LightLab INTERNATIONAL ALLENTOWN LLC

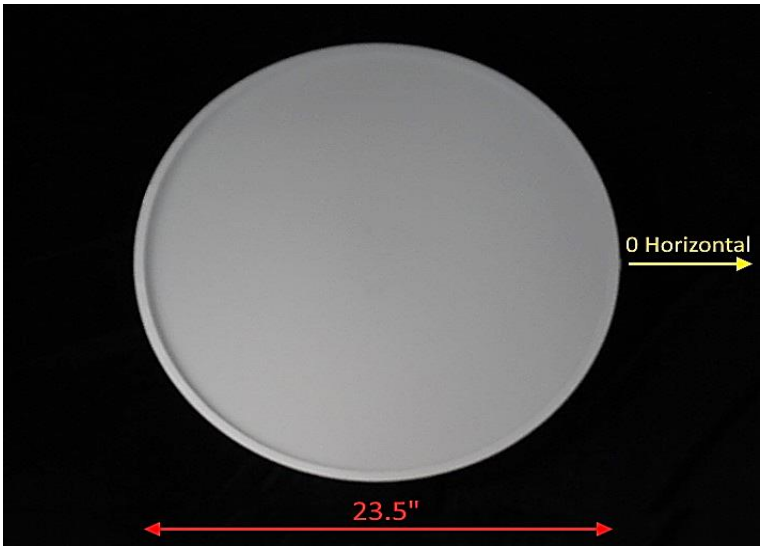
NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA001779-001A

Indoor Distribution Photometry Test Report

Catalog Number: SMM244/F11/D61/L999
Surface mounted, formed aluminum housing, opaque white plastic perimeter
with diffuse white plastic bottom enclosure, frosted side down.
192 white LEDs, two WCI R23R96N-A boards with 96 LEDs each.
One Philips Advance XI075C200V054DSM5 LED driver



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

Performance Summary					
Input Voltage	120.0	Vac	Luminous Flux	9454.5	Lumens
Input Current	0.7160	A	Total Efficacy	110.3	Lm/W
Input Power	85.74	W	Downward Flux	9454.5	Lumens
Frequency	60.00	Hz	Downward Flux	100.0	% 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: 06/09/2022
Report date: 06/09/2022

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
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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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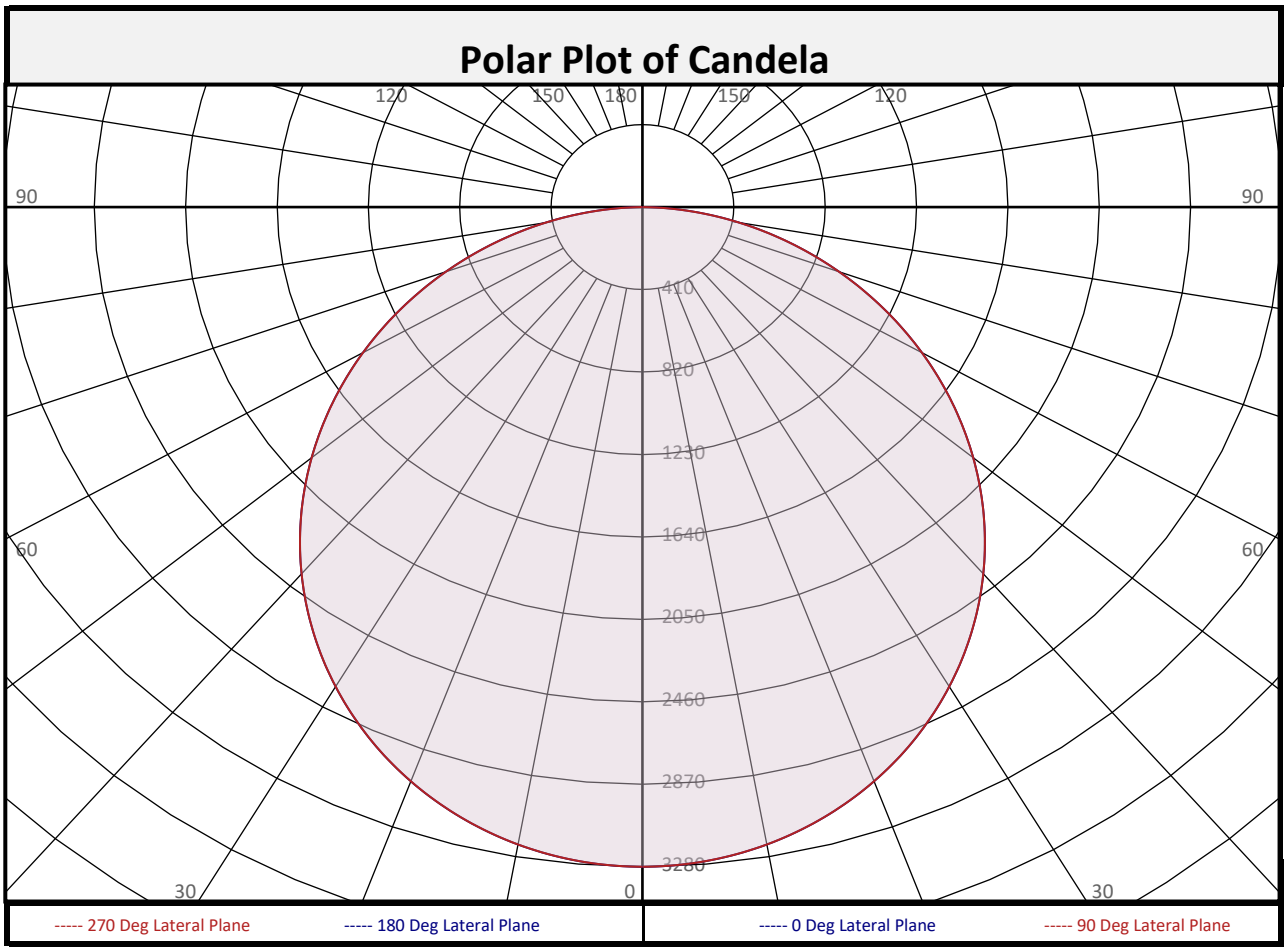

