Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

SR12SQLEDOA 22L 35K xx FT1212 MW xx FO

12" square recessed LED downlight, flush extruded aluminum door

Test Number

SP-01642_1

Test Date

2/12/2024

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

Summary of Results

Power

Input Watts	18.4 W

Lumen Output

Output Lumens	1451
Efficacy	78.83 lm/W

Luminous Dimensions

0° - 180° Size	0.85
90° - 270° Size	0.85
Height	0

Spacing Criterion

Two luminaires, plane 0°	1.23
Two luminaires, plane 90°	1.23
Four luminaires	1.34

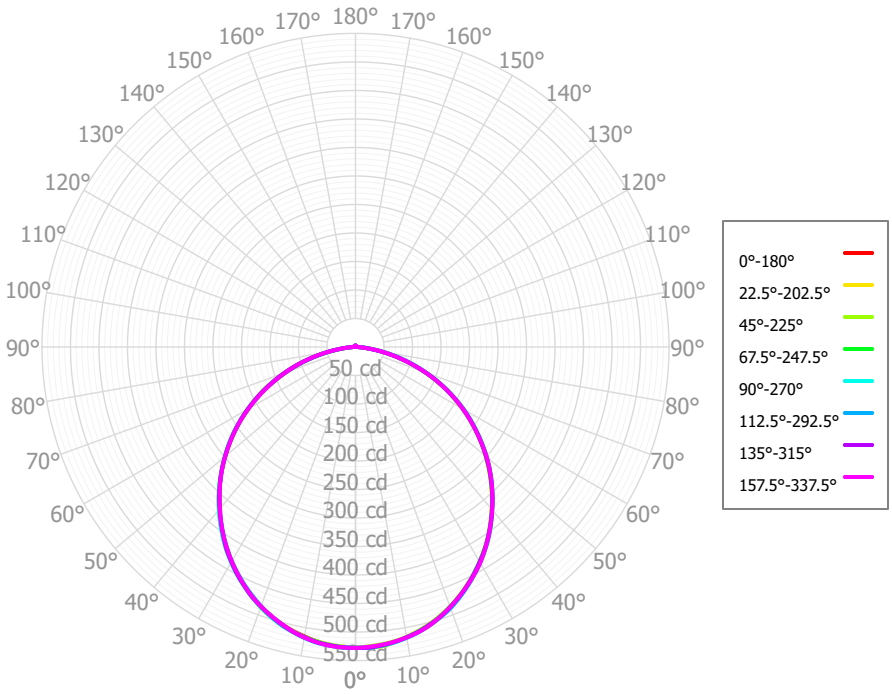
Full Beam Angle

0° - 180°	109°
90° - 270°	109°

IES File Header Contents

Keyword	Value
TEST	SP-01642_1
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
TESTDATE	2/12/2024
ISSUEDATE	2/28/2024
LUMCAT	SR12SQLEDOA 22L 35K xx FT1212 MW xx FO
LUMINAIRE	12" square recessed LED downlight, flush extruded aluminum door
OTHER	Beam Angle: 109 deg
OTHER	80 CRI, 3500K tested
OTHER	CCT Output Multipliers: 30K x .97, 40K x 1.02, 50K x 1.01
OTHER	Total luminaire wattages are approximate
OTHER	This report prepared by Spectrum Lighting

