

Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

SP4ES 15L 35K DX AR4WES SG
Nom. 4.5" Aperture, LED Wall Wash

Test Number

SP-00677_9_M-15L

Test Date

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	1156
Efficacy	77.04 lm/W

Luminous Dimensions

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

Spacing Criterion

Two luminaires, plane 0°	1.02
Two luminaires, plane 90°	1.03
Four luminaires	0.89

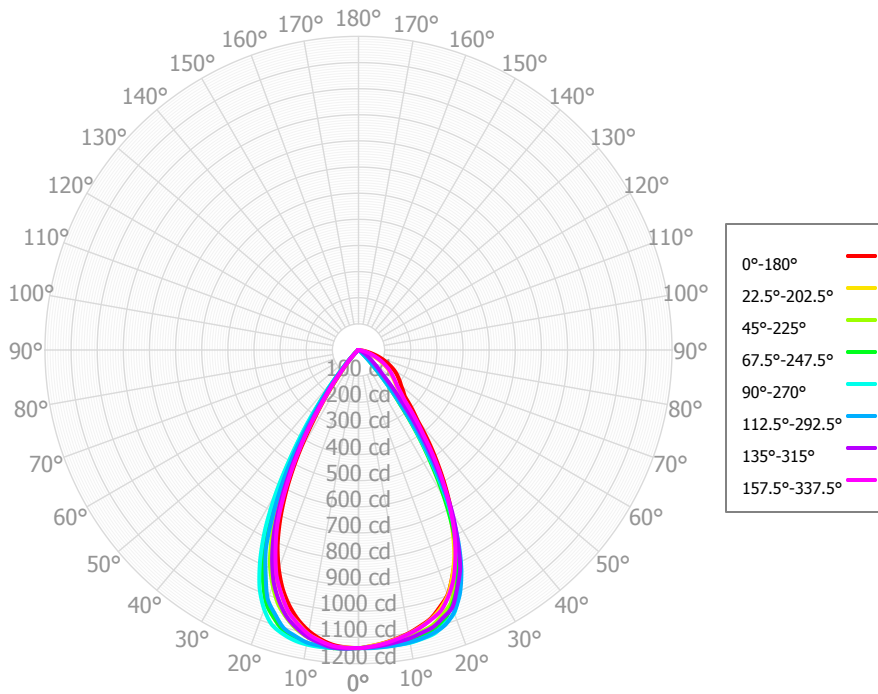
Full Beam Angle

0° - 180°	62°
90° - 270°	63°

IES File Header Contents

Keyword	Value
TEST	SP-00677_9_M-15L
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
ISSUEDATE	7/27/2018
UPDATE	9/19/2019
LUMCAT	SP4ES 15L 35K DX AR4WES SG
LUMINAIRE	Nom. 4.5" Aperture, LED Wall Wash
OTHER	Anodized alum (soft glow) trim, open aperture
OTHER	Peened 'kicker' reflector
OTHER	Any flange finish
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	This report prepared by Spectrum Lighting, scaled from 20L

