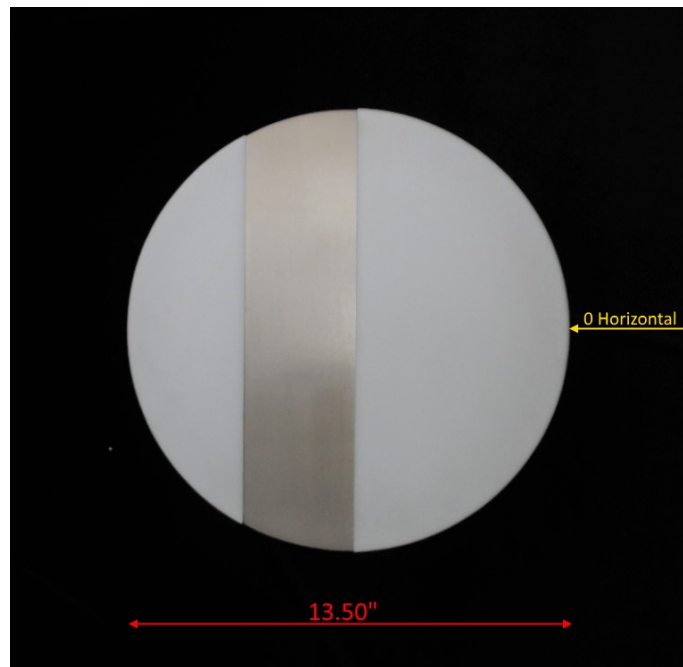


Report of Test

LLIA001067-009A

Catalog Number: 3-662 Aurora Ceiling Mount
Surface ceiling mounted, formed and spun steel canopy,
steel housing/LED tray, translucent white plastic enclosure.
50 white LEDs, one Harvard Engineering LEDENG-182-930 LED board
One ERP ESS030W-0700-42 dimmable LED driver.
120.0Vac, 60.00Hz, 0.2065A, 24.41W, 0.985PF, 13.6%THD(i)



Performance Summary

Total Light Output	1084 lm
Luminaire Power	24.4 W
Luminous Efficacy	44.4 lm/W

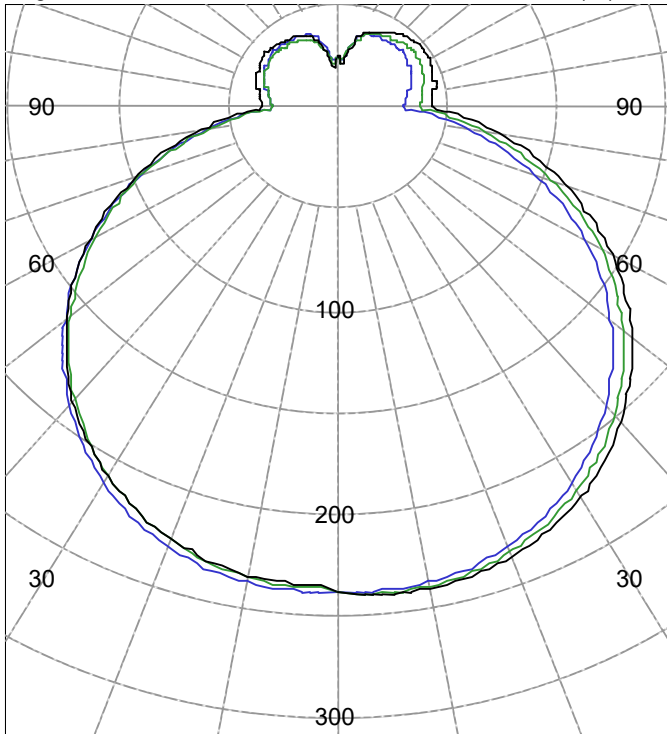
PREPARED FOR : Oxygen Lighting, 201 Railhead Road, Fort Worth, TX 76106, USA



Test Report No. LLIA001067-009A

Catalog Number: 3-662 Aurora Ceiling Mount
Surface ceiling mounted, formed and spun steel canopy,
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Legend: C0/C180-Black, C45/C225-Green, C90/C270-Blue (cd)



C180-C270 (Symmetric about C0/C180) C0-C90

AVERAGE LUMINANCE (cd/m²)

Gamma	C0	C45	C90
45.0	2327	2267	2184
55.0	2247	2168	2059
65.0	2153	2050	1907
75.0	2044	1906	1714
85.0	1928	1719	1433

INTENSITY SUMMARY (cd)

Gamma	C-Plane					Flux (lm)
	C0	C22.5	C45	C67.5	C90	
0.0	238	238	238	238	238	
5.0	240	240	240	239	238	23
10.0	240	240	239	238	237	
15.0	238	238	236	235	234	66
20.0	234	234	232	230	229	
25.0	229	228	226	223	222	102
30.0	221	220	217	215	213	
35.0	212	211	208	205	202	127
40.0	201	200	196	193	190	
45.0	188	187	183	179	177	138
50.0	175	173	169	165	162	
55.0	160	158	154	150	146	133
60.0	144	142	138	133	130	
65.0	127	125	121	116	112	115
70.0	110	108	104	99	95	
75.0	92	91	86	81	77	86
80.0	75	73	69	64	60	
85.0	58	56	51	47	43	52
90.0	43	41	37	33	29	

