



Report No.: GZE160886-E

NVLAP LAB CODE 201011-0

LM-79-08 Test Report

Outdoor Full-Cutoff Wall-mounted Area Luminaires

Model name(s): LWP2-50W

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

Representative (Tested) Model: LWP2-50WW
LWP2-50CW

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

Test & Report By:

Garman Mo

Engineer: Garman Mo

Update: Aug 31, 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

Address: Standard-Tech Building, No.6 Guanhong Road, Guangzhou Science City, Guangzhou 510663, China

Tel: 8620-3229 0320 Fax: 8620-32290422 <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	50W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,4000K,5000K	
LED Manufacturer	Philips Lumileds	
LED Model	LUXEON 3030 2D	
Sample Number	GZE160886-E1(3000K);E2(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	: Aug.26,2016
Date of Test	: Aug.27,2016
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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, 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 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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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 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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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	2016-08-27	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LWP2-50WW		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160886-	120.0	60	0.4017	47.66	0.9887	11.72
E1	277.0	60	0.1854	46.38	0.9029	13.62
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

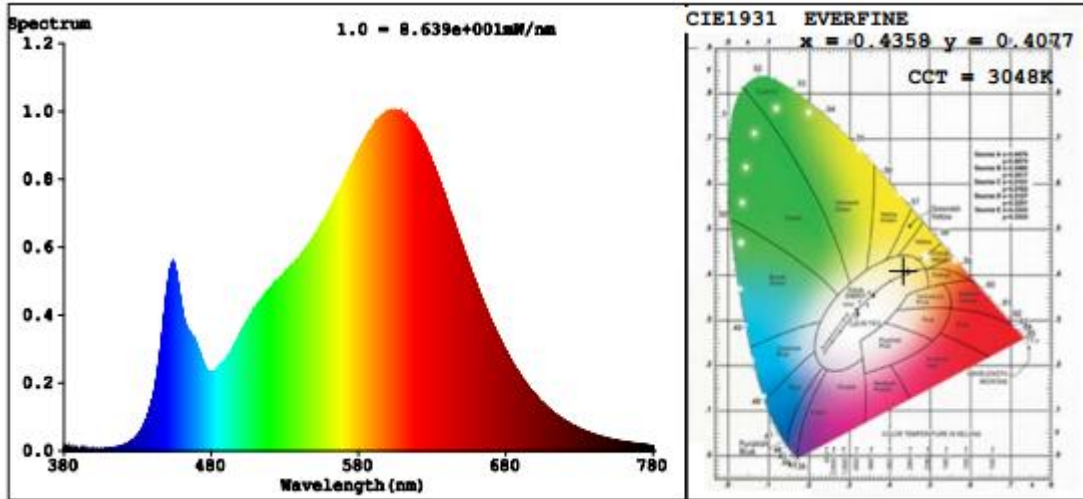
Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	12
Frequency (Hz)	60	R2	92	R10	82
CCT (K)	3048	R3	96	R11	80
Duv	0.0016	R4	81	R12	70
Chromaticity (x, y)	x=0.4358 y=0.4077	R5	82	R13	85
Chromaticity (u', v')	u'=0.2483 v'=0.5226	R6	91	R14	99
Color Rendering Index (CRI)	83.6	R7	84	R15	75
R9	12	R8	61	--	--

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)	5656.0	5453.6	5000-10000 (±10%)	
Luminous Efficacy (lm/W)	118.67	117.59	Standard: >= 95(-3%)	Premium: >= 115(-3%)
Zonal lumens in the 0-90° zone (%)	99.9	--	>=100(-3)	
Zonal lumens in the 80-90° zone (%)	1.0	--	<=10(+3)	
Beam Angle (°)	122.6	--	--	
Center Beam Candle Power (cd)	1704	--	--	

