

# TEST REPORT

|                                       |                                                                                                                                                      |                                                                                       |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| FCC ID.....:                          | 2BPBN-EC-C38BK                                                                                                                                       |                                                                                       |
| Test Report No.....:                  | TCT250314E055                                                                                                                                        |                                                                                       |
| Date of issue.....:                   | Sep. 20, 2024                                                                                                                                        |                                                                                       |
| Testing laboratory .....              | SHENZHEN TONGCE TESTING LAB                                                                                                                          |                                                                                       |
| Testing location/ address:            | 2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China |                                                                                       |
| Applicant's name.....:                | ELECOM USA Inc.                                                                                                                                      |                                                                                       |
| Address.....:                         | 2102 Business Center Dr. Irvine, CA 92612, United States                                                                                             |                                                                                       |
| Manufacturer's name ...:              | ELECOM Co., Ltd.                                                                                                                                     |                                                                                       |
| Address.....:                         | Fushimimachi 4-1-1, Chuo-ku, Osaka City, Osaka, Japan 541-8765                                                                                       |                                                                                       |
| Standard(s) .....                     | FCC CFR Title 47 Part 1.1310<br>KDB 680106 D01 RF Exposure Wireless Charging App v04                                                                 |                                                                                       |
| Product Name.....:                    | Power Bank                                                                                                                                           |                                                                                       |
| Trade Mark .....                      | ELECOM                                                                                                                                               |                                                                                       |
| Model/Type reference.....:            | EC-C38BK, EC-C38, DE-C67-10000BK, DE-C67-10000WH, DE-C67-10000                                                                                       |                                                                                       |
| Rating(s).....:                       | Rechargeable Li-ion Battery DC 3.85V                                                                                                                 |                                                                                       |
| Date of receipt of test item .....    | Mar. 14, 2025                                                                                                                                        |                                                                                       |
| Date (s) of performance of test.....: | Mar. 14, 2025 ~ Mar. 21, 2025                                                                                                                        |                                                                                       |
| Tested by (+signature) ...:           | Rleo LIU                                                                                                                                             |  |
| Check by (+signature)....:            | Beryl ZHAO                                                                                                                                           |  |
| Approved by (+signature):             | Tomsin                                                                                                                                               |  |

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## 1. General Product Information

### 1.1. EUT description

|                             |                                      |
|-----------------------------|--------------------------------------|
| Product Name.....:          | Power Bank                           |
| Model/Type reference.....:  | EC-C38BK                             |
| Sample Number.....:         | TCT250314E054-0101                   |
| Operation Frequency .....   | 127.66kHz                            |
| Output power.....:          | 5W/7.5W/15W                          |
| Modulation Technology ..... | Load modulation                      |
| Antenna Type.....:          | Inductive loop coil Antenna          |
| Rating(s).....:             | Rechargeable Li-ion Battery DC 3.85V |

### 1.2. Model(s) list

| No.          | Model No.                                            | Tested with                         |
|--------------|------------------------------------------------------|-------------------------------------|
| 1            | EC-C38BK                                             | <input checked="" type="checkbox"/> |
| Other models | EC-C38, DE-C67-10000BK, DE-C67-10000WH, DE-C67-10000 | <input type="checkbox"/>            |

Note: EC-C38BK is tested model, other models are derivative models. The models are identical in circuit and PCB layout, only different on the model names, color and packing. So the test data of EC-C38BK can represent the remaining models.

