



Report of Test

LLIA000938-004A

Catalog Number: MQR2-HO-K35-80-2X4-XX-AL-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 (2750627-2000) LED driver
120.0Vac, 60.00Hz, 0.6391A, 75.07W, 0.979PF, 10.5%THD(i)



Performance Summary

Total Light Output	7894 lm
Luminaire Power	75.1 W
Luminous Efficacy	105.1 lm/W

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



Test Report No. LLIA000938-004A

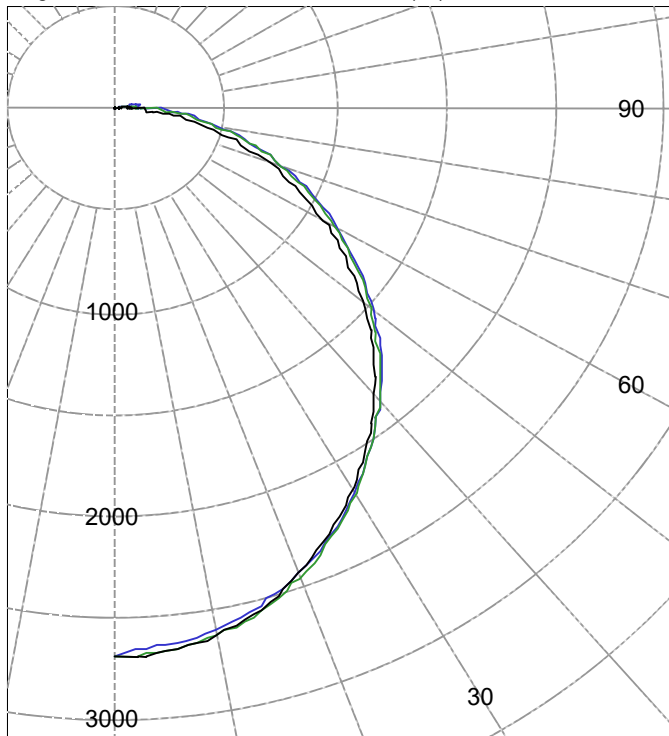
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Legend: C0-Black, C45-Green, C90-Blue (cd)



(Two plane symmetry) C0-C90

AVERAGE LUMINANCE (cd / m²)

Gamma	C0	C45	C90
45.0	14239	14370	14672
55.0	13372	13744	14182
65.0	12644	13371	13795
75.0	11677	13341	13990
85.0	11806	16029	18278

INTENSITY SUMMARY (cd)

Gamma	C-Plane					Flux (lm)
	C0	C22.5	C45	C67.5	C90	
0.0	2685	2685	2685	2685	2685	
5.0	2678	2674	2673	2670	2645	253
10.0	2626	2625	2627	2624	2601	
15.0	2541	2547	2550	2549	2529	717
20.0	2433	2440	2447	2446	2430	
25.0	2300	2312	2323	2321	2311	1066
30.0	2154	2167	2181	2177	2173	
35.0	1994	2010	2025	2020	2022	1261
40.0	1831	1843	1858	1856	1864	
45.0	1651	1668	1683	1686	1701	1295
50.0	1462	1484	1504	1515	1530	
55.0	1271	1299	1325	1342	1348	1180
60.0	1084	1117	1149	1167	1164	
65.0	901	936	973	989	983	951
70.0	717	756	799	812	805	
75.0	529	579	625	642	633	643
80.0	356	416	463	483	473	
85.0	212	268	314	334	328	321
90.0	61	85	112	126	126	

ZONAL FLUX AND PERCENTAGES

Zone	Flux (lm)	% Lamp	% Luminaire
0-30	2037	N / A	25.8
0-40	3298	N / A	41.8
0-60	5774	N / A	73.1
0-90	7688	N / A	97.4
40-90	4389	N / A	55.6
60-90	1914	N / A	24.2
90-180	206	N / A	2.6
0-180	7894	N / A	100.0

Total Light Output = 7,894 lm

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

Signed:

Authorized Signatory

Date of test 2-Feb-2018
Date of report 6-Feb-2018



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120.0Vac, 60.00Hz, 0.6391A, 75.07W, 0.979PF, 10.5%THD(i)

Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
0.0	2685	2685	2685	2685	2685
2.5	2691	2685	2685	2681	2656
5.0	2678	2674	2673	2670	2645
7.5	2656	2653	2653	2651	2626
10.0	2626	2625	2627	2624	2601
12.5	2588	2589	2592	2590	2568
15.0	2541	2547	2550	2549	2529
17.5	2489	2496	2501	2501	2482
20.0	2433	2440	2447	2446	2430
22.5	2368	2378	2388	2386	2373
25.0	2300	2312	2323	2321	2311
27.5	2229	2241	2254	2251	2244
30.0	2154	2167	2181	2177	2173
32.5	2074	2091	2104	2100	2099
35.0	1994	2010	2025	2020	2022
37.5	1912	1928	1943	1939	1944
40.0	1831	1843	1858	1856	1864
42.5	1742	1757	1772	1771	1784
45.0	1651	1668	1683	1686	1701
47.5	1557	1577	1594	1601	1616
50.0	1462	1484	1504	1515	1530
52.5	1370	1391	1414	1429	1439
55.0	1271	1299	1325	1342	1348
57.5	1178	1207	1237	1256	1256
60.0	1084	1117	1149	1167	1164
62.5	992	1026	1060	1078	1073
65.0	901	936	973	989	983
67.5	808	846	885	900	893
70.0	717	756	799	812	805
72.5	623	666	711	726	718
75.0	529	579	625	642	633
77.5	439	495	543	561	552
80.0	356	416	463	483	473
82.5	279	340	387	407	399
85.0	212	268	314	334	328
87.5	154	200	241	261	260
90.0	61	85	112	126	126



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120.0Vac, 60.00Hz, 0.6391A, 75.07W, 0.979PF, 10.5%THD(i)

Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
90.0	61	85	112	126	126
92.5	54	72	93	102	103
95.0	77	69	85	94	96
97.5	68	70	91	87	92
100.0	61	60	86	108	106
102.5	53	50	72	94	109
105.0	47	41	57	79	93
107.5	40	33	42	64	78
110.0	33	27	33	50	63
112.5	26	21	26	39	49
115.0	20	17	18	33	39
117.5	16	14	10	28	34
120.0	13	11	6	23	28
122.5	11	9	6	17	23
125.0	8	6	7	11	17
127.5	6	6	7	8	11
130.0	6	7	7	8	9
132.5	6	7	8	8	8
135.0	6	7	8	8	8
137.5	7	7	8	8	8
140.0	6	7	7	8	8
142.5	6	7	7	7	7
145.0	6	6	7	7	7
147.5	6	6	6	7	7
150.0	5	6	6	6	6
152.5	5	5	6	6	6
155.0	5	5	5	6	6
157.5	4	5	5	5	6
160.0	4	5	5	5	6
162.5	4	4	5	5	5
165.0	4	4	4	4	5
167.5	4	4	4	4	4
170.0	4	4	4	4	4
172.5	4	4	4	0	0
175.0	4	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

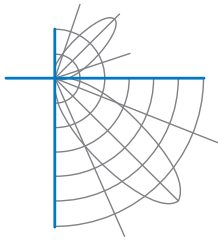
Effective Floor Cavity Reflectance 0.20

RC	80				70				50			30			10			0
	RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	
0	118	118	118	118	115	115	115	115	110	110	110	104	104	104	100	100	100	97
1	107	102	97	93	104	99	95	91	94	91	88	90	87	85	86	84	82	79
2	97	88	81	75	94	86	79	74	82	77	72	78	74	70	75	71	68	65
3	88	77	69	62	86	75	68	61	72	65	60	69	63	58	66	61	57	55
4	81	68	59	52	78	67	58	52	64	57	51	61	55	50	59	53	49	47
5	74	61	52	45	72	60	51	45	57	50	44	55	48	43	53	47	42	40
6	69	55	46	39	66	54	45	39	52	44	38	50	43	38	48	42	37	35
7	64	50	41	35	62	49	40	34	47	40	34	45	39	34	44	38	33	31
8	59	45	37	31	57	45	36	31	43	36	30	42	35	30	40	34	30	28
9	55	42	33	28	54	41	33	28	40	32	27	38	32	27	37	31	27	25
10	52	39	31	25	50	38	30	25	37	30	25	36	29	25	35	29	24	23

