

LM-79-08 Test Report

For

CEA GROUP INTERNATIONAL CO.,LTD

(Brand Name: CEA/EAEC)

Sanjiali Industrial Zone Zhucheng Road Panshi North baixiang Yueqing Zhejiang China

Architectural Flood and Spot Luminaires and Industrial buildings

Model name(s): SFL1S-100

Representative (Tested) Model: SFL1S-100(2700K)
SFL1S-100(5700K)

Model Different: All construction and rating are the same, except CCT

Test & Report By:

Peeta Cao

Engineer: Peeta Cao

Date: Dec.24,2015

Review By:

Tommy Liang

Manager: Tommy Liang

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

U.S. Department of Energy

Lighting Facts™ Uniform LM-79 Reporting Template

Laboratory Information:

Name of Test Laboratory	Standard-Tech Co., Ltd.
Date of Test Report	Dec.24,2015
Test Report No.	STD150803NB-U
Laboratory Contact Name	Tommy Liang

Product Information:

Organization Name	CEA GROUP INTERNATIONAL CO.,LTD	
Brand Name	CEA/EAEC	
Model Number	SFL1S-100(2700K)	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Architectural Flood and Spot Luminaires and Industrial buildings	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Integrating Sphere

Goniophotometer

Electrical Measurements:

Output

Output

Input Wattage	--	100.4	W
Input Current	--	0.8449	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9905	
Off-State Power	--	0	W

Photometric Characteristics

Total Initial Lumen Output	--	9027.6	lm
Initial Lumen Efficacy	--	89.88	lm/w
Correlated color temperature / CCT	2804		K
Color rendering index / CRI	70.1		
R9 Value	0		
Duv	0.0028		
Luminous Intensity Distribution			
Center beam candlepower (if applicable)	-----	4121	cd
Beam angle (if applicable)		97.6	°
Zonal lumens in the 0 °-60 °zone		90.6	%
Zonal lumens in the 60 °-90 °zone		9.3	%
Zonal lumens in the 90 °-120 °zone		0	%
Zonal lumens in the 120 °-180 °zone		0.1	%

Laboratory: Standard-Tech Co. Ltd Testing Center

NVLAP CODE: 201011-0

Report Format Number STD/QR4909-C/2

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<http://www.standard-tech.com>

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Product Information:

Organization Name	CEA GROUP INTERNATIONAL CO.,LTD	
Brand Name	CEA/EAEC	
Model Number	SFL1S-100(5700K)	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Architectural Flood and Spot Luminaires and Industrial buildings	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Integrating Sphere
Goniophotometer
Electrical Measurements:
Output
Output

Input Wattage	101.8	--	W
Input Current	0.8554	--	A
Input Voltage (ac)	120.0	--	V
Power Factor	0.9917	--	
Off-State Power	0	--	W

Photometric Characteristics

Total Initial Lumen Output	9543	--	lm
Initial Lumen Efficacy	93.74	--	lm/w
Correlated color temperature / CCT	5390	--	K
Color rendering index / CRI	70.4	--	
R9 Value	0	--	
Duv	0.0001	--	
Luminous Intensity Distribution			
Center beam candlepower (if applicable)	-----		cd
Beam angle (if applicable)			°
Zonal lumens in the 0 °-60 °zone			%
Zonal lumens in the 60 °-90 °zone			%
Zonal lumens in the 90 °-120 °zone			%
Zonal lumens in the 120 °-180 °zone			%

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Test Specifications:	
Date of Receipt	: Oct.18,2015
Date of Test	: Oct.25,2015
Test item	: Total Luminous Flux, Luminous Distribution Intensity, Luminous Efficacy, Correlated Color Temperature, Color Rendering Index, Chromaticity Coordinate, Electrical parameters
Reference Standard	IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources CIE 15-2004 Technical Report Colorimetry IESNA LM-16-93 Practical Guide to Colorimetry of Light Source IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

Test Methods

1. Photometric and Electrical measurements – Light Distribution Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals.

2. Photometric and Electrical Measurements – Integrating Sphere Method:

Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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 120 Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at least 5 nm intervals over the range of 380 to 780 nm.

