LightLab INTERNATIONAL ALLENTOWN LLC

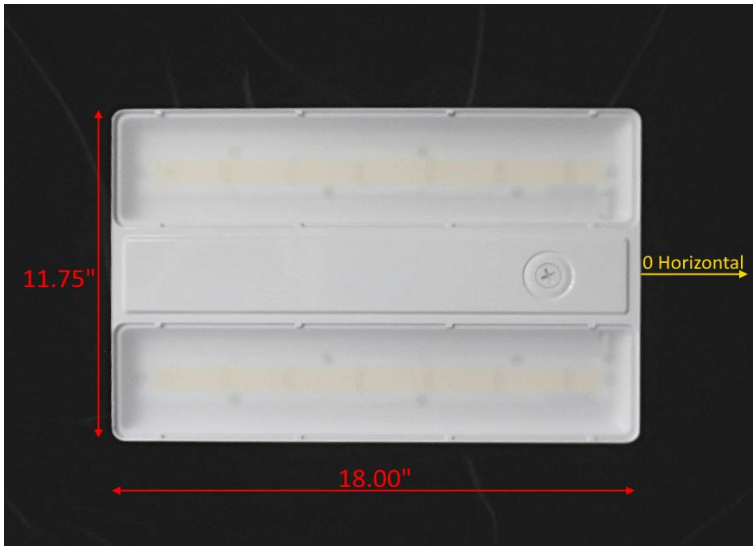
NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA002241-009

Indoor Distribution Photometry Test Report

Catalog Number: LHB-30L-W-40K-U
Highbay/Pendant mounted, cast white painted aluminum housing,
clear prismatic plastic enclosures below LEDs
572 white LEDs on two LED boards with 286 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	29655.1	Lumens
Input Current	1.674	A	Total Efficacy	148.0	Lm/W
Input Power	200.4	W	Downward Flux	29655.0	Lumens
Frequency	60.00	Hz	Downward Flux	100.0	% of Total
Power Factor	0.997				
Current THD	4.8	%			

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

Test date: 10/23/2023
Report date: 10/26/2023

Signed: Michael L. Grather Digitally signed by Michael L. Grather Date: 2023.10.26 14:37:13 -04'00'

North America (issuing laboratory)
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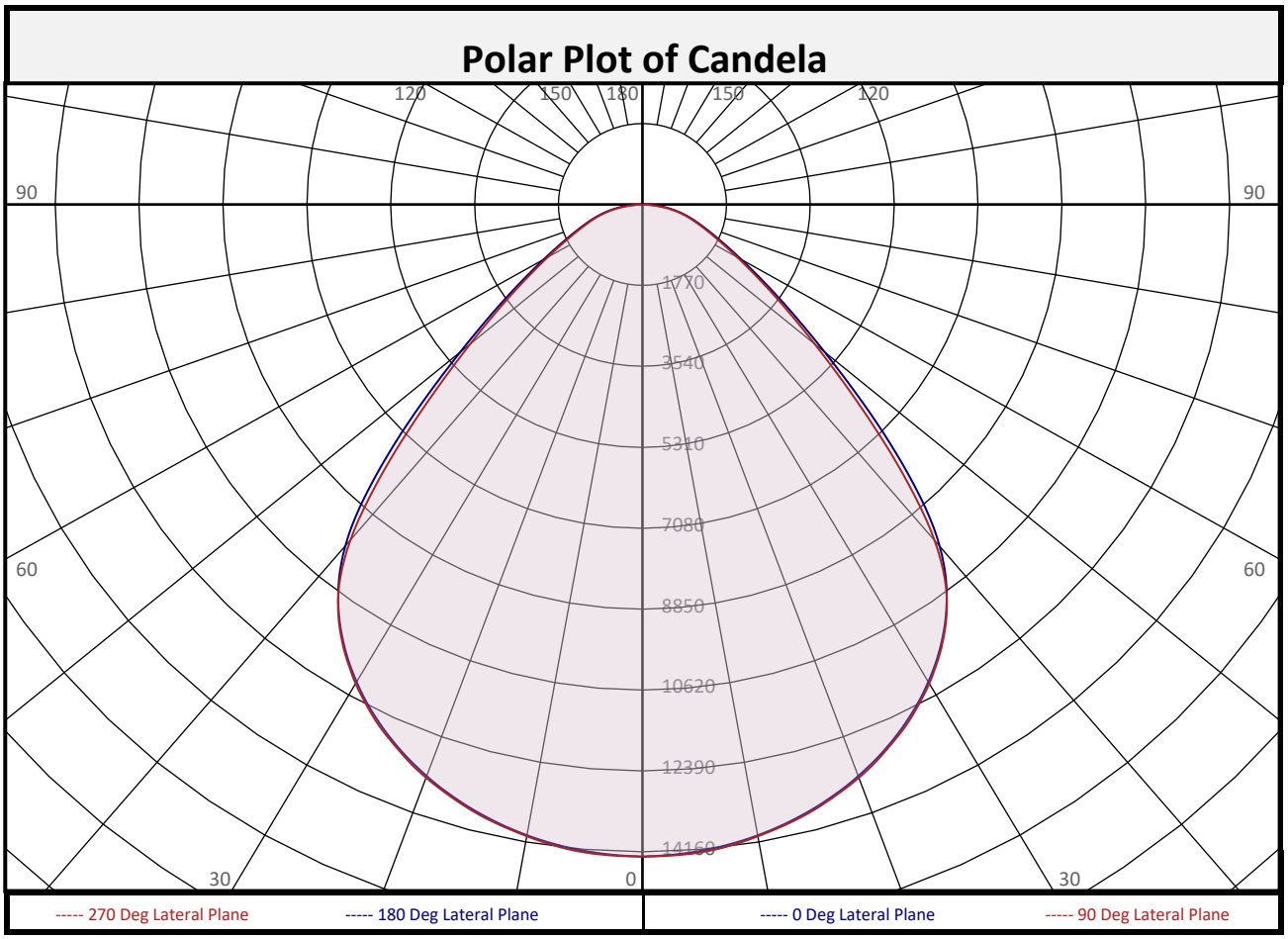

