



FCC Test Report

Test Report
On Behalf of
ShenZhen Zhongyi Technology CO., Ltd.
For
Sovereign 4000mAh Power Bank
Model No.: EPB-SV24, W005Q

FCC ID: 2A9Q9-EPB-SV24

Prepared For: ShenZhen Zhongyi Technology CO., Ltd.
Room 401, No.4 Road One, Shangxue Science and Technology City, Xinxue
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Date of Test: Nov. 13, 2023 ~ Nov. 21, 2023

Date of Report: Nov. 21, 2023

Report Number: HK2311135404-2E



Test Result Certification

Applicant's Name..... : ShenZhen Zhongyi Technology CO., Ltd.
Room 401, No.4 Road One, Shangxue Science and Technology
Address..... : City, Xinxue Community, Bantian Street, Longgang District,
Shenzhen, China
Manufacture's Name..... : ShenZhen Zhongyi Technology CO., Ltd.
Room 401, No.4 Road One, Shangxue Science and Technology
Address..... : City, Xinxue Community, Bantian Street, Longgang District,
Shenzhen, China

Product Description

Trade Mark : N/A
Product Name..... : Sovereign 4000mAh Power Bank
Model and/or Type Reference: EPB-SV24, W005Q

Standards : FCC CFR 47 PART 18, KDB 680106 D01

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Date of Test..... :

Date (s) of Performance of Tests : Nov. 13, 2023 ~ Nov. 21, 2023

Date of Issue..... : Nov. 21, 2023

Test Result..... : Pass

Testing Engineer :

(Gary Qian)

Technical Manager :

(Eden Hu)

Authorized Signatory :

(Jason Zhou)



Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2. Frequency Band: 112-205KHz

Channel List							
Channel	Frequency (KHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	112						

The EUT antenna is Coil Antenna. No antenna other than that furnished by the responsible party shall be used with the device.

2. Summary of Test Results

2.1. Test procedures according to the technical standards:

FCC KDB 680106 D01 Wireless Power Transfer v04

FCC CFR 47			
Standard Section	Test Item	Judgment	Remark
FCC CFR 47 part1, 1.1310 KDB 680106 D01v04	Magnetic Field Strength (H) (A/m)	PASS	

2.2. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	All Emissions, Radiated(<30M)(9KHz-30MHz)	$\pm 3.90\text{dB}$
2	Temperature	$\pm 0.5^\circ\text{C}$
3	Humidity	$\pm 2\%$



2.3. Test Instruments

Description	Brand	Model No.	S/N	Calibrated Date	Calibrated Until
Electric and Magnetic Field Analyzer	narda	EHP-200AC	180ZX11028	Feb. 17, 2023	Feb. 16, 2024

NOTE: 1. the calibration interval of the above test instruments is 12 months.

2.4. Test Mode

Test Item	Test mode	Description
MPE test cases	Mode 1	AC/DC Adapter+ EUT + Mobile Phone (Battery Status: <1%)
	Mode 2	AC/DC Adapter+ EUT + Mobile Phone (Battery Status: <50%)
	Mode 3	AC/DC Adapter+ EUT + Mobile Phone (Battery Status: <100%)
	Mode 4	EUT + Mobile Phone (Battery Status: <1%)
	Mode 5	EUT + Mobile Phone (Battery Status: <50%)
	Mode 6	EUT + Mobile Phone (Battery Status: <100%)

Note:

1. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
2. The Mobile Phone provided by Lab.
3. According to the manufacturer's design principle, the wireless charging power will reach its maximum when the client device's battery level is between 1% and 10%.



3. Maximum Permissible Exposure

Limit of Maximum Permissible Exposure

Limits for Occupational / Controlled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6
Limits for General Population / Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180 / f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1	30

Note 1: f = frequency in MHz; *Plane-wave equivalent power density.

Note 2: For the applicable limit, see FCC 1.1310, 680106 D01 v04.

Note 3: 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 1.63A/m. A KDB inquiry is required to determine the applicable exposure limits below 100 kHz.

