

Verification On Behalf of

For

XING YAO HARDWARE LIGHTING PRODUCTS CO.,LTD
7 FT COLOR CHANGING CRYSTAL ICED TREE

Model No.: 7 FT COLOR CHANGING CRYSTAL ICED TREE

Prepared For : **XING YAO HARDWARE LIGHTING PRODUCTS CO.,LTD**
Address : **XIANG DING INDUSTRIAL ZONE, XIA LANG VILLAGE, QI SHI TOWN, DONG GUAN, China**

Prepared By : **Shenzhen Anbotek Compliance Laboratory Limited**
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Report Number : **SZAWW180425003-01**
Date of Test : **Apr. 25~May 22, 2018**
Date of Report : **May 22, 2018**

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TEST REPORT

Applicant : XING YAO HARDWARE LIGHTING PRODUCTS CO.,LTD
Manufacturer : XING YAO HARDWARE LIGHTING PRODUCTS CO.,LTD
Product Name : 7 FT COLOR CHANGING CRYSTAL ICED TREE
Model No. : 7 FT COLOR CHANGING CRYSTAL ICED TREE
Trade Mark : N/A
Rating(s) : Input: DC 24V, 0.83A (via adapter input: AC 120V, 60Hz, 0.35A; output: DC 24V, 0.83A)

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 : Apr. 25~May 22, 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	:	XING YAO HARDWARE LIGHTING PRODUCTS CO.,LTD
Address	:	XIANG DING INDUSTRIAL ZONE, XIA LANG VILLAGE, QI SHI TOWN, DONG GUAN, China
Manufacturer	:	XING YAO HARDWARE LIGHTING PRODUCTS CO.,LTD
Address	:	XIANG DING INDUSTRIAL ZONE, XIA LANG VILLAGE, QI SHI TOWN, DONG GUAN, China

1.2. Description of Device (EUT)

Product Name	:	7 FT COLOR CHANGING CRYSTAL ICED TREE
Model No.	:	7 FT COLOR CHANGING CRYSTAL ICED TREE
Trade Mark	:	N/A
Operating Frequency	:	433.84MHz 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

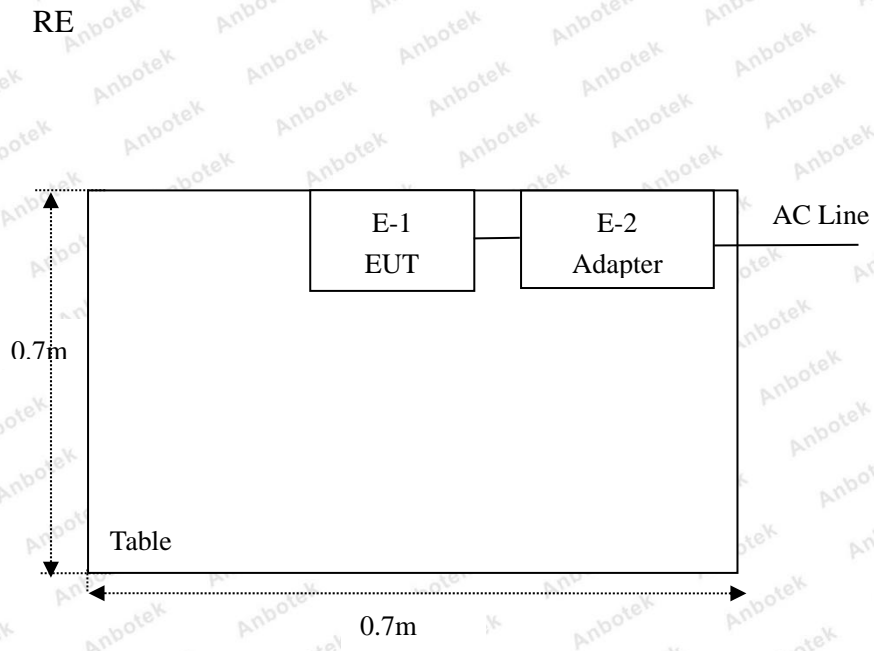
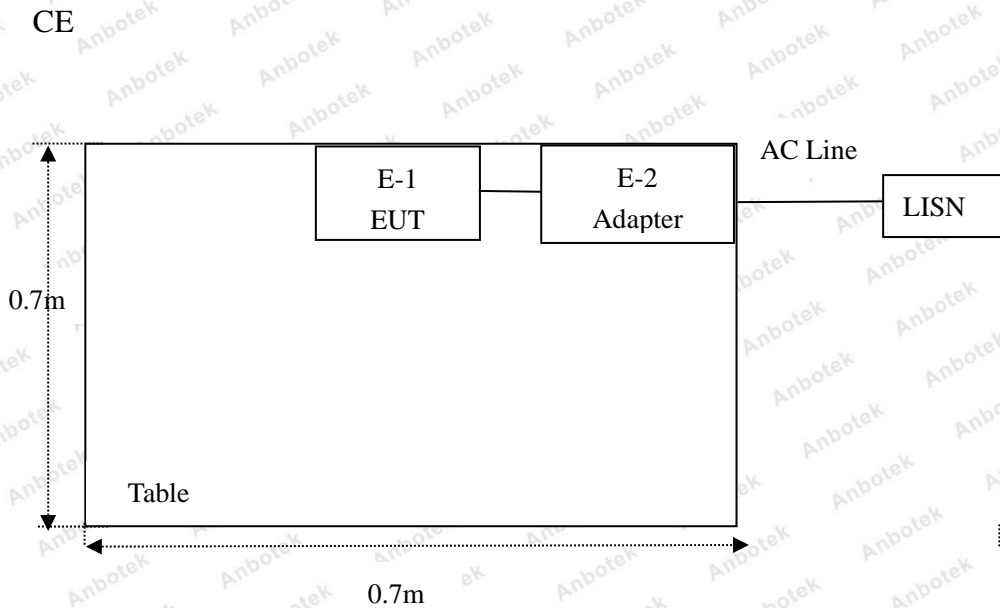
Adapter	:	M/N: TS-20WL24V Input: AC 120V, 60Hz 0.35A Output: DC 24V, 0.83A
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1.4. Description of Test Modes