ZONAL FLUX AND PERCENTAGES

Zone	Flux (lm)	% Lamp	% Luminaire
0-30	191	N / A	17.6
0-40	319	N / A	29.4
0-60	590	N / A	54.4
0-90	842	N / A	77.7
40-90	524	N / A	48.3
60-90	253	N / A	23.3
90-180	242	N / A	22.3
0-180	1084	N / A	100.0

Total Light Output = 1,084 lm

Spacing Criterion: 0-180 1.4
Spacing Criterion: 90-270 1.3

Signed:

Authorized Signatory

Date of test 8-Jan-2019
Date of report 10-Jan-2019



Test Report No. LLIA001067-009A

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120.0Vac, 60.00Hz, 0.2065A, 24.41W, 0.985PF, 13.6%THD(i)

Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
0.0	238	238	238	238	238
2.5	240	240	239	239	238
5.0	240	240	240	239	238
7.5	240	240	240	239	238
10.0	240	240	239	238	237
12.5	239	239	238	237	236
15.0	238	238	236	235	234
17.5	237	236	234	233	232
20.0	234	234	232	230	229
22.5	232	231	229	227	226
25.0	229	228	226	223	222
27.5	225	224	222	219	218
30.0	221	220	217	215	213
32.5	217	216	213	210	208
35.0	212	211	208	205	202
37.5	206	205	202	199	196
40.0	201	200	196	193	190
42.5	195	193	190	186	184
45.0	188	187	183	179	177
47.5	182	180	176	172	169
50.0	175	173	169	165	162
52.5	167	166	162	157	154
55.0	160	158	154	150	146
57.5	152	150	146	141	138
60.0	144	142	138	133	130
62.5	135	134	129	125	121
65.0	127	125	121	116	112
67.5	118	117	112	107	104
70.0	110	108	104	99	95
72.5	101	99	95	90	86
75.0	92	91	86	81	77
77.5	84	82	77	72	69
80.0	75	73	69	64	60
82.5	66	65	60	55	51
85.0	58	56	51	47	43
87.5	50	48	43	38	35
90.0	43	41	37	33	29



Test Report No. LLIA001067-009A

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One ERP ESS030W-0700-42 dimmable LED driver.
120.0Vac, 60.00Hz, 0.2065A, 24.41W, 0.985PF, 13.6%THD(i)

Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
90.0	43	41	37	33	29
92.5	43	42	37	33	30
95.0	44	42	38	33	31
97.5	44	43	38	34	31
100.0	45	43	39	35	32
102.5	45	44	40	36	33
105.0	46	44	40	36	34
107.5	46	45	41	37	35
110.0	47	45	41	38	35
112.5	47	46	42	39	36
115.0	47	46	43	39	37
117.5	48	46	43	40	37
120.0	48	47	43	40	38
122.5	48	47	44	41	39
125.0	48	47	44	41	39
127.5	48	47	44	42	39
130.0	48	47	44	42	40
132.5	48	47	44	42	40
135.0	47	46	43	42	40
137.5	47	46	43	42	40
140.0	46	45	43	42	40
142.5	45	44	42	41	40
145.0	45	44	42	41	40
147.5	44	43	41	41	40
150.0	43	42	41	41	39
152.5	42	42	40	40	39
155.0	41	41	39	40	39
157.5	41	40	39	39	38
160.0	40	39	38	38	38
162.5	38	38	36	37	37
165.0	35	35	35	36	35
167.5	31	32	32	33	33
170.0	28	29	30	30	30
172.5	25	26	27	27	27
175.0	22	23	24	24	24
177.5	25	24	23	24	24
180.0	24	24	24	24	24



Test Report No. LLIA001067-009A

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120.0Vac, 60.00Hz, 0.2065A, 24.41W, 0.985PF, 13.6%THD(i)

Intensity data (cd)

