

Indoor Distribution Test Report

Spectrum Lighting Inc.

994 Jefferson Street
Fall River, MA 02721
+1.508.678.2303

Spectrum Lighting Photometric Lab

Luminaire

SP4ES 11L 35K DX AR4ES SGxF
Nom. 4.5" Aperture, LED Downlight

Test Number

SP-00598_1_M-11L

Test Date

Thu 9/21/2017

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

Summary of Results

Power

Input Watts	11 W
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Lumen Output

Output Lumens	909
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

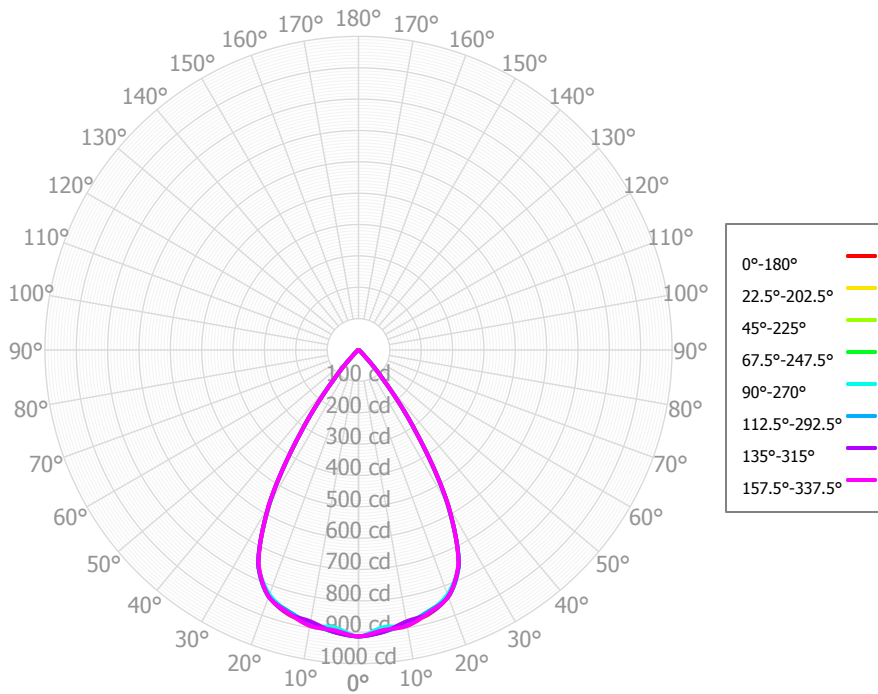
Full Beam Angle

0° - 180°	65°
90° - 270°	65°

IES File Header Contents

Keyword	Value
TESTLAB	Photopia 2017.2.1 see: www.ltiopics.com/ies
ISSUEDATE	
TESTDATE	Thu 9/21/2017
UPDATE	Mon 9/26/2017
TEST	SP-00598_1_M-11L
MANUFAC	Spectrum Lighting
LUMCAT	SP4ES 11L 35K DX AR4ES SGxF
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	Scaled from 20L Report
OTHER	CCT Output Multipliers: 30K X 0.985, 40K X 1.03
OTHER	This report prepared by Spectrum Lighting, Preliminary

