



Report of Test

LLIA000938-003A

Catalog Number: MQR2-HO-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 (2750627-2000) LED driver
120.0Vac, 60.00Hz, 0.6421A, 75.37W, 0.979PF, 10.8%THD(i)



Performance Summary

Total Light Output	7490 lm
Luminaire Power	75.4 W
Luminous Efficacy	99.3 lm/W

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



Test Report No. LLIA000938-003A

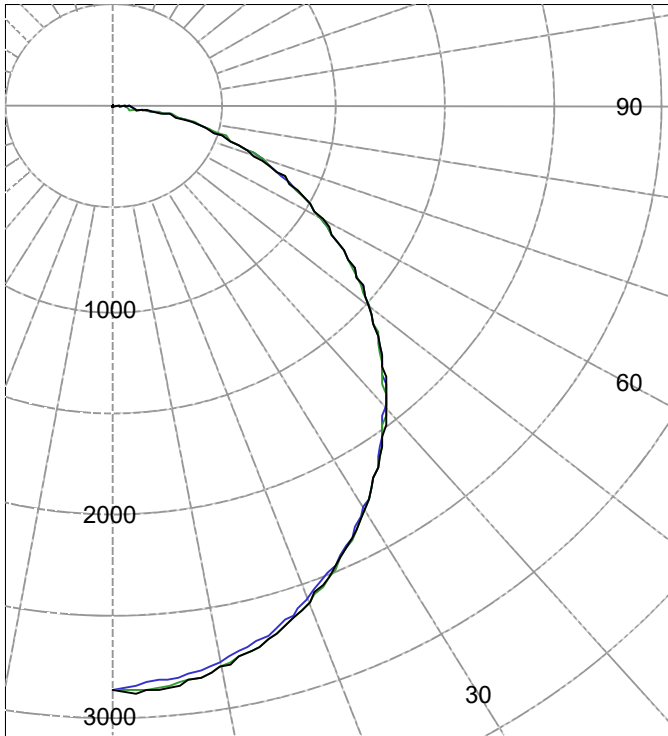
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Legend: C0-Black, C45-Green, C90-Blue (cd)



(Two plane symmetry) C0-C90

AVERAGE LUMINANCE (cd / m²)

Gamma	C0	C45	C90
45.0	15244	15141	15201
55.0	14197	14141	14198
65.0	13155	13092	13002
75.0	11492	11676	11560
85.0	8828	9595	9422

INTENSITY SUMMARY (cd)

Gamma	C-Plane					Flux (lm)
	C0	C22.5	C45	C67.5	C90	
0.0	2869	2869	2869	2869	2869	
5.0	2861	2855	2853	2849	2823	270
10.0	2801	2799	2798	2795	2769	
15.0	2708	2709	2709	2706	2685	762
20.0	2585	2590	2590	2587	2570	
25.0	2441	2446	2448	2442	2432	1125
30.0	2280	2284	2284	2276	2272	
35.0	2104	2107	2106	2095	2097	1315
40.0	1921	1919	1915	1903	1912	
45.0	1725	1720	1713	1705	1720	1323
50.0	1515	1512	1506	1503	1516	
55.0	1303	1302	1298	1299	1303	1163
60.0	1094	1094	1091	1092	1089	
65.0	890	887	885	884	879	876
70.0	683	680	682	679	675	
75.0	476	478	484	482	479	509
80.0	285	292	299	298	295	
85.0	123	129	134	133	131	148
90.0	1	1	2	2	3	

ZONAL FLUX AND PERCENTAGES

Zone	Flux (lm)	% Lamp	% Luminaire
0-30	2157	N / A	28.8
0-40	3472	N / A	46.4
0-60	5958	N / A	79.5
0-90	7490	N / A	100.0
40-90	4018	N / A	53.6
60-90	1533	N / A	20.5
90-180	0	N / A	0.0
0-180	7490	N / A	100.0

