

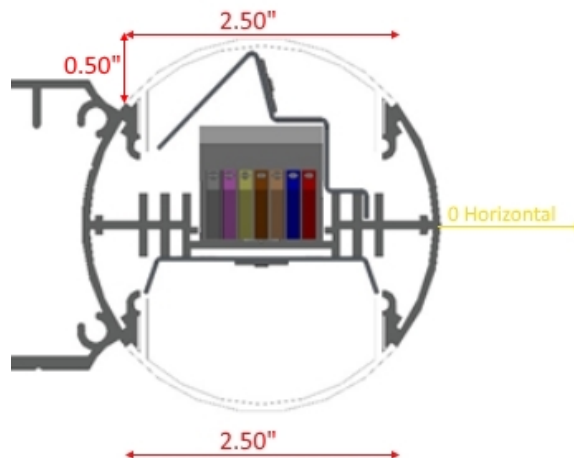


Report of Test

LLIA000956-001A-R01*

*This test report supersedes test report LLIA000956-001A

Catalog Number: AR300-IASY/D-XX-MO/MO-K40-80-4-W-LOH/LOH-FXXX-UNV
Wall mounted, extruded aluminum housing, formed white enamel upper and lower reflectors, frosted plastic upper and lower enclosures. 190 white LEDs, one upper PAL-Lighting LED board with 94 LEDs and one lower PAL-Lighting LED board with 96 LEDs.
One Osram Optotronic OT50W/PRG1400C/UNV/DIM/L LED driver
120.0Vac, 60.00Hz, 0.3057A, 36.52W, 0.995PF, 7.1%THD(i)



Performance Summary

Total Light Output	4671 lm
Luminaire Power	36.5 W
Luminous Efficacy	128.0 lm/W

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



Test Report No. LLIA000956-001A-R01

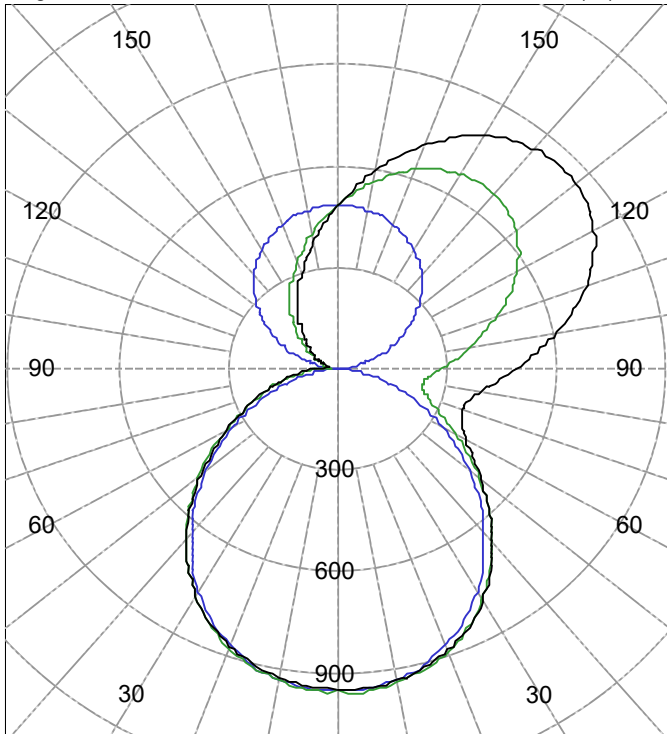
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Legend: C0/C180-Black, C45/C225-Green, C90/C270-Blue (cd)



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

AVERAGE LUMINANCE (cd/m²)

Gamma	C0	C45	C90
45.0	8748	9155	9837
55.0	7792	7844	8666
65.0	7851	7029	7341
75.0	10396	7691	5732
85.0	19321	13641	3582

INTENSITY SUMMARY (cd)

