LightLab INTERNATIONAL ALLENTOWN LLC

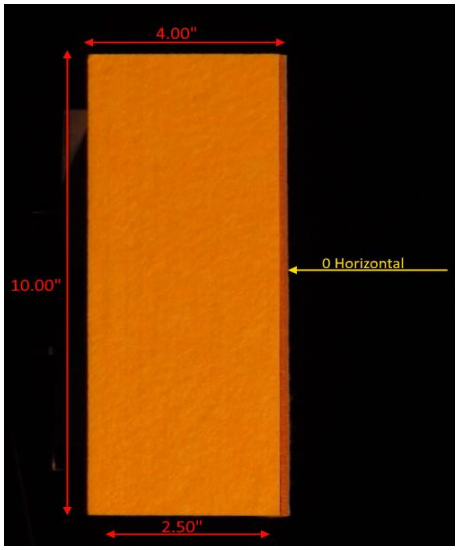
NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA001208-001

Indoor Distribution Photometry Test Report

Catalog Number: 90543W1210A
Wall mounted, formed steel and aluminum housing, solid fabric outer enclosures with white plastic inner lining, translucent white plastic top and bottom enclosures.
48 white LEDs, Two Samsung Electronics SI-B8V114280WW LTM282C G2 boards with 24 LEDs each.
One Philips Advance Xitanium XI025C070V054DSM5 LED driver



Prepared For:
Lumetta, Inc
33 Minnesota Avenue
Warwick, RI 02888, USA

Performance Summary					
Input Voltage	120.0	V	Luminous Flux	770.0	Lumens
Input Current	0.1064	A	Total Efficacy	61.4	Lm/W
Input Power	12.54	W	Downward Flux	370.7	Lumens
Frequency	60.00	Hz	Downward Flux	48.1	% of Total
Power Factor	0.982				
Current THD	14.6	%			

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

Test date: 01/08/2019
Report date: 01/09/2020

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.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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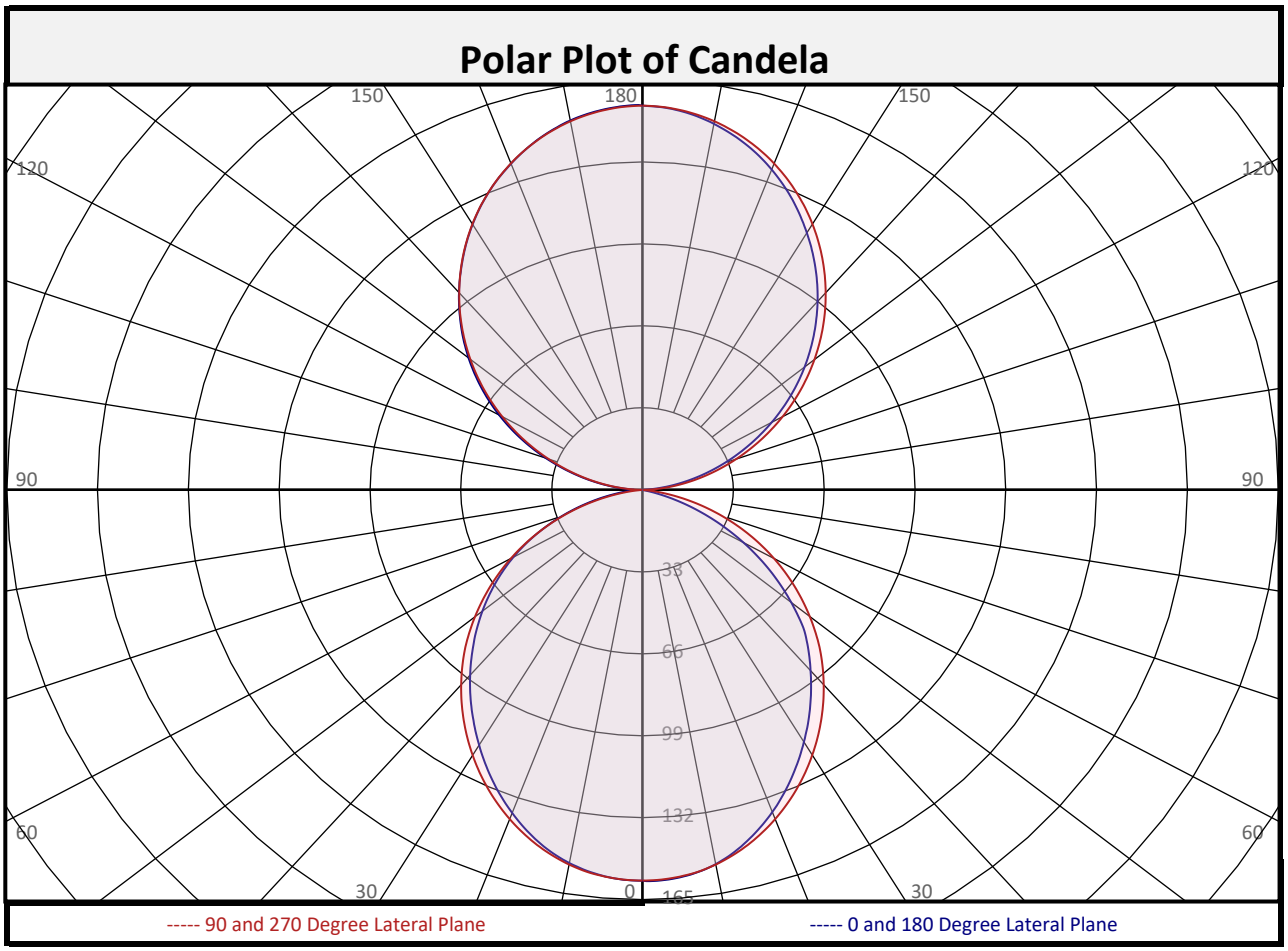

