

EMC Test Report

Client Name : AOK Industrial Company Limited

Address : Building 1, Shengzuozhi Technology Industrial Park,
Shajing Street, Shenzhen City, Guangdong Province,
China

Product Name : SE Series solar street light

Date : Feb. 25, 2021

Shenzhen Anbotek Compliance Laboratory Limited



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TEST REPORT

Applicant : AOK Industrial Company Limited
Manufacturer : AOK Industrial Company Limited
Product Name : SE Series solar street light
AOK-60WsE-DC-AP-L5-5070-T3-P,
AOK-60WsE-DC-XX-XX-XXXX-BN-P (The first "XX" which can be any lamp
Model No. : bead brand and lamp bead type, followed by "XXXX" which can be any numbers for temperature colors and color rendering index, followed by "BN" which can be any letters or digits for beam angles, The "P" can be "-A", "-B", "-C", "-D" or "-E" for mounting means)
Trade Mark : AOK
Input: DC 18V 4.4A IP66 ta45°C
Rating(s) : Output: DC 48V 1.25A Max 60W
Battery: 12.8V 537.6W

Test Standard(s) : J55015(H29)

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the J55015 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited

Date of Receipt: Jan. 22, 2021

Date of Test: Jan. 26~Jan. 28, 2021

Prepared By:

Winnie Huang

(Engineer / Winnie Huang)

Reviewer:

Well Wang

(Supervisor / Well Wang)

Approved & Authorized Signer:

KingKong Jin

(Manager / KingKong Jin)

1. General Information

1.1. Client Information

Applicant	:	AOK Industrial Company Limited
Address	:	Building 1, Shengzuozhi Technology Industrial Park, Shajing Street, Shenzhen City, Guangdong Province, China
Manufacturer	:	AOK Industrial Company Limited
Address	:	Building 1, Shengzuozhi Technology Industrial Park, Shajing Street, Shenzhen City, Guangdong Province, China
Factory	:	AOK Industrial Company Limited
Address	:	Building 1, Shengzuozhi Technology Industrial Park, Shajing Street, Shenzhen City, Guangdong Province, China

1.2. Description of Device (EUT)

Product Name	:	SE Series solar street light
Model No.	:	AOK-60WsE-DC-AP-L5-5070-T3-P, AOK-60WsE-DC-XX-XX-XXXX-BN-P (The first "XX" which can be any lamp bead brand and lamp bead type, followed by "XXXX" which can be any numbers for temperature colors and color rendering index, followed by "BN" which can be any letters or digits for beam angles, The "P" can be "-A", "-B", "-C", "-D" or "-E" for mounting means) (Note: All samples are the same except the model number & appearance, so we prepare "AOK-60WsE-DC-AP-L5-5070-T3-P" for test only.)
Trade Mark	:	AOK
Test Power Supply	:	DC 18V/N.A./DC 12.8V
Test Sample No.	:	1-1-1
Product Description	:	Adapter: N/A
Remark: (1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.		

1.3. Auxiliary Equipment Used During Test

N/A	
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1.4. Description of Test Modes

Pretest Modes	Descriptions
Mode 1	Charging
Mode 2	Solar Power
Mode 3	Light Mode

For Mode 1 Block Diagram of Test Setup



For Mode 2~Mode 3 Block Diagram of Test Setup



1.5. Test Summary

Test Items	Test Modes	Status
Power Line Conducted Emission Test (9KHz To 30MHz)	/	N
Radiated Emission Test (30MHz To 300MHz)	Mode 3	P
Magnetic Radiated Emission Test (9KHz To 30MHz)	All Mode	P
P) Indicates "PASS". N) Indicates "Not applicable".		

1.6. Test Equipment List

Radiated Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Oct. 26, 2020	1 Year
2.	Pre-amplifier	Schwarzbeck	BBV-9745	9745-075	Oct. 26, 2020	1 Year
3.	Bilog Broadband Antenna	SCHWARZBECK	VULB 9163	01109	Nov. 02, 2020	2 Year
4.	Software Name EZ-EMC	Ferrari Technology	EMEC-3A1	N/A	N/A	N/A

Magnetic Radiated Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Oct. 26, 2020	1 Year
2.	Triple-Loop Antenna(2M)	EVERFINE	LLA-2	905003	Oct. 30, 2020	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Oct. 26, 2020	1 Year
4.	Software Name EZ-EMC	Ferrari Technology	ANB-03A	N/A	N/A	N/A



1.7. Description of Test Facility

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

FCC-Registration No.: 184111

Shenzhen Anbotek Compliance Laboratory Limited, 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 our files. Registration No. 184111, September 30, 2020.

ISED-Registration No.: 8058A

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A, September 30, 2020.

Test Location

Shenzhen Anbotek Compliance Laboratory Limited.

1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518128



2. Radiated Emission Test

2.1. Test Standard and Limit

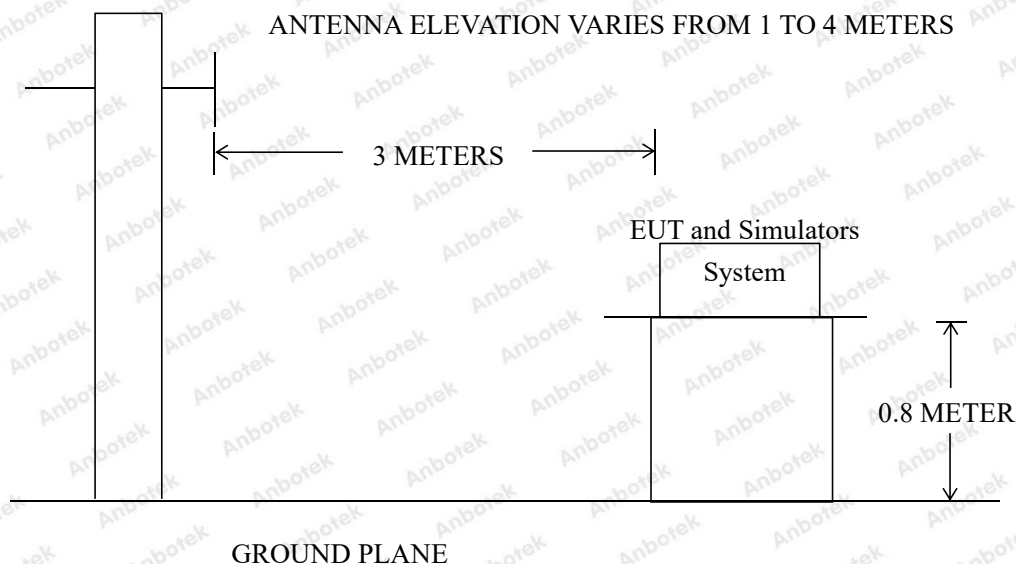
Test Standard	J55015(H29)
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Radiated Emission Test Limit

