

## Report of Test

LLIA001333-002A

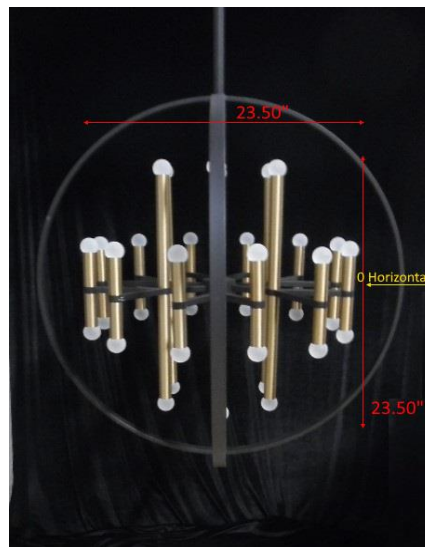
Indoor Distribution Photometry Test Report

Catalog Number: 3-685-1540 Nero Pendant

Pendant mounted, formed steel and tubular steel housings, frosted plastic enclosures.

36 White LEDs

Three ES LD030D-CA07242-M28F LED drivers



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

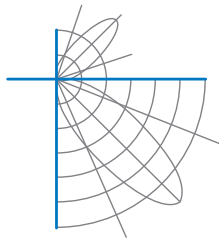
Performance Summary			
Input Voltage	120.0 V	Luminous Flux	2565.1 Lumens
Input Current	0.7338 A	Total Efficacy	29.4 lm/W
Input Power	87.30 W	Downward Flux	1292.8 Lumens
Frequency	60.00 Hz	Downward Flux	50.4 % of Total
Power Factor	0.991		
Current THD	7.3 %		

