

Test Report

Report No.: MTi220413015-03E2

Date of issue: 2022-09-28

Applicant: Otter Products, LLC.

Product: Power Bank with Apple Watch Charger

Model(s): OBFTC-0121-A

FCC ID: 2AEEV-OBFTC0121A

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>

Instructions

1. This test report shall not be partially reproduced without the written consent of the laboratory.
2. The test results in this test report are only responsible for the samples submitted
3. This test report is invalid without the seal and signature of the laboratory.
4. This test report is invalid if transferred, altered, or tampered with in any form without authorization.
5. Any objection to this test report shall be submitted to the laboratory within 15 days from the date of receipt of the report.

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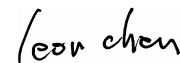
Test Result Certification	
Applicant:	Otter Products, LLC.
Address:	209 South Meldrum, Fort Collins, Colorado, United States, 80521
Manufacturer:	Otter Products, LLC.
Address:	209 South Meldrum, Fort Collins, Colorado, United States, 80521
Factory 1:	Shenzhen Topband Co., Ltd.
Address:	Topband Industry Park, Liyuan Industrial Zone, Shiyan, Bao'an District, Shenzhen, Guangdong, China, 518108
Factory 2:	TOPBAND SMART DONG NAI (VIETNAM) COMPANY LIMITED
Address:	Lot D, Loc An - Binh Son Industrial Zone, Long An Commune, Long Thanh District, Dong Nai, Vietnam, 810000
Product description	
Product name:	Power Bank with Apple Watch Charger
Trademark:	OTTERBOX
Model name:	OBFTC-0121-A
Serial Model:	N/A
Standards:	FCC CFR 47 PART 1, § 1.1310
Test method:	KDB 680106 v03r01
Date of Test	
Date of test:	2022-06-29 ~ 2022-09-28
Test result:	Pass

Test Engineer :



(Yanice Xie)

Reviewed By :



(Leon Chen)

Approved By :



(Tom Xue)

1 General Description

1.1 Description of the EUT

Product name:	Power Bank with Apple Watch Charger
Model name:	OBFTC-0121-A
Series Model:	N/A
Model difference:	N/A
Electrical rating:	Input: DC 5V/3A Output: Type-C: DC 5V/3A Wireless Output: Watch: 5W Battery: DC 3.7V 3000mAh 11.1Wh
Accessories:	Cable: USB-C to C cable 0.5M
Hardware version:	S01
Software version:	V0
Test sample number:	MTi220413015-03-S0001
RF specification:	
Operation frequency:	Tx: 326.5 kHz Tx: 1.778MHz
Modulation type:	ASK
Antenna type:	Coil Antenna

1.2 Description of test modes

All the test modes were carried out with the EUT in normal operation, the final test mode of the EUT was the worst test mode for emission test, which was shown in this report and defined as:

No.	Emission test modes
Mode 1	Wireless Output(326.5kHz)
Mode 2	Wireless Output(1.778MHz)
Mode 3	Stand-by

1.3 Description of support units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Support equipment list			
Description	Model	Serial No.	Manufacturer
Watch	/	/	Apple
Adapter	HW-090200CH0	/	Huizhou BYD Electronics Co., Ltd.
Support cable list			
Description	Length (m)	From	To
/	/	/	/

2 Test facilities and accreditations

2.1 Test laboratory

Test laboratory:	Shenzhen Microtest Co., Ltd.
Test site location:	101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Telephone:	(86-755)88850135
Fax:	(86-755)88850136
CNAS Registration No.:	CNAS L5868
FCC Registration No.:	448573

3 List of test equipment

No.	Equipment	Manufacturer	Model	Serial No.	Cal. date	Cal. Due
MTI-E115	Electric and Magnetic Field Probe – Analyzer	Narda	EHP-200A	101166	2022/05/05	2023/05/04

