

FCC TEST REPORT

Client Name : Sariana LLC
Address : 7365 Mission Gorge Rd, Suite G, San Diego, CA 92120,
USA
Product Name : Apple Watch Charger
Date : Oct. 09, 2021



Shenzhen Anbotech Compliance Laboratory Limited

Shenzhen Anbotech Compliance Laboratory Limited

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TEST REPORT

Applicant : Sariana LLC
Manufacturer : Sariana LLC
Product Name : Apple Watch Charger
Model No. : ST-UCAWPM
Trade Mark : S A T E C H I
Rating(s) : Input: DC 5V, 1A
Apple watch output: 5W

Test Standard(s) : FCC Part15 Subpart C, Paragraph 15.209

Test Method(s) : ANSI C63.10: 2020

The device described above is tested by Shenzhen Anbotech 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 Anbotech 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 Anbotech Compliance Laboratory Limited.

Date of Receipt

Aug. 24, 2021

Date of Test

Aug. 24~Sept. 29, 2021

Prepared By

Ella Liang

(Ella Liang)

Approved & Authorized Signer

Kingkong Jin

(Kingkong Jin)



1. General Information

1.1. Client Information

Applicant	:	Sariana LLC
Address	:	7365 Mission Gorge Rd, Suite G, San Diego, CA 92120, USA
Manufacturer	:	Sariana LLC
Address	:	7365 Mission Gorge Rd, Suite G, San Diego, CA 92120, USA
Factory	:	Sariana LLC
Address	:	7365 Mission Gorge Rd, Suite G, San Diego, CA 92120, USA

1.2. Description of Device (EUT)

Product Name	:	Apple Watch Charger
Model No.	:	ST-UCAWPM
Trade Mark	:	S A T E C H I
Test Power Supply	:	AC 120V, 60Hz for adapter/AC 240V, 60Hz for adapter
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)
Product Description	Operation Frequency:	326.5KHz
	Modulation Type:	FSK
	Antenna Type:	Inductive loop coil Antenna
	Antenna Gain(Peak):	0 dBi (Provide by customer)
Remark: 1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.		

1.3. Auxiliary Equipment Used During Test

Adapter	:	M/N: A2013 Input: AC 100-240V, 0.7A, 50-60Hz Output: 3.6-5.5V---3A/ 6.5-9V---2A/ 9-12V---1.5A
Apple Watch	:	M/N: WR-50M

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	Wireless Charge Mode with Watch

For Conducted Emission	
Final Test Mode	Description
Mode 1	Wireless Charge Mode with Watch

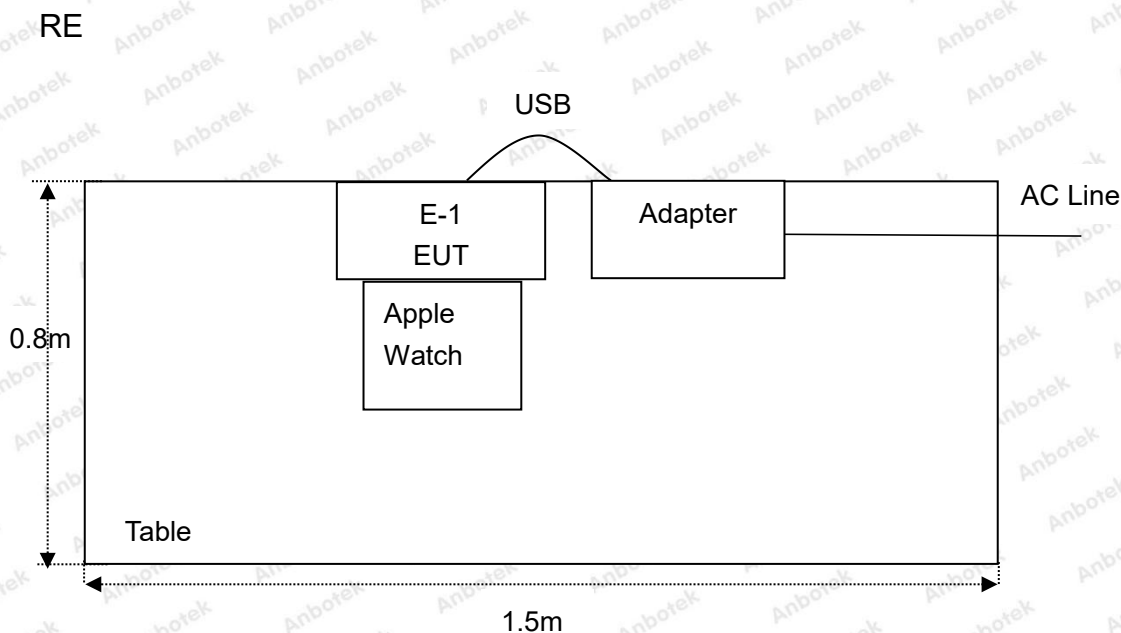
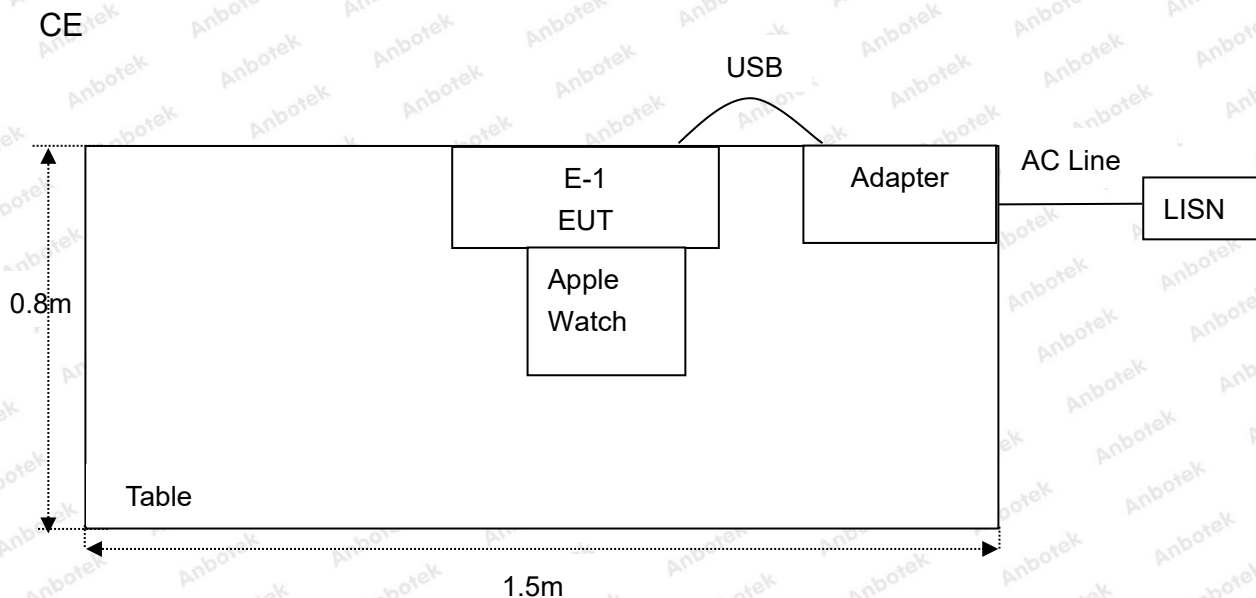
For Radiated Emission	
Final Test Mode	Description
Mode 1	Wireless Charge Mode with Watch

Note: (1)Test channel is 0.3265MHz.

(2) All the situation(full load, half load and empty load) has been tested,only the worst situation (full load 5W) was recorded in the report.



