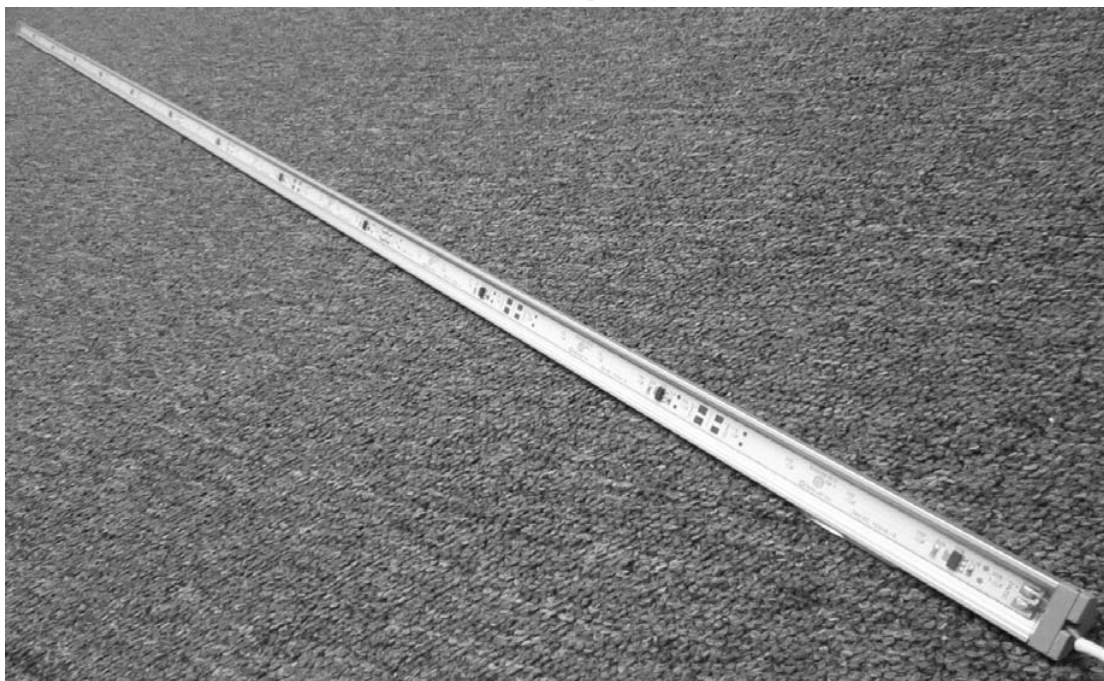


# Report of Test

## LLI-14272-10

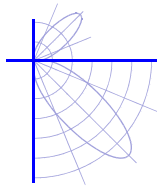
OptoLum "EcoLine" Extruded Aluminum Luminaire. Cat No. EL-AL-S--358USD-A072000  
 Triangular extruded housing with extents ~ 72.375" x 1.0" x 0.75".  
 Twelve white PCB sections marked "OptoLum EcoLine SLO R4.1" with five LEDs each on 1.187" centers.  
 Flat clear plastic lens. Luminous Opening ~ 72 x 0.75".  
 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	1056 lm	Min Power Factor	0.64 @ 277 V
Luminaire Power	25.1 W	Max THD(i)*	31.6 % @ 277 V
Luminous Efficacy	42.1 lm/W	SC along*, across*	1.32 , 1.28
CCT	3440 K	SC Diagonal*	1.40
CIE(x,y) 1931	(0.407, 0.387)		
CRI	85		
0-60° Zonal Flux %	86.5 %		

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



**Test Report No. LLI-14272-10**

OptoLum "EcoLine" Extruded Aluminum Luminaire. Cat No. EL-AL-S--358USD-A072000

Triangular extruded housing with extents ~ 72.375" x 1.0" x 0.75".

