

LM-79-08 Test Report

LED LAMP

Model name(s): **LF3-100W**

Remark: The letter "X" in the model name stand for CCT as bellow :3=3000K, 4=4000K, 5=5000K; "YY" stand for different mounting option as bellow YK=Yoke, TR=Trunnion, SF=Slipfitter, MA=Arm, PD=Pendant, WM=Wall Mount; "ZZ" stand for housing color by use 2 digits to indicate all of color.

Representative (Tested) Model: **LF3-100W**

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

Test & Report By:

Johnson Sun

Engineer: Johnson Sun

Date: July.03,2015

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.

Laboratory: Standard-Tech Co. Ltd Testing Center
NVLAP CODE: 201011-0

Report Format Number STD/QR4909-A/2

Address: 8th floor, Block B, No. 11 Caipin Road, Guangzhou Science City, Tianhe, Guangzhou 510663, China

Tel: 8620-3229 0320 Fax: 8620-32290422 <http://www.standard-tech.com>

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	July.03,2015
Test Report No.	GZE150320-G
Laboratory Contact Name	Tommy Liang

Product Information:

Model Number	LF3-100W	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED LAMP	
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	--	96.93	W
Input Current	--	0.8172	A
Input Voltage (ac)	--	119.9	V
Power Factor	--	0.9893	
Off-State Power	--	0	W

Photometric Characteristics

Total Initial Lumen Output	--	10035	lm
Initial Lumen Efficacy	--	103.53	lm/w
Correlated color temperature / CCT	3058	--	K
Color rendering index / CRI	82.0	--	
R9 Value	4	--	
Duv	-0.0001	--	
Luminous Intensity Distribution			
Center beam candlepower (if applicable)	-----	3441	cd
Beam angle (if applicable)		108.2	°
Zonal lumens in the 0 °-60 °zone		78.8	%
Zonal lumens in the 60 °-90 °zone		21.1	%
Zonal lumens in the 90 °-120 °zone		0	%
Zonal lumens in the 120 °-180 °zone		0.1	%

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Model Number	LF3-100W	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED LAMP	
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	98.45	--	W
Input Current	0.8232	--	A
Input Voltage (ac)	119.9	--	V
Power Factor	0.9974	--	
Off-State Power	0	--	W

Photometric Characteristics

Total Initial Lumen Output	11021	--	lm
Initial Lumen Efficacy	111.95	--	lm/w
Correlated color temperature / CCT	5067	--	K
Color rendering index / CRI	83.8	--	
R9 Value	11	--	
Duv	0.0025	--	
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	: Jun.24,2014
Date of Test	: July.03,2015
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.

1. Product Information:

Model Number	LF3-100W
Luminaire Type	LED LAMP
Rated Voltage / Frequency	120~ 277Vac, 50/60Hz
Nominal Power	100W
Rated Initial Lamp Lumen	--
Declared CCT	3000K, 4000K, 5000K,
LED Manufacturer	Philips Lumileds
LED Model	LUXEON 3030 2D
Sample Receipt Date	Jun.24,2015
Sample Number	GZE150320-G1(3000K),G2(5000K)

Photo



2.1 Electrical, Photometric and Chromaticity Measurements (Refer to Work Instruction QD25)	IES LM-79 2008
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Test date	2015-07-03	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE150320	119.9	60	0.8172	96.93	0.9893	15.06
-G1	277.0	60	0.4145	99.64	0.9024	19.07

Sphere-Spectroradiometer Method:

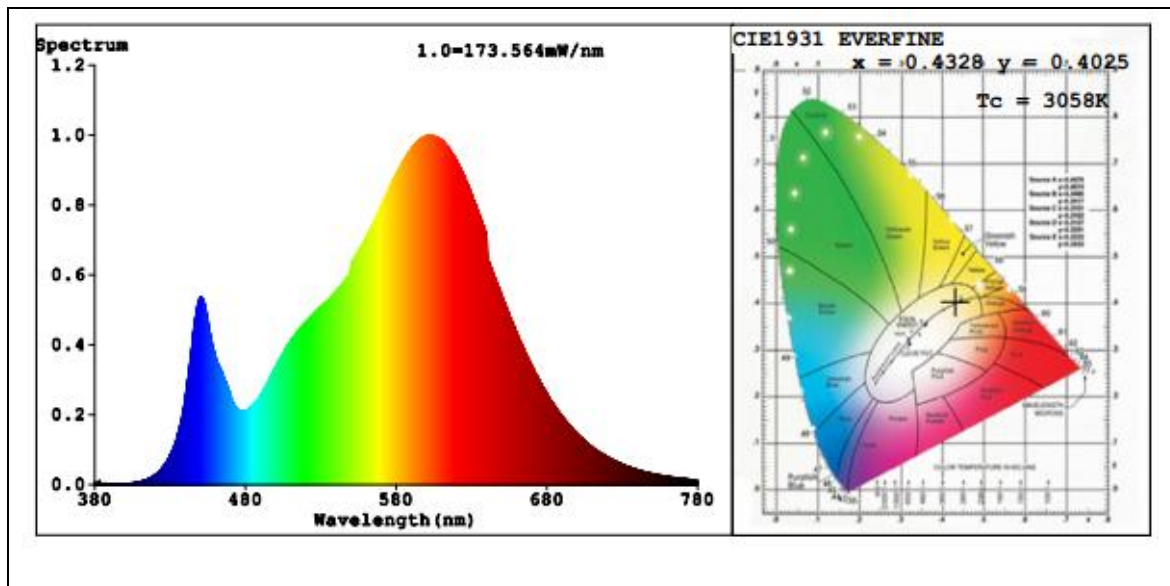
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	82.0
R9	4
CCT (K)	3058
Chromaticity (x, y)	x=0.4328 y=0.4025
Chromaticity (u', v')	u'=0.2486 v'=0.5201
Duv	-0.0001

Special Color Rendering Indices			
R1	80	R9	4
R2	91	R10	79
R3	96	R11	79
R4	80	R12	71
R5	81	R13	83
R6	89	R14	98
R7	82	R15	73
R8	58	--	--

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	10035
Luminous Efficacy (lm/W)	103.53
Beam Angle °	108.2
Center Beam Candle Power (cd)	3441
S/MH(C0/180)	1.32
S/MH(C90/270)	1.12

Spectral Power Distribution & Chromaticity Diagram



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Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	2,543.6	25.3%
0-40	4,250.0	42.4%
0-60	7,904.3	78.8%
60-90	2,115.0	21.1%
70-100	791.4	7.9%
90-120	2.3	0%
0-90	10,019.3	99.9%
90-180	14.5	0.1%
0-180	10,033.8	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	322.5	3.2%	90-100	0.3	0%
10-20	892.2	8.9%	100-110	0.6	0%
20-30	1,328.9	13.2%	110-120	1.4	0%
30-40	1,706.4	17.0%	120-130	2.3	0%
40-50	1,869.1	18.6%	130-140	2.8	0%
50-60	1,785.2	17.8%	140-150	2.7	0%
60-70	1,323.9	13.2%	150-160	2.3	0%
70-80	632.6	6.3%	160-170	1.6	0%
80-90	158.5	1.6%	170-180	0.5	0%

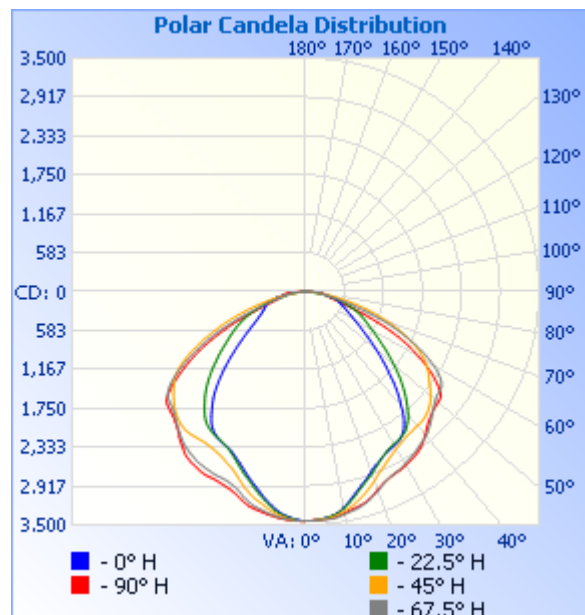
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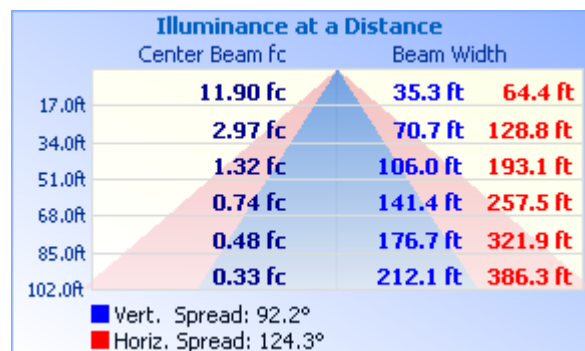
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Photometric Data



