

Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

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

Test Number

SP-00677_9_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	847
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

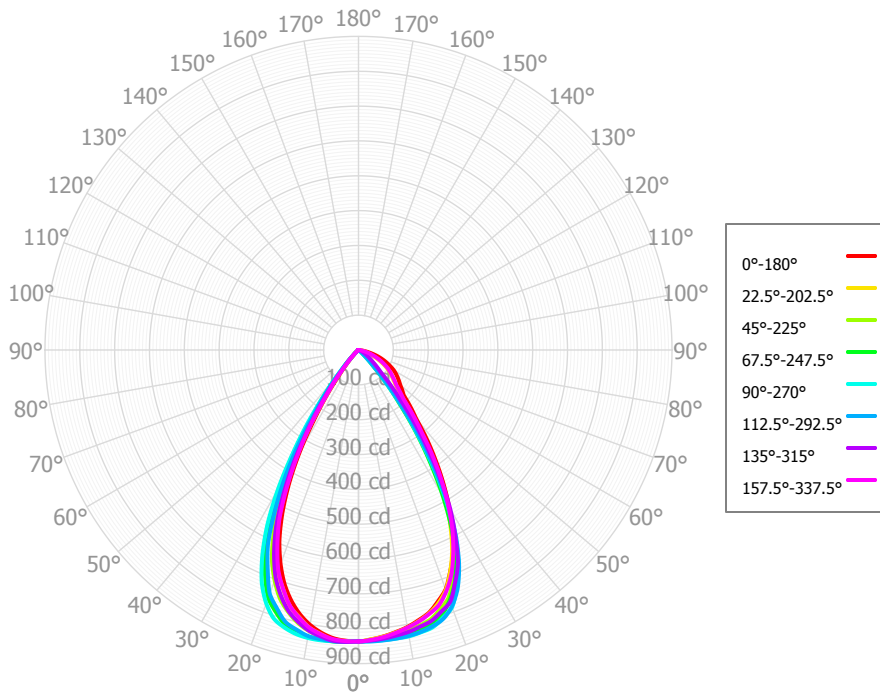
Full Beam Angle

0° - 180°	62°
90° - 270°	63°

IES File Header Contents

Keyword	Value
TEST	SP-00677_9_M-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 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°	80.32	9.48%	90.00° - 100.00°	0.06	0.01%
10.00° - 20.00°	221.37	26.12%	100.00° - 110.00°	0.00	0.00%
20.00° - 30.00°	276.82	32.67%	100.00° - 120.00°	0.00	0.00%
30.00° - 40.00°	167.19	19.73%	120.00° - 130.00°	0.00	0.00%
40.00° - 50.00°	52.03	6.14%	130.00° - 140.00°	0.00	0.00%
50.00° - 60.00°	25.79	3.04%	140.00° - 150.00°	0.00	0.00%
60.00° - 70.00°	15.82	1.87%	150.00° - 160.00°	0.00	0.00%
70.00° - 80.00°	6.82	0.81%	160.00° - 170.00°	0.00	0.00%
80.00° - 90.00°	1.23	0.14%	170.00° - 180.00°	0.00	0.00%
0.00° - 90.00°	847.39	100.00%	0.00° - 180.00°	847.39	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°	836.81	836.81	836.81	836.81	836.81	836.81	836.81	836.81	836.81	836.81	836.81	836.81	836.81	836.81	836.81	836.81	836.81
2.50°	831.75	831.16	834.08	834.64	836.25	838.74	838.77	836.49	835.42	835.96	837.36	838.70	837.73	837.49	834.67	833.02	831.75
5.00°	825.31	825.90	830.62	832.84	835.82	839.30	838.12	833.25	830.47	835.30	835.32	839.78	838.89	836.63	831.53	827.20	825.31
7.50°	816.90	818.14	825.48	831.76	835.22	836.98	829.42	823.49	818.55	823.11	829.93	838.37	840.48	835.39	826.88	819.08	816.90
10.00°	807.64	809.37	819.34	828.11	834.54	833.78	818.30	809.77	801.16	809.62	818.90	835.51	839.27	833.00	822.07	809.46	807.64
12.50°	794.86	797.56	810.54	822.02	829.89	822.18	799.60	787.07	777.03	785.68	802.63	826.66	834.56	828.78	813.92	798.49	794.86
15.00°	780.90	783.09	800.48	811.21	823.93	808.68	775.91	759.99	745.12	761.18	778.63	815.07	824.35	821.19	805.61	784.34	780.90
17.50°	757.30	762.24	780.43	796.63	806.26	778.10	739.96	719.25	705.29	719.66	748.74	788.87	808.46	809.17	788.25	767.85	757.30
20.00°	731.27	733.15	756.63	765.05	785.71	744.70	695.29	673.20	654.12	677.06	703.95	757.38	774.41	783.43	769.41	736.83	731.27
22.50°	687.94	688.41	709.22	722.48	736.03	681.29	633.46	608.57	593.43	612.65	649.81	700.97	725.10	742.81	723.94	696.97	687.94
25.00°	641.48	636.15	654.96	656.74	681.19	614.91	559.55	538.33	517.55	545.51	574.24	637.61	653.87	683.38	675.56	643.75	641.48
27.50°	581.57	572.42	581.45	578.99	595.75	518.40	466.60	447.15	431.33	452.93	487.91	544.82	567.24	607.31	602.11	584.04	581.57
