

TEST REPORT

Reference No. : WTF19S12083723W001 V1
FCC ID : 2AMH2-BMCA142A
Applicant..... : MPOW TECHNOLOGY CO., LIMITED
Address..... : FLAT/RM 605 6/F FA YUEN COMMERCIAL BUILDING 75-77 FA
YUEN STREET MONGKOK KL HONG KONG
Manufacturer : Guangdong dongguan Fuze electronics co.LTD
Address..... : No2.Dongyi heng road.huanshi east road.Tangxia town. dongguan city
Guangdong province, China
Product..... : Wireless Charging Mount Kit With Smart Auto Clamping
Model(s) : CA142A, BMCA142A, BMCA142AB, BMCA124A, CA124A,
BMCA125A, CA125A, BMCA126A, CA126A
Standards..... : FCC Part 15 subpart C
Date of Receipt sample : 2019-12-02
Date of Test : 2019-12-03 to 2019-12-11
Date of Issue..... : 2019-12-25
Test Result..... : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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3. Revision History

Test report No.	Date of Receipt sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTF19S12083723W001	2019-12-02	2019-12-03 to 2019-12-11	2019-12-12	original	-	Replaced
WTF19S12083723W001 V1	2019-12-02	2019-12-03 to 2019-12-11	2019-12-25	Version 1	Updated	Valid

4. Test Summary

Test Items	Load type	Test Requirement	Result
Conducted Emissions	Full load (10W)*	15.207	PASS
	Half load (5W)		
	Empty load		
Radiated Spurious Emissions	Full load (10W)*	15.209	PASS
	Half load (5W)		
	Empty load		
Occupied Bandwidth	Full load (10W)*	15.215	PASS
	Half load (5W)		
	Empty load		
Antenna Requirement	/	15.203	PASS

Note: All the mode were tested and passed, "*" show the worst case mode which were recorded in this report.

5. General Information

5.1 General Description of E.U.T

Product:	Wireless Charging Mount Kit With Smart Auto Clamping
Model(s):	CA142A, BMCA142A, BMCA142AB, BMCA124A, CA124A, BMCA125A, CA125A, BMCA126A, CA126A
Model Difference:	Only the model names are different. The model BMCA142A is the tested sample.
Type of Modulation:	ASK
Frequency Range:	112~205kHz
Antenna installation:	Coil Antenna
Antenna Gain:	0dBi

5.2 Details of EUT

Ratings:	Input: 5V 2A / 9V 2A
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6. Equipment Used during Test

6.1 Equipments List

Conducted Emissions						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1	EMI Test Receiver	R&S	ESCI	101155	2019-09-15	2020-09-14
2	LISN	SCHWARZBECK	NSLK 8128	8128-259	2019-09-15	2020-09-14
3	Limitter	CYBERTEK	EM5010	261115-001-0024	2019-09-15	2020-09-14
4	Cable	Laplace	RF300	-	2019-07-18	2020-07-17
3m Semi-anechoic Chamber for Radiation(TDK)						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1	Test Receiver	R&S	ESCI	101296	2019-04-20	2020-04-19
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	2019-04-20	2020-04-19
3	Active Loop Antenna	Com-Power Corp.	AL-130R	10160007	2019-04-17	2020-04-16
4	Amplifier	ANRITSU	MH648A	M43381	2019-04-20	2020-04-19
5	Cable	HUBER+SUHNER	CBL2	525178	2019-04-20	2020-04-19
RF Conducted Testing						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1	Spectrum Analyzer	Agilent	N9020A	MY49100060	2019-09-21	2020-09-20
2	Spectrum Analyzer (9k-6GHz)	R&S	FSL6	100959	2019-09-10	2020-09-09
3	Humidity Chamber	GF	GTH-225-40-1P	IAA061213	2019-08-12	2020-08-11
4	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	2019-04-05	2020-04-04
5	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	2019-09-10	2020-09-09

6.2 Description of Support Units

Equipment	Manufacturer	Model No.	Series No.
-	-	-	-

6.3 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conducted Emissions	150kHz~30MHz	±3.64dB	(1)
Radiated Spurious Emissions	26KHz~30MHz	±3.03dB	(1)
Radiated Spurious Emissions	30MHz~1000MHz	±5.03dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

6.4 Test Equipment Calibration

All the test equipments used are valid and calibrated by GUANG ZHOU GRG METROLOGY & TEST CO., LTD. address is No.163, Pingyun Rd. West of Huangpu Ave, Tianhe District, Guangzhou, Guangdong, China.

