



Report of Test

LLIA000938-001A

Catalog Number: MQR2-MO-K35-80-2X4-XX-FL-PPNL/FO1M-UNV

Recessed mounted extruded aluminum housing, formed white enamel aluminum reflectors, translucent white plastic enclosures.

256 white LEDs, two PAL-Lighting LED boards with 88 LEDs each and two boards with 40 LEDs each.

One Osram Optotronic OTi 85/120-277/2A3 DIM L (2750627-1340) LED driver
120.0Vac, 60.00Hz, 0.4195A, 49.92W, 0.992PF, 11.3%THD(i)



Performance Summary

Total Light Output	5155 lm
Luminaire Power	49.9 W
Luminous Efficacy	103.3 lm/W

PREPARED FOR : Precision Architectural Lighting, 4830 Timber Creek Drive, Houston, TX 77017



Test Report No. LLIA000938-001A

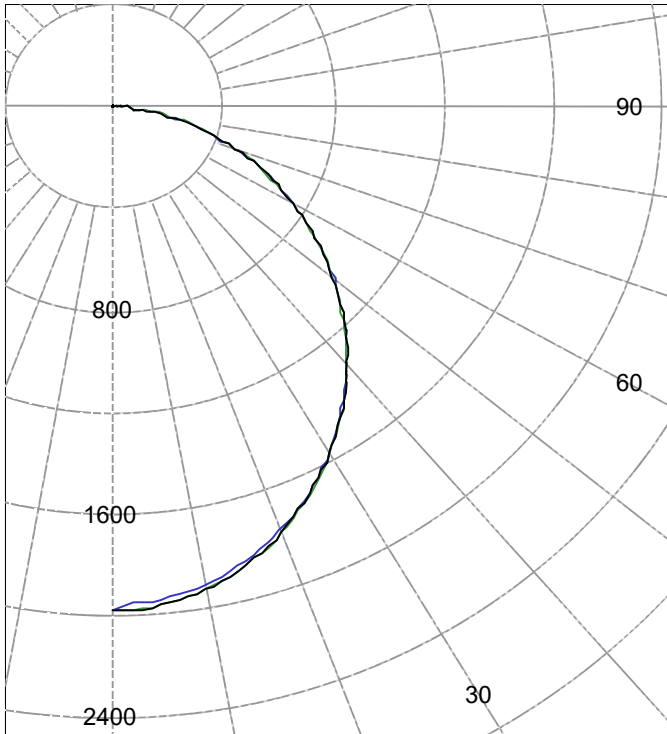
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Legend: C0-Black, C45-Green, C90-Blue (cd)



(Two plane symmetry) C0-C90

AVERAGE LUMINANCE (cd / m²)

Gamma	C0	C45	C90
45.0	10490	10421	10464
55.0	9766	9733	9770
65.0	9047	9011	8949
75.0	7910	8038	7957
85.0	6075	6619	6491

INTENSITY SUMMARY (cd)

Gamma	C-Plane					Flux (lm)
	C0	C22.5	C45	C67.5	C90	
0.0	1974	1974	1974	1974	1974	186
5.0	1969	1965	1964	1962	1942	
10.0	1927	1927	1926	1923	1906	525
15.0	1864	1865	1865	1862	1848	
20.0	1779	1783	1783	1780	1769	774
25.0	1681	1684	1685	1681	1674	
30.0	1569	1572	1573	1566	1564	905
35.0	1449	1450	1449	1441	1443	
40.0	1322	1321	1318	1309	1316	910
45.0	1187	1184	1179	1173	1184	
50.0	1042	1041	1036	1034	1043	800
55.0	896	896	893	893	897	
60.0	753	753	751	752	749	603
65.0	612	611	609	608	605	
70.0	469	468	469	467	465	350
75.0	328	329	333	332	329	
80.0	196	201	206	206	203	102
85.0	85	89	92	92	91	
90.0	0	1	1	2	2	

ZONAL FLUX AND PERCENTAGES

Zone	Flux (lm)	% Lamp	% Luminaire
0-30	1485	N / A	28.8
0-40	2390	N / A	46.4
0-60	4100	N / A	79.5
0-90	5155	N / A	100.0
40-90	2766	N / A	53.6
60-90	1055	N / A	20.5
90-180	0	N / A	0.0
0-180	5155	N / A	100.0

