



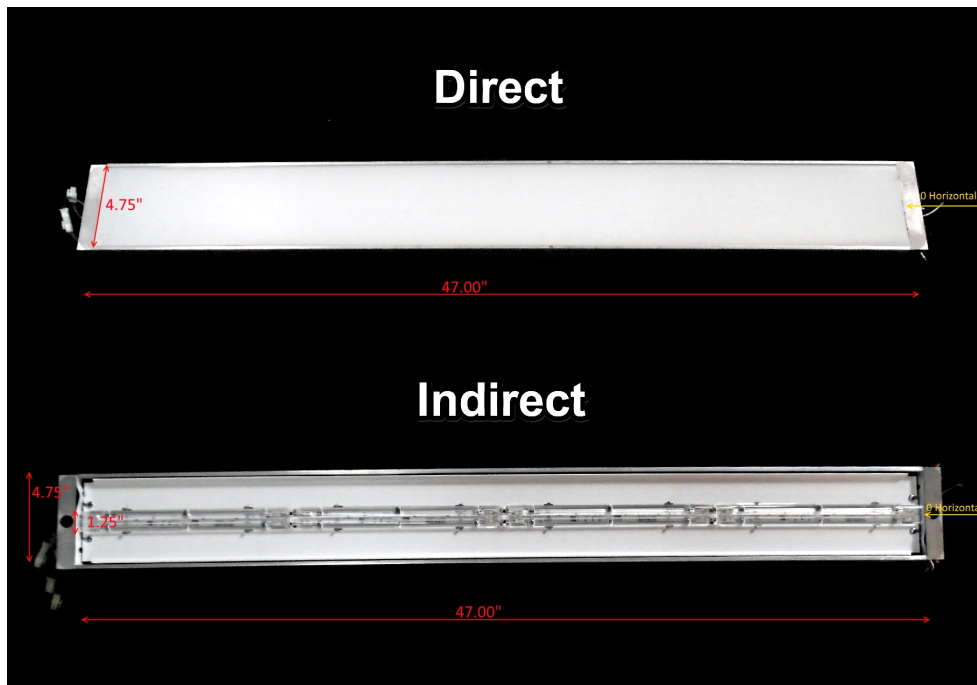
Report of Test

LLIA000844-012A-R04*

*This test report supersedes test report LLIA000844-012A-R03

Catalog Number: MLS5-I/D-MO/MO-K40/K40-80-4-XX-WSOP/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 30/120-277/1A0 DIM L LED drivers 120.1Vac, 60.00Hz, 0.3141A, 37.50W, 0.994PF, 5.4%THD(i)



Performance Summary

Total Light Output	4946 lm
Luminaire Power	37.5 W
Luminous Efficacy	131.9 lm/W

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

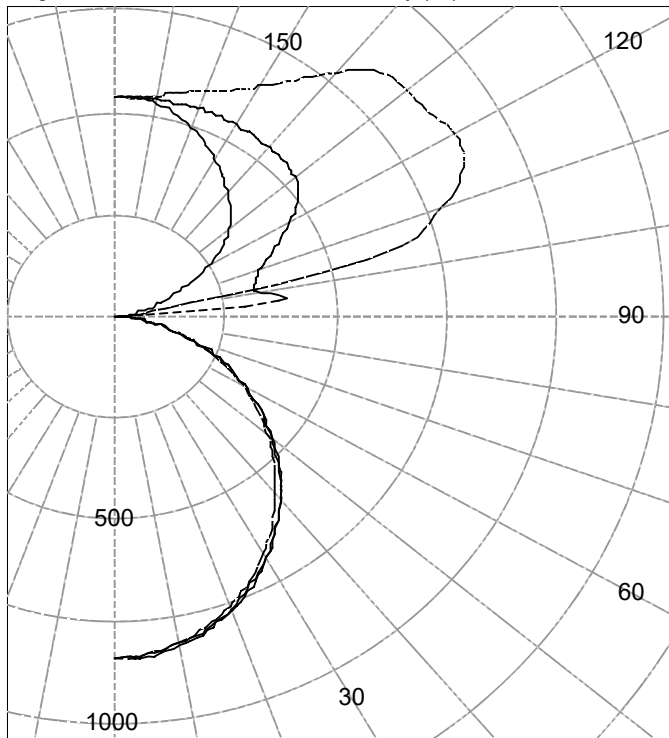


Test Report No. LLIA000844-012A-R04

Catalog Number: MLS5-I/D-MO/MO-K40/K40-80-4-XX-WSOP/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 30/120-277/1A0 DIM L LED drivers 120.1Vac, 60.00Hz, 0.3141A, 37.50W, 0.994PF, 5.4%THD(i)

