LightLab INTERNATIONAL ALLENTOWN LLC

NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA001406-002

Indoor Distribution Photometry Test Report

Catalog Number: F-VTC24/40/840/D-79
Recessed mounted, formed steel housing,
translucent white plastic center enclosure.
312 white LEDs, three LED boards with 104 LEDs each
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	4964.3	Lumens
Input Current	0.3200	A	Total Efficacy	131.1	Lm/W
Input Power	37.86	W	Downward Flux	4964.3	Lumens
Frequency	60.00	Hz	Downward Flux	100.0	% of Total
Power Factor	0.986				
Current THD	3.3	%			

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

Test date: 02/08/2021
Report date: 02/09/2021

Signed: Michael L. Grather

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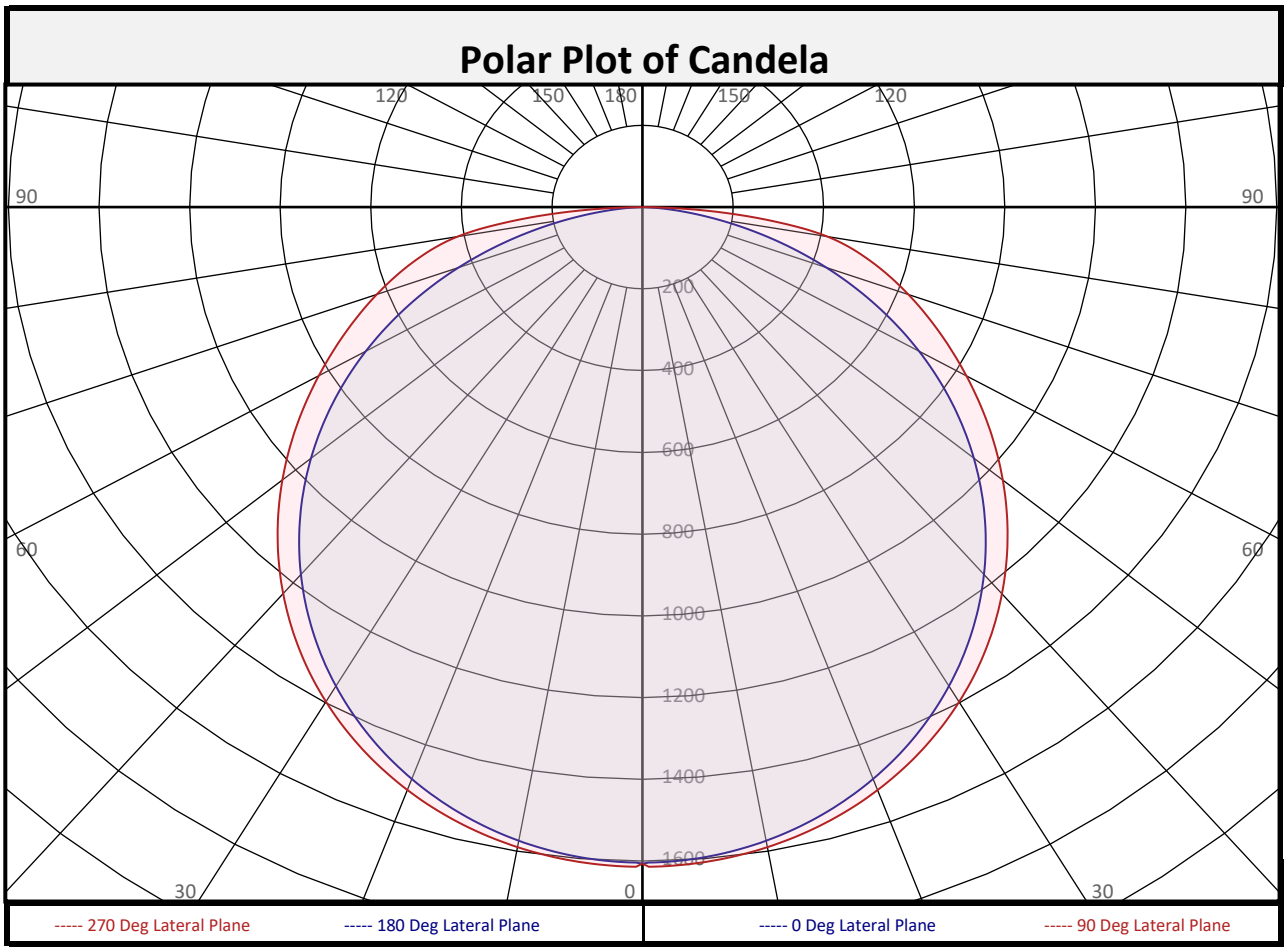

