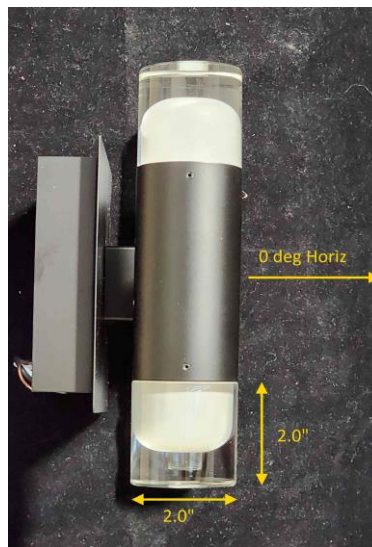


Report of Test

LLIA002028-007A

Indoor Distribution Photometry Test Report

Catalog Number: 3-595-15 ALARUM 4LT LED WLMT - BK
Wall mounted, black painted formed steel housing,
clear glass enclosures with frosted interior.
48 white LEDs. Four white circuit boards with 12 LEDs each.
One Novbo NE012120035-2G LED driver



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

Performance Summary			
Input Voltage	120.0 Vac	Luminous Flux	712.2 Lumens
Input Current	0.1163 A	Total Efficacy	51.8 lm/W
Input Power	13.74 W	Downward Flux	354.4 Lumens
Frequency	60.00 Hz	Downward Flux	49.8 % of Total
Power Factor	0.984		
Current THD	11.4 %		

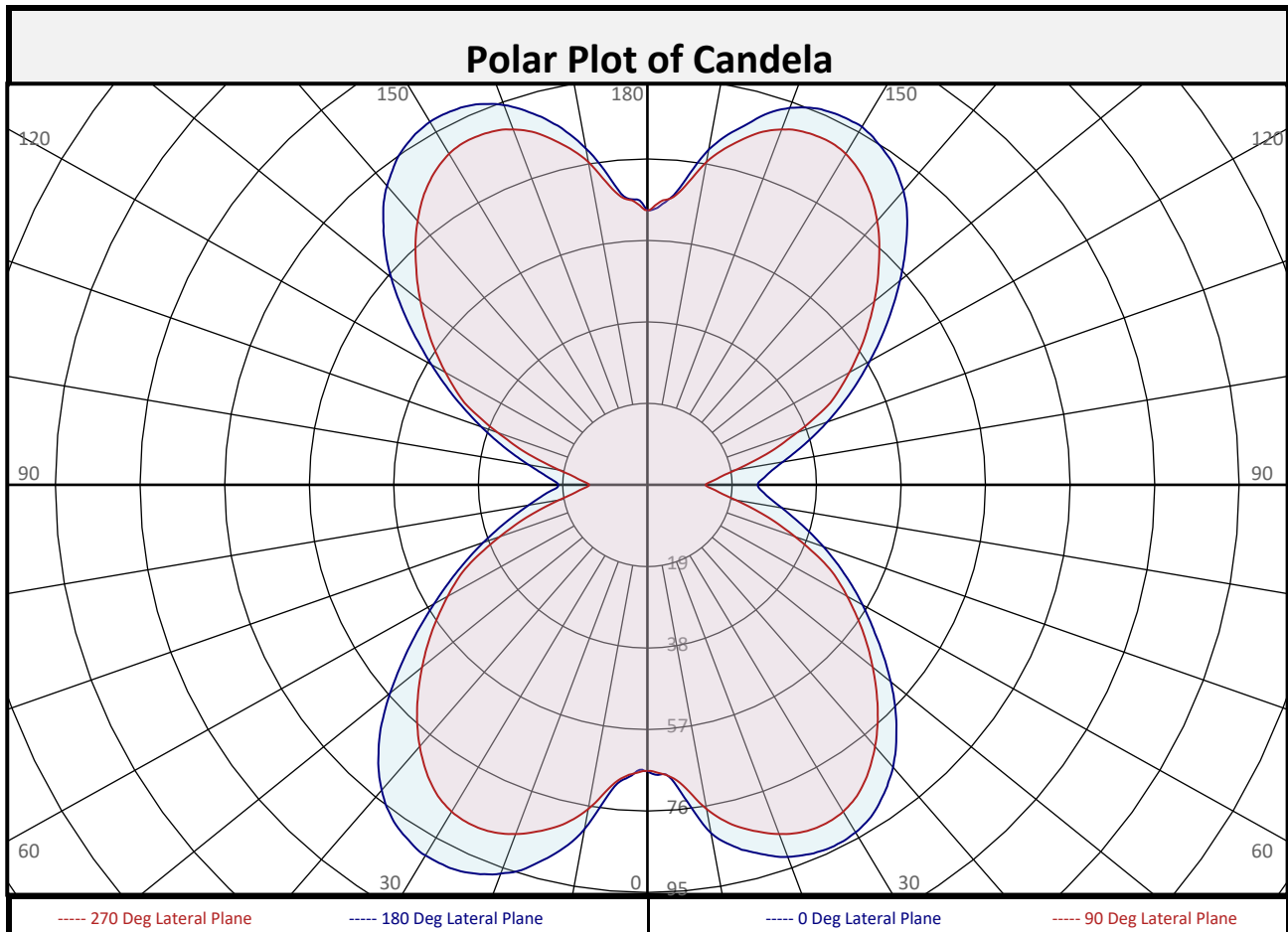
This test report was issued by LightLab International Allentown, LLC without alterations or erasures.

