RADIO TEST REPORT

The device described below is tested by Dongguan Nore Testing Center Co., Ltd. to determine the maximum emission levels emanating from the device, the severe levels which the device can endure and E.U.T.'s performance criterion. The test results, data evaluation, test procedures, and equipment of configurations shown in this report were made in accordance with the procedures in ANSI C63.10(2013).

Applicant	:	IPAN IPAN
Address	:	218/228 avenue du Haut Leveque, batiment 5, PESSAC, France
Manufacturer/Factory	:	Shenzhen Qianhai Headfree Technology Co., Ltd.
Address	:	East Side of 5th Floor, 1st Bldg., Jinyuda Industrial Park, Shangliao Community, Shajing, Bao'an, Shenzhen, China.
E.U.T.	:	Wireless Charger
Brand Name	:	IPAN IPAN
Model No.	:	IPN-TXFC, IPN-CON-S, IPN-COR-S, IPN-BAM-S (For model difference refer to section 1)
FCC ID	:	2AO6R-IPN-TXFC
Measurement Standard	:	FCC PART 15 Subpart C
Date of Receiver	:	August 22, 2018
Date of Test	:	August 22, 2018 to September 04, 2018
Date of Report	:	September 04, 2018

This Test Report is Issued Under the Authority of :

Prepared by	Approved & Authorized Signer
Knight Wen / Engineer	Iori Fan / Authorized Signatory

This test report is for the customer shown above and their specific product only. This report applies to above tested sample only and shall not be reproduced in part without written approval of Dongguan Nore Testing Center Co., Ltd.

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Revision History of This Test Report

Report Number	Description	Issued Date
NTC1808391FV00	Initial Issue	2018-09-04

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test

Product name	:	Wireless Charger
Main model	:	IPN-TXFC
Additional model	:	IPN-CON-S, IPN-COR-S, IPN-BAM-S
Model difference	:	These models have the same circuitry, electrical mechanical, PCB Layout and physical construction. Their difference in model number and shape due to trading purpose.
Power Supply	:	Input: DC 5V 2A From adapter; DC 9V 1.67A From adapter Output: 10W Max
Test voltage	:	AC 120V 60Hz adapter input.
Adapter	:	N/A
Cable	:	N/A
Software version	:	V1.0
Hardware version	:	V1.0
Note	:	N/A
Remark	:	N/A
Frequency Range	:	110.5-205KHz

Note: The test channel and frequency see below:

Channel	Frequency KHz
17	127.6

1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **2AO6R-IPN-TXFC** filing to comply with FCC Part 15 (2017), Subpart C Rule.

1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.10 (2013). Radiated emission measurement was performed in semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters.

1.4 Equipment Modifications

Not available for this EUT intended for grant.

1.5 Support Device

Mobile Phone	:	Manufacturer: Apple M/N: MQA62CH/A S/N: DNQVRGNLJCLG
Adapter	:	Manufacturer: HUAWEI M/N: HW-090200CH0 Input: AC 100-240V 50/60Hz, 0.5A Output: DC 5V, 2A or DC 9V, 2A

1.6 Test Facility and Location

Site Description		
EMC Lab	:	Listed by CNAS, August 13, 2018 The certificate is valid until August 13, 2024 The Laboratory has been assessed and proved to be in compliance with CNAS/CL01 The Certificate Registration Number is L5795. Listed by A2LA, November 01, 2017 The certificate is valid until December 31, 2019 The Laboratory has been assessed and proved to be in compliance with ISO17025 The Certificate Registration Number is 4429.01 Listed by FCC, November 06, 2017 The Designation Number is CN1214 Test Firm Registration Number: 907417 Listed by Industry Canada, June 08, 2017 The Certificate Registration Number. Is 46405-9743
Name of Firm	:	Dongguan Nore Testing Center Co., Ltd. (Dongguan NTC Co., Ltd.)
Site Location	:	Building D, Gaosheng Science & Technology Park, Zhouxi Longxi Road, Nancheng District, Dongguan City, Guangdong Province, China

1.7 Summary of Test Results

FCC Rules	Description Of Test	Uncertainty	Result
§15.35	20dB Bandwidth	±1.42 x10^{-4}%	Compliant
§15.207 (a)	AC Power Conducted Emission	±1.06dB	Compliant
§15.209	Radiated Emission	±3.70dB	Compliant

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 Special Accessories

Not available for this EUT intended for grant.

2.3 Description of test modes

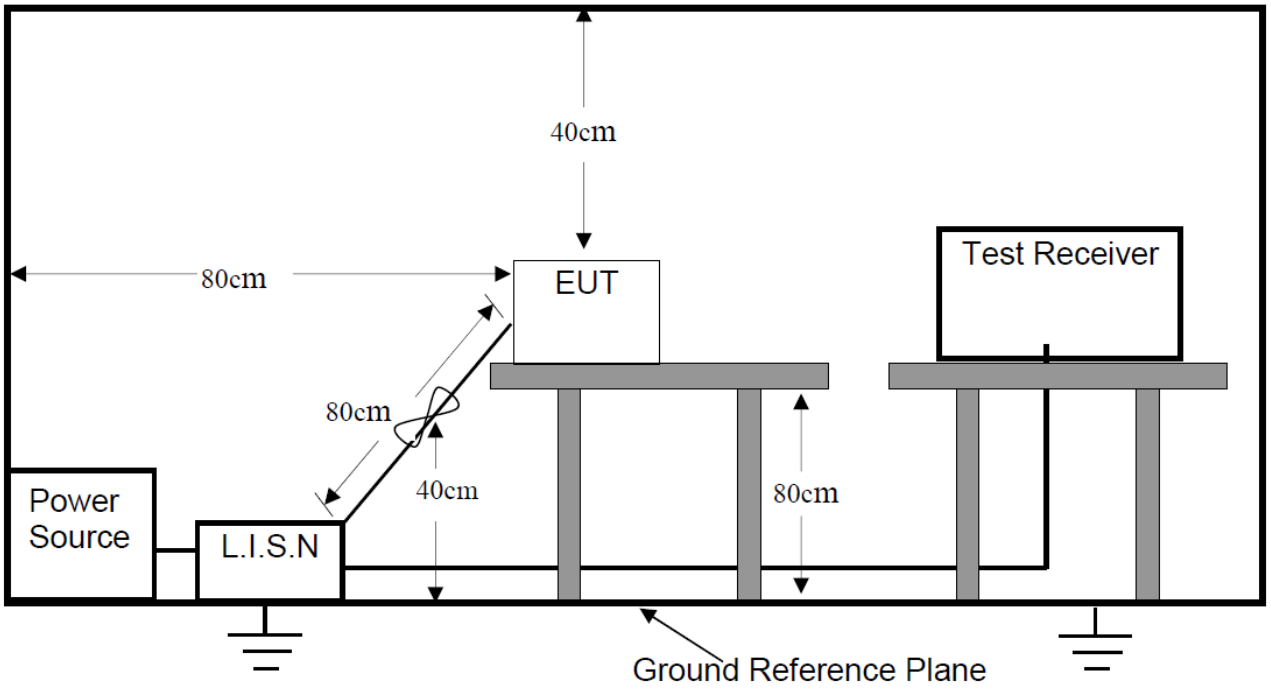
The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and normal mode is programmed. The Lowest, middle and highest channel were chosen for testing.

