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AUSTRALIA TEST REPORT

For

AOK Industrial Company Limited

SE SERIES SOLAR STREET LIGHT

Test Model: AOK-60WSE-DC-AP-L5-5700-T3-P

Additional Models : Please Refer To Page 9 Model List

Prepared for : AOK Industrial Company Limited
Address : Building 1, Shengzuozhi Technology Industrial Park, Shajing Street, Shenzhen City, Guangdong Province, China

Prepared by : Shenzhen Southern LCS Compliance Testing Laboratory Ltd.
Address : 101-201, No.39 Building, Xialang Industrial Zone, Heshuikou Community, Matian Street, Guangming District, Shenzhen, China

Tel : (+86)755-29871520
Fax : (+86)755-29871521
Web : www.LCS-cert.com
Mail : webmaster@LCS-cert.com

Date of receipt of test sample : July 20, 2020
Number of tested samples : 1
Serial number : Prototype
Date of Test : July 20, 2020 ~ July 23, 2020
Date of Report : July 23, 2020

**AUSTRALIA TEST REPORT
AS CISPR 15: 2017**

Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment

Report Reference No : **LCS200720008BE**
Date Of Issue : July 23, 2020

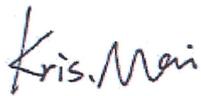
Testing Laboratory Name..... : **Shenzhen Southern LCS Compliance Testing Laboratory Ltd.**
Address : 101-201, No.39 Building,Xialang Industrial Zone, Heshuikou Community, Matian Street,Guangming District, Shenzhen, China
Testing Location/ Procedure ... : Full application of Harmonised standards
 Partial application of Harmonised standards
 Other standard testing method

Applicant's Name : **AOK Industrial Company Limited**
Address : Building 1,Shengzuozhi Technology Industrial Park,Shajing Street,Shenzhen City,Guangdong Province,China

Test Specification:
Standard : AS CISPR 15: 2017
Test Report Form No...... : SLCSEMC-2.0
TRF Originator : Shenzhen Southern LCS Compliance Testing Laboratory Ltd.
Master TRF : Dated 2016-08

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Test Item Description..... : **SE SERIES SOLAR STREET LIGHT**
Trade Mark : 
Test Model..... : AOK-60WSE-DC-AP-L5-5700-T3-P
Power Supply..... : Input: DC 18V,4.4A, IP66
 output: 48V,1.25A,Max.60W
Results : **PASS**

Compiled by:	Supervised by:	Approved by:
		
Kris Mai/ File administrators	Dm Gu/ Technique principal	Cherry Chen/ Manager

AUSTRALIA - TEST REPORT**Test Report No. : LCS200720008BE**July 23, 2020
Date of issue

Applicant: **AOK Industrial Company Limited**
Address

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

Telephone

Fax

Manufacturer: **AOK Industrial Company Limited**
Address

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

Telephone

Fax

Factory: **AOK Industrial Company Limited**
Address

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

Telephone

Fax

Test Result according to the standards on page 6: **PASS**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision History

Revision	Issue Date	Revisions	Revised By
00	July 23, 2020	Initial Issue	Cherry Chen

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1. REPORT INFORMATION DESCRIPTION

1.1 Summary of Standards and Results

1.1.1 Description of Standards and Results

EMISSION (AS CISPR 15: 2017)			
Description of Test Item	Test Standard	Limits	Results
Conducted Disturbance at Mains Terminals	AS CISPR 15: 2017	/	N/A
Conducted Disturbance at Control Terminals	AS CISPR 15: 2017	/	N/A
Radiated Disturbance (9kHz to 30MHz)	AS CISPR 15: 2017	2m	PASS
Radiated Disturbance (30MHz to 300MHz)	AS CISPR 15: 2017	/	PASS

Note: N/A is an abbreviation for Not Applicable.