Candela Polar Plot



Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	109.53	9.48%	90.00° - 100.00°	0.08	0.01%
10.00° - 20.00°	301.86	26.12%	100.00° - 110.00°	0.00	0.00%
20.00° - 30.00°	377.48	32.67%	100.00° - 120.00°	0.00	0.00%
30.00° - 40.00°	227.99	19.73%	120.00° - 130.00°	0.00	0.00%
40.00° - 50.00°	70.95	6.14%	130.00° - 140.00°	0.00	0.00%
50.00° - 60.00°	35.17	3.04%	140.00° - 150.00°	0.00	0.00%
60.00° - 70.00°	21.57	1.87%	150.00° - 160.00°	0.00	0.00%
70.00° - 80.00°	9.30	0.81%	160.00° - 170.00°	0.00	0.00%
80.00° - 90.00°	1.67	0.14%	170.00° - 180.00°	0.00	0.00%
0.00° - 90.00°	1,155.53	100.00%	0.00° - 180.00°	1,155.53	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°	1,141.10	1,141.10	1,141.10	1,141.10	1,141.10	1,141.10	1,141.10	1,141.10	1,141.10	1,141.10	1,141.10	1,141.10	1,141.10	1,141.10	1,141.10	1,141.10	1,141.10
2.50°	1,134.20	1,133.41	1,137.38	1,138.15	1,140.35	1,143.74	1,143.78	1,140.67	1,139.21	1,139.94	1,141.85	1,143.68	1,142.36	1,142.03	1,138.18	1,135.93	1,134.20
5.00°	1,125.42	1,126.22	1,132.67	1,135.69	1,139.76	1,144.50	1,142.89	1,136.24	1,132.45	1,139.05	1,139.07	1,145.16	1,143.95	1,140.86	1,133.90	1,128.00	1,125.42
7.50°	1,113.95	1,115.64	1,125.65	1,134.21	1,138.94	1,141.34	1,131.03	1,122.94	1,116.20	1,122.43	1,131.73	1,143.23	1,146.11	1,139.16	1,127.56	1,116.93	1,113.95
10.00°	1,101.33	1,103.69	1,117.29	1,129.24	1,138.01	1,136.97	1,115.87	1,104.23	1,092.49	1,104.03	1,116.68	1,139.33	1,144.45	1,135.91	1,121.00	1,103.81	1,101.33
12.50°	1,083.90	1,087.58	1,105.28	1,120.93	1,131.67	1,121.16	1,090.36	1,073.27	1,059.59	1,071.38	1,094.49	1,127.26	1,138.03	1,130.15	1,109.89	1,088.84	1,083.90
15.00°	1,064.87	1,067.86	1,091.57	1,106.19	1,123.54	1,102.75	1,058.06	1,036.36	1,016.07	1,037.97	1,061.77	1,111.46	1,124.11	1,119.80	1,098.56	1,069.56	1,064.87
17.50°	1,032.68	1,039.41	1,064.22	1,086.32	1,099.45	1,061.04	1,009.04	980.80	961.76	981.35	1,021.00	1,075.73	1,102.44	1,103.41	1,074.89	1,047.07	1,032.68
20.00°	997.18	999.76	1,031.77	1,043.25	1,071.43	1,015.50	948.13	918.00	891.99	923.26	959.93	1,032.80	1,056.01	1,068.32	1,049.20	1,004.77	997.18
22.50°	938.11	938.74	967.12	985.20	1,003.67	929.03	863.81	829.87	809.22	835.43	886.10	955.87	988.78	1,012.92	987.19	950.41	938.11
25.00°	874.75	867.48	893.12	895.56	928.90	838.51	763.02	734.09	705.76	743.88	783.05	869.47	891.64	931.88	921.21	877.84	874.75
27.50°	793.05	780.57	792.89	789.54	812.38	706.91	636.27	609.76	588.18	617.64	665.33	742.94	773.51	828.16	821.06	796.41	793.05
30.00°	709.26	688.00	687.14	660.89	691.11	573.62	503.80	479.13	458.96	490.10	524.53	608.40	631.36	702.18	717.52	703.17	709.26
32.50°	617.61	588.23	567.15	522.69	546.47	433.54	363.91	353.41	323.15	354.91	374.29	460.35	475.62	559.97	594.48	605.26	617.61
35.00°	525.46	490.88	445.10	390.20	400.58	295.87	246.64	228.46	217.15	230.00	255.48	310.48	338.49	420.02	473.22	506.33	525.46
37.50°	437.78	396.03	338.15	259.58	279.83	197.96	153.48	151.63	124.52	148.23	146.52	205.91	209.71	281.40	359.10	407.10	437.78
40.00°	351.72	319.33	232.47	166.62	161.75	106.24	89.74	79.27	75.05	79.07	90.59	104.78	126.08	180.14	255.72	331.74	351.72
42.50°	299.81	257.93	171.59	82.75	99.05	65.23	51.53	51.69	40.62	49.02	46.86	65.23	58.78	96.67	184.38	261.63	299.81
45.00°	250.81	218.59	112.55	48.02	40.89	28.86	28.59	25.85	24.91	24.99	28.64	27.61	31.81	54.43	125.77	227.67	250.81
47.50°	231.69	194.77	88.05	21.97	25.40	18.19	16.58	16.70	14.31	15.86	14.66	17.78	15.83	28.08	97.55	199.39	231.69
50.00°	213.38	177.15	64.31	13.19	11.52	9.14	9.80	8.01	9.39	8.73	9.11	8.51	9.62	16.97	74.06	182.30	213.38
52.50°	200.04	163.04	50.76	6.29	7.45	6.37	6.07	6.38	5.58	5.51	4.42	6.06	5.31	10.33	59.48	166.25	200.04
55.00°	186.77	147.89	37.70	4.64	4.03	4.04	4.31	4.78	4.51	3.40	3.44	3.85	3.88	7.30	46.64	152.40	186.77
57.50°	173.78	132.27	28.15	3.24	3.32	2.98	3.47	3.43	3.79	3.04	2.63	3.29	2.83	5.04	36.43	138.60	173.78
60.00°	159.89	115.11	19.22	3.11	2.66	2.31	3.00	2.27	3.06	2.74	2.24	2.81	2.71	4.17	27.61	122.26	159.89
62.50°	143.12	97.38	13.36	2.97	2.20	2.55	2.66	2.13	2.32	2.52	1.89	2.74	2.65	3.51	20.54	105.94	143.12
65.00°	126.25	80.51	8.23	2.42	1.86	2.60	2.35	2.04	2.31	2.44	2.17	2.64	2.30	3.27	15.13	89.84	126.25
67.50°	109.18	63.86	5.57	1.94	1.80	2.31	2.05	2.11	2.31	2.50	2.36	2.45	1.96	3.07	11.37	73.91	109.18
70.00°	91.73	48.96	3.62	1.87	1.87	2.12	2.05	2.27	2.40	2.38	2.08	2.19	1.77	2.52	8.25	58.80	91.73
72.50°	73.82	34.87	2.80	1.65	2.11	2.02	2.06	2.54	2.33	2.16	1.98	1.84	1.68	2.10	5.49	44.66	73.82
75.00°	55.51	23.49	2.20	1.22	2.04	1.89	1.96	2.12	1.96	1.93	2.16	1.82	1.78	1.99	4.27	31.85	55.51
77.50°	38.42	14.08	1.69	1.26	1.75	1.60	1.70	1.50	1.50	1.56	1.83	1.79	1.64	1.75	2.98	21.30	38.42
80.00°	24.49	6.93	1.25	1.30	1.13	1.06	1.34	1.13	1.17	1.07	1.46	1.34	1.36	1.53	1.65	11.76	24.49
82.50°	11.32	2.86	1.07	1.04	0.95	0.83	0.98	1.26	1.02	1.01	1.00	0.84	0.99	1.29	1.34	4.56	11.32
85.00°	2.67	1.03	0.88	0.58	1.02	1.13	0.88	1.18	0.84	0.78	0.55	0.79	0.78	0.89	1.08	1.87	2.67
87.50°	0.96	0.82	1.01	0.95	0.74	0.86	0.84	1.00	0.89	1.00	0.99	0.82	0.68	0.94	0.91	0.94	0.96
90.00°	0.43	0.72	0.24	0.75	0.92	0.40	1.18	0.40	0.88	0.37	0.61	0.26	0.64	0.97	0.40	0.61	0.43

