

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 : Spigen Korea Co., Ltd.
Address : No. 1709 STX-V Tower, 128, Gasan digital 1-ro, Geumcheon-gu, Seoul,
08507, Republic of Korea, South Korea
Manufacturer/Factory : Shenzhen Huagon Technology Co.,LTD
Address : 6th floor number two , North fourth ring road phoenix first industrial zone ,
Fuyong town Bao'an District, Shenzhen (518000)
E.U.T. : Fast Wireless Charger
Brand Name : N/A
Model No. : F306W
FCC ID : 2AFKNF306W
Measurement Standard : FCC PART 15 Subpart C
Date of Receiver : November 24, 2017
Date of Test : November 24, 2017 to December 26, 2017
Date of Report : December 26, 2017
This Test Report is Issued Under the Authority of :

Prepared by

Approved & Authorized Signer


Rose Hu / 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.

Table of Contents

1. GENERAL INFORMATION	4
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST	4
1.2 RELATED SUBMITTAL(S) / GRANT (S).....	5
1.3 TEST METHODOLOGY	5
1.4 EQUIPMENT MODIFICATIONS	5
1.5 SUPPORT DEVICE	5
1.6 TEST FACILITY AND LOCATION.....	6
1.7 SUMMARY OF TEST RESULTS	6
2. SYSTEM TEST CONFIGURATION.....	7
2.1 EUT CONFIGURATION	7
2.2 SPECIAL ACCESSORIES.....	7
2.3 DESCRIPTION OF TEST MODES	7
2.4 EUT EXERCISE	7
3. CONDUCTED EMISSIONS TEST	8
3.1 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION).....	8
3.2 TEST CONDITION	8
3.3 MEASUREMENT RESULTS.....	8
4. RADIATED EMISSION TEST	15
4.1 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION).....	15
4.2 MEASUREMENT PROCEDURE	16
4.3 LIMIT	17
4.4 MEASUREMENT RESULTS	18
5. 20DB BANDWIDTH.....	37
5.1 MEASUREMENT PROCEDURE	37
5.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION).....	37
5.3 MEASUREMENT RESULTS.....	37
6. TEST EQUIPMENT LIST	40

Revision History of This Test Report

Report Number	Description	Issued Date
NTC1711180FV00	Initial Issue	2017-11-30

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test

Product name	: Fast Wireless Charger
Main model	: F306W
Additional model	: N/A
Model difference	: N/A
Power Supply	: DC 5V 2A, DC 9V 1.67A, DC 12V 1.5A
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	: 105.5-204.5KHz

Note: The Lowest, middle, and the Highest frequency of channel were selected to perform the test. The selected frequency and test software see below:

Channel	Frequency KHz
1	105.5
51	155.5
100	204.5

1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **2AFKNF306W** filing to comply with FCC Part 15 (2016), 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

Adapter (Provided by manufacturer)	: Manufacturer: Shenzhen Good-she technology co., Ltd. M/N: GS-551 Input: AC110-240V 50-60Hz, 0.6A Max Output: DC 3.6-6V 3A or DC6-9V 2A or DC9-12V 1.5A
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1.6 Test Facility and Location

Site Description

EMC Lab : Listed by CNAS, August 14, 2015
 The certificate is valid until August 13, 2018
 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	$\pm 1.42 \times 10^{-4}\%$	Compliant
§15.207 (a)	AC Power Conducted Emission	$\pm 1.06\text{dB}$	Compliant
§15.209	Radiated Emission	$\pm 3.70\text{dB}$	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

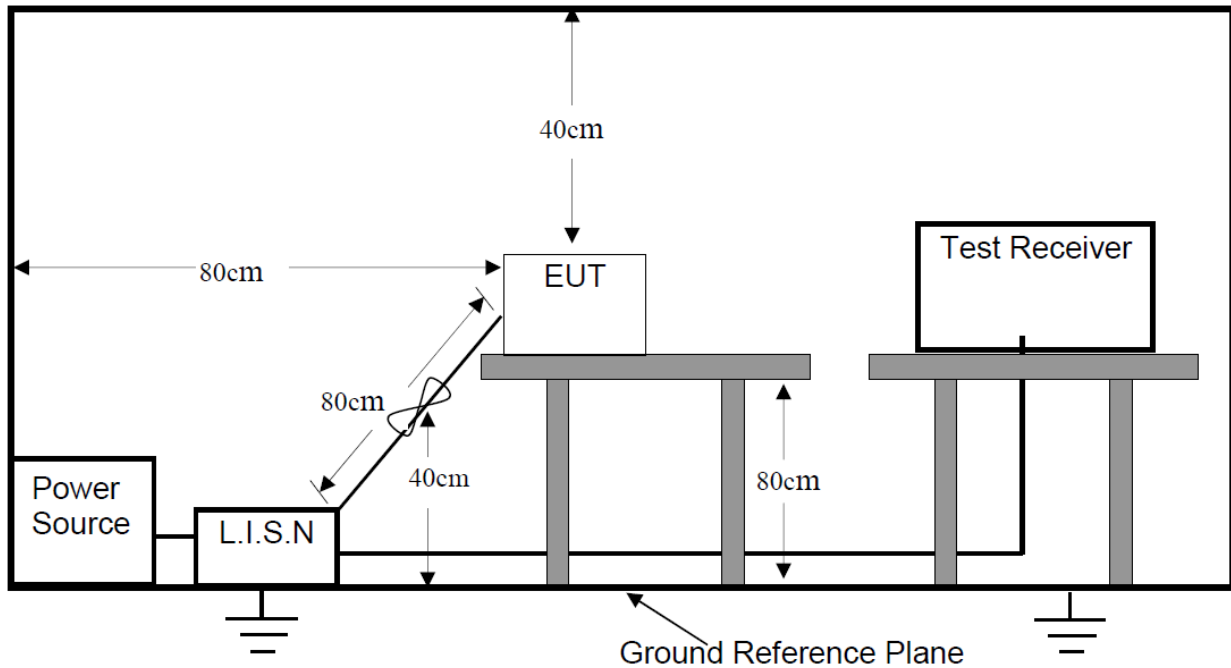
The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and normal mode is programmed. The Lowest, middle and highest channel were chosen for testing.

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: Full Load, Half Load, Empty Load

3.3 Measurement Results

Please refer to following plots of the worst case.



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Conducted Emission Measurement

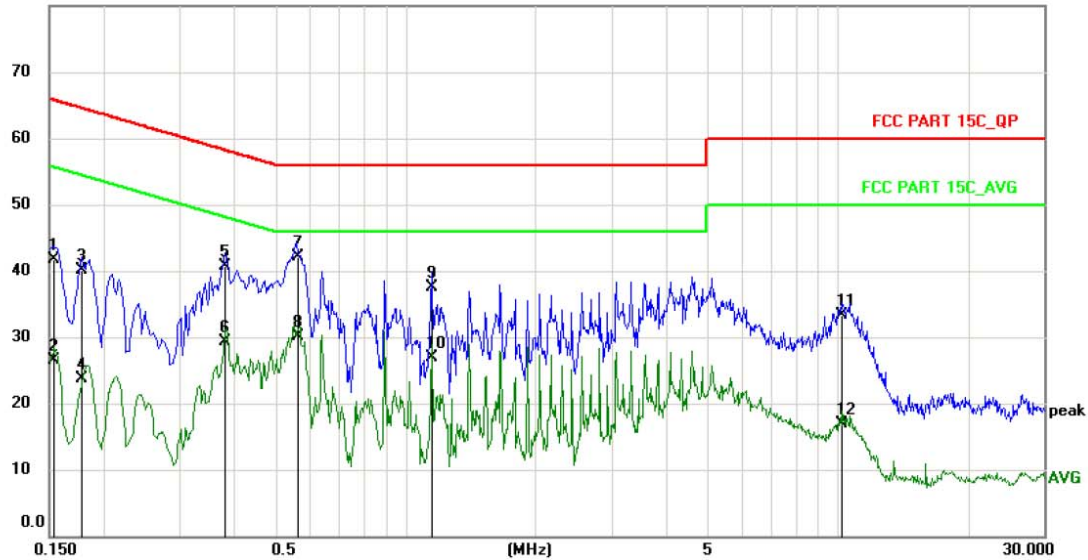
File :24KFNF306

Data :#4

Date: 2017-11-28

Time: 10:32:19

80.0 dBuV



Site

Phase: **L1**

Temperature: 26

Limit: FCC PART 15C_QP

Power: AC120V/60Hz

Humidity: 53 %

EUT: Fast Wireless Charger

M/N: F306W

Mode: Half Load

Note: DC 5V

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1539	30.90	10.80	41.70	65.79	-24.09	QP	
2		0.1539	15.70	10.80	26.50	55.79	-29.29	AVG	
3		0.1780	29.30	10.80	40.10	64.58	-24.48	QP	
4		0.1780	12.90	10.80	23.70	54.58	-30.88	AVG	
5		0.3820	30.00	10.80	40.80	58.24	-17.44	QP	
6		0.3820	18.50	10.80	29.30	48.24	-18.94	AVG	
7	*	0.5620	31.40	10.80	42.20	56.00	-13.80	QP	
8		0.5620	19.30	10.80	30.10	46.00	-15.90	AVG	
9		1.1500	26.80	10.80	37.60	56.00	-18.40	QP	
10		1.1500	16.10	10.80	26.90	46.00	-19.10	AVG	
11		10.2018	22.60	10.80	33.40	60.00	-26.60	QP	
12		10.2018	6.10	10.80	16.90	50.00	-33.10	AVG	



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Conducted Emission Measurement

