

LM-79-08 Test Report

Outdoor Non-Cutoff and Semi-Cutoff Wall-mounted Area Luminaires

Model name(s): WML-50W

Representative (Tested) Model: WML-50NW
WML-50CW

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

Test & Report By:

Johnson Sun

Engineer: Johnson Sun

Update: Nov.28, 2016

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

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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, Outdoor Non-Cutoff and Semi	-Cutoff Wall-mounted Area	
list base type and lamp type)	Luminaires	
Rated Voltage / Frequency	100 -277Vac, 50/60 Hz	
Nominal Power	50W	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K,5000K	
LED Manufacturer	Philips Lumileds	
LED Model	LUXEON 3030 2D	
Sample Number	GZE161105-S1(4000K),S2(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.21,2016
Date of Test	: Nov.22,2016
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:</p> <p>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:</p> <p>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:</p> <p>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	2016-11-22	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	WML-50NW		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE161105-	120.0	60	0.4091	47.99	0.9776	12.59
S1	277.0	60	0.1891	47.42	0.9054	16.37
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

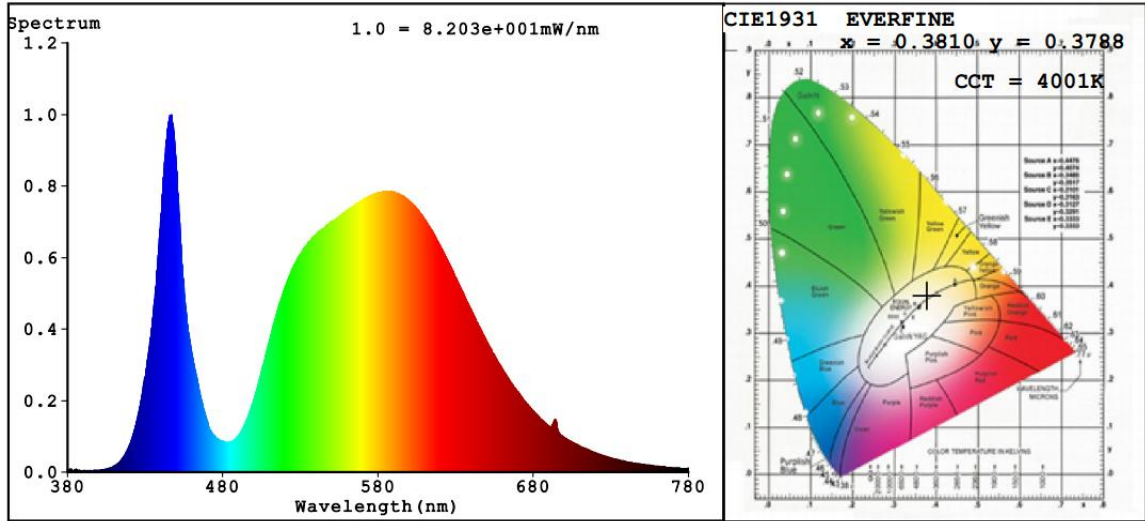
Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	72	R9	0
Frequency (Hz)	60	R2	78	R10	47
CCT (K)	4001	R3	82	R11	70
Duv	0.0008	R4	74	R12	42
Chromaticity (x, y)	x=0.3810 y=0.3788	R5	71	R13	72
Chromaticity (u', v')	u'=0.2246 v'=0.5026	R6	69	R14	89
Color Rendering Index (CRI)	73.0	R7	81	R15	66
R9	0	R8	58	--	--

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)	5848.0	5964.5		
Luminous Efficacy (lm/W)	121.86	125.78		
Total Luminous (lm)(0-90 °)	4726.7	4633.5	$\geq 300 (-10\%)$	
Luminous Efficacy (lm/W)(0-90 °)	98.49	97.71	Standard: $\geq 95(-3\%)$	Premium: $\geq 115(-3\%)$
Zonal lumens in the (80-90 °)/(0-90 °) zone (%)	12.9	--	$\leq 10(3)$	
Beam Angle (°)	102.3	--	--	
Center Beam Candle Power (cd)	1170	--	--	

