

Report of Test

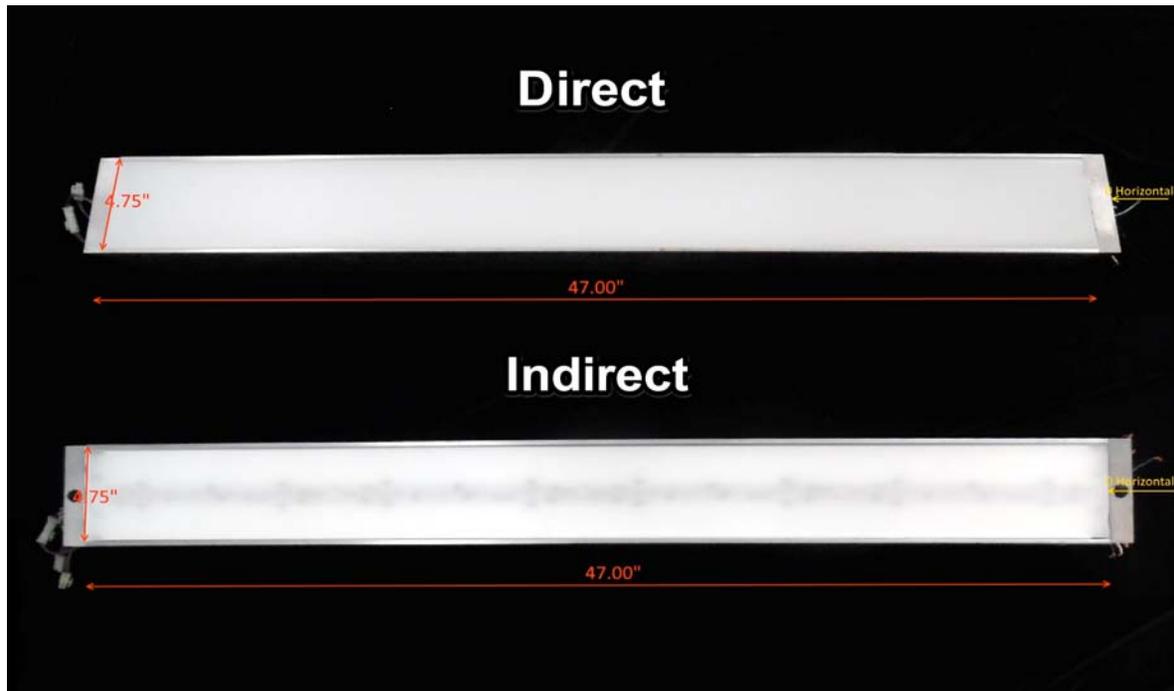
LLIA000844-015A-R04*

*This test report supersedes test report LLIA000844-015A-R03

Catalog Number: MLS5-I/D-HO/HO-K40/K40-80-4-XX-FDC/LOH-XXXX-120

Pendant mounted, extruded aluminum housing with aluminum end caps, formed white enamel aluminum LED tray/reflectors, frosted plastic enclosures. 288 white LEDs, four upper Osram PrevaLED Line boards with 36 LEDs each, four lower Osram PrevaLED

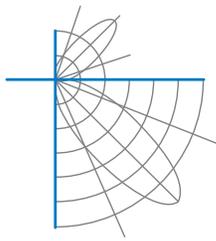
Line boards with 36 LEDs each. Two Osram Optotronic OTi 50/120-277/1A4 DIM L LED drivers 120.0Vac, 60.00Hz, 0.5583A, 66.75W, 0.996PF, 7.6%THD(i)