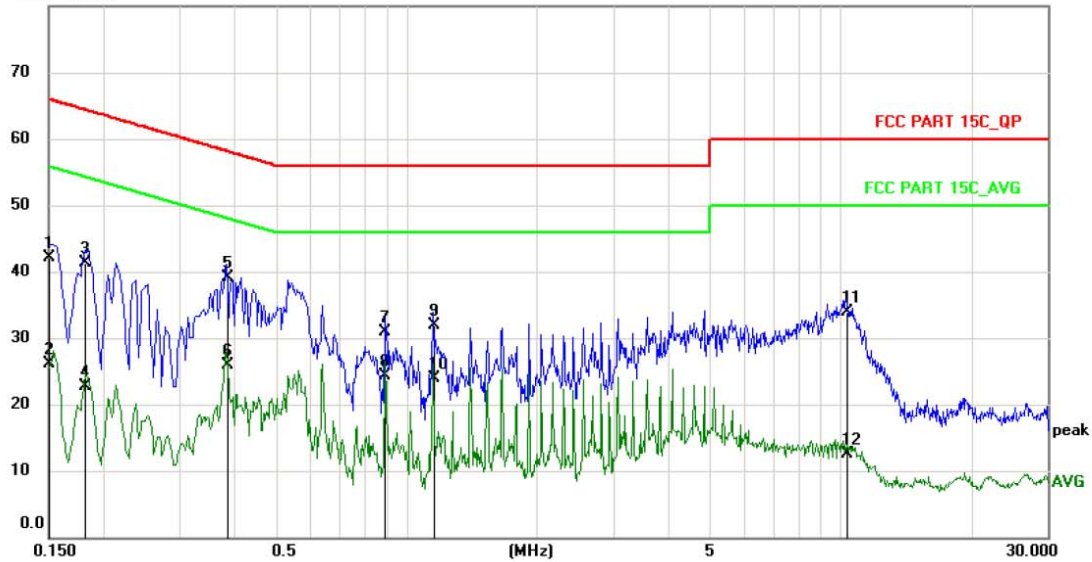
File :24KFN306

Data :#3

Date: 2017-11-28

Time: 10:25:43

80.0 dBuV



Site

Phase: **N**

Temperature: 26

Limit: FCC PART 15C_QP

Power: AC120V/60Hz

Humidity: 53 %

EUT: Fast Wireless Charger

M/N: F306W

Mode: Half Load

Note: DC 5V

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1500	31.30	10.80	42.10	66.00	-23.90	QP	
2		0.1500	15.30	10.80	26.10	56.00	-29.90	AVG	
3		0.1819	30.50	10.80	41.30	64.40	-23.10	QP	
4		0.1819	11.90	10.80	22.70	54.40	-31.70	AVG	
5	*	0.3860	28.30	10.80	39.10	58.15	-19.05	QP	
6		0.3860	15.10	10.80	25.90	48.15	-22.25	AVG	
7		0.8940	20.20	10.80	31.00	56.00	-25.00	QP	
8		0.8940	13.60	10.80	24.40	46.00	-21.60	AVG	
9		1.1539	21.10	10.80	31.90	56.00	-24.10	QP	
10		1.1539	13.20	10.80	24.00	46.00	-22.00	AVG	
11		10.3100	23.10	10.80	33.90	60.00	-26.10	QP	
12		10.3100	1.80	10.80	12.60	50.00	-37.40	AVG	



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Conducted Emission Measurement

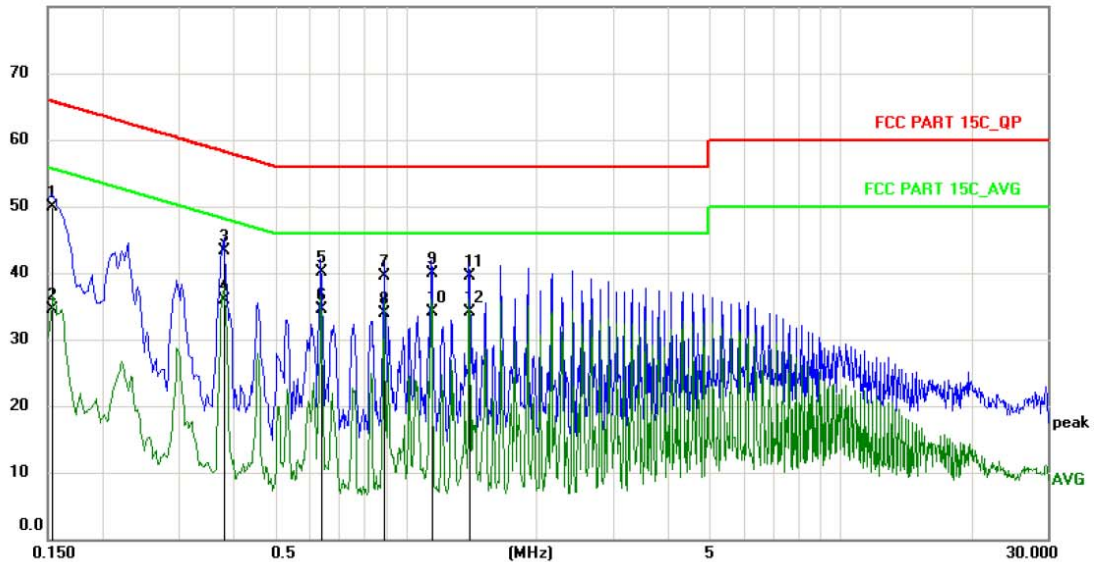
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Data :#7

Date: 2017-12-21

Time: 15:37:59

80.0 dBuV



Site

Phase: **L1**

Temperature: 26

Limit: FCC PART 15C_QP

Power: AC120V/60Hz

Humidity: 53 %

EUT: Fast Wireless Charger

M/N: F306W

Mode: Full Load

Note: 9V

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1539	39.10	10.80	49.90	65.79	-15.89	QP	
2		0.1539	23.80	10.80	34.60	55.79	-21.19	AVG	
3		0.3820	32.60	10.80	43.40	58.24	-14.84	QP	
4		0.3820	25.10	10.80	35.90	48.24	-12.34	AVG	
5		0.6380	29.30	10.80	40.10	56.00	-15.90	QP	
6	*	0.6380	23.70	10.80	34.50	46.00	-11.50	AVG	
7		0.8940	28.80	10.80	39.60	56.00	-16.40	QP	
8		0.8940	23.10	10.80	33.90	46.00	-12.10	AVG	
9		1.1460	29.10	10.80	39.90	56.00	-16.10	QP	
10		1.1460	23.30	10.80	34.10	46.00	-11.90	AVG	
11		1.4020	28.70	10.80	39.50	56.00	-16.50	QP	
12		1.4020	23.30	10.80	34.10	46.00	-11.90	AVG	



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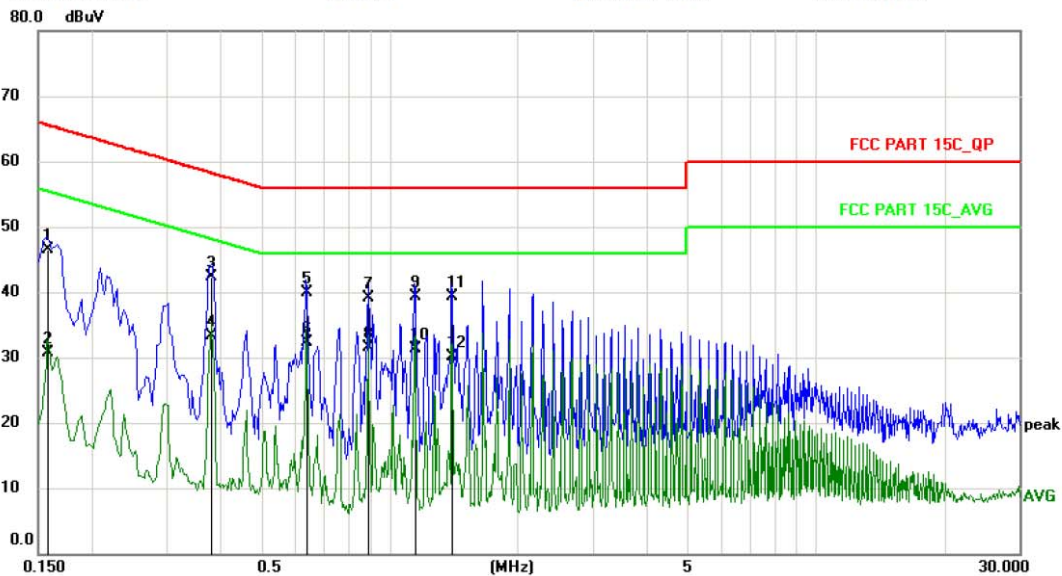
Conducted Emission Measurement

File :24KFN306

Data :#8

Date: 2017-12-21

Time: 15:39:29



Site
Limit: FCC PART 15C_QP
EUT: Fast Wireless Charger
M/N: F306W
Mode: Full Load
Note: 9V

Phase: **N**
Power: AC120V/60Hz

Temperature: 26
Humidity: 53 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1580	35.80	10.80	46.60	65.57	-18.97	QP	
2		0.1580	19.90	10.80	30.70	55.57	-24.87	AVG	
3		0.3820	31.60	10.80	42.40	58.24	-15.84	QP	
4		0.3820	22.50	10.80	33.30	48.24	-14.94	AVG	
5		0.6380	29.10	10.80	39.90	56.00	-16.10	QP	
6	*	0.6380	21.50	10.80	32.30	46.00	-13.70	AVG	
7		0.8940	28.30	10.80	39.10	56.00	-16.90	QP	
8		0.8940	20.70	10.80	31.50	46.00	-14.50	AVG	
9		1.1460	28.50	10.80	39.30	56.00	-16.70	QP	
10		1.1460	20.50	10.80	31.30	46.00	-14.70	AVG	
11		1.4020	28.50	10.80	39.30	56.00	-16.70	QP	
12		1.4020	19.30	10.80	30.10	46.00	-15.90	AVG	



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Conducted Emission Measurement

