

Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

SP4ES 11L 35K DX AR4WES MW
Nom. 4.5" Aperture, LED Wall Wash

Test Number

SP-00677_8_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	1031
Efficacy	68.73 lm/W

Luminous Dimensions

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

Spacing Criterion

Two luminaires, plane 0°	1.05
Two luminaires, plane 90°	0.93
Four luminaires	0.88

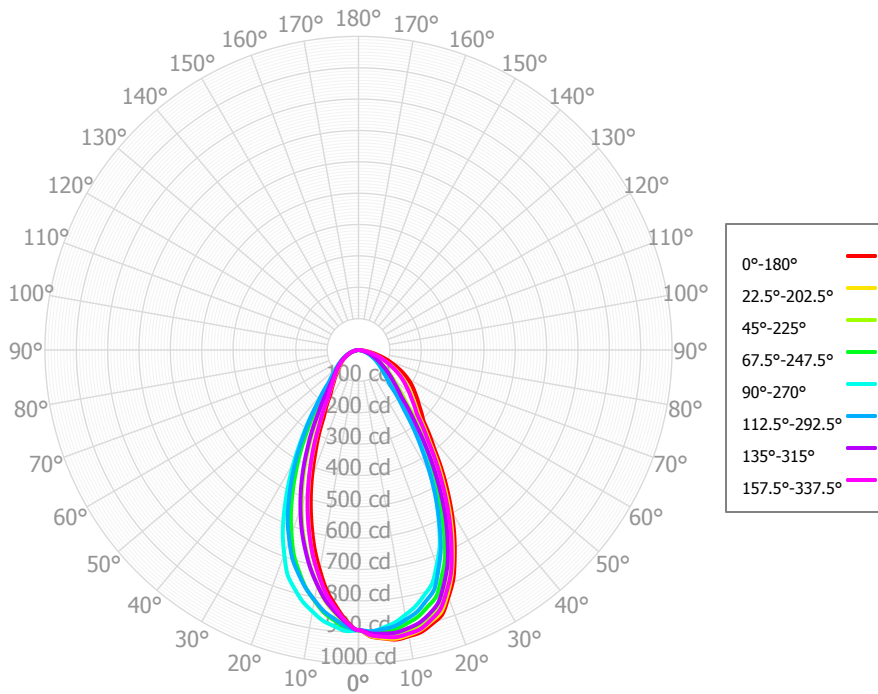
Full Beam Angle

0° - 180°	54°
90° - 270°	58°

IES File Header Contents

Keyword	Value
TEST	SP-00677_8_M-15L
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
ISSUEDATE	7/27/2018
UPDATE	9/19/2018
LUMCAT	SP4ES 11L 35K DX AR4WES MW
LUMINAIRE	Nom. 4.5" Aperture, LED Wall Wash
OTHER	Matte white trim, open aperture, 'kicker' peened 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°	83.72	8.12%	90.00° - 100.00°	0.09	0.01%
10.00° - 20.00°	213.80	20.74%	100.00° - 110.00°	0.00	0.00%
20.00° - 30.00°	248.13	24.07%	100.00° - 120.00°	0.00	0.00%
30.00° - 40.00°	184.40	17.89%	120.00° - 130.00°	0.00	0.00%
40.00° - 50.00°	118.96	11.54%	130.00° - 140.00°	0.00	0.00%
50.00° - 60.00°	88.85	8.62%	140.00° - 150.00°	0.00	0.00%
60.00° - 70.00°	59.02	5.72%	150.00° - 160.00°	0.00	0.00%
70.00° - 80.00°	28.64	2.78%	160.00° - 170.00°	0.00	0.00%
80.00° - 90.00°	5.39	0.52%	170.00° - 180.00°	0.00	0.00%
0.00° - 90.00°	1,030.91	100.00%	0.00° - 180.00°	1,030.91	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°	893.53	893.53	893.53	893.53	893.53	893.53	893.53	893.53	893.53	893.53	893.53	893.53	893.53	893.53	893.53	893.53	893.53
2.50°	914.88	913.81	911.12	906.39	900.21	883.01	871.47	869.12	865.72	870.33	875.32	888.73	897.28	897.97	904.68	910.96	914.88
5.00°	923.55	922.51	916.89	903.17	889.41	862.26	839.99	828.76	820.60	830.83	843.42	867.29	884.45	893.43	908.04	918.14	923.55
7.50°	931.29	928.35	919.83	899.16	877.77	840.83	805.23	785.43	774.17	787.62	808.38	844.89	870.80	888.18	909.23	923.58	931.29
10.00°	926.95	922.93	912.07	886.05	858.06	809.55	759.59	729.65	711.59	731.03	760.48	811.22	846.81	872.66	901.87	918.81	926.95
12.50°	921.66	914.64	901.99	872.30	837.82	777.77	711.42	671.97	648.03	672.02	709.45	776.68	822.02	856.60	891.85	911.72	921.66
15.00°	904.78	896.72	883.16	848.87	809.68	739.34	657.26	606.12	577.45	604.49	652.65	731.91	788.19	829.59	871.81	891.77	904.78
17.50°	885.55	876.45	858.97	824.84	781.04	699.73	601.74	539.07	506.51	536.52	594.51	685.75	752.10	802.06	845.53	867.71	885.55
20.00°	838.80	829.84	815.44	773.70	729.59	645.46	541.04	470.12	434.73	466.99	531.50	624.79	692.49	744.75	795.72	821.00	838.80
22.50°	790.52	776.98	766.20	721.02	676.88	590.30	479.19	400.90	362.92	398.40	467.39	563.28	631.64	686.11	741.65	770.86	790.52
25.00°	725.96	712.28	697.21	646.82	606.85	524.57	415.76	336.06	300.70	332.92	403.04	496.33	557.91	611.33	672.25	702.83	725.96
27.50°	661.09	644.85	626.34	571.49	535.93	458.89	352.00	271.81	238.90	271.50	338.63	429.66	484.26	535.95	601.04	634.25	661.09