Test Limit	Frequency (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT (dB μ V/m)
	30 ~ 230	3	40
	230 ~ 300	3	47

Remark: (1) The smaller limit shall apply at the combination point between two frequency bands.
 (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

2.2. Test Setup



2.3. EUT Configuration on Measurement

The J55015(H29) regulations test method must be used to find the maximum emission during radiated emission measurement.

2.4. Operating Condition of EUT

2.4.1. Setup the EUT as shown in Section 2.2.

2.4.2. Turn on the power of all equipments.

2.4.3. Let the EUT work in test mode and measure it.

2.5. Test Procedure

The EUT is placed on a turn table which is 0.8 meter high above the 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 an antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Bilog antenna is used as a receiving antenna. Both horizontal and vertical polarization of the antenna are set on test.

The bandwidth of the Receiver (ESCI) is set at 120kHz.

The EUT is tested in Chamber.

The test results are listed in Section 2.6.

2.6. Test Results

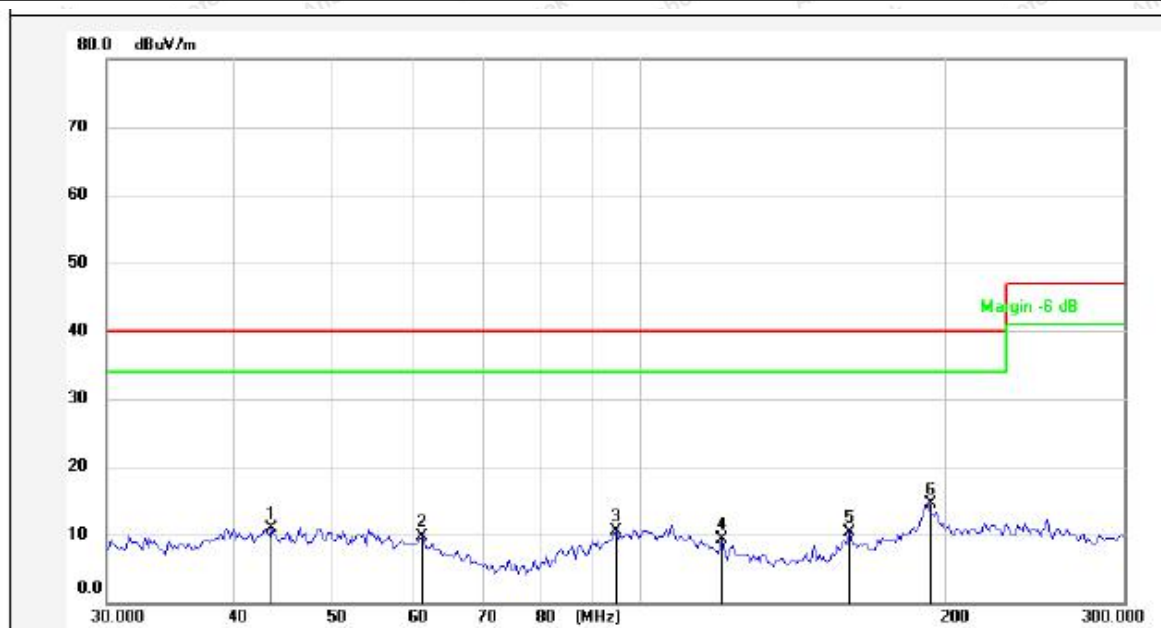
PASS

The frequency range from 30MHz to 300MHz is investigated.

The test curves are shown in the following pages.



Test item: Radiation Test **Polarization:** Horizontal
Standard: (RE)J55015(H29) **Power Source:** DC 18V
Distance: 3m **Temp.(°C)/Hum.(%RH):** 22.1(°C)/50%RH
Test Mode: Charging



No.	Freq. (MHz)	Reading (dBuV)	Factor ()	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	43.6135	26.54	-15.60	10.94	40.00	-29.06	peak			
2	61.2521	26.59	-16.90	9.69	40.00	-30.31	peak			
3	94.8683	26.69	-16.10	10.59	40.00	-29.41	peak			
4	120.8151	27.80	-18.40	9.40	40.00	-30.60	peak			
5	161.1095	30.10	-19.86	10.24	40.00	-29.76	peak			
6	192.5845	32.36	-17.85	14.51	40.00	-25.49	peak			

Note: Result=Reading+Factor Over Limit=Result-Limit



Test item: Radiation Test **Polarization:** Vertical
Standard: (RE)J55015(H29) **Power Source:** DC 18V
Distance: 3m **Temp.(°C)/Hum.(%RH):** 22.1(°C)/50%RH
Test Mode: Charging

