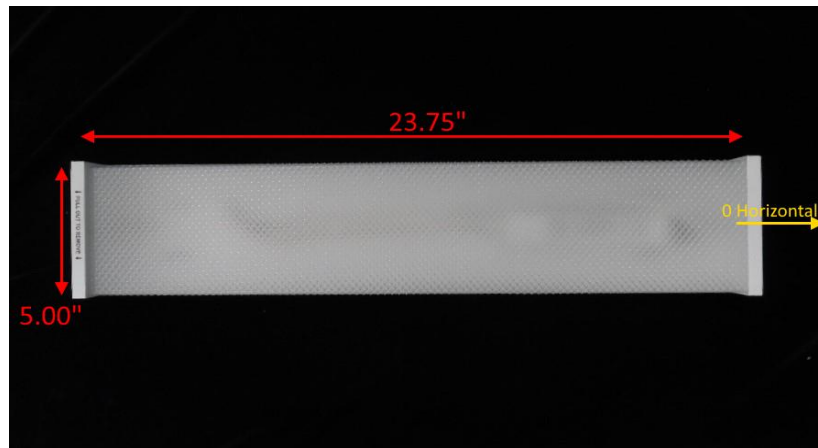


Report of Test

LLIA002196-001

Indoor Distribution Photometry Test Report

Catalog Number: LWRAPU2-20-40K-D
Surface mounted, formed white painted steel housing/reflector, clear prismatic plastic lens.
120 white LEDs two LED boards with 60 LEDs each.
One BL-A20W-36V-G500L LED driver



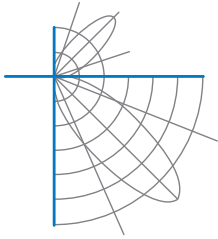
Prepared For:
Topaz Lighting, A Southwire Company
925 Waverly Avenue
Holtsville, NY 11742, USA

Performance Summary			
Input Voltage	120.0 Vac	Luminous Flux	2609.7 Lumens
Input Current	0.1591 A	Total Efficacy	142.3 lm/W
Input Power	18.34 W	Downward Flux	2403.3 Lumens
Frequency	60.00 Hz	Downward Flux	92.1 % of Total
Power Factor	0.961		
Current THD	5.9 %		