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



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	ESPI	101604	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

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 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, 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.		

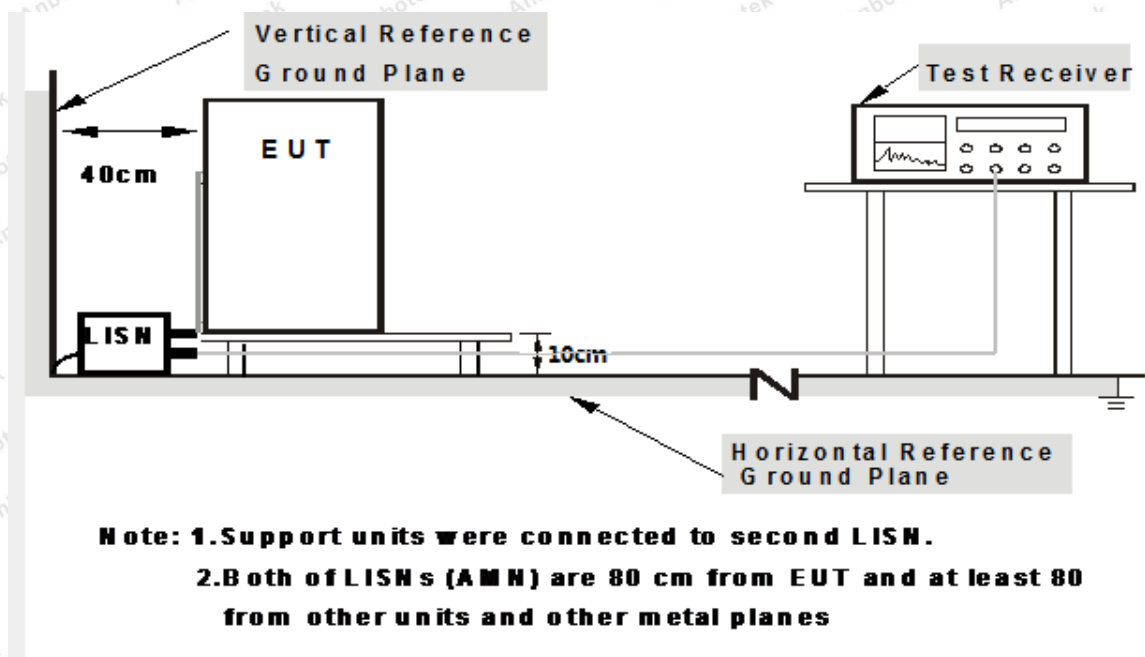
3. Conducted Emission Test

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.