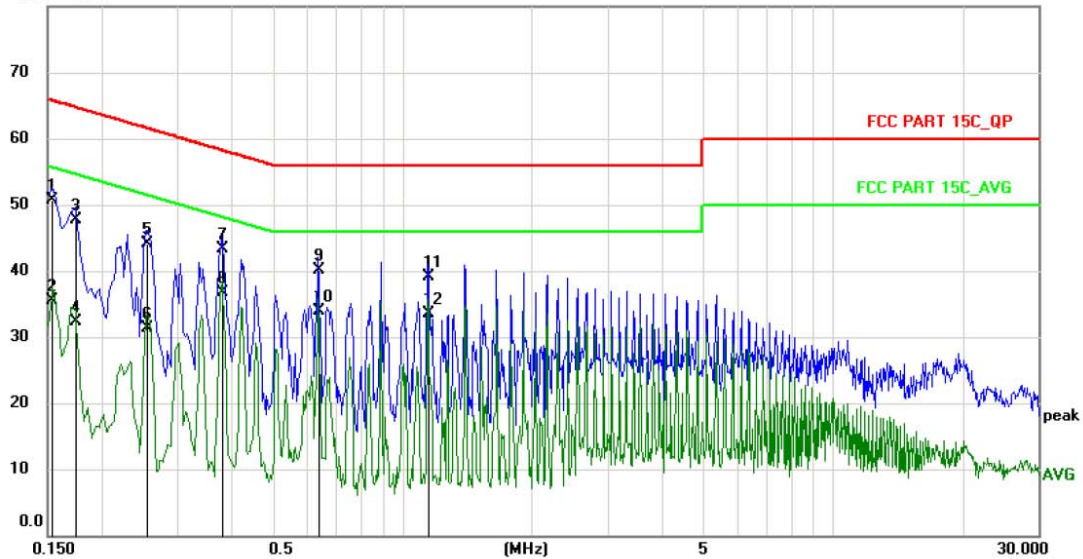
File :24KFN306

Data :#9

Date: 2017-12-25

Time: 9:50:17

80.0 dBuV



Site

Phase: **L1**

Temperature: 26

Limit: FCC PART 15C_QP

Power: AC120V/60Hz

Humidity: 53 %

EUT: Fast Wireless Charger

M/N: F306W

Mode: Full Load

Note: 12V

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1539	40.00	10.80	50.80	65.79	-14.99	QP	
2		0.1539	24.80	10.80	35.60	55.79	-20.19	AVG	
3		0.1740	36.90	10.80	47.70	64.77	-17.07	QP	
4		0.1740	21.50	10.80	32.30	54.77	-22.47	AVG	
5		0.2540	33.30	10.80	44.10	61.63	-17.53	QP	
6		0.2540	20.60	10.80	31.40	51.63	-20.23	AVG	
7		0.3820	32.50	10.80	43.30	58.24	-14.94	QP	
8	*	0.3820	25.90	10.80	36.70	48.24	-11.54	AVG	
9		0.6380	29.30	10.80	40.10	56.00	-15.90	QP	
10		0.6380	23.10	10.80	33.90	46.00	-12.10	AVG	
11		1.1460	28.40	10.80	39.20	56.00	-16.80	QP	
12		1.1460	22.80	10.80	33.60	46.00	-12.40	AVG	



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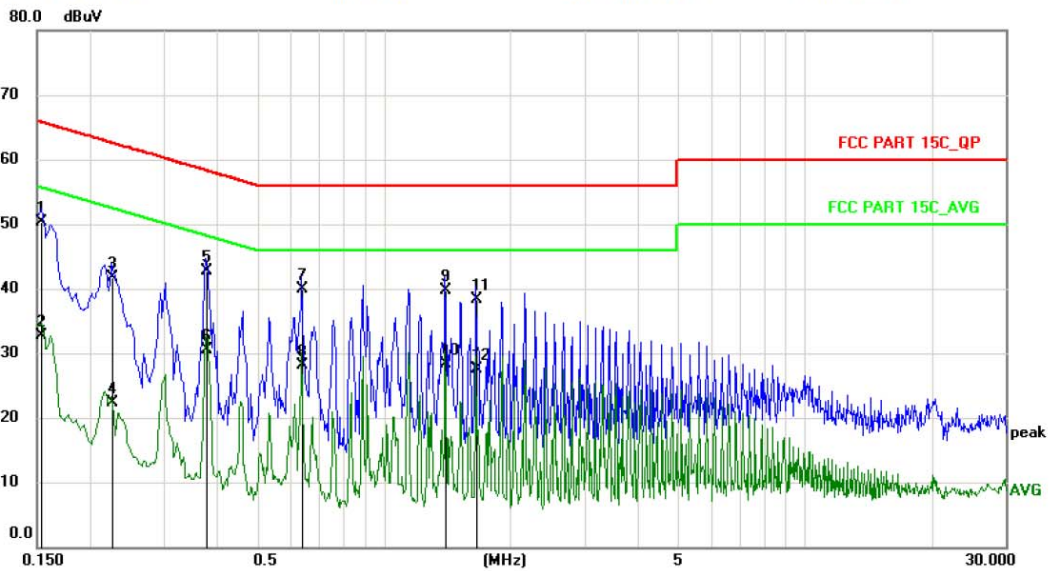
Conducted Emission Measurement

File :24KFN306

Data :#10

Date: 2017-12-25

Time: 9:51:42



Site

Phase: **N**

Temperature: 26

Limit: FCC PART 15C_QP

Power: AC120V/60Hz

Humidity: 53 %

EUT: Fast Wireless Charger

M/N: F306W

Mode: Full Load

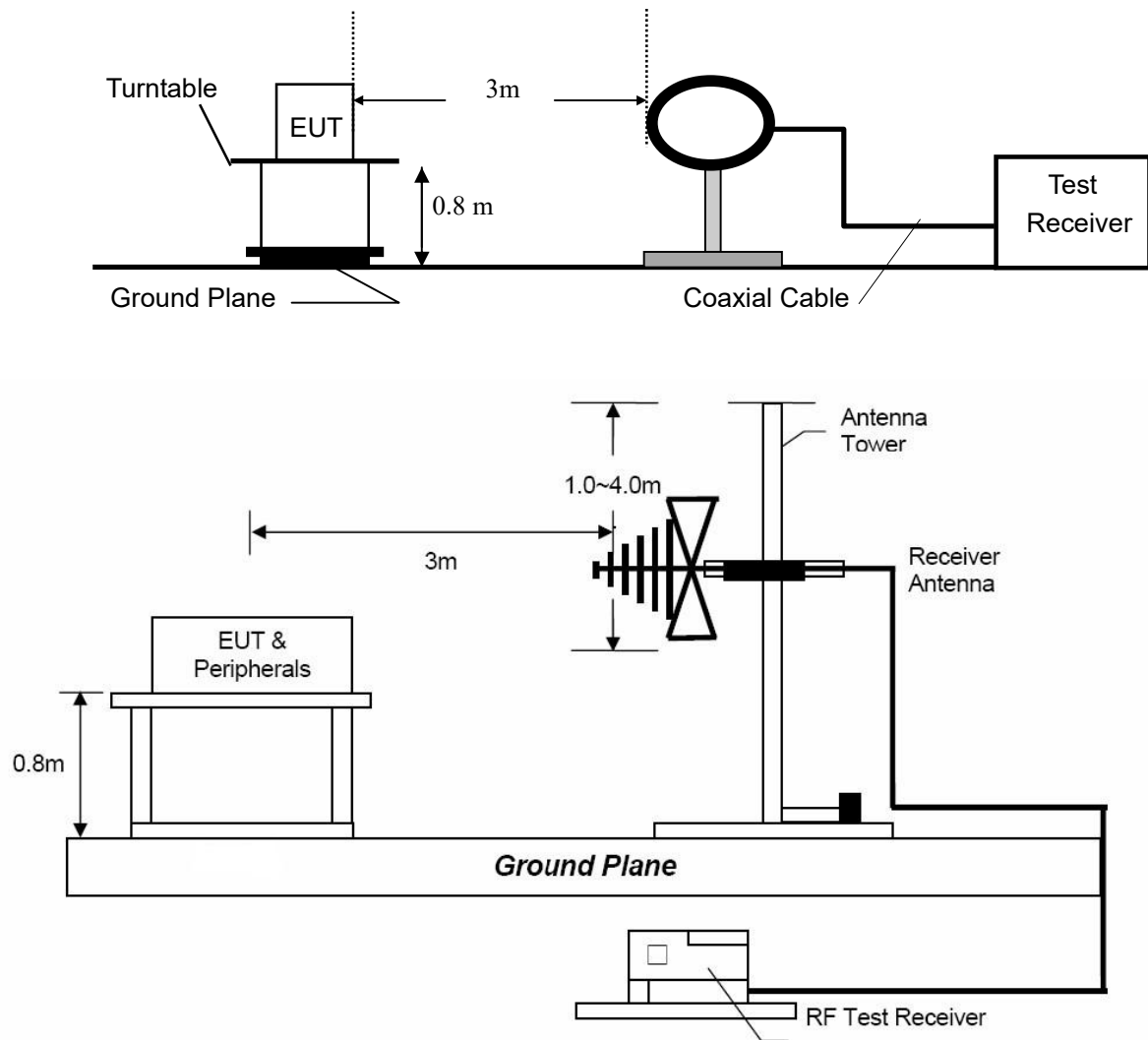
Note: 12V

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1539	39.60	10.80	50.40	65.79	-15.39	QP	
2		0.1539	22.00	10.80	32.80	55.79	-22.99	AVG	
3		0.2260	31.00	10.80	41.80	62.60	-20.80	QP	
4		0.2260	11.60	10.80	22.40	52.60	-30.20	AVG	
5		0.3780	32.00	10.80	42.80	58.32	-15.52	QP	
6		0.3780	19.70	10.80	30.50	48.32	-17.82	AVG	
7		0.6380	29.10	10.80	39.90	56.00	-16.10	QP	
8		0.6380	17.40	10.80	28.20	46.00	-17.80	AVG	
9		1.4020	29.00	10.80	39.80	56.00	-16.20	QP	
10		1.4020	17.60	10.80	28.40	46.00	-17.60	AVG	
11		1.6540	27.50	10.80	38.30	56.00	-17.70	QP	
12		1.6540	16.70	10.80	27.50	46.00	-18.50	AVG	

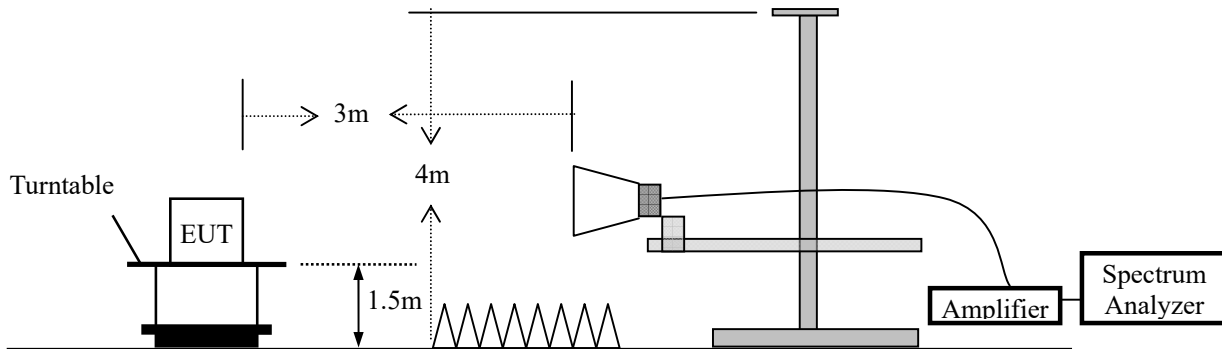
4. Radiated Emission Test

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

- 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.
- 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.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.
- 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.
- 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)
		$\mu\text{V/m}$
0.009 ~ 0.490	300	$2400/F(\text{kHz})$
0.490 ~ 1.705	30	$24000/F(\text{kHz})$
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 $(\text{dB})\mu\text{V} = 20 \log \text{Emission level } \mu\text{V/m}$
- (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: Full Load.



