

## Report of Test

LLIA001166-021A

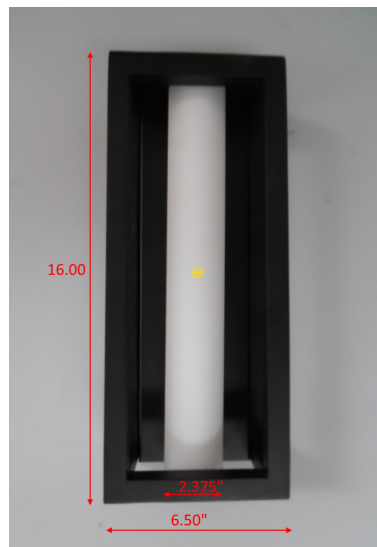
Indoor Distribution Photometry Test Report

Catalog Number: Aperto 3-723-15

Wall mounted, formed and extruded aluminum housing, white coated glass enclosure.

44 white LEDs, one ES-120V-12W-L350\*W32 LED board

One onboard LED driver



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

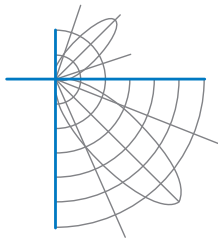
Performance Summary			
Input Voltage	120.0 V	Luminous Flux	546.4 Lumens
Input Current	0.1055 A	Total Efficacy	43.9 Lm/W
Input Power	12.45 W	Downward Flux	277.9 Lumens
Frequency	60.00 Hz	Downward Flux	50.9 % of Total
Power Factor	0.983		
Current THD	17.9 %		