4 Test result

4.1.1 Requirement

§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 as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of FCC part 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
300-1500			f/300	<6
1500-100000			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
300-1500			f/1500	<30
1500-100000			1.0	<30

f = frequency in MHz

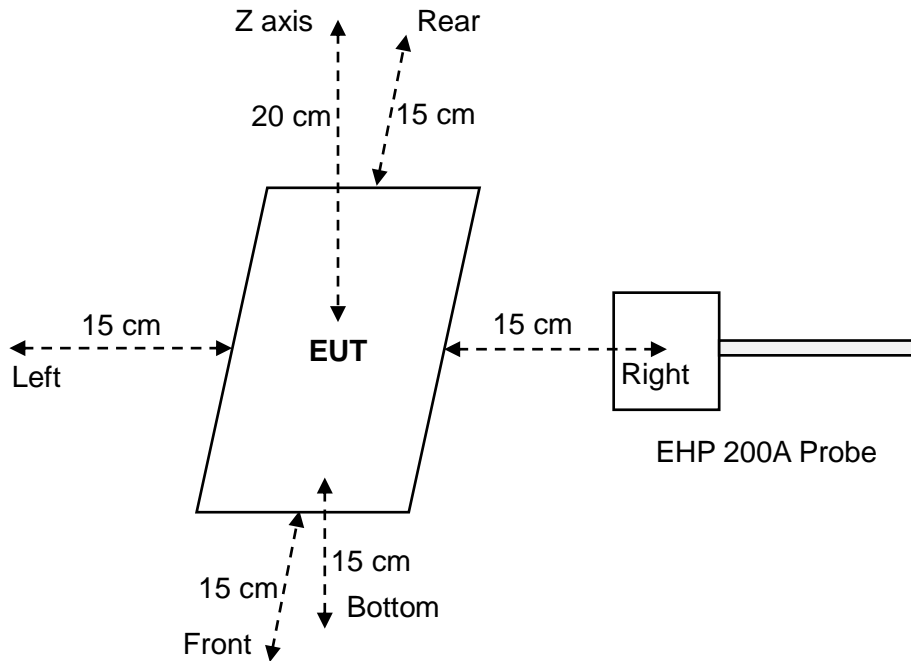
* = Plane-wave equivalent power density

Note 1: Occupational/controlled exposure limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure.

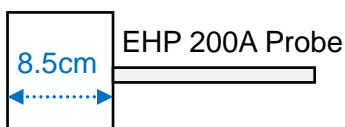
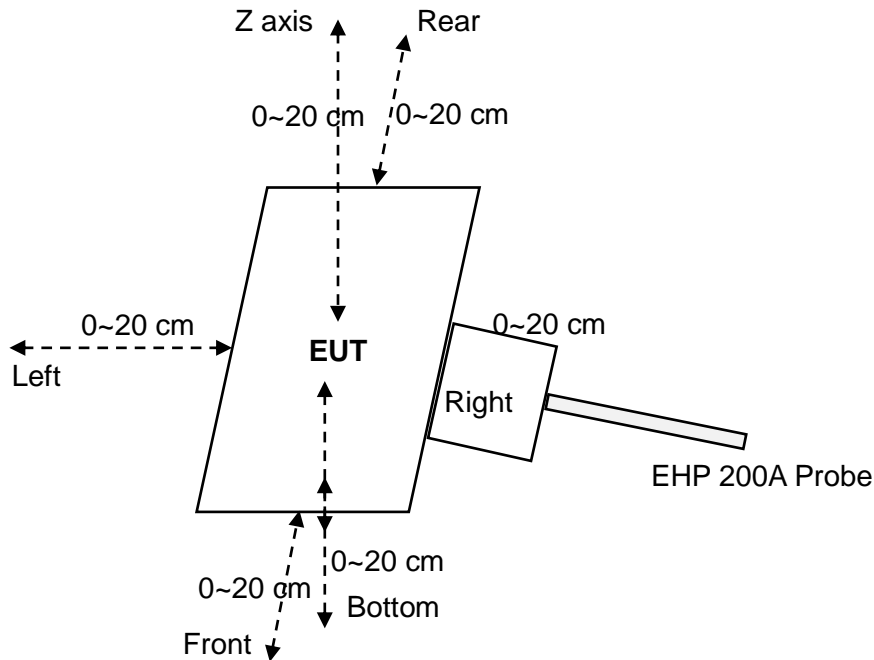
Note 2: General population/uncontrolled exposure limits apply in situations in which the general public may be exposed, or in which persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

4.2 Test setup

For mobile exposure conditions:



For portable exposure conditions:



Notes: The EHP 200A Probe has a diameter of 8.5cm and a radius of 4.25cm.