Illuminance Plots



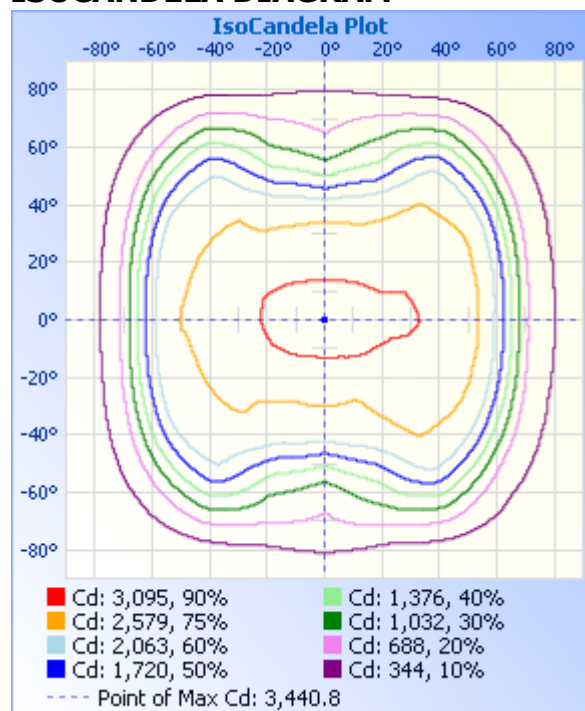
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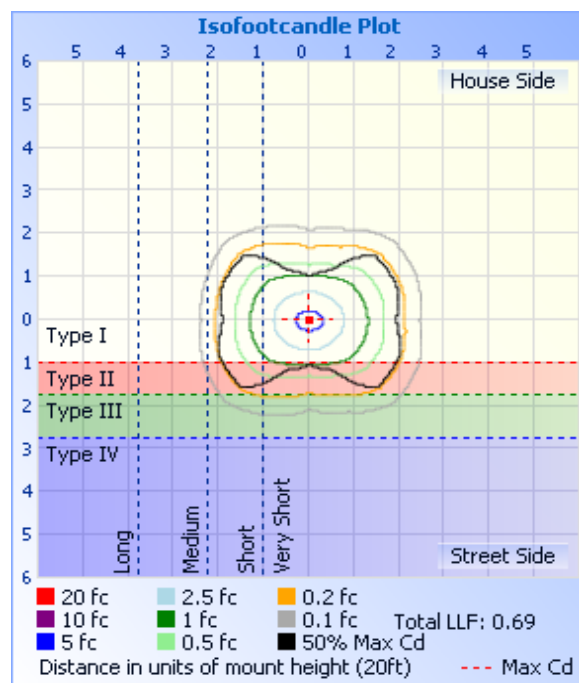
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ISOCANDELA DIAGRAM



