RF Exposure Evaluation

1Measuring Standard

KDB 680106 D01 RF Exposure Wireless Charging Apps v03 r01

2Requirements

According to the item 5 of KDB 680106 D01v03 r01:

Inductive wireless power transfer applications that meet all of the following requirements are excluded from submitting an RF exposure evaluation.

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

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

(3) 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.

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

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

(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.

Remark: Meet all the above requirements.

Limits

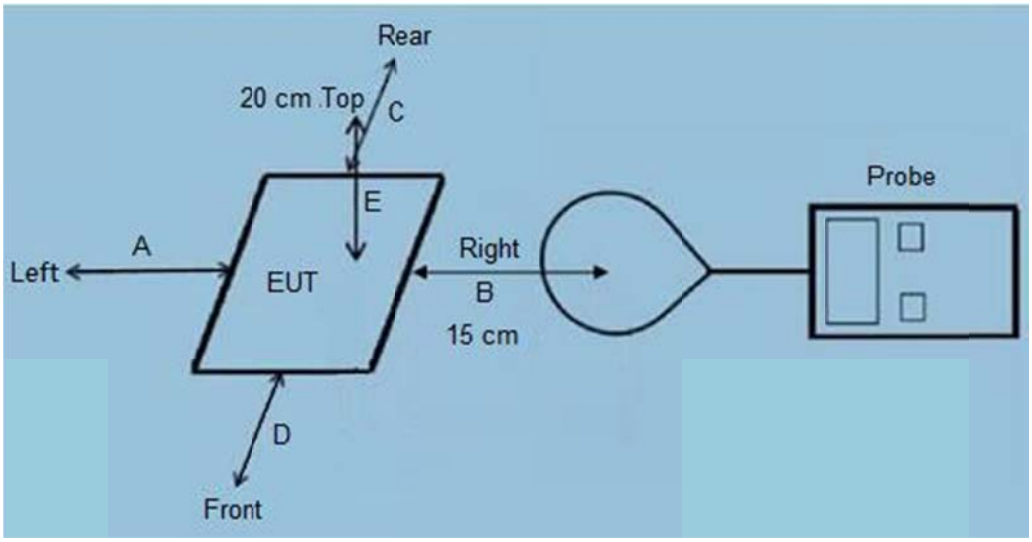
Thecriterialistedinthefollowingtableshallbeusedtoevaluatetheenvironmentimpactof humanexposure toradiofrequency(RF)radiationasspecifiedin1.1307(b)

LimitsforMaximumPermissibleExposure(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	514	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	514	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:514V/m,1.63A/m).

3TestSetup



4TestProcedure

1)TheRFexposuretestwasperformedin anechoicchamber.

2)Themeasurementprobewasplacedattestdistance(15cmfromallsidesand20cmfromthetop) whichis betweentheedgeof thechargerandthegeometriccenterof probe.

3)Thehighestemissionlevelwasrecordedandcomparedwithlimitassoonas measurementof eachpoints (A,B, C,D, E)werecompleted.

4)TheEUTwasmeasuredaccordingtothedictatesofKDB680106D01v03 r01.

Remark：TheEUT'stestpositionA, B,C, DandE isvalidfortheEandHfieldmeasurements.

5TestInstruments list

TestEquipment	Manufacturer	ModelNo.	SN.	Cal.Date (mm-dd-yy)	Cal.Duedate (mm-dd-yy)
EMF Meter	NARDA	ELT-400	N-0356	Oct08, 2022	Oct07, 2023
EMF probe	NARDA	B-Field Probe	M-0812	Oct08, 2022	Oct07, 2023

6TestResult

Note: Frequency Range 0.1115-0.205 (MHz); <5% load energy, 50 % load energy,> 90% load energy mode

all have been tested, Only worse case Max load mode（<5% load energy） is reported.

