



Report of Test

LLIA001168-002A

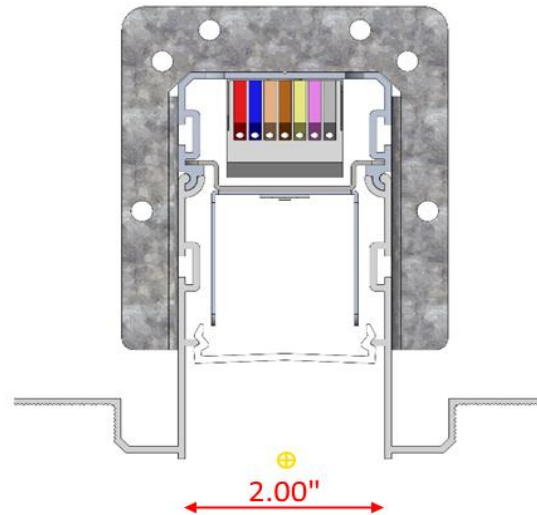
Indoor Distribution Photometry Test Report

Catalog Number: MLR2RG-HO-K35-80-4-XX-LOH-UNV

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

144 white LEDs, four Osram PrevaLED BARs with 36 LEDs each.

One Osram Optotronic OTi 30/120-277/1A0 DIM-1 L G2 LED driver labeled as 720mA.



Prepared For:

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

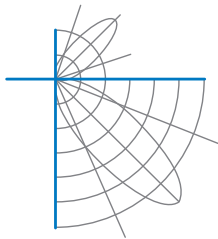
Performance Summary			
Input Voltage	120.0 V	Luminous Flux	2180.5 Lumens
Input Current	0.2322 A	Total Efficacy	79.3 Lm/W
Input Power	27.51 W	Downward Flux	2180.4 Lumens
Frequency	60.00 Hz	Downward Flux	100.0 % of Total
Power Factor	0.988		
Current THD	7.5 %		

