

FCC Test Report

Product	Wireless Charger Module
Machine Type / Model No.	LPS-15WP B
FCC ID.	2APYS-LPS-15WPB

Applicant	Lanto Electronic Ltd
Address	No 399, Baisheng Road, Jinxi Town, Kunshan City, Jiangsu , China 215234

Date of Receipt	Oct. 29, 2019
Issued Date	Nov. 26, 2019
Report No.	19A0394R-RFUSP17V00
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF or any agency of the government.

The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.

Test Report

Issued Date: Nov. 26, 2019

Report No.: 19A0394R-RFUSP17V00



Product	Wireless Charger Module
Applicant	Lanto Electronic Ltd
Address	No 399, Baisheng Road, Jinxi Town, Kunshan City, Jiangsu , China 215234
Manufacturer	Lanto Electronic Ltd
Machine Type / Model No.	LPS-15WP B
FCC ID.	2APYS-LPS-15WPB
EUT Rated Voltage	DC 12V
EUT Test Voltage	AC 120 V / 60 Hz
Trade Name	LUXSHAREICT
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2018 ANSI C63.4: 2014, ANSI C63.10: 2013
Test Result	Complied

Documented By

:



(Senior Adm. Specialist / Leven Huang)

Tested By

:



(Engineer / Boris Hsu)

Approved By

:



(Director / Vincent Lin)

TABLE OF CONTENTS

Description	Page
1. GENERAL INFORMATION.....	4
1.1. EUT Description	4
1.2. Operational Description.....	5
1.3. Test System Details.....	7
1.4. Configuration of Test System	8
1.5. EUT Exercise Software	8
1.6. Test Facility.....	9
1.7. List of Test Equipment.....	10
2. Conducted Emission.....	11
2.1. Test Setup.....	11
2.2. Limits.....	11
2.3. Test Procedure.....	11
2.4. Uncertainty	11
2.5. Test Result of Conducted Emission	12
3. Radiated Emission.....	14
3.1. Test Setup.....	14
3.2. Limits.....	15
3.3. Test Procedure.....	16
3.4. Uncertainty	16
3.5. Test Result of Radiated Emission	17
4. EMI Reduction Method During Compliance Testing	22
Attachment 1: EUT Test Setup Photographs	23
Attachment 2 : EUT Detailed Photographs.....	27

1. GENERAL INFORMATION

1.1. EUT Description

Product	Wireless Charger Module
Trade Name	LUXSHAREICT
Machine Type / Model No.	LPS-15WP B
FCC ID.	2APYS-LPS-15WPB
Frequency Range	110~145kHz
Antenna Type	Coil Antenna
Test Platform	Product: Personal Computer Product name: IdeaCentre AIO 5 27IMB05 , IdeaCentre AIO 5 24IMB05 Brand: Lenovo Model number: F0FA***** , F0FB***** (Where * may be 0-9, a-z, A-Z, any alphanumeric character ,hyphen or blank)

Frequency of Channel:

Channel	Frequency
Channel 1:	126kHz

Note:

1. The EUT is a Wireless Charger Module with a built-in 110~145kHz transceiver.
2. These tests were radiated on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.209
3. The data are tested in each mode. Only worst case(IdeaCentre AIO 5 27IMB05) is shown in the report.
4. This module is “Limited Modular Approval” (LMA).

