

RF Exposure Evaluation Report

Product : Universal Power Bank
Trade mark : N/A
Model/Type reference : A01
Serial Number : N/A
Report Number : EED32Q80738002
FCC ID : 2BK7FFADIAN2024
Date of Issue : Oct. 30, 2024
Test Standards : 47 CFR Part 1.1307
47 CFR Part 1.1310
47 CFR Part 2.1091(mobile devices)
47 CFR Part 2.1093(portable devices)
KDB 447498 D04 Interim General RF Exposure Guidance v01
KDB 680106 D01 Wireless Power Transfer v04
Test result : PASS

Prepared for:

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1 Version

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3 General Information

3.1 Client Information

Applicant:	Chaoxuan technology (ShenZhen) Co., Ltd.
Address of Applicant:	1222-2, Block B, Tianxia Jinniu Plaza, No.8 Taoyuan Road, Dawangshan Community, NanTou Street, Shenzhen, China
Manufacturer:	Chaoxuan technology (ShenZhen) Co., Ltd.
Address of Manufacturer:	1222-2, Block B, Tianxia Jinniu Plaza, No.8 Taoyuan Road, Dawangshan Community, NanTou Street, Shenzhen, China
Factory:	Shenzhen Weiduli Technology Co., Ltd.
Address of Factory:	Room 601, building 4, Dejin Industrial Zone, No, 40, Fuyuan ist Road, Zhancheng community, Fuhaistreet, Bao'an District, Shenzhen, Guangdong, P,R, China

3.2 General Description of EUT

Product Name:	Universal Power Bank
Model No.(EUT):	A01
Trade Mark:	N/A

3.3 Product Specification subjective to this standard

Frequency Range:	111kHz-140kHz
Center Frequency:	128kHz
Modulation Type:	ASK
Test Power Grade:	Default
Test Software of EUT:	RF test
Antenna Type:	Coil antenna
Device type:	Desktop applications device
Power Supply:	AC INPUT: 110V-230V 50/60Hz 0.5A(Max) OUT/TYPE-C1: V-3A/9V-2.22A/12V=1.67A(Max) USB OUTPUT: 5V-2.4A(Max) TYPE-C OUTPUT: 5V-3A/9V-2.22A/12V=1.67A(Max) TYPE-C INPUT: 5V-3A/9V-2A/12V-1.5A(Max) TYPE-C Built-in wire output :5V-3A/9V-2A/10V-2.25A/12V=1.5A(Max) Lighining Built-in wire output: 5V-3A/9V-2.22A/12V-1.67A(Max) Wireless output: 5W/7.5W/10W/15W iWaich Wireless output: 2.5W
Sample Received Date:	Jul. 15, 2024
Sample tested Date:	Jul. 15, 2024 to Sep. 24, 2024
Remark:	Company Name and Address shown on Report, the sample(s) and sample Information were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified.

3.4 Test Environment and Mode

Operating Environment:	
Temperature:	22~25.0 °C
Humidity:	50~55 % RH
Atmospheric Pressure:	1010mbar
Test mode:Transmitting mode	
Mode a:	Wireless charging mode(Null load)(Connect to adapter)
Mode b:	Wireless charging mode(33.3% load)(Connect to adapter)
Mode c:	Wireless charging mode(66.7% load)(Connect to adapter)
Mode d:	Wireless charging mode(Half load)(Connect to adapter)
Mode e:	iWaich Wireless charging mode(Full load)(Connect to adapter)
Note:	
1.Wireless output:5W,7.5W,10W,15W(maximum wireless output 15W during charging);	
2.Through Pre-scan,when EUT power by DC 12.0V was the worst case, only the worst case data was recorded in the report.	

3.5 Description of Support Units

The EUT has been tested with associated equipment below.

1) support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
Intelligent wireless charging full function test module	YBZ	/	FCC ID and DOC	CTI

3.6 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax:+86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

3.7 Deviation from Standards

None.

3.8 Abnormalities from Standard Conditions

None.

3.9 Other Information Requested by the Customer

None.