1.2 Product Information

1.2.1 EUT introduce

EUT : SE SERIES SOLAR STREET LIGHT
 Test Model : AOK-60WSE-DC-AP-L5-5700-T3-P
 Additional Models : See page 7 model list

1.2.2 Test Modes

Mode 1 : EUT was test with power on, to get the status 'Lighting'

1.2.3 Test Auxiliary Equipment

Configuration	Model	Rating	Manufacturer

1.2.4 General Product Information

The EUTs are general luminaires for illumination purpose. detailed differences shown in below.

Model list:

Model
AOK-10WsE-DC-XX-XX-XXXX-BN-P, AOK-15WsE-DC-XX-XX-XXXX-BN-P, AOK-20WsE-DC-XX-XX-XXXX-BN-P,AOK-25WsE-DC-XX-XX-XXXX-BN-P, AOK-30WsE-DC-XX-XX-XXXX-BN-P,AOK-35WsE-DC-XX-XX-XXXX-BN-P, AOK-40WsE-DC-XX-XX-XXXX-BN-P,AOK-45WsE-DC-XX-XX-XXXX-BN-P, AOK-50WsE-DC-XX-XX-XXXX-BN-P,AOK-55WsE-DC-XX-XX-XXXX-BN-P, AOK-60WsE-DC-XX-XX-XXXX-BN-P
where first "XX" can be any letter for manufacturer of LED, second "XX" can be SN or 00 for sensor provided or not, last "XXXX" can be any digits for color temperature, "BN" can be any letter or digits for beam angles, "P" can be A B C D E for mounting means

1.3 Description of Test Facility

EMC Lab. : TUV RH Registration Number. is UA 50418075 0001.
UL Registration Number. is 100571-492.
NVLAP Registration Code is 600112-0.

Test Facilities : Shenzhen Southern LCS Compliance Testing Laboratory Ltd.
101-201, No.39 Building,Xialang Industrial Zone, Heshuikou Community,
Matian Street, Guangming District, Shenzhen, China.

2. STATEMENT OF THE MEASUREMENT UNCERTAINTY

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Test	Parameters	Expanded uncertainty (U_{lab})	Expanded uncertainty (U_{cispr})
Conducted Disturbance	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	± 1.40 dB ± 2.80 dB	± 4.0 dB ± 3.6 dB
Electromagnetic Radiated Emission (3-loop)	Level accuracy (9kHz to 30MHz)	± 3.46 dB	N/A
Radiated Disturbance	Level accuracy (9kHz to 30MHz)	± 3.12 dB	N/A
Radiated Disturbance	Level accuracy (30MHz to 200MHz)	± 4.66 dB	± 5.2 dB
Radiated Disturbance	Level accuracy (200MHz to 1000MHz)	± 4.64 dB	± 5.0 dB

(1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.

(2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

3. MEASURING DEVICES AND TEST EQUIPMENT

Conducted Disturbance

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	EMI Test Receiver	R&S	ESCI	101142	2021-06-17
2	10dB Attenuator	SCHWARZBECK	VTSD9561-F	9561-F159	2021-06-17
3	Artificial Mains	SCHWARZBECK	NSLK8127	8127716	2021-06-17
4	EMI Test Software	EZ	EZ_EMG	N/A	2021-06-17
5	ISN CAT6	SCHWARZBECK	NTFM 8158	NTFM 8158#120	2021-06-17
6	Voltage Probe	SCHWARZBECK	KT 9420	9420401	2021-06-17

Radiated Disturbance(9kHz to 30MHz)

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	EMI Test Receiver	R&S	ESPI	101142	2021-06-17
2	Triple-loop Antenna	EVERFINE	LLA-2	9161	2021-06-17
3	EMI Test Software	EZ	EZ_EMG	N/A	2021-06-17