Zonal Flux Summary

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	1352	4.6%	90-100	0.1	0.0%	0-20	5230	17.6%
10-20	3878	13.1%	100-110	0.0	0.0%	0-30	11118	37.5%
20-30	5888	19.9%	110-120	0.0	0.0%	0-40	18047	60.9%
30-40	6929	23.4%	120-130	0.0	0.0%	0-60	26620	89.8%
40-50	5533	18.7%	130-140	0.0	0.0%	0-80	29361	99.0%
50-60	3039	10.2%	140-150	0.0	0.0%	10-90	28303	95.4%
60-70	1720	5.8%	150-160	0.0	0.0%	20-50	18351	61.9%
70-80	1022	3.4%	160-170	0.0	0.0%	40-90	11608	39.1%
80-90	293.8	1.0%	170-180	0.0	0.0%	60-90	3035	10.2%
0-90	29655	100.0%	90-180	0.1	0.0%	0-180	29655	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	14268	14268	14268	14268	14268	14268	14268	14268	14268
2.5	14241	14238	14261	14267	14256	14267	14261	14238	14241
5	14194	14195	14224	14233	14226	14233	14224	14195	14194
7.5	14116	14121	14153	14158	14150	14158	14153	14121	14116
10	14012	14023	14047	14041	14034	14041	14047	14023	14012
12.5	13880	13895	13904	13904	13904	13904	13904	13895	13880
15	13719	13734	13738	13750	13751	13750	13738	13734	13719
17.5	13528	13538	13550	13558	13559	13558	13550	13538	13528
20	13307	13309	13328	13341	13347	13341	13328	13309	13307
22.5	13055	13053	13072	13100	13092	13100	13072	13053	13055
25	12765	12765	12793	12806	12804	12806	12793	12765	12765
27.5	12436	12434	12465	12493	12477	12493	12465	12434	12436
30	12060	12055	12094	12117	12104	12117	12094	12055	12060
32.5	11634	11636	11674	11688	11670	11688	11674	11636	11634
35	11138	11150	11183	11184	11164	11184	11183	11150	11138
37.5	10537	10553	10562	10542	10515	10542	10562	10553	10537
40	9752	9751	9702	9632	9585	9632	9702	9751	9752
42.5	8669	8625	8515	8388	8323	8388	8515	8625	8669
45	7383	7321	7180	7038	6971	7038	7180	7321	7383
47.5	6108	6040	5910	5795	5747	5795	5910	6040	6108
50	5012	4950	4851	4762	4739	4762	4851	4950	5012
52.5	4134	4070	3994	3930	3927	3930	3994	4070	4134
55	3433	3370	3309	3262	3274	3262	3309	3370	3433
57.5	2866	2806	2756	2721	2738	2721	2756	2806	2866
60	2412	2357	2317	2289	2309	2289	2317	2357	2412
62.5	2045	2001	1970	1947	1960	1947	1970	2001	2045
65	1750	1721	1699	1678	1679	1678	1699	1721	1750
67.5	1510	1497	1484	1460	1449	1460	1484	1497	1510
70	1311	1311	1306	1278	1258	1278	1306	1311	1311
72.5	1138	1146	1145	1114	1090	1114	1145	1146	1138
75	976	987	985	955	927	955	985	987	976
77.5	817	827	821	790	763	790	821	827	817
80	656	662	651	616	594	616	651	662	656
82.5	488	491	471	423	395	423	471	491	488
85	320	317	269	185	160	185	269	317	320
87.5	129	111	47	25	21	25	47	111	129
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	55	49		60	54	49		58	53	49	47
7	71	58	51	45		69	58	50	45		56	49	45		55	49	44		54	48	44	42
8	66	54	46	41		65	53	46	41		52	45	40		51	45	40		50	44	40	38
9	62	50	42	37		61	49	42	37		48	41	37		47	41	37		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	396.3	7.51	7.53
8.0	222.9	10.02	10.04
10.0	142.7	12.52	12.55
12.0	99.1	15.03	15.06
14.0	72.8	17.53	17.57
16.0	55.7	20.04	20.08

