LightLab INTERNATIONAL ALLENTOWN LLC

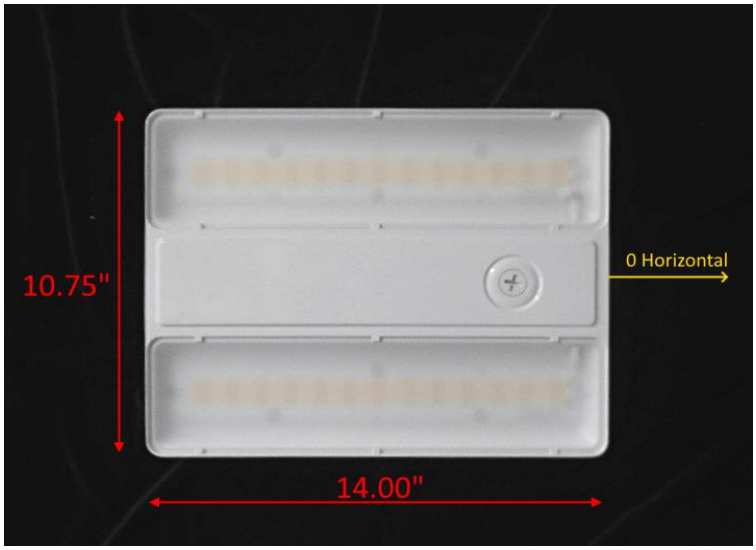
NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA002241-003

Indoor Distribution Photometry Test Report

Catalog Number: LHB-15L-W-PSC-U - 100W-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	14864.8	Lumens
Input Current	0.8123	A	Total Efficacy	153.4	Lm/W
Input Power	96.90	W	Downward Flux	14864.6	Lumens
Frequency	60.00	Hz	Downward Flux	100.0	% of Total
Power Factor	0.994				
Current THD	5.0	%			

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 14:30:36 -04'00'

North America (issuing laboratory)
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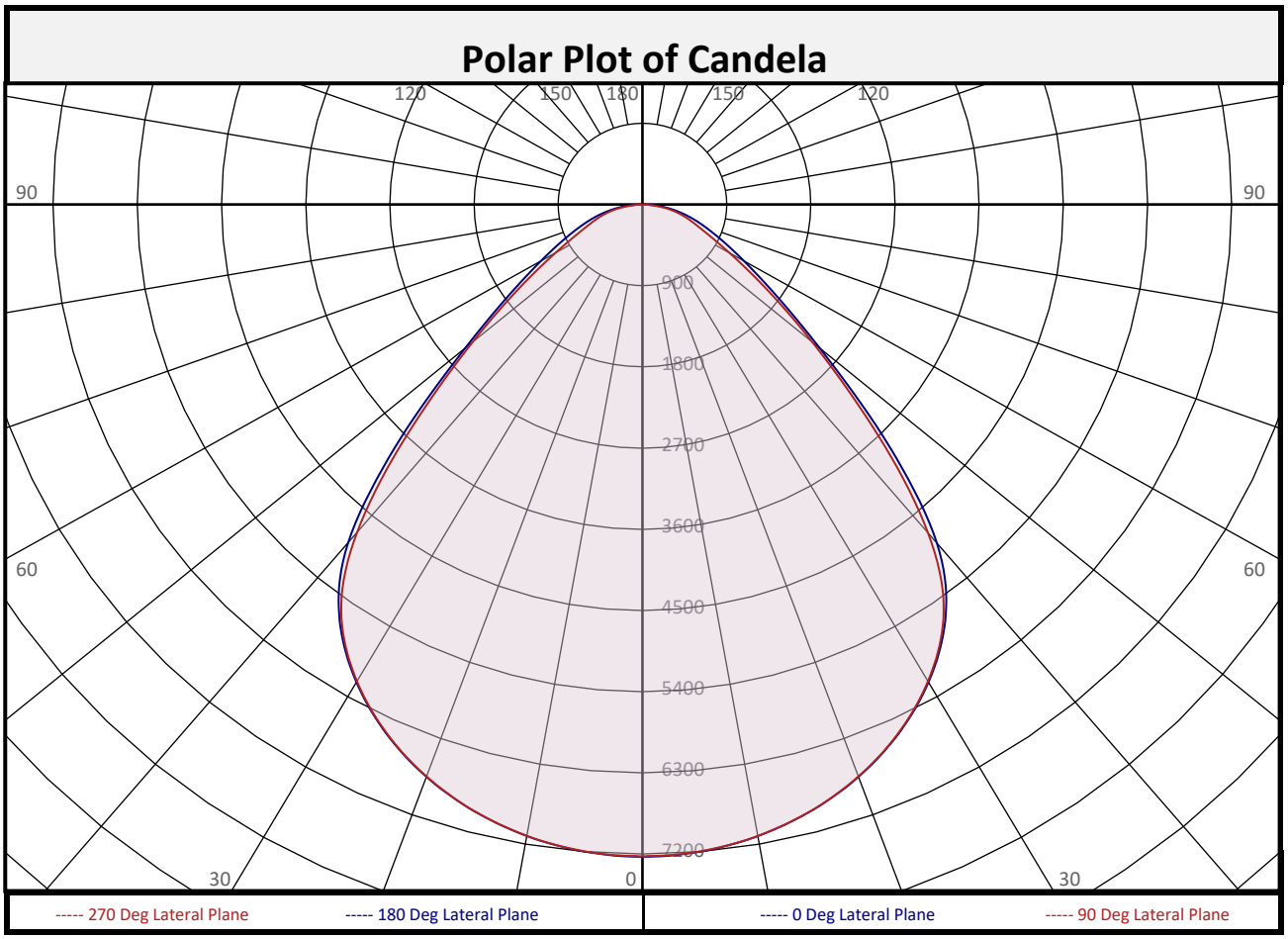

