LightLab INTERNATIONAL ALLENTOWN LLC

NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA002241-005

Indoor Distribution Photometry Test Report

Catalog Number: LHB-30L-W-PCS-U - 160W-4000K Setting
Highbay/Pendant mounted, cast white painted aluminum housing,
clear prismatic plastic enclosures below LEDs
728 white LEDs on two LED boards with 364 LEDs each
One Lifud LF-FAA200 LED driver

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

Performance Summary					
Input Voltage	120.0	Vac	Luminous Flux	25558.5	Lumens
Input Current	1.320	A	Total Efficacy	161.8	Lm/W
Input Power	158.0	W	Downward Flux	25558.4	Lumens
Frequency	60.00	Hz	Downward Flux	100.0	% of Total
Power Factor	0.997				
Current THD	4.4	%			

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

Test date: 10/20/2023
Report date: 10/26/2023

Signed: Michael L. Grather — Digitally signed by Michael L. Grather Date: 2023.10.26 14:28:22 -04'00'

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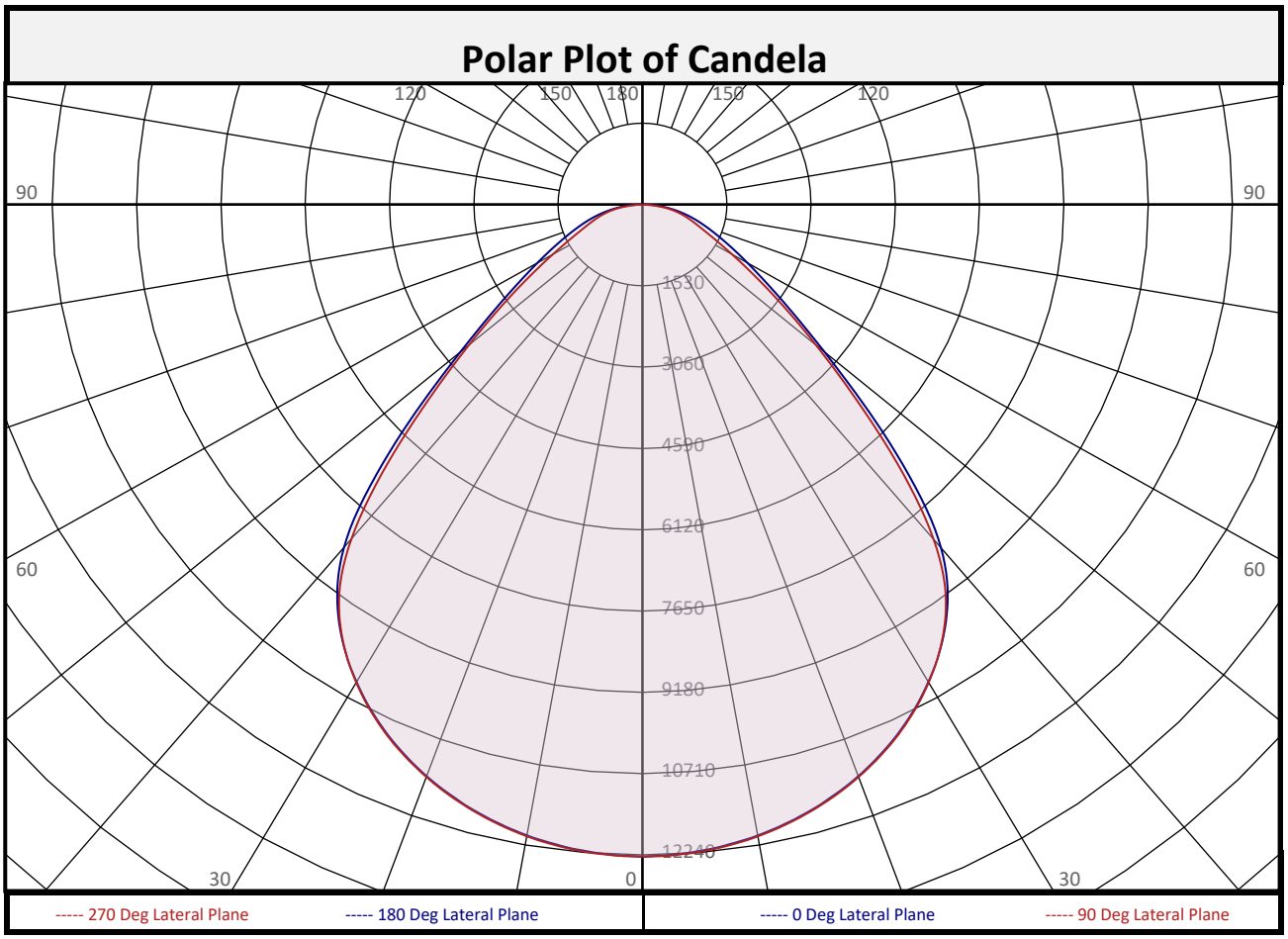