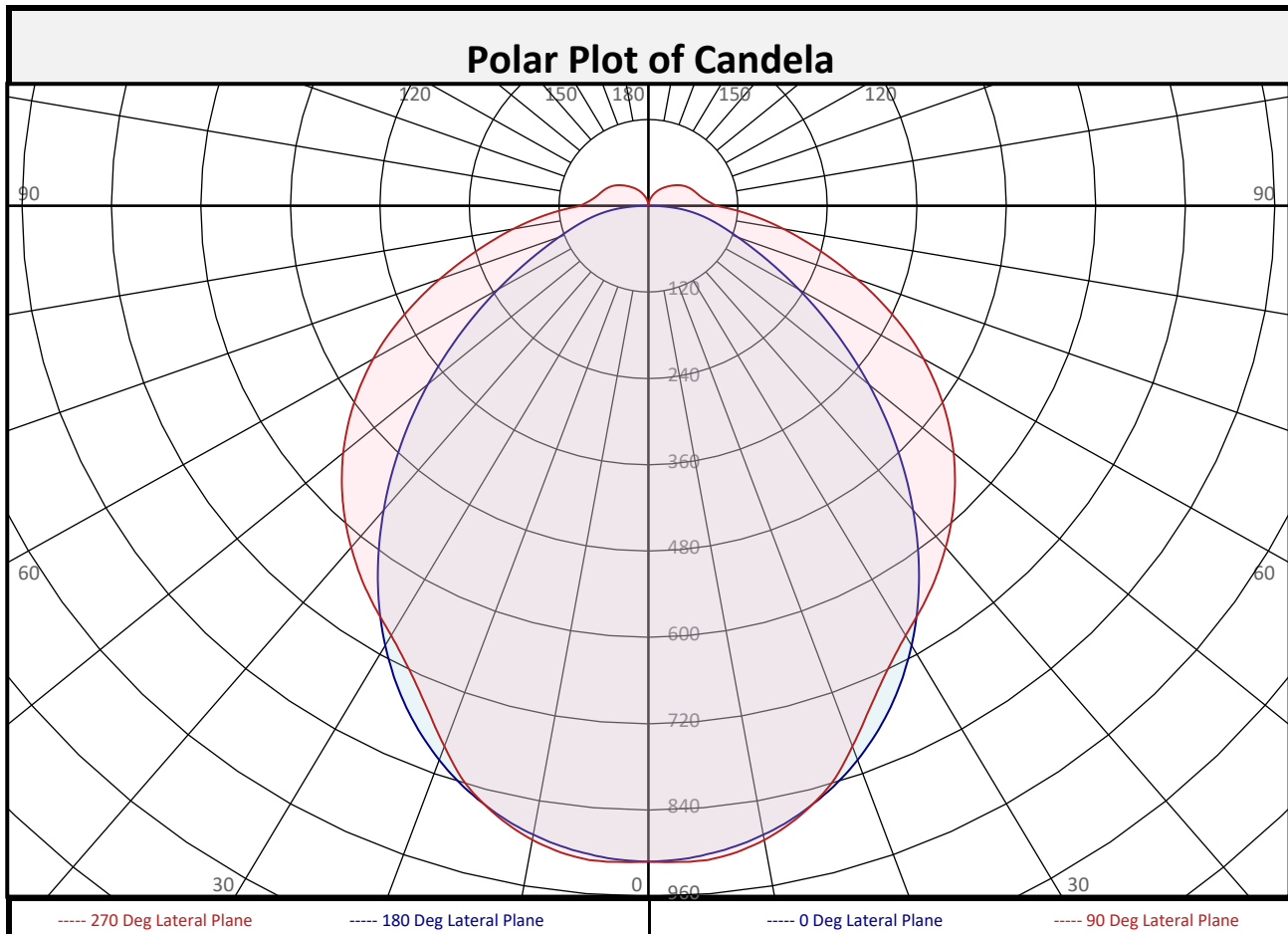
This test report was issued by LightLab International Allentown, LLC without alterations or erasures.

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

Signed: _____

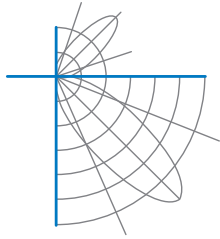


Report of Test LLIA002196-001



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	86.2	3.3%	90-100	58.5	2.2%	0-20	328.4	12.6%
10-20	242.2	9.3%	100-110	46.6	1.8%	0-30	676.3	25.9%
20-30	347.8	13.3%	110-120	37.3	1.4%	0-40	1073	41.1%
30-40	397.2	15.2%	120-130	27.5	1.1%	0-60	1821	69.8%
40-50	396.5	15.2%	130-140	18.3	0.7%	0-80	2292	87.8%
50-60	351.1	13.5%	140-150	11.0	0.4%	10-90	2317	88.8%
60-70	276.5	10.6%	150-160	5.4	0.2%	20-50	1142	43.7%
70-80	194.4	7.4%	160-170	1.7	0.1%	40-90	1330	51.0%
80-90	111.3	4.3%	170-180	0.1	0.0%	60-90	582.3	22.3%
0-90	2403	92.1%	90-180	206.4	7.9%	0-180	2610	100.0%



