

Shenzhen Showtechled CO., LTD

FCC REPORT

Applicant	SShenzhen Showtechled CO., LTD
Address	Area B, 3th Floor, No. 219, Huasheng Road, Langkou Community, Dalang Street, Longhua District, Shenzhen City, China.
Product Name	Outdoor Mesh led display / Transparent led display
Trademark	Showtechled 翰锐光电
Model Number	C1531 (P15.625-31.25)
Additional Models	C0307(P3.91-7.81), C0510 (P5.2-10.4), C0612 (P6.25-12.5), C0606 (P6.9), C0707 (P7.8), C0808 (P8.9), C1010 (P10.4), C1020 (P10.4-20.8), C1212 (P12.5), C0715 (P7.81-15.625), C1515 (P15.625), C3131 (P31.25), C2525 (P25), C2550 (P25-50), C2020 (P20), C1616 (P16), C1632 (P16-32)
Test Laboratory	Shenzhen Circle Testing Certification Co., Ltd.
Address	101,1/F., Building 1, Donglongxing Technology Park, Huaning Road, Longhua District, Shenzhen, Guangdong, China
Test Date	Jun. 20, 2022 - Jun. 24, 2022
Date of Report	Jun. 24, 2022
Report Number	CTC070F04271FR

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TEST REPORT DECLARATION

Applicant	Shenzhen Showtechled CO., LTD
Address	Area B, 3th Floor, No. 219, Huasheng Road, Langkou Community, Dalang Street, Longhua District, Shenzhen City, China.
EUT Description	Outdoor Mesh led display / Transparent led display
Model Number	See page 1. (Note: The series products have the same circuit diagram,PCB layout and functionality. The differences are the model name and appearance,so we select C1531 (P15.625-31.25) to test.)

Test Standards:

FCC Part 15:2016

The EUT described above is tested by US to determine the maximum emissions from the EUT,the maximum emission levels are compared to the FCC Part 15 limits.The measurement results are contained in this test report.and Shenzhen Circle Testing Certification Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT is to be technically compliant with the FCC requirements. This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Circle Testing Certification Co., Ltd..

Tested by :

Irving

Approved & Authorized Signer :


Dennis

Manager

1. GENERAL INFORMATION

1.1. Report information

- 1.1.1. This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that CTC approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that CTC in any way guarantees the later performance of the product/equipment.
- 1.1.2. The sample/s mentioned in this report is/are supplied by Applicant, CTC therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.
- 1.1.3. Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through CTC, unless the applicant has authorized CTC in writing to do so.

1.2. Measurement Uncertainty

(95% confidence levels, k=2)

Measurement Uncertainty levels

Test	Parameters	Expanded uncertainty (Ulab)	Expanded uncertainty (Ucispr)
Conducted Emission	Level accuracy (9kHz to 150kHz)	3.50 dB	3.8 dB
	(150kHz to 30MHz)	3.20 dB	3.4 dB
Radiated Emission (3m SAC)	Level accuracy (30MHz to 1000MHz)	4.52 dB	6.3 dB
	Level accuracy (above 1000MHz)	4.66 dB	N/A

2. PRODUCT DESCRIPTION

2.1. EUT Description

EUT Description	Outdoor Mesh led display / Transparent led display
Applicant	Shenzhen Showtechled CO., LTD
Address	Area B, 3th Floor, No. 219, Huasheng Road, Langkou Community, Dalang Street, Longhua District, Shenzhen City, China.
Manufacturer	Shenzhen Showtechled CO., LTD
Address	Area B, 3th Floor, No. 219, Huasheng Road, Langkou Community, Dalang Street, Longhua District, Shenzhen City, China.
Model Number	C1531 (P15.625-31.25)

Input	100-240V AC, 50/60Hz, 360W/m ²
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2.2. Block Diagram of EUT Configuration



2.3. Operating Condition of EUT

Test mode 1: White Light, maximum brightness (It's the worst case)
 Test mode 2: Colour bars with moving picture element
 Test mode 3: Scroll H characters

