LightLab INTERNATIONAL ALLENTOWN LLC

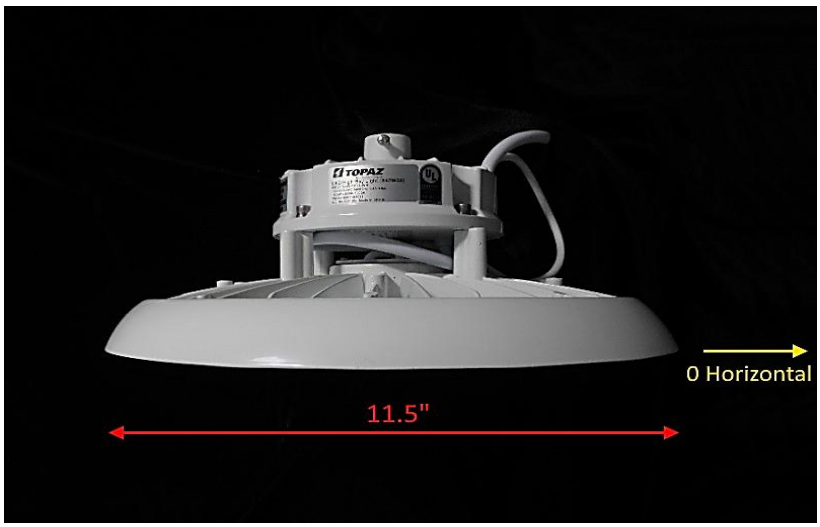
NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA001750-004

Indoor Distribution Photometry Test Report

Catalog Number: HBC-150W-PCTS-xx - 5000K, 100W setting
Suspended downlight, cast aluminum luminaire and driver housings, clear plastic enclosure with concentric lenses.
560 white LEDs on white circuit board; 320CW, 240WW. Only 320CW LEDs on for this test.
One LiFud LF-FHB150YAIV LED driver



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

Performance Summary					
Input Voltage	120.0	Vac	Luminous Flux	17461.3	Lumens
Input Current	0.8534	A	Total Efficacy	171.7	Lm/W
Input Power	101.7	W	Downward Flux	17461.3	Lumens
Frequency	60.00	Hz	Downward Flux	100.0	% of Total
Power Factor	0.993				
Current THD	4.3	%			

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

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

Signed: Michael L. Grather

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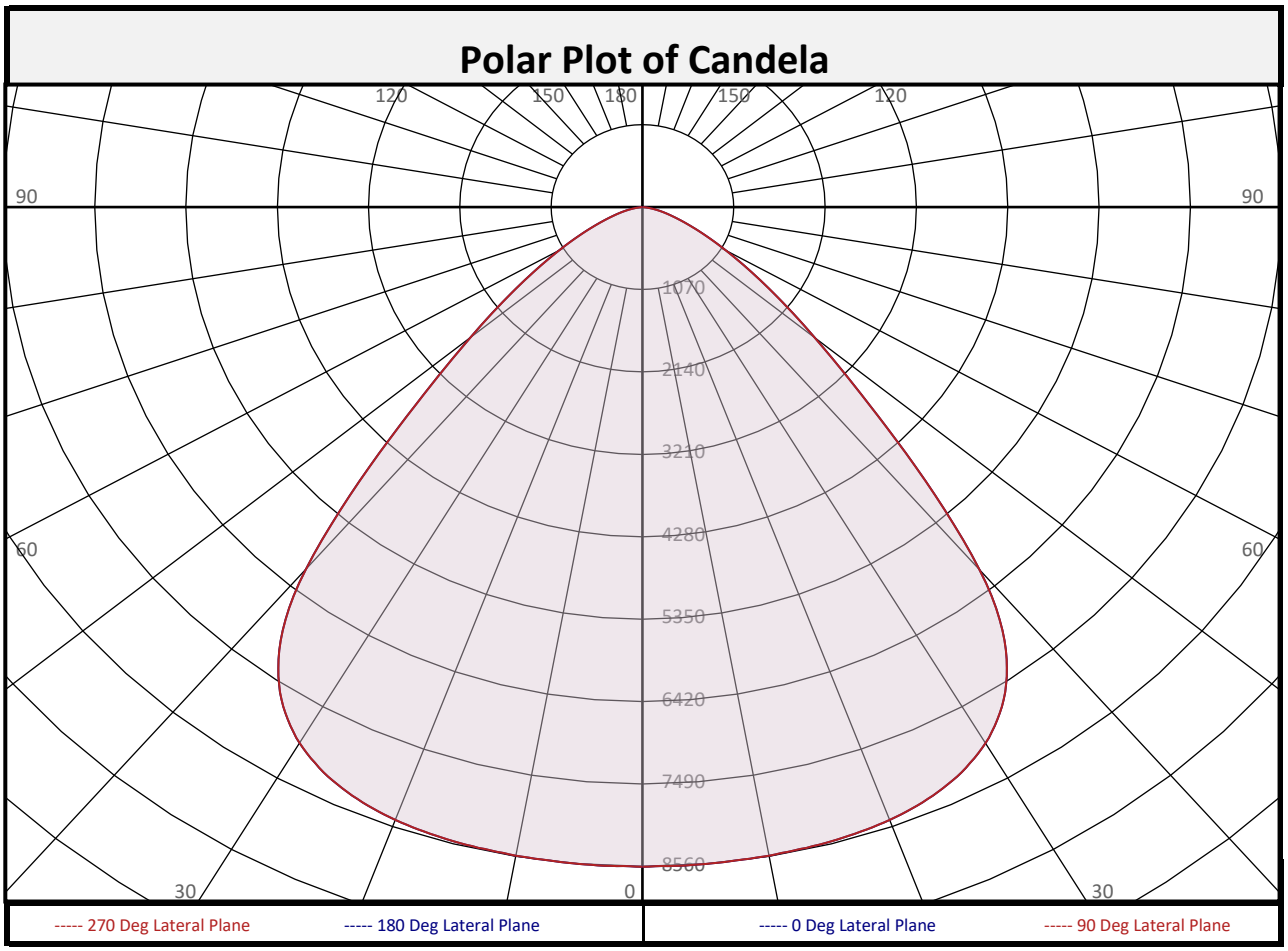

