

JianYan Testing Group Co., Ltd.

JYT4b (E) -133-L

Report No.: JYTAB-R01-2100051



**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.:

AWC1102

Trade mark:

ubiolabs

FCC ID:

2ATGY-AWC1102

**Applicable standards:** 

FCC CFR Title 47 Part 15 Subpart C Section 15.209

Date of sample receipt: 05 Jan., 2021

**Date of Test:** 

06 Jan., 2021 to 22 Jan., 2021

Date of report issue:

22 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.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.





# 2 Version

Version No.	Date	Description
00	27 Jan., 2021	Original
01	22 Feb., 2021	<ol> <li>Update product name.</li> <li>Updated test data on page 11/12.</li> <li>Updated test setup of 9k~30MHz on page 9.</li> <li>Updated operation frequency on page 5.</li> </ol>

Tested By: Date: 22 Feb., 2021

Test Engineer

**Reviewed By:** \_\_\_\_\_\_ **Date:** \_\_\_\_\_ 22 Feb., 2021

**Project Engineer** 





# **3 Contents**

		Page
1 COVE	ER PAGE	1
2 VERS	SION	2
3 CONT	TENTS	3
	SUMMARY	
5 GENE	ERAL INFORMATION	5
5.1	CLIENT INFORMATION	5
5.2	GENERAL DESCRIPTION OF E.U.T	
5.3	TEST MODE AND TEST SAMPLES PLANS	5
5.4	DESCRIPTION OF SUPPORT UNITS	5
5.5	MEASUREMENT UNCERTAINTY	5
5.6	ADDITIONS TO, DEVIATIONS, OR EXCLUSIONS FROM THE METHOD	5
5.7	LABORATORY FACILITY	6
5.8	LABORATORY LOCATION	
5.9	Test Instrumentslist	
6 TEST	RESULTS AND MEASUREMENT DATA	8
6.1	ANTENNA REQUIREMENT	8
6.2	RADIATED EMISSION	
6.3	CONDUCTED EMISSION	15
6.4	20dB Bandwidth	
7 TEST	SETUP PHOTOS	20
9 EUT (	CONSTRUCTIONAL PHOTOS	22



# **4 Test Summary**

Test Item	Section in CFR 47	Result
Spurious emissions	15.209	Pass
20dB Bandwidth	15.215(c)	Pass
Conducted Emission	15.207	Pass

#### Remark:

- 1. Pass: The EUT complies with the essential requirements in the standard.
- The cable insertion loss used by "RF Output Power" and other conduction measurement items is 0.5dB (provided by the customer).

Test Method: ANSI C63.4-2014
ANSI C63.10-2013

TRFNo.: JYT4b (E) -133-L

Page 4 of 32





# **5 General Information**

## **5.1 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

### 5.2 General Description of E.U.T.

Product Name:	Wireless charging pad
Model No.:	AWC1102
Operation Frequency:	127.7kHz
Modulation type:	ASK
Antenna Type:	Coil Antenna
Power supply (Wireless Charger):	Model: AWC1102 Input: DC 15V, 2.5A Output USB A: DC 5V, 2.4A 12W Output Wireless: 15W/ 10W/ 7.5W/ 5W
AC Adapter:	Model: CHG1151SG Input: AC 110-240V, 50-60 Hz0.8A Output: 15V / 2.5A
Test Sample Condition:	The test samples were provided in good working order with no visibled efects.

### 5.3 Test mode

Transmitting mode:	Keep the EUT in transmitting mode with modulation
Remark: Pre-scan input: 15V/2.5A, output Wire worse case mode. So the report only	eless: 15W, 10W, 7.5W, 5W of the Power supply, output Wireless: 15W was reflects the worse mode.