Test date: 03/17/2023
Report date: 03/21/2023

Signed: _____

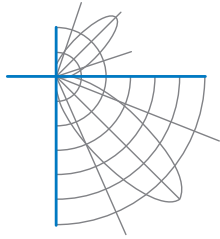


Report of Test
LLIA002028-007A



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	7.0	1.0%	90-100	25.1	3.5%	0-20	31.5	4.4%
10-20	24.5	3.4%	100-110	35.5	5.0%	0-30	74.3	10.4%
20-30	42.9	6.0%	110-120	47.3	6.6%	0-40	131.0	18.4%
30-40	56.7	8.0%	120-130	56.7	8.0%	0-60	247.3	34.7%
40-50	60.6	8.5%	130-140	61.5	8.6%	0-80	329.1	46.2%
50-60	55.6	7.8%	140-150	57.2	8.0%	10-90	347.4	48.8%
60-70	46.5	6.5%	150-160	43.3	6.1%	20-50	160.2	22.5%
70-80	35.3	5.0%	160-170	24.4	3.4%	40-90	223.3	31.4%
80-90	25.2	3.5%	170-180	6.8	1.0%	60-90	107.0	15.0%
0-90	354.4	49.8%	90-180	357.8	50.2%	0-180	712.2	100.0%



Report of Test

LLIA002028-007A

Luminous Intensity (Candela) Table

		Lateral (C-Plane) Angles								
		0	22.5	45	67.5	90	112.5	135	157.5	180
Vertical (Gamma) Angles - Data was acquired in 0.5° increments, 2.5° increments shown.	0	67	67	67	67	67	67	67	67	67
	2.5	68	67	67	67	67	67	67	67	67
	5	70	70	69	69	69	69	69	69	69
	7.5	76	76	74	73	72	72	74	74	74
	10	82	82	80	78	77	77	79	81	81
	12.5	86	85	83	81	80	81	83	86	87
	15	88	88	86	84	83	84	87	89	90
	17.5	91	90	88	86	85	86	90	93	94
	20	92	92	90	88	87	88	92	95	96
	22.5	93	93	91	89	88	90	93	97	98
	25	94	94	92	90	88	90	94	98	99
	27.5	94	94	92	90	88	90	94	99	100
	30	94	93	92	90	88	90	94	100	100
	32.5	93	93	91	89	87	88	94	100	99
	35	91	91	89	88	85	87	93	100	98
	37.5	89	89	87	86	82	85	91	99	96
	40	86	86	85	83	80	82	88	95	93
	42.5	83	83	81	80	76	79	85	91	89
	45	79	79	78	76	73	75	80	85	85
	47.5	75	75	74	73	70	72	76	79	81
50	71	71	70	70	66	68	71	74	76	
52.5	67	67	66	66	63	64	67	68	70	
55	63	63	63	62	59	61	62	63	65	
57.5	59	59	59	59	55	57	58	58	60	
60	56	55	55	55	52	53	54	54	55	
62.5	52	52	52	52	48	50	49	49	51	
65	49	49	49	49	44	46	45	45	47	
67.5	45	45	45	46	40	43	41	42	43	
70	42	42	42	43	35	40	38	38	39	
72.5	39	39	39	40	31	37	34	34	36	
75	36	36	36	37	27	34	30	31	33	
77.5	33	33	34	34	24	31	27	28	30	
80	31	31	31	32	20	27	24	25	27	
82.5	28	29	29	29	17	24	21	23	25	
85	27	27	27	28	16	22	19	21	23	
87.5	25	26	26	26	14	19	16	18	21	
90	25	25	25	25	13	18	15	18	20	

16 lateral half-planes of data were acquired, 22.5 degree increments shown.

North America (issuing laboratory)

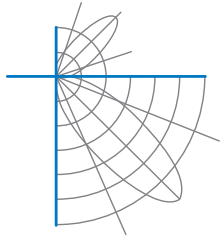
LightLab International Allentown, LLC
905 Harrison Street, Suite 135
Allentown, PA 18103 USA

Ph: +1 484-273-0705
Fx: +1 484-209-5779
www.lightlaballentown.com

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LightLab International
50 Redcliffe Gardens Drive
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Fx : +61 7 3283 8751
www.lightlabint.com



