



Report of Test

LLIA001159-010A

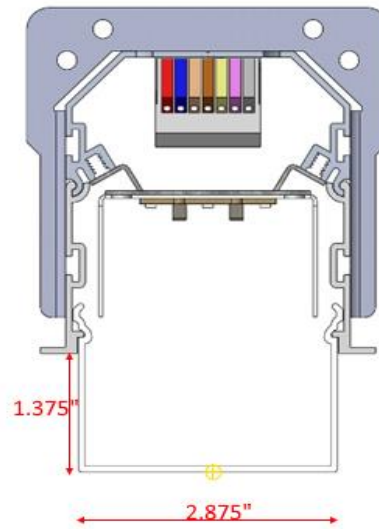
Indoor Distribution Photometry Test Report

Catalog Number: MLR3-MO-K35-80-4-XX-AL2-UNV

Recessed ceiling mounted, extruded aluminum housing with steel endcaps,
formed white enamel aluminum reflector, translucent white plastic enclosure.

144 white LEDs, One Osram PrevaLED Bar LED board.

One Osram Optotronic OTi 20/120-277/700 DIM-1 L G2 LED driver labeled as 380mA



Prepared For:

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

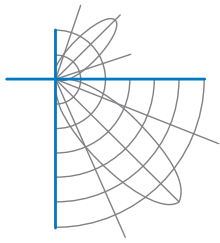
Performance Summary			
Input Voltage	120.0 V	Luminous Flux	2680.0 Lumens
Input Current	0.1832 A	Total Efficacy	122.8 Lm/W
Input Power	21.83 W	Downward Flux	2243.6 Lumens
Frequency	60.00 Hz	Downward Flux	83.7 % of Total
Power Factor	0.993		
Current THD	5.5 %		