Gamma	C-Plane					Flux (lm)
	C0	C22.5	C45	C67.5	C90	
0.0	952	952	952	952	952	
5.0	945	952	954	944	947	90
10.0	934	940	941	929	930	
15.0	914	919	918	906	906	256
20.0	883	888	888	866	864	
25.0	842	847	841	820	817	381
30.0	791	796	787	765	760	
35.0	729	736	725	704	696	445
40.0	658	665	656	632	623	
45.0	581	586	582	558	549	438
50.0	511	510	504	483	469	
55.0	450	445	427	406	394	374
60.0	402	391	362	334	318	
65.0	372	353	307	264	248	289
70.0	360	334	266	201	182	
75.0	369	333	243	150	120	214
80.0	396	352	239	115	68	
85.0	437	386	253	101	27	175
90.0	487	431	282	110	1	

ZONAL FLUX AND PERCENTAGES

Zone	Flux (lm)	% Lamp	% Luminaire
0-30	728	N / A	15.6
0-40	1173	N / A	25.1
0-60	1984	N / A	42.5
0-90	2662	N / A	57.0
40-90	1489	N / A	31.9
60-90	678	N / A	14.5
90-180	2008	N / A	43.0
0-180	4671	N / A	100.0

Total Light Output = 4,671 lm

Signed:

Authorized Signatory

Date of test

6-Mar-2018

Date of report

22-May-2018



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Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
0.0	952	952	952	952	952
2.5	947	954	957	947	951
5.0	945	952	954	944	947
7.5	941	947	949	938	940
10.0	934	940	941	929	930
12.5	925	931	930	918	920
15.0	914	919	918	906	906
17.5	900	905	904	887	885
20.0	883	888	888	866	864
22.5	864	869	866	844	842
25.0	842	847	841	820	817
27.5	818	823	815	794	789
30.0	791	796	787	765	760
32.5	761	767	757	734	731
35.0	729	736	725	704	696
37.5	694	702	692	669	660
40.0	658	665	656	632	623
42.5	619	626	619	595	586
45.0	581	586	582	558	549
47.5	545	546	544	520	510
50.0	511	510	504	483	469
52.5	479	476	464	444	431
55.0	450	445	427	406	394
57.5	424	416	393	369	355
60.0	402	391	362	334	318
62.5	385	370	333	298	282
65.0	372	353	307	264	248
67.5	364	341	285	232	214
70.0	360	334	266	201	182
72.5	362	331	252	174	150
75.0	369	333	243	150	120
77.5	380	340	238	130	93
80.0	396	352	239	115	68
82.5	414	367	244	105	46
85.0	437	386	253	101	27
87.5	461	407	266	103	12
90.0	487	431	282	110	1



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Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
90.0	487	431	282	110	1
92.5	515	456	300	121	11
95.0	545	482	320	136	24
97.5	576	509	342	154	38
100.0	606	537	365	174	54
102.5	637	565	390	195	72
105.0	667	592	415	218	90
107.5	696	620	440	242	110
110.0	723	645	466	267	130
112.5	748	670	491	292	150
115.0	770	692	516	317	170
117.5	790	713	540	340	190
120.0	808	732	562	363	210
122.5	822	748	584	384	230
125.0	834	762	603	404	249
127.5	843	773	620	424	268
130.0	849	782	635	442	287
132.5	852	789	647	459	305
135.0	852	793	657	475	323
137.5	850	794	664	489	340
140.0	845	792	669	501	356
142.5	836	787	671	511	371
145.0	825	780	671	519	385
147.5	811	770	669	526	399
150.0	794	758	664	530	411
152.5	775	743	657	534	422
155.0	754	725	648	535	433
157.5	730	706	638	535	442
160.0	706	685	625	534	450
162.5	679	662	611	531	458
165.0	652	638	595	527	464
167.5	623	613	579	521	470
170.0	594	587	561	515	474
172.5	565	561	542	507	478
175.0	535	535	523	499	480
177.5	507	508	503	489	482
180.0	482	482	482	482	482



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Intensity data (cd)