Performance Summary

Total Light Output	8004 lm
Luminaire Power	66.7 W
Luminous Efficacy	120.0 lm/W

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



Test Report No. LLIA000844-015A-R04

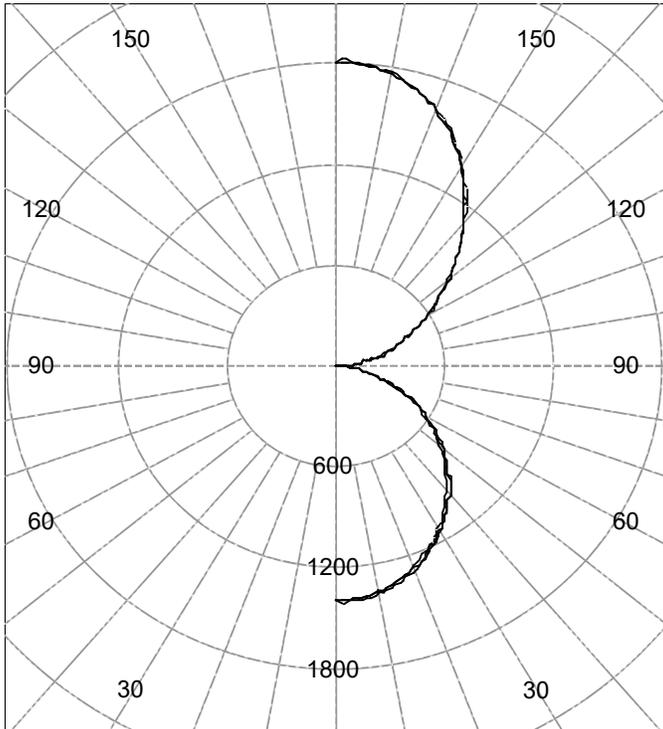
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120.0Vac, 60.00Hz, 0.5583A, 66.75W, 0.996PF, 7.6%THD(i)

Legend: C0-Solid, C45-Dashed, C90-Grey (cd)



(Two plane symmetry) C0-C90

AVERAGE LUMINANCE (cd / m²)

Gamma	C0	C45	C90
45.0	8540	8519	8289
55.0	8032	8022	7780
65.0	7347	7342	7092
75.0	6165	6141	5986
85.0	3979	4232	4356

INTENSITY SUMMARY (cd)

Gamma	C-Plane					Flux (lm)
	C0	C22.5	C45	C67.5	C90	
0.0	1399	1399	1399	1399	1399	
5.0	1383	1389	1398	1395	1384	132
10.0	1360	1365	1374	1370	1358	
15.0	1322	1327	1335	1330	1316	374
20.0	1272	1275	1282	1276	1261	
25.0	1209	1211	1217	1211	1194	557
30.0	1136	1137	1142	1135	1117	
35.0	1055	1055	1059	1051	1033	658
40.0	967	966	967	960	942	
45.0	872	871	870	863	847	668
50.0	772	771	769	762	747	
55.0	666	667	665	657	645	591
60.0	557	560	558	549	540	
65.0	449	452	448	440	433	440
70.0	339	342	337	331	326	
75.0	231	233	230	227	224	243
80.0	130	132	132	132	132	
85.0	50	52	53	54	55	62
90.0	2	3	3	3	3	

ZONAL FLUX AND PERCENTAGES

Zone	Flux (lm)	% Lamp	% Luminaire
0-30	1064	N / A	13.3
0-40	1722	N / A	21.5
0-60	2980	N / A	37.2
0-90	3726	N / A	46.5
40-90	2004	N / A	25.0
60-90	745	N / A	9.3
90-180	4279	N / A	53.5
0-180	8004	N / A	100.0

Total Light Output = 8,004 lm

Signed:

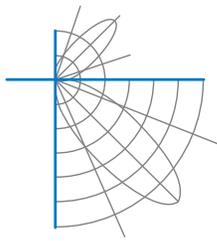
Authorized Signatory

Date of test

28-Aug-2017

Date of report

25-Mar-2022



Test Report No. LLIA000844-015A-R04

Catalog Number: MLS5-I/D-HO/HO-K40/K40-80-4-XX-FDC/LOH-XXXX-120

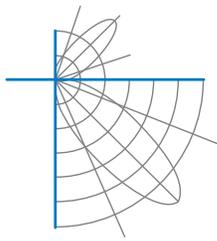
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120.0Vac, 60.00Hz, 0.5583A, 66.75W, 0.996PF, 7.6%THD(i)

Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
0.0	1399	1399	1399	1399	1399
2.5	1389	1395	1403	1401	1391
5.0	1383	1389	1398	1395	1384
7.5	1374	1379	1388	1384	1373
10.0	1360	1365	1374	1370	1358
12.5	1343	1348	1356	1352	1339
15.0	1322	1327	1335	1330	1316
17.5	1299	1302	1310	1305	1290
20.0	1272	1275	1282	1276	1261
22.5	1242	1244	1251	1245	1228
25.0	1209	1211	1217	1211	1194
27.5	1174	1175	1181	1174	1156
30.0	1136	1137	1142	1135	1117
32.5	1097	1097	1101	1094	1076
35.0	1055	1055	1059	1051	1033
37.5	1012	1011	1014	1006	988
40.0	967	966	967	960	942
42.5	921	919	920	912	895
45.0	872	871	870	863	847
47.5	823	821	820	813	797
50.0	772	771	769	762	747
52.5	719	719	717	710	697
55.0	666	667	665	657	645
57.5	612	614	612	604	593
60.0	557	560	558	549	540
62.5	503	507	503	495	486
65.0	449	452	448	440	433
67.5	394	397	393	385	380
70.0	339	342	337	331	326
72.5	285	287	283	278	274
75.0	231	233	230	227	224
77.5	179	180	179	178	177
80.0	130	132	132	132	132
82.5	86	88	90	91	91
85.0	50	52	53	54	55
87.5	22	22	22	22	23
90.0	2	3	3	3	3



Test Report No. LLIA000844-015A-R04

Catalog Number: MLS5-I/D-HO/HO-K40/K40-80-4-XX-FDC/LOH-XXXX-120

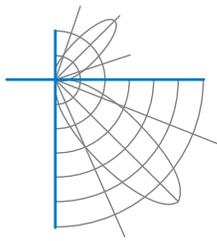
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120.0Vac, 60.00Hz, 0.5583A, 66.75W, 0.996PF, 7.6%THD(i)

Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
90.0	2	3	3	3	3
92.5	41	41	41	40	39
95.0	87	87	86	85	85
97.5	133	132	131	129	129
100.0	178	177	175	174	173
102.5	222	222	220	219	217
105.0	267	268	265	263	262
107.5	313	314	310	309	308
110.0	360	361	357	355	354
112.5	409	409	405	403	403
115.0	460	460	456	453	453
117.5	512	512	509	504	505
120.0	566	567	564	558	560
122.5	623	625	622	615	618
125.0	683	684	682	674	678
127.5	745	746	745	737	742
130.0	810	811	811	802	809
132.5	878	878	879	870	878
135.0	949	947	949	941	949
137.5	1022	1018	1020	1013	1023
140.0	1095	1091	1093	1086	1097
142.5	1168	1163	1166	1160	1171
145.0	1240	1235	1238	1233	1245
147.5	1310	1305	1309	1305	1317
150.0	1378	1372	1377	1374	1386
152.5	1442	1436	1443	1441	1452
155.0	1503	1497	1504	1503	1513
157.5	1559	1553	1562	1561	1569
160.0	1610	1605	1614	1613	1619
162.5	1656	1650	1661	1660	1664
165.0	1696	1690	1702	1700	1703
167.5	1730	1725	1737	1735	1735
170.0	1759	1753	1766	1763	1761
172.5	1781	1775	1789	1786	1781
175.0	1796	1791	1805	1801	1795
177.5	1806	1800	1814	1810	1803
180.0	1810	1810	1810	1810	1810



Test Number: LLIA000844-015A-R04

Catalog Number: MLS5-I/D-HO/HO-K40/K40-80-4-XX-FDC/LOH-XXXX-120

Pendant mounted, extruded aluminum housing with aluminum end caps, formed white enamel aluminum LED tray/reflectors, frosted plastic enclosures. 288 white LEDs, four upper Osram PrevaLED Line boards with 36 LEDs each, four lower Osram PrevaLED Line boards with 36 LEDs each. Two Osram Optotronic OTi 50/120-277/1A4 DIM L LED drivers 120.0Vac, 60.00Hz, 0.5583A, 66.75W, 0.996PF, 7.6%THD(i)

Coefficients Of Utilization - Zonal Cavity Method

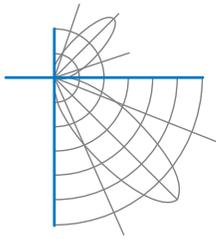
Effective Floor Cavity Reflectance 0.20

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	106	106	106	106	98	98	98	98	81	81	81	67	67	67	53	53	53	47
1	97	93	89	85	89	85	82	79	71	69	67	59	57	55	47	46	45	39
2	88	81	75	70	81	74	69	65	62	59	55	51	49	46	41	39	38	33
3	80	71	64	58	74	65	59	54	55	50	46	45	42	39	36	34	32	28
4	74	63	55	49	67	58	51	46	49	44	39	40	36	33	32	30	27	24
5	67	56	48	42	62	52	44	39	44	38	34	36	32	29	29	26	24	21
6	62	50	42	36	57	46	39	34	39	34	30	33	28	25	26	23	21	18
7	57	45	37	32	53	42	35	30	36	30	26	30	25	22	24	21	19	16
8	53	41	33	28	49	38	31	26	32	27	23	27	23	20	22	19	17	14
9	50	37	30	25	45	35	28	23	30	24	21	25	21	18	20	17	15	13
10	46	34	27	22	42	32	25	21	27	22	19	23	19	16	19	16	14	12