4 Equipment List

RF test system					
Equipment	Manufacturer	Model No.	Serial Number	Cal. Date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
3M Chamber & Accessory Equipment	TDK	SAC-3	---	06-08-2023	06-07-2026
Electric and Magnetic field analyzer	Narda	EHP-200AC	180ZX11020	12-21-2023	12-20-2024
PC-1	HP	ZHAN200	--	--	--
EHP200-TS	Narda	EP-601	EP-601	07-22-2024	07-21-2025
Test software	Narda S.T.S./PMM	EHP200-TS	--	--	--
Steel Ruler	Wynn's	300mm	--	11-04-2021	11-03-2024

5 SAR Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 Limits

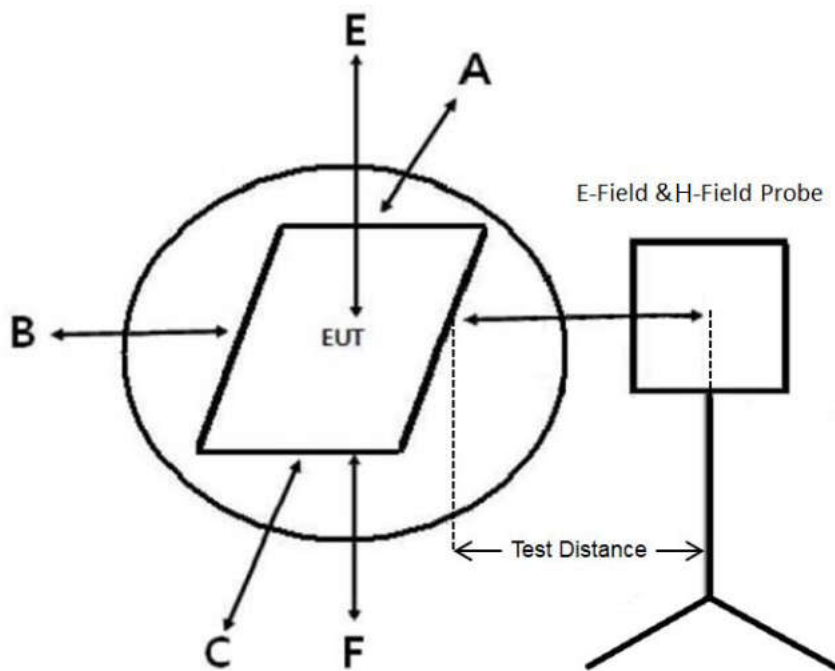
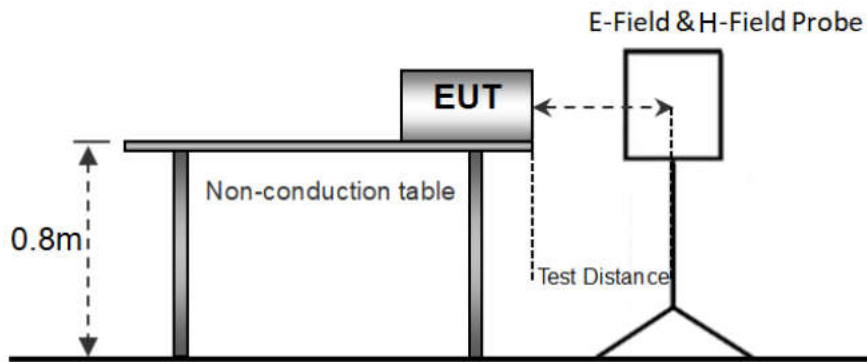
§ 1.1310 The criteria listed in table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency(RF) radiation as specified in § 1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of § 2.1093 of this chapter.

Table 1 to § 1.1310(e)(1)–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)
(i) Limits for Occupational/Controlled Exposure				
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
300–1,500			f/300	<6
1,500–100,000			5	<6
(ii) 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
300–1,500			f/1500	<30
1,500–100,000			1.0	<30

f = frequency in MHz. * = Plane-wave equivalent power density.

5.1.2 Test Procedure



- The measurement probe was placed at test distance (15 cm for A, B, C, D, F and 20 cm for E) which is between the edge of the charger and the geometric center of probe.
- The highest emission level was recorded at the measurement points (A, B, C, D, E, F).
- The EUT was measured according to the distance of KDB 680106 D01 Wireless Power Transfer v04.

5.1.3 Equipment approval considerations

The EUT does comply with section 5.2 of KDB 680106 D01 Wireless Power Transfer v04.

(1) The power transfer frequency is below 1 MHz.

--Yes, the device operates in the frequency range 111kHz-140kHz.

(2) The output power from each transmitting element (e.g., coil) is less than or equal to 15 watts.

--Yes, the maximum output power for each primary coil is 15W.

(3) A client device providing the maximum permitted load is placed in physical contact with the transmitter (i.e., the surfaces of the transmitter and client device enclosures need to be in physical contact)

--Yes, client device is placed directly in contact with the transmitter.

(4) Only § 2.1091-Mobile exposure conditions apply (i.e., this provision does not cover § 2.1093-Portable exposure conditions).

--Yes.

