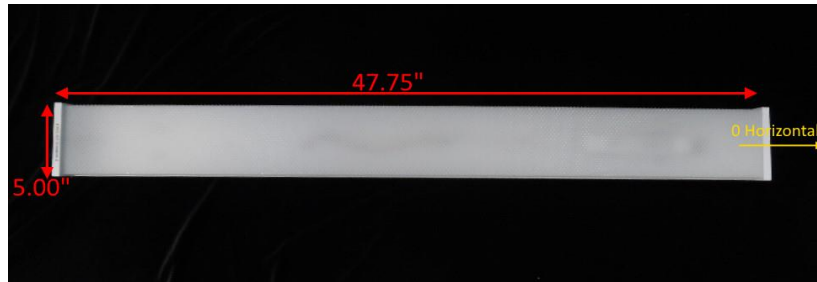


Report of Test

LLIA002196-006

Indoor Distribution Photometry Test Report

Catalog Number: LWRAPU4-40-40K-D
Surface mounted, formed white painted steel housing/reflector, clear prismatic plastic lens.
216 white LEDs on two LED boards with 108 LEDs each.
One BL-A40W-36V-G960L 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	5292.6 Lumens
Input Current	0.3426 A	Total Efficacy	137.8 lm/W
Input Power	38.42 W	Downward Flux	4848.3 Lumens
Frequency	60.00 Hz	Downward Flux	91.6 % of Total
Power Factor	0.935		
Current THD	5.5 %		

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

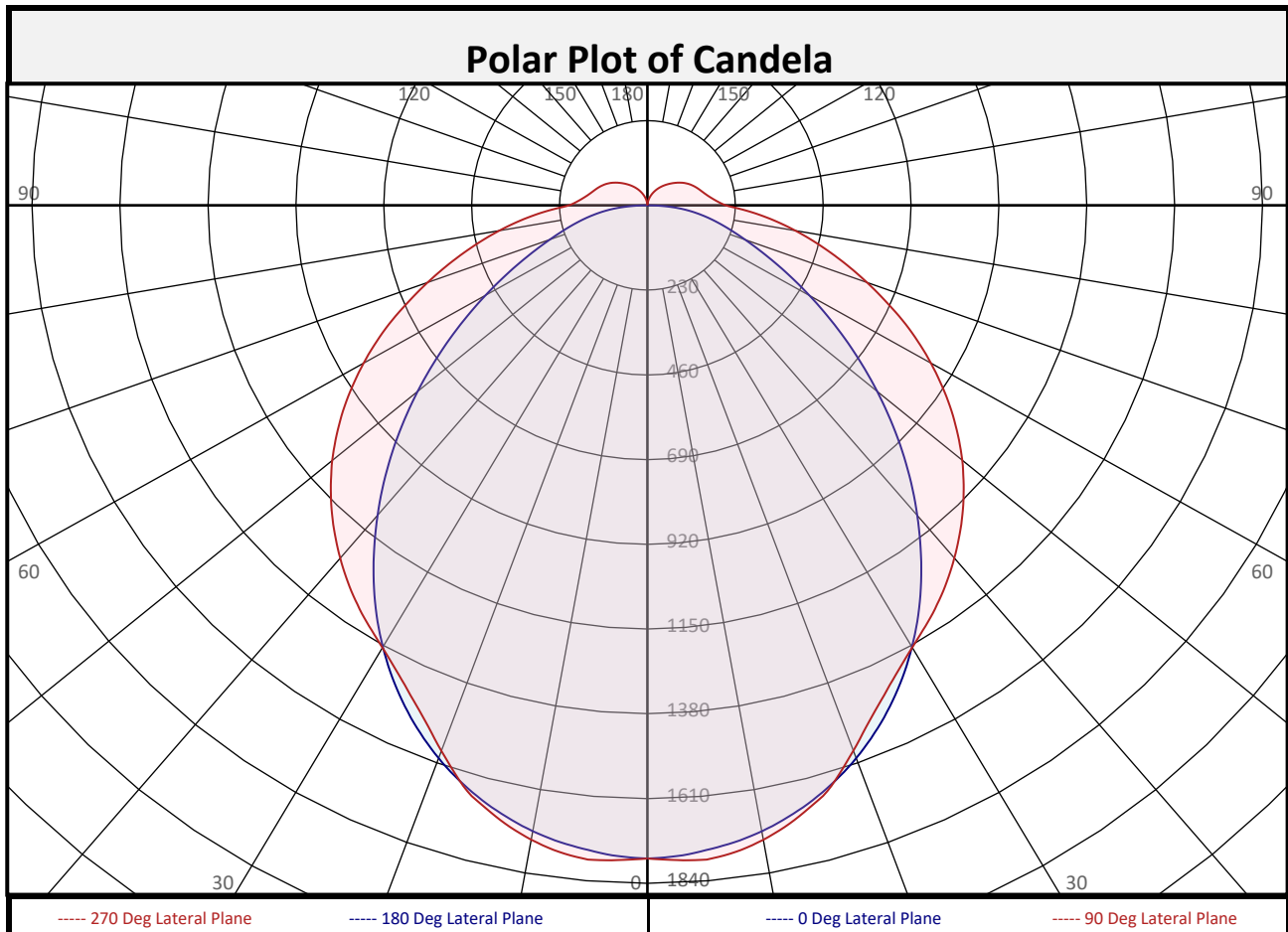
Test date: 08/18/2023
Report date: 08/29/2023

