



FCC TEST REPORT

FCC ID:2A5J6-G2050

Applicant: Zhongshan Shangdong Lighting Technology Co., Ltd

Address: 5th Floor, No.16 Le Lin Street, Guzhen, Zhongshan, China

Manufacturer: Zhongshan Shangdong Lighting Technology Co., Ltd

Address: 5th Floor, No.16 Le Lin Street, Guzhen, Zhongshan, China

EUT: Ceiling Fan with Lights

Trade Mark: N/A

Model Number: G2050, G2060, G8707, G8808, G8909

Date of Receipt: Mar. 02, 2022

Test Date: Mar. 02, 2022 - Mar. 08, 2022

Date of Report: Mar. 08, 2022

Prepared By: Shenzhen DL Testing Technology Co., Ltd.

Address: 101-201, Building C, Shuanghuan, No.8, Baoqing Road, Baolong Industrial Zone, Baolong Street, Longgang District, Shenzhen, Guangdong, China

Applicable Standards: FCC Part 15 Subpart B
ANSI C63.4:2019

Test Result: Pass

Report Number: DL-20220308030E

Prepared (Test Engineer): Alisa Song

Reviewer (Supervisor): Jack Bu

Approved (Manager): Jade Yang



This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Shenzhen DL Testing Technology Co., Ltd.



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**1. VERSION**

Version No.	Date	Description
00	Mar. 08, 2022	Original

2. TEST SUMMARY

EMC Emission				
Standard	Test Item	Limit	Result	Remark
FCC PART 15 B	Conducted Emission at power ports	Class B	PASS	
	Radiated Emission below 1GHz	Class B	PASS	
	Radiated Emission above 1GHz	Class B	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

(2) Test Facility: Shenzhen DL Testing Technology Co., Ltd.

Address: 101-201, Building C, Shuanghuan, No.8, Baoqing Road, Baolong Industrial Zone, Baolong Street, Longgang District, Shenzhen, Guangdong, China



3. GENERAL INFORMATION

3.1 Description of Device (EUT)

EUT: Ceiling Fan with Lights

Trade Mark: N/A

Model Number: G2050, G2060, G8707, G8808, G8909

Model difference: All samples are the same except the model name, so we prepare " G2050" for test only.

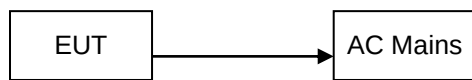
Power Supply: AC 100-260V 50/60Hz

Working Frequency: Below 108MHz

3.2 Tested System Details

None.

3.3 Block Diagram of Test Set-up



3.4 Test Mode Description

Mode1. On Mode

3.5 Test Auxiliary Equipment

3.6 Test Uncertainty

Conducted Emission Uncertainty : $\pm 2.56\text{dB}$

Radiated Emission Uncertainty : $\pm 3.65\text{dB}$



4. TEST INSTRUMENT USED

For Conducted Emission Test (843 Shielded Room)

Equipment	Manufacturer	Model	Serial	Last Cal.	Next Cal.
843 Shielded Room	ChengYu	843 Room	843	Nov. 25, 2019	Nov. 24, 2022
EMI Receiver	R&S	ESR	101421	Nov. 06, 2021	Nov. 05, 2022
LISN	R&S	ENV216	102417	Nov. 06, 2021	Nov. 05, 2022
Clamp	COM-POWER	CLA-050	431071	Nov. 06, 2021	Nov. 05, 2022
3-Loop Antenna	DAZE	ZN30401	13021	Nov. 06, 2021	Nov. 05, 2022
ISN T8	Schwarzbeck	NTFM 8158	101135	Nov. 06, 2021	Nov. 05, 2022
ISN T5	Schwarzbeck	NTFM 8158	101136	Nov. 06, 2021	Nov. 05, 2022
843 Cable 1#	ChengYu	CE Cable	001	Nov. 06, 2021	Nov. 05, 2022
843 Cable 1#	ChengYu	CE Cable	002	Nov. 06, 2021	Nov. 05, 2022

For Radiated Emission Test (966 chamber)

Equipment	Manufacturer	Model	Serial	Last Cal.	Next Cal.
966 Chamber	ChengYu	966 Room	966	Nov. 25, 2019	Nov. 24, 2022
Spectrum Analyzer	Agilent	E4408B	MY50140780	Nov. 06, 2021	Nov. 05, 2022
EMI Receiver	R&S	ESRP7	101393	Nov. 06, 2021	Nov. 05, 2022
Amplifier	Schwarzbeck	BBV9743B	00153	Nov. 06, 2021	Nov. 05, 2022
Amplifier	EMEC	EM01G8GA	00270	Nov. 06, 2021	Nov. 05, 2022
Broadband Trilog Antenna	Schwarzbeck	VULB9162	00306	Nov. 06, 2021	Nov. 05, 2023
Horn Antenna	Schwarzbeck	BBHA9120D	02139	Nov. 06, 2021	Nov. 05, 2023
966 Cable 1#	ChengYu	966	004	Nov. 06, 2021	Nov. 05, 2022
966 Cable 2#	ChengYu	966	003	Nov. 06, 2021	Nov. 05, 2022