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	74.6	7.19	7.24
8.0	42.0	9.58	9.66
10.0	26.9	11.98	12.07
12.0	18.6	14.37	14.49
14.0	13.7	16.77	16.90
16.0	10.5	19.16	19.32



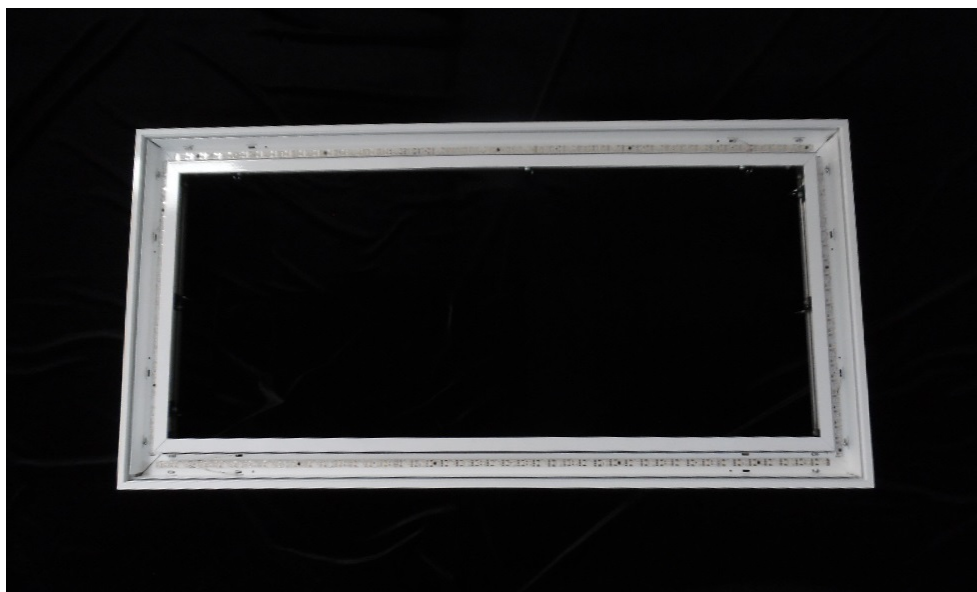
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Test Distance 9.5 m
Test Temperature 25.1 °C

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-79-08 (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

LLIA000938-004B

Integrating Sphere Report

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Performance Summary

Voltage	120.0 Vac
Current	0.6327 A
Power	75.14 W
Frequency	59.97 Hz
Power Factor	0.990
Current THD	10.1 %

Total Luminous Flux	8370.1 lm
Efficacy	111.4 lm/W
Chromaticity (x,y)	(0.4094, 0.3928)
(u',v')	(0.2375, 0.5128)
Duv	0.0000
CCT	3428 K
CRI (Ra)	83
R9	10
TM-30: Rf	82
TM-30: Rg	97

Prepared For:

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

Test date: 02/02/2018

Report date: 02/05/2018



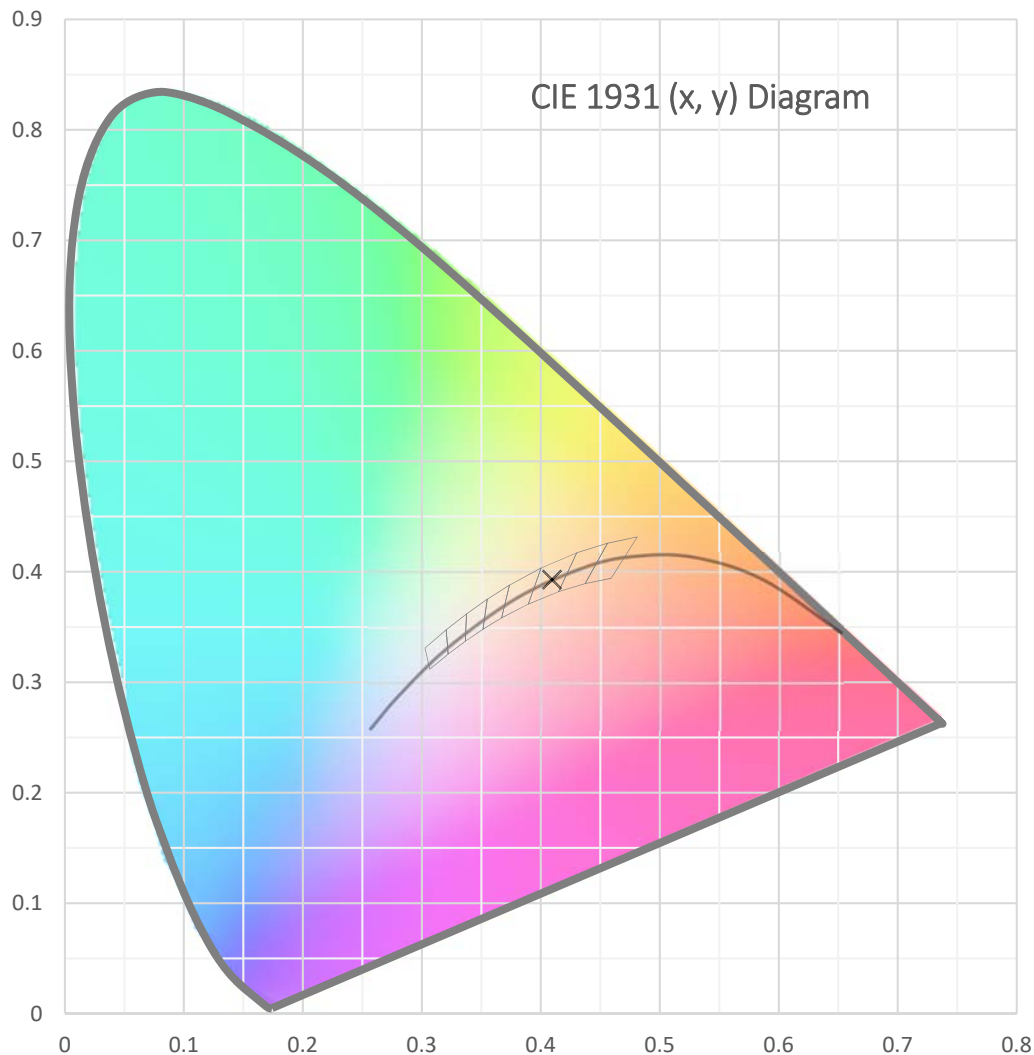
Test Report Number: LLIA000938-004B

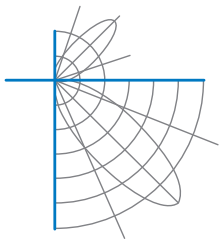
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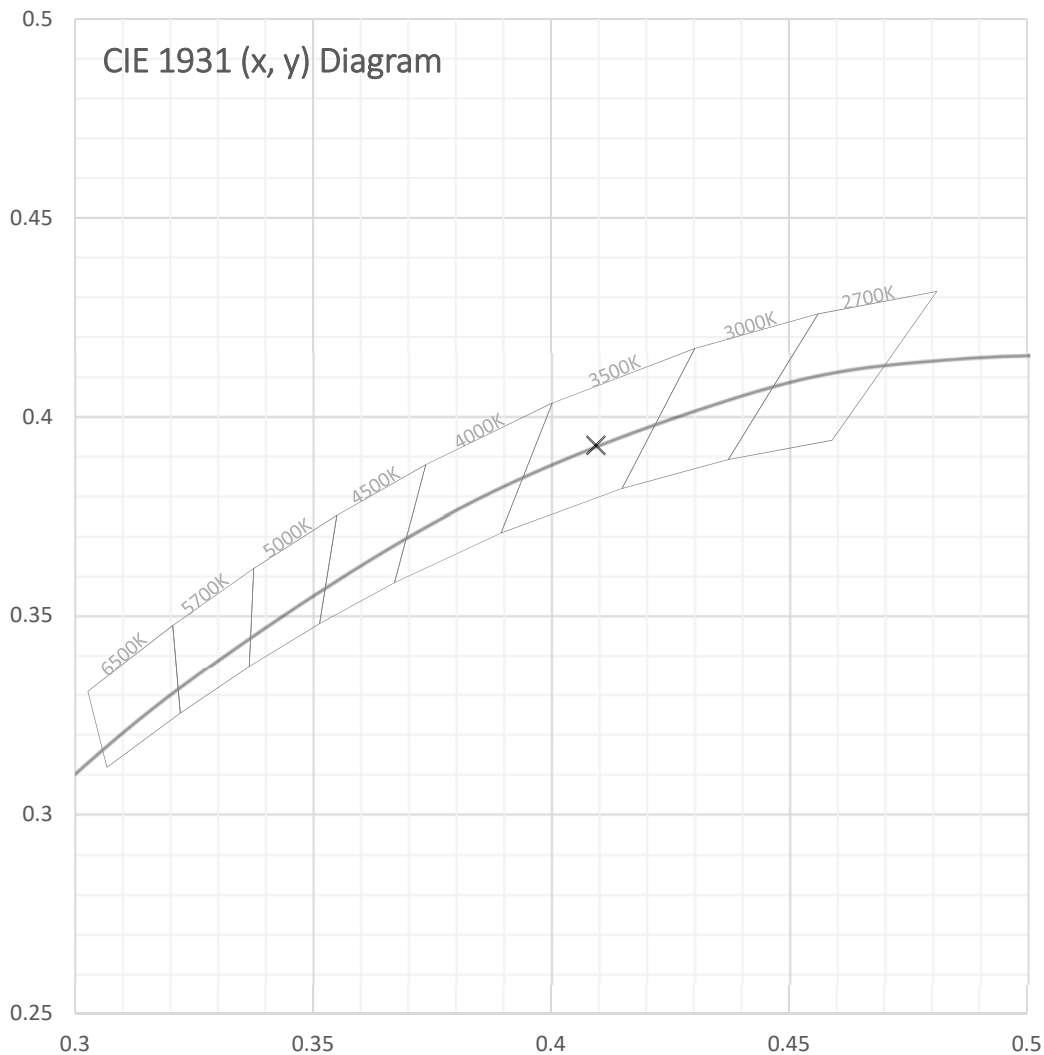
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Spectral Data

Total Radiant Flux	25.66 W
Total Luminous Flux	8370.1 Lm
Chromaticity CIE 1931 (x, y)	(0.4094, 0.3928)
Chromaticity CIE 1976 (u', v')	(0.2375, 0.5128)
Correlated Color Temperature (CCT)	3428 K
Color Rendering Index (Ra)	83
R1	81
R2	89
R3	95
R4	82
R5	81
R6	85
R7	85
R8	63
R9	10
R10	74
R11	80
R12	65
R13	82
R14	97
TM-30: Rf	82
TM-30: Rg	97
Distance from Planckian Locus (Duv)	0.0000
Scotopic/Photopic Ratio *	1.482

Electrical Data

Voltage	120.0 Vac
Current	0.6327 A
Power	75.14 W
Frequency	59.97 Hz
Power Factor	0.990
Current THD	10.1 %