E-FiledStrengthat15cmfromthe edgessurroundingtheEUT(V/m)

FrequencyRange (MHz)	Test PositionA	Test PositionB	Test PositionC	Test PositionD	Limits (V/m)
0.1115-0.205	1.93	1.88	1.83	1.81	614

E-FiledStrengthat 20cmfromthetopoftheEUT(V/m)

FrequencyRange (MHz)	Test PositionE	Limits (V/m)
0.1115-0.205	1.71	614

H-FiledStrengthat15cmfromthe edgessurroundingtheEUT(A/m)

FrequencyRange (MHz)	Test PositionA	Test PositionB	Test PositionC	Test PositionD	Limits (A/m)
0.1115-0.205	0.58	0.56	0.49	0.47	1.63

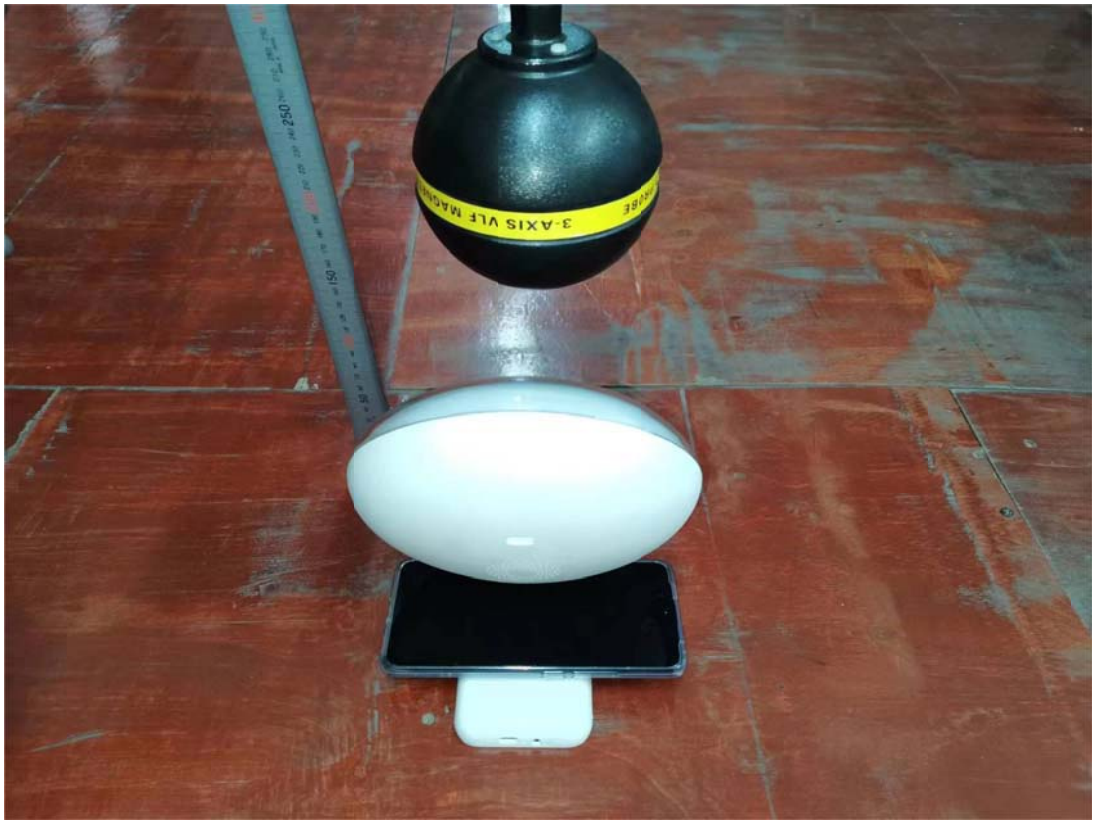
H-FiledStrengthat20cmfromthetopoftheEUT(A/m)

FrequencyRange (MHz)	Test PositionE	Limits (A/m)
0.1115-0.205	0.45	1.63

Simultaneous: (BLE+ WPC) = 0.0028+0.58/1.63=0.359
(WIFI+WPC)= 0.0960+0.58/1.63=0.452

Conslusion: For the max result: 0.452< 1.0, the product comply with the FCC RF exposure requirement. .

7.0 TestSetup Photo



6. Measurement Uncertainty

Item	Uncertainty
Uncertainty for H-Field	2.53dB
Uncertainty for E-Field	2.61dB

(95% confidence levels, k=2)

Test Data: May 30, 2023
Review Data: May 30, 2023

TestEngineer: Andy -xing

Reviewer: Terry