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1. Product Information:

Brand Name	CEA/EAEC
Model Number	SFL1S-100
Luminaire Type	Architectural Flood and Spot Luminaires and Industrial buildings
Rated Voltage / Frequency	100~ 277Vac, 50/60Hz
Nominal Power	100W
Rated Initial Lamp Lumen	--
Declared CCT	2700K,3000K,3500K,4000K,4500K,5000K,5700K
LED Manufacturer	Chuang Te LED
LED Model	CT-5730
Sample Receipt Date	Oct.18,2015
Sample Number	STD150803NB-U1(2700K),U2(5700K)

Photo



2.1 Electrical, Photometric and Chromaticity Measurements (Refer to Work Instruction QD25)	IES LM-79 2008
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Test date	2015-10-25	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	SFL1S-100(2700K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD150803	120.0	60	0.8449	100.4	0.9905	11.36
NB-U1	277.0	60	0.3966	100.7	0.9167	14.54

Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	70.1
R9	0
CCT (K)	2804
Chromaticity (x, y)	x=0.4562 y=0.4173
Chromaticity (u', v')	u'=0.2572 v'=0.5293
Duv	0.0028

Special Color Rendering Indices			
R1	68	R9	0
R2	79	R10	48
R3	92	R11	56
R4	70	R12	39
R5	67	R13	64
R6	69	R14	95
R7	78	R15	54
R8	38	--	--

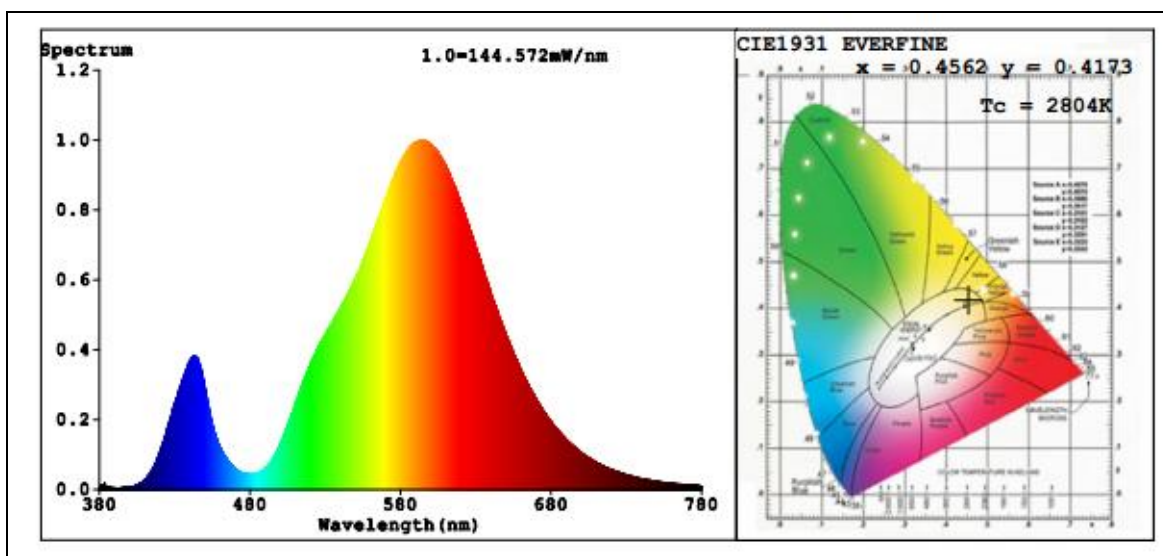
Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	9027.6
Luminous Efficacy (lm/W)	89.88
Beam Angle °	97.6
Center Beam Candle Power (cd)	4121

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	8787.7
Luminous Efficacy (lm/W)	87.27

