LightLab INTERNATIONAL ALLENTOWN LLC

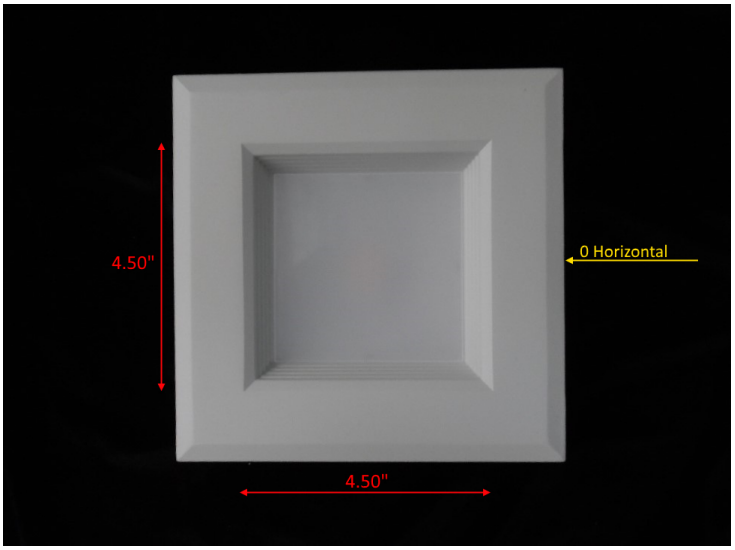
NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA001148-004

Indoor Distribution Photometry Test Report

Catalog Number: RTL/63SQ/WH/90/D-28
Recessed mounted, formed white aluminum housing, stepped white aluminum reflector, translucent white plastic enclosure.
28 white LEDs, one 2835-282A LED board.
One LED driver.



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

Performance Summary					
Input Voltage	120.0	V	Luminous Flux	1154.7	Lumens
Input Current	0.1323	A	Total Efficacy	75.5	Lm/W
Input Power	15.30	W	Downward Flux	1154.7	Lumens
Frequency	60.00	Hz	Downward Flux	100.0	% of Total
Power Factor	0.964				
Current THD	24.0	%			

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

Test date: 08/09/2019
Report date: 08/09/2019

Signed: Michael L. Grather

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USA east coast LightLab Int'l Allentown LLC, 905 Harrison Street, Suite 135, Allentown, PA 18103, Ph: +1 484-273-0705, www.lightlabint.com (issuing laboratory)
Australasia & S.E. Asia LightLab International, 50 Redcliffe Gardens Drive, Clontarf, Queensland, 4019, Australia, Ph : +61 7 3283 7862, Fx : +61 7 3283 8751, www.lightlabint.com

