

LM-79-08 Test Report

Outdoor Full-Cutoff Wall-mounted Area Luminaires

Model name(s): LWA-80W

Remark: X=CCT(3=3000K,4=4000K,5=5000K)YY=Mounting
Option(WM=Wall Mount)ZZ=Housing Color (use 2 digits to
indicate all of color)

Representative (Tested) Model: LWA-80WW

LWA-80CW

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

Test & Report By:

Review By:

Johnson Sun

Tommy Liang

Engineer: Johnson Sun

Manager: Tommy Liang

Update: Nov.16, 2016

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

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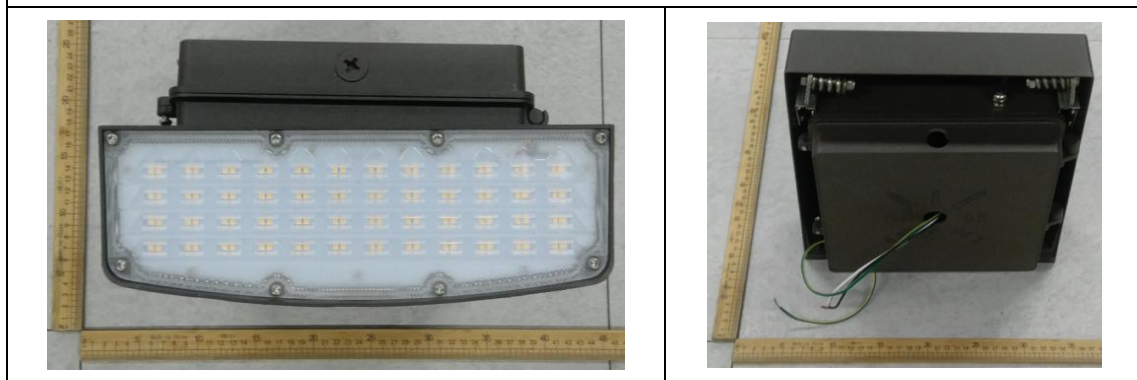
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<http://www.standard-tech.com>

1.1 Product Information:

Organization Name	WESTGATE MFG.	
Brand Name		
Model Number		
SKU (if available)	N/A Type of	
Luminaire (for integral lamps, list base type and lamp type)	Outdoor Full-Cutoff Wall-mounted Area Luminaires	
Rated Voltage / Frequency	100 -277Vac, 50/60 Hz	
Nominal Power	80W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,4000K,5000K	
LED Manufacturer	Philips Lumileds	
LED Model	L130-2780003000W21	
Sample Number	GZE161105-BK1(3000K),BK2(5000K)	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Photo



1.2 Test Specifications:

Date of Receipt	: Nov.11,2016
Date of Test	: Nov.12,2016
Test item	<ol style="list-style-type: none"> 1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none"> 1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

1.3 Test Methods

<p>1) Photometric and Light Distribution Measurement – Goniophotometer Method: Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25 °C ± 1 °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 or rated 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.</p>
<p>2) Chromaticity Measurement – Sphere-Spectroradiometer Method: Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25 °C ± 1 °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 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.</p>
<p>3) Electrical Measurements: Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at 25 °C ± 1 °C. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.</p>

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2016-11-12	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LWA-80WW		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE161105-	120.0	60	0.6745	80.63	0.9961	8.80
BK1	277.0	60	0.3044	80.44	0.9541	13.23
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

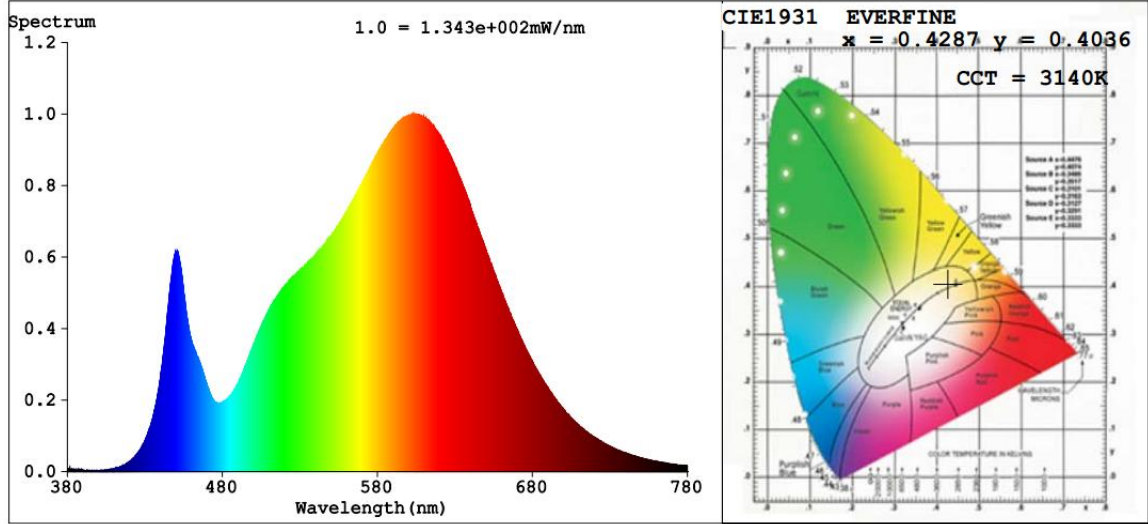
Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	83	R9	16
Frequency (Hz)	60	R2	91	R10	78
CCT (K)	3140	R3	97	R11	83
Duv	0.0010	R4	83	R12	69
Chromaticity (x, y)	x=0.4287 y=0.4036	R5	83	R13	84
Chromaticity (u', v')	u'=0.2455 v'=0.5200	R6	88	R14	99
Color Rendering Index (CRI)	84.2	R7	86	R15	76
R9	16	R8	64	--	--