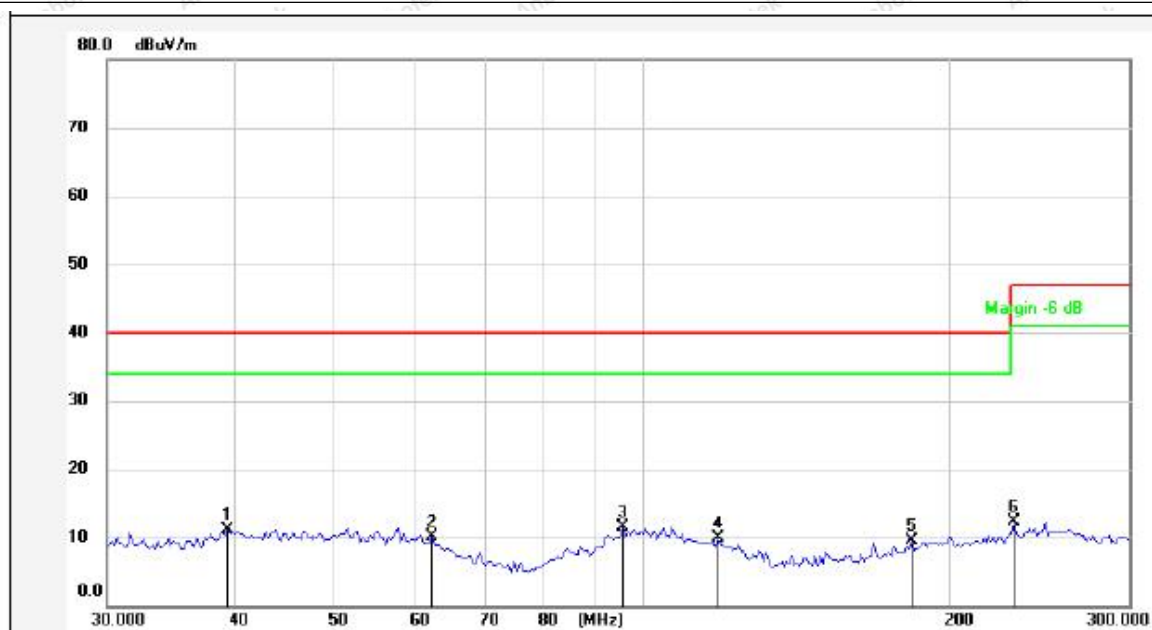


No.	Freq. (MHz)	Reading (dBuV)	Factor ()	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	39.7760	28.51	-15.63	12.88	40.00	-27.12	peak			
2	56.1851	26.13	-16.19	9.94	40.00	-30.06	peak			
3	70.3269	30.50	-20.46	10.04	40.00	-29.96	peak			
4	96.5209	29.71	-15.93	13.78	40.00	-26.22	peak			
5	202.8249	35.40	-17.71	17.69	40.00	-22.31	peak			
6	179.7303	32.83	-18.82	14.01	40.00	-25.99	peak			

Note: Result=Reading+Factor Over Limit=Result-Limit



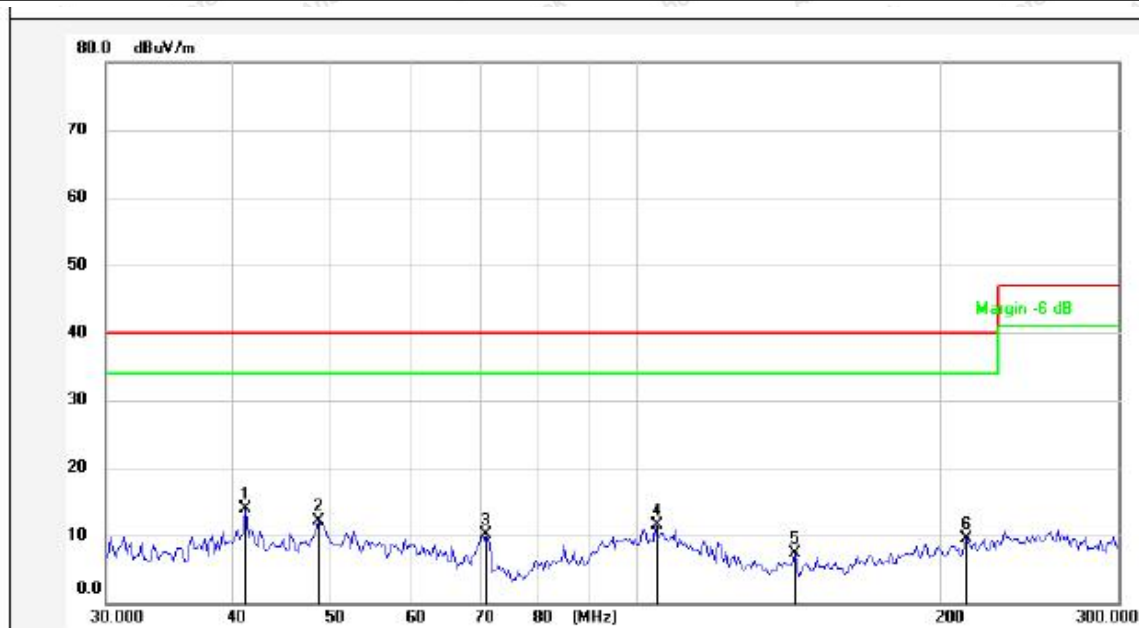
Test item: Radiation Test **Polarization:** Horizontal
Standard: (RE)J55015(H29) **Power Source:** N.A.
Distance: 3m **Temp.(°C)/Hum.(%RH):** 22.1(°C)/50%RH
Test Mode: Solar Power



No.	Freq. (MHz)	Reading (dBuV)	Factor ()	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	39.3207	26.81	-15.74	11.07	40.00	-28.93	peak			
2	62.3190	27.36	-17.32	10.04	40.00	-29.96	peak			
3	95.9668	27.58	-15.98	11.60	40.00	-28.40	peak			
4	118.7466	27.94	-18.06	9.88	40.00	-30.12	peak			
5	183.9166	27.92	-18.44	9.48	40.00	-30.52	peak			
6	231.5374	28.89	-16.59	12.30	47.00	-34.70	peak			

Note: Result=Reading+Factor Over Limit=Result-Limit

Test item: Radiation Test **Polarization:** Vertical
Standard: (RE)J55015(H29) **Power Source:** N.A.
Distance: 3m **Temp.(°C)/Hum.(%RH):** 22.1(°C)/50%RH
Test Mode: Solar Power

