



Report of Test

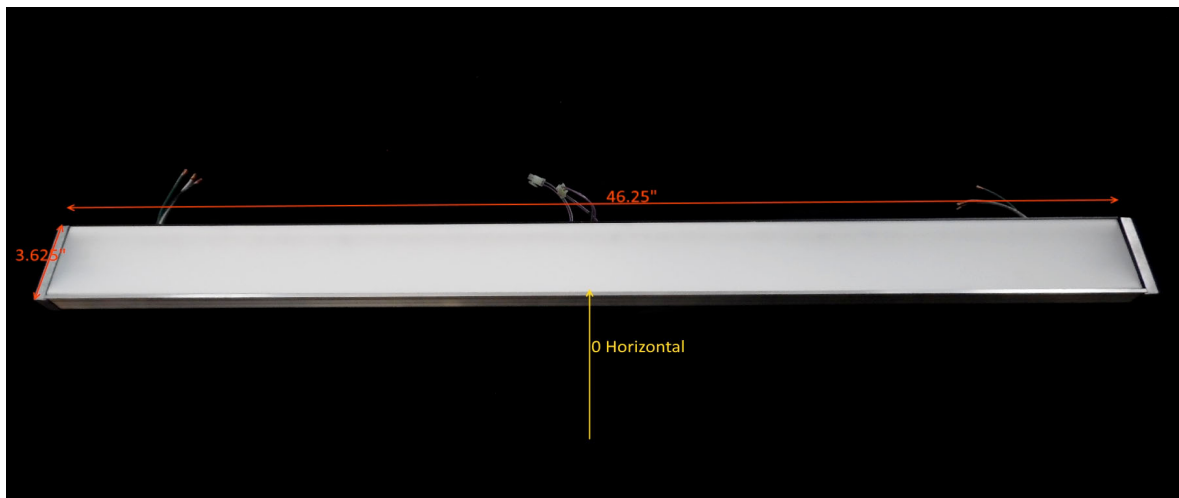
LLIA000817-004A

Catalog Number: PPXX-HO-K40-4-W-XX-UNV-FDC

Wall mounted, extruded aluminum housing with cast aluminum endcaps,
formed white enamel aluminum reflector, translucent white plastic enclosure.

92 white LEDs

One Osram Optotronic OTi 30/120-277/1A0 DIM L LED driver programmed to 720mA
120.0Vac, 60.00Hz, 0.2321A, 27.77W, 0.997PF, 5.9%THD(i)



Performance Summary

Total Light Output	3616 lm
Luminaire Power	27.8 W
Luminous Efficacy	130.1 lm/W

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



Test Report No. LLIA000817-004A

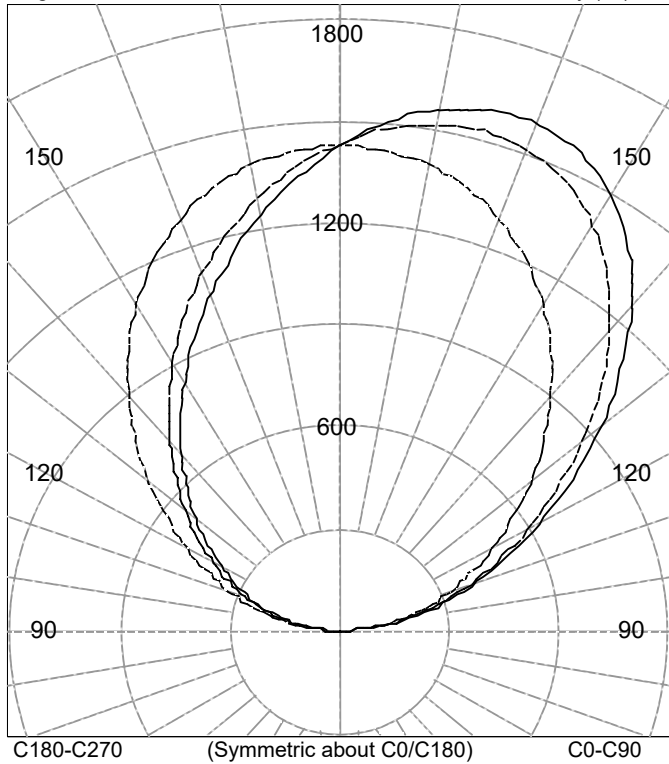
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Legend: C0/C180-Solid, C45/C225-Dashed, C90/C270-Grey (cd)