Zonal Flux Summary

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	817.3	4.7%	90-100	0.0	0.0%	0-20	3231	18.5%
10-20	2414	13.8%	100-110	0.0	0.0%	0-30	7068	40.5%
20-30	3837	22.0%	110-120	0.0	0.0%	0-40	11647	66.7%
30-40	4579	26.2%	120-130	0.0	0.0%	0-60	16432	94.1%
40-50	3194	18.3%	130-140	0.0	0.0%	0-80	17424	99.8%
50-60	1591	9.1%	140-150	0.0	0.0%	10-90	16644	95.3%
60-70	725.3	4.2%	150-160	0.0	0.0%	20-50	11609	66.5%
70-80	266.6	1.5%	160-170	0.0	0.0%	40-90	5814	33.3%
80-90	37.4	0.2%	170-180	0.0	0.0%	60-90	1029	5.9%
0-90	17461	100.0%	90-180	0.0	0.0%	0-180	17461	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	8566	8566	8566	8566	8566	8566	8566	8566	8566
	2.5	8562	8562	8562	8562	8562	8562	8562	8562	8562
	5	8561	8561	8561	8561	8561	8561	8561	8561	8561
	7.5	8554	8554	8554	8554	8554	8554	8554	8554	8554
	10	8552	8552	8552	8552	8552	8552	8552	8552	8552
	12.5	8537	8537	8537	8537	8537	8537	8537	8537	8537
	15	8528	8528	8528	8528	8528	8528	8528	8528	8528
	17.5	8503	8503	8503	8503	8503	8503	8503	8503	8503
	20	8468	8468	8468	8468	8468	8468	8468	8468	8468
	22.5	8411	8411	8411	8411	8411	8411	8411	8411	8411
	25	8327	8327	8327	8327	8327	8327	8327	8327	8327
	27.5	8208	8208	8208	8208	8208	8208	8208	8208	8208
	30	8037	8037	8037	8037	8037	8037	8037	8037	8037
	32.5	7790	7790	7790	7790	7790	7790	7790	7790	7790
	35	7440	7440	7440	7440	7440	7440	7440	7440	7440
	37.5	6927	6927	6927	6927	6927	6927	6927	6927	6927
	40	6136	6136	6136	6136	6136	6136	6136	6136	6136
	42.5	5074	5074	5074	5074	5074	5074	5074	5074	5074
	45	4048	4048	4048	4048	4048	4048	4048	4048	4048
	47.5	3241	3241	3241	3241	3241	3241	3241	3241	3241
	50	2628	2628	2628	2628	2628	2628	2628	2628	2628
	52.5	2142	2142	2142	2142	2142	2142	2142	2142	2142
	55	1742	1742	1742	1742	1742	1742	1742	1742	1742
	57.5	1411	1411	1411	1411	1411	1411	1411	1411	1411
	60	1134	1134	1134	1134	1134	1134	1134	1134	1134
	62.5	904	904	904	904	904	904	904	904	904
	65	713	713	713	713	713	713	713	713	713
	67.5	555	555	555	555	555	555	555	555	555
	70	429	429	429	429	429	429	429	429	429
	72.5	328	328	328	328	328	328	328	328	328
	75	246	246	246	246	246	246	246	246	246
	77.5	174	174	174	174	174	174	174	174	174
	80	111	111	111	111	111	111	111	111	111
	82.5	58	58	58	58	58	58	58	58	58
	85	25	25	25	25	25	25	25	25	25
	87.5	3	3	3	3	3	3	3	3	3
	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	90
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	79	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		46	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	237.9	8.15	8.15
8.0	133.8	10.87	10.87
10.0	85.7	13.59	13.59
12.0	59.5	16.31	16.31
14.0	43.7	19.02	19.02
16.0	33.5	21.74	21.74