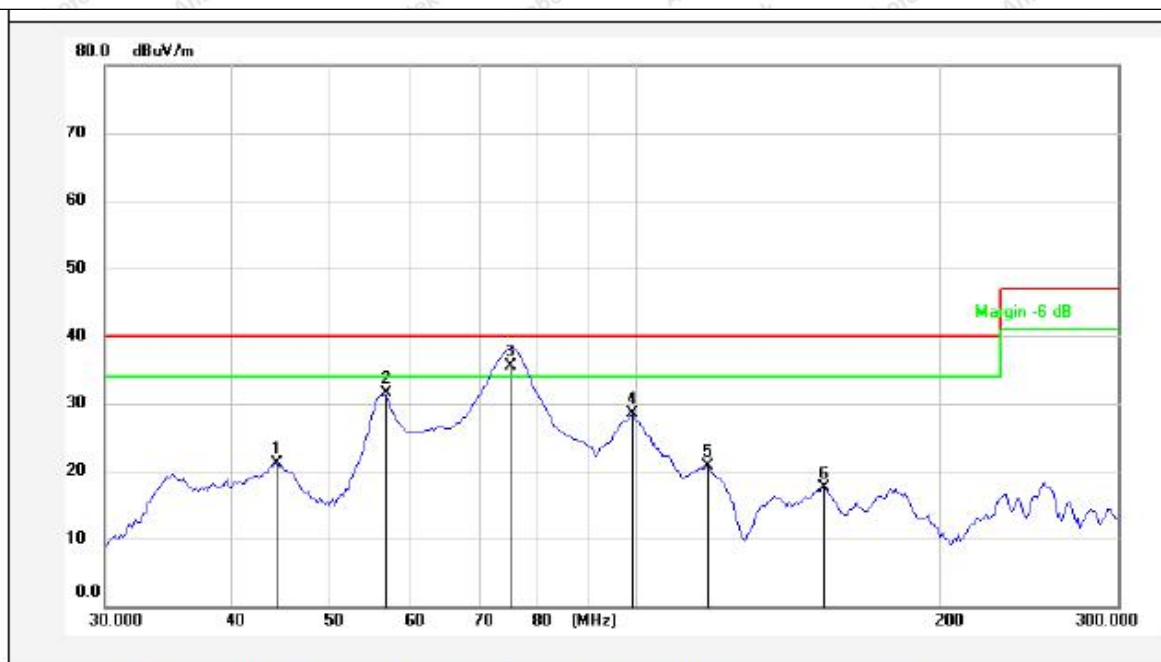


No.	Freq. (MHz)	Reading (dBuV)	Factor ()	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	41.1737	29.41	-15.58	13.83	40.00	-26.17	peak			
2	48.6542	27.96	-15.84	12.12	40.00	-27.88	peak			
3	70.7329	30.69	-20.52	10.17	40.00	-29.83	peak			
4	104.6216	27.64	-16.09	11.55	40.00	-28.45	peak			
5	143.5889	27.76	-20.44	7.32	40.00	-32.68	peak			
6	212.3837	26.90	-17.39	9.51	40.00	-30.49	peak			

Note: Result=Reading+Factor Over Limit=Result-Limit



Test item: Radiation Test **Polarization:** Horizontal
Standard: (RE)J55015(H29) **Power Source:** DC 12.8V
Distance: 3m **Temp.(°C)/Hum.(%RH):** 22.1(°C)/50%RH
Test Mode: Light Mode



No.	Freq. (MHz)	Reading (dBuV)	Factor ()	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	44.1186	36.62	-15.60	21.02	40.00	-18.98	peak			
2	56.5095	47.68	-16.20	31.48	40.00	-8.52	peak			
3	74.9566	56.78	-21.21	35.57	40.00	-4.43	QP	100	360	
4	99.3393	44.14	-15.73	28.41	40.00	-11.59	peak			
5	118.0650	38.59	-17.95	20.64	40.00	-19.36	peak			
6	152.9753	37.74	-20.22	17.52	40.00	-22.48	peak			

Note: Result=Reading+Factor Over Limit=Result-Limit

Test item: Radiation Test **Polarization:** Vertical
Standard: (RE)J55015(H29) **Power Source:** DC 12.8V
Distance: 3m **Temp.(°C)/Hum.(%RH):** 22.1(°C)/50%RH
Test Mode: Light Mode



No.	Freq. (MHz)	Reading (dBuV)	Factor ()	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	34.6435	44.99	-16.85	28.14	40.00	-11.86	peak			
2	56.1851	50.57	-16.19	34.38	40.00	-5.62	QP	100	0	
3	75.7916	51.67	-21.10	30.57	40.00	-9.43	peak			
4	99.3393	44.67	-15.73	28.94	40.00	-11.06	peak			
5	117.3873	42.26	-17.83	24.43	40.00	-15.57	peak			
6	152.0972	38.79	-20.26	18.53	40.00	-21.47	peak			

Note: Result=Reading+Factor Over Limit=Result-Limit



3. Magnetic Radiated Emission Test

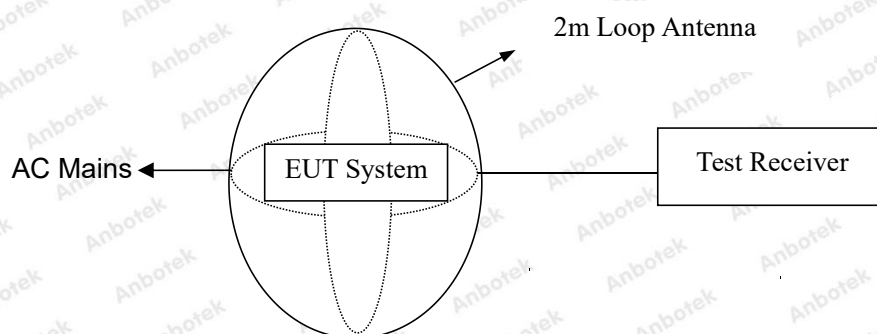
3.1. Test Standard and Limit

Test Standard	J55015(H29)
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Limits for Magnetic Radiated Emission

Test Limit	Frequency	Limits for loop diameter (dB μ A)
		2m
	9KHz ~ 70KHz	88
	70KHz ~ 150KHz	88 ~ 58*
	150KHz ~ 3.0MHz	58 ~ 22*
	3.0MHz ~ 30MHz	22
Remark: (1) At the transition frequency the lower limit applies. (2) * decreasing linearly with logarithm of the frequency.		

3.2. Test Setup



3.3. EUT Configuration on Measurement

The following equipments are installed on Magnetic Radiated emission Measurement to meet J55015(H29) requirements and operating in a manner which tends to maximize its emission characteristics in a normal application.

