

**ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 15 SUBPART C REQUIREMENT**

OF

Dual Wireless Charger

Model No.: WD-20B

Trademark: N/A

FCC ID: 2AXDL-WD20B

Report No.: EA2008241F02001

Issue Date: September 16, 2020

Prepared for

**Dongguan Chuan OptoElectronics Limited
NO.43 SongShui Road,SongMuShan Village,Dalang Town,DongGuan
City,Guangdong,China**

Prepared by

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Hi-tech Industrial Development Zone, Dongguan City, Guangdong Pr.,
China.**

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Dong Guan Anci Electronic Technology Co., Ltd.**

**VERIFICATION OF COMPLIANCE**

Applicant:	Dongguan Chuan OptoElectronics Limited NO.43 SongShui Road,SongMuShan Village,Dalang Town,DongGuan City,Guangdong,China
Manufacturer:	Dongguan Chuan OptoElectronics Limited NO.43 SongShui Road,SongMuShan Village,Dalang Town,DongGuan City,Guangdong,China
Product Description:	Dual Wireless Charger
Trade Mark:	N/A
Model Number:	WD-20B

We hereby certify that:

The above equipment was tested by Dong Guan Anci Electronic Technology Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10-2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.209.

Date of Test : August 22, 2020 to September 11, 2020

Prepared by : _____
Tomas Yang/Supervisor

Reviewer &
Authorized Signer : _____
Alan He/Manager



Report No.: EA2008241F02001

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Modified Information

Version	Summary	Revision Date	Report No.
Ver.1.0	Original Report	/	EA2008241F02001



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1 General Information

1.1 Product Description

Characteristics	Description
Product Name	Dual Wireless Charger
Model number	WD-20B
Operation Mode	Wireless Charging
Input Rating	DC 5V, 2A; DC 9V, 2.5A; DC 12V, 2A
Power Supply	AC120V/60Hz for adapter
Operating Frequency	110-205KHz
Wireless Charging Power	10W Max *2
Modulation Technique	ASK
Antenna Type	Induction coil

1.2 Related Submittal(s) / Grant(s)

This submittal(s) (test report) is intended for FCC ID: 2AXDL-WD20B filing to comply with the FCC Part 15, Subpart C Rules.

1.3 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10 (2013). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 Special Accessories

Not available for this EUT intended for grant.

1.5 Equipment Modifications

Not available for this EUT intended for grant.

1.6 Test Facility

Site Description	:	Accredited by CNAS, 2017.06.26
EMC Lab.	:	The certificate is valid until 2022.10.28
	:	The Laboratory has been assessed and proved to be in compliance with
	:	CNAS-CL01:2006 (identical to ISO/IEC 17025:2005)
	:	The Certificate Registration Number is L6214.
	:	Accredited by A2LA, 2018.03.15
	:	The Certificate Number is 4422.01.
Name of Firm	:	Dong Guan Anci Electronic Technology Co., Ltd.
Site Location	:	1-2 Floor, Building A, No.11, Headquarters 2 Road, Songshan, Lake
	:	Hi-tech Industrial Development Zone, Dongguan City, Guangdong Pr.,
	:	China.

2 System Test Configuration

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

2.3 Test Procedure

2.3.1 Conducted Emissions

The EUT is placed on a turn table which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.

2.3.2 Radiated Emissions

The EUT is placed on a turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the fixed in a particular direction according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013.

2.4 Configuration of Tested System

Fig. 2-1 Configuration of Tested System

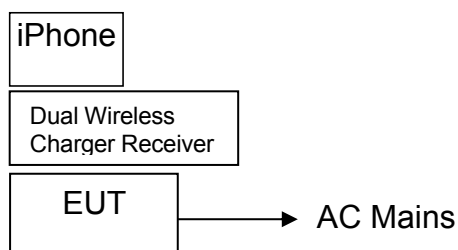


Table 2-1 Equipment Used in Tested System

Item	Equipment	Trade Mark	Model No.	FCC ID	Note
1.	Dual Wireless Charger	Raffel Systems	WD-20B	2AXDL-WD20B	EUT
2.	Adapter	MI	Model:MDY-08-EH Input: AC 100-240V, 50/60Hz Output: DC 5V/3A,DC 9/3A	N/A	Support EUT
3.	iPhone	Apple	A1524	N/A	Support Equipment
4.	Dual Wireless Charger Receiver Module	Universal	N/A	N/A	Support Equipment

Note:

- (1) Unless otherwise denoted as EUT in 『Remark』 column, device(s) used in tested system is a support equipment.

3 Summary of Test Results

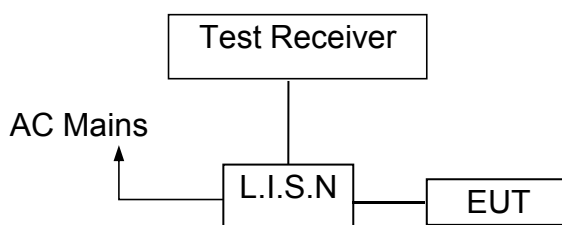
FCC Rules	Description Of Test	Result
§15.207	AC Power Conducted Emission	Compliant
§15.209	Radiated Emission	Compliant
§2.1049	20dB Bandwidth	Compliant
§15.203	Antenna Requirement	Compliant

4 Conducted Emissions Test

4.1 Measurement Procedure

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured was complete.

4.2 Test SET-UP (Block Diagram of Configuration)



4.3 Measurement Equipment Used

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	Calibrated until
L.I.S.N	SCHWARZBECK	NSLK 8127	8127-669	2021-05-18
10 db attenuator	JFW	50FP-010-H4	4360846-427-1	2021-05-18
RF Cable	N/A	N/A	2#	2021-05-18
EMI Test Receiver	ROHDE&SCHWARZ	ESCI	101358	2021-05-18

4.4 Conducted Emission Limit

Conducted Emission

Frequency(MHz)

