

Report of Test

LLIA001166-001A

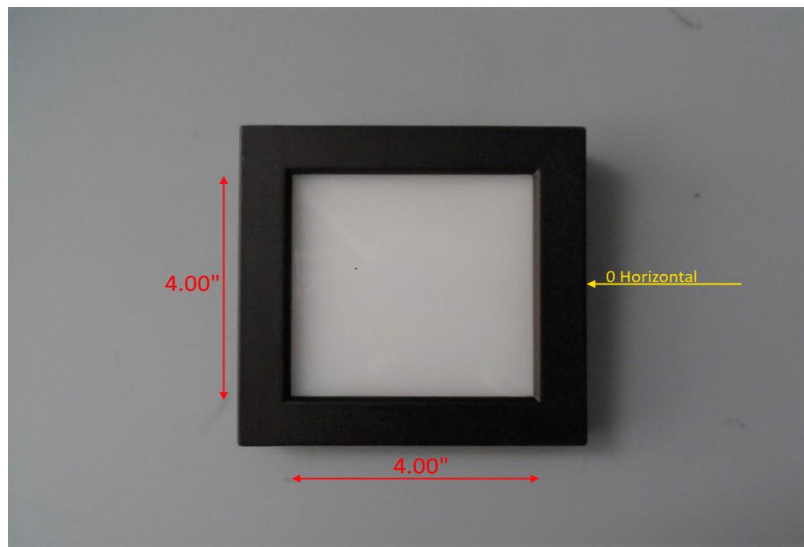
Indoor Distribution Photometry Test Report

Catalog Number: Altair 3-332-6

Ceiling mounted, cast aluminum housing with steel back plate. Translucent white diffuser, clear patterned plastic back diffuser with white reflector, clear glass enclosure.

24 edge-illuminating white LEDs, Two LED boards with 12 LEDs each.

One unmarked LED Driver.



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

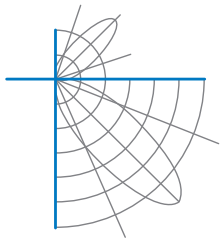
Performance Summary			
Input Voltage	120.0 V	Luminous Flux	480.0 Lumens
Input Current	0.0922 A	Total Efficacy	44.1 Lm/W
Input Power	10.89 W	Downward Flux	480.0 Lumens
Frequency	60.00 Hz	Downward Flux	100.0 % of Total
Power Factor	0.984		
Current THD	11.3 %		