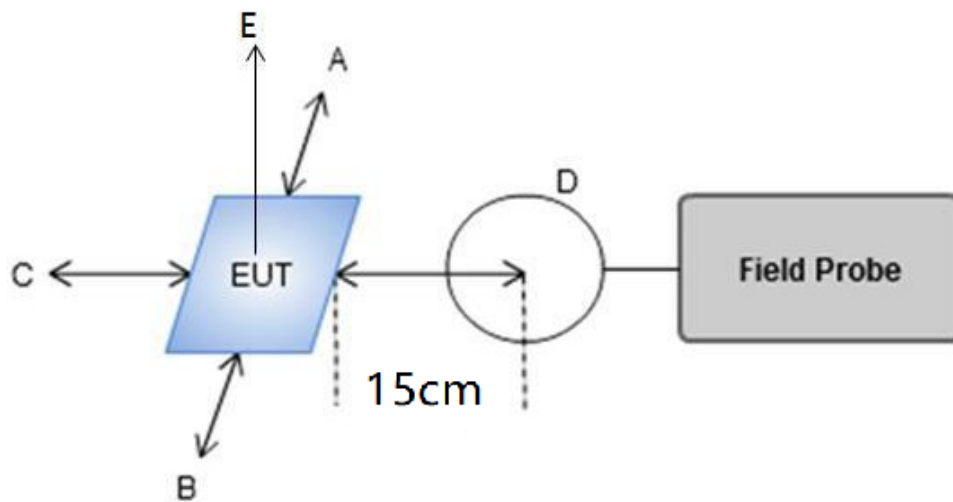


4. Test Procedure

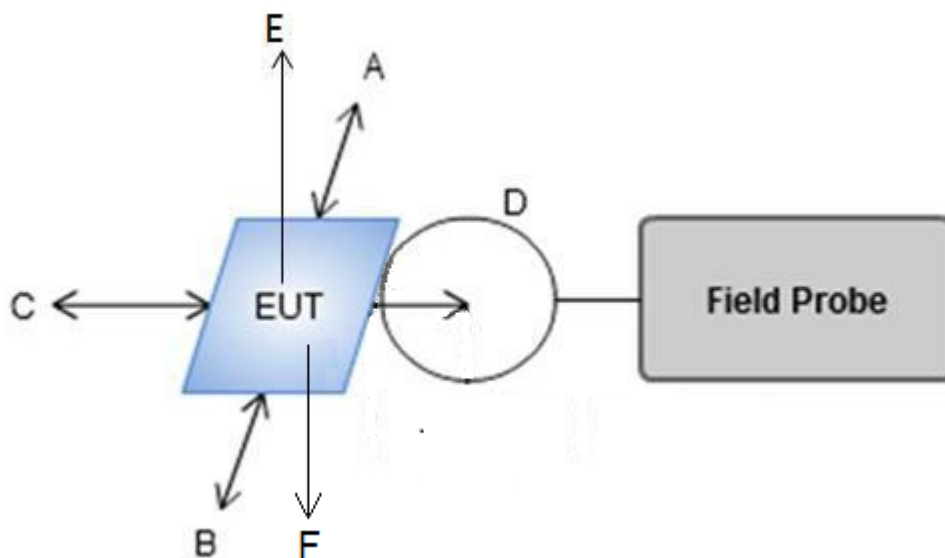
a. For devices designed for typical desktop applications, such as wireless charging pads, RF exposure evaluation should be conducted assuming a user separation distance of (AC Mode: H-field & E-field strengths for all sides is 15cm, H-field strengths of top side is 20cm) and (DC Mode: H-field & E-field strengths for all sides is 0cm, H-field strengths of top side is 0cm). 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.

4.1 Test Setup

AC Mode:



DC Mode:



4.2 Result of Maximum Permissible Exposure

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAKE, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.

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AC Mode:

For Full load:

H-Field Strength at 15 cm (E top side: 20cm) from the edges surrounding the EUT (A/m)

Field strength	Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Limits (A/m)
A/m	0.1479	0.1203	0.0365	0.0415	0.0369	1.63

For Half Load mode:

H-Field Strength at 15 cm (E top side: 20cm) from the edges surrounding the EUT (A/m)

Field strength	Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Limits (A/m)
A/m	0.0863	0.0785	0.0824	0.0694	0.0425	1.63

For No load mode:

H-Field Strength at 15 cm (E top side: 20cm) from the edges surrounding the EUT (A/m)

Field strength	Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Limits (A/m)
A/m	0.0695	0.0712	0.0822	0.0412	0.0379	1.63



DC Mode:

For Full load mode:

H-Field Strength at 0-20 cm from the edges surrounding the EUT (A/m)

Measuring distance (cm)	Field strength	Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Test Position F	Limits (A/m)
0	A/m	0.558	0.374	0.512	0.508	0.537	0.354	1.63
2	A/m	0.433	0.519	0.504	0.470	0.354	0.488	1.63
4	A/m	0.404	0.418	0.312	0.441	0.347	0.435	1.63
6	A/m	0.458	0.281	0.332	0.403	0.244	0.305	1.63
8	A/m	0.390	0.496	0.387	0.280	0.418	0.460	1.63
10	A/m	0.441	0.358	0.296	0.407	0.290	0.464	1.63
12	A/m	0.487	0.382	0.246	0.414	0.392	0.267	1.63
14	A/m	0.452	0.283	0.363	0.359	0.475	0.413	1.63
16	A/m	0.412	0.446	0.246	0.403	0.466	0.480	1.63
18	A/m	0.402	0.320	0.352	0.431	0.298	0.311	1.63
20	A/m	0.287	0.332	0.428	0.309	0.280	0.250	1.63

