



Report of Test

LLIA001166-016A

Indoor Distribution Photometry Test Report

Catalog Number: Terra 3-690-24

Pendant mounted, formed steel canopy, formed steel and aluminum LED plate with translucent white plastic enclosure, coated white glass outer enclosure.

28 white LEDs, one D100-120A LED board

One onboard LED driver



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

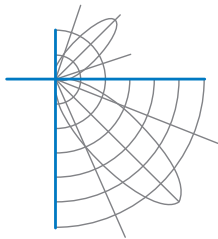
Performance Summary			
Input Voltage	120.0 V	Luminous Flux	565.7 Lumens
Input Current	0.1027 A	Total Efficacy	48.5 Lm/W
Input Power	11.67 W	Downward Flux	244.5 Lumens
Frequency	60.00 Hz	Downward Flux	43.2 % of Total
Power Factor	0.947		
Current THD	33.2 %		

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

Test date: 10/15/2019

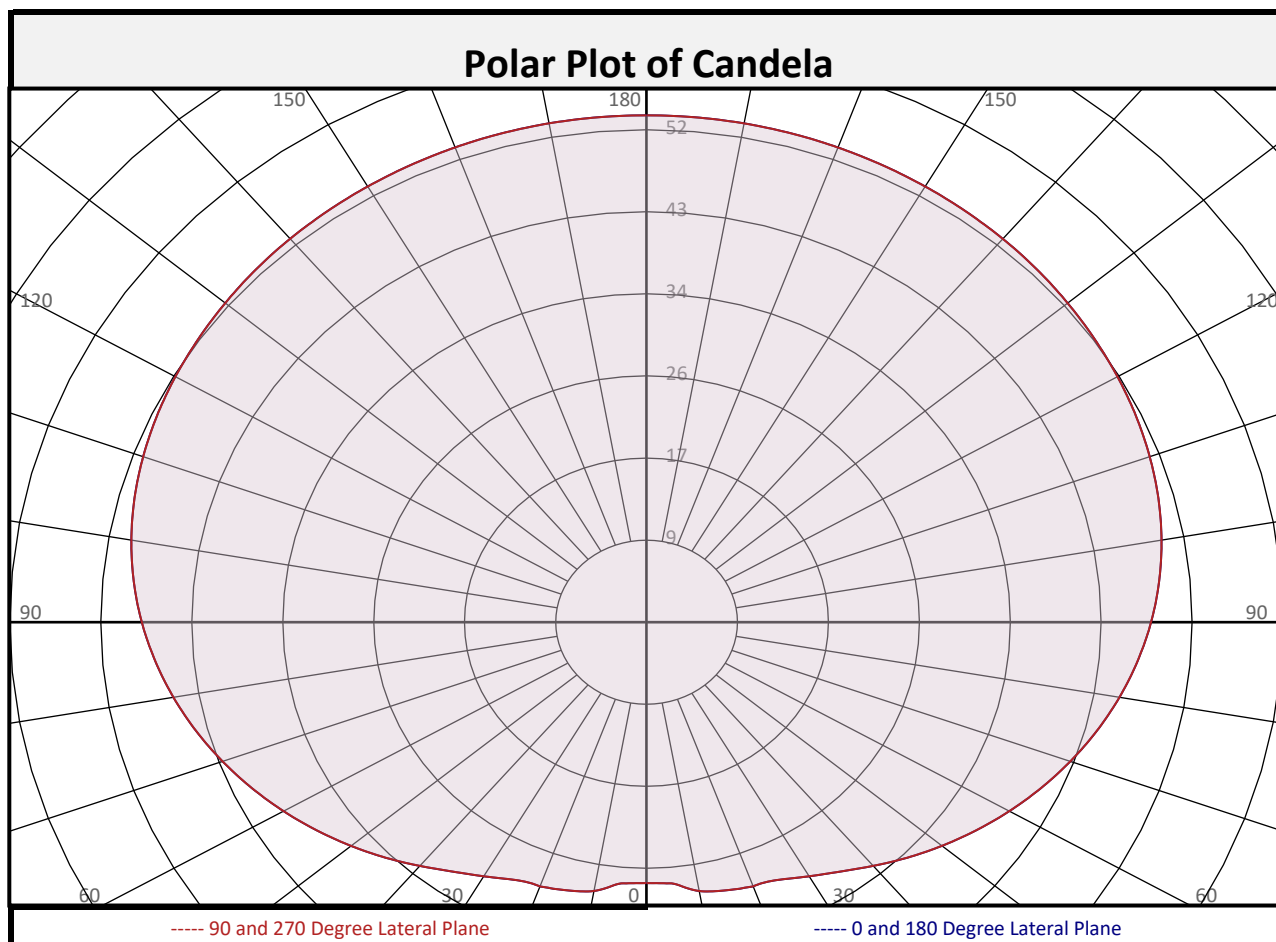
Report date: 10/18/2019

Signed: _____



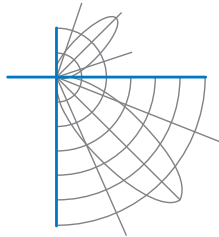
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Zonal Flux Summary