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

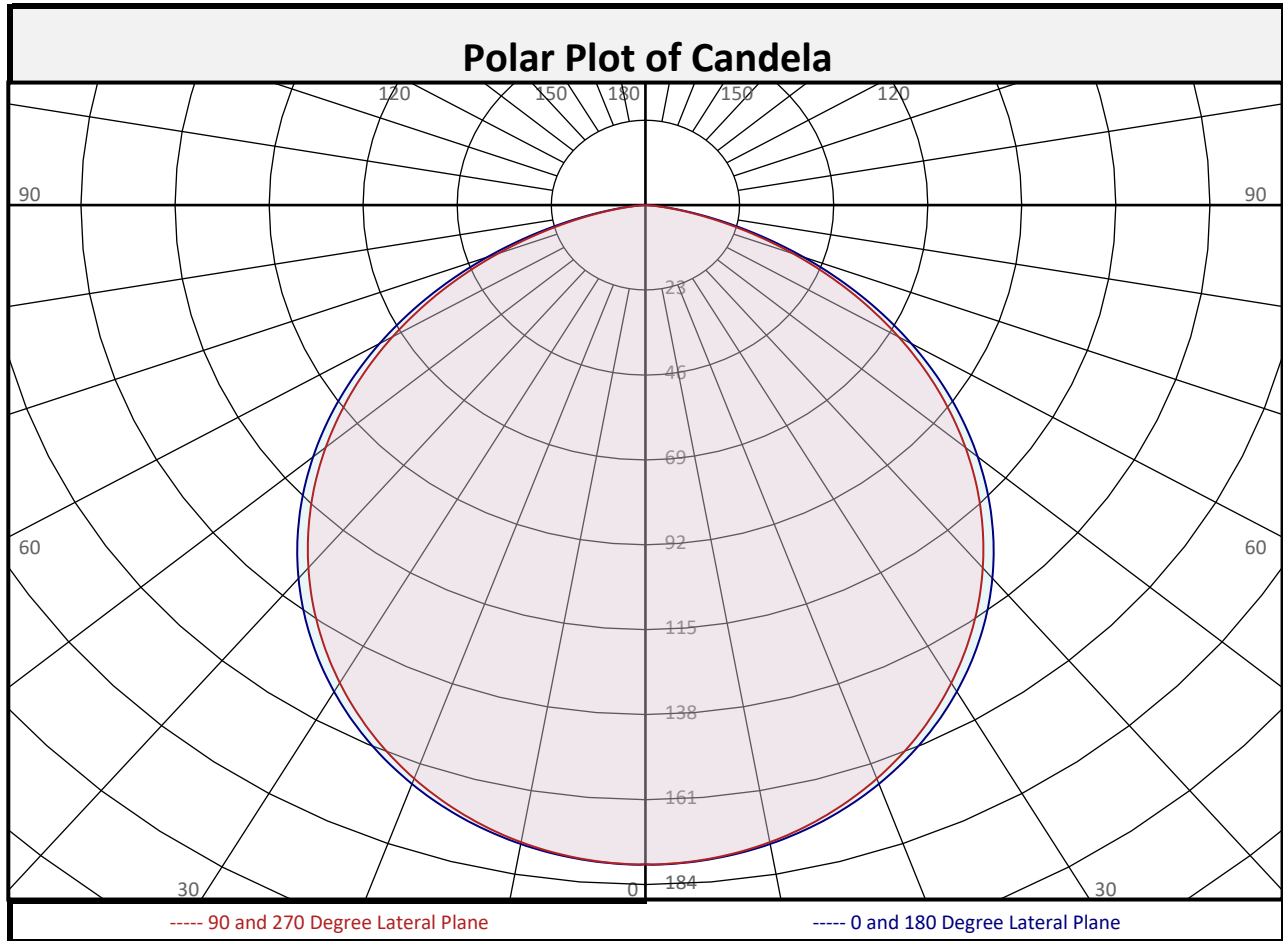
Test date: 10/22/2019

Report date: 10/24/2019

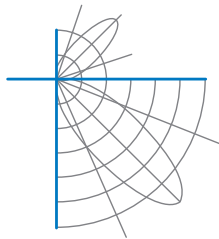
Signed: _____



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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	16.9	3.5%		90-100	0.0	0.0%		0-20	65.3	13.6%
10-20	48.4	10.1%		100-110	0.0	0.0%		0-30	138.6	28.9%
20-30	73.3	15.3%		110-120	0.0	0.0%		0-40	226.8	47.2%
30-40	88.2	18.4%		120-130	0.0	0.0%		0-60	396.5	82.6%
40-50	90.5	18.9%		130-140	0.0	0.0%		0-80	476.8	99.3%
50-60	79.3	16.5%		140-150	0.0	0.0%		10-90	463.1	96.5%
60-70	55.4	11.5%		150-160	0.0	0.0%		20-50	252.0	52.5%
70-80	24.9	5.2%		160-170	0.0	0.0%		40-90	253.3	52.8%
80-90	3.2	0.7%		170-180	0.0	0.0%		60-90	83.5	17.4%
0-90	480.0	100.0%		90-180	0.0	0.0%		0-180	480.0	100.0%

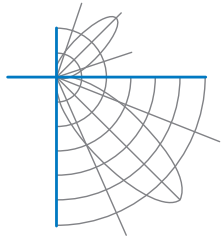


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Luminous Intensity (Candela) Table

		Lateral (C-Plane) Angles								
		0	22.5	45	67.5	90	112.5	135	157.5	180
Vertical (Gamma) Angles	0	179	179	179	179	179	179	179	179	179
	2.5	178	178	178	178	178	178	178	178	178
	5	178	178	178	178	178	178	178	178	178
	7.5	177	177	177	177	177	177	177	177	177
	10	176	176	175	175	175	175	175	176	176
	12.5	174	174	174	173	173	173	174	174	174
	15	172	172	171	171	171	171	171	172	172
	17.5	170	169	169	168	168	168	169	169	170
	20	167	167	166	165	165	165	166	167	167
	22.5	164	163	163	162	162	162	163	163	164
	25	160	160	159	158	158	158	159	160	160
	27.5	156	156	155	154	154	154	155	156	156
	30	152	152	151	150	149	150	151	152	152
	32.5	148	147	146	145	145	145	146	147	148
	35	143	142	141	140	140	140	141	142	143
	37.5	138	137	135	134	134	134	135	137	138
	40	132	131	130	129	128	129	130	131	132
	42.5	126	125	124	122	122	122	124	125	126
	45	120	119	117	116	116	116	117	119	120
	47.5	113	112	111	109	109	109	111	112	113
50	106	105	104	102	102	102	104	105	106	
52.5	99	98	96	95	95	95	96	98	99	
55	91	90	89	87	87	87	89	90	91	
57.5	83	82	81	80	79	80	81	82	83	
60	75	74	72	72	71	72	72	74	75	
62.5	67	66	64	63	63	63	64	66	67	
65	58	57	56	55	55	55	56	57	58	
67.5	50	49	47	46	47	46	47	49	50	
70	41	40	39	38	38	38	39	40	41	
72.5	33	32	30	30	30	30	30	32	33	
75	25	24	23	22	23	22	23	24	25	
77.5	17	17	16	15	16	15	16	17	17	
80	11	10	10	9	10	9	10	10	11	
82.5	6	5	5	5	5	5	5	5	6	
85	2	2	2	2	2	2	2	2	2	
87.5	0	0	0	0	0	0	0	0	0	
90	0	0	0	0	0	0	0	0	0	

