Report of Test

LLI-14188-17D

Optolum "FineLine" Extruded Aluminum Luminaire. Cat No. FL-AL-S--358USE-A072000.
Grey, triangular section aluminum housing, grey plastic end-caps (extent: 72.8" x 1.0" x 0.7" high).
Flat clear lens forms luminous opening of 72.1" x 0.75".
Twelve 6" long white PCBs marked "Optolum FineLine SLO Rev A1", each has six SMT LEDs at 1" centers.
One remote "High Perfection Tech LP1090-24-GG-290 100-240Vac 47-63Hz" driver.
Tested horizontally in free air at 120 V, 60 Hz; beam directed to nadir. Two power connectors, one open-circuit.

Performance Summary

Total Light Output	341 lm	Min Power Factor	0.45 @ 277 V
Luminaire Power	9.80 W	Max THD(i)*	29.3 % @ 277 V
Luminous Efficacy	34.8 lm/W	SC along*, across*	1.28 , 1.28
CCT	3390 K	SC Diagonal*	1.40
CIE(x,y)	(0.411, 0.394)		
CRI	85		
0-60° Zonal Flux %	87.0 %		

PREPARED FOR : Optolum Inc, Tempe AZ 85281

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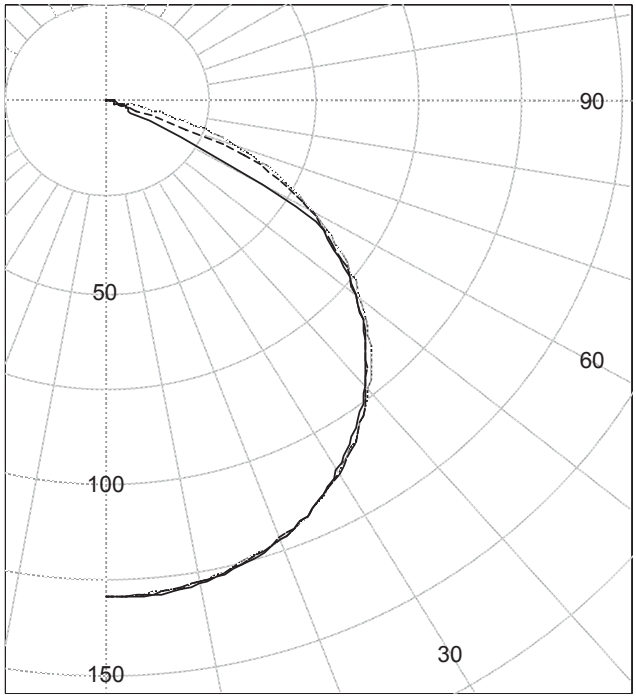
Legend: C0-Solid, C45-Dashed, C90-Grey (cd)



(Two plane symmetry) C0-C90

INTENSITY SUMMARY (cd)

	C-Plane					Flux
Gamma	C0	C22.5	C45	C67.5	C90	(lm)
0.0	130	130	130	130	130	
5.0	129	129	129	129	129	12
10.0	128	128	127	127	128	
15.0	126	125	125	124	125	35
20.0	122	122	122	122	122	
25.0	117	117	117	118	118	54
30.0	111	111	112	113	112	
35.0	104	104	106	106	105	66
40.0	97	96	97	99	98	
45.0	88	87	88	90	90	68
50.0	78	77	78	81	80	
55.0	67	66	68	70	69	60
60.0	44	53	56	57	57	
65.0	6	10	43	44	45	33
70.0	5	5	12	31	33	
75.0	4	4	3	19	20	10
80.0	3	3	2	3	9	
85.0	2	2	2	1	2	2
90.0	0	0	0	0	0	

ZONAL FLUX AND PERCENTAGES

Zone	Flux (lm)	% Lamp	% Luminaire
0-30	102	N / A	29.9
0-40	167	N / A	49.2
0-60	296	N / A	87.0
0-90	341	N / A	100.0
40-90	173	N / A	50.8
60-90	44	N / A	13.0
90-180	0	N / A	0.0
0-180	341	N / A	100.0

Total Light Output = 341 lm

Signed:

P. Lawrance
Authorized Signatory

Date of test 21-Jul-2014
Date of report 20-Aug-2014

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Intensity data (cd)