Test Mode	Mode 1: Transmit
-----------	------------------

1.3. Test System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

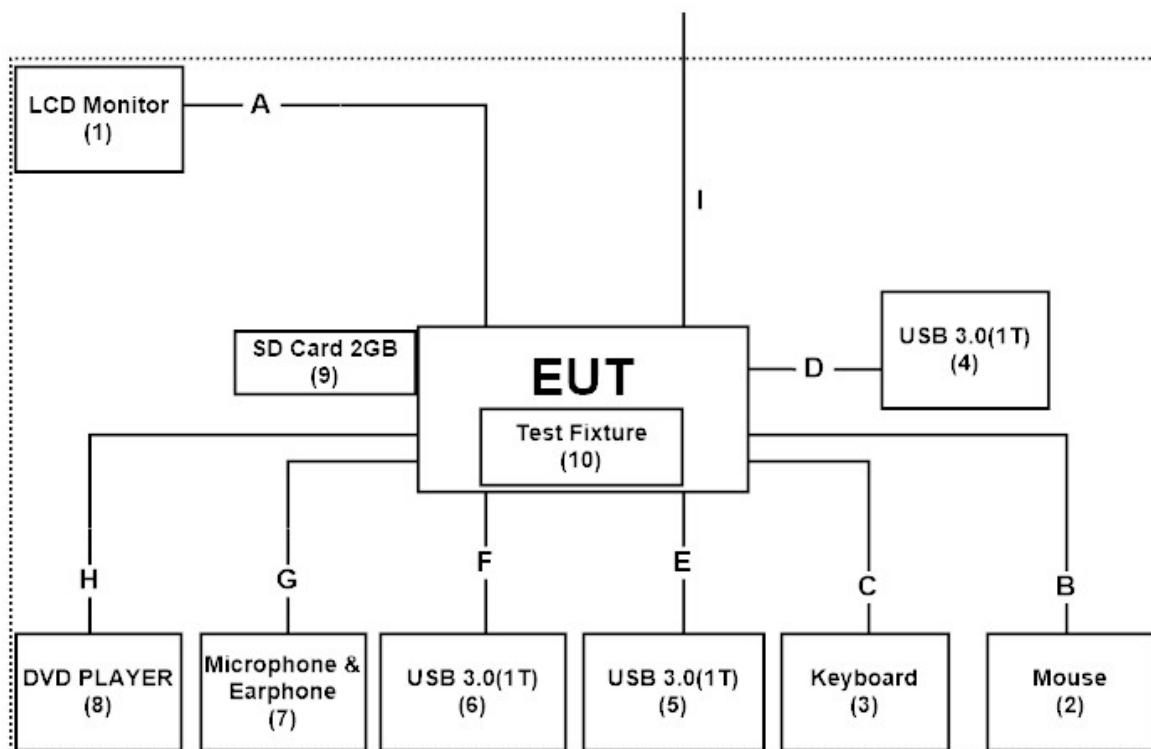
Product	Manufacturer	Model No.	Serial No.	Power Cord
1 LCD Monitor	ASUS	VS229HA	F4LMQS135395	Non-Shielded, 1.8m
2 Mouse	Lenovo	EMS-537A	8SSM50U65178AVLC	N/A
3 Keyboard	Lenovo	Ekb-536a	901017BG	N/A
4 USB 3.0(1T)	Transcend	TS1TSJ25M3	C13890-3746	Non-Shielded, 0.4m
5 USB 3.0(1T)	Transcend	TS1TSJ25M3	C13890-3746	Non-Shielded, 0.4m
6 USB 3.0(1T)	Transcend	TS1TSJ25M3	C13890-3746	Non-Shielded, 0.4m
7 Microphone & Earphone	Ergotech	ET-E201	N/A	Non-Shielded, 1.65m
8 DVD PLAYER	Pioneer	DV-600AV	GJKD006378LS	Non-Shielded, 1.8m
9 SD Card 2GB	Transcend	BE1014314401G	3430631 8398	N/A
10 Test Fixture	N/A	N/A	N/A	N/A

Note:

1. The Test Fixture is a cement resistor(30W5Ω).

Signal Cable Type	Signal cable Description
A HDMI Cable	Non-Shielded, 1.8m
B Mouse Cable	Non-Shielded, 1.7m
C Keyboard Cable	Non-Shielded, 1.8m
D USB Cable	Non-Shielded, 0.4m
E USB Cable	Non-Shielded, 0.4m
F USB Cable	Non-Shielded, 0.4m
G Signal Cable	Non-Shielded, 1.65m
H HDMI Cable	Non-Shielded, 1.8m
I Network Cable	Non-Shielded, 1.65m

1.4. Configuration of Test System



1.5. EUT Exercise Software

- (1) Setup the EUT as shown in Section 1.4
- (2) Turn on the power of all equipment.
- (3) Start the continuous transmitter.
- (4) Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual
Conducted Emission	Temperature (°C)	10~40 °C	23.3 °C
	Humidity (%RH)	10~90 %	60 %
Radiated Emission	Temperature (°C)	10~40 °C	22 °C
	Humidity (%RH)	10~90 %	90 %

USA : FCC Registration Number: TW3023

Site Description: Accredited by TAF
Accredited Number: 3023

Test Laboratory: DEKRA Testing and Certification Co., Ltd
Address: No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451,
Taiwan.
Phone number: 886-2-8601-3788
Fax number: 886-2-8601-3789
Email address: info.tw@dekra.com
Website: <http://www.dekra.com.tw>

1.7. List of Test Equipment

For Conducted measurements /CB3/SR8

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
	Temperature Chamber	WIT GROUP	TH-1S-B	EQ-201-00146	2019/02/26	2020/02/25
X	Spectrum Analyzer	Agilent	N9010A	MY48030495	2019/09/25	2020/09/24
	Peak Power Analyzer	Keysight	8990B	MY51000410	2019/07/30	2020/07/29
	Wideband Power Sensor	Keysight	N1923A	MY56080003	2019/07/30	2020/07/29
	Wideband Power Sensor	Keysight	N1923A	MY56080004	2019/07/30	2020/07/29
X	EMI Test Receiver	R&S	ESCS 30	100369	2019/11/19	2020/11/18
X	LISN	R&S	ESH3-Z5	836679/017	2019/04/10	2020/04/09
X	LISN	R&S	ENV216	100097	2019/04/10	2020/04/09
X	Coaxial Cable	DEKRA	RG 400	LC018-RG	2019/06/20	2020/06/19