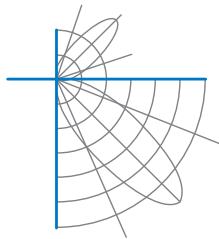


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Luminous Intensity (Candela) Table

		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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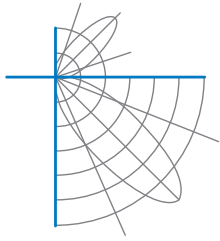
Coefficients of Utilization/Room Utilization - Zonal Cavity Method																						
Effective Floor Cavity Reflectance 0.20																						
RC	80					70					50				30				10			0
RW	70	50	30	10		70	50	30	10		50	30	10		50	30	10		50	30	10	0
RCR																						
0	119	119	119	119		116	116	116	116		111	111	111		106	106	106		102	102	102	100
1	110	105	101	98		107	103	99	96		99	96	93		95	92	90		91	89	87	85
2	100	92	86	80		97	90	84	79		87	82	77		83	79	76		80	77	74	72
3	91	81	73	67		89	80	72	66		77	70	65		74	69	64		71	67	63	61
4	84	72	63	57		81	71	63	57		68	61	56		66	60	55		64	59	54	52
5	77	64	56	49		75	63	55	49		61	54	48		59	53	48		57	52	47	45
6	71	58	49	43		69	57	49	43		55	48	42		54	47	42		52	46	42	40
7	66	53	44	38		64	52	44	38		50	43	38		49	42	37		48	42	37	35
8	61	48	40	34		60	47	39	34		46	39	34		45	38	33		44	38	33	31
9	57	44	36	30		56	43	36	30		42	35	30		41	35	30		40	34	30	28
10	54	41	33	28		53	40	33	28		39	32	27		38	32	27		37	31	27	25

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	5.0	7.60	7.47	
8.0	2.8	10.13	9.96	
10.0	1.8	12.66	12.45	
12.0	1.2	15.19	14.93	
14.0	0.9	17.72	17.42	
16.0	0.7	20.25	19.91	

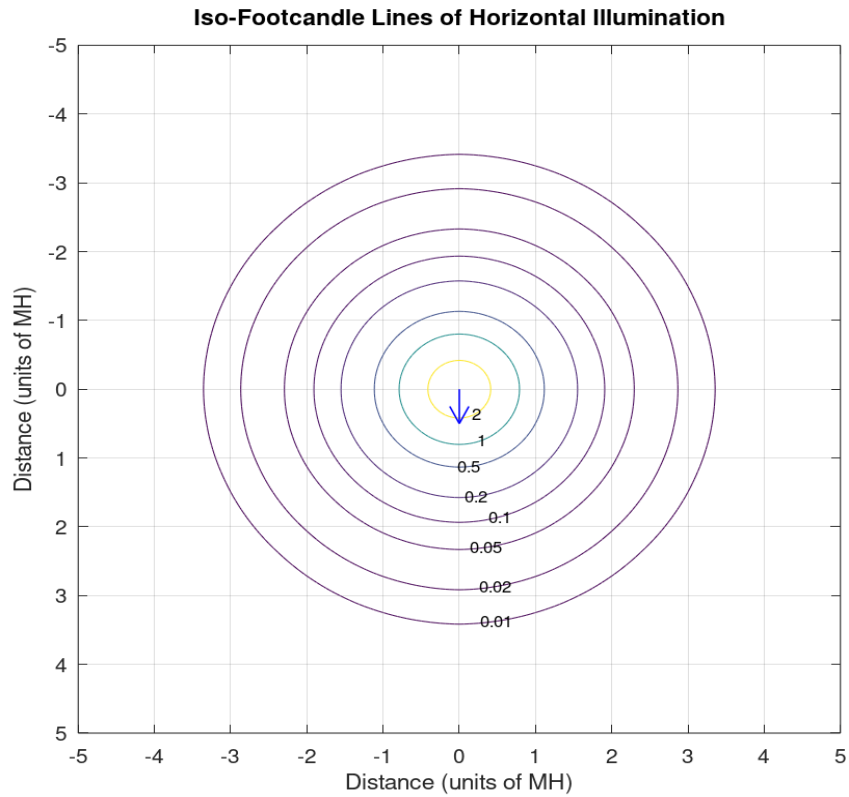
Average Luminance (cd/m ²)			
	0 deg Plane	45 deg Plane	90 deg Plane
0	17299	17299	17299
45	16396	16065	15862
55	15387	14955	14737
65	13346	12746	12606
75	9228	8512	8476
85	2530	1988	1993