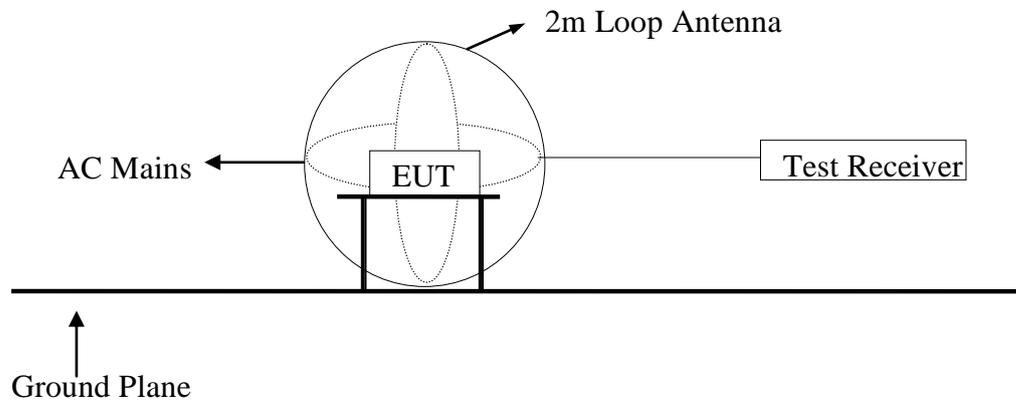
Radiated Disturbance(30MHz to 300MHz)

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2021-08-05
2	EMI Test Receiver	R&S	ESCI	101010	2021-06-17
3	Log per Antenna	SCHWARZBECK	VULB9163	5094	2022-06-23
4	EMI Test Software	AUDIX	E3	N/A	2021-06-17
5	Positioning Controller	MF	BK8807-4A-2T	2016-0808-008	2021-06-17

4. TEST DETAILS

4.1 Radiated Disturbance (9kHz to 30MHz)

4.1.1 Block Diagram of Test Setup



4.1.2 Test Standard

AS CISPR 15: 2017

4.1.3 Limits

Radiated disturbance limits in the frequency range 9 kHz to 30 MHz	
Frequency range	Limits for loop diameter (dB μ A)
	2m
9kHz to 70kHz	88
70kHz to 150kHz	88 to 58*
150kHz to 3.0MHz	58 to 22*
3.0MHz to 30MHz	22

NOTE1: At the transition frequency the lower limit applies.

NOTE2: Decreasing linearly with logarithm of the frequency.

4.1.4 Test Procedure Description

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.

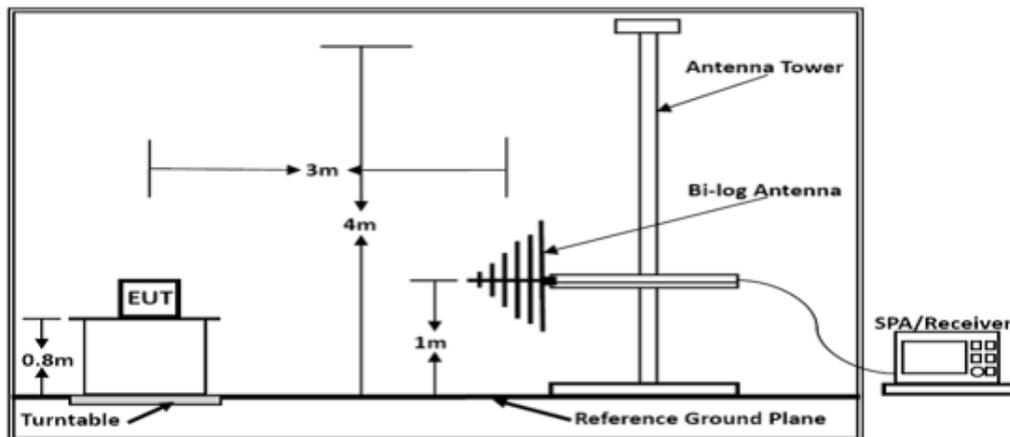
The frequency range from 9kHz to 30MHz is investigated. The receiver is measured with the quasi-peak detector. For frequency band 9kHz to 150kHz, the bandwidth of the field strength meter is set at 200Hz. For frequency band 150kHz to 30MHz, the bandwidth is set at 9kHz.

