LightLab INTERNATIONAL ALLENTOWN LLC

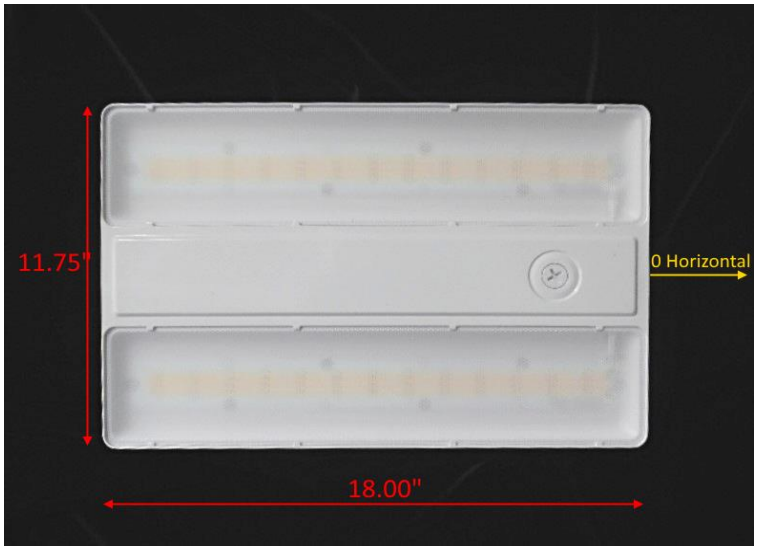
NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA002241-006

Indoor Distribution Photometry Test Report

Catalog Number: LHB-30L-W-PCS-U - 200W-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	30907.7	Lumens
Input Current	1.625	A	Total Efficacy	158.8	Lm/W
Input Power	194.6	W	Downward Flux	30907.6	Lumens
Frequency	60.00	Hz	Downward Flux	100.0	% of Total
Power Factor	0.998				
Current THD	4.7	%			

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 14:28:58 -04'00'

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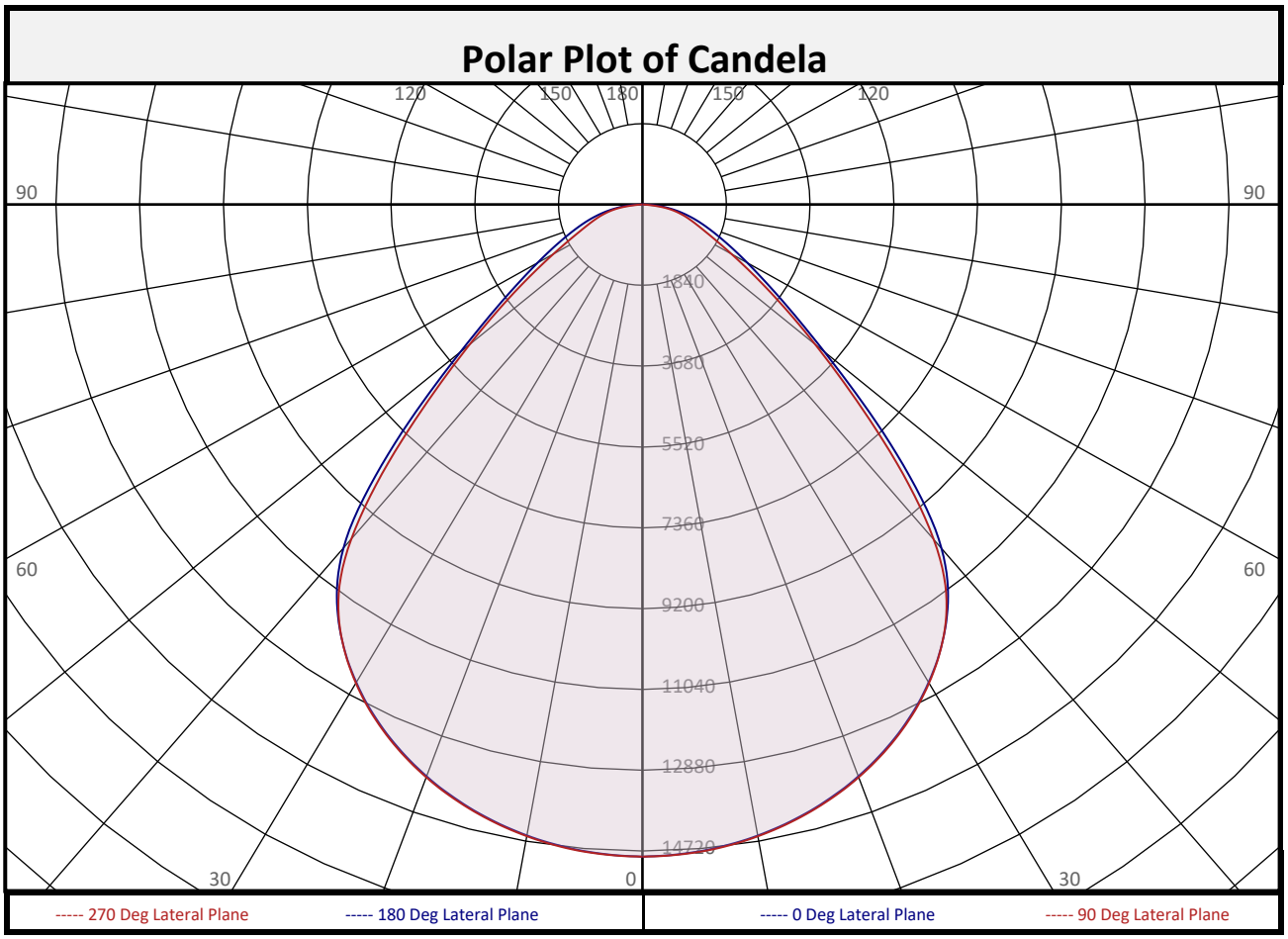

