

REPORT NO.:LCS180831033BS

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-52-70W
Rating..... : AC100-240V, 50/60Hz, 70W
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/ Manager

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1. Test Method

Test Item.....:	Integrating Sphere Test
Ambient Condition	25.1℃
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℃
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-52-70W
Rated Inputs.....:	AC100-240V, 50/60Hz
Rated Power.....:	70W
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:

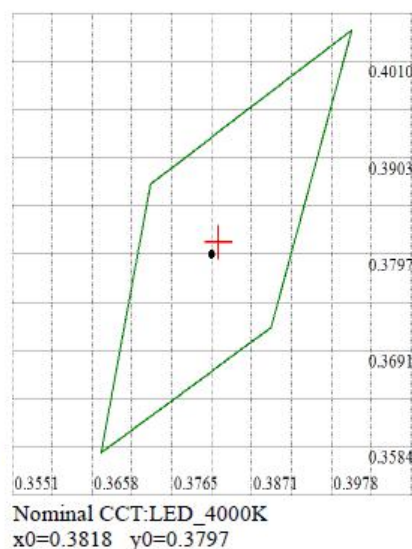
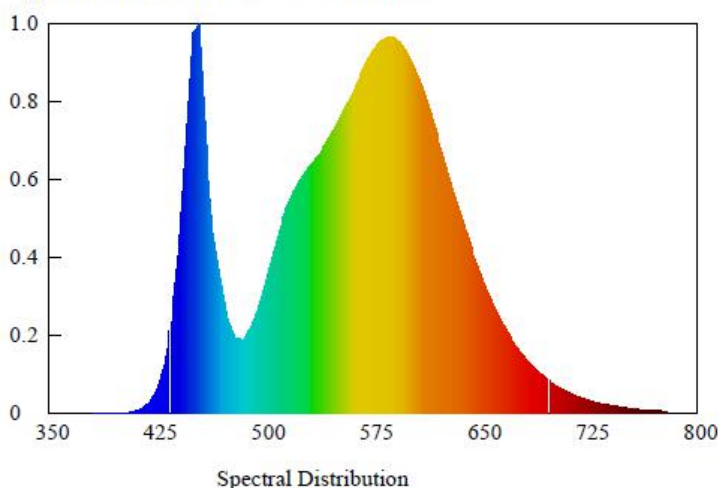
4.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	220.0	50.00	0.331	0.971	70.62

Test type	CCT (K)	CRI	Luminous flux (lm)	Luminous efficacy(lm/W)
Output	3972	74.7	8883.54	125.79

4.2 Spectrum

Spectroradiometric Parameters



Chromaticity Coordinates: x=0.3827 y=0.3810 u'=0.2249 v'=0.5038

Correlated Color Temperature: 3972 K

Colour Fidelity Index: Rf=74

Luminous Flux: 8883.54 lm

Chromaticity Difference: 0.001Duv

Color Ratio: Kr=38.2% Kg=53.6% Kb=8.1%

Bandwidth: 19.1nm

Photosynthetically Active Radiation(PAR): 24.43W

Rendering Index: Ra=74.7

R1=71 R2=83 R3=92 R4=72 R5=71 R6=76 R7=81 R8=50

R9=-31 R10=61 R11=68 R12=48 R13=75 R14=96 R15=64 Re=65

Dominant Wavelength: 577.0 nm(E)

