

FCC §1.1307& §1.1310& §2.1091 – MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

FCC §1.1307 & 1.1310 & §2.1091

According to the item 5(b) of KDB 680106 D01 RF Exposure Wireless Charging Apps v03r01: Inductive wireless power transfer applications that meet all of the following requirements are excluded from submitting an RF evaluation.

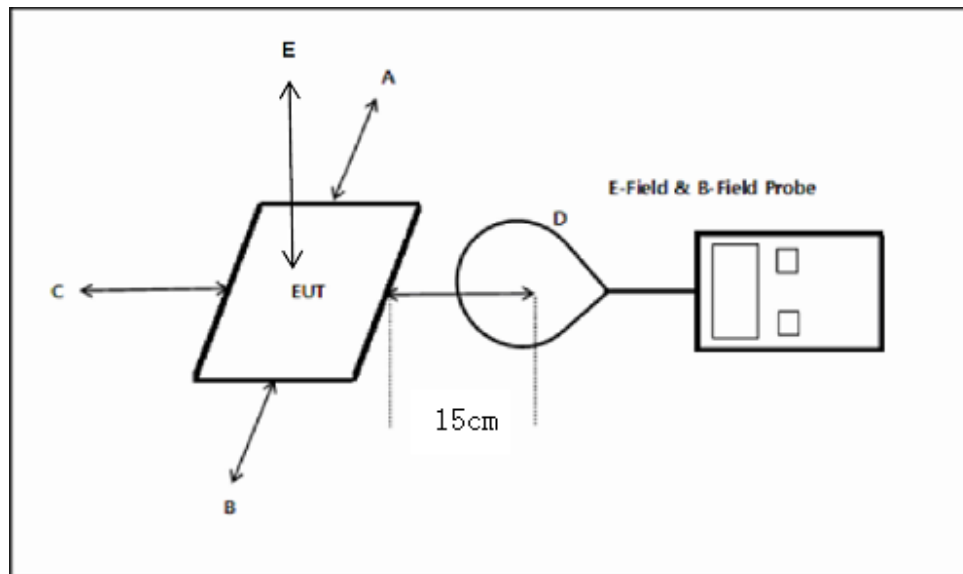
- a) Power transfer frequency is less than 1 MHz.
- b) Output power from each primary coil is less than or equal to 15 watts.
- c) The system may consist of more than one source primary coils, charging one or more clients. If more than one primary coil is present, the coil pairs may be powered on at the same time.
- d) Client device is placed directly in contact with the transmitter.
- e) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).
- f) The aggregate H-field strengths anywhere at or beyond 15 cm surrounding the device, and 20 cm away from the surface from all coils that by design can simultaneously transmit, and while those coils are simultaneously energized, are demonstrated to be less than 50% of the applicable MPE limit.

Limits for Maximum Permissible Exposure (MPE)

(B) Limits for General Population/Uncontrolled Exposure				
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
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

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

EUT Setup



Result

a) Power transfer frequency is less than 1 MHz.

Yes, the device operates in the frequency 110 kHz-130 kHz.

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

Yes, the maximum output power of the primary coil is $10W < 15W$.

c) 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, the transfer system including a charging system with only single primary coils is to detect and allow only between individual of coils.

d) Client device is inserted in or placed directly in contact with the transmitter.

Yes, client device is placed directly in contact with the transmitter.

e) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).

Yes, this is a mobile device.

f) The aggregate H-field strengths anywhere at or beyond 15 cm surrounding the device, and 20 cm away from the surface from all coils that by design can simultaneously transmit, and while those coils are simultaneously energized, are demonstrated to be less than 50% of the applicable MPE limit.

The EUT H-field Strength levels at 15 cm surrounding the device and 20 cm above the top surface are less than 50% the MPE limit.

Test Data**Environmental Conditions**

Temperature:	24.7 °C
Relative Humidity:	51 %
ATM Pressure:	101.2 kPa

The testing was performed by Stone Zhang on 2021-03-30.

Power by DC 5V:

H-Field Strength

Frequency Range (kHz)	Position A (A/m)	Position B (A/m)	Position C (A/m)	Position D (A/m)	Position E (A/m)	50% Limit (A/m)	Limit (A/m)
110-130	0.087	0.049	0.068	0.064	0.234	0.815	1.63

E- Field Strength

Frequency Range (kHz)	Position A (V/m)	Position B (V/m)	Position C (V/m)	Position D (V/m)	Position E (V/m)	50% Limit (V/m)	Limit (V/m)
110-130	1.910	1.101	1.562	1.432	2.136	307	614

Power by DC 9V:

H-Field Strength

Frequency Range (kHz)	Position A (A/m)	Position B (A/m)	Position C (A/m)	Position D (A/m)	Position E (A/m)	50% Limit (A/m)	Limit (A/m)
110-130	0.086	0.052	0.073	0.063	0.237	0.815	1.63

E- Field Strength

Frequency Range (kHz)	Position A (V/m)	Position B (V/m)	Position C (V/m)	Position D (V/m)	Position E (V/m)	50% Limit (V/m)	Limit (V/m)
110-130	1.912	1.103	1.565	1.433	2.140	307	614

Note:

1: According with KDB 680106 D01 RF Exposure Wireless Charging Apps v03r01, 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.

2: The distance for position A, B, C, D are 15cm, the distance for position E is 20cm.