

Report of Test

LLIA000824-056A

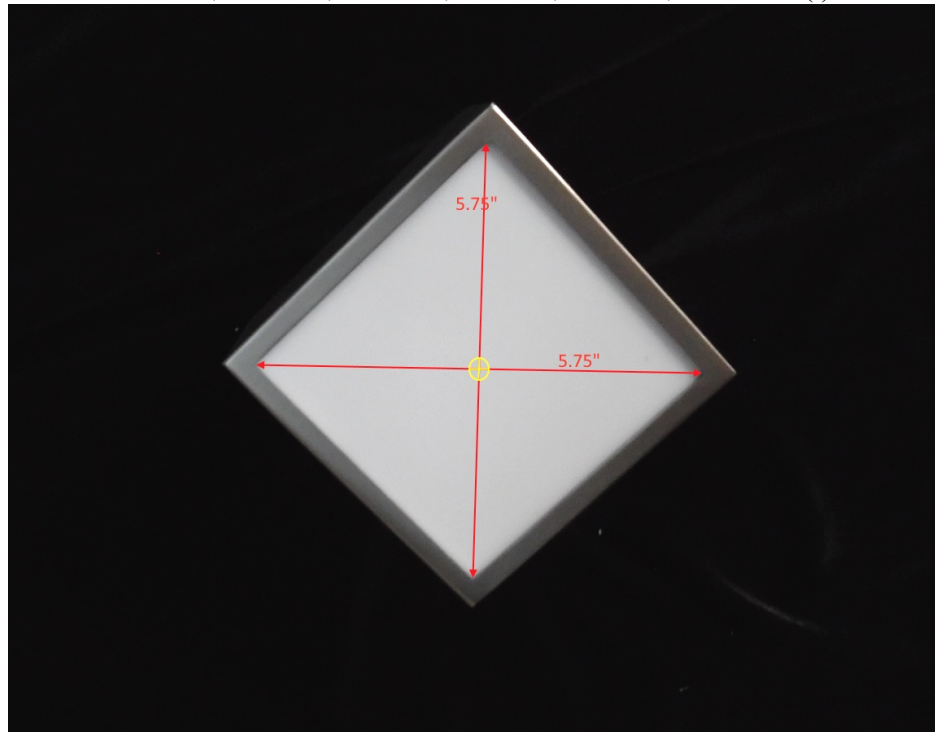
Catalog Number: 3-530-24 Zeta

Wall mounted, formed steel housing with white enamel steel
LED mounting plate, 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, 0.0891A, 10.27W, 0.961PF, 9.6%THD(i)



Performance Summary

Total Light Output	361 lm
Luminaire Power	10.3 W
Luminous Efficacy	35.0 lm/W

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



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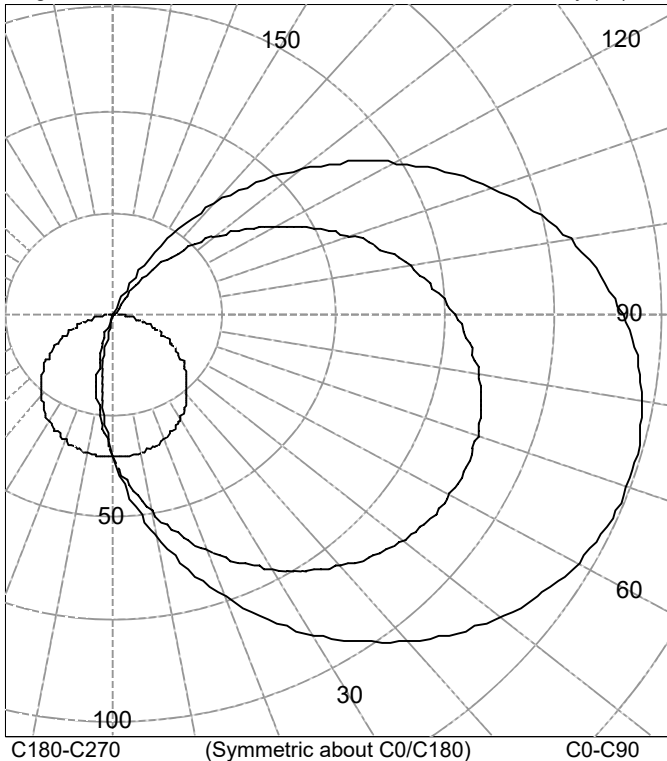
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Legend: C0/C180-Solid, C45/C225-Dashed, C90/C270-Grey (cd)



