



RF Exposure Evaluation Report

Report No.: **CTC20231673E03**

FCC ID.....: **2A6MS-K68**

Applicant.....: **Shenzhen Zhichuang All Technology Co., LTD**

Address.....: D401, Ganghong Complex Building, Building 2, No. 7, Xiangye Road, Xialilang Community, Nanwan Street, Longgang District, Shenzhen

Manufacturer.....: Dongguan Chiyuan Jizhi Electronic Technology Co., LTD

Address.....: Room 402, Building 18, No.3 Yongtai Road, Tangxia Town, Dongguan City, Guangdong Province

Product Name.....: **Magnetic Wireless Charging Power Bank**

Trade Mark.....: /

Model/Type reference.....: K68Pro

Listed Model(s): /

Standard.....: **47 CFR FCC Part 1.1307**
47 CFR FCC Part 1.1310
KDB680106 D01

Date of receipt of test sample...: Aug. 3, 2023

Date of testing.....: Aug. 3, 2023 to Sept. 15, 2023

Date of issue.....: Sept. 18, 2023

Result.....: **PASS**

Compiled by:
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Supervised by:
(Printed name+signature) Eric Zhang

Approved by:
(Printed name+signature) Totti Zhao

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1. TEST SUMMARY

1.1. Test Standards

The tests were performed according to following standards:

[ANSI C95.1-1999](#): IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.

[FCC KDB publication 680106 D01 RF Exposure Wireless Charging Apps v03](#): RF Exposure Considerations for Low Power Consumer Wireless Power Transfer Applications.

[FCC CFR 47 Part 1.1307](#): Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared.

[FCC CFR 47 Part 1.1310](#): Radiofrequency radiation exposure limits.

1.2. Report version

Revised No.	Date of issue	Description
01	Sept. 18, 2023	Original



1.3. Test Facility

Address of the report laboratory

CTC Laboratories, Inc.

Add: 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China

Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

A2LA-Lab Cert. No.: 4340.01

CTC Laboratories, Inc. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

Industry Canada (Registration No.: 9783A, CAB Identifier: CN0029)

CTC Laboratories, Inc. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 9783A on Jan, 2016.

FCC (Registration No.: 951311, Designation Number CN1208)

CTC Laboratories, Inc. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 951311, Aug 26, 2017.



1.4. Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2" and is documented in the CTC Laboratories, Inc. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Below is the best measurement capability for CTC Laboratories, Inc.

Test	Measurement Frequency Range	U (dB)	Note
Conducted Emission	9kHz ~ 30MHz	3.08	Main Power Port
Conducted Emission	150kHz ~ 30MHz	4.26	Telecommunication
Disturbance Power	30MHz ~ 300MHz	2.38	Clamp
Conducted Emission	30MHz ~ 2150MHz	4.2	Antenna Port
Radiated Emission	30MHz ~ 1000MHz	4.51	3m chamber 2
Radiated Emission	1GHz ~ 18GHz	5.84	3m chamber 2
Radiated Emission	30MHz ~ 1000MHz	4.52	10m chamber
Radiated Emission	30MHz ~ 1000MHz	4.5	3m chamber 3
Radiated Emission	1GHz ~ 18GHz	5.7	3m chamber 3

Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

1.5. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature	20~25 °C
Relative Humidity	50~55 %RH
Atmospheric Pressure	101 kPa



2. GENERAL INFORMATION

2.1. Client Information

Applicant:	Shenzhen Zhichuang All Technology Co., LTD
Address:	D401, Ganghong Complex Building, Building 2, No. 7, Xiangye Road, Xialilang Community, Nanwan Street, Longgang District, Shenzhen
Manufacturer:	Dongguan Chiyuan Jizhi Electronic Technology Co., LTD
Address:	Room 402, Building 18, No.3 Yongtai Road, Tangxia Town, Dongguan City, Guangdong Province
Factory:	Dongguan Chiyuan Jizhi Electronic Technology Co., LTD
Address:	Room 402, Building 18, No.3 Yongtai Road, Tangxia Town, Dongguan City, Guangdong Province

2.2. General Description of EUT

Product Name:	Magnetic Wireless Charging Power Bank
Trade Mark:	/
Model/Type reference:	K68Pro
Listed Model(s):	/
Model Differences:	/
Power supply:	Built-in battery: 10000mAh, 3.7V, 37Wh Rated Capacity: 5500mAh (5V \Rightarrow 3A) Type-C Input: 5V \Rightarrow 3.0A; 9V \Rightarrow 2.2A; 12V \Rightarrow 1.5A Type-C Output: 5V \Rightarrow 3.0A; 9V \Rightarrow 2.2A; 12V \Rightarrow 1.5A Type-C Line Output: 5V \Rightarrow 2.4A Lightning Line Output: 5V \Rightarrow 2.0A Wireless charging Power: 5W/7.5W/10W/15W Max
Hardware version:	/
Software version:	/
Wireless Charger	
Frequency Range:	112kHz ~ 205kHz
Operation Frequency:	146kHz
Modulation Type:	ASK
Antenna Type:	Induction Coil
Exposure category:	General population/uncontrolled environment
Device Type:	Portable Device



