Verification

On Behalf of

For

ZHONGSHAN BOYING ELECTRONICS CO., Ltd.

Wireless doorbell

Model No.: A101, A101-2, A102, A103, A106, A107, A108, A109, A201, A202, A203, A206, A207, A208, A209, A301, A302, A303, A306, A307, A308, A309, A501, A502, A503, A506, A507, A507-2, A508, A509, A601, A602, A603, A606, A607, A608, A609, A701, A702, A703, A706, A707, A708, A709, A801, A802, A803, A806, A807, A808, A809, A901, A902, A903, A906, A907, A908, A909, A909-2, 9809, 9809-2, 9803

Prepared For	:	ZHONGSHAN BOYING ELECTRONICS CO., Ltd.
Address	:	5/F, Building F, No. 9, Mincheng Road, Xiaolan Town, Zhongshan, Guangdong, China 528415
Prepared By	:	Shenzhen Anbotek Compliance Laboratory Limited
Address	:	1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518102 Tel: (86)755-26066440 Fax: (86) 755-26014772
Report Number	:	SZAWW180623004-01
Date of Test	:	Jun. 23~Jul. 05, 2018
Date of Report	:	Jul. 05, 2018

Contents

TEST REPORT

Applicant	:	ZHONGSHAN BOYING ELECTRONICS CO., Ltd.
Manufacturer	:	ZHONGSHAN BOYING ELECTRONICS CO., Ltd.
Product Name	:	Wireless doorbell
Model No.	:	A101, A101-2, A102, A103, A106, A107, A108, A109, A201, A202, A203, A206, A207, A208, A209, A301, A302, A303, A306, A307, A308, A309, A501, A502, A503, A506, A507, A507-2, A508, A509, A601, A602, A603, A606, A607, A608, A609, A701, A702, A703, A706, A707, A708, A709, A801, A802, A803, A806, A807, A808, A809, A901, A902, A903, A906, A907, A908, A909, A909-2, 9809, 9809-2, 9803
Trade Mark	:	N..A
Rating(s)	:	AC 110-240V, 50/60Hz,125MA
Test Standard(s)	**:**	**FCC Rules and Regulations Part 15 Subpart B: 2017**
Test Method(s)	**:**	**ANSI C63.4-2014**

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited To determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart B Class B limits both radiated and conducted emissions. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited Is assumed full responsibility for the accuracy and completeness of these measurements.

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: Jun. 23~Jul. 05, 2018

Prepared by: (Engineer / Oliay Yang)

Reviewer: (Supervisor / Calvin Liu)

Approved & Authorized Signer: (Manager / Tom Chen)

1. General Information

1.1. Client Information

Applicant	:	ZHONGSHAN BOYING ELECTRONICS CO., Ltd.
Address	:	5/F, Building F, No. 9, Mincheng Road, Xiaolan Town, Zhongshan, Guangdong, China 528415
Manufacturer	:	ZHONGSHAN BOYING ELECTRONICS CO., Ltd.
Address	:	5/F, Building F, No. 9, Mincheng Road, Xiaolan Town, Zhongshan, Guangdong, China 528415

1.2. Description of Device (EUT)

Product Name	:	Wireless doorbell
Model No.	:	A101, A101-2, A102, A103, A106, A107, A108, A109, A201, A202, A203, A206, A207, A208, A209, A301, A302, A303, A306, A307, A308, A309, A501, A502, A503, A506, A507, A507-2, A508, A509, A601, A602, A603, A606, A607, A608, A609, A701, A702, A703, A706, A707, A708, A709, A801, A802, A803, A806, A807, A808, A809, A901, A902, A903, A906, A907, A908, A909, A909-2, 9809, 9809-2, 9803 (Note: All samples are the same except the size and appearance, so we prepare "A101" for test only.)
Test Sample No.	:	S1, S2
Trade Mark	:	N.A.
Operating Frequency	:	433.92MHz Receive
Test Power Supply	:	AC 120V, 60Hz
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

N/A		

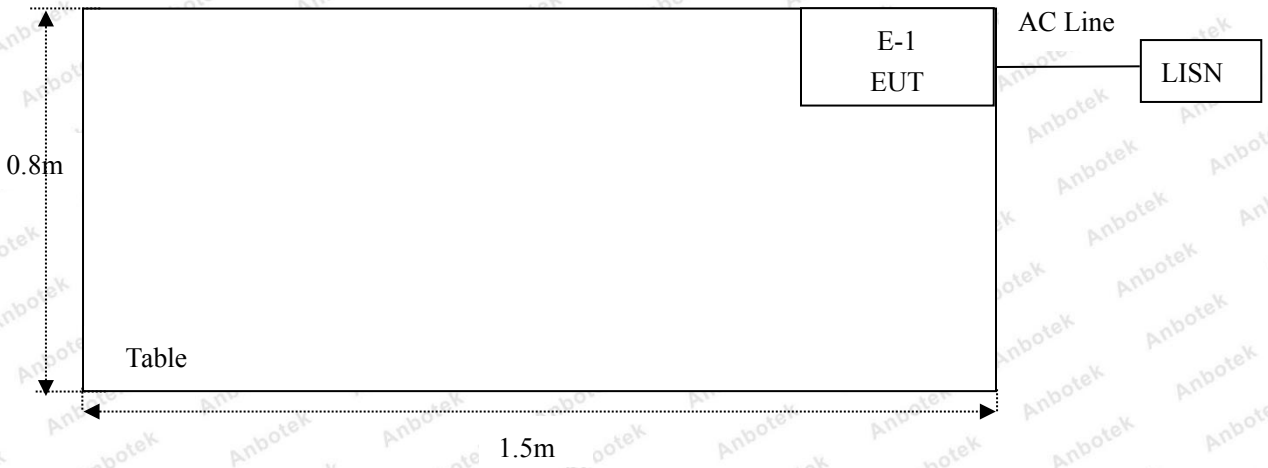
1.4. Description of Test Modes

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.

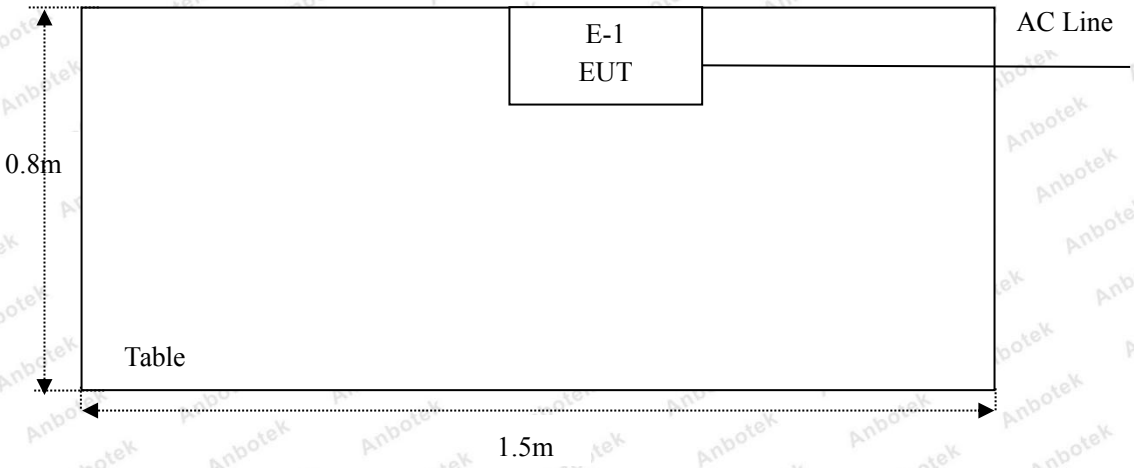
For Radiated Emission	
Final Test Mode	Description
Mode 1	ON Mode

