



# RF Exposure Report

Applicant : Protop International Inc.

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Address : 10F-8, No.237, Sec.,1, Datong Rd., Xizhi Dist.,  
22161New Taipei City, Taiwan

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Equipment : Charging Stand with MagSafe

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Model No. : OBFTC-0108-A,78-80872,78-80873

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Trade Name : OTTERBOX

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FCC ID. : 2AAYX0108A

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Standard : FCC CFR 47 part1, 1.1310  
KDB680106 D01v03r01

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## I HEREBY CERTIFY THAT :

The sample was received on May 31, 2022 and the testing was carried out on Jun. 20, 2022 at CerpPASS Technology Corp. The test result refers exclusively to the test presented test model / sample. Without written approval of CerpPASS Technology Corp., the test report shall not be reproduced except in full.

Approved by:

Leevin Li / Supervisor



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## 1. Test Configuration of Equipment under Test

### 1.1. Feature of Equipment under Test

Product	Charging Stand with MagSafe
Test Model	OBFTC-0108-A,78-80872,78-80873
Model Discrepancy	All models are identical to each other except the model name and appearance color. The tested model: OBFTC-0108-A
Frequency Range	iPhone Wireless Charging:127.7KHz and 360KHz
Antenna Type	Coil antenna
EUT Power Rating:	Input: 9.0V $\overline{\sim}$ 2.22A/12V $\overline{\sim}$ 1.67A, 20.0W MAX Output Wireless Magsafe:15W Max
Temperature	Operating Temp:0 $^{\circ}$ C $\sim$ +35 $^{\circ}$ C Storage Temp: -20 $^{\circ}$ C $\sim$ +70 $^{\circ}$ C

Note: The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

### 1.2. Test Mode and Test Software

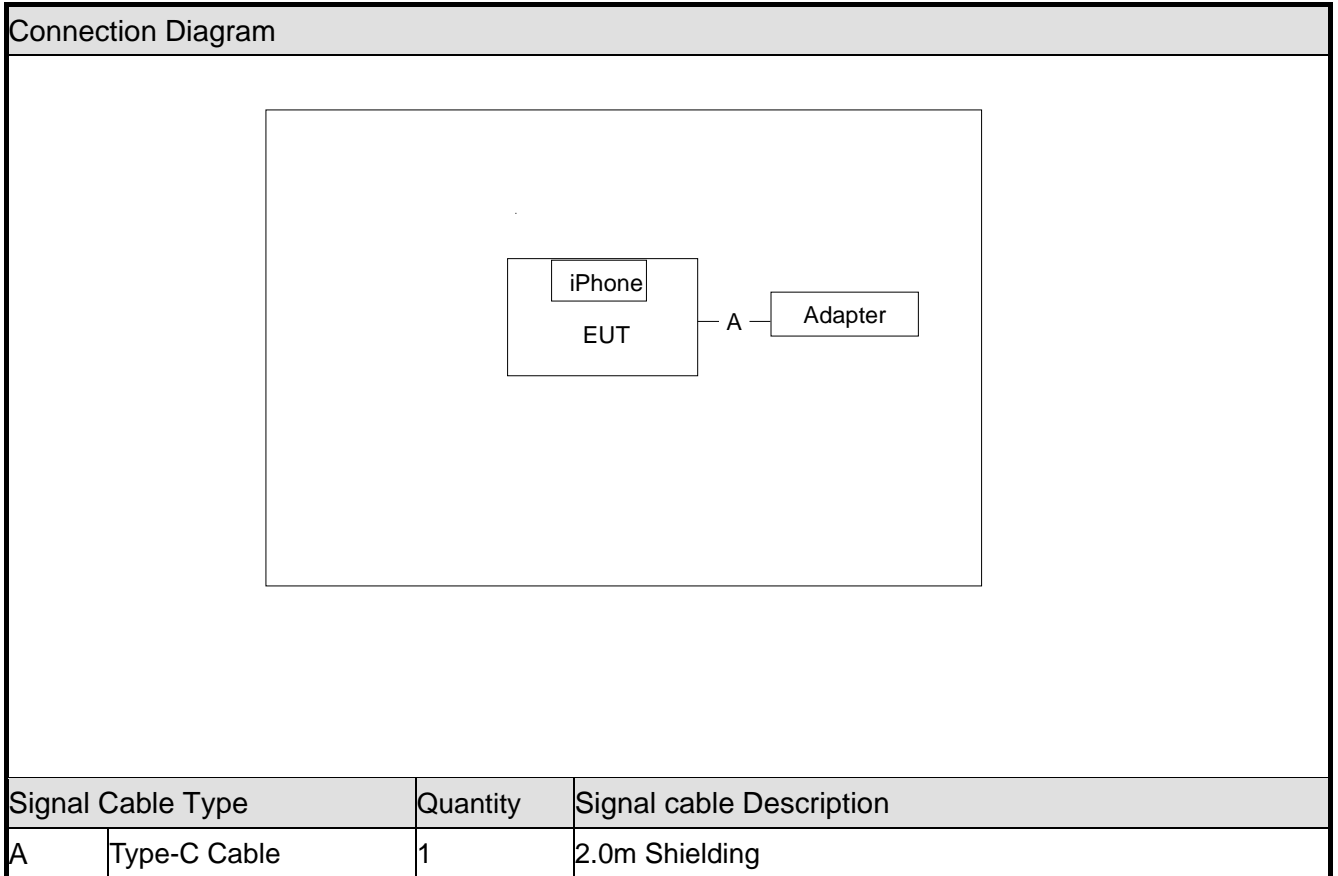
Test Mode	Operating Description
Mode 1	Wireless Charging for Wireless 1(Standby mode)
Mode 2	Wireless Charging for Wireless 1(15W for iPhone 13, Operating @360KHz)
Mode 3	Wireless Charging for Wireless 1(15W for iPhone 12, Operating @127.7KHz)