1.5. Description Of Test Setup



1.6. 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	Oct. 26, 2020	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Oct. 26, 2020	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Oct. 26, 2020	1 Year
4.	Software Name EZ-EMC	Ferrari Technology	ANB-03A	N/A	N/A	N/A
5.	MAX Spectrum Analysis	Agilent	N9020A	MY51170037	Oct. 26, 2020	1 Year
6.	Preamplifier	SKET Electronic	BK1G18G30 D	KD17503	Oct. 26, 2020	1 Year
7.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Nov. 02, 2020	2 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Nov. 02, 2020	2 Year
9.	Loop Antenna	Schwarzbeck	FMZB1519B	00053	Nov. 02, 2020	2 Year
10.	Horn Antenna	A-INFO	LB-180400-K F	J211060628	Nov. 02, 2020	2 Year
11.	Pre-amplifier	SONOMA	310N	186860	Oct. 26, 2020	1 Year
12.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
13.	RF Test Control System	YIHENG	YH3000	2017430	Oct. 26, 2020	1 Year
14.	Power Sensor	DAER	RPR3006W	15I00041SN045	Oct. 26, 2020	1 Year
15.	Power Sensor	DAER	RPR3006W	15I00041SN046	Oct. 26, 2020	1 Year
16.	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Oct. 26, 2020	1 Year
17.	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Oct. 26, 2020	1 Year
18.	Signal Generator	Agilent	E4421B	MY41000743	Oct. 26, 2020	1 Year
19.	DC Power Supply	IVYTECH	IV3605	1804D360510	Oct. 26, 2020	1 Year
20.	Constant Temperature Humidity Chamber	ZHONGJIAN	ZJ-KHWS80 B	N/A	Oct. 26, 2020	1 Year



1.7. Measurement Uncertainty

Radiation Uncertainty	:	Ur = 3.9 dB (Horizontal)
		Ur = 3.8 dB (Vertical)
Conduction Uncertainty	:	Uc = 3.4 dB

1.8. Description of Test Facility

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

FCC-Registration No.: 184111

Shenzhen Anbotech Compliance Laboratory Limited, EMC Laboratory has been registered 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.

ISED-Registration No.: 8058A

Shenzhen Anbotech 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.

Test Location

Shenzhen Anbotech Compliance Laboratory Limited.

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
FCC Part 15, Paragraph 15.207	Conducted Emission Test	PASS
FCC Part 15, Paragraph 15.209(a)(f)	Spurious Emission	PASS
Part 15.203	Antenna Requirement	PASS

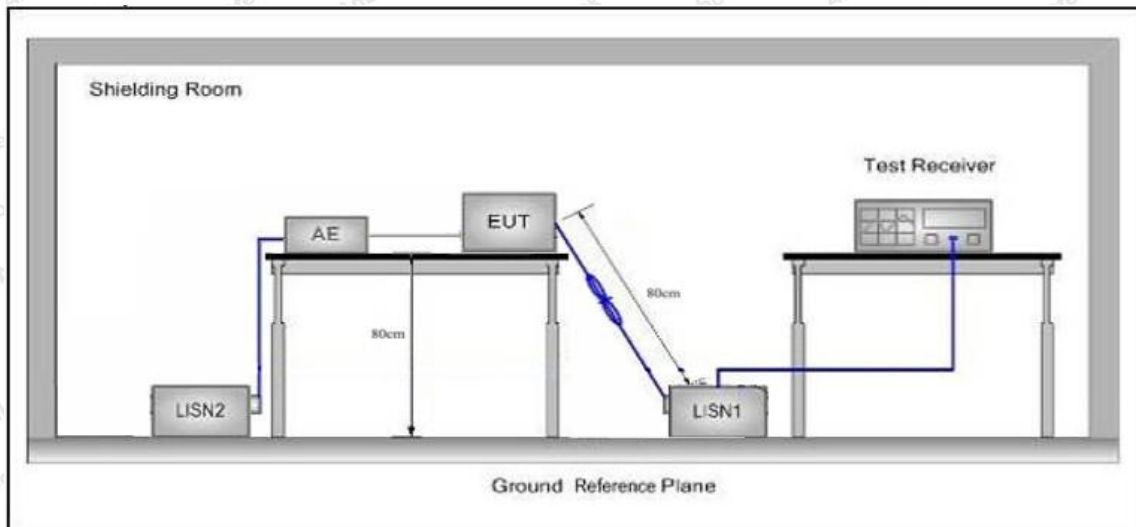
3. Conducted Emission Test

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 C63.10-2020 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

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Code:AB-RF-05-a



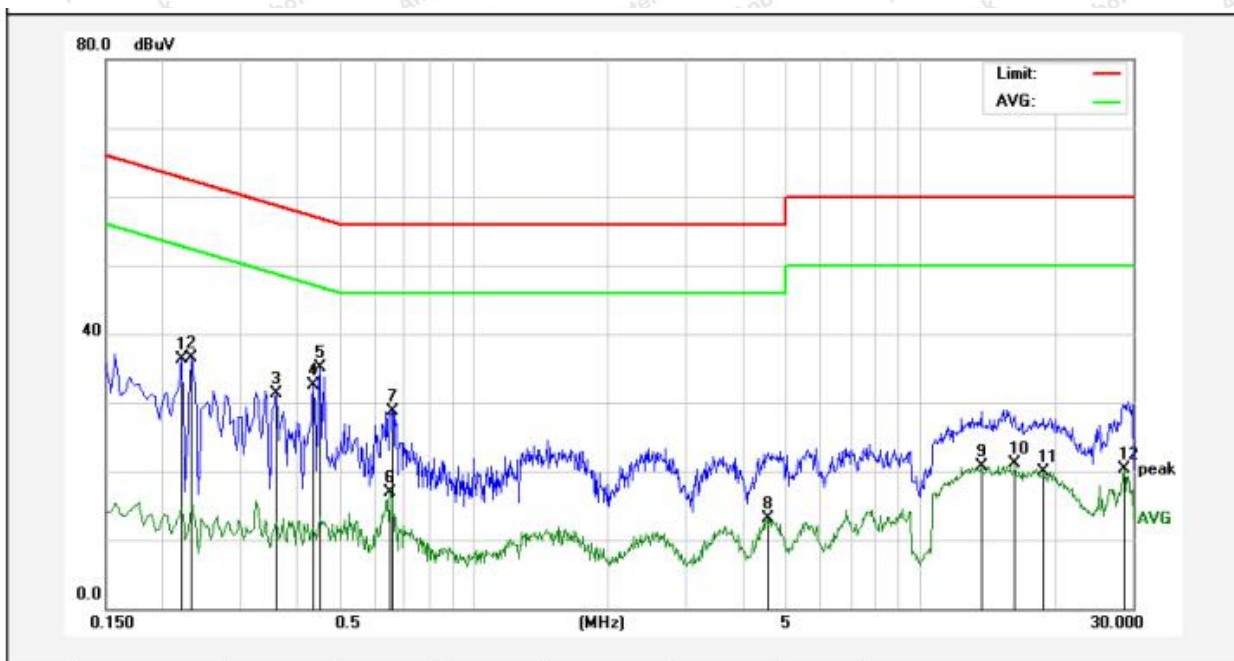
Hotline

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Conducted Emission Test Data

