



# 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:** PB20B-1  
**Series model number:** N/A  
**FCC ID:** 2AN4Y-PB20B1

## Issued By

**Company name:** BTF Testing Lab (Shenzhen) Co., Ltd.  
**Address:** 101/201/301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Subdistrict, Bao'an District, Shenzhen, China  
**Report number:** BTF251011R00902  
**Test standards:** 47 CFR Part 1 Subpart I Section 1.1310  
**Test conclusion:** Pass  
**Date of sample receipt:** 2025-10-11  
**Test date:** 2025-10-11 to 2025-10-16  
**Date of issue:** 2025-11-19

**Prepared by:**

Chris Liu

Chris Liu / Project engineer

Approved  
by:



Ryan.Gu / EMC manager

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| Revision History |                                                                              |                   |
|------------------|------------------------------------------------------------------------------|-------------------|
| Version          | Issue Date                                                                   | Revisions Content |
| R_V0             | 2025-11-19                                                                   | Original          |
|                  |                                                                              |                   |
| Note:            | Once the revision has been made, then previous versions reports are invalid. |                   |

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## 1. Introduction

### 1.1 Laboratory Location

|                |                                                                                                                                    |
|----------------|------------------------------------------------------------------------------------------------------------------------------------|
| Test location: | BTF Testing Lab (Shenzhen) Co., Ltd.                                                                                               |
| Address:       | 101/201/301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Subdistrict, Bao'an District, Shenzhen, China |
| Phone number:  | +86-0755-23146130                                                                                                                  |
| Fax number:    | +86-0755-23146130                                                                                                                  |

### 1.2 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC - Designation No.: CN1409**  
BTF Testing Lab (Shenzhen) Co., Ltd. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The test firm Registration No. is 695374..
- **CNAS - Registration No.: CNAS L17568**  
BTF Testing Lab (Shenzhen) Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L17568.
- **A2LA - Registration No.: 6660.01**  
BTF Testing Lab (Shenzhen) Co., Ltd. is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories.

### 1.3 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:                     | PB20B-1                                                                                                                                                                                                                                                                                                    |
| Series model name:                         | N/A                                                                                                                                                                                                                                                                                                        |
| Description of model name differentiation: | N/A                                                                                                                                                                                                                                                                                                        |
| Ratings:                                   | USB-C / USB-C Cable Input: 5.0V $\Rightarrow$ 3.0A / 9.0V $\Rightarrow$ 2.22A<br>USB-C / USB-C Cable Output: 5.0V $\Rightarrow$ 2.0A / 9.0V $\Rightarrow$ 2.22A / 10.0V $\Rightarrow$ 2.25A<br>Wireless Charging Output: 15W MAX<br>Multi-port Output: 15W Max<br>Li-ion polymer Battery DC 3.7V 10Ah 37Wh |

### 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.

- Power transfer frequency is less than 1 MHz.  
Yes, the device operate in the frequency range from 111-205KHz
- Output power from each primary coil is less than or equal to 15 watts.  
YES, the maximum output power of the primary coil is 5W.
- 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 and secondary coils
- Client device is placed directly in contact with the transmitter.  
Yes, client device is placed directly in contact with the transmitter.
- Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).  
Yes, the EUT is a Wireless Charging mobile.
- 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)