Quasi-peak

Average

0.15-0.5

66-56

56-46

0.5-5.0

56

46

5.0-30.0

60

50

Note: 1. The lower limit shall apply at the transition frequencies

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

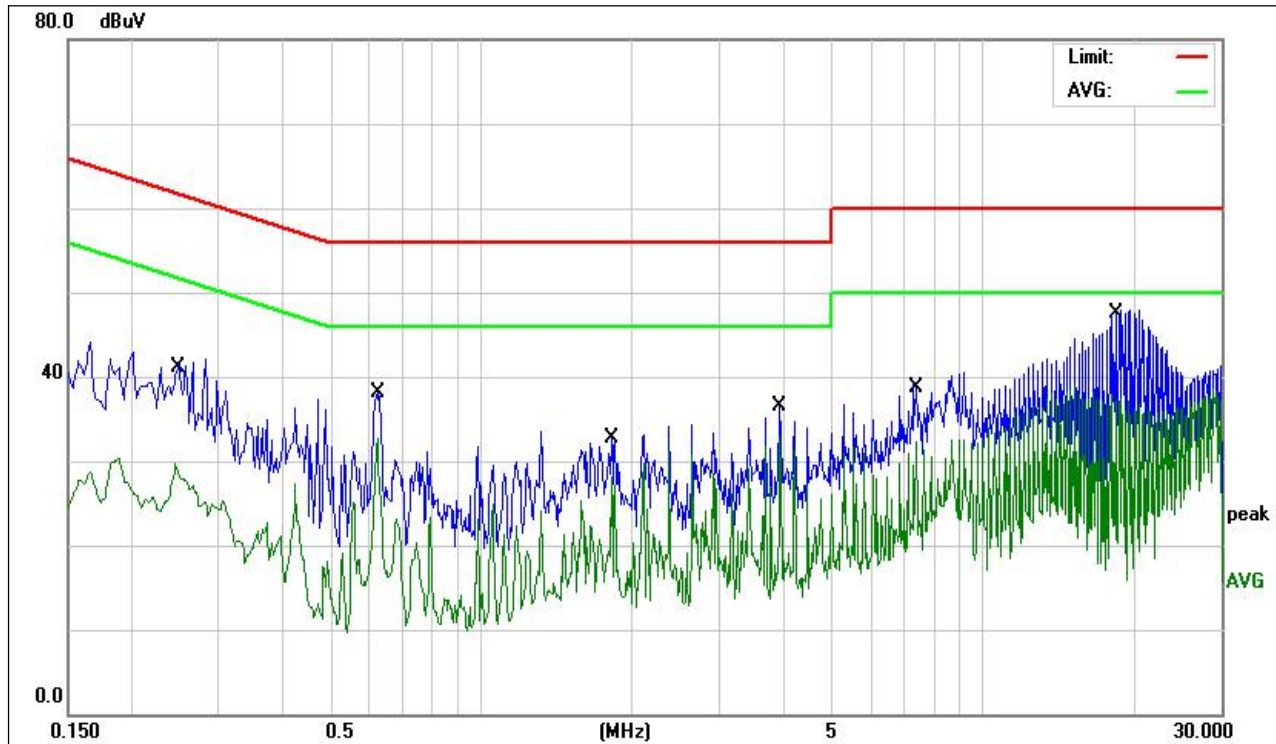
4.5 Measurement Result

Operation Mode:	TX	Test Date :	2020-08-22
Frequency Range:	0.15MHz~30MHz	Temperature :	28°C
Test Result:	PASS	Humidity :	65 %
Test By:	Best		

Pass

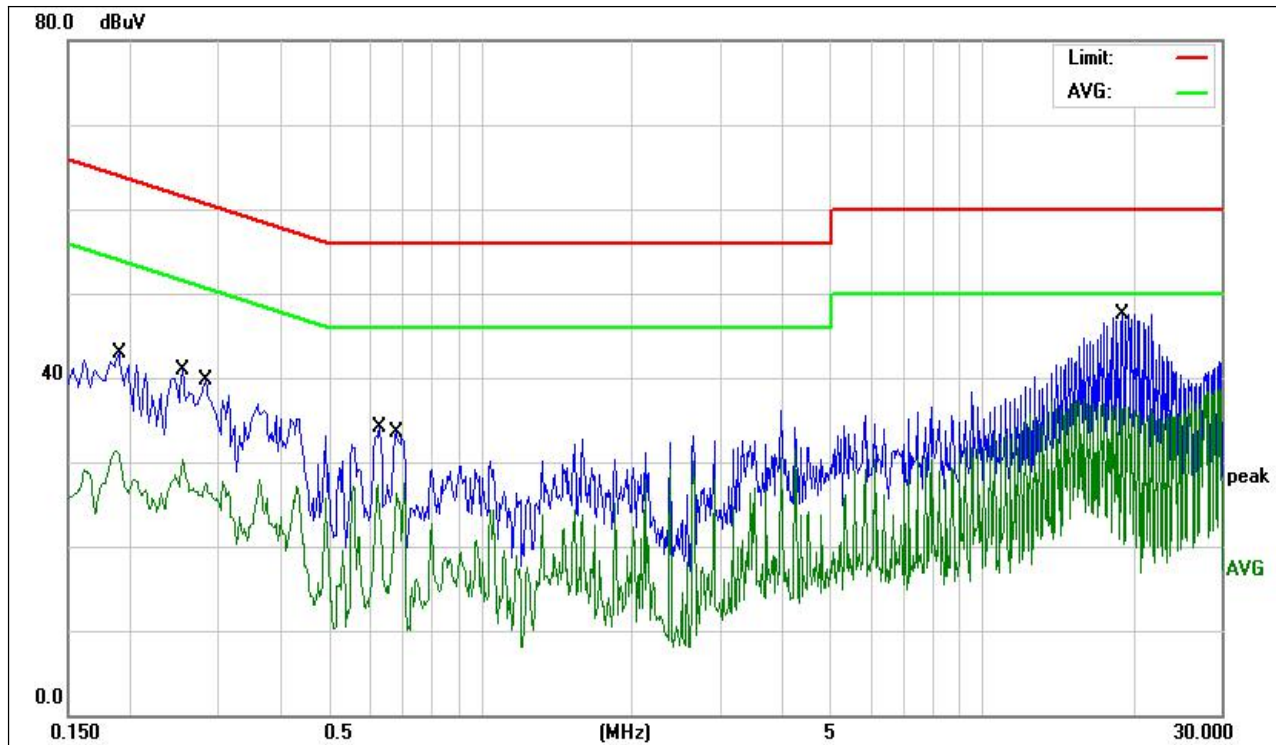
We pretested modes (Single Coil Wireless Charging(10W),Single Coil Wireless Charging(5W), Dual Coil Wireless Charging(10W*2), Dual Coil Wireless Charging(5W*2)) for EUT. The worst test data see follow the table.

Dual Coil Wireless Charging(10W*2):



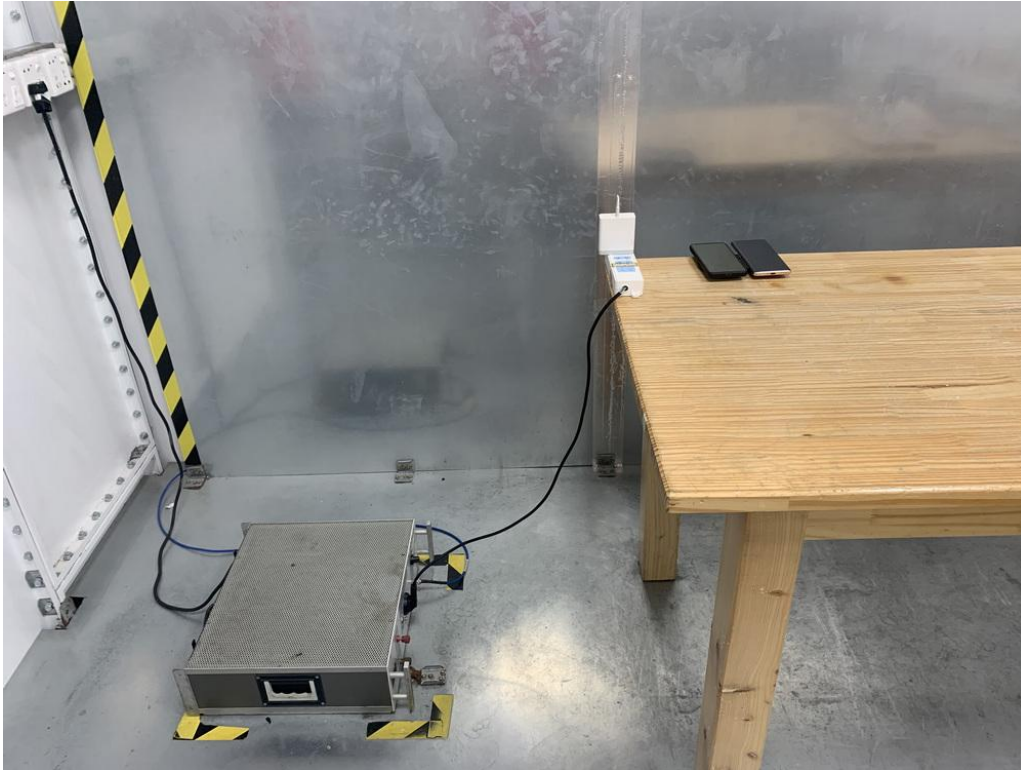
Site:	843	Phase:	L1	Temperature(C):	26(C)
Limit:	FCC Part 15 C Conduction(QP)	Test Time:	2020/08/22	Humidity(%):	60%
EUT:	Dual Wireless Charger	Power Rating:	AC 120V/60Hz		
M/N.:	WD-20B	Test Engineer:	Jack		
Mode:	Dual Coil Wireless Charging 10W*2				
Note:					