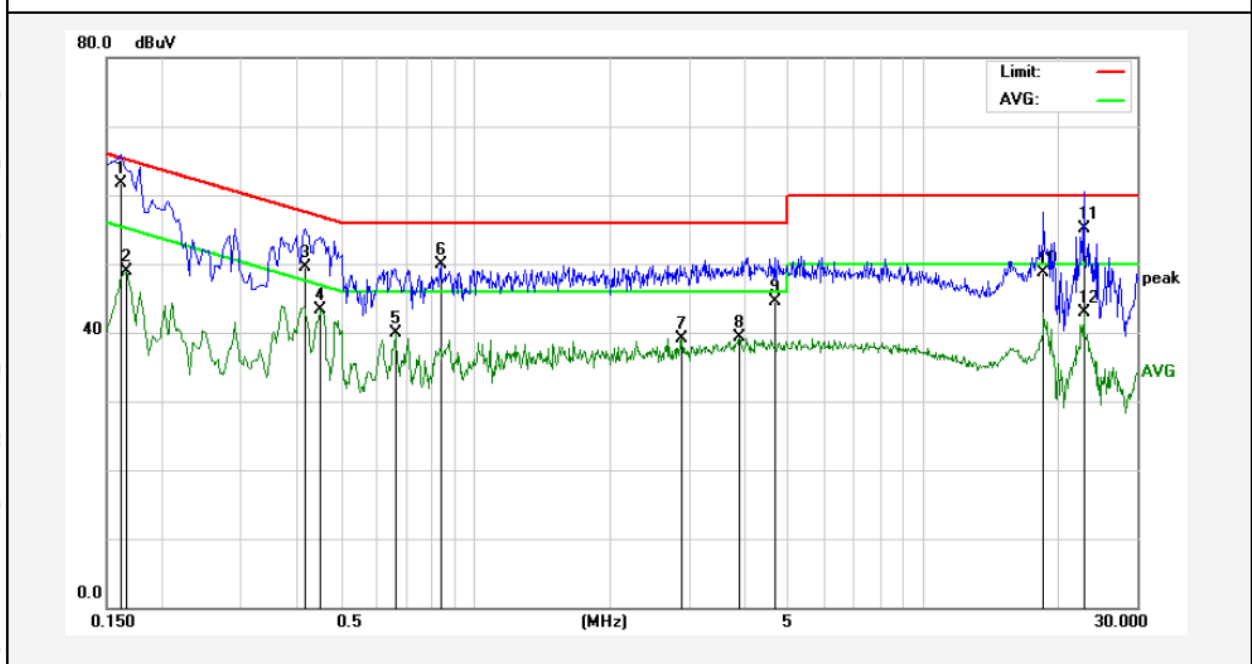
The frequency range from 150kHz to 30MHz is checked.

3.4. Test Data

Please to see the following pages

Conducted Emission Test Data

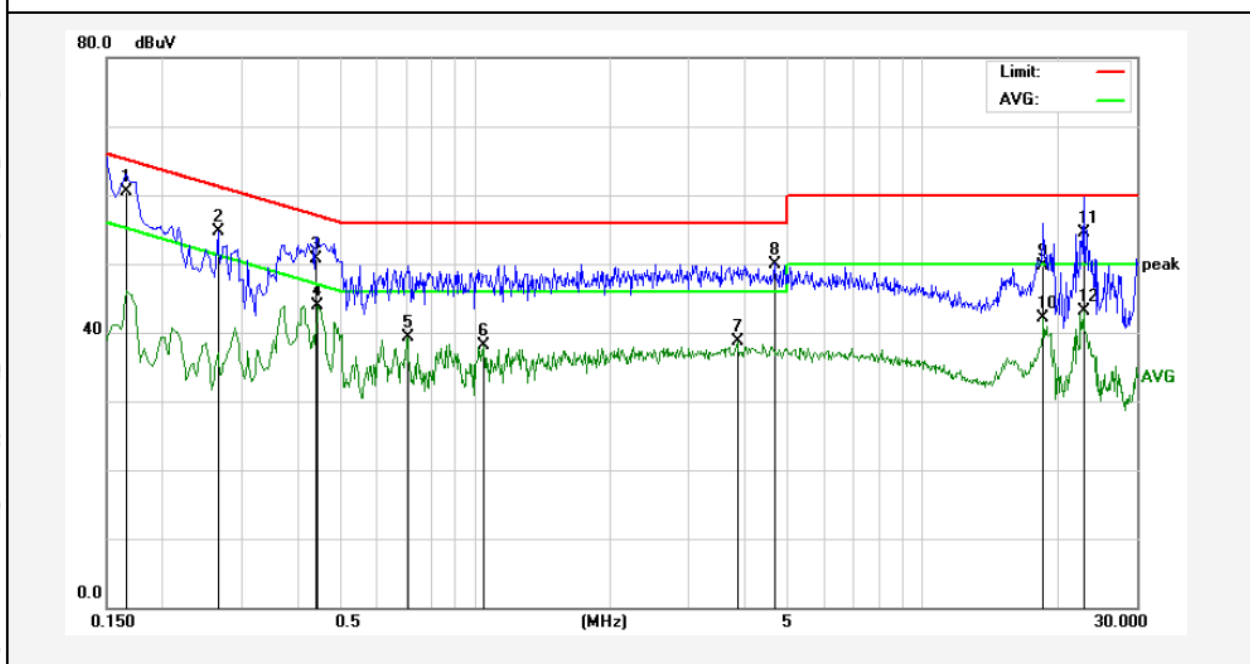
Test Site: 1# Shielded Room
 Operating Condition: ON Mode
 Test Specification: AC 120V, 60Hz
 Comment: Live Line
 Tem.:22.5°C Hum.:57%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1620	41.84	19.90	61.74	65.36	-3.62	QP	
2	0.1660	29.02	19.90	48.92	55.15	-6.23	AVG	
3	0.4180	29.53	19.94	49.47	57.49	-8.02	QP	
4	0.4500	23.30	19.96	43.26	46.87	-3.61	AVG	
5	0.6620	19.84	20.03	39.87	46.00	-6.13	AVG	
6	0.8380	29.84	20.08	49.92	56.00	-6.08	QP	
7	2.8860	18.95	20.16	39.11	46.00	-6.89	AVG	
8	3.8980	19.14	20.18	39.32	46.00	-6.68	AVG	
9	4.6540	24.39	20.20	44.59	56.00	-11.41	QP	
10	18.5620	28.36	20.32	48.68	60.00	-11.32	QP	
11	22.8340	34.73	20.31	55.04	60.00	-4.96	QP	
12	22.8340	22.59	20.31	42.90	50.00	-7.10	AVG	

