LightLab INTERNATIONAL ALLENTOWN LLC

NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA001740-005

Indoor Distribution Photometry Test Report

Catalog Number: PL24-50WPCTS-D - 40W/4000K setting
Recessed mounted, formed white painted steel housing/reflector, white painted aluminum frame, clear prismatic plastic enclosure with diffuse white plastic overlay.
180 white LEDs on six white circuit boards with optic below each LED
XZ-SE50B-480100-080060-Y-D LED driver

Prepared For:
Topaz Lighting Corp
925 Waverly Avenue
Holtsville, NY 11742, USA

Performance Summary					
Input Voltage	120.0	Vac	Luminous Flux	5354.0	Lumens
Input Current	0.3086	A	Total Efficacy	147.0	Lm/W
Input Power	36.42	W	Downward Flux	5354.0	Lumens
Frequency	60.00	Hz	Downward Flux	100.0	% of Total
Power Factor	0.983				
Current THD	8.5	%			

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

Test date: 05/04/2022
Report date: 05/05/2022

Signed: Michael L. Grather

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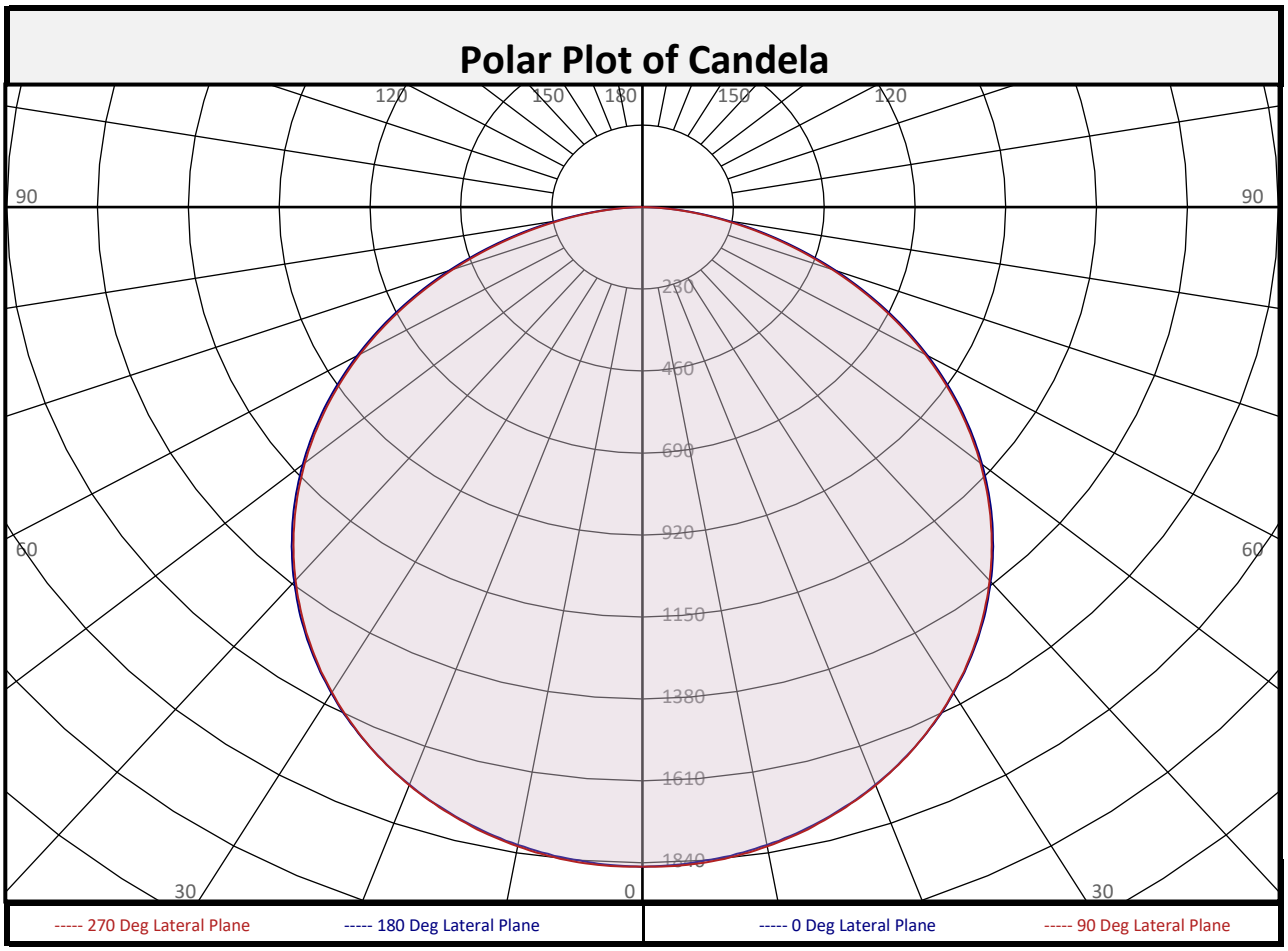
USA east coast LightLab Int'l Allentown LLC, 905 Harrison Street, Suite 135, Allentown, PA 18103, Ph: +1 484-273-0705, www.lightlaballentown.com (issuing laboratory)
Australasia & S.E. Asia LightLab International, 50 Redcliffe Gardens Drive, Clontarf, Queensland, 4019, Australia, Ph : +61 7 3283 7862, Fx : +61 7 3283 8751, www.lightlabint.com