5.4 Description of Support Units

Manufacturer	Description	Model	S/N	FCC ID/DoC
Skvtek	Wireless charging	N/A	N/A	N/A
onyton.	match load			

# 5.5 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%)
Conducted Emission (9kHz ~ 150kHz)	±1.60 dB
Conducted Emission (150kHz ~ 30MHz)	±2.20 dB
Radiated Emission (9kHz ~ 30MHz)	±3.12 dB
Radiated Emission (30MHz ~ 1000MHz)	±4.40 dB
Radiated Emission (1GHz ~ 18GHz)	±5.20 dB
Radiated Emission (18GHz ~ 26.5GHz)	±4.80 dB

# 5.6 Additions to, deviations, or exclusions from the method

No

No.760, FenglingRoad, Tong'anDistrict, Xiamen,Fujian, China Telephone: +86 (0) 5922273071Fax: +86 (0) 5922273700





# 5.7 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

### **5.8** 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/





# **5.9 Test Instruments list**

Spurious emissions:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	BOST	CHC-966	966-1#	2019-12-27	2022-12-26
3m SAC	BOST	CHC-966	966-2#	2019-12-27	2022-12-26
EMI Test Receiver	Rohde & Schwarz	ESR 3	102330	2020-08-05	2021-08-04
EMI Test Receiver	Rohde & Schwarz	ESR 3	102329	2020-08-06	2021-08-05
EMI Test Receiver	Rohde & Schwarz	ESR 7	102259	2020-04-12	2021-04-11
Spectrum Analyzer	Agilent	E4407B	MY45115531	2020-12-27	2021-12-26
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102175	2020-04-15	2021-04-14
BiConiLog Antenna	SCHWARZBECK	VULB 9163	1105	2020-12-20	2021-12-19
BiConiLog Antenna	SCHWARZBECK	VULB 9168	1066	2020-04-11	2021-04-10
Horn Antenna	SCHWARZBECK	BBHA 9120 D	911	2020-04-01	2021-03-31
Pre-amplifier	SCHWARZBECK	BBV9743	00009	2020-08-06	2021-08-05
Pre-amplifier	SCHWARZBECK	BBV9744	162	2020-12-22	2021-12-21
Pre-amplifier	SCHWARZBECK	BBV9718C	00014	2020-04-08	2021-04-07
EMI Test Software	Farad	EZ-EMC	Ve	ersion: V.EMCE-3	A1

Conducted Emssion:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
EMI Test Receiver	Rohde & Schwarz	ESR 3	102330	2020-08-05	2021-08-04
EMI Test Receiver	Rohde & Schwarz	ESR 3	102329	2020-08-06	2021-08-05
EMI Test Receiver	Rohde & Schwarz	ESR 7	102259	2020-04-12	2021-04-11
LISN	Rohde & Schwarz	ENV 216	102240	2020-08-05	2021-08-04
Voltage probe	Schwarzbeck	TK9420+VT9420	814	2020-08-05	2021-08-04
ISN	Schwarzbeck	CAT3 8158	95	2020-08-05	2021-08-04
EMI Test Software	Farad	EZ-EMC	Version: V.EMCE-3A1		

20dB Bandwidth:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
Spectrum Analyzer	Agilent	E4407B	MY45115531	2020-12-27	2021-12-26
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102175	2020-04-15	2021-04-14





# **6 Test results and Measurement Data**

# 6.1 Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203
responsible party shall be us antenna that uses a unique	be designed to ensure that no antenna other than that furnished by the sed with the device. The use of a permanently attached antenna or of an coupling to the intentional radiator, the manufacturer may design the unit n be replaced by the user, but the use of a standard antenna jack or bited.
E.U.T Antenna:	

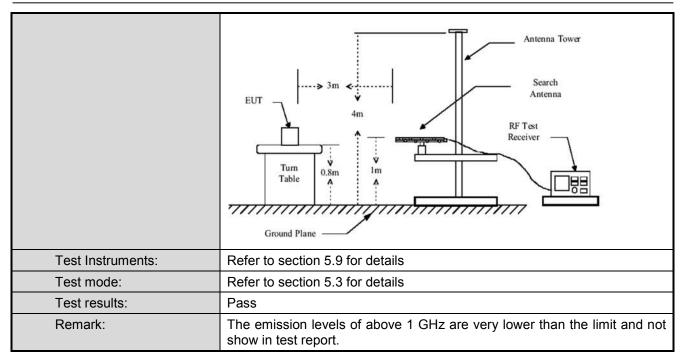
JianYanTestingGroupCo., Ltd. No.760, FenglingRoad, Tong'anDistrict, Xiamen,Fujian, China Telephone: +86 (0) 5922273071Fax: +86 (0) 5922273700