Candela Polar Plot



Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	50.63	3.49%	90.00° - 100.00°	2.60	0.18%
10.00° - 20.00°	141.96	9.79%	100.00° - 110.00°	2.27	0.16%
20.00° - 30.00°	212.74	14.67%	100.00° - 120.00°	4.44	0.31%
30.00° - 40.00°	253.27	17.46%	120.00° - 130.00°	1.99	0.14%
40.00° - 50.00°	259.40	17.88%	130.00° - 140.00°	1.73	0.12%
50.00° - 60.00°	231.53	15.96%	140.00° - 150.00°	1.40	0.10%
60.00° - 70.00°	172.78	11.91%	150.00° - 160.00°	1.06	0.07%
70.00° - 80.00°	92.74	6.39%	160.00° - 170.00°	0.63	0.04%
80.00° - 90.00°	21.43	1.48%	170.00° - 180.00°	0.22	0.02%
0.00° - 90.00°	1436.48	99.03%	0.00° - 180.00°	1450.56	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°	527.79	527.79	527.79	527.79	527.79	527.79	527.79	527.79	527.79	527.79	527.79	527.79	527.79	527.79	527.79	527.79	527.79
2.50°	527.68	527.24	525.63	527.66	528.24	526.86	527.36	527.48	527.65	526.13	526.03	527.56	527.59	527.23	528.09	526.43	527.68
5.00°	525.30	527.12	523.71	526.26	525.82	525.45	524.94	526.12	524.65	525.27	523.98	525.56	525.72	525.73	525.30	524.45	525.30
7.50°	521.81	522.30	520.59	522.54	522.75	522.15	522.11	522.59	520.81	521.74	520.60	521.39	523.37	522.05	521.96	521.46	521.81
10.00°	516.69	517.38	516.57	517.31	518.12	517.83	516.80	517.61	515.62	517.92	516.62	516.68	518.04	517.60	517.01	517.55	516.69
12.50°	510.47	511.29	510.34	510.99	512.58	511.66	511.06	510.81	509.74	511.32	510.36	511.08	511.35	511.59	511.73	512.15	510.47
15.00°	503.27	504.96	503.29	503.94	504.76	504.45	502.63	502.74	502.71	504.41	503.03	504.36	503.64	504.90	504.05	505.21	503.27
17.50°	495.37	495.20	494.16	495.10	496.38	494.88	494.05	493.92	494.67	494.89	494.10	495.68	495.45	496.79	495.89	495.72	495.37
20.00°	485.58	485.31	484.60	485.05	486.58	483.93	484.43	484.58	484.89	485.06	484.39	485.94	485.52	487.61	485.54	485.57	485.58
22.50°	474.43	473.46	473.94	474.00	475.82	472.33	474.48	473.59	474.26	473.45	473.28	474.30	474.74	476.10	474.73	474.32	474.43
25.00°	462.46	461.56	462.51	462.26	462.51	460.34	462.08	461.40	462.11	461.61	461.48	462.17	462.83	464.09	462.23	462.75	462.46
27.50°	449.88	448.78	449.04	449.16	449.18	447.36	449.50	448.14	449.14	448.11	448.35	449.12	450.33	450.97	449.36	450.63	449.88
30.00°	436.17	435.90	435.28	435.07	435.81	433.77	435.41	434.07	434.69	434.38	434.52	435.59	436.47	437.41	435.56	437.44	436.17
32.50°	421.59	421.02	420.72	420.92	421.77	418.91	421.06	419.20	419.90	419.73	419.63	421.11	421.90	422.84	421.54	422.29	421.59
35.00°	405.88	406.06	405.64	406.72	405.84	403.24	404.48	403.70	404.48	404.94	404.19	405.75	406.22	407.51	405.73	406.65	405.88
37.50°	389.28	389.04	389.06	390.48	389.60	386.96	387.86	387.16	388.51	389.00	387.75	388.68	389.94	390.34	389.47	390.06	389.28
40.00°	372.21	372.00	372.12	372.66	372.41	370.29	370.98	369.79	371.46	372.88	370.78	371.66	372.86	373.16	372.48	373.17	372.21
