TEST REPORT

Applicant:	Zhongshan rixiao Photoelectric Technology Co., Ltd
Address of Applicant:	No.4-1, South Huatai East Road, caosan Pioneer Park, Guzhen town, Zhongshan City, Guang Dong Province, China
Manufacturer:	Zhongshan rixiao Photoelectric Technology Co., Ltd
Address of Manufacturer:	No.4-1, South Huatai East Road, caosan Pioneer Park, Guzhen town, Zhongshan City, Guang Dong Province, China

Equipment Under Test (EUT)

Product Name:	LED Recessed Luminaires
Model No.:	RX3030-12W
FCC ID:	2AYRG-RX3030-12W
Applicable standards:	FCC CFR Title 47 Part 15 Subpart B
Date of sample receipt:	January 06, 2021
Date of Test:	January 06- 19, 2021
Date of report issued:	January 19, 2021
Test Result :	Pass *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Robinson Luo
Laboratory Manager

2 Version

Version No.	*Date*	*Description*
00	*January 19, 2021*	*Original*

Prepared by: ***Date:*** *January 19, 2021*

Project Engineer

Reviewed by: ***Date:*** *January 19, 2021*

Reviewer

3 Contents

4 Test Summary

Test Item	Test Requirement	Test Method	Class / Severity	Result
Conducted Emission	FCC Part15.107	ANSI C63.4	Class B	PASS
Radiated Emissions #	FCC Part15.109	ANSI C63.4	Class B	PASS

Remark:

1. Pass: The EUT complies with the essential requirements in the standard.

2. # Refer to FCC Part 15.33 (b)(1) conditional testing procedure :

The highest frequency generated or used in the EUT	*Test frequency range of Radiated emission*
<108MHz	*30MHz ~ 1GHz*
108MHz ~ 500MHz	*30MHz ~ 2GHz*
500MHz ~ 1GHz	*30MHz ~ 5GHz*
>1GHz	*30MHz ~ 5th harmonic of the highest frequency or 40 GHz, whichever is lower.*

The highest frequency of the internal sources of the EUT is less than 108MHz.

5 General Information

5.1 General Description of EUT

Product Name:	LED Recessed Luminaires
Model No.:	RX3030-12W
Power supply:	120V~, 60Hz, 12W , 0.11A

5.2 Test mode and Test voltage

Test mode:	
Operation mode	Keep the EUT lighting.
Test voltage:	
AC 120V/60Hz	

5.3 Description of Support Units

None.

5.4 Deviation from Standards

None.

5.5 Abnormalities from Standard Conditions

None.

5.6 Test Facility

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

● **FCC —Registration No.: 381383**

Global United Technology Services Co., Ltd., Shenzhen 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 files. Registration 381383.

● **IC —Registration No.: 9079A**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A.

● **NVLAP (LAB CODE:600179-0)**

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). LAB CODE:600179-0.

5.7 Test Location

Tests were performed at:

Global United Technology Services Co., Ltd.
Address: No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102
Tel: 0755-27798480
Fax: 0755-27798960

6 Test Instruments list

Radiated Emission:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July. 02 2020	July. 01 2025
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June. 25 2020	June. 24 2021
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 25 2020	June. 24 2021
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 25 2020	June. 24 2021
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 25 2020	June. 24 2021
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 25 2020	June. 24 2021
9	Coaxial Cable	GTS	N/A	GTS211	June. 25 2020	June. 24 2021
10	Coaxial cable	GTS	N/A	GTS210	June. 25 2020	June. 24 2021
11	Coaxial Cable	GTS	N/A	GTS212	June. 25 2020	June. 24 2021
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 25 2020	June. 24 2021
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 25 2020	June. 24 2021
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 25 2020	June. 24 2021
15	Band filter	Amindeon	82346	GTS219	June. 25 2020	June. 24 2021
16	Power Meter	Anritsu	ML2495A	GTS540	June. 25 2020	June. 24 2021
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 25 2020	June. 24 2021
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 25 2020	June. 24 2021
19	Splitter	Agilent	11636B	GTS237	June. 25 2020	June. 24 2021
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 25 2020	June. 24 2021
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 18 2020	Oct. 17 2021
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 18 2020	Oct. 17 2021
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 18 2020	Oct. 17 2021
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 25 2020	June. 24 2021

General used equipment:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 25 2020	June. 24 2021
2	Barometer	ChangChun	DYM3	GTS255	June. 25 2020	June. 24 2021

