FCC TEST REPORT

For

VTIN TECHNOLOGY Co., Limited

bluetooth fm transmitter

Model No.: BH267A, BH267, BH267B, BH267C, FM39, FM40

Prepared For	:	VTIN TECHNOLOGY Co., Limited
Address	:	Unit D, 16/F, One Capital Place, 18 Luard Road, Wan Chai, Hong Kong
Prepared By	:	Shenzhen Anbotek Compliance Laboratory Limited
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Report Number	:	SZAWW180330016-02
Date of Test	:	Mar. 31~Apr. 20, 2018
Date of Report	:	Apr. 20, 2018

Contents

TEST REPORT

Applicant	:	VTIN TECHNOLOGY Co., Limited
Manufacturer	:	Shenzhen Spring Technologies Co.,Ltd
Product Name	:	bluetooth fm transmitter
Model No.	:	BH267A, BH267, BH267B, BH267C, FM39, FM40
Trade Mark	:	VICTSING
Rating(s)	:	Input: DC 12-24V; Output: DC 5V, 2.8A

Test Standard(s)	**:**	**FCC Part15 Subpart C 2017, Section 15.239**
Test Method(s)	**:**	**ANSI C63.10: 2013**

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart C requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Test : : Mar. 31~Apr. 20, 2018

Prepared by : : Winkey Wang

(Tested Engineer / Winkey Wang)

Reviewer : : Tangcy. T.

(Project Manager / Tangcy. T)

Approved & Authorized Signer : : Tom Chen

(Manager / Tom Chen)

1. General Information

1.1. Client Information

Applicant	:	VTIN TECHNOLOGY Co., Limited
Address	:	Unit D, 16/F, One Capital Place, 18 Luard Road, Wan Chai, Hong Kong
Manufacturer	:	Shenzhen Spring Technologies Co.,Ltd
Address	:	2F Tongfuyu Industrial Park, Kukeng, Guanlan Town, Shenzhen City, China

1.2. Description of Device (EUT)

Product Name	:	bluetooth fm transmitter	
Model No.	:	BH267A, BH267, BH267B, BH267C, FM39, FM40 (Note: The Samples are the same except model and exterior, So we prepare "BH267A" for test only.)	
Trade Mark	:	VICTSING	
Test Power Supply	:	DC 12V / DC 24V	
Product Description	:	Operation Frequency:	88.1-107.9MHz
		Number of Channel:	199 Channels
		Modulation Type:	FM
		Antenna Type:	PCB antenna.
		Antenna Gain(Peak):	5 dBi
Remark: 1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual. 2) This report is for FM module.			

1.3. Auxiliary Equipment Used During Test

N/A		

1.4. Description of Test Modes

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 above was evaluated respectively.

Pretest Mode	Description
Mode 1	88.1MHz
Mode 2	98.1MHz
Mode 3	107.9MHz

For Radiated Emission	
Final Test Mode	Description
Mode 1	88.1MHz
Mode 2	98.1MHz
Mode 3	107.9MHz

Note:

1. The engineering test program was provided and the EUT was programmed to be in continuously transmitting mode.
2. EUT built-in battery-powered, fully-charged battery use of the test battery.

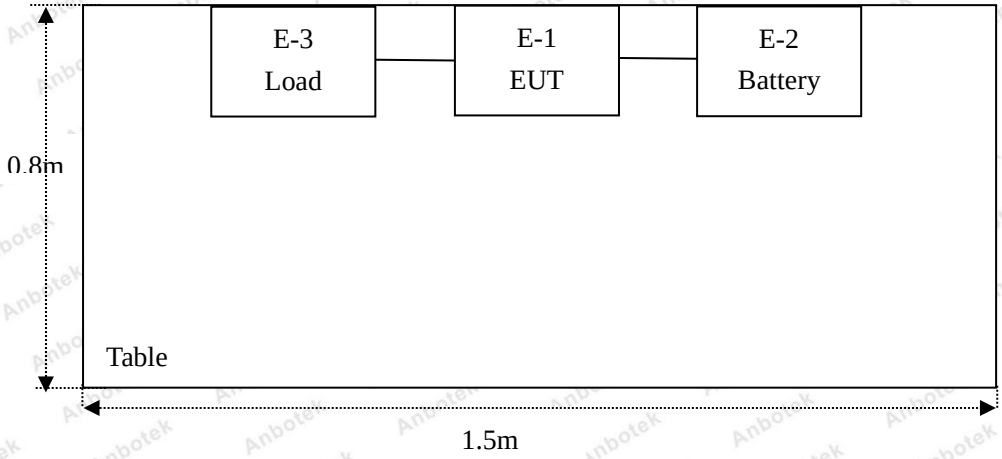
1.5. List of channels

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
1	88.10	51	93.10	101	98.10	151	103.10
2	88.20	52	93.20	102	98.20	152	103.20
3	88.30	53	93.30	103	98.30	153	103.30
4	88.40	54	93.40	104	98.40	154	103.40
5	88.50	55	93.50	105	98.50	155	103.50
6	88.60	56	93.60	106	98.60	156	103.60
7	88.70	57	93.70	107	98.70	157	103.70
8	88.80	58	93.80	108	98.80	158	103.80
9	88.90	59	93.90	109	98.90	159	103.90
10	89.00	60	94.00	110	99.00	160	104.00
11	89.10	61	94.10	111	99.10	161	104.10
12	89.20	62	94.20	112	99.20	162	104.20
13	89.30	63	94.30	113	99.30	163	104.30

14	89.40	64	94.40	114	99.40	164	104.40
15	89.50	65	94.50	115	99.50	165	104.50
16	89.60	66	94.60	116	99.60	166	104.60
17	89.70	67	94.70	117	99.70	167	104.70
18	89.80	68	94.80	118	99.80	168	104.80
19	89.90	69	94.90	119	99.90	169	104.90
20	90.00	70	95.00	120	100.00	170	105.00
21	90.10	71	95.10	121	100.10	171	105.10
22	90.20	72	95.20	122	100.20	172	105.20
23	90.30	73	95.30	123	100.30	173	105.30
24	90.40	74	95.40	124	100.40	174	105.40
25	90.50	75	95.50	125	100.50	175	105.50
26	90.60	76	95.60	126	100.60	176	105.60
27	90.70	77	95.70	127	100.70	177	105.70
28	90.80	78	95.80	128	100.80	178	105.80
29	90.90	79	95.90	129	100.90	179	105.90
30	91.00	80	96.00	130	101.00	180	106.00
31	91.10	81	96.10	131	101.10	181	106.10
32	91.20	82	96.20	132	101.20	182	106.20
33	91.30	83	96.30	133	101.30	183	106.30
34	91.40	84	96.40	134	101.40	184	106.40
35	91.50	85	96.50	135	101.50	185	106.50
36	91.60	86	96.60	136	101.60	186	106.60
37	91.70	87	96.70	137	101.70	187	106.70
38	91.80	88	96.80	138	101.80	188	106.80
39	91.90	89	96.90	139	101.90	189	106.90
40	92.00	90	97.00	140	102.00	190	107.00
41	92.10	91	97.10	141	102.10	191	107.10
42	92.20	92	97.20	142	102.20	192	107.20
43	92.30	93	97.30	143	102.30	193	107.30
44	92.40	94	97.40	144	102.40	194	107.40
45	92.50	95	97.50	145	102.50	195	107.50
46	92.60	96	97.60	146	102.60	196	107.60
47	92.70	97	97.70	147	102.70	197	107.70
48	92.80	98	97.80	148	102.80	198	107.80
49	92.90	99	97.90	149	102.90	199	107.90
50	93.00	100	98.00	150	103.00		

1.6. Description Of Test Setup

RE



1.7. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	Rohde & Schwarz	ENV216	100055	Nov. 17, 2017	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Nov. 17, 2017	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Nov. 17, 2017	1 Year
4.	Spectrum Analysis	Agilent	E4407B	US39390582	Nov. 17, 2017	1 Year
5.	Spectrum Analysis	Agilent	N9038A	MY53227295	Nov. 17, 2017	1 Year
6.	Preamplifier	SKET Electronic	BK1G18G30D	KD17503	Nov. 17, 2017	1 Year
7.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Nov. 17, 2017	1 Year
8.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Nov. 20, 2017	1 Year
9.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Nov. 20, 2017	1 Year
10.	Loop Antenna	Schwarzbeck	HFH2-Z2	100047	Nov. 17, 2017	1 Year
11.	Horn Antenna	Schewarzbeck	BBHA9170	9170-375	Nov. 17, 2017	1 Year
12.	Pre-amplifier	SONOMA	310N	186860	Nov. 17, 2017	1 Year
13.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
14.	RF Test Control System	YIHENG	YH3000	2017430	Nov. 18, 2017	1 Year
15.	Power Sensor	DAER	RPR3006W	15I00041SN045	Nov. 17, 2017	1 Year
16.	Power Sensor	DAER	RPR3006W	15I00041SN046	Nov. 17, 2017	1 Year
17.	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Nov. 18, 2017	1 Year
18.	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Nov. 18, 2017	1 Year
19.	Signal Generator	Agilent	E4421B	MY41000743	Nov. 18, 2017	1 Year
20.	DC Power Supply	LW	TPR-6410D	349315	Nov. 01, 2017	1 Year
21.	Constant Temperature Humidity Chamber	Sertep	ZJ-HWHS80B	ZJ-17042804	Nov. 01, 2017	1 Year

1.8. Measurement Uncertainty

Radiation Uncertainty	:	Ur = 4.1 dB (Horizontal)
		Ur = 4.3 dB (Vertical)
Conduction Uncertainty	:	Uc = 3.4dB

1.9. Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.: 184111

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registed and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 184111, July 31, 2017.