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

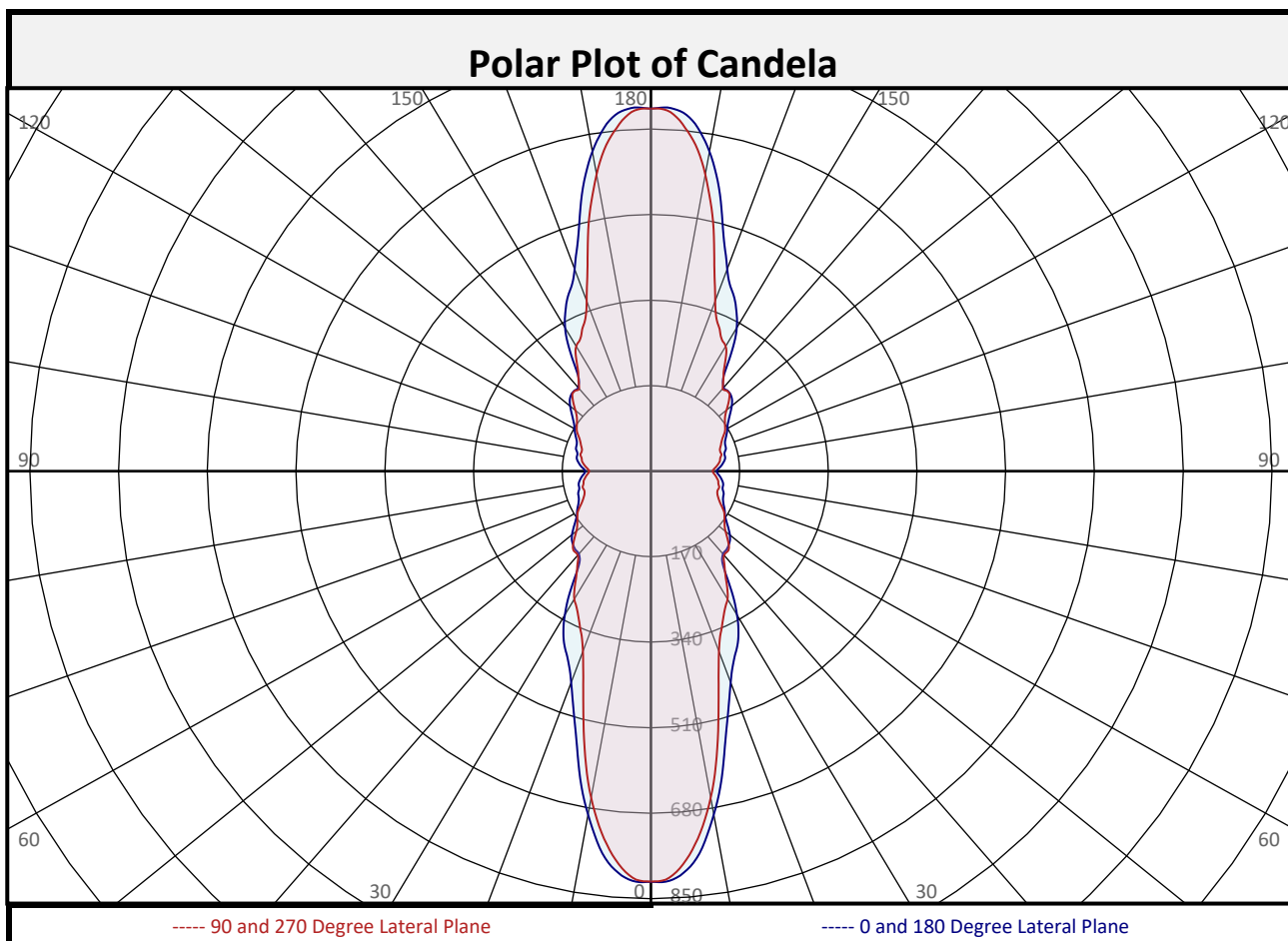
Test date: 10/16/2020

Report date: 10/19/2020

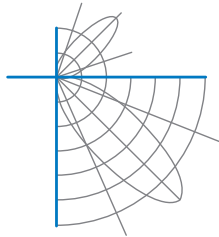
Signed: \_\_\_\_\_



## Report of Test LLIA001333-002A



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	71.7	2.8%		90-100	141.5	5.5%		0-20	222.3	8.7%
10-20	150.6	5.9%		100-110	146.1	5.7%		0-30	387.0	15.1%
20-30	164.6	6.4%		110-120	149.5	5.8%		0-40	550.3	21.5%
30-40	163.4	6.4%		120-130	153.2	6.0%		0-60	858.2	33.5%
40-50	155.6	6.1%		130-140	155.1	6.0%		0-80	1151	44.9%
50-60	152.3	5.9%		140-150	161.2	6.3%		10-90	1221	47.6%
60-70	147.6	5.8%		150-160	158.7	6.2%		20-90	483.6	18.9%
70-80	145.7	5.7%		160-170	142.2	5.5%		40-90	742.5	28.9%
80-90	141.4	5.5%		170-180	64.9	2.5%		60-90	434.6	16.9%
0-90	1293	50.4%		90-180	1272	49.6%		0-180	2565	100.0%

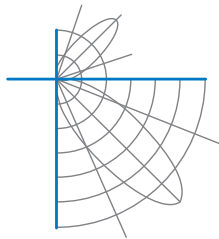


## Report of Test

### LLIA001333-002A

Luminous Intensity (Candela) Table

		Lateral (C-Plane) Angles								
		0	22.5	45	67.5	90	112.5	135	157.5	180
Vertical (Gamma) Angles	0	816	816	816	816	816	816	816	816	816
	2.5	815	815	813	811	809	811	813	815	815
	5	795	793	787	780	776	780	787	793	795
	7.5	755	753	743	731	725	731	743	753	755
	10	693	692	688	670	659	670	688	692	693
	12.5	626	625	623	602	581	602	623	625	626
	15	552	554	555	530	500	530	555	554	552
	17.5	494	492	488	464	431	464	488	492	494
	20	447	446	431	410	381	410	431	446	447
	22.5	413	408	390	367	349	367	390	408	413
	25	389	376	361	335	326	335	361	376	389
	27.5	363	346	331	308	307	308	331	346	363
	30	330	317	302	291	293	291	302	317	330
	32.5	292	289	278	275	271	275	278	289	292
	35	251	267	256	263	248	263	256	267	251
	37.5	224	252	234	254	231	254	234	252	224
	40	215	233	216	238	218	238	216	233	215
	42.5	213	210	203	216	217	216	203	210	213
	45	210	196	192	201	211	201	192	196	210
	47.5	205	189	179	196	199	196	179	189	205
50	198	183	164	195	187	195	164	183	198	
52.5	187	179	154	190	178	190	154	179	187	
55	177	173	149	180	172	180	149	173	177	
57.5	169	168	148	170	167	170	148	168	169	
60	164	162	149	161	162	161	149	162	164	
62.5	159	156	148	155	153	155	148	156	159	
65	153	151	144	150	145	150	144	151	153	
67.5	149	145	138	146	140	146	138	145	149	
70	147	141	135	143	136	143	135	141	147	
72.5	146	139	134	142	133	142	134	139	146	
75	143	139	134	139	134	139	134	139	143	
77.5	141	137	134	139	133	139	134	137	141	
80	140	134	133	139	131	139	133	134	140	
82.5	137	131	132	136	129	136	132	131	137	
85	134	127	130	133	125	133	130	127	134	
87.5	129	122	128	129	121	129	128	122	129	
90	126	120	126	126	118	126	126	120	126	