Conducted Emission Test Data

Test Site: 1# Shielded Room
 Operating Condition: ON Mode
 Test Specification: AC 120V, 60Hz
 Comment: Neutral Line
 Tem.:22.5°C Hum.:57%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1660	40.70	19.90	60.60	65.15	-4.55	QP	
2	0.2660	34.83	19.89	54.72	61.24	-6.52	QP	
3	0.4420	30.81	19.95	50.76	57.02	-6.26	QP	
4	0.4460	23.94	19.96	43.90	46.95	-3.05	AVG	
5	0.7060	19.30	20.04	39.34	46.00	-6.66	AVG	
6	1.0460	17.92	20.12	38.04	46.00	-7.96	AVG	
7	3.8500	18.58	20.18	38.76	46.00	-7.24	AVG	
8	4.6579	29.75	20.20	49.95	56.00	-6.05	QP	
9	18.5459	29.38	20.32	49.70	60.00	-10.30	QP	
10	18.5459	21.81	20.32	42.13	50.00	-7.87	AVG	
11	22.8700	34.22	20.31	54.53	60.00	-5.47	QP	
12	22.8700	22.80	20.31	43.11	50.00	-6.89	AVG	

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

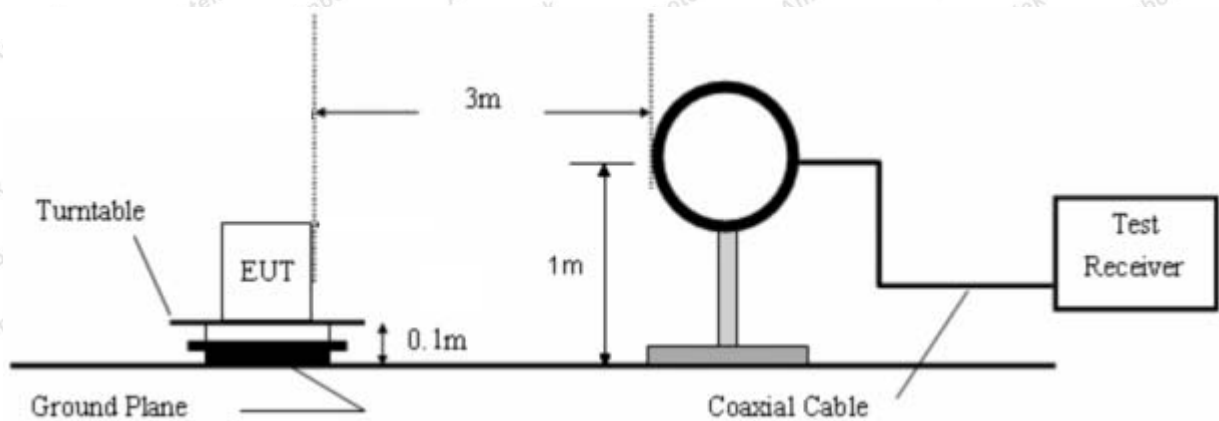


Figure 1. Below 30MHz

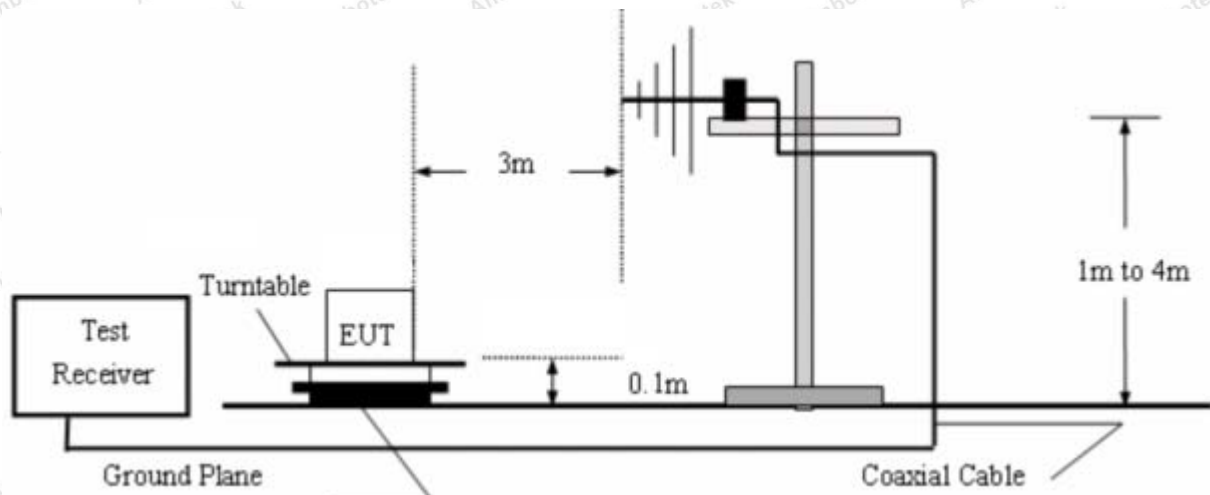


Figure 2. 30MHz to 1GHz

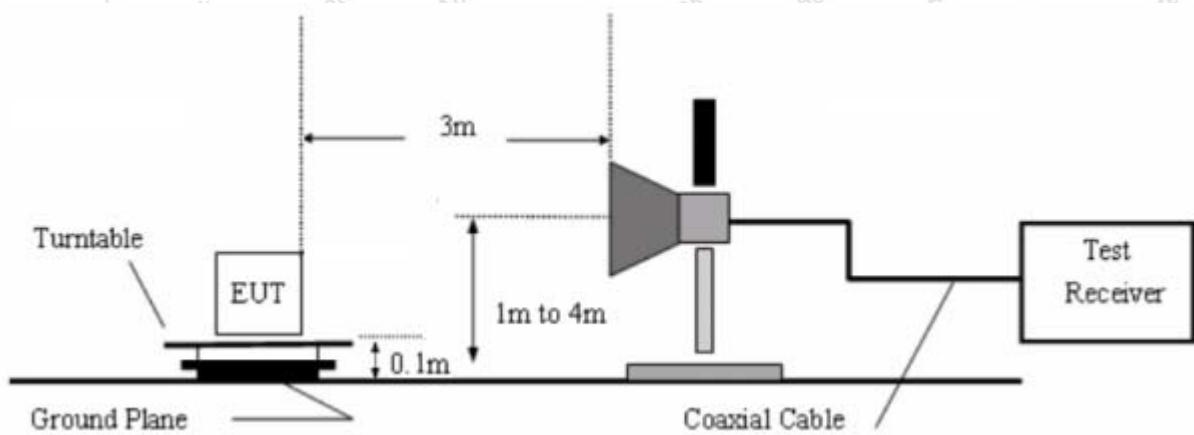


Figure 3. Above 1 GHz

4.3. Test Procedure

For below 1GHz: The EUT is placed on a turntable, which is 0.1m 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 = 10Hz, Detector = Peak, Trace mode = Max hold, Sweep = auto couple.