For Half Load mode:

H-Field Strength at 0-20 cm from the edges surrounding the EUT (A/m)

Measuring distance (cm)	Field strength	Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Test Position F	Limits (A/m)
0	A/m	0.507	0.487	0.467	0.506	0.529	0.514	1.63
2	A/m	0.488	0.406	0.340	0.404	0.440	0.419	1.63
4	A/m	0.369	0.492	0.302	0.321	0.480	0.361	1.63
6	A/m	0.381	0.398	0.434	0.226	0.403	0.456	1.63
8	A/m	0.397	0.480	0.427	0.314	0.214	0.234	1.63
10	A/m	0.440	0.214	0.491	0.326	0.390	0.399	1.63
12	A/m	0.401	0.357	0.394	0.397	0.437	0.244	1.63
14	A/m	0.448	0.363	0.360	0.318	0.279	0.369	1.63
16	A/m	0.405	0.427	0.247	0.357	0.319	0.172	1.63
18	A/m	0.309	0.323	0.425	0.226	0.371	0.390	1.63
20	A/m	0.213	0.342	0.261	0.333	0.295	0.229	1.63



For No load mode:

H-Field Strength at 0-20 cm from the edges surrounding the EUT (A/m)

Measuring distance (cm)	Field strength	Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Test Position F	Limits (A/m)
0	A/m	0.521	0.485	0.468	0.330	0.352	0.464	1.63
2	A/m	0.393	0.435	0.428	0.455	0.484	0.400	1.63
4	A/m	0.430	0.357	0.360	0.445	0.252	0.469	1.63
6	A/m	0.393	0.282	0.343	0.339	0.466	0.326	1.63
8	A/m	0.318	0.428	0.400	0.404	0.245	0.394	1.63
10	A/m	0.328	0.379	0.320	0.477	0.385	0.403	1.63
12	A/m	0.436	0.317	0.369	0.423	0.420	0.261	1.63
14	A/m	0.401	0.366	0.356	0.320	0.246	0.432	1.63
16	A/m	0.357	0.334	0.280	0.453	0.298	0.269	1.63
18	A/m	0.325	0.244	0.418	0.365	0.343	0.252	1.63
20	A/m	0.183	0.301	0.281	0.210	0.256	0.291	1.63



Remark: According KDB 680106 D01 v04, section 5.2). 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. The E- field evaluation conducted assuming a user separation distance of 15 cm according to the KDB 680106 D01 v04).

Result: The device comply with the RF exposure requirement according to 680106 D01 v04, section 5.2):

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

- The device operate in the frequency range for 112KHz~ 205KHz

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

- The maximum output power is 5W

(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)

-The EUT 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).

- This is a portable device.

(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.

-- The EUT meet the conditions.

(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.

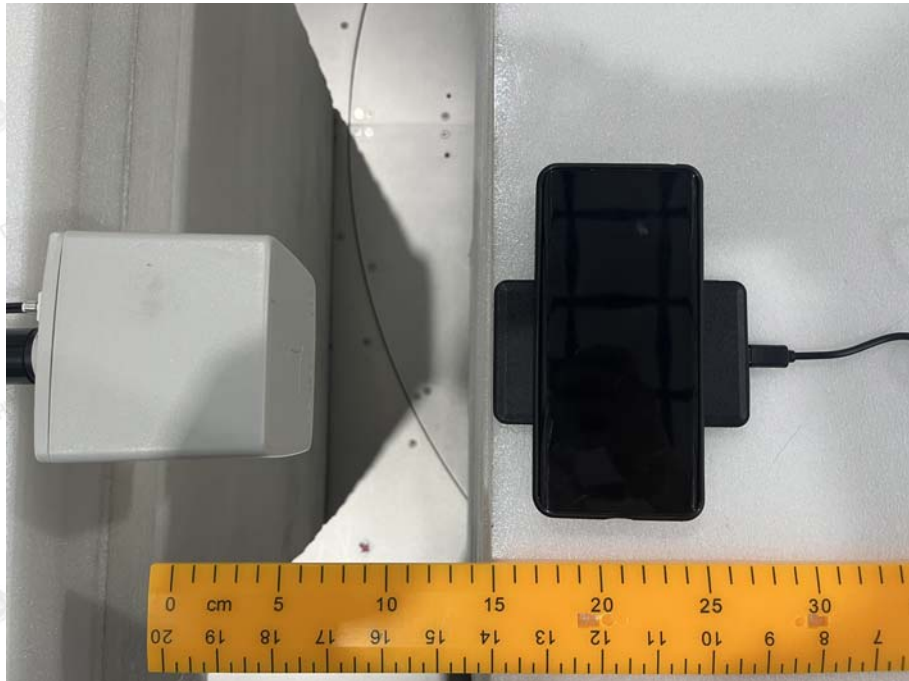
-- The EUT meet the conditions.