caused "Test Mode 2~3" generated the worst case, they were reported as the final data.



### 1.3. Description of Test System

Product	Manufacturer	Model No.	Power Cord
1 Adapter	OTTERBOX	OBFTC-0069-B	N/A
2 iPhone	Apple	iPhone 12	N/A
3 iPhone	Apple	iPhone X	N/A





#### 1.4. General Information of Test

Test Site	<b>CerpPASS Technology Corporation(CerpPASS Laboratory)</b> Address: Room 102, No. 5, Xing'an Road, Chang'an Town, Dongguan City, Guangdong Province Tel: +86-769-8547-1212 Fax: +86-769-8547-1912
FCC Designation No.:	CN1288

Test Item	Test Site	Test period	Environmental Conditions	Tested By
RF Exposure	3M01-DG	2022/06/20	26°C / 60%	Amos Zhang

#### 1.5. Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

Measurement Item	Uncertainty
Magnetic Field measurements	±1.60
Electric Field measurements	±1.60



## 2. Summary Of Standards And Results

### 2.1. Measuring Standard

The EUT have been tested according to the applicable standards as referenced below:

Test Item	Normative References	Remarks
RF Exposure	FCC CFR 47 part1, 1.1310 KDB680106 D01v03r01	PASS

### 2.2. Requirements

According to the item 5 of KDB 680106 D01v03r01:

Requirements of KDB 680106 D01 v03r01 section 5b	Yes/No	Description
Power transfer frequency is less than 1 MHz	Yes	The maximum operating frequency is 360KHz
Output power from each primary coil is less than or equal to 15 watts	Yes	The maximum output power for each 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 single coils that is able to detect receiver devices
Client device is inserted in or placed directly in contact with the transmitter	Yes	Client device is inserted in or placed directly in contact with the transmitter
Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion)	Yes	Mobile exposure conditions only
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 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.