INTENSITY SUMMARY (cd)

Gamma	C-Plane					Flux (lm)
	C0	C22.5	C45	C67.5	C90	
90.0	0	0	0	0	1	
95.0	84	84	83	81	78	83
100.0	177	175	171	164	154	
105.0	274	272	263	250	231	245
110.0	380	374	361	341	310	
115.0	497	489	473	438	392	397
120.0	627	616	591	541	479	
125.0	771	758	721	651	574	531
130.0	927	914	861	771	676	
135.0	1086	1072	1005	896	785	628
140.0	1239	1222	1144	1021	896	
145.0	1374	1354	1272	1138	1006	649
150.0	1481	1459	1379	1243	1110	
155.0	1553	1531	1459	1330	1205	565
160.0	1588	1568	1506	1396	1287	
165.0	1589	1573	1524	1435	1350	383
170.0	1560	1550	1515	1452	1394	
175.0	1505	1501	1485	1448	1420	135
180.0	1431	1431	1431	1431	1431	

ZONAL FLUX AND PERCENTAGES

Zone	Flux (lm)	% Lamp	% Luminaire
180-150	1084	N / A	30.0
180-140	1732	N / A	47.9
180-120	2892	N / A	80.0
180-90	3616	N / A	100.0
140-90	1884	N / A	52.1
120-90	725	N / A	20.0
90-0	0	N / A	0.0
180-0	3616	N / A	100.0

Total Light Output = 3,616 lm

Signed:

Authorized Signatory

Date of test

7-Jul-2017

Date of report

11-Jul-2017



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Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
90.0	0	0	0	0	1
92.5	39	40	39	39	38
95.0	84	84	83	81	78
97.5	130	129	127	122	116
100.0	177	175	171	164	154
102.5	225	225	216	206	192
105.0	274	272	263	250	231
107.5	326	324	311	294	270
110.0	380	374	361	341	310
112.5	436	430	415	389	351
115.0	497	489	473	438	392
117.5	560	551	529	488	435
120.0	627	616	591	541	479
122.5	698	685	655	596	526
125.0	771	758	721	651	574
127.5	848	835	791	710	624
130.0	927	914	861	771	676
132.5	1007	993	933	833	730
135.0	1086	1072	1005	896	785
137.5	1164	1149	1075	959	840
140.0	1239	1222	1144	1021	896
142.5	1309	1291	1210	1081	951
145.0	1374	1354	1272	1138	1006
147.5	1431	1410	1329	1192	1059
150.0	1481	1459	1379	1243	1110
152.5	1521	1499	1423	1289	1159
155.0	1553	1531	1459	1330	1205
157.5	1575	1554	1487	1366	1248
160.0	1588	1568	1506	1396	1287
162.5	1593	1575	1518	1419	1321
165.0	1589	1573	1524	1435	1350
167.5	1578	1565	1523	1447	1374
170.0	1560	1550	1515	1452	1394
172.5	1535	1528	1503	1453	1409
175.0	1505	1501	1485	1448	1420
177.5	1470	1469	1462	1439	1427
180.0	1431	1431	1431	1431	1431



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Intensity data (cd)