Photograph of Test

AC Mode:

A



B

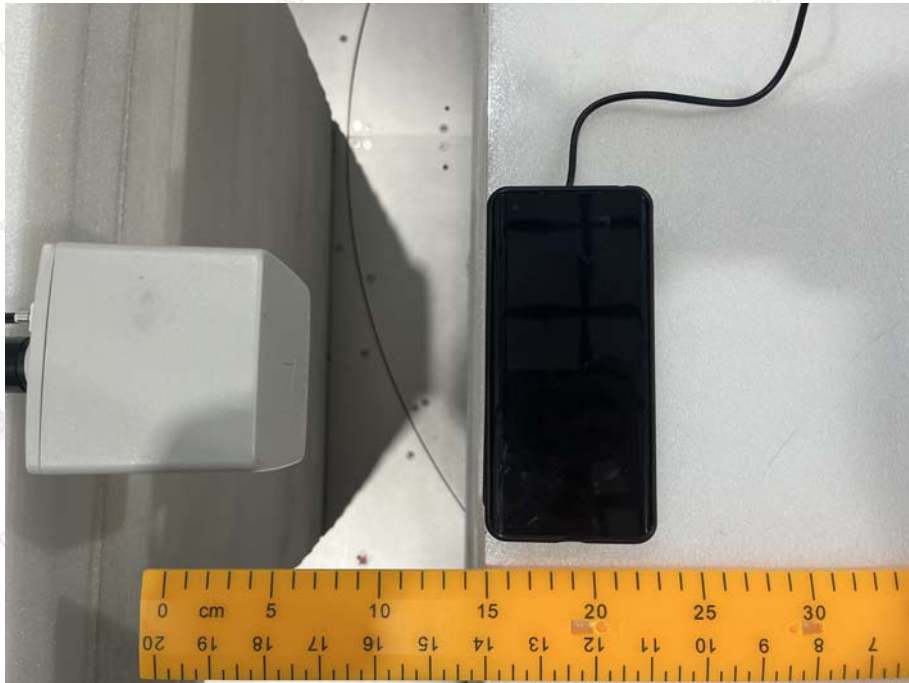




C

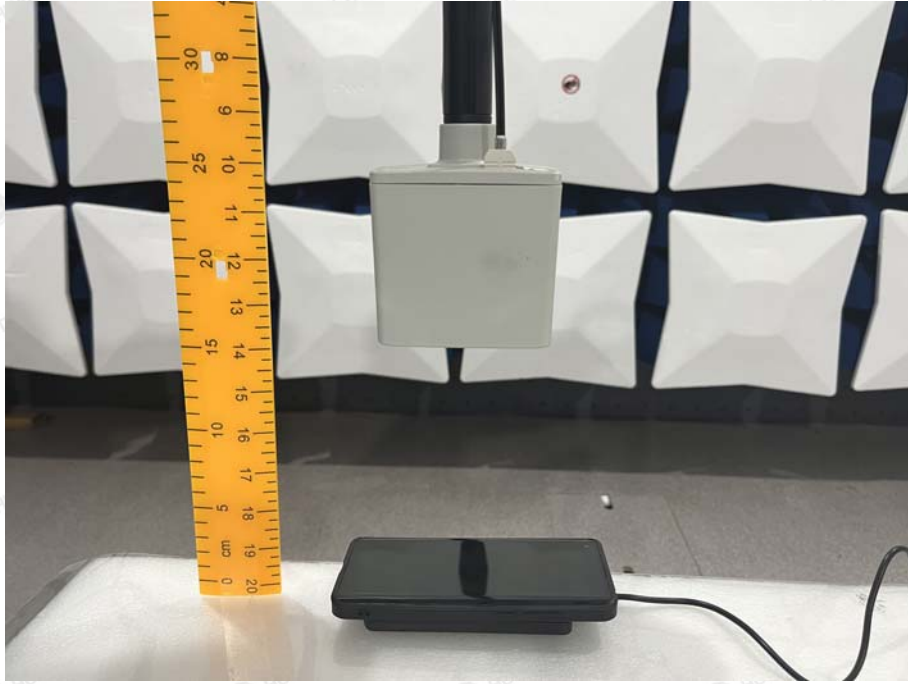


D





E



DC Mode:

A





C





E





F



※※※※※THE END※※※※※