Gamma	C-Plane				
	C90	C112.5	C135	C157.5	C180
0.0	238	238	238	238	238
2.5	238	237	236	235	235
5.0	238	237	236	235	235
7.5	238	237	236	235	234
10.0	237	236	235	234	234
12.5	236	234	233	232	232
15.0	234	232	231	230	230
17.5	232	230	228	228	228
20.0	229	227	225	225	225
22.5	226	223	222	222	222
25.0	222	219	218	218	218
27.5	218	215	214	214	214
30.0	213	210	209	209	210
32.5	208	205	204	204	205
35.0	202	199	198	199	199
37.5	196	193	193	193	194
40.0	190	187	186	187	188
42.5	184	181	180	181	182
45.0	177	174	173	174	175
47.5	169	167	166	167	168
50.0	162	159	159	160	161
52.5	154	151	151	153	154
55.0	146	143	143	145	146
57.5	138	135	135	137	138
60.0	130	127	127	129	130
62.5	121	119	119	121	122
65.0	112	110	110	112	114
67.5	104	101	102	104	105
70.0	95	93	93	96	97
72.5	86	84	85	87	89
75.0	77	75	76	78	80
77.5	69	67	67	70	72
80.0	60	58	59	62	63
82.5	51	50	50	53	55
85.0	43	41	42	45	47
87.5	35	33	34	37	39
90.0	29	28	29	33	34



Test Report No. LLIA001067-009A

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One ERP ESS030W-0700-42 dimmable LED driver.
120.0Vac, 60.00Hz, 0.2065A, 24.41W, 0.985PF, 13.6%THD(i)

Intensity data (cd)

Gamma	C-Plane				
	C90	C112.5	C135	C157.5	C180
90.0	29	28	29	33	34
92.5	30	29	30	33	35
95.0	31	30	31	33	35
97.5	31	30	31	34	36
100.0	32	31	32	35	36
102.5	33	32	33	35	37
105.0	34	33	33	36	38
107.5	35	33	34	37	38
110.0	35	34	35	37	39
112.5	36	35	36	38	40
115.0	37	36	36	39	40
117.5	37	36	37	39	41
120.0	38	37	38	40	41
122.5	39	37	38	40	41
125.0	39	38	38	40	42
127.5	39	38	39	41	42
130.0	40	38	39	41	42
132.5	40	38	39	41	42
135.0	40	38	39	40	42
137.5	40	38	38	40	41
140.0	40	38	38	40	41
142.5	40	38	38	40	41
145.0	40	38	38	39	41
147.5	40	38	38	39	40
150.0	39	37	38	39	40
152.5	39	37	37	38	39
155.0	39	36	37	38	38
157.5	38	36	36	37	37
160.0	38	35	36	36	37
162.5	37	34	34	35	35
165.0	35	33	32	33	33
167.5	33	31	29	29	30
170.0	30	29	27	26	27
172.5	27	26	25	23	23
175.0	24	23	22	21	20
177.5	24	24	24	23	22
180.0	24	24	24	24	24



Test Number: LLIA001067-009A

Catalog Number: 3-662 Aurora Ceiling Mount

Surface ceiling mounted, formed and spun steel canopy,
steel housing/LED tray, translucent white plastic enclosure.

50 white LEDs, one Harvard Engineering LEDENG-182-930 LED board

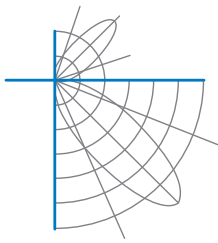
One ERP ESS030W-0700-42 dimmable LED driver.

120.0Vac, 60.00Hz, 0.2065A, 24.41W, 0.985PF, 13.6%THD(i)

Coefficients Of 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	
0	114	114	114	114	108	108	108	108	99	99	99	90	90	90	82	82	82	78
1	102	96	92	87	97	92	88	84	84	80	77	76	73	71	69	67	65	61
2	92	83	76	70	87	79	73	67	72	67	62	65	61	57	59	56	53	49
3	83	72	64	57	79	69	61	55	63	56	51	57	52	47	52	48	44	41
4	76	64	55	48	72	61	52	46	55	48	43	50	45	40	46	41	37	34
5	70	56	47	40	66	54	46	39	49	42	37	45	39	34	41	36	32	29
6	64	51	41	35	61	48	40	34	44	37	32	41	35	30	37	32	28	25
7	59	46	37	31	56	44	36	30	40	33	28	37	31	26	34	29	25	22
8	55	41	33	27	52	40	32	26	37	30	25	34	28	23	31	26	22	20
9	51	38	30	24	49	36	29	23	34	27	22	31	25	21	28	23	20	18
10	48	35	27	22	46	33	26	21	31	24	20	29	23	19	26	21	18	16