Gamma	C-Plane				
	C90	C112.5	C135	C157.5	C180
0.0	952	952	952	952	952
2.5	951	946	954	951	945
5.0	947	941	950	947	940
7.5	940	934	943	940	934
10.0	930	924	934	931	925
12.5	920	913	922	920	914
15.0	906	900	908	907	901
17.5	885	881	894	891	885
20.0	864	859	876	873	867
22.5	842	837	854	853	848
25.0	817	812	829	831	825
27.5	789	785	802	806	800
30.0	760	756	774	779	773
32.5	731	725	744	751	744
35.0	696	695	712	720	712
37.5	660	660	678	686	678
40.0	623	623	643	650	641
42.5	586	586	607	612	604
45.0	549	549	571	572	565
47.5	510	511	534	532	526
50.0	469	475	495	493	487
52.5	431	437	456	454	449
55.0	394	399	418	416	412
57.5	355	363	381	380	376
60.0	318	328	346	346	342
62.5	282	293	313	313	310
65.0	248	260	281	282	280
67.5	214	228	251	254	252
70.0	182	198	222	227	224
72.5	150	169	195	200	198
75.0	120	142	170	175	173
77.5	93	117	146	151	150
80.0	68	95	123	129	129
82.5	46	74	103	111	110
85.0	27	57	86	94	94
87.5	12	41	69	78	79
90.0	1	25	52	63	65



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Intensity data (cd)

Gamma	C-Plane				
	C90	C112.5	C135	C157.5	C180
90.0	1	25	52	63	65
92.5	11	12	35	48	51
95.0	24	8	23	36	40
97.5	38	12	15	27	31
100.0	54	19	18	21	25
102.5	72	27	23	25	26
105.0	90	37	29	29	30
107.5	110	48	36	34	34
110.0	130	60	43	40	40
112.5	150	74	52	47	46
115.0	170	89	61	54	53
117.5	190	105	71	62	60
120.0	210	120	82	70	68
122.5	230	137	94	79	77
125.0	249	153	106	89	86
127.5	268	170	120	100	96
130.0	287	186	134	111	107
132.5	305	203	148	123	118
135.0	323	219	163	135	130
137.5	340	236	178	149	143
140.0	356	252	193	163	157
142.5	371	269	209	179	172
145.0	385	285	225	194	187
147.5	399	301	242	210	203
150.0	411	316	259	227	220
152.5	422	332	276	244	237
155.0	433	347	293	262	255
157.5	442	362	311	281	273
160.0	450	377	329	300	293
162.5	458	392	348	320	313
165.0	464	406	366	341	334
167.5	470	419	386	362	356
170.0	474	433	405	385	379
172.5	478	446	425	409	404
175.0	480	458	445	434	429
177.5	482	470	465	458	456
180.0	482	482	482	482	482



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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	109	109	109	109	101	101	101	101	87	87	87	74	74	74	63	63	63	57
1	98	93	89	85	91	87	83	80	75	72	69	64	62	60	53	52	51	46
2	89	81	75	69	83	76	70	65	65	61	57	56	52	49	47	44	42	38
3	81	71	63	57	75	66	60	54	57	52	48	49	45	42	41	38	36	32
4	74	63	55	48	69	59	52	46	51	45	41	44	39	36	37	34	31	27
5	68	56	48	42	63	53	45	39	46	40	35	39	35	31	33	30	27	24
6	63	50	42	36	58	47	40	34	41	35	31	36	31	27	30	27	24	21
7	58	46	37	32	54	43	35	30	37	31	27	32	28	24	28	24	21	18
8	54	41	34	28	50	39	32	27	34	28	24	30	25	21	25	22	19	16
9	50	38	30	25	47	36	29	24	31	26	22	27	23	19	24	20	17	15
10	47	35	27	22	44	33	26	21	29	23	19	25	21	17	22	18	15	14

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	26.4	7.33	7.15
8.0	14.9	9.77	9.53
10.0	9.5	12.21	11.92
12.0	6.6	14.65	14.30
14.0	4.9	17.10	16.69
16.0	3.7	19.54	19.07

