Test Report

Client Name	:	Shenzhen Sinoco Lighting Technologies Co.,Ltd.
Address	:	G building,Shasi , High-Tec ,Industrial park,Shajing Town,Baoan District,Shenzhen, Guangdong,China
Product Name	:	LED street light
Date	:	2019-12-31

Shenzhen Anbotek Pengcheng Compliance Laboratory Limited

Report No.:	PCANL191224003-01
Product Description:	LED street light
Electrical Rating:	220-240VAC, 50Hz, 150W
Model No.:	ST-52-150W I
Model Difference:	N/A
Test Date:	2019-12-24
Test Standard:	LM-79-08
Test Laboratory:	Shenzhen Anbotek Pengcheng Compliance Laboratory Limited
Testing location:	Zone B, 1/F., Building 2, Hengchangrong High Tech Industrial Park, Huangtian, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.

Tested by **Reviewed by**

Ocean Deng Flora Zhang

Anbotek (PC) Compliance Laboratory Limited * Approved *

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or use in part without prior written consent from Shenzhen Anbotek Pengcheng Compliance Laboratory Limited.

General Information

Applicant:	Shenzhen Sinoco Lighting Technologies Co.,Ltd.
Applicant Address:	G building,Shasi , High-Tec ,Industrial park,Shajing Town,Baoan District,Shenzhen, Guangdong,China
Manufacturer:	Shenzhen Sinoco Lighting Technologies Co.,Ltd.
Manufacturer Address:	G building,Shasi , High-Tec ,Industrial park,Shajing Town,Baoan District,Shenzhen, Guangdong,China
Brand Name:	SINOCO
Tested Model:	ST-52-150W I
Nominal CCT	3000K

Summary of Result

Test Item	**Test Result**	
	Luminous Flux (lm)	**Luminous Efficacy (lm/W)**
Integrating Sphere Test	21368	145.45
Goniophotometer Test	21344	146.19

1 Test Condition

1.1 Air Temperature

The ambient temperature in which measurements are being taken shall be maintained at 25°C±1°C, measured at a point not more than 1 m from the SSL product and at the same height as the SSL product. The temperature sensor shall be shielded from direct optical radiation from the SSL product and optical radiation from any other source. If measurements are performed at other than this recommended temperature, this is a non-standard condition and shall be noted in the test report.

1.2 Thermal Conditions for Mounting SSL Products

The method of mounting can be the primary path for heat flow away from the device and can affect measurement results significantly. The SSL product under test shall be mounted to the measuring instrument so that heat conduction through supporting objects causes negligible cooling effects. If the SSL product under test is provided with a support structure that is designated to be used as a component of the luminaire thermal management system, the product shall be tested with the support structure attached. Any such support structure included in the measurement shall be reported.

1.3 Air Movement

The incidence of air movements on the surface of a SSL product under test may substantially after electrical and photometric values. Air flow around the SSL product being tested should be such that normal convective air flow induced by device under test is not affected.

1.4 Waveshape of AC Power Supply

The AC power supply, while operating the SSL product, shall have a sinusoidal voltage waveshapeat the prescribed frequency typically 50/60 Hz or 50 Hz) such that the RMS summation of the harmonic components does not exceed 3 percent of the fundamental during operation of the test item.

1.5 Voltage Regulation

The voltage of an AC power supply (RMS voltage) or DC power supply (instantaneous voltage) applied to the device under test shall be regulated to within ±0.2 percent under load.

1.6 Seasoning

For the purpose of rating new SSL products, SSL products shall be tested with no seasoning.

1.7 Stabilization

Before measurements are taken, the SSL product under test shall be operated long enough to reach stabilization and temperature equilibrium. The time required for stabilization depends on the type of SSL products under test. The stabilization time typically ranges from 30 min to 2 or more hours for large SSL products.

1.8 Operating Orientation

The SSL product under test shall be evaluated in the operating orientation recommended by the manufacturer for an intended use of the SSL product. Stabilization and photometric measurements of SSL products shall be done in such operating orientation.

2 Test Method

2.1 Integrating Sphere Measurement

The integrating sphere system includes AC power source, digital power meter, DC power supply, spectrophotometer, and integrating sphere. The system is calibrated by standard lamp before measurement weekly. The standard lamp has been calibrated regularly and traced to the National Primary Standard.