	C-Plane				
Gamma	**C0**	**C22.5**	**C45**	**C67.5**	**C90**
0.0	130	130	130	130	130
2.5	130	129	129	129	129
5.0	129	129	129	129	129
7.5	129	129	128	128	129
10.0	128	128	127	127	128
12.5	127	127	126	126	126
15.0	126	125	125	124	125
17.5	124	124	124	123	123
20.0	122	122	122	122	122
22.5	120	119	120	120	120
25.0	117	117	117	118	118
27.5	114	114	115	116	115
30.0	111	111	112	113	112
32.5	108	107	109	109	108
35.0	104	104	106	106	105
37.5	101	100	102	102	102
40.0	97	96	97	99	98
42.5	93	92	93	95	94
45.0	88	87	88	90	90
47.5	83	82	83	86	85
50.0	78	77	78	81	80
52.5	73	72	73	75	75
55.0	67	66	68	70	69
57.5	61	60	62	64	63
60.0	44	53	56	57	57
62.5	15	34	50	51	51
65.0	6	10	43	44	45
67.5	5	5	33	38	39
70.0	5	5	12	31	33
72.5	4	4	4	25	26
75.0	4	4	3	19	20
77.5	4	3	3	12	14
80.0	3	3	2	3	9
82.5	3	3	2	1	5
85.0	2	2	2	1	2
87.5	1	1	1	1	1
90.0	0	0	0	0	0

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Lab Code 200989-0

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Tested horizontally in free air at 120 V, 60 Hz; beam directed to nadir. Two power connectors, one open-circuit.

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	10	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	87
2	101	93	87	82	98	92	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	62	57	65	60	56	54
5	78	66	57	51	76	65	57	51	63	56	50	61	54	50	59	53	49	47
6	72	59	51	45	70	58	50	44	57	49	44	55	48	44	53	48	43	41
7	67	54	45	39	65	53	45	39	51	44	39	50	43	39	49	43	38	36
8	62	49	41	35	61	48	40	35	47	40	35	46	39	35	45	39	34	32
9	58	45	37	32	57	44	37	31	43	36	31	42	36	31	41	35	31	29
10	54	41	34	29	53	41	34	29	40	33	28	39	33	28	38	32	28	26

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LM-79 Performance Data

Spectral	CIE 1931 (x, y) (1)	(0.411, 0.394)	
	CIE 1976 (u', v') (1)	(0.239, 0.513)	
	Correlated Color Temperature (CCT) (1)	3390	K
	Color Spatial Uniformity (2)	0.0037	
	Color Rendering Index (Ra) (1)	85	
	Special CRI 9 (R_9) (1),(3)	27	
	Distance from Planckian Locus (Duv) (1),(3)	0.0000	
	Scotopic/Photopic Ratio (1),(3)	1.51	

Electrical	Voltage	120	V	(Setpoint 1)
	Frequency	60	Hz	
	Current	0.101	A	
	Power	9.80	W	
	Power Factor	0.81		
	Current THD	16.7	%	
	Voltage	240	V	(Setpoint 2)
	Frequency	60	Hz	
	Current	0.086	A	
	Power	9.28	W	
	Power Factor	0.45		
	Current THD	29.3	%	

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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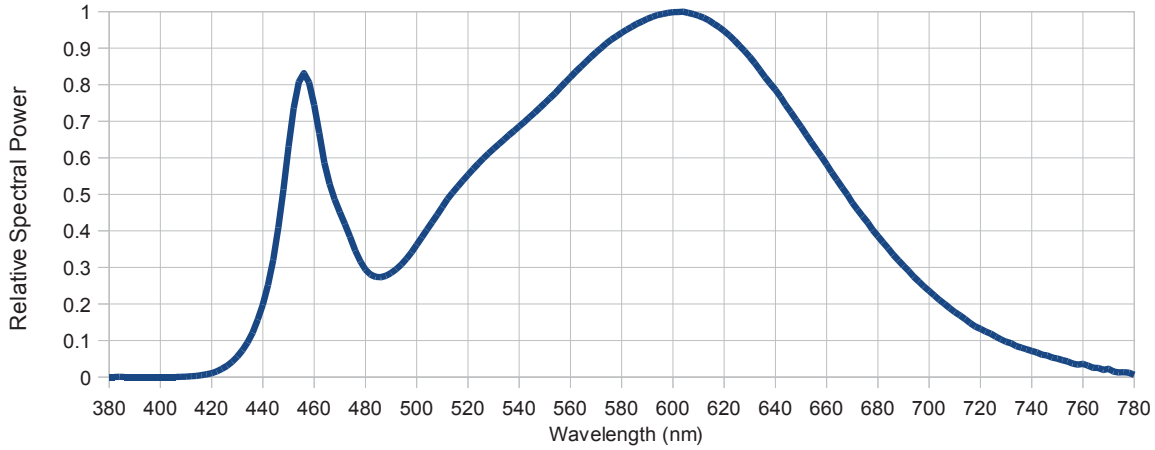
LM-79 Performance Data