Gamma	C-Plane				
	C90	C112.5	C135	C157.5	C180
90.0	1	1	1	1	1
92.5	38	37	35	34	33
95.0	78	73	69	67	66
97.5	116	109	103	99	97
100.0	154	144	136	131	128
102.5	192	179	168	162	159
105.0	231	215	200	192	189
107.5	270	250	233	223	219
110.0	310	286	265	253	250
112.5	351	323	298	284	280
115.0	392	359	332	315	311
117.5	435	396	365	347	343
120.0	479	433	400	380	375
122.5	526	472	436	413	408
125.0	574	511	473	448	442
127.5	624	553	511	483	477
130.0	676	596	550	520	513
132.5	730	640	590	559	550
135.0	785	687	633	598	589
137.5	840	735	676	640	629
140.0	896	784	721	682	670
142.5	951	835	767	726	713
145.0	1006	885	814	771	757
147.5	1059	936	863	817	801
150.0	1110	987	913	864	848
152.5	1159	1038	963	913	895
155.0	1205	1087	1012	962	943
157.5	1248	1134	1062	1012	993
160.0	1287	1180	1111	1062	1042
162.5	1321	1223	1159	1112	1093
165.0	1350	1262	1206	1162	1143
167.5	1374	1298	1250	1212	1194
170.0	1394	1331	1293	1260	1244
172.5	1409	1360	1334	1307	1293
175.0	1420	1386	1371	1353	1340
177.5	1427	1408	1406	1395	1385
180.0	1431	1431	1431	1431	1431



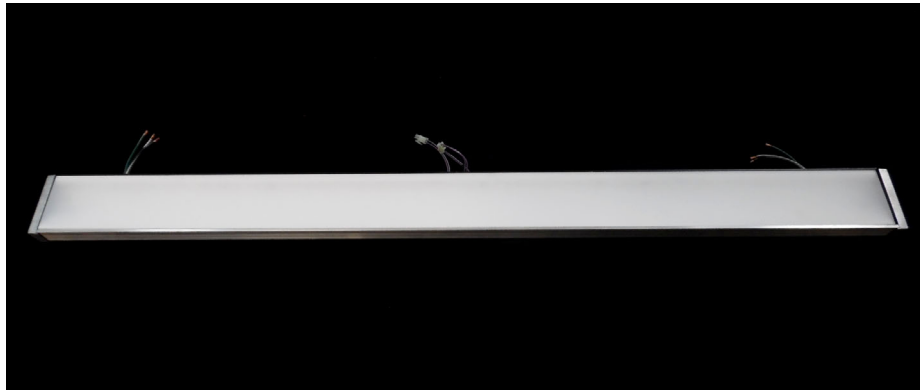
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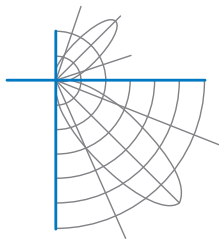
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120.0Vac, 60.00Hz, 0.2321A, 27.77W, 0.997PF, 5.9%THD(i)





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120.0Vac, 60.00Hz, 0.2321A, 27.77W, 0.997PF, 5.9%THD(i)

Test Distance 9.5 m
Test Temperature 25.1 °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

LLIA000817-004B

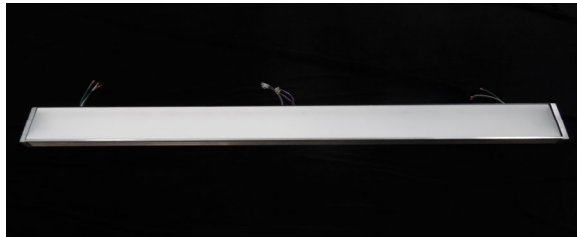
Integrating Sphere Report

Catalog Number: PPXX-HO-K40-4-W-XX-UNV-FDC

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92 white LEDs

One Osram Optotronic OTi 30/120-277/1A0 DIM L LED driver programmed to 720mA



Performance Summary

Voltage	120.0 Vac
Current	0.2322 A
Power	27.77 W
Frequency	60.00 Hz
Power Factor	0.997
Current THD	5.9 %

