

MPE REPORT

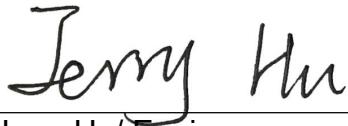
Applicant:	Dongguan Rainbow Tech Electronic & Plastic Products Co., Ltd.					
Address:	No.22 Fuxing Road, Xiagang Village, Chang'an Town, Dongguan, Guangdong, China					
Manufacturer:	Dongguan Rainbow Tech Electronic & Plastic Products Co., Ltd.					
Address:	No.22 Fuxing Road, Xiagang Village, Chang'an Town, Dongguan, Guangdong, China					
Factory:	Dongguan Rainbow Tech Electronic & Plastic Products Co., Ltd.					
Address:	No.22 Fuxing Road, Xiagang Village, Chang'an Town, Dongguan, Guangdong, China					
E.U.T.:	Wireless charger					
Model Number:	ZH114、ZH130、ZH138、ZH118-A、ZH118-B					
Trade mark:	N/A					
FCC ID:	2AKV5ZH118					
Date of Receipt:	Dec. 26, 2023	Date of Test:	Dec. 26, 2023 - Jan. 25, 2024			
Test Specification:	FCC Part 1(1.1310) and Part 2(2.1091) KDB 680106 D01 RF Exposure Wireless Charging App v03r01					
Test Result:	The equipment under test was found to be compliance with the requirements of the standards applied.					
Prepared by:	Approved & Authorized Signer:					
 _____ Jerry Hu/ Engineer	 _____ Frank Shen/ Manager					
Issue Date: January 25, 2024						
This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Dongguan Lepont Service Co., Ltd.						

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Revision History of This Test Report

1. GENERAL PRODUCT INFORMATION

1.1. PRODUCT FUNCTION

Refer to Technical Construction Form and User Manual.

1.2. EUT TECHNICAL DESCRIPTION

Product Name:	Wireless Charger
Model No.:	ZH114、ZH130、ZH138、ZH118-A、ZH118-B
Test Model No:	ZH118-A
Difference:	1, All the models have the same circuit diagram and PCB layout, except for model name, appearance and colour. 2, The models ZH114, ZH130, ZH138, and ZH118-A have the same appearance, but differ from the ZH118-B, as detailed in the EUT photo
Serial No.:	N/A
Test sample(s) ID:	LP23100240C01-S001
Sample(s) Status	Engineer sample
Hardware:	V1.0
Software:	V1.0
Operation frequency:	115-205KHz for Phone and Earphone 320-327KHz for Watch
Modulation Type:	FSK
Antenna Type:	Inductive Loop Antenna with 10 Turns for Phone and Earphone Inductive Loop Antenna with 14 Turns for Watch
Antenna Gain :	0dBi
Wireless Charging:	Watch wireless output : 2W Phone wireless output : 10W/7.5W/5W Earphone wireless output : 3W
Power Supply:	<input checked="" type="checkbox"/> DC 9V for EUT <input checked="" type="checkbox"/> Adapter supply: Model: GN413-090200-AG Input:100-240VAC, 50/60Hz, 0.5A Max. Output: 9V2A
Note: for more details, please refer to the User's manual of the EUT.	

1.3. DESCRIPTION OF TEST MODES

All the test modes were carried out with the EUT in normal operation, the final test mode of the EUT was the worst test mode for emission test, which was shown in this report and defined as:

Mode	TEST MODE DESCRIPTION
1	ADAPTER + EUT + Phone Wireless Output: 10W + Earphone Wireless Output: 3W + Watch Wireless Output: 2W
2	ADAPTER + EUT + Phone Wireless Output: 10W + Earphone Wireless Output: 3W
3	ADAPTER + EUT + Phone Wireless Output: 10W + Watch Wireless Output: 2W
4	ADAPTER + EUT + Earphone Wireless Output: 3W + Watch Wireless Output: 2W
5	ADAPTER + EUT + Phone Wireless Output: 10W
6	ADAPTER + EUT + Phone Wireless Output: 7.5W
7	ADAPTER + EUT + Phone Wireless Output: 5W
8	ADAPTER + EUT + Earphone Wireless Output: 3W
9	ADAPTER + EUT + Watch Wireless Output: 2W
10	Stand By