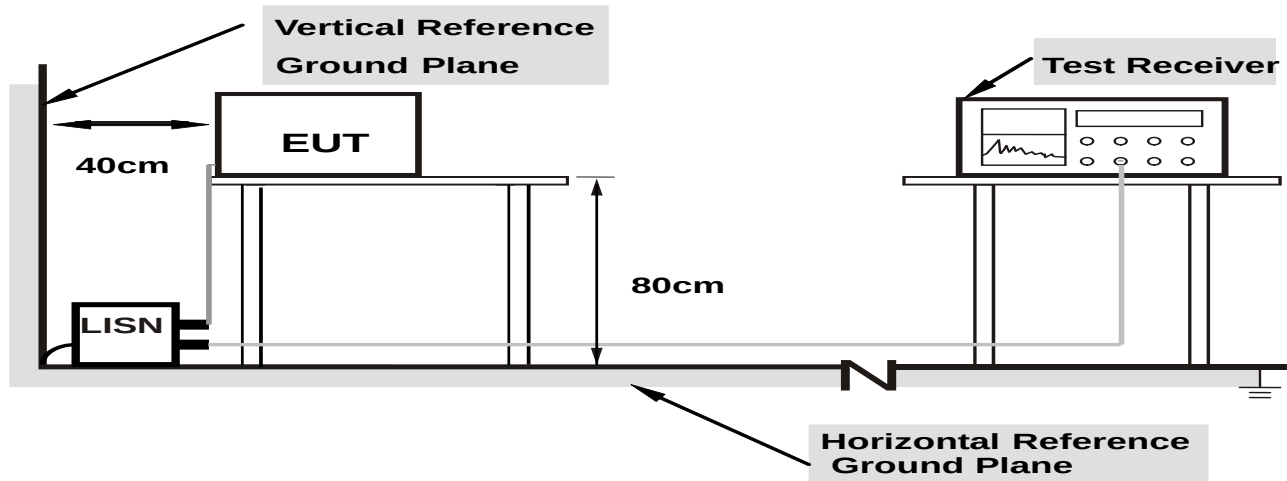
Other

Name	Manufacturer	Model	Software version
EMC Conduction Test System	FALA	EZ_EMG	EMC-CON 3A1.1
EMC radiation test system	FALA	EZ_EMG	FA-03A2
RF test system	MAIWEI	MTS8310	2.0.0.0
RF communication test system	MAIWEI	MTS8200	2.0.0.0

5. CONDUCTED EMISSION TEST

5.1 Block Diagram of Test Setup

For Mains Terminals Test



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

5.2 Test Standard and Limit

FCC PART 15 B

Frequency MHz	Limits dB(μ V)	
	Quasi-peak Level	Average Level
0.15~0.50	66 ~ 56*	55 ~ 46*
0.50~5.00	56	46
5.00~30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

5.3 EUT Configuration on Test

The following equipment's are installed on conducted emission test to meet FCC PART 15 B requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

5.4 Operating Condition of EUT

5.4.1 Setup the EUT and simulators as shown in Section 5.1.

5.4.2 Turn on the power of all equipments.

5.4.3 Let the EUT work in test modes and test it.



5.5 Test Procedure

The EUT is put on the table and connected to the AC mains through a Artificial Mains Network (AMN) or ISN. This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are checked to find out the maximum conducted emission levels according to the **ANSI C63.4** regulations during conducted emission test.

The bandwidth of the test receiver (R&S Test Receiver ESR) is set at 10KHz.

The frequency range from 150 KHz to 30 MHz is investigated.

We pretest AC 120V and AC 230V, the worst voltage was AC 230V and the data recording in the report.

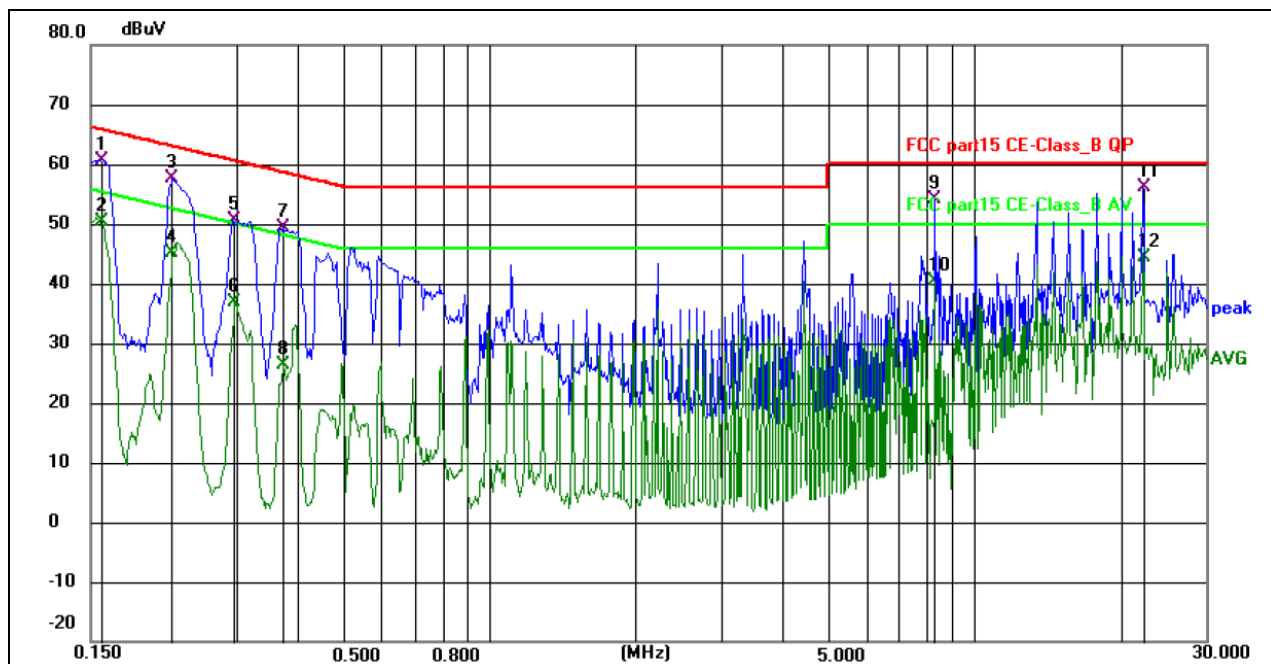
5.6 Test Result

PASS

Please refer to the following page.