Report of Test

LLIA002028-007A

Luminous Intensity (Candela) Table

		Lateral (C-Plane) Angles								
		0	22.5	45	67.5	90	112.5	135	157.5	180
Vertical (Gamma) Angles - Data was acquired in 0.5° increments, 2.5° increments shown.	90	25	25	25	25	13	18	15	18	20
	92.5	26	26	26	26	14	19	16	18	21
	95	27	27	27	28	16	22	19	20	23
	97.5	29	29	29	30	17	24	21	22	25
	100	31	31	31	32	20	27	24	25	27
	102.5	34	34	34	35	24	30	27	28	30
	105	37	37	37	38	28	33	30	31	33
	107.5	40	40	40	40	32	36	34	35	36
	110	43	43	43	44	36	40	38	38	40
	112.5	46	47	46	47	40	43	42	42	43
	115	50	50	50	50	45	46	46	46	47
	117.5	54	54	53	53	49	50	50	50	52
	120	58	58	57	57	52	53	54	54	56
	122.5	62	62	61	60	56	57	58	59	61
	125	66	66	65	64	60	61	62	64	65
	127.5	70	70	69	67	63	64	67	69	70
	130	74	74	73	71	67	68	71	74	75
	132.5	78	79	77	75	70	72	75	79	80
	135	82	83	81	78	74	76	79	83	84
	137.5	86	88	85	82	77	80	83	87	88
	140	90	91	88	85	80	83	87	91	91
	142.5	92	93	91	88	83	86	90	94	94
	145	94	95	93	90	86	88	92	96	96
	147.5	95	96	94	91	88	89	93	97	97
150	96	97	95	92	89	91	94	98	98	
152.5	96	96	95	92	90	91	94	97	98	
155	96	96	94	92	90	91	94	97	97	
157.5	95	95	93	91	89	91	93	95	96	
160	94	93	92	89	88	90	91	94	94	
162.5	91	91	89	87	86	88	89	91	92	
165	87	87	86	84	84	85	86	88	88	
167.5	84	83	82	81	80	81	83	84	84	
170	79	79	78	77	76	78	79	80	80	
172.5	73	73	72	71	71	72	74	74	74	
175	68	68	67	67	67	68	68	68	68	
177.5	65	65	65	66	66	66	66	67	67	
180	64	64	64	64	64	64	64	64	64	

16 lateral half-planes of data were acquired, 22.5 degree increments shown.

North America (issuing laboratory)

Australasia & S.E. Asia



Report of Test

LLIA002028-007A

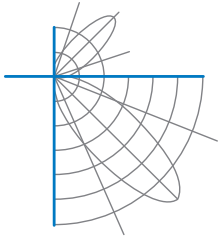
Coefficients of Utilization/Room Utilization - Zonal Cavity Method																					
Effective Floor Cavity Reflectance 0.20																					
RC	80				70				50				30				10				0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																					
0	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56	50			
1	96	91	87	83	88	84	80	77	71	68	65	58	56	54	47	46	44	39			
2	87	79	72	66	80	73	67	62	61	57	53	50	47	44	40	38	36	31			
3	79	69	61	54	72	63	56	51	53	48	44	44	40	37	35	32	30	26			
4	72	60	52	46	66	56	48	43	47	41	37	39	34	31	31	28	25	22			
5	66	54	45	39	60	49	42	36	42	36	31	35	30	26	28	24	22	18			
6	60	48	39	33	55	44	37	31	37	31	27	31	26	23	25	22	19	16			
7	56	43	35	29	51	40	32	27	34	28	23	28	23	20	23	19	16	14			
8	52	39	31	25	47	36	29	24	31	25	21	26	21	18	21	17	15	12			
9	48	35	28	22	44	33	26	21	28	22	18	23	19	16	19	16	13	11			
10	45	32	25	20	41	30	23	19	26	20	16	21	17	14	18	14	12	10			

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	1.9	11.19	10.50
8.0	1.0	14.92	14.00
10.0	0.7	18.65	17.50
12.0	0.5	22.38	21.00
14.0	0.3	26.11	24.50
16.0	0.3	29.84	28.00

Spacing Criterion	
0 deg:	1.8
90 deg:	1.7
180 deg:	1.9
270 deg:	1.7

Average Luminance (cd/m ²)			
	0 deg Plane	45 deg Plane	90 deg Plane
0	12916	12916	12916
45	7227	6833	10026
55	5538	5245	8207
65	4221	4012	6482
75	3179	3058	4321
85	2491	2396	2783