Spectral Power Distribution & Chromaticity Diagram



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Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	3,106.2	34.4%
0-40	4,962.7	55%
0-60	8,175.1	90.6%
60-90	835.4	9.3%
70-100	131.0	1.5%
90-120	1.7	0%
0-90	9,010.4	99.8%
90-180	15.6	0.2%
0-180	9,026.0	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	390.2	4.3%	90-100	0.0	0%
10-20	1,101.8	12.2%	100-110	0.3	0%
20-30	1,614.2	17.9%	110-120	1.4	0%
30-40	1,856.5	20.6%	120-130	2.7	0%
40-50	1,811.2	20.1%	130-140	3.2	0%
50-60	1,401.2	15.5%	140-150	3.1	0%
60-70	704.4	7.8%	150-160	2.5	0%
70-80	123.2	1.4%	160-170	1.6	0%
80-90	7.8	0.1%	170-180	0.7	0%

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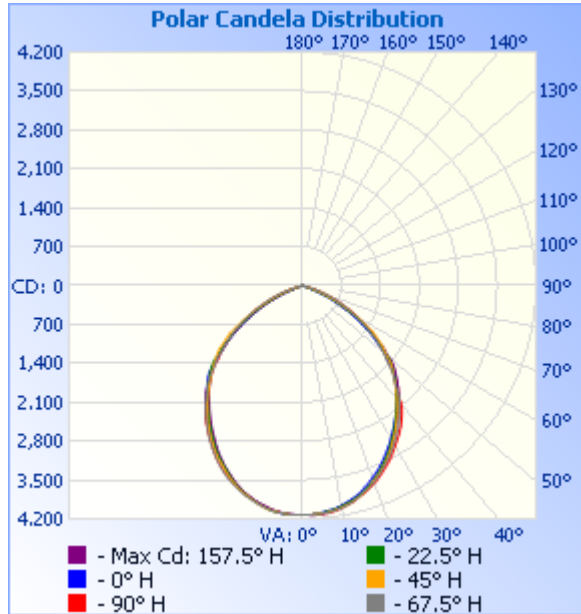
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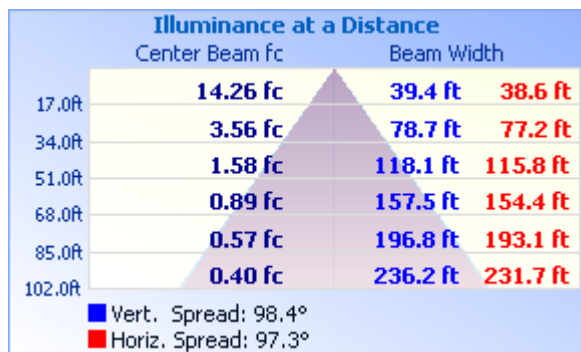
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Photometric Data



Illuminance Plots



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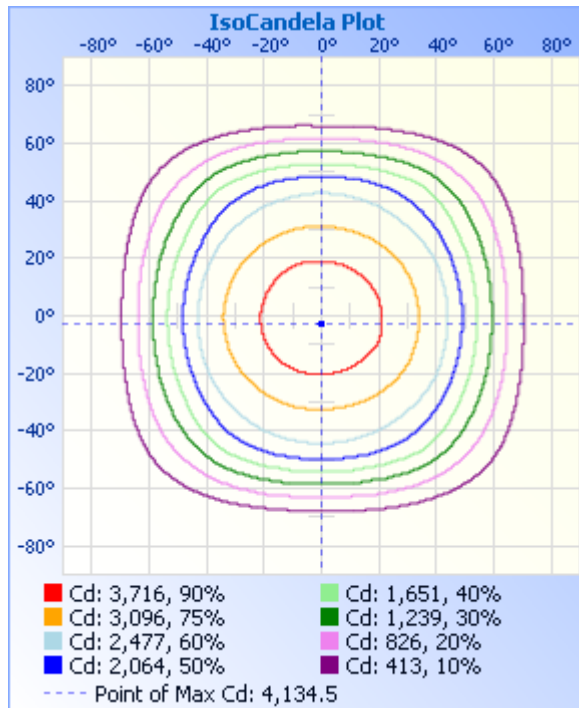
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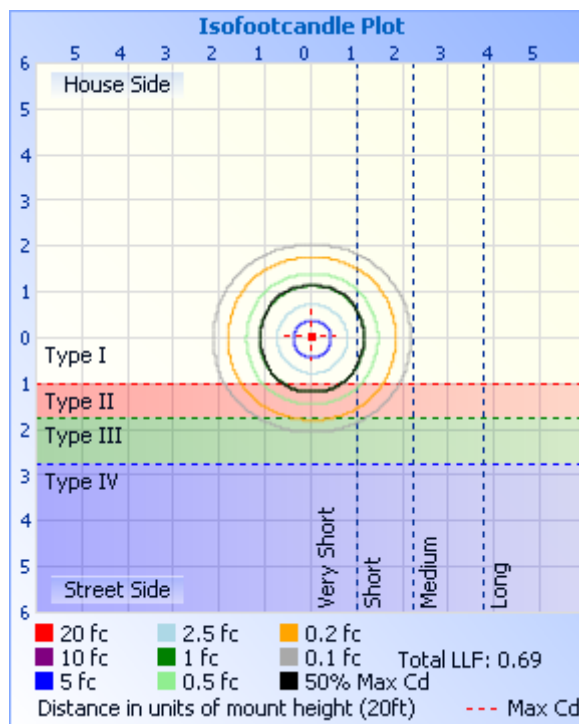
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ISOCANDELA DIAGRAM