Zonal Flux Summary

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	684.8	4.6%	90-100	0.1	0.0%	0-20	2650	17.8%
10-20	1965	13.2%	100-110	0.0	0.0%	0-30	5632	37.9%
20-30	2982	20.1%	110-120	0.0	0.0%	0-40	9121	61.4%
30-40	3489	23.5%	120-130	0.0	0.0%	0-60	13373	90.0%
40-50	2747	18.5%	130-140	0.0	0.0%	0-80	14722	99.0%
50-60	1506	10.1%	140-150	0.0	0.0%	10-90	14180	95.4%
60-70	848.8	5.7%	150-160	0.0	0.0%	20-50	9218	62.0%
70-80	500.0	3.4%	160-170	0.0	0.0%	40-90	5744	38.6%
80-90	142.8	1.0%	170-180	0.0	0.0%	60-90	1492	10.0%
0-90	14865	100.0%	90-180	0.1	0.0%	0-180	14865	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	7230	7230	7230	7230	7230	7230	7230	7230	7230
	2.5	7223	7219	7226	7225	7219	7225	7226	7219	7223
	5	7201	7197	7204	7203	7196	7203	7204	7197	7201
	7.5	7160	7159	7164	7164	7159	7164	7164	7159	7160
	10	7109	7108	7111	7115	7109	7115	7111	7108	7109
	12.5	7042	7040	7046	7047	7040	7047	7046	7040	7042
	15	6961	6958	6964	6967	6959	6967	6964	6958	6961
	17.5	6863	6860	6865	6871	6862	6871	6865	6860	6863
	20	6752	6748	6754	6758	6748	6758	6754	6748	6752
	22.5	6623	6620	6625	6631	6617	6631	6625	6620	6623
	25	6475	6473	6477	6483	6467	6483	6477	6473	6475
	27.5	6307	6304	6310	6315	6298	6315	6310	6304	6307
	30	6115	6112	6118	6122	6102	6122	6118	6112	6115
	32.5	5897	5894	5898	5898	5878	5898	5898	5894	5897
	35	5643	5640	5636	5629	5608	5629	5636	5640	5643
	37.5	5326	5320	5301	5274	5244	5274	5301	5320	5326
	40	4895	4877	4831	4782	4743	4782	4831	4877	4895
	42.5	4299	4272	4227	4171	4128	4171	4227	4272	4299
	45	3643	3615	3564	3511	3471	3511	3564	3615	3643
	47.5	3002	2975	2934	2899	2869	2899	2934	2975	3002
	50	2469	2435	2409	2389	2363	2389	2409	2435	2469
	52.5	2053	1991	1981	1980	1939	1980	1981	1991	2053
	55	1726	1631	1638	1658	1589	1658	1638	1631	1726
	57.5	1464	1339	1362	1399	1303	1399	1362	1339	1464
	60	1254	1108	1143	1192	1074	1192	1143	1108	1254
	62.5	1080	928	971	1024	895	1024	971	928	1080
	65	934	790	837	889	758	889	837	790	934
	67.5	808	685	730	774	652	774	730	685	808
	70	700	603	642	674	568	674	642	603	700
	72.5	602	531	561	581	495	581	561	531	602
	75	509	461	481	489	423	489	481	461	509
	77.5	420	390	401	396	350	396	401	390	420
	80	332	315	316	301	273	301	316	315	332
	82.5	245	236	226	198	176	198	226	236	245
	85	160	151	124	94	84	94	124	151	160
	87.5	65	50	32	21	18	21	32	50	65
	90	0	1	1	2	2	2	1	1	0

16 lateral half-planes of data were acquired, 22.5 degree increments shown.