Zonal Flux Summary

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	14.8	1.9%	90-100	6.7	0.9%	0-20	56.2	7.3%
10-20	41.4	5.4%	100-110	26.3	3.4%	0-30	116.3	15.1%
20-30	60.1	7.8%	110-120	46.1	6.0%	0-40	185.1	24.0%
30-40	68.8	8.9%	120-130	62.3	8.1%	0-60	310.8	40.4%
40-50	68.0	8.8%	130-140	71.1	9.2%	0-80	367.6	47.7%
50-60	57.7	7.5%	140-150	70.6	9.2%	10-90	355.9	46.2%
60-70	39.4	5.1%	150-160	60.5	7.9%	20-50	196.9	25.6%
70-80	17.4	2.3%	160-170	41.0	5.3%	40-90	185.6	24.1%
80-90	3.1	0.4%	170-180	14.6	1.9%	60-90	59.9	7.8%
0-90	370.7	48.1%	90-180	399.2	51.8%	0-180	770.0	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	157	157	157	157	157	157	157	157	157
	2.5	157	157	157	157	157	157	157	157	157
	5	157	157	156	156	156	156	156	156	156
	7.5	155	155	155	155	155	155	155	155	155
	10	153	153	153	153	153	153	153	153	153
	12.5	150	150	150	151	151	150	150	150	150
	15	146	147	147	148	148	148	147	147	147
	17.5	142	143	143	144	145	144	143	143	143
	20	138	138	139	140	141	141	140	139	138
	22.5	133	134	135	136	137	136	135	134	134
	25	128	129	130	132	133	132	131	129	129
	27.5	123	123	125	127	128	128	126	124	124
	30	117	118	120	122	123	123	121	119	119
	32.5	112	113	115	117	118	118	116	114	113
	35	106	107	109	112	113	112	110	109	108
	37.5	101	102	104	107	108	107	105	103	103
	40	95	96	98	101	102	102	100	98	97
	42.5	89	90	93	95	97	96	94	93	92
	45	84	85	87	90	91	91	89	88	87
	47.5	78	79	82	84	85	85	83	82	81
	50	71	73	76	78	79	79	78	77	76
	52.5	64	66	70	72	73	73	72	71	71
	55	56	59	65	66	67	67	67	66	65
	57.5	49	52	58	60	61	61	61	60	60
	60	42	45	51	54	55	55	55	55	54
	62.5	35	38	44	48	49	49	49	49	49
	65	29	31	37	42	43	43	43	43	43
	67.5	22	24	30	36	37	37	38	38	37
	70	16	18	23	30	31	31	32	32	32
	72.5	10	12	17	24	25	26	26	26	26
	75	5	7	11	17	19	20	21	21	21
	77.5	1	2	6	11	14	15	15	16	16
	80	0	0	2	6	9	10	11	12	11
	82.5	0	0	0	2	5	6	7	8	8
	85	0	0	0	0	1	3	4	5	6
	87.5	0	0	0	0	0	2	3	4	4
	90	0	0	0	0	0	1	3	4	4