No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measure-ment(dBuV)	Limit (dBuV)	Over (dB)	Detector	Comment
1	0.2460	26.42	10.16	36.58	61.89	-25.31	QP	
2	0.2460	19.44	10.16	29.60	51.89	-22.29	AVG	
3	0.6220	24.74	10.21	34.95	56.00	-21.05	QP	
4	0.6220	22.46	10.21	32.67	46.00	-13.33	AVG	
5	1.8260	15.42	10.28	25.70	56.00	-30.30	QP	
6	1.8260	17.74	10.28	28.02	46.00	-17.98	AVG	
7	3.9620	23.68	10.41	34.09	56.00	-21.91	QP	
8	3.9620	22.43	10.41	32.84	46.00	-13.16	AVG	
9	7.3980	24.58	10.57	35.15	60.00	-24.85	QP	
10	7.3980	21.73	10.57	32.30	50.00	-17.70	AVG	
11	18.2260	33.79	11.25	45.04	60.00	-14.96	QP	
12	18.2260	26.56	11.25	37.81	50.00	-12.19	AVG	
*								



Site: 843 **Phase:** N **Temperature(C):** 26(C)
Limit: FCC Part 15 C Conduction(QP) **Humidity(%):** 60%
EUT: Dual Wireless Charger **Test Time:** 2020/08/22
M/N.: WD-20B **Power Rating:** AC 120V/60Hz
Mode: Dual Coil Wireless Charging 10W*2 **Test Engineer:** Jack
Note:

No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measure-ment(dBuV)	Limit (dBuV)	Over (dB)	Detector	Comment
1	0.1900	27.75	10.10	37.85	64.03	-26.18	QP	
2	0.1900	19.75	10.10	29.85	54.03	-24.18	AVG	
3	0.2540	24.82	10.11	34.93	61.62	-26.69	QP	
4	0.2540	18.26	10.11	28.37	51.62	-23.25	AVG	
5	0.2819	23.58	10.11	33.69	60.76	-27.07	QP	
6	0.2819	16.24	10.11	26.35	50.76	-24.41	AVG	
7	0.6300	18.07	10.13	28.20	56.00	-27.80	QP	
8	0.6300	9.78	10.13	19.91	46.00	-26.09	AVG	
9	0.6780	20.96	10.13	31.09	56.00	-24.91	QP	
10	0.6780	14.64	10.13	24.77	46.00	-21.23	AVG	
*								
11	19.1020	15.98	11.17	27.15	60.00	-32.85	QP	
12	19.1020	5.62	11.17	16.79	50.00	-33.21	AVG	

4.6 Conducted Measurement Photo

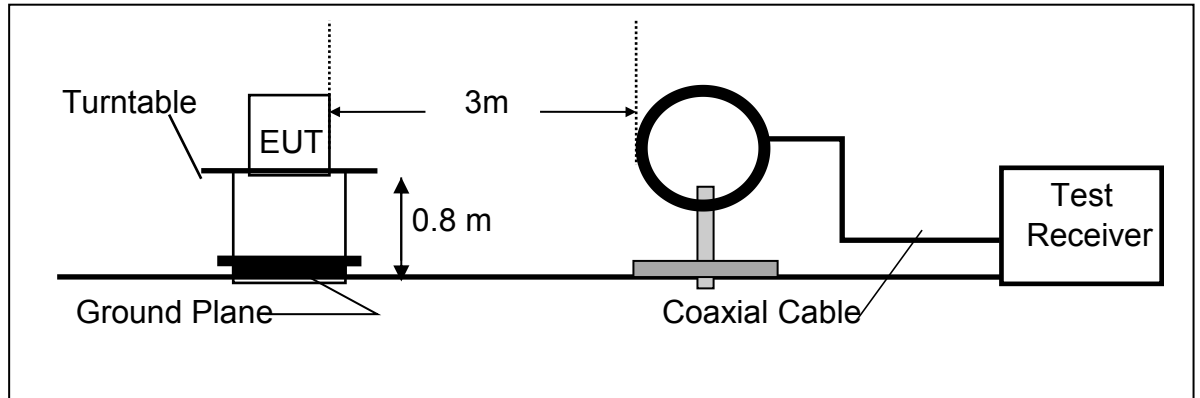
5 Radiated Emission Test

5.1 Measurement Procedure

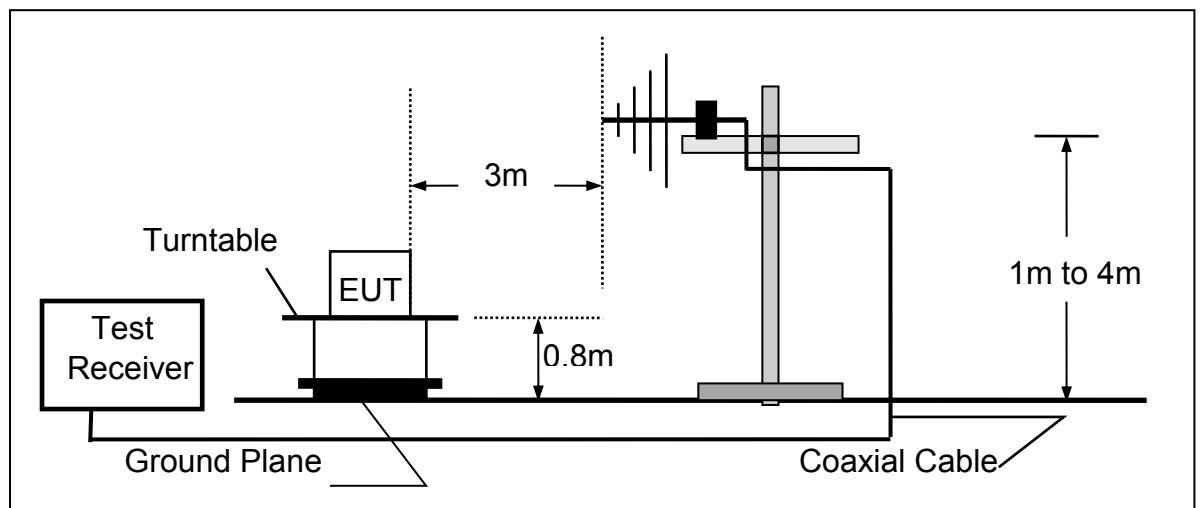
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

5.2 Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



5.3 Measurement Equipment Used

Item	Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1.	EMI Test Receiver	Rohde & Schwarz	ESPI	100502	2020-11-28
2.	Pre-Amplifier	HP	8447D	2727A06172	2021-05-18
3.	Bilog Antenna	Schwarzbeck	VULB9163	VULB9163-588	2021-05-18
4.	Loop Antenna	Schwarzbeck	FMZB 1516	1516-141	2020-11-28
5.	RF Cable	Gigalink Microwave	ZT40-2.92J-2.92 J-2m	N/A	2020-11-28
6.	RF Cable	Gigalink Microwave	ZT40-2.92J-2.92 J-0.3m	N/A	2020-11-28
7.	RF Cable	N/A	N/A	6#	2021-05-18
8.	3m Semi-anechoic Chamber	chengyu	9m*6m*6m	N/A	2021-05-18
9.	Test Software	Farad	EZ-EMC Ver:ANCI-3A1	N/A	N/A

5.4 Radiated Emission Limit

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table 15.209(a):

FCC Part 15.209				
Frequency (MHz)	Field Strength Limitation		Field Strength Limitation Frequency tion at 3m Measurement Dist	
	(uV/m)	Dist	(uV/m)	(dBuV/m)
0.009 – 0.490	$2400 / F(\text{KHz})$	300m	$10000 * 2400/F(\text{KHz})$	$20\log 2400/F(\text{KHz}) + 80$
0.490 – 1.705	$24000 / F(\text{KHz})$	30m	$100 * 24000/F(\text{KHz})$	$20\log 24000/F(\text{KHz}) + 40$
1.705 – 30.00	30	30m	$100 * 30$	$20\log 30 + 40$
30.0 – 88.0	100	3m	100	$20\log 100$
88.0 – 216.0	150	3m	150	$20\log 150$
216.0 – 960.0	200	3m	200	$20\log 200$
Above 960.0	500	3m	500	$20\log 500$

