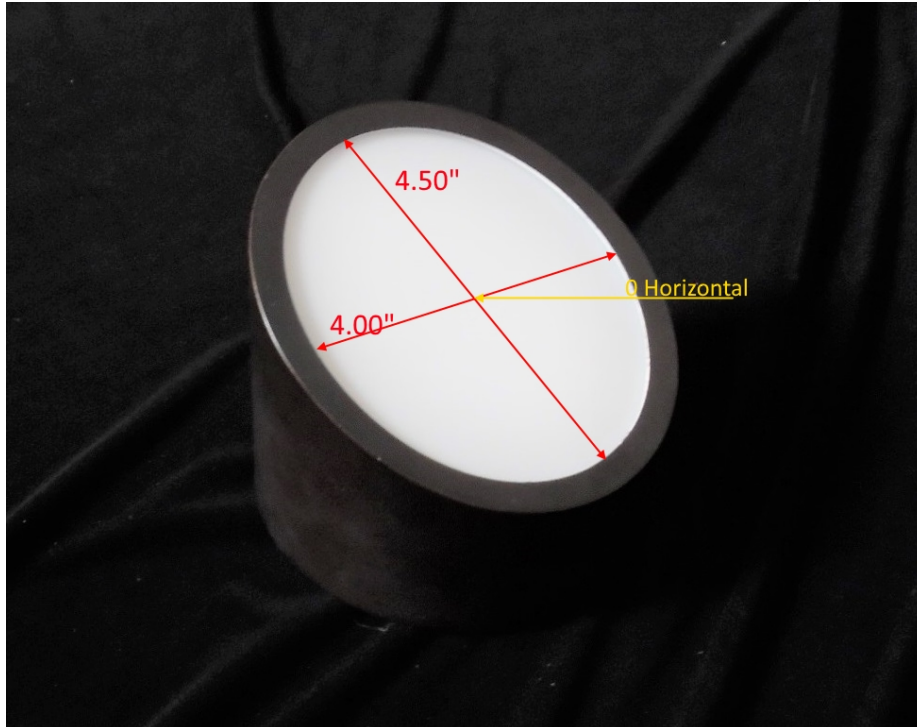




# Report of Test

## LLIA000824-053A

Catalog Number: 3-560-22 Zeepers Ceiling  
Ceiling mounted, formed steel housing, formed white enamel steel LED mounting plates, translucent white plastic enclosure.  
24 white LEDs, one Harvard Engineering LEDENG-165-930 LED board.  
One LTF DA12W350C1834D010-0014 dimming LED driver.  
120.0Vac, 60.00Hz, 0.0903A, 10.37W, 0.957PF, 11.2%THD(i)



### Performance Summary

Total Light Output	321 lm
Luminaire Power	10.4 W
Luminous Efficacy	30.9 lm/W

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



**Test Report No. LLIA000824-053A**

Catalog Number: 3-560-22 Zeepers Ceiling

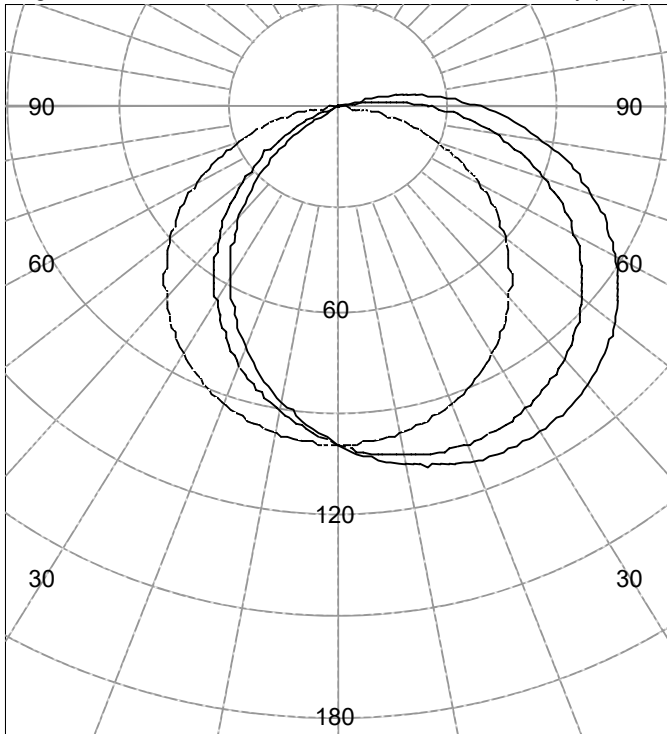
Ceiling mounted, formed steel housing, formed white enamel steel LED mounting plates, translucent white plastic enclosure.

