LightLab INTERNATIONAL ALLENTOWN LLC

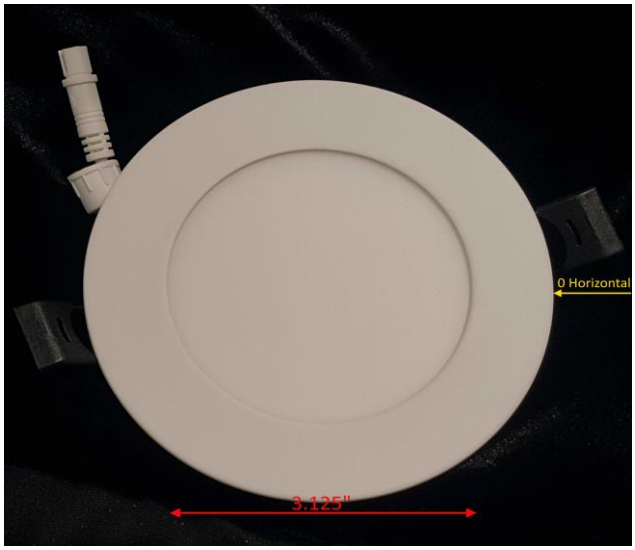
NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA001204-007

Indoor Distribution Photometry Test Report

Catalog Number: RDL/43RND/9/WH-97
LED indoor recessed downlight, formed steel housing, formed white aluminum trim with clear patterned plastic lens above translucent white plastic enclosure.
36 white LEDs
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	604.1	Lumens
Input Current	0.1009	A	Total Efficacy	66.6	Lm/W
Input Power	9.07	W	Downward Flux	604.1	Lumens
Frequency	60.00	Hz	Downward Flux	100.0	% of Total
Power Factor	0.748				
Current THD	40.9	%			

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

Test date: 02/14/2020
Report date: 02/17/2020

Signed: Michael L. Grather

USA west coast LightLab International, LLC, 24825 N. 16th Avenue, Suite 125, Phoenix, AZ, 85085, Ph : +1 623-434-1499, Fx : +1 623-434-1492, www.lightlabint.com
USA east coast LightLab Int'l Allentown LLC, 905 Harrison Street, Suite 135, Allentown, PA 18103, Ph: +1 484-273-0705, www.lightlaballentown.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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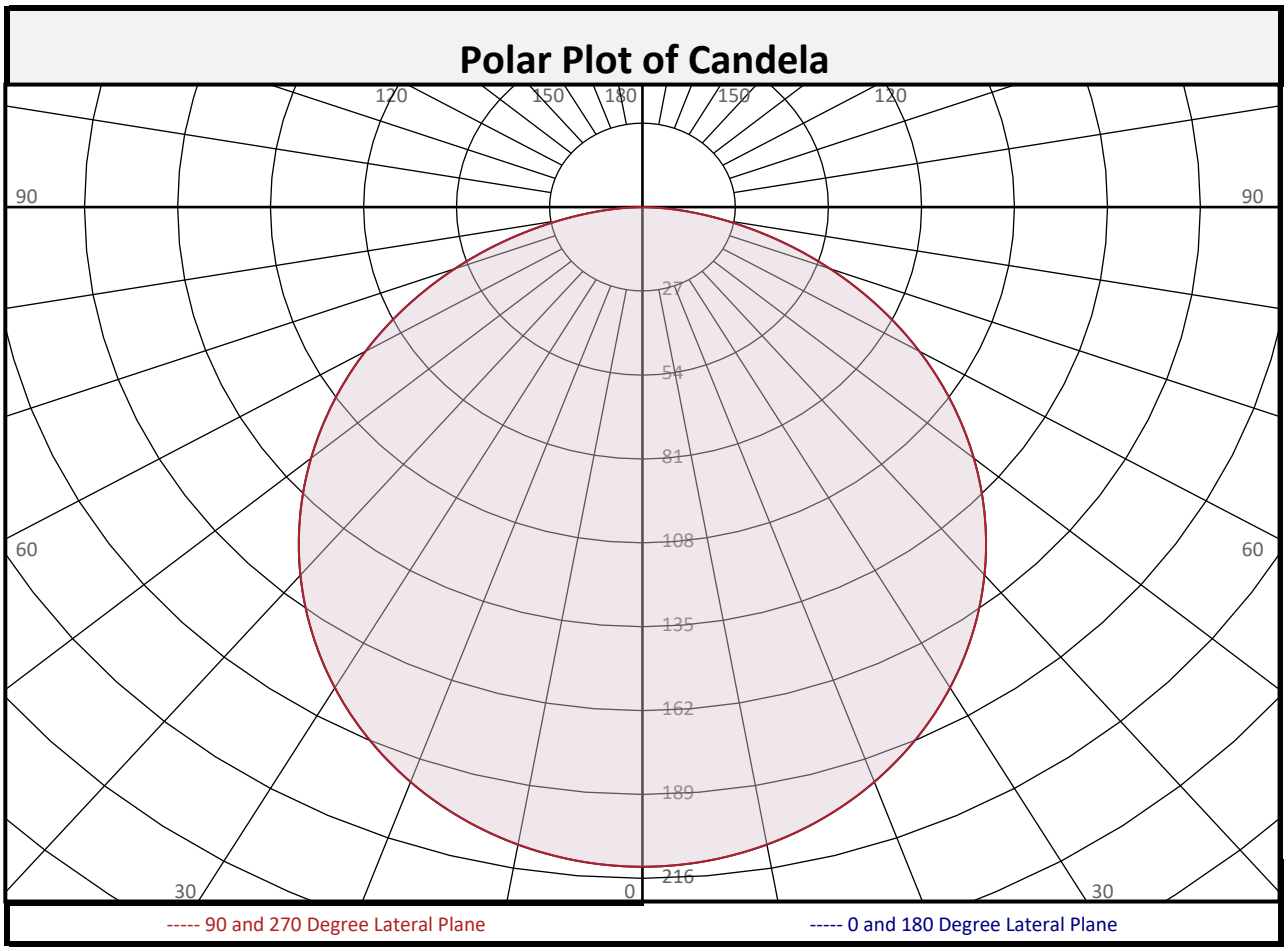

