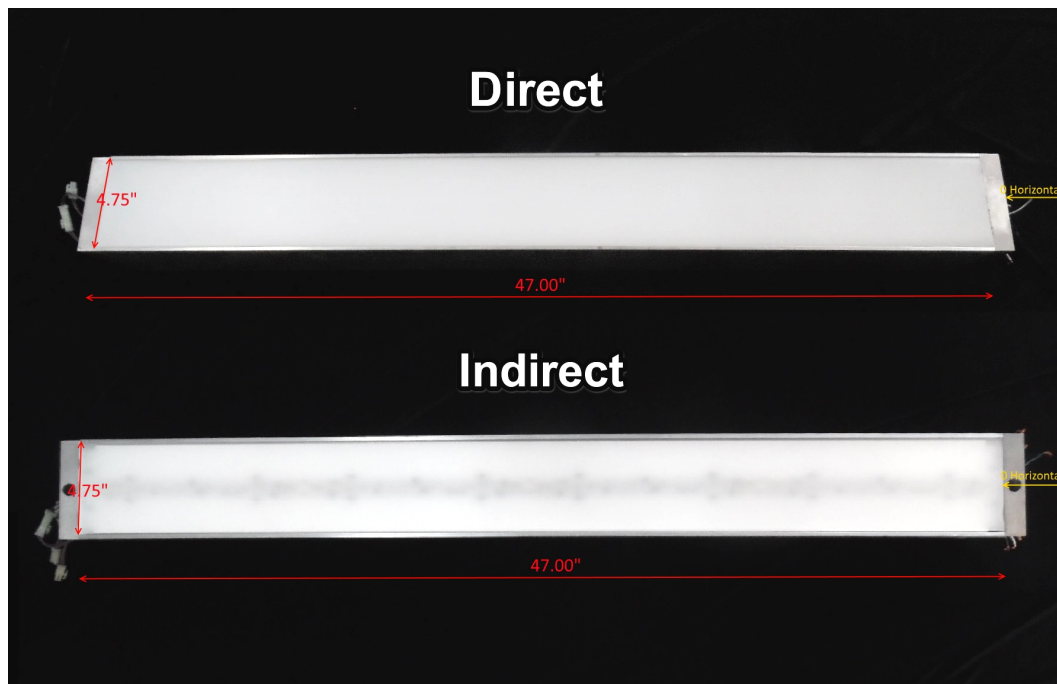


Report of Test

LLIA000844-016A-R04*

*This test report supersedes test report LLIA000844-016A-R03

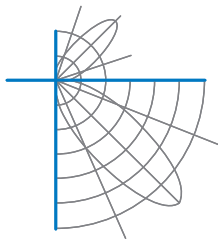
Catalog Number: MLS5-I/D-MO/MO-K40/K40-80-4-XX-FDC/LOH-XXXX-120
Pendant mounted, extruded aluminum housing with aluminum end caps, formed white enamel aluminum LED tray/reflectors, frosted plastic enclosures. 288 white LEDs, four upper Osram PrevaLED Line boards with 36 LEDs each, four lower Osram PrevaLED Line boards with 36 LEDs each. Two Osram Optotronic OTi 30/120-277/1A0 DIM L LED drivers 120.0Vac, 60.00Hz, 0.3140A, 37.47W, 0.994PF, 5.4%THD(i)



