LightLab INTERNATIONAL ALLENTOWN LLC

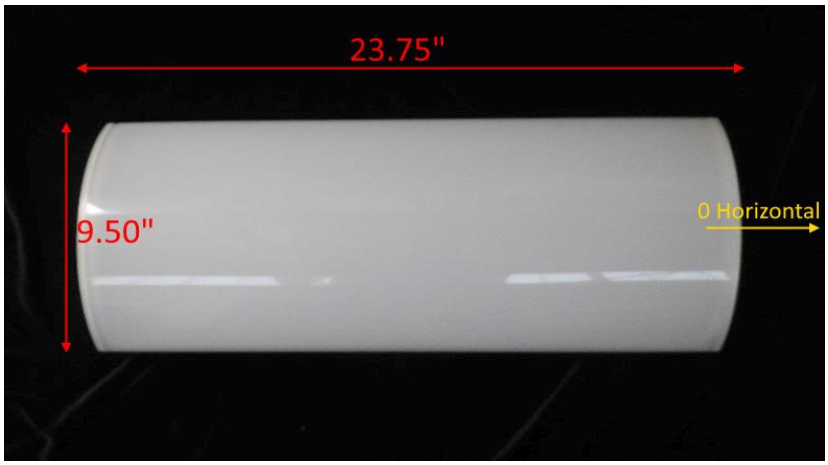
NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA002469-004

Indoor Distribution Photometry Test Report

Catalog Number: LWRAPA2-25PCS 15W Setting 4000K
Surface mounted, formed white painted steel housing, white painted steel reflector, translucent white linear ribbed plastic enclosure.
240 white LEDs, 120 CW LEDs and 120 WW LEDs on 2 boards
One PLC025S0550US-DEGAR 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	2178.5	Lumens
Input Current	0.1346	A	Total Efficacy	136.3	Lm/W
Input Power	15.98	W	Downward Flux	2092.0	Lumens
Frequency	60.00	Hz	Downward Flux	96.0	% of Total
Power Factor	0.989				
Current THD	10.0	%			

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

Test date: 08/21/2024
Report date: 09/04/2024

Signed: Michael L. Grather Digitally signed by Michael L. Grather Date: 2024.09.04 14:03:04 -04'00'