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

1.4. DESCRIPTION OF SUPPORT DEVICE

No.	Equipment	Trade name	Model	S/N	Input/ Output
1.	Intelligent wireless charging full function test module	YZB	/	/	
2.	Watch	Apple	Watch Series 8	N/A	/
3.					
4.					

2. TEST STANDARDS AND SITES

2.1. DESCRIPTION OF STANDARDS AND RESULTS

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

EMISSION		
Description of Test Item	Standard & Limits	Results
MPE	FCC Part 1(1.1310) and Part 2(2.1091) KDB 680106 D01 RF Exposure Wireless Charging App v03r01	Pass

Note: N/A is an abbreviation for Not Applicable.

2.2. LIST OF TEST AND MEASUREMENT INSTRUMENTS

For MPE Measurement							
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Interval	Lab No.	Remark
Electric and MagneticField Probe - Analyzer	Narda	EHP-2001	101168	Feb. 15, 2023	1 Year	LEP-E069	<input checked="" type="checkbox"/>

2.3. TEST FACILITY

EMC Lab. : The Laboratory has been assessed and proved to be in compliance with CNAS/CL01

The Certificate Registration Number is L10100.

The Laboratory has been assessed and proved to be in compliance with A2LA

The Certificate Registration Number is 6901.01

FCC Designation No.: CN1351

Test Firm Registration No.: 397428

ISED CAB identifier: CN0151

Test Firm Registration No.: 20133

Test Location : Dongguan Lepont Testing Service Co., Ltd.

Address : Room 102, Building 11, No.7, Houjie Science And Technology Avenue, Houjie, Dongguan, Guangdong, China

3. RF EXPOSURE

3.1. MEASURING STANDARD

FCC Part 1(1.1310) and Part 2(2.1091), Part 2(2.1093)

3.2. REQUIREMENTS

Three different categories of transmitters are defined by the FCC in OET Bulletin 65. These categories are fixed installation, mobile, and portable and are defined as follows:

- **Fixed Installations:** fixed location means that the device, including its antenna, is physically secured at a permanent location and is not able to be easily moved to another location. Additionally, distance to humans from the antenna is maintained to at least 2 meters.
- **Mobile Devices:** a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to be generally used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structures and the body of the user or nearby persons. Transmitters designed to be used by consumers or workers that can be easily re-located, such as a wireless modem operating in a laptop computer, are considered mobile devices if they meet the 20 centimeter separation requirement. The FCC rules for evaluating mobile devices for RF compliance are found in 47 CFR §2.1091.
- **Portable Devices:** a portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user. Portable device requirements are found in Section 2.1093 of the FCC's Rules (47 CFR§2.1093).
- The FCC also categorizes the use of the device as based upon the user's awareness and ability to exercise control over his or her exposure. The two categories defined are Occupational/ Controlled Exposure and General Population/Uncontrolled Exposure. These two categories are defined as follows:
- **Occupational/Controlled Exposure:** In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means. Awareness of the potential for RF exposure in a workplace or similar environment can be provided through specific training as part of a RF safety program. If appropriate, warning signs and labels can also be used to establish such awareness by providing prominent information on the risk of potential exposure and instructions on methods to minimize such exposure risks.
- **General Population/Uncontrolled Exposure:** The general population / uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity. Warning labels placed on low-power consumer devices such as cellular telephones are not considered sufficient to allow the device to be considered under the occupational/controlled category, and the general population/uncontrolled exposure limits apply to these devices.