INTENSITY SUMMARY (cd)

Gamma	C-Plane					Flux (lm)
	C0	C22.5	C45	C67.5	C90	
0.0	35	35	35	35	35	
5.0	45	45	42	39	35	3
10.0	55	54	49	43	35	
15.0	65	63	56	46	34	10
20.0	74	71	62	48	33	
25.0	83	79	67	50	31	17
30.0	91	86	72	52	30	
35.0	98	93	77	54	28	24
40.0	105	99	81	55	26	
45.0	111	104	84	55	24	31
50.0	115	108	86	55	21	
55.0	119	111	88	54	18	37
60.0	122	113	89	53	16	
65.0	124	114	89	52	13	41
70.0	124	115	88	50	10	
75.0	124	114	86	47	7	42
80.0	122	112	84	44	4	
85.0	119	109	81	41	1	40
90.0	116	106	77	38	0	

AVERAGE LUMINANCE (cd/m²)

Gamma	C0	C45	C90
45.0	11214	10927	9437
55.0	11303	10955	9072
65.0	11331	10919	8576
75.0	11300	10835	7614
85.0	11215	10696	4199

ZONAL FLUX AND PERCENTAGES

Zone	Flux (lm)	% Lamp	% Luminaire
0-30	30	N / A	8.3
0-40	54	N / A	14.9
0-60	122	N / A	33.8
0-90	244	N / A	67.7
40-90	191	N / A	52.8
60-90	122	N / A	33.9
90-180	116	N / A	32.3
0-180	361	N / A	100.0

Total Light Output = 361 lm

Signed:

Authorized Signatory

Date of test 11-Sep-2017

Date of report 15-Sep-2017



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Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
0.0	35	35	35	35	35
2.5	40	40	39	37	35
5.0	45	45	42	39	35
7.5	50	49	46	41	35
10.0	55	54	49	43	35
12.5	60	58	52	44	34
15.0	65	63	56	46	34
17.5	70	67	59	47	33
20.0	74	71	62	48	33
22.5	79	75	65	49	32
25.0	83	79	67	50	31
27.5	87	83	70	51	31
30.0	91	86	72	52	30
32.5	95	90	75	53	29
35.0	98	93	77	54	28
37.5	102	96	79	54	27
40.0	105	99	81	55	26
42.5	108	101	82	55	25
45.0	111	104	84	55	24
47.5	113	106	85	55	22
50.0	115	108	86	55	21
52.5	118	109	87	55	20
55.0	119	111	88	54	18
57.5	121	112	88	54	17
60.0	122	113	89	53	16
62.5	123	114	89	53	14
65.0	124	114	89	52	13
67.5	124	115	88	51	11
70.0	124	115	88	50	10
72.5	124	114	87	49	8
75.0	124	114	86	47	7
77.5	123	113	85	46	5
80.0	122	112	84	44	4
82.5	121	111	83	43	2
85.0	119	109	81	41	1
87.5	118	108	79	40	0
90.0	116	106	77	38	0



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Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
90.0	116	106	77	38	0
92.5	113	103	75	36	0
95.0	111	101	73	34	0
97.5	108	98	71	32	0
100.0	105	96	68	30	0
102.5	102	93	66	28	0
105.0	99	89	63	26	0
107.5	95	86	60	24	0
110.0	91	82	57	21	0
112.5	87	78	54	19	0
115.0	83	75	50	17	0
117.5	79	70	47	15	0
120.0	75	66	44	12	0
122.5	70	62	40	10	0
125.0	65	58	37	8	0
127.5	60	53	33	6	0
130.0	56	49	29	4	0
132.5	51	44	26	2	0
135.0	46	39	22	0	0
137.5	41	35	19	0	0
140.0	36	30	15	0	0
142.5	31	25	12	0	0
145.0	26	21	8	0	0
147.5	21	16	5	0	0
150.0	16	12	2	0	0
152.5	11	8	0	0	0
155.0	7	4	0	0	0
157.5	2	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



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Intensity data (cd)

