

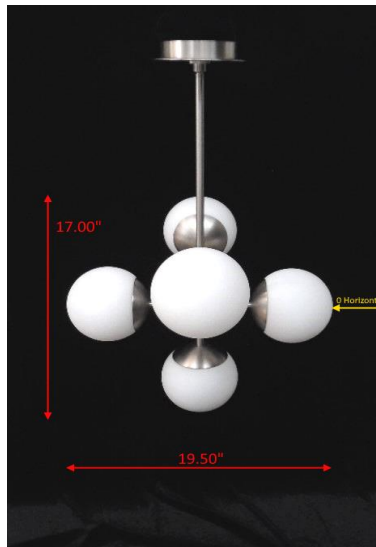
## Report of Test

LLIA001286-003A

Indoor Distribution Photometry Test Report

Catalog Number: 3-680-24

Pendant mounted, formed steel housing and canopy, frosted plastic enclosure around each LED board, translucent white glass enclosures.  
70 White LEDs, 5 LED boards with 14 LEDs each.



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

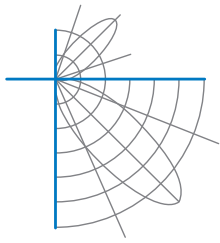
Performance Summary			
Input Voltage	120.0 V	Luminous Flux	1481.0 Lumens
Input Current	0.2503 A	Total Efficacy	50.9 Lm/W
Input Power	29.11 W	Downward Flux	762.4 Lumens
Frequency	60.00 Hz	Downward Flux	51.5 % of Total
Power Factor	0.969		
Current THD	23.9 %		