Zonal Flux Summary

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	310.4	3.3%	90-100	0.0	0.0%	0-20	1197	12.7%
10-20	886.7	9.4%	100-110	0.0	0.0%	0-30	2537	26.8%
20-30	1340	14.2%	110-120	0.0	0.0%	0-40	4148	43.9%
30-40	1611	17.0%	120-130	0.0	0.0%	0-60	7333	77.6%
40-50	1669	17.7%	130-140	0.0	0.0%	0-80	9235	97.7%
50-60	1516	16.0%	140-150	0.0	0.0%	10-90	9144	96.7%
60-70	1180	12.5%	150-160	0.0	0.0%	20-50	4620	48.9%
70-80	722.1	7.6%	160-170	0.0	0.0%	40-90	5307	56.1%
80-90	219.4	2.3%	170-180	0.0	0.0%	60-90	2122	22.4%
0-90	9455	100.0%	90-180	0.0	0.0%	0-180	9455	100.0%

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Luminous Intensity (Candela) Table

Vertical (Gamma) Angles - Data was acquired in 0.5° increments, 2.5° increments shown.	Lateral (C-Plane) Angles								
	0	22.5	45	67.5	90	112.5	135	157.5	180
0	3281	3281	3281	3281	3281	3281	3281	3281	3281
2.5	3277	3277	3277	3277	3277	3277	3277	3277	3277
5	3265	3265	3265	3265	3265	3265	3265	3265	3265
7.5	3245	3245	3245	3245	3245	3245	3245	3245	3245
10	3218	3218	3218	3218	3218	3218	3218	3218	3218
12.5	3184	3184	3184	3184	3184	3184	3184	3184	3184
15	3143	3143	3143	3143	3143	3143	3143	3143	3143
17.5	3094	3094	3094	3094	3094	3094	3094	3094	3094
20	3038	3038	3038	3038	3038	3038	3038	3038	3038
22.5	2976	2976	2976	2976	2976	2976	2976	2976	2976
25	2908	2908	2908	2908	2908	2908	2908	2908	2908
27.5	2833	2833	2833	2833	2833	2833	2833	2833	2833
30	2753	2753	2753	2753	2753	2753	2753	2753	2753
32.5	2667	2667	2667	2667	2667	2667	2667	2667	2667
35	2576	2576	2576	2576	2576	2576	2576	2576	2576
37.5	2480	2480	2480	2480	2480	2480	2480	2480	2480
40	2378	2378	2378	2378	2378	2378	2378	2378	2378
42.5	2274	2274	2274	2274	2274	2274	2274	2274	2274
45	2165	2165	2165	2165	2165	2165	2165	2165	2165
47.5	2052	2052	2052	2052	2052	2052	2052	2052	2052
50	1936	1936	1936	1936	1936	1936	1936	1936	1936
52.5	1817	1817	1817	1817	1817	1817	1817	1817	1817
55	1696	1696	1696	1696	1696	1696	1696	1696	1696
57.5	1572	1572	1572	1572	1572	1572	1572	1572	1572
60	1447	1447	1447	1447	1447	1447	1447	1447	1447
62.5	1320	1320	1320	1320	1320	1320	1320	1320	1320
65	1192	1192	1192	1192	1192	1192	1192	1192	1192
67.5	1065	1065	1065	1065	1065	1065	1065	1065	1065
70	937	937	937	937	937	937	937	937	937
72.5	810	810	810	810	810	810	810	810	810
75	683	683	683	683	683	683	683	683	683
77.5	559	559	559	559	559	559	559	559	559
80	436	436	436	436	436	436	436	436	436
82.5	315	315	315	315	315	315	315	315	315
85	197	197	197	197	197	197	197	197	197
87.5	84	84	84	84	84	84	84	84	84
90	0	0	0	0	0	0	0	0	0

