



# TEST REPORT

|                                                                                                                                                                                                                       |                                           |                                                          |                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|----------------------------------------------------------|---------------------------------------------------|
| <b>KCTL KCTL Inc.</b><br>65, Sinwon-ro, Yeongtong-gu,<br>Suwon-si, Gyeonggi-do, 16677, Korea<br>TEL: 82-31-285-0894 FAX: 82-505-299-8311<br><a href="http://www.kctl.co.kr">www.kctl.co.kr</a>                        |                                           | Report No.:<br><b>KR20-SRF0289-B</b><br>Page (1) of (13) |                                                   |
| <b>1. Client</b><br>◦ Name : Smart Guardians Inc.<br>◦ Address : #B-1425, 344, Yangcheon-ro, Gangseo-gu, Seoul 07791<br>South Korea<br>◦ Date of Receipt : 2020-10-20                                                 |                                           |                                                          |                                                   |
| <b>2. Use of Report</b> : Certification                                                                                                                                                                               |                                           |                                                          |                                                   |
| <b>3. Name of Product / Model</b> : BeraShield Battery / BB02AI01                                                                                                                                                     |                                           |                                                          |                                                   |
| <b>4. Manufacturer / Country of Origin</b> : SHENZHEN UNIL ELECTRONICS<br>TECHNOLOGY CO LTD / China                                                                                                                   |                                           |                                                          |                                                   |
| <b>5. FCC ID</b> : 2AXTGBB02AI01                                                                                                                                                                                      |                                           |                                                          |                                                   |
| <b>6. Date of Test</b> : 2020-11-02 to 2020-12-03                                                                                                                                                                     |                                           |                                                          |                                                   |
| <b>7. Location of Test</b> : <input checked="" type="checkbox"/> Permanent Testing Lab <input type="checkbox"/> On Site Testing (Address: Address of testing location)                                                |                                           |                                                          |                                                   |
| <b>8. Test method used</b> : 47 CFR Part 1.1310                                                                                                                                                                       |                                           |                                                          |                                                   |
| <b>9. Test Results</b> : Refer to the test result in the test report                                                                                                                                                  |                                           |                                                          |                                                   |
| Affirmation                                                                                                                                                                                                           | Tested by<br>Name : Sumin Kim (Signature) |                                                          | Technical Manager<br>Name : Heesu Ahn (Signature) |
|                                                                                                                                                                                                                       |                                           |                                                          |                                                   |
| 2020-12-03                                                                                                                                                                                                            |                                           |                                                          |                                                   |
| <b>KCTL Inc.</b>                                                                                                                                                                                                      |                                           |                                                          |                                                   |
| As a test result of the sample which was submitted from the client, this report does not guarantee the whole product quality. This test report should not be used and copied without a written agreement by KCTL Inc. |                                           |                                                          |                                                   |

## REPORT REVISION HISTORY

| Date       | Revision          | Page No    |
|------------|-------------------|------------|
| 2020-11-18 | Originally issued | -          |
| 2020-11-26 | Updated           | 4          |
| 2020-12-03 | Updated           | 4, 5, 7-12 |
|            |                   |            |
|            |                   |            |

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Note. The report No. KR20-SRF0289 is superseded by the report No. KR20-SRF0289-A.

## General remarks for test reports

Nothing significant to report.

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## 1. General information

Client : Smart Guardians Inc.  
 Address : #B-1425, 344, Yangcheon-ro, Gangseo-gu, Seoul 07791 South Korea  
 Manufacturer : SHENZHEN UNIL ELECTRONICS TECHNOLOGY CO LTD  
 Address : 2/F, B2 Building Huaxiayuan Industrial Zone, Fuping Road, Pingdi Town, Longgang District, Shenzhen City, China  
 Laboratory : KCTL Inc.  
 Address : 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea  
 Accreditations : FCC Site Designation No: KR0040, FCC Site Registration No: 687132  
 VCCI Registration No. : R-20080, G-20078, C-20059, T-20056  
 Industry Canada Registration No. : 8035A  
 KOLAS No.: KT231