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Radiated Emission Measurement

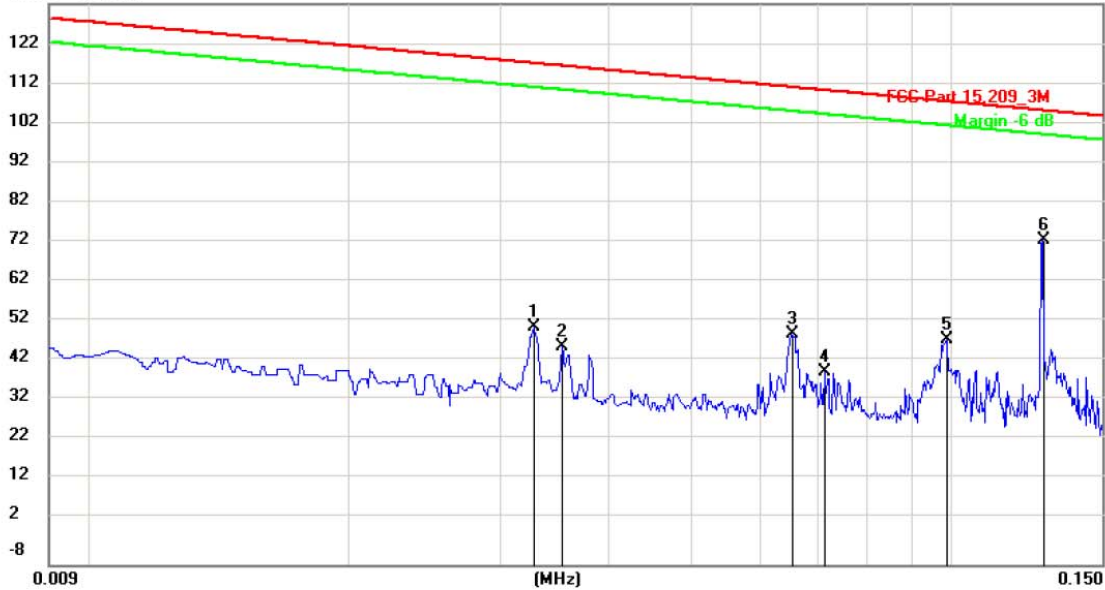
File : 2AFKNF306

Data : #7

Date: 2017-11-27

Time: 14:02:49

132.0 dBuV/m



Site

Polarization: **Horizontal**

Temperature: 26

Limit: FCC Part 15.209_3M

Power: AC120V/60Hz

Humidity: 60 %

EUT: Fast Wireless Charger

Distance: 3m

M/N: F306W

Mode: Full Load

Note: DC 5V

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		0.0328	30.96	20.52	51.48	117.22	-65.74	peak		
2		0.0354	25.81	20.54	46.35	116.56	-70.21	peak		
3		0.0655	29.07	20.52	49.59	111.23	-61.64	peak		
4		0.0714	19.74	20.52	40.26	110.48	-70.22	peak		
5		0.0990	27.57	20.54	48.11	107.65	-59.54	peak		
6	*	0.1279	52.44	20.53	72.97	105.43	-32.46	peak		

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



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Radiated Emission Measurement



Site
Limit: FCC Part 15.209_3M
EUT: Fast Wireless Charger
M/N: F306W
Mode: Full Load
Note: DC 5V

Polarization: **Vertical**
Power: AC120V/60Hz
Distance: 3m

Temperature: 26
Humidity: 60 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		0.0354	26.26	20.54	46.80	116.56	-69.76	peak		
2		0.0656	21.42	20.52	41.94	111.22	-69.28	peak		
3		0.0985	21.32	20.54	41.86	107.70	-65.84	peak		
4		0.1136	20.23	20.53	40.76	106.46	-65.70	peak		
5	*	0.1276	47.68	20.53	68.21	105.45	-37.24	peak		
6		0.1440	19.42	20.53	39.95	104.41	-64.46	peak		

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

meet the requirements.



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Radiated Emission Measurement

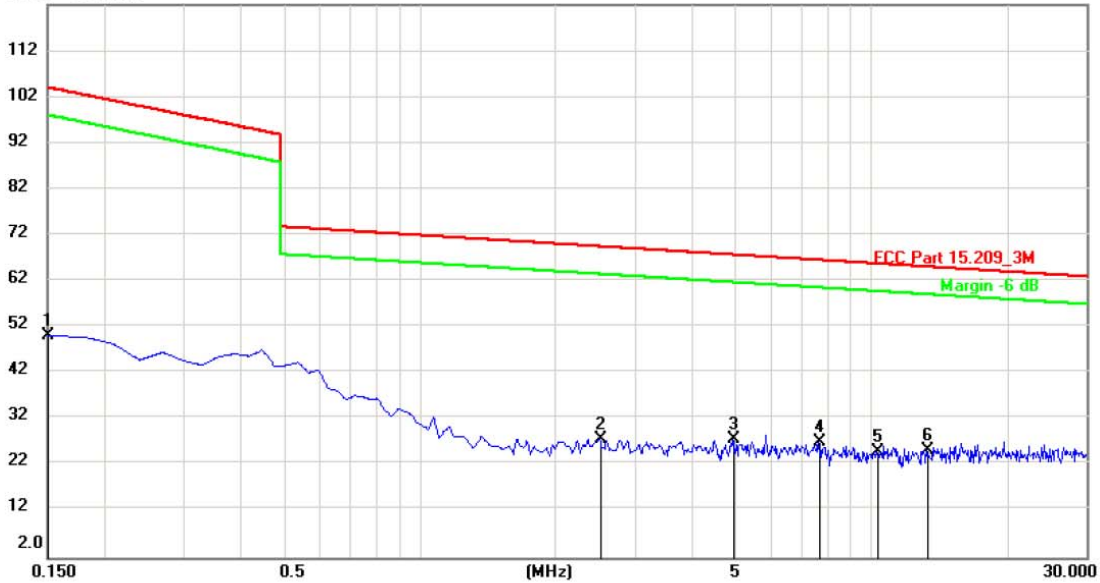
File : 2AFKNF306

Data : #18

Date: 2017-11-27

Time: 15:20:18

122.0 dBuV/m



Site
Limit: FCC Part 15.209_3M
EUT: Fast Wireless Charger
M/N: F306W
Mode: Full Load
Note: DC 5V

Polarization: **Horizontal**
Power: AC120V/60Hz
Distance: 3m

Temperature: 26
Humidity: 60 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1		0.1500	29.57	20.52	50.09	104.05	-53.96	peak		
2		2.5081	7.31	20.40	27.71	69.50	-41.79	peak		
3		4.9260	7.32	20.45	27.77	67.73	-39.96	peak		
4	*	7.6722	6.66	20.51	27.17	66.56	-39.39	peak		
5		10.2987	4.47	20.58	25.05	65.78	-40.73	peak		
6		13.3139	4.83	20.56	25.39	65.11	-39.72	peak		

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

meet the requirements.



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Radiated Emission Measurement

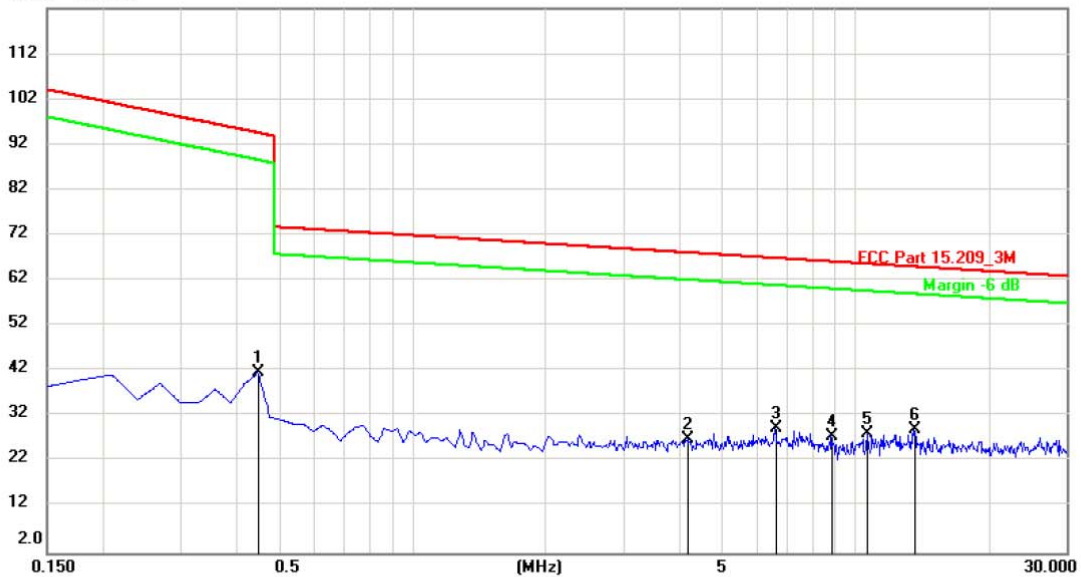
File :2AFKNF306

Data :#17

Date: 2017-11-27

Time: 15:13:17

122.0 dBuV/m



Site

Polarization: **Vertical**

Temperature: 26

Limit: FCC Part 15.209_3M

Power: AC120V/60Hz

Humidity: 60 %

EUT: Fast Wireless Charger

Distance: 3m

M/N: F306W

Mode: Full Load

Note: DC 5V

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree	Comment
1		0.4485	21.20	20.45	41.65	94.57	-52.92	peak		
2		4.1798	6.73	20.44	27.17	68.16	-40.99	peak		
3		6.5975	9.07	20.48	29.55	66.96	-37.41	peak		
4		8.8362	7.26	20.54	27.80	66.19	-38.39	peak		
5		10.6272	7.57	20.59	28.16	65.70	-37.54	peak		
6	*	13.5525	8.52	20.56	29.08	65.06	-35.98	peak		

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



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Radiated Emission Measurement