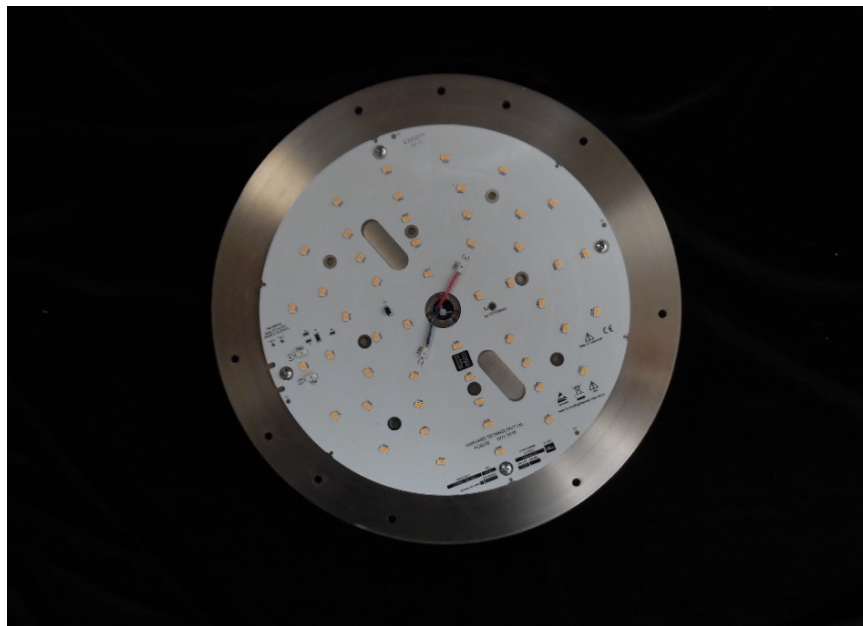
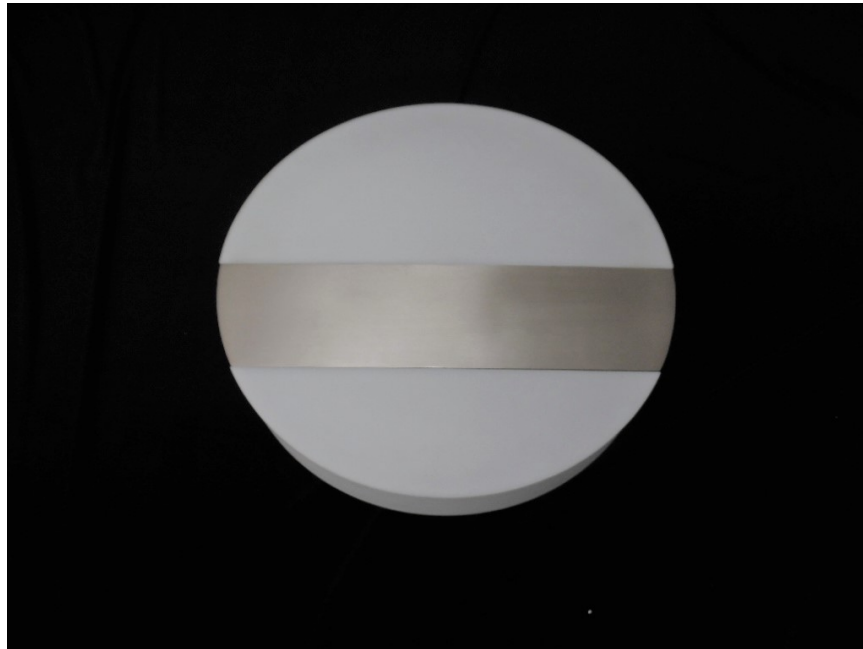
For absolute test reports, CUs are expressed as a percentage of total lumen output. Calculations were based on published IES procedures, and are based on the zonal cavity method. Basic assumptions: 1) Room surfaces are lambertian reflectors. 2) Incident flux on each surface is uniformly distributed. 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.

Height(ft)	Illuminance at Nadir (fc)	Beam Width (across 50% Nadir Illum)	
		0-180	90-270
6.0	6.6	8.06	7.97
8.0	3.7	10.75	10.62
10.0	2.4	13.43	13.28
12.0	1.7	16.12	15.93
14.0	1.2	18.80	18.59
16.0	0.9	21.49	21.24



Test Report No. LLIA001067-009A

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120.0Vac, 60.00Hz, 0.2065A, 24.41W, 0.985PF, 13.6%THD(i)





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120.0Vac, 60.00Hz, 0.2065A, 24.41W, 0.985PF, 13.6%THD(i)

Test Distance 9.5 m
Test 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-79-08 (Sec. 12), IES LM-16-93, IES LM-58-13, CIE 13.3:1995, CIE 15:2004, ANSI C78.377:2015, ANSI C82.77-10:2014.

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 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

LLIA001067-009B

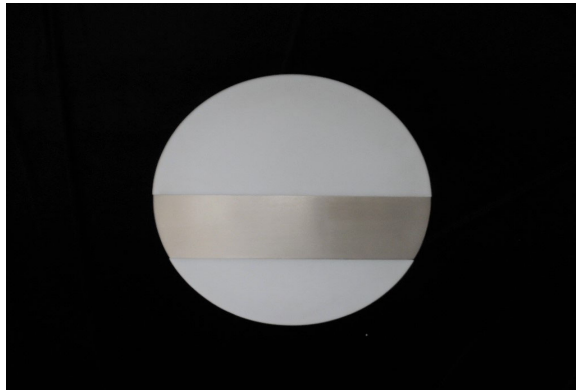
Integrating Sphere Report

Catalog Number: 3-662 Aurora Ceiling Mount

Surface ceiling mounted, formed and spun steel canopy,
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50 white LEDs, one Harvard Engineering LEDENG-182-930 LED board

One ERP ESS030W-0700-42 dimmable LED driver.