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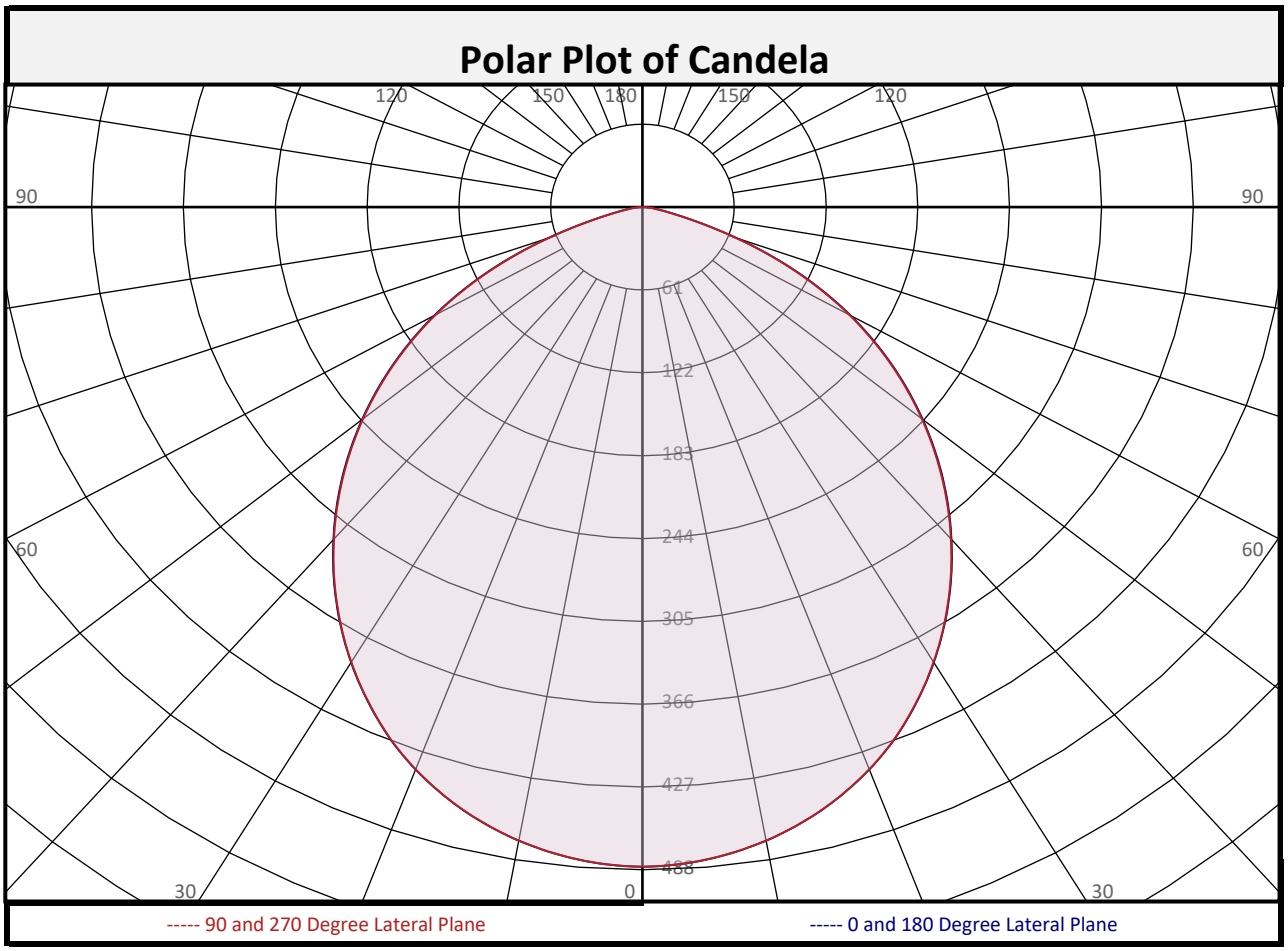