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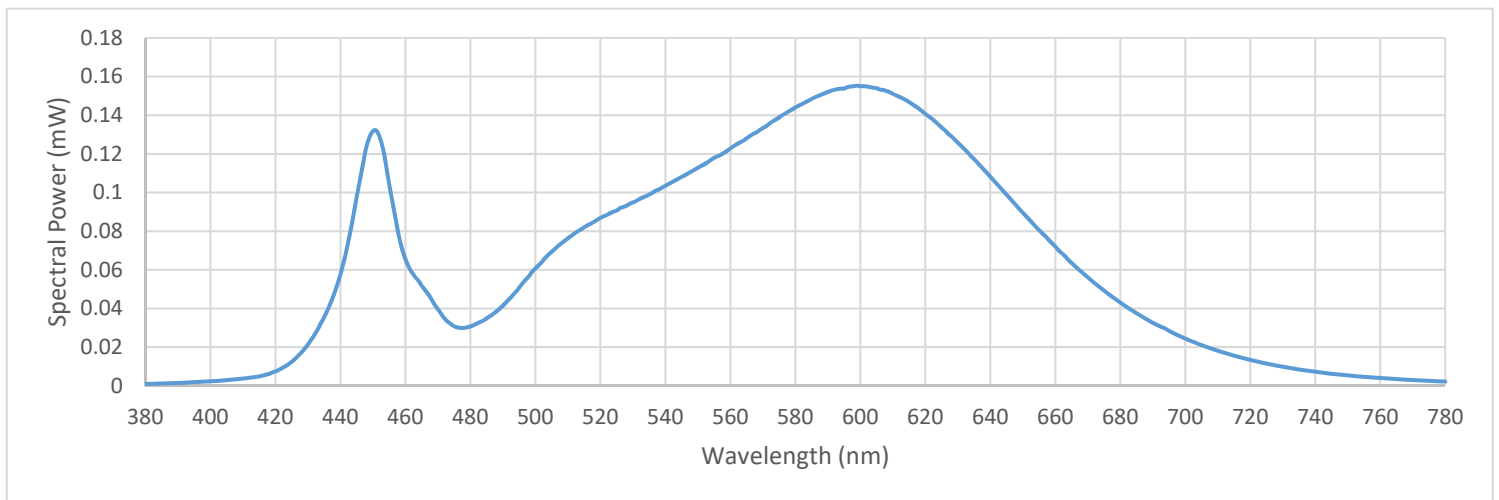
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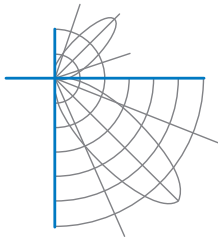
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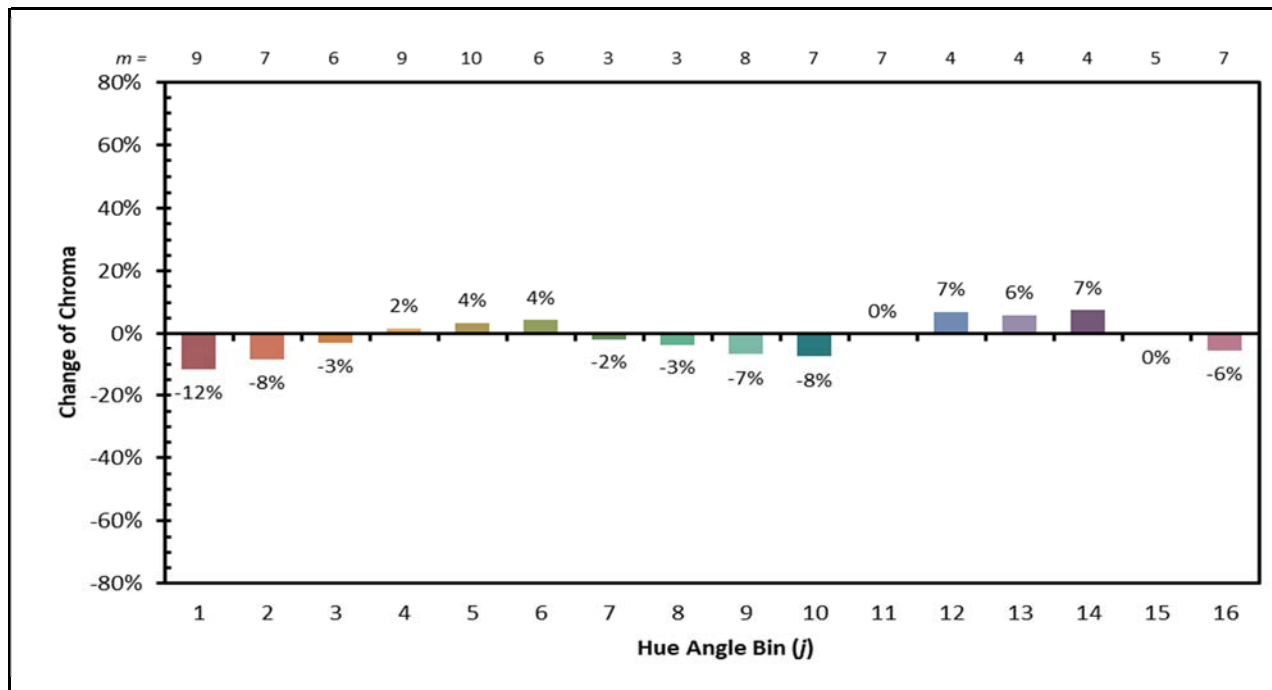
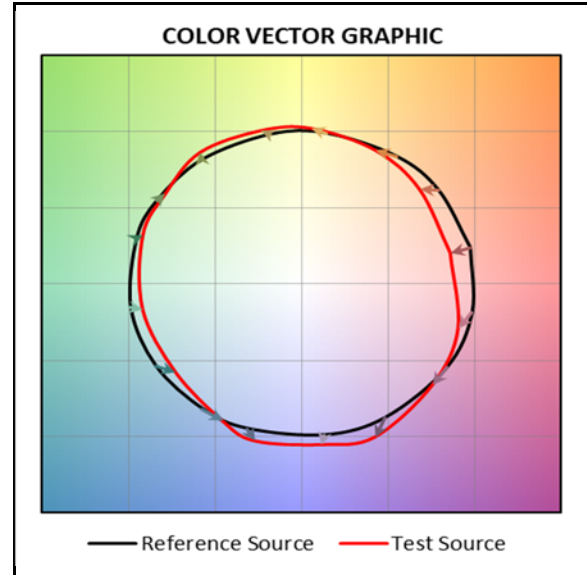
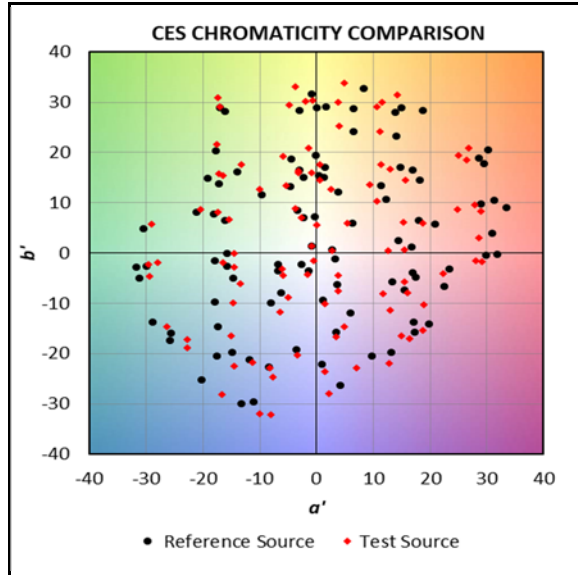
Summary Spectral Power Distribution (wavelength - nm, spectral power - mW)

