

## Report of Test

**LLIA002196-003**

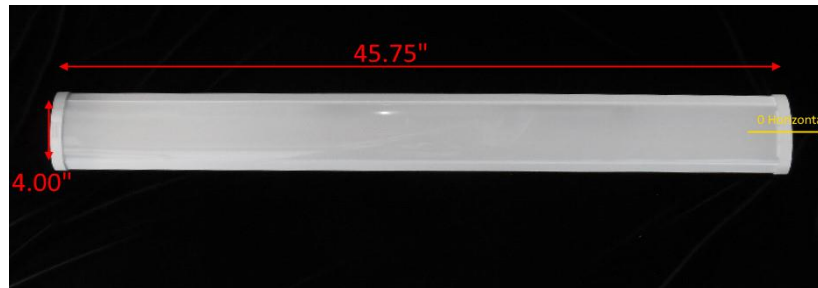
Indoor Distribution Photometry Test Report

Catalog Number: LWRAP4-48-40K-D

Surface mounted, formed white painted steel housing/reflector, diffuse white plastic enclosure.

280 white LEDs on one LED board with clear plastic enclosure.

One BL-A48W-60V-G0760LA LED driver



Prepared For:

Topaz Lighting, A Southwire Company  
925 Waverly Avenue  
Holtsville, NY 11742, USA

### Performance Summary

Input Voltage	120.0 Vac	Luminous Flux	5733.6 Lumens
Input Current	0.3970 A	Total Efficacy	122.5 lm/W
Input Power	46.81 W	Downward Flux	5719.4 Lumens
Frequency	60.00 Hz	Downward Flux	99.8 % of Total
Power Factor	0.983		
Current THD	6.8 %		

This test report was issued by LightLab International Allentown, LLC without alterations or erasures.