Total Light Output = 5,155 lm

Spacing Criterion: 0-180 1.2
Spacing Criterion: 90-270 1.2

Signed:

Authorized Signatory

Date of test 30-Jan-2018
Date of report 1-Feb-2018



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Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
0.0	1974	1974	1974	1974	1974
2.5	1979	1974	1974	1971	1952
5.0	1969	1965	1964	1962	1942
7.5	1951	1948	1948	1945	1927
10.0	1927	1927	1926	1923	1906
12.5	1899	1898	1898	1896	1879
15.0	1864	1865	1865	1862	1848
17.5	1823	1826	1826	1823	1810
20.0	1779	1783	1783	1780	1769
22.5	1731	1735	1736	1733	1723
25.0	1681	1684	1685	1681	1674
27.5	1627	1629	1631	1625	1620
30.0	1569	1572	1573	1566	1564
32.5	1509	1512	1512	1505	1505
35.0	1449	1450	1449	1441	1443
37.5	1386	1387	1384	1376	1380
40.0	1322	1321	1318	1309	1316
42.5	1257	1253	1249	1241	1250
45.0	1187	1184	1179	1173	1184
47.5	1114	1113	1108	1104	1115
50.0	1042	1041	1036	1034	1043
52.5	970	968	965	964	970
55.0	896	896	893	893	897
57.5	825	824	822	823	823
60.0	753	753	751	752	749
62.5	682	681	680	680	677
65.0	612	611	609	608	605
67.5	540	539	539	537	534
70.0	469	468	469	467	465
72.5	397	398	400	399	396
75.0	328	329	333	332	329
77.5	260	263	268	268	265
80.0	196	201	206	206	203
82.5	138	143	147	147	145
85.0	85	89	92	92	91
87.5	38	40	42	41	40
90.0	0	1	1	2	2



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Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
90.0	0	1	1	2	2
92.5	0	0	0	0	0
95.0	0	0	0	0	0
97.5	0	0	0	0	0
100.0	0	0	0	0	0
102.5	0	0	0	0	0
105.0	0	0	0	0	0
107.5	0	0	0	0	0
110.0	0	0	0	0	0
112.5	0	0	0	0	0
115.0	0	0	0	0	0
117.5	0	0	0	0	0
120.0	0	0	0	0	0
122.5	0	0	0	0	0
125.0	0	0	0	0	0
127.5	0	0	0	0	0
130.0	0	0	0	0	0
132.5	0	0	0	0	0
135.0	0	0	0	0	0
137.5	0	0	0	0	0
140.0	0	0	0	0	0
142.5	0	0	0	0	0
145.0	0	0	0	0	0
147.5	0	0	0	0	0
150.0	0	0	0	0	0
152.5	0	0	0	0	0
155.0	0	0	0	0	0
157.5	0	0	0	0	0
160.0	0	0	0	0	0
162.5	0	0	0	0	0
165.0	0	0	0	0	0
167.5	0	0	0	0	0
170.0	0	0	0	0	0
172.5	0	0	0	0	0
175.0	0	0	0	0	0
177.5	0	0	0	0	0
180.0	0	0	0	0	0



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Coefficients Of Utilization - Zonal Cavity Method

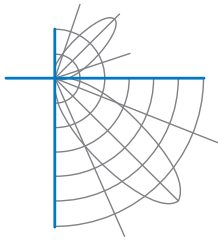
Effective Floor Cavity Reflectance 0.20

RC	80				70				50			30			10			0
	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	109	104	100	96	106	102	98	94	98	94	91	94	91	89	90	88	86	84
2	99	91	84	78	96	89	83	77	85	80	76	82	78	74	79	75	72	70
3	90	80	72	65	88	78	71	65	75	69	64	73	67	62	70	65	61	59
4	83	71	62	56	81	70	61	55	67	60	54	65	59	54	63	57	53	51
5	76	64	55	48	74	62	54	48	60	53	47	58	52	47	56	51	46	44
6	71	57	48	42	69	56	48	42	55	47	41	53	46	41	51	45	41	39
7	65	52	43	37	64	51	43	37	50	42	37	48	42	37	47	41	36	34
8	61	48	39	33	59	47	39	33	46	38	33	44	38	33	43	37	33	31
9	57	44	36	30	56	43	35	30	42	35	30	41	34	30	40	34	29	28
10	54	40	32	27	52	40	32	27	39	32	27	38	31	27	37	31	27	25