File : 2AFKNF306

Data : #1

Date: 2017-11-25

Time: 14:21:22



Site

Polarization: **Horizontal**

Temperature: 26

Limit: FCC Part 15C_Class B_3M

Power: AC120V/60Hz

Humidity: 60 %

EUT: Fast Wireless Charger

Distance: 3m

M/N: F306W

Mode: Full Load

Note: DC5V

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		92.4624	34.46	-13.36	21.10	43.50	-22.40	QP		
2		258.3263	36.57	-11.47	25.10	46.00	-20.90	QP		
3		299.3158	41.67	-10.47	31.20	46.00	-14.80	QP		
4	*	330.1949	44.81	-9.61	35.20	46.00	-10.80	QP		
5		477.1693	40.58	-7.28	33.30	46.00	-12.70	QP		
6		572.6144	32.81	-5.81	27.00	46.00	-19.00	QP		



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Radiated Emission Measurement

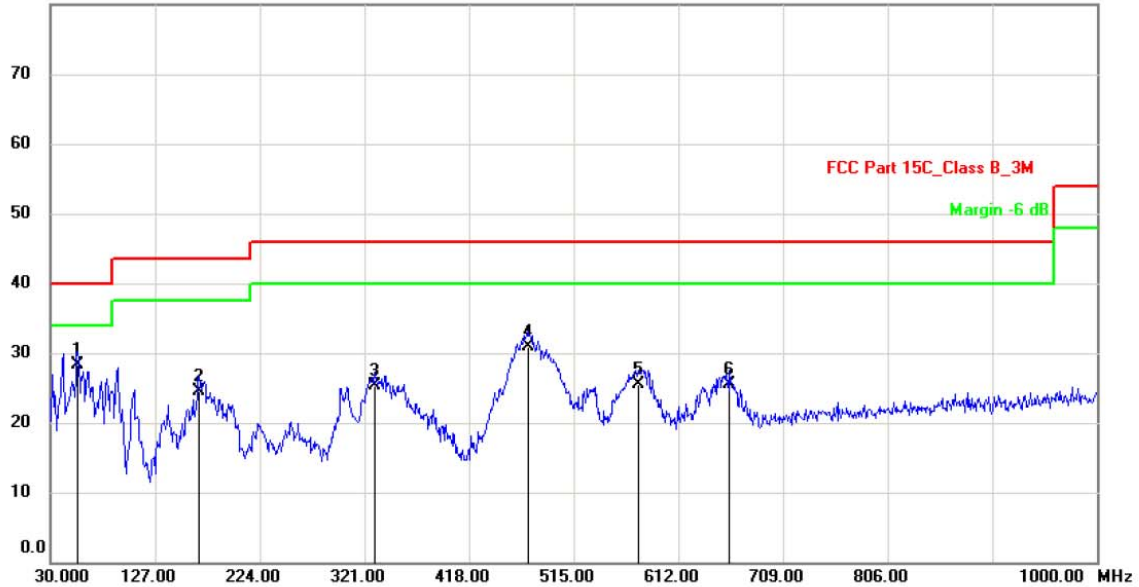
File :2AFKNF306

Data :#2

Date: 2017-11-25

Time: 14:28:29

80.0 dBuV/m



Site

Polarization: **Vertical**

Temperature: 26

Limit: FCC Part 15C_Class B_3M

Power: AC120V/60Hz

Humidity: 60 %

EUT: Fast Wireless Charger

Distance: 3m

M/N: F306W

Mode: Full Load

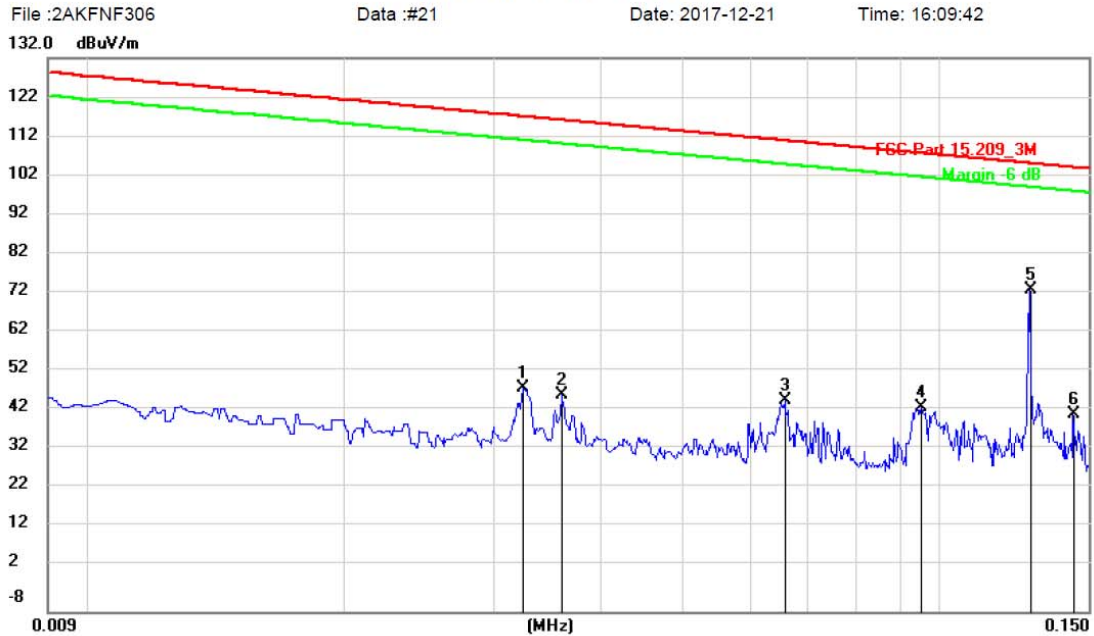
Note: DC 5V

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1	*	55.2200	42.02	-13.72	28.30	40.00	-11.70	QP		
2		167.7400	42.49	-17.89	24.60	43.50	-18.90	QP		
3		330.7000	36.90	-11.60	25.30	46.00	-20.70	QP		
4		473.2900	40.38	-9.38	31.00	46.00	-15.00	QP		
5		575.1400	33.33	-7.73	25.60	46.00	-20.40	QP		
6		659.5300	30.53	-4.93	25.60	46.00	-20.40	QP		



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Radiated Emission Measurement



Site
Limit: FCC Part 15.209_3M
EUT: Fast Wireless Charger
M/N: F306W
Mode: Full Load
Note: 9V

Polarization: **Horizontal**
Power: AC120V/60Hz
Distance: 3m

Temperature: 26
Humidity: 60 %

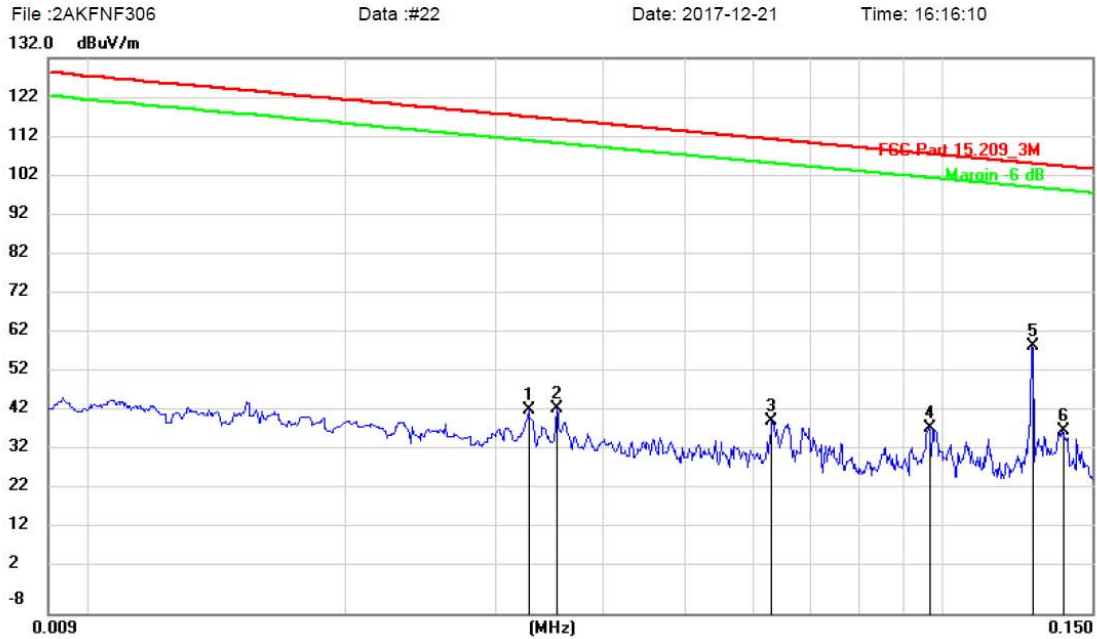
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree degree	Comment
1		0.0325	27.86	20.52	48.38	117.2	-68.86	peak			
2		0.0361	26.16	20.55	46.71	116.3	-69.62	peak			
3		0.0661	24.86	20.52	45.38	111.1	-65.72	peak			
4		0.0952	23.09	20.54	43.63	107.9	-64.32	peak			
5	*	0.1279	52.94	20.53	73.47	105.4	-31.93	peak			
6		0.1440	21.26	20.53	41.79	104.3	-62.59	peak			

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



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Radiated Emission Measurement



Site
Limit: FCC Part 15.209_3M
EUT: Fast Wireless Charger
M/N: F306W
Mode: Full Load
Note: 9V

Polarization: **Vertical**
Power: AC120V/60Hz
Distance: 3m

Temperature: 26
Humidity: 60 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		0.0328	22.66	20.52	43.18	117.1	-73.98	peak		
2		0.0354	23.26	20.54	43.80	116.5	-72.70	peak		
3		0.0632	19.93	20.53	40.46	111.4	-71.03	peak		
4		0.0966	18.21	20.54	38.75	107.8	-69.08	peak		
5	*	0.1276	38.68	20.53	59.21	105.4	-46.21	peak		
6		0.1383	17.38	20.53	37.91	104.7	-66.82	peak		

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



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Radiated Emission Measurement

File : 2AFKNF306

Data : #24

Date: 2017-12-21

Time: 16:30:08

122.0 dBuV/m



Site

Polarization: **Horizontal**

Temperature: 26

Limit: FCC Part 15.209_3M

Power: AC120V/60Hz

Humidity: 60 %

EUT: Fast Wireless Charger

Distance: 3m

M/N: F306W

Mode: Full Load

Note: 9V

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree degree	Comment
1		0.2028	30.71	20.51	51.22	101.4	-50.20	peak			
2		0.3518	28.23	20.47	48.70	96.66	-47.96	peak			
3	*	0.5433	25.05	20.44	45.49	73.53	-28.04	peak			
4		2.5081	8.31	20.40	28.71	69.50	-40.79	peak			
5		4.0602	9.66	20.43	30.09	68.23	-38.14	peak			
6		9.1349	8.41	20.55	28.96	66.10	-37.14	peak			



