LightLab INTERNATIONAL ALLENTOWN LLC

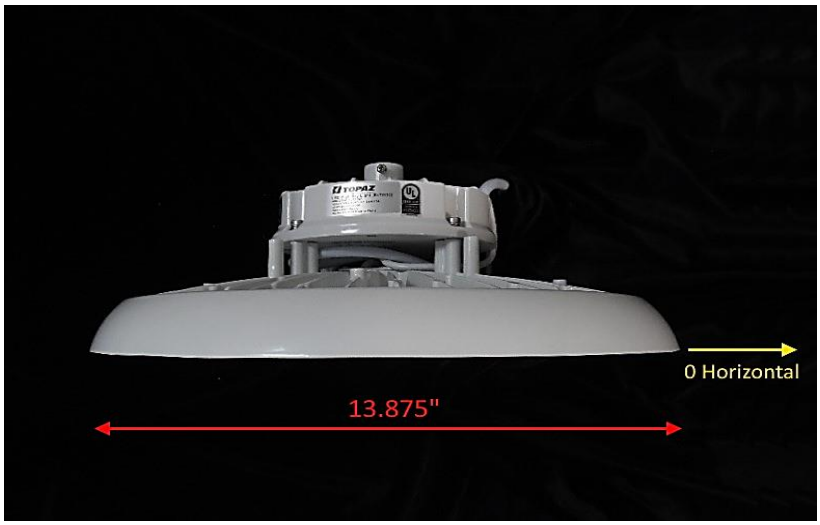
NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA001750-008

Indoor Distribution Photometry Test Report

Catalog Number: HBC-200W-PCTS-xx - 5000K, 150W setting
Suspended downlight, cast aluminum luminaire and driver housings, clear plastic enclosure with concentric lenses.
720 white LEDs on white circuit board; 400CW, 320WW. Only 400CW LEDs on for this test.
One LiFud LF-FHB200YAIV LED driver



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

Performance Summary					
Input Voltage	120.0	Vac	Luminous Flux	25238.9	Lumens
Input Current	1.269	A	Total Efficacy	166.5	Lm/W
Input Power	151.6	W	Downward Flux	25238.9	Lumens
Frequency	60.00	Hz	Downward Flux	100.0	% of Total
Power Factor	0.996				
Current THD	2.8	%			

