



Testing Lab.

Shenzhen Southern LCS Compliance Testing Laboratory Ltd.



TESTING
NVLAP LAB CODE 600112-0

Report No.: LCS200918046BS

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-52-60W-TC10
Rating..... : AC220V, 50/60Hz, 60W, 4000K
Date of Test..... : September 18, 2020
Date of Issue..... : September 23, 2020

Test by:

William Lian

William Lian/ Project Engineer

Check by:

Jian Luo

Ian Luo/ Director

Approved by:



Jesse Liu/ Manager

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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.

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2. Product Information

Product description.....:	LED Street Light
Model Number.....:	ST-52-60W-TC10
Rated Inputs.....:	AC220V, 50/60Hz
Rated Power.....:	60W
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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4. Integrating Sphere Test Results:

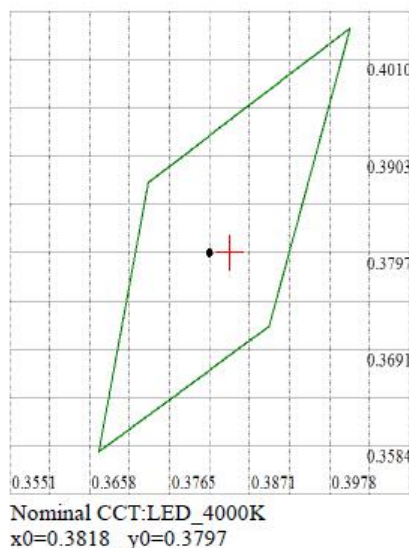
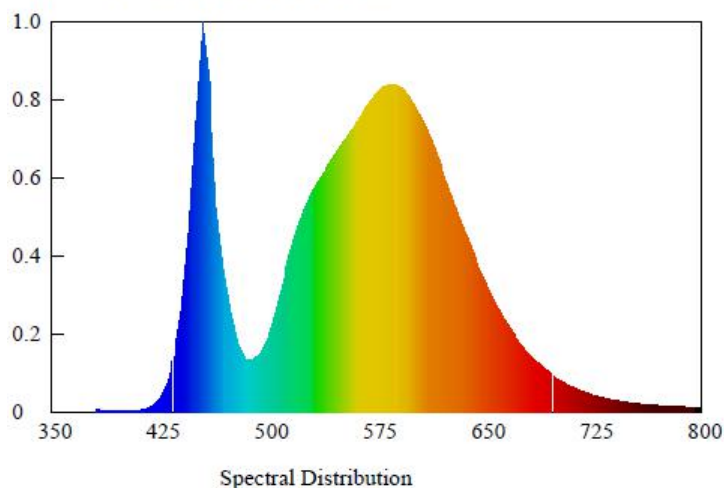
4.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	219.99	50.0	0.2798	0.9918	61.04

Test type	CCT (K)	CRI	Duv	Luminous flux (lm)	Luminous efficacy(lm/W)
Output	3913	73.4	+0.00022	9284.18	152.10

4.2 Spectrum

Spectroradiometric Parameters



Chromaticity Coordinates: $x=0.3845$ $y=0.3797$ $u'=0.2266$ $v'=0.5035$

Correlated Color Temperature: 3913 K

Colour Fidelity Index: $R_f=71$

Luminous Flux: 9284.18 lm

Chromaticity Difference: $+0.00022D_{uv}$

Color Ratio: $K_r=38.3\%$ $K_g=54.8\%$ $K_b=7.0\%$

Bandwidth: 23.6nm

Photosynthetically Active Radiation(PAR): 27.49W

Rendering Index: $R_a=73.4$

$R_1=71$ $R_2=83$ $R_3=90$ $R_4=69$ $R_5=69$ $R_6=74$ $R_7=81$ $R_8=51$

$R_9=-27$ $R_{10}=57$ $R_{11}=63$ $R_{12}=40$ $R_{13}=74$ $R_{14}=94$ $R_{15}=65$ $R_e=64$

Dominant Wavelength: 578.0 nm(E)

