# TEST REPORT

| | |
|---|---|
| **Applicant:** | Shenzhen Esorun Technology Co.,LTD |
| **Address of Applicant:** | 10F, Mingzhuo Building, Mingzhuoxing Industrial Park, Guangming Street, Guangming District, Shenzhen |
| **Manufacturer/Factory:** | Shenzhen Esorun Technology Co.,LTD |
| **Address of Manufacturer/Factory:** | 10F, Mingzhuo Building, Mingzhuoxing Industrial Park, Guangming Street, Guangming District, Shenzhen |

**Equipment Under Test (EUT)**

| | |
|---|---|
| Product Name: | Wireless Charger |
| Model No.: | Air |
| Trade mark: | ESORUN |
| **FCC ID:** | 2AP2N-AIR |
| **Applicable standards:** | FCC CFR Title 47 Part 15 Subpart C |
| **Date of sample receipt:** | April 27, 2018 |
| **Date of Test:** | April 27, 2018-May 24, 2018 |
| **Date of report issued:** | May 25, 2018 |
| **Test Result :** | PASS * |

Authorized Signature:

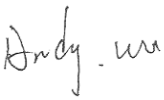
**Robinson Lo**
**Laboratory Manager**

# Version

| Version No. | Date | Description |
|---|---|---|
| *00* | *May 25, 2018* | *Original* |
| | | |
| | | |
| | | |
| | | |

***Prepared By:***  ***Date:*** ***May 25, 2018***

***Project Engineer***

***Check By:***  ***Date:*** ***May 25, 2018***

***Reviewer***

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# 1. Test Certification

| | |
|---|---|
| **Product:** | Wireless Charger |
| **Model No.:** | Air |
| **Additional Model No.:** | N/A |
| | |
| **Trade Mark:** | ESORUN |
| **Applicant:** | Shenzhen Esorun Technology Co.,LTD |
| **Address:** | 10F, Mingzhuo Building, Mingzhuoxing Industrial Park, Guangming Street, Guangming District, Shenzhen |
| **Manufacturer:** | Shenzhen Esorun Technology Co.,LTD |
| **Address:** | 10F, Mingzhuo Building, Mingzhuoxing Industrial Park, Guangming Street, Guangming District, Shenzhen |
| **Applicable Standards:** | FCC Rules and Regulations KDB680106 |

*The above equipment has been tested by Global United Technology Services Co., Ltd. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.*

# 2. Test Result Summary

| Requirement | CFR 47 Section | Result |
|---|---|---|
| RF EXPOSURE | §1.1307(b)(1) & KDB680106 | PASS |

***Note:***

*1. PASS: Test item meets the requirement.*

*2. Fail: Test item does not meet the requirement.*

*3. N/A: Test case does not apply to the test object.*

*4. The test result judgment is decided by the limit of test standard.*

# 3. EUT Description

| | |
|---|---|
| **Product:** | Wireless Charger |
| **Model No.:** | Air |
| **Additional Model No.:** | N/A |
| | |
| **Trade Mark:** | ESORUN |
| **Number of Channel** | 18 channels |
| **Operation Frequency:** | 120-205KHz |
| **Modulation Technology:** | PFM |
| **Antenna Type:** | Coil Antenna |
| **Antenna Gain:** | 10dBi |

| Conditions requirement | Answers |
|---|---|
| Power transfer frequency is less that 1 MHz | After measuring the product the transfer frequency is 120-205KHz |
| Output power from each primary coil is less than 15 watts | After measuring the product the each primary coil power is 10 watts |
| 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 oils | The wireless charger has two primary coils, the primary coils was in the charger, the secondary coils in the mobile phone. |
| Client device is inserted in or placed directly in contact with the transmitter | Client device is placed directly in contact with the transmitter |
| 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. | After measuring the product the Max E-Filed Strength is 1.24V/m Far less than 50% of the MPE limit. |

**Operation Frequency each of channel**

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|---|---|---|---|
| 1 | 0.120 | 6 | 0.145 | 11 | 0.170 | 16 | 0.195 |
| 2 | 0.125 | 7 | 0.150 | 12 | 0.175 | 17 | 0.200 |
| 3 | 0.130 | 8 | 0.155 | 13 | 0.180 | 18 | 0.205 |
| 4 | 0.135 | 9 | 0.160 | 14 | 0.185 | 19 | |
| 5 | 0.140 | 10 | 0.165 | 15 | 0.190 | 20 | |