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	148928	148928	148928
45	108983	105980	102893
55	62467	60210	59581
65	43225	41952	41476
75	39359	39719	37401
85	38270	32156	19189

Beam and Field Angle

0-180 Degree Plane

Beam Angle: 91.0°

Field Angle: 137.0°

90-270 Degree Plane

Beam Angle: 89.4°

Field Angle: 135.6°

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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	23.2	24.6	23.5	24.9	25.2	22.9	24.3	23.3	24.7	25.0
	3H	24.4	25.7	24.8	26.0	26.4	24.2	25.5	24.6	25.8	26.2
	4H	25.0	26.2	25.4	26.5	26.9	24.8	26.0	25.2	26.3	26.7
	6H	25.5	26.6	25.9	27.0	27.4	25.2	26.3	25.6	26.7	27.1
	8H	25.7	26.8	26.1	27.1	27.5	25.4	26.4	25.8	26.8	27.2
	12H	25.9	26.9	26.3	27.2	27.7	25.4	26.4	25.9	26.8	27.2
4H	2H	23.5	24.7	23.9	25.1	25.4	23.3	24.5	23.7	24.9	25.2
	3H	25.1	26.0	25.5	26.4	26.9	24.9	25.9	25.3	26.3	26.7
	4H	25.8	26.7	26.2	27.1	27.5	25.6	26.5	26.0	26.9	27.3
	6H	26.5	27.2	26.9	27.7	28.2	26.2	27.0	26.7	27.4	27.9
	8H	26.7	27.5	27.2	27.9	28.4	26.4	27.1	26.9	27.6	28.0
	12H	26.9	27.6	27.4	28.1	28.5	26.5	27.1	27.0	27.6	28.1
8H	4H	26.1	26.8	26.6	27.2	27.7	25.9	26.6	26.4	27.1	27.5
	6H	26.9	27.5	27.4	28.0	28.5	26.7	27.3	27.2	27.7	28.2
	8H	27.3	27.8	27.8	28.3	28.8	26.9	27.5	27.4	28.0	28.5
	12H	27.6	28.0	28.1	28.5	29.1	27.1	27.5	27.6	28.0	28.6
12H	4H	26.1	26.7	26.6	27.2	27.7	25.9	26.6	26.4	27.0	27.5
	6H	27.0	27.5	27.5	28.0	28.5	26.7	27.3	27.3	27.7	28.3
	8H	27.4	27.8	27.9	28.3	28.9	27.1	27.5	27.6	28.0	28.6

Maximum UGR = 29.1

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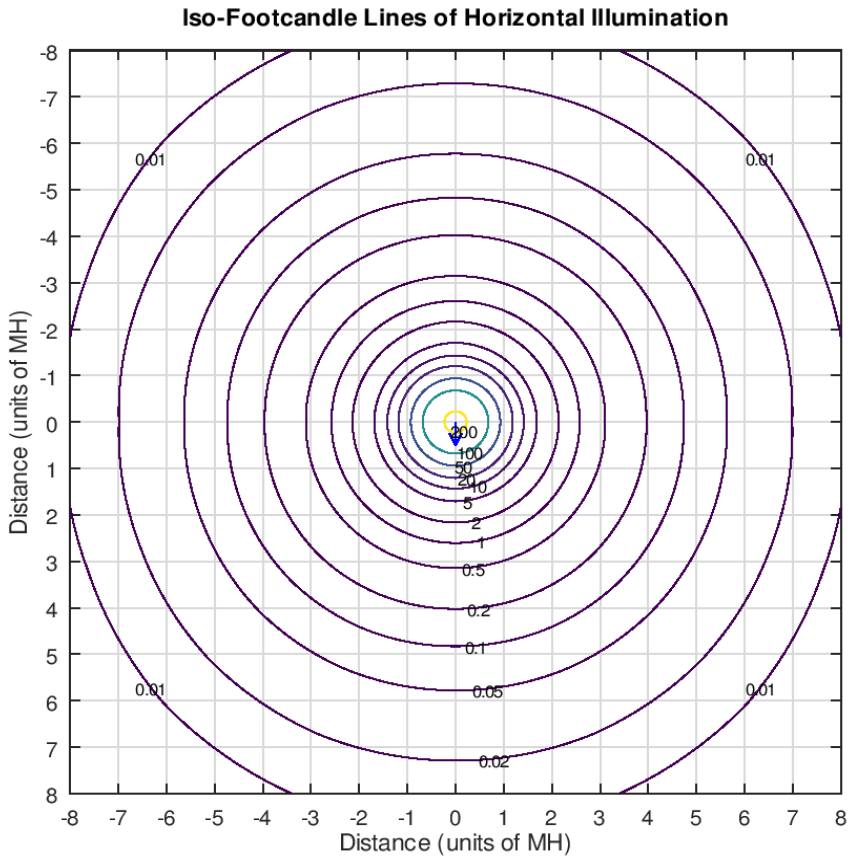
Iso-Illuminance Plot



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.