Performance Summary

Total Light Output	4797 lm
Luminaire Power	37.5 W
Luminous Efficacy	127.9 lm/W

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



Test Report No. LLIA000844-016A-R04

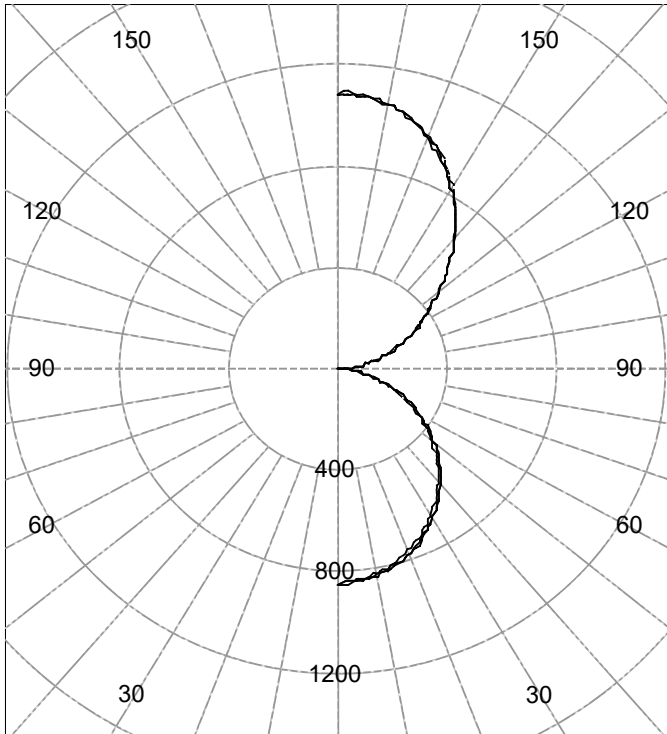
Catalog Number: MLS5-I/D-MO/MO-K40/K40-80-4-XX-FDC/LOH-XXXX-120

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120.0Vac, 60.00Hz, 0.3140A, 37.47W, 0.994PF, 5.4%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	5141	5115	4977
55.0	4832	4817	4666
65.0	4415	4405	4252
75.0	3691	3687	3595
85.0	2352	2573	2626

INTENSITY SUMMARY (cd)

Gamma	C-Plane					Flux (lm)
	C0	C22.5	C45	C67.5	C90	
0.0	843	843	843	843	843	
5.0	834	837	842	840	833	80
10.0	820	823	827	824	817	
15.0	797	799	803	800	791	225
20.0	767	768	771	768	758	
25.0	728	729	732	728	717	335
30.0	685	684	687	682	671	
35.0	635	634	636	632	620	395
40.0	582	581	581	577	566	
45.0	525	523	523	519	508	401
50.0	464	463	462	458	449	
55.0	400	400	399	395	387	355
60.0	335	336	335	330	324	
65.0	270	271	269	264	260	264
70.0	203	205	202	199	196	
75.0	138	139	138	136	134	146
80.0	77	79	79	79	79	
85.0	30	31	32	33	33	37
90.0	1	2	2	2	2	

ZONAL FLUX AND PERCENTAGES

Zone	Flux (lm)	% Lamp	% Luminaire
0-30	640	N / A	13.3
0-40	1036	N / A	21.6
0-60	1792	N / A	37.3
0-90	2239	N / A	46.7
40-90	1203	N / A	25.1
60-90	447	N / A	9.3
90-180	2558	N / A	53.3
0-180	4797	N / A	100.0

Total Light Output = 4,797 lm

Signed:

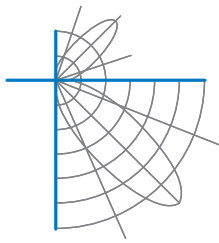
Authorized Signatory

Date of test

25-Aug-2017

Date of report

25-Mar-2022



Test Report No. LLIA000844-016A-R04

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

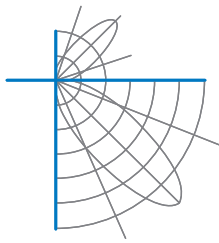
Pendant mounted, extruded aluminum housing with aluminum end caps, formed white enamel aluminum LED tray/reflectors, frosted plastic enclosures. 288 white LEDs, four upper Osram

PrevaLED Line boards with 36 LEDs each, four lower Osram PrevaLED

Line boards with 36 LEDs each. Two Osram Optotronic OTi 30/120-277/1A0 DIM L LED drivers
120.0Vac, 60.00Hz, 0.3140A, 37.47W, 0.994PF, 5.4%THD(i)

Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
0.0	843	843	843	843	843
2.5	838	841	846	844	838
5.0	834	837	842	840	833
7.5	828	831	835	833	826
10.0	820	823	827	824	817
12.5	810	812	816	813	805
15.0	797	799	803	800	791
17.5	783	784	788	785	776
20.0	767	768	771	768	758
22.5	748	749	752	749	738
25.0	728	729	732	728	717
27.5	707	707	711	706	694
30.0	685	684	687	682	671
32.5	660	660	662	657	646
35.0	635	634	636	632	620
37.5	609	608	609	605	593
40.0	582	581	581	577	566
42.5	554	553	552	548	538
45.0	525	523	523	519	508
47.5	495	494	492	488	479
50.0	464	463	462	458	449
52.5	433	432	431	426	418
55.0	400	400	399	395	387
57.5	368	368	367	363	355
60.0	335	336	335	330	324
62.5	302	303	302	297	291
65.0	270	271	269	264	260
67.5	236	238	236	231	228
70.0	203	205	202	199	196
72.5	170	172	170	167	165
75.0	138	139	138	136	134
77.5	107	108	107	107	106
80.0	77	79	79	79	79
82.5	51	53	54	55	55
85.0	30	31	32	33	33
87.5	13	13	14	14	14
90.0	1	2	2	2	2



Test Report No. LLIA000844-016A-R04

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

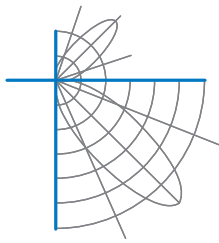
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120.0Vac, 60.00Hz, 0.3140A, 37.47W, 0.994PF, 5.4%THD(i)

Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
90.0	1	2	2	2	2
92.5	24	24	24	23	23
95.0	51	51	51	50	50
97.5	79	78	78	77	77
100.0	106	105	104	104	103
102.5	133	132	131	130	130
105.0	159	159	158	157	156
107.5	187	187	185	184	184
110.0	215	215	213	212	212
112.5	244	244	242	240	240
115.0	274	274	272	270	271
117.5	305	306	304	301	302
120.0	338	339	337	334	334
122.5	372	373	371	367	369
125.0	407	409	407	403	405
127.5	444	446	445	440	443
130.0	484	485	485	479	482
132.5	524	526	525	520	524
135.0	567	567	567	562	566
137.5	610	610	610	605	610
140.0	654	654	654	649	655
142.5	698	697	697	693	700
145.0	741	740	741	738	745
147.5	784	782	784	781	789
150.0	824	822	825	822	831
152.5	863	861	864	862	871
155.0	899	897	902	900	907
157.5	933	931	936	935	941
160.0	964	962	967	966	972
162.5	991	989	995	995	998
165.0	1015	1013	1020	1019	1021
167.5	1036	1033	1041	1040	1040
170.0	1053	1050	1059	1057	1056
172.5	1066	1063	1072	1070	1068
175.0	1076	1072	1081	1079	1076
177.5	1082	1078	1087	1085	1080
180.0	1084	1084	1084	1084	1084



Test Number: LLIA000844-016A-R04

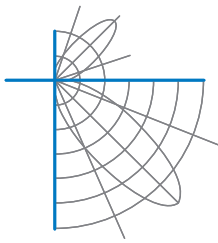
Catalog Number: MLS5-I/D-MO/MO-K40/K40-80-4-XX-FDC/LOH-XXXX-120

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 30/120-277/1A0 DIM L LED drivers 120.0Vac, 60.00Hz, 0.3140A, 37.47W, 0.994PF, 5.4%THD(i)

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	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	75	69	65	63	59	55	51	49	46	41	39	38	33
3	81	71	64	58	74	66	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	37	33	33	30	27	24
5	68	56	48	42	62	52	45	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	27	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	43	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.