For Radiated measurements /Site3/CB8

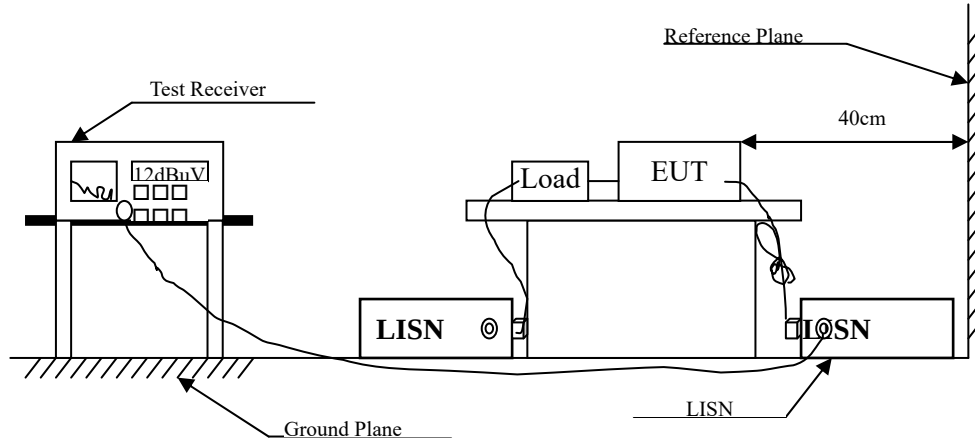
	Equipment	Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
X	Spectrum Analyzer	R&S	FSP40	100170	2019/03/11	2020/03/10
X	Loop Antenna	Teseq	HLA6121	37133	2019/10/15	2021/10/14
X	Bilog Antenna	Schaffner Chase	CBL6112B	2707	2019/06/23	2020/06/22
X	Coaxial Cable	DEKRA	RG 214	LC003-RG	2019/07/10	2020/07/09
X	Pre-Amplifier	Jet-Power	JPA-10M1G33	170101000330010	2019/08/22	2020/08/21
	Horn Antenna	ETS-Lindgren	3117	00135205	2019/05/02	2020/05/01
	Horn Antenna	SCHWARZBECK	9120D	576	2019/07/10	2020/07/09
	Pre-Amplifier	EMCI	EMC012630SE	980210	2019/06/26	2020/06/25
	Horn Antenna	Com-Power	AH-840	101043	2019/08/08	2020/08/07
	Amplifier + Cable	EMCI	EMC184045SE	980370	2019/10/31	2020/10/30
	Filter	MICRO-TRONICS	BRM50702	G270	2019/04/16	2020/04/15
	Filter	MICRO-TRONICS	BRM50716	G196	2019/06/23	2020/06/22

Note:

1. Loop Antenna is calibrated every two years, the other equipments are calibrated every one year.
2. The test instruments marked with "X" are used to measure the final test results.
3. Test Software version : DEKRA Test system V1.1

2. Conducted Emission

2.1. Test Setup



2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56 _(註)	56-46 _(註)
0.50-5.0	56	46
5.0 - 30	60	50

