LightLab INTERNATIONAL ALLENTOWN LLC

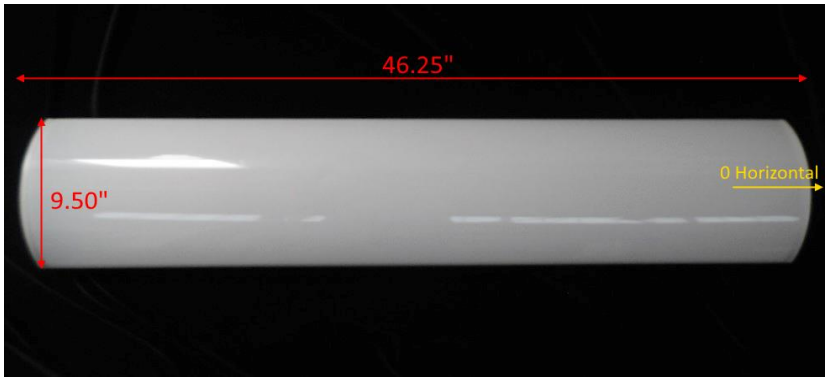
NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA002469-002

Indoor Distribution Photometry Test Report

Catalog Number: LWRAPA4-50PCS 40W Setting 4000K
Surface mounted, formed white painted steel housing, white painted steel reflector, translucent white linear ribbed plastic enclosure.
480 white LEDs, 240 CW LEDs and 240 WW LEDs on 4 boards
One PLC050S1050US-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	5260.5	Lumens
Input Current	0.3103	A	Total Efficacy	142.2	Lm/W
Input Power	37.00	W	Downward Flux	5053.1	Lumens
Frequency	60.00	Hz	Downward Flux	96.1	% of Total
Power Factor	0.994				
Current THD	10.3	%			

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

Test date: 08/16/2024
Report date: 09/03/2024

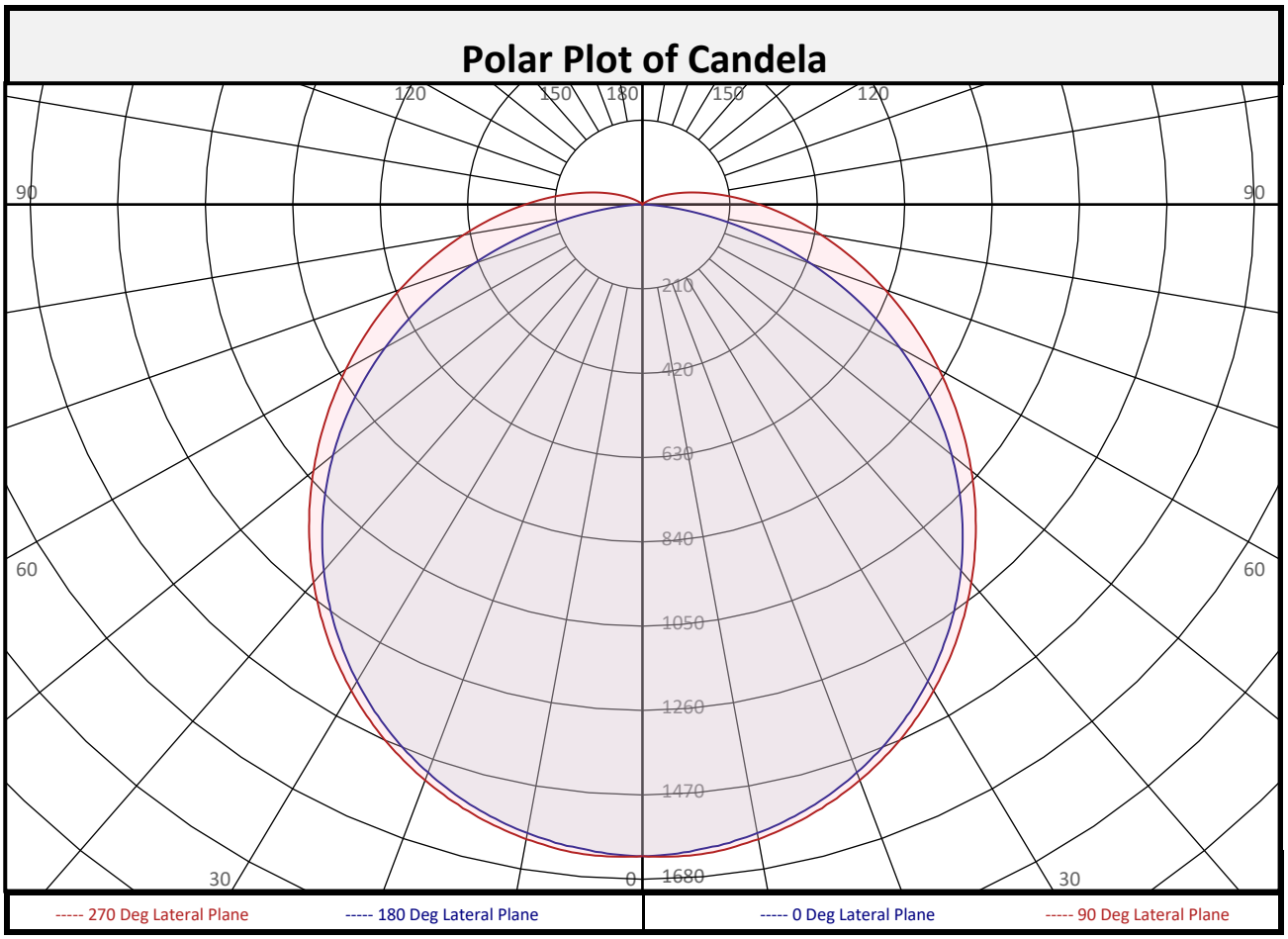
Signed: Michael L. Grather Digitally signed by Michael L. Grather Date: 2024.09.04 14:02:04 -04'00'