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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	1	3	4	4
92.5	0	0	0	1	2	2	3	3	3
95	2	3	4	5	6	7	7	7	7
97.5	7	7	8	10	11	11	12	12	12
100	12	12	13	14	16	16	16	17	16
102.5	16	17	18	19	20	21	22	22	21
105	21	22	23	24	26	26	27	27	26
107.5	27	27	28	29	31	33	32	32	32
110	32	32	33	35	36	39	38	38	37
112.5	37	38	39	40	42	43	43	43	43
115	43	43	44	46	47	48	49	49	49
117.5	48	49	50	51	53	54	54	55	54
120	54	54	55	57	59	60	61	60	60
122.5	60	60	61	63	64	65	69	66	66
125	65	66	67	69	70	71	72	72	71
127.5	71	71	73	74	76	77	77	83	77
130	77	77	78	80	82	82	83	92	82
132.5	82	83	84	86	87	88	88	96	88
135	88	88	90	91	93	94	94	94	93
137.5	93	94	95	97	98	99	99	99	99
140	99	99	101	102	104	104	104	104	104
142.5	104	105	106	108	109	109	110	109	109
145	109	110	111	113	114	114	115	114	114
147.5	114	115	116	118	119	119	119	119	119
150	119	120	121	122	124	124	124	124	123
152.5	124	125	126	127	128	128	128	128	128
155	129	129	130	131	132	133	133	132	132
157.5	133	134	134	135	136	137	137	136	136
160	137	138	138	139	140	140	140	140	140
162.5	141	141	142	143	143	143	144	143	143
165	144	144	145	146	146	146	146	146	146
167.5	147	147	148	148	149	149	149	149	149
170	150	150	150	150	151	151	151	151	151
172.5	152	152	152	152	152	153	153	153	153
175	153	153	153	153	154	154	154	154	154
177.5	154	154	154	154	154	154	155	155	155
180	155	155	155	155	155	155	155	155	155

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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	107	107	107	107		98	98	98	98		82	82	82		68	68	68		54	54	54	48
1	98	94	90	86		90	86	83	80		73	70	68		60	59	57		49	48	47	41
2	89	82	76	71		82	76	71	66		64	60	57		53	51	48		43	41	40	35
3	82	72	65	59		75	67	61	56		57	52	48		47	44	41		38	36	34	30
4	75	64	56	50		68	59	53	47		50	45	41		42	38	35		34	32	29	26
5	69	57	49	43		63	53	46	41		45	40	36		38	34	31		31	28	26	23
6	63	51	43	38		58	48	41	35		41	35	31		34	30	27		28	25	23	20
7	58	46	38	33		54	43	36	31		37	31	27		31	27	24		26	23	20	18
8	54	42	34	29		50	39	32	28		34	28	24		29	24	21		24	21	18	16
9	51	38	31	26		47	36	29	25		31	26	22		26	22	19		22	19	16	14
10	47	35	28	23		43	33	26	22		28	23	20		24	20	17		20	17	15	13

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	4.4	6.78	7.04
8.0	2.5	9.04	9.39
10.0	1.6	11.30	11.74
12.0	1.1	13.56	14.08
14.0	0.8	15.82	16.43
16.0	0.6	18.08	18.78

Average Luminance (cd/m^2)

	0 deg Plane	45 deg Plane	90 deg Plane
0	8866	8866	8866
45	6697	6941	7280
55	5549	6348	6619
65	3829	4900	5740
75	1146	2391	4213
85	130	125	938

Spacing Criterion

0 degree plane:	1.1
90 degree plane:	1.2
180 degree plane:	1.1
270 degree plane:	1.2