2.3. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

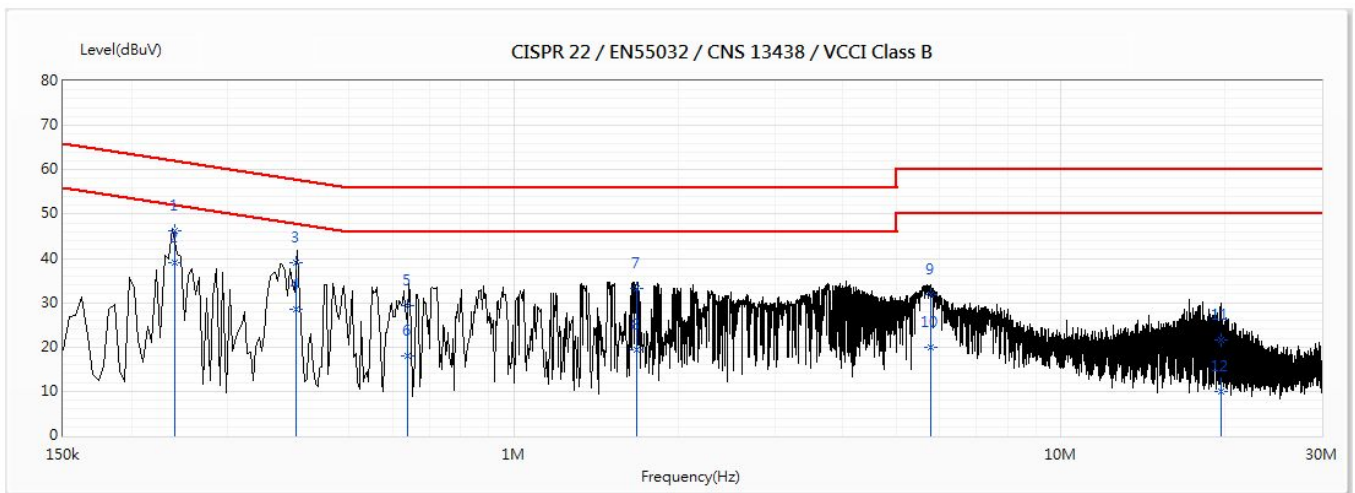
2.4. Uncertainty

± 2.26 dB

2.5. Test Result of Conducted Emission

Product : Wireless Charger Module
 Test Item : Conducted Emission Test
 Test Site : No.SR8
 Test Date : 2019/11/26
 Test Mode : Mode 1: Transmit

Line1



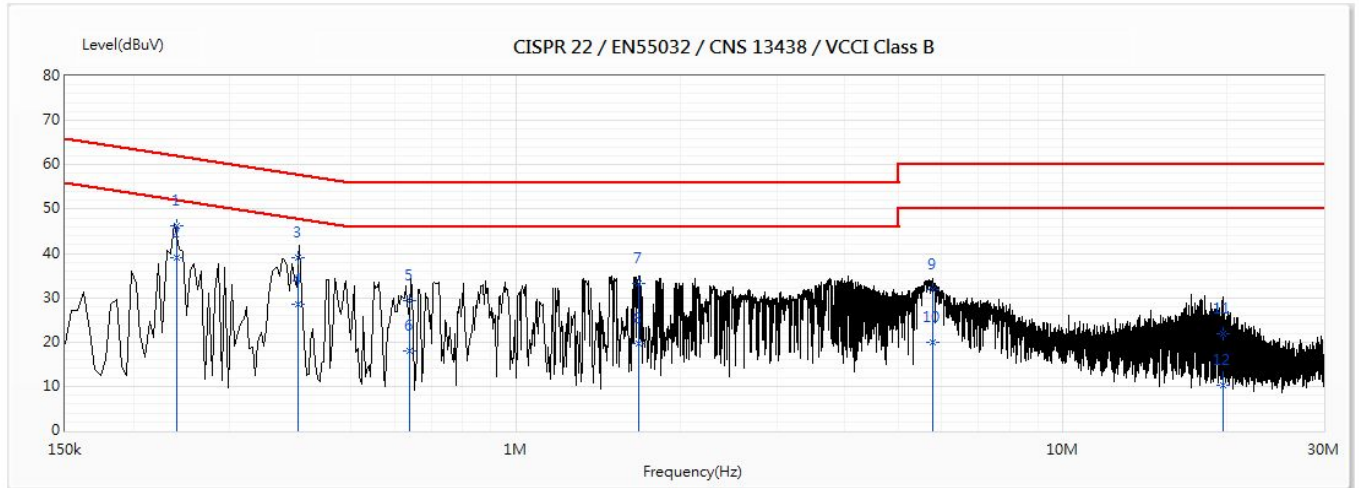
No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Cable Loss (dB)	LISN (dB)	Detector Type
1	0.24	46.24	62.11	-15.87	36.54	0.12	9.57	QP
*2	0.24	38.97	52.11	-13.14	29.28	0.12	9.57	AV
3	0.401	39.11	57.84	-18.73	29.42	0.13	9.57	QP
4	0.401	28.53	47.84	-19.31	18.83	0.13	9.57	AV
5	0.64	29.42	56.00	-26.58	19.71	0.14	9.57	QP
6	0.64	18.01	46.00	-27.99	8.30	0.14	9.57	AV
7	1.679	33.09	56.00	-22.91	23.33	0.19	9.58	QP
8	1.679	19.48	46.00	-26.52	9.72	0.19	9.58	AV
9	5.795	31.86	60.00	-28.14	21.96	0.30	9.60	QP
10	5.795	19.93	50.00	-30.07	10.02	0.30	9.60	AV
11	19.644	21.60	60.00	-38.40	11.43	0.52	9.66	QP
12	19.644	10.02	50.00	-39.98	-0.15	0.52	9.66	AV

Note:

1. "*" means this data is the worst emission level; "!" means this data is over limit.
2. Emission Level=Reading Level + Correct Factor(Correct Factor=LISN Factor+Cable Loss).
3. Margin=Limit -Emission Level.

