LightLab INTERNATIONAL ALLENTOWN LLC

NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA001426-003

Indoor Distribution Photometry Test Report

Catalog Number: RDL/4GIM/11/5CTS-46 - 3000K Setting
Recessed mounted, cast aluminum housing, clear patterned plastic enclosure above translucent white plastic enclosure.
white LEDs
One LED20009A LED driver

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

Performance Summary					
Input Voltage	120.0	V	Luminous Flux	918.8	Lumens
Input Current	0.0921	A	Total Efficacy	85.2	Lm/W
Input Power	10.78	W	Downward Flux	918.8	Lumens
Frequency	60.00	Hz	Downward Flux	100.0	% of Total
Power Factor	0.975				
Current THD	12.9	%			

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

Test date: 03/16/2021
Report date: 03/19/2021

Signed: Michael L. Grather

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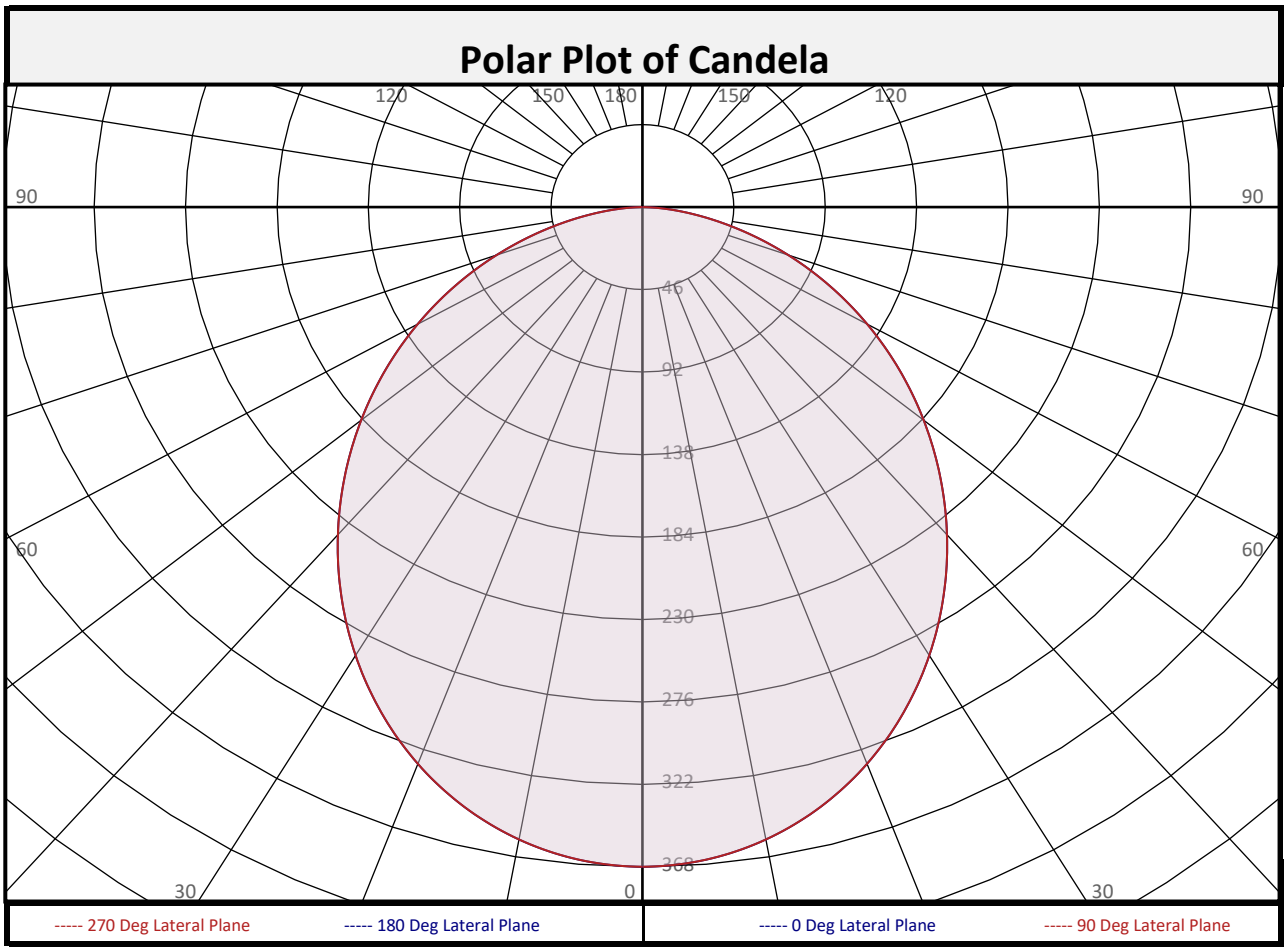

