RF Exposure Report

For

Applicant name:	**Shenzhen Torras Technology Co., Ltd.**
Address:	RM1215, BLK C, Zhantao Technology BLDG, Minzhi Avenue, Minzhi ST, Longhua DIST, Shenzhen, China
EUT name:	Power Bank
Brand name:	TORRAS
Model number:	PB10
Series model number:	N/A

Issued By

Company Name:	**BTF Testing Lab (Shenzhen) Co., Ltd.**
Address:	F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China
Report Number:	BTF240730R00202
Test Standards:	47 CFR Part 1 Subpart I Section 1.1310
FCC ID:	2AN4Y-PB10
Test Conclusion:	Pass
Date of sample receipt:	2024-07-30
Test date:	2024-08-01 to 2024-08-15
Date of issue:	2024-08-15
Test by:	Xing.chen / Tester
Prepared by:	ChrisLiu/Project engineer
Approved by:	Ryan.CJ/EMC manager

Note: All the test results in this report only related to the testing samples. Which can be duplicated completely for the legal use with approval of applicant; it shall not be reproduced except in full without the written approval of BTF Testing Lab (Shenzhen) Co., Ltd., All the objections should be raised within thirty days from the date of issue. To validate the report, you can contact us.

Revision History		
Version	Issue Date	Revisions Content
R_V0	2024-08-15	Original
Note:	*Once the revision has been made, then previous versions reports are invalid.*	

Table of Contents

1. Introduction

1.1 Identification of Testing Laboratory

Company Name:	BTF Testing Lab (Shenzhen) Co., Ltd.
Address:	F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China
Phone Number:	+86-0755-23146130
Fax Number:	+86-0755-23146130

1.2 Identification of the Responsible Testing Location

Test Location:	BTF Testing Lab (Shenzhen) Co., Ltd.
Address:	F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China
Description:	All measurement facilities used to collect the measurement data are located at F101,201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China
FCC Registration Number:	518915
Designation Number:	CN1330

1.3 Laboratory Condition

Ambient Temperature:	20℃ to 25℃
Ambient Relative Humidity:	45% to 55%
Ambient Pressure:	100 kPa to 102 kPa

1.4 Announcement

(1) The test report reference to the report template version v0.

(2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.

(3) The test report is invalid if there is any evidence and/or falsification.

(4) This document may not be altered or revised in any way unless done so by BTF and all revisions are duly noted in the revisions section.

(5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.

(6) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

2. Product Information

2.1 Application Information

Company name:	Shenzhen Torras Technology Co., Ltd.
Address:	RM1215, BLK C, Zhantao Technology BLDG, Minzhi Avenue, Minzhi ST, Longhua DIST, Shenzhen, China

2.2 Manufacturer Information

Company name:	Shenzhen Torras Technology Co., Ltd.
Address:	RM1215, BLK C, Zhantao Technology BLDG, Minzhi Avenue, Minzhi ST, Longhua DIST, Shenzhen, China

2.3 Factory Information

Company name:	Shenzhen Torras Technology Co., Ltd.
Address:	RM1215, BLK C, Zhantao Technology BLDG, Minzhi Avenue, Minzhi ST, Longhua DIST, Shenzhen, China

2.4 General Description of Equipment under Test (EUT)

EUT name	Power Bank
Under test model name	PB10
Series model name	N/A
Description of model name differentiation	N/A
Hardware Version	N/A
Software Version	N/A
Power supply:	DC 5V⎓3A/9.0V⎓3.0A or 7.3V from battery
Ratings:	Input:USB-C:5.0V⎓3.0A/9.0V⎓3.0A Output: USB-C: 5.0V⎓2.0A/9.0V⎓3.0A/10.0V⎓2.25A/ 12.0V⎓2.5A/15.0V⎓2.0A

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2.5 Test Equipment List

Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. (mm-dd-yy)	Next Cal. (mm-dd-yy)
Electric and Magnetic Field Analyzer	Narda	EHP-200A	180ZX11001	2023.11.16	2024.11.15

2.6 Test Auxiliary Equipment

Description	Manufacturer	Model	Serial No.	Length	Description	Use
Mobile Phone	Xiaomi	Xiaomi14	/	/	15.0W Max	☒

2.7 Test mode

Test item	Test mode	Description
Radiated &Conducted Test cases	ANT1	Mode 1: AC/DC Adapter + EUT + Mobile Phone (1%) Mode 2: AC/DC Adapter + EUT + Mobile Phone (50%) Mode 3: AC/DC Adapter + EUT + Mobile Phone (100%)
	No Loads	Mode 4: AC/DC Adapter + EUT(Null Load)

Note:1. The EUT can only be charged wirelessly if it is plugged in.
2. All modes have been tested, and only the worst case Mode 1 are in the report.