7. Conducted Emission

Test Requirement:	FCC CFR 47 Part 15 Section 15.207
Test Method:	ANSI C63.10:2013
Test Result:	PASS
Frequency Range:	150kHz to 30MHz
Class/Severity:	Class B
Limit:	66-56 dB μ V between 0.15MHz & 0.5MHz 56 dB μ V between 0.5MHz & 5MHz 60 dB μ V between 5MHz & 30MHz
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth)

7.1 E.U.T. Operation

Operating Environment :

Temperature: 25.5 °C

Humidity: 51 % RH

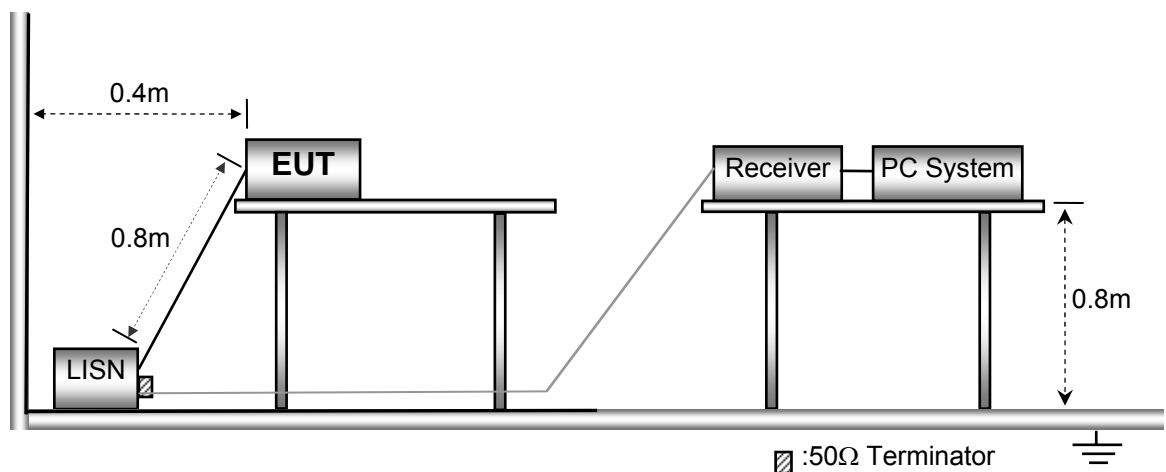
Atmospheric Pressure: 101.2kPa

EUT Operation : Wireless charging

The test was performed in Wireless charging, the test data were shown in the report.

7.2 EUT Setup

The EUT was placed on the test table in shielding room.



