LightLab INTERNATIONAL ALLENTOWN LLC

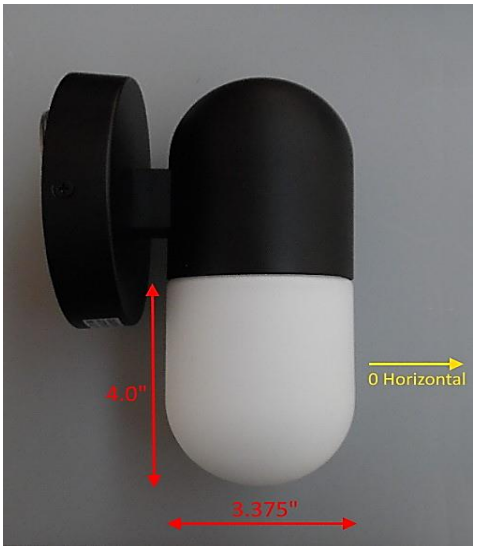
NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA001626-010A

Indoor Distribution Photometry Test Report

Catalog Number: Corpus 3-757-xx
Wall mounted, aluminum housing, translucent white glass bell jar enclosure.
14 white LEDs, mounted on one white circuit board.
Integral LED driver



Prepared For:
Oxygen Lighting
201 Railhead Road
Fort Worth, TX 76106, USA

Performance Summary					
Input Voltage	120.0	Vac	Luminous Flux	343.2	Lumens
Input Current	0.0579	A	Total Efficacy	54.3	Lm/W
Input Power	6.32	W	Downward Flux	218.6	Lumens
Frequency	60.00	Hz	Downward Flux	63.7	% of Total
Power Factor	0.911				
Current THD	44.1	%			

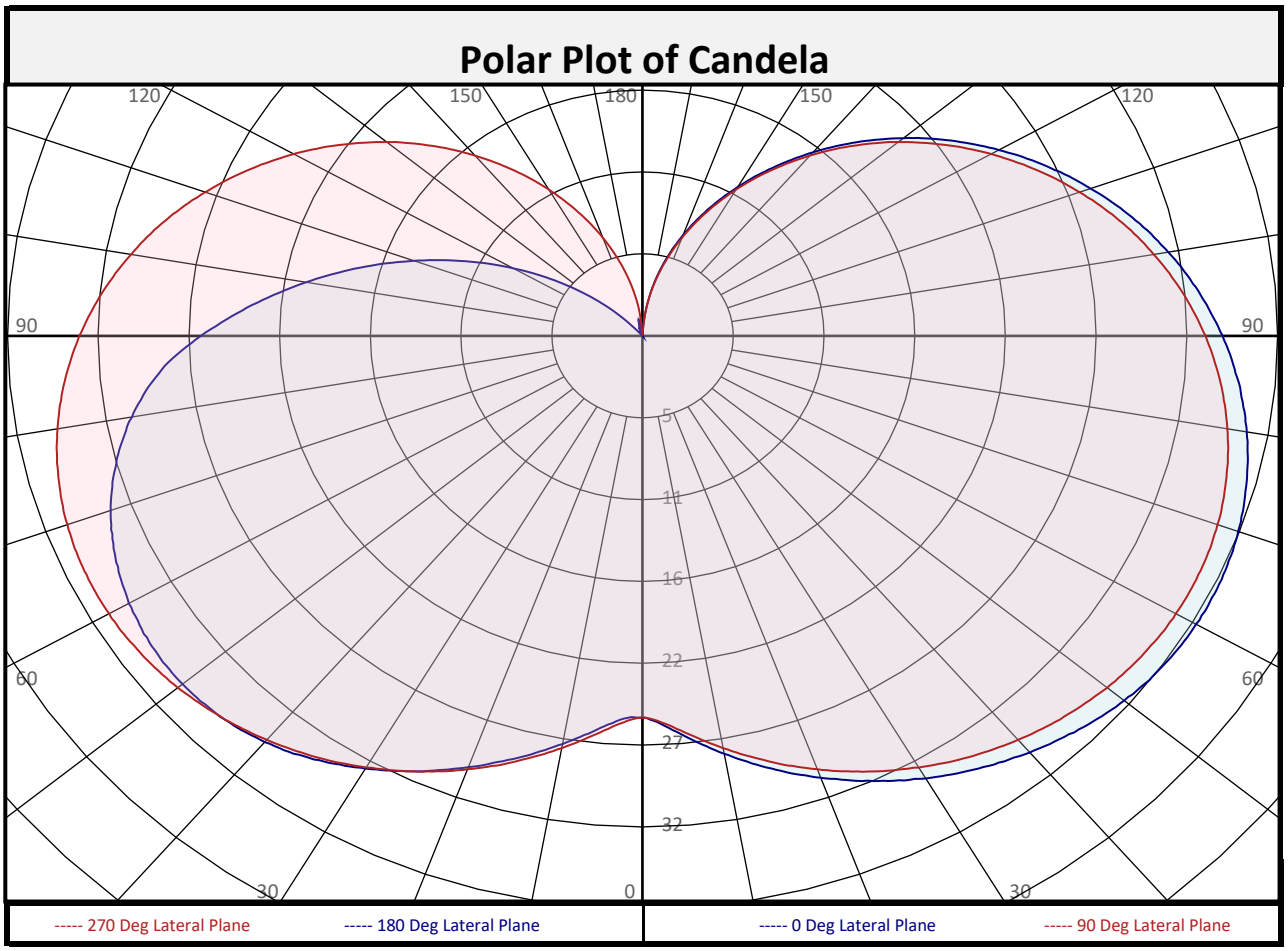
This test report was issued by LightLab International Allentown, LLC without alterations or erasures.