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	3439	3439	3439	3439	3439	3439	3439	3439	3439	3439	3439	3439	3439	3439	3439	3439	3439
1	3437	3440	3438	3440	3435	3435	3433	3433	3434	3438	3439	3438	3441	3440	3435	3438	3437
2	3434	3436	3434	3437	3432	3432	3426	3422	3424	3431	3438	3437	3439	3437	3433	3437	3434
3	3426	3428	3428	3434	3430	3426	3414	3405	3410	3417	3431	3433	3436	3433	3426	3431	3426
4	3417	3419	3422	3430	3426	3421	3403	3389	3393	3405	3418	3427	3435	3431	3420	3421	3417
5	3407	3409	3419	3432	3425	3415	3391	3373	3375	3387	3404	3423	3430	3427	3411	3410	3407
6	3397	3398	3412	3429	3423	3407	3380	3353	3354	3363	3389	3414	3423	3422	3401	3399	3397
7	3381	3382	3400	3425	3416	3395	3359	3327	3324	3337	3372	3405	3416	3412	3389	3382	3381
8	3359	3364	3382	3418	3405	3378	3337	3291	3285	3311	3351	3391	3407	3401	3375	3362	3359
9	3327	3334	3363	3402	3388	3358	3314	3254	3246	3271	3326	3377	3394	3387	3352	3338	3327
10	3287	3298	3343	3388	3371	3340	3284	3217	3207	3231	3297	3362	3383	3372	3331	3306	3287
11	3244	3260	3320	3373	3352	3325	3254	3179	3165	3191	3268	3345	3371	3359	3308	3267	3244
12	3198	3220	3293	3361	3339	3310	3224	3140	3124	3151	3238	3330	3360	3348	3284	3227	3198
13	3152	3178	3265	3348	3326	3296	3194	3101	3077	3110	3217	3313	3349	3336	3256	3181	3152
14	3105	3131	3231	3334	3315	3281	3163	3056	3032	3070	3189	3297	3337	3321	3226	3135	3105
15	3064	3088	3200	3313	3298	3254	3131	3014	2991	3026	3156	3268	3323	3301	3195	3094	3064
16	3022	3048	3167	3292	3284	3227	3099	2974	2951	2983	3121	3239	3297	3277	3164	3054	3022
17	2987	3009	3132	3267	3254	3200	3064	2939	2912	2943	3085	3210	3269	3250	3130	3015	2987
18	2951	2972	3093	3238	3224	3167	3024	2904	2872	2906	3047	3173	3239	3216	3093	2978	2951
19	2912	2937	3055	3207	3195	3134	2982	2869	2831	2870	3006	3138	3212	3186	3053	2944	2912
20	2872	2902	3016	3178	3158	3102	2939	2832	2790	2828	2965	3111	3190	3157	3011	2906	2872
21	2836	2864	2974	3147	3128	3068	2898	2793	2755	2792	2926	3094	3174	3136	2973	2872	2836
22	2806	2830	2938	3112	3106	3040	2861	2759	2724	2754	2891	3079	3163	3123	2937	2836	2806
23	2783	2798	2903	3083	3085	3016	2828	2727	2692	2717	2862	3069	3150	3113	2907	2804	2783
24	2758	2762	2872	3062	3067	3000	2800	2696	2663	2685	2841	3063	3142	3105	2889	2777	2758
25	2734	2734	2841	3048	3051	2986	2772	2667	2639	2655	2821	3063	3134	3099	2869	2748	2734
26	2715	2708	2811	3035	3041	2973	2745	2643	2620	2630	2799	3063	3129	3098	2851	2724	2715
27	2697	2684	2787	3025	3034	2961	2720	2623	2606	2609	2779	3059	3129	3095	2836	2701	2697
28	2681	2667	2764	3014	3027	2949	2699	2605	2597	2592	2762	3051	3132	3092	2820	2682	2681
29	2673	2652	2739	2998	3017	2936	2679	2589	2588	2579	2750	3046	3131	3088	2804	2671	2673