Total Light Output = 7,490 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	2869	2869	2869	2869	2869
2.5	2876	2868	2868	2864	2837
5.0	2861	2855	2853	2849	2823
7.5	2836	2831	2830	2827	2801
10.0	2801	2799	2798	2795	2769
12.5	2759	2758	2758	2754	2731
15.0	2708	2709	2709	2706	2685
17.5	2650	2653	2653	2650	2631
20.0	2585	2590	2590	2587	2570
22.5	2516	2520	2522	2517	2504
25.0	2441	2446	2448	2442	2432
27.5	2363	2367	2369	2361	2355
30.0	2280	2284	2284	2276	2272
32.5	2193	2197	2197	2188	2186
35.0	2104	2107	2106	2095	2097
37.5	2014	2015	2012	2000	2005
40.0	1921	1919	1915	1903	1912
42.5	1827	1821	1815	1804	1817
45.0	1725	1720	1713	1705	1720
47.5	1619	1617	1610	1604	1619
50.0	1515	1512	1506	1503	1516
52.5	1409	1407	1402	1401	1410
55.0	1303	1302	1298	1299	1303
57.5	1198	1197	1195	1196	1196
60.0	1094	1094	1091	1092	1089
62.5	991	990	988	987	983
65.0	890	887	885	884	879
67.5	785	783	783	780	776
70.0	683	680	682	679	675
72.5	578	578	582	579	576
75.0	476	478	484	482	479
77.5	377	383	389	388	385
80.0	285	292	299	298	295
82.5	200	207	214	213	211
85.0	123	129	134	133	131
87.5	56	58	60	59	58
90.0	1	1	2	2	3



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Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
90.0	1	1	2	2	3
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

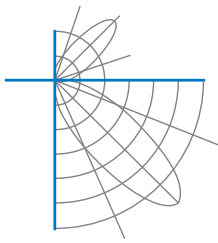
Effective Floor Cavity Reflectance 0.20

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	63	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	79.7	7.12	7.10
8.0	44.8	9.50	9.47
10.0	28.7	11.87	11.84
12.0	19.9	14.25	14.21
14.0	14.6	16.62	16.58
16.0	11.2	18.99	18.95



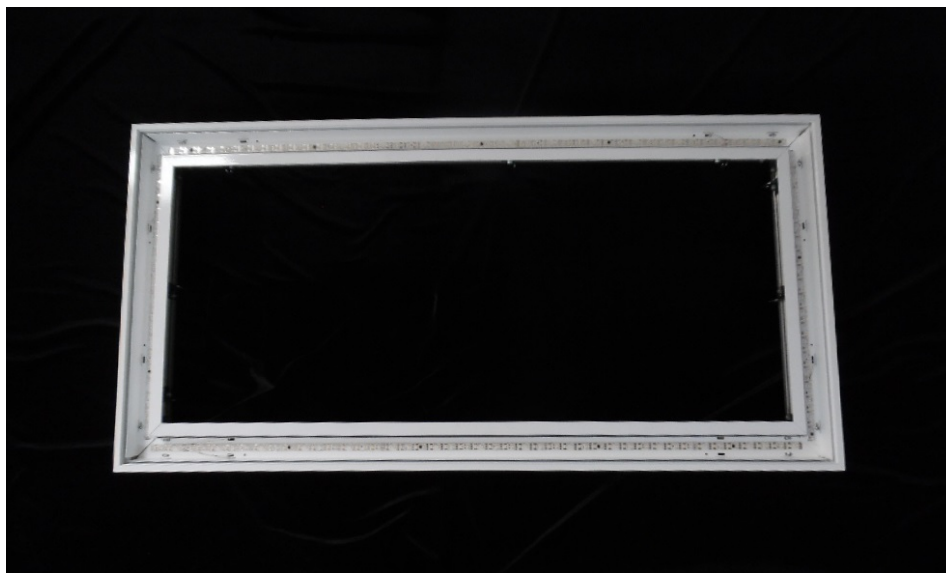
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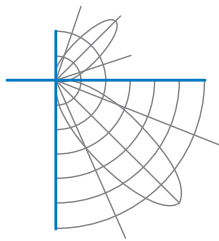
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Test Distance 9.5 m
Test Temperature 24.2 °C

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

LLIA000938-003B

Integrating Sphere Report

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Performance Summary

Voltage	120.0 Vac
Current	0.6313 A
Power	75.02 W
Frequency	59.97 Hz
Power Factor	0.990
Current THD	10.1 %

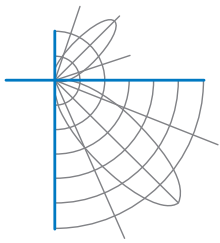
Total Luminous Flux	7873.5 lm
Efficacy	105.0 lm/W
Chromaticity (x,y)	(0.4100, 0.3934)
(u',v')	(0.2377, 0.5131)
Duv	0.0002
CCT	3420 K
CRI (Ra)	83
R9	10
TM-30: Rf	82
TM-30: Rg	97