Height(ft)	Illuminance at Nadir (fc)	Beam Width (across 50% Nadir Illum)	
		0-180	90-270
6.0	23.4	7.26	7.13
8.0	13.2	9.68	9.51
10.0	8.4	12.10	11.88
12.0	5.9	14.52	14.26
14.0	4.3	16.94	16.64
16.0	3.3	19.36	19.02



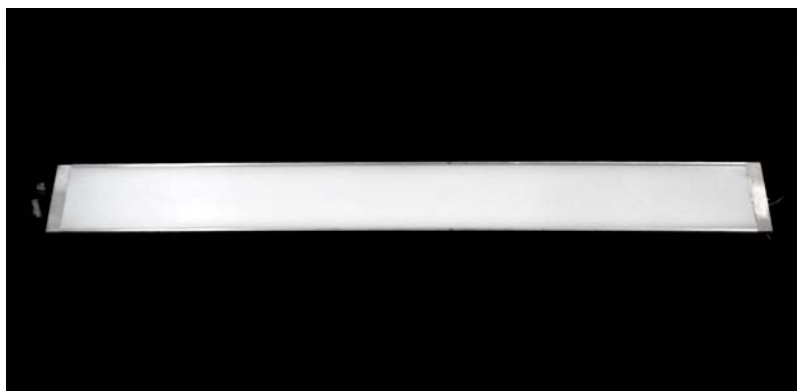
Test Report No. LLIA000844-016A-R04

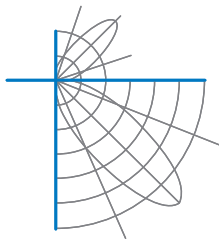
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Line boards with 36 LEDs each. Two Osram Optotronic OTi 30/120-277/1A0 DIM L LED drivers
120.0Vac, 60.00Hz, 0.3140A, 37.47W, 0.994PF, 5.4%THD(i)





Test Report No. LLIA000844-016A-R04

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120.0Vac, 60.00Hz, 0.3140A, 37.47W, 0.994PF, 5.4%THD(i)

Test Distance 9.5 m
Test Temperature 24.9 °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 016B



Report of Test

LLIA000844-016B-R04

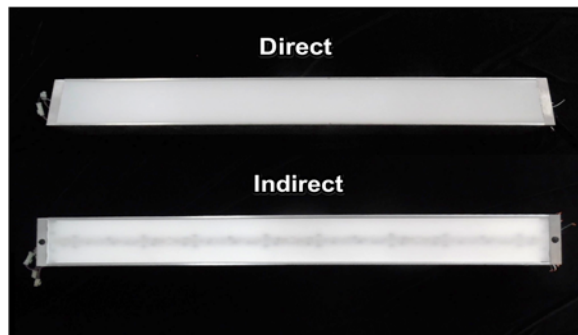
Integrating Sphere Report

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

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Line boards with 36 LEDs each. Two Osram Optotronic OTi 30/120-277/1A0 DIM L LED drivers



Performance Summary

Voltage	120.0 Vac
Current	0.3136 A
Power	37.44 W
Frequency	59.97 Hz
Power Factor	0.995
Current THD	5.4 %

Total Luminous Flux	4865.6 lm
Efficacy	130.0 lm/W
Chromaticity (x,y)	(0.3830, 0.3812)
(u',v')	(0.2250, 0.5039)
Duv	0.0013
CCT	3963 K
CRI (Ra)	82
R9	11

Prepared For:

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

*This test report supersedes test report LLIA000844-016B-R03

Test date: 08/22/2017

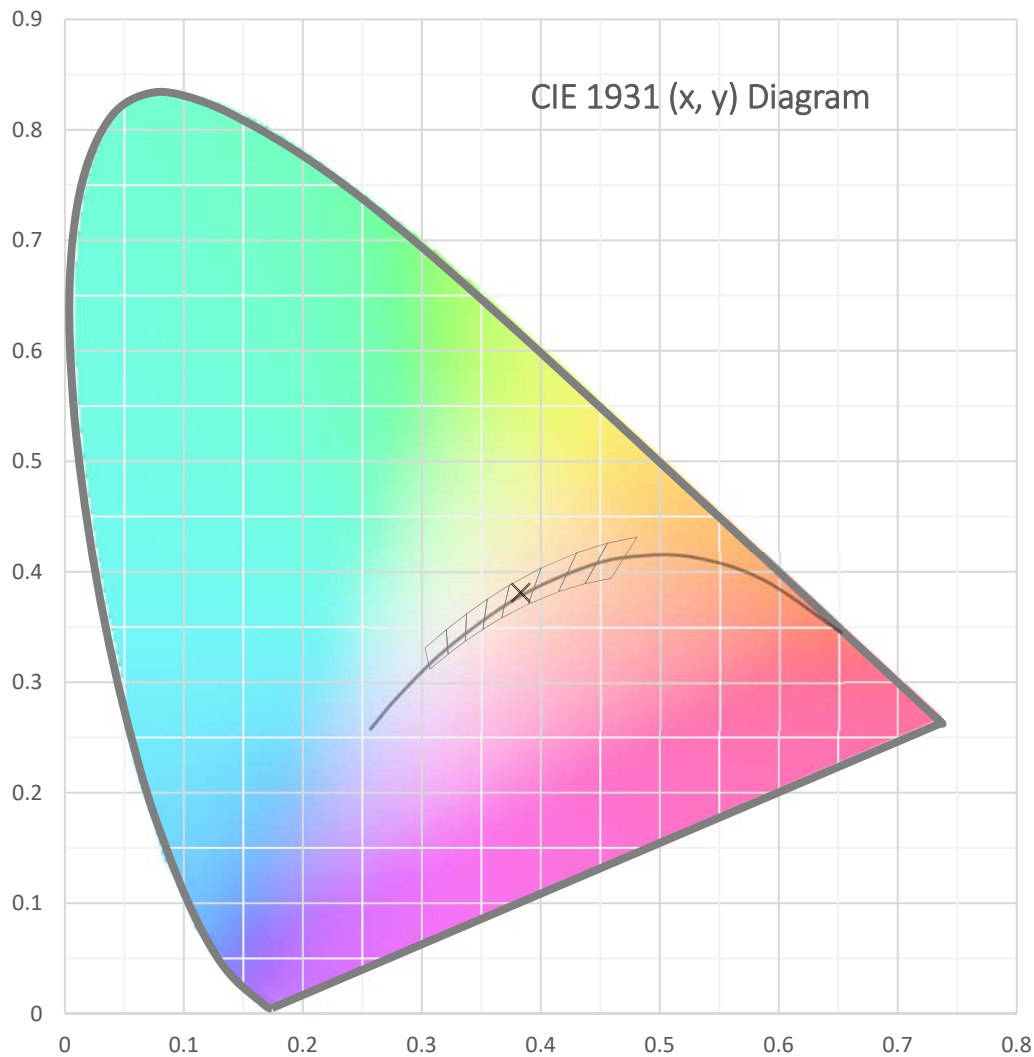
Report date: 03/25/2022

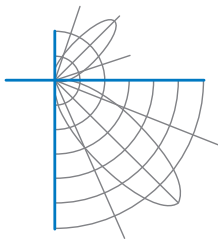


Test Report Number: LLIA000844-016B-R04

Catalog Number: MLS5-I/D-MO/MO-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