Product : Wireless Charger Module
 Test Item : Conducted Emission Test
 Test Site : No.SR8
 Test Date : 2019/11/26
 Test Mode : Mode 1: Transmit

Line2



No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Cable Loss (dB)	LISN (dB)	Detector Type
1	0.24	46.27	62.11	-15.84	36.55	0.12	9.60	QP
*2	0.24	39.00	52.11	-13.11	29.28	0.12	9.60	AV
3	0.401	39.14	57.84	-18.70	29.41	0.13	9.60	QP
4	0.401	28.56	47.84	-19.28	18.83	0.13	9.60	AV
5	0.64	29.45	56.00	-26.55	19.71	0.14	9.60	QP
6	0.64	18.04	46.00	-27.96	8.30	0.14	9.60	AV
7	1.679	33.13	56.00	-22.87	23.33	0.19	9.62	QP
8	1.679	19.52	46.00	-26.48	9.72	0.19	9.62	AV
9	5.795	31.91	60.00	-28.09	21.96	0.30	9.65	QP
10	5.795	19.98	50.00	-30.02	10.03	0.30	9.65	AV
11	19.644	21.78	60.00	-38.22	11.43	0.52	9.84	QP
12	19.644	10.20	50.00	-39.80	-0.15	0.52	9.84	AV

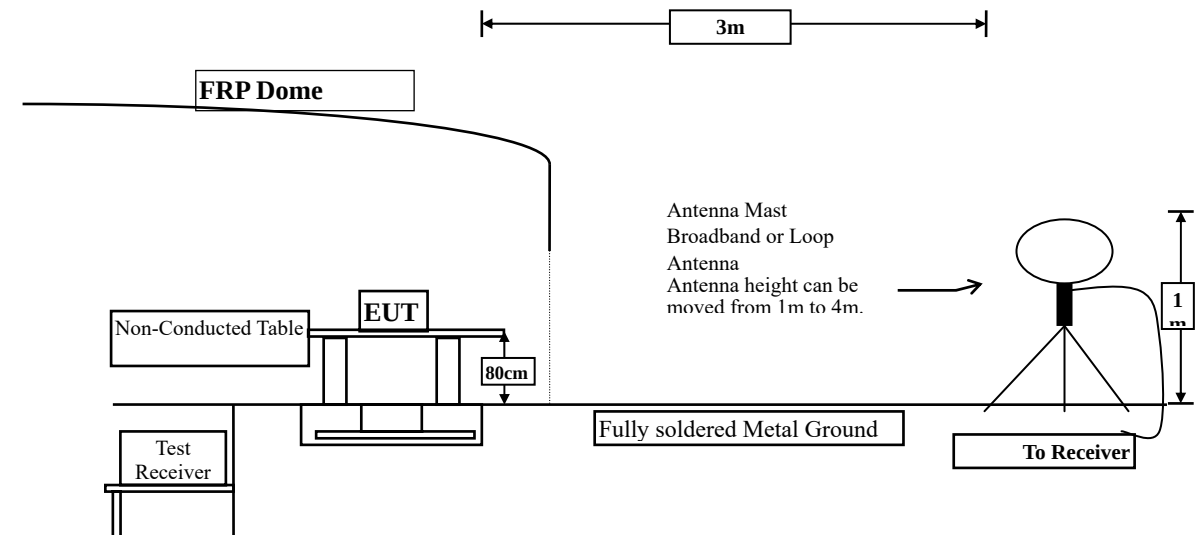
Note:

1. "*" means this data is the worst emission level; "!" means this data is over limit.
2. Emission Level=Reading Level + Correct Factor(Correct Factor=LISN Factor+Cable Loss).
3. Margin=Limit -Emission Level.

