Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

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

Test Number
SP-01015

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	382
Efficacy	39.36 lm/W

Luminous Dimensions

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

Spacing Criterion

Two luminaires, plane 0°	0.55
Two luminaires, plane 90°	0.56
Four luminaires	0.6

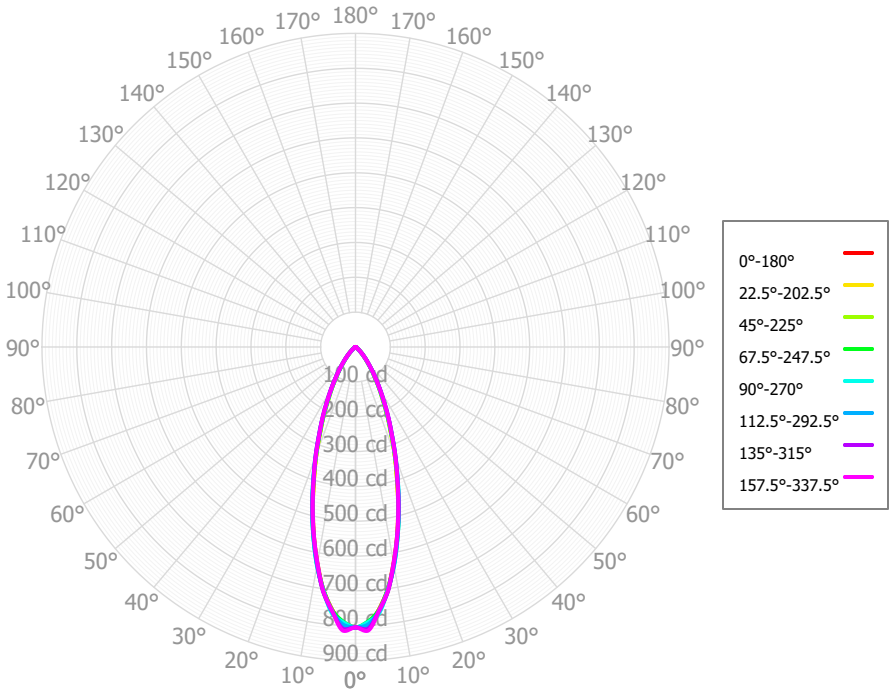
Full Beam Angle

0° - 180°	34°
90° - 270°	35°

IES File Header Contents

Keyword	Value
TEST	SP-01015
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 FL MW xx
LUMINAIRE	Nom 1" square recessed downlight
OTHER	Beam angle: 33.3 degrees
LAMP	N/A
LAMPCAT	N/A, CRI: 90 min
OTHER	CCT Multiplers: 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°	69.34	18.16%	90.00° - 100.00°	0.08	0.02%
10.00° - 20.00°	130.36	34.14%	100.00° - 110.00°	0.00	0.00%
20.00° - 30.00°	100.56	26.34%	100.00° - 120.00°	0.00	0.00%
30.00° - 40.00°	52.31	13.70%	120.00° - 130.00°	0.00	0.00%
40.00° - 50.00°	19.40	5.08%	130.00° - 140.00°	0.00	0.00%
50.00° - 60.00°	5.01	1.31%	140.00° - 150.00°	0.00	0.00%
60.00° - 70.00°	2.08	0.55%	150.00° - 160.00°	0.00	0.00%
70.00° - 80.00°	1.41	0.37%	160.00° - 170.00°	0.00	0.00%
80.00° - 90.00°	1.25	0.33%	170.00° - 180.00°	0.00	0.00%
0.00° - 90.00°	381.72	99.98%	0.00° - 180.00°	381.80	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°	804.92	804.92	804.92	804.92	804.92	804.92	804.92	804.92	804.92	804.92	804.92	804.92	804.92	804.92	804.92	804.92	804.92
2.50°	804.29	803.77	797.13	789.88	791.51	798.41	809.82	815.15	804.29	803.77	797.13	789.88	791.51	798.41	809.82	815.15	804.29
5.00°	758.60	759.56	759.60	760.51	768.46	763.74	762.58	762.27	758.60	759.56	759.60	760.51	768.46	763.74	762.58	762.27	758.60
7.50°	704.48	708.13	705.68	703.76	705.58	707.10	709.51	707.61	704.48	708.13	705.68	703.76	705.58	707.10	709.51	707.61	704.48
10.00°	629.31	632.35	633.30	635.06	637.36	635.71	632.55	630.43	629.31	632.35	633.30	635.06	637.36	635.71	632.55	630.43	629.31
12.50°	552.37	554.61	555.15	557.71	558.92	557.32	554.50	553.14	552.37	554.61	555.15	557.71	558.92	557.32	554.50	553.14	552.37
15.00°	472.07	474.17	475.90	479.28	479.98	480.05	477.10	475.17	472.07	474.17	475.90	479.28	479.98	480.05	477.10	475.17	472.07
17.50°	396.95	394.41	396.41	400.27	405.11	403.17	400.72	399.57	396.95	394.41	396.41	400.27	405.11	403.17	400.72	399.57	396.95
20.00°	329.26	327.96	329.39	331.73	331.50	336.54	335.94	333.51	329.26	327.96	329.39	331.73	331.50	336.54	335.94	333.51	329.26
22.50°	269.42	263.60	263.95	267.42	273.89	272.42	273.40	271.80	269.42	263.60	263.95	267.42	273.89	272.42	273.40	271.80	269.42
25.00°	218.21	215.12	214.85	216.63	218.42	222.86	223.81	222.16	218.21	215.12	214.85	216.63	218.42	222.86	223.81	222.16	218.21
