

RF Exposure Evaluation

FCC ID:2BBU2-P15

1 Measuring Standard

KDB 680106 D01 RF Exposure Wireless Charging Apps v03r01c

2 Requirements

According to KDB680106 clause 5,b

- (1) Power transfer frequency is less than 1 MHz.
--Yes, the device operated in the frequency range from 115 KHz to 205KHz
- (2) Output power from each primary coil is less than or equal to 15 watts.
--Yes, the maximum output power of the primary coil is 15 W
- (3) The system may consist of more than one source primary coils,charging one or more clients.If more than one primary coli is present,the coil pairy may be powered on at the same time.
--Yes, the transfer system includes have multiple primary coils and clients that are able to detect and allow coupling be powered on at the same time.
- (4) Client device is placed directly in contact with the transmitter.
--Yes, Client device is placed directly in contact with the transmitter
- (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, the EUT field strength level are 50% x MPE limit.

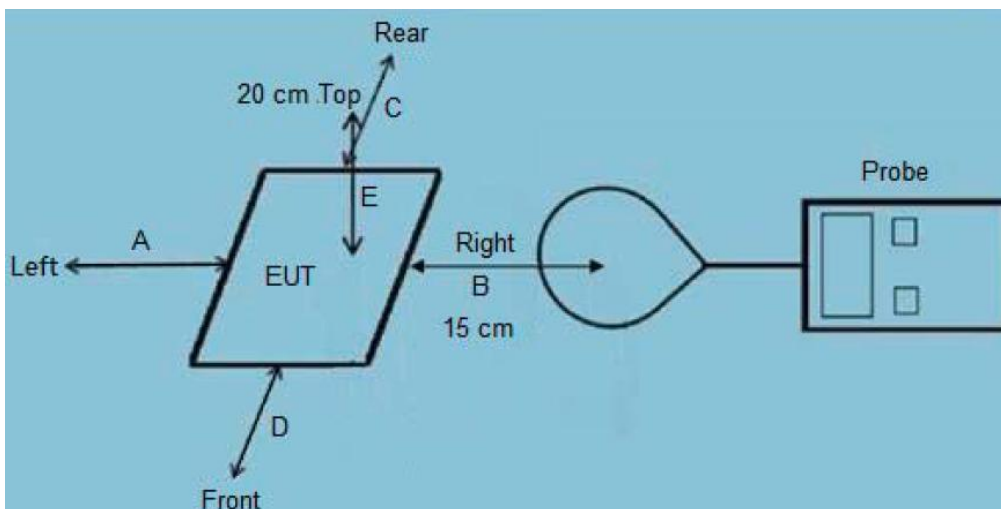
3 Limits

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 (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 D01v03r01
- Remark: The EUT's test position A, B, C, D and E is valid for the E and H field measurements

6. Measurement Uncertainty

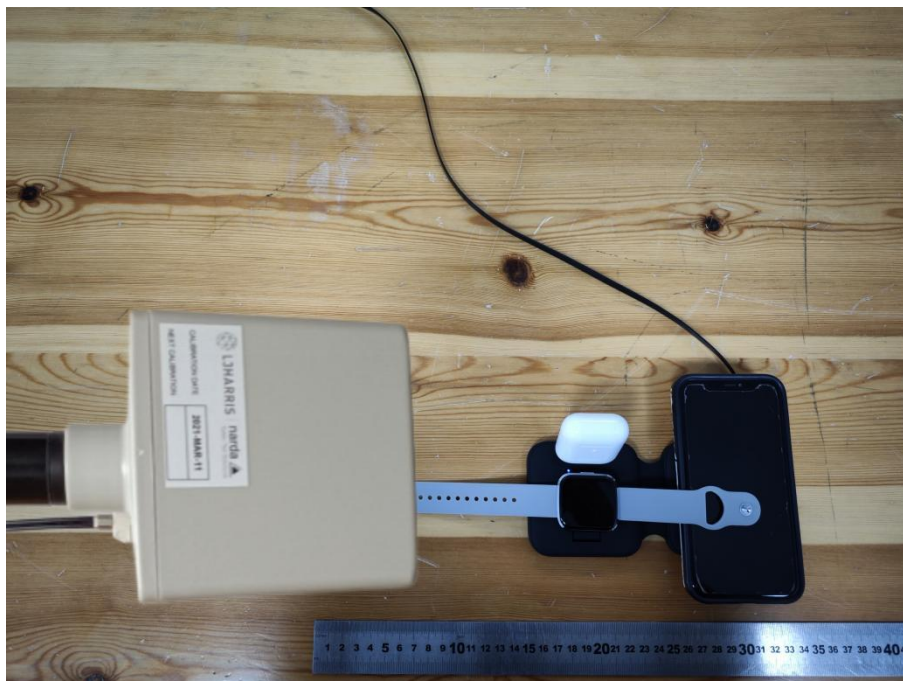
(95% confidence levels, k=2)