## 2. Device information

Equipment under test : BeraShield Battery  
 Model : BB02AI01  
 Frequency range : WPT\_111 kHz ~ 239 kHz  
 Modulation technique : WPT\_AM  
 Number of channels : 1 ch  
 Power source : DC 9 V  
 Antenna specification : Coil Antenna  
 Software version : Rev 1.0  
 Hardware version : Rev 1.0  
 Operation temperature : -20 °C ~ 50 °C

### 2.1. Accessory information

| Equipment    | Manufacturer | Model    | Serial No. | Power source |
|--------------|--------------|----------|------------|--------------|
| Mobile phone | Samsung      | SM-N950N | -          | -            |

## 2.2 Equipment Approval Considerations

| Requirements of KDB 680106                                                                                                                                                                                                                   | Description                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| (1) Power transfer frequency is less than 1 MHz.                                                                                                                                                                                             | Operating frequency is 111 – 129 kHz                                                                   |
| (2) Output power from each primary coil is less than or equal to 15 watts.                                                                                                                                                                   | Maximum rated charging power is 15W.                                                                   |
| (3) The transfer system includes only single primary and secondary coils. This includes charging systems that may have multiple primary coils and clients that are able to detect and allow coupling only between individual pairs of coils. | The device only has a single coil capable of coupling to a single secondary coil in the client device. |
| (4) Client device is placed directly in contact with the transmitter.                                                                                                                                                                        | The client device has to be placed directly in contact with the charger.                               |
| (5) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).                                                                                                                                        | This device is a portable charger.                                                                     |
| (6) The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.                                          | The highest measured H field was 0.8524A/m which is 52.3% of the limit.                                |

### 3. RF Exposure

#### 3.1. FCC Regulation

This document is prepared to show compliance with the RF Exposure requirements as required in §1.1310 of the FCC rules and Regulations.

The limit for Maximum Permissible Exposure (MPE), specified in FCC §1.1310, is listed in Table 1-1. According to FCC §1.1310: the criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b).

Table 1 – Limits for Maximum Permissible Exposure (MPE)

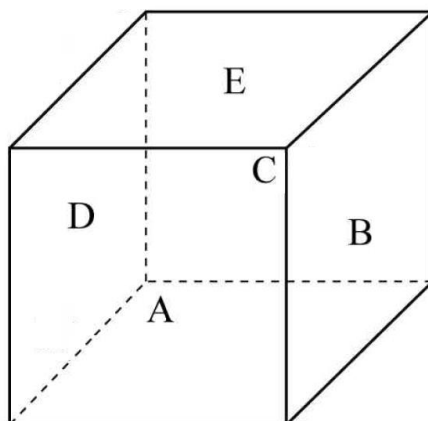
| Frequency Range<br>(MHz)                                  | Electric Field<br>Strength<br>[V/m] | Magnetic Field<br>Strength<br>[A/m] | Power Density<br>[mW/cm <sup>2</sup> ] | Averaging<br>Time<br>[minute] |
|-----------------------------------------------------------|-------------------------------------|-------------------------------------|----------------------------------------|-------------------------------|
| (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 ~ 15 000                                            | /                                   | /                                   | 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/1 500                                | 30                            |
| 1 500 ~ 15 000                                            | /                                   | /                                   | 1.0                                    | 30                            |

*f*=frequency in MHz, \* = plane-wave equivalent power density

## 3.2. Test Set-up

### 3.2.1. Isotropic Probe test setup

The measurement probe (EHP-200A) is a regular hexahedron and supports 3-axis (X, Y and Z) isotropic probe.