Spacing Criterion

SC: 1.3

Average Luminance (cd/m^2)

	0 deg Plane	45 deg Plane	90 deg Plane
0	127827	127827	127827
45	85425	85425	85425
55	45332	45332	45332
65	25166	25166	25166
75	14169	14169	14169
85	4298	4298	4298

Beam and Field Angle

0-180 Degree Plane

Beam Angle: 88.8°

Field Angle: 126.2°

90-270 Degree Plane

Beam Angle: 88.8°

Field Angle: 126.2°

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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	21.9	23.2	22.2	23.5	23.8	21.9	23.2	22.2	23.5	23.8
	3H	22.5	23.7	22.9	24.0	24.4	22.5	23.7	22.9	24.0	24.4
	4H	22.6	23.7	23.0	24.1	24.5	22.6	23.7	23.0	24.1	24.5
	6H	22.7	23.7	23.1	24.1	24.5	22.7	23.7	23.1	24.1	24.5
	8H	22.7	23.6	23.1	24.0	24.4	22.7	23.6	23.1	24.0	24.4
	12H	22.6	23.6	23.1	23.9	24.4	22.6	23.6	23.1	23.9	24.4
4H	2H	22.1	23.2	22.5	23.5	23.9	22.1	23.2	22.5	23.5	23.9
	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	23.5	24.3	24.7	23.0	23.8	23.5	24.3	24.7
	6H	23.1	23.8	23.6	24.3	24.7	23.1	23.8	23.6	24.3	24.7
	8H	23.1	23.8	23.6	24.2	24.7	23.1	23.8	23.6	24.2	24.7
	12H	23.1	23.7	23.6	24.2	24.6	23.1	23.7	23.6	24.2	24.6
8H	4H	23.1	23.7	23.5	24.1	24.6	23.1	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	23.6	23.7	24.1	24.6	23.2	23.6	23.7	24.1	24.6
12H	4H	23.0	23.6	23.5	24.1	24.5	23.0	23.6	23.5	24.1	24.5
	6H	23.1	23.6	23.7	24.1	24.6	23.1	23.6	23.7	24.1	24.6
	8H	23.2	23.6	23.7	24.1	24.6	23.2	23.6	23.7	24.1	24.6

Maximum UGR = 24.7

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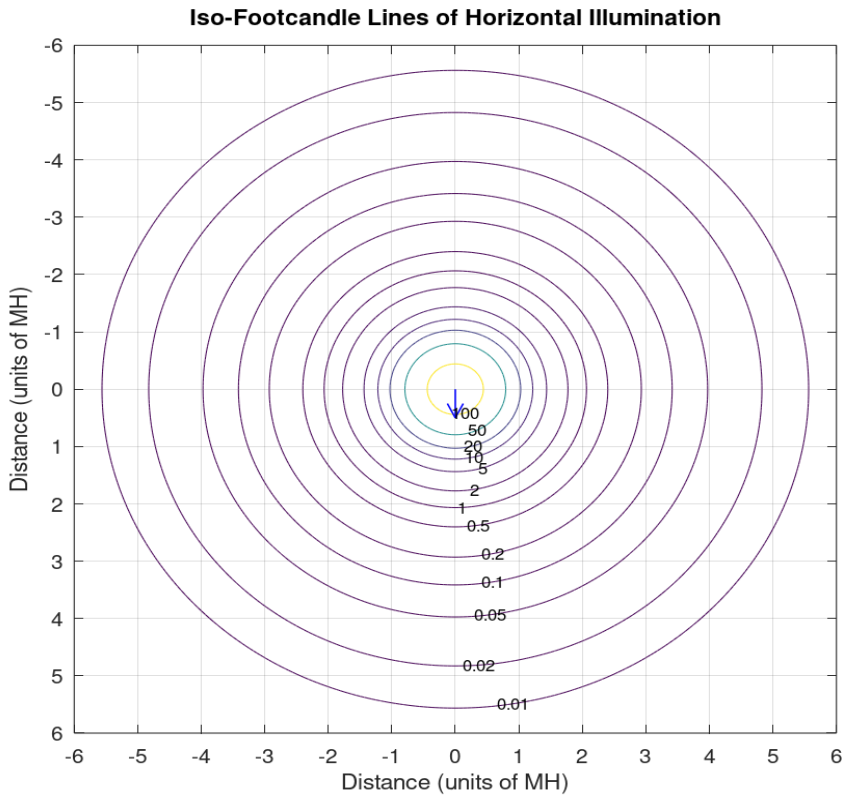
Iso-Illuminance Plot



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	25.1 °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.