

Report of Test

LLI-14272-13

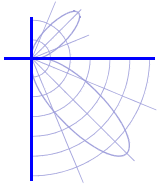
OptoLum "EcoLine" Extruded Aluminum Luminaire. Cat No. EL-LP-S--358UOD-A072000
 Low profile extruded housing with extents ~ 72.375" x 1.0" x 0.375".
 Twelve white PCB sections marked "OptoLum EcoLine SLO R4.1" with five LEDs each on 1.187" centers.
 Curved opal plastic lens. Luminous Opening ~ 72 x 0.5 x 0.0625".
 One remote "High Perfection Tech LP1090-24-GG-290 100-240Vac 47-63Hz" driver.
 Tested at 120V 60Hz with luminous opening horizontal facing nadir.



Performance Summary

Total Light Output	982 lm	Min Power Factor	0.64 @ 277 V
Luminaire Power	25.0 W	Max THD(i)*	29.7 % @ 277 V
Luminous Efficacy	39.3 lm/W	SC along*, across*	1.26 , 1.28
CCT	3340 K	SC Diagonal*	1.40
CIE(x,y) 1931	(0.413, 0.391)		
CRI	85		
0-60° Zonal Flux %	76.0 %		

PREPARED FOR : OptoLum Inc., 1407 W 10th Place, Tempe, AZ



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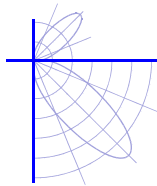
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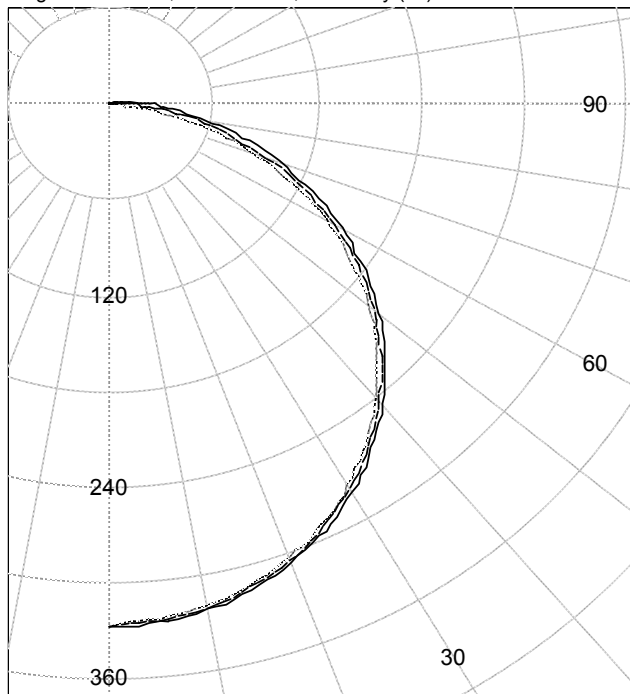
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Legend: C0-Solid, C45-Dashed, C90-Grey (cd)



INTENSITY SUMMARY (cd)

Gamma	C-Plane					Flux (lm)
	C0	C22.5	C45	C67.5	C90	
0.0	327	327	327	327	327	
5.0	326	325	325	326	324	31
10.0	322	321	321	322	319	
15.0	316	314	314	315	312	89
20.0	306	304	305	305	302	
25.0	295	293	292	293	290	135
30.0	281	279	278	278	276	
35.0	264	262	261	261	259	164
40.0	246	244	243	241	239	
45.0	225	224	222	220	218	171
50.0	204	202	199	197	195	
55.0	180	178	175	172	170	157
60.0	155	154	150	146	144	
65.0	129	128	123	119	116	122
70.0	104	102	96	91	88	
75.0	79	77	70	63	58	74
80.0	57	54	46	37	31	
85.0	37	34	26	16	10	29
90.0	23	20	13	4	0	

ZONAL FLUX AND PERCENTAGES

Zone	Flux (lm)	% Lamp	% Luminaire
0-30	255	N / A	25.9
0-40	418	N / A	42.6
0-60	746	N / A	76.0
0-90	970	N / A	98.8
40-90	552	N / A	56.2
60-90	224	N / A	22.8
90-180	11	N / A	1.2
0-180	982	N / A	100.0

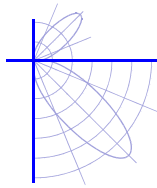
Total Light Output = 982 lm

Signed:

E Southgate

Eric Southgate
Authorized Signatory

Date of test 12-Oct-2014
Date of report 15-Oct-2014



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OptoLum "EcoLine" Extruded Aluminum Luminaire. Cat No. EL-LP-S--358UOD-A072000

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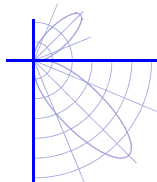
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Tested at 120V 60Hz with luminous opening horizontal facing nadir.

Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
0.0	327	327	327	327	327
2.5	327	326	326	328	325
5.0	326	325	325	326	324
7.5	324	323	323	325	322
10.0	322	321	321	322	319
12.5	319	318	318	319	316
15.0	316	314	314	315	312
17.5	311	310	310	310	308
20.0	306	304	305	305	302
22.5	300	298	299	299	296
25.0	295	293	292	293	290
27.5	288	286	285	286	283
30.0	281	279	278	278	276
32.5	273	271	270	270	267
35.0	264	262	261	261	259
37.5	255	253	252	252	249
40.0	246	244	243	241	239
42.5	236	234	232	231	229
45.0	225	224	222	220	218
47.5	215	213	210	209	207
50.0	204	202	199	197	195
52.5	192	191	187	185	183
55.0	180	178	175	172	170
57.5	168	166	163	159	158
60.0	155	154	150	146	144
62.5	142	141	137	132	131
65.0	129	128	123	119	116
67.5	116	115	110	105	102
70.0	104	102	96	91	88
72.5	92	89	83	76	73
75.0	79	77	70	63	58
77.5	68	65	58	49	45
80.0	57	54	46	37	31
82.5	46	44	35	25	20
85.0	37	34	26	16	10
87.5	30	27	19	9	2
90.0	23	20	13	4	0



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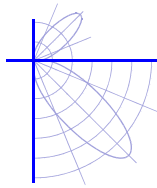
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Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
90.0	23	20	13	4	0
92.5	17	15	8	2	0
95.0	13	11	5	1	0
97.5	9	8	4	1	0
100.0	7	6	3	0	0
102.5	5	4	2	0	0
105.0	4	3	2	0	0
107.5	4	3	2	0	0
110.0	3	3	2	0	0
112.5	3	3	1	0	0
115.0	3	2	1	0	0
117.5	2	2	1	0	0
120.0	3	2	1	0	0
122.5	2	2	1	0	0
125.0	2	1	1	0	0
127.5	1	1	0	0	0
130.0	1	1	0	0	0
132.5	1	1	0	0	0
135.0	1	1	0	0	0
137.5	1	1	0	0	0
140.0	1	0	0	0	0
142.5	1	0	0	0	0
145.0	1	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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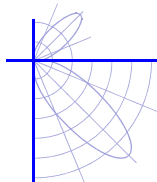
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Coefficients Of Utilization * - Zonal Cavity Method
Effective Floor Cavity Reflectance 0.20

RC	80		80		70		70		50		50		30		30		10		10		0
RW	70	50	30	10	10	70	50	30	10	10	50	30	10	10	50	30	10	10	0	0	
0	119	119	119	119	116	116	116	116	110	110	110	105	105	105	101	101	101	99			
1	108	103	98	94	105	100	96	93	96	93	89	92	89	86	88	86	84	82			
2	98	89	82	76	95	87	81	75	83	78	73	80	75	71	77	73	70	67			
3	89	78	70	63	86	76	69	62	73	67	61	70	65	60	68	63	59	56			
4	81	69	60	53	79	68	59	53	65	58	52	63	56	51	60	55	50	48			
5	75	62	52	46	73	60	52	45	58	51	45	56	49	44	54	48	44	41			
6	69	55	46	40	67	54	46	40	52	45	39	51	44	39	49	43	38	36			
7	64	50	41	35	62	49	41	35	48	40	35	46	39	34	45	39	34	32			
8	59	46	37	31	58	45	37	31	44	36	31	42	35	31	41	35	30	28			
9	56	42	34	28	54	41	33	28	40	33	28	39	32	28	38	32	27	25			
10	52	39	31	25	51	38	30	25	37	30	25	36	30	25	35	29	25	23			



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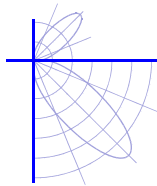
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LM-79 Performance Data

