LCTECH

Test Report Number:	**LCZE20110119** **Total Page(s): 20**
Applicant Name:	Energy Recovery Products(Zhu hai) Co., Ltd
Applicant Address:	No.8,Pingdong Road 2,Nanping Science Park, Zhuhai, Guangdong, China
Test item:	LED Driver
Model / Type Reference:	See section 4.2 ratings and system details
Date of Issue:	2020-12-01
Testing Laboratory:	LCTECH Guangdong Testing Services Co., Ltd. 2/F.,Technology and Enterprise Development Center, Guangyuan Road, Xiaolan, Zhongshan, Guangdong, China
Test Specification:	FCC CFR Title 47 PART 15 Subpart B
Test Result:	Passed

Compiled by:			**Reviewed by:**		
2020-12-01	Alan Tian	Alan Tian	2020-12-01	Barlow Lv	Barlow Lv
Date	*Name*	*Signature*	*Date*	*Name*	*Signature*

Remark:

N/A

TEST SUMMARY

5.1 MAINS TERMINAL CONTINUOUS DISTURBANCE VOLTAGE
RESULT: Pass

5.2 RADIATED EMISSION
RESULT: Pass

Contents

1 General Remarks

When applying the basic standards in this test report, please refer to the applied generic or product family standards for edition information:
For dated basic standards, only the edition cited applies. For undated basic standards, the latest edition (including any amendments) applies.

1.1 Complementary Materials

Constructional Data form

2 Measurement Uncertainty

Test Item	Uncertainty
Uncertainty for Conduction emission test	3.26dB
Uncertainty for Radiation Emission test	3.14 dB (Polarize: V)
	3.16 dB (Polarize: H)

Note：This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3 Test Sites

3.1 Test Facilities

A. LCTECH Guangdong Testing Services Co., Ltd.
Add: 2/F.,Technology and Enterprise Development Center, Guangyuan Road, Xiaolan, Zhongshan, Guangdong, China
Test Sites: 1/F., Building I, Technology and Enterprise Development Center, Guangyuan Road, Xiaolan, Zhongshan, Guangdong, China

3.2 Testing

Date of receipt of test item : 2020-11-27
Date (s) of performance of tests : 2020-11-27

3.3 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
Radiated Emission						☒
1	EMI Test Receiver	R&S	ESCI 7	100965	2020-07-27	2021-07-27
2	Log-periodic Dipole Antenna	Schwarzbeck	VULB 9162	058	2020-01-10	2021-01-10
3	Pre-Amplifier	SCHWARZBECK	BBV9743	9743-143	2020-01-10	2021-01-10
4	3m Semi-anechoic	Zhongshuo Electronics	9mx6mx6m	N/A	2020-01-10	2021-01-10
Disturbance Voltage						☒
5	EMI Test Receiver	Rohde&Schwarz	ESCI	100939	2020-01-10	2021-01-10
6	Artificial Mains Network	Rohde&Schwarz	ENV216	3560655012	2020-07-27	2021-07-27
7	Shield Room	ZhongYu Elertron	8X5X3.5	N/A	2020-07-27	2021-07-27
8	Conducted Emission Software	FALA	EZ-EMC	N/A	N/A	N/A

☐: **Not Used**
☒: **Used**

4 General Product Information

According to the declaration from the applicant, this report covers the model as below: See section 4.2 ratings and system details. These models have the same internal configuration and PCB layout, the difference of these models was power, Therefore PSS30W-0700-42 was fully test in the report.

4.1 Product Description and Intended Use

Refer to Constructional Data Form and user manual.

4.2 Ratings and System Details

No.	Model No.	Input Voltage (Vac)	Max Output Power	Max output current(mA)	Output Voltage Range (Vdc)
1	PSSPPW-XXXX-VV-YYYYYY-ZZZZZZ	120/277	29.4	700	42

For model series PSSPPW-XXXX-VV-YYYYYY-ZZZZZZ

1. Where “PP”– If Pout<10W, “PP”=10; if 10W<=Pout<=15W, “PP”=15; if 15W<Pout<=20W, “PP”=20; if 20W<Pout<=25W, “PP”=25; if 25W<Pout<=30W, “PP”=30.
2. “XXXX” - Denotes regulated output current. Regulated output current is not greater than max output regulated current within the output voltage range.
3. “VV” - Denotes maximum output voltage(in voltage) which is not greater than max output voltage range.
4. “YYYYYY” - Denotes customer code for market purpose only. It could be blank, 2-6 digits, any combination of alphanumeric characters or blank.
5. “ZZZZZZ” - Denotes customer code for market purpose only. It could be blank, 2-6 digits, any combination of alphanumeric characters or blank.

4.3 Independent Operation Modes

The basic operation modes are:

A. Test in lighting mode

4.4 Noise Generating and Noise Suppressing Parts

Refer to the Constructional Data Form

4.5 Submitted Documents

Difference declaration
Rating Label
Circuit diagram
User manual
PCB layout

4.6 Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.7 Physical Configuration for Testing

Refer to the related chapter in this test report.

4.8 Test Operation and Test Software

Refer to test set up in chapter 5.
All testing were performed according to the procedures in ANSI C63.10: 2013.

4.9 Special Accessories and Auxiliary Equipment

None

4.10 Countermeasures to achieve EMC Compliance

The test sample, which has been tested, contained the noise suppression parts as described in the Constructional Data Form or the Technical Construction File. No additional measures were employed to achieve compliance.

