LightLab INTERNATIONAL ALLENTOWN LLC

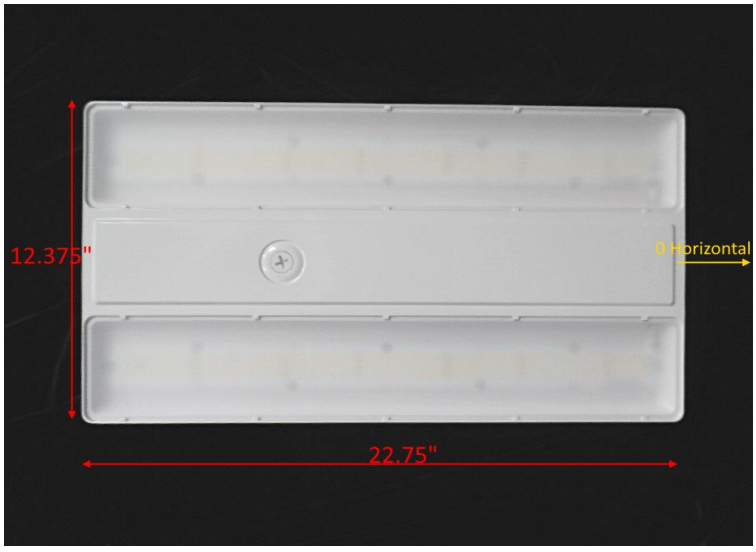
NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA002241-010

Indoor Distribution Photometry Test Report

Catalog Number: LHB-36L-W-40K-U
Highbay/Pendant mounted, cast white painted aluminum housing,
clear prismatic plastic enclosures below LEDs
624 white LEDs on two LED boards with 312 LEDs each
One Lifud LF-FAA240 LED driver



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

Performance Summary					
Input Voltage	120.0	Vac	Luminous Flux	35332.2	Lumens
Input Current	1.990	A	Total Efficacy	148.3	Lm/W
Input Power	238.2	W	Downward Flux	35332.1	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: 10/19/2023
Report date: 10/26/2023

Signed: Michael L. Grather Digitally signed by Michael L. Grather Date: 2023.10.26 14:37:47 -04'00'

North America (issuing laboratory)
LightLab International Allentown, LLC
905 Harrison Street, Suite 135
Allentown, PA 18103 USA
Ph: +1 484-273-0705
Fx: +1 484-209-5779
www.lightlaballentown.com

