

Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

CK0407PC 20L 35K ND xx NL xx MW
Nom. 4.5" Diam x 7"H Round Cylinder, Narrow Beam

Test Number

SP-01441_M-20L

Test Date

11/23/2022

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	1468
Efficacy	111.2 lm/W

Luminous Dimensions

0° - 180° Size	-0.38
90° - 270° Size	-0.38
Height	0

Spacing Criterion

Two luminaires, plane 0°	0.38
Two luminaires, plane 90°	0.38
Four luminaires	0.42

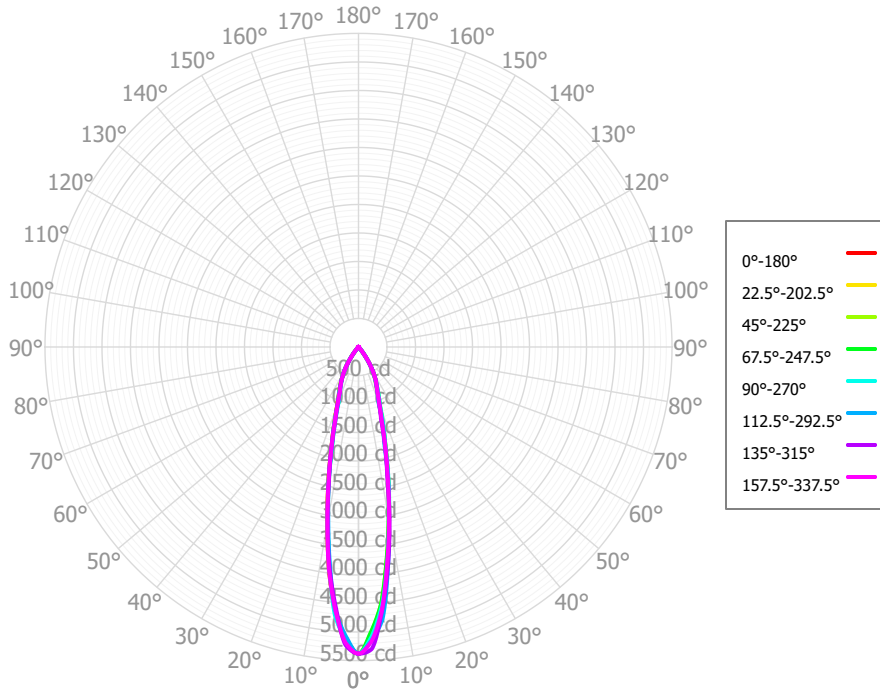
Full Beam Angle

0° - 180°	23°
90° - 270°	23°

IES File Header Contents

Keyword	Value
TEST	SP-01441_M-20L
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
TESTDATE	11/23/2022
ISSUEDATE	11/23/2022
LUMCAT	CK0407PC 20L 35K ND xx NL xx MW
LUMINAIRE	Nom. 4.5" Diam x 7"H Round Cylinder, Narrow Beam
OTHER	No lens, Matte White finish
OTHER	23 Degree Beam Angle
OTHER	Reference Project SL378
LAMP	N/A
LAMPCAT	N/A, Min. 80 CRI
OTHER	Total Luminaire Watts is approximate
OTHER	CCT 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°	392.97	26.77%	90.00° - 100.00°	2.02	0.14%
10.00° - 20.00°	509.88	34.74%	100.00° - 110.00°	1.98	0.13%
20.00° - 30.00°	346.14	23.58%	100.00° - 120.00°	3.88	0.26%
30.00° - 40.00°	165.68	11.29%	120.00° - 130.00°	1.73	0.12%
40.00° - 50.00°	16.46	1.12%	130.00° - 140.00°	1.60	0.11%
50.00° - 60.00°	8.89	0.61%	140.00° - 150.00°	1.43	0.10%
60.00° - 70.00°	8.74	0.60%	150.00° - 160.00°	1.03	0.07%
70.00° - 80.00°	3.83	0.26%	160.00° - 170.00°	0.64	0.04%
80.00° - 90.00°	2.66	0.18%	170.00° - 180.00°	0.21	0.01%
0.00° - 90.00°	1455.25	99.15%	0.00° - 180.00°	1467.79	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°	5379.54	5379.54	5379.54	5379.54	5379.54	5379.54	5379.54	5379.54	5379.54	5379.54	5379.54	5379.54	5379.54	5379.54	5379.54	5379.54	5379.54
2.50°	5116.12	5061.46	5032.34	5005.61	5100.94	5081.02	5232.02	5195.55	5167.21	5126.30	5152.72	5113.32	5145.36	5160.45	5303.82	5171.66	5116.12
5.00°	4642.39	4615.67	4530.02	4534.25	4594.66	4648.15	4580.58	4643.79	4663.56	4674.19	4633.09	4641.82	4728.63	4801.83	4671.96	4655.53	4642.39
