

## Indoor Distribution Test Report

# Spectrum Lighting Inc.

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## Spectrum Lighting Photometric Lab

### Luminaire

AS01SQF NC 935 007 DL SP MW xx  
Nom 1" square recessed downlight

### Test Number

SP-01017

### Test Date

3/7/2019

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

### Summary of Results

#### Power

Input Watts	9.7 W
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#### Lumen Output

Output Lumens	514
Efficacy	52.97 lm/W

#### Luminous Dimensions

0° - 180° Size	0.07
90° - 270° Size	0.07
Height	0

#### Spacing Criterion

Two luminaires, plane 0°	0.39
Two luminaires, plane 90°	0.39
Four luminaires	0.41

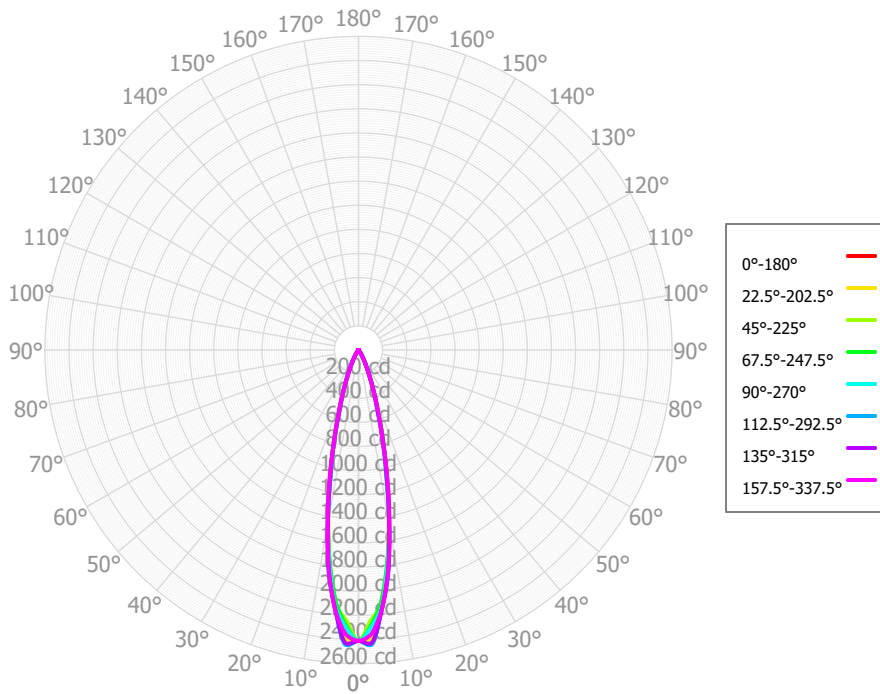
#### Full Beam Angle

0° - 180°	23°
90° - 270°	23°

### IES File Header Contents

Keyword	Value
TEST	SP-01017
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
TESTDATE	3/7/2019
ISSUEDATE	2/5/2020
LUMCAT	AS01SQF NC 935 007 DL SP MW xx
LUMINAIRE	Nom 1" square recessed downlight
OTHER	Beam angle: 23.3 degrees
LAMP	N/A
LAMPCAT	N/A, CRI: 90 min
OTHER	CCT Multipliers: 927 x 0.96, 930 x 0.99, 935 x 1.0, 940 x 1.02
OTHER	Total luminaire wattages is approximate
OTHER	This report prepared by Spectrum Lighting
_CRI	90+
_CCTMULT	927 x 0.96, 930 x 0.99, 940 x 1.02
_LAMPMULT	004 x 0.56