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Luminous Intensity (Candela) Table

Vertical (Gamma) Angles - Data was acquired in 0.5° increments, 2.5° increments shown.	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	108	103	99	95		106	101	97	93		97	94	91		93	90	88		89	87	85	83
2	98	90	83	77		96	88	82	76		84	79	74		81	77	73		78	74	71	69
3	90	79	70	64		87	77	69	63		74	68	62		71	66	61		69	64	60	58
4	82	70	61	54		80	68	60	54		66	59	53		63	57	52		61	56	51	49
5	75	62	53	46		73	61	53	46		59	51	46		57	50	45		55	49	45	42
6	70	56	47	40		68	55	46	40		53	46	40		52	45	39		50	44	39	37
7	64	51	42	36		63	50	42	36		48	41	35		47	40	35		46	39	35	33
8	60	46	38	32		58	46	37	32		44	37	31		43	36	31		42	36	31	29
9	56	42	34	29		55	42	34	29		41	33	28		40	33	28		39	33	28	26
10	53	39	31	26		51	39	31	26		38	31	26		37	30	26		36	30	25	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	91.1	7.49	7.49
8.0	51.3	9.98	9.98
10.0	32.8	12.48	12.48
12.0	22.8	14.97	14.97
14.0	16.7	17.47	17.47
16.0	12.8	19.97	19.97

Spacing Criterion

SC: 1.2

Average Luminance (cd/m^2)

	0 deg Plane	45 deg Plane	90 deg Plane
0	11724	11724	11724
45	10940	10940	10940
55	10565	10565	10565
65	10084	10084	10084
75	9435	9435	9435
85	8063	8063	8063

Beam and Field Angle

0-180 Degree Plane

Beam Angle: 112.3°

Field Angle: 164.4°

90-270 Degree Plane

Beam Angle: 112.3°

Field Angle: 164.4°

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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	19.5	21.1	19.8	21.4	21.8	19.5	21.1	19.8	21.4	21.8
	3H	21.4	22.9	21.8	23.2	23.6	21.4	22.9	21.8	23.2	23.6
	4H	22.2	23.6	22.6	23.9	24.3	22.2	23.6	22.6	23.9	24.3
	6H	22.8	24.1	23.2	24.4	24.8	22.8	24.1	23.2	24.4	24.8
	8H	23.0	24.2	23.4	24.6	25.0	23.0	24.2	23.4	24.6	25.0
	12H	23.1	24.3	23.5	24.7	25.1	23.1	24.3	23.5	24.7	25.1
4H	2H	20.1	21.6	20.5	21.9	22.3	20.1	21.6	20.5	21.9	22.3
	3H	22.3	23.5	22.7	23.9	24.3	22.3	23.5	22.7	23.9	24.3
	4H	23.2	24.3	23.6	24.7	25.1	23.2	24.3	23.6	24.7	25.1
	6H	23.9	24.9	24.4	25.3	25.8	23.9	24.9	24.4	25.3	25.8
	8H	24.2	25.1	24.7	25.5	26.0	24.2	25.1	24.7	25.5	26.0
	12H	24.4	25.2	24.9	25.7	26.2	24.4	25.2	24.9	25.7	26.2
8H	4H	23.6	24.4	24.0	24.9	25.3	23.6	24.4	24.0	24.9	25.3
	6H	24.4	25.2	24.9	25.7	26.1	24.4	25.2	24.9	25.7	26.1
	8H	24.8	25.5	25.3	26.0	26.5	24.8	25.5	25.3	26.0	26.5
	12H	25.1	25.7	25.6	26.2	26.7	25.1	25.7	25.6	26.2	26.7
12H	4H	23.6	24.4	24.1	24.9	25.3	23.6	24.4	24.1	24.9	25.3
	6H	24.5	25.2	25.1	25.7	26.2	24.5	25.2	25.1	25.7	26.2
	8H	24.9	25.5	25.5	26.0	26.6	24.9	25.5	25.5	26.0	26.6