ISOLUX DIAGRAM



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Candela Table - Type C

	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	4121	4121	4121	4121	4121	4121	4121	4121	4121	4121	4121	4121	4121	4121	4121	4121	4121
1	4126	4127	4126	4123	4125	4123	4126	4123	4123	4123	4120	4122	4120	4122	4118	4122	4126
2	4126	4127	4129	4126	4123	4122	4130	4131	4128	4127	4122	4124	4123	4126	4115	4120	4126
3	4119	4119	4119	4120	4119	4121	4129	4134	4129	4128	4127	4125	4123	4121	4107	4114	4119
4	4109	4111	4112	4115	4118	4121	4113	4128	4123	4121	4123	4119	4113	4105	4089	4110	4109
5	4096	4101	4109	4109	4119	4120	4102	4118	4117	4112	4108	4110	4106	4094	4088	4103	4096
6	4081	4091	4103	4104	4120	4122	4099	4111	4106	4107	4099	4104	4099	4089	4085	4089	4081
7	4069	4081	4096	4100	4113	4117	4099	4099	4089	4097	4091	4100	4085	4079	4078	4076	4069
8	4057	4069	4083	4087	4098	4104	4099	4078	4071	4080	4080	4086	4066	4066	4061	4059	4057
9	4040	4053	4067	4073	4083	4090	4092	4061	4055	4061	4069	4065	4044	4045	4041	4034	4040
10	4017	4031	4052	4062	4063	4075	4071	4047	4033	4041	4044	4043	4025	4024	4018	4011	4017
11	3993	4009	4033	4042	4042	4057	4053	4025	4007	4015	4020	4020	4008	4001	3992	3992	3993
12	3967	3988	4015	4019	4021	4031	4028	4001	3982	3989	3994	4000	3984	3983	3965	3970	3967
13	3939	3965	3992	3994	3997	4009	4003	3979	3956	3963	3965	3972	3952	3959	3936	3941	3939
14	3911	3940	3962	3966	3969	3983	3975	3957	3925	3936	3935	3945	3921	3927	3910	3911	3911
15	3882	3910	3933	3931	3937	3953	3941	3924	3895	3903	3906	3923	3894	3899	3884	3883	3882
16	3846	3880	3903	3897	3910	3919	3911	3891	3861	3866	3875	3896	3864	3869	3855	3851	3846
17	3803	3842	3868	3863	3880	3887	3881	3858	3827	3833	3842	3864	3834	3835	3819	3812	3803
18	3763	3804	3829	3829	3850	3855	3848	3817	3791	3797	3805	3829	3806	3801	3777	3770	3763
19	3720	3766	3787	3798	3816	3817	3808	3774	3752	3756	3765	3794	3774	3766	3736	3732	3720
20	3677	3722	3741	3761	3781	3780	3769	3734	3706	3709	3723	3762	3735	3729	3698	3686	3677
21	3634	3676	3699	3718	3745	3741	3723	3693	3658	3661	3682	3725	3701	3688	3660	3635	3634
22	3589	3631	3658	3674	3704	3701	3675	3648	3610	3608	3638	3685	3668	3644	3616	3592	3589
23	3543	3587	3614	3625	3660	3660	3627	3608	3562	3561	3592	3640	3629	3601	3572	3548	3543
24	3491	3536	3570	3577	3617	3612	3581	3563	3517	3520	3545	3597	3586	3559	3524	3498	3491
25	3440	3485	3520	3530	3572	3566	3532	3516	3469	3476	3502	3549	3542	3518	3476	3447	3440
26	3388	3434	3469	3486	3527	3521	3481	3468	3417	3425	3461	3502	3497	3474	3427	3399	3388
27	3338	3381	3415	3443	3480	3478	3433	3411	3366	3375	3409	3450	3447	3429	3372	3347	3338
28	3286	3326	3360	3395	3432	3427	3378	3354	3315	3325	3357	3397	3390	3379	3315	3290	3286
29	3231	3265	3300	3344	3380	3372	3323	3296	3266	3271	3304	3345	3339	3326	3255	3231	3231