Zonal Flux Summary

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	1407	4.6%	90-100	0.1	0.0%	0-20	5442	17.6%
10-20	4036	13.1%	100-110	0.0	0.0%	0-30	11572	37.4%
20-30	6130	19.8%	110-120	0.0	0.0%	0-40	18793	60.8%
30-40	7221	23.4%	120-130	0.0	0.0%	0-60	27731	89.7%
40-50	5766	18.7%	130-140	0.0	0.0%	0-80	30604	99.0%
50-60	3172	10.3%	140-150	0.0	0.0%	10-90	29501	95.4%
60-70	1802	5.8%	150-160	0.0	0.0%	20-50	19117	61.9%
70-80	1071	3.5%	160-170	0.0	0.0%	40-90	12115	39.2%
80-90	303.3	1.0%	170-180	0.0	0.0%	60-90	3177	10.3%
0-90	30908	100.0%	90-180	0.1	0.0%	0-180	30908	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	14851	14851	14851	14851	14851	14851	14851	14851	14851
2.5	14826	14821	14842	14845	14833	14845	14842	14821	14826
5	14778	14773	14795	14800	14791	14800	14795	14773	14778
7.5	14697	14693	14717	14722	14715	14722	14717	14693	14697
10	14590	14588	14610	14612	14607	14612	14610	14588	14590
12.5	14453	14453	14470	14474	14471	14474	14470	14453	14453
15	14287	14289	14303	14307	14306	14307	14303	14289	14287
17.5	14086	14089	14103	14108	14109	14108	14103	14089	14086
20	13857	13858	13874	13882	13880	13882	13874	13858	13857
22.5	13593	13593	13613	13623	13617	13623	13613	13593	13593
25	13295	13293	13316	13328	13317	13328	13316	13293	13295
27.5	12954	12954	12978	12992	12978	12992	12978	12954	12954
30	12567	12570	12595	12606	12585	12606	12595	12570	12567
32.5	12133	12137	12162	12162	12138	12162	12162	12137	12133
35	11630	11636	11651	11638	11611	11638	11651	11636	11630
37.5	11023	11030	11013	10965	10927	10965	11013	11030	11023
40	10217	10201	10116	10008	9946	10008	10116	10201	10217
42.5	9059	8998	8873	8737	8661	8737	8873	8998	9059
45	7691	7616	7480	7344	7268	7344	7480	7616	7691
47.5	6343	6269	6157	6055	6001	6055	6157	6269	6343
50	5212	5132	5057	4988	4944	4988	5057	5132	5212
52.5	4334	4206	4167	4140	4064	4140	4167	4206	4334
55	3651	3453	3456	3472	3336	3472	3456	3453	3651
57.5	3103	2841	2884	2937	2741	2937	2884	2841	3103
60	2666	2354	2427	2508	2262	2508	2427	2354	2666
62.5	2300	1973	2065	2162	1888	2162	2065	1973	2300
65	1990	1682	1782	1881	1600	1881	1782	1682	1990
67.5	1725	1459	1556	1644	1379	1644	1556	1459	1725
70	1496	1284	1369	1433	1204	1433	1369	1284	1496
72.5	1291	1134	1199	1237	1053	1237	1199	1134	1291
75	1093	989	1030	1047	908	1047	1030	989	1093
77.5	901	839	859	854	758	854	859	839	901
80	712	678	680	657	599	657	680	678	712
82.5	522	504	491	440	396	440	491	504	522
85	338	322	273	187	157	187	273	322	338
87.5	135	108	44	24	20	24	44	108	135
90	0	1	1	2	2	2	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	2	2	2	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	63		71	66	62		69	65	61	59
5	81	70	62	56		79	69	62	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		54	48	44	42
8	66	54	46	41		65	53	46	40		52	45	40		51	45	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		45	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	412.5	7.52	7.53
8.0	232.1	10.03	10.04
10.0	148.5	12.54	12.55
12.0	103.1	15.05	15.06
14.0	75.8	17.56	17.56
16.0	58.0	20.06	20.07