Maximum UGR = 26.7

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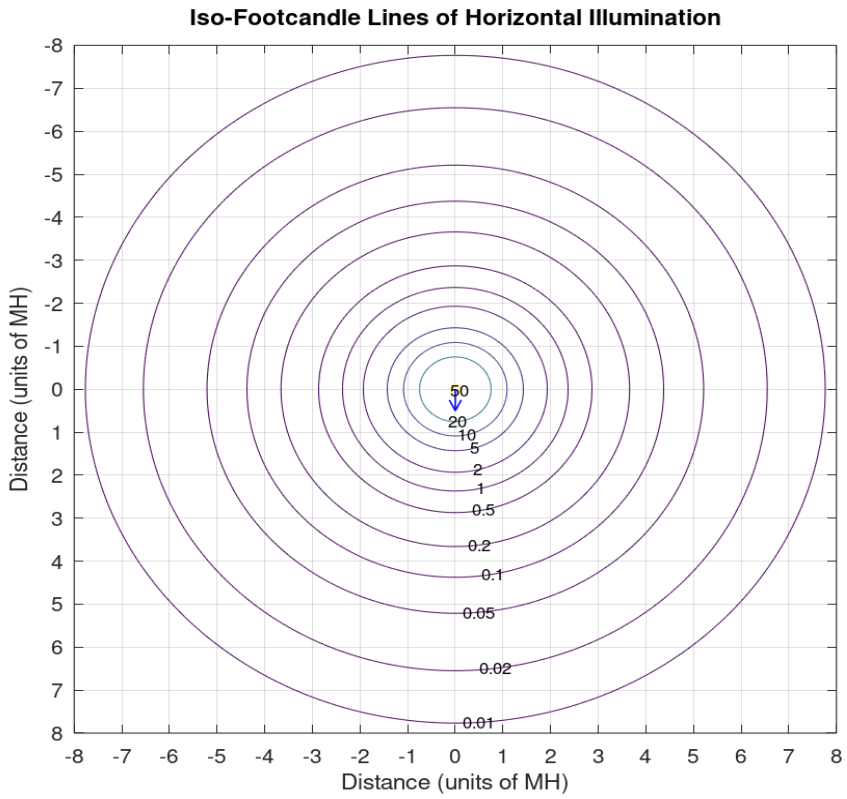
Iso-Illuminance Plot



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

Report of Test

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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 IES LM-79-19. Format of reports and angular increments based on IES LM-41-20 and LM-46-20.

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.

LightLab INTERNATIONAL ALLENTOWN LLC

NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA001779-001B

Integrating Sphere Report
Catalog Number: SMM244/F11/D61/L999
Surface mounted, formed aluminum housing, opaque white plastic perimeter with diffuse white plastic bottom enclosure, frosted side down.
192 white LEDs, two WCI R23R96N-A boards with 96 LEDs each.
One Philips Advance XI075C200V054DSM5 LED driver