## 6.2 Radiated Emission

Test Requirement:	FCC Part15 C S	ection 15.209				
TestFrequency Range:	9kHz to 1000MF	łz				
Test site:	Measurement Di	istance: 3m(Se	mi-Anechoid	Cham	ber)	
Receiver setup:	Frequency	Detector	RBW	VBV		Remark
i tosonon sottapi	9kHz-150kHz	Quasi-peak	200Hz	600H		Quasi-peak Value
	150kHz- 30MHz	Quasi-peak	9kHz	30kl	Hz	Quasi-peak Value
	30MHz-1GHz	Quasi-peak	120kHz	300k	Hz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MF	Ηz	Peak Value
Limit:	Frequency (M		it (uV/m @3			Distance (m)
	0.009-0.49		2400/F(kHz)			300
	0.490-1.70	5 2	4000/F(kHz	)		30
	1.705-30		30			30
	30-88		100			3
	88-216		150			3
	216-960		200			3
Test Procedure:	Above 1GF	Iz   placed on the to	500	. 4abl- ^	١ ٠ ٠-٠	3
Test setup:	groundat a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.  b. The EUT was set 3 meters away from the interference-receiving antenna whichwas mounted on the top of a variable-height antenna tower.  c. The antenna height is varied from one meter to four meters above the groundate to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.  d. For each suspected emission, the EUT was arranged to its worst case are thenthe antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.  e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.  f. If the emission level of the EUT in peak mode was 10dB lower than the lift specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB marg would bere-tested one by one using peak, quasi-peak or average method specified and then reported in a data sheet.					
. Socioties.	9kHz-30MHz  Tum Table  Ground Plane -	3m <b>♦</b> 4m  1.3m				1



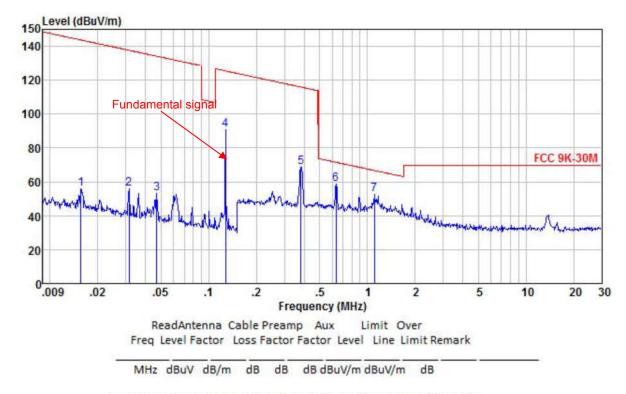




#### **Measurement Data:**

#### **Below 1GHz:**

Product Name:	Wireless charging pad	Product Model:	AWC1102
Test By:	Miles Chen	Test mode:	Charing mode
Test Frequency:	9kHz~30MHz	Polarization:	Coxial
Test Voltage:	AC 120V/60Hz	Environment:	Temp: 24℃ Huni: 57%



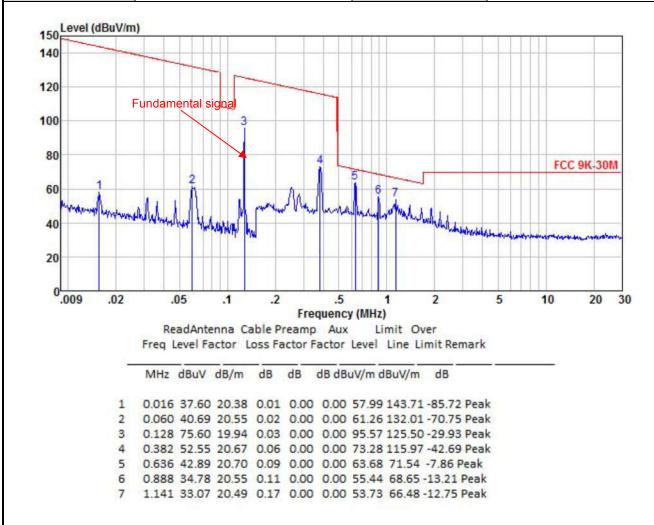
- 1 0.016 35.54 20.38 0.01 0.00 0.00 55.93 143.71 -87.78 Peak
- 2 0.031 35.39 20.24 0.02 0.00 0.00 55.65 137.65 -82.00 Peak
- 3 0.047 32.43 20.56 0.02 0.00 0.00 53.01 134.13 -81.12 Peak
- 4 0.128 70.78 19.94 0.03 0.00 0.00 90.75 125.50 -34.75 Peak
- 5 0.382 48.00 20.67 0.06 0.00 0.00 68.73 115.97 -47.24 Peak
- 0.636 37.61 20.70 0.09 0.00 0.00 58.40 71.54 -13.14 Peak
- 7 1.105 32.02 20.49 0.17 0.00 0.00 52.68 66.76 -14.08 Peak