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30	2662	2642	2719	2981	3006	2920	2661	2578	2575	2567	2740	3039	3122	3083	2793	2662	2662
31	2652	2633	2701	2964	2992	2904	2643	2565	2561	2558	2732	3033	3112	3074	2783	2653	2652
32	2640	2622	2686	2949	2979	2889	2628	2550	2541	2548	2726	3025	3104	3067	2777	2639	2640
33	2615	2613	2671	2933	2967	2874	2614	2533	2516	2538	2720	3013	3092	3057	2774	2627	2615
34	2588	2599	2659	2915	2952	2858	2604	2514	2488	2526	2720	2999	3080	3048	2773	2614	2588
35	2555	2582	2645	2898	2935	2844	2597	2491	2454	2511	2725	2985	3064	3035	2772	2597	2555
36	2510	2558	2637	2879	2914	2828	2592	2465	2409	2492	2731	2969	3048	3022	2777	2574	2510
37	2451	2524	2634	2861	2889	2810	2589	2435	2350	2469	2736	2954	3022	3005	2782	2544	2451
38	2385	2484	2626	2848	2859	2794	2588	2393	2291	2439	2740	2934	2984	2996	2789	2515	2385
39	2313	2442	2618	2833	2826	2773	2585	2344	2232	2401	2745	2913	2954	2975	2792	2470	2313
40	2226	2389	2616	2812	2793	2751	2585	2290	2170	2356	2750	2886	2925	2950	2794	2417	2226
41	2151	2332	2614	2790	2757	2726	2581	2239	2108	2309	2749	2859	2888	2923	2793	2362	2151
42	2075	2271	2610	2760	2724	2695	2574	2190	2040	2264	2743	2833	2845	2894	2791	2306	2075
43	1992	2210	2601	2732	2695	2664	2560	2141	1966	2219	2736	2802	2817	2862	2782	2245	1992
44	1904	2150	2590	2703	2670	2631	2541	2089	1885	2172	2722	2775	2785	2828	2768	2183	1904
45	1816	2086	2575	2673	2648	2600	2519	2035	1804	2122	2705	2746	2765	2797	2750	2126	1816
46	1728	2020	2556	2641	2630	2569	2495	1975	1723	2069	2686	2718	2743	2761	2727	2067	1728
47	1649	1954	2534	2612	2615	2542	2471	1910	1643	2013	2663	2694	2726	2728	2698	2004	1649
48	1570	1885	2510	2584	2602	2515	2443	1847	1562	1955	2638	2670	2712	2704	2670	1938	1570
49	1491	1816	2481	2561	2597	2492	2412	1781	1483	1896	2610	2651	2701	2681	2638	1873	1491
50	1417	1745	2445	2539	2591	2478	2379	1714	1406	1837	2581	2637	2688	2663	2602	1806	1417
51	1345	1675	2410	2521	2582	2468	2344	1648	1332	1776	2549	2625	2675	2649	2568	1740	1345
52	1273	1612	2373	2510	2569	2465	2311	1584	1261	1714	2515	2613	2648	2643	2531	1673	1273
53	1206	1549	2332	2505	2533	2466	2278	1520	1195	1656	2481	2594	2594	2633	2491	1616	1206
54	1145	1486	2293	2501	2476	2465	2246	1457	1131	1599	2448	2552	2518	2615	2453	1559	1145
55	1086	1424	2259	2487	2410	2452	2215	1396	1072	1543	2413	2494	2435	2574	2418	1502	1086
56	1031	1363	2222	2459	2337	2418	2184	1337	1019	1486	2376	2427	2339	2511	2383	1448	1031
57	981	1308	2188	2418	2254	2370	2151	1282	968	1433	2331	2348	2241	2443	2342	1395	981
58	933	1253	2148	2362	2167	2311	2117	1228	923	1382	2275	2257	2139	2362	2294	1345	933
59	890	1201	2106	2298	2070	2240	2077	1179	881	1334	2211	2158	2038	2270	2241	1300	890
60	851	1155	2062	2219	1972	2160	2031	1133	845	1289	2137	2055	1932	2169	2176	1259	851