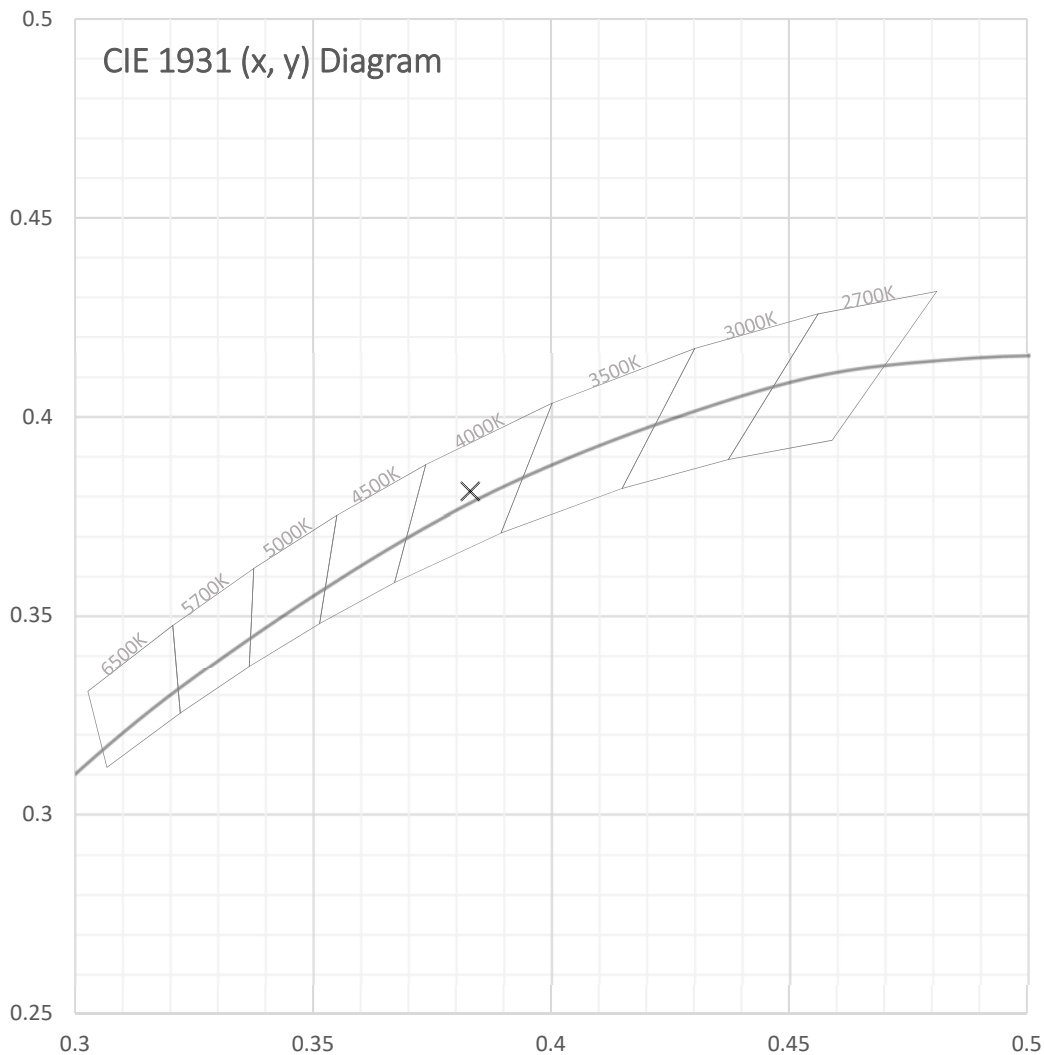




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Spectral Data	Total Radiant Flux	14.92 W
	Total Luminous Flux	4865.6 Lm
	Chromaticity CIE 1931 (x, y)	(0.3830, 0.3812)
	Chromaticity CIE 1976 (u', v')	(0.2250, 0.5039)
	Correlated Color Temperature (CCT)	3963 K
	Color Rendering Index (Ra)	82
	R1	80
	R2	88
	R3	93
	R4	81
	R5	80
	R6	82
	R7	87
	R8	66
	R9	11
	R10	70
	R11	78
	R12	55
	R13	82
	R14	96
	Distance from Planckian Locus (Duv)	0.0013
	Scotopic/Photopic Ratio *	1.647

Electrical Data

Voltage	120.0 Vac
Current	0.3136 A
Power	37.44 W
Frequency	59.97 Hz
Power Factor	0.995
Current THD	5.4 %