Spacing Criterion	
0 degree plane:	1.3
90 degree plane:	1.2
180 degree plane:	1.3
270 degree plane:	1.2

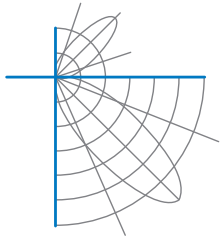


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Iso-Illuminance Plot

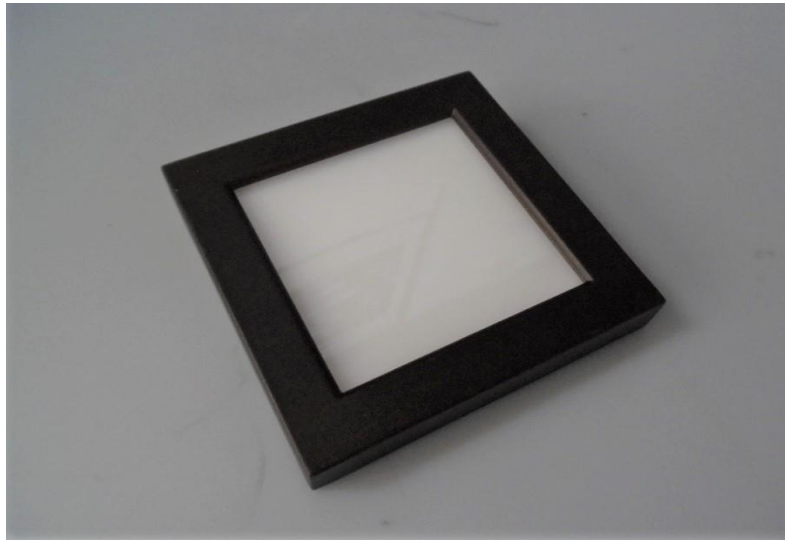


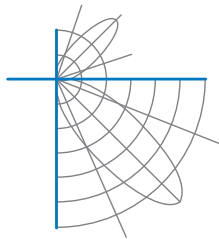
The isofootcandle values shown in the plot above are based on a mounting height of $h = 8.0$ feet. Grid values show multiples of mounting height. The isoilluminance contour lines are expressed in units of footcandles. The values expressed are based on the direct light from a single unit without the contribution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



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Additional Pictures of Test Subject





Report of Test

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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

LLIA001166-001B

Integrating Sphere Report

Catalog Number: Altair 3-332-6

Ceiling mounted, cast aluminum housing with steel back plate. Translucent white diffuser, clear patterned plastic back diffuser with white reflector, clear glass enclosure.

24 edge-illuminating white LEDs, Two LED boards with 12 LEDs each.

One unmarked LED Driver.



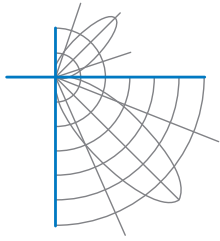
Performance Summary

Voltage	120.0 Vac
Current	0.0927 A
Power	10.89 W
Frequency	59.97 Hz
Power Factor	0.979
Current THD	11.3 %
Total Luminous Flux	479.6 lm
Efficacy	44.0 lm/W
Chromaticity (x,y)	(0.4432, 0.4061)
(u',v')	(0.2538, 0.5231)
Duv	0.0000
CCT	2913 K
CRI (Ra)	93
R9	66
TM-30: Rf	88
TM-30: Rg	95