2.3. Accessory Equipment information

Equipment Information			
Name	Model	S/N	Manufacturer
Intelligent wireless charging full function test module	/	/	/
Cable Information			
Name	Shielded Type	Ferrite Core	Length
/	/	/	/

2.4. Description of Test Modes

As the function of the EUT, test mode selected to test as below to conform this standard.

Test mode	Description
1	Wireless charging (5V/1A)
2	Wireless charging (5V/1.5A)
3	Wireless charging (5V/2A)
4	Wireless charging (5V/3A)

Pre-scan above all test mode, Found below test mode which it was worse case mode, So only show the test data for worse case mode (Test mode 4) on the test report.

2.5. Measurement Instruments List

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Electromagnetic field frequency selective analyzer	Narda	EHP-200A	180ZX00611	Aug. 1, 2024

Note: The Cal. Interval was one year.



2.6. Equipment Approval Considerations

The EUT does comply with item 5.b of KDB 680106 D01v03 as follows table;

Requirements of KDB 680106 D01	Yes / No	Description
Power transfer frequency is less than 1 MHz	Yes	The device operate in the frequency range 112.0 kHz - 205.0 kHz
Output power from each primary coil is less than 15 watts	Yes	The maximum output power of the primary coil is less than 10W.
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.	Yes	The transfer system includes single coil that is able to detect receiver device.
Client device is placed directly in contact with the transmitter.	Yes	Client device is placed directly in contact with the transmitter.
Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).	No	This device is portable
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 aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are less than 50% the MPE limit.

In all other cases, unless excluded above, an RF exposure evaluation report must be reviewed and accepted through a KDB or PBA inquiry to enable authorization of the equipment. When evaluation is required to show compliance; for example, using field strength, power density, SAR measurements or computational modeling etc., the specific authorization requirements will be determined based on the results of the RF exposure evaluation.



2.7. RF Exposure

LIMIT

According to FCC 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.

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.1-3.0	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
300-1,500	/	/	f/300	6
1,500-100,000	/	/	5	6

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
0.1-1.34	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
300-1,500	/	/	f/1500	30
1,500-100,000	/	/	1.0	30

