FCC Radio Test Report

FCC ID: 2AQLJYM-P20

Original Grant

Report No.	:	TB-FCC160827
Applicant	:	Shenzhen Wintop Electronics Co.,Ltd.
Equipment Under Test (EUT)		
EUT Name	:	Wireless Charger
Model No.	:	YM-P20
Serial Model No.	:	YM-P10, YM-M10, YM-M20, YM-P25, YM-P30, YM-C10, YM-U10, YM-U20, YM-U30, YM-U40, POA01, WI-S1, WI-X1, WI-U1
Brand Name	:	Wintop, BONAI, ONPRO, POWEROWL
Receipt Date	:	2018-06-22
Test Date	:	2018-06-23 to 2018-07-02
Issue Date	:	2018-07-02
Standards	:	FCC Part 15: 2017, Subpart C(15.209)
Test Method	:	ANSI C63.10: 2013
Conclusions	:	**PASS**

In the configuration tested, the EUT complied with the standards specified above,

Test/Witness Engineer	:	Jason Xu
Engineer Supervisor	:	Ivan Su
Engineer Manager	:	Ray Lai

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

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Revision History

Report No.	Version	Description	Issued Date
TB-FCC160827	Rev.01	Initial issue of report	2018-07-02

1. General Information about EUT

1.1 Client Information

Applicant	:	Shenzhen Wintop Electronics Co.,Ltd.
Address	:	Huaguan Industrial Park, No.46 Xinhe Road, Baolai Industrial District Shangmugu, Pinghu Town, Longgang District, Shenzhen, China
Manufacturer	:	Shenzhen Wintop Electronics Co.,Ltd.
Address	:	Huaguan Industrial Park, No.46 Xinhe Road, Baolai Industrial District Shangmugu, Pinghu Town, Longgang District, Shenzhen, China

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	Wireless Charger	
Models No.	:	YM-P20, YM-P10, YM-M10, YM-M20, YM-P25, YM-P30, YM-C10, YM-U10, YM-U20, YM-U30, YM-U40, POA01, WI-S1, WI-X1, WI-U1	
Model Difference	:	All these models are identical in the same PCB layout and electrica circuit, the only difference is appearance.	
Product Description	:	Operation Frequency:	110KHz-150KHz
		Modulation Type:	MSK
		Antenna:	Coil Antenna
Power Supply	:	Input: 5V/2A, 9V/ 1.67A Output: 5V/1A, 9V/ 1.1A	
Charging Distance	:	≤8mm	
Software Version	:	YM_P20(004)V02	
Hardware Version	:	YM_P20(004)V02	
Connecting I/O Port(S)	:	Please refer to the User's Manual	

Note:

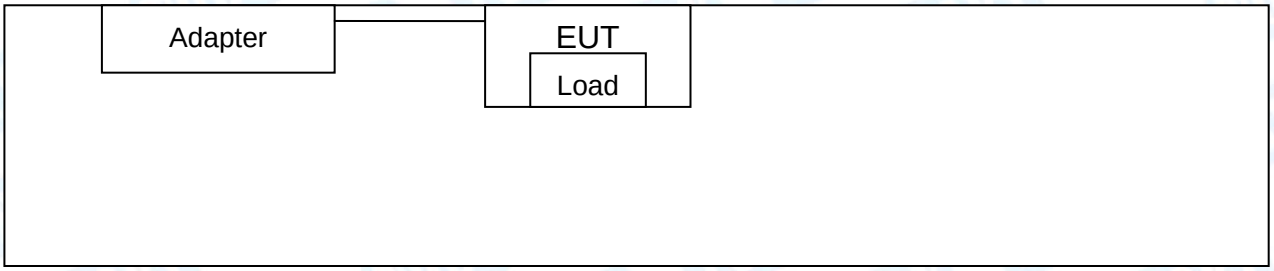
(1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

(2) Channel List:

Low Frequency(KHz)	Middle Frequency(KHz)	High Frequency(KHz)
113	128	150
Note: Operation Frequency=113+1*k, k∈（0,1,2,3.....,37）		

1.3 Block Diagram Showing the Configuration of System Tested

Charging + TX Mode



1.4 Description of Support Units

Name	Model	S/N	Manufacturer	Used " √ "
Load	5V/9V	----	CHIPSVISION	√
Adapter	EP-TA200	----	SAMSUNG	√
Input: AC100-240V,50/60Hz, 0.5A Output: DC 9V, 1.67A or DC 5V, 2A.				

1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

Pretest Mode	
Final Test Mode	**Description**
Mode 1	TX Mode(Low CH)
Mode 2	TX Mode(Middle CH)
Mode 3	TX Mode(High CH)
Mode 4	Keeping TX Mode(5V/1A)
Mode 5	Keeping TX Mode(9V/1.1A)
For Conducted Test	
Final Test Mode	**Description**
Mode 4	Keeping TX Mode(5V/1A)
Mode 5	Keeping TX Mode(9V/1.1A)

For Radiated Test	
Final Test Mode	**Description**
Mode 4	Keeping TX Mode(5V/1A)
Mode 5	Keeping TX Mode(9V/1.1A)
For Bandwidth Test	
Final Test Mode	**Description**
Mode 1	TX Mode(Low CH)

Note:

(1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate.

According to ANSI C63.10 standards, the measurements are performed at the highest, middle, lowest available channels, and the worst case data rate as follows:

TX Mode: Transmitting mode.

(2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.

(3) The EUT is considered a portable unit; in normal use it was positioned on X-plane. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.

1.6 Description of Test Software Setting

During testing channel& Power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of RF setting.

Test Software Version	**N/A**
Frequency	113-150KHz

1.7 Measurement Uncertainty

The reported uncertainty of measurement y ± U，where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2，providing a level of confidence of approximately 95 %.

Test Item	Parameters	Expanded Uncertainty (U_{Lab})
Conducted Emission	Level Accuracy: 9kHz~150kHz 150kHz to 30MHz	±3.42 dB ±3.42 dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	±4.60 dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	±4.40 dB
Radiated Emission	Level Accuracy: Above 1000MHz	±4.20 dB

1.8 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

A2LA Certificate No.: 4750.01

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025：2005 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01.

IC Registration No.: (11950A-1)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A-1.

2. Test Summary

FCC Part 15 Subpart C(15.209)			
Standard Section	**Test Item**	**Judgment**	**Remark**
15.207(a)	Conducted Emission	PASS	N/A
15.209(a)(f)	Radiated emissions	PASS	N/A
15.215	Bandwidth	PASS	N/A
Note: N/A is an abbreviation for Not Applicable.			

3. Test Equipment

Conducted Emission Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal. Due Date**
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jul. 20, 2017	Jul. 19, 2018
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jul. 20, 2017	Jul. 19, 2018
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jul. 20, 2017	Jul. 19, 2018
LISN	Rohde & Schwarz	ENV216	101131	Jul. 21, 2017	Jul. 20, 2018
Radiation Emission Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal. Due Date**
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 20, 2017	Jul. 19, 2018
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jul. 20, 2017	Jul. 19, 2018
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar.16, 2018	Mar. 15, 2019
Bilog Antenna	ETS-LINDGREN	3142E	00117542	Mar.16, 2018	Mar. 15, 2019
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar.16, 2018	Mar. 15, 2019
Horn Antenna	ETS-LINDGREN	3117	00143209	Mar.16, 2018	Mar. 15, 2019
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jul. 03, 2017	Jul. 02, 2018
Pre-amplifier	Sonoma	310N	185903	Mar.17, 2018	Mar. 16, 2019
Pre-amplifier	HP	8449B	3008A00849	Mar.17, 2018	Mar. 16, 2019
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar.17, 2018	Mar. 16, 2019
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A
Antenna Conducted Emission					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal. Due Date**
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 20, 2017	Jul. 19, 2018
Spectrum Analyzer	Rohde & Schwarz	ESCI	100010/007	Jul. 20, 2017	Jul. 19, 2018
MXA Signal Analyzer	Agilent	N9020A	MY49100060	Oct. 26, 2017	Oct. 25, 2018
Vector Signal Generator	Agilent	N5182A	MY50141294	Oct. 26, 2017	Oct. 25, 2018
Analog Signal Generator	Agilent	N5181A	MY50141953	Oct. 26, 2017	Oct. 25, 2018
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO26	Oct. 26, 2017	Oct. 25, 2018
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO29	Oct. 26, 2017	Oct. 25, 2018
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO31	Oct. 26, 2017	Oct. 25, 2018
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO33	Oct. 26, 2017	Oct. 25, 2018