## 2. General Information

### 2.1. Test environment and mode

| Operating Environment: |     |                                    |
|------------------------|-----|------------------------------------|
| Temperature:           |     | 25 °C                              |
| Humidity:              |     | 55 % RH                            |
| Atmospheric Pressure:  |     | 1010 mbar                          |
| Test Mode:             |     |                                    |
| AC Mode                | TM1 | Charging + wireless charging(5W)   |
|                        | TM2 | Charging + wireless charging(7.5W) |
|                        | TM3 | Charging + wireless charging(15W)  |
| DC Mode                | TM4 | wireless charging(5W)              |
|                        | TM5 | wireless charging(7.5W)            |
|                        | TM6 | wireless charging(15W)             |

### 2.2. 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.

| Equipment    | Model No. | Serial No.     | FCC ID | Trade Name |
|--------------|-----------|----------------|--------|------------|
| Adapter      | EP-TA200  | R37M4PR7QD4SE3 | /      | SAMSUNG    |
| Mobile Phone | SM-G9350  | R28HA2ER3GT    | /      | SAMSUNG    |

### 3. Facilities and Accreditations

#### 3.1. Facilities

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

- FCC - Registration No.: 645098

SHENZHEN TONGCE TESTING LAB

Designation Number: CN1205

The testing lab has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- IC - Registration No.: 10668A

SHENZHEN TONGCE TESTING LAB

CAB identifier: CN0031

The testing lab has been registered by Innovation, Science and Economic Development Canada for radio equipment testing.

#### 3.2. Location

SHENZHEN TONGCE TESTING LAB

Address: 2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China

TEL: +86-755-27673339

## 4. Technical Requirements Specification

### 4.1. Requirements

According to the item 5 of KDB 680106 D01 RF Exposure Wireless Charging App v04:

- 1) Power transfer frequency is below 1 MHz.  
**Wireless power transfer operation frequency is 127.66kHz.**
- 2) Output power from each transmitting element (e.g., coil) is less than or equal to 15 watts.  
**The max output power is 15W**
- 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 in physical contact with the the client device.**
- 4) Only § 2.1091-Mobile exposure conditions apply (i.e., this provision does not cover § 2.1093-Portable exposure conditions)  
**Mobile exposure**
- 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.  
**Yes, E-field and H-field strengths meet the requirements**
- 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.  
**Yes, All the modes were tested**

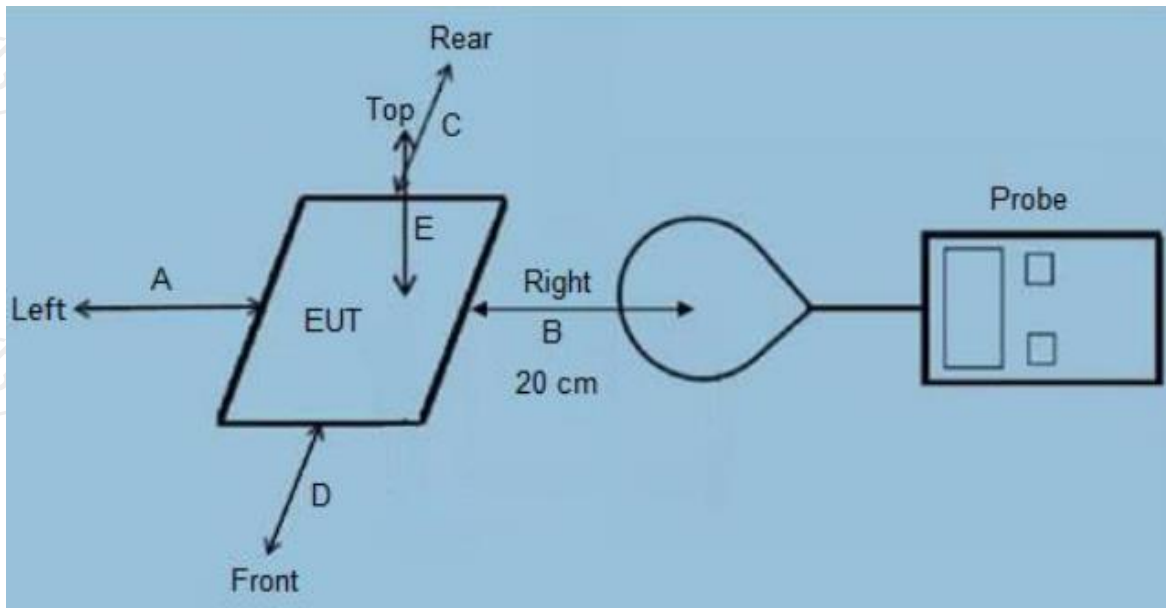
Limits For Maximum Permissible Exposure (MPE)

