LightLab INTERNATIONAL ALLENTOWN LLC

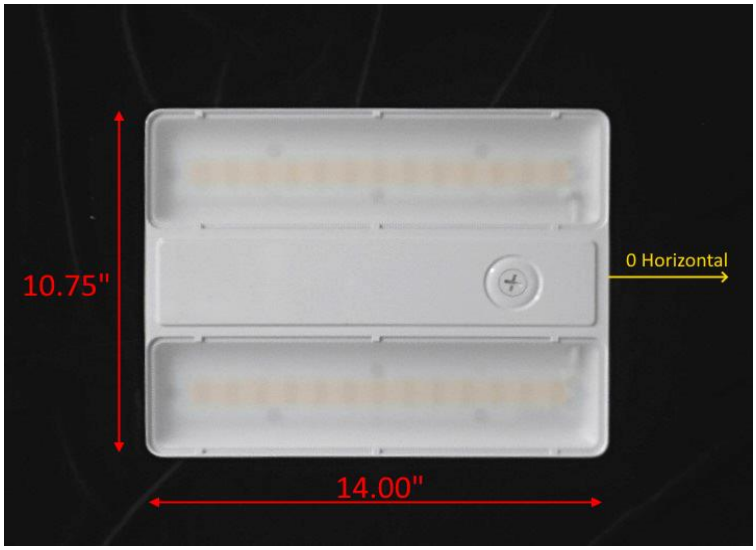
NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA002241-002

Indoor Distribution Photometry Test Report

Catalog Number: LHB-15L-W-PSC-U - 80W-4000K Setting
Highbay/Pendant mounted, cast white painted aluminum housing,
clear prismatic plastic enclosures below LEDs
520 white LEDs on two LED boards with 260 LEDs each
One Lifud LF-FAA100 LED driver



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

Performance Summary					
Input Voltage	120.0	Vac	Luminous Flux	12619.6	Lumens
Input Current	0.6840	A	Total Efficacy	155.0	Lm/W
Input Power	81.43	W	Downward Flux	12619.5	Lumens
Frequency	60.00	Hz	Downward Flux	100.0	% of Total
Power Factor	0.992				
Current THD	5.6	%			

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

Test date: 10/23/2023
Report date: 10/25/2023

Signed: Michael L. Grather Digitally signed by Michael L. Grather Date: 2023.10.26 14:30:02 -04'00'