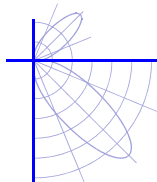
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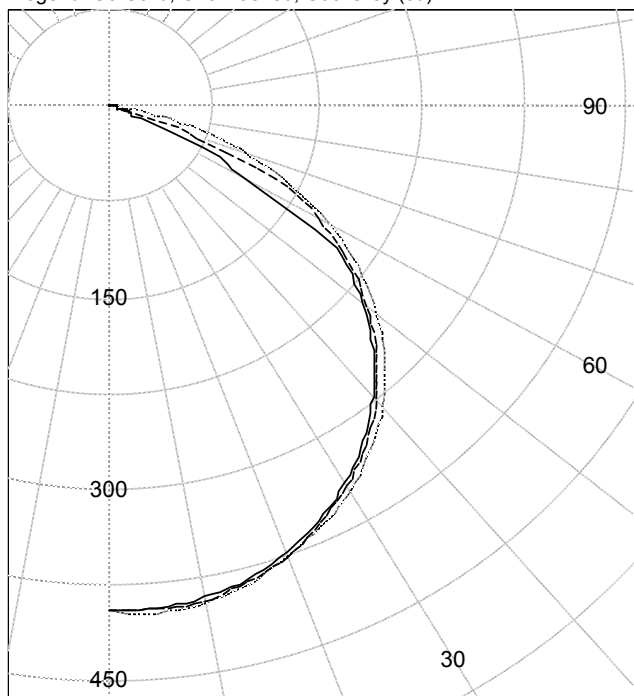
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Legend: C0-Solid, C45-Dashed, C90-Grey (cd)



(Two plane symmetry) C0-C90

**INTENSITY SUMMARY (cd)**

Gamma	C-Plane					Flux (lm)
	C0	C22.5	C45	C67.5	C90	
0.0	395	395	395	395	395	
5.0	395	394	396	398	398	38
10.0	391	391	394	395	395	
15.0	384	385	386	388	387	109
20.0	372	375	376	376	375	
25.0	358	361	361	363	363	167
30.0	341	343	344	348	348	
35.0	320	321	324	329	329	203
40.0	296	296	300	306	306	
45.0	270	268	273	280	281	211
50.0	240	237	243	250	252	
55.0	205	202	210	216	219	185
60.0	108	136	174	179	182	
65.0	46	78	133	138	143	105
70.0	14	14	61	98	101	
75.0	12	11	10	59	61	32
80.0	9	9	7	15	28	
85.0	5	5	4	3	6	6
90.0	0	0	0	0	0	

**ZONAL FLUX AND PERCENTAGES**

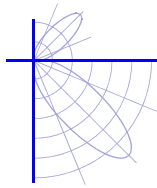
Zone	Flux (lm)	% Lamp	% Luminaire
0-30	313	N/A	29.7
0-40	516	N/A	48.9
0-60	913	N/A	86.5
0-90	1056	N/A	100.0
40-90	539	N/A	51.1
60-90	143	N/A	13.5
90-180	0	N/A	0.0
0-180	1056	N/A	100.0

Total Light Output = 1,056 lm

Signed: *E Southgate*

Eric Southgate  
Authorized Signatory

Date of test 10-Oct-2014  
Date of report 14-Oct-2014



**Test Report No. LLI-14272-10**

OptoLum "EcoLine" Extruded Aluminum Luminaire. Cat No. EL-AL-S--358USD-A072000

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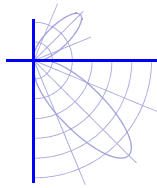
Flat clear plastic lens. Luminous Opening ~ 72 x 0.75".

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

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	395	395	395	395	395
2.5	396	394	395	397	398
5.0	395	394	396	398	398
7.5	393	393	395	397	398
10.0	391	391	394	395	395
12.5	388	388	390	392	392
15.0	384	385	386	388	387
17.5	379	381	381	382	381
20.0	372	375	376	376	375
22.5	366	368	369	369	368
25.0	358	361	361	363	363
27.5	350	352	353	356	356
30.0	341	343	344	348	348
32.5	331	333	334	339	339
35.0	320	321	324	329	329
37.5	308	309	312	318	318
40.0	296	296	300	306	306
42.5	283	283	287	293	294
45.0	270	268	273	280	281
47.5	255	253	258	266	267
50.0	240	237	243	250	252
52.5	223	220	227	234	236
55.0	205	202	210	216	219
57.5	163	183	192	198	201
60.0	108	136	174	179	182
62.5	94	93	154	159	163
65.0	46	78	133	138	143
67.5	16	26	80	118	122
70.0	14	14	61	98	101
72.5	13	12	24	78	82
75.0	12	11	10	59	61
77.5	10	10	8	32	42
80.0	9	9	7	15	28
82.5	7	7	6	4	15
85.0	5	5	4	3	6
87.5	4	3	2	2	2
90.0	0	0	0	0	0