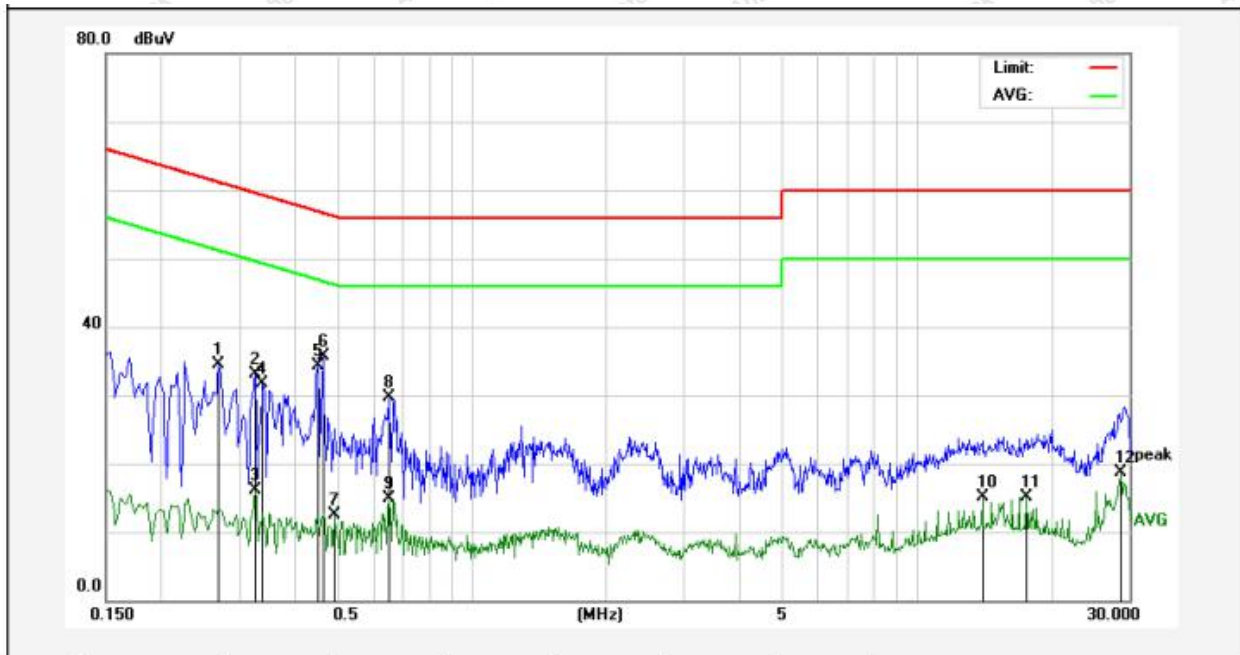
Test Site: 1# Shielded Room
Operating Condition: Mode 1
Test Specification: AC 240V, 60Hz for adapter
Comment: Live Line
Tem.: 24.5°C Hum.: 46%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.2220	26.09	10.12	36.21	62.74	-26.53	QP	
2	0.2340	26.38	10.12	36.50	62.30	-25.80	QP	
3	0.3620	21.25	10.12	31.37	58.68	-27.31	QP	
4	0.4380	22.40	10.13	32.53	57.10	-24.57	QP	
5	0.4540	25.01	10.13	35.14	56.80	-21.66	QP	
6	0.6540	6.77	10.15	16.92	46.00	-29.08	AVG	
7	0.6580	18.53	10.15	28.68	56.00	-27.32	QP	
8	4.5700	2.93	10.11	13.04	46.00	-32.96	AVG	
9	13.7140	10.56	10.16	20.72	50.00	-29.28	AVG	
10	16.3260	10.91	10.18	21.09	50.00	-28.91	AVG	
11	18.9380	9.76	10.19	19.95	50.00	-30.05	AVG	
12	28.6860	9.98	10.32	20.30	50.00	-29.70	AVG	

Conducted Emission Test Data

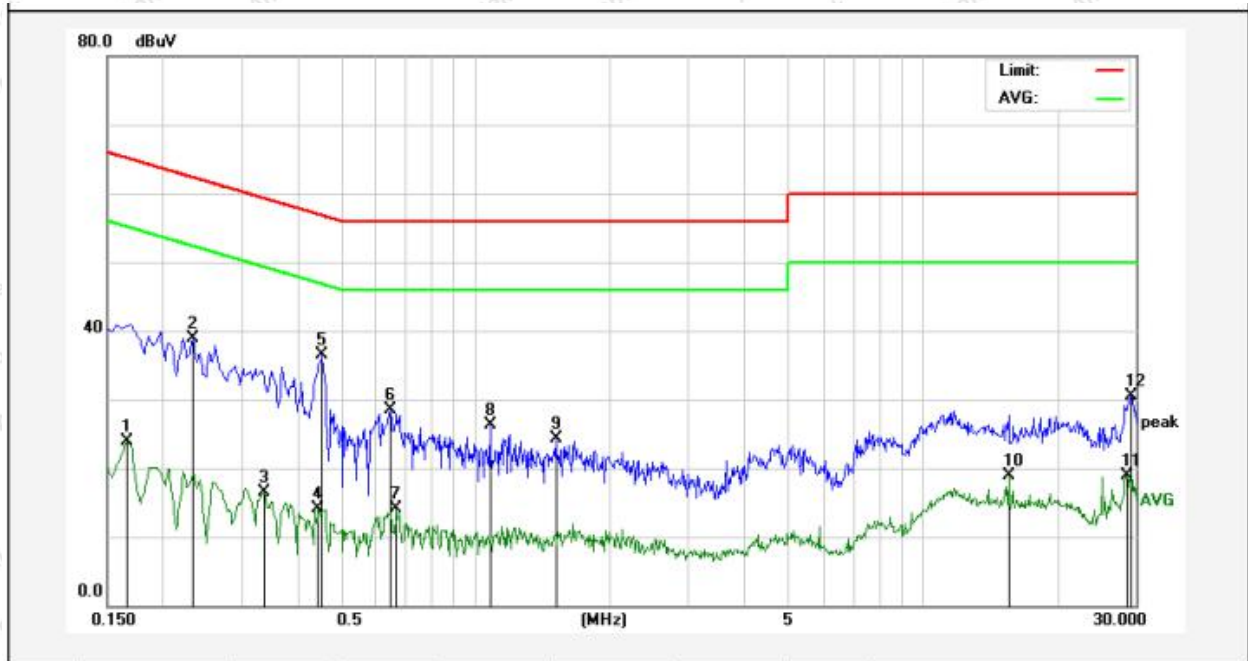
Test Site: 1# Shielded Room
Operating Condition: Mode 1
Test Specification: AC 240V, 60Hz for adapter
Comment: Neutral Line
Tem.: 24.5°C Hum.: 46%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.2700	24.41	10.13	34.54	61.12	-26.58	QP	
2	0.3260	22.90	10.12	33.02	59.55	-26.53	QP	
3	0.3260	6.04	10.12	16.16	49.55	-33.39	AVG	
4	0.3379	21.53	10.12	31.65	59.25	-27.60	QP	
5	0.4500	24.12	10.13	34.25	56.87	-22.62	QP	
6	0.4620	25.53	10.13	35.66	56.66	-21.00	QP	
7	0.4900	2.33	10.15	12.48	46.17	-33.69	AVG	
8	0.6500	19.46	10.15	29.61	56.00	-26.39	QP	
9	0.6500	4.68	10.15	14.83	46.00	-31.17	AVG	
10	14.0420	4.91	10.16	15.07	50.00	-34.93	AVG	
11	17.6340	4.97	10.19	15.16	50.00	-34.84	AVG	
12	28.6860	8.41	10.32	18.73	50.00	-31.27	AVG	

Conducted Emission Test Data

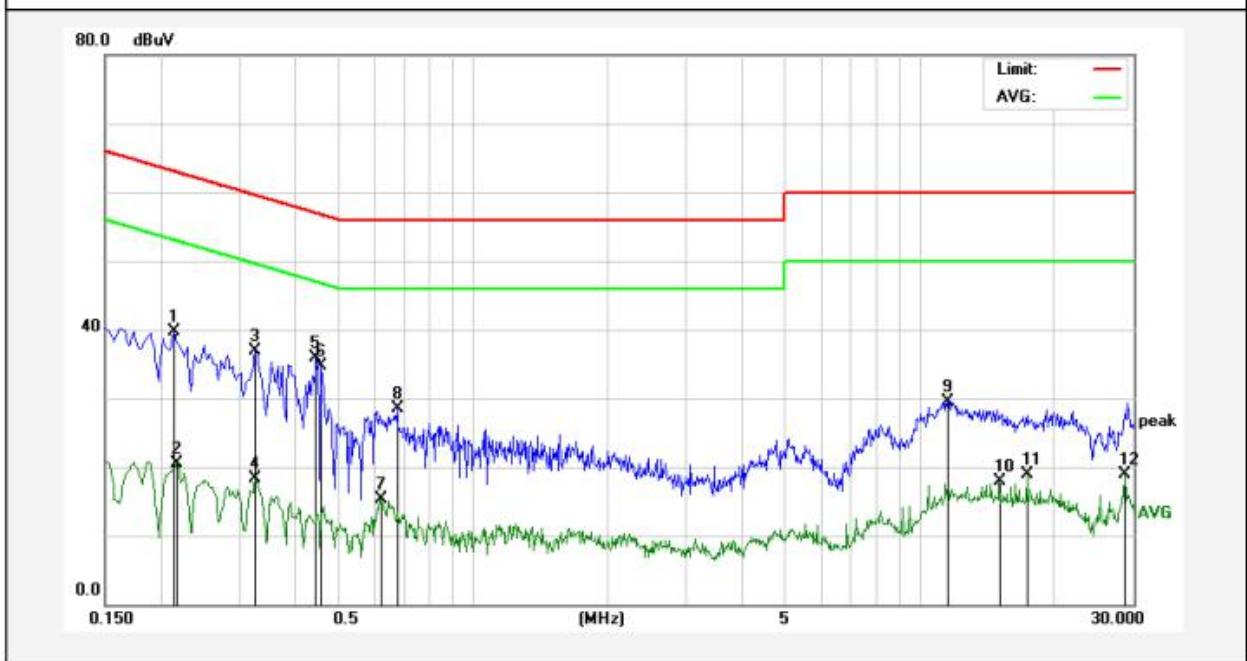
Test Site: 1# Shielded Room
Operating Condition: Mode 1
Test Specification: AC 120V, 60Hz for adapter
Comment: Live Line
Tem.: 24.5°C Hum.: 46%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1660	13.76	10.12	23.88	55.15	-31.27	AVG	
2	0.2340	28.77	10.12	38.89	62.30	-23.41	QP	
3	0.3379	6.43	10.12	16.55	49.25	-32.70	AVG	
4	0.4460	4.06	10.13	14.19	46.95	-32.76	AVG	
5	0.4540	26.30	10.13	36.43	56.80	-20.37	QP	
6	0.6460	18.29	10.15	28.44	56.00	-27.56	QP	
7	0.6660	3.93	10.15	14.08	46.00	-31.92	AVG	
8	1.0780	16.21	10.15	26.36	56.00	-29.64	QP	
9	1.5140	14.22	10.13	24.35	56.00	-31.65	QP	
10	15.6180	8.83	10.17	19.00	50.00	-31.00	AVG	
11	28.6860	8.63	10.32	18.95	50.00	-31.05	AVG	
12	29.2340	20.18	10.34	30.52	60.00	-29.48	QP	