Australasia & S.E. Asia
LightLab International
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Clontarf - Queensland, 4019, Australia
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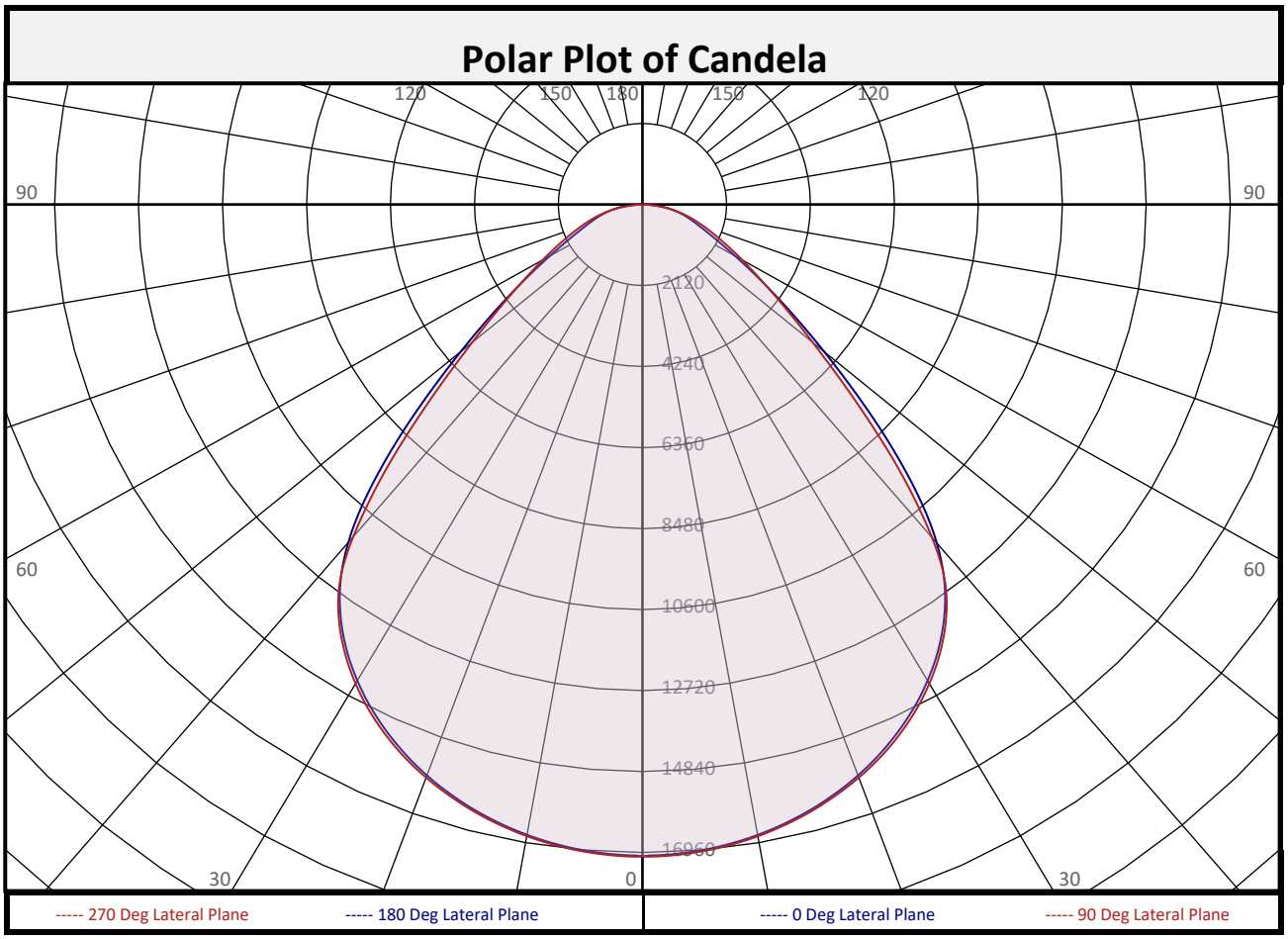