24 white LEDs, one Harvard Engineering LEDENG-165-930 LED board.

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120.0Vac, 60.00Hz, 0.0903A, 10.37W, 0.957PF, 11.2%THD(i)

Legend: C0/C180-Solid, C45/C225-Dashed, C90/C270-Grey (cd)



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

**AVERAGE LUMINANCE (cd/m<sup>2</sup>)**

Gamma	C0	C45	C90
45.0	12178	11858	11099
55.0	12085	11690	10668
65.0	11911	11428	10026
75.0	11655	11040	8956
85.0	11268	10457	5743

**INTENSITY SUMMARY (cd)**

Gamma	C-Plane					Flux (lm)
	C0	C22.5	C45	C67.5	C90	
0.0	99	99	99	99	99	
5.0	104	104	102	101	99	9
10.0	107	106	104	101	98	
15.0	109	108	105	101	95	27
20.0	111	109	105	99	92	
25.0	111	109	104	97	89	41
30.0	111	109	103	94	84	
35.0	109	107	100	90	79	50
40.0	106	104	96	86	73	
45.0	103	100	92	80	66	52
50.0	99	96	87	74	60	
55.0	93	90	81	68	52	48
60.0	87	84	74	60	44	
65.0	81	77	67	53	36	38
70.0	73	70	60	45	28	
75.0	65	62	52	37	20	28
80.0	57	53	43	28	12	
85.0	48	45	35	20	5	18
90.0	39	36	26	12	0	

**ZONAL FLUX AND PERCENTAGES**

Zone	Flux (lm)	% Lamp	% Luminaire
0-30	77	N / A	24.1
0-40	127	N / A	39.6
0-60	226	N / A	70.5
0-90	309	N / A	96.4
40-90	182	N / A	56.8
60-90	83	N / A	25.9
90-180	12	N / A	3.6
0-180	321	N / A	100.0

Total Light Output = 321 lm

Signed:

Authorized Signatory

Date of test 10-Sep-2017

Date of report 13-Sep-2017



**Test Report No. LLIA000824-053A**

Catalog Number: 3-560-22 Zeepers Ceiling

Ceiling mounted, formed steel housing, formed white enamel steel LED mounting plates, translucent white plastic enclosure.

24 white LEDs, one Harvard Engineering LEDENG-165-930 LED board.

One LTF DA12W350C1834D010-0014 dimming LED driver.

120.0Vac, 60.00Hz, 0.0903A, 10.37W, 0.957PF, 11.2%THD(i)

**Intensity data (cd)**

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
0.0	99	99	99	99	99
2.5	102	102	101	100	99
5.0	104	104	102	101	99
7.5	106	105	104	101	98
10.0	107	106	104	101	98
12.5	108	108	105	101	97
15.0	109	108	105	101	95
17.5	110	109	105	100	94
20.0	111	109	105	99	92
22.5	111	110	105	98	91
25.0	111	109	104	97	89
27.5	111	109	104	96	86
30.0	111	109	103	94	84
32.5	110	108	101	92	82
35.0	109	107	100	90	79
37.5	108	105	98	88	76
40.0	106	104	96	86	73
42.5	105	102	94	83	70
45.0	103	100	92	80	66
47.5	101	98	90	77	63
50.0	99	96	87	74	60
52.5	96	93	84	71	56
55.0	93	90	81	68	52
57.5	91	87	78	64	48
60.0	87	84	74	60	44
62.5	84	81	71	57	40
65.0	81	77	67	53	36
67.5	77	74	64	49	32
70.0	73	70	60	45	28
72.5	69	66	56	41	24
75.0	65	62	52	37	20
77.5	61	58	47	33	16
80.0	57	53	43	28	12
82.5	53	49	39	24	9
85.0	48	45	35	20	5
87.5	44	40	30	16	2
90.0	39	36	26	12	0