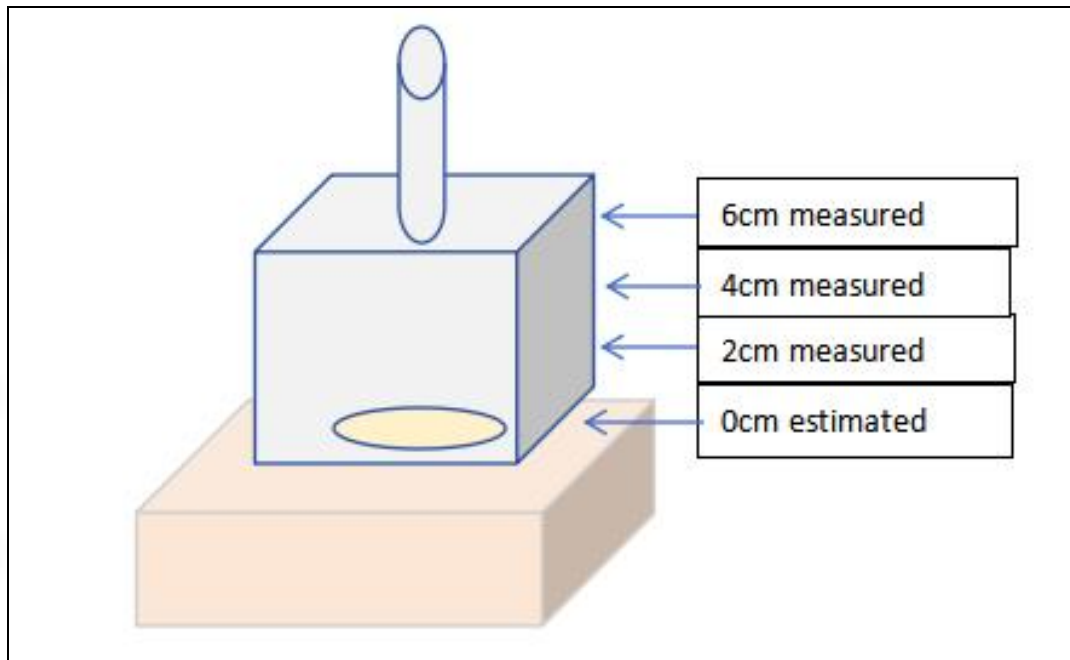
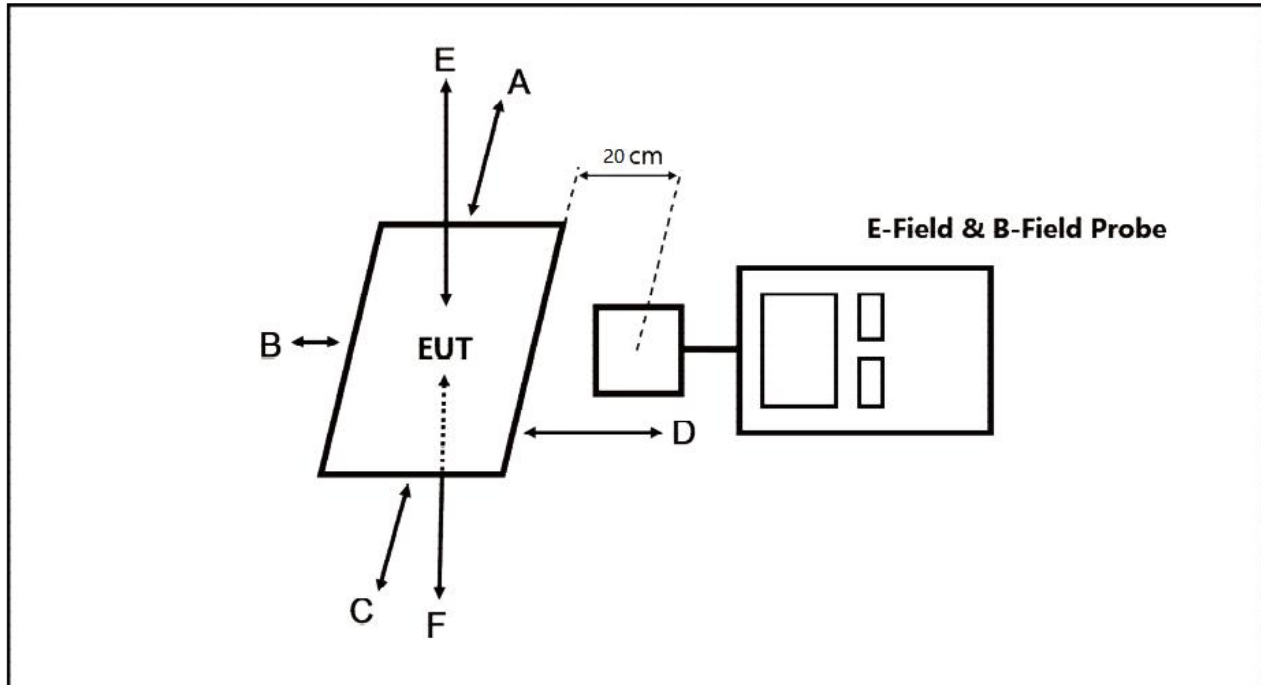
| Frequency range (MHz)                                   | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm <sup>2</sup> ) | Averaging time (minutes) |
|---------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| (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 <sup>2</sup>                 | 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 <sup>2</sup>                 | 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 | 2024/11/16           | 2025/11/15           |

## 4. Test Setup



Note1: The sensitive elements are located approximately 8mm below the external surface

Note2: Measurements should be made from all sides and the top of the primary/client pair, with the 0/2/4/6/8/10/12/14/16/18/20cm measured from the center of the probe(s) to the edge of the device.

1) The RF exposure test was performed in anechoic chamber.

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- 2) The measurement probe was placed at test distance (0/2/4/6/8/10/12/14/16/18/20cm) 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 v04.

## 5. Assessment Result

Note: The sensitive elements are located approximately 8mm below the exxternal surface

### 5.1 E-Field Strength Test Date

E-Field Strength at 2/4/6/8/10/12/14/16/18/20cm from the edges surrounding the EUT