Gamut Index: Rg=92

Purity: 0.2921

Peak Wavelength: 455.0 nm

Radiant Flux: 24.744 W

Photosynthetic Photon Flux(PPF):114.65μmol/s

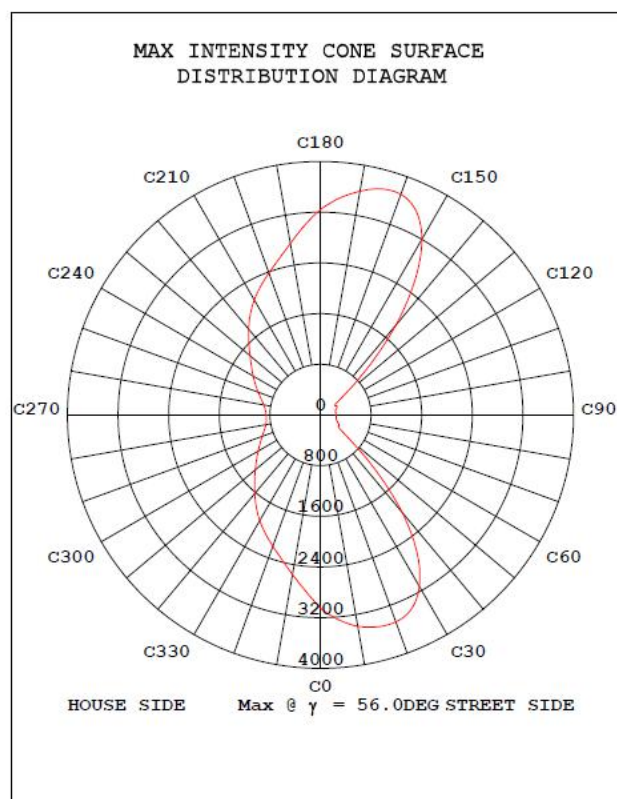
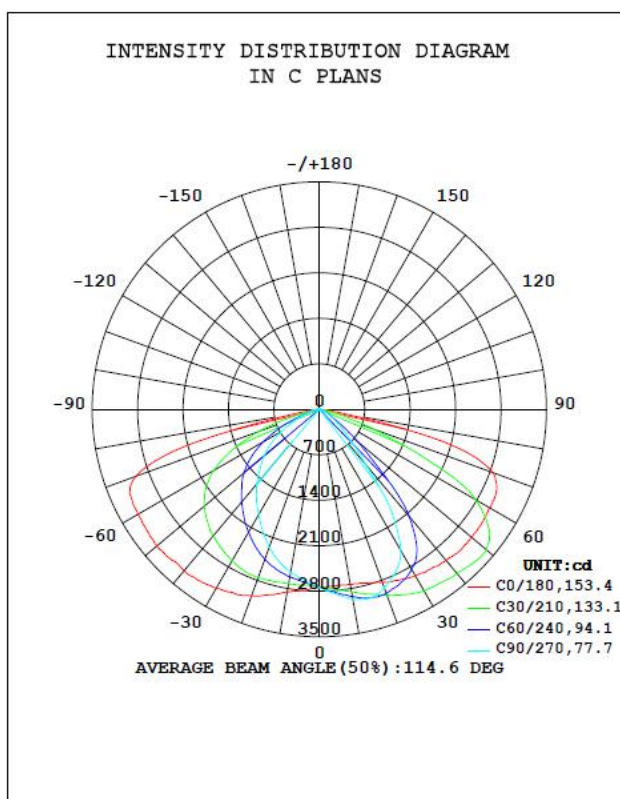
5. Goniophotometer Test results

5.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	220.0	50.00	0.3303	0.9711	70.61

Test type	Total Flux (lm)	Luminous efficacy(lm/W)	I _{max} (cd)	Spacing Criteria (0~180°)	Spacing Criteria (90~270°)
Output	8874.24	125.69	3706	-	-