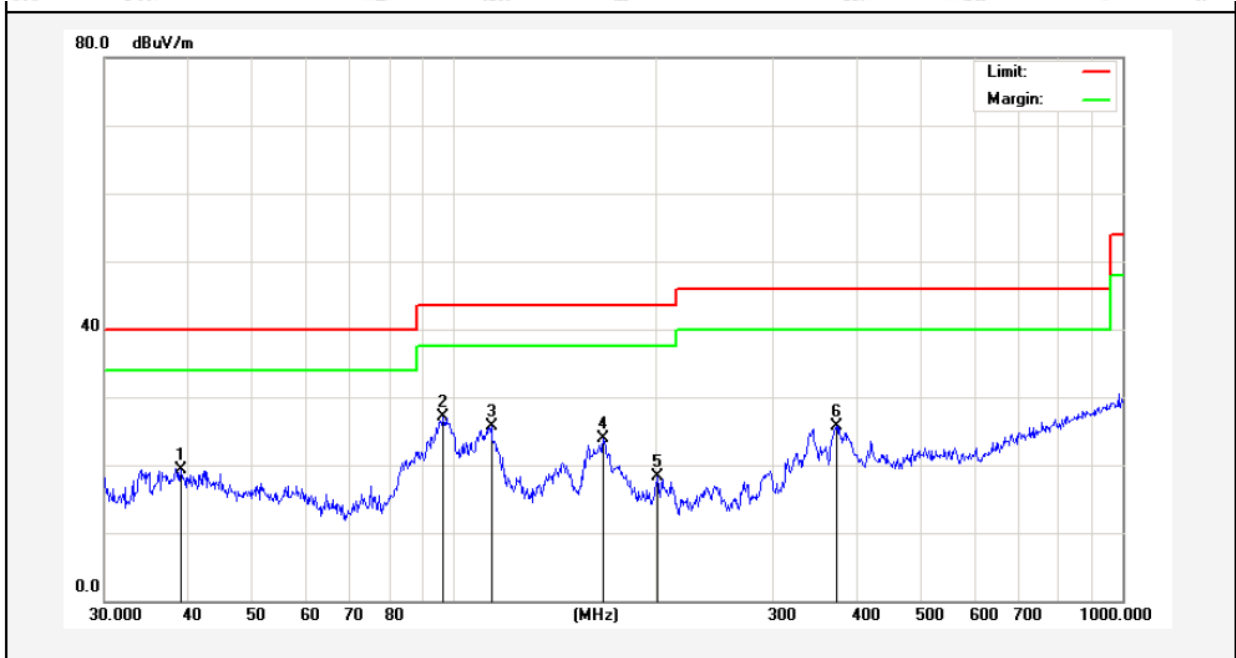
4.4. Test Data

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.: SZAWW180425003-01 Temp.(°C)/Hum.(%RH): 23.3°C/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	39.0245	34.18	-14.90	19.28	40.00	-20.72	QP	300	71	
2	96.4362	48.16	-21.09	27.07	43.50	-16.43	QP	300	134	
3	113.7143	46.67	-20.88	25.79	43.50	-17.71	QP	300	196	
4	167.2368	43.80	-19.92	23.88	43.50	-19.62	QP	300	261	
5	201.3930	37.29	-18.90	18.39	43.50	-25.11	QP	300	306	
6	373.3112	39.18	-13.40	25.78	46.00	-20.22	QP	300	360	

Test Results (30~1000MHz)

Job No.: SZAWW180425003-01 Temp.(°C)/Hum.(%RH): 23.3°C/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	30.0000	49.89	-17.55	32.34	40.00	-7.66	QP	300	63	
2	36.5092	49.21	-15.27	33.94	40.00	-6.06	QP	300	134	
3	48.6719	44.30	-15.24	29.06	40.00	-10.94	QP	300	175	
4	96.4362	47.44	-15.09	32.35	43.50	-11.15	QP	300	255	
5	112.9196	44.49	-14.83	29.66	43.50	-13.84	QP	300	270	
6	162.0414	43.83	-16.81	27.02	43.50	-16.48	QP	300	360	

Test Results (1GHz~5GHz)

Frequency (MHz)	Read Level (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.	Detector
1416.73	49.51	-2.80	46.71	74.00	-27.29	H	PEAK
1880.84	46.71	-2.60	44.11	74.00	-29.89	H	PEAK
2143.29	55.35	-4.54	50.81	74.00	-23.19	H	PEAK
3071.01	53.24	-4.83	48.42	74.00	-25.58	H	PEAK
4161.44	50.56	-4.68	45.88	74.00	-28.12	H	PEAK
4496.84	53.44	-5.64	47.81	74.00	-26.19	H	PEAK
1416.73	42.36	-2.80	39.55	54.00	-14.45	H	AVG
1880.84	39.80	-2.60	37.20	54.00	-16.80	H	AVG
2143.29	41.76	-4.54	37.22	54.00	-16.78	H	AVG
3071.01	40.86	-4.83	36.04	54.00	-17.96	H	AVG
4161.44	39.18	-4.68	34.50	54.00	-19.50	H	AVG
4496.84	44.06	-5.64	38.42	54.00	-15.58	H	AVG
1312.23	54.23	-3.02	51.21	74.00	-22.79	V	PEAK
1655.34	46.83	-3.22	43.61	74.00	-30.39	V	PEAK
2278.63	49.14	-4.15	44.99	74.00	-29.01	V	PEAK
2863.71	55.72	-5.19	50.53	74.00	-23.47	V	PEAK
3811.99	45.03	-4.68	40.35	74.00	-33.65	V	PEAK
4492.16	45.98	-5.47	40.51	74.00	-33.49	V	PEAK
1312.23	41.54	-3.02	38.52	54.00	-15.48	V	AVG
1655.34	39.70	-3.22	36.47	54.00	-17.53	V	AVG
2278.63	42.05	-4.15	37.90	54.00	-16.10	V	AVG
2863.71	44.88	-5.19	39.69	54.00	-14.31	V	AVG
3811.99	38.42	-4.68	33.74	54.00	-20.26	V	AVG
4492.16	42.81	-5.47	37.34	54.00	-16.66	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





