

LM-79-08 Test Report

For

Outdoor Wall-mounted Area Luminaires

Remark: The letter "X" in the model name stand for CCT as bellow : 3=3000K, 4=4000K, 5=5000K, 6=5700K; "YY" stand for different mounting option as bellow WM=Wall Mount; "ZZ" stand for housing color by use 2 digits to indicate all of color.

Representative (Tested) Model: 'WML-120W

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

Test & Report By:

Johnson Sun

Engineer: Johnson Sun

Date: Jul.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	Jul.03,2015
Test Report No.	GZE150320-J
Laboratory Contact Name	Tommy Liang

Product Information:

Model Number	WML-120W	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Outdoor Wall-mounted Area Luminaires	
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	--	127.5	W
Input Current	--	1.0798	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9840	
Off-State Power	--	0	W

Photometric Characteristics

Total Initial Lumen Output	--	9468.3	lm
Initial Lumen Efficacy	--	74.26	lm/w
Correlated color temperature / CCT	3030	--	K
Color rendering index / CRI	81.7	--	
R9 Value	3	--	
Duv	0.0007	--	
Luminous Intensity Distribution			
Center beam candlepower (if applicable)	-----	4396	cd
Beam angle (if applicable)		89.9	°
Zonal lumens in the 0 °-60 °zone		81.3	%
Zonal lumens in the 60 °-90 °zone		18.2	%
Zonal lumens in the 90 °-120 °zone		0.1	%
Zonal lumens in the 120 °-180 °zone		0.3	%

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Product Information:

Model Number	WML-120W	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Outdoor Wall-mounted Area Luminaires	
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	126.9	--	W
Input Current	1.0726	--	A
Input Voltage (ac)	120.0	--	V
Power Factor	0.9859	--	
Off-State Power	0	--	W

Photometric Characteristics

Total Initial Lumen Output	9942	--	lm
Initial Lumen Efficacy	78.35	--	lm/w
Correlated color temperature / CCT	5748	--	K
Color rendering index / CRI	83.6	--	
R9 Value	17	--	
Duv	0.0036	--	
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.01,2014
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.

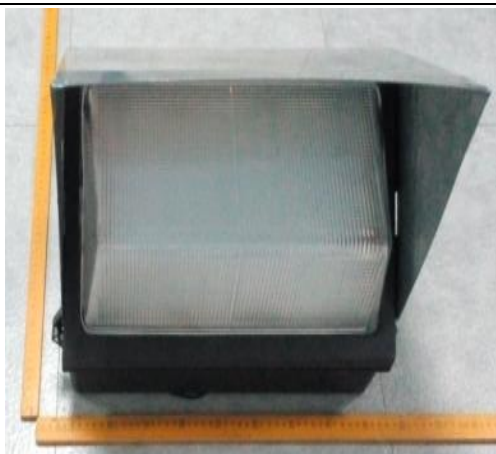
2. Photometric and Electrical Measurements – Integrating Sphere Method:

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:

Luminaire Type	Outdoor Wall-mounted Area Luminaires
Rated Voltage / Frequency	120~ 277Vac, 50/60Hz
Nominal Power	120W
Rated Initial Lamp Lumen	--
Declared CCT	3000K, 4000K, 5000K,5700K
LED Manufacturer	Philips Lumileds
LED Model	LUXEON 3030 2D
Sample Receipt Date	Jun.24,2015
Sample Number	GZE150320-J1(3000K),J2(5700K)

Photo



2.1 Electrical, Photometric and Chromaticity Measurements (Refer to Work Instruction QD25)	IES LM-79 2008
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Test date	2015-07-01	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	120.0	60	1.0798	127.5	0.9840	12.50
-J1	277.0	60	0.5084	127.1	0.9026	19.89

Sphere-Spectroradiometer Method:

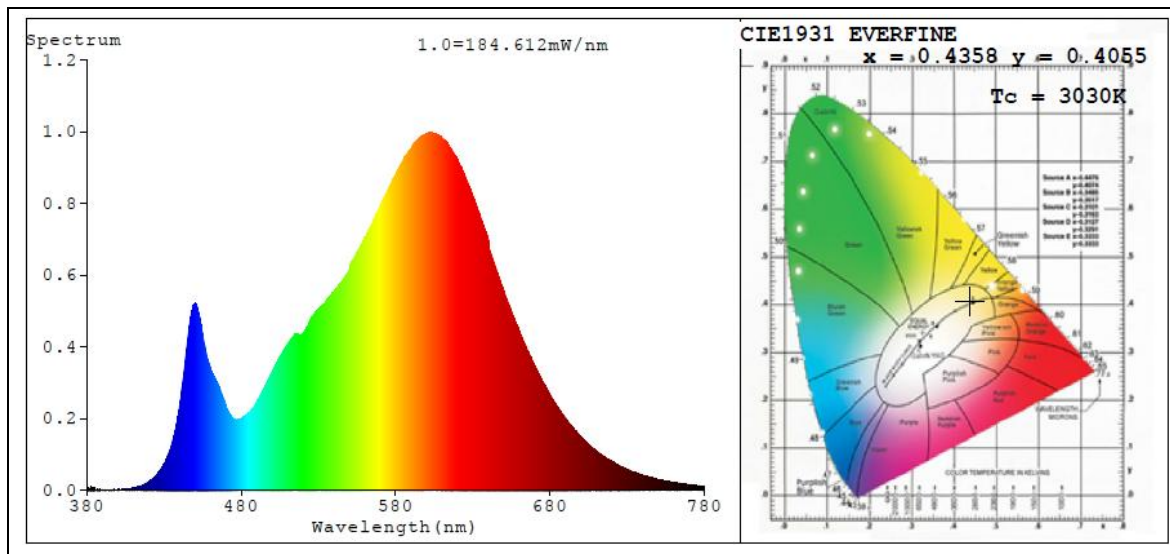
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	81.7
R9	3
CCT (K)	3030
Chromaticity (x, y)	x=0.4358 y=0.4055
Chromaticity (u', v')	u'=0.2493 v'=0.5218
Duv	0.0007

Special Color Rendering Indices			
R1	80	R9	3
R2	90	R10	78
R3	96	R11	78
R4	79	R12	70
R5	80	R13	82
R6	88	R14	99
R7	82	R15	72
R8	58	--	--

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	9468.3
Luminous Efficacy (lm/W)	74.26
Beam Angle °	89.9
Center Beam Candle Power (cd)	4396
S/MH(C0/180)	1.08
S/MH(C90/270)	0.88

Spectral Power Distribution & Chromaticity Diagram



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Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	2,892.5	30.6%
0-40	4,522.1	47.8%
0-60	7,699.1	81.3%
60-90	1,727.6	18.2%
70-100	560.7	5.9%
90-120	9.2	0.1%
0-90	9,426.8	99.6%
90-180	41.3	0.4%
0-180	9,468.1	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	370.1	3.9%	90-100	1.8	0%
10-20	1,035.8	10.9%	100-110	3.1	0%
20-30	1,486.6	15.7%	110-120	4.3	0%
30-40	1,629.6	17.2%	120-130	5.6	0.1%
40-50	1,605.6	17.0%	130-140	7.1	0.1%
50-60	1,571.4	16.6%	140-150	7.8	0.1%
60-70	1,168.7	12.3%	150-160	6.0	0.1%
70-80	507.7	5.4%	160-170	4.1	0%
80-90	51.2	0.5%	170-180	1.6	0%

