



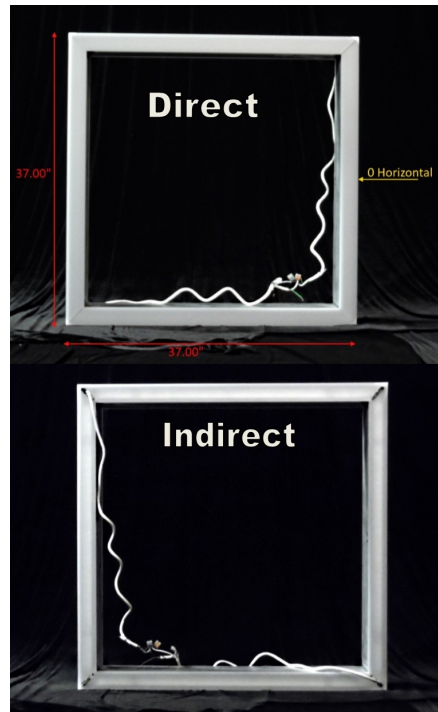
Report of Test

LLIA000833-007A

Catalog Number: MQS2-I/D-HO/HO-K35-80-3X3-XXX-AL/AL-XXXX-UNV

Pendant mounted, extruded aluminum housing, formed white enamel aluminum reflectors, translucent white plastic enclosures. 544 white LEDs, 4 PAL-Lighting upper LED boards with 68 LEDs each and 4 PAL-Lighting lower LED boards with 68 LEDs each.

Two Osram Optotronic Oti 50/120-277/1A4 DIM L LED drivers
120.0Vac, 60.00Hz, 1.376A, 164.5W, 0.997PF, 7.8%THD(i)



Performance Summary

Total Light Output	18286 lm
Luminaire Power	164.5 W
Luminous Efficacy	111.2 lm/W

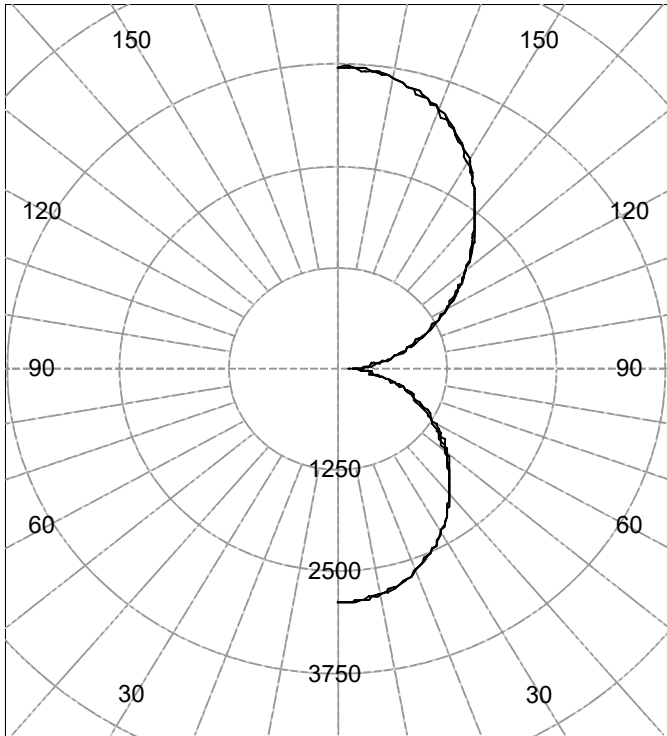
PREPARED FOR : Precision Architectural Lighting, 4830 Timber Creek Drive, Houston, TX 77017