**Test Report No. LLIA000824-053A**

Catalog Number: 3-560-22 Zeepers Ceiling

Ceiling mounted, formed steel housing, formed white enamel steel LED mounting plates, translucent white plastic enclosure.

24 white LEDs, one Harvard Engineering LEDENG-165-930 LED board.

One LTF DA12W350C1834D010-0014 dimming LED driver.

120.0Vac, 60.00Hz, 0.0903A, 10.37W, 0.957PF, 11.2%THD(i)

**Intensity data (cd)**

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
90.0	39	36	26	12	0
92.5	35	31	22	8	0
95.0	30	27	18	5	0
97.5	26	23	14	2	0
100.0	21	18	10	0	0
102.5	17	14	6	0	0
105.0	13	10	2	0	0
107.5	9	6	0	0	0
110.0	5	2	0	0	0
112.5	0	0	0	0	0
115.0	0	0	0	0	0
117.5	0	0	0	0	0
120.0	0	0	0	0	0
122.5	0	0	0	0	0
125.0	0	0	0	0	0
127.5	0	0	0	0	0
130.0	0	0	0	0	0
132.5	0	0	0	0	0
135.0	0	0	0	0	0
137.5	0	0	0	0	0
140.0	0	0	0	0	0
142.5	0	0	0	0	0
145.0	0	0	0	0	0
147.5	0	0	0	0	0
150.0	0	0	0	0	0
152.5	0	0	0	0	0
155.0	0	0	0	0	0
157.5	0	0	0	0	0
160.0	0	0	0	0	0
162.5	0	0	0	0	0
165.0	0	0	0	0	0
167.5	0	0	0	0	0
170.0	0	0	0	0	0
172.5	0	0	0	0	0
175.0	0	0	0	0	0
177.5	0	0	0	0	0
180.0	0	0	0	0	0



**Test Report No. LLIA000824-053A**

Catalog Number: 3-560-22 Zeepers Ceiling

Ceiling mounted, formed steel housing, formed white enamel steel LED mounting plates, translucent white plastic enclosure.

24 white LEDs, one Harvard Engineering LEDENG-165-930 LED board.

One LTF DA12W350C1834D010-0014 dimming LED driver.

120.0Vac, 60.00Hz, 0.0903A, 10.37W, 0.957PF, 11.2%THD(i)

**Intensity data (cd)**

Gamma	C-Plane				
	C90	C112.5	C135	C157.5	C180
0.0	99	99	99	99	99
2.5	99	98	97	97	97
5.0	99	97	95	94	94
7.5	98	96	93	92	91
10.0	98	94	91	89	88
12.5	97	92	88	86	85
15.0	95	90	86	83	82
17.5	94	88	83	80	78
20.0	92	86	80	76	75
22.5	91	83	77	72	71
25.0	89	80	73	69	67
27.5	86	77	70	65	63
30.0	84	74	66	61	59
32.5	82	71	62	57	55
35.0	79	68	59	52	50
37.5	76	64	55	48	46
40.0	73	61	50	44	41
42.5	70	57	46	39	37
45.0	66	53	42	35	33
47.5	63	49	38	31	28
50.0	60	45	34	26	24
52.5	56	41	29	22	19
55.0	52	37	25	18	15
57.5	48	33	21	13	11
60.0	44	29	17	9	7
62.5	40	25	13	5	3
65.0	36	21	9	2	0
67.5	32	17	5	0	0
70.0	28	13	2	0	0
72.5	24	9	0	0	0
75.0	20	5	0	0	0
77.5	16	2	0	0	0
80.0	12	0	0	0	0
82.5	9	0	0	0	0
85.0	5	0	0	0	0
87.5	2	0	0	0	0
90.0	0	0	0	0	0



**Test Report No. LLIA000824-053A**

Catalog Number: 3-560-22 Zeepers Ceiling

Ceiling mounted, formed steel housing, formed white enamel steel LED mounting plates, translucent white plastic enclosure.

