

Indoor Distribution Test Report

Spectrum Lighting Inc.

994 Jefferson Street
Fall River, MA 02721
+1.508.678.2303

Spectrum Lighting Photometric Lab

Luminaire

SP4ES-15L-35K-DX / AR4ES-SG-xF
Nom. 4.5" Aperture, LED Downlight

Test Number

SP-00598_1_M-15L

Test Date

Thu 9/21/2017

The results contained in this report pertain only to this IES file.

Summary of Results

Power

Input Watts	15 W
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Lumen Output

Output Lumens	1240
Efficacy	82.64 lm/W

Luminous Dimensions

0° - 180° Size	-0.38
90° - 270° Size	-0.38
Height	0

Spacing Criterion

Two luminaires, plane 0°	1.04
Two luminaires, plane 90°	1.04
Four luminaires	0.94

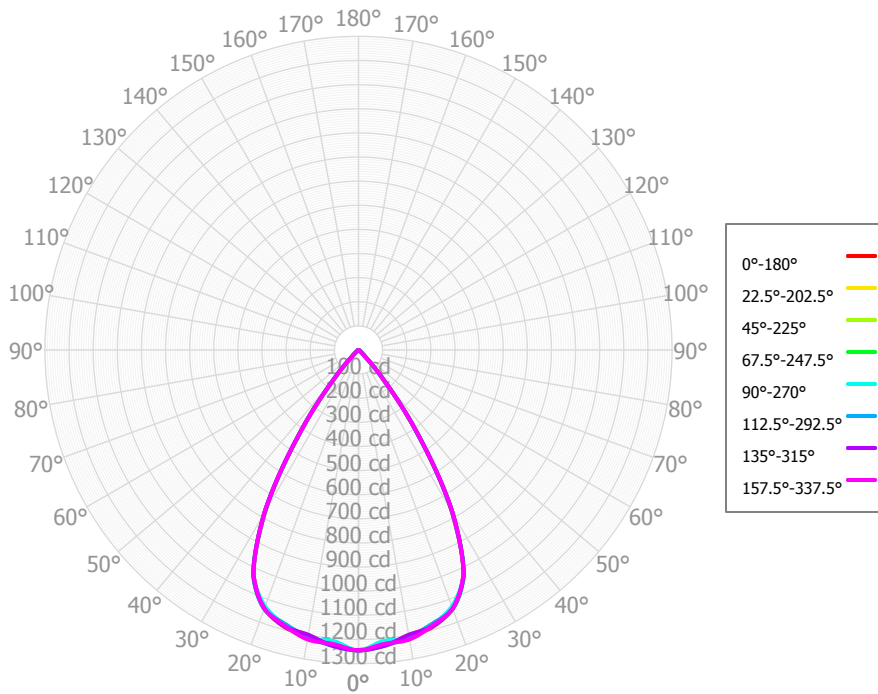
Full Beam Angle

0° - 180°	65°
90° - 270°	65°

IES File Header Contents

Keyword	Value
TESTLAB	Photopia 2017.2.1 see: www.ltioptics.com/ies
ISSUEDATE	
TESTDATE	Thu 9/21/2017
UPDATE	Mon 9/26/2017
TEST	SP-00598_1_M-15L
MANUFAC	Spectrum Lighting
LUMCAT	SP4ES-15L-35K-DX / AR4ES-SG-xF
LUMINAIRE	Nom. 4.5" Aperture, LED Downlight
OTHER	Semi-Diffuse clear anodized, open aperture
OTHER	Any flange finish
OTHER	64.4 Deg. Beam Angle
LAMP	N/A
LAMPCAT	N/A, 3500K CCT
OTHER	Fully regressed lensed, light emitting surface
OTHER	Total Luminaire Watts is approximate
OTHER	CCT Output Multipliers: 30K X 0.985, 40K X 1.03
OTHER	Scaled from 20L Report
OTHER	This report prepared by Spectrum Lighting

Candela Polar Plot



Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	123.58	9.97%	90.00° - 100.00°	0.00	0.00%
10.00° - 20.00°	332.19	26.80%	100.00° - 110.00°	0.00	0.00%
20.00° - 30.00°	452.54	36.51%	100.00° - 120.00°	0.00	0.00%
30.00° - 40.00°	273.03	22.03%	120.00° - 130.00°	0.00	0.00%
40.00° - 50.00°	47.03	3.79%	130.00° - 140.00°	0.00	0.00%
50.00° - 60.00°	7.38	0.60%	140.00° - 150.00°	0.00	0.00%
60.00° - 70.00°	2.64	0.21%	150.00° - 160.00°	0.00	0.00%
70.00° - 80.00°	0.99	0.08%	160.00° - 170.00°	0.00	0.00%
80.00° - 90.00°	0.20	0.02%	170.00° - 180.00°	0.00	0.00%
0.00° - 90.00°	1,239.60	100.00%	0.00° - 180.00°	1,239.60	100.00%