2.4 EUT Exercise

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements.

3. Conducted Emissions Test

3.1 Test SET-UP (Block Diagram of Configuration)



3.2 Test Condition

Test Requirement: FCC Part 15.207

Frequency Range: 150KHz ~ 30MHz

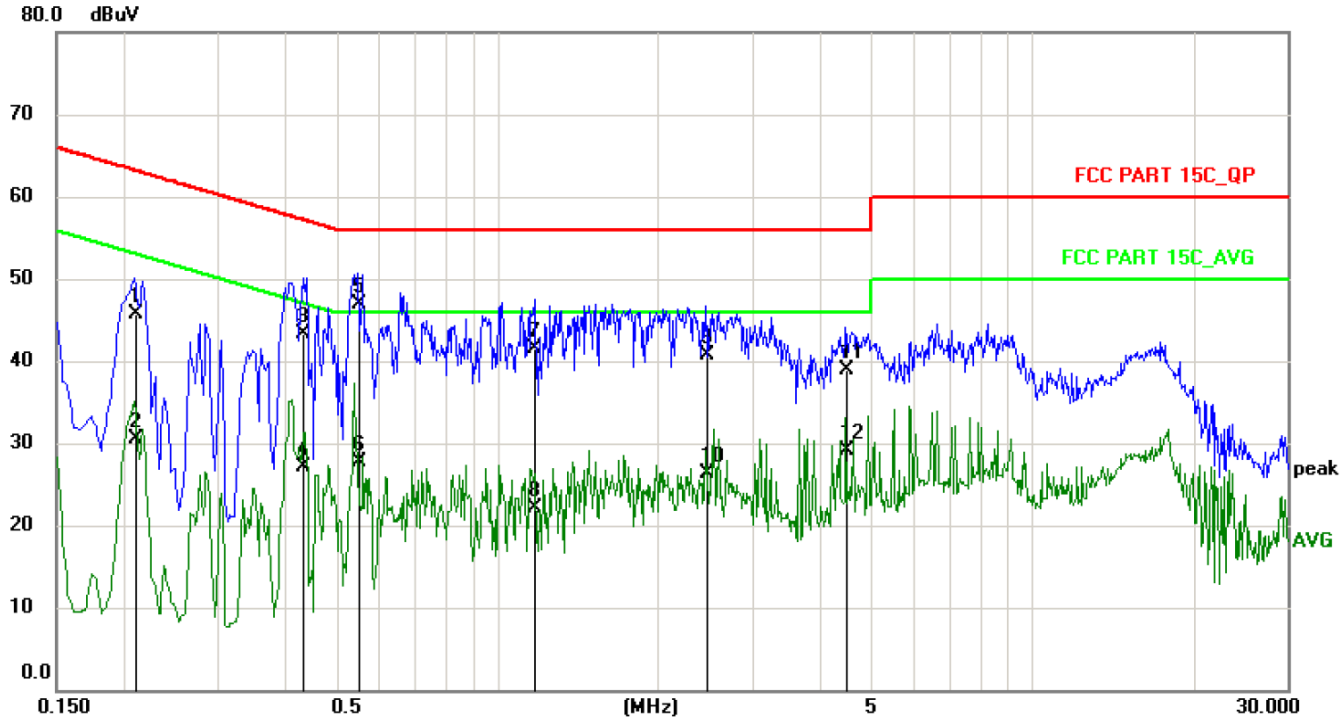
Detector: RBW 9KHz, VBW 30KHz

Operation Mode: TX

3.3 Measurement Results

Please refer to following plots of the worst case.

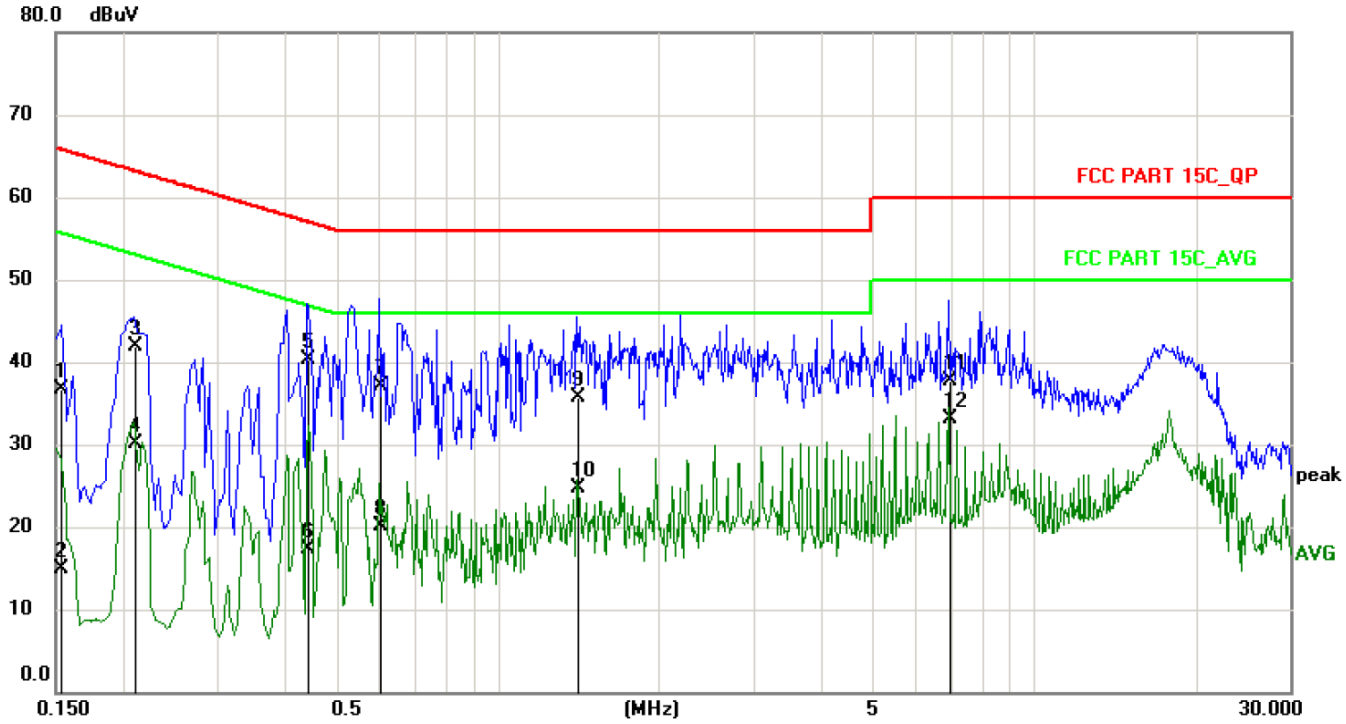
Date: 2018-9-4 Time: 11:09:45



Site		Phase:	L1	Temperature:	26
Limit:	FCC PART 15C_QP	Power:	AC 120V/60Hz	Humidity:	50%
EUT:	Wireless Charging				
M/N:	IPN-TXFC				
Mode:	TX				
Note	9V				

