LightLab INTERNATIONAL ALLENTOWN LLC

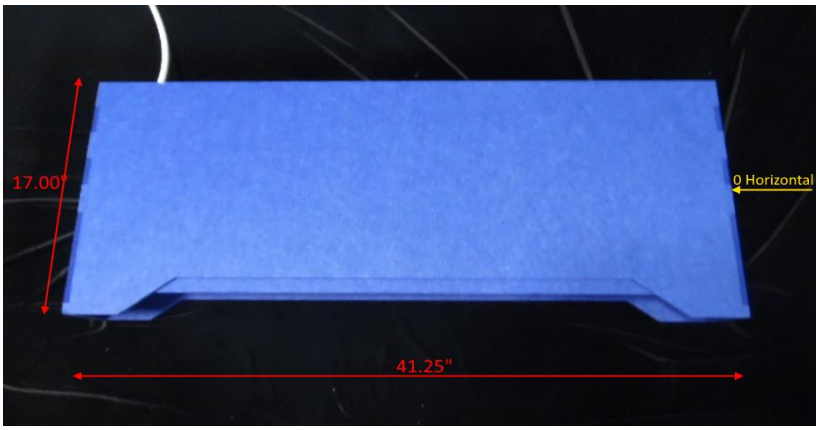
NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA001289-003

Indoor Distribution Photometry Test Report

Catalog Number: P4217A-Upper and Lower Sections
Pendant mounted, formed steel and aluminum housing, solid fabric outer enclosures with white plastic inner lining, translucent white plastic top and bottom enclosures.
144 white LEDs, six Samsung Electronics SI-B8V114280WW boards with 24 LEDs each.
One eldoLED SC 4202/L and one eldoLED DUALdrive DL75L-M2A0D1-A 350mA LOG LED driver



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

Performance Summary					
Input Voltage	120.0	V	Luminous Flux	3971.0	Lumens
Input Current	0.6596	A	Total Efficacy	50.3	Lm/W
Input Power	79.02	W	Downward Flux	830.1	Lumens
Frequency	60.00	Hz	Downward Flux	20.9	% of Total
Power Factor	0.998				
Current THD	4.9	%			