The 4π geometry was used to measure total luminous, luminous efficacy, chromaticity coordinates, correlated color temperature, and color rendering index, the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm. The product was operated in its intended orientation and was recorded in the report.

2.2 Goniophotometer Measurement

The goniophotometer system is calibrated by standard lamp before measurement weekly. The standard lamp has been calibrated regularly and traced to National Primary Standards.

Type C goniophotometer was used for measuring total luminous flux, luminous efficacy, luminous intensity distribution, and color angular uniformity, which were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals. The product was operated in its intended orientation and was recorded in the report.

2.3 Electrical Measurement

According to ANSI C82.77-2002, the measurement was made using a digital power meter and power supply, the SSL product under test was operated at rated voltage and stabilized enough before measurement. The total harmonic distortion of current and power factor can be calculated from the digital power meter. The digital power meter was calibrated regularly and traced to National Primary Standards.

3 Test Result

3.1 Integrating Sphere

Temperature (°C)	Test Humidity	Orientation	Stabilization Time(min)	Test Time(min)	Number of hours operated prior to measurement
25.1	55%RH	Face Down	30min	1min	0

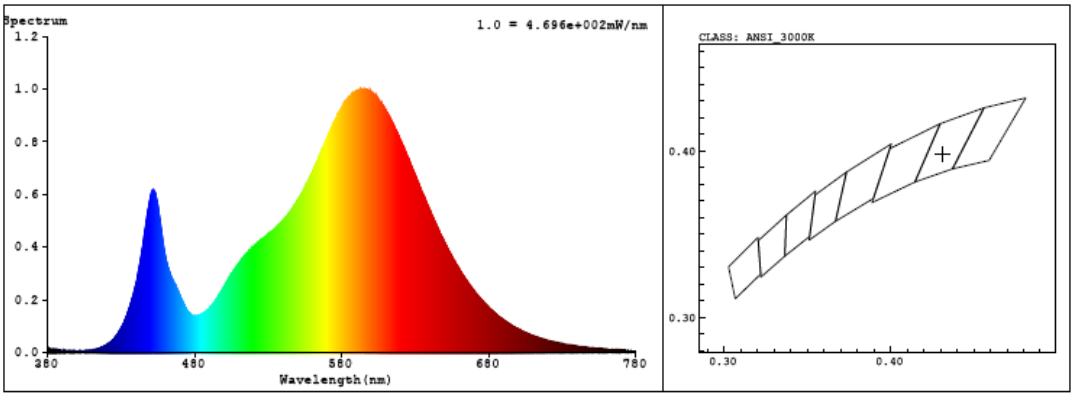
Input Voltage (V)	Frequency (Hz)	Current (A)	Power Factor	Power(W)	Correction factors
229.98	50	0.6459	0.9890	146.91	1.2746

Luminous Flux (lm)	Radiant Flux (W)	CCT (K)	Duv	Luminous Efficacy (lm/W)
21368	62.44	3053	-0.0015	145.45

Ra	x	y	u’	v’
73.1	0.4312	0.3984	0.2493	0.5183

R1	R2	R3	R4	R5
70	85	94	68	70
R6	R7	R8	R9	R10
81	75	41	-35	67
R11	R12	R13	R14	R15
65	58	73	97	61

Spectral Distribution & Chromaticity Diagram



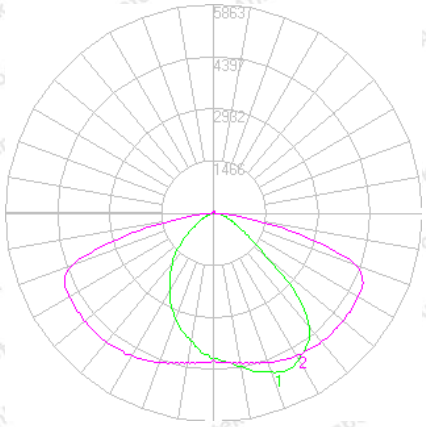
3.2.Goniophotometer

Temperature (°C)	Test Humidity	Orientation	Stabilization Time(min)	Test Time(min)	Number of hours operated prior to measurement
25.1	54%	Face down	30	45	0