F=frequency in MHz

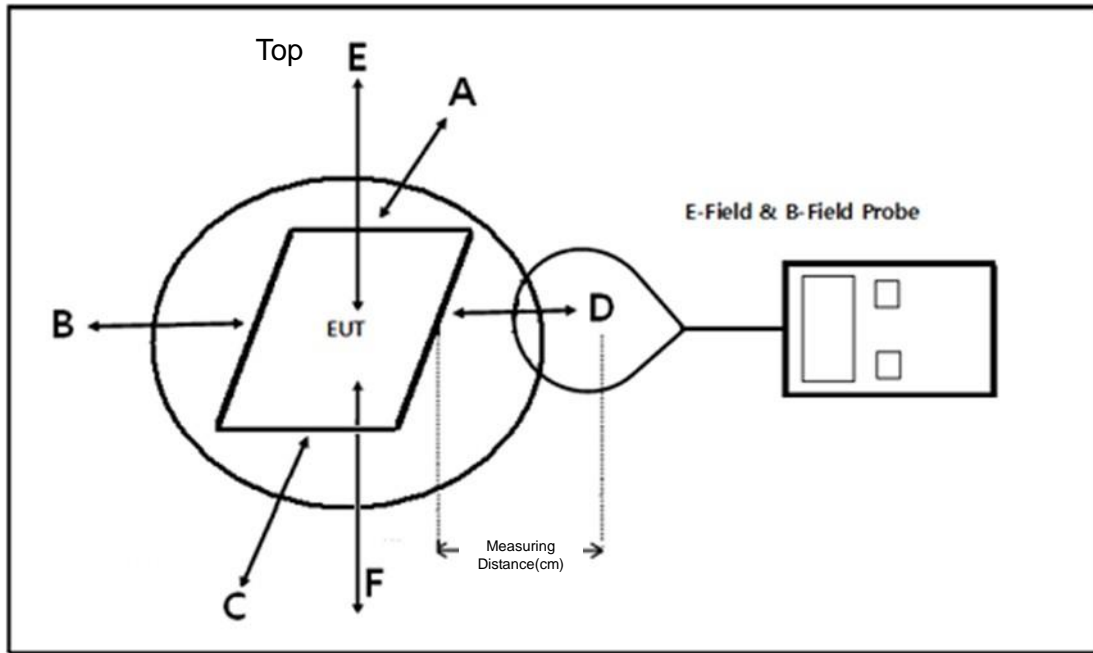
*=Plane-wave equivalent power density

According to FCC KDB 680106 D01 Section 3. RF Exposure Requirements clause 3 the Emission-Limits in the frequency range from 100 KHz to 300 KHz should be assessed versus the limits at 300 KHz in Table 1 of CFR 47 – Section 1.310 as following (measured distance shall be 15cm from the center of the probe to the edge of the device):

	E-filed	H-filed	B-filed
Frequency	V/m	A/m	uT
0.1 MHz – 1.34 MHz	614	1.63	2.0
1.34 MHz – 30 MHz	824/f(=27.5 _{30MHz})	2.19/f(=0.073 _{30MHz})	--

A KDB inquire was required to determine/confirm the applicable limits below 100 KHz.

TEST CONFIGURATION



TEST PROCEDURE

- A. The RF exposure test was performed on 360 degree turn table in anechoic chamber.
- B. The measurement probe was placed at test distance (0-20cm) which is between the edge of the charger and the geometric center of probe.
- C. The turn table was rotated 360 degree to search of highest strength.
- D. The highest emission level was recorded and compared with limit as soon as measurement of each points (A, B, C, D, E, F) were completed.
- E. The EUT were measured according to the dictates of KDB 680106D01v03.

TEST MODE

Please refer to the clause 2.4.

TEST RESULTS



H-field strengths levels should less than 50% of MPE limit.

Operation frequency(kHz)	Test Distance (cm)	Test Position	Probe Measure Result(A/m)			50% Limit (A/m)
			10% charge	50% charge	90% charge	
146	0	A	0.4416	0.4349	0.4400	0.815
		B	0.4659	0.4652	0.4612	0.815
		C	0.4385	0.4333	0.4318	0.815
		D	0.4360	0.4295	0.4328	0.815
		E	0.6123	0.6100	0.6125	0.815
		F	0.3698	0.3675	0.3661	0.815

Operation frequency(kHz)	Test Distance (cm)	Test Position	Probe Measure Result(A/m)			50% Limit (A/m)
			10% charge	50% charge	90% charge	
146	2	A	0.4129	0.4114	0.4120	0.815
		B	0.4225	0.4206	0.4219	0.815
		C	0.4067	0.4019	0.4055	0.815
		D	0.3871	0.3789	0.3794	0.815
		E	0.5496	0.5442	0.5475	0.815
		F	0.3423	0.3484	0.3450	0.815

Operation frequency(kHz)	Test Distance (cm)	Test Position	Probe Measure Result(A/m)			50% Limit (A/m)
			10% charge	50% charge	90% charge	
146	4	A	0.3746	0.3713	0.3685	0.815
		B	0.3921	0.3918	0.3846	0.815
		C	0.3745	0.3722	0.3702	0.815
		D	0.3363	0.3298	0.3315	0.815
		E	0.5048	0.5027	0.5086	0.815
		F	0.3119	0.3124	0.3115	0.815

Operation frequency(kHz)	Test Distance (cm)	Test Position	Probe Measure Result(A/m)			50% Limit (A/m)
			10% charge	50% charge	90% charge	
146	6	A	0.3121	0.3103	0.3126	0.815
		B	0.3278	0.3265	0.3249	0.815
		C	0.3090	0.2999	0.3001	0.815
		D	0.2704	0.2685	0.2856	0.815
		E	0.4642	0.4617	0.4625	0.815
		F	0.2748	0.2785	0.2719	0.815



Operation frequency(kHz)	Test Distance (cm)	Test Position	Probe Measure Result(A/m)			50% Limit (A/m)
			10% charge	50% charge	90% charge	
146	8	A	0.2745	0.2711	0.2699	0.815
		B	0.2912	0.2887	0.2897	0.815
		C	0.2846	0.2810	0.2884	0.815
		D	0.2454	0.2413	0.2433	0.815
		E	0.4012	0.4125	0.4076	0.815
		F	0.2451	0.2481	0.2464	0.815

Operation frequency(kHz)	Test Distance (cm)	Test Position	Probe Measure Result(A/m)			50% Limit (A/m)
			10% charge	50% charge	90% charge	
146	10	A	0.2166	0.2135	0.2094	0.815
		B	0.2678	0.2654	0.2660	0.815
		C	0.2642	0.2688	0.2702	0.815
		D	0.2095	0.2005	0.2112	0.815
		E	0.3779	0.3748	0.3690	0.815
		F	0.2106	0.2142	0.2113	0.815

