

## **Indoor Distribution Test Report**

# **Spectrum Lighting Inc.**

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## **Spectrum Lighting Photometric Lab**

### **Luminaire**

CK0407SQPC 20L 35K ND xx NL xx MW  
Nom. 4.5" Diam x 7"H Square Cylinder, Narrow Beam

### **Test Number**

SP-01449\_M-20L

### **Test Date**

11/28/2022

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

## Summary of Results

### Power

Input Watts	13.2 W
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### Lumen Output

Output Lumens	1044
Efficacy	79.08 lm/W

### Luminous Dimensions

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

### Spacing Criterion

Two luminaires, plane 0°	0.42
Two luminaires, plane 90°	0.41
Four luminaires	0.45

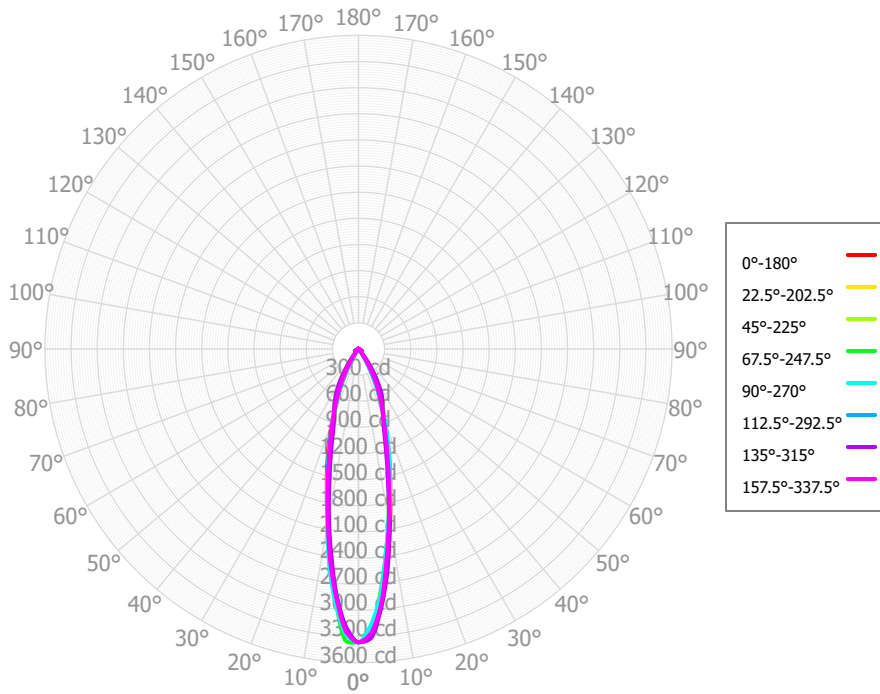
### Full Beam Angle

0° - 180°	25°
90° - 270°	25°

## IES File Header Contents

Keyword	Value
TEST	SP-01449_M-20L
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
TESTDATE	11/28/2022
ISSUEDATE	11/28/2022
LUMCAT	CK0407SQPC 20L 35K ND xx NL xx MW
LUMINAIRE	Nom. 4.5" Diam x 7"H Square 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	CCT Output Multipliers: 27K x 0.95, 30K x 0.97, 40K x 1.03
OTHER	This report prepared by Spectrum Lighting