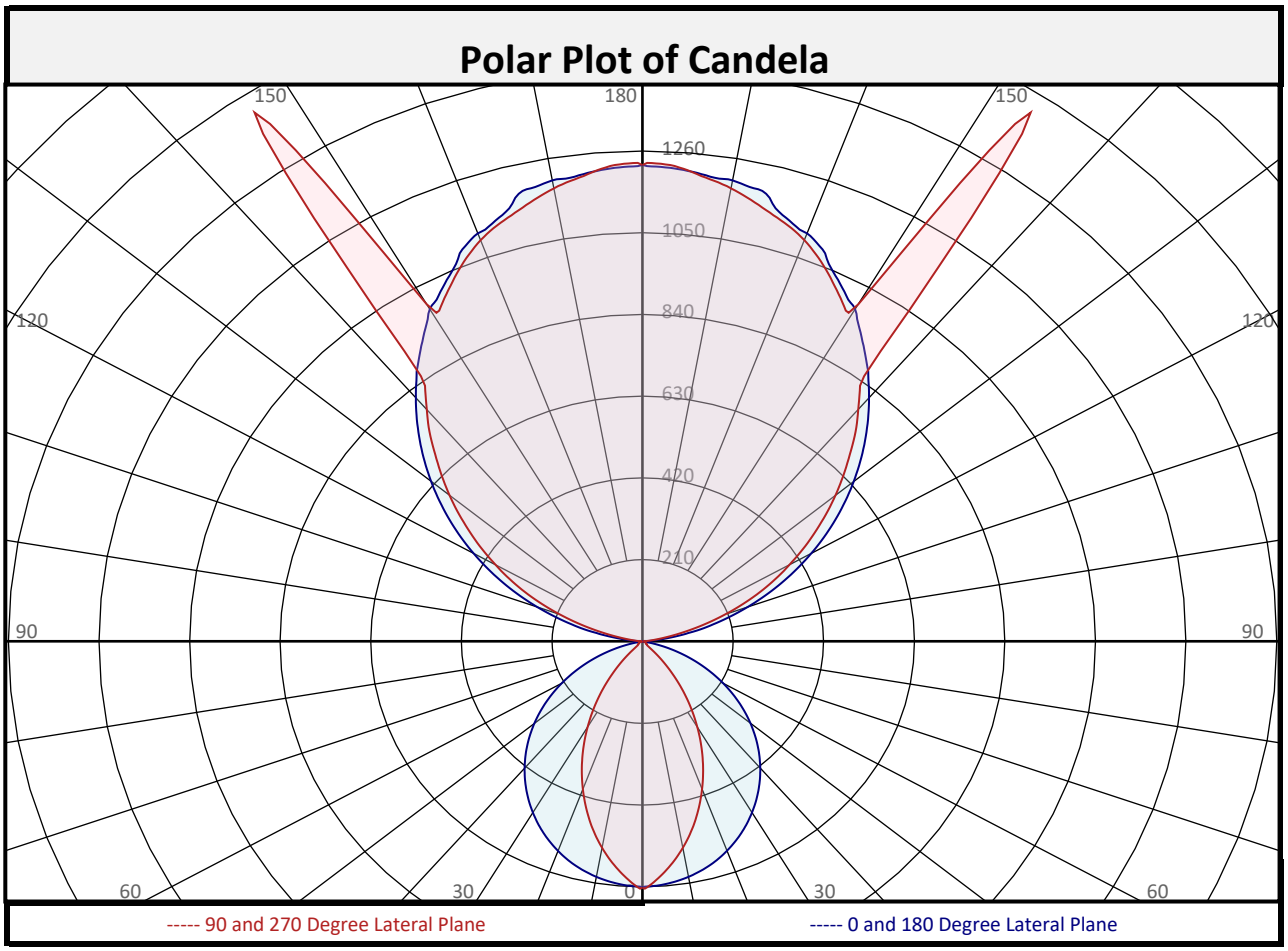
This test report was issued by LightLab International Allentown, LLC without alterations or erasures.

Test date: 07/31/2020
Report date: 08/04/2020

Signed: Michael L. Grather

Report of Test

LLIA001289-003



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	56.5	1.4%	90-100	17.6	0.4%	0-20	202.0	5.1%
10-20	145.5	3.7%	100-110	150.4	3.8%	0-30	390.6	9.8%
20-30	188.6	4.7%	110-120	337.9	8.5%	0-40	572.1	14.4%
30-40	181.4	4.6%	120-130	486.8	12.3%	0-60	778.3	19.6%
40-50	131.2	3.3%	130-140	599.5	15.1%	0-80	827.3	20.8%
50-60	75.0	1.9%	140-150	627.8	15.8%	10-90	773.6	19.5%
60-70	37.0	0.9%	150-160	481.3	12.1%	20-50	501.2	12.6%
70-80	12.1	0.3%	160-170	324.6	8.2%	40-90	258.0	6.5%
80-90	2.8	0.1%	170-180	115.0	2.9%	60-90	51.8	1.3%
0-90	830.1	20.9%	90-180	3141	79.1%	0-180	3971	100.0%