Conducted Emission Test Data

Test Site: 1# Shielded Room
Operating Condition: Mode 1
Test Specification: AC 120V, 60Hz for adapter
Comment: Neutral Line
Tem.: 24.5°C Hum.: 46%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.2140	29.65	10.12	39.77	63.04	-23.27	QP	
2	0.2180	10.47	10.12	20.59	52.89	-32.30	AVG	
3	0.3260	26.69	10.12	36.81	59.55	-22.74	QP	
4	0.3260	8.10	10.12	18.22	49.55	-31.33	AVG	
5	0.4460	25.86	10.13	35.99	56.95	-20.96	QP	
6	0.4580	24.60	10.13	34.73	56.73	-22.00	QP	
7	0.6260	5.11	10.15	15.26	46.00	-30.74	AVG	
8	0.6780	18.29	10.15	28.44	56.00	-27.56	QP	
9	11.5180	19.46	10.14	29.60	60.00	-30.40	QP	
10	15.0220	7.66	10.17	17.83	50.00	-32.17	AVG	
11	17.3060	8.64	10.18	18.82	50.00	-31.18	AVG	
12	28.6860	8.67	10.32	18.99	50.00	-31.01	AVG	

4. Radiation Spurious Emission

4.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.209 and 15.205				
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.

4.2. Test Setup

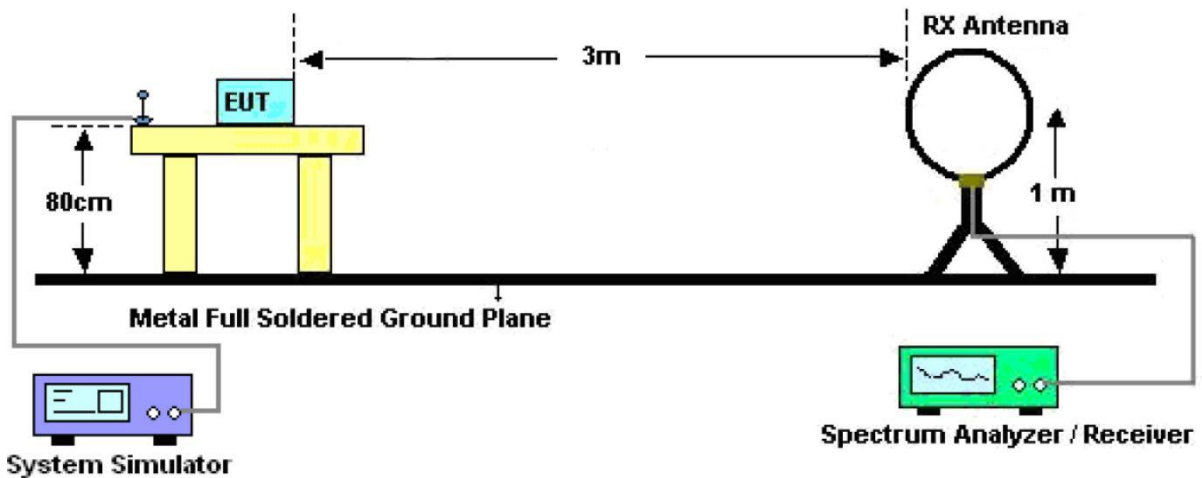


Figure 1. Below 30MHz

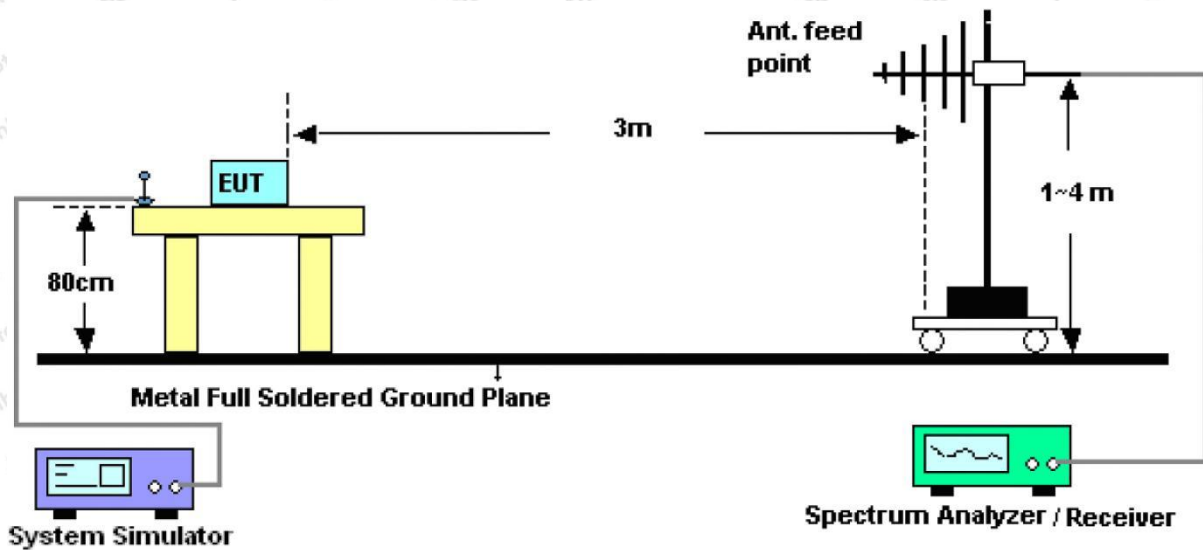


Figure 2. 30MHz to 1GHz

4.3. Test Procedure

For below 1GHz: The EUT is placed on a turntable, which is 0.8m 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 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.

