



Shenzhen LCS Compliance Testing Laboratory Ltd.



REPORT NO.:LCS180831032BS

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 LCS Compliance Testing Laboratory Ltd.
Address..... : B Area, 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-52-45W
Rating..... : AC100-240V, 50/60Hz, 45W
Date of Test..... : September 03, 2018
Date of Issue..... : September 05, 2018

Test by:

James

James Zhang/ Project Engineer

Check by:

Ian Luo

Ian Luo/ Director

Approved by:

Jesse Liu

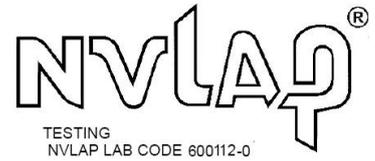
Jesse Liu/ Manager



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1. Test Method

Test Item.....:	Integrating Sphere Test
Ambient Condition	25.1°C
Stabilization time(h):	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°C
Total operated time of the product for measurements including stabilization..... (h):	1h
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.

2.Product Information

Product description.....:	LED street light
Model Number.....:	ST-52-45W
Rated Inputs.....:	AC100-240V, 50/60Hz
Rated Power.....:	45W
Declared CCT.....:	4000K
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.....:	September 03, 2018
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

4. Integrating Sphere Test Results:

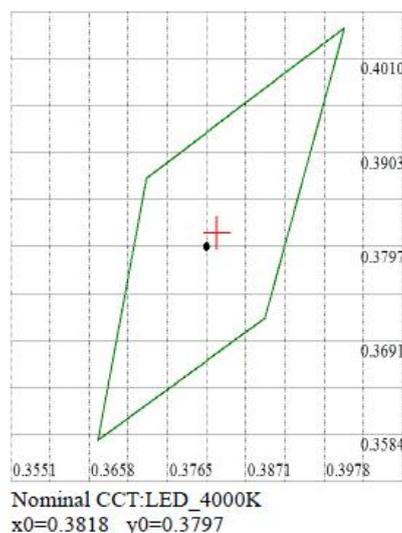
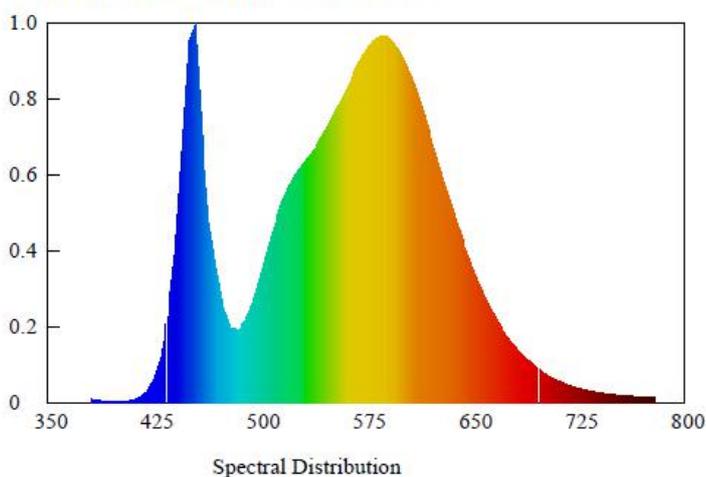
4.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	220.0	50.00	0.219	0.985	47.5

Test type	CCT (K)	CRI	Luminous flux (lm)	Luminous efficacy(lm/W)
Output	3960	74.9	5869.67	123.57

4.2 Spectrum

Spectroradiometric Parameters



Chromaticity Coordinates: $x=0.3832$ $y=0.3812$ $u'=0.2251$ $v'=0.5039$

Correlated Color Temperature: 3960 K

Colour Fidelity Index: $R_f=74$

Luminous Flux: 5869.67 lm

Chromaticity Difference: 0.001Duv

Color Ratio: $K_r=38.3\%$ $K_g=53.6\%$ $K_b=8.1\%$

Bandwidth: 18.6nm

Photosynthetically Active Radiation(PAR): 15.48W

Rendering Index: $R_a=74.9$

$R_1=71$ $R_2=84$ $R_3=93$ $R_4=72$ $R_5=71$ $R_6=77$ $R_7=81$ $R_8=51$

$R_9=-29$ $R_{10}=61$ $R_{11}=68$ $R_{12}=48$ $R_{13}=75$ $R_{14}=96$ $R_{15}=64$ $R_e=65$

Dominant Wavelength: 577.0 nm(E)

