



Testing Lab.

Shenzhen Southern LCS Compliance Testing Laboratory Ltd.



TESTING
NVLAP LAB CODE 600112-0

Report No.: LCS200918051BS

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**[®]

Testing laboratory..... : Shenzhen Southern LCS Compliance Testing Laboratory Ltd.

Address..... : B Area, 2F, Building B, Zhongyu Green Wenge Road, Heshuikou, Gongming Street,
Guangming New District, Shenzhen, Guangdong Prov .518000 China

Product description .. : LED Street Light

Models..... : ST-52-150W-TC10

Rating..... : AC220V, 50/60Hz, 150W, 4000K

Date of Test..... : September 18, 2020

Date of Issue..... : September 23, 2020

Test by:

William Lian

William Lian/ Project Engineer

Check by:

Ian Luo

Ian Luo/ Director

Approved by:



Jesse Liu/ Manager

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Table of Contents

1. Test Method.....	3
2. Product Information.....	4
3. Test equipment list:.....	4
4. Integrating Sphere Test Results:	5
4.1 Test Data.....	5
4.2 Spectrum.....	5
5. Goniophotometer Test results.....	6
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
6. Photo of sample:.....	10



Testing Lab.

Shenzhen Southern LCS Compliance Testing Laboratory Ltd.



TESTING
NVLAP LAB CODE 600112-0

Report No.: LCS200918051BS

1. Test Method

Test Item.....	: Integrating Sphere Test
Ambient Condition	: 25.1℃
Number of hours operated prior to Measurement	: 0h
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):	: 2.5h
Correction factors applied.....	: Intensity distribution
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.

Report No.: LCS200918051BS

2. Product Information

Product description.....:	LED Street Light
Model Number.....:	ST-52-150W-TC10
Rated Inputs.....:	AC220V, 50/60Hz
Rated Power.....:	150W
Declared CCT.....:	4000K
LED Manufacturer.....:	N/A
LED Model.....:	N/A
LED Package, Array or Module.....:	N/A
Forward current of the LED chip.....:	N/A
Date of Receipt Samples.....:	September 18, 2020
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	2020/07/02	2021/07/01
EVERFINE	Digital Power Meter	SLCS-S-103	PF2010	2020/06/24	2021/06/23
EVERFINE	AC Testing Power Source	SLCS-S-115	DPS1060	2020/06/24	2021/06/23
EVERFINE	Total Spectral Radiant Flux Standard Lamp	SLCS-S-143	D908S	2020/07/02	2021/07/01
SENSING	2 Meter Integrating Sphere	SLCS-S-038	SPR-3000	2020/07/02	2021/07/01
YOKOGAWA	Digital Power Meter	SLCS-S-058	WT310	2020/06/24	2021/06/23
ALL POWER ELECTRONIC	AC Testing Power Source	SLCS-S-111	APW-105N	2020/06/24	2021/06/23
SENSING	Standard Lamp	SLCS-S-118	S11010017	2020/07/02	2021/07/01



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NVLAP LAB CODE 600112-0

Report No.: LCS200918051BS

4. Integrating Sphere Test Results:

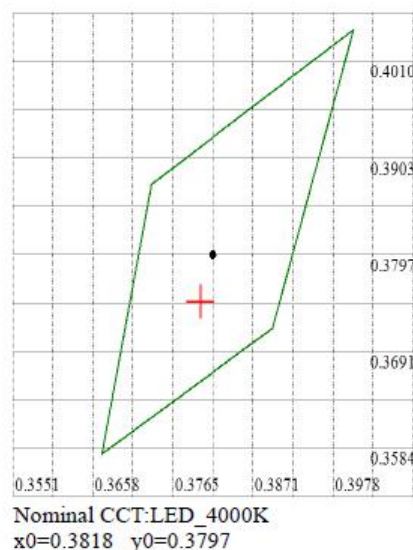
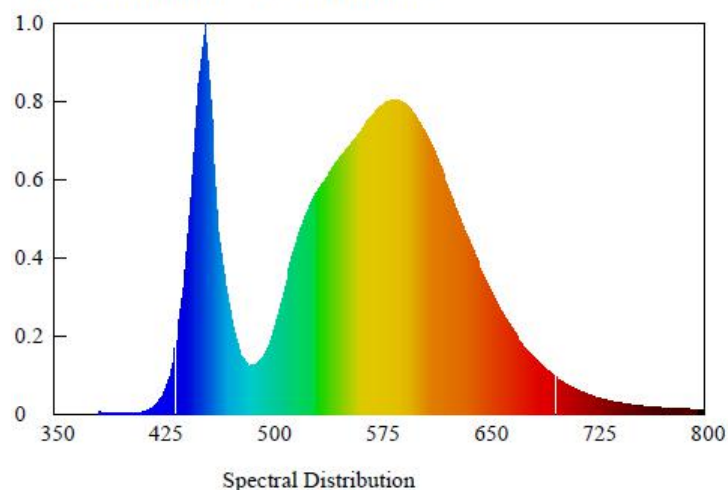
4.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	220.05	50.0	0.6960	0.9914	151.83

