



Report of Test

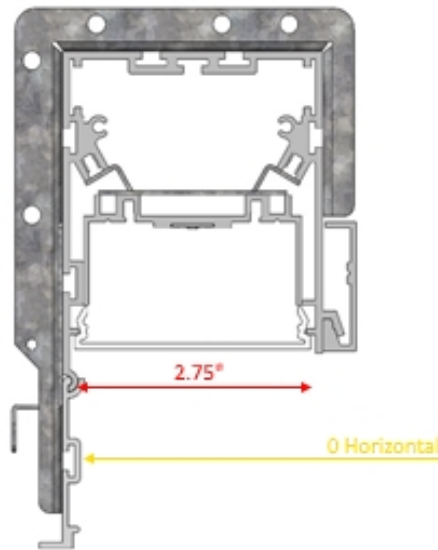
LLIA001084-001A

Catalog Number: PS3-A-HO-K40-80-4-XX-XX-LOH-UNV-XXX

Recessed mounted, extruded aluminum housing, formed white enamel aluminum LED tray, frosted plastic enclosure.

One PAL-Lighting LED board with 88 LEDs

One Osram Optotronic OTi30/120-277/1A0 DIM-1 L LED driver labeled as 720mA
120.0Vac, 60.00Hz, 0.2336A, 27.94W, 0.997PF, 5.8%THD(i)



Performance Summary

Total Light Output	2922 lm
Luminaire Power	27.9 W
Luminous Efficacy	104.7 lm/W

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



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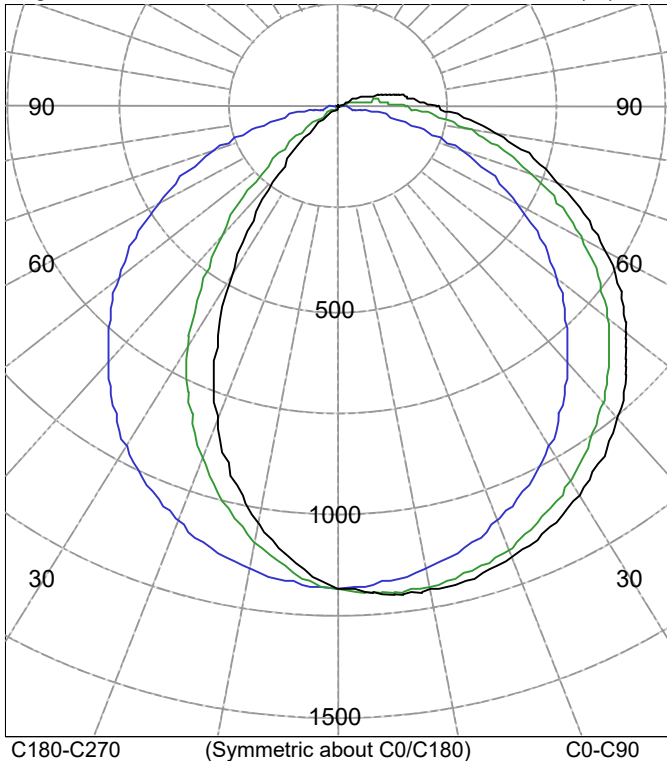
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Legend: C0/C180-Black, C45/C225-Green, C90/C270-Blue (cd)



C180-C270 (Symmetric about C0/C180) C0-C90

AVERAGE LUMINANCE (cd/m²)

Gamma	C0	C45	C90
45.0	9152	9688	12484
55.0	7977	8495	11544
65.0	6732	7142	10184
75.0	5399	5583	7851
85.0	4041	3990	3699

INTENSITY SUMMARY (cd)

Gamma	C-Plane					Flux (lm)
	C0	C22.5	C45	C67.5	C90	
0.0	1182	1182	1182	1182	1182	
5.0	1199	1202	1197	1177	1173	111
10.0	1205	1205	1196	1167	1153	
15.0	1197	1194	1179	1146	1121	307
20.0	1174	1167	1151	1110	1077	
25.0	1141	1131	1108	1065	1024	439
30.0	1100	1085	1059	1011	962	
35.0	1051	1033	1002	948	892	488
40.0	993	973	941	878	815	
45.0	929	907	874	805	734	464
50.0	859	835	801	728	649	
55.0	783	759	722	649	562	392
60.0	703	679	639	569	471	
65.0	618	595	552	483	377	302
70.0	532	510	463	394	283	
75.0	447	425	375	304	191	202
80.0	365	344	293	216	108	
85.0	287	269	220	140	40	112
90.0	227	210	159	81	0	