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2100	35.06	10.61	45.67	63.21	-17.54	QP	
2		0.2100	19.94	10.61	30.55	53.21	-22.66	AVG	
3		0.4340	32.75	10.62	43.37	57.18	-13.81	QP	
4		0.4340	16.57	10.62	27.19	47.18	-19.99	AVG	
5	*	0.5500	36.28	10.62	46.90	56.00	-9.10	QP	
6		0.5500	17.02	10.62	27.64	46.00	-18.36	AVG	
7		1.1780	30.77	10.65	41.42	56.00	-14.58	QP	
8		1.1780	11.41	10.65	22.06	46.00	-23.94	AVG	
9		2.4580	30.04	10.65	40.69	56.00	-15.31	QP	
10		2.4580	15.63	10.65	26.28	46.00	-19.72	AVG	
11		4.4818	28.20	10.66	38.86	56.00	-17.14	QP	
12		4.4818	18.54	10.66	29.20	46.00	-16.80	AVG	

Date: 2018-9-4 Time: 11:16:45



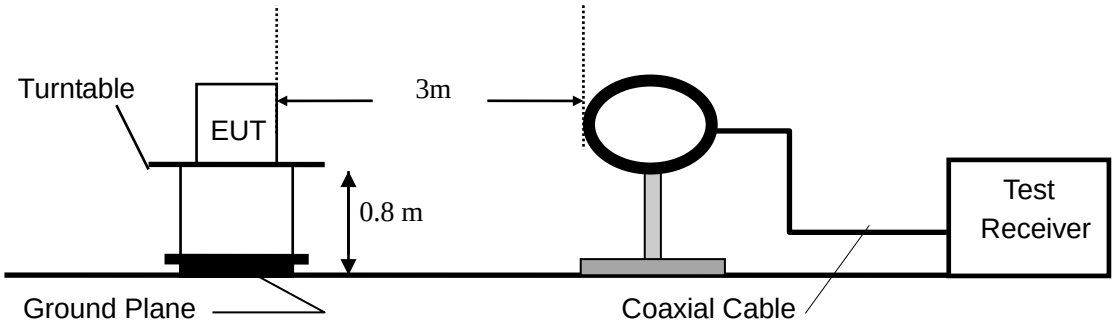
Site		Phase:	N	Temperature:	26
Limit:	FCC PART 15C_QP	Power:	AC 120V/60Hz	Humidity:	50%
EUT:	Wireless Charging				
M/N:	IPN-TXFC				
Mode:	TX				
Note	9V				

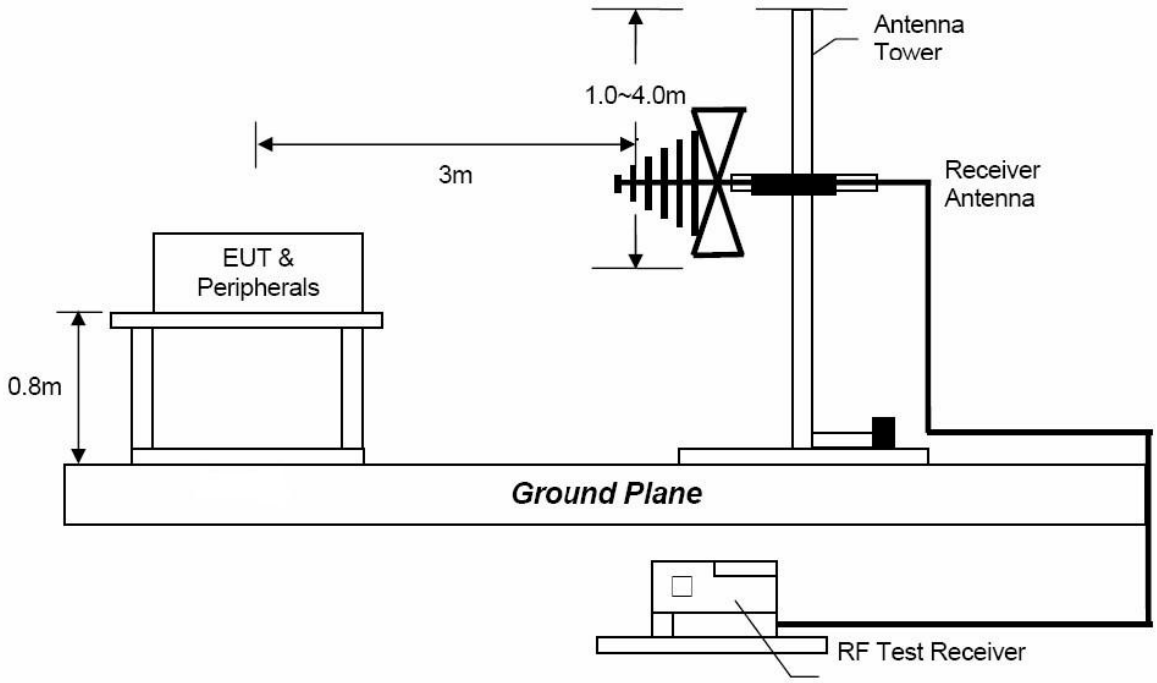
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1539	26.01	10.61	36.62	65.79	-29.17	QP	
2		0.1539	4.31	10.61	14.92	55.79	-40.87	AVG	
3		0.2100	31.20	10.61	41.81	63.21	-21.40	QP	
4		0.2100	19.44	10.61	30.05	53.21	-23.16	AVG	
5	*	0.4420	29.65	10.62	40.27	57.02	-16.75	QP	
6		0.4420	6.62	10.62	17.24	47.02	-29.78	AVG	
7		0.6020	26.49	10.63	37.12	56.00	-18.88	QP	
8		0.6020	9.50	10.63	20.13	46.00	-25.87	AVG	
9		1.4100	24.96	10.65	35.61	56.00	-20.39	QP	
10		1.4100	14.11	10.65	24.76	46.00	-21.24	AVG	
11		6.9180	27.03	10.66	37.69	60.00	-22.31	QP	
12		6.9180	22.53	10.66	33.19	50.00	-16.81	AVG	

