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RF Exposure Evaluation Report

Report No.: CQASZ20230200128E-02
Applicant: Shenzhen Itian Technology Co.,LTD
Address of Applicant: 6F,Building D, Phase 2nd , Anfeng Industrial Park , Dalang Street , Longhua District,Shenzhen , China
Equipment Under Test (EUT):
Product: MP01 MagSafe Power Bank
Model No.: MP01
Test Model No.: MP01
Brand Name: ITIAN
FCC ID: 2AUDO-MP01
Standards: 47 CFR Part 1.1307
47 CFR Part 1.1310
KDB 680106 D01 RF Exposure Wireless Charging Base App v03r01
Date of Receipt: 2023-2-8
Date of Test: 2023-2-8 to 2023-2-13
Date of Issue: 2023-3-16
Test Result : **PASS***


*In the configuration tested, the EUT complied with the standards specified above

Tested By:



(Joe Wang)

Reviewed By:



(Timo Lei)

Approved By:



(Jack Ai)



1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20230200128E-02	Rev.01	Initial report	2023-3-16

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3 General Information

3.1 Client Information

Applicant:	Shenzhen Itian Technology Co.,LTD
Address of Applicant:	6F,Building D, Phase 2nd , Anfeng Industrial Park , Dalang Street , Longhua District,Shenzhen , China
Manufacturer:	Shenzhen Itian Technology Co.,LTD
Address of Manufacturer:	6F,Building D, Phase 2nd , Anfeng Industrial Park , Dalang Street , Longhua District,Shenzhen , China
Factory:	Shenzhen Itian Technology Co.,LTD
Address of Factory:	6F,Building D, Phase 2nd , Anfeng Industrial Park , Dalang Street , Longhua District,Shenzhen , China

3.2 General Description of EUT

Product Name:	MP01 MagSafe Power Bank
Model No.:	MP01
Test Model No.:	MP01
Brand Name:	ITIAN
Software Version:	MP_V3.92
Hardware Version:	1024-MP01-V1
EUT Power Supply:	DC 5V-2A 9V-2A

3.3 Product Specification subjective to this standard

Equipment Category:	Non-ISM frequency
Operation Frequency range:	110kHz~205kHz
Modulation Type:	Induction
Antenna Type:	Induction coil
Antenna Gain:	0dBi

Note:

1. In section 15.31(m), regards to the operating frequency range less 1 MHz.

3.4 Test Environment

Operating Environment:	
Temperature:	25.5 °C
Humidity:	53 % RH
Atmospheric Pressure:	1009 mbar
Test Mode:	
Mode a:	Wireless output Mode at 15W (Max)
Mode b:	Wireless output Mode at 5W (Max)
Mode c:	Wireless total output Mode at 20W (Max)

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
Apple Watch	Apple	/	/	CQA
Wireless charge load	/	/	/	CQA

2) Cable

Cable No.	Description	Manufacturer	Cable Type/Length	Supplied by
/	/	/	/	/

3.6 Test Location

Shenzhen Huaxia Testing Technology Co., Ltd.

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China

3.7 Test Facility

• **A2LA (Certificate No. 4742.01)**

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 4742.01.

• **FCC Registration No.: 522263**

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen 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 No.:522263

3.8 Equipment List

Test Equipment	Manufacturer	Model No.	Instrument No.	Calibration Date	Calibration Due Date
Broadband Field Meter	Narda Safety Test Solutions GmbH	NBM-520	SB9873	2022/9/9	2023/9/8
Magnetic field probe	HIOKI	3470	SB9058/04	2022/9/9	2023/9/8
E-field probe	Narda	EF0391	SB9059	2022/9/9	2023/9/8

4 RF Exposure Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Limits

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

TABLE 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)
(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

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

Note 2: For the applicable limit, see FCC 1.1310, 680106 D01 RF Exposure Wireless Charging Apps v03