(5) The E-field and H-field strengths, at and beyond 20 cm surrounding the device surface, are demonstrated to be less than 50% of the applicable MPE limit, per KDB 447498, Table 1. These measurements shall be taken along the principal axes of the device, with one axis oriented along the direction of the estimated maximum field strength, and for three points per axis or until a 1/d (inverse distance from the emitter structure) field strength decay is observed. Symmetry considerations may be used for test reduction purposes. The device shall be operated in documented worst-case compliance scenarios (i.e., the ones that lead to the maximum field components), and while all the radiating structures (e.g., coils or antennas) that by design can simultaneously transmit are energized at their nominal maximum power.

--Yes, the EUT H-field strengths levels are less than 50% of MPE limit.

(6) For systems with more than one radiating structure, the conditions specified in (5) must be met when the system is fully loaded (i.e., clients absorbing maximum power available), and with all the radiating structures operating at maximum power at the same time, as per design conditions. If the design allows one or more radiating structures to be powered at a higher level while other radiating structures are not powered, then those cases must be tested as well. For instance, a device may use three RF coils powered at 5 W, or one coil powered at 15 W: in this case, both scenarios shall be tested.

--This product has only one radiating structure.

5.1.4 RF Exposure Evaluation

5.1.4.1 Field strengths Evaluation

1. According to April 27, 2022 TCB Workshop, for portable devices that do not physically attach to phone, desktop WPT testing guidance from FCC KDB 680106 D01 Wireless Power Transfer v04 is applied.
2. The equipment under test was placed on a wooden desk inside of shield room. The isotropic field probe was used to measure the field strength for 6 EUT surfaces. The detailed setup photo please refer to Appendix A.
3. Per FCC KDB 680106 D01 Wireless Power Transfer v04 and April 27, 2022 TCB Workshop, For devices designed for typical desktop applications, such a wireless charging pads, RF exposure evaluation should be conducted assuming a user separation distance of 15 cm. E and H field strength measurements or numerical modeling 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. Emissions between 100 kHz to 300 kHz should be assessed versus the limits at 300 kHz in Table 1 of Section 1.1310: 614 V/m and 1.63 A/m. And aggregate H-field strengths and E-field strengths from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.
4. According to the KDB 680106 D01 Wireless Power Transfer v04, we tested at 20cm, 22cm and 24cm distance, and only the worst case of 20cm test data was recorded in the report.

Test data:

Mode 5W						
Test position	Test distance (cm)	Electric Field Strength (V/m)	50% Limit (V/m)	Magnetic Field Strength (A/m)	50% Limit (A/m)	Result
Front	15	0.4444	307	0.2067	0.815	Pass
Top	15	0.3841	307	0.2120	0.815	Pass
Left	15	0.3855	307	0.2071	0.815	Pass
Right	15	0.3894	307	0.2017	0.815	Pass
Rear	15	0.3891	307	0.2111	0.815	Pass
Bottom*	15	0.3866	307	0.2015	0.815	Pass
*This product is belongs to desktop applications device, therefore it doesn't apply.						

Mode 空载						
Test position	Test distance (cm)	Electric Field Strength (V/m)	50% Limit (V/m)	Magnetic Field Strength (A/m)	50% Limit (A/m)	Result
Front	15	0.3855	307	0.2067	0.815	Pass
Top	15	0.3864	307	0.2071	0.815	Pass
Left	15	0.3897	307	0.2041	0.815	Pass
Right	15	0.3865	307	0.2068	0.815	Pass
Rear	15	0.3844	307	0.2088	0.815	Pass
Bottom*	15	0.3894	307	0.2095	0.815	Pass
*This product is belongs to desktop applications device, therefore it doesn't apply.						

Mode 7.5W						
Test position	Test distance (cm)	Electric Field Strength (V/m)	50% Limit (V/m)	Magnetic Field Strength (A/m)	50% Limit (A/m)	Result
Front	15	0.4175	307	0.2111	0.815	Pass
Top	15	0.6544	307	0.3278	0.815	Pass
Left	15	0.3984	307	0.2501	0.815	Pass
Right	15	0.3808	307	0.2364	0.815	Pass
Rear	15	0.3808	307	0.2057	0.815	Pass
Bottom*	15	0.3845	307	0.2071	0.815	Pass
*This product is belongs to desktop applications device,therefore it doesn't apply.						

Mode 空载						
Test position	Test distance (cm)	Electric Field Strength (V/m)	50% Limit (V/m)	Magnetic Field Strength (A/m)	50% Limit (A/m)	Result
Front	15	0.3855	307	0.2067	0.815	Pass
Top	15	0.3465	307	0.2111	0.815	Pass
Left	15	0.3884	307	0.2064	0.815	Pass
Right	15	0.3987	307	0.2058	0.815	Pass
Rear	15	0.3541	307	0.2071	0.815	Pass
Bottom*	15	0.3641	307	0.2071	0.815	Pass
*This product is belongs to desktop applications device,therefore it doesn't apply.						

