LightLab INTERNATIONAL ALLENTOWN LLC

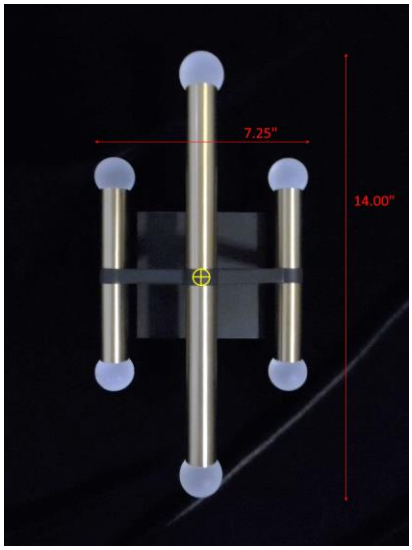
NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA001333-001A

Indoor Distribution Photometry Test Report

Catalog Number: 3-584-1540 Nero Sconce
Surface wall mounted, formed steel and tubular steel housings, frosted plastic enclosures.
6 White LEDs
One ES LD017D-CA07224-M18F LED driver



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

Performance Summary					
Input Voltage	120.0	V	Luminous Flux	366.1	Lumens
Input Current	0.1356	A	Total Efficacy	22.7	Lm/W
Input Power	16.14	W	Downward Flux	187.3	Lumens
Frequency	60.00	Hz	Downward Flux	51.2	% of Total
Power Factor	0.992				
Current THD	7.1	%			

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

Test date: 10/16/2020
Report date: 10/19/2020

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
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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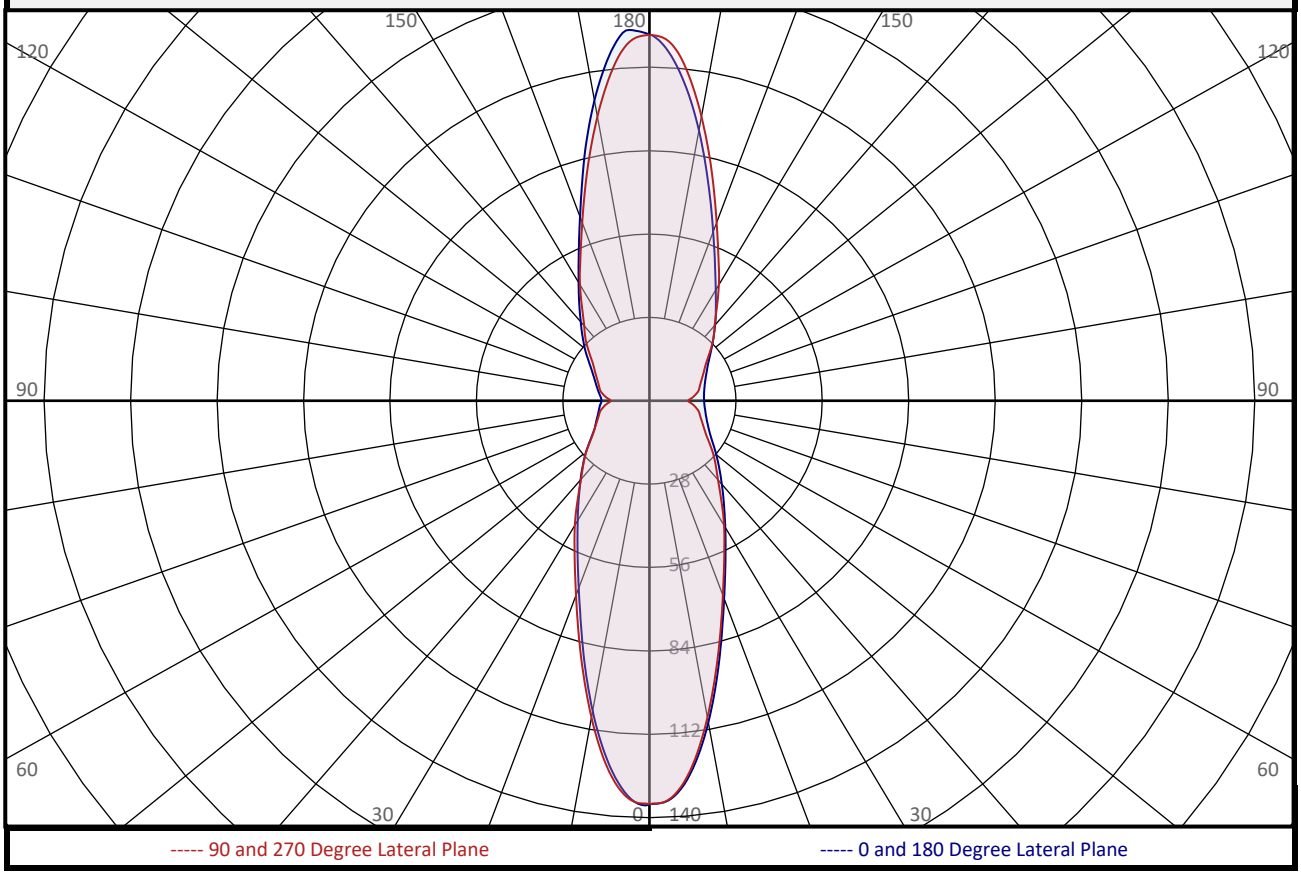
Polar Plot of Candela