4. Radiated Emission Test

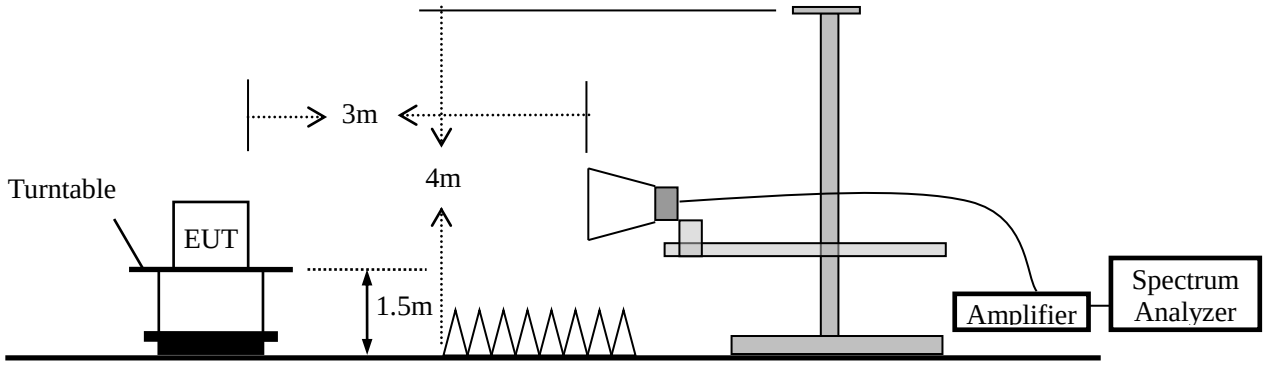
4.1 Test SET-UP (Block Diagram of Configuration)

4.1.1 Radiated Emission Test Set-Up, Frequency Below 30MHz





4.1.2 Radiated Emission Test Set-Up, Frequency above 1GHz



4.2 Measurement Procedure

a. Blow 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi- anechoic chamber room.
b. For the radiated emission test above 1GHz:
   The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter full anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
c. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
d. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
e. For each suspected emission, the EUT was arranged to its worst case and then the 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. The test-receiver system was set to peak detect function and specified bandwidth with maximum hold mode.
f. A Quasi-peak measurement was then made for that frequency point for below 1GHz test. PK and AV for above 1GHz emission test.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

Frequency Band (MHz)	Level	Resolution Bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	3 MHz
	Average	1 MHz	10 Hz

4.3 Limit

Frequency range MHz	Distance Meters	Field Strengths Limit (15.209) μV/m
0.009 ~ 0.490	300	2400/F(kHz)
0.490 ~ 1.705	30	24000/F(kHz)
1.705 ~ 30	30	30
30 ~ 88	3	100
88 ~ 216	3	150
216 ~ 960	3	200
Above 960	3	500

Remark：(1) Emission level (dB)μV = 20 log Emission level μV/m

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

(4) The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower.

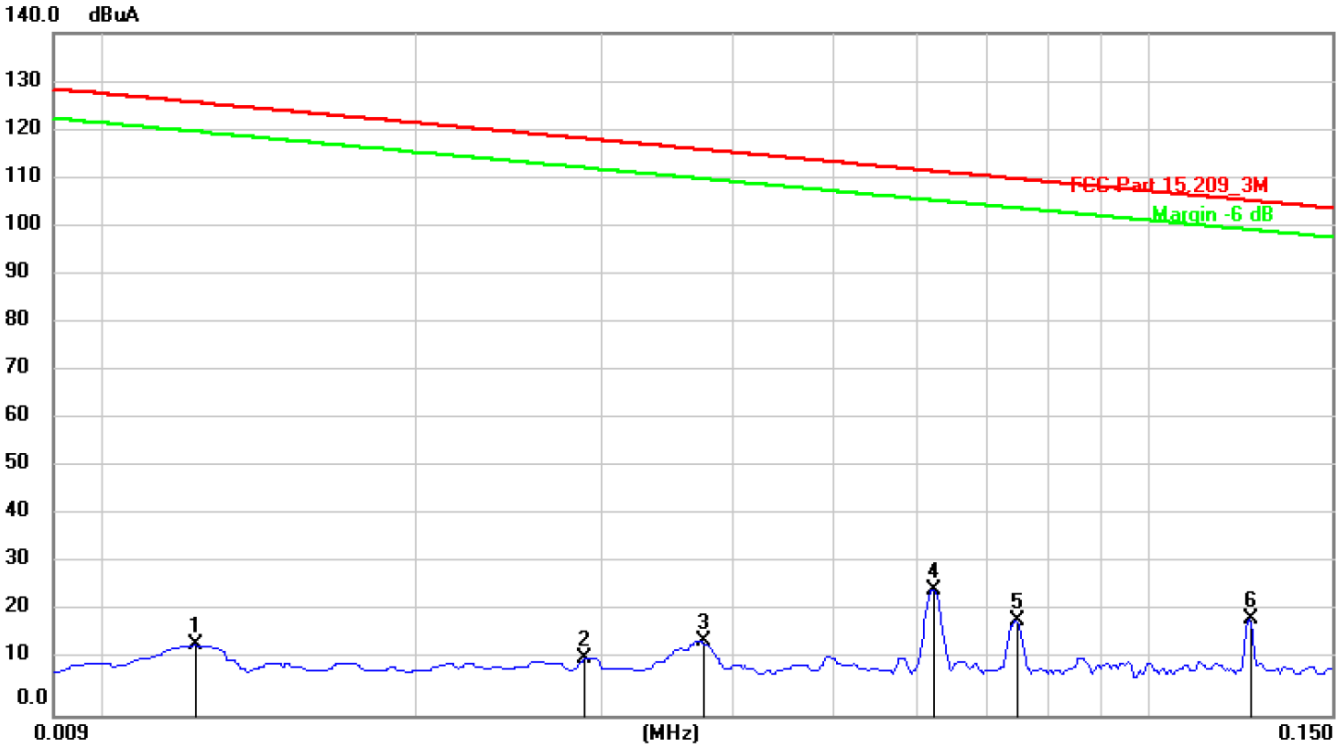
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9KHz~90KHz/ RB 200Hz for AV
	90KHz~110KHz/ RB 200Hz for QP
	110KHz~490KHz/ RB 200Hz for AV
	490KHz~30MHz/ RB 9KHz for QP
	30MHz~1000MHz/ RB 120KHz for QP

FCC 15.209 (d) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90KHz, 110-490KHz and above 1000MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

4.4 Measurement Results

Please refer to following plots of the worst case.