4.1.5 Test Results

Refer to Annex A.1

4.2 Radiated Disturbance (30MHz to 300MHz)

4.2.1 Block Diagram of Test Setup



4.2.2 Test Standard

AS CISPR 15: 2017

4.2.3 Limits

SAC Radiated disturbance limits and associated measurement methods in the frequency range 30 MHz to 1 GHz (at 3 m distance)	
Frequency range (MHz)	Quasi-Peak Limits(dB μ V/m)
30 ~ 230	40
230 ~ 300	47

NOTE1: at the transition frequency, the lower limit applies.

NOTE2: Distance refers to the distance in meters between the measuring instrument antenna geometric center and the closed point of any part of the EUT.

NOTE3: Testing method which the Semi Anechoic Chamber

4.2.4 Test Procedure Description

The Radiated Disturbance test was conducted in a 3M Semi Anechoic Chamber and conforming to CISPR 16. The EUT is placed on a turntable, which is 0.8 meter high above the ground. The turntable 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. By-log antenna (calibrated by Dipole Antenna) is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.

The bandwidth of the Receiver is set at 120kHz; The frequency range from 30MHz to 300MHz is investigated.

4.2.5 Test Results

Refer to Annex A.2

ANNEX A

(Emission and Immunity test results)

A.1 Radiated Disturbance Test Results (9kHz to 30MHz)

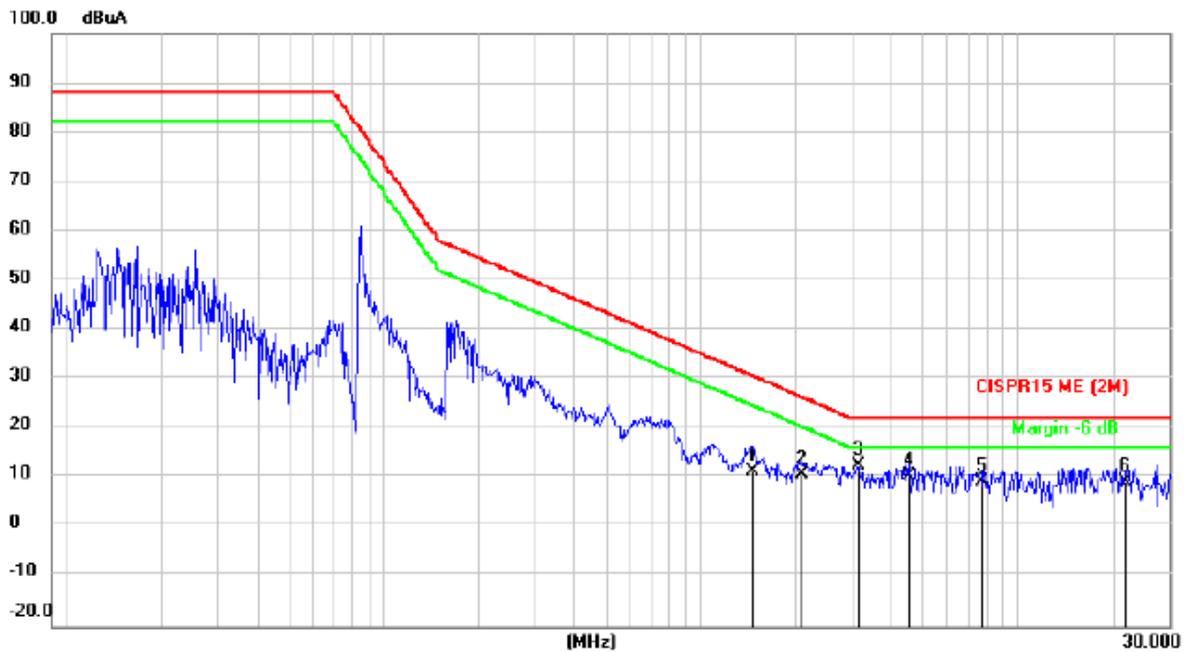
Environmental Conditions:	23.9°C, 53% RH
Test Voltage:	DC
Test Model:	AOK-60WSE-DC-AP-L5-5700-T3-P
Test Mode:	Mode 1
Test Engineer:	ZOM ZHANG
Pol:	X
Detailed results are shown below	