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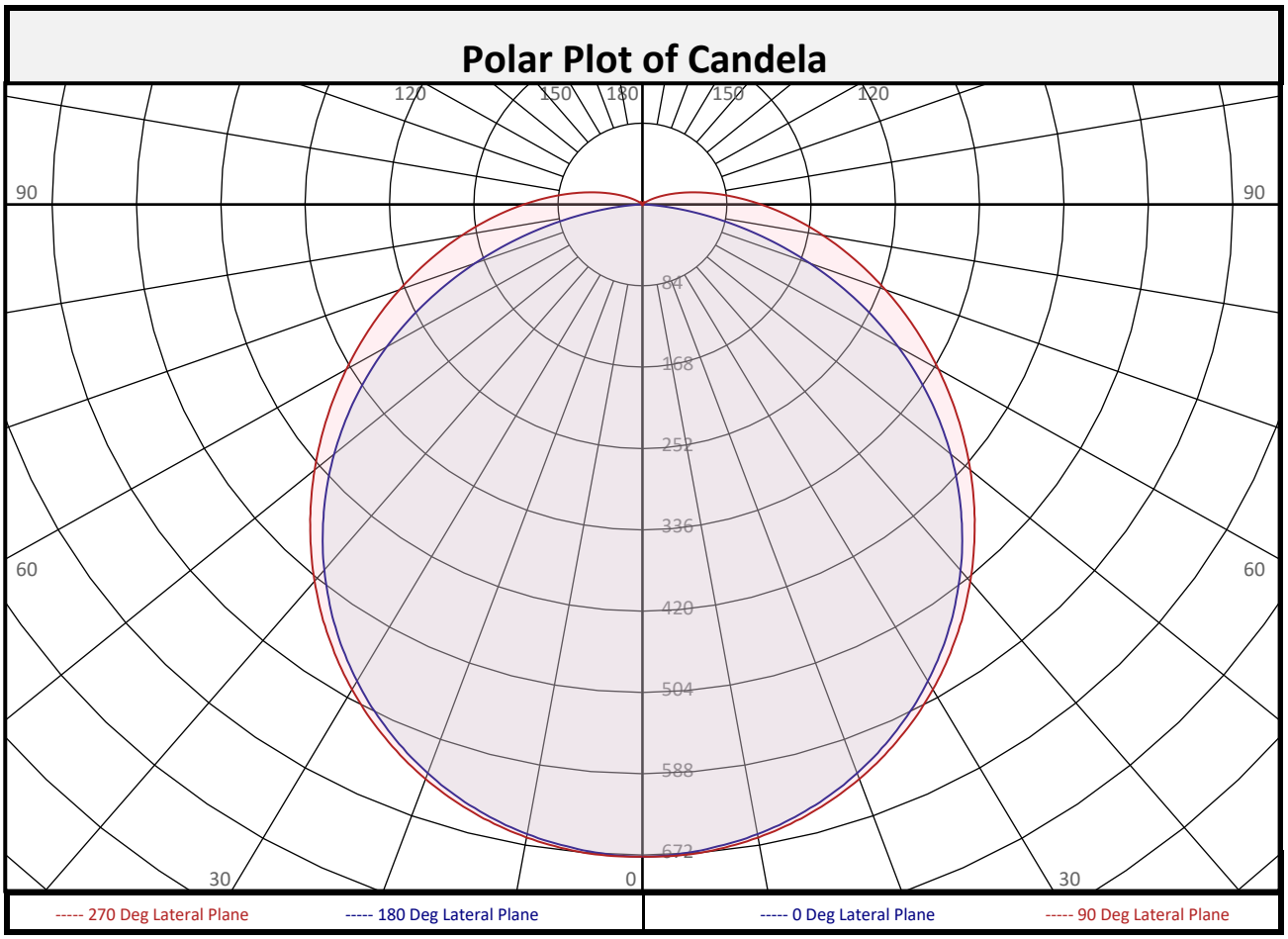

Zonal Flux Summary

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	63.8	2.9%	90-100	52.3	2.4%	0-20	246.7	11.3%
10-20	182.9	8.4%	100-110	22.9	1.1%	0-30	524.8	24.1%
20-30	278.1	12.8%	110-120	8.1	0.4%	0-40	862.0	39.6%
30-40	337.2	15.5%	120-130	2.2	0.1%	0-60	1541	70.7%
40-50	353.1	16.2%	130-140	0.6	0.0%	0-80	1988	91.2%
50-60	326.1	15.0%	140-150	0.3	0.0%	10-90	2028	93.1%
60-70	264.0	12.1%	150-160	0.0	0.0%	20-50	968.4	44.5%
70-80	182.5	8.4%	160-170	0.0	0.0%	40-90	1230	56.5%
80-90	104.3	4.8%	170-180	0.0	0.0%	60-90	550.9	25.3%
0-90	2092	96.0%	90-180	86.5	4.0%	0-180	2179	100.0%

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Luminous Intensity (Candela) Table