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

Test date: 10/16/2019

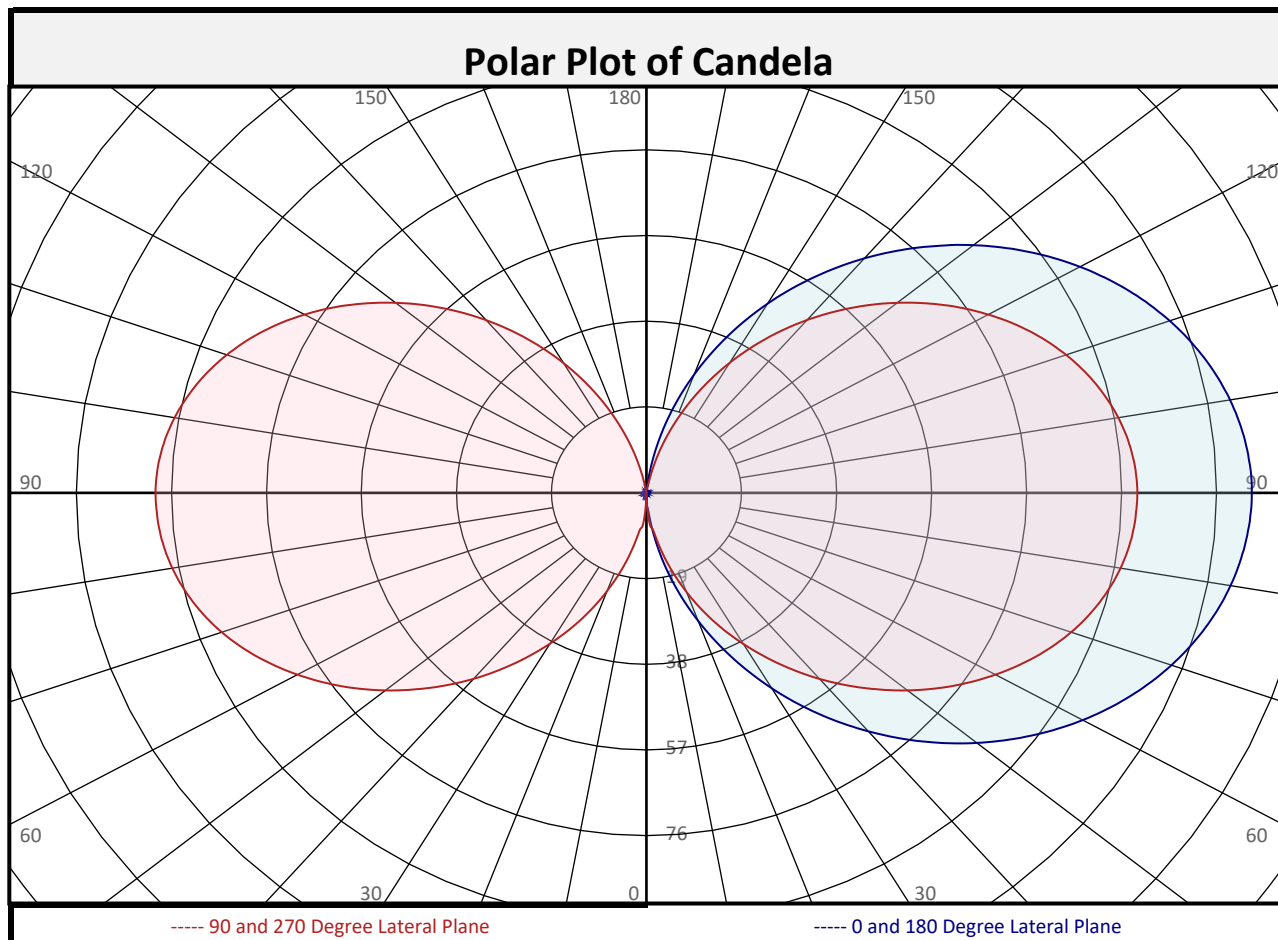
Report date: 10/18/2019

Signed: \_\_\_\_\_

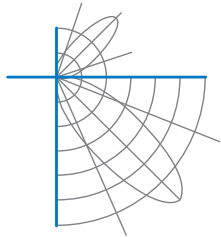


## Report of Test

### LLIA001166-021A



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	0.5	0.1%		90-100	63.6	11.6%		0-20	3.9	0.7%
10-20	3.4	0.6%		100-110	59.1	10.8%		0-30	13.6	2.5%
20-30	9.7	1.8%		110-120	50.8	9.3%		0-40	32.4	5.9%
30-40	18.7	3.4%		120-130	39.9	7.3%		0-60	103.1	18.9%
40-50	29.6	5.4%		130-140	28.1	5.1%		0-80	214.1	39.2%
50-60	41.1	7.5%		140-150	17.0	3.1%		10-90	277.4	50.8%
60-70	51.6	9.4%		150-160	7.9	1.4%		20-50	58.1	10.6%
70-80	59.5	10.9%		160-170	2.0	0.4%		40-90	245.5	44.9%
80-90	63.7	11.7%		170-180	0.1	0.0%		60-90	174.8	32.0%
0-90	277.9	50.9%		90-180	268.5	49.1%		0-180	546.4	100.0%

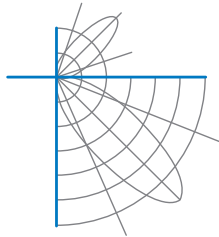


## Report of Test

### LLIA001166-021A

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	0	0	0	0	0	0	0	0	0
	2.5	3	3	3	3	3	2	2	1	1
	5	4	4	6	7	6	5	3	1	1
	7.5	7	7	8	9	8	6	4	2	1
	10	11	11	10	9	9	7	4	2	1
	12.5	16	16	13	11	12	9	4	2	1
	15	21	21	15	14	16	11	4	2	1
	17.5	25	25	18	16	20	13	4	2	1
	20	30	30	21	18	23	15	4	2	1
	22.5	35	35	24	21	27	17	4	1	1
	25	40	40	27	23	31	19	4	1	1
	27.5	45	45	29	25	35	21	4	1	1
	30	50	50	32	28	39	23	4	1	1
	32.5	55	55	35	30	42	26	3	1	1
	35	60	59	37	32	46	28	3	1	1
	37.5	64	64	40	34	50	30	3	1	1
	40	69	69	43	36	54	32	3	1	1
	42.5	74	73	45	39	57	34	3	1	1
	45	78	78	47	41	61	36	3	1	0
	47.5	82	82	50	43	65	38	3	1	0
50	86	86	52	45	68	40	2	1	0	
52.5	90	90	54	47	71	42	2	1	0	
55	94	94	56	48	75	43	2	1	0	
57.5	97	97	58	50	78	45	2	1	0	
60	101	100	60	52	81	47	2	1	0	
62.5	104	104	62	53	83	48	2	1	0	
65	107	106	63	55	86	50	2	1	0	
67.5	109	109	65	56	88	51	2	1	0	
70	112	111	66	58	90	52	1	1	0	
72.5	114	114	67	59	92	53	1	1	0	
75	116	116	68	60	94	54	1	1	0	
77.5	117	117	69	60	95	55	1	0	0	
80	119	118	70	61	96	55	1	0	0	
82.5	120	119	70	61	97	56	1	0	0	
85	120	120	71	62	98	56	1	0	0	
87.5	121	121	71	62	98	56	1	0	0	
90	121	121	71	62	98	56	1	0	0	

