

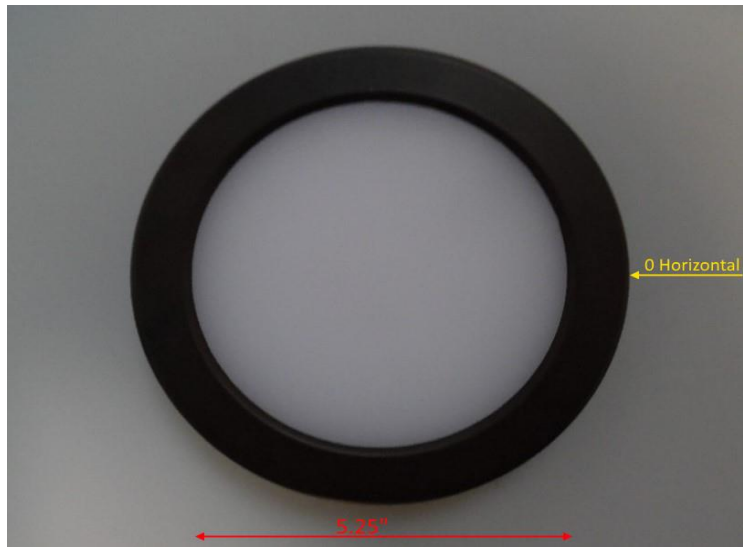
## Report of Test

**LLIA001198-019A-R01\***

Indoor Distribution Photometry Test Report

Catalog Number: 3-645-22 Elite Ceiling Mount

Surface ceiling mounted, cast aluminum housing, formed steel aluminum LED plate, translucent white plastic enclosure.  
96 white LEDs, one C135-14-120-3F-R10-RFR7\_9V LED board



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

Performance Summary			
Input Voltage	120.0 V	Luminous Flux	823.8 Lumens
Input Current	0.1181 A	Total Efficacy	58.8 Lm/W
Input Power	14.02 W	Downward Flux	823.8 Lumens
Frequency	60.00 Hz	Downward Flux	100.0 % of Total
Power Factor	0.989		
Current THD	14.8 %		

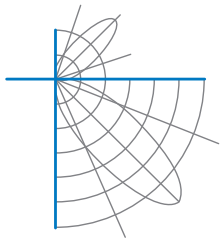
\*This test report supersedes test report LLIA001198-019A