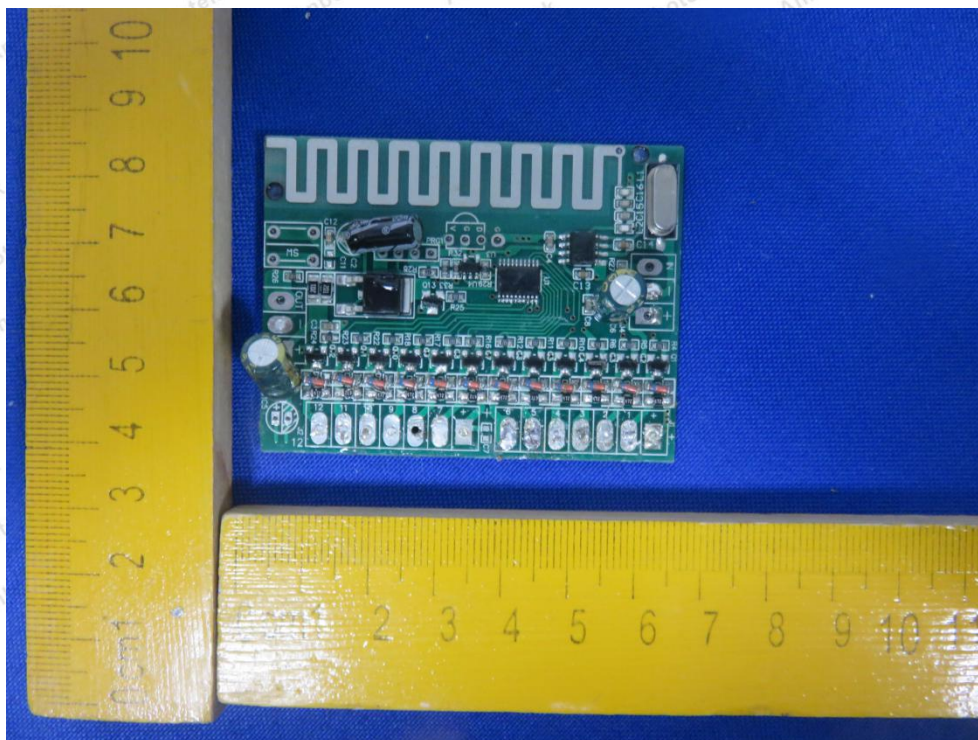
APPENDIX II -- EXTERNAL PHOTOGRAPH