ZONAL FLUX AND PERCENTAGES

Zone	Flux (lm)	% Lamp	% Luminaire
0-30	856	N / A	29.3
0-40	1343	N / A	46.0
0-60	2199	N / A	75.2
0-90	2815	N / A	96.3
40-90	1472	N / A	50.4
60-90	616	N / A	21.1
90-180	107	N / A	3.7
0-180	2922	N / A	100.0

Total Light Output = 2,922 lm

Spacing Criterion: 0-180 1.4
Spacing Criterion: 90-270 1.2

Signed:

Authorized Signatory

Date of test 25-Feb-2019
Date of report 28-Feb-2019



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Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
0.0	1182	1182	1182	1182	1182
2.5	1189	1194	1193	1177	1178
5.0	1199	1202	1197	1177	1173
7.5	1205	1205	1199	1174	1165
10.0	1205	1205	1196	1167	1153
12.5	1203	1201	1189	1158	1139
15.0	1197	1194	1179	1146	1121
17.5	1186	1182	1167	1129	1100
20.0	1174	1167	1151	1110	1077
22.5	1159	1150	1130	1089	1051
25.0	1141	1131	1108	1065	1024
27.5	1121	1109	1085	1039	994
30.0	1100	1085	1059	1011	962
32.5	1076	1060	1031	981	928
35.0	1051	1033	1002	948	892
37.5	1023	1004	972	914	854
40.0	993	973	941	878	815
42.5	962	941	908	842	775
45.0	929	907	874	805	734
47.5	895	872	838	767	692
50.0	859	835	801	728	649
52.5	821	798	762	688	606
55.0	783	759	722	649	562
57.5	744	720	681	609	517
60.0	703	679	639	569	471
62.5	661	637	595	526	424
65.0	618	595	552	483	377
67.5	575	552	508	439	330
70.0	532	510	463	394	283
72.5	490	467	419	349	236
75.0	447	425	375	304	191
77.5	405	384	334	260	148
80.0	365	344	293	216	108
82.5	326	307	255	176	72
85.0	287	269	220	140	40
87.5	251	234	185	109	12
90.0	227	210	159	81	0



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Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
90.0	227	210	159	81	0
92.5	210	193	142	61	0
95.0	186	167	117	52	0
97.5	164	149	109	36	0
100.0	156	142	97	25	0
102.5	145	129	80	18	0
105.0	130	113	60	6	0
107.5	110	89	47	4	0
110.0	85	72	38	3	0
112.5	71	59	31	3	0
115.0	58	47	17	2	0
117.5	49	41	4	2	0
120.0	40	29	3	2	0
122.5	27	8	2	2	0
125.0	5	2	2	2	0
127.5	0	2	2	2	0
130.0	0	0	2	0	0
132.5	0	0	2	0	0
135.0	0	0	2	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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One PAL-Lighting LED board with 88 LEDs

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Intensity data (cd)

Gamma	C-Plane				
	C90	C112.5	C135	C157.5	C180
0.0	1182	1182	1182	1182	1182
2.5	1178	1169	1174	1167	1160
5.0	1173	1157	1148	1133	1125
7.5	1165	1137	1118	1095	1084
10.0	1153	1114	1084	1052	1039
12.5	1139	1088	1045	1005	989
15.0	1121	1059	1003	954	933
17.5	1100	1026	958	896	872
20.0	1077	991	909	835	806
22.5	1051	954	856	769	732
25.0	1024	914	800	695	653
27.5	994	873	742	619	572
30.0	962	829	679	541	490
32.5	928	784	613	464	412
35.0	892	737	545	389	339
37.5	854	688	478	320	272
40.0	815	639	411	256	211
42.5	775	588	346	199	157
45.0	734	537	285	147	109
47.5	692	484	228	100	66
50.0	649	429	175	59	27
52.5	606	374	127	23	0
55.0	562	319	85	2	0
57.5	517	265	48	0	0
60.0	471	213	15	0	0
62.5	424	162	3	0	0
65.0	377	116	3	0	0
67.5	330	75	2	0	0
70.0	283	40	2	0	0
72.5	236	12	0	0	0
75.0	191	4	0	0	0
77.5	148	3	0	0	0
80.0	108	2	0	0	0
82.5	72	0	0	0	0
85.0	40	0	0	0	0
87.5	12	0	0	0	0
90.0	0	0	0	0	0



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One PAL-Lighting LED board with 88 LEDs

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Intensity data (cd)

Gamma	C-Plane				
	C90	C112.5	C135	C157.5	C180
90.0	0	0	0	0	0
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



Test Number: LLIA001084-001A

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Recessed mounted, extruded aluminum housing, formed white enamel aluminum LED tray, frosted plastic enclosure.