3.3. TEST CONFIGURATION

For mobile exposure conditions:

- a. The RF exposure test was performed in an echoic chamber
- b. E and H-field measurements should be made with the center of the probe at a distance of 15 cm surrounding the EUT and 20 cm above the top surface of the primary/client pair.
- c. The highest emission level was recorded and compared with limit.
- d. The EUT was measured according to the dictates of KDB 680106 v03r01

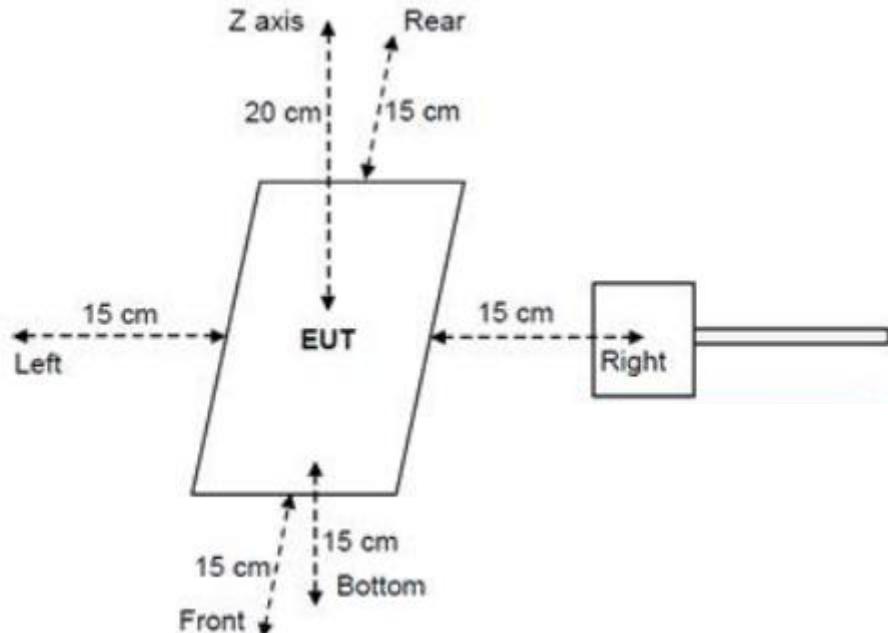
For portable exposure conditions:

- a. The RF exposure test was performed in an echoic chamber.
- b. E and H-field measurements should be made with the probe at 0 cm for all side of the EUT.
- c. The highest emission level was recorded and compared with limit

For portable exposure conditions. 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 10 cm

3.4. BLOCK DIAGRAM OF TEST SETUP

For mobile exposure conditions:



3.5. LIMITS

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
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

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	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

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

3.6. MEASURING RESULTS

a) Power transfer frequency is less than 1 MHz.

Yes, The device operates in the frequency 115KHz-205KHz and 320KHz-327KHz.

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

Yes, The maximum output power of the primary coil is Max 10W≤15W.

c) The transfer system includes one 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 transmission system consists of four coils

d) Client device is placed directly in contact with the transmitter.

Yes, Client device is placed directly in contact with the transmitter.

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

Yes, Mobile exposure condition only.

f) 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.

The EUT H-field strengths at 15 cm surrounding the device and 20 cm above the top surface are less than 50% the MPE limit

TEST Data:
Test Mode: Mode 1(100% Load)

Electric Field Emissions		
Test Position	Measure Value (V/m)	Limit(V/m)
Top	2.48	614
Left	2.51	614
Right	2.29	614
Rear	2.26	614
Front	2.11	614
Bottom	2.80	614

Magnetic Field Emissions		
Test Position	Measure Value (A/m)	Limit(A/m)
Top	0.0698	1.63
Left	0.0782	1.63
Right	0.0541	1.63
Rear	0.0623	1.63
Front	0.0729	1.63
Bottom	0.0635	1.63

Test Mode: Mode 1(50% Load)