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

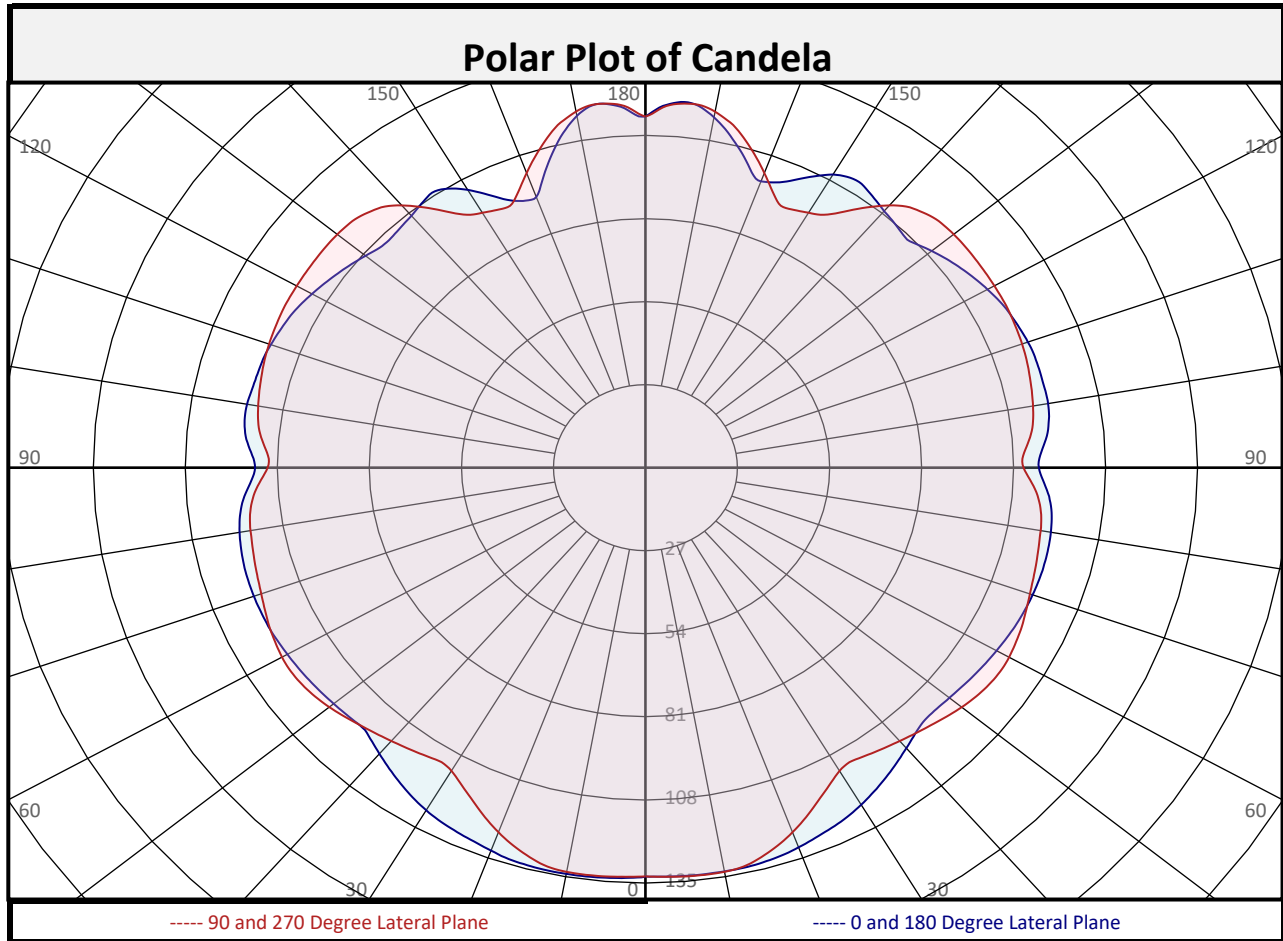
Test date: 07/21/2020

Report date: 07/23/2020

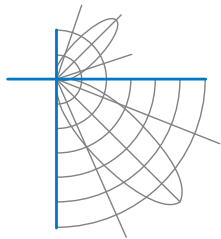
Signed: \_\_\_\_\_



Report of Test  
LLIA001286-003A



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	Zone (Deg Vert)	Flux (Lumens)	Percent of Total															
0-10	12.8	0.9%	90-100	127.7	8.6%	0-20	50.3	3.4%	10-20	37.6	2.5%	100-110	121.7	8.2%	0-30	109.7	7.4%									
20-30	59.4	4.0%	110-120	112.6	7.6%	0-40	188.2	12.7%	30-40	78.4	5.3%	120-130	102.7	6.9%	0-60	391.9	26.5%	40-50	95.1	6.4%	130-140	89.0	6.0%	0-80	633.6	42.8%
50-60	108.6	7.3%	140-150	71.1	4.8%	10-90	749.7	50.6%	60-70	117.2	7.9%	150-160	50.4	3.4%	20-50	232.9	15.7%	70-80	124.5	8.4%	160-170	32.0	2.2%	40-90	574.3	38.8%
80-90	128.8	8.7%	170-180	11.3	0.8%	60-90	370.5	25.0%	0-90	762.4	51.5%	90-180	718.6	48.5%	0-180	1481	100.0%									

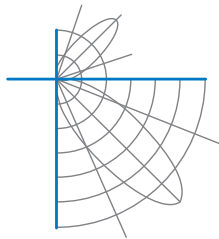


## Report of Test

### LLIA001286-003A

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	133	133	133	133	133	133	133	133	133
	2.5	133	133	133	133	133	133	133	133	133
	5	133	133	133	133	133	134	134	134	134
	7.5	133	133	133	133	134	134	134	134	134
	10	133	133	133	133	133	134	134	134	134
	12.5	133	133	133	133	133	133	134	134	134
	15	133	133	133	132	131	132	134	134	134
	17.5	132	133	132	130	129	131	133	134	133
	20	131	132	132	129	126	130	133	134	132
	22.5	130	132	131	127	123	128	133	133	131
	25	129	131	131	125	120	127	132	132	131
	27.5	128	130	130	124	117	126	132	132	130
	30	127	129	129	123	114	125	131	131	129
	32.5	125	128	129	123	113	124	131	130	127
	35	123	127	129	122	114	124	131	129	125
	37.5	121	126	128	122	115	124	130	128	123
	40	119	125	127	122	116	124	129	127	121
	42.5	117	124	127	122	117	123	128	126	120
	45	116	123	125	122	118	123	127	126	118
	47.5	116	123	124	122	120	123	125	125	119
50	116	122	122	122	121	123	124	124	119	
52.5	117	122	121	122	122	123	122	124	120	
55	118	122	119	122	123	122	120	124	120	
57.5	118	121	117	121	123	121	118	123	121	
60	119	121	115	120	123	120	116	123	121	
62.5	120	121	113	119	123	119	113	123	122	
65	120	121	111	118	122	118	111	122	122	
67.5	121	121	109	117	121	117	109	122	122	
70	121	121	110	116	120	116	110	122	122	
72.5	121	122	111	116	119	116	111	123	122	
75	121	122	112	116	119	116	112	123	122	
77.5	121	122	113	116	118	117	113	123	122	
80	121	123	114	117	118	117	114	123	121	
82.5	120	123	114	118	117	118	114	123	120	
85	119	123	115	119	116	119	114	123	118	
87.5	117	123	115	120	113	119	114	122	116	
90	115	123	115	120	111	120	113	122	115	