One PAL-Lighting LED board with 88 LEDs

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Coefficients Of Utilization - Zonal Cavity Method

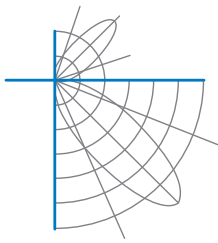
Effective Floor Cavity Reflectance 0.20

RC	80				70				50			30			10			0
	RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10
0	118	118	118	118	115	115	115	115	109	109	109	104	104	104	99	99	99	96
1	107	102	98	94	104	100	96	92	95	91	88	90	88	85	86	84	82	80
2	98	90	83	77	95	87	81	76	83	78	73	79	75	71	76	72	69	67
3	89	79	71	64	87	77	70	64	74	67	62	70	65	60	67	63	59	57
4	82	70	62	55	80	69	61	54	66	59	53	63	57	52	60	55	51	49
5	76	63	54	48	73	62	54	47	59	52	46	57	51	46	55	49	45	43
6	70	57	48	42	68	56	48	42	54	46	41	52	45	40	50	44	40	38
7	65	52	43	37	63	51	43	37	49	42	37	47	41	36	46	40	36	34
8	61	48	39	34	59	47	39	33	45	38	33	44	37	32	42	36	32	30
9	57	44	36	30	55	43	35	30	42	35	30	40	34	29	39	33	29	27
10	54	41	33	28	52	40	33	28	39	32	27	38	31	27	36	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	32.8	6.56	7.28
8.0	18.5	8.75	9.70
10.0	11.8	10.94	12.13
12.0	8.2	13.13	14.55
14.0	6.0	15.31	16.98
16.0	4.6	17.50	19.40



Test Report No. LLIA001084-001A

Catalog Number: PS3-A-HO-K40-80-4-XX-XX-LOH-UNV-XXX

Recessed mounted, extruded aluminum housing, formed white enamel aluminum LED tray, frosted plastic enclosure.

One PAL-Lighting LED board with 88 LEDs

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120.0Vac, 60.00Hz, 0.2336A, 27.94W, 0.997PF, 5.8%THD(i)





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Test Distance 9.5 m
Test Temperature 24.7 °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

LLIA001084-001B

Integrating Sphere Report

Catalog Number: PS3-A-HO-K40-80-4-XX-XX-LOH-UNV-XXX

Recessed mounted, extruded aluminum housing, formed white enamel aluminum LED tray, frosted plastic enclosure.

One PAL-Lighting LED board with 88 LEDs

One Osram Optotronic OTi30/120-277/1A0 DIM-1 L LED driver labeled as 720mA



Performance Summary

Voltage	120.0 Vac
Current	0.2335 A
Power	27.95 W
Frequency	59.97 Hz
Power Factor	0.997
Current THD	5.9 %

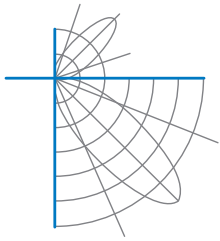
Total Luminous Flux	2943.9 lm
Efficacy	105.3 lm/W
Chromaticity (x,y)	(0.3810, 0.3787)
(u',v')	(0.2247, 0.5025)
Duv	0.0008
CCT	4000 K
CRI (Ra)	83
R9	14
TM-30: Rf	82
TM-30: Rg	96

Prepared For:

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

Test date: 02/25/2019

Report date: 02/28/2019



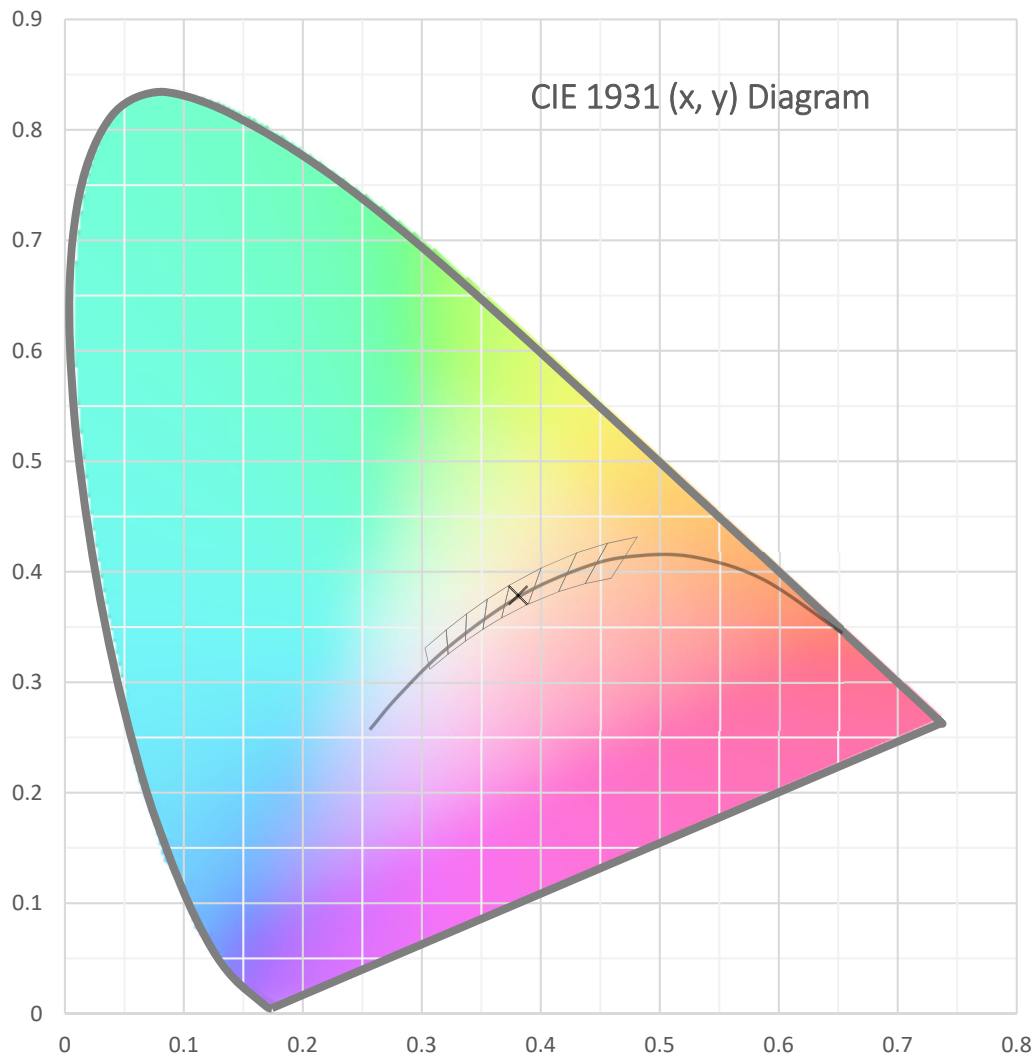
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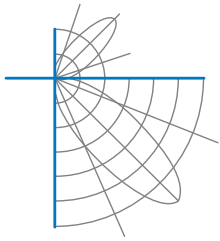
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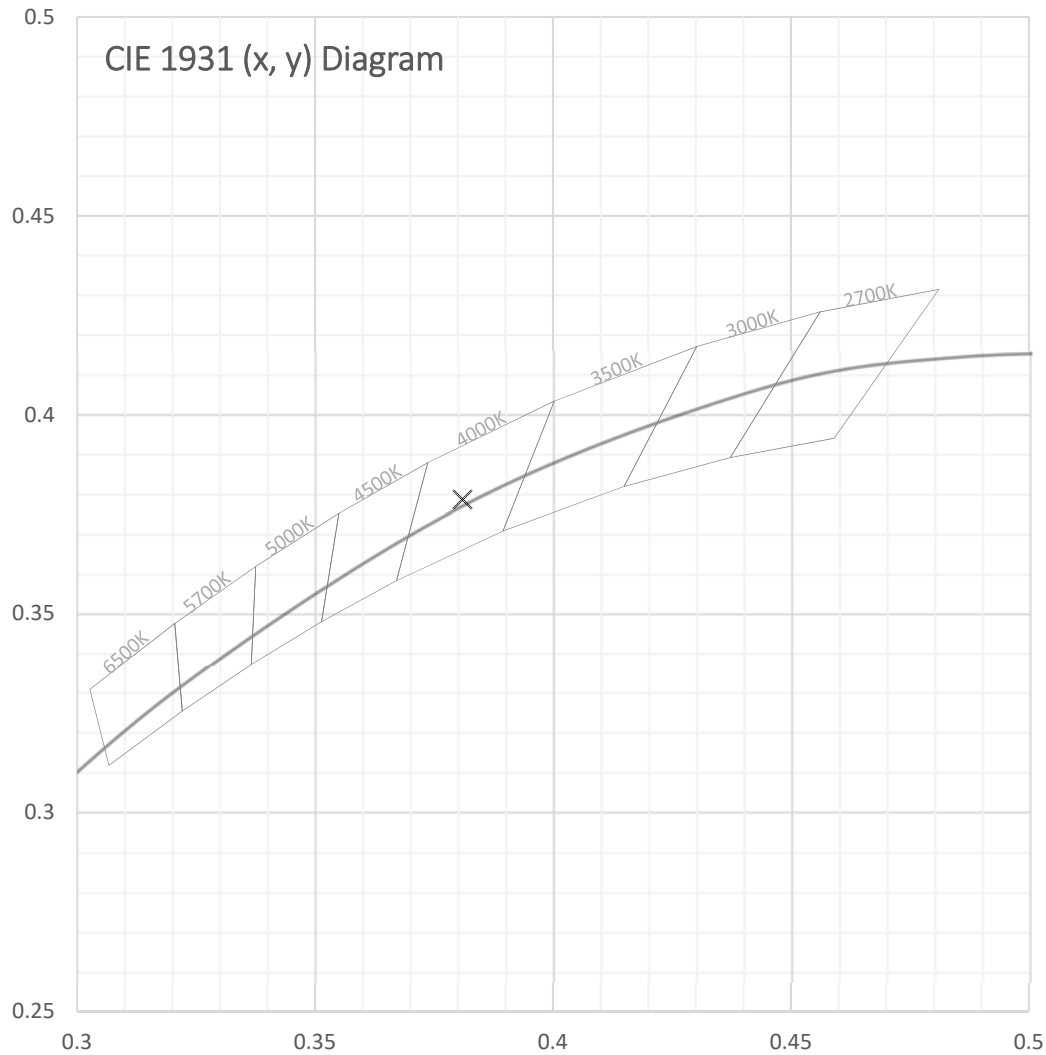
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Spectral Data

