

Mobile phone	:	Manufacturer: HUAWEI TECHNOLOGIES CO., LTD. M/N: YOK-AN10

1.4. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Electric and Magnetic field Analyzer	NARDA	EHP-200A	180ZX10202	Nov. 12, 2021	1 Year

1.5. Measurement Uncertainty

Magnetic Field Reading(A/m)	:	+/-0.04282(A/m)
Electric Field Reading(V/m)	:	+/-0.03679(V/m)

1.6. Description of Test Facility

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

FCC-Registration No.: 184111

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory 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. Registration No. 184111.

ISED-Registration No.: 8058A

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A.

Test Location

Shenzhen Anbotek Compliance Laboratory Limited.
1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China. 518102

2. Measurement and Result

2.1. Requirements

According to the item 5.b) of KDB 680106 D01v03r01:
Inductive wireless power transfer applications that meet all of the following requirements are excluded from submitting an RF exposure evaluation.

1) Power transfer frequency is less that 1 MHz

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

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

4) Client device is inserted in or placed directly in contact with the transmitter

5) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion)

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.

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).

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Tel:(86) 755-26066440 Fax: (86) 755-26014772 Email: service@anbotek.com
Hotline 400-003-0500
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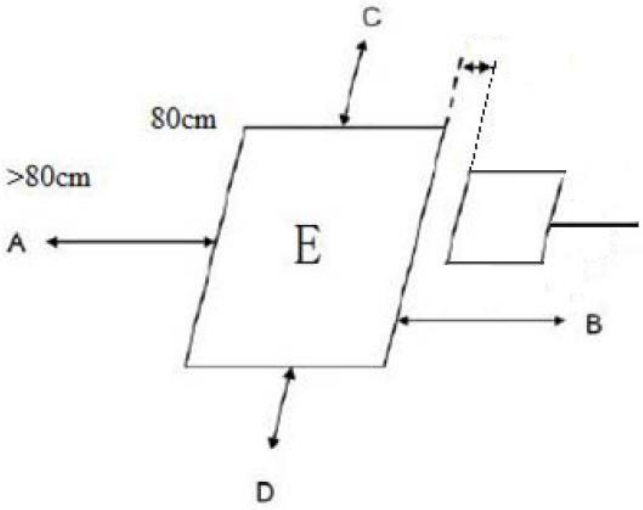
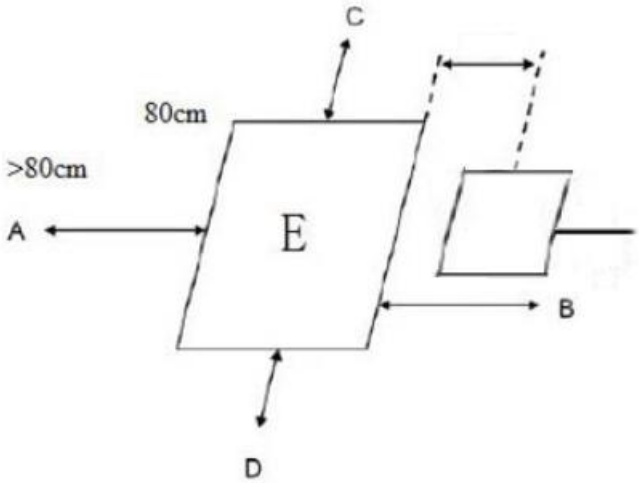
2.2. Test Setup



Note:
H-field data are taken along all three axes the device, from 0 cm to 10 cm, in 2 cm minimum increment measured from the edge of the device, with one axis coincident with the axis of the main coil.



Note: Measurements should be made at 15 cm surrounding the EUT and 20cm above the top surface of the EUT. (probe radius is 4.75cm)

2.3. Test Procedure

1) The RF exposure test was performed in anechoic chamber.
2) The measurement probe was placed at required test distance (from 0 cm to 10 cm, in 2 cm minimum increment) which is between the edge/top surface of the charger and the edge of probe.

and the measurement probe was placed at required test distance 15cm and 20cm 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) were completed.(A is the right, B is the back, C is the left, D is the front, and E is the top.)

4) The EUT was measured according to the dictates of TCB Workshop November 2019 and KDB 680106 D01 v03r01.