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

Test date: 05/12/2022
Report date: 05/13/2022

Signed: Michael L. Grather

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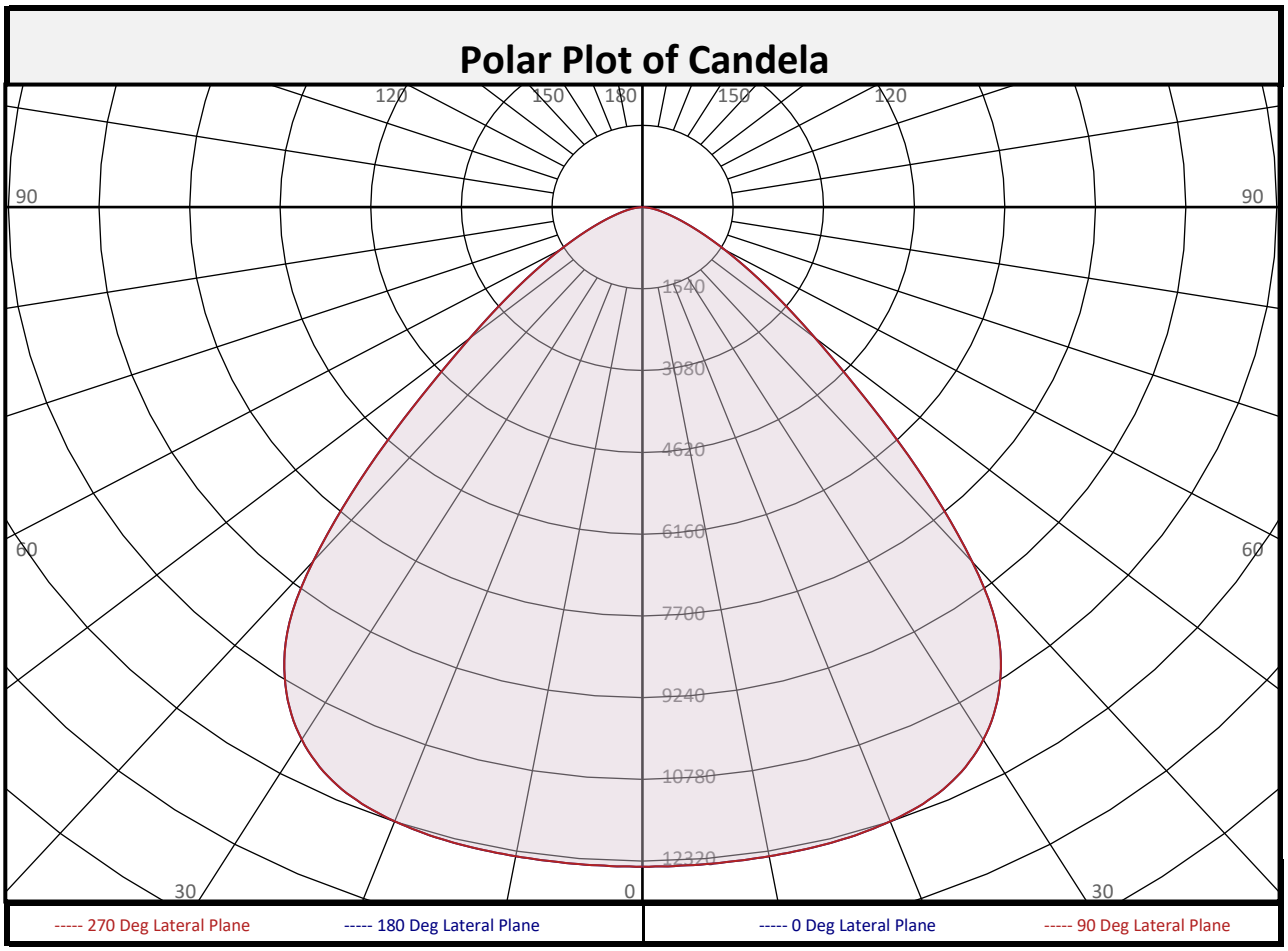