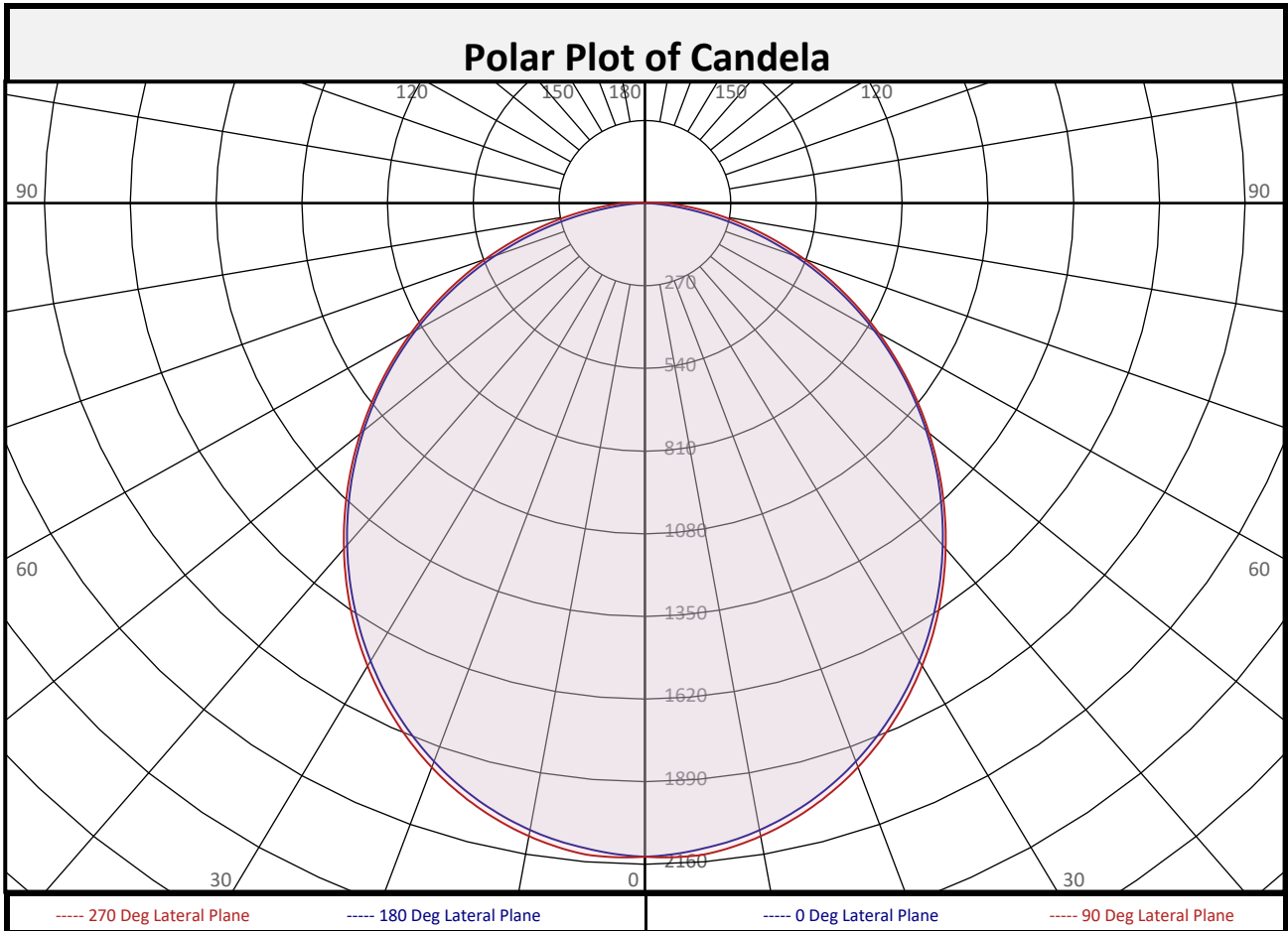
Test date: 08/21/2023

Report date: 08/29/2023

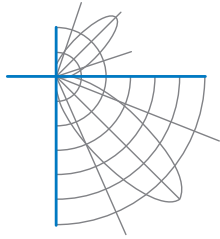
Signed: \_\_\_\_\_



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Zonal Flux Summary										
Zone (Deg Vert)	Flux (Lumens)	Percent of Total		Zone (Deg Vert)	Flux (Lumens)	Percent of Total		Zone (Deg Vert)	Flux (Lumens)	Percent of Total
0-10	201.6	3.5%		90-100	13.1	0.2%		0-20	773.5	13.5%
10-20	571.9	10.0%		100-110	1.1	0.0%		0-30	1626	28.4%
20-30	852.1	14.9%		110-120	0.0	0.0%		0-40	2630	45.9%
30-40	1004	17.5%		120-130	0.0	0.0%		0-60	4544	79.3%
40-50	1016	17.7%		130-140	0.0	0.0%		0-80	5601	97.7%
50-60	898.1	15.7%		140-150	0.0	0.0%		10-90	5518	96.2%
60-70	673.9	11.8%		150-160	0.0	0.0%		20-50	2873	50.1%
70-80	383.3	6.7%		160-170	0.0	0.0%		40-90	3090	53.9%
80-90	118.1	2.1%		170-180	0.0	0.0%		60-90	1175	20.5%
0-90	5719	99.8%		90-180	14.2	0.2%		0-180	5734	100.0%



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#### Luminous Intensity (Candela) Table

		Lateral (C-Plane) Angles								
		0	22.5	45	67.5	90	112.5	135	157.5	180
Vertical (Gamma) Angles - Data was acquired in 0.5° increments, 2.5° increments shown.	0	2135	2135	2135	2135	2135	2135	2135	2135	2135
	2.5	2128	2128	2131	2135	2139	2135	2131	2128	2128
	5	2116	2116	2120	2129	2136	2129	2120	2116	2116
	7.5	2101	2101	2105	2114	2121	2114	2105	2101	2101
	10	2080	2080	2085	2093	2100	2093	2085	2080	2080
	12.5	2053	2053	2058	2067	2073	2067	2058	2053	2053
	15	2021	2021	2027	2035	2041	2035	2027	2021	2021
	17.5	1984	1984	1989	1998	2003	1998	1989	1984	1984
	20	1941	1941	1947	1956	1961	1956	1947	1941	1941
	22.5	1894	1895	1900	1909	1914	1909	1900	1895	1894
	25	1842	1843	1849	1858	1862	1858	1849	1843	1842
	27.5	1787	1787	1793	1802	1806	1802	1793	1787	1787
	30	1727	1728	1733	1742	1745	1742	1733	1728	1727
	32.5	1664	1665	1671	1680	1682	1680	1671	1665	1664
	35	1598	1599	1605	1613	1615	1613	1605	1599	1598
	37.5	1530	1531	1537	1544	1546	1544	1537	1531	1530
	40	1458	1460	1465	1472	1473	1472	1465	1460	1458
	42.5	1385	1387	1392	1399	1399	1399	1392	1387	1385
	45	1310	1312	1317	1324	1324	1324	1317	1312	1310
	47.5	1234	1236	1241	1247	1247	1247	1241	1236	1234
50	1156	1158	1164	1169	1168	1169	1164	1158	1156	
52.5	1077	1079	1085	1090	1089	1090	1085	1079	1077	
55	997	999	1005	1011	1010	1011	1005	999	997	
57.5	916	919	925	931	930	931	925	919	916	
60	834	837	845	851	851	851	845	837	834	
62.5	751	755	763	770	770	770	763	755	751	
65	668	672	682	690	691	690	682	672	668	
67.5	584	589	601	611	612	611	601	589	584	
70	501	507	520	531	533	531	520	507	501	
72.5	418	425	441	454	457	454	441	425	418	
75	337	345	363	378	382	378	363	345	337	
77.5	258	267	288	306	312	306	288	267	258	
80	183	194	218	240	246	240	218	194	183	
82.5	115	128	156	180	188	180	156	128	115	
85	57	73	103	128	136	128	103	73	57	
87.5	16	33	62	85	94	85	62	33	16	
90	0	12	34	54	61	54	34	12	0	