1.6. Description Of Test Setup

CE



RE



1.7. Test Equipment List

Conducted Emission Measurement

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.	Software Name EZ-EMC	Ferrari Tcchnology	ANB-03A	N/A	N/A	N/A

Radiated Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Nov. 17, 2017	1 Year
2.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Nov. 20, 2017	1 Year
3.	Pre-amplifier	SONOMA	310N	186860	Nov. 17, 2017	1 Year
4.	Software Name EZ-EMC	Ferrari Tcchnology	ANB-03A	N/A	N/A	N/A
5.	Preamplifier	SKET Electronic	BK1G18G30D	KD17503	Nov. 17, 2017	1 Year
6.	Spectrum Analysis	Agilent	E4407B	US39390582	Nov. 17, 2017	1 Year
7.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Nov. 20, 2017	1 Year

1.8. Measurement Uncertainty

Radiation Uncertainty	:	Ur = 3.9 dB (Horizontal)
		Ur = 3.8 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 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

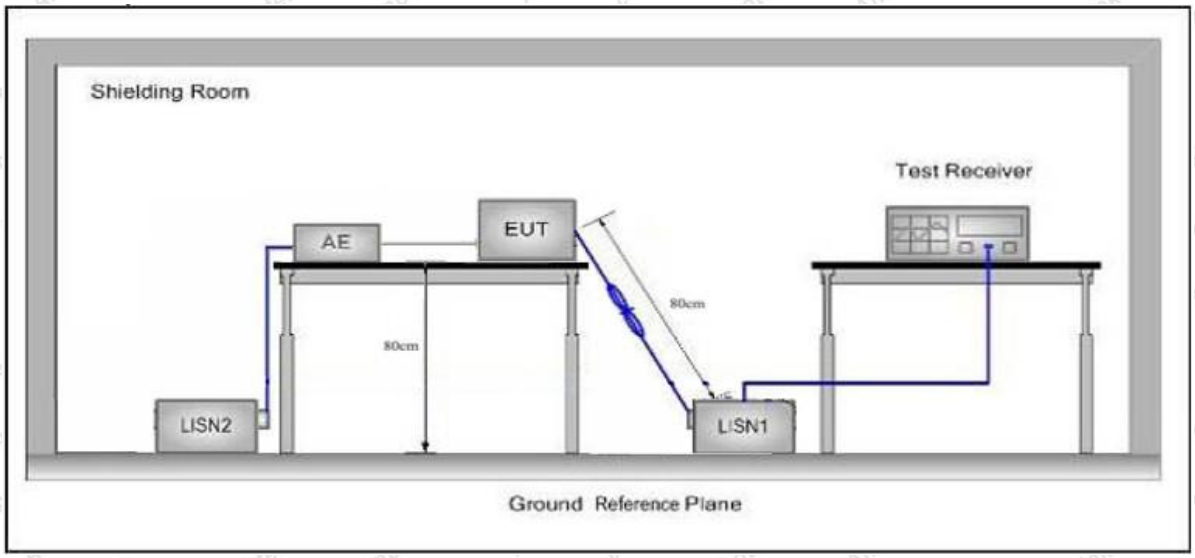
Test Items	Test Mode	Status
Power Line Conducted Emission Test (150KHz To 30MHz)	Mode 1	P
Radiated Emission Test (30MHz To 1000MHz)	Mode 1	P
P) Indicates that the through the test. N) Don't test.		