4. Conducted Emission Test

4.1 Test Standard and Limit

4.1.1Test Standard

FCC Part 15.207

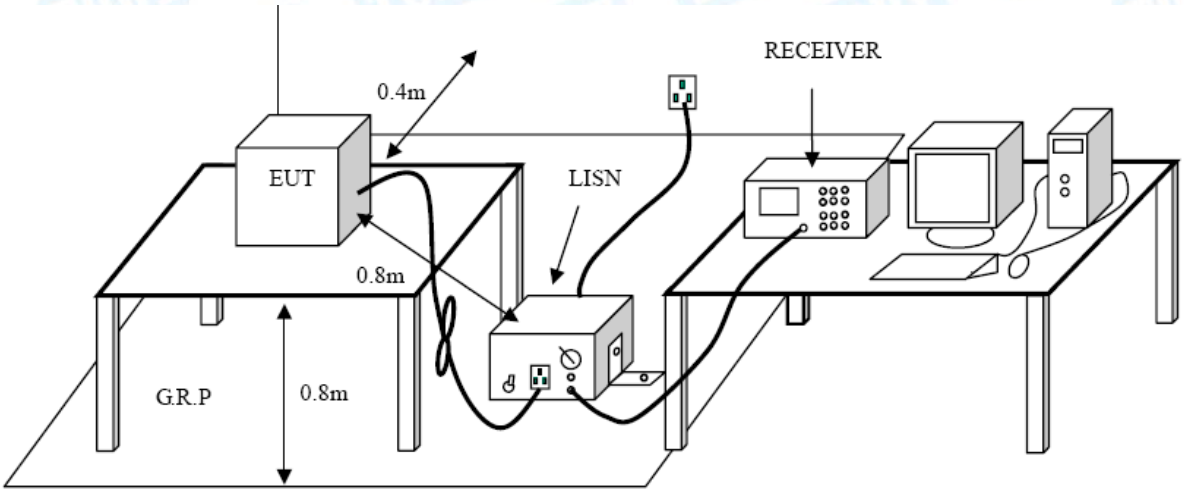
4.1.2 Test Limit

Conducted Emission Test Limit

Frequency	Maximum RF Line Voltage (dBμV)	
	Quasi-peak Level	Average Level
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Notes:
(1) *Decreasing linearly with logarithm of the frequency.
(2) The lower limit shall apply at the transition frequencies.
(3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2 Test Setup



4.3 Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN at least 80 cm from nearest part of EUT chassis.

The bandwidth of EMI test receiver is set at 9 kHz, and the test frequency band is from 0.15MHz to 30MHz.

4.4 EUT Operating Mode

Please refer to the description of test mode.

4.5 Test Data

Please refer to the Attachment A.

5. Radiated Emission Test

5.1 Test Standard and Limit

5.1.1 Test Standard

FCC Part 15.209(a)(f)

5.1.2 Test Limit

Radiated Emission Limits (9 kHz~1000 MHz)

Frequency (MHz	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Radiated Emission Limit (Above 1000MHz)

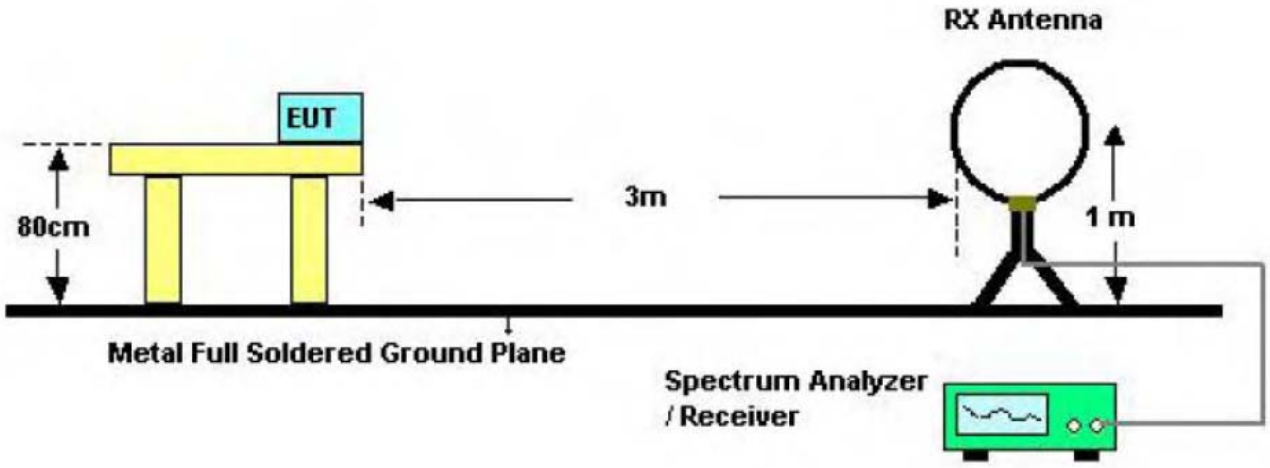
Frequency (MHz)	Distance of 3m (dBuV/m)	
	Peak	Average
Above 1000	74	54

Note:

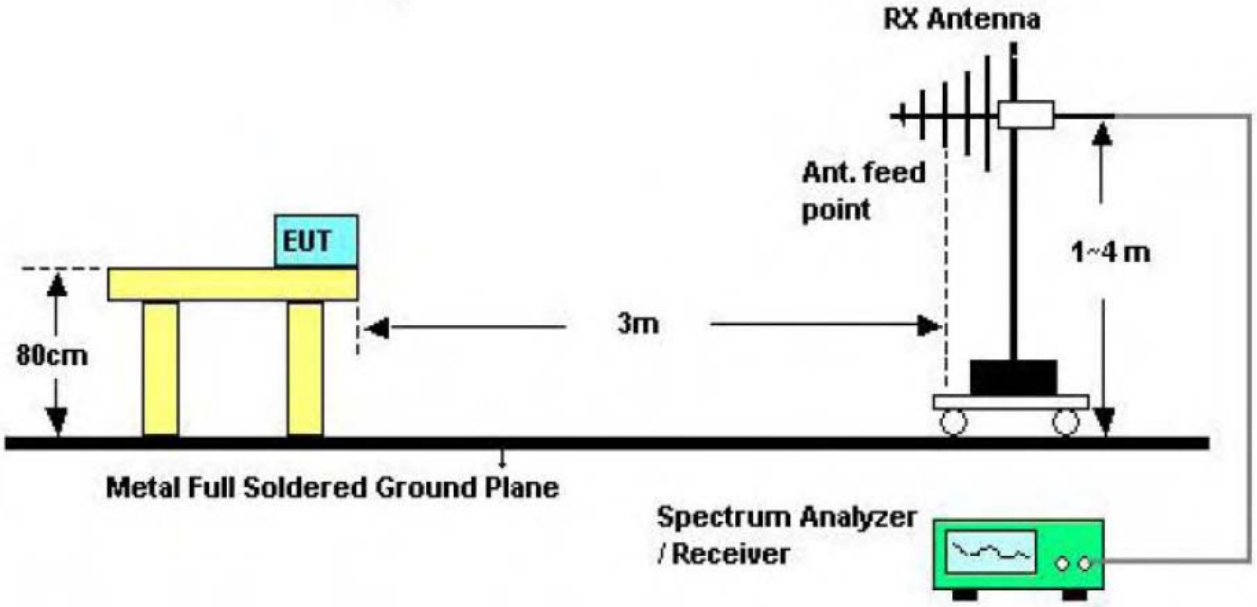
(1) The tighter limit applies at the band edges.

(2) Emission Level(dBuV/m)=20log Emission Level(uV/m)

5.2 Test Setup



Below 30MHz Test Setup



Below 1000MHz Test Setup

5.3 Test Procedure

(1) Measurements at frequency 9KHz~30MHz and Below 1GHz. The EUT was placed on a rotating 0.8m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna.The table was rotated 360 degrees to determine the position of the highest radiation.

(2) 9KHz~30MHz the test antenna 1m away from the ground, Both 0° and 90° antenna are set to make measurement.
Below 1GHz the test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.

(3) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

(4) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.

(5) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.

(6) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

(7) For 9kHz to 150kHz, Set the spectrum analyzer as:
RBW= 200Hz, VBW =1kHz, Detector= Quasi-Peak, Trace mode= Max hold,
Sweep- auto couple.
For 150kHz to 30MHz, Set the spectrum analyzer as:
RBW= 9KHz, VBW =30kHz, Detector= Quasi-Peak, Trace mode= Max hold,
Sweep- auto couple

(8) For the actual test configuration, please see the test setup photo.

5.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

5.5 Test Data

Please refer to the Attachment B.