### Candela Polar Plot



### Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	184.05	35.82%	90.00° - 100.00°	0.07	0.01%
10.00° - 20.00°	216.19	42.07%	100.00° - 110.00°	0.00	0.00%
20.00° - 30.00°	80.80	15.72%	100.00° - 120.00°	0.00	0.00%
30.00° - 40.00°	18.77	3.65%	120.00° - 130.00°	0.00	0.00%
40.00° - 50.00°	6.38	1.24%	130.00° - 140.00°	0.00	0.00%
50.00° - 60.00°	3.45	0.67%	140.00° - 150.00°	0.00	0.00%
60.00° - 70.00°	1.68	0.33%	150.00° - 160.00°	0.00	0.00%
70.00° - 80.00°	1.36	0.26%	160.00° - 170.00°	0.00	0.00%
80.00° - 90.00°	1.11	0.22%	170.00° - 180.00°	0.00	0.00%
0.00° - 90.00°	513.78	99.99%	0.00° - 180.00°	513.86	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°	2,411.54	2,411.54	2,411.54	2,411.54	2,411.54	2,411.54	2,411.54	2,411.54	2,411.54	2,411.54	2,411.54	2,411.54	2,411.54	2,411.54	2,411.54	2,411.54	2,411.54
2.50°	2,442.35	2,392.21	2,251.04	2,294.16	2,309.69	2,447.70	2,433.81	2,363.17	2,442.35	2,392.21	2,251.04	2,294.16	2,309.69	2,447.70	2,433.81	2,363.17	2,442.35
5.00°	2,161.25	2,120.13	2,129.63	2,110.82	2,154.31	2,176.45	2,175.52	2,175.89	2,161.25	2,120.13	2,129.63	2,110.82	2,154.31	2,176.45	2,175.52	2,175.89	2,161.25
7.50°	1,861.44	1,825.66	1,814.03	1,803.69	1,829.38	1,881.67	1,870.26	1,869.34	1,861.44	1,825.66	1,814.03	1,803.69	1,829.38	1,881.67	1,870.26	1,869.34	1,861.44
10.00°	1,463.17	1,445.04	1,452.02	1,457.02	1,468.74	1,459.57	1,462.41	1,475.82	1,463.17	1,445.04	1,452.02	1,457.02	1,468.74	1,459.57	1,462.41	1,475.82	1,463.17
12.50°	1,085.66	1,085.64	1,110.13	1,088.35	1,075.64	1,063.70	1,090.96	1,114.13	1,085.66	1,085.64	1,110.13	1,088.35	1,075.64	1,063.70	1,090.96	1,114.13	1,085.66
15.00°	788.47	789.32	771.53	797.68	769.84	767.32	784.34	771.32	788.47	789.32	771.53	797.68	769.84	767.32	784.34	771.32	788.47
17.50°	527.66	536.40	557.83	541.19	528.17	510.69	537.73	539.50	527.66	536.40	557.83	541.19	528.17	510.69	537.73	539.50	527.66
20.00°	371.46	382.63	356.11	378.17	366.97	370.66	376.66	360.71	371.46	382.63	356.11	378.17	366.97	370.66	376.66	360.71	371.46
22.50°	239.57	253.45	253.28	246.64	253.19	250.47	251.91	247.53	239.57	253.45	253.28	246.64	253.19	250.47	251.91	247.53	239.57
25.00°	161.62	168.52	155.32	167.27	174.74	175.13	168.95	158.69	161.62	168.52	155.32	167.27	174.74	175.13	168.95	158.69	161.62
27.50°	98.61	101.80	106.49	101.46	113.32	112.76	108.41	105.70	98.61	101.80	106.49	101.46	113.32	112.76	108.41	105.70	98.61
30.00°	62.61	62.09	59.56	68.02	75.28	73.50	69.38	62.71	62.61	62.09	59.56	68.02	75.28	73.50	69.38	62.71	62.61
32.50°	36.20	35.01	40.55	40.46	45.98	44.01	43.52	41.89	36.20	35.01	40.55	40.46	45.98	44.01	43.52	41.89	36.20
35.00°	23.62	23.03	23.00	28.02	30.41	28.87	27.88	25.70	23.62	23.03	23.00	28.02	30.41	28.87	27.88	25.70	23.62
37.50°	14.92	15.22	17.42	17.29	18.71	18.37	18.92	18.65	14.92	15.22	17.42	17.29	18.71	18.37	18.92	18.65	14.92
40.00°	10.75	11.47	12.44	13.36	13.36	13.35	14.13	12.85	10.75	11.47	12.44	13.36	13.36	13.35	14.13	12.85	10.75
42.50°	8.09	8.90	10.60	9.82	9.35	9.90	10.97	10.30	8.09	8.90	10.60	9.82	9.35	9.90	10.97	10.30	8.09
45.00°	6.90	7.30	8.87	8.32	7.38	7.96	8.66	7.99	6.90	7.30	8.87	8.32	7.38	7.96	8.66	7.99	6.90
47.50°	5.74	6.05	7.53	6.85	5.69	6.75	7.70	6.38	5.74	6.05	7.53	6.85	5.69	6.75	7.70	6.38	5.74
50.00°	4.60	5.03	6.44	5.91	4.92	6.14	7.28	4.80	4.60	5.03	6.44	5.91	4.92	6.14	7.28	4.80	4.60
52.50°	3.72	4.01	6.02	4.95	4.22	5.08	6.33	3.94	3.72	4.01	6.02	4.95	4.22	5.08	6.33	3.94	3.72
55.00°	3.01	2.99	5.38	3.81	3.39	3.73	5.21	3.11	3.01	2.99	5.38	3.81	3.39	3.73	5.21	3.11	3.01
57.50°	2.57	2.41	4.27	2.77	2.57	2.77	3.87	2.56	2.57	2.41	4.27	2.77	2.57	2.77	3.87	2.56	2.57
60.00°	2.29	2.01	3.18	2.25	2.00	1.99	2.48	2.05	2.29	2.01	3.18	2.25	2.00	1.99	2.48	2.05	2.29
62.50°	1.87	1.75	2.16	1.80	1.47	1.72	2.10	1.82	1.87	1.75	2.16	1.80	1.47	1.72	2.10	1.82	1.87
65.00°	1.40	1.54	1.57	1.62	1.36	1.66	1.88	1.67	1.40	1.54	1.57	1.62	1.36	1.66	1.88	1.67	1.40
67.50°	1.31	1.48	1.58	1.44	1.27	1.64	1.62	1.78	1.31	1.48	1.58	1.44	1.27	1.64	1.62	1.78	1.31
70.00°	1.35	1.43	1.51	1.25	1.25	1.61	1.38	1.73	1.35	1.43	1.51	1.25	1.25	1.61	1.38	1.73	1.35
72.50°	1.17	1.34	1.39	1.22	1.16	1.43	1.40	1.52	1.17	1.34	1.39	1.22	1.16	1.43	1.40	1.52	1.17
75.00°	1.00	1.22	1.32	1.30	1.00	1.46	1.36	1.40	1.00	1.22	1.32	1.30	1.00	1.46	1.36	1.40	1.00
77.50°	1.09	1.15	1.27	1.18	0.96	1.57	1.19	1.43	1.09	1.15	1.27	1.18	0.96	1.57	1.19	1.43	1.09
80.00°	1.10	1.31	1.20	1.13	0.94	1.44	1.18	1.38	1.10	1.31	1.20	1.13	0.94	1.44	1.18	1.38	1.10
82.50°	1.05	1.52	1.19	1.20	0.93	1.12	1.21	1.17	1.05	1.52	1.19	1.20	0.93	1.12	1.21	1.17	1.05
85.00°	0.98	1.42	1.06	1.34	0.85	1.07	1.13	1.18	0.98	1.42	1.06	1.34	0.85	1.07	1.13	1.18	0.98
87.50°	0.59	1.25	0.97	0.90	0.95	1.25	0.68	0.53	0.59	1.25	0.97	0.90	0.95	1.25	0.68	0.53	0.59
90.00°	0.69	0.56	0.43	0.58	0.38	0.61	0.53	0.51	0.69	0.56	0.43	0.58	0.38	0.61	0.53	0.51	0.69
92.50°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95.00°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
97.50°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
102.50°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105.00°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
107.50°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110.00°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
112.50°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### Coefficients of Utilization – Zonal Cavity Method