Test Report No. LLIA000833-007A

Catalog Number: MQS2-I/D-HO/HO-K35-80-3X3-XXX-AL/AL-XXXX-UNV
Pendant mounted, extruded aluminum housing, formed white enamel aluminum reflectors, translucent white plastic enclosures. 544 white LEDs, 4 PAL-Lighting upper LED boards with 68 LEDs each and 4 PAL-Lighting lower LED boards with 68 LEDs each.
Two Osram Optotronic Oti 50/120-277/1A4 DIM L LED drivers
120.0Vac, 60.00Hz, 1.376A, 164.5W, 0.997PF, 7.8%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	2870	2870	2870	2870	2870	
5.0	2863	2857	2852	2856	2861	271
10.0	2817	2813	2809	2813	2814	
15.0	2740	2733	2728	2732	2736	770
20.0	2629	2624	2620	2623	2625	
25.0	2497	2492	2487	2489	2492	1147
30.0	2344	2336	2336	2334	2339	
35.0	2172	2169	2172	2166	2166	1357
40.0	1985	1992	1999	1989	1979	
45.0	1794	1809	1818	1806	1787	1394
50.0	1599	1620	1633	1617	1594	
55.0	1405	1430	1443	1426	1400	1276
60.0	1219	1240	1252	1237	1214	
65.0	1033	1052	1060	1049	1027	1038
70.0	846	864	869	861	841	
75.0	664	677	679	674	658	712
80.0	495	497	494	493	488	
85.0	286	307	315	305	283	339
90.0	148	162	164	159	143	

AVERAGE LUMINANCE (cd / m²)

Gamma	C0	C45	C90
45.0	12019	11983	11977
55.0	11413	11448	11367
65.0	11067	10978	11006
75.0	10946	10595	10851
85.0	10945	10602	10801

ZONAL FLUX AND PERCENTAGES

Zone	Flux (lm)	% Lamp	% Luminaire
0-30	2189	N / A	12.0
0-40	3546	N / A	19.4
0-60	6215	N / A	34.0
0-90	8304	N / A	45.4
40-90	4758	N / A	26.0
60-90	2089	N / A	11.4
90-180	9982	N / A	54.6
0-180	18286	N / A	100.0

Total Light Output = 18,286 lm

Signed:

Authorized Signatory

Date of test 17-Sep-2017
Date of report 17-Sep-2017



Test Report No. LLIA000833-007A

Catalog Number: MQS2-I/D-HO/HO-K35-80-3X3-XXX-AL/AL-XXXX-UNV
Pendant mounted, extruded aluminum housing, formed white enamel aluminum reflectors, translucent white plastic enclosures. 544 white LEDs, 4 PAL-Lighting upper LED boards with 68 LEDs each and 4 PAL-Lighting lower LED boards with 68 LEDs each.
Two Osram Optotronic Oti 50/120-277/1A4 DIM L LED drivers
120.0Vac, 60.00Hz, 1.376A, 164.5W, 0.997PF, 7.8%THD(i)

Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
0.0	2870	2870	2870	2870	2870
2.5	2872	2866	2860	2866	2871
5.0	2863	2857	2852	2856	2861
7.5	2844	2838	2834	2837	2842
10.0	2817	2813	2809	2813	2814
12.5	2783	2777	2773	2776	2781
15.0	2740	2733	2728	2732	2736
17.5	2689	2681	2677	2680	2684
20.0	2629	2624	2620	2623	2625
22.5	2566	2561	2556	2559	2561
25.0	2497	2492	2487	2489	2492
27.5	2424	2416	2413	2414	2418
30.0	2344	2336	2336	2334	2339
32.5	2260	2254	2255	2252	2254
35.0	2172	2169	2172	2166	2166
37.5	2080	2082	2087	2079	2074
40.0	1985	1992	1999	1989	1979
42.5	1890	1902	1909	1899	1884
45.0	1794	1809	1818	1806	1787
47.5	1697	1714	1726	1712	1691
50.0	1599	1620	1633	1617	1594
52.5	1502	1525	1539	1521	1496
55.0	1405	1430	1443	1426	1400
57.5	1311	1335	1348	1332	1306
60.0	1219	1240	1252	1237	1214
62.5	1126	1146	1156	1143	1121
65.0	1033	1052	1060	1049	1027
67.5	940	958	964	955	934
70.0	846	864	869	861	841
72.5	755	770	774	767	750
75.0	664	677	679	674	658
77.5	578	586	586	582	571
80.0	495	497	494	493	488
82.5	357	379	400	376	353
85.0	286	307	315	305	283
87.5	226	245	250	242	223
90.0	148	162	164	159	143