| Charging Battery Level | Measured Distance (cm) | Measured E-Field Strength Values (V/m) |                 |                 |                 |                 |                 | FCC E-Field Strength Limits (V/m) |
|------------------------|------------------------|----------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------------------------|
|                        |                        | Test Position A                        | Test Position B | Test Position C | Test Position D | Test Position E | Test Position F |                                   |
| 99%                    | 2                      | 4.4332                                 | 4.8639          | 4.4280          | 4.5583          | 7.4644          | 7.3260          | 614                               |
| 50%                    | 2                      | 4.3227                                 | 5.1224          | 4.7533          | 4.7636          | 7.8569          | 7.4968          | 614                               |
| 1%                     | 2                      | 4.6337                                 | 5.1248          | 4.6239          | 4.4566          | 7.6863          | 7.6229          | 614                               |
| 99%                    | 4                      | 4.0221                                 | 4.5464          | 4.1347          | 4.2197          | 7.2839          | 6.9457          | 614                               |
| 50%                    | 4                      | 3.9115                                 | 4.7455          | 4.3089          | 4.2489          | 7.4934          | 7.1180          | 614                               |
| 1%                     | 4                      | 4.2241                                 | 4.8783          | 4.3950          | 4.2528          | 7.5898          | 7.2886          | 614                               |
| 99%                    | 6                      | 3.6619                                 | 4.4060          | 3.9506          | 3.9484          | 7.1460          | 6.7791          | 614                               |
| 50%                    | 6                      | 3.7848                                 | 4.5450          | 4.1051          | 3.9959          | 7.3891          | 6.9504          | 614                               |
| 1%                     | 6                      | 4.0111                                 | 4.7047          | 4.2140          | 4.1148          | 7.5199          | 7.1772          | 614                               |
| 99%                    | 8                      | 3.5156                                 | 4.3556          | 3.8287          | 3.8282          | 7.0614          | 6.6650          | 614                               |
| 50%                    | 8                      | 3.7038                                 | 4.4684          | 3.9785          | 3.9412          | 7.2867          | 6.8537          | 614                               |
| 1%                     | 8                      | 3.8929                                 | 4.6195          | 4.0924          | 4.0540          | 7.5127          | 7.0808          | 614                               |
| 99%                    | 10                     | 2.7619                                 | 3.7143          | 3.3002          | 3.2629          | 6.0800          | 5.7229          | 614                               |
| 50%                    | 10                     | 2.9128                                 | 3.8656          | 3.4137          | 3.3752          | 6.3068          | 5.9110          | 614                               |
| 1%                     | 10                     | 3.0632                                 | 3.9783          | 3.5272          | 3.4886          | 6.4960          | 6.1000          | 614                               |
| 99%                    | 12                     | 2.0827                                 | 3.2252          | 2.8478          | 2.8096          | 5.2506          | 4.9318          | 614                               |
| 50%                    | 12                     | 2.1957                                 | 3.3009          | 2.9236          | 2.8862          | 5.4394          | 5.0829          | 614                               |
| 1%                     | 12                     | 2.3473                                 | 3.4140          | 3.0371          | 2.9989          | 5.5905          | 5.2337          | 614                               |
| 99%                    | 14                     | 1.4802                                 | 2.7722          | 2.4329          | 2.4326          | 4.5351          | 4.2155          | 614                               |
| 50%                    | 14                     | 1.5931                                 | 2.8482          | 2.5081          | 2.5082          | 4.6858          | 4.3667          | 614                               |
| 1%                     | 14                     | 1.7068                                 | 2.9240          | 2.5840          | 2.5845          | 4.8360          | 4.5168          | 614                               |
| 99%                    | 16                     | 0.9900                                 | 2.3580          | 2.0947          | 2.0936          | 3.9322          | 3.6490          | 614                               |
| 50%                    | 16                     | 1.0648                                 | 2.4332          | 2.1700          | 2.1324          | 4.0445          | 3.7624          | 614                               |
| 1%                     | 16                     | 1.1777                                 | 2.5087          | 2.2441          | 2.2069          | 4.1587          | 3.8755          | 614                               |

|     |    |        |        |        |        |        |        |     |
|-----|----|--------|--------|--------|--------|--------|--------|-----|
| 99% | 18 | 0.5378 | 2.0188 | 1.7929 | 1.7916 | 3.4042 | 3.1219 | 614 |
| 50% | 18 | 0.6504 | 2.0944 | 1.8682 | 1.8300 | 3.4796 | 3.2343 | 614 |
| 1%  | 18 | 0.7255 | 2.1696 | 1.9060 | 1.9047 | 3.5925 | 3.3102 | 614 |
| 99% | 20 | 0.1607 | 1.7548 | 1.5281 | 1.5283 | 2.9510 | 2.6693 | 614 |
| 50% | 20 | 0.2361 | 1.7916 | 1.6031 | 1.5666 | 3.0269 | 2.7820 | 614 |
| 1%  | 20 | 0.3114 | 1.8683 | 1.6418 | 1.5933 | 3.1031 | 2.8583 | 614 |

Note: V/m= A/m \*377

## 5.2 H-Field Strength Test Date:

H-Field Strength at 2/4/6 8/10/12/14/16/18/20cm from the edges surrounding the EUT