2.4. Test Conditions

Temperature: 22-26°C
 Relative Humidity: 55-60%

3. TEST EQUIPMENT USED

3.1. For Conducted Emission Test

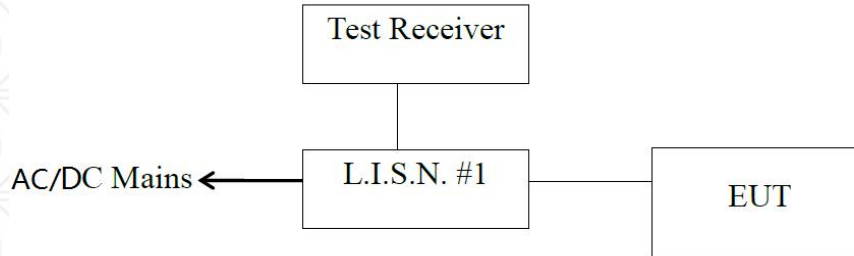
Equipment	Manufacturer	Model No.	Serial No.	Calibration Until
Test Receiver	Rohde & Schwarz	ESR3	CTC(A)087	2023-07-14
Coaxial Cable	CTC	10B	CTC(A)159	2023-07-14
L.I.S.N.	Rohde & Schwarz	ENV 216	CTC(A)089	2023-07-14

3.2. For Radiated Emission Measurement

Equipment	Manufacturer	Model No.	Serial No.	Calibration Until
Test Receiver	Rohde & Schwarz	ESPI7	CTC(A)155	2023-03-04
Test Receiver	Rohde & Schwarz	ESR3	CTC(A)087	2023-07-14
Broadband Trilog Antenna	Schwarzbeck	VULB9162	CTC(A)088	2023-03-29
OPT H64 Preamplifier	HP	8447F	CTC(A)164	2023-03-04
Cable	CTC	3C	CTC(A)140	2023-07-14
Cable	CTC	3B	CTC(A)139	2023-07-14
Cable	CTC	3D	CTC(A)141	2023-07-14
Cable	CTC	10A	CTC(A)138	2023-07-14
Horn Antenna	Schwarzbeck	BBHA9120D	CTC(A)161	2023-03-07
Broadband Preamplifier	Schwarzbeck	BBV9718	CTC(A)162	2023-03-04

4. POWER LINE CONDUCTED EMISSION TEST

4.1. Block Diagram of Test Setup



4.2. Test Standard

FCC Part 15 Class B

4.3. Power Line Conducted Emission Limit

Frequency MHz	Quasi-peak Level	Limits dB(uV) Average Level
0.15-0.50	66-56*	56-46*
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.

4.4. EUT Configuration on Test

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

4.5. Operating Condition of EUT

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

5.5.2.Turn on the power of all equipment.

5.5.3.Let the EUT work in test modes (ON) and test it.

4.6. Test Procedure

The EUT is put on the ground and connected to the AC mains through a Artificial Mains Network (AMN). This provided 50ohm-coupling impedance for the tested equipment. Both sides of AC line are checked to find out the maximum conducted emission levels according to the FCC regulations during conducted emission test.

The bandwidth of the test receiver is set at 9kHz.

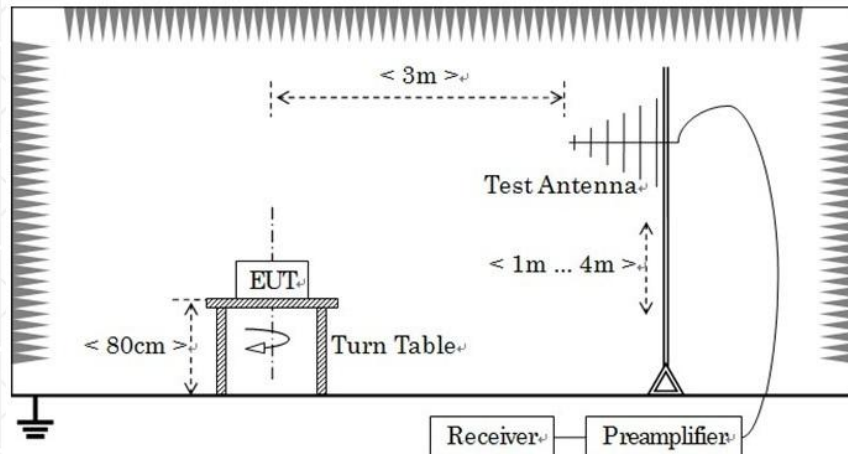
The frequency range from 150 kHz to 30 MHz is investigated. and all the scanning waveform is put in **Appendix I**.

