

# RF Exposure Evaluation

## FCC ID: 2A4QT-CS-13BLACK

### 1. Client Information

<b>Applicant</b>	:	taiyuanfakaishangmaoyouxiangongsi
<b>Address</b>	:	yingzequtaoyuannanlu50hao jintaoyuanazuo816shi taiyuanshi shanxisheng China 030000
<b>Manufacturer</b>	:	taiyuanfakaishangmaoyouxiangongsi
<b>Address</b>	:	yingzequtaoyuannanlu50hao jintaoyuanazuo816shi taiyuanshi shanxisheng China 030000

### 2. General Description of EUT

<b>EUT Name</b>	:	3 in 1 Charging Station
<b>Models No.</b>	:	CS-13BLACK, CS-13ROSEGOLD, CS-13GREY, CS-13WHITE, CS-13SILVER, CS-13COPPER, CS-13BLUE, CS-13GOLD, CS-13GREEN, CS-13PURPLE
<b>Sample ID</b>	:	RW-C-202202-0061-2-2#
<b>Model Different</b>	:	All these models are the same in the same PCB, layout and circuit, the only difference is the model name and appearance color.
<b>Product Description</b>	Operation Frequency:	113-205KHz for phone 300-350KHz for watch
	Modulation Type:	ASK
	Antenna:	Coil Antenna
<b>Power Rating</b>	:	USB Input: DC9V2A Wireless charging output: Phone:DC5V2A, Watch:DC5V0.5A earphone: DC5V 0.5A
<b>Software Version</b>	:	V2.2
<b>Hardware Version</b>	:	V2.2
<b>Connecting I/O Port(S)</b>	:	Please refer to the User's Manual

**Note:** More test information about the EUT please refer the RF Test Report.

TB-RF-074-1.0

## RF Exposure Considerations

### 1. Measuring Standard

KDB 680106 D01 RF Exposure Wireless Charging App v03.

### 2. Requirements

According to the item 5.2 of KDB 680106 D01v03:

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 than 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 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)

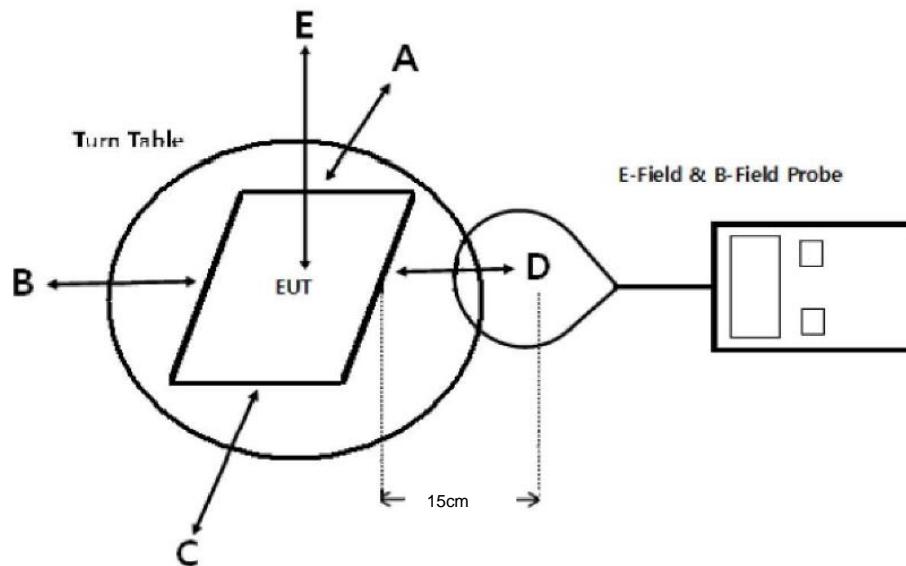
Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposures</b>				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f <sup>2</sup> )	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
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
300-1500	/	/	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).

### 3. Test Setup



Note: The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface.

### 4. Test Procedure

- 1) The RF exposure test was performed in anechoic chamber.
- 2) The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface.
- 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.
- 4) The EUT was measured according to the dictates of KDB 680106 D01 v03.

