

LM-79-08 Test Report

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

Model name(s): WML-30W

Remark: X=CCT(4=4000K,5=5000K)

YY=Mounting Option(WM=Wall Mount)

ZZ=Housing Color(use 2 digits to indicate all of color)

Representative (Tested) Model: WML-30WW
WML-30CW

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.

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 Non-Cutoff and Semi-Cutoff Wall-mounted Area	Luminaires
Rated Voltage / Frequency	100 -277Vac, 50/60 Hz	
Nominal Power	30W	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K,5000K	
LED Manufacturer	Philips Lumileds	
LED Model	L130-2780003000W21	
Sample Number	GZE161105-R1(4000K),R2(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

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.

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.

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.

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-30WW		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE161105-	120.0	60	0.2544	29.90	0.9795	13.05
R1	277.0	60	0.1168	29.82	0.9220	16.82
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

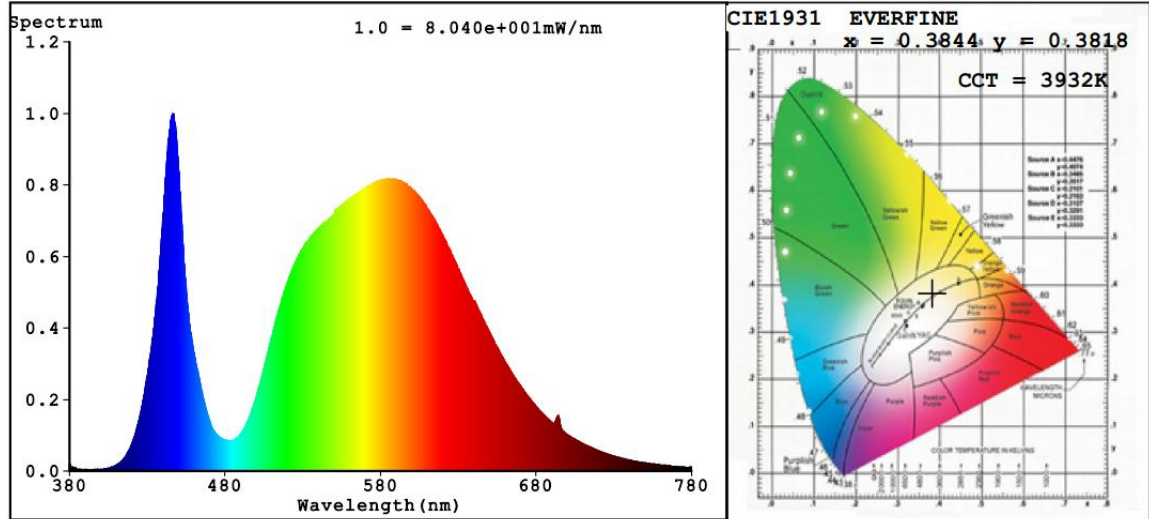
Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	71	R9	0
Frequency (Hz)	60	R2	78	R10	47
CCT (K)	3932	R3	82	R11	70
Duv	0.0012	R4	73	R12	41
Chromaticity (x, y)	x=0.3844 y=0.3818	R5	70	R13	71
Chromaticity (u', v')	u'=0.2257 v'=0.5044	R6	68	R14	90
Color Rendering Index (CRI)	72.7	R7	81	R15	66
R9	0	R8	57	--	--

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)	3242.8	3241.6		
Luminous Efficacy (lm/W)	108.45	108.71		
Total Luminous (lm)(0-90 °)	2724.8	2723.7	>=300 (-10%)	
Luminous Efficacy (lm/W)(0-90 °)	91.13	91.34	Standard: >= 90(-3%)	Premium: >= 110(-3%)
Zonal lumens in the (80-90 °)/(0-90 °) zone (%)	11.1	--	<=10(3)	
Beam Angle (°)	126.3	--	--	
Center Beam Candle Power (cd)	655	--	--	