4.3 Test Procedures

For mobile exposure conditions:

- a. The RF exposure test was performed in anechoic chamber.
- b. E and H-field measurements should be made with the center of the probe at a distance of 15 cm surrounding the EUT and 20 cm above the top surface of the primary/client pair.
- c. The highest emission level was recorded and compared with limit.
- d. The EUT was measured according to the dictates of KDB 680106 v03r01.

For portable exposure conditions:

- a. The RF exposure test was performed in anechoic chamber.
- b. 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
- c. The highest emission level was recorded and compared with limit.
- d. The EUT was measured according to the dictates of TCB Workshop "41-Part-18-&-Wireless-Power-Transfer - April 27, 2022"

Notes: The EUT was setted to transmit continuously with the duty cycle of 100%.

4.4 Equipment Approval Considerations item 5 b) of KDB 680106 D01 v03r01

Requirement	Device
1. Power transfer frequency is less than 1 MHz.	No. The operating frequencies: Tx: 326.5 kHz Tx: 1.778MHz
2. Output power from each primary coil is less than or equal to 15 watts	Yes. The maximum output power: 5W
3. The system may consist of more than one source primary coils, charging one or more clients. If more than one primary coil is present, the coil pairs may be powered on at the same time.	Yes. The EUT have one source primary coil.
4. Client device is placed directly in contact with the transmitter.	Yes. The client device is placed directly in contact with the transmitter.
5. Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).	No. The EUT has portable exposure condition.
6. The aggregate H-field strengths anywhere at or beyond 15 cm surrounding the device, and 20 cm away from the surface from all coils that by design can simultaneously transmit, and while those coils are simultaneously energized, are demonstrated to be less than 50% of the applicable MPE limit.	No, 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.

4.5 Test results

For portable exposure condition:

Note:

(1). The portable test modes have covered the considerations of the mobile test, only record the test data of the portable conditions in this report.

(2) Operating modes with client device (1 %, 50%, 99% battery status of client device) have been test, only show the data of worst case of 1% battery status of client device.

Test condition 1: Mode 1 operating mode with client device (1 % battery status of client device) -test distance: 0cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.0517	1.63	5.31%
	Left	0.0540		
	Right	0.0523		
	Front	0.0865		
	Rear	0.0505		
	Bottom	0.0501		

Test condition 2: Mode 1 operating mode with client device (1 % battery status of client device) -test distance: 2cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.0517	1.63	5.31%
	Left	0.0540		
	Right	0.0523		
	Front	0.0865		
	Rear	0.0505		
	Bottom	0.0501		

Test condition 3: Mode 1 operating mode with client device (1 % battery status of client device)
- Test distance 4cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.0517	1.63	5.31%
	Left	0.0540		
	Right	0.0523		
	Front	0.0865		
	Rear	0.0505		
	Bottom	0.0501		

Test condition 4: Mode 1 operating mode with client device (1 % battery status of client device)
- Test distance 6cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.0517	1.63	3.21%
	Left	0.0501		
	Right	0.0517		
	Front	0.0505		
	Rear	0.0513		
	Bottom	0.0523		

Test condition 5: Mode 1 operating mode with client device (1 % battery status of client device)
- Test distance 8cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.0517	1.63	3.31%
	Left	0.0540		
	Right	0.0517		
	Front	0.0540		
	Rear	0.0517		
	Bottom	0.0505		

Test condition 6: Mode 1 operating mode with client device (1 % battery status of client device)
- Test distance 10cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.0501	1.63	3.31%
	Left	0.0513		
	Right	0.0539		
	Front	0.0535		
	Rear	0.0517		
	Bottom	0.0517		

Test condition 7: Mode 1 operating mode with client device (1 % battery status of client device)
- Test distance 12cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.0517	1.63	3.17%
	Left	0.0505		
	Right	0.0505		
	Front	0.0513		
	Rear	0.0498		
	Bottom	0.0505		