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	38.9	7.26	7.15
8.0	21.9	9.69	9.54
10.0	14.0	12.11	11.92
12.0	9.7	14.53	14.31
14.0	7.1	16.95	16.69
16.0	5.5	19.37	19.08



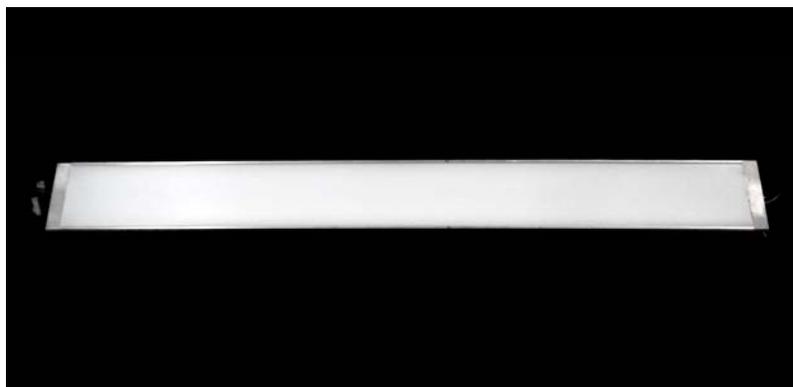
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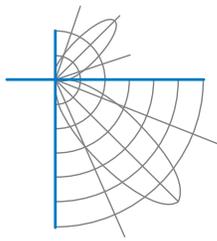
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Test Report No. LLIA000844-015A-R04

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Test Distance 9.5 m
Test Temperature 24.8 °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.

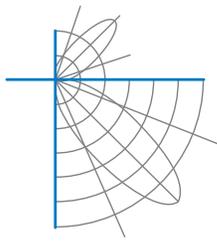
Photometric intensity values are reported using the CIE Gamma coordinate system as defined in CIE publication number 121.

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.

Revision History

- R01 - 12/14/2017 - Changed catalog number
- R02 - 01/03/2019 - Added -80 to catalog number for 80 CRI chips
- R03 - 01/23/2019 - Added K40/K40 to note the 4000 CCT
- R04 - 03/23/2022 - Revised to keep in series with 015B



Report of Test

LLIA000844-015B-R04*

Integrating Sphere Report

Catalog Number: MLS5-I/D-HO/HO-K40/K40-80-4-XX-FDC/LOH-XXXX-120

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Performance Summary

Voltage	120.0 Vac
Current	0.5579 A
Power	66.67 W
Frequency	59.97 Hz
Power Factor	0.996
Current THD	7.6 %

Total Luminous Flux	8122.2 lm
Efficacy	121.8 lm/W
Chromaticity (x,y)	(0.3825, 0.3806)
(u',v')	(0.2249, 0.5036)
Duv	0.0012
CCT	3973 K
CRI (Ra)	82
R9	10

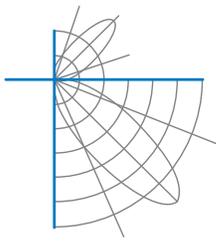
Prepared For:

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

*This test report supersedes test report LLIA000844-015B-R03

Test date: 08/22/2017

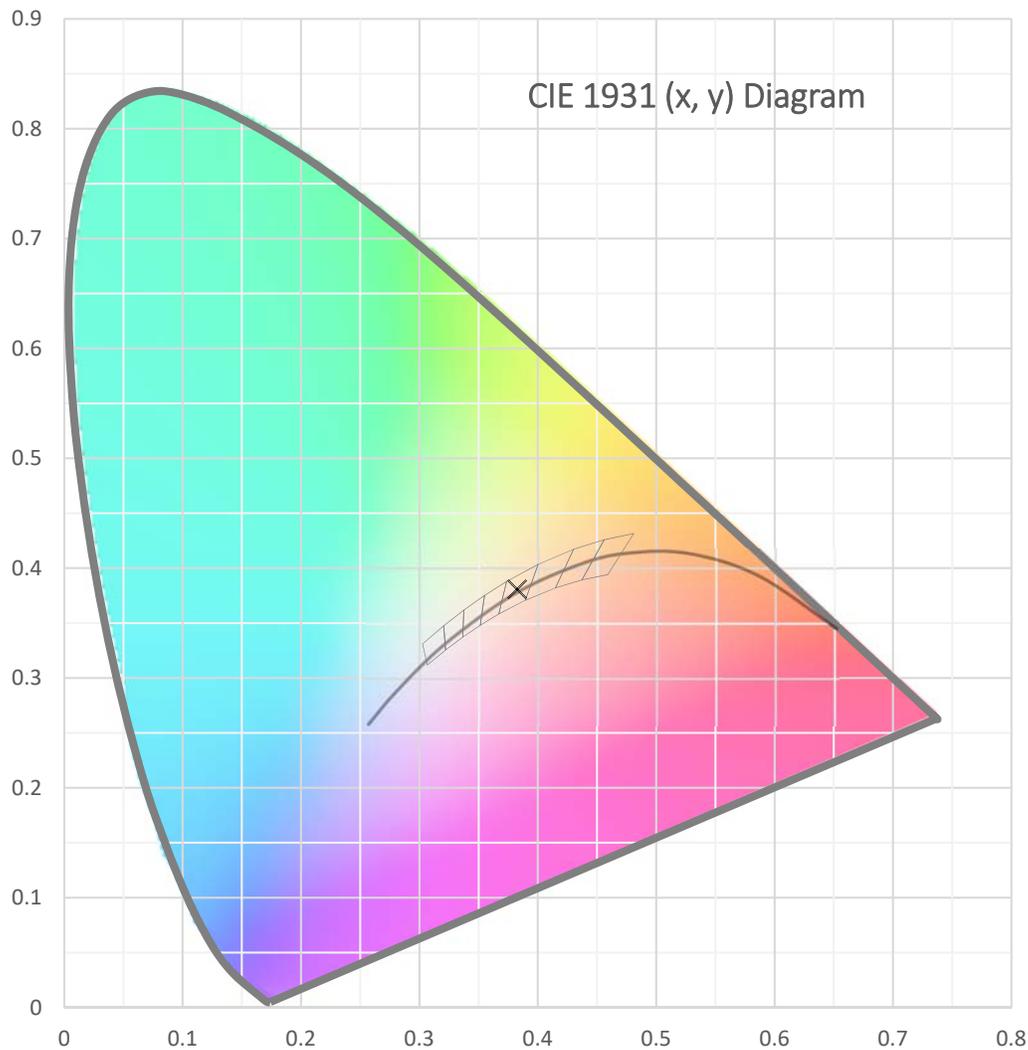
Report date: 03/25/2022

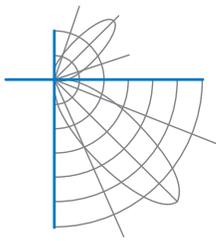


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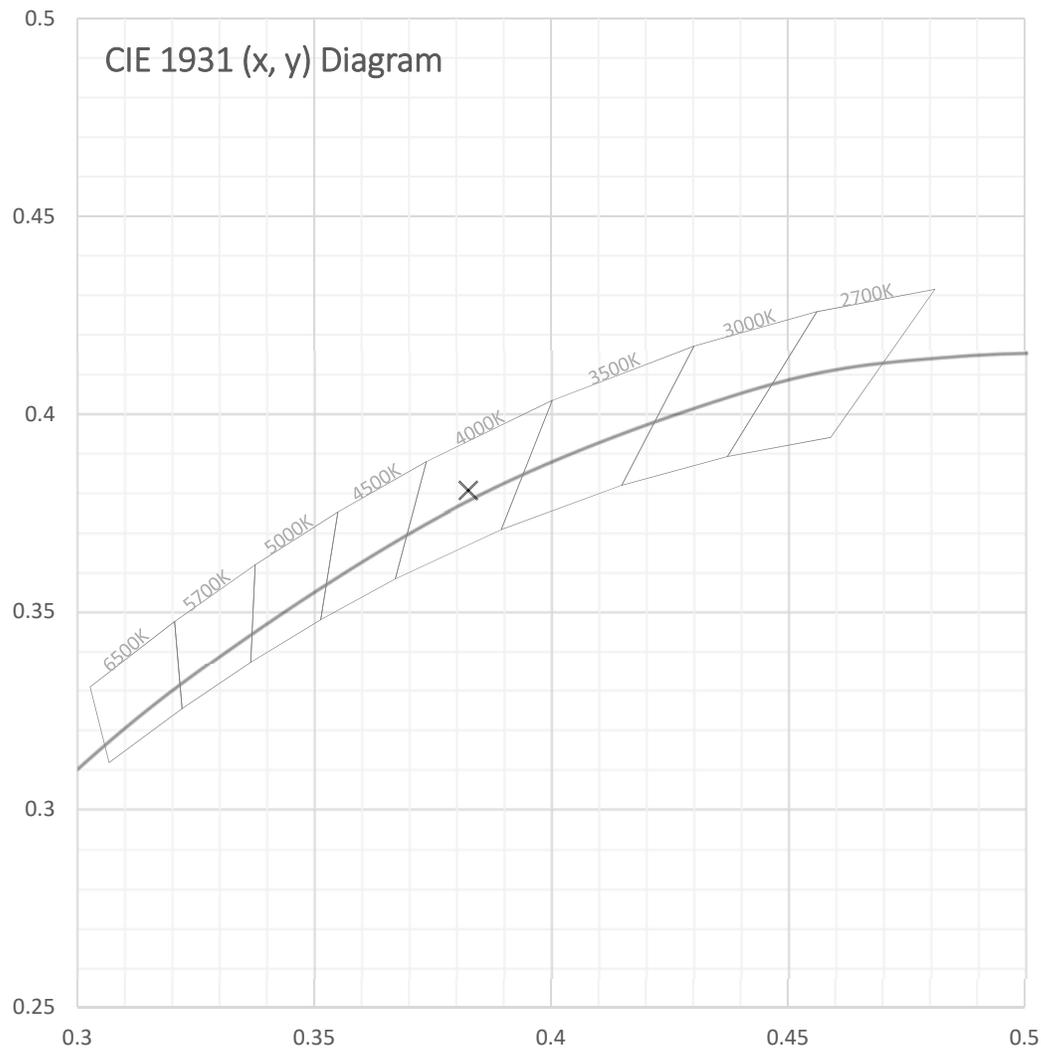


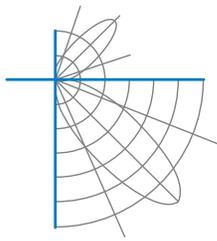


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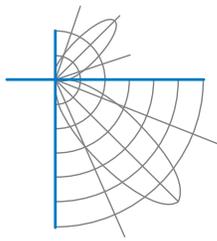
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Spectral Data	Total Radiant Flux	24.95 W
	Total Luminous Flux	8122.2 Lm
	Chromaticity CIE 1931 (x, y)	(0.3825, 0.3806)
	Chromaticity CIE 1976 (u', v')	(0.2249, 0.5036)
	Correlated Color Temperature (CCT)	3973 K
	Color Rendering Index (Ra)	82
	R1	80
	R2	88
	R3	93
	R4	80
	R5	79
	R6	82
	R7	87
	R8	66
	R9	10
	R10	70
	R11	78
	R12	56
	R13	82
	R14	96
	Distance from Planckian Locus (Duv)	0.0012
	Scotopic/Photopic Ratio *	1.649

Electrical Data

Voltage	120.0 Vac
Current	0.5579 A
Power	66.67 W
Frequency	59.97 Hz
Power Factor	0.996
Current THD	7.6 %