3.4. Operating Condition of EUT

3.4.1. Setup the EUT as shown in Section 3.2.

3.4.2. Turn on the power of all equipments.

3.4.3. Let the EUT work in test mode and measure it.

3.5. Test Procedure

The EUT is placed on a wood table in the center of a loop antenna. The induced current in the loop antenna is measured by means of a current probe and the test receiver. Three field components are checked by means of a coaxial switch.

The frequency range from 9KHz to 30MHz is investigated. The receiver is measured with the quasi-peak detector. For frequency band 9KHz to 150KHz, the bandwidth of the test receiver (ESCI) is set at 200Hz. For frequency band 150KHz to 30MHz, the bandwidth is set at 9KHz.

All the test results are listed in Section 3.6.

3.6. Test Results

PASS

The frequency range from 9KHz to 30MHz is investigated.

The test curves are shown in the following pages.



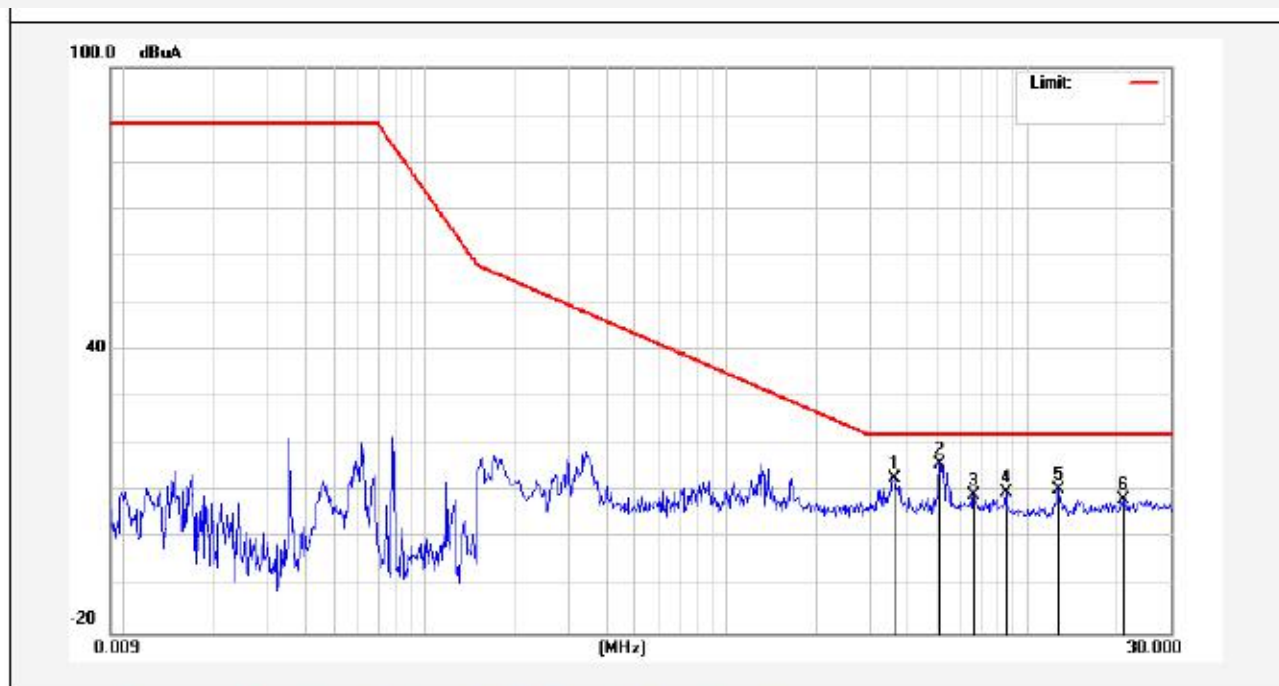
Magnetic Radiated Emission Test

Test Site: 1# Shielded Room

Test Specification: DC 12.8V

Comment: X

Temp.: 23.5°C Hum.: 50%



No.	Freq. (MHz)	Reading (dBuA)	Factor (dB)	Result (dBuA)	Limit (dBuA)	Over Limit (dB)	Detector	Remark
1	3.6340	12.70	0.03	12.73	22.00	-9.27	QP	
2	5.1420	15.95	0.04	15.99	22.00	-6.01	QP	
3	6.6740	9.07	0.07	9.14	22.00	-12.86	QP	
4	8.4819	9.76	0.05	9.81	22.00	-12.19	QP	
5	12.7100	10.50	0.02	10.52	22.00	-11.48	QP	
6	20.8540	8.40	0.02	8.42	22.00	-13.58	QP	