Date: 2018-8-29 Time: 13:10:46

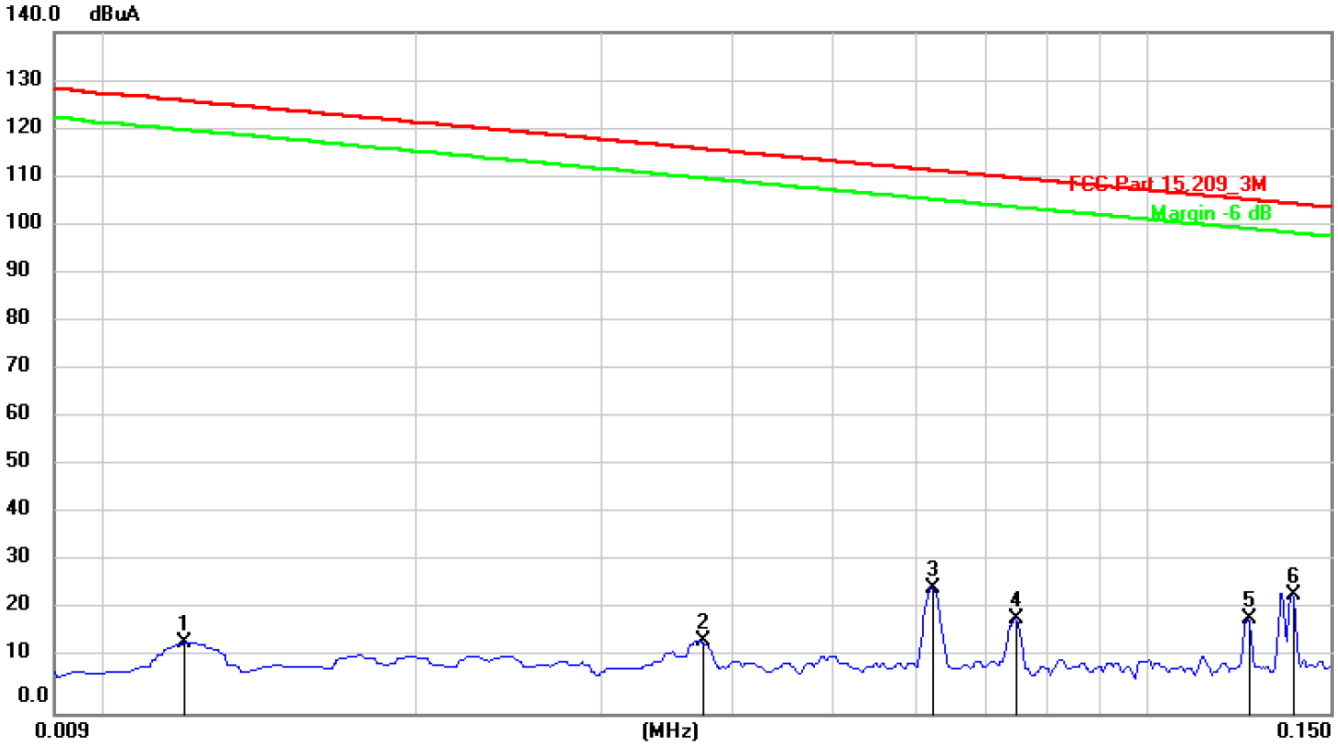


Site	3m Chamber	Phase:	Horizontal	Temperature:	26
Limit:	FCC Part 15.209_3M	Power:	AC 120V/60Hz	Humidity:	50%
EUT:	Wireless Charging	Distance	3m		
M/N:	IPN-TXFC				
Mode:	TX				
Note	9V				

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuA	dBuA	dB	Detector	cm	degree	Comment
1		0.0123	-17.07	31.55	14.48	125.72	-111.24	peak			
2		0.0289	-20.72	32.28	11.56	118.32	-106.76	peak			
3		0.0376	-17.05	32.32	15.27	116.04	-100.77	peak			
4		0.0623	-6.48	32.30	25.82	111.66	-85.84	peak			
5		0.0748	-13.03	32.30	19.27	110.08	-90.81	peak			
6	*	0.1250	-12.49	32.30	19.81	105.63	-85.82	peak			

Note: When the PEAK level was below the limit of AV level, the AV levels were considered to meet the requirements.

Date: 2018-8-29 Time: 13:17:31

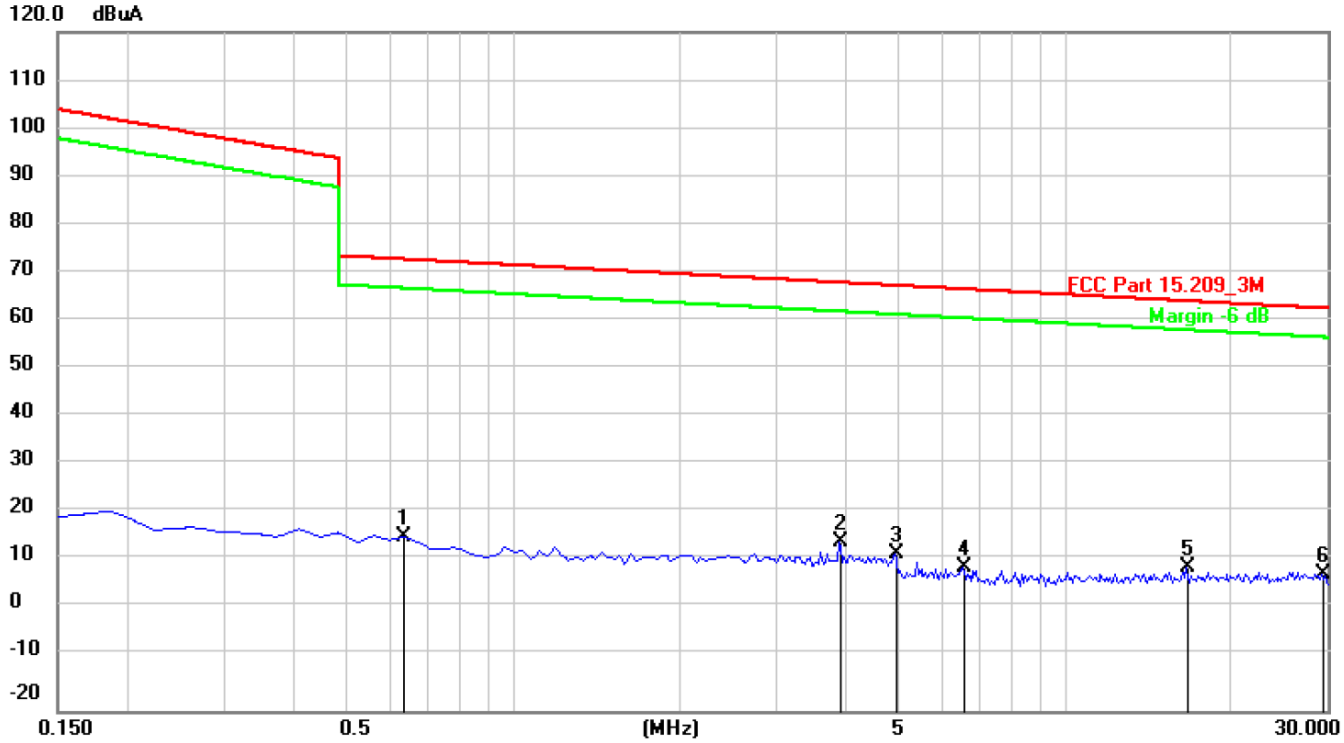


Site	3m Chamber	Phase:	Vertical	Temperature:	26
Limit:	FCC Part 15.209_3M	Power:	AC 120V/60Hz	Humidity:	50%
EUT:	Wireless Charging	Distance	3m		
M/N:	IPN-TXFC				
Mode:	TX				
Note	9V				

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuA	dBuA	dB	Detector	cm	degree	Comment
1		0.0120	-17.03	31.51	14.48	125.84	-111.36	peak			
2		0.0376	-17.35	32.32	14.97	115.98	-101.01	peak			
3		0.0623	-6.42	32.30	25.88	111.61	-85.73	peak			
4		0.0748	-13.03	32.30	19.27	110.03	-90.76	peak			
5		0.1250	-12.84	32.30	19.46	105.60	-86.14	peak			
6	*	0.1380	-7.87	32.30	24.43	104.74	-80.31	peak			

Note: When the PEAK level was below the limit of AV level, the AV levels were considered to meet the requirements.