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	2.7	0.5%	90-100	53.1	9.4%	0-20	10.9	1.9%
10-20	8.3	1.5%	100-110	53.0	9.4%	0-30	24.8	4.4%
20-30	13.9	2.5%	110-120	50.7	9.0%	0-40	44.9	7.9%
30-40	20.1	3.6%	120-130	46.4	8.2%	0-60	106.1	18.8%
40-50	27.1	4.8%	130-140	40.5	7.2%	0-80	193.6	34.2%
50-60	34.2	6.0%	140-150	33.0	5.8%	10-90	241.8	42.7%
60-70	40.9	7.2%	150-160	24.5	4.3%	20-50	61.0	10.8%
70-80	46.6	8.2%	160-170	15.0	2.7%	40-90	199.6	35.3%
80-90	50.9	9.0%	170-180	5.1	0.9%	60-90	138.4	24.5%
0-90	244.5	43.2%	90-180	321.2	56.8%	0-180	565.7	100.0%

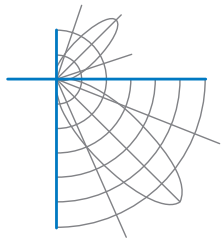


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Luminous Intensity (Candela) Table

		Lateral (C-Plane) Angles								
		0	22.5	45	67.5	90	112.5	135	157.5	180
Vertical (Gamma) Angles	0	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3
	2.5	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4
	5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
	7.5	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0
	10	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6
	12.5	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9
	15	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1
	17.5	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3
	20	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5
	22.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5
	25	29.8	29.8	29.8	29.8	29.8	29.8	29.8	29.8	29.8
	27.5	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2
	30	30.8	30.8	30.8	30.8	30.8	30.8	30.8	30.8	30.8
	32.5	31.3	31.3	31.3	31.3	31.3	31.3	31.3	31.3	31.3
	35	31.9	31.9	31.9	31.9	31.9	31.9	31.9	31.9	31.9
	37.5	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6
	40	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3
	42.5	34.1	34.1	34.1	34.1	34.1	34.1	34.1	34.1	34.1
	45	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9
	47.5	35.7	35.7	35.7	35.7	35.7	35.7	35.7	35.7	35.7
50	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	
52.5	37.3	37.3	37.3	37.3	37.3	37.3	37.3	37.3	37.3	
55	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0	
57.5	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	
60	39.6	39.6	39.6	39.6	39.6	39.6	39.6	39.6	39.6	
62.5	40.4	40.4	40.4	40.4	40.4	40.4	40.4	40.4	40.4	
65	41.2	41.2	41.2	41.2	41.2	41.2	41.2	41.2	41.2	
67.5	41.9	41.9	41.9	41.9	41.9	41.9	41.9	41.9	41.9	
70	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7	
72.5	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	
75	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	
77.5	44.8	44.8	44.8	44.8	44.8	44.8	44.8	44.8	44.8	
80	45.4	45.4	45.4	45.4	45.4	45.4	45.4	45.4	45.4	
82.5	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	
85	46.6	46.6	46.6	46.6	46.6	46.6	46.6	46.6	46.6	
87.5	47.2	47.2	47.2	47.2	47.2	47.2	47.2	47.2	47.2	
90	47.7	47.7	47.7	47.7	47.7	47.7	47.7	47.7	47.7	