7.50°	3840.65	3828.98	3783.24	3773.07	3871.51	3847.04	3904.76	3954.06	3952.54	3923.89	3950.80	3920.17	3892.41	3938.56	3924.16	3841.15	3840.65
10.00°	3086.84	3074.79	3072.18	3049.39	3085.76	3055.24	3125.00	3133.99	3124.60	3097.21	3129.99	3091.10	3093.98	3069.54	3134.74	3083.56	3086.84
12.50°	2403.88	2417.81	2395.94	2396.28	2442.99	2420.97	2391.66	2431.76	2440.71	2433.02	2433.82	2414.42	2397.38	2405.07	2338.15	2376.57	2403.88
15.00°	1823.52	1821.69	1840.31	1832.53	1838.41	1804.79	1836.36	1833.62	1832.30	1807.12	1838.29	1798.08	1776.82	1746.71	1806.78	1808.98	1823.52
17.50°	1384.65	1395.53	1396.16	1427.53	1447.96	1419.53	1344.75	1388.46	1414.96	1417.03	1403.99	1385.00	1348.24	1377.29	1315.14	1357.49	1384.65
20.00°	1060.22	1042.76	1084.57	1105.48	1109.07	1054.02	1079.01	1071.45	1090.46	1076.61	1091.32	1047.29	1003.68	1015.57	1077.64	1059.97	1060.22
22.50°	885.38	878.28	889.20	922.64	924.00	899.07	850.98	864.05	895.41	902.34	887.53	869.06	854.68	873.50	872.67	882.24	885.38
25.00°	743.71	732.75	742.62	764.26	772.92	748.39	744.52	742.47	759.57	759.92	760.41	745.05	723.43	733.31	759.60	747.78	743.71
27.50°	643.16	632.01	636.02	644.12	644.82	635.22	634.16	628.09	637.73	640.38	640.40	633.12	631.04	631.31	656.79	645.21	643.16
30.00°	527.28	521.16	515.24	517.53	521.24	519.64	512.08	519.07	521.92	524.68	525.13	525.03	525.86	527.45	528.28	524.26	527.28
32.50°	393.65	387.85	383.60	381.55	389.08	385.58	387.99	393.99	393.04	392.91	399.54	398.80	394.77	396.37	397.33	390.46	393.65
35.00°	267.77	260.73	259.74	255.26	255.40	255.58	258.36	257.79	258.99	258.72	267.53	267.34	269.12	267.09	269.02	264.21	267.77
37.50°	150.29	146.60	141.52	142.33	155.56	152.10	145.51	152.34	154.94	154.49	161.24	161.66	153.73	158.34	140.92	142.87	150.29
40.00°	71.86	61.56	70.25	64.59	60.96	59.93	75.82	67.07	61.81	54.11	70.07	62.87	67.89	57.43	77.94	71.21	71.86
42.50°	33.54	32.91	31.25	32.91	31.93	34.13	24.15	27.49	27.49	28.99	29.06	30.93	34.54	32.33	18.65	29.72	33.54
45.00°	12.88	13.08	13.28	13.65	11.93	12.11	15.21	15.84	13.20	11.98	15.47	15.07	12.41	9.69	11.89	12.12	12.88
