



Test Report Number:	LCZE20070007						
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:	2020-07-08						
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:			
2020-07-08	Alan Tian		2020-07-08	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 : 2020-07-03

Date (s) of performance of tests : 2020-07-03

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 Eletron	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

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 PKB65W-1800-55-T 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	PKBPPA- XXXX-VV-T-ZZZZ	120/277	65	1800	55

For model series PKBPPA- XXXX-VV-T-ZZZZ

1. "A" represents the input voltage, should be "W", representing input voltage 120/277 V.

2. "XXXX" represents the output current; the max output current is 1800mA

3. "VV" represents the output voltage, in increments of 1 from 10 to 55, which is not greater than max output regulated voltage; while "ZZZZ" can be any alpha-numeric character or blank and are for marketing purpose only.

4. "PP" designate: If $1W < P_{out} \leq 10W$, PP=10, If $10W < P_{out} \leq 20W$, PP=20, If $20W < P_{out} \leq 30W$, PP=30, If $30W < P_{out} \leq 40W$, PP=40, If $40W < P_{out} \leq 50W$, PP=50, If $50W < P_{out} \leq 55W$, PP=55, If $55W < P_{out} \leq 60W$, PP=60, If $60W < P_{out} \leq 65W$, PP=65

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:

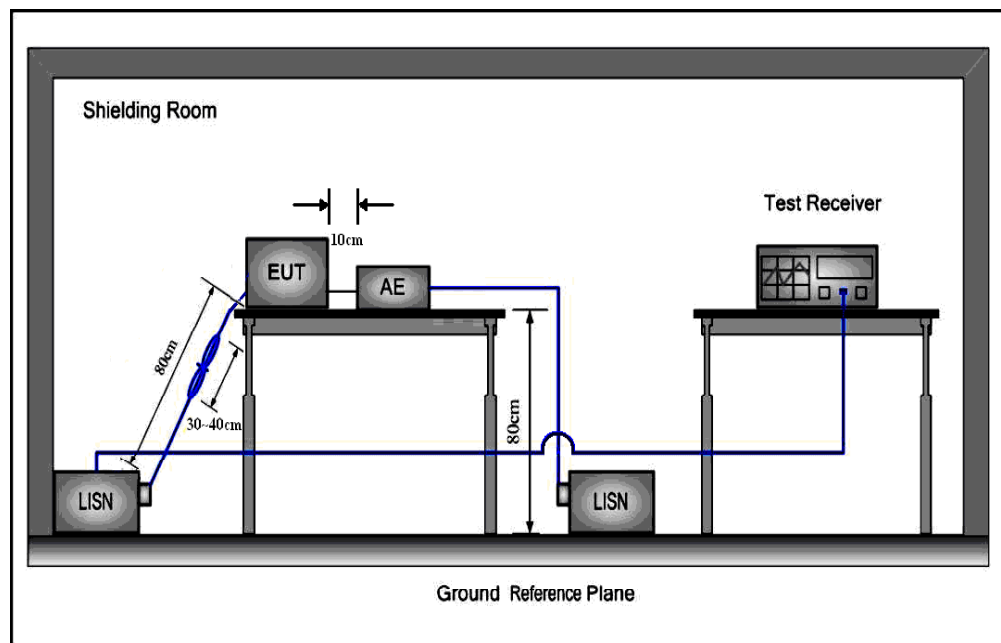
Pass

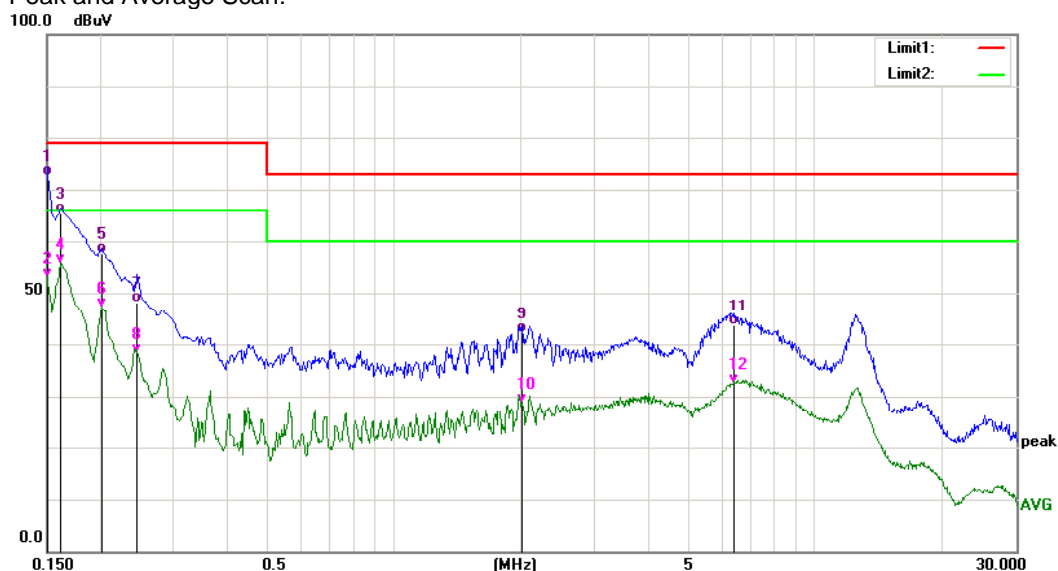
Date of testing : July 03, 2020
 Test procedure : ANSI C63.4:2014
 Frequency range : 0.15- 30MHz
 Kind of test site : shielded room
 Limits : FCC PART 15 Subpart B: Class A