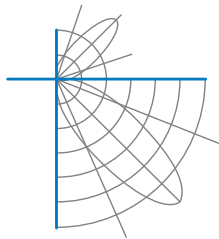


## Report of Test

### LLIA001333-002A

Luminous Intensity (Candela) Table

		Lateral (C-Plane) Angles								
		0	22.5	45	67.5	90	112.5	135	157.5	180
Vertical (Gamma) Angles	90	126	120	126	126	118	126	126	120	126
	92.5	130	122	128	127	122	127	128	122	130
	95	136	126	131	131	127	131	131	126	136
	97.5	141	130	134	134	132	134	134	130	141
	100	144	133	135	136	134	136	135	133	144
	102.5	145	135	135	135	137	135	135	135	145
	105	146	137	137	136	139	136	137	137	146
	107.5	151	137	137	139	139	139	137	137	151
	110	152	139	138	142	142	142	138	139	152
	112.5	154	144	142	146	146	146	142	144	154
	115	158	151	147	151	151	151	147	151	158
	117.5	164	157	150	156	158	156	150	157	164
	120	169	162	150	162	164	162	150	162	169
	122.5	175	168	150	169	168	169	150	168	175
	125	183	173	152	179	173	179	152	173	183
	127.5	192	178	156	188	179	188	156	178	192
	130	202	182	164	193	189	193	164	182	202
	132.5	211	188	178	194	201	194	178	188	211
	135	216	195	190	198	213	198	190	195	216
	137.5	217	209	200	212	216	212	200	209	217
140	217	231	213	233	214	233	213	231	217	
142.5	226	249	229	249	228	249	229	249	226	
145	252	265	249	259	243	259	249	265	252	
147.5	293	290	269	272	267	272	269	290	293	
150	329	315	292	286	286	286	292	315	329	
152.5	355	338	317	300	295	300	317	338	355	
155	379	362	344	321	311	321	344	362	379	
157.5	398	390	376	351	328	351	376	390	398	
160	427	424	418	390	360	390	418	424	427	
162.5	469	471	469	441	405	441	469	471	469	
165	527	528	524	499	467	499	524	528	527	
167.5	591	589	581	557	536	557	581	589	591	
170	646	644	635	614	599	614	635	644	646	
172.5	689	687	676	662	654	662	676	687	689	
175	715	713	706	697	693	697	706	713	715	
177.5	724	722	721	718	718	718	721	722	724	
180	721	721	721	721	721	721	721	721	721	



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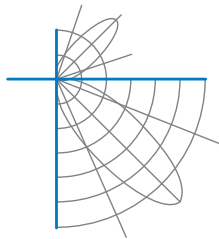
Coefficients of Utilization/Room Utilization - Zonal Cavity Method																						
Effective Floor Cavity Reflectance 0.20																						
RC	80					70					50				30				10			0
RW	70	50	30	10		70	50	30	10		50	30	10		50	30	10		50	30	10	0
RCR																						
0	107	107	107	107		99	99	99	99		84	84	84		69	69	69		56	56	56	50
1	96	91	86	82		88	84	79	76		70	67	64		58	56	54		47	45	44	38
2	87	79	72	66		80	72	66	61		61	56	53		50	47	44		41	38	36	31
3	79	69	61	55		73	64	57	51		54	48	44		44	41	37		36	33	31	26
4	73	61	53	46		66	57	49	44		48	42	38		40	35	32		32	29	26	23
5	67	55	46	40		61	51	43	38		43	37	33		36	31	28		29	26	23	20
6	62	49	41	35		57	46	38	33		39	33	29		33	28	25		27	23	21	18
7	57	45	37	31		53	42	34	29		36	30	26		30	26	22		25	21	19	16
8	53	41	33	28		49	38	31	26		33	27	23		28	23	20		23	20	17	15
9	50	37	30	25		46	35	28	23		30	25	21		26	21	18		21	18	16	13
10	47	35	27	22		43	32	26	21		28	23	19		24	20	17		20	17	14	12

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	22.7	3.98	3.51	
8.0	12.8	5.30	4.68	
10.0	8.2	6.63	5.85	
12.0	5.7	7.95	7.02	
14.0	4.2	9.28	8.19	
16.0	3.2	10.60	9.36	

Average Luminance (cd/m <sup>2</sup> )			
	0 deg Plane	45 deg Plane	90 deg Plane
0	26485	26485	26485
45	6804	6221	6857
55	5755	4835	5577
65	4979	4669	4720
75	4626	4350	4354
85	4334	4218	4063

Spacing Criterion	
0 degree plane:	0.7
90 degree plane:	0.6
180 degree plane:	0.7
270 degree plane:	0.6