Test Report No. LLIA000833-007A

Catalog Number: MQS2-I/D-HO/HO-K35-80-3X3-XXX-AL/AL-XXXX-UNV
Pendant mounted, extruded aluminum housing, formed white enamel aluminum reflectors, translucent white plastic enclosures. 544 white LEDs, 4 PAL-Lighting upper LED boards with 68 LEDs each and 4 PAL-Lighting lower LED boards with 68 LEDs each.
Two Osram Optotronic Oti 50/120-277/1A4 DIM L LED drivers
120.0Vac, 60.00Hz, 1.376A, 164.5W, 0.997PF, 7.8%THD(i)

Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
90.0	148	162	164	159	143
92.5	263	283	287	277	255
95.0	338	359	365	354	331
97.5	417	439	454	434	409
100.0	541	550	550	545	534
102.5	629	643	645	638	622
105.0	723	739	744	734	717
107.5	822	840	845	834	814
110.0	926	944	951	938	921
112.5	1037	1054	1061	1048	1031
115.0	1153	1170	1176	1164	1145
117.5	1274	1290	1292	1285	1267
120.0	1400	1411	1412	1405	1395
122.5	1525	1534	1534	1528	1514
125.0	1645	1659	1659	1654	1638
127.5	1770	1787	1787	1784	1765
130.0	1898	1918	1917	1915	1894
132.5	2033	2049	2053	2048	2023
135.0	2165	2182	2191	2181	2151
137.5	2298	2318	2322	2312	2291
140.0	2437	2452	2452	2447	2426
142.5	2573	2583	2580	2584	2571
145.0	2706	2713	2706	2715	2712
147.5	2840	2838	2829	2837	2843
150.0	2976	2958	2946	2955	2970
152.5	3098	3071	3060	3068	3088
155.0	3204	3179	3167	3176	3194
157.5	3303	3280	3271	3277	3294
160.0	3392	3367	3362	3364	3385
162.5	3469	3446	3439	3442	3463
165.0	3535	3516	3511	3514	3528
167.5	3591	3574	3569	3573	3586
170.0	3638	3623	3617	3621	3635
172.5	3676	3662	3655	3661	3674
175.0	3702	3690	3683	3688	3701
177.5	3717	3706	3700	3706	3717
180.0	3713	3713	3713	3713	3713



Test Number: LLIA000833-007A

Catalog Number: MQS2-I/D-HO/HO-K35-80-3X3-XXX-AL/AL-XXXX-UNV

Pendant mounted, extruded aluminum housing, formed white enamel aluminum reflectors, translucent white plastic enclosures. 544 white LEDs, 4 PAL-Lighting upper LED boards with 68 LEDs each and 4 PAL-Lighting lower LED boards with 68 LEDs each.

Two Osram Optotronic Oti 50/120-277/1A4 DIM L LED drivers
120.0Vac, 60.00Hz, 1.376A, 164.5W, 0.997PF, 7.8%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	10	0
0	106	106	106	106	97	97	97	97	81	81	81	66	66	66	52	52	52	45
1	96	92	87	84	88	84	80	77	70	67	65	57	55	53	45	44	43	37
2	87	80	73	68	80	73	68	63	61	57	53	50	47	44	39	37	35	30
3	79	70	62	56	72	64	57	52	53	48	44	44	40	37	34	32	30	25
4	73	62	53	47	66	57	50	44	47	42	38	39	35	31	31	28	25	22
5	66	55	46	40	61	50	43	38	42	37	32	35	30	27	28	24	22	19
6	61	49	41	35	56	45	38	33	38	32	28	31	27	24	25	22	19	16
7	57	44	36	30	52	41	34	29	34	29	25	28	24	21	23	20	17	14
8	52	40	32	27	48	37	30	25	31	26	22	26	22	19	21	18	15	13
9	49	36	29	24	45	34	27	22	29	23	19	24	20	17	19	16	14	12
10	46	33	26	21	42	31	24	20	26	21	17	22	18	15	18	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.