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

Test date: 12/13/2019

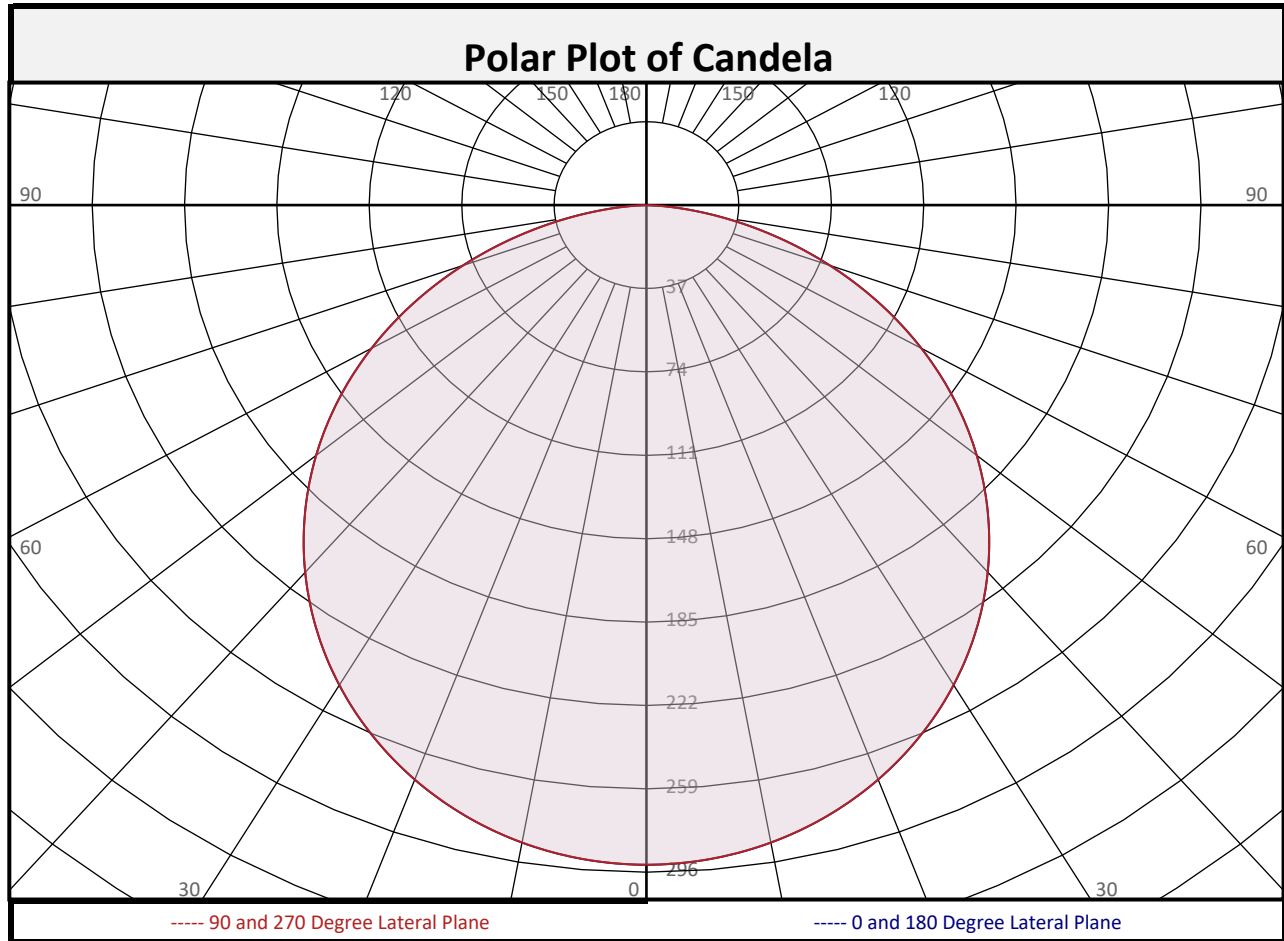
Report date: 01/15/2020

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



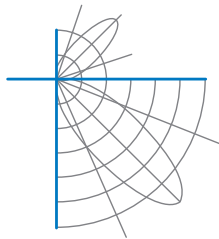
## Report of Test

### LLIA001198-019A-R01



### 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	27.7	3.4%	90-100	0.0	0.0%	0-20	106.8	13.0%
10-20	79.1	9.6%	100-110	0.0	0.0%	0-30	226.4	27.5%
20-30	119.6	14.5%	110-120	0.0	0.0%	0-40	370.3	45.0%
30-40	143.9	17.5%	120-130	0.0	0.0%	0-60	653.6	79.3%
40-50	149.0	18.1%	130-140	0.0	0.0%	0-80	811.5	98.5%
50-60	134.3	16.3%	140-150	0.0	0.0%	10-90	796.1	96.6%
60-70	101.5	12.3%	150-160	0.0	0.0%	20-50	412.5	50.1%
70-80	56.4	6.8%	160-170	0.0	0.0%	40-90	453.4	55.0%
80-90	12.2	1.5%	170-180	0.0	0.0%	60-90	170.2	20.7%
0-90	823.8	100.0%	90-180	0.0	0.0%	0-180	823.8	100.0%