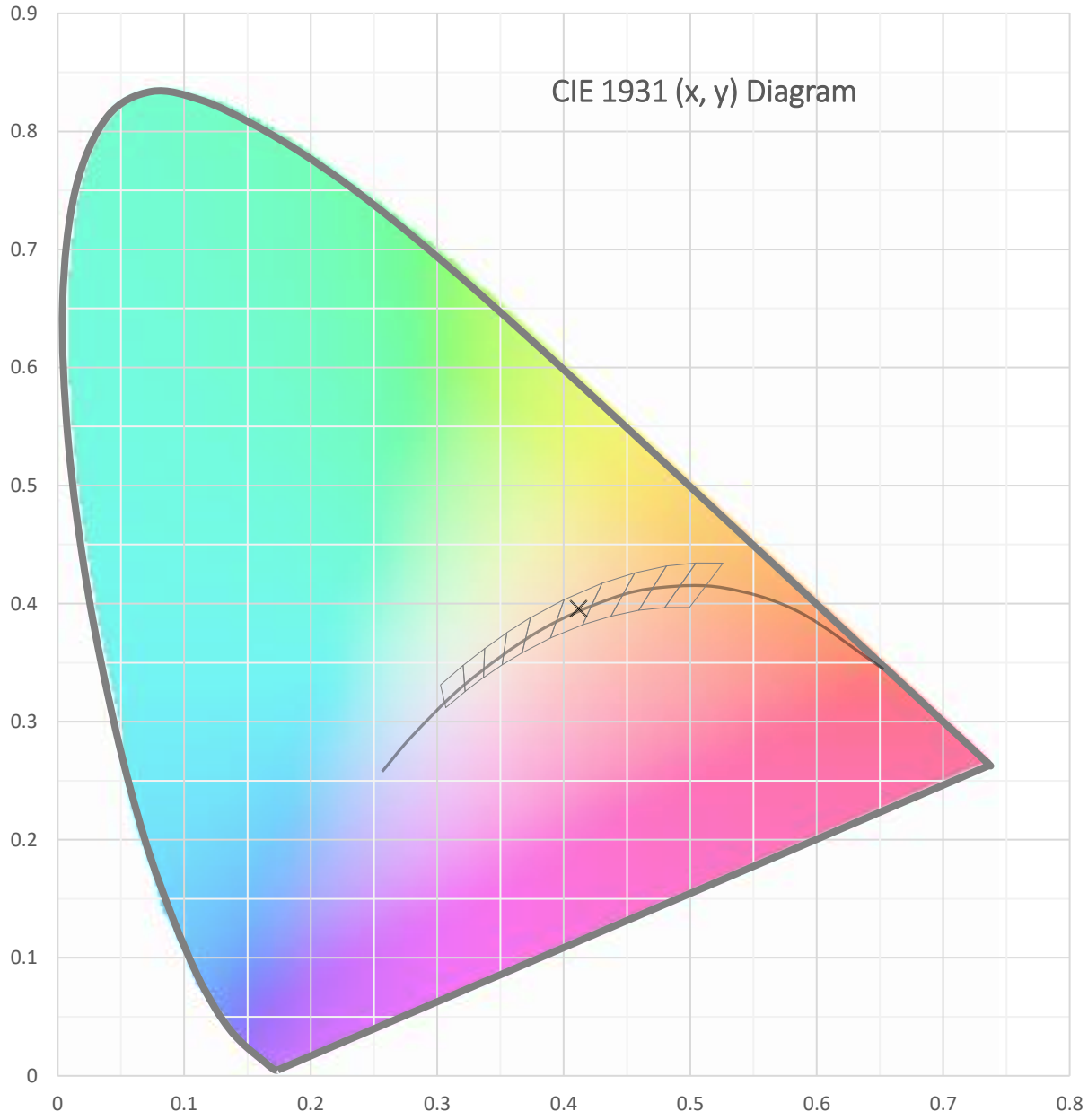
Performance Summary

Voltage	120.0	Vac
Current	0.7159	A
Power	85.69	W
Frequency	59.99	Hz
Power Factor	0.998	
Current THD	5.0	%
Total Luminous Flux	9384.3	lm
Efficacy	109.5	lm/W
Chromaticity (x,y)	(0.4116, 0.3956)	
(u',v')	(0.2378, 0.5142)	
Duv	0.0008	
CCT	3406	K
CRI (Ra)	82	
R9	1	
TM-30: Rf	82	
TM-30: Rg	97	
TM-30: Rcs,h1	-13	