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	11.6	3.2%	90-100	18.2	5.0%	0-20	35.5	9.7%
10-20	24.0	6.6%	100-110	18.7	5.1%	0-30	61.5	16.8%
20-30	26.0	7.1%	110-120	19.3	5.3%	0-40	86.8	23.7%
30-40	25.2	6.9%	120-130	20.5	5.6%	0-60	130.9	35.8%
40-50	23.2	6.3%	130-140	22.2	6.1%	0-80	169.2	46.2%
50-60	21.0	5.7%	140-150	23.7	6.5%	10-90	175.7	48.0%
60-70	19.6	5.4%	150-160	24.0	6.6%	20-50	74.4	20.3%
70-80	18.8	5.1%	160-170	21.8	6.0%	40-90	100.6	27.5%
80-90	18.1	4.9%	170-180	10.4	2.8%	60-90	56.4	15.4%
0-90	187.3	51.2%	90-180	178.8	48.8%	0-180	366.1	100.0%

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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
0	136	136	136	136	136	136	136	136	136
2.5	135	135	134	134	134	134	134	134	134
5	129	130	130	129	129	128	127	127	127
7.5	120	121	121	120	119	118	117	117	117
10	110	110	110	109	108	106	105	105	106
12.5	99	99	98	98	97	95	94	94	95
15	88	88	88	88	87	84	83	83	84
17.5	79	79	78	78	77	75	74	74	74
20	71	71	70	70	70	67	66	66	67
22.5	64	64	63	63	63	60	59	60	61
25	58	58	58	57	57	55	54	54	55
27.5	53	53	53	52	53	50	49	50	50
30	49	49	49	48	48	46	45	46	46
32.5	45	46	45	44	44	42	42	42	43
35	42	42	42	40	41	39	39	39	40
37.5	39	39	38	36	37	36	36	36	37
40	37	37	35	32	35	33	33	34	35
42.5	34	34	32	29	32	31	31	33	33
45	32	32	30	26	30	29	29	31	30
47.5	30	30	28	24	29	27	27	29	29
50	28	28	26	23	27	25	26	27	27
52.5	27	27	25	21	25	24	24	26	25
55	25	25	24	21	23	22	23	25	23
57.5	24	24	22	20	22	21	22	23	22
60	23	23	22	19	21	20	21	22	21
62.5	22	22	21	18	20	19	20	22	20
65	21	21	20	18	19	19	20	21	19
67.5	20	20	19	17	18	18	19	20	19
70	20	20	19	17	18	18	19	20	18
72.5	19	19	18	16	17	18	18	19	18
75	19	19	18	16	17	18	18	19	17
77.5	19	19	17	15	16	18	17	18	17
80	18	18	17	15	16	18	17	18	17
82.5	18	18	17	15	15	18	17	18	16
85	18	18	17	15	14	18	16	18	16
87.5	18	18	17	15	13	18	16	18	16
90	18	18	17	15	13	18	17	18	16

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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	18	18	17	15	13	18	17	18	16
92.5	18	18	17	15	13	18	17	18	16
95	18	18	17	15	14	18	17	18	16
97.5	18	18	17	15	15	18	17	18	16
100	18	18	17	15	16	18	18	19	17
102.5	18	18	17	15	16	18	18	19	17
105	19	19	17	15	17	18	18	19	18
107.5	19	19	18	16	17	18	18	20	18
110	19	19	18	16	18	18	19	20	19
112.5	20	20	19	17	18	18	19	21	19
115	20	20	19	17	19	19	20	21	20
117.5	21	21	20	18	20	19	20	22	21
120	22	22	21	18	20	20	21	23	22
122.5	23	23	22	19	21	21	22	24	23
125	24	24	22	19	23	22	23	25	24
127.5	25	25	23	20	24	23	24	26	26
130	26	26	25	21	26	25	26	28	27
132.5	28	28	26	23	27	26	27	29	29
135	29	30	28	24	29	28	29	31	31
137.5	31	31	30	27	31	30	31	33	33
140	33	33	32	29	33	33	33	34	35
142.5	35	35	35	33	35	35	36	36	37
145	38	38	38	36	38	38	38	39	40
147.5	40	40	40	40	41	41	41	42	43
150	43	43	43	43	45	44	44	45	46
152.5	46	47	47	47	49	48	48	49	50
155	50	51	51	51	53	52	52	53	54
157.5	55	55	55	56	58	58	58	59	59
160	60	60	61	61	64	64	64	65	66
162.5	67	67	67	68	71	71	72	72	73
165	74	74	75	77	79	79	80	82	82
167.5	83	83	84	86	87	88	90	91	92
170	92	93	94	96	97	98	100	101	102
172.5	102	102	104	106	107	108	110	112	113
175	111	112	113	114	116	117	119	121	121
177.5	119	119	120	120	122	122	124	124	125
180	123	123	123	123	123	123	123	123	123