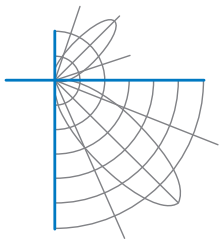
Total Luminous Flux	3733.3 lm
Efficacy	134.4 lm/W
Chromaticity (x,y)	(0.3830, 0.3814)
(u',v')	(0.2250, 0.5040)
Duv	0.0014
CCT	3965 K
CRI (Ra)	84
R9	17

Prepared For:

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

Test date: 07/09/2017

Report date: 07/10/2017



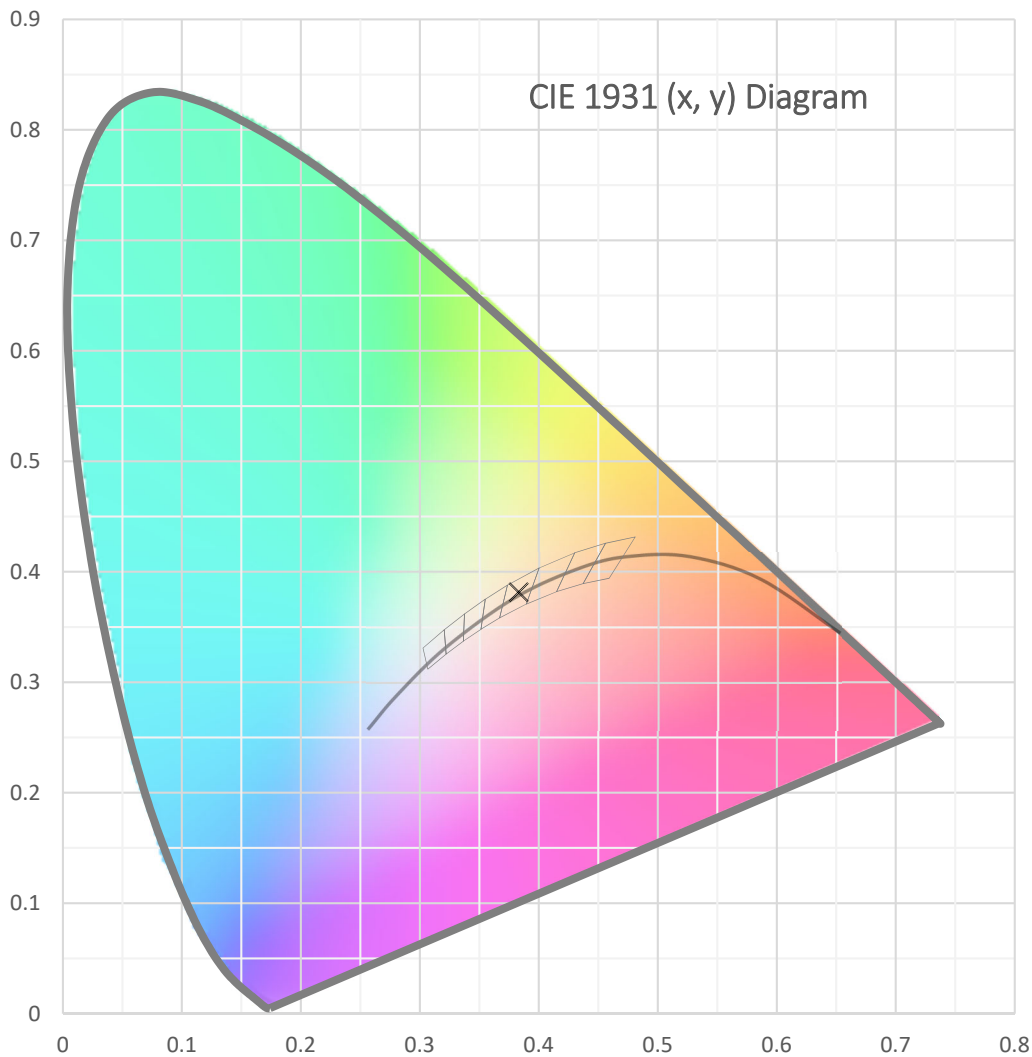
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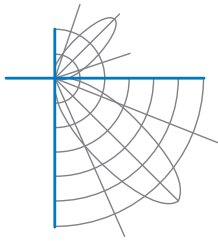
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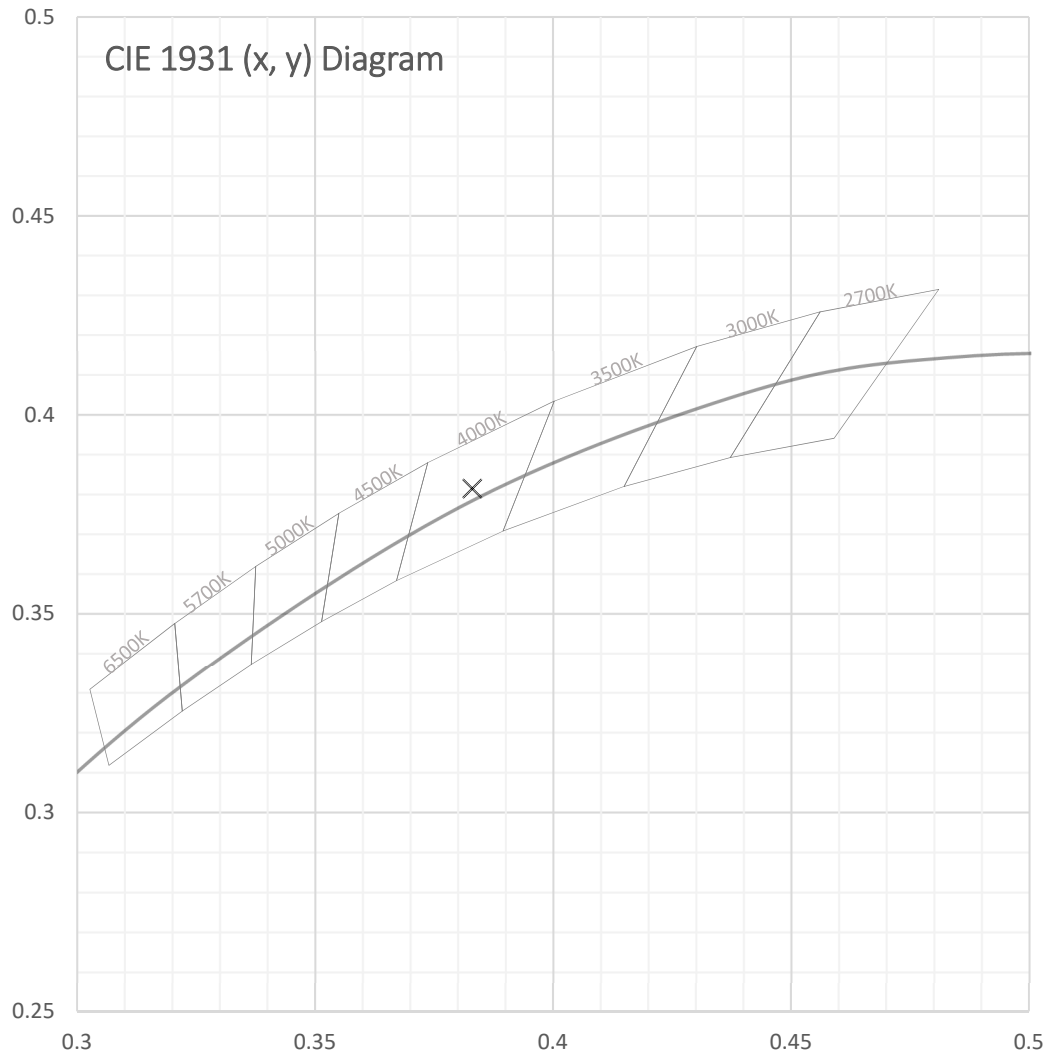
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Spectral Data	Total Radiant Flux	11.58 W
	Total Luminous Flux	3733.3 Lm
	Chromaticity CIE 1931 (x, y)	(0.3830, 0.3814)
	Chromaticity CIE 1976 (u', v')	(0.2250, 0.5040)
	Correlated Color Temperature (CCT)	3965 K
	Color Rendering Index (Ra)	84
	R1	83
	R2	91
	R3	96
	R4	82
	R5	82
	R6	86
	R7	87
	R8	67
	R9	17
	R10	77
	R11	80
	R12	60
	R13	85
	R14	98
	Distance from Planckian Locus (Duv)	0.0014
	Scotopic/Photopic Ratio *	1.698