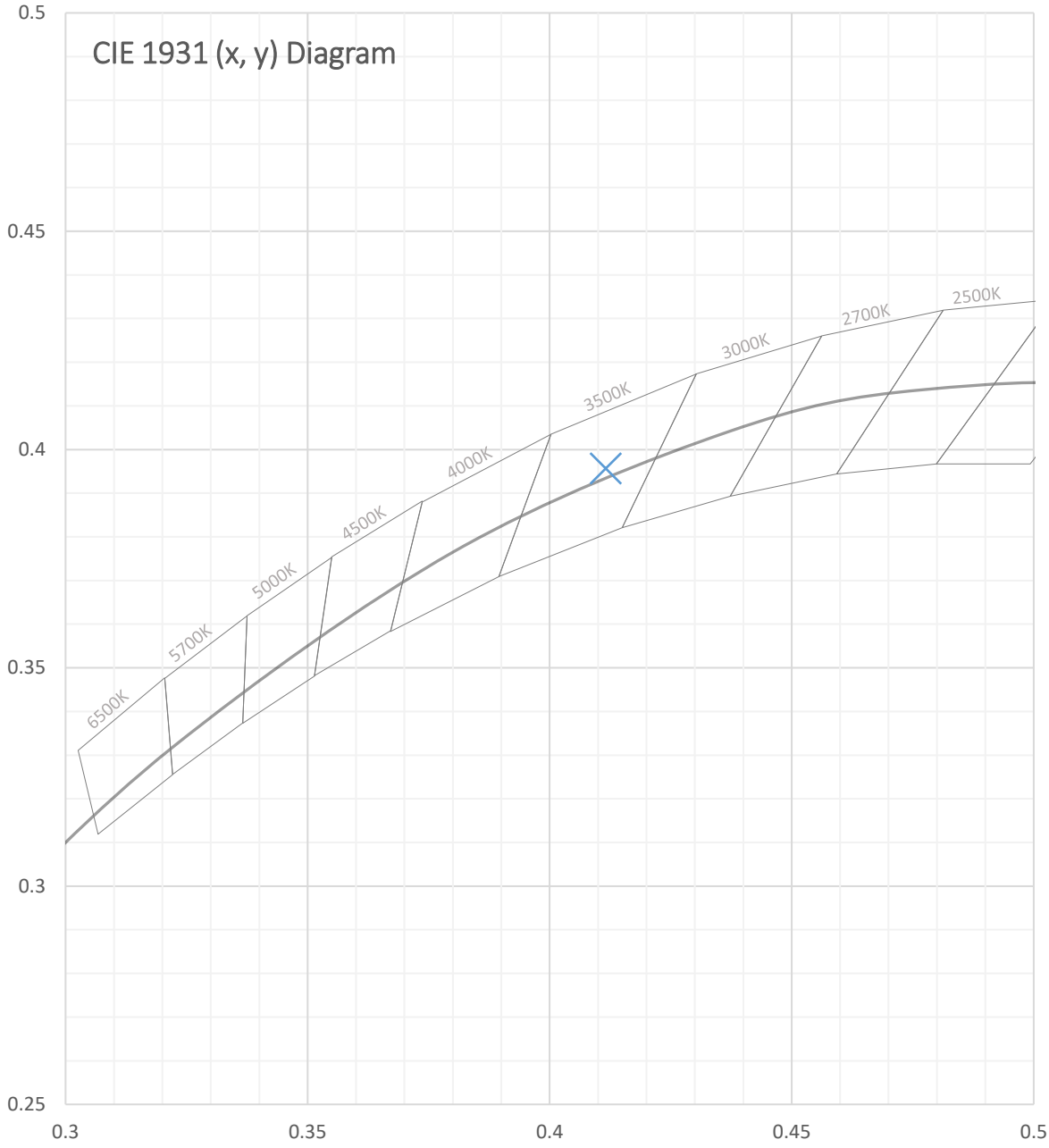
Prepared For:
Lumetta, Inc
33 Minnesota Avenue
Warwick, RI 02888, USA

Test date: 06/09/2022
Report date: 06/09/2022

Test Report Number: LLIA001779-001B



Test Report Number: LLIA001779-001B



Test Report Number: LLIA001779-001B

Total Radiant Flux	28.14	W
Total Luminous Flux	9384.3	Lm
Chromaticity CIE 1931 (x, y)	(0.4116, 0.3956)	
Chromaticity CIE 1976 (u', v')	(0.2378, 0.5142)	
Correlated Color Temperature (CCT)	3406	K
Color Rendering Index (Ra)	82	
R1	80	
R2	89	
R3	96	
R4	81	
R5	80	
R6	86	
R7	84	
R8	59	
R9	1	
R10	74	
R11	81	
R12	68	
R13	82	
R14	98	
TM-30: Rf	82	
TM-30: Rg	97	
TM-30: Rcs,h1	-13	
Distance from Planckian Locus (Duv)	0.0008	
Scotopic/Photopic Ratio ǂ	1.474	