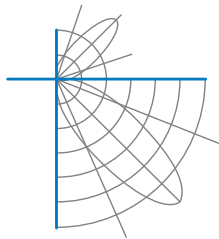


## Report of Test

### LLIA001286-003A

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	115	123	115	120	111	120	113	122	115
	92.5	116	122	114	120	111	120	113	121	116
	95	118	121	114	120	113	119	112	120	118
	97.5	119	120	114	119	115	119	112	119	119
	100	120	119	113	119	115	118	111	117	119
	102.5	120	118	112	118	116	118	109	115	118
	105	120	117	111	118	117	117	108	114	118
	107.5	120	116	109	118	117	117	106	113	118
	110	119	115	108	118	118	117	104	113	117
	112.5	119	115	106	118	118	117	103	112	116
	115	118	115	106	118	118	117	103	112	115
	117.5	117	115	108	118	118	117	105	112	114
	120	116	115	110	118	118	117	107	112	113
	122.5	115	114	112	119	118	117	109	112	112
	125	113	114	113	119	118	118	111	111	110
	127.5	111	114	115	119	118	118	112	112	109
	130	110	114	116	119	118	118	114	112	107
	132.5	108	114	117	119	118	118	115	112	106
	135	107	114	118	119	117	118	116	112	106
	137.5	108	114	119	119	115	117	117	112	106
	140	109	115	119	118	111	116	117	113	107
	142.5	110	115	119	116	107	114	117	113	108
	145	112	116	120	114	102	112	118	114	109
	147.5	112	117	120	112	98	109	118	115	108
150	110	116	120	110	96	108	118	113	104	
152.5	107	114	120	109	94	106	118	110	100	
155	103	112	119	108	94	106	117	108	96	
157.5	100	110	118	109	97	107	116	107	94	
160	99	110	117	111	102	109	116	108	94	
162.5	102	111	117	113	107	111	116	109	99	
165	107	113	118	115	111	114	117	112	106	
167.5	112	115	119	117	115	117	119	115	112	
170	116	118	120	119	118	118	120	118	116	
172.5	119	119	120	120	119	119	119	119	119	
175	119	119	119	119	119	119	118	118	119	
177.5	118	117	117	117	117	117	116	116	116	
180	114	114	114	114	114	114	114	114	114	



## Report of Test

### LLIA001286-003A

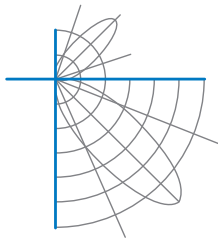
Coefficients of Utilization/Room Utilization - Zonal Cavity Method																						
Effective Floor Cavity Reflectance 0.20																						
RC	80					70					50				30				10			0
RW	70	50	30	10		70	50	30	10		50	30	10		50	30	10		50	30	10	0
RCR																						
0	107	107	107	107		99	99	99	99		84	84	84		70	70	70		57	57	57	51
1	94	88	82	77		86	81	76	72		68	64	60		55	53	50		44	42	40	35
2	84	75	67	60		77	68	62	56		57	52	47		46	42	39		37	34	31	26
3	76	64	55	48		69	59	51	45		49	43	38		40	35	31		31	28	25	21
4	69	56	47	40		63	52	43	37		43	37	31		35	30	26		27	24	20	17
5	63	50	40	34		57	46	37	31		38	31	26		31	26	22		24	20	17	14
6	58	44	35	29		53	41	33	27		34	27	23		28	23	19		22	18	15	12
7	53	40	31	25		49	37	29	23		31	24	20		25	20	16		20	16	13	10
8	49	36	27	22		45	33	25	20		28	22	17		23	18	14		18	14	11	9
9	46	33	25	19		42	30	23	18		25	19	15		21	16	13		17	13	10	8
10	43	30	22	17		39	28	21	16		23	18	14		19	15	11		15	12	9	7

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	3.7	8.59	7.83	
8.0	2.1	11.46	10.45	
10.0	1.3	14.32	13.06	
12.0	0.9	17.19	15.67	
14.0	0.7	20.05	18.28	
16.0	0.5	22.92	20.89	

Average Luminance (cd/m <sup>2</sup> )			
	0 deg Plane	45 deg Plane	90 deg Plane
0	820	820	820
45	715	772	730
55	726	733	758
65	741	683	752
75	747	690	732
85	734	707	714

Spacing Criterion	
0 degree plane:	1.4
90 degree plane:	1.3
180 degree plane:	1.4
270 degree plane:	1.3