Prepared For:

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

Test date: 01/30/2018

Report date: 02/01/2018



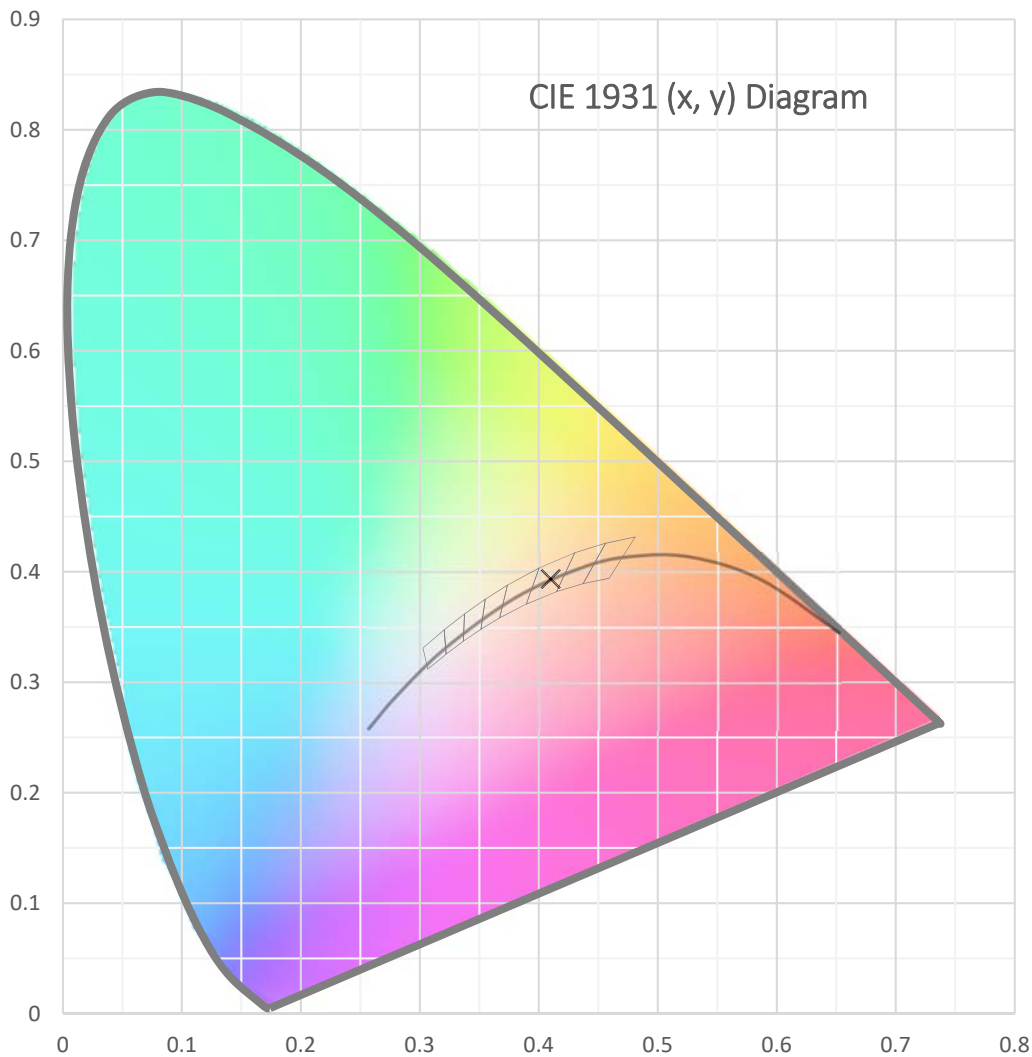
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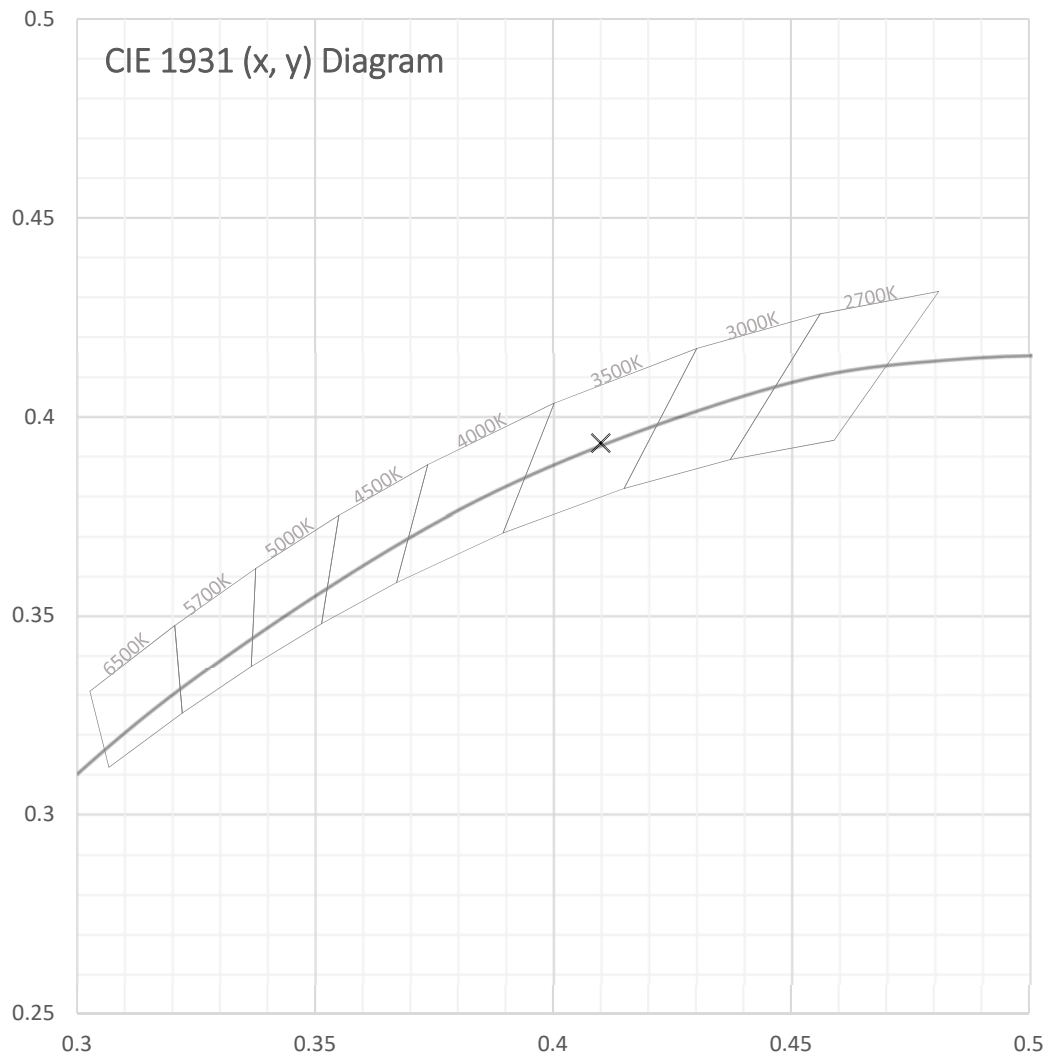
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Spectral Data

