



Report of Test

LLIA001198-007A

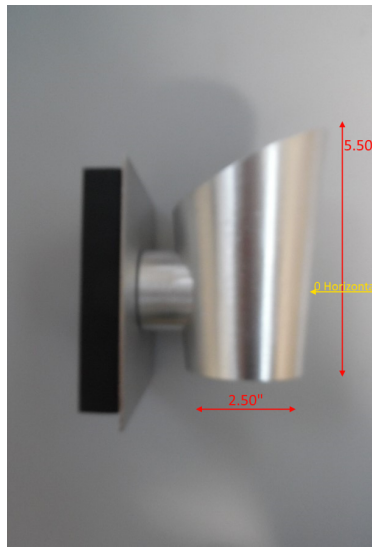
Indoor Distribution Photometry Test Report

Catalog Number: 3-732-16 Pilot

Wall mounted, formed steel and aluminum housing, clear glass enclosures.

Two white LEDs

One Novbo IS007038060-1G LED driver



Prepared For:
Oxygen Lighting
201 Railhead Road
Fort Worth, TX 76106, USA

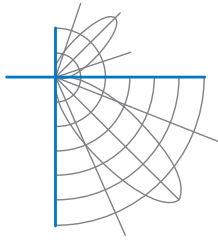
Performance Summary			
Input Voltage	120.0 V	Luminous Flux	327.9 Lumens
Input Current	0.0733 A	Total Efficacy	69.3 Lm/W
Input Power	4.73 W	Downward Flux	164.9 Lumens
Frequency	60.00 Hz	Downward Flux	50.3 % of Total
Power Factor	0.538		
Current THD	138.8 %		

