LightLab INTERNATIONAL ALLENTOWN LLC

NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA001426-005

Indoor Distribution Photometry Test Report

Catalog Number: RDL/4GIM/9/5CTS-46 - 3000K Setting
Recessed mounted, cast aluminum housing, 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	675.4	Lumens
Input Current	0.0749	A	Total Efficacy	77.5	Lm/W
Input Power	8.71	W	Downward Flux	675.4	Lumens
Frequency	60.00	Hz	Downward Flux	100.0	% of Total
Power Factor	0.968				
Current THD	14.3	%			

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

Test date: 03/17/2021
Report date: 03/19/2021

Signed: Michael L. Grather

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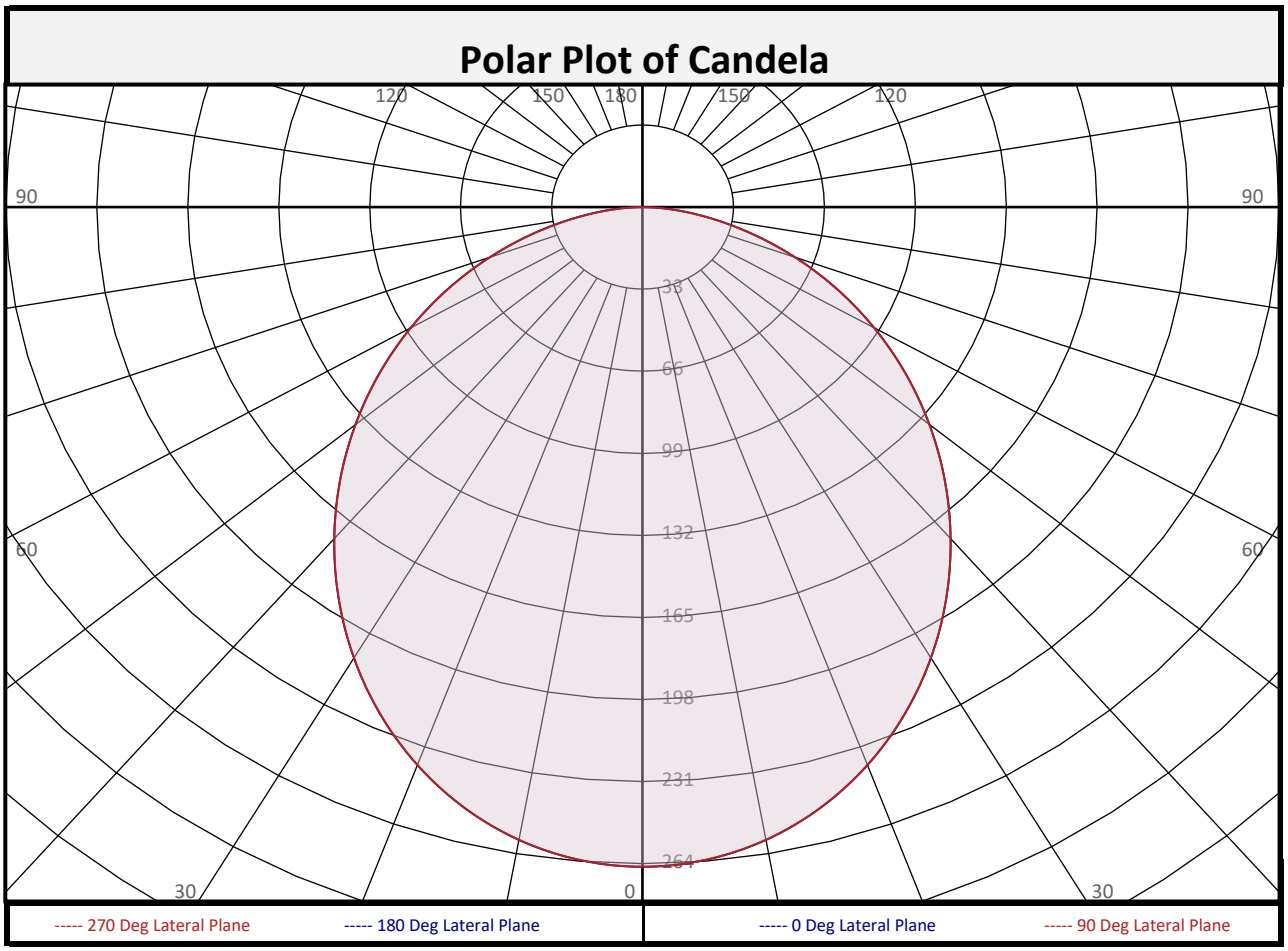