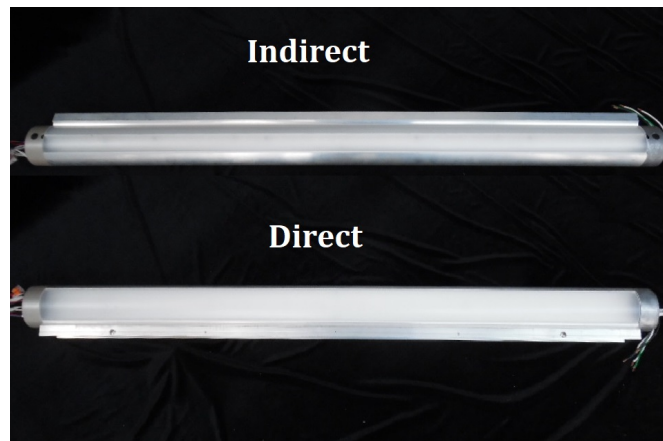


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Test Distance 9.5 m
Test Temperature 25.2 °C

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.

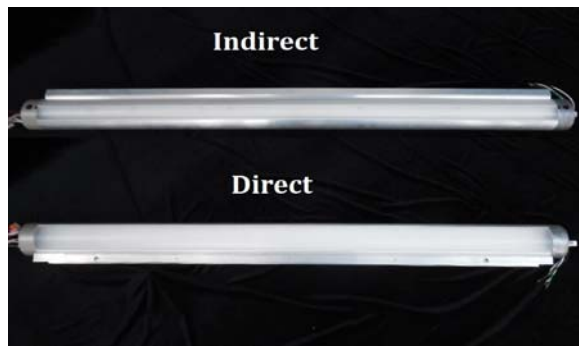


Report of Test

LLIA000956-001B-R01*

Integrating Sphere Report

Catalog Number: AR300-IASY/D-XX-MO/MO-K40-80-4-W-LOH/LOH-FXXX-UNV
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Performance Summary

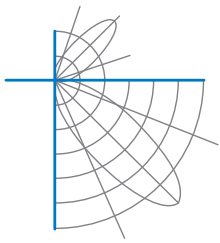
Voltage	120.0 Vac
Current	0.3057 A
Power	36.50 W
Frequency	59.97 Hz
Power Factor	0.995
Current THD	7.0 %

Total Luminous Flux	4805.9 lm
Efficacy	131.7 lm/W
Chromaticity (x,y)	(0.3817, 0.3779)
(u',v')	(0.2255, 0.5023)
Duv	0.0002
CCT	3974 K
CRI (Ra)	84
R9	17
TM-30: Rf	83
TM-30: Rg	95