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

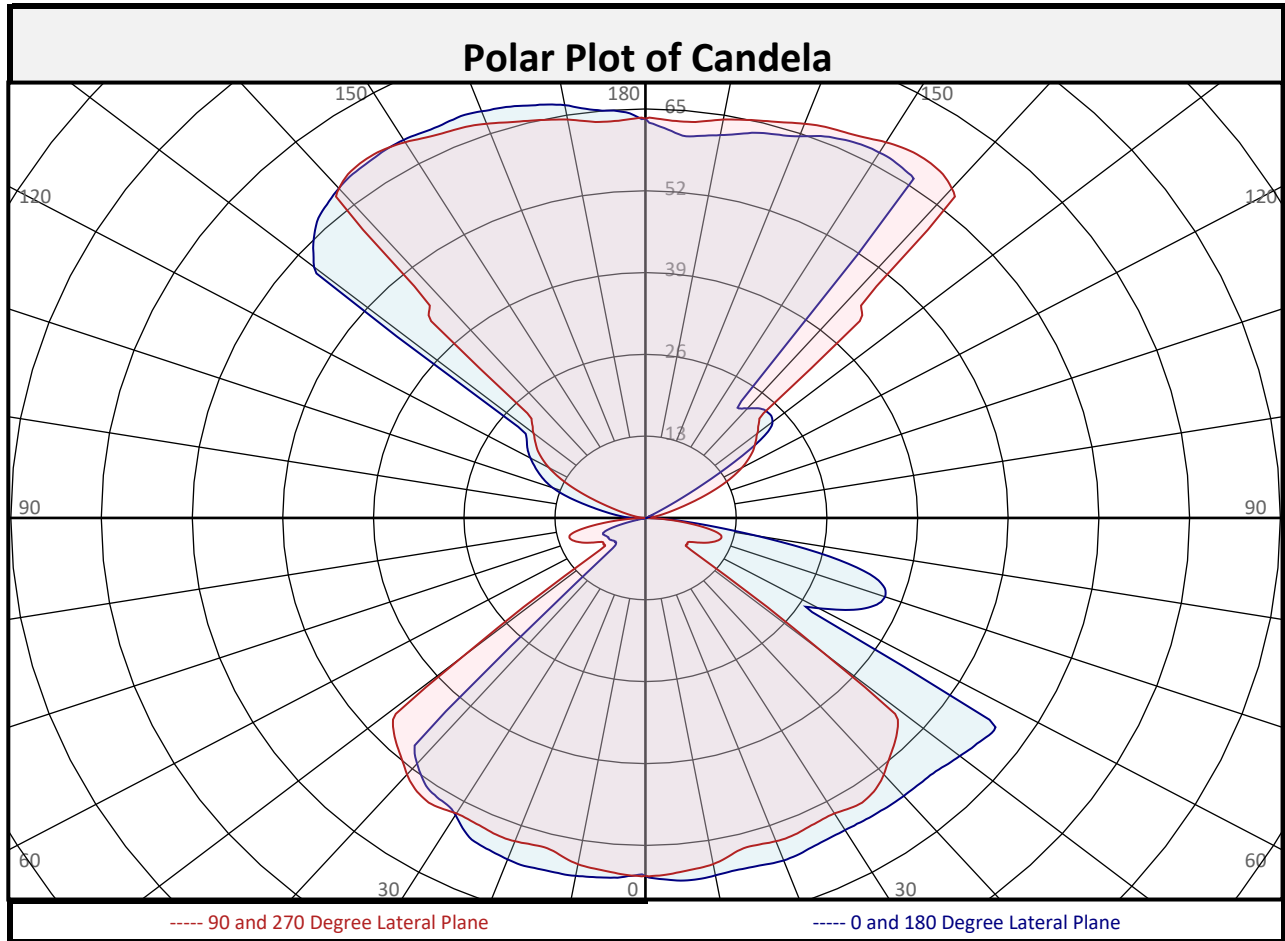
Test date: 12/12/2019

Report date: 12/17/2019

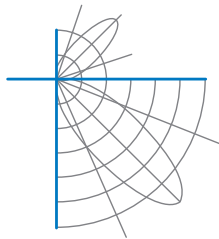
Signed: _____



Report of Test
LLIA001198-007A



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	Zone (Deg Vert)	Flux (Lumens)	Percent of Total						
0-10	5.4	1.6%	90-100	1.7	0.5%	0-20	21.2	6.5%	10-20	15.8	4.8%	100-110	4.8	1.5%	0-30	46.5	14.2%
20-30	25.3	7.7%	110-120	9.9	3.0%	0-40	80.9	24.7%	30-40	34.4	10.5%	120-130	17.6	5.4%	0-60	132.6	40.4%
40-50	33.6	10.2%	130-140	32.4	9.9%	0-80	160.8	49.0%	50-60	18.0	5.5%	140-150	40.5	12.4%	0-90	159.5	48.6%
60-70	14.0	4.3%	150-160	31.4	9.6%	10-90	93.4	28.5%	60-70	14.0	4.3%	160-170	18.6	5.7%	40-90	84.0	25.6%
70-80	14.2	4.3%	170-180	6.1	1.9%	60-90	32.3	9.9%	80-90	4.1	1.3%	180-190	1.7	0.5%	0-180	327.9	100.0%
0-90	164.9	50.3%															

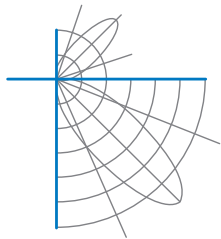


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Luminous Intensity (Candela) Table

		Lateral (C-Plane) Angles								
		0	22.5	45	67.5	90	112.5	135	157.5	180
Vertical (Gamma) Angles	0	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9
	2.5	57.4	57.3	57.3	56.7	56.8	56.8	56.5	56.8	56.9
	5	57.8	57.3	57.1	56.8	56.5	56.9	56.5	56.9	57.4
	7.5	57.8	57.2	57.1	56.8	56.2	56.6	56.3	57.0	57.5
	10	57.6	57.1	57.3	56.9	55.9	55.8	56.0	57.0	57.7
	12.5	57.4	57.0	57.3	57.0	55.1	54.3	54.9	56.9	57.7
	15	57.5	57.2	57.2	56.8	54.3	52.6	53.2	56.3	57.8
	17.5	57.7	57.6	57.2	56.6	54.4	51.7	51.7	55.4	57.9
	20	57.9	58.0	57.1	56.6	54.7	51.9	50.5	54.6	57.7
	22.5	57.7	58.0	56.7	56.5	54.7	52.3	49.5	54.1	57.4
	25	57.4	57.8	56.4	56.2	54.4	52.3	49.1	53.7	57.0
	27.5	57.3	57.4	56.4	56.1	54.3	52.7	49.3	53.5	56.1
	30	57.2	57.3	56.6	56.1	54.2	53.6	49.6	53.1	54.5
	32.5	57.3	57.3	56.8	55.8	54.7	54.8	50.2	53.0	53.6
	35	57.4	57.3	57.0	55.1	54.8	56.0	51.1	53.1	53.3
	37.5	57.5	57.3	56.9	54.6	54.3	56.3	51.7	52.7	52.4
	40	57.6	57.1	56.6	54.1	53.2	55.1	51.2	51.7	50.9
	42.5	57.6	57.0	56.0	53.4	51.8	53.2	50.2	50.0	49.0
	45	57.7	57.2	55.4	52.7	50.6	50.8	38.5	8.0	6.1
	47.5	58.2	57.5	54.9	51.6	49.1	30.8	5.8	5.7	5.8
50	58.8	57.9	54.1	50.1	33.5	6.3	5.5	5.6	5.7	
52.5	59.4	57.7	52.8	37.4	7.3	5.9	5.6	5.7	5.9	
55	60.1	57.8	38.6	9.7	7.3	5.9	5.7	5.9	6.0	
57.5	43.9	27.6	15.6	10.1	7.2	6.1	6.0	6.1	6.2	
60	28.6	24.6	17.0	10.7	7.6	6.5	6.3	6.3	6.1	
62.5	31.5	27.1	18.7	11.8	8.5	7.1	6.6	6.4	6.3	
65	34.2	29.4	20.4	13.0	9.3	7.8	7.0	6.6	6.4	
67.5	35.9	31.0	21.8	14.1	10.1	8.4	7.4	6.8	6.6	
70	36.5	31.8	22.8	15.0	10.8	8.8	7.8	6.7	6.2	
72.5	35.7	31.5	23.0	15.5	11.2	9.2	7.8	5.7	4.9	
75	32.4	28.9	22.1	15.3	11.3	9.2	7.2	3.7	2.8	
77.5	25.3	22.8	18.7	13.7	10.5	8.6	5.6	1.2	0.4	
80	16.2	15.1	13.4	10.6	8.5	7.3	3.8	0.2	0.1	
82.5	9.2	9.1	8.6	7.1	6.0	5.5	2.8	0.4	0.2	
85	4.9	5.1	4.9	4.0	3.6	3.6	2.1	0.7	0.3	
87.5	2.3	2.4	2.2	1.6	1.5	2.0	1.6	1.1	0.4	
90	0.8	0.9	0.7	0.2	0.1	1.0	1.5	1.7	0.6	