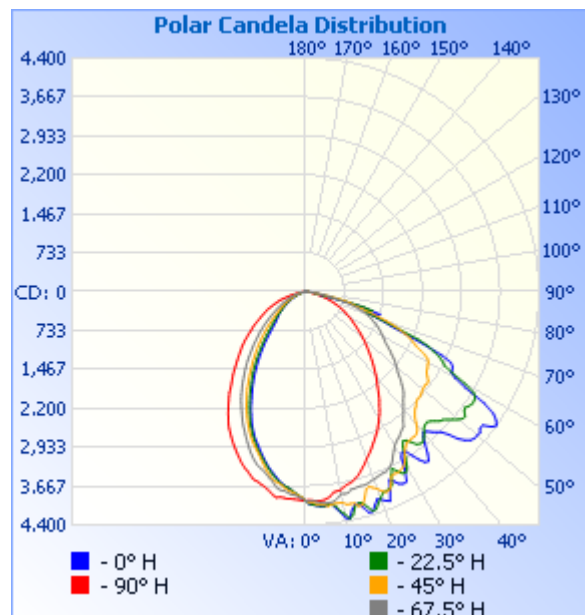
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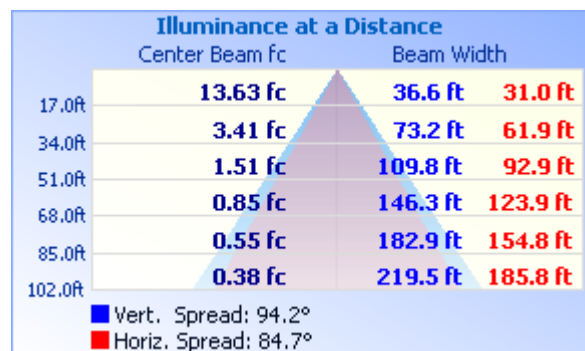
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Photometric Data



Illuminance Plots



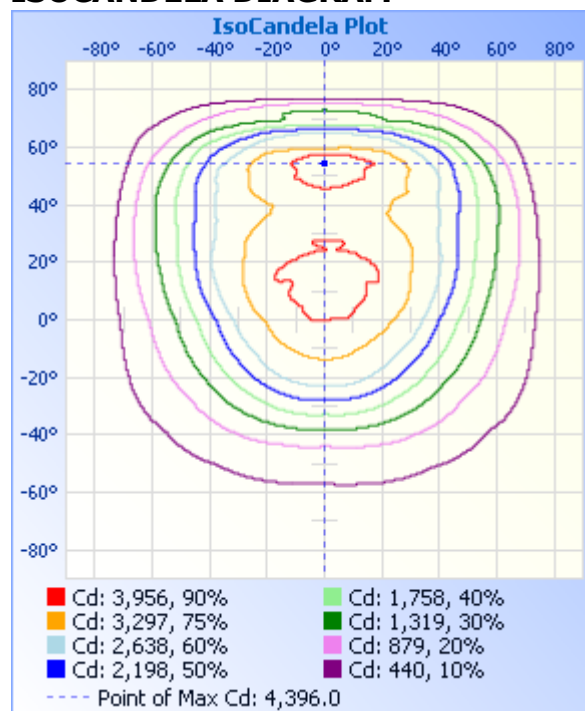
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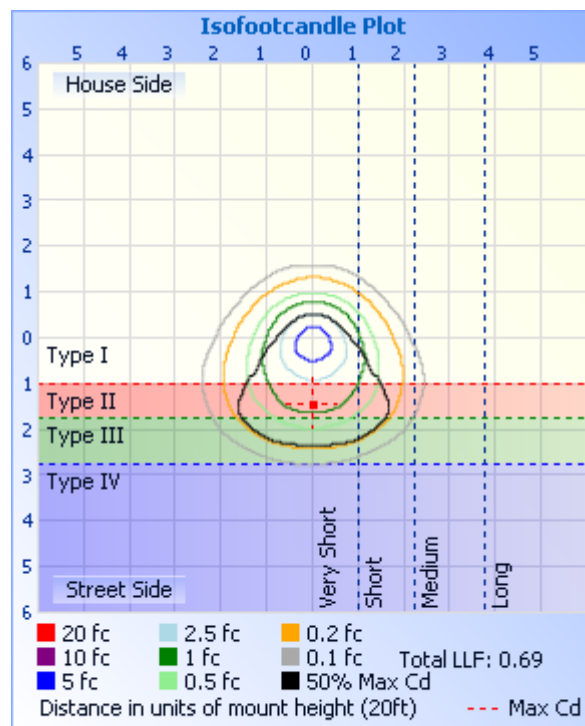
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ISOCANDELA DIAGRAM



