

FCC

MPE

TEST REPORT

ISSUED BY  
Shenzhen BALUN Technology Co., Ltd.



FOR  
**Wireless charging pad**

ISSUED TO  
JACS Solutions, Inc.

809 Pinnacle Drive, Suite R, Linthicum Heights, MD 21090



Tested by: Zong Liyao  
Zong Liyao  
Date Mar. 05, 2021

Approved by: Wei Yanquan  
Wei Yanquan  
(Chief Engineer)  
Date Mar. 05, 2021

Report No.: BL-SZ2110528-701  
EUT Name: Wireless charging pad  
Model Name: CP75C  
Brand Name: N/A  
Test Standard: 47 CFR Part 1.1307  
47 CFR Part 1.1310  
FCC ID: 2AGCDJACSCP75C1

Test Conclusion: Pass  
Test Date: Jan. 26, 2021 ~ Jan. 27, 2021  
Date of Issue: Mar. 05, 2021

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**Revision History**

| Version        | Issue Date           | Revisions Content    |
|----------------|----------------------|----------------------|
| <u>Rev. 01</u> | <u>Mar. 05, 2021</u> | <u>Initial Issue</u> |

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# 1 GENERAL INFORMATION

## 1.1 Identification of the Testing Laboratory

|              |                                                                                                                                  |
|--------------|----------------------------------------------------------------------------------------------------------------------------------|
| Company Name | Shenzhen BALUN Technology Co., Ltd.                                                                                              |
| Address      | Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China. |
| Phone Number | +86 755 6685 0100                                                                                                                |
| Fax Number   | +86 755 6182 4271                                                                                                                |

## 1.2 Identification of the Responsible Testing Location

|               |                                                                                                                                                                                                                     |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Location | Shenzhen BALUN Technology Co., Ltd.                                                                                                                                                                                 |
| Address       | Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China.                                                                                    |
| Description   | All measurement facilities used to collect the measurement data are located at Block B, FL 1, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China 518055 |

## 1.3 Test Environment Condition

|                           |                |
|---------------------------|----------------|
| Ambient Temperature       | 21 to 23 °C    |
| Ambient Relative Humidity | 40 to 50%      |
| Ambient Pressure          | 100 to 102 KPa |

## 1.4 Announce

- (1) The test report reference to the report template version v1.2.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.
- (5) This document may not be altered or revised in any way unless done so by BALUN and all revisions are duly noted in the revisions section.
- (6) 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.
- (7) 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 Applicant Information

|           |                                                          |
|-----------|----------------------------------------------------------|
| Applicant | JACS Solutions, Inc.                                     |
| Address   | 809 Pinnacle Drive, Suite R, Linthicum Heights, MD 21090 |

### 2.2 Manufacturer Information

|              |                                                          |
|--------------|----------------------------------------------------------|
| Manufacturer | JACS Solutions, Inc.                                     |
| Address      | 809 Pinnacle Drive, Suite R, Linthicum Heights, MD 21090 |

### 2.3 Factory Information

|         |     |
|---------|-----|
| Factory | N/A |
| Address | N/A |

### 2.4 General Description for Equipment under Test (EUT)

|                                           |                             |
|-------------------------------------------|-----------------------------|
| EUT Name                                  | Wireless charging pad       |
| Model Name Under Test                     | CP75C                       |
| Series Model Name                         | N/A                         |
| Description of Model name differentiation | N/A                         |
| Hardware Version                          | ZW-ZWY-TG801 -20201012-V1.2 |
| Software Version                          | 8A1E                        |
| Dimensions (Approx.)                      | N/A                         |
| Weight (Approx.)                          | N/A                         |

### 2.5 Ancillary Equipment

Note: Not applicable.

### 2.6 Technical Information

|                                   |     |
|-----------------------------------|-----|
| Network and Wireless connectivity | PWM |
|-----------------------------------|-----|

The requirement for the following technical information of the EUT was tested in this report:

|                     |                                                                                                  |
|---------------------|--------------------------------------------------------------------------------------------------|
| Operating Frequency | 119~173 kHz                                                                                      |
| Antenna Type        | Coil Antenna                                                                                     |
| About Product       | The EUT only support the PWM technology.                                                         |
| Exposure Category   | General Population/Uncontrolled exposure                                                         |
| EUT Stage           | Mobile Device                                                                                    |
| Product             | Type                                                                                             |
|                     | <input checked="" type="checkbox"/> Production unit <input type="checkbox"/> Identical prototype |

