

## **Indoor Distribution Test Report**

# **Spectrum Lighting Inc.**

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## **Spectrum Lighting Photometric Lab**

### **Luminaire**

CK0407SQPC 30L 35K ND xx NL xx MW  
Nom. 4.5" Diam x 7"H Square Cylinder, Narrow Beam

### **Test Number**

SP-01449\_M-30L

### **Test Date**

10/27/2022

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

### Summary of Results

#### Power

Input Watts	17.8 W
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#### Lumen Output

Output Lumens	1384
Efficacy	77.75 lm/W

#### Luminous Dimensions

0° - 180° Size	0.2
90° - 270° Size	0.2
Height	0

#### Spacing Criterion

Two luminaires, plane 0°	0.41
Two luminaires, plane 90°	0.41
Four luminaires	0.44

#### Full Beam Angle

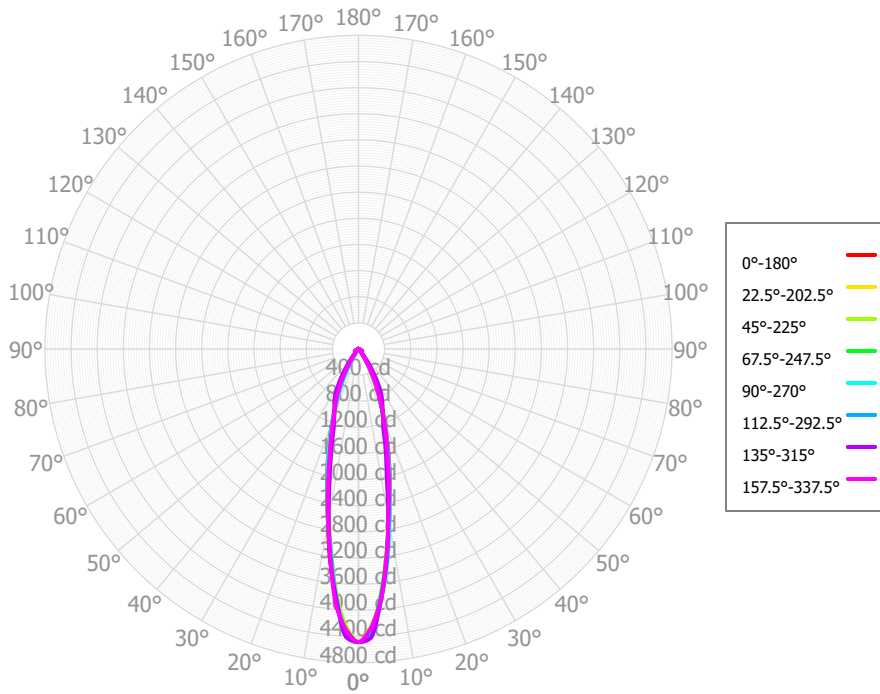
0° - 180°	25°
90° - 270°	25°

### IES File Header Contents

Keyword	Value
TEST	SP-01449_M-30L
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
TESTDATE	10/27/2022
ISSUEDATE	11/22/2022
LUMCAT	CK0407SQPC 30L 35K ND xx NL xx MW
LUMINAIRE	Nom. 4.5" Diam x 7"H Sqaure Cylinder, Narrow Beam
OTHER	No lens, Matte White finish
OTHER	25 Degree Beam Angle
OTHER	Reference Project SL378
LAMP	N/A
LAMPCAT	N/A, Min. 80 CRI
OTHER	Total Luminaire Watts is approximate
OTHER	This report prepared by Spectrum Lighting
_CRI	80
_CCTMULT	27K x 0.95, 30K x 0.97, 40K x 1.03
_LAMPMULT	10L x 0.34, 15L x 0.49, 20L x 0.67