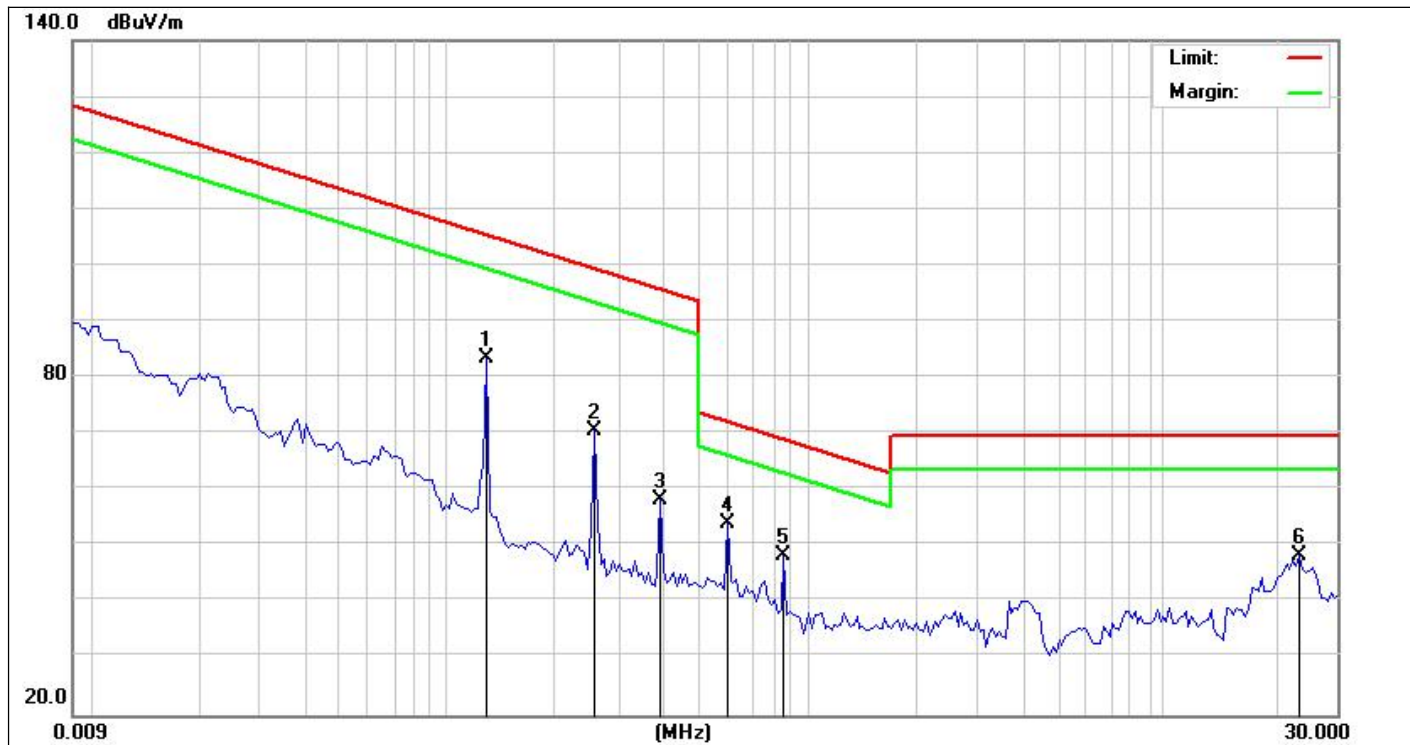
15.205 Restricted bands of operation

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)

- Remark:
1. Emission level in dBuV/m=20 log (uV/m)
 2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
 3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of § 15.205, and the emissions located in restricted bands also comply with 15.209 limit.

5.5 Measurement Result

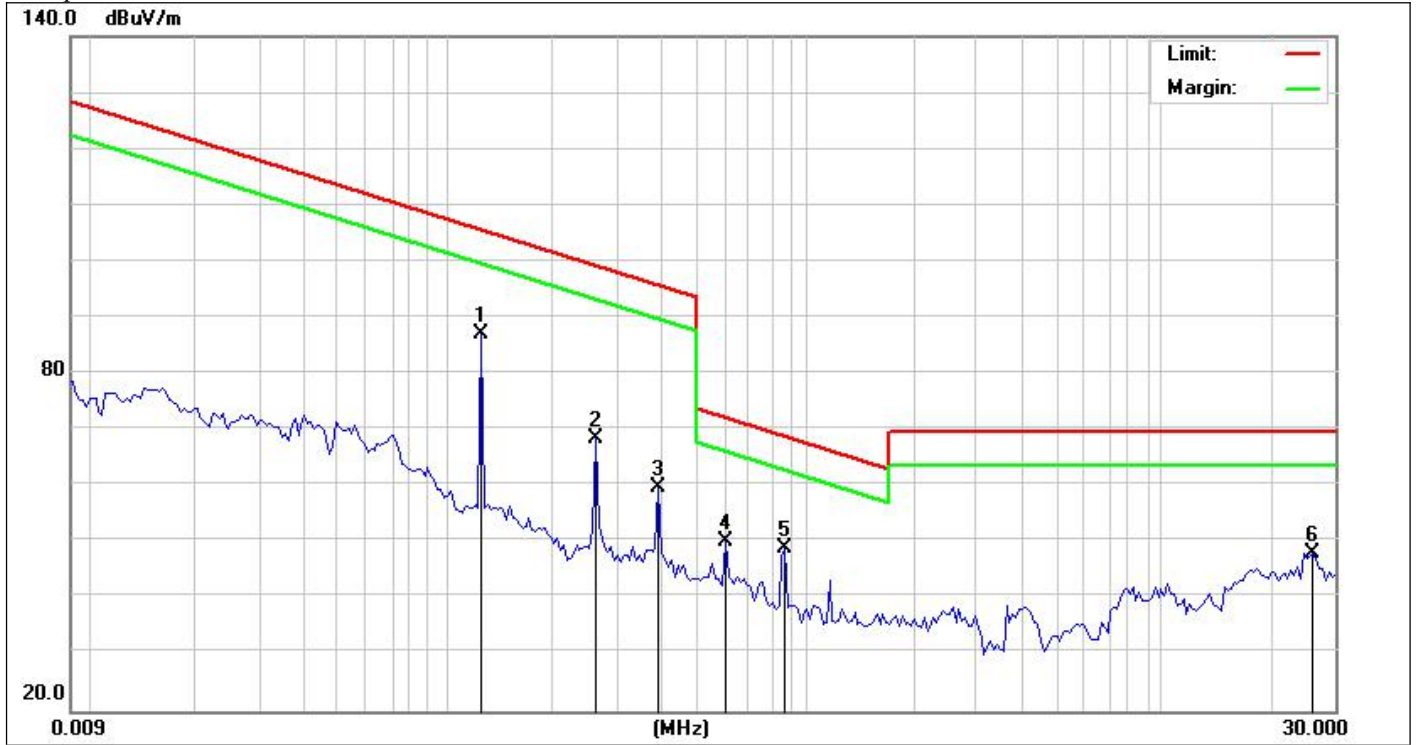
We pretested modes (Single Coil Wireless Charging(10W),Single Coil Wireless Charging(5W), Dual Coil Wireless Charging(10W*2), Dual Coil Wireless Charging(5W*2)) for EUT. The worst mode (Dual Coil Wireless Charging(10W*2))test data see follow the table.