42.50°	354.75	354.37	354.13	354.77	355.14	353.15	354.01	352.58	354.06	354.97	353.41	354.75	355.34	355.95	355.30	355.68	354.75
45.00°	336.99	336.70	336.04	336.82	337.60	335.69	336.09	335.51	335.95	336.75	335.83	337.07	337.01	338.31	336.99	337.92	336.99
47.50°	318.97	317.54	317.62	318.19	319.67	317.46	318.03	317.35	317.60	317.64	317.33	317.73	318.22	319.54	318.38	319.62	318.97
50.00°	299.88	298.38	298.81	299.03	300.47	298.69	298.52	298.25	298.75	298.37	298.30	298.41	299.40	300.34	298.88	300.47	299.88
52.50°	279.85	278.95	278.75	279.46	280.98	279.40	278.96	278.76	279.55	278.96	278.68	279.11	280.58	279.95	279.11	279.52	279.85
55.00°	259.40	259.52	258.62	259.57	260.52	259.75	258.93	258.90	259.61	259.53	258.71	259.38	260.42	259.72	258.82	258.83	259.40
57.50°	238.56	238.71	238.25	239.19	239.97	239.32	238.83	238.24	239.24	239.14	238.09	238.64	239.45	239.93	238.37	238.73	238.56
60.00°	217.54	217.90	217.67	218.37	219.13	218.31	217.92	216.87	217.92	218.57	217.07	217.75	218.02	219.50	217.45	218.23	217.54
62.50°	196.36	196.06	196.36	196.82	198.15	196.95	196.95	195.25	196.69	197.75	195.40	196.48	196.31	197.24	196.38	196.84	196.36
65.00°	174.81	174.22	174.89	174.61	176.64	175.33	175.18	173.41	175.68	176.87	173.33	174.86	174.51	175.09	174.75	175.29	174.81
67.50°	152.94	152.64	152.86	152.70	155.01	153.20	153.43	151.65	154.40	153.52	151.27	152.41	152.65	153.25	152.95	153.38	152.94
70.00°	130.76	131.06	130.84	131.09	132.91	130.68	132.16	129.97	132.49	129.64	129.22	130.17	130.48	131.35	130.46	131.32	130.76
72.50°	108.28	108.55	108.89	109.78	111.01	108.99	110.87	108.66	110.73	108.23	107.73	108.50	108.11	109.24	107.74	108.92	108.28
75.00°	86.86	86.04	87.20	88.77	89.83	87.97	89.03	87.70	89.34	87.40	86.62	87.02	86.15	87.42	86.02	87.10	86.86
77.50°	66.49	66.11	66.55	68.11	68.90	67.57	67.31	67.22	68.25	67.17	65.95	66.06	64.46	66.54	64.64	66.67	66.49
80.00°	47.41	46.23	46.69	47.79	48.98	47.69	48.27	47.23	47.91	47.09	45.58	46.20	45.30	46.50	45.55	47.06	47.41
82.50°	29.64	29.86	30.24	30.74	30.49	31.05	29.50	30.23	29.70	30.84	28.97	29.27	27.94	29.22	27.27	29.56	29.64
85.00°	16.57	13.58	15.59	16.94	18.26	17.13	17.86	16.34	17.06	15.56	15.08	15.06	15.82	14.43	15.78	15.01	16.57
87.50°	8.40	7.98	8.87	8.14	7.70	8.46	6.48	7.51	7.09	8.52	7.22	8.40	7.51	8.17	6.77	8.25	8.40
90.00°	3.70	2.75	3.20	4.46	4.76	4.36	4.40	4.06	4.28	3.63	3.84	3.28	3.40	3.13	3.45	3.17	3.70
92.50°	2.71	2.25	2.41	2.46	2.32	2.39	2.36	2.21	2.17	2.38	2.26	2.59	2.48	2.55	2.31	2.69	2.71
95.00°	2.18	1.94	1.76	2.25	2.28	2.34	2.14	2.10	2.03	2.13	2.05	2.06	2.17	2.09	1.97	2.29	2.18
97.50°	2.16	2.10	1.71	2.21	2.24	2.30	1.92	2.02	1.96	2.08	2.01	2.02	2.34	2.08	1.95	2.11	2.16
100.00°	2.17	2.29	1.71	2.36	2.20	2.26	2.15	1.99	2.09	2.08	2.09	2.02	2.32	2.09	2.00	2.00	2.17
102.50°	2.22	2.13	1.96	2.38	2.17	2.30	2.38	1.93	2.15	2.11	2.11	2.21	2.13	2.20	2.09	2.09	2.22
105.00°	2.24	1.94	2.13	2.24	2.15	2.43	2.19	1.84	2.01	2.16	2.07	2.32	2.12	2.30	2.08	2.15	2.24