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Radiated Emission Measurement

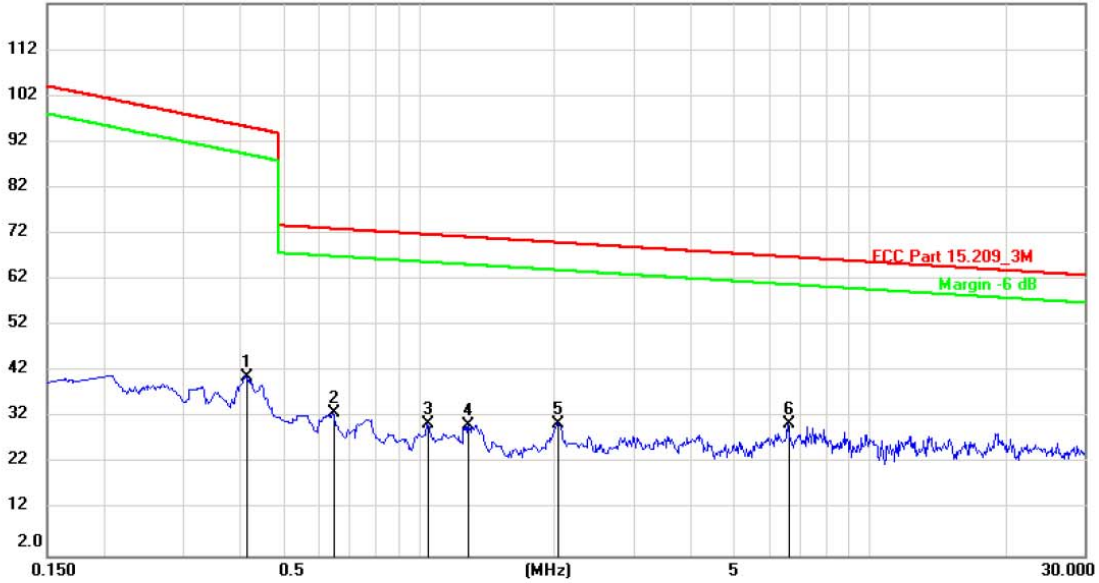
File :2AKFNF306

Data :#23

Date: 2017-12-21

Time: 16:23:55

122.0 dBuV/m



Site

Polarization: **Vertical**

Temperature: 26

Limit: FCC Part 15.209_3M

Power: AC120V/60Hz

Humidity: 60 %

EUT: Fast Wireless Charger

Distance: 3m

M/N: F306W

Mode: Full Load

Note: 9V

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree degree	Comment
1		0.4127	20.54	20.46	41.00	95.28	-54.28	peak			
2		0.6440	12.53	20.43	32.96	73.08	-40.12	peak			
3		1.0455	10.19	20.40	30.59	71.81	-41.22	peak			
4		1.2890	10.09	20.40	30.49	71.25	-40.76	peak			
5		2.0306	10.24	20.40	30.64	70.06	-39.42	peak			
6	*	6.5975	10.07	20.48	30.55	66.96	-36.41	peak			



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Radiated Emission Measurement

File : 2AFKNF306

Data : #20

Date: 2017-12-21

Time: 16:44:30

80.0 dBuV/m



Site

Polarization: **Horizontal**

Temperature: 26

Limit: FCC Part 15C_Class B_3M

Power: AC120V/60Hz

Humidity: 47 %

EUT: Fast Wireless charger

Distance: 3m

M/N: F306W

Mode: Full Load

Note: 9V

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		89.1700	40.33	-14.13	26.20	43.50	-17.30	QP		
2		152.2200	40.63	-15.43	25.20	43.50	-18.30	QP		
3		181.3200	39.45	-14.05	25.40	43.50	-18.10	QP		
4		223.0300	35.91	-12.81	23.10	46.00	-22.90	QP		
5		291.9000	35.70	-10.70	25.00	46.00	-21.00	QP		
6	*	473.2900	42.58	-7.38	35.20	46.00	-10.80	QP		



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Radiated Emission Measurement

File :2AFKNF306

Data :#19

Date: 2017-12-21

Time: 16:37:01

80.0 dBuV/m



Site

Polarization: **Vertical**

Temperature: 26

Limit: FCC Part 15C_Class B_3M

Power: AC120V/60Hz

Humidity: 47 %

EUT: Fast Wireless Charger

Distance: 3m

M/N: F306W

Mode: Full Load

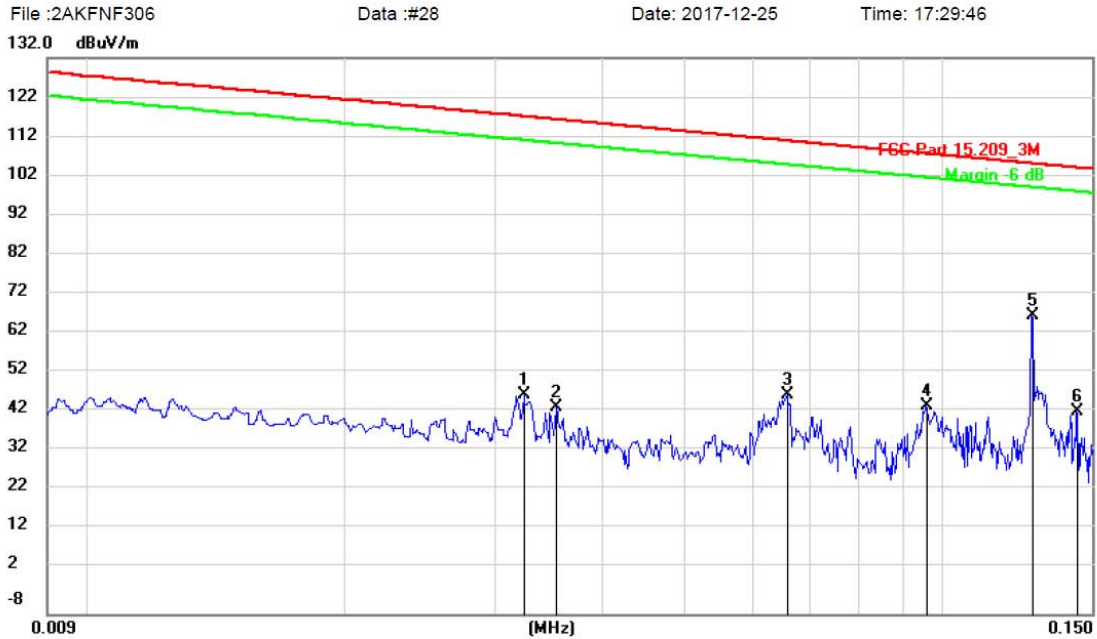
Note: 9V

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree degree	Comment
1		90.1400	44.30	-16.90	27.40	43.50	-16.10	QP			
2		154.1600	43.68	-18.38	25.30	43.50	-18.20	QP			
3		183.2600	41.34	-16.94	24.40	43.50	-19.10	QP			
4		296.7500	34.86	-12.56	22.30	46.00	-23.70	QP			
5		347.1900	37.76	-11.16	26.60	46.00	-19.40	QP			
6	*	468.4400	42.02	-9.52	32.50	46.00	-13.50	QP			



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Radiated Emission Measurement



Site
Limit: FCC Part 15.209_3M
EUT: Fast Wireless Charger
M/N: F306W
Mode: Full Load
Note: 12V

Polarization: **Horizontal**
Power: AC120V/60Hz
Distance: 3m
Temperature: 26
Humidity: 60 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1		0.0325	26.64	20.52	47.16	117.2	-70.08	peak			
2		0.0354	23.52	20.54	44.06	116.5	-72.44	peak			
3		0.0660	26.50	20.52	47.02	111.1	-64.10	peak			
4		0.0961	23.94	20.54	44.48	107.8	-63.39	peak			
5	*	0.1276	46.53	20.53	67.06	105.4	-38.36	peak			
6		0.1440	22.55	20.53	43.08	104.3	-61.30	peak			

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



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Radiated Emission Measurement

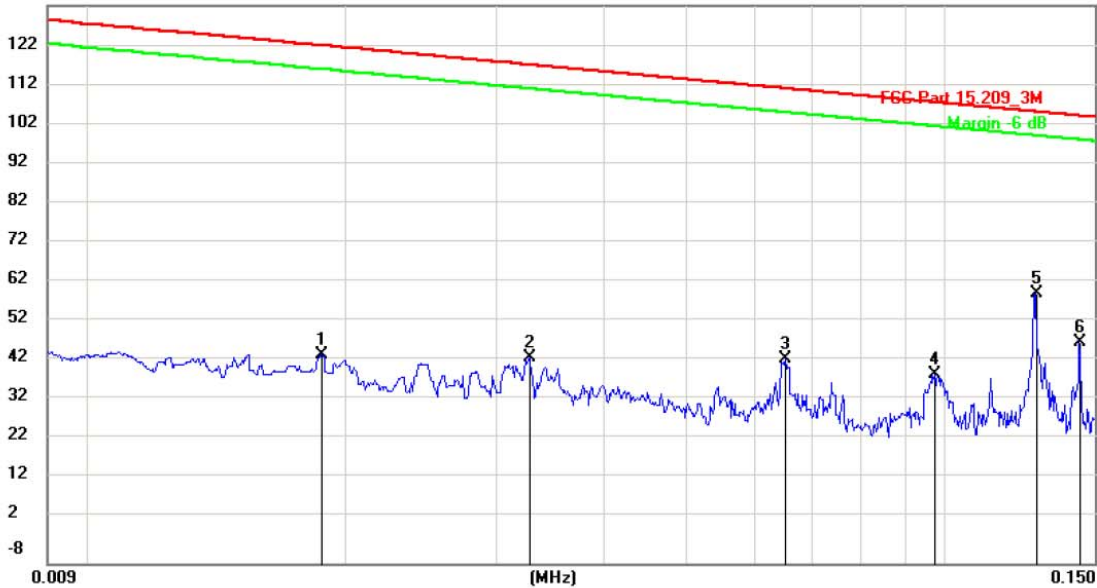
File : 2AFKNF306

Data : #27

Date: 2017-12-25

Time: 17:22:07

132.0 dBuV/m



Site
Limit: FCC Part 15.209_3M
EUT: Fast Wireless Charger
M/N: F306W
Mode: Full Load
Note: 12V