## Report of Test

LLIA001286-003A

### UGR TABLE - CORRECTED

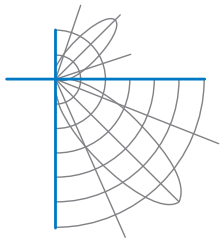
Reflectances

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

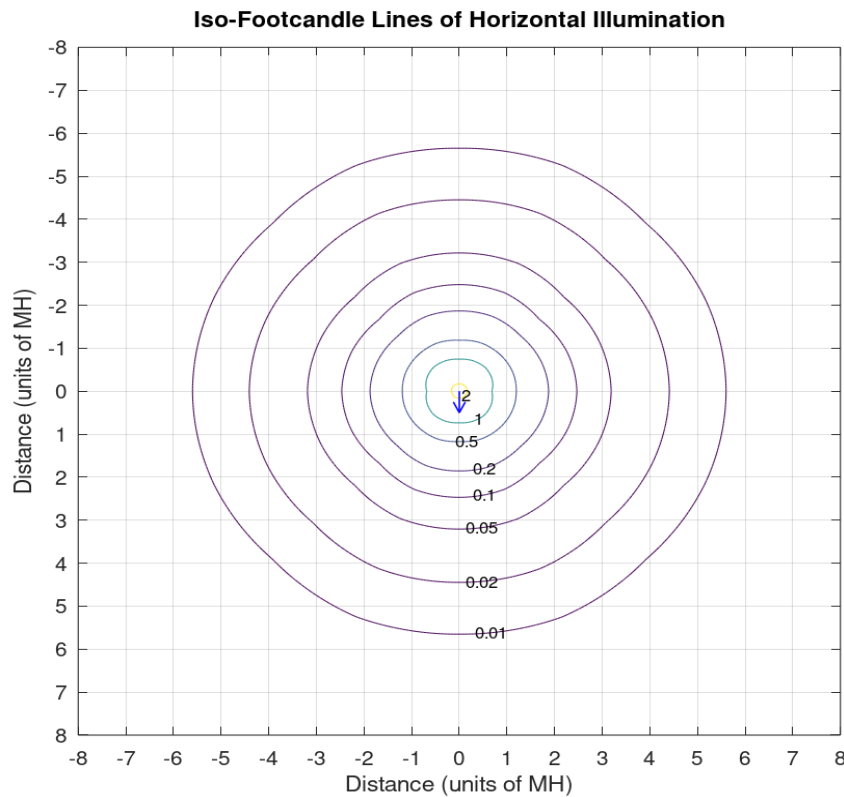
Room Size		UGR Viewed Crosswise					UGR Viewed Endwise				
X=2H	Y=2H	6.8	7.8	7.7	8.8	10.0	6.8	7.8	7.7	8.8	10.0
	3H	9.7	10.6	10.6	11.6	12.9	9.6	10.6	10.6	11.5	12.8
	4H	11.2	12.1	12.1	13.0	14.3	11.0	11.9	12.0	12.9	14.2
	6H	12.6	13.4	13.6	14.4	15.7	12.5	13.3	13.4	14.3	15.5
	8H	13.3	14.1	14.3	15.1	16.4	13.1	13.9	14.1	14.9	16.2
	12H	14.0	14.8	15.0	15.7	17.0	13.8	14.6	14.8	15.6	16.9
4H	2H	7.4	8.3	8.4	9.3	10.5	7.4	8.3	8.4	9.3	10.5
	3H	10.6	11.4	11.5	12.3	13.6	10.5	11.3	11.4	12.3	13.5
	4H	12.2	12.9	13.2	13.9	15.2	12.1	12.8	13.0	13.8	15.1
	6H	13.9	14.5	14.8	15.5	16.8	13.7	14.3	14.7	15.3	16.6
	8H	14.7	15.3	15.6	16.3	17.6	14.5	15.1	15.5	16.1	17.4
	12H	15.5	16.0	16.5	17.0	18.4	15.3	15.8	16.3	16.8	18.2
8H	4H	12.7	13.3	13.7	14.3	15.6	12.6	13.2	13.5	14.2	15.5
	6H	14.6	15.1	15.6	16.1	17.4	14.4	14.9	15.4	16.0	17.3
	8H	15.5	16.0	16.5	17.0	18.4	15.4	15.8	16.4	16.8	18.2
	12H	16.5	16.9	17.5	18.0	19.3	16.3	16.8	17.3	17.8	19.1
12H	4H	12.8	13.4	13.8	14.4	15.7	12.7	13.2	13.7	14.3	15.6
	6H	14.7	15.2	15.8	16.2	17.6	14.6	15.1	15.6	16.1	17.4
	8H	15.8	16.2	16.8	17.2	18.6	15.6	16.0	16.6	17.1	18.4

Maximum UGR = 19.3

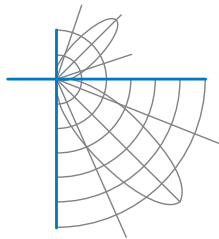


Report of Test  
LLIA001286-003A

**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

### LLIA001286-003A

Test Distance                    9.5 m  
Ambient Temperature        25.1 °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 publications: IES LM-79-19 and ANSI C82.77-10:2014. 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.

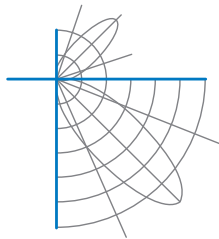
This report is free of erasures and corrections.