Electrical Data

Voltage	120.0 Vac
Current	0.2322 A
Power	27.77 W
Frequency	60.00 Hz
Power Factor	0.997
Current THD	5.9 %



Test Report Number: LLIA000817-004B

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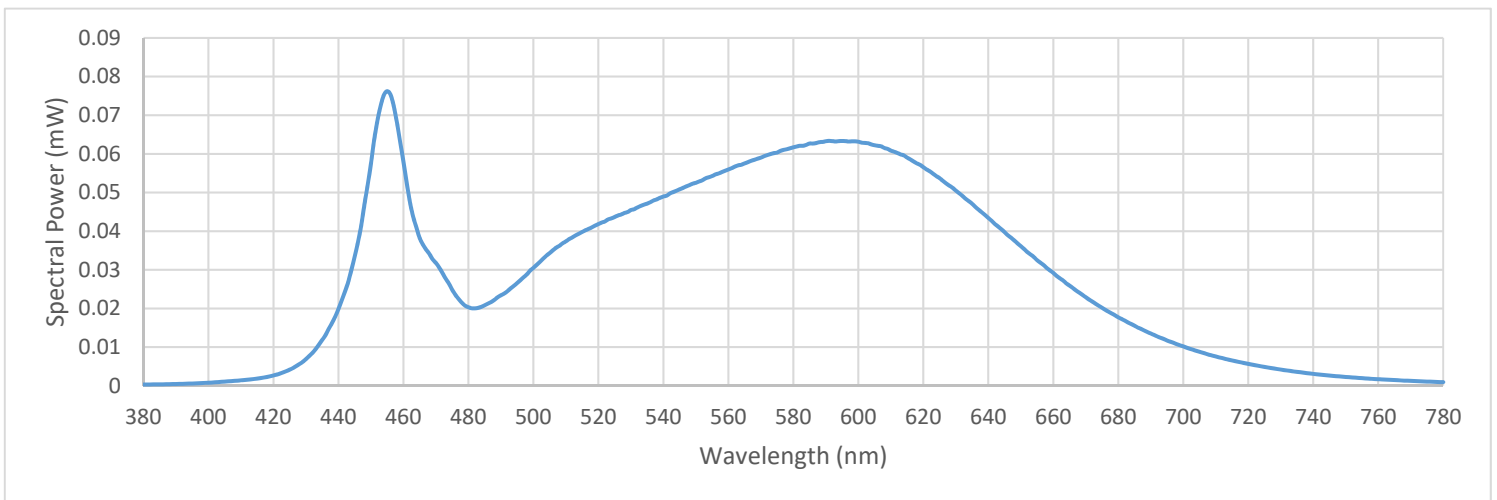
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Summary Spectral Power Distribution (wavelength - nm, spectral power - mW)