4.7. Test Result

PASS.

5. RADIATED EMISSION TEST

5.1. Semi-Anechoic Chamber Setup Diagram



5.2. Test Standard

FCC Part 15:2016

5.3. Radiated Emission Limit

All emanations from a Class B computing devices or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS (dBuV/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
960-1000	3	50.0

Note:(1) The tighter limit shall apply at the edge between two frequency bands.

(2) Distance refers to the distance in meters between the measuring instruments antenna and the closed point of any part of the EUT.

5.4. EUT Configuration on Test

The following equipment are installed on Radiated Emission Measurement to meet the Commission requirements and operating regulations in a manner which tends to maximize Its emission characteristics in normal application.

5.5. Operating Condition of EUT

- (1) Setup the EUT as shown on Section 4.1.
- (2) Turn on the power of all equipment.
- (3) Let the EUT work in test mode (ON) and measure it.

5.6. Test Procedure

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna (calibrated by dipole antenna) are used as a receiving antenna. Both horizontal and vertical polarization of the antenna are set on test.

The bandwidth setting on the test receiver is 120 kHz.

The EUT is tested in Semi-Anechoic Chamber. and all the scanning waveform is put in **Appendix II**

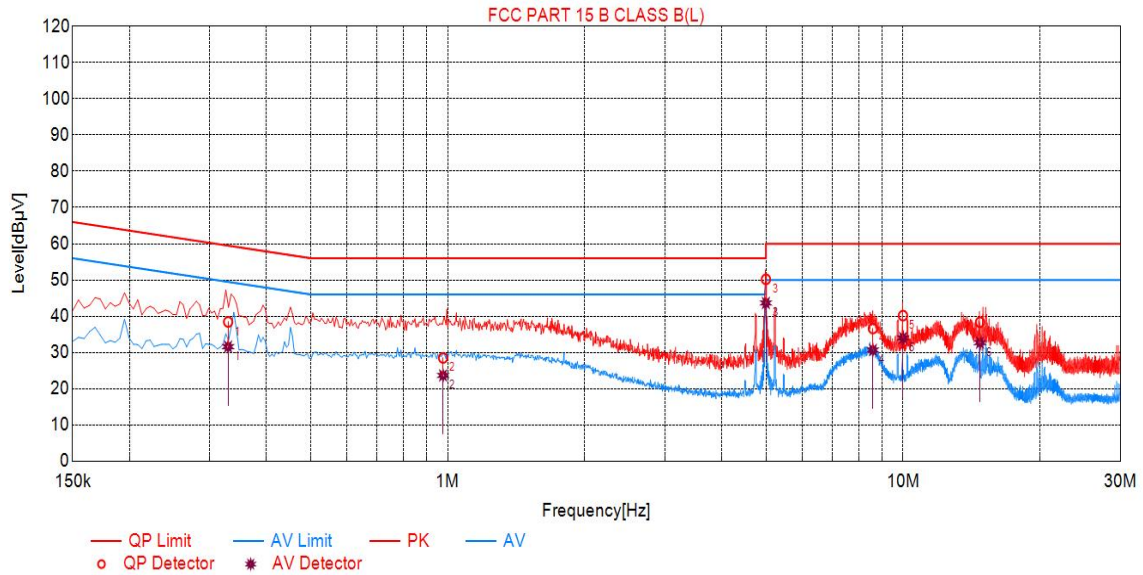
5.7. Test Results

PASS.

APPENDIX I: CONDUCTED EMISSION Test Data

Operation Mode : White Light, maximum brightness
 Phase : L (150kHz - 30MHz)

