



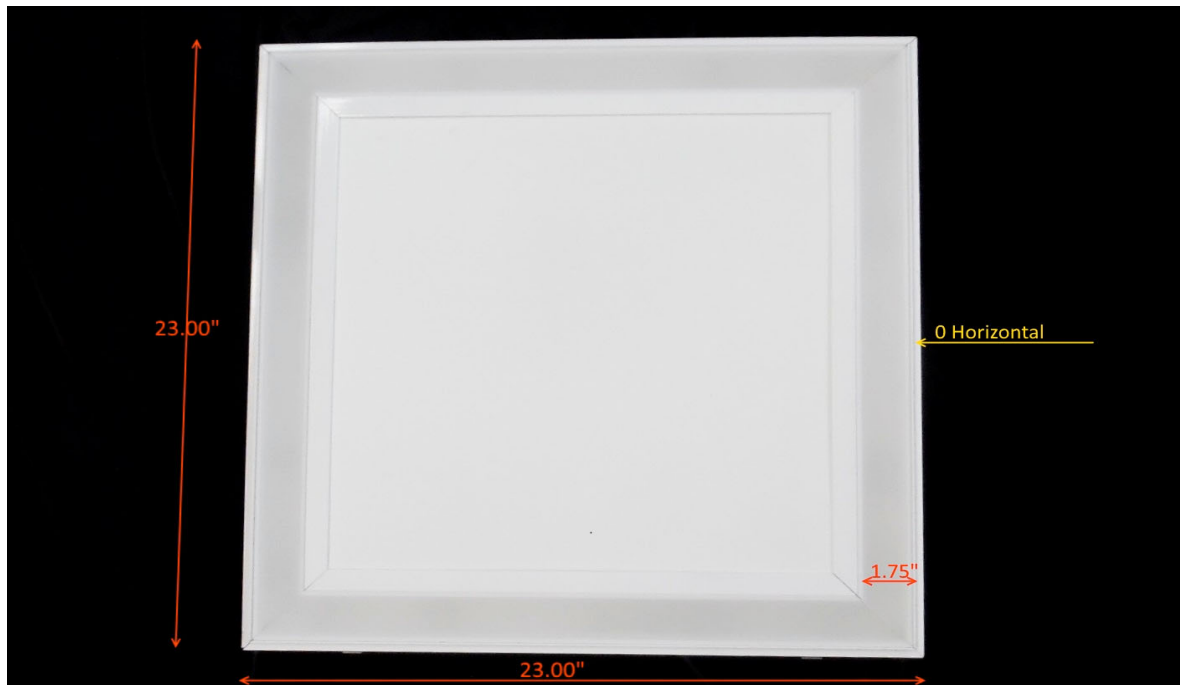
Report of Test

LLIA000817-005A

Catalog Number: MQR2-MO-K35-80-2X2-XX-FL-PPNL/FO1M-UNV
Recessed or suspended, extruded aluminum housing, formed white enamel
aluminum reflectors, translucent white plastic enclosures.

160 white LEDs, 4 boards with 40 LEDs each.

One Osram Optotronic OTi 50/120-277/1A4 DIM L LED driver programmed to 840mA
120.0Vac, 60.00Hz, 0.2670A, 31.94W, 0.997PF, 6.0%THD(i)