North America (issuing laboratory)
LightLab International Allentown, LLC
905 Harrison Street, Suite 135
Allentown, PA 18103 USA
Ph: +1 484-273-0705
Fx: +1 484-209-5779
www.lightlaballentown.com

Australasia & S.E. Asia
LightLab International
50 Redcliffe Gardens Drive
Clontarf - Queensland, 4019, Australia
Ph : +61 7 3283 7862
Fx : +61 7 3283 8751
www.lightlabint.com

Report of Test

LLIA002469-002



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	153.7	2.9%	90-100	124.8	2.4%	0-20	594.5	11.3%
10-20	440.8	8.4%	100-110	55.3	1.1%	0-30	1265	24.1%
20-30	670.7	12.8%	110-120	19.9	0.4%	0-40	2079	39.5%
30-40	814.0	15.5%	120-130	5.4	0.1%	0-60	3722	70.8%
40-50	853.6	16.2%	130-140	1.3	0.0%	0-80	4803	91.3%
50-60	789.6	15.0%	140-150	0.6	0.0%	10-90	4899	93.1%
60-70	639.7	12.2%	150-160	0.0	0.0%	20-50	2338	44.5%
70-80	440.9	8.4%	160-170	0.0	0.0%	40-90	2974	56.5%
80-90	250.1	4.8%	170-180	0.0	0.0%	60-90	1331	25.3%
0-90	5053	96.1%	90-180	207.3	3.9%	0-180	5260	100.0%

