RF exposure evaluation

Human exposure to RF emissions from mobile devices (47 CFR §2.1091) may be evaluatedbased on the MPE limits adopted by the FCC for electric and magnetic field strength and/or powerdensity, as appropriate, since exposures are assumed to occur at distances of 20 cm or more frompersons.

According to KDB 680106 D01 RF Exposure Wireless Charging Apps, RF exposure evaluation should be conducted assuming a user separation distance of 15 cm for devices designed for typical desktop applications. E and H field strength measurements or numerical modelling may be used to demonstrate compliance. Measurements should be made from all sides and the top of the primary/client pair, with the 15 cm measured from the center of the probe(s) to the edge of the device

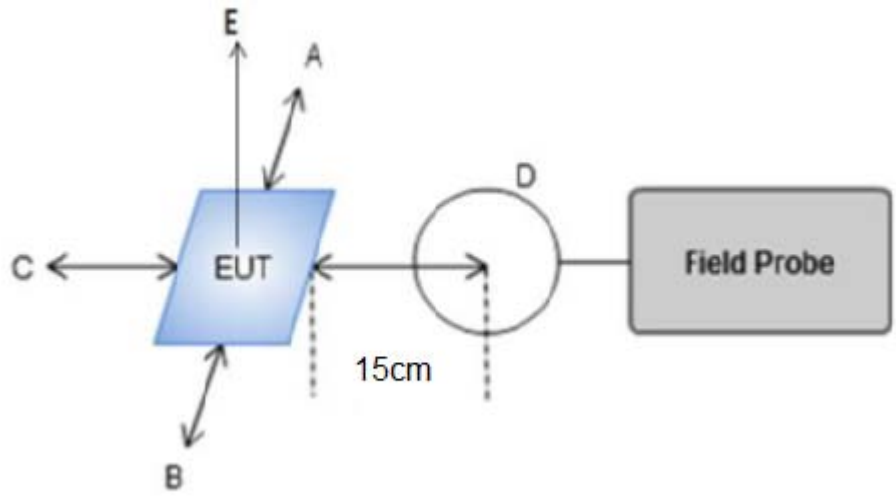
1. Limits ForGeneral Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW /cm$_2$)	Averaging Time (minutes)
0.3 ~ 3.0	614	1.63	(100)*	30
3.0 ~ 30	824/f	2.19/f	(180/f$_2$)*	30
30 ~ 300	27.5	0.073	0.2	30
300~1500	-	-	f/1500	30
1500~100000	-	-	1.0	30

2. The Equipment List

Instrument	Manufacturer	Model No.	Serial No.	Calibration Until
Magnetic field meter	Narda	ELT-400	B-0138	Jan. 06, 2020
Wireless charging match load	Skytek	N/A	N/A	N/A

3. Test Setup Block



Test procedure:	(1) The wireless charging base is placed on an 80cm high table and close to the edge of the table. (2) Adjust the bracket of the ELT-400 so that the electric field probe is on the same level as the wireless charging base。 (3) Turn on the ELT-400 power switch, select the range of 320μT or 80mT (determined according to the actual radiation intensity of DUT), select the peak detection mode, select the Max-Hold display,and select the low sideband range at 30Hz. (4) The wireless charging base is connected to the power supply, a passive load is placed above it, and the resistance of the passive load is adjusted to maximize the current value of the passive load. (5)Turn on the ELT-400 power switch, select the range of 320μT or 80mT (determined according to the actual radiation intensity of DUT), select the peak detection mode, select the Max-Hold display,and select the low sideband range at 30Hz. (6) During the measurement, the magnetic field probe of the ELT-400 is kept in 15cm distance from each test surface of the wireless charging base, and recorded the measured values of the A, B, C, D, and E side are separately. (7) The required magnetic field strength (unit: A/m) and electric field strength (unit: V/m) can be obtained by the following conversion formula ①A/m = μT/1.25; ②dBμA/m = 20lg(A/m) + 120; ③dBμV/m = dBμA/m + 51.5; ④ V/m = 10 ^ {[(dBμV/m)-120]/20}
Test Result:	Pass

4. Version

Version No.	Date	Description
00	*04 Dec., 2019*	*Original*

Tested By: YT Yang ***Date:*** *04 Dec., 2019*

Test Engineer

Reviewed By: Wimer Zhang ***Date:*** *04 Dec., 2019*

Project Engineer

5. MPE EVALUATION RESULTS

a) Wireless 1 (Left side)

MagneticFieldStrengthMeasurement

Measured Side	Distance (cm)	Measured Value (A/m)	50 % of Limit (A/m)	Limit (A/m)
A	1	0.682	0.815	1.63
B	1	0.671	0.815	1.63
C	1	0.655	0.815	1.63
D	1	0.632	0.815	1.63
E	1	0.681	0.815	1.63

Measured Side	Distance (cm)	Measured Value (A/m)	50 % of Limit (A/m)	Limit (A/m)
A	3	0.519	0.815	1.63
B	3	0.557	0.815	1.63
C	3	0.589	0.815	1.63
D	3	0.543	0.815	1.63
E	3	0.522	0.815	1.63

Measured Side	Distance (cm)	Measured Value (A/m)	50 % of Limit (A/m)	Limit (A/m)
A	5	0.482	0.815	1.63
B	5	0.493	0.815	1.63
C	5	0.455	0.815	1.63
D	5	0.487	0.815	1.63
E	5	0.442	0.815	1.63

Measured Side	Distance (cm)	Measured Value (A/m)	50 % of Limit (A/m)	Limit (A/m)
A	7	0.382	0.815	1.63
B	7	0.401	0.815	1.63
C	7	0.398	0.815	1.63
D	7	0.405	0.815	1.63
E	7	0.388	0.815	1.63