380	0.000338	480	0.020327	580	0.061694	680	0.017710
385	0.000365	485	0.020832	585	0.062683	685	0.015550
390	0.000456	490	0.023409	590	0.063266	690	0.013520
395	0.000595	495	0.026570	595	0.063323	695	0.011724
400	0.000800	500	0.030496	600	0.063143	700	0.010197
405	0.001079	505	0.034329	605	0.062227	705	0.008789
410	0.001423	510	0.037366	610	0.060844	710	0.007578
415	0.001862	515	0.039793	615	0.059050	715	0.006561
420	0.002679	520	0.041838	620	0.056580	720	0.005659
425	0.004175	525	0.043679	625	0.053737	725	0.004880
430	0.006918	530	0.045461	630	0.050507	730	0.004202
435	0.011855	535	0.047135	635	0.047117	735	0.003606
440	0.019896	540	0.048966	640	0.043440	740	0.003084
445	0.033455	545	0.050839	645	0.039754	745	0.002656
450	0.057463	550	0.052526	650	0.036129	750	0.002289
455	0.076216	555	0.054263	655	0.032508	755	0.001975
460	0.057980	560	0.055969	660	0.029196	760	0.001712
465	0.038237	565	0.057538	665	0.025917	765	0.001470
470	0.031790	570	0.059037	670	0.022902	770	0.001264
475	0.024869	575	0.060345	675	0.020205	775	0.001093
						780	0.000944





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One Osram Optotronic OTi 30/120-277/1A0 DIM L LED driver programmed to 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: 25.2 °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.

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Quantities marked with * are not covered.



Report of Test

LLIA000817-004C

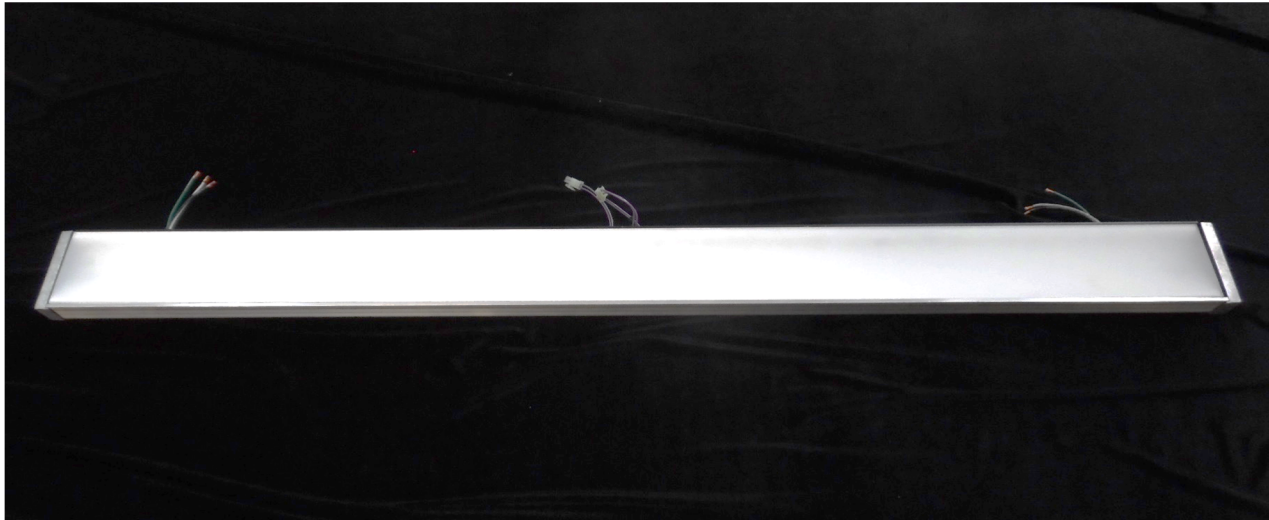
ISTM Report

Catalog Number: PPXX-HO-K40-4-W-XX-UNV-FDC

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

This test report was issued by LightLab International Allentown, LLC without alterations or erasures.