# 4. Genera Information

## 4.1. Test environment and mode

| Operating Environment: | |
|---|---|
| Temperature: | 25.0 °C |
| Humidity: | 56 % RH |
| Atmospheric Pressure: | 1010 mbar |
| **Test Mode:** | |
| Engineering mode: | Keep the EUT in continuous transmitting by select channel and modulations(The value of duty cycle is 98%) with Notebook. |
| The sample was placed (0.8m below 1GHz, 1.5m above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.<br>Both DC 5V and DC 9V output modes are tested, and results in this report are for DC 9V output. | |

## 4.2. 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. | Certification | Trade Name |
|---|---|---|---|---|
| Notebook | ZQT | N/A | DOC | ACER |
| Receiver | N/A | N/A | N/A | N/A |
| Load | N/A | N/A | N/A | Load |
| Mobile Phone | A1864 | N/A | DOC | Apple |

***Note:***

*1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*

*2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*

*3. For conducted measurements (Output Power, 6dB Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.*

# 5. Facilities and Accreditations

## 5.1. Facilities

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

● Industry Canada (IC) —Registration No.: 9079A-2

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2, August 15, 2016.

## 5.2. Location

Global United Technology Services Co., Ltd.

Address: No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480

Fax: 0755-27798960

## 5.3. Measurement Uncertainty

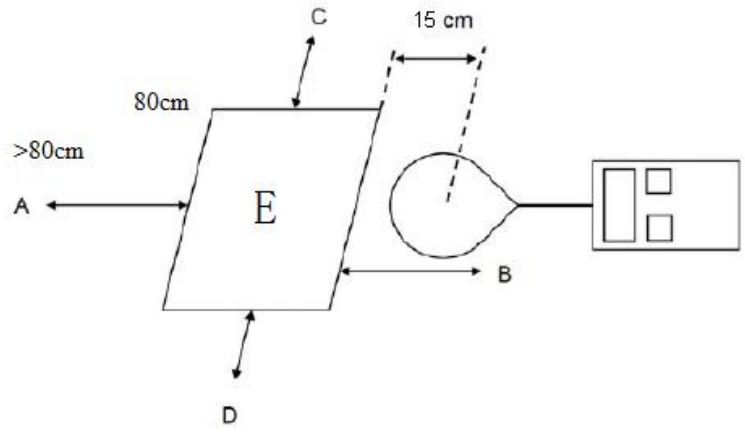
The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

| No. | Item | MU |
|---|---|---|
| 1 | Conducted Emission | ±2.56dB |
| 2 | RF power, conducted | ±0.12dB |
| 3 | Spurious emissions, conducted | ±0.11dB |
| 4 | All emissions, radiated(<1G) | ±3.92dB |
| 5 | All emissions, radiated(>1G) | ±4.28dB |
| 6 | Temperature | ±0.1°C |
| 7 | Humidity | ±1.0% |

# 6. Test Results and Measurement Data

## 6.1. RF EXPOSURE TEST

### 6.1.1. Test Specification

| | |
|---|---|
| **Test Requirement:** | **FCC Rules and Regulations KDB680106** |
| **Test Method:** | §1.1307(b)(1) & KDB680106 |
| **Limits:** | According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines. According to §1.1310 and §2.1093 RF exposure is calculated. According KDB680106 D01v03: RF Exposure Wireless Charging Apps v03. |
| **Test Setup:** |  |
| **Test Mode:** | Charging + Transmitting Mode |
| **Test Procedure:** | 1. The RF exposure test was performed on 360 degree turn table in anechoic chamber.<br>2. The measurement probe was placed at test distance (10cm) which is between the edge of the charger and the geometric centre of probe.<br>3. The turn table was rotated 360d degree to search of highest strength.<br>4. The highest emission level was recorded and compared with limit as soon as measurement of each points (A, B, C, D, E) were completed.<br>5. The EUT were measured according to the dictates of KDB 680106 D01v03. |
| **Test Result:** | PASS |

### 6.1.2. Test Instruments

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | Exposure Level Tester | narda | ELT-400 | N-0231 | 2017.09.29 | 1 Year |
| 2. | Magnetic field probe 100cm2 | narda | ELT probe 100cm2 | M0675 | 2017.09.29 | 1 Year |

### 6.1.3. Test data

For Full load mode:
E-Filed Strength at 15 cm from the edges surrounding the EUT (V/m)

| Frequency Range (MHz) | Test Position A | Test Position B | Test Position C | Test Position D | Test Position E | Reference Limit (V/m) | Limits Test (V/m) |
|---|---|---|---|---|---|---|---|
| 0. 205 | 1.21 | 1.22 | 1.24 | 1.22 | 1.14 | 184.2 | 614 |