Test Graph

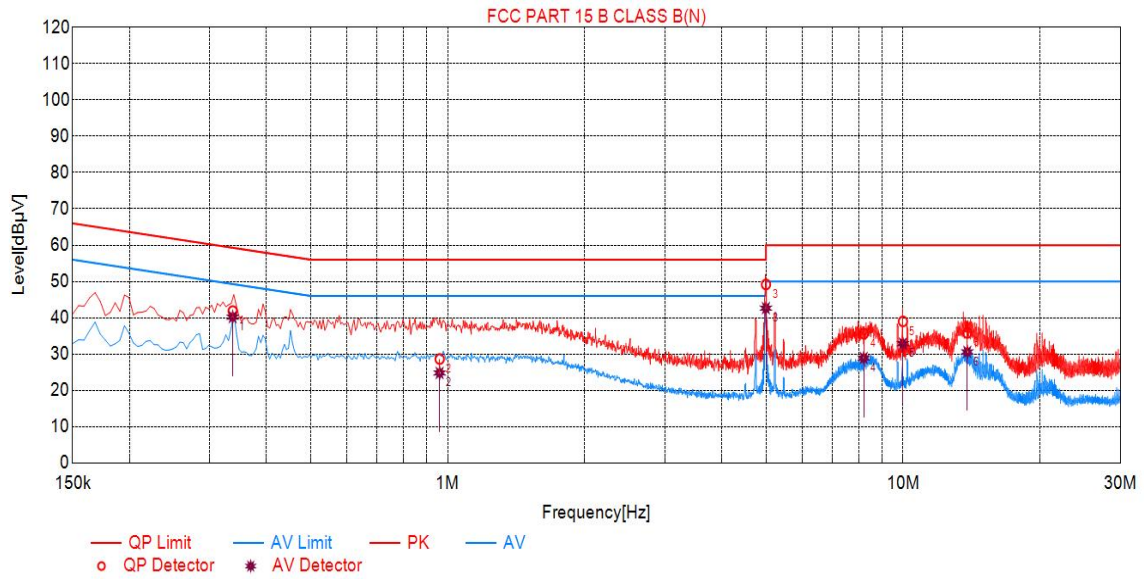


Final Data List

NO.	Freq. [MHz]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Verdict
1	0.3293	38.42	59.47	21.05	31.58	49.47	17.89	PASS
2	0.9767	28.48	56.00	27.52	23.65	46.00	22.35	PASS
3	4.9995	50.19	56.00	5.81	43.64	46.00	2.36	PASS
4	8.5881	36.60	60.00	23.40	30.66	50.00	19.34	PASS
5	9.9990	40.16	60.00	19.84	34.01	50.00	15.99	PASS
6	14.7614	38.33	60.00	21.67	32.69	50.00	17.31	PASS

Operation Mode : White Light, maximum brightness
 Phase : N (150kHz - 30MHz)