Signed: _____



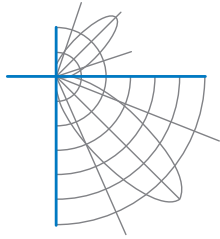
Report of Test

LLIA002196-006



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	167.8	3.2%	90-100	126.9	2.4%	0-20	640.5	12.1%
10-20	472.6	8.9%	100-110	100.8	1.9%	0-30	1326	25.0%
20-30	685.1	12.9%	110-120	80.1	1.5%	0-40	2119	40.0%
30-40	793.6	15.0%	120-130	59.0	1.1%	0-60	3638	68.7%
40-50	801.9	15.2%	130-140	39.3	0.7%	0-80	4612	87.1%
50-60	717.0	13.5%	140-150	23.3	0.4%	10-90	4680	88.4%
60-70	569.4	10.8%	150-160	11.1	0.2%	20-50	2281	43.1%
70-80	405.0	7.7%	160-170	3.5	0.1%	40-90	2729	51.6%
80-90	235.9	4.5%	170-180	0.3	0.0%	60-90	1210	22.9%
0-90	4848	91.6%	90-180	444.2	8.4%	0-180	5293	100.0%



Report of Test

LLIA002196-006

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	1773	1773	1773	1773	1773	1773	1773	1773	1773
	2.5	1768	1769	1771	1775	1779	1775	1771	1769	1768
	5	1757	1759	1765	1774	1783	1774	1765	1759	1757
	7.5	1744	1748	1755	1763	1770	1763	1755	1748	1744
	10	1725	1731	1737	1743	1749	1743	1737	1731	1725
	12.5	1700	1709	1713	1715	1719	1715	1713	1709	1700
	15	1671	1680	1681	1679	1683	1679	1681	1680	1671
	17.5	1637	1647	1643	1640	1636	1640	1643	1647	1637
	20	1597	1607	1600	1582	1576	1582	1600	1607	1597
	22.5	1551	1562	1552	1522	1517	1522	1552	1562	1551
	25	1501	1513	1490	1464	1467	1464	1490	1513	1501
	27.5	1445	1457	1425	1414	1423	1414	1425	1457	1445
	30	1384	1396	1359	1368	1386	1368	1359	1396	1384
	32.5	1319	1331	1296	1328	1355	1328	1296	1331	1319
	35	1248	1264	1237	1291	1322	1291	1237	1264	1248
	37.5	1174	1189	1180	1253	1288	1253	1180	1189	1174
	40	1098	1111	1125	1213	1250	1213	1125	1111	1098
	42.5	1021	1034	1072	1171	1210	1171	1072	1034	1021
	45	942	957	1019	1126	1168	1126	1019	957	942
	47.5	863	881	966	1080	1123	1080	966	881	863
50	784	808	912	1032	1076	1032	912	808	784	
52.5	706	737	858	982	1025	982	858	737	706	
55	630	671	803	929	972	929	803	671	630	
57.5	558	608	750	875	915	875	750	608	558	
60	489	549	696	819	858	819	696	549	489	
62.5	426	494	643	762	798	762	643	494	426	
65	368	444	593	706	736	706	593	444	368	
67.5	316	398	544	648	673	648	544	398	316	
70	271	358	498	590	612	590	498	358	271	
72.5	233	321	453	537	554	537	453	321	233	
75	200	287	410	484	498	484	410	287	200	
77.5	168	254	368	434	444	434	368	254	168	
80	138	221	327	384	393	384	327	221	138	
82.5	108	187	288	335	344	335	288	187	108	
85	75	152	246	286	296	286	246	152	75	
87.5	37	114	200	239	248	239	200	114	37	
90	0	78	157	199	207	199	157	78	0	

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

North America (issuing laboratory)

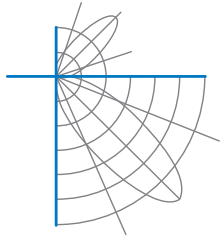
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Report of Test