Gamut Index: $R_g=91$

Purity: 0.2943

Peak Wavelength: 455.0 nm

Radiant Flux: 15.75 W

Photosynthetic Photon Flux(PPF):72.70 μ mol/s

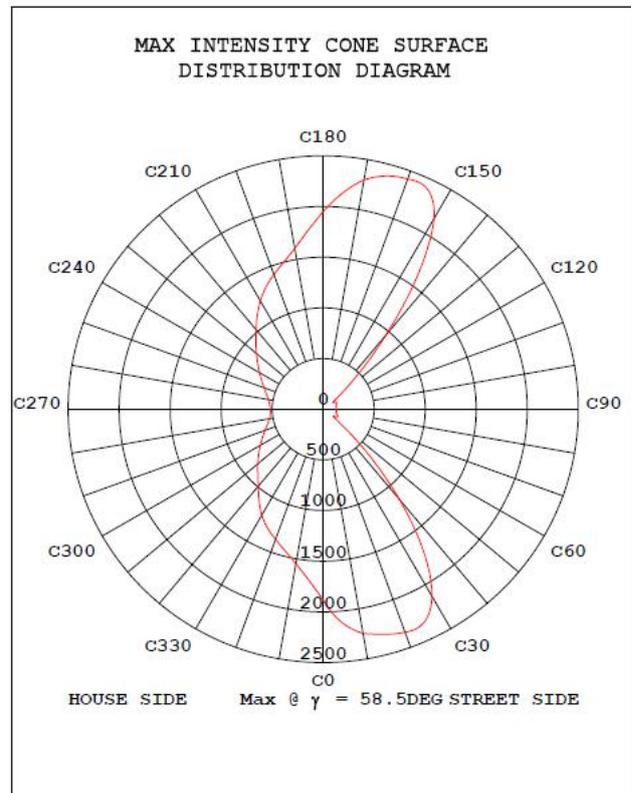
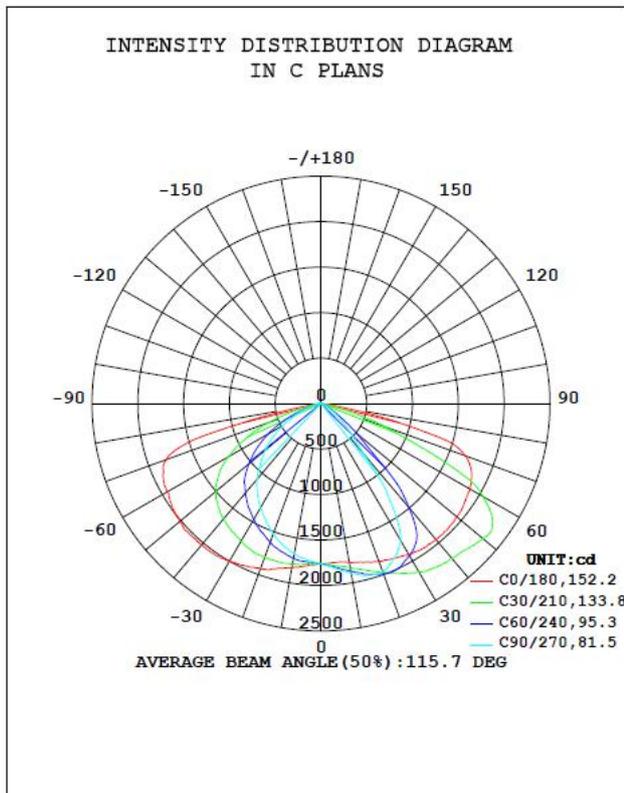
5. Goniophotometer Test results

5.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	220.0	50.00	0.2192	0.985	47.51