Zonal Flux Summary									
Zone (Deg Vert)	Flux (Lumens)	Percent of Total	Zone (Deg Vert)	Flux (Lumens)	Percent of Total	Zone (Deg Vert)	Flux (Lumens)	Percent of Total
0-10	45.8	4.0%	90-100	0.0	0.0%	0-20	175.4	15.2%
10-20	129.6	11.2%	100-110	0.0	0.0%	0-30	367.3	31.8%
20-30	191.9	16.6%	110-120	0.0	0.0%	0-40	590.0	51.1%
30-40	222.7	19.3%	120-130	0.0	0.0%	0-60	992.5	86.0%
40-50	219.1	19.0%	130-140	0.0	0.0%	0-80	1149	99.5%
50-60	183.4	15.9%	140-150	0.0	0.0%	10-90	1109	96.0%
60-70	118.5	10.3%	150-160	0.0	0.0%	20-50	633.7	54.9%
70-80	38.4	3.3%	160-170	0.0	0.0%	40-90	564.7	48.9%
80-90	5.2	0.5%	170-180	0.0	0.0%	60-90	162.2	14.0%
0-90	1155	100.0%	90-180	0.0	0.0%	0-180	1155	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	486	486	486	486	486	486	486	486	486
	2.5	485	485	485	485	485	485	485	485	485
	5	482	483	483	483	482	483	483	483	482
	7.5	479	479	479	479	479	479	479	479	479
	10	474	474	474	474	474	474	474	474	474
	12.5	467	467	467	467	467	467	467	467	467
	15	460	460	460	460	460	460	460	460	460
	17.5	451	451	451	451	451	451	451	451	451
	20	441	441	441	441	441	441	441	441	441
	22.5	429	430	430	430	429	430	430	430	429
	25	416	417	418	417	416	417	418	417	416
	27.5	402	403	405	403	402	403	405	403	402
	30	387	388	390	388	387	388	390	388	387
	32.5	371	373	375	373	371	373	375	373	371
	35	355	356	358	356	354	356	358	356	355
	37.5	338	339	341	339	337	339	341	339	338
	40	320	322	323	321	319	321	323	322	320
	42.5	301	304	305	303	301	303	305	304	301
	45	282	285	286	284	282	284	286	285	282
	47.5	263	266	267	265	262	265	267	266	263
	50	243	246	248	246	242	246	248	246	243
	52.5	223	226	228	226	222	226	228	226	223
	55	202	206	208	205	202	205	208	206	202
	57.5	182	186	188	185	181	185	188	186	182
	60	160	165	168	164	159	164	168	165	160
	62.5	137	143	148	142	136	142	148	143	137
	65	114	121	127	120	113	120	127	121	114
	67.5	90	98	106	97	89	97	106	98	90
	70	66	74	85	74	66	74	85	74	66
	72.5	44	51	62	51	45	51	62	51	44
	75	28	32	40	32	28	32	40	32	28
	77.5	18	19	22	19	18	19	22	19	18
	80	11	12	12	12	11	12	12	12	11
	82.5	8	8	8	8	8	8	8	8	8
	85	5	5	4	5	5	5	4	5	5
	87.5	2	1	1	2	2	2	1	1	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	100	97		100	97	94		96	93	91		92	90	89	87
2	101	94	87	82		99	92	86	81		88	84	79		85	81	78		82	79	76	74
3	93	83	75	69		90	81	74	69		79	73	68		76	71	67		73	69	65	63
4	85	74	66	60		83	73	65	59		70	64	58		68	62	58		66	61	57	55
5	79	66	58	52		77	65	57	51		63	56	51		61	55	50		60	54	50	48
6	73	60	52	45		71	59	51	45		57	50	45		56	49	44		54	48	44	42
7	68	55	46	40		66	54	46	40		52	45	40		51	44	40		50	44	39	37
8	63	50	42	36		61	49	41	36		48	41	36		47	40	36		46	40	35	34
9	59	46	38	33		58	45	38	33		44	37	32		43	37	32		42	36	32	30
10	55	42	35	30		54	42	35	30		41	34	29		40	34	29		39	33	29	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	13.5	7.14	7.13
8.0	7.6	9.52	9.51
10.0	4.9	11.90	11.89
12.0	3.4	14.28	14.27
14.0	2.5	16.66	16.65
16.0	1.9	19.04	19.03

Average Luminance (cd/m^2)

	0 deg Plane	45 deg Plane	90 deg Plane
0	37183	37183	37183
45	30574	30945	30481
55	27019	27789	26902
65	20658	23053	20502
75	8197	11711	8358
85	4025	3862	4076

Spacing Criterion

0 degree plane:	1.2
90 degree plane:	1.2
180 degree plane:	1.2
270 degree plane:	1.2