Test condition 8: Mode 1 operating mode with client device (1 % battery status of client device)
- Test distance 14cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.0510	1.63	3.17%
	Left	0.0517		
	Right	0.0501		
	Front	0.0501		
	Rear	0.0505		
	Bottom	0.0505		

Test condition 9: Mode 1 operating mode with client device (1 % battery status of client device)
- Test distance 16cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.0505	1.63	3.28%
	Left	0.0521		
	Right	0.0505		
	Front	0.0488		
	Rear	0.0535		
	Bottom	0.0505		

Test condition 10: Mode 1 operating mode with client device (1 % battery status of client device)
- Test distance 18cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.0505	1.63	3.22%
	Left	0.0525		
	Right	0.0513		
	Front	0.0523		
	Rear	0.0501		
	Bottom	0.0501		

Test condition 11: Mode 1 operating mode with client device (1 % battery status of client device)
- Test distance 20cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.0505	1.63	3.21%
	Left	0.0523		
	Right	0.0511		
	Front	0.0505		
	Rear	0.0515		
	Bottom	0.0517		

Test condition 1: Mode 2 operating mode with client device (1 % battery status of client device)
-test distance: 0cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.0957	1.63	8.29%
	Left	0.1352		
	Right	0.0792		
	Front	0.1128		
	Rear	0.0535		
	Bottom	0.0727		

Test condition 2: Mode 2 operating mode with client device (1 % battery status of client device)
-test distance: 2cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.0957	1.63	6.05%
	Left	0.1352		
	Right	0.0792		
	Front	0.1128		
	Rear	0.0535		
	Bottom	0.0727		

Test condition 3: Mode 2 operating mode with client device (1 % battery status of client device)
- Test distance 4cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.0957	1.63	3.60%
	Left	0.1352		
	Right	0.0792		
	Front	0.1128		
	Rear	0.0535		
	Bottom	0.0727		

Test condition 4: Mode 2 operating mode with client device (1 % battery status of client device)
- Test distance 6cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.0540	1.63	3.42%
	Left	0.0548		
	Right	0.0535		
	Front	0.0557		
	Rear	0.0531		
	Bottom	0.0535		

Test condition 5: Mode 2 operating mode with client device (1 % battery status of client device)
- Test distance 8cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.0548	1.63	3.52%
	Left	0.0535		
	Right	0.0535		
	Front	0.0574		
	Rear	0.0546		
	Bottom	0.0531		

Test condition 6: Mode 2 operating mode with client device (1 % battery status of client device)
- Test distance 10cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.0548	1.63	3.52%
	Left	0.0535		
	Right	0.0574		
	Front	0.0548		
	Rear	0.0546		
	Bottom	0.0535		

Test condition 7: Mode 2 operating mode with client device (1 % battery status of client device)
- Test distance 12cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.0573	1.63	3.52%
	Left	0.0570		
	Right	0.0535		
	Front	0.0535		
	Rear	0.0574		
	Bottom	0.0545		

Test condition 8: Mode 2 operating mode with client device (1 % battery status of client device)
- Test distance 14cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.0557	1.63	3.52%
	Left	0.0540		
	Right	0.0548		
	Front	0.0546		
	Rear	0.0531		
	Bottom	0.0574		

Test condition 9: Mode 2 operating mode with client device (1 % battery status of client device)
- Test distance 16cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.0569	1.63	3.49%
	Left	0.0557		
	Right	0.0535		
	Front	0.0535		
	Rear	0.0557		
	Bottom	0.0554		

Test condition 10: Mode 2 operating mode with client device (1 % battery status of client device)
- Test distance 18cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.0535	1.63	3.36%
	Left	0.0535		
	Right	0.0543		
	Front	0.0540		
	Rear	0.0548		
	Bottom	0.0548		

Test condition 11: Mode 2 operating mode with client device (1 % battery status of client device)
- Test distance 20cm

Antenna	Probe Position	H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.0548	1.63	3.40%
	Left	0.0548		
	Right	0.0554		
	Front	0.0531		
	Rear	0.0535		
	Bottom	0.0531		

Photographs of the Test Setup

See the Appendix - Test Setup Photos.

Photographs of the EUT

See the Appendix - EUT Photos.

----End of Report----