Report of Test

LLIA002469-002

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	1623	1623	1623	1623	1623	1623	1623	1623	1623
2.5	1620	1619	1620	1623	1625	1623	1620	1619	1620
5	1611	1611	1614	1620	1624	1620	1614	1611	1611
7.5	1603	1603	1606	1612	1617	1612	1606	1603	1603
10	1589	1591	1593	1600	1605	1600	1593	1591	1589
12.5	1574	1575	1578	1584	1589	1584	1578	1575	1574
15	1554	1556	1560	1567	1571	1567	1560	1556	1554
17.5	1532	1534	1538	1546	1551	1546	1538	1534	1532
20	1505	1508	1513	1521	1526	1521	1513	1508	1505
22.5	1477	1479	1485	1494	1499	1494	1485	1479	1477
25	1445	1447	1454	1463	1469	1463	1454	1447	1445
27.5	1409	1412	1419	1430	1435	1430	1419	1412	1409
30	1371	1374	1382	1393	1398	1393	1382	1374	1371
32.5	1330	1333	1343	1354	1359	1354	1343	1333	1330
35	1287	1290	1300	1313	1318	1313	1300	1290	1287
37.5	1240	1244	1254	1268	1274	1268	1254	1244	1240
40	1190	1195	1207	1222	1229	1222	1207	1195	1190
42.5	1139	1144	1156	1174	1181	1174	1156	1144	1139
45	1085	1089	1103	1124	1132	1124	1103	1089	1085
47.5	1028	1034	1050	1073	1082	1073	1050	1034	1028
50	970	975	994	1020	1031	1020	994	975	970
52.5	908	915	937	967	980	967	937	915	908
55	846	853	879	914	927	914	879	853	846
57.5	781	789	821	860	875	860	821	789	781
60	714	724	762	806	823	806	762	724	714
62.5	645	657	703	752	771	752	703	657	645
65	575	591	645	700	720	700	645	591	575
67.5	503	524	588	647	670	647	588	524	503
70	431	459	532	596	621	596	532	459	431
72.5	360	395	478	547	572	547	478	395	360
75	288	333	426	499	525	499	426	333	288
77.5	219	275	376	453	480	453	376	275	219
80	153	221	329	408	436	408	329	221	153
82.5	95	174	286	366	395	366	286	174	95
85	46	132	245	326	355	326	245	132	46
87.5	12	97	208	288	317	288	208	97	12
90	0	69	175	254	281	254	175	69	0

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

Report of Test

LLIA002469-002

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	69	175	254	281	254	175	69	0
	92.5	0	47	145	221	249	221	145	47	0
	95	0	31	119	191	217	191	119	31	0
	97.5	0	20	96	163	188	163	96	20	0
	100	0	12	76	138	162	138	76	12	0
	102.5	0	7	60	116	138	116	60	7	0
	105	0	4	46	96	116	96	46	4	0
	107.5	0	1	34	78	97	78	34	1	0
	110	0	0	25	63	79	63	25	0	0
	112.5	0	0	18	50	64	50	18	0	0
	115	0	0	13	38	51	38	13	0	0
	117.5	0	0	9	29	40	29	9	0	0
	120	0	0	6	22	30	22	6	0	0
	122.5	0	0	4	16	22	16	4	0	0
	125	0	0	3	11	16	11	3	0	0
	127.5	0	0	2	8	11	8	2	0	0
	130	0	0	1	5	8	5	1	0	0
	132.5	0	0	1	4	6	4	1	0	0
	135	0	0	1	3	4	3	1	0	0
	137.5	0	0	1	3	3	3	1	0	0
	140	0	0	1	2	3	2	1	0	0
	142.5	0	0	1	2	2	2	1	0	0
	145	0	0	1	2	2	2	1	0	0
	147.5	0	0	1	1	1	1	1	0	0
	150	0	0	0	1	1	1	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.

LightLab INTERNATIONAL ALLENTOWN LLC

NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA002469-002

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	42		54	47	42		51	46	41	39
6	68	54	45	38		65	53	44	38		50	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	34	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	45.1	7.54	7.68
8.0	25.4	10.05	10.24
10.0	16.2	12.56	12.80
12.0	11.3	15.07	15.36
14.0	8.3	17.58	17.91
16.0	6.3	20.10	20.47

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	5725	5725	5725
45	5412	4569	4382
55	5202	4185	4034
65	4799	3740	3709
75	3926	3288	3442
85	1846	2972	3333

Beam and Field Angle

0-180 Degree Plane

Beam Angle: 112.6°

Field Angle: 159.3°

90-270 Degree Plane

Beam Angle: 121.0°

Field Angle: 199.9°

North America (issuing laboratory)
LightLab International Allentown, LLC
905 Harrison Street, Suite 135
Allentown, PA 18103 USA
Ph: +1 484-273-0705
Fx: +1 484-209-5779
www.lightlaballentown.com