7 Test Results and Measurement Data

7.1 Radiated Emission

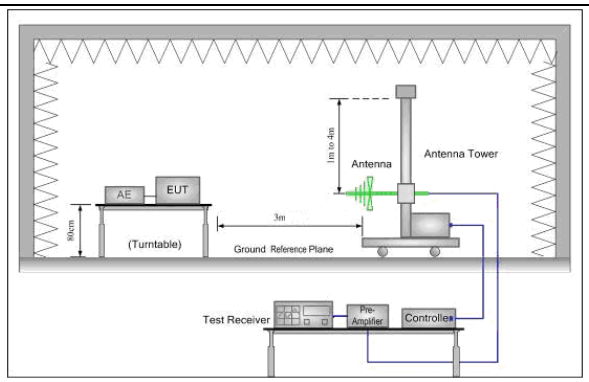
Test Requirement:	FCC Part15 B Section 15.109
Test Method:	ANSI C63.4:2014
Test Frequency Range:	30MHz to 1GHz
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)
Receiver setup:	

Frequency	Detector	RBW	VBW	Value
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak

Limit:

Frequency	Limit (dBµV/m @3m)	Value
30MHz-88MHz	40.00	Quasi-peak
88MHz-216MHz	43.50	Quasi-peak
216MHz-960MHz	46.00	Quasi-peak
960MHz-1GHz	54.00	Quasi-peak

Test setup:



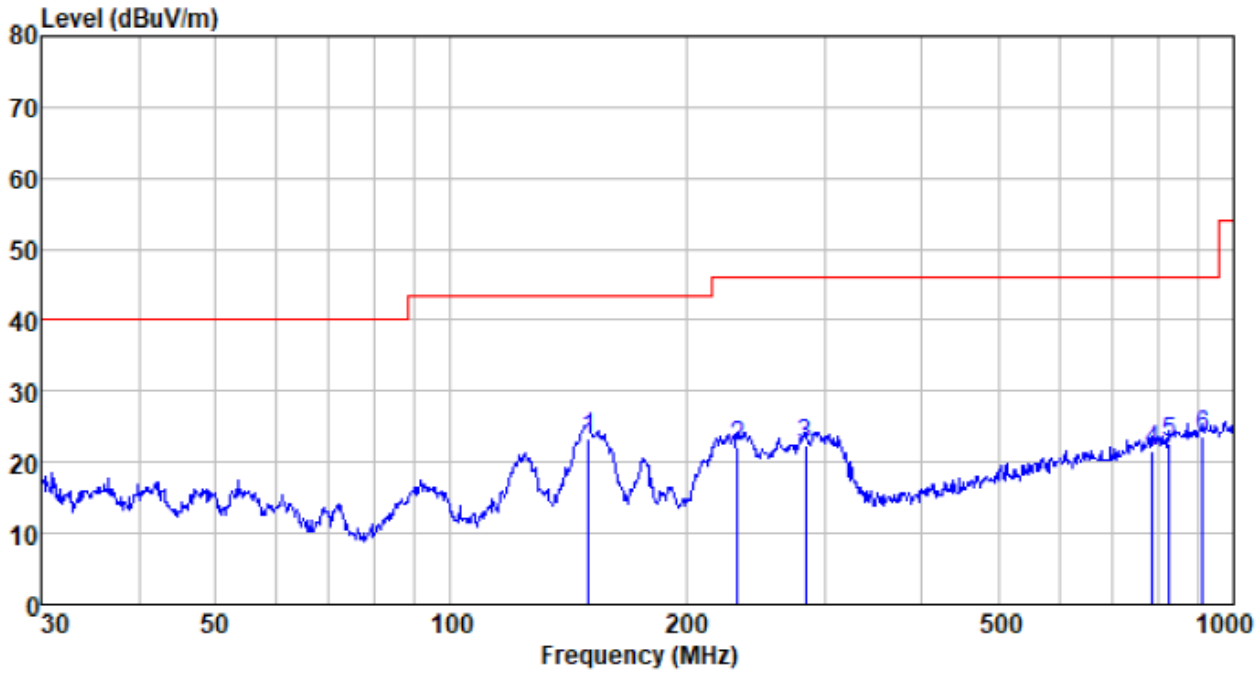
Test Procedure:

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10dB lower than

	the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.					
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1 012mbar
Measurement Record:	Uncertainty: 3.8039dB （30MHz-200MHz） 3.9679dB （200MHz-1GHz）					
Test Instruments:	Refer to section 6 for details					
Test mode:	Refer to section 5.2 for details					
Test results:	Pass					