Gamma	C-Plane				
	C90	C112.5	C135	C157.5	C180
0.0	35	35	35	35	35
2.5	35	33	32	31	30
5.0	35	31	28	26	25
7.5	35	29	25	22	20
10.0	35	27	21	17	16
12.5	34	25	17	13	11
15.0	34	23	14	8	7
17.5	33	21	11	4	2
20.0	33	18	7	1	0
22.5	32	16	4	0	0
25.0	31	14	1	0	0
27.5	31	12	0	0	0
30.0	30	10	0	0	0
32.5	29	7	0	0	0
35.0	28	5	0	0	0
37.5	27	3	0	0	0
40.0	26	1	0	0	0
42.5	25	0	0	0	0
45.0	24	0	0	0	0
47.5	22	0	0	0	0
50.0	21	0	0	0	0
52.5	20	0	0	0	0
55.0	18	0	0	0	0
57.5	17	0	0	0	0
60.0	16	0	0	0	0
62.5	14	0	0	0	0
65.0	13	0	0	0	0
67.5	11	0	0	0	0
70.0	10	0	0	0	0
72.5	8	0	0	0	0
75.0	7	0	0	0	0
77.5	5	0	0	0	0
80.0	4	0	0	0	0
82.5	2	0	0	0	0
85.0	1	0	0	0	0
87.5	0	0	0	0	0
90.0	0	0	0	0	0



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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



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Coefficients Of Utilization - Zonal Cavity Method

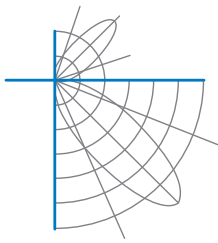
Effective Floor Cavity Reflectance 0.20

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	111	111	111	111	105	105	105	105	93	93	93	82	82	82	72	72	72	68
1	96	89	83	78	90	84	78	73	74	69	65	64	61	57	55	53	50	46
2	85	75	66	59	79	70	62	56	61	55	50	53	48	44	45	42	38	34
3	77	64	54	47	71	60	51	44	52	45	39	45	39	35	38	34	30	26
4	69	56	46	38	64	52	43	36	45	38	32	39	33	28	33	28	24	21
5	63	49	39	32	59	46	37	30	40	32	27	35	28	23	30	24	20	17
6	58	43	34	27	54	41	32	25	36	28	23	31	25	20	26	21	17	14
7	53	39	30	23	50	37	28	22	32	25	20	28	22	17	24	19	15	12
8	49	35	26	20	46	33	25	19	29	22	17	25	19	15	22	17	13	11
9	46	32	23	18	43	30	22	17	27	20	15	23	17	13	20	15	12	9
10	43	29	21	16	40	28	20	15	24	18	13	21	16	12	18	14	10	8

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.

Circle of Light Plot

Height(ft)	Illuminance at Nadir (fc)	Beam Width (across 50% Nadir Illum)	
		0-180	90-270
6.0	1.0	10.61	7.55
8.0	0.6	14.15	10.06
10.0	0.4	17.68	12.58
12.0	0.2	21.22	15.09
14.0	0.2	24.75	17.61
16.0	0.1	28.29	20.13



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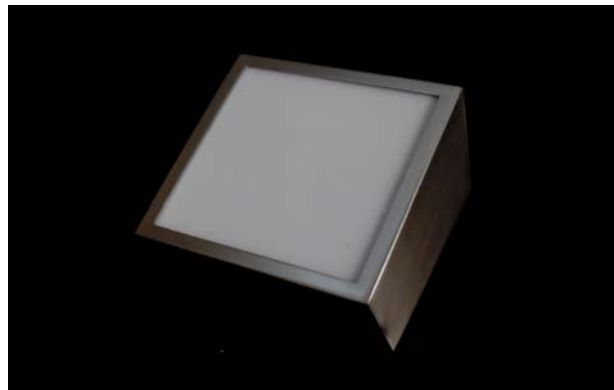
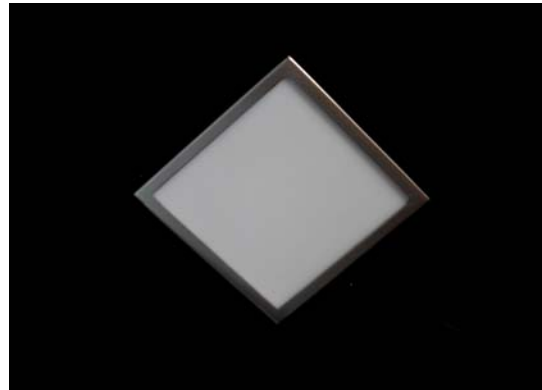
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120.0Vac, 60.00Hz, 0.0891A, 10.27W, 0.961PF, 9.6%THD(i)