Zonal Flux Summary									
Zone (Deg Vert)	Flux (Lumens)	Percent of Total	Zone (Deg Vert)	Flux (Lumens)	Percent of Total	Zone (Deg Vert)	Flux (Lumens)	Percent of Total
0-10	1187	4.7%	90-100	0.0	0.0%	0-20	4696	18.6%
10-20	3510	13.9%	100-110	0.0	0.0%	0-30	10263	40.7%
20-30	5567	22.1%	110-120	0.0	0.0%	0-40	16805	66.6%
30-40	6542	25.9%	120-130	0.0	0.0%	0-60	23739	94.1%
40-50	4637	18.4%	130-140	0.0	0.0%	0-80	25168	99.7%
50-60	2296	9.1%	140-150	0.0	0.0%	10-90	24052	95.3%
60-70	1038	4.1%	150-160	0.0	0.0%	20-50	16746	66.4%
70-80	390.8	1.5%	160-170	0.0	0.0%	40-90	8434	33.4%
80-90	71.3	0.3%	170-180	0.0	0.0%	60-90	1500	5.9%
0-90	25239	100.0%	90-180	0.0	0.0%	0-180	25239	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	12426	12426	12426	12426	12426	12426	12426	12426	12426
	2.5	12428	12428	12428	12428	12428	12428	12428	12428	12428
	5	12424	12424	12424	12424	12424	12424	12424	12424	12424
	7.5	12421	12421	12421	12421	12421	12421	12421	12421	12421
	10	12418	12418	12418	12418	12418	12418	12418	12418	12418
	12.5	12411	12411	12411	12411	12411	12411	12411	12411	12411
	15	12398	12398	12398	12398	12398	12398	12398	12398	12398
	17.5	12367	12367	12367	12367	12367	12367	12367	12367	12367
	20	12315	12315	12315	12315	12315	12315	12315	12315	12315
	22.5	12232	12232	12232	12232	12232	12232	12232	12232	12232
	25	12102	12102	12102	12102	12102	12102	12102	12102	12102
	27.5	11892	11892	11892	11892	11892	11892	11892	11892	11892
	30	11585	11585	11585	11585	11585	11585	11585	11585	11585
	32.5	11172	11172	11172	11172	11172	11172	11172	11172	11172
	35	10621	10621	10621	10621	10621	10621	10621	10621	10621
	37.5	9862	9862	9862	9862	9862	9862	9862	9862	9862
	40	8713	8713	8713	8713	8713	8713	8713	8713	8713
	42.5	7334	7334	7334	7334	7334	7334	7334	7334	7334
	45	5950	5950	5950	5950	5950	5950	5950	5950	5950
	47.5	4737	4737	4737	4737	4737	4737	4737	4737	4737
	50	3817	3817	3817	3817	3817	3817	3817	3817	3817
	52.5	3099	3099	3099	3099	3099	3099	3099	3099	3099
	55	2515	2515	2515	2515	2515	2515	2515	2515	2515
	57.5	2029	2029	2029	2029	2029	2029	2029	2029	2029
	60	1626	1626	1626	1626	1626	1626	1626	1626	1626
	62.5	1293	1293	1293	1293	1293	1293	1293	1293	1293
	65	1019	1019	1019	1019	1019	1019	1019	1019	1019
	67.5	796	796	796	796	796	796	796	796	796
	70	615	615	615	615	615	615	615	615	615
	72.5	470	470	470	470	470	470	470	470	470
	75	356	356	356	356	356	356	356	356	356
	77.5	265	265	265	265	265	265	265	265	265
	80	185	185	185	185	185	185	185	185	185
	82.5	114	114	114	114	114	114	114	114	114
	85	53	53	53	53	53	53	53	53	53
	87.5	6	6	6	6	6	6	6	6	6
	90	0	0	0	0	0	0	0	0	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
	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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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	112	108	105	102		109	106	103	100		102	99	97		98	96	94		94	93	91	89
2	104	97	92	88		101	96	91	87		92	88	85		89	86	83		86	83	81	79
3	96	88	81	76		94	86	80	76		84	79	74		81	77	73		79	75	72	70
4	90	80	73	67		88	78	72	67		76	70	66		74	69	65		72	68	64	62
5	83	73	65	59		81	72	64	59		70	63	59		68	62	58		66	61	57	56
6	78	66	59	53		76	65	58	53		64	57	52		62	56	52		61	56	52	50
7	73	61	53	48		71	60	53	48		59	52	47		57	51	47		56	51	47	45
8	68	56	48	43		66	55	48	43		54	48	43		53	47	43		52	46	42	41
9	64	52	44	39		62	51	44	39		50	44	39		49	43	39		48	43	39	37
10	60	48	41	36		59	47	41	36		47	40	36		46	40	36		45	39	36	34

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	345.2	8.07	8.07
8.0	194.2	10.76	10.76
10.0	124.3	13.45	13.45
12.0	86.3	16.14	16.14
14.0	63.4	18.83	18.83
16.0	48.5	21.52	21.52

Spacing Criterion

SC: 1.3

Average Luminance (cd/m^2)

	0 deg Plane	45 deg Plane	90 deg Plane
0	127387	127387	127387
45	86266	86266	86266
55	44948	44948	44948
65	24722	24722	24722
75	14104	14104	14104
85	6211	6211	6211