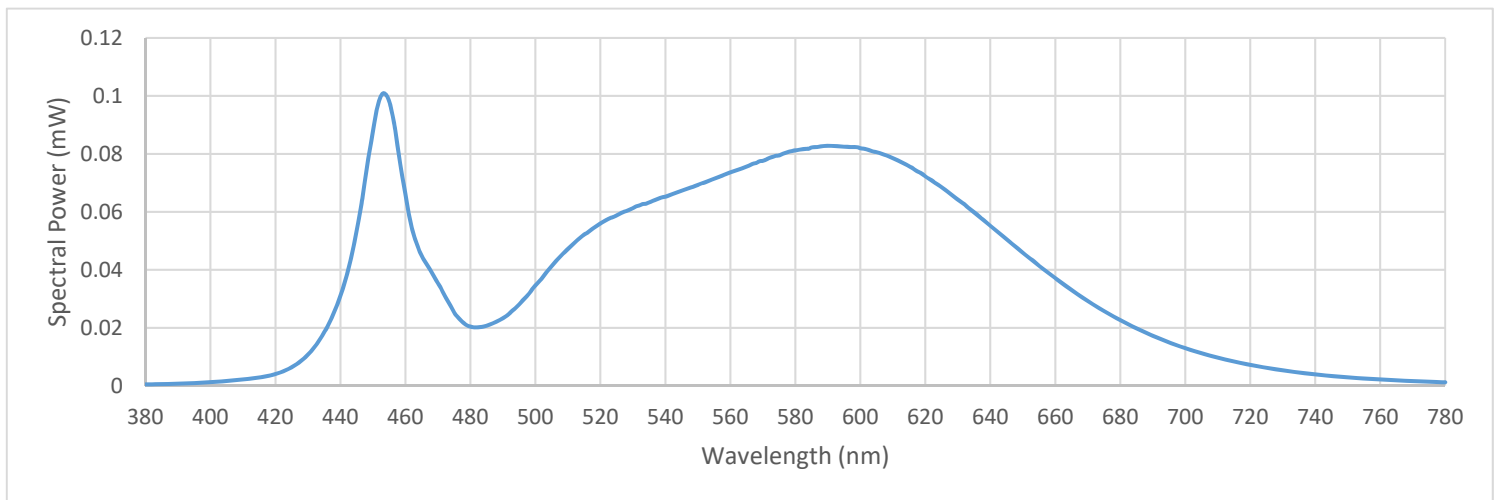
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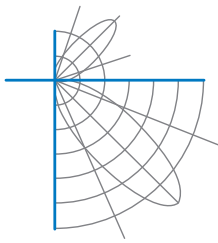
Catalog Number: MLS5-I/D-MO/MO-K40/K40-80-4-XX-FDC/LOH-XXXX-120