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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		99	99	99	99		84	84	84		70	70	70		57	57	57	51
1	96	91	87	83		89	84	80	77		71	68	66		59	57	55		48	46	45	40
2	88	80	73	67		81	74	68	63		62	58	54		52	48	46		42	40	38	33
3	80	70	62	56		74	65	58	53		55	50	46		46	42	39		37	35	32	28
4	73	62	54	48		67	58	51	45		49	44	39		41	37	34		34	31	28	25
5	68	56	48	41		62	52	45	39		44	39	34		37	33	30		31	28	25	22
6	63	50	42	36		58	47	40	34		40	35	30		34	30	26		28	25	22	19
7	58	46	38	32		54	43	36	31		37	31	27		31	27	24		26	23	20	18
8	54	42	34	29		50	39	32	27		34	28	24		29	25	21		24	21	18	16
9	51	39	31	26		47	36	29	25		31	26	22		27	23	20		23	19	17	15
10	48	36	28	24		44	33	27	22		29	24	20		25	21	18		21	18	16	14

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	3.8	3.72	3.75
8.0	2.1	4.95	5.00
10.0	1.4	6.19	6.25
12.0	0.9	7.43	7.50
14.0	0.7	8.67	8.76
16.0	0.5	9.91	10.01

Average Luminance (cd/m^2)

	0 deg Plane	45 deg Plane	90 deg Plane
0	26377	26377	26377
45	6236	5848	5902
55	4904	4599	4547
65	4104	3874	3727
75	3688	3452	3271
85	3489	3254	2744

Spacing Criterion

0 degree plane:	0.6
90 degree plane:	0.6
180 degree plane:	0.6
270 degree plane:	0.6

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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	4.9	5.8	5.9	6.8	8.0	2.9	3.8	3.8	4.7	6.0
	3H	7.2	8.0	8.1	9.0	10.2	5.0	5.8	6.0	6.8	8.1
	4H	8.3	9.1	9.3	10.1	11.4	6.0	6.8	7.0	7.8	9.1
	6H	9.5	10.2	10.5	11.2	12.5	7.1	7.8	8.0	8.8	10.0
	8H	10.1	10.8	11.1	11.8	13.0	7.5	8.2	8.5	9.2	10.5
	12H	10.7	11.3	11.6	12.3	13.6	7.9	8.6	8.9	9.6	10.9
4H	2H	5.2	6.0	6.2	7.0	8.3	3.6	4.4	4.6	5.4	6.6
	3H	7.8	8.4	8.7	9.4	10.7	6.0	6.6	6.9	7.6	8.9
	4H	9.1	9.7	10.1	10.7	12.0	7.1	7.7	8.1	8.7	10.1
	6H	10.5	11.0	11.5	12.0	13.3	8.3	8.9	9.3	9.9	11.2
	8H	11.1	11.6	12.1	12.7	14.0	8.9	9.4	9.9	10.4	11.7
	12H	11.8	12.3	12.9	13.3	14.7	9.4	9.9	10.4	10.9	12.2
8H	4H	9.3	9.8	10.3	10.8	12.2	7.7	8.2	8.7	9.2	10.5
	6H	10.9	11.3	11.9	12.4	13.7	9.1	9.5	10.1	10.6	11.9
	8H	11.7	12.1	12.8	13.2	14.5	9.8	10.2	10.8	11.2	12.5
	12H	12.6	13.0	13.7	14.0	15.4	10.5	10.8	11.5	11.9	13.2
12H	4H	9.4	9.8	10.4	10.8	12.2	7.8	8.3	8.8	9.3	10.6
	6H	11.0	11.4	12.0	12.4	13.8	9.3	9.7	10.3	10.7	12.1
	8H	11.9	12.2	12.9	13.3	14.6	10.1	10.4	11.1	11.4	12.8