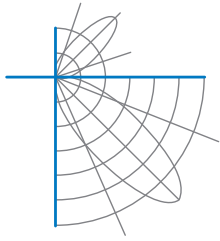
## Report of Test

### LLIA001333-002A

#### UGR TABLE - CORRECTED

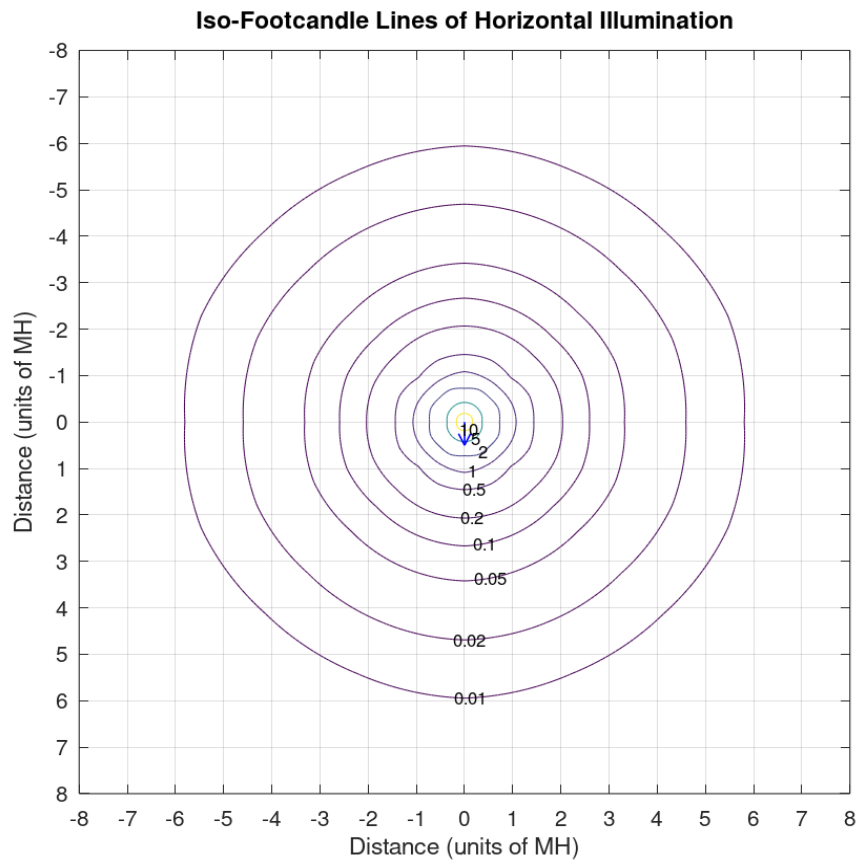
Reflectances											
Ceiling Cavity	70	70	50	50	30	70	70	50	50	30	
Walls	50	30	50	30	30	50	30	50	30	30	
Floor Cavity	20	20	20	20	20	20	20	20	20	20	
Room Size	UGR Viewed Crosswise					UGR Viewed Endwise					
X=2H	Y=2H	3.3	4.2	4.3	5.2	6.4	3.3	4.2	4.3	5.2	6.5
	3H	5.7	6.5	6.6	7.5	8.8	5.6	6.4	6.5	7.4	8.7
	4H	6.9	7.7	7.9	8.7	10.0	6.7	7.5	7.7	8.5	9.8
	6H	8.2	8.9	9.2	9.9	11.2	8.0	8.7	9.0	9.7	11.0
	8H	8.8	9.5	9.8	10.5	11.8	8.5	9.2	9.5	10.2	11.6
	12H	9.4	10.0	10.4	11.0	12.4	9.1	9.8	10.1	10.8	12.1
4H	2H	3.8	4.6	4.8	5.6	6.9	3.8	4.6	4.8	5.6	6.9
	3H	6.4	7.1	7.4	8.1	9.4	6.4	7.0	7.4	8.1	9.4
	4H	7.8	8.5	8.8	9.5	10.8	7.7	8.4	8.7	9.4	10.7
	6H	9.3	9.8	10.3	10.9	12.2	9.2	9.7	10.2	10.7	12.1
	8H	10.0	10.5	11.0	11.5	12.9	9.9	10.4	10.9	11.4	12.8
	12H	10.7	11.2	11.7	12.2	13.6	10.6	11.0	11.6	12.1	13.4
8H	4H	8.3	8.8	9.3	9.8	11.1	8.2	8.7	9.2	9.7	11.1
	6H	9.9	10.4	11.0	11.4	12.8	9.9	10.3	10.9	11.3	12.7
	8H	10.8	11.2	11.8	12.2	13.6	10.7	11.1	11.8	12.1	13.5
	12H	11.7	12.0	12.7	13.0	14.5	11.6	11.9	12.6	13.0	14.4
12H	4H	8.4	8.8	9.4	9.9	11.2	8.3	8.7	9.3	9.8	11.1
	6H	10.1	10.5	11.1	11.5	12.9	10.0	10.4	11.1	11.4	12.8
	8H	11.0	11.4	12.1	12.4	13.8	11.0	11.3	12.0	12.3	13.7

Maximum UGR = 14.5

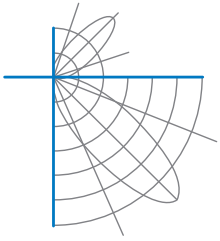


## Report of Test LLIA001333-002A

### Iso-Illuminance Plot

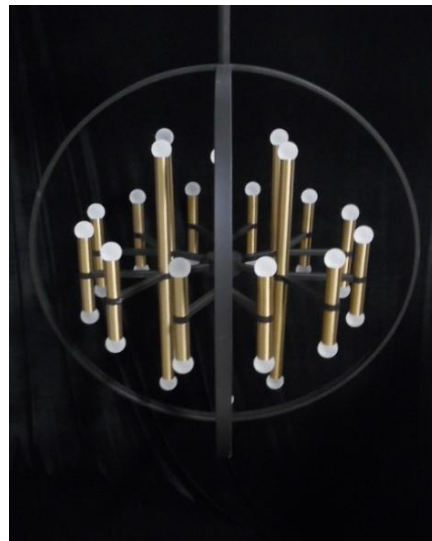
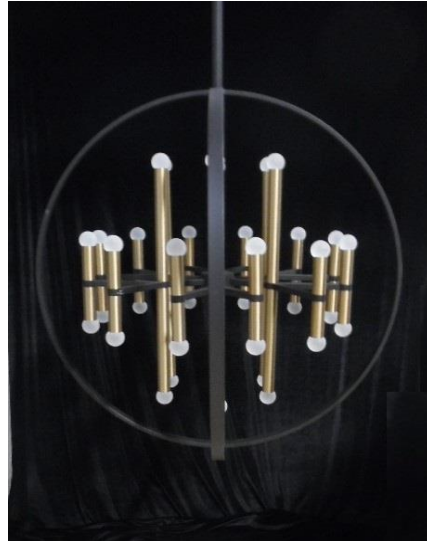


The isofootcandle values shown in the plot above are based on a mounting height of  $h = 8.0$  feet. Grid values show multiples of mounting height. The isoilluminance contour lines are expressed in units of footcandles. The values expressed are based on the direct light from a single unit without the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

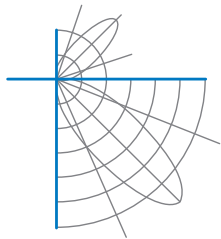


Report of Test  
LLIA001333-002A

**Additional Pictures of Test Subject**







## Report of Test

### LLIA001333-002A

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-41-14 and LM-46-04.