Beam and Field Angle

0-180 Degree Plane

Beam Angle: 89.0°

Field Angle: 125.9°

90-270 Degree Plane

Beam Angle: 89.0°

Field Angle: 125.9°

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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	21.8	23.1	22.2	23.5	23.8	21.8	23.1	22.2	23.5	23.8
	3H	22.4	23.6	22.8	23.9	24.3	22.4	23.6	22.8	23.9	24.3
	4H	22.6	23.7	23.0	24.0	24.4	22.6	23.7	23.0	24.0	24.4
	6H	22.7	23.7	23.1	24.0	24.4	22.7	23.7	23.1	24.0	24.4
	8H	22.7	23.6	23.1	24.0	24.4	22.7	23.6	23.1	24.0	24.4
	12H	22.7	23.6	23.1	23.9	24.4	22.7	23.6	23.1	23.9	24.4
4H	2H	22.0	23.1	22.4	23.5	23.8	22.0	23.1	22.4	23.5	23.8
	3H	22.8	23.7	23.2	24.1	24.5	22.8	23.7	23.2	24.1	24.5
	4H	23.0	23.8	23.4	24.2	24.7	23.0	23.8	23.4	24.2	24.7
	6H	23.1	23.8	23.6	24.3	24.7	23.1	23.8	23.6	24.3	24.7
	8H	23.2	23.8	23.6	24.2	24.7	23.2	23.8	23.6	24.2	24.7
	12H	23.1	23.7	23.6	24.2	24.7	23.1	23.7	23.6	24.2	24.7
8H	4H	23.0	23.7	23.5	24.1	24.6	23.0	23.7	23.5	24.1	24.6
	6H	23.2	23.7	23.7	24.2	24.7	23.2	23.7	23.7	24.2	24.7
	8H	23.2	23.7	23.7	24.2	24.7	23.2	23.7	23.7	24.2	24.7
	12H	23.2	23.7	23.7	24.2	24.7	23.2	23.7	23.7	24.2	24.7
12H	4H	23.0	23.6	23.5	24.0	24.5	23.0	23.6	23.5	24.0	24.5
	6H	23.2	23.7	23.7	24.1	24.7	23.2	23.7	23.7	24.1	24.7
	8H	23.2	23.6	23.7	24.1	24.7	23.2	23.6	23.7	24.1	24.7

Maximum UGR = 24.7

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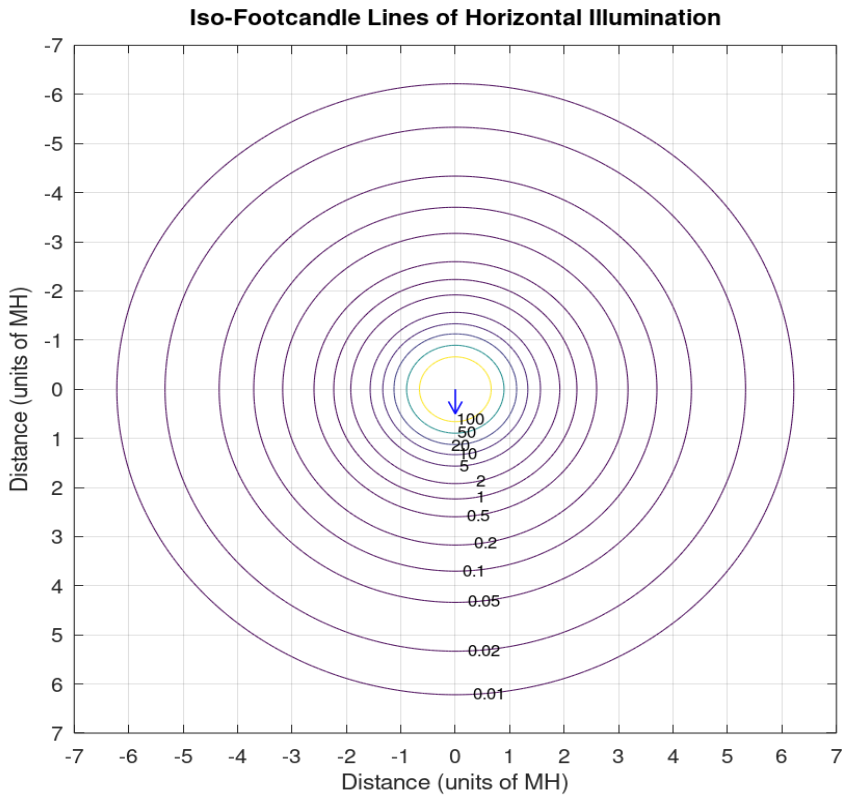
Iso-Illuminance Plot



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	25.3 °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.