Test type	Total Flux (lm)	Luminous efficacy(lm/W)	I _{max} (cd)	Spacing Criteria (0~180°)	Spacing Criteria (90~270°)
Output	5863.2	123.4	2415	-	-

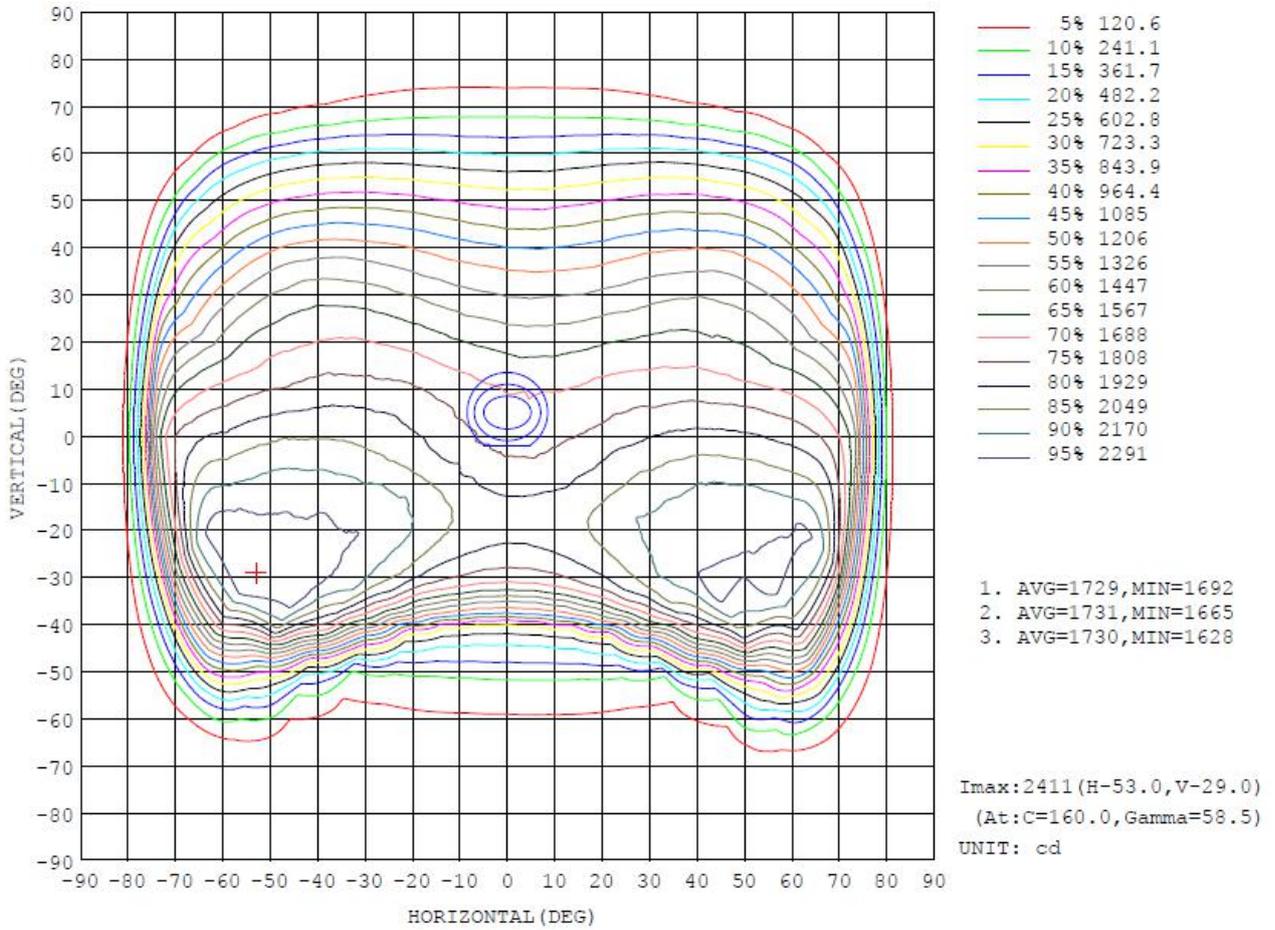
5.2 Luminous Intensity Distribution Diagram and C0 Plane Isolux Diagram (Unit : lx)