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

*This test report supersedes test report LLIA000956-001B

Test date: 03/06/2018
Report date: 05/22/2018

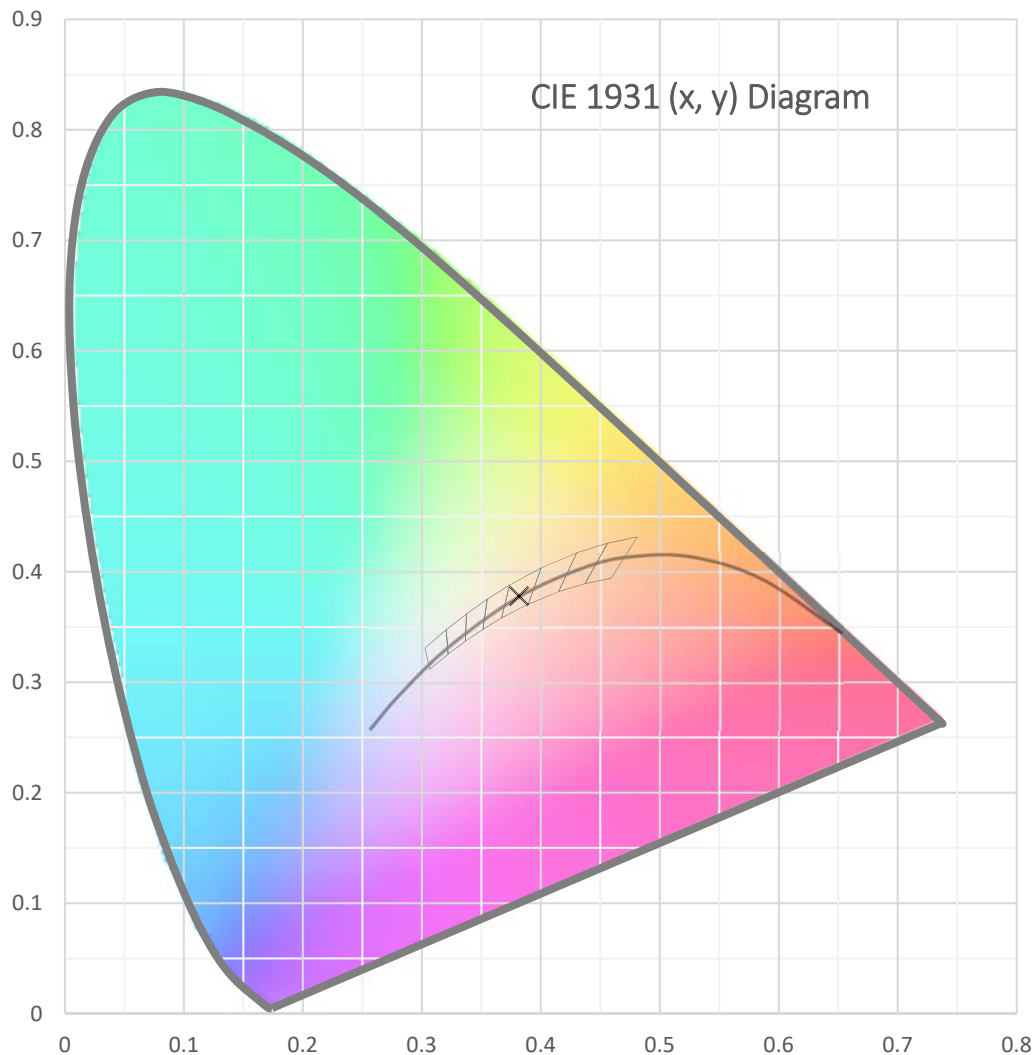


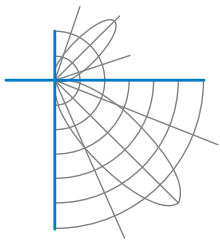
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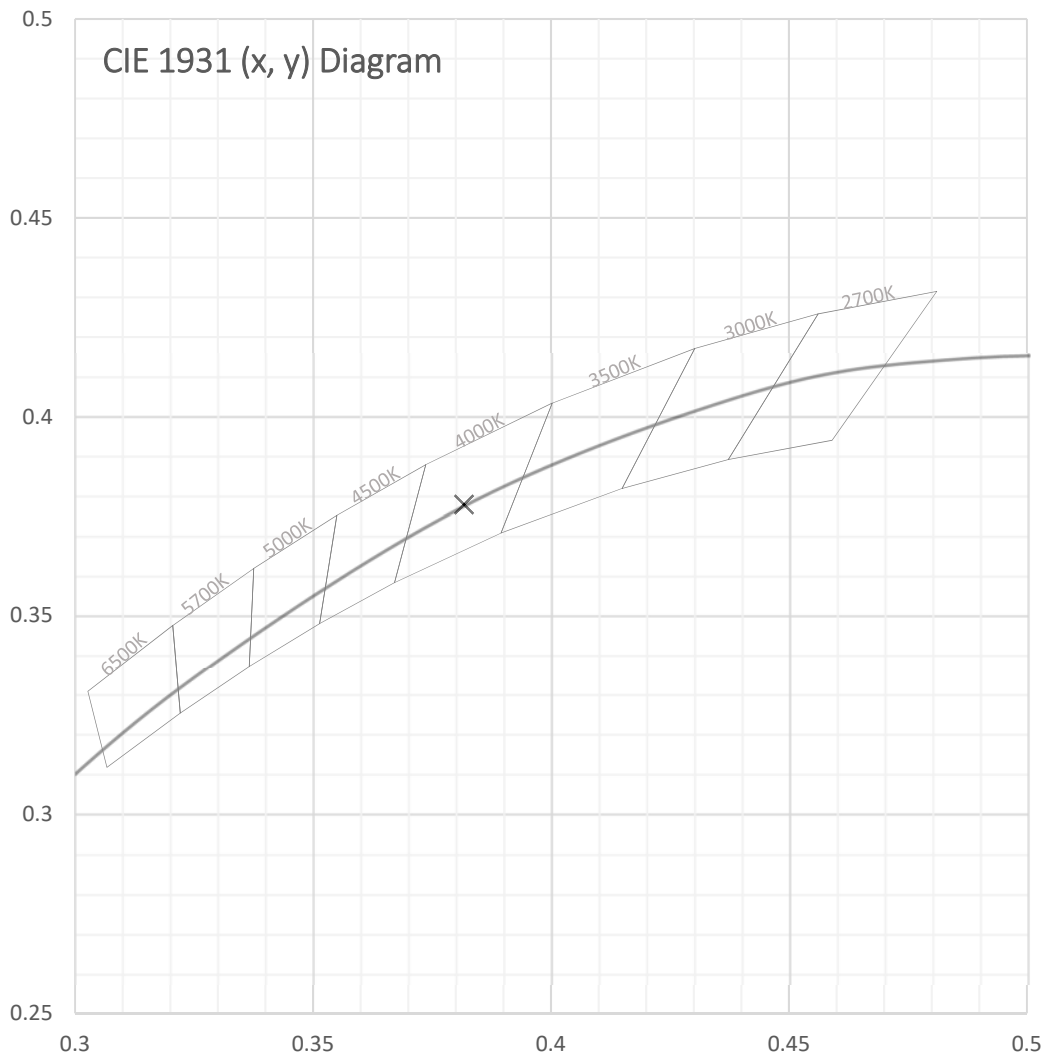