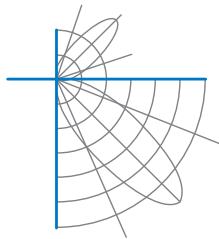


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Luminous Intensity (Candela) Table

		Lateral (C-Plane) Angles								
		0	22.5	45	67.5	90	112.5	135	157.5	180
Vertical (Gamma) Angles	90	0.8	0.9	0.7	0.2	0.1	1.0	1.5	1.7	0.6
	92.5	0.6	0.9	0.6	0.1	0.3	1.4	2.1	2.4	2.6
	95	0.5	0.8	0.6	0.1	0.6	2.0	2.9	3.3	3.5
	97.5	0.3	0.7	0.6	0.1	1.0	2.7	3.9	4.4	4.6
	100	0.1	0.7	0.5	0.2	1.6	3.7	5.2	5.8	5.9
	102.5	0.1	0.7	0.5	0.4	2.3	4.9	7.0	7.5	7.6
	105	0.1	0.7	0.5	0.9	3.3	6.5	9.0	9.8	9.8
	107.5	0.4	0.7	0.5	1.7	4.7	8.5	11.1	12.0	12.2
	110	0.6	0.7	0.6	2.8	6.6	10.6	12.8	13.8	14.2
	112.5	0.6	0.6	1.2	4.6	9.1	12.6	14.4	15.2	15.6
	115	0.6	0.6	2.9	7.4	11.6	14.5	15.8	16.5	16.8
	117.5	0.6	1.9	5.8	11.0	14.0	16.1	17.0	17.6	17.9
	120	3.4	5.3	10.7	14.6	16.0	17.5	18.1	18.7	19.0
	122.5	8.6	10.9	16.5	17.3	17.6	18.6	19.1	19.7	20.0
	125	15.6	17.6	20.5	19.3	18.9	19.6	20.1	20.6	20.7
	127.5	21.5	22.1	22.6	20.7	19.9	20.7	21.1	21.7	21.6
	130	23.8	23.7	23.7	21.8	21.0	21.9	40.8	54.9	62.0
	132.5	24.3	24.2	24.2	22.4	22.0	43.3	58.9	64.9	64.6
	135	24.2	24.3	24.3	22.9	33.6	50.2	67.1	66.7	66.6
	137.5	23.7	23.7	24.0	23.6	45.8	67.8	68.6	68.6	67.6
140	22.7	22.9	23.7	46.5	68.4	68.9	69.6	69.5	68.4	
142.5	22.0	23.0	47.8	69.4	69.4	69.5	70.2	69.7	68.9	
145	66.5	67.9	69.6	70.0	69.7	69.6	70.4	69.8	69.1	
147.5	66.9	68.3	69.2	69.9	69.5	69.5	70.1	69.8	69.4	
150	67.0	67.5	68.5	69.4	68.9	69.5	69.7	69.7	69.4	
152.5	66.9	66.4	68.0	68.5	68.2	69.2	69.3	69.4	69.1	
155	66.4	65.8	67.4	67.6	67.6	68.6	68.9	69.2	69.0	
157.5	65.7	65.3	66.5	66.6	67.3	68.0	68.7	69.0	69.1	
160	64.5	64.3	65.6	65.7	66.7	67.4	68.2	68.7	68.8	
162.5	63.9	63.6	64.6	65.1	65.9	66.9	67.7	68.3	68.4	
165	63.3	63.3	63.7	64.5	65.3	66.3	67.0	67.7	67.8	
167.5	62.5	62.7	63.0	63.8	64.8	65.5	66.5	67.0	67.3	
170	61.8	61.9	62.2	63.2	64.3	64.7	65.7	66.2	66.6	
172.5	61.2	61.1	61.7	62.8	63.6	64.1	65.1	65.5	65.6	
175	61.0	61.1	61.7	62.8	63.2	63.7	64.7	64.9	65.0	
177.5	62.0	62.2	62.6	63.3	63.4	63.6	64.2	64.3	64.5	
180	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	