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



(Two plane symmetry) C0-C90

INTENSITY SUMMARY (cd)

Gamma	C-Plane					Flux (lm)
	C0	C22.5	C45	C67.5	C90	
0.0	842	842	842	842	842	
5.0	833	836	840	839	832	79
10.0	819	821	826	823	816	
15.0	796	798	802	799	791	225
20.0	766	766	770	767	758	
25.0	727	727	731	727	717	335
30.0	683	683	686	682	671	
35.0	635	634	636	631	621	395
40.0	581	580	581	577	566	
45.0	524	523	523	519	509	401
50.0	464	463	462	458	449	
55.0	400	400	400	395	388	355
60.0	335	337	336	330	324	
65.0	270	272	269	265	260	265
70.0	204	205	203	199	197	
75.0	138	140	138	137	136	146
80.0	78	79	80	80	80	
85.0	30	31	33	34	34	38
90.0	1	2	3	3	3	

AVERAGE LUMINANCE (cd / m²)

Gamma	C0	C45	C90
45.0	5133	5116	4985
55.0	4831	4825	4679
65.0	4423	4413	4262
75.0	3703	3698	3627
85.0	2377	2607	2693

ZONAL FLUX AND PERCENTAGES

Zone	Flux (lm)	% Lamp	% Luminaire
0-30	639	N / A	12.9
0-40	1035	N / A	20.9
0-60	1791	N / A	36.2
0-90	2240	N / A	45.3
40-90	1205	N / A	24.4
60-90	449	N / A	9.1
90-180	2706	N / A	54.7
0-180	4946	N / A	100.0

Total Light Output = 4,946 lm

Signed:

Authorized Signatory

Date of test 25-Aug-2017
Date of report 24-Mar-2022



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Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
0.0	842	842	842	842	842
2.5	836	840	844	843	837
5.0	833	836	840	839	832
7.5	827	830	834	832	826
10.0	819	821	826	823	816
12.5	808	811	815	812	805
15.0	796	798	802	799	791
17.5	781	783	787	784	775
20.0	766	766	770	767	758
22.5	747	748	752	748	738
25.0	727	727	731	727	717
27.5	706	706	710	705	695
30.0	683	683	686	682	671
32.5	660	659	661	657	646
35.0	635	634	636	631	621
37.5	608	607	609	604	594
40.0	581	580	581	577	566
42.5	553	552	552	548	538
45.0	524	523	523	519	509
47.5	495	493	493	489	480
50.0	464	463	462	458	449
52.5	432	432	431	427	419
55.0	400	400	400	395	388
57.5	368	369	368	363	356
60.0	335	337	336	330	324
62.5	303	304	303	297	292
65.0	270	272	269	265	260
67.5	237	239	236	232	228
70.0	204	205	203	199	197
72.5	171	172	170	168	166
75.0	138	140	138	137	136
77.5	107	108	108	107	107
80.0	78	79	80	80	80
82.5	52	53	55	55	56
85.0	30	31	33	34	34
87.5	13	13	14	15	15
90.0	1	2	3	3	3



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Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
90.0	1	2	3	3	3
92.5	6	14	25	8	7
95.0	16	39	296	44	26
97.5	29	63	381	129	70
100.0	45	80	336	369	174
102.5	63	96	315	650	428
105.0	82	114	326	728	669
107.5	104	136	335	759	742
110.0	126	160	352	788	793
112.5	151	185	378	799	842
115.0	179	211	403	801	870
117.5	208	239	428	795	888
120.0	237	267	456	785	893
122.5	266	294	483	777	883
125.0	293	320	505	774	871
127.5	316	346	521	777	865
130.0	335	370	531	778	864
132.5	351	393	536	772	861
135.0	367	412	538	755	848
137.5	381	429	539	728	821
140.0	394	442	540	699	785
142.5	408	452	542	671	746
145.0	421	461	543	647	710
147.5	434	469	543	627	678
150.0	448	476	544	612	653
152.5	461	483	544	600	633
155.0	473	490	545	590	616
157.5	485	498	545	581	601
160.0	496	505	545	574	589
162.5	506	512	544	568	579
165.0	516	519	542	562	570
167.5	524	525	541	555	560
170.0	531	530	541	548	551
172.5	536	534	542	544	544
175.0	540	537	543	542	540
177.5	542	539	544	542	539
180.0	542	542	542	542	542