### 2.3. Duty cycle

Limits

None; for reporting purposes only.

Procedure

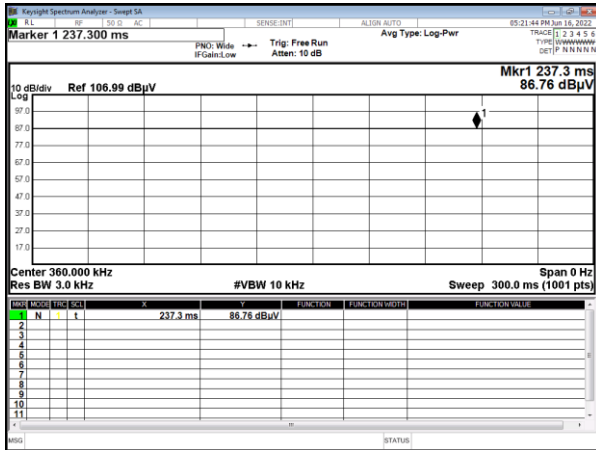
Duty cycle zero-span mode Method

Result

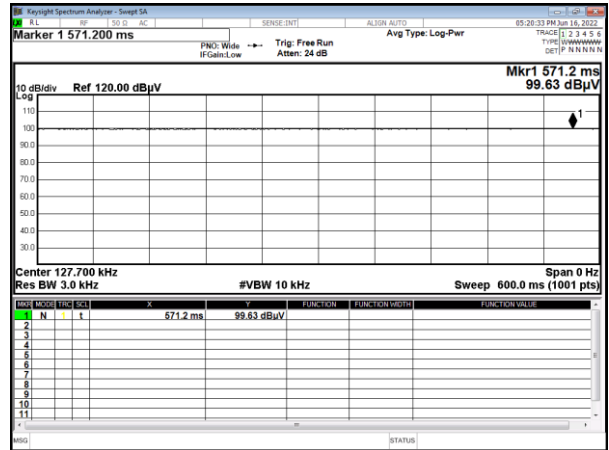
Mode	On Time (msec)	Period Time (msec)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
Mode2: Operating Frequency @ 360kHz	100.00	100.00	100.00%	0.00
Mode3: Operating Frequency @ 127.7kHz	100.00	100.00	100.00%	0.00