Report of Test

LLIA002028-007A

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

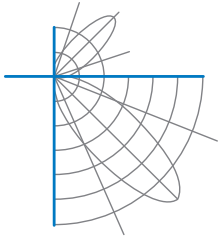
Room Size

UGR Viewed Crosswise

UGR Viewed Endwise

X=2H	Y=2H	11.3	12.2	12.3	13.2	14.5	9.3	10.3	10.3	11.2	12.5
	3H	13.3	14.1	14.3	15.1	16.4	10.9	11.7	11.8	12.7	14.0
	4H	14.2	15.0	15.2	16.0	17.3	11.4	12.2	12.4	13.2	14.5
	6H	15.0	15.8	16.0	16.8	18.1	11.8	12.5	12.8	13.5	14.8
	8H	15.4	16.1	16.4	17.1	18.4	11.9	12.6	12.9	13.6	14.9
	12H	15.8	16.5	16.8	17.5	18.8	12.0	12.7	13.0	13.7	15.0
4H	2H	11.6	12.4	12.6	13.4	14.7	9.9	10.7	10.9	11.7	13.0
	3H	13.8	14.4	14.8	15.5	16.8	11.7	12.4	12.7	13.4	14.7
	4H	14.8	15.4	15.8	16.4	17.7	12.5	13.1	13.4	14.1	15.4
	6H	15.8	16.3	16.8	17.3	18.7	13.0	13.6	14.0	14.6	15.9
	8H	16.3	16.8	17.3	17.8	19.1	13.2	13.7	14.2	14.8	16.1
	12H	16.8	17.2	17.8	18.2	19.6	13.4	13.9	14.4	14.9	16.2
8H	4H	14.9	15.5	15.9	16.5	17.8	12.8	13.3	13.8	14.3	15.7
	6H	16.1	16.5	17.1	17.6	18.9	13.6	14.0	14.6	15.1	16.4
	8H	16.7	17.1	17.7	18.1	19.5	13.9	14.3	15.0	15.4	16.7
	12H	17.3	17.6	18.3	18.7	20.1	14.3	14.6	15.3	15.6	17.0
12H	4H	15.0	15.4	16.0	16.4	17.8	12.9	13.3	13.9	14.4	15.7
	6H	16.1	16.5	17.2	17.5	18.9	13.7	14.1	14.7	15.1	16.5
	8H	16.8	17.1	17.8	18.1	19.5	14.1	14.5	15.2	15.5	16.9

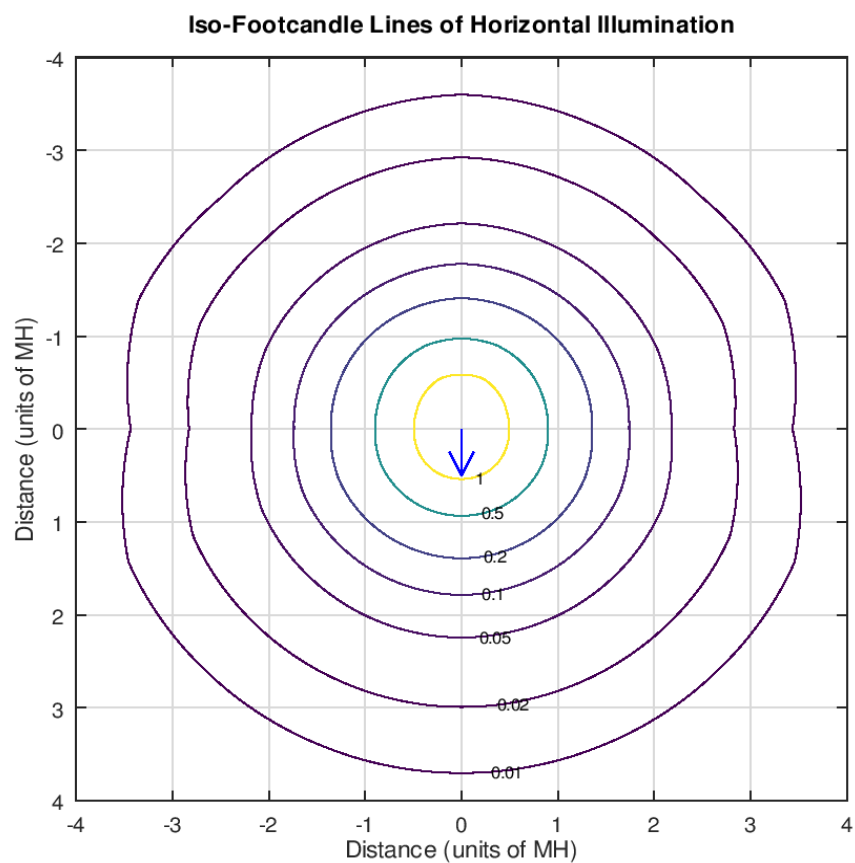
Maximum UGR = 20.1



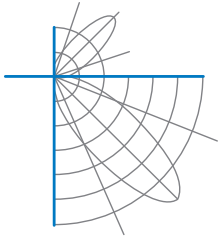
Report of Test

LLIA002028-007A

Iso-Illuminance Plot

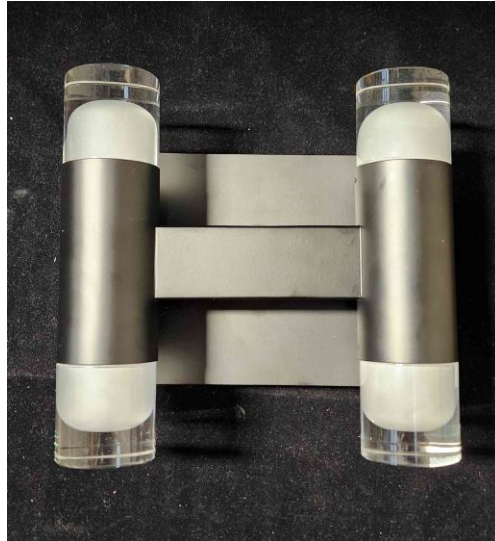


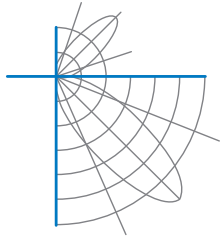
The isofootcandle values shown in the plot above are based on a mounting height of $h = 8.0$ feet. Grid values show multiples of mounting height. The isoilluminance contour lines are expressed in units of footcandles. The values expressed are based on the direct light from a single unit without the contribution of room reflections.