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



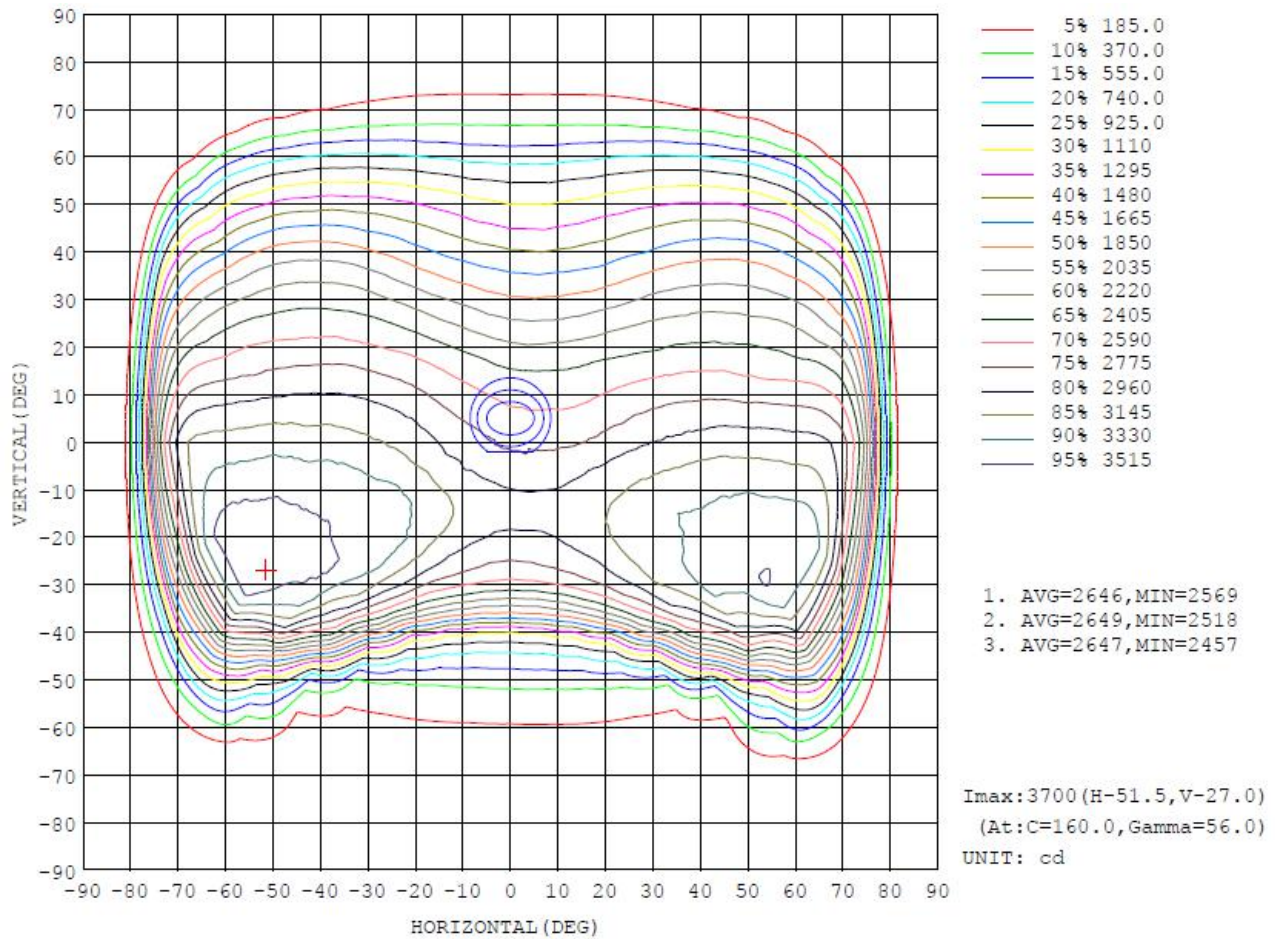
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5.3 Zonal Flux Diagram