Report of Test

LLIA002241-003

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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LLIA002241-003

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		93	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	38	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	200.8	7.52	7.50
8.0	113.0	10.02	10.00
10.0	72.3	12.53	12.50
12.0	50.2	15.03	15.00
14.0	36.9	17.54	17.50
16.0	28.2	20.04	19.99

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	110406	110406	110406
45	78677	76972	74962
55	45946	43609	42316
65	33738	30242	27378
75	30058	28409	24930
85	27987	21692	14747

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: 131.5°

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LLIA002241-003

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	21.7	23.1	22.0	23.4	23.7	21.8	23.2	22.2	23.5	23.8
	3H	23.0	24.3	23.4	24.6	25.0	23.0	24.3	23.4	24.6	24.9
	4H	23.6	24.8	24.0	25.2	25.6	23.5	24.7	23.9	25.0	25.4
	6H	24.2	25.3	24.6	25.6	26.0	23.9	25.0	24.3	25.4	25.8
	8H	24.4	25.4	24.8	25.8	26.2	24.0	25.1	24.5	25.5	25.9
	12H	24.5	25.5	24.9	25.9	26.3	24.1	25.1	24.5	25.5	25.9
4H	2H	22.1	23.3	22.5	23.6	24.0	22.2	23.3	22.6	23.7	24.1
	3H	23.6	24.6	24.1	25.0	25.4	23.7	24.6	24.1	25.0	25.5
	4H	24.4	25.3	24.8	25.7	26.1	24.4	25.2	24.8	25.7	26.1
	6H	25.1	25.8	25.5	26.3	26.7	24.9	25.7	25.4	26.1	26.6
	8H	25.4	26.1	25.8	26.5	27.0	25.1	25.8	25.6	26.2	26.7
	12H	25.5	26.2	26.0	26.7	27.1	25.2	25.8	25.6	26.3	26.7
8H	4H	24.7	25.4	25.1	25.8	26.3	24.6	25.3	25.1	25.8	26.3
	6H	25.5	26.1	26.0	26.6	27.1	25.3	25.9	25.8	26.4	26.9
	8H	25.8	26.4	26.4	26.9	27.4	25.6	26.1	26.1	26.6	27.1
	12H	26.1	26.6	26.7	27.1	27.7	25.7	26.2	26.2	26.7	27.2
12H	4H	24.7	25.3	25.2	25.8	26.3	24.7	25.3	25.1	25.8	26.2
	6H	25.6	26.1	26.1	26.6	27.1	25.4	25.9	25.9	26.4	27.0
	8H	26.0	26.4	26.5	26.9	27.5	25.7	26.2	26.2	26.7	27.2

Maximum UGR = 27.7

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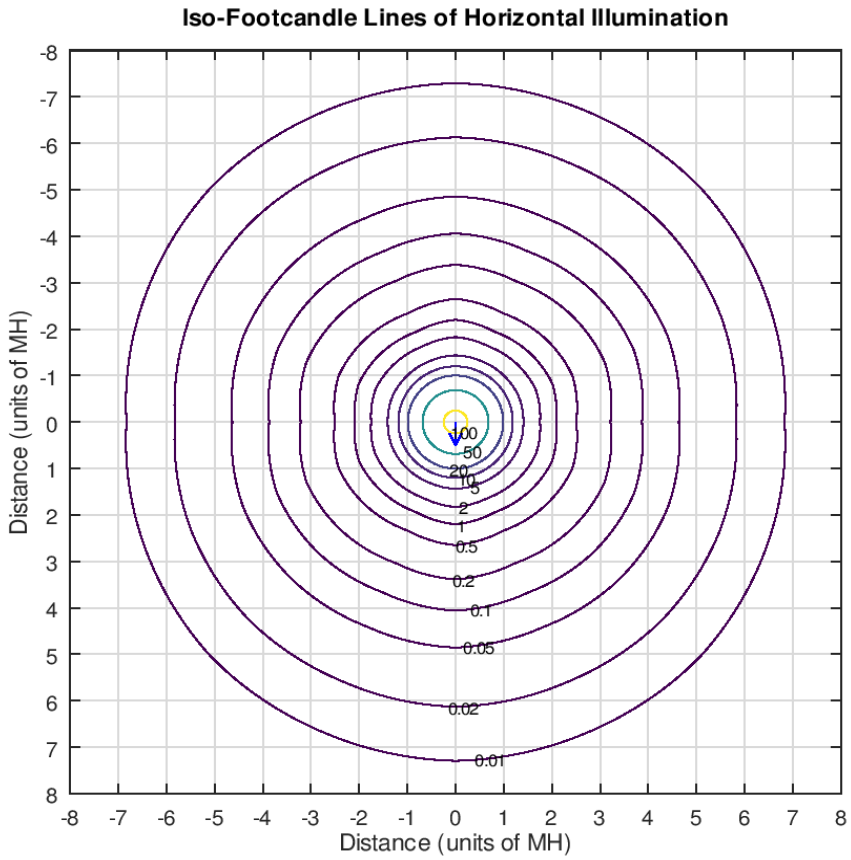
Iso-Illuminance Plot



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	25.1 °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.