



RF Exposure Evaluation

1 Measuring Standard

KDB 680106 D01 RF Exposure Wireless Charging Apps v03 r01

2 Requirements

According to the item 5 of KDB 680106 D01 RF Exposure Wireless Charging App v03 r01:

- (1) Power transfer frequency is less than 1 MHz
Yes
- (2) Output power from each primary coil is less than or equal to 15 watts.
Yes, the wireless outpower is 10W maximum
- (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
- (3) Client device is placed directly in contact with the transmitter.
Yes
- (5) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).
Yes
- (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

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)

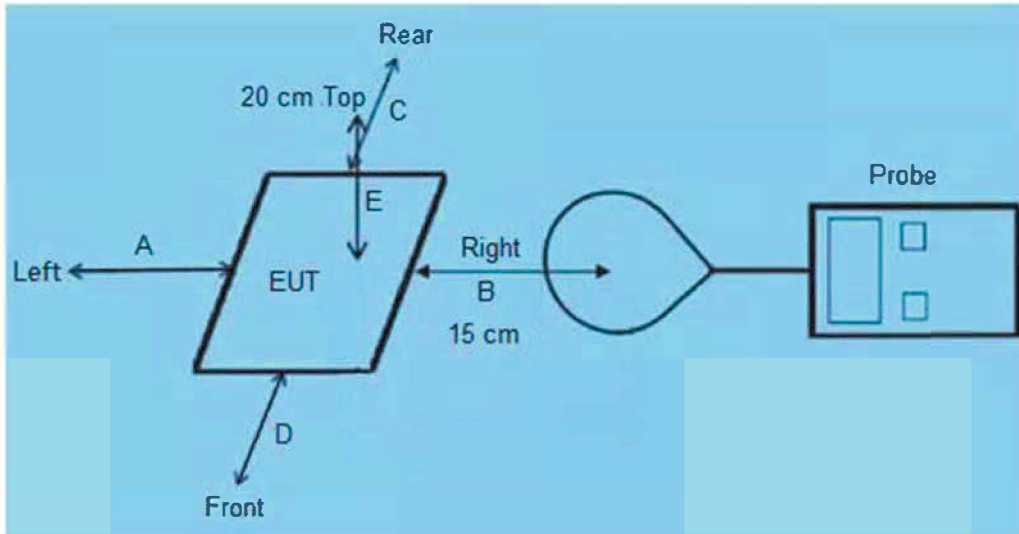
Limits for Maximum Permissible Exposure (MPE)

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	/	/	1/300	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	/	/	1/1500	30
1500-100,000	/	/	1.0	30

F= frequency in MHz
 P= 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: 514V/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 D01v03 r01.

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

(Remark: wireless output DC5V/2A and DC9V/1.1A were tested and in the test report, only the worst case was recorded and DC5V/2A was the worst case)

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5 Test Instruments list

Test Equipment	Manufacturer	Model No.	SN.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
EMF Meter	NARDA	ELT-400	N-0356	Oct 08, 2022	Oct 07, 2023
EMF probe	NARDA	B-Field Probe	M-0812	Oct 08, 2022	Oct 07, 2023

6 Test Result

Note: Frequency Range 0.1115-0.205 (MHz); <5% load energy, 50 % load energy,> 90% load energy mode all have been tested, Only worse case Max load mode (<5% load energy) is reported.

E-Filed Strength at 15 cm from the edges surrounding the EUT (V/m)

Frequency Range (MHz)	Test Position A	Test Position B	Test Position C	Test Position D	Limits (V/m)
0.1115-0.205	1.86	1.85	1.84	1.81	614

E-Filed Strength at 20 cm from the top of the EUT (V/m)

Frequency Range (MHz)	Test Position E	Limits (V/m)
0.1115-0.205	2.12	614

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)
0.1115-0.205	0.45	0.41	0.43	0.44	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)
0.1115-0.205	0.59	1.63

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7.0 Test Setup Photo



Test Data: July 07, 2023
Review Data: July 07, 2023

Test Engineer: Andy Xing

Reviewer: Terry



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