Test setup

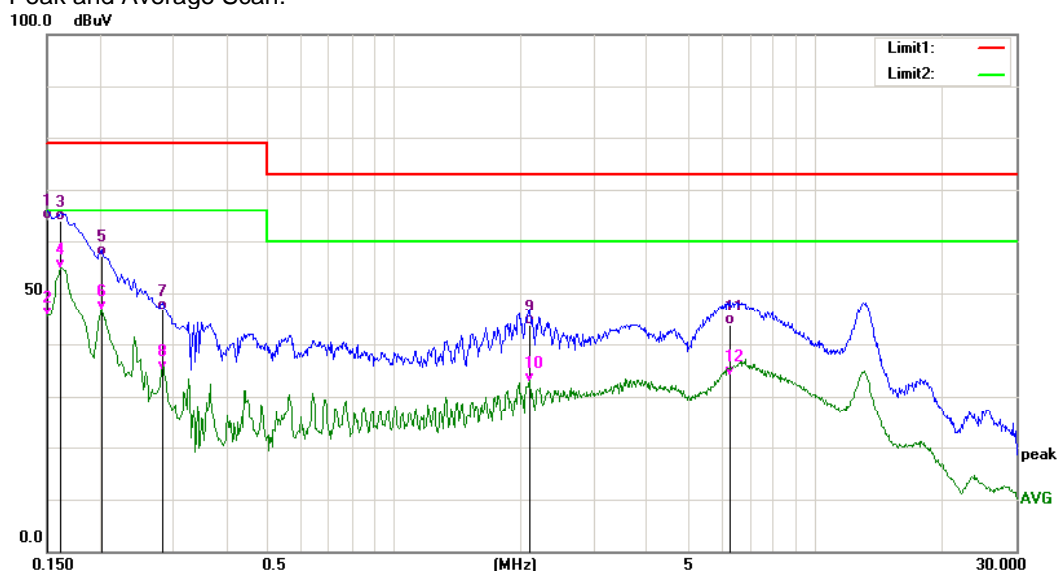
Input Voltage : 120&277Vac, 60Hz
 Operation Mode : A
 Artificial Hand : Not applied
 Earthing : Applied
 Temperature : 23°C
 Humidity : 58%
 Air pressure : 101KPA