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

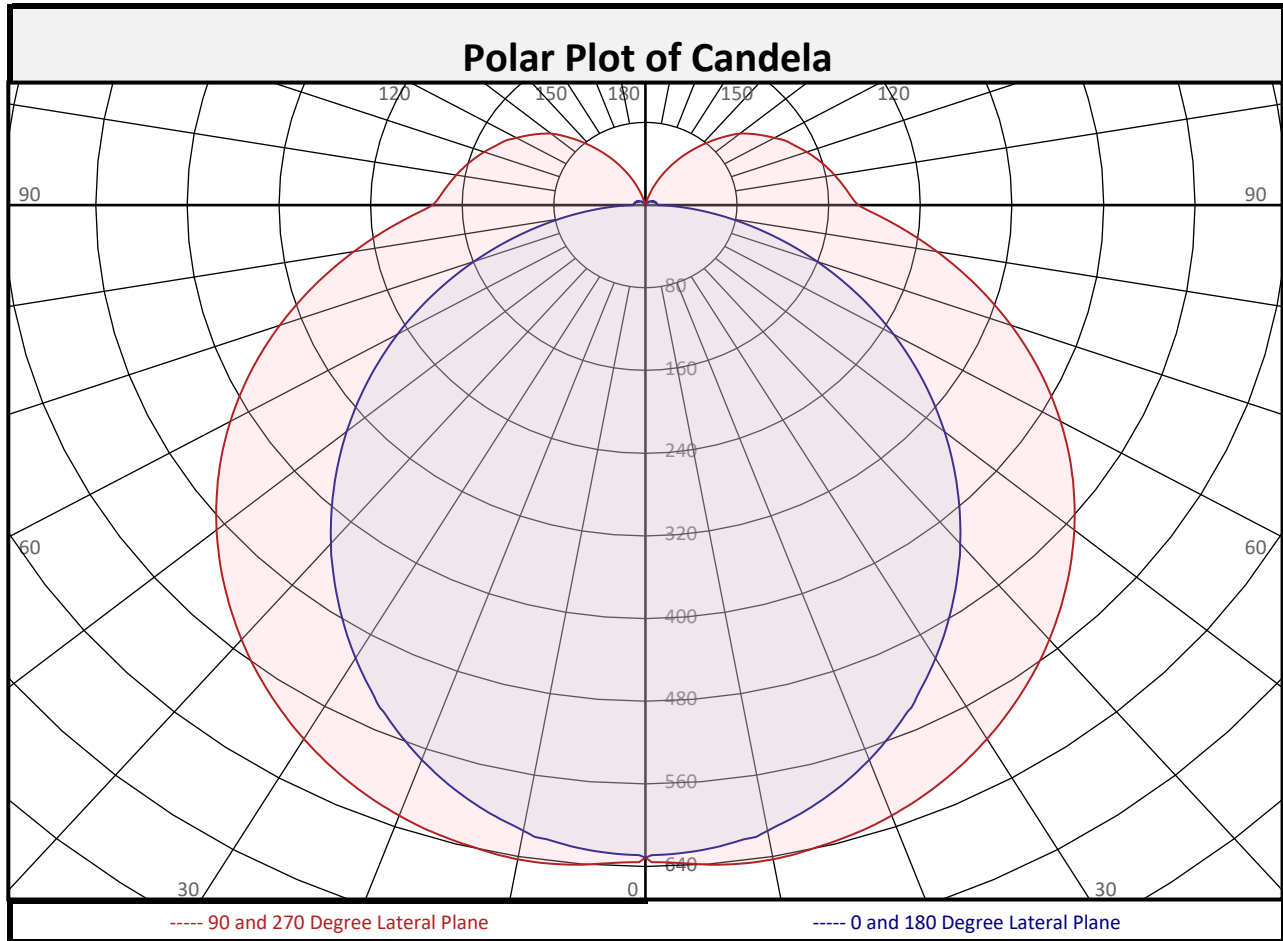
Test date: 08/30/2019

Report date: 09/04/2019

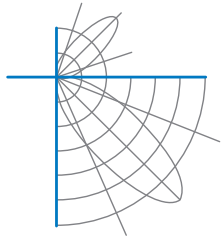
Signed: _____



Report of Test
LLIA001159-010A



Zonal Flux Summary										
Zone (Deg Vert)	Flux (Lumens)	Percent of Total		Zone (Deg Vert)	Flux (Lumens)	Percent of Total		Zone (Deg Vert)	Flux (Lumens)	Percent of Total
0-10	60.3	2.2%		90-100	120.4	4.5%		0-20	235.1	8.8%
10-20	174.8	6.5%		100-110	105.4	3.9%		0-30	503.9	18.8%
20-30	268.8	10.0%		110-120	85.5	3.2%		0-40	835.0	31.2%
30-40	331.2	12.4%		120-130	62.7	2.3%		0-60	1540	57.5%
40-50	357.5	13.3%		130-140	38.4	1.4%		0-80	2082	77.7%
50-60	347.5	13.0%		140-150	18.3	0.7%		10-90	2183	81.5%
60-70	304.4	11.4%		150-160	5.6	0.2%		20-50	957.5	35.7%
70-80	237.2	8.9%		160-170	0.3	0.0%		40-90	1409	52.6%
80-90	161.9	6.0%		170-180	0.0	0.0%		60-90	703.5	26.2%
0-90	2244	83.7%		90-180	436.5	16.3%		0-180	2680	100.0%

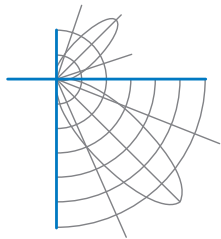


Report of Test

LLIA001159-010A

Luminous Intensity (Candela) Table

		Lateral (C-Plane) Angles								
		0	22.5	45	67.5	90	112.5	135	157.5	180
Vertical (Gamma) Angles	0	631	631	631	631	631	631	631	631	631
	2.5	628	629	631	634	637	634	631	629	628
	5	625	627	631	637	641	637	631	627	625
	7.5	621	624	631	638	643	638	631	624	621
	10	615	621	630	638	643	638	630	621	615
	12.5	606	614	628	636	640	636	628	614	606
	15	596	607	621	632	637	632	621	607	596
	17.5	584	597	613	627	634	627	613	597	584
	20	571	587	605	622	629	622	605	587	571
	22.5	557	575	596	616	622	616	596	575	557
	25	541	561	586	607	615	607	586	561	541
	27.5	524	548	574	597	606	597	574	548	524
	30	506	531	562	587	596	587	562	531	506
	32.5	488	514	548	575	586	575	548	514	488
	35	468	497	534	563	574	563	534	497	468
	37.5	448	479	519	550	562	550	519	479	448
	40	427	461	503	537	549	537	503	461	427
	42.5	406	442	487	522	535	522	487	442	406
	45	384	423	470	507	520	507	470	423	384
	47.5	363	404	452	491	505	491	452	404	363
50	341	383	434	474	489	474	434	383	341	
52.5	318	363	416	457	472	457	416	363	318	
55	296	342	397	440	455	440	397	342	296	
57.5	273	321	377	421	437	421	377	321	273	
60	250	300	358	403	418	403	358	300	250	
62.5	227	278	337	383	399	383	337	278	227	
65	204	257	317	363	380	363	317	257	204	
67.5	182	235	297	343	360	343	297	235	182	
70	159	214	276	323	340	323	276	214	159	
72.5	137	193	256	303	319	303	256	193	137	
75	116	172	235	283	299	283	235	172	116	
77.5	95	152	215	262	278	262	215	152	95	
80	76	133	196	243	258	243	196	133	76	
82.5	57	115	177	223	239	223	177	115	57	
85	40	97	159	204	219	204	159	97	40	
87.5	25	81	142	186	201	186	142	81	25	
90	11	67	128	172	186	172	128	67	11	



