



Testing Lab.

Shenzhen Southern LCS Compliance Testing Laboratory Ltd.



TESTING
NVLAP LAB CODE 600112-0

Report No.: LCS200918047BS

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-52-70W-TC10
Rating..... : AC220V, 50/60Hz, 70W, 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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TRF No. LM-79-2008

Page 1 of 10

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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



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Shenzhen Southern LCS Compliance Testing Laboratory Ltd.



TESTING
NVLAP LAB CODE 600112-0

Report No.: LCS200918047BS

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.: LCS200918047BS

2. Product Information

Product description.....:	LED Street Light
Model Number.....:	ST-52-70W-TC10
Rated Inputs.....:	AC220V, 50/60Hz
Rated Power.....:	70W
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.: LCS200918047BS

4. Integrating Sphere Test Results:

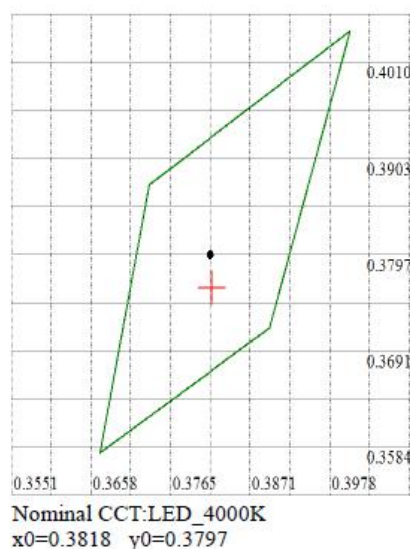
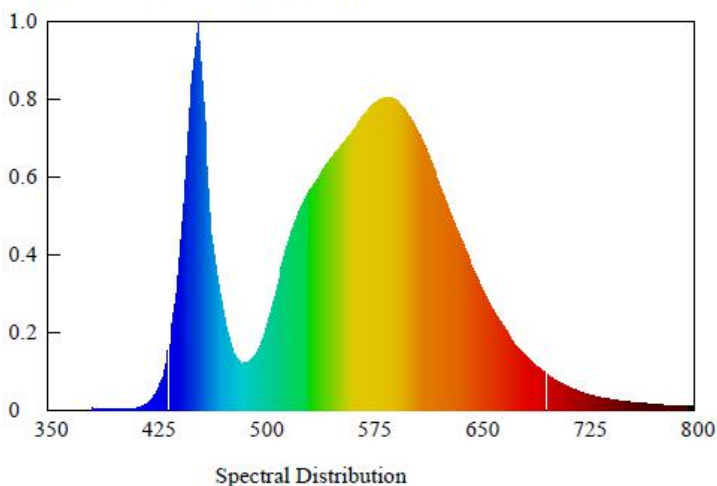
4.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	220.05	50.0	0.3225	0.9857	69.95

Test type	CCT (K)	CRI	Duv	Luminous flux (lm)	Luminous efficacy(lm/W)
Output	3951	73.9	-0.00083	10724.73	153.32

4.2 Spectrum

Spectroradiometric Parameters



Chromaticity Coordinates: $x=0.3820$ $y=0.3760$ $u'=0.2265$ $v'=0.5015$

Correlated Color Temperature: 3951 K

Colour Fidelity Index: $R_f=72$

Luminous Flux: 10724.73 lm

Chromaticity Difference: $-0.00083D_{uv}$

Color Ratio: $K_r=38.1\%$ $K_g=54.9\%$ $K_b=7.0\%$

Bandwidth: 16.5nm

Photosynthetically Active Radiation(PAR): 31.55W

Rendering Index: $R_a=73.9$

$R_1=71$ $R_2=82$ $R_3=89$ $R_4=70$ $R_5=70$ $R_6=73$ $R_7=82$ $R_8=53$

$R_9=-23$ $R_{10}=56$ $R_{11}=65$ $R_{12}=40$ $R_{13}=74$ $R_{14}=93$ $R_{15}=66$ $R_e=64$

Dominant Wavelength: 578.0 nm(E)