Site:	LAB	Antenna::Vertical	Temperature(C):23.4(C)
Limit:	FCC Part 15 Class B 3m Radiation(QP)		Humidity(%):56.7%
EUT:	Dual Wireless Charger	Test Time:	2020/09/6
M/N.:	WD-20B	Power Rating:	AC 120V/60Hz
Mode:	Dual Coil Wireless Charging 10W*2	Test Engineer:	sunshine
Note:			

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Remark
1	0.1282	77.33	6.20	83.53	105.37	-21.84	QP	100	125	
2	0.2555	65.03	5.60	70.63	99.42	-28.79	QP	100	125	
3	0.3911	52.40	5.99	58.39	95.74	-37.35	QP	100	48	
4 *	0.5988	47.75	6.40	54.15	72.06	-17.91	QP	100	48	
5	0.8627	42.09	6.30	48.39	68.90	-20.51	QP	100	236	
6	23.5198	41.90	6.35	48.25	69.50	-21.25	QP	100	236	

*:Maximum data x:Over limit !:over margin



Site:	LAB	Antenna::Horizontal	Temperature(C):23.4(C)
Limit:	FCC Part 15 Class B 3m Radiation(QP)	Test Time:	Humidity(%):56.7%
EUT:	Dual Wireless Charger	Power Rating:	2020/09/6
M/N.:	WD-20B	Test Engineer:	AC 120V/60Hz
Mode:	Dual Coil Wireless Charging 10W*2		sunshine
Note:			

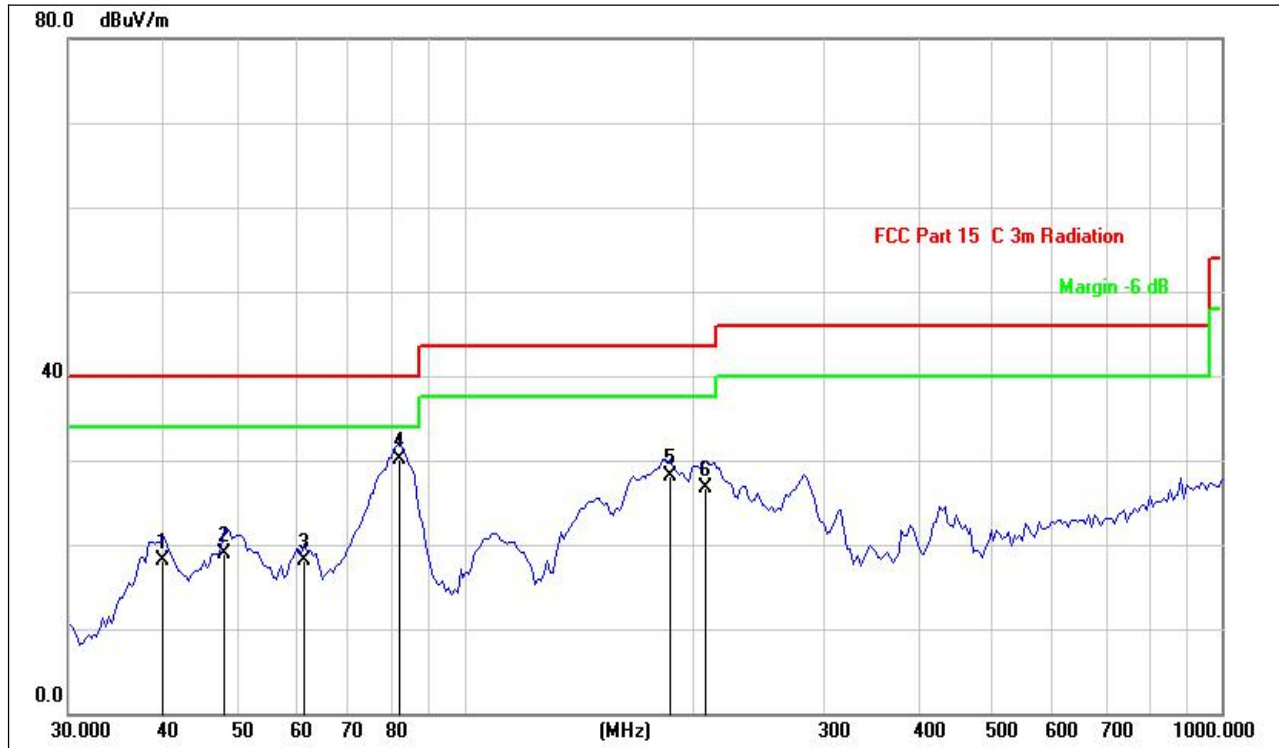
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Remark
1 *	0.1257	80.93	6.22	87.15	105.54	-18.39	QP	100	125	
2	0.2607	62.81	5.61	68.42	99.25	-30.83	QP	100	125	
3	0.3911	53.90	5.99	59.89	95.74	-35.85	QP	100	48	
4	0.5988	43.75	6.40	50.15	72.06	-21.91	QP	100	48	
5	0.8803	42.56	6.27	48.83	68.72	-19.89	QP	100	236	
6	26.0298	42.16	5.89	48.05	69.50	-21.45	QP	100	236	

Note:

- (1) All Readings are Peak Value.
- (2) Emission Level= Reading Level+Probe Factor +Cable Loss.
- (3) The average measurement was not performed when the peak measured data under the limit of average detection.
- (4) EUT lying on the table position is the worst case result in the report.

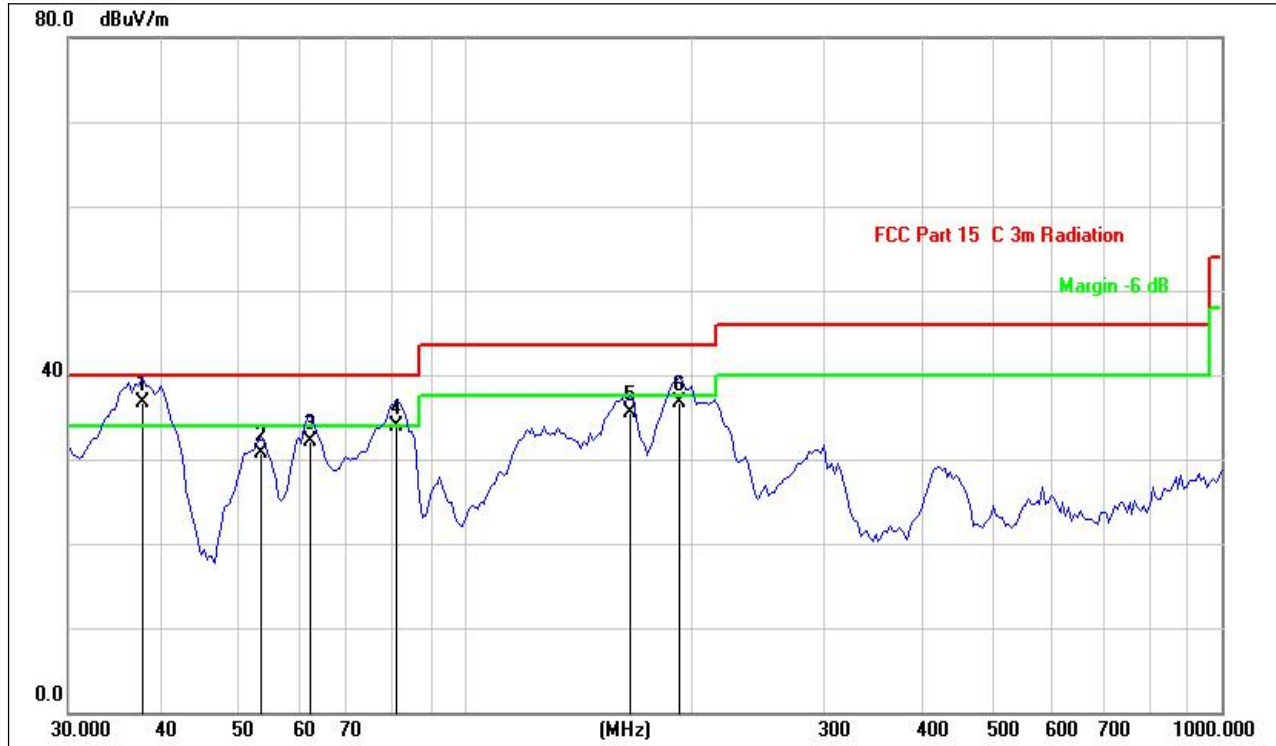
We pretested modes (Wireless Charging(15W),Wireless Charging(10W),Wireless Charging(7.5W), Wireless Charging(5W)) for EUT. The worst test data see follow the table.

