

Test Report Number:	LCZE20070010	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:	2020-07-17	
Testing Laboratory:	LCTECH Guangdong Testing Services Co., Ltd. 2/F.,Technology and Enterprise Development Center, Guangyuan Road, Xiaolan, Zhongshan, Guangdong, China	
Test Specification:	FCC PART 15 Subpart B	
Test Result:	Passed	
Compiled by:	Reviewed by:	
2020-07-17	Alan Tian	Alan Tian
2020-07-17	Barlow Lv	Barlow Lv
<i>Date</i>	<i>Name</i>	<i>Signature</i>
<i>Date</i>	<i>Name</i>	<i>Signature</i>
Remark:		
N/A		
<p>The duplication of this report or parts of it and its use for advertising purposes is only allowed with permission of the testing laboratory. This report contains the result of the examination of the product sample submitted by the applicant. A general statement concerning the quality of the products from the series manufacture cannot be derived therefore.</p>		



TEST SUMMARY

- 5.1 MAINS TERMINAL CONTINUOUS DISTURBANCE VOLTAGE
RESULT: Pass
- 5.2 RADIATED EMISSION
RESULT: Pass

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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 : 2020-07-06

Date (s) of performance of tests : 2020-07-16

LCTECH Guangdong Testing Services Co., Ltd.
Add: 2/F., Technology and Enterprise Development Center,
Guangyuan Road, Xiaolan, Zhongshan, Guangdong, China

Tel: +86-760-22833366

Fax: +86-760-22833399

E-mail: Service@lccert.com

<http://www.lccert.com>

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						<input checked="" type="checkbox"/>
1	EMI Test Receiver	R&S	ESCI 7	100965	2019-07-27	2020-07-27
2	Log-periodic Dipole Antenna	Schwarzbeck	VULB 9162	058	2020-01-03	2021-01-02
3	Pre-Amplifier	SCHWARZBECK	BBV9743	9743-143	2020-01-03	2021-01-02
4	3m Semi-anechoic	Zhongshuo Electronics	9mx6mx6m	N/A	2020-01-03	2021-01-02
Disturbance Voltage						<input checked="" type="checkbox"/>
5	EMI Test Receiver	Rohde&Schwarz	ESCI	100939	2020-01-03	2021-01-02
6	Artificial Mains Network	Rohde&Schwarz	ENV216	3560655012	2019-07-27	2020-07-27
7	Shield Room	ZhongYu Elertron	8X5X3.5	N/A	2019-07-27	2020-07-27
8	Conducted Emission Software	FALA	EZ-EMC	N/A	N/A	N/A

☐ : Not Used

☒ : Used

4 General Product Information

The report LCZE20070010 was base on LCZE19040027 Changs model description. On the original basis, the voltage is increased to 56V, so DAL50W-0850-56 was fully tested 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	DALPPA-XXXX -VV-T-YYYYY- ZZZZ	120-277	50.4	1200	56

For model series DALPPA-XXXX -VV-T-YYYYY-ZZZZ

1. "A" represents the input voltage, should be "W", representing input voltage 120 to 277 Vac;
2. "XXXX" represents output current, for example 1200 means 1200mA;
3. "VV" represents the output voltage, while "YYYYY" and "ZZZZ" can be any alpha-numeric character or blank and are for marketing purpose only;
4. "PP" represents output power, can be "10" to "50", in increments of 1 from 10W to 50 W;
5. For any specific models, the maximum output current rating= output power/output voltage.

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:

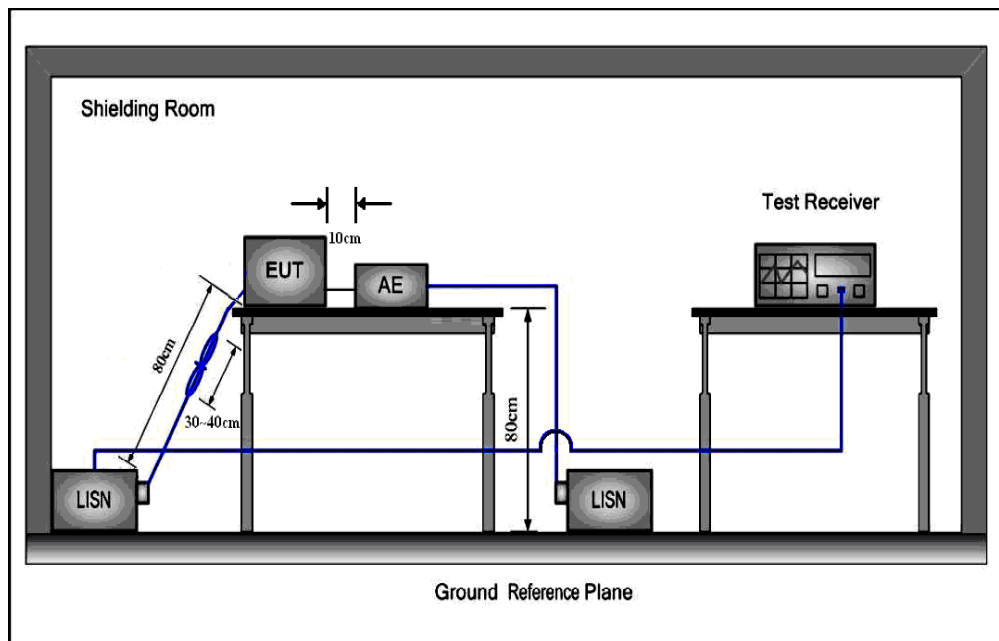
Pass

Date of testing : July 16, 2020
 Test procedure : ANSI C63.4:2014
 Frequency range : 0.15- 30MHz
 Kind of test site : shielded room
 Limits : FCC PART 15 Subpart B: Class B
 FCC PART 15 Subpart B: Class A