Total Radiant Flux	24.13 W
Total Luminous Flux	7873.5 Lm
Chromaticity CIE 1931 (x, y)	(0.4100, 0.3934)
Chromaticity CIE 1976 (u', v')	(0.2377, 0.5131)
Correlated Color Temperature (CCT)	3420 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)	0.0002
Scotopic/Photopic Ratio *	1.478

Electrical Data

Voltage	120.0 Vac
Current	0.6313 A
Power	75.02 W
Frequency	59.97 Hz
Power Factor	0.990
Current THD	10.1 %



Test Report Number: LLIA000938-003B

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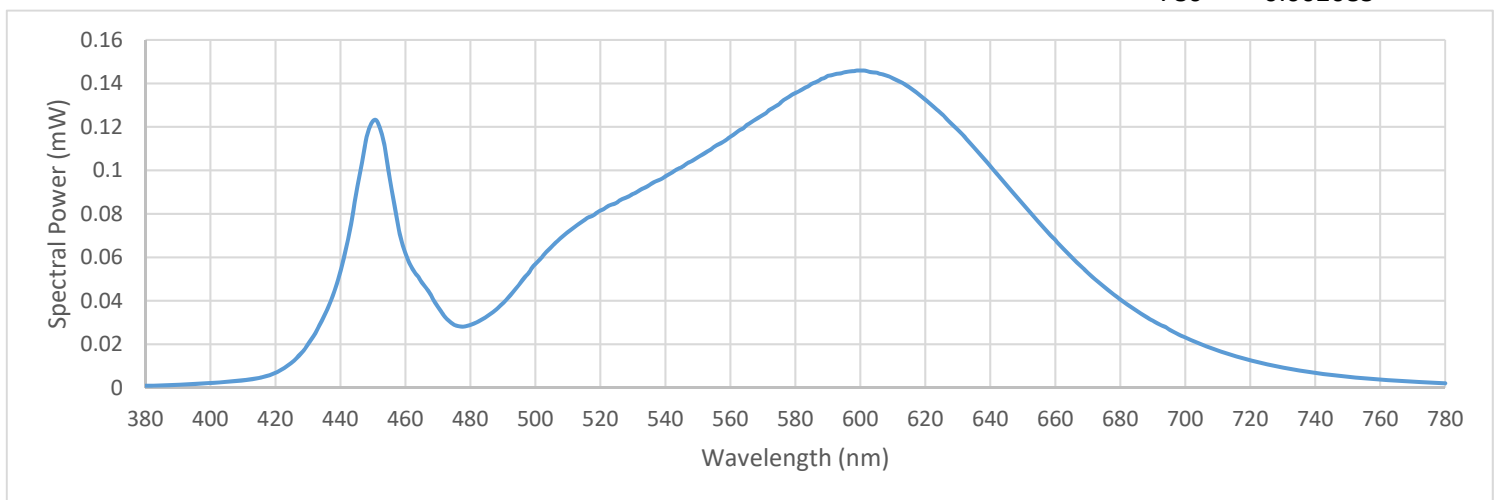
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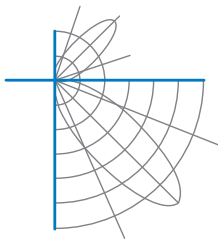
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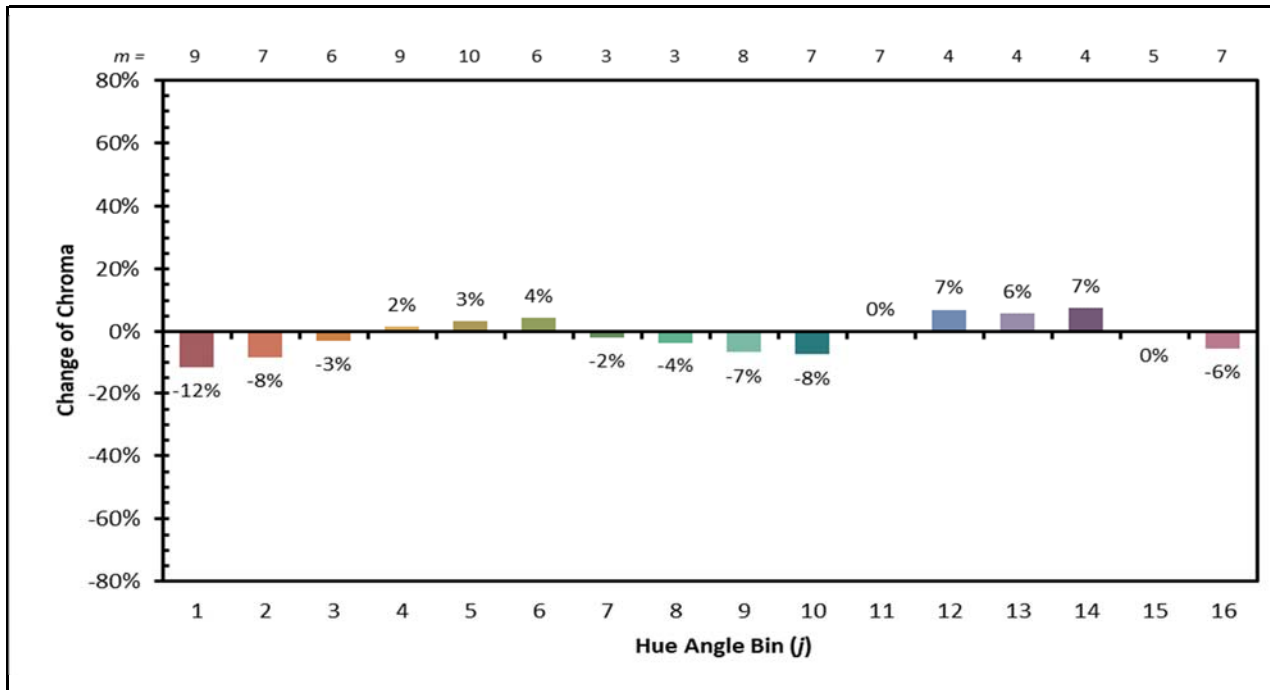
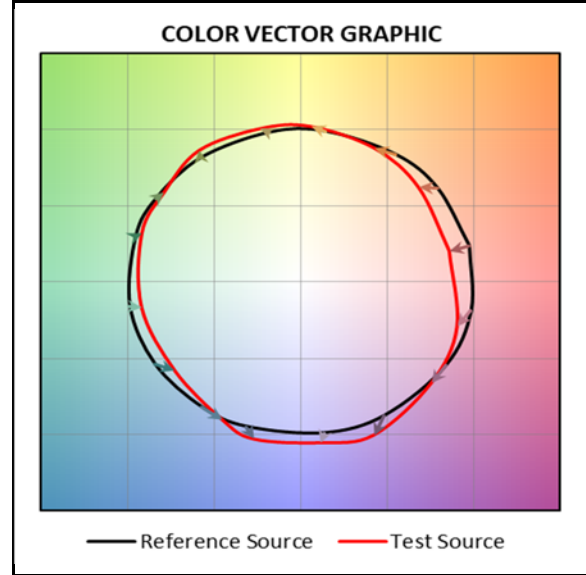
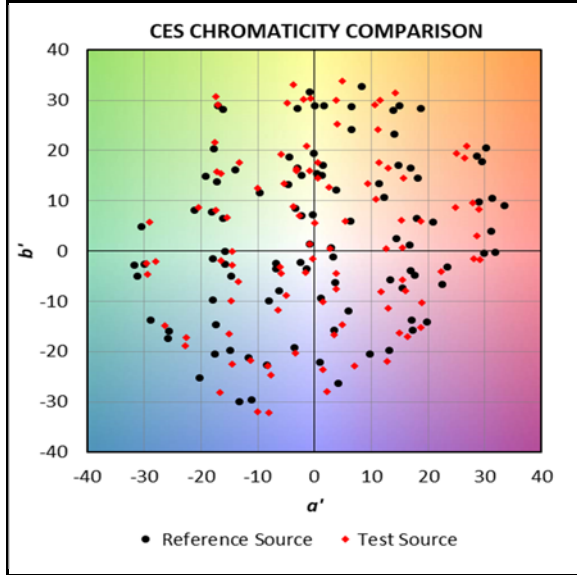
Summary Spectral Power Distribution (wavelength - nm, spectral power - mW)