Maximum UGR = 15.4

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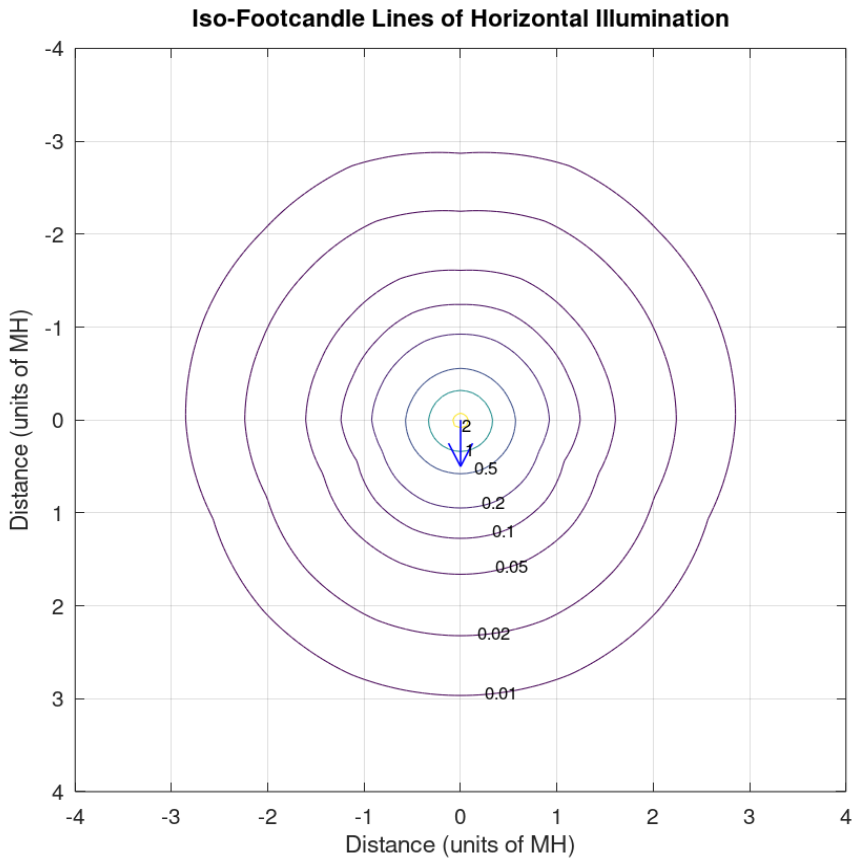
Iso-Illuminance Plot



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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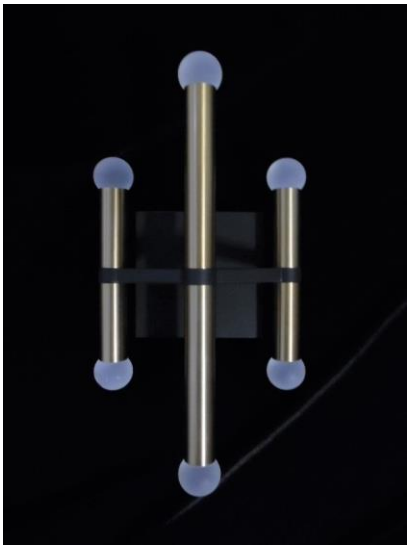
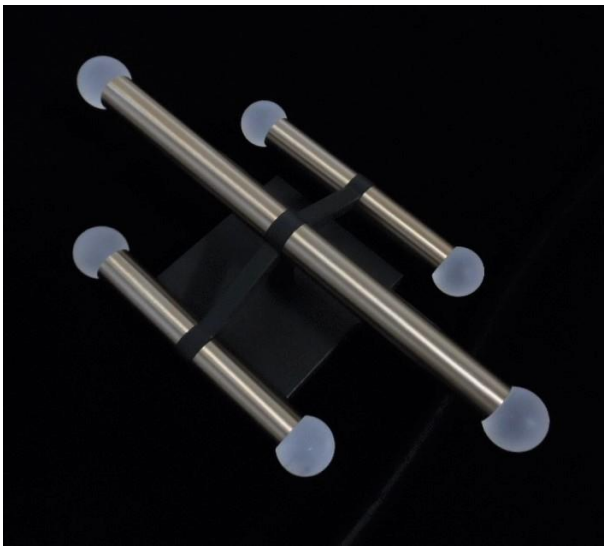
Additional Pictures of Test Subject





Report of Test

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Test Distance	9.5 m
Ambient Temperature	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-41-14 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.

