



Shenzhen Southern LCS Compliance Testing Laboratory Ltd.

REPORT NO.:LCS190322026BS001

### TEST REPORT of IES LM-79-08

Approved Method for Electrical and Photometric Measurements of Solid-State Lighting Products

Client..... : Shenzhen Sinoco Lighting Technologies Co.,Ltd.  
Address..... : G building,Shasi , High-Tec ,Industrial park,Shajing Town,Baoan District,Shenzhen,  
Guangdong,China

Brand Name..... : **SINOCO**<sup>®</sup>

Testing laboratory..... : Shenzhen Southern LCS Compliance Testing Laboratory Ltd.  
Address..... : B Area, 1-2F, Building B, Zhongyu Green High-tech Industrial Park, Wenge Road,  
Heshuikou, Gongming Street, Guangming New District, Shenzhen, China

Product description ... : LED street light  
Models..... : ST-41-150W-V3-3000K  
Rating..... : 220-240VAC, 50/60Hz, 150W  
Date of Test..... : March 25, 2019  
Date of Issue..... : April 08, 2019

Test by:

James

James Zhang/ Project Engineer

Check by:

Ian Luo

Ian Luo/ Director

Approved by:

Jesse Liu

Jesse Liu/ Manager



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TRF No. LM-79-2008

Page 1 of 11

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REPORT NO.:LCS190322026BS001

## Table of Contents

<b>1. Test Method.....</b>	<b>3</b>
<b>2.Product Information.....</b>	<b>4</b>
<b>3.Test equipment list:.....</b>	<b>4</b>
<b>4. Integrating Sphere Test Results: .....</b>	<b>5</b>
4.1 Test Data.....	5
4.2 Spectrum.....	5
<b>5. Goniophotometer Test results.....</b>	<b>6</b>
5.1 Test Data.....	6
5.2 Luminous Intensity Distribution Diagram and C0 Plane Isolux Diagram (Unit : lx).....	6
5.3 Zonal Flux Diagram.....	7
5.4 Isocandela Diagram.....	8
5.5 Luminous Distribution Intensity Data.....	9
<b>6. Photo of sample:.....</b>	<b>10</b>



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Shenzhen Southern LCS Compliance Testing Laboratory Ltd.

REPORT NO.:LCS190322026BS001

## 1. Test Method

Test Item.....	Integrating Sphere Test
Ambient Condition .....	25.1℃
Stabilization time .....	0.5h
Orientation(burning position) of SSL product during test .....	down
Test Method .....	The sample was tested according to the IES LM-79-2008. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at rated voltage and was stabilized before measurement. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm.
Test Item.....	Goniophotometer Test
Ambient Condition.....	25.1℃
Total operated time of the product for measurements including stabilization..... (h):	1.0h
Orientation(burning position) of SSL product during test .....	down
Test Method.....	The sample was tested according to the IES LM-79-2008. Photometric paramters were measured using a type C goniophotometer and software. The sample reference plane was located at the center of the sample goniometer at a test distance of 26m from the detectors. The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, Luminous efficacy, zonal flux were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals.



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REPORT NO.:LCS190322026BS001

## 2.Product Information

Product description.....:	LED street light
Model Number.....:	ST-41-150W-V3-3000K
Rated Inputs.....:	220-240VAC, 50/60Hz
Rated Power.....:	150W
Declared CCT.....:	3000K
Manufacturer.....:	Shenzhen Sinoco Lighting Technologies Co.,Ltd.
Address.....:	G building,Shasi , High-Tec ,Industrial park,Shajing Town,Baoan District,Shenzhen, Guangdong,China
LED Manufacturer.....:	N/A
LED Model.....:	N/A
Forward current of the LED chip.....:	N/A
Date of Receipt Samples.....:	March 25, 2019
Quantity of Receipt Samples.....:	1 unit

## 3.Test equipment list:

Manufacturer	Description	Equipment ID	Model	Calibration Date	Calibration Due Date
EVERFINE	Full-field Speed Goniophotometer	SLCS-S-112	GO-R5000	2018/08/14	2019/08/13
EVERFINE	Digital Power Meter	SLCS-S-103	PF2010	2018/08/14	2019/08/13
EVERFINE	AC Testing Power Source	SLCS-S-115	DPS1060	2018/08/14	2019/08/13
EVERFINE	Total Spectral Radiant Flux Standard Lamp	SLCS-S-143	D908S	2018/08/22	2019/08/21
SENSING	2 Meter Integrating Sphere	SLCS-S-038	SPR-3000	2018/08/14	2019/08/13
YOKOGAWA	Digital Power Meter	SLCS-S-058	WT310	2018/08/14	2019/08/13
ALL POWER ELECTRONIC	AC Testing Power Source	SLCS-S-111	APW-105N	2018/08/14	2019/08/13
SENSING	Standard Lamp	SLCS-S-118	S11010017	2018/08/22	2019/08/21