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

Test date: 10/22/2019

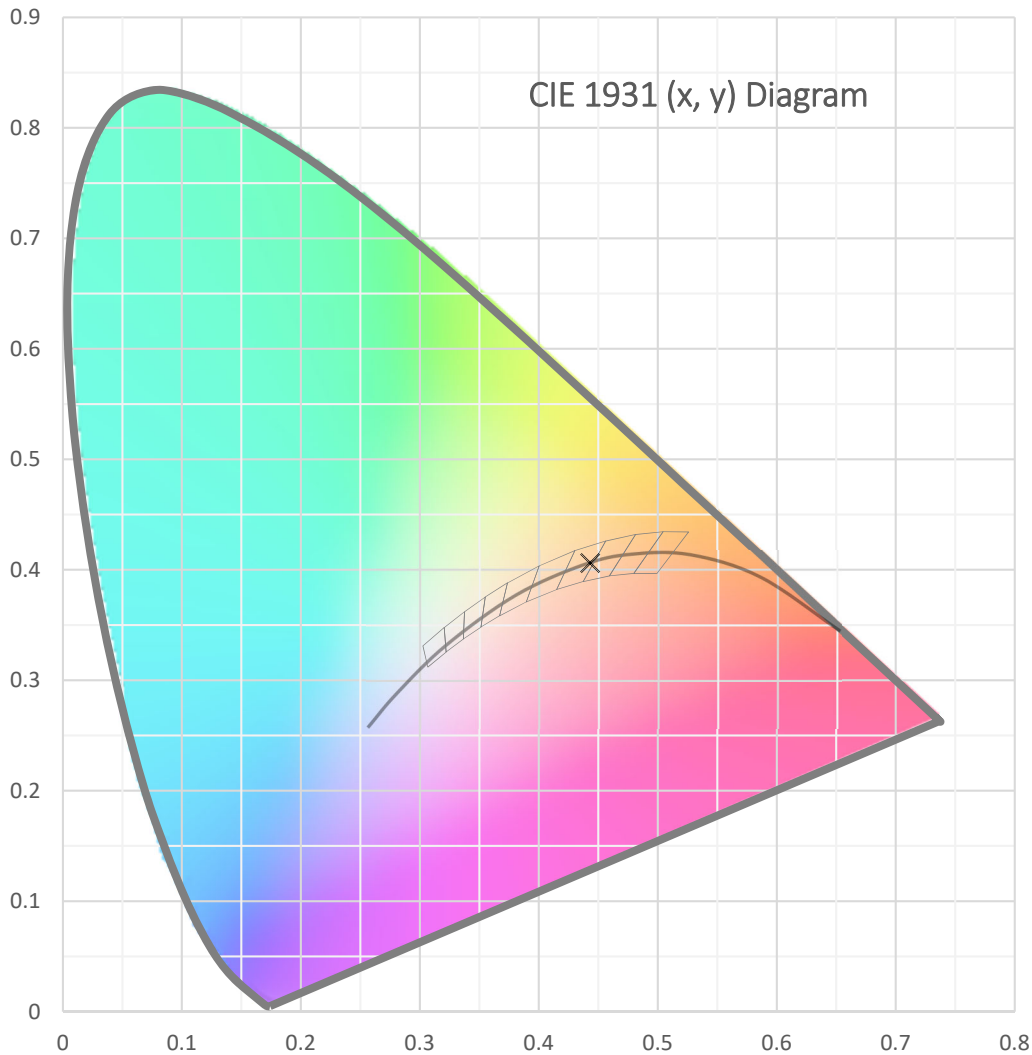
Report date: 10/24/2019

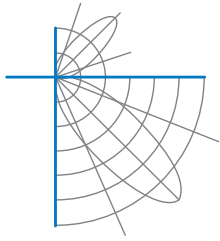


Test Report Number: LLIA001166-001B

Catalog Number: Altair 3-332-6

Ceiling mounted, cast aluminum housing with steel back plate. Translucent white diffuser, clear patterned plastic back diffuser with white reflector, clear glass enclosure.
24 edge-illuminating white LEDs, Two LED boards with 12 LEDs each.
One unmarked LED Driver.