Temperature:	25 °C	Relative Humidity:	54%
Pressure:	1010hPa	Phase :	L
Test Voltage :	AC 230V/50Hz	Test Mode:	Mode 1



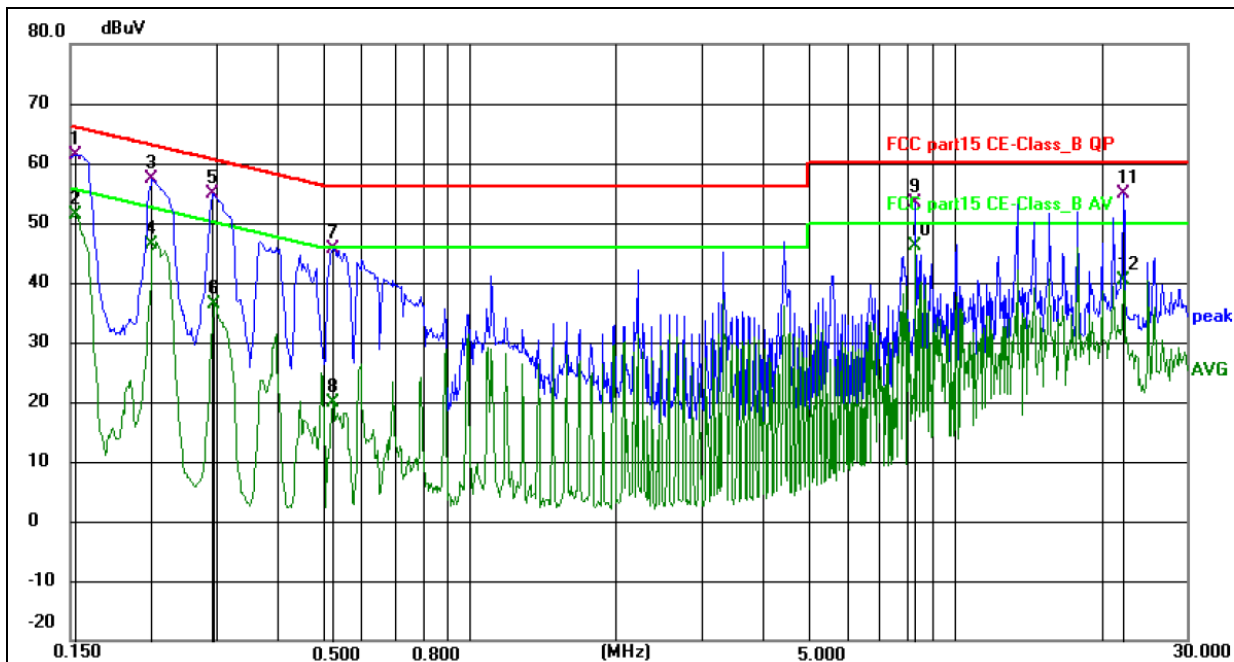
Remark:

Margin = Limit – Level, Correct Factor = Cable lose + LISN insertion loss, Level= Reading + Correct factor

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1590	50.26	10.49	60.75	65.52	4.77	QP	P	
2	0.1590	39.99	10.49	50.48	55.52	5.04	AVG	P	
3	0.2220	48.03	9.59	57.62	62.74	5.12	QP	P	
4	0.2220	35.60	9.59	45.19	52.74	7.55	AVG	P	
5	0.2939	41.44	9.22	50.66	60.41	9.75	QP	P	
6	0.2939	27.67	9.22	36.89	50.41	13.52	AVG	P	
7	0.3750	39.98	9.28	49.26	58.39	9.13	QP	P	
8	0.3750	17.15	9.28	26.43	48.39	21.96	AVG	P	
9	8.3129	44.23	9.93	54.16	60.00	5.84	QP	P	
10	8.3129	30.54	9.93	40.47	50.00	9.53	AVG	P	
11 *	22.2944	45.31	10.86	56.17	60.00	3.83	QP	P	
12	22.2944	33.40	10.86	44.26	50.00	5.74	AVG	P	



Temperature:	25 °C	Relative Humidity:	54%
Pressure:	1010hPa	Phase :	N
Test Voltage :	AC 230V/50Hz	Test Mode:	Mode 1



Remark:

Margin = Limit – Level, Correct Factor = Cable lose + LISN insertion loss, Level= Reading + Correct factor

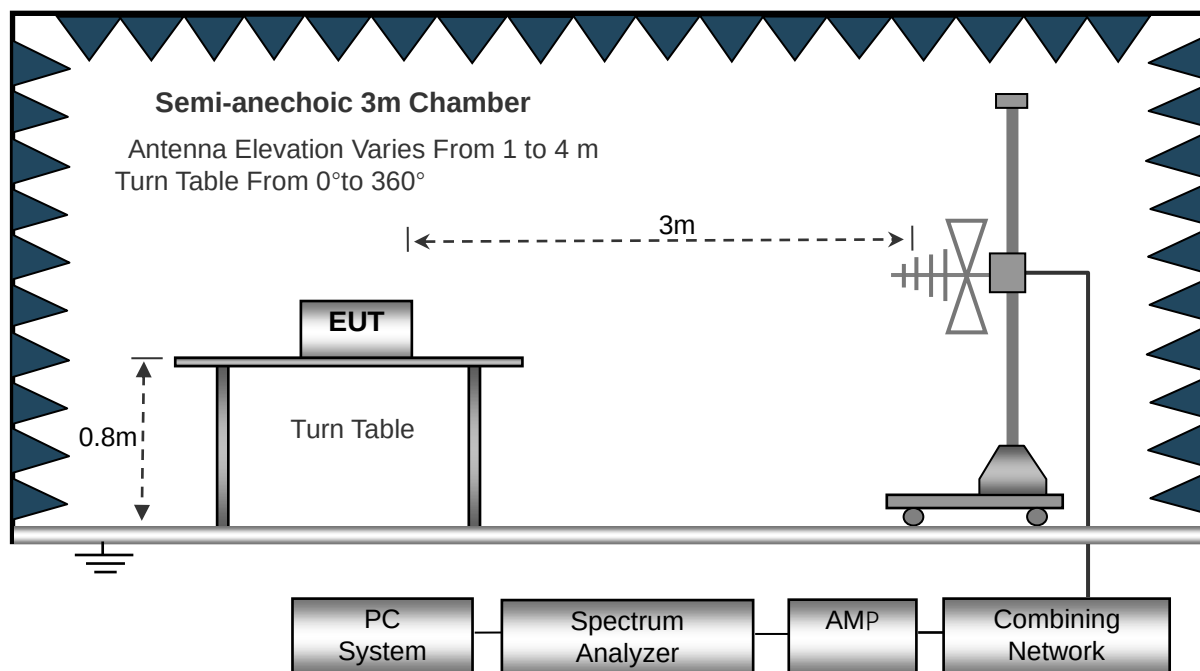
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1544	51.04	10.40	61.44	65.76	4.32	QP	P	
2	0.1544	41.10	10.40	51.50	55.76	4.26	AVG	P	
3	0.2220	48.33	9.08	57.41	62.74	5.33	QP	P	
4	0.2220	37.23	9.08	46.31	52.74	6.43	AVG	P	
5	0.2938	45.77	9.21	54.98	60.42	5.44	QP	P	
6	0.2983	27.27	9.22	36.49	50.29	13.80	AVG	P	
7	0.5231	36.17	9.52	45.69	56.00	10.31	QP	P	
8	0.5231	10.32	9.52	19.84	46.00	26.16	AVG	P	
9	8.3129	43.19	10.08	53.27	60.00	6.73	QP	P	
10 *	8.3129	35.96	10.08	46.04	50.00	3.96	AVG	P	
11	22.2942	43.94	10.87	54.81	60.00	5.19	QP	P	
12	22.2942	29.63	10.87	40.50	50.00	9.50	AVG	P	