Test type	CCT (K)	CRI	Duv	Luminous flux (lm)	Luminous efficacy(lm/W)
Output	3994	74.0	-0.00097	22747.17	149.82

4.2 Spectrum

Spectroradiometric Parameters



Chromaticity Coordinates: $x=0.3801$ $y=0.3745$ $u'=0.2258$ $v'=0.5005$

Correlated Color Temperature: 3994 K

Colour Fidelity Index: $R_f=72$

Luminous Flux: 22747.17 lm

Chromaticity Difference: $-0.00097D_{uv}$

Color Ratio: $K_r=37.9\%$ $K_g=55.1\%$ $K_b=7.0\%$

Bandwidth: 16.8nm

Photosynthetically Active Radiation(PAR): 68.17W

Rendering Index: $R_a=74.0$

$R_1=72$ $R_2=82$ $R_3=89$ $R_4=71$ $R_5=70$ $R_6=73$ $R_7=82$ $R_8=54$

$R_9=-22$ $R_{10}=56$ $R_{11}=65$ $R_{12}=41$ $R_{13}=75$ $R_{14}=93$ $R_{15}=67$ $R_e=64$

Dominant Wavelength: 578.0 nm(E)

Gamut Index: $R_g=92$

Purity: 0.2650

Peak Wavelength: 455.0 nm

Radiant Flux: 69.796 W

Photosynthetic Photon Flux(PPF): 320.59 $\mu\text{mol/s}$



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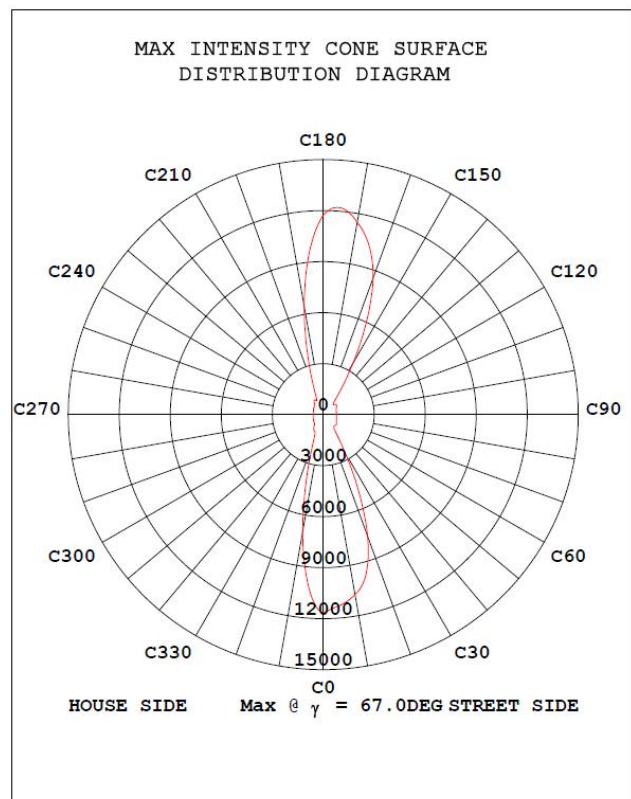
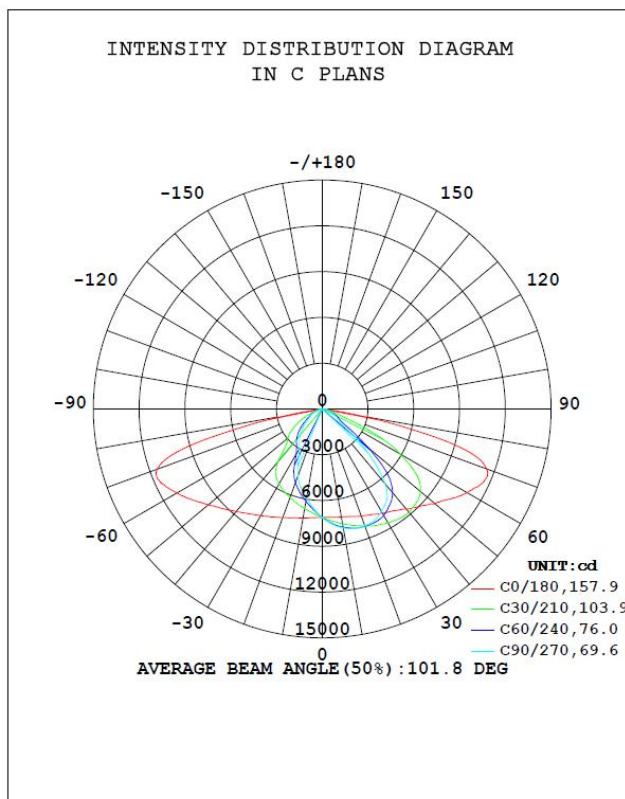
5. Goniophotometer Test results

5.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	220.1	50.00	0.6955	0.9914	151.8

Test type	Total Flux (lm)	Luminous efficacy(lm/W)	ZL (0~90°)	ZL (80~90°)
Output	22760.3	149.99	100%	0.7%

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