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Spectral Data

Total Radiant Flux	14.93 W
Total Luminous Flux	4805.9 Lm
Chromaticity CIE 1931 (x, y)	(0.3817, 0.3779)
Chromaticity CIE 1976 (u', v')	(0.2255, 0.5023)
Correlated Color Temperature (CCT)	3974 K
Color Rendering Index (Ra)	84
R1	83
R2	90
R3	95
R4	82
R5	82
R6	86
R7	87
R8	67
R9	17
R10	76
R11	81
R12	61
R13	85
R14	97
TM-30: Rf	83
TM-30: Rg	95
Distance from Planckian Locus (Duv)	0.0002
Scotopic/Photopic Ratio *	1.693

Electrical Data

Voltage	120.0 Vac
Current	0.3057 A
Power	36.50 W
Frequency	59.97 Hz
Power Factor	0.995
Current THD	7.0 %



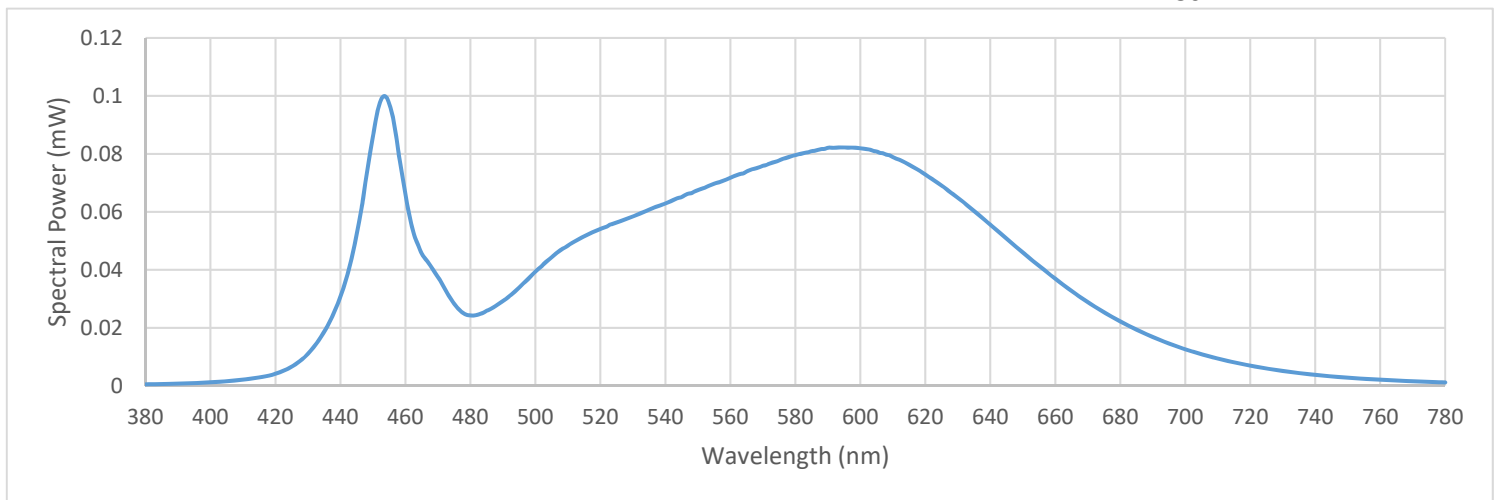
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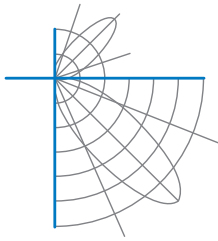
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One Osram Optotronic OT50W/PRG1400C/UNV/DIM/L LED driver