24 white LEDs, one Harvard Engineering LEDENG-165-930 LED board.

One LTF DA12W350C1834D010-0014 dimming LED driver.

120.0Vac, 60.00Hz, 0.0903A, 10.37W, 0.957PF, 11.2%THD(i)

**Intensity data (cd)**

Gamma	C-Plane				
	C90	C112.5	C135	C157.5	C180
90.0	0	0	0	0	0
92.5	0	0	0	0	0
95.0	0	0	0	0	0
97.5	0	0	0	0	0
100.0	0	0	0	0	0
102.5	0	0	0	0	0
105.0	0	0	0	0	0
107.5	0	0	0	0	0
110.0	0	0	0	0	0
112.5	0	0	0	0	0
115.0	0	0	0	0	0
117.5	0	0	0	0	0
120.0	0	0	0	0	0
122.5	0	0	0	0	0
125.0	0	0	0	0	0
127.5	0	0	0	0	0
130.0	0	0	0	0	0
132.5	0	0	0	0	0
135.0	0	0	0	0	0
137.5	0	0	0	0	0
140.0	0	0	0	0	0
142.5	0	0	0	0	0
145.0	0	0	0	0	0
147.5	0	0	0	0	0
150.0	0	0	0	0	0
152.5	0	0	0	0	0
155.0	0	0	0	0	0
157.5	0	0	0	0	0
160.0	0	0	0	0	0
162.5	0	0	0	0	0
165.0	0	0	0	0	0
167.5	0	0	0	0	0
170.0	0	0	0	0	0
172.5	0	0	0	0	0
175.0	0	0	0	0	0
177.5	0	0	0	0	0
180.0	0	0	0	0	0



**Test Number: LLIA000824-053A**

Catalog Number: 3-560-22 Zeepers Ceiling

Ceiling mounted, formed steel housing, formed white enamel steel LED mounting plates, translucent white plastic enclosure.

24 white LEDs, one Harvard Engineering LEDENG-165-930 LED board.

One LTF DA12W350C1834D010-0014 dimming LED driver.

120.0Vac, 60.00Hz, 0.0903A, 10.37W, 0.957PF, 11.2%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	118	118	118	118	115	115	115	115	109	109	109	104	104	104	99	99	99	96
1	106	101	96	91	103	98	93	89	93	89	86	88	85	83	84	82	80	77
2	96	87	80	73	93	85	78	72	81	75	70	77	72	68	73	69	66	63
3	87	76	67	60	84	74	66	60	71	64	58	67	61	57	64	59	55	53
4	80	67	58	51	77	66	57	50	63	55	49	60	53	48	57	52	47	45
5	73	60	51	44	71	58	50	43	56	48	42	54	47	42	51	45	41	38
6	68	54	45	38	65	53	44	38	50	43	37	48	42	36	46	40	36	34
7	63	49	40	33	61	48	39	33	46	38	33	44	37	32	42	36	32	30
8	58	44	36	30	56	44	35	30	42	34	29	40	34	29	39	33	28	26
9	54	41	32	27	53	40	32	27	39	31	26	37	31	26	36	30	26	24
10	51	38	30	24	50	37	29	24	36	29	24	34	28	23	33	27	23	21

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	2.8	7.70	7.55
8.0	1.6	10.27	10.06
10.0	1.0	12.84	12.58
12.0	0.7	15.41	15.09
14.0	0.5	17.97	17.61
16.0	0.4	20.54	20.12





**Test Report No. LLIA000824-053A**

Catalog Number: 3-560-22 Zeepers Ceiling

Ceiling mounted, formed steel housing, formed white enamel steel LED mounting plates, translucent white plastic enclosure.