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

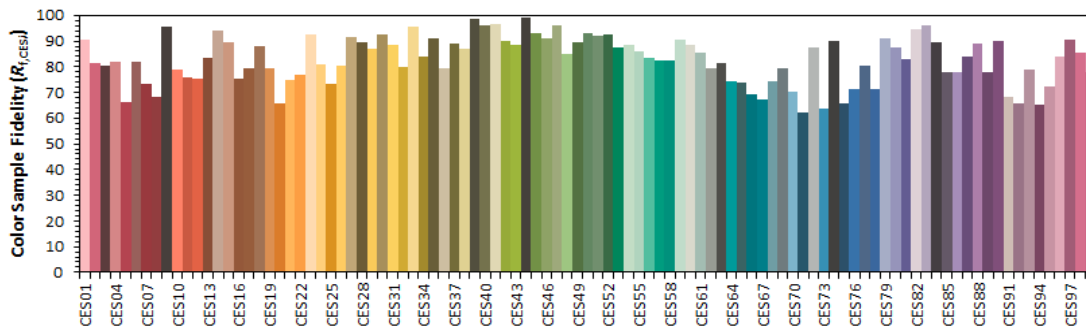
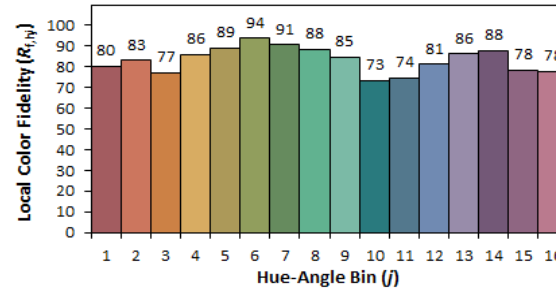
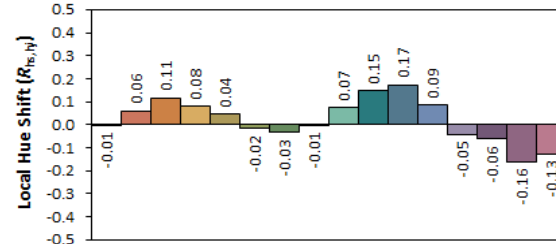
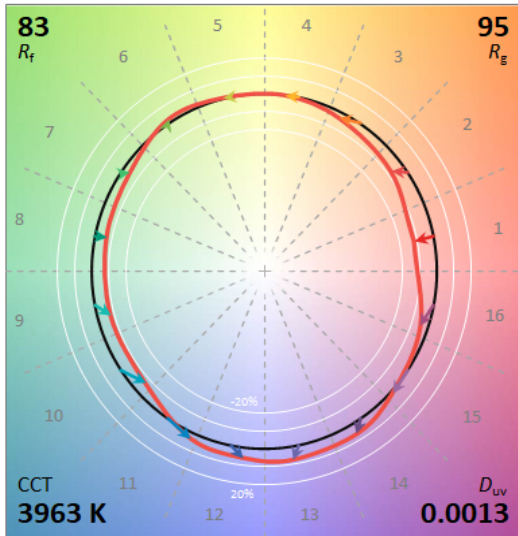
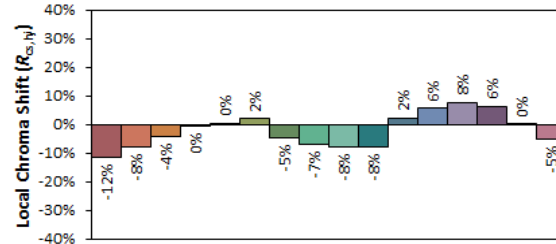
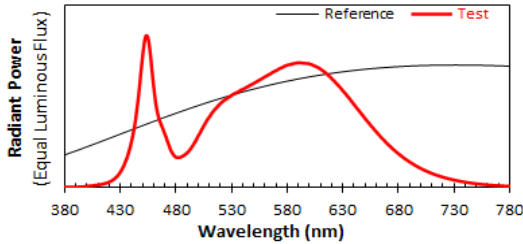
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385	0.000545	485	0.020710	585	0.082211	685	0.019823
390	0.000703	490	0.023324	590	0.082790	690	0.017274
395	0.000923	495	0.028043	595	0.082476	695	0.014990
400	0.001247	500	0.034608	600	0.081954	700	0.012982
405	0.001666	505	0.041241	605	0.080607	705	0.011240
410	0.002158	510	0.047126	610	0.078509	710	0.009661
415	0.002818	515	0.052183	615	0.075692	715	0.008353
420	0.004060	520	0.056028	620	0.072191	720	0.007196
425	0.006416	525	0.058765	625	0.068473	725	0.006201
430	0.010798	530	0.061275	630	0.064156	730	0.005331
435	0.018481	535	0.063245	635	0.059867	735	0.004571
440	0.031020	540	0.065242	640	0.055166	740	0.003913
445	0.053474	545	0.067247	645	0.050500	745	0.003374
450	0.087855	550	0.069282	650	0.045868	750	0.002911
455	0.098171	555	0.071416	655	0.041366	755	0.002501
460	0.066074	560	0.073561	660	0.037182	760	0.002170
465	0.044799	565	0.075538	665	0.033013	765	0.001864
470	0.035410	570	0.077604	670	0.029203	770	0.001602
475	0.025241	575	0.079456	675	0.025784	775	0.001388
						780	0.001198





Test Report Number: LLIA000844-016B-R04

IES TM-30 Details



Notes:

x **0.3830**
y **0.3811**
u' **0.2251**
v' **0.5039**

CIE 13.3-1995 (CRI)	
R _a	82
R _g	11



Test Report Number: LLIA000844-016B-R04

Catalog Number: MLS5-I/D-MO/MO-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: 25.1 °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