The luminous intensity values, and other derived quantities, contained in this report are based on the absolute data, as measured.

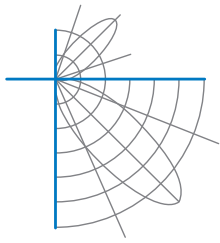
Prorating the performance of the sample for the use of other component combinations (such as lamp / LED / Ballast / driver), or for use in different environmental conditions than that tested, may produce erroneous results.

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

**LLIA001333-002B**

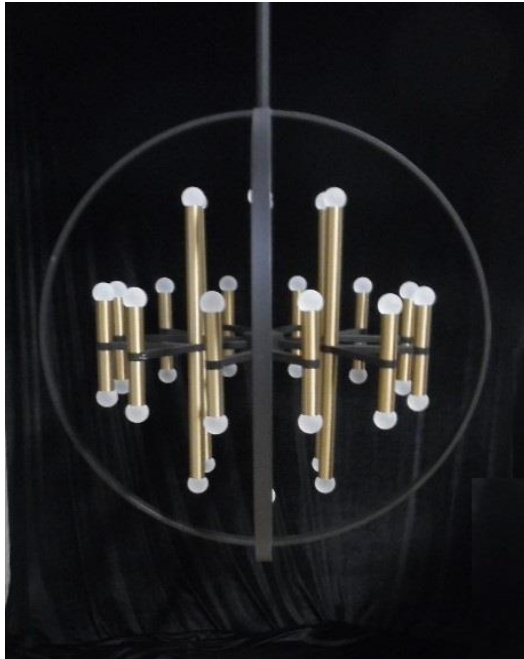
Integrating Sphere Report

Catalog Number: 3-685-1540 Nero Pendant

Pendant mounted, formed steel and tubular steel housings, frosted plastic enclosures.

36 White LEDs

Three ES LD030D-CA07242-M28F LED drivers

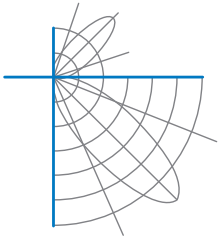


### Performance Summary

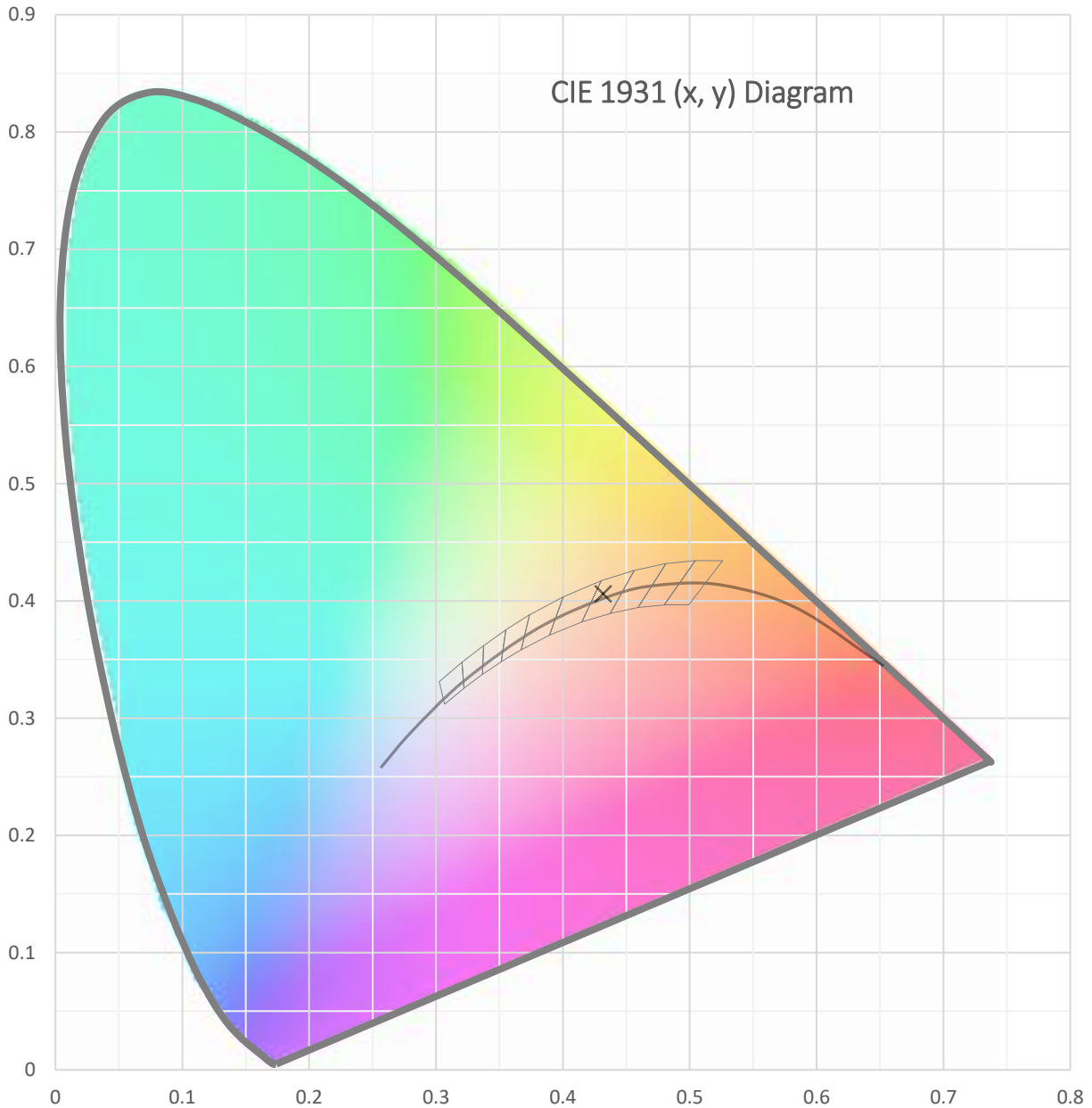
Voltage	120.0 Vac
Current	0.7412 A
Power	88.05 W
Frequency	59.99 Hz
Power Factor	0.990
Current THD	6.9 %
Total Luminous Flux	2702.3 lm
Efficacy	30.7 lm/W
Chromaticity (x,y)	(0.4319, 0.4061)
(u',v')	(0.2464, 0.5214)
Duv	0.0016
CCT	3104 K
CRI (Ra)	93
R9	60
TM-30: Rf	91
TM-30: Rg	99