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	3938	3938	3938	3938	3938	3938	3938	3938	3938	3938	3938	3938	3938	3938	3938	3938	3938
1	4006	3996	3979	3953	3928	3912	3904	3892	3898	3886	3877	3894	3939	3963	3984	3998	4006
2	4021	4016	3982	3948	3939	3901	3860	3845	3853	3836	3848	3866	3925	3975	4002	4008	4021
3	4037	4033	4009	3966	3944	3889	3844	3803	3807	3798	3811	3841	3919	3995	4018	4028	4037
4	4056	4043	4013	3987	3951	3867	3810	3758	3753	3753	3782	3836	3915	4003	4039	4031	4056
5	4058	4053	4035	4004	3945	3847	3767	3717	3717	3712	3758	3809	3919	4020	4048	4064	4058
6	4040	4033	4065	4002	3917	3825	3734	3695	3686	3686	3723	3778	3907	4031	4074	4050	4040
7	4040	4044	4039	4003	3879	3781	3706	3667	3646	3658	3675	3773	3900	4028	4088	4048	4040
8	4124	4079	4033	3977	3816	3717	3677	3623	3596	3614	3642	3752	3921	4061	4056	4046	4124
9	4218	4191	4032	3926	3807	3651	3639	3569	3536	3571	3623	3695	3890	4049	4061	4120	4218
10	4329	4254	4039	3868	3797	3622	3585	3504	3485	3514	3592	3629	3835	3998	4081	4206	4329
11	4361	4356	4088	3883	3754	3597	3519	3447	3429	3458	3531	3577	3793	3960	4114	4313	4361
12	4204	4308	4088	3876	3722	3546	3455	3393	3373	3398	3469	3525	3754	3926	4144	4332	4204
13	4126	4154	4093	3822	3704	3511	3399	3336	3308	3337	3398	3484	3727	3894	4163	4205	4126
14	4114	4108	4166	3820	3680	3476	3338	3279	3243	3276	3330	3445	3697	3876	4181	4110	4114
15	4212	4119	4163	3808	3639	3437	3278	3221	3178	3215	3262	3411	3682	3864	4204	4097	4212
16	4332	4218	4039	3807	3598	3392	3217	3157	3112	3155	3194	3375	3654	3872	4173	4167	4332
17	4333	4325	3895	3812	3539	3326	3159	3095	3042	3097	3135	3315	3600	3863	4049	4351	4333
18	4232	4310	3866	3802	3481	3261	3101	3027	2982	3032	3079	3255	3552	3830	3986	4374	4232
19	4141	4218	3909	3778	3423	3196	3043	2958	2922	2963	3025	3194	3516	3802	3949	4314	4141
20	4168	4136	3957	3758	3355	3128	2983	2888	2851	2897	2965	3126	3471	3780	3970	4218	4168
21	4222	4063	4029	3747	3301	3052	2917	2812	2778	2826	2903	3056	3419	3772	4006	4154	4222
22	4259	4049	4072	3730	3247	2976	2848	2737	2700	2750	2835	2984	3359	3776	4104	4194	4259
23	4080	4032	4059	3718	3192	2902	2775	2661	2615	2677	2761	2913	3306	3774	4117	4236	4080
24	3883	3999	3962	3718	3130	2835	2702	2582	2524	2598	2687	2847	3251	3743	4032	4197	3883
25	3947	3823	3830	3687	3074	2768	2634	2502	2441	2510	2610	2783	3197	3712	3968	3977	3947
26	4033	3709	3819	3652	3016	2696	2554	2418	2340	2423	2534	2715	3140	3686	3934	3819	4033
27	4064	3793	3832	3595	2965	2624	2472	2336	2243	2336	2456	2641	3083	3674	3928	3875	4064
28	4054	3882	3809	3504	2899	2554	2389	2248	2152	2245	2378	2568	3024	3632	3920	3934	4054
29	3870	3892	3791	3433	2832	2484	2305	2159	2068	2152	2298	2500	2966	3558	3915	3943	3870