Performance Summary

Total Light Output	3461 lm
Luminaire Power	31.9 W
Luminous Efficacy	108.5 lm/W

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



Test Report No. LLIA000817-005A

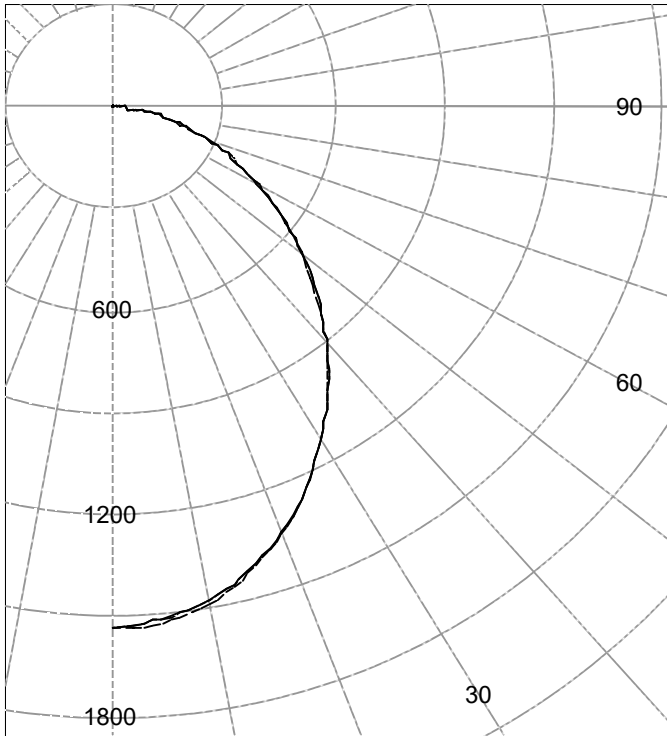
Catalog Number: MQR2-MO-K35-80-2X2-XX-FL-PPNL/FO1M-UNV

Recessed or suspended, extruded aluminum housing, formed white enamel aluminum reflectors, translucent white plastic enclosures.

160 white LEDs, 4 boards with 40 LEDs each.

One Osram Optotronic OTi 50/120-277/1A4 DIM L LED driver programmed to 840mA
120.0Vac, 60.00Hz, 0.2670A, 31.94W, 0.997PF, 6.0%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	1535	1535	1535	1535	1535	
5.0	1516	1523	1527	1523	1516	144
10.0	1478	1484	1488	1484	1478	
15.0	1416	1421	1425	1422	1417	400
20.0	1335	1339	1341	1339	1336	
25.0	1239	1240	1242	1241	1239	570
30.0	1131	1131	1132	1132	1132	
35.0	1017	1016	1017	1017	1018	635
40.0	900	898	898	899	901	
45.0	785	781	781	781	786	604
50.0	671	667	666	667	672	
55.0	560	558	556	558	560	500
60.0	455	455	453	455	455	
65.0	357	357	357	357	357	354
70.0	266	268	267	268	267	
75.0	185	186	186	186	185	198
80.0	111	113	114	113	112	
85.0	48	50	50	50	49	56
90.0	0	0	0	0	0	

AVERAGE LUMINANCE (cd / m²)

Gamma	C0	C45	C90
45.0	11556	11497	11569
55.0	10156	10090	10165
65.0	8787	8781	8798
75.0	7418	7493	7436
85.0	5786	6019	5834

ZONAL FLUX AND PERCENTAGES

Zone	Flux (lm)	% Lamp	% Luminaire
0-30	1114	N / A	32.2
0-40	1750	N / A	50.6
0-60	2853	N / A	82.4
0-90	3461	N / A	100.0
40-90	1711	N / A	49.4
60-90	608	N / A	17.6
90-180	0	N / A	0.0
0-180	3461	N / A	100.0

Total Light Output = 3,461 lm

Spacing Criterion: 0-180 1.1
Spacing Criterion: 90-270 1.1

Signed:

Authorized Signatory

Date of test 9-Jul-2017
Date of report 11-Jul-2017



Test Report No. LLIA000817-005A

Catalog Number: MQR2-MO-K35-80-2X2-XX-FL-PPNL/FO1M-UNV

Recessed or suspended, extruded aluminum housing, formed white enamel
aluminum reflectors, translucent white plastic enclosures.

160 white LEDs, 4 boards with 40 LEDs each.

One Osram Optotronic OTi 50/120-277/1A4 DIM L LED driver programmed to 840mA
120.0Vac, 60.00Hz, 0.2670A, 31.94W, 0.997PF, 6.0%THD(i)

Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
0.0	1535	1535	1535	1535	1535
2.5	1526	1533	1537	1533	1526
5.0	1516	1523	1527	1523	1516
7.5	1500	1507	1510	1507	1500
10.0	1478	1484	1488	1484	1478
12.5	1450	1455	1459	1456	1450
15.0	1416	1421	1425	1422	1417
17.5	1378	1382	1385	1383	1379
20.0	1335	1339	1341	1339	1336
22.5	1289	1291	1293	1292	1289
25.0	1239	1240	1242	1241	1239
27.5	1186	1187	1188	1188	1187
30.0	1131	1131	1132	1132	1132
32.5	1074	1074	1075	1075	1075
35.0	1017	1016	1017	1017	1018
37.5	959	957	958	958	959
40.0	900	898	898	899	901
42.5	843	839	840	840	844
45.0	785	781	781	781	786
47.5	728	723	723	724	729
50.0	671	667	666	667	672
52.5	615	612	610	612	616
55.0	560	558	556	558	560
57.5	506	506	504	506	507
60.0	455	455	453	455	455
62.5	405	405	404	405	405
65.0	357	357	357	357	357
67.5	311	311	311	312	311
70.0	266	268	267	268	267
72.5	225	226	226	226	225
75.0	185	186	186	186	185
77.5	147	148	149	149	147
80.0	111	113	114	113	112
82.5	79	80	81	80	79
85.0	48	50	50	50	49
87.5	21	22	22	22	22
90.0	0	0	0	0	0



Test Number: LLIA000817-005A

Catalog Number: MQR2-MO-K35-80-2X2-XX-FL-PPNL/FO1M-UNV

Recessed or suspended, extruded aluminum housing, formed white enamel
aluminum reflectors, translucent white plastic enclosures.

160 white LEDs, 4 boards with 40 LEDs each.

One Osram Optotronic OTi 50/120-277/1A4 DIM L LED driver programmed to 840mA
120.0Vac, 60.00Hz, 0.2670A, 31.94W, 0.997PF, 6.0%THD(i)

Coefficients Of Utilization - Zonal Cavity Method

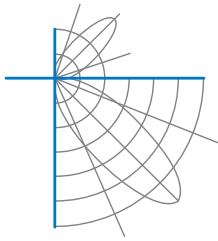
Effective Floor Cavity Reflectance 0.20

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	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	109	105	101	97	107	103	99	96	98	95	93	95	92	90	91	89	87	85
2	100	92	86	80	98	90	84	79	87	82	78	84	79	76	81	77	74	72
3	92	82	74	68	89	80	73	67	77	71	66	74	69	65	72	68	64	62
4	84	73	65	58	82	72	64	58	69	62	57	67	61	56	65	60	55	53
5	78	66	57	51	76	64	56	50	62	55	50	60	54	49	59	53	49	47
6	72	59	51	45	70	58	50	44	57	49	44	55	49	44	53	48	43	41
7	67	54	46	40	65	53	45	40	52	45	39	50	44	39	49	43	39	37
8	63	50	41	36	61	49	41	36	48	40	35	46	40	35	45	39	35	33
9	59	46	38	32	57	45	37	32	44	37	32	43	37	32	42	36	32	30
10	55	42	35	30	54	42	34	29	41	34	29	40	34	29	39	33	29	27

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	42.7	6.68	6.68
8.0	24.0	8.91	8.91
10.0	15.4	11.13	11.14
12.0	10.7	13.36	13.37
14.0	7.8	15.58	15.60
16.0	6.0	17.81	17.83



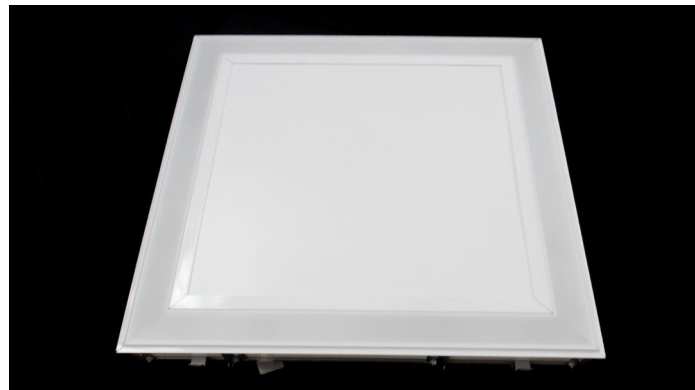
Test Report No. LLIA000817-005A

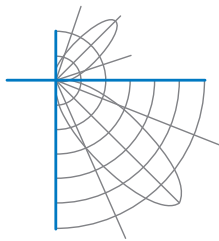
Catalog Number: MQR2-MO-K35-80-2X2-XX-FL-PPNL/FO1M-UNV

Recessed or suspended, extruded aluminum housing, formed white enamel aluminum reflectors, translucent white plastic enclosures.

160 white LEDs, 4 boards with 40 LEDs each.