Report of Test

LLIA001159-010A

Luminous Intensity (Candela) Table

		Lateral (C-Plane) Angles								
		0	22.5	45	67.5	90	112.5	135	157.5	180
Vertical (Gamma) Angles	90	11	67	128	172	186	172	128	67	11
	92.5	11	65	124	166	180	166	124	65	11
	95	10	64	122	162	176	162	122	64	10
	97.5	10	62	119	159	172	159	119	62	10
	100	10	60	116	155	168	155	116	60	10
	102.5	10	59	114	151	163	151	114	59	10
	105	9	57	110	147	159	147	110	57	9
	107.5	9	55	107	143	155	143	107	55	9
	110	9	52	104	138	150	138	104	52	9
	112.5	8	48	100	134	145	134	100	48	8
	115	8	44	97	129	141	129	97	44	8
	117.5	8	41	93	124	136	124	93	41	8
	120	7	37	89	120	130	120	89	37	7
	122.5	7	33	84	114	124	114	84	33	7
	125	7	30	78	109	119	109	78	30	7
	127.5	6	26	71	103	113	103	71	26	6
	130	6	22	65	96	108	96	65	22	6
	132.5	5	19	59	88	100	88	59	19	5
	135	5	15	53	81	92	81	53	15	5
	137.5	4	12	47	73	83	73	47	12	4
	140	4	9	41	65	75	65	41	9	4
	142.5	3	5	35	58	67	58	35	5	3
	145	3	3	29	51	59	51	29	3	3
	147.5	2	2	24	43	51	43	24	2	2
150	2	2	18	36	43	36	18	2	2	
152.5	1	1	13	29	35	29	13	1	1	
155	1	1	8	22	28	22	8	1	1	
157.5	0	0	4	16	20	16	4	0	0	
160	0	0	0	9	13	9	0	0	0	
162.5	0	0	0	4	7	4	0	0	0	
165	0	0	0	0	1	0	0	0	0	
167.5	0	0	0	0	0	0	0	0	0	
170	0	0	0	0	0	0	0	0	0	
172.5	0	0	0	0	0	0	0	0	0	
175	0	0	0	0	0	0	0	0	0	
177.5	0	0	0	0	0	0	0	0	0	
180	0	0	0	0	0	0	0	0	0	



Report of Test

LLIA001159-010A

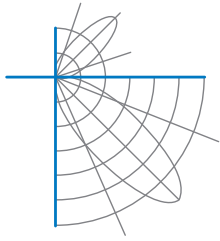
Coefficients of Utilization/Room Utilization - Zonal Cavity Method																						
Effective Floor Cavity Reflectance 0.20																						
RC	80					70					50				30				10			0
RW	70	50	30	10		70	50	30	10		50	30	10		50	30	10		50	30	10	0
RCR																						
0	115	115	115	115		111	111	111	111		102	102	102		94	94	94		87	87	87	84
1	103	97	92	87		98	93	89	84		86	82	79		79	76	73		73	71	68	65
2	92	83	76	69		88	80	73	67		74	68	63		68	63	59		63	59	56	52
3	84	72	64	57		80	70	62	55		64	57	52		59	54	49		55	50	46	43
4	76	64	54	47		73	61	53	46		57	49	44		52	46	41		48	43	39	36
5	70	57	47	40		67	54	46	39		50	43	37		47	40	35		43	38	34	31
6	64	51	41	35		61	49	40	34		45	38	32		42	36	31		39	34	29	27
7	60	46	37	30		57	44	36	30		41	34	28		38	32	27		36	30	26	24
8	55	42	33	27		53	40	32	26		38	30	25		35	29	24		33	27	23	21
9	52	38	30	24		49	37	29	24		34	28	23		32	26	22		30	25	21	19
10	48	35	27	22		46	34	26	21		32	25	20		30	24	20		28	23	19	17

For absolute test reports, RUs are expressed as a percentage of total lumen output. For relative test reports, CUs are expressed as a percentage of total lamp 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)	Ground-level distance to half-of-nadir illuminance (ft)		
		0-180 deg	90-270 deg	
6.0	17.5	7.18	8.40	
8.0	9.9	9.57	11.20	
10.0	6.3	11.97	14.00	
12.0	4.4	14.36	16.80	
14.0	3.2	16.76	19.60	
16.0	2.5	19.15	22.40	