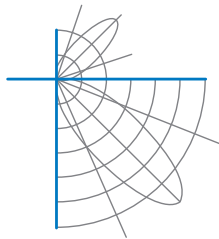


## Report of Test

### LLIA001166-021A

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	121	121	71	62	98	56	1	0	0
	92.5	121	121	71	62	98	56	1	0	0
	95	120	120	71	62	98	56	1	0	0
	97.5	120	119	70	61	97	55	1	0	0
	100	118	118	70	61	96	55	1	0	0
	102.5	117	117	69	60	95	54	1	0	0
	105	115	115	68	59	93	53	1	0	0
	107.5	114	113	67	58	91	52	1	0	0
	110	111	111	65	57	89	51	1	0	0
	112.5	109	109	64	55	87	50	1	0	0
	115	106	106	62	54	85	48	1	0	0
	117.5	103	103	61	52	82	47	1	0	0
	120	100	100	59	50	79	45	1	0	0
	122.5	97	96	57	48	76	43	1	0	0
	125	93	93	55	46	73	42	1	0	0
	127.5	89	89	52	44	69	40	1	0	0
	130	85	85	50	42	65	38	1	0	0
	132.5	81	80	48	40	62	35	1	0	0
	135	77	76	45	37	58	33	1	0	0
	137.5	72	72	42	35	54	31	1	0	0
140	68	67	40	32	50	29	1	0	0	
142.5	63	62	37	30	46	26	1	0	0	
145	58	57	34	27	42	24	1	0	0	
147.5	53	52	31	25	37	21	1	0	0	
150	48	47	28	22	33	19	1	0	0	
152.5	43	42	25	19	29	17	1	0	0	
155	38	37	22	16	25	14	1	0	0	
157.5	33	32	19	14	20	12	1	0	0	
160	28	27	16	11	16	9	0	0	0	
162.5	23	22	12	8	12	7	0	0	0	
165	18	17	9	5	8	4	0	0	0	
167.5	13	12	6	3	4	2	0	0	0	
170	8	7	3	1	1	0	0	0	0	
172.5	3	3	1	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

### LLIA001166-021A

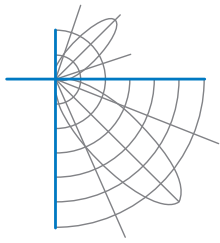
Coefficients of Utilization/Room Utilization - Zonal Cavity Method																					
Effective Floor Cavity Reflectance 0.20																					
RC	80				70				50				30				10				0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																					
0	107	107	107	107	99	99	99	99	84	84	84	70	70	70	57	57	57	51			
1	92	85	79	73	84	78	72	67	64	60	56	52	49	46	41	38	36	30			
2	81	71	62	55	74	65	57	51	53	47	42	42	38	34	33	29	26	21			
3	73	60	51	43	66	55	47	40	45	38	33	36	30	26	27	23	20	15			
4	66	52	42	35	59	48	39	32	39	32	26	31	25	21	23	19	15	11			
5	60	46	36	29	54	42	33	26	34	27	22	27	21	17	20	16	12	9			
6	55	40	31	24	49	37	28	22	30	23	18	24	18	14	18	13	10	7			
7	50	36	27	20	45	33	25	19	27	20	15	21	16	12	16	12	8	6			
8	46	32	24	18	42	30	22	16	24	18	13	19	14	10	14	10	7	5			
9	43	29	21	15	39	27	19	14	22	16	11	17	12	9	13	9	6	4			
10	40	27	19	13	36	24	17	12	20	14	10	16	11	8	12	8	5	3			

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	0.0	62.01	103.45
8.0	0.0	82.68	137.93
10.0	0.0	103.35	172.42
12.0	0.0	124.02	206.90
14.0	0.0	144.68	241.38
16.0	0.0	165.35	275.87

