

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-11L

Test Date

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	756
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

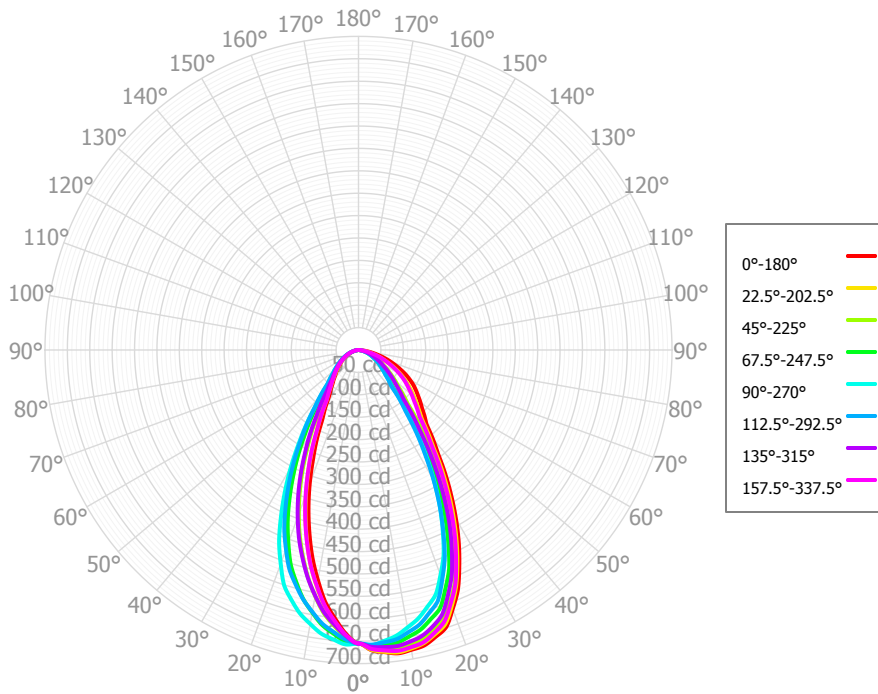
Full Beam Angle

0° - 180°	54°
90° - 270°	58°

IES File Header Contents

Keyword	Value
TEST	SP-00677_8_M-11L
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
ISSUEDATE	7/27/2018
UPDATE	9/19/2019
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°	61.39	8.12%	90.00° - 100.00°	0.07	0.01%
10.00° - 20.00°	156.78	20.74%	100.00° - 110.00°	0.00	0.00%
20.00° - 30.00°	181.96	24.07%	100.00° - 120.00°	0.00	0.00%
30.00° - 40.00°	135.23	17.89%	120.00° - 130.00°	0.00	0.00%
40.00° - 50.00°	87.24	11.54%	130.00° - 140.00°	0.00	0.00%
50.00° - 60.00°	65.16	8.62%	140.00° - 150.00°	0.00	0.00%
60.00° - 70.00°	43.28	5.72%	150.00° - 160.00°	0.00	0.00%
70.00° - 80.00°	21.00	2.78%	160.00° - 170.00°	0.00	0.00%
80.00° - 90.00°	3.95	0.52%	170.00° - 180.00°	0.00	0.00%
0.00° - 90.00°	756.00	100.00%	0.00° - 180.00°	756.00	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°	655.26	655.26	655.26	655.26	655.26	655.26	655.26	655.26	655.26	655.26	655.26	655.26	655.26	655.26	655.26	655.26	655.26
2.50°	670.91	670.13	668.15	664.68	660.16	647.54	639.08	637.35	634.86	638.24	641.90	651.73	658.00	658.51	663.43	668.04	670.91
5.00°	677.27	676.51	672.39	662.33	652.24	632.32	615.99	607.76	601.77	609.28	618.51	636.01	648.60	655.18	665.89	673.31	677.27
7.50°	682.95	680.79	674.54	659.39	643.69	616.61	590.51	575.98	567.73	577.59	592.81	619.58	638.59	651.33	666.77	677.29	682.95
10.00°	679.76	676.82	668.85	649.77	629.25	593.67	557.03	535.08	521.83	536.09	557.69	594.90	620.99	639.95	661.37	673.80	679.76
12.50°	675.88	670.74	661.46	639.69	614.40	570.36	521.71	492.78	475.22	492.81	520.27	569.57	602.81	628.17	654.02	668.59	675.88
15.00°	663.50	657.59	647.65	622.50	593.77	542.19	481.99	444.49	423.46	443.29	478.61	536.73	578.01	608.37	639.33	653.96	663.50
17.50°	649.40	642.73	629.91	604.88	572.76	513.14	441.28	395.32	371.44	393.45	435.97	502.88	551.54	588.18	620.06	636.32	649.40
20.00°	615.12	608.55	597.99	567.38	535.03	473.34	396.76	344.75	318.80	342.46	389.77	458.18	507.83	546.15	583.53	602.06	615.12
22.50°	579.71	569.78	561.88	528.75	496.38	432.88	351.41	293.99	266.14	292.16	342.75	413.07	463.20	503.14	543.88	565.30	579.71
25.00°	532.37	522.34	511.29	474.34	445.02	384.68	304.89	246.45	220.51	244.14	295.56	363.97	409.13	448.31	492.98	515.41	532.37
27.50°	484.80	472.89	459.32	419.09	393.02	336.52	258.14	199.33	175.19	199.10	248.33	315.09	355.12	393.03	440.76	465.12	484.80
30.00°	434.97	422.10	402.57	359.80	338.26	288.75	216.25	165.06	148.20	163.92	207.48	268.23	301.63	335.16	383.98	412.85	434.97