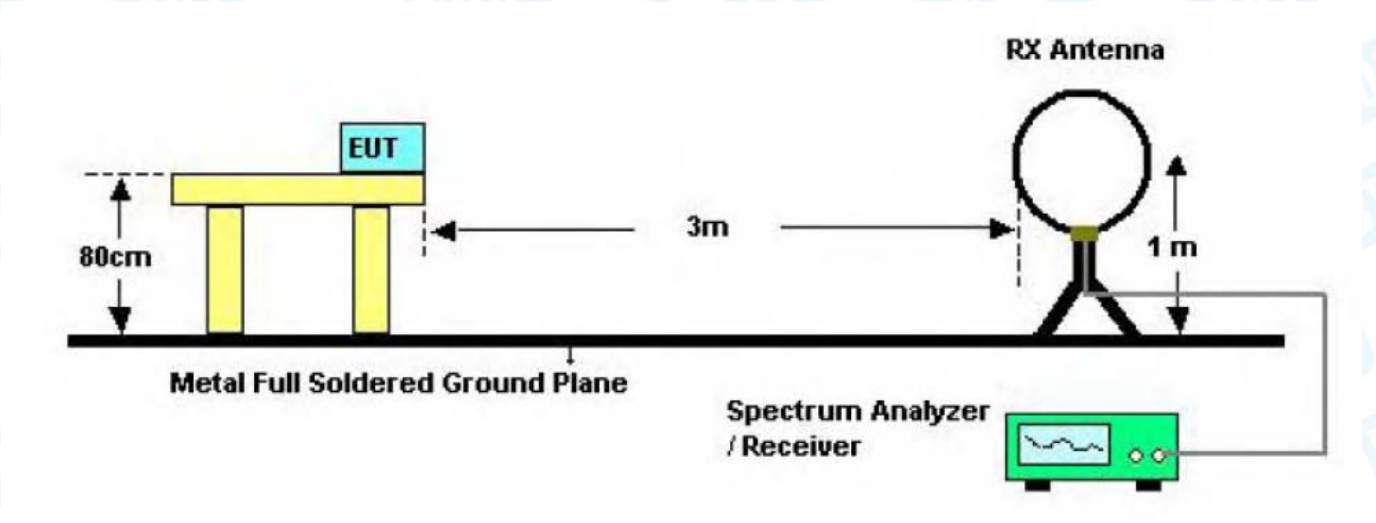
6. Bandwidth Measurement

6.1 Test Standard and Limit

5.1.1 Test Standard

FCC Part 15.215

6.2 Test Setup



6.3 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.

6.4 EUT Operating Condition

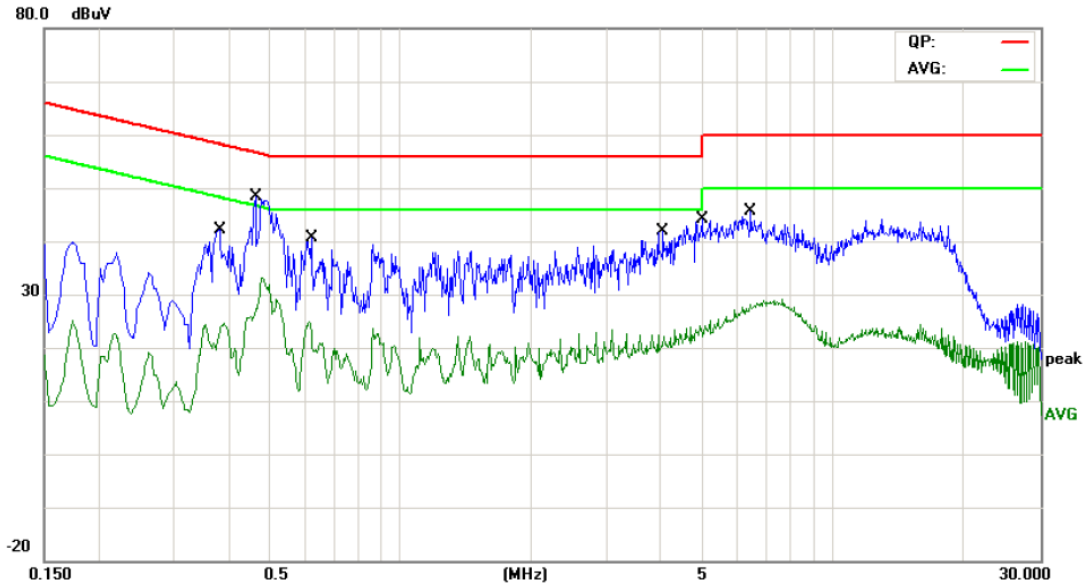
The Equipment Under Test was set to Continual Transmitting in maximum power.

6.5 Test Data

Please refer to the Attachment C.

Attachment A-- Conducted Emission Test Data

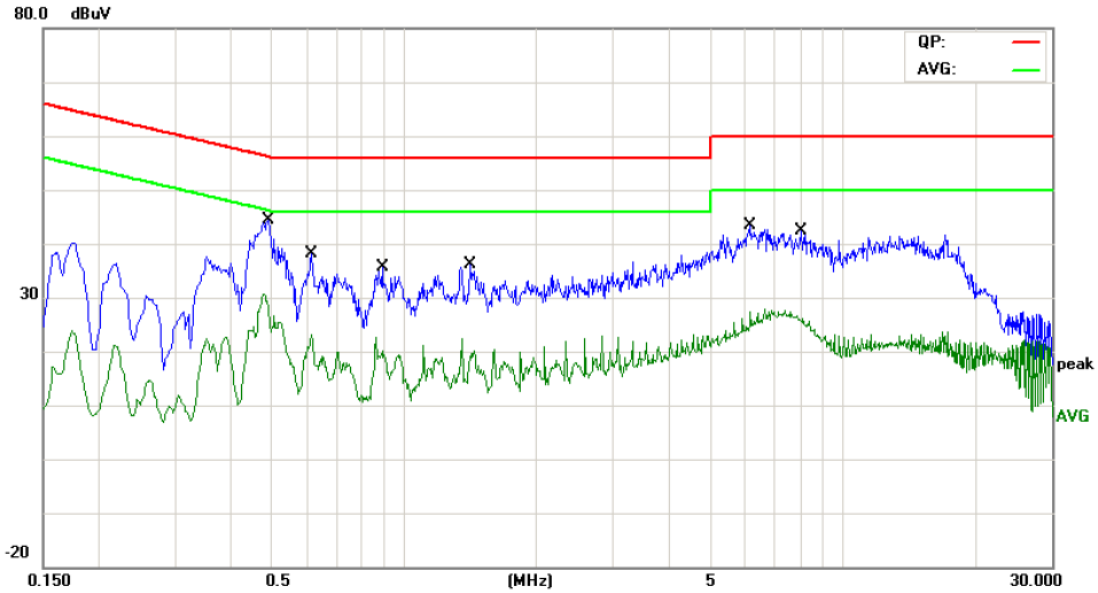
Temperature:	25℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Terminal:	Line		
Test Mode:	TX Mode(9V/1.1A)		
Remark:	Only worse case is reported		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.3820	24.86	9.60	34.46	58.23	-23.77	QP
2		0.3820	13.71	9.60	23.31	48.23	-24.92	AVG
3	*	0.4620	29.42	9.60	39.02	56.66	-17.64	QP
4		0.4620	17.63	9.60	27.23	46.66	-19.43	AVG
5		0.6220	21.55	9.61	31.16	56.00	-24.84	QP
6		0.6220	11.86	9.61	21.47	46.00	-24.53	AVG
7		4.0340	20.25	9.68	29.93	56.00	-26.07	QP
8		4.0340	10.46	9.68	20.14	46.00	-25.86	AVG
9		4.9740	22.85	9.74	32.59	56.00	-23.41	QP
10		4.9740	11.89	9.74	21.63	46.00	-24.37	AVG
11		6.4220	25.42	9.83	35.25	60.00	-24.75	QP
12		6.4220	17.03	9.83	26.86	50.00	-23.14	AVG