Height(ft)	Illuminance at Nadir (fc)	Beam Width (across 50% Nadir Illum)	
		0-180	90-270
6.0	79.7	7.30	7.28
8.0	44.8	9.73	9.71
10.0	28.7	12.17	12.14
12.0	19.9	14.60	14.57
14.0	14.6	17.03	17.00
16.0	11.2	19.46	19.42

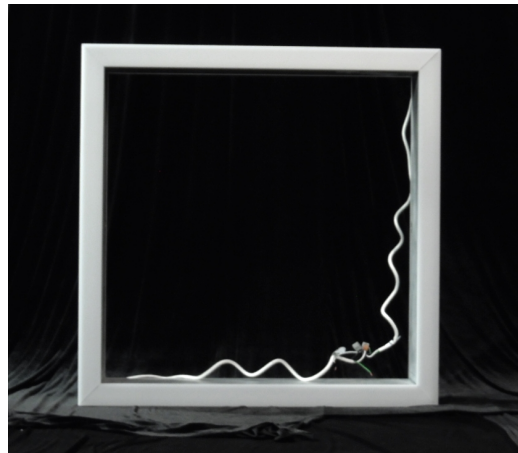


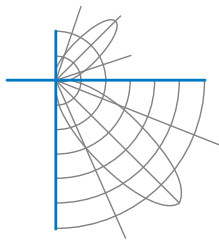
Test Report No. LLIA000833-007A

Catalog Number: MQS2-I/D-HO/HO-K35-80-3X3-XXX-AL/AL-XXXX-UNV

Pendant mounted, extruded aluminum housing, formed white enamel aluminum reflectors, translucent white plastic enclosures. 544 white LEDs, 4 PAL-Lighting upper LED boards with 68 LEDs each and 4 PAL-Lighting lower LED boards with 68 LEDs each.

Two Osram Optotronic Oti 50/120-277/1A4 DIM L LED drivers
120.0Vac, 60.00Hz, 1.376A, 164.5W, 0.997PF, 7.8%THD(i)





Test Report No. LLIA000833-007A

Catalog Number: MQS2-I/D-HO/HO-K35-80-3X3-XXX-AL/AL-XXXX-UNV
Pendant mounted, extruded aluminum housing, formed white enamel aluminum reflectors, translucent white plastic enclosures. 544 white LEDs, 4 PAL-Lighting upper LED boards with 68 LEDs each and 4 PAL-Lighting lower LED boards with 68 LEDs each.
Two Osram Optotronic Oti 50/120-277/1A4 DIM L LED drivers
120.0Vac, 60.00Hz, 1.376A, 164.5W, 0.997PF, 7.8%THD(i)

Test Distance 9.5 m
Test Temperature 25.8 °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.



Report of Test

LLIA000833-007B

Integrating Sphere Report

Catalog Number: MQS2-I/D-HO/HO-K35-80-3X3-XXX-AL/AL-XXXX-UNV

Pendant mounted, extruded aluminum housing, formed white enamel aluminum reflectors, translucent white plastic enclosures. 544 white LEDs, 4 PAL-Lighting upper LED boards with 68 LEDs each and 4 PAL-Lighting lower LED boards with 68 LEDs each.