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30	3614	3825	3727	3358	2766	2418	2222	2076	1979	2065	2219	2430	2907	3483	3871	3896	3614
31	3527	3665	3639	3307	2701	2344	2138	1992	1890	1982	2137	2363	2828	3393	3791	3759	3527
32	3552	3460	3535	3277	2629	2271	2050	1906	1803	1904	2052	2289	2755	3318	3654	3558	3552
33	3683	3362	3466	3249	2552	2200	1964	1820	1711	1823	1972	2209	2680	3270	3557	3477	3683
34	3816	3379	3425	3200	2488	2129	1879	1738	1623	1737	1890	2137	2605	3225	3526	3470	3816
35	3925	3453	3423	3170	2410	2052	1796	1648	1534	1649	1808	2060	2527	3201	3533	3561	3925
36	3948	3559	3407	3144	2332	1972	1716	1560	1448	1565	1729	1985	2459	3163	3531	3674	3948
37	3823	3586	3414	3053	2256	1900	1642	1475	1361	1479	1652	1912	2385	3116	3518	3668	3823
38	3660	3594	3396	2988	2188	1832	1569	1393	1278	1398	1578	1844	2296	3060	3499	3610	3660
39	3529	3538	3347	2927	2127	1756	1495	1310	1193	1319	1508	1775	2223	2999	3431	3562	3529
40	3455	3480	3240	2868	2061	1681	1424	1229	1113	1239	1441	1701	2153	2939	3309	3467	3455
41	3490	3398	3141	2808	1992	1611	1358	1151	1032	1164	1372	1628	2087	2866	3210	3413	3490
42	3558	3372	3073	2748	1925	1540	1289	1074	960	1091	1299	1558	2019	2778	3125	3432	3558
43	3624	3357	3026	2705	1863	1473	1219	1001	896	1023	1231	1489	1948	2707	3092	3469	3624
44	3678	3393	2995	2659	1801	1404	1152	935	841	960	1165	1426	1881	2654	3063	3509	3678
45	3805	3450	2951	2598	1738	1337	1088	875	797	903	1103	1359	1820	2617	3010	3558	3805
46	3991	3514	2926	2518	1676	1275	1025	821	763	850	1039	1295	1760	2563	2950	3599	3991
47	4108	3539	2928	2456	1615	1212	964	774	734	802	979	1234	1699	2492	2921	3619	4108
48	4184	3603	2918	2371	1558	1150	906	729	708	758	922	1176	1645	2421	2919	3676	4184
49	4216	3667	2897	2300	1504	1092	850	690	681	715	867	1118	1592	2362	2945	3762	4216
50	4219	3747	2875	2246	1446	1034	796	654	655	675	815	1061	1539	2303	2993	3838	4219
51	4229	3807	2867	2192	1389	981	745	622	626	638	764	1004	1477	2242	3013	3886	4229
52	4174	3818	2861	2138	1334	926	698	592	596	603	716	948	1418	2167	2996	3904	4174
53	4184	3744	2875	2073	1277	874	655	565	563	572	673	896	1361	2087	2944	3849	4184
54	4334	3716	2856	2004	1223	826	616	539	530	544	633	847	1303	2020	2879	3830	4334
55	4396	3757	2804	1947	1173	779	580	512	495	518	595	797	1250	1959	2825	3901	4396
56	4329	3784	2753	1879	1122	732	547	488	459	493	560	749	1197	1909	2801	3922	4329
57	4220	3785	2724	1817	1073	686	515	463	426	469	527	704	1144	1867	2807	3936	4220
58	3964	3765	2708	1762	1030	644	484	437	394	447	495	660	1091	1833	2823	3926	3964
59	3512	3696	2684	1722	989	605	453	410	365	423	465	620	1042	1802	2817	3831	3512
60	3261	3477	2671	1683	942	567	423	383	340	399	436	581	997	1742	2777	3587	3261