Vertical (Gamma) Angles - Data was acquired in 0.5° increments, 2.5° increments shown.	Lateral (C-Plane) Angles									
		0	22.5	45	67.5	90	112.5	135	157.5	180
	0	674	674	674	674	674	674	674	674	674
	2.5	673	673	673	673	674	673	673	673	673
	5	670	670	670	672	672	672	670	670	670
	7.5	666	666	667	668	668	668	667	666	666
	10	660	661	662	664	664	664	662	661	660
	12.5	654	654	656	657	658	657	656	654	654
	15	645	646	648	650	650	650	648	646	645
	17.5	636	637	639	641	642	641	639	637	636
	20	625	626	628	630	632	630	628	626	625
	22.5	613	614	616	619	620	619	616	614	613
	25	599	601	603	606	607	606	603	601	599
	27.5	585	586	589	592	594	592	589	586	585
	30	569	570	573	577	578	577	573	570	569
	32.5	551	553	557	561	563	561	557	553	551
	35	533	535	539	543	545	543	539	535	533
	37.5	513	515	520	525	527	525	520	515	513
	40	493	495	500	505	508	505	500	495	493
	42.5	472	473	479	485	488	485	479	473	472
	45	449	451	457	464	468	464	457	451	449
	47.5	425	428	434	443	447	443	434	428	425
	50	401	404	411	421	426	421	411	404	401
	52.5	375	378	387	399	405	399	387	378	375
	55	349	352	363	377	383	377	363	352	349
	57.5	322	326	339	355	362	355	339	326	322
	60	294	298	314	333	341	333	314	298	294
	62.5	266	271	290	311	319	311	290	271	266
	65	237	243	266	289	298	289	266	243	237
	67.5	207	216	242	268	278	268	242	216	207
	70	178	189	220	247	258	247	220	189	178
	72.5	148	162	198	227	238	227	198	162	148
	75	118	137	176	207	219	207	176	137	118
	77.5	90	113	156	188	200	188	156	113	90
	80	63	91	137	170	182	170	137	91	63
	82.5	38	72	119	153	165	153	119	72	38
	85	18	55	102	137	149	137	102	55	18
	87.5	4	40	87	121	133	121	87	40	4
	90	0	29	73	106	119	106	73	29	0

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

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Luminous Intensity (Candela) Table

Vertical (Gamma) Angles - Data was acquired in 0.5° increments, 2.5° increments shown.	Lateral (C-Plane) Angles									
		0	22.5	45	67.5	90	112.5	135	157.5	180
	90	0	29	73	106	119	106	73	29	0
	92.5	0	20	61	93	105	93	61	20	0
	95	0	13	50	80	92	80	50	13	0
	97.5	0	8	40	69	79	69	40	8	0
	100	0	5	32	58	68	58	32	5	0
	102.5	0	3	25	49	58	49	25	3	0
	105	0	2	19	40	49	40	19	2	0
	107.5	0	0	14	32	40	32	14	0	0
	110	0	0	10	26	33	26	10	0	0
	112.5	0	0	7	20	26	20	7	0	0
	115	0	0	5	16	21	16	5	0	0
	117.5	0	0	3	12	16	12	3	0	0
	120	0	0	2	9	12	9	2	0	0
	122.5	0	0	2	6	9	6	2	0	0
	125	0	0	1	4	6	4	1	0	0
	127.5	0	0	1	3	5	3	1	0	0
	130	0	0	1	2	3	2	1	0	0
	132.5	0	0	1	2	2	2	1	0	0
	135	0	0	1	1	2	1	1	0	0
	137.5	0	0	0	1	2	1	0	0	0
	140	0	0	0	1	1	1	0	0	0
	142.5	0	0	1	1	1	1	1	0	0
	145	0	0	0	1	1	1	0	0	0
	147.5	0	0	0	1	1	1	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	0
RCR																						
0	118	118	118	118		115	115	115	115		109	109	109		103	103	103		98	98	98	96
1	106	101	96	92		103	98	94	90		93	90	86		89	86	83		84	82	80	77
2	96	87	80	74		93	85	78	72		81	75	70		77	72	68		73	69	66	63
3	87	76	68	61		85	74	66	60		71	64	58		67	62	57		64	59	55	53
4	80	67	58	51		77	66	57	51		63	55	49		60	53	48		57	52	47	45
5	73	60	51	44		71	59	50	43		56	48	43		54	47	42		51	46	41	39
6	68	54	45	38		65	53	44	38		51	43	37		48	42	36		46	40	36	34
7	63	49	40	34		61	48	39	33		46	38	33		44	37	32		42	36	32	30
8	58	44	36	30		56	44	35	30		42	35	29		40	34	29		39	33	28	26
9	54	41	32	27		53	40	32	27		39	31	26		37	31	26		36	30	26	24
10	51	38	30	24		50	37	29	24		36	29	24		34	28	23		33	27	23	21