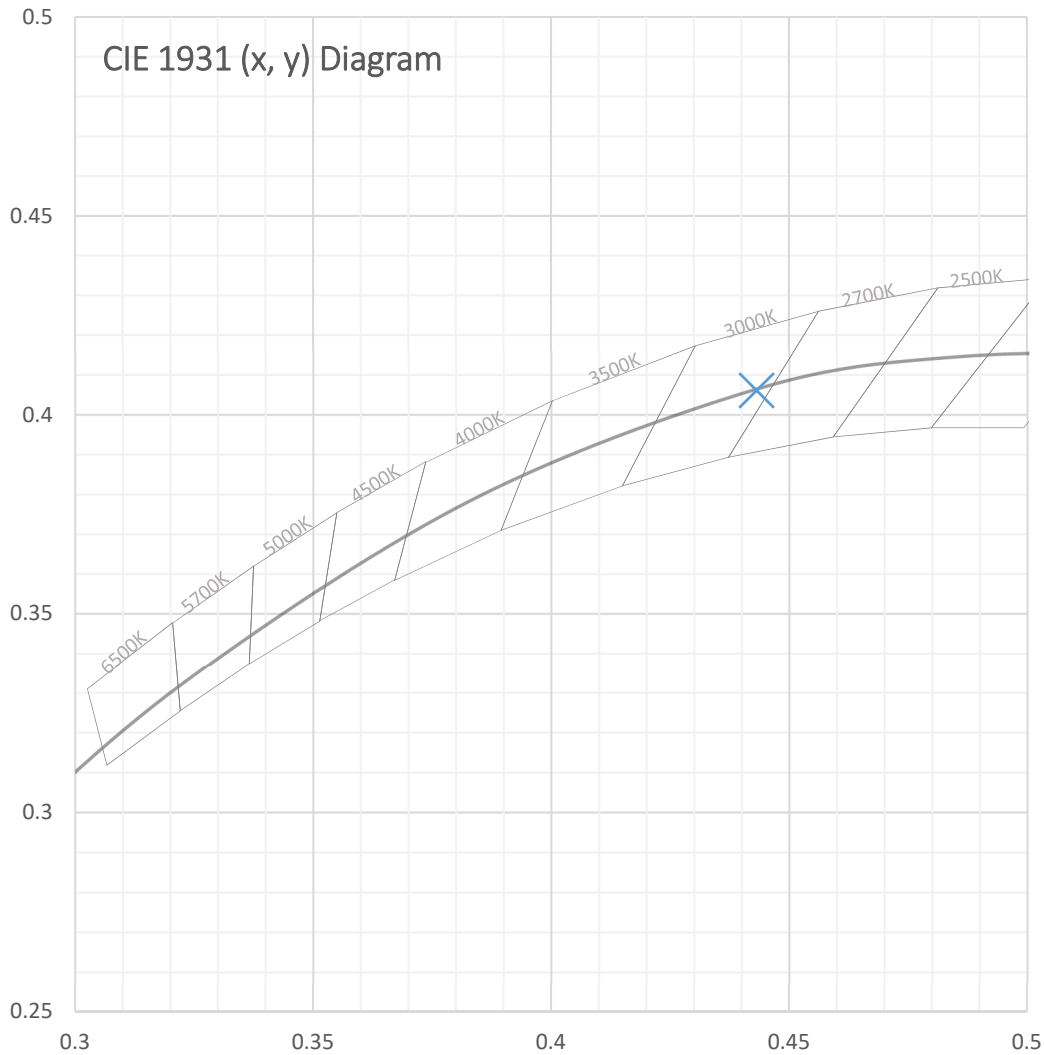


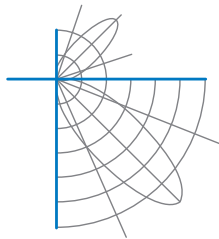


Test Report Number: LLIA001166-001B

Catalog Number: Altair 3-332-6

Ceiling mounted, cast aluminum housing with steel back plate. Translucent white diffuser, clear patterned plastic back diffuser with white reflector, clear glass enclosure.
24 edge-illuminating white LEDs, Two LED boards with 12 LEDs each.
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Catalog Number: Altair 3-332-6

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24 edge-illuminating white LEDs, Two LED boards with 12 LEDs each.

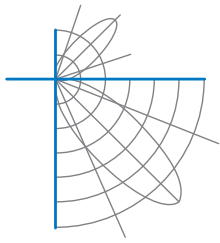
One unmarked LED Driver.

Spectral Data

Total Radiant Flux	1.702 W
Total Luminous Flux	479.6 Lm
Chromaticity CIE 1931 (x, y)	(0.4432, 0.4061)
Chromaticity CIE 1976 (u', v')	(0.2538, 0.5231)
Correlated Color Temperature (CCT)	2913 K
Color Rendering Index (Ra)	93
R1	95
R2	100
R3	97
R4	92
R5	94
R6	97
R7	90
R8	83
R9	66
R10	98
R11	93
R12	82
R13	97
R14	99
TM-30: Rf	88
TM-30: Rg	95
Distance from Planckian Locus (Duv)	0.0000
Scotopic/Photopic Ratio *	1.431

Electrical Data

Voltage	120.0 Vac
Current	0.0927 A
Power	10.89 W
Frequency	59.97 Hz
Power Factor	0.979
Current THD	11.3 %