47.50°	9.43	9.12	8.79	9.58	8.44	9.59	8.60	10.37	8.30	8.85	9.36	10.08	9.11	7.71	7.34	8.24	9.43
50.00°	7.41	7.01	7.70	7.91	6.88	7.71	7.18	8.47	6.32	7.01	7.11	7.48	7.05	6.04	6.16	6.63	7.41
52.50°	6.70	8.06	8.62	8.98	8.46	8.82	7.22	9.28	7.95	8.12	7.91	7.67	6.93	6.63	5.08	6.23	6.70
55.00°	7.88	9.54	10.81	11.19	10.34	10.22	10.28	11.54	10.63	9.47	10.16	8.40	8.21	7.42	7.41	7.85	7.88
57.50°	10.67	11.74	13.70	14.63	12.95	12.87	12.73	12.95	12.65	12.00	12.67	10.84	11.52	9.50	9.77	10.49	10.67
60.00°	11.54	12.56	13.06	14.71	15.62	14.29	14.03	13.93	14.52	14.61	15.30	13.58	12.82	11.09	10.51	10.99	11.54
62.50°	10.86	11.32	10.57	11.32	12.66	11.00	13.22	12.07	11.87	12.11	12.89	11.18	11.34	9.97	11.20	10.50	10.86
65.00°	8.87	9.51	7.91	8.53	9.33	8.02	8.60	8.90	8.13	9.42	8.38	7.98	9.47	8.65	8.77	8.72	8.87
67.50°	5.91	6.93	5.17	6.33	6.70	6.13	5.40	6.24	6.26	7.16	6.05	6.39	7.10	6.39	6.37	6.38	5.91
70.00°	4.24	5.02	4.53	4.65	4.11	4.43	4.61	3.80	4.78	4.91	4.56	5.02	5.31	4.43	5.01	5.17	4.24
72.50°	3.50	4.00	4.87	3.45	3.37	3.39	3.79	3.07	3.96	4.14	3.83	4.19	4.22	3.78	3.70	4.42	3.50
75.00°	3.34	3.37	4.52	2.96	2.68	2.66	2.91	3.02	3.26	3.39	3.37	3.42	3.78	3.29	3.47	3.97	3.34
77.50°	3.56	3.24	3.88	3.09	2.84	2.89	2.37	3.15	3.30	3.63	3.38	3.50	4.09	3.51	3.25	3.62	3.56
80.00°	3.42	2.93	3.24	3.14	3.01	2.92	2.32	3.33	3.48	3.85	3.55	3.65	3.84	3.47	3.05	3.16	3.42
82.50°	3.04	2.42	2.60	3.14	2.80	2.41	2.13	2.90	2.96	3.26	3.20	3.18	2.98	2.53	2.80	2.68	3.04
85.00°	2.68	2.08	2.12	2.76	2.58	2.10	1.73	2.26	2.34	2.69	2.69	2.66	2.37	1.83	2.08	2.33	2.68
87.50°	2.31	1.91	1.69	2.10	2.23	2.29	1.41	2.05	1.92	2.33	2.36	2.59	2.02	1.94	1.44	2.03	2.31
90.00°	2.01	1.77	1.54	1.79	1.88	2.33	1.18	1.99	1.52	1.99	2.10	2.54	1.87	1.99	1.58	1.90	2.01
92.50°	1.74	1.66	1.48	1.72	1.95	2.01	1.08	1.88	1.73	1.90	2.04	2.21	1.92	1.82	1.71	1.82	1.74
95.00°	1.74	1.64	1.73	1.94	2.02	1.79	1.14	1.75	2.01	1.83	2.03	1.86	1.89	1.64	1.70	2.01	1.74
97.50°	1.88	1.70	2.08	2.34	2.14	1.81	1.21	1.74	2.16	1.98	2.10	2.03	1.81	1.42	1.69	2.27	1.88
100.00°	1.80	1.78	2.20	2.34	2.24	1.82	1.29	1.75	2.30	2.12	2.18	2.21	2.00	1.36	1.72	2.05	1.80