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

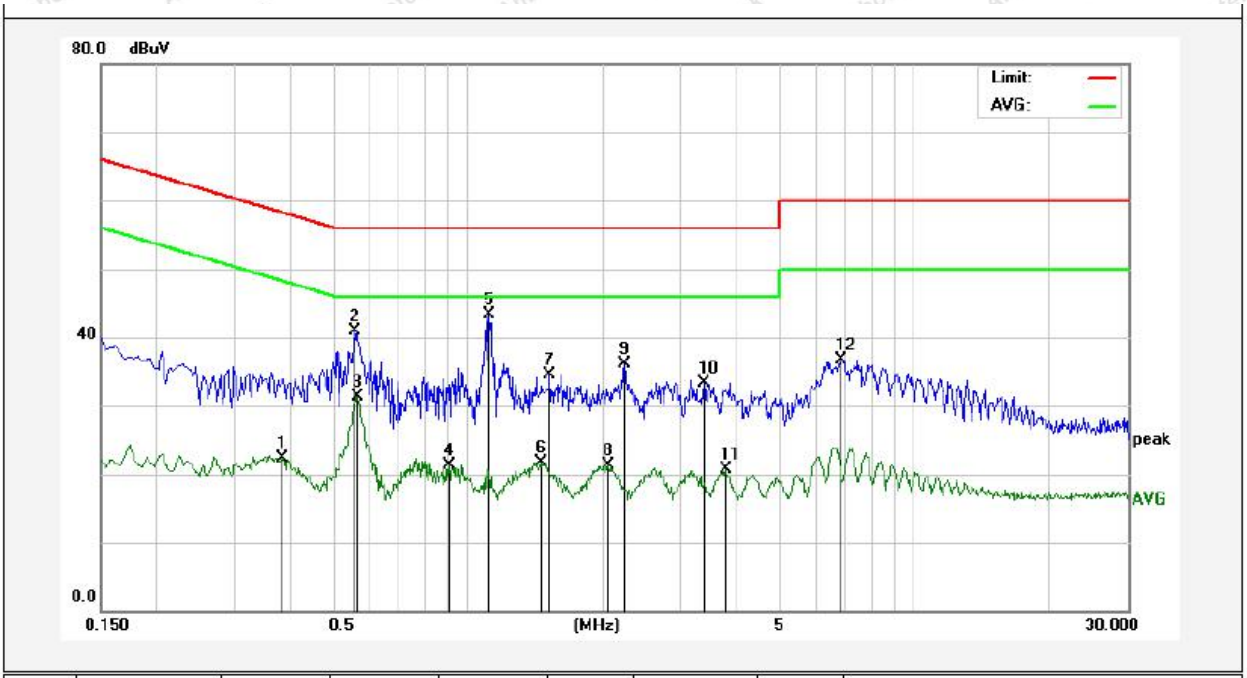
Test Site: 1# Shielded Room

Operating Condition: ON Mode

Test Specification: AC 120V, 60Hz

Comment: Live Line

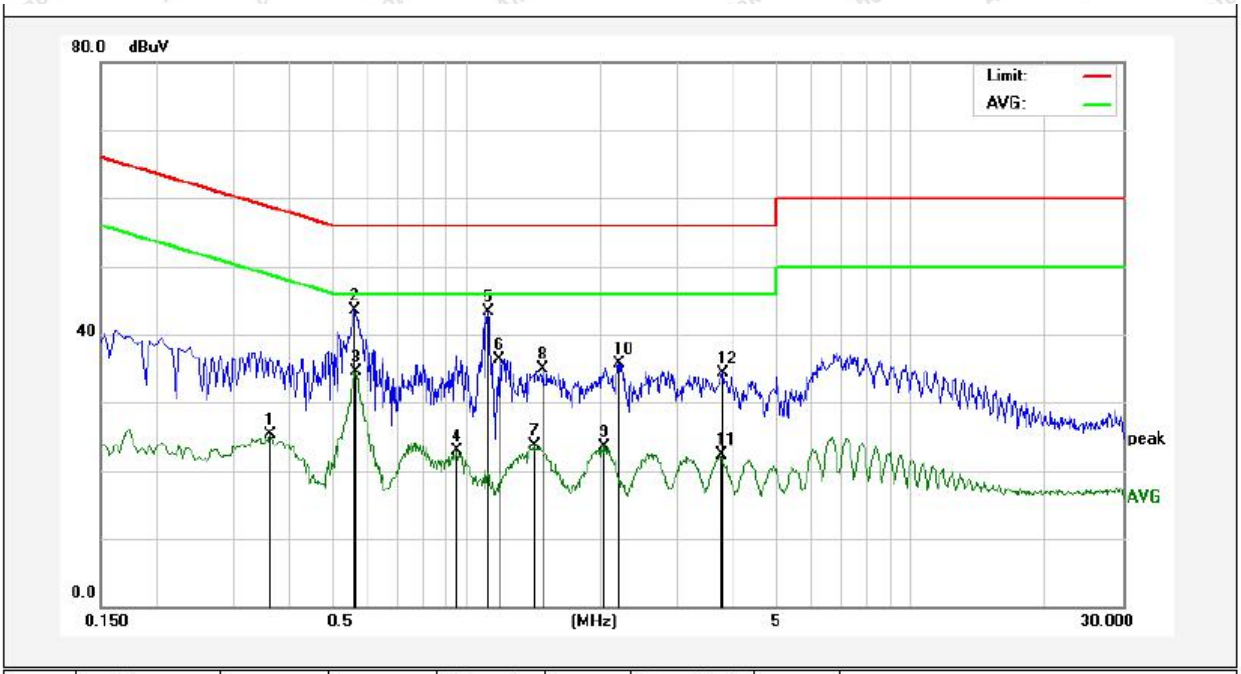
Tem.: 22.2℃ Hum.: 60%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.3820	2.43	19.93	22.36	48.23	-25.87	AVG	
2	0.5580	20.82	20.00	40.82	56.00	-15.18	QP	
3	0.5660	11.31	20.00	31.31	46.00	-14.69	AVG	
4	0.9060	1.17	20.09	21.26	46.00	-24.74	AVG	
5	1.1140	23.14	20.12	43.26	56.00	-12.74	QP	
6	1.4540	1.65	20.13	21.78	46.00	-24.22	AVG	
7	1.5260	14.29	20.13	34.42	56.00	-21.58	QP	
8	2.0620	1.19	20.14	21.33	46.00	-24.67	AVG	
9	2.2420	15.88	20.14	36.02	56.00	-19.98	QP	
10	3.3740	13.12	20.17	33.29	56.00	-22.71	QP	
11	3.7740	0.45	20.18	20.63	46.00	-25.37	AVG	
12	6.8140	16.50	20.25	36.75	60.00	-23.25	QP	

Conducted Emission Test Data

Test Site: 1# Shielded Room
Operating Condition: ON Mode
Test Specification: AC 120V, 60Hz
Comment: Neutral Line
Tem.: 22.2℃ Hum.: 60%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.3620	5.39	19.92	25.31	48.68	-23.37	AVG	
2	0.5620	23.47	20.00	43.47	56.00	-12.53	QP	
3	0.5660	14.43	20.00	34.43	46.00	-11.57	AVG	
4	0.9580	2.76	20.11	22.87	46.00	-23.13	AVG	
5	1.1180	23.14	20.12	43.26	56.00	-12.74	QP	
6	1.1900	16.10	20.12	36.22	56.00	-19.78	QP	
7	1.4220	3.62	20.13	23.75	46.00	-22.25	AVG	
8	1.4940	14.82	20.13	34.95	56.00	-21.05	QP	
9	2.0380	3.39	20.14	23.53	46.00	-22.47	AVG	
10	2.2060	15.48	20.14	35.62	56.00	-20.38	QP	
11	3.7300	2.13	20.17	22.30	46.00	-23.70	AVG	
12	3.7980	14.11	20.18	34.29	56.00	-21.71	QP	