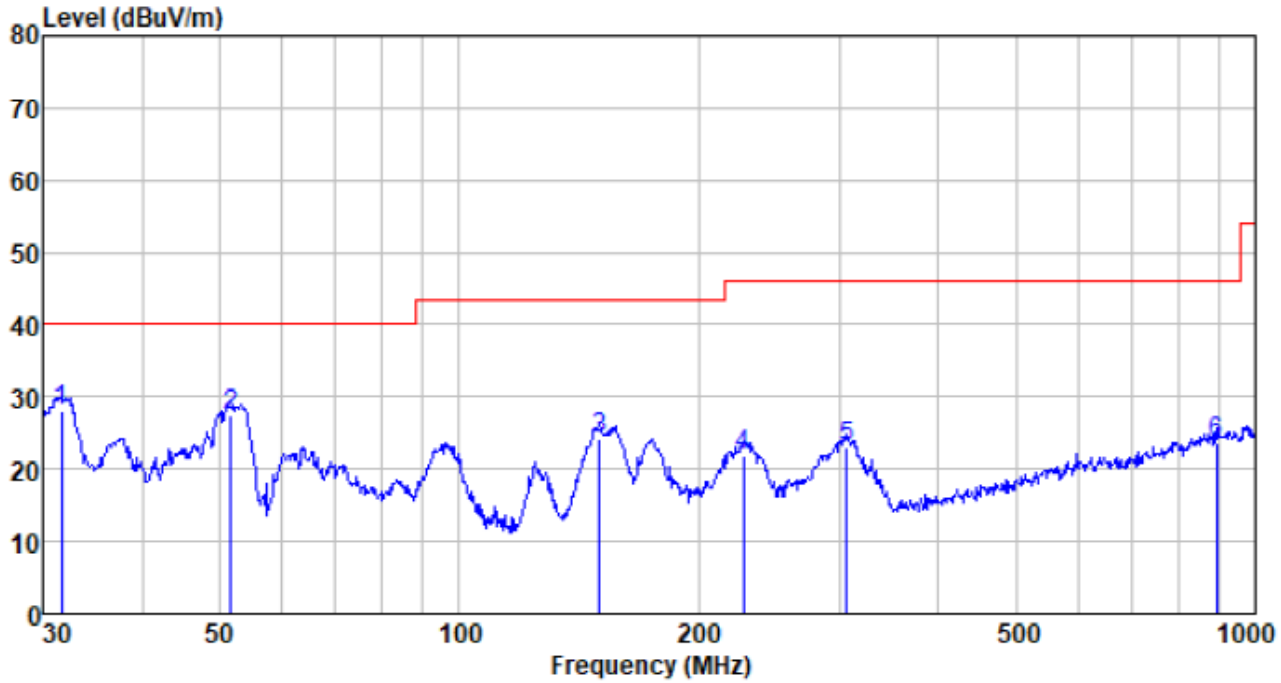
Measurement Data

Test mode:	Operation mode	Antenna Polarity:	Horizontal



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
150.011	51.26	7.65	1.57	37.08	23.40	43.50	-20.10	QP
232.532	45.97	11.60	2.03	37.36	22.24	46.00	-23.76	QP
283.979	44.29	13.16	2.29	37.41	22.33	46.00	-23.67	QP
787.851	33.64	21.21	4.41	37.62	21.64	46.00	-24.36	QP
827.493	34.04	21.64	4.57	37.61	22.64	46.00	-23.36	QP
912.862	33.86	22.35	4.90	37.59	23.52	46.00	-22.48	QP

Test mode:	Operation mode	Antenna Polarity:	Vertical



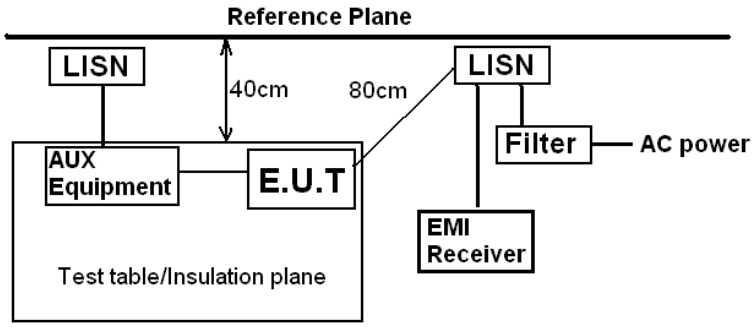
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
31.620	51.36	11.23	0.57	35.12	28.04	40.00	-11.96	QP
51.662	50.89	12.12	0.79	36.21	27.59	40.00	-12.41	QP
150.011	52.01	7.65	1.57	37.08	24.15	43.50	-19.35	QP
227.691	45.82	11.42	2.01	37.36	21.89	46.00	-24.11	QP
306.754	44.22	13.74	2.39	37.43	22.92	46.00	-23.08	QP
893.857	34.16	22.23	4.83	37.60	23.62	46.00	-22.38	QP