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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	106	106	106	106	97	97	97	97	81	81	81	66	66	66	52	52	52	45
1	97	92	89	85	89	85	82	79	71	68	66	58	56	55	46	45	44	38
2	88	81	75	69	80	74	69	64	62	58	55	51	48	46	40	38	37	32
3	80	71	64	58	73	65	59	54	55	50	46	45	41	38	36	33	31	27
4	73	63	55	49	67	58	51	45	48	43	39	40	36	33	32	29	27	23
5	67	56	48	42	61	51	44	39	43	38	34	36	32	28	29	26	23	20
6	62	50	42	36	57	46	39	34	39	33	29	32	28	25	26	23	20	17
7	57	45	37	32	52	42	35	30	35	30	26	29	25	22	24	21	18	15
8	53	41	33	28	49	38	31	26	32	27	23	27	23	19	22	19	16	14
9	49	37	30	25	45	35	28	23	29	24	20	25	20	17	20	17	15	12
10	46	34	27	22	42	32	25	21	27	22	18	23	19	16	19	15	13	11

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

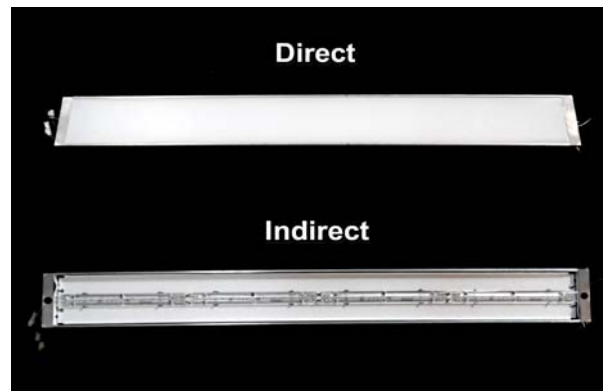
Height(ft)	Illuminance at Nadir (fc)	Beam Width (across 50% Nadir Illum)	
		0-180	90-270
6.0	23.4	7.26	7.14
8.0	13.2	9.68	9.53
10.0	8.4	12.10	11.91
12.0	5.8	14.52	14.29
14.0	4.3	16.94	16.67
16.0	3.3	19.36	19.05



Test Report No. LLIA000844-012A-R04

Catalog Number: MLS5-I/D-MO/MO-K40/K40-80-4-XX-WSOP/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 30/120-277/1A0 DIM L LED drivers 120.1Vac, 60.00Hz, 0.3141A, 37.50W, 0.994PF, 5.4%THD(i)





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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 - 03/24/2022 - Revised to keep in series with 012B



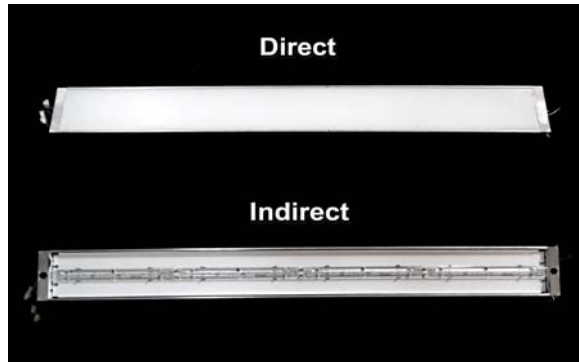
Report of Test

LLIA000844-012B-R04*

Integrating Sphere Report

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

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Performance Summary

Voltage	120.0 Vac
Current	0.3141 A
Power	37.47 W
Frequency	59.97 Hz
Power Factor	0.995
Current THD	5.4 %

Total Luminous Flux	5027.9 lm
Efficacy	134.2 lm/W
Chromaticity (x,y)	(0.3823, 0.3807)
(u',v')	(0.2248, 0.5036)
Duv	0.0013
CCT	3978 K
CRI (Ra)	82
R9	11