Remark;

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

2.4. Test Result

2.4.1. Equipment Approval Considerations item 5.b of KDB 680106 D01 v03r01.

1) Power transfer frequency is less that 1 MHz

- The device operate in the frequency range 110.1~205KHz.

2) Output power from each primary coil is less than 15 watts

- The maximum output power of the primary coil is 15W.

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

- The transfer system including a charging system with only single primary coils is to detect and allow only between individual pairs of coils.

4) Client device is inserted in or placed directly in contact with the transmitter

- Client device is placed directly in contact with the transmitter.

5) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion)

- The EUT is a Mobile exposure conditions

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.

- Conducted the measurement with the required distance and the test results please refer to the section 2.4.

2.4.2. Environmental evaluation and exposure limit according to FCC CFR 47 part 1, 1.1307(b), 1.1310

Temperature:	22.5°C	Relative Humidity:	49 %
Pressure:	1012 hPa	Test Voltage:	AC 120V, 60Hz for adapter

Between the edge/top surface of the charger and the edge of probe

H-Field Strength at 0 cm

Battery power	Frequency Range (KHz)	Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Reference Limit (A/m)	Limits Test (A/m)
1%	110.1-205	0.053	0.056	0.097	0.043	0.086	0.815	1.63
50%	110.1-205	0.639	0.427	0.443	0.406	0.455	0.815	1.63
99%	110.1-205	0.642	0.447	0.484	0.429	0.472	0.815	1.63
Stand-by	110.1-205	0.213	0.231	0.196	0.176	0.193	0.815	1.63

H-Field Strength at 2 cm

Battery power	Frequency Range (KHz)	Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Reference Limit (A/m)	Limits Test (A/m)
1%	110.1-205	0.051	0.055	0.096	0.041	0.084	0.815	1.63
50%	110.1-205	0.637	0.425	0.441	0.404	0.452	0.815	1.63
99%	110.1-205	0.638	0.443	0.482	0.425	0.470	0.815	1.63
Stand-by	110.1-205	0.211	0.228	0.194	0.174	0.191	0.815	1.63

H-Field Strength at 4 cm

Battery power	Frequency Range (KHz)	Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Reference Limit (A/m)	Limits Test (A/m)
1%	110.1-205	0.047	0.053	0.095	0.038	0.081	0.815	1.63
50%	110.1-205	0.635	0.422	0.439	0.401	0.448	0.815	1.63
99%	110.1-205	0.636	0.440	0.479	0.423	0.467	0.815	1.63
Stand-by	110.1-205	0.206	0.224	0.192	0.170	0.188	0.815	1.63

H-Field Strength at 6 cm

Battery power	Frequency Range (KHz)	Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Reference Limit (A/m)	Limits Test (A/m)
1%	110.1-205	0.045	0.051	0.094	0.036	0.075	0.815	1.63
50%	110.1-205	0.633	0.420	0.437	0.398	0.445	0.815	1.63
99%	110.1-205	0.634	0.439	0.476	0.420	0.464	0.815	1.63
Stand-by	110.1-205	0.202	0.221	0.187	0.167	0.186	0.815	1.63

H-Field Strength at 8 cm

Battery power	Frequency Range (KHz)	Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Reference Limit (A/m)	Limits Test (A/m)
1%	110.1-205	0.042	0.048	0.092	0.034	0.073	0.815	1.63
50%	110.1-205	0.630	0.417	0.436	0.395	0.444	0.815	1.63
99%	110.1-205	0.633	0.437	0.474	0.416	0.462	0.815	1.63
Stand-by	110.1-205	0.201	0.219	0.185	0.165	0.183	0.815	1.63

H-Field Strength at 10 cm

Battery power	Frequency Range (KHz)	Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Reference Limit (A/m)	Limits Test (A/m)
1%	110.1-205	0.040	0.044	0.090	0.030	0.072	0.815	1.63
50%	110.1-205	0.629	0.416	0.434	0.394	0.441	0.815	1.63
99%	110.1-205	0.632	0.435	0.472	0.413	0.460	0.815	1.63
Stand-by	110.1-205	0.218	0.215	0.184	0.167	0.181	0.815	1.63

Between the edge of the charger and the geometric center of probe

H-Field Strength at 15 cm surrounding the EUT and 20cm above the top surface of the EUT

Battery power	Frequency Range (KHz)	Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Reference Limit (A/m)	Limits Test (A/m)
1%	110.1-205	0.038	0.041	0.084	0.028	0.070	0.815	1.63
50%	110.1-205	0.627	0.415	0.431	0.391	0.439	0.815	1.63
99%	110.1-205	0.630	0.433	0.470	0.416	0.457	0.815	1.63
Stand-by	110.1-205	0.215	0.212	0.183	0.165	0.180	0.815	1.63

Note: All modulation and situation(full load, half load and empty load) has been tested,only the worst situation (full load 15W) was recorded in the report.