Test Distance 9.5 m
Test 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-79-08 (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

LLIA000824-056B

Integrating Sphere Report

Catalog Number: 3-530-24 Zeta

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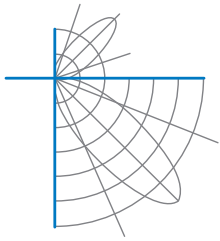
Performance Summary

Voltage	120.0 Vac
Current	0.0891 A
Power	10.29 W
Frequency	60.00 Hz
Power Factor	0.962
Current THD	9.6 %

Total Luminous Flux	360.2 lm
Efficacy	35.0 lm/W
Chromaticity (x,y)	(0.4377, 0.4021)
(u',v')	(0.2519, 0.5207)
Duv	-0.0009
CCT	2971 K
CRI (Ra)	93
R9	64

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

Test date: 09/11/2017
Report date: 09/14/2017



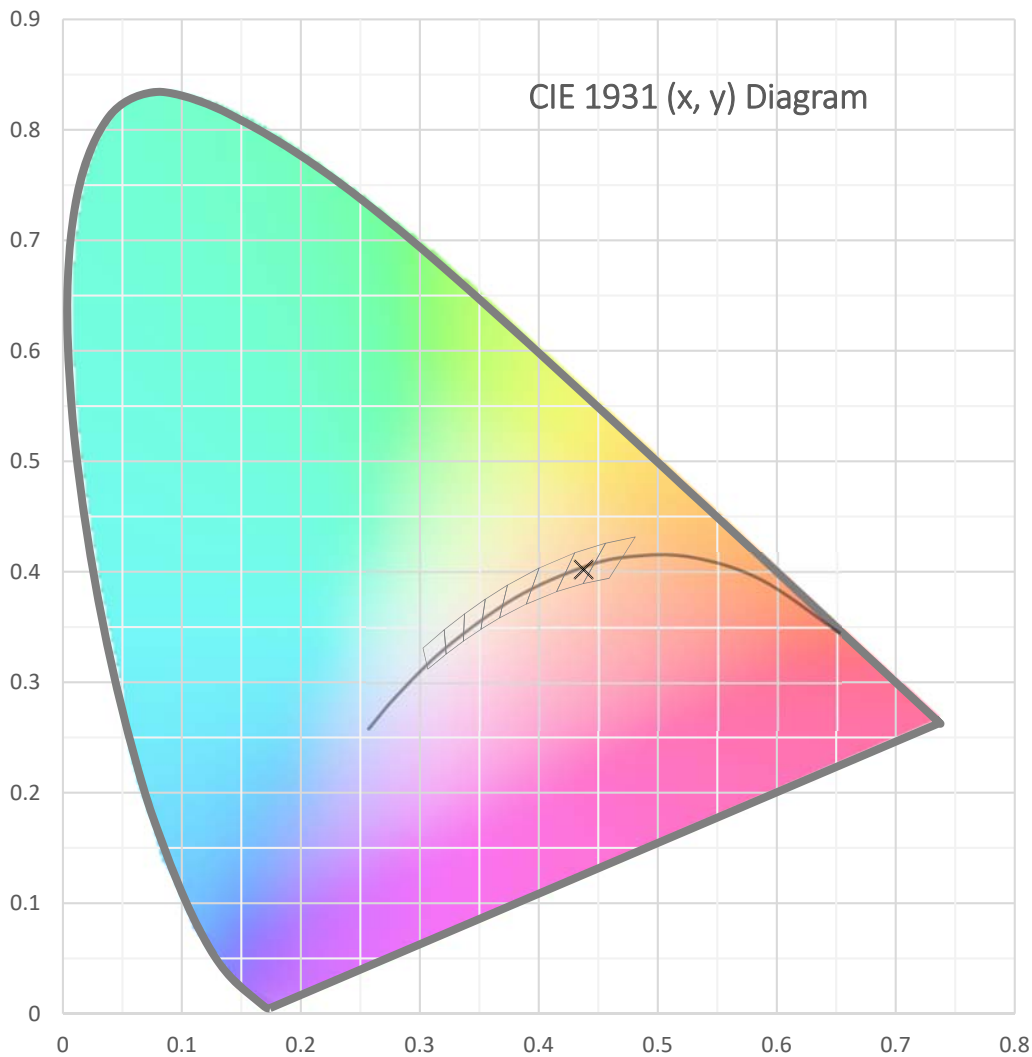
Test Report Number: LLIA000824-056B

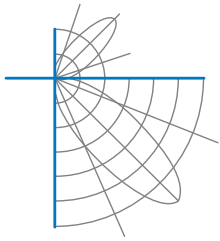
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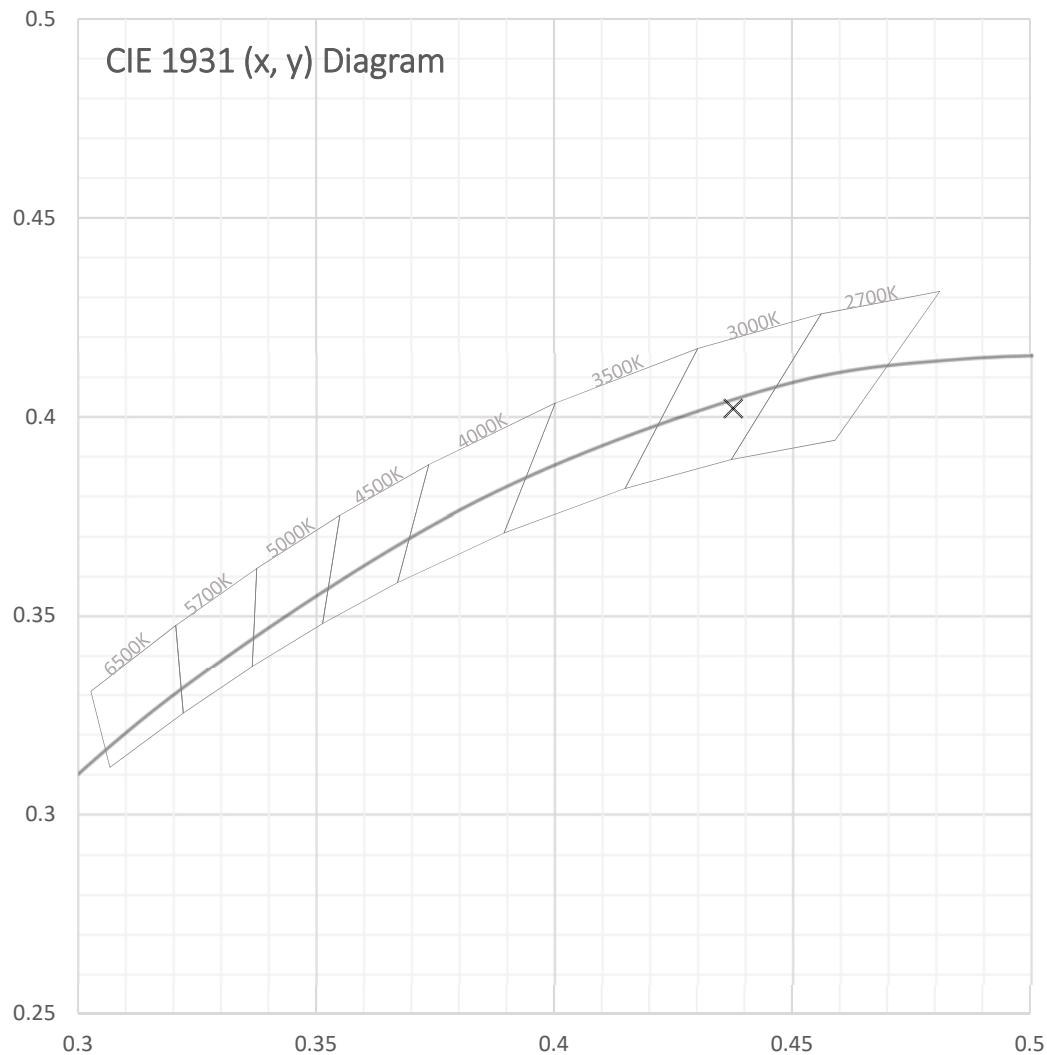
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Spectral Data

Total Radiant Flux	1.286 W
Total Luminous Flux	360.2 Lm
Chromaticity CIE 1931 (x, y)	(0.4377, 0.4021)
Chromaticity CIE 1976 (u', v')	(0.2519, 0.5207)
Correlated Color Temperature (CCT)	2971 K
Color Rendering Index (Ra)	93
R1	94
R2	97
R3	98
R4	93
R5	93
R6	95
R7	93
R8	84
R9	64
R10	91
R11	93
R12	82
R13	94
R14	98
Distance from Planckian Locus (Duv)	-0.0009
Scotopic/Photopic Ratio *	1.409