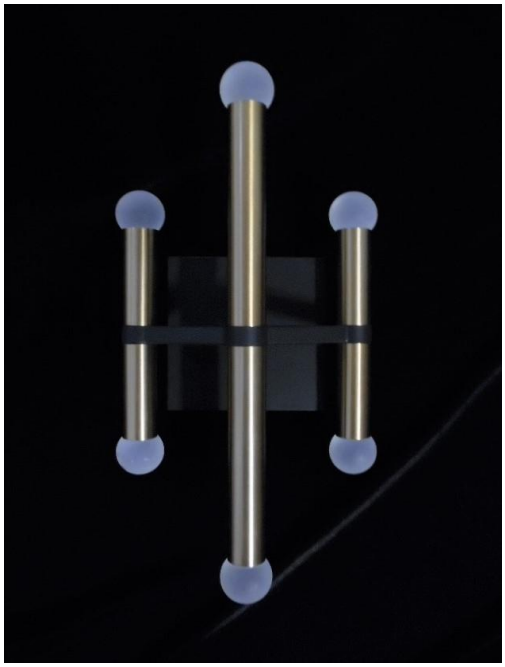
This report may contain data that are not covered by the NVLAP accreditation. Quantities marked with ‡ are not covered.

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.

Report of Test

LLIA001333-001B

Integrating Sphere Report
Catalog Number: 3-584-1540 Nero Sconce
Surface wall mounted, formed steel and tubular steel housings, frosted plastic enclosures.
6 White LEDs
One ES LD017D-CA07224-M18F LED driver



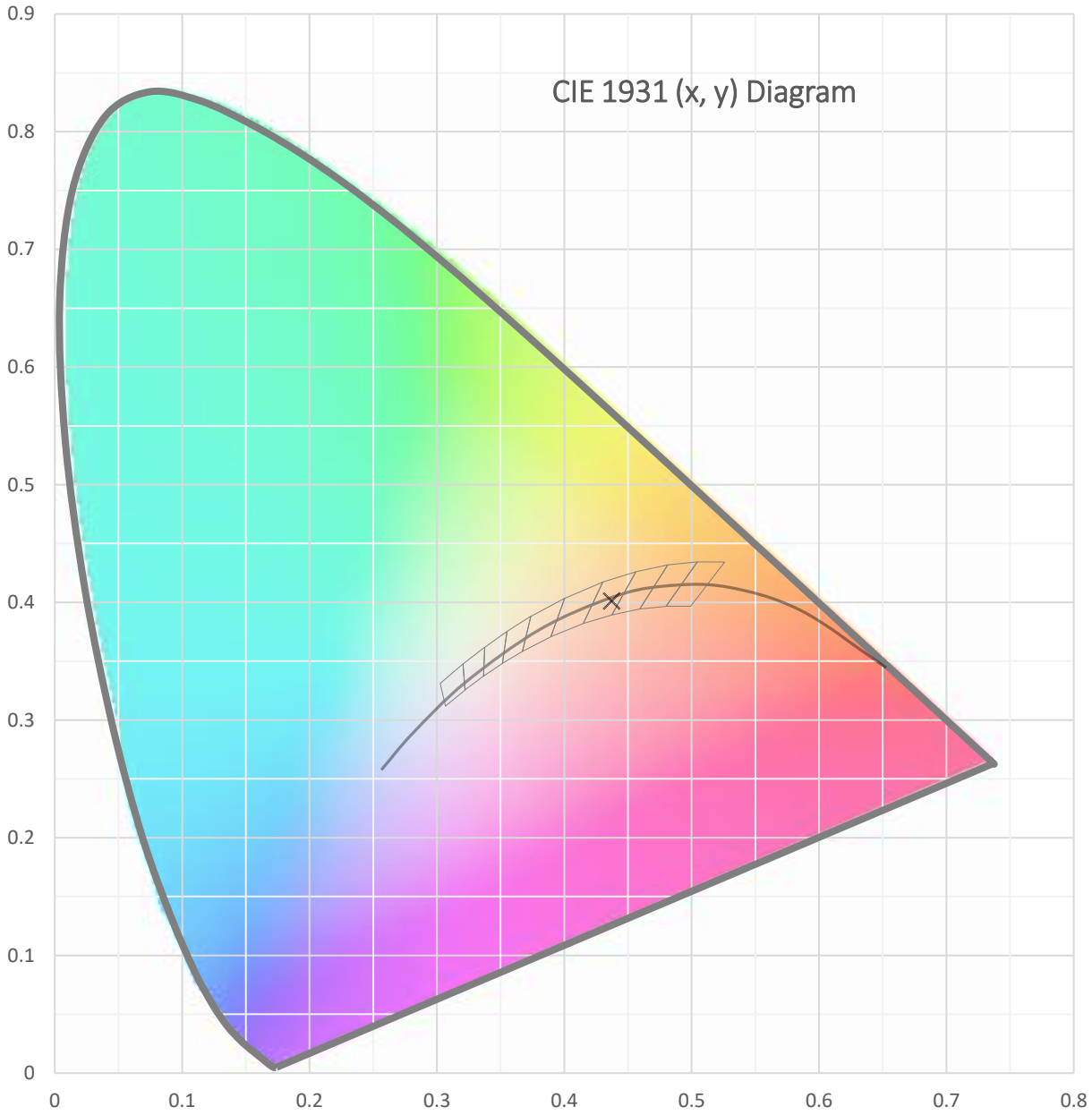
Performance Summary

Voltage	120.0	Vac
Current	0.1360	A
Power	16.20	W
Frequency	59.97	Hz
Power Factor	0.994	
Current THD	5.1	%
Total Luminous Flux	366.6	lm
Efficacy	22.6	lm/W
Chromaticity (x,y)	(0.4371, 0.4011)	
(u',v')	(0.2519, 0.5202)	
Duv	-0.0012	
CCT	2973	K
CRI (Ra)	91	
R9	53	
TM-30: Rf	90	
TM-30: Rg	98	

