LightLab INTERNATIONAL ALLENTOWN LLC

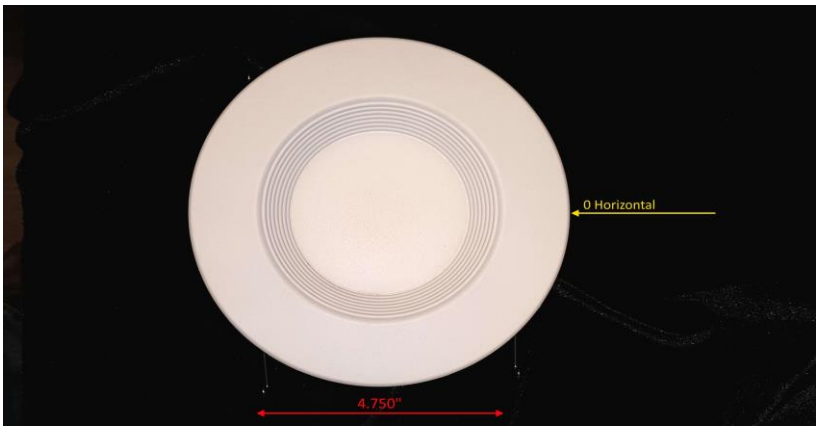
NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA001204-002

Indoor Distribution Photometry Test Report

Catalog Number: RTL/603WH/11W/CTS-46 - 3000K Setting
Recessed mounted, formed white plastic housing with lower stepped section,
upper white plastic reflector, translucent white plastic enclosure.
46 white LEDs, one AL19111C LED board
One internal LED driver



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

Performance Summary					
Input Voltage	120.0	V	Luminous Flux	1135.8	Lumens
Input Current	0.0949	A	Total Efficacy	105.6	Lm/W
Input Power	10.76	W	Downward Flux	1135.8	Lumens
Frequency	60.00	Hz	Downward Flux	100.0	% of Total
Power Factor	0.945				
Current THD	19.2	%			

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

Test date: 12/27/2019
Report date: 12/27/2019

Signed: Michael L. Grather

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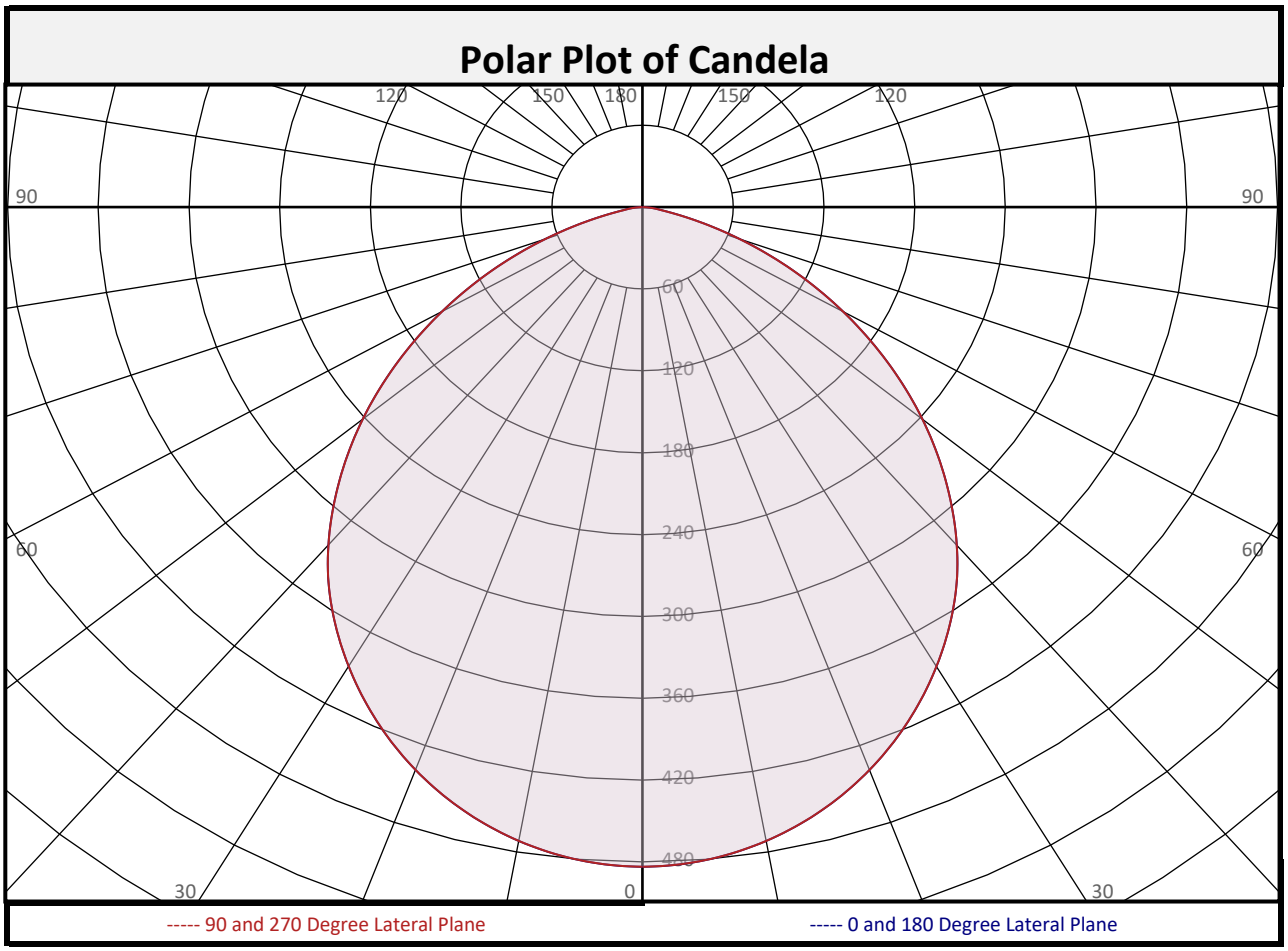