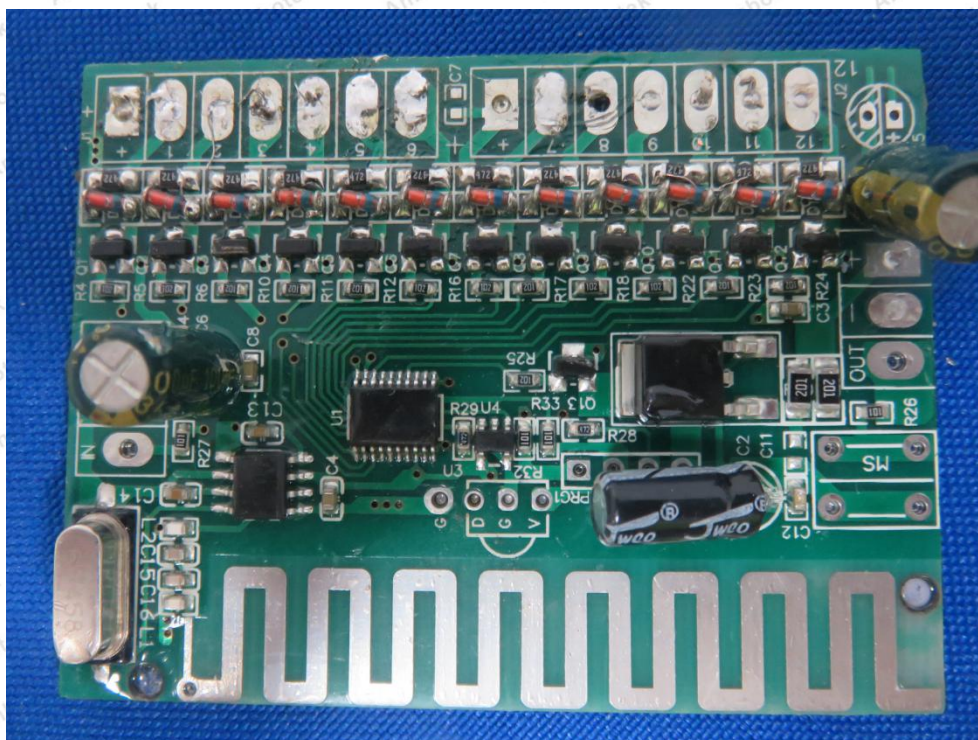
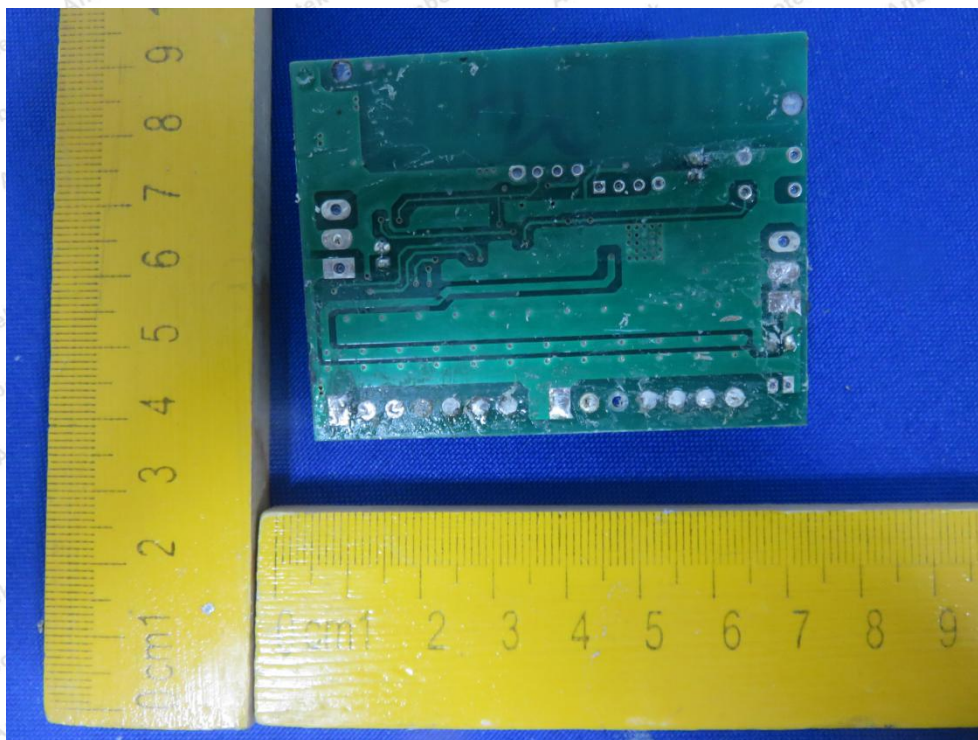