Test Connection Diagram

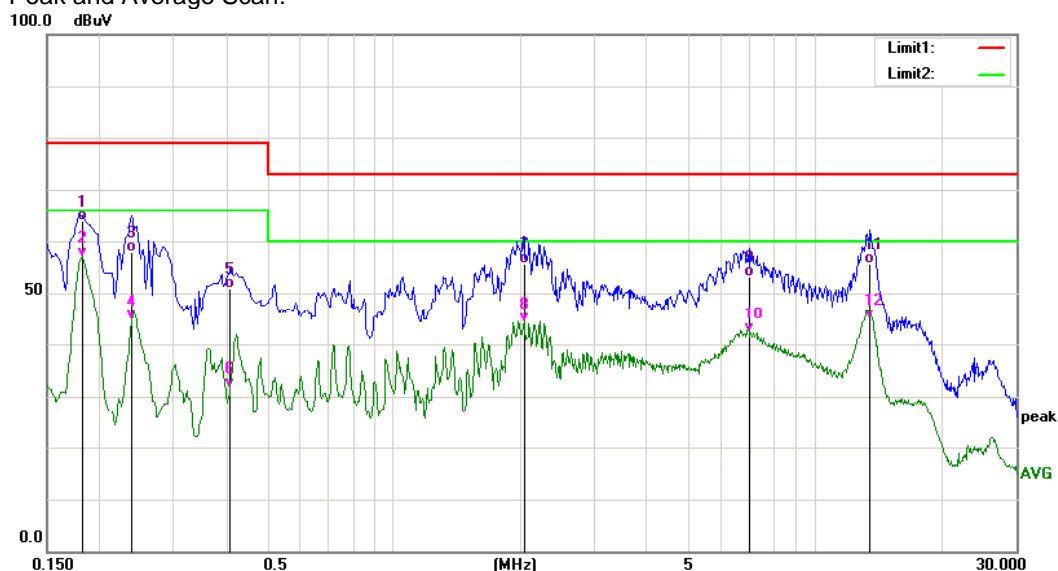


Test data for model PKB65W-1800-55-T
Power Source: 120Vac, 60Hz
Terminal under Test: Live Line
Fre. Range 150 kHz-30 MHz:
IF Bandwidth:9KHz
Step Size:4.5 kHz
Scan Time:20 ms
Final Meas. Time:1 s
Peak and Average Scan:

Quasi-peak and Average measurement:

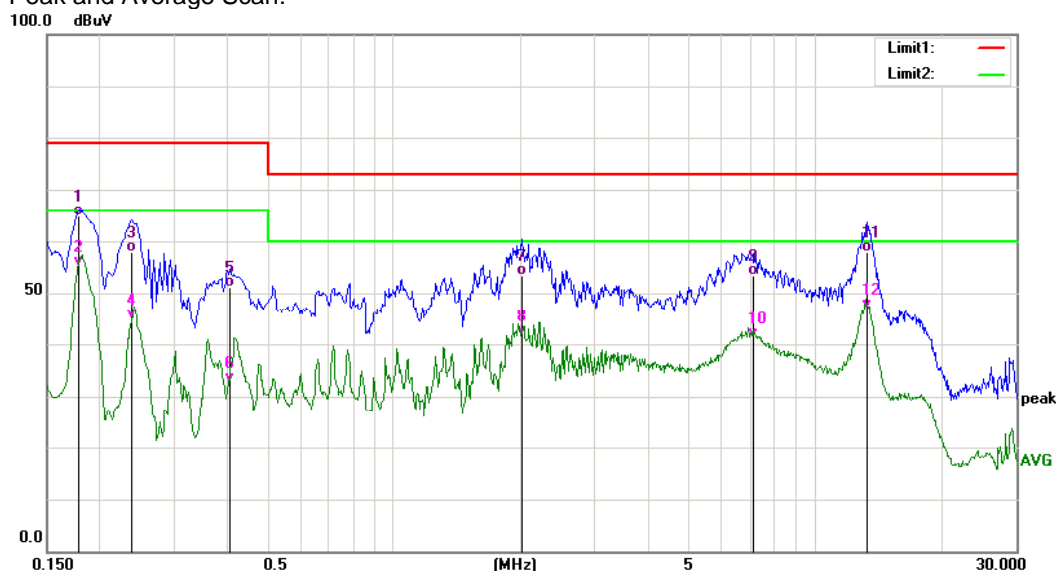
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1500	62.98	9.66	72.64	79.00	-6.36	QP
2	0.1500	43.23	9.66	52.89	66.00	-13.11	AVG
3	0.1620	55.60	9.67	65.27	79.00	-13.73	QP
4	0.1620	46.06	9.67	55.73	66.00	-10.27	AVG
5	0.2020	47.86	9.69	57.55	79.00	-21.45	QP
6	0.2020	37.33	9.69	47.02	66.00	-18.98	AVG
7	0.2460	38.33	9.68	48.01	79.00	-30.99	QP
8	0.2460	28.36	9.68	38.04	66.00	-27.96	AVG
9	2.0139	32.38	9.87	42.25	73.00	-30.75	QP
10	2.0139	18.67	9.87	28.54	60.00	-31.46	AVG
11	6.4419	33.33	10.19	43.52	73.00	-29.48	QP
12	6.4419	22.22	10.19	32.41	60.00	-27.59	AVG

Test data for model PKB65W-1800-55-T
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	54.59	9.66	64.25	79.00	-14.75	QP
2	0.1500	35.63	9.66	45.29	66.00	-20.71	AVG
3	0.1641	54.31	9.67	63.98	79.00	-15.02	QP
4	0.1641	45.02	9.67	54.69	66.00	-11.31	AVG
5	0.2020	47.55	9.69	57.24	79.00	-21.76	QP
6	0.2020	36.97	9.69	46.66	66.00	-19.34	AVG
7	0.2819	37.01	9.69	46.70	79.00	-32.30	QP
8	0.2819	25.24	9.69	34.93	66.00	-31.07	AVG
9	2.1020	33.64	9.88	43.52	73.00	-29.48	QP
10	2.1020	22.69	9.88	32.57	60.00	-27.43	AVG
11	6.2539	33.33	10.18	43.51	73.00	-29.49	QP
12	6.2539	23.71	10.18	33.89	60.00	-26.11	AVG