Zonal Flux Summary									
Zone (Deg Vert)	Flux (Lumens)	Percent of Total	Zone (Deg Vert)	Flux (Lumens)	Percent of Total	Zone (Deg Vert)	Flux (Lumens)	Percent of Total
0-10	45.6	4.0%	90-100	0.0	0.0%	0-20	174.6	15.4%
10-20	129.0	11.4%	100-110	0.0	0.0%	0-30	366.1	32.2%
20-30	191.4	16.9%	110-120	0.0	0.0%	0-40	589.9	51.9%
30-40	223.8	19.7%	120-130	0.0	0.0%	0-60	984.5	86.7%
40-50	218.4	19.2%	130-140	0.0	0.0%	0-80	1130	99.5%
50-60	176.2	15.5%	140-150	0.0	0.0%	10-90	1090	96.0%
60-70	108.6	9.6%	150-160	0.0	0.0%	20-50	633.6	55.8%
70-80	37.1	3.3%	160-170	0.0	0.0%	40-90	545.9	48.1%
80-90	5.7	0.5%	170-180	0.0	0.0%	60-90	151.4	13.3%
0-90	1136	100.0%	90-180	0.0	0.0%	0-180	1136	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	484	484	484	484	484	484	484	484	484
	2.5	483	483	483	483	483	483	483	483	483
	5	480	480	480	480	480	480	480	480	480
	7.5	477	477	477	477	477	477	477	477	477
	10	472	472	472	472	472	472	472	472	472
	12.5	465	465	465	465	465	465	465	465	465
	15	458	458	458	458	458	458	458	458	458
	17.5	449	449	449	449	449	449	449	449	449
	20	439	439	439	439	439	439	439	439	439
	22.5	428	428	428	428	428	428	428	428	428
	25	416	416	416	416	416	416	416	416	416
	27.5	403	403	403	403	403	403	403	403	403
	30	389	389	389	389	389	389	389	389	389
	32.5	374	374	374	374	374	374	374	374	374
	35	358	358	358	358	358	358	358	358	358
	37.5	342	342	342	342	342	342	342	342	342
	40	323	323	323	323	323	323	323	323	323
	42.5	304	304	304	304	304	304	304	304	304
	45	284	284	284	284	284	284	284	284	284
	47.5	263	263	263	263	263	263	263	263	263
	50	241	241	241	241	241	241	241	241	241
	52.5	219	219	219	219	219	219	219	219	219
	55	197	197	197	197	197	197	197	197	197
	57.5	175	175	175	175	175	175	175	175	175
	60	153	153	153	153	153	153	153	153	153
	62.5	131	131	131	131	131	131	131	131	131
	65	110	110	110	110	110	110	110	110	110
	67.5	88	88	88	88	88	88	88	88	88
	70	68	68	68	68	68	68	68	68	68
	72.5	49	49	49	49	49	49	49	49	49
	75	33	33	33	33	33	33	33	33	33
	77.5	20	20	20	20	20	20	20	20	20
	80	12	12	12	12	12	12	12	12	12
	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