Report of Test

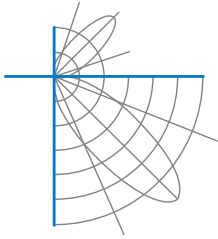
LLIA002196-001

Luminous Intensity (Candela) Table

Lateral (C-Plane) Angles										
	0	22.5	45	67.5	90	112.5	135	157.5	180	
0	912	912	912	912	912	912	912	912	912	912
2.5	910	910	911	912	913	912	911	910	910	910
5	905	906	907	910	913	910	907	906	905	905
7.5	898	899	901	904	907	904	901	899	898	898
10	888	890	892	894	895	894	892	890	888	888
12.5	875	878	879	879	879	879	879	878	875	875
15	859	863	863	860	859	860	863	863	859	859
17.5	841	845	843	836	834	836	843	845	841	841
20	820	824	819	806	800	806	819	824	820	820
22.5	796	801	792	772	766	772	792	801	796	796
25	769	774	759	738	736	738	759	774	769	769
27.5	739	744	722	708	710	708	722	744	739	739
30	706	711	685	682	690	682	685	711	706	706
32.5	671	676	650	660	673	660	650	676	671	671
35	633	639	616	641	656	641	616	639	633	633
37.5	593	599	585	621	639	621	585	599	593	593
40	552	557	556	601	620	601	556	557	552	552
42.5	511	515	528	579	601	579	528	515	511	511
45	469	474	500	557	580	557	500	474	469	469
47.5	427	433	473	534	558	534	473	433	427	427
50	386	394	446	510	534	510	446	394	386	386
52.5	345	357	419	485	509	485	419	357	345	345
55	306	323	392	460	483	460	392	323	306	306
57.5	269	291	365	433	455	433	365	291	269	269
60	234	261	339	405	427	405	339	261	234	234
62.5	201	234	313	377	396	377	313	234	201	201
65	173	209	289	348	363	348	209	209	173	173
67.5	148	188	265	318	331	318	265	188	148	148
70	128	169	242	289	298	289	242	169	128	128
72.5	110	152	220	260	267	260	220	152	110	110
75	95	136	199	233	237	233	199	136	95	95
77.5	81	121	178	207	209	207	178	121	81	81
80	67	106	158	182	184	182	158	106	67	67
82.5	53	90	138	158	160	158	138	90	53	53
85	37	73	118	134	136	134	118	73	37	37
87.5	18	54	95	111	113	111	95	54	18	18
90	0	37	73	91	92	91	73	37	0	0

Vertical (Gamma) Angles - Data was acquired in 0.5° increments, 2.5° increments shown.

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



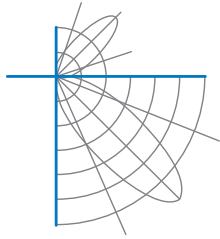
Report of Test

LLIA002196-001

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	37	73	91	92	91	73	37	0
	92.5	0	34	67	83	85	83	67	34	0
	95	0	32	63	78	79	78	63	32	0
	97.5	0	31	59	73	75	73	59	31	0
	100	0	29	56	70	72	70	56	29	0
	102.5	0	28	54	67	69	67	54	28	0
	105	0	26	51	64	67	64	51	26	0
	107.5	0	25	49	62	66	62	49	25	0
	110	0	24	47	60	64	60	47	24	0
	112.5	0	23	45	58	62	58	45	23	0
	115	0	22	43	56	60	56	43	22	0
	117.5	0	20	40	54	58	54	40	20	0
	120	0	19	38	51	55	51	38	19	0
	122.5	0	18	36	49	53	49	36	18	0
	125	0	17	34	46	50	46	34	17	0
	127.5	0	16	32	43	47	43	32	16	0
	130	0	15	30	41	44	41	30	15	0
	132.5	0	14	28	38	42	38	28	14	0
	135	0	13	26	36	39	36	26	13	0
	137.5	0	12	24	33	36	33	24	12	0
140	0	11	23	31	34	31	23	11	0	
142.5	0	10	21	29	31	29	21	10	0	
145	0	9	19	26	29	26	19	9	0	
147.5	0	9	18	24	26	24	18	9	0	
150	0	8	16	22	24	22	16	8	0	
152.5	0	7	14	20	22	20	14	7	0	
155	0	6	13	18	19	18	13	6	0	
157.5	0	5	11	15	17	15	11	5	0	
160	0	4	10	13	15	13	10	4	0	
162.5	0	3	8	11	12	11	8	3	0	
165	0	2	7	9	10	9	7	2	0	
167.5	0	1	5	8	8	8	5	1	0	
170	0	0	3	6	6	6	3	0	0	
172.5	0	0	2	4	4	4	2	0	0	
175	0	0	0	1	2	1	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.



