

RF Exposure Evaluation

1 Measuring Standard

KDB 680106 RF Exposure Wireless Charging Apps v03r01

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 operate in the frequency range from 110KHz to 205KHz

- (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 15000mW.

- (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.

Yes, the transfer system includes only single primary and secondary 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).

No, submit a KDB inquiry to get test guideline and fully follow the KDB inquiry guideline.

- (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.

Yes, the EUT field strength levels are less 50% x MPE limit.

Limits

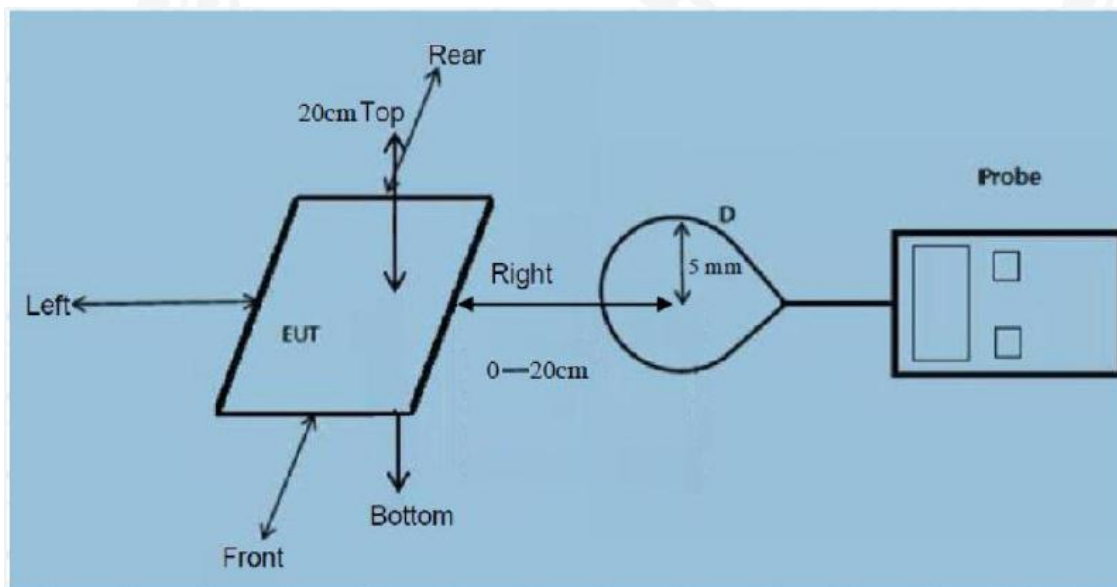
The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

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
 E=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

- The RF exposure test was performed on 360 degree turn table in anechoic chamber.
- The measurement probe was placed at test distance (0-20cm) which is between the edge of the charger and the geometric centre of probe, Move the bracket to adjust the distance.
- The turn table was rotated 360d degree to search of highest strength.
- The highest emission level was recorded and compared with limit as soon as measurement of each points were completed.
- The EUT were measured according to the dictates of KDB 680106v03r01.

Note: The radius of the probe is 4.7mm, and the center of the probe sensing element is less than 5 mm from the probe outer edge.

5 Test Instruments list

Test Equipment	Manufacturer	Model No.	SN.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
EMF TESTER	Wavecontrol	SMP160	19SN0989	2021.08.20	2023.08.29

6 Test Result

H-Filed Strength at 20 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	0.15	0.16	0.16	0.14	1.63

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	0.17	1.63

H-Filed Strength at 18 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	0.19	0.19	0.20	0.21	1.63

H-Filed Strength at 18 cm from the top of the EUT (A/m)

Frequency Range (MHz)	Test Position E	Limits (A/m)
0.115-0.205	0.22	1.63

H-Filed Strength at 16 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	0.26	0.26	0.25	0.26	1.63

H-Filed Strength at 16 cm from the top of the EUT (A/m)

Frequency Range (MHz)	Test Position E	Limits (A/m)
0.115-0.205	0.27	1.63

H-Filed Strength at 14 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	0.32	0.31	0.31	0.31	1.63

H-Filed Strength at 14 cm from the top of the EUT (A/m)

Frequency Range (MHz)	Test Position E	Limits (A/m)
0.115-0.205	0.32	1.63

H-Filed Strength at 12 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	0.36	0.35	0.34	0.36	1.63

H-Filed Strength at 12 cm from the top of the EUT (A/m)

Frequency Range (MHz)	Test Position E	Limits (A/m)
0.115-0.205	0.36	1.63

H-Filed Strength at 10 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	0.42	0.41	0.42	0.42	1.63

H-Filed Strength at 10 cm from the top of the EUT (A/m)

Frequency Range (MHz)	Test Position E	Limits (A/m)
0.115-0.205	0.43	1.63

H-Filed Strength at 8 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	0.48	0.47	0.47	0.48	1.63

H-Filed Strength at 8 cm from the top of the EUT (A/m)

Frequency Range (MHz)	Test Position E	Limits (A/m)
0.115-0.205	0.49	1.63

H-Filed Strength at 6 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	0.52	0.52	0.51	0.51	1.63

H-Filed Strength at 6 cm from the top of the EUT (A/m)

Frequency Range (MHz)	Test Position E	Limits (A/m)
0.115-0.205	0.54	1.63

H-Filed Strength at 4 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	0.57	0.57	0.56	0.57	1.63

H-Filed Strength at 4 cm from the top of the EUT (A/m)

Frequency Range (MHz)	Test Position E	Limits (A/m)
0.115-0.205	0.58	1.63

H-Filed Strength at 2 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	0.62	0.62	0.62	0.63	1.63

H-Filed Strength at 2 cm from the top of the EUT (A/m)

Frequency Range (MHz)	Test Position E	Limits (A/m)
0.115-0.205	0.63	1.63

H-Filed Strength at 0 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	0.65	0.64	0.64	0.64	1.63

H-Filed Strength at 0 cm from the top of the EUT (A/m)

Frequency Range (MHz)	Test Position E	Limits (A/m)
0.115-0.205	0.66	1.63

7 Test Set-up Photo