24 white LEDs, one Harvard Engineering LEDENG-165-930 LED board.

One LTF DA12W350C1834D010-0014 dimming LED driver.

120.0Vac, 60.00Hz, 0.0903A, 10.37W, 0.957PF, 11.2%THD(i)







**Test Report No. LLIA000824-053A**

Catalog Number: 3-560-22 Zeepers Ceiling

Ceiling mounted, formed steel housing, formed white enamel steel LED mounting plates, translucent white plastic enclosure.

24 white LEDs, one Harvard Engineering LEDENG-165-930 LED board.

One LTF DA12W350C1834D010-0014 dimming LED driver.

120.0Vac, 60.00Hz, 0.0903A, 10.37W, 0.957PF, 11.2%THD(i)

**Test Distance**            9.5 m  
**Test Temperature**      24.9 °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

**LLIA000824-053B**

Integrating Sphere Report

Catalog Number: 3-560-22 Zeepers Ceiling

Ceiling mounted, formed steel housing, formed white enamel steel LED mounting plates, translucent white plastic enclosure.

24 white LEDs, one Harvard Engineering LEDENG-165-930 LED board.

One LTF DA12W350C1834D010-0014 dimming LED driver.



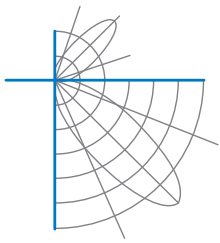
### Performance Summary

Voltage	120.0 Vac
Current	0.0901 A
Power	10.36 W
Frequency	60.00 Hz
Power Factor	0.958
Current THD	11.2 %

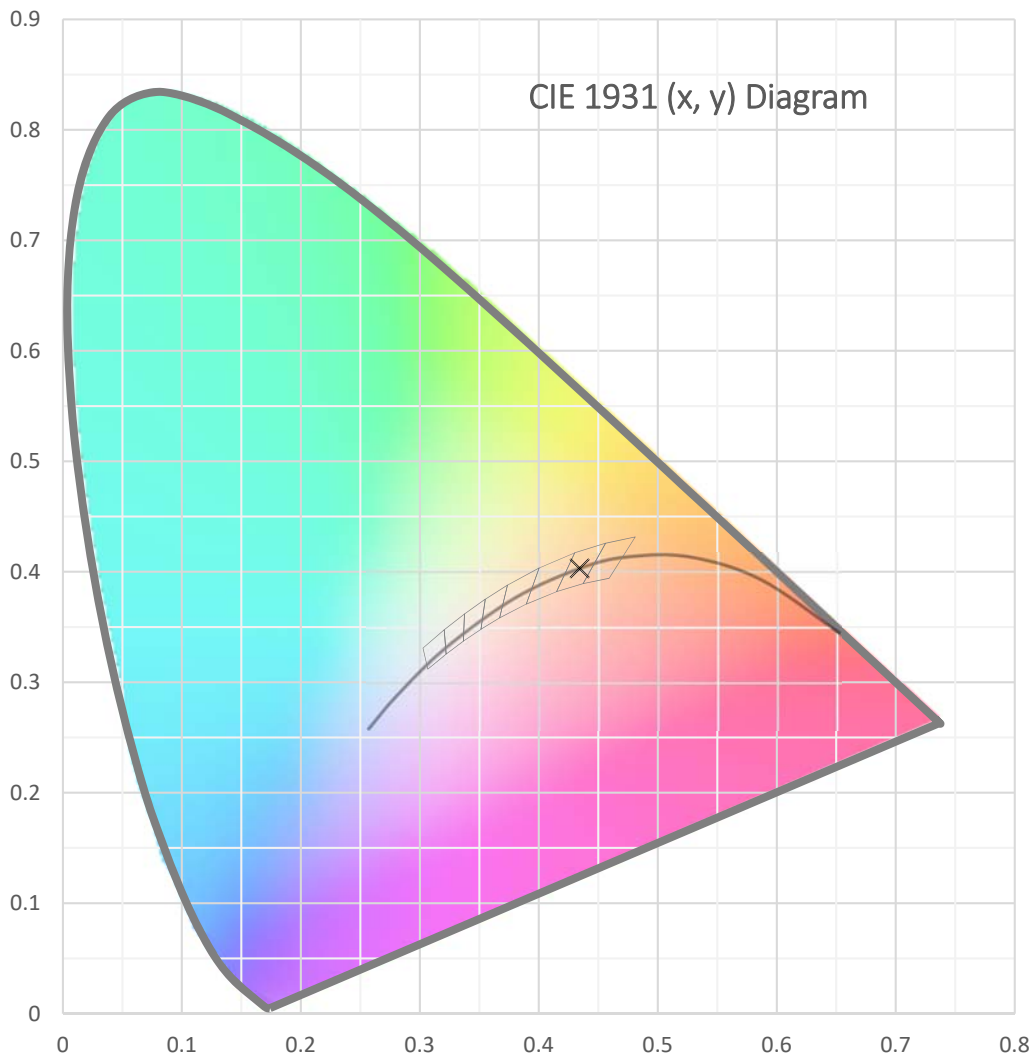
Total Luminous Flux	311.7 lm
Efficacy	30.1 lm/W
Chromaticity (x,y)	(0.4343, 0.4030)
(u',v')	(0.2493, 0.5206)
Duv	-0.0001
CCT	3036 K
CRI (Ra)	92
R9	58