Date: 2018-8-29 Time: 13:24:13

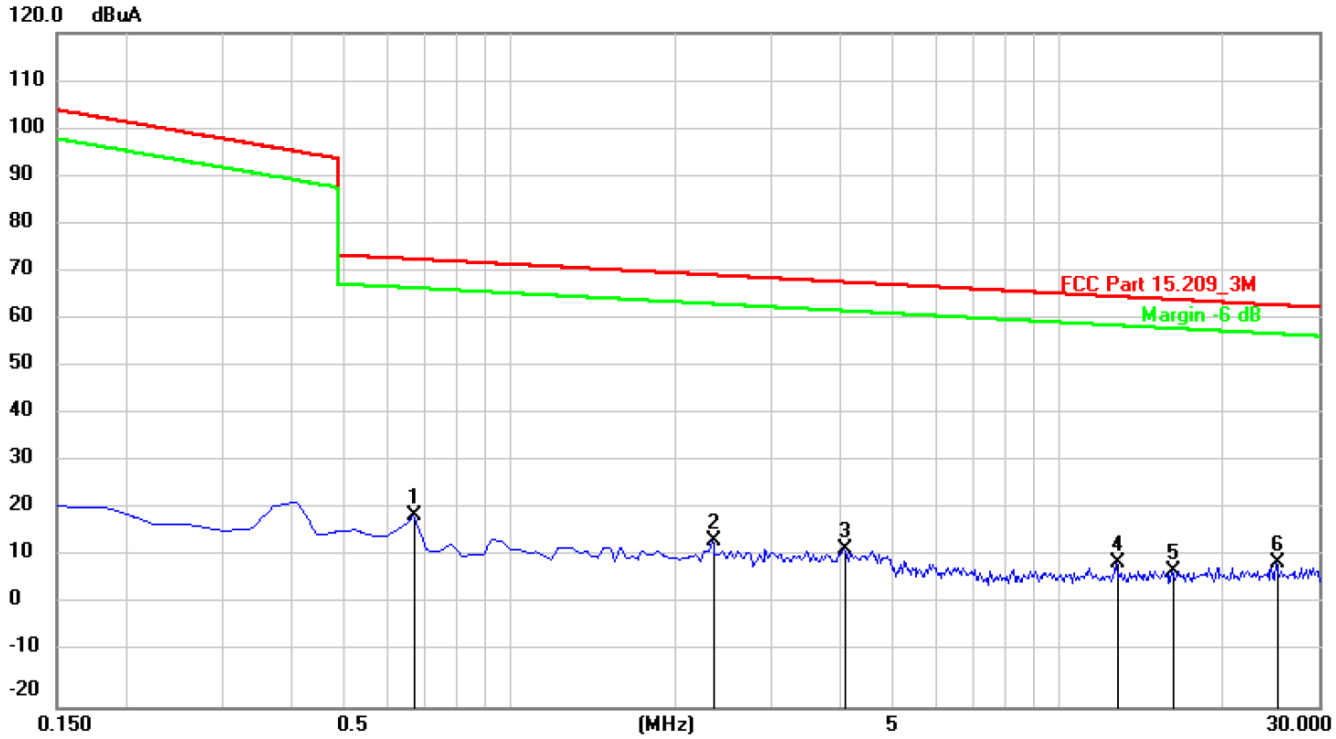


Site	3m Chamber	Phase:	Horizontal	Temperature:	26
Limit:	FCC Part 15.209_3M	Power:	AC 120V/60Hz	Humidity:	50%
EUT:	Wireless Charging	Distance	3m		
M/N:	IPN-TXFC				
Mode:	TX				
Note	9V				

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuA	dBuA	dB	Detector	cm	degree	Comment
1		0.6350	-16.29	32.20	15.91	73.12	-57.21	peak			
2	*	3.9186	-17.52	32.20	14.68	68.33	-53.65	peak			
3		4.9260	-19.75	32.22	12.47	67.73	-55.26	peak			
4		6.5677	-22.71	32.25	9.54	66.97	-57.43	peak			
5		16.6794	-22.66	32.32	9.66	64.52	-54.86	peak			
6		29.4029	-24.08	32.33	8.25	63.02	-54.77	peak			

Note: When the PEAK level was below the limit of AV level, the AV levels were considered to meet the requirements.