16 lateral half-planes of data were acquired, 22.5 degree increments shown.

**North America (issuing laboratory)**

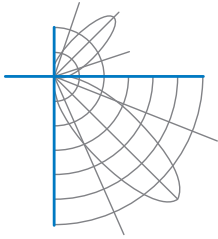
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Luminous Intensity (Candela) Table

		Lateral (C-Plane) Angles								
		0	22.5	45	67.5	90	112.5	135	157.5	180
Vertical (Gamma) Angles - Data was acquired in 0.5° increments, 2.5° increments shown.	90	0	12	34	54	61	54	34	12	0
	92.5	0	2	17	32	38	32	17	2	0
	95	0	0	8	18	22	18	8	0	0
	97.5	0	0	4	10	13	10	4	0	0
	100	0	0	2	6	8	6	2	0	0
	102.5	0	0	0	3	5	3	0	0	0
	105	0	0	0	2	3	2	0	0	0
	107.5	0	0	0	0	2	0	0	0	0
	110	0	0	0	0	0	0	0	0	0
	112.5	0	0	0	0	0	0	0	0	0
	115	0	0	0	0	0	0	0	0	0
	117.5	0	0	0	0	0	0	0	0	0
	120	0	0	0	0	0	0	0	0	0
	122.5	0	0	0	0	0	0	0	0	0
	125	0	0	0	0	0	0	0	0	0
	127.5	0	0	0	0	0	0	0	0	0
	130	0	0	0	0	0	0	0	0	0
	132.5	0	0	0	0	0	0	0	0	0
	135	0	0	0	0	0	0	0	0	0
	137.5	0	0	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0	0	0	
142.5	0	0	0	0	0	0	0	0	0	
145	0	0	0	0	0	0	0	0	0	
147.5	0	0	0	0	0	0	0	0	0	
150	0	0	0	0	0	0	0	0	0	
152.5	0	0	0	0	0	0	0	0	0	
155	0	0	0	0	0	0	0	0	0	
157.5	0	0	0	0	0	0	0	0	0	
160	0	0	0	0	0	0	0	0	0	
162.5	0	0	0	0	0	0	0	0	0	
165	0	0	0	0	0	0	0	0	0	
167.5	0	0	0	0	0	0	0	0	0	
170	0	0	0	0	0	0	0	0	0	
172.5	0	0	0	0	0	0	0	0	0	
175	0	0	0	0	0	0	0	0	0	
177.5	0	0	0	0	0	0	0	0	0	
180	0	0	0	0	0	0	0	0	0	

16 lateral half-planes of data were acquired, 22.5 degree increments shown.