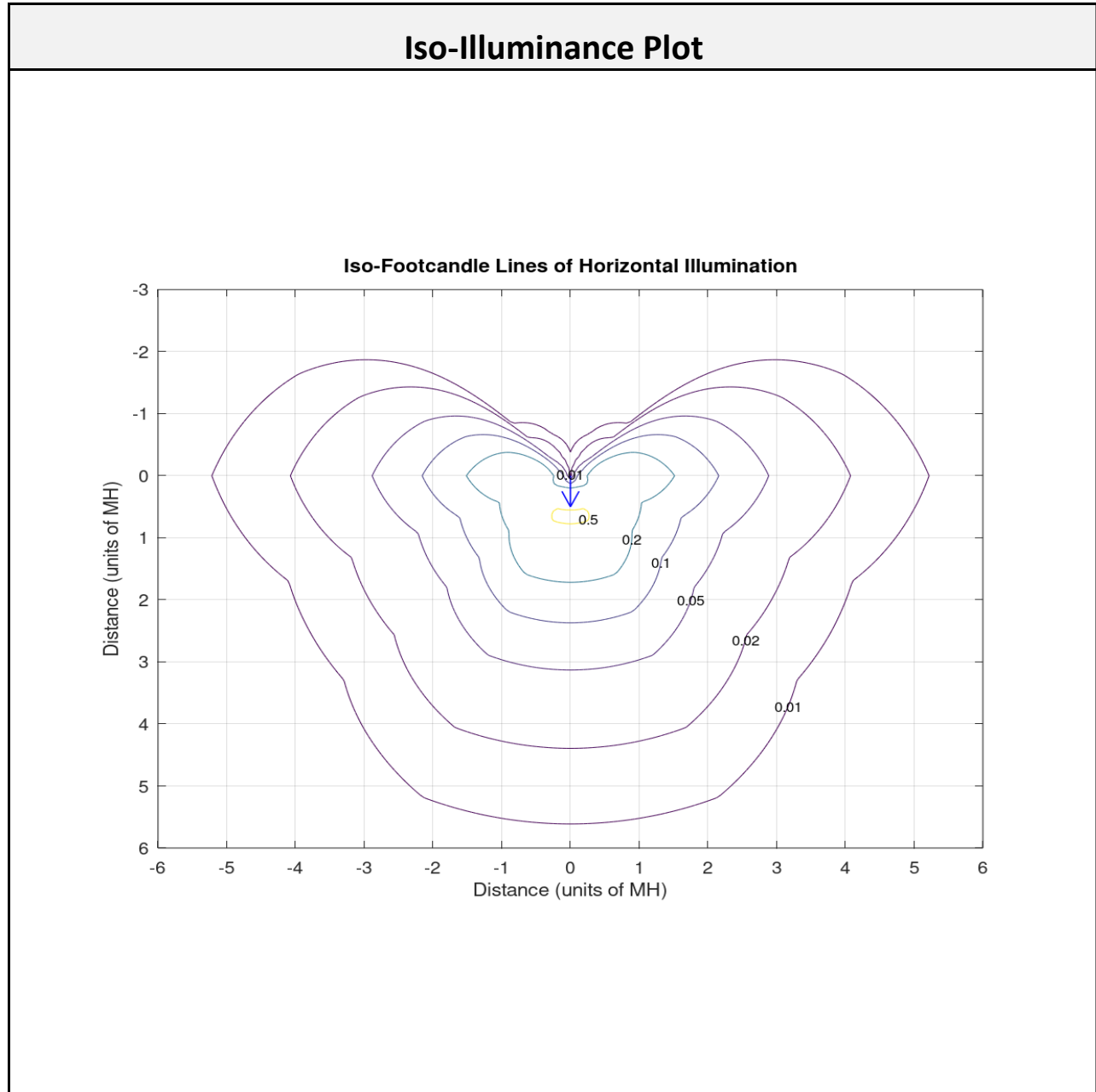
Average Luminance (cd/m <sup>2</sup> )			
	0 deg Plane	45 deg Plane	90 deg Plane
0	82	82	82
45	3968	1774	3111
55	4294	1868	3415
65	4557	1948	3670
75	4769	2013	3868
85	4941	2064	4010

Spacing Criterion	
0 degree plane:	18.5
90 degree plane:	17.2
180 degree plane:	2.2
270 degree plane:	17.2

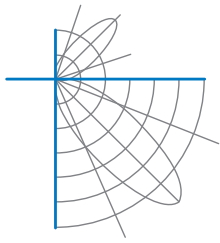


## Report of Test LLIA001166-021A

### 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

### LLIA001166-021A

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.

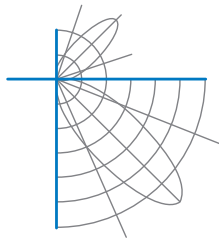
Prorating the performance of the sample for the use of other component combinations (such as lamp / LED / Ballast / driver), or for use in different environmental conditions than that tested, may produce erroneous results.

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

**LLIA001166-021B**

Integrating Sphere Report

Catalog Number: Aperto 3-723-15

Wall mounted, formed and extruded aluminum housing, white coated glass enclosure.

44 white LEDs, one ES-120V-12W-L350\*W32 LED board

One onboard LED driver



### Performance Summary

Voltage	120.0 Vac
Current	0.1057 A
Power	12.45 W
Frequency	59.99 Hz
Power Factor	0.982
Current THD	17.9 %
Total Luminous Flux	561.0 lm
Efficacy	45.1 lm/W
Chromaticity (x,y)	(0.4473, 0.4094)
(u',v')	(0.2549, 0.5250)
Duv	0.0008
CCT	2876 K
CRI (Ra)	92
R9	57
TM-30: Rf	91
TM-30: Rg	98

Prepared For:

Oxygen Lighting

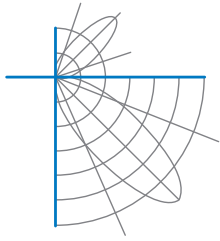
201 Railhead Road

Fort Worth, TX 76106, USA

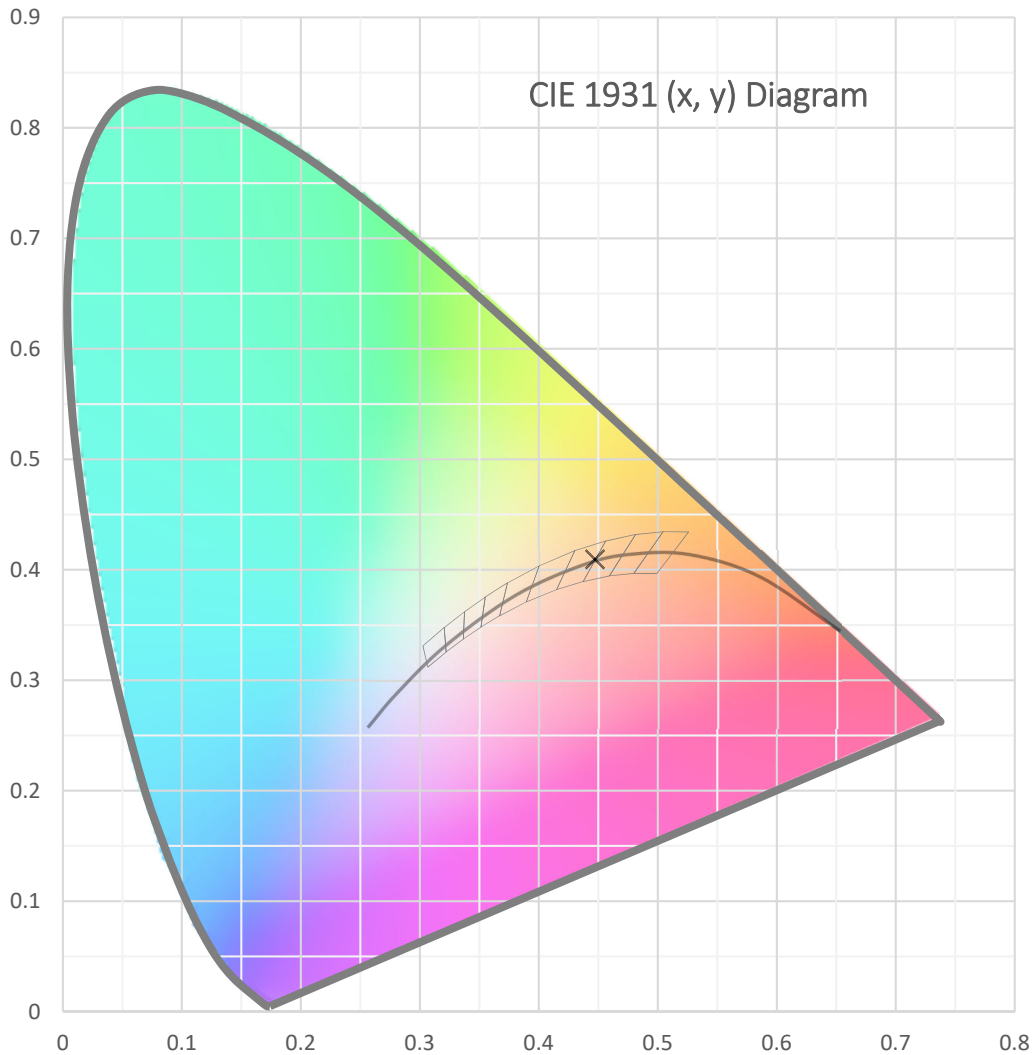
Test date: 10/15/2019

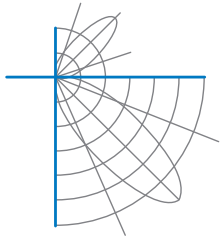
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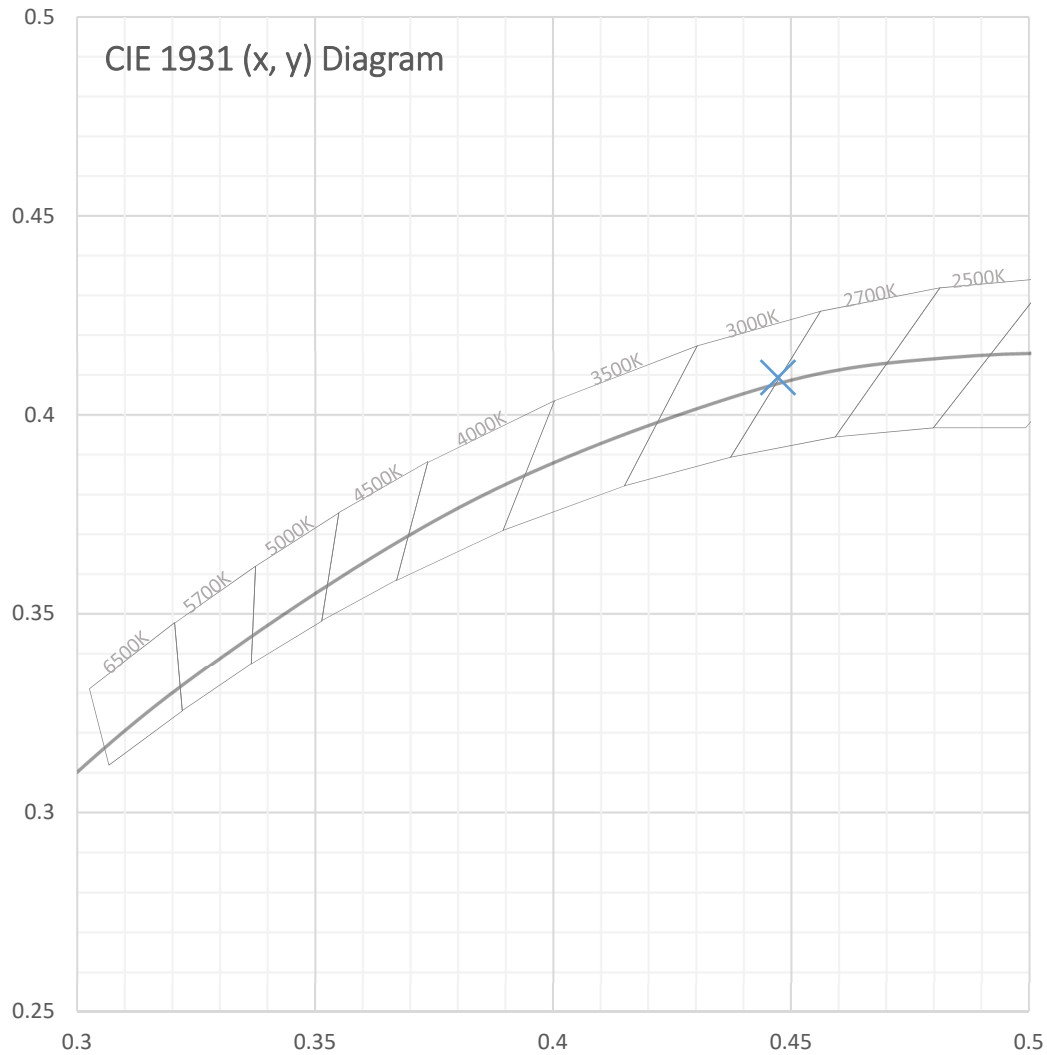


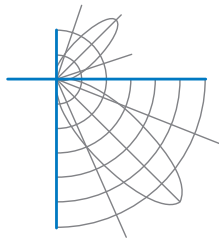
**Test Report Number: LLIA001166-021B**  
Catalog Number: Aperto 3-723-15  
Wall mounted, formed and extruded aluminum  
housing, white coated glass enclosure.  
44 white LEDs, one ES-120V-12W-L350\*W32 LED board  
One onboard LED driver





**Test Report Number: LLIA001166-021B**  
Catalog Number: Aperto 3-723-15  
Wall mounted, formed and extruded aluminum  
housing, white coated glass enclosure.  
44 white LEDs, one ES-120V-12W-L350\*W32 LED board  
One onboard LED driver