No. Mk.	Freq. MHz	Reading Level dBuA	Correct Factor dB	Measurement dBuA	Limit dBuA	Over dB	Detector	Comment
1	1.4314	13.80	0.00	13.80	30.89	-17.09	QP	
2	2.5478	11.50	0.00	11.50	23.96	-12.46	QP	
3	3.1206	11.21	0.00	11.21	22.00	-10.79	QP	
4 *	8.0615	13.63	-2.09	11.54	22.00	-10.46	QP	
5	13.7697	19.74	-9.54	10.20	22.00	-11.80	QP	
6	20.4902	25.81	-15.47	10.34	22.00	-11.66	QP	

Environmental Conditions:	23.9°C, 53% RH
Test Voltage:	DC
Test Model:	AOK-60WSE-DC-AP-L5-5700-T3-P
Test Mode:	Mode 1
Test Engineer:	ZOM ZHANG
Pol:	Y

Detailed results are shown below



No.	Mk.	Freq. MHz	Reading Level dBuA	Correct Factor dB	Measure- ment dBuA	Limit dBuA	Over dB	Detector	Comment
1		1.4556	11.23	0.00	11.23	30.69	-19.46	QP	
2		2.0800	10.83	0.00	10.83	26.40	-15.57	QP	
3	*	3.1459	12.66	0.00	12.66	22.00	-9.34	QP	
4		4.5319	10.38	0.00	10.38	22.00	-11.62	QP	
5		7.6783	10.99	-1.68	9.31	22.00	-12.69	QP	
6		21.8640	28.91	-19.59	9.32	22.00	-12.68	QP	

Environmental Conditions:	23.9°C, 53% RH
Test Voltage:	DC
Test Model:	AOK-60WSE-DC-AP-L5-5700-T3-P
Test Mode:	Mode 1
Test Engineer:	ZOM ZHANG
Pol:	Z

Detailed results are shown below



No.	Mk.	Freq. MHz	Reading Level dBuA	Correct Factor dB	Measure- ment dBuA	Limit dBuA	Over dB	Detector	Comment
1		1.4916	10.70	0.00	10.70	30.40	-19.70	QP	
2		2.6105	10.42	0.00	10.42	23.67	-13.25	QP	
3		4.1787	9.96	0.00	9.96	22.00	-12.04	QP	
4	*	8.3268	12.74	-2.49	10.25	22.00	-11.75	QP	
5		13.7697	19.58	-9.54	10.04	22.00	-11.96	QP	
6		26.7789	30.21	-21.17	9.04	22.00	-12.96	QP	

A.2 Radiated Disturbance Test Results (30MHz to 300MHz)

Environmental Conditions:	23.8°C, 53% RH
Test Voltage:	DC
Test Model:	AOK-60WSE-DC-AP-L5-5700-T3-P
Test Mode:	Mode 1
Test Engineer:	ZOM ZHANG
Pol:	Vertical