**Test Report No. LLI-14272-10**

OptoLum "EcoLine" Extruded Aluminum Luminaire. Cat No. EL-AL-S--358USD-A072000

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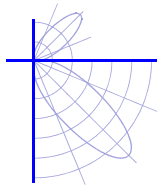
Flat clear plastic lens. Luminous Opening ~ 72 x 0.75".

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

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

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		111	111	111		106	106	106		102	102	102	100
1	110	106	102	99		107	104	100	97		99	97	94		96	93	91		92	90	89	86
2	101	93	87	82		98	91	86	81		88	83	79		85	81	77		82	79	76	74
3	92	83	75	69		90	81	74	68		78	72	67		75	70	66		73	69	65	63
4	85	73	65	59		83	72	64	58		70	63	58		67	61	57		65	60	56	54
5	78	66	57	51		76	65	57	50		62	55	50		61	54	49		59	53	49	47
6	72	59	51	44		70	58	50	44		56	49	44		55	48	43		53	48	43	41
7	67	54	45	39		65	53	45	39		51	44	39		50	43	38		49	43	38	36
8	62	49	41	35		61	48	40	35		47	40	35		46	39	34		45	39	34	32
9	58	45	37	31		57	44	37	31		43	36	31		42	36	31		41	35	31	29
10	54	41	34	28		53	41	33	28		40	33	28		39	33	28		38	32	28	26



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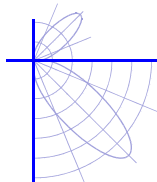
Tested at 120V 60Hz with luminous opening horizontal facing nadir.

**LM-79 Performance Data**

<b>Spectral</b>	CIE 1931 (x, y) <sup>(1)</sup>	(0.407, 0.387)	
	CIE 1976 (u', v') <sup>(1)</sup>	(0.238, 0.510)	
	Correlated Color Temperature (CCT) <sup>(1)</sup>	3440 K	
	Color Spatial Uniformity <sup>(2)</sup>	0.0029	
	Color Rendering Index (Ra) <sup>(1)</sup>	85	
	Special CRI 9 (R <sub>g</sub> ) <sup>(1),(3)</sup>	28	
	Distance from Planckian Locus (Duv) <sup>(1),(3)</sup>	-0.0021	
	Scotopic/Photopic Ratio <sup>(1),(3)</sup>	1.54	
<b>Electrical</b>	Voltage	120 V	(Setpoint 1)
	Frequency	60 Hz	
	Current	0.2206 A	
	Power	25.15 W	
	Power Factor	0.949	
	Current THD	9.42 %	
	Voltage	277 V	(Setpoint 2)
	Frequency	60 Hz	
	Current	0.1673 A	
	Power	29.72 W	
Power Factor	0.641		
Current THD	31.63 %		

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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OptoLum "EcoLine" Extruded Aluminum Luminaire. Cat No. EL-AL-S--358USD-A072000