Report of Test
LLIA002028-007A

Additional Pictures of Test Subject





Report of Test

LLIA002028-007A

Test Distance 9.5 m
Ambient Temperature 25.0 °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.



Report of Test

LLIA002028-007B

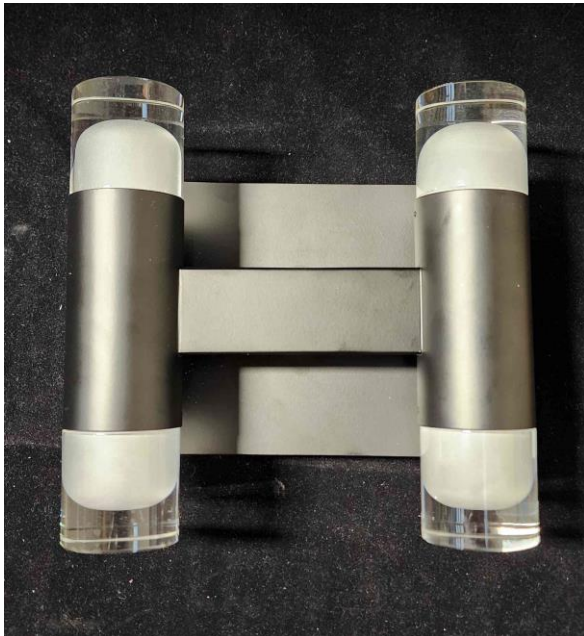
Integrating Sphere Report

Catalog Number: 3-595-15 ALARUM 4LT LED WLMT - BK

Wall mounted, black painted formed steel housing,
clear glass enclosures with frosted interior.

48 white LEDs. Four white circuit boards with 12 LEDs each.

One Novbo NE012120035-2G LED driver

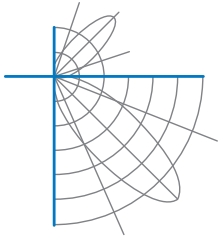


Performance Summary

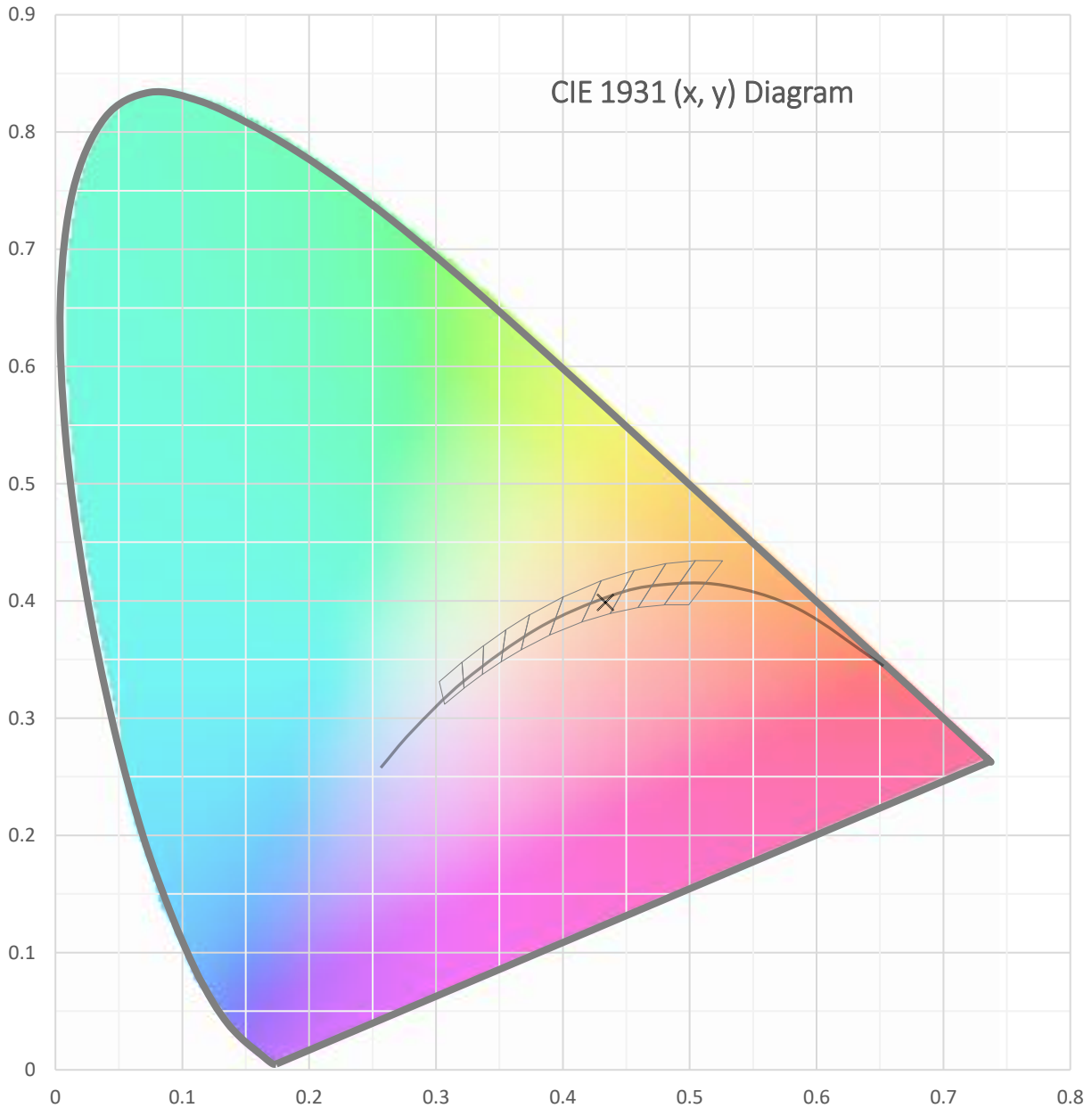
Voltage	120.0 Vac
Current	0.1164 A
Power	13.75 W
Frequency	59.99 Hz
Power Factor	0.984
Current THD	11.4 %
Total Luminous Flux	713.1 lm
Efficacy	51.9 lm/W
Chromaticity (x,y)	(0.4335, 0.3987)
(u',v')	(0.2507, 0.5187)
Duv	-0.0017
CCT	3015 K
CRI (Ra)	92
R9	61
TM-30: Rf	90
TM-30: Rg	99
TM-30: Rcs,h1	-5