Note: **Result=Reading+Factor** **Over Limit=Result-Limit**

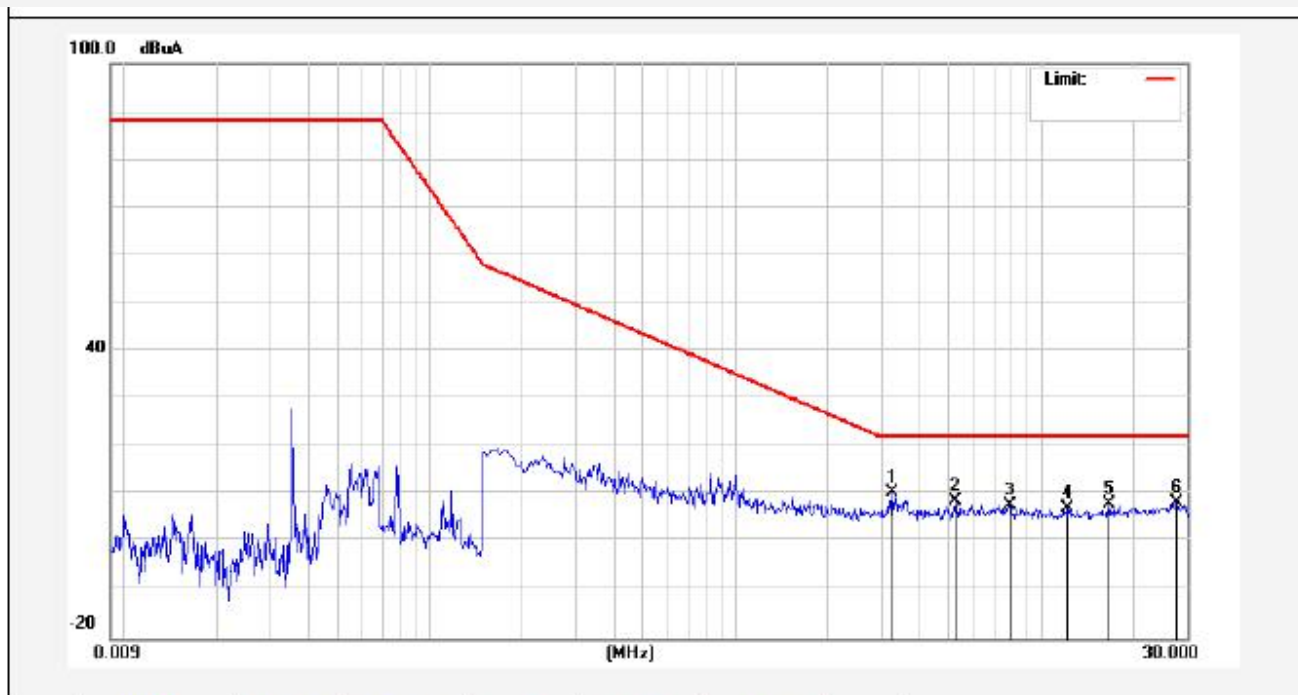
Magnetic Radiated Emission Test

Test Site: 1# Shielded Room

Test Specification: DC 12.8V

Comment: Y

Temp.: 23.5°C Hum.: 50%



No.	Freq. (MHz)	Reading (dBuA)	Factor (dB)	Result (dBuA)	Limit (dBuA)	Over Limit (dB)	Detector	Remark
1	3.2500	10.40	0.02	10.42	22.00	-11.58	QP	
2	5.2580	8.69	0.05	8.74	22.00	-13.26	QP	
3	7.9220	7.73	0.06	7.79	22.00	-14.21	QP	
4	12.2620	7.21	0.01	7.22	22.00	-14.78	QP	
5	16.6020	8.04	0.02	8.06	22.00	-13.94	QP	
6	27.7740	8.33	0.02	8.35	22.00	-13.65	QP	

Note: Result=Reading+Factor Over Limit=Result-Limit

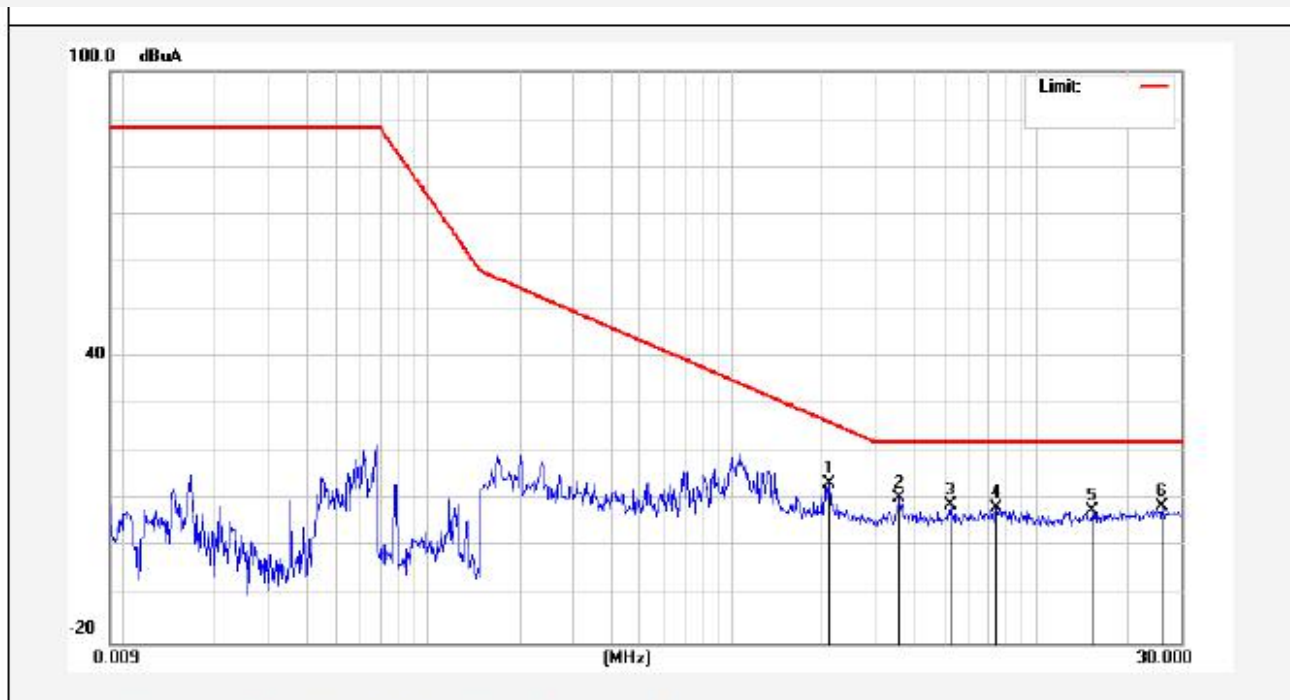
Magnetic Radiated Emission Test

Test Site: 1# Shielded Room

Test Specification: /DC 12.8V

Comment: Z

Temp.: 23.5°C Hum.: 50%



No.	Freq. (MHz)	Reading (dBuA)	Factor (dB)	Result (dBuA)	Limit (dBuA)	Over Limit (dB)	Detector	Remark
1	2.0820	13.54	0.01	13.55	26.39	-12.84	QP	
2	3.5700	10.32	0.03	10.35	22.00	-11.65	QP	
3	5.2580	8.77	0.05	8.82	22.00	-13.18	QP	
4	7.3900	8.26	0.07	8.33	22.00	-13.67	QP	
5	15.3700	7.84	0.02	7.86	22.00	-14.14	QP	
6	26.0340	8.62	0.02	8.64	22.00	-13.36	QP	