5.3 Zonal Flux Diagram

y	C0	C45	C90	C135	C180	C225	C270	C315	y	Φ zone	Φ total	%lum, lamp
10	1773	1852	1895	1904	1831	1753	1680	1708	0- 10	170.3	170.3	2.9,2.9
20	1848	1994	1965	2067	1932	1702	1521	1624	10- 20	516.7	687.0	11.7,11.7
30	1915	2077	1738	2153	2001	1607	1319	1516	20- 30	842.5	1530	26.1,26.1
40	1954	2034	727.9	2077	2027	1473	1087	1373	30- 40	1071	2600	44.4,44.4
50	1938	1546	289.4	1506	2016	1254	793.3	1183	40- 50	1116	3717	63.4,63.4
60	1877	545.3	111.1	424.0	1938	873.9	468.6	862.3	50- 60	1028	4745	80.9,80.9
70	1678	97.00	31.50	83.01	1800	365.6	182.2	371.7	60- 70	780.0	5525	94.2,94.2
80	223.3	5.285	0.2187	2.771	207.5	61.43	64.66	64.32	70- 80	311.0	5836	99.5,99.5
90	1.079	0.1458	0	0	0.7916	0	0	0	80- 90	18.28	5854	99.8,99.8
100	1.007	0.0362	0	0	1.871	0.0725	0	0.0703	90-100	0.3256	5854	99.8,99.8
110	1.223	0.0725	0	0	2.662	0.6928	0	0.6184	100-110	0.6230	5855	99.9,99.9
120	1.439	0.2519	0	0.2906	2.588	1.631	0.1458	1.637	110-120	0.9454	5856	99.9,99.9
130	2.231	1.196	1.093	1.346	2.519	2.030	0.4386	2.146	120-130	1.216	5857	99.9,99.9
140	3.222	2.207	1.822	1.776	2.519	2.177	1.749	2.549	130-140	1.486	5858	99.9,99.9
150	3.597	3.042	2.692	2.581	2.738	3.119	3.136	3.606	140-150	1.706	5860	99.9,99.9
160	3.526	3.625	3.572	3.380	3.310	3.698	3.863	3.891	150-160	1.592	5862	100,100
170	3.742	3.909	3.718	3.637	3.743	3.987	3.936	3.891	160-170	1.062	5863	100,100
180	4.174	4.096	3.936	3.891	3.886	3.987	3.936	3.891	170-180	0.3754	5863	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

5.4 Isocandela Diagram





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TESTING
NVLAP LAB CODE 600112-0

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5.5 Luminous Distribution Intensity Data