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

**LLIA001286-003B**

Integrating Sphere Report

Catalog Number: 3-680-24

Pendant mounted, formed steel housing and canopy, frosted plastic enclosure around each LED board, translucent white glass enclosures.

70 White LEDs, 5 LED boards with 14 LEDs each.



### Performance Summary

Voltage	120.0 Vac
Current	0.2508 A
Power	29.14 W
Frequency	59.99 Hz
Power Factor	0.969
Current THD	23.8 %
Total Luminous Flux	1507.7 lm
Efficacy	51.7 lm/W
Chromaticity (x,y)	(0.4430, 0.4029)
(u',v')	(0.2550, 0.5218)
Duv	-0.0013
CCT	2890 K
CRI (Ra)	92
R9	64
TM-30: Rf	89
TM-30: Rg	102

Prepared For:

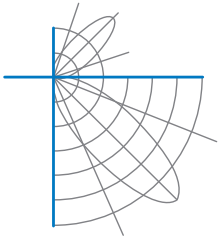
Oxygen Lighting

201 Railhead Road

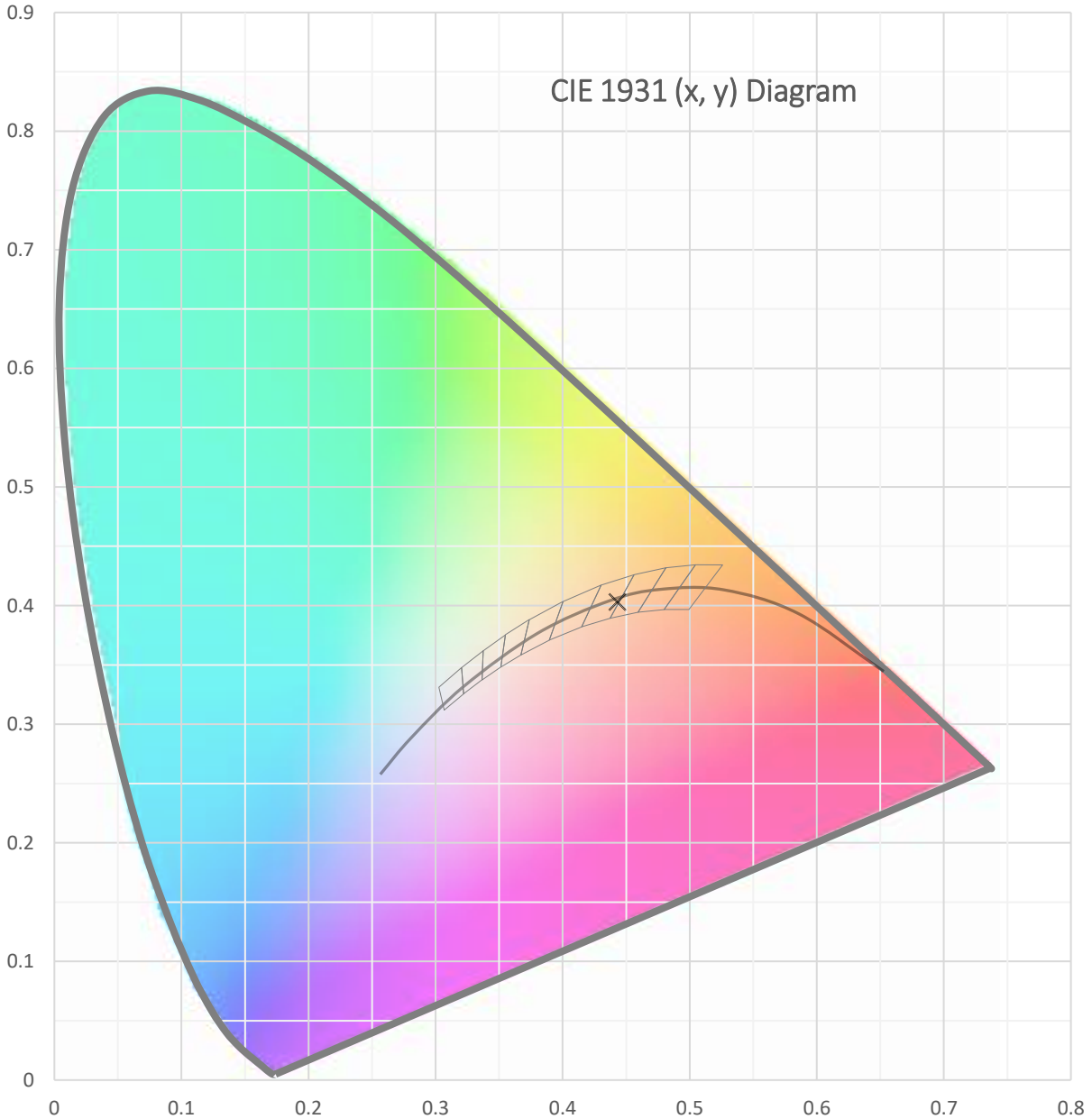
Fort Worth, TX 76106, USA

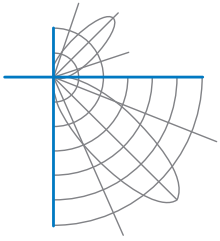
Test date: 07/20/2020

Report date: 07/22/2020

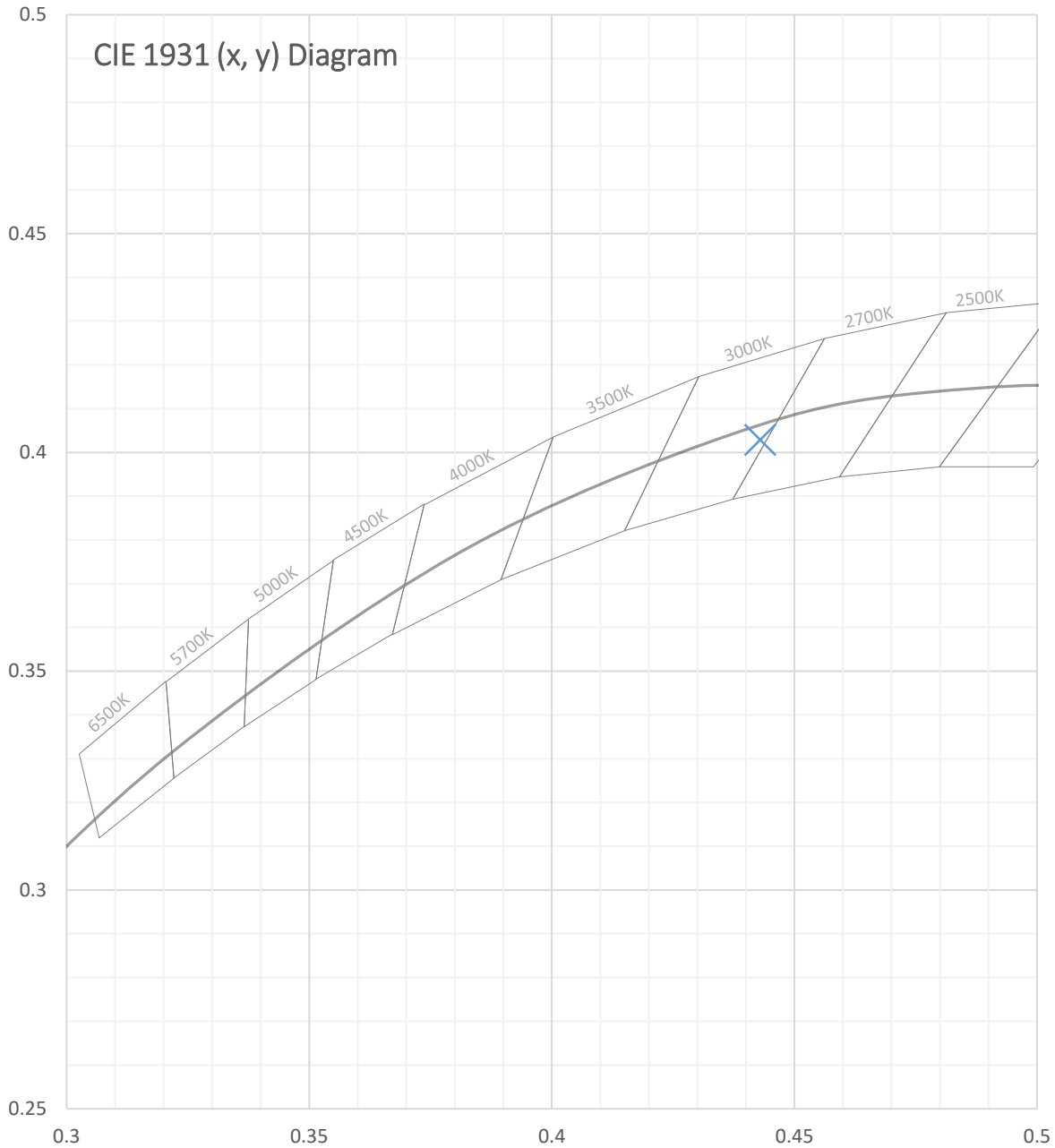


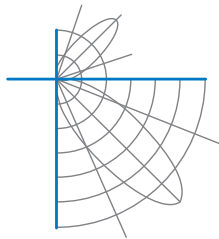
Test Report Number: LLIA001286-003B





Test Report Number: LLIA001286-003B



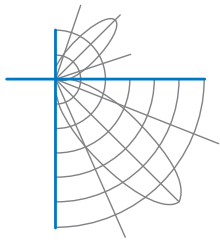


**Test Report Number: LLIA001286-003B**

Total Radiant Flux	5.407 W