| Charging Battery Level | Measured Distance (cm) | Unit | 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 |                                   |
| 99%                    | 2                      | uT   | 0.0388                                 | 0.0421          | 0.0339          | 0.0278          | 0.0614          | 0.0686          | --                                |
| 99%                    | 2                      | A/m  | 0.0310                                 | 0.0337          | 0.0271          | 0.0222          | 0.0491          | 0.0549          | 1.63                              |
| 50%                    | 2                      | uT   | 0.0455                                 | 0.0388          | 0.0318          | 0.0358          | 0.0616          | 0.0718          | --                                |
| 50%                    | 2                      | A/m  | 0.0364                                 | 0.0310          | 0.0254          | 0.0286          | 0.0493          | 0.0574          | 1.63                              |
| 1%                     | 2                      | uT   | 0.0418                                 | 0.0411          | 0.0330          | 0.0354          | 0.0581          | 0.0676          | --                                |
| 1%                     | 2                      | A/m  | 0.0334                                 | 0.0329          | 0.0264          | 0.0283          | 0.0465          | 0.0541          | 1.63                              |
| 99%                    | 4                      | uT   | 0.0298                                 | 0.0258          | 0.0211          | 0.0240          | 0.0364          | 0.0349          | --                                |
| 99%                    | 4                      | A/m  | 0.0238                                 | 0.0206          | 0.0169          | 0.0192          | 0.0291          | 0.0279          | 1.63                              |
| 50%                    | 4                      | uT   | 0.0340                                 | 0.0246          | 0.0221          | 0.0245          | 0.0370          | 0.0393          | --                                |
| 50%                    | 4                      | A/m  | 0.0272                                 | 0.0197          | 0.0177          | 0.0196          | 0.0296          | 0.0314          | 1.63                              |
| 1%                     | 4                      | uT   | 0.0341                                 | 0.0289          | 0.0255          | 0.0238          | 0.0341          | 0.0343          | --                                |
| 1%                     | 4                      | A/m  | 0.0273                                 | 0.0231          | 0.0204          | 0.0190          | 0.0273          | 0.0274          | 1.63                              |
| 99%                    | 6                      | uT   | 0.0239                                 | 0.0215          | 0.0174          | 0.0162          | 0.0330          | 0.0298          | --                                |
| 99%                    | 6                      | A/m  | 0.0191                                 | 0.0172          | 0.0139          | 0.0130          | 0.0264          | 0.0238          | 1.63                              |
| 50%                    | 6                      | uT   | 0.0247                                 | 0.0212          | 0.0177          | 0.0174          | 0.0328          | 0.0323          | --                                |
| 50%                    | 6                      | A/m  | 0.0197                                 | 0.0170          | 0.0142          | 0.0139          | 0.0263          | 0.0258          | 1.63                              |
| 1%                     | 6                      | uT   | 0.0236                                 | 0.0218          | 0.0193          | 0.0211          | 0.0316          | 0.0297          | --                                |
| 1%                     | 6                      | A/m  | 0.0189                                 | 0.0174          | 0.0154          | 0.0169          | 0.0253          | 0.0238          | 1.63                              |
| 99%                    | 8                      | uT   | 0.0214                                 | 0.0162          | 0.0133          | 0.0153          | 0.0257          | 0.0254          | --                                |
| 99%                    | 8                      | A/m  | 0.0171                                 | 0.0130          | 0.0107          | 0.0122          | 0.0206          | 0.0203          | 1.63                              |
| 50%                    | 8                      | uT   | 0.0229                                 | 0.0164          | 0.0137          | 0.0152          | 0.0277          | 0.0257          | --                                |
| 50%                    | 8                      | A/m  | 0.0183                                 | 0.0131          | 0.0109          | 0.0121          | 0.0221          | 0.0205          | 1.63                              |
| 1%                     | 8                      | uT   | 0.0227                                 | 0.0177          | 0.0138          | 0.0154          | 0.0279          | 0.0265          | --                                |
| 1%                     | 8                      | A/m  | 0.0181                                 | 0.0141          | 0.0110          | 0.0123          | 0.0224          | 0.0212          | 1.63                              |
| 99%                    | 10                     | uT   | 0.0191                                 | 0.0133          | 0.0116          | 0.0120          | 0.0230          | 0.0222          | --                                |
| 99%                    | 10                     | A/m  | 0.0153                                 | 0.0107          | 0.0093          | 0.0096          | 0.0184          | 0.0177          | 1.63                              |
| 50%                    | 10                     | uT   | 0.0195                                 | 0.0149          | 0.0114          | 0.0134          | 0.0240          | 0.0217          | --                                |
| 50%                    | 10                     | A/m  | 0.0156                                 | 0.0119          | 0.0091          | 0.0107          | 0.0192          | 0.0174          | 1.63                              |
| 1%                     | 10                     | uT   | 0.0203                                 | 0.0146          | 0.0118          | 0.0137          | 0.0243          | 0.0230          | --                                |
| 1%                     | 10                     | A/m  | 0.0162                                 | 0.0117          | 0.0094          | 0.0110          | 0.0194          | 0.0184          | 1.63                              |
| 99%                    | 12                     | uT   | 0.0158                                 | 0.0120          | 0.0098          | 0.0104          | 0.0199          | 0.0187          | --                                |
| 99%                    | 12                     | A/m  | 0.0127                                 | 0.0096          | 0.0079          | 0.0083          | 0.0159          | 0.0150          | 1.63                              |