Emission Level= Read Level+ Correct Factor

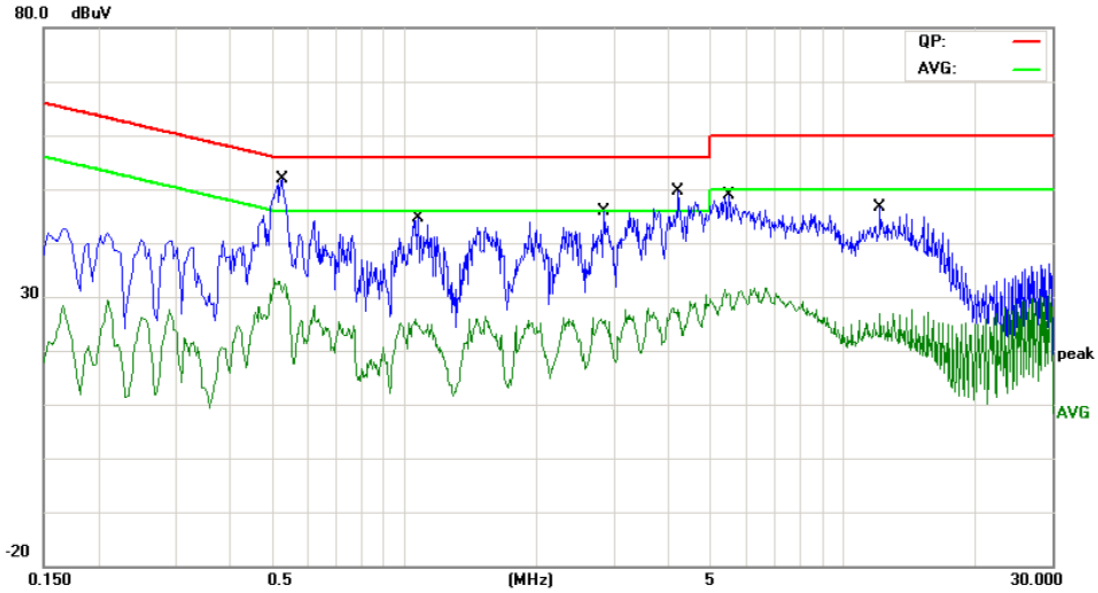
Temperature:	25℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Terminal:	Neutral		
Test Mode:	TX Mode(9V/1.1A)		
Remark:	Only worse case is reported		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	*	0.4900	28.89	9.58	38.47	56.17	-17.70	QP
2		0.4900	18.06	9.58	27.64	46.17	-18.53	AVG
3		0.6140	21.45	9.59	31.04	56.00	-24.96	QP
4		0.6140	13.13	9.59	22.72	46.00	-23.28	AVG
5		0.8900	19.08	9.59	28.67	56.00	-27.33	QP
6		0.8900	9.81	9.59	19.40	46.00	-26.60	AVG
7		1.4180	18.95	9.60	28.55	56.00	-27.45	QP
8		1.4180	8.61	9.60	18.21	46.00	-27.79	AVG
9		6.1540	24.04	10.13	34.17	60.00	-25.83	QP
10		6.1540	16.38	10.13	26.51	50.00	-23.49	AVG
11		8.0620	22.18	10.27	32.45	60.00	-27.55	QP
12		8.0620	14.70	10.27	24.97	50.00	-25.03	AVG

Emission Level= Read Level+ Correct Factor

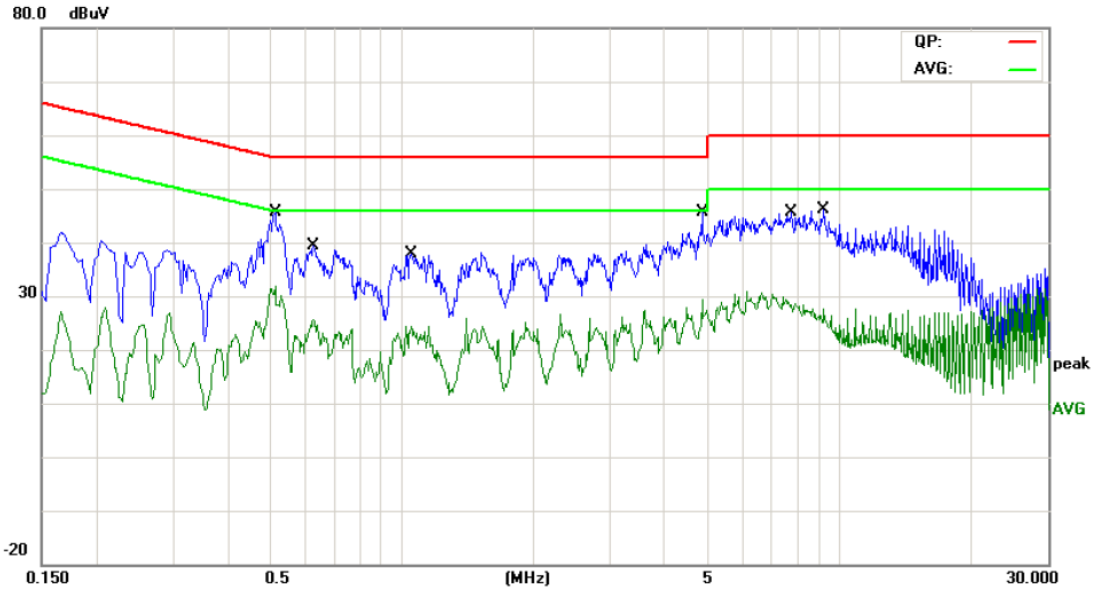
Temperature:	25℃	**Relative Humidity:**	55%
Test Voltage:	AC 240V/60 Hz		
Terminal:	Line		
Test Mode:	TX Mode(9V/1.1A)		
Remark:	Only worse case is reported		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.5260	31.38	9.60	40.98	56.00	-15.02	QP
2	*	0.5260	21.67	9.60	31.27	46.00	-14.73	AVG
3		1.0740	23.73	9.60	33.33	56.00	-22.67	QP
4		1.0740	14.39	9.60	23.99	46.00	-22.01	AVG
5		2.8420	25.12	9.64	34.76	56.00	-21.24	QP
6		2.8420	15.33	9.64	24.97	46.00	-21.03	AVG
7		4.2220	27.52	9.69	37.21	56.00	-18.79	QP
8		4.2220	16.87	9.69	26.56	46.00	-19.44	AVG
9		5.5020	28.73	9.77	38.50	60.00	-21.50	QP
10		5.5020	20.04	9.77	29.81	50.00	-20.19	AVG
11		12.1580	27.91	10.23	38.14	60.00	-21.86	QP
12		12.1580	15.02	10.23	25.25	50.00	-24.75	AVG

Emission Level= Read Level+ Correct Factor

Temperature:	25℃	**Relative Humidity:**	55%
Test Voltage:	AC 240V/60 Hz		
Terminal:	Neutral		
Test Mode:	TX Mode(9V/1.1A)		
Remark:	Only worse case is reported		



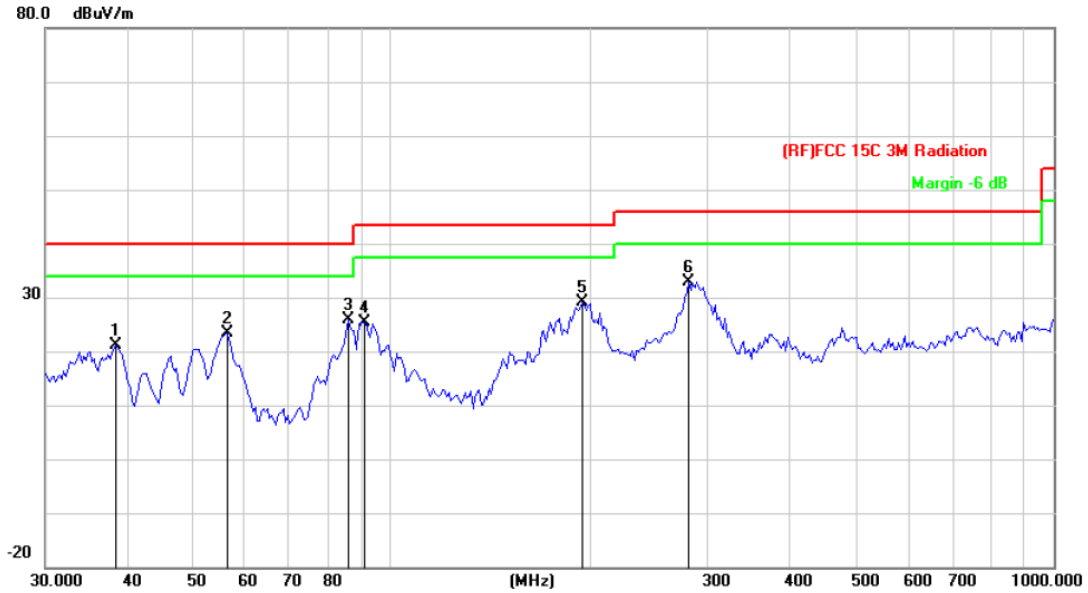
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.5140	30.28	9.60	39.88	56.00	-16.12	QP
2	*	0.5140	20.62	9.60	30.22	46.00	-15.78	AVG
3		0.6300	24.10	9.61	33.71	56.00	-22.29	QP
4		0.6300	14.53	9.61	24.14	46.00	-21.86	AVG
5		1.0500	23.49	9.60	33.09	56.00	-22.91	QP
6		1.0500	13.42	9.60	23.02	46.00	-22.98	AVG
7		4.8659	26.39	9.73	36.12	56.00	-19.88	QP
8		4.8659	18.57	9.73	28.30	46.00	-17.70	AVG
9		7.8100	26.48	9.91	36.39	60.00	-23.61	QP
10		7.8100	17.79	9.91	27.70	50.00	-22.30	AVG
11		9.2180	27.59	10.00	37.59	60.00	-22.41	QP
12		9.2180	16.88	10.00	26.88	50.00	-23.12	AVG