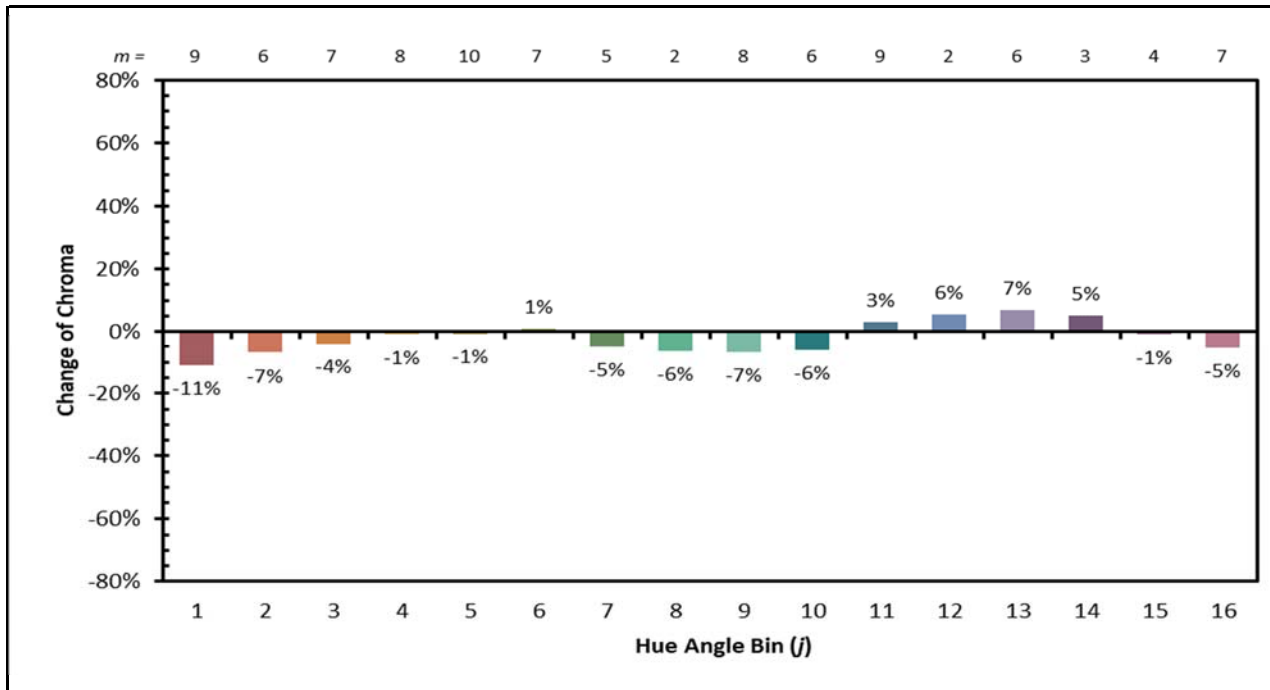
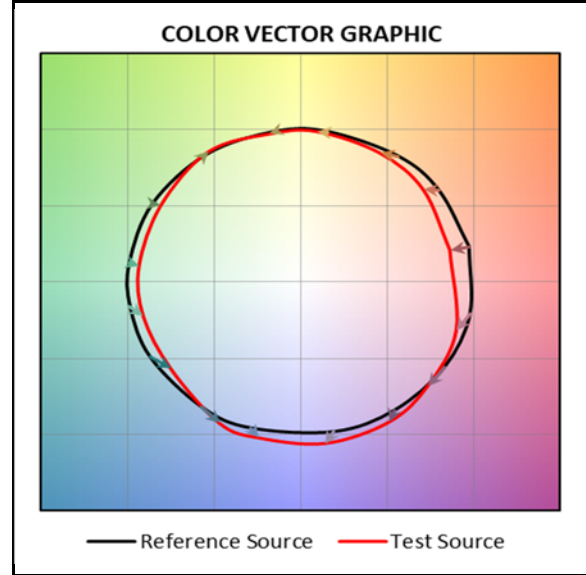
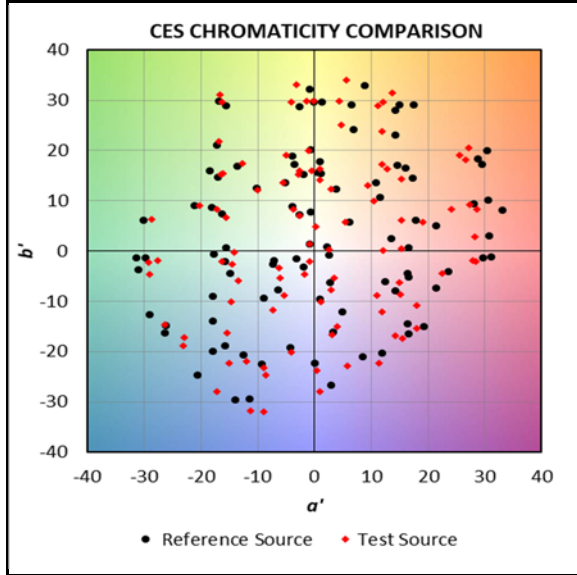
Summary Spectral Power Distribution (wavelength - nm, spectral power - mW)