|     |    |     |        |        |        |        |        |        |      |
|-----|----|-----|--------|--------|--------|--------|--------|--------|------|
| 50% | 12 | uT  | 0.0168 | 0.0118 | 0.0108 | 0.0104 | 0.0202 | 0.0188 | --   |
| 50% | 12 | A/m | 0.0134 | 0.0094 | 0.0086 | 0.0084 | 0.0162 | 0.0150 | 1.63 |
| 1%  | 12 | uT  | 0.0171 | 0.0132 | 0.0107 | 0.0109 | 0.0212 | 0.0200 | --   |
| 1%  | 12 | A/m | 0.0137 | 0.0106 | 0.0086 | 0.0087 | 0.0169 | 0.0160 | 1.63 |
| 99% | 14 | uT  | 0.0138 | 0.0107 | 0.0093 | 0.0091 | 0.0171 | 0.0168 | --   |
| 99% | 14 | A/m | 0.0110 | 0.0085 | 0.0075 | 0.0073 | 0.0136 | 0.0134 | 1.63 |
| 50% | 14 | uT  | 0.0150 | 0.0105 | 0.0095 | 0.0091 | 0.0172 | 0.0169 | --   |
| 50% | 14 | A/m | 0.0120 | 0.0084 | 0.0076 | 0.0073 | 0.0137 | 0.0135 | 1.63 |
| 1%  | 14 | uT  | 0.0146 | 0.0117 | 0.0099 | 0.0106 | 0.0174 | 0.0175 | --   |
| 1%  | 14 | A/m | 0.0117 | 0.0094 | 0.0079 | 0.0085 | 0.0139 | 0.0140 | 1.63 |
| 99% | 16 | uT  | 0.0127 | 0.0086 | 0.0075 | 0.0077 | 0.0150 | 0.0138 | --   |
| 99% | 16 | A/m | 0.0101 | 0.0069 | 0.0060 | 0.0062 | 0.0120 | 0.0111 | 1.63 |
| 50% | 16 | uT  | 0.0118 | 0.0097 | 0.0083 | 0.0088 | 0.0152 | 0.0143 | --   |
| 50% | 16 | A/m | 0.0094 | 0.0078 | 0.0067 | 0.0071 | 0.0122 | 0.0115 | 1.63 |
| 1%  | 16 | uT  | 0.0126 | 0.0090 | 0.0088 | 0.0088 | 0.0160 | 0.0153 | --   |
| 1%  | 16 | A/m | 0.0101 | 0.0072 | 0.0070 | 0.0070 | 0.0128 | 0.0123 | 1.63 |
| 99% | 18 | uT  | 0.0112 | 0.0080 | 0.0065 | 0.0075 | 0.0126 | 0.0124 | --   |
| 99% | 18 | A/m | 0.0090 | 0.0064 | 0.0052 | 0.0060 | 0.0101 | 0.0099 | 1.63 |
| 50% | 18 | uT  | 0.0112 | 0.0080 | 0.0073 | 0.0072 | 0.0122 | 0.0124 | --   |
| 50% | 18 | A/m | 0.0089 | 0.0064 | 0.0058 | 0.0058 | 0.0098 | 0.0099 | 1.63 |
| 1%  | 18 | uT  | 0.0104 | 0.0084 | 0.0077 | 0.0074 | 0.0139 | 0.0134 | --   |
| 1%  | 18 | A/m | 0.0083 | 0.0067 | 0.0062 | 0.0059 | 0.0111 | 0.0107 | 1.63 |
| 99% | 20 | uT  | 0.0095 | 0.0064 | 0.0055 | 0.0070 | 0.0103 | 0.0101 | --   |
| 99% | 20 | A/m | 0.0076 | 0.0051 | 0.0044 | 0.0056 | 0.0083 | 0.0081 | 1.63 |
| 50% | 20 | uT  | 0.0091 | 0.0078 | 0.0063 | 0.0068 | 0.0114 | 0.0106 | --   |
| 50% | 20 | A/m | 0.0073 | 0.0062 | 0.0050 | 0.0054 | 0.0091 | 0.0085 | 1.63 |
| 1%  | 20 | uT  | 0.0089 | 0.0078 | 0.0060 | 0.0060 | 0.0114 | 0.0105 | --   |
| 1%  | 20 | A/m | 0.0071 | 0.0062 | 0.0048 | 0.0048 | 0.0092 | 0.0084 | 1.63 |

Note: A/m=uT/1.25

### 5.3 Estimated Model

According to the formula:

The formula for the magnetic field strength at a distance r from the coil is

$$H = I / (2\pi r) * \mu$$

H is A/m

I is the current intensity

$\mu$  is the permeability, and its value depends on the medium.

The other parameters are fixed, so H is inversely proportional to r.

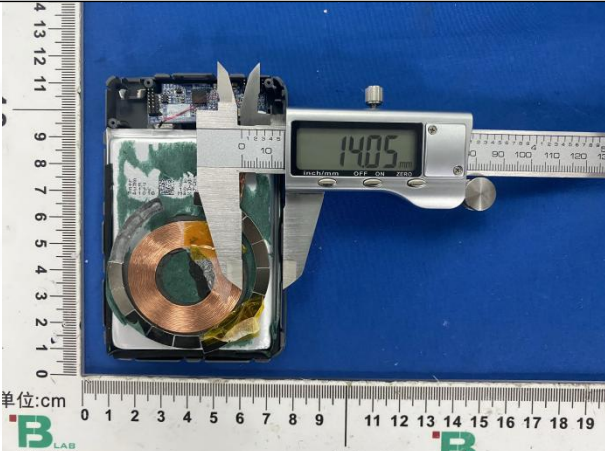
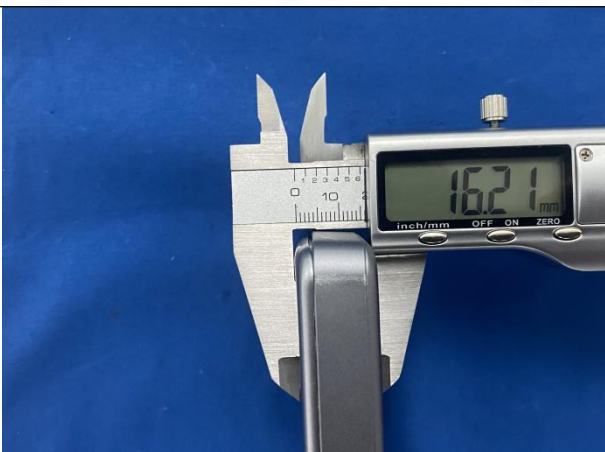
Therefore, From the measurement H6 we can estimate the values of H4,H2,H0:

$$H4=H6*r6/r4$$

$$H2=H6*r6/r2$$

$$H0=H6*r6/r0$$

The values of “r” are shown in the following table:

|                                                                                                      |                                                                                                      |
|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| <p>A:52.40mm</p>    | <p>B:10.81mm</p>   |
| <p>C:14.05mm</p>   | <p>D:11.80mm</p>  |
| <p>E:16.21mm</p>  | <p>F:3.93mm</p>  |

ABCDEF direction The actual distance(r) to the antenna coil.

| measured distance(cm) | Actual distance r to the antenna (cm) |                 |                 |                 |                 |                 |
|-----------------------|---------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                       | Test Position A                       | Test Position B | Test Position C | Test Position D | Test Position E | Test Position F |
| 0                     | 5.2400                                | 1.1081          | 1.4050          | 1.1800          | 1.6210          | 0.3930          |
| 2                     | 7.2400                                | 3.1081          | 3.4050          | 3.1800          | 3.6210          | 2.3930          |
| 4                     | 9.2400                                | 5.1081          | 5.4050          | 5.1800          | 5.6210          | 4.3930          |
| 6                     | 11.2400                               | 7.1081          | 7.4050          | 7.1800          | 7.6210          | 6.3930          |
| 8                     | 13.2400                               | 9.1081          | 9.4050          | 9.1800          | 9.6210          | 8.3930          |
| 10                    | 15.2400                               | 11.1081         | 11.4050         | 11.1800         | 11.6210         | 10.3930         |
| 12                    | 17.2400                               | 13.1081         | 13.4050         | 13.1800         | 13.6210         | 12.3930         |
| 14                    | 19.2400                               | 15.1081         | 15.4050         | 15.1800         | 15.6210         | 14.3930         |
| 16                    | 21.2400                               | 17.1081         | 17.4050         | 17.1800         | 17.6210         | 16.3930         |
| 18                    | 23.2400                               | 19.1081         | 19.4050         | 19.1800         | 19.6210         | 18.3930         |
| 20                    | 25.2400                               | 21.1081         | 21.4050         | 21.1800         | 21.6210         | 20.3930         |

Note: The phone is 16.21mm thick.

The result is calculated by the above formula:

H-Field Strength at 0/2/4cm from the edges surrounding the EUT

| Charging Battery Level | Measured Distance (cm) | Unit | 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 |                                   |
| 99%                    | 0                      | A/m  | 0.0410                                 | 0.1103          | 0.0733          | 0.0791          | 0.1241          | 0.3872          | 1.63                              |
| 50%                    | 0                      | A/m  | 0.0423                                 | 0.1090          | 0.0748          | 0.0846          | 0.1236          | 0.4197          | 1.63                              |
| 1%                     | 0                      | A/m  | 0.0405                                 | 0.1116          | 0.0812          | 0.1028          | 0.1189          | 0.3872          | 1.63                              |
| 99%                    | 2                      | A/m  | 0.0297                                 | 0.0393          | 0.0302          | 0.0294          | 0.0556          | 0.0636          | 1.63                              |
| 50%                    | 2                      | A/m  | 0.0306                                 | 0.0389          | 0.0309          | 0.0314          | 0.0554          | 0.0689          | 1.63                              |
| 1%                     | 2                      | A/m  | 0.0293                                 | 0.0398          | 0.0335          | 0.0382          | 0.0532          | 0.0636          | 1.63                              |
| 99%                    | 4                      | A/m  | 0.0232                                 | 0.0239          | 0.0190          | 0.0180          | 0.0358          | 0.0346          | 1.63                              |
| 50%                    | 4                      | A/m  | 0.0240                                 | 0.0237          | 0.0195          | 0.0193          | 0.0357          | 0.0375          | 1.63                              |
| 1%                     | 4                      | A/m  | 0.0230                                 | 0.0242          | 0.0211          | 0.0234          | 0.0343          | 0.0346          | 1.63                              |