#### Remark:

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

### 5. Test Equipment List

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Magnetic field meter	NARDA	ELT-400	O-0449	Aug. 27, 2021	Aug. 26, 2022
Magnetic field probe	NARDA	ELT- probe 100cm <sup>2</sup>	M-1850	Aug. 27, 2021	Aug. 26, 2022
Field intensity probe	NARDA	EP-601	811ZX01000	Jun. 05, 2021	Jun. 04, 2022

### 6. Deviation From Test Standard

No deviation

## 7. Equipment Approval Considerations

The EUT does comply with item 5.2 of KDB 680106 D01v02 as follows table;

Requirements of KDB 680106 D01	Yes / No	Description
Power transfer frequency is less than 1 MHz	Yes	The device operate in the frequency range 113KHz-205KHz and 300KHz -350KHz
Output power from each primary coil is less than 15 watts	Yes	The maximum output power of the primary coil is 10W.
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.	Yes	The transfer system includes one primary coils and clients that are able to detect and allow coupling only between individual pairs of 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	Mobile exposure conditions
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	Mobile exposure condition.

In all other cases, unless excluded above, an RF exposure evaluation report must be reviewed and accepted through a KDB or PBA inquiry to enable authorization of the equipment. When evaluation is required to show compliance; for example, using field strength, power density, SAR measurements or computational modeling etc., the specific authorization requirements will be determined based on the results of the RF exposure evaluation

## 8. Mode of operation during the test / Test peripherals used

Test Modes:		
TM1	AC/DC Adapter + EUT + Watch (Battery Status: <1%)	record
TM2	AC/DC Adapter + EUT + Watch (Battery Status: <50%)	record
TM3	AC/DC Adapter + EUT + Watch (Battery Status: <99%)	record
TM4	AC/DC Adapter + EUT + Phone (Battery Status: <1%)	record
TM5	AC/DC Adapter + EUT + Phone (Battery Status: <50%)	record
TM6	AC/DC Adapter + EUT + Phone (Battery Status: <99%)	record

Note: All test modes were pre-tested, but we only recorded the worst case (TM1, TM2, TM3, TM4, TM5, TM6) in this report.

## 9. Test Result

### Watch:

E-Filed Strength at 15 cm from the edges surrounding the EUT and 15 cm above the top surface

Charging Battery Level	Frequency Range (MHz)	Measured E-Field Strength Values (V/m)					E-Field Strength 50% Limits (V/m)	E-Field Strength Limits (V/m)		
		Test Position								
		A	B	C	D	E				
1%	0.328	34.285	35.365	34.693	36.733	36.374	307.0	614.0		
50%	0.328	26.148	36.621	35.275	35.742	34.735	307.0	614.0		
99%	0.328	35.327	31.256	34.944	36.556	36.584	307.0	614.0		

H-Filed Strength at 15 cm from the edges surrounding the EUT and 15 cm above the top surface

Charging Battery Level	unit	Frequency Range (MHz)	Measured H-Field Strength Values (A/m)					H-Field Strength 50% Limits (A/m)	H-Field Strength Limits (A/m)		
			Test Position								
			A	B	C	D	E				
1%	uT	0.328	0.265	0.230	0.335	0.284	0.262	--	--		
1%	A/m	0.328	0.212	0.184	0.268	0.227	0.210	0.815	1.63		
50%	uT	0.328	0.226	0.233	0.260	0.231	0.314	--	--		
50%	A/m	0.328	0.181	0.186	0.208	0.184	0.251	0.815	1.63		
99%	uT	0.328	0.292	0.256	0.254	0.259	0.257	--	--		
99%	A/m	0.328	0.234	0.204	0.203	0.207	0.206	0.815	1.63		

H-Field Strength at 20cm from the top surface of the EUT

Charging Battery Level	Unit	Frequency Range (MHz)	Measured H-Field Strength Values (A/m)		FCC H-Field Strength 50% Limits (A/m)	FCC H-Field Strength Limits (A/m)
			Test Position E			
1%	uT	0.328	0.235		--	--
1%	A/m	0.328	0.188		0.815	1.63
50%	uT	0.328	0.292		--	--
50%	A/m	0.328	0.234		0.815	1.63
99%	uT	0.328	0.287		--	--
99%	A/m	0.328	0.230		0.815	1.63

Note: A/m=uT/1.25

phone:

E-Filed Strength at 15 cm from the edges surrounding the EUT and 15 cm above the top surface