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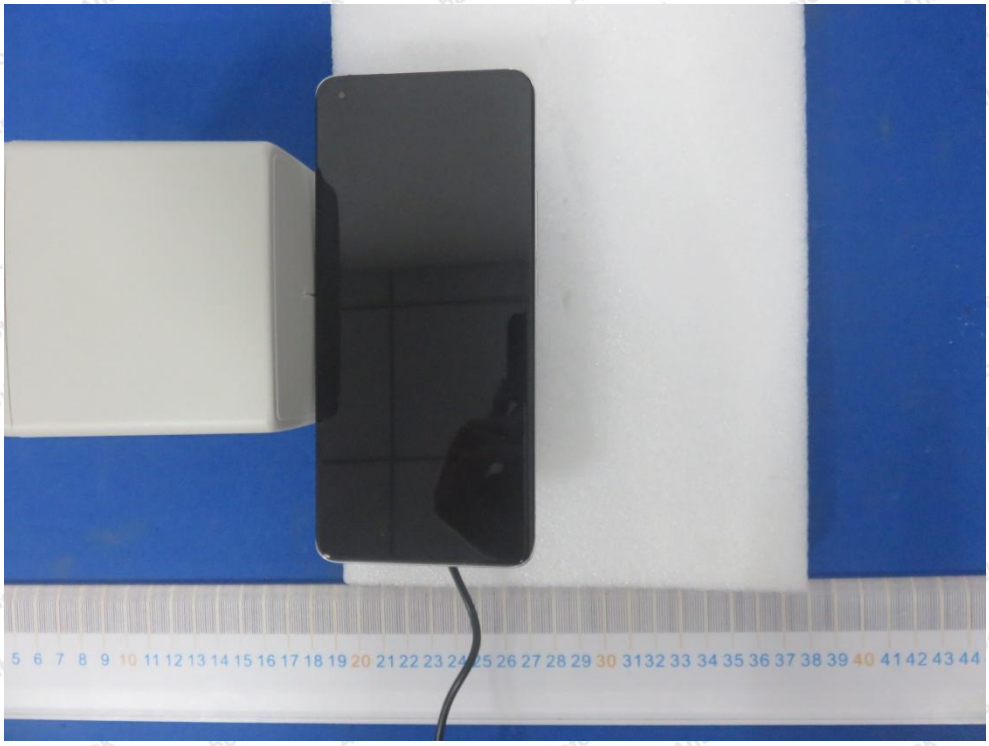
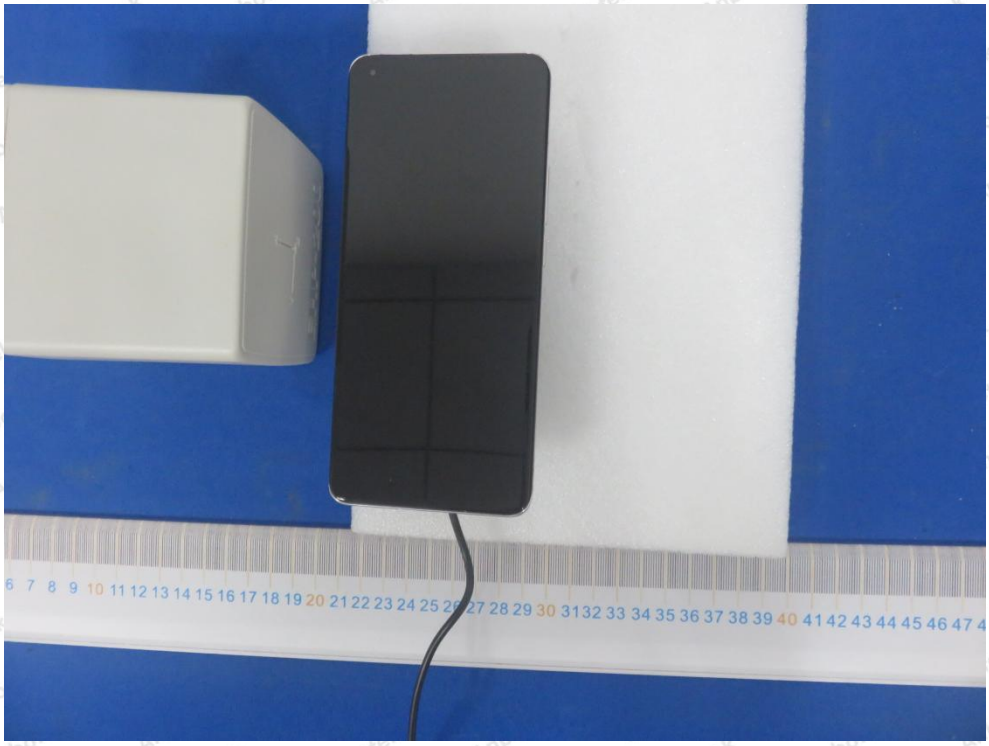
APPENDIX I -- TEST SETUP PHOTOGRAPH

