

RF EXPOSURE

1. Test Configuration

The RF exposure limits, as set forth in § 1.1310, do not cover the frequency range below 100 kHz for Specific Absorption Rate (SAR) and below 300 kHz for Maximum Permitted Exposure (MPE). In addition, present limitations of RF exposure evaluation systems prevent an accurate evaluation of SAR below 4 MHz. For these reasons, a specific MPE-based RF Exposure compliance procedure for devices operating in the aforementioned low-frequency ranges has been set in place. This procedure is applicable to Equipment Authorization of all RF devices, thus including, but not limited to, Part 18 and WPT devices.

Accordingly, for § 2.1091-Mobile devices, the MPE limits between 100 kHz to 300 kHz are to be considered the same as those at 300 kHz in Table 1 of § 1.1310, that is, 614 V/m and 1.63 A/m, for the electric field and magnetic field, respectively. For § 2.1093-Portable devices below 4 MHz and down to 100 kHz, the MPE limits in § 1.1310 (with the 300 kHz limit applicable all the way down to 100 kHz) can be used for the purpose of equipment authorization in lieu of SAR evaluations.

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) The power transfer frequency is below 1 MHz.

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

(2) The output power from each transmitting element (e.g., coil) is less than or equal to 15 watts.

-The DUT is that supports up to 15 W

(3) A client device providing the maximum permitted load is placed in physical contact with the transmitter (i.e., the surfaces of the transmitter and client device enclosures need to be in physical contact)

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

(4) Only § 2.1091-Mobile exposure conditions apply (i.e., this provision does not cover § 2.1093-Portable exposure conditions).

-Yes

(5) The E-field and H-field strengths, at and beyond 20 cm surrounding the device surface, are demonstrated to be less than 50% of the applicable MPE limit, per KDB 447498, Table 1. These measurements shall be taken along the principal axes of the device, with one axis oriented along the direction of the estimated maximum field strength, and for three points per axis or until a 1/d (inverse distance from the emitter structure) field strength decay is observed. Symmetry considerations may be used for test reduction purposes. The device shall be operated in documented worst-case compliance scenarios (i.e., the ones that lead to the maximum field components), and while all the radiating structures (e.g., coils or antennas) that by design can simultaneously transmit are energized at their nominal maximum power.

-Yes (refer to 4page)

(6) For systems with more than one radiating structure, the conditions specified in (5) must be met when the system is fully loaded (i.e., clients absorbing maximum power available), and with all the radiating structures operating at maximum power at the same time, as per design conditions. If the design allows one or more radiating structures to be powered at a higher level while other radiating structures are not powered, then those cases must be tested as well. For instance, a device may use three RF coils powered at 5 W, or one coil powered at 15 W: in this case, both scenarios shall be tested.

-The DUT(Device Under Test) includes one radiating structure.

4. Test Methods

4.1 Measurement Procedure

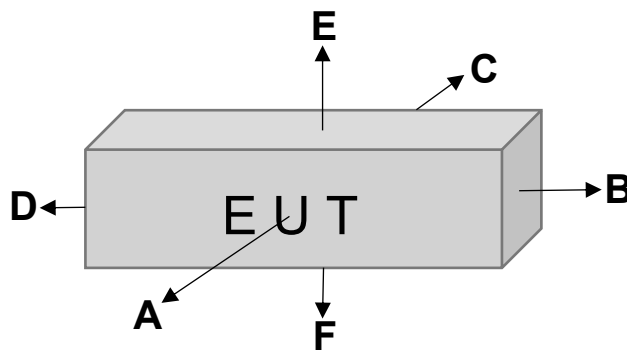
1. The RF exposure test was performed at the turn table of anechoic chamber.
2. The edge of the charger(EUT) and center of the filed probe should be located at specified distance(20 cm).
3. Maximum value of E-field and H-field were measured for the five side each at the specified distance and recorded

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 dictates of KDB 680106D01 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)
<u>20 cm</u>	2.67	1.51	1.41	1.73	1.70	1.04	614.00

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)
<u>20 cm</u>	0.32	0.26	0.35	0.26	0.25	0.26	1.63

- 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)
<u>20 cm</u>	3.68	1.97	1.81	2.28	2.23	1.41	614.00

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)
<u>20 cm</u>	0.38	0.28	0.40	0.28	0.27	0.27	1.63

- 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)
<u>20 cm</u>	2.54	1.34	1.32	1.66	1.61	1.00	614.00



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)
<u>20 cm</u>	0.39	0.28	0.41	0.29	0.27	0.29	1.63

- 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)
<u>20 cm</u>	2.80	1.50	1.47	1.74	1.69	1.08	614.00

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)
<u>20 cm</u>	0.38	0.28	0.40	0.28	0.28	0.28	1.63

5. Test Equipment

Type	Manufacturer	Model	Cal.Date	Next.Cal.Date	S/N
Isotropic Electric Field Probe	ETS-Lindgren	HI-6105	2025-04-01	2026-04-01	161805
Exposure Level Tester	Narda	ELT-400	2025-03-28	2026-03-28	O-0876
DC POWER SUPPLY	AGILENT	E3632A	2025-04-01	2026-04-01	MY51160055