## 5.4 Comparison of evaluation data and test data

We compare the test value of 4cm/2cm with the estimated value:

| Charging Battery Level | Measured Distance (cm) | Unit | 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 |                                   |
| 99%                    | 2                      | A/m  | 0.0310                                 | 0.0337          | 0.0271          | 0.0222          | 0.0491          | 0.0549          | 1.63                              |
| 50%                    | 2                      | A/m  | 0.0364                                 | 0.031           | 0.0254          | 0.0286          | 0.0493          | 0.0574          | 1.63                              |
| 1%                     | 2                      | A/m  | 0.0334                                 | 0.0329          | 0.0264          | 0.0283          | 0.0465          | 0.0541          | 1.63                              |
| 99%                    | 4                      | A/m  | 0.0238                                 | 0.0206          | 0.0169          | 0.0192          | 0.0291          | 0.0279          | 1.63                              |
| 50%                    | 4                      | A/m  | 0.0272                                 | 0.0197          | 0.0177          | 0.0196          | 0.0296          | 0.0314          | 1.63                              |
| 1%                     | 4                      | A/m  | 0.0273                                 | 0.0231          | 0.0204          | 0.019           | 0.0273          | 0.0274          | 1.63                              |

| Charging Battery Level | Measured Distance (cm) | Unit | Estimated 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 |                                   |
| 99%                    | 2                      | A/m  | 0.0297                                  | 0.0393          | 0.0302          | 0.0294          | 0.0556          | 0.0636          | 1.63                              |
| 50%                    | 2                      | A/m  | 0.0306                                  | 0.0389          | 0.0309          | 0.0314          | 0.0554          | 0.0689          | 1.63                              |
| 1%                     | 2                      | A/m  | 0.0293                                  | 0.0398          | 0.0335          | 0.0382          | 0.0532          | 0.0636          | 1.63                              |
| 99%                    | 4                      | A/m  | 0.0232                                  | 0.0239          | 0.0190          | 0.0180          | 0.0358          | 0.0346          | 1.63                              |
| 50%                    | 4                      | A/m  | 0.0240                                  | 0.0237          | 0.0195          | 0.0193          | 0.0357          | 0.0375          | 1.63                              |
| 1%                     | 4                      | A/m  | 0.0230                                  | 0.0242          | 0.0211          | 0.0234          | 0.0343          | 0.0346          | 1.63                              |

The corresponding deviation value is calculated

| Charging Battery Level | Measured Distance (cm) | Unit | Deviation value |                 |                 |                 |                 |                 | Limits (A/m) | Result |
|------------------------|------------------------|------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|--------|
|                        |                        |      | Test Position A | Test Position B | Test Position C | Test Position D | Test Position E | Test Position F |              |        |
| 99%                    | 2                      | A/m  | 4.38%           | -14.25%         | -10.26%         | -24.49%         | -11.69%         | -13.68%         | 30%          | Pass   |
| 50%                    | 2                      | A/m  | 18.95%          | -20.31%         | -17.80%         | -8.92%          | -11.01%         | -16.69%         | 30%          | Pass   |
| 1%                     | 2                      | A/m  | 13.99%          | -17.34%         | -21.19%         | -25.92%         | -12.59%         | -14.94%         | 30%          | Pass   |
| 99%                    | 4                      | A/m  | 2.59%           | -13.81%         | -11.05%         | 6.67%           | -18.72%         | -19.36%         | 30%          | Pass   |

|     |   |     |        |         |        |         |         |         |     |      |
|-----|---|-----|--------|---------|--------|---------|---------|---------|-----|------|
| 50% | 4 | A/m | 13.33% | -16.88% | -9.23% | 1.55%   | -17.09% | -16.27% | 30% | Pass |
| 1%  | 4 | A/m | 18.70% | -4.55%  | -3.32% | -18.80% | -20.41% | -20.81% | 30% | Pass |