Test Graph

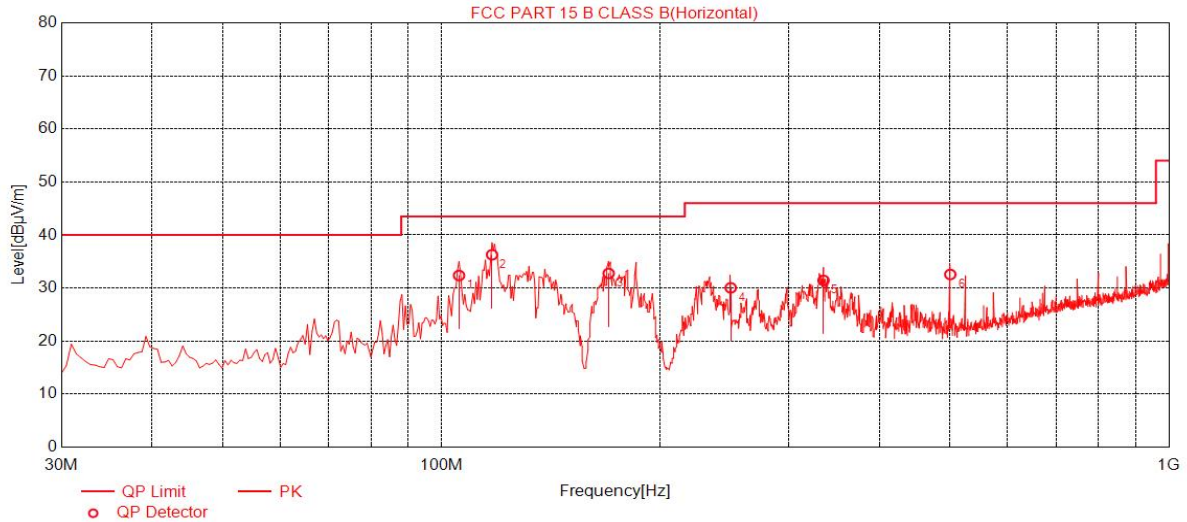


Final Data List								
NO.	Freq. [MHz]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Verdict
1	0.3370	41.85	59.28	17.43	40.17	49.28	9.11	PASS
2	0.9599	28.62	56.00	27.38	24.78	46.00	21.22	PASS
3	5.0000	49.18	56.00	6.82	42.63	46.00	3.37	PASS
4	8.2000	35.59	60.00	24.41	28.89	50.00	21.11	PASS
5	9.9965	39.00	60.00	21.00	32.86	50.00	17.14	PASS
6	13.8449	35.80	60.00	24.20	30.57	50.00	19.43	PASS

APPENDIX II: Radiated Emission Test data

Polarization : Horizontal
 Operation Mode : White Light, maximum brightness

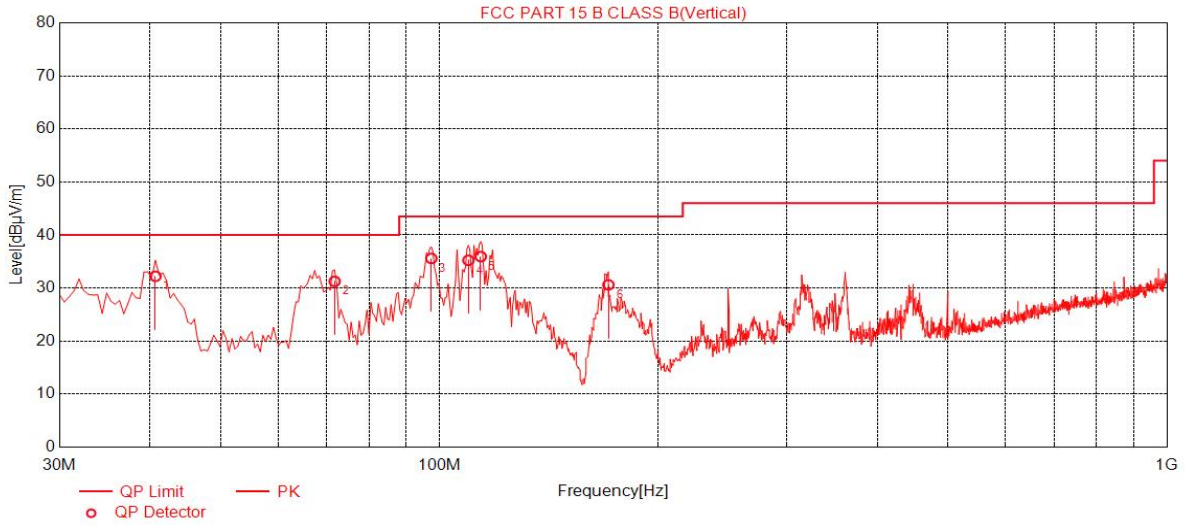
Test Graph



Final Data List								
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	105.6600	-9.99	32.37	43.50	11.13	100	352	Horizontal
2	117.3000	-9.64	36.28	43.50	7.22	100	56	Horizontal
3	169.6800	-11.31	32.76	43.50	10.74	100	325	Horizontal
4	249.7050	-7.73	30.04	46.00	15.96	100	56	Horizontal
5	335.0650	-5.96	31.44	46.00	14.56	100	318	Horizontal
6	500.4500	-3.06	32.57	46.00	13.43	100	252	Horizontal

Polarization Vertical
 Operation Mode White Light, maximum brightness

Test Graph



Final Data List								
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	40.6700	-8.65	32.23	40.00	7.77	100	42	Vertical
2	71.7100	-12.13	31.27	40.00	8.73	100	320	Vertical
3	97.4150	-10.57	35.59	43.50	7.91	100	304	Vertical
4	109.5400	-9.83	35.23	43.50	8.27	100	343	Vertical
5	113.9050	-9.71	35.93	43.50	7.57	100	235	Vertical
6	170.6500	-11.18	30.60	43.50	12.90	100	146	Vertical