Gamut Index: $R_g=92$

Purity: 0.2753

Peak Wavelength: 455.0 nm

Radiant Flux: 32.263 W

Photosynthetic Photon Flux(PPF):148.50 μ mol/s



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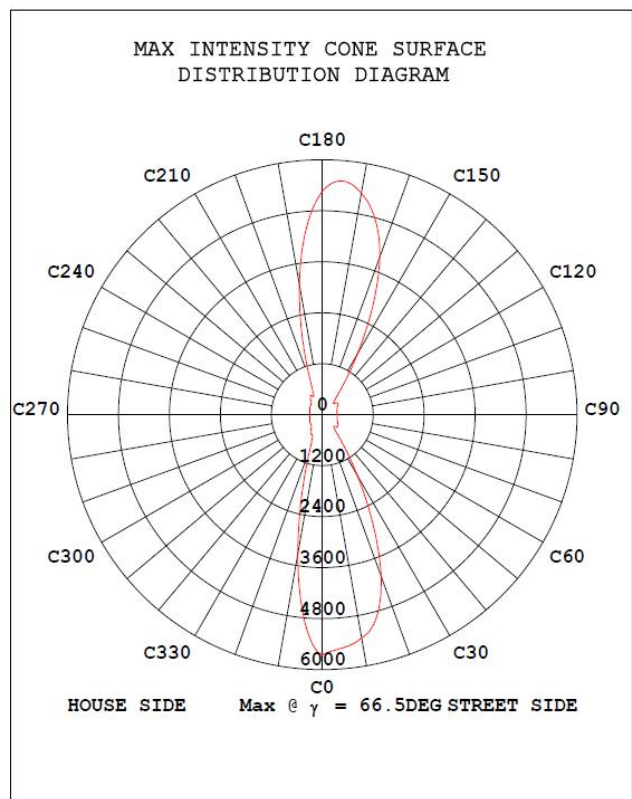
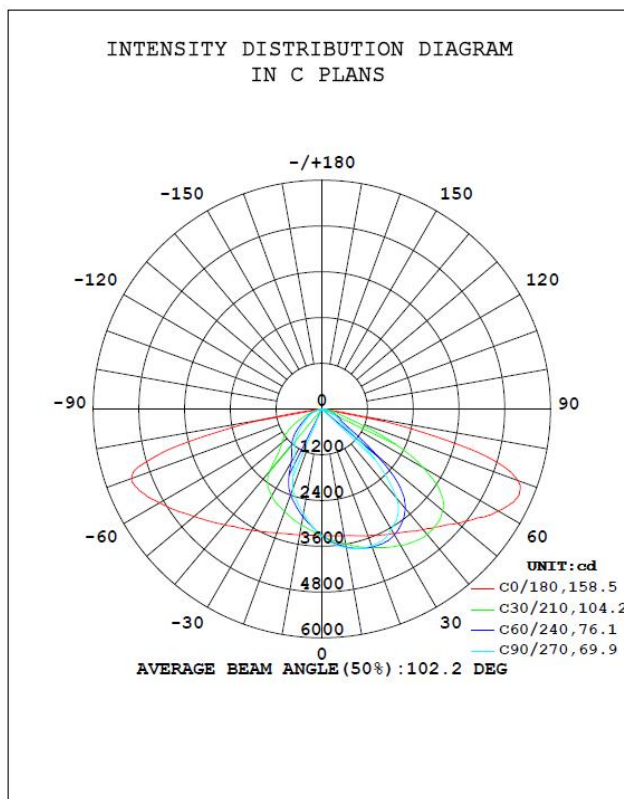
5. Goniophotometer Test results

5.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	220.0	50.01	0.3225	0.9857	69.94

Test type	Total Flux (lm)	Luminous efficacy(lm/W)	ZL (0~90°)	ZL (80~90°)
Output	10733.3	153.47	100%	0.7%

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





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TESTING
NVLAP LAB CODE 600112-0

Report No.: LCS200918047BS

5.3 Zonal Flux Diagram

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	lum, lamp
10	3371	3640	3691	3633	3347	2965	2800	2990	0- 10	316.3	316.3	2.95, 2.95
20	3537	3882	3815	3850	3462	2610	2219	2644	10- 20	930.0	1246	11.6, 11.6
30	3766	3970	3646	3963	3666	2097	1432	2139	20- 30	1467	2713	25.3, 25.3
40	4136	3828	3051	3838	3966	1465	1078	1484	30- 40	1873	4586	42.7, 42.7
50	4656	2980	1240	2973	4381	1072	695.4	1094	40- 50	2027	6613	61.6, 61.6
60	5345	900.6	479.0	893.6	4913	633.8	423.0	640.6	50- 60	1762	8375	78, 78
70	5466	354.3	271.9	351.1	5308	290.4	213.7	283.1	60- 70	1441	9816	91.5, 91.5
80	994.2	110.0	81.41	106.9	1435	65.35	15.77	63.84	70- 80	842.5	10659	99.3, 99.3
90	0	0	0	0	0	0	0	0	80- 90	74.70	10733	100, 100
100	0	0	0	0	0	0	0	0	90-100	0.0003	10733	100, 100
110	0	0	0	0	0	0	0	0	100-110	0	10733	100, 100
120	0	0	0	0	0	0	0	0	110-120	0	10733	100, 100
130	0	0	0	0	0	0	0	0	120-130	0	10733	100, 100
140	0	0	0	0	0	0	0	0	130-140	0	10733	100, 100
150	0	0	0	0	0	0	0	0	140-150	0	10733	100, 100
160	0	0	0	0	0	0	0	0	150-160	0	10733	100, 100
170	0	0	0	0	0	0	0	0	160-170	0	10733	100, 100
180	0	0	0	0	0	0	0	0	170-180	0	10733	100, 100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		