Photo of MPE Measurement

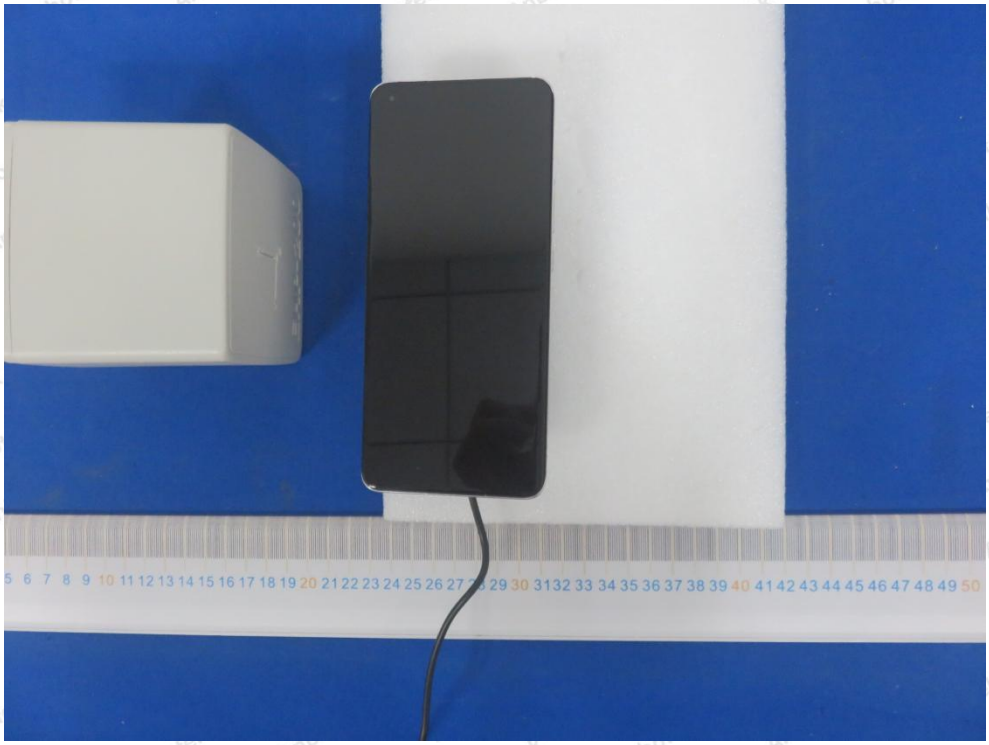
Between the edge/top surface of the charger and the edge of probe 0cm



