

## **Indoor Distribution Test Report**

# **Spectrum Lighting Inc.**

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## **Spectrum Lighting Photometric Lab**

### **Luminaire**

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

### **Test Number**

SP-01451\_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	1042
Efficacy	78.96 lm/W

#### Luminous Dimensions

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

#### Spacing Criterion

Two luminaires, plane 0°	0.66
Two luminaires, plane 90°	0.66
Four luminaires	0.71

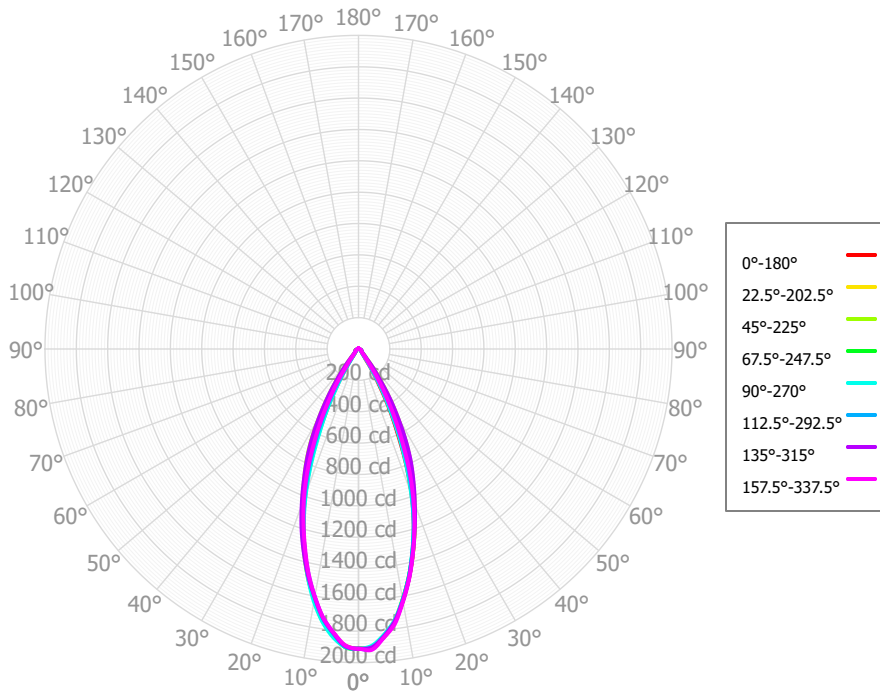
#### Full Beam Angle

0° - 180°	41°
90° - 270°	41°

### IES File Header Contents

Keyword	Value
TEST	SP-01451_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 WD xx NL xx MW
LUMINAIRE	Nom. 4.5" Diam x 7"H Square Cylinder, Wide Beam
OTHER	No lens, Matte White finish
OTHER	41 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°	170.70	16.38%	90.00° - 100.00°	2.28	0.22%
10.00° - 20.00°	366.44	35.16%	100.00° - 110.00°	2.20	0.21%
20.00° - 30.00°	306.87	29.44%	100.00° - 120.00°	4.27	0.41%
30.00° - 40.00°	106.49	10.22%	120.00° - 130.00°	1.95	0.19%
40.00° - 50.00°	27.42	2.63%	130.00° - 140.00°	1.73	0.17%
50.00° - 60.00°	19.72	1.89%	140.00° - 150.00°	1.47	0.14%
60.00° - 70.00°	18.38	1.76%	150.00° - 160.00°	1.07	0.10%
70.00° - 80.00°	9.41	0.90%	160.00° - 170.00°	0.67	0.06%
80.00° - 90.00°	3.13	0.30%	170.00° - 180.00°	0.22	0.02%
0.00° - 90.00°	1028.55	98.69%	0.00° - 180.00°	1042.21	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°	1912.36	1912.36	1912.36	1912.36	1912.36	1912.36	1912.36	1912.36	1912.36	1912.36	1912.36	1912.36	1912.36	1912.36	1912.36	1912.36	1912.36
2.50°	1903.51	1906.74	1903.37	1907.67	1896.65	1900.78	1898.18	1893.28	1896.34	1895.25	1902.13	1905.05	1902.93	1916.50	1906.12	1921.34	1903.51
5.00°	1846.52	1840.16	1838.28	1837.73	1833.75	1822.79	1821.21	1816.79	1831.65	1826.96	1829.80	1831.03	1846.66	1841.66	1843.65	1849.27	1846.52
7.50°	1757.69	1761.61	1751.80	1759.59	1749.56	1736.24	1730.08	1728.71	1750.20	1739.09	1748.09	1747.33	1756.67	1759.10	1756.53	1770.61	1757.69
10.00°	1631.20	1628.51	1621.47	1625.73	1624.35	1607.35	1608.50	1603.63	1622.93	1616.17	1621.18	1617.32	1636.43	1626.20	1631.16	1635.11	1631.20
12.50°	1492.07	1491.56	1485.46	1487.44	1487.15	1473.67	1483.72	1469.44	1487.11	1479.35	1491.66	1480.58	1492.50	1487.65	1492.79	1496.53	1492.07
15.00°	1343.03	1341.53	1341.94	1333.77	1332.40	1326.61	1345.74	1317.08	1332.22	1326.28	1343.83	1326.16	1334.65	1330.79	1340.75	1342.45	1343.03
17.50°	1173.32	1188.32	1195.59	1176.85	1175.02	1172.91	1206.57	1166.47	1175.02	1169.98	1196.26	1170.13	1161.76	1171.52	1193.42	1186.11	1173.32
20.00°	993.13	1015.79	1046.76	1013.19	984.58	1007.72	1057.63	1018.12	993.38	1011.14	1049.92	1011.44	983.18	1007.41	1049.35	1023.59	993.13
22.50°	791.79	841.20	909.84	847.58	793.73	835.29	911.90	856.89	810.42	837.89	908.81	846.21	787.85	836.71	915.98	854.14	791.79
25.00°	583.74	660.24	779.96	679.35	609.56	654.65	778.19	684.34	619.17	657.20	782.02	673.72	589.06	657.42	787.35	672.55	583.74