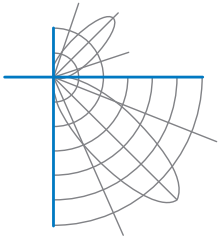
Prepared For:  
Oxygen Lighting  
201 Railhead Road  
Fort Worth, TX 76106, USA

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

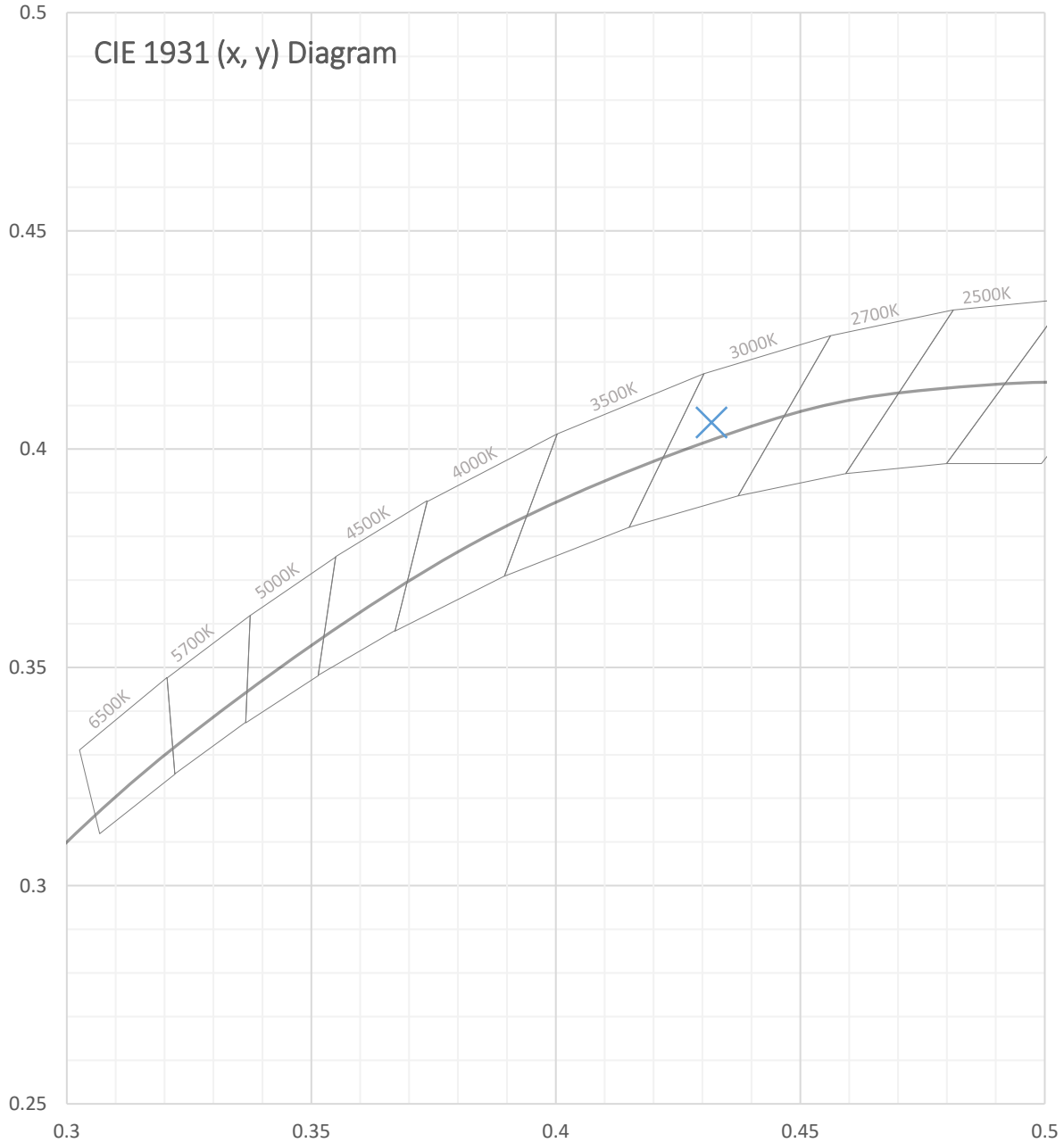


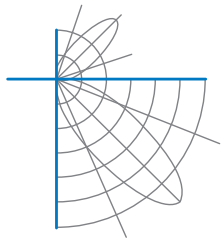
Test Report Number: LLIA001333-002B





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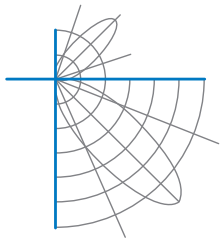


Test Report Number: LLIA001333-002B

Total Radiant Flux	9.326 W
Total Luminous Flux	2702.3 Lm
Chromaticity CIE 1931 (x, y)	(0.4319, 0.4061)
Chromaticity CIE 1976 (u', v')	(0.2464, 0.5214)