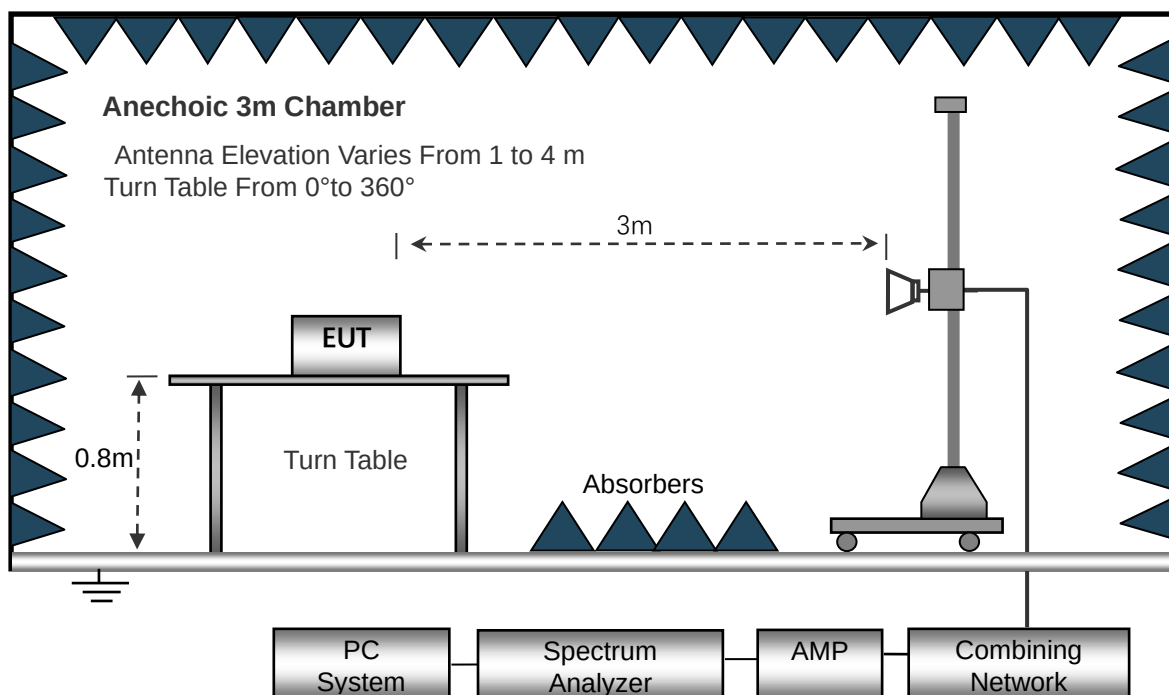
6. RADIATION EMISSION TEST

6.1 Block Diagram of Test Setup

Below 1GHz



Above 1GHz



6.2 Test Standard and Limit

FCC PART 15 B



Below 1GHz

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dB μ V/m)
30 ~ 88	3	40.0
88 ~ 216	3	43.5
216 ~ 960	3	46.0
960 ~ 1000	3	54.0

Above 1GHz

Frequency MHz	Distance (Meters)	Field Strengths Limits dB(μ V)/m	Detector
1000 ~ 6000	3	74.0	PEAK
1000 ~ 6000	3	54.0	AVERAGE

Remark:

- (1) The smaller limit shall apply at the cross point between two frequency bands.
- (2) Distance refers to the distance in meters between the measuring instrument, antenna and the closed point of any part of the device or system.

6.3 EUT Configuration on Test

The FCC PART 15 B regulations test method must be used to find the maximum emission during radiated emission test.

The configuration of EUT is the same as used in conducted emission test.

Please refer to Section 5.3.

6.4 Operating Condition of EUT

Same as conducted emission test, which is listed in Section 5.4 except the test set up replaced as Section 6.2.

6.5 Test Procedure

- 1) The radiated emissions test was conducted in a semi-anechoic chamber.
 - 2) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
 - 3) Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emissions spectrum plots of the EUT.
 - 4) The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.
 - 5) The bandwidth setting on the field strength meter (R&S Test Receiver ESCI) is set at 120KHz.
 - 6) The frequency range from 30MHz to 3000MHz is checked.
- We pretest AC 120V and AC 230V, the worst voltage was AC 230V and the data recording in the report.