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### Candela Polar Plot



### Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	330.67	23.89%	90.00° - 100.00°	1.98	0.14%
10.00° - 20.00°	475.08	34.33%	100.00° - 110.00°	1.93	0.14%
20.00° - 30.00°	335.84	24.27%	100.00° - 120.00°	3.74	0.27%
30.00° - 40.00°	113.65	8.21%	120.00° - 130.00°	1.72	0.12%
40.00° - 50.00°	22.91	1.66%	130.00° - 140.00°	1.48	0.11%
50.00° - 60.00°	44.93	3.25%	140.00° - 150.00°	1.29	0.09%
60.00° - 70.00°	34.32	2.48%	150.00° - 160.00°	0.97	0.07%
70.00° - 80.00°	9.88	0.71%	160.00° - 170.00°	0.59	0.04%
80.00° - 90.00°	4.69	0.34%	170.00° - 180.00°	0.20	0.01%
0.00° - 90.00°	1371.97	99.14%	0.00° - 180.00°	1383.93	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°	4486.65	4486.65	4486.65	4486.65	4486.65	4486.65	4486.65	4486.65	4486.65	4486.65	4486.65	4486.65	4486.65	4486.65	4486.65	4486.65	4486.65
2.50°	4281.21	4335.06	4265.96	4393.03	4394.51	4318.84	4411.43	430710	4308.88	4270.53	4262.60	4402.02	4360.00	4350.44	4424.49	4284.25	4281.21
5.00°	3862.38	3877.20	3890.44	3823.41	3883.32	3896.34	3862.31	3943.06	3846.69	3804.70	3851.45	3825.71	3848.48	3895.14	3872.67	3879.08	3862.38
7.50°	3233.29	3321.95	3234.25	3252.12	3332.38	3237.49	3289.13	3270.89	3295.74	3165.97	3246.05	3248.99	3183.86	3299.08	3267.84	3268.75	3233.29
10.00°	2691.77	2669.94	2613.88	2668.68	2726.69	2640.13	2634.16	2653.70	2688.55	2622.27	2595.33	2667.30	2670.90	2632.61	2626.64	2628.00	2691.77
12.50°	2212.06	2137.59	2050.14	2116.13	2209.62	2096.92	2042.61	2149.46	2223.80	2119.26	2076.23	2112.05	2201.27	2143.91	1994.87	2166.14	2212.06
15.00°	1810.05	1696.77	1598.29	1695.54	1785.13	1681.14	1604.66	1712.21	1825.88	1710.16	1575.20	1711.97	1823.38	1719.29	1615.47	1716.47	1810.05
17.50°	1449.03	1378.45	1279.92	1324.06	1431.85	1350.22	1262.30	137716	1479.31	1329.89	1307.92	1348.13	1462.15	1398.08	1260.30	1413.45	1449.03
20.00°	1146.91	1130.53	1071.79	1093.69	1135.91	1113.01	1089.37	1112.53	1149.93	1090.08	1056.57	1120.16	1155.15	1102.16	1105.20	1116.47	1146.91
22.50°	867.74	937.09	965.04	881.68	889.39	922.97	954.89	929.12	897.23	879.03	969.79	906.46	853.44	907.93	958.15	896.47	867.74
25.00°	647.43	766.60	850.25	708.14	672.83	746.90	871.57	752.74	662.04	707.15	877.67	730.31	643.16	729.10	849.66	683.45	647.43
27.50°	443.29	602.57	729.84	539.40	486.20	575.99	748.61	582.61	477.44	539.70	721.97	558.63	437.31	564.89	726.83	514.14	443.29
30.00°	290.47	440.48	582.55	378.11	313.18	413.87	585.08	420.60	299.58	380.11	566.00	395.48	285.56	401.77	558.94	352.11	290.47
32.50°	146.50	294.30	421.06	239.53	191.48	253.96	430.55	264.13	189.05	223.17	408.47	253.08	145.47	264.00	400.59	218.07	146.50
35.00°	96.57	151.30	287.30	127.99	86.36	151.99	283.11	158.85	83.60	138.12	262.41	140.24	96.87	132.64	263.89	109.42	96.57
37.50°	54.66	93.08	164.17	64.20	52.62	58.90	173.88	79.60	61.36	59.72	159.27	69.16	54.39	85.77	153.60	69.05	54.66
40.00°	41.28	44.09	100.60	43.63	34.46	39.70	87.34	47.17	40.09	43.42	77.02	43.81	40.21	43.55	87.36	38.95	41.28
42.50°	28.63	33.59	53.09	30.89	25.28	25.89	49.23	31.94	29.89	28.88	48.64	29.04	27.92	30.96	44.59	28.83	28.63
45.00°	22.47	24.62	36.15	23.59	17.22	21.75	32.29	24.41	20.71	23.24	28.40	23.18	21.39	20.77	31.71	22.40	22.47
47.50°	18.09	25.62	24.34	22.74	16.39	18.51	28.49	18.84	17.42	20.95	23.67	22.50	18.48	20.13	26.96	21.38	18.09
50.00°	26.84	27.91	33.33	25.25	16.26	27.76	28.83	27.74	18.51	29.67	27.48	25.13	23.58	23.82	30.06	26.79	26.84
52.50°	36.82	41.76	44.09	38.40	31.01	37.94	42.88	38.97	35.66	40.82	43.42	36.82	33.50	39.28	42.50	39.36	36.82
55.00°	52.07	54.06	54.65	55.62	45.66	54.09	59.83	52.18	50.46	57.72	55.48	52.79	51.25	52.50	61.87	52.53	52.07
57.50°	62.84	58.74	64.04	60.39	59.37	65.71	61.48	65.55	59.32	66.46	63.30	58.12	61.14	61.30	64.25	66.20	62.84
60.00°	60.43	59.09	54.48	61.90	68.87	59.03	61.33	58.42	61.96	61.15	58.56	59.78	61.36	61.49	57.14	62.56	60.43
62.50°	53.31	45.51	44.52	49.34	55.65	49.49	46.77	50.68	52.93	50.22	43.37	48.22	52.29	48.87	45.16	47.67	53.31
65.00°	36.12	32.19	31.72	34.43	42.11	32.08	31.77	34.48	40.77	31.90	29.65	33.54	34.41	35.11	31.15	32.78	36.12
67.50°	22.08	19.49	19.99	22.92	27.47	18.40	21.03	19.54	24.24	19.00	16.85	20.84	21.31	20.08	20.34	17.90	22.08
70.00°	13.03	10.70	12.92	11.68	16.40	12.26	11.15	13.18	13.92	11.51	10.04	8.42	11.70	11.01	10.44	12.04	13.03
72.50°	9.14	8.56	7.58	10.88	14.13	8.66	9.70	8.10	10.32	8.61	6.05	6.94	8.25	7.11	7.72	9.36	9.14
75.00°	11.42	7.82	7.27	10.30	13.85	8.89	8.40	8.26	10.50	9.23	5.35	6.10	8.17	5.76	6.36	9.67	11.42
77.50°	12.09	8.88	7.11	11.56	17.19	9.44	7.92	8.63	13.78	9.44	5.78	7.56	9.08	6.07	6.35	10.71	12.09
80.00°	11.26	7.96	7.30	12.04	15.94	10.35	7.05	9.54	11.46	9.40	4.79	8.66	10.38	5.21	6.48	8.68	11.26
82.50°	8.19	5.11	6.27	7.01	8.40	8.44	4.83	8.76	5.62	6.72	3.47	5.68	6.95	3.78	4.70	6.21	8.19
85.00°	3.54	3.36	3.33	2.84	3.90	4.05	3.04	4.53	3.21	2.91	2.78	3.03	2.19	3.02	2.95	4.23	3.54
87.50°	1.88	2.45	1.65	2.30	2.57	2.12	2.24	1.93	2.40	1.89	2.16	2.34	1.50	2.49	2.54	2.30	1.88
90.00°	1.80	1.98	1.49	1.86	1.85	1.83	1.74	1.81	2.02	1.72	2.03	1.73	1.55	2.10	2.14	2.00	1.80
92.50°	1.85	1.75	1.59	1.72	1.62	1.86	1.76	1.78	1.79	1.65	1.92	1.43	1.83	1.75	1.81	1.74	1.85
95.00°	1.95	1.78	1.93	1.71	1.52	2.07	1.74	1.85	1.70	1.60	1.97	1.31	2.13	1.80	1.60	2.03	1.95
97.50°	1.74	1.93	2.02	1.95	1.50	2.16	1.69	2.02	1.64	1.81	2.00	1.66	1.68	1.92	1.97	2.26	1.74
100.00°	1.44	1.89	1.94	2.05	1.54	2.21	1.67	2.27	1.77	2.05	1.79	1.88	1.24	1.62	2.24	2.11	1.44