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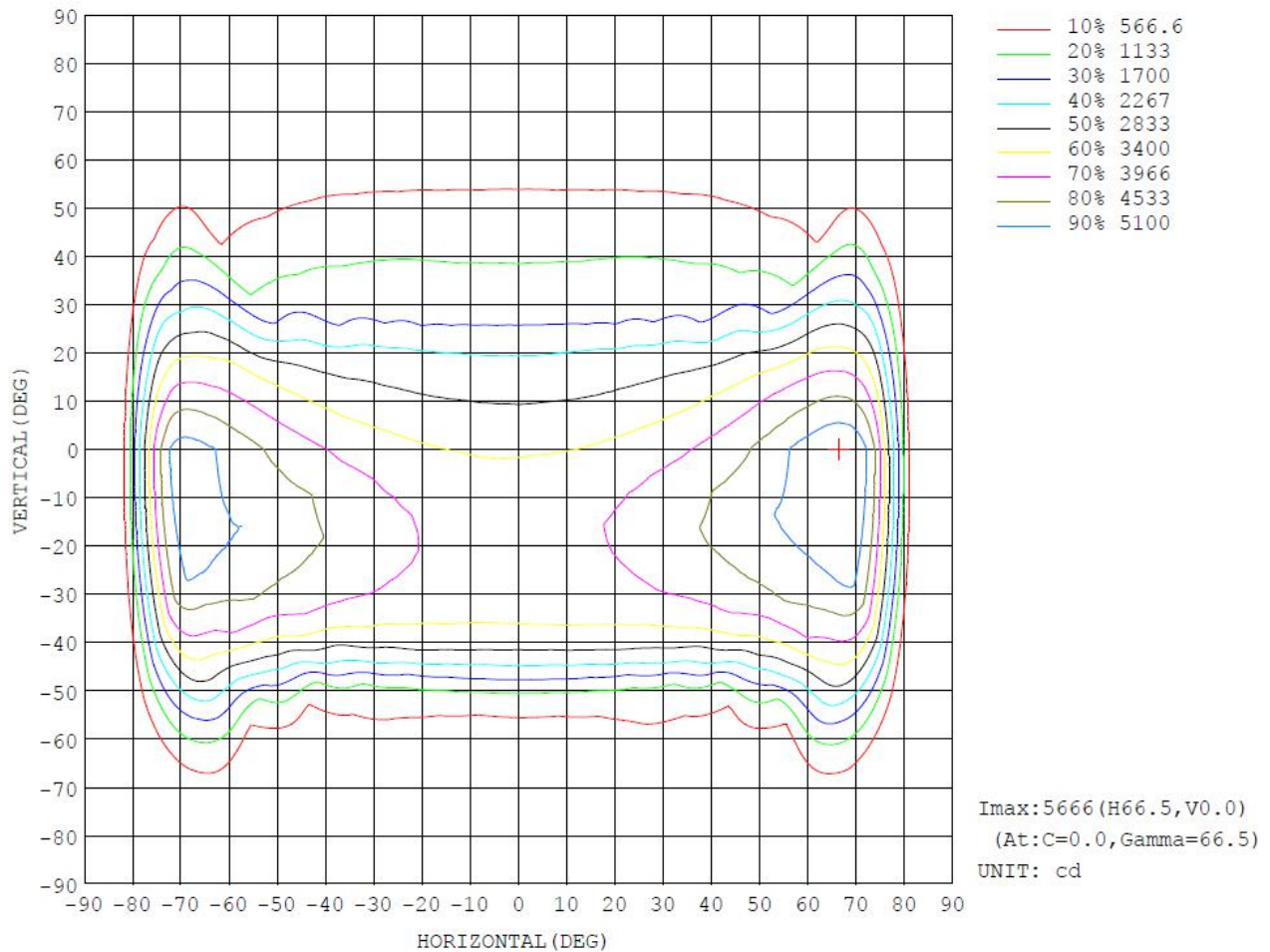
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NVLAP LAB CODE 600112-0