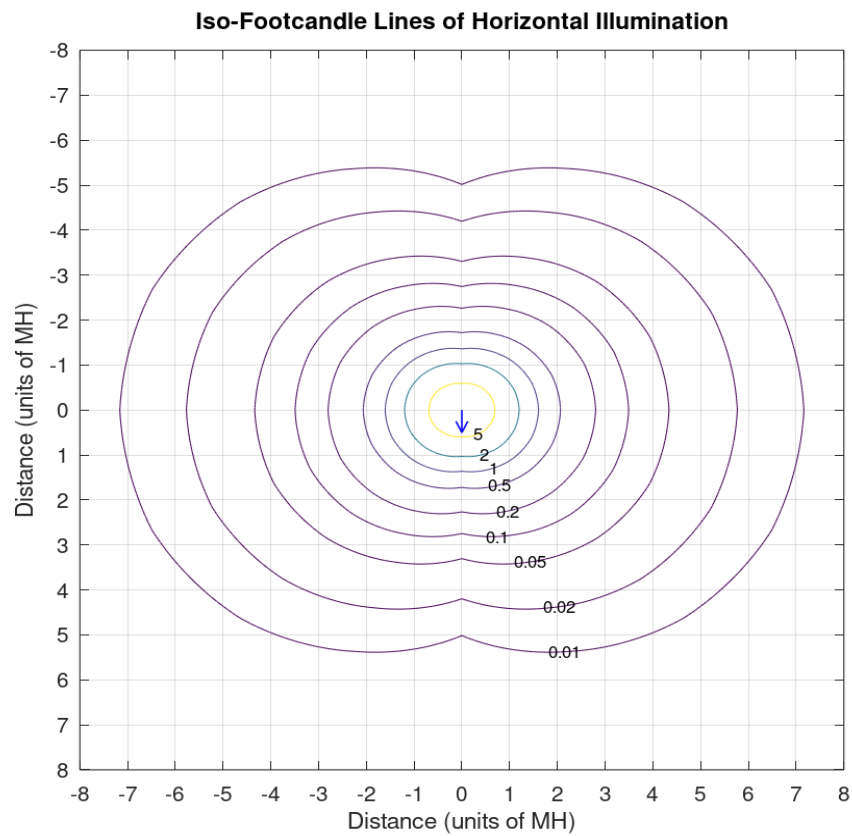
Average Luminance (cd/m ²)			
	0 deg Plane	45 deg Plane	90 deg Plane
0	11134	11134	11134
45	9512	10220	10806
55	8985	10082	10875
65	8381	10057	11090
75	7663	10351	11654
85	7491	12025	13511

Spacing Criterion	
0 degree plane:	1.2
90 degree plane:	1.4
180 degree plane:	1.2
270 degree plane:	1.4

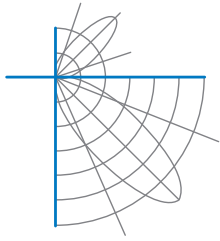


Report of Test LLIA001159-010A

Iso-Illuminance Plot



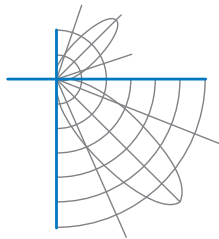
The isofootcandle values shown in the plot above are based on a mounting height of $h = 8.0$ feet. Grid values show multiples of mounting height. The isoilluminance contour lines are expressed in units of footcandles. The values expressed are based on the direct light from a single unit without the contribution of room reflections.



Report of Test
LLIA001159-010A

Additional Pictures of Test Subject





Report of Test

LLIA001159-010A

Test Distance 9.5 m
Ambient Temperature 25.3 °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 and ANSI C82.77-10:2014. Format of reports and angular increments based on IES LM-41-14 and LM-46-04.

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 C-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

LLIA001159-010B

Integrating Sphere Report

Catalog Number: MLR3-MO-K35-80-4-XX-AL2-UNV

Recessed ceiling mounted, extruded aluminum housing with steel endcaps,
formed white enamel aluminum reflector, translucent white plastic enclosure.

144 white LEDs, One Osram PrevaLED Bar LED board.

One Osram Optotronic OTi 20/120-277/700 DIM-1 L G2 LED driver labeled as 380mA



Performance Summary

Voltage	120.0 Vac
Current	0.1831 A
Power	21.83 W
Frequency	60.00 Hz
Power Factor	0.993
Current THD	5.5 %

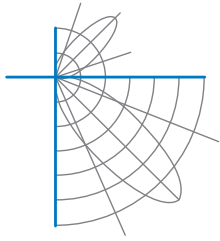
Total Luminous Flux	2692.5 lm
Efficacy	123.3 lm/W
Chromaticity (x,y)	(0.4058, 0.3926)
(u',v')	(0.2352, 0.5121)
Duv	0.0007
CCT	3506 K
CRI (Ra)	83
R9	8
TM-30: Rf	82
TM-30: Rg	97

Prepared For:

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

Test date: 08/30/2019

Report date: 09/04/2019



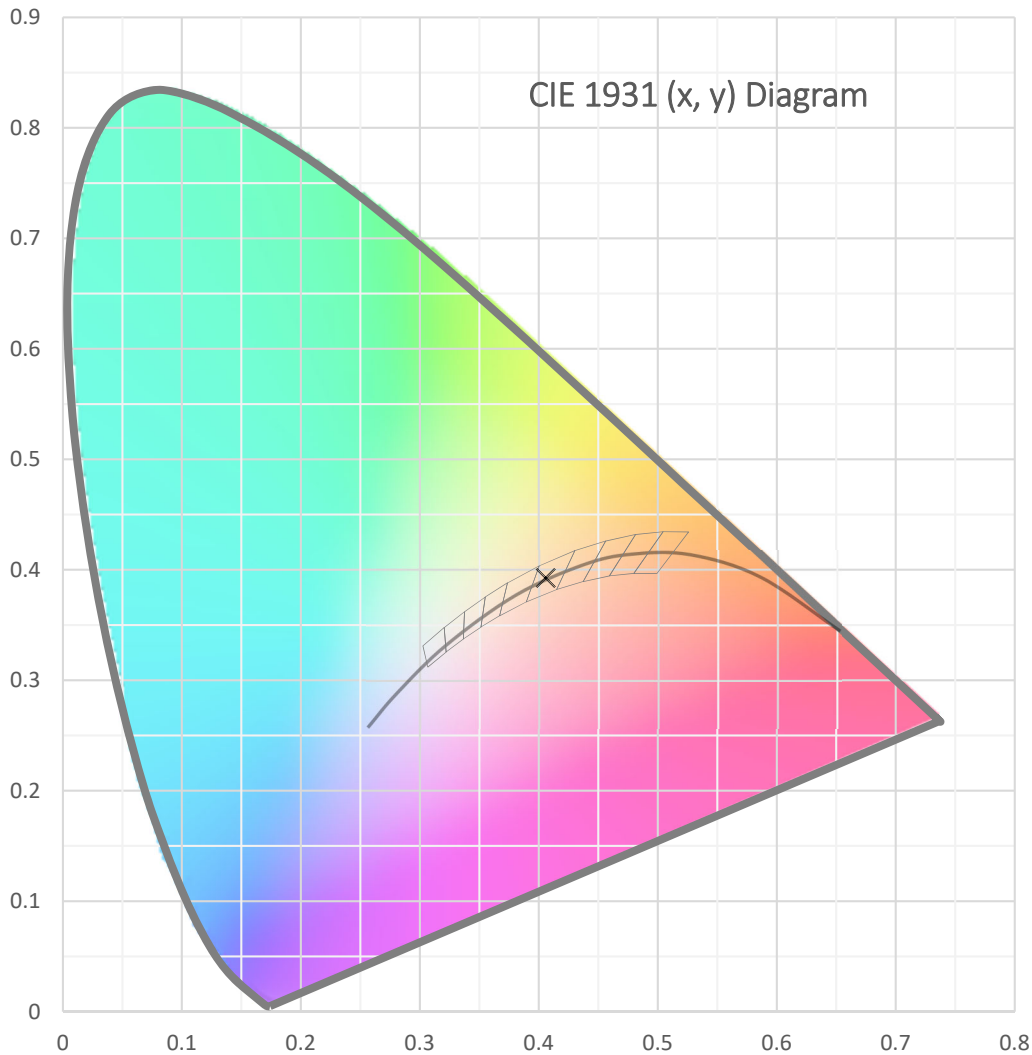
Test Report Number: LLIA001159-010B

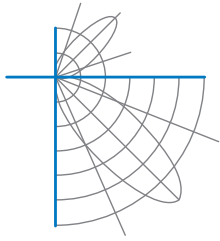
Catalog Number: MLR3-MO-K35-80-4-XX-AL2-UNV

Recessed ceiling mounted, extruded aluminum housing with steel endcaps,
formed white enamel aluminum reflector, translucent white plastic enclosure.

144 white LEDs, One Osram PrevaLED Bar LED board.