Correlated Color Temperature (CCT)	3104 K
Color Rendering Index (Ra)	93
R1	93
R2	95
R3	97
R4	93
R5	92
R6	94
R7	94
R8	83
R9	60
R10	88
R11	93
R12	80
R13	93
R14	97
TM-30: Rf	91
TM-30: Rg	99
Distance from Planckian Locus (Duv)	0.0016
Scotopic/Photopic Ratio ‡	1.443

**Electrical Data**

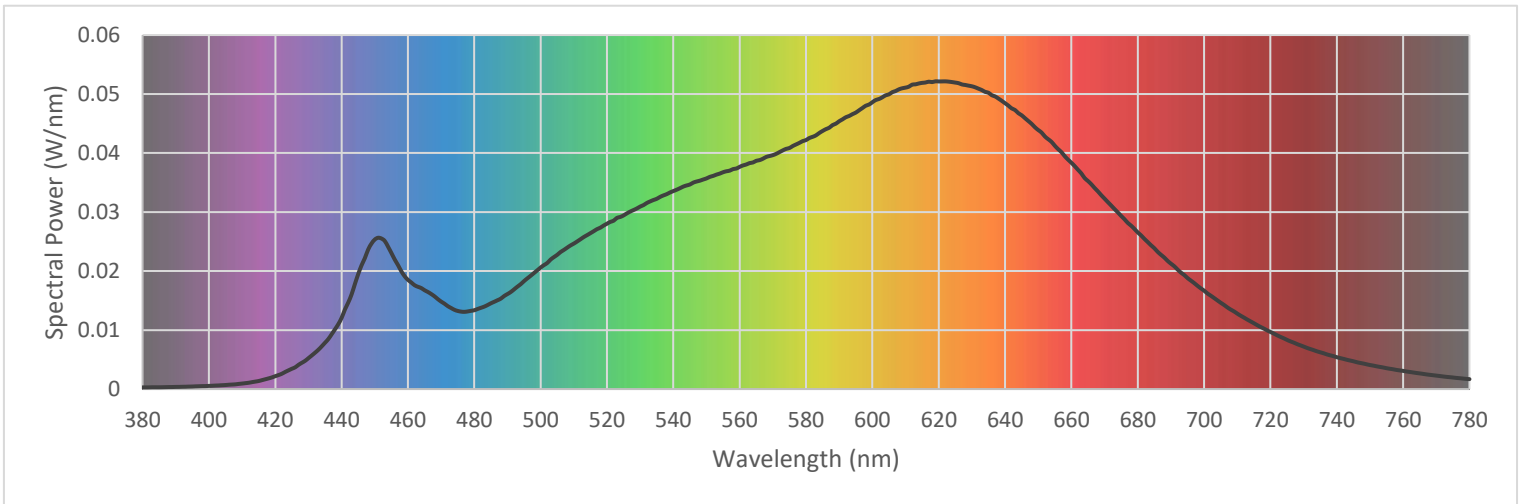
Voltage	120.0 Vac
Current	0.7412 A
Power	88.05 W
Frequency	59.99 Hz
Power Factor	0.990
Current THD	6.9 %

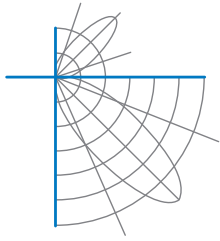


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Summary Spectral Power Distribution (wavelength - nm, spectral power - W/nm)