380	0.000521	480	0.024269	580	0.079566	680	0.022192
385	0.000574	485	0.025879	585	0.080935	685	0.019371
390	0.000696	490	0.029254	590	0.082104	690	0.016823
395	0.000907	495	0.033884	595	0.082212	695	0.014552
400	0.001202	500	0.039435	600	0.081909	700	0.012622
405	0.001598	505	0.044299	605	0.080830	705	0.010862
410	0.002109	510	0.048355	610	0.078891	710	0.009334
415	0.002835	515	0.051533	615	0.076308	715	0.008068
420	0.004156	520	0.054127	620	0.072843	720	0.006933
425	0.006559	525	0.056267	625	0.069061	725	0.005961
430	0.011117	530	0.058418	630	0.064803	730	0.005123
435	0.018687	535	0.060775	635	0.060330	735	0.004386
440	0.030673	540	0.062866	640	0.055573	740	0.003760
445	0.052426	545	0.065096	645	0.050831	745	0.003239
450	0.085963	550	0.067489	650	0.045987	750	0.002786
455	0.097534	555	0.069700	655	0.041329	755	0.002404
460	0.066281	560	0.071687	660	0.036966	760	0.002081
465	0.045625	565	0.073898	665	0.032684	765	0.001796
470	0.037513	570	0.075881	670	0.028850	770	0.001539
475	0.028302	575	0.077723	675	0.025377	775	0.001335
						780	0.001152





IES TM-30 Summary





Test Report Number: LLIA000956-001B-R01

Catalog Number: AR300-IASY/D-XX-MO/MO-K40-80-4-W-LOH/LOH-FXXX-UNV
Wall mounted, extruded aluminum housing, formed white enamel upper and lower reflectors, frosted plastic upper and lower enclosures. 190 white LEDs, one upper PAL-Lighting LED board with 94 LEDs and one lower PAL-Lighting LED board with 96 LEDs.
One Osram Optotronic OT50W/PRG1400C/UNV/DIM/L LED driver

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: 25.9 °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.