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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	47.7	47.7	47.7	47.7	47.7	47.7	47.7	47.7	47.7
	92.5	48.2	48.2	48.2	48.2	48.2	48.2	48.2	48.2	48.2
	95	48.7	48.7	48.7	48.7	48.7	48.7	48.7	48.7	48.7
	97.5	49.1	49.1	49.1	49.1	49.1	49.1	49.1	49.1	49.1
	100	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5
	102.5	49.8	49.8	49.8	49.8	49.8	49.8	49.8	49.8	49.8
	105	50.1	50.1	50.1	50.1	50.1	50.1	50.1	50.1	50.1
	107.5	50.4	50.4	50.4	50.4	50.4	50.4	50.4	50.4	50.4
	110	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7
	112.5	50.9	50.9	50.9	50.9	50.9	50.9	50.9	50.9	50.9
	115	51.1	51.1	51.1	51.1	51.1	51.1	51.1	51.1	51.1
	117.5	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3
	120	51.4	51.4	51.4	51.4	51.4	51.4	51.4	51.4	51.4
	122.5	51.6	51.6	51.6	51.6	51.6	51.6	51.6	51.6	51.6
	125	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7
	127.5	51.9	51.9	51.9	51.9	51.9	51.9	51.9	51.9	51.9
	130	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0
	132.5	52.1	52.1	52.1	52.1	52.1	52.1	52.1	52.1	52.1
	135	52.3	52.3	52.3	52.3	52.3	52.3	52.3	52.3	52.3
	137.5	52.4	52.4	52.4	52.4	52.4	52.4	52.4	52.4	52.4
140	52.4	52.4	52.4	52.4	52.4	52.4	52.4	52.4	52.4	
142.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	
145	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	
147.5	52.7	52.7	52.7	52.7	52.7	52.7	52.7	52.7	52.7	
150	52.7	52.7	52.7	52.7	52.7	52.7	52.7	52.7	52.7	
152.5	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	
155	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	
157.5	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	
160	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	
162.5	53.0	53.0	53.0	53.0	53.0	53.0	53.0	53.0	53.0	
165	53.0	53.0	53.0	53.0	53.0	53.0	53.0	53.0	53.0	
167.5	53.1	53.1	53.1	53.1	53.1	53.1	53.1	53.1	53.1	
170	53.1	53.1	53.1	53.1	53.1	53.1	53.1	53.1	53.1	
172.5	53.1	53.1	53.1	53.1	53.1	53.1	53.1	53.1	53.1	
175	53.1	53.1	53.1	53.1	53.1	53.1	53.1	53.1	53.1	
177.5	53.1	53.1	53.1	53.1	53.1	53.1	53.1	53.1	53.1	
180	53.1	53.1	53.1	53.1	53.1	53.1	53.1	53.1	53.1	



Report of Test

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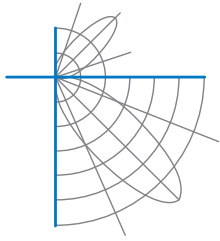
Coefficients of Utilization/Room Utilization - Zonal Cavity Method																						
Effective Floor Cavity Reflectance 0.20																						
RC	80					70					50				30				10			0
RW	70	50	30	10		70	50	30	10		50	30	10		50	30	10		50	30	10	0
RCR																						
0	106	106	106	106		96	96	96	96		80	80	80		64	64	64		50	50	50	43
1	92	86	80	75		83	78	73	69		63	59	56		50	47	44		37	35	33	27
2	82	72	65	58		74	66	59	53		53	48	43		41	37	34		30	27	25	20
3	74	62	54	46		66	56	49	42		45	39	35		35	31	27		26	22	20	15
4	67	54	45	38		60	49	41	35		40	33	28		31	26	22		22	19	16	12
5	61	48	39	32		55	43	35	29		35	29	24		27	22	18		20	16	13	9
6	56	43	34	27		50	39	31	25		31	25	20		24	19	16		18	14	11	8
7	52	38	29	23		46	35	27	21		28	22	17		22	17	13		16	12	10	7
8	48	34	26	20		43	31	24	19		25	19	15		20	15	12		14	11	8	6
9	44	31	23	18		40	28	21	16		23	17	13		18	14	10		13	10	7	5
10	41	28	21	16		37	26	19	14		21	16	12		17	12	9		12	9	7	4

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	0.8	11.00	11.00	
8.0	0.4	14.66	14.66	
10.0	0.3	18.33	18.33	
12.0	0.2	21.99	21.99	
14.0	0.1	25.66	25.66	
16.0	0.1	29.33	29.33	