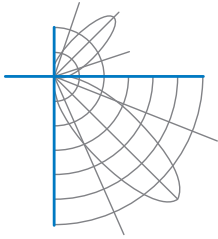
Prepared For:
Oxygen Lighting
201 Railhead Road
Fort Worth, TX 76106, USA

Test date: 03/14/2023
Report date: 03/21/2023

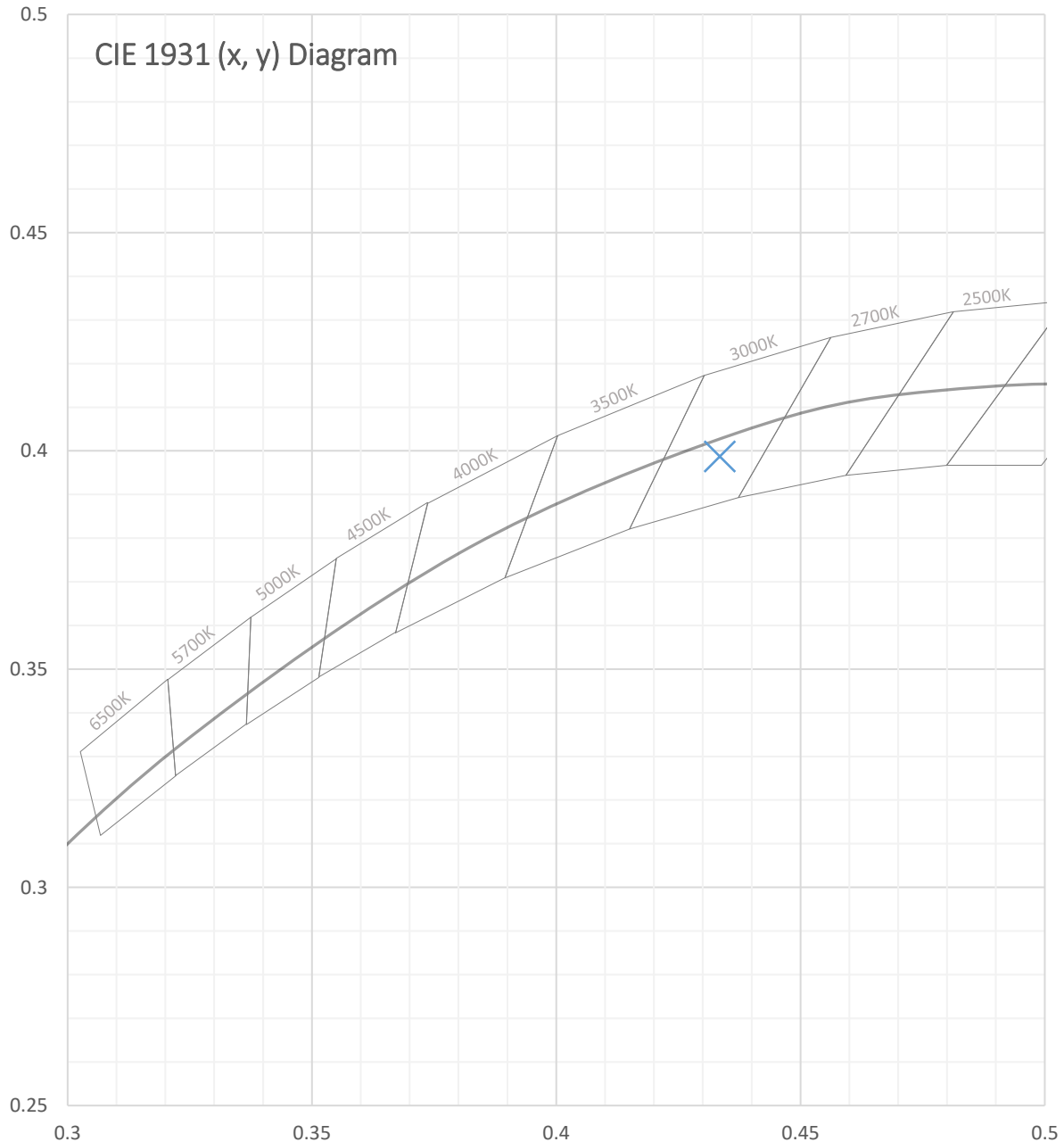


Test Report Number: LLIA002028-007B





Test Report Number: LLIA002028-007B



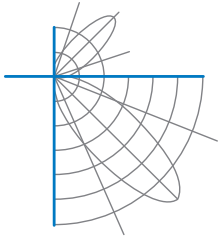


Test Report Number: LLIA002028-007B

Total Radiant Flux	2.521 W
Total Luminous Flux	713.1 Lm
Chromaticity CIE 1931 (x, y)	(0.4335, 0.3987)
Chromaticity CIE 1976 (u', v')	(0.2507, 0.5187)
Correlated Color Temperature (CCT)	3015 K
Color Rendering Index (Ra)	92
R1	92
R2	96
R3	97
R4	91
R5	92
R6	94
R7	92
R8	82
R9	61
R10	90
R11	90
R12	80
R13	93
R14	98
TM-30: Rf	90
TM-30: Rg	99
TM-30: Rcs,h1	-5
Distance from Planckian Locus (Duv)	-0.0017
Scotopic/Photopic Ratio ‡	1.423

Electrical Data

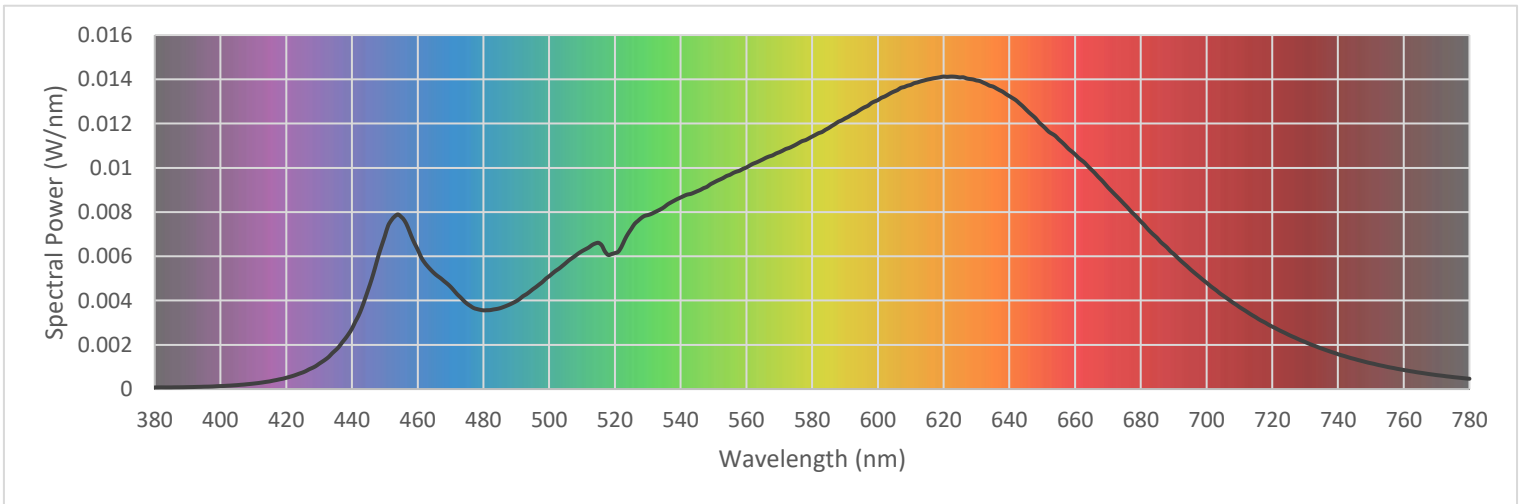
Voltage	120.0 Vac
Current	0.1164 A
Power	13.75 W
Frequency	59.99 Hz
Power Factor	0.984
Current THD	11.4 %

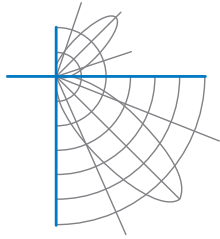


Test Report Number: LLIA002028-007B

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