Dual Coil Wireless Charging(10W*2):



Site:	LAB	Antenna::	Horizontal	Temperature(C):	24.2(C)
Limit:	FCC Part 15 C 3m Radiation(QP)	Test Time:		Humidity(%):	53.6%
EUT:	Dual Wireless Charger	Power Rating:		AC 120V/60Hz	
M/N.:	WD-20B	Test Engineer:		sunshine	
Mode:	Dual Coil Wireless Charging 10W*2				
Note:					

No .	Frequenc y (MHz)	Readin g (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margi n (dB)	Det .	Heigh t (cm)	Azimut h (deg)	Remar k
1	40.0643	34.87	-16.76	18.11	40.00	-21.89	QP			
2	48.1625	35.11	-16.17	18.94	40.00	-21.06	QP			
3	61.5617	34.04	-16.01	18.03	40.00	-21.97	QP			
4 *	82.2146	48.29	-18.19	30.10	40.00	-9.90	QP			
5	187.4241	44.92	-16.79	28.13	43.50	-15.37	QP			
6	208.2148	42.46	-15.66	26.80	43.50	-16.70	QP			

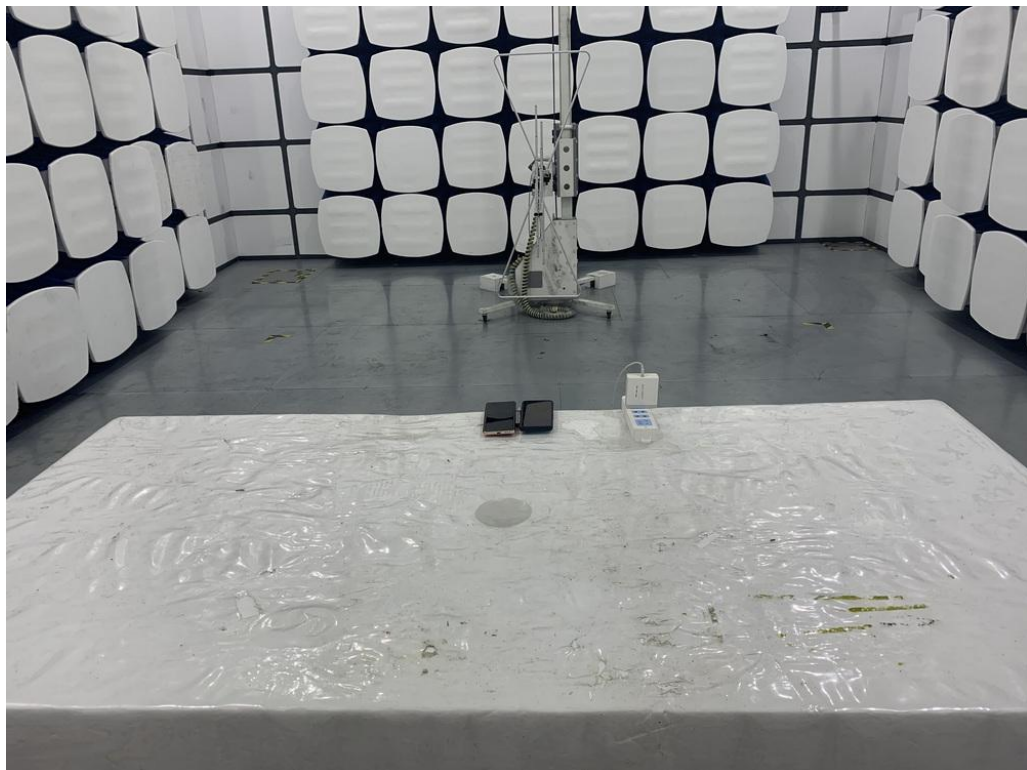
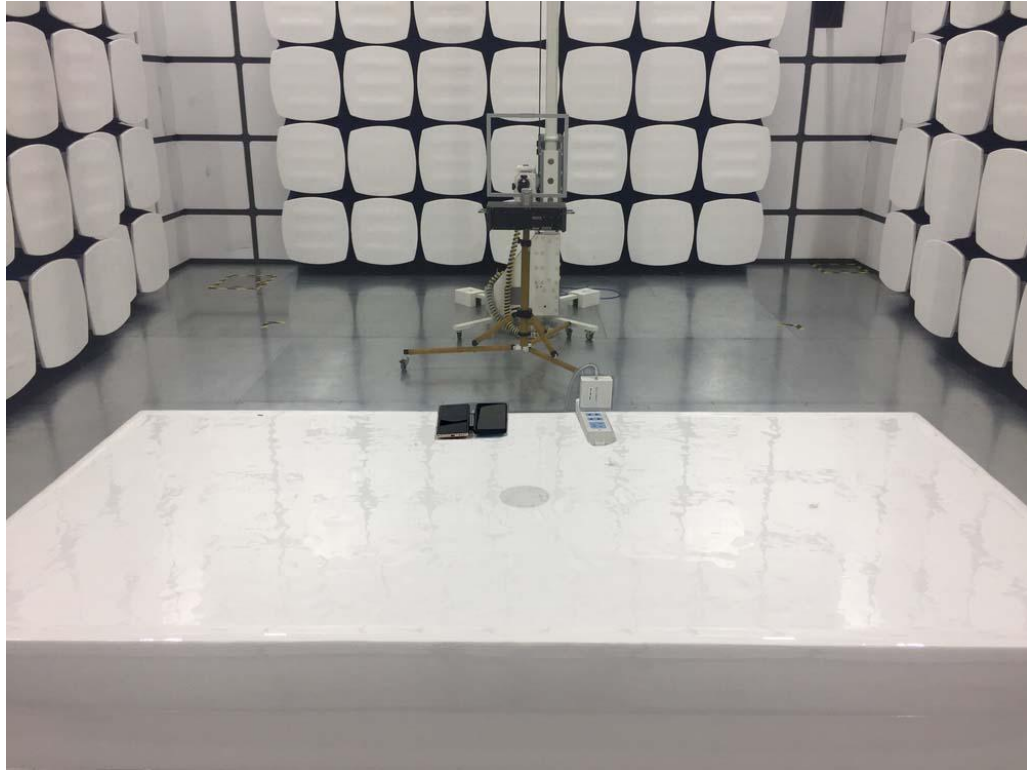


Site:	LAB	Antenna::Vertical	Temperature(C):24.2(C)
Limit:	FCC Part 15 C 3m Radiation(QP)		Humidity(%):53.6%
EUT:	Dual Wireless Charger	Test Time:	2020/09/6
M/N.:	WD-20B	Power Rating:	AC 120V/60Hz
Mode:	Dual Coil Wireless Charging 10W*2	Test Engineer:	sunshine
Note:			

No .	Frequenc y (MHz)	Readin g (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margi n (dB)	Det .	Heigh t (cm)	Azimut h (deg)	Remar k
1 *	37.6798	53.79	-17.16	36.63	40.00	-3.37	QP			
2	53.9763	46.37	-15.69	30.68	40.00	-9.32	QP			
3	62.6507	48.31	-16.24	32.07	40.00	-7.93	QP			
4	81.4968	52.08	-18.16	33.92	40.00	-6.08	QP			
5	165.7768	53.12	-17.64	35.48	43.50	-8.02	QP			
6	192.4183	53.24	-16.50	36.74	43.50	-6.76	QP			

*:Maximum data x:Over limit !:over margin

5.6 Radiated Measurement Photos



6 20db Bandwidth

6.1 20dB Bandwidth Limit

None: for reporting purposed only.

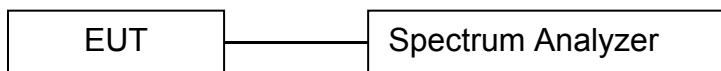
6.2 Test Instruments

Refer a test equipment and calibration data table in this test report.