Charging Battery Level	Frequency Range (MHz)	Measured E-Field Strength Values (V/m)					E-Field Strength 50% Limits (V/m)	E-Field Strength Limits (V/m)		
		Test Position								
		A	B	C	D	E				
1%	0.132	24.285	25.359	24.293	26.352	26.352	307.0	614.0		
50%	0.132	26.148	26.635	25.226	25.262	24.260	307.0	614.0		
99%	0.132	25.327	21.231	24.350	26.362	26.263	307.0	614.0		

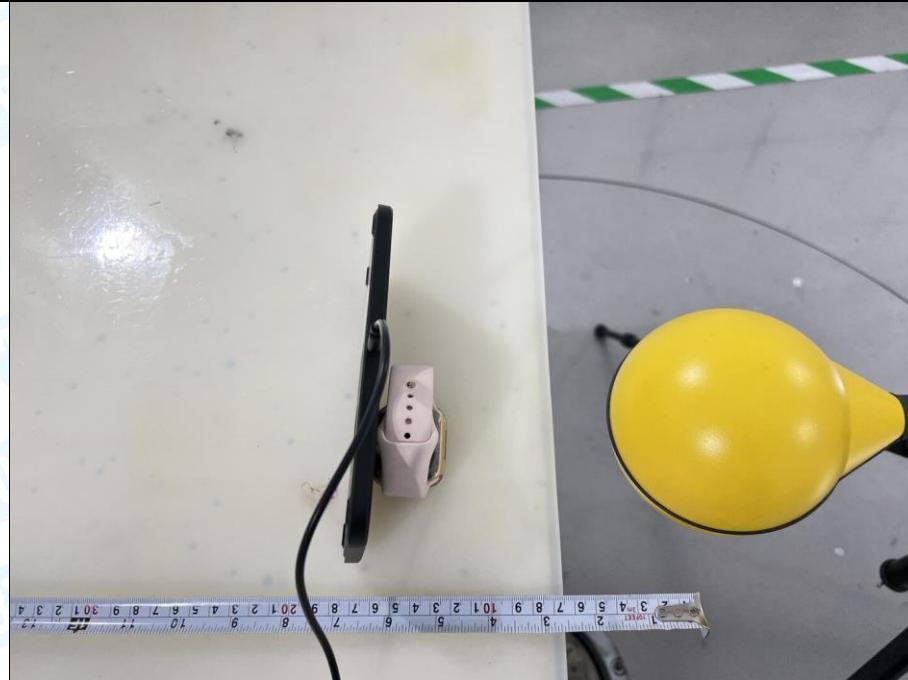
H-Filed Strength at 15 cm from the edges surrounding the EUT and 15 cm above the top surface