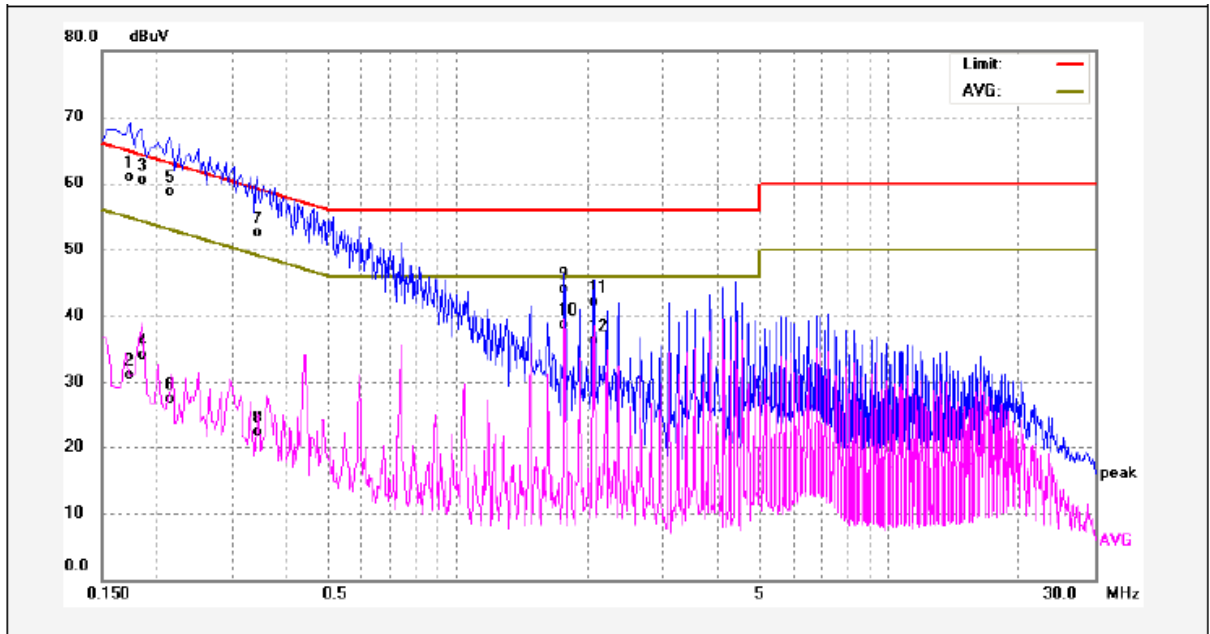
7.3 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

7.4 Conducted Emission Test Result

Wireless charging (worst mode):

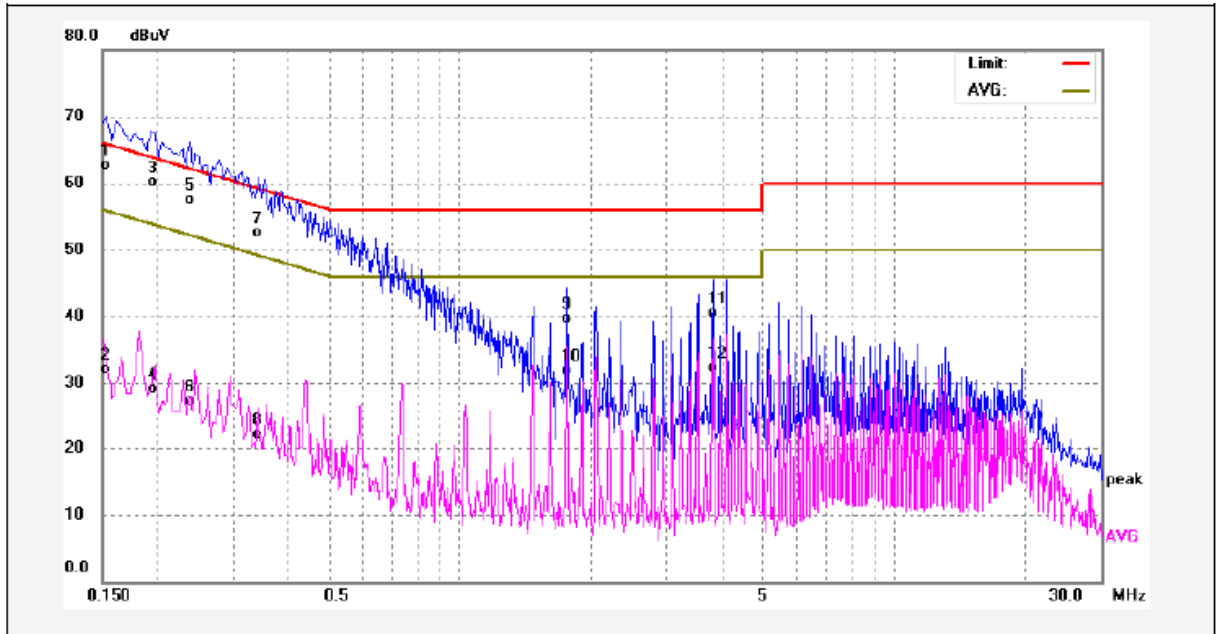
Live line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1740	51.22	9.78	61.00	64.76	-3.76	QP	
2	0.1740	21.24	9.78	31.02	54.76	-23.74	AVG	
3	0.1860	50.71	9.77	60.48	64.21	-3.73	QP	
4	0.1860	24.42	9.77	34.19	54.21	-20.02	AVG	
5	0.2140	48.88	9.77	58.65	63.04	-4.39	QP	
6	0.2140	17.76	9.77	27.53	53.04	-25.51	AVG	
7	0.3420	42.71	9.80	52.51	59.15	-6.64	QP	
8	0.3420	12.42	9.80	22.22	49.15	-26.93	AVG	
9	1.7700	34.09	9.93	44.02	56.00	-11.98	QP	
10	1.7700	28.82	9.93	38.75	46.00	-7.25	AVG	
11	2.0660	32.05	9.96	42.01	56.00	-13.99	QP	
12	2.0660	26.38	9.96	36.34	46.00	-9.66	AVG	