Zonal Flux Summary

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	34.7	3.8%	90-100	0.0	0.0%	0-20	132.2	14.4%
10-20	97.6	10.6%	100-110	0.0	0.0%	0-30	275.4	30.0%
20-30	143.1	15.6%	110-120	0.0	0.0%	0-40	440.6	48.0%
30-40	165.2	18.0%	120-130	0.0	0.0%	0-60	744.9	81.1%
40-50	163.4	17.8%	130-140	0.0	0.0%	0-80	904.4	98.4%
50-60	140.9	15.3%	140-150	0.0	0.0%	10-90	884.1	96.2%
60-70	103.0	11.2%	150-160	0.0	0.0%	20-50	471.8	51.4%
70-80	56.5	6.1%	160-170	0.0	0.0%	40-90	478.1	52.0%
80-90	14.4	1.6%	170-180	0.0	0.0%	60-90	173.8	18.9%
0-90	918.8	100.0%	90-180	0.0	0.0%	0-180	918.8	100.0%

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Luminous Intensity (Candela) Table

	Lateral (C-Plane) Angles									
Vertical (Gamma) Angles		0	22.5	45	67.5	90	112.5	135	157.5	180
	0	368	368	368	368	368	368	368	368	368
	2.5	367	367	367	367	367	367	367	367	367
	5	365	365	365	365	365	365	365	365	365
	7.5	362	362	362	362	362	362	362	362	362
	10	358	358	358	358	358	358	358	358	358
	12.5	353	353	353	353	353	353	353	353	353
	15	346	346	346	346	346	346	346	346	346
	17.5	339	339	339	339	339	339	339	339	339
	20	330	330	330	330	330	330	330	330	330
	22.5	321	321	321	321	321	321	321	321	321
	25	311	311	311	311	311	311	311	311	311
	27.5	300	300	300	300	300	300	300	300	300
	30	289	289	289	289	289	289	289	289	289
	32.5	277	277	277	277	277	277	277	277	277
	35	264	264	264	264	264	264	264	264	264
	37.5	252	252	252	252	252	252	252	252	252
	40	238	238	238	238	238	238	238	238	238
	42.5	225	225	225	225	225	225	225	225	225
	45	212	212	212	212	212	212	212	212	212
	47.5	198	198	198	198	198	198	198	198	198
	50	185	185	185	185	185	185	185	185	185
	52.5	171	171	171	171	171	171	171	171	171
	55	158	158	158	158	158	158	158	158	158
	57.5	144	144	144	144	144	144	144	144	144
	60	131	131	131	131	131	131	131	131	131
	62.5	117	117	117	117	117	117	117	117	117
	65	104	104	104	104	104	104	104	104	104
	67.5	91	91	91	91	91	91	91	91	91
	70	78	78	78	78	78	78	78	78	78
	72.5	65	65	65	65	65	65	65	65	65
	75	53	53	53	53	53	53	53	53	53
	77.5	42	42	42	42	42	42	42	42	42
	80	31	31	31	31	31	31	31	31	31
	82.5	21	21	21	21	21	21	21	21	21
	85	12	12	12	12	12	12	12	12	12
	87.5	5	5	5	5	5	5	5	5	5
	90	0	0	0	0	0	0	0	0	0

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Luminous Intensity (Candela) Table

	Lateral (C-Plane) Angles									
Vertical (Gamma) Angles		0	22.5	45	67.5	90	112.5	135	157.5	180
	90	0	0	0	0	0	0	0	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

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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	109	105	100	97		106	102	99	95		98	95	92		94	92	89		91	89	87	85
2	100	92	85	79		97	90	84	78		86	81	77		83	79	75		80	76	73	71
3	91	81	73	66		89	79	72	66		76	70	65		73	68	64		71	66	63	60
4	84	72	63	57		81	70	62	56		68	61	56		66	60	55		64	58	54	52
5	77	64	56	49		75	63	55	49		61	54	48		59	53	48		57	52	47	45
6	71	58	49	43		69	57	49	43		55	48	42		54	47	42		52	46	42	40
7	66	53	44	38		64	52	44	38		50	43	38		49	42	37		48	42	37	35
8	62	48	40	34		60	48	40	34		46	39	34		45	38	34		44	38	33	32
9	58	44	36	31		56	44	36	31		43	36	31		42	35	30		41	35	30	29
10	54	41	33	28		53	41	33	28		40	33	28		39	32	28		38	32	28	26

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	10.2	7.04	7.04
8.0	5.7	9.39	9.39
10.0	3.7	11.74	11.74
12.0	2.6	14.09	14.09
14.0	1.9	16.43	16.43
16.0	1.4	18.78	18.78

Average Luminance (cd/m^2)