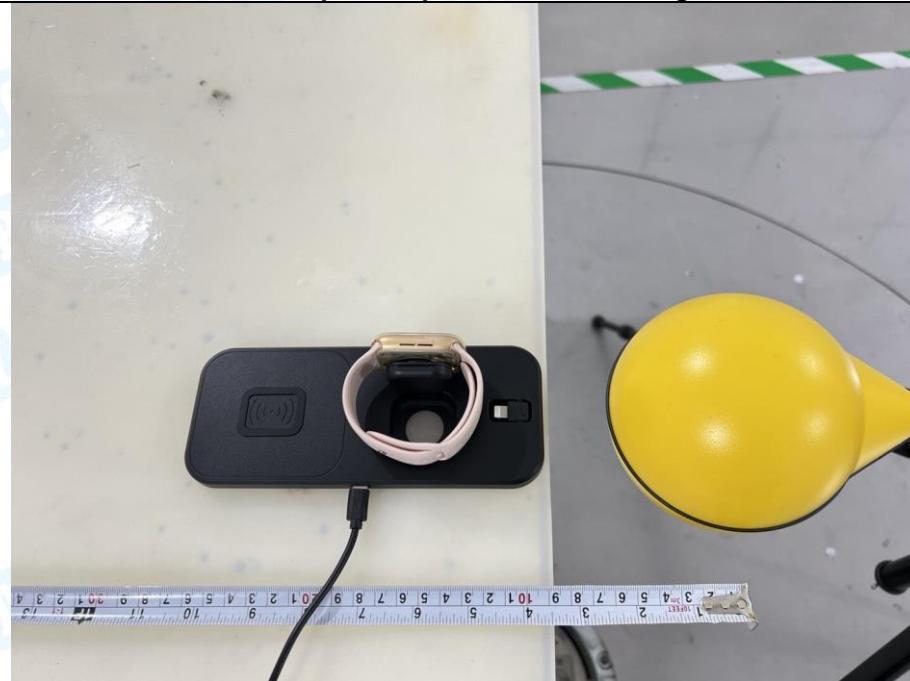
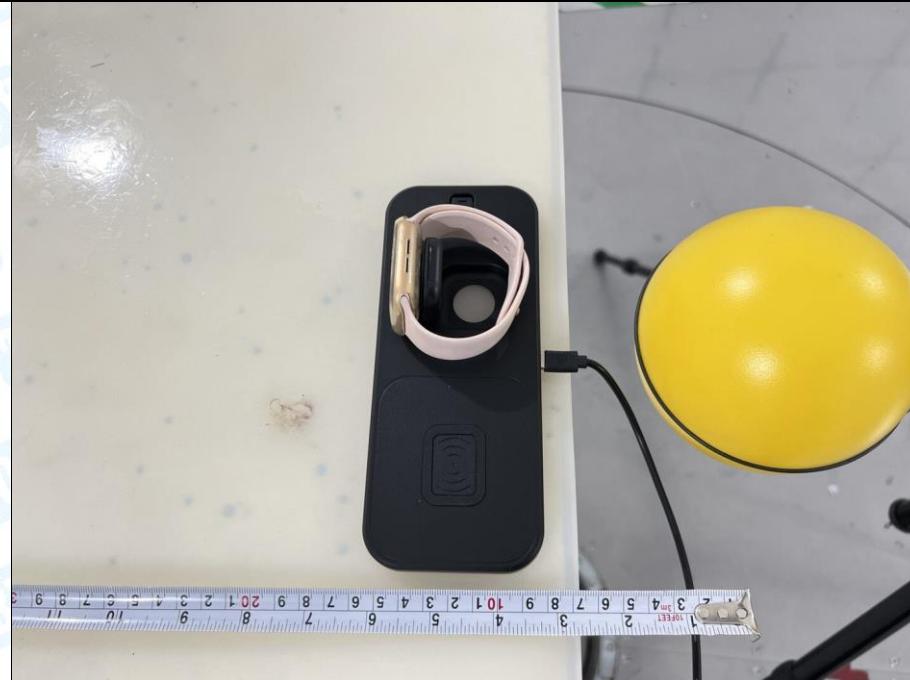
Charging Battery Level	unit	Frequency Range (MHz)	Measured H-Field Strength Values (A/m)					H-Field Strength 50% Limits (A/m)	H-Field Strength Limits (A/m)		
			Test Position								
			A	B	C	D	E				
1%	uT	0.132	0.205	0.211	0.203	0.226	0.224	--	--		
1%	A/m	0.132	0.164	0.169	0.268	0.227	0.210	0.815	1.63		
50%	uT	0.132	0.223	0.226	0.235	0.259	0.263	--	--		
50%	A/m	0.132	0.178	0.181	0.208	0.184	0.251	0.815	1.63		
99%	uT	0.132	0.235	0.214	0.212	0.241	0.260	--	--		
99%	A/m	0.132	0.188	0.171	0.170	0.171	0.210	0.815	1.63		