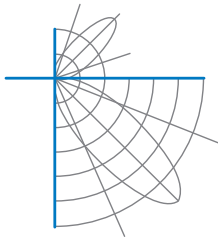
Prepared For:

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

*This test report supersedes test report LLIA000844-012-R03

Test date: 08/22/2017

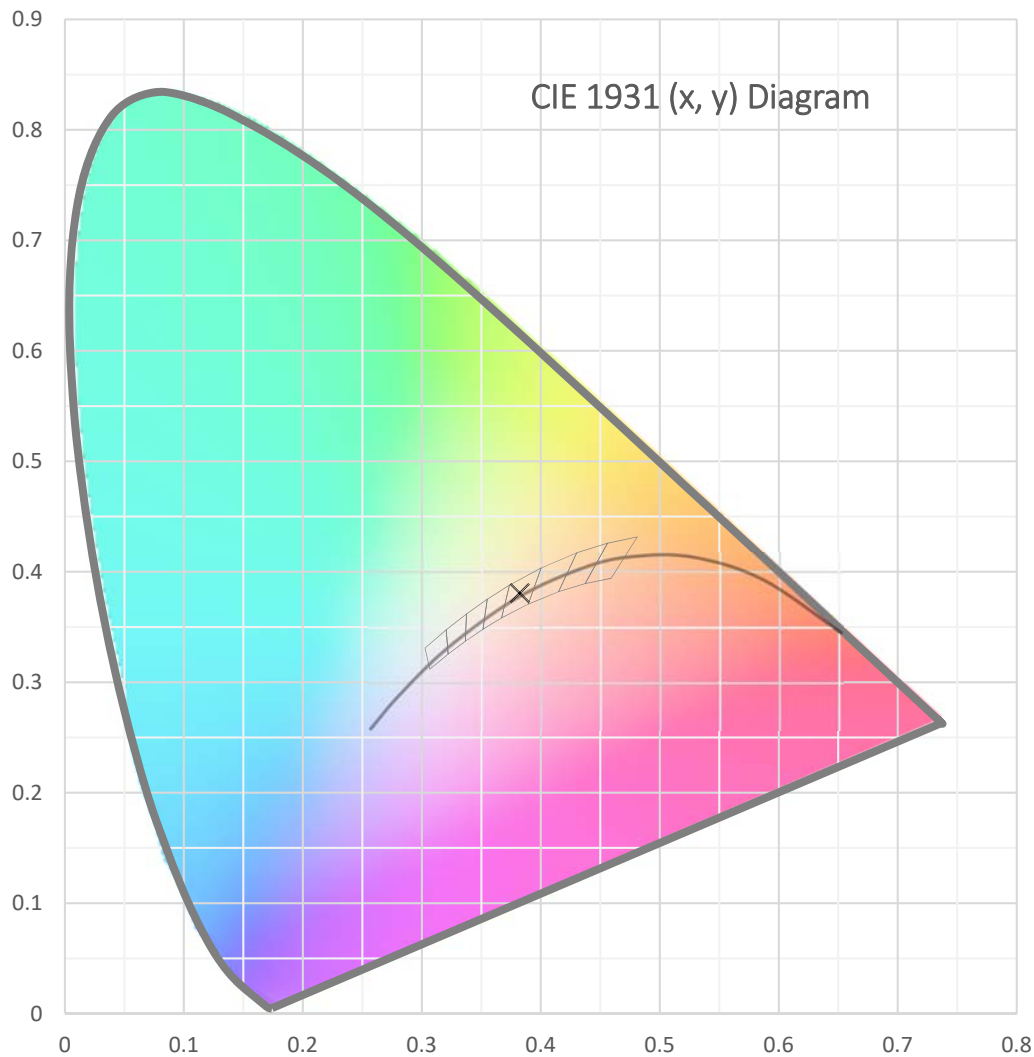
Report date: 03/24/2022

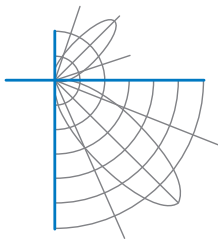


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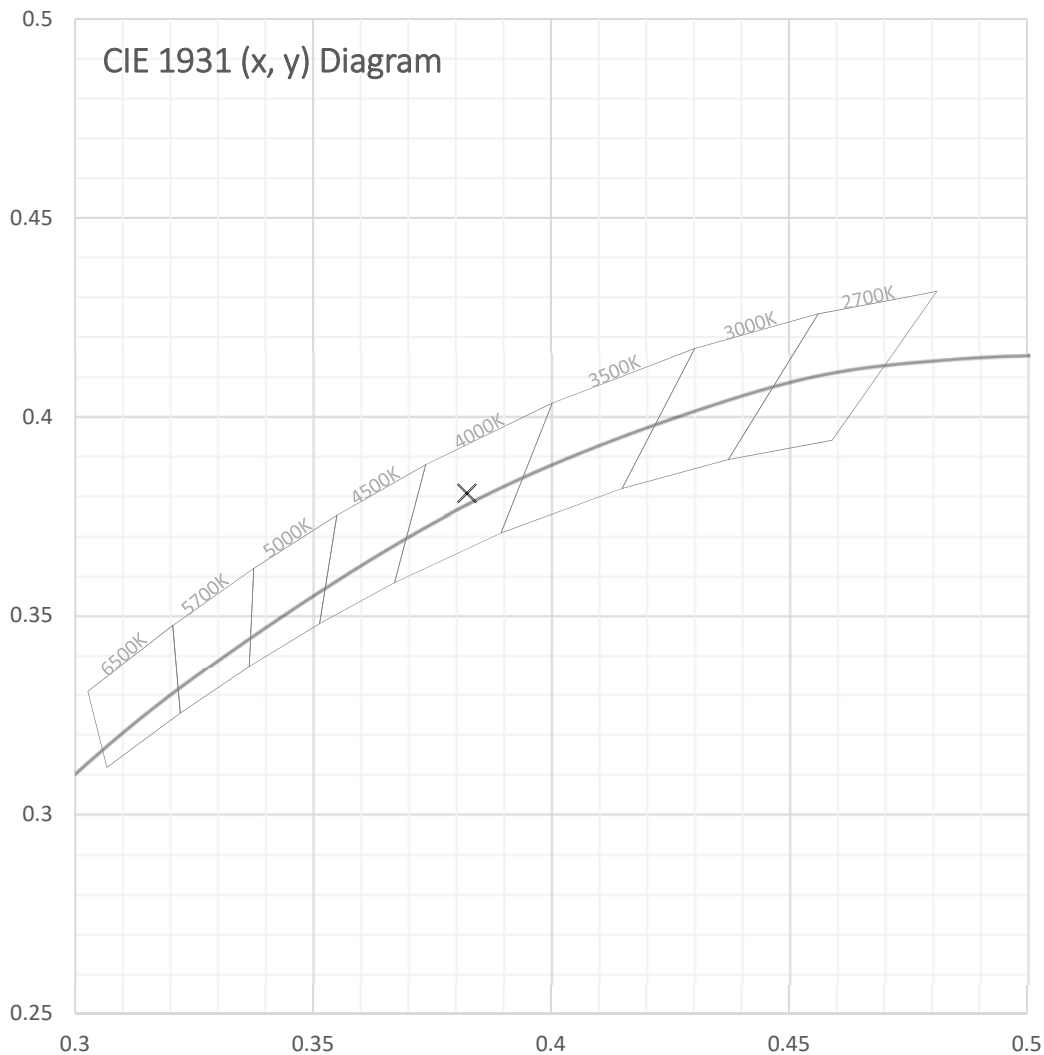




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Spectral Data	Total Radiant Flux	15.42 W
	Total Luminous Flux	5027.9 Lm
	Chromaticity CIE 1931 (x, y)	(0.3823, 0.3807)
	Chromaticity CIE 1976 (u', v')	(0.2248, 0.5036)
	Correlated Color Temperature (CCT)	3978 K
	Color Rendering Index (Ra)	82
	R1	80
	R2	88
	R3	93
	R4	81
	R5	80
	R6	82
	R7	87
	R8	66
	R9	11
	R10	70
	R11	79
R12	55	
R13	82	
R14	96	
Distance from Planckian Locus (Duv)	0.0013	
Scotopic/Photopic Ratio *	1.651	

Electrical Data

Voltage	120.0 Vac
Current	0.3141 A
Power	37.47 W
Frequency	59.97 Hz
Power Factor	0.995
Current THD	5.4 %