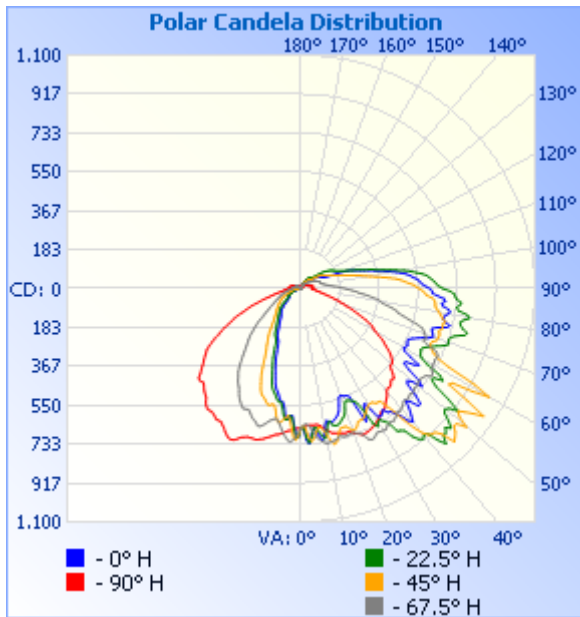
Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	510.0	15.7%
0-40	857.0	26.4%
0-60	1,697.6	52.3%
60-90	1,027.2	31.7%
70-100	878.4	27.1%
90-120	428.8	13.2%
0-90	2,724.8	84%
90-180	518.1	16%
0-180	3,242.9	100%

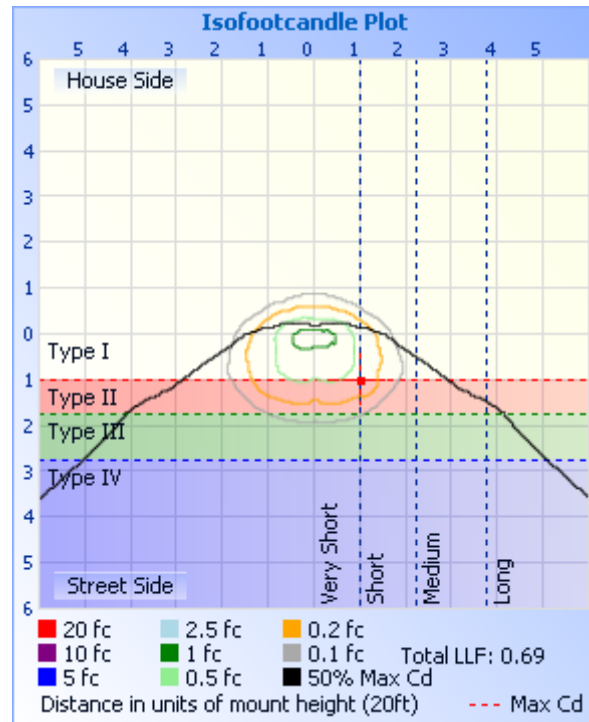
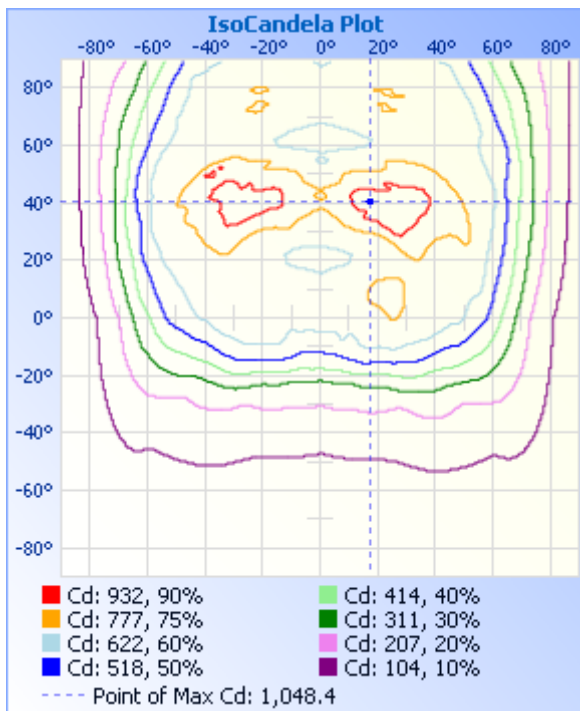
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	63.6	2.0%	90-100	222.9	6.9%
10-20	178.9	5.5%	100-110	131.5	4.1%
20-30	267.5	8.3%	110-120	74.4	2.3%
30-40	347.0	10.7%	120-130	46.3	1.4%
40-50	418.7	12.9%	130-140	23.8	0.7%
50-60	421.9	13.0%	140-150	13.0	0.4%
60-70	371.7	11.5%	150-160	5.1	0.2%
70-80	353.6	10.9%	160-170	1.0	0%
80-90	301.9	9.3%	170-180	0.1	0%