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NVLAP LAB CODE 600112-0

Report No.: LCS200918051BS

5.3 Zonal Flux Diagram

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	Φ lum, lamp
10	718.8	777.4	791.4	783.3	726.2	637.7	596.3	635.4	0- 10	677.1	677.1	2.97, 2.97
20	745.5	820.6	814.9	831.5	756.9	560.5	468.3	558.1	10- 20	1988	2665	11.7, 11.7
30	788.0	832.0	775.0	858.7	807.6	447.2	302.8	454.6	20- 30	3131	5797	25.5, 25.5
40	856.1	792.3	641.4	829.6	877.3	309.7	227.0	313.3	30- 40	3986	9782	43, 43
50	964.8	607.2	263.4	636.8	976.5	225.5	145.3	229.2	40- 50	4293	14075	61.8, 61.8
60	1096	184.0	108.2	199.9	1099	129.6	87.95	135.5	50- 60	3739	17814	78.3, 78.3
70	1147	78.96	62.70	79.31	1152	58.51	43.60	59.50	60- 70	3047	20862	91.7, 91.7
80	235.9	25.58	19.60	24.99	194.4	10.90	2.953	13.13	70- 80	1750	22611	99.3, 99.3
90	0	0	0	0	0	0.0172	0.0101	0	80- 90	148.9	22760	100, 100
100	0	0	0	0	0	0	0	0	90-100	0.0006	22760	100, 100
110	0	0	0	0	0	0	0	0	100-110	0	22760	100, 100
120	0	0	0	0	0	0	0	0	110-120	0	22760	100, 100
130	0	0	0	0	0	0	0	0	120-130	0	22760	100, 100
140	0	0	0	0	0	0	0	0	130-140	0	22760	100, 100
150	0	0	0	0	0	0	0	0	140-150	0	22760	100, 100
160	0	0	0	0	0	0	0	0	150-160	0	22760	100, 100
170	0	0	0	0	0	0	0	0	160-170	0	22760	100, 100
180	0	0	0	0	0	0	0	0	170-180	0	22760	100, 100
DEG	LUMINOUS INTENSITY: $\times 10 \text{cd}$									UNIT: lm		