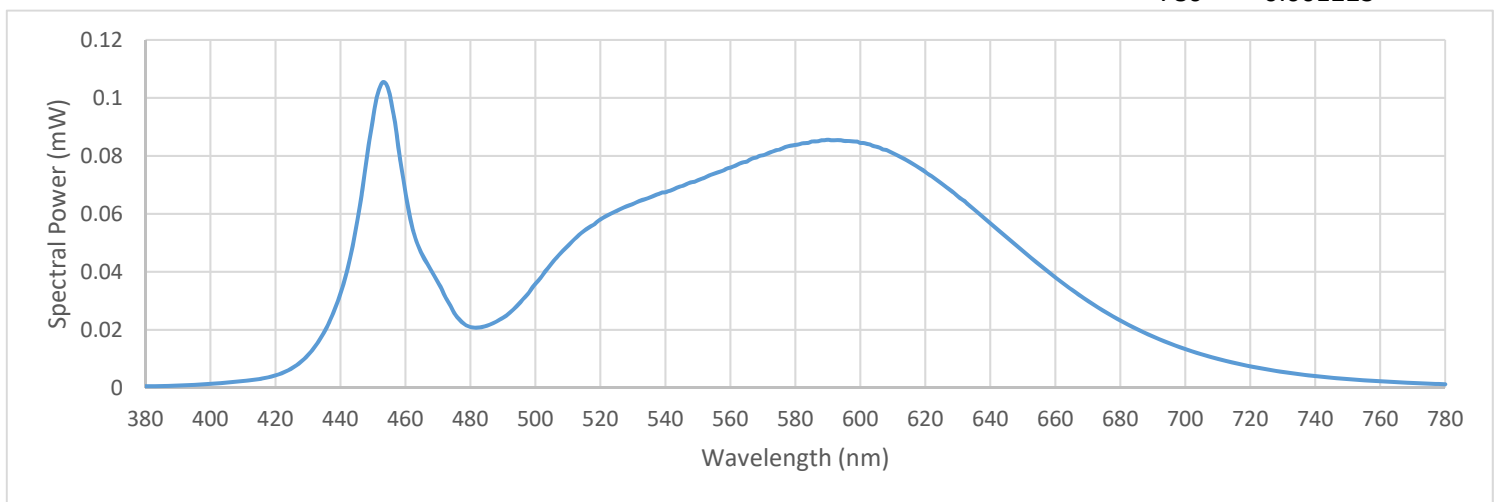
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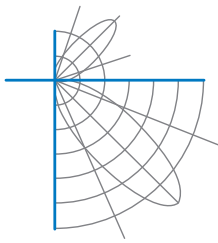
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Summary Spectral Power Distribution (wavelength - nm, spectral power - mW)