CK0407PC 20L 35K ND xx NL xx MW

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Page 4 of 6

Coefficients of Utilization – Zonal Cavity Method

Values are lumens delivered to the workplane.

RCR	pfc	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	0%
	pcc	80%	80%	80%	80%	70%	70%	70%	70%	50%	50%	50%	30%	30%	30%	10%	10%	10%	0%
	pw	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	30%
	0	1744	1744	1744	1744	1702	1702	1702	1702	1624	1624	1624	1552	1552	1552	1486	1486	1486	1455
	1	1675	1639	1607	1578	1638	1606	1578	1552	1545	1523	1502	1489	1472	1456	1437	1424	1412	1395
	2	1608	1547	1496	1454	1576	1521	1475	1437	1473	1436	1404	1428	1398	1372	1387	1363	1342	1336
	3	1545	1466	1404	1356	1516	1445	1389	1344	1406	1360	1321	1370	1332	1299	1337	1305	1278	1280
	4	1486	1394	1326	1275	1460	1377	1315	1267	1345	1292	1251	1316	1271	1235	1288	1251	1220	1228
	5	1430	1329	1258	1206	1407	1315	1249	1200	1289	1232	1189	1265	1216	1178	1242	1200	1167	1179
	6	1377	1270	1198	1147	1357	1259	1192	1143	1237	1178	1134	1217	1165	1126	1198	1153	1118	1133
	7	1328	1217	1145	1095	1310	1208	1140	1092	1189	1129	1085	1172	1119	1079	1156	1109	1073	1091
	8	1282	1169	1097	1048	1266	1160	1093	1046	1145	1084	1041	1130	1076	1036	1117	1068	1032	1051
	9	1239	1124	1054	1006	1224	1117	1050	1004	1104	1043	1001	1091	1036	997	1079	1030	993	1014
	10	1198	1083	1014	968	1185	1077	1011	967	1066	1005	964	1055	1000	961	1044	994	958	980

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	177.8 fc	2.2 ft
6.5 ft	127.3 fc	2.6 ft
7.5 ft	95.6 fc	3.1 ft
8.0 ft	84.1 fc	3.3 ft
10.0 ft	53.8 fc	4.1 ft
12.0 ft	37.4 fc	4.9 ft
14.0 ft	27.4 fc	5.7 ft
16.0 ft	21.0 fc	6.5 ft
20.0 ft	13.4 fc	8.2 ft
24.0 ft	9.3 fc	9.8 ft
28.0 ft	6.9 fc	11.4 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	510573	510573	510573
45.00°	1729	1783	1602
55.00°	1304	1788	1711
65.00°	1993	1776	2096
75.00°	1224	1657	983
85.00°	2914	2307	2815

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	3.9	4.8	4.2	5.1	5.4	4.5	5.4	4.9	5.7	6.0
	3H	5.0	5.8	5.4	6.2	6.6	5.5	6.3	5.9	6.7	7.1
	4H	5.4	6.2	5.8	6.5	6.9	5.8	6.6	6.2	6.9	7.3
	6H	6.1	6.8	6.5	7.2	7.6	6.4	7.1	6.8	7.5	7.9
	8H	6.5	7.1	6.9	7.5	8.0	6.8	7.4	7.2	7.8	8.2
	12H	7.0	7.6	7.4	8.0	8.4	7.1	7.7	7.6	8.1	8.6
4H	2H	4.4	5.1	4.8	5.5	5.9	4.9	5.7	5.4	6.1	6.5
	3H	5.7	6.3	6.1	6.7	7.1	6.0	6.6	6.5	7.1	7.5
	4H	6.2	6.8	6.7	7.2	7.7	6.4	7.0	6.9	7.4	7.9
	6H	7.1	7.5	7.5	8.0	8.5	7.2	7.7	7.7	8.1	8.6
	8H	7.5	8.0	8.0	8.4	8.9	7.7	8.1	8.2	8.6	9.1
	12H	8.1	8.5	8.6	9.0	9.5	8.2	8.6	8.7	9.1	9.6
8H	4H	6.4	6.9	6.9	7.3	7.8	6.5	6.9	7.0	7.4	7.9
	6H	7.5	7.8	8.0	8.3	8.8	7.6	7.9	8.1	8.4	8.9
	8H	8.1	8.4	8.6	8.9	9.5	8.2	8.5	8.8	9.0	9.6
	12H	8.9	9.1	9.4	9.6	10.2	8.9	9.2	9.5	9.7	10.3
12H	4H	6.5	6.8	7.0	7.3	7.8	6.6	6.9	7.1	7.4	7.9
	6H	7.6	7.9	8.1	8.4	8.9	7.7	8.0	8.2	8.5	9.0
	8H	8.3	8.5	8.8	9.1	9.7	8.4	8.7	9.0	9.2	9.8

Corrected UGR values based on total output energy
 SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0