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	18.7	7.53	7.66
8.0	10.5	10.04	10.21
10.0	6.7	12.55	12.76
12.0	4.7	15.06	15.31
14.0	3.4	17.57	17.87
16.0	2.6	20.08	20.42

Spacing Criterion

0 deg:	1.3
90 deg:	1.3
180 deg:	1.3
270 deg:	1.3

Average Luminance (cd/m^2)

	0 deg Plane	45 deg Plane	90 deg Plane
0	4628	4628	4628
45	4364	3685	3526
55	4184	3363	3248
65	3847	3004	2991
75	3137	2652	2791
85	1435	2413	2723

Beam and Field Angle

0-180 Degree Plane

Beam Angle: 112.3°

Field Angle: 159.1°

90-270 Degree Plane

Beam Angle: 120.9°

Field Angle: 200.4°

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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	15.1	16.8	15.6	17.1	17.6	16.2	17.8	16.6	18.2	18.6
	3H	16.7	18.1	17.1	18.6	19.0	18.5	19.9	18.9	20.3	20.8
	4H	17.2	18.5	17.6	19.0	19.4	19.5	20.9	20.0	21.3	21.8
	6H	17.4	18.7	17.9	19.2	19.7	20.5	21.8	21.0	22.3	22.7
	8H	17.5	18.7	18.0	19.2	19.7	21.0	22.2	21.5	22.7	23.2
	12H	17.5	18.7	18.0	19.1	19.7	21.5	22.7	22.0	23.2	23.7
4H	2H	15.9	17.2	16.3	17.7	18.1	16.7	18.1	17.2	18.5	19.0
	3H	17.6	18.8	18.1	19.3	19.8	19.2	20.4	19.6	20.8	21.3
	4H	18.2	19.3	18.7	19.8	20.3	20.4	21.5	20.9	21.9	22.5
	6H	18.6	19.5	19.1	20.1	20.6	21.6	22.5	22.1	23.0	23.6
	8H	18.7	19.6	19.2	20.1	20.6	22.2	23.1	22.7	23.6	24.1
	12H	18.7	19.5	19.3	20.1	20.6	22.8	23.6	23.3	24.1	24.7
8H	4H	18.7	19.6	19.2	20.1	20.7	20.6	21.5	21.1	22.0	22.6
	6H	19.3	20.0	19.8	20.6	21.1	22.0	22.7	22.5	23.3	23.9
	8H	19.4	20.1	20.0	20.7	21.2	22.7	23.4	23.3	24.0	24.5
	12H	19.5	20.1	20.1	20.7	21.3	23.5	24.1	24.1	24.7	25.3
12H	4H	18.9	19.7	19.4	20.2	20.8	20.6	21.4	21.2	22.0	22.5
	6H	19.5	20.2	20.1	20.7	21.3	22.1	22.7	22.6	23.3	23.9
	8H	19.7	20.3	20.3	20.9	21.5	22.8	23.4	23.4	24.0	24.6