380	0.000934	480	0.028959	580	0.135600	680	0.040598
385	0.001038	485	0.032807	585	0.139799	685	0.035481
390	0.001352	490	0.038929	590	0.143442	690	0.030864
395	0.001739	495	0.047413	595	0.145079	695	0.026863
400	0.002198	500	0.056954	600	0.145944	700	0.023162
405	0.002740	505	0.064888	605	0.144939	705	0.019894
410	0.003365	510	0.071537	610	0.142333	710	0.017104
415	0.004521	515	0.077040	615	0.138257	715	0.014783
420	0.006905	520	0.081501	620	0.132408	720	0.012675
425	0.011567	525	0.085109	625	0.126025	725	0.010854
430	0.020061	530	0.089157	630	0.118590	730	0.009322
435	0.033166	535	0.093158	635	0.110547	735	0.007982
440	0.053355	540	0.097187	640	0.101982	740	0.006835
445	0.090775	545	0.101461	645	0.093241	745	0.005895
450	0.122680	550	0.106022	650	0.084523	750	0.005071
455	0.097921	555	0.110835	655	0.075914	755	0.004368
460	0.061977	560	0.115502	660	0.067975	760	0.003782
465	0.048553	565	0.120797	665	0.060076	765	0.003261
470	0.037233	570	0.125495	670	0.052851	770	0.002797
475	0.028979	575	0.130451	675	0.046524	775	0.002418
						780	0.002085





IES TM-30 Summary





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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: 25.8 °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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