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

Test date: 10/31/2019

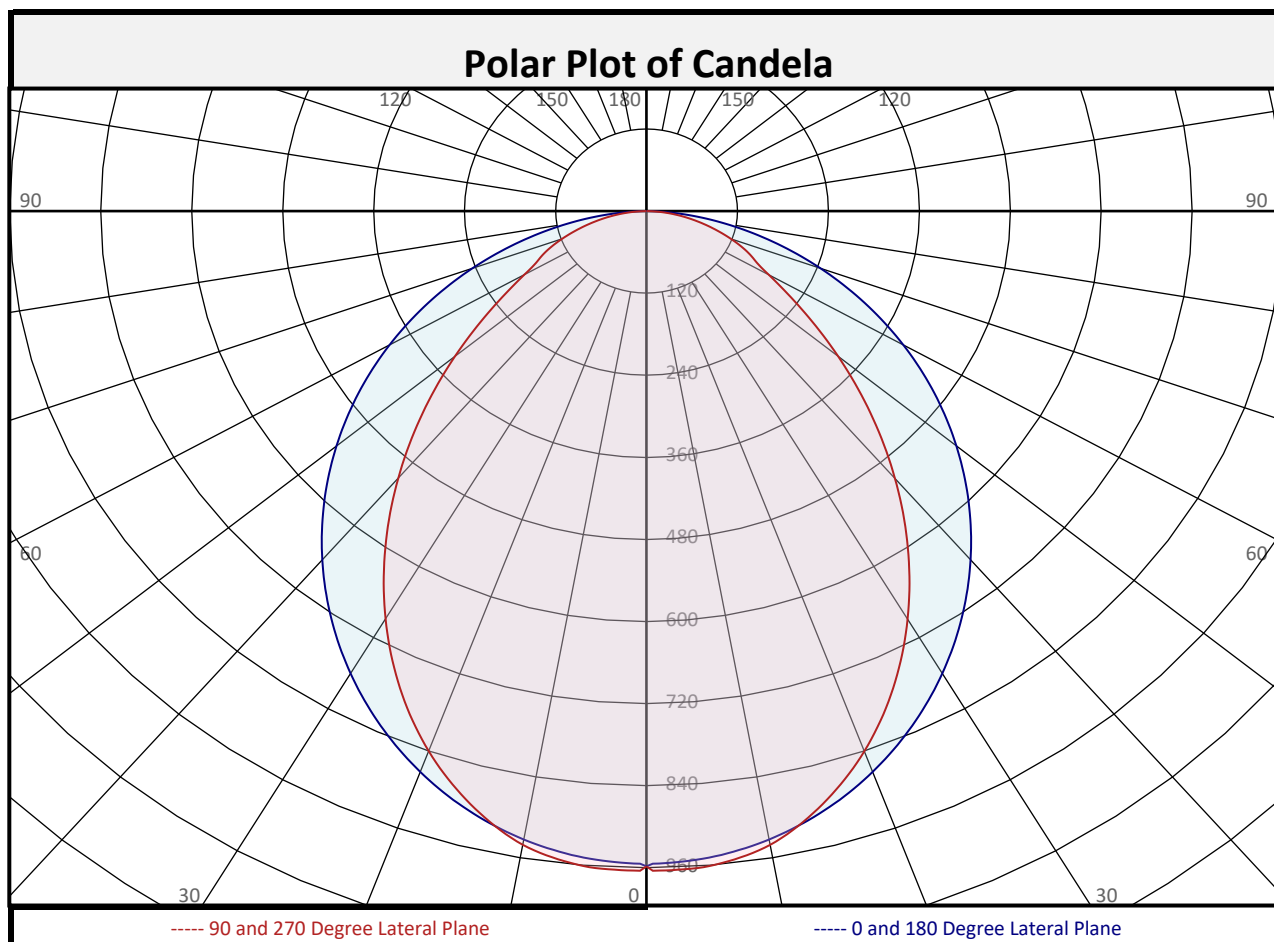
Report date: 11/04/2019

Signed: _____



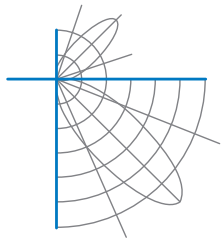
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Zonal Flux Summary

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	90.6	4.2%	90-100	0.0	0.0%	0-20	345.2	15.8%
10-20	254.6	11.7%	100-110	0.0	0.0%	0-30	714.3	32.8%
20-30	369.2	16.9%	110-120	0.0	0.0%	0-40	1130	51.8%
30-40	415.3	19.0%	120-130	0.0	0.0%	0-60	1830	83.9%
40-50	391.0	17.9%	130-140	0.0	0.0%	0-80	2149	98.6%
50-60	309.6	14.2%	140-150	0.0	0.0%	10-90	2090	95.9%
60-70	206.4	9.5%	150-160	0.0	0.0%	20-50	1175	53.9%
70-80	112.2	5.1%	160-170	0.0	0.0%	40-90	1051	48.2%
80-90	31.5	1.4%	170-180	0.0	0.0%	60-90	350.2	16.1%
0-90	2180	100.0%	90-180	0.0	0.0%	0-180	2180	100.0%



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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	958	958	958	958	958	958	958	958	958
	2.5	953	953	956	961	964	961	956	953	953
	5	949	950	953	958	961	958	953	950	949
	7.5	942	944	947	950	953	950	947	944	942
	10	933	935	937	939	941	939	937	935	933
	12.5	921	924	924	922	921	922	924	924	921
	15	907	910	907	900	898	900	907	910	907
	17.5	891	893	885	874	871	874	885	893	891
	20	873	874	860	846	840	846	860	874	873
	22.5	852	853	833	814	806	814	833	853	852
	25	830	829	803	780	770	780	803	829	830
	27.5	806	803	771	743	730	743	771	803	806
	30	781	775	738	703	689	703	738	775	781
	32.5	754	745	702	662	646	662	702	745	754
	35	726	713	664	619	601	619	664	713	726
	37.5	696	681	625	575	556	575	625	681	696
	40	666	647	585	531	509	531	585	647	666
	42.5	634	613	544	486	463	486	544	613	634
	45	602	577	502	441	418	441	502	577	602
	47.5	568	541	460	396	373	396	460	541	568
50	534	503	417	352	330	352	417	503	534	
52.5	499	465	374	309	288	309	374	465	499	
55	464	426	332	269	250	269	332	426	464	
57.5	428	387	290	231	215	231	290	387	428	
60	392	347	250	198	186	198	250	347	392	
62.5	355	307	211	170	164	170	211	307	355	
65	318	267	176	151	151	151	176	267	318	
67.5	281	227	146	137	135	137	146	227	281	
70	244	188	124	121	118	121	124	188	244	
72.5	208	151	109	103	101	103	109	151	208	
75	173	116	91	86	84	86	91	116	173	
77.5	138	86	73	70	68	70	73	86	138	
80	106	66	56	54	53	54	56	66	106	
82.5	75	47	40	39	38	39	40	47	75	
85	45	28	25	24	24	24	25	28	45	
87.5	18	12	11	10	10	10	11	12	18	
90	0	0	0	0	0	0	0	0	0	