Electrical Data

Voltage	120.0	Vac
Current	0.7159	A
Power	85.69	W
Frequency	59.99	Hz
Power Factor	0.998	
Current THD	5.0	%

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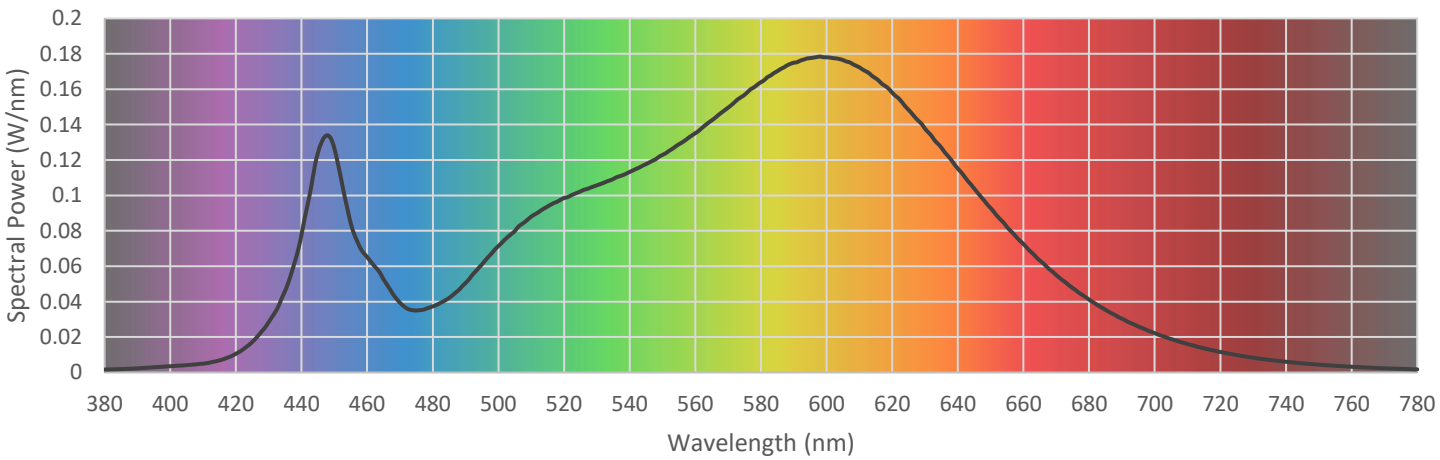
Summary Spectral Power Distribution (wavelength - nm, spectral power - W/nm)

380	0.001658	480	0.037319	580	0.163939	680	0.041179
385	0.001903	485	0.042138	585	0.170192	685	0.035428
390	0.002312	490	0.050579	590	0.174947	690	0.030378
395	0.002965	495	0.061079	595	0.177546	695	0.025941
400	0.003519	500	0.071432	600	0.178004	700	0.022228
405	0.004127	505	0.079844	605	0.176443	705	0.018893
410	0.004966	510	0.088028	610	0.172346	710	0.016070
415	0.006799	515	0.093761	615	0.166107	715	0.013657
420	0.010568	520	0.098537	620	0.158022	720	0.011577
425	0.017259	525	0.102257	625	0.148342	725	0.009819
430	0.028488	530	0.105701	630	0.137680	730	0.008364
435	0.046159	535	0.109281	635	0.126944	735	0.007090
440	0.077962	540	0.113269	640	0.115131	740	0.006034
445	0.124154	545	0.117698	645	0.103876	745	0.005163
450	0.126593	550	0.122901	650	0.092836	750	0.004417
455	0.084158	555	0.128886	655	0.082112	755	0.003764
460	0.065154	560	0.135164	660	0.072565	760	0.003238
465	0.052513	565	0.142367	665	0.063239	765	0.002762
470	0.039371	570	0.149601	670	0.055022	770	0.002362
475	0.034990	575	0.156782	675	0.047701	775	0.002032
						780	0.001746