Note: Result=Reading+Factor Over Limit=Result-Limit

APPENDIX I -- TEST SETUP PHOTOGRAPH

Photo of Radiated Emission Test

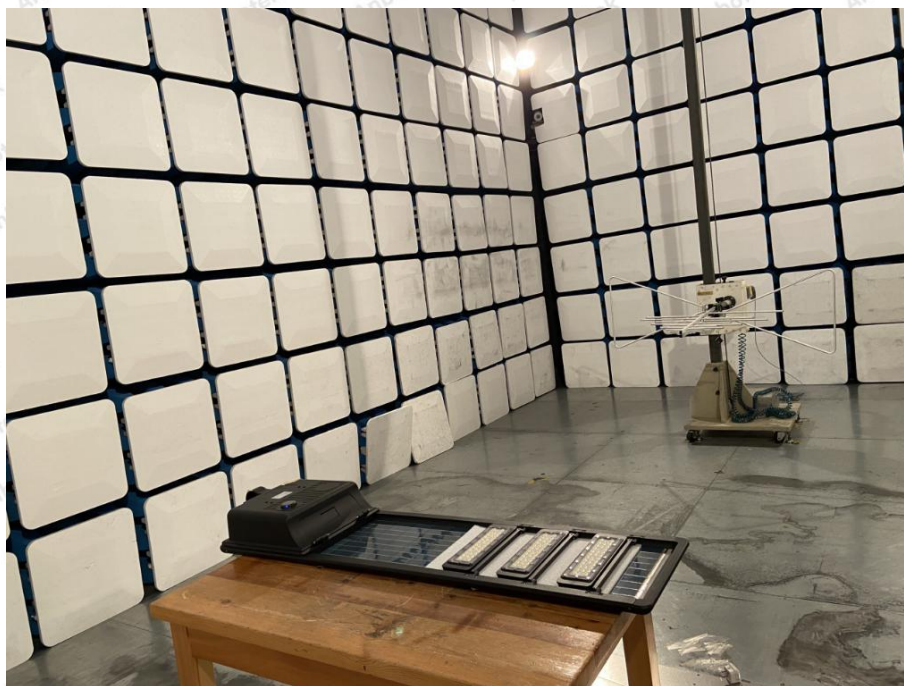
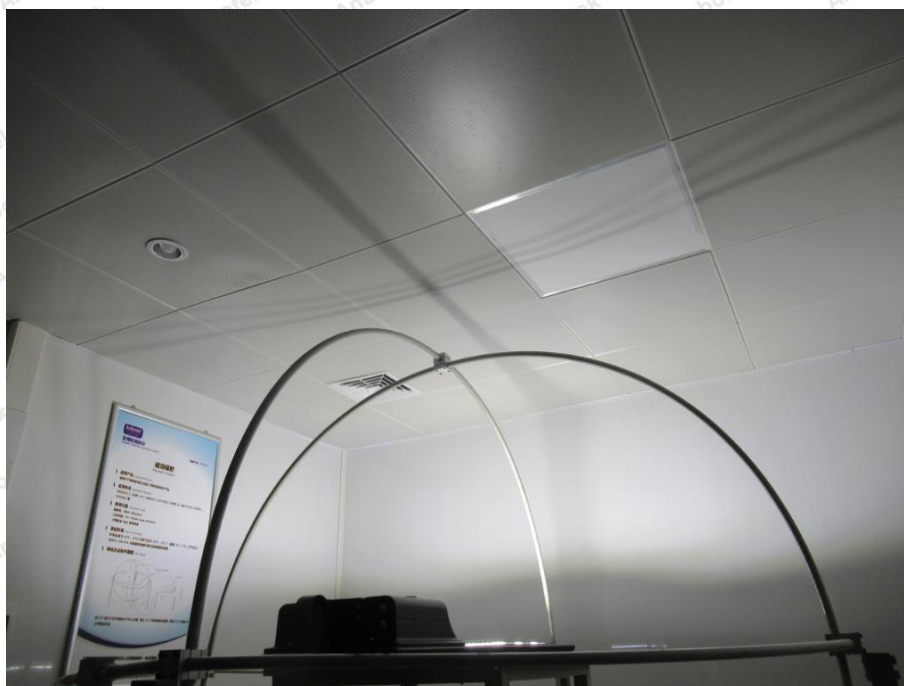
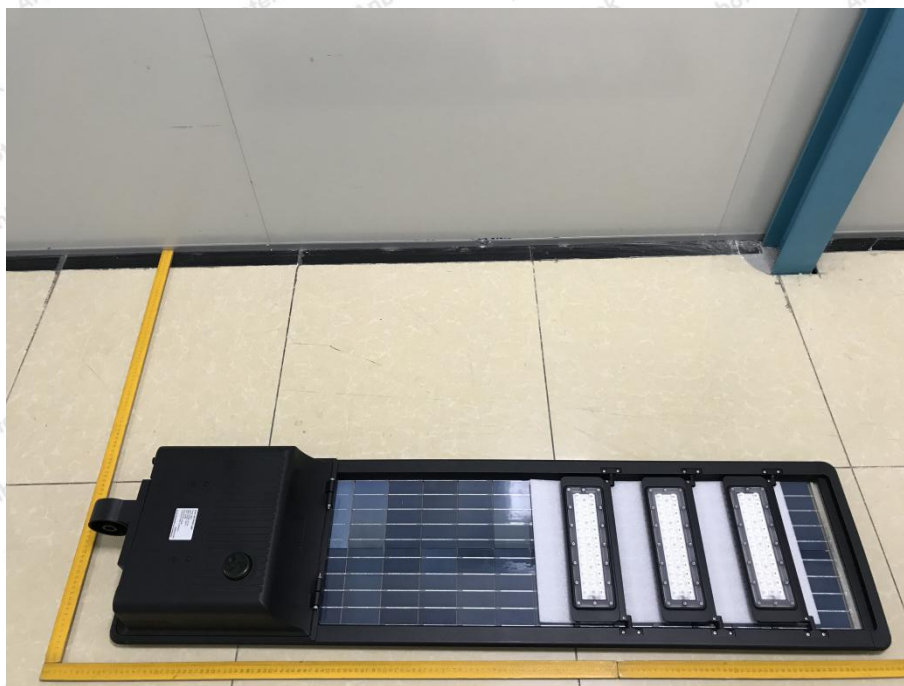