Candela Polar Plot



Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	90.63	9.97%	90.00° - 100.00°	0.00	0.00%
10.00° - 20.00°	243.61	26.80%	100.00° - 110.00°	0.00	0.00%
20.00° - 30.00°	331.87	36.51%	100.00° - 120.00°	0.00	0.00%
30.00° - 40.00°	200.22	22.03%	120.00° - 130.00°	0.00	0.00%
40.00° - 50.00°	34.49	3.79%	130.00° - 140.00°	0.00	0.00%
50.00° - 60.00°	5.41	0.60%	140.00° - 150.00°	0.00	0.00%
60.00° - 70.00°	1.93	0.21%	150.00° - 160.00°	0.00	0.00%
70.00° - 80.00°	0.73	0.08%	160.00° - 170.00°	0.00	0.00%
80.00° - 90.00°	0.15	0.02%	170.00° - 180.00°	0.00	0.00%
0.00° - 90.00°	909.04	100.00%	0.00° - 180.00°	909.04	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°	913.36	913.36	913.36	913.36	913.36	913.36	913.36	913.36	913.36	913.36	913.36	913.36	913.36	913.36	913.36	913.36	913.36
5.00°	900.11	897.18	902.97	902.48	888.07	902.48	902.97	897.18	900.11	897.18	902.97	902.48	888.07	902.48	902.97	897.18	900.11
10.00°	885.25	893.57	879.38	886.10	891.75	886.10	879.38	893.57	885.25	893.57	879.38	886.10	891.75	886.10	879.38	893.57	885.25
15.00°	871.63	867.57	870.14	862.83	865.33	862.83	870.14	867.57	871.63	867.57	870.14	862.83	865.33	862.83	870.14	867.57	871.63
20.00°	834.44	837.30	836.71	837.83	829.94	837.83	836.71	837.30	834.44	837.30	836.71	837.83	829.94	837.83	836.71	837.30	834.44
25.00°	756.09	754.33	756.35	757.63	756.34	757.63	756.35	754.33	756.09	754.33	756.35	757.63	756.34	757.63	756.35	754.33	756.09
30.00°	567.50	573.86	572.44	570.58	572.29	570.58	572.44	573.86	567.50	573.86	572.44	570.58	572.29	570.58	572.44	573.86	567.50
35.00°	321.52	320.87	319.56	318.85	320.67	318.85	319.56	320.87	321.52	320.87	319.56	318.85	320.67	318.85	319.56	320.87	321.52
40.00°	122.01	120.62	120.24	120.58	119.96	120.58	120.24	120.62	122.01	120.62	120.24	120.58	119.96	120.58	120.24	120.62	122.01
45.00°	28.67	28.40	28.17	28.45	28.36	28.45	28.17	28.40	28.67	28.40	28.17	28.45	28.36	28.45	28.17	28.40	28.67
50.00°	10.62	10.32	10.99	10.83	10.57	10.83	10.99	10.32	10.62	10.32	10.99	10.83	10.57	10.83	10.99	10.32	10.62
55.00°	5.12	5.35	5.60	5.52	5.42	5.52	5.60	5.35	5.12	5.35	5.60	5.52	5.42	5.52	5.60	5.35	5.12
60.00°	3.08	3.05	3.13	3.05	3.08	3.05	3.13	3.05	3.08	3.05	3.13	3.05	3.08	3.05	3.13	3.05	3.08
65.00°	1.88	1.76	1.83	1.85	1.97	1.85	1.83	1.76	1.88	1.76	1.83	1.85	1.97	1.85	1.83	1.76	1.88
70.00°	1.06	1.25	1.09	1.08	1.06	1.08	1.09	1.25	1.06	1.25	1.09	1.08	1.06	1.08	1.09	1.25	1.06
75.00°	0.67	0.69	0.62	0.65	0.63	0.65	0.62	0.69	0.67	0.69	0.62	0.65	0.63	0.65	0.62	0.69	0.67
80.00°	0.34	0.36	0.33	0.36	0.31	0.36	0.33	0.36	0.34	0.36	0.33	0.36	0.31	0.36	0.33	0.36	0.34
85.00°	0.09	0.09	0.12	0.09	0.11	0.09	0.12	0.09	0.09	0.09	0.12	0.09	0.11	0.09	0.12	0.09	0.09
90.00°	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.01	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%	20%	0%
	pcc	80%	80%	80%	80%	70%	70%	70%	70%	50%	50%	50%	30%	30%	30%	10%	10%	10%	0%
	pw	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	30%
	0	1,082	1,082	1,082	1,082	1,057	1,057	1,057	1,057	1,010	1,010	1,010	967	967	967	928	928	928	909
	1	1,033	1,008	985	965	1,010	988	968	950	951	935	921	918	905	893	886	877	868	859
	2	982	939	903	872	962	923	890	863	894	867	844	867	845	826	842	824	808	808
	3	934	876	832	796	916	864	823	790	840	805	777	818	789	765	797	774	753	759
	4	887	819	770	732	871	809	763	727	789	750	719	771	738	710	754	726	702	712
	5	842	768	715	676	828	759	710	673	743	700	667	728	691	661	714	682	656	669
	6	800	720	667	628	787	713	663	626	700	655	622	687	647	617	675	640	613	629
	7	761	677	623	585	749	671	620	584	660	614	580	649	608	577	639	602	574	592
	8	724	638	584	547	713	633	581	546	623	577	543	614	572	541	605	567	539	558
	9	689	602	549	513	679	598	547	512	589	543	510	581	539	508	573	535	506	527
	10	657	569	517	482	648	565	515	481	558	512	480	551	508	478	544	505	477	498