Two Osram Optotronic Oti 50/120-277/1A4 DIM L LED drivers



Performance Summary

Voltage	120.0 Vac
Current	1.376 A
Power	164.5 W
Frequency	60.00 Hz
Power Factor	0.997
Current THD	7.8 %

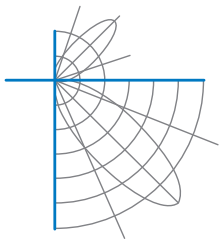
Total Luminous Flux	19532.0 lm
Efficacy	118.7 lm/W
Chromaticity (x,y)	(0.4049, 0.3875)
(u',v')	(0.2368, 0.5099)
Duv	-0.0013
CCT	3481 K
CRI (Ra)	84
R9	14

Prepared For:

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

Test date: 01/00/1900

Report date: 09/15/2017

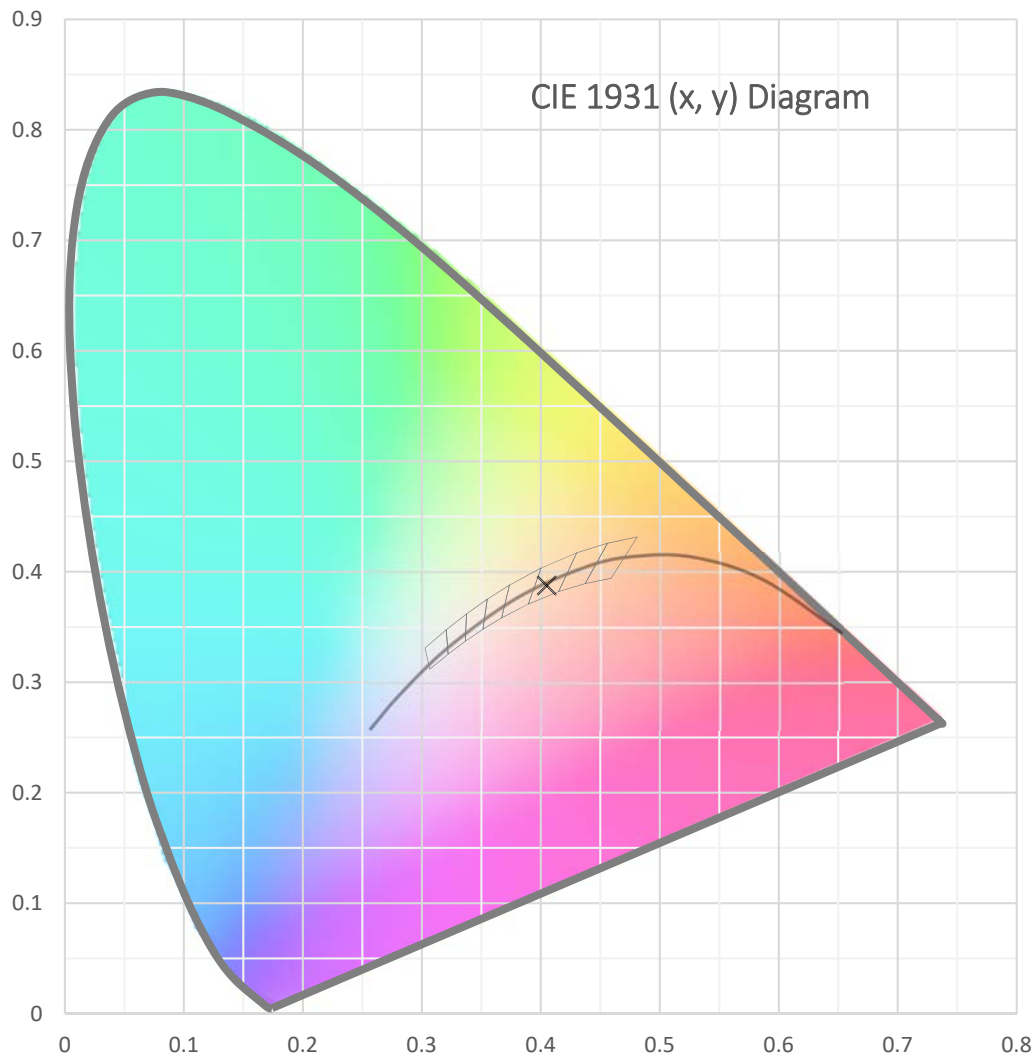


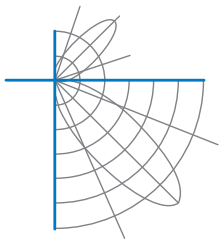
Test Report Number: LLIA000833-007B

Catalog Number: MQS2-I/D-HO/HO-K35-80-3X3-XXX-AL/AL-XXXX-UNV

Pendant mounted, extruded aluminum housing, formed white enamel aluminum reflectors, translucent white plastic enclosures. 544 white LEDs, 4 PAL-Lighting upper LED boards with 68 LEDs each and 4 PAL-Lighting lower LED boards with 68 LEDs each.