Test data for model PKB65W-1800-55-T
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	0.1819	54.16	9.68	63.84	79.00	-15.16	QP
2	0.1819	47.09	9.68	56.77	66.00	-9.23	AVG
3	0.2380	48.12	9.68	57.80	79.00	-21.20	QP
4	0.2380	34.98	9.68	44.66	66.00	-21.34	AVG
5	0.4100	41.26	9.72	50.98	79.00	-28.02	QP
6	0.4100	21.93	9.72	31.65	66.00	-34.35	AVG
7	2.0340	45.75	9.87	55.62	73.00	-17.38	QP
8	2.0340	34.22	9.87	44.09	60.00	-15.91	AVG
9	6.9860	43.02	10.21	53.23	73.00	-19.77	QP
10	6.9860	31.88	10.21	42.09	60.00	-17.91	AVG
11	13.5340	45.32	10.34	55.66	73.00	-17.34	QP
12	13.5340	34.56	10.34	44.90	60.00	-15.10	AVG

Test data for model PKB65W-1800-55-T
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	0.1780	55.14	9.68	64.82	79.00	-14.18	QP
2	0.1780	45.44	9.68	55.12	66.00	-10.88	AVG
3	0.2380	48.13	9.68	57.81	79.00	-21.19	QP
4	0.2380	35.24	9.68	44.92	66.00	-21.08	AVG
5	0.4100	41.47	9.72	51.19	79.00	-27.81	QP
6	0.4100	22.84	9.72	32.56	66.00	-33.44	AVG
7	2.0220	43.55	9.87	53.42	73.00	-19.58	QP
8	2.0220	31.67	9.87	41.54	60.00	-18.46	AVG
9	7.1060	43.09	10.21	53.30	73.00	-19.70	QP
10	7.1060	30.92	10.21	41.13	60.00	-18.87	AVG
11	13.2780	47.57	10.34	57.91	73.00	-15.09	QP
12	13.2780	36.65	10.34	46.99	60.00	-13.01	AVG

5.2 Radiated Emission

Results:

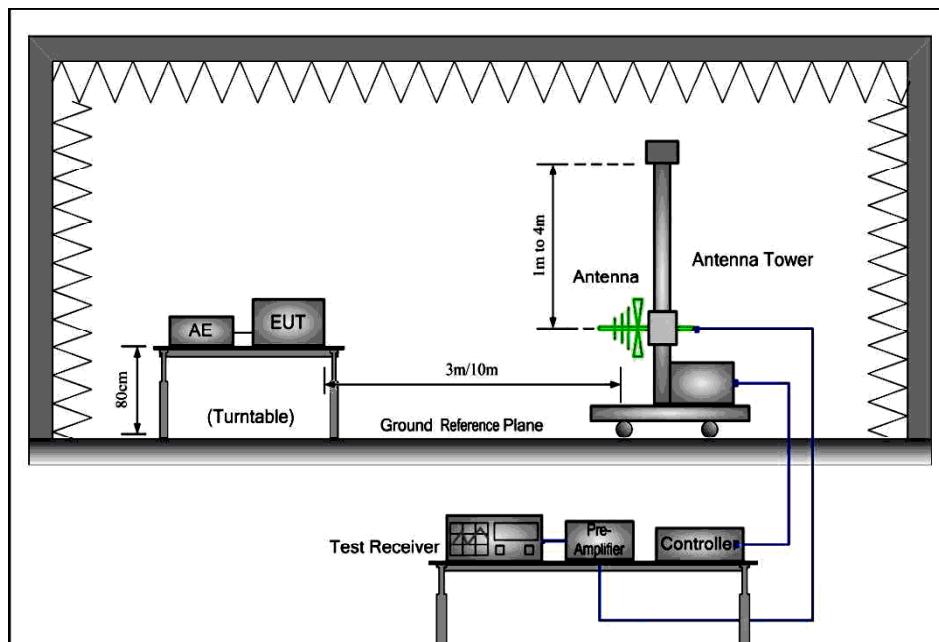
Pass

Date of testing : July 03, 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 A

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 PKB65W-1800-55-T
Power Source :120Vac, 60Hz