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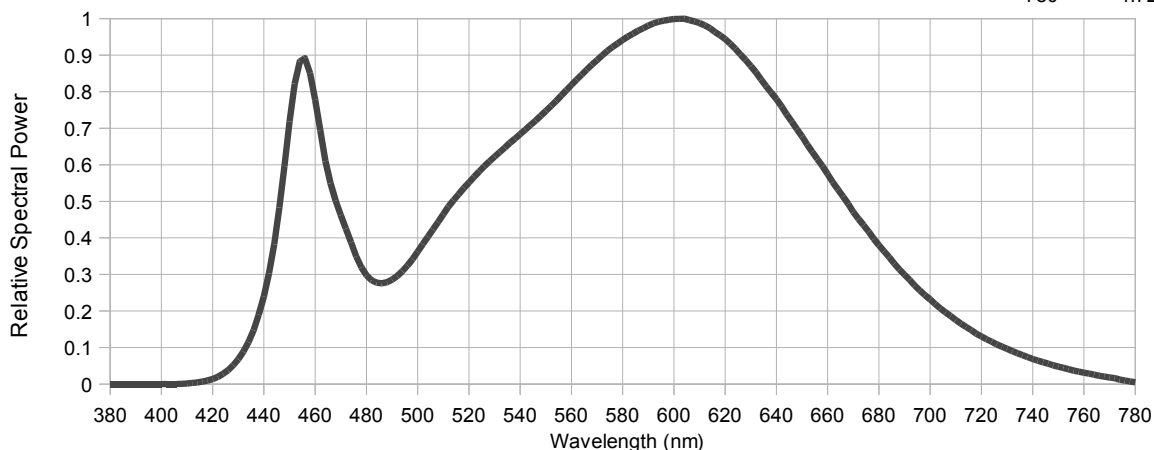
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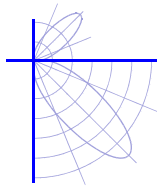
**LM-79 Performance Data**

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

380	0.00E+00	480	2.98E-01	580	9.42E-01	680	3.80E-01
385	0.00E+00	485	2.77E-01	585	9.63E-01	685	3.39E-01
390	0.00E+00	490	2.86E-01	590	9.81E-01	690	2.99E-01
395	0.00E+00	495	3.17E-01	595	9.93E-01	695	2.63E-01
400	0.00E+00	500	3.62E-01	600	9.99E-01	700	2.32E-01
405	1.12E-04	505	4.13E-01	605	9.98E-01	705	2.01E-01
410	1.51E-03	510	4.64E-01	610	9.88E-01	710	1.75E-01
415	5.52E-03	515	5.11E-01	615	9.69E-01	715	1.52E-01
420	1.39E-02	520	5.51E-01	620	9.44E-01	720	1.30E-01
425	3.27E-02	525	5.89E-01	625	9.10E-01	725	1.12E-01
430	6.78E-02	530	6.22E-01	630	8.70E-01	730	9.64E-02
435	1.31E-01	535	6.54E-01	635	8.25E-01	735	8.18E-02
440	2.40E-01	540	6.84E-01	640	7.80E-01	740	6.86E-02
445	4.33E-01	545	7.15E-01	645	7.28E-01	745	5.77E-02
450	7.19E-01	550	7.47E-01	650	6.78E-01	750	4.74E-02
455	8.87E-01	555	7.82E-01	655	6.25E-01	755	3.88E-02
460	7.78E-01	560	8.18E-01	660	5.75E-01	760	3.08E-02
465	5.80E-01	565	8.53E-01	665	5.23E-01	765	2.41E-02
470	4.62E-01	570	8.87E-01	670	4.71E-01	770	1.80E-02
475	3.69E-01	575	9.17E-01	675	4.26E-01	775	1.09E-02
						780	4.72E-03



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



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**LM-79 Performance Data**

**Spatial measurements**

Vertical angle (deg)	CIE 1976 (u',v') coordinates	
	Horizontal 0 plane	Horizontal 90 plane
0	(0.238, 0.508)	(0.238, 0.508)
10	(0.238, 0.508)	(0.238, 0.508)
20	(0.238, 0.509)	(0.238, 0.508)
30	(0.238, 0.509)	(0.238, 0.509)
40	(0.238, 0.510)	(0.238, 0.510)
50	(0.238, 0.510)	(0.238, 0.510)
60	I <= 10 %	(0.239, 0.511)
70	I <= 10 %	(0.239, 0.512)
80	I <= 10 %	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	20 hour
		Total Operation Time	22.75 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.

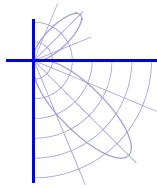
CIE (x, y) coordinates	± 0.003	CCT	± 100 K
CIE (u', v') coordinates	± 0.002	CRI (Ra)	± 2
Δ (u', v') Color difference	± 0.001	Scotopic / Photopic Ratio *	± 0.02
Relative Spectral Irradiance *	± 2 %	R9 *	± 2

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

**Test Distance:** 8.0 metres

**Test Temperature:** 24.8 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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