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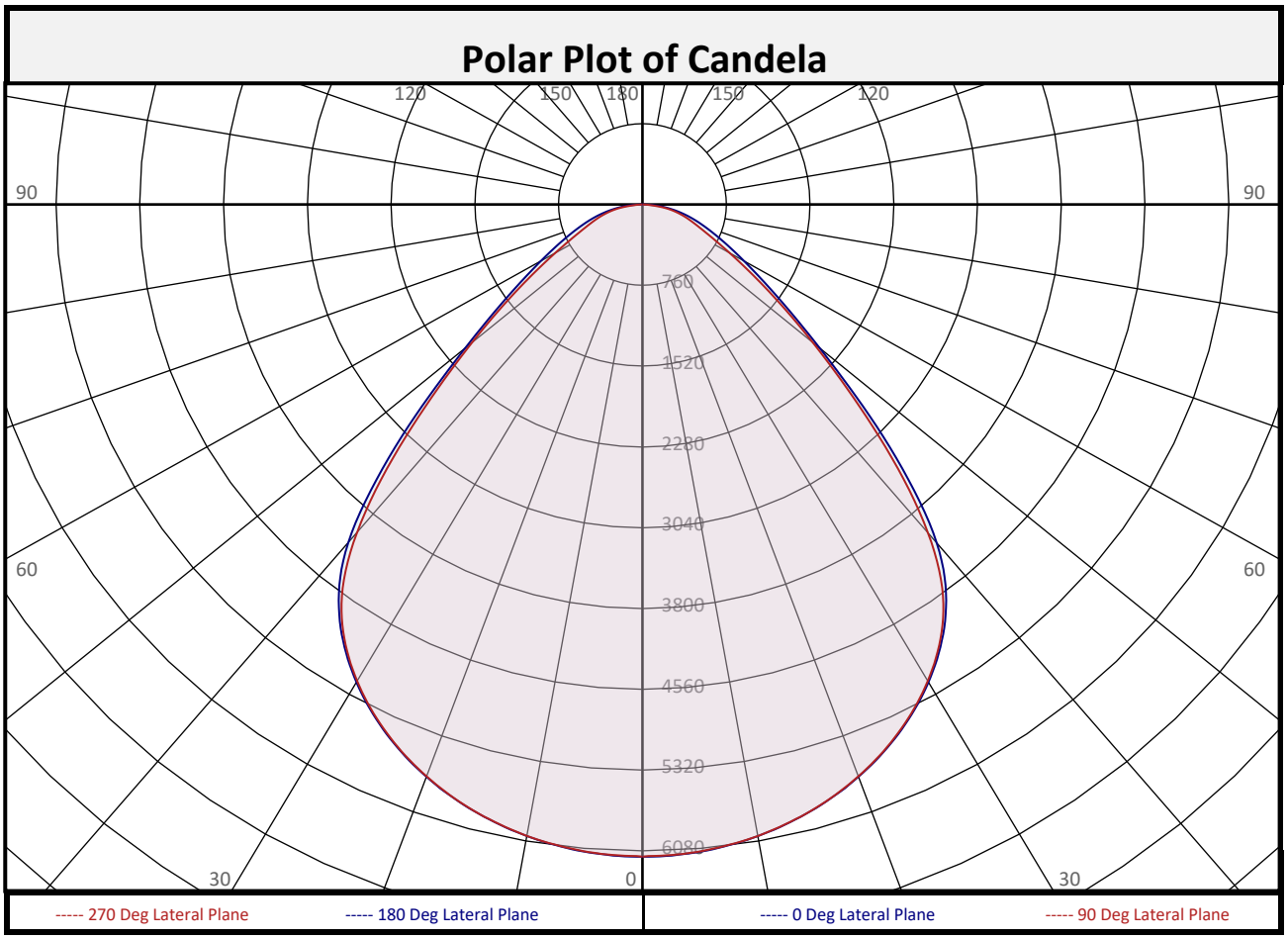