4. Radiation Spurious Emission and Band Edge

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

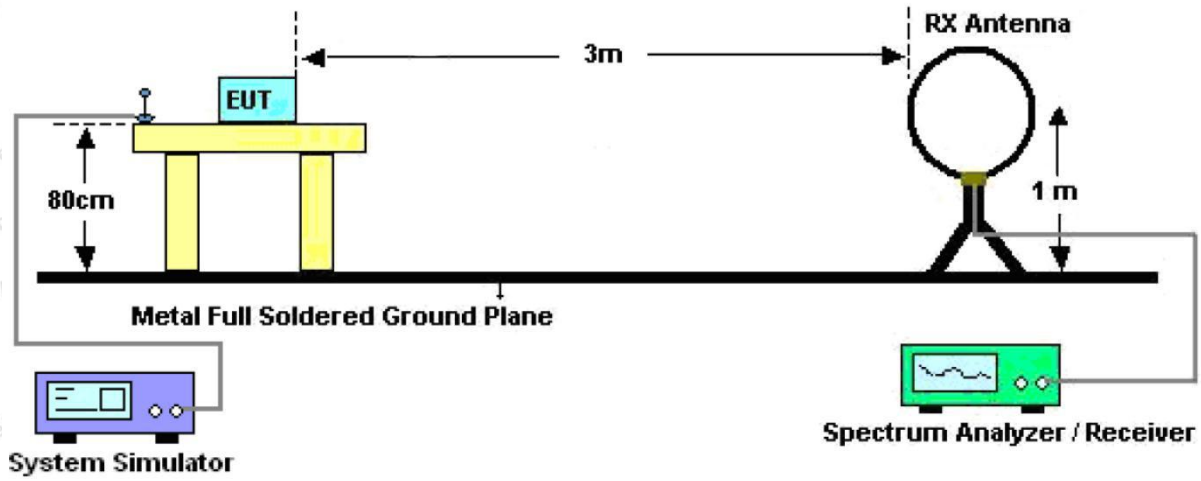


Figure 1. Below 30MHz

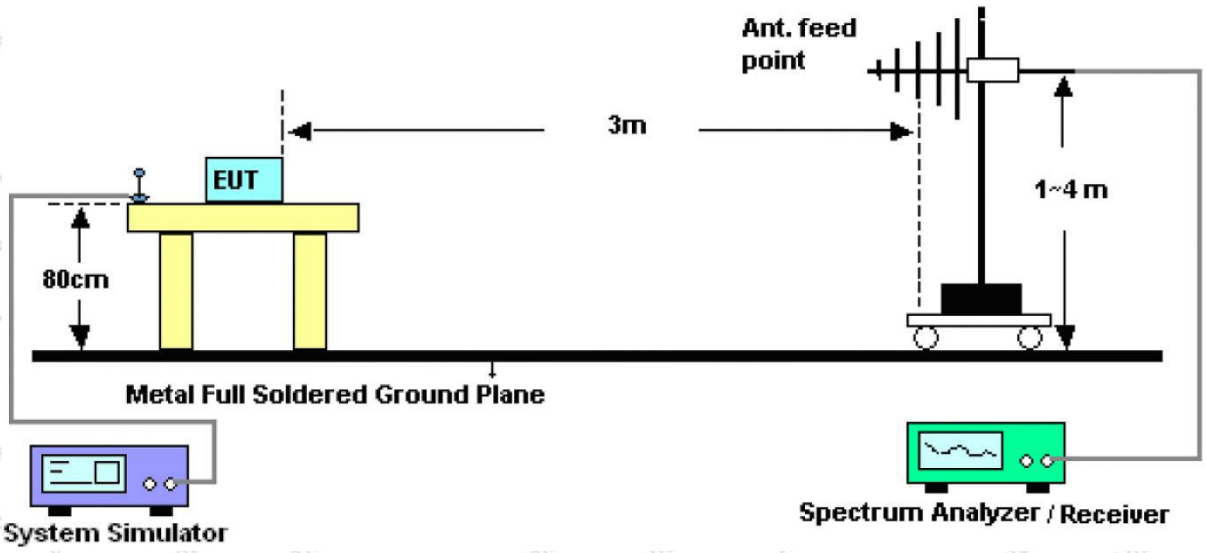


Figure 2. 30MHz to 1GHz

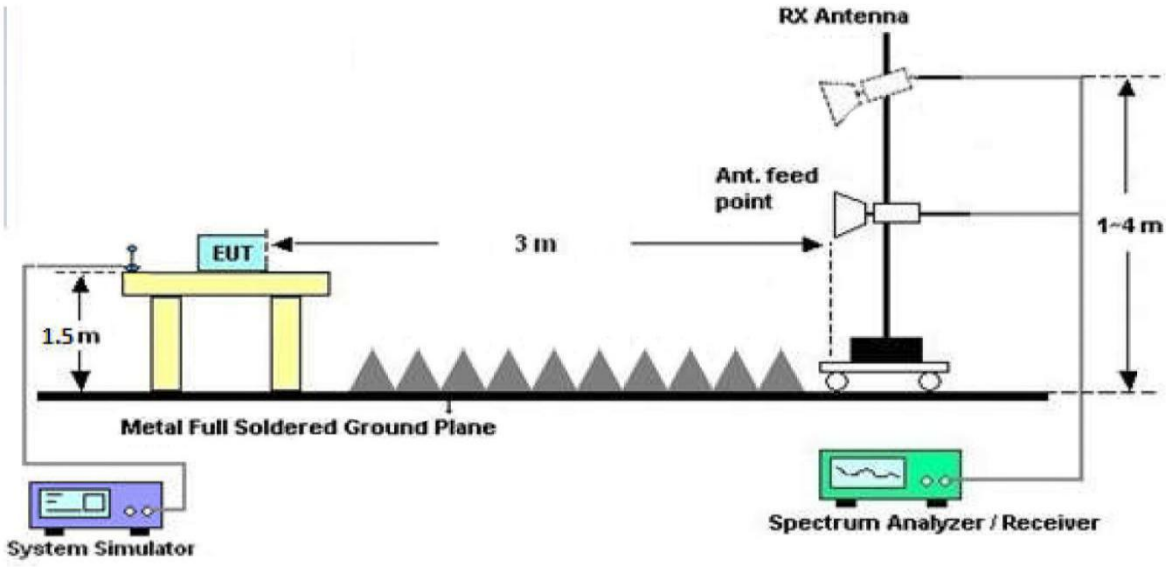


Figure 3. Above 1 GHz

4.3. Test Procedure

For below 1GHz: The EUT is placed on a turntable, which is 1m above the ground plane.

For above 1GHz: The EUT is placed on a turntable, which is 1m 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 =10Hz, Detector= Peak, Trace mode= Max hold, Sweep- auto couple.

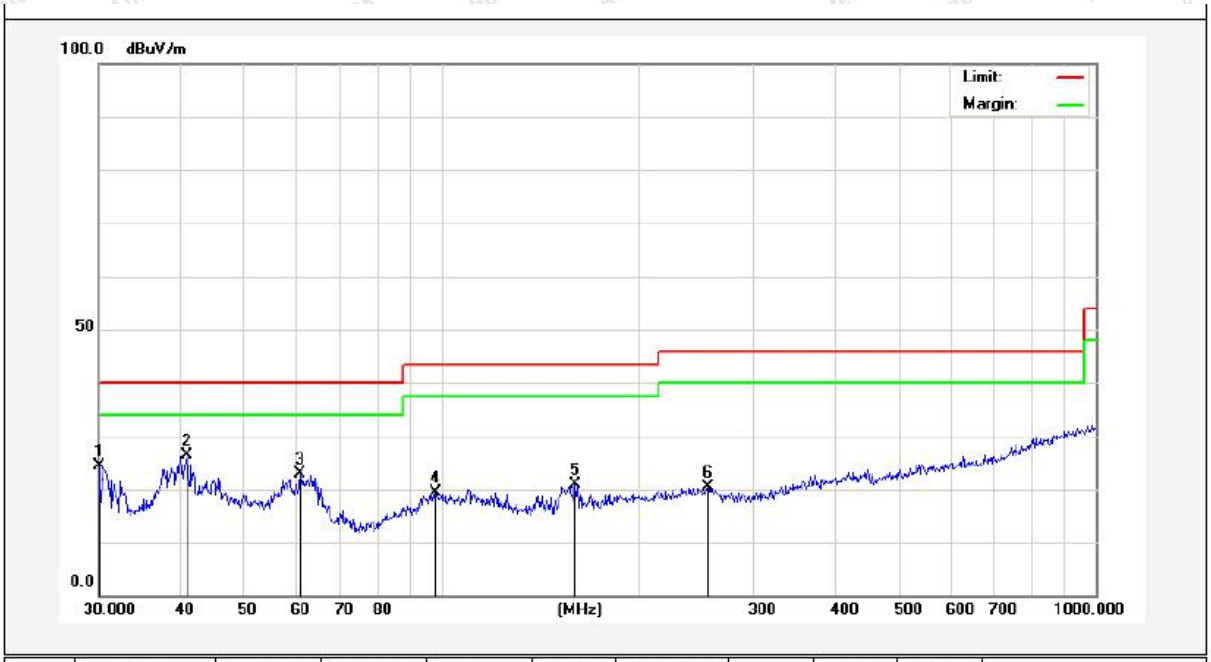
4.4. Test Data

PASS

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)