380	0.000075	480	0.003557	580	0.011411	680	0.007573
385	0.000076	485	0.003652	585	0.011792	685	0.006827
390	0.000088	490	0.003974	590	0.012230	690	0.006107
395	0.000107	495	0.004508	595	0.012659	695	0.005424
400	0.000136	500	0.005100	600	0.013056	700	0.004808
405	0.000178	505	0.005687	605	0.013453	705	0.004230
410	0.000247	510	0.006233	610	0.013747	710	0.003708
415	0.000348	515	0.006607	615	0.013985	715	0.003244
420	0.000510	520	0.006147	620	0.014126	720	0.002821
425	0.000750	525	0.007241	625	0.014084	725	0.002451
430	0.001143	530	0.007862	630	0.013948	730	0.002128
435	0.001753	535	0.008225	635	0.013675	735	0.001833
440	0.002730	540	0.008657	640	0.013241	740	0.001577
445	0.004517	545	0.008939	645	0.012646	745	0.001360
450	0.006912	550	0.009328	650	0.011922	750	0.001168
455	0.007780	555	0.009683	655	0.011291	755	0.001002
460	0.006308	560	0.010012	660	0.010609	760	0.000862
465	0.005238	565	0.010379	665	0.009912	765	0.000738
470	0.004624	570	0.010703	670	0.009117	770	0.000631
475	0.003860	575	0.011042	675	0.008355	775	0.000542
						780	0.000466