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30	3175	3205	3239	3288	3329	3316	3268	3241	3212	3214	3250	3296	3285	3268	3197	3174	3175
31	3121	3152	3182	3235	3277	3261	3208	3187	3159	3158	3197	3240	3232	3210	3148	3117	3121
32	3070	3096	3126	3180	3231	3204	3156	3131	3100	3102	3142	3182	3182	3153	3098	3065	3070
33	3014	3037	3070	3130	3184	3150	3101	3072	3046	3046	3085	3125	3127	3094	3046	3009	3014
34	2959	2974	3008	3076	3134	3101	3039	3021	2996	2993	3027	3069	3073	3036	2987	2954	2959
35	2904	2914	2947	3021	3081	3050	2973	2962	2948	2938	2969	3012	3019	2976	2921	2897	2904
36	2851	2856	2883	2962	3023	2992	2912	2902	2898	2882	2905	2955	2965	2915	2852	2841	2851
37	2800	2801	2816	2900	2965	2932	2855	2847	2849	2825	2843	2897	2908	2857	2791	2784	2800
38	2746	2747	2754	2839	2905	2867	2794	2793	2798	2769	2780	2836	2850	2799	2732	2725	2746
39	2691	2692	2692	2777	2842	2803	2733	2742	2746	2712	2719	2775	2785	2738	2674	2673	2691
40	2640	2632	2635	2720	2754	2742	2675	2689	2697	2657	2656	2708	2722	2674	2610	2621	2640
41	2590	2572	2574	2654	2645	2682	2612	2634	2643	2607	2592	2644	2660	2609	2544	2567	2590
42	2537	2517	2511	2566	2569	2609	2549	2579	2586	2553	2528	2580	2597	2546	2478	2511	2537
43	2482	2464	2447	2451	2515	2505	2488	2519	2530	2496	2463	2517	2526	2483	2416	2454	2482
44	2426	2404	2385	2377	2460	2415	2434	2459	2474	2439	2400	2455	2418	2420	2357	2396	2426
45	2371	2342	2324	2317	2373	2345	2377	2400	2418	2382	2338	2388	2336	2351	2299	2337	2371
46	2311	2278	2268	2255	2265	2284	2319	2342	2361	2327	2279	2297	2273	2250	2238	2280	2311
47	2253	2219	2212	2162	2196	2210	2258	2282	2302	2268	2218	2191	2212	2152	2174	2222	2253
48	2146	2161	2154	2053	2136	2103	2197	2222	2206	2205	2159	2118	2114	2084	2111	2160	2146
49	2027	2101	2085	1985	2051	2025	2140	2161	2075	2142	2101	2054	2018	2024	2053	2097	2027
50	1963	2024	1988	1927	1946	1968	2068	2073	2009	2067	2043	1980	1953	1943	1997	2001	1963
51	1859	1884	1909	1838	1883	1896	1974	1941	1924	1928	1984	1869	1889	1836	1938	1873	1859
52	1761	1806	1851	1766	1825	1785	1896	1868	1792	1848	1925	1794	1782	1766	1876	1806	1761
53	1663	1719	1792	1694	1729	1710	1836	1793	1726	1781	1862	1736	1705	1690	1807	1717	1663
54	1566	1631	1708	1621	1641	1654	1777	1662	1626	1647	1767	1648	1629	1614	1732	1629	1566
55	1480	1543	1624	1518	1581	1573	1698	1592	1515	1568	1685	1556	1553	1533	1656	1540	1480
56	1386	1440	1557	1445	1485	1473	1598	1499	1449	1490	1616	1495	1470	1470	1580	1422	1386
57	1276	1345	1495	1389	1404	1412	1516	1389	1319	1368	1550	1420	1409	1385	1497	1335	1276
58	1197	1272	1359	1283	1345	1336	1406	1324	1252	1308	1418	1324	1309	1302	1353	1245	1197
59	1088	1158	1249	1218	1238	1242	1311	1203	1131	1187	1305	1265	1245	1237	1276	1143	1088
60	1000	1089	1184	1145	1172	1184	1213	1139	1065	1122	1239	1172	1161	1145	1181	1063	1000
61	904	976	1064	1052	1077	1092	1109	1023	947	1009	1119	1096	1082	1084	1065	966	904