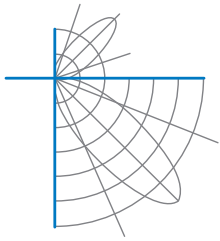
Performance Summary

Voltage	120.0 Vac
Current	0.2065 A
Power	24.43 W
Frequency	59.99 Hz
Power Factor	0.986
Current THD	13.6 %

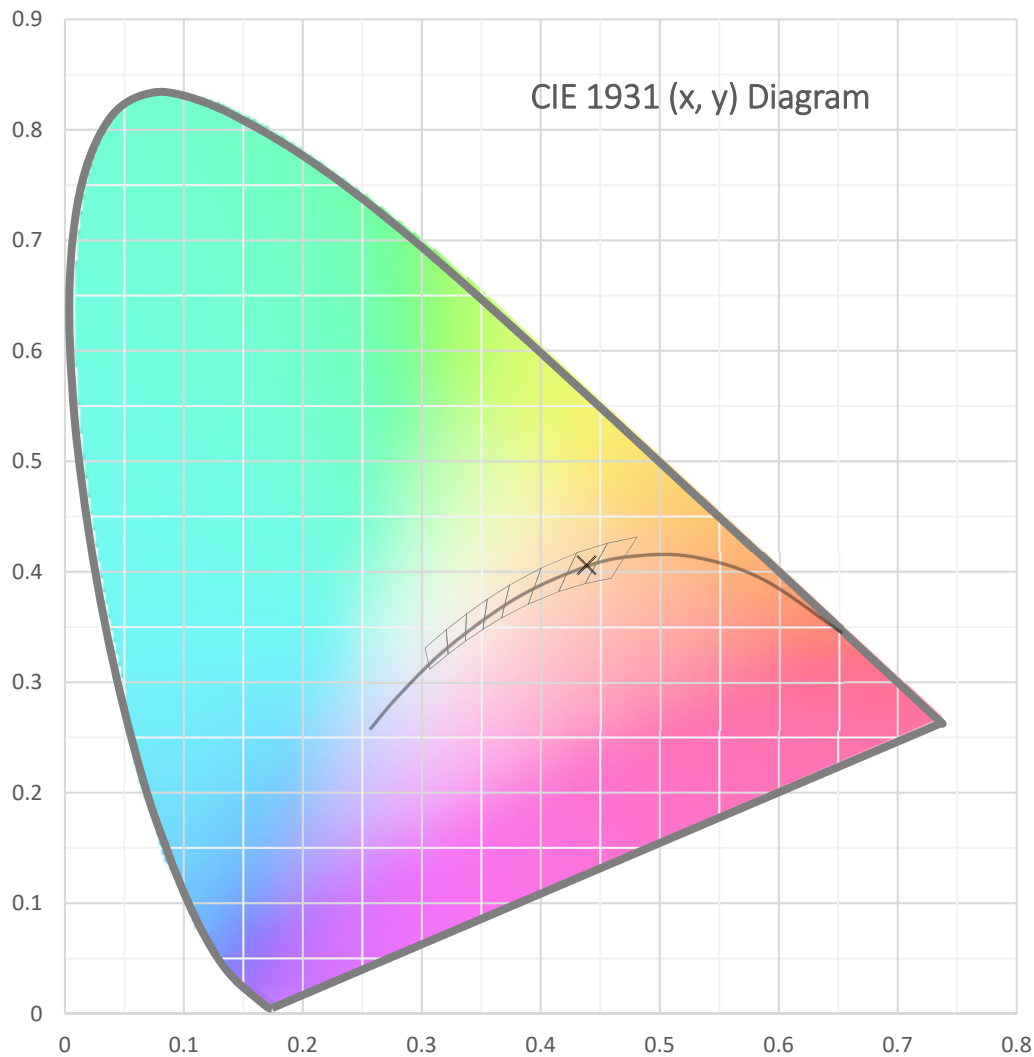
Total Luminous Flux	1088.3 lm
Efficacy	44.5 lm/W
Chromaticity (x,y)	(0.4384, 0.4059)
(u',v')	(0.2507, 0.5223)
Duv	0.0005
CCT	2990 K
CRI (Ra)	96
R9	89
TM-30: Rf	94
TM-30: Rg	103

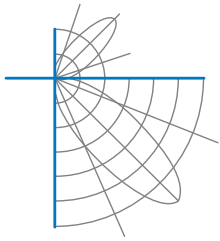
Prepared For:
Oxygen Lighting
201 Railhead Road
Fort Worth, TX 76106, USA