380	0.001003	480	0.030761	580	0.143964	680	0.043079
385	0.001101	485	0.034927	585	0.148446	685	0.037603
390	0.001427	490	0.041562	590	0.152103	690	0.032602
395	0.001827	495	0.050684	595	0.153827	695	0.028412
400	0.002345	500	0.060692	600	0.154982	700	0.024492
405	0.002923	505	0.069336	605	0.154004	705	0.021065
410	0.003633	510	0.076284	610	0.151032	710	0.018084
415	0.004835	515	0.081951	615	0.146843	715	0.015584
420	0.007414	520	0.086812	620	0.140707	720	0.013397
425	0.012327	525	0.090638	625	0.133660	725	0.011468
430	0.021562	530	0.094847	630	0.125674	730	0.009843
435	0.035591	535	0.098940	635	0.117330	735	0.008436
440	0.057481	540	0.103488	640	0.108241	740	0.007224
445	0.097824	545	0.108101	645	0.098974	745	0.006216
450	0.131724	550	0.112782	650	0.089589	750	0.005343
455	0.104670	555	0.117977	655	0.080436	755	0.004608
460	0.065742	560	0.122697	660	0.072135	760	0.004004
465	0.051732	565	0.128032	665	0.063571	765	0.003434
470	0.039553	570	0.133375	670	0.056077	770	0.002942
475	0.030777	575	0.138744	675	0.049274	775	0.002545
						780	0.002201





IES TM-30 Summary





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One Osram Optotronic OTi 85/120-277/2A3 DIM L (2750627-2000) 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: 25.4 °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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