Photometric Measurement – Goniophotometer Method :

Parameter	Result		DLC V4.0 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	8871.0	8820.5	$\geq 300 (-10\%)$	
Luminous Efficacy (lm/W)	110.02	109.65	Standard: $\geq 95(-3\%)$	Premium: $\geq 115(-3\%)$
Zonal lumens in the 0-90 °zone (%)	100	--	$\geq 100(-3)$	
Zonal lumens in the 80-90 °zone (%)	1.0	--	$\leq 10(3)$	
Beam Angle (°)	90.6	--	--	
Center Beam Candle Power (cd)	4103	--	--	

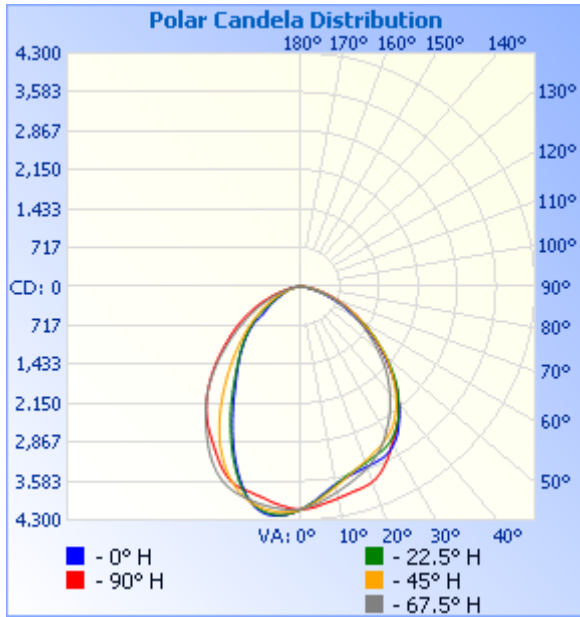
Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	3,010.5	33.9%
0-40	4,748.5	53.5%
0-60	7,627.6	86%
60-90	1,241.8	14%
70-100	456.1	5.1%
90-120	0	0%
0-90	8,869.4	100%
90-180	0	0%
0-180	8,869.4	100%