27.50°	174.69	169.23	166.73	169.85	176.32	175.48	177.23	176.48	174.69	169.23	166.73	169.85	176.32	175.48	177.23	176.48	174.69
30.00°	137.83	134.90	133.86	135.17	136.81	141.03	141.97	138.84	137.83	134.90	133.86	135.17	136.81	141.03	141.97	138.84	137.83
32.50°	107.38	103.36	101.88	102.84	107.31	107.47	109.67	106.62	107.38	103.36	101.88	102.84	107.31	107.47	109.67	106.62	107.38
35.00°	81.16	80.58	80.39	80.58	80.61	84.96	85.27	82.92	81.16	80.58	80.39	80.58	80.61	84.96	85.27	82.92	81.16
37.50°	61.31	60.46	60.11	59.40	61.71	62.97	64.18	62.85	61.31	60.46	60.11	59.40	61.71	62.97	64.18	62.85	61.31
40.00°	44.63	46.32	46.94	45.39	45.00	48.14	49.58	47.12	44.63	46.32	46.94	45.39	45.00	48.14	49.58	47.12	44.63
42.50°	31.89	33.65	34.76	31.80	32.77	34.07	37.07	33.95	31.89	33.65	34.76	31.80	32.77	34.07	37.07	33.95	31.89
45.00°	20.63	23.47	26.46	23.45	21.93	25.24	27.62	23.12	20.63	23.47	26.46	23.45	21.93	25.24	27.62	23.12	20.63
47.50°	13.46	15.72	19.11	15.43	13.22	17.00	19.90	15.21	13.46	15.72	19.11	15.43	13.22	17.00	19.90	15.21	13.46
50.00°	7.34	11.15	14.37	10.67	7.54	11.41	14.18	9.39	7.34	11.15	14.37	10.67	7.54	11.41	14.18	9.39	7.34
52.50°	5.41	7.39	10.15	6.39	5.48	6.74	9.90	6.14	5.41	7.39	10.15	6.39	5.48	6.74	9.90	6.14	5.41
55.00°	4.17	4.42	6.95	4.76	4.04	4.81	6.91	4.28	4.17	4.42	6.95	4.76	4.04	4.81	6.91	4.28	4.17
57.50°	3.46	3.05	4.56	3.35	3.17	3.37	4.83	3.25	3.46	3.05	4.56	3.35	3.17	3.37	4.83	3.25	3.46
60.00°	2.80	2.89	3.37	2.78	2.54	2.97	3.36	2.54	2.80	2.89	3.37	2.78	2.54	2.97	3.36	2.54	2.80
62.50°	2.36	2.71	2.52	2.30	2.07	2.57	2.56	2.19	2.36	2.71	2.52	2.30	2.07	2.57	2.56	2.19	2.36
65.00°	1.93	2.52	2.04	2.03	1.79	2.16	2.11	1.95	1.93	2.52	2.04	2.03	1.79	2.16	2.11	1.95	1.93
67.50°	1.74	1.99	1.69	1.79	1.63	1.80	1.82	1.63	1.74	1.99	1.69	1.79	1.63	1.80	1.82	1.63	1.74
70.00°	1.57	1.36	1.43	1.61	1.59	1.48	1.57	1.36	1.57	1.36	1.43	1.61	1.59	1.48	1.57	1.36	1.57
72.50°	1.49	1.36	1.36	1.53	1.56	1.39	1.45	1.33	1.49	1.36	1.36	1.53	1.56	1.39	1.45	1.33	1.49
75.00°	1.39	1.29	1.30	1.50	1.33	1.31	1.37	1.30	1.39	1.29	1.30	1.50	1.33	1.31	1.37	1.30	1.39
77.50°	1.25	1.16	1.15	1.31	1.19	1.08	1.29	1.26	1.25	1.16	1.15	1.31	1.19	1.08	1.29	1.26	1.25
80.00°	1.19	1.22	1.13	1.30	1.16	1.20	1.00	1.17	1.19	1.22	1.13	1.30	1.16	1.20	1.00	1.17	1.19
82.50°	1.17	1.29	1.24	1.21	1.26	1.36	1.28	1.22	1.17	1.29	1.24	1.21	1.26	1.36	1.28	1.22	1.17
85.00°	1.19	1.30	1.47	1.18	1.26	1.06	1.26	1.17	1.19	1.30	1.47	1.18	1.26	1.06	1.26	1.17	1.19
87.50°	0.94	1.17	1.21	1.41	1.34	1.13	1.07	1.44	0.94	1.17	1.21	1.41	1.34	1.13	1.07	1.44	0.94
90.00°	0.54	0.56	0.60	0.58	0.71	0.63	0.43	0.74	0.54	0.56	0.60	0.58	0.71	0.63	0.43	0.74	0.54
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.