Total Luminous Flux	1507.7 Lm
Chromaticity CIE 1931 (x, y)	(0.4430, 0.4029)
Chromaticity CIE 1976 (u', v')	(0.2550, 0.5218)
Correlated Color Temperature (CCT)	2890 K
Color Rendering Index (Ra)	92
R1	93
R2	95
R3	94
R4	92
R5	92
R6	93
R7	93
R8	85
R9	64
R10	86
R11	92
R12	80
R13	93
R14	96
TM-30: Rf	89
TM-30: Rg	102
Distance from Planckian Locus (Duv)	-0.0013
Scotopic/Photopic Ratio $\phi$	1.338

**Electrical Data**

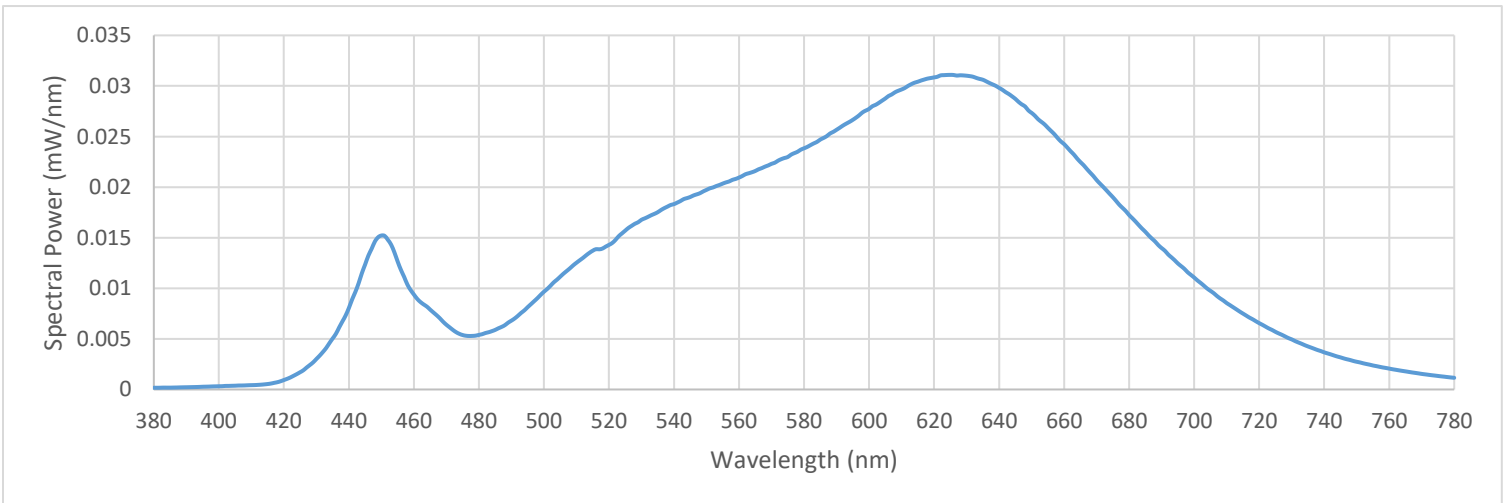
Voltage	120.0 Vac
Current	0.2508 A
Power	29.14 W
Frequency	59.99 Hz
Power Factor	0.969
Current THD	23.8 %