| Frequency range (MHz)                                          | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm <sup>2</sup> ) | Averaging time (minutes) |
|----------------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| <b>(A) Limits for Occupational/Controlled Exposures</b>        |                               |                               |                                     |                          |
| 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                        |
| 300-1500                                                       | /                             | /                             | f/300                               | 6                        |
| 1500-100,000                                                   | /                             | /                             | 5                                   | 6                        |
| <b>(B) Limits for General Population/Uncontrolled Exposure</b> |                               |                               |                                     |                          |
| 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                       |
| 300-1500                                                       | /                             | /                             | f/1500                              | 30                       |
| 1500-100,000                                                   | /                             | /                             | 1.0                                 | 30                       |

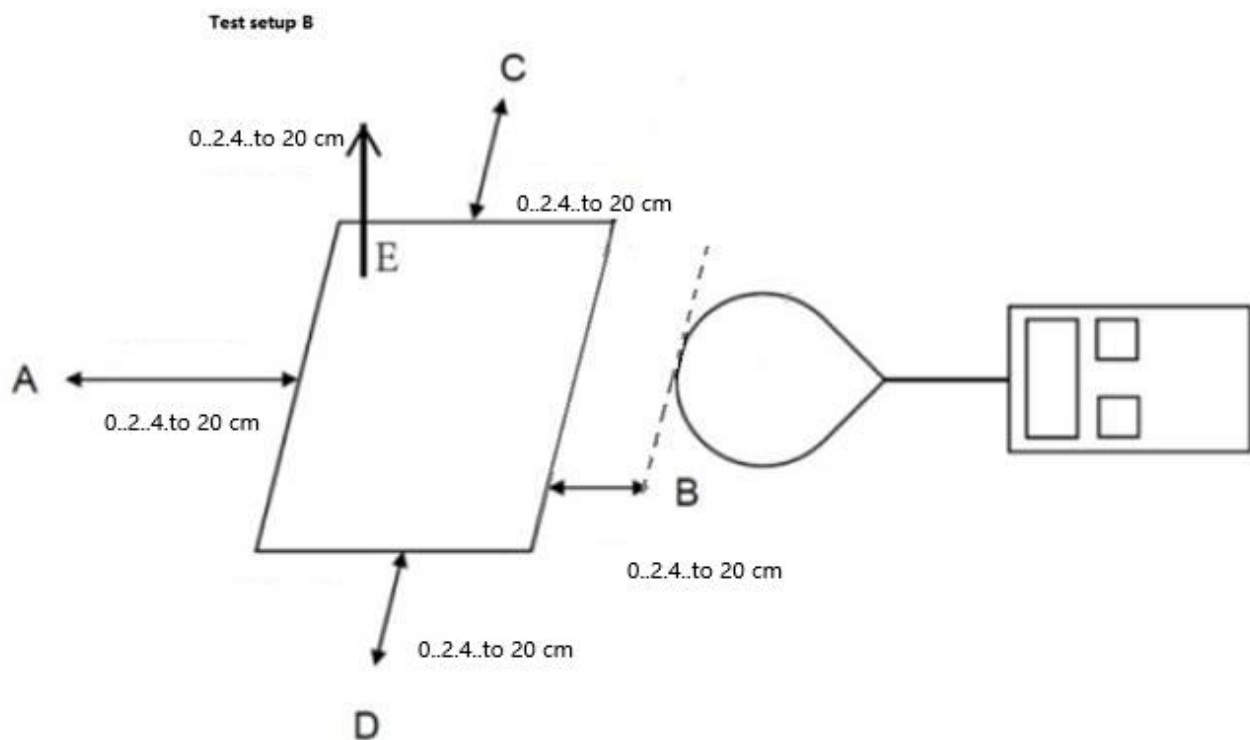
F=frequency in MHz  
 \*=Plane-wave equivalent power density  
 RF exposure compliance will need to be determined with respect to 1.1307(c) and (d) of the FCC rules. The emissions should be within the limits at 300kHz in Table 1 of 1.1310(use the 300kHz limits for 150kHz:614V/m,1.63A/m).