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	2.27 fc	52.7 ft	70.8 ft
34.0ft	0.57 fc	105.5 ft	141.6 ft
51.0ft	0.25 fc	158.2 ft	212.5 ft
68.0ft	0.14 fc	210.9 ft	283.3 ft
85.0ft	0.09 fc	263.6 ft	354.1 ft
102.0ft	0.06 fc	316.4 ft	424.9 ft

■ Vert. Spread: 114.4°
■ Horiz. Spread: 128.7°



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

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C (DEG) y (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338
0	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
5	672	739	727	675	661	661	708	684	645	705	603	588	604	602	617	718
10	698	760	747	709	651	696	700	739	673	611	602	533	539	545	637	631
15	734	758	721	667	631	664	694	719	705	648	552	478	467	500	568	661
20	743	804	737	617	536	601	711	721	725	637	517	374	345	397	535	655
25	784	823	709	607	618	585	680	785	744	605	411	270	259	283	441	626
30	740	804	631	750	662	726	633	772	719	551	316	235	208	244	328	584
35	720	711	733	847	712	816	647	761	688	482	250	188	166	197	267	517
40	698	731	980	922	818	899	887	735	626	390	195	158	147	165	204	436
45	647	690	994	983	781	962	1020	719	602	307	164	137	119	142	170	355
50	618	710	1006	862	681	884	1015	714	555	241	140	106	82.3	112	148	285
55	552	820	922	717	600	751	1048	715	499	187	123	77.7	71.1	78.8	129	210
60	470	739	873	653	557	655	1021	716	404	145	105	68.8	64.8	66.0	111	161
65	362	696	694	645	561	651	677	702	316	119	83.3	59.0	57.6	55.4	90.6	127
70	260	621	681	731	661	739	684	616	212	99.1	63.4	47.0	42.2	45.1	69.0	106
75	167	553	725	800	710	809	690	497	134	82.8	50.3	31.2	24.7	33.5	53.6	84.8
80	110	457	734	815	699	804	662	388	87.9	66.5	39.6	17.3	7.45	20.4	42.1	68.7
85	78.2	377	655	753	681	756	630	294	65.2	49.5	31.0	9.20	3.01	11.8	32.6	52.6
90	62.5	286	606	655	607	670	557	209	51.3	38.6	21.6	2.44	1.06	4.33	24.1	43.1
95	54.1	208	502	608	542	605	471	147	51.3	34.5	17.0	1.59	0.95	3.01	18.8	37.9
100	49.7	141	385	496	451	494	332	114	56.6	31.2	13.9	1.11	0.95	1.75	16.0	33.9
105	47.8	116	270	346	330	349	242	97.9	49.9	29.3	11.1	0.64	0.84	1.22	14.2	30.5
110	43.1	105	195	258	252	254	183	92.5	39.7	28.4	9.07	0.58	0.53	0.84	12.0	29.0
115	37.9	91.8	154	207	133	200	148	83.4	33.7	23.3	7.80	0.53	0.53	0.74	9.85	26.4
120	32.7	78.7	133	173	112	171	127	71.2	32.0	20.0	6.20	0.53	0.53	0.74	7.64	22.4
125	28.6	61.5	111	148	96.3	145	107	57.5	28.5	17.0	4.55	0.53	0.53	0.69	5.80	17.6
130	24.3	50.5	78.8	106	73.6	104	76.3	49.2	24.6	13.2	2.81	0.53	0.53	0.63	3.95	13.6
135	19.2	40.8	62.0	76.7	56.1	75.2	61.0	41.1	19.9	9.76	1.95	0.53	0.53	0.58	2.62	9.85
140	14.5	32.5	52.7	67.3	51.6	65.6	52.6	32.5	15.1	6.69	1.01	0.53	0.48	0.48	1.26	6.51
145	9.99	25.1	44.0	57.6	47.5	59.1	44.3	24.0	9.95	4.41	0.69	0.53	0.48	0.48	0.63	3.66
150	6.11	17.0	35.8	43.1	41.9	43.1	34.6	15.7	5.68	2.92	0.58	0.53	0.48	0.48	0.63	1.57
155	3.13	9.51	25.3	30.6	32.6	28.5	23.3	8.25	2.75	1.54	0.58	0.53	0.48	0.48	0.63	0.63
160	1.07	1.85	15.9	18.0	21.7	16.4	14.7	1.58	0.64	0.64	0.58	0.53	0.42	0.58	0.63	0.58
165	0.69	0.64	6.99	9.84	12.4	8.65	6.05	0.68	0.69	0.64	0.58	0.58	0.58	0.59	0.69	0.68
170	0.69	0.64	0.85	3.12	4.33	2.68	0.95	0.68	1.11	0.90	1.12	1.01	0.79	0.69	0.90	1.10
175	0.90	1.01	0.90	0.80	0.74	0.95	0.90	0.94	0.96	0.95	1.27	1.06	0.79	0.69	0.90	1.16
180	0.85	1.17	0.96	0.80	0.64	0.90	1.11	1.21	0.96	0.85	1.27	0.95	0.79	0.69	0.90	1.10