Zonal Flux Summary

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	25.0	3.7%	90-100	0.0	0.0%	0-20	95.4	14.1%
10-20	70.4	10.4%	100-110	0.0	0.0%	0-30	199.0	29.5%
20-30	103.6	15.3%	110-120	0.0	0.0%	0-40	319.2	47.3%
30-40	120.2	17.8%	120-130	0.0	0.0%	0-60	543.1	80.4%
40-50	119.7	17.7%	130-140	0.0	0.0%	0-80	663.3	98.2%
50-60	104.2	15.4%	140-150	0.0	0.0%	10-90	650.4	96.3%
60-70	77.0	11.4%	150-160	0.0	0.0%	20-50	343.5	50.9%
70-80	43.3	6.4%	160-170	0.0	0.0%	40-90	356.2	52.7%
80-90	12.1	1.8%	170-180	0.0	0.0%	60-90	132.3	19.6%
0-90	675.4	100.0%	90-180	0.0	0.0%	0-180	675.4	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	265	265	265	265	265	265	265	265	265
	2.5	265	265	265	265	265	265	265	265	265
	5	264	264	264	264	264	264	264	264	264
	7.5	261	261	261	261	261	261	261	261	261
	10	258	258	258	258	258	258	258	258	258
	12.5	255	255	255	255	255	255	255	255	255
	15	250	250	250	250	250	250	250	250	250
	17.5	245	245	245	245	245	245	245	245	245
	20	239	239	239	239	239	239	239	239	239
	22.5	232	232	232	232	232	232	232	232	232
	25	225	225	225	225	225	225	225	225	225
	27.5	217	217	217	217	217	217	217	217	217
	30	209	209	209	209	209	209	209	209	209
	32.5	201	201	201	201	201	201	201	201	201
	35	192	192	192	192	192	192	192	192	192
	37.5	183	183	183	183	183	183	183	183	183
	40	174	174	174	174	174	174	174	174	174
	42.5	165	165	165	165	165	165	165	165	165
	45	155	155	155	155	155	155	155	155	155
	47.5	146	146	146	146	146	146	146	146	146
	50	136	136	136	136	136	136	136	136	136
	52.5	126	126	126	126	126	126	126	126	126
	55	116	116	116	116	116	116	116	116	116
	57.5	107	107	107	107	107	107	107	107	107
	60	97	97	97	97	97	97	97	97	97
	62.5	87	87	87	87	87	87	87	87	87
	65	78	78	78	78	78	78	78	78	78
	67.5	68	68	68	68	68	68	68	68	68
	70	59	59	59	59	59	59	59	59	59
	72.5	50	50	50	50	50	50	50	50	50
	75	41	41	41	41	41	41	41	41	41
	77.5	32	32	32	32	32	32	32	32	32
	80	24	24	24	24	24	24	24	24	24
	82.5	17	17	17	17	17	17	17	17	17
	85	10	10	10	10	10	10	10	10	10
	87.5	5	5	5	5	5	5	5	5	5
	90	1	1	1	1	1	1	1	1	1

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Luminous Intensity (Candela) Table

Vertical (Gamma) Angles	Lateral (C-Plane) Angles									
	0	22.5	45	67.5	90	112.5	135	157.5	180
90	1	1	1	1	1	1	1	1	1
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	104	100	96		106	102	98	95		98	95	92		94	91	89		90	88	86	84
2	99	91	85	79		97	89	83	78		86	81	76		83	78	74		80	76	73	71
3	91	80	72	66		88	79	71	65		76	69	64		73	68	63		71	66	62	60
4	83	71	63	56		81	70	62	56		68	61	55		65	59	54		63	58	54	51
5	77	64	55	49		75	63	55	48		61	53	48		59	52	47		57	51	47	45
6	71	58	49	43		69	57	48	42		55	48	42		53	47	42		52	46	41	39
7	66	52	44	38		64	52	43	38		50	43	37		49	42	37		47	41	37	35
8	61	48	40	34		60	47	39	34		46	39	33		45	38	33		44	38	33	31
9	57	44	36	30		56	44	36	30		42	35	30		41	35	30		40	34	30	28
10	54	41	33	28		53	40	33	28		39	32	28		38	32	27		37	32	27	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	7.4	7.08	7.08
8.0	4.1	9.44	9.44
10.0	2.7	11.80	11.80
12.0	1.8	14.16	14.16
14.0	1.4	16.52	16.52
16.0	1.0	18.88	18.88

Average Luminance (cd/m^2)

	0 deg Plane	45 deg Plane	90 deg Plane
0	58173	58173	58173
45	48116	48116	48116
55	44537	44537	44537
65	40362	40362	40362
75	34531	34531	34531
85	26065	26065	26065

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	24.3	25.9	24.6	26.2	26.5	24.3	25.9	24.6	26.2	26.5
	3H	26.0	27.5	26.4	27.8	28.1	26.0	27.5	26.4	27.8	28.1
	4H	26.6	28.0	27.0	28.4	28.7	26.6	28.0	27.0	28.4	28.7
	6H	27.1	28.4	27.5	28.7	29.1	27.1	28.4	27.5	28.7	29.1
	8H	27.2	28.5	27.7	28.8	29.2	27.2	28.5	27.7	28.8	29.2
	12H	27.3	28.5	27.8	28.9	29.3	27.3	28.5	27.8	28.9	29.3
4H	2H	24.9	26.2	25.3	26.6	27.0	24.9	26.2	25.3	26.6	27.0
	3H	26.8	28.0	27.2	28.4	28.8	26.8	28.0	27.2	28.4	28.8
	4H	27.6	28.6	28.0	29.0	29.5	27.6	28.6	28.0	29.0	29.5
	6H	28.2	29.1	28.6	29.5	30.0	28.2	29.1	28.6	29.5	30.0
	8H	28.4	29.2	28.8	29.7	30.1	28.4	29.2	28.8	29.7	30.1
	12H	28.5	29.3	29.0	29.7	30.2	28.5	29.3	29.0	29.7	30.2
8H	4H	27.9	28.7	28.3	29.2	29.6	27.9	28.7	28.3	29.2	29.6
	6H	28.6	29.3	29.1	29.8	30.3	28.6	29.3	29.1	29.8	30.3
	8H	28.8	29.5	29.3	30.0	30.5	28.8	29.5	29.3	30.0	30.5
	12H	29.1	29.6	29.6	30.1	30.7	29.1	29.6	29.6	30.1	30.7
12H	4H	27.9	28.7	28.4	29.1	29.6	27.9	28.7	28.4	29.1	29.6
	6H	28.6	29.3	29.2	29.7	30.3	28.6	29.3	29.2	29.7	30.3
	8H	29.0	29.5	29.5	30.0	30.6	29.0	29.5	29.5	30.0	30.6

Maximum UGR = 30.7

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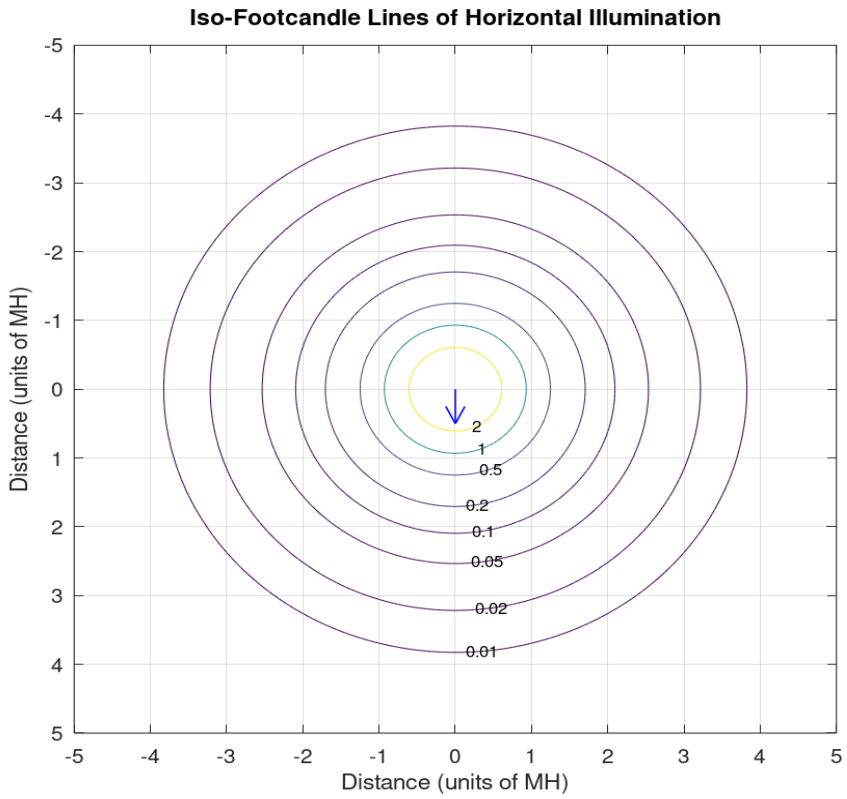
Iso-Illuminance Plot



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	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-41-14 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.