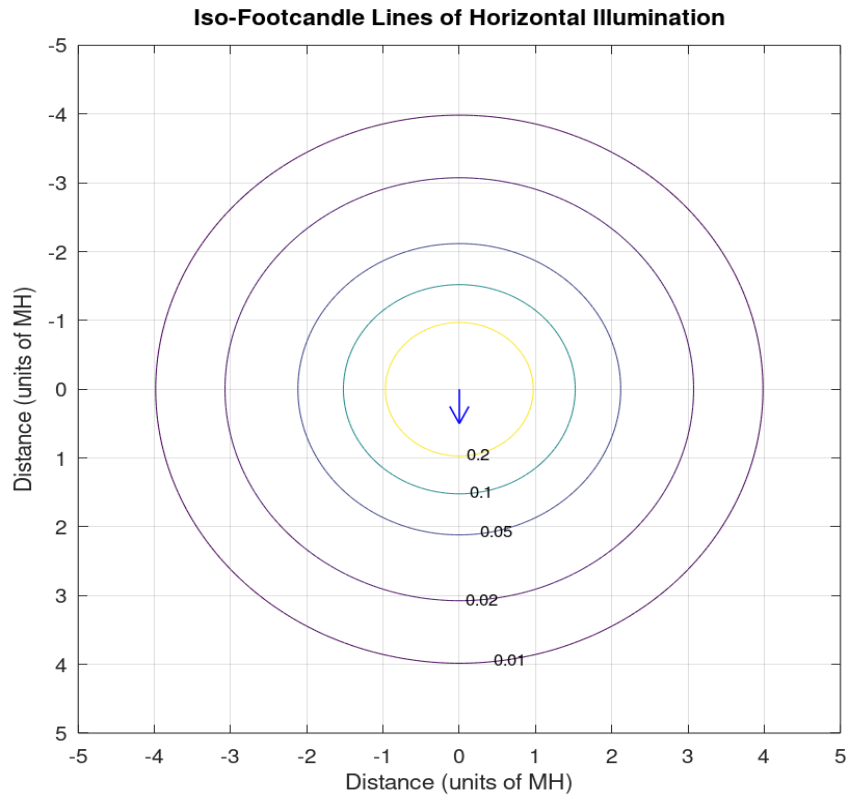
Average Luminance (cd/m ²)			
	0 deg Plane	45 deg Plane	90 deg Plane
0	667	667	667
45	851	851	851
55	928	928	928
65	1004	1004	1004
75	1075	1075	1075
85	1137	1137	1137

Spacing Criterion	
Spacing Criterion:	1.8

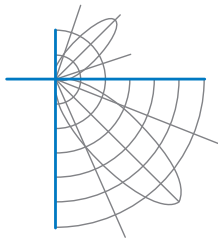


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Iso-Illuminance Plot



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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Test Distance 9.5 m
Ambient Temperature 24.3 °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.

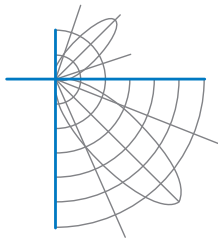
Prorating the performance of the sample for the use of other component combinations (such as lamp / LED / Ballast / driver), or for use in different environmental conditions than that tested, may produce erroneous results.

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

LLIA001166-016B

Integrating Sphere Report
Catalog Number: Terra 3-690-24

Pendant mounted, formed steel canopy, formed steel and aluminum LED plate with translucent white plastic enclosure, coated white glass outer enclosure.

28 white LEDs, one D100-120A LED board

One onboard LED driver

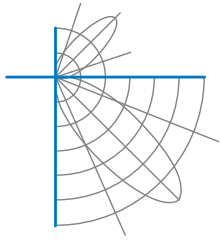


Performance Summary

Voltage	120.0 Vac
Current	0.1033 A
Power	11.72 W
Frequency	59.99 Hz
Power Factor	0.945
Current THD	33.1 %
Total Luminous Flux	569.3 lm
Efficacy	48.6 lm/W
Chromaticity (x,y)	(0.4458, 0.4050)
(u',v')	(0.2559, 0.5231)
Duv	-0.0007
CCT	2865 K
CRI (Ra)	92
R9	63
TM-30: Rf	89
TM-30: Rg	101

