

## Indoor Distribution Test Report

# Spectrum Lighting Inc.

994 Jefferson Street  
Fall River, MA 02721  
+1.508.678.2303

## Spectrum Lighting Photometric Lab

### Luminaire

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

### Test Number

SP-01016

### 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
-------------	-------

#### Lumen Output

Output Lumens	441
Efficacy	45.5 lm/W

#### Luminous Dimensions

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

#### Spacing Criterion

Two luminaires, plane 0°	0.45
Two luminaires, plane 90°	0.45
Four luminaires	0.47

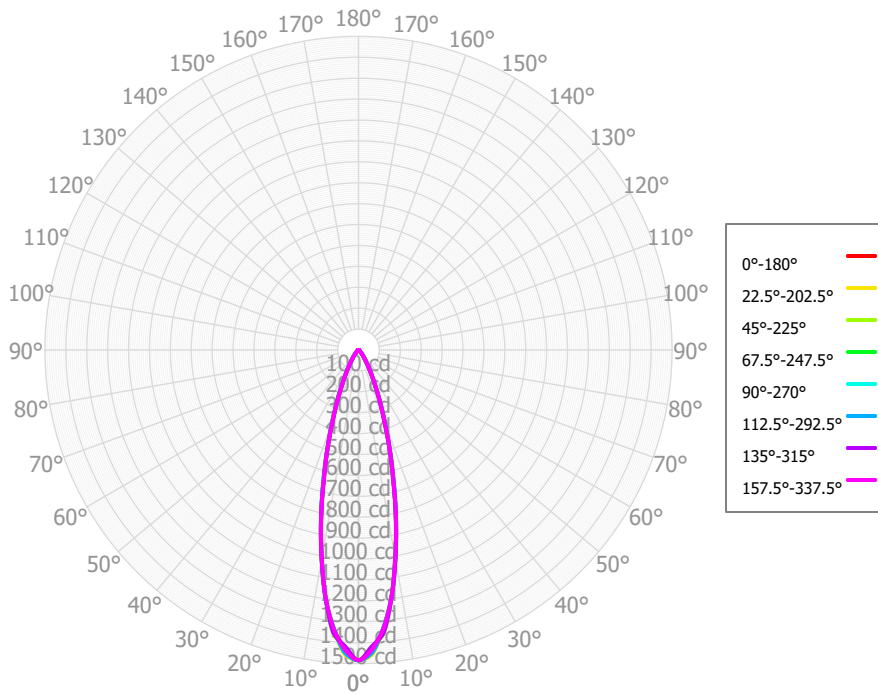
#### Full Beam Angle

0° - 180°	27°
90° - 270°	27°

### IES File Header Contents

Keyword	Value
TEST	SP-01016
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 NF MW xx
LUMINAIRE	Nom 1" square recessed downlight
OTHER	Beam angle: 27.3 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°	118.77	26.91%	90.00° - 100.00°	0.07	0.02%
10.00° - 20.00°	176.66	40.03%	100.00° - 110.00°	0.00	0.00%
20.00° - 30.00°	91.58	20.75%	100.00° - 120.00°	0.00	0.00%
30.00° - 40.00°	33.58	7.61%	120.00° - 130.00°	0.00	0.00%
40.00° - 50.00°	12.32	2.79%	130.00° - 140.00°	0.00	0.00%
50.00° - 60.00°	4.21	0.95%	140.00° - 150.00°	0.00	0.00%
60.00° - 70.00°	1.73	0.39%	150.00° - 160.00°	0.00	0.00%
70.00° - 80.00°	1.29	0.29%	160.00° - 170.00°	0.00	0.00%
80.00° - 90.00°	1.13	0.26%	170.00° - 180.00°	0.00	0.00%
0.00° - 90.00°	441.25	99.98%	0.00° - 180.00°	441.33	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°	1,484.16	1,484.16	1,484.16	1,484.16	1,484.16	1,484.16	1,484.16	1,484.16	1,484.16	1,484.16	1,484.16	1,484.16	1,484.16	1,484.16	1,484.16	1,484.16	1,484.16
2.50°	1,428.78	1,459.29	1,424.27	1,451.25	1,446.85	1,452.06	1,421.92	1,437.97	1,428.78	1,459.29	1,424.27	1,451.25	1,446.85	1,452.06	1,421.92	1,437.97	1,428.78
5.00°	1,349.11	1,342.37	1,364.87	1,341.52	1,342.02	1,341.49	1,361.64	1,343.15	1,349.11	1,342.37	1,364.87	1,341.52	1,342.02	1,341.49	1,361.64	1,343.15	1,349.11
7.50°	1,200.06	1,203.18	1,200.50	1,201.00	1,201.11	1,204.32	1,201.35	1,200.41	1,200.06	1,203.18	1,200.50	1,201.00	1,201.11	1,204.32	1,201.35	1,200.41	1,200.06