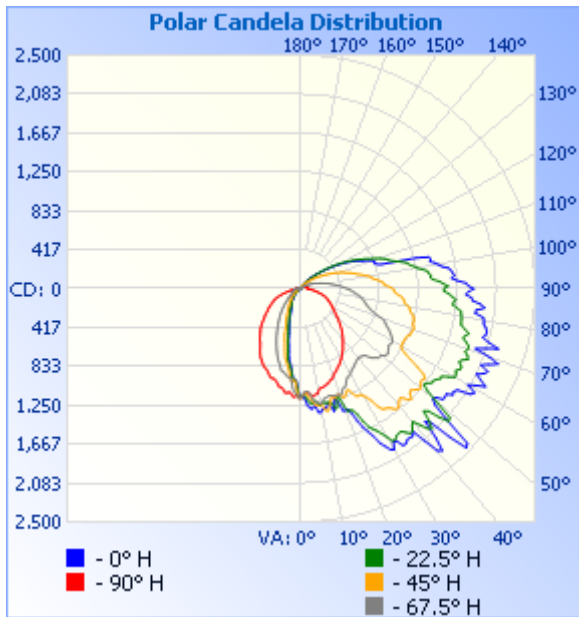
Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	789.0	13.2%
0-40	1,347.0	22.6%
0-60	2,712.3	45.4%
60-90	2,014.4	33.7%
70-100	1,797.3	30.1%
90-120	1,064.7	17.8%
0-90	4,726.7	79.2%
90-180	1,242.2	20.8%
0-180	5,968.9	100%

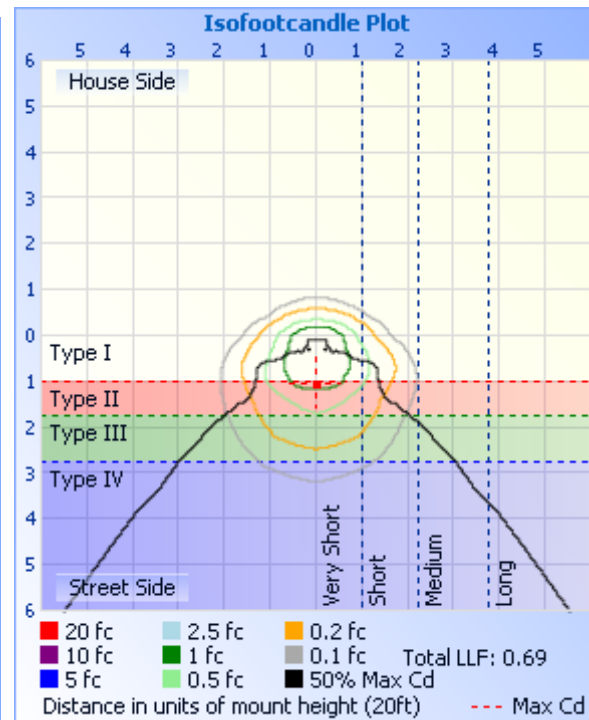
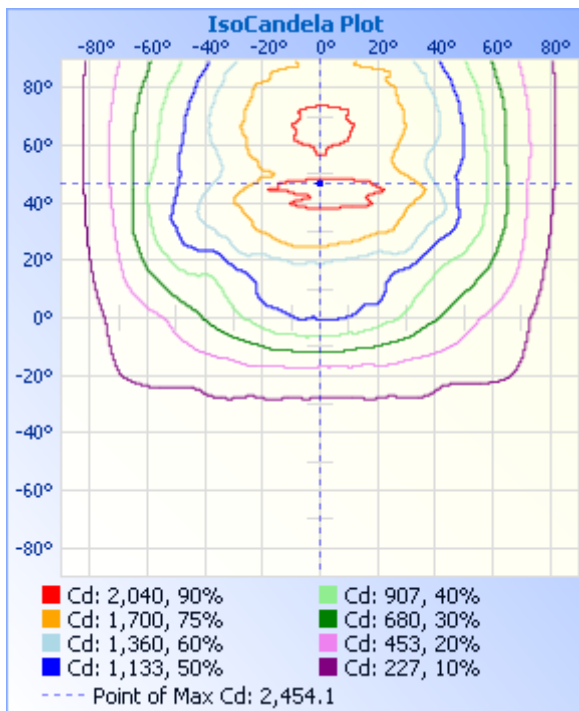
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	104.4	1.7%	90-100	499.3	8.4%
10-20	273.2	4.6%	100-110	352.0	5.9%
20-30	411.4	6.9%	110-120	213.4	3.6%
30-40	558.1	9.3%	120-130	109.4	1.8%
40-50	672.3	11.3%	130-140	45.8	0.8%
50-60	693.0	11.6%	140-150	16.5	0.3%
60-70	716.3	12.0%	150-160	4.7	0.1%
70-80	688.1	11.5%	160-170	0.9	0%
80-90	609.9	10.2%	170-180	0.2	0%