Two Osram Optotronic Oti 50/120-277/1A4 DIM L LED drivers



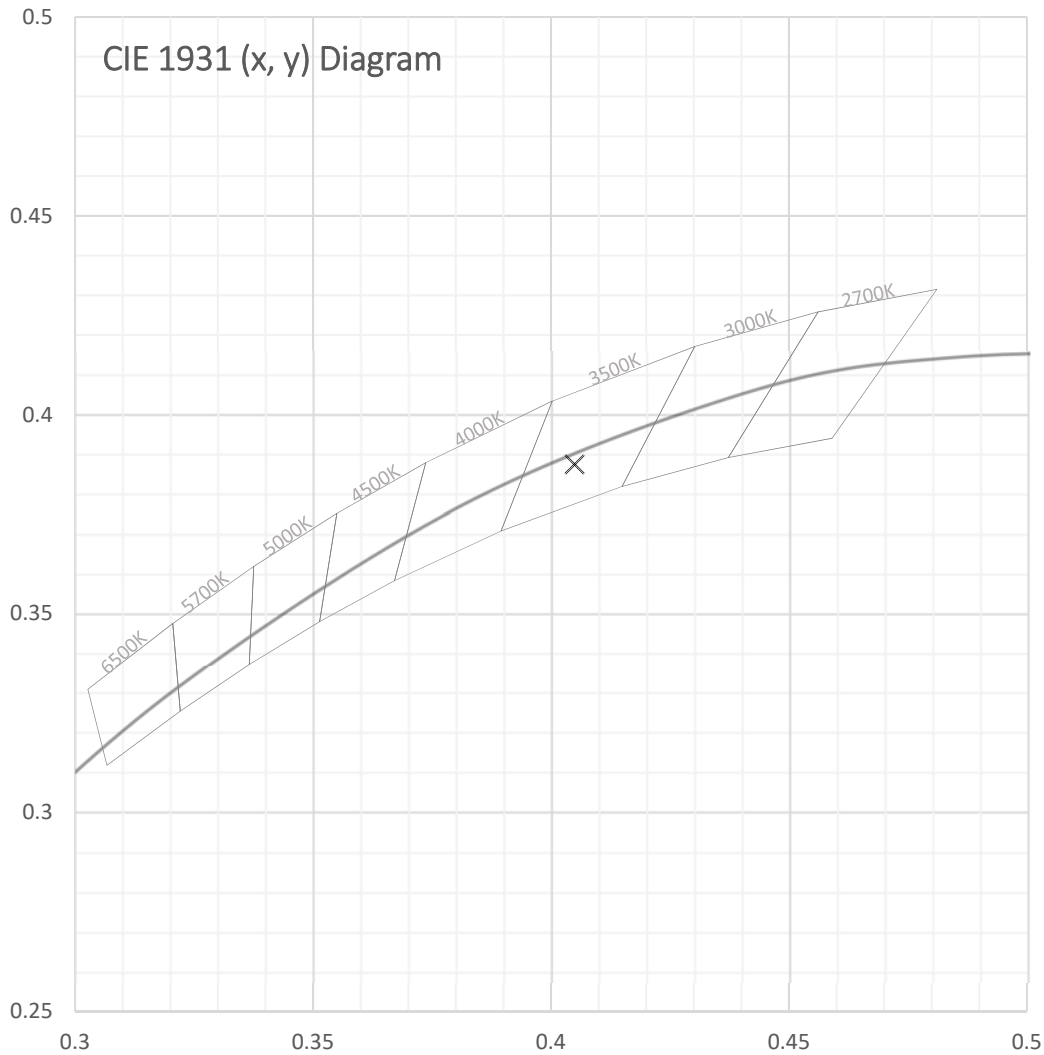


Test Report Number: LLIA000833-007B

Catalog Number: MQS2-I/D-HO/HO-K35-80-3X3-XXX-AL/AL-XXXX-UNV

Pendant mounted, extruded aluminum housing, formed white enamel aluminum reflectors, translucent white plastic enclosures. 544 white LEDs, 4 PAL-Lighting upper LED boards with 68 LEDs each and 4 PAL-Lighting lower LED boards with 68 LEDs each.

Two Osram Optotronic Oti 50/120-277/1A4 DIM L LED drivers





Test Report Number: LLIA000833-007B

Catalog Number: MQS2-I/D-HO/HO-K35-80-3X3-XXX-AL/AL-XXXX-UNV

Pendant mounted, extruded aluminum housing, formed white enamel aluminum reflectors, translucent white plastic enclosures. 544 white LEDs, 4 PAL-Lighting upper LED boards with 68 LEDs each and 4 PAL-Lighting lower LED boards with 68 LEDs each.

Two Osram Optotronic Oti 50/120-277/1A4 DIM L LED drivers

Spectral Data	Total Radiant Flux	60.51 W
	Total Luminous Flux	19532.0 Lm
	Chromaticity CIE 1931 (x, y)	(0.4049, 0.3875)
	Chromaticity CIE 1976 (u', v')	(0.2368, 0.5099)
	Correlated Color Temperature (CCT)	3481 K
	Color Rendering Index (Ra)	84
	R1	82
	R2	91
	R3	96
	R4	81
	R5	82
	R6	88
	R7	85
	R8	64
	R9	14
	R10	79
	R11	80
	R12	66
	R13	85
	R14	98
	Distance from Planckian Locus (Duv)	-0.0013
	Scotopic/Photopic Ratio *	1.539

Electrical Data

Voltage	120.0 Vac
Current	1.376 A
Power	164.5 W
Frequency	60.00 Hz
Power Factor	0.997
Current THD	7.8 %