Report of Test

LLIA001289-003

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	632	632	632	632	632	632	632	632	632
	2.5	628	625	619	617	618	617	619	625	628
	5	625	614	601	594	594	594	601	614	625
	7.5	620	601	581	569	567	569	581	601	620
	10	614	586	559	542	538	542	559	586	614
	12.5	606	570	535	512	507	512	535	570	606
	15	596	552	510	481	475	481	510	552	596
	17.5	585	533	484	449	440	449	484	533	585
	20	572	513	456	415	404	415	456	513	572
	22.5	558	491	427	380	367	380	427	491	558
	25	543	468	396	345	330	345	396	468	543
	27.5	526	445	365	310	293	310	365	445	526
	30	508	420	334	274	255	274	334	420	508
	32.5	488	395	302	238	217	238	302	395	488
	35	468	368	270	203	181	203	270	368	468
	37.5	447	341	238	168	144	168	238	341	447
	40	425	314	206	134	108	134	206	314	425
	42.5	401	286	175	100	76	100	175	286	401
	45	377	258	144	69	44	69	144	258	377
	47.5	352	230	113	39	18	39	113	230	352
	50	327	201	83	16	14	16	83	201	327
	52.5	300	173	57	13	13	13	57	173	300
	55	273	145	31	12	12	12	31	145	273
	57.5	245	118	13	12	12	12	13	118	245
	60	217	92	11	11	11	11	11	92	217
	62.5	189	67	10	10	9	10	10	67	189
	65	161	45	10	9	8	9	10	45	161
	67.5	132	26	8	8	7	8	8	26	132
	70	105	10	7	7	7	7	7	10	105
	72.5	78	7	6	6	6	6	6	7	78
	75	52	5	5	5	5	5	5	5	52
	77.5	29	5	5	5	4	5	5	5	29
	80	10	4	4	4	4	4	4	4	10
	82.5	1	3	3	3	3	3	3	3	1
	85	1	2	3	3	3	3	3	2	1
	87.5	1	2	2	2	2	2	2	2	1
	90	0	1	2	2	2	2	2	1	0

Report of Test

LLIA001289-003

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	1	2	2	2	2	2	1	0
	92.5	3	2	2	2	2	2	2	2	3
	95	20	13	4	2	2	2	4	13	20
	97.5	48	41	25	16	13	16	25	41	48
	100	85	77	56	43	39	43	56	77	85
	102.5	129	118	96	79	73	79	96	118	129
	105	170	162	140	120	113	120	140	162	170
	107.5	214	209	186	166	158	166	186	209	214
	110	260	256	233	212	205	212	233	256	260
	112.5	308	306	279	261	253	261	279	306	308
	115	355	359	326	308	300	308	326	359	355
	117.5	403	495	374	354	347	354	374	495	403
	120	451	694	423	400	392	400	423	694	451
	122.5	499	697	472	448	440	448	472	697	499
	125	546	571	520	496	487	496	520	571	546
	127.5	593	602	571	545	535	545	571	602	593
	130	639	655	626	593	584	593	626	655	639
	132.5	684	694	680	641	632	641	680	694	684
	135	729	742	1046	692	680	692	1046	742	729
	137.5	774	781	1361	747	731	747	1361	781	774
	140	816	820	994	799	778	799	994	820	816
	142.5	859	868	866	1206	828	1206	866	868	859
	145	900	903	909	1540	1328	1540	909	903	900
	147.5	940	939	946	1053	1497	1053	946	939	940
	150	985	981	981	964	1001	964	981	981	985
	152.5	1013	1022	1016	1001	994	1001	1016	1022	1013
	155	1047	1056	1048	1038	1031	1038	1048	1056	1047
	157.5	1090	1089	1075	1072	1067	1072	1075	1089	1090
	160	1115	1118	1098	1101	1097	1101	1098	1118	1115
	162.5	1133	1145	1122	1122	1121	1122	1122	1145	1133
	165	1164	1164	1142	1143	1141	1143	1142	1164	1164
	167.5	1192	1182	1164	1165	1162	1165	1164	1182	1192
	170	1202	1193	1181	1184	1182	1184	1181	1193	1202
	172.5	1204	1204	1199	1198	1198	1198	1199	1204	1204
	175	1213	1214	1213	1214	1215	1214	1213	1214	1213
	177.5	1219	1220	1221	1225	1227	1225	1221	1220	1219
	180	1224	1224	1224	1224	1224	1224	1224	1224	1224