One Osram Optotronic OTi 50/120-277/1A4 DIM L LED driver programmed to 840mA
120.0Vac, 60.00Hz, 0.2670A, 31.94W, 0.997PF, 6.0%THD(i)





Test Report No. LLIA000817-005A

Catalog Number: MQR2-MO-K35-80-2X2-XX-FL-PPNL/FO1M-UNV

Recessed or suspended, extruded aluminum housing, formed white enamel aluminum reflectors, translucent white plastic enclosures.

160 white LEDs, 4 boards with 40 LEDs each.

One Osram Optotronic OTi 50/120-277/1A4 DIM L LED driver programmed to 840mA
120.0Vac, 60.00Hz, 0.2670A, 31.94W, 0.997PF, 6.0%THD(i)

Test Distance 9.5 m
Test Temperature 25.0 °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

LLIA000817-005B

Integrating Sphere Report

Catalog Number: MQR2-MO-K35-80-2X2-XX-FL-PPNL/FO1M-UNV

Recessed or suspended, extruded aluminum housing, formed white enamel
aluminum reflectors, translucent white plastic enclosures.

160 white LEDs, 4 boards with 40 LEDs each.

One Osram Optotronic OTi 50/120-277/1A4 DIM L LED driver programmed to 840mA



Performance Summary

Voltage	120.0 Vac
Current	0.2670 A
Power	31.94 W
Frequency	60.00 Hz
Power Factor	0.997
Current THD	6.0 %

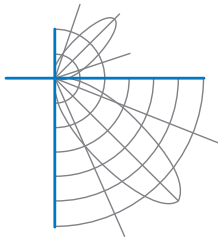
Total Luminous Flux	3561.6 lm
Efficacy	111.5 lm/W
Chromaticity (x,y)	(0.4068, 0.3876)
(u',v')	(0.2380, 0.5102)
Duv	-0.0017
CCT	3441 K
CRI (Ra)	84
R9	17

Prepared For:

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

Test date: 07/07/2017

Report date: 07/11/2017



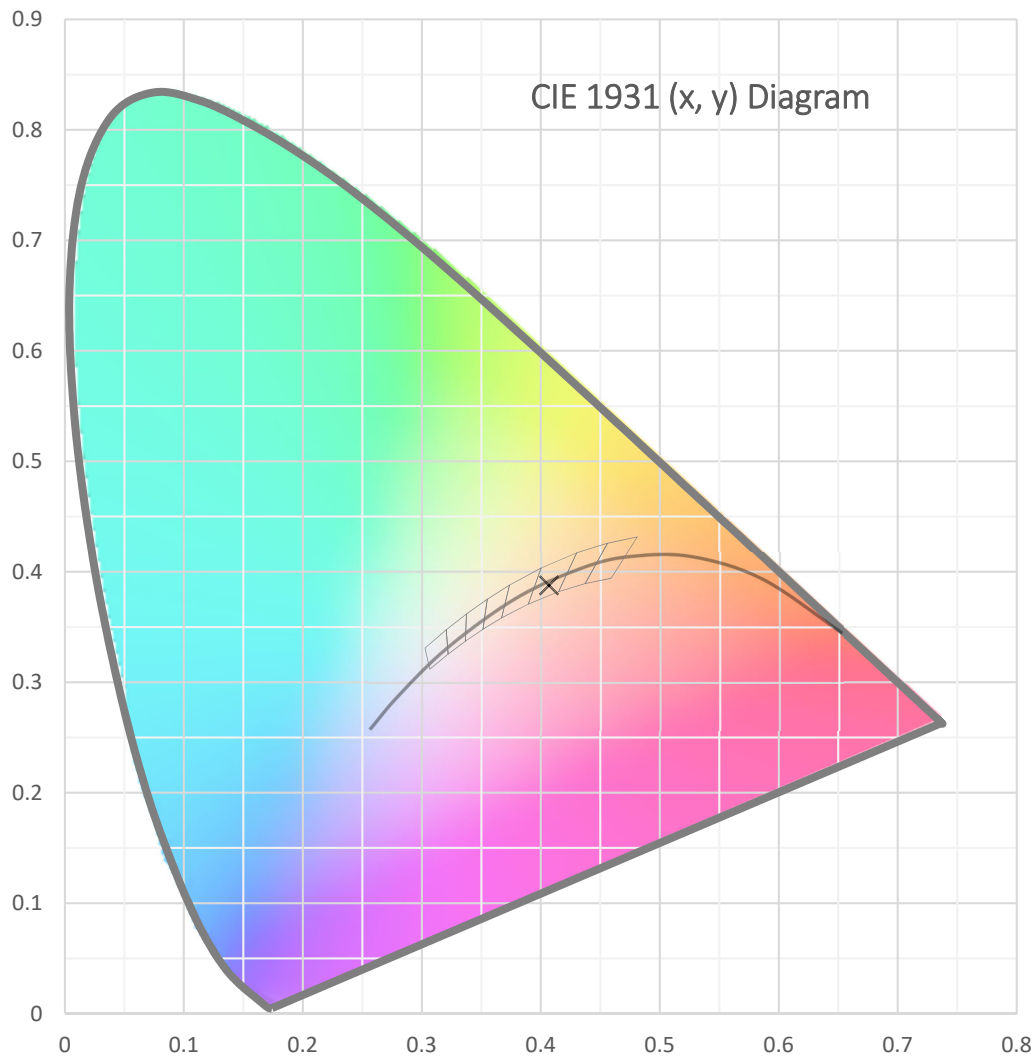
Test Report Number: LLIA000817-005B

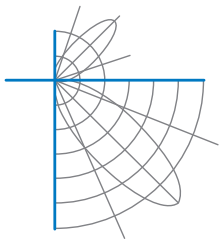
Catalog Number: MQR2-MO-K35-80-2X2-XX-FL-PPNL/FO1M-UNV

Recessed or suspended, extruded aluminum housing, formed white enamel
aluminum reflectors, translucent white plastic enclosures.

160 white LEDs, 4 boards with 40 LEDs each.