32.50°	385.33	371.01	346.60	300.32	283.38	241.50	175.37	132.45	121.88	133.06	167.97	222.09	248.90	277.20	327.86	361.29	385.33
35.00°	337.65	322.89	293.18	246.43	233.35	199.47	144.86	116.05	108.36	116.00	138.27	182.50	202.82	225.41	274.02	313.26	337.65
37.50°	291.33	275.41	242.40	192.77	183.51	158.65	116.43	101.67	95.32	100.72	110.59	144.47	158.41	173.80	223.50	267.64	291.33
40.00°	257.21	241.10	200.05	153.91	146.86	129.67	100.38	91.47	86.16	90.94	96.21	119.31	128.58	140.54	184.00	233.34	257.21
42.50°	224.85	209.57	162.51	115.60	110.68	102.27	86.67	81.77	77.12	81.51	84.49	95.68	100.80	107.68	149.36	202.18	224.85
45.00°	208.35	191.25	140.31	99.55	95.76	89.17	78.05	74.48	70.47	73.15	75.85	84.67	89.60	94.72	130.25	185.06	208.35
47.50°	192.29	175.56	120.24	84.16	81.51	76.63	70.36	67.46	63.88	65.37	67.79	74.07	78.72	82.19	112.66	168.61	192.29
50.00°	179.82	161.56	106.73	75.03	72.70	69.11	63.63	61.11	57.59	59.29	61.35	66.58	70.37	73.72	99.89	155.11	179.82
52.50°	167.51	147.90	93.53	66.07	64.02	61.68	57.07	54.83	51.30	53.48	55.21	59.29	62.18	65.30	87.55	141.92	167.51
55.00°	156.43	134.96	81.30	58.56	57.47	54.93	51.78	49.18	47.10	48.44	49.74	53.54	55.35	58.61	76.55	130.05	156.43
57.50°	145.13	122.16	69.75	51.09	50.96	48.40	46.70	43.59	42.94	43.47	44.39	47.82	48.62	51.92	66.18	118.00	145.13
60.00°	132.07	108.84	60.23	44.79	45.01	43.59	41.06	38.79	37.49	38.70	39.18	42.30	42.70	45.30	57.73	105.18	132.07
62.50°	118.80	95.42	51.18	38.50	39.07	38.69	35.34	34.06	32.03	34.07	34.00	36.87	36.95	38.69	49.66	92.41	118.80
65.00°	104.03	81.45	43.42	33.20	33.61	33.13	30.83	29.71	27.97	29.79	29.63	32.01	32.30	33.83	42.70	79.85	104.03
67.50°	89.52	67.38	36.18	27.99	28.28	27.84	26.51	25.41	23.95	25.35	25.39	27.19	27.64	29.01	36.02	67.71	89.52
70.00°	75.99	56.19	29.94	23.77	24.30	23.57	22.23	21.95	20.16	20.60	21.24	22.56	22.91	24.48	29.89	56.64	75.99
72.50°	62.51	45.06	24.30	19.74	20.17	19.48	18.07	18.34	16.62	16.78	17.08	18.29	18.42	19.78	23.95	45.59	62.51
75.00°	49.12	33.80	19.12	16.04	15.79	15.60	14.25	14.35	13.51	13.62	12.85	14.43	14.20	14.76	18.14	34.55	49.12
77.50°	37.23	23.86	14.40	12.08	11.62	12.06	10.49	10.38	10.00	9.89	9.50	10.67	10.18	10.97	13.83	25.05	37.23
80.00°	26.03	15.27	9.28	7.94	8.03	7.97	7.16	7.11	6.68	6.70	6.56	6.74	7.03	7.70	9.69	16.29	26.03
82.50°	15.32	8.38	4.81	4.22	5.30	4.39	4.55	4.75	4.00	4.05	3.88	3.61	4.56	4.75	5.83	9.03	15.32
85.00°	5.85	3.12	2.21	2.29	2.99	2.74	2.19	2.30	2.26	2.03	2.13	2.23	2.13	2.31	2.65	3.79	5.85
87.50°	1.05	1.10	0.91	1.15	1.25	1.13	1.04	1.03	1.07	0.97	0.89	1.02	0.89	0.98	0.93	0.92	1.05
90.00°	0.41	0.56	0.35	0.40	0.41	0.49	0.77	0.59	0.57	0.34	0.47	0.60	0.59	0.38	0.54	0.34	0.41