Date: 2018-8-29 Time: 13:31:35

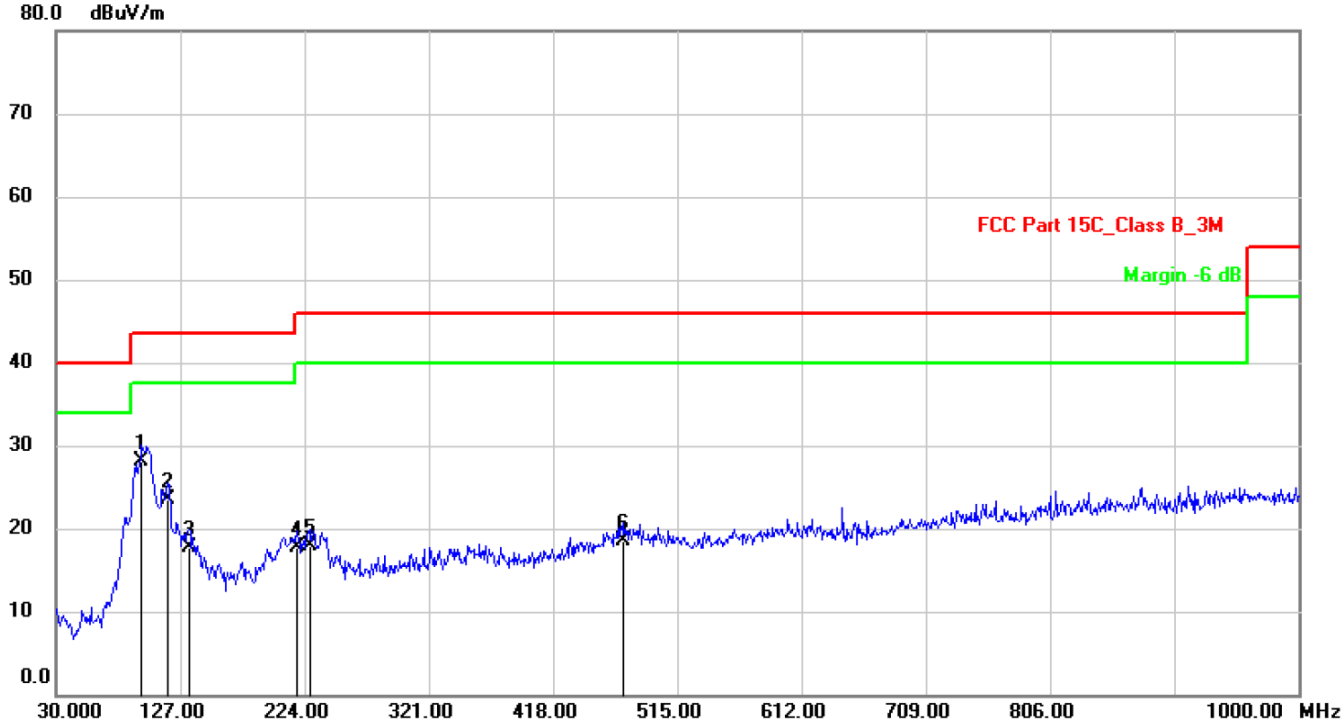


Site	3m Chamber	Phase:	Vertical	Temperature:	26
Limit:	FCC Part 15.209_3M	Power:	AC 120V/60Hz	Humidity:	50%
EUT:	Wireless Charging	Distance	3m		
M/N:	IPN-TXFC				
Mode:	TX				
Note	9V				

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuA	dBuA	dB	Detector	cm	degree	Comment
1	*	0.6722	-12.52	32.20	19.68	72.97	-53.29	peak			
2		2.3513	-17.83	32.17	14.34	69.67	-55.33	peak			
3		4.1051	-19.58	32.20	12.62	68.21	-55.59	peak			
4		12.8361	-22.32	32.33	10.01	65.20	-55.19	peak			
5		16.2688	-24.14	32.32	8.18	64.58	-56.40	peak			
6		25.1121	-22.28	32.35	10.07	63.44	-53.37	peak			

Note: When the PEAK level was below the limit of AV level, the AV levels were considered to meet the requirements.

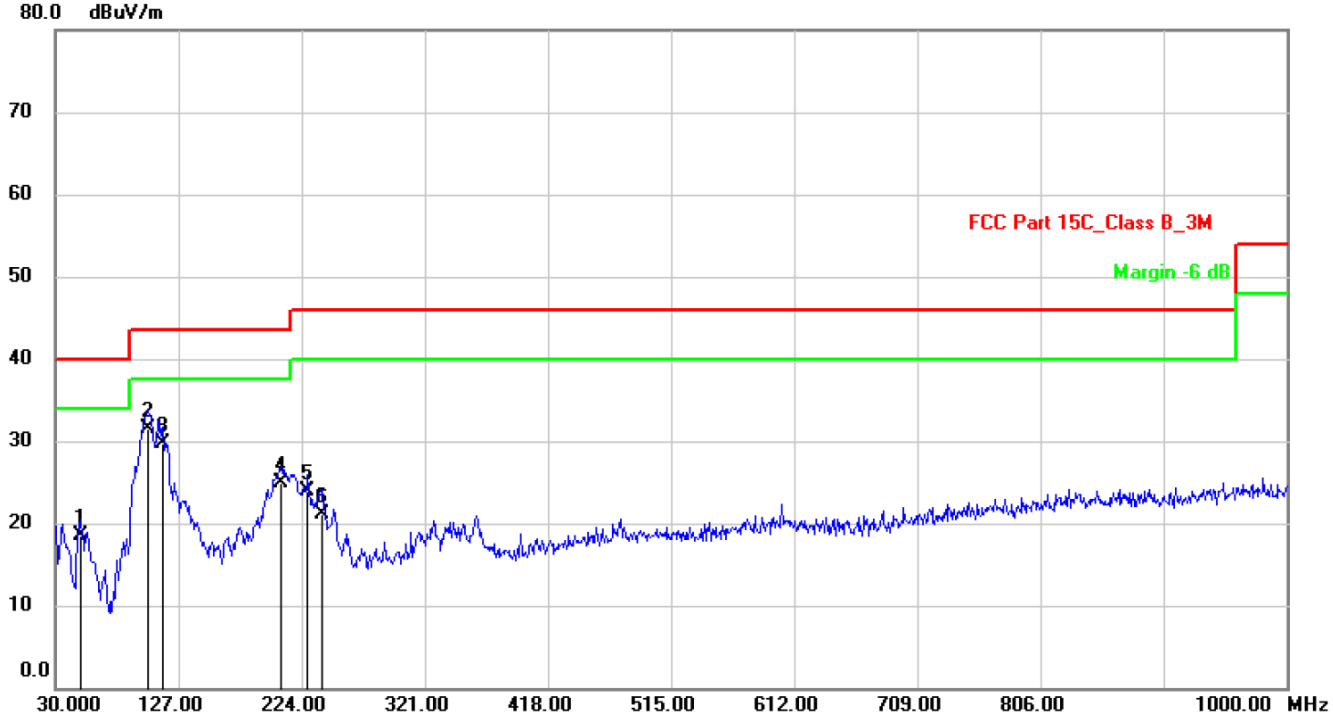
Date: 2018-8-28 Time: 14:14:35



Site	3m Chamber	Phase:	Horizontal	Temperature:	26
Limit:	FCC Part 15C_Class B_3M	Power:	AC 120V/60Hz	Humidity:	50%
EUT:	Wireless Charging	Distance	3m		
M/N:	IPN-TXFC				
Mode:	TX				
Note	9V				

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	96.9300	40.64	-12.54	28.10	43.50	-15.40	QP			
2		117.3000	37.06	-13.46	23.60	43.50	-19.90	QP			
3		133.7899	33.12	-15.32	17.80	43.50	-25.70	QP			
4		218.1800	30.72	-13.02	17.70	46.00	-28.30	QP			
5		227.8800	30.46	-12.56	17.90	46.00	-28.10	QP			
6		473.2900	25.98	-7.38	18.60	46.00	-27.40	QP			

Date: 2018-8-28 Time: 14:21:39



Site	3m Chamber	Phase:	Vertical	Temperature:	26
Limit:	FCC Part 15C_Class B_3M	Power:	AC 120V/60Hz	Humidity:	50%
EUT:	Wireless Charging	Distance	3m		
M/N:	IPN-TXFC				
Mode:	TX				
Note	9V				

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		49.4000	31.99	-13.39	18.60	40.00	-21.40	QP			
2	*	102.7500	47.63	-16.03	31.60	43.50	-11.90	QP			
3		114.3900	45.69	-15.99	29.70	43.50	-13.80	QP			
4		207.5100	41.19	-16.29	24.90	43.50	-18.60	QP			
5		228.8500	39.42	-15.52	23.90	46.00	-22.10	QP			
6		240.4900	36.16	-14.96	21.20	46.00	-24.80	QP			

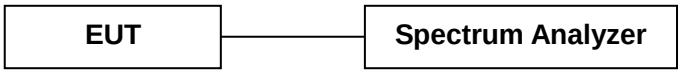
5. 20dB Bandwidth

5.1 Measurement Procedure

Maximum 20dB RF Bandwidth, FCC Rule 15.35:

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RBW was chosen so that the display was a result of the hopping channel modulation. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. Use the spectrum 20dB down delta function to measure the bandwidth.