Polarization: Horizontal

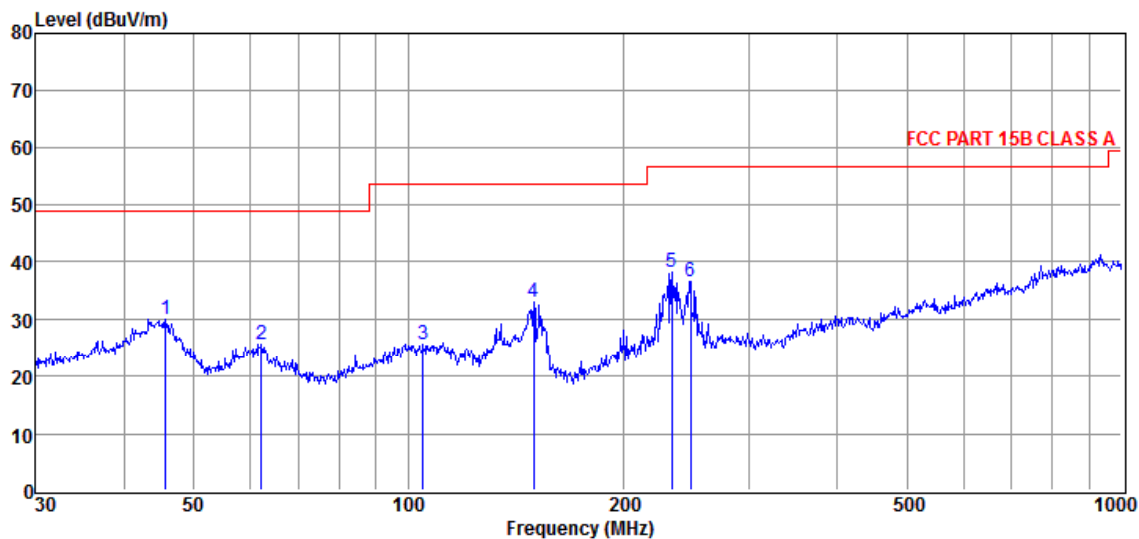
Fre. Range:30 MHz-1000 MHz:

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	45.70	13.53	15.95	0.00	0.56	30.04	49.00	-18.96	Peak	HORIZONTAL
2	62.21	14.61	10.43	0.00	0.66	25.70	49.00	-23.30	Peak	HORIZONTAL
3	104.90	12.64	12.19	0.00	0.87	25.70	53.50	-27.80	Peak	HORIZONTAL
4	150.01	24.01	7.80	0.00	1.08	32.89	53.50	-20.61	Peak	HORIZONTAL
5	234.17	24.95	11.75	0.00	1.44	38.14	56.50	-18.36	Peak	HORIZONTAL
6	248.55	23.04	12.13	0.00	1.49	36.66	56.50	-19.84	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 PKB65W-1800-55-T
Power Source:120Vac, 60Hz

Polarization: Vertical

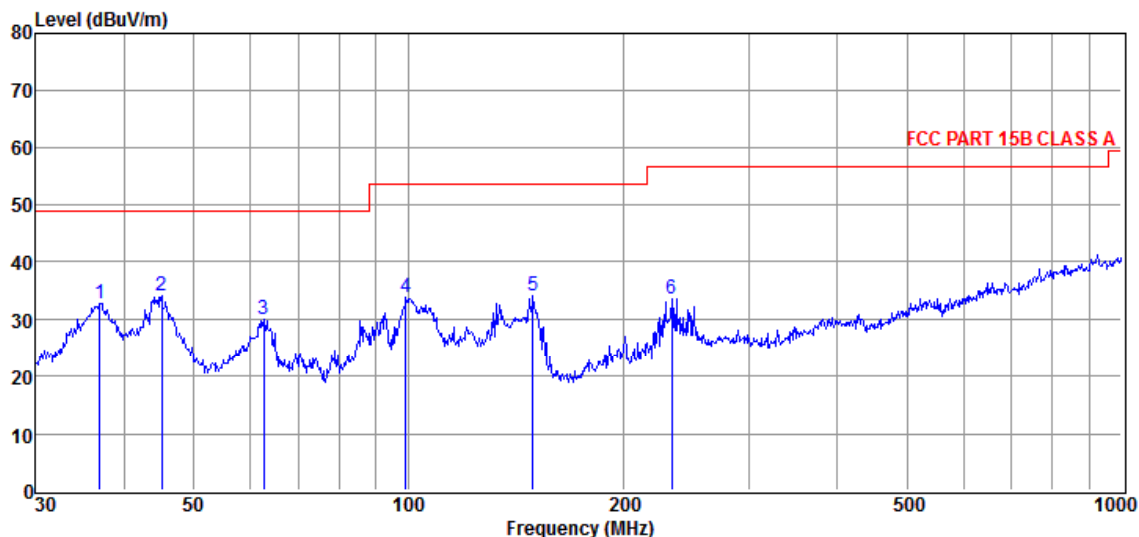
Fre. Range:30 MHz-1000 MHz:

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	36.90	20.26	11.98	0.00	0.50	32.74	49.00	-16.26	Peak	VERTICAL
2	45.06	17.19	16.27	0.00	0.56	34.02	49.00	-14.98	Peak	VERTICAL
3	62.65	18.97	10.28	0.00	0.66	29.91	49.00	-19.09	Peak	VERTICAL
4	99.18	21.68	11.36	0.00	0.85	33.89	53.50	-19.61	Peak	VERTICAL
5	149.49	25.23	7.80	0.00	1.08	34.11	53.50	-19.39	Peak	VERTICAL
6	234.17	20.36	11.75	0.00	1.44	33.55	56.50	-22.95	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 PKB65W-1800-55-T
Power Source: 277Vac, 60Hz

Polarization: Horizontal

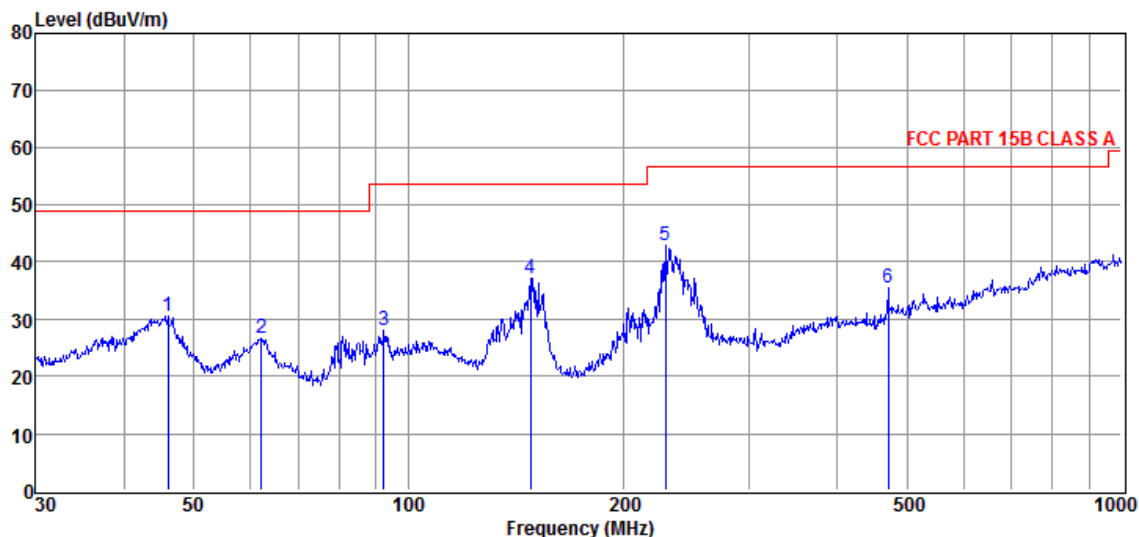
Fre. Range:30 MHz-1000 MHz:

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	46.02	14.18	15.78	0.00	0.56	30.52	49.00	-18.48	Peak	HORIZONTAL
2	62.21	15.49	10.43	0.00	0.66	26.58	49.00	-22.42	Peak	HORIZONTAL
3	92.46	17.29	9.90	0.00	0.81	28.00	53.50	-25.50	Peak	HORIZONTAL
4	148.44	28.25	7.80	0.00	1.07	37.12	53.50	-16.38	Peak	HORIZONTAL
5	229.29	30.17	11.35	0.00	1.42	42.94	56.50	-13.56	Peak	HORIZONTAL
6	470.52	17.50	15.54	0.00	2.45	35.49	56.50	-21.01	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 PKB65W-1800-55-T
Power Source: 277Vac, 60Hz