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3. Test Requirement

KDB 680106 D01 RF Exposure Wireless Charging App v03
According to the item 5.2 of KDB 680106 D01v03:
Inductive wireless power transfer applications that meet all of the following requirements are excluded from submitting an RF exposure evaluation.

a) Power transfer frequency is less than 1 MHz.
Yes, the device operate in the frequency range from 127.637 kHz to 360.260kHz

b) Output power from each primary coil is less than or equal to 15 watts.
YES, the maximum output power of the primary coil is 15W.

c) 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 only single primary coils

d) Client device is placed directly in contact with the transmitter.
Yes, client device is placed directly in contact with the transmitter.

e) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).
Yes, the EUT is a Wireless Charging mobile.

f) 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 EUT field strength levels are 50% X MPE limit.

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 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
(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
300-1,500			f/1500	30
1,500-100,000			1.0	30

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

Test Equipment List

Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. (mm-dd-yy)	Next Cal. (mm-dd-yy)
Electric and Magnetic Field Analyzer	Narda	EHP-200A	180ZX11001	2023.11.16	2024.11.15
Mobile Phone	XiaoMi	xiaomi14	/	/	/

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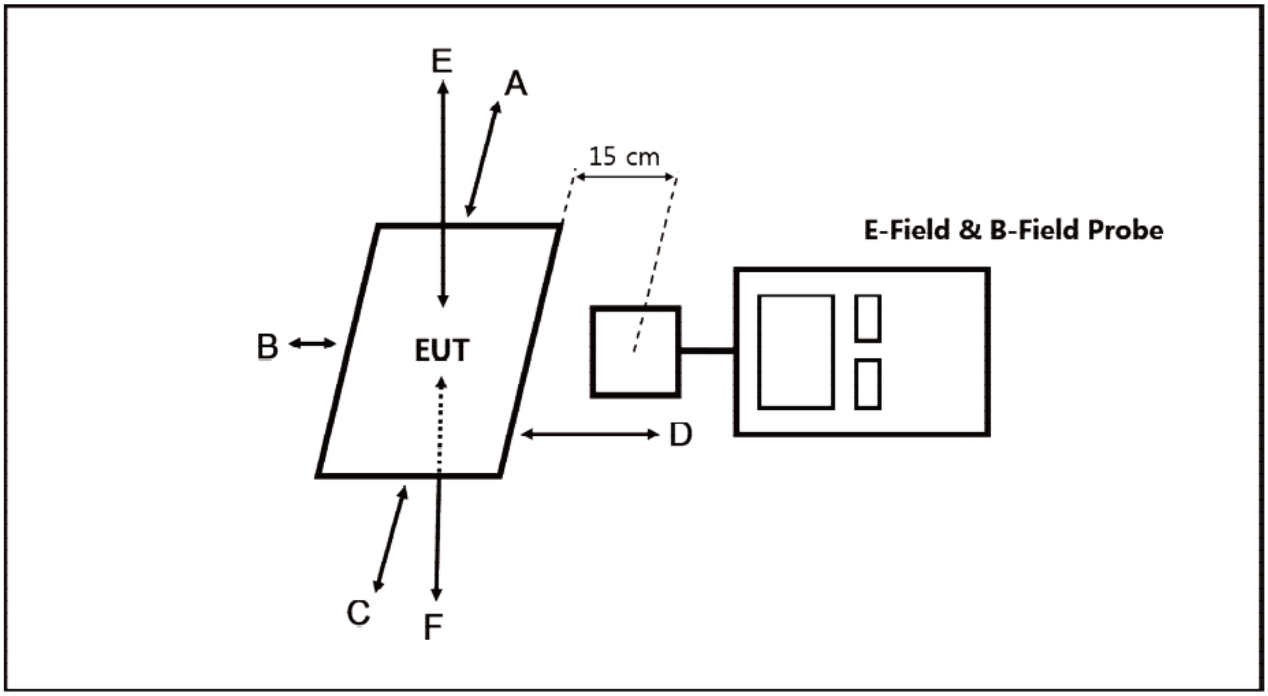
Test Setup



Note: Measurements should be made from all sides and the top of the primary/client pair, with the 15cm measured from the center of the probe(s) to the edge of the device.

1) The RF exposure test was performed in anechoic chamber.
2) The measurement probe was placed at test distance (15cm) which is between the edge of the charger and the geometric center of probe.
3) 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.
4) The EUT was measured according to the dictates of KDB 680106 D01 v03.

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4. Assessment Result

Note: All the mode have been tested, and only the worst case of mode 1 are in the report.