Gamut Index: $R_g=91$

Purity: 0.2937

Peak Wavelength: 455.0 nm

Radiant Flux: 28.13 W

Photosynthetic Photon Flux(PPF):129.55 μ mol/s



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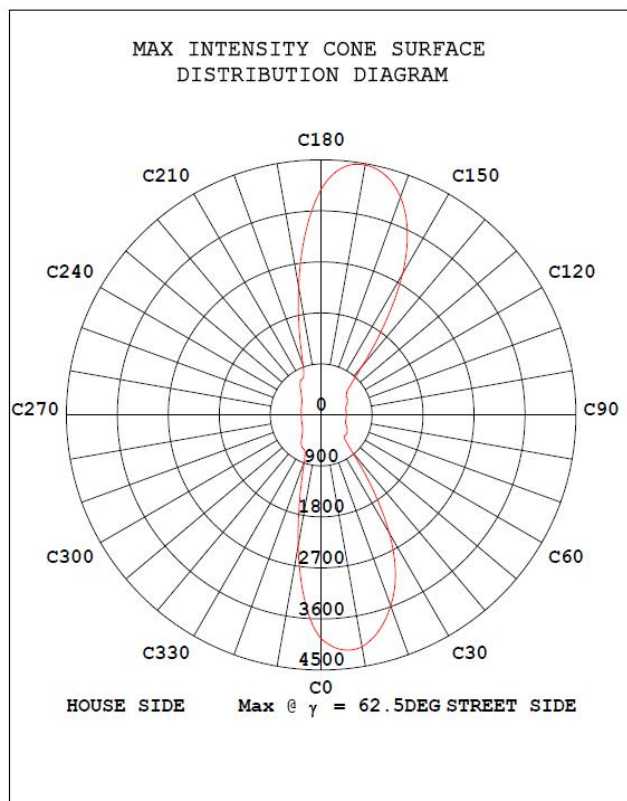
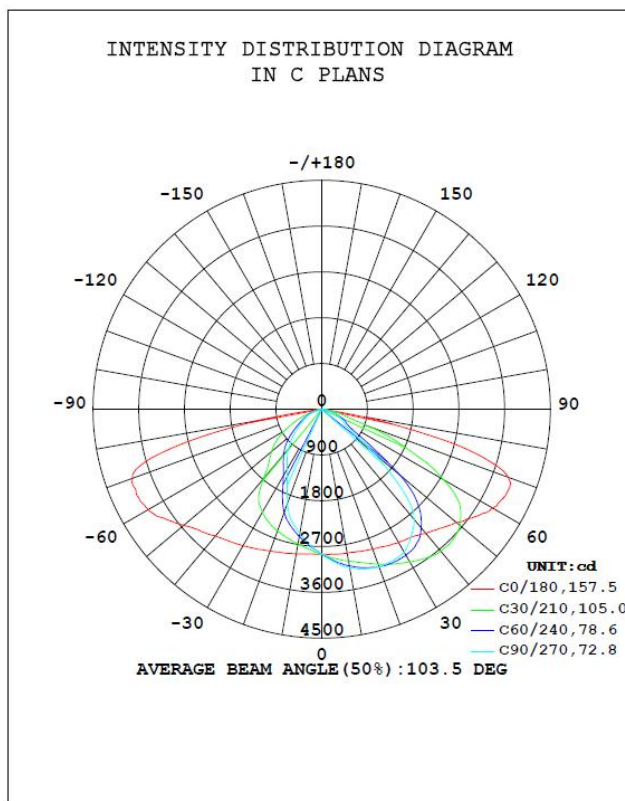
5. Goniophotometer Test results

5.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	220.1	50.00	0.2797	0.9918	61.05

Test type	Total Flux (lm)	Luminous efficacy(lm/W)	ZL (0~90°)	ZL (80~90°)
Output	9282.6	152.04	100%	0.7%