Zonal Flux Summary

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	1163	4.5%	90-100	0.1	0.0%	0-20	4498	17.6%
10-20	3335	13.0%	100-110	0.0	0.0%	0-30	9561	37.4%
20-30	5064	19.8%	110-120	0.0	0.0%	0-40	15521	60.7%
30-40	5959	23.3%	120-130	0.0	0.0%	0-60	22920	89.7%
40-50	4771	18.7%	130-140	0.0	0.0%	0-80	25302	99.0%
50-60	2628	10.3%	140-150	0.0	0.0%	10-90	24396	95.5%
60-70	1493	5.8%	150-160	0.0	0.0%	20-50	15794	61.8%
70-80	888.5	3.5%	160-170	0.0	0.0%	40-90	10038	39.3%
80-90	256.9	1.0%	170-180	0.0	0.0%	60-90	2638	10.3%
0-90	25558	100.0%	90-180	0.1	0.0%	0-180	25559	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	12275	12275	12275	12275	12275	12275	12275	12275	12275
2.5	12254	12251	12269	12271	12261	12271	12269	12251	12254
5	12207	12210	12228	12233	12227	12233	12228	12210	12207
7.5	12142	12146	12166	12167	12161	12167	12166	12146	12142
10	12057	12057	12075	12076	12075	12076	12075	12057	12057
12.5	11941	11945	11960	11962	11960	11962	11960	11945	11941
15	11805	11809	11821	11822	11822	11822	11821	11809	11805
17.5	11638	11644	11654	11659	11658	11659	11654	11644	11638
20	11450	11452	11465	11473	11465	11473	11465	11452	11450
22.5	11230	11233	11248	11255	11248	11255	11248	11233	11230
25	10984	10984	11002	11009	11002	11009	11002	10984	10984
27.5	10701	10702	10721	10729	10716	10729	10721	10702	10701
30	10377	10382	10402	10407	10389	10407	10402	10382	10377
32.5	10020	10022	10040	10037	10015	10037	10040	10022	10020
35	9602	9606	9613	9598	9575	9598	9613	9606	9602
37.5	9099	9102	9082	9044	9013	9044	9082	9102	9099
40	8431	8418	8352	8265	8215	8265	8352	8418	8431
42.5	7478	7431	7337	7231	7172	7231	7337	7431	7478
45	6349	6293	6197	6093	6032	6093	6197	6293	6349
47.5	5240	5186	5103	5027	4983	5027	5103	5186	5240
50	4308	4246	4191	4141	4105	4141	4191	4246	4308
52.5	3584	3480	3453	3435	3375	3435	3453	3480	3584
55	3020	2858	2864	2881	2772	2881	2864	2858	3020
57.5	2567	2351	2388	2437	2277	2437	2388	2351	2567
60	2205	1948	2010	2081	1880	2081	2010	1948	2205
62.5	1903	1632	1710	1793	1569	1793	1710	1632	1903
65	1647	1391	1476	1560	1328	1560	1476	1391	1647
67.5	1428	1206	1289	1363	1145	1363	1289	1206	1428
70	1238	1061	1134	1189	999	1189	1134	1061	1238
72.5	1067	938	994	1027	874	1027	994	938	1067
75	904	818	855	871	754	871	855	818	904
77.5	746	694	714	712	632	712	714	694	746
80	590	562	566	550	502	550	566	562	590
82.5	432	418	410	376	342	376	410	418	432
85	280	268	237	171	145	171	237	268	280
87.5	112	94	45	24	19	24	45	94	112
90	0	1	1	1	2	1	1	1	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	1	1	1	2	1	1	1	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

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	119	119	119	119		116	116	116	116		111	111	111		106	106	106		102	102	102	100
1	111	107	103	100		108	104	101	98		100	98	95		96	94	92		93	91	90	88
2	102	95	90	85		100	94	88	84		90	86	82		87	83	80		84	81	78	76
3	95	86	79	73		92	84	78	72		81	76	71		79	74	70		76	72	69	67
4	88	77	70	64		86	76	69	63		74	67	62		71	66	62		69	65	61	59
5	81	70	62	56		79	69	61	56		67	60	55		65	59	55		63	58	54	52
6	76	64	56	50		74	63	55	50		61	54	49		60	54	49		58	53	49	47
7	71	58	50	45		69	58	50	45		56	49	44		55	49	44		53	48	44	42
8	66	54	46	41		65	53	46	40		52	45	40		51	44	40		49	44	40	38
9	62	50	42	37		61	49	42	37		48	41	37		47	41	36		46	40	36	35
10	58	46	39	34		57	45	38	34		44	38	34		44	38	33		43	37	33	32

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	341.0	7.52	7.52
8.0	191.8	10.03	10.02
10.0	122.8	12.53	12.53
12.0	85.2	15.04	15.04
14.0	62.6	17.55	17.54
16.0	47.9	20.05	20.05