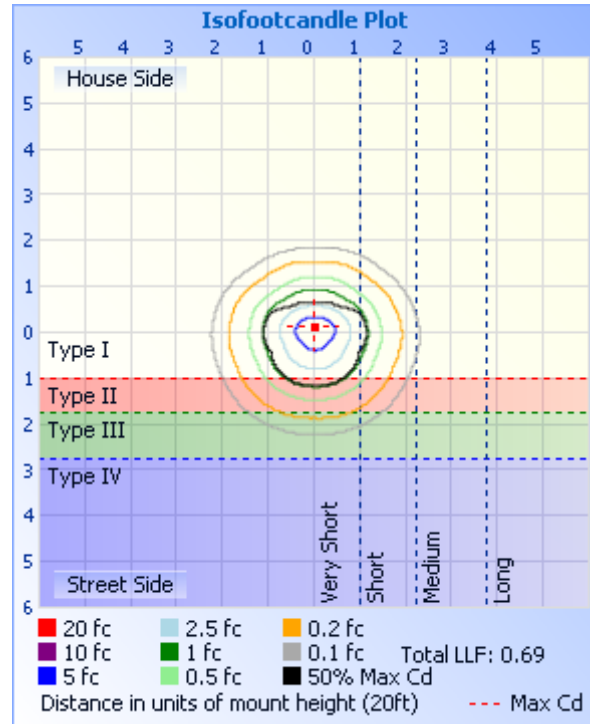
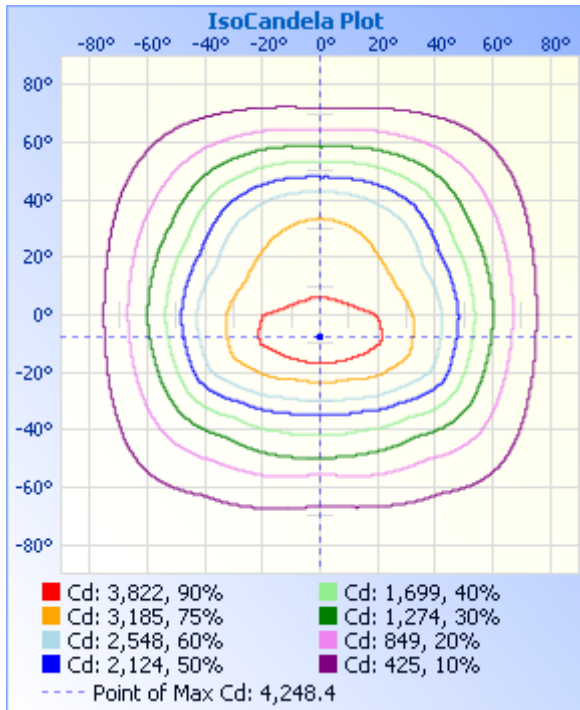
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	383.5	4.3%	90-100	0	0%
10-20	1,071.8	12.1%	100-110	0	0%
20-30	1,555.3	17.5%	110-120	0	0%
30-40	1,738.0	19.6%	120-130	0	0%
40-50	1,625.1	18.3%	130-140	0	0%
50-60	1,254.0	14.1%	140-150	0	0%
60-70	785.7	8.9%	150-160	0	0%
70-80	370.8	4.2%	160-170	0	0%
80-90	85.3	1.0%	170-180	0	0%



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	14.20 fc	30.0 ft	37.1 ft
34.0ft	3.55 fc	60.1 ft	74.2 ft
51.0ft	1.58 fc	90.1 ft	111.3 ft
68.0ft	0.89 fc	120.2 ft	148.4 ft
85.0ft	0.57 fc	150.2 ft	185.5 ft
102.0ft	0.39 fc	180.3 ft	222.5 ft

■ Vert. Spread: 82.9°
■ Horiz. Spread: 95.0°



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C (DEG) \ γ (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5
0	4103	4103	4103	4103	4103	4103	4103	4103	4103	4103	4103	4103	4103	4103	4103	4103
5	4053	3992	3935	3898	3887	3907	3926	3987	4038	4120	4170	4213	4236	4221	4176	4112
10	3956	3838	3721	3692	3688	3700	3732	3841	3956	4086	4144	4180	4214	4185	4141	4079
15	3890	3686	3542	3546	3585	3554	3566	3696	3890	4030	4017	3955	3946	3958	4019	4018
20	3803	3526	3396	3444	3531	3459	3427	3557	3830	3938	3769	3544	3491	3545	3782	3925
25	3562	3321	3285	3373	3498	3385	3310	3368	3632	3757	3436	3045	2983	3053	3438	3721
30	3276	3056	3139	3268	3380	3285	3181	3117	3345	3433	2990	2571	2494	2582	3010	3409
35	3010	2757	2966	3058	3127	3083	2992	2840	3088	3080	2533	2157	2085	2144	2540	3054
40	2699	2475	2697	2766	2791	2791	2719	2536	2789	2718	2082	1826	1776	1800	2090	2709
45	2337	2162	2377	2418	2407	2452	2393	2218	2424	2322	1690	1557	1504	1523	1694	2316
50	1957	1811	2026	2039	2000	2064	2037	1854	2025	1872	1363	1299	1229	1263	1357	1888
55	1589	1480	1648	1655	1594	1667	1656	1505	1643	1454	1087	1041	823	1011	1067	1482
60	1270	1182	1287	1267	1183	1284	1289	1184	1307	1105	830	706	623	680	804	1129
65	953	912	944	906	839	912	945	906	982	815	611	525	449	505	588	824
70	660	648	646	611	544	616	642	644	698	570	406	377	331	363	391	567
75	420	407	403	360	300	365	399	408	448	368	260	263	261	254	247	359
80	232	217	216	159	119	165	215	219	252	166	163	171	186	164	153	159
85	75.9	60.7	62.3	33.1	24.3	35.2	65.8	63.1	99.6	72.0	78.8	90.6	104	84.8	71.7	66.9
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