10.00°	1,012.75	1,011.55	1,017.28	1,011.52	1,013.28	1,013.26	1,017.07	1,010.81	1,012.75	1,011.55	1,017.28	1,011.52	1,013.28	1,013.26	1,017.07	1,010.81	1,012.75
12.50°	827.89	824.84	828.31	825.96	829.31	826.73	828.09	825.02	827.89	824.84	828.31	825.96	829.31	826.73	828.09	825.02	827.89
15.00°	644.31	649.07	638.35	646.50	650.12	648.88	638.07	642.78	644.31	649.07	638.35	646.50	650.12	648.88	638.07	642.78	644.31
17.50°	495.99	490.64	494.50	489.99	495.41	490.91	492.99	490.24	495.99	490.64	494.50	489.99	495.41	490.91	492.99	490.24	495.99
20.00°	365.06	369.73	357.81	367.34	370.29	368.94	357.00	363.99	365.06	369.73	357.81	367.34	370.29	368.94	357.00	363.99	365.06
22.50°	270.25	265.59	269.07	266.09	268.90	265.30	267.36	266.02	270.25	265.59	269.07	266.09	268.90	265.30	267.36	266.02	270.25
25.00°	192.84	195.70	186.97	194.83	194.78	194.10	186.75	192.55	192.84	195.70	186.97	194.83	194.78	194.10	186.75	192.55	192.84
27.50°	139.85	136.99	137.87	137.74	137.55	135.82	137.95	138.17	139.85	136.99	137.87	137.74	137.55	135.82	137.95	138.17	139.85
30.00°	97.96	99.85	93.13	100.09	98.80	99.23	94.79	99.48	97.96	99.85	93.13	100.09	98.80	99.23	94.79	99.48	97.96
32.50°	71.09	69.20	69.91	70.64	69.56	69.68	70.61	71.35	71.09	69.20	69.91	70.64	69.56	69.68	70.61	71.35	71.09
35.00°	50.65	50.79	49.18	51.87	50.49	51.35	49.46	51.48	50.65	50.79	49.18	51.87	50.49	51.35	49.46	51.48	50.65
37.50°	37.33	35.95	37.72	37.36	36.03	36.58	37.12	37.32	37.33	35.95	37.72	37.36	36.03	36.58	37.12	37.32	37.33
40.00°	26.97	27.47	27.19	28.11	26.26	27.37	26.12	27.55	26.97	27.47	27.19	28.11	26.26	27.37	26.12	27.55	26.97
42.50°	20.18	20.40	21.22	20.88	18.85	20.06	20.63	20.42	20.18	20.40	21.22	20.88	18.85	20.06	20.63	20.42	20.18
45.00°	14.80	15.70	15.67	16.05	13.74	15.56	15.90	15.23	14.80	15.70	15.67	16.05	13.74	15.56	15.90	15.23	14.80
47.50°	10.56	11.54	12.58	11.77	9.64	11.65	13.04	11.23	10.56	11.54	12.58	11.77	9.64	11.65	13.04	11.23	10.56
50.00°	6.75	8.24	9.67	8.11	6.50	8.56	10.41	8.06	6.75	8.24	9.67	8.11	6.50	8.56	10.41	8.06	6.75
52.50°	4.76	5.71	7.89	5.38	4.39	5.95	8.34	5.75	4.76	5.71	7.89	5.38	4.39	5.95	8.34	5.75	4.76
55.00°	3.43	4.36	6.19	3.66	3.20	3.99	6.33	4.01	3.43	4.36	6.19	3.66	3.20	3.99	6.33	4.01	3.43