A: Front of measurement probe

B: Right of measurement probe

C: Rear of measurement probe

D: Left of measurement probe

E: Top of measurement probe

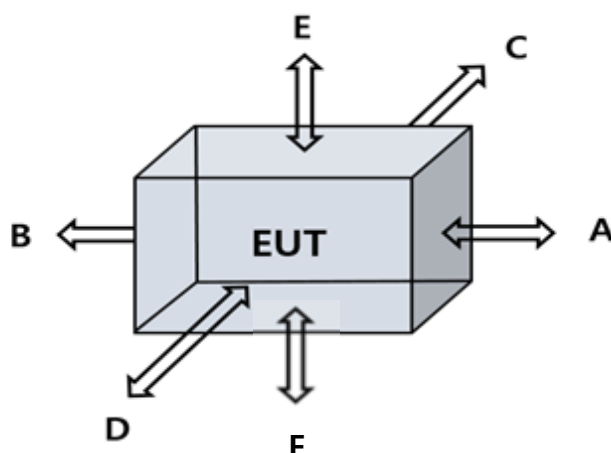
\*Bottom of measurement probe is not used to measure RF exposure condition owing to connection with a stick.

At 0 cm distance, measurement isotropic probe was investigated by rotating the probe through various angles for one of the EUT's sides as below.

| Measurement Point | A              | B             | C            | D             | E   |
|-------------------|----------------|---------------|--------------|---------------|-----|
| Direction         | Front          | Right         | Rear         | Left          | Top |
| Measurement Point | A to B         | B to C        | C to D       | D to A        | N/A |
| Direction         | Front to Right | Right to Rear | Rear to Left | Left to Front | -   |
| Measurement Point | A to E         | B to E        | C to E       | D to E        | N/A |
| Direction         | Front to Top   | Right to Top  | Rear to Top  | Left to Top   | -   |

When the worst angle among all angles was found, RF exposure measurement should be adjusted from worst angle.

### 3.2.2. EUT test setup



- 1) Testing was performed with a calibrated field probe.
- 2) Measurement was performed on each side of the EUT as described per below table.

| A     | B    | C    | D     | E   | F      |
|-------|------|------|-------|-----|--------|
| Right | Left | Rear | Front | Top | Bottom |

- 3) Test was performed at the distances and different battery level as indicated on test result table.

#### - Test mode

In order to measure E-field, H-field in portable condition, we refer to KDB680106 D01. KDB680106 D01 is a guide for evaluating RF exposure and explains how to measure E-field and H-field strength for the surface of EUT. In addition that more detail measurement guidance was referred to previous PAG.

We measure E-field and H-field level of EUT's surface from 0 cm (contact) to possible reading distance (Not Detected level) per 2cm.

- ✓ Further away: measurement distance of EUT was confirmed until isotropic probe could not read fundamental level anymore (Not detected level).
- ✓ Moving closer: measurement isotropic probe directly contacts with sides of EUT (0 cm)
- ✓ When the worst level of EUT's sides is found out, several measurements should be checked through various distance (2 cm step).

|                      |                                                |
|----------------------|------------------------------------------------|
| Measurement Probe    | EHP-200A (Manufacturer: Narda)                 |
| Measurement Method   | Direct measurement                             |
| Measurement Distance | Surface of the EUT to the center of the probe. |

### 3.3. Test configuration (Description of test mode)

Test case configuration is reported as below.

| Test Mode | Description                               |
|-----------|-------------------------------------------|
| TM1       | EUT + Mobile phone(Battery status: < 10%) |
| TM2       | EUT + Mobile phone(Battery status: < 50%) |
| TM3       | EUT + Mobile phone(Battery status: > 90%) |

### 3.4. Test result

#### 3.4.1. Test mode: test result of rotating the probe through various angles

- E-field measurement results (Sides of probe)

| Frequency<br>[MHz] | Distance<br>[cm] | E-field Measurement [V/m] |         |         |         |                | Limits<br>[V/m] |
|--------------------|------------------|---------------------------|---------|---------|---------|----------------|-----------------|
|                    |                  | Probe rotation            |         |         |         |                |                 |
|                    |                  | A                         | B       | C       | D       | E              |                 |
| 0.127              | 0                | 0.513 4                   | 0.472 6 | 0.426 7 | 0.531 7 | <b>0.647 5</b> | 614.00          |