LightLab INTERNATIONAL ALLENTOWN LLC

NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA001289-003

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	100	100	100	100		89	89	89	89		67	67	67		47	47	47		29	29	29	21
1	92	88	84	81		81	78	75	73		60	58	56		43	41	41		27	26	26	19
2	84	77	72	67		74	69	64	61		53	50	47		38	36	35		24	24	23	17
3	77	69	62	57		68	61	56	51		47	43	40		34	32	30		22	21	20	15
4	71	61	54	48		63	54	48	44		42	38	35		31	28	26		20	19	18	13
5	65	54	47	42		58	49	43	38		38	34	30		28	25	23		18	17	16	12
6	60	49	42	36		53	44	38	33		34	30	27		25	23	20		17	15	14	11
7	55	44	37	32		49	40	33	29		31	27	24		23	20	18		16	14	13	10
8	51	40	33	28		46	36	30	26		28	24	21		21	18	16		15	13	12	9
9	48	37	30	25		43	33	27	23		26	22	19		20	17	15		13	12	11	8
10	45	34	27	22		40	30	25	21		24	20	17		18	15	13		13	11	10	8

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	17.6	7.19	4.62
8.0	9.9	9.58	6.15
10.0	6.3	11.98	7.69
12.0	4.4	14.37	9.23
14.0	3.2	16.77	10.77
16.0	2.5	19.17	12.31

Average Luminance (cd/m^2)

	0 deg Plane	45 deg Plane	90 deg Plane
0	5000	5000	5000
45	4220	1605	494
55	3764	422	166
65	3006	179	158
75	1602	165	157
85	75	239	265

Spacing Criterion

0 degree plane:	1.2
90 degree plane:	0.8
180 degree plane:	1.2
270 degree plane:	0.8

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

Report of Test

LLIA001289-003

UGR TABLE - CORRECTED

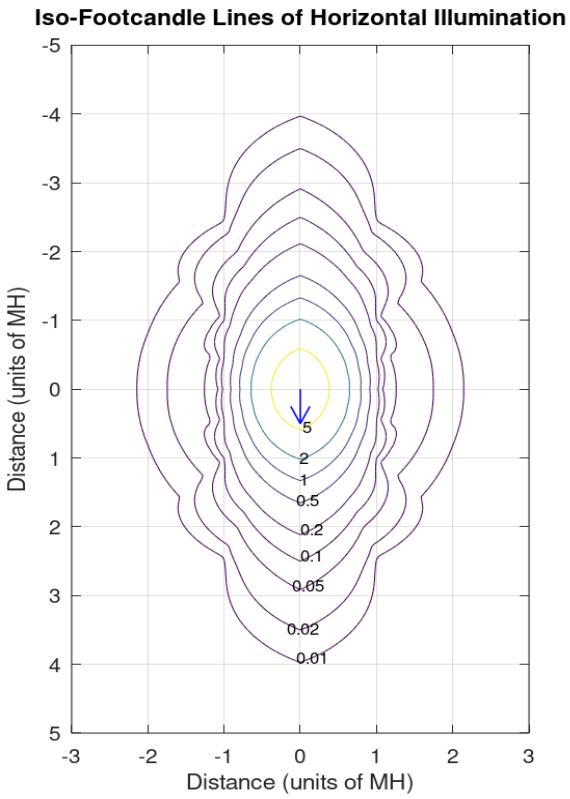
Reflectances											
Ceiling Cavity		70	70	50	50	30	70	70	50	50	30
Walls		50	30	50	30	30	50	30	50	30	30
Floor Cavity		20	20	20	20	20	20	20	20	20	20
Room Size		UGR Viewed Crosswise					UGR Viewed Endwise				
X=2H	Y=2H	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
	3H	4.8	4.8	4.8	4.8	4.9	4.8	4.8	4.8	4.8	4.8
	4H	4.8	4.8	4.8	4.8	5.0	4.8	4.8	4.8	4.8	4.8
	6H	4.8	4.8	4.8	4.8	4.9	4.8	4.8	4.8	4.8	4.8
	8H	4.8	4.8	4.8	4.8	4.9	4.8	4.8	4.8	4.8	4.8
	12H	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
4H	2H	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
	3H	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
	4H	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
	6H	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
	8H	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
	12H	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
8H	4H	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
	6H	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
	8H	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
	12H	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
12H	4H	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
	6H	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
	8H	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8

Maximum UGR = 5.0

Report of Test

LLIA001289-003

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.

Report of Test

LLIA001289-003

Additional Pictures of Test Subject

Report of Test

LLIA001289-003

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 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.