6.6 Test Result

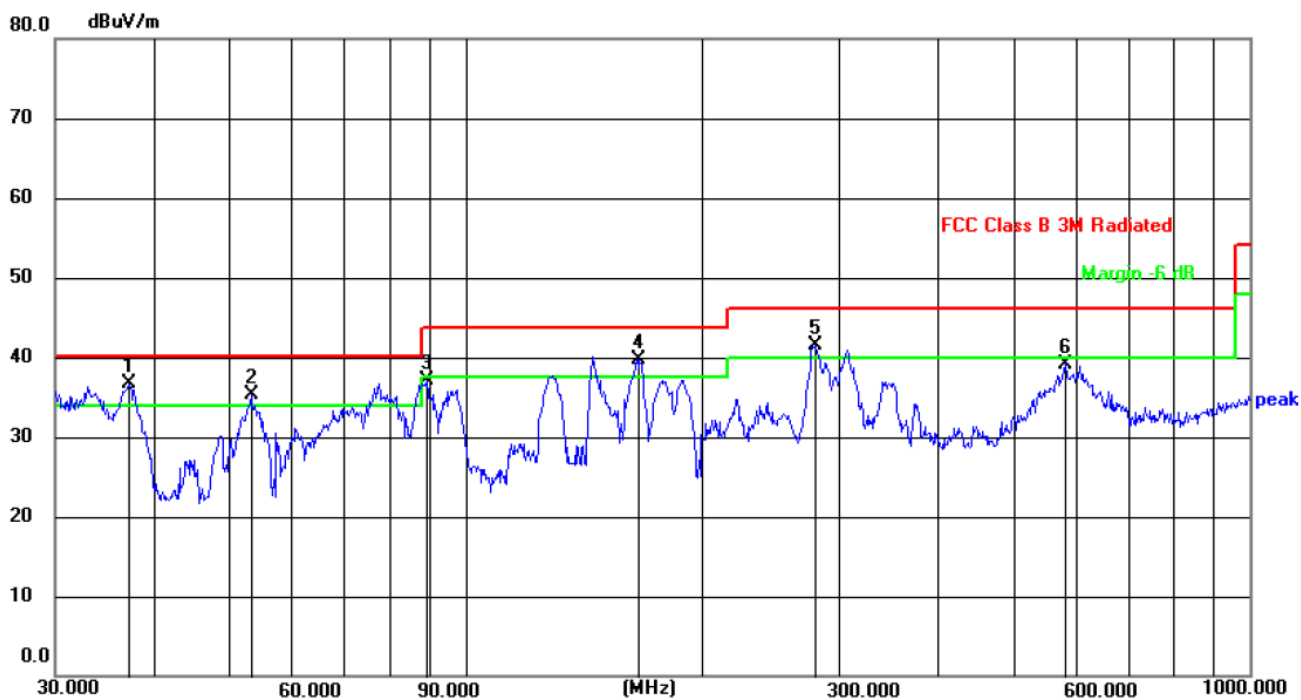
PASS

Please refer to the following page.

The emission above 1GHz was background, so no data show it.



Radiation Emission Test Data			
Temperature:	24.5℃	Relative Humidity:	54%
Pressure:	1009hPa	Polarization:	Horizontal
Test Voltage:	AC 230V/50Hz	Test Mode:	Mode 1



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1	*	37.2854	51.50	-14.77	36.73	40.00	3.27	QP
2	!	53.3179	48.93	-13.60	35.33	40.00	4.67	QP
3		89.2762	54.48	-17.38	37.10	43.50	6.40	QP
4	!	166.6511	57.88	-18.13	39.75	43.50	3.75	QP
5	!	279.0436	54.60	-13.08	41.52	46.00	4.48	QP
6		582.7423	46.17	-6.97	39.20	46.00	6.80	QP

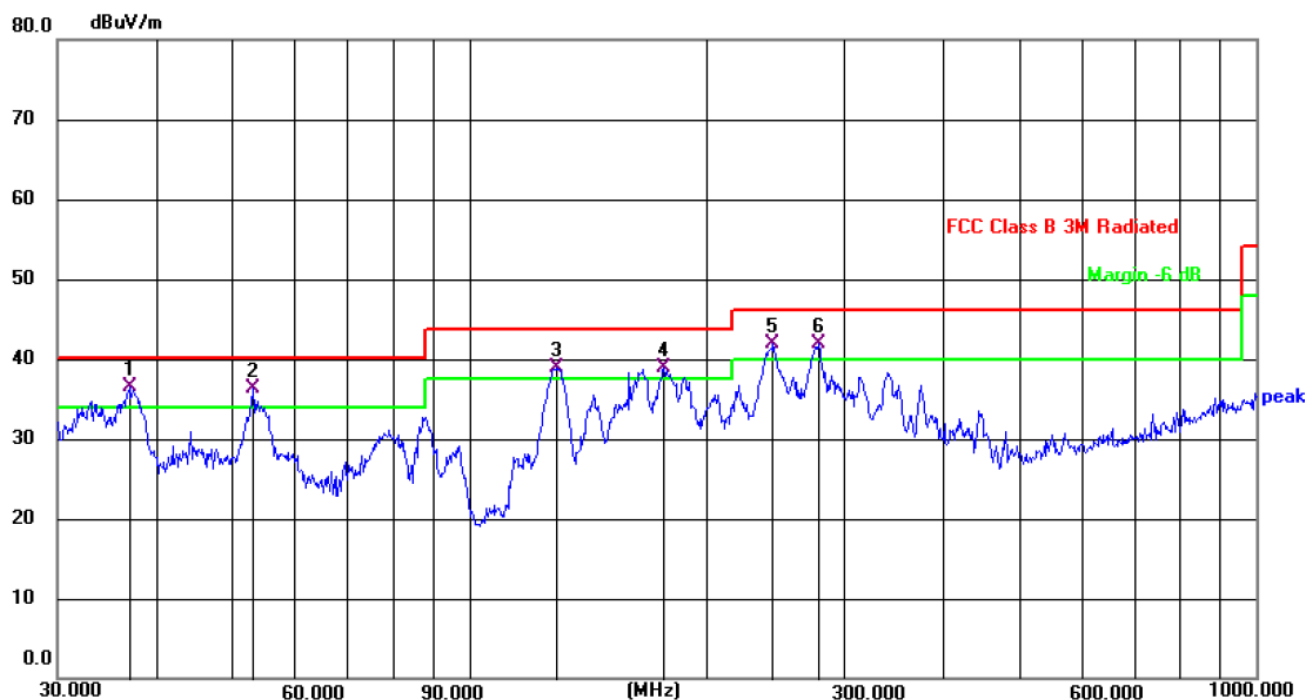
Remark:

Correct Factor = Cable loss + Antenna factor – Preamplifier;