#### Remark:

- 1. Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product Name:	Wireless charging pad	Product Model:	AWC1102
Test By:	Miles Chen	Test mode:	Charing mode
Test Frequency:	9kHz~30MHz	Polarization:	Coplanar
Test Voltage:	AC 120V/60Hz	Environment:	Temp: 24℃ Huni: 57%

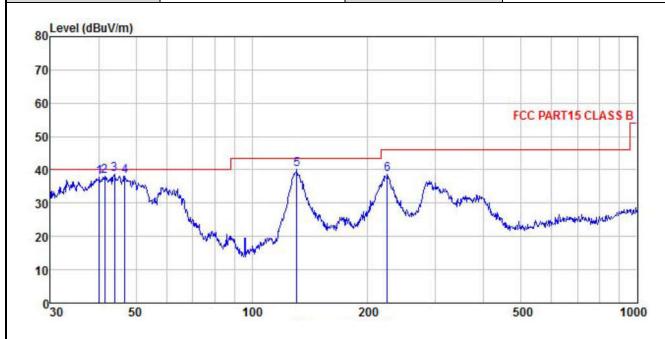


#### Remark:

- 1. Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product Name:	Wireless charging pad	Product Model:	AWC1102
Test By:	Miles Chen	Test mode:	Charing mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz	Environment:	Temp: 24℃ Huni: 57%



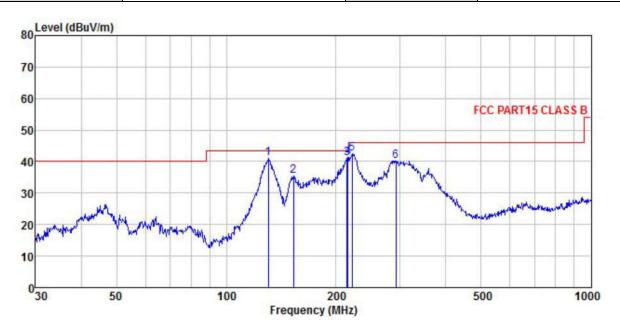
	Freq		Antenna Factor					Limit Line	Over Limit	Remark
2	MHz	dBu∜	<u>dB</u> /m		<u>ab</u>	<u>ab</u>	dBuV/m	$\overline{dBuV/m}$	<u>dB</u>	
1	40.135	54.58	12.80	0.35	0.00	29.90	37.83	40.00	-2.17	QP
2	41.422	54.66	12.83	0.36	0.00	29.89	37.96	40.00	-2.04	QP
3	43.966	55.24	12.88	0.37	0.00	29.87	38.62	40.00	-1.38	QP
4	46.830	54.41	13.01	0.38	0.00	29.85	37.95	40.00	-2.05	QP
5	130.837	56.80	12.11	0.59	0.00	29.32	40.18	43.50	-3.32	QP
6	224.519	48.18	18.40	0.74	0.00	28.68	38.64	46.00	-7.36	QP

#### Remark

- 1. Final Level =Receiver Read level + Antenna Factor + Cable Loss + Aux Factor Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 3. The Aux Factor is a notch filter switch box loss, this item is not used.