Test date: 01/08/2019
Report date: 01/09/2019

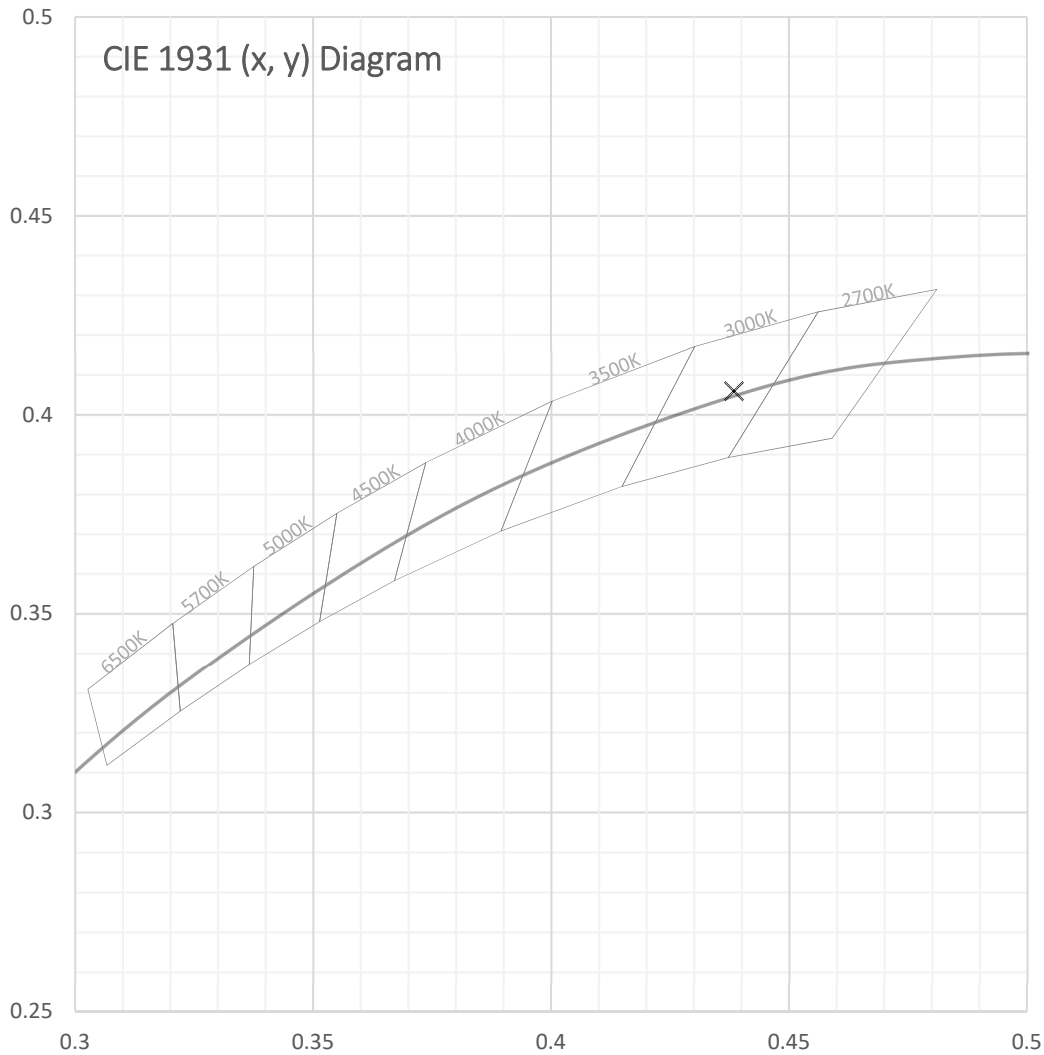


Test Report Number: LLIA001067-009B
Catalog Number: 3-662 Aurora Ceiling Mount
Surface ceiling mounted, formed and spun steel canopy,
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One ERP ESS030W-0700-42 dimmable LED driver.

Spectral Data

Total Radiant Flux	4.091 W
Total Luminous Flux	1088.3 Lm
Chromaticity CIE 1931 (x, y)	(0.4384, 0.4059)
Chromaticity CIE 1976 (u', v')	(0.2507, 0.5223)
Correlated Color Temperature (CCT)	2990 K
Color Rendering Index (Ra)	96
R1	98
R2	97
R3	93
R4	96
R5	97
R6	95
R7	97
R8	96
R9	89
R10	90
R11	96
R12	85
R13	98
R14	95
TM-30: Rf	94
TM-30: Rg	103
Distance from Planckian Locus (Duv)	0.0005
Scotopic/Photopic Ratio *	1.411

Electrical Data

Voltage	120.0 Vac
Current	0.2065 A
Power	24.43 W
Frequency	59.99 Hz
Power Factor	0.986
Current THD	13.6 %