Electric Field Emissions		
Test Position	Measure Value (V/m)	Limit(V/m)
Top	2.21	614
Left	2.24	614
Right	1.89	614
Rear	1.57	614
Front	1.48	614
Bottom	1.29	614

Magnetic Field Emissions		
Test Position	Measure Value (A/m)	Limit(A/m)
Top	0.0753	1.63
Left	0.0784	1.63
Right	0.0621	1.63
Rear	0.0636	1.63
Front	0.0649	1.63
Bottom	0.0725	1.63

Test Mode: Mode 1(10% Load)

Electric Field Emissions		
Test Position	Measure Value (V/m)	Limit(V/m)
Top	1.73	614
Left	1.57	614
Right	1.41	614
Rear	1.36	614
Front	1.41	614
Bottom	1.29	614

Magnetic Field Emissions		
Test Position	Measure Value (A/m)	Limit(A/m)
Top	0.0128	1.63
Left	0.0121	1.63
Right	0.0130	1.63
Rear	0.0133	1.63
Front	0.0149	1.63
Bottom	0.0151	1.63

Test Mode: Mode 5(100% Load)

Electric Field Emissions		
Test Position	Measure Value (V/m)	Limit(V/m)
Top	2.19	614
Left	2.25	614
Right	1.99	614
Rear	1.87	614
Front	1.89	614
Bottom	1.85	614

Magnetic Field Emissions		
Test Position	Measure Value (A/m)	Limit(A/m)
Top	0.0692	1.63
Left	0.0682	1.63
Right	0.0521	1.63
Rear	0.0515	1.63
Front	0.0671	1.63
Bottom	0.0665	1.63

Test Mode: Mode 5(50% Load)

Electric Field Emissions		
Test Position	Measure Value (V/m)	Limit(V/m)
Top	2.03	614
Left	2.16	614
Right	1.58	614
Rear	1.50	614
Front	1.39	614
Bottom	1.41	614

Magnetic Field Emissions		
Test Position	Measure Value (A/m)	Limit(A/m)
Top	0.0741	1.63
Left	0.0739	1.63
Right	0.0588	1.63
Rear	0.0569	1.63
Front	0.0532	1.63
Bottom	0.0698	1.63

Test Mode: Mode 5(10% Load)

Electric Field Emissions		
Test Position	Measure Value (V/m)	Limit(V/m)
Top	1.66	614
Left	1.45	614
Right	1.33	614
Rear	1.52	614
Front	1.35	614
Bottom	1.21	614

Magnetic Field Emissions		
Test Position	Measure Value (A/m)	Limit(A/m)
Top	0.0121	1.63
Left	0.0133	1.63
Right	0.0113	1.63
Rear	0.0136	1.63
Front	0.0141	1.63
Bottom	0.0138	1.63

Test Mode: Mode 8(100% Load)

Electric Field Emissions		
Test Position	Measure Value (V/m)	Limit(V/m)
Top	2.07	614
Left	2.06	614
Right	1.53	614
Rear	1.73	614
Front	1.57	614
Bottom	1.51	614

Magnetic Field Emissions		
Test Position	Measure Value (A/m)	Limit(A/m)
Top	0.0612	1.63
Left	0.0619	1.63
Right	0.0649	1.63
Rear	0.0522	1.63
Front	0.0534	1.63
Bottom	0.0578	1.63

Test Mode: Mode 8(50% Load)

Electric Field Emissions		
Test Position	Measure Value (V/m)	Limit(V/m)
Top	1.97	614
Left	1.84	614
Right	1.45	614
Rear	1.41	614
Front	1.36	614
Bottom	1.69	614

Magnetic Field Emissions		
Test Position	Measure Value (A/m)	Limit(A/m)
Top	0.0588	1.63
Left	0.0546	1.63
Right	0.0664	1.63
Rear	0.0534	1.63
Front	0.0543	1.63
Bottom	0.0531	1.63

Test Mode: Mode 8(10% Load)