4.4. Test Data

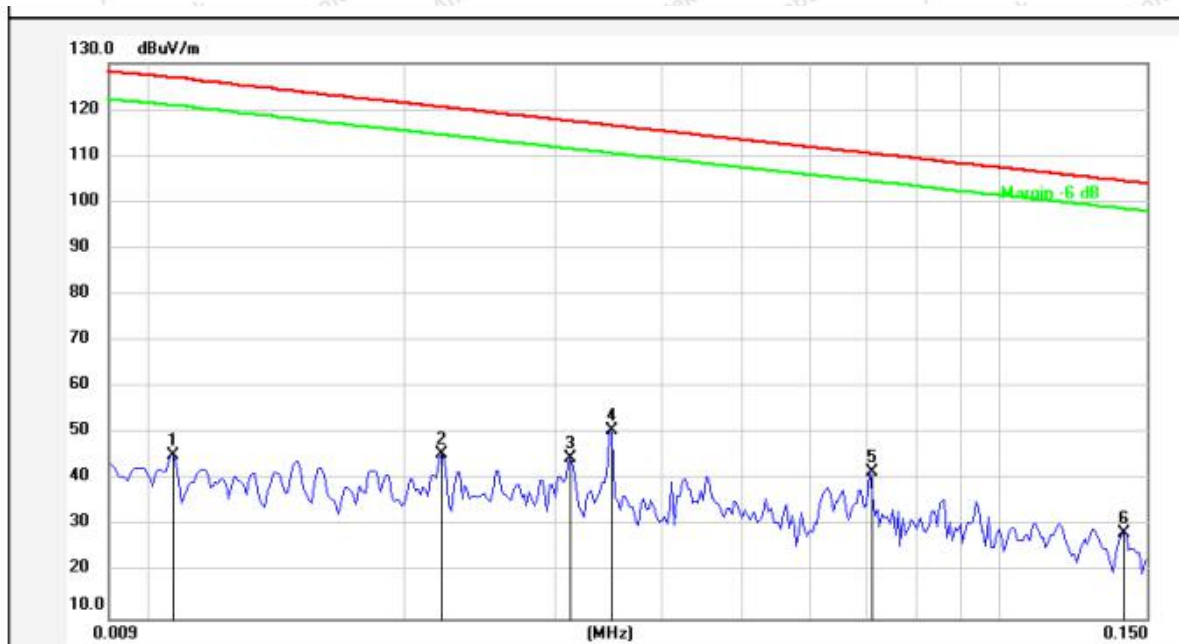
PASS

Note: The data is in TX mode, and this is the worst mode.

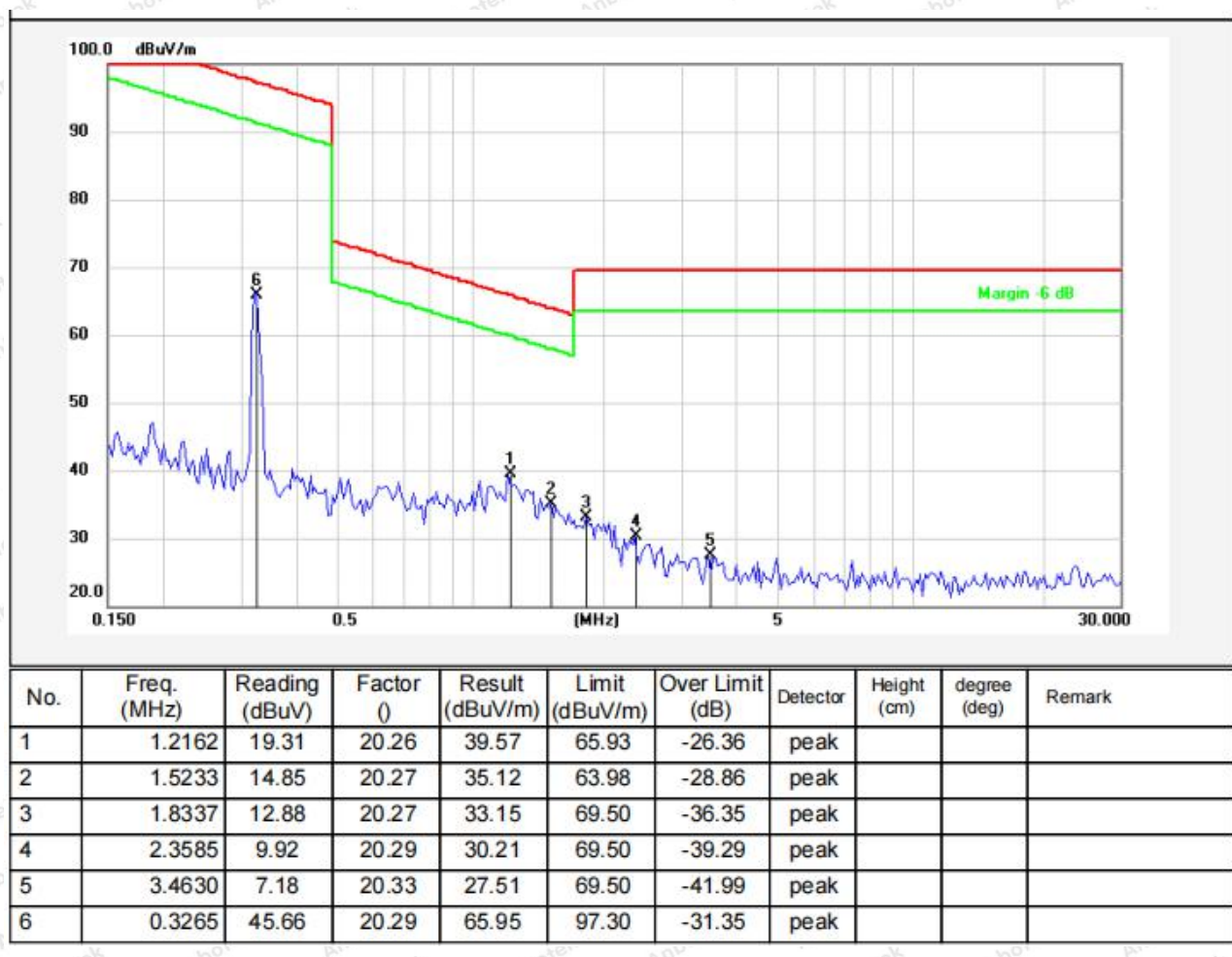
Test Results

(Between 9KHz – 30MHz)

Standard: FCC PART15 C _3m **Power Source:** AC 120V, 60Hz for adapter
Test item: Radiation Test **Temp.(C)/Hum.(%RH):** 24.2°C/57%RH
Test Mode: Mode 1 **Distance:** 3m

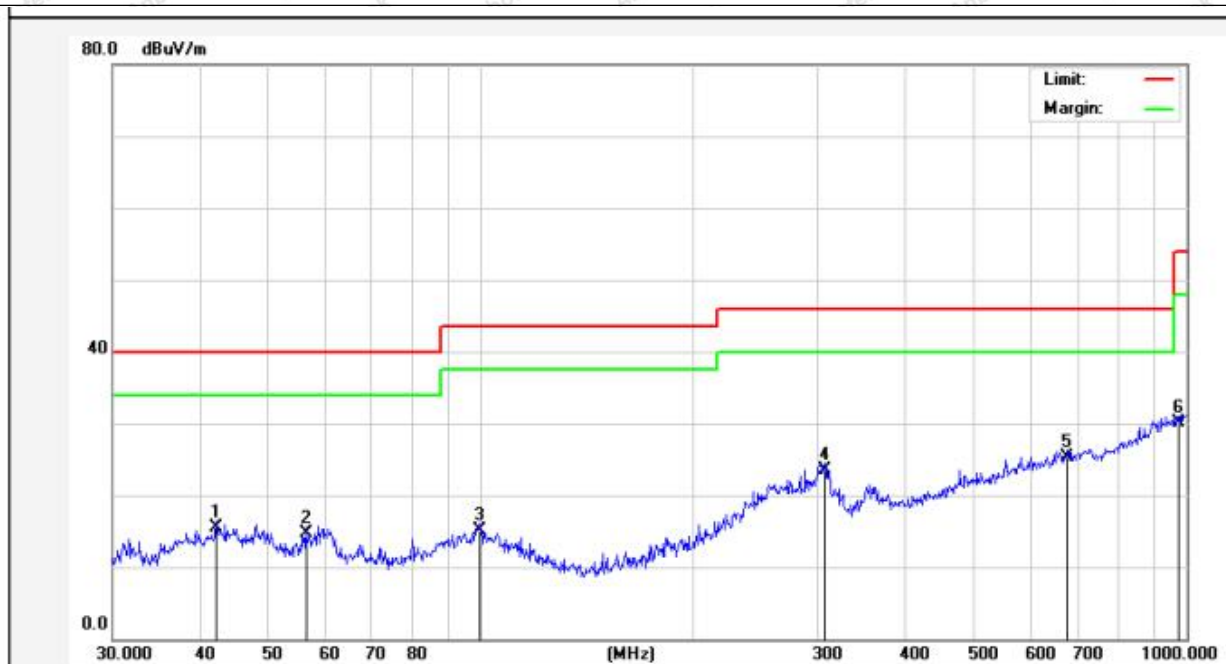


No.	Freq. (MHz)	Reading (dBuV)	Factor ()	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	0.0107	25.34	20.06	45.40	126.81	-81.41	peak			
2	0.0221	25.17	20.34	45.51	120.55	-75.04	peak			
3	0.0314	24.09	20.55	44.64	117.52	-72.88	peak			
4	0.0350	30.16	20.49	50.65	116.58	-65.93	peak			
5	0.0707	21.40	20.37	41.77	110.51	-68.74	peak			
6	0.1408	8.25	20.33	28.58	104.57	-75.99	peak			