Test date: 01/11/2022
Report date: 01/13/2022

Signed: Michael L. Grather

Report of Test

LLIA001626-010A



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	2.5	0.7%	90-100	33.7	9.8%	0-20	10.8	3.1%
10-20	8.3	2.4%	100-110	28.9	8.4%	0-30	25.6	7.5%
20-30	14.8	4.3%	110-120	23.1	6.7%	0-40	47.1	13.7%
30-40	21.5	6.3%	120-130	16.9	4.9%	0-60	107.8	31.4%
40-50	27.8	8.1%	130-140	11.1	3.2%	0-80	181.9	53.0%
50-60	32.9	9.6%	140-150	6.4	1.9%	10-90	216.1	63.0%
60-70	36.4	10.6%	150-160	3.2	0.9%	20-50	64.1	18.7%
70-80	37.7	11.0%	160-170	1.2	0.3%	40-90	171.5	50.0%
80-90	36.8	10.7%	170-180	0.1	0.0%	60-90	110.8	32.3%
0-90	218.6	63.7%	90-180	124.6	36.3%	0-180	343.2	100.0%

Report of Test

LLIA001626-010A

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	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2
2.5	25.6	25.6	25.6	25.6	25.5	25.4	25.4	25.3	25.3
5	26.4	26.4	26.3	26.2	26.1	26.1	26.0	25.9	25.8
7.5	27.2	27.2	27.1	27.0	26.9	26.8	26.7	26.6	26.6
10	28.0	27.9	27.8	27.7	27.6	27.5	27.4	27.4	27.3
12.5	28.8	28.8	28.6	28.5	28.3	28.2	28.2	28.1	28.1
15	29.5	29.5	29.4	29.2	29.1	28.9	28.9	28.9	28.8
17.5	30.3	30.3	30.1	29.9	29.7	29.6	29.6	29.6	29.5
20	31.0	31.0	30.8	30.6	30.4	30.3	30.3	30.3	30.3
22.5	31.7	31.7	31.5	31.3	31.1	31.0	30.9	31.0	31.0
25	32.4	32.3	32.2	31.9	31.7	31.6	31.6	31.6	31.7
27.5	33.1	33.0	32.8	32.5	32.3	32.2	32.2	32.3	32.3
30	33.7	33.6	33.4	33.1	32.9	32.7	32.8	32.9	33.0
32.5	34.3	34.2	33.9	33.7	33.4	33.3	33.4	33.5	33.5
35	34.9	34.7	34.5	34.2	33.9	33.8	33.9	34.0	34.1
37.5	35.4	35.2	35.0	34.6	34.4	34.3	34.4	34.6	34.6
40	35.9	35.7	35.4	35.1	34.8	34.7	34.9	35.0	35.0
42.5	36.3	36.2	35.9	35.5	35.2	35.1	35.3	35.4	35.3
45	36.7	36.6	36.3	35.9	35.5	35.5	35.7	35.6	35.5
47.5	37.1	37.0	36.6	36.2	35.8	35.7	36.0	35.8	35.7
50	37.4	37.3	36.9	36.5	36.1	36.0	36.2	36.0	35.7
52.5	37.7	37.5	37.2	36.7	36.3	36.2	36.4	36.0	35.7
55	37.9	37.7	37.3	36.9	36.5	36.4	36.5	36.0	35.7
57.5	38.0	37.9	37.5	37.0	36.6	36.5	36.5	35.9	35.5
60	38.0	37.9	37.5	37.1	36.7	36.6	36.5	35.7	35.3
62.5	38.1	37.9	37.6	37.1	36.7	36.6	36.4	35.4	35.0
65	38.0	37.9	37.5	37.0	36.7	36.6	36.2	35.1	34.6
67.5	37.9	37.8	37.4	37.0	36.6	36.5	36.0	34.8	34.2
70	37.7	37.6	37.3	36.8	36.4	36.4	35.7	34.3	33.7
72.5	37.5	37.4	37.1	36.6	36.2	36.2	35.3	33.8	33.1
75	37.2	37.1	36.8	36.4	36.0	36.0	34.9	33.2	32.4
77.5	36.9	36.8	36.5	36.0	35.7	35.7	34.5	32.6	31.7
80	36.5	36.4	36.1	35.7	35.4	35.3	33.9	31.9	30.9
82.5	36.1	36.0	35.7	35.3	35.0	34.9	33.4	31.2	30.0
85	35.6	35.5	35.2	34.8	34.5	34.4	32.7	30.3	28.9
87.5	35.1	35.0	34.7	34.3	34.0	33.9	32.1	29.4	27.7
90	34.5	34.4	34.1	33.8	33.5	33.3	31.3	28.4	26.3