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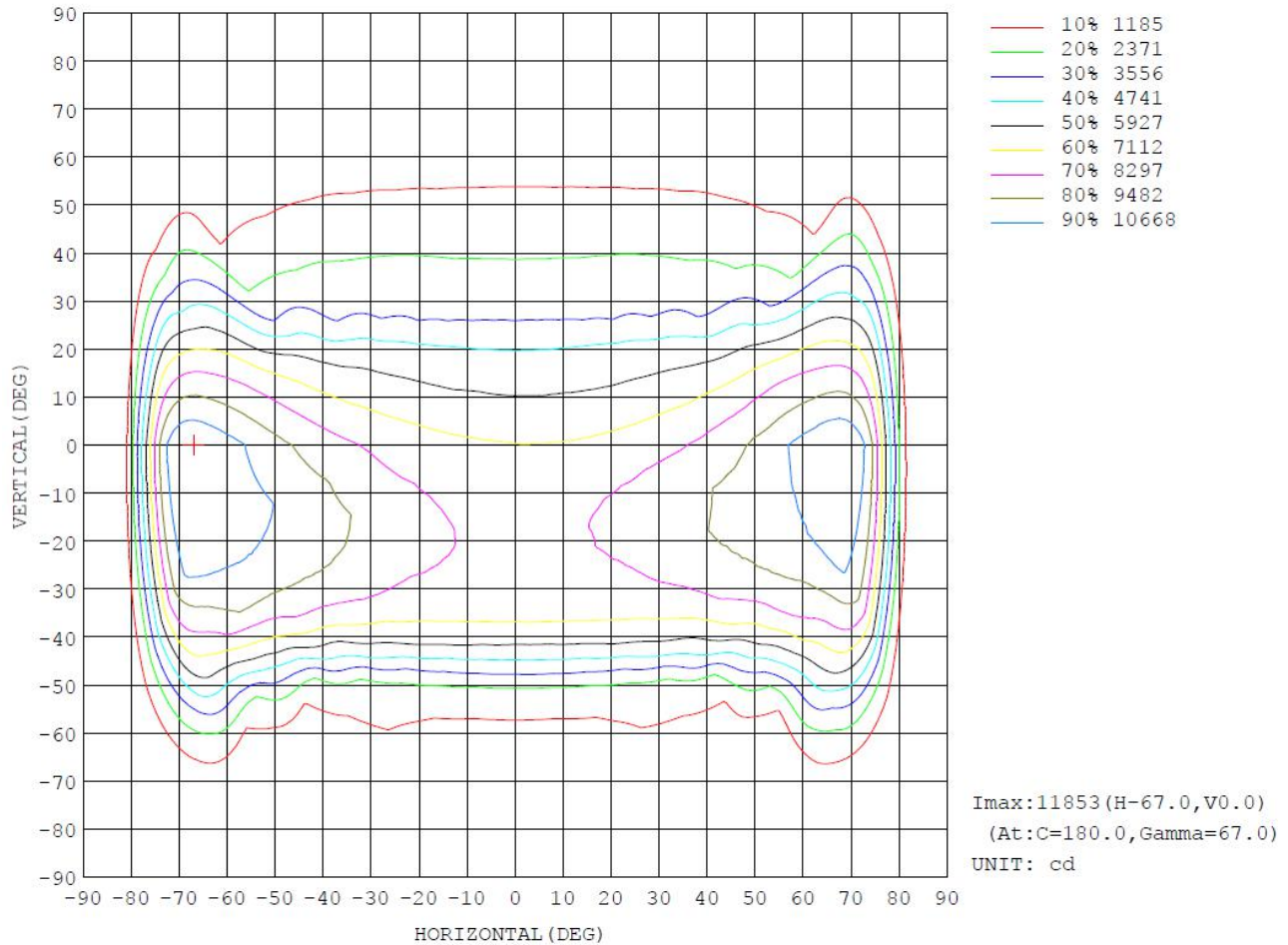
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NVLAP LAB CODE 600112-0

Report No.: LCS200918051BS

5.4 Isocandela Diagram





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TESTING
NVLAP LAB CODE 600112-0