Level = Reading Level + Correct Factor; Margin = Limit – Level;



Radiation Emission Test Data			
Temperature:	24.5℃	Relative Humidity:	54%
Pressure:	1009hPa	Polarization:	Vertical
Test Voltage:	AC 230V/50Hz	Test Mode:	Mode 1



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1	*	37.0248	51.24	-14.81	36.43	40.00	3.57	QP
2	!	53.1313	49.95	-13.58	36.37	40.00	3.63	QP
3	!	129.0141	57.29	-18.33	38.96	43.50	4.54	QP
4	!	176.8874	56.35	-17.51	38.84	43.50	4.66	QP
5	!	243.3771	56.11	-14.17	41.94	46.00	4.06	QP
6	!	278.0668	55.01	-13.11	41.90	46.00	4.10	QP

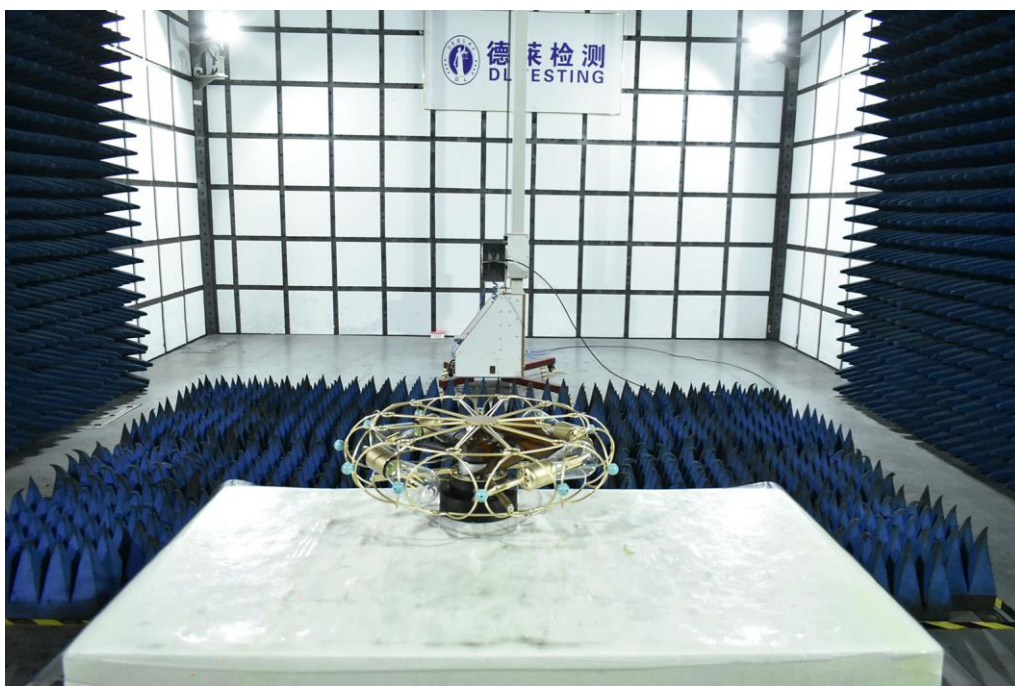
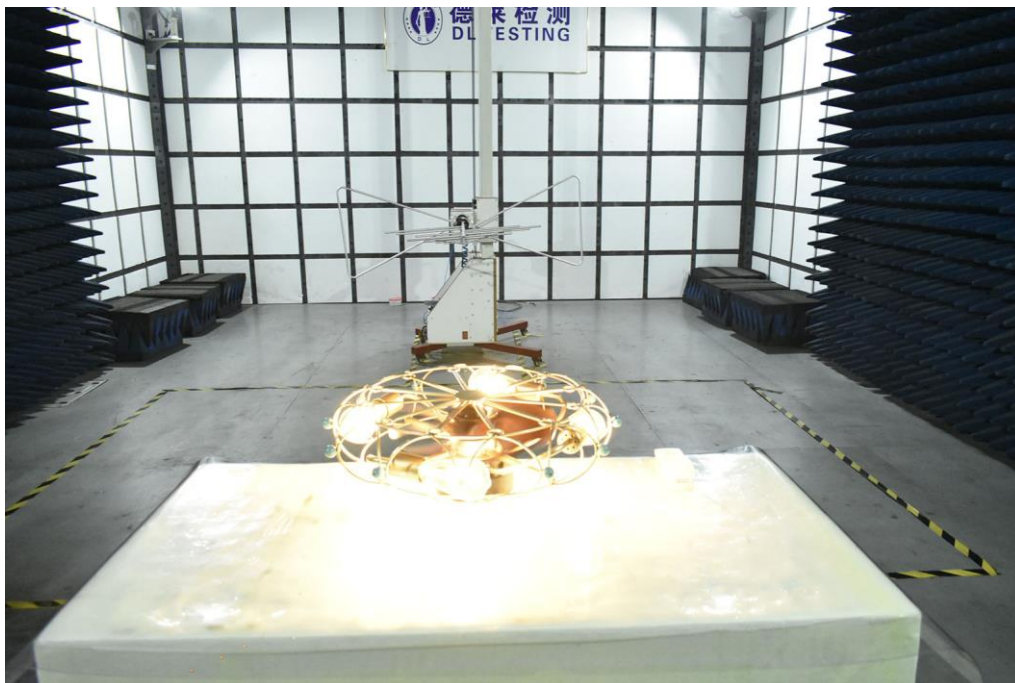
Remark:

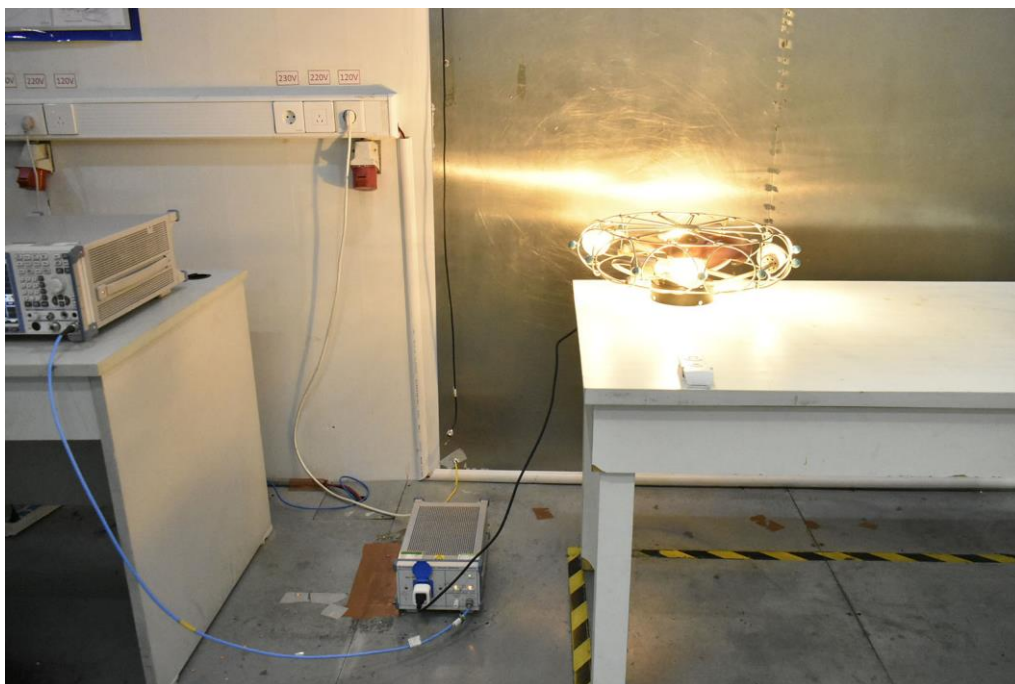
Correct Factor = Cable loss + Antenna factor – Preamplifier;

Level = Reading Level + Correct Factor; Margin = Limit – Level;



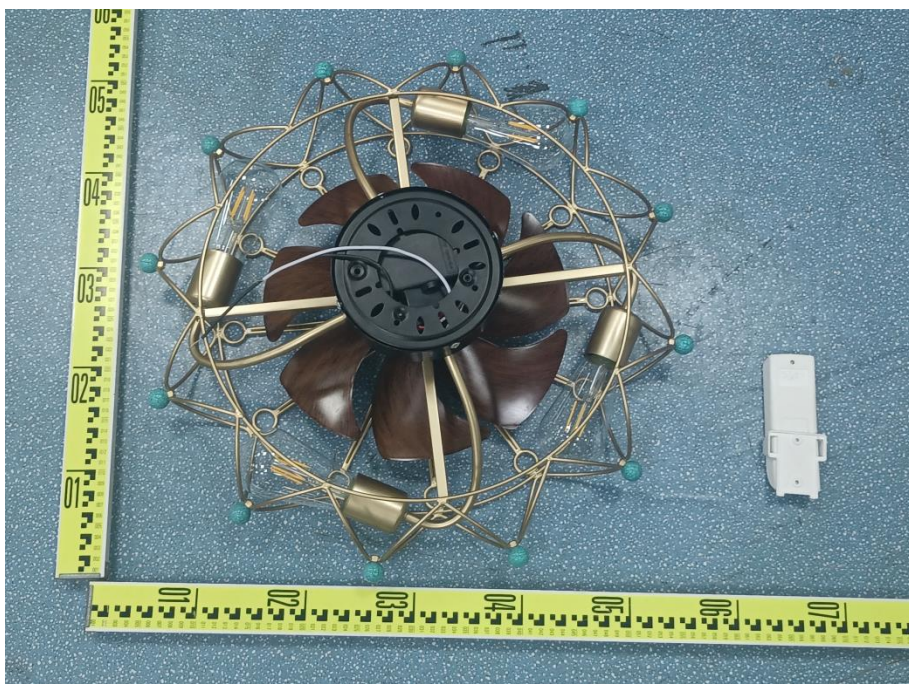
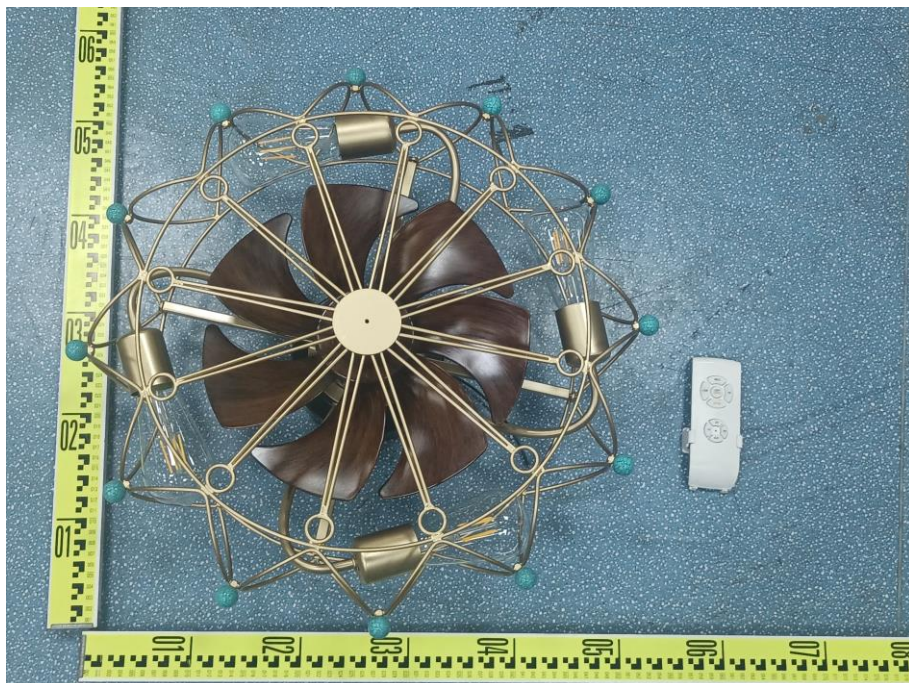
7. SETUP PHOTOGRAPHS