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 30,2022	Aug 29,2023

8 Placement Mode 1 Photo



8 Test mode

Mode	Description
Mode 1	iWatch(2.5W)
Mode 2	Phone(5W)
Mode 3	Phone(7.5W)
Mode 4	Phone(10W)
Mode 5	Phone(15W)
Mode 6	iWatch(2.5W)+Earbuds(5W)+Phone(5W)
Mode 7	iWatch(2.5W)+Earbuds(5W)+Phone(7.5W)
Mode 8	iWatch(2.5W)+Earbuds(5W)+Phone(10W)
Mode 9	iWatch(2.5W)+Earbuds(5W)+Phone(15W)
Mode 10	iWatch(2.5W)+Phone(5W)
Mode 11	iWatch(2.5W)+Phone(7.5W)
Mode 12	iWatch(2.5W)+Phone(10W)
Mode 13	iWatch(2.5W)+Phone(15W)

Mode 14	Earbuds(5W)+Phone(5W)
Mode 15	Earbuds(5W)+Phone(7.5W)
Mode 16	Earbuds(5W)+Phone(10W)
Mode 17	Earbuds(5W)+Phone(15W)
Mode 18	iWatch(2.5W)+Earbuds(5W)
Mode 19	iWatch(2.5W)+Earbuds(5W)
Mode 20	iWatch(2.5W)+Earbuds(5W)
Mode 21	iWatch(2.5W)+Earbuds(5W)

9 Necessary accessories

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note
1	Phone	apple	iPhone 12	N/A	This is for testing only in report.
2	Earbuds	Apple AirPods	AirPods 2	N/A	This is for testing only in report.
3	Watch	XIAOMI	S1	N/A	This is for testing only in report.
4	Adapter	XIAOMI	MDY-11-EB	N/A	This is for testing only in report.

10 Test Result

Placement Mode 9(Worst)

E-Filed Strength at 15 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)
1%	0.115-0.205	1.44	1.46	0.57	0.49	614
50%	0.115-0.205	1.57	1.30	0.47	0.59	614
95%	0.115-0.205	1.28	1.56	0.46	0.58	614
Stand-by	0.115-0.205	1.38	1.27	0.59	0.58	614

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)
1%	0.115-0.205	1.23	614
50%	0.115-0.205	1.29	614
95%	0.115-0.205	1.28	614
Stand-by	0.115-0.205	1.48	614

H-Filed Strength at 15 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)
1%	0.115-0.205	0.62	0.60	0.70	0.61	1.63
50%	0.115-0.205	0.61	0.62	0.65	0.57	1.63
95%	0.115-0.205	0.60	0.63	0.57	0.55	1.63
Stand-by	0.115-0.205	0.58	0.60	0.64	0.56	1.63

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)
1%	0.115-0.205	0.44	1.63
50%	0.115-0.205	0.38	1.63
95%	0.115-0.205	0.44	1.63
Stand-by	0.115-0.205	0.54	1.63

Tested by: Duke Chen

Reviewed by: Jak Wang

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