Electrical Data

Voltage	120.0 Vac
Current	0.0891 A
Power	10.29 W
Frequency	60.00 Hz
Power Factor	0.962
Current THD	9.6 %



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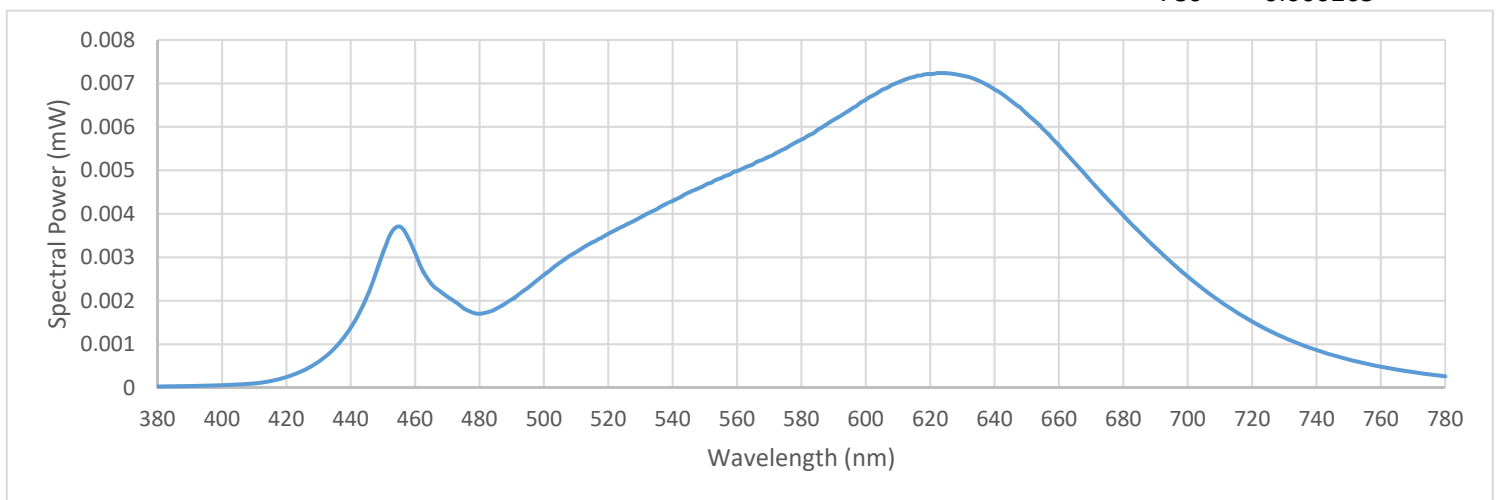
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Summary Spectral Power Distribution (wavelength - nm, spectral power - mW)

380	0.000031	480	0.001705	580	0.005706	680	0.003962
385	0.000033	485	0.001810	585	0.005931	685	0.003589
390	0.000040	490	0.002033	590	0.006165	690	0.003222
395	0.000048	495	0.002295	595	0.006386	695	0.002875
400	0.000060	500	0.002596	600	0.006623	700	0.002561
405	0.000074	505	0.002878	605	0.006850	705	0.002262
410	0.000101	510	0.003118	610	0.007022	710	0.001988
415	0.000152	515	0.003345	615	0.007148	715	0.001745
420	0.000247	520	0.003542	620	0.007215	720	0.001525
425	0.000389	525	0.003726	625	0.007234	725	0.001325
430	0.000601	530	0.003914	630	0.007182	730	0.001155
435	0.000916	535	0.004105	635	0.007062	735	0.000999
440	0.001378	540	0.004294	640	0.006860	740	0.000864
445	0.002092	545	0.004490	645	0.006603	745	0.000751
450	0.003105	550	0.004658	650	0.006297	750	0.000648
455	0.003710	555	0.004821	655	0.005954	755	0.000561
460	0.003105	560	0.004983	660	0.005580	760	0.000487
465	0.002394	565	0.005140	665	0.005161	765	0.000419
470	0.002100	570	0.005315	670	0.004749	770	0.000358
475	0.001830	575	0.005499	675	0.004350	775	0.000309
						780	0.000265





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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 π geometry

Test Temperature: 24.0 °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
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