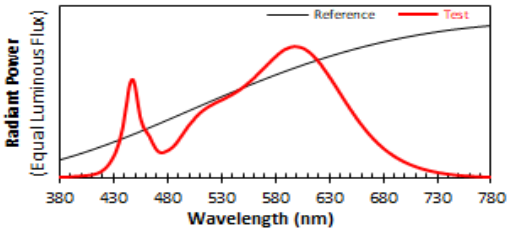


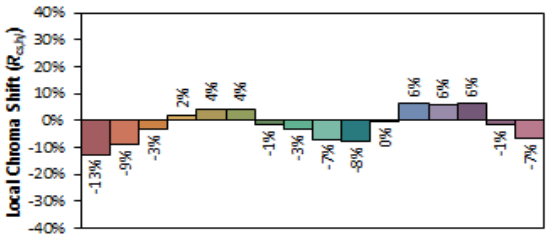
Test Report Number: LLIA001779-001B

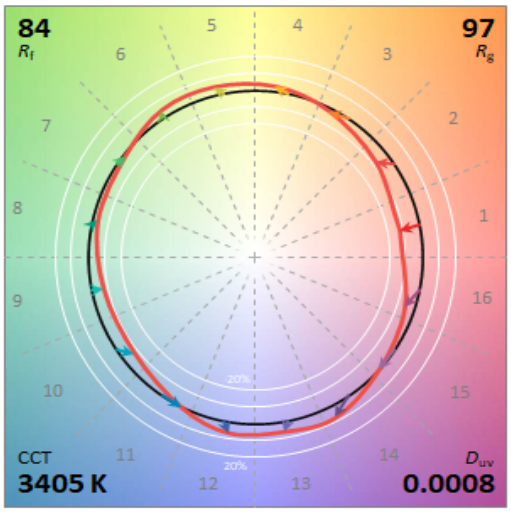
IES TM-30 Details

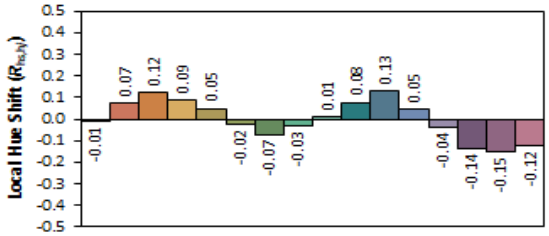
Source: LLIA001779-001B **Manufacturer:** Lumetta, Inc

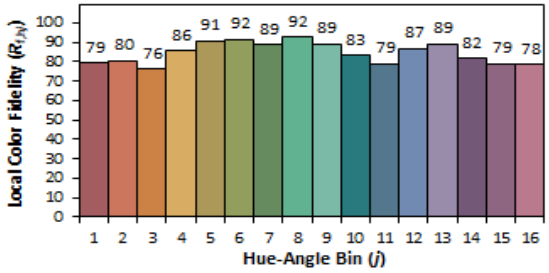
Date: 6/9/2022 **Model:** SMM244/F11/D61/L999

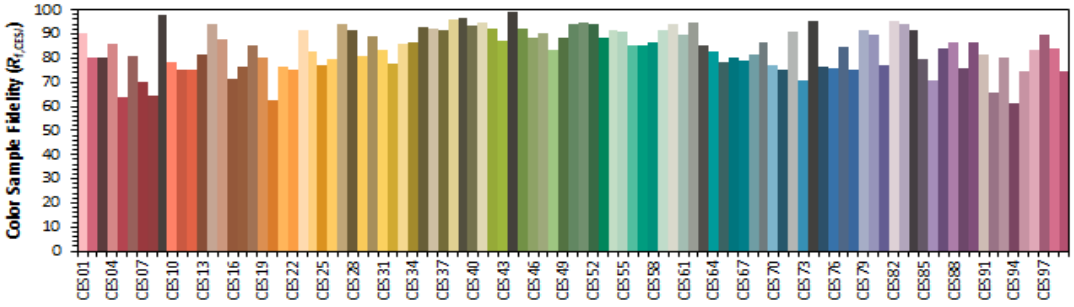












Notes:

x	0.4116
y	0.3956
u'	0.2378
v'	0.5142

CIE 13.3-1995 (CRI)

R_a	82
R_9	1

Test Report Number: LLIA001779-001B

Test Equipment Configuration:	LightLab International Allentown 2m Integrating Sphere Measurements acquired using a Labsphere CDS 2600 spectroradiometer Testing was performed using 4π geometry
Test Temperature:	25.7 °C
Test Procedure:	Tested in accordance with the applicable sections of: LM-79-19, LM-78-20, LM-58-20, ANSI_ANSLG C78.377-2017, TM-30-20
Significance:	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.
Notes:	The measurements 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 This report may contain data that are not covered by the NVLAP accreditation. Quantities marked with ǂ 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.

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