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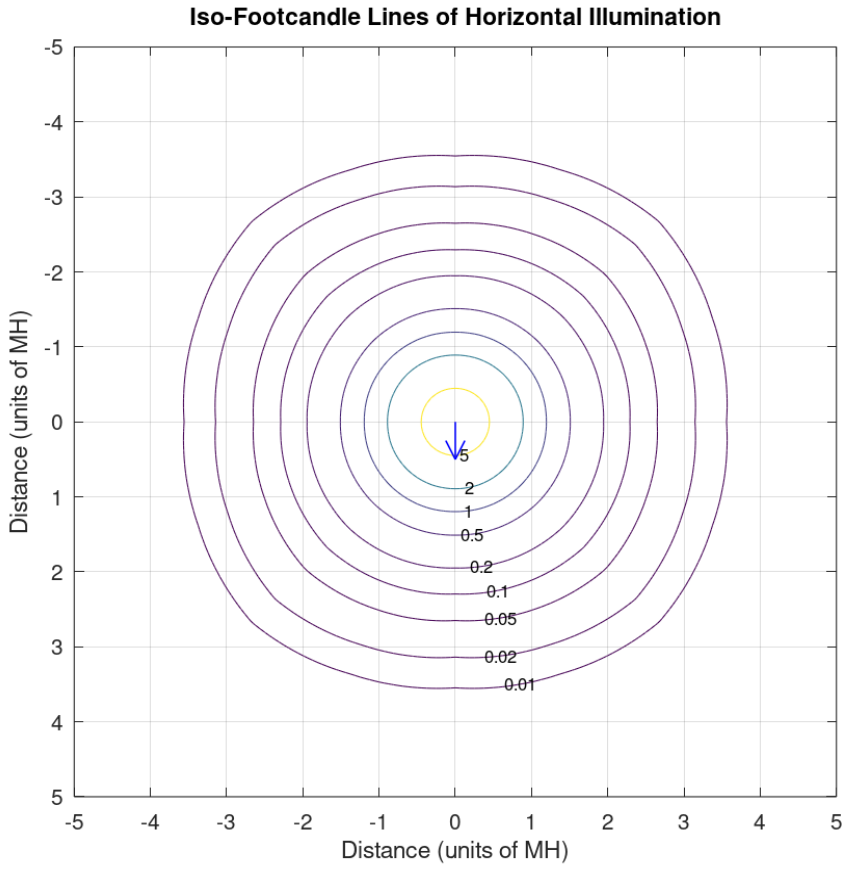
Iso-Illuminance Plot



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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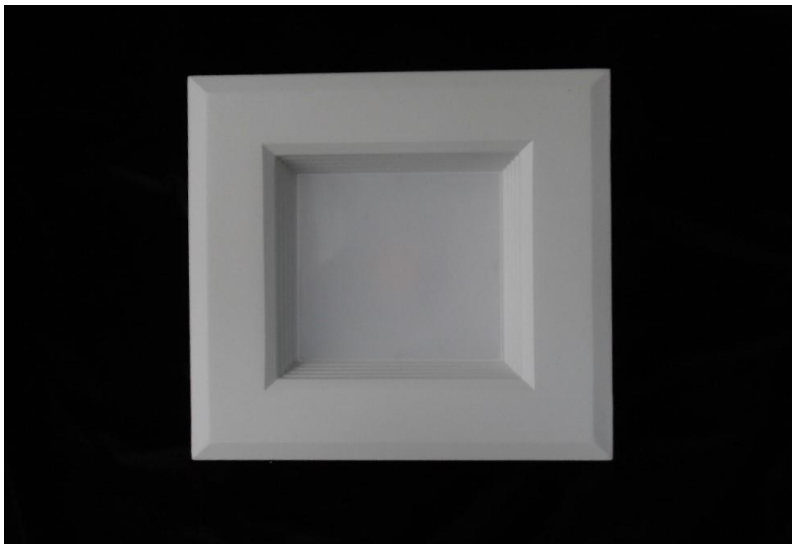
Additional Pictures of Test Subject



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Test Distance	9.5 m
Ambient Temperature	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 publications: IES LM-79-08 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.