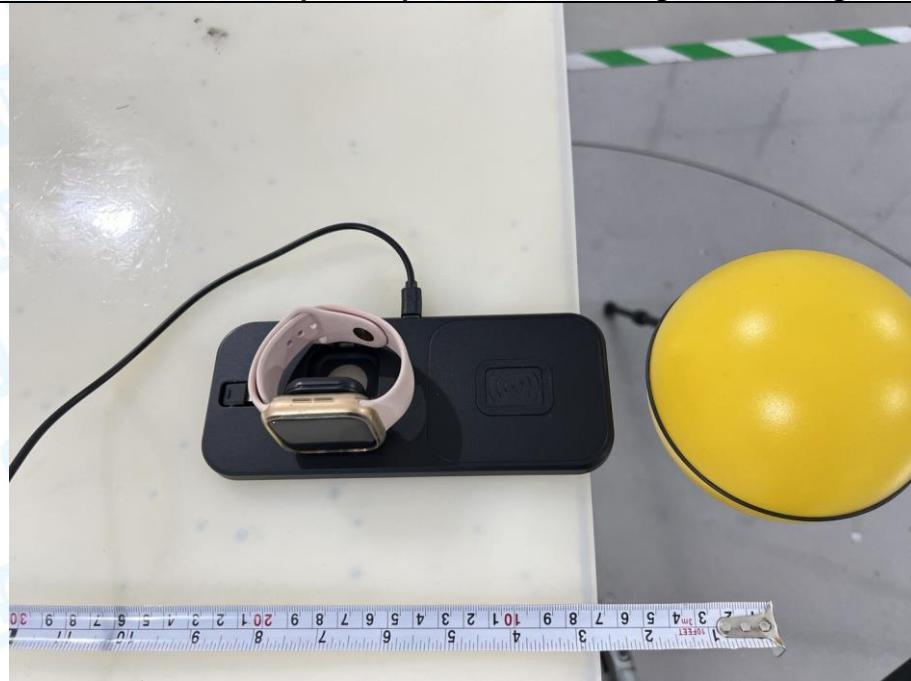
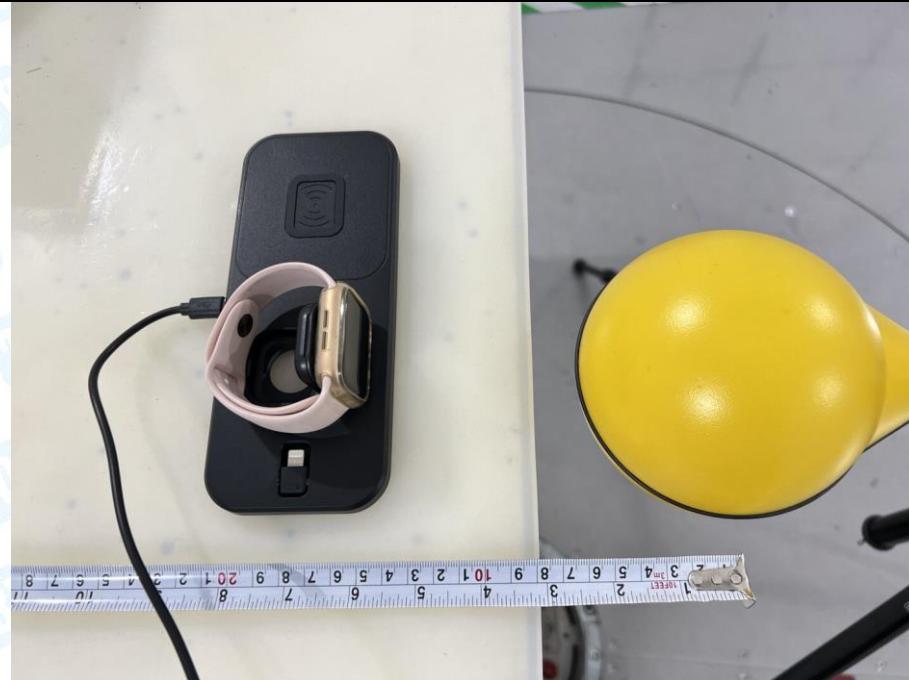
H-Field Strength at 20cm from the top surface of the EUT