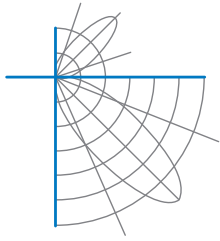


## Report of Test

### LLIA001198-019A-R01

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	293	293	293	293	293	293	293	293	293
	2.5	292	292	292	292	292	292	292	292	292
	5	291	291	291	291	291	291	291	291	291
	7.5	290	290	290	290	290	290	290	290	290
	10	287	287	287	287	287	287	287	287	287
	12.5	284	284	284	284	284	284	284	284	284
	15	280	280	280	280	280	280	280	280	280
	17.5	276	276	276	276	276	276	276	276	276
	20	271	271	271	271	271	271	271	271	271
	22.5	266	266	266	266	266	266	266	266	266
	25	260	260	260	260	260	260	260	260	260
	27.5	253	253	253	253	253	253	253	253	253
	30	246	246	246	246	246	246	246	246	246
	32.5	238	238	238	238	238	238	238	238	238
	35	230	230	230	230	230	230	230	230	230
	37.5	221	221	221	221	221	221	221	221	221
	40	212	212	212	212	212	212	212	212	212
	42.5	203	203	203	203	203	203	203	203	203
	45	193	193	193	193	193	193	193	193	193
	47.5	183	183	183	183	183	183	183	183	183
50	172	172	172	172	172	172	172	172	172	
52.5	162	162	162	162	162	162	162	162	162	
55	150	150	150	150	150	150	150	150	150	
57.5	139	139	139	139	139	139	139	139	139	
60	127	127	127	127	127	127	127	127	127	
62.5	115	115	115	115	115	115	115	115	115	
65	103	103	103	103	103	103	103	103	103	
67.5	90	90	90	90	90	90	90	90	90	
70	78	78	78	78	78	78	78	78	78	
72.5	66	66	66	66	66	66	66	66	66	
75	53	53	53	53	53	53	53	53	53	
77.5	41	41	41	41	41	41	41	41	41	
80	30	30	30	30	30	30	30	30	30	
82.5	19	19	19	19	19	19	19	19	19	
85	10	10	10	10	10	10	10	10	10	
87.5	2	2	2	2	2	2	2	2	2	
90	0	0	0	0	0	0	0	0	0	

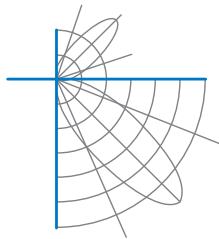


## Report of Test

### LLIA001198-019A-R01

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	



## Report of Test

### LLIA001198-019A-R01

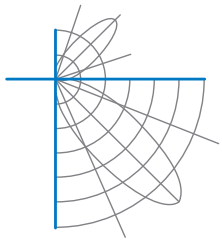
Coefficients of Utilization/Room Utilization - Zonal Cavity Method																						
Effective Floor Cavity Reflectance 0.20																						
RC	80					70					50				30				10			0
RW	70	50	30	10		70	50	30	10		50	30	10		50	30	10		50	30	10	0
RCR																						
0	119	119	119	119		116	116	116	116		111	111	111		106	106	106		102	102	102	100
1	109	104	100	96		106	102	98	95		98	94	92		94	91	89		90	88	86	84
2	99	91	84	78		96	89	83	77		85	80	75		82	78	74		79	75	72	70
3	90	80	71	65		88	78	70	64		75	69	63		72	67	62		70	65	61	59
4	83	71	62	55		80	69	61	55		67	60	54		64	58	53		62	57	52	50
5	76	63	54	47		74	62	53	47		60	52	47		58	51	46		56	50	46	43
6	70	57	48	41		68	56	47	41		54	46	41		52	45	40		51	45	40	38
7	65	51	43	36		63	51	42	36		49	41	36		48	41	36		46	40	35	33
8	60	47	38	32		59	46	38	32		45	37	32		44	37	32		42	36	32	30
9	56	43	35	29		55	42	35	29		41	34	29		40	34	29		39	33	29	27
10	53	40	32	26		52	39	32	26		38	31	26		37	31	26		36	30	26	24

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	8.1	7.49	7.49	
8.0	4.6	9.99	9.99	
10.0	2.9	12.49	12.49	
12.0	2.0	14.99	14.99	
14.0	1.5	17.49	17.49	
16.0	1.1	19.98	19.98	

Average Luminance (cd/m <sup>2</sup> )			
	0 deg Plane	45 deg Plane	90 deg Plane
0	20957	20957	20957
45	19565	19565	19565
55	18767	18767	18767
65	17399	17399	17399
75	14747	14747	14747
85	7977	7977	7977