Product Name:	Wireless charging pad	Product Model:	AWC1102
Test By:	Miles Chen	Test mode:	Charing mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Horizontal
Test Voltage:	AC 120V/60Hz	Environment:	Temp: 24℃ Huni: 57%



	Freq		Factor					Limit	Over Limit	Remark
2	MHz	dBu₹	<u>dB</u> /m	<u>d</u> B	<u>d</u> B	<u>dB</u>	$\overline{dBuV/m}$	$\overline{dBuV/m}$		
1	130.379	57.87	11.95	0.59	0.00	29.33	41.08	43.50	-2.42	QP
2	152.664	49.61	14.36	0.62	0.00	29.20	35.39	43.50	-8.11	QP
3	214.514	50.58	18.36	0.73	0.00	28.74	40.93	43.50	-2.57	QP
4	215.268	51.09	18.37	0.74	0.00	28.73	41.47	43.50	-2.03	QP
5	221.392	51.98	18.39	0.74	0.00	28.70	42.41	46.00	-3.59	QP
6	292.058	49.19	18.67	0.85	0.00	28.46	40.25	46.00	-5.75	QP

#### Remark:

- 1. Final Level =Receiver Read level + Antenna Factor + Cable Loss + Aux Factor Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 3. The Aux Factor is a notch filter switch box loss, this item is not used.



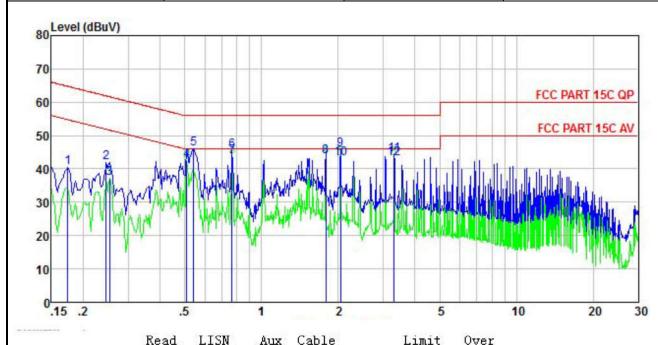
# **6.3 Conducted Emission**

Test Requirement:	FCC Part15 B Section 15.20	7					
Test Frequency Range:	150kHz to 30MHz						
Class / Severity:	Class B						
Receiver setup:	RBW=9kHz, VBW=30kHz						
Limit:	Frequency range (MHz)	Limit	(dBµV)				
	, , ,	Quasi-peak	Average				
	0.15-0.5	66 to 56*	56 to 46*				
	0.5-5	56	46				
	0.5-30	60	50				
	* Decreases with the logarith	m of the frequency.					
Test setup:	Reference Plan  LISN 40cm 80ci  40cm 80ci  E.U.T  Test table/Insulation plane  Remark  E.U.T: Equipment Under Test  LISN: Line Impedence Stabilization Network  Test table height=0.8m	Filter AC po					
Test procedure	<ol> <li>The E.U.T and simulators line impedance stabilization 500hm/50uH coupling impedance.</li> <li>The peripheral devices are a LISN that provides a 500 termination. (Please refers photographs).</li> <li>Both sides of A.C. line are interference. In order to fir positions of equipment an according to ANSI C63.4:</li> </ol>	on network(L.I.S.N.). The pedance for the measure also connected to the ohm/50uH coupling imports to the block diagram are checked for maximum and the maximum emiss deall of the interface care.	the provide a ring equipment. The main power through pedance with 500hm of the test setup and the conducted sion, the relative ables must be changed				
Test environment:	Temp.: 23°C Hun	nid.: 56% Pr	ess.: 101kPa				
Test Instruments:	Refer to section 5.9 for detail	ls	•				
Test mode:	Refer to section 5.3 for detail	ls					
Test results:	Pass						



#### Measurement data:

Product name:	Wireless charging pad	Product Model:	AWC1102
Test by:	Miles Chen	Test mode:	Charing mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Line
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5℃ Huni: 55%