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Coefficients of Utilization/Room Utilization - Zonal Cavity Method																					
Effective Floor Cavity Reflectance 0.20																					
RC	80				70				50				30				10				0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																					
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100			
1	109	104	100	96	106	102	98	94	97	94	91	93	91	88	90	88	86	84			
2	99	91	84	78	96	89	83	77	85	80	75	82	78	74	79	75	72	70			
3	90	80	72	65	88	78	71	65	75	69	63	72	67	62	70	65	61	59			
4	83	71	62	55	80	69	61	55	67	60	54	65	58	53	62	57	53	50			
5	76	63	54	48	74	62	54	47	60	53	47	58	51	46	56	50	46	44			
6	70	57	48	42	68	56	48	42	54	47	41	53	46	41	51	45	40	38			
7	65	52	43	37	64	51	43	37	49	42	37	48	41	36	47	41	36	34			
8	61	47	39	33	59	47	39	33	45	38	33	44	37	32	43	37	32	30			
9	57	43	35	30	55	43	35	30	42	35	29	41	34	29	40	34	29	27			
10	53	40	32	27	52	40	32	27	39	32	27	38	31	27	37	31	27	25			

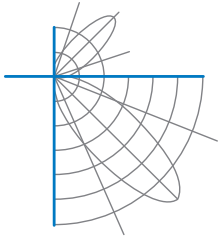
For absolute test reports, RUs are expressed as a percentage of total lumen output. For relative test reports, CUs are expressed as a percentage of total lamp output. Calculations were based on published IES procedures, and are based on the zonal cavity method. Basic assumptions: 1) Room surfaces are lambertian reflectors. 2) Incident flux on each surface is uniformly distributed. 3) The room is spectrally neutral. When luminaires are not evenly distributed throughout the room, or do not exhibit lateral symmetry, CU values may differ from actual performance.

Circle of Light Plot			
Height(ft)	Illuminance at Nadir (fc)	Ground-level distance to half-of-nadir illuminance (ft)	
		0-180 deg	90-270 deg
6.0	59.3	7.24	7.30
8.0	33.4	9.65	9.74
10.0	21.4	12.06	12.17
12.0	14.8	14.47	14.60
14.0	10.9	16.89	17.04
16.0	8.3	19.30	19.47

Spacing Criterion	
0 deg:	1.2
90 deg:	1.2
180 deg:	1.2
270 deg:	1.2

Average Luminance (cd/m <sup>2</sup> )			
	0 deg Plane	45 deg Plane	90 deg Plane
0	18085	18085	18085
45	15692	15113	14922
55	14724	13963	13694
65	13383	12487	12205
75	11018	10189	10146
85	5552	6666	7721

Beam and Field Angle	
0-180 Degree Plane	
Beam Angle:	105.5°
Field Angle:	157.9°
90-270 Degree Plane	
Beam Angle:	106.3°
Field Angle:	162.7°



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#### UGR Table - Corrected

##### Reflectances

Ceiling Cavity	70	70	50	50	30	70	70	50	50	30
Walls	50	30	50	30	30	50	30	50	30	30
Floor Cavity	20	20	20	20	20	20	20	20	20	20