ISED-Registration No.: 8058A-1

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A-1, June 13, 2016.

Test Location

All Emissions tests were performed at

Shenzhen Anbotek Compliance Laboratory Limited. at 1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518102

2. Summary of Test Results

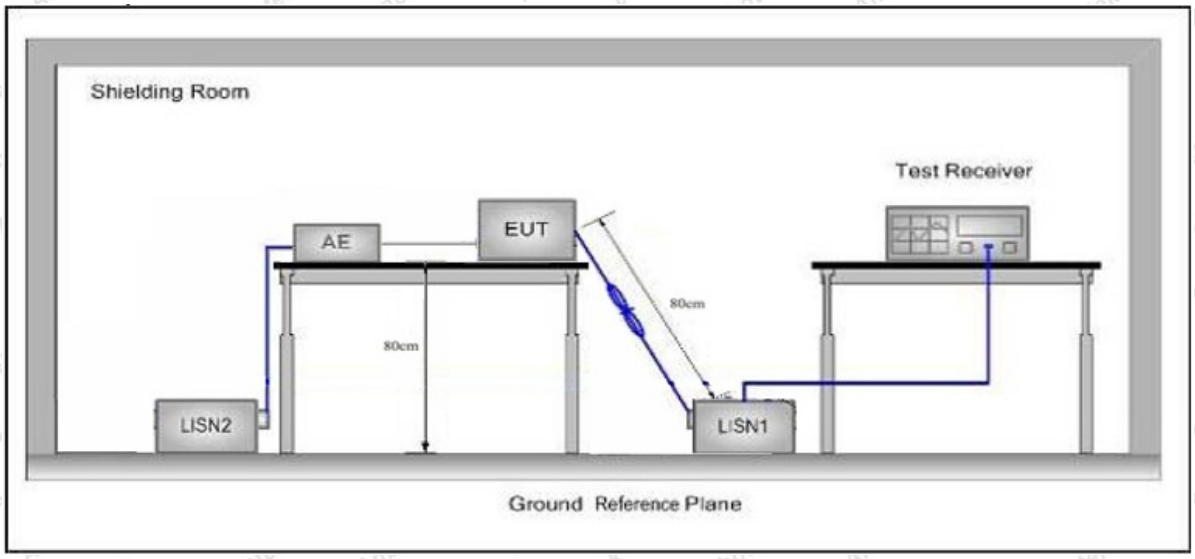
Standard Section	Test Item	Result
15.203	Antenna Requirement	PASS
15.207	Conducted Emission	N/A
15.205/15.209/15.239	Spurious Emission	PASS
15.205	Band Edge Emission	PASS
15.215(c)	Occupied Bandwidth	PASS
Remark: "N/A" is an abbreviation for Not Applicable.		

3. Conducted Emission Test

3.1. Test Standard and Limit

Test Standard	FCC Part15 Section 15.207		
Test Limit	Frequency	Maximum RF Line Voltage (dBuV)	
		Quasi-peak Level	Average Level
	150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
	500kHz~5MHz	56	46
	5MHz~30MHz	60	50
Remark: (1) *Decreasing linearly with logarithm of the frequency. (2) The lower limit shall apply at the transition frequency.			

3.2. Test Setup



3.3. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.10-2013 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

3.4. Test Data

Please to see the following pages

Conducted Emission Test Data

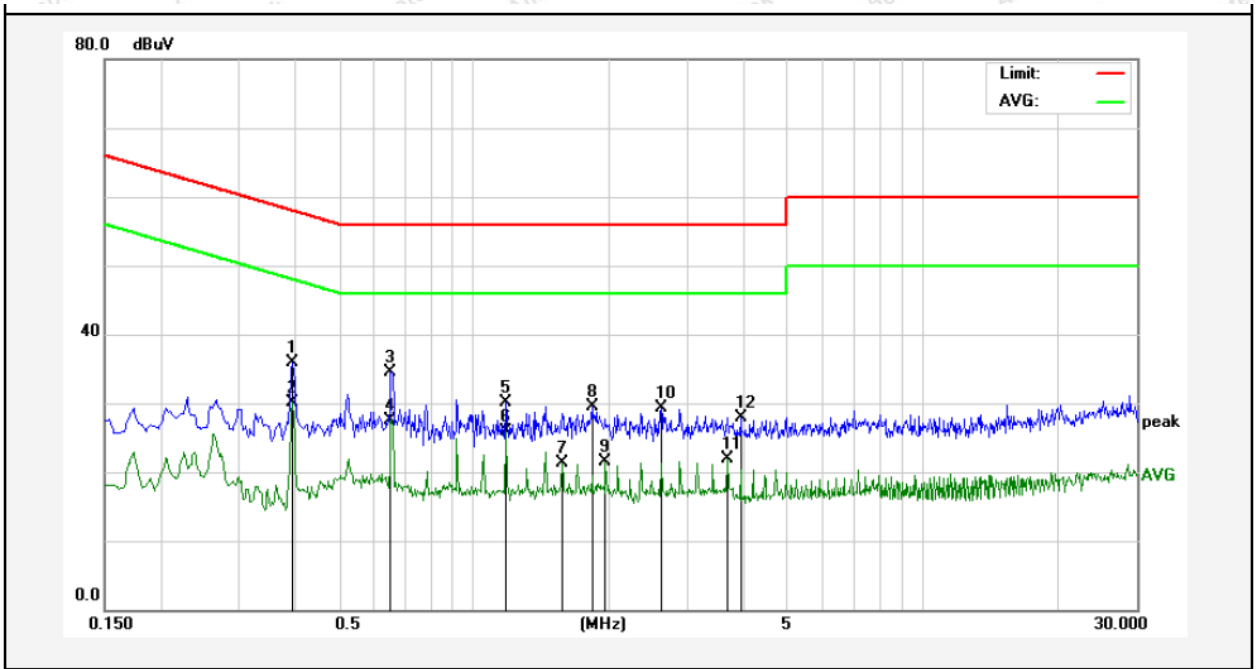
Test Site: 1# Shielded Room

Operating Condition: Keeping TX+ Charging Mode

Test Specification: DC 12V

Comment: Live Line

Tem.:22.5℃ Hum.:59%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.3940	16.04	19.93	35.97	57.98	-22.01	QP	
2	0.3940	10.15	19.93	30.08	47.98	-17.90	AVG	
3	0.6540	14.49	20.03	34.52	56.00	-21.48	QP	
4	0.6540	7.56	20.03	27.59	46.00	-18.41	AVG	
5	1.1817	10.04	20.12	30.16	56.00	-25.84	QP	
6	1.1817	5.72	20.12	25.84	46.00	-20.16	AVG	
7	1.5740	1.24	20.13	21.37	46.00	-24.63	AVG	
8	1.8340	9.45	20.14	29.59	56.00	-26.41	QP	
9	1.9657	1.36	20.14	21.50	46.00	-24.50	AVG	
10	2.6218	9.22	20.15	29.37	56.00	-26.63	QP	
11	3.6699	1.72	20.17	21.89	46.00	-24.11	AVG	
12	3.9300	7.79	20.18	27.97	56.00	-28.03	QP	

