RF Exposure Evaluation

FCC ID: 2A4OM-HS-ST24-BLACK

1. Client Information

Applicant	:	HangZhouHengShengHuanJingGongChengYouXianGongSi
Address	:	BinJiangQuChangHeJieDaoJiangErLu57Hao1ZhuangAQu1007Shi HangZhouShi ZheJiangSheng China 310051
Manufacturer	:	HangZhouHengShengHuanJingGongChengYouXianGongSi
Address	:	BinJiangQuChangHeJieDaoJiangErLu57Hao1ZhuangAQu1007Shi HangZhouShi ZheJiangSheng China 310051

2. General Description of EUT

EUT Name	:	DUAL WIRELESS CHARGER	
Models No.	:	HS-ST24-Black, HS-ST24-W, HS-ST24-RG	
Sample ID	:	RW-C-202202-0061-1-2#	
Model Different	:	All these models are the same in the same PCB, layout and circuit, the only difference is the model name and appearance color.	
Product Description	:	Operation Frequency:	113-205KHz for earphone 300-350KHz for watch
		Modulation Type:	ASK
		Antenna:	Coil Antenna
Power Rating		USB Input: DC5V2A Wireless charging output: DC5V1A, DC5V0.4A	
Software Version	:	V2.2	
Hardware Version	:	V2.2	
Connecting I/O Port(S)	:	Please refer to the User's Manual	

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

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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).

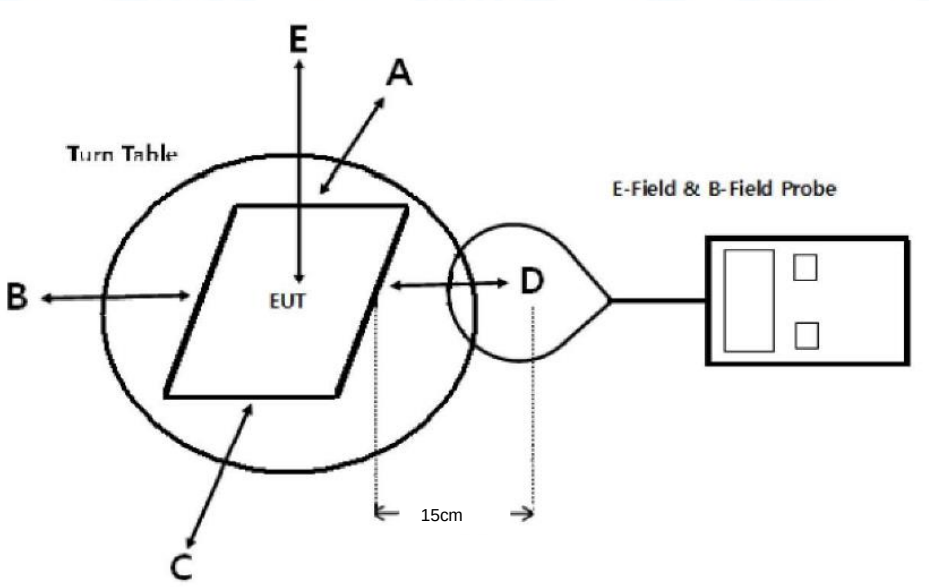
(6) The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.

Limits For Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^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).

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^2	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%)	Pre-tested
TM2	AC/DC Adapter + EUT + Watch (Battery Status: <50%)	Pre-tested
TM3	AC/DC Adapter + EUT + Watch (Battery Status: <99%)	Pre-tested
Note: All test modes were pre-tested, but we only recorded the worst case (TM1, TM2, TM3) in this report.		

9. Test Result

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) Test Position A	B	C	D	E	E-Field Strength 50% Limits (V/m)	E-Field Strength Limits (V/m)
1%	0.326	56.232	51.261	52.636	55.261	53.374	307.0	614.0
50%	0.326	36.148	36.621	32.321	36.362	34.556	307.0	614.0
99%	0.326	30.325	35.526	37.15	36.556	33.236	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) Test Position A	B	C	D	E	H-Field Strength 50% Limits (A/m)	H-Field Strength Limits (A/m)
1%	uT	0.326	0.293	0.319	0.246	0.216	0.226	--	--
1%	A/m	0.326	0.234	0.255	0.197	0.173	0.181	0.815	1.63
50%	uT	0.326	0.360	0.362	0.321	0.231	0.238	--	--
50%	A/m	0.326	0.288	0.290	0.256	0.185	0.280	0.815	1.63
99%	uT	0.326	0.285	0.290	0.253	0.237	0.263	--	--
99%	A/m	0.326	0.228	0.232	0.202	0.190	0.210	0.815	1.63