Candela Distribution

	0.00°	22.50°	45.00°	67.50°	90.00°	112.50°	135.00°	157.50°	180.00°	202.50°	225.00°	247.50°	270.00°	292.50°	315.00°	337.50°	360.00°
0.00°	1,245.50	1,245.50	1,245.50	1,245.50	1,245.50	1,245.50	1,245.50	1,245.50	1,245.50	1,245.50	1,245.50	1,245.50	1,245.50	1,245.50	1,245.50	1,245.50	1,245.50
5.00°	1,227.43	1,223.43	1,231.33	1,230.65	1,211.00	1,230.65	1,231.33	1,223.43	1,227.43	1,223.43	1,231.33	1,230.65	1,211.00	1,230.65	1,231.33	1,223.43	1,227.43
10.00°	1,207.16	1,218.50	1,199.16	1,208.32	1,216.03	1,208.32	1,199.16	1,218.50	1,207.16	1,218.50	1,199.16	1,208.32	1,216.03	1,208.32	1,199.16	1,218.50	1,207.16
15.00°	1,188.59	1,183.05	1,186.56	1,176.59	1,179.99	1,176.59	1,186.56	1,183.05	1,188.59	1,183.05	1,186.56	1,176.59	1,179.99	1,176.59	1,186.56	1,183.05	1,188.59
20.00°	1,137.87	1,141.77	1,140.97	1,142.49	1,131.74	1,142.49	1,140.97	1,141.77	1,137.87	1,141.77	1,140.97	1,142.49	1,131.74	1,142.49	1,140.97	1,141.77	1,137.87
25.00°	1,031.03	1,028.63	1,031.39	1,033.13	1,031.38	1,033.13	1,031.39	1,028.63	1,031.03	1,028.63	1,031.39	1,033.13	1,031.38	1,033.13	1,031.39	1,028.63	1,031.03
30.00°	773.86	782.54	780.60	778.07	780.39	778.07	780.60	782.54	773.86	782.54	780.60	778.07	780.39	778.07	780.60	782.54	773.86
35.00°	438.44	437.55	435.76	434.79	437.28	434.79	435.76	437.55	438.44	437.55	435.76	434.79	437.28	434.79	435.76	437.55	438.44
40.00°	166.38	164.48	163.97	164.42	163.58	164.42	163.97	164.48	166.38	164.48	163.97	164.42	163.58	164.42	163.97	164.48	166.38
45.00°	39.09	38.72	38.41	38.79	38.68	38.79	38.41	38.72	39.09	38.72	38.41	38.79	38.68	38.79	38.41	38.72	39.09
50.00°	14.48	14.07	14.99	14.77	14.41	14.77	14.99	14.07	14.48	14.07	14.99	14.77	14.41	14.77	14.99	14.07	14.48
55.00°	6.98	7.30	7.64	7.52	7.39	7.52	7.64	7.30	6.98	7.30	7.64	7.52	7.39	7.52	7.64	7.30	6.98
60.00°	4.20	4.16	4.27	4.16	4.20	4.16	4.27	4.16	4.20	4.16	4.27	4.16	4.20	4.16	4.27	4.16	4.20
65.00°	2.57	2.40	2.50	2.52	2.69	2.52	2.50	2.40	2.57	2.40	2.50	2.52	2.69	2.52	2.50	2.40	2.57
70.00°	1.44	1.71	1.48	1.48	1.44	1.48	1.48	1.71	1.44	1.71	1.48	1.48	1.44	1.48	1.48	1.71	1.44
75.00°	0.92	0.94	0.85	0.89	0.86	0.89	0.85	0.94	0.92	0.94	0.85	0.89	0.86	0.89	0.85	0.94	0.92
80.00°	0.46	0.49	0.45	0.50	0.43	0.50	0.45	0.49	0.46	0.49	0.45	0.50	0.43	0.50	0.45	0.49	0.46
85.00°	0.12	0.13	0.17	0.12	0.15	0.12	0.17	0.13	0.12	0.13	0.17	0.12	0.15	0.12	0.17	0.13	0.12
90.00°	0.00	0.02	0.00	0.01	0.02	0.01	0.00	0.02	0.00	0.02	0.00	0.01	0.02	0.01	0.00	0.02	0.00

Coefficients of Utilization – Zonal Cavity Method

Values are lumens delivered to the workplane.