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BUG Rating: B3-U0-G1

IESNA Luminaire Flux Distribution Table:

Zone	Lumens	Luminaire %
FL - Front-Low(0-30)	1479	16.7
FM - Front-Medium(30-60)	2546.8	28.7
FH - Front-High(60-80)	661.71	7.5
FVH - Front-Very High(80-90)	37.977	0.4
Total Forward Light	4725.5	53.3

BL - Back-Low(0-30)	1531.7	17.3
BM - Back-Medium(30-60)	2071.6	23.4
BH - Back-High(60-80)	494.84	5.6
BVH - Back-Very High(80-90)	47.324	0.5
Total Back Light	4145.5	46.7

UL - Uplight-Low(90-100)	0	0.0
UH - Uplight-High(100-180)	0	0.0
Total Up Light	0	0.0

BUG(Back,Up,Glare) Rating	B3-U0-G1
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Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	4145.5	0	4145.5
Street Side	4725.5	0	4725.5

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2016-11-12	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LWA-80CW		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE161105-	120.0	60	0.6712	80.16	0.9953	8.87
BK2	277.0	60	0.3026	79.97	0.9542	13.29
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

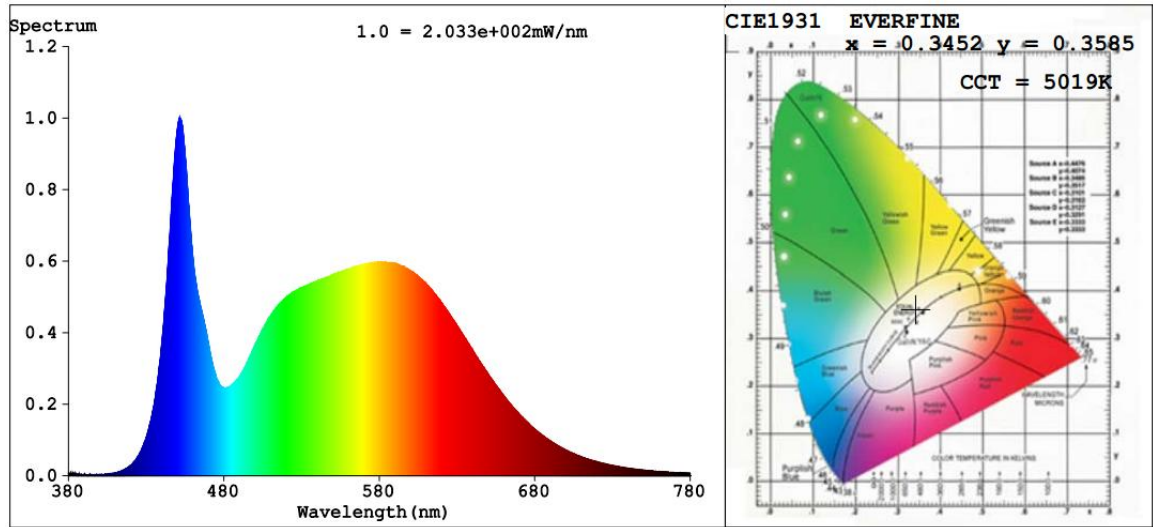
Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	81	R9	9
Frequency (Hz)	60	R2	88	R10	72
CCT (K)	5019	R3	93	R11	82
Duv	0.0034	R4	83	R12	61
Chromaticity (x, y)	x=0.3452 y=0.3585	R5	82	R13	83
Chromaticity (u', v')	u'=0.2089 v'=0.4880	R6	84	R14	96
Color Rendering Index (CRI)	83.3	R7	87	R15	76
R9	9	R8	67	--	--

Photometric Measurement – Sphere-Spectroradiometer Method :

Parameter	Result		DLC V4.0 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	9241	9188	>=300 (-10%)	
Luminous Efficacy (lm/W)	115.28	114.89	Standard: >= 95(-3%)	Premium: >= 115(-3%)

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	2016-07-01	2017-06-30
ST-R-331	Spectral analysis system HAAS-2000	2016-07-01	2017-06-30
D204	Standard Lamp	2016-07-01	2017-06-30
PF2010	Power Meter for Integrating Sphere	2016-07-01	2017-06-30
EE-09	Goniophotometer system	2016-07-01	2017-06-30
D908S	Standard Lamp	2016-07-01	2017-06-30
PF210	Power Meter for Goniophotometer	2016-07-01	2017-06-30
ST-R-181A	Temperature Tester	2016-07-01	2017-06-30
Uncertainty: Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

******* END OF REPORT *******

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