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%	0%
	pw	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	30%
	0	1,376	1,376	1,376	1,376	1,344	1,344	1,344	1,344	1,284	1,284	1,284	1,229	1,229	1,229	1,179	1,179	1,156
	1	1,306	1,272	1,241	1,214	1,278	1,247	1,219	1,194	1,200	1,178	1,157	1,157	1,139	1,123	1,117	1,103	1,081
	2	1,236	1,176	1,127	1,085	1,210	1,156	1,111	1,072	1,118	1,081	1,049	1,084	1,053	1,026	1,051	1,027	1,006
	3	1,170	1,091	1,030	981	1,146	1,074	1,018	973	1,044	996	957	1,015	976	942	989	956	937
	4	1,107	1,015	947	896	1,086	1,001	939	890	976	922	879	952	906	869	931	891	874
	5	1,048	947	876	823	1,029	936	869	819	914	856	812	895	844	805	876	833	817
	6	994	886	813	761	976	876	808	758	859	798	753	842	789	748	826	779	766
	7	943	831	758	707	927	823	754	705	808	746	701	794	738	697	780	731	719
	8	895	781	709	659	881	774	706	658	761	699	655	749	693	652	738	687	676
	9	852	736	665	617	838	730	662	616	719	657	614	708	652	612	699	647	637
	10	811	695	625	579	799	690	623	578	680	619	577	671	615	575	662	611	602