Australasia & S.E. Asia
LightLab International
50 Redcliffe Gardens Drive
Clontarf - Queensland, 4019, Australia
Ph : +61 7 3283 7862
Fx : +61 7 3283 8751
www.lightlabint.com

Report of Test

LLIA002469-002

UGR Table - Corrected

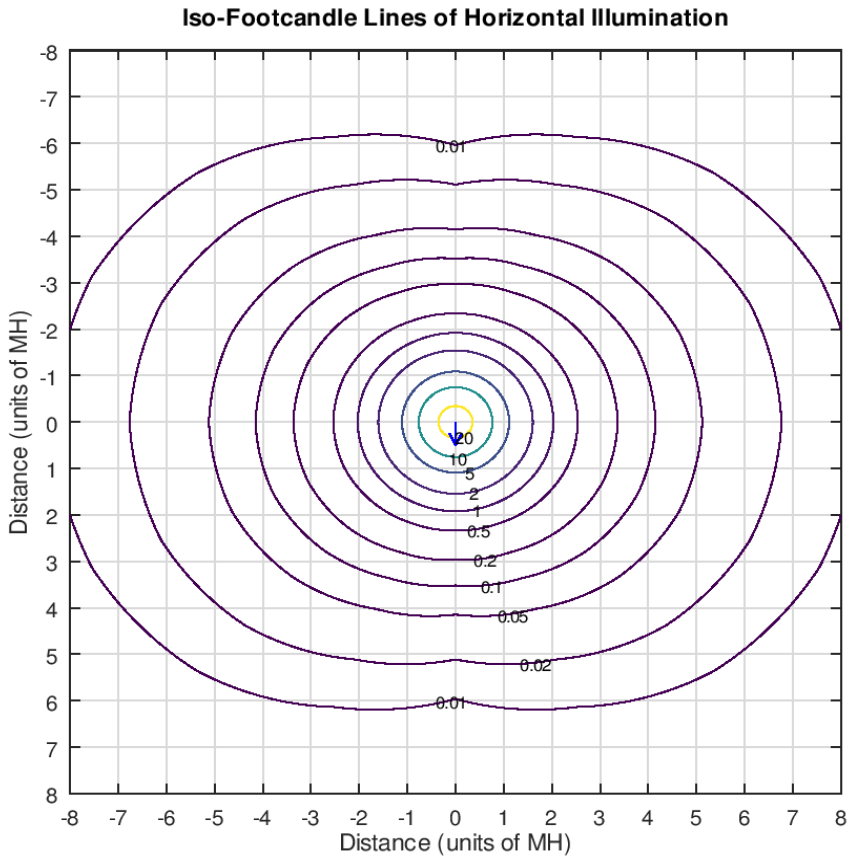
Reflectances											
Ceiling Cavity		70	70	50	50	30	70	70	50	50	30
Walls		50	30	50	30	30	50	30	50	30	30
Floor Cavity		20	20	20	20	20	20	20	20	20	20
Room Size		UGR Viewed Crosswise					UGR Viewed Endwise				
X=2H	Y=2H	16.0	17.6	16.4	18.0	18.4	17.3	18.9	17.7	19.3	19.7
	3H	17.6	19.0	18.0	19.4	19.9	19.6	21.0	20.0	21.4	21.9
	4H	18.1	19.4	18.5	19.9	20.3	20.6	22.0	21.1	22.4	22.9
	6H	18.3	19.6	18.8	20.0	20.5	21.7	23.0	22.2	23.4	23.9
	8H	18.4	19.6	18.8	20.1	20.6	22.2	23.5	22.7	23.9	24.4
	12H	18.4	19.6	18.9	20.0	20.5	22.8	24.0	23.3	24.5	25.0
4H	2H	16.8	18.1	17.2	18.6	19.0	17.8	19.1	18.2	19.6	20.0
	3H	18.5	19.7	19.0	20.2	20.7	20.3	21.4	20.7	21.9	22.4
	4H	19.1	20.2	19.6	20.7	21.2	21.5	22.6	22.0	23.1	23.6
	6H	19.5	20.5	20.0	21.0	21.5	22.8	23.7	23.3	24.2	24.8
	8H	19.6	20.5	20.1	21.0	21.6	23.4	24.3	23.9	24.8	25.4
	12H	19.6	20.4	20.2	21.0	21.5	24.1	24.9	24.6	25.4	26.0
8H	4H	19.7	20.6	20.2	21.1	21.6	21.7	22.6	22.3	23.1	23.7
	6H	20.2	21.0	20.8	21.5	22.1	23.2	23.9	23.7	24.5	25.0
	8H	20.4	21.0	20.9	21.6	22.2	23.9	24.6	24.5	25.2	25.8
	12H	20.5	21.1	21.0	21.6	22.3	24.8	25.4	25.4	25.9	26.6
12H	4H	19.8	20.6	20.4	21.2	21.7	21.8	22.6	22.3	23.1	23.7
	6H	20.4	21.1	21.0	21.6	22.3	23.2	23.9	23.8	24.4	25.1
	8H	20.7	21.3	21.2	21.8	22.5	24.0	24.6	24.6	25.2	25.8