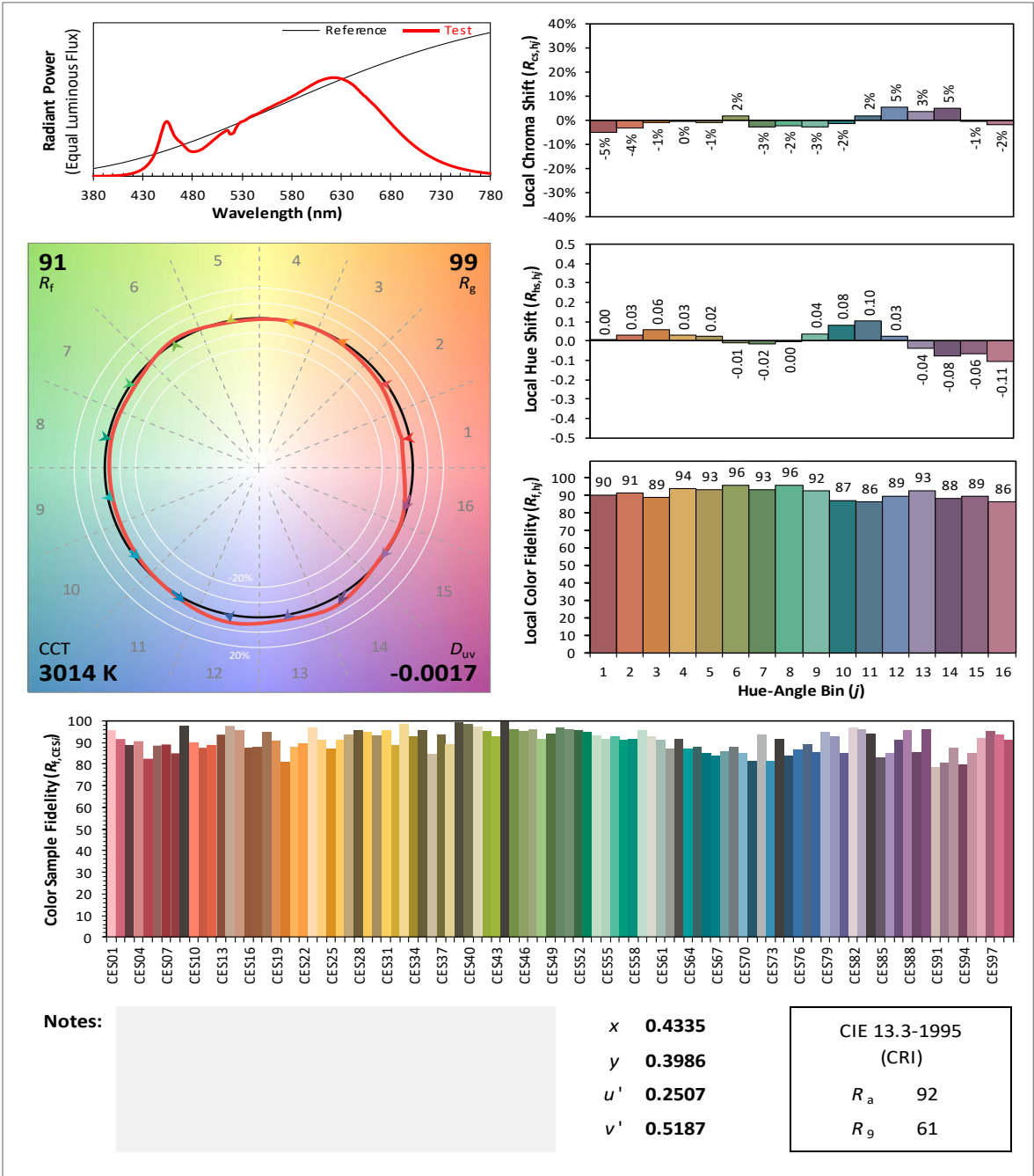


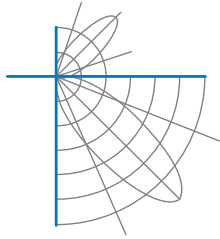
Test Report Number: LLIA002028-007B

IES TM-30 Details

Source: LLIA002028-007B **Manufacturer:** Oxygen Lighting

Date: 3/21/2023 **Model:** 3-595-15 ALARUM 4LT LED WLMT - BK





Test Report Number: LLIA002028-007B

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-78-20, 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.