Zonal Flux Summary									
Zone (Deg Vert)	Flux (Lumens)	Percent of Total	Zone (Deg Vert)	Flux (Lumens)	Percent of Total	Zone (Deg Vert)	Flux (Lumens)	Percent of Total
0-10	152.2	3.1%	90-100	0.0	0.0%	0-20	589.0	11.9%
10-20	436.8	8.8%	100-110	0.0	0.0%	0-30	1255	25.3%
20-30	665.9	13.4%	110-120	0.0	0.0%	0-40	2065	41.6%
30-40	810.5	16.3%	120-130	0.0	0.0%	0-60	3712	74.8%
40-50	853.5	17.2%	130-140	0.0	0.0%	0-80	4797	96.6%
50-60	792.7	16.0%	140-150	0.0	0.0%	10-90	4812	96.9%
60-70	644.0	13.0%	150-160	0.0	0.0%	20-50	2330	46.9%
70-80	441.6	8.9%	160-170	0.0	0.0%	40-90	2899	58.4%
80-90	167.0	3.4%	170-180	0.0	0.0%	60-90	1253	25.2%
0-90	4964	100.0%	90-180	0.0	0.0%	0-180	4964	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	1606	1606	1606	1606	1606	1606	1606	1606	1606
	2.5	1602	1602	1602	1608	1613	1608	1602	1602	1602
	5	1596	1596	1597	1603	1608	1603	1597	1596	1596
	7.5	1587	1587	1589	1596	1601	1596	1589	1587	1587
	10	1574	1575	1578	1585	1590	1585	1578	1575	1574
	12.5	1558	1559	1563	1571	1577	1571	1563	1559	1558
	15	1538	1540	1546	1555	1560	1555	1546	1540	1538
	17.5	1515	1518	1525	1535	1541	1535	1525	1518	1515
	20	1489	1492	1500	1512	1518	1512	1500	1492	1489
	22.5	1460	1464	1473	1486	1492	1486	1473	1464	1460
	25	1427	1432	1443	1458	1464	1458	1443	1432	1427
	27.5	1392	1397	1410	1426	1432	1426	1410	1397	1392
	30	1353	1360	1375	1391	1398	1391	1375	1360	1353
	32.5	1312	1320	1336	1354	1361	1354	1336	1320	1312
	35	1268	1277	1295	1315	1321	1315	1295	1277	1268
	37.5	1222	1232	1252	1272	1279	1272	1252	1232	1222
	40	1173	1184	1206	1228	1235	1228	1206	1184	1173
	42.5	1121	1134	1158	1181	1188	1181	1158	1134	1121
	45	1068	1082	1107	1132	1140	1132	1107	1082	1068
	47.5	1012	1028	1055	1082	1090	1082	1055	1028	1012
	50	955	971	1002	1030	1038	1030	1002	971	955
	52.5	895	913	946	976	986	976	946	913	895
	55	833	853	889	922	932	922	889	853	833
	57.5	770	792	831	867	879	867	831	792	770
	60	705	729	772	812	826	812	772	729	705
	62.5	638	664	712	756	773	756	712	664	638
	65	570	599	652	703	723	703	652	599	570
	67.5	501	533	593	651	673	651	593	533	501
	70	431	467	535	600	625	600	535	467	431
	72.5	361	402	479	549	576	549	479	402	361
	75	292	337	425	499	527	499	425	337	292
	77.5	224	276	374	448	475	448	374	276	224
	80	160	218	323	391	414	391	323	218	160
	82.5	102	168	264	309	321	309	264	168	102
	85	53	121	177	201	209	201	177	121	53
	87.5	18	56	77	87	91	87	77	56	18
	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	108	102	98	94		105	100	96	92		96	92	89		92	89	86		88	86	84	82
2	97	89	81	75		95	87	80	74		83	77	72		80	75	71		77	73	69	67
3	88	77	69	62		86	76	68	61		73	66	60		70	64	59		67	62	58	56
4	81	68	59	52		78	67	58	52		64	57	51		62	55	50		60	54	50	47
5	74	61	52	45		72	60	51	44		58	50	44		56	49	43		54	48	43	41
6	68	55	45	39		66	54	45	39		52	44	38		50	43	38		49	42	38	35
7	63	50	40	34		62	49	40	34		47	39	34		46	39	33		44	38	33	31
8	59	45	36	30		57	44	36	30		43	35	30		42	35	30		41	34	30	28
9	55	41	33	27		54	41	33	27		40	32	27		39	32	27		37	31	27	25
10	52	38	30	25		50	38	30	25		37	29	25		36	29	24		35	29	24	22

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	44.6	7.52	7.75
8.0	25.1	10.02	10.34
10.0	16.1	12.53	12.92
12.0	11.2	15.03	15.51
14.0	8.2	17.54	18.09
16.0	6.3	20.04	20.68

Average Luminance (cd/m^2)