Note:
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

7.2 Conducted Emissions

Test Requirement:	FCC Part15 B Section 15.107
Test Method:	ANSI C63.4:2014
Test Frequency Range:	150kHz to 30MHz
Class / Severity:	Class B
Receiver setup:	RBW=9kHz, VBW=30kHz
Limit:	See table below
Test setup:	See figure below
Test procedure	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.
Test environment:	Temp.: 25 °C Humid.: 52% Press.: 1 012mbar
Measurement Record:	Uncertainty: 3.44dB
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

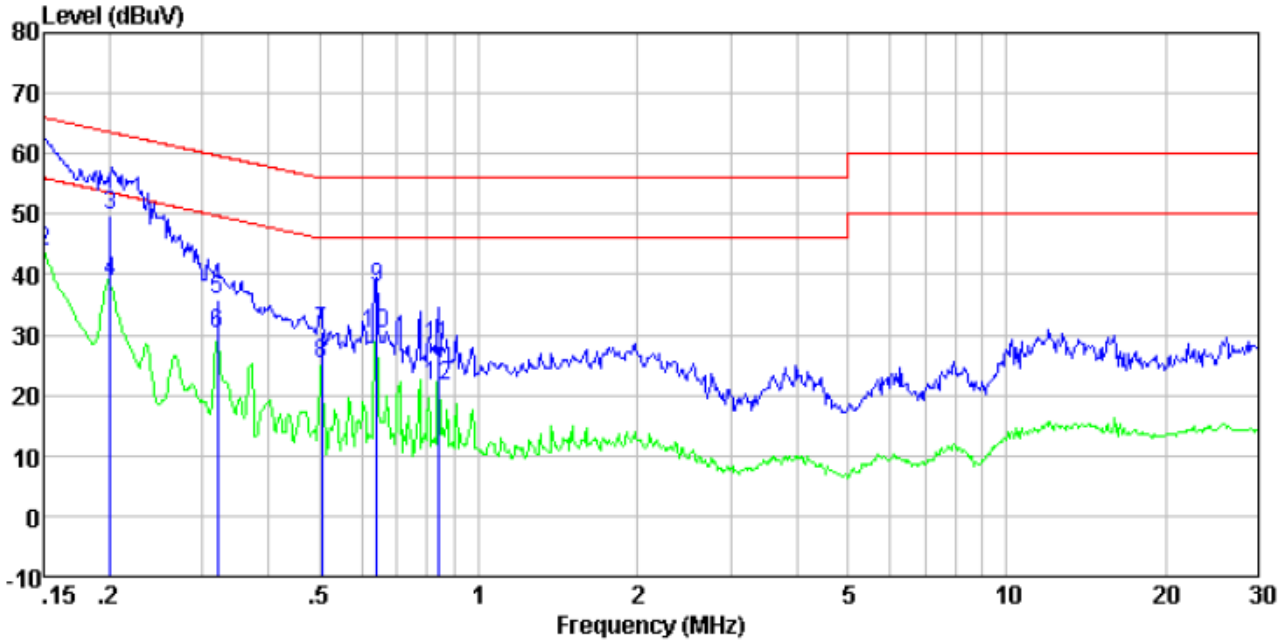
Frequency range (MHz)	Limit (dBµV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
0.5-30	60	50



Remark:
E.U.T: Equipment Under Test
LISN: Line Impedence Stabilization Network
Test table height=0.8m