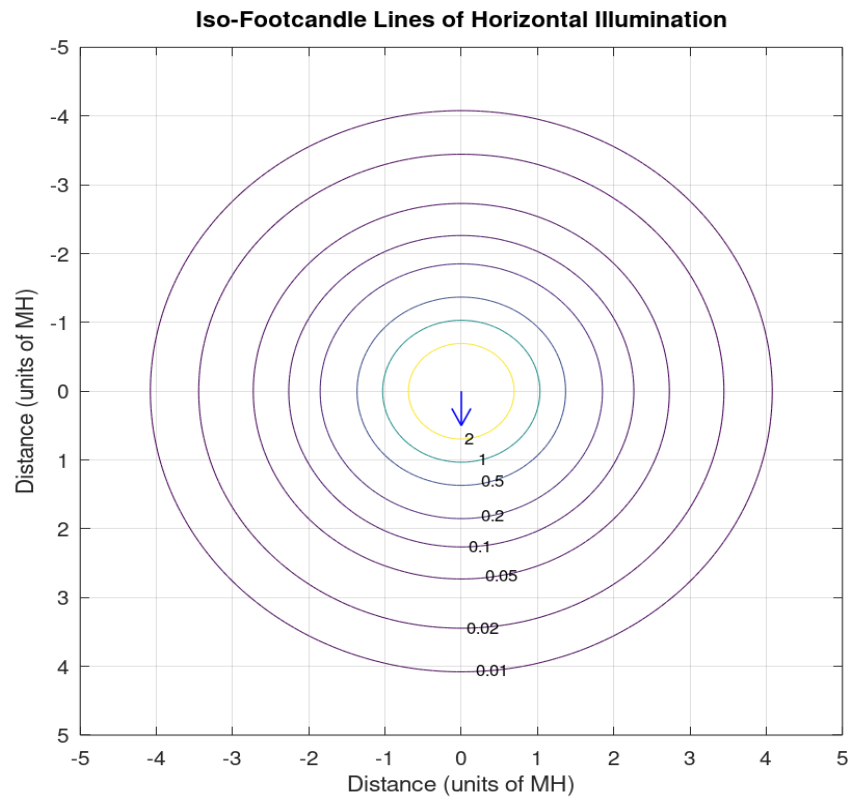
Spacing Criterion	
Spacing Criterion:	1.2



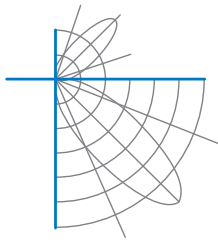
## Report of Test

### LLIA001198-019A-R01

#### 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

LLIA001198-019A-R01

Test Distance                    9.5 m  
Ambient Temperature        25.4 °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.

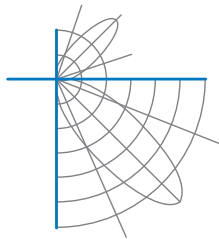
This report is free of erasures and corrections.

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.

Revision Log: R01-01/15/2020 Catalog Number was changed to 3-645-22 Elite Ceiling Mount



## Report of Test

**LLIA001198-019B-R01\***

Integrating Sphere Report

Catalog Number: 3-645-22 Elite Ceiling Mount

Surface ceiling mounted, cast aluminum housing, formed steel aluminum LED plate, translucent white plastic enclosure.  
96 white LEDs, one C135-14-120-3F-R10-RFR7\_9V LED board



### Performance Summary

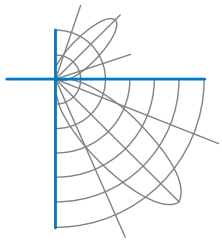
Voltage	120.0 Vac
Current	0.1183 A
Power	14.01 W
Frequency	59.99 Hz
Power Factor	0.987
Current THD	14.8 %
Total Luminous Flux	820.5 lm
Efficacy	58.6 lm/W
Chromaticity (x,y)	(0.4396, 0.3980)
(u',v')	(0.2550, 0.5194)
Duv	-0.0028
CCT	2905 K
CRI (Ra)	94
R9	76
TM-30: Rf	91
TM-30: Rg	98

