

Indoor Distribution Test Report

Spectrum Lighting Inc.

994 Jefferson Street
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Spectrum Lighting Photometric Lab

Luminaire

AS01SQF NC 935 004 DL NF MW xx
Nom 1" square recessed downlight

Test Number

SP-01016_M-4L

Test Date

3/7/2019

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

Summary of Results

Power

Input Watts	6.3 W
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Lumen Output

Output Lumens	252
Efficacy	40.03 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

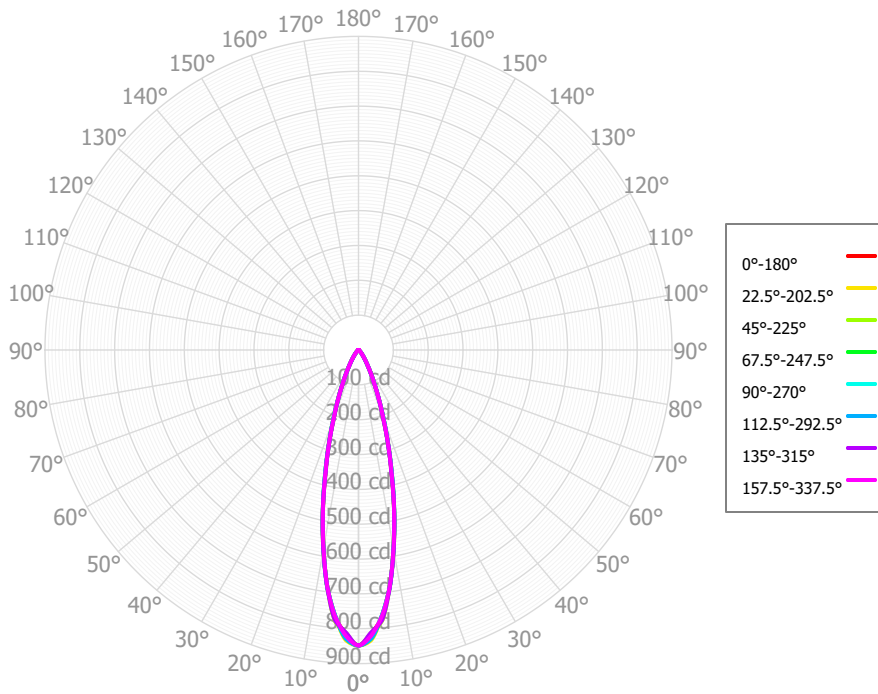
Full Beam Angle

0° - 180°	27°
90° - 270°	27°

IES File Header Contents

Keyword	Value
TEST	SP-01016_M-4L
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
TESTDATE	3/7/2019
ISSUEDATE	2/5/2020
LUMCAT	AS01SQF NC 935 004 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, 940 x 1.02
OTHER	Total luminaire wattages is approximate
OTHER	This report prepared by Spectrum Lighting, scaled from 7L