	ρfc	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	0%
	ρcc	80%	80%	80%	80%	70%	70%	70%	70%	50%	50%	50%	30%	30%	30%	10%	10%	10%	0%
	ρw	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	30%
	0	455	455	455	455	444	444	444	444	424	424	424	406	406	406	390	390	390	382
	1	434	424	415	407	425	416	408	401	401	394	388	386	381	377	373	369	366	362
	2	415	397	383	371	407	391	378	367	379	368	359	367	359	351	357	350	344	343
	3	396	373	356	342	389	368	352	339	358	345	334	349	338	328	341	331	323	325
	4	379	352	333	318	372	348	330	316	340	324	312	332	319	308	325	314	305	308
RCR	5	362	333	312	297	356	329	310	296	323	306	293	316	302	291	311	298	288	293
	6	346	315	295	280	341	312	293	279	307	290	277	302	287	275	297	284	273	279
	7	332	300	279	264	327	297	277	263	292	275	262	288	272	261	284	270	259	266
	8	318	285	264	250	314	283	263	250	279	261	249	275	259	248	272	258	247	253
	9	306	272	252	238	302	270	251	238	267	249	237	264	248	236	261	246	235	242
	10	294	260	240	227	290	259	239	226	256	238	226	253	237	225	250	235	225	232

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	26.6 fc	3.4 ft
6.5 ft	19.1 fc	4.0 ft
7.5 ft	14.3 fc	4.6 ft
8.0 ft	12.6 fc	4.9 ft
10.0 ft	8.0 fc	6.2 ft
12.0 ft	5.6 fc	7.4 ft
14.0 ft	4.1 fc	8.6 ft
16.0 ft	3.1 fc	9.9 ft
20.0 ft	2.0 fc	12.3 ft
24.0 ft	1.4 fc	14.8 ft
28.0 ft	1.0 fc	17.3 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	1,768,176	1,768,176	1,768,176
45.00°	64,105	82,196	68,123
55.00°	15,963	26,637	15,487
65.00°	10,020	10,599	9,326
75.00°	11,774	11,009	11,300
85.00°	30,048	37,051	31,735

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	11.5	12.5	11.9	12.8	13.2	11.8	12.8	12.2	13.1	13.4
	3H	12.8	13.7	13.2	14.0	14.4	13.0	13.8	13.4	14.2	14.5
	4H	13.5	14.4	14.0	14.7	15.1	13.7	14.5	14.1	14.9	15.3
	6H	14.5	15.2	14.9	15.6	16.0	14.6	15.3	15.0	15.7	16.1
	8H	15.1	15.8	15.5	16.2	16.6	15.2	15.9	15.7	16.3	16.7
	12H	15.9	16.6	16.4	17.0	17.4	16.1	16.8	16.5	17.1	17.6
4H	2H	11.9	12.7	12.3	13.1	13.5	12.1	12.9	12.5	13.3	13.7
	3H	13.4	14.0	13.8	14.4	14.8	13.6	14.2	14.0	14.6	15.0
	4H	14.3	14.9	14.7	15.3	15.8	14.5	15.1	15.0	15.5	16.0
	6H	15.5	16.0	16.0	16.4	16.9	15.6	16.1	16.1	16.6	17.1
	8H	16.3	16.7	16.8	17.2	17.7	16.5	16.9	16.9	17.4	17.8
	12H	17.3	17.7	17.8	18.2	18.7	17.5	17.9	18.0	18.4	18.9
8H	4H	14.6	15.1	15.1	15.6	16.0	14.8	15.3	15.3	15.8	16.2
	6H	16.1	16.5	16.6	17.0	17.5	16.3	16.6	16.8	17.1	17.6
	8H	17.2	17.5	17.7	18.0	18.5	17.3	17.7	17.9	18.2	18.7
	12H	18.5	18.8	19.0	19.3	19.9	18.6	18.9	19.2	19.4	20.0
12H	4H	14.7	15.1	15.2	15.6	16.1	14.9	15.3	15.4	15.8	16.3
	6H	16.3	16.7	16.9	17.1	17.7	16.5	16.8	17.0	17.3	17.8
	8H	17.6	17.8	18.1	18.3	18.9	17.7	18.0	18.2	18.5	19.0

Corrected UGR values based on total output lumens

SHR = 1.0