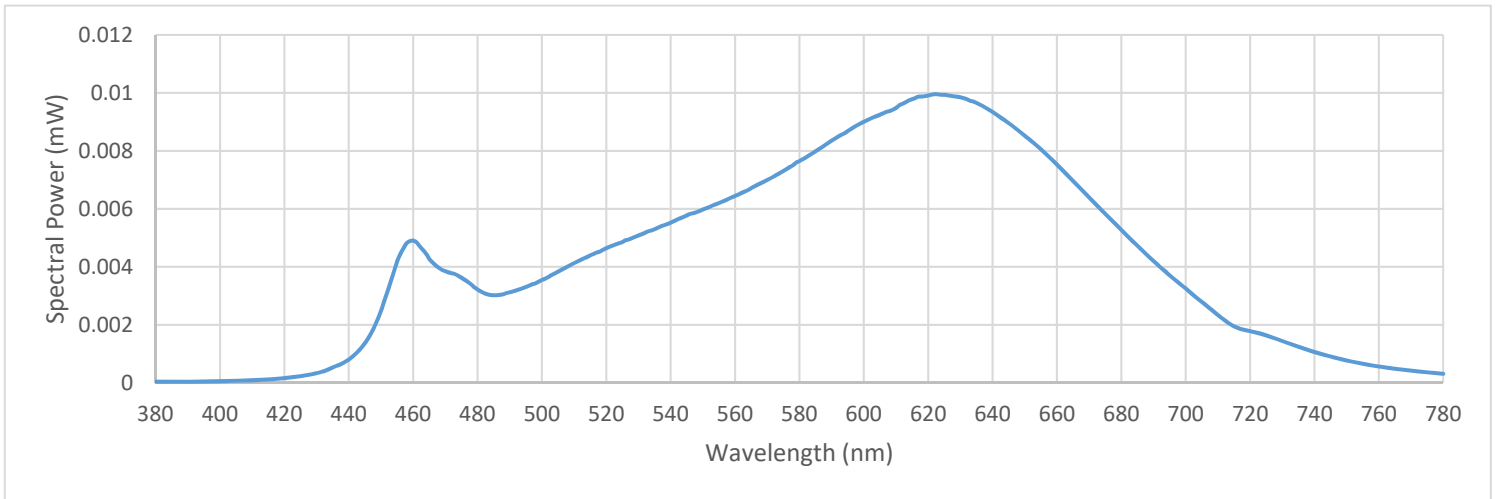
Test Report Number: LLIA001166-001B

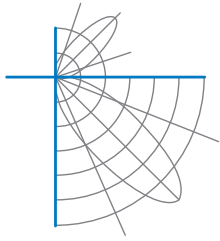
Catalog Number: Altair 3-332-6

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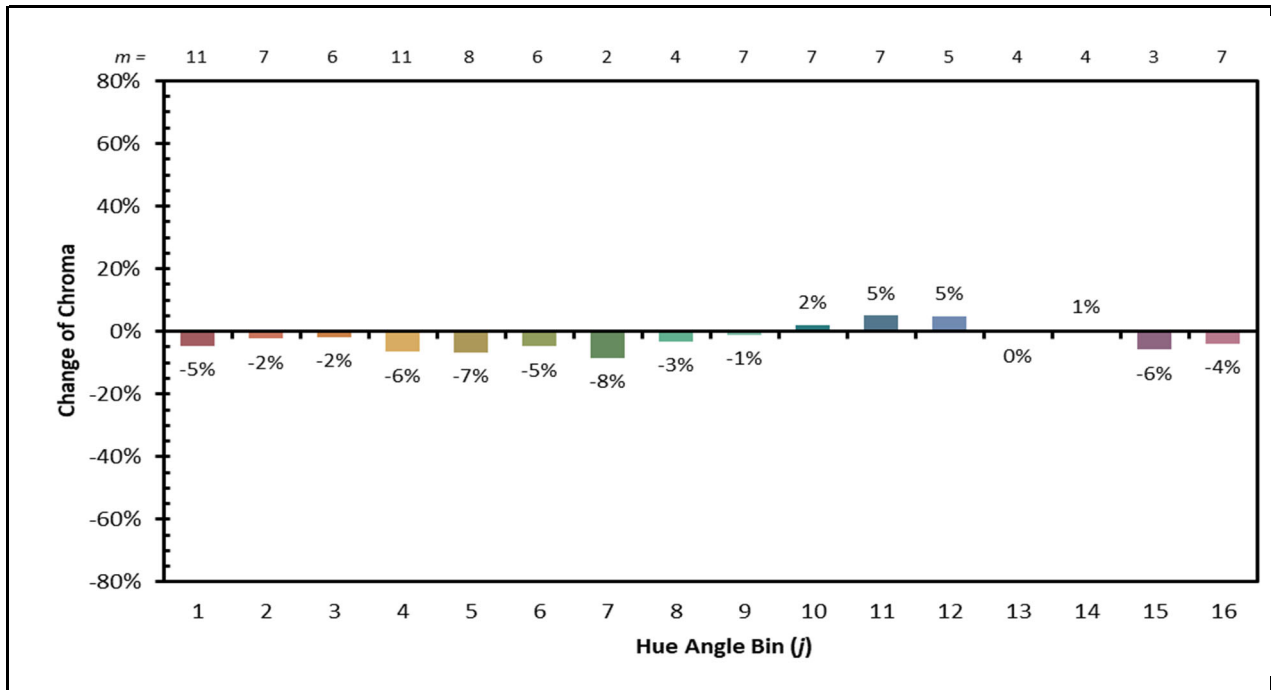
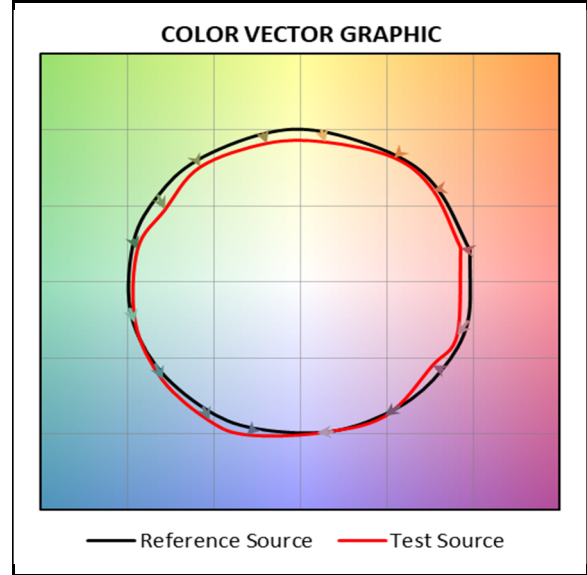
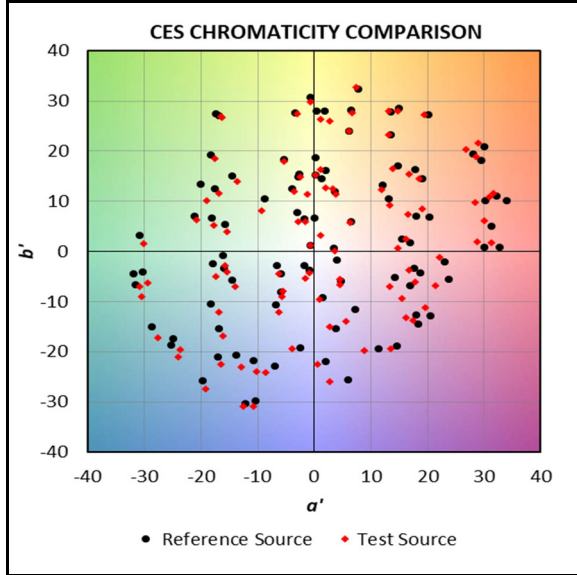
Summary Spectral Power Distribution (wavelength - nm, spectral power - mW)

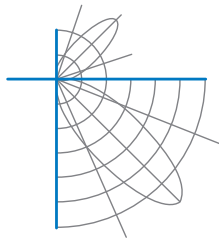
380	0.000037	480	0.003220	580	0.007647	680	0.005267
385	0.000035	485	0.003018	585	0.007986	685	0.004732
390	0.000038	490	0.003120	590	0.008355	690	0.004201
395	0.000041	495	0.003303	595	0.008681	695	0.003703
400	0.000051	500	0.003546	600	0.009002	700	0.003256
405	0.000075	505	0.003828	605	0.009243	705	0.002792
410	0.000085	510	0.004130	610	0.009478	710	0.002334
415	0.000116	515	0.004394	615	0.009779	715	0.001948
420	0.000162	520	0.004648	620	0.009911	720	0.001780
425	0.000229	525	0.004854	625	0.009936	725	0.001635
430	0.000333	530	0.005087	630	0.009851	730	0.001441
435	0.000529	535	0.005298	635	0.009652	735	0.001241
440	0.000800	540	0.005525	640	0.009343	740	0.001061
445	0.001363	545	0.005770	645	0.008963	745	0.000909
450	0.002470	550	0.005979	650	0.008519	750	0.000771
455	0.004180	555	0.006197	655	0.008051	755	0.000652
460	0.004906	560	0.006447	660	0.007531	760	0.000561
465	0.004272	565	0.006715	665	0.006960	765	0.000483
470	0.003850	570	0.006994	670	0.006392	770	0.000419
475	0.003621	575	0.007303	675	0.005833	775	0.000361
						780	0.000311





IES TM-30 Details





Test Report Number: LLIA001166-001B

Catalog Number: Altair 3-332-6

Ceiling mounted, cast aluminum housing with steel back plate. Translucent white diffuser, clear patterned plastic back diffuser with white reflector, clear glass enclosure.

24 edge-illuminating white LEDs, Two LED boards with 12 LEDs each.

One unmarked LED Driver.

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

Test Temperature: 24.3 °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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