For absolute test reports, CUs are expressed as a percentage of total lumen 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)	Beam Width (across 50% Nadir Illum)	
		0-180	90-270
6.0	54.8	7.12	7.10
8.0	30.8	9.50	9.47
10.0	19.7	11.87	11.84
12.0	13.7	14.25	14.21
14.0	10.1	16.62	16.57
16.0	7.7	19.00	18.94



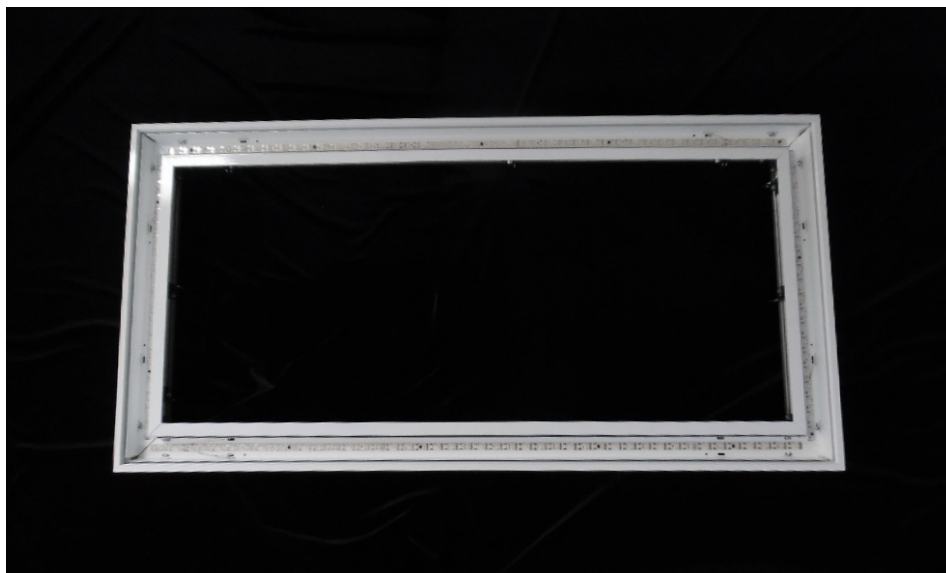
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Test Distance 9.5 m
Test Temperature 24.1 °C

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-79-08 (Sec. 12), IES LM-16-93, IES LM-58-13, CIE 13.3:1995, CIE 15:2004, ANSI C78.377:2015, ANSI C82.77-10:2014.

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 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

LLIA000938-001B

Integrating Sphere Report

Catalog Number: MQR2-MO-K35-80-2X4-XX-FL-PPNL/FO1M-UNV

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Performance Summary

Voltage	120.0 Vac
Current	0.4220 A
Power	50.02 W
Frequency	59.97 Hz
Power Factor	0.988
Current THD	11.1 %

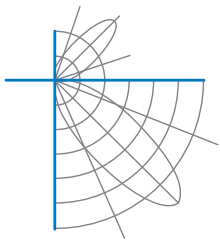
Total Luminous Flux	5429.9 lm
Efficacy	108.6 lm/W
Chromaticity (x,y)	(0.4110, 0.3939)
(u',v')	(0.2381, 0.5134)
Duv	0.0002
CCT	3405 K
CRI (Ra)	83
R9	11
TM-30: Rf	82
TM-30: Rg	97

Prepared For:

Precision Architectural Lighting
4830 Timber Creek Drive
Houston, TX 77017, USA

Test date: 01/30/2018

Report date: 02/01/2018



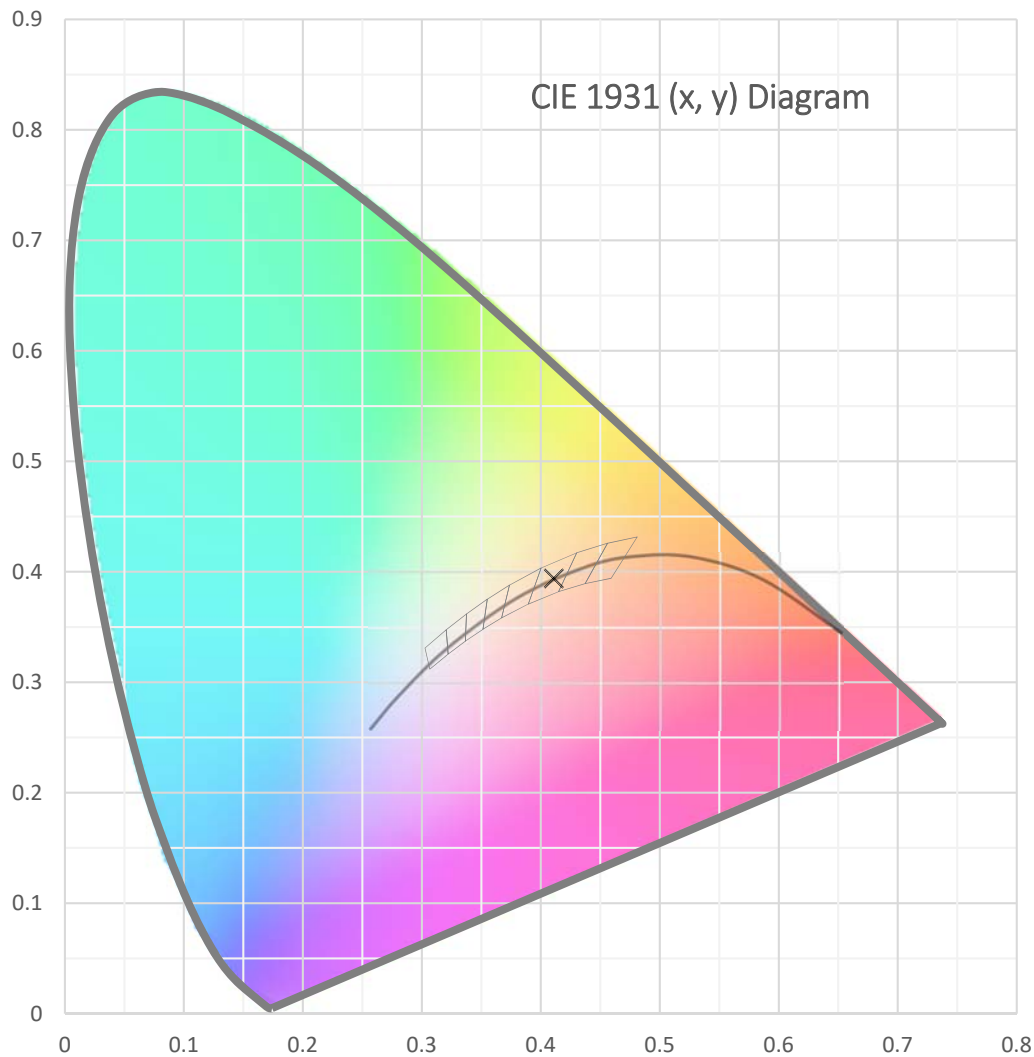
Test Report Number: LLIA000938-001B

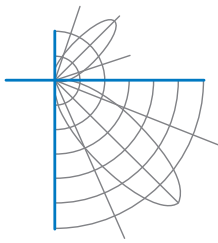
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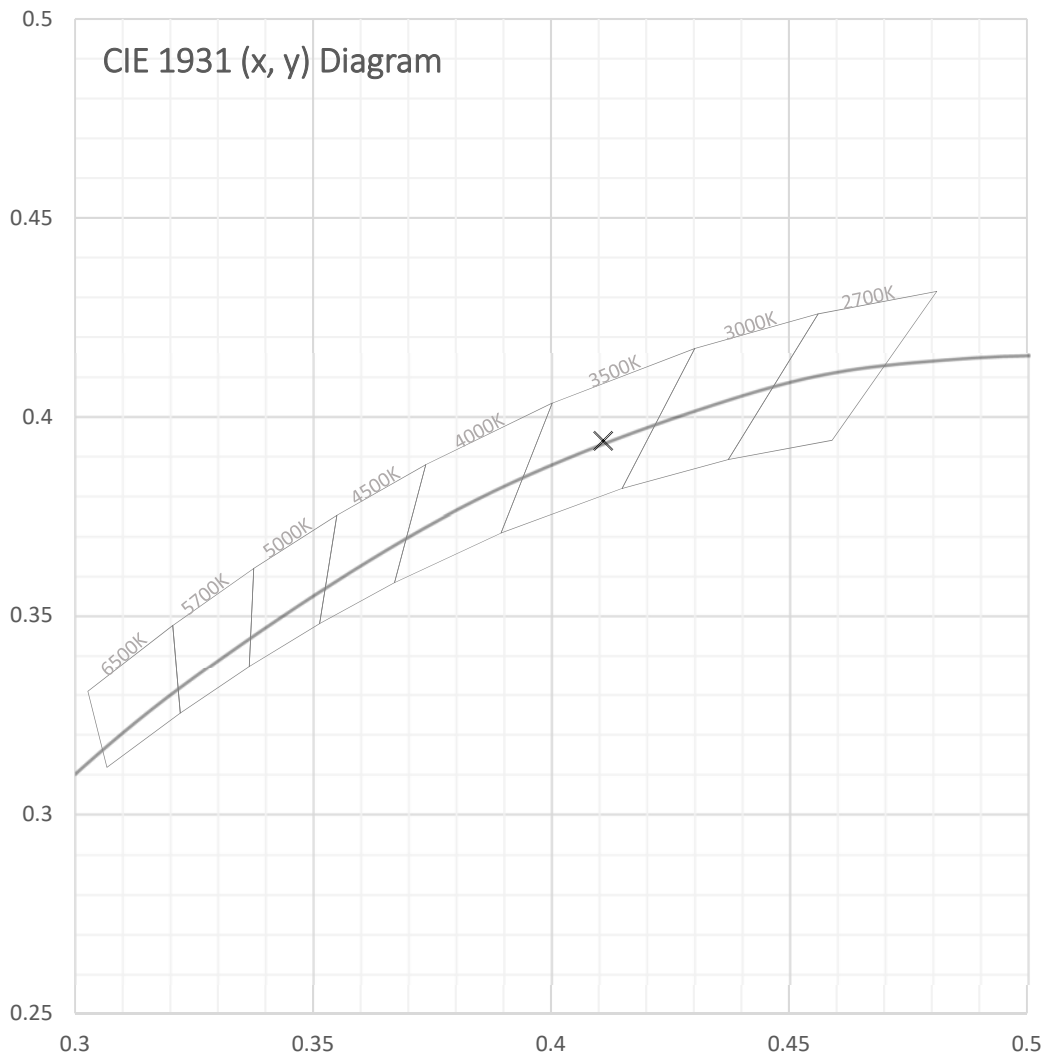
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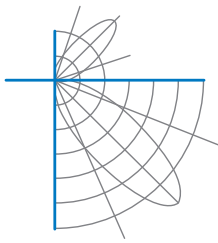
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Spectral Data	Total Radiant Flux	16.63 W
	Total Luminous Flux	5429.9 Lm
	Chromaticity CIE 1931 (x, y)	(0.4110, 0.3939)
	Chromaticity CIE 1976 (u', v')	(0.2381, 0.5134)
	Correlated Color Temperature (CCT)	3405 K
	Color Rendering Index (Ra)	83
	R1	81
	R2	89
	R3	95
	R4	82
	R5	81
	R6	85
	R7	85
	R8	63
	R9	11
	R10	74
	R11	81
	R12	65
	R13	83
	R14	97
	TM-30: Rf	82
	TM-30: Rg	97
	Distance from Planckian Locus (Duv)	0.0002
	Scotopic/Photopic Ratio *	1.474

Electrical Data

Voltage	120.0 Vac
Current	0.4220 A
Power	50.02 W
Frequency	59.97 Hz
Power Factor	0.988
Current THD	11.1 %