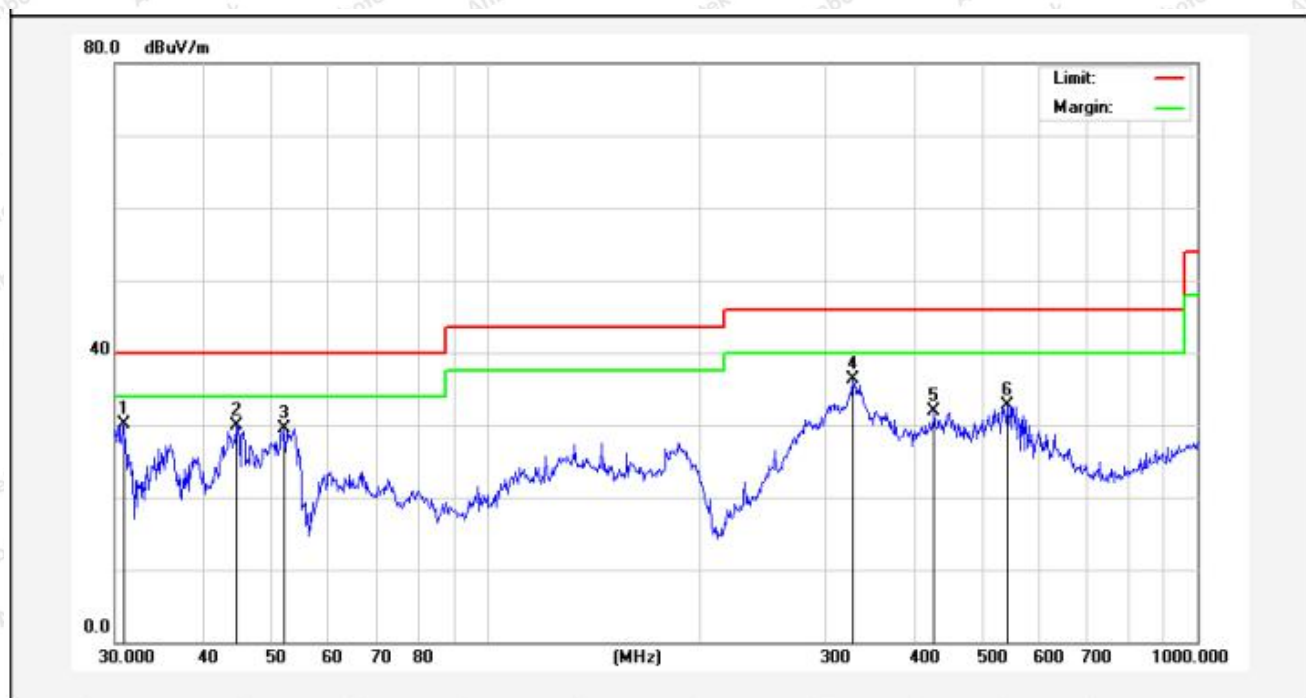


Remark: According to FCC PART 15.209 (d), the emission limits for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz, Radiated emission limits in these three bands are based on measurements employing an average detector.

(Between 30MHz –1000 MHz)

Standard: FCC PART15 C _3m**Polarization:****Horizontal****Test item:** Radiation Test**Power Source:****AC 120V, 60Hz for adapter****Test Mode:** Mode 1**Temp.(C)/Hum.(%RH):****23.7°C/50%RH****Distance:** 3m

No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	42.0066	30.18	-14.73	15.45	40.00	-24.55	QP	100	360	
2	56.3948	31.21	-16.44	14.77	40.00	-25.23	QP	100	0	
3	99.5281	34.50	-19.42	15.08	43.50	-28.42	QP	100	360	
4	306.7537	37.70	-14.13	23.57	46.00	-22.43	QP	100	0	
5	677.5798	31.60	-6.37	25.23	46.00	-20.77	QP	100	360	
6	975.7529	30.43	-0.24	30.19	54.00	-23.81	QP	100	0	

Standard: FCC PART15 C _3m**Polarization:****Vertical****Test item:** Radiation Test**Power Source:****AC 120V, 60Hz for adapter****Test Mode:** Mode 1**Temp.(C)/Hum.(%RH):****23.7°C/50%RH****Distance:** 3m

No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	30.8535	47.07	-17.04	30.03	40.00	-9.97	peak			
2	44.4308	43.96	-14.04	29.92	40.00	-10.08	peak			
3	52.0251	45.06	-15.53	29.53	40.00	-10.47	peak			
4	327.8873	48.85	-12.61	36.24	46.00	-9.76	peak			
5	426.5210	42.71	-10.73	31.98	46.00	-14.02	peak			
6	541.3725	40.90	-8.12	32.78	46.00	-13.22	peak			

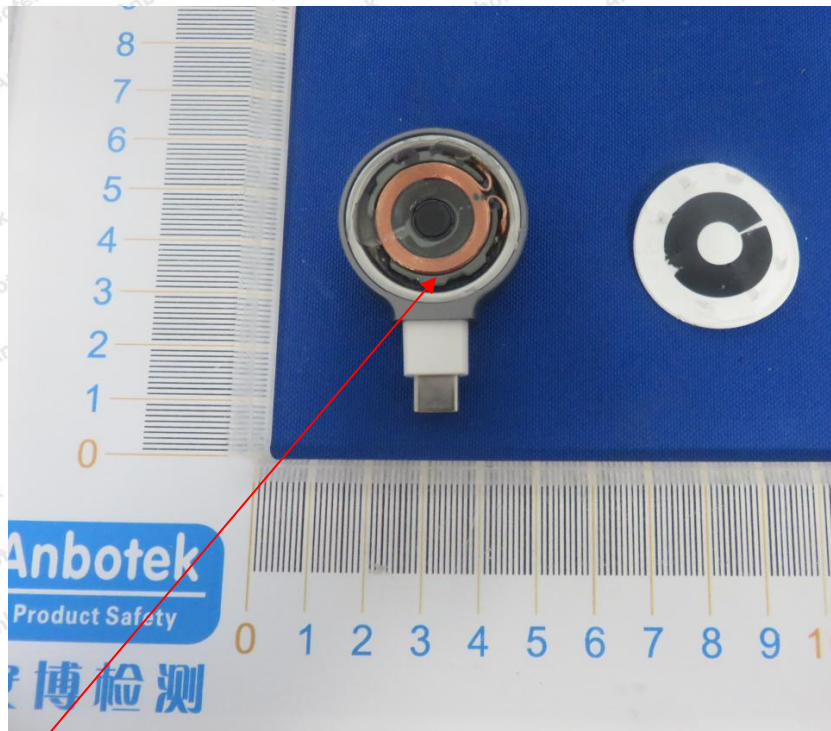
5. Antenna Requirement

5.1. Test Standard and Requirement

Test Standard	FCC Part15 Section 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

5.2. Antenna Connected Construction

The antenna is a Inductive loop coil Antenna which permanently attached, and the best case gain of the antenna is 0 dBi. It complies with the standard requirement.



