

RF Exposure Evaluation

FCCID: 2AZWG-RUSWC

1 Measuring Standard

KDB 680106 Wireless Power Transfer D01 V04

2 Requirements

§1.1310: 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), except in the case of portable devices which shall be evaluated according to the provisions of FCC part 2.1093 of this chapter.

Requirement	
1. The power transfer frequency is below 1 MHz.	Yes. The operating frequencies are: 115 kHz - 205 kHz
2. The output power from each transmitting element (e.g., coil) is less than or equal to 15 watts.	Yes. The maximum output power is: 15W
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)	Yes. The client device is placed directly in contact with the transmitter.
4. Only §2.1091-Mobile exposure conditions apply (i.e.,thisprovision does not cover §2.1093-Portable exposure conditions).	Yes. Mobile exposure conditions only.
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. See the test result in item 10.
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	Yes. The EUT has a radiating structure and all scenarios have been tested.

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.

3 Limits

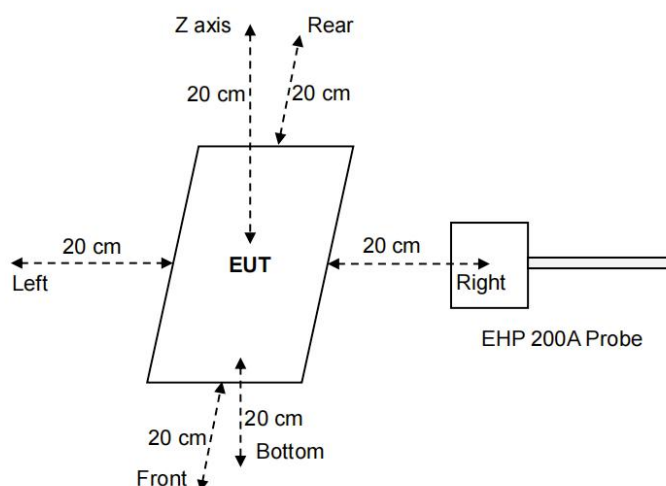
The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

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).

4 Test Setup



5 Test Procedure

- 1) The RF exposure test was performed in anechoic chamber.
- 2) The measurement probe was placed at test distance (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 D01 Wireless Power Transfer v04.

6. Measurement Uncertainty (95% confidence levels, k=2)

Item	Uncertainty
Uncertainty for H-Field	2.36dB
Uncertainty for E-Field	2.42dB
Uncertainty for conducted RF Power	0.62dB
Uncertainty for temperature	0.2°C
Uncertainty for humidity	1.1%
Uncertainty for DC and low frequency voltages	0.06%

7. Equipment list

Test Equipment	Manufacturer	Model No.	SN.	Last calibration	Calibrated until
Electric and Magnetic field probe-Analyzer	Narda	EHP-200A	N03565	Aug 29,2023	Aug 28,2024

7 Placement Mode 1 Photo



8 Test mode

Mode 1	Mobile phone wireless charging (5W)
Mode 2	Mobile phone wireless charging (7.5W)
Mode 3	Mobile phone wireless charging (10W)
Mode 4	Mobile phone wireless charging (15W)

9 Necessary accessories

	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note
1	Adapter	XIAOMI	MDY-11-EB	N/A	This is for testing only in report.
2	Phone	Apple	iPone 13	N/A	This is for testing only in report.

10 Test Result

Placement Mode 4(Worst)

E-Filed Strength at 20 cm from the edges surrounding the EUT (V/m)

Battery power	Frequency Range(MHz)	Test Position A	Test Position B	Test Position C	Test Position D	Limits (V/m)	50%MPE limit (V/m)	Result
1%	0.115-0.205	1.40	1.47	0.58	0.42	614	307	PASS
50%	0.115-0.205	1.49	1.36	0.45	0.61	614	307	PASS
95%	0.115-0.205	1.28	1.55	0.42	0.58	614	307	PASS
Stand-by	0.115-0.205	1.42	1.31	0.60	0.62	614	307	PASS

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

Battery power	Frequency Range(MHz)	Test Position E	Limits (V/m)	50%MPE limit(V/m)	Result
1%	0.115-0.205	1.21	614	307	PASS
50%	0.115-0.205	1.27	614	307	PASS
95%	0.115-0.205	1.32	614	307	PASS
Stand-by	0.115-0.205	1.47	614	307	PASS

H-Filed Strength at 20 cm from the edges surrounding the EUT (A/m)

Battery power	Frequency Range(MHz)	Test Position A	Test Position B	Test Position C	Test Position D	Limits (A/m)	50%MP E limit (A/m)	Result
1%	0.115-0.205	0.62	0.59	0.65	0.62	1.63	0.815	PASS
50%	0.115-0.205	0.59	0.55	0.62	0.61	1.63	0.815	PASS
95%	0.115-0.205	0.60	0.63	0.59	0.60	1.63	0.815	PASS
Stand-by	0.115-0.205	0.64	0.62	0.59	0.64	1.63	0.815	PASS

H-Filed Strength at 20 cm from the top of the EUT (A/m)

Battery power	Frequency Range(MHz)	Test Position E	Limits (A/m)	50%MPE limit (A/m)	Result
1%	0.115-0.205	0.49	1.63	0.815	PASS
50%	0.115-0.205	0.43	1.63	0.815	PASS
95%	0.115-0.205	0.47	1.63	0.815	PASS
Stand-by	0.115-0.205	0.60	1.63	0.815	PASS

Tested by: Duke Chen

Reviewed by: Jakwang

*****END OF THE REPORT*****