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	4.05 fc	45.4 ft	39.6 ft
34.0ft	1.01 fc	90.9 ft	79.2 ft
51.0ft	0.45 fc	136.3 ft	118.9 ft
68.0ft	0.25 fc	181.8 ft	158.5 ft
85.0ft	0.16 fc	227.2 ft	198.1 ft
102.0ft	0.11 fc	272.7 ft	237.7 ft

■ Vert. Spread: 106.4°
■ Horiz. Spread: 98.7°



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C (DEG) \ γ (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338
0	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170
5	1140	1183	1253	1288	1296	1240	1191	1137	1134	1059	949	945	971	974	991	1060
10	1097	1239	1236	1326	1314	1256	1252	1249	1101	956	853	771	747	790	835	939
15	1025	1180	1233	1235	1361	1269	1223	1183	1060	899	693	558	496	541	676	865
20	991	1220	1181	1301	1385	1336	1213	1215	1003	775	518	394	356	387	508	748
25	927	1126	1177	1494	1693	1571	1196	1133	925	630	397	289	257	282	379	627
30	862	1062	1258	1776	1991	1834	1323	1052	864	525	299	215	199	215	289	512
35	761	1005	1554	1901	1979	1866	1568	996	780	422	229	173	169	177	229	418
40	688	986	1674	1918	2266	1858	1628	958	695	343	181	141	135	147	182	334
45	616	944	1699	2017	2248	1851	1669	1038	611	273	146	115	105	117	145	261
50	531	984	1695	2034	1841	1907	1662	1114	519	215	117	87.3	76.9	87.6	116	198
55	455	997	1761	1731	1981	1723	1598	1140	441	174	90.5	61.6	46.1	63.5	94.8	151
60	392	1003	1333	1873	2059	1898	1235	1126	384	145	69.4	35.6	26.8	40.1	74.4	121
65	332	922	1278	1892	2154	1864	1236	1035	333	122	54.6	26.0	17.4	27.2	59.7	103
70	271	835	1329	1940	2146	1895	1280	901	288	107	42.7	12.9	5.76	12.1	44.4	92.2
75	191	714	1311	1906	2010	1858	1244	738	226	95.8	28.0	3.26	3.53	3.10	25.5	85.4
80	116	648	1243	1817	1984	1741	1177	670	161	83.1	19.3	3.57	3.99	3.46	17.1	72.5
85	74.0	564	1145	1742	1929	1637	1085	586	110	66.7	15.8	4.33	4.71	4.07	13.7	57.7
90	53.7	471	1030	1618	1845	1525	983	493	79.2	53.7	12.8	4.44	5.27	4.37	11.0	48.5
95	44.2	373	910	1463	1647	1386	865	394	66.4	45.3	9.94	4.49	5.27	4.42	8.75	40.2
100	41.3	277	775	1334	1491	1265	743	305	56.9	38.3	7.57	4.13	5.22	4.27	7.33	33.7
105	39.4	200	649	1172	1275	1113	612	228	47.9	32.7	6.21	4.08	5.22	4.02	6.28	27.9
110	37.7	148	531	972	836	939	503	169	39.0	26.8	5.30	3.72	4.75	3.61	5.52	22.1
115	34.2	110	415	779	710	756	398	123	34.8	21.0	4.54	3.77	4.50	3.56	4.55	17.3
120	27.8	82.2	304	593	564	592	298	87.9	29.2	15.3	3.94	3.41	4.09	3.20	4.15	13.1
125	20.9	59.2	222	426	412	434	220	59.9	22.3	10.8	3.23	2.96	3.73	3.10	3.54	10.3
130	15.7	42.0	162	292	288	294	161	40.2	16.1	7.85	2.63	2.85	3.38	3.00	3.09	8.31
135	11.6	28.5	116	193	199	185	115	26.2	11.8	5.94	2.22	2.85	3.43	3.00	2.88	6.40
140	8.53	19.3	80.2	126	137	116	79.5	18.6	8.29	4.77	2.17	2.85	3.28	3.00	2.68	4.78
145	6.10	11.8	52.0	76.6	92.7	72.7	51.6	11.7	5.69	3.57	2.02	2.85	3.17	3.00	2.68	3.52
150	4.49	7.07	30.6	48.1	58.7	46.6	29.8	6.56	3.92	2.92	2.02	2.50	3.02	2.64	2.63	2.47
155	3.33	3.89	16.1	27.0	34.4	27.8	16.2	3.43	2.66	2.11	1.97	2.04	2.35	2.34	2.28	2.02
160	2.32	2.32	6.54	13.7	18.4	15.1	6.94	2.02	1.81	1.66	1.77	1.94	2.05	2.13	2.13	1.97
165	1.76	1.51	2.28	5.11	6.68	5.40	2.28	1.41	1.61	1.71	1.82	1.94	2.05	2.14	2.13	2.12
170	2.01	1.71	1.52	1.63	1.59	1.63	1.52	1.56	2.27	2.27	2.68	2.65	2.40	2.29	2.38	2.47
175	2.16	2.16	2.12	1.89	1.64	1.68	1.97	2.07	2.27	2.16	2.58	2.55	2.45	2.29	2.33	2.52
180	2.11	2.52	2.12	2.04	1.94	2.03	2.18	2.12	2.22	2.22	2.38	2.19	2.05	1.88	2.02	2.12