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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	0	0	0	0	0	0	0	0	0
	92.5	0	0	0	0	0	0	0	0	0
	95	0	0	0	0	0	0	0	0	0
	97.5	0	0	0	0	0	0	0	0	0
	100	0	0	0	0	0	0	0	0	0
	102.5	0	0	0	0	0	0	0	0	0
	105	0	0	0	0	0	0	0	0	0
	107.5	0	0	0	0	0	0	0	0	0
	110	0	0	0	0	0	0	0	0	0
	112.5	0	0	0	0	0	0	0	0	0
	115	0	0	0	0	0	0	0	0	0
	117.5	0	0	0	0	0	0	0	0	0
	120	0	0	0	0	0	0	0	0	0
	122.5	0	0	0	0	0	0	0	0	0
	125	0	0	0	0	0	0	0	0	0
	127.5	0	0	0	0	0	0	0	0	0
	130	0	0	0	0	0	0	0	0	0
	132.5	0	0	0	0	0	0	0	0	0
	135	0	0	0	0	0	0	0	0	0
	137.5	0	0	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0	0	0	
142.5	0	0	0	0	0	0	0	0	0	
145	0	0	0	0	0	0	0	0	0	
147.5	0	0	0	0	0	0	0	0	0	
150	0	0	0	0	0	0	0	0	0	
152.5	0	0	0	0	0	0	0	0	0	
155	0	0	0	0	0	0	0	0	0	
157.5	0	0	0	0	0	0	0	0	0	
160	0	0	0	0	0	0	0	0	0	
162.5	0	0	0	0	0	0	0	0	0	
165	0	0	0	0	0	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	



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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	119	119	119	119		116	116	116	116		111	111	111		106	106	106		102	102	102	100
1	110	105	101	98		107	103	99	96		99	96	93		95	93	90		91	89	88	86
2	100	93	86	81		98	91	85	80		87	83	78		84	80	77		81	78	75	73
3	92	82	75	69		90	81	74	68		78	72	67		75	70	66		73	68	65	62
4	85	74	65	59		83	72	65	59		70	63	58		68	62	57		65	60	56	54
5	78	66	58	51		76	65	57	51		63	56	51		61	55	50		59	54	50	48
6	73	60	51	45		71	59	51	45		57	50	45		56	49	44		54	48	44	42
7	68	55	46	40		66	54	46	40		52	45	40		51	45	40		50	44	39	38
8	63	50	42	36		62	49	42	36		48	41	36		47	41	36		46	40	36	34
9	59	46	38	33		58	46	38	33		44	38	33		43	37	33		42	37	32	31
10	56	43	35	30		54	42	35	30		41	35	30		40	34	30		39	34	30	28

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	26.6	7.29	6.57	
8.0	15.0	9.72	8.77	
10.0	9.6	12.15	10.96	
12.0	6.7	14.58	13.15	
14.0	4.9	17.01	15.34	
16.0	3.7	19.44	17.53	

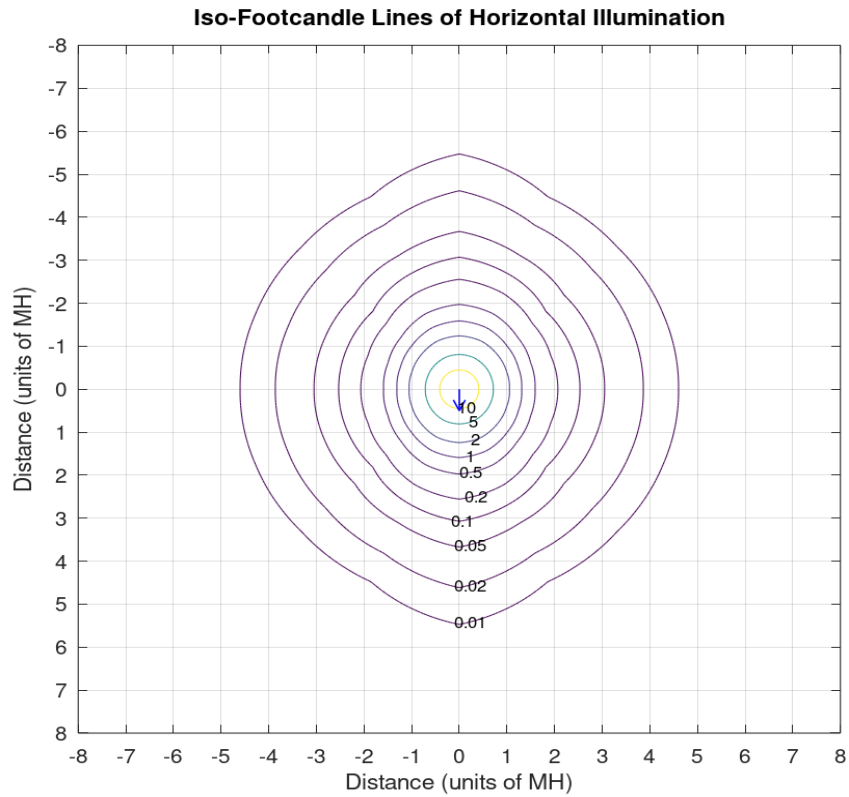
Average Luminance (cd/m ²)			
	0 deg Plane	45 deg Plane	90 deg Plane
0	15883	15883	15883
45	14103	11770	9794
55	13411	9590	7213
65	12473	6920	5917
75	11058	5853	5403
85	8598	4802	4495

