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 JYTproduct 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: _____ ***Date:*** 05 Feb., 2021
Test Engineer

Reviewed by: _____ ***Date:*** 05 Feb., 2021
Project Engineer

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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, Xinhe 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

Jianyan 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

Jianyan 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 17025:2017General 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

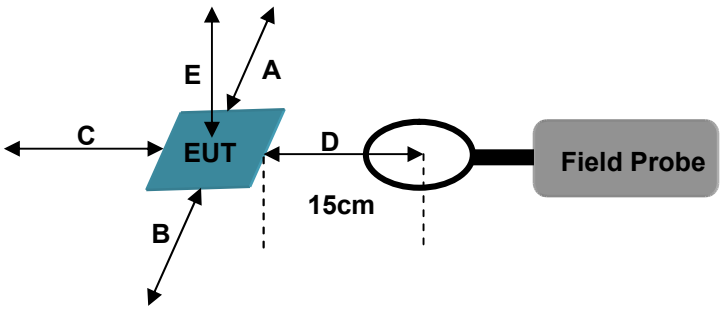
Human exposure to RF emissions from mobile devices (47 CFR §2.1091) may be evaluatedbased on the MPE limits adopted by the FCC for electric and magnetic field strength and/or powerdensity, as appropriate, since exposures are assumed to occur at distances of 20 cm or more frompersons.
According to KDB 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	$3.142f^{0.3417}$	$0.008335f^{0.3417}$	$0.02619f^{0.6834}$	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	$616000/f^{1.2}$
150000-300000	$0.158f^{0.5}$	$4.21 \times 10^{-4} f^{0.5}$	$6.67 \times 10^{-5} f$	$616000/f^{1.2}$

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 ForGeneral Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW /cm2)	Averaging Time (minutes)
0.3 ~ 3.0	614	1.63	(100)*	30
3.0 ~ 30	824/f	2.19/f	(180/f2)*	30
30 ~ 300	27.5	0.073	0.2	30
300~1500	-	-	f/1500	30
1500~100000	-	-	1.0	30

5.4 Test Procedure

KDB 680106 D01 Section 5(b):
(1) Power transfer frequency is less than 1 MHz. -- Yes, the device operate in the frequency 128.3kHz. (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. (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. (4) Client device is placed directly in contact with the transmitter. -- Yes, client device is placed directly in contact with the transmitter. (5) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion). -- Yes, the DUT is a Wireless Charging mobile. (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.

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