**Test Report Number: LLIA001166-021B**

Catalog Number: Aperto 3-723-15

Wall mounted, formed and extruded aluminum housing, white coated glass enclosure.

44 white LEDs, one ES-120V-12W-L350\*W32 LED board

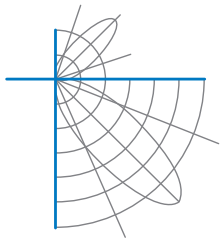
One onboard LED driver

**Spectral Data**

Total Radiant Flux	1.969 W
Total Luminous Flux	561.0 Lm
Chromaticity CIE 1931 (x, y)	(0.4473, 0.4094)
Chromaticity CIE 1976 (u', v')	(0.2549, 0.5250)
Correlated Color Temperature (CCT)	2876 K
Color Rendering Index (Ra)	92
R1	92
R2	96
R3	99
R4	92
R5	92
R6	96
R7	92
R8	81
R9	57
R10	91
R11	93
R12	83
R13	93
R14	99
TM-30: Rf	91
TM-30: Rg	98
Distance from Planckian Locus (Duv)	0.0008
Scotopic/Photopic Ratio *	1.362

**Electrical Data**

Voltage	120.0 Vac
Current	0.1057 A
Power	12.45 W
Frequency	59.99 Hz
Power Factor	0.982
Current THD	17.9 %