5 Test Results EMISSION

5.1 Conducted Emission

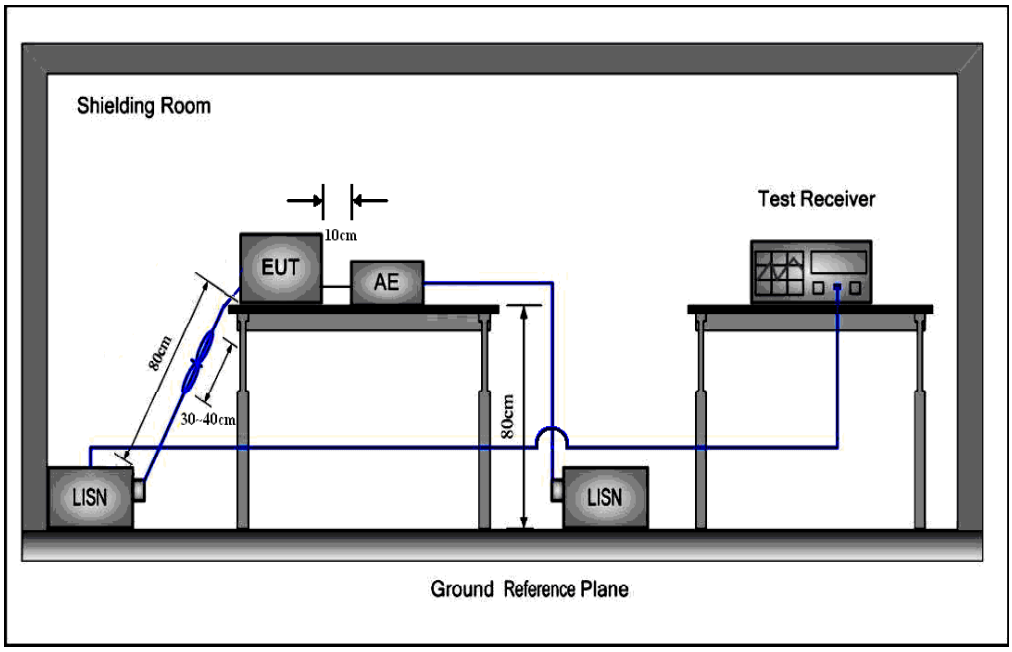
Results: **Pass**

Date of testing	:	Nov 27, 2020
Test procedure	:	ANSI C63.4:2014
Frequency range	:	0.15- 30MHz
Kind of test site	:	shielded room
Limits	:	FCC PART 15 Subpart B

Test setup

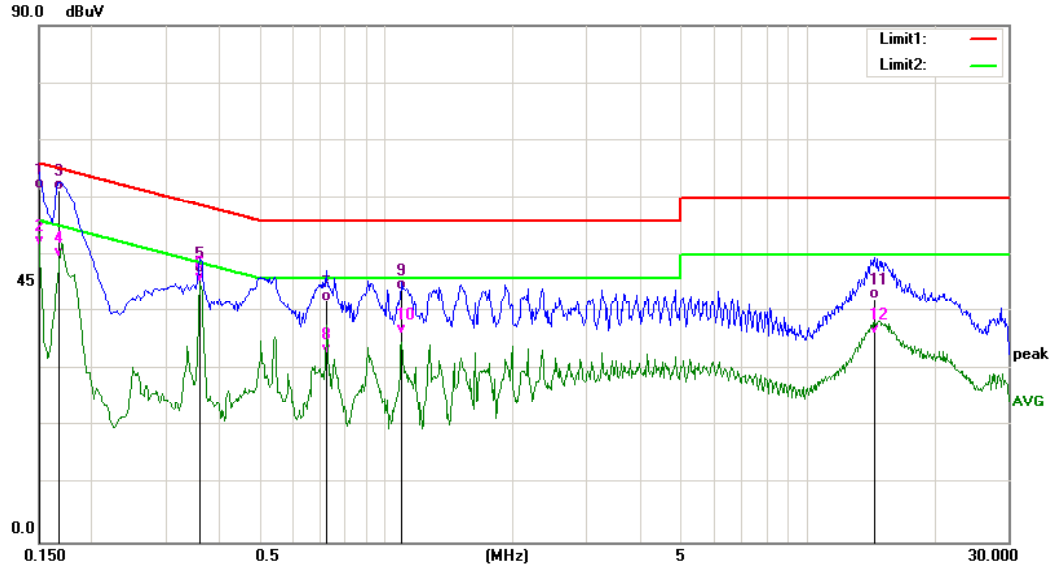
Input Voltage	:	120&277Vac, 60Hz
Operation Mode	:	A
Artificial Hand	:	Not applied
Earthing	:	Applied
Temperature	:	23°C
Humidity	:	58%
Air pressure	:	101KPA

Test Connection Diagram



Test data for model PSS30W-0700-42
Power Source: 120Vac, 60Hz **Terminal under Test: Live Line**
Fre. Range 150 kHz-30 MHz: IF Bandwidth:9KHz Step Size:4.5 kHz
Scan Time:20 ms Final Meas. Time:1 s

Peak and Average Scan:

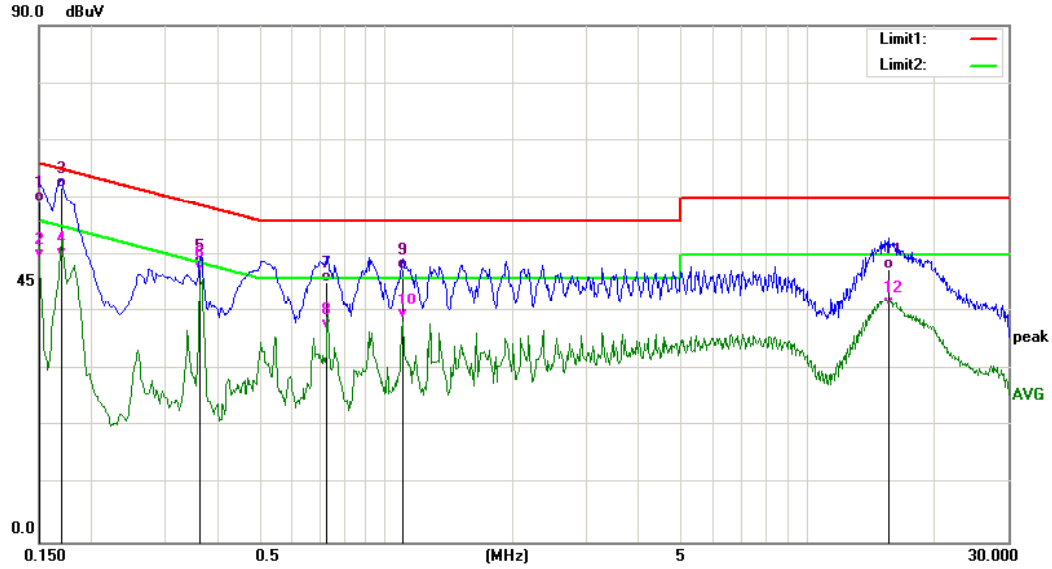


Quasi-peak and Average measurement:

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1500	51.29	10.28	61.57	66.00	-4.43	QP
2	0.1500	41.33	10.28	51.61	56.00	-4.39	AVG
3	0.1700	51.13	10.25	61.38	64.96	-3.58	QP
4	0.1700	39.47	10.25	49.72	54.96	-5.24	AVG
5	0.3620	36.79	10.16	46.95	58.68	-11.73	QP
6	0.3620	35.10	10.16	45.26	48.68	-3.42	AVG
7	0.7220	31.77	10.19	41.96	56.00	-14.04	QP
8	0.7220	22.61	10.19	32.80	46.00	-13.20	AVG
9	1.0900	33.83	10.20	44.03	56.00	-11.97	QP
10	1.0900	25.84	10.20	36.04	46.00	-9.96	AVG
11	14.4460	32.11	10.36	42.47	60.00	-17.53	QP
12	14.4460	25.65	10.36	36.01	50.00	-13.99	AVG

Test data for model PSS30W-0700-42
Power Source: 120Vac,60Hz Terminal under Test: Neutral Line
Fre. Range 150 kHz-30 MHz: IF Bandwidth:9KHz Step Size:4.5 kHz
Scan Time:20 ms Final Meas. Time:1 s

Peak and Average Scan:

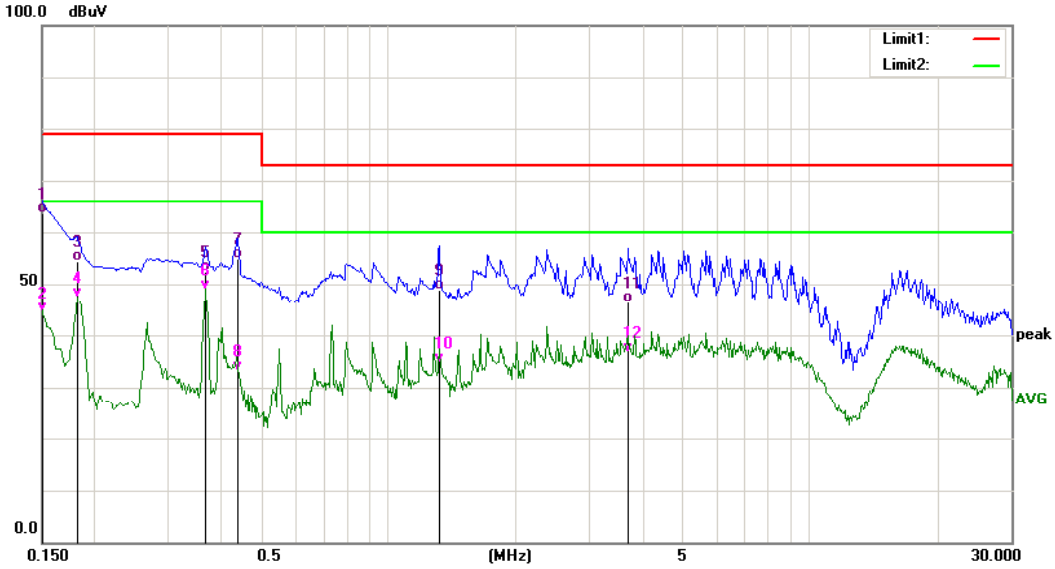


Quasi-peak and Average measurement:

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1500	49.05	10.28	59.33	66.00	-6.67	QP
2	0.1500	39.09	10.28	49.37	56.00	-6.63	AVG
3	0.1700	51.50	10.25	61.75	64.96	-3.21	QP
4	0.1700	39.34	10.25	49.59	54.96	-5.37	AVG
5	0.3634	38.21	10.16	48.37	58.65	-10.28	QP
6	0.3634	36.89	10.16	47.05	48.65	-1.60	AVG
7	0.7260	35.17	10.19	45.36	56.00	-10.64	QP
8	0.7260	26.82	10.19	37.01	46.00	-8.99	AVG
9	1.0940	37.28	10.20	47.48	56.00	-8.52	QP
10	1.0940	28.66	10.20	38.86	46.00	-7.14	AVG
11	15.6060	37.13	10.38	47.51	60.00	-12.49	QP
12	15.6060	30.77	10.38	41.15	50.00	-8.85	AVG

Test data for model PSS30W-0700-42
Power Source: 277Vac, 60Hz **Terminal under Test: Live Line**
Fre. Range 150 kHz-30 MHz: IF Bandwidth:9KHz Step Size:4.5 kHz
Scan Time:20 ms Final Meas. Time:1 s

Peak and Average Scan:

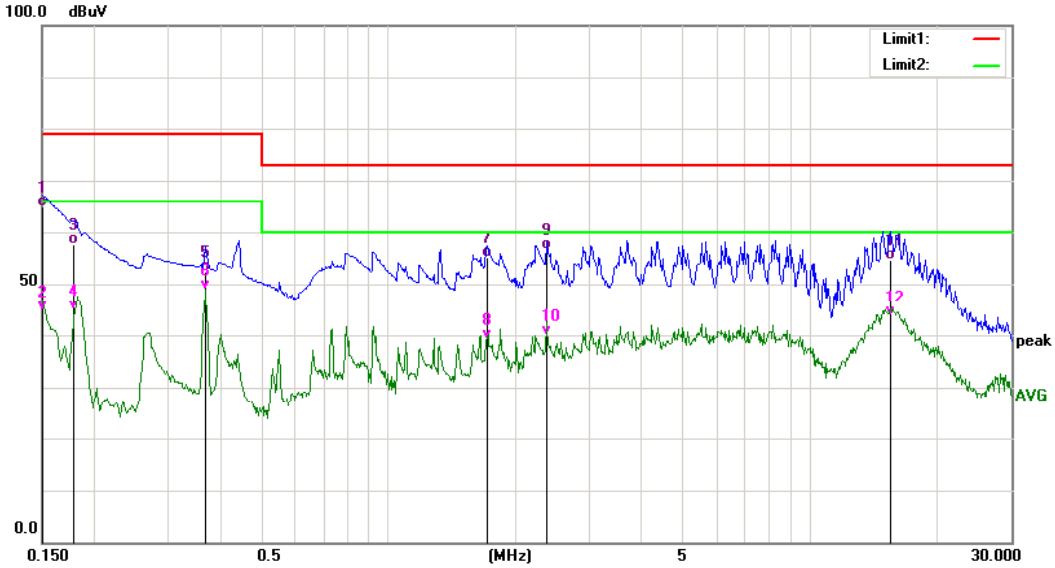


Quasi-peak and Average measurement:

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1500	53.33	10.28	63.61	79.00	-15.39	QP
2	0.1500	34.04	10.28	44.32	66.00	-21.68	AVG
3	0.1820	44.23	10.23	54.46	79.00	-24.54	QP
4	0.1820	37.19	10.23	47.42	66.00	-18.58	AVG
5	0.3660	42.29	10.16	52.45	79.00	-26.55	QP
6	0.3660	38.76	10.16	48.92	66.00	-17.08	AVG
7	0.4380	44.76	10.16	54.92	79.00	-24.08	QP
8	0.4380	22.98	10.16	33.14	66.00	-32.86	AVG
9	1.3180	38.74	10.20	48.94	73.00	-24.06	QP
10	1.3180	24.45	10.20	34.65	60.00	-25.35	AVG
11	3.6900	36.11	10.24	46.35	73.00	-26.65	QP
12	3.6900	26.28	10.24	36.52	60.00	-23.48	AVG

Test data for model PSS30W-0700-42
Power Source: 277Vac,60Hz **Terminal under Test: Neutral Line**
Fre. Range 150 kHz-30 MHz: IF Bandwidth:9KHz Step Size:4.5 kHz
Scan Time:20 ms Final Meas. Time:1 s

Peak and Average Scan:



Quasi-peak and Average measurement:

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1500	54.56	10.28	64.84	79.00	-14.16	QP
2	0.1500	34.34	10.28	44.62	66.00	-21.38	AVG
3	0.1796	47.35	10.23	57.58	79.00	-21.42	QP
4	0.1796	34.62	10.23	44.85	66.00	-21.15	AVG
5	0.3660	42.12	10.16	52.28	79.00	-26.72	QP
6	0.3660	38.75	10.16	48.91	66.00	-17.09	AVG
7	1.7100	44.95	10.21	55.16	73.00	-17.84	QP
8	1.7100	28.89	10.21	39.10	60.00	-20.90	AVG
9	2.3700	46.33	10.22	56.55	73.00	-16.45	QP
10	2.3700	29.78	10.22	40.00	60.00	-20.00	AVG
11	15.5460	44.18	10.38	54.56	73.00	-18.44	QP
12	15.5460	33.30	10.38	43.68	60.00	-16.32	AVG

5.2 Radiated Emission

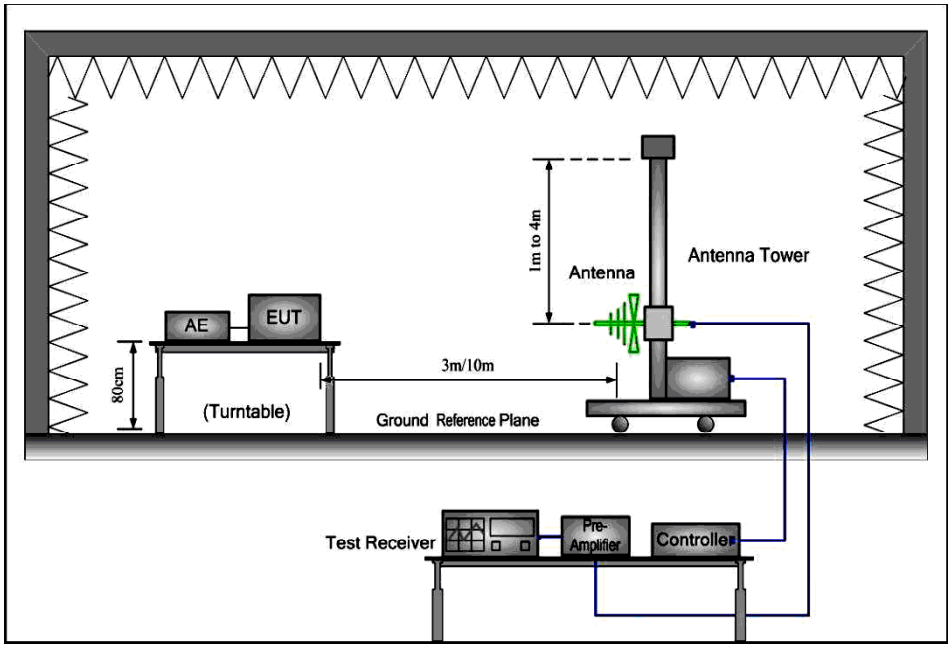
Results: **Pass**

Date of testing	:	Nov 27, 2020
Test procedure	:	ANSI C63.4:2014
Frequency range	:	30- 1000MHz
Kind of test site	:	Semi-Anechoic chamber
Limits	:	FCC PART 15 Subpart B