Report of Test

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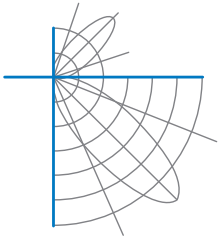
Coefficients of Utilization/Room Utilization - Zonal Cavity Method																						
Effective Floor Cavity Reflectance 0.20																						
RC	80					70					50				30				10			0
RW	70	50	30	10		70	50	30	10		50	30	10		50	30	10		50	30	10	0
RCR																						
0	107	107	107	107		99	99	99	99		83	83	83		69	69	69		56	56	56	50
1	98	93	89	86		90	86	83	80		73	70	68		61	59	57		50	48	47	42
2	89	82	75	70		82	75	70	66		64	60	57		53	51	48		44	42	40	35
3	81	72	64	59		75	67	60	55		57	52	48		47	44	41		39	36	34	30
4	74	64	56	50		68	59	52	47		50	45	41		42	38	35		35	32	30	26
5	68	57	49	43		63	53	46	40		45	40	35		38	34	31		31	28	26	23
6	63	51	43	37		58	47	40	35		41	35	31		34	30	27		29	25	23	20
7	58	46	38	33		54	43	36	31		37	31	27		31	27	24		26	23	20	18
8	54	42	34	29		50	39	32	27		34	28	24		29	24	21		24	21	18	16
9	50	38	31	26		46	36	29	24		31	25	22		26	22	19		22	19	16	14
10	47	35	28	23		43	33	26	22		28	23	19		24	20	17		20	17	15	13

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	1.6	8.96	8.85	
8.0	0.9	11.95	11.81	
10.0	0.6	14.94	14.76	
12.0	0.4	17.93	17.71	
14.0	0.3	20.92	20.66	
16.0	0.2	23.91	23.61	

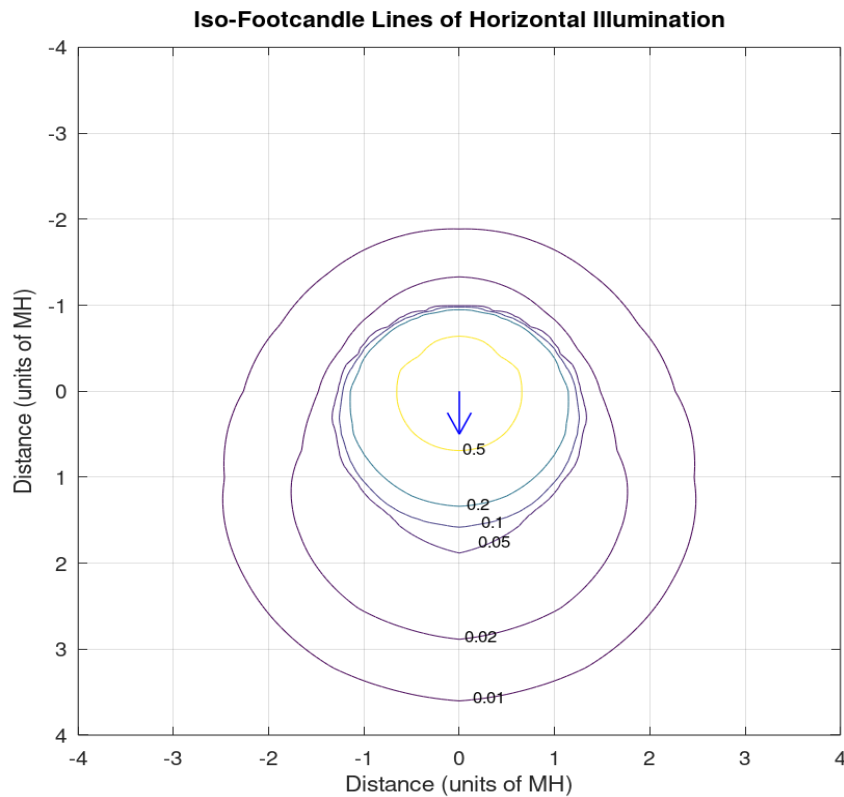
Average Luminance (cd/m ²)			
	0 deg Plane	45 deg Plane	90 deg Plane
0	17953	17953	17953
45	25787	24759	22577
55	33102	21228	4033
65	25528	15215	6966
75	39503	26973	13767
85	17872	17738	13030

Spacing Criterion	
0 degree plane:	1.5
90 degree plane:	1.5
180 degree plane:	1.4
270 degree plane:	1.5