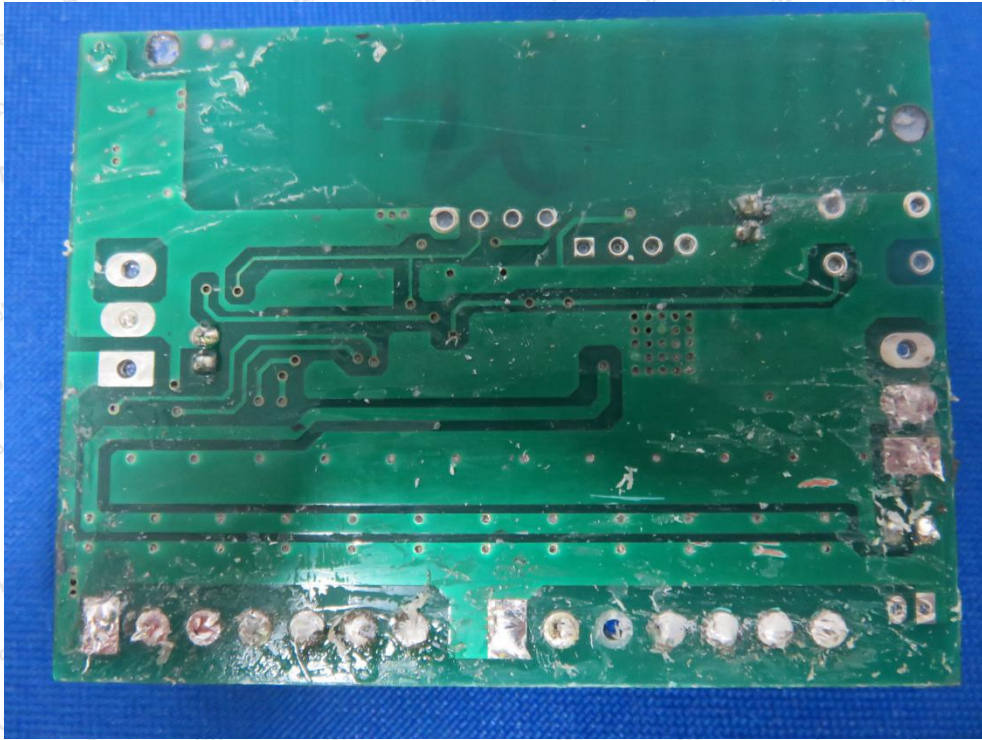




APPENDIX III -- INTERNAL PHOTOGRAPH







End of Report