Conducted Emission Test Data

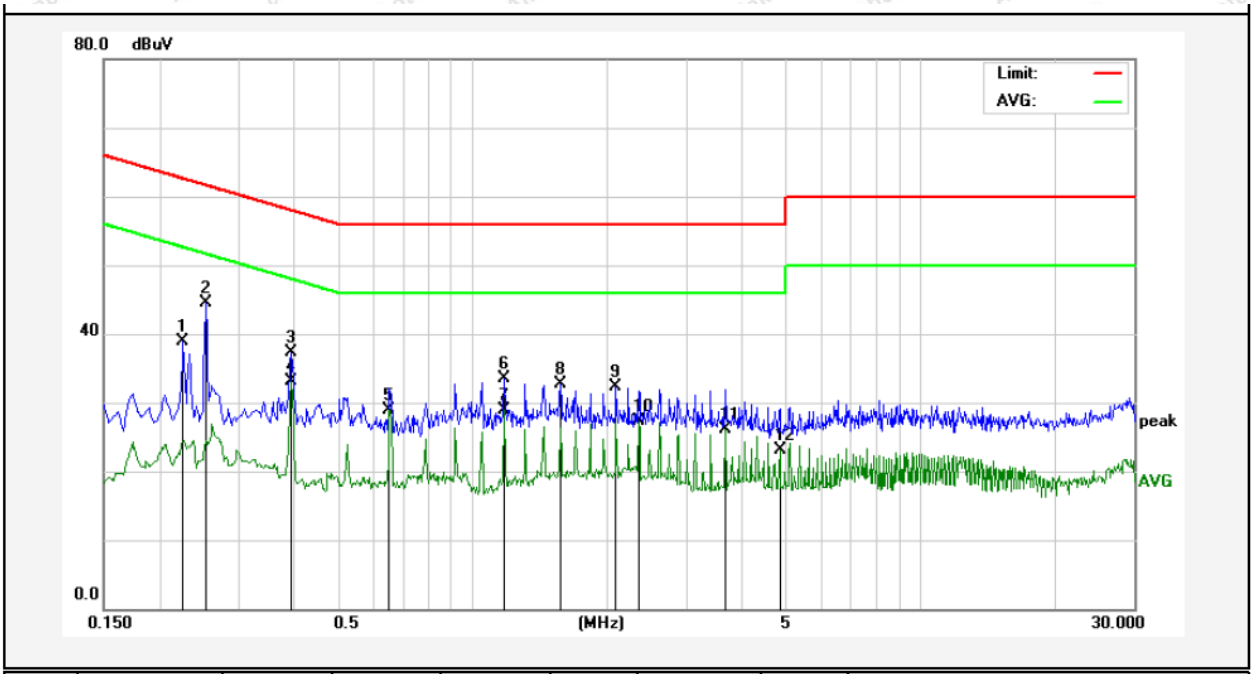
Test Site: 1# Shielded Room

Operating Condition: Keeping TX+ Charging Mode

Test Specification: DC 12V

Comment: Neutral Line

Tem.:22.5℃ Hum.:59%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.2260	19.02	19.89	38.91	62.59	-23.68	QP	
2	0.2540	24.66	19.89	44.55	61.62	-17.07	QP	
3	0.3940	17.33	19.93	37.26	57.98	-20.72	QP	
4	0.3940	13.15	19.93	33.08	47.98	-14.90	AVG	
5	0.6540	8.96	20.03	28.99	46.00	-17.01	AVG	
6	1.1777	13.45	20.12	33.57	56.00	-22.43	QP	
7	1.1817	8.76	20.12	28.88	46.00	-17.12	AVG	
8	1.5740	12.59	20.13	32.72	56.00	-23.28	QP	
9	2.0979	12.10	20.14	32.24	56.00	-23.76	QP	
10	2.3580	7.08	20.15	27.23	46.00	-18.77	AVG	
11	3.6699	5.93	20.17	26.10	46.00	-19.90	AVG	
12	4.8498	2.98	20.20	23.18	46.00	-22.82	AVG	

Conducted Emission Test Data

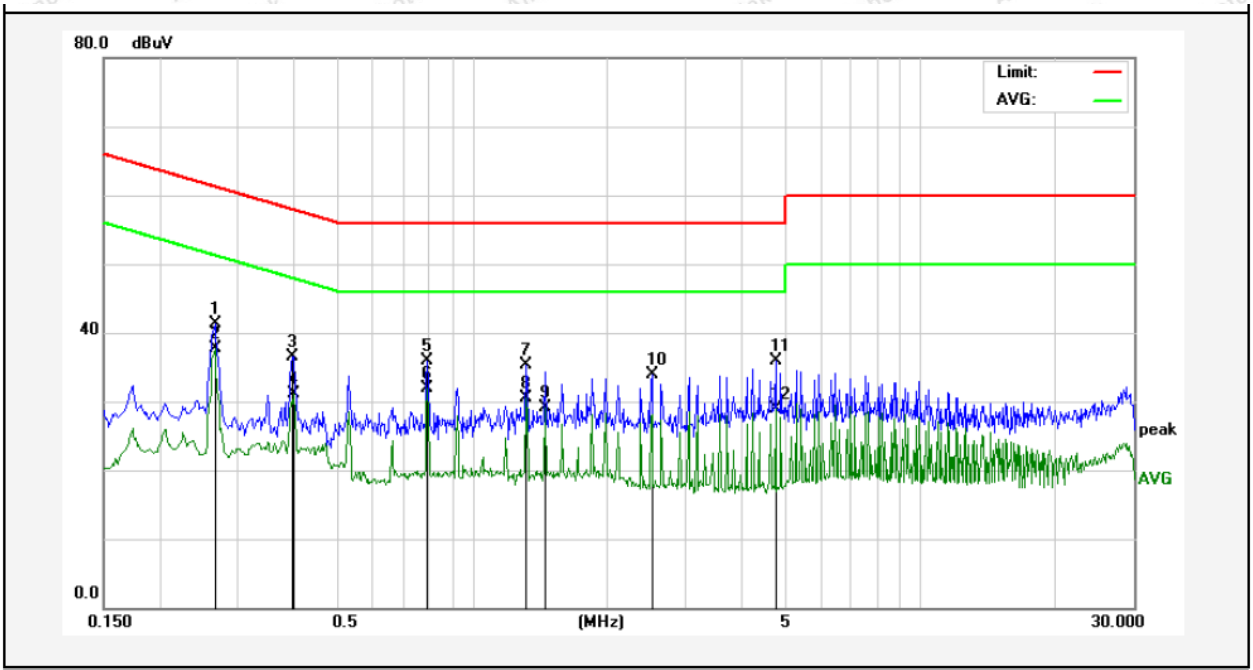
Test Site: 1# Shielded Room

Operating Condition: Keeping TX+ Charging Mode

Test Specification: DC 24V

Comment: Live Line

Tem.:22.5℃ Hum.:59%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.2658	21.32	19.89	41.21	61.25	-20.04	QP	
2	0.2658	17.78	19.89	37.67	51.25	-13.58	AVG	
3	0.3955	16.51	19.93	36.44	57.95	-21.51	QP	
4	0.3976	11.10	19.93	31.03	47.90	-16.87	AVG	
5	0.7918	15.79	20.06	35.85	56.00	-20.15	QP	
6	0.7918	11.87	20.06	31.93	46.00	-14.07	AVG	
7	1.3168	15.09	20.13	35.22	56.00	-20.78	QP	
8	1.3168	10.33	20.13	30.46	46.00	-15.54	AVG	
9	1.4485	9.04	20.13	29.17	46.00	-16.83	AVG	
10	2.5133	13.80	20.15	33.95	56.00	-22.05	QP	
11	4.7464	15.71	20.20	35.91	56.00	-20.09	QP	
12	4.7464	8.78	20.20	28.98	46.00	-17.02	AVG	