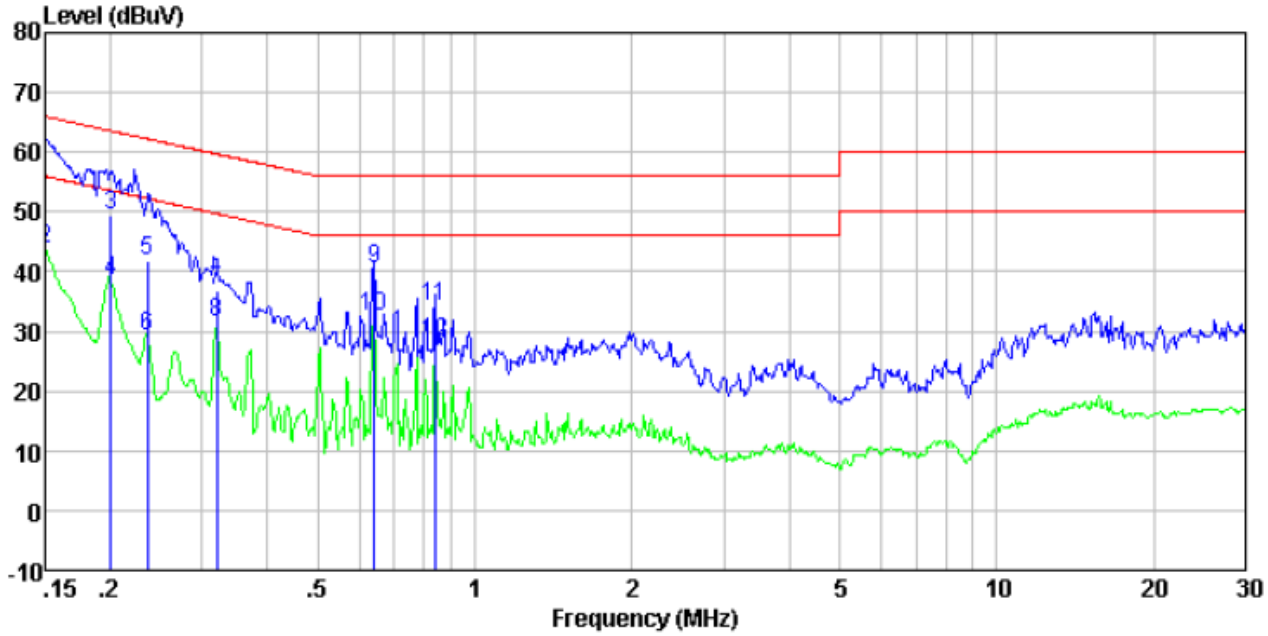
Measurement Data

Test mode:	Operation mode	Phase Polarity:	Line



Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.15	40.65	20.40	0.07	61.12	66.00	-4.88	QP
0.15	23.48	20.40	0.07	43.95	56.00	-12.05	Average
0.20	29.18	20.40	0.11	49.69	63.58	-13.89	QP
0.20	18.27	20.40	0.11	38.78	53.58	-14.80	Average
0.32	15.18	20.39	0.10	35.67	59.71	-24.04	QP
0.32	9.57	20.39	0.10	30.06	49.71	-19.65	Average
0.50	9.97	20.31	0.11	30.39	56.00	-25.61	QP
0.50	4.94	20.31	0.11	25.36	46.00	-20.64	Average
0.64	17.53	20.27	0.12	37.92	56.00	-18.08	QP
0.64	9.66	20.27	0.12	30.05	46.00	-15.95	Average
0.84	7.95	20.23	0.14	28.32	56.00	-27.68	QP
0.84	1.22	20.23	0.14	21.59	46.00	-24.41	Average

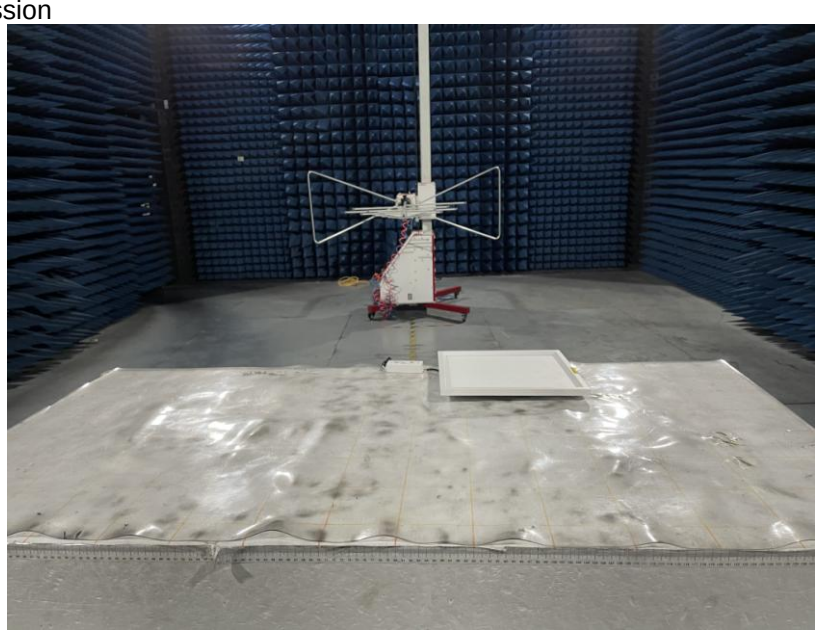
Test mode:	Operation mode	Phase Polarity:	Neutral



Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.15	40.51	20.40	0.07	60.98	66.00	-5.02	QP
0.15	23.40	20.40	0.07	43.87	56.00	-12.13	Average
0.20	29.02	20.40	0.11	49.53	63.58	-14.05	QP
0.20	18.12	20.40	0.11	38.63	53.58	-14.95	Average
0.24	21.26	20.40	0.11	41.77	62.26	-20.49	QP
0.24	8.73	20.40	0.11	29.24	52.26	-23.02	Average
0.32	16.39	20.39	0.10	36.88	59.71	-22.83	QP
0.32	10.88	20.39	0.10	31.37	49.71	-18.34	Average
0.64	19.96	20.27	0.12	40.35	56.00	-15.65	QP
0.64	12.04	20.27	0.12	32.43	46.00	-13.57	Average
0.84	13.77	20.23	0.14	34.14	56.00	-21.86	QP
0.84	7.67	20.23	0.14	28.04	46.00	-17.96	Average

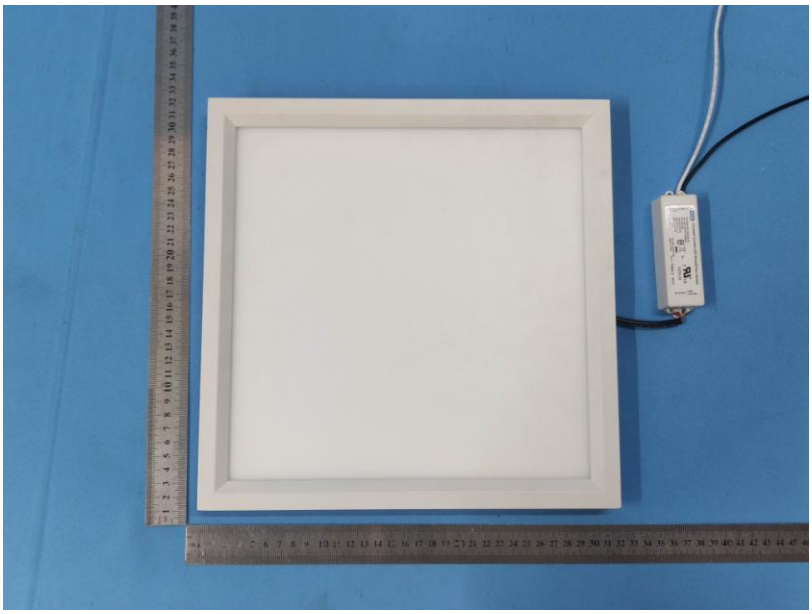
8 Test Setup Photo

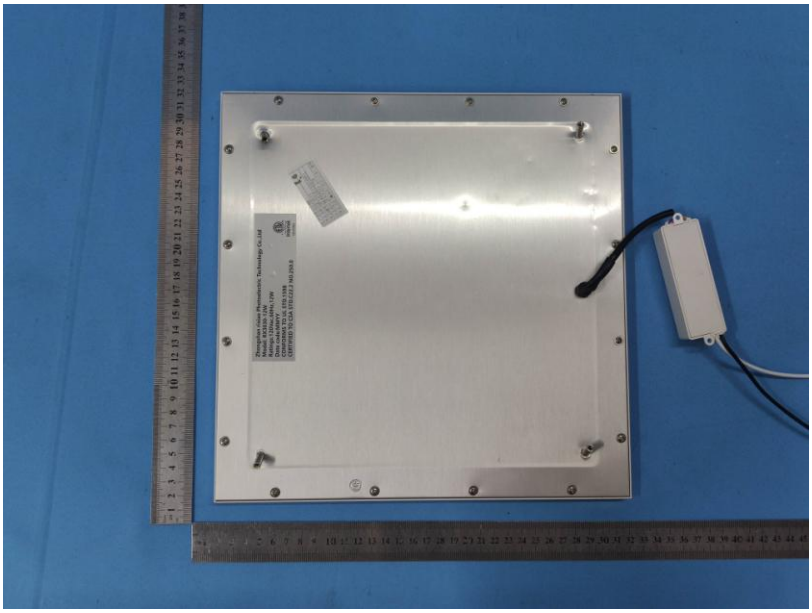
Radiated Emission