Zonal Flux Summary

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	1616	4.6%	90-100	0.1	0.0%	0-20	6253	17.7%
10-20	4637	13.1%	100-110	0.0	0.0%	0-30	13290	37.6%
20-30	7038	19.9%	110-120	0.0	0.0%	0-40	21551	61.0%
30-40	8260	23.4%	120-130	0.0	0.0%	0-60	31714	89.8%
40-50	6553	18.5%	130-140	0.0	0.0%	0-80	34978	99.0%
50-60	3610	10.2%	140-150	0.0	0.0%	10-90	33716	95.4%
60-70	2047	5.8%	150-160	0.0	0.0%	20-50	21851	61.8%
70-80	1217	3.4%	160-170	0.0	0.0%	40-90	13781	39.0%
80-90	354.4	1.0%	170-180	0.0	0.0%	60-90	3618	10.2%
0-90	35332	100.0%	90-180	0.1	0.0%	0-180	35332	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	17065	17065	17065	17065	17065	17065	17065	17065	17065
2.5	17025	17039	17051	17056	17054	17056	17051	17039	17025
5	16970	16985	16997	17002	17001	17002	16997	16985	16970
7.5	16879	16894	16906	16911	16911	16911	16906	16894	16879
10	16755	16771	16783	16787	16789	16787	16783	16771	16755
12.5	16595	16612	16623	16629	16634	16629	16623	16612	16595
15	16401	16417	16431	16441	16446	16441	16431	16417	16401
17.5	16170	16183	16202	16213	16219	16213	16202	16183	16170
20	15903	15913	15937	15950	15964	15950	15937	15913	15903
22.5	15594	15606	15631	15653	15669	15653	15631	15606	15594
25	15243	15256	15285	15309	15327	15309	15285	15256	15243
27.5	14846	14858	14894	14917	14935	14917	14894	14858	14846
30	14391	14405	14448	14467	14482	14467	14448	14405	14391
32.5	13874	13892	13939	13953	13962	13953	13939	13892	13874
35	13268	13295	13333	13343	13350	13343	13333	13295	13268
37.5	12527	12558	12574	12569	12571	12569	12574	12558	12527
40	11551	11560	11508	11404	11363	11404	11508	11560	11551
42.5	10261	10223	10070	9879	9830	9879	10070	10223	10261
45	8775	8718	8503	8282	8217	8282	8503	8718	8775
47.5	7282	7220	7011	6822	6774	6822	7011	7220	7282
50	5977	5939	5764	5600	5603	5600	5764	5939	5977
52.5	4892	4908	4744	4594	4691	4594	4744	4908	4892
55	4004	4102	3925	3773	3971	3773	3925	4102	4004
57.5	3281	3461	3268	3106	3388	3106	3268	3461	3281
60	2707	2947	2749	2579	2914	2579	2749	2947	2707
62.5	2255	2533	2339	2167	2512	2167	2339	2533	2255
65	1907	2199	2021	1852	2171	1852	2021	2199	1907
67.5	1638	1917	1768	1610	1876	1610	1768	1917	1638
70	1426	1671	1557	1416	1621	1416	1557	1671	1426
72.5	1249	1446	1366	1248	1391	1248	1366	1446	1249
75	1083	1231	1175	1083	1172	1083	1175	1231	1083
77.5	919	1018	979	912	955	912	979	1018	919
80	749	806	776	722	734	722	776	806	749
82.5	565	594	561	505	488	505	561	594	565
85	369	387	324	231	208	231	324	387	369
87.5	147	135	69	38	31	38	69	135	147
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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Australasia & S.E. Asia
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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		80	69	62	56		67	60	55		65	59	55		63	58	54	52
6	76	64	56	50		74	63	55	50		61	55	50		60	54	49		58	53	49	47
7	71	58	51	45		69	58	50	45		56	50	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	46	39	34		45	38	34		44	38	34		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	474.0	7.50	7.53
8.0	266.6	10.00	10.05
10.0	170.7	12.49	12.56
12.0	118.5	14.99	15.07
14.0	87.1	17.49	17.58
16.0	66.7	19.99	20.09

Spacing Criterion

0 deg:	1.2
90 deg:	1.3
180 deg:	1.2
270 deg:	1.3

Average Luminance (cd/m^2)

	0 deg Plane	45 deg Plane	90 deg Plane
0	140932	140932	140932
45	102490	99312	95970
55	57649	56512	57171
65	37263	39483	42416
75	34572	37506	37383
85	34954	30654	19744