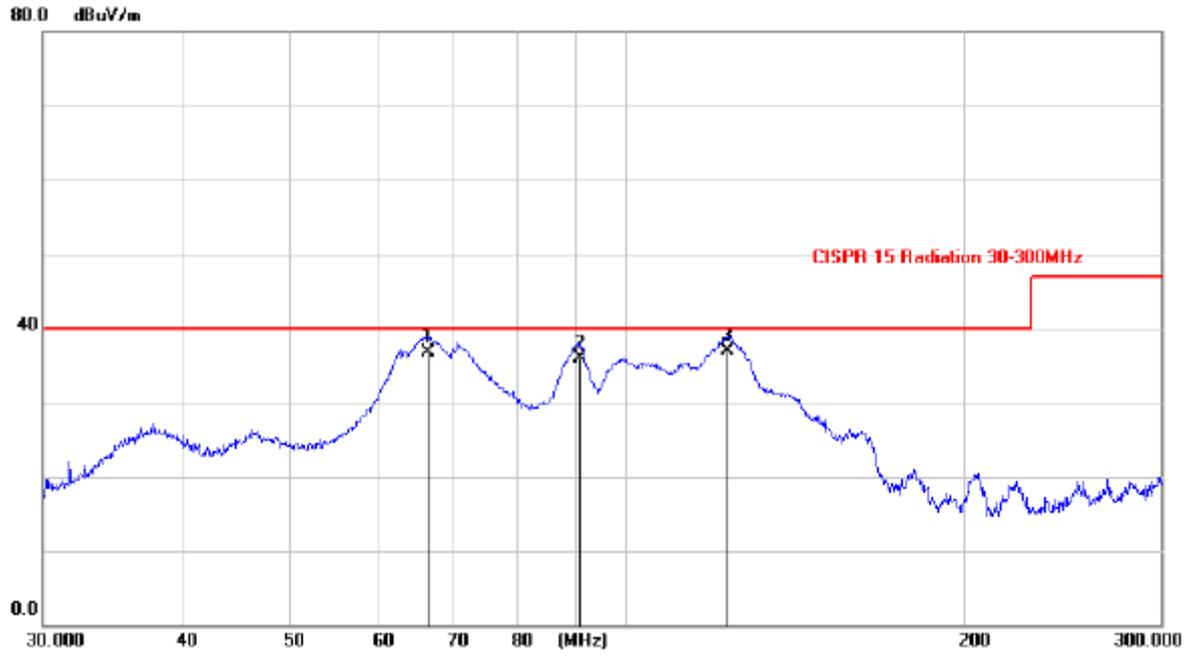
Detailed results are shown below



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1	*	79.3179	27.08	9.58	36.66	40.00	-3.34	QP			
2		90.5986	26.42	9.59	36.01	40.00	-3.99	QP			
3		124.3072	22.39	12.65	35.04	40.00	-4.96	QP			

Environmental Conditions:	23.8°C, 53% RH
Test Voltage:	DC
Test Model:	AOK-60WSE-DC-AP-L5-5700-T3-P
Test Mode:	Mode 1
Test Engineer:	ZOM ZHANG
Pol:	Horizontal