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REPORT NO.:LCS190322026BS001

#### 4. Integrating Sphere Test Results:

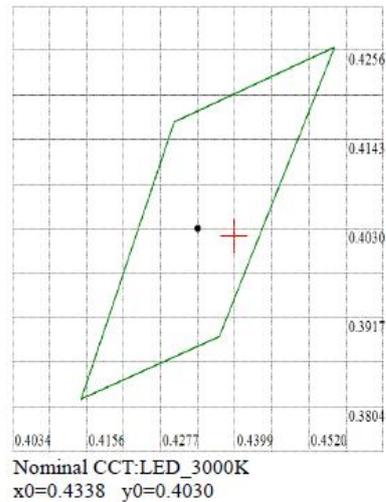
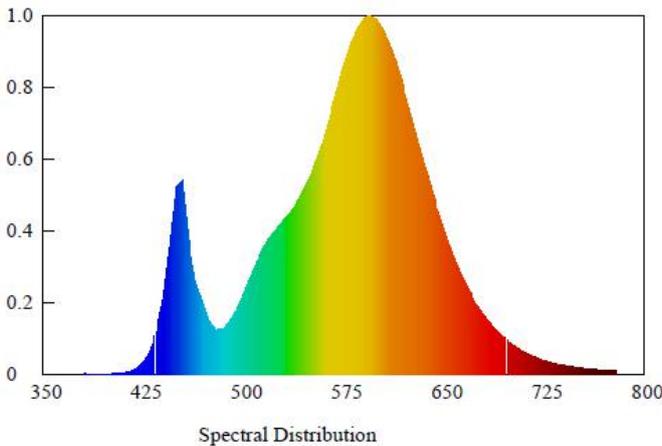
##### 4.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	220.0	50.0	0.6864	0.9841	148.6

Test type	CCT (K)	CRI	Luminous flux (lm)	Luminous efficacy(lm/W)
Output	2938	72.1	21935.87	147.59

##### 4.2 Spectrum

###### Spectroradiometric Parameters



Chromaticity Coordinates:  $x=0.4397$   $y=0.4021$   $u'=0.2532$   $v'=0.521$

Correlated Color Temperature: 2938 K

Dominant Wavelength: 582.0 nm(E)

Colour Fidelity Index:  $R_f=73$

Gamut Index:  $R_g=92$

Luminous Flux: 21935.87 lm

Purity: 0.5288

Chromaticity Difference: -0.00115Duv

Peak Wavelength: 595.0 nm

Color Ratio:  $K_r=46.3\%$   $K_g=47.6\%$   $K_b=6.0\%$

Bandwidth: 98.4nm

Radiant Flux: 61.458 W

Photosynthetically Active Radiation(PAR): 60.32W

Photosynthetic Photon Flux(PPF):291.38 $\mu$ mol/s

Rendering Index:  $R_a=72.1$

$R_1=69$   $R_2=85$   $R_3=93$   $R_4=67$   $R_5=69$   $R_6=81$   $R_7=74$   $R_8=39$

$R_9=-38$   $R_{10}=67$   $R_{11}=63$   $R_{12}=57$   $R_{13}=73$   $R_{14}=97$   $R_{15}=60$   $R_e=64$



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## 5. Goniophotometer Test results