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

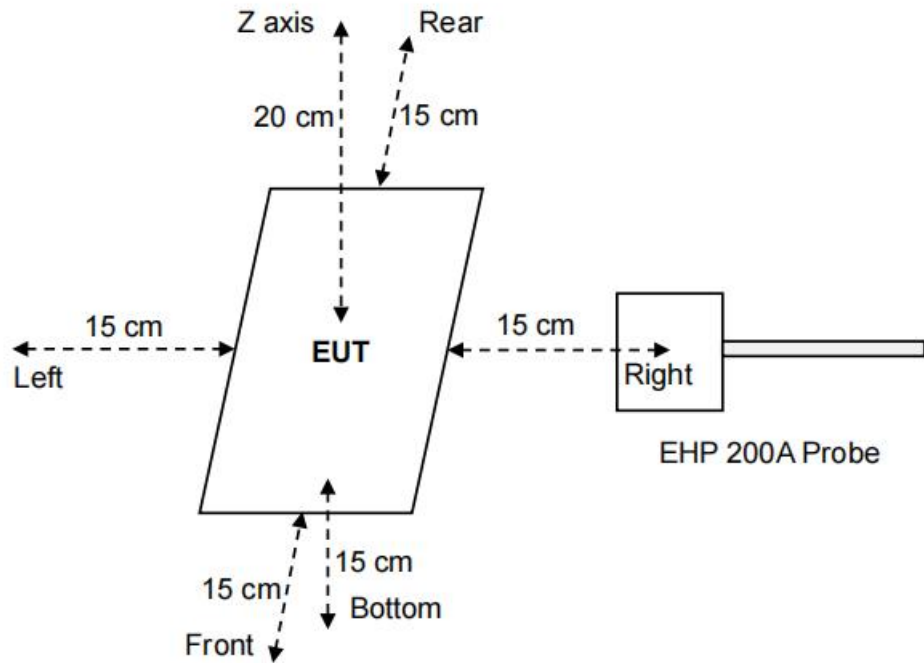
Note 4: The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit .

4.1.2 Test Procedure

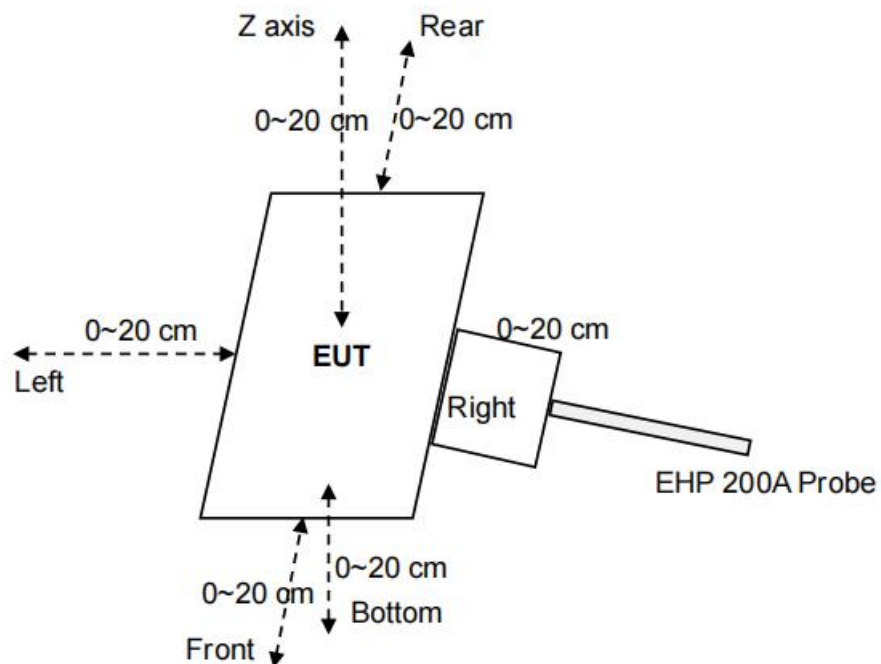
For devices designed for typical desktop applications, such a wireless charging pads, RF exposure evaluation should be conducted assuming a user separation distance of 20 cm(Top) and 15cm(Edge). E and H field strength measurements or numerical modeling may be used to demonstrate compliance. Measurements should be made from all sides and the top of the primary/client pair, with the 20 cm(Top) and 15cm(Edge) measured from the center of the probe(s) to the edge of the device.

4.1.3 Test Setup

For mobile exposure conditions:



For portable exposure conditions:



Note: Perform H-field measurements for each edge/top surface of the host/client pair at every 2 cm, starting

from as close as possible out to 20 cm

4.1.4 Test Results

The EUT does comply with item 5 KDB680106 D01 v03r01.