Total Radiant Flux	9.105 W
Total Luminous Flux	2943.9 Lm
Chromaticity CIE 1931 (x, y)	(0.3810, 0.3787)
Chromaticity CIE 1976 (u', v')	(0.2247, 0.5025)
Correlated Color Temperature (CCT)	4000 K
Color Rendering Index (Ra)	83
R1	82
R2	89
R3	94
R4	82
R5	81
R6	84
R7	87
R8	67
R9	14
R10	74
R11	81
R12	60
R13	83
R14	97
TM-30: Rf	82
TM-30: Rg	96
Distance from Planckian Locus (Duv)	0.0008
Scotopic/Photopic Ratio *	1.684

Electrical Data

Voltage	120.0 Vac
Current	0.2335 A
Power	27.95 W
Frequency	59.97 Hz
Power Factor	0.997
Current THD	5.9 %



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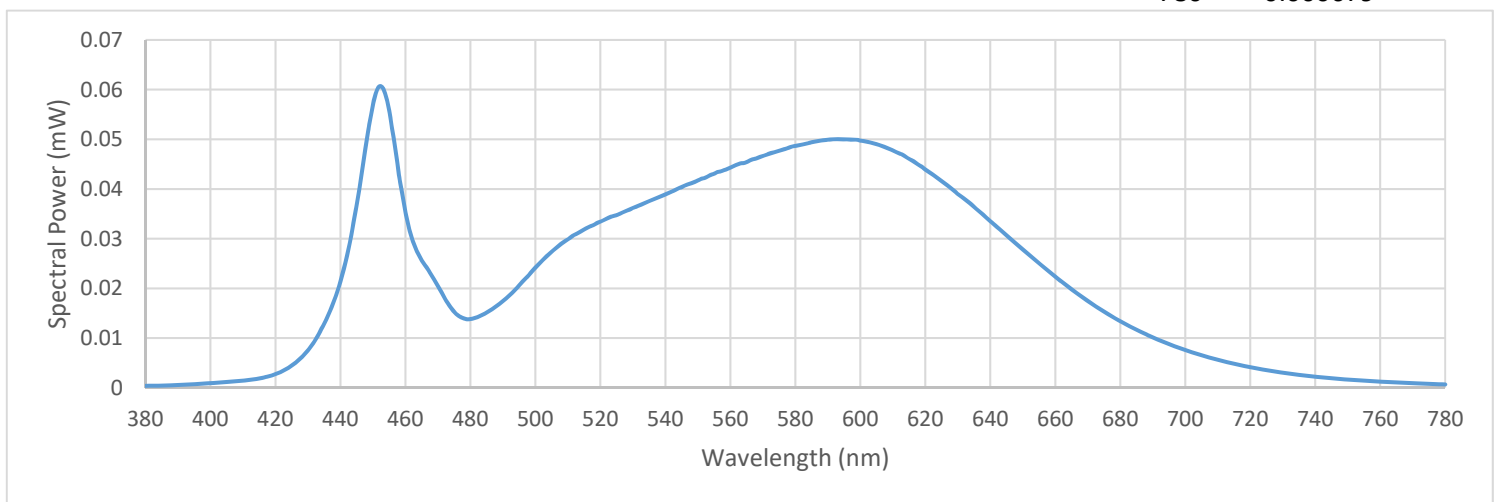
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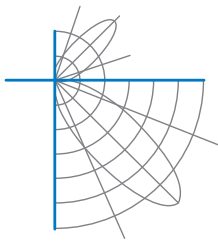
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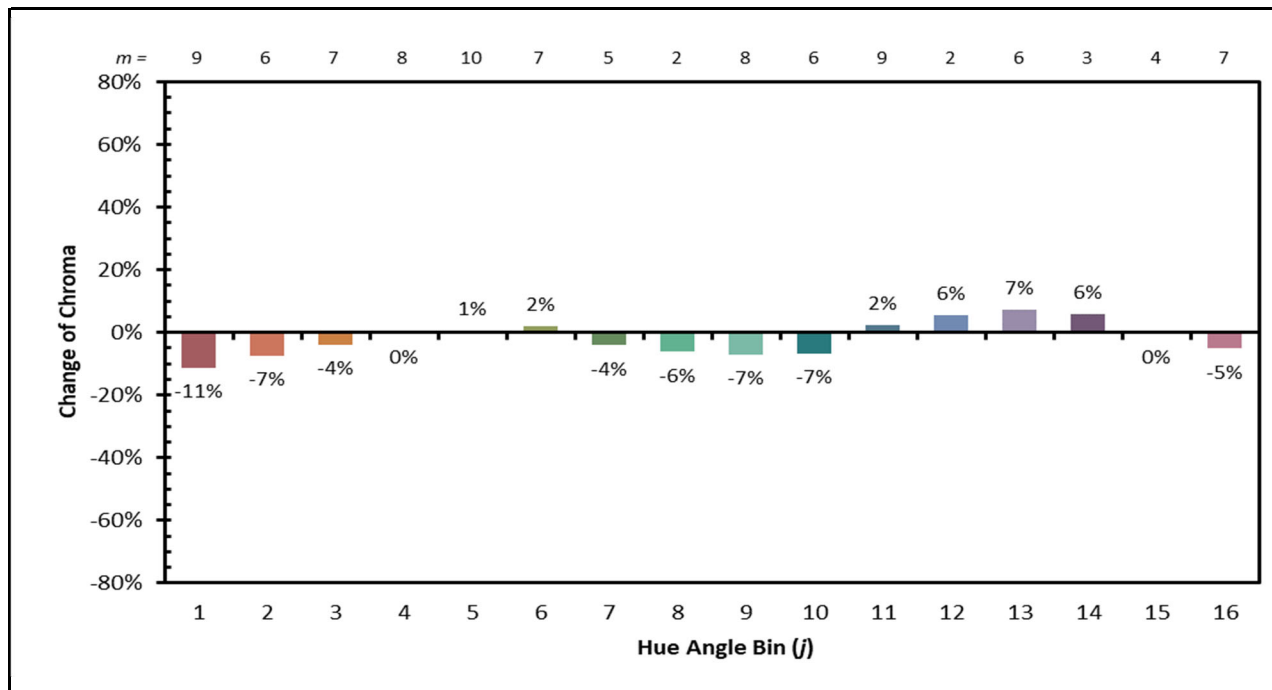
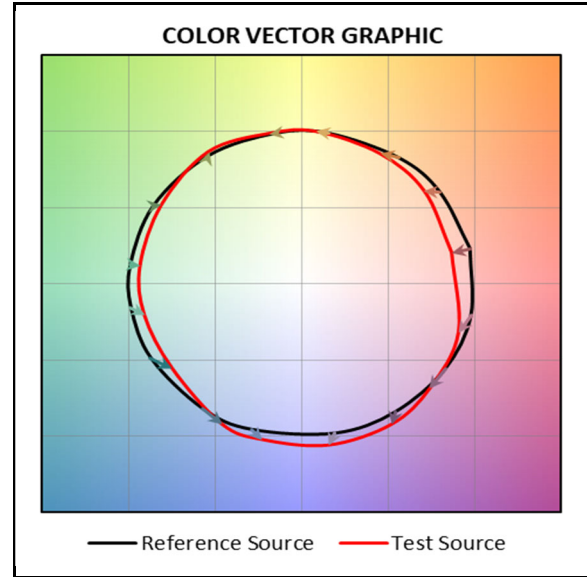
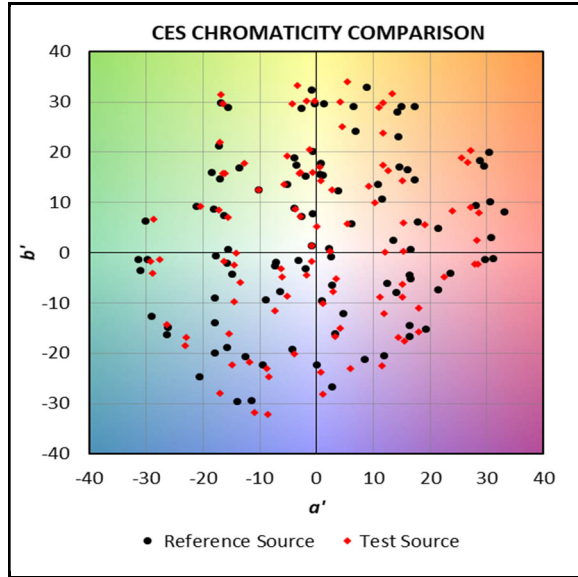
Summary Spectral Power Distribution (wavelength - nm, spectral power - mW)