5.2 Test SET-UP (Block Diagram of Configuration)



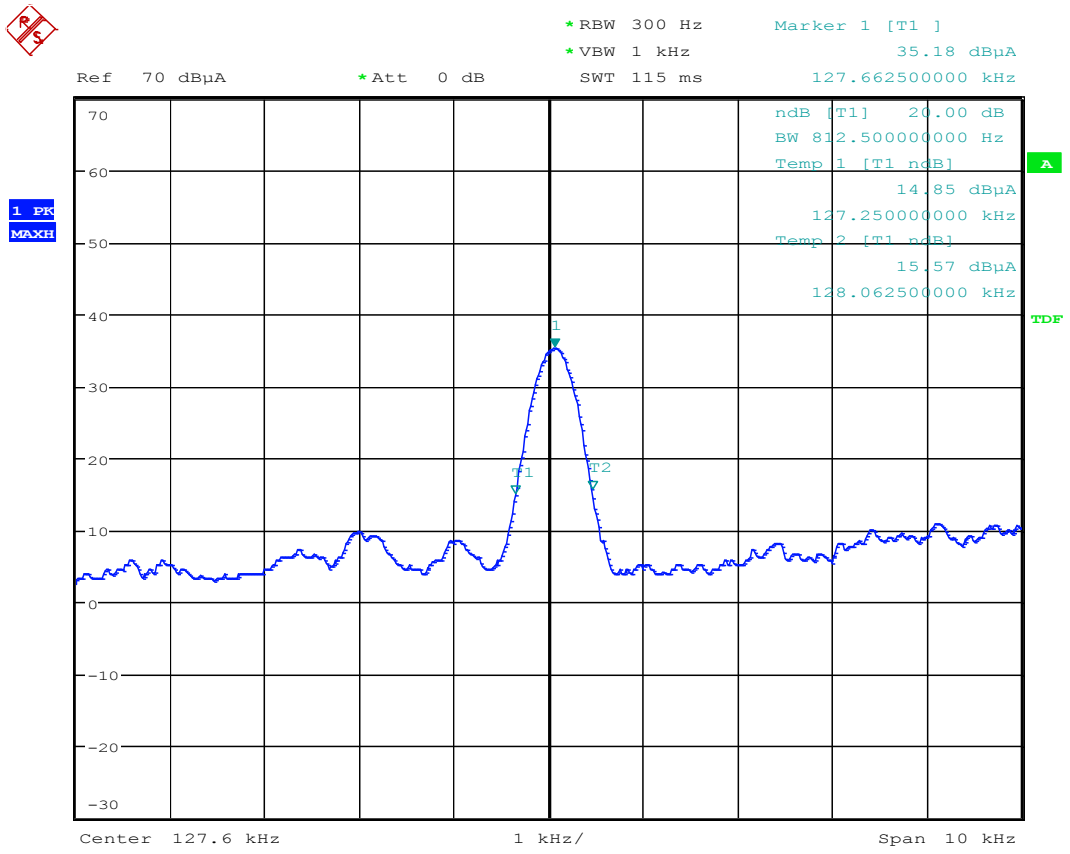
5.3 Measurement Results

Refer to attached data chart.

RBW:	30Hz	VBW:	100Hz
Test By:	Sance	Spectrum Detector:	PK
Temperature :	24 ℃	Test Date :	September 04, 2018
Test Result:	PASS	Humidity :	50 %

Channel frequency (KHz)	20dB Down BW(Hz)
127.6	812.5

Test Channel



Date: 4.SEP.2018 19:45:48

6. Antenna Application

6.1 Antenna requirement

According to of FCC part 15C section 15.203 and 15.240:

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 or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

6.2 Measurement Results

The antenna is coil antenna that no antenna other than furnished by the responsible party shall be used with the device, and the best case gain of the antenna is 0 dBi, So, the antenna is consider meet the requirement.

7. Test Equipment List

Description	Manufacturer	Model Number	Serial Number	Characteristics	Calibration Date	Calibration Due Date
Test Receiver	Rohde & Schwarz	ESCI7	100837	9KHz~7GHz	Mar. 14, 2018	Mar. 13, 2019
Antenna	Schwarzbeck	VULB9162	9162-010	30MHz~7GHz	Mar. 15, 2018	Mar. 14, 2019
Cable	Huber+Suhner	CBL2-NN-1M	22390001	9KHz~7GHz	Mar. 14, 2018	Mar. 13, 2019
Cable	Huber+Suhner	CIL02	N/A	9KHz~7GHz	Mar. 14, 2018	Mar. 13, 2019
RF Cable	Huber+Suhner	SF-104	MY16559/4	9KHz~25GHz	Apr. 25, 2018	Apr. 25, 2019
Power Amplifier	HP	HP 8447D	1145A00203	100KHz~1.3GHz	Mar. 14, 2018	Mar. 13, 2019
Horn Antenna	Schwarzbeck	BBHA9170	9170-242	15GHz~40GHz	Mar. 14, 2018	Mar. 13, 2019
Horn Antenna	Com-Power	AH-118	071078	1GHz~18GHz	Mar. 15, 2018	Mar. 14, 2019
RF Cable	Huber+Suhner	SF-104	N/A	9KHz~40GHz	Apr. 25, 2018	Apr. 24, 2019
Loop antenna	Daze	ZA30900A	0708	9KHz~30MHz	Apr. 25, 2018	Apr. 24, 2019
Spectrum Analyzer	Rohde & Schwarz	FSU26	200409/026	20Hz~26.5GHz	Apr. 25, 2018	Apr. 24, 2019
Spectrum Analyzer	Rohde & Schwarz	FSV40	101003	10Hz~40GHz	Apr. 06, 2018	April. 05, 2019
Pre-Amplifier	EMCI	EMC 184045	980102	18GHz~40GHz	Nov. 03, 2017	Nov. 02, 2018
Pre-Amplifier	Agilent	8449B	3008A02964	1GHz~26.5GHz	Apr. 25, 2018	Apr. 24, 2019
L.I.S.N.	Rohde & Schwarz	ENV 216	101317	9KHz~30MHz	Mar. 14, 2018	Mar. 13, 2019
Temporary antenna connector	TESCOM	SS402	N/A	9KHz-25GHz	N/A	N/A
Power Meter	Anritsu	ML2495A	1139001	100k-65GHz	Nov. 03, 2017	Nov. 02, 2018
Power Sensor	Anritsu	MA2411B	100345	300M-40GHz	Nov. 03, 2017	Nov. 02, 2018

Note: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

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