Spectral Power Distribution & Chromaticity Diagram

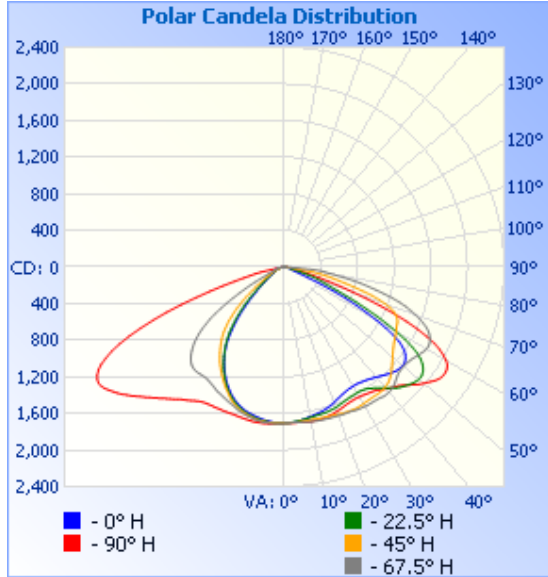


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,368.6	24.2%
0-40	2,307.2	40.8%
0-60	4,460.9	78.9%
60-90	1,185.6	21%
70-100	404.9	7.2%
90-120	2.2	0%
0-90	5,646.5	99.9%
90-180	7.9	0.1%
0-180	5,654.4	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	162.1	2.9%	90-100	0.2	0%
10-20	471.9	8.3%	100-110	0.8	0%
20-30	734.6	13.0%	110-120	1.2	0%
30-40	938.6	16.6%	120-130	1.4	0%
40-50	1,077.4	19.1%	130-140	1.3	0%
50-60	1,076.3	19.0%	140-150	1.2	0%
60-70	780.9	13.8%	150-160	0.9	0%
70-80	346.8	6.1%	160-170	0.6	0%
80-90	57.9	1.0%	170-180	0.3	0%

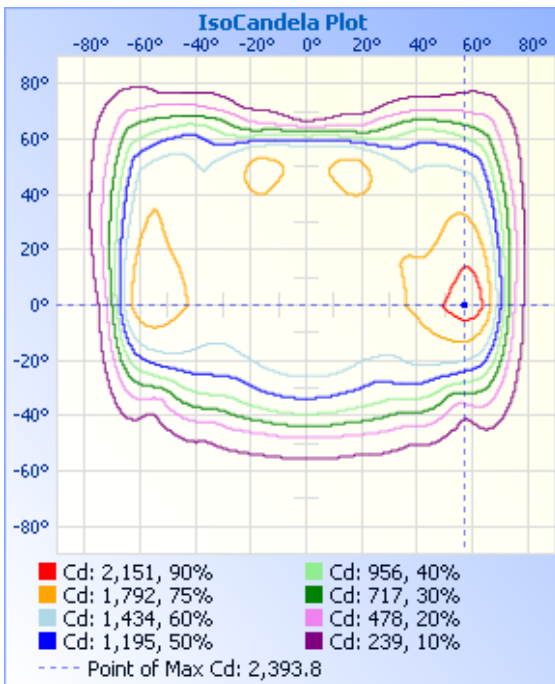
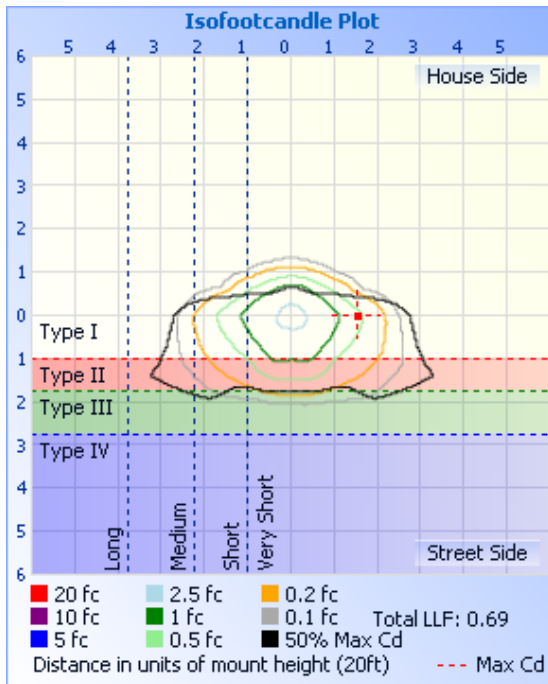
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	5.89 fc	28.3 ft	87.8 ft
34.0ft	1.47 fc	56.6 ft	175.5 ft
51.0ft	0.65 fc	84.9 ft	263.3 ft
68.0ft	0.37 fc	113.2 ft	351.0 ft
85.0ft	0.24 fc	141.5 ft	438.8 ft
102.0ft	0.16 fc	169.8 ft	526.5 ft