Antenna



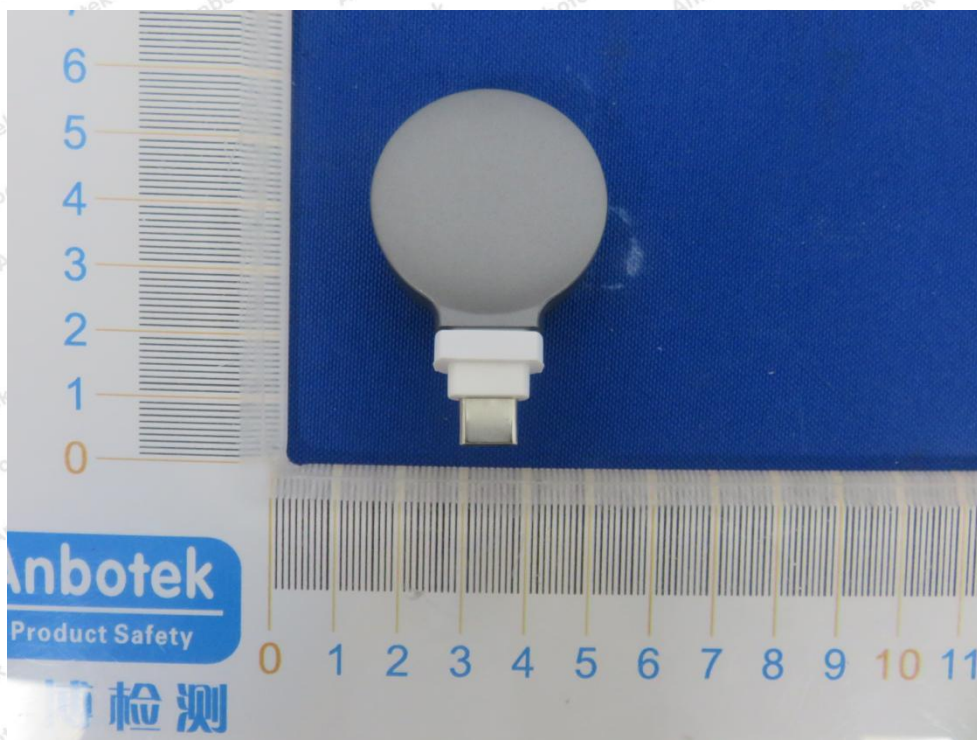
APPENDIX I -- TEST SETUP PHOTOGRAPH

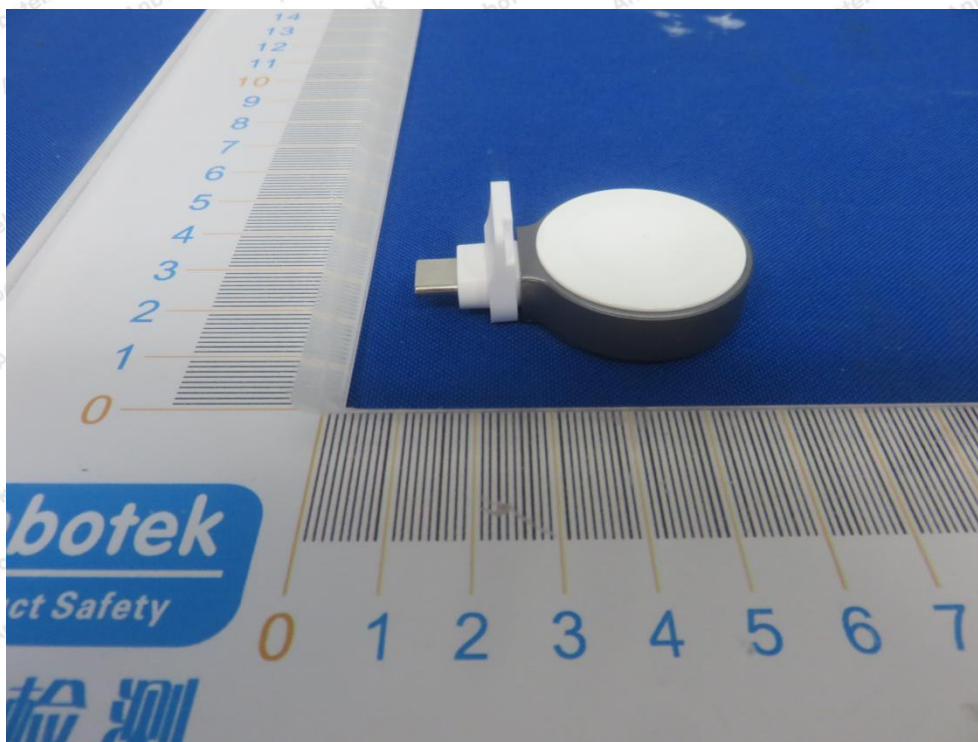
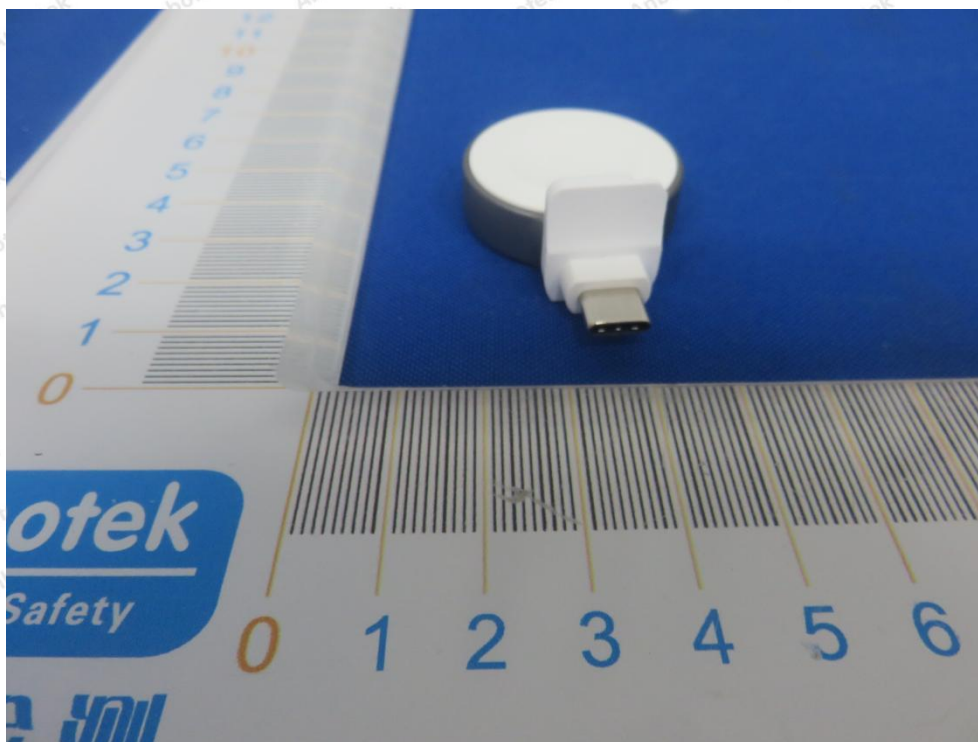
Photo of Conducted Emission Measurement