### 3 STANDARD INFORMATION

#### 3.1 Test Standard

| No. | Identity       | Document Title                                                                         |
|-----|----------------|----------------------------------------------------------------------------------------|
| 1   | 47 CFR Part 1  | Practice and Procedure                                                                 |
| 2   | KDB 680106 D01 | RF Exposure Considerations for Low Power Consumer Wireless Power Transfer Applications |

#### 3.2 Radiofrequency Radiation Exposure Limit

| 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                       |
| <i>f = frequency in MHz * = Plane-wave equivalent power density</i> |                               |                               |                                       |                          |

NOTE:

**Limits:** According KDB 680106 D01, emissions between 100 kHz to 300 kHz should be assessed versus the limits at 300 kHz in Table 1 of Section 1.1310: 614 V/m and 1.63 A/m.

**General Population/Uncontrolled Exposure:** Locations where there is the exposure of individuals who have no knowledge or control of their exposure. General population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

**Occupational/Controlled Exposure:** Locations where there is exposure that may be incurred by persons who are aware of the potential for exposure. In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

### 3.3 Measurement Uncertainty

Measurement uncertainty evaluation for electric filed strength and magnetic filed strength test

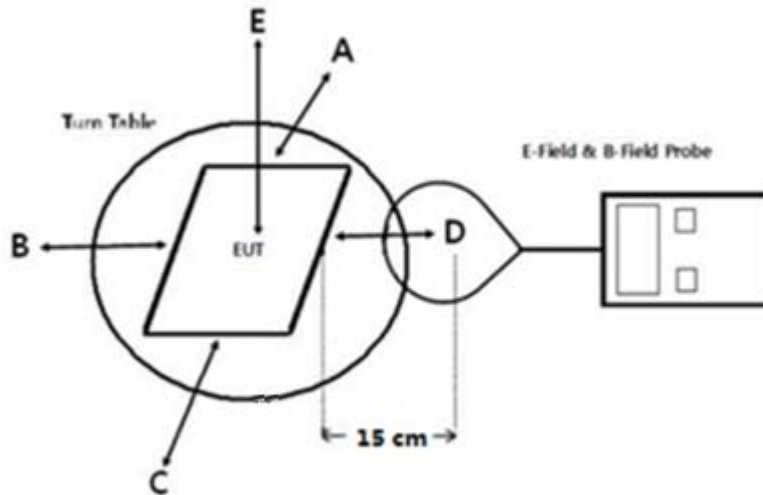
This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

| Measurement             | Value   |
|-------------------------|---------|
| Electric Filed Strength | 1.13 dB |
| Magnetic Filed Strength | 1.18 dB |

## 4 TEST SETUP

### 4.1 Test Setup Photo

Maximum H-field and E-field measurements were made on each of five sides of the EUT that could come in contact with a user. The five sides are defined as follows: Top (A), Left (B), Bottom (C), Right (D) and Front (E). Refer to the test position diagram below.



### 4.2 Measurement procedure

1. The RF exposure test was performed in anechoic chamber.
2. The measurement probe was placed at test distance (15 cm) 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) were completed.
4. The EUT was measured according the dictates of KDB 680106 D01v03r01.

### 4.3 Mobile Condition

| Probe   | Condition | Test Distance (cm)<br>A/B/C/D | Test Distance (cm)<br>E |
|---------|-----------|-------------------------------|-------------------------|
| H-field | Mobile    | 15                            | 20                      |
| E-field | Mobile    | 15                            | 20                      |



#### 4.4 Equipment Approval Considerations item 5.2 of KDB 680106 D01 v03r01.

1. Power transfer frequency is less than 1 MHz.
  - The device operates at a frequency 119~173 kHz.
2. Output power from each primary coil is less than or equal to 15 watts.
  - Output power from primary coil 10 watts.
3. The system may consist of more than one source primary coils, charging one or more clients. If more than one primary coil is present, the coil pairs may be powered on at the same time.
  - The transfer system including a charging system with one coils that is able to detect receiver device.
4. Client device is placed directly in contact with the transmitter.
  - Client device is placed directly in contact with the transmitter.
5. Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).
  - On the normal use this EUT only support mobile exposure condition.
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.
  - Refer to following test results.