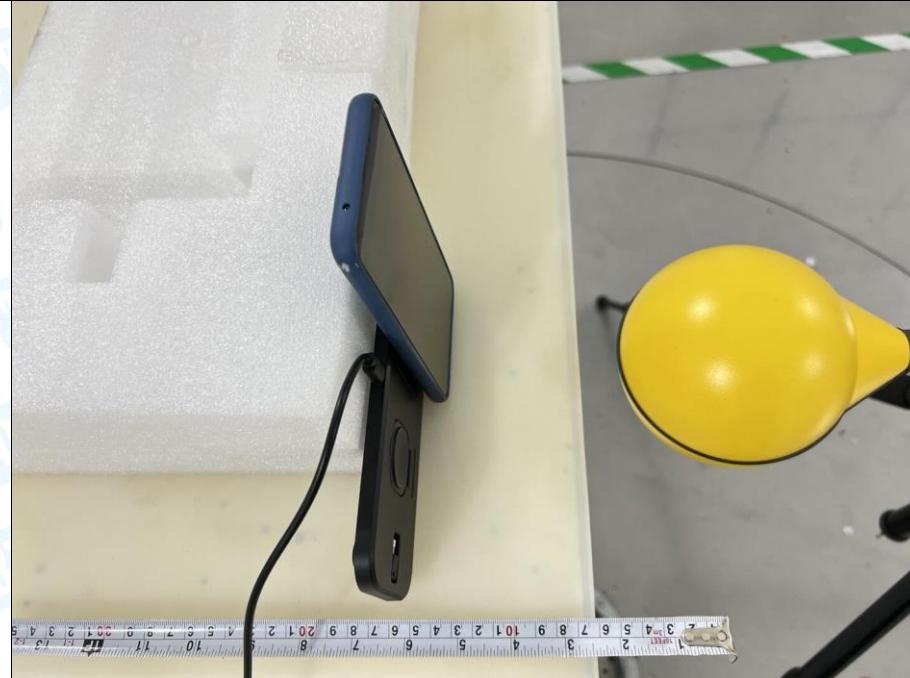
Charging Battery Level	Unit	Frequency Range (MHz)	Measured H-Field Strength Values (A/m)		FCC H-Field Strength 50% Limits (A/m)	FCC H-Field Strength Limits (A/m)
			Test Position E			
1%	uT	0.132	0.224		--	--
1%	A/m	0.132	0.179		0.815	1.63
50%	uT	0.132	0.231		--	--
50%	A/m	0.132	0.185		0.815	1.63
99%	uT	0.132	0.251		--	--
99%	A/m	0.132	0.201		0.815	1.63

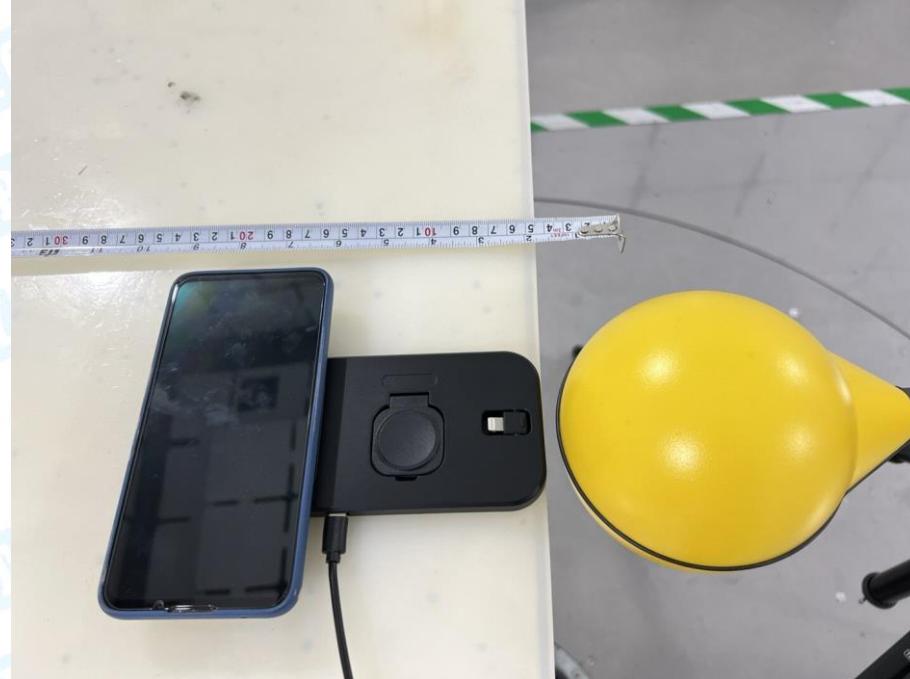
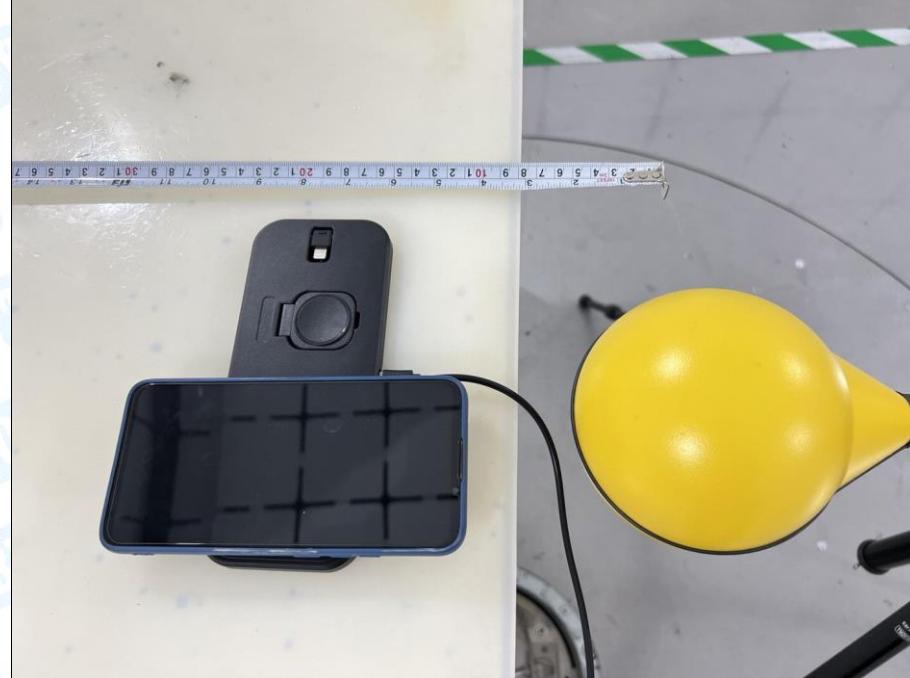
Note: A/m=uT/1.25