Polarization: **Vertical**
Power: AC120V/60Hz
Distance: 3m

Temperature: 26
Humidity: 60 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1		0.0188	24.05	20.26	44.31	121.9	-77.65	peak		
2		0.0328	23.20	20.52	43.72	117.1	-73.44	peak		
3		0.0651	22.63	20.52	43.15	111.2	-68.08	peak		
4		0.0974	18.77	20.54	39.31	107.7	-68.44	peak		
5	*	0.1279	39.11	20.53	59.64	105.4	-45.76	peak		
6		0.1440	26.84	20.53	47.37	104.3	-57.01	peak		

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



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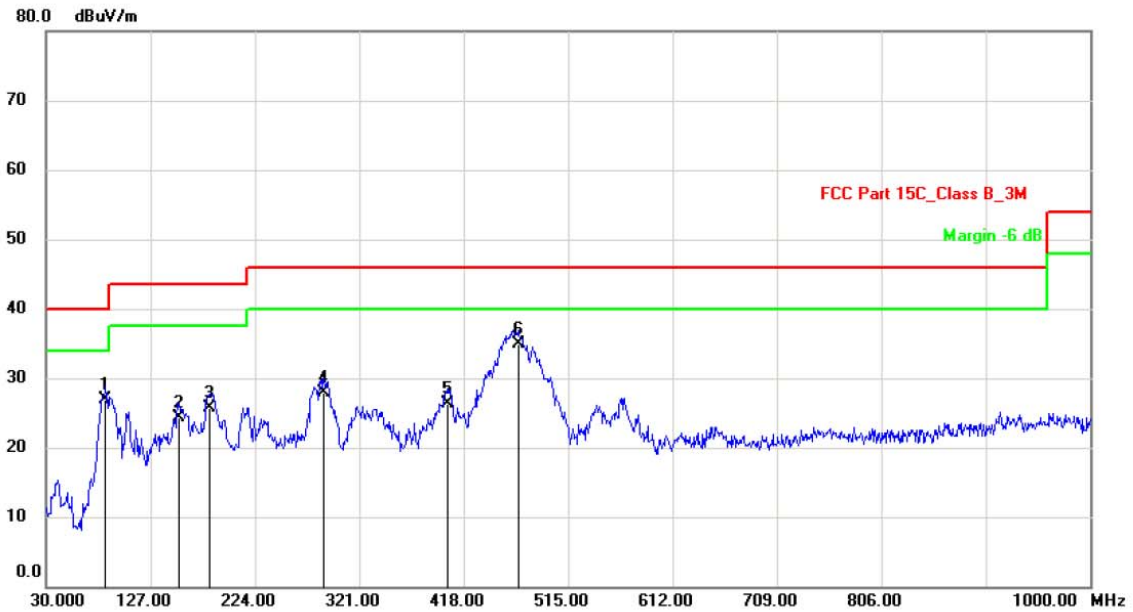
Radiated Emission Measurement

File : 2AFKNF306

Data : #26

Date: 2017-12-25

Time: 17:15:30



Site

Polarization: **Horizontal**

Temperature: 26

Limit: FCC Part 15C_Class B_3M

Power: AC120V/60Hz

Humidity: 47 %

EUT: Fast Wireless Charger

Distance: 3m

M/N: F306W

Mode: Full Load

Note: 12V

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		85.2900	42.11	-15.11	27.00	40.00	-13.00	QP		
2		153.1900	39.80	-15.40	24.40	43.50	-19.10	QP		
3		182.2899	39.70	-14.00	25.70	43.50	-17.80	QP		
4		288.0200	38.80	-10.80	28.00	46.00	-18.00	QP		
5		403.4500	35.43	-9.03	26.40	46.00	-19.60	QP		
6	*	468.4400	42.52	-7.52	35.00	46.00	-11.00	QP		



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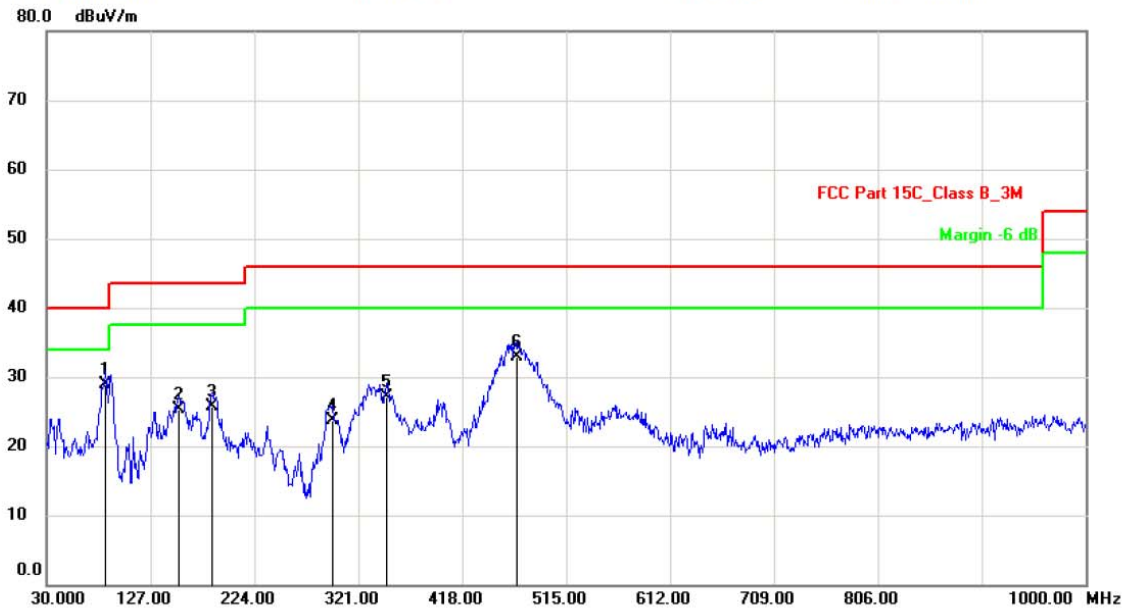
Radiated Emission Measurement

File : 2AFKNF306

Data : #25

Date: 2017-12-25

Time: 17:07:01



Site: Polarization: **Vertical** Temperature: 26
Limit: FCC Part 15C_Class B_3M Power: AC120V/60Hz Humidity: 47 %
EUT: Fast Wireless Charger Distance: 3m
M/N: F306W
Mode: Full Load
Note: 12V

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	85.2900	47.11	-18.11	29.00	40.00	-11.00	QP		
2		153.1900	43.70	-18.40	25.30	43.50	-18.20	QP		
3		184.2300	42.68	-16.88	25.80	43.50	-17.70	QP		
4		296.7500	36.36	-12.56	23.80	46.00	-22.20	QP		
5		347.1900	38.26	-11.16	27.10	46.00	-18.90	QP		
6		468.4400	42.52	-9.52	33.00	46.00	-13.00	QP		



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Radiated Emission Measurement

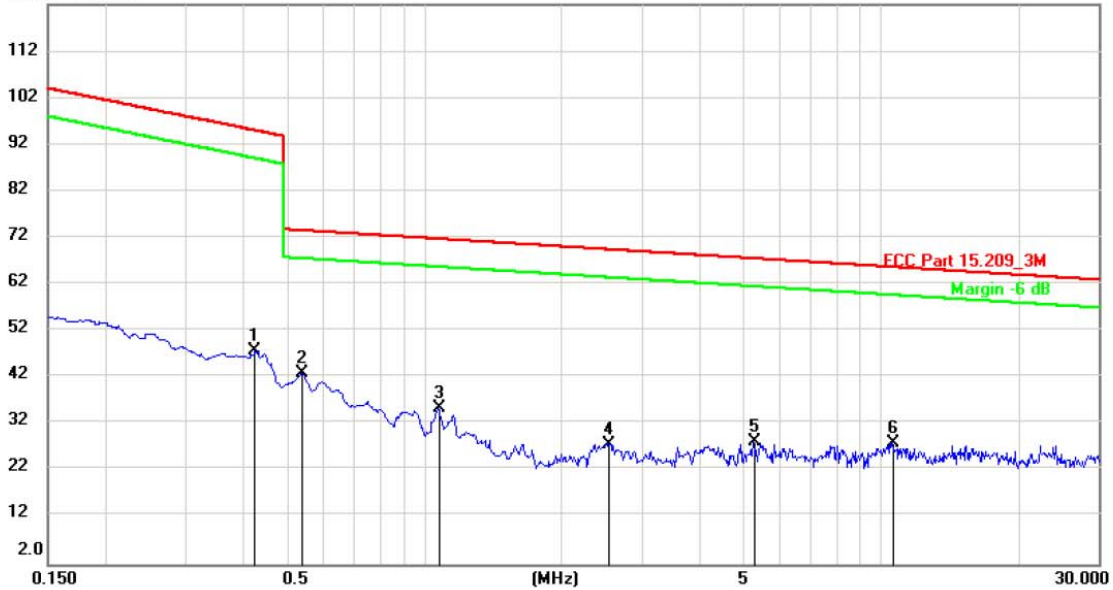
File : 2AFKNF306

Data : #29

Date: 2017-12-25

Time: 17:36:18

122.0 dBuV/m



Site
Limit: FCC Part 15.209_3M
EUT: Fast Wireless Charger
M/N: F306W
Mode: Full Load
Note: 12V

Polarization: **Horizontal**
Power: AC120V/60Hz
Distance: 3m

Temperature: 26
Humidity: 60 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1		0.4259	27.24	20.46	47.70	95.01	-47.31	peak		
2	*	0.5404	22.60	20.44	43.04	73.54	-30.50	peak		
3		1.0747	15.02	20.40	35.42	71.73	-36.31	peak		
4		2.5379	7.40	20.40	27.80	69.47	-41.67	peak		
5		5.2544	7.79	20.45	28.24	67.56	-39.32	peak		
6		10.5677	7.47	20.59	28.06	65.72	-37.66	peak		



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Web: [Http://www.ntc-c.com](http://www.ntc-c.com)