30.00°	593.14	575.59	548.96	490.63	461.27	393.76	294.89	225.08	202.09	223.52	282.93	365.76	411.32	457.04	523.61	562.98	593.14
32.50°	525.45	505.93	472.64	409.53	386.42	329.32	239.14	180.62	166.20	181.44	229.05	302.86	339.41	377.99	447.08	492.67	525.45
35.00°	460.43	440.31	399.79	336.04	318.20	272.00	197.54	158.25	147.77	158.18	188.56	248.87	276.57	307.38	373.67	427.18	460.43
37.50°	397.27	375.55	330.55	262.86	250.25	216.34	158.77	138.64	129.99	137.35	150.80	197.00	216.01	237.00	304.77	364.96	397.27
40.00°	350.74	328.77	272.80	209.87	200.27	176.82	136.88	124.74	117.49	124.01	131.19	162.70	175.34	191.65	250.91	318.19	350.74
42.50°	306.61	285.77	221.60	157.63	150.93	139.47	118.18	111.50	105.16	111.14	115.21	130.47	137.45	146.84	203.67	275.70	306.61
45.00°	284.12	260.79	191.33	135.75	130.58	121.60	106.43	101.56	96.10	99.75	103.43	115.46	122.18	129.16	177.62	252.36	284.12
47.50°	262.22	239.41	163.97	114.76	111.15	104.49	95.95	91.99	87.11	89.15	92.44	101.00	107.35	112.07	153.62	229.92	262.22
50.00°	245.21	220.31	145.53	102.32	99.14	94.24	86.77	83.33	78.53	80.85	83.66	90.78	95.95	100.52	136.21	211.52	245.21
52.50°	228.43	201.68	127.54	90.09	87.31	84.11	77.82	74.77	69.95	72.93	75.28	80.85	84.80	89.05	119.39	193.53	228.43
55.00°	213.32	184.04	110.86	79.86	78.37	74.91	70.60	67.07	64.23	66.06	67.82	73.01	75.47	79.92	104.39	177.35	213.32
57.50°	197.90	166.58	95.11	69.67	69.50	66.01	63.68	59.44	58.55	59.28	60.53	65.21	66.30	70.80	90.25	160.91	197.90
60.00°	180.10	148.41	82.13	61.07	61.38	59.44	56.00	52.89	51.12	52.78	53.43	57.68	58.23	61.77	78.73	143.42	180.10
62.50°	162.00	130.12	69.79	52.50	53.28	52.76	48.18	46.45	43.67	46.45	46.36	50.27	50.39	52.76	67.72	126.01	162.00
65.00°	141.86	111.06	59.21	45.27	45.84	45.18	42.05	40.51	38.15	40.62	40.40	43.64	44.05	46.14	58.22	108.89	141.86
67.50°	122.08	91.88	49.33	38.17	38.57	37.97	36.15	34.65	32.66	34.56	34.62	37.08	37.69	39.56	49.11	92.34	122.08
70.00°	103.62	76.62	40.82	32.42	33.13	32.14	30.32	29.93	27.50	28.09	28.97	30.77	31.24	33.39	40.76	77.24	103.62
72.50°	85.25	61.44	33.14	26.92	27.50	26.56	24.64	25.00	22.67	22.89	23.29	24.94	25.12	26.97	32.66	62.17	85.25
75.00°	66.98	46.09	26.07	21.88	21.53	21.27	19.44	19.57	18.42	18.58	17.52	19.67	19.36	20.13	24.73	47.12	66.98
77.50°	50.76	32.54	19.64	16.47	15.85	16.44	14.30	14.15	13.63	13.49	12.96	14.56	13.88	14.97	18.86	34.16	50.76
80.00°	35.50	20.83	12.66	10.82	10.95	10.87	9.76	9.69	9.11	9.14	8.95	9.19	9.58	10.51	13.22	22.21	35.50
82.50°	20.89	11.42	6.57	5.76	7.23	5.99	6.21	6.48	5.46	5.52	5.29	4.92	6.21	6.48	7.95	12.31	20.89
85.00°	7.97	4.25	3.01	3.12	4.08	3.74	2.99	3.13	3.08	2.77	2.90	3.04	2.90	3.15	3.61	5.16	7.97
87.50°	1.43	1.49	1.24	1.57	1.71	1.53	1.41	1.40	1.46	1.32	1.21	1.40	1.21	1.33	1.26	1.25	1.43
90.00°	0.56	0.76	0.48	0.54	0.56	0.67	1.04	0.80	0.77	0.47	0.64	0.81	0.81	0.51	0.74	0.47	0.56