Report of Test

LLIA001626-010A

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	34.5	34.4	34.1	33.8	33.5	33.3	31.3	28.4	26.3
92.5	33.9	33.8	33.6	33.2	32.9	32.7	30.5	27.3	24.8
95	33.2	33.1	32.9	32.6	32.3	32.0	29.7	26.2	23.3
97.5	32.5	32.4	32.2	31.9	31.7	31.3	28.8	25.0	21.8
100	31.8	31.7	31.5	31.2	30.9	30.5	27.9	23.8	20.3
102.5	31.0	30.9	30.7	30.4	30.2	29.7	26.9	22.5	18.9
105	30.2	30.1	29.9	29.6	29.4	28.8	25.8	21.2	17.4
107.5	29.3	29.3	29.1	28.8	28.6	27.9	24.8	19.8	15.9
110	28.4	28.4	28.2	27.9	27.7	27.0	23.6	18.4	14.5
112.5	27.5	27.4	27.3	27.0	26.8	26.0	22.5	17.0	13.1
115	26.5	26.5	26.3	26.1	25.9	25.0	21.3	15.6	11.7
117.5	25.5	25.5	25.4	25.2	24.9	24.0	20.1	14.2	10.3
120	24.5	24.5	24.4	24.2	24.0	22.9	18.8	12.8	8.9
122.5	23.5	23.5	23.4	23.2	23.0	21.8	17.5	11.3	7.7
125	22.4	22.4	22.4	22.2	22.0	20.7	16.2	9.9	6.4
127.5	21.4	21.4	21.3	21.1	20.9	19.6	15.0	8.6	5.2
130	20.3	20.3	20.3	20.1	19.9	18.5	13.7	7.2	4.0
132.5	19.1	19.2	19.1	19.0	18.8	17.3	12.4	5.9	2.8
135	18.0	18.1	18.1	18.0	17.7	16.2	11.2	4.7	1.7
137.5	16.9	17.0	17.0	16.9	16.6	15.0	10.1	3.6	0.6
140	15.8	15.8	15.8	15.8	15.5	13.9	9.0	2.6	0.0
142.5	14.6	14.7	14.7	14.6	14.4	12.8	8.0	1.8	0.0
145	13.5	13.6	13.6	13.5	13.3	11.7	7.0	1.4	0.0
147.5	12.4	12.5	12.5	12.4	12.2	10.7	6.2	1.2	0.0
150	11.3	11.4	11.4	11.4	11.2	9.7	5.5	1.1	0.0
152.5	10.2	10.2	10.3	10.3	10.0	8.7	4.9	1.1	0.0
155	9.2	9.2	9.2	9.2	9.0	7.9	4.3	1.2	0.1
157.5	8.1	8.1	8.1	8.1	7.9	7.1	3.9	1.2	0.2
160	7.1	7.0	7.1	7.0	6.9	6.3	3.6	1.3	0.4
162.5	6.0	6.0	6.0	6.0	5.9	5.5	3.2	1.3	0.3
165	5.0	5.0	5.0	5.0	4.9	4.7	2.9	1.4	0.8
167.5	4.0	3.9	4.0	3.9	3.9	3.8	2.6	1.3	1.0
170	3.0	3.0	2.9	3.0	3.0	2.9	2.2	1.0	1.0
172.5	1.9	1.9	1.9	2.0	2.0	2.0	1.5	1.1	1.0
175	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.7
177.5	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
180	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Report of Test

LLIA001626-010A

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	110	110	110	110		104	104	104	104		91	91	91		79	79	79		69	69	69	64
1	95	89	83	77		89	83	77	73		72	68	64		62	58	55		52	50	47	43
2	85	75	66	59		79	69	62	55		60	54	49		51	46	42		43	39	36	32
3	76	64	54	47		70	59	51	44		51	44	38		43	38	33		36	32	28	24
4	69	55	46	38		64	52	43	36		44	37	31		38	32	27		32	27	23	19
5	63	49	39	32		58	45	36	30		39	32	26		33	27	23		28	23	19	16
6	58	43	34	27		53	40	32	25		35	28	22		30	24	19		25	20	16	13
7	53	39	30	23		49	36	28	22		31	24	19		27	21	16		22	18	14	11
8	49	35	26	20		45	33	25	19		28	22	17		24	19	14		20	16	12	10
9	46	32	23	18		42	30	22	17		26	19	15		22	17	13		19	14	11	9
10	43	29	21	16		39	27	20	15		24	17	13		20	15	11		17	13	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	0.7	12.13	11.98
8.0	0.4	16.17	15.97
10.0	0.3	20.21	19.96
12.0	0.2	24.26	23.95
14.0	0.1	28.30	27.95
16.0	0.1	32.34	31.94

