



Product Name:	Wireless Charging Station
Product Model No.:	M4 M3, M6, M7, M9, M10, M11, M12
Operation Frequency:	Phone Coil: 115K-205KHz Earphone Coil: 115K-350KHz Watch Coil: 115K-350KHz
Transmitting mode	Keep the EUT in continuously wireless charging mode
Power supply:	Input: 5V---3A, 9V---3A, 12V---2.5A Output 1 : 5W/7.5W/10W/15W Output 2 : 5W Output 3 : 2.5W

Auxiliary					
Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E1	Wireless Charging Station	N/A	M4	N/A	EUT
A1	AC/DC adapter	N/A	H6157-W1	N/A	Auxiliary
A3	Watch	Apple	Watch Series 8	N/A	Auxiliary
A4	Phone	Apple	iPhone13 pro	N/A	Auxiliary
A5	Earphone	Apple	Air Pods	N/A	Auxiliary

Test Modes:	Description:
Phone Coil+Earphone Coil+Watch Coil	Mode 1: AC/DC Adapter+EUT + Earphone +Watch (Battery Status:<1%)+Wireless load (Full Load)
	Mode 2: AC/DC Adapter+EUT + Earphone + Watch (Battery Status:<50%)+Wireless load (Full Load)
	Mode 3: AC/DC Adapter+EUT +Earphone +Watch (Battery Status:<100%)+Wireless load (Full Load)
	Mode 4 :AC/DC Adapter+EUT +Earphone +Watch (Battery Status:<1%)+Wireless load (Half Load)
	Mode 5: AC/DC Adapter+EUT + Earphone + Watch (Battery Status:<50%)+Wireless load (Half Load)
	Mode 6: AC/DC Adapter+EUT + Earphone +Watch (Battery Status:<100%)+Wireless load (Half Load)
	Mode 7:AC/DC Adapter+EUT + Earphone + Watch (Battery Status:<1%)+Wireless load (Null Load)
	Mode 8:AC/DC Adapter+EUT +Earphone + Watch (Battery Status:<50%)+Wireless load (Null Load)
	Mode 9:AC/DC Adapter+EUT +Earphone +Watch (Battery Status:<100%)+Wireless load (Null Load)
No Loads	AC/DC Adapter+EUT (Null Load)



RF Exposure Evaluation

1 Measuring Standard

KDB 680106 RF Exposure Wireless Charging Apps v03r01

1.1 KDB 680106 RF Exposure Wireless Charging Apps v03r01

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainly
1	H-filed	$\pm 0.93\text{dB}$
2	E-filed	$\pm 0.51\text{dB}$

2 Requirements

According to the item 5 of KDB 680106 v03r01:

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 1MHz.

Yes. The device operates in the frequency Phone Coil is 115KHz-205KHz & Watch Coil and Earphone Coil is 115KHz-350KHz; ;

(2) 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 1.5W;

(3) 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 including a charging system with only single primary coils is to detect and allow only between individual of coils;

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

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

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

Yes. The EUT does not have portable exposure conditions.

(6) The aggregate H-field strengths anywhere at or beyond 15 cm surrounding the device, and 20 cm away from the surface from all coils that by design can simultaneously transmit, and while those coils are simultaneously energized, are demonstrated to be less than 50% of the applicable MPE limit.

Yes. Meet the requirement.

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)

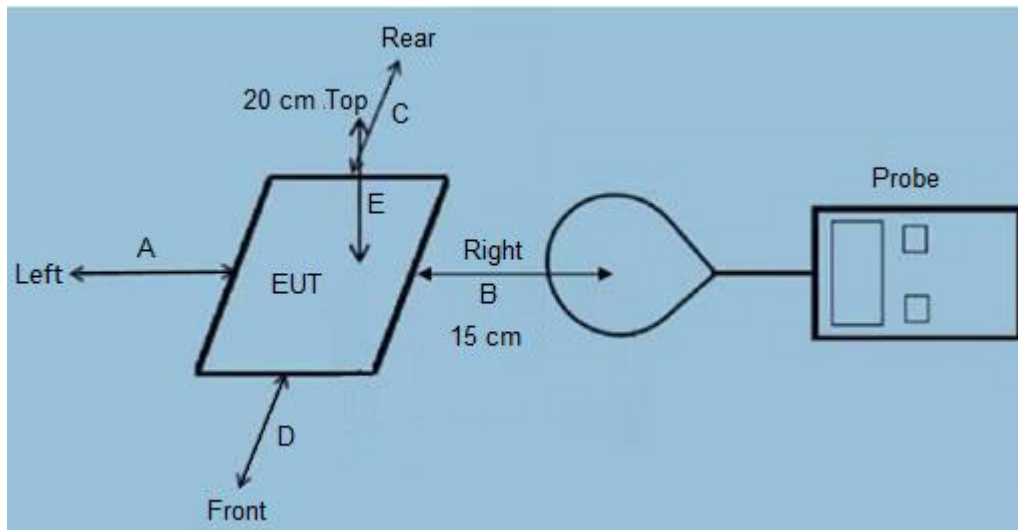
Limits for Maximum Permissible Exposure (MPE)



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



4 Test Procedure

- 1) The RF exposure test was performed in anechoic chamber.
- 2) The measurement probe was placed at test distance (15 cm from all sides and 20 cm from the top) 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.
- 4) The EUT was measured according to the dictates of KDB 680106 v03r01.