6.3 Test Procedure

The bandwidth of the fundamental frequency was measured by spectrum analyzer with 10Hz RBW and 30Hz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

6.4 Test Setup



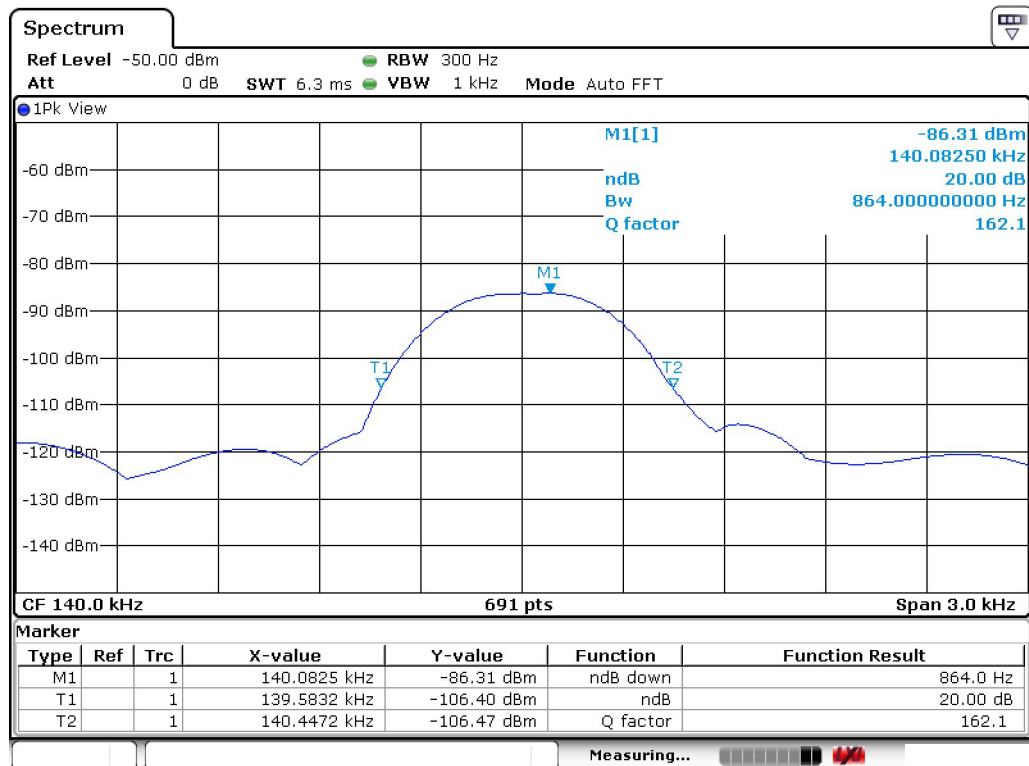
6.5 Test Result

Frequency (KHz)	20dB Bandwidth (Hz)	Results
140	864	PASS

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20 dB Bandwidth Test plot



7 Antenna Application

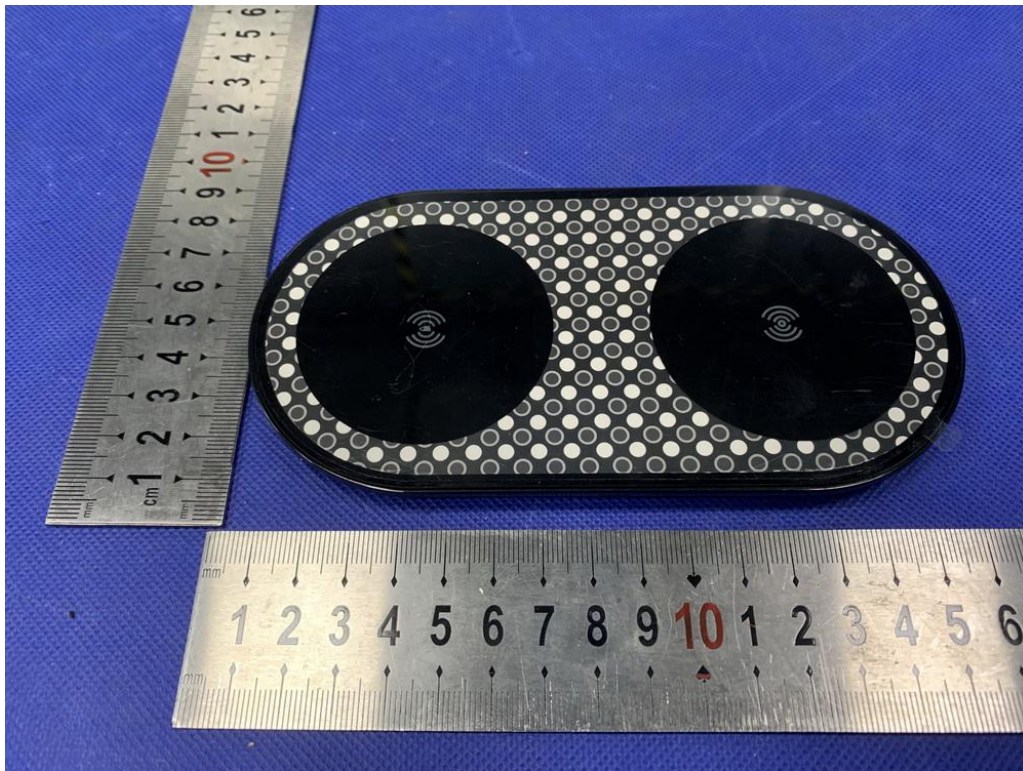