	0 deg Plane	45 deg Plane	90 deg Plane
0	80693	80693	80693
45	65675	65675	65675
55	60259	60259	60259
65	53956	53956	53956
75	45032	45032	45032
85	30934	30934	30934

Spacing Criterion

Spacing Criterion: 1.2

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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	25.3	26.9	25.7	27.2	27.6	25.3	26.9	25.7	27.2	27.6
	3H	27.0	28.5	27.4	28.8	29.2	27.0	28.5	27.4	28.8	29.2
	4H	27.6	29.0	28.0	29.3	29.7	27.6	29.0	28.0	29.3	29.7
	6H	28.1	29.3	28.5	29.7	30.1	28.1	29.3	28.5	29.7	30.1
	8H	28.2	29.4	28.6	29.8	30.2	28.2	29.4	28.6	29.8	30.2
	12H	28.2	29.4	28.7	29.8	30.2	28.2	29.4	28.7	29.8	30.2
4H	2H	25.9	27.3	26.3	27.6	28.0	25.9	27.3	26.3	27.6	28.0
	3H	27.8	29.0	28.3	29.4	29.8	27.8	29.0	28.3	29.4	29.8
	4H	28.6	29.6	29.0	30.0	30.4	28.6	29.6	29.0	30.0	30.4
	6H	29.1	30.0	29.6	30.4	30.9	29.1	30.0	29.6	30.4	30.9
	8H	29.3	30.1	29.7	30.5	31.0	29.3	30.1	29.7	30.5	31.0
	12H	29.4	30.1	29.9	30.6	31.1	29.4	30.1	29.9	30.6	31.1
8H	4H	28.8	29.7	29.3	30.1	30.6	28.8	29.7	29.3	30.1	30.6
	6H	29.5	30.2	30.0	30.7	31.1	29.5	30.2	30.0	30.7	31.1
	8H	29.7	30.3	30.2	30.8	31.3	29.7	30.3	30.2	30.8	31.3
	12H	29.9	30.4	30.4	30.9	31.5	29.9	30.4	30.4	30.9	31.5
12H	4H	28.9	29.6	29.3	30.1	30.6	28.9	29.6	29.3	30.1	30.6
	6H	29.5	30.2	30.1	30.6	31.2	29.5	30.2	30.1	30.6	31.2
	8H	29.8	30.4	30.3	30.8	31.4	29.8	30.4	30.3	30.8	31.4

Maximum UGR = 31.5

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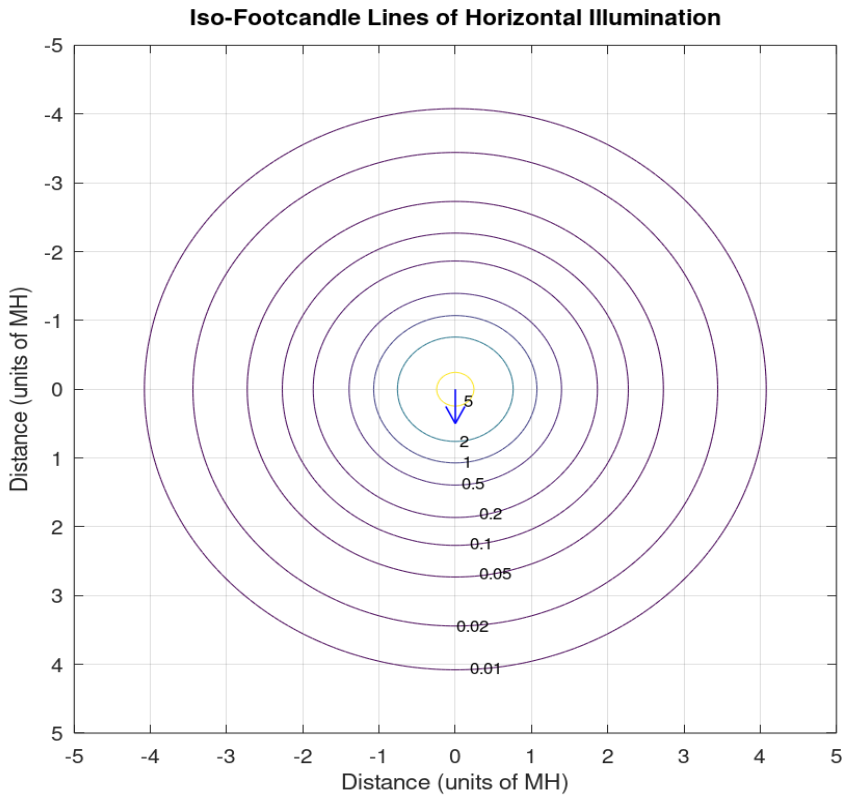
Iso-Illuminance Plot



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	24.8 °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-41-14 and LM-46-04.

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.