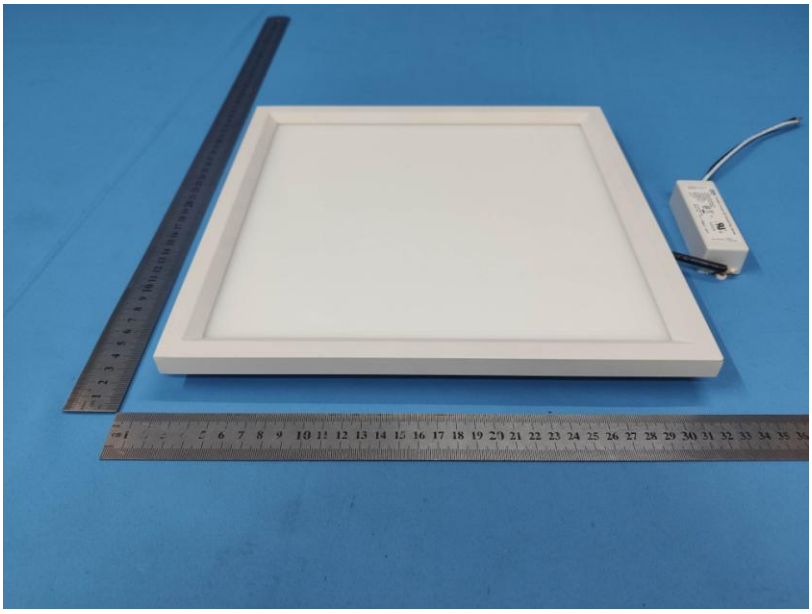


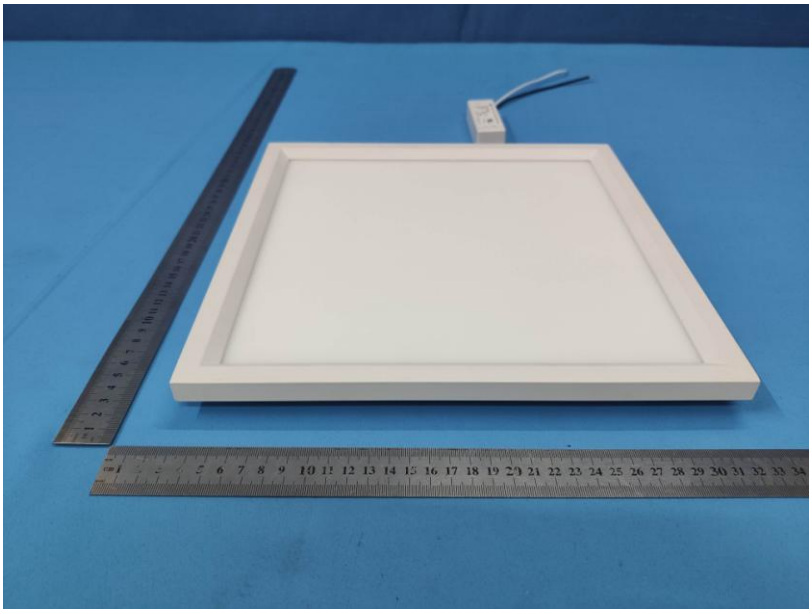
Conducted Emission

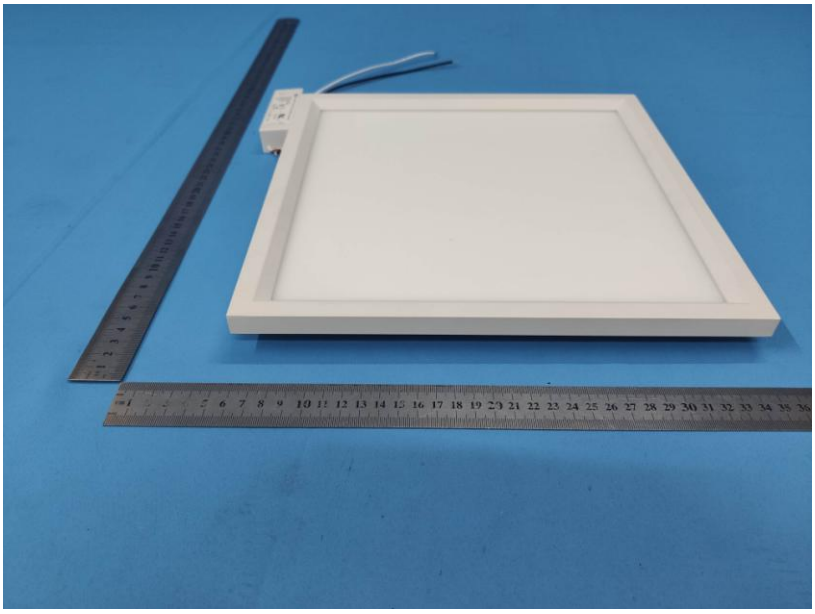
9 EUT Constructional Details

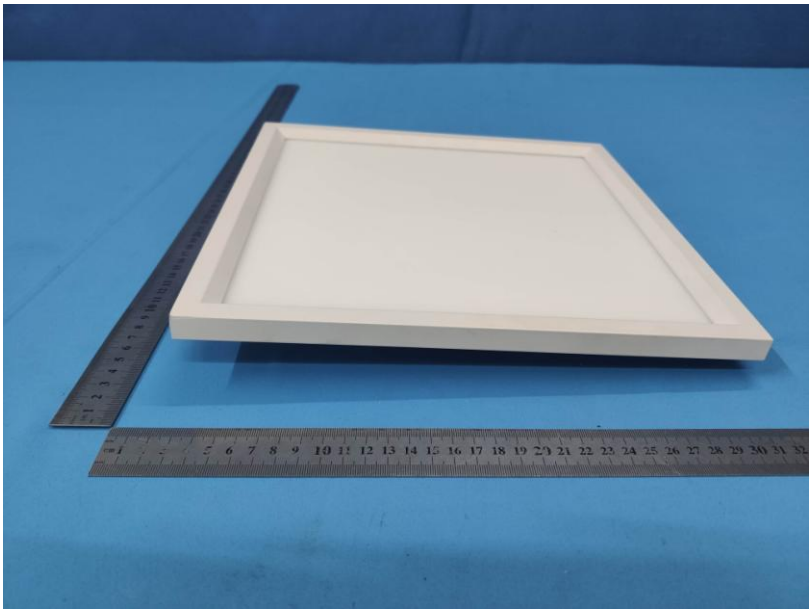


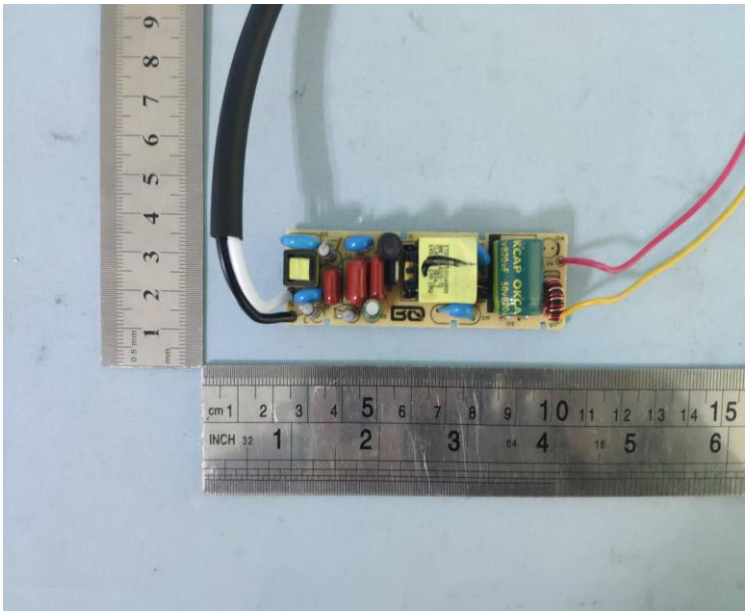


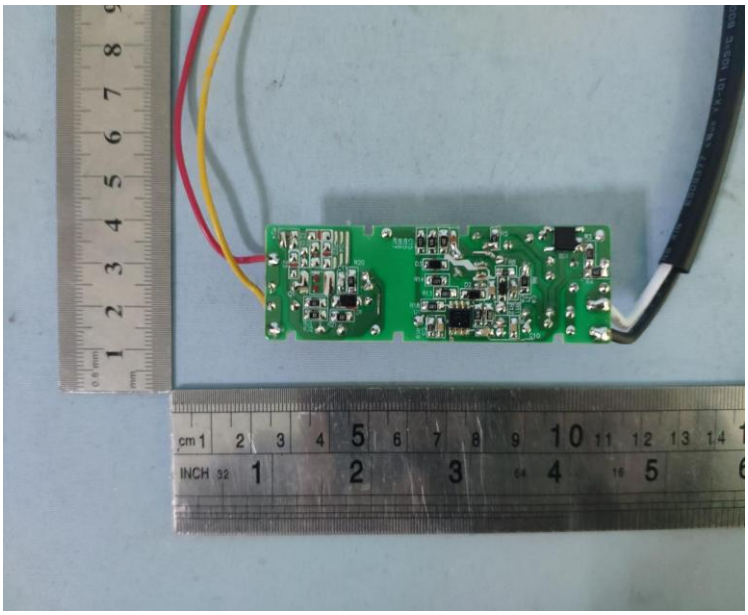












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