Zonal Flux Summary								
Zone (Deg Vert)	Flux (Lumens)	Percent of Total	Zone (Deg Vert)	Flux (Lumens)	Percent of Total	Zone (Deg Vert)	Flux (Lumens)	Percent of Total
0-10	581.2	4.6%	90-100	0.1	0.0%	0-20	2249	17.8%
10-20	1668	13.2%	100-110	0.0	0.0%	0-30	4779	37.9%
20-30	2530	20.0%	110-120	0.0	0.0%	0-40	7737	61.3%
30-40	2959	23.4%	120-130	0.0	0.0%	0-60	11351	89.9%
40-50	2333	18.5%	130-140	0.0	0.0%	0-80	12497	99.0%
50-60	1280	10.1%	140-150	0.0	0.0%	10-90	12038	95.4%
60-70	721.5	5.7%	150-160	0.0	0.0%	20-50	7822	62.0%
70-80	425.2	3.4%	160-170	0.0	0.0%	40-90	4882	38.7%
80-90	122.3	1.0%	170-180	0.0	0.0%	60-90	1269	10.1%
0-90	12619	100.0%	90-180	0.1	0.0%	0-180	12620	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	6136	6136	6136	6136	6136	6136	6136	6136	6136
2.5	6131	6127	6132	6131	6126	6131	6132	6127	6131
5	6111	6108	6113	6112	6107	6112	6113	6108	6111
7.5	6077	6076	6080	6079	6074	6079	6080	6076	6077
10	6034	6032	6036	6037	6033	6037	6036	6032	6034
12.5	5976	5975	5980	5980	5973	5980	5980	5975	5976
15	5907	5906	5909	5911	5905	5911	5909	5906	5907
17.5	5825	5822	5826	5831	5823	5831	5826	5822	5825
20	5729	5727	5732	5734	5725	5734	5732	5727	5729
22.5	5621	5618	5622	5626	5614	5626	5622	5618	5621
25	5495	5493	5495	5500	5486	5500	5495	5493	5495
27.5	5352	5349	5353	5356	5341	5356	5353	5349	5352
30	5190	5186	5190	5192	5175	5192	5190	5186	5190
32.5	5003	5001	5002	5000	4984	5000	5002	5001	5003
35	4787	4784	4779	4772	4753	4772	4779	4784	4787
37.5	4518	4511	4494	4471	4446	4471	4494	4511	4518
40	4151	4137	4098	4057	4023	4057	4098	4137	4151
42.5	3646	3627	3589	3543	3506	3543	3589	3627	3646
45	3091	3069	3030	2985	2951	2985	3030	3069	3091
47.5	2547	2527	2495	2467	2441	2467	2495	2527	2547
50	2095	2068	2049	2032	2010	2032	2049	2068	2095
52.5	1742	1691	1685	1685	1651	1685	1685	1691	1742
55	1465	1385	1393	1410	1353	1410	1393	1385	1465
57.5	1243	1137	1158	1190	1109	1190	1158	1137	1243
60	1065	941	973	1013	915	1013	973	941	1065
62.5	917	788	826	871	762	871	826	788	917
65	793	671	711	756	645	756	711	671	793
67.5	686	582	620	658	554	658	620	582	686
70	594	512	545	573	483	573	545	512	594
72.5	511	451	477	494	420	494	477	451	511
75	433	392	410	416	359	416	410	392	433
77.5	356	332	341	338	299	338	341	332	356
80	282	268	269	257	233	257	269	268	282
82.5	208	200	193	170	152	170	193	200	208
85	136	129	107	82	73	82	107	129	136
87.5	55	43	28	20	16	20	28	43	55
90	0	0	1	1	2	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	2	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	105	101	98		100	98	95		97	94	92		93	91	90	88
2	102	96	90	85		100	94	88	84		90	86	82		87	83	80		84	81	79	77
3	95	86	79	73		92	84	78	73		81	76	71		79	74	70		76	72	69	67
4	88	77	70	64		86	76	69	64		74	68	63		72	66	62		70	65	61	59
5	82	70	62	57		80	69	62	56		67	61	56		65	60	55		64	59	55	53
6	76	64	56	50		74	63	56	50		61	55	50		60	54	49		58	53	49	47
7	71	59	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	41		51	45	40		50	44	40	38
9	62	50	42	37		61	49	42	37		48	42	37		47	41	37		46	41	37	35
10	58	46	39	34		57	46	39	34		45	38	34		44	38	34		43	37	34	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	170.4	7.52	7.49
8.0	95.9	10.02	9.99
10.0	61.4	12.53	12.49
12.0	42.6	15.03	14.98
14.0	31.3	17.54	17.48
16.0	24.0	20.04	19.98

Spacing Criterion

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

Average Luminance (cd/m^2)

	0 deg Plane	45 deg Plane	90 deg Plane
0	93700	93700	93700
45	66744	65427	63740
55	39008	37083	36016
65	28648	25709	23295
75	25534	24172	21210
85	23788	18775	12798

