

RF Exposure Evaluation

FCC ID: 2AOKR-ZL-2

1. Client Information

Applicant	:	Dongguan Zhanlian Plastic Manufacture Co.,Ltd.
Address	:	Building M, Dongxing Industrial Shanxia Zone, Hengli Town, Dongguan City, Guangdong Province, CN
Manufacturer	:	Dongguan Zhanlian Plastic Manufacture Co.,Ltd.
Address	:	Building M, Dongxing Industrial Shanxia Zone, Hengli Town, Dongguan City, Guangdong Province, CN

2. General Description of EUT

EUT Name	:	Multi-function Desktop Bluetooth Speaker	
Models No.	:	ZL-2	
Model Difference	:	----	
Product Description	:	Operation Frequency:	Wireless charger: 110KHz-148KHz
	:	Modulation Type:	Wireless charger :MSK
	:	Antenna:	Wireless charger:Coil Antenna
Power Supply	:	Input: DC 5V, 2A DC 3.7V by 1200mAh Li-ion battery	
Charging Distance	:	≤8mm	
Software Version	:	K-787_AC692x_SDK_release_V2.5.1_20190604_6928B_ZL-2_1F91456B	
Hardware Version	:	VER:1.0	
Connecting I/O Port(S)	:	Please refer to the User's Manual	

Note: More test information about the EUT please refer the RF Test Report.

RF Exposure Considerations

1. Measuring Standard

KDB 680106 D01 RF Exposure Wireless Charging App v03.

2. Requirements

According to the item 5.2 of KDB 680106 D01v03:

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

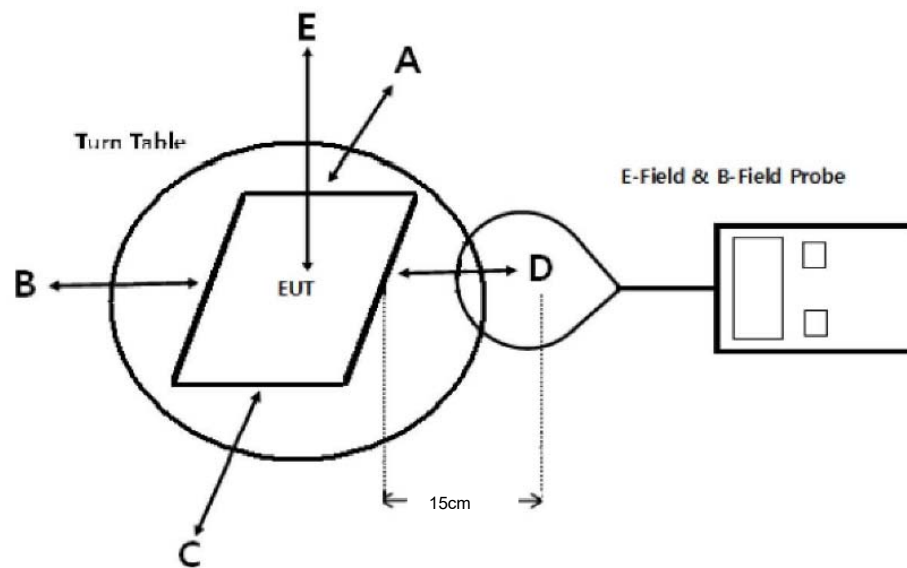
- (1) Power transfer frequency is less than 1 MHz.
- (2) Output power from each primary coil is less than or equal to 15 watts.
- (3) The transfer system includes only single primary and secondary coils. This includes charging systems that may have multiple primary coils and clients that are able to detect and allow coupling only between individual pairs of coils.
- (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.

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).

3. Test Setup



Note: The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface.

4. Test Procedure

- 1) The RF exposure test was performed in anechoic chamber.
- 2) The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface.
- 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 v03.

Remark:

The EUT's test position A, B, C, D and E is valid for the E and H field measurements.

5. Test Equipment List

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Magnetic field meter	NARDA	ELT-400	EE030	Sep. 27, 2018	Sep. 26, 2019

6. Mode of operation during the test / Test peripherals used

We tested the load at all three power level modes, and the 100% Power level mode is the worst case, we listed the results in this report.

Item No.	Manufacturer	Model
1	Client	100% Power level
2	Client	50% Power level
3	Client	0% Power level

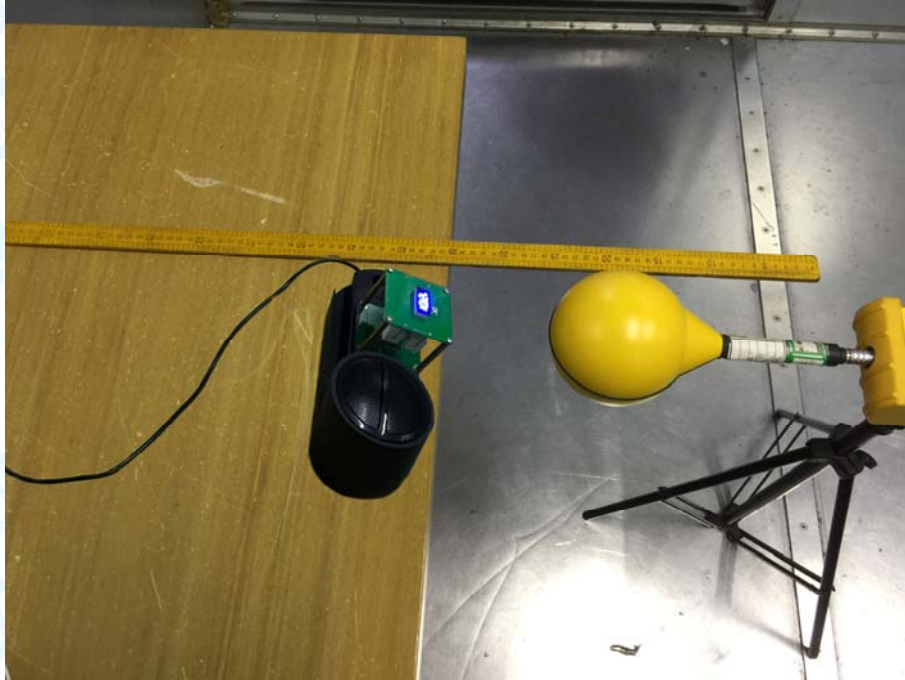
7. Test Result

EUT was tested with empty load, half load and full load, the full load is the worst case and we listed the results in the report.

E-Filed Strength							
Frequency Range (KHz)	Test Position	Test Distance (cm)	Calculated Value (A/m)	Calculated Value (V/m)	50% Limits Test (V/m)	Limits Test (V/m)	Result
110-148	A	15	0.100	37.584	307	614	PASS
	B	15	0.094	35.479			PASS
	C	15	0.109	40.891			PASS
	D	15	0.085	32.472			PASS
	E	20	0.136	51.114			PASS
H-Filed Strength							
Frequency Range (KHz)	Test Position	Test Distance (cm)	Measured Value (uT)	Calculated Value (A/m)	50% Limits Test (A/m)	Limits Test (A/m)	Result
110-148	A	15	0.125	0.100	0.815	1.63	PASS
	B	15	0.116	0.094			PASS
	C	15	0.134	0.109			PASS
	D	15	0.108	0.086			PASS
	E	20	0.170	0.136			PASS
Note: The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface. A/m=uT/1.25							

8. Test Set-up Photo

Test Set-up Photo



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