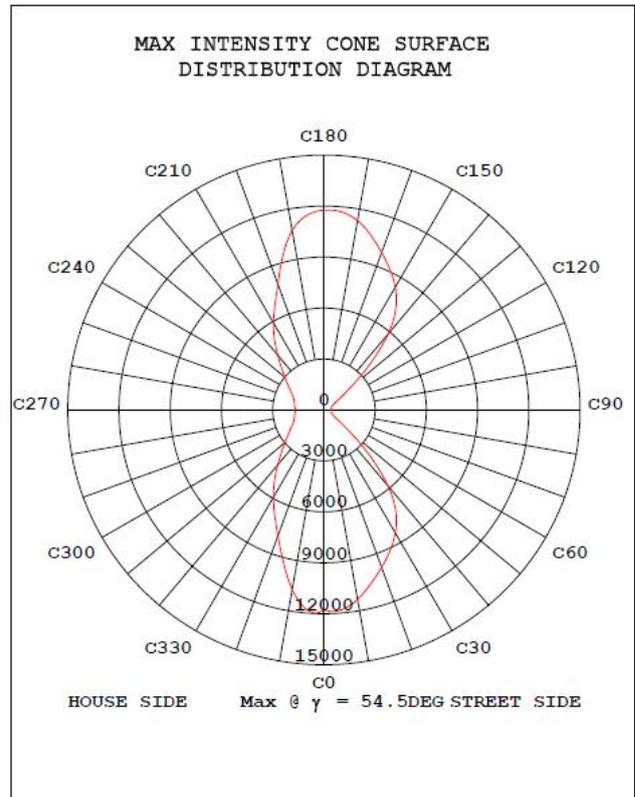
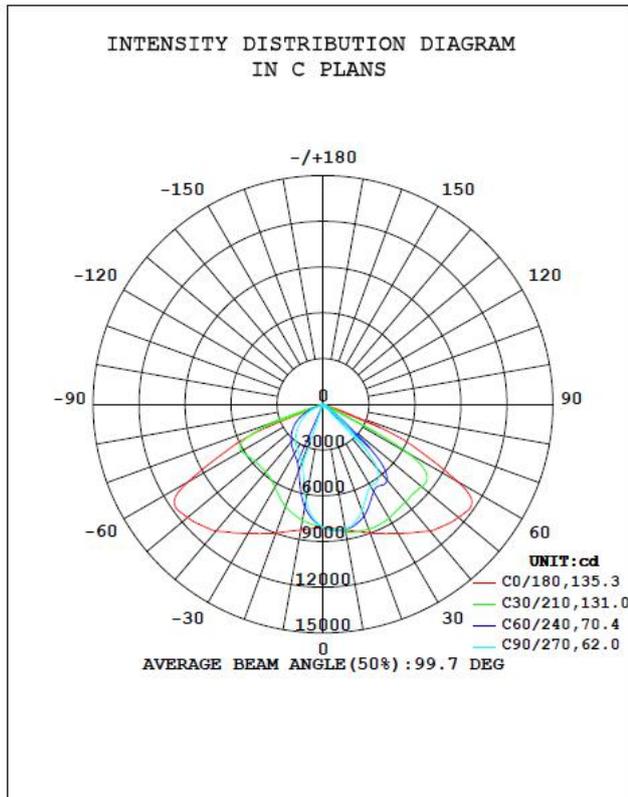
REPORT NO.:LCS190322026BS001

### 5.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	220.0	50.01	0.6864	0.9841	148.6

Test type	Total Flux (lm)	Luminous efficacy(lm/W)	I <sub>max</sub> (cd)	Spacing Criteria ( 0~180° )	Spacing Criteria ( 90~270° )
Output	21931.2	147.58	11758	-	-

### 5.2 Luminous Intensity Distribution Diagram and C0 Plane Isolux Diagram (Unit : lx)





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REPORT NO.:LCS190322026BS001

### 5.3 Zonal Flux Diagram

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	Φlum, lamp
10	825.5	842.2	831.0	842.2	825.5	726.1	641.4	726.1	0- 10	760.8	760.8	3.47,3.47
20	898.1	826.6	742.4	826.6	898.1	572.7	402.5	572.7	10- 20	2119	2880	13.1,13.1
30	977.9	748.4	621.4	748.4	977.9	457.6	338.6	457.6	20- 30	3181	6061	27.6,27.6
40	1084	707.2	549.2	707.2	1084	408.5	278.7	408.5	30- 40	4125	10185	46.4,46.4
50	1154	608.9	420.0	608.9	1154	378.5	202.2	378.5	40- 50	4663	14849	67.7,67.7
60	1016	65.43	31.39	65.43	1016	329.6	118.0	329.6	50- 60	4249	19198	87.5,87.5
70	145.7	22.88	13.81	22.88	145.7	150.4	28.14	150.4	60- 70	2450	21648	98.7,98.7
80	5.048	4.786	2.560	4.786	5.048	19.43	7.723	19.43	70- 80	254.8	21902	99.9,99.9
90	0	0	0	0	0	0	0	0	80- 90	28.68	21931	100,100
100	0	0	0	0	0	0	0	0	90-100	0	21931	100,100
110	0	0	0	0	0	0	0	0	100-110	0	21931	100,100
120	0	0	0	0	0	0	0	0	110-120	0	21931	100,100
130	0	0	0	0	0	0	0	0	120-130	0	21931	100,100
140	0	0	0	0	0	0	0	0	130-140	0	21931	100,100
150	0	0	0	0	0	0	0	0	140-150	0	21931	100,100
160	0	0	0	0	0	0	0	0	150-160	0	21931	100,100
170	0	0	0	0	0	0	0	0	160-170	0	21931	100,100
180	0	0	0	0	0	0	0	0	170-180	0	21931	100,100
DEG	LUMINOUS INTENSITY:×10cd									UNIT:lm		