27.50°	418.01	491.76	637.41	523.57	432.47	491.39	641.14	524.93	438.53	497.80	646.95	513.82	427.41	495.80	643.54	508.71	418.01
30.00°	259.07	347.58	490.21	379.03	289.88	341.53	496.72	373.07	291.59	345.05	497.76	363.17	270.15	349.43	495.66	365.17	259.07
32.50°	165.58	225.07	363.33	256.43	168.14	221.05	362.46	249.37	171.50	226.28	363.13	241.13	172.54	230.35	363.46	244.01	165.58
35.00°	78.86	129.90	240.48	146.83	101.90	115.22	242.92	135.70	103.02	113.15	244.74	133.06	84.62	127.15	233.18	139.81	78.86
37.50°	60.19	73.80	159.09	90.43	56.29	71.75	149.95	86.91	58.41	77.40	153.21	83.14	61.91	78.79	154.39	84.21	60.19
40.00°	43.52	51.31	82.60	54.39	44.95	46.90	82.41	51.11	44.47	46.46	82.09	50.12	42.99	50.23	81.14	53.11	43.52
42.50°	37.20	39.02	58.65	40.89	35.78	37.05	48.51	41.16	35.51	39.57	49.07	39.01	36.59	38.77	57.24	40.23	37.20
45.00°	31.23	32.46	36.88	32.14	29.06	29.52	35.79	33.11	30.80	33.08	34.73	30.97	30.96	30.64	36.81	32.85	31.23
47.50°	26.30	28.93	29.84	28.63	24.58	27.11	29.55	28.42	27.04	28.67	29.79	27.92	26.90	27.42	30.92	29.07	26.30
50.00°	22.85	26.45	24.39	25.54	21.77	24.90	25.97	24.27	23.81	24.98	27.59	25.10	23.33	24.61	26.35	25.86	22.85
52.50°	22.04	23.56	24.28	23.12	20.68	23.13	24.75	23.56	21.85	23.36	25.40	23.46	20.42	23.18	25.04	24.06	22.04
55.00°	20.74	20.59	23.53	20.90	20.45	21.49	24.09	22.76	20.33	22.01	23.20	21.90	18.99	21.78	23.69	22.35	20.74
57.50°	18.87	19.90	21.51	19.95	19.30	20.49	22.76	21.70	18.82	21.12	23.35	20.71	18.86	20.57	22.28	21.11	18.87
60.00°	18.07	19.36	20.35	19.33	17.88	19.86	21.39	20.87	17.32	20.85	23.50	20.02	19.00	19.59	21.82	20.08	18.07
62.50°	18.10	18.95	20.35	19.76	18.56	20.27	21.37	20.50	18.57	21.31	22.83	20.67	19.29	19.40	22.36	20.15	18.10
65.00°	17.78	18.33	19.14	19.51	19.55	19.42	20.94	19.38	19.86	19.60	21.56	20.09	18.95	18.53	21.11	19.57	17.78
67.50°	17.28	16.43	16.86	17.83	17.62	16.39	17.34	17.28	17.96	16.18	17.38	17.49	18.37	16.33	18.62	17.20	17.28
70.00°	14.37	14.18	14.41	15.36	15.50	13.53	14.09	14.26	15.82	13.81	13.75	14.71	14.91	13.57	15.68	14.49	14.37
72.50°	10.71	10.81	11.84	11.81	12.13	10.88	12.12	10.45	12.17	11.99	11.57	11.70	10.84	10.10	12.55	11.19	10.71
75.00°	8.50	7.92	9.37	8.93	8.93	8.24	9.72	7.83	8.81	8.88	9.32	8.74	8.34	7.57	9.20	8.36	8.50
77.50°	6.52	5.92	6.93	6.64	6.53	5.61	6.35	5.91	6.40	5.37	6.94	5.80	5.98	5.85	5.79	6.09	6.52
80.00°	4.47	4.44	5.02	4.84	4.43	4.43	3.91	4.42	4.55	4.21	5.11	4.21	4.46	4.39	4.02	4.45	4.47
82.50°	2.54	3.62	3.22	3.34	3.14	3.98	2.77	3.09	3.76	3.44	3.91	3.25	3.12	3.07	2.46	3.27	2.54
85.00°	2.34	3.00	2.56	2.61	2.22	3.25	2.21	2.67	3.04	2.88	2.90	2.76	2.99	2.36	2.29	2.61	2.34
87.50°	2.16	2.56	1.99	2.18	1.91	2.44	2.22	2.43	2.40	2.35	2.03	2.39	2.82	1.88	2.14	2.21	2.16
90.00°	2.12	2.47	2.16	1.99	1.86	2.37	2.21	2.10	2.10	2.01	1.98	2.40	2.48	2.11	2.05	1.89	2.12
92.50°	2.03	2.57	2.32	1.86	2.10	2.41	2.19	1.77	2.10	1.78	2.34	2.46	2.14	2.47	1.97	1.59	2.03
95.00°	1.82	2.33	2.37	2.06	2.10	2.42	2.14	1.72	1.83	2.06	2.31	2.31	1.79	2.60	1.92	1.78	1.82
97.50°	1.73	1.97	2.34	2.27	1.92	2.41	2.07	1.71	1.42	2.24	2.17	2.15	1.73	2.71	1.91	2.05	1.73
100.00°	1.86	2.10	2.03	2.05	1.85	2.02	2.09	2.01	1.65	2.13	2.17	1.98	2.05	2.23	1.96	2.16	1.86