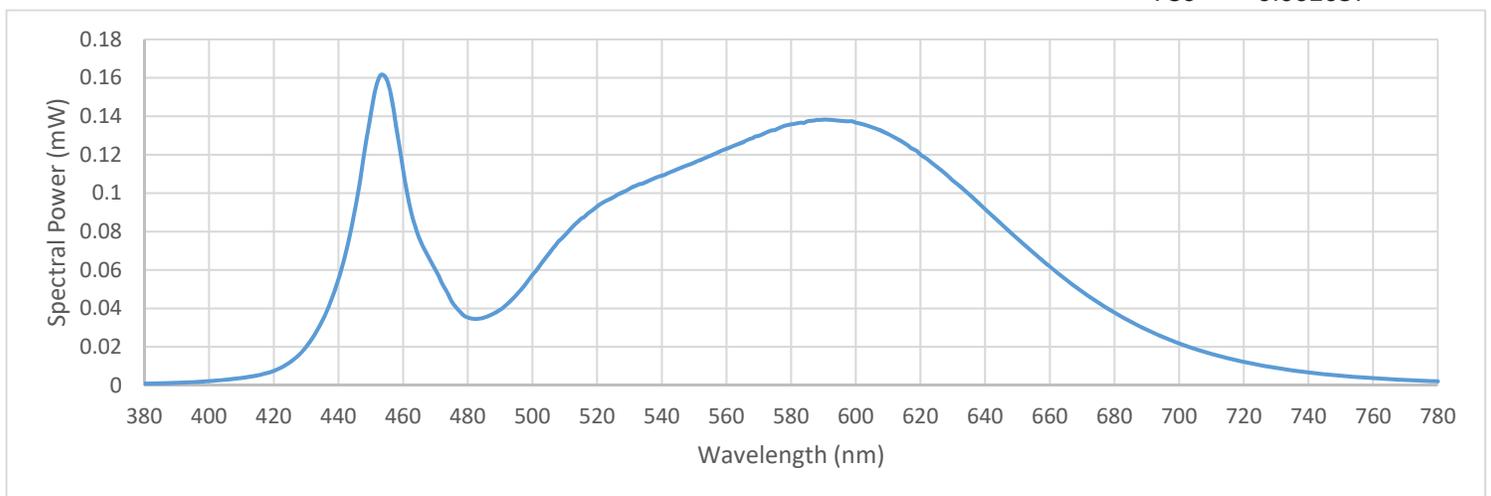
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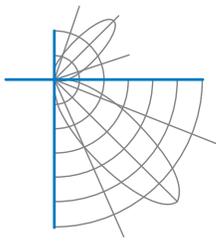
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Summary Spectral Power Distribution (wavelength - nm, spectral power - mW)