RCR	pfc	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	0%
	pcc	80%	80%	80%	80%	70%	70%	70%	70%	50%	50%	50%	30%	30%	30%	10%	10%	10%
	pw	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	30%
	0	1,476	1,476	1,476	1,476	1,441	1,441	1,441	1,441	1,377	1,377	1,377	1,319	1,319	1,319	1,265	1,265	1,265
	1	1,408	1,374	1,344	1,316	1,378	1,347	1,320	1,295	1,297	1,276	1,256	1,251	1,234	1,218	1,209	1,196	1,183
	2	1,340	1,280	1,231	1,190	1,312	1,259	1,214	1,176	1,219	1,182	1,150	1,182	1,152	1,126	1,148	1,124	1,102
	3	1,273	1,195	1,134	1,086	1,249	1,178	1,122	1,077	1,145	1,098	1,060	1,115	1,076	1,043	1,087	1,055	1,027
	4	1,209	1,117	1,050	998	1,187	1,103	1,040	992	1,076	1,023	980	1,052	1,006	969	1,029	990	958
	5	1,149	1,047	975	922	1,129	1,035	968	918	1,013	955	910	992	942	902	973	929	894
	6	1,092	982	909	856	1,073	973	904	853	954	893	848	937	883	842	920	873	836
	7	1,038	924	850	798	1,021	915	845	796	900	837	791	885	829	787	871	821	783
	8	987	870	796	746	972	863	793	744	849	786	741	837	780	738	825	773	735
	9	940	821	748	699	926	815	745	698	803	740	695	792	734	693	782	729	691
	10	896	776	704	657	883	771	702	656	761	698	654	751	693	652	742	689	650

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	41.2 fc	6.9 ft
6.5 ft	29.5 fc	8.2 ft
7.5 ft	22.1 fc	9.5 ft
8.0 ft	19.5 fc	10.1 ft
10.0 ft	12.5 fc	12.6 ft
12.0 ft	8.6 fc	15.1 ft
14.0 ft	6.4 fc	17.7 ft
16.0 ft	4.9 fc	20.2 ft
20.0 ft	3.1 fc	25.2 ft
24.0 ft	2.2 fc	30.3 ft
28.0 ft	1.6 fc	35.3 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	118,210	118,210	118,210
45.00°	5,247	5,155	5,191
55.00°	1,155	1,263	1,222
65.00°	576	561	603
75.00°	336	311	316
85.00°	131	180	163

UGR CIE 190:2010

Ceiling reflectance		0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Wall reflectance		0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Plane reflectance		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions		Viewed crosswise					Viewed endwise				
2H	2H	-0.3	0.6	0.1	0.9	1.3	-0.2	0.8	0.2	1.1	1.4
	3H	0.1	1.0	0.5	1.3	1.7	0.2	1.1	0.6	1.4	1.8
	4H	0.2	1.0	0.7	1.4	1.8	0.3	1.1	0.7	1.4	1.8
	6H	0.3	1.0	0.7	1.3	1.7	0.3	1.0	0.7	1.4	1.8
	8H	0.3	0.9	0.7	1.3	1.7	0.3	1.0	0.7	1.3	1.8
	12H	0.2	0.8	0.6	1.2	1.6	0.3	0.9	0.7	1.3	1.7
4H	2H	-0.3	0.5	0.1	0.8	1.2	-0.1	0.6	0.3	1.0	1.4
	3H	0.3	0.9	0.7	1.3	1.7	0.4	1.0	0.8	1.4	1.8
	4H	0.5	1.0	0.9	1.4	1.9	0.5	1.0	0.9	1.5	1.9
	6H	0.6	1.0	1.0	1.5	2.0	0.6	1.0	1.0	1.5	2.0
	8H	0.5	1.0	1.0	1.4	1.9	0.5	1.0	1.0	1.4	1.9
	12H	0.5	0.9	1.0	1.4	1.8	0.5	0.9	1.0	1.4	1.8
8H	4H	0.4	0.8	0.9	1.3	1.8	0.4	0.9	0.9	1.3	1.8
	6H	0.5	0.9	1.1	1.4	1.9	0.5	0.9	1.1	1.4	1.9
	8H	0.6	0.9	1.1	1.4	1.9	0.6	0.9	1.1	1.4	1.9
	12H	0.5	0.8	1.1	1.3	1.9	0.6	0.8	1.1	1.3	1.9
12H	4H	0.4	0.7	0.8	1.2	1.7	0.4	0.8	0.9	1.2	1.7
	6H	0.5	0.8	1.0	1.3	1.8	0.5	0.8	1.0	1.3	1.8
	8H	0.5	0.8	1.1	1.3	1.9	0.5	0.8	1.1	1.3	1.9

Corrected UGR values based on total output lumens

SHR = 1.0