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	1,227	1,227	1,227	1,227	1,199	1,199	1,199	1,199	1,146	1,146	1,146	1,097	1,097	1,097	1,052	1,052	1,031
	1	1,150	1,114	1,080	1,051	1,124	1,091	1,061	1,034	1,048	1,024	1,002	1,009	989	971	973	957	938
	2	1,074	1,009	955	910	1,049	990	941	900	956	915	880	924	890	860	894	866	842
	3	1,003	919	853	802	980	903	843	795	875	824	781	848	805	769	824	787	756
	4	938	841	770	715	918	828	762	711	805	747	702	783	733	693	762	720	685
	5	880	774	700	646	861	764	694	642	744	683	636	725	672	630	708	661	624
	6	827	716	641	588	810	707	637	586	690	628	581	675	619	577	660	611	573
	7	780	665	591	539	764	658	588	538	643	580	534	630	573	531	617	567	528
	8	736	621	548	498	722	614	545	497	602	539	494	590	533	492	579	528	489
	9	697	581	510	462	684	575	508	461	565	503	459	555	498	458	545	494	456
	10	661	546	477	431	649	541	475	430	532	471	429	523	467	427	515	463	426

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	29.5 fc	5.7 ft
6.5 ft	21.1 fc	6.7 ft
7.5 ft	15.9 fc	7.8 ft
8.0 ft	14.0 fc	8.3 ft
10.0 ft	8.9 fc	10.4 ft
12.0 ft	6.2 fc	12.5 ft
14.0 ft	4.6 fc	14.5 ft
16.0 ft	3.5 fc	16.6 ft
20.0 ft	2.2 fc	20.8 ft
24.0 ft	1.6 fc	24.9 ft
28.0 ft	1.1 fc	29.1 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	84,805	84,805	84,805
45.00°	38,136	25,681	17,527
55.00°	35,298	18,344	12,968
65.00°	31,858	13,297	10,294
75.00°	24,564	9,559	7,895
85.00°	8,682	3,283	4,442

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	23.6	24.9	23.9	25.2	25.5	17.0	18.3	17.4	18.6	18.9
	3H	25.2	26.3	25.6	26.7	27.0	18.4	19.5	18.7	19.9	20.2
	4H	25.7	26.8	26.1	27.2	27.6	18.8	19.9	19.2	20.3	20.6
	6H	26.1	27.1	26.5	27.4	27.8	19.1	20.1	19.5	20.4	20.8
	8H	26.1	27.1	26.6	27.5	27.9	19.1	20.1	19.5	20.4	20.9
	12H	26.2	27.1	26.6	27.4	27.9	19.1	20.0	19.6	20.4	20.8
4H	2H	23.5	24.6	23.9	25.0	25.3	17.4	18.4	17.8	18.8	19.2
	3H	25.3	26.2	25.7	26.6	27.0	18.9	19.8	19.4	20.2	20.6
	4H	26.0	26.8	26.4	27.2	27.7	19.5	20.3	19.9	20.7	21.2
	6H	26.4	27.1	26.9	27.6	28.0	19.9	20.5	20.3	21.0	21.5
	8H	26.5	27.2	27.0	27.6	28.1	19.9	20.6	20.4	21.0	21.5
	12H	26.5	27.1	27.0	27.6	28.1	19.9	20.5	20.4	21.0	21.5
8H	4H	25.9	26.6	26.4	27.0	27.5	19.6	20.3	20.1	20.7	21.2
	6H	26.4	26.9	26.9	27.4	27.9	20.0	20.6	20.6	21.1	21.5
	8H	26.5	27.0	27.1	27.5	28.0	20.1	20.6	20.7	21.1	21.6
	12H	26.6	27.0	27.1	27.5	28.1	20.2	20.6	20.7	21.1	21.7
12H	4H	25.9	26.5	26.4	27.0	27.4	19.6	20.2	20.1	20.7	21.1
	6H	26.4	26.8	26.9	27.3	27.9	20.0	20.5	20.6	21.0	21.5
	8H	26.5	26.9	27.0	27.4	28.0	20.2	20.6	20.7	21.1	21.6

Corrected UGR values based on total output lumens

SHR = 1.0