One Osram Optotronic OTi 50/120-277/1A4 DIM L LED driver programmed to 840mA





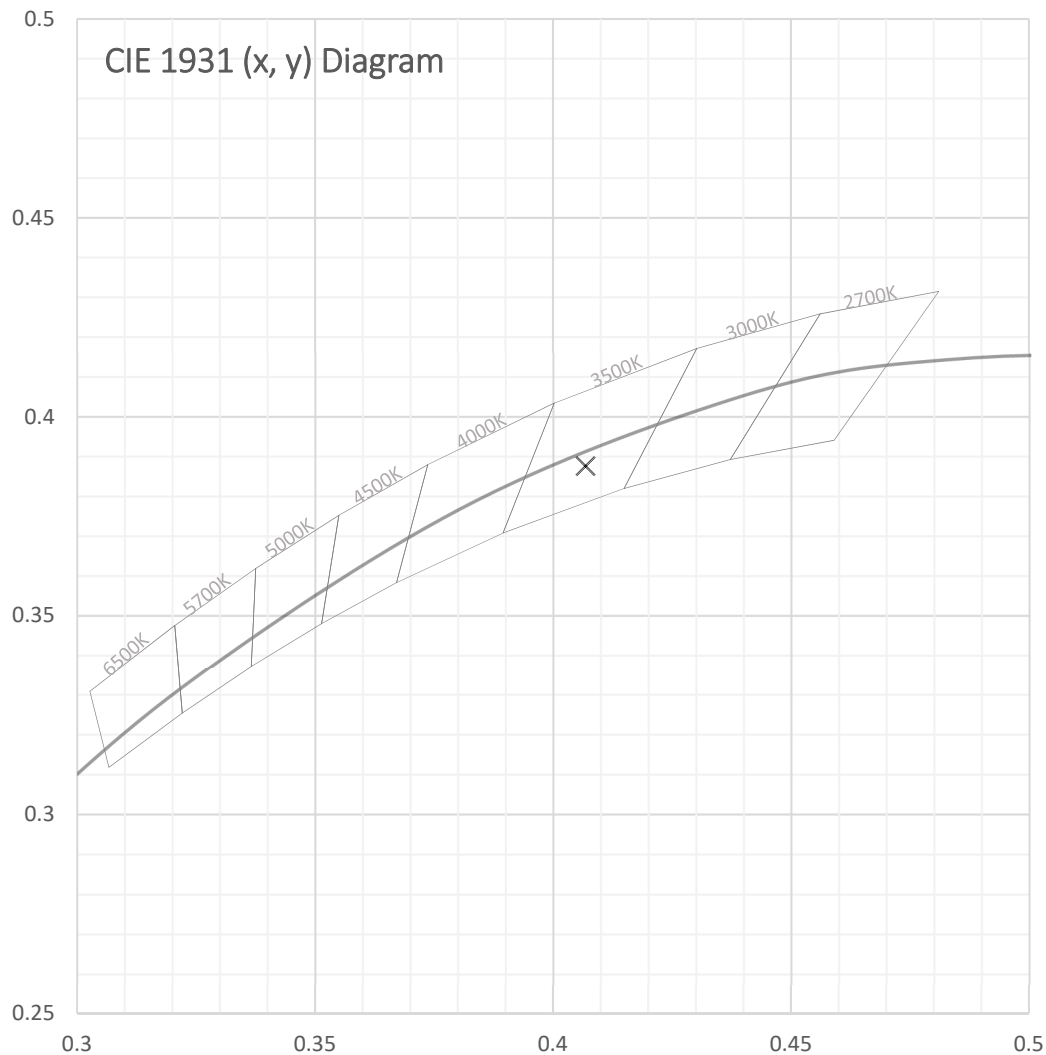
Test Report Number: LLIA000817-005B

Catalog Number: MQR2-MO-K35-80-2X2-XX-FL-PPNL/FO1M-UNV

Recessed or suspended, extruded aluminum housing, formed white enamel
aluminum reflectors, translucent white plastic enclosures.

160 white LEDs, 4 boards with 40 LEDs each.

One Osram Optotronic OTi 50/120-277/1A4 DIM L LED driver programmed to 840mA





Test Report Number: LLIA000817-005B

Catalog Number: MQR2-MO-K35-80-2X2-XX-FL-PPNL/FO1M-UNV

Recessed or suspended, extruded aluminum housing, formed white enamel
aluminum reflectors, translucent white plastic enclosures.

160 white LEDs, 4 boards with 40 LEDs each.

One Osram Optotronic OTi 50/120-277/1A4 DIM L LED driver programmed to 840mA

Spectral Data

Total Radiant Flux	11.12 W
Total Luminous Flux	3561.6 Lm
Chromaticity CIE 1931 (x, y)	(0.4068, 0.3876)
Chromaticity CIE 1976 (u', v')	(0.2380, 0.5102)
Correlated Color Temperature (CCT)	3441 K
Color Rendering Index (Ra)	84
R1	83
R2	92
R3	96
R4	82
R5	83
R6	88
R7	85
R8	65
R9	17
R10	80
R11	80
R12	66
R13	85
R14	98
Distance from Planckian Locus (Duv)	-0.0017
Scotopic/Photopic Ratio *	1.530

Electrical Data

Voltage	120.0 Vac
Current	0.2670 A
Power	31.94 W
Frequency	60.00 Hz
Power Factor	0.997
Current THD	6.0 %