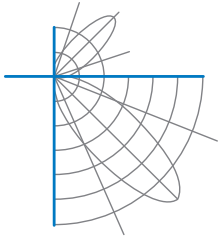
##### Room Size

##### UGR Viewed Crosswise

##### UGR Viewed Endwise

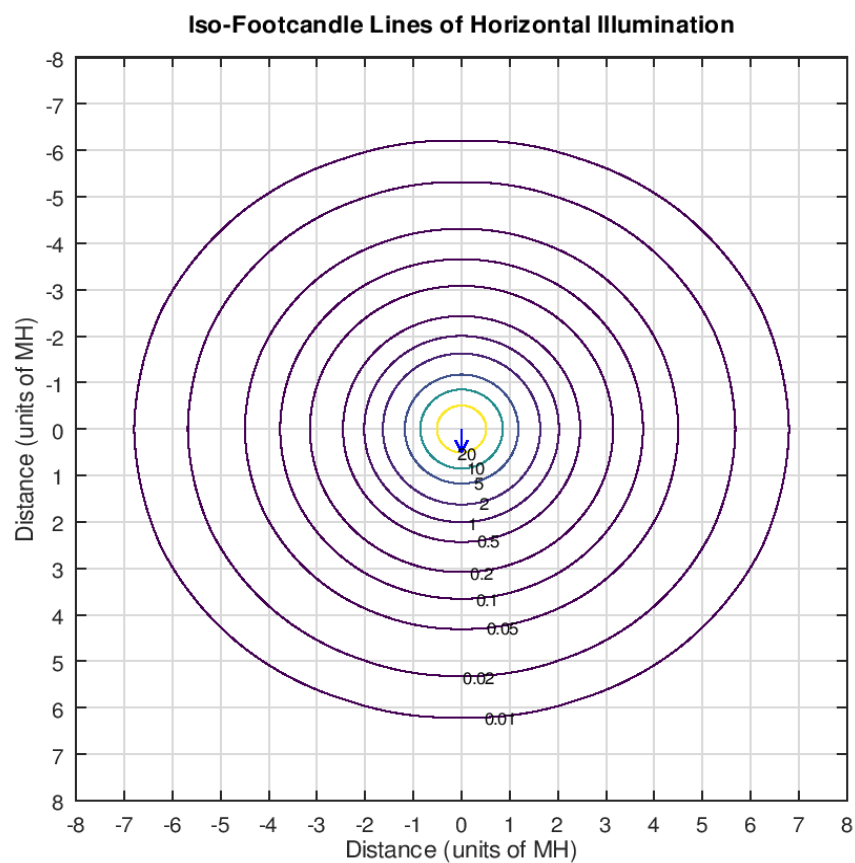
X=2H	Y=2H	21.1	22.7	21.4	23.0	23.3	21.3	23.0	21.7	23.3	23.6
	3H	22.7	24.2	23.1	24.5	24.9	23.2	24.6	23.5	25.0	25.3
	4H	23.3	24.6	23.7	25.0	25.4	23.8	25.2	24.2	25.6	26.0
	6H	23.6	24.9	24.0	25.2	25.6	24.4	25.7	24.8	26.0	26.4
	8H	23.7	24.9	24.1	25.3	25.7	24.6	25.8	25.0	26.2	26.6
	12H	23.7	24.9	24.1	25.2	25.7	24.8	26.0	25.2	26.3	26.8
4H	2H	21.7	23.1	22.1	23.4	23.8	21.9	23.3	22.3	23.6	24.0
	3H	23.5	24.7	24.0	25.1	25.5	23.9	25.1	24.3	25.5	25.9
	4H	24.2	25.3	24.6	25.7	26.1	24.8	25.8	25.2	26.2	26.7
	6H	24.7	25.6	25.1	26.0	26.5	25.4	26.4	25.9	26.8	27.3
	8H	24.7	25.6	25.2	26.1	26.5	25.7	26.6	26.2	27.0	27.5
	12H	24.8	25.6	25.3	26.1	26.5	25.9	26.7	26.4	27.2	27.7
8H	4H	24.5	25.4	25.0	25.8	26.3	25.0	25.9	25.5	26.3	26.8
	6H	25.1	25.8	25.6	26.3	26.7	25.8	26.5	26.3	27.0	27.5
	8H	25.2	25.9	25.7	26.4	26.9	26.2	26.8	26.7	27.3	27.8
	12H	25.3	25.9	25.8	26.4	26.9	26.5	27.1	27.0	27.6	28.1
12H	4H	24.6	25.3	25.0	25.8	26.3	25.0	25.8	25.5	26.3	26.7
	6H	25.1	25.8	25.6	26.2	26.8	25.8	26.5	26.4	27.0	27.5
	8H	25.3	25.9	25.8	26.4	26.9	26.2	26.8	26.7	27.3	27.9

Maximum UGR = 28.1

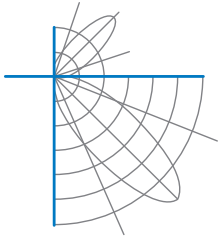


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### Iso-Illuminance Plot



The isofootcandle values shown in the plot above are based on a mounting height of  $h = 8.0$  feet. Grid values show multiples of mounting height. The isoilluminance contour lines are expressed in units of footcandles. The values expressed are based on the direct light from a single unit without the contribution of room reflections.



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Test Distance                    9.5 m  
Ambient Temperature        24.8 °C

#### Notes

The laboratory has not participated in the selection of samples to be tested. All testing is performed on the understanding that the significance of the report is limited to the extent that the test sample is representative of production units.

Tested in accordance with the applicable sections of IES LM-79-19. Format of reports and angular increments based on IES LM-41-20 and LM-46-20.

The luminous intensity values, and other derived quantities, contained in this report are based on the absolute data, as measured.

Prorating the performance of the sample for the use of other component combinations (such as lamp / LED / Ballast / driver), or for use in different environmental conditions than that tested, may produce erroneous results.

This report is free of erasures and corrections.

Photometric intensity values are reported using the CIE C-Gamma coordinate system as defined in CIE publication number 121.

This report may contain data that are not covered by the NVLAP accreditation. Quantities marked with ‡ are not covered.

This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the Federal Government.