**Candela Polar Plot**



**Zonal Lumen Summary**

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	249.69	23.92%	90.00° - 100.00°	2.08	0.20%
10.00° - 20.00°	362.03	34.68%	100.00° - 110.00°	1.96	0.19%
20.00° - 30.00°	253.91	24.33%	100.00° - 120.00°	3.82	0.37%
30.00° - 40.00°	84.44	8.09%	120.00° - 130.00°	1.69	0.16%
40.00° - 50.00°	15.58	1.49%	130.00° - 140.00°	1.51	0.14%
50.00° - 60.00°	32.24	3.09%	140.00° - 150.00°	1.32	0.13%
60.00° - 70.00°	23.41	2.24%	150.00° - 160.00°	0.98	0.09%
70.00° - 80.00°	6.56	0.63%	160.00° - 170.00°	0.59	0.06%
80.00° - 90.00°	3.73	0.36%	170.00° - 180.00°	0.20	0.02%
0.00° - 90.00°	1031.61	98.83%	0.00° - 180.00°	1043.80	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°	3366.88	3366.88	3366.88	3366.88	3366.88	3366.88	3366.88	3366.88	3366.88	3366.88	3366.88	3366.88	3366.88	3366.88	3366.88	3366.88	3366.88
2.50°	3302.96	3256.47	3260.62	3259.61	3180.07	3225.22	3202.68	3252.37	3228.26	3262.34	3232.69	3354.35	3281.93	3276.04	3322.84	3269.02	3302.96
5.00°	2925.42	2928.95	2915.28	2835.18	2860.10	2852.60	2860.66	2885.12	2879.15	2887.85	2927.58	2937.17	2960.05	2984.83	2982.80	2956.06	2925.42
7.50°	2522.34	2449.31	2486.99	2384.80	2384.60	2443.60	2394.31	2474.11	2411.89	2480.77	2436.56	2515.89	2542.25	2485.04	2556.51	2452.23	2522.34
10.00°	2075.23	2017.93	1996.40	1991.29	1982.34	2003.77	1956.12	2019.32	2024.11	2028.73	1979.25	2049.66	2058.49	2026.10	2019.06	2006.82	2075.23
12.50°	1682.86	1617.62	1591.97	1601.28	1674.78	1636.43	1537.37	1632.99	1677.49	1638.35	1561.91	1597.42	1671.89	1610.12	1568.31	1614.08	1682.86
15.00°	1381.19	1297.38	1250.48	1312.27	1387.08	1328.22	1216.90	1312.60	1383.71	1329.78	1224.70	1281.26	1349.49	1279.80	1225.08	1289.56	1381.19
17.50°	1107.59	1026.66	1012.30	1028.38	1124.08	1073.39	961.63	1054.55	1116.14	1069.46	978.93	981.33	1081.97	1036.20	972.17	1024.21	1107.59
20.00°	878.67	830.43	846.69	860.30	886.89	860.46	811.78	854.28	880.87	870.71	811.98	823.21	849.31	841.62	828.23	828.32	878.67
22.50°	675.18	678.94	736.06	696.89	680.60	686.00	729.12	686.33	660.93	693.94	731.59	669.67	659.90	694.81	720.14	690.42	675.18
25.00°	510.54	542.29	662.55	561.14	500.43	540.92	635.08	547.21	485.94	544.18	640.54	552.31	496.88	554.48	653.66	558.47	510.54
27.50°	361.21	414.20	561.93	426.23	350.37	406.28	534.07	416.42	331.37	406.10	538.24	434.68	354.81	420.22	561.45	431.31	361.21
30.00°	234.34	294.81	443.71	303.82	225.10	279.30	417.45	292.77	213.11	282.01	425.38	315.08	225.15	295.74	440.50	310.09	234.34
32.50°	136.34	180.23	327.53	181.67	127.33	177.88	291.67	189.49	110.63	177.48	301.66	200.46	134.58	180.10	324.84	193.45	136.34
35.00°	79.55	106.68	212.62	113.04	65.89	94.52	192.51	103.04	62.92	95.47	198.49	118.73	66.23	99.60	214.88	113.32	79.55