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62	804	893	979	998	1012	1028	1033	958	879	943	1021	1027	1007	999	988	875	804
63	729	811	879	908	925	942	911	848	777	831	942	945	928	930	884	799	729
64	633	704	794	856	855	878	847	766	684	768	835	880	846	850	801	695	633
65	538	624	699	774	767	800	735	687	614	676	757	802	778	786	702	604	538
66	442	534	629	700	708	740	668	581	525	581	668	729	694	704	622	517	442
67	352	450	534	637	625	660	573	495	434	508	582	667	622	643	542	426	352
68	258	357	465	558	547	593	505	416	347	436	511	589	556	579	456	333	258
69	179	268	398	493	478	528	429	328	259	350	430	519	487	502	394	252	179
70	103	193	325	430	415	461	357	246	173	267	357	460	419	437	325	174	103
71	69	123	263	364	353	384	289	173	104	187	302	399	359	360	255	108	69
72	62	66	208	293	291	320	232	98	68	123	244	324	301	303	193	65	62
73	56	56	159	239	235	255	177	60	61	64	190	265	244	241	142	57	56
74	50	49	110	189	189	203	129	54	55	56	144	208	192	192	96	51	50
75	44	44	73	135	138	151	84	48	49	50	100	161	141	145	60	45	44
76	39	38	43	98	97	109	50	42	44	44	66	115	97	102	39	40	39
77	34	34	33	63	58	75	35	37	39	39	40	78	58	68	34	34	34
78	29	29	28	37	40	46	30	32	34	34	33	49	40	41	29	30	29
79	25	25	24	30	34	31	26	27	29	29	28	33	34	31	24	25	25
80	20	20	20	25	29	26	22	23	24	24	23	28	28	25	20	21	20
81	16	16	16	21	24	22	18	19	19	20	19	23	23	20	16	16	16
82	11	12	12	16	19	17	14	14	15	16	15	19	19	16	12	12	11
83	7	8	9	12	15	13	10	10	10	11	11	15	15	12	9	8	7
84	3	4	6	9	11	10	7	6	6	7	7	11	11	8	6	4	3
85	1	2	3	6	8	6	4	3	2	4	4	7	8	6	3	2	1
86	0	1	1	3	5	4	2	1	1	1	2	4	5	3	1	1	0
87	0	0	0	1	2	2	0	0	0	0	0	2	2	1	0	0	0
88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
89	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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126	4	4	3	4	3	3	3	3	3	3	3	3	4	4	3	4	4
127	4	4	3	4	3	3	3	3	3	3	3	3	4	4	3	4	4
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147	6	5	4	5	5	5	4	5	6	6	5	5	5	5	5	6	6
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158	6	6	6	6	5	5	5	5	5	6	5	5	5	5	6	6	6
159	6	6	6	6	5	5	5	5	3	6	5	5	5	5	6	6	6
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179	8	7	7	6	6	6	6	7	7	8	7	7	6	7	7	7	8
180	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8