- H-field measurement results (Sides of probe)

| Frequency<br>[MHz] | Distance<br>[cm] | H-field Measurement [A/m] |         |         |         |                | Limits<br>[A/m] |
|--------------------|------------------|---------------------------|---------|---------|---------|----------------|-----------------|
|                    |                  | Probe rotation            |         |         |         |                |                 |
|                    |                  | A                         | B       | C       | D       | E              |                 |
| 0.127              | 0                | 0.049 8                   | 0.109 9 | 0.123 6 | 0.035 3 | <b>0.145 4</b> | 1.63            |

- E-field measurement results (Rotation of probe)

| Frequency<br>[MHz] | Distance<br>[cm] | E-field Measurement [V/m] |         |         |         |         |         |         |         | Limits<br>[V/m] |
|--------------------|------------------|---------------------------|---------|---------|---------|---------|---------|---------|---------|-----------------|
|                    |                  | Probe rotation            |         |         |         |         |         |         |         |                 |
|                    |                  | A to B                    | B to C  | C to D  | D to A  | A to E  | B to E  | C to E  | D to E  |                 |
| 0.127              | 0                | 0.621 4                   | 0.607 5 | 0.613 4 | 0.631 5 | 0.516 5 | 0.524 7 | 0.431 5 | 0.481 6 | 614             |

- H-field measurement results (Rotation of probe)

| Frequency<br>[MHz] | Distance<br>[cm] | H-field Measurement [A/m] |         |         |         |         |         |         |         | Limits<br>[A/m] |
|--------------------|------------------|---------------------------|---------|---------|---------|---------|---------|---------|---------|-----------------|
|                    |                  | Probe rotation            |         |         |         |         |         |         |         |                 |
|                    |                  | A to B                    | B to C  | C to D  | D to A  | A to E  | B to E  | C to E  | D to E  |                 |
| 0.127              | 0                | 0.124 7                   | 0.135 5 | 0.124 0 | 0.132 8 | 0.068 1 | 0.067 4 | 0.079 5 | 0.089 1 | 1.63            |

#### Note:

- Worst Case: one of the several angles was found as **E-side** of isotropic probe.