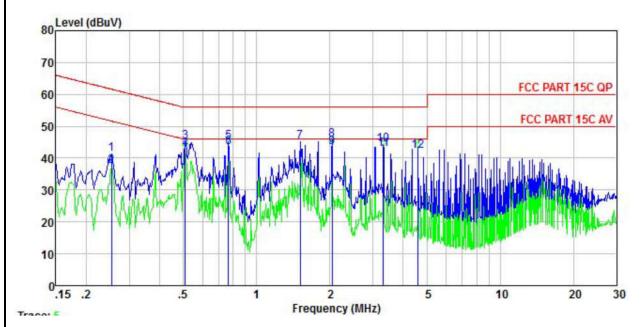
	Freq	Level	Factor	Factor	Loss	Level	Line	Limit	Remark
	MHz	dBu∜	<u>ab</u>		<u>ab</u>	—dBu∀	dBu∀	<u>d</u> B	
1	0.174	30.42	-0.58	-0.11	10.77	40.50	64.77	-24.27	QP
2	0.246	32.09	-0.57	-0.21	10.75	42.06	61.91	-19.85	QP
3	0.253	27.31	-0.57	-0.22	10.75	37.27	51.64	-14.37	Average
4	0.510	32.52	-0.44	-0.35	10.76	42.49	46.00	-3.51	Average
5	0.541	36.11	-0.45	-0.36	10.76	46.06	56.00	-9.94	QP
1 2 3 4 5 6 7 8	0.767	35.28	-0.55	-0.19	10.80	45.34	56.00	-10.66	QP
7	0.767	33.74	-0.55	-0.19	10.80	43.80	46.00	-2.20	Average
8	1.790	33.39	-0.53	-0.20	10.95	43.61	46.00	-2.39	Average
	2.044	35.63	-0.51	-0.31	10.96	45.77	56.00	-10.23	QP
10	2.044	33.02	-0.51	-0.31	10.96	43.16	46.00	-2.84	Average
11	3.310	34.02	-0.42	-0.15	10.91	44.36	56.00	-11.64	QP
12	3.310	32.71	-0.42	-0.15	10.91	43.05	46.00	-2.95	Average

#### Notes:

- 1. An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3. Final Level =Receiver Read level + LISN Factor + Cable Loss.



Product name:	Wireless charging pad	Product Model:	AWC1102
Test by:	Miles Chen	Test mode:	Charing mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Neutral
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5℃ Huni: 55%



	Freq	Read Level	LISN Factor	Aux Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
-	MHz	₫₿u₹	<u>ab</u>	<u>ā</u> B	dB	dBu₹	dBu∜	<u>ab</u>	
1	0.253	31.38	-0.67	0.01	10.75	41.47	61.64	-20.17	QP
2	0.253	27.43	-0.67	0.01	10.75	37.52	51.64	-14.12	Average
3	0.510	35.03	-0.65	0.03	10.76	45.17	56.00	-10.83	QP
4	0.510	32.69	-0.65	0.03	10.76	42.83	46.00	-3.17	Average
1 2 3 4 5 6 7 8 9	0.767	35.05	-0.65	0.05	10.80	45.25	56.00	-10.75	QP
6	0.767	33.12	-0.65	0.05	10.80	43.32	46.00	-2.68	Average
7	1.511	34.91	-0.70	0.13	10.92	45.26	56.00	-10.74	QP
8	2.044	35.41	-0.71	0.18	10.96	45.84	56.00	-10.16	QP
9	2.044	33.07	-0.71	0.18	10.96	43.50	46.00	-2.50	Average
10	3.310	33.66	-0.65	0.38	10.91	44.30	56.00	-11.70	
11	3.310	32.27	-0.65	0.38	10.91	42.91	46.00	-3.09	Average
12	4.598	31.34	-0.64	0.61	10.86	42.17	46.00	-3.83	Average

### Notes:

- 1. An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3. Final Level =Receiver Read level + LISN Factor + Cable Loss.



## 6.4 20dB Bandwidth

Test Requirement:	FCC Part15 C Section 15.215 (c)		
Receiver setup:	RBW=1 kHz, VBW=3 kHz, detector: Peak		
Limit:	The fundamental emission be kept within at least the central 80% of the permitted band		
Test Procedure:	<ol> <li>According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT.</li> <li>Set the EUT to proper test channel.</li> <li>Max hold the radiated emissions, mark the peak power frequency point and the -20dB upper and lower frequency points.</li> <li>Read 20dB bandwidth.</li> </ol>		
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane		
Test Instruments:	Refer to section 5.9 for details		
Test mode:	Refer to section 5.3 for details		
Test results:	Passed		

### **Measurement Data**

20dB bandwidth (kHz)	99% bandwidth (kHz)	Limits	
2.74	2.30	N/A	
Remark: For report purpose only.			



### Test plot as follows:

