LightLab INTERNATIONAL ALLENTOWN LLC

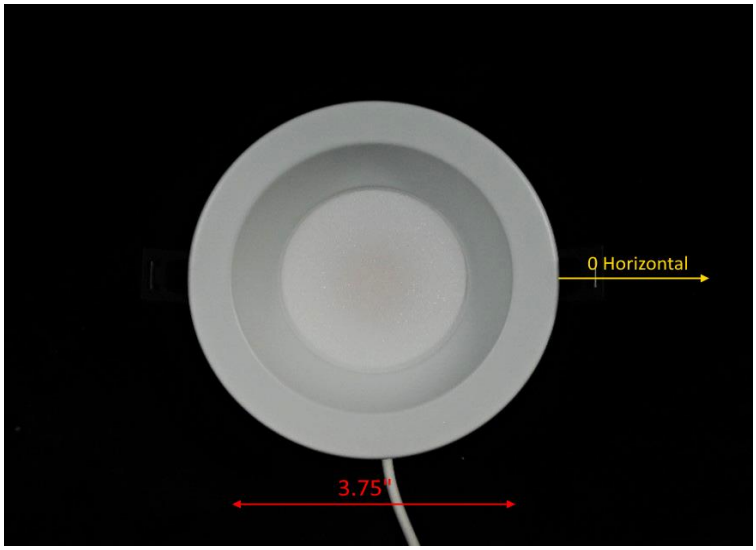
NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA002379-014

Indoor Distribution Photometry Test Report

Catalog Number: CDL4S-RM-12WPCS-U - 9W Setting - 4000K Setting
Recessed mounted, formed white painted aluminum housing,
white interior reflector, diffuse white plastic enclosure.
white LEDs
One unmarked PCB type LED driver in formed steel box.



Prepared For:
Topaz Lighting, A Southwire Company
925 Waverly Avenue
Holtsville, NY 11742, USA

Performance Summary					
Input Voltage	120.0	Vac	Luminous Flux	936.4	Lumens
Input Current	0.0694	A	Total Efficacy	114.8	Lm/W
Input Power	8.16	W	Downward Flux	936.4	Lumens
Frequency	60.00	Hz	Downward Flux	100.0	% of Total
Power Factor	0.981				
Current THD	8.7	%			

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

Test date: 04/29/2024
Report date: 05/16/2024

Signed: Michael L. Grather Digitally signed by Michael L. Grather Date: 2024.05.16 15:18:55 -04'00'

North America (issuing laboratory)
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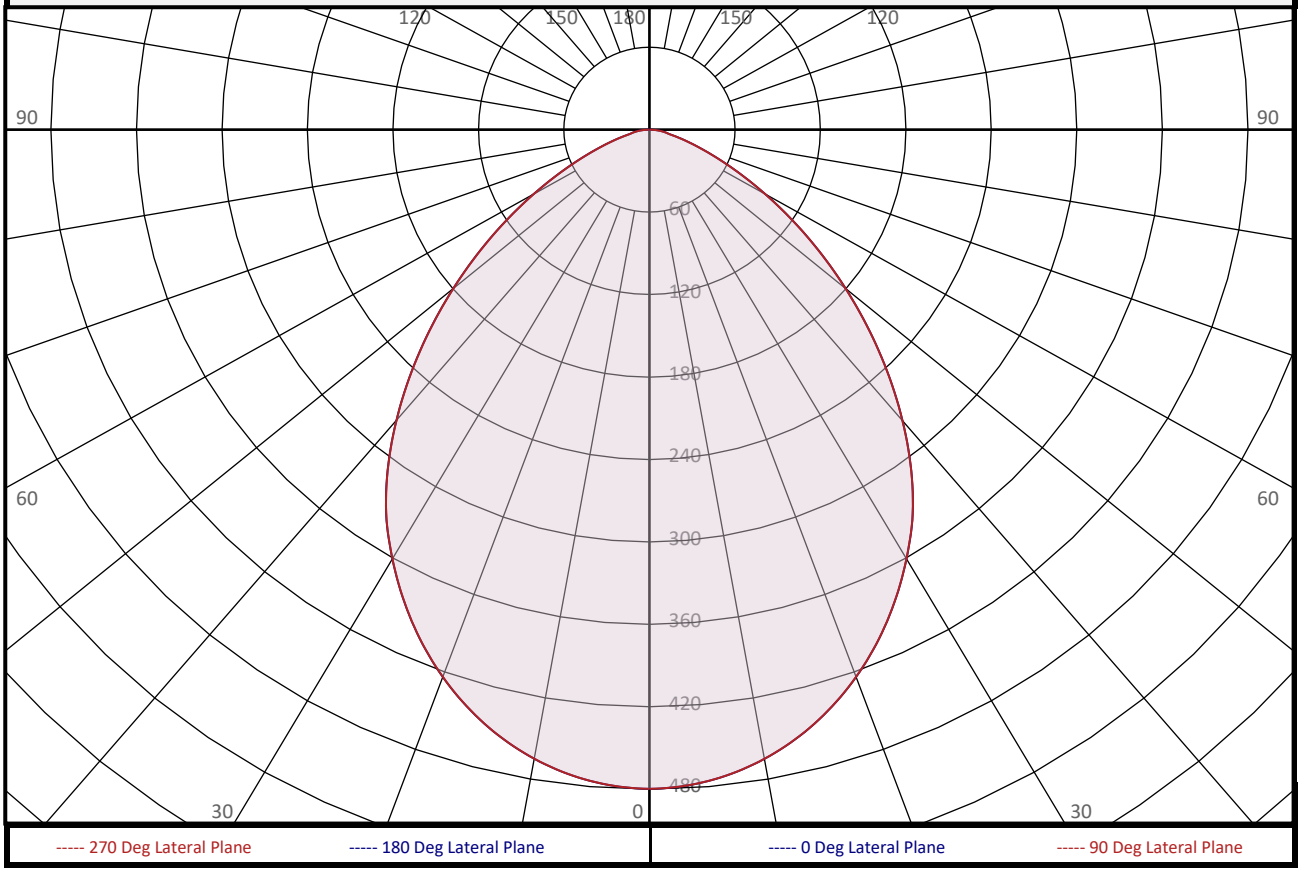
Polar Plot of Candela



