

RF EXPOSURE

1. Test Configuration

For devices designed for typical desktop applications, such as wireless charging pads, RF exposure evaluation should be conducted assuming a user separation distance of 15 cm. E and H field strength measurements or numerical modeling may be used to demonstrate compliance. Measurements should be made from all sides and the top of the primary/client pair, with the 15 cm measured from the center of the probe(s) to the edge of the device. Emissions between 100 kHz to 300 kHz should be assessed versus the limits at 300 kHz in Table 1 of Section 1.1310: 614 V/m and 1.63 A/m. A KDB inquiry is required to determine the applicable exposure limits below 100 kHz.

2. Limit

Table 1—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 Exposure				
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 ~ 1,500			f/300	6
1,500 ~ 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 ~ 1,500			f/1500	30
1,500 ~ 100,000			1	30

Note f = frequency in MHz * = Plane-wave equivalent power density

Per the guidance of KDB 680106, the E-field and H-field limits shown in the table above are extended down to 100kHz.

3. Equipment Approval Considerations

(1) Power transfer frequency is less than 1 MHz.

-The power transfer frequency is set from 110 kHz to 205 kHz. Therefore the frequency specification is satisfied with the device.

(2) Output power from each primary coil is less than or equal to 15 watts.

-The DUT is that supports up to 15 W

(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.

-The DUT(Device Under Test) includes Only secondary coil in transmitter.

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

-When the client device is placed directly in contact with transmitter, then charging is able to start.

(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 (refer to 3page)

4. Test Methods

4.1 Measurement Procedure

1. The RF exposure test was performed at the turn table of anechoic chamber.

2. The edge of the charger(EUT) and center of the field probe should be located at specified distance(15 cm, 20 cm).

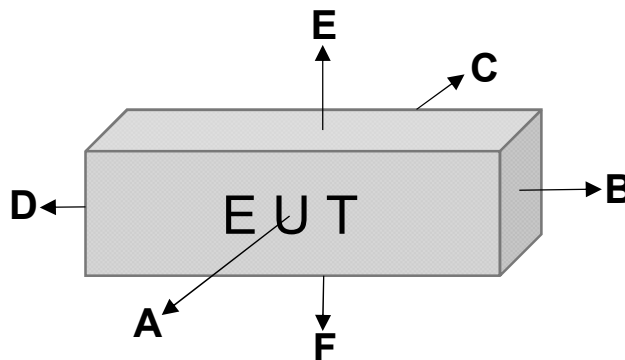
3. Maximum value of E-field and H-field were measured for the five side each at the specified distance and recorded

them on the following Test Result table. Five sides are [A]Front, [B]Left, [C]Rear, [D]Right, [E]Top and [F]Bottom.

Please see below diagram.

4. The EUT was implemented by the distates of KDB 690106D01 accordingly.

4.2 Test Diagram



4.3 Test Mode

In order to check all kinds of possible configurations, EUT was evaluated with appropriate client and under each charging condition as below table.

Test Mode	Output Power
Mode 1	5 W Wireless Charging
Mode 2	7.5 W Wireless Charging
Mode 3	10 W Wireless Charging
Mode 4	15 W Wireless Charging

4.4 Test Result

Comply (measurement data : refer to below)

- Test Mode : Mode 1

E-field Measurements

Distance	Front [A] (V/m)	Left [B] (V/m)	Rear [C] (V/m)	Right [D] (V/m)	Top [E] (V/m)	Bottom [F] (V/m)	Limit (V/m)
15 cm	95.42	94.19	96.84	97.12	120.34	97.62	614.00
20 cm					93.82		307.00

H-field Measurements

Distance	Front [A] (A/m)	Left [B] (A/m)	Rear [C] (A/m)	Right [D] (A/m)	Top [E] (A/m)	Bottom [F] (A/m)	Limit (A/m)
15 cm	0.52	0.64	0.53	0.60	0.63	0.51	1.63
20 cm					0.55		0.82

- Test Mode : Mode 2

E-field Measurements

Distance	Front [A] (V/m)	Left [B] (V/m)	Rear [C] (V/m)	Right [D] (V/m)	Top [E] (V/m)	Bottom [F] (V/m)	Limit (V/m)
15 cm	96.43	95.14	97.01	96.84	119.87	96.04	614.00
20 cm					94.84		307.00

H-field Measurements

Distance	Front [A] (A/m)	Left [B] (A/m)	Rear [C] (A/m)	Right [D] (A/m)	Top [E] (A/m)	Bottom [F] (A/m)	Limit (A/m)
15 cm	0.57	0.62	0.69	0.57	0.69	0.58	1.63
20 cm					0.59		0.82

- Test Mode : Mode 3

E-field Measurements

Distance	Front [A] (V/m)	Left [B] (V/m)	Rear [C] (V/m)	Right [D] (V/m)	Top [E] (V/m)	Bottom [F] (V/m)	Limit (V/m)
15 cm	97.59	96.94	98.42	93.12	120.34	95.74	614.00
20 cm					95.01		307.00

H-field Measurements

Distance	Front [A] (A/m)	Left [B] (A/m)	Rear [C] (A/m)	Right [D] (A/m)	Top [E] (A/m)	Bottom [F] (A/m)	Limit (A/m)
15 cm	0.57	0.62	0.69	0.57	0.69	0.58	1.63
20 cm					0.59		0.82

- Test Mode : Mode 4

E-field Measurements

Distance	Front [A] (V/m)	Left [B] (V/m)	Rear [C] (V/m)	Right [D] (V/m)	Top [E] (V/m)	Bottom [F] (V/m)	Limit (V/m)
15 cm	98.19	99.31	99.79	90.42	122.40	96.23	614.00
20 cm					94.44		307.00

H-field Measurements

Distance	Front [A] (A/m)	Left [B] (A/m)	Rear [C] (A/m)	Right [D] (A/m)	Top [E] (A/m)	Bottom [F] (A/m)	Limit (A/m)
15 cm	0.65	0.58	0.54	0.59	0.65	0.52	1.63
20 cm					0.62		0.82

5. Test Equipment

Type	Manufacturer	Model	Cal.Date	Next.Cal.Date	S/N
EMF Tester	WaveControl	SMP2	2022-01-17	2023-01-17	17SN0599
Isotropic Electric Field Probe	ETS-Lindgren	HI-6105	2022-04-25	2023-04-25	161805
Isotropic Electric Field Interface	ETS-Lindgren	HI-6113	-	-	161970