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61	3137	3164	2634	1641	894	532	394	355	319	374	409	544	951	1672	2694	3248	3137
62	3131	2966	2552	1599	853	497	366	328	301	349	383	510	906	1626	2589	3081	3131
63	3108	2891	2434	1557	814	465	339	302	284	323	357	477	863	1579	2519	2982	3108
64	3049	2804	2307	1512	773		434	315	277	268	297	333	446	823	1539	2461	2876
65	2828	2663	2230	1462	725		404	292	255	250	271	310	416	781	1498	2383	2699
66	2438	2530	2149	1412	681		375	271	234	230	246	287	387	737	1461	2280	2538
67	2052	2307	2041	1372	641		346	252	215	209	222	265	359	692	1428	2145	2308
68	1754	1945	1923	1331	600		320	234	197	187	200	244	331	648	1380	1989	1990
69	1587	1681	1792	1269	557		296	219	181	167	181	225	305	607	1312	1852	1741
70	1421	1464	1628	1207	514		272	204	164	148	163	207	281	567	1242	1708	1560
71	1256	1248	1455	1137	469		249	189	146	131	146	189	258	529	1185	1538	1379
72	1456	1182	1282	1057	419		224	174	129	115	130	173	235	486	1128	1367	1198
73	1463	1259	1129	981	371		199	158	110	101	113	156	209	437	1053	1197	1254
74	1277	1308	996	888	323		175	141	92	86	96	139	184	387	952	1048	1234
75	1075	1147	918	786	279		152	121	75	63	79	122	160	335	838	949	1100
76	710	871	855	684	244		129	99	57	44	61	102	137	290	724	861	913
77	407	597	746	583	213		108	77	39	34	42	81	116	253	613	765	664
78	297	370	610	513	184		89	57	30	30	30	61	97	220	534	643	366
79	271	253	462	444	152		72	41	26	27	25	44	79	187	457	488	261
80	250	221	322	361	124		55	28	23	24	22	29	62	155	371	337	222
81	233	197	211	279	96		40	20	20	21	19	20	46	125	285	207	197
82	205	176	147	209	72		26	15	18	19	17	14	32	96	211	145	171
83	157	143	110	148	49		16	11	17	19	15	10	19	70	147	102	128
84	85	95	80	94	29		9	9	16	18	14	8	10	46	91	73	82
85	28	44	52	53	13		4	8	15	17	13	7	4	26	48	43	35
86	9	15	24	23	3		3	7	14	16	12	6	2	10	19	18	11
87	2	4	7	5	1		2	5	11	13	10	5	2	2	4	5	3
88	1	1	2	1	1		1	3	7	8	6	3	1	1	1	1	1
89	0	0	1	1	0		0	1	1	0	0	0	0	0	1	0	0
90	0	0	0	0	0		0	1	1	0	0	1	1	0	0	0	0
91	0	0	0	0	0		1	1	1	0	1	1	1	0	0	0	0

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92	0	0	0	0	0	1	1	1	1	1	1	1	0	0	2	0	0
93	0	0	2	0	0	1	2	2	1	2	3	2	0	0	6	0	0
94	0	0	2	0	1	2	3	3	1	3	4	3	1	2	5	2	0
95	0	0	3	0	1	3	4	5	2	4	4	3	2	3	4	0	0
96	0	0	2	1	2	3	4	5	2	4	4	3	2	2	2	0	0
97	0	0	1	1	2	3	5	5	3	4	4	3	2	1	1	0	0
98	0	0	0	1	2	3	5	5	3	5	5	3	1	1	0	0	0
99	0	0	0	0	2	3	5	5	4	5	5	3	1	1	0	0	0
100	0	0	0	0	2	3	6	6	4	5	5	3	1	0	0	0	0
101	0	0	0	0	2	4	6	6	4	5	5	3	2	0	0	0	0
102	0	0	0	0	3	4	6	6	4	5	5	4	2	0	0	0	0
103	0	0	0	0	3	4	6	7	5	6	6	4	2	0	0	0	0
104	0	0	0	0	3	4	6	7	5	6	6	4	2	0	0	0	0
105	0	0	0	0	3	5	6	7	6	6	6	4	3	0	0	0	0
106	0	0	0	0	4	5	7	8	6	6	6	5	3	0	0	0	0
107	0	0	0	0	4	5	7	8	7	7	6	5	3	0	0	0	0
108	0	0	0	0	4	6	7	8	7	7	6	5	4	0	0	0	0
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110	0	0	0	0	5	6	7	7	7	7	6	5	4	1	0	0	0
111	0	0	0	0	5	7	8	7	8	7	6	6	4	1	0	0	0
112	0	0	0	1	5	7	8	7	8	7	6	6	5	2	0	0	0
113	0	0	0	2	5	7	8	7	8	6	6	6	5	2	0	0	0
114	0	0	0	2	6	8	8	7	8	6	6	6	5	3	0	0	0
115	0	0	0	3	6	8	8	7	8	6	6	7	5	3	0	0	0
116	0	0	0	3	6	9	8	8	8	7	6	7	6	4	0	0	0
117	0	0	0	4	6	9	9	8	8	7	6	8	6	4	0	0	0
118	0	0	0	4	7	9	9	8	8	7	7	8	6	5	0	0	0
119	0	0	0	4	7	10	9	9	9	7	7	8	6	5	1	0	0
120	0	0	0	4	7	10	9	9	9	8	7	9	7	5	1	0	0
121	0	0	0	5	7	10	9	9	9	7	7	9	7	6	1	0	0
122	0	0	0	5	8	11	9	9	9	8	7	9	7	6	1	0	0