30.00°	520.13	504.53	503.91	484.66	506.81	420.66	369.45	351.36	336.57	359.41	384.65	446.16	462.99	514.93	526.18	515.66	520.13
32.50°	452.91	431.37	415.91	383.31	400.75	317.93	266.87	259.16	236.97	260.27	274.48	337.59	348.79	410.65	435.95	443.85	452.91
35.00°	385.34	359.98	326.41	286.15	293.76	216.97	180.87	167.54	159.24	168.67	187.36	227.69	248.23	308.01	347.03	371.31	385.34
37.50°	321.04	290.42	247.98	190.36	205.21	145.17	112.55	111.19	91.32	108.70	107.45	151.00	153.79	206.36	263.34	298.54	321.04
40.00°	257.93	234.17	170.48	122.19	118.61	77.91	65.81	58.13	55.04	57.99	66.43	76.84	92.46	132.11	187.53	243.28	257.93
42.50°	219.86	189.15	125.83	60.68	72.64	47.83	37.79	37.91	29.78	35.95	34.37	47.84	43.11	70.89	135.21	191.86	219.86
45.00°	183.93	160.30	82.53	35.21	29.98	21.16	20.97	18.96	18.27	18.33	21.00	20.24	23.33	39.92	92.23	166.96	183.93
47.50°	169.91	142.83	64.57	16.11	18.63	13.34	12.16	12.25	10.49	11.63	10.75	13.04	11.61	20.59	71.54	146.22	169.91
50.00°	156.48	129.91	47.16	9.67	8.45	6.70	7.18	5.88	6.88	6.40	6.68	6.24	7.06	12.45	54.31	133.69	156.48
52.50°	146.70	119.56	37.23	4.62	5.47	4.67	4.45	4.68	4.09	4.04	3.24	4.44	3.90	7.57	43.62	121.92	146.70
55.00°	136.96	108.45	27.65	3.40	2.96	2.96	3.16	3.50	3.31	2.50	2.53	2.82	2.85	5.35	34.20	111.76	136.96
57.50°	127.44	97.00	20.65	2.37	2.43	2.18	2.55	2.52	2.78	2.23	1.93	2.41	2.08	3.70	26.71	101.64	127.44
60.00°	117.26	84.41	14.09	2.28	1.95	1.69	2.20	1.67	2.24	2.01	1.64	2.06	1.98	3.06	20.25	89.66	117.26
62.50°	104.95	71.42	9.80	2.18	1.61	1.87	1.95	1.56	1.70	1.85	1.39	2.01	1.94	2.57	15.07	77.69	104.95
65.00°	92.58	59.04	6.04	1.77	1.36	1.91	1.73	1.50	1.69	1.79	1.59	1.94	1.68	2.40	11.09	65.88	92.58
67.50°	80.06	46.83	4.08	1.42	1.32	1.69	1.50	1.55	1.70	1.84	1.73	1.80	1.43	2.25	8.33	54.20	80.06
70.00°	67.27	35.90	2.66	1.37	1.37	1.55	1.50	1.66	1.76	1.75	1.52	1.61	1.30	1.85	6.05	43.12	67.27
72.50°	54.14	25.57	2.06	1.21	1.54	1.48	1.51	1.86	1.71	1.59	1.46	1.35	1.23	1.54	4.03	32.75	54.14
75.00°	40.70	17.22	1.61	0.89	1.50	1.38	1.44	1.55	1.44	1.41	1.58	1.34	1.31	1.46	3.13	23.35	40.70
77.50°	28.18	10.32	1.24	0.93	1.28	1.17	1.25	1.10	1.10	1.14	1.34	1.31	1.20	1.28	2.18	15.62	28.18
80.00°	17.96	5.08	0.92	0.95	0.83	0.77	0.98	0.83	0.86	0.79	1.07	0.98	1.00	1.12	1.21	8.63	17.96
82.50°	8.30	2.10	0.79	0.77	0.70	0.61	0.72	0.92	0.75	0.74	0.73	0.61	0.73	0.95	0.99	3.35	8.30
85.00°	1.96	0.76	0.64	0.43	0.75	0.83	0.64	0.86	0.61	0.57	0.40	0.58	0.57	0.66	0.79	1.37	1.96
87.50°	0.71	0.60	0.74	0.70	0.54	0.63	0.62	0.74	0.65	0.73	0.72	0.60	0.50	0.69	0.67	0.69	0.71
90.00°	0.31	0.52	0.18	0.55	0.68	0.29	0.87	0.29	0.64	0.27	0.44	0.19	0.47	0.71	0.30	0.45	0.31