Operating Frequency @ 360kHz



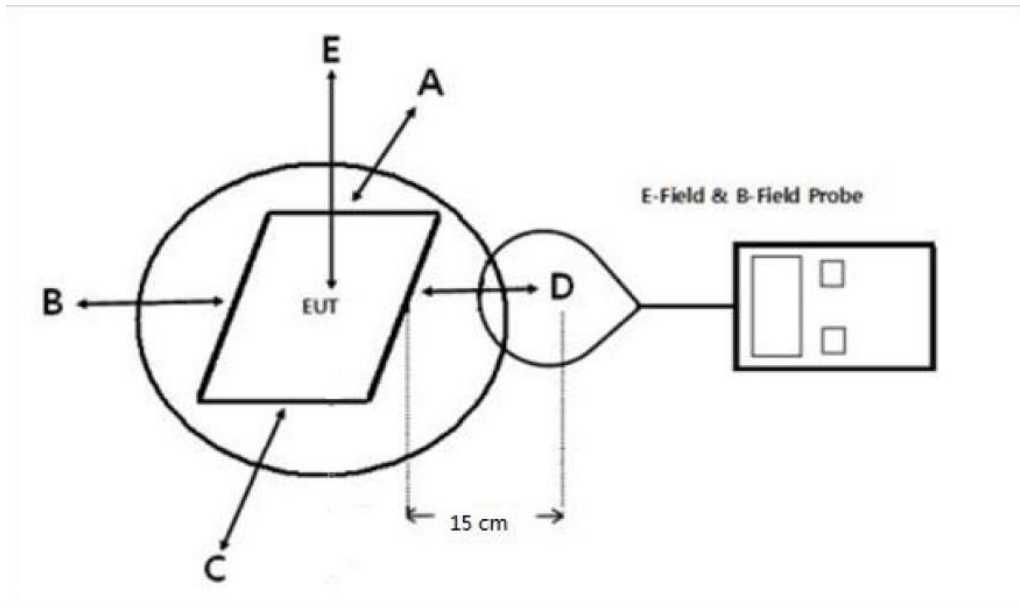
Operating Frequency @ 127.7kHz







### 2.4. Typical test Setup



Note: Position A: Front of EUT; Position B: Left of EUT; Position C: back of EUT; Position D: Right of EUT; Position E: Top of EUT(20 cm measure distance);

### 2.5. Specification 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 <sup>2</sup> )	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f <sup>2</sup>	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			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 <sup>2</sup>	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

Note 1: f = frequency in MHz ; \*Plane-wave equivalent power density

Note 2: For the applicable limit, see FCC 1.1310



**2.6. Test Equipment List and Details**

Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
Electric and Magnetic field analyzer	L3HARRIS	EHP-200AC	180ZX00632	2021.08.19	2022.08.18
MXA Signal Analyzer	KEYSIGHT	N9020A	US46220290	2022.05.07	2023.05.06



## 2.7. Test Result

### Mode 2: Wireless Charging for Wireless 1(15W for iPhone 13, Operating @360KHz)

Operating @360KHz

#### a) Electric Field Strength Measurement

Power ~10% Charging						
Measured Side	Distance (cm)	Measured Value (V/m)			50% of Limit (V/m)	Limit (V/m)
		Peak	Duty Cycle %	AVG		
A	15	0.90	100	0.90	307.00	614.00
B	15	0.69	100	0.69	307.00	614.00
C	15	0.50	100	0.50	307.00	614.00
D	15	0.72	100	0.72	307.00	614.00
E	20	1.04	100	1.04	307.00	614.00

Power 20%~60% Charging						
Measured Side	Distance (cm)	Measured Value (V/m)			50% of Limit (V/m)	Limit (V/m)
		Peak	Duty Cycle %	AVG		
A	15	0.84	100	0.84	307.00	614.00
B	15	0.62	100	0.62	307.00	614.00
C	15	0.43	100	0.43	307.00	614.00
D	15	0.61	100	0.61	307.00	614.00
E	20	0.94	100	0.94	307.00	614.00

Power >75% Charging						
Measured Side	Distance (cm)	Measured Value (V/m)			50% of Limit (V/m)	Limit (V/m)
		Peak	Duty Cycle %	AVG		
A	15	0.78	100	0.78	307.00	614.00
B	15	0.58	100	0.58	307.00	614.00
C	15	0.39	100	0.39	307.00	614.00
D	15	0.56	100	0.56	307.00	614.00
E	20	0.85	100	0.85	307.00	614.00

Note: Peak measurements were performed. RMS values were calculated from the peak measurement.

Please refer to the formula for calculating the RMS values:  $[\text{Filed Strength} \times \sqrt{\text{Duty cycle}}]$



b) Magnetic Field Strength Measurement

Power ~10% Charging						
Measured Side	Distance (cm)	Measured Value (A/m)			50% of Limit (A/m)	Limit (A/m)
		Peak	Duty Cycle %	AVG		
A	15	0.022	100	0.022	0.815	1.63
B	15	0.033	100	0.033	0.815	1.63
C	15	0.027	100	0.027	0.815	1.63
D	15	0.022	100	0.022	0.815	1.63
E	20	0.024	100	0.024	0.815	1.63

Power 20%~60% Charging						
Measured Side	Distance (cm)	Measured Value (A/m)			50% of Limit (A/m)	Limit (A/m)
		Peak	Duty Cycle %	AVG		
A	15	0.018	100	0.018	0.815	1.63
B	15	0.028	100	0.028	0.815	1.63
C	15	0.022	100	0.022	0.815	1.63
D	15	0.018	100	0.018	0.815	1.63
E	20	0.021	100	0.021	0.815	1.63