Test setup

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

Test Connection Diagram



Test data for model DAL50W-0850-56

Power Source: 120Vac, 60Hz

Terminal under Test: Live Line

Fre. Range 150 kHz-30 MHz:

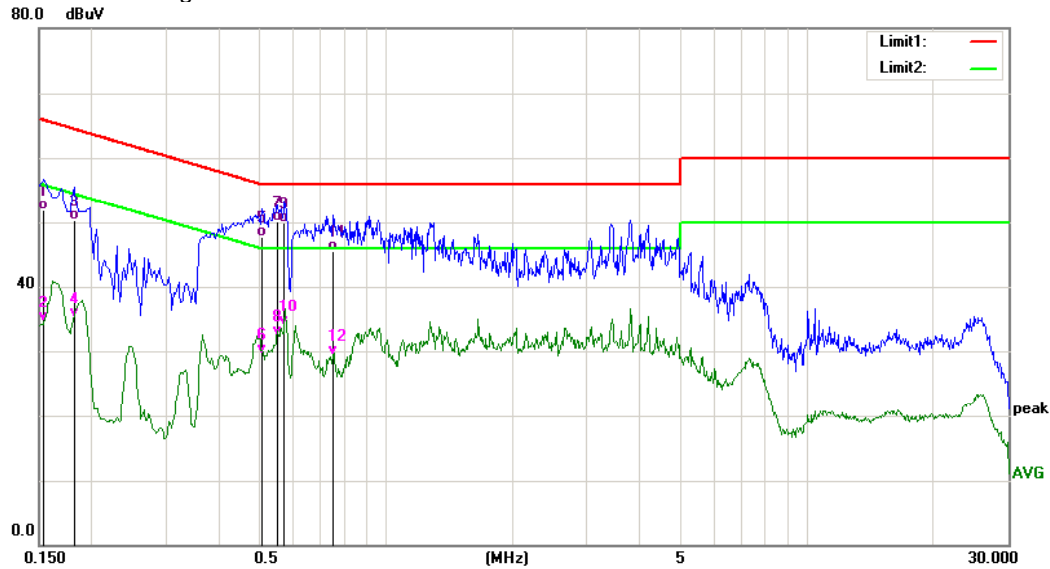
IF Bandwidth:9KHz

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	0.1540	42.22	9.65	51.87	65.78	-13.91	QP
2	0.1540	24.89	9.65	34.54	55.78	-21.24	AVG
3	0.1820	40.68	9.67	50.35	64.39	-14.04	QP
4	0.1820	25.47	9.67	35.14	54.39	-19.25	AVG
5	0.5100	38.03	9.70	47.73	56.00	-8.27	QP
6	0.5100	19.81	9.70	29.51	46.00	-16.49	AVG
7	0.5540	40.33	9.71	50.04	56.00	-5.96	QP
8	0.5540	22.56	9.71	32.27	46.00	-13.73	AVG
9	0.5740	40.18	9.71	49.89	56.00	-6.11	QP
10	0.5740	24.27	9.71	33.98	46.00	-12.02	AVG
11	0.7500	35.82	9.71	45.53	56.00	-10.47	QP
12	0.7500	19.63	9.71	29.34	46.00	-16.66	AVG

Test data for model DAL50W-0850-56

Power Source: 120Vac,60Hz

Fre. Range 150 kHz-30 MHz:

Terminal under Test: Neutral Line

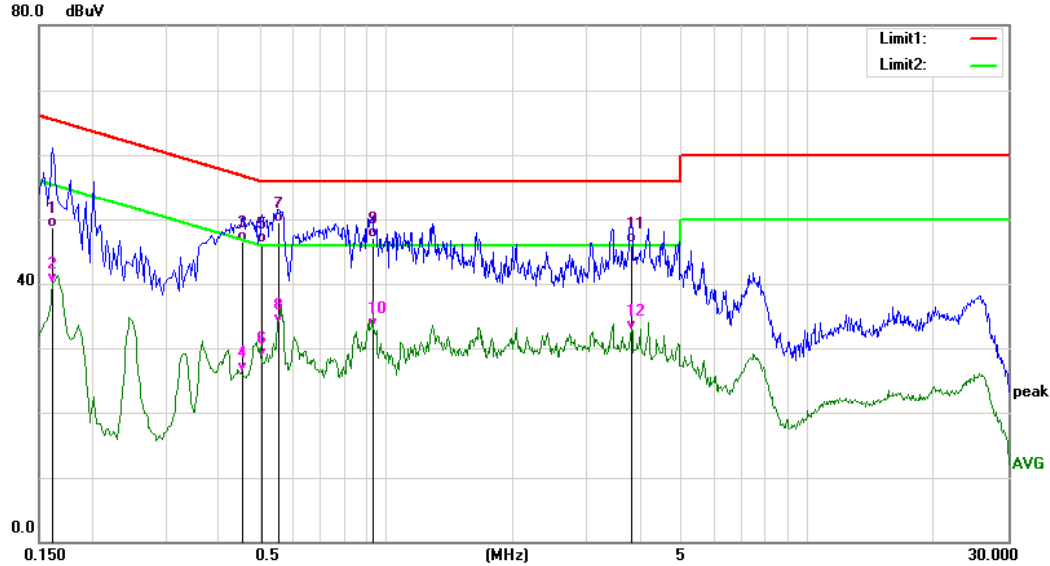
IF Bandwidth:9KHz

Scan Time:20 ms

Step Size:4.5 kHz

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	0.1620	39.06	9.66	48.72	65.36	-16.64	QP
2	0.1620	30.43	9.66	40.09	55.36	-15.27	AVG
3	0.4580	36.72	9.70	46.42	56.73	-10.31	QP
4	0.4580	16.60	9.70	26.30	46.73	-20.43	AVG
5	0.5100	36.68	9.70	46.38	56.00	-9.62	QP
6	0.5100	18.71	9.70	28.41	46.00	-17.59	AVG
7	0.5580	39.84	9.71	49.55	56.00	-6.45	QP
8	0.5580	24.01	9.71	33.72	46.00	-12.28	AVG
9	0.9300	37.46	9.74	47.20	56.00	-8.80	QP
10	0.9300	23.39	9.74	33.13	46.00	-12.87	AVG
11	3.8340	36.34	9.99	46.33	56.00	-9.67	QP
12	3.8340	22.66	9.99	32.65	46.00	-13.35	AVG

Test data for model DAL50W-0850-56

Power Source: 277Vac, 60Hz

Terminal under Test: Live Line

Fre. Range 150 kHz-30 MHz:

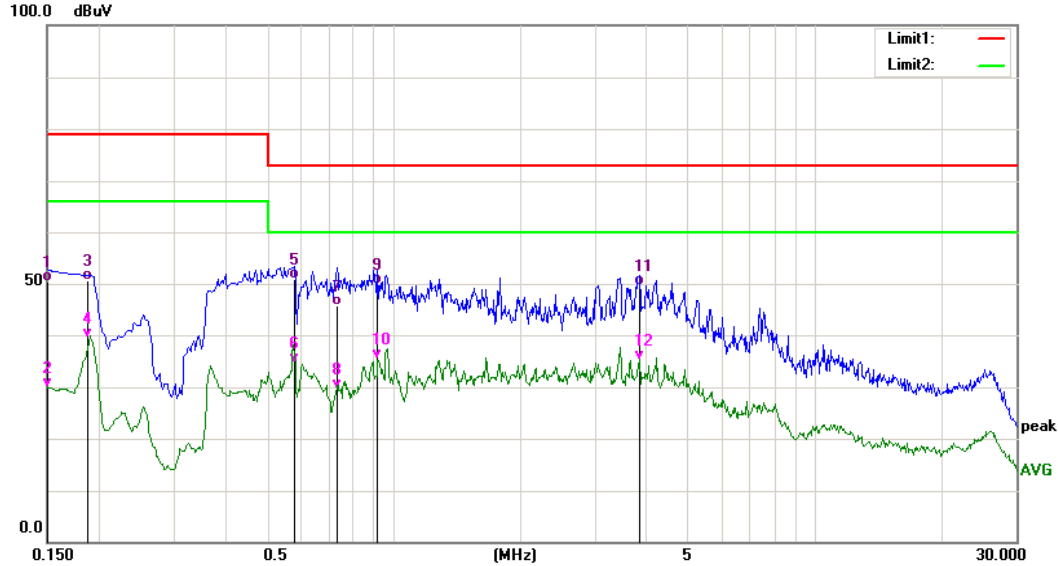
IF Bandwidth:9KHz

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	40.73	9.65	50.38	79.00	-28.62	QP
2	0.1500	20.30	9.65	29.95	66.00	-36.05	AVG
3	0.1904	40.96	9.67	50.63	79.00	-28.37	QP
4	0.1904	29.79	9.67	39.46	66.00	-26.54	AVG
5	0.5820	41.10	9.72	50.82	73.00	-22.18	QP
6	0.5820	24.82	9.72	34.54	60.00	-25.46	AVG
7	0.7340	36.01	9.71	45.72	73.00	-27.28	QP
8	0.7340	19.85	9.71	29.56	60.00	-30.44	AVG
9	0.9180	40.11	9.73	49.84	73.00	-23.16	QP
10	0.9180	25.73	9.73	35.46	60.00	-24.54	AVG
11	3.8340	39.75	9.99	49.74	73.00	-23.26	QP
12	3.8340	25.09	9.99	35.08	60.00	-24.92	AVG

Test data for model DAL50W-0850-56

Power Source: 277Vac,60Hz

Terminal under Test: Neutral Line

Fre. Range 150 kHz-30 MHz:

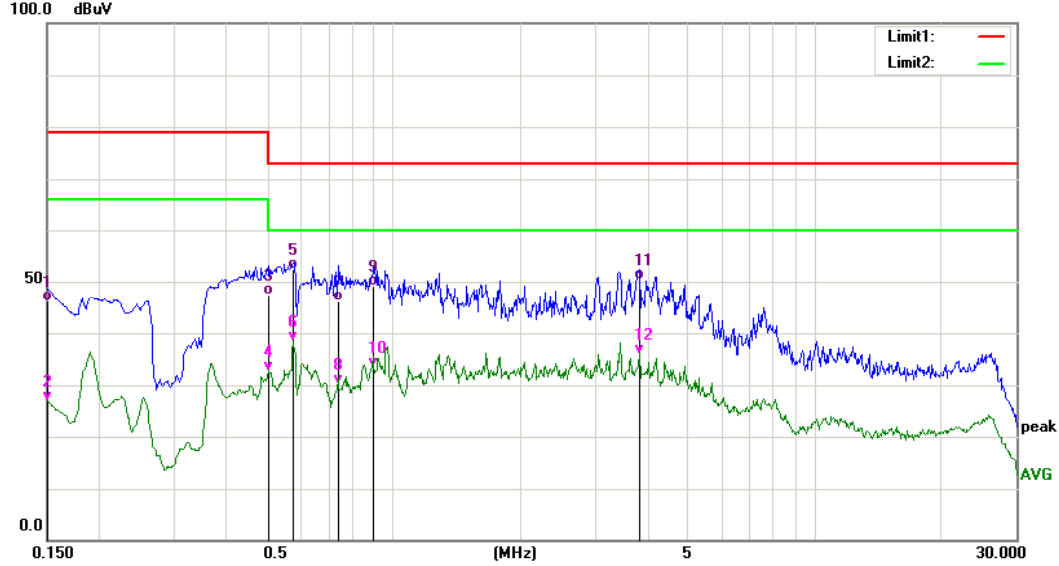
IF Bandwidth:9KHz

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	36.40	9.65	46.05	79.00	-32.95	QP
2	0.1500	17.30	9.65	26.95	66.00	-39.05	AVG
3	0.5020	37.77	9.70	47.47	73.00	-25.53	QP
4	0.5020	22.86	9.70	32.56	60.00	-27.44	AVG
5	0.5780	42.63	9.72	52.35	73.00	-20.65	QP
6	0.5780	28.56	9.72	38.28	60.00	-21.72	AVG
7	0.7380	36.43	9.71	46.14	73.00	-26.86	QP
8	0.7380	20.44	9.71	30.15	60.00	-29.85	AVG
9	0.8980	39.35	9.73	49.08	73.00	-23.92	QP
10	0.8980	23.66	9.73	33.39	60.00	-26.61	AVG
11	3.8300	40.28	9.99	50.27	73.00	-22.73	QP
12	3.8300	25.78	9.99	35.77	60.00	-24.23	AVG

5.2 Radiated Emission

Results:

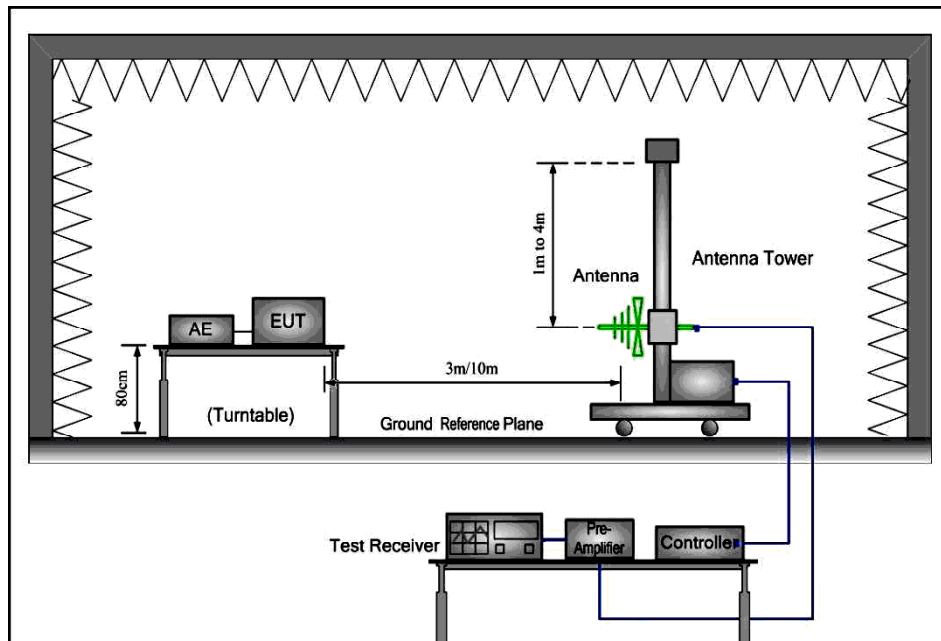
Pass

Date of testing : July 16, 2020
 Test procedure : ANSI C63.4:2014
 Frequency range : 30- 1000MHz
 Kind of test site : Semi-Anechoic chamber
 Limits : FCC PART 15 Subpart B: Class B
 FCC PART 15 Subpart B: Class A

Test setup:

Input Voltage : 120&277Vac, 60Hz
 Operation Mode : Test in lighting mode
 Artificial Hand : Not applied
 Earthing : Applied
 Temperature : 25°C
 Humidity : 59%
 Air pressure : 101KPA