Wireless charging (worst mode):

Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1539	52.90	9.76	62.66	65.78	-3.12	QP	
2	0.1539	22.28	9.76	32.04	55.78	-23.74	AVG	
3	0.1940	50.31	9.77	60.08	63.86	-3.78	QP	
4	0.1940	19.25	9.77	29.02	53.86	-24.84	AVG	
5	0.2380	47.83	9.76	57.59	62.16	-4.57	QP	
6	0.2380	17.62	9.76	27.38	52.16	-24.78	AVG	
7	0.3460	42.61	9.80	52.41	59.06	-6.65	QP	
8	0.3460	12.21	9.80	22.01	49.06	-27.05	AVG	
9	1.7660	29.83	9.93	39.76	56.00	-16.24	QP	
10	1.7660	22.04	9.93	31.97	46.00	-14.03	AVG	
11	3.8220	30.48	9.94	40.42	56.00	-15.58	QP	
12	3.8220	22.37	9.94	32.31	46.00	-13.69	AVG	

8. Radiated Spurious Emissions

Test Requirement: FCC CFR47 Part 15 Section 15.209

Test Method: ANSI C63.10:2013

Test Result: PASS

Measurement Distance: 3m

Limit:

FCC Part15 Paragraph 15.209

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	$20\log^{(2400/F(kHz))} + 80$
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	$20\log^{(24000/F(kHz))} + 40$
1.705 ~ 30	30	30	100 * 30	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

8.1 EUT Operation

Operating Environment :