Report of Test

LLIA001740-005



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	175.3	3.3%	90-100	0.0	0.0%	0-20	677.6	12.7%
10-20	502.3	9.4%	100-110	0.0	0.0%	0-30	1441	26.9%
20-30	763.4	14.3%	110-120	0.0	0.0%	0-40	2365	44.2%
30-40	924.4	17.3%	120-130	0.0	0.0%	0-60	4204	78.5%
40-50	963.8	18.0%	130-140	0.0	0.0%	0-80	5251	98.1%
50-60	874.5	16.3%	140-150	0.0	0.0%	10-90	5179	96.7%
60-70	666.8	12.5%	150-160	0.0	0.0%	20-50	2652	49.5%
70-80	380.5	7.1%	160-170	0.0	0.0%	40-90	2989	55.8%
80-90	102.9	1.9%	170-180	0.0	0.0%	60-90	1150	21.5%
0-90	5354	100.0%	90-180	0.0	0.0%	0-180	5354	100.0%

Report of Test

LLIA001740-005

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	1851	1851	1851	1851	1851	1851	1851	1851	1851
	2.5	1848	1848	1849	1850	1851	1850	1849	1848	1848
	5	1840	1841	1843	1845	1846	1845	1843	1841	1840
	7.5	1831	1830	1832	1835	1836	1835	1832	1830	1831
	10	1818	1818	1818	1820	1821	1820	1818	1818	1818
	12.5	1800	1800	1801	1802	1804	1802	1801	1800	1800
	15	1779	1779	1779	1781	1781	1781	1779	1779	1779
	17.5	1754	1753	1754	1755	1755	1755	1754	1753	1754
	20	1725	1725	1725	1726	1727	1726	1725	1725	1725
	22.5	1693	1692	1692	1693	1694	1693	1692	1692	1693
	25	1657	1656	1656	1656	1657	1656	1656	1656	1657
	27.5	1618	1617	1617	1616	1617	1616	1617	1617	1618
	30	1575	1574	1573	1573	1573	1573	1573	1574	1575
	32.5	1529	1529	1527	1526	1526	1526	1527	1529	1529
	35	1481	1479	1478	1476	1476	1476	1478	1479	1481
	37.5	1428	1427	1425	1423	1423	1423	1425	1427	1428
	40	1372	1371	1369	1367	1367	1367	1369	1371	1372
	42.5	1314	1313	1311	1309	1308	1309	1311	1313	1314
	45	1254	1252	1250	1248	1247	1248	1250	1252	1254
	47.5	1190	1189	1186	1184	1183	1184	1186	1189	1190
	50	1123	1122	1120	1117	1117	1117	1120	1122	1123
	52.5	1054	1053	1050	1048	1047	1048	1050	1053	1054
	55	984	982	979	976	976	976	979	982	984
	57.5	909	909	906	903	902	903	906	909	909
	60	835	833	830	827	827	827	830	833	835
	62.5	757	756	753	750	749	750	753	756	757
	65	679	678	674	671	670	671	674	678	679
	67.5	600	599	595	592	591	592	595	599	600
	70	521	519	516	512	510	512	516	519	521
	72.5	442	441	436	433	431	433	436	441	442
	75	365	363	359	355	353	355	359	363	365
	77.5	290	289	284	280	279	280	284	289	290
	80	219	218	214	210	208	210	214	218	219
	82.5	152	152	149	145	144	145	149	152	152
	85	91	91	89	87	86	87	89	91	91
	87.5	37	37	37	37	37	37	37	37	37
	90	0	0	0	0	0	0	0	0	0