Test Report Number: LLIA001067-009B

Catalog Number: 3-662 Aurora Ceiling Mount

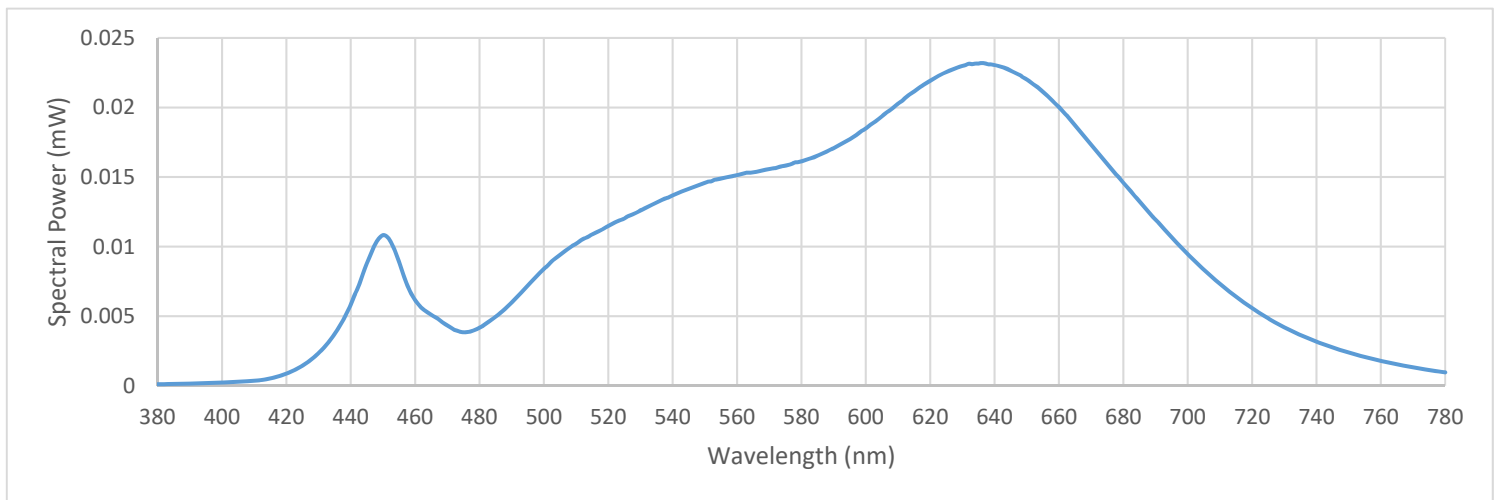
Surface ceiling mounted, formed and spun steel canopy,
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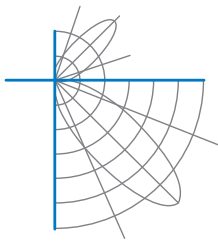
50 white LEDs, one Harvard Engineering LEDENG-182-930 LED board

One ERP ESS030W-0700-42 dimmable LED driver.