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	30.2 fc	6.9 ft
6.5 ft	21.6 fc	8.2 ft
7.5 ft	16.2 fc	9.5 ft
8.0 ft	14.3 fc	10.1 ft
10.0 ft	9.1 fc	12.6 ft
12.0 ft	6.3 fc	15.1 ft
14.0 ft	4.7 fc	17.7 ft
16.0 ft	3.6 fc	20.2 ft
20.0 ft	2.3 fc	25.2 ft
24.0 ft	1.6 fc	30.3 ft
28.0 ft	1.2 fc	35.3 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	86,687	86,687	86,687
45.00°	3,848	3,780	3,807
55.00°	847	926	896
65.00°	422	411	442
75.00°	246	228	232
85.00°	96	132	120

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	-1.4	-0.4	-1.0	-0.1	0.2	-1.2	-0.3	-0.9	0.0	0.3
	3H	-0.9	-0.1	-0.5	0.2	0.6	-0.8	0.0	-0.5	0.3	0.7
	4H	-0.8	-0.1	-0.4	0.3	0.7	-0.8	0.0	-0.4	0.4	0.7
	6H	-0.8	-0.1	-0.4	0.3	0.7	-0.8	-0.1	-0.3	0.3	0.7
	8H	-0.8	-0.2	-0.4	0.2	0.6	-0.8	-0.1	-0.3	0.3	0.7
	12H	-0.9	-0.2	-0.4	0.1	0.6	-0.8	-0.2	-0.4	0.2	0.6
4H	2H	-1.4	-0.6	-1.0	-0.2	0.1	-1.2	-0.5	-0.8	-0.1	0.3
	3H	-0.8	-0.2	-0.4	0.3	0.7	-0.7	-0.1	-0.3	0.3	0.7
	4H	-0.6	-0.1	-0.2	0.4	0.8	-0.6	0.0	-0.2	0.4	0.8
	6H	-0.5	-0.1	0.0	0.4	0.9	-0.5	-0.1	0.0	0.4	0.9
	8H	-0.5	-0.1	-0.1	0.4	0.8	-0.5	-0.1	-0.1	0.4	0.8
	12H	-0.6	-0.2	-0.1	0.3	0.8	-0.6	-0.2	-0.1	0.3	0.8
8H	4H	-0.7	-0.2	-0.2	0.2	0.7	-0.6	-0.2	-0.2	0.2	0.7
	6H	-0.5	-0.2	0.0	0.3	0.8	-0.5	-0.2	0.0	0.3	0.8
	8H	-0.5	-0.2	0.0	0.3	0.8	-0.5	-0.2	0.0	0.3	0.8
	12H	-0.5	-0.3	0.0	0.2	0.8	-0.5	-0.3	0.0	0.2	0.8
12H	4H	-0.7	-0.3	-0.2	0.1	0.6	-0.7	-0.3	-0.2	0.2	0.6
	6H	-0.6	-0.3	0.0	0.2	0.8	-0.6	-0.3	0.0	0.2	0.8
	8H	-0.5	-0.3	0.0	0.2	0.8	-0.5	-0.3	0.0	0.2	0.8

Corrected UGR values based on total output lumens

SHR = 1.0