Zonal Flux Summary									
Zone (Deg Vert)	Flux (Lumens)	Percent of Total	Zone (Deg Vert)	Flux (Lumens)	Percent of Total	Zone (Deg Vert)	Flux (Lumens)	Percent of Total
0-10	20.1	3.3%	90-100	0.0	0.0%	0-20	77.5	12.8%
10-20	57.4	9.5%	100-110	0.0	0.0%	0-30	164.3	27.2%
20-30	86.8	14.4%	110-120	0.0	0.0%	0-40	268.9	44.5%
30-40	104.6	17.3%	120-130	0.0	0.0%	0-60	475.1	78.7%
40-50	108.4	17.9%	130-140	0.0	0.0%	0-80	592.6	98.1%
50-60	97.9	16.2%	140-150	0.0	0.0%	10-90	584.0	96.7%
60-70	74.7	12.4%	150-160	0.0	0.0%	20-50	299.8	49.6%
70-80	42.8	7.1%	160-170	0.0	0.0%	40-90	335.2	55.5%
80-90	11.4	1.9%	170-180	0.0	0.0%	60-90	128.9	21.3%
0-90	604.1	100.0%	90-180	0.0	0.0%	0-180	604.1	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	212	212	212	212	212	212	212	212	212
	2.5	212	212	212	212	212	212	212	212	212
	5	211	211	211	211	211	211	211	211	211
	7.5	210	210	210	210	210	210	210	210	210
	10	208	208	208	208	208	208	208	208	208
	12.5	206	206	206	206	206	206	206	206	206
	15	203	203	203	203	203	203	203	203	203
	17.5	200	200	200	200	200	200	200	200	200
	20	197	197	197	197	197	197	197	197	197
	22.5	193	193	193	193	193	193	193	193	193
	25	188	188	188	188	188	188	188	188	188
	27.5	184	184	184	184	184	184	184	184	184
	30	179	179	179	179	179	179	179	179	179
	32.5	173	173	173	173	173	173	173	173	173
	35	167	167	167	167	167	167	167	167	167
	37.5	161	161	161	161	161	161	161	161	161
	40	154	154	154	154	154	154	154	154	154
	42.5	148	148	148	148	148	148	148	148	148
	45	141	141	141	141	141	141	141	141	141
	47.5	133	133	133	133	133	133	133	133	133
	50	126	126	126	126	126	126	126	126	126
	52.5	118	118	118	118	118	118	118	118	118
	55	110	110	110	110	110	110	110	110	110
	57.5	101	101	101	101	101	101	101	101	101
	60	93	93	93	93	93	93	93	93	93
	62.5	84	84	84	84	84	84	84	84	84
	65	75	75	75	75	75	75	75	75	75
	67.5	67	67	67	67	67	67	67	67	67
	70	58	58	58	58	58	58	58	58	58
	72.5	49	49	49	49	49	49	49	49	49
	75	40	40	40	40	40	40	40	40	40
	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	4	4	4	4	4	4	4	4	4
	90	0	0	0	0	0	0	0	0	0