Test Connection Diagram



Test data for model DAL50W-0850-56

Power Source: 120Vac, 60Hz

Polarization: Horizontal

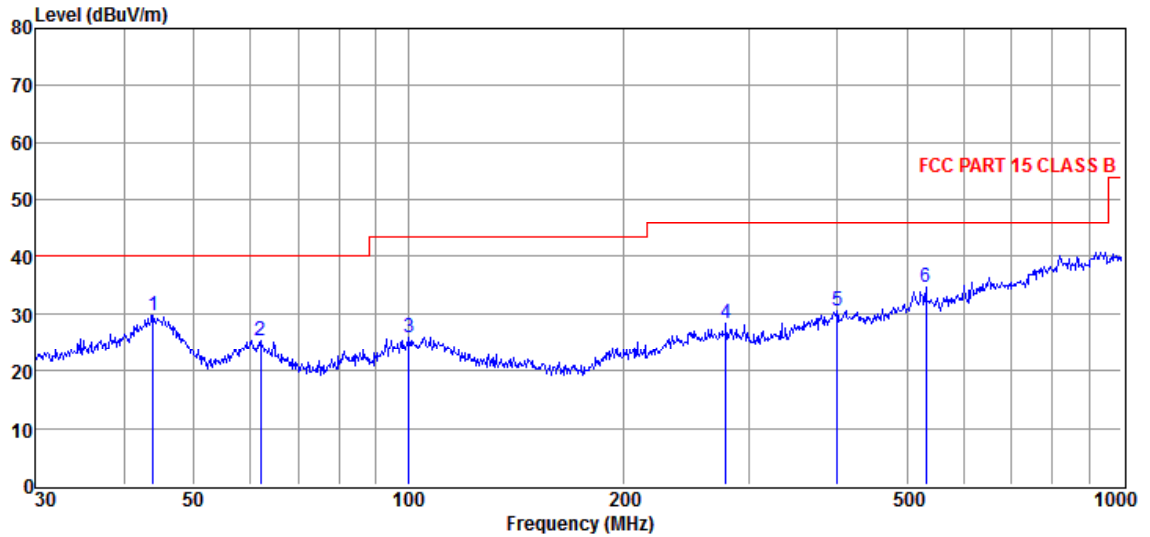
Fre. Range: 30 MHz-1000 MHz:

Peak Sweep:

RBW: 120 kHz

Meas. Distance: 3 m

Final Meas. Time: 1 s



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	43.81	12.49	16.66	0.00	0.55	29.70	40.00	-10.30	Peak	HORIZONTAL
2	62.00	14.16	10.51	0.00	0.66	25.33	40.00	-14.67	Peak	HORIZONTAL
3	100.23	13.56	11.53	0.00	0.85	25.94	43.50	-17.56	Peak	HORIZONTAL
4	279.04	13.78	12.78	0.00	1.63	28.19	46.00	-17.81	Peak	HORIZONTAL
5	399.03	12.74	15.77	0.00	2.14	30.65	46.00	-15.35	Peak	HORIZONTAL
6	531.96	13.79	18.14	0.00	2.69	34.62	46.00	-11.38	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss

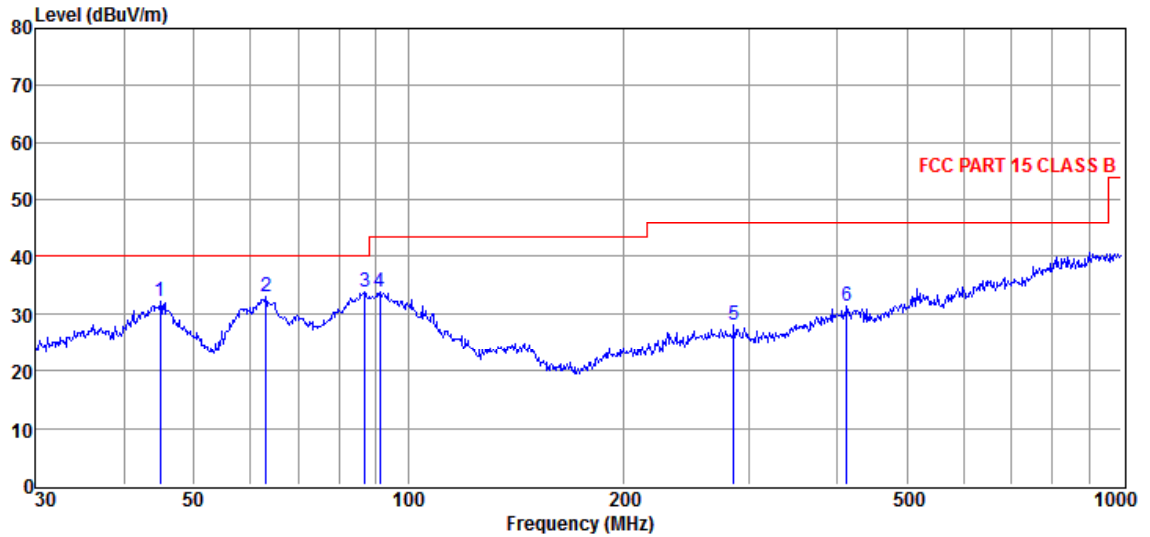
2. If Peak Result comply with QP limit, QP Result is deemed to comply with QP limit

3. Test setup: RBW: 120kHz, VBW: 300kHz, Sweep time: auto

Test data for model DAL50W-0850-56
Power Source :120Vac, 60Hz
Polarization: Vertical
Fre. Range:30 MHz-1000 MHz:
Peak Sweep:

RBW:120 kHz

Meas. Distance:3 m
Final Meas. Time:1 s



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	44.90	15.32	16.34	0.00	0.55	32.21	40.00	-7.79	Peak	VERTICAL
2	63.09	22.20	10.13	0.00	0.67	33.00	40.00	-7.00	Peak	VERTICAL
3	86.81	24.58	8.43	0.00	0.79	33.80	40.00	-6.20	Peak	VERTICAL
4	91.18	23.45	9.54	0.00	0.81	33.80	43.50	-9.70	Peak	VERTICAL
5	285.98	13.77	12.54	0.00	1.66	27.97	46.00	-18.03	Peak	VERTICAL
6	411.82	13.46	15.58	0.00	2.20	31.24	46.00	-14.76	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 DAL50W-0850-56

Power Source: 277Vac, 60Hz

Polarization: Horizontal

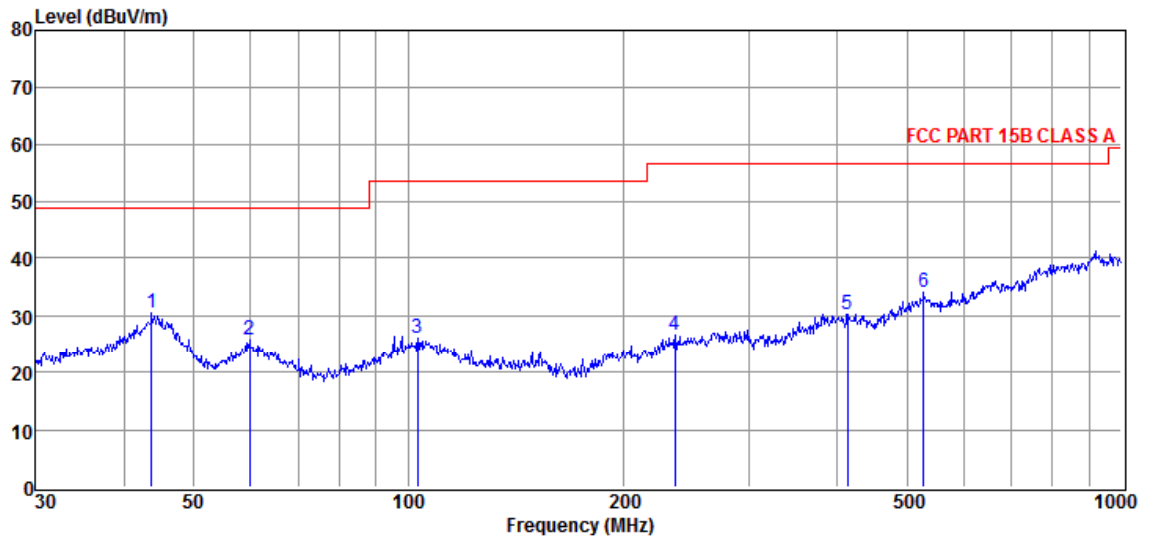
Fre. Range: 30 MHz-1000 MHz:

Peak Sweep:

RBW: 120 kHz

Meas. Distance: 3 m

Final Meas. Time: 1 s



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	43.66	13.35	16.55	0.00	0.55	30.45	49.00	-18.55	Peak	HORIZONTAL
2	59.86	14.01	11.15	0.00	0.65	25.81	49.00	-23.19	Peak	HORIZONTAL
3	103.08	13.19	11.94	0.00	0.87	26.00	53.50	-27.50	Peak	HORIZONTAL
4	236.65	13.42	11.73	0.00	1.45	26.60	56.50	-29.90	Peak	HORIZONTAL
5	413.27	12.54	15.57	0.00	2.20	30.31	56.50	-26.19	Peak	HORIZONTAL
6	528.25	13.16	18.18	0.00	2.68	34.02	56.50	-22.48	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss

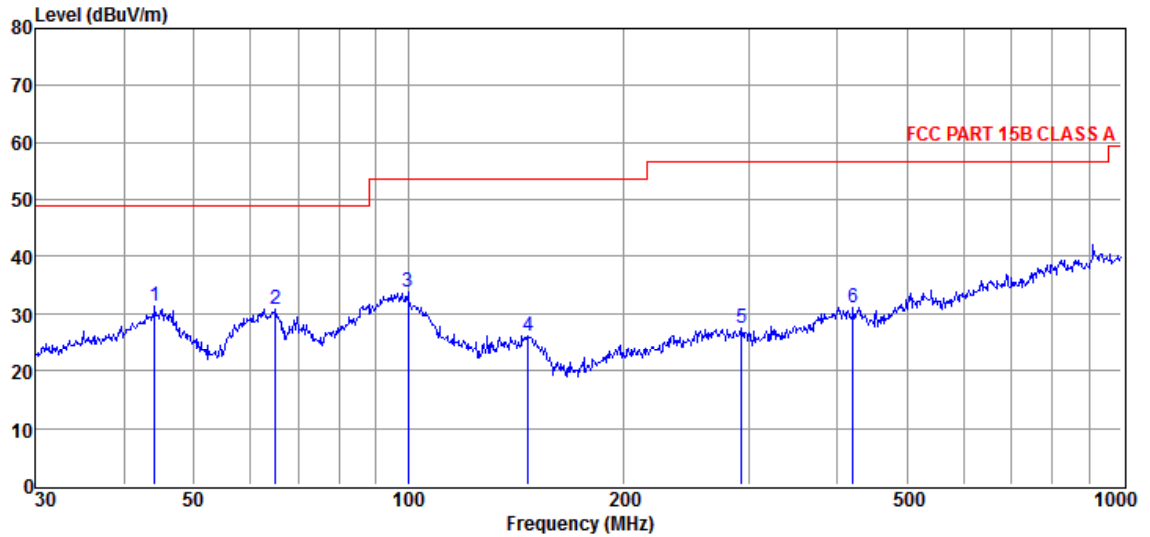
2. If Peak Result comply with QP limit, QP Result is deemed to comply with QP limit