Emission Level= Read Level+ Correct Factor

Attachment B-- Radiated Emission Test Data

30MHz~1GHz

Temperature:	25℃	**Relative Humidity:**	55%
Test Voltage:	AC 120/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX Mode(5V/1A)		
Remark:	Only worse case is reported		

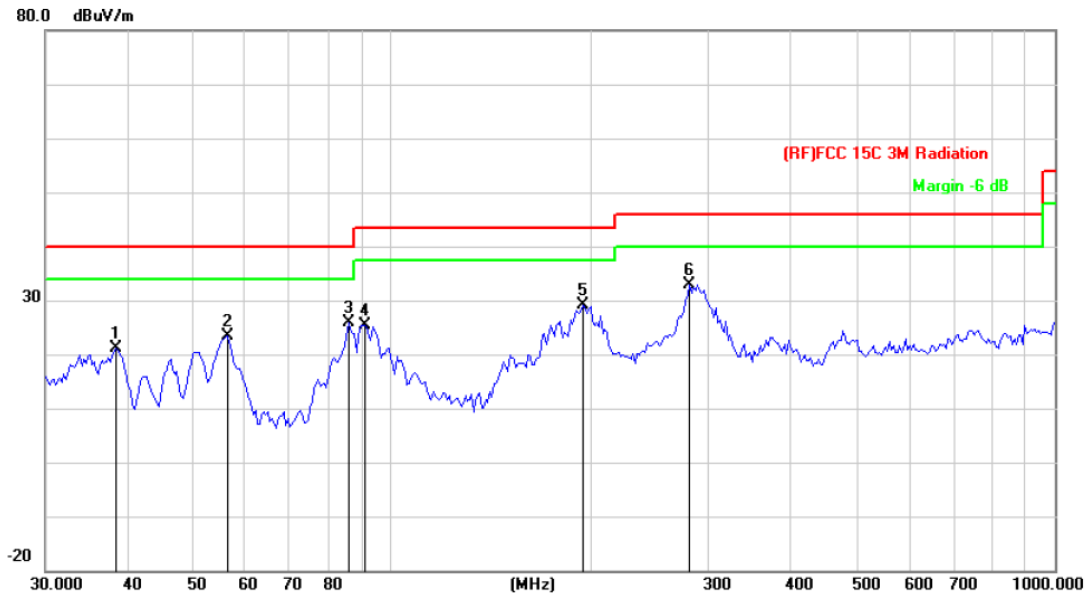


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		38.3462	39.41	-18.33	21.08	40.00	-18.92	peak
2		56.3948	47.34	-23.97	23.37	40.00	-16.63	peak
3		85.8984	48.04	-22.21	25.83	40.00	-14.17	peak
4		90.8554	47.49	-21.99	25.50	43.50	-18.00	peak
5		193.7728	48.88	-19.87	29.01	43.50	-14.49	peak
6	*	281.0075	49.51	-16.57	32.94	46.00	-13.06	peak

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

Emission Level= Read Level+ Correct Factor

Temperature:	25℃	**Relative Humidity:**	55%
Test Voltage:	AC 120/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX Mode(5V/1A)		
Remark:	Only worse case is reported		

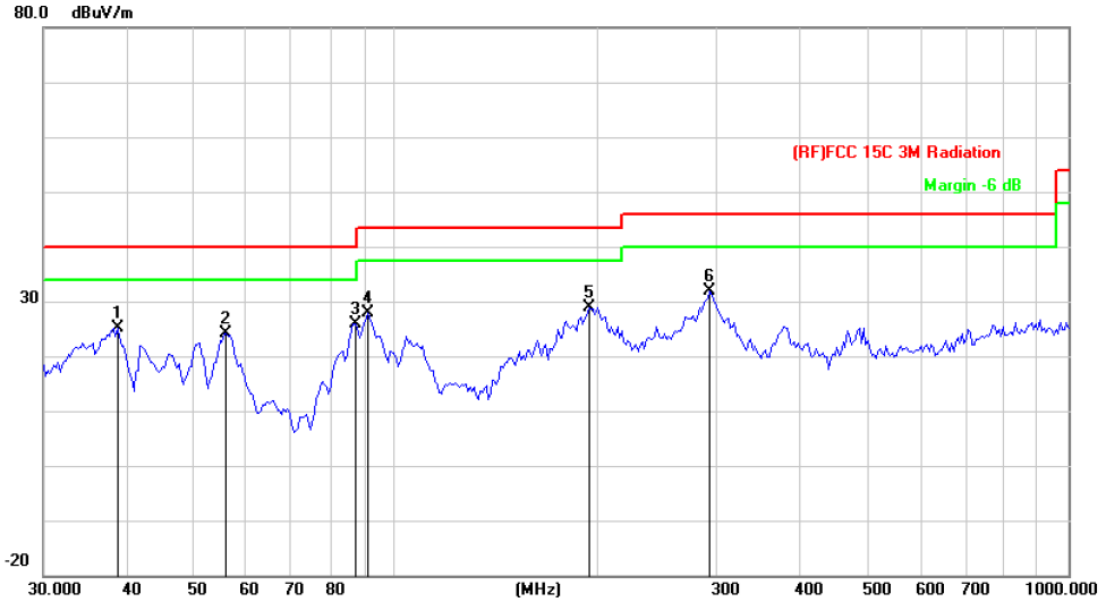


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		38.3462	39.41	-18.33	21.08	40.00	-18.92	peak
2		56.3948	47.34	-23.97	23.37	40.00	-16.63	peak
3		85.8984	48.04	-22.21	25.83	40.00	-14.17	peak
4		90.8554	47.49	-21.99	25.50	43.50	-18.00	peak
5		193.7728	48.88	-19.87	29.01	43.50	-14.49	peak
6	*	281.0075	49.51	-16.57	32.94	46.00	-13.06	peak

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

Emission Level= Read Level+ Correct Factor

Temperature:	25℃	**Relative Humidity:**	55%
Test Voltage:	AC 120/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX Mode(9V/1.1A)		
Remark:	Only worse case is reported		

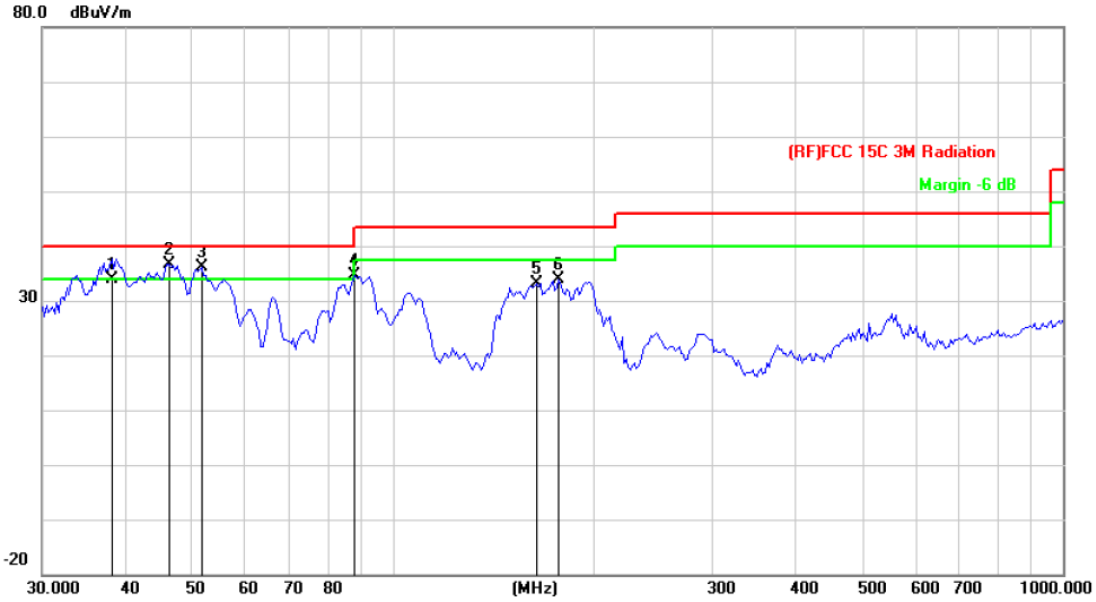


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		38.6160	43.52	-18.46	25.06	40.00	-14.94	peak
2		56.0007	48.05	-23.92	24.13	40.00	-15.87	peak
3		86.5029	48.03	-22.17	25.86	40.00	-14.14	peak
4		90.8554	49.95	-21.99	27.96	43.50	-15.54	peak
5		193.7728	48.86	-19.87	28.99	43.50	-14.51	peak
6	*	293.0842	48.30	-16.34	31.96	46.00	-14.04	peak