■ Vert. Spread: 79.5°
■ Horiz. Spread: 137.6°



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Table--1

UNIT: cd

T (DEG)	C (DEG)															
	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338
0	1704	1704	1704	1704	1704	1704	1704	1704	1704	1704	1704	1704	1704	1704	1704	1704
5	1716	1711	1702	1690	1693	1690	1699	1702	1704	1701	1698	1697	1695	1703	1705	1712
10	1721	1722	1694	1663	1657	1667	1693	1713	1711	1700	1685	1673	1667	1683	1694	1701
15	1712	1726	1684	1647	1626	1653	1697	1720	1703	1683	1643	1632	1627	1643	1656	1669
20	1702	1731	1691	1625	1575	1633	1710	1727	1677	1626	1576	1567	1557	1574	1593	1616
25	1706	1751	1702	1594	1523	1601	1727	1737	1644	1547	1486	1460	1449	1467	1486	1568
30	1716	1772	1712	1570	1502	1586	1726	1759	1638	1467	1361	1322	1306	1321	1362	1523
35	1780	1785	1693	1609	1518	1619	1719	1765	1662	1399	1205	1157	1134	1142	1229	1484
40	1883	1797	1700	1720	1568	1726	1711	1781	1734	1354	1037	936	891	932	1076	1491
45	2021	1745	1666	1858	1639	1843	1649	1728	1827	1299	829	652	604	671	884	1444
50	2186	1741	1561	1926	1682	1912	1543	1693	1978	1146	563	395	369	418	635	1284
55	2341	1783	1476	1814	1600	1840	1459	1727	2095	851	327	249	236	256	388	994
60	2362	1786	1396	1337	1166	1415	1408	1792	2038	457	202	177	162	177	224	566
65	1989	1650	1278	657	437	743	1361	1748	1606	198	144	131	114	135	144	250
70	1195	1457	1039	316	104	387	1172	1523	793	120	100.0	93.1	99.5	94.2	100	130
75	462	1083	584	92.5	71.8	133	694	1127	252	86.2	67.3	74.1	89.5	71.6	66.6	87.0
80	99.2	585	214	46.1	44.1	52.8	318	663	73.4	50.3	36.5	44.1	49.7	42.0	33.0	53.0
85	27.4	179	11.6	13.0	15.7	13.5	15.9	318	32.0	18.2	11.8	15.9	14.9	14.6	10.6	17.8
90	0.26	0.74	0.00	0.00	0.00	0.00	0.00	0.86	0.21	0.26	0.00	0.00	0.00	0.00	0.00	0.42
95	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.69	0.05	0.00	0.00	0.00	0.16	0.80
100	0.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.21	1.48	0.63	0.00	0.00	0.00	0.74	1.64
105	1.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.15	2.21	1.05	0.11	0.00	0.27	1.12	2.43
110	2.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.89	2.84	1.26	0.75	0.48	0.80	1.54	3.01
115	3.15	0.37	0.00	0.00	0.00	0.00	0.00	0.58	2.99	2.95	1.68	1.06	1.01	1.33	2.18	2.90
120	3.25	0.95	0.00	0.00	0.00	0.00	0.00	1.27	2.83	2.90	2.10	1.70	1.66	1.87	1.91	2.59
125	3.30	1.47	0.11	0.00	0.00	0.00	0.00	1.58	2.67	2.74	2.10	2.07	2.30	2.08	1.86	2.22
130	3.36	1.79	0.36	0.26	0.05	0.21	0.37	1.85	2.52	2.42	2.00	2.39	2.45	2.29	1.86	2.11
135	3.15	1.79	0.52	0.53	0.32	0.53	0.53	1.85	2.31	2.26	1.95	2.34	2.45	2.35	1.86	2.06
140	2.88	1.84	0.73	0.80	0.80	0.96	0.85	1.96	2.15	2.37	1.84	2.34	2.45	2.24	1.76	2.16
145	2.67	1.79	1.31	1.22	0.85	1.28	0.96	1.95	2.15	2.16	2.10	2.34	2.35	2.24	2.02	2.11
150	2.57	1.63	1.78	1.38	1.50	1.50	1.43	2.01	2.04	2.16	2.16	2.34	2.35	2.24	2.45	2.01
155	2.05	1.84	2.21	1.75	2.08	1.71	1.91	2.11	1.83	2.21	2.16	2.34	2.19	2.24	2.23	2.01
160	1.89	2.00	2.20	2.02	2.14	1.97	2.02	2.11	1.84	1.95	2.16	2.34	2.19	2.35	2.23	2.06
165	1.99	2.16	2.47	2.02	2.13	2.03	2.18	2.17	2.15	1.95	2.26	2.34	2.19	2.46	2.39	2.27
170	2.15	2.37	2.99	2.60	2.56	2.72	2.92	2.27	2.41	2.48	2.94	3.19	3.20	3.20	3.03	3.06
175	2.20	2.69	3.31	2.87	3.15	2.99	3.14	2.32	2.36	2.48	2.94	3.19	3.09	3.31	3.03	3.06
180	2.20	2.84	3.36	2.98	3.26	3.15	3.08	2.32	2.25	2.21	2.84	3.19	2.99	3.25	3.03	3.06