4.1.Test distance: 2cm-20cm

The result of test distance 2cm-20cm was measured value.According to Calibration information and specification about EHP-200A,

Mode	measuring distance (cm)	Measured H-Field Strength Values (A/m)						FCC H-Field Strength Limits (A/m)
		Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Test Position F	
Mode 1	2	0.295	0.1132	0.1704	0.1342	0.2171	0.2105	1.63
Mode 1	4	0.0433	0.0597	0.0726	0.1306	0.1977	0.0732	1.63
Mode 1	6	0.0356	0.0395	0.0526	0.1023	0.1526	0.0532	1.63
Mode 1	8	0.0308	0.0293	0.0385	0.0409	0.0708	0.0466	1.63
Mode 1	10	0.0254	0.0188	0.0371	0.0349	0.0503	0.0362	1.63
Mode 1	12	0.02	0.0182	0.0306	0.0295	0.0349	0.0283	1.63
Mode 1	14	0.0168	0.02	0.023	0.0256	0.026	0.0219	1.63
Mode 1	16	0.0217	0.0153	0.021	0.0188	0.0171	0.0153	1.63
Mode 1	18	0.0168	0.0129	0.0234	0.0217	0.0204	0.0168	1.63
Mode 1	20	0.0162	0.0147	0.0205	0.0182	0.0168	0.0168	1.63

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4.1.Test distance: 0cm

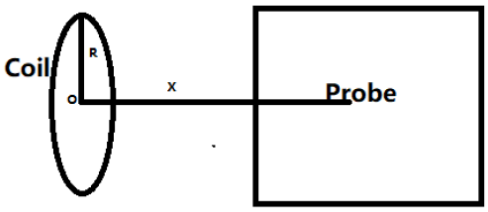
The Probe EHP-200A's sensitiveelements center are 8mm below the externa surface, and the dimensions is 92x92x109mm, so the actuacm field strenaths need to be estimated for the positions that are not reachable. The Extrapolated ValueCalculation Method please below).

Estimated method for portable RF Exposure condition:

We use Biot-Savart formula theory to estimate the strength of the magnetic field that the measuring instrument cannot measure.

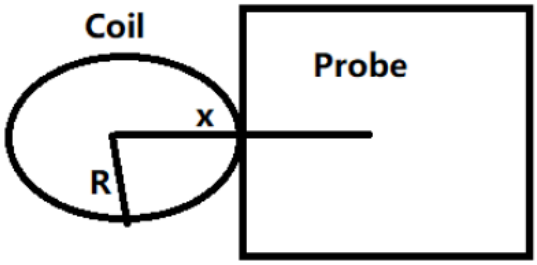
According to Biot-Savart formula:

Top & Bottom Side:



$$B = \frac{\mu_0 * I * N * R^2}{2 * (R^2 + x^2)^{3/2}}$$

Front, left, right & rear Side:



$$B = \frac{\mu_0 * I * N}{2 * x}$$

B: means H-field value.

Uo is space permeability; u0=4T*10-7:

l:A current element passing through a coil:

R: means the Radius of coil(We can get the minimum R=0.02m);

Test Distance: The distance from the sensing element of the probe to the edge of the devicesurface

x: means the center of the coil to the sensing elements of the probe. (For top & bottom side: x=test distance. Foiother side: x=test distance+R)

N: Number of turns, according to providing “Antenna specification” files: N=11

For validation purposes: lf the value to show a 30% agreement between the mode and the (E- and/or H-field) probemeasurements for the two closest points to the device surface, and with 2cm increments. Then this extrapolation method is reasonable.

Note:

The percent ratio of agreement is the diference between the estimated and measured values divided bythe average of the estimated and measured values.

Validation:Use the Biot-Savart Law to estimate the results of 2cm through 4cm

Magnetic Field Emissions							
Test Distance(cm)	A	B	C	D	E	F	Conclusion
	Unit: Agreement (%); H-field (A/m)						
2cm(measured)	0.295	0.1132	0.1704	0.1342	0.2171	0.2105	Compliance (Within 30%)
2cm(estimated)	0.3215	0.1267	0.1465	0.1625	0.1831	0.2341	
Agreement-2cm	8.98%	11%	-14.65%	21.12%	-15.65%	11.23%	

As the model is sufficient, the value of 0cm can be estimated through the results of 2 cm

Test Position	Measured H-Field Strength Values (A/m)	H-Field Strength Limits (A/m)
A	0.4123	1.63
B	0.2236	1.63
C	0.2531	1.63
D	0.2652	1.63
E	0.3102	1.63
F	0.3514	1.63

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5. Test Set-up Photo

Front

Rear


Left


Right


Top


Below


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www.btf-lab.com

--END OF REPORT--

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