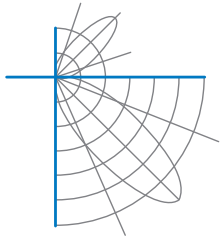


Report of Test LLIA001198-007A

Iso-Illuminance Plot



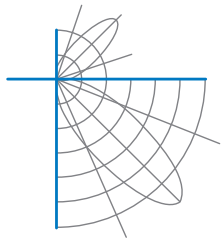
The isofootcandle values shown in the plot above are based on a mounting height of $h = 8.0$ feet. Grid values show multiples of mounting height. The isoilluminance contour lines are expressed in units of footcandles. The values expressed are based on the direct light from a single unit without the contribution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



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Additional Pictures of Test Subject





Report of Test

LLIA001198-007A

Test Distance 9.5 m
Ambient 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-79-19 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

LLIA001198-007B

Integrating Sphere Report

Catalog Number: 3-732-16 Pilot

Wall mounted, formed steel and aluminum housing, clear glass enclosures.

Two white LEDs

One Novbo IS007038060-1G LED driver



Performance Summary

Voltage	120.0 Vac
Current	0.0748 A
Power	4.75 W
Frequency	59.99 Hz
Power Factor	0.529
Current THD	141.0 %
Total Luminous Flux	322.0 lm
Efficacy	67.8 lm/W
Chromaticity (x,y)	(0.4280, 0.4109)
(u',v')	(0.2420, 0.5227)
Duv	0.0041
CCT	3211 K
CRI (Ra)	84
R9	10
TM-30: Rf	86
TM-30: Rg	96

Prepared For:

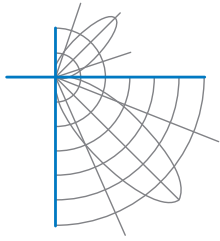
Oxygen Lighting

201 Railhead Road

Fort Worth, TX 76106, USA

Test date: 12/12/2019

Report date: 12/17/2019



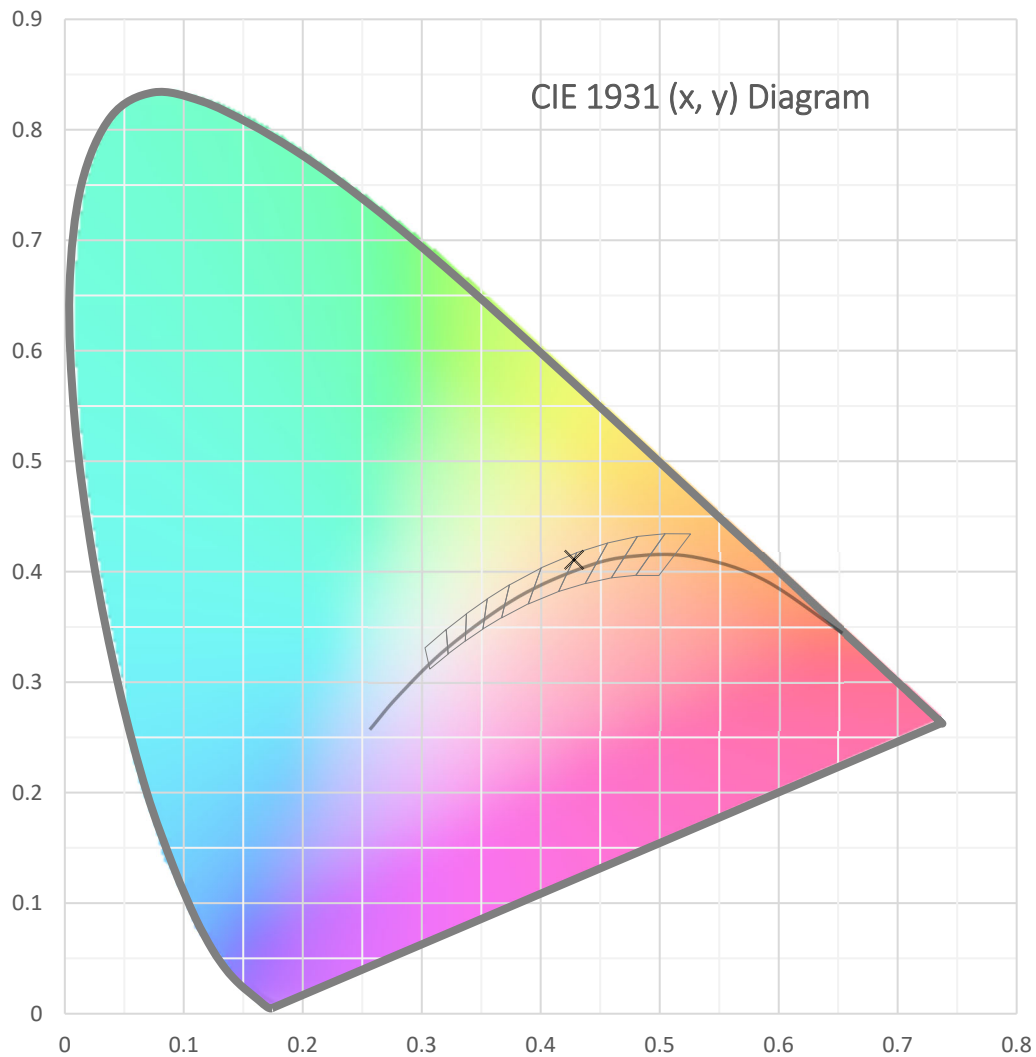
Test Report Number: LLIA001198-007B

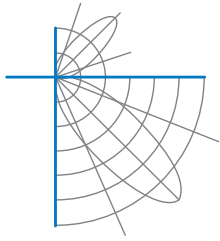
Catalog Number: 3-732-16 Pilot

Wall mounted, formed steel and aluminum housing, clear glass enclosures.

Two white LEDs

One Novbo IS007038060-1G LED driver





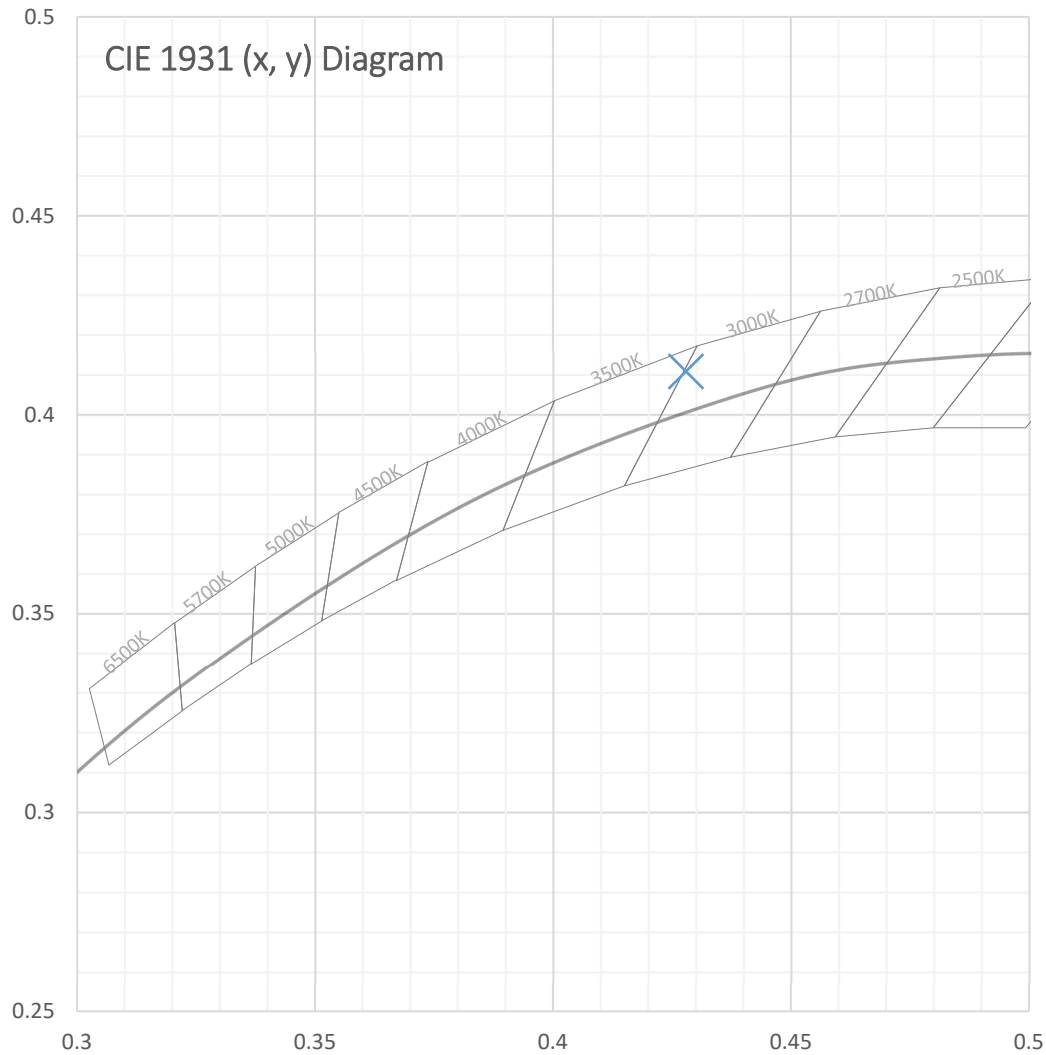
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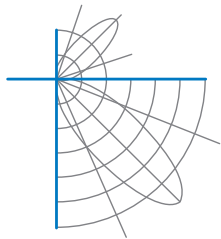
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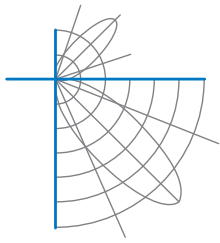
Two white LEDs