### 3.4.2. Test mode: Test result of EUT's sides about the distance

- E-field measurement results

| Test Mode | Frequency [MHz] | Distance [cm] | E-field Measurement [V/m]                          |         |         |         |         |         | Limits [V/m] |
|-----------|-----------------|---------------|----------------------------------------------------|---------|---------|---------|---------|---------|--------------|
|           |                 |               | EUT sides                                          |         |         |         |         |         |              |
|           |                 |               | A                                                  | B       | C       | D       | E       | F       |              |
| TM1       | 0.127           | 0             | 0.867 1                                            | 0.835 4 | 0.971 3 | 0.726 7 | 2.759 0 | 2.430 7 | 614          |
|           | 0.127           | 2             | -                                                  | -       | -       | -       | 1.654 8 | -       |              |
|           | 0.127           | 4             | -                                                  | -       | -       | -       | 1.320 6 | -       |              |
|           | 0.127           | 6             | -                                                  | -       | -       | -       | 0.984 2 | -       |              |
|           | 0.127           | 8             | -                                                  | -       | -       | -       | 0.765 4 | -       |              |
|           | 0.127           | 10            | -                                                  | -       | -       | -       | 0.688 4 | -       |              |
|           | 0.127           | 12            | -                                                  | -       | -       | -       | 0.387 6 | -       |              |
|           | 0.127           | 14            | -                                                  | -       | -       | -       | 0.289 9 | -       |              |
|           | 0.127           | 16            | -                                                  | -       | -       | -       | 0.264 7 | -       |              |
|           | 0.127           | 18            | -                                                  | -       | -       | -       | 0.254 8 | -       |              |
|           | 0.127           | 20            | -                                                  | -       | -       | -       | 0.253 3 | -       |              |
|           | 0.127           | -             | Not detected (similar level between 16cm and 20cm) |         |         |         |         |         |              |
| TM2       | 0.127           | 0             | 0.646 8                                            | 0.696 4 | 0.774 1 | 0.528 3 | 2.576 1 | 2.267 4 |              |
|           | 0.127           | 2             | -                                                  | -       | -       | -       | 1.602 4 | -       |              |
|           | 0.127           | 4             | -                                                  | -       | -       | -       | 1.122 3 | -       |              |
|           | 0.127           | 6             | -                                                  | -       | -       | -       | 0.876 4 | -       |              |
|           | 0.127           | 8             | -                                                  | -       | -       | -       | 0.523 0 | -       |              |
|           | 0.127           | 10            | -                                                  | -       | -       | -       | 0.468 7 | -       |              |
|           | 0.127           | 12            | -                                                  | -       | -       | -       | 0.402 1 | -       |              |
|           | 0.127           | 14            | -                                                  | -       | -       | -       | 0.297 6 | -       |              |
|           | 0.127           | 16            | -                                                  | -       | -       | -       | 0.253 1 | -       |              |
|           | 0.127           | 18            | -                                                  | -       | -       | -       | 0.251 7 | -       |              |
|           | 0.127           | 20            | -                                                  | -       | -       | -       | 0.252 0 | -       |              |
|           | 0.127           | -             | Not detected (similar level between 16cm and 20cm) |         |         |         |         |         |              |
| TM3       | 0.127           | 0             | 0.647 5                                            | 0.850 0 | 0.442 5 | 0.628 3 | 2.303 0 | 2.660 1 |              |
|           | 0.127           | 2             | -                                                  | -       | -       | -       | 1.120 7 | -       |              |
|           | 0.127           | 4             | -                                                  | -       | -       | -       | 0.975 5 | -       |              |
|           | 0.127           | 6             | -                                                  | -       | -       | -       | 0.720 8 | -       |              |
|           | 0.127           | 8             | -                                                  | -       | -       | -       | 0.458 0 | -       |              |
|           | 0.127           | 10            | -                                                  | -       | -       | -       | 0.400 0 | -       |              |
|           | 0.127           | 12            | -                                                  | -       | -       | -       | 0.330 9 | -       |              |
|           | 0.127           | 14            | -                                                  | -       | -       | -       | 0.272 1 | -       |              |
|           | 0.127           | 16            | -                                                  | -       | -       | -       | 0.256 8 | -       |              |
|           | 0.127           | 18            | -                                                  | -       | -       | -       | 0.248 8 | -       |              |
|           | 0.127           | 20            | -                                                  | -       | -       | -       | 0.231 5 | -       |              |
|           | 0.127           | -             | Not detected (similar level between 16cm and 20cm) |         |         |         |         |         |              |