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

Test date: 10/15/2019
Report date: 10/18/2019



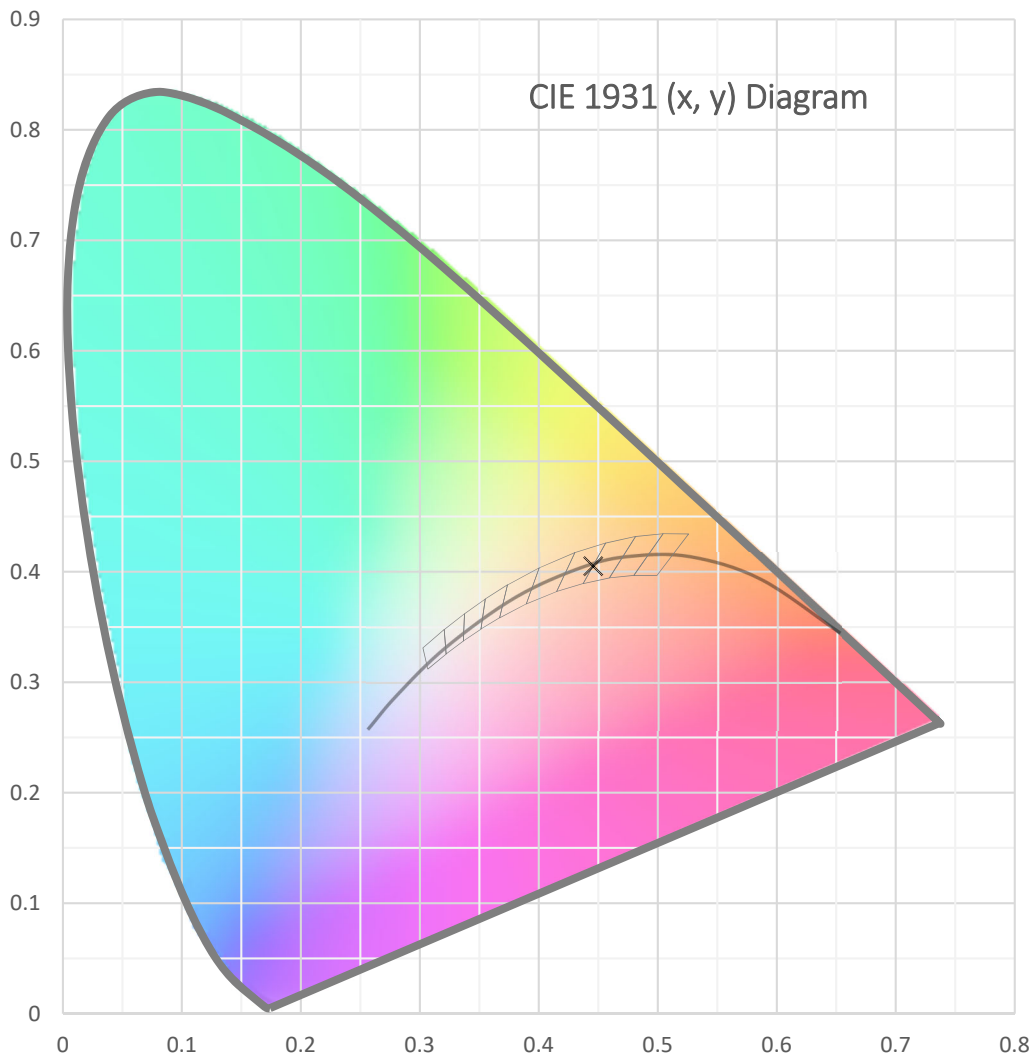
Test Report Number: LLIA001166-016B

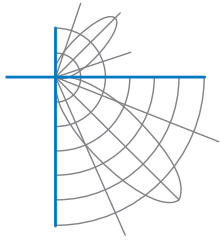
Catalog Number: Terra 3-690-24

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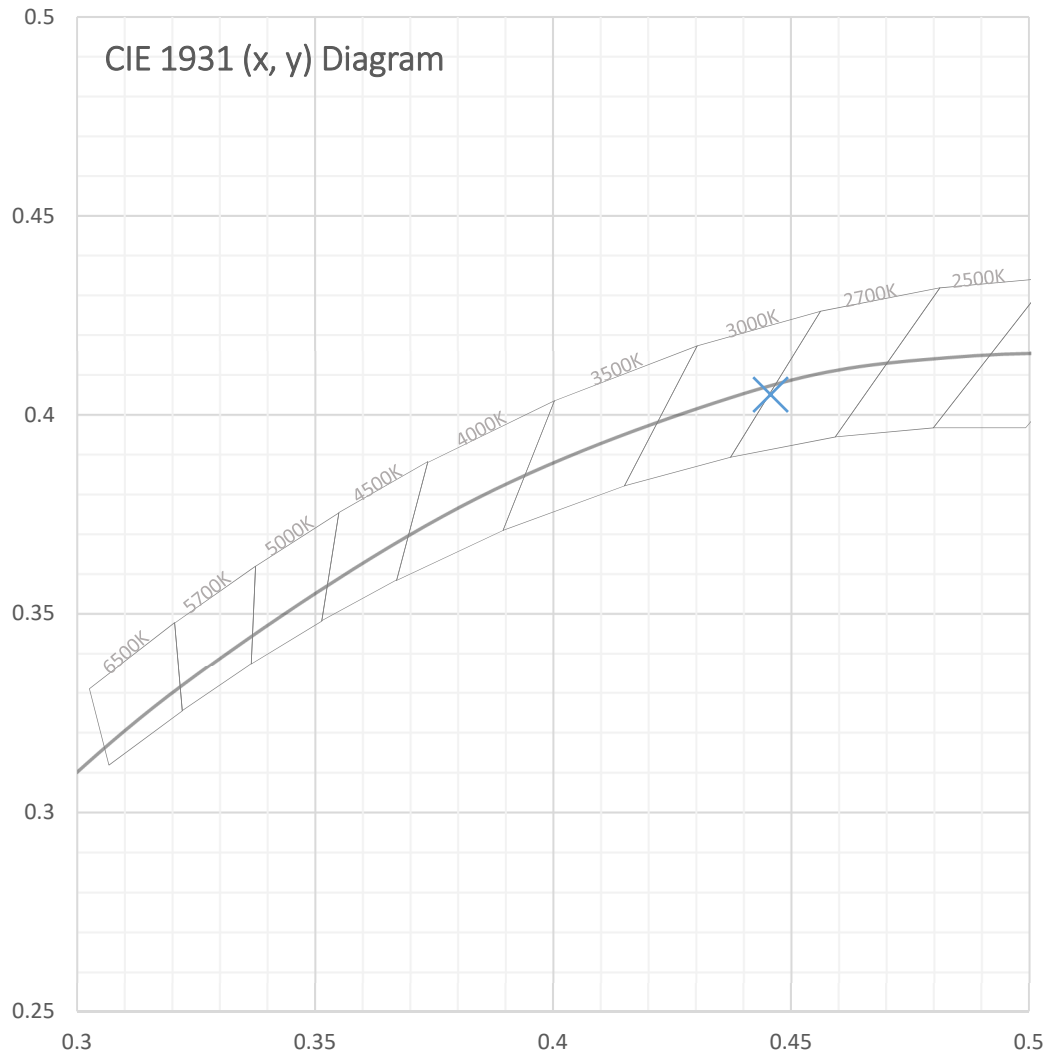
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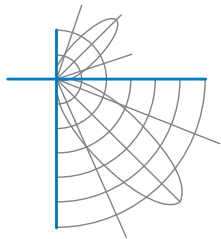
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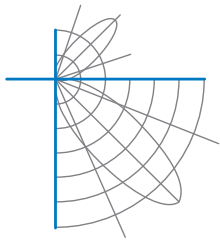
One onboard LED driver

Spectral Data

Total Radiant Flux	2.037 W
Total Luminous Flux	569.3 Lm
Chromaticity CIE 1931 (x, y)	(0.4458, 0.4050)
Chromaticity CIE 1976 (u', v')	(0.2559, 0.5231)
Correlated Color Temperature (CCT)	2865 K
Color Rendering Index (Ra)	92
R1	92
R2	94
R3	94
R4	92
R5	91
R6	92
R7	93
R8	84
R9	63
R10	85
R11	92
R12	79
R13	93
R14	96
TM-30: Rf	89
TM-30: Rg	101
Distance from Planckian Locus (Duv)	-0.0007
Scotopic/Photopic Ratio *	1.322

Electrical Data

Voltage	120.0 Vac
Current	0.1033 A
Power	11.72 W
Frequency	59.99 Hz
Power Factor	0.945
Current THD	33.1 %