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	1724	1724	1724	1724	1682	1682	1682	1682	1604	1604	1604	1533	1533	1533	1467	1467	1467	1436
	1	1578	1510	1449	1394	1537	1476	1420	1370	1412	1366	1325	1353	1316	1281	1298	1269	1241	1241
	2	1436	1318	1221	1139	1397	1289	1200	1124	1236	1160	1096	1186	1123	1068	1140	1089	1043	1064
	3	1310	1159	1041	948	1273	1135	1026	939	1089	997	920	1048	969	902	1009	942	885	920
	4	1200	1027	901	804	1165	1007	889	798	969	866	785	933	845	773	900	824	761	805
RCR	5	1104	918	789	693	1072	901	780	689	869	762	680	839	745	671	811	728	663	712
	6	1019	827	698	605	991	813	691	602	785	677	596	759	663	589	735	650	583	636
	7	946	750	624	535	920	738	618	533	714	606	528	692	595	523	672	585	518	572
	8	880	685	562	478	857	674	557	476	654	548	472	635	539	468	617	530	464	519
	9	823	629	510	430	802	620	506	428	602	498	425	586	491	422	570	483	420	474
	10	772	581	466	390	752	573	463	389	557	456	386	543	450	384	529	443	382	435

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	17.4 fc	15.4 ft
6.5 ft	12.5 fc	18.2 ft
7.5 ft	9.4 fc	21.0 ft
8.0 ft	8.2 fc	22.4 ft
10.0 ft	5.3 fc	28.0 ft
12.0 ft	3.7 fc	33.6 ft
14.0 ft	2.7 fc	39.2 ft
16.0 ft	2.1 fc	44.7 ft
20.0 ft	1.3 fc	55.9 ft
24.0 ft	0.9 fc	67.1 ft
28.0 ft	0.7 fc	78.3 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	7863	7863	7863
45.00°	7100	7080	7113
55.00°	6738	6717	6767
65.00°	6163	6165	6227
75.00°	5000	5020	5171
85.00°	2832	2664	3121

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	18.7	20.3	19.1	20.6	21.0	18.7	20.3	19.1	20.7	21.0
	3H	20.4	21.9	20.8	22.2	22.6	20.4	21.9	20.8	22.2	22.6
	4H	21.0	22.4	21.4	22.7	23.1	21.0	22.4	21.4	22.8	23.2
	6H	21.4	22.6	21.8	23.0	23.4	21.4	22.7	21.8	23.1	23.5
	8H	21.5	22.7	21.9	23.1	23.5	21.5	22.7	21.9	23.1	23.5
	12H	21.5	22.7	22.0	23.1	23.5	21.5	22.7	22.0	23.1	23.6
4H	2H	19.3	20.7	19.7	21.0	21.4	19.3	20.7	19.7	21.1	21.5
	3H	21.2	22.4	21.7	22.8	23.2	21.3	22.4	21.7	22.8	23.2
	4H	21.9	23.0	22.4	23.4	23.9	22.0	23.0	22.4	23.4	23.9
	6H	22.4	23.3	22.9	23.8	24.3	22.4	23.3	22.9	23.8	24.3
	8H	22.5	23.4	23.0	23.8	24.3	22.6	23.4	23.0	23.9	24.4
	12H	22.6	23.4	23.1	23.9	24.4	22.6	23.4	23.1	23.9	24.4
8H	4H	22.2	23.0	22.7	23.5	24.0	22.2	23.1	22.7	23.5	24.0
	6H	22.8	23.5	23.3	24.0	24.5	22.8	23.5	23.3	24.0	24.5
	8H	22.9	23.6	23.5	24.1	24.6	23.0	23.6	23.5	24.1	24.6
	12H	23.1	23.6	23.6	24.1	24.7	23.1	23.6	23.6	24.2	24.7
12H	4H	22.2	23.0	22.7	23.5	24.0	22.2	23.0	22.7	23.5	24.0
	6H	22.8	23.4	23.3	23.9	24.5	22.8	23.5	23.4	23.9	24.5
	8H	23.0	23.6	23.5	24.1	24.7	23.0	23.6	23.6	24.1	24.7

Corrected UGR values based on total output energy
SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0