One Novbo IS007038060-1G LED driver

Spectral Data	Total Radiant Flux	0.972 W
	Total Luminous Flux	322.0 Lm
	Chromaticity CIE 1931 (x, y)	(0.4280, 0.4109)
	Chromaticity CIE 1976 (u', v')	(0.2420, 0.5227)
	Correlated Color Temperature (CCT)	3211 K
	Color Rendering Index (Ra)	84
	R1	82
	R2	90
	R3	98
	R4	84
	R5	83
	R6	89
	R7	86
	R8	62
	R9	10
	R10	78
	R11	84
	R12	76
	R13	84
	R14	99
	TM-30: Rf	86
	TM-30: Rg	96
	Distance from Planckian Locus (Duv)	0.0041
	Scotopic/Photopic Ratio *	1.420

Electrical Data

Voltage	120.0 Vac
Current	0.0748 A
Power	4.75 W
Frequency	59.99 Hz
Power Factor	0.529
Current THD	141.0 %



Test Report Number: LLIA001198-007B

Catalog Number: 3-732-16 Pilot

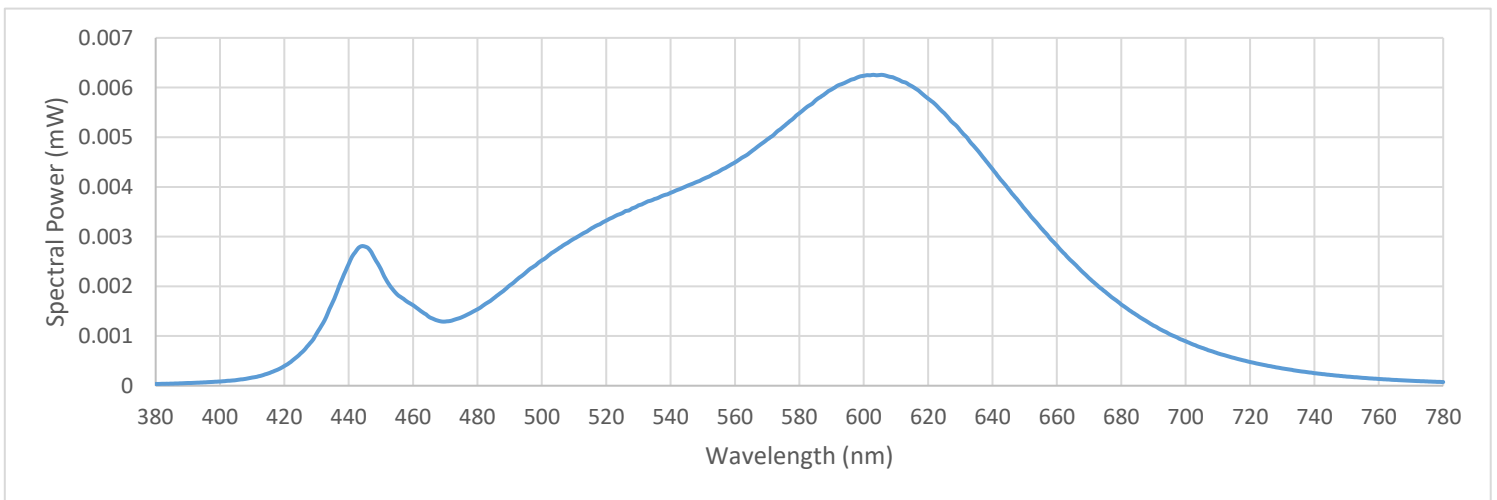
Wall mounted, formed steel and aluminum housing, clear glass enclosures.