Operation frequency(kHz)	Test Distance (cm)	Test Position	Probe Measure Result(A/m)			50% Limit (A/m)
			10% charge	50% charge	90% charge	
146	15	A	0.0952	0.0774	0.7842	0.815
		B	0.2025	0.1951	0.1885	0.815
		C	0.1818	0.1894	0.1843	0.815
		D	0.0859	0.0721	0.0722	0.815
		F	0.1197	0.1285	0.1247	0.815

Operation frequency(kHz)	Test Distance (cm)	Test Position	Probe Measure Result(A/m)			50% Limit (A/m)
			10% charge	50% charge	90% charge	
146	20	E	0.1167	0.1148	0.1155	0.815



E-field strengths levels should less than 50% of MPE limit.

Operation frequency(kHz)	Test Distance (cm)	Test Position	Probe Measure Result(V/m)			50% Limit (V/m)
			10% charge	50% charge	90% charge	
146	0	A	3.8596	3.8469	3.8566	307
		B	4.2415	4.2394	4.2402	307
		C	4.1580	4.1465	4.1478	307
		D	4.0525	4.0424	4.0525	307
		E	5.2120	5.2006	5.2089	307
		F	3.9956	3.9960	3.9942	307

Operation frequency(kHz)	Test Distance (cm)	Test Position	Probe Measure Result(V/m)			50% Limit (V/m)
			10% charge	50% charge	90% charge	
146	2	A	3.0102	3.0022	3.0046	307
		B	3.5210	3.5116	3.5199	307
		C	3.4415	3.4129	3.4245	307
		D	3.3997	3.3950	3.9141	307
		E	4.4210	4.4220	4.4189	307
		F	3.2329	3.2455	3.2316	307

Operation frequency(kHz)	Test Distance (cm)	Test Position	Probe Measure Result(V/m)			50% Limit (V/m)
			10% charge	50% charge	90% charge	
146	4	A	2.3300	2.3268	2.3299	307
		B	2.6421	2.6440	2.6416	307
		C	2.7458	2.7415	2.7345	307
		D	2.6855	2.6841	2.6826	307
		E	3.8580	3.8465	3.8554	307
		F	2.6551	2.6427	2.6500	307

Operation frequency(kHz)	Test Distance (cm)	Test Position	Probe Measure Result(V/m)			50% Limit (V/m)
			10% charge	50% charge	90% charge	
146	6	A	1.8592	1.8411	1.8505	307
		B	2.2302	2.2321	2.2336	307
		C	2.3144	2.3200	2.3185	307
		D	2.2985	2.2889	2.2846	307
		E	3.0281	3.0124	3.0312	307
		F	2.0210	2.0199	2.0185	307



Operation frequency(kHz)	Test Distance (cm)	Test Position	Probe Measure Result(V/m)			50% Limit (V/m)
			10% charge	50% charge	90% charge	
146	8	A	1.5213	1.5200	1.4996	307
		B	1.8123	1.8114	1.8154	307
		C	1.8451	1.8389	1.8582	307
		D	1.8250	1.8215	1.8248	307
		E	2.2544	2.2135	2.5232	307
		F	1.7486	1.7446	1.7418	307

Operation frequency(kHz)	Test Distance (cm)	Test Position	Probe Measure Result(V/m)			50% Limit (V/m)
			10% charge	50% charge	90% charge	
146	10	A	1.2360	1.2319	1.2338	307
		B	1.5287	1.5216	1.5251	307
		C	1.5349	1.5328	1.5369	307
		D	1.5058	1.5020	1.5014	307
		E	1.9120	1.9045	1.9105	307
		F	1.3642	1.3646	1.3619	307

Operation frequency(kHz)	Test Distance (cm)	Test Position	Probe Measure Result(V/m)			50% Limit (V/m)
			10% charge	50% charge	90% charge	
146	15	A	0.5469	0.5435	0.5456	307
		B	1.3774	1.3722	1.3767	307
		C	1.3925	1.3901	1.3905	307
		D	1.7290	1.7285	1.7261	307
		F	0.9500	0.9428	0.9498	307

Operation frequency(kHz)	Test Distance (cm)	Test Position	Probe Measure Result(V/m)			50% Limit (V/m)
			10% charge	50% charge	90% charge	
146	20	E	1.2950	1.2845	1.2816	307

Note: The test data meets the limit requirements. Test result: Pass.

*****THE END*****