3. Test setup: RBW: 120kHz, VBW: 300kHz, Sweep time: auto

Test data for model DAL50W-0850-56
Power Source: 277Vac, 60Hz
Polarization: Vertical
Fre. Range:30 MHz-1000 MHz:
Peak Sweep:

RBW:120 kHz

Meas. Distance:3 m
Final Meas. Time:1 s



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	44.12	13.98	16.74	0.00	0.55	31.27	49.00	-17.73	Peak	VERTICAL
2	65.11	20.57	9.46	0.00	0.68	30.71	49.00	-18.29	Peak	VERTICAL
3	99.88	21.51	11.48	0.00	0.85	33.84	53.50	-19.66	Peak	VERTICAL
4	147.40	17.21	7.80	0.00	1.07	26.08	53.50	-27.42	Peak	VERTICAL
5	293.08	13.14	12.64	0.00	1.69	27.47	56.50	-29.03	Peak	VERTICAL
6	420.58	13.38	15.51	0.00	2.24	31.13	56.50	-25.37	Peak	VERTICAL

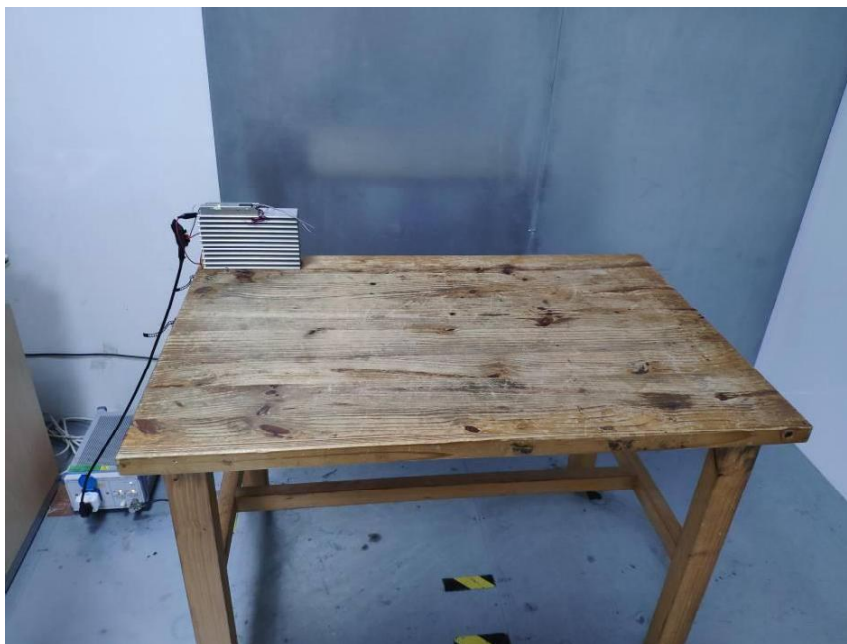
Note: 1. Result Level = Read Level + Antenna Factor + Cable loss

2. If Peak Result comply with QP limit, QP Result is deemed to comply with QP limit

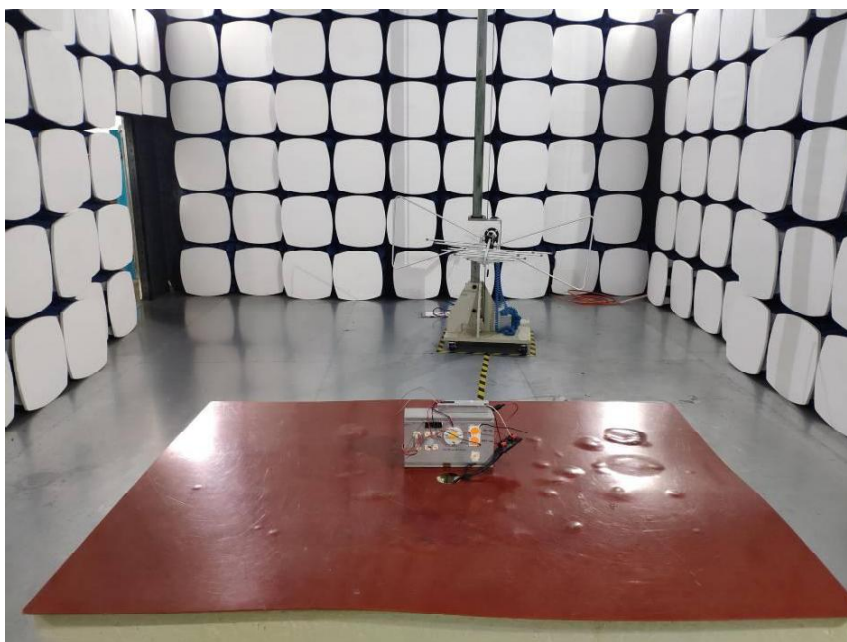
3. Test setup: RBW: 120kHz, VBW: 300kHz, Sweep time: auto