**Test Report Number: LLIA001166-021B**

Catalog Number: Aperto 3-723-15

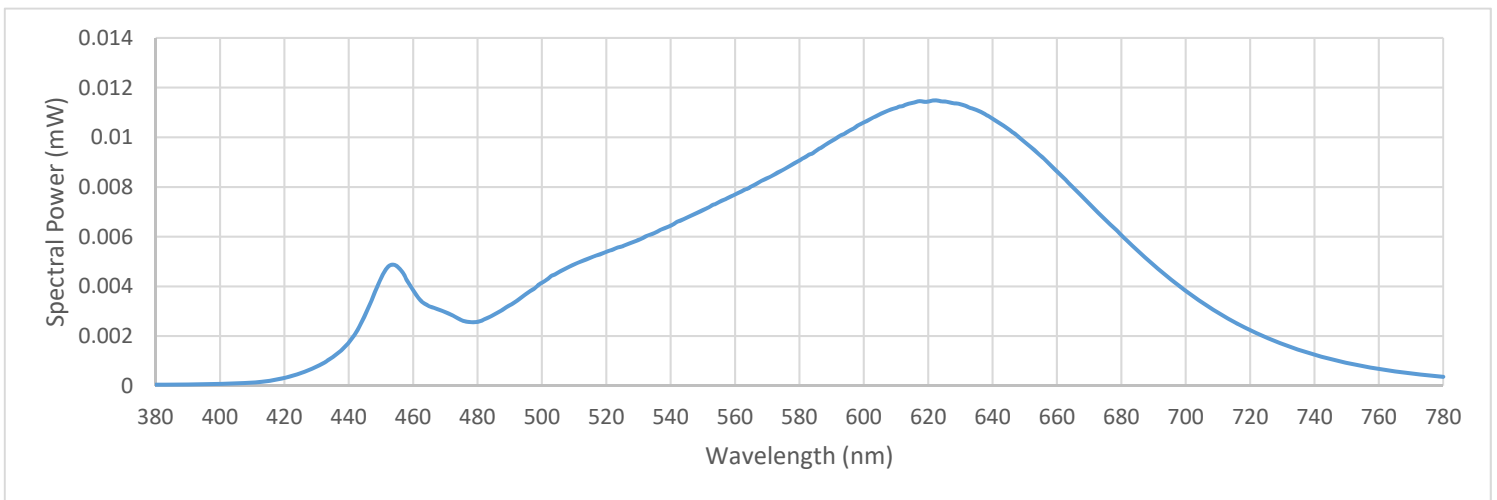
Wall mounted, formed and extruded aluminum housing, white coated glass enclosure.

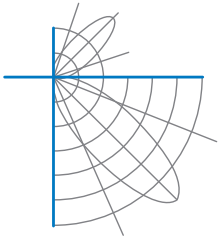
44 white LEDs, one ES-120V-12W-L350\*W32 LED board

