LightLab INTERNATIONAL ALLENTOWN LLC

NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA002241-004

Indoor Distribution Photometry Test Report

Catalog Number: LHB-30L-W-PCS-U - 120W-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	19542.6	Lumens
Input Current	0.9970	A	Total Efficacy	163.9	Lm/W
Input Power	119.2	W	Downward Flux	19542.6	Lumens
Frequency	60.00	Hz	Downward Flux	100.0	% of Total
Power Factor	0.996				
Current THD	4.3	%			

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 14:27:49 -04'00'

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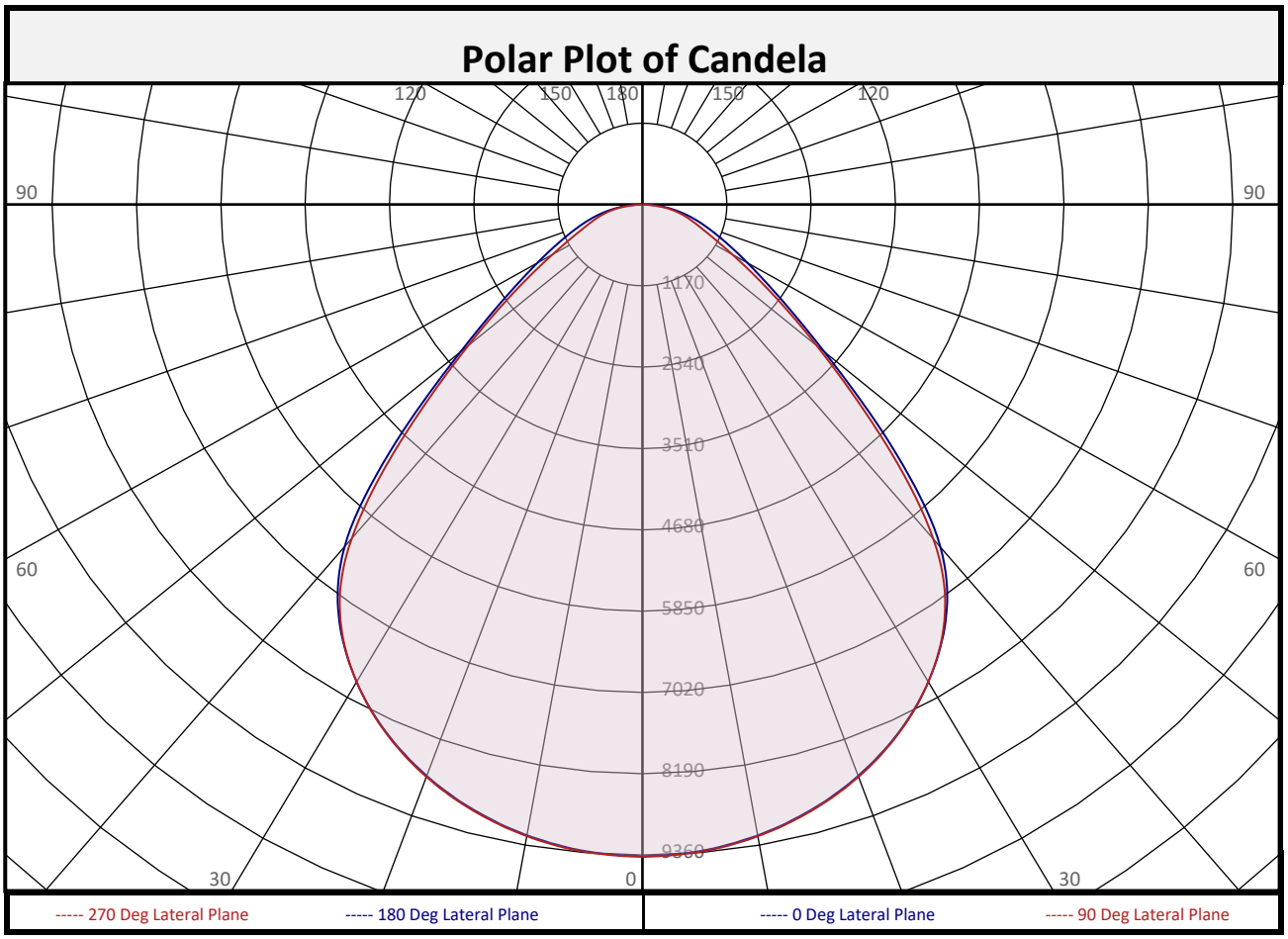

Zonal Flux Summary

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	888.8	4.5%	90-100	0.0	0.0%	0-20	3438	17.6%
10-20	2549	13.0%	100-110	0.0	0.0%	0-30	7307	37.4%
20-30	3869	19.8%	110-120	0.0	0.0%	0-40	11855	60.7%
30-40	4548	23.3%	120-130	0.0	0.0%	0-60	17517	89.6%
40-50	3649	18.7%	130-140	0.0	0.0%	0-80	19342	99.0%
50-60	2013	10.3%	140-150	0.0	0.0%	10-90	18654	95.5%
60-70	1144	5.9%	150-160	0.0	0.0%	20-50	12066	61.7%
70-80	681.3	3.5%	160-170	0.0	0.0%	40-90	7688	39.3%
80-90	200.5	1.0%	170-180	0.0	0.0%	60-90	2025	10.4%
0-90	19543	100.0%	90-180	0.0	0.0%	0-180	19543	100.0%

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LLIA002241-004

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	9385	9385	9385	9385	9385	9385	9385	9385	9385
2.5	9363	9366	9381	9382	9373	9382	9381	9366	9363
5	9337	9334	9351	9351	9349	9351	9351	9334	9337
7.5	9284	9285	9300	9301	9299	9301	9300	9285	9284
10	9218	9218	9231	9231	9229	9231	9231	9218	9218
12.5	9131	9132	9142	9145	9142	9145	9142	9132	9131
15	9023	9026	9035	9036	9036	9036	9035	9026	9023
17.5	8895	8899	8909	8912	8911	8912	8909	8899	8895
20	8751	8753	8764	8766	8765	8766	8764	8753	8751
22.5	8582	8584	8596	8601	8597	8601	8596	8584	8582
25	8394	8395	8404	8412	8403	8412	8404	8395	8394
27.5	8178	8177	8188	8194	8185	8194	8188	8177	8178
30	7931	7931	7944	7946	7933	7946	7944	7931	7931
32.5	7653	7654	7666	7662	7644	7662	7666	7654	7653
35	7333	7334	7337	7324	7305	7324	7337	7334	7333
37.5	6944	6944	6928	6896	6872	6896	6928	6944	6944
40	6431	6422	6371	6309	6273	6309	6371	6422	6431
42.5	5705	5676	5606	5531	5489	5531	5606	5676	5705
45	4846	4809	4742	4670	4623	4670	4742	4809	4846
47.5	4001	3966	3907	3855	3823	3855	3907	3966	4001
50	3292	3250	3211	3175	3150	3175	3211	3250	3292
52.5	2740	2662	2644	2635	2590	2635	2644	2662	2740
55	2308	2186	2193	2210	2128	2210	2193	2186	2308
57.5	1964	1799	1829	1869	1749	1869	1829	1799	1964
60	1687	1491	1539	1596	1444	1596	1539	1491	1687
62.5	1456	1250	1309	1375	1204	1375	1309	1250	1456
65	1260	1065	1129	1196	1020	1196	1129	1065	1260
67.5	1092	923	986	1045	879	1045	986	923	1092
70	946	812	868	912	767	912	868	812	946
72.5	816	717	761	789	672	789	761	717	816
75	691	626	656	669	580	669	656	626	691
77.5	570	531	548	548	487	548	548	531	570
80	451	430	435	426	389	426	435	430	451
82.5	331	320	316	295	272	295	316	320	331
85	214	206	188	142	122	142	188	206	214
87.5	86	74	40	23	18	23	40	74	86
90	0	0	1	1	1	1	1	0	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	0	1	1	1	1	1	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

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	33		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	260.7	7.51	7.51
8.0	146.6	10.02	10.01
10.0	93.8	12.52	12.51
12.0	65.2	15.03	15.02
14.0	47.9	17.53	17.52
16.0	36.7	20.04	20.02

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	95076	95076	95076
45	69427	67944	66239
55	40771	38726	37581
65	30194	27068	24459
75	27048	25661	22703
85	24920	21822	14162