Spectral	CIE 1931 (x, y) ⁽¹⁾	(0.413, 0.391)	
	CIE 1976 (u', v') ⁽¹⁾	(0.241, 0.512)	
	Correlated Color Temperature (CCT) ⁽¹⁾	3340 K	
	Color Spatial Uniformity ⁽²⁾	0.0011	
	Color Rendering Index (Ra) ⁽¹⁾	85	
	Special CRI 9 (R ₉) ^{(1),(3)}	27	
	Distance from Planckian Locus (Duv) ^{(1),(3)}	-0.0015	
	Scotopic/Photopic Ratio ^{(1),(3)}	1.49	
Electrical	Voltage	120 V	(Setpoint 1)
	Frequency	60 Hz	
	Current	0.2196 A	
	Power	25.01 W	
	Power Factor	0.949	
	Current THD	9.35 %	
	Voltage	277 V	(Setpoint 2)
	Frequency	60 Hz	
	Current	0.1664 A	
	Power	29.55 W	
Power Factor	0.641		
Current THD	29.71 %		

Performance data in accordance with IESNA LM-79-08. Spectral calculations are for a CIE 2° observer
Photometric and spectral values were measured at Setpoint 1

- (1) Value is computed from the weighted average of the spatial measurements
- (2) Value is the maximum deviation of the spatial u' and v' measurements from the weighted average
- (3) Quantity is in addition to the scope of IESNA LM-79-08



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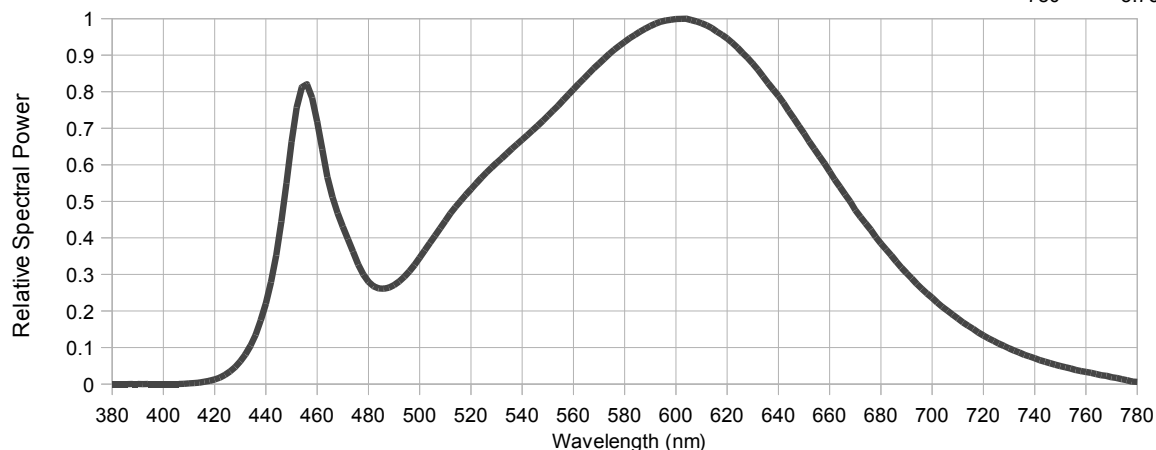
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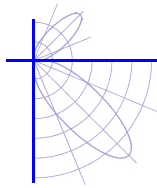
LM-79 Performance Data

Summary Relative Spectral Irradiance Distribution (wavelength – nm, irradiance – relative to peak = 1)

380	0.00E+00	480	2.80E-01	580	9.37E-01	680	3.84E-01
385	0.00E+00	485	2.61E-01	585	9.60E-01	685	3.43E-01
390	0.00E+00	490	2.71E-01	590	9.80E-01	690	3.04E-01
395	0.00E+00	495	3.01E-01	595	9.93E-01	695	2.67E-01
400	0.00E+00	500	3.46E-01	600	9.99E-01	700	2.36E-01
405	1.30E-04	505	3.96E-01	605	9.98E-01	705	2.06E-01
410	1.56E-03	510	4.46E-01	610	9.87E-01	710	1.79E-01
415	4.98E-03	515	4.93E-01	615	9.69E-01	715	1.55E-01
420	1.26E-02	520	5.33E-01	620	9.46E-01	720	1.32E-01
425	2.97E-02	525	5.71E-01	625	9.14E-01	725	1.14E-01
430	6.19E-02	530	6.05E-01	630	8.77E-01	730	9.79E-02
435	1.20E-01	535	6.37E-01	635	8.33E-01	735	8.32E-02
440	2.20E-01	540	6.69E-01	640	7.89E-01	740	7.07E-02
445	3.98E-01	545	7.01E-01	645	7.37E-01	745	5.90E-02
450	6.63E-01	550	7.34E-01	650	6.86E-01	750	4.92E-02
455	8.16E-01	555	7.69E-01	655	6.33E-01	755	4.06E-02
460	7.18E-01	560	8.07E-01	660	5.82E-01	760	3.29E-02
465	5.39E-01	565	8.42E-01	665	5.29E-01	765	2.55E-02
470	4.31E-01	570	8.77E-01	670	4.76E-01	770	1.87E-02
475	3.45E-01	575	9.09E-01	675	4.31E-01	775	1.19E-02
						780	5.75E-03