6 The photos of test setting

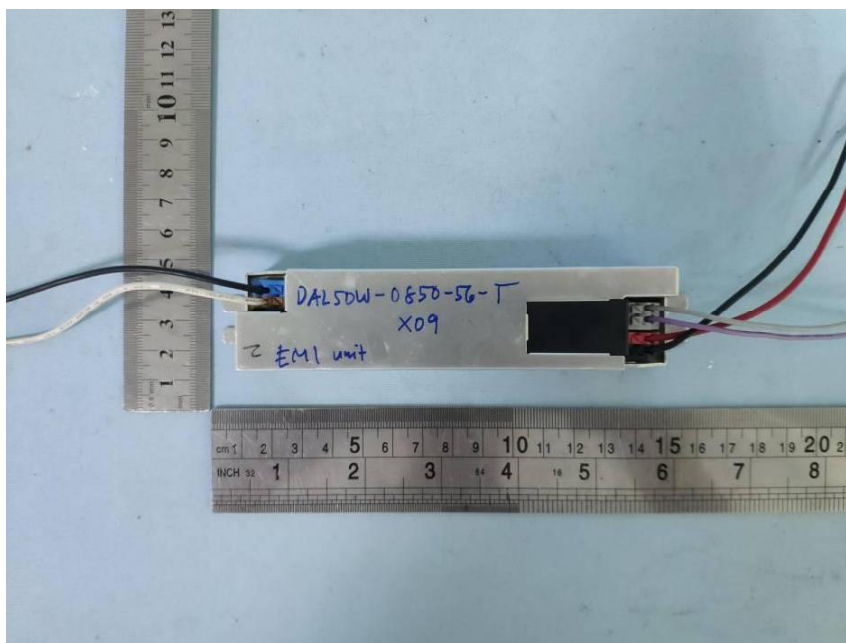
Terminal Continuous Disturbance Voltage:



Radiated Emission:



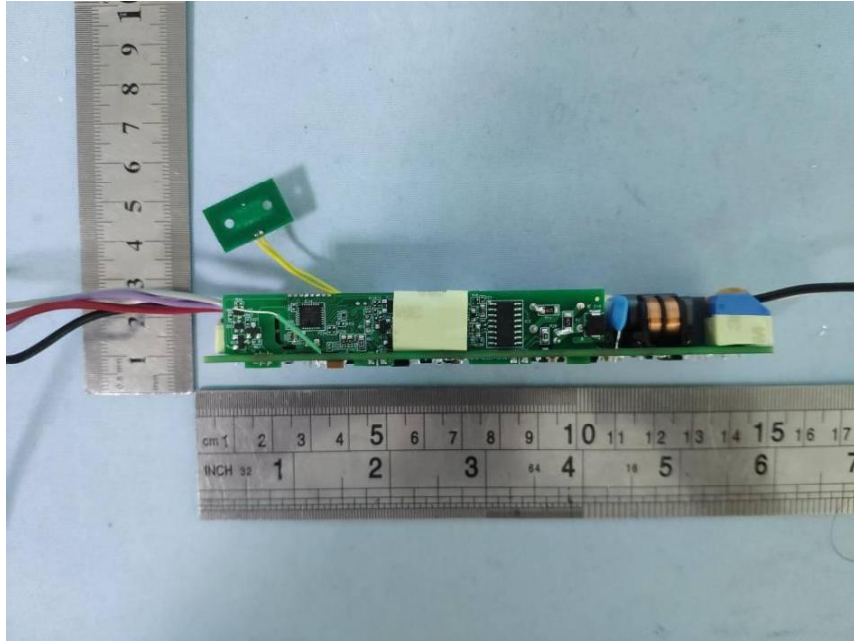
7 The photos of EUT



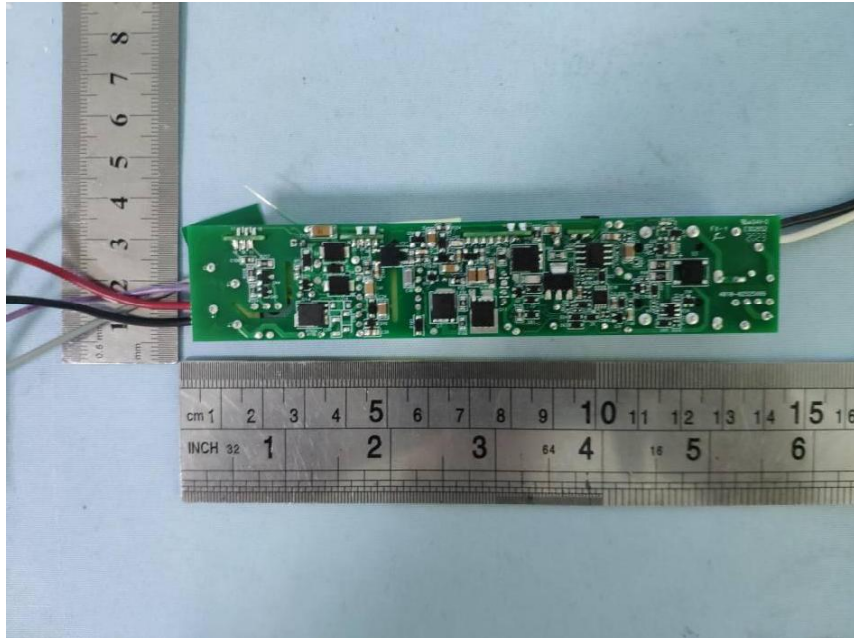
Picture 1



Picture 2



Picture 3



Picture 4

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