APPENDIX III:EUT and Test Setup Photo

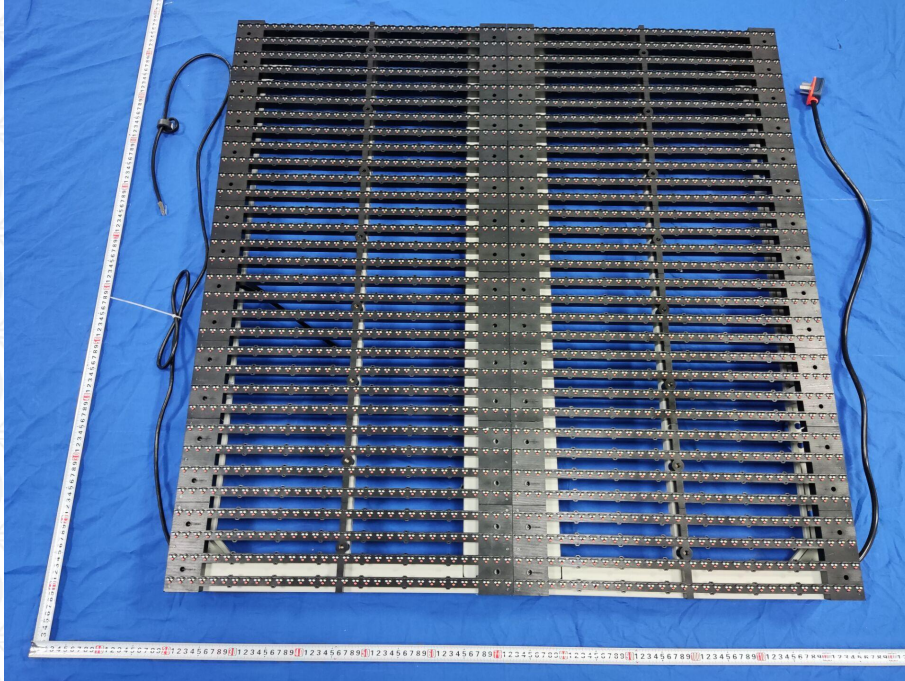


Figure 1: EUT Front-Side

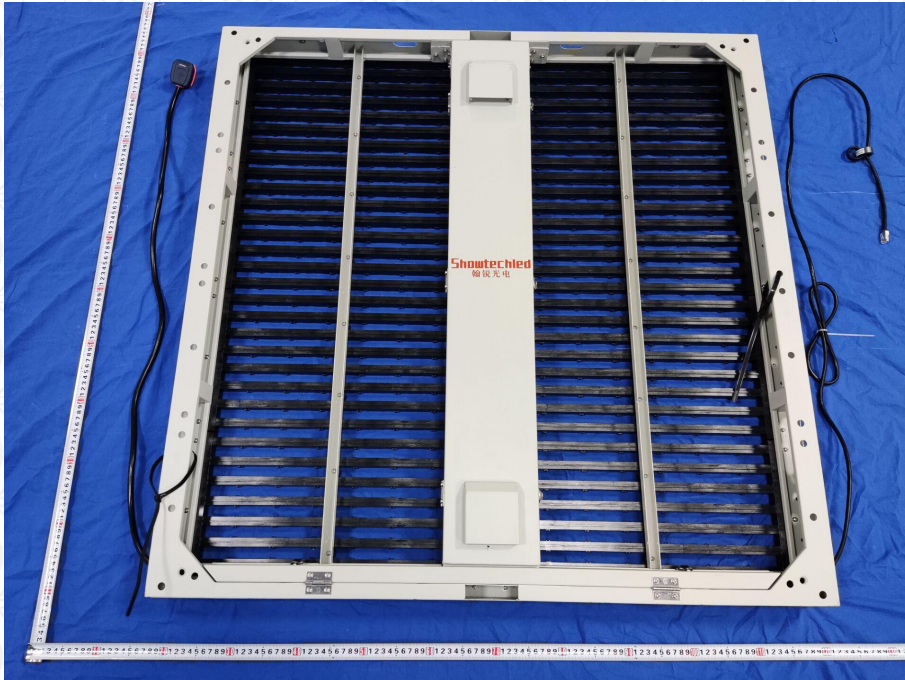


Figure 2: EUT- Back side

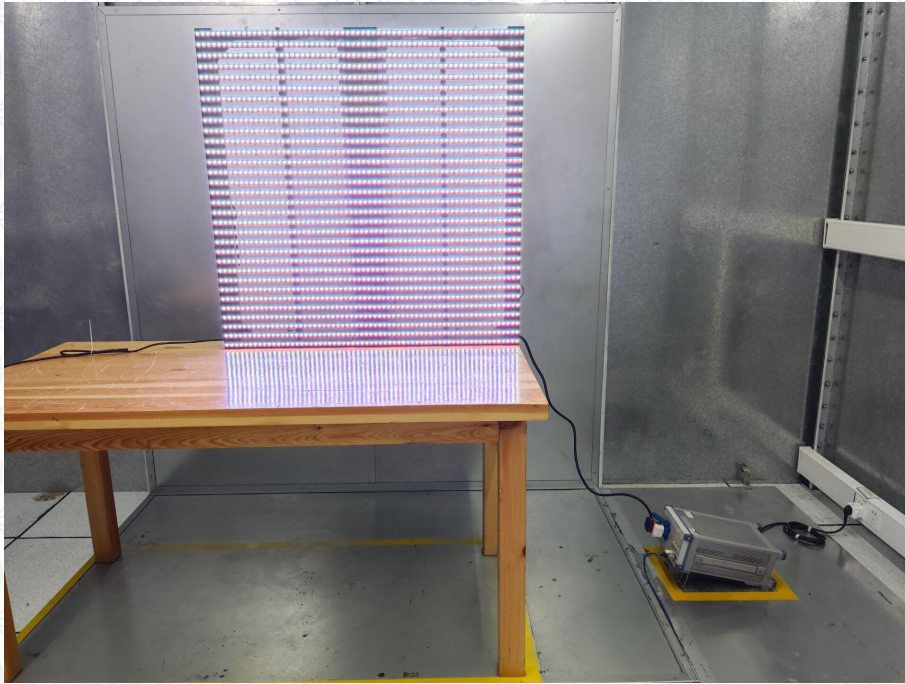