One Osram Optotronic OTi 20/120-277/700 DIM-1 L G2 LED driver labeled as 380mA





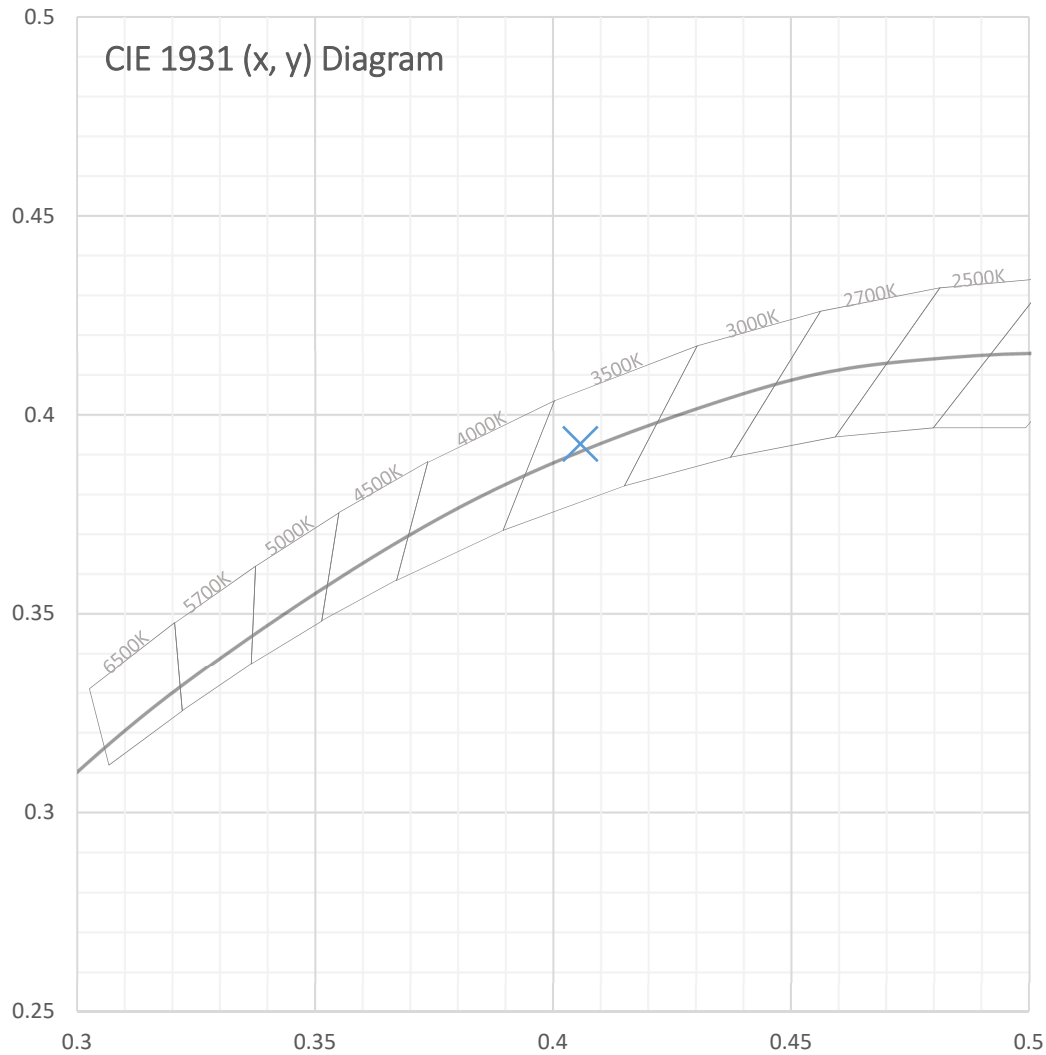
Test Report Number: LLIA001159-010B

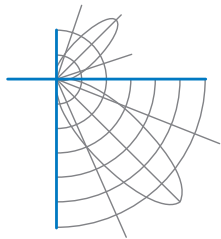
Catalog Number: MLR3-MO-K35-80-4-XX-AL2-UNV

Recessed ceiling mounted, extruded aluminum housing with steel endcaps,
formed white enamel aluminum reflector, translucent white plastic enclosure.

144 white LEDs, One Osram PrevaLED Bar LED board.

One Osram Optotronic OTi 20/120-277/700 DIM-1 L G2 LED driver labeled as 380mA





Test Report Number: LLIA001159-010B

Catalog Number: MLR3-MO-K35-80-4-XX-AL2-UNV

Recessed ceiling mounted, extruded aluminum housing with steel endcaps,
formed white enamel aluminum reflector, translucent white plastic enclosure.

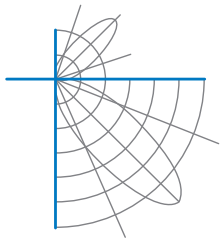
144 white LEDs, One Osram PrevaLED Bar LED board.

One Osram Optotronic OTi 20/120-277/700 DIM-1 L G2 LED driver labeled as 380mA

Spectral Data	Total Radiant Flux	8.063 W
	Total Luminous Flux	2692.5 Lm
	Chromaticity CIE 1931 (x, y)	(0.4058, 0.3926)
	Chromaticity CIE 1976 (u', v')	(0.2352, 0.5121)
	Correlated Color Temperature (CCT)	3506 K
	Color Rendering Index (Ra)	83
	R1	82
	R2	88
	R3	94
	R4	83
	R5	81
	R6	84
	R7	86
	R8	63
	R9	8
	R10	72
	R11	84
	R12	60
	R13	83
	R14	96
	TM-30: Rf	82
	TM-30: Rg	97
	Distance from Planckian Locus (Duv)	0.0007
	Scotopic/Photopic Ratio *	1.495

Electrical Data

Voltage	120.0 Vac
Current	0.1831 A
Power	21.83 W
Frequency	60.00 Hz
Power Factor	0.993
Current THD	5.5 %