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61	813	1112	2010	2135	1871	2070	1976	1092	813	1246	2055	1947	1826	2066	2101	1220	813
62	780	1072	1948	2045	1770	1977	1912	1053	783	1201	1965	1834	1708	1962	2021	1184	780
63	747	1035	1884	1952	1662	1872	1840	1014	756	1156	1870	1721	1585	1849	1939	1147	747
64	718	999	1813	1850	1548	1768	1759	979	733	1111	1773	1609	1462	1741	1846	1108	718
65	691	962	1737	1744	1427	1662	1671	943	713	1063	1672	1491	1338	1620	1748	1070	691
66	665	926	1655	1635	1295	1556	1580	905	695	1013	1570	1370	1205	1499	1649	1028	665
67	641	889	1574	1526	1168	1445	1487	868	679	964	1469	1242	1069	1378	1554	983	641
68	619	851	1493	1417	1040	1330	1389	828	665	911	1367	1115	945	1250	1458	938	619
69	598	813	1402	1301	919	1207	1292	785	652	856	1268	990	833	1117	1358	889	598
70	579	773	1311	1181	806	1088	1195	745	642	800	1168	874	732	989	1261	839	579
71	561	731	1217	1061	705	966	1097	704	630	744	1069	766	646	869	1161	787	561
72	544	689	1123	941	617	851	1005	661	619	689	973	670	573	759	1065	734	544
73	527	645	1031	829	544	740	912	617	608	635	878	587	516	663	967	679	527
74	511	600	940	721	487	644	823	576	596	585	786	516	469	580	871	627	511
75	496	557	851	627	439	558	737	535	568	535	698	456	434	509	780	575	496
76	479	513	763	545	401	484	654	486	511	480	615	408	404	452	688	526	479
77	436	470	678	475	370	423	575	421	477	410	537	370	381	405	604	476	436
78	391	409	598	415	347	371	501	374	459	357	463	337	364	366	523	407	391
79	373	350	522	367	330	329	429	340	436	323	396	311	352	333	451	347	373
80	356	312	450	325	317	294	344	305	372	285	325	291	344	307	385	309	356
81	313	279	375	292	305	266	275	243	325	228	263	270	338	286	309	275	313
82	264	226	298	265	294	241	222	210	272	196	211	249	330	265	249	218	264
83	230	188	241	239	281	214	168	153	215	144	163	231	320	245	200	184	230
84	178	144	188	215	263	188	126	132	200	122	121	213	304	228	152	137	178
85	165	120	140	194	242	152	84	109	157	103	83	170	283	211	112	114	165
86	126	101	97	163	205	129	65	51	44	47	62	142	253	180	77	93	126
87	33	46	73	139	111	75	24	6	7	5	16	55	186	148	57	33	33
88	6	5	29	77	21	17	3	2	1	1	3	3	81	82	11	4	6
89	1	1	2	20	1	1	1	0	0	0	1	1	3	6	1	0	1
90	0	0	0	1	0	1	1	0	0	0	1	1	0	0	0	0	0
91	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0

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92	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
93	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
94	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0
95	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0
96	0	0	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
97	0	0	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
98	0	0	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
99	0	0	0	0	1	1	1	0	0	1	1	1	0	0	0	0	0
100	0	0	0	0	0	1	1	0	0	1	1	1	0	0	0	0	0
101	0	0	0	0	1	1	1	0	0	1	1	1	0	0	0	0	0
102	0	0	0	0	1	1	1	0	0	1	1	1	0	0	0	0	0
103	0	0	0	0	1	1	1	0	0	1	1	1	0	0	0	0	0
104	0	0	0	0	1	1	1	1	0	1	1	1	0	0	0	0	0
105	0	0	0	0	1	1	1	1	0	1	1	1	0	0	0	0	0
106	0	0	0	0	1	1	1	1	0	1	1	2	0	0	0	0	0
107	0	0	0	0	1	1	1	1	0	1	1	2	0	0	0	0	0
108	0	0	0	0	2	1	1	1	1	1	2	2	0	0	1	0	0
109	0	0	0	0	2	1	2	1	1	1	2	2	1	1	1	0	0
110	0	0	0	1	2	1	2	1	1	1	2	2	1	1	1	0	0
111	0	0	1	1	2	1	2	1	1	1	2	2	1	1	1	0	0
112	1	0	1	1	2	2	2	1	1	1	2	2	1	1	1	0	1
113	1	0	1	1	2	2	2	1	1	1	2	2	1	1	1	0	1
114	1	0	1	1	2	2	2	1	1	1	2	2	1	1	1	0	1
115	1	0	1	1	2	2	2	1	2	1	2	2	1	1	1	1	1
116	1	1	1	2	2	3	2	1	2	1	2	2	1	1	1	1	1
117	1	1	1	2	2	3	2	1	2	1	2	3	2	2	1	1	1
118	2	1	1	2	2	3	2	1	1	1	2	3	2	2	2	1	2
119	2	1	1	2	3	3	2	1	1	2	2	3	2	2	2	1	2
120	1	1	2	2	3	3	2	1	1	2	2	3	2	2	2	1	1
121	1	1	2	2	3	3	2	1	1	2	2	3	2	2	2	1	1
122	3	1	2	2	3	3	2	2	1	2	2	3	2	2	2	1	3