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	124356	124356	124356
45	90966	88783	86415
55	53338	50580	48961
65	39474	35370	31839
75	35393	33463	29526
85	32555	27510	16907

Beam and Field Angle

0-180 Degree Plane

Beam Angle: 90.9°

Field Angle: 140.3°

90-270 Degree Plane

Beam Angle: 89.5°

Field Angle: 132.6°

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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	22.5	24.0	22.9	24.3	24.6	22.6	24.0	23.0	24.3	24.7
	3H	23.9	25.2	24.3	25.5	25.9	23.8	25.1	24.2	25.4	25.8
	4H	24.5	25.7	24.9	26.1	26.4	24.4	25.5	24.8	25.9	26.3
	6H	25.1	26.2	25.5	26.5	26.9	24.8	25.9	25.2	26.3	26.7
	8H	25.3	26.3	25.7	26.7	27.1	24.9	26.0	25.4	26.4	26.8
	12H	25.4	26.4	25.8	26.8	27.2	25.0	26.0	25.4	26.4	26.8
4H	2H	22.9	24.1	23.3	24.5	24.9	23.0	24.2	23.4	24.5	24.9
	3H	24.5	25.5	24.9	25.9	26.3	24.5	25.5	24.9	25.9	26.3
	4H	25.3	26.2	25.7	26.6	27.0	25.2	26.1	25.7	26.5	27.0
	6H	26.0	26.7	26.4	27.2	27.7	25.8	26.6	26.3	27.0	27.5
	8H	26.2	27.0	26.7	27.4	27.9	26.0	26.7	26.5	27.2	27.7
	12H	26.5	27.1	26.9	27.6	28.0	26.1	26.7	26.6	27.2	27.7
8H	4H	25.5	26.3	26.0	26.7	27.2	25.5	26.2	26.0	26.7	27.1
	6H	26.4	27.0	26.9	27.5	28.0	26.3	26.9	26.8	27.4	27.8
	8H	26.8	27.3	27.3	27.8	28.3	26.5	27.1	27.1	27.6	28.1
	12H	27.1	27.5	27.6	28.0	28.6	26.7	27.2	27.2	27.6	28.2
12H	4H	25.6	26.2	26.1	26.7	27.2	25.5	26.2	26.0	26.7	27.1
	6H	26.5	27.0	27.0	27.5	28.0	26.3	26.9	26.9	27.3	27.9
	8H	26.9	27.4	27.4	27.8	28.4	26.7	27.1	27.2	27.6	28.2

Maximum UGR = 28.6

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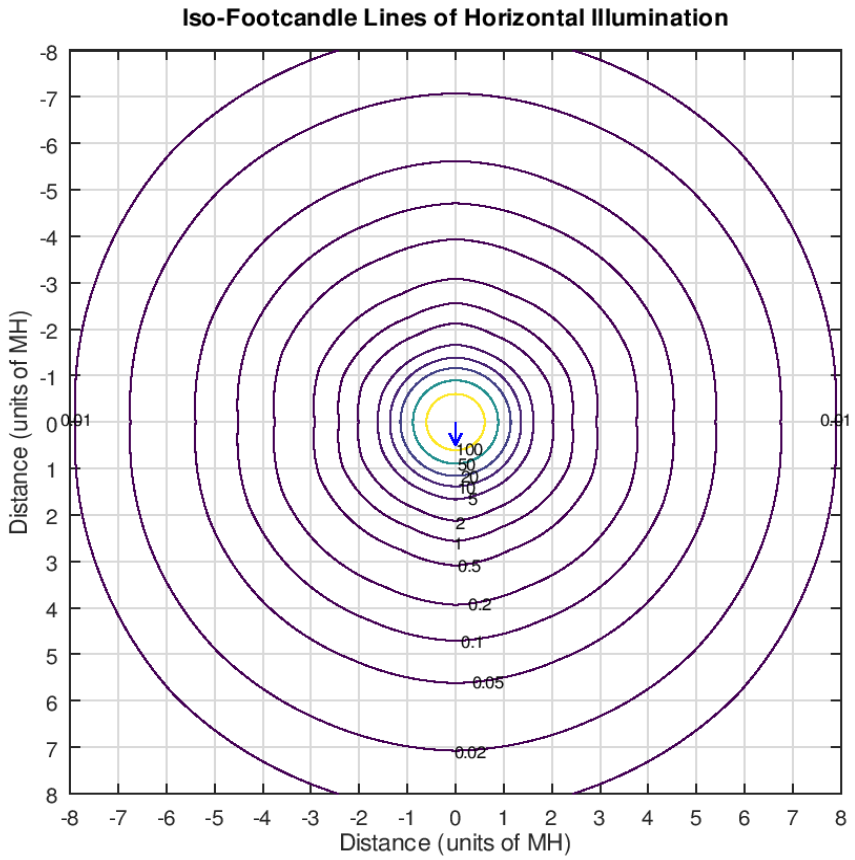
Iso-Illuminance Plot



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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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.