The EUT E-Field Strength levels at 15 cm < 50 % of the MPE E-Field Strength limit 307.0 V/m  
6.450 V/m (Max. at 15 cm) < 307 V/m

The EUT H-Field Strength levels at 15 cm < 50 % of the MPE H-Field Strength limit  
0.062 A/m (Max. at 15 cm) < 0.815 A/m

#### 4.5 Test Equipment

| Description       | Manufacturer  | Model        | Serial No.   | Cal. Date  | Cal. Due   |
|-------------------|---------------|--------------|--------------|------------|------------|
| H-field Probe     | SCHWARZBECK   | FESP 5134-40 | 5134-40-242  | 2020.10.09 | 2021.10.08 |
| E-field Probe     | Narda         | EP-602       | 611WX80276   | 2020.06.08 | 2021.06.08 |
| Spectrum Analyzer | ROHDE&SCHWARZ | FSV-30       | 103118       | 2020.06.08 | 2021.06.08 |
| Anechoic Chamber  | RAINFORD      | 9m*6m*6m     | N/A          | 2020.02.18 | 2021.02.17 |
| Tablet            | GTL           | TG801        | 4846C1226472 | N/A        | N/A        |

#### 4.6 Test Configuration

To check all kinds of possible modes, the EUT was evaluated with appropriate client and under each charging condition as the below table:

| Test Mode NO. | Description   |                                                    |
|---------------|---------------|----------------------------------------------------|
| 1             | Charging Mode | AC/DC Adapter + EUT+ Tablet (Battery Status: <1%)  |
| 2             | Charging Mode | AC/DC Adapter + EUT+ Tablet (Battery Status: <50%) |
| 3             | Charging Mode | AC/DC Adapter + EUT+ Tablet (Battery Status: 100%) |

## 5 TEST RESULT

### 5.1 H-field

| Distance<br>(cm) | Test Mode | EUT Edges  |            |            |            | Limit<br>(A/m) |
|------------------|-----------|------------|------------|------------|------------|----------------|
|                  |           | A<br>(A/m) | B<br>(A/m) | C<br>(A/m) | D<br>(A/m) |                |
| 15               | 1         | 0.075      | 0.053      | 0.062      | 0.071      | 1.63           |
|                  | 2         | 0.072      | 0.055      | 0.063      | 0.075      |                |
|                  | 3         | 0.076      | 0.061      | 0.061      | 0.077      |                |

| Distance<br>(cm) | Test Mode | EUT Edge   | Limit<br>(A/m) |
|------------------|-----------|------------|----------------|
|                  |           | E<br>(A/m) |                |
| 20               | 1         | 0.056      | 1.63           |
|                  | 2         | 0.051      |                |
|                  | 3         | 0.058      |                |

### 5.2 E-field

| Distance<br>(cm) | Test Mode | EUT Edges  |            |            |            | Limit<br>(V/m) |
|------------------|-----------|------------|------------|------------|------------|----------------|
|                  |           | A<br>(V/m) | B<br>(V/m) | C<br>(V/m) | D<br>(V/m) |                |
| 15               | 1         | 9.945      | 8.052      | 9.156      | 10.165     | 614            |
|                  | 2         | 9.785      | 8.042      | 8.956      | 9.905      |                |
|                  | 3         | 10.345     | 8.042      | 9.166      | 10.256     |                |

| Distance<br>(cm) | Test Mode | EUT Edge   | Limit<br>(V/m) |
|------------------|-----------|------------|----------------|
|                  |           | E<br>(V/m) |                |
| 20               | 1         | 8.358      | 614            |
|                  | 2         | 7.978      |                |
|                  | 3         | 8.048      |                |

## 6 Test Conclusion

### 6.1 H-field

| Distance<br>(cm) | Worst-case<br>Test Mode | EUT Edge D | Limit<br>(A/m) | 50% Limit<br>(A/m) | Verdict |
|------------------|-------------------------|------------|----------------|--------------------|---------|
|                  |                         | (A/m)      |                |                    |         |
| 15               | 3                       | 0.077      | 1.63           | 0.815              | Pass    |

### 6.2 E-field

| Distance<br>(cm) | Worst-case<br>Test Mode | EUT Edge A | Limit<br>(V/m) | 50% Limit<br>(V/m) | Verdict |
|------------------|-------------------------|------------|----------------|--------------------|---------|
|                  |                         | (V/m)      |                |                    |         |
| 15               | 3                       | 10.345     | 614            | 307                | Pass    |

According KDB 680106 D01v03r01, the EUT is compliant with the 50% of the MPE limits.

--END OF REPORT--