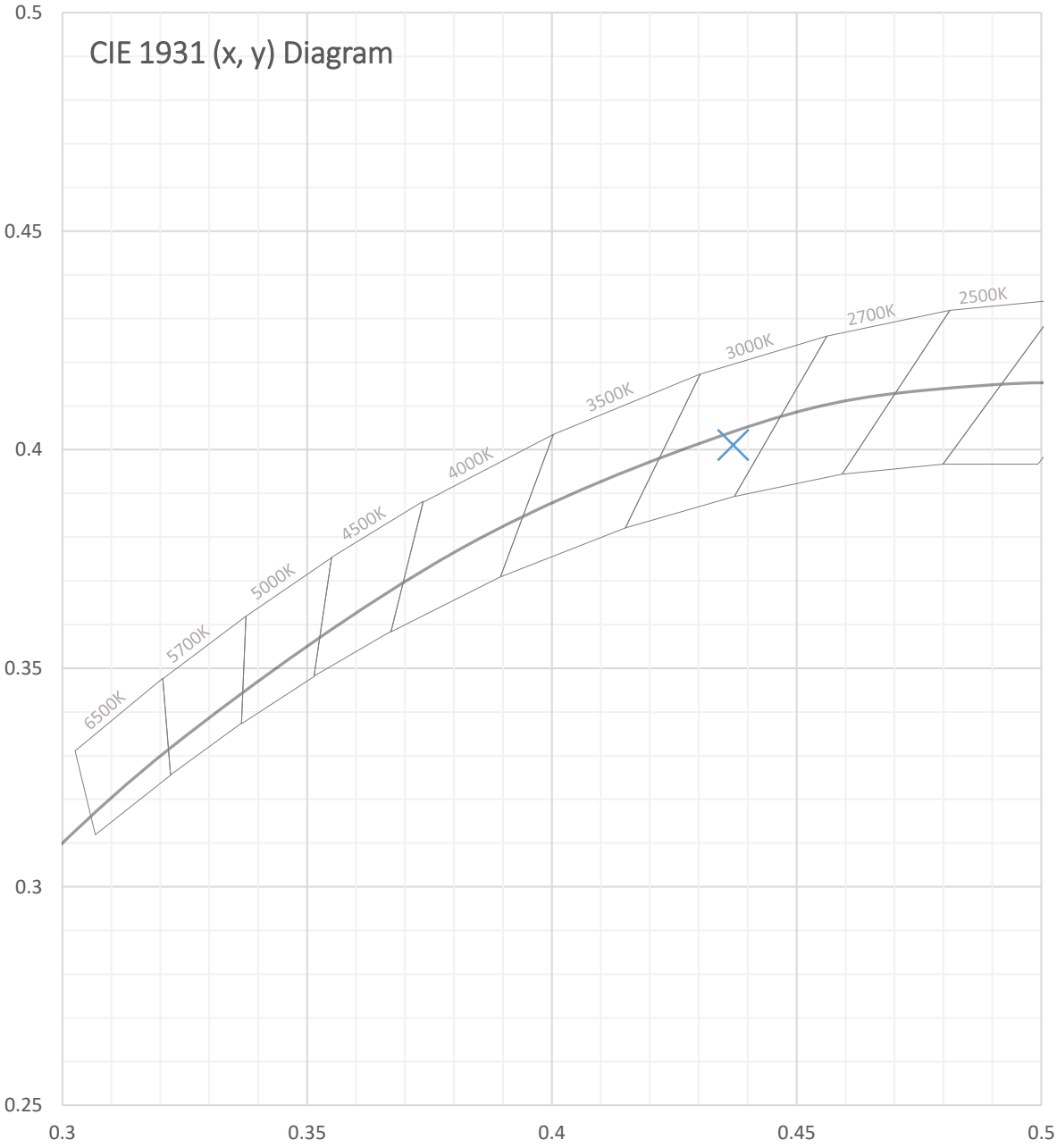
Prepared For:
Oxygen Lighting
201 Railhead Road
Fort Worth, TX 76106, USA