Power >75% Charging						
Measured Side	Distance (cm)	Measured Value (A/m)			50% of Limit (A/m)	Limit (A/m)
		Peak	Duty Cycle %	AVG		
A	15	0.015	100	0.015	0.815	1.63
B	15	0.023	100	0.023	0.815	1.63
C	15	0.020	100	0.020	0.815	1.63
D	15	0.015	100	0.015	0.815	1.63
E	20	0.018	100	0.018	0.815	1.63

Note: Peak measurements were performed. RMS values were calculated from the peak measurement.

Please refer to the formula for calculating the RMS values:  $[Filed\ Strength \cdot \sqrt{Duty\ cycle}]$



Mode 3: Wireless Charging for Wireless 1(15W for iPhone 12, Operating @127.7KHz)

Operating @127.7KHz

a) Electric Field Strength Measurement

Power ~10% Charging						
Measured Side	Distance (cm)	Measured Value (V/m)			50% of Limit (V/m)	Limit (V/m)
		Peak	Duty Cycle %	AVG		
A	15	0.73	100	0.73	307.00	614.00
B	15	0.52	100	0.52	307.00	614.00
C	15	0.41	100	0.41	307.00	614.00
D	15	0.62	100	0.62	307.00	614.00
E	20	1.01	100	1.01	307.00	614.00

Power 20%~60% Charging						
Measured Side	Distance (cm)	Measured Value (V/m)			50% of Limit (V/m)	Limit (V/m)
		Peak	Duty Cycle %	AVG		
A	15	0.72	100	0.72	307.00	614.00
B	15	0.53	100	0.53	307.00	614.00
C	15	0.39	100	0.39	307.00	614.00
D	15	0.58	100	0.58	307.00	614.00
E	20	0.84	100	0.84	307.00	614.00

Power >75% Charging						
Measured Side	Distance (cm)	Measured Value (V/m)			50% of Limit (V/m)	Limit (V/m)
		Peak	Duty Cycle %	AVG		
A	15	0.72	100	0.72	307.00	614.00
B	15	0.53	100	0.53	307.00	614.00
C	15	0.31	100	0.31	307.00	614.00
D	15	0.42	100	0.42	307.00	614.00
E	20	0.79	100	0.79	307.00	614.00

Note: Peak measurements were performed. RMS values were calculated from the peak measurement.

Please refer to the formula for calculating the RMS values: [Filed Strength\*√Duty cycle]



b) Magnetic Field Strength Measurement

Power ~10% Charging						
Measured Side	Distance (cm)	Measured Value (A/m)			50% of Limit (A/m)	Limit (A/m)
		Peak	Duty Cycle %	AVG		
A	15	0.020	100	0.020	0.815	1.63
B	15	0.029	100	0.029	0.815	1.63
C	15	0.024	100	0.024	0.815	1.63
D	15	0.019	100	0.019	0.815	1.63
E	20	0.021	100	0.021	0.815	1.63

Power 20%~60% Charging						
Measured Side	Distance (cm)	Measured Value (A/m)			50% of Limit (A/m)	Limit (A/m)
		Peak	Duty Cycle %	AVG		
A	15	0.015	100	0.015	0.815	1.63
B	15	0.024	100	0.024	0.815	1.63
C	15	0.020	100	0.020	0.815	1.63
D	15	0.015	100	0.015	0.815	1.63
E	20	0.022	100	0.022	0.815	1.63

Power >75% Charging						
Measured Side	Distance (cm)	Measured Value (A/m)			50% of Limit (A/m)	Limit (A/m)
		Peak	Duty Cycle %	AVG		
A	15	0.014	100	0.014	0.815	1.63
B	15	0.021	100	0.021	0.815	1.63
C	15	0.018	100	0.018	0.815	1.63
D	15	0.014	100	0.014	0.815	1.63
E	20	0.012	100	0.012	0.815	1.63