Spacing Criterion

0 deg:	2.0
90 deg:	2.0
180 deg:	2.0
270 deg:	2.0

Average Luminance (cd/m^2)

	0 deg Plane	45 deg Plane	90 deg Plane
0	4363	4363	4363
45	3586	3541	3468
55	3625	3574	3492
65	3682	3630	3549
75	3758	3713	3634
85	3882	3836	3762

Beam and Field Angle

0-180 Degree Plane

Beam Angle: 234.9°

Field Angle: 298.3°

90-270 Degree Plane

Beam Angle: 263.9°

Field Angle: 335.5°

Report of Test

LLIA001626-010A

UGR Table - Corrected

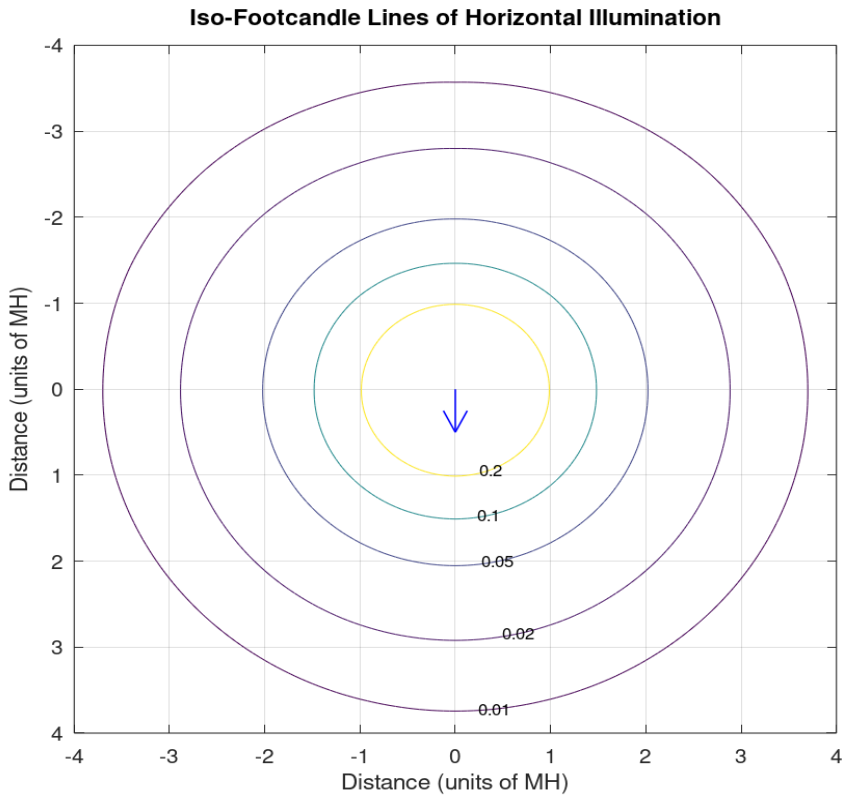
Reflectances											
Ceiling Cavity		70	70	50	50	30	70	70	50	50	30
Walls		50	30	50	30	30	50	30	50	30	30
Floor Cavity		20	20	20	20	20	20	20	20	20	20
Room Size		UGR Viewed Crosswise					UGR Viewed Endwise				
X=2H	Y=2H	13.2	14.4	14.0	15.2	16.3	13.0	14.2	13.8	15.0	16.1
	3H	16.1	17.2	16.9	18.0	19.1	15.9	17.0	16.7	17.8	18.9
	4H	17.5	18.5	18.3	19.4	20.5	17.3	18.3	18.1	19.2	20.2
	6H	18.9	19.8	19.7	20.7	21.8	18.6	19.6	19.5	20.5	21.6
	8H	19.5	20.5	20.3	21.3	22.4	19.3	20.2	20.1	21.1	22.2
	12H	20.1	21.1	21.0	21.9	23.1	19.9	20.8	20.8	21.7	22.8
4H	2H	14.0	15.0	14.8	15.9	16.9	13.8	14.8	14.6	15.7	16.8
	3H	17.0	18.0	17.9	18.8	19.9	16.8	17.8	17.7	18.6	19.7
	4H	18.6	19.4	19.4	20.3	21.4	18.4	19.2	19.2	20.1	21.2
	6H	20.1	20.9	21.0	21.8	22.9	19.9	20.7	20.8	21.6	22.7
	8H	20.9	21.6	21.7	22.5	23.6	20.7	21.4	21.5	22.3	23.4
	12H	21.6	22.3	22.5	23.2	24.4	21.4	22.1	22.3	23.0	24.2
8H	4H	19.1	19.8	20.0	20.7	21.9	18.9	19.6	19.8	20.5	21.7
	6H	20.8	21.5	21.7	22.4	23.5	20.6	21.3	21.5	22.2	23.3
	8H	21.7	22.3	22.6	23.2	24.4	21.5	22.1	22.4	23.0	24.2
	12H	22.7	23.2	23.6	24.1	25.3	22.5	23.0	23.4	23.9	25.1
12H	4H	19.2	19.9	20.1	20.8	21.9	19.0	19.7	19.9	20.6	21.7
	6H	21.0	21.6	21.9	22.5	23.7	20.8	21.4	21.7	22.3	23.5
	8H	22.0	22.5	22.9	23.4	24.6	21.8	22.3	22.7	23.2	24.4