Test Report Number: LLIA001159-010B

Catalog Number: MLR3-MO-K35-80-4-XX-AL2-UNV

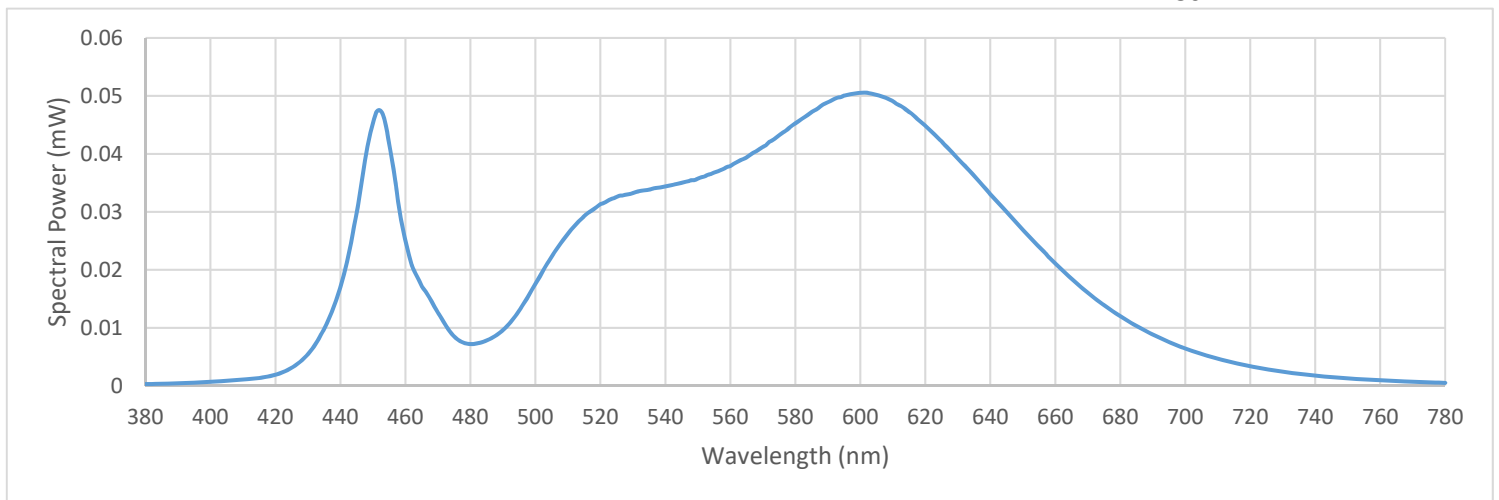
Recessed ceiling mounted, extruded aluminum housing with steel endcaps,
formed white enamel aluminum reflector, translucent white plastic enclosure.

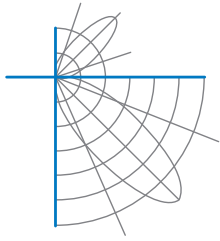
144 white LEDs, One Osram PrevaLED Bar LED board.