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	45.1	4.8%	90-100	0.0	0.0%	0-20	171.0	18.3%
10-20	125.9	13.4%	100-110	0.0	0.0%	0-30	352.4	37.6%
20-30	181.4	19.4%	110-120	0.0	0.0%	0-40	552.9	59.0%
30-40	200.4	21.4%	120-130	0.0	0.0%	0-60	848.4	90.6%
40-50	175.2	18.7%	130-140	0.0	0.0%	0-80	930.5	99.4%
50-60	120.3	12.9%	140-150	0.0	0.0%	10-90	891.3	95.2%
60-70	60.7	6.5%	150-160	0.0	0.0%	20-50	557.1	59.5%
70-80	21.3	2.3%	160-170	0.0	0.0%	40-90	383.6	41.0%
80-90	5.9	0.6%	170-180	0.0	0.0%	60-90	88.0	9.4%
0-90	936.4	100.0%	90-180	0.0	0.0%	0-180	936.4	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	480	480	480	480	480	480	480	480	480
	2.5	479	479	479	479	479	479	479	479	479
	5	476	476	476	476	476	476	476	476	476
	7.5	471	471	471	471	471	471	471	471	471
	10	465	465	465	465	465	465	465	465	465
	12.5	457	457	457	457	457	457	457	457	457
	15	448	448	448	448	448	448	448	448	448
	17.5	436	436	436	436	436	436	436	436	436
	20	424	424	424	424	424	424	424	424	424
	22.5	410	410	410	410	410	410	410	410	410
	25	395	395	395	395	395	395	395	395	395
	27.5	378	378	378	378	378	378	378	378	378
	30	361	361	361	361	361	361	361	361	361
	32.5	343	343	343	343	343	343	343	343	343
	35	322	322	322	322	322	322	322	322	322
	37.5	300	300	300	300	300	300	300	300	300
	40	276	276	276	276	276	276	276	276	276
	42.5	252	252	252	252	252	252	252	252	252
	45	228	228	228	228	228	228	228	228	228
	47.5	203	203	203	203	203	203	203	203	203
	50	179	179	179	179	179	179	179	179	179
	52.5	156	156	156	156	156	156	156	156	156
	55	134	134	134	134	134	134	134	134	134
	57.5	113	113	113	113	113	113	113	113	113
	60	94	94	94	94	94	94	94	94	94
	62.5	76	76	76	76	76	76	76	76	76
	65	60	60	60	60	60	60	60	60	60
	67.5	47	47	47	47	47	47	47	47	47
	70	35	35	35	35	35	35	35	35	35
	72.5	26	26	26	26	26	26	26	26	26
	75	19	19	19	19	19	19	19	19	19
	77.5	14	14	14	14	14	14	14	14	14
	80	11	11	11	11	11	11	11	11	11
	82.5	8	8	8	8	8	8	8	8	8
	85	5	5	5	5	5	5	5	5	5
	87.5	2	2	2	2	2	2	2	2	2
	90	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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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	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

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	104	100		108	105	102	99		101	98	96		97	95	93		93	92	90	88
2	103	96	90	85		100	94	89	84		90	86	82		87	84	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	63		74	67	63		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		59	53	49		58	53	49	47
7	71	58	50	45		69	57	50	45		56	49	44		55	49	44		53	48	44	42
8	66	54	46	40		64	53	45	40		52	45	40		50	44	40		49	44	40	38
9	62	49	42	37		61	49	42	37		48	41	37		47	41	36		46	40	36	34
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	13.3	6.80	6.80
8.0	7.5	9.06	9.06
10.0	4.8	11.33	11.33
12.0	3.3	13.59	13.59
14.0	2.4	15.86	15.86
16.0	1.9	18.12	18.12

Spacing Criterion

SC: 1.1

Average Luminance (cd/m^2)