(1) Power transfer frequency is less than 1 MHz.
(Conform)

(2) Output power from each primary coil is less than or equal to 15 watts.
(Conform)

(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.
(Conform)

(4) Client device is placed directly in contact with the transmitter.
(Conform)

(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.
(Conform)

(7) the H-field measurements for each edge/top surface of the host/client pair at every 2 cm, starting from as close as possible out to 20 cm were also evaluated for portable use condition.

Test condition: Mode c

H-field strength test result:

test distance: 0cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
2	Z axis	0.7853	1.63	74.5%
	Left	0.84586		
	Right	0.75414		
	Front	0.48536		
	Rear	1.2140		
	Bottom	0.8973		

test distance: 2cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
2	Z axis	0.5850	1.63	67.6%
	Left	0.7411		
	Right	0.5486		
	Front	0.3124		
	Rear	1.1019		
	Bottom	0.6583		

test distance: 4cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
2	Z axis	0.1251	1.63	60.4%
	Left	0.2156		
	Right	0.1555		
	Front	0.094		
	Rear	0.9852		
	Bottom	0.4126		

test distance: 6cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
2	Z axis	0.1014	1.63	51.8%
	Left	0.1870		
	Right	0.1239		
	Front	0.073		
	Rear	0.8451		
	Bottom	0.2540		

test distance: 8cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
2	Z axis	0.0873	1.63	27.9%
	Left	0.0982		
	Right	0.0851		
	Front	0.0450		
	Rear	0.4540		
	Bottom	0.0896		

test distance: 10cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
2	Z axis	0.0740	1.63	25.4%
	Left	0.0839		
	Right	0.0411		
	Front	0.0409		
	Rear	0.4144		
	Bottom	0.0740		

test distance: 12cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
2	Z axis	0.0411	1.63	5.24%
	Left	0.0486		
	Right	0.0449		
	Front	0.0410		
	Rear	0.0854		
	Bottom	0.0414		

test distance: 14cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
2	Z axis	0.0397	1.63	2.73%
	Left	0.0411		
	Right	0.0451		
	Front	0.0383		
	Rear	0.0445		
	Bottom	0.0434		

test distance: 16cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
2	Z axis	0.0420	1.63	2.71%
	Left	0.0400		
	Right	0.0408		
	Front	0.0343		
	Rear	0.0442		
	Bottom	0.0417		