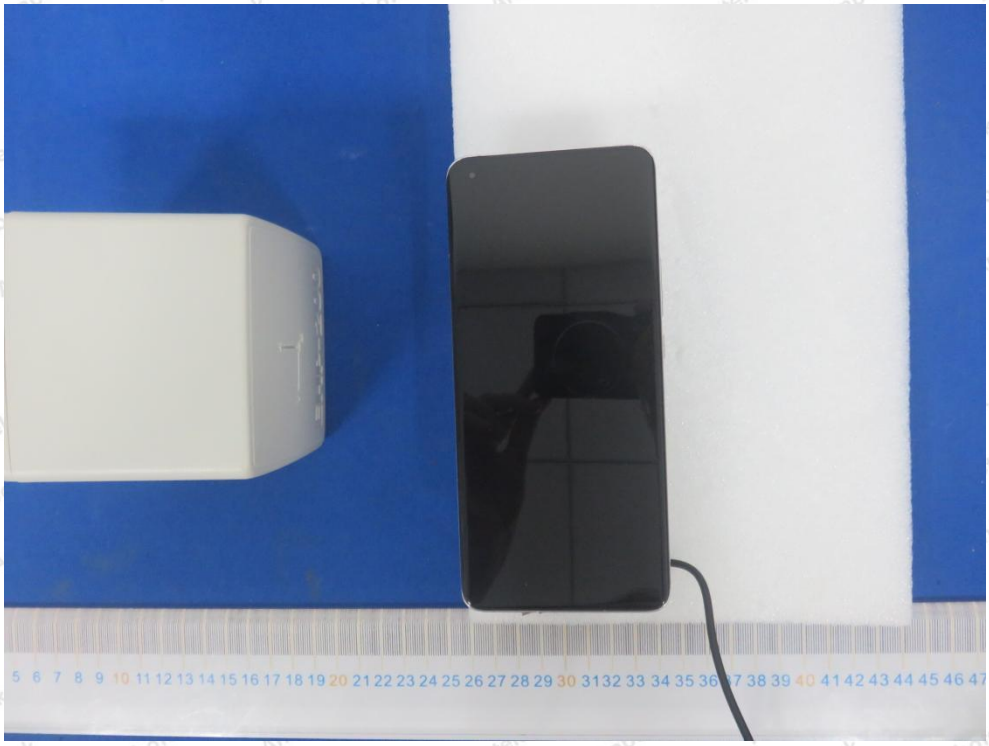
2cm



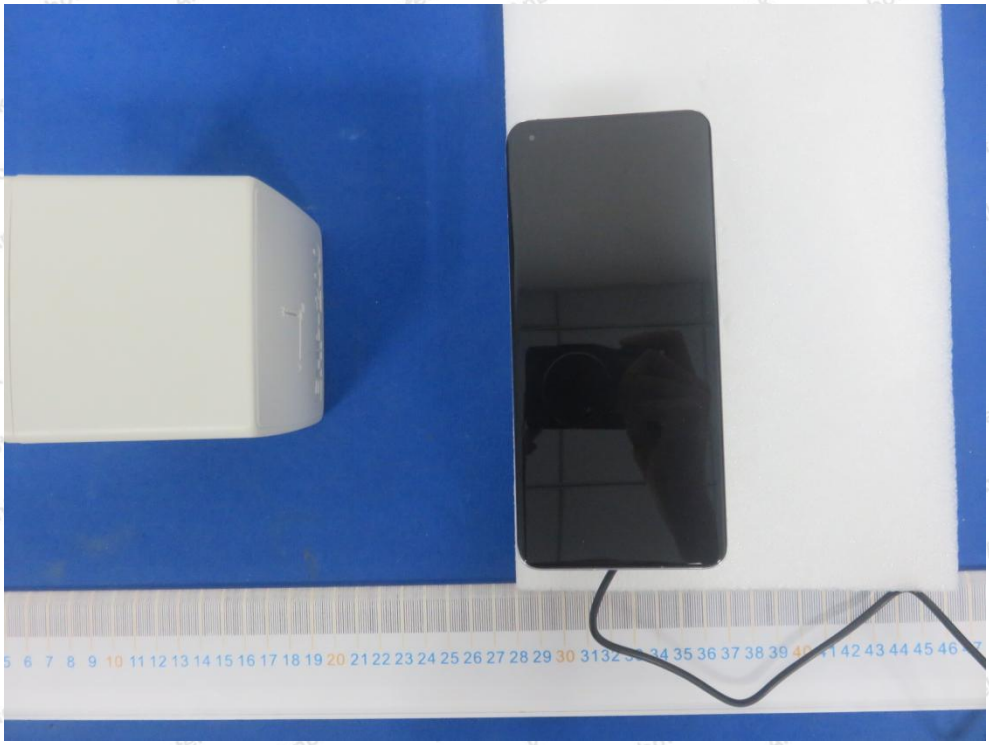
4cm



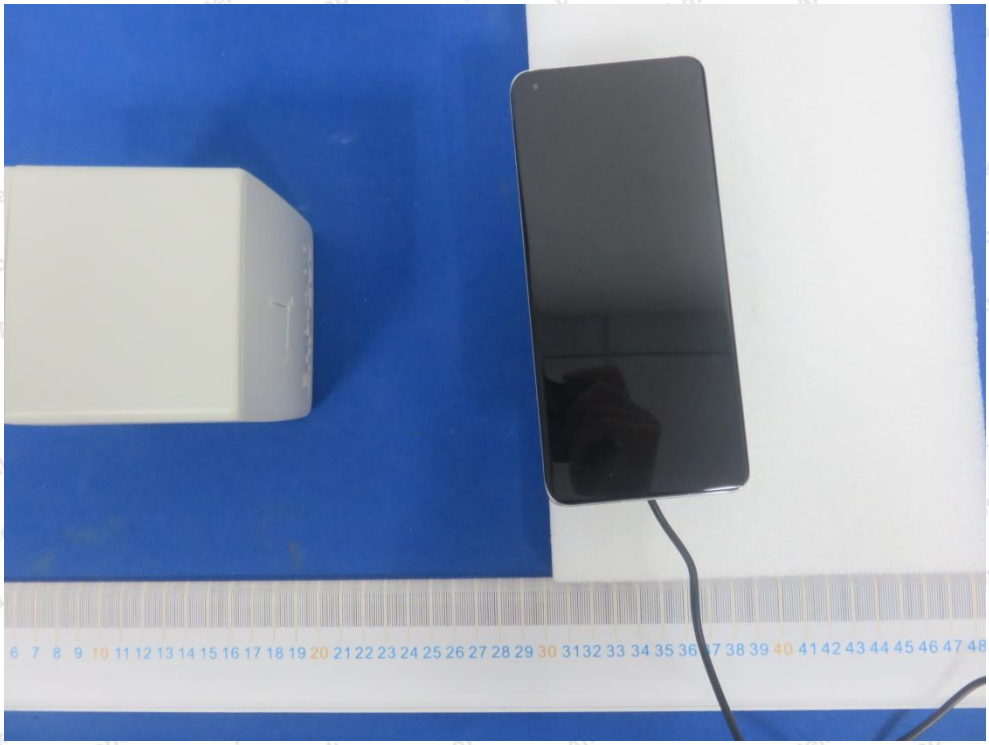
6cm



8cm