Candela Polar Plot



Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	67.87	26.91%	90.00° - 100.00°	0.04	0.02%
10.00° - 20.00°	100.95	40.03%	100.00° - 110.00°	0.00	0.00%
20.00° - 30.00°	52.33	20.75%	100.00° - 120.00°	0.00	0.00%
30.00° - 40.00°	19.19	7.61%	120.00° - 130.00°	0.00	0.00%
40.00° - 50.00°	7.04	2.79%	130.00° - 140.00°	0.00	0.00%
50.00° - 60.00°	2.40	0.95%	140.00° - 150.00°	0.00	0.00%
60.00° - 70.00°	0.99	0.39%	150.00° - 160.00°	0.00	0.00%
70.00° - 80.00°	0.74	0.29%	160.00° - 170.00°	0.00	0.00%
80.00° - 90.00°	0.64	0.26%	170.00° - 180.00°	0.00	0.00%
0.00° - 90.00°	252.14	99.98%	0.00° - 180.00°	252.19	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°	848.09	848.09	848.09	848.09	848.09	848.09	848.09	848.09	848.09	848.09	848.09	848.09	848.09	848.09	848.09	848.09	848.09
2.50°	816.45	833.88	813.87	829.28	826.77	829.75	812.53	821.70	816.45	833.88	813.87	829.28	826.77	829.75	812.53	821.70	816.45
5.00°	770.92	767.07	779.93	766.58	766.87	766.56	778.08	767.51	770.92	767.07	779.93	766.58	766.87	766.56	778.08	767.51	770.92
7.50°	685.75	687.53	686.00	686.29	686.35	688.18	686.49	685.95	685.75	687.53	686.00	686.29	686.35	688.18	686.49	685.95	685.75
10.00°	578.72	578.03	581.30	578.01	579.02	579.00	581.18	577.61	578.72	578.03	581.30	578.01	579.02	579.00	581.18	577.61	578.72
12.50°	473.08	471.34	473.32	471.98	473.89	472.41	473.19	471.44	473.08	471.34	473.32	471.98	473.89	472.41	473.19	471.44	473.08
15.00°	368.18	370.90	364.77	369.43	371.50	370.79	364.61	367.30	368.18	370.90	364.77	369.43	371.50	370.79	364.61	367.30	368.18
17.50°	283.42	280.36	282.57	279.99	283.09	280.52	281.71	280.14	283.42	280.36	282.57	279.99	283.09	280.52	281.71	280.14	283.42
20.00°	208.61	211.28	204.46	209.91	211.60	210.82	204.00	207.99	208.61	211.28	204.46	209.91	211.60	210.82	204.00	207.99	208.61
22.50°	154.43	151.77	153.75	152.05	153.66	151.60	152.78	152.01	154.43	151.77	153.75	152.05	153.66	151.60	152.78	152.01	154.43
25.00°	110.20	111.83	106.84	111.33	111.30	110.91	106.71	110.03	110.20	111.83	106.84	111.33	111.30	110.91	106.71	110.03	110.20
27.50°	79.91	78.28	78.79	78.71	78.60	77.61	78.83	78.95	79.91	78.28	78.79	78.71	78.60	77.61	78.83	78.95	79.91
30.00°	55.98	57.06	53.22	57.19	56.46	56.70	54.17	56.84	55.98	57.06	53.22	57.19	56.46	56.70	54.17	56.84	55.98
32.50°	40.62	39.55	39.95	40.36	39.75	39.82	40.35	40.77	40.62	39.55	39.95	40.36	39.75	39.82	40.35	40.77	40.62
35.00°	28.95	29.03	28.10	29.64	28.85	29.34	28.26	29.41	28.95	29.03	28.10	29.64	28.85	29.34	28.26	29.41	28.95
37.50°	21.33	20.54	21.55	21.35	20.59	20.91	21.21	21.33	21.33	20.54	21.55	21.35	20.59	20.91	21.21	21.33	21.33
40.00°	15.41	15.70	15.54	16.06	15.01	15.64	14.93	15.74	15.41	15.70	15.54	16.06	15.01	15.64	14.93	15.74	15.41
42.50°	11.53	11.66	12.13	11.93	10.77	11.46	11.79	11.67	11.53	11.66	12.13	11.93	10.77	11.46	11.79	11.67	11.53
45.00°	8.46	8.97	8.96	9.17	7.85	8.89	9.09	8.70	8.46	8.97	8.96	9.17	7.85	8.89	9.09	8.70	8.46
47.50°	6.03	6.59	7.19	6.73	5.51	6.66	7.45	6.42	6.03	6.59	7.19	6.73	5.51	6.66	7.45	6.42	6.03
50.00°	3.86	4.71	5.53	4.63	3.71	4.89	5.95	4.61	3.86	4.71	5.53	4.63	3.71	4.89	5.95	4.61	3.86
52.50°	2.72	3.26	4.51	3.07	2.51	3.40	4.76	3.29	2.72	3.26	4.51	3.07	2.51	3.40	4.76	3.29	2.72
55.00°	1.96	2.49	3.54	2.09	1.83	2.28	3.61	2.29	1.96	2.49	3.54	2.09	1.83	2.28	3.61	2.29	1.96
57.50°	1.57	1.88	2.58	1.49	1.36	1.57	2.68	1.67	1.57	1.88	2.58	1.49	1.36	1.57	2.68	1.67	1.57
60.00°	1.31	1.51	1.61	1.28	1.07	1.41	1.76	1.28	1.31	1.51	1.61	1.28	1.07	1.41	1.76	1.28	1.31
62.50°	1.08	1.22	1.34	1.11	0.86	1.20	1.31	1.03	1.08	1.22	1.34	1.11	0.86	1.20	1.31	1.03	1.08
65.00°	0.85	1.05	1.10	0.98	0.71	0.94	0.89	0.87	0.85	1.05	1.10	0.98	0.71	0.94	0.89	0.87	0.85
67.50°	0.80	0.89	0.89	0.89	0.64	0.81	1.01	0.77	0.80	0.89	0.89	0.89	0.64	0.81	1.01	0.77	0.80
70.00°	0.78	0.75	0.72	0.85	0.63	0.81	1.04	0.69	0.78	0.75	0.72	0.85	0.63	0.81	1.04	0.69	0.78
72.50°	0.75	0.73	0.70	0.74	0.65	0.76	0.71	0.61	0.75	0.73	0.70	0.74	0.65	0.76	0.71	0.61	0.75
75.00°	0.71	0.75	0.63	0.65	0.69	0.73	0.64	0.57	0.71	0.75	0.63	0.65	0.69	0.73	0.64	0.57	0.71
77.50°	0.66	0.79	0.58	0.65	0.77	0.74	0.69	0.61	0.66	0.79	0.58	0.65	0.77	0.74	0.69	0.61	0.66
80.00°	0.63	0.78	0.66	0.67	0.78	0.65	0.64	0.50	0.63	0.78	0.66	0.67	0.78	0.65	0.64	0.50	0.63
82.50°	0.63	0.69	0.69	0.56	0.64	0.64	0.65	0.58	0.63	0.69	0.69	0.56	0.64	0.64	0.65	0.58	0.63
85.00°	0.57	0.56	0.74	0.57	0.50	0.79	0.66	0.60	0.57	0.56	0.74	0.57	0.50	0.79	0.66	0.60	0.57
87.50°	0.56	0.66	0.67	0.65	0.68	0.52	0.51	0.69	0.56	0.66	0.67	0.65	0.68	0.52	0.51	0.69	0.56
90.00°	0.30	0.31	0.35	0.41	0.30	0.27	0.23	0.31	0.30	0.31	0.35	0.41	0.30	0.27	0.23	0.31	0.30
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.