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LLIA001740-005

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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	0	0	0	0	0	0	0	0
92.5	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	0
97.5	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0
102.5	0	0	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0	0	0
107.5	0	0	0	0	0	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

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LLIA001740-005

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	119	119	119	119		116	116	116	116		111	111	111		106	106	106		102	102	102	100
1	109	104	99	96		106	102	98	94		97	94	91		93	91	88		90	88	86	83
2	99	90	83	78		96	88	82	77		85	79	75		82	77	73		79	75	72	69
3	90	79	71	64		87	78	70	64		75	68	63		72	66	62		69	65	60	58
4	82	70	61	54		80	69	60	54		66	59	53		64	58	53		62	56	52	50
5	76	63	53	47		73	61	53	46		59	52	46		57	51	45		55	50	45	43
6	70	56	47	41		68	55	47	41		53	46	40		52	45	40		50	44	39	37
7	65	51	42	36		63	50	42	36		49	41	36		47	40	35		46	40	35	33
8	60	46	38	32		59	46	38	32		44	37	32		43	36	31		42	36	31	29
9	56	43	34	29		55	42	34	29		41	34	29		40	33	28		39	33	28	26
10	53	39	31	26		51	39	31	26		38	31	26		37	30	26		36	30	26	24

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	51.4	7.59	7.58
8.0	28.9	10.12	10.10
10.0	18.5	12.65	12.63
12.0	12.9	15.18	15.15
14.0	9.4	17.71	17.68
16.0	7.2	20.23	20.20

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	2884	2884	2884
45	2761	2754	2747
55	2671	2659	2650
65	2502	2486	2470
75	2194	2160	2124
85	1628	1591	1540