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





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5.3 Zonal Flux Diagram

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	2872	3087	3157	3109	2887	2608	2480	2605	0- 10	272.3	272.3	2.93, 2.93
20	2927	3298	3294	3333	2965	2343	1970	2336	10- 20	803.7	1076	11.6, 11.6
30	3024	3409	3243	3481	3098	1853	1361	1857	20- 30	1269	2345	25.3, 25.3
40	3186	3369	2826	3516	3254	1377	1024	1358	30- 40	1627	3971	42.8, 42.8
50	3458	2794	1327	2999	3552	1017	662.1	999.2	40- 50	1789	5760	62, 62
60	3887	1009	490.8	1284	3946	601.3	396.2	583.9	50- 60	1549	7309	78.7, 78.7
70	3902	362.3	296.3	390.2	3965	274.9	190.5	248.9	60- 70	1221	8530	91.9, 91.9
80	663.2	108.2	86.70	125.6	1216	44.23	2.290	33.61	70- 80	688.3	9218	99.3, 99.3
90	0	0	0	0	0	0	0	0.0439	80- 90	64.30	9283	100, 100
100	0	0	0	0	0	0	0	0	90-100	0.0005	9283	100, 100
110	0	0	0	0	0	0	0	0	100-110	0	9283	100, 100
120	0	0	0	0	0	0	0	0	110-120	0	9283	100, 100
130	0	0	0	0	0	0	0	0	120-130	0	9283	100, 100
140	0	0	0	0	0	0	0	0	130-140	0	9283	100, 100
150	0	0	0	0	0	0	0	0	140-150	0	9283	100, 100
160	0	0	0	0	0	0	0	0	150-160	0	9283	100, 100
170	0	0	0	0	0	0	0	0	160-170	0	9283	100, 100
180	0	0	0	0	0	0	0	0	170-180	0	9283	100, 100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		



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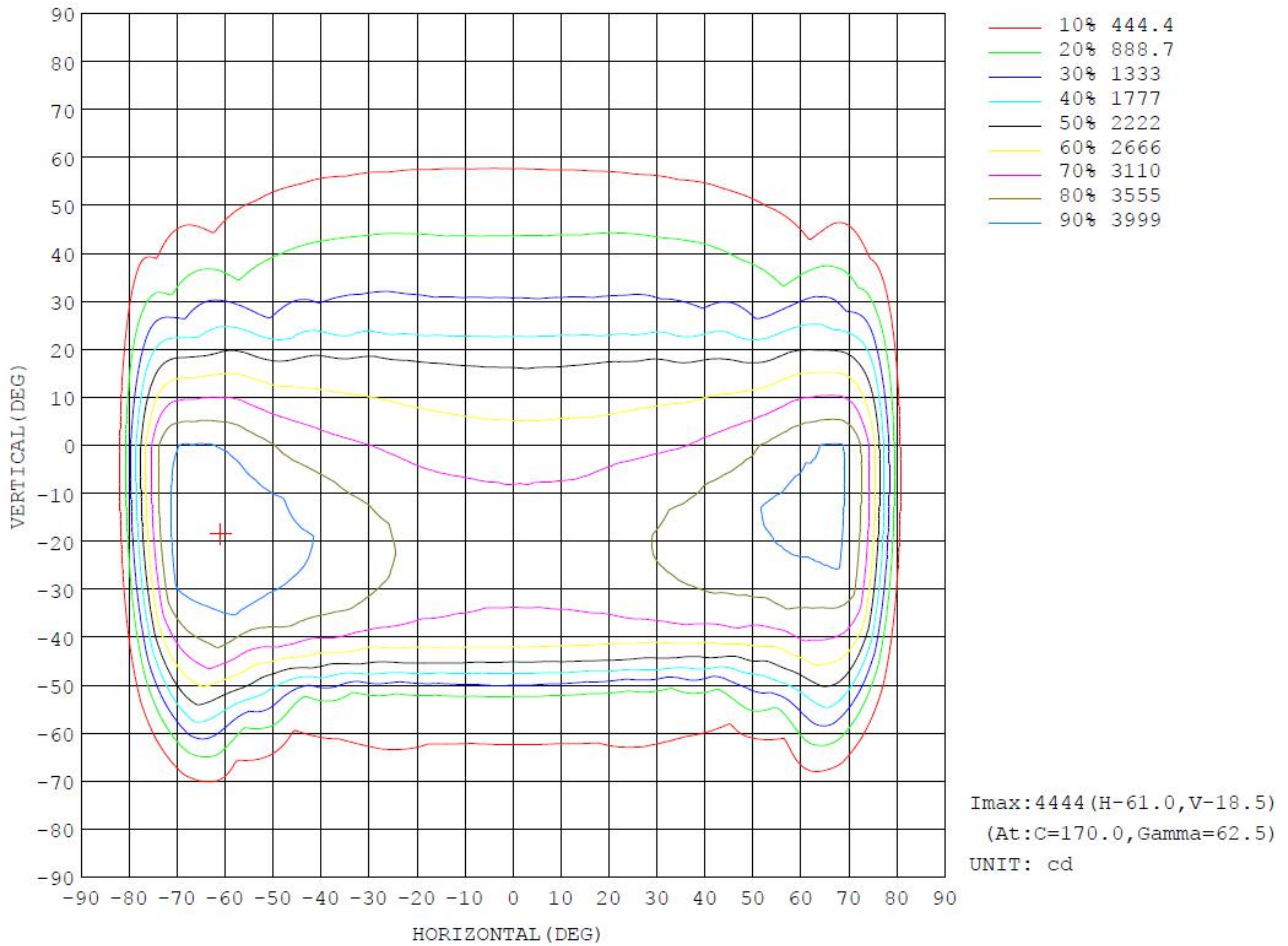
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5.4 Isocandela Diagram