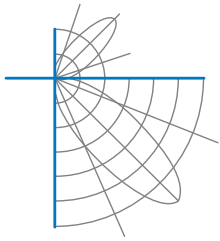
Prepared For:  
Oxygen Lighting  
201 Railhead Road  
Fort Worth, TX 76106, USA

Test date: 09/08/2017  
Report date: 09/13/2017



**Test Report Number: LLIA000824-053B**  
Catalog Number: 3-560-22 Zeepers Ceiling  
Ceiling mounted, formed steel housing, formed white enamel steel LED  
mounting plates, translucent white plastic enclosure.  
24 white LEDs, one Harvard Engineering LEDENG-165-930 LED board.  
One LTF DA12W350C1834D010-0014 dimming LED driver.





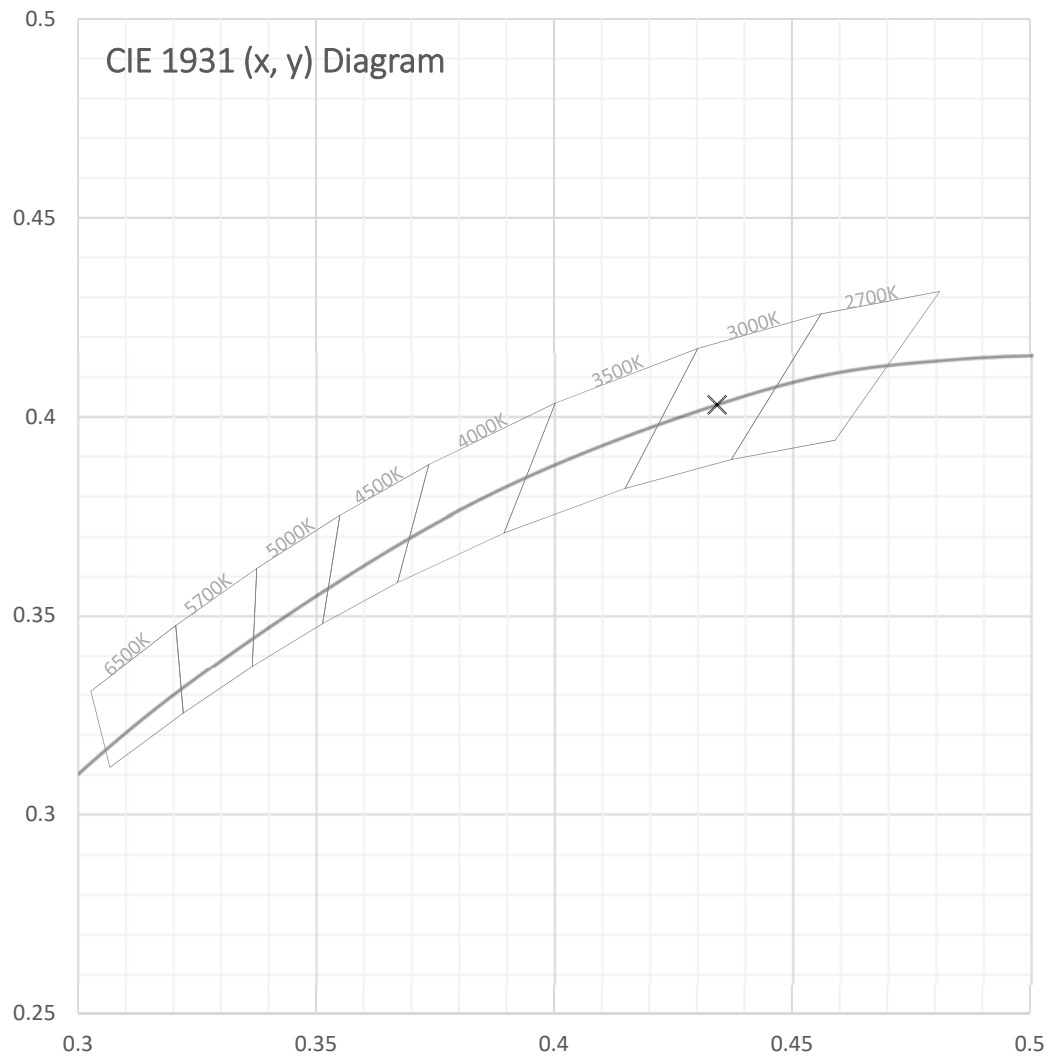
**Test Report Number: LLIA000824-053B**

Catalog Number: 3-560-22 Zeepers Ceiling

Ceiling mounted, formed steel housing, formed white enamel steel LED mounting plates, translucent white plastic enclosure.

24 white LEDs, one Harvard Engineering LEDENG-165-930 LED board.

One LTF DA12W350C1834D010-0014 dimming LED driver.





**Test Report Number: LLIA000824-053B**

Catalog Number: 3-560-22 Zeepers Ceiling

Ceiling mounted, formed steel housing, formed white enamel steel LED mounting plates, translucent white plastic enclosure.

24 white LEDs, one Harvard Engineering LEDENG-165-930 LED board.

One LTF DA12W350C1834D010-0014 dimming LED driver.

**Spectral Data**

Total Radiant Flux	1.085 W
Total Luminous Flux	311.7 Lm
Chromaticity CIE 1931 (x, y)	(0.4343, 0.4030)
Chromaticity CIE 1976 (u', v')	(0.2493, 0.5206)
Correlated Color Temperature (CCT)	3036 K
Color Rendering Index (Ra)	92
R1	92
R2	95
R3	96
R4	93
R5	92
R6	94
R7	93
R8	82
R9	58
R10	87
R11	93
R12	81
R13	93
R14	97
Distance from Planckian Locus (Duv)	-0.0001
Scotopic/Photopic Ratio *	1.412

**Electrical Data**

Voltage	120.0 Vac
Current	0.0901 A
Power	10.36 W
Frequency	60.00 Hz
Power Factor	0.958
Current THD	11.2 %