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	150455	150455	150455
45	110184	107163	104131
55	64492	61034	58916
65	47700	42723	38346
75	42798	40327	35530
85	39319	31718	18293

Beam and Field Angle

0-180 Degree Plane

Beam Angle: 91.0°

Field Angle: 140.3°

90-270 Degree Plane

Beam Angle: 89.4°

Field Angle: 132.4°

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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	23.1	24.6	23.5	24.9	25.2	23.2	24.6	23.5	24.9	25.2
	3H	24.5	25.8	24.9	26.1	26.5	24.4	25.7	24.8	26.0	26.4
	4H	25.1	26.3	25.5	26.7	27.0	24.9	26.1	25.3	26.5	26.8
	6H	25.7	26.8	26.1	27.1	27.5	25.4	26.5	25.8	26.8	27.2
	8H	25.9	26.9	26.3	27.3	27.7	25.5	26.5	25.9	26.9	27.3
	12H	26.0	27.0	26.4	27.4	27.8	25.5	26.5	26.0	26.9	27.4
4H	2H	23.5	24.7	23.9	25.1	25.4	23.6	24.7	24.0	25.1	25.5
	3H	25.1	26.1	25.5	26.5	26.9	25.1	26.1	25.5	26.5	26.9
	4H	25.9	26.8	26.3	27.2	27.6	25.8	26.7	26.2	27.1	27.5
	6H	26.6	27.3	27.0	27.8	28.3	26.4	27.2	26.9	27.6	28.1
	8H	26.9	27.6	27.3	28.0	28.5	26.6	27.3	27.1	27.7	28.2
	12H	27.0	27.7	27.5	28.2	28.6	26.6	27.3	27.1	27.8	28.2
8H	4H	26.2	26.9	26.6	27.3	27.8	26.1	26.8	26.6	27.2	27.7
	6H	27.0	27.6	27.5	28.1	28.6	26.8	27.4	27.3	27.9	28.4
	8H	27.4	27.9	27.9	28.4	28.9	27.1	27.6	27.6	28.1	28.6
	12H	27.7	28.1	28.2	28.6	29.2	27.2	27.7	27.7	28.2	28.7
12H	4H	26.2	26.8	26.7	27.3	27.8	26.1	26.8	26.6	27.2	27.7
	6H	27.1	27.6	27.6	28.1	28.6	26.9	27.4	27.4	27.9	28.4
	8H	27.5	27.9	28.0	28.4	29.0	27.2	27.7	27.7	28.2	28.7

Maximum UGR = 29.2

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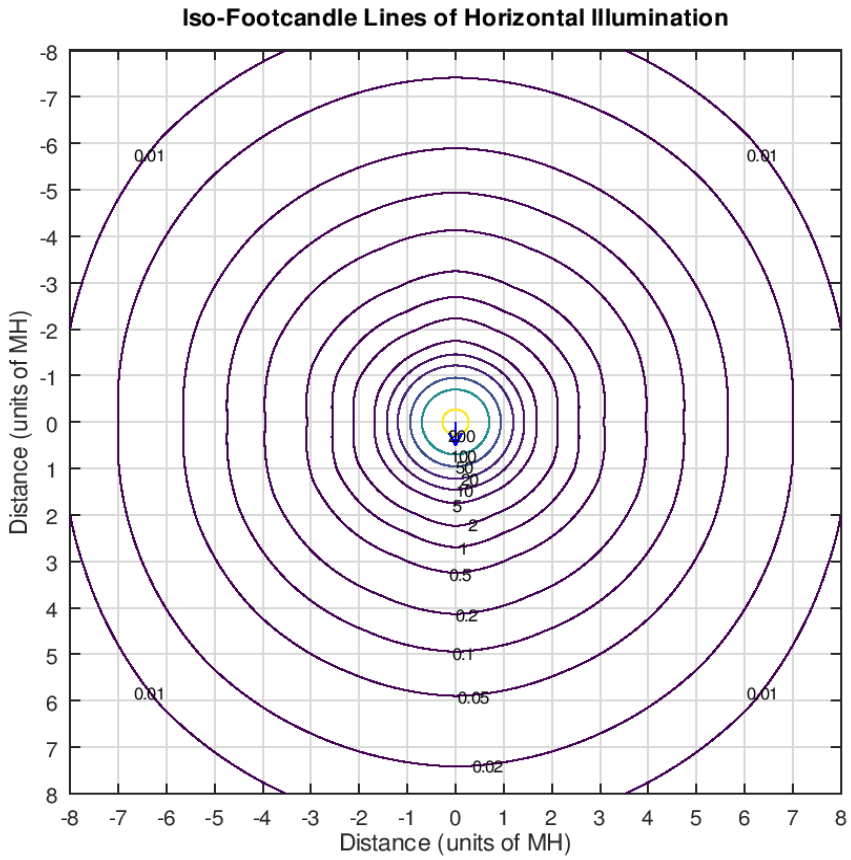
Iso-Illuminance Plot



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	25.0 °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.