Beam and Field Angle

0-180 Degree Plane

Beam Angle: 90.8°

Field Angle: 133.6°

90-270 Degree Plane

Beam Angle: 89.0°

Field Angle: 138.2°

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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	22.9	24.3	23.3	24.6	25.0	22.3	23.8	22.7	24.1	24.4
	3H	24.1	25.4	24.5	25.7	26.1	23.7	25.0	24.1	25.3	25.7
	4H	24.7	25.8	25.1	26.2	26.6	24.3	25.5	24.7	25.8	26.2
	6H	25.1	26.2	25.5	26.6	27.0	24.8	25.9	25.2	26.3	26.7
	8H	25.3	26.4	25.7	26.7	27.1	25.0	26.0	25.4	26.4	26.8
	12H	25.4	26.4	25.9	26.8	27.3	25.0	26.0	25.5	26.4	26.8
4H	2H	23.3	24.4	23.7	24.8	25.2	22.8	24.0	23.2	24.3	24.7
	3H	24.8	25.8	25.2	26.2	26.6	24.4	25.3	24.8	25.7	26.1
	4H	25.5	26.4	25.9	26.8	27.2	25.1	26.0	25.5	26.4	26.8
	6H	26.1	26.9	26.6	27.3	27.8	25.8	26.5	26.2	27.0	27.4
	8H	26.4	27.1	26.9	27.5	28.0	26.0	26.7	26.4	27.1	27.6
	12H	26.6	27.2	27.1	27.7	28.2	26.1	26.7	26.5	27.2	27.6
8H	4H	25.8	26.5	26.2	26.9	27.4	25.4	26.1	25.9	26.6	27.0
	6H	26.6	27.1	27.1	27.6	28.1	26.2	26.8	26.7	27.3	27.8
	8H	26.9	27.4	27.4	27.9	28.4	26.5	27.0	27.0	27.5	28.0
	12H	27.2	27.7	27.7	28.2	28.7	26.6	27.1	27.1	27.6	28.2
12H	4H	25.8	26.4	26.3	26.9	27.4	25.4	26.1	25.9	26.6	27.0
	6H	26.6	27.2	27.1	27.6	28.2	26.3	26.8	26.8	27.3	27.8
	8H	27.0	27.5	27.5	28.0	28.5	26.6	27.1	27.1	27.6	28.2

Maximum UGR = 28.7

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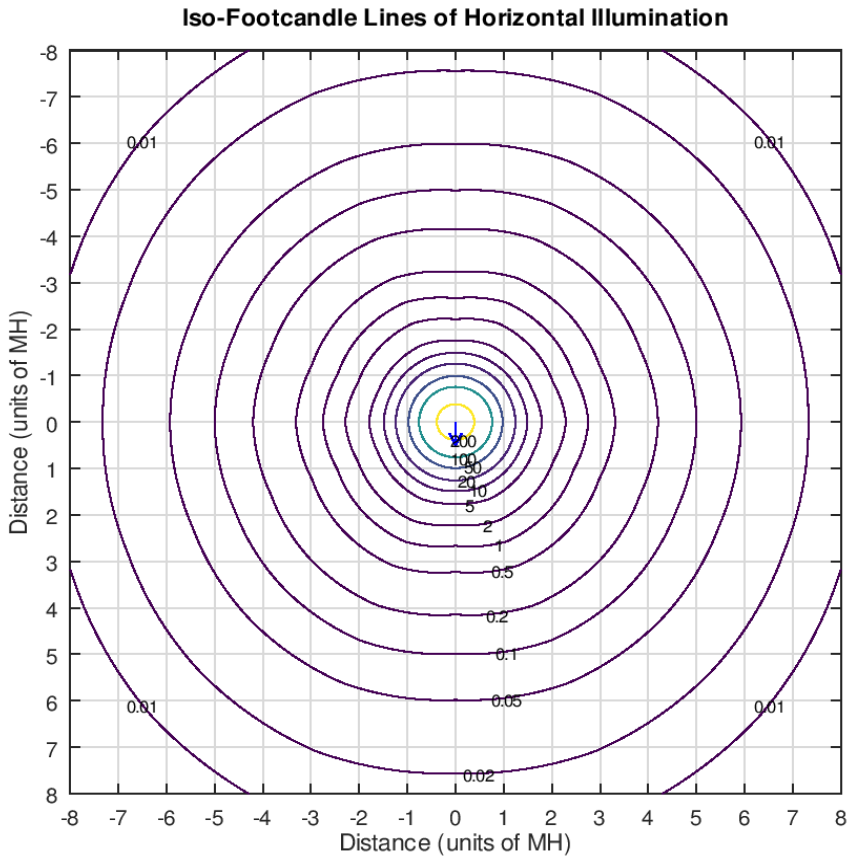
Iso-Illuminance Plot



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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Test Distance	9.5 m
Ambient Temperature	25.2 °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.