Note: Deviation value=(Hest-Hmea)/Hmea

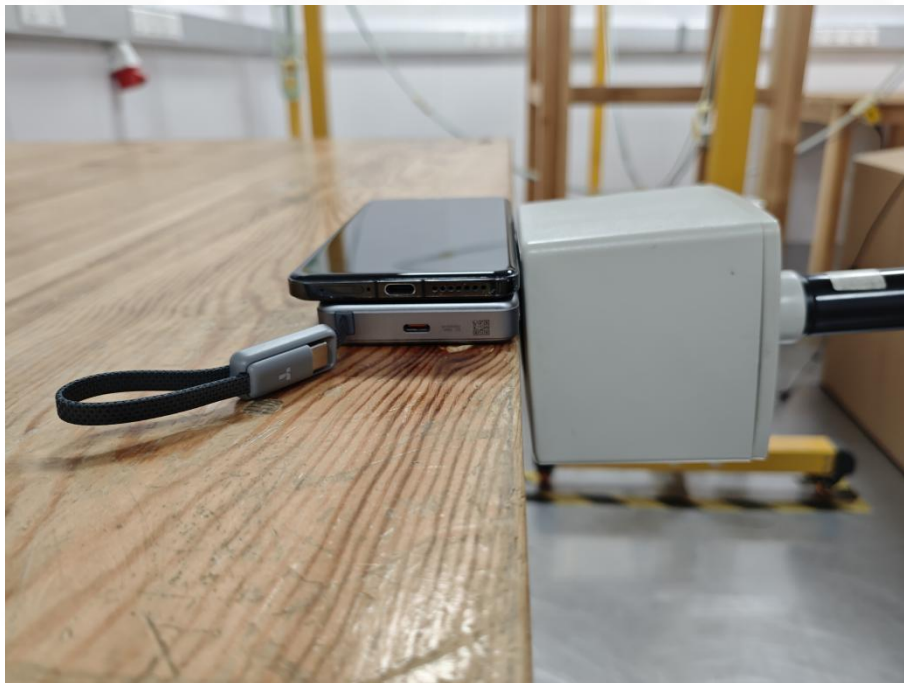
## 6. Conclusion

A minimum safety distance of 0 cm to the antenna is required when the device is charging a smart phone for mobile exposure. The detected emissions are below the limitations according FCC KDB 680106. The model was established with a 30% agreement, so it was considered to be approved. The estimated test distances of 0cm are reliable

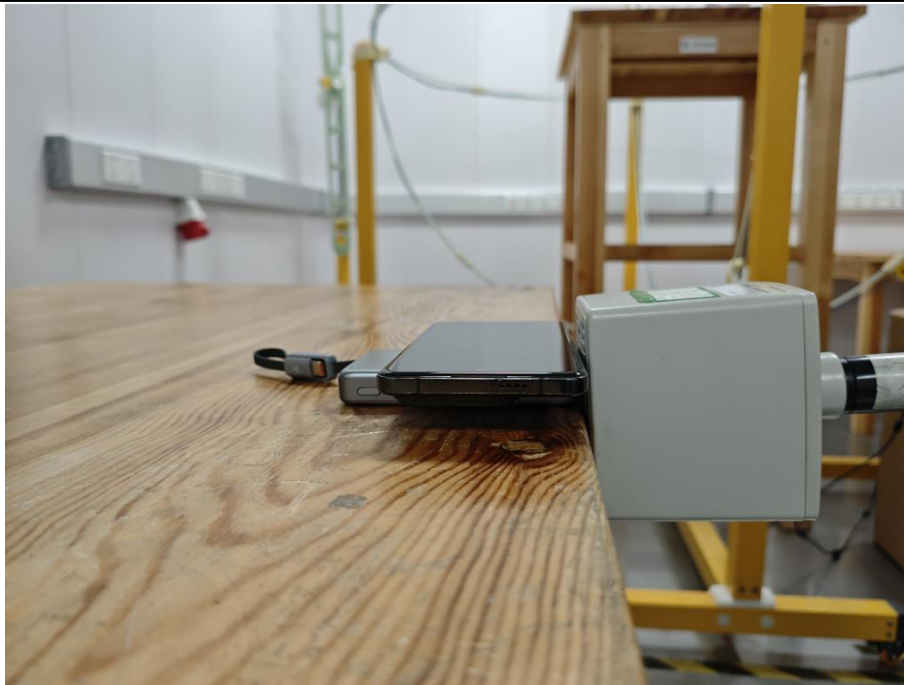
## 7. Test Set-up Photo



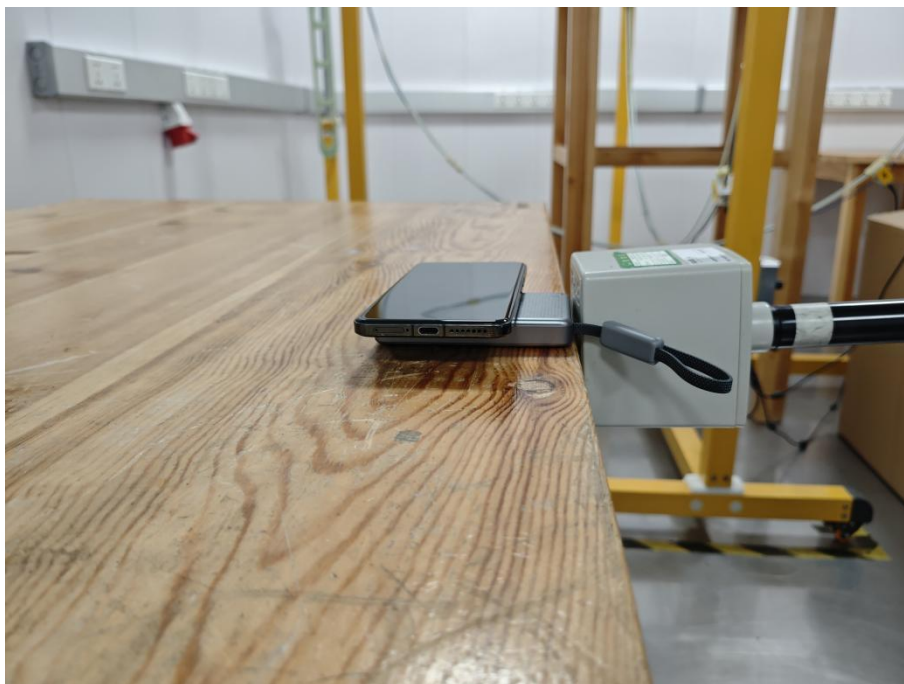
Side(C)



Side(A)



Side(B)



Side(D)



Top(E)



Bottom(F)



Test Report Number: BTF251011R00902



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**--END OF REPORT--**