Temperature: 23.5 °C

Humidity: 51.1 % RH

Atmospheric Pressure: 101.2kPa

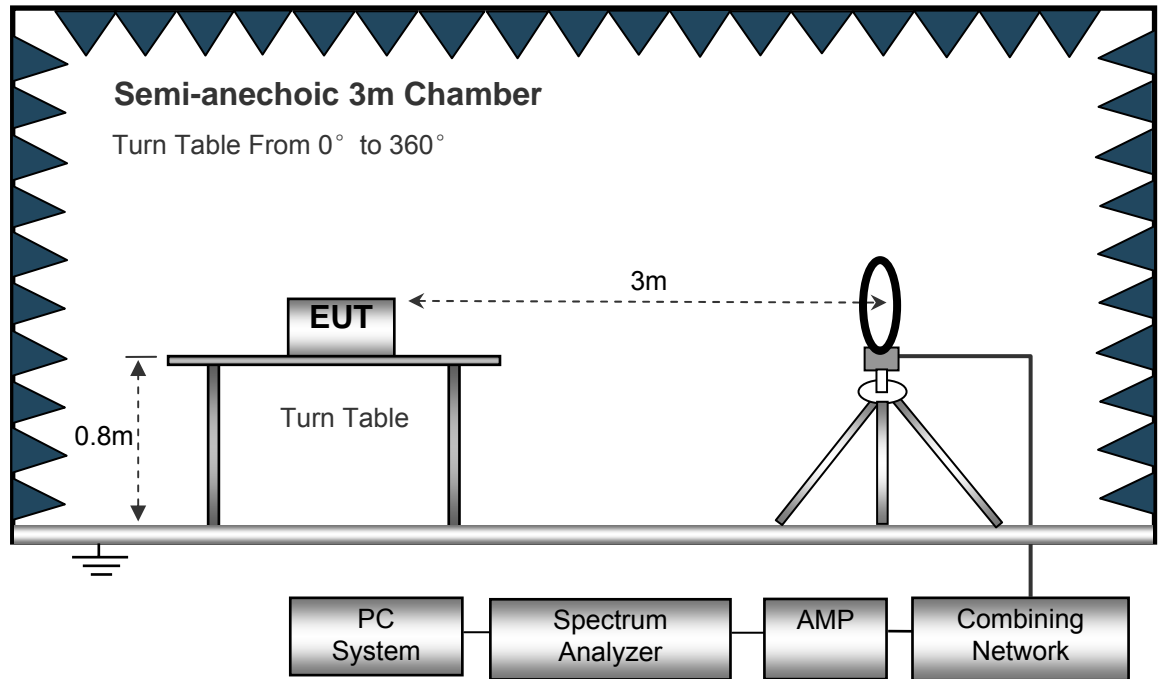
EUT Operation :

Only the worst case Wireless charging were record in the report.

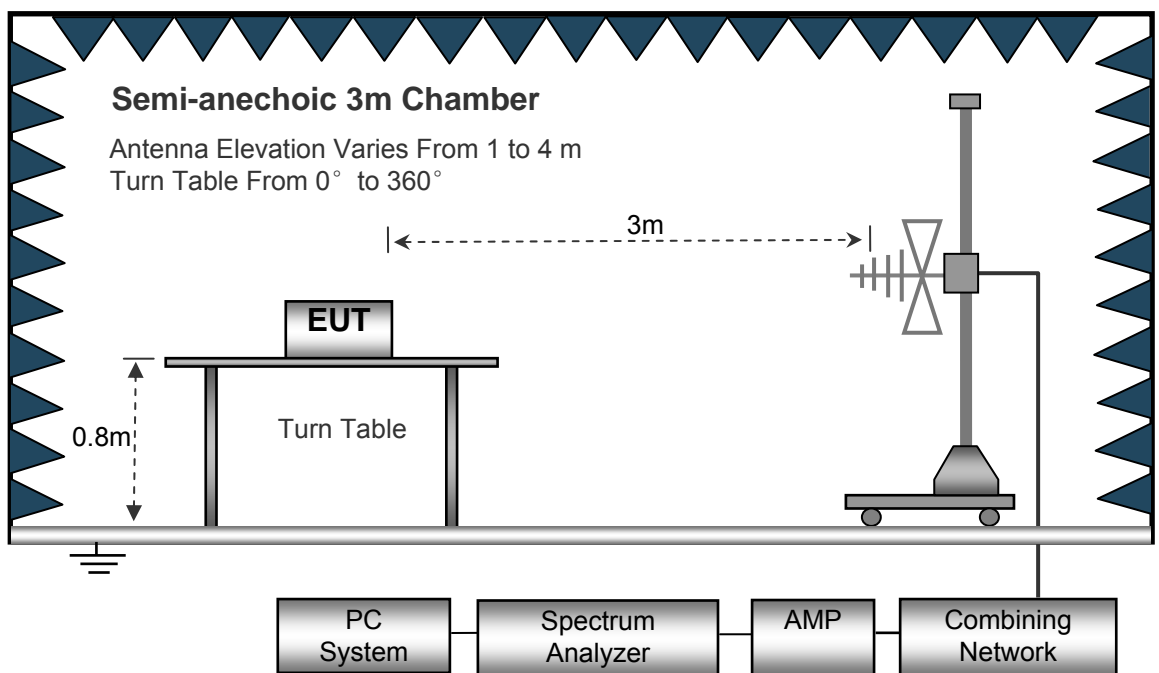
8.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.10: 2013.