**Test Report Number: LLIA000824-053B**

Catalog Number: 3-560-22 Zeepers Ceiling

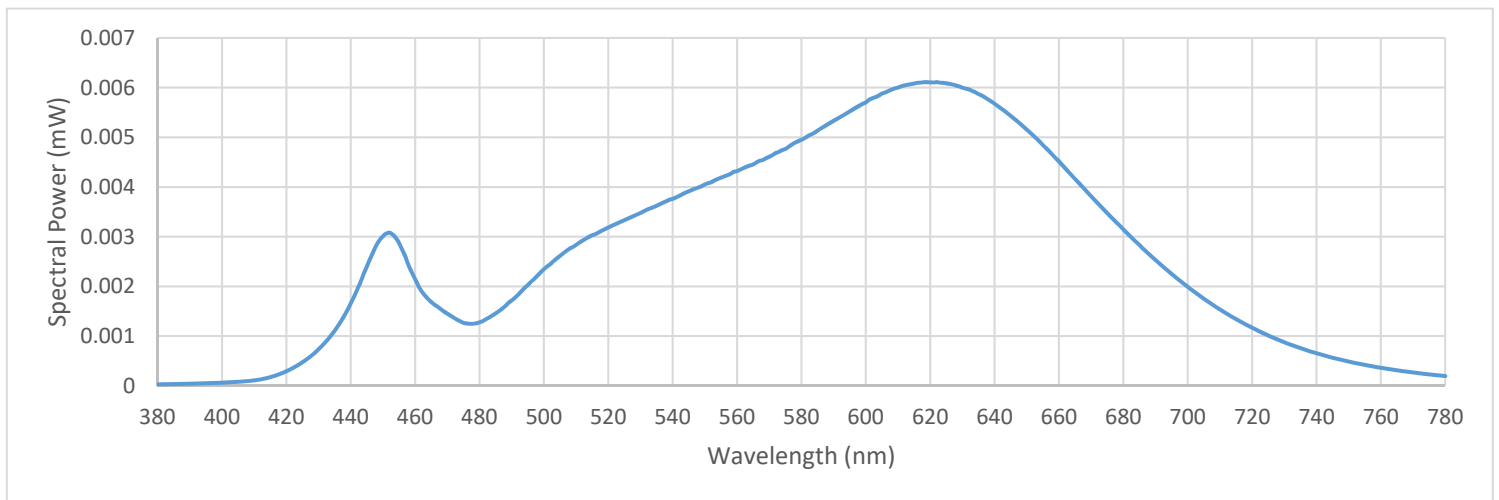
Ceiling mounted, formed steel housing, formed white enamel steel LED mounting plates, translucent white plastic enclosure.

24 white LEDs, one Harvard Engineering LEDENG-165-930 LED board.

One LTF DA12W350C1834D010-0014 dimming LED driver.

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

380	0.000030	480	0.001276	580	0.004951	680	0.003144
385	0.000033	485	0.001456	585	0.005137	685	0.002835
390	0.000041	490	0.001717	590	0.005334	690	0.002531
395	0.000051	495	0.002027	595	0.005523	695	0.002245
400	0.000063	500	0.002344	600	0.005702	700	0.001993
405	0.000078	505	0.002615	605	0.005880	705	0.001755
410	0.000109	510	0.002835	610	0.006000	710	0.001535
415	0.000172	515	0.003031	615	0.006082	715	0.001344
420	0.000293	520	0.003186	620	0.006106	720	0.001168
425	0.000474	525	0.003329	625	0.006085	725	0.001011
430	0.000738	530	0.003477	630	0.005999	730	0.000878
435	0.001110	535	0.003621	635	0.005871	735	0.000756
440	0.001652	540	0.003761	640	0.005674	740	0.000652
445	0.002401	545	0.003913	645	0.005430	745	0.000565
450	0.003013	550	0.004053	650	0.005152	750	0.000488
455	0.002875	555	0.004186	655	0.004842	755	0.000419
460	0.002147	560	0.004320	660	0.004521	760	0.000363
465	0.001684	565	0.004453	665	0.004159	765	0.000311
470	0.001453	570	0.004608	670	0.003811	770	0.000266
475	0.001266	575	0.004765	675	0.003475	775	0.000229
						780	0.000196





**Test Report Number: LLIA000824-053B**

Catalog Number: 3-560-22 Zeepers Ceiling

Ceiling mounted, formed steel housing, formed white enamel steel LED mounting plates, translucent white plastic enclosure.

24 white LEDs, one Harvard Engineering LEDENG-165-930 LED board.

One LTF DA12W350C1834D010-0014 dimming 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:** 24.9 °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

**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.