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123	0	0	0	5	8	11	9	9	9	8	7	10	7	6	1	0	0
124	0	0	0	5	8	12	9	9	9	8	7	10	8	6	1	0	0
125	0	0	0	6	9	12	9	9	9	8	8	10	8	7	1	0	0
126	0	0	1	6	9	12	9	9	9	8	8	11	8	7	3	1	0
127	0	0	3	6	9	13	10	9	9	8	8	11	9	7	3	1	0
128	0	1	4	6	10	13	10	9	9	9	9	11	9	7	4	1	0
129	1	1	4	7	10	13	11	9	9	9	9	12	9	8	5	1	1
130	1	0	5	7	10	13	11	9	9	9	10	12	9	8	6	1	1
131	1	1	6	7	10	14	12	9	9	9	10	12	10	8	6	1	1
132	1	1	6	7	11	14	12	10	9	9	10	13	10	8	6	1	1
133	1	1	6	8	11	14	12	10	9	10	11	13	10	9	7	2	1
134	1	3	7	8	11	15	13	11	10	10	11	13	10	9	7	4	1
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136	3	5	7	8	12	15	13	12	10	11	12	13	11	9	8	6	3
137	5	6	7	8	12	15	14	13	11	11	12	13	11	9	8	6	5
138	6	7	8	9	12	15	14	13	12	11	12	13	11	10	8	7	6
139	7	8	8	9	13	15	15	14	12	12	13	13	11	10	8	8	7
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147	11	10	10	11	14	16	15	16	15	16	13	15	13	11	10	11	11
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149	11	10	9	11	15	16	15	16	15	15	14	15	13	12	9	11	11
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152	12	11	9	12	15	16	16	14	14	14	14	14	13	12	9	11	12
153	12	11	10	12	15	16	16	14	13	13	14	14	13	12	10	11	12

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154	12	12	11	11	15	16	17	14	13	13	15	14	13	12	11	11	12
155	12	9	11	11	15	16	17	15	12	13	14	15	13	12	12	9	12
156	11	8	12	11	15	15	18	15	12	12	14	15	13	12	13	7	11
157	7	6	13	11	14	15	18	15	12	13	14	15	13	13	13	6	7
158	6	7	13	12	15	16	18	15	13	12	15	15	13	13	14	8	6
159	5	10	13	12	15	16	18	16	12	11	16	15	14	14	14	10	5
160	9	12	13	12	16	16	18	17	12	11	15	15	14	14	14	12	9
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162	13	14	13	13	17	16	18	18	13	11	14	15	15	15	14	14	13
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164	13	14	13	13	17	16	17	17	13	11	13	15	15	15	14	14	13
165	13	14	13	13	17	16	17	17	13	11	13	15	16	15	14	14	13
166	13	14	14	13	17	17	17	17	13	11	13	14	16	15	15	14	13
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168	14	14	15	14	17	17	18	17	13	12	12	13	16	15	16	15	14
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174	16	15	16	15	17	17	17	18	18	19	19	16	17	17	17	16	16
175	17	15	16	15	17	17	17	18	17	18	19	16	17	17	17	16	17
176	17	16	16	15	17	17	17	18	17	18	18	17	16	17	17	16	17
177	17	16	16	15	17	17	17	18	17	18	18	17	16	17	17	16	17
178	17	16	16	15	17	17	17	17	17	17	17	17	16	17	17	16	17
179	17	16	16	14	17	17	16	17	16	17	17	16	16	17	17	16	17
180	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17

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Test Voltage:277V

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE150320 -J1	277.0	60	0.5084	127.1	0.9026	19.89