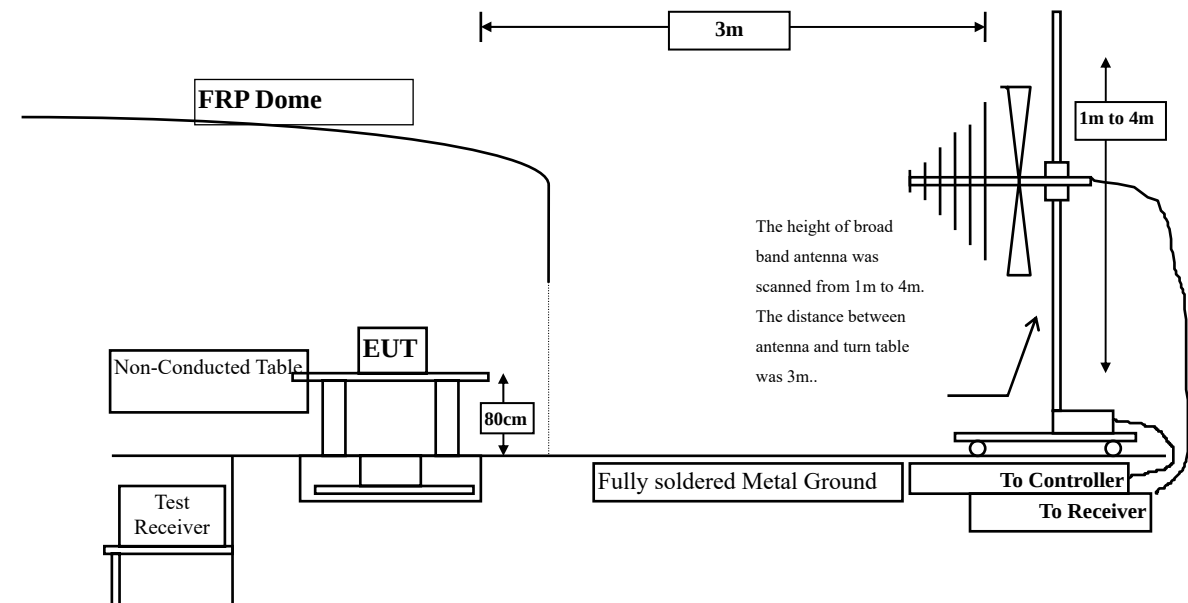
3. Radiated Emission

3.1. Test Setup

Under 30MHz Test Setup



Radiated Emission Below 1GHz



3.2. Limits

FCC Part 15 Subpart B Paragraph 15.209 Limits		
Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 - 0.490	2,400/F(kHz)	300
0.490– 1.705	24,000/F(kHz)	30
1.705 – 30	30	30
30 – 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

Remarks : 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested compliance to FCC 47CFR 15.209 requirements.

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz. Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured on the Final Measurement.

The measurement frequency range from 9kHz - 10th Harmonic of fundamental was investigated.

3.4. Uncertainty

± 4.08 dB above 1GHz

± 4.22 dB below 1GHz

3.5. Test Result of Radiated Emission

Product	Wireless Charger Module
Test Item	Fundamental Radiated Emission
Test Site	Site3
Date of Test	2019/11/22
Test Mode	Mode 1: Transmit

Horizontal

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	0.126	68.99	105.60	-36.61	49.80	19.19	AV

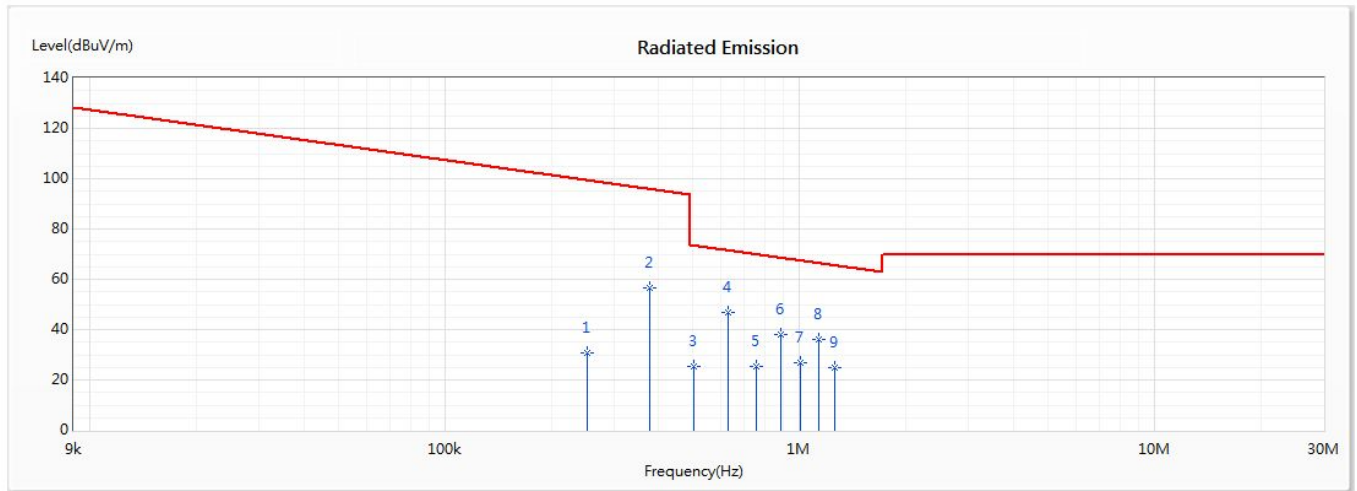
Vertical

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	0.126	57.99	105.60	-47.61	38.80	19.19	AV

Note:

1. Limit=25.528 dBuV/300m + 40*Log (300(m)/3(m))= 105.59dBuV/3m (Average).
2. Measurement Level = Reading Level + Correct Factor.

Product	Wireless Charger Module
Test Item	General Radiated Emission
Test Site	Site3
Date of Test	2019/11/19
Test Mode	Mode 1: Transmit (9k-30M)