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

Emission Level= Read Level+ Correct Factor

Temperature:	25℃	**Relative Humidity:**	55%
Test Voltage:	AC 120/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX Mode(9V/1.1A)		
Remark:	Only worse case is reported		



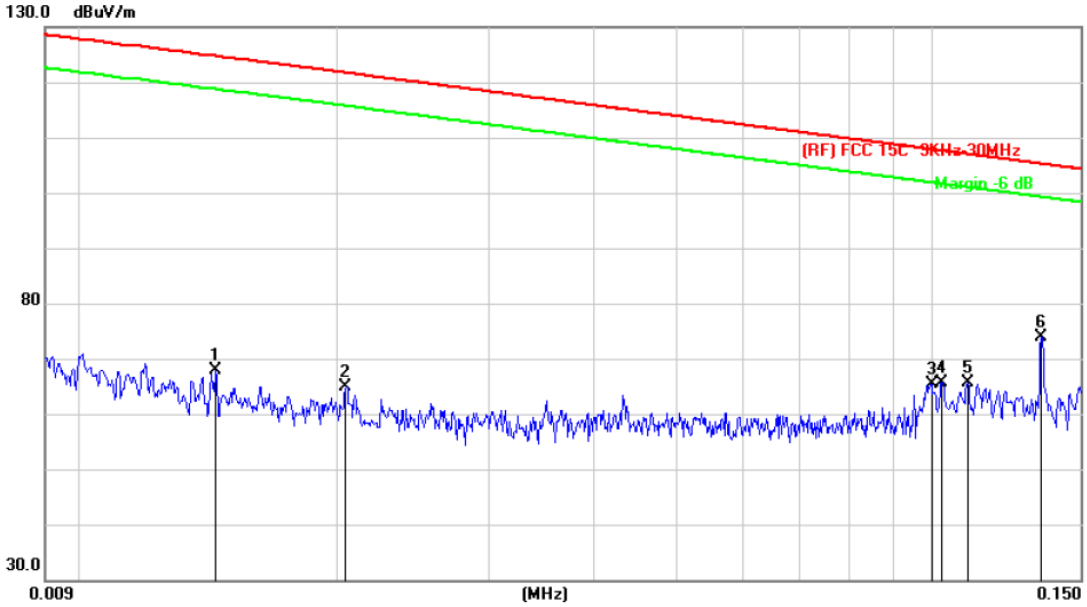
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		38.0783	52.21	-18.21	34.00	40.00	-6.00	QP
2	*	46.3402	58.58	-22.03	36.55	40.00	-3.45	peak
3	!	51.8430	59.54	-23.45	36.09	40.00	-3.91	peak
4	!	87.7248	56.68	-22.10	34.58	40.00	-5.42	peak
5		163.7550	53.86	-20.75	33.11	43.50	-10.39	peak
6		176.8878	54.14	-20.27	33.87	43.50	-9.63	peak

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

Emission Level= Read Level+ Correct Factor

9KMz-30MHz

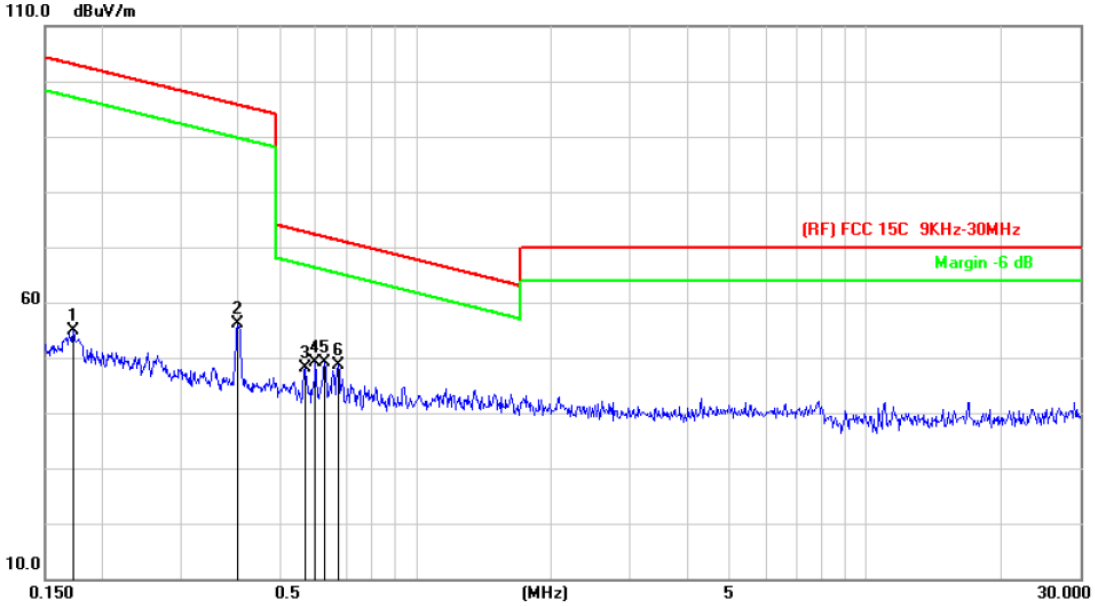
Temperature:	25℃	**Relative Humidity:**	55%
Test Voltage:	AC 120/60Hz		
Ant. Pol.	Ant. 0°		
Test Mode:	TX Mode(5V/1A)		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		0.0232	73.00	-10.10	62.90	120.63	-57.73	peak
2		0.0743	74.12	-10.07	64.05	110.47	-46.42	peak
3		0.1088	65.09	-4.27	60.82	107.14	-46.32	peak
4		0.1291	66.22	-5.03	61.19	105.65	-44.46	peak
5	*	0.1422	89.01	-5.52	83.49	104.80	-21.31	peak

Emission Level= Read Level+ Correct Factor

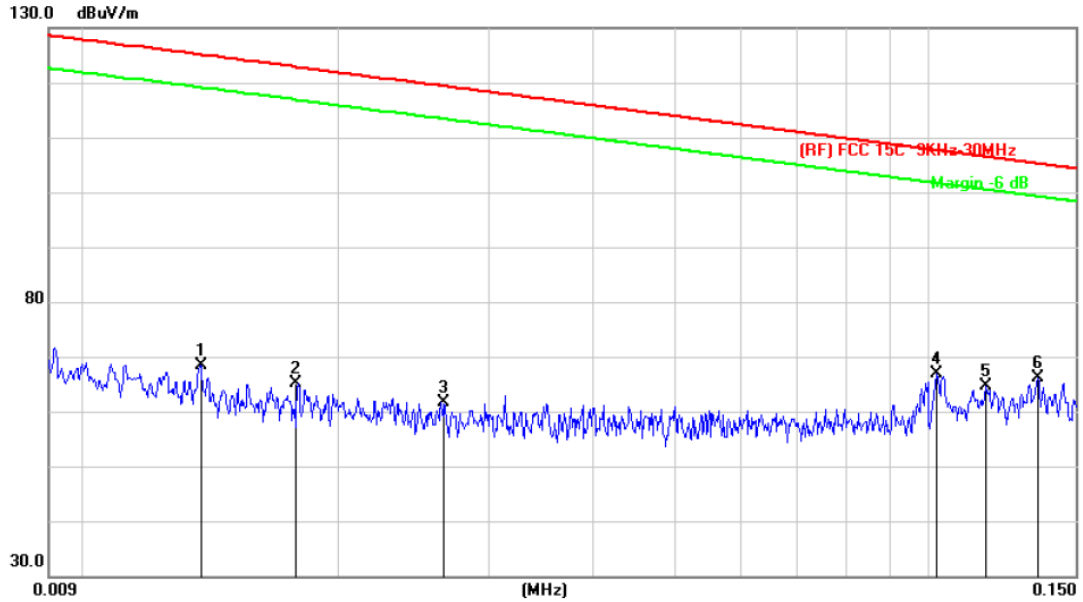
Temperature:	25℃	**Relative Humidity:**	55%
Test Voltage:	AC 120/60Hz		
Ant. Pol.	Ant. 0°		
Test Mode:	TX Mode(5V/1A)		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		0.1731	30.98	23.91	54.89	103.06	-48.17	peak
2		0.4019	34.54	21.60	56.14	95.73	-39.59	peak
3		0.5670	27.16	20.87	48.03	72.71	-24.68	peak
4		0.5979	28.42	20.83	49.25	72.24	-22.99	peak
5		0.6271	28.33	20.79	49.12	71.82	-22.70	peak
6	*	0.6719	27.99	20.73	48.72	71.21	-22.49	peak