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



5 Test Instruments list

Test Equipment	Manufacturer	Model No.	SN.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
Exposure Level Tester	Narda	ELT-400	180ZX10220	Oct. 25, 2022	Oct. 24 2023
Magnetic field probe 100cm ²	Narda	ELT probe 100cm ²	M0675	Oct. 26, 2022	Oct. 25 2023

6 Test Result

Mobile Phone Coil

H-Filed Strength at 15 cm from the edges surrounding the EUT (A/m)

Frequency Range (MHz)	Test Position A	Test Position B	Test Position C	Test Position D	Limits (A/m)
0.115-0.205	0.49	0.50	0.48	0.52	1.63

H-Filed Strength at 15 cm from the edges surrounding the EUT (uT)

Frequency Range (MHz)	Test Position A	Test Position B	Test Position C	Test Position D
0.115-0.205	0.61	0.63	0.60	0.65

H-Filed Strength at 20 cm from the top of the EUT (A/m)

Frequency Range (MHz)	Test Position E	Limits (A/m)
0.115-0.205	0.51	1.63

H-Filed Strength at 20 cm from the top of the EUT (uT)

Frequency Range (MHz)	Test Position E
0.115-0.205	0.64

Three states of full load half-load were tested and only the worst value was recorded



Mobile Earphone Coil

H-Filed Strength at 15 cm from the edges surrounding the EUT (A/m)

Frequency Range (MHz)	Test Position A	Test Position B	Test Position C	Test Position D	Limits (A/m)
0.115-0.350	0.54	0.52	0.53	0.55	1.63

H-Filed Strength at 15 cm from the edges surrounding the EUT (uT)

Frequency Range (MHz)	Test Position A	Test Position B	Test Position C	Test Position D
0.115-0.350	0.68	0.65	0.66	0.69

H-Filed Strength at 20 cm from the top of the EUT (A/m)

Frequency Range (MHz)	Test Position E	Limits (A/m)
0.115-0.350	0.54	1.63

H-Filed Strength at 20 cm from the top of the EUT (uT)

Frequency Range (MHz)	Test Position E
0.115-0.350	0.68

Remark: $A/m = uT/1.25$

Three states of full load half-load were tested and only the worst value was recorded



Mobile Watch Coil

H-Filed Strength at 15 cm from the edges surrounding the EUT (A/m)

Frequency Range (MHz)	Test Position A	Test Position B	Test Position C	Test Position D	Limits (A/m)
0.115-0.350	0.49	0.50	0.51	0.53	1.63

H-Filed Strength at 15 cm from the edges surrounding the EUT (uT)

Frequency Range (MHz)	Test Position A	Test Position B	Test Position C	Test Position D
0.115-0.350	0.67	0.60	0.61	0.68

H-Filed Strength at 20 cm from the top of the EUT (A/m)

Frequency Range (MHz)	Test Position E	Limits (A/m)
0.115-0.350	0.52	1.63

H-Filed Strength at 20 cm from the top of the EUT (uT)

Frequency Range (MHz)	Test Position E
0.115-0.350	0.62

Remark: $A/m = uT/1.25$

Three states of full load half-load were tested and only the worst value was recorded



Mobile Phone Coil+Earphone Coil+Watch Coil

H-Filed Strength at 15 cm from the edges surrounding the EUT (A/m)

Frequency Range (MHz)	Test Position A	Test Position B	Test Position C	Test Position D	Limits (A/m)
0.115-0.350	0.91	0.90	0.98	0.93	1.63

H-Filed Strength at 15 cm from the edges surrounding the EUT (uT)

Frequency Range (MHz)	Test Position A	Test Position B	Test Position C	Test Position D
0.115-0.350	0.89	0.89	0.90	0.87

H-Filed Strength at 20 cm from the top of the EUT (A/m)

Frequency Range (MHz)	Test Position E	Limits (A/m)
0.115-0.350	0.83	1.63

H-Filed Strength at 20 cm from the top of the EUT (uT)

Frequency Range (MHz)	Test Position E
0.115-0.350	0.87

Remark: A/m = uT/1.25

Three states of full load half-load were tested and only the worst value was recorded



7 Test Set-up Photo