Maximum UGR = 25.3

Report of Test

LLIA001626-010A

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

LLIA001626-010A

Test Distance	9.5 m
Ambient Temperature	24.9 °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

LLIA001626-010B

Integrating Sphere Report
Catalog Number: Corpus 3-757-xx
Wall mounted, aluminum housing, translucent white glass bell jar enclosure.
14 white LEDs, mounted on one white circuit board.
Integral LED driver

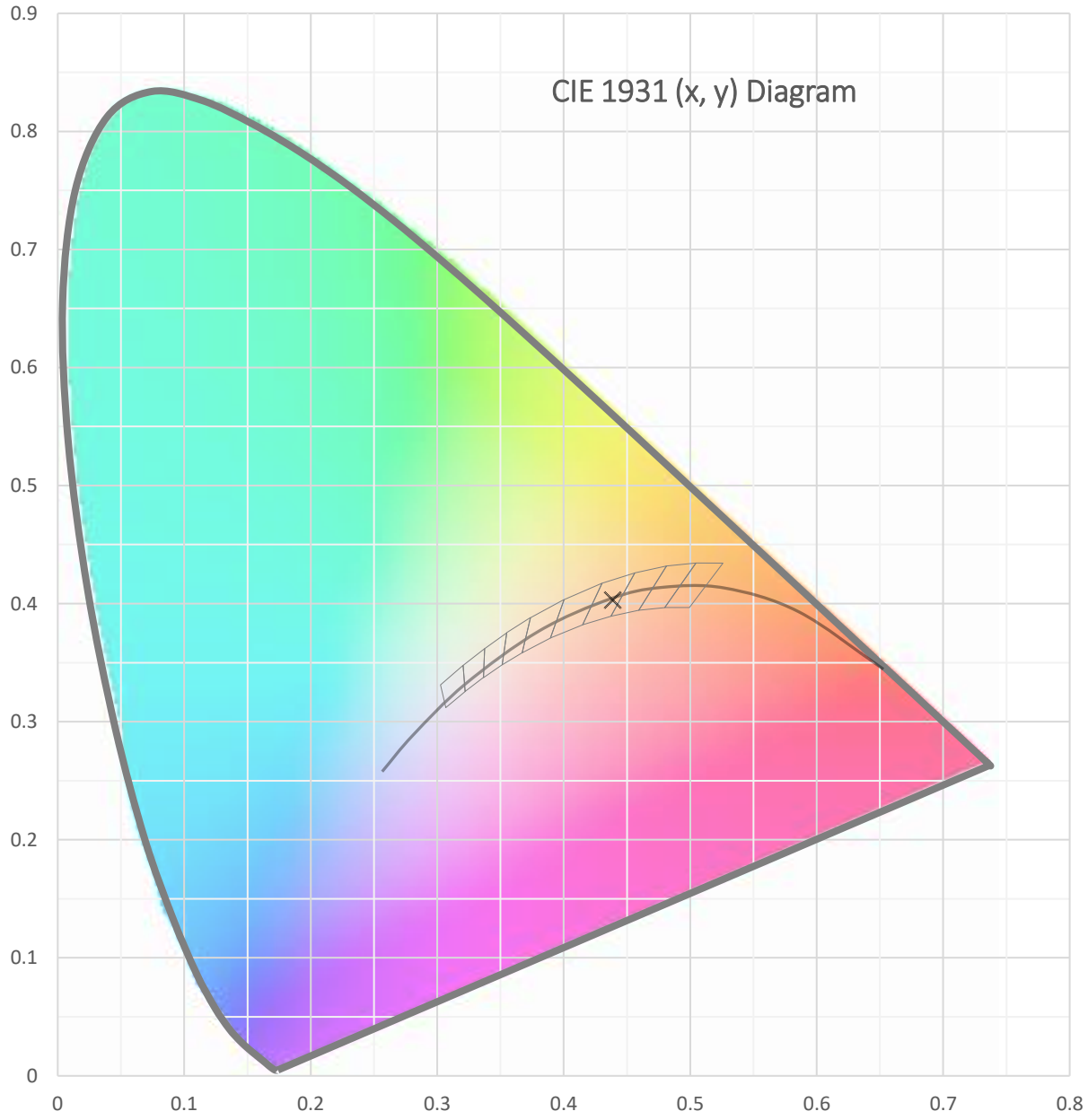
Performance Summary

Voltage	120.0	Vac
Current	0.0578	A
Power	6.33	W
Frequency	59.99	Hz
Power Factor	0.914	
Current THD	44.0	%
Total Luminous Flux	342.2	lm
Efficacy	54.1	lm/W
Chromaticity (x,y)	(0.4388, 0.4030)	
(u',v')	(0.2522, 0.5212)	
Duv	-0.0007	
CCT	2960	K
CRI (Ra)	94	
R9	59	
TM-30: Rf	92	
TM-30: Rg	98	
TM-30: Rcs,h1	-5	

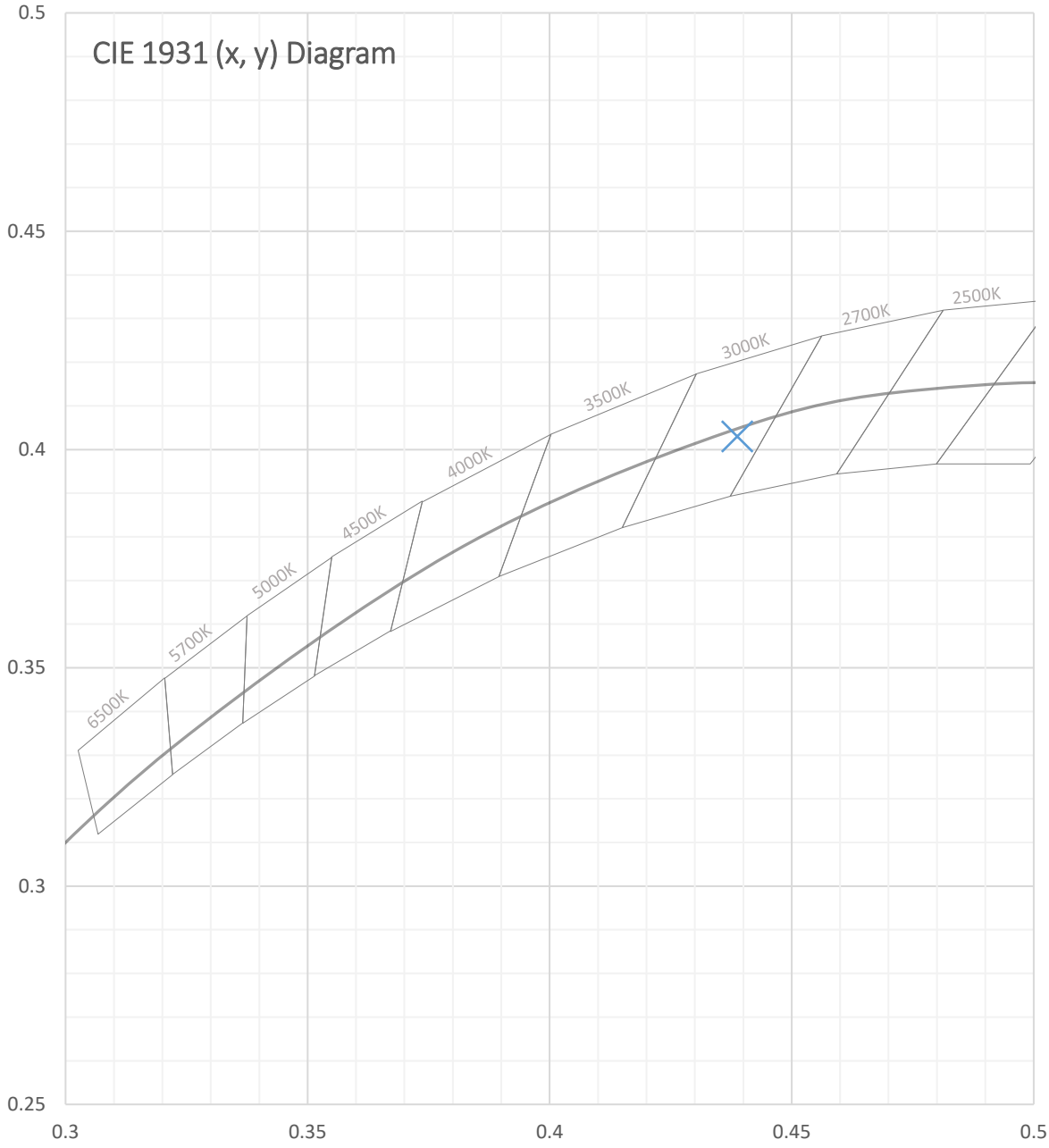
Prepared For:
Oxygen Lighting
201 Railhead Road
Fort Worth, TX 76106, USA