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

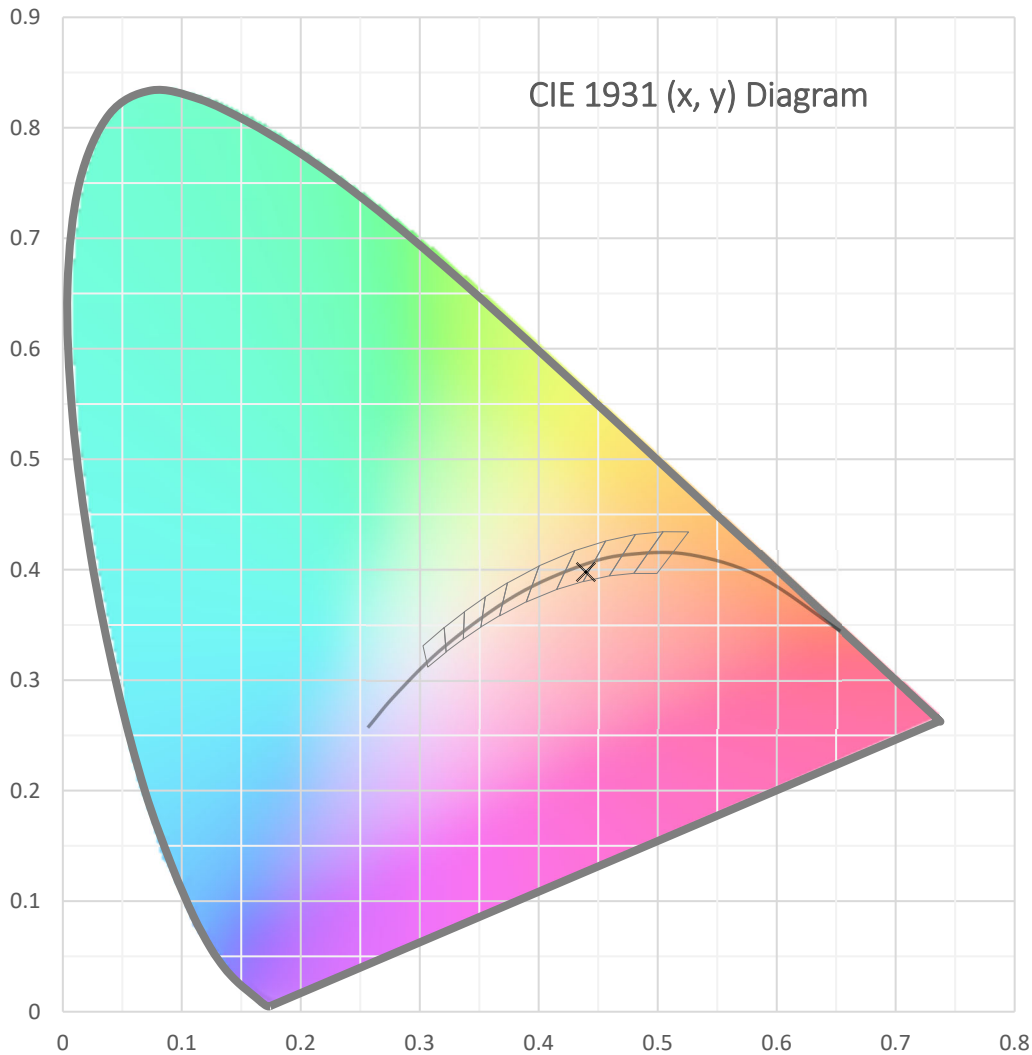
\*This test report supersedes test report LLIA001198-019B

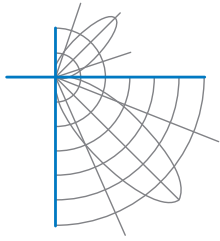
Test date: 12/13/2019  
Report date: 01/15/2020