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123	3	1	2	2	3	3	2	2	2	2	3	3	2	2	2	2	3
124	4	2	2	2	3	3	2	2	2	2	2	3	2	2	2	2	4
125	8	2	2	2	3	3	2	2	2	2	2	3	2	2	2	2	8
126	10	2	2	2	4	3	3	2	2	2	3	3	2	2	2	2	10
127	11	2	2	2	4	3	3	2	2	2	3	3	3	2	2	2	11
128	11	2	2	3	4	3	3	2	2	2	3	3	3	2	2	2	11
129	11	2	2	3	4	3	3	2	2	2	3	3	3	2	2	3	11
130	12	3	2	3	4	3	3	2	3	2	3	3	3	3	2	3	12
131	12	3	2	3	4	4	3	3	3	2	3	3	3	3	2	3	12
132	12	3	2	3	4	4	3	3	3	3	3	4	3	3	2	3	12
133	12	3	2	3	4	4	3	3	3	3	3	4	3	3	2	3	12
134	7	3	2	3	4	4	3	3	3	3	3	4	3	3	2	3	7
135	6	3	2	3	4	4	3	3	3	3	3	4	3	3	2	3	6
136	10	4	2	3	4	4	3	3	4	3	3	4	3	3	2	3	10
137	12	4	2	3	4	4	3	3	3	3	4	4	3	3	2	3	12
138	12	4	2	3	4	4	4	4	4	4	4	4	3	3	2	3	12
139	12	3	2	3	4	4	4	4	4	4	4	4	3	3	3	3	12
140	9	3	3	3	4	4	4	4	4	4	4	4	3	3	3	3	9
141	8	4	3	3	5	4	4	4	4	4	4	4	3	3	3	4	8
142	8	4	3	3	5	4	4	4	4	4	4	4	3	3	3	4	8
143	10	4	3	3	5	4	4	4	4	4	4	4	3	3	3	4	10
144	10	4	3	3	5	4	4	4	4	4	4	4	3	3	3	4	10
145	10	4	3	3	5	4	4	4	4	4	4	4	3	3	3	4	10
146	10	4	3	3	5	5	4	4	5	4	4	4	3	3	3	4	10
147	9	4	3	3	5	5	4	5	5	5	5	5	4	3	3	3	9
148	9	4	3	3	5	5	4	5	5	5	5	5	4	3	3	3	9
149	9	4	3	3	5	5	5	5	5	6	5	5	3	3	3	5	9
150	8	4	4	3	5	5	5	5	6	6	5	5	3	3	4	5	8
151	8	5	4	3	5	5	5	5	8	5	5	5	3	3	4	5	8
152	8	5	4	3	5	5	5	5	6	5	5	5	4	3	4	5	8
153	8	5	4	3	5	5	5	5	5	5	5	5	4	3	4	5	8

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154	8	5	4	4	5	5	5	5	5	5	6	5	4	4	4	5	8
155	8	5	4	4	5	5	5	6	5	5	6	6	4	4	4	5	8
156	7	5	4	4	5	6	5	6	5	6	6	6	4	4	4	5	7
157	7	5	4	4	5	6	6	6	7	7	6	6	4	4	4	5	7
158	7	5	4	4	5	6	6	6	7	7	6	6	4	4	4	5	7
159	7	5	4	4	5	6	6	6	7	7	6	6	4	4	4	5	7
160	7	5	4	4	5	6	6	6	7	7	6	6	4	4	4	5	7
161	6	5	4	4	5	6	6	6	7	7	6	6	4	4	4	5	6
162	6	5	4	4	6	6	6	6	7	7	6	6	4	4	5	5	6
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164	5	5	4	4	6	6	6	6	7	7	7	6	4	4	5	5	5
165	5	5	4	4	6	6	6	6	7	7	7	6	4	4	5	5	5
166	5	5	5	4	6	6	6	6	7	7	7	6	4	4	5	5	5
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168	5	5	5	5	6	6	6	6	6	7	7	6	5	5	5	5	5
169	5	5	5	5	6	6	6	6	7	7	7	6	5	5	5	5	5
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172	5	5	5	5	6	6	6	6	6	7	6	6	5	5	5	5	5
173	6	5	5	5	6	6	6	6	6	6	6	6	5	5	5	6	6
174	6	5	5	5	6	6	6	6	6	7	6	6	5	5	5	6	6
175	6	5	5	5	6	6	6	6	6	6	6	6	5	5	5	6	6
176	6	6	5	5	6	6	6	6	6	6	6	6	5	5	6	6	6
177	6	6	6	6	6	6	6	6	6	6	6	6	5	5	6	6	6
178	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	6	6
179	6	6	6	6	5	5	6	6	6	6	6	6	5	6	6	6	6
180	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6