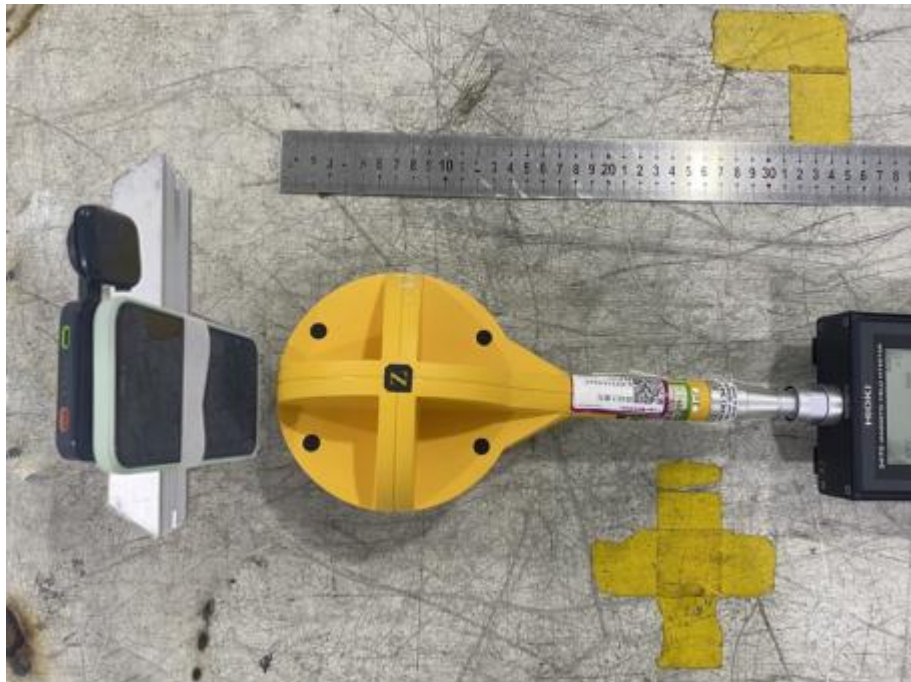
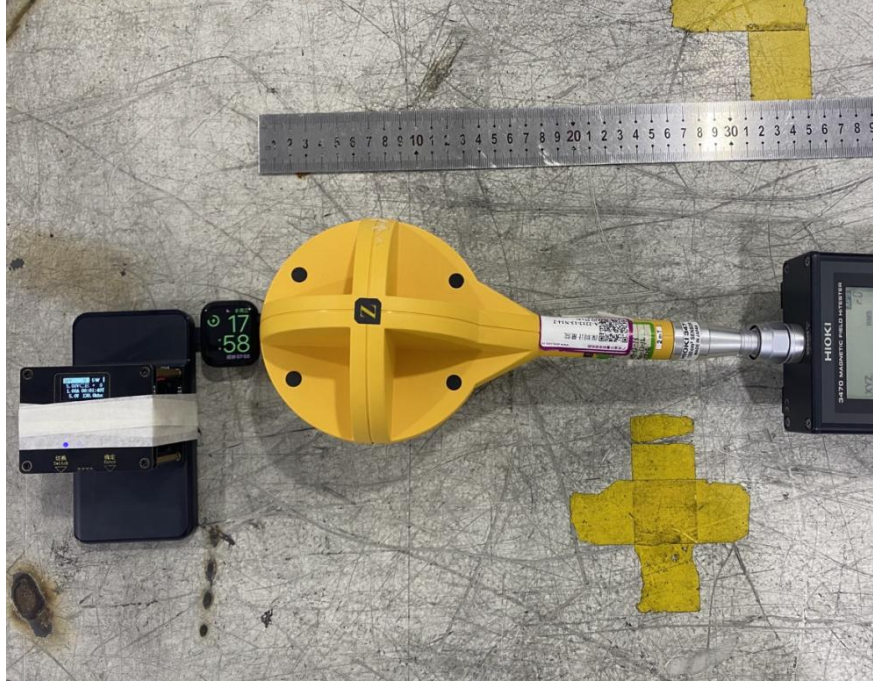
test distance: 18cm

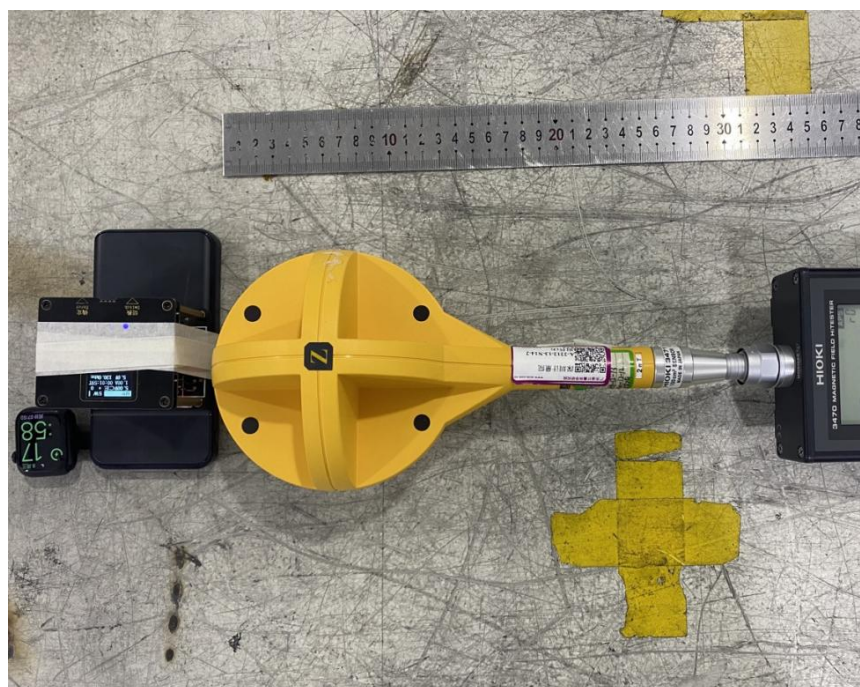
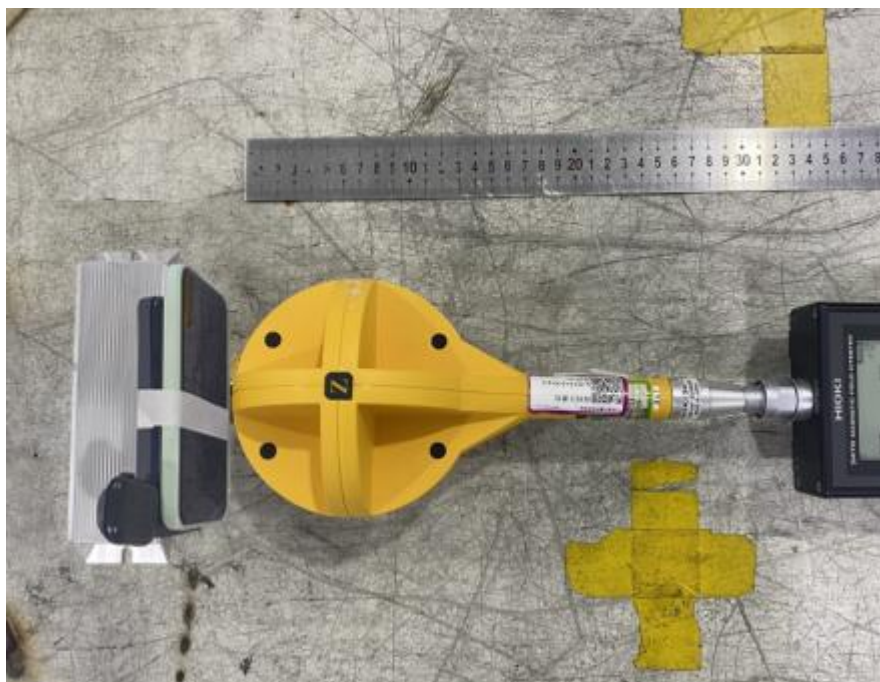
Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
2	Z axis	0.0414	1.63	2.56%
	Left	0.0400		
	Right	0.0411		
	Front	0.0406		
	Rear	0.0418		
	Bottom	0.0400		