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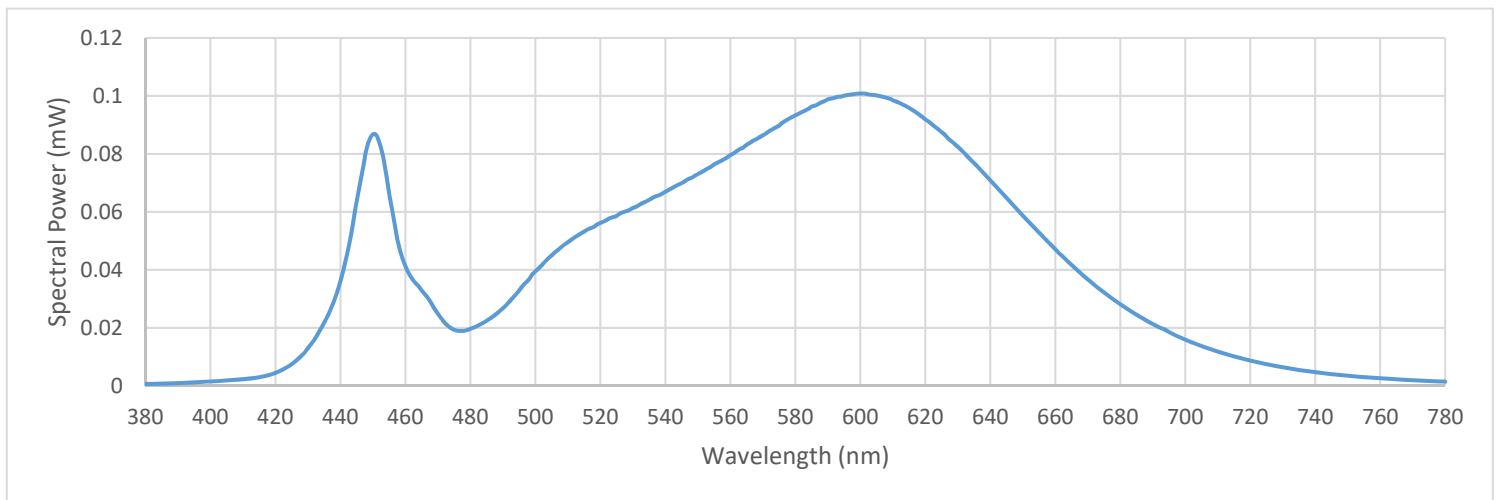
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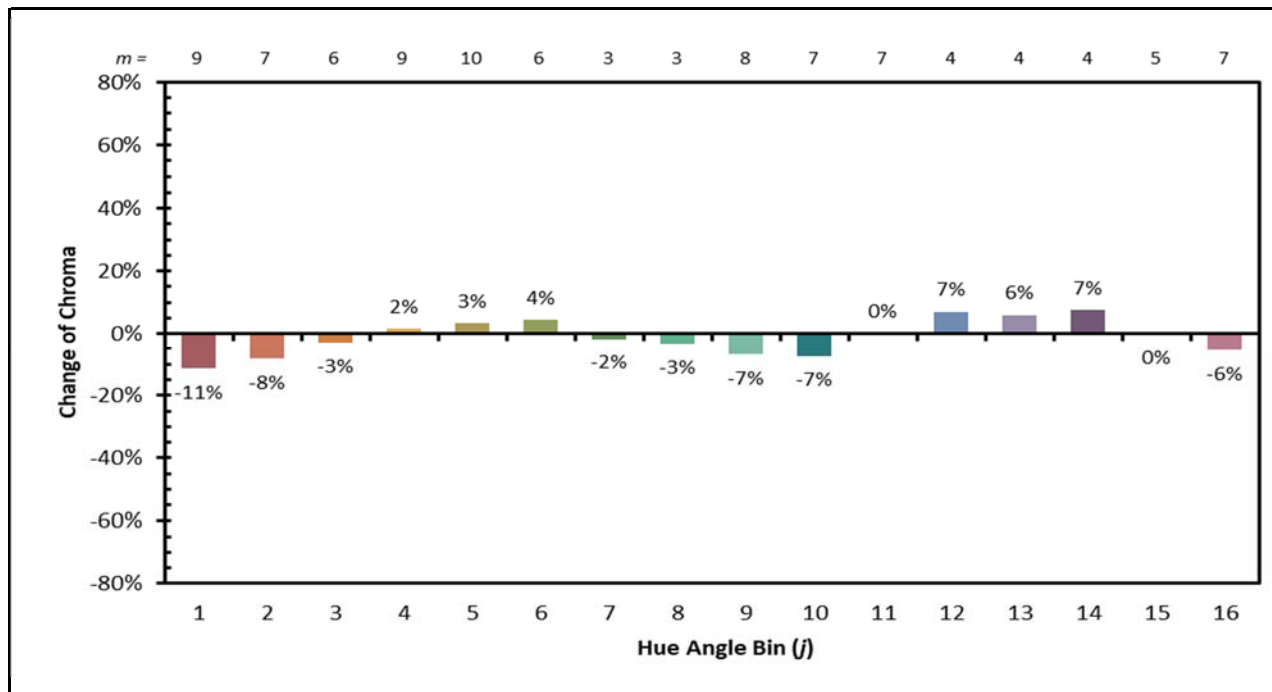
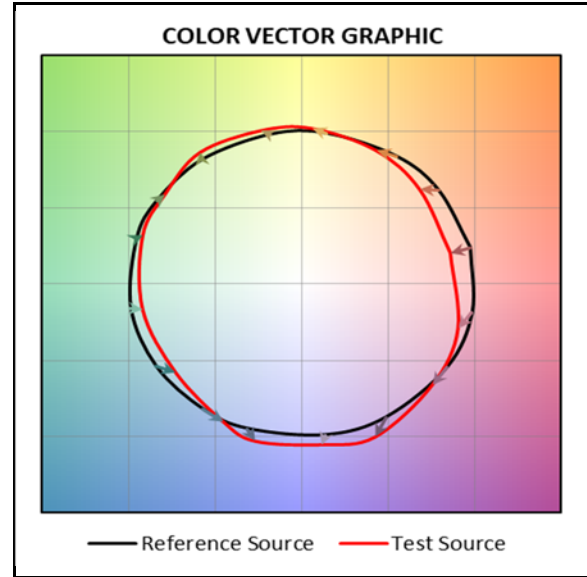
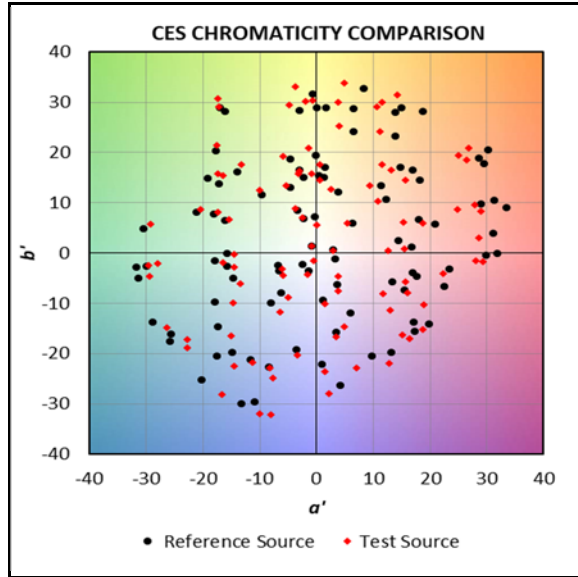
Summary Spectral Power Distribution (wavelength - nm, spectral power - mW)