Electric Field Emissions		
Test Position	Measure Value (V/m)	Limit(V/m)
Top	1.51	614
Left	1.61	614
Right	1.67	614
Rear	1.64	614
Front	1.55	614
Bottom	1.60	614

Magnetic Field Emissions		
Test Position	Measure Value (A/m)	Limit(A/m)
Top	0.0111	1.63
Left	0.0124	1.63
Right	0.0109	1.63
Rear	0.0128	1.63
Front	0.0122	1.63
Bottom	0.0188	1.63

Test Mode: Mode 9(100% Load)

Electric Field Emissions		
Test Position	Measure Value (V/m)	Limit(V/m)
Top	1.91	614
Left	2.00	614
Right	1.51	614
Rear	1.53	614
Front	1.49	614
Bottom	1.48	614

Magnetic Field Emissions		
Test Position	Measure Value (A/m)	Limit(A/m)
Top	0.0592	1.63
Left	0.0589	1.63
Right	0.0574	1.63
Rear	0.0572	1.63
Front	0.0584	1.63
Bottom	0.0573	1.63

Test Mode: Mode 9(50% Load)

Electric Field Emissions		
Test Position	Measure Value (V/m)	Limit(V/m)
Top	1.67	614
Left	1.64	614
Right	1.39	614
Rear	1.36	614
Front	1.37	614
Bottom	1.31	614

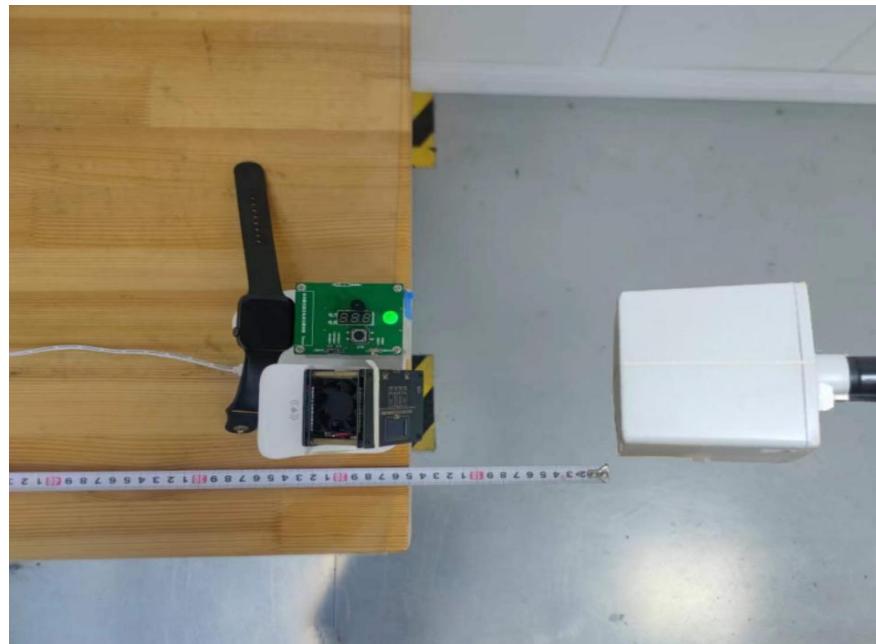
Magnetic Field Emissions		
Test Position	Measure Value (A/m)	Limit(A/m)
Top	0.0498	1.63
Left	0.0487	1.63
Right	0.0456	1.63
Rear	0.0443	1.63
Front	0.0437	1.63
Bottom	0.0413	1.63

Test Mode: Mode 9(10% Load)