Conducted Emission Test Data

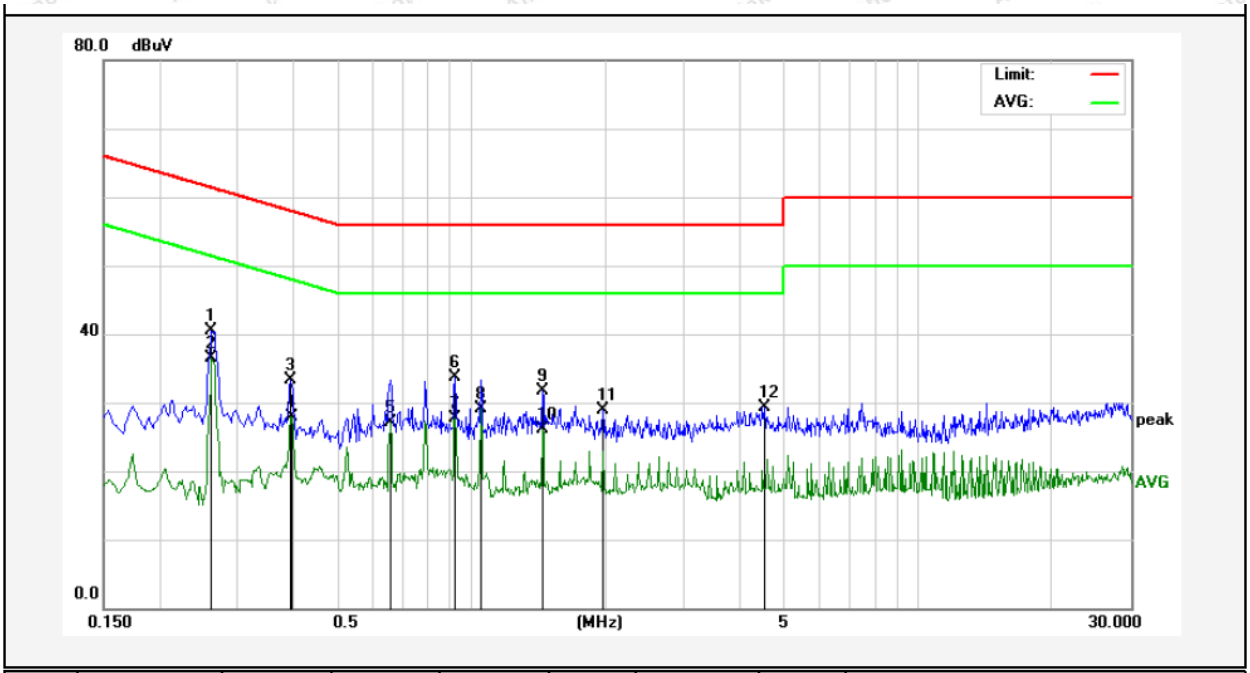
Test Site: 1# Shielded Room

Operating Condition: Keeping TX+ Charging Mode

Test Specification: DC 24V

Comment: Neutral Line

Tem.:22.5℃ Hum.:59%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.2620	20.55	19.89	40.44	61.36	-20.92	QP	
2	0.2620	16.64	19.89	36.53	51.36	-14.83	AVG	
3	0.3940	13.32	19.93	33.25	57.98	-24.73	QP	
4	0.3955	7.95	19.93	27.88	47.95	-20.07	AVG	
5	0.6580	7.03	20.03	27.06	46.00	-18.94	AVG	
6	0.9220	13.58	20.10	33.68	56.00	-22.32	QP	
7	0.9220	7.55	20.10	27.65	46.00	-18.35	AVG	
8	1.0540	8.95	20.12	29.07	46.00	-16.93	AVG	
9	1.4457	11.59	20.13	31.72	56.00	-24.28	QP	
10	1.4457	5.96	20.13	26.09	46.00	-19.91	AVG	
11	1.9737	8.77	20.14	28.91	56.00	-27.09	QP	
12	4.5377	9.15	20.19	29.34	56.00	-26.66	QP	

4. Radiation Spurious Emission and Band Edge

4.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.209, 15.205 and 15.239(a)				
Test Limit	Frequency (MHz)	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz~0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz~88MHz	100	40.0	Quasi-peak	3
	88MHz~216MHz	150	43.5	Quasi-peak	3
	216MHz~960MHz	200	46.0	Quasi-peak	3
	960MHz~1000MHz	500	54.0	Quasi-peak	3
	Above 1000MHz	500	54.0	Average	3
		-	74.0	Peak	3
Remark: (1)The lower limit shall apply at the transition frequency. (2) 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.					

According to §15.239(a), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

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

The field strength of emission limits have been calculated in below table:

Fundamental Frequency (MHz)	Field Strength of Fundamental (dBuV/m)@3m
88.1-107.9	48 (AVG)
	68 (Peak)

NOTE:
1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. FCC part15.239(b) The field strength of any emissions within the permitted 200 KHz band shall not exceed 250 microvolts/meter at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in Section 15.35 for limiting peak emissions apply.

4.2. Test Setup

Figure 1. Below 30MHz

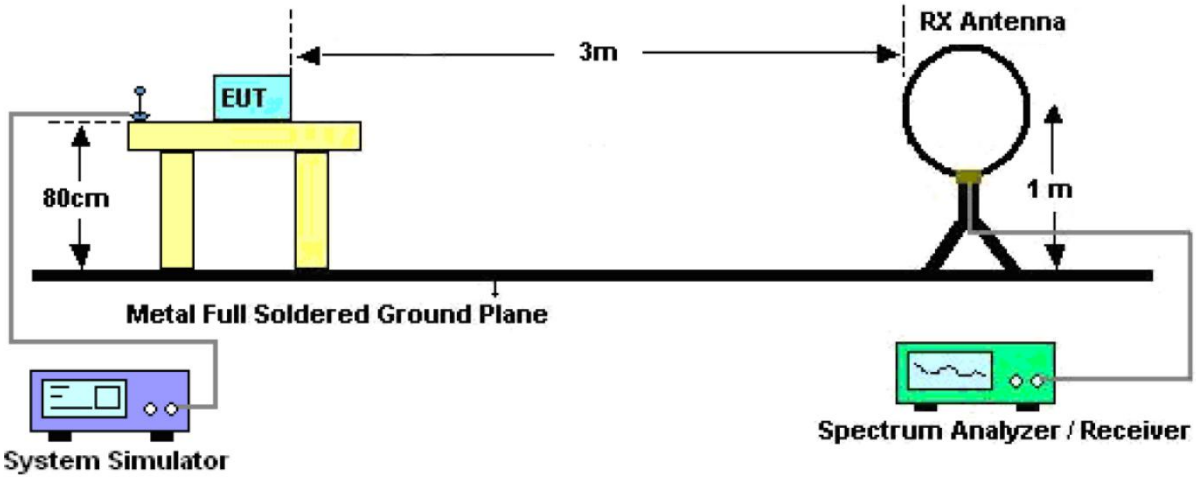


Figure 2. 30MHz to 1GHz

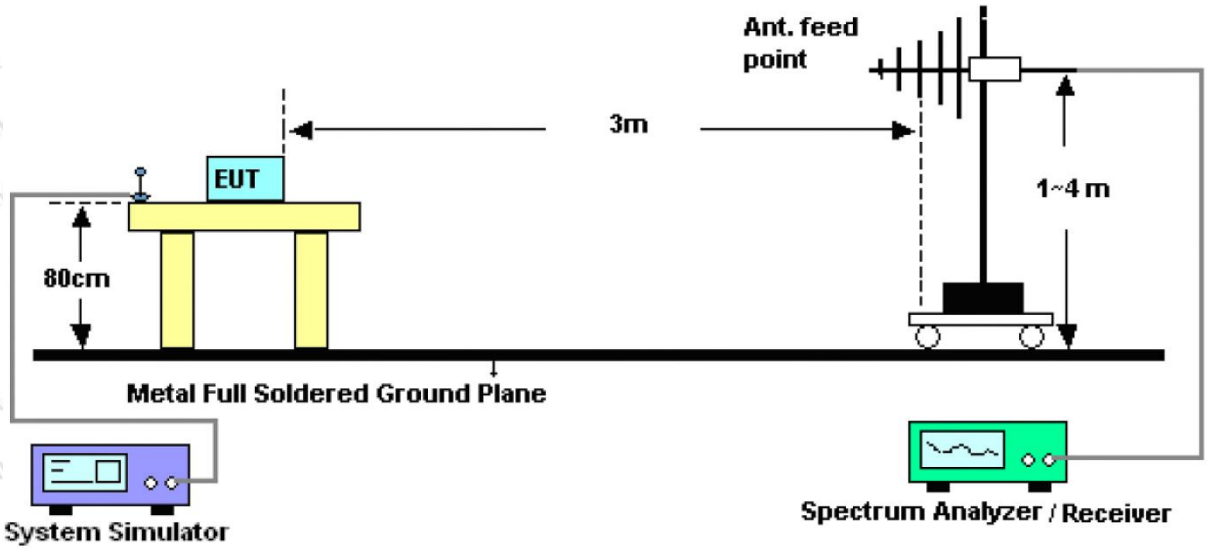
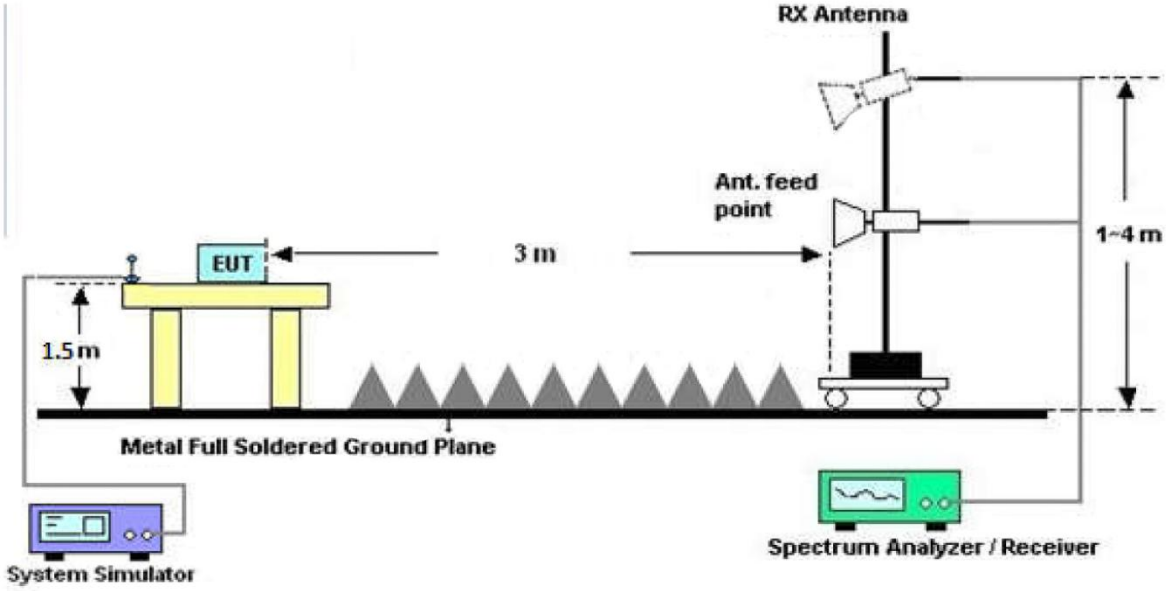