	0 deg Plane	45 deg Plane	90 deg Plane
0	2255	2255	2255
45	2120	2198	2262
55	2039	2175	2282
65	1893	2166	2400
75	1583	2306	2857
85	850	2844	3373

Spacing Criterion

0 degree plane:	1.3
90 degree plane:	1.3
180 degree plane:	1.3
270 degree plane:	1.3

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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	19.3	21.0	19.7	21.3	21.6	20.0	21.7	20.3	22.0	22.3
	3H	21.1	22.6	21.5	23.0	23.3	22.3	23.9	22.7	24.2	24.6
	4H	21.7	23.2	22.1	23.6	23.9	23.5	24.9	23.9	25.3	25.7
	6H	22.2	23.5	22.6	23.9	24.3	24.6	26.0	25.0	26.3	26.7
	8H	22.3	23.6	22.7	24.0	24.4	25.1	26.4	25.5	26.8	27.2
	12H	22.4	23.6	22.8	24.0	24.4	25.5	26.7	25.9	27.1	27.5
4H	2H	20.1	21.5	20.5	21.9	22.3	20.6	22.1	21.0	22.4	22.8
	3H	22.2	23.4	22.6	23.8	24.2	23.3	24.5	23.7	24.9	25.3
	4H	23.0	24.1	23.4	24.5	24.9	24.6	25.7	25.0	26.1	26.6
	6H	23.5	24.5	24.0	25.0	25.4	25.9	26.9	26.4	27.3	27.8
	8H	23.7	24.6	24.2	25.1	25.5	26.5	27.4	26.9	27.9	28.3
	12H	23.8	24.7	24.3	25.1	25.6	26.9	27.8	27.4	28.2	28.7
8H	4H	23.6	24.5	24.0	24.9	25.4	24.9	25.9	25.4	26.3	26.8
	6H	24.4	25.1	24.9	25.6	26.1	26.5	27.3	27.0	27.8	28.2
	8H	24.6	25.3	25.1	25.8	26.3	27.2	27.9	27.7	28.4	28.9
	12H	24.8	25.5	25.4	26.0	26.5	27.8	28.4	28.3	28.9	29.5
12H	4H	23.7	24.6	24.2	25.0	25.5	25.0	25.8	25.5	26.3	26.8
	6H	24.6	25.3	25.1	25.8	26.3	26.6	27.3	27.1	27.8	28.3
	8H	25.0	25.6	25.5	26.1	26.7	27.4	28.0	27.9	28.5	29.1

Maximum UGR = 29.5

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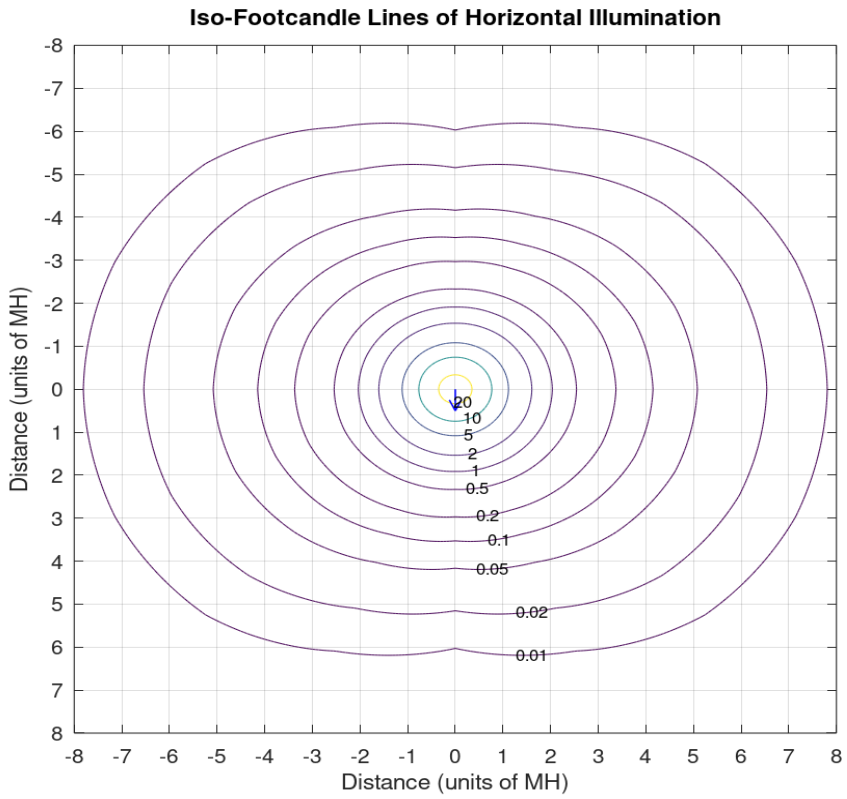
Iso-Illuminance Plot



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	25.0 °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.