57.50°	2.75	3.30	4.51	2.61	2.38	2.75	4.69	2.92	2.75	3.30	4.51	2.61	2.38	2.75	4.69	2.92	2.75
60.00°	2.29	2.64	2.83	2.25	1.87	2.46	3.08	2.24	2.29	2.64	2.83	2.25	1.87	2.46	3.08	2.24	2.29
62.50°	1.88	2.14	2.35	1.95	1.50	2.09	2.28	1.81	1.88	2.14	2.35	1.95	1.50	2.09	2.28	1.81	1.88
65.00°	1.49	1.83	1.92	1.71	1.23	1.64	1.55	1.53	1.49	1.83	1.92	1.71	1.23	1.64	1.55	1.53	1.49
67.50°	1.40	1.56	1.55	1.57	1.12	1.42	1.77	1.34	1.40	1.56	1.55	1.57	1.12	1.42	1.77	1.34	1.40
70.00°	1.37	1.31	1.27	1.48	1.10	1.41	1.81	1.20	1.37	1.31	1.27	1.48	1.10	1.41	1.81	1.20	1.37
72.50°	1.32	1.28	1.23	1.30	1.13	1.34	1.24	1.06	1.32	1.28	1.23	1.30	1.13	1.34	1.24	1.06	1.32
75.00°	1.24	1.32	1.10	1.15	1.20	1.27	1.12	1.00	1.24	1.32	1.10	1.15	1.20	1.27	1.12	1.00	1.24
77.50°	1.16	1.38	1.01	1.13	1.35	1.29	1.21	1.06	1.16	1.38	1.01	1.13	1.35	1.29	1.21	1.06	1.16
80.00°	1.10	1.36	1.15	1.17	1.37	1.14	1.13	0.88	1.10	1.36	1.15	1.17	1.37	1.14	1.13	0.88	1.10
82.50°	1.11	1.21	1.21	0.99	1.11	1.12	1.14	1.01	1.11	1.21	1.21	0.99	1.11	1.12	1.14	1.01	1.11
85.00°	1.00	0.98	1.29	1.00	0.88	1.38	1.15	1.04	1.00	0.98	1.29	1.00	0.88	1.38	1.15	1.04	1.00
87.50°	0.98	1.16	1.17	1.14	1.19	0.92	0.89	1.20	0.98	1.16	1.17	1.14	1.19	0.92	0.89	1.20	0.98
90.00°	0.52	0.54	0.60	0.71	0.53	0.47	0.41	0.53	0.52	0.54	0.60	0.71	0.53	0.47	0.41	0.53	0.52
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>	525	525	525	525	513	513	513	513	490	490	490	469	469	469	450	450	441
	<b>1</b>	505	494	485	476	494	485	476	469	467	460	454	451	446	441	436	432	428
	<b>2</b>	485	467	452	440	476	460	446	435	446	435	425	433	424	416	421	414	408
	<b>3</b>	467	443	425	411	458	437	421	407	426	412	401	416	404	395	406	397	389
	<b>4</b>	449	422	402	387	442	417	399	385	408	393	380	400	387	376	392	381	372
	<b>5</b>	433	403	382	367	427	399	380	366	392	375	362	385	371	359	379	366	356
	<b>6</b>	418	386	365	350	412	383	363	349	377	359	346	371	356	344	366	353	342
	<b>7</b>	403	371	350	335	398	368	348	334	363	345	332	358	342	331	354	340	329
	<b>8</b>	390	357	336	321	385	354	334	321	350	332	319	346	330	318	342	328	317
	<b>9</b>	377	344	323	309	373	342	322	308	338	320	308	335	318	307	331	317	306
	<b>10</b>	365	332	311	298	362	330	311	298	327	309	297	324	308	296	321	306	295

### Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	49.1 fc	2.7 ft
6.5 ft	35.1 fc	3.2 ft
7.5 ft	26.4 fc	3.6 ft
8.0 ft	23.2 fc	3.9 ft
10.0 ft	14.8 fc	4.9 ft
12.0 ft	10.3 fc	5.8 ft
14.0 ft	7.6 fc	6.8 ft
16.0 ft	5.8 fc	7.8 ft
20.0 ft	3.7 fc	9.7 ft
24.0 ft	2.6 fc	11.7 ft
28.0 ft	1.9 fc	13.6 ft

### Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
<b>0.00°</b>	3,260,268	3,260,268	3,260,268
<b>45.00°</b>	45,973	48,695	42,678
<b>55.00°</b>	13,129	23,711	12,268
<b>65.00°</b>	7,755	9,983	6,415
<b>75.00°</b>	10,548	9,334	10,208
<b>85.00°</b>	25,120	32,563	22,196

### 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>	10.7	11.7	11.1	12.0	12.3	9.7	10.7	10.1	11.0	11.3
	<b>3H</b>	11.7	12.5	12.1	12.9	13.2	10.9	11.7	11.2	12.0	12.4
	<b>4H</b>	12.4	13.2	12.8	13.5	13.9	11.7	12.5	12.1	12.9	13.3
	<b>6H</b>	13.4	14.1	13.8	14.5	14.9	13.3	14.0	13.7	14.3	14.7
	<b>8H</b>	14.0	14.7	14.5	15.1	15.5	14.0	14.6	14.4	15.0	15.5
	<b>12H</b>	14.8	15.4	15.2	15.8	16.2	14.7	15.3	15.1	15.7	16.1
<b>4H</b>	<b>2H</b>	10.9	11.7	11.3	12.1	12.5	10.1	10.9	10.5	11.2	11.6
	<b>3H</b>	12.2	12.8	12.6	13.2	13.6	11.7	12.3	12.1	12.7	13.1
	<b>4H</b>	13.1	13.7	13.6	14.1	14.6	12.7	13.3	13.2	13.7	14.2
	<b>6H</b>	14.4	14.9	14.9	15.4	15.8	14.4	14.9	14.9	15.4	15.9
	<b>8H</b>	15.2	15.7	15.7	16.1	16.6	15.3	15.7	15.8	16.2	16.7
	<b>12H</b>	16.2	16.5	16.6	17.0	17.5	16.1	16.5	16.6	17.0	17.5
<b>8H</b>	<b>4H</b>	13.5	13.9	14.0	14.4	14.9	13.1	13.6	13.6	14.0	14.5
	<b>6H</b>	15.1	15.5	15.6	16.0	16.5	15.1	15.5	15.6	16.0	16.5
	<b>8H</b>	16.1	16.4	16.7	17.0	17.5	16.2	16.5	16.7	17.0	17.5
	<b>12H</b>	17.3	17.6	17.8	18.1	18.7	17.4	17.6	17.9	18.1	18.7
<b>12H</b>	<b>4H</b>	13.6	14.0	14.1	14.5	14.9	13.3	13.6	13.8	14.1	14.6
	<b>6H</b>	15.3	15.7	15.9	16.1	16.7	15.3	15.7	15.9	16.1	16.7
	<b>8H</b>	16.5	16.8	17.0	17.3	17.9	16.5	16.8	17.1	17.3	17.9

Corrected UGR values based on total output lumens

SHR = 1.0