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	37.7 fc	6.6 ft
6.5 ft	27.0 fc	7.8 ft
7.5 ft	20.3 fc	9.0 ft
8.0 ft	17.8 fc	9.6 ft
10.0 ft	11.4 fc	11.9 ft
12.0 ft	7.9 fc	14.3 ft
14.0 ft	5.8 fc	16.7 ft
16.0 ft	4.5 fc	19.1 ft
20.0 ft	2.9 fc	23.9 ft
24.0 ft	2.0 fc	28.7 ft
28.0 ft	1.5 fc	33.4 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	108,302	108,302	108,302
45.00°	33,665	15,106	5,488
55.00°	30,904	6,238	667
65.00°	28,353	1,849	417
75.00°	20,355	805	748
85.00°	2,904	956	1,107

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	22.2	23.3	22.6	23.6	23.9	-4.3	-3.3	-4.0	-3.0	-2.7
	3H	23.8	24.7	24.2	25.0	25.4	-2.4	-1.4	-2.0	-1.1	-0.7
	4H	24.2	25.1	24.7	25.5	25.9	-1.1	-0.3	-0.7	0.1	0.5
	6H	24.4	25.2	24.9	25.6	26.0	-0.1	0.7	0.3	1.1	1.5
	8H	24.5	25.2	24.9	25.6	26.0	0.2	1.0	0.7	1.4	1.8
	12H	24.4	25.1	24.8	25.5	25.9	0.6	1.4	1.1	1.7	2.2
4H	2H	22.0	22.8	22.4	23.2	23.6	-3.8	-3.0	-3.4	-2.6	-2.2
	3H	23.6	24.3	24.0	24.7	25.1	-1.4	-0.7	-1.0	-0.3	0.1
	4H	24.1	24.8	24.6	25.2	25.6	0.0	0.6	0.4	1.0	1.5
	6H	24.4	24.9	24.9	25.4	25.9	1.2	1.7	1.6	2.1	2.6
	8H	24.4	24.9	24.9	25.4	25.8	1.5	2.0	2.0	2.5	2.9
	12H	24.4	24.8	24.9	25.3	25.8	2.0	2.4	2.5	2.9	3.4
8H	4H	24.0	24.5	24.5	24.9	25.4	0.5	1.0	1.0	1.5	2.0
	6H	24.2	24.6	24.8	25.1	25.6	1.8	2.2	2.4	2.7	3.2
	8H	24.3	24.6	24.8	25.1	25.6	2.3	2.6	2.8	3.2	3.7
	12H	24.2	24.5	24.8	25.0	25.6	3.0	3.3	3.5	3.8	4.4
12H	4H	23.9	24.4	24.4	24.8	25.3	0.6	1.0	1.1	1.5	2.0
	6H	24.2	24.5	24.7	25.0	25.6	2.0	2.3	2.5	2.8	3.3
	8H	24.2	24.5	24.7	25.0	25.6	2.5	2.8	3.0	3.3	3.9

Corrected UGR values based on total output lumens

SHR = 1.0