Test Report Number: LLIA000817-005B

Catalog Number: MQR2-MO-K35-80-2X2-XX-FL-PPNL/FO1M-UNV

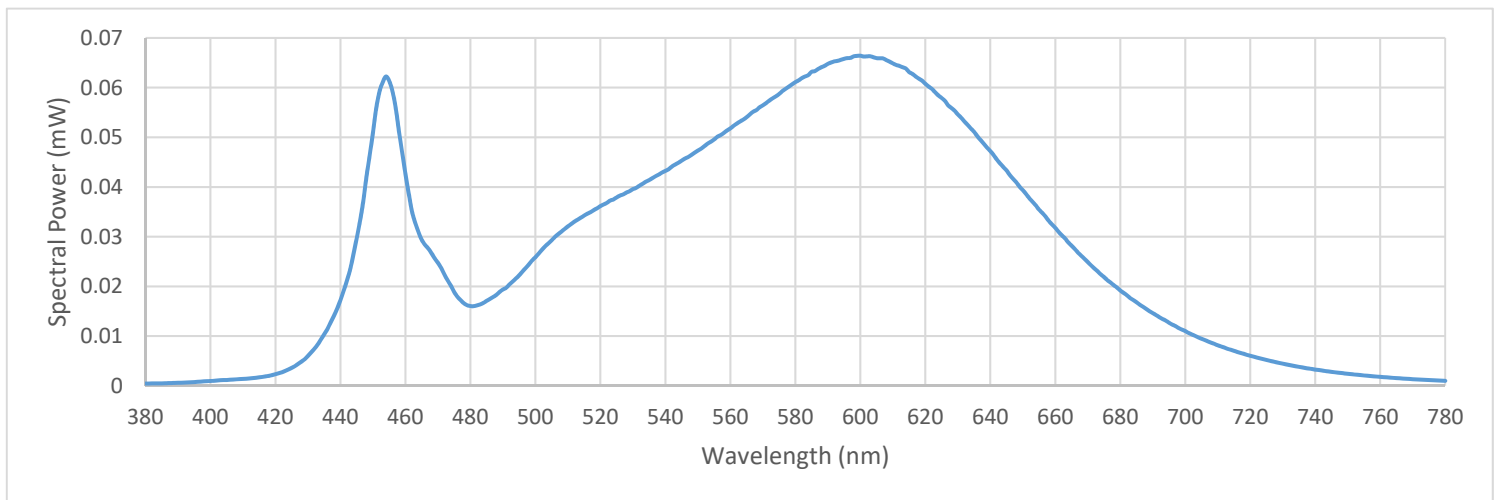
Recessed or suspended, extruded aluminum housing, formed white enamel
aluminum reflectors, translucent white plastic enclosures.

160 white LEDs, 4 boards with 40 LEDs each.

One Osram Optotronic OTi 50/120-277/1A4 DIM L LED driver programmed to 840mA

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

380	0.000457	480	0.016044	580	0.061097	680	0.019174
385	0.000488	485	0.017096	585	0.063177	685	0.016802
390	0.000605	490	0.019380	590	0.064782	690	0.014611
395	0.000752	495	0.022226	595	0.065795	695	0.012681
400	0.000971	500	0.025879	600	0.066411	700	0.011005
405	0.001172	505	0.029281	605	0.065936	705	0.009473
410	0.001382	510	0.032078	610	0.064872	710	0.008149
415	0.001693	515	0.034244	615	0.063138	715	0.007043
420	0.002326	520	0.036161	620	0.060787	720	0.006045
425	0.003599	525	0.037905	625	0.057927	725	0.005187
430	0.006004	530	0.039574	630	0.054614	730	0.004450
435	0.010345	535	0.041388	635	0.051112	735	0.003818
440	0.017244	540	0.043237	640	0.047223	740	0.003251
445	0.029665	545	0.045304	645	0.043333	745	0.002808
450	0.050922	550	0.047323	650	0.039361	750	0.002415
455	0.061348	555	0.049559	655	0.035449	755	0.002075
460	0.042639	560	0.051793	660	0.031782	760	0.001793
465	0.029408	565	0.054054	665	0.028203	765	0.001545
470	0.024752	570	0.056445	670	0.024898	770	0.001328
475	0.018884	575	0.058711	675	0.021877	775	0.001145
						780	0.000991





Test Report Number: LLIA000817-005B

Catalog Number: MQR2-MO-K35-80-2X2-XX-FL-PPNL/FO1M-UNV

Recessed or suspended, extruded aluminum housing, formed white enamel
aluminum reflectors, translucent white plastic enclosures.

160 white LEDs, 4 boards with 40 LEDs each.

One Osram Optotronic OTi 50/120-277/1A4 DIM L LED driver programmed to 840mA

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: 24.8 °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.



Report of Test

LLIA000817-005C

Electrical Test Report

Catalog Number: MQR2-MO-K35-80-2X2-XX-FL-PPNL/FO1M-UNV

Recessed or suspended, extruded aluminum housing, formed white enamel
aluminum reflectors, translucent white plastic enclosures.

160 white LEDs, 4 boards with 40 LEDs each.

One Osram Optotronic OTi 50/120-277/1A4 DIM L LED driver programmed to 840mA



Performance Summary

Voltage	277.0 Vac
Current	0.1250 A
Power	32.97 W
Frequency	60.00 Hz
Power Factor	0.952
Current THD	15.1 %
 Ambient Temperature:	 25.0 °C

Prepared For:

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

Tested in accordance with the applicable sections of C82.77-10-2014. 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. 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.

Test date: 07/07/2017

Report date: 07/11/2017

Electrical Report Template V1-2