Detailed results are shown below



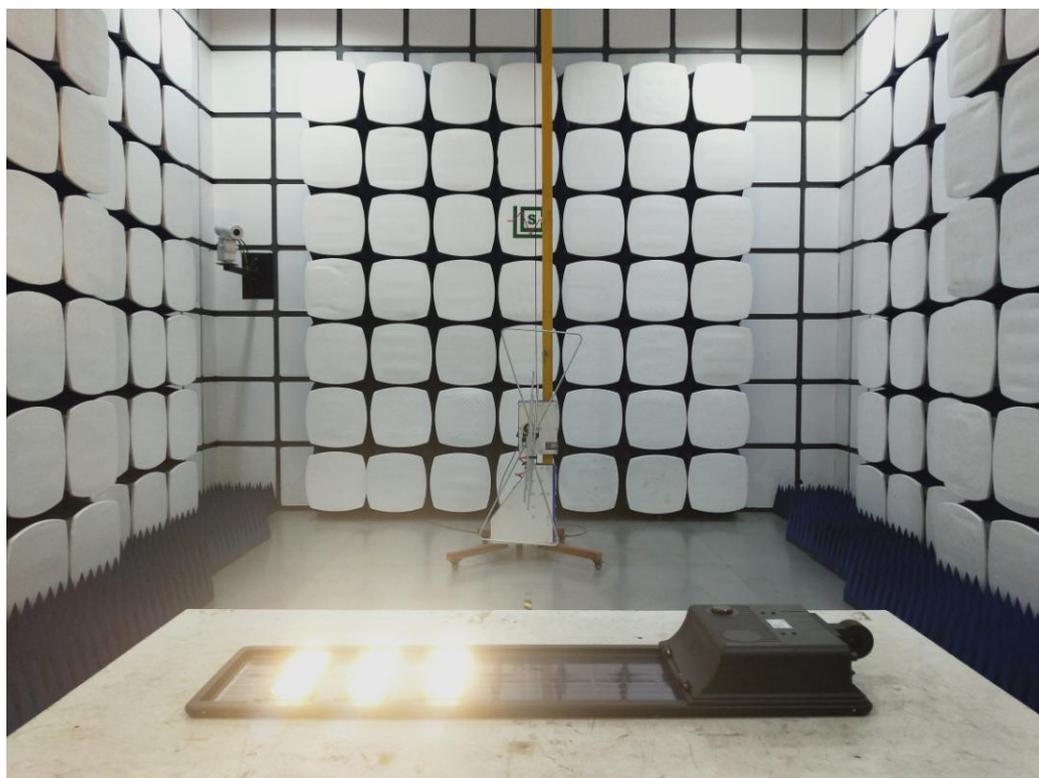
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1		66.2400	25.51	11.27	36.78	40.00	-3.22	QP			
2		90.7813	24.69	11.26	35.95	40.00	-4.05	QP			
3	*	122.9903	25.72	11.10	36.82	40.00	-3.18	QP			

ANNEX B (Test photograph)

B.1 Photo of Radiated Disturbance(9kHz to 30MHz)



B.2 Photo of Radiated Disturbance(30MHz to 300MHz)



ANNEX C

(External and internal photos of the EUT)



Figure. 1 (AOK-60WSE-DC-AP-L5-5700-T3-P)