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2.2 Electrical, Photometric and Chromaticity Measurements
(Refer to Work Instruction QD25)

Test date	2016-08-27	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LWP2-50CW		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160886-	120.0	60	0.3917	46.34	0.9858	12.59
E2	277.0	60	0.1806	45.10	0.9015	14.05
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

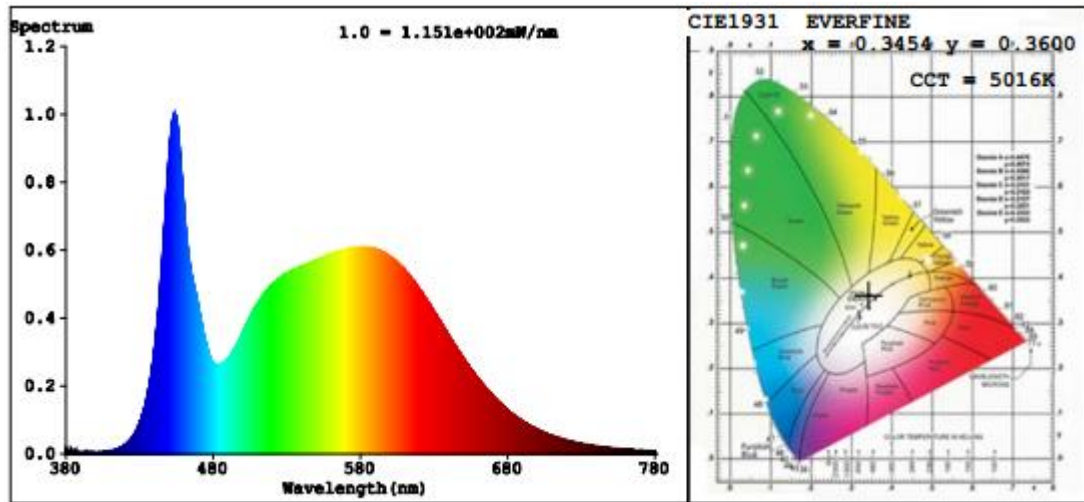
Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	81	R9	5
Frequency (Hz)	60	R2	89	R10	73
CCT (K)	5016	R3	94	R11	80
Duv	0.0041	R4	81	R12	59
Chromaticity (x, y)	x=0.3454 y=0.3600	R5	81	R13	83
Chromaticity (u', v')	u'=0.2084 v'=0.4888	R6	84	R14	97
Color Rendering Index (CRI)	82.7	R7	87	R15	75
R9	5	R8	66	--	--

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)	5798	5591	5000-10000 (±10%)	
Luminous Efficacy (lm/W)	125.12	123.97	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 *******