One onboard LED driver

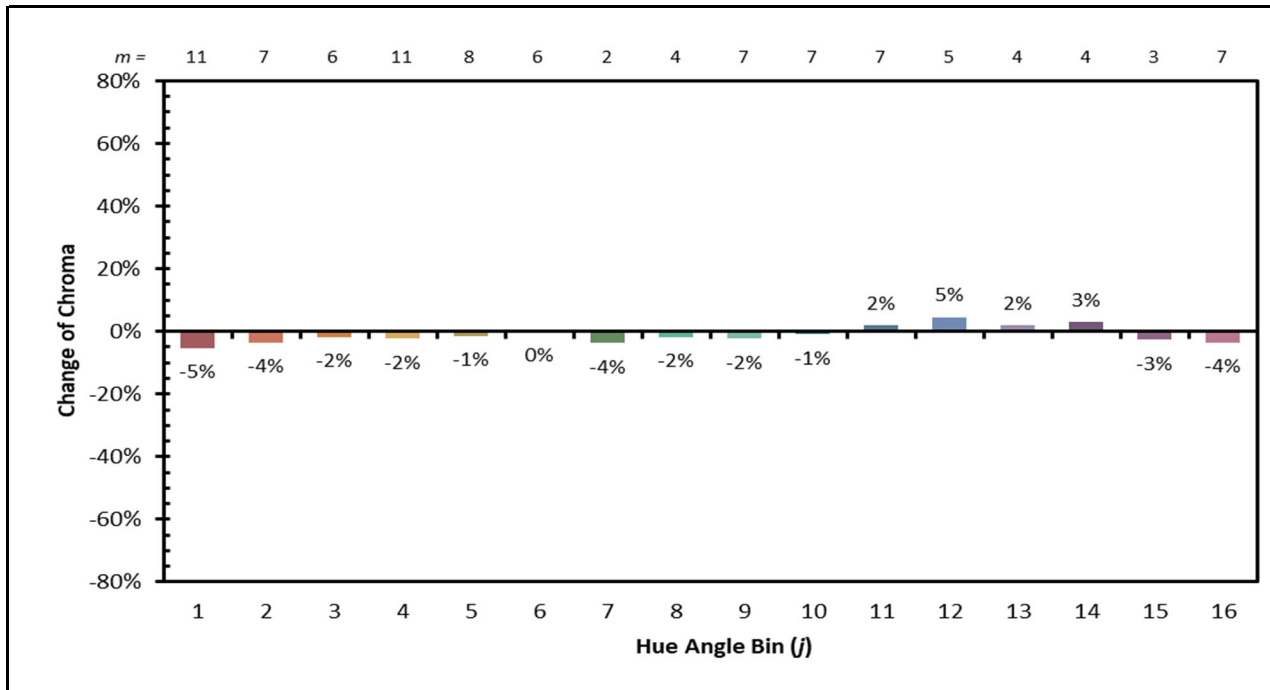
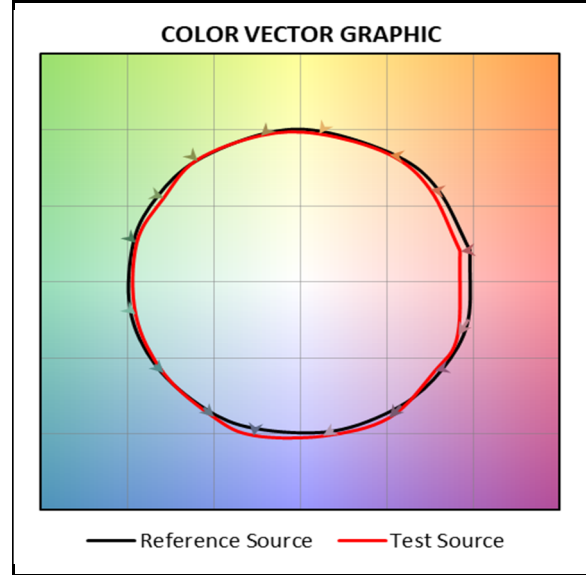
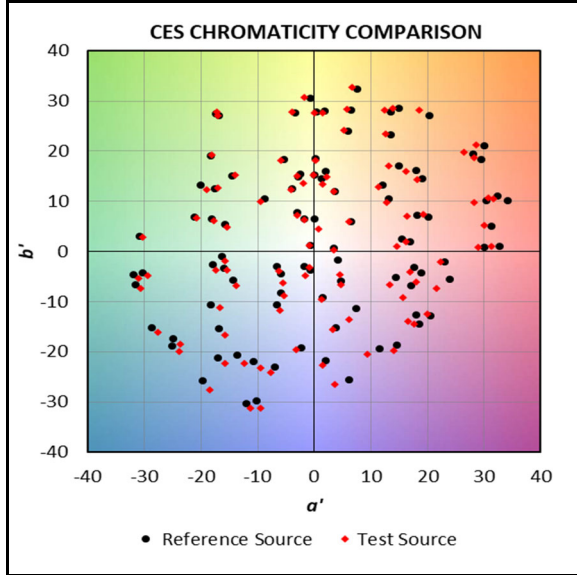
**Summary Spectral Power Distribution (wavelength - nm, spectral power - mW)**

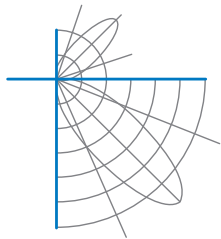
380	0.000044	480	0.002576	580	0.009066	680	0.006064
385	0.000046	485	0.002852	585	0.009444	685	0.005448
390	0.000054	490	0.003239	590	0.009853	690	0.004870
395	0.000062	495	0.003683	595	0.010228	695	0.004317
400	0.000077	500	0.004148	600	0.010601	700	0.003833
405	0.000097	505	0.004556	605	0.010927	705	0.003367
410	0.000128	510	0.004888	610	0.011180	710	0.002938
415	0.000194	515	0.005151	615	0.011389	715	0.002574
420	0.000319	520	0.005388	620	0.011438	720	0.002243
425	0.000507	525	0.005614	625	0.011443	725	0.001943
430	0.000771	530	0.005875	630	0.011333	730	0.001687
435	0.001151	535	0.006154	635	0.011094	735	0.001451
440	0.001733	540	0.006445	640	0.010752	740	0.001247
445	0.002830	545	0.006765	645	0.010329	745	0.001073
450	0.004325	550	0.007070	650	0.009801	750	0.000921
455	0.004809	555	0.007392	655	0.009253	755	0.000788
460	0.003853	560	0.007695	660	0.008634	760	0.000682
465	0.003195	565	0.008022	665	0.007991	765	0.000582
470	0.002969	570	0.008358	670	0.007330	770	0.000497
475	0.002642	575	0.008692	675	0.006690	775	0.000427
						780	0.000363





IES TM-30 Details





**Test Report Number: LLIA001166-021B**

Catalog Number: Aperto 3-723-15

Wall mounted, formed and extruded aluminum housing, white coated glass enclosure.

44 white LEDs, one ES-120V-12W-L350\*W32 LED board

One onboard LED driver

**Test Equipment Configuration:** LightLab International Allentown 2m Integrating Sphere  
Measurements acquired using a Labsphere CDS 2600 spectroradiometer  
Testing was performed using 4 $\pi$  geometry

**Test Temperature:** 25.0 °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

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