Figure 3: Power Line Conducted Emission Test Setup

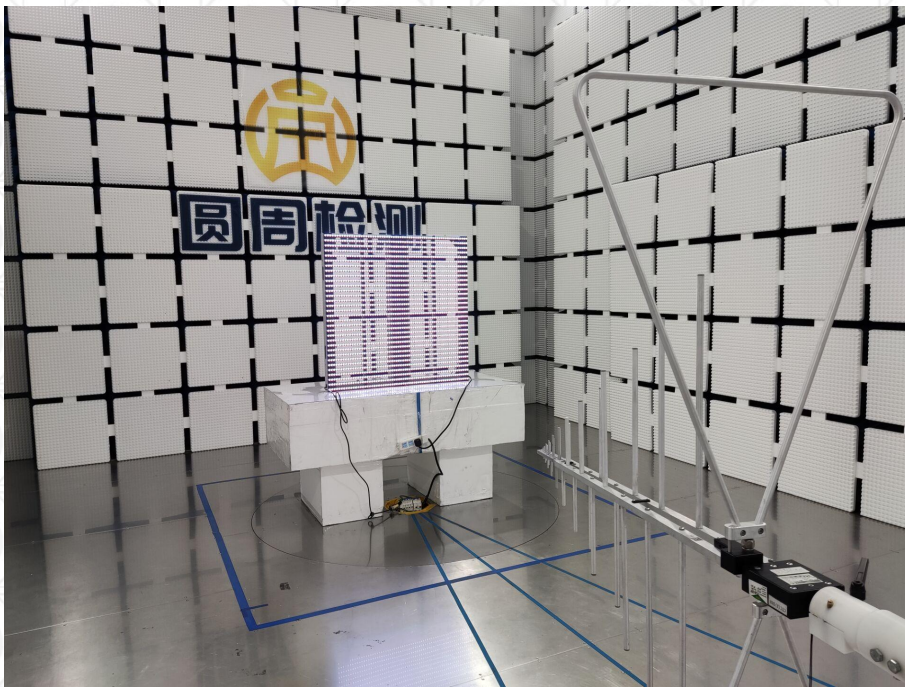


Figure 4: Radiated Emission Test Setup

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