LLIA002196-006

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	78	157	199	207	199	157	78	0
	92.5	0	72	143	182	188	182	143	72	0
	95	0	69	134	170	176	170	134	69	0
	97.5	0	65	127	160	167	160	127	65	0
	100	0	62	121	152	159	152	121	62	0
	102.5	0	59	115	146	153	146	115	59	0
	105	0	56	110	140	148	140	110	56	0
	107.5	0	54	105	135	143	135	105	54	0
	110	0	51	101	130	139	130	101	51	0
	112.5	0	49	96	125	134	125	96	49	0
	115	0	46	91	120	129	120	91	46	0
	117.5	0	44	87	115	125	115	87	44	0
	120	0	41	82	110	119	110	82	41	0
	122.5	0	39	77	104	114	104	77	39	0
	125	0	37	73	98	108	98	73	37	0
	127.5	0	35	69	93	102	93	69	35	0
	130	0	32	64	87	96	87	64	32	0
	132.5	0	30	60	82	90	82	60	30	0
	135	0	28	56	76	84	76	56	28	0
	137.5	0	25	52	71	78	71	52	25	0
140	0	23	49	66	73	66	49	23	0	
142.5	0	21	45	61	67	61	45	21	0	
145	0	18	41	56	62	56	41	18	0	
147.5	0	16	38	51	57	51	38	16	0	
150	0	14	34	47	52	47	34	14	0	
152.5	0	12	30	42	46	42	30	12	0	
155	0	11	26	37	41	37	26	11	0	
157.5	0	9	22	33	36	33	22	9	0	
160	0	7	19	29	32	29	19	7	0	
162.5	0	6	15	24	27	24	15	6	0	
165	0	4	12	20	22	20	12	4	0	
167.5	0	3	9	16	18	16	9	3	0	
170	0	1	6	12	13	12	6	1	0	
172.5	0	0	3	7	8	7	3	0	0	
175	0	0	1	3	4	3	1	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.



Report of Test

LLIA002196-006

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	70	50	30	10	70	50	30	10	70	50	30	10	0
RCR																					
0	117	117	117	117	113	113	113	113	106	106	106	100	100	100	94	94	94	92			
1	106	100	96	92	102	97	93	89	92	88	85	86	83	81	81	79	77	74			
2	96	87	80	74	92	85	78	73	80	74	70	75	71	67	71	67	64	61			
3	87	77	68	61	84	74	67	60	70	64	58	66	61	56	63	58	54	52			
4	80	68	59	52	77	66	58	51	62	55	50	59	53	48	56	51	47	44			
5	74	61	52	45	71	59	51	44	56	49	43	53	47	42	50	45	41	38			
6	68	55	46	39	66	53	45	39	51	43	38	48	42	37	46	40	36	33			
7	63	50	41	35	61	48	40	34	46	39	33	44	37	33	42	36	32	30			
8	59	45	37	31	57	44	36	31	42	35	30	40	34	29	39	33	29	27			
9	55	42	33	28	53	41	33	28	39	32	27	37	31	26	36	30	26	24			
10	51	38	30	25	50	38	30	25	36	29	25	35	28	24	33	28	24	22			

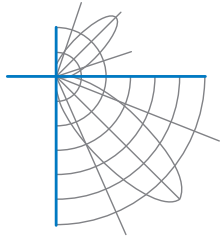
For absolute test reports, RUs are expressed as a percentage of total lumen output. For relative test reports, CUs are expressed as a percentage of total lamp output. Calculations were based on published IES procedures, and are based on the zonal cavity method. Basic assumptions: 1) Room surfaces are 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	49.3	7.01	7.04
8.0	27.7	9.34	9.38
10.0	17.7	11.68	11.73
12.0	12.3	14.01	14.07
14.0	9.0	16.35	16.42
16.0	6.9	18.69	18.77

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

Average Luminance (cd/m ²)			
	0 deg Plane	45 deg Plane	90 deg Plane
0	11511	11511	11511
45	8650	7608	8094
55	7136	6847	7513
65	5650	6097	6666
75	5004	5530	5641
85	5595	5061	4676

Beam and Field Angle	
0-180 Degree Plane	
Beam Angle:	93.2°
Field Angle:	153.4°
90-270 Degree Plane	
Beam Angle:	117.1°
Field Angle:	189.1°