Test date: 01/10/2022
Report date: 01/13/2022

Test Report Number: LLIA001626-010B



Test Report Number: LLIA001626-010B



Test Report Number: LLIA001626-010B

Total Radiant Flux	1.168	W
Total Luminous Flux	342.2	Lm
Chromaticity CIE 1931 (x, y)	(0.4388, 0.4030)	
Chromaticity CIE 1976 (u', v')	(0.2522, 0.5212)	
Correlated Color Temperature (CCT)	2960	K
Color Rendering Index (Ra)	94	
R1	97	
R2	99	
R3	95	
R4	97	
R5	98	
R6	94	
R7	89	
R8	80	
R9	59	
R10	97	
R11	98	
R12	89	
R13	99	
R14	98	
TM-30: Rf	92	
TM-30: Rg	98	
TM-30: Rcs,h1	-5	
Distance from Planckian Locus (Duv)	-0.0007	
Scotopic/Photopic Ratio ǂ	1.479	

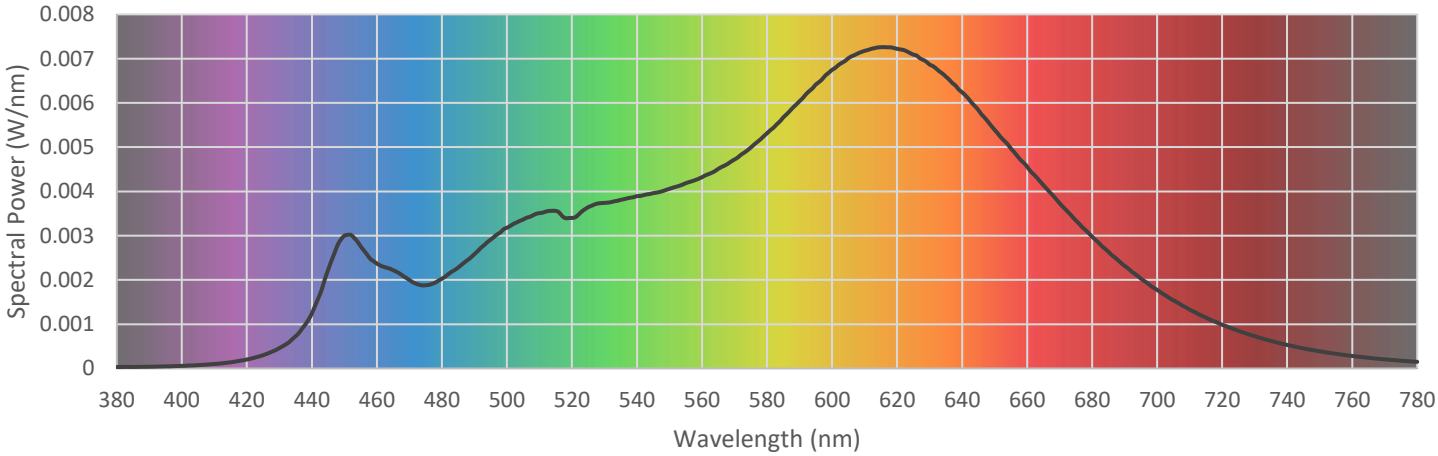
Electrical Data

Voltage	120.0	Vac
Current	0.0578	A
Power	6.33	W
Frequency	59.99	Hz
Power Factor	0.914	
Current THD	44.0	%

Test Report Number: LLIA001626-010B

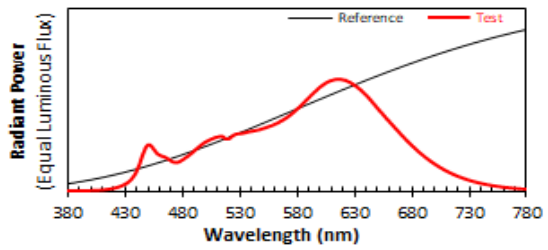
Summary Spectral Power Distribution (wavelength - nm, spectral power - W/nm)