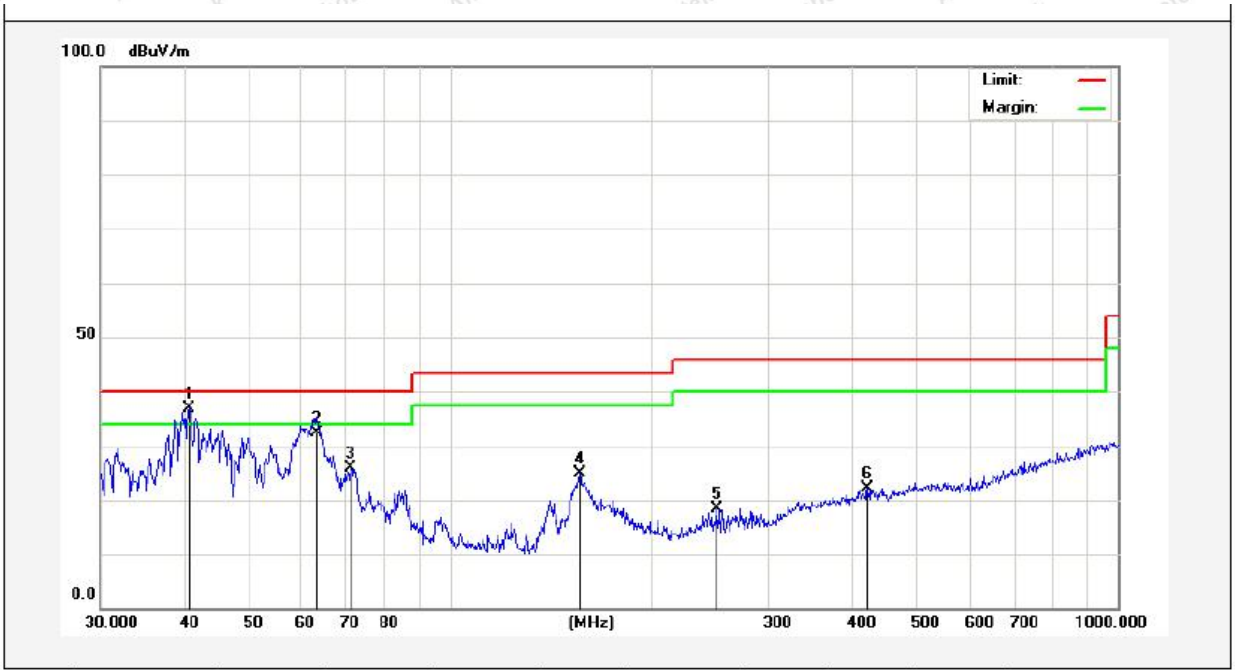
Job No.:	SZAWW180623004-01	Temp.(℃)/Hum.(%RH):	23.3℃/54%RH
Standard:	FCC PART 15B	Power Source:	AC 120V, 60Hz
Test Mode:	Mode 1	Polarization:	Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	30.0000	43.02	-18.55	24.47	40.00	-15.53	QP	300	12	
2	40.9881	40.87	-14.57	26.30	40.00	-13.70	QP	300	124	
3	60.9176	40.23	-17.34	22.89	40.00	-17.11	QP	300	215	
4	98.1419	40.34	-20.94	19.40	43.50	-24.10	QP	300	122	
5	160.3456	41.59	-20.83	20.76	43.50	-22.74	QP	300	312	
6	255.6231	38.71	-18.35	20.36	46.00	-25.64	QP	300	31	

Test Results (30~1000MHz)

Job No.:	SZAWW180623004-01	Temp.(℃)/Hum.(%RH):	23.3℃/54%RH
Standard:	FCC PART 15B	Power Source:	AC 120V, 60Hz
Test Mode:	Mode 1	Polarization:	Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	40.7014	50.34	-13.50	36.84	40.00	-3.16	QP	300	74	
2	63.0916	49.62	-17.15	32.47	40.00	-7.53	QP	300	124	
3	71.0803	45.93	-19.98	25.95	40.00	-14.05	QP	300	21	
4	156.4578	41.82	-17.04	24.78	43.50	-18.72	QP	300	251	
5	251.1804	31.91	-13.54	18.37	46.00	-27.63	QP	300	312	
6	422.0577	33.38	-11.27	22.11	46.00	-23.89	QP	300	125	

Test Results (1GHz~5GHz)

Frequency (MHz)	Read Level (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.	Detector
1218.40	45.87	-2.85	43.02	74.00	-30.98	H	PEAK
1910.13	54.91	-2.66	52.24	74.00	-21.76	H	PEAK
2137.80	53.90	-4.38	49.52	74.00	-24.48	H	PEAK
3059.80	51.09	-5.08	46.01	74.00	-27.99	H	PEAK
3954.16	51.37	-4.66	46.71	74.00	-27.29	H	PEAK
4380.76	50.79	-5.19	45.60	74.00	-28.40	H	PEAK
1218.40	40.08	-2.85	37.24	54.00	-16.76	H	AVG
1910.13	38.55	-2.66	35.89	54.00	-18.11	H	AVG
2137.80	41.17	-4.38	36.79	54.00	-17.21	H	AVG
3059.80	41.22	-5.08	36.15	54.00	-17.85	H	AVG
3954.16	44.96	-4.66	40.30	54.00	-13.70	H	AVG
4380.76	40.62	-5.19	35.43	54.00	-18.57	H	AVG
1441.25	49.76	-2.47	47.29	74.00	-26.71	V	PEAK
1969.83	50.62	-2.99	47.63	74.00	-26.37	V	PEAK
2073.54	52.22	-4.34	47.87	74.00	-26.13	V	PEAK
2918.21	54.98	-4.93	50.04	74.00	-23.96	V	PEAK
4032.31	51.28	-4.58	46.70	74.00	-27.30	V	PEAK
4435.48	47.20	-5.78	41.42	74.00	-32.58	V	PEAK
1441.25	42.12	-2.47	39.65	54.00	-14.35	V	AVG
1969.83	39.00	-2.99	36.00	54.00	-18.00	V	AVG
2073.54	37.90	-4.34	33.55	54.00	-20.45	V	AVG
2918.21	40.71	-4.93	35.77	54.00	-18.23	V	AVG
4032.31	37.54	-4.58	32.96	54.00	-21.04	V	AVG
4435.48	40.27	-5.78	34.49	54.00	-19.51	V	AVG

Remark:

1. Level =Receiver Read level + Antenna Factor

APPENDIX I -- TEST SETUP PHOTOGRAPH

Photo of Conducted Emission Test

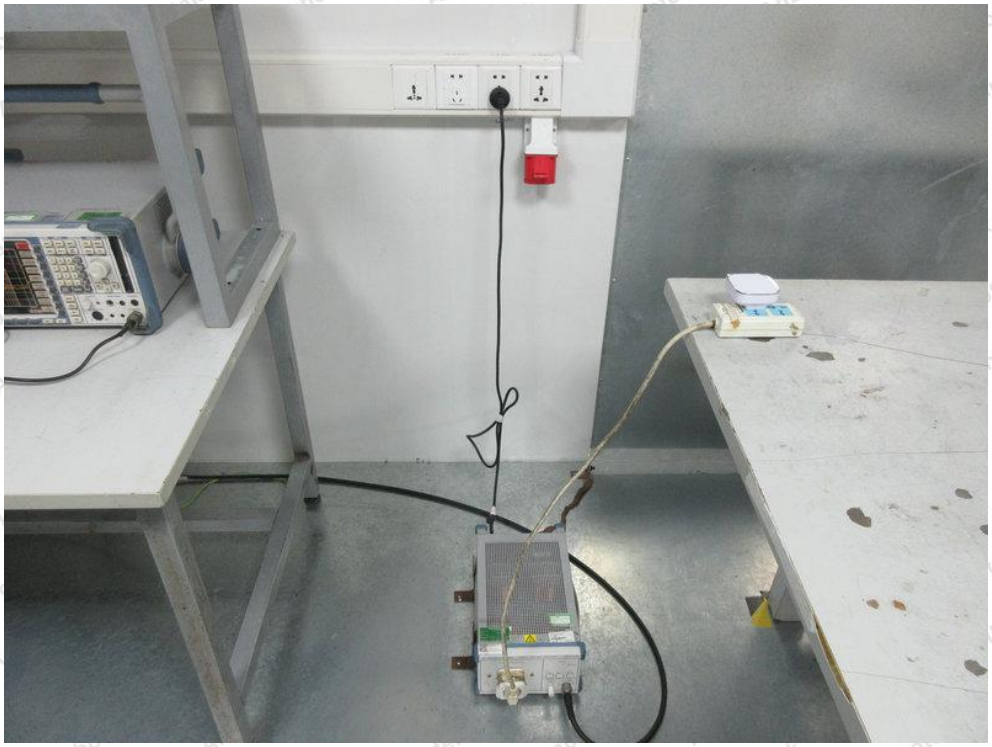
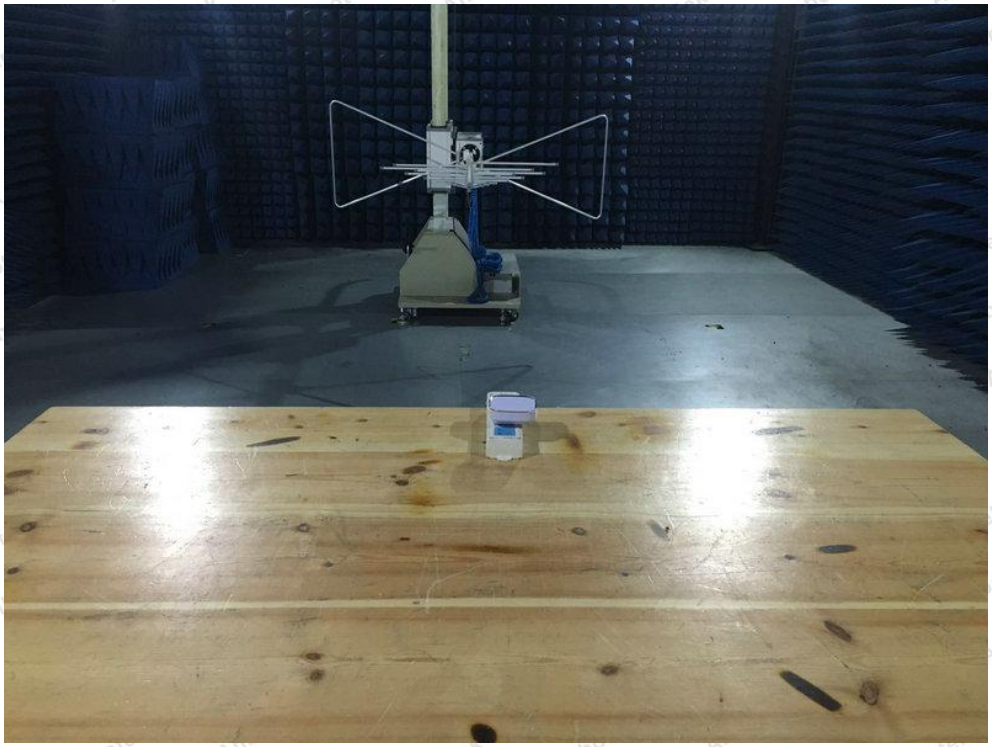
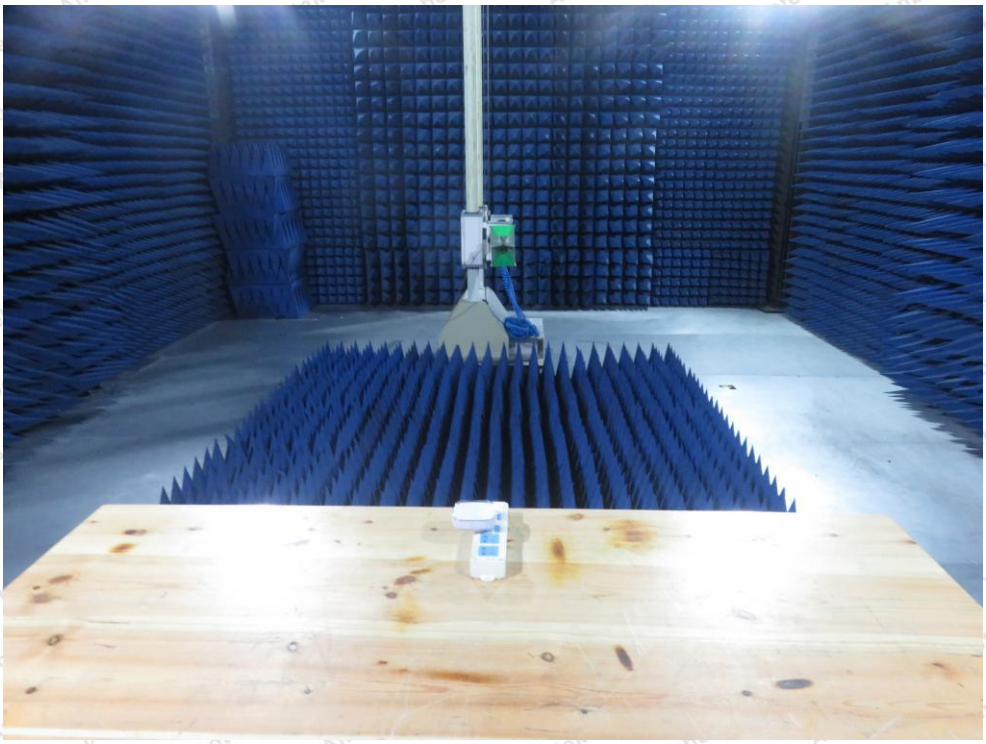
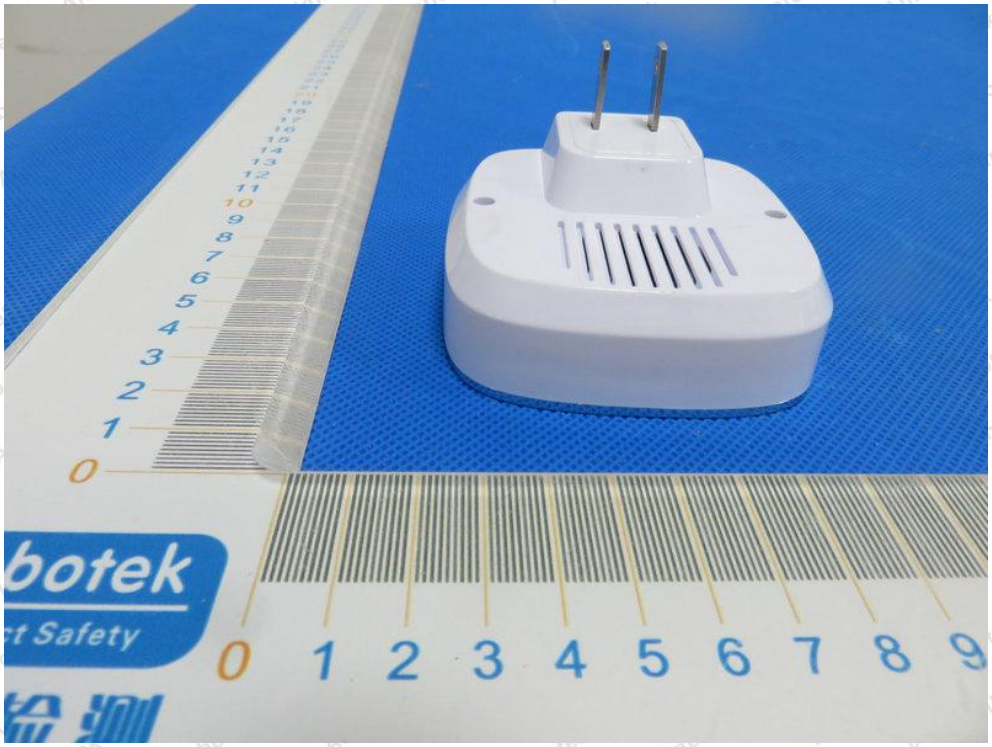