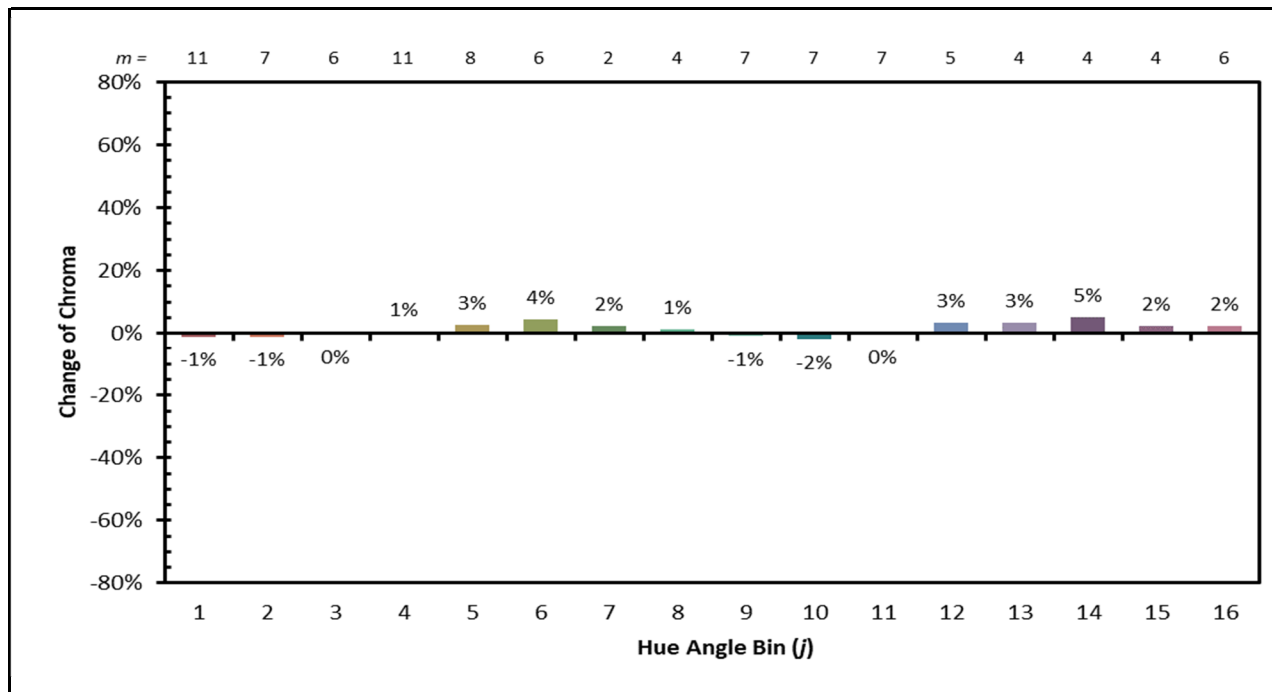
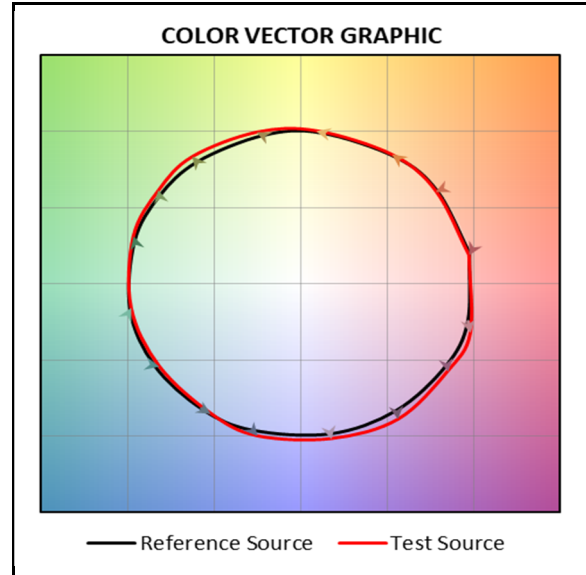
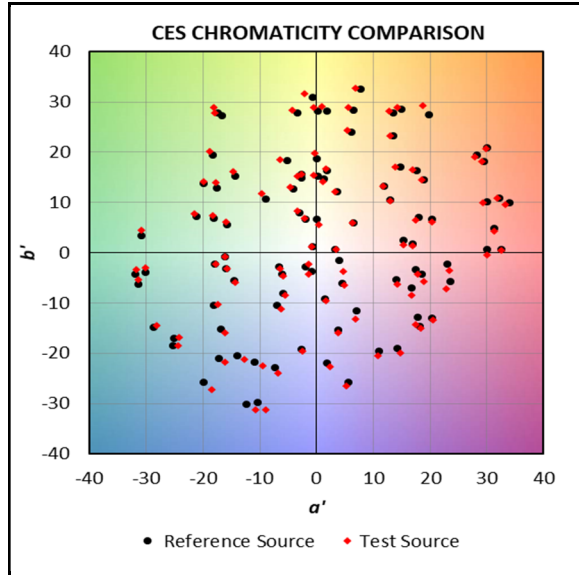
Summary Spectral Power Distribution (wavelength - nm, spectral power - mW)

380	0.000116	480	0.004179	580	0.016139	680	0.014568
385	0.000128	485	0.004955	585	0.016548	685	0.013281
390	0.000156	490	0.005999	590	0.017071	690	0.011940
395	0.000192	495	0.007185	595	0.017707	695	0.010647
400	0.000236	500	0.008413	600	0.018482	700	0.009492
405	0.000285	505	0.009399	605	0.019364	705	0.008347
410	0.000360	510	0.010205	610	0.020291	710	0.007309
415	0.000530	515	0.010887	615	0.021142	715	0.006412
420	0.000879	520	0.011485	620	0.021908	720	0.005580
425	0.001455	525	0.012024	625	0.022547	725	0.004849
430	0.002358	530	0.012610	630	0.022989	730	0.004211
435	0.003732	535	0.013159	635	0.023161	735	0.003650
440	0.005822	540	0.013690	640	0.023042	740	0.003167
445	0.008804	545	0.014161	645	0.022654	745	0.002756
450	0.010825	550	0.014584	650	0.022013	750	0.002393
455	0.008872	555	0.014885	655	0.021125	755	0.002071
460	0.006155	560	0.015131	660	0.020042	760	0.001794
465	0.005097	565	0.015323	665	0.018713	765	0.001542
470	0.004327	570	0.015572	670	0.017319	770	0.001318
475	0.003838	575	0.015821	675	0.015947	775	0.001130
						780	0.000964





IES TM-30 Summary





Test Report Number: LLIA001067-009B
Catalog Number: 3-662 Aurora Ceiling Mount
Surface ceiling mounted, formed and spun steel canopy,
steel housing/LED tray, translucent white plastic enclosure.
50 white LEDs, one Harvard Engineering LEDENG-182-930 LED board
One ERP ESS030W-0700-42 dimmable 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: 24.7 °C

Test Procedure: Tested in accordance with the applicable sections of:
LM-79-08, LM-78-07, LM-58-13, ANSI_ANSLG C78.377-2015,
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.