H-Filed Strength at 15 cm from the edges surrounding the EUT (A/m)

| Frequency Range (MHz) | Test Position A | Test Position B | Test Position C | Test Position D | Test Position E | Reference Limit (A/m) | Limits Test (V/m) |
|---|---|---|---|---|---|---|---|
| 0. 205 | 0.24 | 0.22 | 0.24 | 0.21 | 0.17 | 0.489 | 1.63 |

For Half load mode:
E-Filed Strength at 15 cm from the edges surrounding the EUT (V/m)

| Frequency Range (MHz) | Test Position A | Test Position B | Test Position C | Test Position D | Test Position E | Reference Limit (V/m) | Limits Test (V/m) |
|---|---|---|---|---|---|---|---|
| 0.165 | 1.17 | 1.19 | 1.18 | 1.17 | 1.12 | 184.2 | 614 |

H-Filed Strength at 15 cm from the edges surrounding the EUT (A/m)

| Frequency Range (MHz) | Test Position A | Test Position B | Test Position C | Test Position D | Test Position E | Reference Limit (A/m) | Limits Test (V/m) |
|---|---|---|---|---|---|---|---|
| 0.165 | 0.18 | 0.18 | 0.19 | 0.18 | 0.17 | 0.489 | 1.63 |

For No load mode:
E-Filed Strength at 15 cm from the edges surrounding the EUT (V/m)

| Frequency Range (MHz) | Test Position A | Test Position B | Test Position C | Test Position D | Test Position E | Reference Limit (V/m) | Limits Test (V/m) |
|---|---|---|---|---|---|---|---|
| 0.120 | 1.15 | 1.16 | 1.16 | 1.15 | 1.12 | 184.2 | 614 |

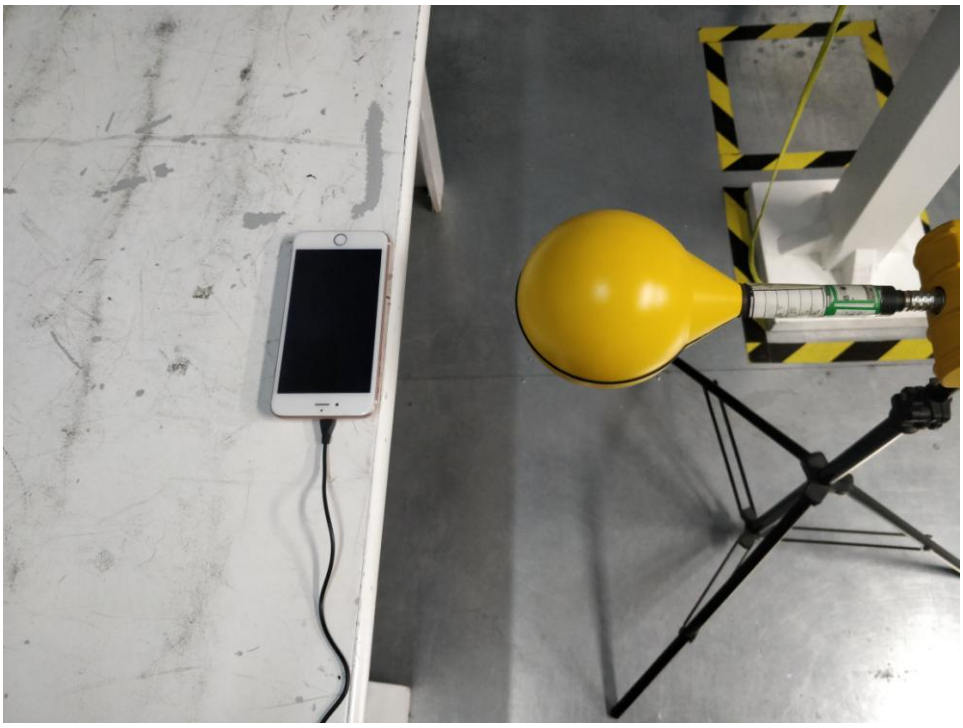
H-Filed Strength at 15 cm from the edges surrounding the EUT (A/m)

| Frequency Range (MHz) | Test Position A | Test Position B | Test Position C | Test Position D | Test Position E | Reference Limit (A/m) | Limits Test (V/m) |
|---|---|---|---|---|---|---|---|
| 0.120 | 0.18 | 0.18 | 0.17 | 0.17 | 0.15 | 0.489 | 1.63 |

# Appendix A: Photographs of Test Setup

Product: Wireless Charger
Model: Air

For Full load mode



For No load mode

## Appendix B: Photographs of EUT

Refer to test report GTS201806000073F01

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