Polarization: Vertical

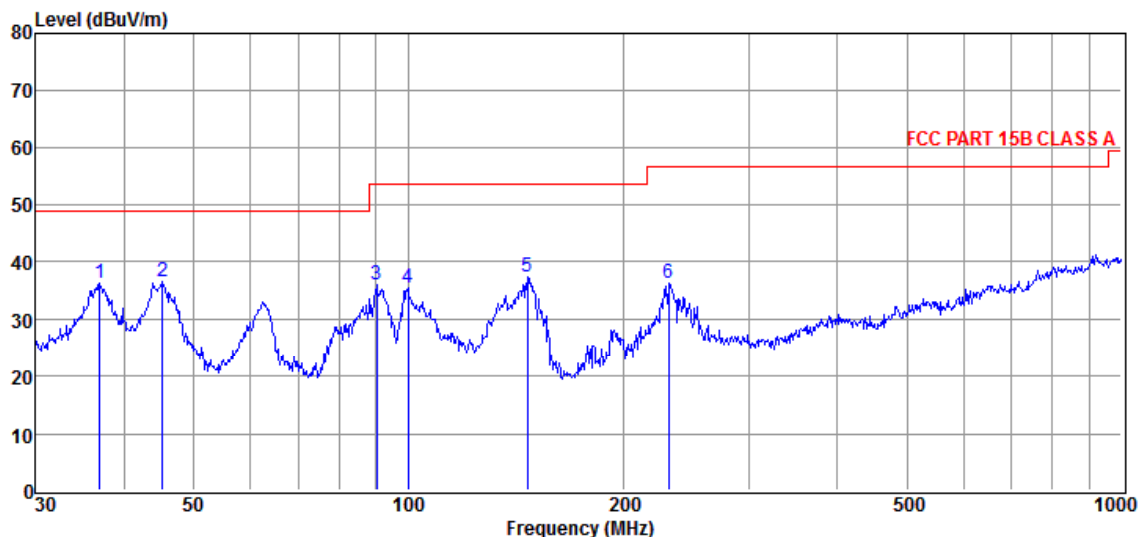
Fre. Range:30 MHz-1000 MHz:

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	36.90	23.80	11.98	0.00	0.50	36.28	49.00	-12.72	Peak	VERTICAL
2	45.22	19.76	16.19	0.00	0.56	36.51	49.00	-12.49	Peak	VERTICAL
3	90.22	25.85	9.26	0.00	0.80	35.91	53.50	-17.59	Peak	VERTICAL
4	99.88	23.05	11.48	0.00	0.85	35.38	53.50	-18.12	Peak	VERTICAL
5	146.89	28.51	7.80	0.00	1.07	37.38	53.50	-16.12	Peak	VERTICAL
6	231.72	23.21	11.60	0.00	1.43	36.24	56.50	-20.26	Peak	VERTICAL

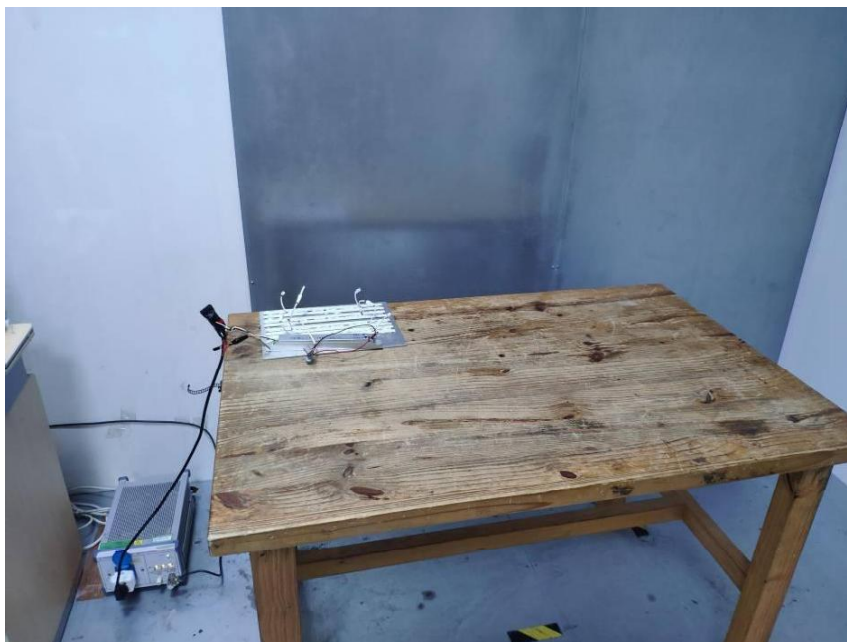
Note: 1. Result Level = Read Level + Antenna Factor + Cable loss

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

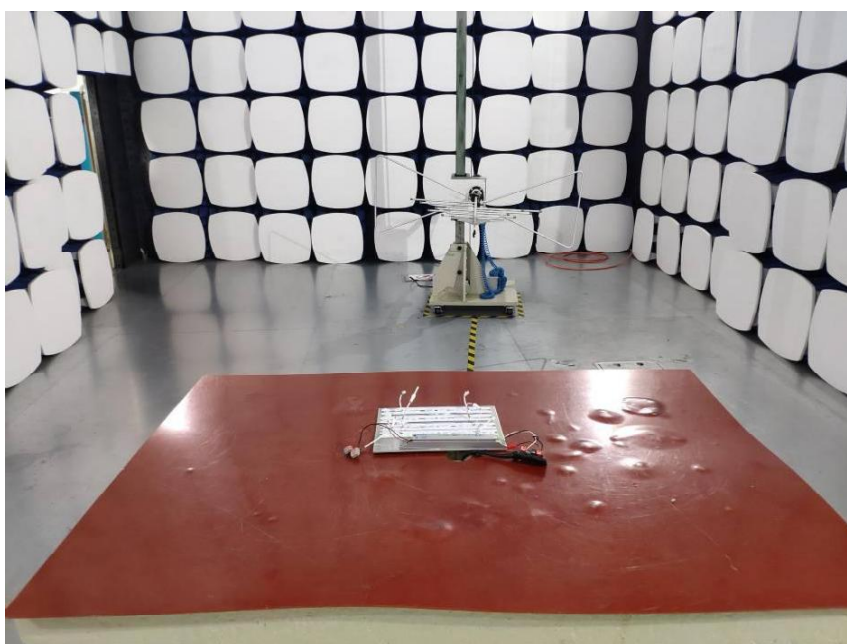
3. Test setup: RBW: 120kHz, VBW: 300kHz, Sweep time: auto