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	9233.3
Luminous Efficacy (lm/W)	72.65
Beam Angle °	89.8
Center Beam Candle Power (cd)	4290
S/MH(C0/180)	1.07
S/MH(C90/270)	0.87

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BUG(Back,Up,Glare) Rating: B3-U2-G1

IESNA Luminaire Flux Distribution Table:

Zone	Lumens	Luminaire %
FL - Front-Low(0-30)	1638.7	17.3
FM - Front-Medium(30-60)	3469.3	36.6
FH - Front-High(60-80)	1422.1	15.0
FVH - Front-Very High(80-90)	43.193	0.5
Total Forward Light	6587.2	69.6

BL - Back-Low(0-30)	1254	13.2
BM - Back-Medium(30-60)	1337.8	14.1
BH - Back-High(60-80)	253.87	2.7
BVH - Back-Very High(80-90)	7.9807	0.1
Total Back Light	2881.1	30.4

UL - Uplight-Low(90-100)	1.7989	0.0
UH - Uplight-High(100-180)	39.557	0.4
Total Up Light	41.356	0.4

BUG(Back,Up,Glare) Rating	B3-U2-G1
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Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	6573.3	13.86	6587.2
Street side	2853.6	27.496	2881.1

2.2 Electrical, Photometric and Chromaticity Measurements (Refer to Work Instruction QD25)	IES LM-79 2008
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Test date	2015-07-01	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90

Electrical Measurement:

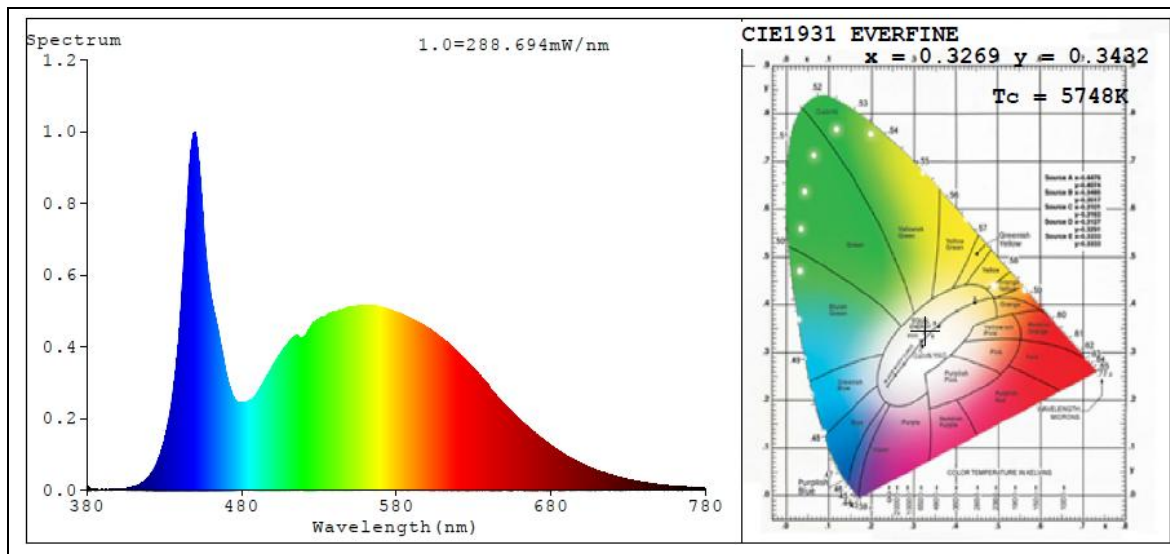
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE150320	120.0	60	1.0726	126.9	0.9859	11.80
-J2	277.0	60	0.5060	126.5	0.9026	18.49

Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	83.6
R9	17
CCT (K)	5748
Chromaticity (x, y)	x=0.3269 y=0.3432
Chromaticity (u', v')	u'=0.2022 v'=0.4778
Duv	0.0036
Total Luminous (lm)	9942
Luminous Efficacy (lm/W)	78.35

Special Color Rendering Indices			
R1	82	R9	17
R2	87	R10	69
R3	90	R11	82
R4	84	R12	60
R5	83	R13	83
R6	82	R14	95
R7	89	R15	78
R8	72	--	--

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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