2.3 Electrical, Photometric and Chromaticity Measurements (Refer to Work Instruction QD25)

IES LM-79 2008

Test date	2015-10-25	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	SFL1S-100(5700K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD150803	120.0	60	0.8554	101.8	0.9917	11.66
NB-U2	277.0	60	0.4036	102.4	0.9159	14.49

Sphere-Spectroradiometer Method:

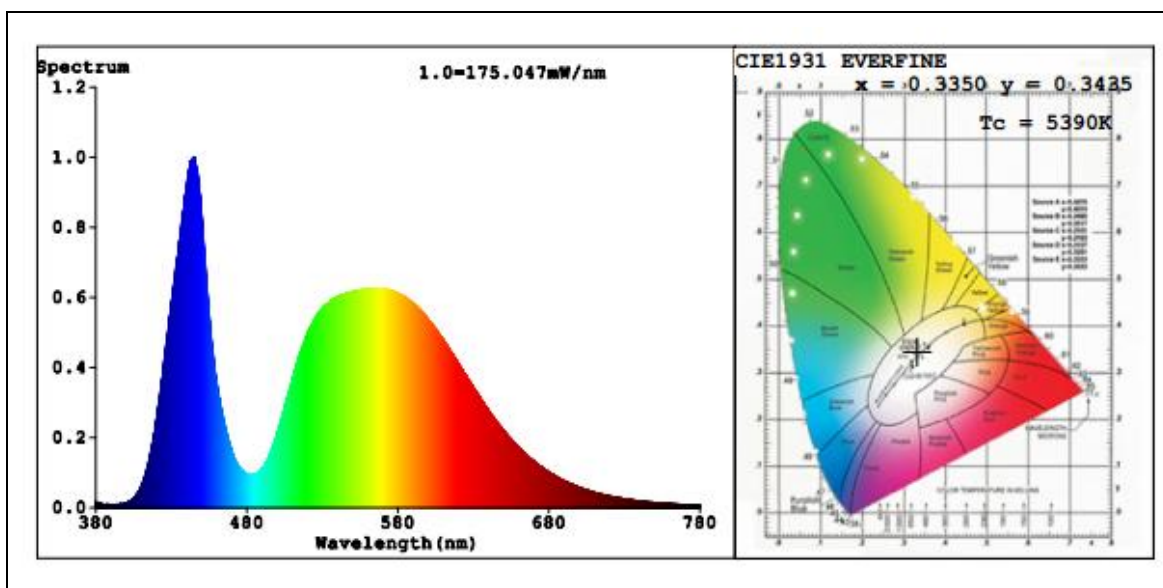
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	70.4
R9	0
CCT (K)	5390
Chromaticity (x, y)	x=0.3350 y=0.3435
Chromaticity (u', v')	u'=0.2077 v'=0.4791
Duv	0.0001
Total Initial Lumen Output(lm)	9543
Initial Lumen Efficacy(lm/w)	93.74

Special Color Rendering Indices			
R1	70	R9	0
R2	73	R10	36
R3	75	R11	72
R4	73	R12	46
R5	71	R13	69
R6	65	R14	86
R7	77	R15	64
R8	59	--	--

Sphere-Spectroradiometer Method for 277V:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Initial Lumen Output(lm)	9334
Initial Lumen Efficacy(lm/w)	91.15

Spectral Power Distribution & Chromaticity Diagram



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3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2015-07-01	2016-06-30
ST-R-331	Spectral analysis system HAAS-2000	2015-07-01	2016-06-30
D204	Standard Lamp	2015-07-01	2016-06-30
PF2010	Power Meter for Integrating Sphere	2015-07-01	2016-06-30
EE-09	Goniophotometer system	2015-07-01	2016-06-30
D908S	Standard Lamp	2015-07-01	2016-06-30
PF210	Power Meter for Goniophotometer	2015-07-01	2016-06-30
ST-R-181A	Temperature Tester	2015-07-01	2016-06-30
Uncertainty: Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

******* END OF DATASHEET PACKAGE *******