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BUG Rating: B1-U4-G4

IESNA Luminaire Flux Distribution Table:

Zone	Lumens	Luminaire %
FL - Front-Low(0-30)	533.2	8.9
FM - Front-Medium(30-60)	1672.2	28.0
FH - Front-High(60-80)	1325.4	22.2
FVH - Front-Very High(80-90)	589.86	9.9
Total Forward Light	5326.3	89.3

BL - Back-Low(0-30)	255.84	4.3
BM - Back-Medium(30-60)	250.61	4.2
BH - Back-High(60-80)	77.728	1.3
BVH - Back-Very High(80-90)	19.271	0.3
Total Back Light	638.22	10.7

UL - Uplight-Low(90-100)	498.55	8.4
UH - Uplight-High(100-180)	741.8	12.4
Total Up Light	1240.3	20.8

BUG(Back,Up,Glare) Rating	B1-U4-G4
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Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	603.45	34.77	638.22
Street Side	4120.7	1205.6	5326.3

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2016-11-22	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	WML-50CW		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE161105-	120.0	60	0.4101	48.15	0.9785	12.53
S2	277.0	60	0.1895	47.58	0.9063	16.31
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

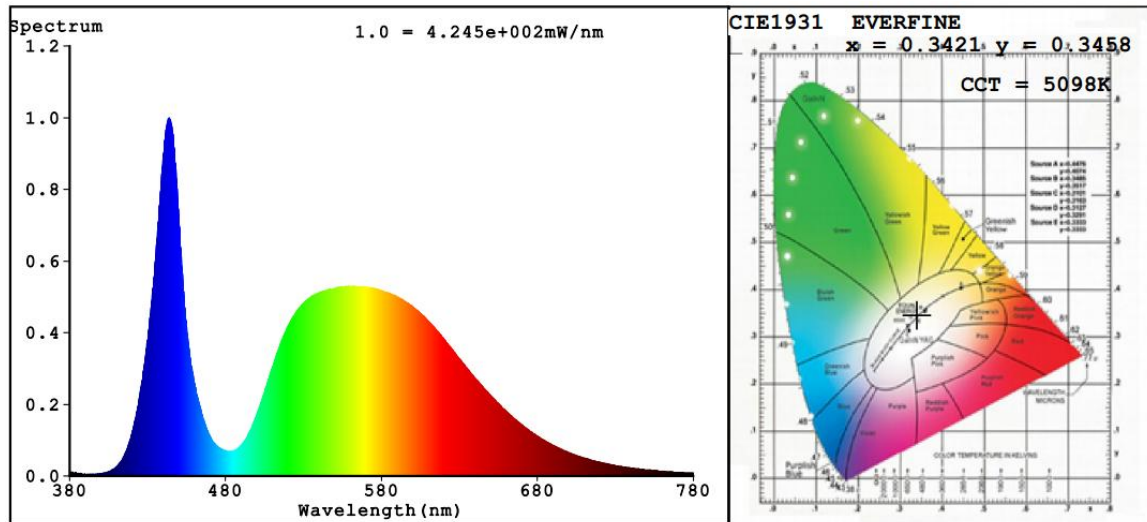
Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	73	R9	0
Frequency (Hz)	60	R2	75	R10	39
CCT (K)	5098	R3	74	R11	74
Duv	-0.0017	R4	74	R12	45
Chromaticity (x, y)	x=0.3421 y=0.3458	R5	73	R13	72
Chromaticity (u', v')	u'=0.2117 v'=0.4814	R6	66	R14	85
Color Rendering Index (CRI)	71.9	R7	77	R15	69
R9	0	R8	63	--	--

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)	5969	6088		
Luminous Efficacy (lm/W)	123.97	127.95		
Total Luminous (lm)(0-90 °)	4824	4729	>=300 (-10%)	
Luminous Efficacy(lm/W)(0-90 °)	100.19	99.39	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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