Input Voltage (V)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
229.93	50	0.6420	0.9888	146.00

Luminous Flux (lm)	CBCP (cd)	Beam Angle (50%)[C0/180]	Beam Angle (50%)[C90/270]	Luminous Efficacy (lm/W)
21344	5872	155.1	85.1	146.19

Luminous Intensity Distribution



Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixt
0-20	2245.75	10.50	10.50
0-30	5016.71	23.50	23.50
0-40	8679.89	40.70	40.70
0-60	16505.52	77.30	77.30
0-80	20850.02	97.70	97.70
0-90	21149.12	99.10	99.10
10-90	20586.64	96.50	96.50
20-40	6434.14	30.10	30.10
20-50	10527.95	49.30	49.30
40-70	10673.45	50.00	50.00
60-80	4344.5	20.40	20.40
70-80	1496.69	7.00	7.00
80-90	299.09	1.40	1.40
90-110	62.95	0.30	0.30
90-120	90.91	0.40	0.40
90-130	118.77	0.60	0.60
90-150	166.32	0.80	0.80
90-180	195.17	0.90	0.90
110-180	132.22	0.60	0.60
0-180	21344.29	100.00	100.00

Total Luminaire Efficiency = 100.00%

Zone	Lumens
0-10	562.47
10-20	1683.28
20-30	2770.96
30-40	3663.18
40-50	4093.8
50-60	3731.83
60-70	2847.82
70-80	1496.69
80-90	299.09
90-100	35.13
100-110	27.82
110-120	27.96
120-130	27.86
130-140	25.98
140-150	21.57
150-160	15.91
160-170	9.71
170-180	3.23

Luminous Intensity (cd) Distribution Data

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	5872	5872	5872	5872	5872	5872	5872	5872	5872	5872	5872	5872	5872	5872	5872	5872	5872
1	5836	5854	5872	5926	6132	5908	5818	5782	5729	5782	5818	5908	6132	5926	5872	5854	5836
2	5872	5890	5899	5935	6123	5908	5791	5756	5693	5756	5791	5908	6123	5935	5899	5890	5872
3	5908	5944	5935	5944	6149	5890	5774	5711	5621	5711	5774	5890	6149	5944	5935	5944	5908
4	5962	5979	5970	5962	6149	5890	5747	5648	5568	5648	5747	5890	6149	5962	5970	5979	5962
5	6015	6033	6006	5979	6158	5881	5711	5612	5496	5612	5711	5881	6158	5979	6006	6033	6015
10	6248	6275	6203	6105	6239	5863	5532	5263	5138	5263	5532	5863	6239	6105	6203	6275	6248
15	6588	6588	6454	6302	6373	5863	5317	4923	4708	4923	5317	5863	6373	6302	6454	6588	6588
20	6910	6901	6776	6552	6516	5818	5093	4556	4297	4556	5093	5818	6516	6552	6776	6901	6910
25	7071	7134	7125	6857	6633	5738	4861	4189	3885	4189	4861	5738	6633	6857	7125	7134	7071
30	6946	7107	7421	7161	6740	5648	4619	3795	3419	3795	4619	5648	6740	7161	7421	7107	6946
35	6552	6883	7626	7447	6803	5523	4332	3437	2990	3437	4332	5523	6803	7447	7626	6883	6552
40	5944	6445	7662	7725	6848	5353	3992	3043	2578	3043	3992	5353	6848	7725	7662	6445	5944
45	4619	5603	7600	7949	6866	5102	3598	2578	2112	2578	3598	5102	6866	7949	7600	5603	4619
50	2739	4046	7394	8083	6848	4744	3043	2023	1540	2023	3043	4744	6848	8083	7394	4046	2739
55	1844	2345	6696	8190	6821	4171	2363	1334	1003	1334	2363	4171	6821	8190	6696	2345	1844
60	1253	1450	5532	8343	6758	3321	1432	788	662	788	1432	3321	6758	8343	5532	1450	1253
65	824	904	3384	8334	6597	2256	636	519	430	519	636	2256	6597	8334	3384	904	824
70	591	644	940	7698	5872	797	358	322	286	322	358	797	5872	7698	940	644	591
75	394	448	519	5756	3742	242	188	161	161	161	188	242	3742	5756	519	448	394
80	251	286	349	2838	1978	107	90	54	36	54	90	107	1978	2838	349	286	251
85	161	152	179	806	313	36	45	36	36	36	45	36	313	806	179	152	161
90	72	81	72	116	45	36	27	18	18	18	27	36	45	116	72	81	72
95	54	54	36	36	36	27	18	18	18	18	18	27	36	36	36	54	54
100	18	18	27	27	27	27	36	36	18	36	36	27	27	27	27	18	18
105	18	18	18	27	36	36	27	27	18	27	27	36	36	27	18	18	18
110	18	36	27	18	27	36	36	18	18	18	36	36	27	18	27	36	18
115	18	18	18	36	27	45	36	36	18	36	36	45	27	36	18	18	18
120	18	18	18	27	36	36	27	36	18	36	27	36	36	27	18	18	18
125	36	18	27	36	45	36	36	36	36	36	36	36	45	36	27	18	36
130	36	27	27	36	36	27	36	36	18	36	36	27	36	36	27	27	36
135	36	27	36	27	36	36	36	36	36	36	36	36	36	27	36	27	36
140	36	36	27	36	36	36	45	36	36	36	45	36	36	36	27	36	36
145	36	27	36	36	36	36	36	36	36	36	36	36	36	36	36	27	36
150	36	36	36	36	36	36	36	36	54	36	36	36	36	36	36	36	36
155	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
160	18	36	27	36	36	36	18	36	36	36	18	36	36	36	27	36	18
165	36	36	27	36	36	36	36	36	36	36	36	36	36	36	27	36	36
170	36	36	36	27	36	36	36	36	36	36	36	36	36	27	36	36	36
175	36	36	36	36	27	27	36	36	36	36	36	27	27	36	36	36	36
180	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36