Mode 10W						
Test position	Test distance (cm)	Electric Field Strength (V/m)	50% Limit (V/m)	Magnetic Field Strength (A/m)	50% Limit (A/m)	Result
Front	15	0.6211	307	0.2113	0.815	Pass
Top	15	1.0891	307	0.4569	0.815	Pass
Left	15	0.3766	307	0.3888	0.815	Pass
Right	15	0.3834	307	0.4025	0.815	Pass
Rear	15	0.3808	307	0.2067	0.815	Pass
Bottom*	15	0.3808	307	0.2120	0.815	Pass
*This product is belongs to desktop applications device,therefore it doesn't apply.						

Mode 空载						
Test position	Test distance (cm)	Electric Field Strength (V/m)	50% Limit (V/m)	Magnetic Field Strength (A/m)	50% Limit (A/m)	Result
Front	15	0.3841	307	0.2067	0.815	Pass
Top	15	0.3765	307	0.2067	0.815	Pass
Left	15	0.3841	307	0.2058	0.815	Pass
Right	15	0.3451	307	0.2066	0.815	Pass
Rear	15	0.3415	307	0.2068	0.815	Pass
Bottom*	15	0.3485	307	0.2111	0.815	Pass
*This product is belongs to desktop applications device,therefore it doesn't apply.						

Mode 15W						
Test position	Test distance (cm)	Electric Field Strength (V/m)	50% Limit (V/m)	Magnetic Field Strength (A/m)	50% Limit (A/m)	Result
Front	15	1.0248	307	0.2166	0.815	Pass
Top	15	0.6814	307	0.4509	0.815	Pass
Left	15	0.5431	307	0.3169	0.815	Pass
Right	15	0.4447	307	0.2795	0.815	Pass
Rear	15	0.3808	307	0.2071	0.815	Pass
Bottom*	15	0.3808	307	0.2068	0.815	Pass
*This product is belongs to desktop applications device,therefore it doesn't apply.						

Mode 空载						
Test position	Test distance (cm)	Electric Field Strength (V/m)	50% Limit (V/m)	Magnetic Field Strength (A/m)	50% Limit (A/m)	Result
Front	15	0.3845	307	0.2055	0.815	Pass
Top	15	0.4111	307	0.2017	0.815	Pass
Left	15	0.3984	307	0.2014	0.815	Pass
Right	15	0.3844	307	0.2055	0.815	Pass
Rear	15	0.4101	307	0.2111	0.815	Pass
Bottom*	15	0.3855	307	0.2255	0.815	Pass
*This product is belongs to desktop applications device,therefore it doesn't apply.						

Mode 带手表无线充 2.5W						
Test position	Test distance (cm)	Electric Field Strength (V/m)	50% Limit (V/m)	Magnetic Field Strength (A/m)	50% Limit (A/m)	Result
Front	15	0.3845	307	0.2067	0.815	Pass
Top	15	0.3944	307	0.2069	0.815	Pass
Left	15	0.3841	307	0.2071	0.815	Pass
Right	15	0.3911	307	0.2088	0.815	Pass
Rear	15	0.3811	307	0.2071	0.815	Pass
Bottom*	15	0.3866	307	0.2091	0.815	Pass
*This product is belongs to desktop applications device,therefore it doesn't apply.						

Mode 空载 带手表无线充 2.5W						
Test position	Test distance (cm)	Electric Field Strength (V/m)	50% Limit (V/m)	Magnetic Field Strength (A/m)	50% Limit (A/m)	Result
Front	15	0.3865	307	0.2066	0.815	Pass
Top	15	0.3821	307	0.2054	0.815	Pass
Left	15	0.3811	307	0.2111	0.815	Pass
Right	15	0.3911	307	0.2112	0.815	Pass
Rear	15	0.3922	307	0.2088	0.815	Pass
Bottom*	15	0.3877	307	0.2099	0.815	Pass
*This product is belongs to desktop applications device,therefore it doesn't apply.						

Conclusions:

From the measurement data obtained, the tested sample was considered to have complied with the requirements for the relevant §1.1310 Radio frequency radiation exposure limits and KDB 680106 D01 Wireless Power Transfer v04.

PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No. EED32Q80738001 for EUT external and internal photos.

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CTI, this report can't be reproduced except in full.

*** End of Report ***