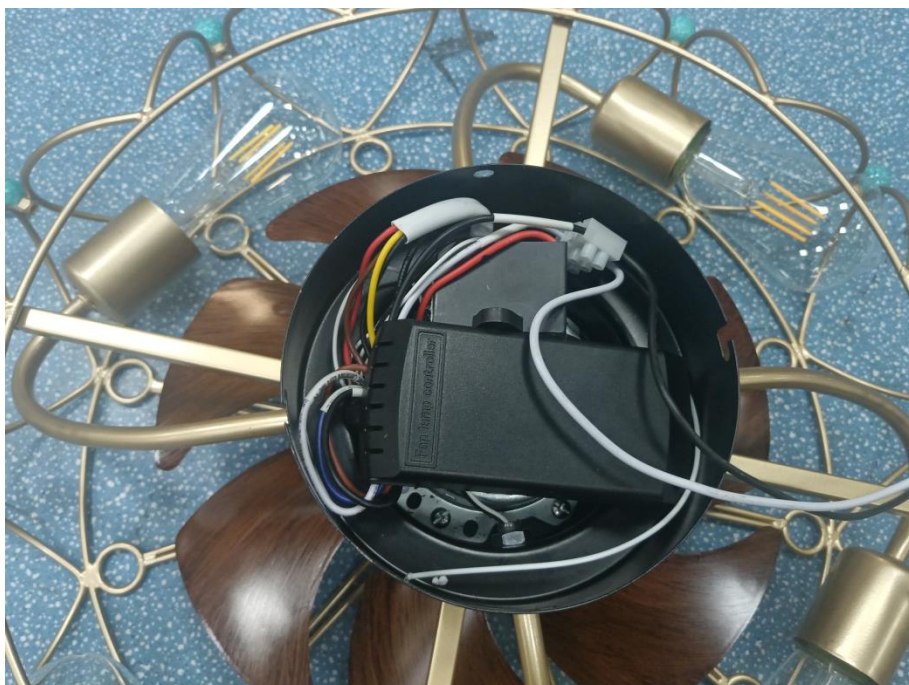
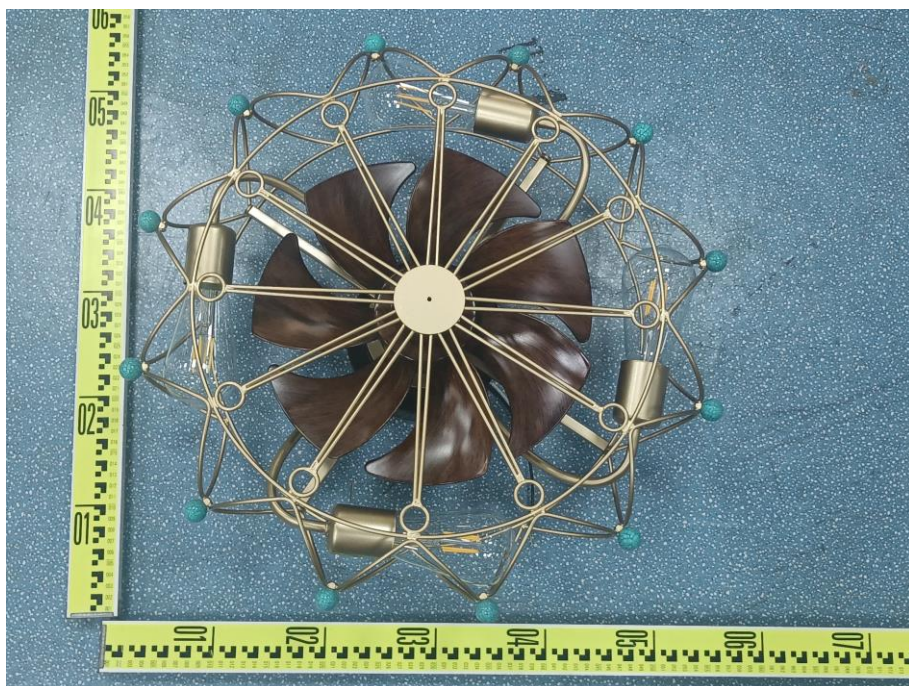


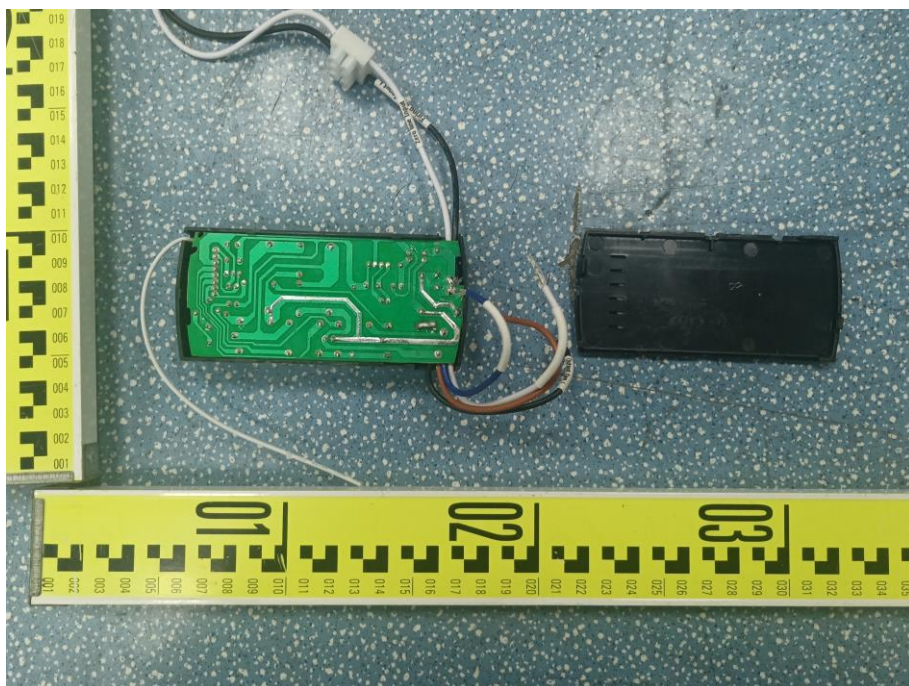




8. EUT PHOTOGRAPHS







***** END OF REPORT *****