

RF Exposure Evaluation Report



Applicant: Ubio Labs, Inc.
Address of Applicant: 2821 Northup Way, Suite 250 Bellevue, WA 98004 USA

Equipment Under Test (EUT)

Product Name: Wireless Charging Pad
Model No.: AWC1098
Trade mark: ubiolabs
FCC ID: 2ATGY-AWC1098
Applicable standards: 680106 D01 RF Exposure Wireless Charging App v03r01
Date of sample receipt: 05 Jan., 2021
Date of Test: 06 Jan., 2021 to 22 Jan., 2021
Date of report issue: 05 Feb., 2021
Test Result: PASS*

* In the configuration tested, the EUT complied with the standards specified above.

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the JYT product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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2 Version

| Version No. | Date | Description |
|-------------|---------------|-------------|
| 00 | 27 Jan., 2021 | Original |
| | | |
| | | |
| | | |
| | | |



Tested by: Welan Zhang
Test Engineer

Date: 05 Feb., 2021

Reviewed by: Lipo
Project Engineer

Date: 05 Feb., 2021

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4 General Information

4.1 Client Information

| | |
|-----------------------|--|
| Applicant: | Ubio Labs, Inc. |
| Address: | 2821 Northup Way, Suite 250 Bellevue, WA 98004 USA |
| Manufacturer/Factory: | SHENZHEN LANNENGSHITONG ELECTRONICS CO.,LTD. |
| Address: | Floor3 No.40, Xinxhe Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen City, Guangdong Province, China |

4.2 General Description of E.U.T.

| | |
|------------------------------------|--|
| Product Name: | Wireless Charging Pad |
| Model No.: | AWC1098 |
| Operation Frequency: | 128.3kHz |
| Modulation technology: | ASK |
| Antenna Type: | Coil Antenna |
| Input & Output (Wireless Charger): | Model: AWC1098 Input: DC 15V, 3.5A Output (USB-C PD 3.0): DC 5V, 3.0A/ DC 9V, 2.22A Output Wireless: 15W/ 10W/ 7.5W/ 5W |
| AC Adapter: | Model: CHG1088 Input: AC 110-240V, 50-60 Hz 1.1A Output: 15V / 3.5A |
| Test Sample Condition: | The test samples were provided in good working order with no visible defects. |

4.3 Operating Modes

| Operating mode | Detail description |
|--|--------------------------------|
| Full load mode | Keep the EUT in Full load mode |
| Remark: | |
| 1. Pre-scan input: 15V, 3.5A, output: 5W, 7.5W, 10W, 15W of the Power supply, found output: 15W was worse case mode. So the report only reflects the worse mode. | |
| 2. No load, mid load, full load mode all have been tested, only worse case full load mode is reported. | |

4.4 Description of Support Units

| Manufacturer | Description | Model | S/N | FCC ID/DoC |
|--------------|------------------------------|---------------|-----------|------------|
| Skytek | Wireless charging match load | N/A | N/A | N/A |
| Apple | Mobile phone | iPhone 11 Pro | MWDE2CH/A | Doc |

4.5 Measurement Uncertainty

| Parameter | Expanded Uncertainty (Confidence of 95%) |
|-------------------------------|--|
| Field Strength (9kHz ~ 30MHz) | ±2% (k=2) |

4.6 Additions to, deviations, or exclusions from the method

| |
|----|
| No |
|----|

4.7 Laboratory Facility

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

● **FCC - Designation No.: CN1279**

Jiayan Testing Group Co., Ltd. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The test firm Registration No. is 892155.

● **ISED – CAB identifier.: CN0102**

Jiayan Testing Group Co., Ltd. has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements with ISED#:26114.

● **A2LA - Registration No.: 5568.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <https://portal.a2la.org/scopepdf/5568-01.pdf>

4.8 Laboratory Location

JianYan Testing Group Co., Ltd.

Address: No.760, Fengling Road, Tong'an District, Xiamen, Fujian, China

Tel: +86-592-2273071, Fax: +86-592-2273700

Email: quality@xmabr.com, Website: <http://www.lets.com/>

4.9 Test Instruments list

| Test Equipment | Manufacturer | Model No. | Serial No. | Cal.Date (mm-dd-yy) | Cal.Due date (mm-dd-yy) |
|---|-----------------------|-----------|------------|---------------------|-------------------------|
| Electromagnetic field strength analyzer | Coliy Technology GmbH | E300 | 13945 | 12-25-2020 | 12-24-2021 |

5 Technical Requirements Specification in FCC CFR Title 47 Part 2.1091

5.1 Limits

Human exposure to RF emissions from mobile devices (47 CFR §2.1091) may be evaluated based on the MPE limits adopted by the FCC for electric and magnetic field strength and/or power density, as appropriate, since exposures are assumed to occur at distances of 20 cm or more from persons.

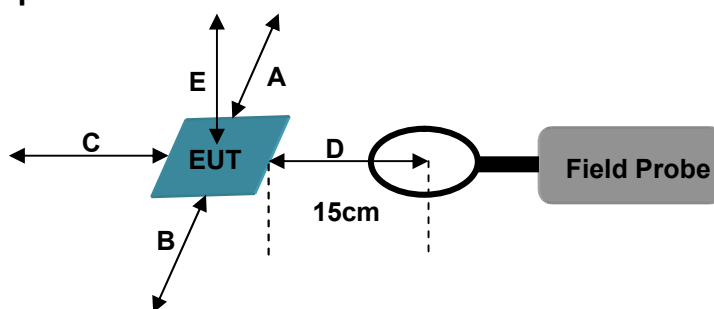
According to KDB 680106 D01 RF Exposure Wireless Charging Apps, RF exposure evaluation should be conducted assuming a user separation distance of 15 cm for devices designed for typical desktop applications. E and H field strength measurements or numerical modelling may be used to demonstrate compliance. Measurements should be made from all sides and the top of the primary/client pair, with the 15 cm measured from the center of the probe(s) to the edge of the device.