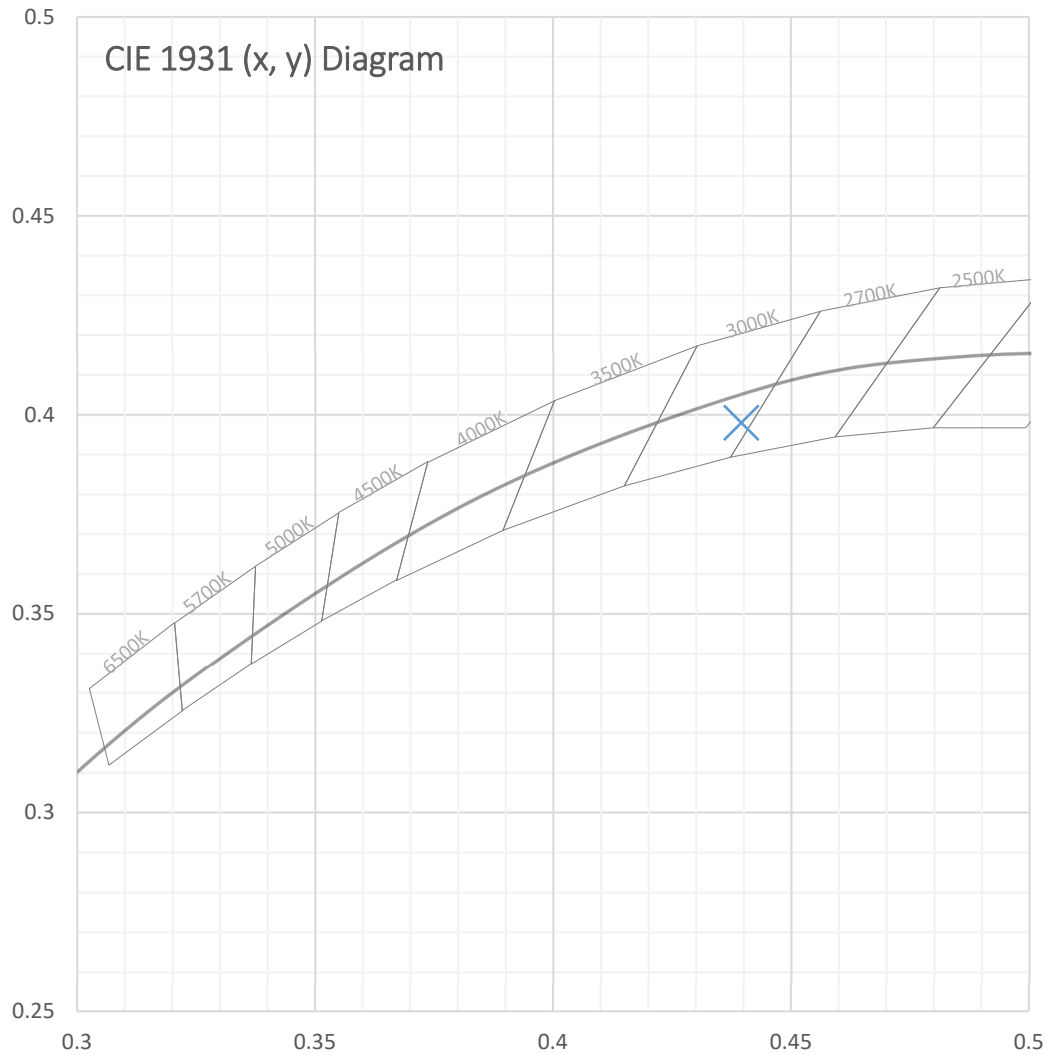


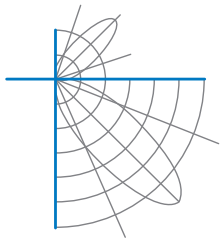
**Test Report Number: LLIA001198-019B-R01**  
Catalog Number: 3-645-22 Elite Ceiling Mount  
Surface ceiling mounted, cast aluminum housing, formed  
steel aluminum LED plate, translucent white plastic enclosure.  
96 white LEDs, one C135-14-120-3F-R10-RFR7\_9V LED board





**Test Report Number: LLIA001198-019B-R01**  
Catalog Number: 3-645-22 Elite Ceiling Mount  
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**Test Report Number: LLIA001198-019B-R01**

Catalog Number: 3-645-22 Elite Ceiling Mount

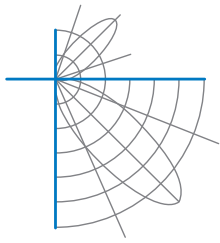
Surface ceiling mounted, cast aluminum housing, formed steel aluminum LED plate, translucent white plastic enclosure.  
96 white LEDs, one C135-14-120-3F-R10-RFR7\_9V LED board

**Spectral Data**

Total Radiant Flux	3.043 W
Total Luminous Flux	820.5 Lm
Chromaticity CIE 1931 (x, y)	(0.4396, 0.3980)
Chromaticity CIE 1976 (u', v')	(0.2550, 0.5194)
Correlated Color Temperature (CCT)	2905 K
Color Rendering Index (Ra)	94
R1	98
R2	97
R3	95
R4	96
R5	98
R6	93
R7	91
R8	87
R9	76
R10	95
R11	98
R12	84
R13	99
R14	98
TM-30: Rf	91
TM-30: Rg	98
Distance from Planckian Locus (Duv)	-0.0028
Scotopic/Photopic Ratio *	1.472

**Electrical Data**

Voltage	120.0 Vac
Current	0.1183 A
Power	14.01 W
Frequency	59.99 Hz
Power Factor	0.987
Current THD	14.8 %