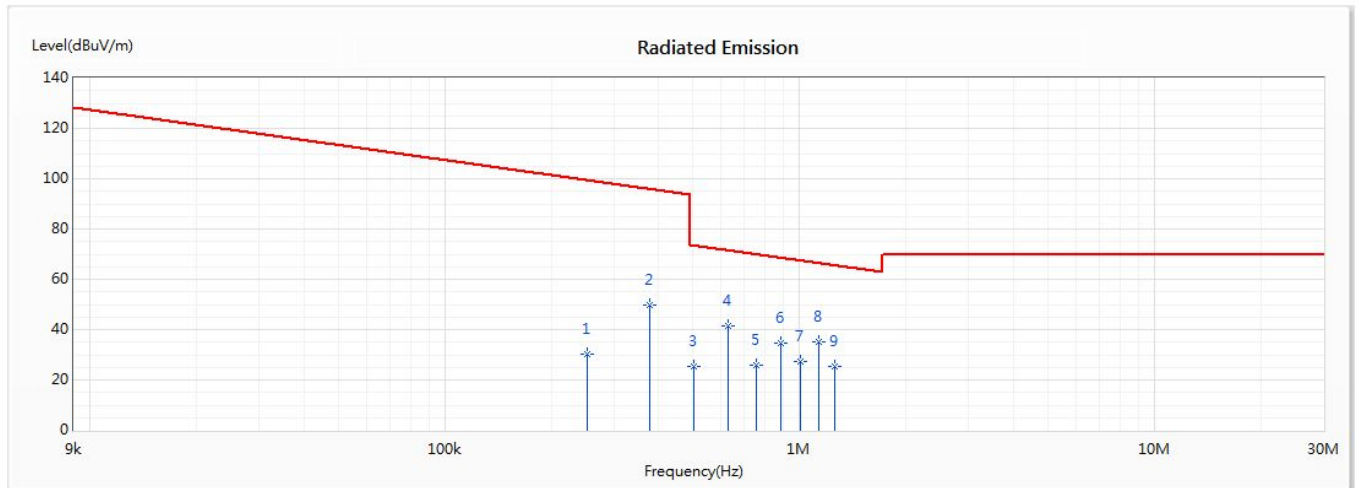
9kHz~30MHz**Horizontal**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	0.252	30.73	99.58	-68.84	11.10	19.63	QP
2	0.378	56.70	96.05	-39.35	36.90	19.80	QP
3	0.504	25.40	73.56	-48.16	5.60	19.80	QP
* 4	0.63	46.83	71.62	-24.80	27.00	19.83	QP
5	0.756	25.25	70.04	-44.79	5.40	19.85	QP
6	0.882	37.98	68.71	-30.73	18.10	19.88	QP
7	1.008	27.00	67.55	-40.55	7.10	19.90	QP
8	1.134	36.00	66.53	-30.53	16.10	19.90	QP
9	1.26	24.70	65.62	-40.92	4.80	19.90	QP

Note:

1. All Readings below 1GHz are Quasi-Peak.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product	Wireless Charger Module
Test Item	General Radiated Emission
Test Site	Site3
Date of Test	2019/11/19
Test Mode	Mode 1: Transmit (9k-30M)

9kHz~30MHz**Vertical**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	0.252	30.23	99.58	-69.34	10.60	19.63	QP
2	0.378	49.70	96.05	-46.35	29.90	19.80	QP
3	0.504	25.60	73.56	-47.96	5.80	19.80	QP
* 4	0.63	41.23	71.62	-30.40	21.40	19.83	QP
5	0.756	25.95	70.04	-44.09	6.10	19.85	QP
6	0.882	34.68	68.71	-34.03	14.80	19.88	QP
7	1.008	27.20	67.55	-40.35	7.30	19.90	QP
8	1.134	35.00	66.53	-31.53	15.10	19.90	QP
9	1.26	25.40	65.62	-40.22	5.50	19.90	QP

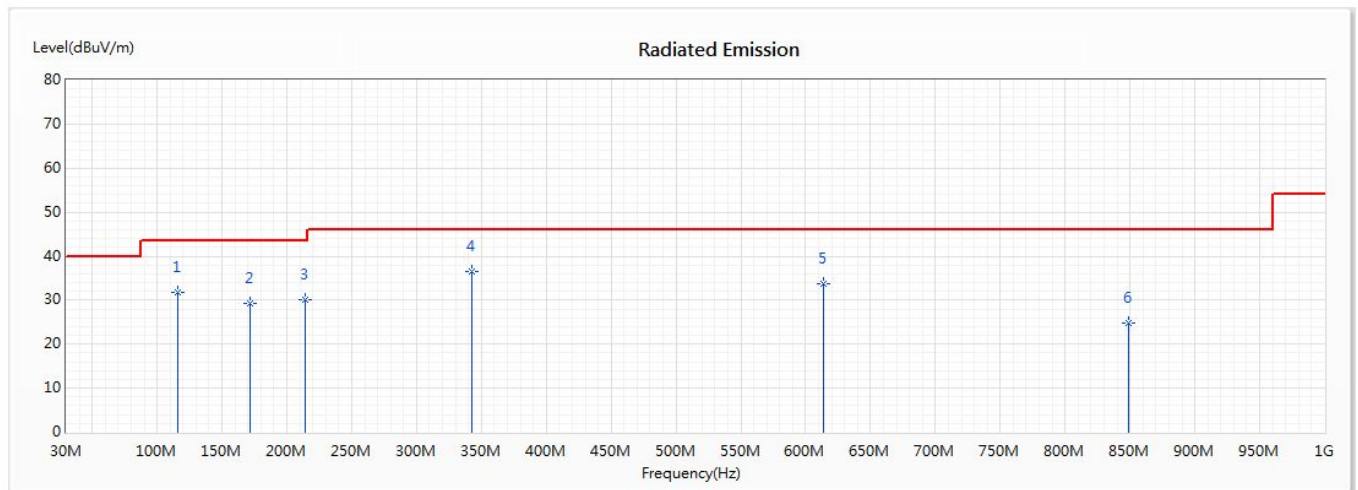
Note:

1. All Readings below 1GHz are Quasi-Peak.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product	Wireless Charger Module
Test Item	General Radiated Emission
Test Site	Site3
Date of Test	2019/11/15
Test Mode	Mode 1: Transmit (30M-1G)

30MHz~1GHz

Horizontal



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	116.33	31.78	43.50	-11.72	48.65	-16.87	QP
2	171.62	29.19	43.50	-14.31	49.27	-20.08	QP
3	214.3	30.23	43.50	-13.27	48.39	-18.16	QP
* 4	342.34	36.60	46.00	-9.40	50.42	-13.82	QP
5	613.94	33.62	46.00	-12.38	41.24	-7.62	QP
6	848.68	24.71	46.00	-21.29	33.07	-8.36	QP

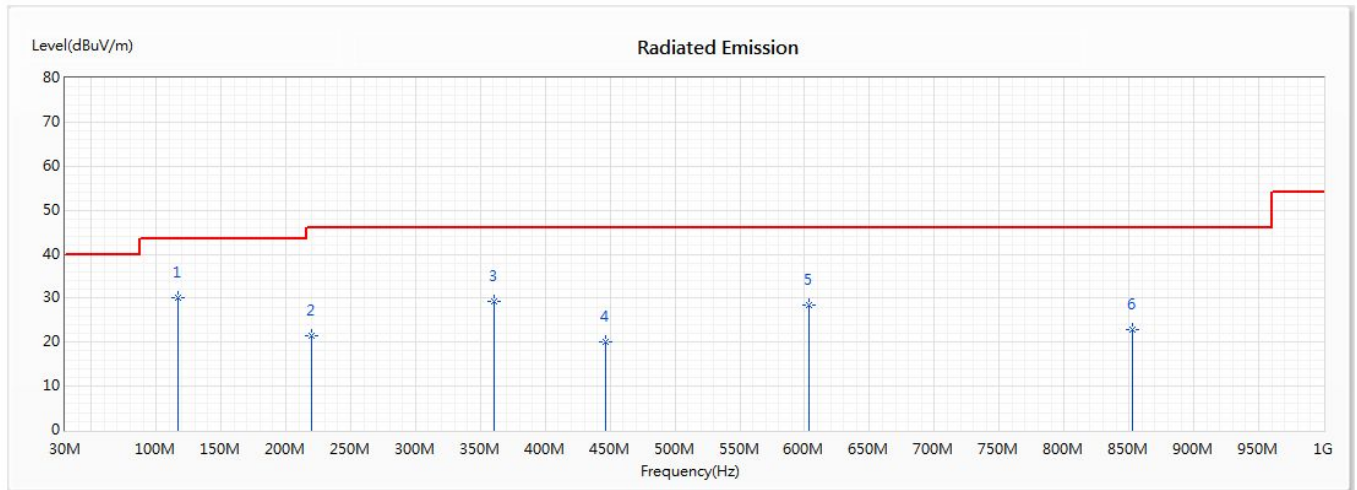
Note:

1. The reading levels below 1GHz are quasi-peak values.
2. Measurement Level = Reading Level + Correct Factor.
3. The radiated emissions below 1GHz of the lowest, middle, highest frequency are pretested. Only the worst case is shown on the report.

Product	Wireless Charger Module
Test Item	General Radiated Emission
Test Site	Site3
Date of Test	2019/11/15
Test Mode	Mode 1: Transmit (30M-1G)

30MHz~1GHz

Vertical



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	117.3	30.11	43.50	-13.39	47.00	-16.89	QP
2	220.12	21.52	46.00	-24.48	39.60	-18.08	QP
3	360.77	29.32	46.00	-16.68	42.00	-12.68	QP
4	446.13	20.00	46.00	-26.00	30.00	-10.00	QP
5	603.27	28.37	46.00	-17.63	35.21	-6.84	QP
6	852.56	22.74	46.00	-23.26	31.12	-8.38	QP

Note:

1. The reading levels below 1GHz are quasi-peak values.
2. Measurement Level = Reading Level + Correct Factor.
3. The radiated emissions below 1GHz of the lowest, middle, highest frequency are pretested. Only the worst case is shown on the report.

4. EMI Reduction Method During Compliance Testing

No modification was made during testing.