BUG Rating: B1-U3-G3**IESNA Luminaire Flux Distribution Table:**

Zone	Lumens	Luminaire %
FL - Front-Low(0-30)	295.25	9.1
FM - Front-Medium(30-60)	906.88	28.0
FH - Front-High(60-80)	635.84	19.6
FVH - Front-Very High(80-90)	284.11	8.8
Total Forward Light	2605.2	80.3

BL - Back-Low(0-30)	214.82	6.6
BM - Back-Medium(30-60)	280.98	8.7
BH - Back-High(60-80)	89.382	2.8
BVH - Back-Very High(80-90)	17.647	0.5
Total Back Light	637.6	19.7

UL - Uplight-Low(90-100)	222.83	6.9
UH - Uplight-High(100-180)	295.1	9.1
Total Up Light	517.93	16.0

BUG(Back,Up,Glare) Rating	B1-U3-G3
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Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	602.83	34.774	637.6
Street Side	2122.1	483.15	2605.2

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-30CW		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE161105-	120.0	60	0.2550	29.98	0.9798	13.02
R2	277.0	60	0.1170	29.90	0.9224	16.79
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

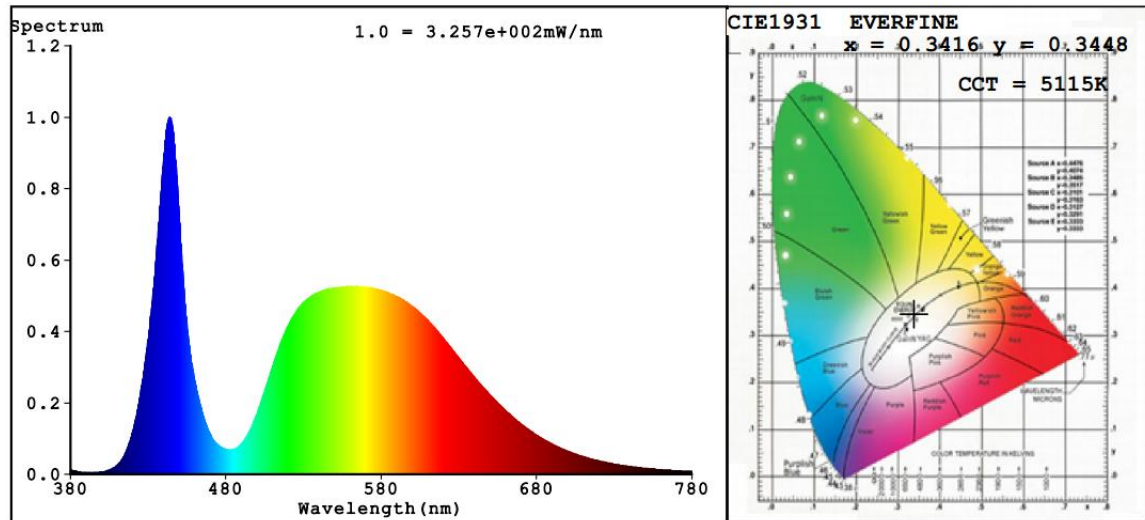
Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	73	R9	0
Frequency (Hz)	60	R2	75	R10	39
CCT (K)	5115	R3	74	R11	74
Duv	-0.0020	R4	74	R12	45
Chromaticity (x, y)	x=0.3416 y=0.3448	R5	73	R13	72
Chromaticity (u', v')	u'=0.2117 v'=0.4808	R6	66	R14	85
Color Rendering Index (CRI)	72.0	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)	3316	3315		
Luminous Efficacy (lm/W)	110.61	110.87		
Total Luminous (lm)(0-90 °)	2786	2785	>=300 (-10%)	
Luminous Efficacy(lm/W)(0-90 °)	92.93	93.14	Standard: >= 90(-3%)	Premium: >= 110(-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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