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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	110	106	102	99		108	104	101	97		100	97	94		96	94	92		92	91	89	87
2	101	94	88	83		99	92	86	82		89	84	80		85	81	78		82	79	76	74
3	93	83	76	70		91	82	75	69		79	73	68		76	71	67		74	69	66	64
4	85	74	66	60		83	73	65	60		71	64	59		68	63	58		66	61	57	55
5	79	67	58	52		77	66	58	52		64	57	51		62	56	51		60	55	50	48
6	73	60	52	46		71	60	52	46		58	51	45		56	50	45		55	49	45	43
7	68	55	47	41		66	54	46	41		53	46	40		51	45	40		50	44	40	38
8	63	50	42	37		62	50	42	36		48	41	36		47	41	36		46	40	36	34
9	59	46	38	33		58	46	38	33		45	38	33		44	37	33		43	37	32	31
10	56	43	35	30		54	42	35	30		41	35	30		40	34	30		39	34	30	28

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	13.4	7.19	7.19
8.0	7.6	9.59	9.59
10.0	4.8	11.99	11.99
12.0	3.4	14.39	14.39
14.0	2.5	16.79	16.79
16.0	1.9	19.19	19.19

Average Luminance (cd/m^2)

	0 deg Plane	45 deg Plane	90 deg Plane
0	42299	42299	42299
45	35070	35070	35070
55	30098	30098	30098
65	22686	22686	22686
75	11074	11074	11074
85	5034	5034	5034

Spacing Criterion

Spacing Criterion: 1.2

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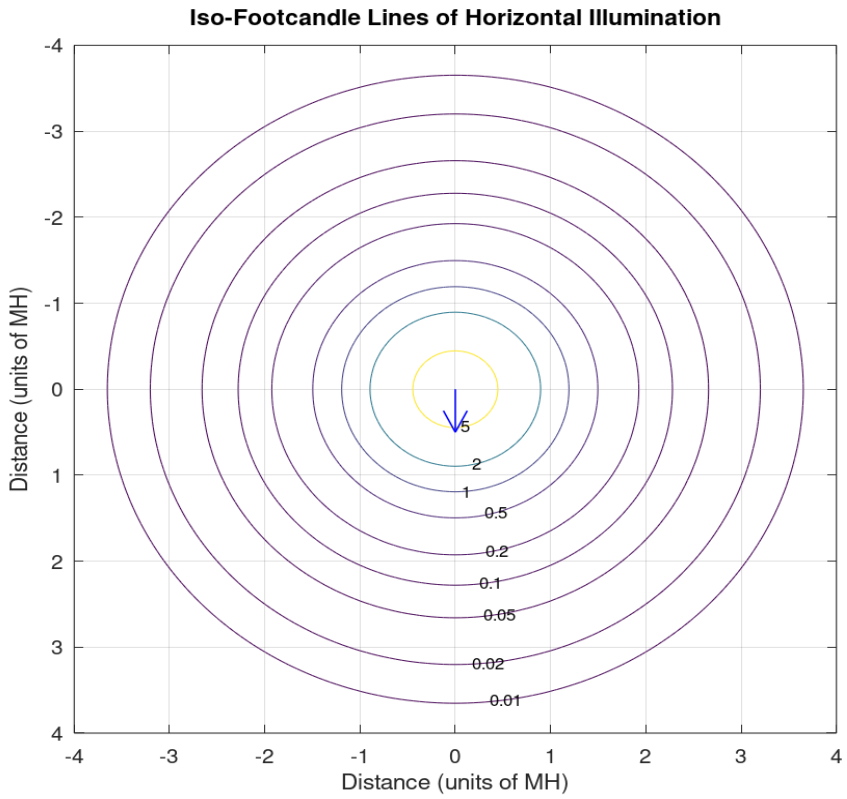
Iso-Illuminance Plot



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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Additional Pictures of Test Subject

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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 publications: IES LM-79-19 and ANSI C82.77-10:2014. 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.