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	lum, lamp
10	2736	2884	2968	2970	2856	2666	2542	2589	0- 10	263.5	263.5	2.97,2.97
20	2833	3053	2922	3193	3055	2597	2257	2449	10- 20	792.7	1056	11.9,11.9
30	2958	3075	2504	3244	3180	2440	1874	2253	20- 30	1275	2331	26.3,26.3
40	3036	2939	1120	3041	3240	2211	1501	2016	30- 40	1603	3933	44.3,44.3
50	3063	2127	449.6	2089	3271	1898	1112	1720	40- 50	1670	5604	63.1,63.1
60	3034	720.8	174.2	533.7	3228	1355	660.7	1276	50- 60	1550	7153	80.6,80.6
70	2841	117.7	59.64	109.3	3007	555.9	257.6	544.1	60- 70	1185	8338	94,94
80	394.6	13.74	1.118	9.401	333.6	90.06	96.56	96.36	70- 80	491.7	8830	99.5,99.5
90	1.951	0.2532	0	0.0730	1.959	0.0704	0	0.0724	80- 90	28.88	8858	99.8,99.8
100	2.383	0.1809	0	0.0365	3.404	0.1448	0	0.1460	90-100	0.6357	8859	99.8,99.8
110	2.963	0.4667	0	0.3282	5.063	1.230	0.0765	0.9132	100-110	1.152	8860	99.8,99.8
120	3.541	1.375	0.3560	1.275	4.906	2.677	0.3620	2.407	110-120	1.809	8862	99.9,99.9
130	4.336	2.353	1.584	2.037	4.119	3.112	0.7982	3.282	120-130	2.179	8864	99.9,99.9
140	5.633	3.686	2.965	3.236	4.121	3.728	2.609	4.086	130-140	2.474	8867	99.9,99.9
150	6.142	4.990	4.630	4.404	4.628	5.030	4.348	5.538	140-150	2.727	8869	99.9,99.9
160	6.142	5.967	5.505	4.921	5.569	5.969	6.226	6.164	150-160	2.506	8872	100,100
170	6.787	6.824	6.154	5.941	5.999	6.582	6.588	6.451	160-170	1.712	8874	100,100
180	7.082	7.158	6.878	6.306	7.010	7.052	6.588	6.415	170-180	0.6326	8874	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