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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	2851	2851	2851	2851	2851	2851	2851	2851	2851	2851	2851	2851	2851	2851	2851	2851	2851	2851	2851
5	2859	2889	2916	2944	2961	2984	2998	3008	3017	3021	3019	3011	3001	2988	2973	2950	2924	2893	2855
10	2872	2935	2984	3032	3071	3104	3125	3133	3155	3157	3158	3149	3139	3124	3095	3055	3016	2952	2887
15	2892	2998	3062	3121	3181	3209	3224	3235	3246	3253	3247	3255	3257	3241	3221	3170	3103	3019	2923
20	2927	3074	3165	3235	3295	3302	3291	3294	3294	3294	3293	3313	3340	3331	3335	3296	3216	3106	2965
25	2972	3160	3273	3358	3382	3356	3326	3310	3299	3290	3298	3324	3370	3400	3441	3428	3341	3216	3031
30	3024	3259	3405	3460	3443	3375	3316	3280	3247	3243	3257	3313	3375	3447	3516	3560	3495	3341	3098
35	3072	3371	3551	3570	3484	3356	3243	3148	3072	3063	3090	3189	3326	3460	3588	3699	3664	3483	3167
40	3186	3519	3698	3640	3466	3273	3043	2907	2846	2826	2852	2945	3121	3402	3631	3836	3852	3668	3254
45	3307	3705	3800	3640	3381	3010	2702	2492	2308	2249	2343	2554	2768	3160	3592	3886	4023	3858	3383
50	3458	3895	3822	3547	3102	2487	1992	1534	1364	1327	1392	1605	2126	2622	3375	3854	4136	4073	3552
55	3685	4070	3785	3325	2458	1525	901	705	627	616	638	740	996	1782	2775	3702	4192	4293	3758
60	3887	4158	3678	2762	1345	672	575	507	492	491	491	513	585	732	1836	3275	4162	4452	3946
65	3995	4115	3423	1897	609	491	479	415	400	394	401	420	501	509	693	2412	3984	4456	4014
70	3902	4003	2906	966	370	355	327	306	296	296	298	313	338	369	411	1572	3480	4316	3965
75	2832	3259	2063	417	231	223	207	190	182	183	185	196	218	239	262	657	2495	3527	3203
80	663	1046	763	212	112	105	94.4	86.3	85.1	86.7	86.9	91.2	103	116	135	290	1033	1422	1216
85	41.6	71.1	91.3	48.8	27.8	24.8	22.1	19.7	19.1	19.0	20.1	22.0	25.5	30.6	38.8	74.1	153	127	88.8
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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6. Photo of sample:



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