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	300	300	300	300	293	293	293	293	280	280	280	268	268	268	257	257	252
	1	288	282	277	272	282	277	272	268	267	263	260	258	255	252	249	247	245
	2	277	267	258	251	272	263	255	248	255	248	243	247	242	238	241	236	233
	3	267	253	243	235	262	250	240	233	244	236	229	238	231	226	232	227	222
	4	257	241	230	221	253	239	228	220	233	224	217	229	221	215	224	218	213
	5	247	230	219	210	244	228	217	209	224	214	207	220	212	205	216	209	204
	6	239	221	209	200	235	219	208	199	215	205	198	212	203	197	209	201	195
	7	231	212	200	191	228	210	199	191	207	197	190	205	196	189	202	194	188
	8	223	204	192	184	220	202	191	183	200	190	182	198	188	182	195	187	181
	9	216	196	185	177	213	195	184	176	193	183	176	191	182	175	189	181	175
	10	209	189	178	170	207	189	177	170	187	177	170	185	176	169	183	175	169

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	28.0 fc	2.7 ft
6.5 ft	20.1 fc	3.2 ft
7.5 ft	15.1 fc	3.6 ft
8.0 ft	13.3 fc	3.9 ft
10.0 ft	8.5 fc	4.9 ft
12.0 ft	5.9 fc	5.8 ft
14.0 ft	4.3 fc	6.8 ft
16.0 ft	3.3 fc	7.8 ft
20.0 ft	2.1 fc	9.7 ft
24.0 ft	1.5 fc	11.7 ft
28.0 ft	1.1 fc	13.6 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	1,863,010	1,863,010	1,863,010
45.00°	26,270	27,826	24,387
55.00°	7,502	13,549	7,010
65.00°	4,431	5,704	3,666
75.00°	6,027	5,334	5,833
85.00°	14,354	18,607	12,683

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	8.8	9.7	9.1	10.0	10.3	7.8	8.7	8.1	9.0	9.3
	3H	9.7	10.6	10.1	10.9	11.3	8.9	9.8	9.3	10.1	10.5
	4H	10.5	11.2	10.9	11.6	12.0	9.8	10.6	10.2	10.9	11.3
	6H	11.5	12.2	11.9	12.5	12.9	11.3	12.0	11.7	12.4	12.8
	8H	12.1	12.8	12.5	13.1	13.6	12.0	12.7	12.5	13.1	13.5
	12H	12.8	13.5	13.3	13.9	14.3	12.7	13.4	13.2	13.7	14.2
4H	2H	9.0	9.8	9.4	10.1	10.5	8.2	8.9	8.6	9.3	9.7
	3H	10.3	10.9	10.7	11.3	11.7	9.7	10.3	10.1	10.8	11.2
	4H	11.2	11.7	11.6	12.2	12.6	10.8	11.4	11.2	11.8	12.2
	6H	12.5	13.0	13.0	13.4	13.9	12.5	13.0	13.0	13.4	13.9
	8H	13.3	13.7	13.8	14.2	14.7	13.3	13.8	13.8	14.2	14.7
	12H	14.2	14.6	14.7	15.1	15.6	14.2	14.6	14.7	15.1	15.5
8H	4H	11.5	12.0	12.0	12.4	12.9	11.2	11.6	11.7	12.1	12.6
	6H	13.2	13.5	13.7	14.0	14.5	13.2	13.5	13.7	14.0	14.5
	8H	14.2	14.5	14.7	15.0	15.5	14.2	14.5	14.7	15.0	15.5
	12H	15.4	15.6	15.9	16.1	16.7	15.4	15.7	15.9	16.2	16.8
12H	4H	11.6	12.0	12.1	12.5	13.0	11.3	11.7	11.8	12.2	12.7
	6H	13.4	13.7	13.9	14.2	14.7	13.4	13.7	13.9	14.2	14.7
	8H	14.6	14.8	15.1	15.3	15.9	14.6	14.9	15.1	15.4	15.9

Corrected UGR values based on total output lumens

SHR = 1.0