7.1 Antenna requirement

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

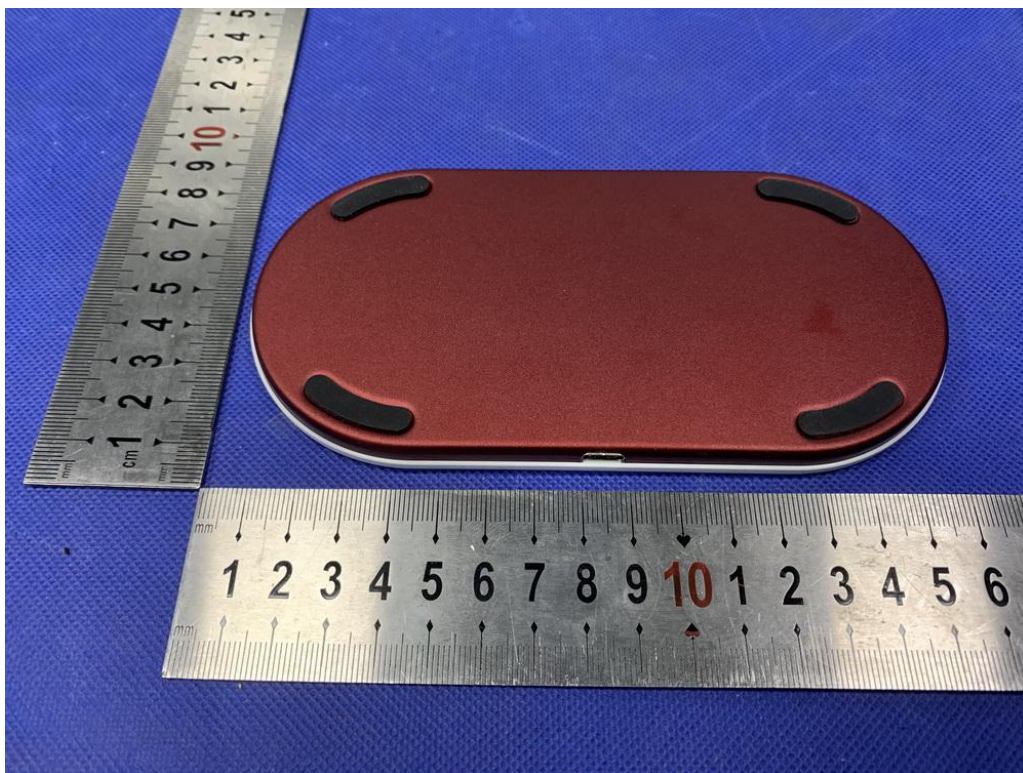
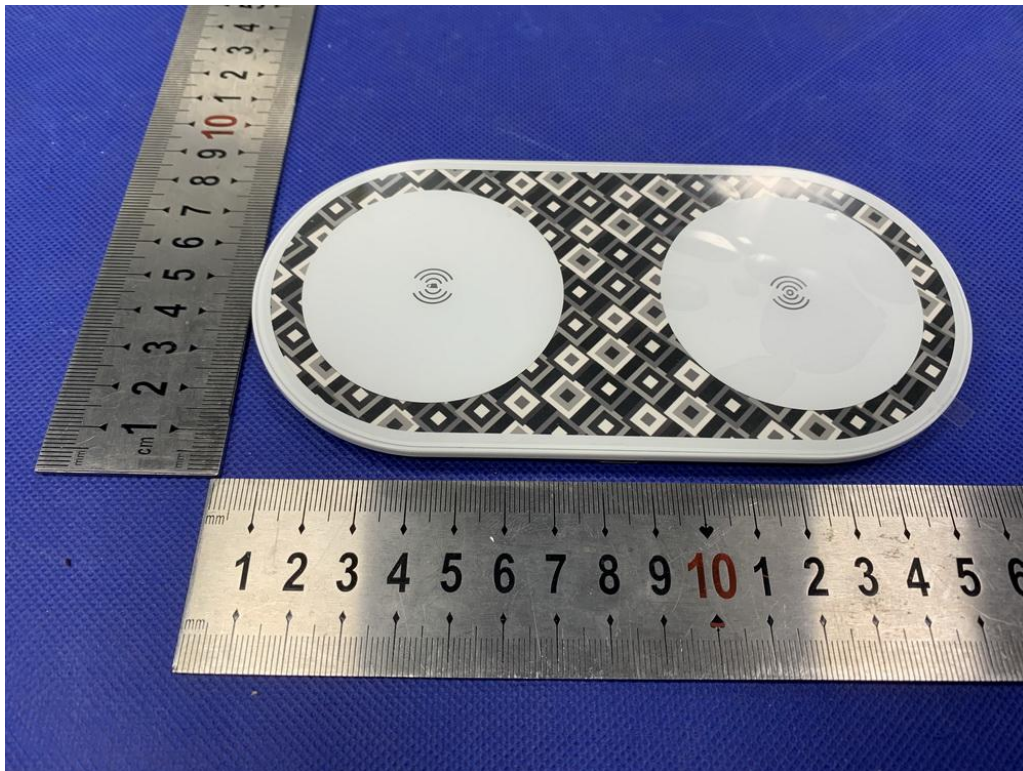
7.2 Result

The EUT's antenna, permanent attached antenna, used an Induction coil and integrated on PCB, The antenna's gain meets the requirement.

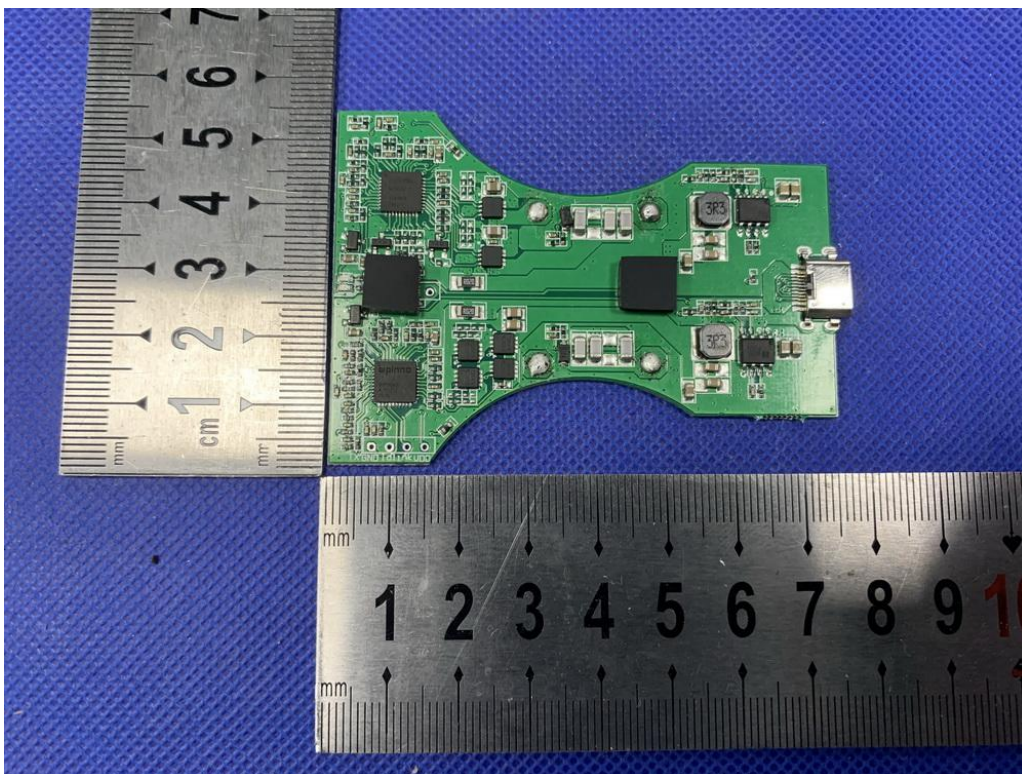
APPENDIX (Photos of EUT)

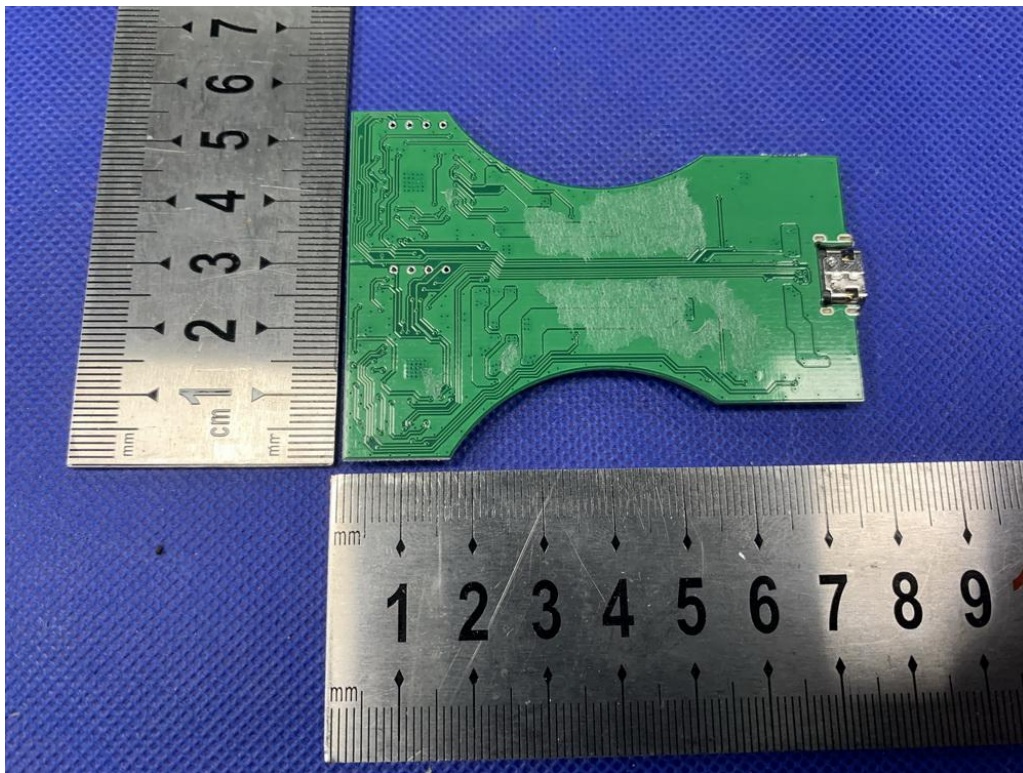












-----The end of report-----