The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



8.3 Spectrum Analyzer Setup

Below 30MHz

Sweep Speed Auto
IF Bandwidth..... 10kHz
Video Bandwidth..... 10kHz
Resolution Bandwidth..... 10kHz

30MHz ~ 1GHz

Sweep Speed Auto
Detector PK
Resolution Bandwidth..... 100kHz
Video Bandwidth..... 300kHz

8.4 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are tested under 3-axes(X, Y, Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand). After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.

8.5 Summary of Test Results

Wireless charging(worst mode):

Test Frequency: 9KHz ~ 30MHz, Note: Correct factor = Cable loss + Antenna factor

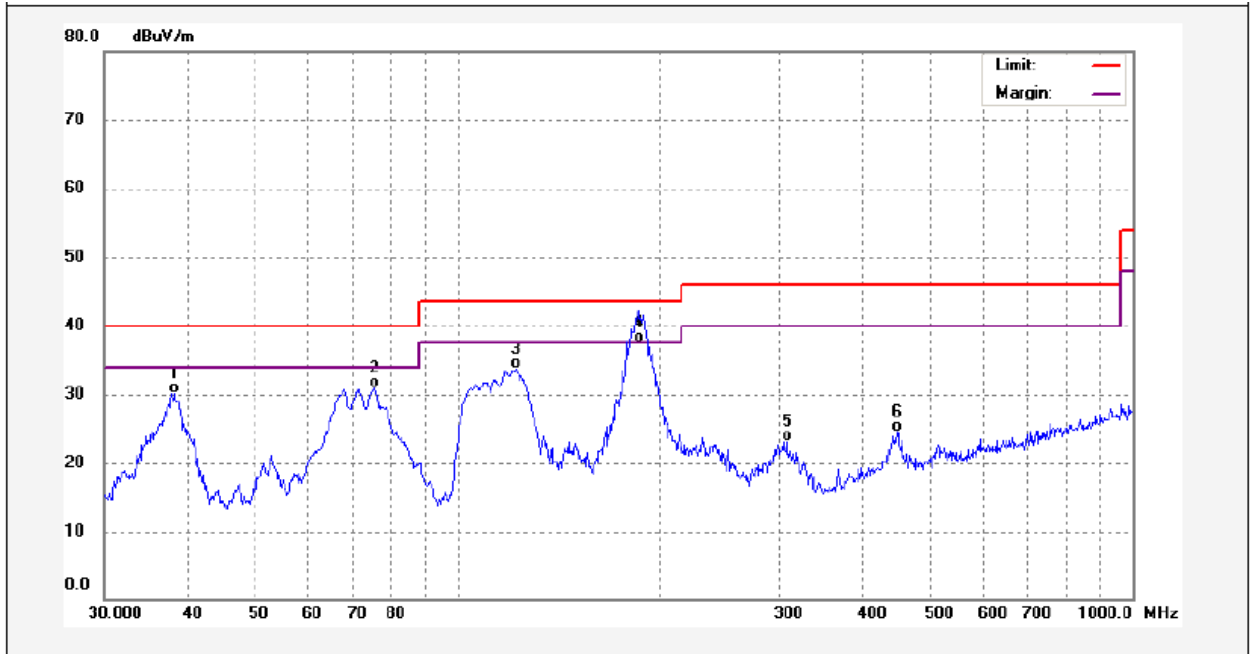
Frequency (MHz)	Measurement results	Detector	Correct factor	Polarization	Measurement results (calculated)	Limits	Margin
	dB μ V @3m	PK/QP	dB/m	H/V	dB μ V/m @3m	dB μ V/m @3m	dB
0.144	88.52	QP	-28.98	H	59.54	104.4	-44.86
0.144	81.81	QP	-28.98	V	52.83	104.4	-51.57
0.061	70.12	QP	-28.53	H	41.59	111.9	-70.31
0.061	65.06	QP	-28.53	V	36.53	111.9	-75.37

Note:0.144 MHz is the Center frequency of the EUT for Radiated Spurious Emissions.