Spacing Criterion	
0 degree plane:	1.2
90 degree plane:	1.1
180 degree plane:	1.2
270 degree plane:	1.1



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Iso-Illuminance Plot

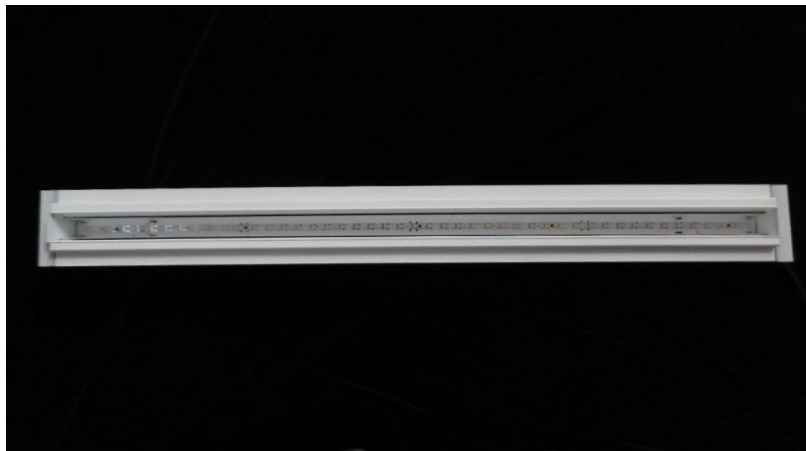
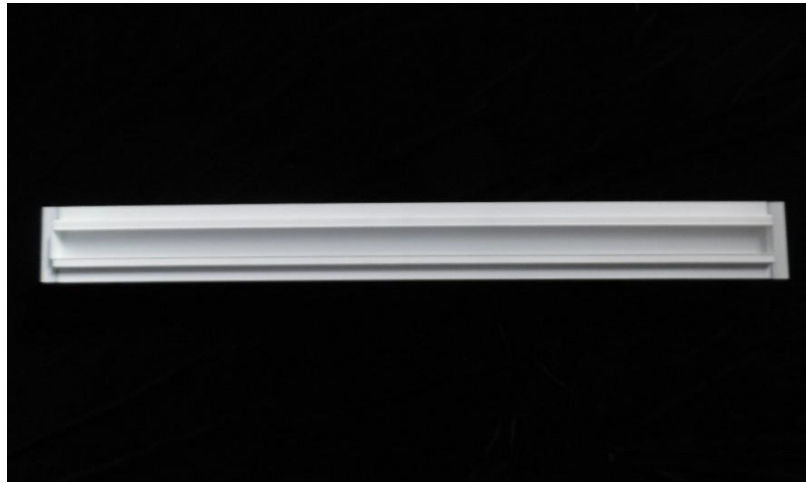


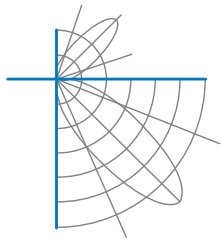
The isofootcandle values shown in the plot above are based on a mounting height of $h = 8.0$ feet. Grid values show multiples of mounting height. The isoilluminance contour lines are expressed in units of footcandles. The values expressed are based on the direct light from a single unit without the contribution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



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Additional Pictures of Test Subject





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Test Distance 9.5 m
Ambient Temperature 24.8 °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-79-19 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.

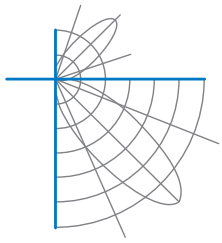
Prorating the performance of the sample for the use of other component combinations (such as lamp / LED / Ballast / driver), or for use in different environmental conditions than that tested, may produce erroneous results.

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

LLIA001168-002B

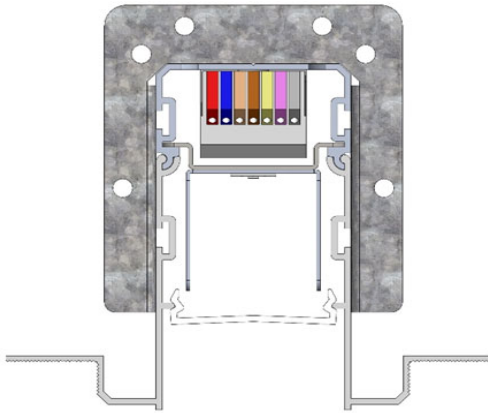
Integrating Sphere Report

Catalog Number: MLR2RG-HO-K35-80-4-XX-LOH-UNV

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

144 white LEDs, four Osram PrevaLED BARs with 36 LEDs each.

One Osram Optotronic OTi 30/120-277/1A0 DIM-1 L G2 LED driver labeled as 720mA.