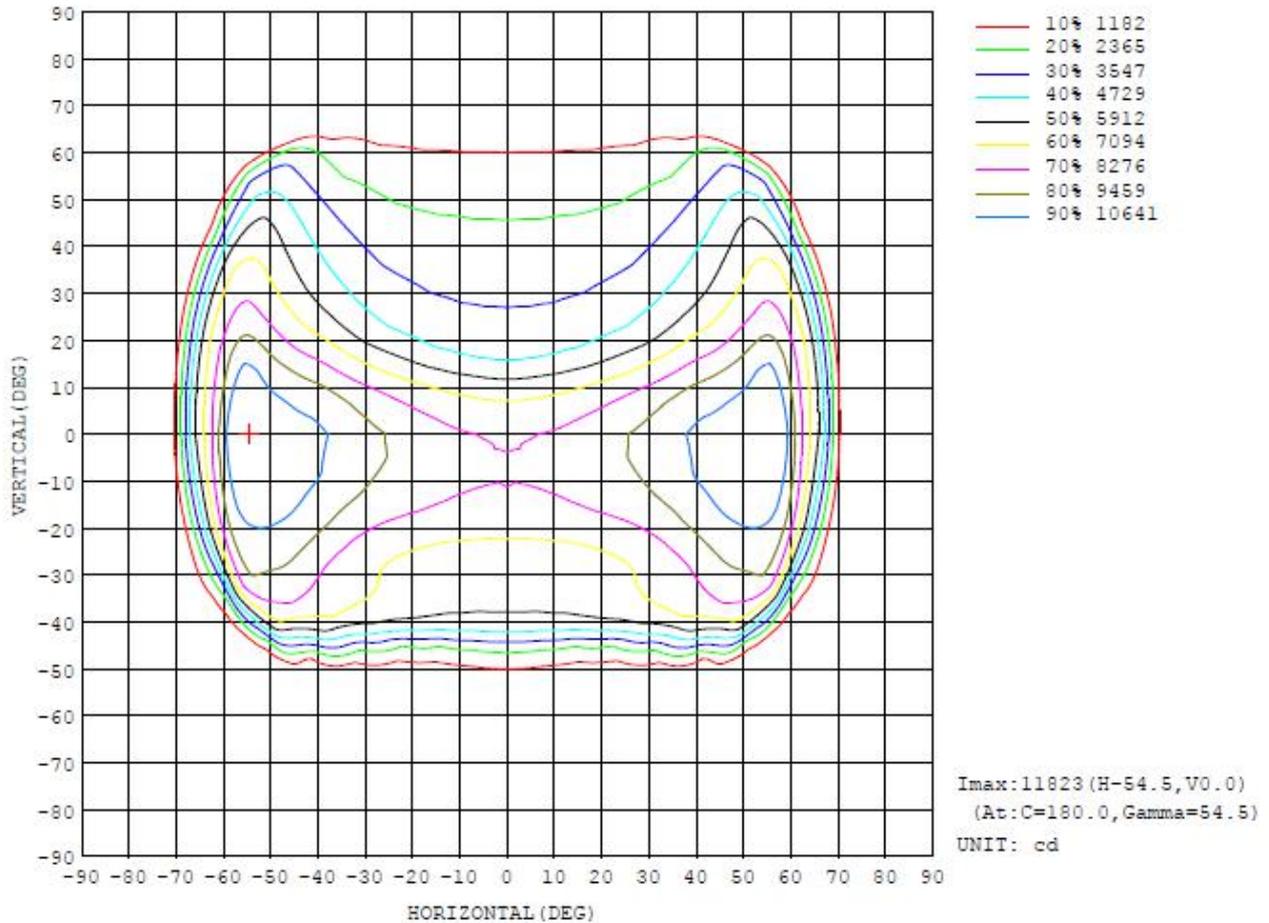


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REPORT NO.:LCS190322026BS001

### 5.4 Isocandela Diagram





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REPORT NO.:LCS190322026BS001