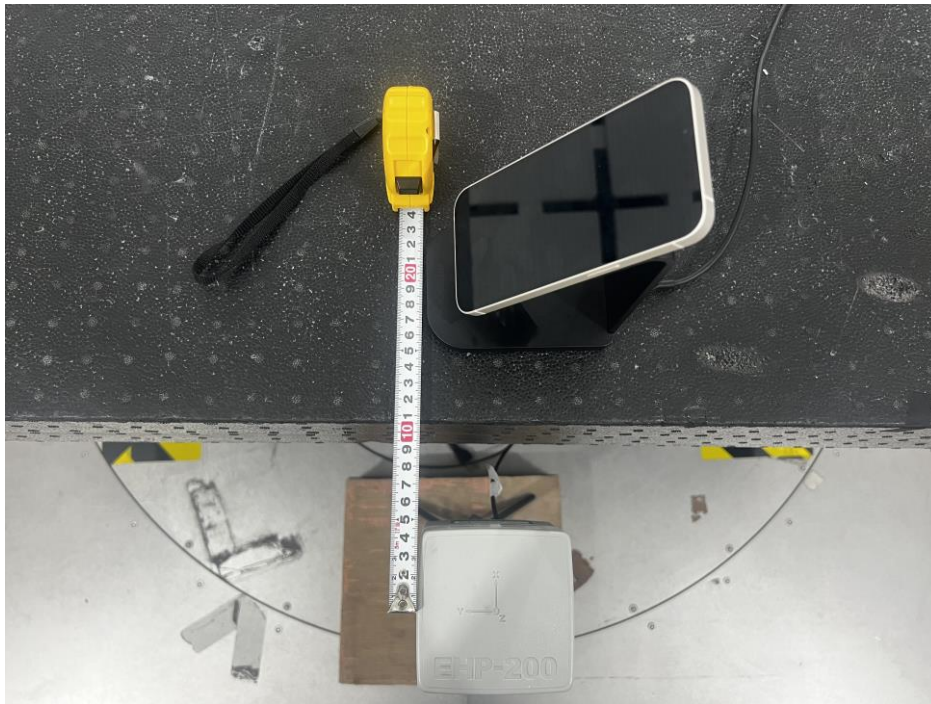
Note: Peak measurements were performed. RMS values were calculated from the peak measurement.

Please refer to the formula for calculating the RMS values:  $[Filed\ Strength \cdot \sqrt{Duty\ cycle}]$