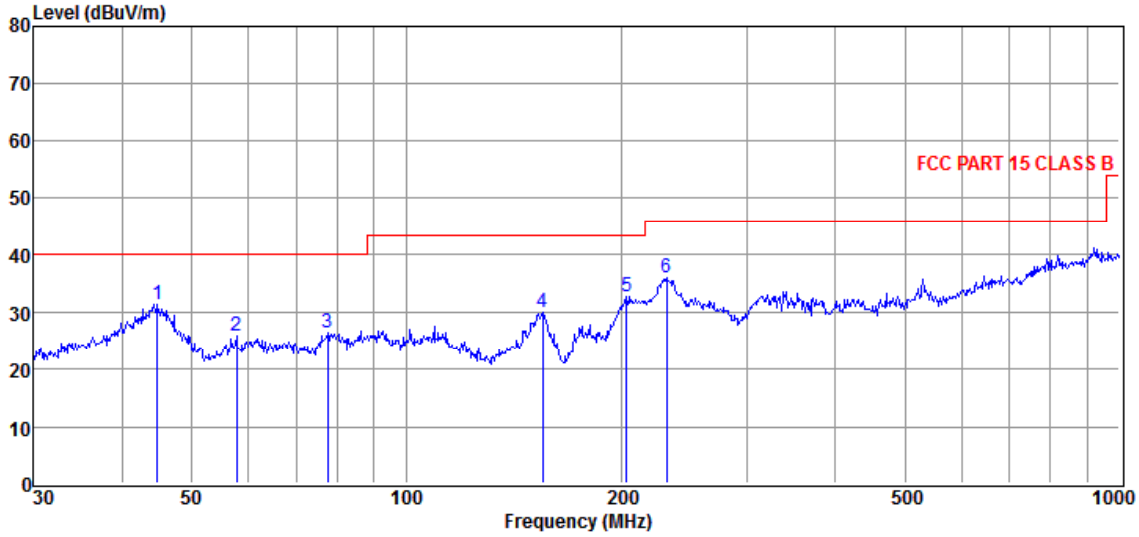
Test setup:

Input Voltage	:	120&277Vac, 60Hz
Operation Mode	:	A
Artificial Hand	:	Not applied
Earthing	:	Applied
Temperature	:	24°C
Humidity	:	56%
Air pressure	:	101KPA

Test Connection Diagram



Test data for model PSS30W-0700-42
Power Source: 120Vac, 60Hz
Polarization: Horizontal Meas. Distance:3 m
Fre. Range:30 MHz-1000 MHz: RBW:120 kHz Final Meas. Time:1 s
Peak Sweep:

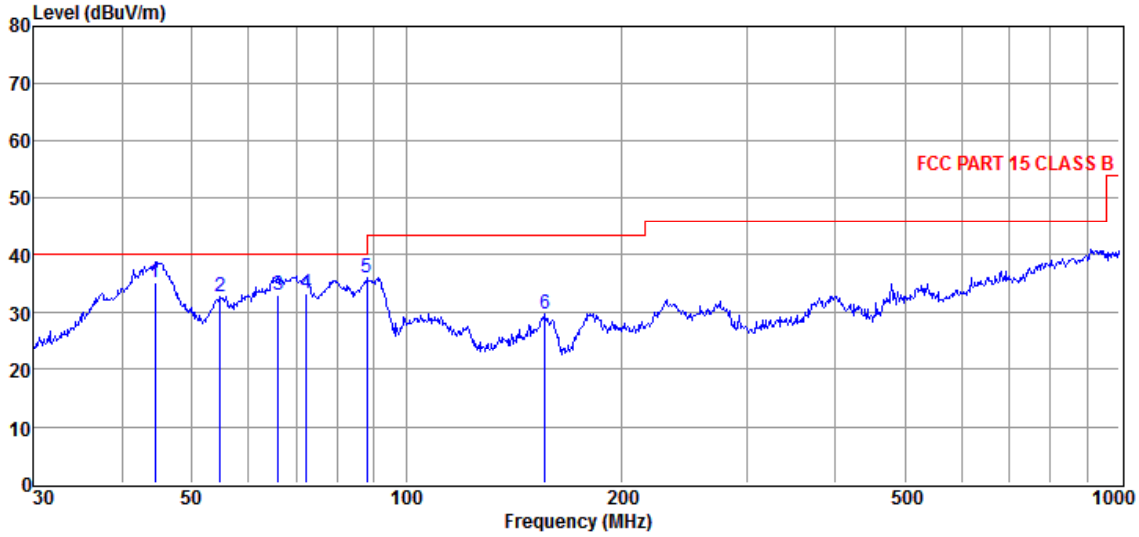


Quasi-peak measurement:

Item (Mark)	Freq (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	44.74	14.32	16.42	0.00	0.55	31.29	40.00	-8.71	Peak	HORIZONTAL
2	57.80	14.85	10.42	0.00	0.64	25.91	40.00	-14.09	Peak	HORIZONTAL
3	77.59	19.11	6.65	0.00	0.75	26.51	40.00	-13.49	Peak	HORIZONTAL
4	155.36	21.26	7.59	0.00	1.11	29.96	43.50	-13.54	Peak	HORIZONTAL
5	203.52	21.65	9.71	0.00	1.32	32.68	43.50	-10.82	Peak	HORIZONTAL
6	231.72	22.87	11.60	0.00	1.43	35.90	46.00	-10.10	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss
2. If Peak Result comply with QP limit, QP Result is deemed to comply with QP limit
3. Test setup: RBW: 120kHz, VBW: 300kHz, Sweep time: auto