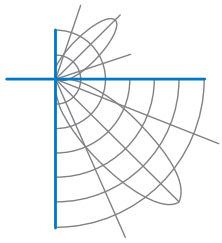


Test Report Number: LLIA001286-003B

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

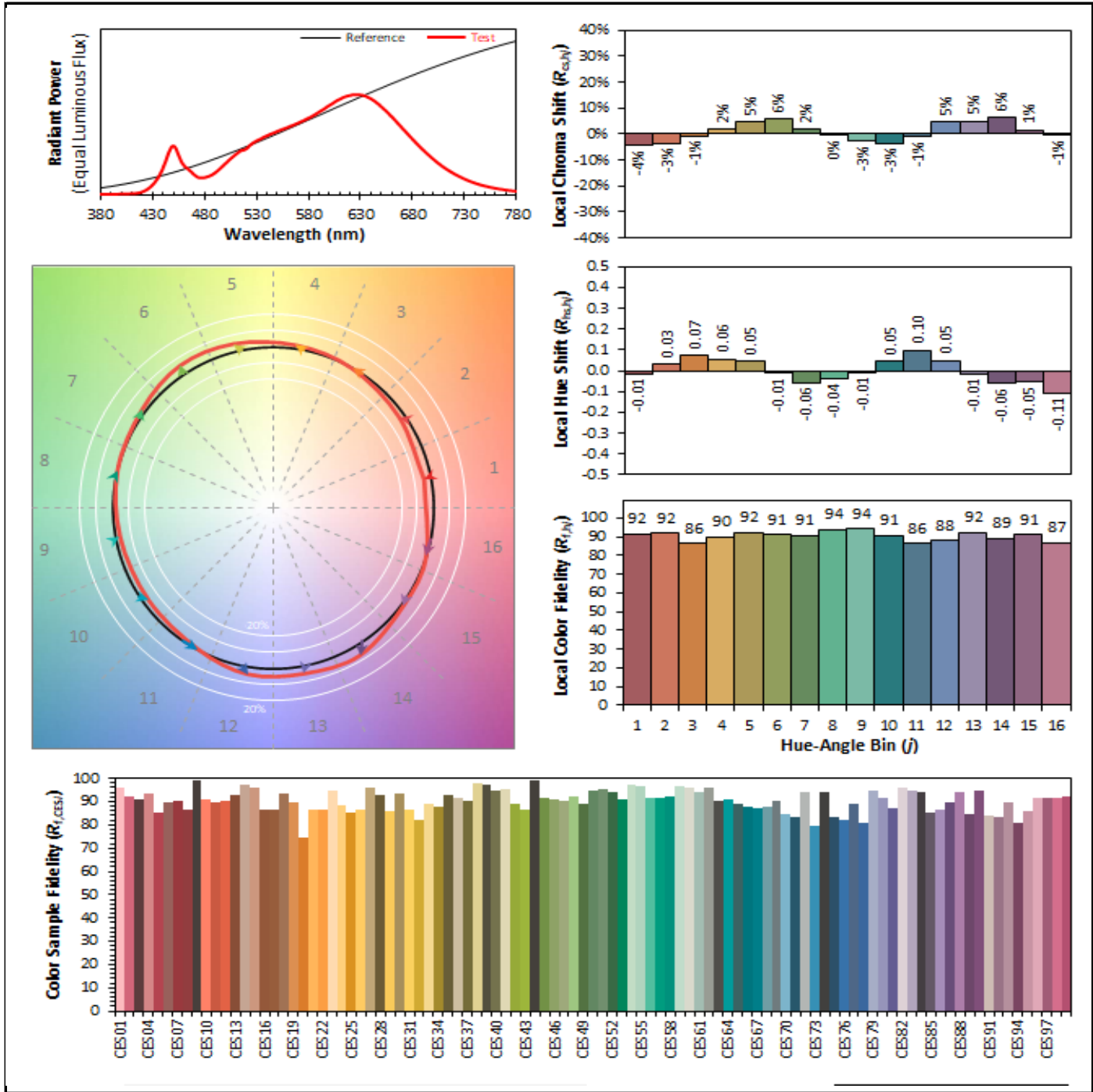
380	0.000171	480	0.005395	580	0.023837	680	0.017238
385	0.000181	485	0.005888	585	0.024701	685	0.015583
390	0.000219	490	0.006805	590	0.025667	690	0.013973
395	0.000268	495	0.008139	595	0.026649	695	0.012453
400	0.000317	500	0.009661	600	0.027728	700	0.011066
405	0.000371	505	0.011147	605	0.028758	705	0.009748
410	0.000427	510	0.012525	610	0.029652	710	0.008543
415	0.000536	515	0.013714	615	0.030419	715	0.007503
420	0.000932	520	0.014290	620	0.030845	720	0.006556
425	0.001704	525	0.015701	625	0.031093	725	0.005697
430	0.003011	530	0.016771	630	0.031011	730	0.004952
435	0.005040	535	0.017521	635	0.030615	735	0.004255
440	0.008055	540	0.018321	640	0.029812	740	0.003669
445	0.012358	545	0.019024	645	0.028723	745	0.003173
450	0.015217	550	0.019725	650	0.027339	750	0.002738
455	0.012644	555	0.020349	655	0.025864	755	0.002371
460	0.009382	560	0.020945	660	0.024250	760	0.002063
465	0.007892	565	0.021595	665	0.022482	765	0.001789
470	0.006394	570	0.022303	670	0.020701	770	0.001539
475	0.005378	575	0.022978	675	0.019003	775	0.001335
						780	0.001154

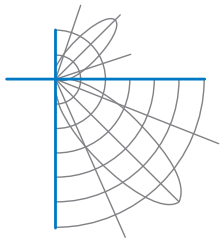




Test Report Number: LLIA001286-003B

IES TM-30 Details





## Test Report Number: LLIA001286-003B

**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:** 25.1 °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.