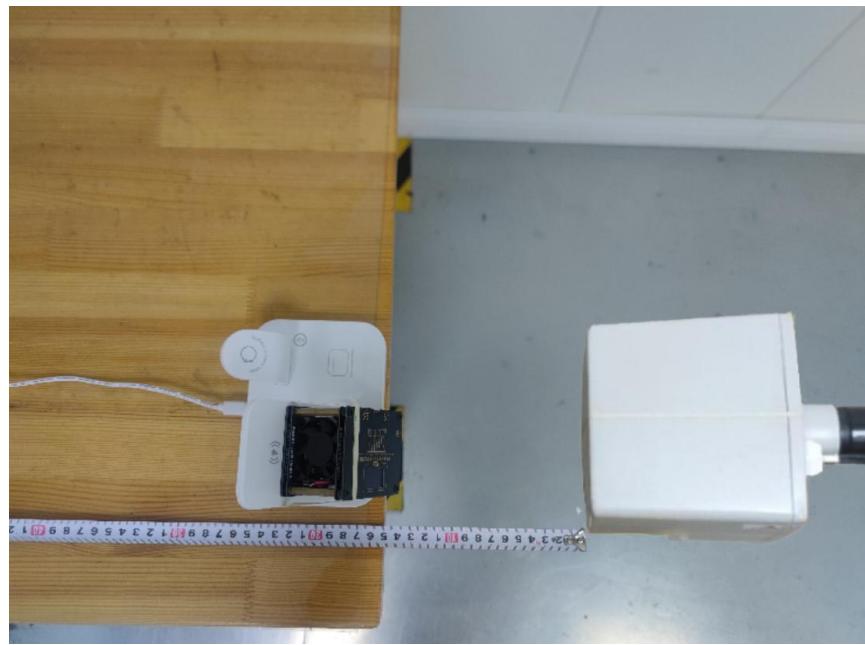
Electric Field Emissions		
Test Position	Measure Value (V/m)	Limit(V/m)
Top	1.41	614
Left	1.39	614
Right	1.40	614
Rear	1.44	614
Front	1.46	614
Bottom	1.49	614

Magnetic Field Emissions		
Test Position	Measure Value (A/m)	Limit(A/m)
Top	0.0098	1.63
Left	0.0088	1.63
Right	0.0094	1.63
Rear	0.0091	1.63
Front	0.0087	1.63

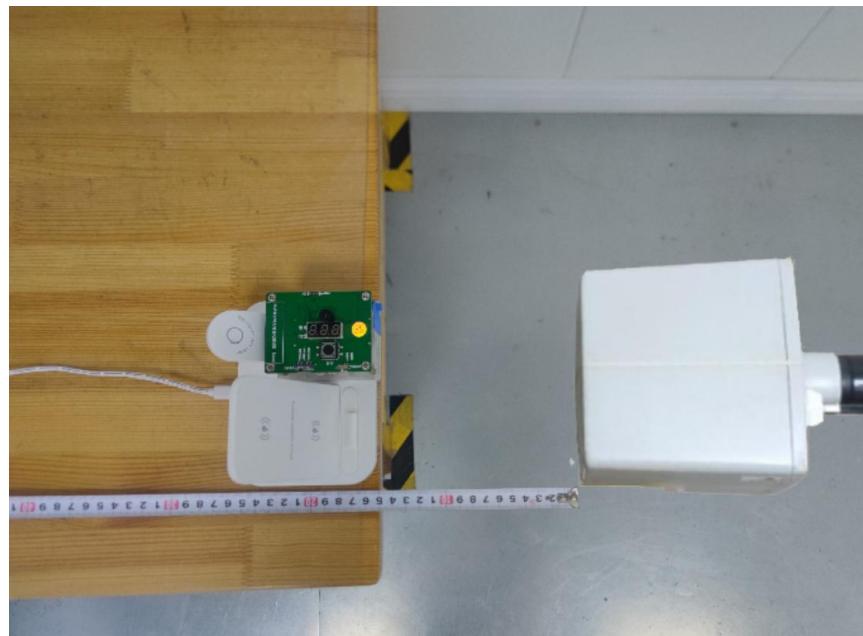
Test Photo



Phone wireless charger(10W)



Earphone wireless charger(3W)



Watch wireless charger(2W)



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