Beam and Field Angle

0-180 Degree Plane

Beam Angle: 113.9°

Field Angle: 162.5°

90-270 Degree Plane

Beam Angle: 113.4°

Field Angle: 161.7°

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LLIA001740-005

UGR Table - Corrected

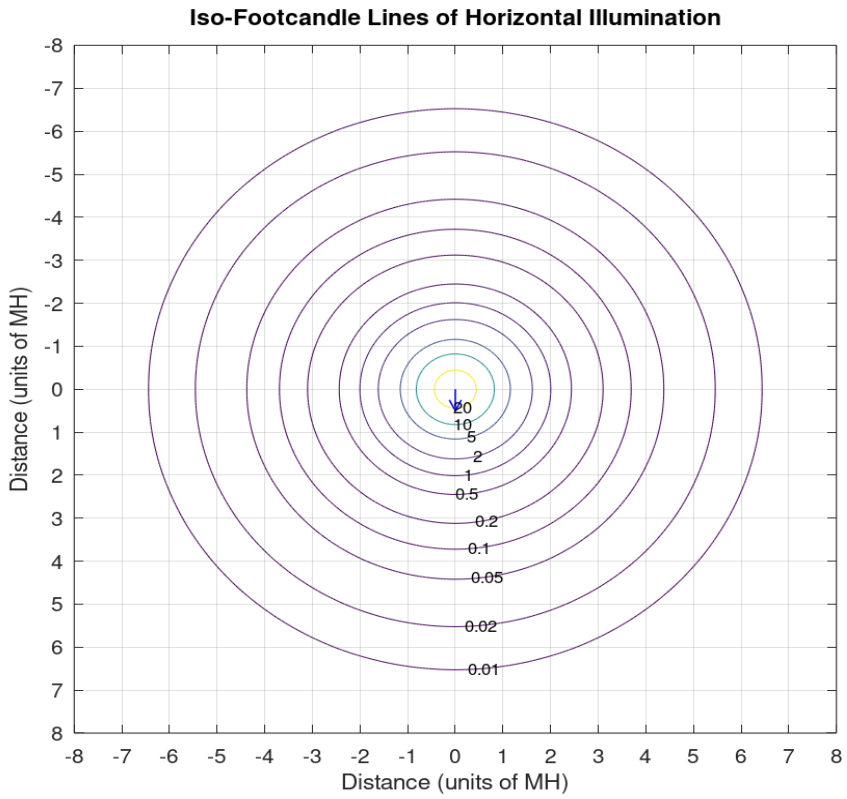
Reflectances											
Ceiling Cavity		70	70	50	50	30	70	70	50	50	30
Walls		50	30	50	30	30	50	30	50	30	30
Floor Cavity		20	20	20	20	20	20	20	20	20	20
Room Size		UGR Viewed Crosswise					UGR Viewed Endwise				
X=2H	Y=2H	15.6	17.2	15.9	17.5	17.9	15.5	17.2	15.9	17.5	17.8
	3H	17.4	18.9	17.8	19.2	19.6	17.3	18.8	17.7	19.2	19.5
	4H	18.1	19.5	18.5	19.8	20.2	18.0	19.4	18.4	19.7	20.1
	6H	18.6	19.9	19.0	20.3	20.6	18.5	19.8	18.9	20.1	20.5
	8H	18.7	20.0	19.2	20.4	20.8	18.6	19.9	19.0	20.2	20.6
	12H	18.9	20.0	19.3	20.4	20.8	18.7	19.9	19.1	20.3	20.7
4H	2H	16.2	17.6	16.6	18.0	18.3	16.2	17.6	16.6	17.9	18.3
	3H	18.3	19.4	18.7	19.8	20.2	18.2	19.4	18.6	19.8	20.2
	4H	19.1	20.1	19.5	20.5	21.0	19.0	20.1	19.4	20.5	20.9
	6H	19.7	20.6	20.2	21.1	21.5	19.6	20.5	20.0	21.0	21.4
	8H	19.9	20.8	20.4	21.2	21.7	19.8	20.6	20.2	21.1	21.6
	12H	20.0	20.8	20.5	21.3	21.8	19.9	20.7	20.4	21.2	21.6
8H	4H	19.4	20.3	19.8	20.7	21.2	19.3	20.2	19.8	20.6	21.1
	6H	20.1	20.9	20.6	21.3	21.8	20.0	20.7	20.5	21.2	21.7
	8H	20.4	21.1	20.9	21.6	22.0	20.3	20.9	20.8	21.4	21.9
	12H	20.6	21.2	21.1	21.7	22.2	20.5	21.1	21.0	21.5	22.1
12H	4H	19.4	20.2	19.9	20.7	21.1	19.3	20.1	19.8	20.6	21.1
	6H	20.2	20.8	20.7	21.3	21.8	20.1	20.7	20.6	21.2	21.7
	8H	20.5	21.1	21.0	21.6	22.1	20.4	21.0	20.9	21.5	22.0

Maximum UGR = 22.2

Report of Test

LLIA001740-005

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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LLIA001740-005

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.