## 4.2. Test Setup

A:

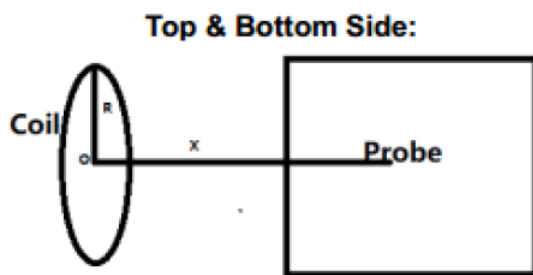


B:

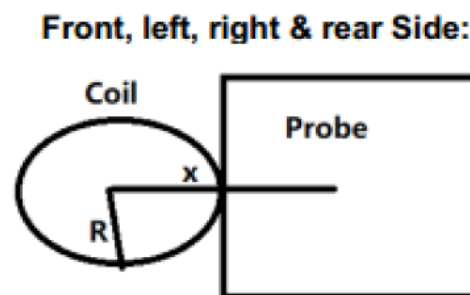


### 4.3. Test Procedure

- 1) The RF exposure test was performed in an echoic chamber;
- 2) The measurement probe was placed at test distance(15 cm from edges, 20 cm and 15cm from top) Which is between the edge of the charger and the geometric center of probe, for test setup A;
- 3) In addition to what is described in KDB 680106 D01, please measure and provide magnetic and electrical field strength at a distance 0cm to 20cm at 2cm iteration, i.e. at a distance of 0cm, 2cm, 4cm, ..... 20cm. Which is between the edge of the charger and the edge of of probe, for test setup B;
- 4) The highest emission leve laws recorded and compared with limit as soon as measurement of each points (A,B, C,D, E)were completed;
- 5) According to the requirements if KDB 680106 D01 v04, If the center of the probe sensing element is located more than 5 mm (The sensitive elements are located approximately 8 mm below the external surface specified in user manual of EHP-200A) from the probe outer surface, the field strengths need to be estimated through modeling for those positions that are not reachable;
- 6) Use **Biot-Savart Law**, the value of 0 cm can be estimated through the results of 2 cm, according to the formula:



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



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

**Remark:**

B: H-field(Unit:T)

$\mu_0$ : Space permeability= $4 * \pi * 10^{-7}$

I (Unit: A): The current element passing through a radiated coil.

R: Radius of radiated coil, according to the coil specification: R=0.022m

X: The distance from the sensing elements of the probe to the edge of the radiated coil (the dimensions of EUT and load are take into account) (Unit: m)

N: Turns of the radiated coil, according to the coil specification: N=11.

### 4.4. Test Instruments List

| Equipment                            | Manufacturer | Model No. | Serial No. | Date of Cal.  | Due Date      |
|--------------------------------------|--------------|-----------|------------|---------------|---------------|
| Electric and Magnetic Field Analyzer | Narda        | EHP-200A  | 180ZX20511 | Jun. 27, 2024 | Jun. 26, 2025 |

## 4.5. Test Result

Note: EUT mode: wireless output 15 W

Test Result for Test setup A:

AC mode

E-Filed Strength at 20 cm surrounding the EUT (V/m)

| Test mode | Test Position A (V/m) | Test Position B (V/m) | Test Position C (V/m) | Test Position D (V/m) | Test Position E (V/m)20cm | Test Position E (V/m)15cm | Limits (V/m) |
|-----------|-----------------------|-----------------------|-----------------------|-----------------------|---------------------------|---------------------------|--------------|
| TM1       | 0.42                  | 0.69                  | 0.67                  | 0.71                  | 0.58                      | 0.73                      | 614          |
| TM2       | 0.41                  | 0.55                  | 0.58                  | 0.60                  | 0.57                      | 0.62                      | 614          |
| TM3       | 0.36                  | 0.36                  | 0.52                  | 0.63                  | 0.56                      | 0.66                      | 614          |