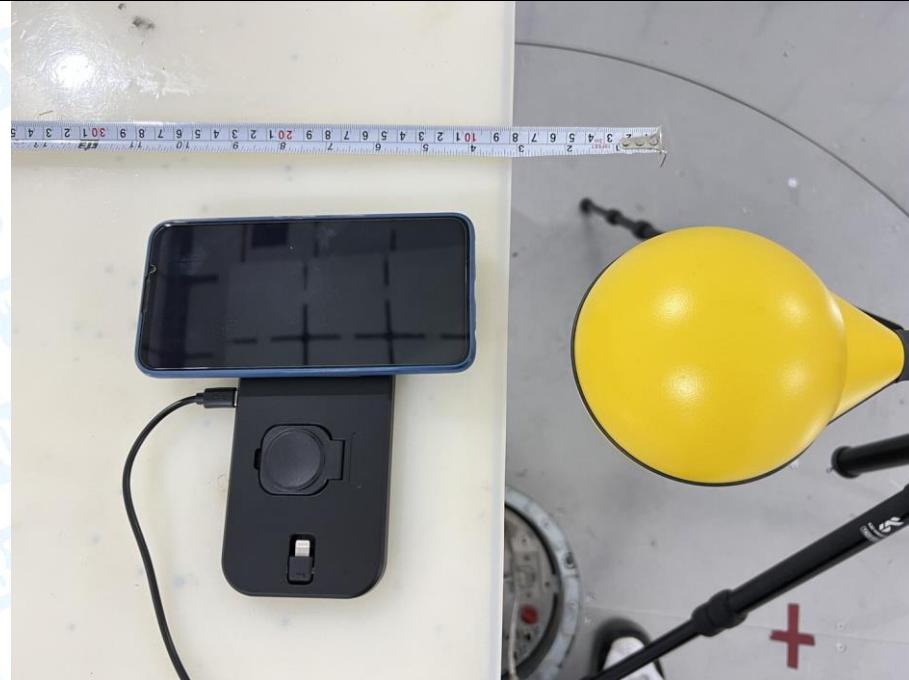
**H-Field Strength-20cm****Test Position E - Exposure photo from top surface****H-Field Strength-15cm****Test Position A - Exposure photo from side edge surface-Rear**

**H-Field Strength-15cm****Test Position B - Exposure photo from side edge surface-Left****H-Field Strength-15cm****Test Position C - Exposure photo from side edge surface-Front**

**H-Field Strength-15cm****Test Position D - Exposure photo from side edge surface-Right****H-Field Strength- 15 cm****Test Position E - Exposure photo from top surface**

**H-Field Strength-20cm****Test Position E - Exposure photo from top surface****H-Field Strength-15cm****Test Position A - Exposure photo from side edge surface-Rear**

**H-Field Strength-15cm****Test Position B - Exposure photo from side edge surface-Left****H-Field Strength-15cm****Test Position C - Exposure photo from side edge surface-Front**

**H-Field Strength-15cm****Test Position D - Exposure photo from side edge surface-Right****H-Field Strength- 15 cm****Test Position E - Exposure photo from top surface**

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