Measured Side	Distance (cm)	Measured Value (A/m)	50 % of Limit (A/m)	Limit (A/m)
A	10	0.311	0.815	1.63
B	10	0.296	0.815	1.63

C	10	0.305	0.815	1.63
D	10	0.284	0.815	1.63
E	10	0.276	0.815	1.63

Measured Side	Distance (cm)	Measured Value (A/m)	50 % of Limit (A/m)	Limit (A/m)
A	15	0.203	0.815	1.63
B	15	0.198	0.815	1.63
C	15	0.182	0.815	1.63
D	15	0.179	0.815	1.63
E	20	0.163	0.815	1.63

6. Electric Field Strength Measurement

MeasuredSide	Distance (cm)	Measured Value (V/m)	50 % of Limit (V/m)	Limit (V/m)
A	15	76.29	307.00	614
B	15	74.42	307.00	614
C	15	68.40	307.00	614
D	15	67.27	307.00	614
E	20	61.26	307.00	614

b) Wireless 2 (Right side)

MagneticFieldStrengthMeasurement

Measured Side	Distance (cm)	Measured Value (A/m)	50 % of Limit (A/m)	Limit (A/m)
A	1	0.671	0.815	1.63
B	1	0.632	0.815	1.63
C	1	0.695	0.815	1.63
D	1	0.664	0.815	1.63
E	1	0.627	0.815	1.63

Measured Side	Distance (cm)	Measured Value (A/m)	50 % of Limit (A/m)	Limit (A/m)
A	3	0.517	0.815	1.63
B	3	0.529	0.815	1.63
C	3	0.539	0.815	1.63
D	3	0.547	0.815	1.63
E	3	0.522	0.815	1.63

Measured Side	Distance (cm)	Measured Value (A/m)	50 % of Limit (A/m)	Limit (A/m)
A	5	0.455	0.815	1.63
B	5	0.436	0.815	1.63
C	5	0.418	0.815	1.63
D	5	0.425	0.815	1.63
E	5	0.479	0.815	1.63

Measured Side	Distance (cm)	Measured Value (A/m)	50 % of Limit (A/m)	Limit (A/m)
A	7	0.397	0.815	1.63
B	7	0.401	0.815	1.63
C	7	0.423	0.815	1.63
D	7	0.386	0.815	1.63
E	7	0.357	0.815	1.63

Measured Side	Distance (cm)	Measured Value (A/m)	50 % of Limit (A/m)	Limit (A/m)
A	10	0.305	0.815	1.63
B	10	0.296	0.815	1.63
C	10	0.302	0.815	1.63
D	10	0.314	0.815	1.63

E	10	0.298	0.815	1.63

Measured Side	Distance (cm)	Measured Value (A/m)	50 % of Limit (A/m)	Limit (A/m)
A	15	0.211	0.815	1.63
B	15	0.208	0.815	1.63
C	15	0.202	0.815	1.63
D	15	0.197	0.815	1.63
E	20	0.156	0.815	1.63

Electric Field Strength Measurement

MeasuredSide	Distance (cm)	Measured Value (V/m)	50 % of Limit (V/m)	Limit (V/m)
A	15	79.30	307.00	614
B	15	78.17	307.00	614
C	15	75.92	307.00	614
D	15	74.04	307.00	614
E	20	58.63	307.00	614

c) Wireless 1 +Wireless 2

MagneticFieldStrengthMeasurement

Measured Side	Distance (cm)	Measured Value (A/m)	50 % of Limit (A/m)	Limit (A/m)
A	1	0.769	0.815	1.63
B	1	0.772	0.815	1.63
C	1	0.733	0.815	1.63
D	1	0.759	0.815	1.63
E	1	0.766	0.815	1.63

Measured Side	Distance (cm)	Measured Value (A/m)	50 % of Limit (A/m)	Limit (A/m)
A	3	0.681	0.815	1.63
B	3	0.675	0.815	1.63
C	3	0.663	0.815	1.63
D	3	0.692	0.815	1.63
E	3	0.668	0.815	1.63

Measured Side	Distance (cm)	Measured Value (A/m)	50 % of Limit (A/m)	Limit (A/m)
A	5	0.593	0.815	1.63
B	5	0.588	0.815	1.63
C	5	0.567	0.815	1.63
D	5	0.559	0.815	1.63
E	5	0.562	0.815	1.63

Measured Side	Distance (cm)	Measured Value (A/m)	50 % of Limit (A/m)	Limit (A/m)
A	7	0.497	0.815	1.63
B	7	0.488	0.815	1.63
C	7	0.476	0.815	1.63
D	7	0.501	0.815	1.63
E	7	0.498	0.815	1.63

Measured Side	Distance (cm)	Measured Value (A/m)	50 % of Limit (A/m)	Limit (A/m)
A	10	0.435	0.815	1.63
B	10	0.417	0.815	1.63
C	10	0.428	0.815	1.63

D	10	0.439	0.815	1.63
E	10	0.445	0.815	1.63

Measured Side	Distance (cm)	Measured Value (A/m)	50 % of Limit (A/m)	Limit (A/m)
A	15	0.383	0.815	1.63
B	15	0.376	0.815	1.63
C	15	0.374	0.815	1.63
D	15	0.365	0.815	1.63
E	20	0.341	0.815	1.63

Electric Field Strength Measurement

MeasuredSide	Distance (cm)	Measured Value (V/m)	50 % of Limit (V/m)	Limit (V/m)
A	15	143.95	307.00	614
B	15	141.31	307.00	614
C	15	140.56	307.00	614
D	15	137.18	307.00	614
E	20	128.16	307.00	614

7. Test setup photo

Wireless 1

Wireless 2

Wireless 1 +Wireless 2

------End of report------