- H-field measurement results

| Test Mode | Frequency [MHz] | Distance [cm] | H-field Measurement [A/m]                          |         |         |         |         |         | Limits [A/m] |
|-----------|-----------------|---------------|----------------------------------------------------|---------|---------|---------|---------|---------|--------------|
|           |                 |               | EUT sides                                          |         |         |         |         |         |              |
|           |                 |               | A                                                  | B       | C       | D       | E       | F       |              |
| TM1       | 0.127           | 0             | 0.424 6                                            | 0.435 1 | 0.567 1 | 0.417 5 | 0.852 4 | 0.625 7 | 1.63         |
|           | 0.127           | 2             | -                                                  | -       | -       | -       | 0.446 7 | -       |              |
|           | 0.127           | 4             | -                                                  | -       | -       | -       | 0.267 1 | -       |              |
|           | 0.127           | 6             | -                                                  | -       | -       | -       | 0.167 5 | -       |              |
|           | 0.127           | 8             | -                                                  | -       | -       | -       | 0.097 2 | -       |              |
|           | 0.127           | 10            | -                                                  | -       | -       | -       | 0.073 2 | -       |              |
|           | 0.127           | 12            | -                                                  | -       | -       | -       | 0.055 1 | -       |              |
|           | 0.127           | 14            | -                                                  | -       | -       | -       | 0.043 1 | -       |              |
|           | 0.127           | 16            | -                                                  | -       | -       | -       | 0.038 1 | -       |              |
|           | 0.127           | 18            | -                                                  | -       | -       | -       | 0.038 5 | -       |              |
|           | 0.127           | 20            | -                                                  | -       | -       | -       | 0.037 6 | -       |              |
|           | 0.127           | -             | Not detected (similar level between 16cm and 20cm) |         |         |         |         |         |              |
| TM2       | 0.127           | 0             | 0.353 4                                            | 0.435 7 | 0.610 7 | 0.400 5 | 0.739 5 | 0.619 3 |              |
|           | 0.127           | 2             | -                                                  | -       | -       | -       | 0.216 7 | -       |              |
|           | 0.127           | 4             | -                                                  | -       | -       | -       | 0.146 2 | -       |              |
|           | 0.127           | 6             | -                                                  | -       | -       | -       | 0.098 6 | -       |              |
|           | 0.127           | 8             | -                                                  | -       | -       | -       | 0.077 2 | -       |              |
|           | 0.127           | 10            | -                                                  | -       | -       | -       | 0.064 8 | -       |              |
|           | 0.127           | 12            | -                                                  | -       | -       | -       | 0.051 3 | -       |              |
|           | 0.127           | 14            | -                                                  | -       | -       | -       | 0.046 7 | -       |              |
|           | 0.127           | 16            | -                                                  | -       | -       | -       | 0.048 2 | -       |              |
|           | 0.127           | 18            | -                                                  | -       | -       | -       | 0.039 8 | -       |              |
|           | 0.127           | 20            | -                                                  | -       | -       | -       | 0.037 5 | -       |              |
|           | 0.127           | -             | Not detected (similar level between 16cm and 20cm) |         |         |         |         |         |              |
| TM3       | 0.127           | 0             | 0.345 4                                            | 0.413 3 | 0.536 9 | 0.301 6 | 0.624 5 | 0.263 5 |              |
|           | 0.127           | 2             | -                                                  | -       | -       | -       | 0.282 8 | -       |              |
|           | 0.127           | 4             | -                                                  | -       | -       | -       | 0.136 4 | -       |              |
|           | 0.127           | 6             | -                                                  | -       | -       | -       | 0.081 7 | -       |              |
|           | 0.127           | 8             | -                                                  | -       | -       | -       | 0.062 1 | -       |              |
|           | 0.127           | 10            | -                                                  | -       | -       | -       | 0.047 1 | -       |              |
|           | 0.127           | 12            | -                                                  | -       | -       | -       | 0.043 1 | -       |              |
|           | 0.127           | 14            | -                                                  | -       | -       | -       | 0.042 0 | -       |              |
|           | 0.127           | 16            | -                                                  | -       | -       | -       | 0.037 4 | -       |              |
|           | 0.127           | 18            | -                                                  | -       | -       | -       | 0.038 6 | -       |              |
|           | 0.127           | 20            | -                                                  | -       | -       | -       | 0.037 1 | -       |              |
|           | 0.127           | -             | Not detected (similar level between 16cm and 20cm) |         |         |         |         |         |              |

**Note:**

- Above RF exposure measurement was performed considering worst position (E-side) of isotropic probe.

### 3.5 Measurement Equipment

| Equipment Name  | Manufacturer | Model No. | Serial No. | Next Cal. Date |
|-----------------|--------------|-----------|------------|----------------|
| E&H Field Probe | Narda        | EHP-200A  | 170WX81015 | 21.02.14       |

**End of test report**