Wireless charging (worst mode):

Test Frequency: 30MHz ~ 1GHz

Antenna Polarization: Vertical



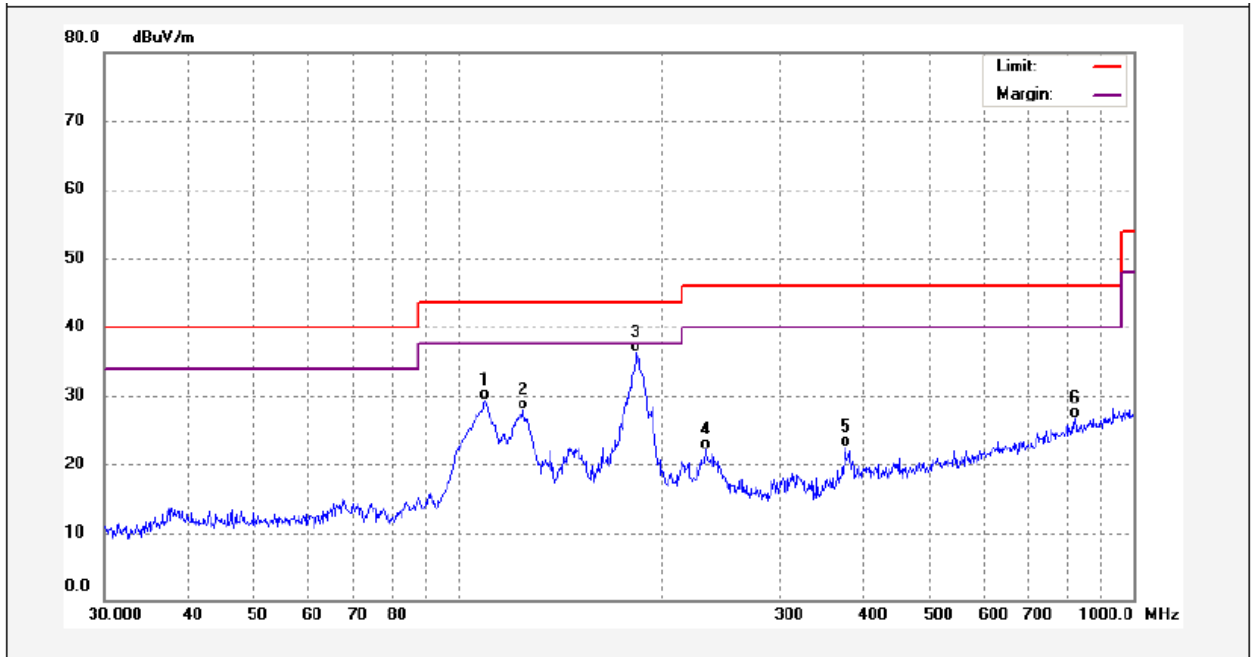
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	38.0783	46.71	-16.55	30.16	40.00	-9.84	QP	
2	75.4464	50.23	-19.31	30.92	40.00	-9.08	QP	
3	121.9755	51.03	-17.42	33.61	43.50	-9.89	QP	
4	185.7882	54.36	-16.76	37.60	43.50	-5.90	QP	
5	307.8313	37.80	-14.72	23.08	46.00	-22.92	QP	
6	447.9822	35.40	-10.88	24.52	46.00	-21.48	QP	

Factor= antenna factor + cable loss - preamplifier factor

Result = Reading + Factor

Wireless charging (worst mode):

Antenna Polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	109.7960	47.83	-18.57	29.26	43.50	-14.24	QP	
2	125.0066	44.96	-17.13	27.83	43.50	-15.67	QP	
3	183.8440	52.75	-16.48	36.27	43.50	-7.23	QP	
4	232.5318	38.93	-16.82	22.11	46.00	-23.89	QP	
5	374.6225	35.46	-12.95	22.51	46.00	-23.49	QP	
6	818.8341	30.95	-4.20	26.75	46.00	-19.25	QP	