H-Filed Strength at 20 cm surrounding the EUT (A/m)

| Test mode | Test Position A(A/m) | Test Position B(A/m) | Test Position C(A/m) | Test Position D(A/m) | Test Position E(A/m)20cm | Test Position E(A/m)15cm | Limits (A/m) |
|-----------|----------------------|----------------------|----------------------|----------------------|--------------------------|--------------------------|--------------|
| TM1       | 0.32                 | 0.52                 | 0.52                 | 0.55                 | 0.45                     | 0.56                     | 1.63         |
| TM2       | 0.32                 | 0.43                 | 0.44                 | 0.45                 | 0.44                     | 0.48                     | 1.63         |
| TM3       | 0.27                 | 0.026                | 0.41                 | 0.49                 | 0.44                     | 0.50                     | 1.63         |

**Test Result for Test setup B:**  
**DC mode.**

**5W, 7.5W, 15W load all have been tested, only worse case Max load (15W) is reported.**

**H-Filed Strength at (distance 0cm to 20cm at 2cm iteration, i.e. at a distance of 20cm, 18cm, 16cm, ..... 0cm, Which is between the edge of the charger and the edge of of probe,) surrounding the EUT (A/m)**

| Test distance (cm) | Test Position A(A/m) | Test Position B(A/m) | Test Position C(A/m) | Test Position D(A/m) | Test Position E(A/m) | Test Position F(A/m) | Limits (A/m) |
|--------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|--------------|
| 2                  | 0.508                | 0.482                | 0.437                | 0.435                | 0.293                | 0.283                | 1.63         |
| 4                  | 0.437                | 0.431                | 0.371                | 0.353                | 0.138                | 0.124                | 1.63         |
| 6                  | 0.415                | 0.428                | 0.352                | 0.341                | 0.132                | 0.122                | 1.63         |
| 8                  | 0.408                | 0.412                | 0.348                | 0.324                | 0.126                | 0.117                | 1.63         |
| 10                 | 0.377                | 0.403                | 0.327                | 0.322                | 0.119                | 0.115                | 1.63         |
| 12                 | 0.376                | 0.364                | 0.324                | 0.315                | 0.112                | 0.110                | 1.63         |
| 14                 | 0.351                | 0.348                | 0.311                | 0.307                | 0.105                | 0.096                | 1.63         |
| 16                 | 0.349                | 0.346                | 0.308                | 0.295                | 0.089                | 0.087                | 1.63         |
| 18                 | 0.332                | 0.327                | 0.289                | 0.258                | 0.078                | 0.074                | 1.63         |
| 20                 | 0.314                | 0.310                | 0.276                | 0.254                | 0.065                | 0.060                | 1.63         |

Use the Biot-Savart Law to estimated the results of 2cm through 4 cm.

| Test position | Measure Value(A/m) | Estimated Value (A/m) | Agreement Ratio | Limits |
|---------------|--------------------|-----------------------|-----------------|--------|
| A             | 0.508              | 0.583                 | 14.76%          | 30%    |
| B             | 0.482              | 0.679                 | 40.87%          | 30%    |
| C             | 0.437              | 0.564                 | 29.06%          | 30%    |
| D             | 0.435              | 0.541                 | 24.37%          | 30%    |
| E             | 0.293              | 0.356                 | 21.50%          | 30%    |
| F             | 0.283              | 0.365                 | 28.98%          | 30%    |

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

| Test position | Estimated Value (A/m) | Limits(A/m) |
|---------------|-----------------------|-------------|
| A             | 0.767                 | 1.63        |
| B             | 1.123                 |             |
| C             | 0.938                 |             |
| D             | 0.938                 |             |
| E             | 0.996                 |             |
| F             | 1.063                 |             |

#### 4.6. Test Set-up Photo

Please refer to document Appendix No.: TCT250314E054-A

**\*\*\*\*\*END OF REPORT\*\*\*\*\***