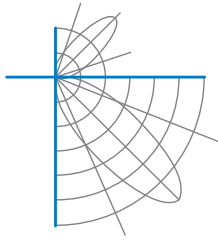
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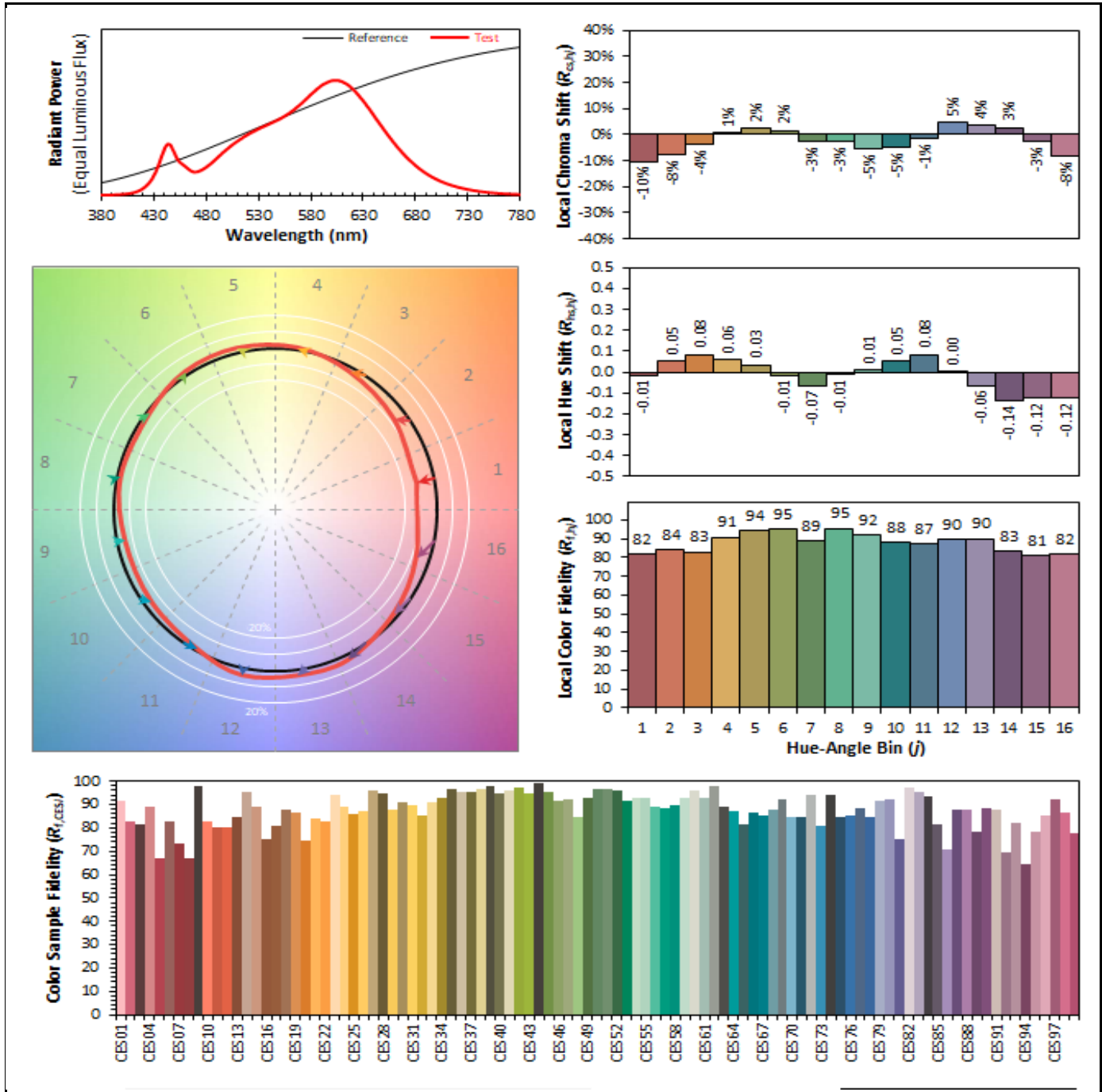
Summary Spectral Power Distribution (wavelength - nm, spectral power - mW)

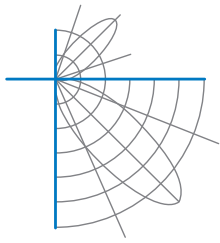
380	0.000037	480	0.001541	580	0.005486	680	0.001635
385	0.000043	485	0.001760	585	0.005742	685	0.001414
390	0.000056	490	0.002020	590	0.005965	690	0.001213
395	0.000067	495	0.002279	595	0.006125	695	0.001039
400	0.000086	500	0.002525	600	0.006237	700	0.000895
405	0.000114	505	0.002755	605	0.006256	705	0.000765
410	0.000165	510	0.002959	610	0.006179	710	0.000653
415	0.000248	515	0.003150	615	0.006025	715	0.000560
420	0.000398	520	0.003325	620	0.005778	720	0.000479
425	0.000647	525	0.003474	625	0.005483	725	0.000409
430	0.001050	530	0.003628	630	0.005136	730	0.000350
435	0.001679	535	0.003758	635	0.004765	735	0.000298
440	0.002454	540	0.003883	640	0.004356	740	0.000254
445	0.002802	545	0.004019	645	0.003956	745	0.000218
450	0.002344	550	0.004158	650	0.003560	750	0.000186
455	0.001841	555	0.004314	655	0.003178	755	0.000160
460	0.001620	560	0.004497	660	0.002821	760	0.000138
465	0.001383	565	0.004711	665	0.002482	765	0.000118
470	0.001294	570	0.004955	670	0.002166	770	0.000101
475	0.001376	575	0.005213	675	0.001891	775	0.000087
						780	0.000075





IES TM-30 Details





Test Report Number: LLIA001198-007B

Catalog Number: 3-732-16 Pilot

Wall mounted, formed steel and aluminum housing, clear glass enclosures.

Two white LEDs

One Novbo IS007038060-1G LED driver

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-79-19, 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.

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.