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 D01v03 r01:
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,0.1115-0.205MHz.
(2) Output power from each primary coil is less than or equal to 15 watts.Yes,10W.
(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,3coils work at same time.
(4) 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,Mobile condition.
(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.
Remark: Meet all the above requirements.

Limits

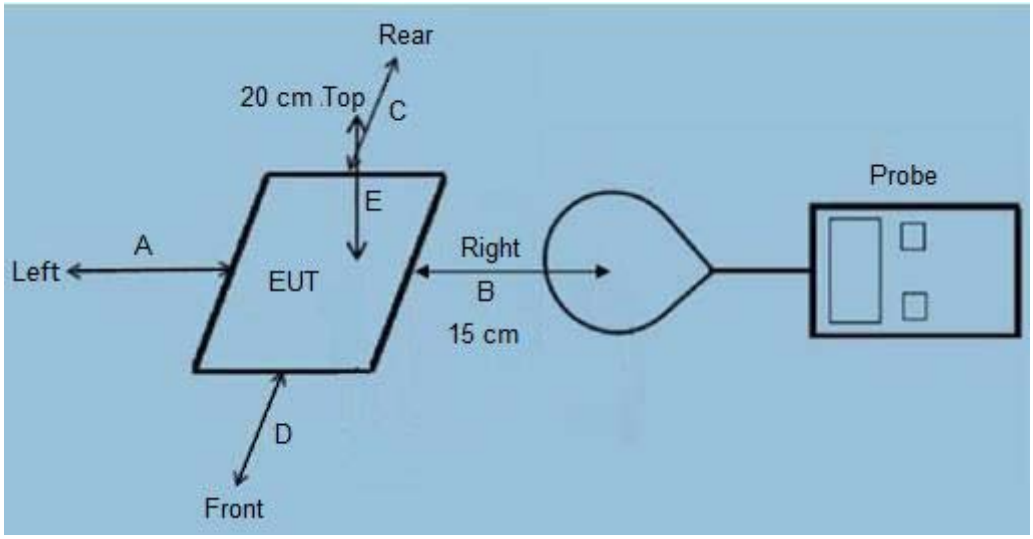
The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

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 D01v03 r01.

Remark：The EUT's test position A, B, C, D and E is valid for the E and H field measurements.
Test at worse case wireless output 10W mode.

The report refers only to the sample tested and does not apply to the bulk.
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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 10, 2020	Oct 09, 2021
EMF probe	NARDA	B-Field Probe	M-0812	Oct 10, 2020	Oct 09, 2021

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	1.36	1.31	1.19	1.21	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	1.14	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	0.46	0.34	0.31	0.15	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	0.21	1.63

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7.0 Test Setup Photo

Test Engineer: Alan geng

Dated: September 27, 2021

Reviewer: Terry Tang

Dated: September 27, 2021

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