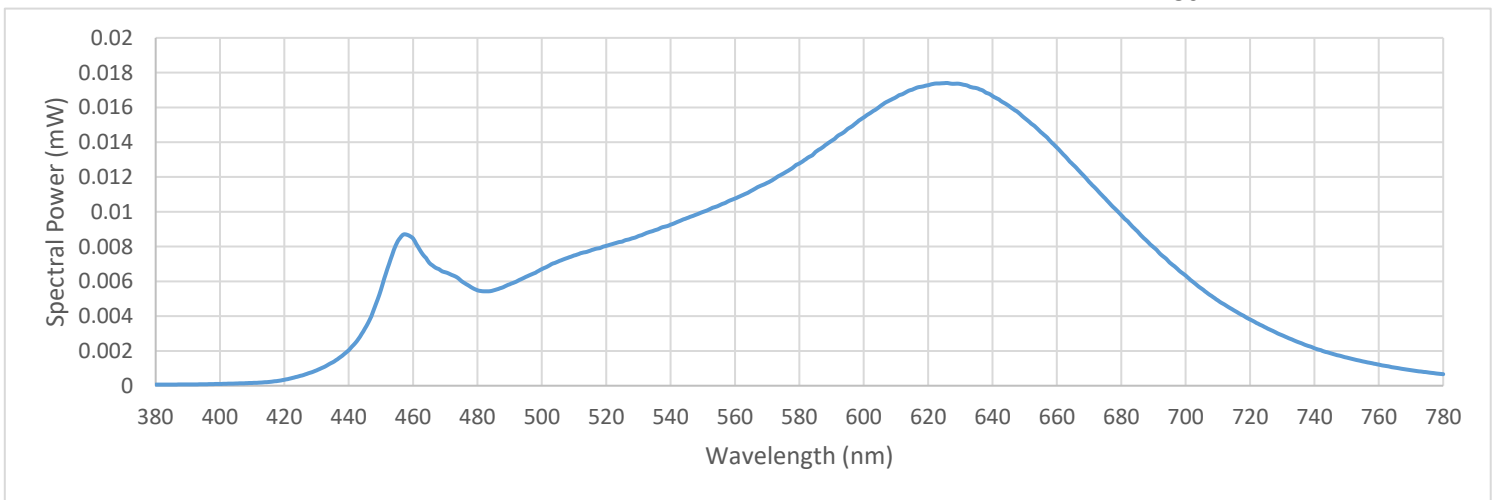
**Test Report Number: LLIA001198-019B-R01**

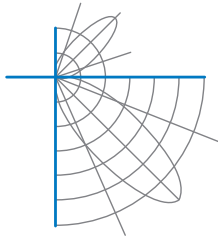
Catalog Number: 3-645-22 Elite Ceiling Mount

Surface ceiling mounted, cast aluminum housing, formed steel aluminum LED plate, translucent white plastic enclosure.  
96 white LEDs, one C135-14-120-3F-R10-RFR7\_9V LED board