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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	2740	2740	2740	2740	2740	2740	2740	2740	2740	2740	2740	2740	2740	2740	2740	2740	2740	2740	2740
5	2729	2720	2769	2778	2785	2809	2827	2841	2852	2851	2868	2858	2859	2855	2851	2824	2816	2817	2798
10	2736	2772	2820	2855	2876	2892	2923	2950	2959	2968	2977	2982	2982	2972	2969	2958	2929	2897	2856
15	2767	2835	2895	2943	2968	2981	3001	2999	3019	3008	3023	3055	3059	3092	3096	3064	3064	3010	2953
20	2833	2922	3001	3041	3065	3042	3012	2964	2935	2922	2949	3015	3073	3160	3226	3222	3196	3126	3055
25	2901	3029	3106	3145	3123	3039	2952	2861	2804	2772	2805	2891	3008	3170	3304	3346	3324	3240	3120
30	2958	3094	3211	3221	3157	2993	2841	2688	2562	2504	2569	2705	2895	3141	3348	3415	3416	3316	3180
35	2999	3176	3289	3258	3168	2930	2618	2266	2031	1959	2030	2278	2617	3041	3348	3455	3478	3406	3221
40	3036	3258	3324	3294	3148	2731	2153	1594	1219	1120	1186	1520	2133	2775	3306	3497	3510	3452	3240
45	3070	3306	3355	3350	3037	2331	1338	900	737	691	715	858	1239	2321	3115	3527	3568	3495	3252
50	3063	3341	3408	3357	2709	1545	762	545	475	450	457	515	705	1437	2741	3492	3629	3540	3271
55	3055	3374	3491	3189	2170	728	394	307	280	270	267	284	345	595	2067	3277	3691	3574	3244
60	3034	3432	3493	2778	1185	256	207	195	181	174	177	187	199	226	842	2690	3618	3619	3228
65	3006	3436	3216	1839	317	156	138	127	116	111	114	123	133	151	271	1466	3108	3467	3202
70	2841	2939	2471	886	140	95.4	81.3	72.0	63.9	59.6	62.1	69.0	77.4	89.8	129	641	1921	2616	3007
75	2081	1801	1266	340	66.7	44.7	35.5	27.5	22.9	20.4	21.6	25.0	32.3	40.6	56.8	202	758	1286	2020
80	395	353	236	67.7	17.9	9.62	5.01	2.39	1.43	1.12	1.06	1.57	3.11	7.05	11.7	31.4	119	202	334
85	16.8	13.4	8.33	2.93	1.17	0.36	0.22	0.15	0.15	0.08	0.07	0.07	0.15	0.15	0.37	1.47	3.10	7.10	11.5
90	1.95	1.96	1.60	0.95	0.36	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.29	0.74	1.68	1.96
95	1.81	1.74	1.31	0.66	0.29	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.29	0.73	1.39	2.53
100	2.38	1.74	1.31	0.65	0.29	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.29	0.65	1.46	3.40
105	2.39	2.32	1.31	0.65	0.29	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.07	0.51	1.24	1.90	4.27
110	2.96	2.39	1.60	1.16	0.72	0.21	0.07	0.00	0.15	0.00	0.00	0.00	0.07	0.15	0.51	1.31	1.68	2.41	5.06
115	3.04	2.61	2.18	1.37	1.30	0.58	0.36	0.21	0.14	0.07	0.00	0.00	0.22	0.50	1.17	1.38	2.33	3.00	5.06
120	3.54	2.68	2.40	1.45	1.45	1.30	0.80	0.44	0.43	0.36	0.29	0.36	0.44	1.16	1.38	1.53	2.48	3.07	4.91
125	3.83	3.48	2.54	2.31	1.74	1.51	1.30	1.38	1.23	1.23	1.16	1.30	1.30	1.31	1.67	2.33	2.69	3.58	4.19
130	4.34	3.91	3.48	2.75	2.39	2.32	2.09	1.88	1.67	1.58	1.38	1.60	1.74	1.75	2.33	2.40	3.35	3.95	4.12
135	4.55	4.13	3.63	3.54	3.26	2.46	2.46	2.40	2.32	2.24	2.25	2.25	2.32	2.33	2.48	3.13	3.71	4.09	4.12
140	5.63	5.15	4.58	4.41	3.90	3.47	3.48	3.62	3.19	2.97	2.75	2.76	3.04	3.26	3.21	3.64	4.57	4.90	4.12
145	6.14	5.87	5.15	4.70	4.56	4.40	4.49	4.06	3.99	3.69	3.55	3.84	3.70	3.85	3.80	3.93	4.66	5.12	4.26
150	6.14	5.94	5.88	5.35	4.99	4.99	4.78	4.78	4.57	4.63	4.20	4.14	4.06	4.44	4.37	4.36	4.66	5.26	4.63
155	6.14	6.02	5.89	5.79	6.01	5.64	5.14	5.22	5.00	4.85	4.64	4.65	4.57	4.73	4.82	4.73	4.88	5.34	5.13
160	6.14	6.16	5.89	5.86	6.08	5.85	5.93	5.88	5.87	5.51	5.08	4.94	5.00	4.95	4.89	4.88	4.96	5.48	5.57
165	6.50	6.31	6.03	5.93	6.15	6.07	6.15	6.02	6.02	5.94	6.02	5.45	5.87	5.31	5.69	5.60	5.89	5.92	5.64
170	6.79	7.03	7.04	6.80	6.86	6.79	6.73	6.52	6.16	6.15	6.16	5.96	6.09	5.82	6.06	5.97	6.11	6.22	6.00
175	7.15	7.03	7.05	6.95	7.09	7.01	7.03	6.96	6.60	6.88	6.82	6.32	6.46	6.26	6.35	6.26	6.41	6.36	6.94
180	7.08	7.03	7.05	7.02	7.23	7.08	7.03	7.04	6.60	6.88	6.82	6.32	6.53	6.26	6.35	6.48	6.34	6.36	7.01

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6. Photo of sample:



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