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BUG Rating: B3-U2-G2

IESNA Luminaire Flux Distribution Table:

Zone	Lumens	Luminaire %
FL - Front-Low(0-30)	1284.5	12.8
FM - Front-Medium(30-60)	2708.2	27.0
FH - Front-High(60-80)	996.7	9.9
FVH - Front-Very High(80-90)	87.327	0.9
Total Forward Light	5083.2	50.7

BL - Back-Low(0-30)	1259.1	12.5
BM - Back-Medium(30-60)	2653.6	26.4
BH - Back-High(60-80)	959.62	9.6
BVH - Back-Very High(80-90)	71.407	0.7
Total Back Light	4952	49.3

UL - Uplight-Low(90-100)	0.56138	0.0
UH - Uplight-High(100-180)	14.194	0.1
Total Up Light	14.755	0.1

BUG(Back,Up,Glare) Rating	B3-U2-G2
---------------------------	----------

Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	5076.7	6.473	5083.2
Street Side	4943.7	8.2821	4952

Test Voltage:277V

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE150320 -G1	277.0	60	0.4145	99.64	0.9024	19.07

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	10343
Luminous Efficacy (lm/W)	103.80
Beam Angle °	108.4
Center Beam Candle Power (cd)	3538
S/MH(C0/180)	1.33
S/MH(C90/270)	1.12

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2.2 Electrical, Photometric and Chromaticity Measurements (Refer to Work Instruction QD25)	IES LM-79 2008
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Test date	2015-07-03	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90

Electrical Measurement:

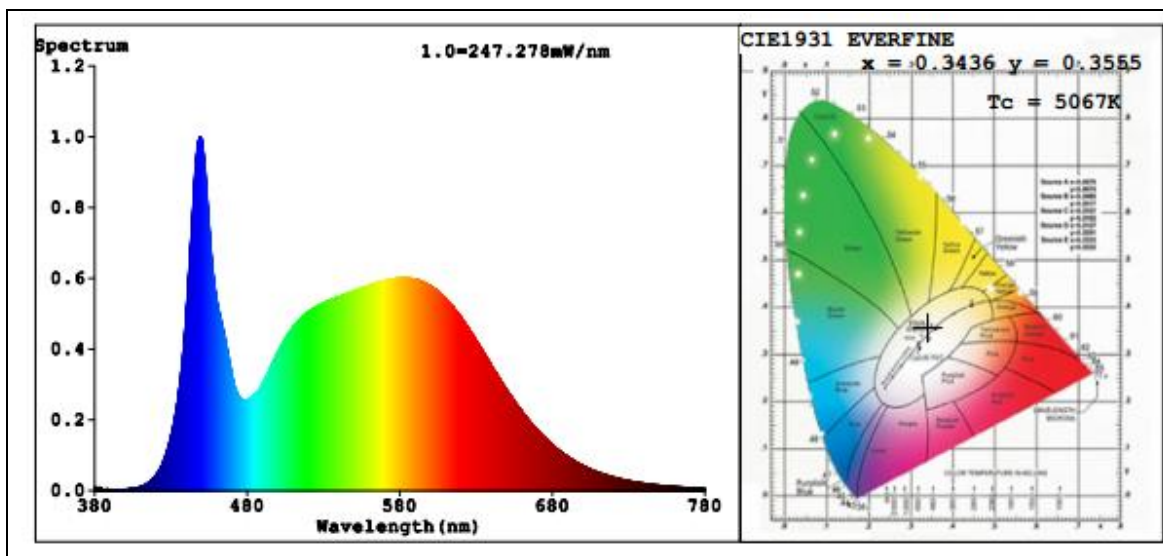
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE150320	119.9	60	0.8232	98.45	0.9974	14.98
-G2	277.0	60	0.4048	101.6	0.9062	18.87

Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	83.8
R9	11
CCT (K)	5067
Chromaticity (x, y)	x=0.3436 y=0.3555
Chromaticity (u', v')	u'=0.2089 v'=0.4864
Duv	0.0025
Total Luminous (lm)	11021
Luminous Efficacy (lm/W)	111.95

Special Color Rendering Indices			
R1	82	R9	11
R2	88	R10	72
R3	93	R11	84
R4	84	R12	65
R5	83	R13	84
R6	84	R14	96
R7	87	R15	77
R8	69	--	--

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 *******

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