Test date: 10/14/2020
Report date: 10/19/2020

Test Report Number: LLIA001333-001B



Test Report Number: LLIA001333-001B



Test Report Number: LLIA001333-001B

Total Radiant Flux	1.280	W
Total Luminous Flux	366.6	Lm
Chromaticity CIE 1931 (x, y)	(0.4371, 0.4011)	
Chromaticity CIE 1976 (u', v')	(0.2519, 0.5202)	
Correlated Color Temperature (CCT)	2973	K
Color Rendering Index (Ra)	91	
R1	92	
R2	97	
R3	98	
R4	90	
R5	91	
R6	95	
R7	90	
R8	79	
R9	53	
R10	91	
R11	90	
R12	83	
R13	93	
R14	99	
TM-30: Rf	90	
TM-30: Rg	98	
Distance from Planckian Locus (Duv)	-0.0012	
Scotopic/Photopic Ratio ǂ	1.410	

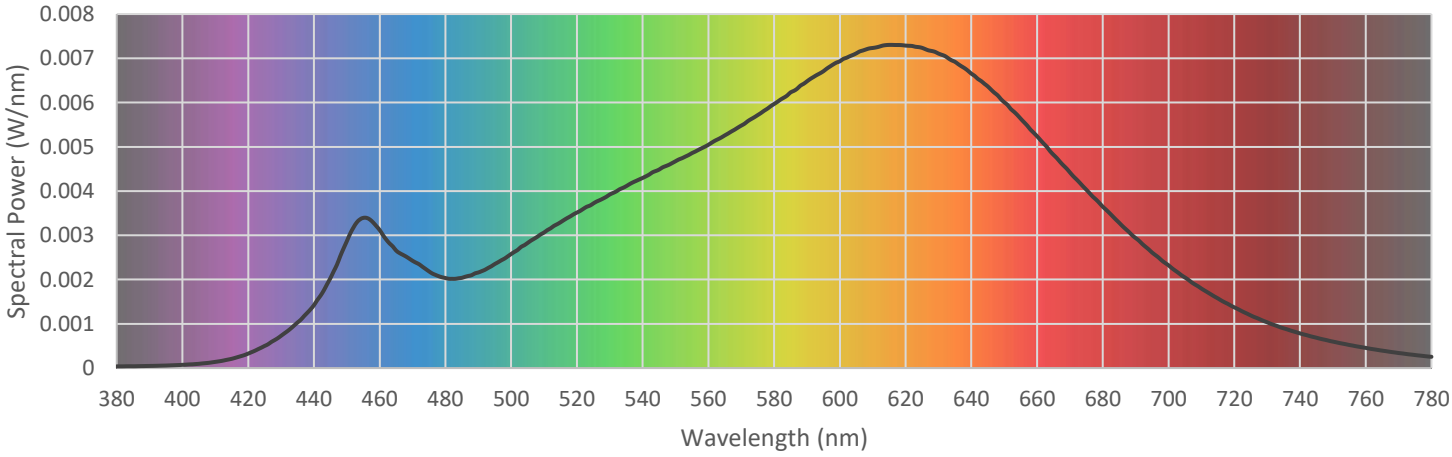
Electrical Data

Voltage	120.0	Vac
Current	0.1360	A
Power	16.20	W
Frequency	59.97	Hz
Power Factor	0.994	
Current THD	5.1	%

Test Report Number: LLIA001333-001B

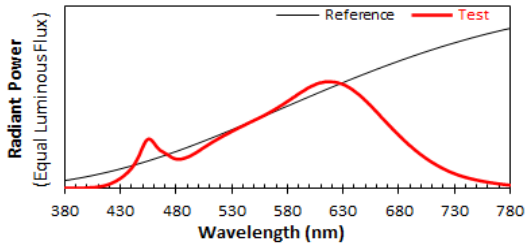
Summary Spectral Power Distribution (wavelength - nm, spectral power - W/nm)