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### 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%	20%	0%
	<b>pcc</b>	80%	80%	80%	80%	70%	70%	70%	70%	50%	50%	50%	30%	30%	30%	10%	10%	10%	0%
	<b>pw</b>	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	30%
	<b>0</b>	1645	1645	1645	1645	1605	1605	1605	1605	1531	1531	1531	1463	1463	1463	1401	1401	1401	1372
	<b>1</b>	1571	1535	1502	1472	1536	1504	1474	1447	1446	1422	1401	1392	1374	1357	1343	1329	1316	1302
	<b>2</b>	1501	1438	1386	1342	1470	1413	1366	1326	1367	1328	1295	1324	1293	1266	1285	1260	1238	1234
	<b>3</b>	1436	1354	1291	1240	1408	1334	1276	1229	1297	1248	1208	1262	1222	1188	1230	1197	1169	1174
	<b>4</b>	1375	1281	1211	1159	1350	1265	1201	1151	1234	1180	1136	1206	1160	1122	1179	1140	1108	1119
	<b>5</b>	1319	1216	1144	1091	1297	1203	1136	1086	1178	1120	1075	1154	1104	1065	1132	1089	1055	1069
	<b>6</b>	1268	1159	1086	1033	1248	1148	1079	1029	1127	1067	1022	1107	1054	1014	1089	1043	1007	1025
	<b>7</b>	1220	1107	1035	984	1202	1098	1029	981	1080	1019	975	1064	1010	969	1048	1000	964	984
	<b>8</b>	1175	1061	989	940	1159	1053	985	937	1038	977	933	1024	969	929	1011	961	924	946
	<b>9</b>	1134	1019	948	900	1119	1012	945	899	999	938	895	987	932	892	975	925	889	911
	<b>10</b>	1095	980	911	865	1082	974	908	864	963	903	861	952	897	858	942	892	856	879

### Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	148.3 fc	2.4 ft
6.5 ft	106.2 fc	2.9 ft
7.5 ft	79.8 fc	3.3 ft
8.0 ft	70.1 fc	3.5 ft
10.0 ft	44.9 fc	4.4 ft
12.0 ft	31.2 fc	5.3 ft
14.0 ft	22.9 fc	6.1 ft
16.0 ft	17.5 fc	7.0 ft
20.0 ft	11.2 fc	8.8 ft
24.0 ft	7.8 fc	10.5 ft
28.0 ft	5.7 fc	12.3 ft

### Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
<b>0.00°</b>	1207348	1207348	1207348
<b>45.00°</b>	8550	13757	6552
<b>55.00°</b>	24429	25640	21424
<b>65.00°</b>	23001	20197	26814
<b>75.00°</b>	11878	7554	14398
<b>85.00°</b>	10917	10281	12054

### 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	20.4	21.4	20.8	21.8	22.1	20.3	21.3	20.7	21.7	22.0
	3H	20.7	21.6	21.1	21.9	22.3	20.6	21.5	21.0	21.9	22.3
	4H	20.7	21.6	21.2	21.9	22.3	20.7	21.5	21.1	21.9	22.3
	6H	21.0	21.8	21.5	22.2	22.6	21.1	21.8	21.5	22.2	22.7
	8H	21.2	21.9	21.6	22.3	22.7	21.2	21.9	21.7	22.4	22.8
	12H	21.2	21.9	21.7	22.3	22.7	21.3	21.9	21.7	22.3	22.8
4H	2H	20.5	21.4	21.0	21.7	22.1	20.4	21.3	20.9	21.6	22.0
	3H	20.8	21.5	21.2	21.9	22.3	20.8	21.4	21.2	21.9	22.3
	4H	20.9	21.5	21.4	22.0	22.4	20.9	21.5	21.3	21.9	22.4
	6H	21.4	21.9	21.8	22.3	22.8	21.4	21.9	21.9	22.4	22.9
	8H	21.5	22.0	22.0	22.5	23.0	21.6	22.1	22.1	22.6	23.1
	12H	21.6	22.1	22.1	22.6	23.1	21.7	22.1	22.2	22.6	23.1
8H	4H	20.9	21.3	21.3	21.8	22.3	20.8	21.3	21.3	21.7	22.2
	6H	21.4	21.8	21.9	22.3	22.8	21.4	21.8	22.0	22.3	22.8
	8H	21.6	22.0	22.2	22.5	23.0	21.8	22.1	22.3	22.6	23.1
	12H	21.8	22.1	22.4	22.6	23.2	21.9	22.2	22.5	22.7	23.3
12H	4H	20.8	21.2	21.3	21.7	22.2	20.8	21.2	21.3	21.7	22.2
	6H	21.4	21.7	21.9	22.2	22.8	21.4	21.8	22.0	22.2	22.8
	8H	21.7	22.0	22.2	22.5	23.1	21.8	22.1	22.3	22.6	23.2

Corrected UGR values based on total output energy  
 SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0