10cm



0cm

2cm

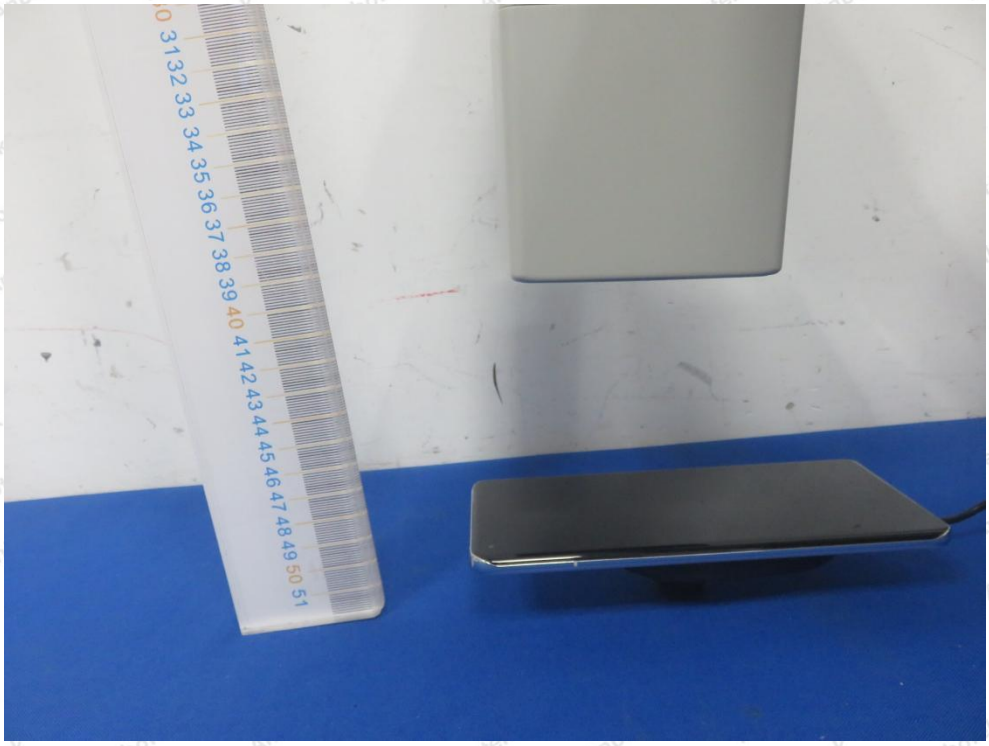
4cm

35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51

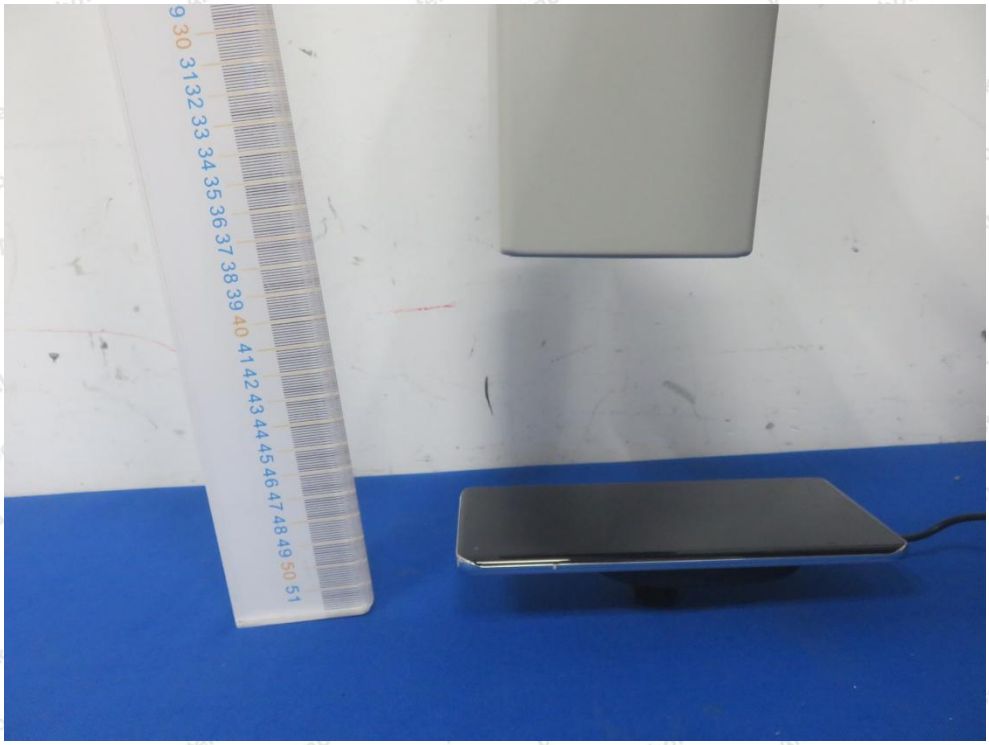