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

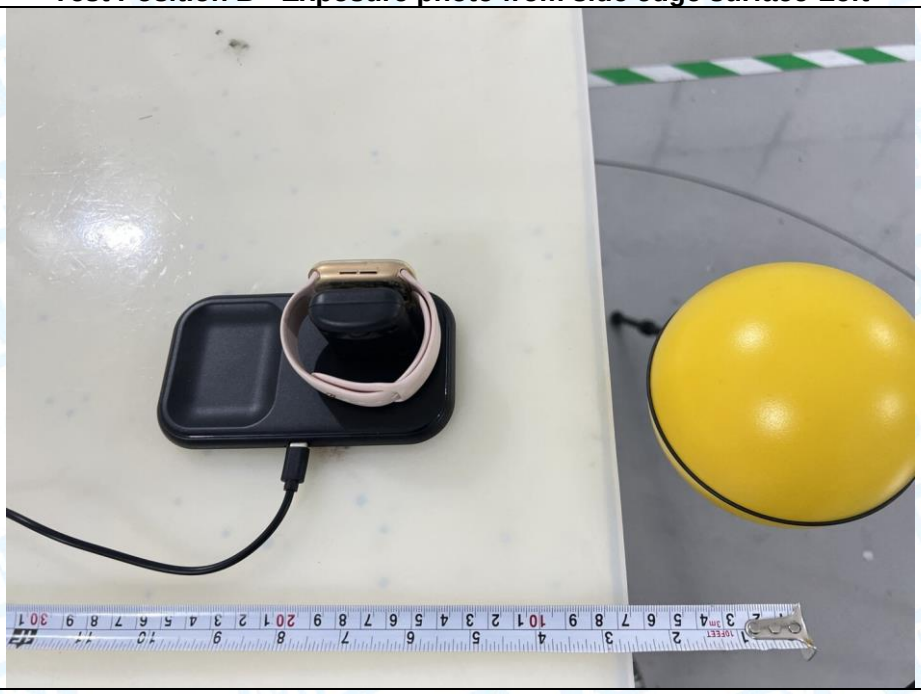
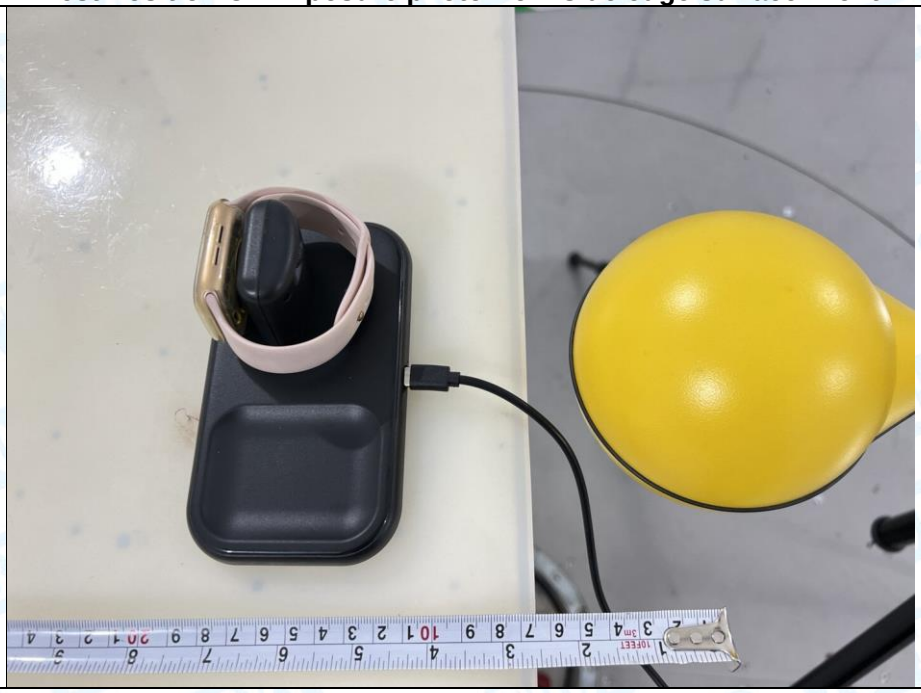
Charging Battery Level	Unit	Frequency Range (MHz)	Measured H-Field Strength Values (A/m) Test Position E	FCC H-Field Strength 50% Limits (A/m)	FCC H-Field Strength Limits (A/m)
1%	uT	0.326	0.235	--	--
1%	A/m	0.326	0.188	0.815	1.63
50%	uT	0.326	0.249	--	--
50%	A/m	0.326	0.199	0.815	1.63
99%	uT	0.326	0.234	--	--
99%	A/m	0.326	0.187	0.815	1.63