Report of Test

LLIA002196-001

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	114	114	114	114	107	107	107	107	100	100	100	100	95	95	95	95	92
1	106	101	96	92	102	98	94	90	92	89	85	85	87	84	81	81	82	80	78	78	75
2	96	88	81	75	93	85	79	73	80	75	70	70	76	71	67	67	72	68	65	65	62
3	88	77	69	62	85	75	67	61	71	64	59	59	67	61	57	57	63	59	55	55	52
4	80	68	59	53	77	66	58	52	63	56	50	50	60	54	49	49	57	52	47	47	45
5	74	61	52	45	71	60	51	45	57	49	44	44	54	47	42	42	51	46	41	41	39
6	68	55	46	40	66	54	45	39	51	44	38	38	49	42	37	37	46	41	36	36	34
7	63	50	41	35	61	49	41	35	47	39	34	34	44	38	33	33	43	37	32	32	30
8	59	46	37	31	57	45	37	31	43	36	31	31	41	35	30	30	39	33	29	29	27
9	55	42	34	28	54	41	33	28	39	32	28	28	38	32	27	27	36	31	26	26	25
10	52	39	31	26	50	38	31	26	37	30	25	25	35	29	25	25	34	28	24	24	22

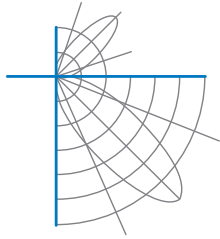
For absolute test reports, RUs are expressed as a percentage of total lumen output. For relative test reports, CUs are expressed as a percentage of total lamp output. Calculations were based on published IES procedures, and are based on the zonal cavity method. Basic assumptions: 1) Room surfaces are 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	25.3	6.96	6.81
8.0	14.2	9.28	9.08
10.0	9.1	11.60	11.35
12.0	6.3	13.92	13.62
14.0	4.7	16.24	15.89
16.0	3.6	18.56	18.16

Spacing Criterion	
0 deg:	1.2
90 deg:	1.1
180 deg:	1.2
270 deg:	1.1

Average Luminance (cd/m ²)			
	0 deg Plane	45 deg Plane	90 deg Plane
0	11902	11902	11902
45	8661	7510	8079
55	6960	6713	7508
65	5345	5969	6610
75	4788	5393	5397
85	5534	4866	4325

Beam and Field Angle	
0-180 Degree Plane	
Beam Angle:	91.5°
Field Angle:	151.3°
90-270 Degree Plane	
Beam Angle:	114.7°
Field Angle:	180.5°



Report of Test

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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