6cm

33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51

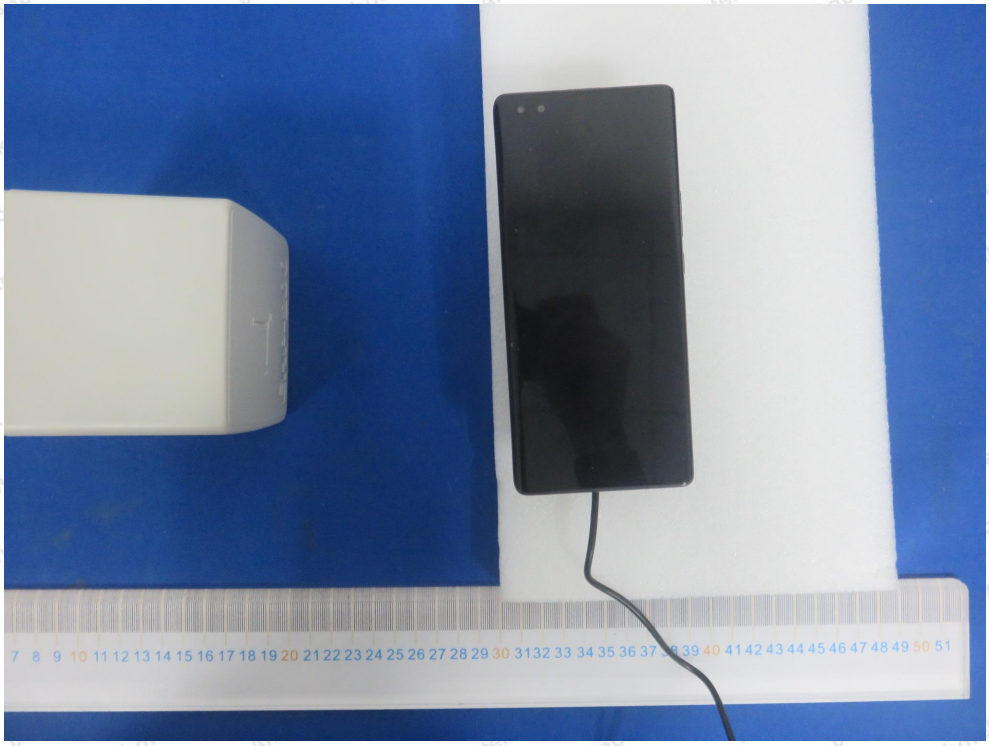
8cm

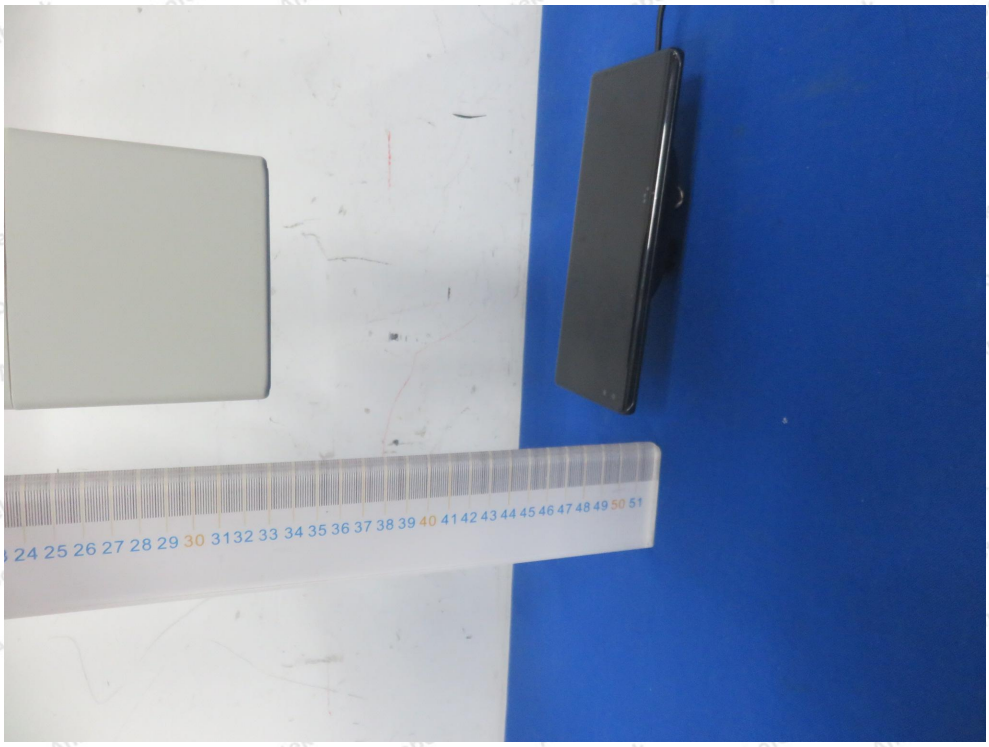


10cm



Between the edge of the charger and the geometric center of probe





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