Table 4: RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)

| Frequency Range (MHz) | Electric Field (V/m rms) | Magnetic Field (A/m rms) | Power Density (W/m ²) | Reference Period (minutes) |
|------------------------|---------------------------|--|-----------------------------------|----------------------------|
| 0.003-10 ²¹ | 83 | 90 | - | Instantaneous* |
| 0.1-10 | - | 0.73/ f | - | 6** |
| 1.1-10 | 87/ f ^{0.5} | - | - | 6** |
| 10-20 | 27.46 | 0.0728 | 2 | 6 |
| 20-48 | 58.07/ f ^{0.25} | 0.1540/ f ^{0.25} | 8.944/ f ^{0.5} | 6 |
| 48-300 | 22.06 | 0.05852 | 1.291 | 6 |
| 300-6000 | 3.142 f ^{0.3417} | 0.008335 f ^{0.3417} | 0.02619 f ^{0.6834} | 6 |
| 6000-15000 | 61.4 | 0.163 | 10 | 6 |
| 15000-150000 | 61.4 | 0.163 | 10 | 616000/ f ^{1.2} |
| 150000-300000 | 0.158 f ^{0.5} | 4.21 x 10 ⁻⁴ f ^{0.5} | 6.67 x 10 ⁻⁵ f | 616000/ f ^{1.2} |

Note: f is frequency in MHz.
 *Based on nerve stimulation (NS).
 ** Based on specific absorption rate (SAR).

5.2 Test Setup Block



Remrak: The E300 probe antenna diameter is 11.5cm.

5.3 Limits For General Population/Uncontrolled Exposure

| Frequency Range (MHz) | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW /cm ²) | Averaging Time (minutes) |
|-----------------------|-------------------------------|-------------------------------|--------------------------------------|--------------------------|
| 0.3 ~ 3.0 | 614 | 1.63 | (100)* | 30 |
| 3.0 ~ 30 | 824/f | 2.19/f | (180/f ₂)* | 30 |
| 30 ~ 300 | 27.5 | 0.073 | 0.2 | 30 |
| 300~1500 | - | - | f/1500 | 30 |
| 1500~100000 | - | - | 1.0 | 30 |

5.4 Test Procedure

| |
|---|
| <p>KDB 680106 D01 Section 5(b):</p> <p>(1) Power transfer frequency is less than 1 MHz. -- Yes, the device operate in the frequency 128.3kHz.</p> <p>(2) Output power from each primary coil is less than or equal to 15 watts. -- Yes, the maximum output power of the primary coil is 15W.</p> <p>(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. --Yes, the transfer system includes only single primary and secondary coils.</p> <p>(4) Client device is placed directly in contact with the transmitter. -- Yes, client device is placed directly in contact with the transmitter.</p> <p>(5) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion). -- Yes, the DUT is a Wireless Charging mobile.</p> <p>(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. --Yes the EUT field strength levels are less than 50% of the MPE limit.</p> |
|---|

1. Installing the magnetic field probe and turn on the E300 power switch, select the magnetic field test mode and the A/munit, select the peak detection mode, select the Max-Hold display.
2. Measured the ambient noise at this time and record.
3. Make DUT work at maximum transmit power.
4. During the measurement, the magnetic field probe centreof the E300 is kept in 15cm distance from each test surface of the wireless charging base, and recorded the measured values of the A, B, C, D, and E side are separately.
5. After all the measured values of the A, B, C, D, and E side are subtracted the background noise separately, they are the true magnetic field strength values at that point.
6. Replace the electric field test probe and select the electric field test mode and the V/munit, select the peak detection mode, select the Max-Hold display.
7. Repeat step 3 to 5 and then get the strength of the electric field.

5.5 Result

Empty load, half load and full load have been tested, the full load mode is the worst, and only the worst test data is reflected in the report.

a) Magnetic Field Strength Measurement

| Measured Side | Distance (cm) | Measured Value (A/m) | 50 % of Limit (A/m) | Limit (A/m) |
|---------------|---------------|----------------------|---------------------|-------------|
| A | 15 | 0.217 | 0.815 | 1.63 |
| B | 15 | 0.223 | 0.815 | 1.63 |
| C | 15 | 0.234 | 0.815 | 1.63 |
| D | 15 | 0.215 | 0.815 | 1.63 |
| E | 15 | 0.169 | 0.815 | 1.63 |

b) Electric Field Strength Measurement

| Measured Side | Distance (cm) | Measured Value (V/m) | 50 % of Limit (V/m) | Limit (V/m) |
|---------------|---------------|----------------------|---------------------|-------------|
| A | 15 | 0.046 | 307.00 | 614 |
| B | 15 | 0.051 | 307.00 | 614 |
| C | 15 | 0.029 | 307.00 | 614 |
| D | 15 | 0.023 | 307.00 | 614 |
| E | 15 | 0.022 | 307.00 | 614 |