Beam and Field Angle

0-180 Degree Plane

Beam Angle: 90.2°

Field Angle: 138.9°

90-270 Degree Plane

Beam Angle: 88.9°

Field Angle: 131.6°

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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	21.1	22.5	21.4	22.8	23.1	21.2	22.6	21.6	22.9	23.3
	3H	22.4	23.7	22.8	24.0	24.4	22.4	23.7	22.8	24.0	24.4
	4H	23.0	24.2	23.4	24.6	25.0	22.9	24.1	23.3	24.4	24.8
	6H	23.6	24.7	24.0	25.0	25.4	23.3	24.4	23.7	24.8	25.2
	8H	23.8	24.8	24.2	25.2	25.6	23.5	24.5	23.9	24.9	25.3
	12H	23.9	24.9	24.3	25.3	25.7	23.5	24.5	23.9	24.9	25.3
4H	2H	21.5	22.7	21.9	23.0	23.4	21.6	22.8	22.0	23.1	23.5
	3H	23.0	24.0	23.5	24.4	24.8	23.1	24.1	23.5	24.5	24.9
	4H	23.8	24.7	24.2	25.1	25.5	23.8	24.6	24.2	25.1	25.5
	6H	24.5	25.2	24.9	25.7	26.2	24.3	25.1	24.8	25.6	26.0
	8H	24.8	25.5	25.2	25.9	26.4	24.5	25.2	25.0	25.7	26.1
	12H	25.0	25.6	25.4	26.1	26.5	24.6	25.2	25.1	25.7	26.2
8H	4H	24.1	24.8	24.5	25.2	25.7	24.1	24.8	24.5	25.2	25.7
	6H	24.9	25.5	25.4	26.0	26.5	24.8	25.4	25.3	25.8	26.3
	8H	25.3	25.8	25.8	26.3	26.8	25.0	25.5	25.5	26.0	26.5
	12H	25.6	26.0	26.1	26.5	27.1	25.1	25.6	25.6	26.1	26.7
12H	4H	24.1	24.7	24.6	25.2	25.7	24.1	24.7	24.5	25.2	25.7
	6H	25.0	25.5	25.5	26.0	26.5	24.8	25.4	25.4	25.8	26.4
	8H	25.4	25.8	25.9	26.3	26.9	25.1	25.6	25.6	26.1	26.6

Maximum UGR = 27.1

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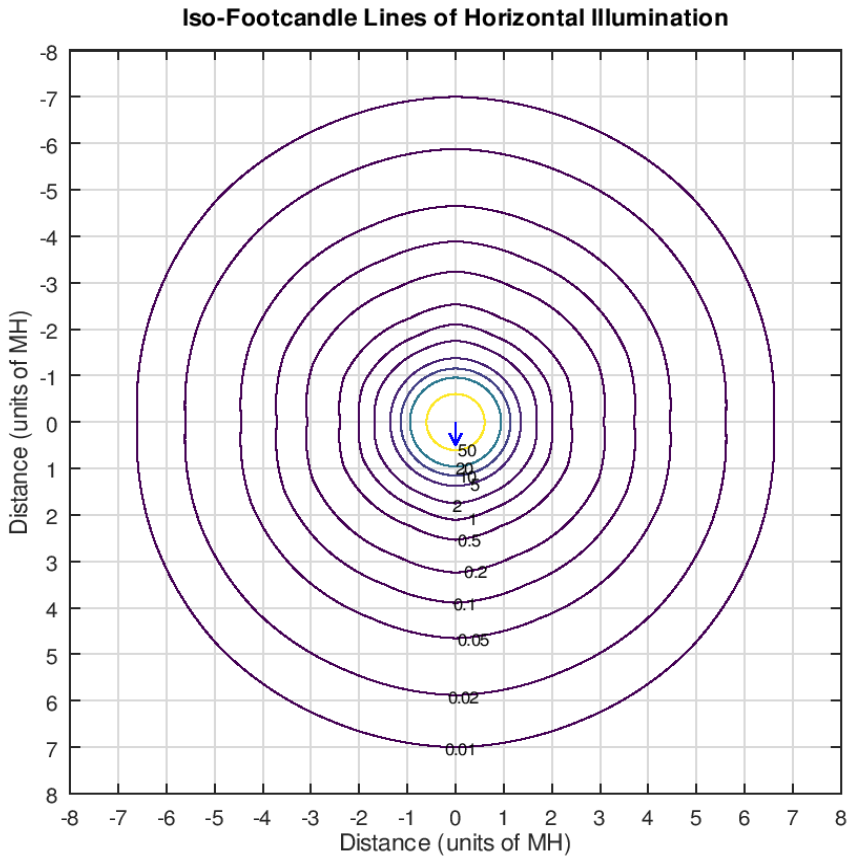
Iso-Illuminance Plot



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	25.1 °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.