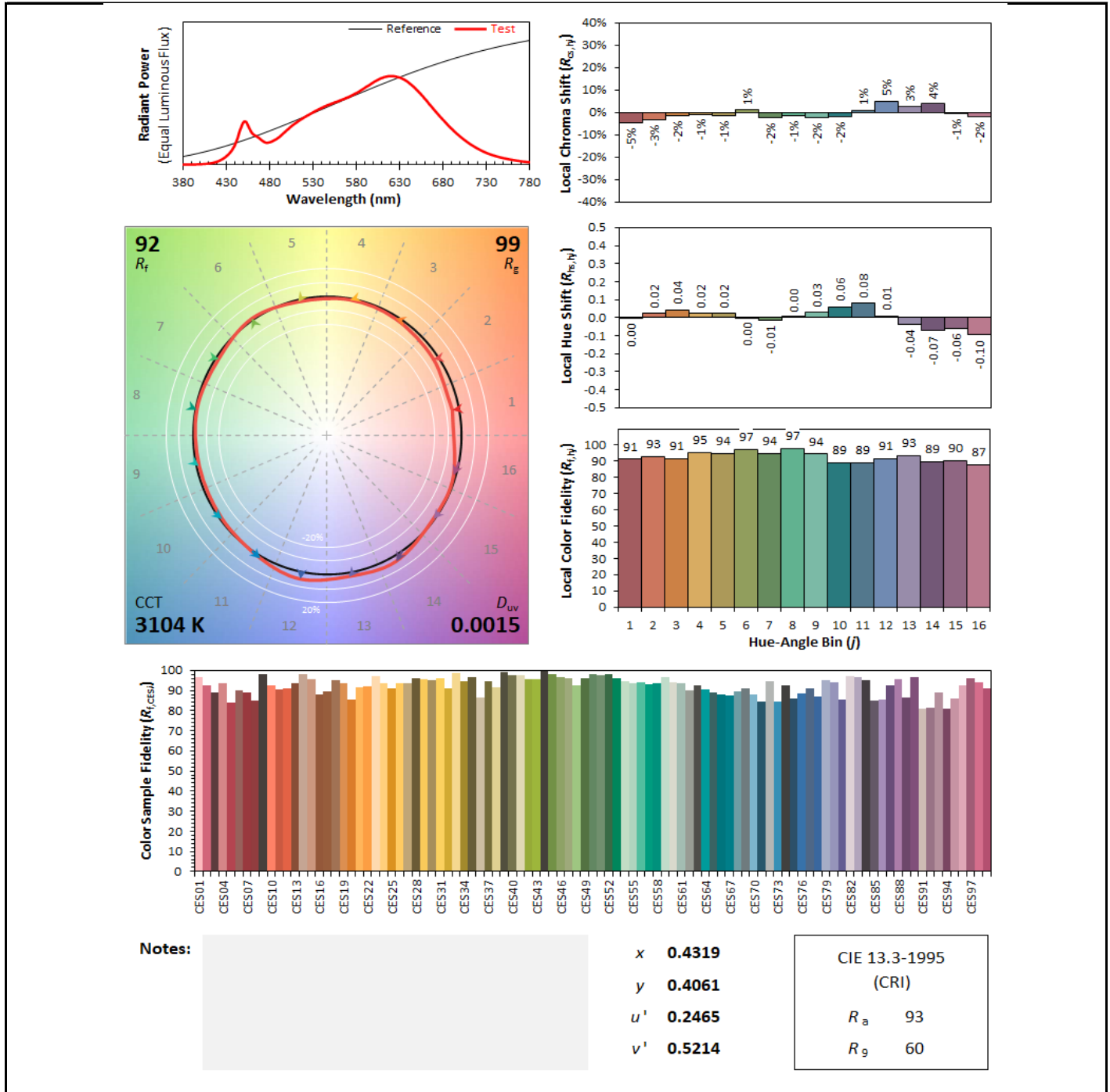
380	0.000288	480	0.013361	580	0.042201	680	0.026552
385	0.000304	485	0.014540	585	0.043746	685	0.023871
390	0.000366	490	0.016107	590	0.045393	690	0.021255
395	0.000433	495	0.018302	595	0.046858	695	0.018814
400	0.000538	500	0.020602	600	0.048614	700	0.016678
405	0.000684	505	0.022757	605	0.049948	705	0.014637
410	0.000932	510	0.024655	610	0.051090	710	0.012794
415	0.001362	515	0.026423	615	0.051896	715	0.011164
420	0.002186	520	0.028028	620	0.052138	720	0.009678
425	0.003441	525	0.029435	625	0.051940	725	0.008335
430	0.005239	530	0.030929	630	0.051316	730	0.007209
435	0.007855	535	0.032248	635	0.050225	735	0.006234
440	0.012074	540	0.033555	640	0.048448	740	0.005404
445	0.019485	545	0.034671	645	0.046405	745	0.004713
450	0.025342	550	0.035701	650	0.043900	750	0.004076
455	0.023062	555	0.036753	655	0.041239	755	0.003536
460	0.018507	560	0.037662	660	0.038353	760	0.003080
465	0.016751	565	0.038684	665	0.035262	765	0.002657
470	0.014829	570	0.039645	670	0.032272	770	0.002282
475	0.013240	575	0.040853	675	0.029343	775	0.001960
						780	0.001680

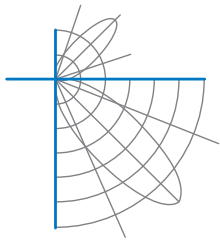




Test Report Number: LLIA001333-002B

IES TM-30 Details





## Test Report Number: LLIA001333-002B

**Test Equipment Configuration:** LightLab International Allentown 2m Integrating Sphere  
Measurements acquired using a Labsphere CDS 2600 spectroradiometer  
Testing was performed using  $4\pi$  geometry

**Test Temperature:** 24.8 °C

**Test Procedure:** Tested in accordance with the applicable sections of:  
LM-79-19, LM-78-07, LM-58-13, ANSI\_ANSI 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.