380	0.000397	480	0.013831	580	0.048686	680	0.013370
385	0.000433	485	0.015146	585	0.049418	685	0.011696
390	0.000559	490	0.017414	590	0.049920	690	0.010158
395	0.000724	495	0.020612	595	0.049993	695	0.008782
400	0.000929	500	0.024194	600	0.049739	700	0.007600
405	0.001169	505	0.027367	605	0.049056	705	0.006535
410	0.001439	510	0.029827	610	0.047718	710	0.005614
415	0.001878	515	0.031877	615	0.046040	715	0.004834
420	0.002753	520	0.033421	620	0.043902	720	0.004148
425	0.004450	525	0.034747	625	0.041644	725	0.003546
430	0.007570	530	0.036200	630	0.038972	730	0.003048
435	0.012898	535	0.037561	635	0.036414	735	0.002609
440	0.021384	540	0.038902	640	0.033523	740	0.002236
445	0.036763	545	0.040357	645	0.030663	745	0.001930
450	0.056802	550	0.041715	650	0.027805	750	0.001653
455	0.055839	555	0.043068	655	0.025017	755	0.001428
460	0.035502	560	0.044308	660	0.022405	760	0.001236
465	0.025615	565	0.045402	665	0.019811	765	0.001061
470	0.020474	570	0.046629	670	0.017418	770	0.000915
475	0.015259	575	0.047665	675	0.015328	775	0.000788
						780	0.000679





IES TM-30 Summary





Test Report Number: LLIA001084-001B

Catalog Number: PS3-A-HO-K40-80-4-XX-XX-LOH-UNV-XXX

Recessed mounted, extruded aluminum housing, formed white enamel aluminum LED tray, frosted plastic enclosure.

One PAL-Lighting LED board with 88 LEDs

One Osram Optotronic OTi30/120-277/1A0 DIM-1 L LED driver labeled as 720mA

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: 25.9 °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.

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.