380	0.000632	480	0.019653	580	0.093323	680	0.028124
385	0.000693	485	0.022486	585	0.096296	685	0.024544
390	0.000901	490	0.026787	590	0.098809	690	0.021305
395	0.001169	495	0.032837	595	0.100086	695	0.018518
400	0.001502	500	0.039477	600	0.100768	700	0.015958
405	0.001842	505	0.044965	605	0.100246	705	0.013698
410	0.002228	510	0.049489	610	0.098512	710	0.011764
415	0.002942	515	0.053169	615	0.095823	715	0.010151
420	0.004462	520	0.056194	620	0.091852	720	0.008708
425	0.007442	525	0.058600	625	0.087516	725	0.007446
430	0.013013	530	0.061342	630	0.082382	730	0.006386
435	0.021826	535	0.064127	635	0.076827	735	0.005459
440	0.035969	540	0.066910	640	0.070851	740	0.004669
445	0.063734	545	0.069873	645	0.064784	745	0.004023
450	0.086729	550	0.073053	650	0.058733	750	0.003460
455	0.066206	555	0.076344	655	0.052734	755	0.002976
460	0.041271	560	0.079580	660	0.047230	760	0.002569
465	0.032879	565	0.083153	665	0.041706	765	0.002214
470	0.024873	570	0.086416	670	0.036680	770	0.001904
475	0.019300	575	0.089753	675	0.032226	775	0.001634
						780	0.001414





IES TM-30 Summary





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One Osram Optotronic OTi 85/120-277/2A3 DIM L (2750627-1340) 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: 25.0 °C

Test Procedure: Tested in accordance with the applicable sections of:
LM-79-08, LM-78-07, LM-58-13, ANSI_ANSLG C78.377-2015,
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.

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