Figure 3. Above 1 GHz



4.3. Test Procedure

For below 1GHz: The EUT is placed on a turntable, which is 0.8m above the ground plane.
For above 1GHz: The EUT is placed on a turntable, which is 1.5m above the ground plane.
The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Rotated the EUT through three orthogonal axes to determine the maximum emissions, both horizontal and vertical polarization of the antenna are set on test. The EUT is tested in 9*6*6 Chamber. The device is evaluated in xyz orientation.

For the radiated emission test above 1GHz:
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.

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.

For 30MHz to 1000MHz, Set the spectrum analyzer as:
RBW = 100kHz, VBW =300kHz,Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For above 1GHz,Set the spectrum analyzer as:
RBW =1MHz, VBW =1MHz, Detector= Peak, Trace mode= Max hold, Sweep- auto couple.
RBW =1MHz, VBW =10Hz, Detector= Average, Trace mode= Max hold, Sweep- auto couple.

4.4. Test Data

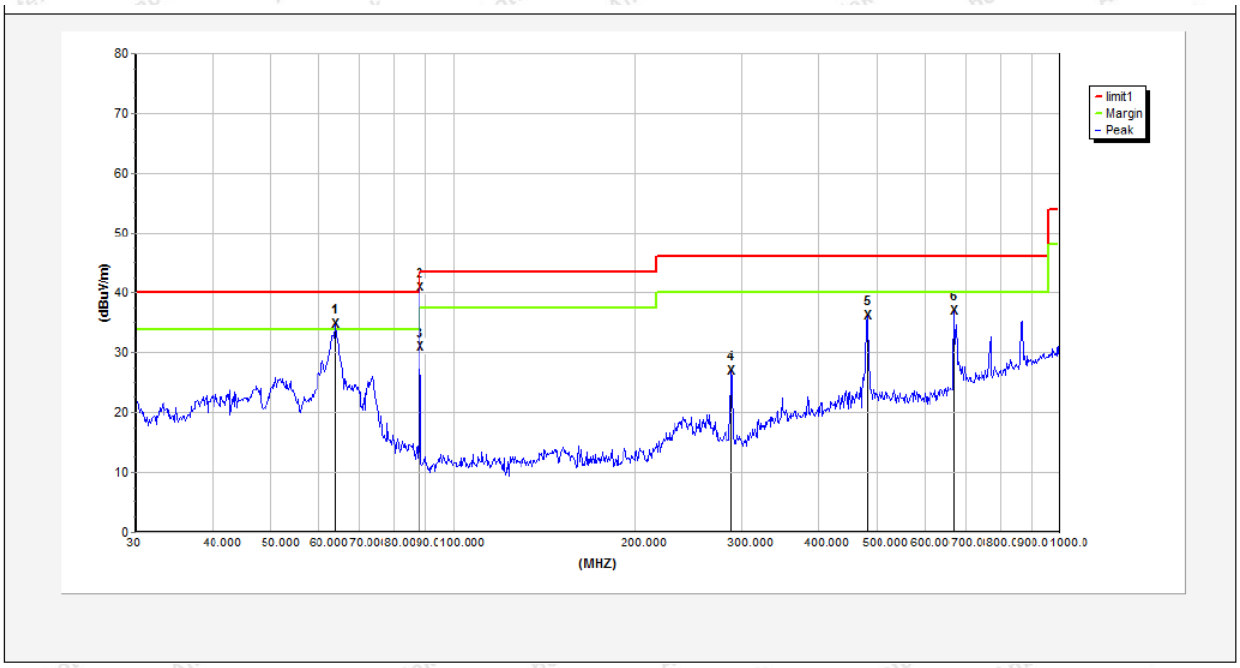
PASS

During the test, Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the X-axis is the worst case.

The test results of 9kHz-30MHz was attenuated more than 20dB below the permissible limits, so the results don't record in the report.

Test Results (30~1000MHz)

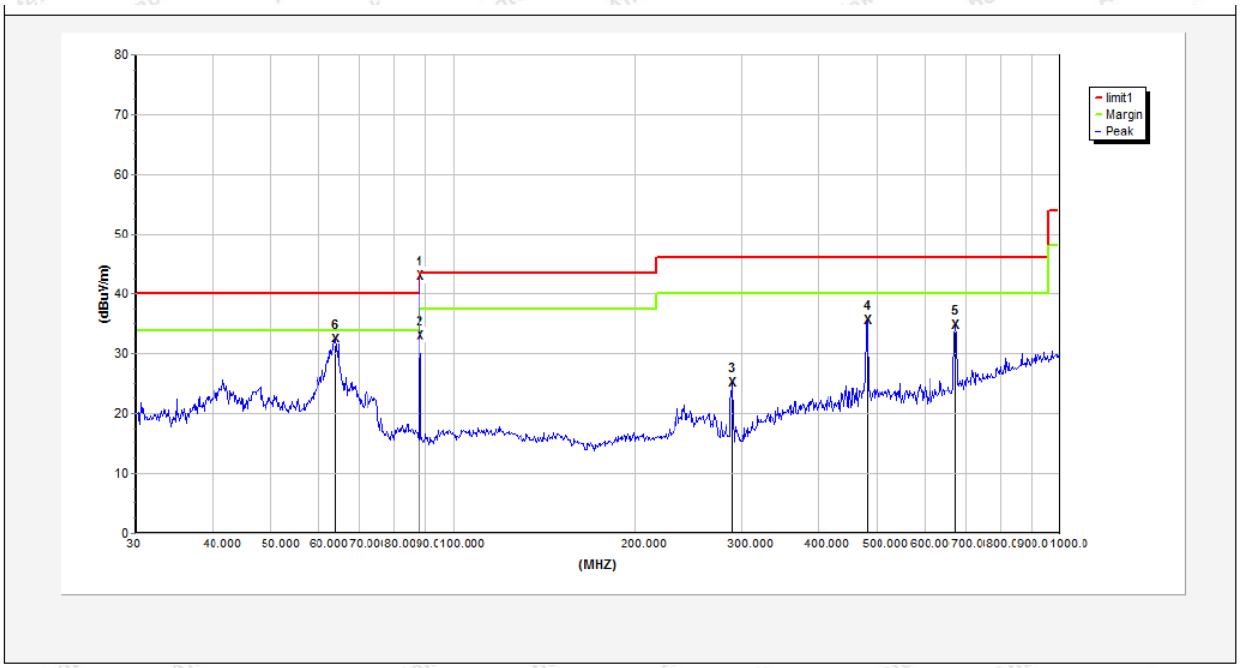
Job No.:	SZAWW180330016-02	Temp.(℃)/Hum.(%RH):	24.3℃/55%RH
Standard:	FCC PART 15C	Power Source:	DC 12V
Test Mode:	Mode 1	Polarization:	Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	88.1029	57.89	-15.01	42.88	68.00	-25.12	PK	300	180	
2	88.1029	46.25	-15.01	31.24	48.00	-16.76	AV	300	180	
3	289.0020	43.14	-18.01	25.13	46.00	-20.87	QP	300	152	
4	482.2155	46.94	-11.53	35.41	46.00	-10.59	QP	300	189	
5	672.8444	43.96	-9.22	34.74	46.00	-11.26	QP	300	200	
6	63.9827	37.60	-5.34	32.26	40.00	-7.74	QP	300	58	

Test Results (30~1000MHz)