	0 deg Plane	45 deg Plane	90 deg Plane
0	67332	67332	67332
45	45160	45160	45160
55	32839	32839	32839
65	19962	19962	19962
75	10138	10138	10138
85	8835	8835	8835

Beam and Field Angle

0-180 Degree Plane

Beam Angle: 87.5°

Field Angle: 134.4°

90-270 Degree Plane

Beam Angle: 87.5°

Field Angle: 134.4°

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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	22.2	23.7	22.6	24.0	24.3	22.2	23.7	22.6	24.0	24.3
	3H	22.9	24.2	23.3	24.5	24.9	22.9	24.2	23.3	24.5	24.9
	4H	23.0	24.2	23.4	24.6	25.0	23.0	24.2	23.4	24.6	25.0
	6H	23.1	24.2	23.5	24.6	25.0	23.1	24.2	23.5	24.6	25.0
	8H	23.1	24.2	23.6	24.6	25.0	23.1	24.2	23.6	24.6	25.0
	12H	23.2	24.2	23.6	24.5	25.0	23.2	24.2	23.6	24.5	25.0
4H	2H	22.5	23.7	22.9	24.0	24.4	22.5	23.7	22.9	24.0	24.4
	3H	23.3	24.3	23.7	24.7	25.1	23.3	24.3	23.7	24.7	25.1
	4H	23.5	24.4	23.9	24.8	25.2	23.5	24.4	23.9	24.8	25.2
	6H	23.6	24.4	24.1	24.8	25.3	23.6	24.4	24.1	24.8	25.3
	8H	23.7	24.4	24.2	24.8	25.3	23.7	24.4	24.2	24.8	25.3
	12H	23.7	24.4	24.2	24.8	25.3	23.7	24.4	24.2	24.8	25.3
8H	4H	23.5	24.2	24.0	24.7	25.1	23.5	24.2	24.0	24.7	25.1
	6H	23.7	24.3	24.2	24.8	25.3	23.7	24.3	24.2	24.8	25.3
	8H	23.8	24.3	24.3	24.8	25.3	23.8	24.3	24.3	24.8	25.3
	12H	23.9	24.4	24.4	24.8	25.4	23.9	24.4	24.4	24.8	25.4
12H	4H	23.5	24.1	24.0	24.6	25.1	23.5	24.1	24.0	24.6	25.1
	6H	23.7	24.2	24.2	24.7	25.2	23.7	24.2	24.2	24.7	25.2
	8H	23.8	24.3	24.3	24.8	25.3	23.8	24.3	24.3	24.8	25.3

Maximum UGR = 25.4

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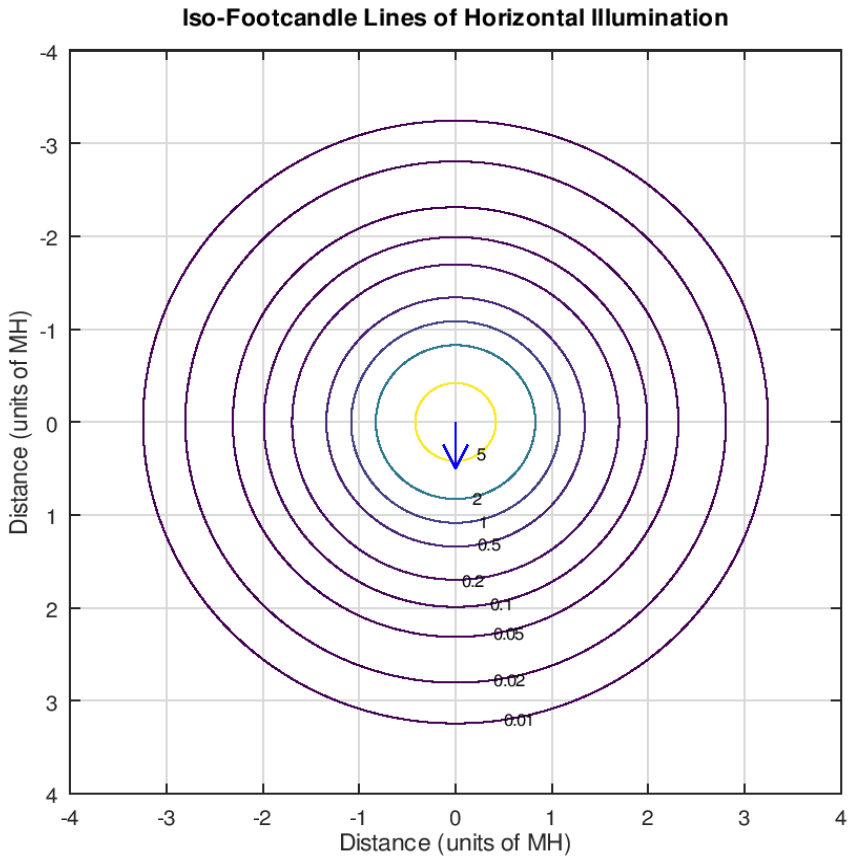
Iso-Illuminance Plot



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	25.2 °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.