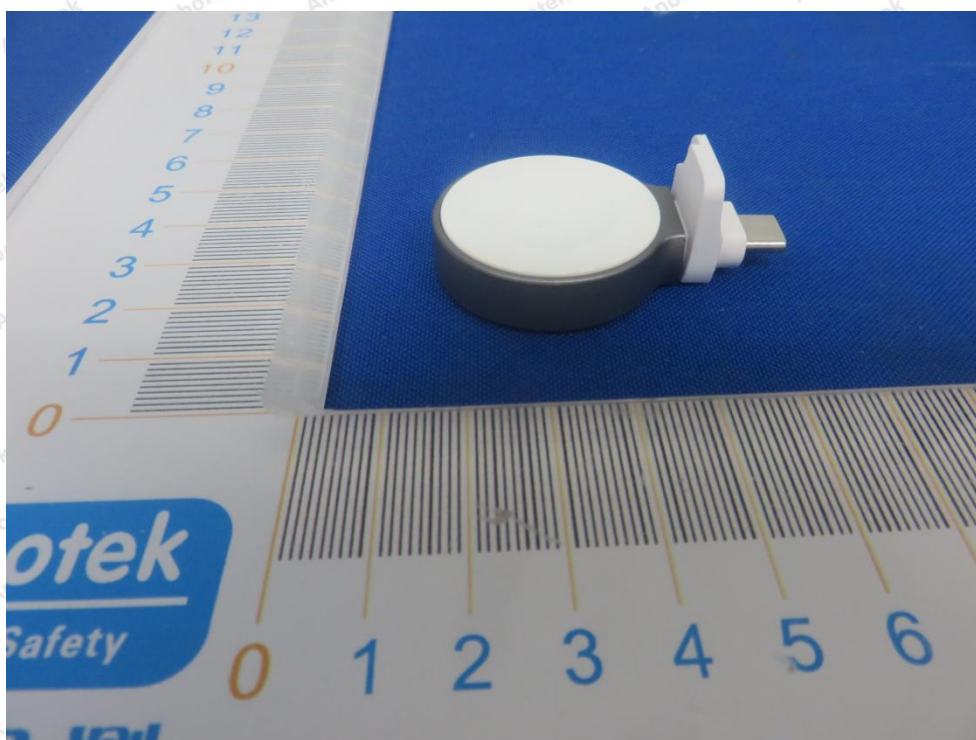
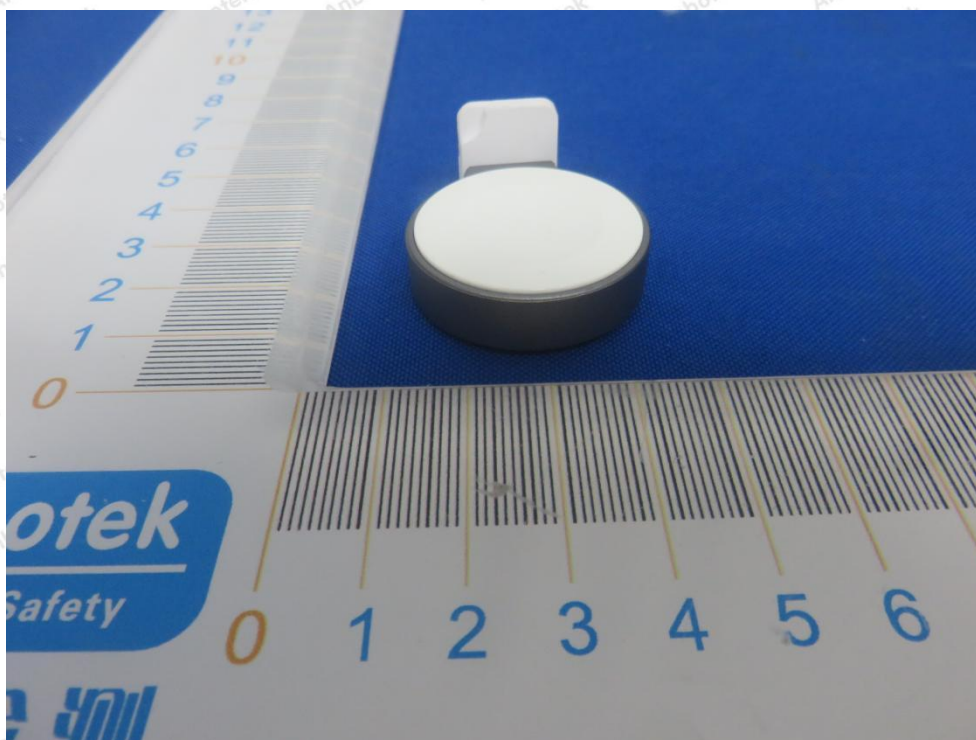


Photo of Radiation Emission Test



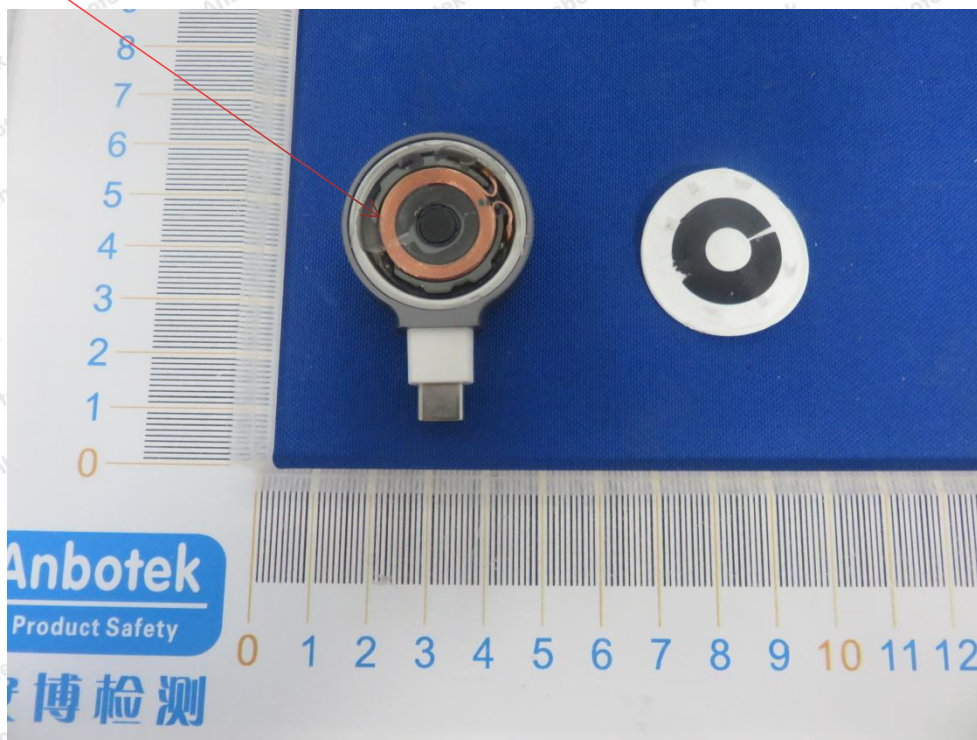
APPENDIX II -- EXTERNAL PHOTOGRAPH

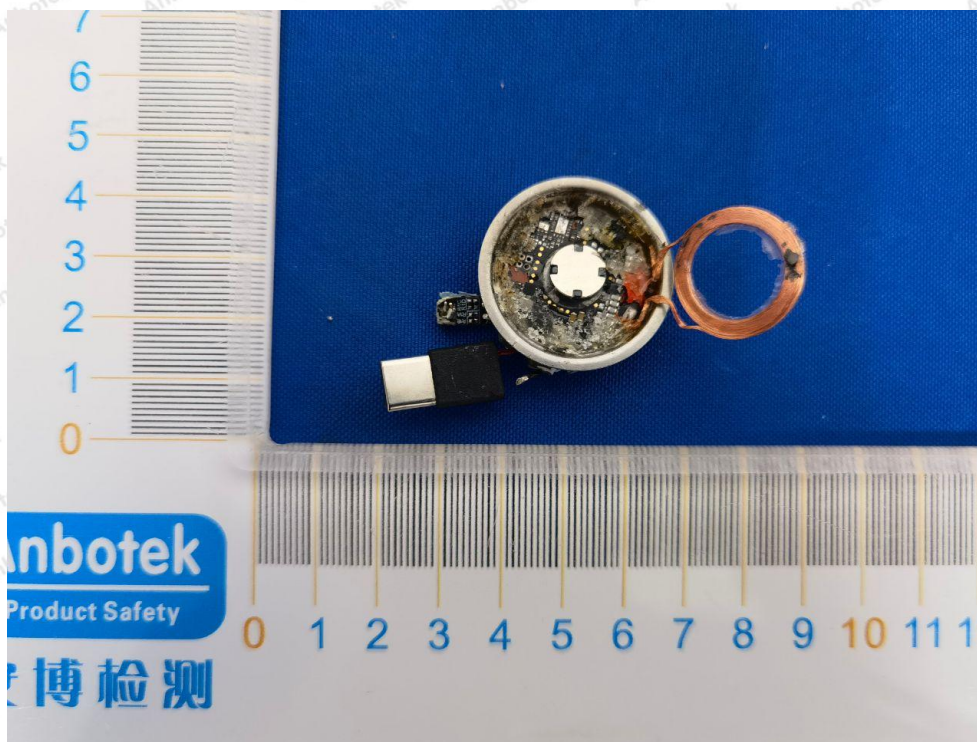




APPENDIX III -- INTERNAL PHOTOGRAPH

ANT





----- End of Report -----

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