Test Report Number: LLIA001166-016B

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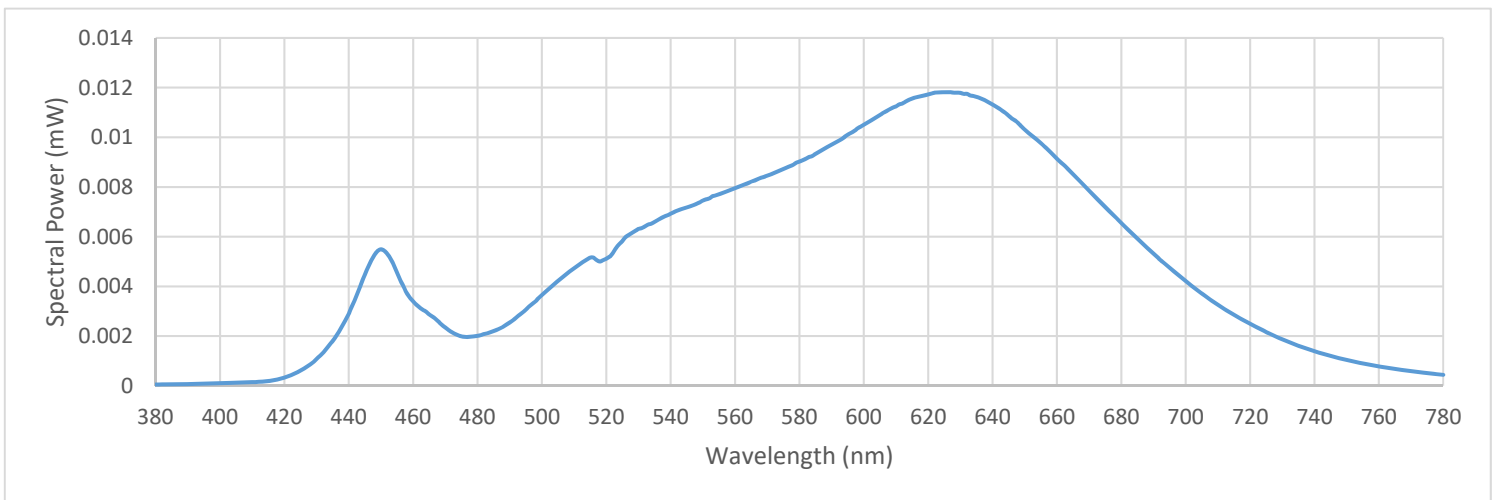
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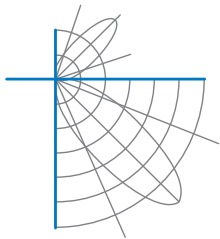
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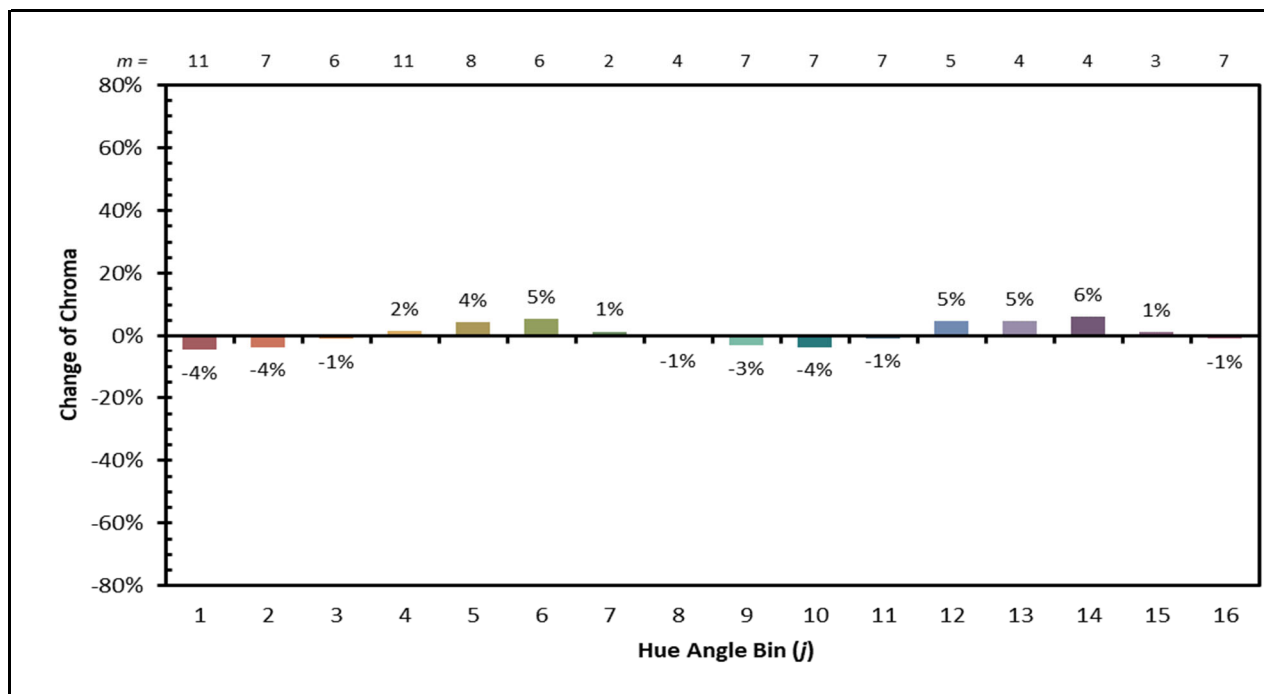
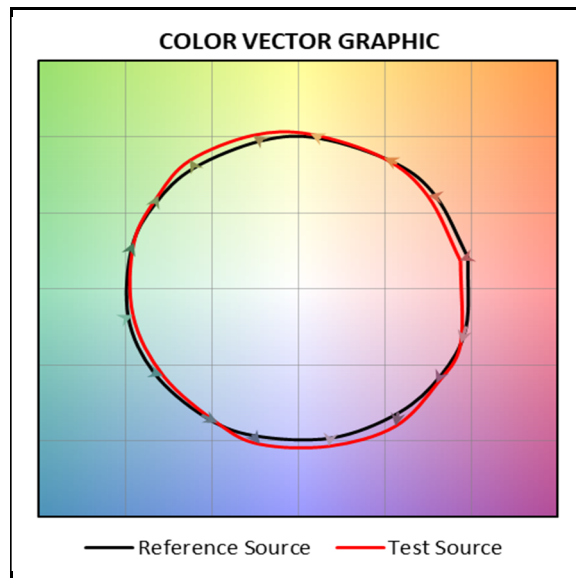
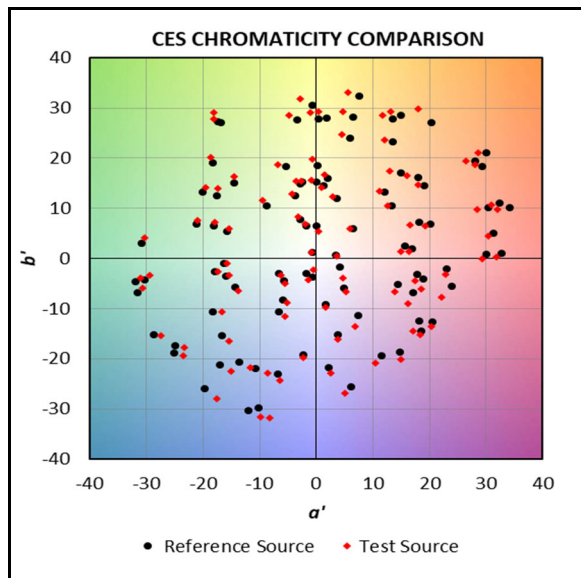
Summary Spectral Power Distribution (wavelength - nm, spectral power - mW)