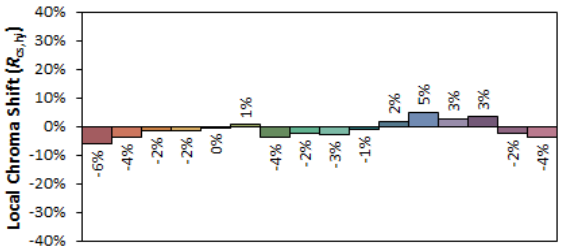
380	0.000039	480	0.002035	580	0.005967	680	0.003646
385	0.000041	485	0.002039	585	0.006230	685	0.003283
390	0.000048	490	0.002159	590	0.006479	690	0.002938
395	0.000057	495	0.002350	595	0.006708	695	0.002611
400	0.000073	500	0.002578	600	0.006931	700	0.002322
405	0.000096	505	0.002827	605	0.007111	705	0.002047
410	0.000140	510	0.003062	610	0.007234	710	0.001796
415	0.000209	515	0.003294	615	0.007303	715	0.001575
420	0.000327	520	0.003514	620	0.007287	720	0.001372
425	0.000500	525	0.003720	625	0.007236	725	0.001190
430	0.000730	530	0.003923	630	0.007107	730	0.001035
435	0.001030	535	0.004110	635	0.006922	735	0.000899
440	0.001422	540	0.004297	640	0.006653	740	0.000784
445	0.002032	545	0.004484	645	0.006365	745	0.000686
450	0.002866	550	0.004673	650	0.006007	750	0.000598
455	0.003394	555	0.004857	655	0.005637	755	0.000521
460	0.003118	560	0.005046	660	0.005239	760	0.000456
465	0.002655	565	0.005258	665	0.004820	765	0.000394
470	0.002424	570	0.005480	670	0.004421	770	0.000340
475	0.002185	575	0.005717	675	0.004030	775	0.000295
						780	0.000254

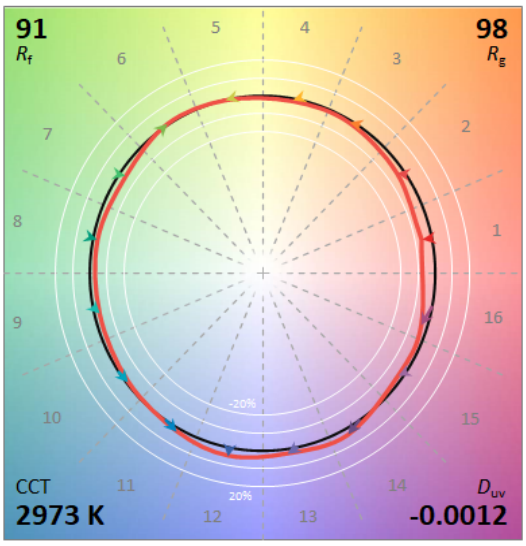


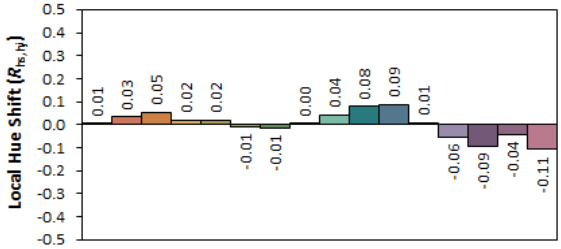
Test Report Number: LLIA001333-001B

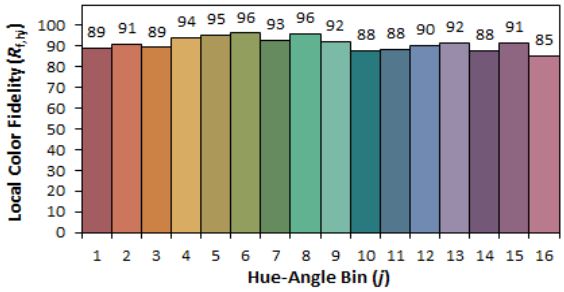
IES TM-30 Details

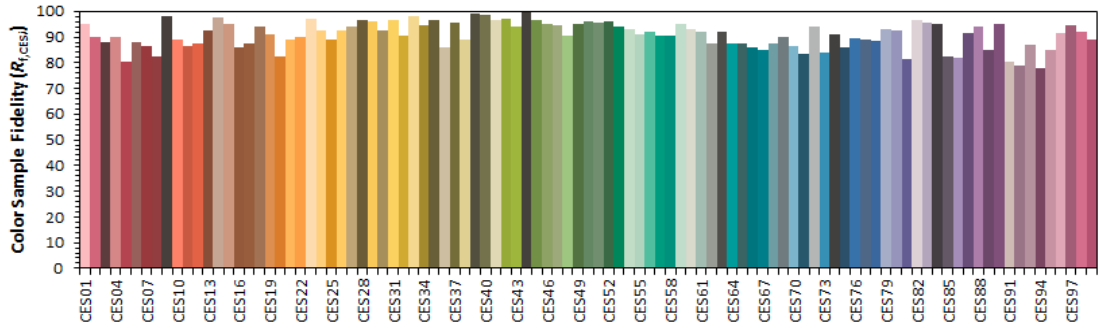












Notes:

x	**0.4371**
y	**0.4011**
u'	**0.2520**
v'	**0.5202**

CIE 13.3-1995 (CRI)

R_a	91
R_9	53

Test Report Number: LLIA001333-001B

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:	24.9 °C
Test Procedure:	Tested in accordance with the applicable sections of: LM-79-19, LM-78-07, LM-58-13, ANSI_ANSLG C78.377-2017, TM-30-18
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.

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