One Osram Optotronic OTi 20/120-277/700 DIM-1 L G2 LED driver labeled as 380mA

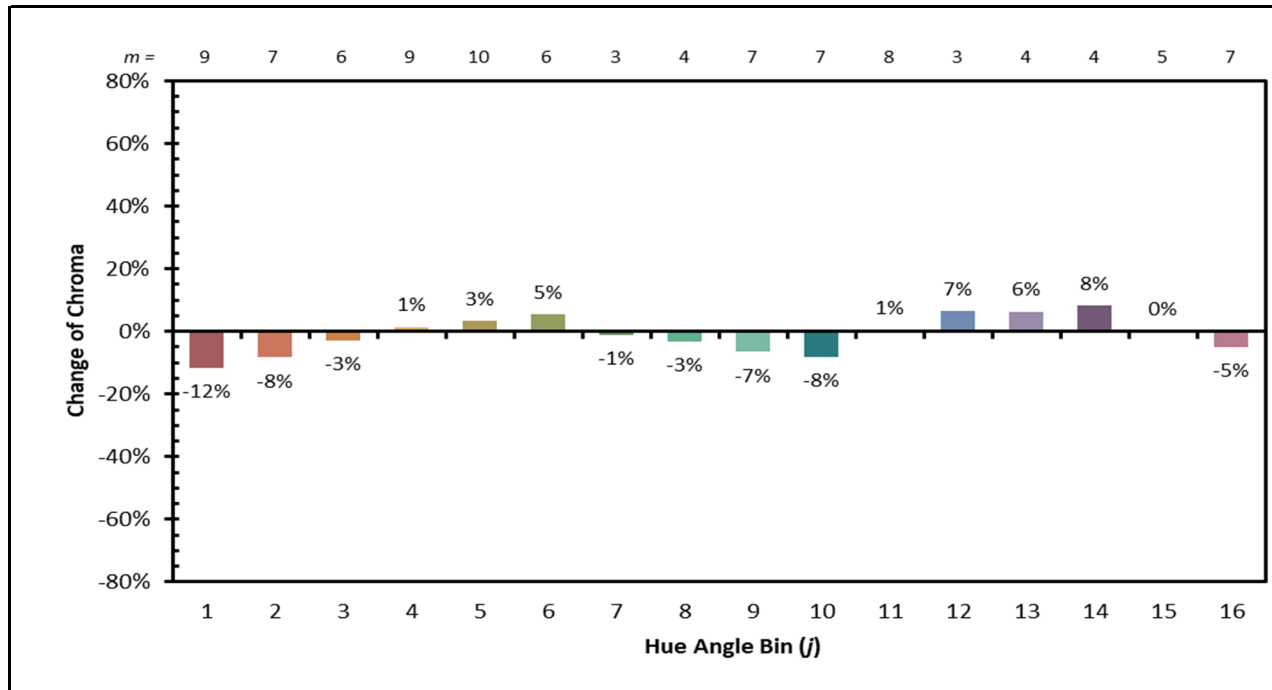
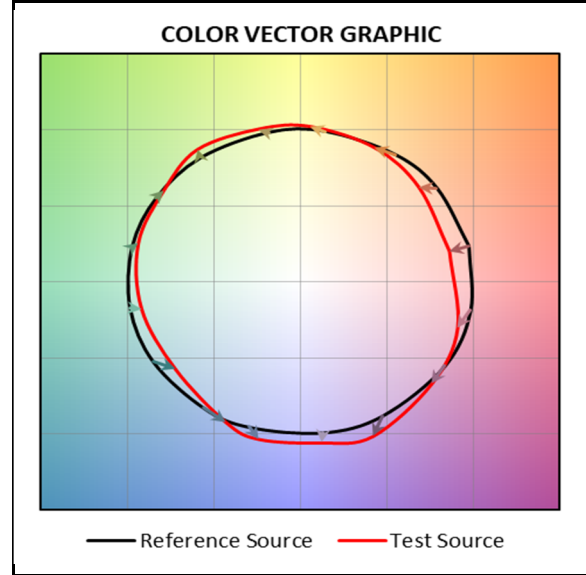
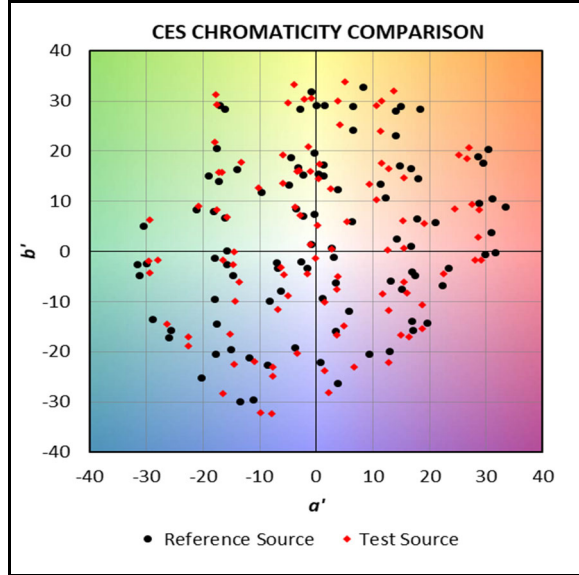
Summary Spectral Power Distribution (wavelength - nm, spectral power - mW)

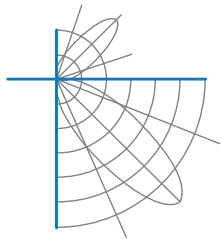
380	0.000303	480	0.007205	580	0.045248	680	0.011984
385	0.000330	485	0.007823	585	0.047215	685	0.010320
390	0.000413	490	0.009607	590	0.048910	690	0.008823
395	0.000527	495	0.012943	595	0.050047	695	0.007544
400	0.000692	500	0.017562	600	0.050506	700	0.006441
405	0.000865	505	0.022265	605	0.050177	705	0.005477
410	0.001065	510	0.026232	610	0.049112	710	0.004650
415	0.001338	515	0.029248	615	0.047224	715	0.003968
420	0.001914	520	0.031320	620	0.044809	720	0.003377
425	0.003078	525	0.032579	625	0.042152	725	0.002857
430	0.005460	530	0.033246	630	0.039176	730	0.002433
435	0.009827	535	0.033812	635	0.036284	735	0.002067
440	0.017010	540	0.034406	640	0.033029	740	0.001754
445	0.029925	545	0.034996	645	0.029992	745	0.001499
450	0.045403	550	0.035746	650	0.026940	750	0.001276
455	0.041723	555	0.036774	655	0.023932	755	0.001092
460	0.025127	560	0.037903	660	0.021134	760	0.000940
465	0.017204	565	0.039393	665	0.018462	765	0.000804
470	0.012627	570	0.041199	670	0.016028	770	0.000687
475	0.008470	575	0.043207	675	0.013913	775	0.000590
						780	0.000509





IES TM-30 Details





Test Report Number: LLIA001159-010B

Catalog Number: MLR3-MO-K35-80-4-XX-AL2-UNV

Recessed ceiling mounted, extruded aluminum housing with steel endcaps,
formed white enamel aluminum reflector, translucent white plastic enclosure.

144 white LEDs, One Osram PrevaLED Bar LED board.

One Osram Optotronic OTi 20/120-277/700 DIM-1 L G2 LED driver labeled as 380mA

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 C78.377-2017,
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.