Maximum UGR = 26.6

Report of Test

LLIA002469-002

Iso-Illuminance Plot

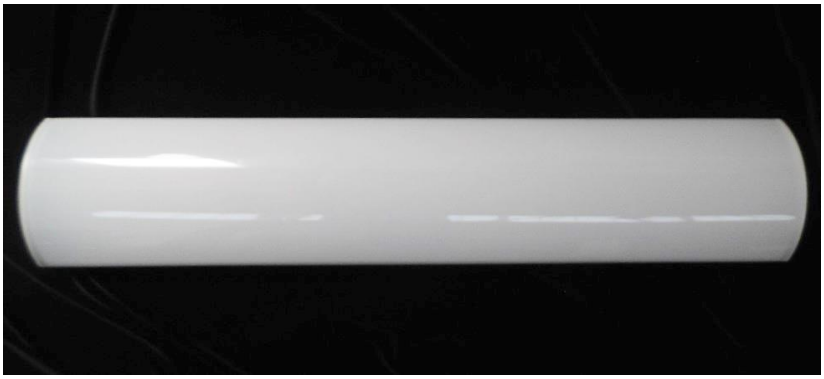


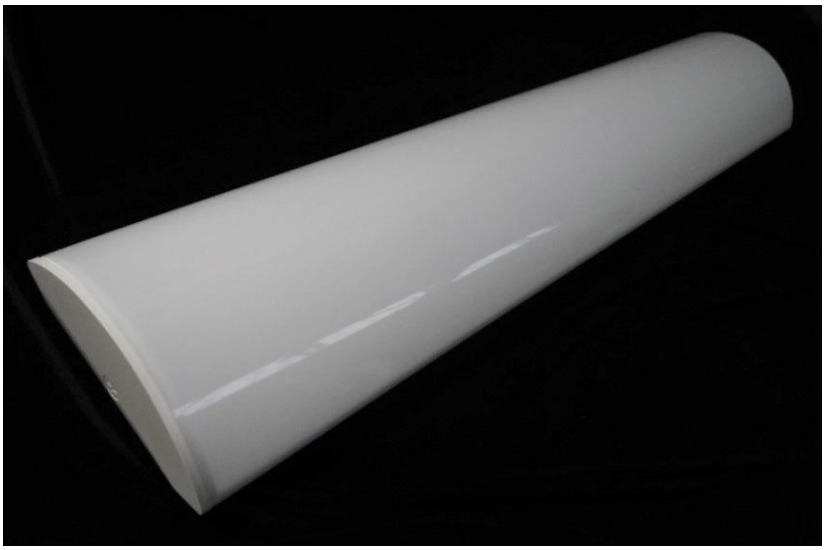
The isofootcandle values shown in the plot above are based on a mounting height of h = 8.0 feet. Grid values show multiples of mounting height. The isoilluminance contour lines are expressed in units of footcandles. The values expressed are based on the direct light from a single unit without the contribution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

Report of Test

LLIA002469-002

Additional Pictures of Test Subject





Report of Test

LLIA002469-002

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.