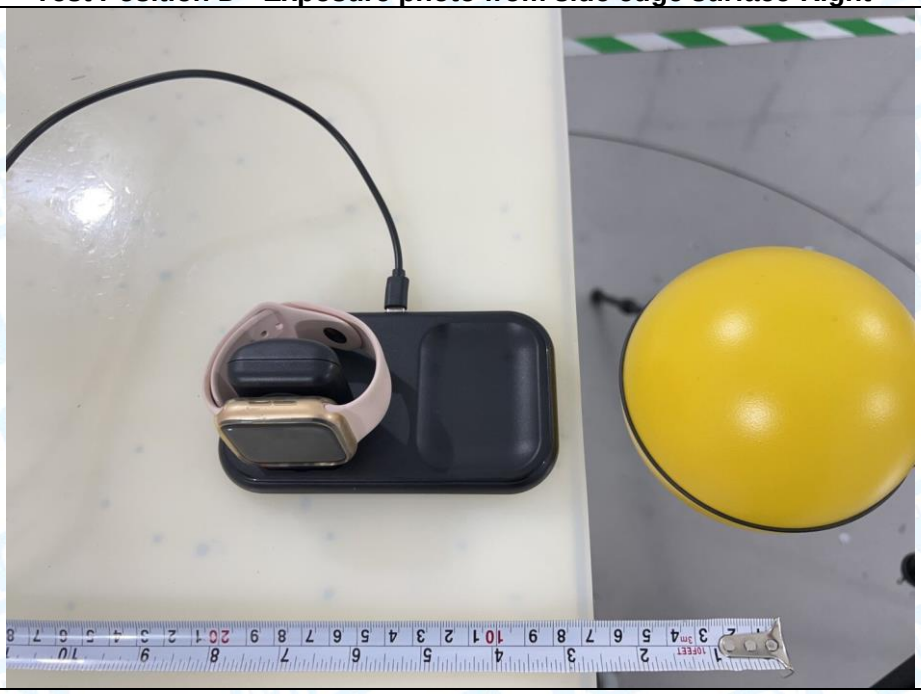
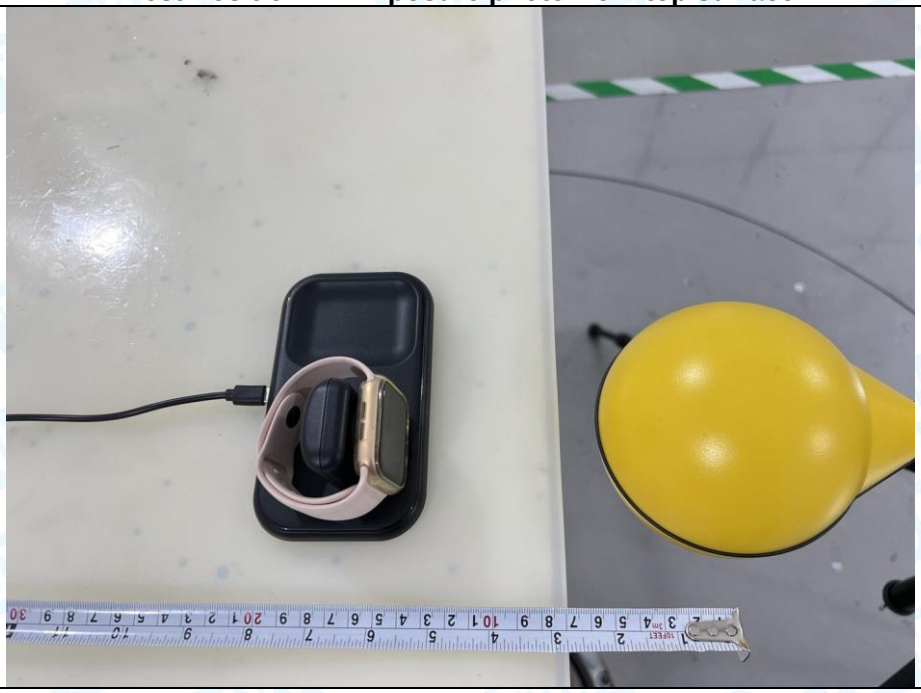
Note: A/m=uT/1.25

10. Test Set-up Photos

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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