Performance Summary

Voltage	120.0 Vac
Current	0.2331 A
Power	27.52 W
Frequency	59.97 Hz
Power Factor	0.984
Current THD	7.5 %

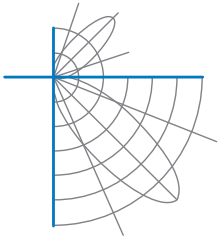
Total Luminous Flux	2205.0 lm
Efficacy	80.1 lm/W
Chromaticity (x,y)	(0.4024, 0.3859)
(u',v')	(0.2358, 0.5088)
Duv	-0.0015
CCT	3526 K
CRI (Ra)	84
R9	14
TM-30: Rf	83
TM-30: Rg	95

Prepared For:

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

Test date: 10/31/2019

Report date: 11/04/2019



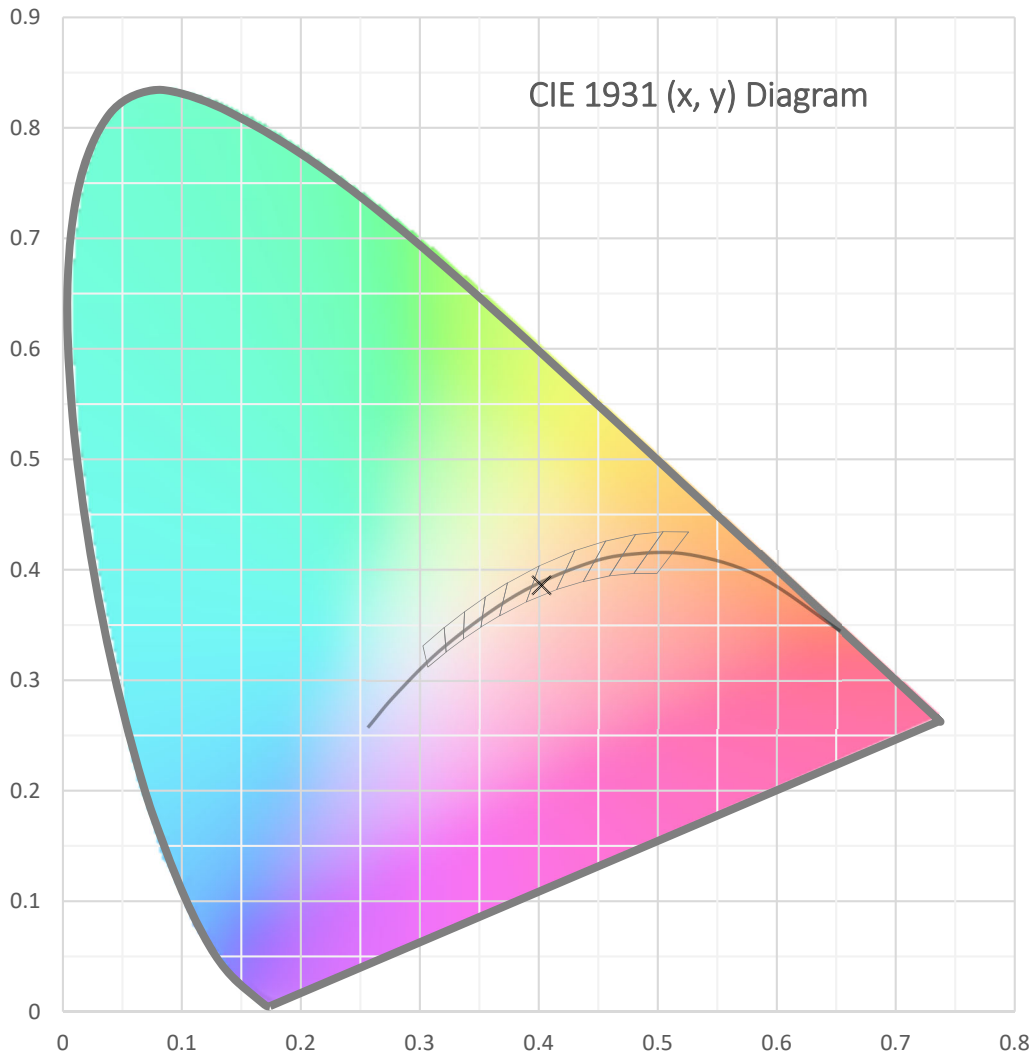
Test Report Number: LLIA001168-002B

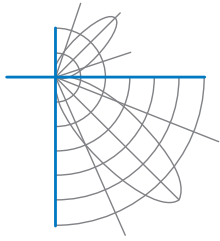
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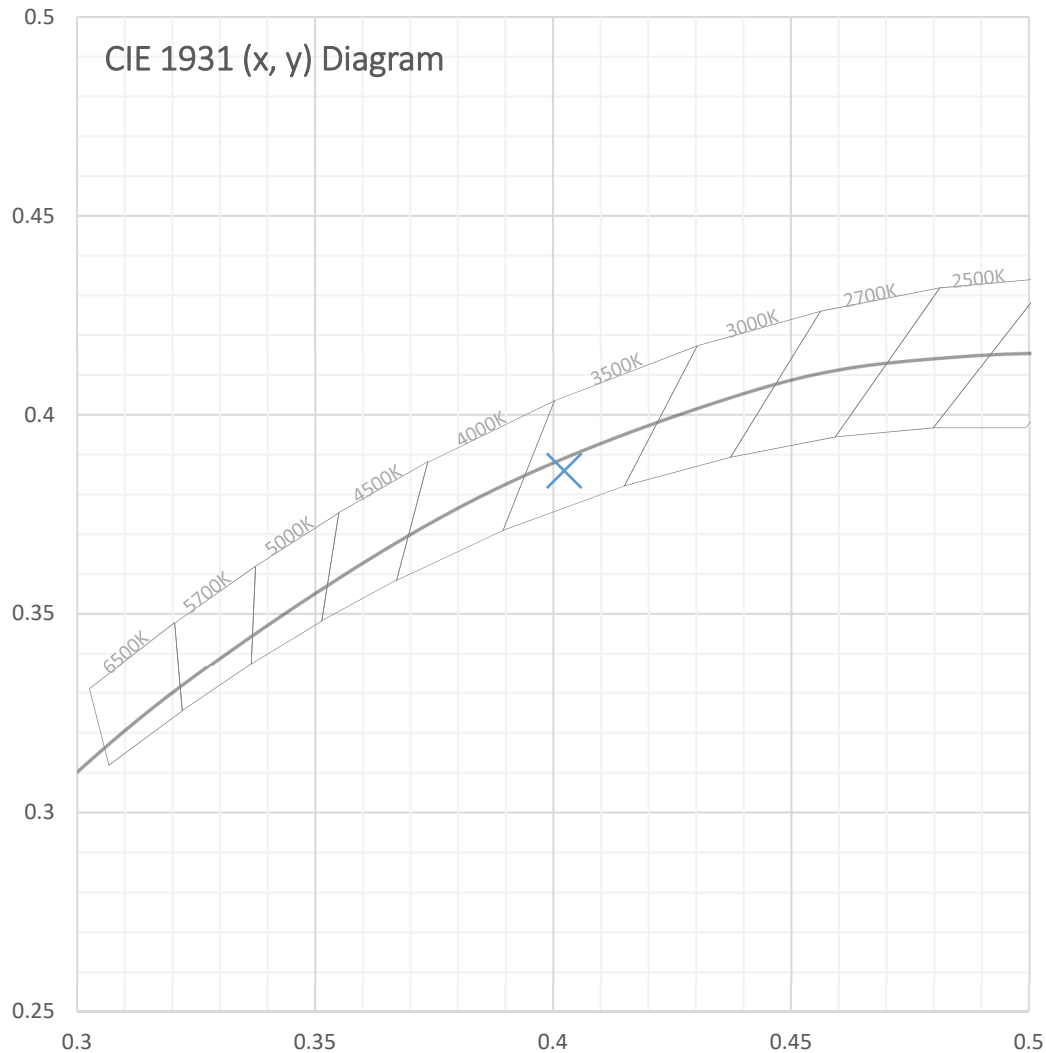
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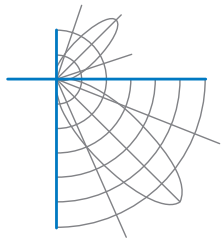
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Test Report Number: LLIA001168-002B

Catalog Number: MLR2RG-HO-K35-80-4-XX-LOH-UNV

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

144 white LEDs, four Osram PrevaLED BARs with 36 LEDs each.

One Osram Optotronic OTi 30/120-277/1A0 DIM-1 L G2 LED driver labeled as 720mA.

Spectral Data	Total Radiant Flux	6.834 W
	Total Luminous Flux	2205.0 Lm
	Chromaticity CIE 1931 (x, y)	(0.4024, 0.3859)
	Chromaticity CIE 1976 (u', v')	(0.2358, 0.5088)
	Correlated Color Temperature (CCT)	3526 K
	Color Rendering Index (Ra)	84
	R1	83
	R2	92
	R3	96
	R4	81
	R5	83
	R6	89
	R7	84
	R8	64
	R9	14
	R10	81
	R11	80
	R12	66
	R13	86
	R14	99
	TM-30: Rf	83
	TM-30: Rg	95
	Distance from Planckian Locus (Duv)	-0.0015
	Scotopic/Photopic Ratio *	1.570

Electrical Data

Voltage	120.0 Vac
Current	0.2331 A
Power	27.52 W
Frequency	59.97 Hz
Power Factor	0.984
Current THD	7.5 %