Report No.: LCS200918051BS

5.5 Luminous Distribution Intensity Data

Table--1

UNIT: $\times 10\text{cd}$

C (DEG) γ (DEG)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	711	711	711	711	711	711	711	711	711	711	711	711	711	711	711	711	711	711	711
5	713	721	729	736	745	749	752	755	757	757	759	757	754	750	746	739	732	724	715
10	719	734	751	764	774	781	785	789	790	791	791	791	789	785	781	769	757	743	726
15	729	754	774	789	797	804	808	807	811	810	811	812	812	812	810	800	785	763	738
20	746	780	801	816	820	822	817	817	816	815	818	821	826	829	834	830	818	791	757
25	764	807	832	841	836	826	819	813	808	807	813	821	831	842	856	859	854	824	780
30	788	842	864	860	841	823	806	785	777	775	784	795	818	847	871	888	895	866	808
35	815	879	899	878	841	802	769	747	740	734	741	756	783	825	885	915	937	909	839
40	856	924	927	884	826	758	717	681	653	641	656	685	724	785	875	936	981	967	877
45	903	967	945	871	774	682	608	520	478	464	478	529	617	695	826	936	1009	1014	923
50	965	1001	946	841	671	544	387	315	275	263	275	316	389	560	714	907	1023	1062	977
55	1029	1031	936	757	520	279	188	148	132	131	133	150	191	284	554	836	1029	1109	1038
60	1096	1049	903	590	226	142	126	112	109	108	109	113	127	144	256	673	1011	1136	1099
65	1156	1067	813	362	112	108	104	91.3	87.4	85.8	87.3	91.3	105	108	117	459	927	1151	1159
70	1147	1068	646	133	79.3	78.6	72.4	67.0	64.1	62.7	63.2	66.1	71.0	76.7	82.0	195	723	1113	1152
75	886	910	449	71.3	51.1	49.9	46.3	42.4	39.4	38.5	39.0	41.5	44.7	48.3	52.1	93.4	491	841	844
80	236	343	166	38.5	25.7	25.4	23.7	21.2	20.0	19.6	19.7	20.6	22.6	24.1	25.9	45.8	161	245	194
85	13.8	24.0	29.1	11.6	7.83	7.45	6.69	6.29	5.82	5.62	5.65	5.86	6.16	6.72	7.50	11.9	22.4	18.9	12.0
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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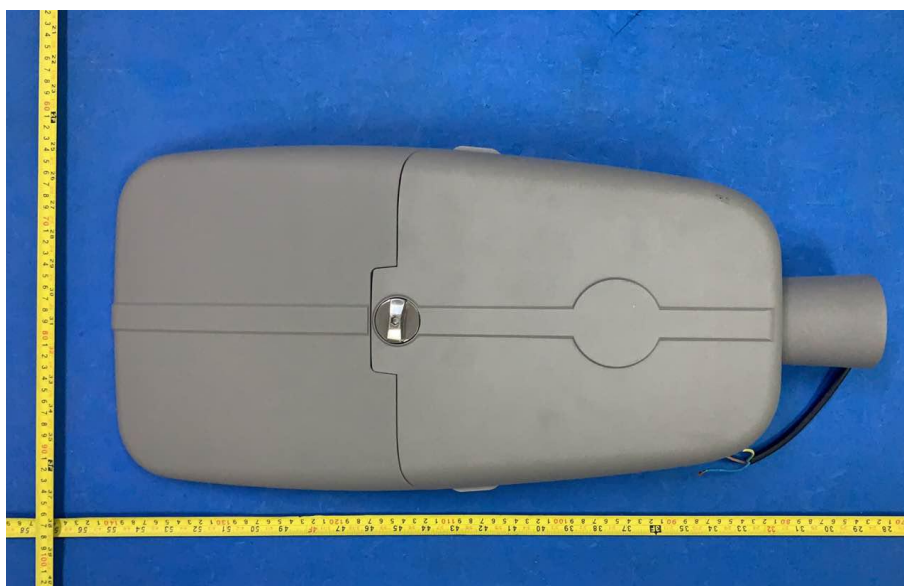
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6. Photo of sample:



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