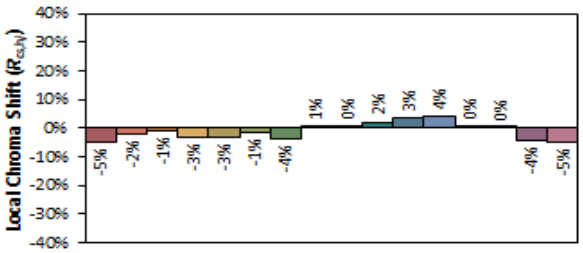
380	0.000033	480	0.002028	580	0.005313	680	0.002978
385	0.000034	485	0.002281	585	0.005672	685	0.002637
390	0.000039	490	0.002583	590	0.006038	690	0.002319
395	0.000047	495	0.002911	595	0.006415	695	0.002030
400	0.000059	500	0.003180	600	0.006746	700	0.001775
405	0.000075	505	0.003365	605	0.007008	705	0.001539
410	0.000101	510	0.003509	610	0.007176	710	0.001331
415	0.000139	515	0.003560	615	0.007258	715	0.001151
420	0.000203	520	0.003402	620	0.007222	720	0.000988
425	0.000301	525	0.003645	625	0.007090	725	0.000850
430	0.000462	530	0.003741	630	0.006866	730	0.000731
435	0.000728	535	0.003809	635	0.006594	735	0.000622
440	0.001243	540	0.003894	640	0.006240	740	0.000531
445	0.002231	545	0.003961	645	0.005839	745	0.000455
450	0.003000	550	0.004059	650	0.005392	750	0.000388
455	0.002759	555	0.004186	655	0.004972	755	0.000330
460	0.002370	560	0.004321	660	0.004560	760	0.000283
465	0.002220	565	0.004509	665	0.004142	765	0.000241
470	0.001999	570	0.004721	670	0.003734	770	0.000205
475	0.001880	575	0.004991	675	0.003344	775	0.000176
						780	0.000150

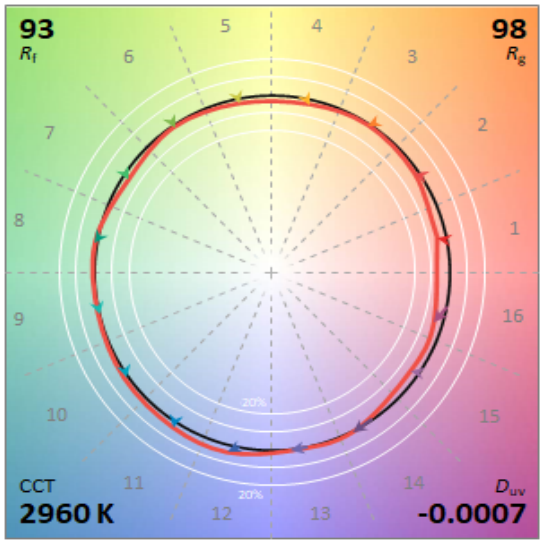


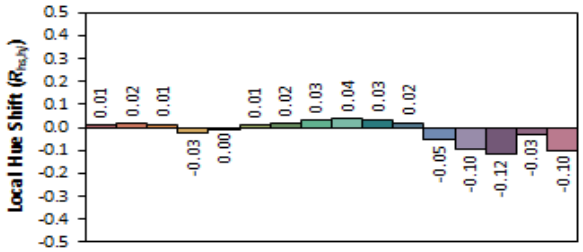
Test Report Number: LLIA001626-010B

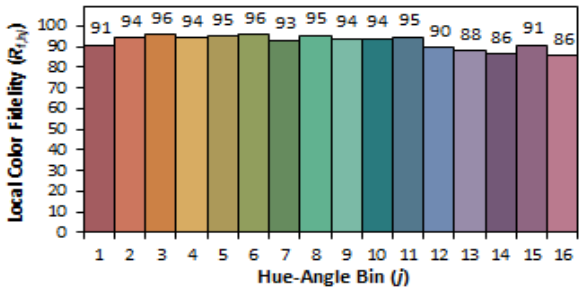
IES TM-30 Details

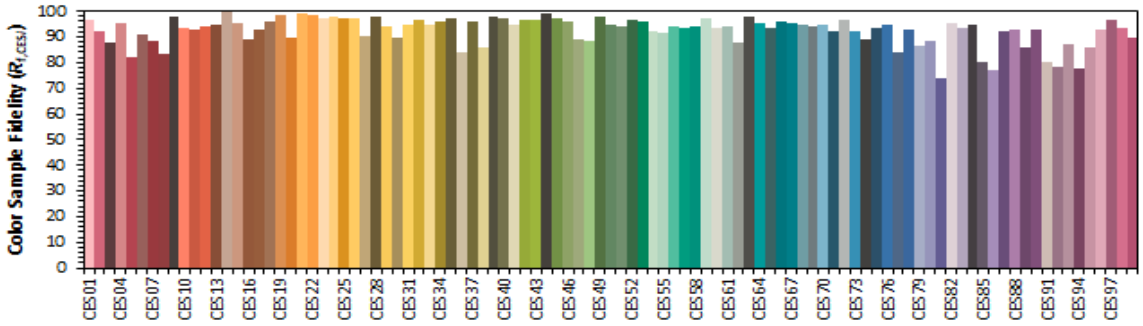












Notes:

x	0.4388
y	0.4029
u'	0.2523
v'	0.5212

CIE 13.3-1995 (CRI)

R_a	94
R_9	59

Test Report Number: LLIA001626-010B

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:	24.8 °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 ‡ 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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