Test date: 07/10/2017

Report date: 07/11/2017



Test Report Number: LLIA000817-004C

Catalog Number: PPXX-HO-K40-4-W-XX-UNV-FDC

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- Purpose of Test:** To determine the in-situ temperature of the specified LED Ts point and driver Tc point. In this test, in-situ temperature refers to standard laboratory conditions with the luminaire configured in accordance with appropriate sections of UL1598-2008
- Luminaire Mounting:** Surface/Wall
- LED Test Point:** Thermocouples were attached to the LED case temperature point (Ts) as specified by report number SQETMP098101, issued 04/12/2016 by Nichia Corporation LED Testing Laboratory. The measured LED was selected according to guidance provided by DLC and ENERGY STAR for lumen maintenance projection.
- Driver Test Point:** Thermocouples were attached to the driver case in the location (Tc) designated by the manufacturer.
- Sample Selection:** LightLab International Allentown. LLC has not participated in the selection of sample(s) being tested. Testing is performed on the understanding that the significance of the report is limited to the extent to which the sample is representative of production units.
- Disclaimer:** 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.
- Procedure:** In-situ temperature measurements were performed with the luminaire mounted vertically, on a simulated wall. The luminaire supply voltage and frequency was set according to the luminaire manufacturer's instructions. The luminaire was allowed to reach stabilization as defined in UL1598-2008 prior to reported measurements. Testing was performed in a draft-free, temperature-controlled environment with an ambient temperature of 25 +/- 5 °C.
- Test Equipment:** GW Instek APS-7100 AC Power Source
Xitron 2801 Power Analyzer
Fluke 52-ii Thermometer



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Electrical Measurements

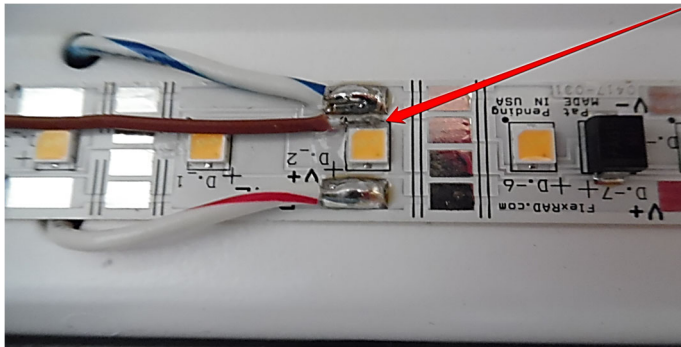
Voltage	120.0 Vac
Current	0.2326 A
Power	27.83 W
Frequency	60.0 Hz
Power Factor	0.997
Current THD	6.0 %
Driver #1 Output	0.719 Adc

Temperature Measurements

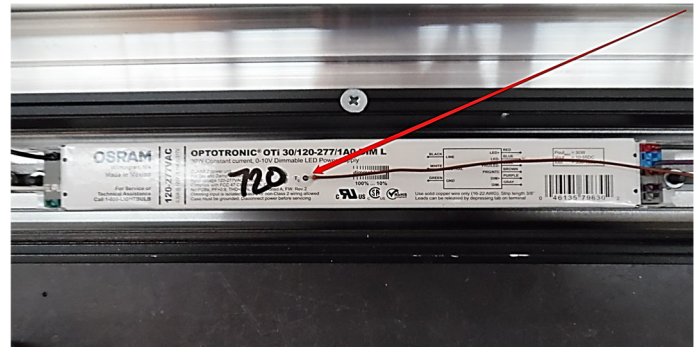
LED #1 (Ts)	40.2°C	Driver #1 (Tc)	40.7°C
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*The above temperatures have been normalized to 25°C ambient.

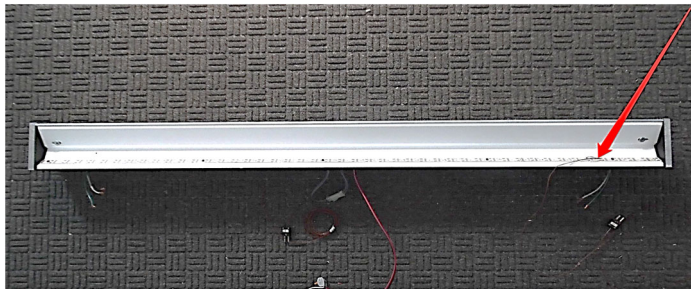
Measured Ambient Temperature (Ta) 24.2°C



LED Thermocouple Location



Driver Thermocouple Location



Selected LED Location