Test Report Number: LLIA000833-007B

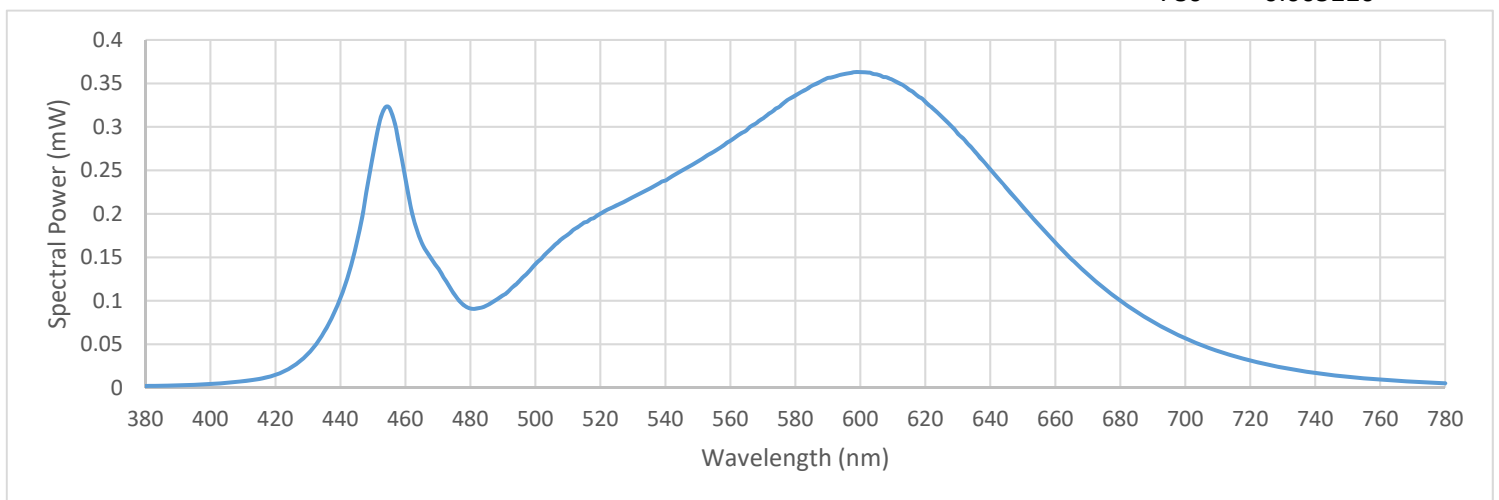
Catalog Number: MQS2-I/D-HO/HO-K35-80-3X3-XXX-AL/AL-XXXX-UNV

Pendant mounted, extruded aluminum housing, formed white enamel aluminum reflectors, translucent white plastic enclosures. 544 white LEDs, 4 PAL-Lighting upper LED boards with 68 LEDs each and 4 PAL-Lighting lower LED boards with 68 LEDs each.

Two Osram Optotronic Oti 50/120-277/1A4 DIM L LED drivers

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

380	0.002106	480	0.091129	580	0.336055	680	0.100165
385	0.002272	485	0.094572	585	0.347266	685	0.087449
390	0.002782	490	0.106297	590	0.356259	690	0.076045
395	0.003390	495	0.122451	595	0.360681	695	0.065689
400	0.004336	500	0.142146	600	0.362871	700	0.056914
405	0.005667	505	0.160669	605	0.360377	705	0.049064
410	0.007451	510	0.176003	610	0.354073	710	0.042253
415	0.010114	515	0.189954	615	0.342722	715	0.036460
420	0.014955	520	0.200241	620	0.328835	720	0.031286
425	0.023751	525	0.209896	625	0.311976	725	0.026888
430	0.039141	530	0.218886	630	0.292230	730	0.023165
435	0.064409	535	0.228438	635	0.272724	735	0.019828
440	0.103122	540	0.238273	640	0.251243	740	0.017048
445	0.166617	545	0.249470	645	0.229457	745	0.014621
450	0.267591	550	0.260099	650	0.207904	750	0.012622
455	0.322138	555	0.271455	655	0.186972	755	0.010866
460	0.240802	560	0.283947	660	0.167259	760	0.009401
465	0.166930	565	0.296157	665	0.147731	765	0.008129
470	0.137918	570	0.309639	670	0.130357	770	0.006967
475	0.107262	575	0.322896	675	0.114550	775	0.006043
						780	0.005220





Test Report Number: LLIA000833-007B

Catalog Number: MQS2-I/D-HO/HO-K35-80-3X3-XXX-AL/AL-XXXX-UNV

Pendant mounted, extruded aluminum housing, formed white enamel aluminum reflectors, translucent white plastic enclosures. 544 white LEDs, 4 PAL-Lighting upper LED boards with 68 LEDs each and 4 PAL-Lighting lower LED boards with 68 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: 25.3 °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.