Test data for model PSS30W-0700-42
Power Source :120Vac, 60Hz
Polarization: Vertical Meas. Distance:3 m
Fre. Range:30 MHz-1000 MHz: RBW:120 kHz Final Meas. Time:1 s
Peak Sweep:

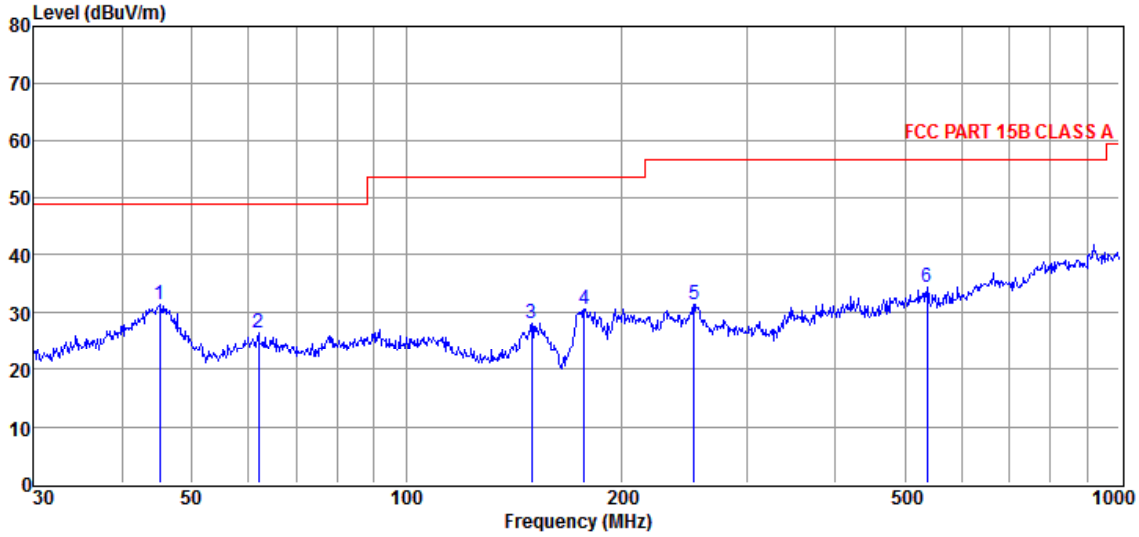


Quasi-peak measurement:

Item (Mark)	Freq (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	44.43	18.10	16.58	0.00	0.55	35.23	40.00	-4.77	QP	VERTICAL
2	54.84	22.86	9.18	0.00	0.62	32.66	40.00	-7.34	Peak	VERTICAL
3	66.03	23.27	9.14	0.00	0.68	33.09	40.00	-6.91	QP	VERTICAL
4	72.34	25.30	7.23	0.00	0.71	33.24	40.00	-6.76	QP	VERTICAL
5	88.03	26.59	8.73	0.00	0.79	36.11	43.50	-7.39	Peak	VERTICAL
6	156.46	20.97	7.54	0.00	1.11	29.62	43.50	-13.88	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss
2. If Peak Result comply with QP limit, QP Result is deemed to comply with QP limit
3. Test setup: RBW: 120kHz, VBW: 300kHz, Sweep time: auto

Test data for model PSS30W-0700-42
Power Source :277Vac, 60Hz
Polarization: Horizontal Meas. Distance:3 m
Fre. Range:30 MHz-1000 MHz: RBW:120 kHz Final Meas. Time:1 s
Peak Sweep:

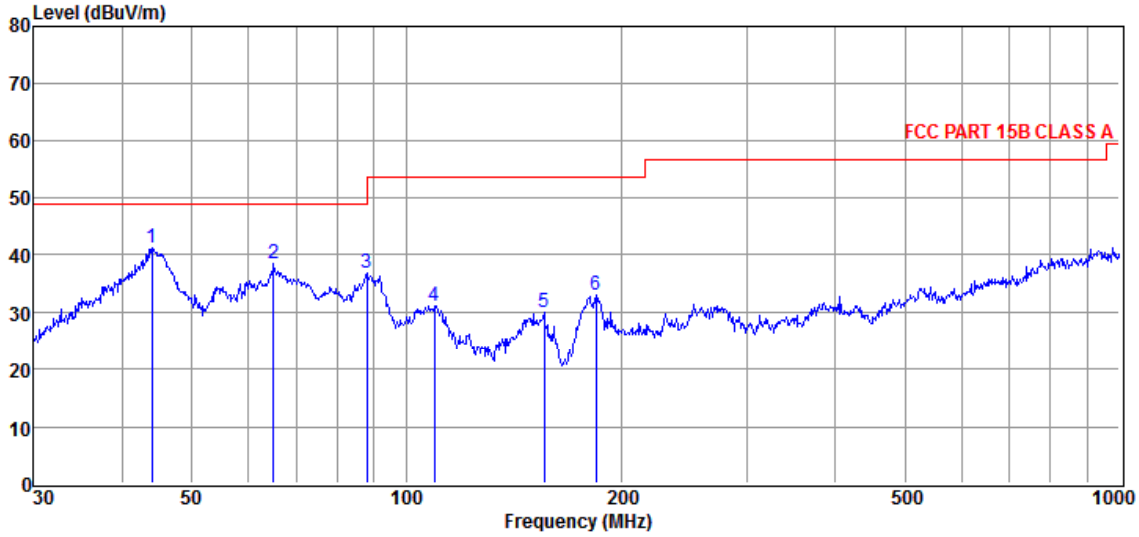


Quasi-peak measurement:

Item (Mark)	Freq (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	45.06	14.47	16.27	0.00	0.56	31.30	49.00	-17.70	Peak	HORIZONTAL
2	62.00	15.24	10.51	0.00	0.66	26.41	49.00	-22.59	Peak	HORIZONTAL
3	150.01	19.20	7.80	0.00	1.08	28.08	53.50	-25.42	Peak	HORIZONTAL
4	177.51	22.26	7.15	0.00	1.21	30.62	53.50	-22.88	Peak	HORIZONTAL
5	252.95	17.45	12.36	0.00	1.51	31.32	56.50	-25.18	Peak	HORIZONTAL
6	537.59	13.85	17.69	0.00	2.72	34.26	56.50	-22.24	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss
2. If Peak Result comply with QP limit, QP Result is deemed to comply with QP limit
3. Test setup: RBW: 120kHz, VBW: 300kHz, Sweep time: auto

Test data for model PSS30W-0700-42
Power Source :277Vac, 60Hz
Polarization: Vertical Meas. Distance:3 m
Fre. Range:30 MHz-1000 MHz: RBW:120 kHz Final Meas. Time:1 s
Peak Sweep:



Quasi-peak measurement:

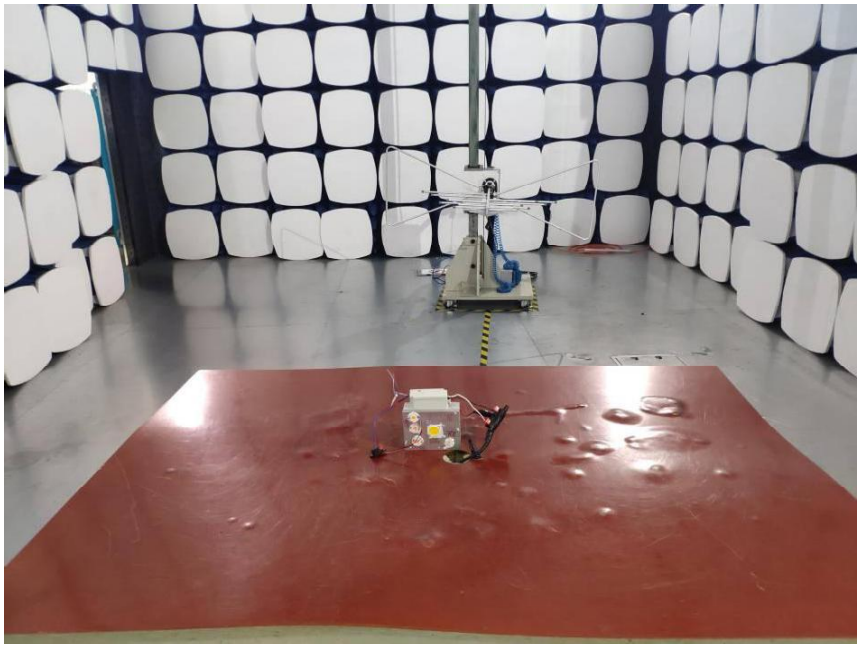
Item (Mark)	Freq (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	43.97	23.83	16.77	0.00	0.55	41.15	49.00	-7.85	Peak	VERTICAL
2	65.11	28.43	9.46	0.00	0.68	38.57	49.00	-10.43	Peak	VERTICAL
3	88.03	27.29	8.73	0.00	0.79	36.81	53.50	-16.69	Peak	VERTICAL
4	109.41	18.46	11.76	0.00	0.90	31.12	53.50	-22.38	Peak	VERTICAL
5	155.91	21.30	7.56	0.00	1.11	29.97	53.50	-23.53	Peak	VERTICAL
6	184.49	23.36	8.40	0.00	1.24	33.00	53.50	-20.50	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss
2. If Peak Result comply with QP limit, QP Result is deemed to comply with QP limit
3. Test setup: RBW: 120kHz, VBW: 300kHz, Sweep time: auto

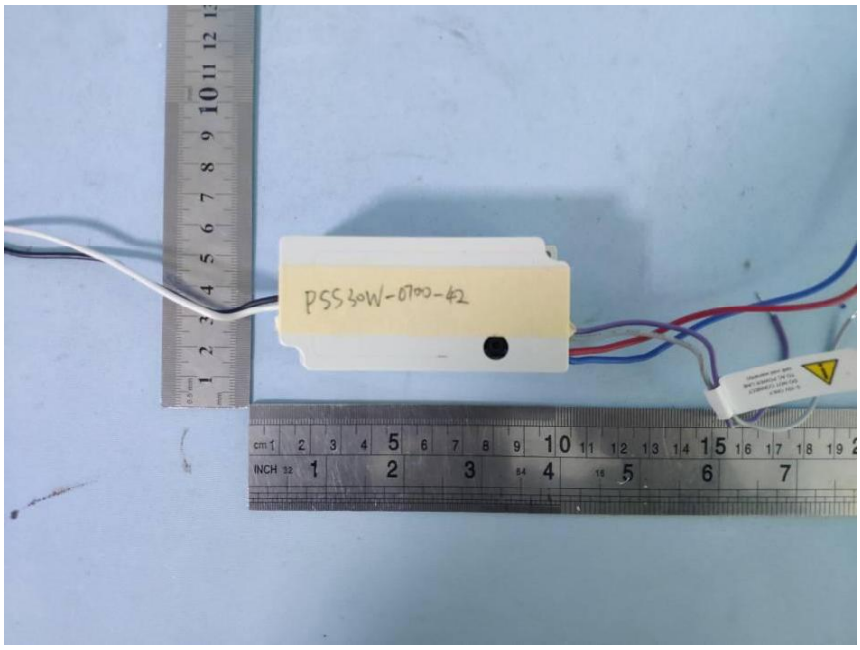
6 The photos of test setting

Terminal Continuous Disturbance Voltage:

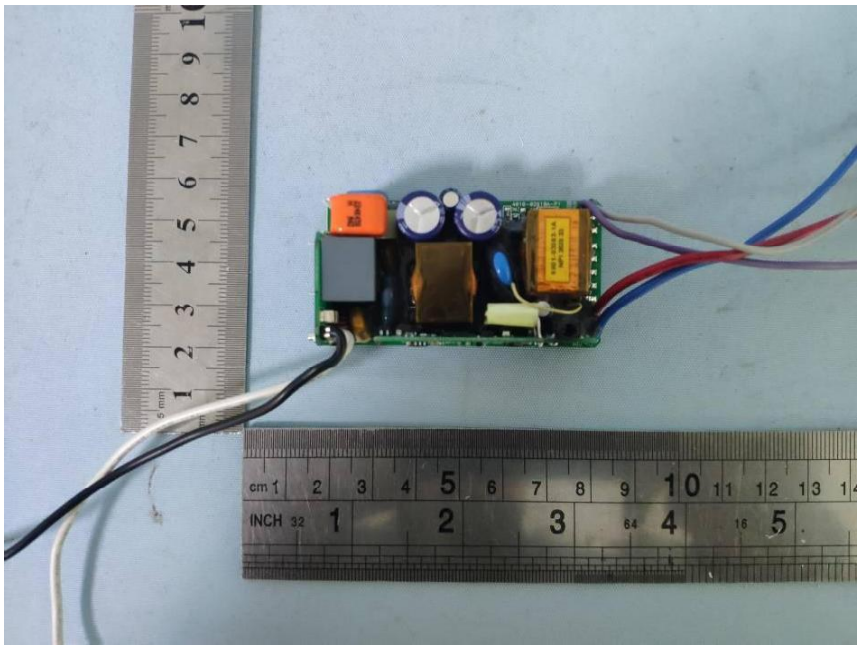
Radiated Emission:



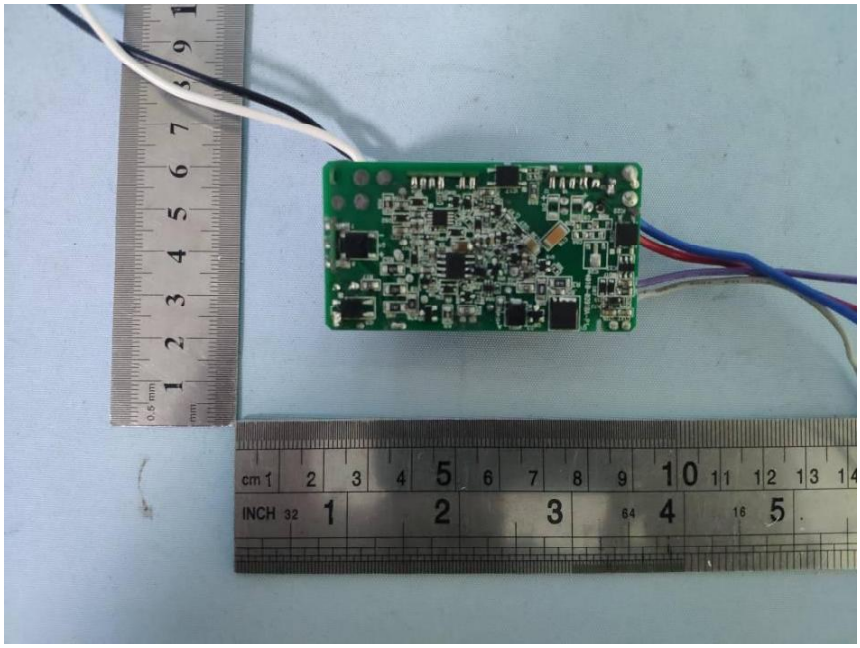
7 The photos of EUT



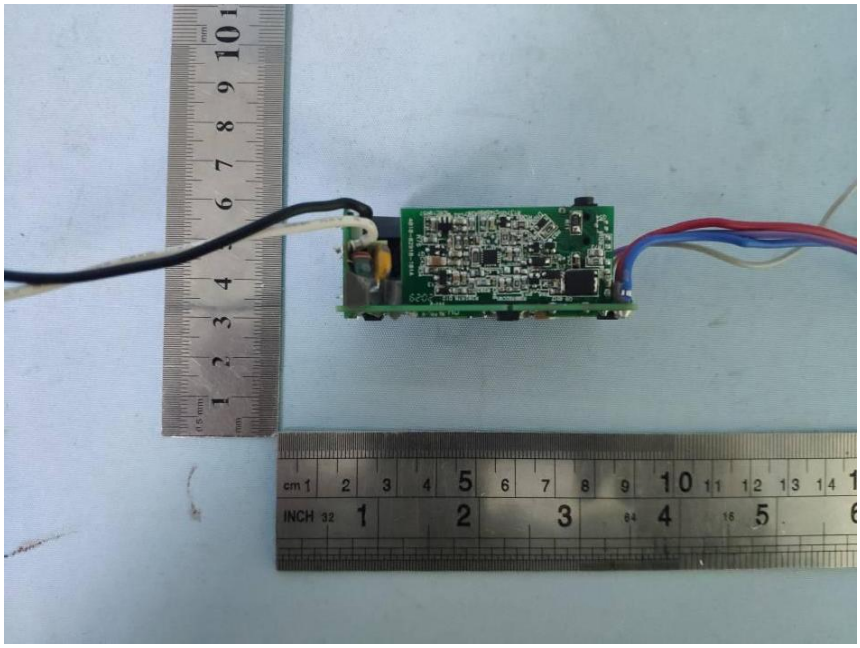
Picture 1



Picture 2



Picture 3



Picture 4

------End of test report------

LCTECH Guangdong Testing Services Co., Ltd.
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