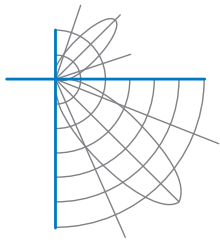
380	0.000052	480	0.002012	580	0.009025	680	0.006543
385	0.000057	485	0.002199	585	0.009337	685	0.005923
390	0.000070	490	0.002547	590	0.009709	690	0.005318
395	0.000082	495	0.003063	595	0.010111	695	0.004746
400	0.000103	500	0.003651	600	0.010495	700	0.004224
405	0.000125	505	0.004209	605	0.010892	705	0.003715
410	0.000147	510	0.004730	610	0.011243	710	0.003256
415	0.000190	515	0.005158	615	0.011555	715	0.002856
420	0.000332	520	0.005122	620	0.011731	720	0.002495
425	0.000612	525	0.005828	625	0.011817	725	0.002162
430	0.001083	530	0.006313	630	0.011789	730	0.001875
435	0.001802	535	0.006593	635	0.011629	735	0.001612
440	0.002899	540	0.006923	640	0.011321	740	0.001385
445	0.004473	545	0.007179	645	0.010869	745	0.001199
450	0.005493	550	0.007456	650	0.010308	750	0.001037
455	0.004547	555	0.007705	655	0.009763	755	0.000900
460	0.003398	560	0.007950	660	0.009144	760	0.000782
465	0.002868	565	0.008218	665	0.008529	765	0.000679
470	0.002347	570	0.008462	670	0.007843	770	0.000586
475	0.001984	575	0.008715	675	0.007196	775	0.000510
						780	0.000441





IES TM-30 Details





Test Report Number: LLIA001166-016B

Catalog Number: Terra 3-690-24

Pendant mounted, formed steel canopy, formed steel and aluminum LED plate with translucent white plastic enclosure, coated white glass outer enclosure.
28 white LEDs, one D100-120A LED board
One onboard LED driver

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

Test Temperature: 24.7 °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,
ANSI C82-77-10:2014, TM-30-15

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.