Radiated Emission Measurement

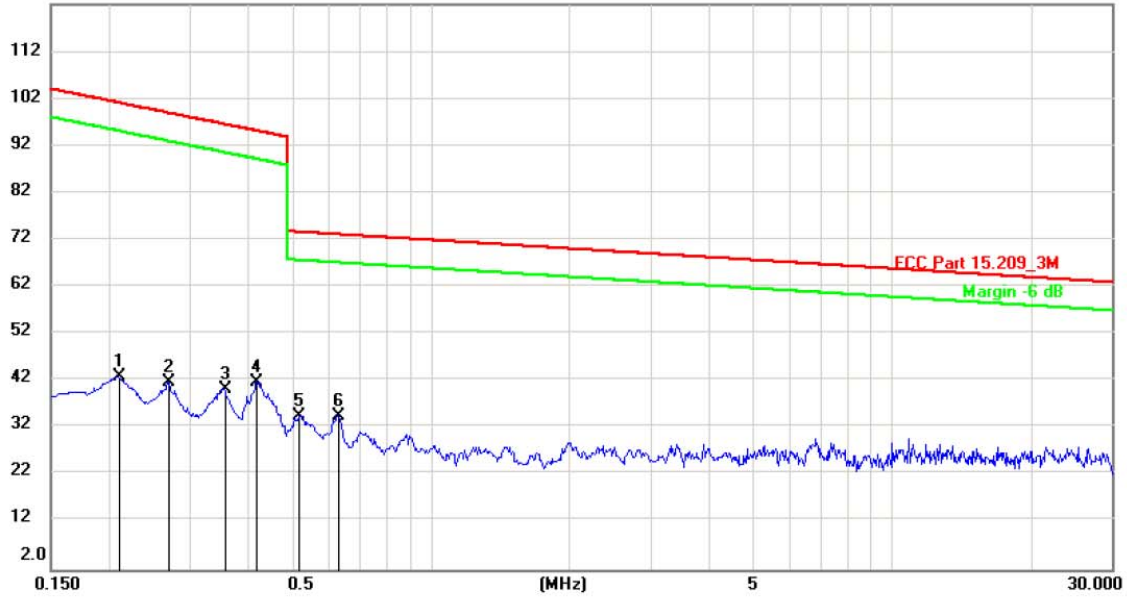
File :2AFKNF306

Data :#30

Date: 2017-12-25

Time: 17:42:37

122.0 dBuV/m



Site

Polarization: **Vertical**

Temperature: 26

Limit: FCC Part 15.209_3M

Power: AC120V/60Hz

Humidity: 60 %

EUT: Fast Wireless Charger

Distance: 3m

M/N: F306W

Mode: Full Load

Note: 12V

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		0.2096	22.48	20.51	42.99	101.1	-58.14	peak		
2		0.2691	21.26	20.49	41.75	98.98	-57.23	peak		
3		0.3558	19.78	20.47	40.25	96.56	-56.31	peak		
4		0.4187	21.27	20.46	41.73	95.16	-53.43	peak		
5		0.5181	14.20	20.45	34.65	73.65	-39.00	peak		
6	*	0.6303	14.13	20.43	34.56	73.14	-38.58	peak		

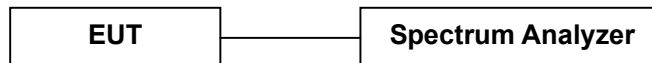
5. 20dB Bandwidth

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)



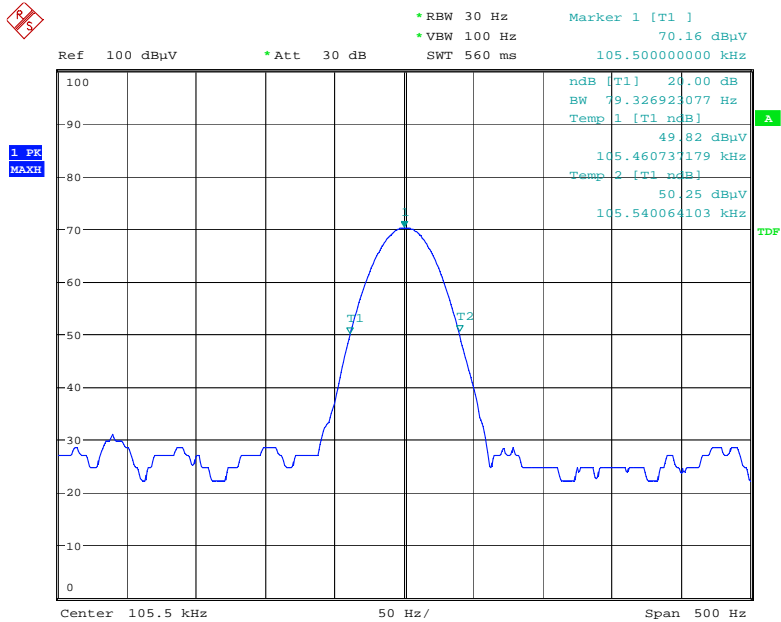
5.3 Measurement Results

Refer to attached data chart.

RBW:	30Hz	VBW:	100Hz
Test By:	Sance	Spectrum Detector:	PK
Temperature :	24 °C	Test Date :	November 27, 2017
Test Result:	PASS	Humidity :	50 %

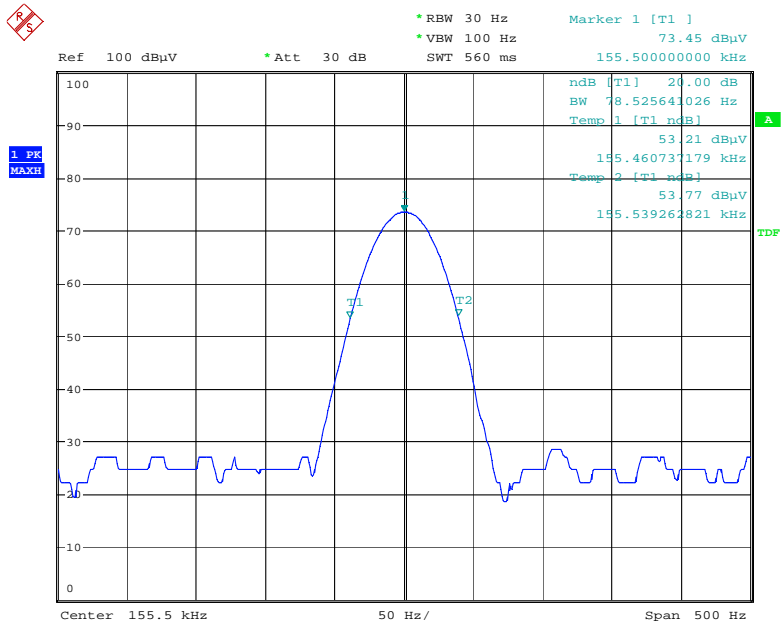
Channel frequency (KHz)	20dB Down BW(Hz)
105.5	78.33
155.5	78.53
204.5	78.53

Lowest Channel



Date: 27.NOV.2017 17:05:51

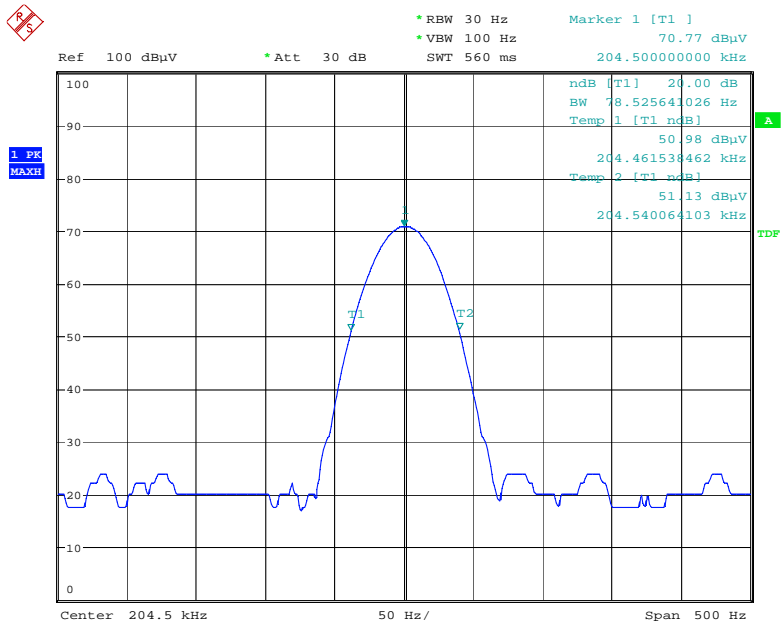
Middle Channel



Date: 27.NOV.2017 17:06:25



Highest Channel



Date: 27.NOV.2017 17:07:29

6. 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, 2017	Mar. 13, 2018
Antenna	Schwarzbeck	VULB9162	9162-010	30MHz~7GHz	Mar. 15, 2017	Mar. 14, 2018
Cable	Huber+Suhner	CBL2-NN-1M	22390001	9KHz~7GHz	Mar. 14, 2017	Mar. 13, 2018
Cable	Huber+Suhner	CIL02	N/A	9KHz~7GHz	Mar. 14, 2017	Mar. 13, 2018
RF Cable	Huber+Suhner	SF-104	MY16559/4	9KHz~25GHz	Apr. 25, 2017	Apr. 25, 2018
Power Amplifier	HP	HP 8447D	1145A00203	100KHz~1.3GHz	Mar. 14, 2017	Mar. 13, 2018
Horn Antenna	Schwarzbeck	BBHA9170	9170-242	15GHz~40GHz	Mar. 14, 2017	Mar. 13, 2018
Horn Antenna	Com-Power	AH-118	071078	1GHz~18GHz	Mar. 15, 2017	Mar. 14, 2018
RF Cable	Huber+Suhner	SF-104	N/A	9KHz~40GHz	Apr. 25, 2017	Apr. 24, 2018
Loop antenna	Schwarzbeck	FMZB1513	1513-272	9KHz~30MHz	Sep. 09, 2017	Sep. 08, 2018
Spectrum Analyzer	Rohde & Schwarz	FSU26	200409/026	20Hz~26.5GHz	Apr. 25, 2017	Apr. 24, 2018
Spectrum Analyzer	Rohde & Schwarz	FSV40	101003	10Hz~40GHz	April. 06, 2017	April. 05, 2018
Pre-Amplifier	EMCI	EMC 184045	980102	18GHz~40GHz	Nov. 03, 2017	Nov. 02, 2018
Pre-Amplifier	Agilent	8449B	3008A02964	1GHz~26.5GHz	Apr. 25, 2017	Apr. 24, 2018
L.I.S.N.	Rohde & Schwarz	ENV 216	101317	9KHz~30MHz	Mar. 14, 2017	Mar. 13, 2018
Temporary antenna connector	TESCOM	SS402	N/A	9KHz-25GHz	N/A	N/A

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.

---End---