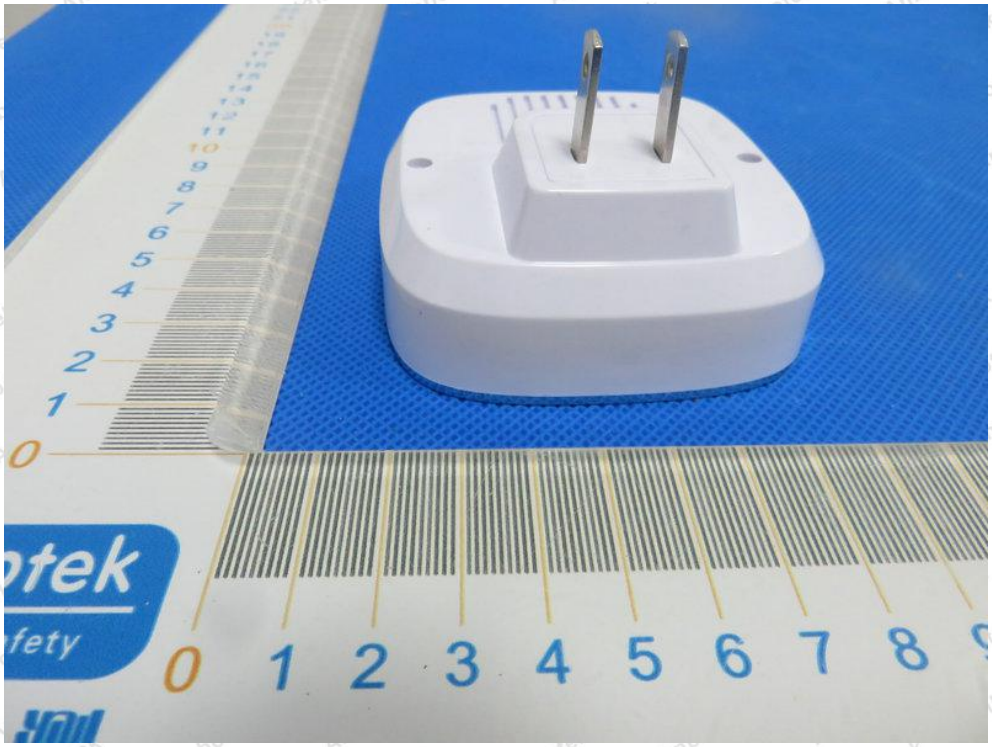
Photo of Radiation Emission Test



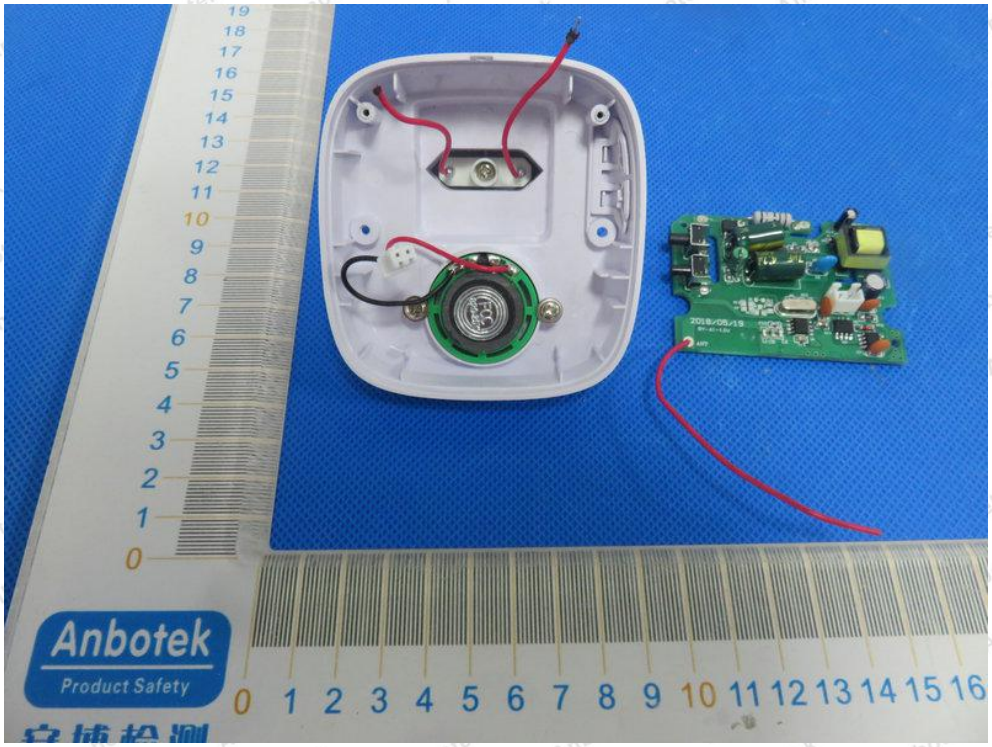


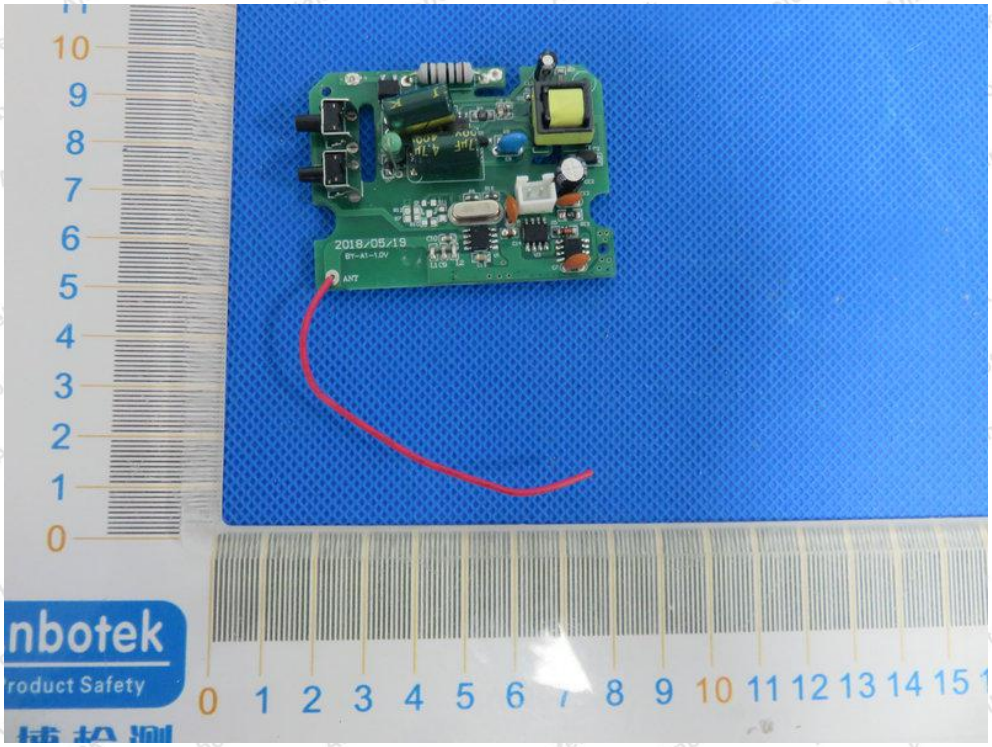
APPENDIX II -- EXTERNAL PHOTOGRAPH





APPENDIX III -- INTERNAL PHOTOGRAPH