Test Report Number: LLIA001168-002B

Catalog Number: MLR2RG-HO-K35-80-4-XX-LOH-UNV

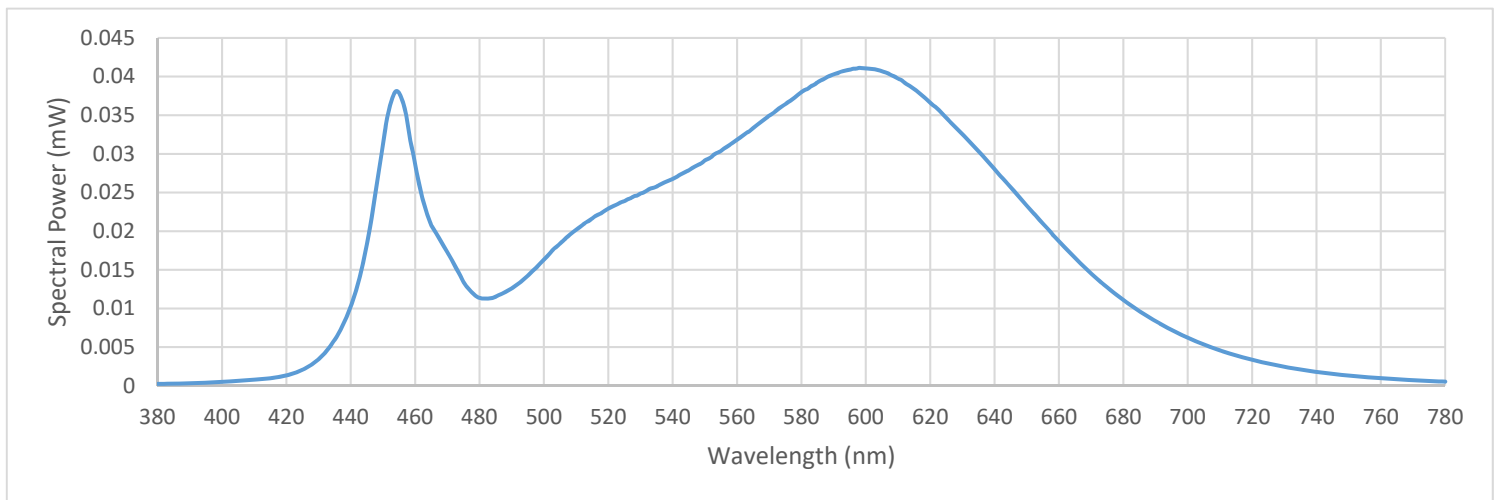
Recessed ceiling mounted, extruded aluminum housing, formed white enamel aluminum reflector, translucent white plastic enclosure.