* The spectral power distribution combines the weighted spectral power distributions of all spatial measurements.



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Tested at 120V 60Hz with luminous opening horizontal facing nadir.

LM-79 Performance Data

Spatial measurements

Vertical angle (deg)	CIE 1976 (u',v') coordinates	
	Horizontal 0 plane	Horizontal 90 plane
0	(0.240, 0.512)	(0.240, 0.512)
10	(0.240, 0.512)	(0.240, 0.512)
20	(0.240, 0.512)	(0.240, 0.512)
30	(0.240, 0.512)	(0.241, 0.512)
40	(0.241, 0.512)	(0.241, 0.512)
50	(0.240, 0.512)	(0.241, 0.513)
60	(0.241, 0.513)	(0.241, 0.513)
70	(0.241, 0.513)	(0.240, 0.513)
80	(0.241, 0.513)	I <= 10 %
90	I <= 10 %	I <= 10 %

Spatial measurements

Vertical angle (deg)	CIE 1976 (u',v') coordinates	
	Horizontal 0 plane	Horizontal 90 plane
90	I <= 10 %	I <= 10 %
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

Test procedure

All measurements were performed in an environmentally controlled laboratory employing suitable baffling to minimize stray light. The sample was mounted in its normal operating orientation on a rotating mirror goniophotometer and operated from a stabilized supply. The photometric output was monitored and measurements were performed once stability was achieved.

The goniophotometer was used to measure the spatial distribution of both luminous intensity and, in conjunction with a spectroradiometer, spectral irradiance. The distribution locus comprises points in two or more planes (as indicated in the table above) at no more than 10° vertical intervals. The CIE (x,y) coordinates and other derived metrics (CIE (u', v'), CCT and CRI) are calculated from the weighted sum (weighted for intensity and represented solid angle) of the measured spectral irradiances.

Sample Orientation	Horizontal	Stabilization Time	1.25 hour
		Total Operation Time	16.25 hour

Equipment and uncertainties

LightLab International R80A C-gamma rotating mirror goniophotometer with a test distance of 8 m.

Luminous Intensity	± 4 %	Temperature	± 1 °C
Luminous Flux	± 4 %	Luminous Efficacy	± 4.5 %
Horizontal, Vertical Angles	± 0.25°		

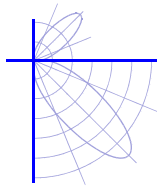
PhotoResearch PR-670 spectroradiometer (380 - 780 nm., 2 nm. per pixel) measuring at a distance from the sample deemed greater than five times the maximum observed luminous opening dimension.

CIE (x, y) coordinates	± 0.003	CCT	± 100 K
CIE (u', v') coordinates	± 0.002	CRI (Ra)	± 2
Δ (u', v') Color difference	± 0.001	Scotopic / Photopic Ratio *	± 0.02
Relative Spectral Irradiance *	± 2 %	R9 *	± 2

Yokogawa WT210 power meter connected in circuit to the sample electrical supply

Voltage	± 0.5 %	Frequency *	± 0.1 Hz
Current	± 0.5 %	Power	± 0.5 %
Current THD *	± 3 %	Power Factor	± 0.02

This report contains data that are not covered by the NVLAP accreditation. Quantities marked with * are not covered. IESNA LM-79-08 Calculator v4.9 (23rd Sep 2014)



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One remote "High Perfection Tech LP1090-24-GG-290 100-240Vac 47-63Hz" driver.

Tested at 120V 60Hz with luminous opening horizontal facing nadir.

Test Distance: 8.0 metres

Test Temperature: 24.7 degrees Celsius

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.

Test Procedure: Tested in accordance with the applicable sections of IESNA publication LM-79-08.

Notes: 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.

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