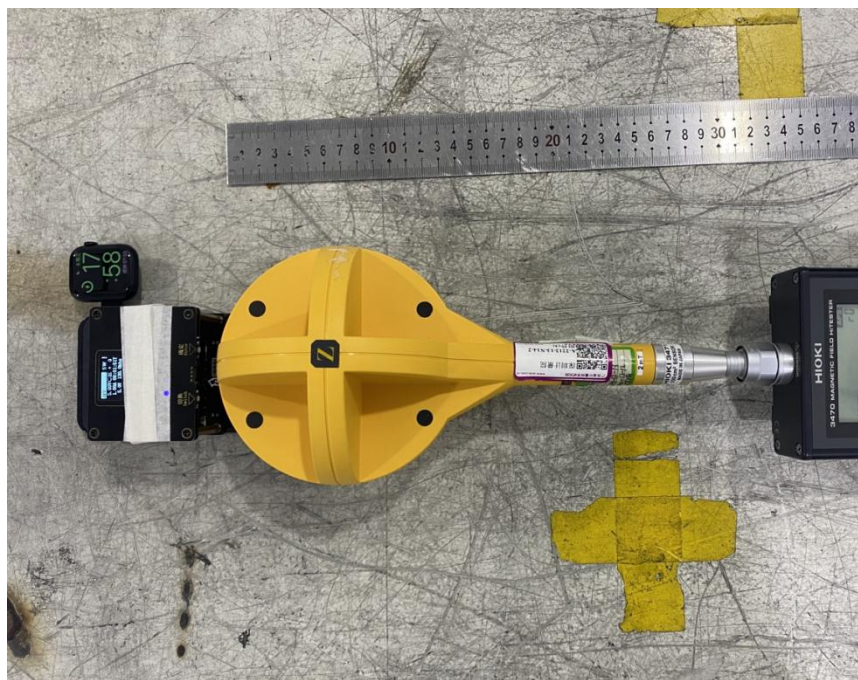
test distance: 20cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
2	Z axis	0.0420	1.63	1.93%
	Left	0.0383		
	Right	0.0373		
	Front	0.0388		
	Rear	0.0315		
	Bottom	0.0316		

APPENDIX A: PHOTOGRAPHS OF TEST SETUP







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