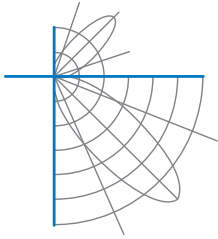
Room Size

UGR Viewed Crosswise

UGR Viewed Endwise

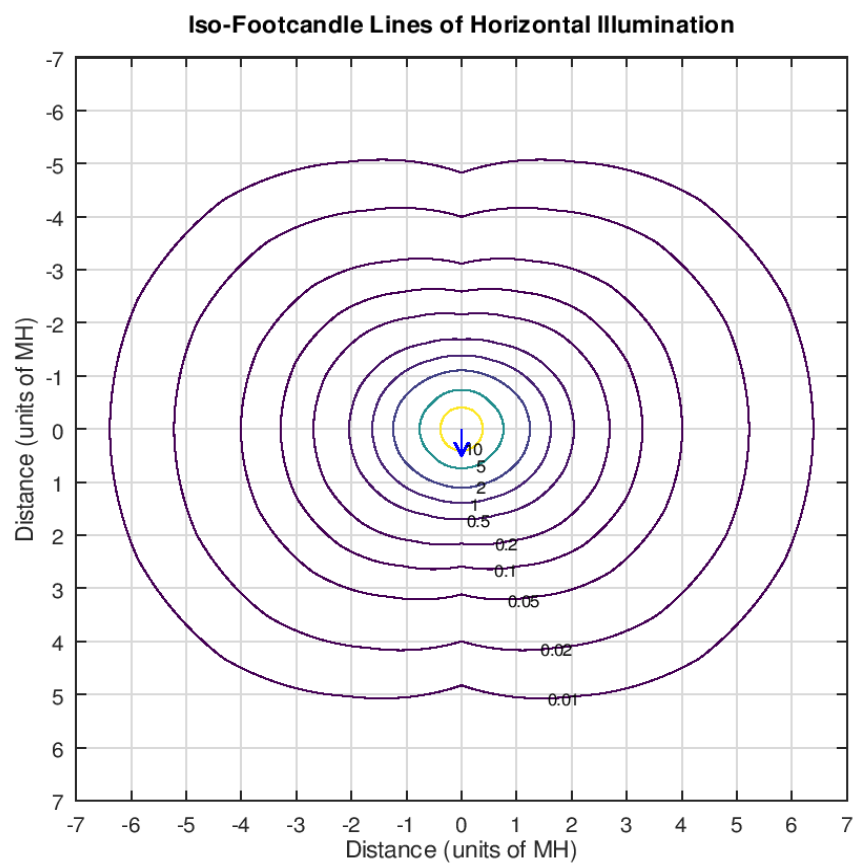
X=2H	Y=2H	15.7	17.2	16.2	17.6	18.2	19.3	20.8	19.8	21.2	21.7
		3H	17.0	18.3	17.5	18.8	19.3	21.5	22.8	22.0	23.3
	4H	17.5	18.7	18.0	19.2	19.8	22.4	23.6	22.9	24.1	24.7
	6H	17.8	19.0	18.4	19.5	20.1	23.2	24.4	23.8	24.9	25.5
	8H	17.9	19.1	18.5	19.6	20.2	23.6	24.8	24.2	25.3	25.9
	12H	18.0	19.1	18.6	19.6	20.2	24.0	25.1	24.6	25.6	26.2
4H	2H	16.8	18.1	17.4	18.6	19.2	19.6	20.9	20.1	21.4	21.9
	3H	18.4	19.4	18.9	20.0	20.6	22.0	23.1	22.6	23.6	24.2
	4H	19.0	19.9	19.5	20.5	21.1	23.1	24.1	23.7	24.6	25.3
	6H	19.5	20.3	20.0	20.9	21.5	24.2	25.0	24.7	25.6	26.2
	8H	19.6	20.4	20.2	21.0	21.7	24.7	25.5	25.2	26.1	26.7
	12H	19.7	20.5	20.3	21.1	21.7	25.2	25.9	25.8	26.5	27.1
8H	4H	19.8	20.6	20.4	21.2	21.8	23.3	24.1	23.9	24.7	25.3
	6H	20.5	21.2	21.1	21.8	22.4	24.5	25.2	25.1	25.8	26.5
	8H	20.8	21.4	21.4	22.0	22.7	25.1	25.8	25.8	26.4	27.1
	12H	21.0	21.5	21.6	22.1	22.9	25.8	26.3	26.4	27.0	27.7
12H	4H	20.0	20.7	20.6	21.3	22.0	23.3	24.0	23.9	24.6	25.3
	6H	20.8	21.4	21.4	22.0	22.7	24.6	25.2	25.2	25.8	26.5
	8H	21.2	21.7	21.8	22.3	23.0	25.3	25.8	25.9	26.4	27.1

Maximum UGR = 27.7

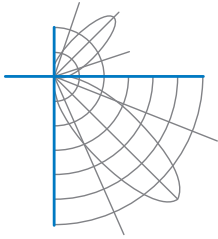


Report of Test LLIA002196-001

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

LLIA002196-001

Test Distance 9.5 m
Ambient Temperature 25.1 °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.