### 5.5 Luminous Distribution Intensity Data

Table--1 UNIT: ×10cd

C (DEG) \ y (DEG)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	809	809	809	809	809	809	809	809	809	809	809	809	809	809	809	809	809	809	809
5	818	823	828	830	831	829	830	831	830	831	830	831	830	829	831	830	828	823	818
10	835	845	850	850	846	838	834	831	828	831	828	831	834	838	846	850	850	845	835
15	863	874	874	865	849	833	818	808	800	803	800	808	818	833	849	865	874	874	863
20	898	904	895	871	842	811	780	759	745	742	745	759	780	811	842	871	895	904	898
25	935	936	912	870	822	767	721	691	674	669	674	691	721	767	822	870	912	936	935
30	978	975	929	861	782	715	661	634	622	621	622	634	661	715	782	861	929	975	978
35	1028	1014	949	846	741	676	651	637	621	617	621	637	651	676	741	846	949	1014	1028
40	1084	1059	974	835	724	690	649	588	554	549	554	588	649	690	724	835	974	1059	1084
45	1122	1106	998	831	746	669	523	376	316	310	316	376	523	669	746	831	998	1106	1122
50	1154	1141	1006	840	732	486	204	125	115	120	115	125	204	486	732	840	1006	1141	1154
55	1175	1128	983	829	555	163	57.0	42.5	39.9	39.3	39.9	42.5	57.0	163	555	829	983	1128	1175
60	1016	991	927	644	98.3	32.6	36.1	35.8	31.1	31.4	31.1	35.8	36.1	32.6	98.3	644	927	991	1016
65	649	541	263	41.6	30.4	29.1	30.5	30.9	25.8	25.4	25.8	30.9	30.5	29.1	30.4	41.6	263	541	649
70	146	66.8	34.8	24.5	22.6	23.1	21.0	19.7	14.1	13.8	14.1	19.7	21.0	23.1	22.6	24.5	34.8	66.8	146
75	13.0	14.8	16.8	14.7	13.0	13.3	11.0	11.8	7.58	6.62	7.58	11.8	11.0	13.3	13.0	14.7	16.8	14.8	13.0
80	5.05	5.99	6.35	6.20	4.57	5.00	4.25	5.18	3.50	2.56	3.50	5.18	4.25	5.00	4.57	6.20	6.35	5.99	5.05
85	0.59	0.58	0.57	0.62	0.43	0.33	0.24	0.13	0.09	0.07	0.09	0.13	0.24	0.33	0.43	0.62	0.57	0.58	0.59
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

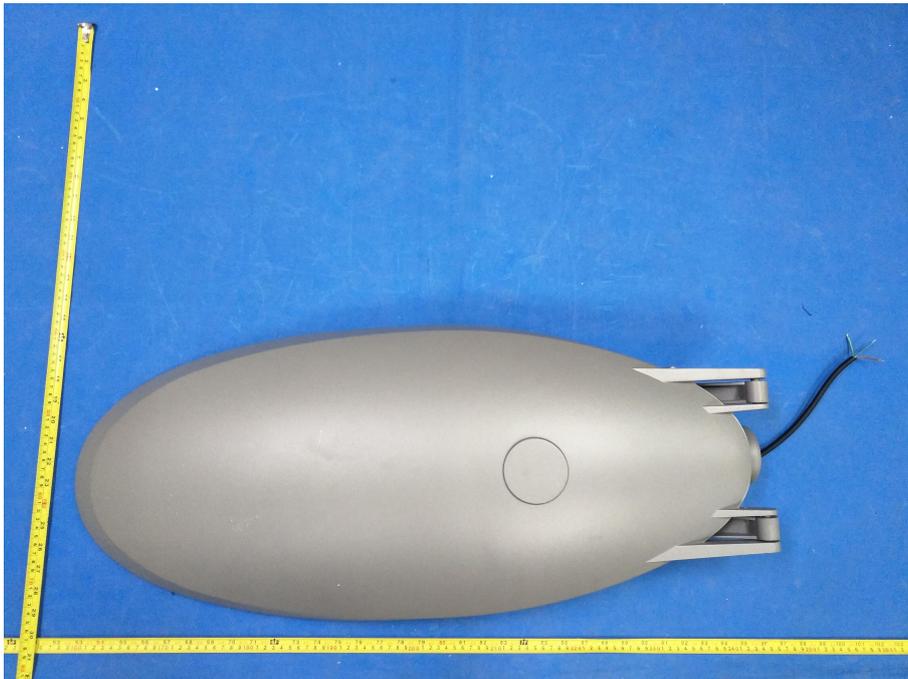


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REPORT NO.:LCS190322026BS001

## 6. Photo of sample:



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

TRF No. LM-79-2008

Page 10 of 11

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**Revision History**

<b>Revision</b>	<b>Issue Date</b>	<b>Revision Content</b>	<b>Revised By</b>
V1.0	2019/03/27	The original report no:LCS190322026BS	James Zhang
V2.0	2019/04/08	Modify trademarks and models	James Zhang