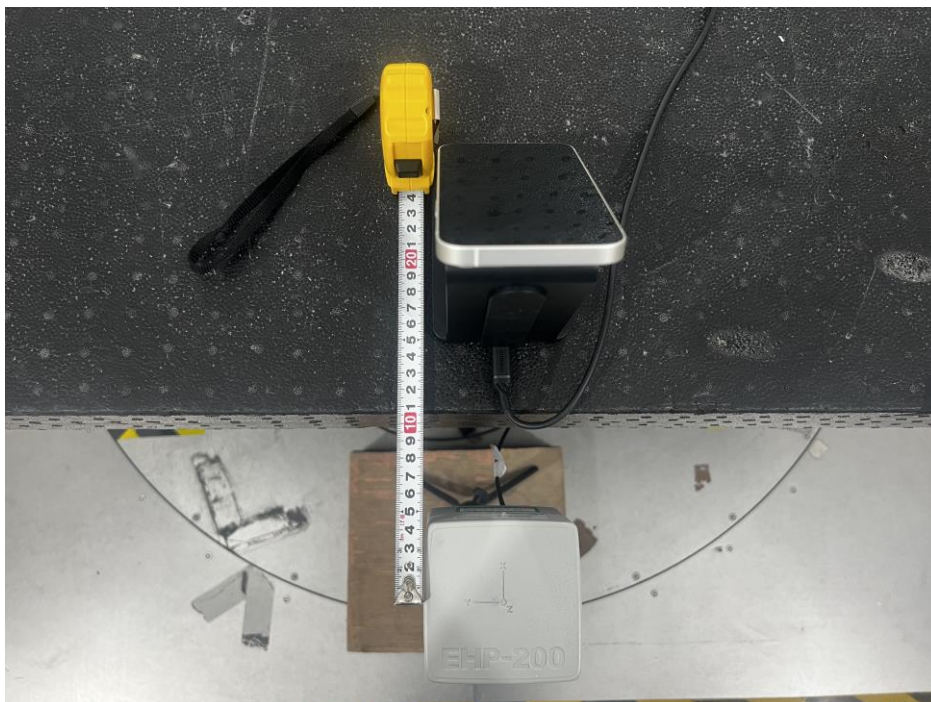


2.8. Photographs of test setup

Measured Side A

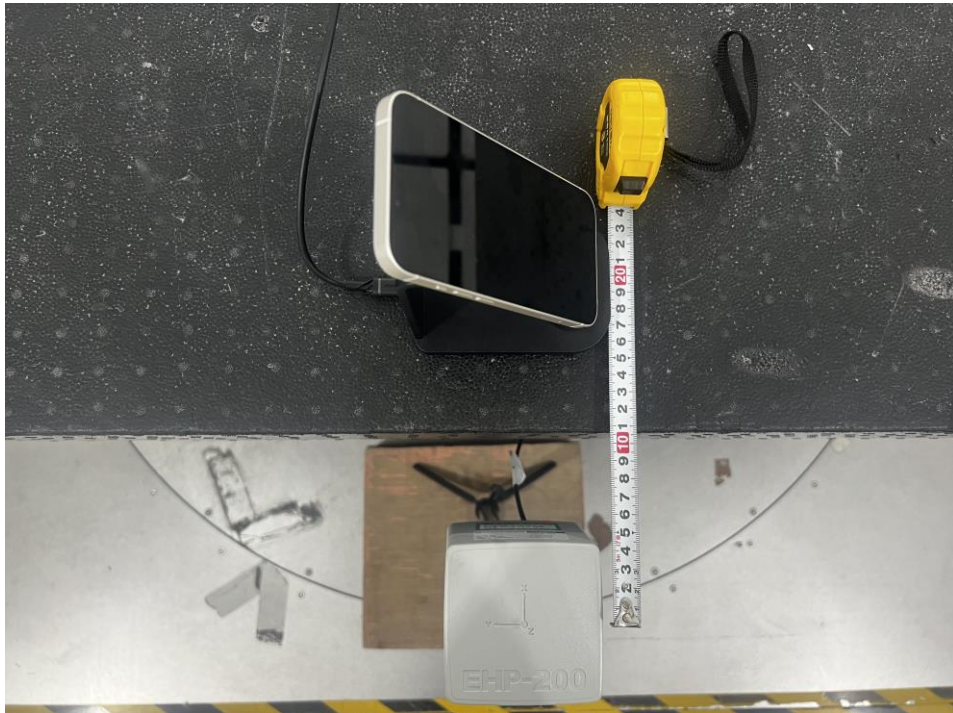


Measured Side B

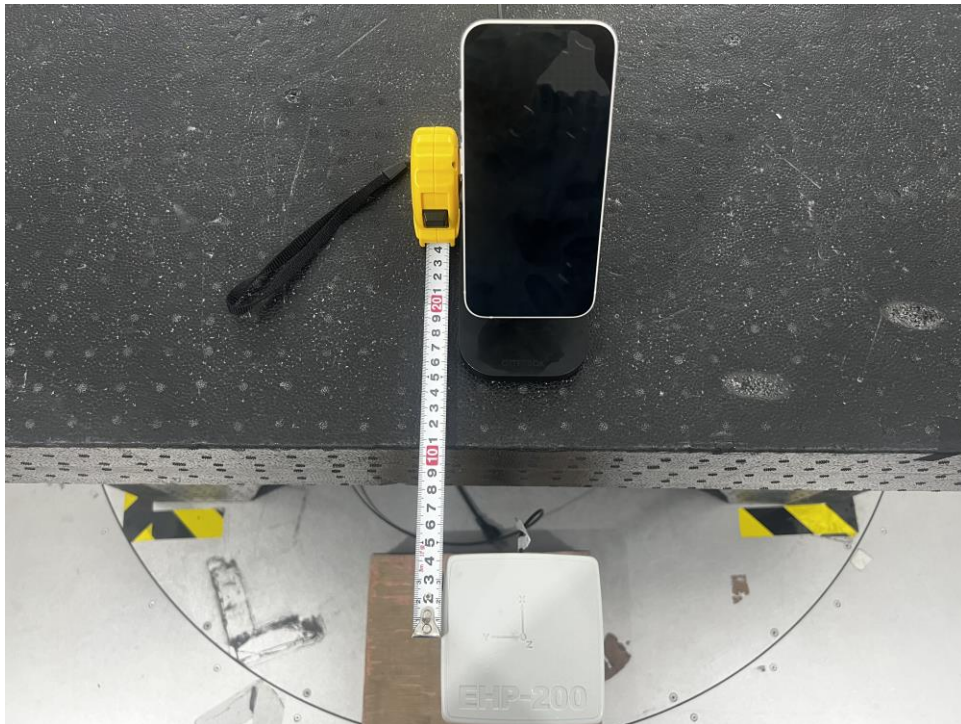