37.50°	41.13	54.91	129.10	44.96	43.24	49.39	108.37	52.45	37.96	45.41	115.68	46.52	35.28	49.67	129.11	60.33	41.13
40.00°	27.93	30.73	64.37	31.52	27.46	30.23	61.19	30.37	25.87	30.72	62.12	32.34	24.73	23.99	68.39	32.19	27.93
42.50°	17.80	20.59	32.98	18.18	18.75	20.02	34.01	18.92	18.88	21.20	36.44	19.64	17.23	18.60	32.96	21.81	17.80
45.00°	11.74	15.32	20.75	14.98	13.50	15.65	21.77	15.62	14.43	17.19	22.28	15.27	11.31	14.54	22.73	16.24	11.74
47.50°	10.11	12.42	18.09	11.94	11.69	15.54	17.29	16.46	10.95	17.38	18.70	12.40	10.40	11.54	18.42	13.96	10.11
50.00°	14.12	18.06	20.69	19.27	15.58	18.08	22.96	20.38	17.78	21.86	23.02	17.49	11.99	15.54	19.77	18.54	14.12
52.50°	22.60	27.69	30.41	26.69	24.92	27.95	33.69	29.47	28.33	29.95	34.33	23.90	21.84	24.96	26.64	27.65	22.60
55.00°	36.54	38.04	43.90	37.82	34.74	42.21	40.93	42.26	37.98	41.60	41.61	36.81	35.66	34.80	38.64	35.99	36.54
57.50°	44.70	48.72	44.35	48.31	45.01	45.81	46.51	45.85	47.32	45.60	45.46	46.55	43.50	44.96	43.05	43.83	44.70
60.00°	46.08	43.69	38.19	40.66	45.39	43.24	40.23	43.10	44.12	42.34	40.99	41.84	48.59	44.14	40.64	40.57	46.08
62.50°	39.94	31.97	30.19	32.82	36.96	34.31	28.55	33.74	36.83	34.52	29.69	35.65	40.97	35.38	34.04	30.55	39.94
65.00°	25.29	21.49	21.28	21.06	26.56	21.81	19.30	20.01	25.38	22.55	20.50	23.15	27.70	24.67	23.83	21.09	25.29
67.50°	14.93	11.52	14.20	9.78	14.46	13.31	11.11	11.70	12.64	14.07	12.95	12.27	18.16	12.59	15.38	11.95	14.93
70.00°	9.25	7.64	7.97	6.89	8.32	6.97	7.04	6.85	8.17	8.66	8.32	7.94	10.21	7.04	8.38	7.34	9.25
72.50°	6.74	6.14	5.38	4.20	7.10	4.96	4.70	5.32	6.12	6.30	5.90	4.62	7.78	5.86	5.17	5.29	6.74
75.00°	7.58	6.80	4.41	4.39	7.00	5.18	4.10	5.82	6.93	6.53	4.88	5.12	7.58	5.85	5.00	5.26	7.58
77.50°	8.29	8.26	4.65	4.56	7.81	5.24	4.20	5.90	8.54	6.83	4.89	5.59	8.23	6.59	5.20	6.33	8.29
80.00°	8.87	6.96	5.40	4.26	6.48	5.21	3.93	5.73	7.03	7.19	4.48	5.98	9.19	5.87	5.69	5.46	8.87
82.50°	7.32	4.69	4.56	3.88	3.53	4.19	3.52	4.37	4.69	5.75	3.78	5.80	6.81	4.26	4.81	3.57	7.32
85.00°	3.72	3.49	3.09	2.60	2.07	2.70	2.92	2.34	3.20	2.90	3.09	3.63	3.19	3.11	2.92	2.60	3.72
87.50°	1.86	2.64	2.39	1.47	1.71	2.06	2.25	1.56	1.91	1.74	2.41	1.96	2.06	2.23	2.14	2.08	1.86
90.00°	1.65	2.27	2.00	1.83	1.64	1.80	2.03	1.44	1.77	1.85	2.02	1.89	1.79	1.95	2.13	1.93	1.65
92.50°	1.61	2.04	1.89	2.14	1.78	1.84	1.98	1.50	1.91	1.95	1.81	1.87	1.56	1.99	1.96	1.95	1.61
95.00°	1.75	2.23	1.88	2.08	2.05	2.00	1.89	1.63	2.01	2.04	1.72	1.98	1.34	2.03	1.68	1.89	1.75
97.50°	1.81	2.55	1.89	2.00	2.40	2.00	1.81	1.84	2.10	2.21	1.70	2.07	1.50	2.06	1.70	1.78	1.81
100.00°	1.80	2.38	1.92	1.75	2.26	1.94	1.82	2.08	2.02	2.44	1.75	2.07	1.79	1.92	1.92	1.73	1.80