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	1,009	1,009	1,009	1,009	985	985	985	985	942	942	942	901	901	901	865	865	847
	1	958	933	910	890	937	914	894	876	880	864	849	848	835	823	819	809	793
	2	907	863	826	795	888	848	815	786	820	793	769	795	772	753	771	753	738
	3	858	800	755	719	840	788	747	714	765	731	702	745	715	691	725	701	687
	4	812	744	695	657	796	734	688	653	716	676	645	698	665	637	682	654	641
	5	769	694	642	604	755	686	637	601	671	628	595	656	619	590	643	611	599
	6	729	649	596	558	716	643	593	556	630	585	552	617	578	548	606	572	561
	7	691	609	556	519	680	603	553	517	592	547	514	582	542	511	572	536	527
	8	657	573	520	484	646	568	517	482	558	513	480	549	508	478	541	504	496
	9	624	540	488	453	615	535	486	452	527	482	450	520	478	449	512	475	467
	10	595	510	459	425	586	506	457	424	499	454	423	492	451	422	486	448	441

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	27.7 fc	6.6 ft
6.5 ft	19.8 fc	7.8 ft
7.5 ft	14.9 fc	9.0 ft
8.0 ft	13.1 fc	9.6 ft
10.0 ft	8.4 fc	11.9 ft
12.0 ft	5.8 fc	14.3 ft
14.0 ft	4.3 fc	16.7 ft
16.0 ft	3.3 fc	19.1 ft
20.0 ft	2.1 fc	23.9 ft
24.0 ft	1.5 fc	28.7 ft
28.0 ft	1.1 fc	33.4 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	79,421	79,421	79,421
45.00°	24,687	11,078	4,025
55.00°	22,663	4,575	489
65.00°	20,792	1,356	306
75.00°	14,927	590	548
85.00°	2,130	701	812

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	21.2	22.2	21.5	22.5	22.8	-5.4	-4.4	-5.0	-4.0	-3.7
	3H	22.7	23.6	23.1	24.0	24.3	-3.4	-2.5	-3.1	-2.2	-1.8
	4H	23.2	24.0	23.6	24.4	24.8	-2.2	-1.4	-1.8	-1.0	-0.6
	6H	23.4	24.2	23.8	24.5	24.9	-1.2	-0.4	-0.7	0.0	0.4
	8H	23.4	24.1	23.8	24.5	24.9	-0.8	-0.1	-0.4	0.3	0.7
	12H	23.3	24.0	23.8	24.4	24.9	-0.4	0.3	0.0	0.7	1.1
4H	2H	20.9	21.7	21.3	22.1	22.5	-4.9	-4.1	-4.5	-3.7	-3.3
	3H	22.5	23.2	23.0	23.7	24.1	-2.5	-1.8	-2.1	-1.4	-1.0
	4H	23.1	23.7	23.5	24.1	24.6	-1.1	-0.5	-0.7	-0.1	0.4
	6H	23.3	23.9	23.8	24.3	24.8	0.1	0.6	0.5	1.1	1.5
	8H	23.3	23.8	23.8	24.3	24.8	0.4	0.9	0.9	1.4	1.9
	12H	23.3	23.7	23.8	24.2	24.7	0.9	1.4	1.4	1.9	2.3
8H	4H	22.9	23.4	23.4	23.8	24.3	-0.5	0.0	-0.1	0.4	0.9
	6H	23.2	23.6	23.7	24.1	24.6	0.8	1.2	1.3	1.7	2.2
	8H	23.2	23.5	23.7	24.1	24.6	1.2	1.6	1.7	2.1	2.6
	12H	23.2	23.5	23.7	24.0	24.5	1.9	2.2	2.4	2.7	3.3
12H	4H	22.8	23.3	23.3	23.8	24.2	-0.5	-0.1	0.0	0.4	0.9
	6H	23.1	23.5	23.6	23.9	24.5	0.9	1.2	1.4	1.7	2.3
	8H	23.1	23.4	23.7	23.9	24.5	1.4	1.7	1.9	2.2	2.8

Corrected UGR values based on total output lumens

SHR = 1.0