The photos of test setting

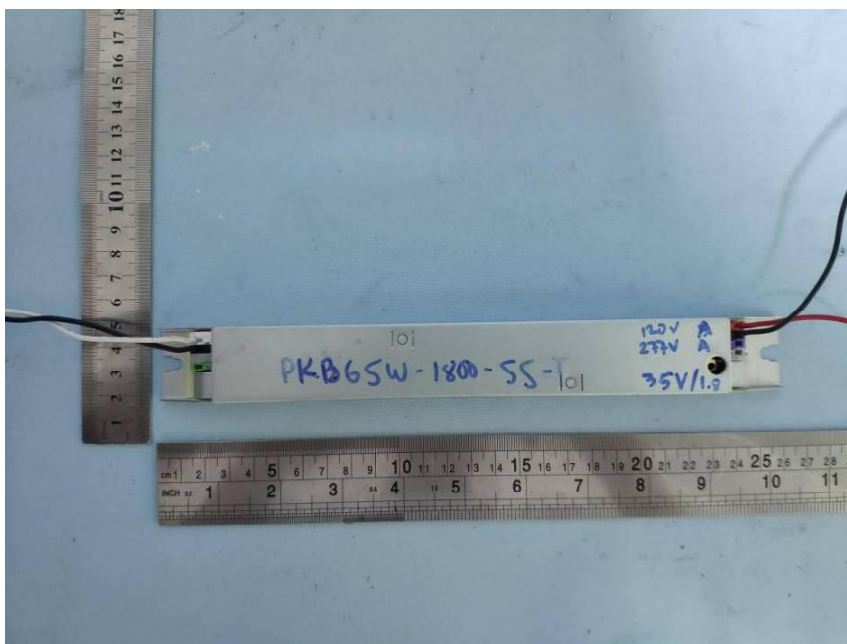
Terminal Continuous Disturbance Voltage:



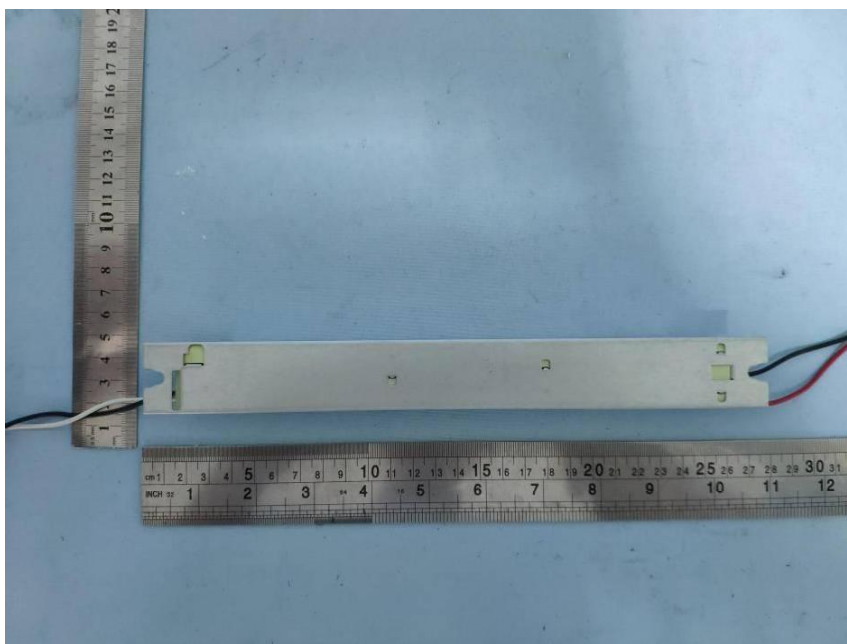
Radiated Emission:



6 The photos of EUT



Picture 1



Picture 2



Picture 3



Picture 4

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