Values are lumens delivered to the workplane.

<b>RCR</b>	<b>pfc</b>	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	0%
	<b>pcc</b>	80%	80%	80%	80%	70%	70%	70%	70%	50%	50%	50%	30%	30%	30%	10%	10%	0%
	<b>pw</b>	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	30%
	<b>0</b>	612	612	612	612	597	597	597	597	571	571	571	547	547	547	524	524	514
	<b>1</b>	590	579	569	559	578	568	559	551	547	540	534	528	523	518	511	507	497
	<b>2</b>	570	551	535	522	559	542	528	516	526	515	505	511	502	494	498	490	484
	<b>3</b>	551	527	508	493	542	520	503	489	507	493	481	495	484	474	485	475	466
	<b>4</b>	534	506	485	469	526	500	481	466	490	474	461	480	467	456	472	460	452
	<b>5</b>	518	487	465	449	511	482	462	447	474	457	444	466	452	440	459	446	439
	<b>6</b>	502	470	448	432	496	466	446	431	459	442	428	453	437	425	447	433	426
	<b>7</b>	488	454	433	417	483	451	431	416	446	428	414	441	424	412	436	421	415
	<b>8</b>	475	440	419	404	470	438	417	403	433	415	402	429	412	400	424	410	399
	<b>9</b>	462	427	406	392	458	425	405	391	421	403	390	417	401	389	414	399	388
	<b>10</b>	450	415	395	381	446	414	394	380	410	392	379	407	390	379	404	389	378

### Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	79.7 fc	2.3 ft
6.5 ft	57.1 fc	2.7 ft
7.5 ft	42.9 fc	3.1 ft
8.0 ft	37.7 fc	3.3 ft
10.0 ft	24.1 fc	4.1 ft
12.0 ft	16.7 fc	4.9 ft
14.0 ft	12.3 fc	5.7 ft
16.0 ft	9.4 fc	6.6 ft
20.0 ft	6.0 fc	8.2 ft
24.0 ft	4.2 fc	9.8 ft
28.0 ft	3.1 fc	11.5 ft

### Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
<b>0.00°</b>	5,297,475	5,297,475	5,297,475
<b>45.00°</b>	21,423	27,552	22,923
<b>55.00°</b>	11,514	20,611	12,995
<b>65.00°</b>	7,257	8,147	7,075
<b>75.00°</b>	8,492	11,202	8,512
<b>85.00°</b>	24,688	26,699	21,465

### UGR CIE 190:2010

<b>Ceiling reflectance</b>		<b>0.7</b>	<b>0.7</b>	<b>0.5</b>	<b>0.5</b>	<b>0.3</b>	<b>0.7</b>	<b>0.7</b>	<b>0.5</b>	<b>0.5</b>	<b>0.3</b>
<b>Wall reflectance</b>		<b>0.5</b>	<b>0.3</b>	<b>0.5</b>	<b>0.3</b>	<b>0.3</b>	<b>0.5</b>	<b>0.3</b>	<b>0.5</b>	<b>0.3</b>	<b>0.3</b>
<b>Plane reflectance</b>		<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
<b>Room dimensions</b>		<b>Viewed crosswise</b>					<b>Viewed endwise</b>				
<b>2H</b>	<b>2H</b>	8.9	9.8	9.2	10.1	10.4	9.4	10.4	9.8	10.7	11.0
	<b>3H</b>	10.5	11.3	10.8	11.6	12.0	10.7	11.5	11.0	11.8	12.2
	<b>4H</b>	11.2	12.0	11.7	12.3	12.7	11.4	12.2	11.8	12.5	12.9
	<b>6H</b>	12.4	13.1	12.9	13.5	13.9	12.4	13.0	12.8	13.4	13.8
	<b>8H</b>	13.2	13.8	13.6	14.2	14.6	13.0	13.6	13.4	14.0	14.4
	<b>12H</b>	14.0	14.6	14.4	15.0	15.4	13.7	14.3	14.1	14.6	15.1
<b>4H</b>	<b>2H</b>	9.3	10.0	9.7	10.4	10.8	9.8	10.5	10.2	10.9	11.3
	<b>3H</b>	11.3	11.9	11.7	12.3	12.7	11.4	12.0	11.8	12.4	12.8
	<b>4H</b>	12.4	12.9	12.8	13.3	13.8	12.5	13.0	12.9	13.4	13.9
	<b>6H</b>	13.8	14.3	14.3	14.8	15.2	13.8	14.2	14.3	14.7	15.2
	<b>8H</b>	14.7	15.2	15.2	15.6	16.1	14.5	14.9	15.0	15.4	15.9
	<b>12H</b>	15.7	16.1	16.2	16.6	17.1	15.3	15.7	15.8	16.2	16.7
<b>8H</b>	<b>4H</b>	12.9	13.3	13.3	13.7	14.2	13.0	13.4	13.4	13.9	14.3
	<b>6H</b>	14.7	15.1	15.3	15.6	16.1	14.7	15.0	15.2	15.5	16.0
	<b>8H</b>	15.9	16.2	16.5	16.7	17.2	15.6	15.9	16.2	16.4	16.9
	<b>12H</b>	17.2	17.5	17.8	18.0	18.6	16.8	17.0	17.3	17.5	18.1
<b>12H</b>	<b>4H</b>	13.0	13.4	13.5	13.9	14.3	13.1	13.5	13.6	14.0	14.4
	<b>6H</b>	15.0	15.3	15.5	15.8	16.3	14.9	15.2	15.5	15.7	16.2
	<b>8H</b>	16.3	16.6	16.8	17.1	17.7	16.0	16.3	16.6	16.8	17.4

Corrected UGR values based on total output lumens

SHR = 1.0