Measured Side C



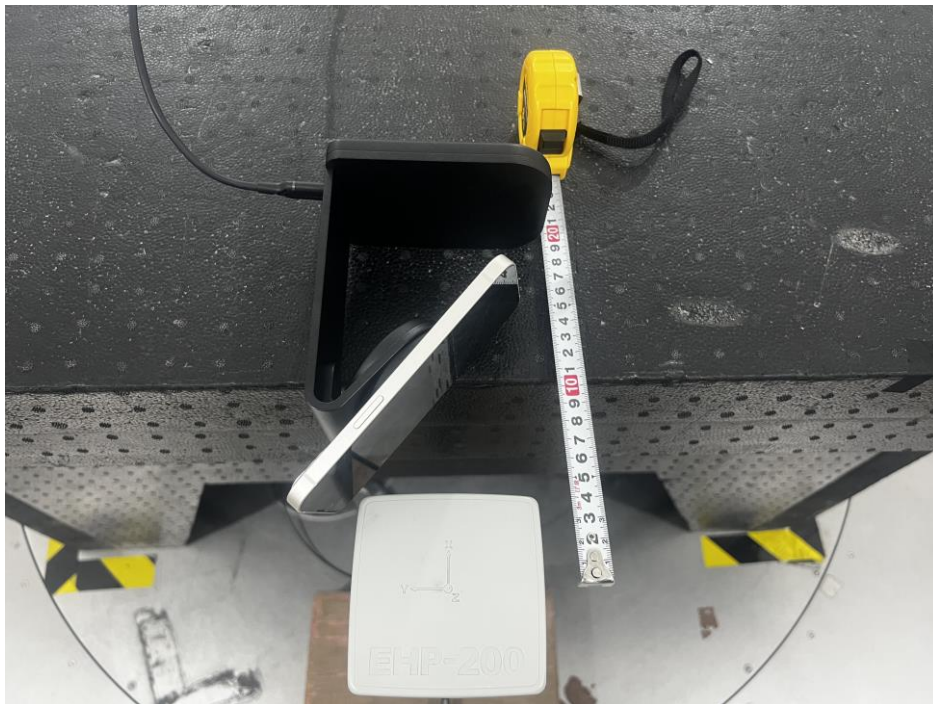
Measured Side D







Measured Side E



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