Beam and Field Angle

0-180 Degree Plane

Beam Angle: 90.9°

Field Angle: 140.3°

90-270 Degree Plane

Beam Angle: 89.6°

Field Angle: 132.7°

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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	21.5	23.0	21.9	23.3	23.6	21.6	23.0	22.0	23.4	23.7
	3H	22.9	24.2	23.3	24.5	24.9	22.8	24.1	23.2	24.4	24.8
	4H	23.5	24.7	23.9	25.1	25.4	23.4	24.6	23.8	24.9	25.3
	6H	24.1	25.2	24.5	25.5	25.9	23.8	24.9	24.2	25.3	25.7
	8H	24.3	25.3	24.7	25.7	26.1	24.0	25.0	24.4	25.4	25.8
	12H	24.4	25.4	24.8	25.8	26.2	24.0	25.0	24.5	25.4	25.9
4H	2H	21.9	23.1	22.3	23.5	23.9	22.0	23.2	22.4	23.5	23.9
	3H	23.5	24.5	23.9	24.9	25.3	23.5	24.5	23.9	24.9	25.3
	4H	24.3	25.2	24.7	25.6	26.0	24.3	25.1	24.7	25.6	26.0
	6H	25.0	25.7	25.4	26.2	26.7	24.9	25.6	25.3	26.1	26.5
	8H	25.2	26.0	25.7	26.4	26.9	25.1	25.8	25.5	26.2	26.7
	12H	25.5	26.1	25.9	26.6	27.0	25.2	25.8	25.7	26.3	26.8
8H	4H	24.5	25.3	25.0	25.7	26.2	24.5	25.2	25.0	25.7	26.2
	6H	25.4	26.0	25.9	26.5	27.0	25.3	25.9	25.8	26.4	26.9
	8H	25.8	26.3	26.3	26.8	27.3	25.6	26.1	26.1	26.6	27.1
	12H	26.1	26.5	26.6	27.0	27.6	25.8	26.2	26.3	26.7	27.3
12H	4H	24.6	25.2	25.1	25.7	26.2	24.6	25.2	25.0	25.7	26.2
	6H	25.5	26.0	26.0	26.5	27.0	25.4	25.9	25.9	26.4	26.9
	8H	25.9	26.4	26.4	26.9	27.4	25.7	26.2	26.2	26.7	27.2

Maximum UGR = 27.6

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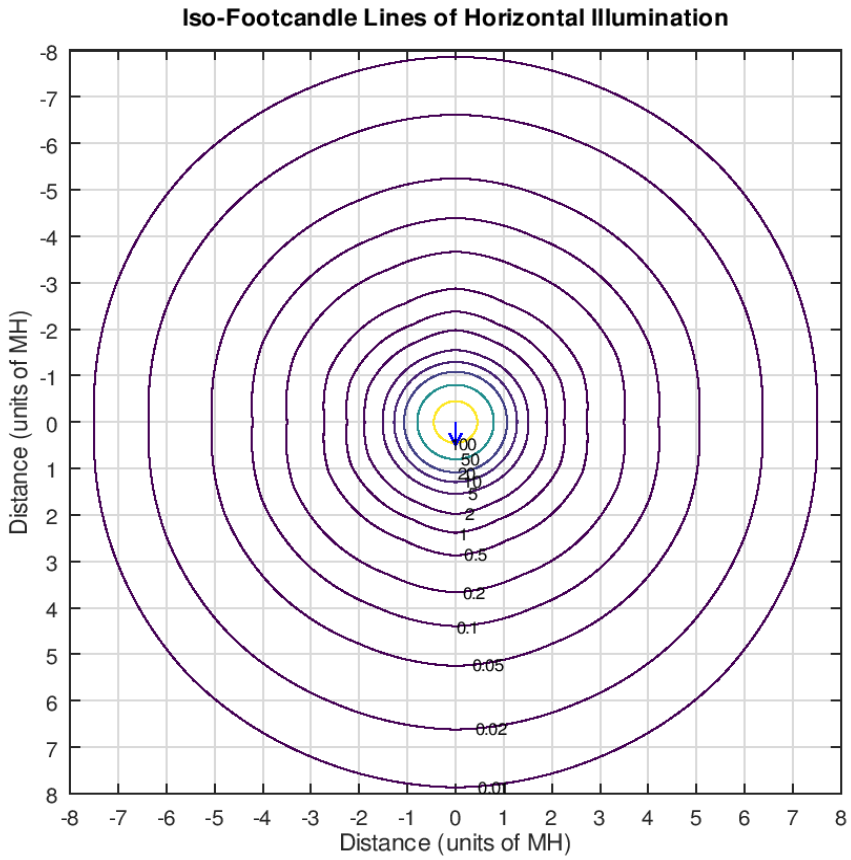
Iso-Illuminance Plot



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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LLIA002241-004

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.