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

380	1.25E-04	480	2.94E-01	580	9.42E-01	680	3.85E-01
385	2.77E-04	485	2.74E-01	585	9.63E-01	685	3.44E-01
390	1.82E-04	490	2.85E-01	590	9.80E-01	690	3.04E-01
395	2.95E-05	495	3.16E-01	595	9.92E-01	695	2.68E-01
400	1.79E-05	500	3.62E-01	600	9.99E-01	700	2.35E-01
405	1.24E-04	505	4.13E-01	605	9.98E-01	705	2.06E-01
410	9.92E-04	510	4.65E-01	610	9.89E-01	710	1.78E-01
415	4.12E-03	515	5.13E-01	615	9.72E-01	715	1.53E-01
420	1.08E-02	520	5.53E-01	620	9.47E-01	720	1.32E-01
425	2.64E-02	525	5.91E-01	625	9.14E-01	725	1.15E-01
430	5.56E-02	530	6.24E-01	630	8.76E-01	730	9.66E-02
435	1.08E-01	535	6.56E-01	635	8.30E-01	735	8.24E-02
440	1.98E-01	540	6.86E-01	640	7.86E-01	740	7.14E-02
445	3.65E-01	545	7.17E-01	645	7.35E-01	745	6.00E-02
450	6.31E-01	550	7.50E-01	650	6.85E-01	750	5.03E-02
455	8.19E-01	555	7.84E-01	655	6.33E-01	755	3.98E-02
460	7.44E-01	560	8.21E-01	660	5.82E-01	760	3.62E-02
465	5.57E-01	565	8.55E-01	665	5.29E-01	765	2.53E-02
470	4.52E-01	570	8.88E-01	670	4.77E-01	770	2.23E-02
475	3.65E-01	575	9.18E-01	675	4.31E-01	775	1.31E-02
						780	5.92E-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 (lower hemisphere)

Vertical angle (deg)	CIE 1976 (u',v') coordinates Horizontal 0 plane	Horizontal 90 plane
0	(0.238, 0.511)	(0.238, 0.511)
10	(0.238, 0.511)	(0.238, 0.511)
20	(0.238, 0.511)	(0.238, 0.511)
30	(0.238, 0.512)	(0.238, 0.513)
40	(0.238, 0.513)	(0.239, 0.514)
50	(0.238, 0.514)	(0.239, 0.515)
60	(0.238, 0.515)	(0.239, 0.516)
70	I <= 10 %	(0.240, 0.517)
80	I <= 10 %	I <= 10 %
-	-	-

Spatial measurements (upper hemisphere)

Vertical angle (deg)	CIE 1976 (u',v') coordinates Horizontal 0 plane	Horizontal 90 plane
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

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 10º 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.

		Stabilization Time	0.75 hour
Sample Orientation	Beam to nadir	Total Operation Time	2.5 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	± 0.25º		

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)	± 3
Δ (u', v') Color difference	± 0.001	Scotopic / Photopic Ratio *	± 0.02
Relative Spectral Irradiance *	± 2 %	R9 *	± 3

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 v4.7 (13th Sep 2013)

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Test Distance: 8.0 metres

Test Temperature: 24.7 degrees Celsius

Significance: This laboratory has no control over 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 tested.

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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Corrections have been applied to the photometric data to account for the sample luminous opening length exceeding 20% of the test distance.

20-Aug-14 19:43:50 REPORT program version: 3.804a

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