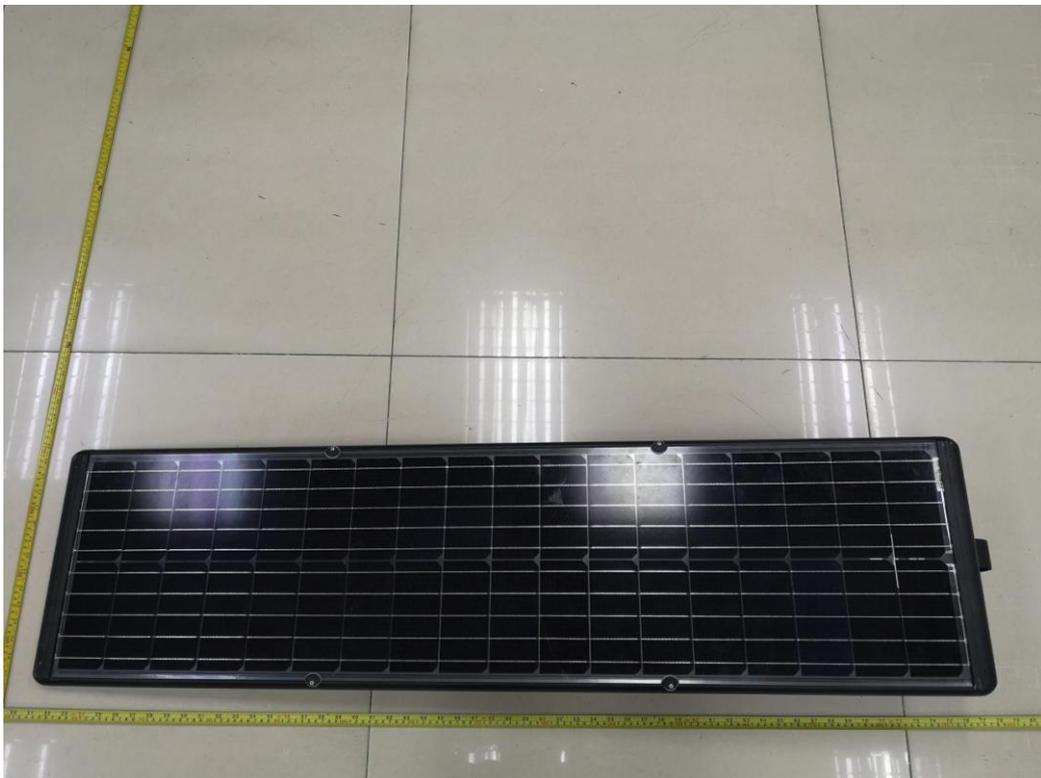


Figure. 2 (AOK-60WSE-DC-AP-L5-5700-T3-P)

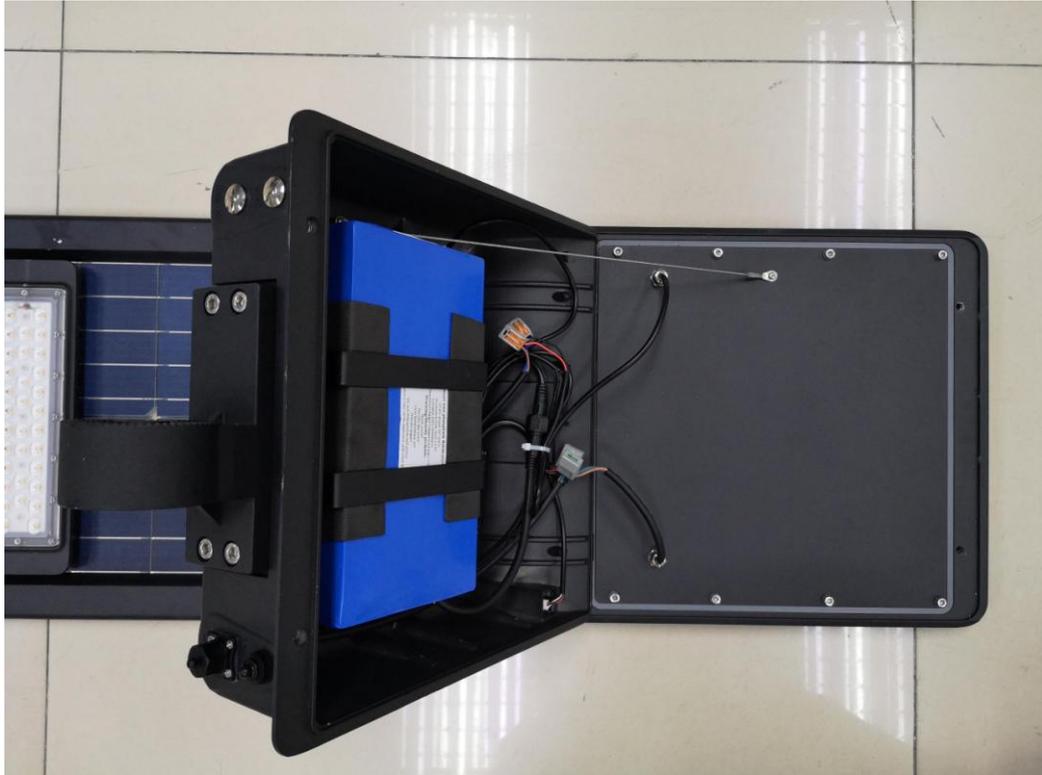


Figure. 3 (AOK-60WSE-DC-AP-L5-5700-T3-P)



Figure. 4 (AOK-60WSE-DC-AP-L5-5700-T3-P)



Figure. 5 (AOK-60WSE-DC-AP-L5-5700-T3-P)



Figure. 6 (AOK-60WSE-DC-AP-L5-5700-T3-P)

-----THE END OF TEST REPORT-----