Factor= antenna factor + cable loss - preamplifier factor

Result = Reading + Factor

9. Bandwidth Measurement

Test Requirement: FCC CFR47 Part 15 Section 15.215

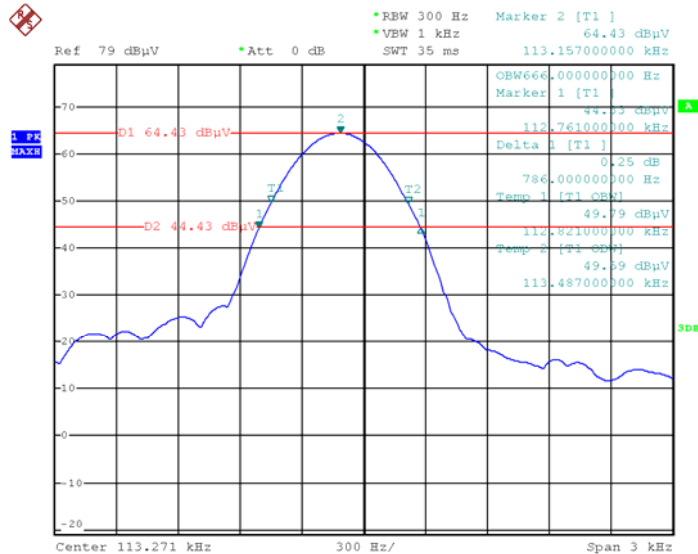
9.1 Test Procedure

1. The transmitter shall be operated at its maximum carrier power measured under normal test conditions;
2. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.
3. The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

9.2 Test Result Plot:

Test Channel(kHz)	99% Bandwidth(Hz)	20dB Bandwidth Emission(Hz)
113.157	666	786

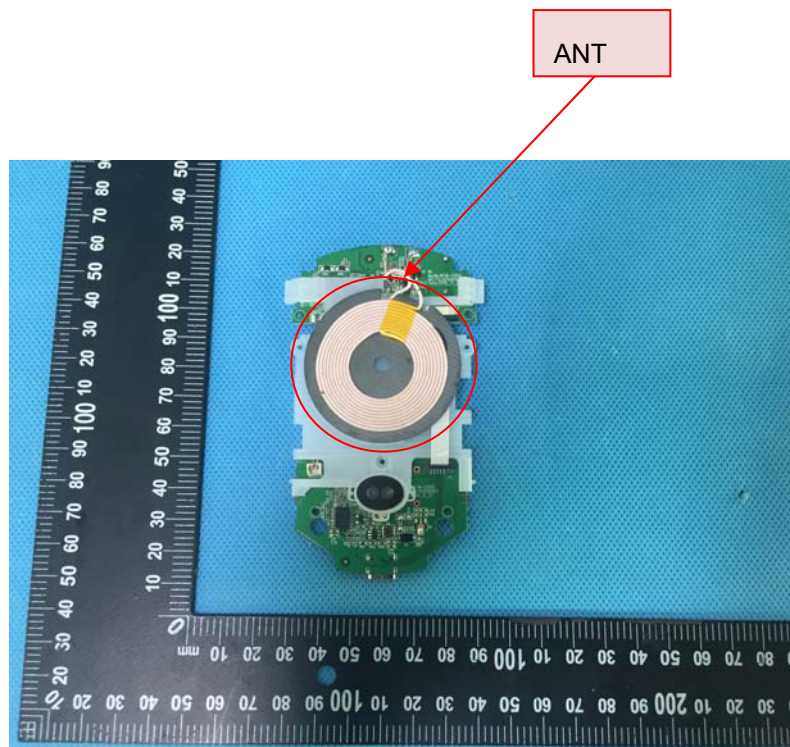
Test result plot as follows:



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10. Antenna Requirement

According to the FCC Part 15 Paragraph 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. The use of a permanently attached antenna to the intentional radiator shall be considered sufficient to comply with the provisions of this section. This product has a Coil antenna, fulfill the requirement of this section.



11. Photographs-Test Setup

11.1 Radiation Emission Test Setup

Below 30MHz



From 30MHz to 1GHz