CK0407SQPC 20L 35K ND xx NL xx MW

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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%	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>	1240	1240	1240	1240	1209	1209	1209	1209	1153	1153	1153	1101	1101	1101	1054	1054	1032
	<b>1</b>	1185	1157	1133	1110	1158	1134	1112	1092	1089	1072	1056	1049	1035	1022	1011	1001	991
	<b>2</b>	1133	1085	1046	1013	1109	1066	1031	1001	1031	1002	977	998	975	955	968	950	933
	<b>3</b>	1084	1022	975	937	1062	1007	964	929	979	943	913	952	922	897	928	903	885
	<b>4</b>	1038	968	916	876	1020	955	907	870	932	891	859	910	876	848	890	861	837
	<b>5</b>	996	919	865	825	980	909	859	821	890	846	813	872	834	805	855	823	797
	<b>6</b>	958	876	822	782	943	868	816	779	852	807	773	837	797	767	822	788	761
	<b>7</b>	922	838	783	745	908	830	779	742	817	771	738	804	764	733	792	756	729
	<b>8</b>	888	803	749	712	876	796	745	710	785	739	706	774	733	703	764	727	699
	<b>9</b>	857	771	718	682	846	765	715	681	756	710	678	746	705	675	737	700	673
	<b>10</b>	828	742	690	655	818	737	688	654	728	683	652	720	679	650	713	675	648

### Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	111.3 fc	2.4 ft
6.5 ft	79.7 fc	2.9 ft
7.5 ft	59.9 fc	3.3 ft
8.0 ft	52.6 fc	3.5 ft
10.0 ft	33.7 fc	4.4 ft
12.0 ft	23.4 fc	5.3 ft
14.0 ft	17.2 fc	6.2 ft
16.0 ft	13.2 fc	7.1 ft
20.0 ft	8.4 fc	8.9 ft
24.0 ft	5.8 fc	10.6 ft
28.0 ft	4.3 fc	12.4 ft

### Average Luminaire Luminance [cd/m<sup>2</sup>]

	0.00°	45.00°	90.00°
<b>0.00°</b>	906019	906019	906019
<b>45.00°</b>	4467	7897	5139
<b>55.00°</b>	17142	20594	16300
<b>65.00°</b>	16102	13551	16910
<b>75.00°</b>	7880	4584	7283
<b>85.00°</b>	11480	9532	6393

### 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	19.2	20.2	19.6	20.6	20.9	19.2	20.2	19.6	20.5	20.9
	3H	19.4	20.3	19.8	20.6	21.0	19.4	20.3	19.8	20.7	21.1
	4H	19.5	20.3	19.9	20.6	21.1	19.5	20.3	19.9	20.7	21.1
	6H	19.8	20.5	20.2	20.9	21.3	19.7	20.4	20.1	20.8	21.3
	8H	19.9	20.6	20.4	21.1	21.5	19.8	20.5	20.3	20.9	21.4
	12H	20.1	20.7	20.5	21.1	21.6	19.9	20.5	20.3	20.9	21.4
4H	2H	19.3	20.1	19.8	20.5	20.9	19.2	20.0	19.7	20.4	20.8
	3H	19.5	20.2	20.0	20.6	21.1	19.5	20.1	19.9	20.6	21.0
	4H	19.6	20.2	20.1	20.7	21.1	19.5	20.1	20.0	20.6	21.1
	6H	20.1	20.6	20.6	21.1	21.6	19.9	20.4	20.4	20.9	21.4
	8H	20.3	20.8	20.8	21.3	21.8	20.1	20.5	20.6	21.0	21.5
	12H	20.5	20.9	21.0	21.4	21.9	20.2	20.6	20.7	21.1	21.6
8H	4H	19.5	20.0	20.0	20.5	21.0	19.4	19.9	19.9	20.4	20.9
	6H	20.1	20.5	20.6	21.0	21.5	19.9	20.3	20.4	20.8	21.3
	8H	20.4	20.8	21.0	21.3	21.8	20.2	20.5	20.7	21.1	21.6
	12H	20.7	21.0	21.3	21.5	22.1	20.4	20.7	20.9	21.2	21.8
12H	4H	19.5	19.9	20.0	20.4	20.9	19.4	19.8	19.9	20.3	20.8
	6H	20.1	20.4	20.7	20.9	21.5	19.9	20.2	20.4	20.7	21.3
	8H	20.5	20.8	21.0	21.3	21.9	20.2	20.5	20.8	21.0	21.6

Corrected UGR values based on total output energy  
 SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0