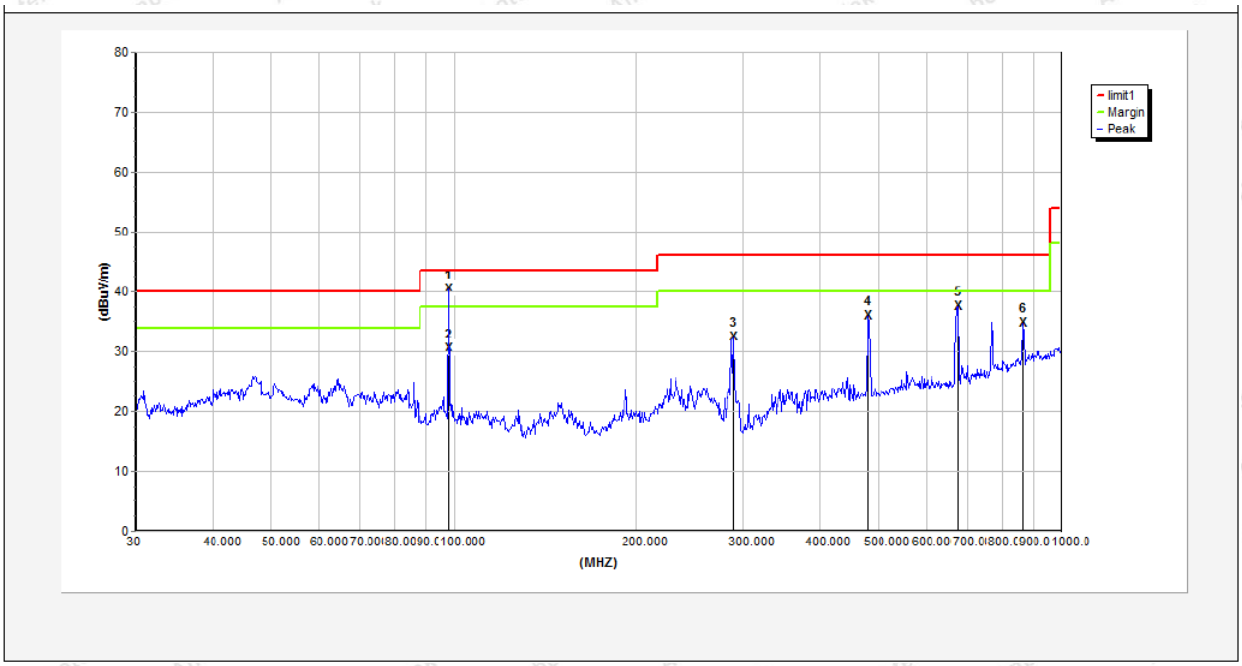
Job No.:	SZAWW180330016-02	Temp.(℃)/Hum.(%RH):	24.3℃/55%RH
Standard:	FCC PART 15C	Power Source:	DC 12V
Test Mode:	Mode 1	Polarization:	Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	63.9827	49.60	-14.85	34.75	40.00	-5.25	QP	300	180	
2	88.1029	55.76	-15.01	40.75	68.00	-27.25	PK	300	180	
3	88.1029	45.42	-15.01	30.41	48.00	-17.59	AV	300	210	
4	287.9904	38.45	-11.53	26.92	46.00	-19.08	QP	300	180	
5	482.2155	44.80	-8.68	36.12	46.00	-9.88	QP	300	110	
6	670.4891	41.12	-4.34	36.78	46.00	-9.22	QP	300	55	

Test Results (30~1000MHz)

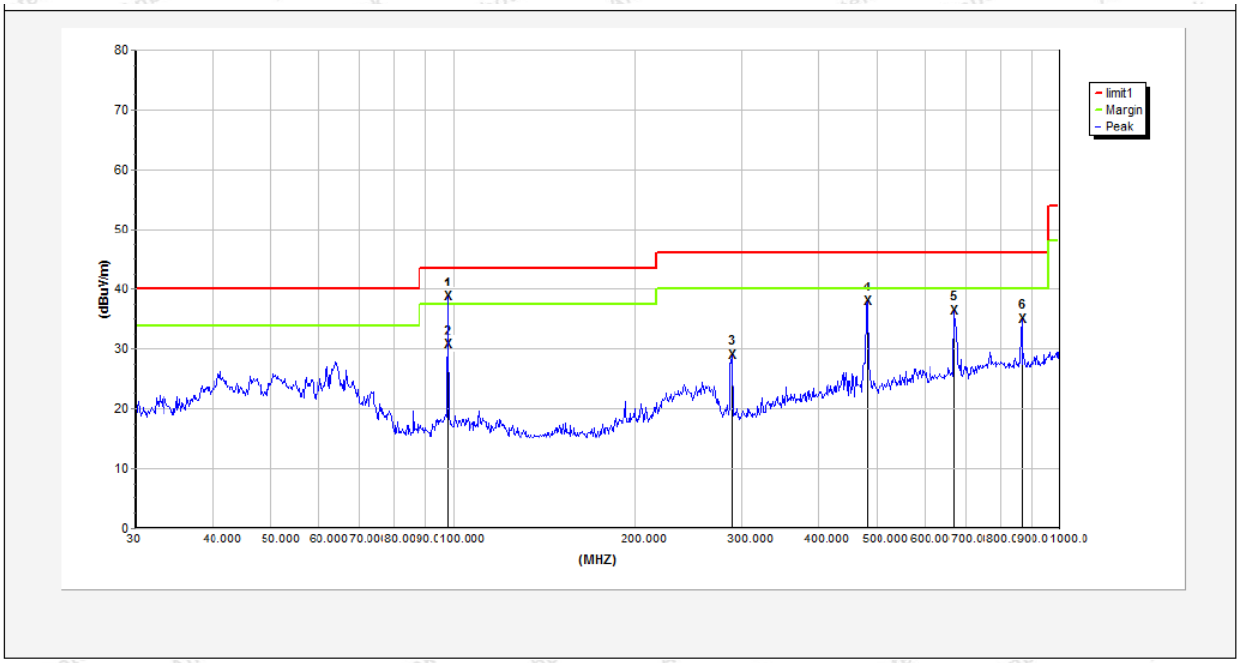
Job No.:	SZAWW180330016-02	Temp.(℃)/Hum.(%RH):	24.3℃/55%RH
Standard:	FCC PART 15C	Power Source:	DC 12V
Test Mode:	Mode 2	Polarization:	Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	98.1000	56.21	-15.88	40.33	68.00	-27.67	PK	300	180	
2	98.1000	46.06	-15.88	30.18	48.00	-17.82	AV	300	180	
3	289.0020	48.27	-15.88	32.39	46.00	-13.61	QP	300	214	
4	480.5276	50.89	-15.01	35.88	46.00	-10.12	QP	300	141	
5	675.2078	49.03	-11.53	37.50	46.00	-8.50	QP	300	114	
6	863.0561	43.46	-8.68	34.78	46.00	-11.22	QP	300	41	

Test Results (30~1000MHz)

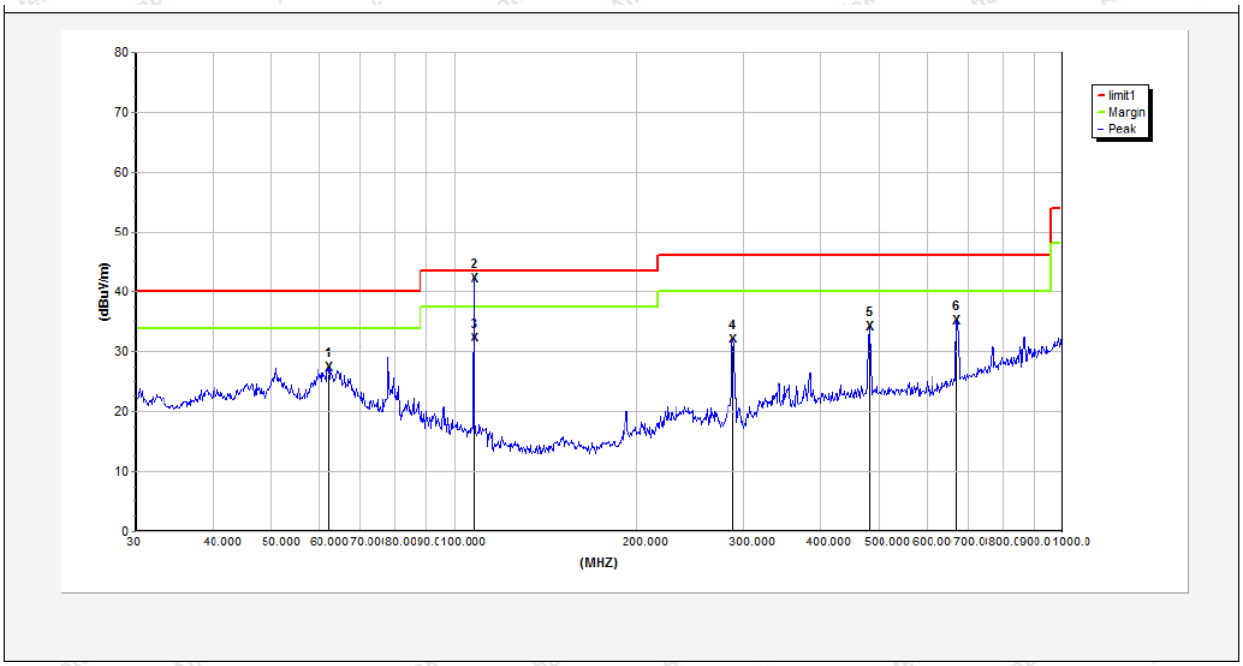
Job No.:	SZAWW180330016-02	Temp.(℃)/Hum.(%RH):	24.3℃/55%RH
Standard:	FCC PART 15C	Power Source:	DC 12V
Test Mode:	Mode 2	Polarization:	Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	98.1000	54.49	-15.88	38.61	68.00	-29.39	PK	300	180	
2	98.1000	46.77	-15.88	30.89	48.00	-17.11	AV	300	180	
3	289.0020	44.73	-15.88	28.85	43.50	-14.65	QP	300	200	
4	482.2155	52.95	-15.01	37.94	46.00	-8.06	QP	300	147	
5	670.4891	47.74	-11.53	36.21	46.00	-9.79	QP	300	320	
6	866.0878	43.52	-8.68	34.84	46.00	-11.16	QP	300	111	