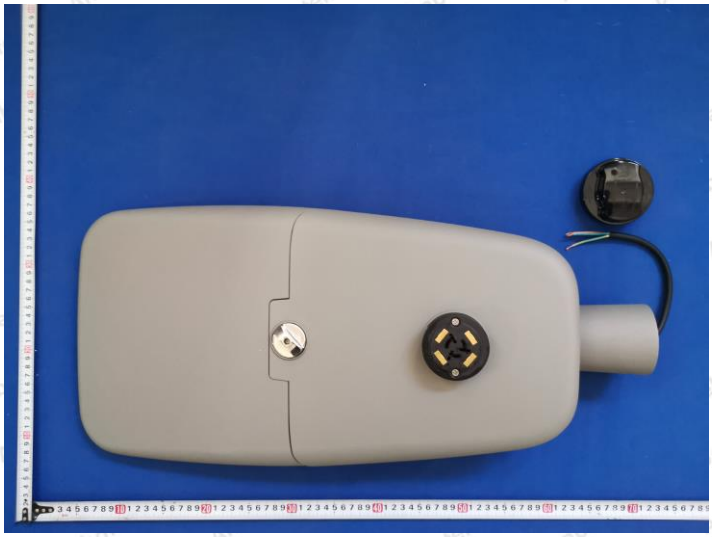
1 Test Equipment

Equipment Name	Manufacturer	Model No	Reference No	Calibration Due Date
Integrating Sphere (2.0m)	EVERFINE	YF-1000	SE-599	Before use
Standard Lamp	SENSING	DC24V100W	SE-2091	2020-05-06
Digital Power Meter	YOKOGAWA	WT210	SE-074	2020-05-06
Goniophotometer System	SENSING	GMS-3000	SE-450	Before use
Digital Power Meter	YOKOGAWA	WT310	SE-381	2020-05-06
AC Power Source	HUAYANG	HY9010	SE-114	2020-05-06
DC Power Source	EVERFINE	WY605	SE-605	2020-05-06
Temperature Sensor	WALVICO	HG126D	SE-616	2020-05-06

Measurement Uncertainty Statement:

Φ :Urel=2.78% (k=2)
$U_p(u')$: Urel=0.04%
$U_p(v')$:Urel=0.02%

Attachment A – Product Photo



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