Emission Level= Read Level+ Correct Factor

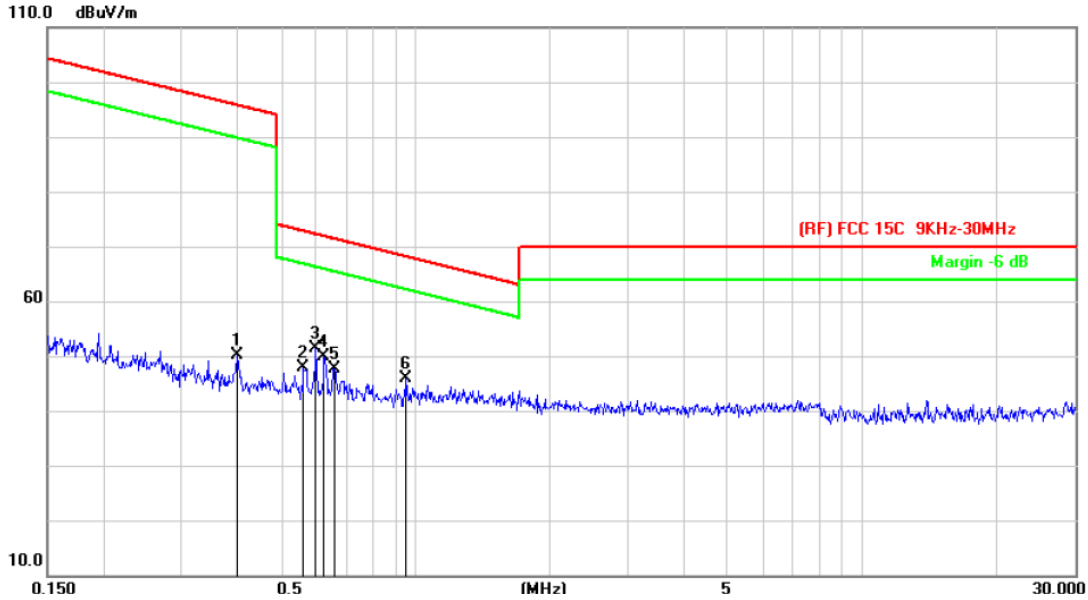
Temperature:	25℃	**Relative Humidity:**	55%
Test Voltage:	AC 120/60Hz		
Ant. Pol.	Ant. 90°		
Test Mode:	TX Mode(5V/1A)		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		0.0136	48.06	20.24	68.30	125.21	-56.91	peak
2		0.0177	44.80	20.31	65.11	122.92	-57.81	peak
3		0.0264	41.28	20.46	61.74	119.43	-57.69	peak
4		0.1026	40.22	26.54	66.76	107.61	-40.85	peak
5		0.1171	38.52	25.99	64.51	106.46	-41.95	peak
6	*	0.1352	40.79	25.31	66.10	105.21	-39.11	peak

Emission Level= Read Level+ Correct Factor

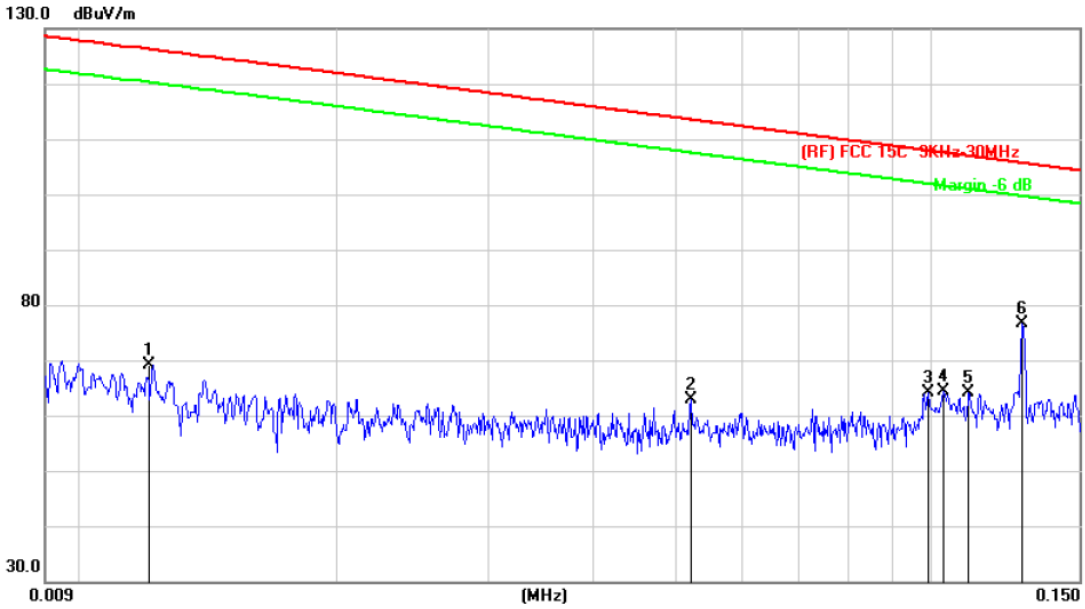
Temperature:	25℃	**Relative Humidity:**	55%
Test Voltage:	AC 120/60Hz		
Ant. Pol.	Ant. 90°		
Test Mode:	TX Mode(5V/1A)		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		0.3976	28.56	21.63	50.19	95.82	-45.63	peak
2		0.5611	27.10	20.88	47.98	72.80	-24.82	peak
3	*	0.5979	30.59	20.83	51.42	72.24	-20.82	peak
4		0.6238	29.14	20.80	49.94	71.87	-21.93	peak
5		0.6578	26.90	20.75	47.65	71.40	-23.75	peak
6		0.9531	25.24	20.52	45.76	68.13	-22.37	peak

Emission Level= Read Level+ Correct Factor

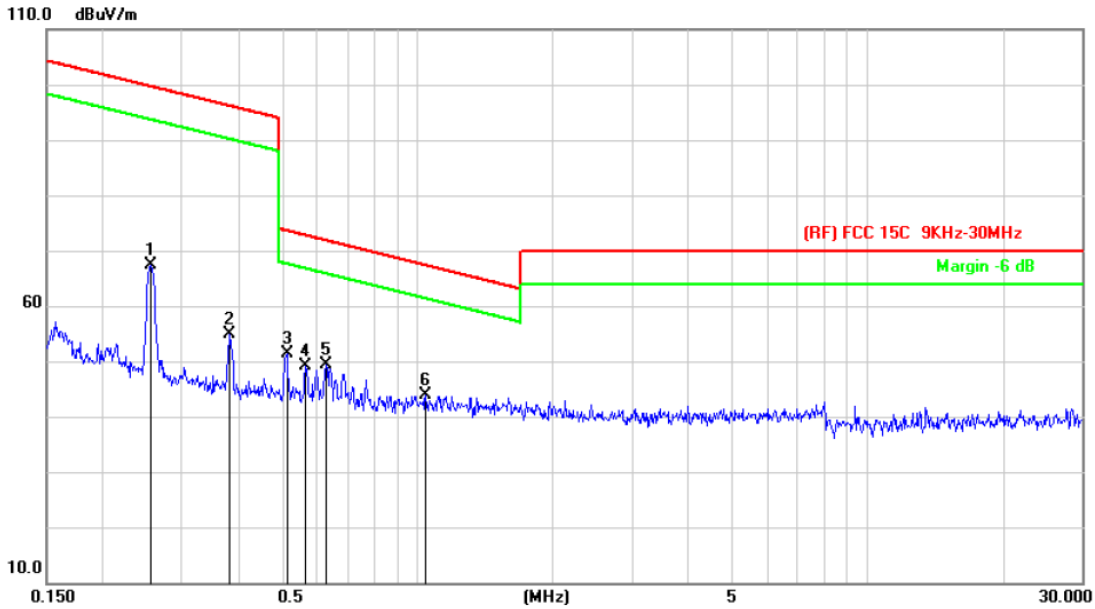
Temperature:	25℃	**Relative Humidity:**	55%
Test Voltage:	AC 120/60Hz		
Ant. Pol.	Ant. 0°		
Test Mode:	TX Mode(9V/1.1A)		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		0.0120	48.91	20.20	69.11	126.30	-57.19	peak
2		0.0521	42.32	20.50	62.82	113.51	-50.69	peak
3		0.0995	43.65	20.46	64.11	107.88	-43.77	peak
4		0.1038	37.90	26.49	64.39	107.51	-43.12	peak
5		0.1110	37.89	26.22	64.11	106.93	-42.82	peak
6	*	0.1285	51.05	25.56	76.61	105.65	-29.04	peak