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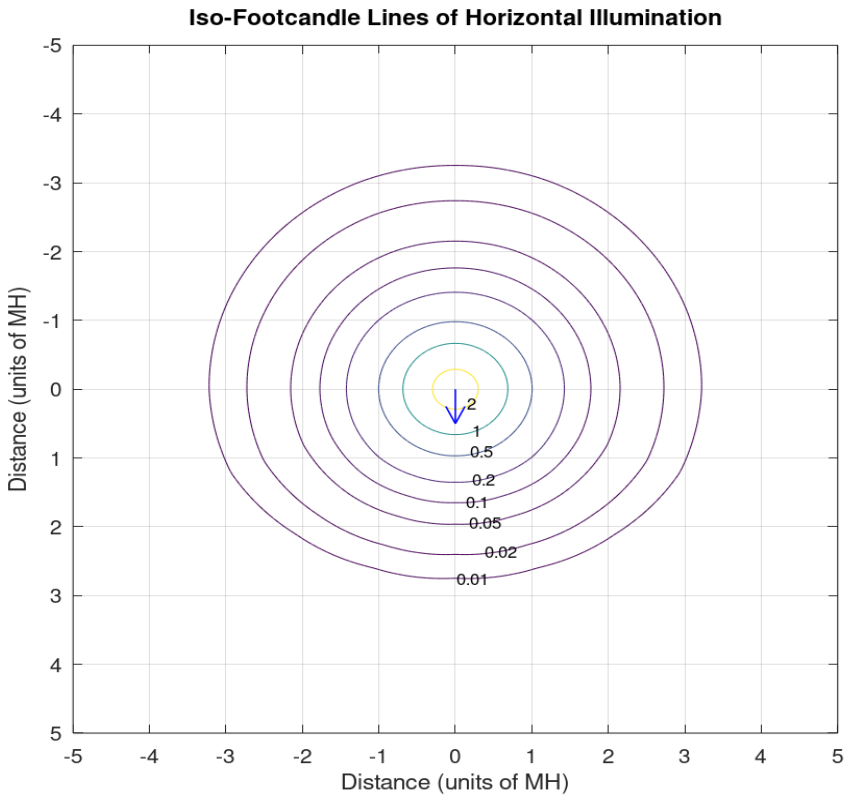
Iso-Illuminance Plot



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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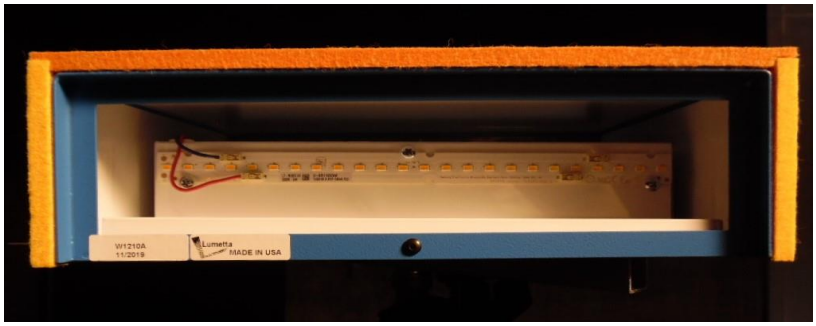
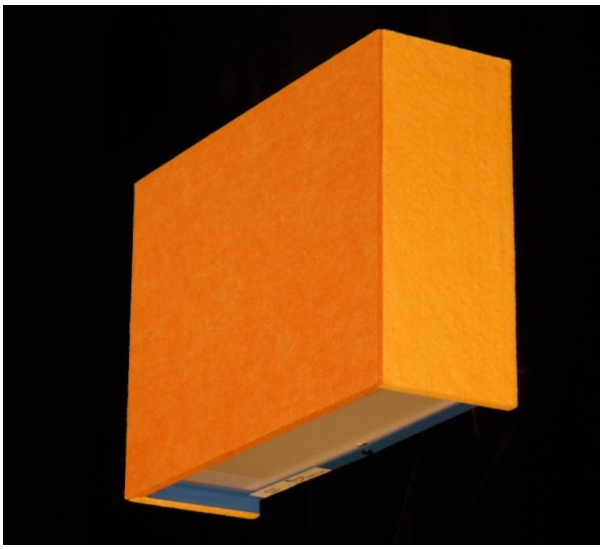
Additional Pictures of Test Subject





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Test Distance	9.5 m
Ambient Temperature	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.