Report of Test

LLIA002196-006

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

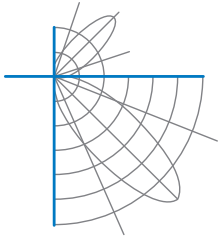
Room Size

UGR Viewed Crosswise

UGR Viewed Endwise

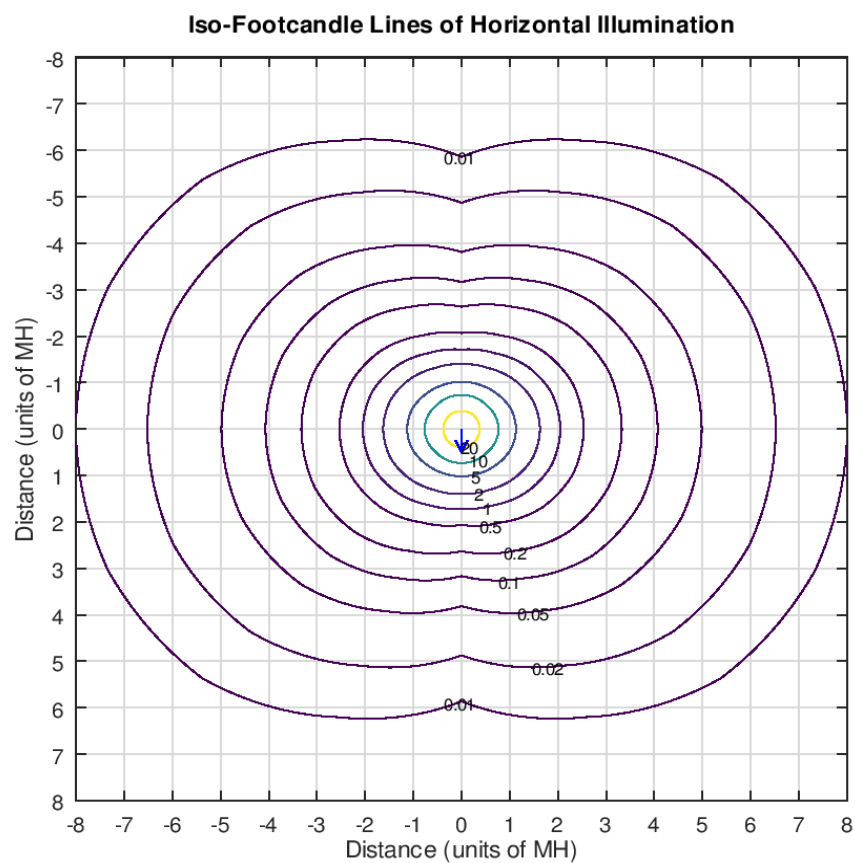
X=2H	Y=2H	16.0	17.5	16.5	18.0	18.5	19.5	20.9	19.9	21.4	21.9
		3H	17.3	18.7	17.8	19.1	19.7	21.7	23.0	22.2	23.5
	4H	17.8	19.1	18.3	19.6	20.1	22.7	24.0	23.2	24.5	25.0
	6H	18.2	19.3	18.7	19.9	20.4	23.7	24.9	24.2	25.4	26.0
	8H	18.3	19.4	18.8	19.9	20.5	24.1	25.3	24.7	25.8	26.4
	12H	18.3	19.4	18.9	20.0	20.6	24.6	25.7	25.2	26.2	26.9
4H	2H	17.1	18.4	17.6	18.9	19.5	19.8	21.1	20.3	21.6	22.1
	3H	18.7	19.8	19.2	20.3	20.9	22.3	23.4	22.8	23.9	24.5
	4H	19.3	20.3	19.9	20.9	21.5	23.5	24.5	24.0	25.0	25.6
	6H	19.8	20.7	20.4	21.2	21.9	24.6	25.5	25.2	26.1	26.7
	8H	19.9	20.8	20.5	21.4	22.0	25.2	26.0	25.8	26.6	27.2
	12H	20.1	20.8	20.7	21.4	22.1	25.8	26.5	26.4	27.1	27.8
8H	4H	20.1	20.9	20.7	21.5	22.2	23.6	24.5	24.2	25.0	25.7
	6H	20.8	21.5	21.4	22.1	22.8	25.0	25.7	25.6	26.3	27.0
	8H	21.1	21.7	21.7	22.3	23.0	25.7	26.3	26.3	26.9	27.6
	12H	21.3	21.8	21.9	22.5	23.2	26.4	27.0	27.1	27.6	28.3
12H	4H	20.3	21.1	20.9	21.7	22.3	23.6	24.4	24.2	25.0	25.7
	6H	21.1	21.8	21.8	22.4	23.1	25.0	25.7	25.7	26.3	27.0
	8H	21.5	22.1	22.1	22.7	23.4	25.8	26.3	26.4	27.0	27.7

Maximum UGR = 28.3

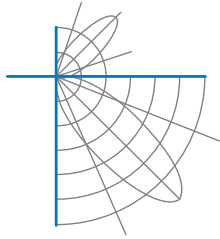


Report of Test LLIA002196-006

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.



Report of Test

LLIA002196-006

Test Distance 9.5 m
Ambient Temperature 24.9 °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.