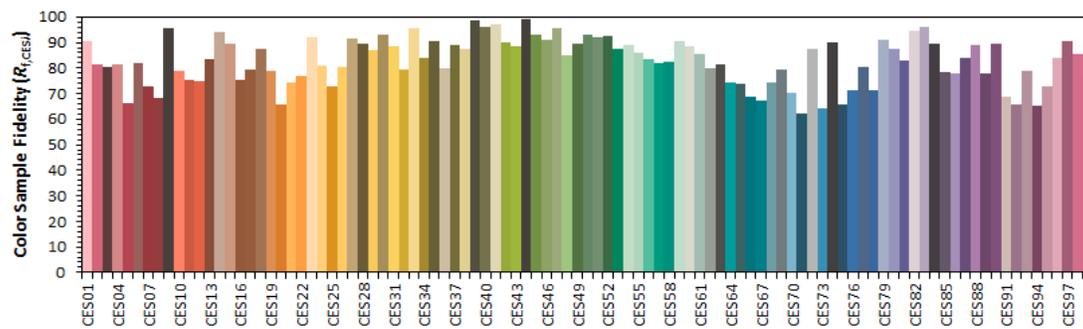
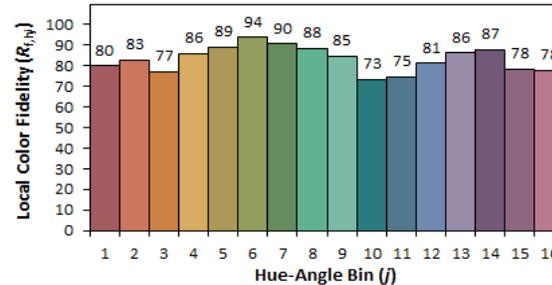
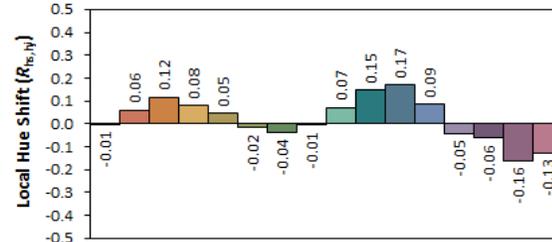
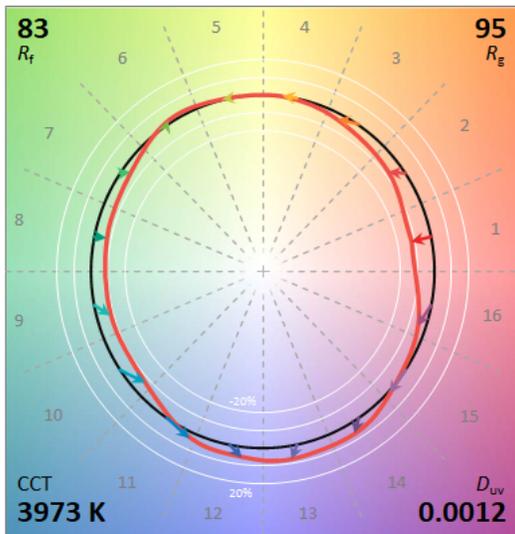
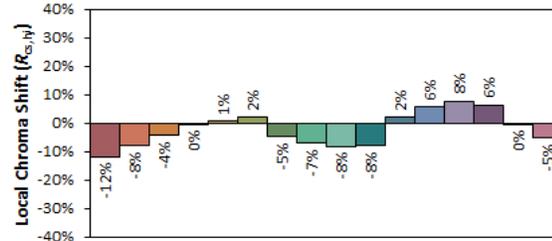
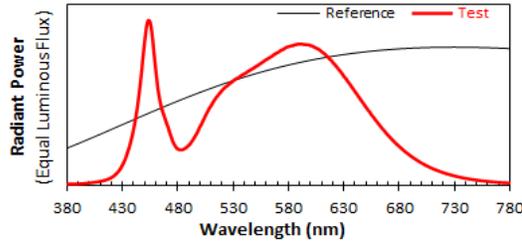
380	0.000889	480	0.035330	580	0.135837	680	0.037834
385	0.000981	485	0.035136	585	0.137403	685	0.033183
390	0.001241	490	0.039294	590	0.138242	690	0.028919
395	0.001607	495	0.046938	595	0.137711	695	0.025145
400	0.002180	500	0.057420	600	0.136678	700	0.021795
405	0.002886	505	0.068266	605	0.134400	705	0.018892
410	0.003800	510	0.078027	610	0.130659	710	0.016287
415	0.005085	515	0.086617	615	0.125967	715	0.014117
420	0.007528	520	0.093103	620	0.120044	720	0.012157
425	0.011972	525	0.097731	625	0.113808	725	0.010491
430	0.020068	530	0.102195	630	0.106569	730	0.009038
435	0.033610	535	0.105631	635	0.099459	735	0.007766
440	0.055087	540	0.109050	640	0.091661	740	0.006661
445	0.090317	545	0.112533	645	0.083905	745	0.005748
450	0.141144	550	0.115849	650	0.076183	750	0.004957
455	0.158995	555	0.119453	655	0.068754	755	0.004275
460	0.112546	560	0.123079	660	0.061852	760	0.003713
465	0.076313	565	0.126376	665	0.054980	765	0.003198
470	0.059922	570	0.129798	670	0.048678	770	0.002762
475	0.043676	575	0.132855	675	0.043016	775	0.002374
						780	0.002057





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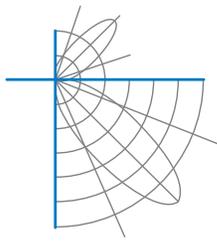
IES TM-30 Details



Notes:

x **0.3825**
y **0.3806**
u' **0.2249**
v' **0.5036**

CIE 13.3-1995
(CRI)
Ra 82
Rg 10



Test Report Number: LLIA000844-015B-R04

Catalog Number: MLS5-I/D-HO/HO-K40/K40-80-4-XX-FDC/LOH-XXXX-120

Pendant mounted, extruded aluminum housing with aluminum end caps, formed white enamel aluminum LED tray/reflectors, frosted plastic lower enclosure. 288 white LEDs, four upper Osram PrevaLED Line boards with 36 LEDs each, clear linear plastic lens above, four lower Osram PrevaLED Line boards with 36 LEDs each. Two Osram Optotronic OTi 50/120-277/1A4 DIM L LED drivers

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:	25.6 °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
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.
Revision History:	R01 - 12/14/2017 - Changed catalog number R02 - 01/03/2019 - Added -80 to catalog number for 80 CRI chips R03 - 01/23/2019 - Added K40/K40 to note the 4000 CCT R04 - 03/25/2022 - Added TM-30 metrics page to report