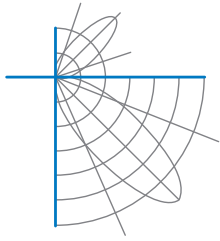
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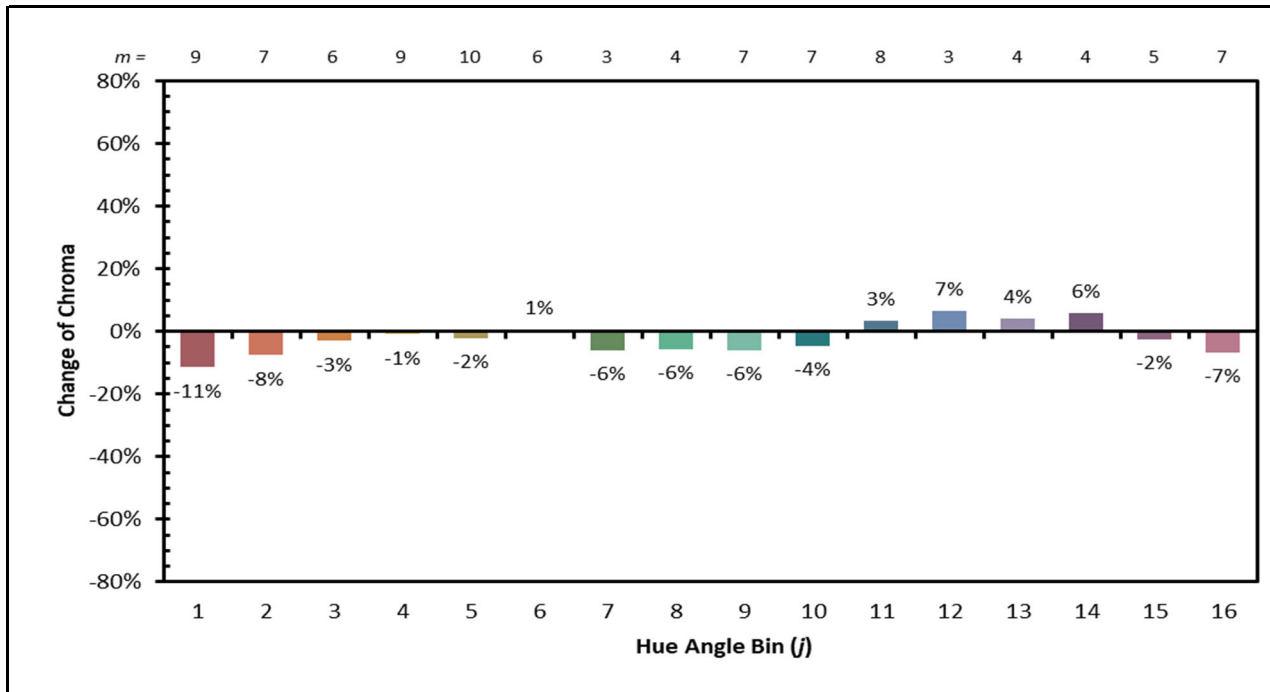
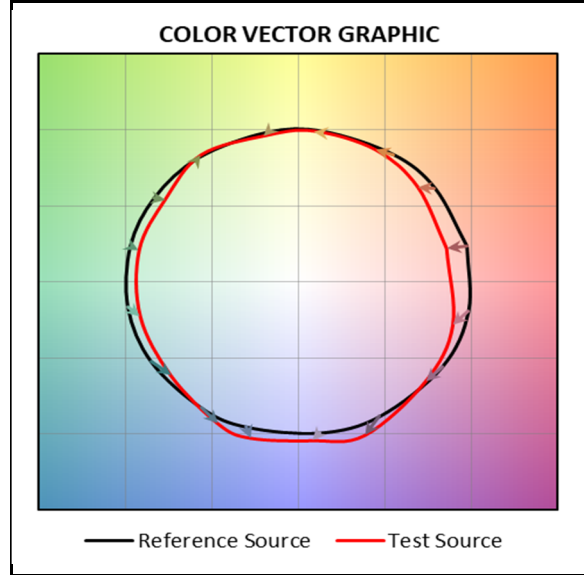
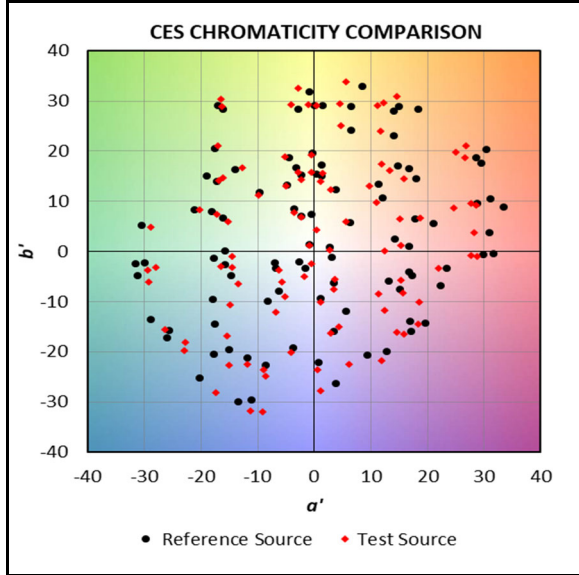
Summary Spectral Power Distribution (wavelength - nm, spectral power - mW)

380	0.000256	480	0.011364	580	0.037984	680	0.011093
385	0.000266	485	0.011518	585	0.039259	685	0.009673
390	0.000319	490	0.012643	590	0.040302	690	0.008364
395	0.000396	495	0.014264	595	0.040873	695	0.007194
400	0.000506	500	0.016317	600	0.041058	700	0.006239
405	0.000638	505	0.018400	605	0.040675	705	0.005344
410	0.000785	510	0.020200	610	0.039726	710	0.004583
415	0.000970	515	0.021663	615	0.038409	715	0.003933
420	0.001347	520	0.022936	620	0.036612	720	0.003364
425	0.002076	525	0.023887	625	0.034700	725	0.002865
430	0.003459	530	0.024860	630	0.032541	730	0.002459
435	0.005953	535	0.025777	635	0.030380	735	0.002096
440	0.010221	540	0.026774	640	0.028019	740	0.001793
445	0.018318	545	0.027874	645	0.025691	745	0.001540
450	0.031162	550	0.029151	650	0.023311	750	0.001316
455	0.037883	555	0.030381	655	0.020954	755	0.001131
460	0.028716	560	0.031825	660	0.018728	760	0.000979
465	0.020783	565	0.033357	665	0.016546	765	0.000839
470	0.017269	570	0.034947	670	0.014512	770	0.000721
475	0.013448	575	0.036416	675	0.012726	775	0.000621
						780	0.000532





IES TM-30 Details





Test Report Number: LLIA001168-002B

Catalog Number: MLR2RG-HO-K35-80-4-XX-LOH-UNV

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

144 white LEDs, four Osram PrevaLED BARs with 36 LEDs each.

One Osram Optotronic OTi 30/120-277/1A0 DIM-1 L G2 LED driver labeled as 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: 25.4 °C

Test Procedure: Tested in accordance with the applicable sections of:
LM-79-19, 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.

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