Emission Level= Read Level+ Correct Factor

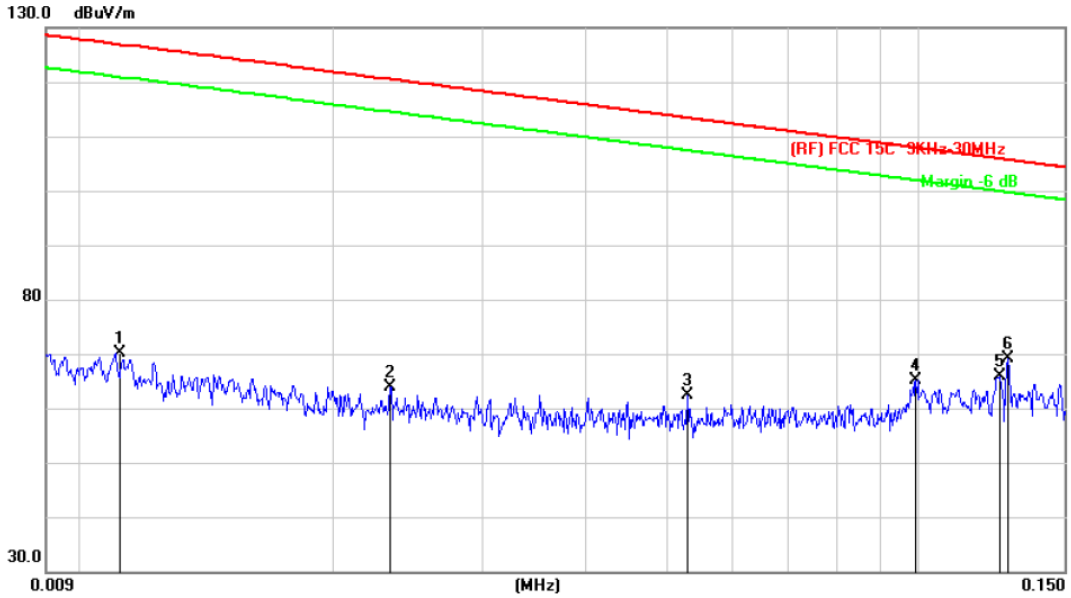
Temperature:	25℃	**Relative Humidity:**	55%
Test Voltage:	AC 120/60Hz		
Ant. Pol.	Ant. 0°		
Test Mode:	TX Mode(9V/1.1A)		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		0.2548	44.92	22.55	67.47	99.69	-32.22	peak
2		0.3832	33.27	21.72	54.99	96.14	-41.15	peak
3	*	0.5128	30.47	20.94	51.41	73.60	-22.19	peak
4		0.5641	28.16	20.87	49.03	72.76	-23.73	peak
5		0.6271	28.56	20.79	49.35	71.82	-22.47	peak
6		1.0430	23.47	20.50	43.97	67.34	-23.37	peak

Emission Level= Read Level+ Correct Factor

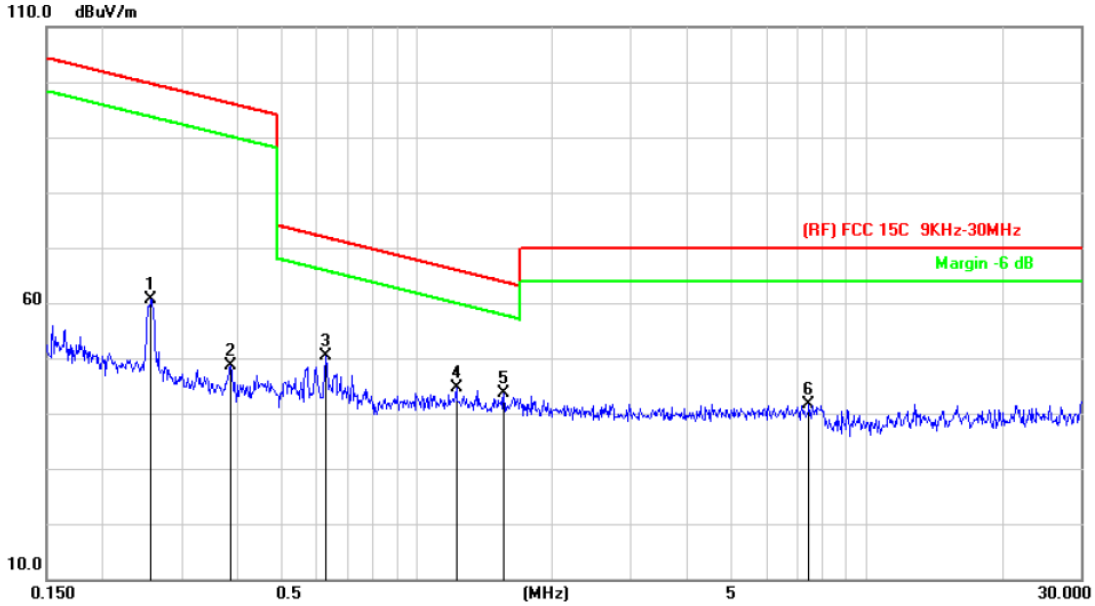
Temperature:	25℃	**Relative Humidity:**	55%
Test Voltage:	AC 120/60Hz		
Ant. Pol.	Ant. 90°		
Test Mode:	TX Mode(9V/1.1A)		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		0.0109	50.01	20.11	70.12	127.14	-57.02	peak
2		0.0233	43.53	20.44	63.97	120.52	-56.55	peak
3		0.0530	41.87	20.51	62.38	113.37	-50.99	peak
4		0.0995	44.73	20.46	65.19	107.88	-42.69	peak
5		0.1253	40.10	25.68	65.78	105.87	-40.09	peak
6	*	0.1281	43.62	25.57	69.19	105.68	-36.49	peak

Emission Level= Read Level+ Correct Factor

Temperature:	25℃	**Relative Humidity:**	55%
Test Voltage:	AC 120/60Hz		
Ant. Pol.	Ant. 90°		
Test Mode:	TX Mode(9V/1.1A)		
Remark:	N/A		

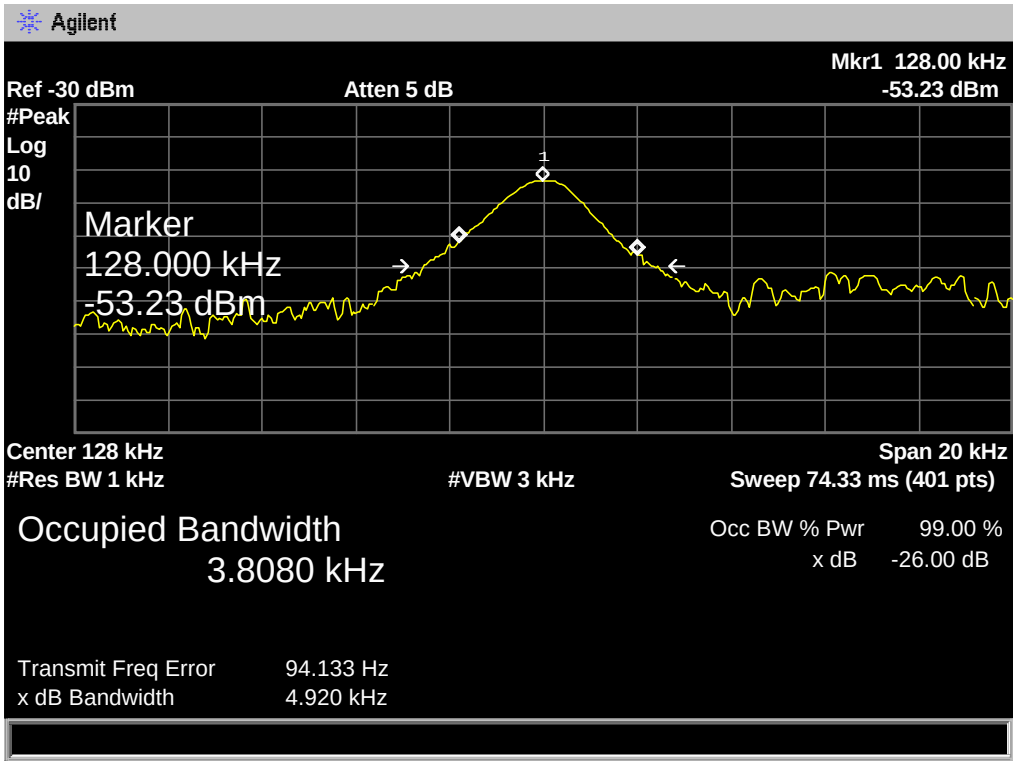


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		0.2562	38.14	22.54	60.68	99.66	-38.98	peak
2		0.3852	27.03	21.70	48.73	96.10	-47.37	peak
3		0.6271	29.69	20.79	50.48	71.82	-21.34	peak
4		1.2226	24.09	20.50	44.59	65.93	-21.34	peak
5	*	1.5601	23.22	20.48	43.70	63.78	-20.08	peak
6		7.4465	20.91	20.82	41.73	70.00	-28.27	peak

Emission Level= Read Level+ Correct Factor

Attachment C-- Bandwidth Measurement Data

Frequency (KHz)	20 dBc Bandwidth (kHz)	99% OBW (kHz)	Result
128	4.920	3.8080	PASS



-----END OF REPORT------