Test Results (30~1000MHz)

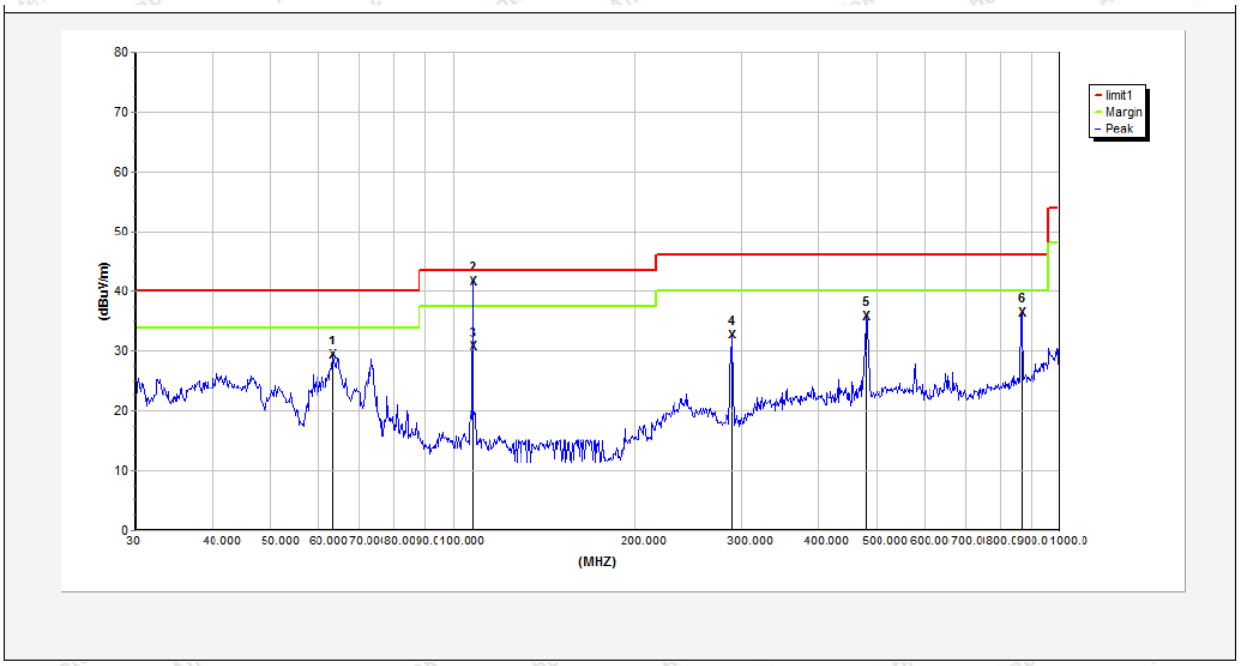
Job No.:	SZAWW180330016-02	Temp.(℃)/Hum.(%RH):	24.3℃/55%RH
Standard:	FCC PART 15C	Power Source:	DC 12V
Test Mode:	Mode 3	Polarization:	Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	62.2128	42.08	-14.75	27.33	40.00	-12.67	QP	300	24	
2	107.9000	57.86	-15.66	42.20	68.00	-25.80	PK	300	180	
3	107.9000	48.10	-15.66	32.44	48.00	-15.56	AV	300	180	
4	287.9904	50.03	-18.01	32.02	46.00	-13.98	QP	300	125	
5	482.2155	45.60	-11.53	34.07	46.00	-11.93	QP	300	245	
6	670.4891	44.38	-9.22	35.16	46.00	-10.84	QP	300	241	

Test Results (30~1000MHz)

Job No.:	SZAWW180330016-02	Temp.(℃)/Hum.(%RH):	24.3℃/55%RH
Standard:	FCC PART 15C	Power Source:	DC 12V
Test Mode:	Mode 3	Polarization:	Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	63.3132	43.98	-14.71	29.27	40.00	-10.73	QP	300	24	
2	107.9000	57.18	-15.66	41.52	68.00	-26.48	PK	300	180	
3	107.9000	46.19	-15.66	30.53	48.00	-17.47	AV	300	180	
4	289.0020	47.50	-15.01	32.49	46.00	-13.51	QP	300	174	
5	478.8455	47.19	-11.53	35.66	46.00	-10.34	QP	300	200	
6	866.0878	44.94	-8.69	36.25	46.00	-9.75	QP	300	154	

Test Results (1GHz-25GHz)

107.9MHz										
Frequency (MHz)	Meter Reading (dBuV)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Orrected Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type	Comment
1012.52	57.00	46.30	3.70	24.20	-18.24	40.20	74.00	-33.80	PK	V
1012.52	46.09	46.30	3.70	24.20	-18.24	30.22	54.00	-23.78	AV	V
1033.64	55.07	46.30	3.70	24.20	-18.24	35.40	74.00	-38.60	PK	H
1033.64	46.10	46.30	3.70	24.20	-18.24	26.55	54.00	-27.45	AV	H
1045.27	57.85	44.90	3.70	24.20	-18.24	40.10	74.00	-33.90	PK	V
1045.27	48.86	44.90	3.70	24.20	-18.24	30.65	54.00	-23.35	AV	V
1055.36	56.90	44.90	3.70	24.20	-18.24	39.65	74.00	-34.35	PK	H
1055.36	48.89	44.90	3.70	24.20	-18.24	30.22	54.00	-23.78	AV	H

Remark:

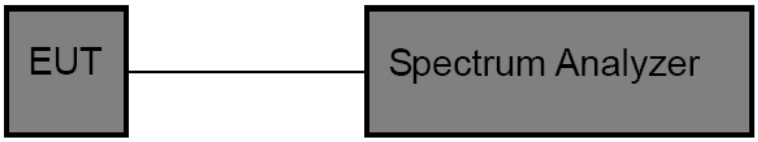
Only Worse case is reported.

5. 20DB Occupy Bandwidth Test

5.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.215
Test Limit	15.215(c), Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the 20 dB bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation. Limit: 200 MHz

5.2. Test Setup



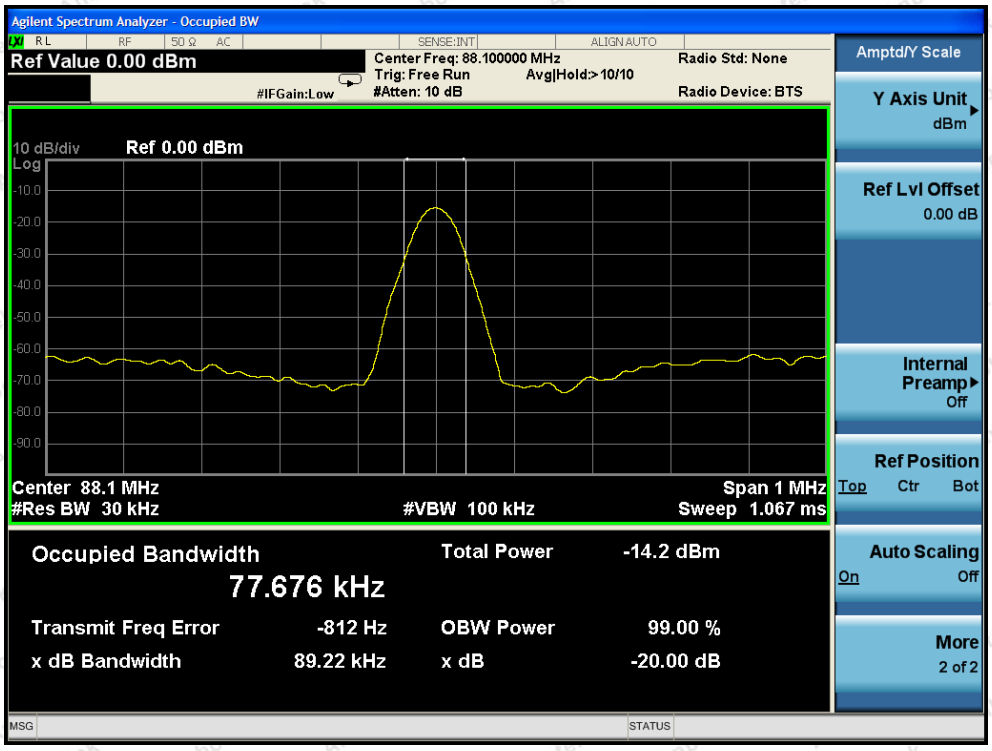
5.3. Test Procedure

1. Place the EUT on the table and set it in the continuously transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as:
   RBW = 30kHz, VBW≥3*RBW =100kHz,
   Span= 3MHz
   Detector= Peak
   Trace mode= Max hold.
   Sweep- auto couple.
4. Mark the peak frequency and –20dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