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	900	900	900	900	879	879	879	879	840	840	840	804	804	804	771	771	756
	1	844	817	792	770	824	800	778	758	769	751	734	740	726	712	713	702	688
	2	787	740	701	668	769	726	690	660	701	671	645	677	653	631	656	635	622
	3	735	674	626	588	719	662	618	583	641	604	573	622	590	564	604	577	566
	4	688	617	565	525	673	608	559	521	590	548	515	574	538	508	559	528	517
	5	645	568	513	473	632	560	509	471	545	501	467	532	493	462	519	485	476
	6	607	525	470	431	594	519	467	429	506	460	426	495	454	423	484	448	440
	7	572	488	434	395	560	482	431	394	472	426	392	462	421	390	453	416	408
	8	540	455	402	365	530	450	400	364	441	395	362	433	391	361	425	387	381
	9	511	426	374	339	502	422	372	338	414	369	337	407	365	336	400	362	356
	10	485	400	350	316	476	397	348	315	390	345	314	384	342	313	378	340	334

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	21.7 fc	5.7 ft
6.5 ft	15.5 fc	6.7 ft
7.5 ft	11.6 fc	7.8 ft
8.0 ft	10.2 fc	8.3 ft
10.0 ft	6.6 fc	10.4 ft
12.0 ft	4.6 fc	12.5 ft
14.0 ft	3.3 fc	14.5 ft
16.0 ft	2.6 fc	16.6 ft
20.0 ft	1.6 fc	20.8 ft
24.0 ft	1.1 fc	24.9 ft
28.0 ft	0.8 fc	29.1 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	62,191	62,191	62,191
45.00°	27,966	18,833	12,853
55.00°	25,885	13,452	9,510
65.00°	23,362	9,751	7,549
75.00°	18,013	7,010	5,789
85.00°	6,367	2,408	3,258

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	22.5	23.8	22.8	24.1	24.4	15.9	17.2	16.3	17.5	17.8
	3H	24.1	25.3	24.5	25.6	26.0	17.3	18.4	17.7	18.8	19.1
	4H	24.7	25.7	25.1	26.1	26.5	17.7	18.8	18.1	19.2	19.6
	6H	25.0	26.0	25.4	26.4	26.8	18.0	19.0	18.4	19.4	19.8
	8H	25.1	26.0	25.5	26.4	26.8	18.0	19.0	18.5	19.4	19.8
	12H	25.1	26.0	25.5	26.4	26.8	18.0	18.9	18.5	19.3	19.8
4H	2H	22.4	23.5	22.8	23.9	24.3	16.3	17.4	16.7	17.7	18.1
	3H	24.3	25.1	24.7	25.6	26.0	17.9	18.8	18.3	19.2	19.6
	4H	24.9	25.7	25.3	26.1	26.6	18.4	19.2	18.9	19.6	20.1
	6H	25.4	26.0	25.8	26.5	27.0	18.8	19.5	19.2	19.9	20.4
	8H	25.4	26.1	25.9	26.5	27.0	18.8	19.5	19.3	19.9	20.4
	12H	25.5	26.0	26.0	26.5	27.0	18.9	19.4	19.4	19.9	20.4
8H	4H	24.9	25.5	25.3	26.0	26.4	18.6	19.2	19.0	19.6	20.1
	6H	25.3	25.9	25.8	26.4	26.8	19.0	19.5	19.5	20.0	20.5
	8H	25.5	25.9	26.0	26.4	26.9	19.1	19.5	19.6	20.0	20.5
	12H	25.5	25.9	26.0	26.4	27.0	19.1	19.5	19.6	20.0	20.6
12H	4H	24.8	25.4	25.3	25.9	26.3	18.5	19.1	19.0	19.6	20.1
	6H	25.3	25.8	25.8	26.2	26.8	19.0	19.4	19.5	19.9	20.4
	8H	25.4	25.8	26.0	26.3	26.9	19.1	19.5	19.6	20.0	20.6

Corrected UGR values based on total output lumens

SHR = 1.0