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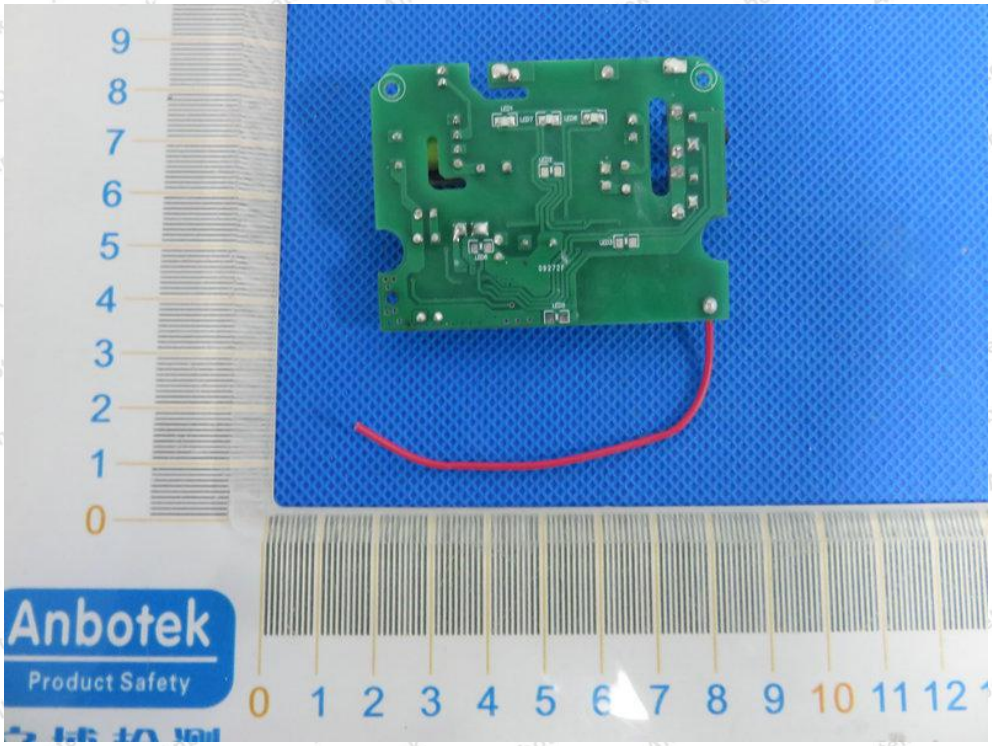
roduct Safety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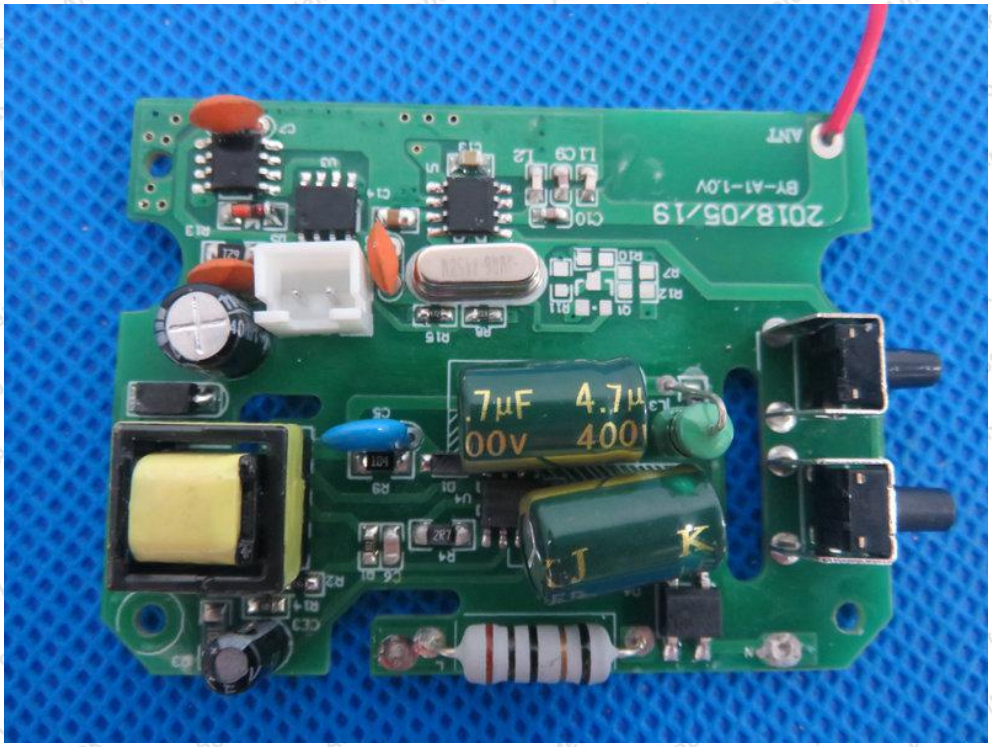
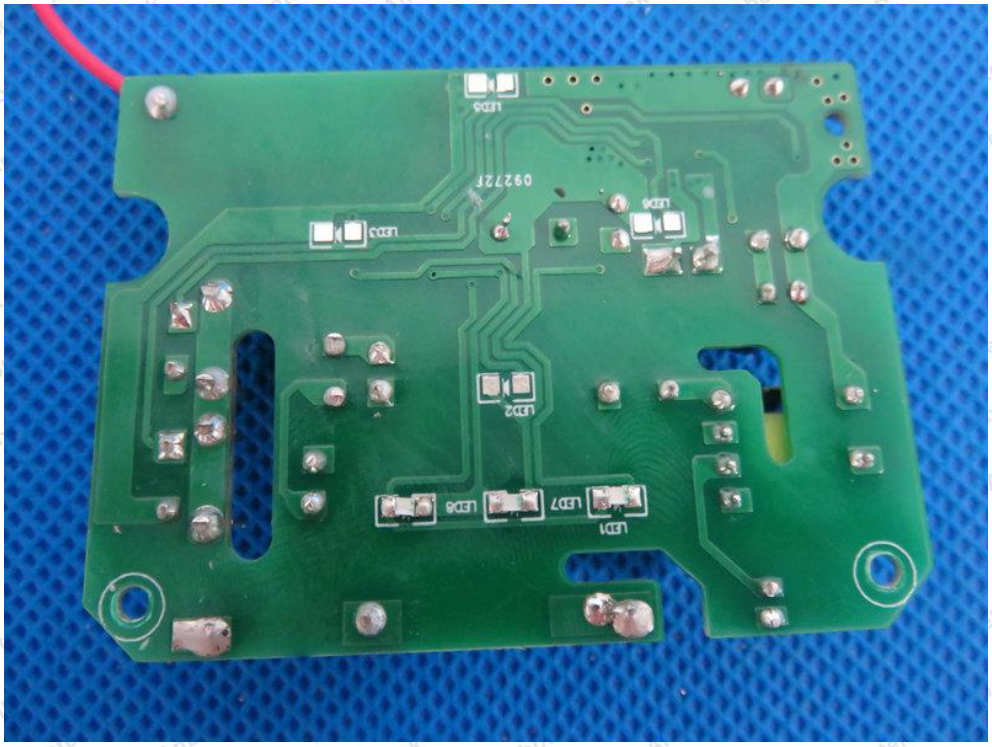
Product Safety





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