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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	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	104	100	96		106	102	98	94		97	94	91		93	91	88		90	88	86	84
2	99	90	84	78		96	89	82	77		85	80	75		82	77	73		79	75	72	69
3	90	79	71	64		87	78	70	64		75	68	63		72	66	62		69	65	61	58
4	82	70	61	55		80	69	61	54		66	59	53		64	58	53		62	56	52	50
5	76	63	54	47		74	62	53	47		59	52	46		57	51	46		56	50	45	43
6	70	56	47	41		68	55	47	41		54	46	40		52	45	40		50	44	40	38
7	65	51	42	36		63	50	42	36		49	41	36		47	40	35		46	40	35	33
8	60	47	38	32		59	46	38	32		45	37	32		43	37	32		42	36	31	30
9	56	43	35	29		55	42	34	29		41	34	29		40	33	29		39	33	28	27
10	53	39	32	26		51	39	31	26		38	31	26		37	31	26		36	30	26	24

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	5.9	7.51	7.51
8.0	3.3	10.01	10.01
10.0	2.1	12.51	12.51
12.0	1.5	15.01	15.01
14.0	1.1	17.51	17.51
16.0	0.8	20.01	20.01

Average Luminance (cd/m^2)

	0 deg Plane	45 deg Plane	90 deg Plane
0	42893	42893	42893
45	40158	40158	40158
55	38598	38598	38598
65	36102	36102	36102
75	31587	31587	31587
85	23068	23068	23068

Spacing Criterion

Spacing Criterion: 1.3

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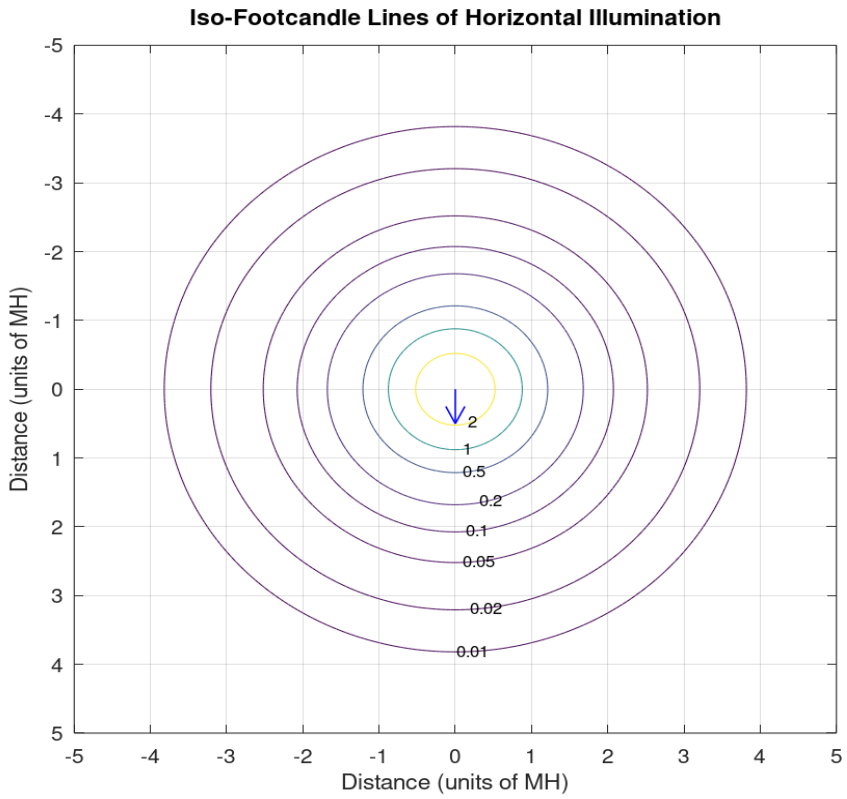
Iso-Illuminance Plot



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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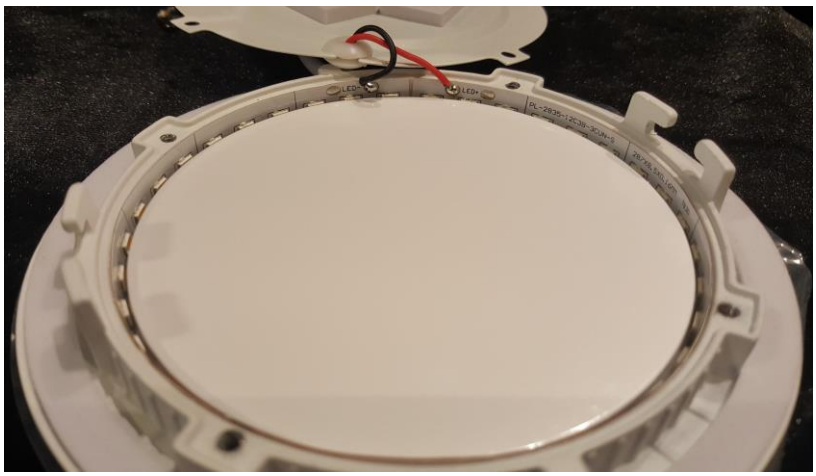
Additional Pictures of Test Subject



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Test Distance	9.5 m
Ambient Temperature	25.1 °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.