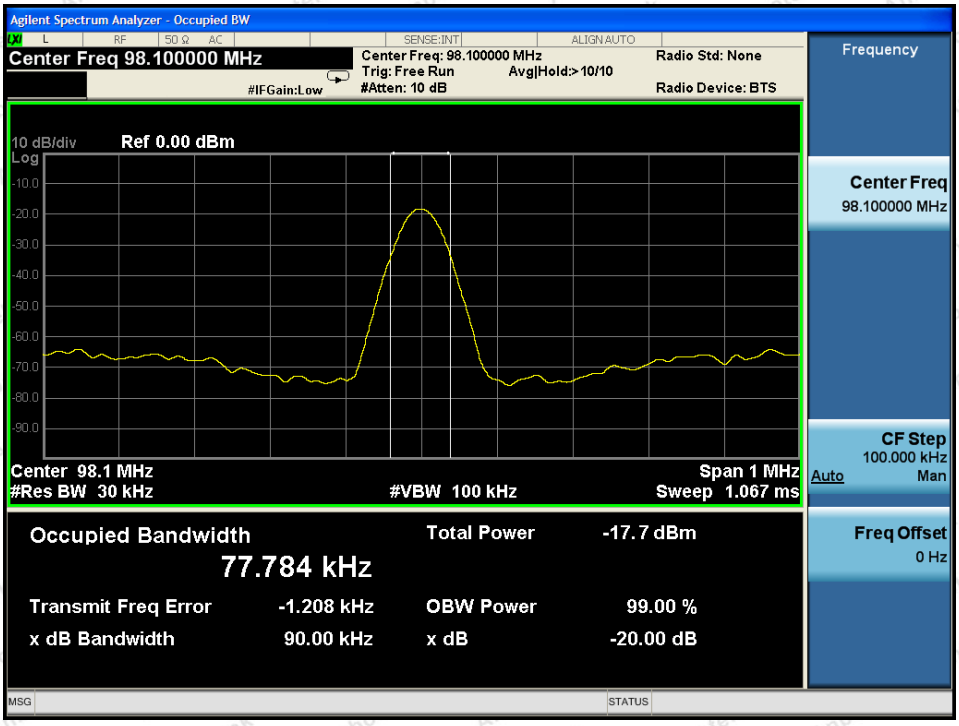
5.4. Test Data

Test Item	:	20dB Bandwidth	Test Mode	:	TX Mode
Test Voltage	:	DC 12V	Temperature	:	24℃
Test Result	:	PASS	Humidity	:	55%RH

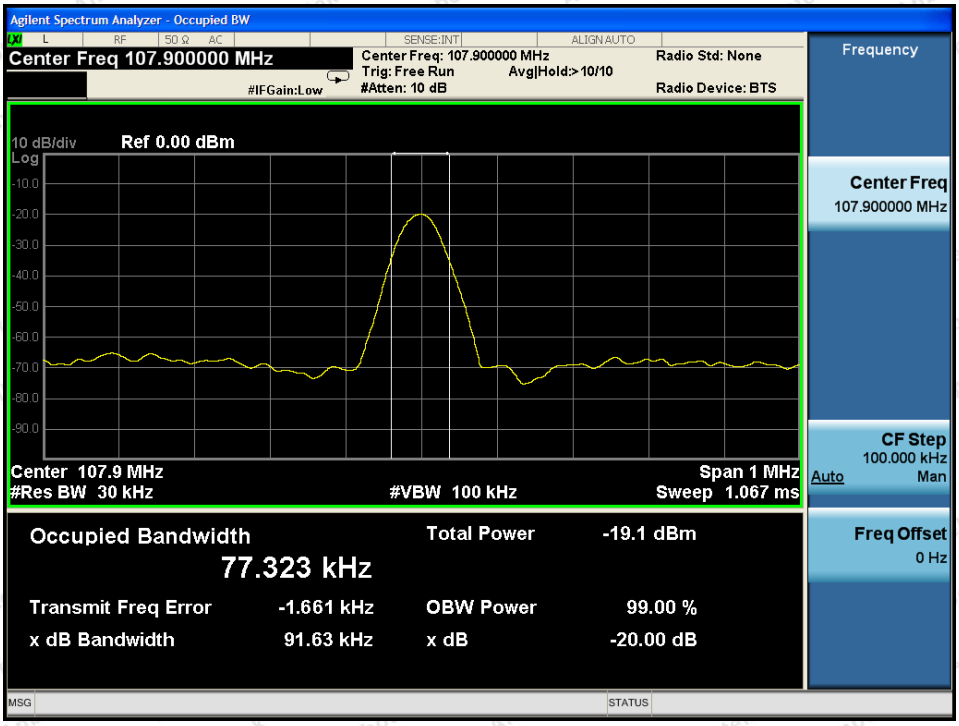
Test Channel	Frequency (MHz)	20 dBc Bandwidth (KHz)	Limit (KHz)
Low	88.1	89.22	200
Mid	98.1	90.00	200
High	107.9	91.63	200



The Low Channel



The Mid Channel



The High Channel

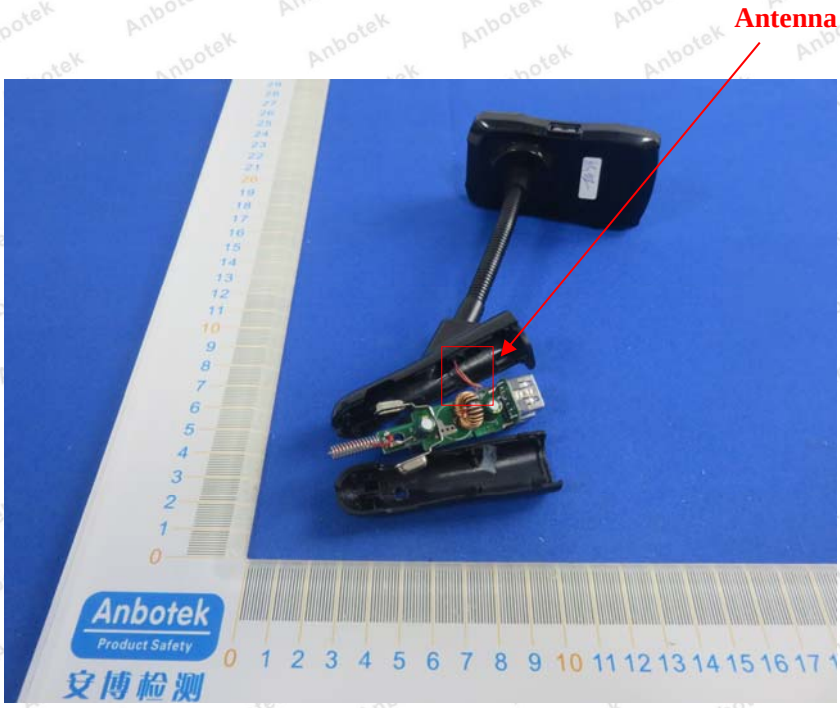
6. Antenna Requirement

6.1. Test Standard and Requirement

Test Standard	FCC Part15 Section 15.203
Requirement	1) 15.203 requirement: 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. Antenna requirement must meet at least one of the following: 1) Antenna must be permanently attached to device. 2) The antenna must use a unique type of connector to attach to the device. 3) Device must be professionally installed. The installer shall be responsible for ensuring that the correct antenna is employed by the device.

6.2. Antenna Connected Construction

The RF antenna is a FM antenna which permanently attached, and the best case gain of the antenna is 5 dBi. It complies with the standard requirement.



APPENDIX I -- TEST SETUP PHOTOGRAPH

Please see the test report of SZAWW180330016-01

APPENDIX II -- EXTERNAL PHOTOGRAPH

Please see the test report of SZAWW180330016-01

APPENDIX III -- INTERNAL PHOTOGRAPH

Please see the test report of SZAWW180330016-01