Maximum UGR = 25.3

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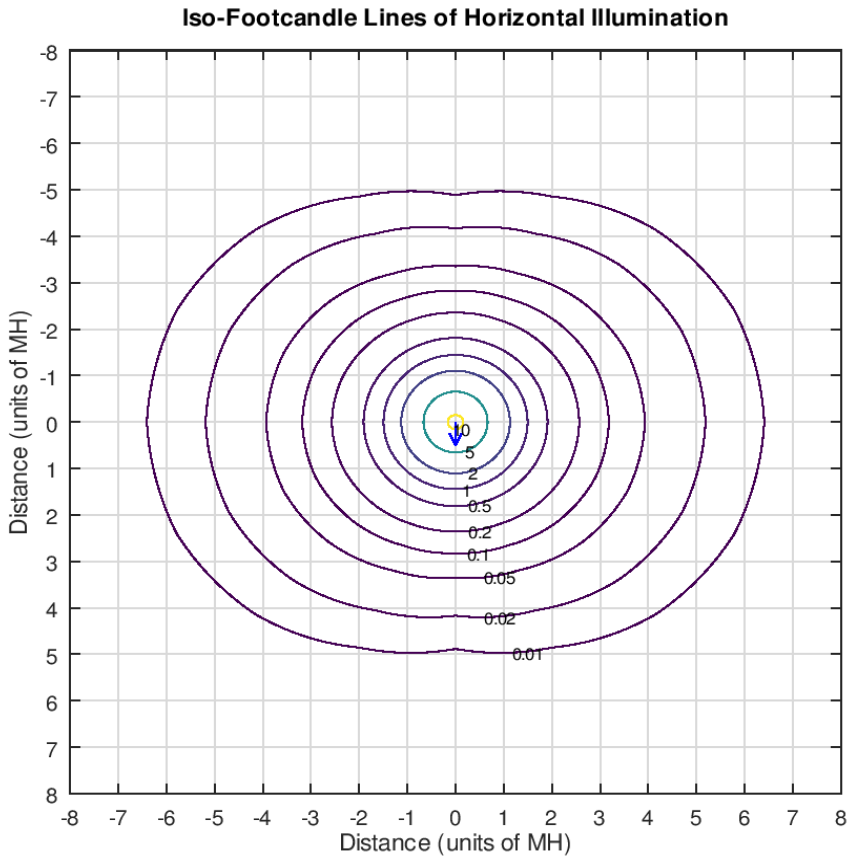
Iso-Illuminance Plot



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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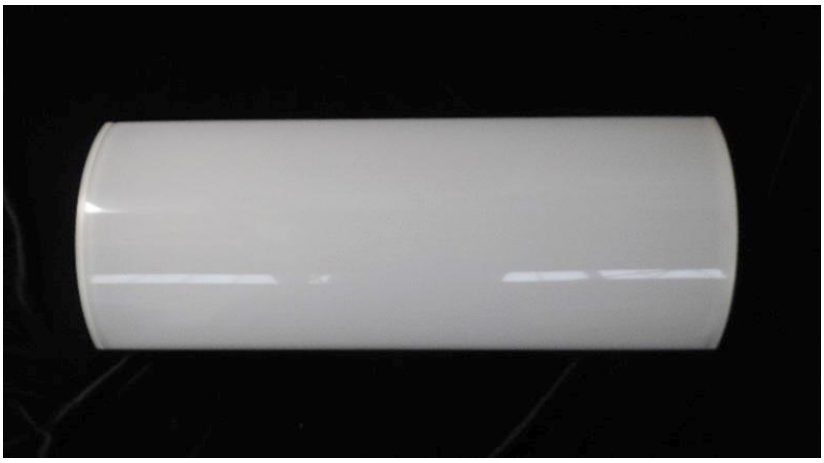
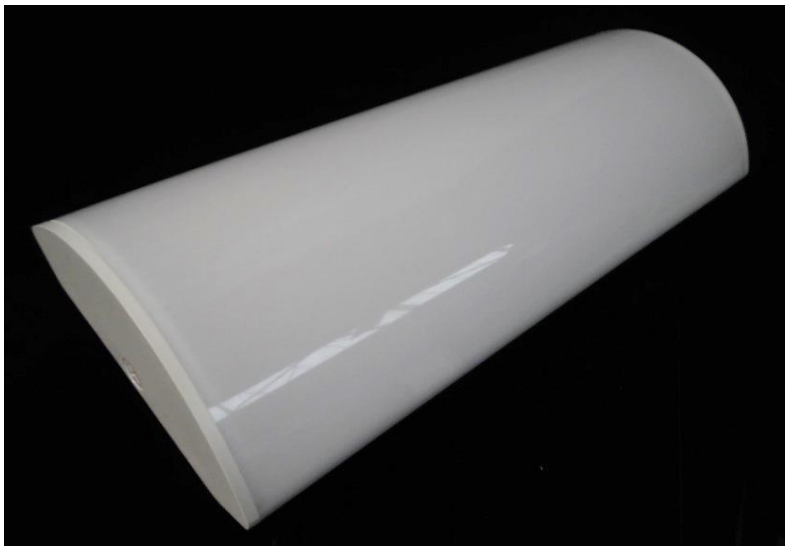
Additional Pictures of Test Subject





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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.