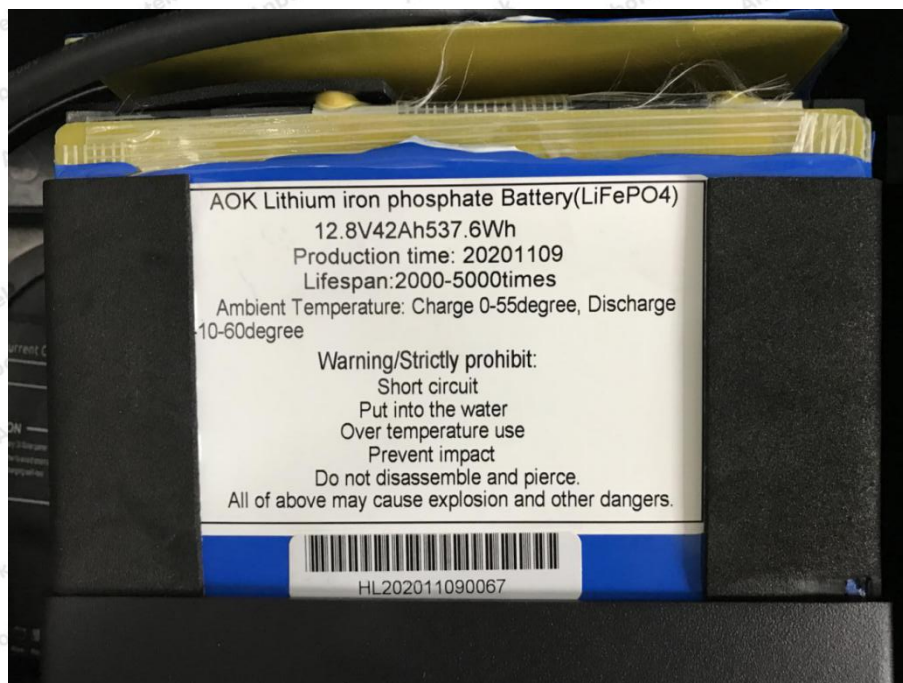
Photo of Magnetic Radiated Emission Test



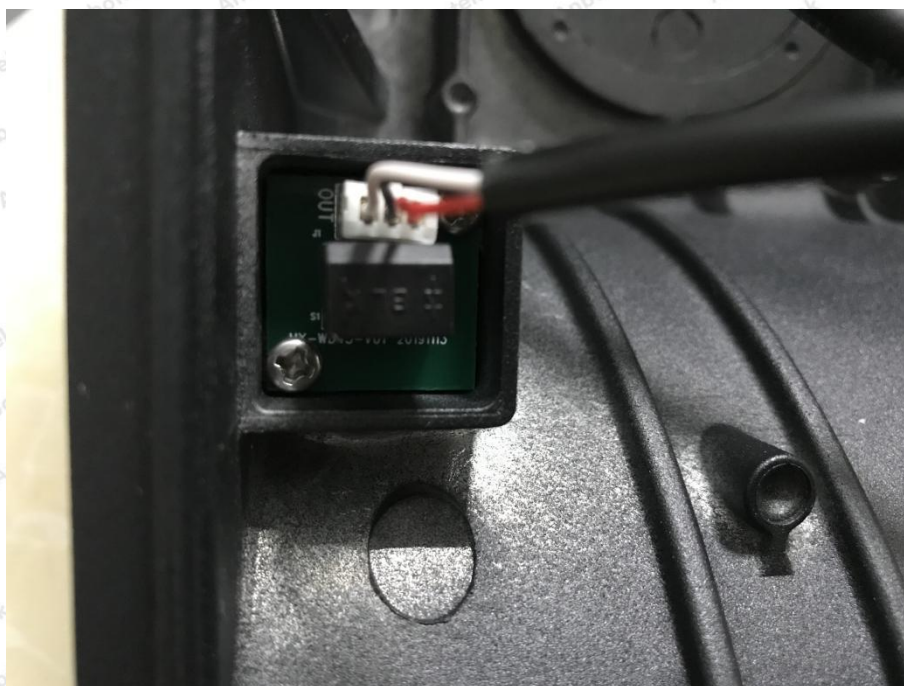
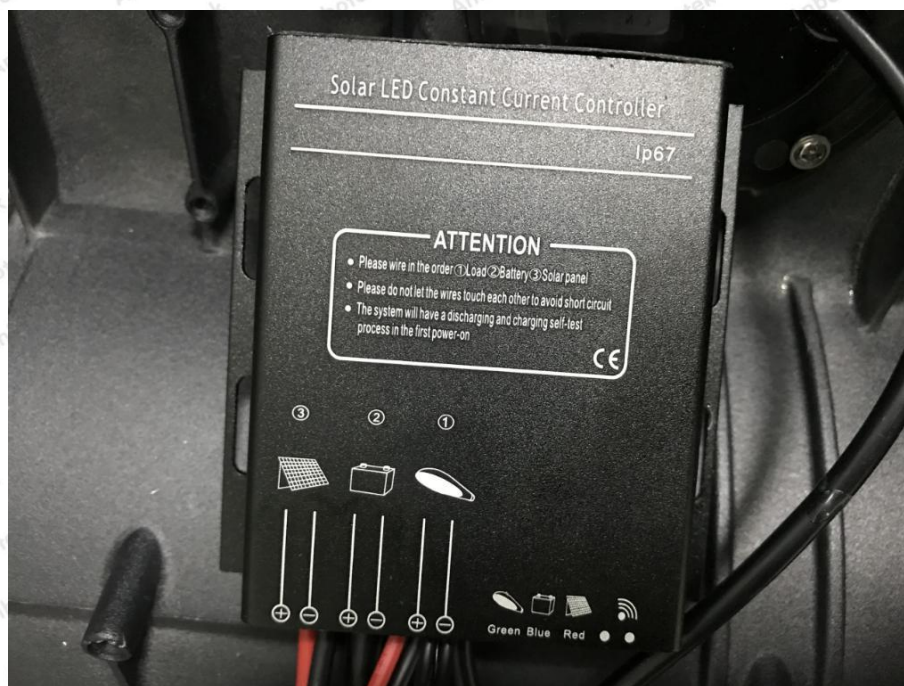
APPENDIX II -- Photo documentation

















----- End of Report -----