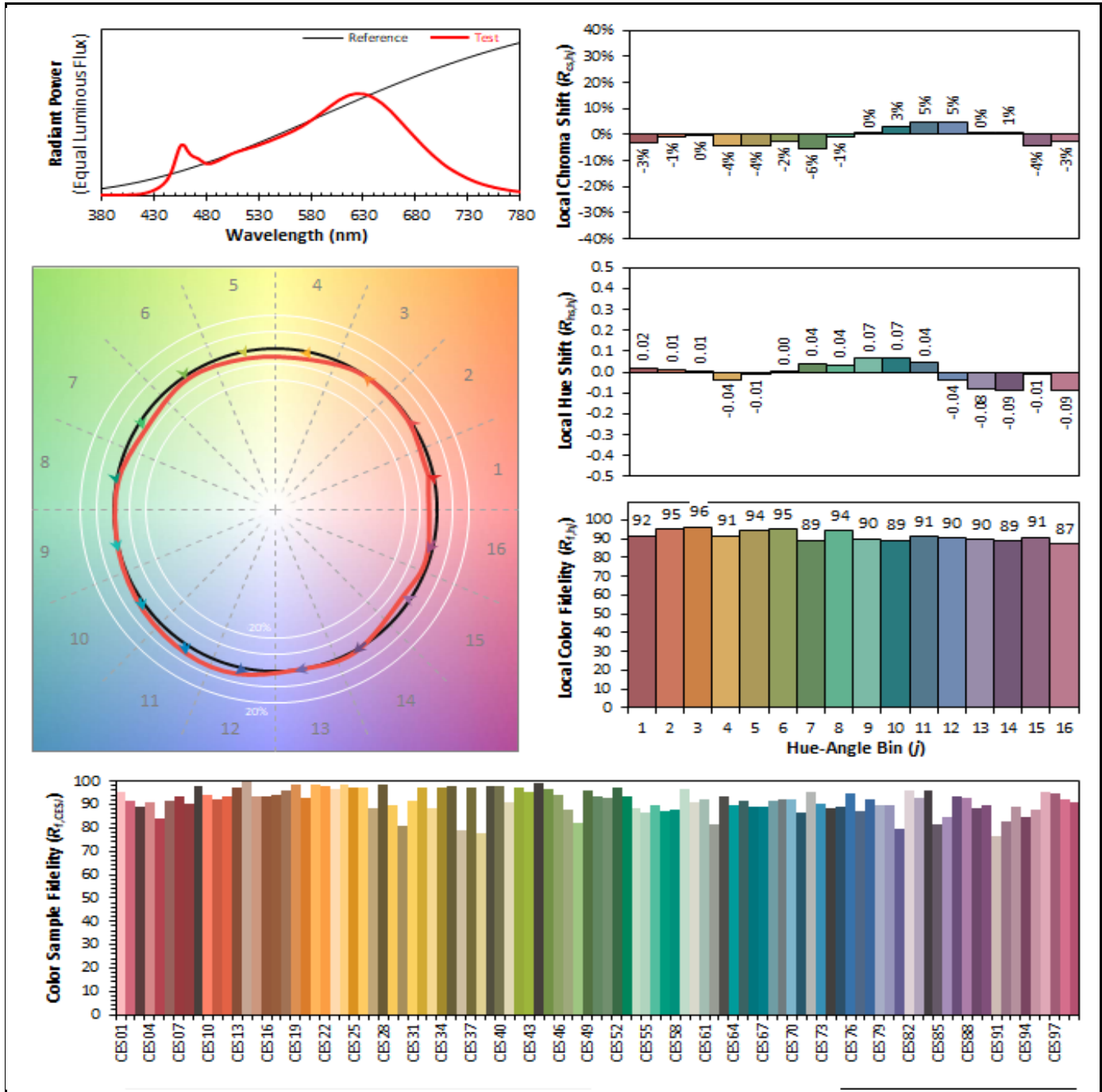
**Summary Spectral Power Distribution (wavelength - nm, spectral power - mW)**

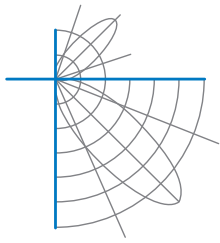
380	0.000069	480	0.005489	580	0.012782	680	0.009809
385	0.000070	485	0.005485	585	0.013441	685	0.008878
390	0.000079	490	0.005838	590	0.014085	690	0.007968
395	0.000087	495	0.006256	595	0.014767	695	0.007091
400	0.000106	500	0.006714	600	0.015428	700	0.006335
405	0.000132	505	0.007141	605	0.016060	705	0.005576
410	0.000165	510	0.007490	610	0.016591	710	0.004903
415	0.000215	515	0.007772	615	0.017023	715	0.004340
420	0.000348	520	0.008045	620	0.017281	720	0.003811
425	0.000570	525	0.008296	625	0.017402	725	0.003331
430	0.000891	530	0.008608	630	0.017352	730	0.002903
435	0.001349	535	0.008932	635	0.017118	735	0.002507
440	0.002049	540	0.009264	640	0.016658	740	0.002158
445	0.003275	545	0.009631	645	0.016099	745	0.001871
450	0.005522	550	0.009995	650	0.015388	750	0.001621
455	0.008235	555	0.010361	655	0.014583	755	0.001402
460	0.008464	560	0.010764	660	0.013696	760	0.001215
465	0.007072	565	0.011206	665	0.012720	765	0.001044
470	0.006526	570	0.011667	670	0.011726	770	0.000896
475	0.006021	575	0.012202	675	0.010769	775	0.000773
						780	0.000664





IES TM-30 Details





**Test Report Number: LLIA001198-019B-R01**  
Catalog Number: 3-645-22 Elite Ceiling Mount  
Surface ceiling mounted, cast aluminum housing, formed  
steel aluminum LED plate, translucent white plastic enclosure.  
96 white LEDs, one C135-14-120-3F-R10-RFR7\_9V LED board

**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:** 24.7 °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.

Revision Log: R01-01/15/2020 Catalog Number was changed to 3-645-22 Elite Ceiling Mount