Report No.: LCS200918047BS

5.4 Isocandela Diagram





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TESTING
NVLAP LAB CODE 600112-0

Report No.: LCS200918047BS

5.5 Luminous Distribution Intensity Data

Table--1

UNIT: 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	3322	3322	3322	3322	3322	3322	3322	3322	3322	3322	3322	3322	3322	3322	3322	3322	3322	3322	3322
5	3339	3382	3418	3462	3482	3501	3515	3527	3542	3544	3539	3526	3512	3496	3483	3436	3398	3372	3322
10	3371	3468	3532	3592	3628	3653	3677	3687	3699	3691	3684	3677	3666	3641	3625	3571	3501	3441	3347
15	3440	3571	3660	3736	3774	3777	3781	3792	3795	3790	3770	3780	3775	3768	3757	3709	3615	3526	3394
20	3537	3695	3805	3872	3895	3869	3854	3836	3825	3815	3804	3816	3845	3849	3852	3823	3747	3641	3462
25	3647	3848	3970	4001	3979	3909	3869	3837	3802	3790	3782	3820	3871	3895	3939	3957	3902	3777	3554
30	3766	4034	4158	4127	4028	3912	3806	3724	3661	3646	3657	3718	3814	3918	4009	4082	4070	3957	3666
35	3927	4234	4336	4237	4055	3836	3652	3536	3481	3451	3472	3540	3661	3842	4051	4207	4270	4146	3801
40	4136	4481	4514	4296	4017	3638	3404	3246	3109	3051	3098	3235	3401	3654	4022	4307	4438	4385	3966
45	4359	4716	4613	4261	3789	3279	2909	2526	2277	2215	2269	2511	2935	3263	3814	4299	4571	4618	4162
50	4656	4921	4655	4140	3318	2642	1867	1498	1297	1240	1287	1481	1859	2637	3309	4184	4639	4845	4381
55	4977	5113	4645	3798	2581	1365	874	672	591	586	584	665	864	1343	2569	3847	4645	5020	4651
60	5345	5245	4536	3060	1156	645	573	501	484	479	479	492	556	638	1150	3060	4557	5141	4913
65	5610	5325	4198	2007	524	483	478	407	388	381	383	400	473	482	513	2052	4177	5234	5196
70	5466	5321	3426	793	359	349	320	293	277	272	274	288	314	345	358	800	3286	5239	5308
75	3957	4318	2433	378	229	216	197	181	167	164	165	178	193	211	226	390	2311	4226	4249
80	994	1529	883	205	114	106	96.5	87.8	82.6	81.4	82.1	87.0	96.1	103	111	202	876	1621	1435
85	55.5	94.8	133	56.0	32.0	30.2	27.4	25.4	23.3	23.3	22.9	24.5	26.6	29.1	31.1	51.2	128	114	80.6
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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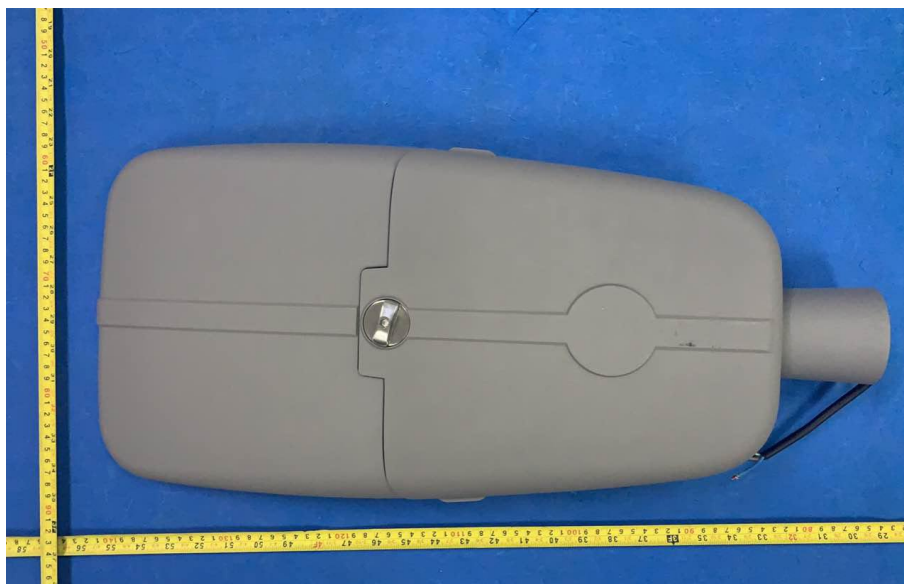
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6. Photo of sample:



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