Table--2

UNIT: cd

C (DBG) y (DBG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350		
0	1763	1763	1763	1763	1763	1763	1763	1763	1763	1763	1763	1763	1763	1763	1763	1763	1763		
5	1788	1776	1772	1766	1749	1748	1735	1731	1728	1725	1724	1722	1727	1726	1745	1739	1746		
10	1826	1807	1791	1764	1741	1730	1705	1694	1680	1674	1687	1686	1708	1709	1738	1732	1754		
15	1861	1827	1802	1757	1719	1683	1639	1626	1612	1602	1612	1632	1666	1684	1731	1741	1772		
20	1905	1841	1799	1734	1669	1621	1570	1541	1521	1510	1527	1559	1606	1642	1714	1757	1792		
25	1926	1850	1784	1705	1617	1552	1482	1449	1422	1419	1438	1488	1537	1608	1691	1750	1817		
30	1927	1822	1746	1651	1563	1469	1390	1349	1319	1318	1348	1398	1473	1560	1657	1735	1819		
35	1914	1798	1705	1602	1489	1385	1295	1245	1212	1211	1242	1308	1399	1493	1615	1706	1809		
40	1885	1765	1655	1540	1407	1287	1187	1125	1087	1088	1131	1209	1313	1433	1566	1663	1793		
45	1830	1698	1590	1451	1305	1182	1062	979	936	943	1007	1102	1221	1360	1508	1612	1744		
50	1770	1625	1500	1342	1166	1027	908	829	793	803	864	969	1109	1256	1424	1547	1692		
55	1689	1519	1364	1178	992	856	743	669	639	654	720	829	956	1123	1314	1457	1614		
60	1571	1360	1168	956	792	663	561	495	469	485	556	660	788	937	1141	1323	1513		
65	1395	1125	906	714	566	449	371	327	314	325	369	453	574	721	913	1123	1361		
70	1121	803	609	431	300	234	200	188	182	185	200	237	303	441	631	825	1116		
75	694	411	249	148	116	116	111	104	109	116	118	120	155	265	443	715			
80	118	59.9	57.1	61.2	61.7	65.7	65.0	64.5	64.7	64.3	65.3	67.0	64.4	64.2	61.7	73.4	134		
85	12.4	14.6	16.3	20.0	22.4	23.6	23.2	22.5	22.2	22.9	24.5	25.8	25.3	22.6	18.6	17.4	16.6		
90	0.80	0.51	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.58	0.87		
95	1.24	0.87	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.87	1.31		
100	2.03	1.66	0.73	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.74	1.67	2.10		
105	2.68	2.32	1.53	0.58	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	1.47	2.47	2.75		
110	3.26	2.89	2.10	1.10	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	1.09	2.20	3.12	3.48		
115	3.19	2.89	2.61	1.74	0.87	0.22	0.00	0.00	0.07	0.00	0.07	0.08	0.66	1.67	2.78	3.63	3.76		
120	3.12	2.96	2.61	2.03	1.23	0.65	0.29	0.15	0.15	0.15	0.22	0.37	1.10	2.18	3.22	3.77	3.76		
125	2.68	2.75	2.61	2.03	1.52	0.94	0.58	0.37	0.29	0.22	0.29	0.80	1.46	2.32	3.22	3.62	3.69		
130	2.46	2.46	2.61	2.25	1.81	1.09	0.87	0.51	0.44	0.44	0.80	1.10	1.75	2.54	3.22	3.41	3.62		
135	2.46	2.46	2.54	2.25	1.88	1.82	1.53	1.31	1.10	1.01	1.24	1.46	2.04	2.61	3.22	3.33	3.47		
140	2.61	2.75	2.61	2.32	2.03	2.18	2.04	1.83	1.75	1.60	1.89	1.89	2.33	2.77	3.29	3.41	3.54		
145	2.68	2.68	2.61	2.68	2.54	2.76	2.55	2.54	2.34	2.25	2.41	2.41	2.92	3.12	3.51	3.63	3.69		
150	3.12	3.11	2.90	3.05	3.19	3.13	3.12	3.13	3.14	2.98	3.13	3.28	3.51	3.70	3.81	3.77	3.90		
155	3.19	3.25	3.27	3.55	3.62	3.49	3.55	3.64	3.72	3.71	3.71	3.87	3.86	3.85	3.95	3.99	3.90		
160	3.41	3.47	3.48	3.70	3.69	3.92	3.85	3.93	3.86	3.93	3.93	3.94	3.94	3.85	3.95	3.99	3.90		
165	3.55	3.69	3.63	3.77	3.77	4.00	3.92	3.86	3.86	3.93	3.93	3.94	3.94	3.85	3.95	3.99	3.90		
170	3.78	3.90	3.99	3.99	3.98	4.21	4.06	4.00	3.94	3.93	3.93	3.94	3.94	3.85	3.95	3.99	3.90		
175	4.20	3.98	3.99	3.99	3.98	4.21	4.06	4.00	3.94	3.93	3.93	3.94	3.94	3.85	3.95	3.99	3.90		
180	4.20	3.98	3.99	3.99	3.98	4.21	4.06	4.00	3.94	3.93	3.93	4.01	3.94	3.85	3.95	3.91	3.90		



Testing Lab.

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6. Photo of sample:



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