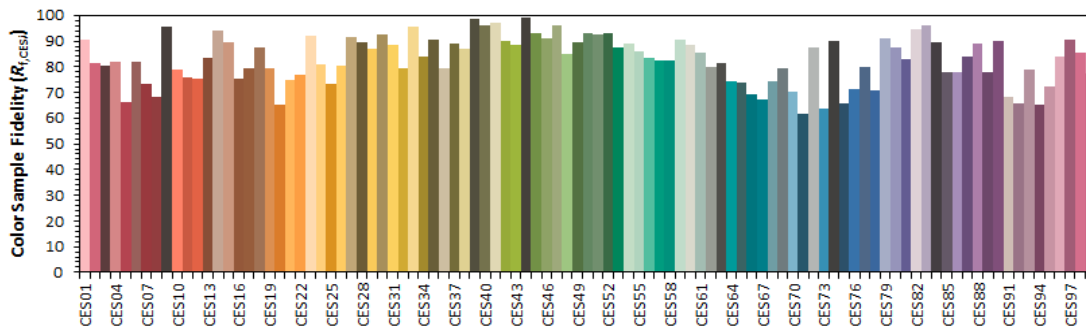
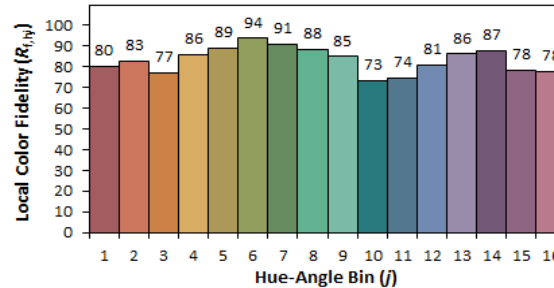
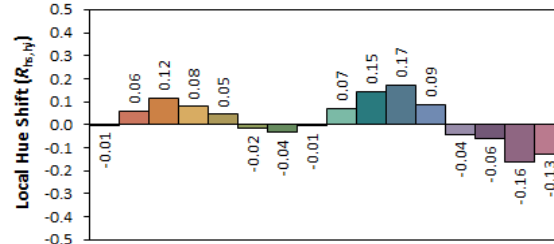
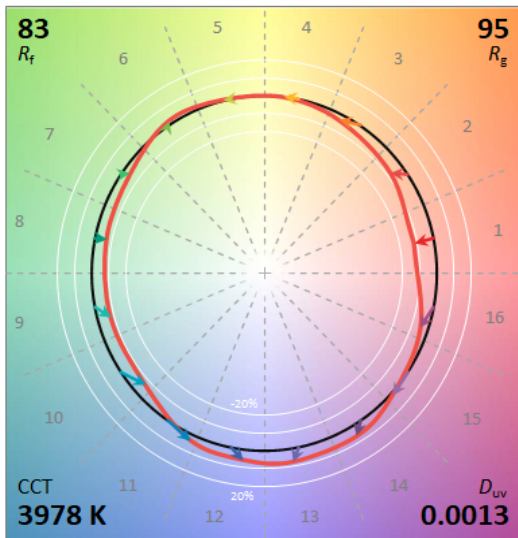
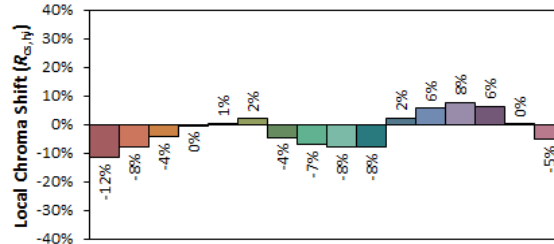
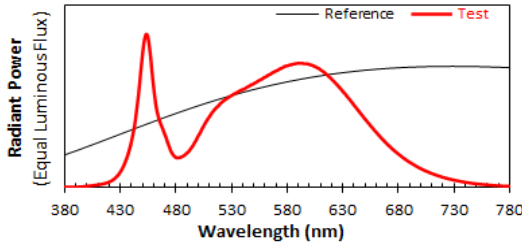
380	0.000535	480	0.020921	580	0.083772	680	0.023188
385	0.000587	485	0.021414	585	0.084934	685	0.020332
390	0.000750	490	0.024137	590	0.085561	690	0.017708
395	0.000992	495	0.028911	595	0.085176	695	0.015385
400	0.001357	500	0.035846	600	0.084463	700	0.013344
405	0.001789	505	0.042857	605	0.083182	705	0.011553
410	0.002308	510	0.048896	610	0.080907	710	0.009944
415	0.002984	515	0.054161	615	0.077974	715	0.008591
420	0.004269	520	0.058119	620	0.074428	720	0.007374
425	0.006691	525	0.061001	625	0.070506	725	0.006351
430	0.011312	530	0.063365	630	0.066027	730	0.005471
435	0.019317	535	0.065489	635	0.061607	735	0.004683
440	0.032471	540	0.067452	640	0.056713	740	0.004014
445	0.056470	545	0.069528	645	0.051908	745	0.003467
450	0.092757	550	0.071593	650	0.047156	750	0.002986
455	0.102012	555	0.073883	655	0.042505	755	0.002569
460	0.067528	560	0.075949	660	0.038159	760	0.002233
465	0.046209	565	0.077991	665	0.033871	765	0.001921
470	0.036427	570	0.080195	670	0.029991	770	0.001658
475	0.025832	575	0.082106	675	0.026442	775	0.001422
						780	0.001223





Test Report Number: LLIA000844-012B-R04

IES TM-30 Details



Notes:

x **0.3823**
y **0.3807**
u' **0.2248**
v' **0.5036**

CIE 13.3-1995
(CRI)
R_a 82
R_g 11



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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 4π 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 - 03/24/2022 - Added TM-30 metrics page to report