### 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>	1237	1237	1237	1237	1207	1207	1207	1207	1150	1150	1150	1099	1099	1099	1051	1051	1051	1029
	<b>1</b>	1180	1152	1126	1103	1153	1128	1105	1084	1083	1065	1049	1042	1028	1015	1005	994	983	973
	<b>2</b>	1125	1076	1035	1001	1101	1057	1020	989	1021	991	965	988	964	943	958	938	921	919
	<b>3</b>	1074	1010	960	921	1052	994	949	913	965	928	896	939	907	881	914	888	866	870
	<b>4</b>	1025	951	897	855	1006	939	888	850	915	872	838	893	856	827	872	842	816	825
	<b>5</b>	980	899	842	800	963	888	836	796	869	823	788	850	811	780	833	799	772	784
	<b>6</b>	938	852	794	753	922	843	789	750	827	779	744	811	770	738	797	760	732	747
	<b>7</b>	899	810	752	711	884	802	748	709	788	740	705	775	732	700	763	725	696	712
	<b>8</b>	862	771	714	675	849	765	710	673	753	704	669	741	698	666	731	692	662	680
	<b>9</b>	827	736	679	641	816	730	677	640	720	671	637	710	666	635	701	661	632	651
	<b>10</b>	795	703	648	611	785	699	646	610	690	641	608	681	637	606	673	633	604	623

### Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	63.2 fc	4.1 ft
6.5 ft	45.3 fc	4.8 ft
7.5 ft	34.0 fc	5.6 ft
8.0 ft	29.9 fc	6.0 ft
10.0 ft	19.1 fc	7.4 ft
12.0 ft	13.3 fc	8.9 ft
14.0 ft	9.8 fc	10.4 ft
16.0 ft	7.5 fc	11.9 ft
20.0 ft	4.8 fc	14.9 ft
24.0 ft	3.3 fc	17.9 ft
28.0 ft	2.4 fc	20.9 ft

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

	0.00°	45.00°	90.00°
<b>0.00°</b>	514611	514611	514611
<b>45.00°</b>	11887	14034	11059
<b>55.00°</b>	9730	11040	9593
<b>65.00°</b>	11319	12186	12446
<b>75.00°</b>	8838	9742	9280
<b>85.00°</b>	7217	7894	6862

### 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	13.5	14.5	13.9	14.9	15.2	13.6	14.6	14.0	14.9	15.3
	3H	16.1	16.9	16.5	17.3	17.7	16.2	17.0	16.6	17.4	17.8
	4H	16.6	17.4	17.1	17.8	18.2	16.8	17.6	17.2	17.9	18.4
	6H	16.9	17.7	17.4	18.1	18.5	17.0	17.8	17.5	18.2	18.6
	8H	17.0	17.7	17.5	18.1	18.6	17.1	17.8	17.6	18.2	18.7
	12H	17.1	17.7	17.5	18.1	18.6	17.2	17.9	17.7	18.3	18.7
4H	2H	14.6	15.4	15.0	15.8	16.2	14.7	15.5	15.2	15.9	16.3
	3H	17.0	17.7	17.5	18.1	18.6	17.1	17.8	17.6	18.2	18.7
	4H	17.6	18.2	18.1	18.7	19.1	17.8	18.3	18.2	18.8	19.3
	6H	18.0	18.5	18.5	19.0	19.5	18.1	18.6	18.6	19.1	19.6
	8H	18.1	18.6	18.6	19.0	19.5	18.2	18.7	18.7	19.1	19.6
	12H	18.2	18.6	18.7	19.1	19.6	18.3	18.7	18.8	19.2	19.7
8H	4H	17.8	18.3	18.3	18.8	19.3	17.9	18.4	18.4	18.9	19.4
	6H	18.3	18.7	18.8	19.2	19.7	18.4	18.7	18.9	19.3	19.8
	8H	18.4	18.8	19.0	19.3	19.8	18.5	18.9	19.1	19.4	19.9
	12H	18.6	18.9	19.2	19.4	20.0	18.8	19.1	19.3	19.6	20.2
12H	4H	17.8	18.2	18.3	18.7	19.2	17.9	18.3	18.4	18.8	19.3
	6H	18.3	18.6	18.8	19.1	19.7	18.4	18.7	18.9	19.2	19.8
	8H	18.5	18.8	19.0	19.3	19.9	18.6	18.9	19.1	19.4	20.0

Corrected UGR values based on total output energy  
 SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0