

## Indoor Distribution Test Report

# Spectrum Lighting Inc.

994 Jefferson Street  
Fall River, MA 02721  
+1.508.678.2303

## Spectrum Lighting Photometric Lab

### Luminaire

CF04XXPC 15L 35K ND XX NL XX  
Nom 4" diam Gamma Cylinder, ND optic, no lens

### Test Number

SP-01069\_1\_M-15L

### Test Date

1/31/2020

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

### Summary of Results

#### Power

Input Watts	9.5 W
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#### Lumen Output

Output Lumens	1166
Efficacy	122.74 lm/W

#### Luminous Dimensions

0° - 180° Size	-0.33
90° - 270° Size	-0.33
Height	0

#### Spacing Criterion

Two luminaires, plane 0°	0.32
Two luminaires, plane 90°	0.32
Four luminaires	0.33

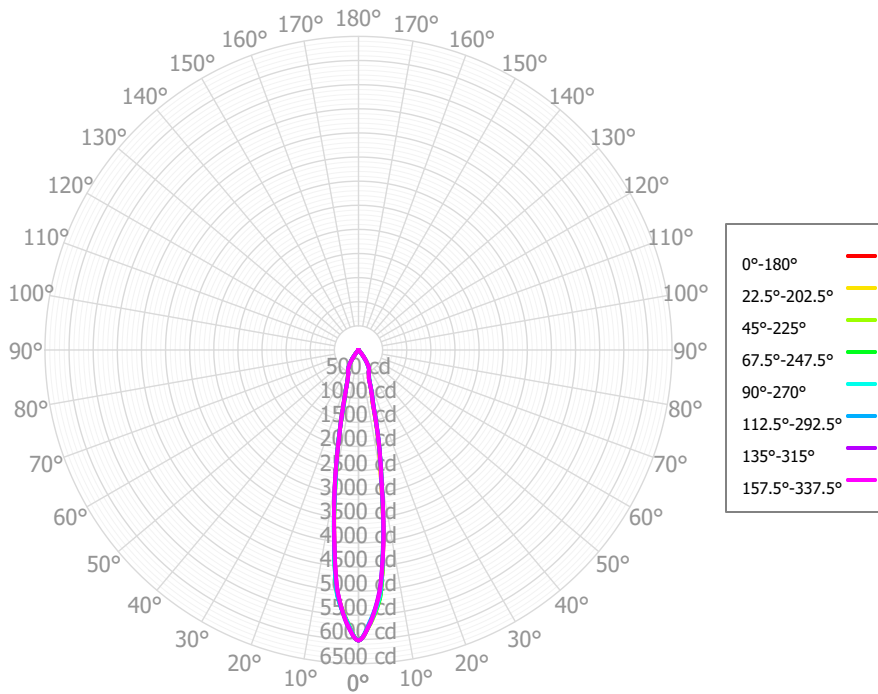
#### Full Beam Angle

0° - 180°	19°
90° - 270°	19°

### IES File Header Contents

Keyword	Value
TEST	SP-01069_1_M-15L
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
TESTDATE	1/31/2020
ISSUEDATE	3/19/2020
LUMCAT	CF04XXPC 15L 35K ND XX NL XX
LUMINAIRE	Nom 4" diam Gamma Cylinder, ND optic, no lens
OTHER	Beam Angle: 18.9 deg
LAMPCAT	N/A
LAMP	N/A
OTHER	CCT Output Multipliers: 27K x 0.972, 30K x 0.981, 40K x 1.04, 27HK x 0.89, 30HK x 0.83
OTHER	Total luminaire wattage is approximate
OTHER	This report prepared by Spectrum Lighting

### Candela Polar Plot



### Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	402.83	34.55%	90.00° - 100.00°	0.05	0.00%
10.00° - 20.00°	365.52	31.35%	100.00° - 110.00°	0.00	0.00%
20.00° - 30.00°	236.20	20.26%	100.00° - 120.00°	0.00	0.00%
30.00° - 40.00°	146.21	12.54%	120.00° - 130.00°	0.00	0.00%
40.00° - 50.00°	10.93	0.94%	130.00° - 140.00°	0.00	0.00%
50.00° - 60.00°	0.93	0.08%	140.00° - 150.00°	0.00	0.00%
60.00° - 70.00°	1.25	0.11%	150.00° - 160.00°	0.00	0.00%
70.00° - 80.00°	1.22	0.10%	160.00° - 170.00°	0.00	0.00%
80.00° - 90.00°	0.93	0.08%	170.00° - 180.00°	0.00	0.00%
0.00° - 90.00°	1166.02	100.00%	0.00° - 180.00°	1166.07	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°	6019.86	6019.86	6019.86	6019.86	6019.86	6019.86	6019.86	6019.86	6019.86	6019.86	6019.86	6019.86	6019.86	6019.86	6019.86	6019.86	6019.86
2.50°	5649.24	5657.10	5682.83	5658.40	5655.30	5644.35	5677.79	5657.84	5631.77	5629.79	5603.75	5617.16	5619.32	5614.89	5658.83	5657.53	5649.24
5.00°	5118.96	5125.54	5154.94	5146.60	5117.58	5070.51	5005.35	5011.57	5047.03	5033.86	5062.76	5094.28	5094.79	5050.67	5004.16	5041.13	5118.96
7.50°	3933.05	3940.11	3909.03	3914.24	3904.12	3891.08	3859.29	3858.63	3867.43	3859.86	3883.38	3892.63	3898.84	3915.56	3963.22	3962.86	3933.05
10.00°	2675.33	2671.48	2763.39	2755.07	2776.14	2802.94	2813.71	2809.09	2783.98	2780.51	2687.81	2733.63	2718.17	2723.23	2756.24	2737.22	2675.33
12.50°	1882.03	1879.27	1884.12	1903.63	1913.54	1908.74	1857.40	1875.78	1897.89	1883.43	1891.60	1905.37	1915.51	1929.26	1924.39	1910.67	1882.03
15.00°	1126.47	1126.13	1198.43	1197.81	1222.32	1232.69	1245.26	1244.55	1231.42	1218.70	1151.73	1178.52	1182.78	1172.87	1200.31	1162.66	1126.47
17.50°	867.77	866.36	870.80	886.53	893.49	887.33	855.96	862.21	887.48	875.80	882.65	889.11	891.61	893.63	881.66	870.68	867.77
20.00°	633.63	628.93	646.13	653.05	658.47	660.35	660.48	655.25	662.28	656.36	648.92	654.35	646.19	642.08	634.10	624.06	633.63
22.50°	563.64	561.78	560.79	568.23	567.08	564.23	555.81	554.76	566.19	562.01	571.61	570.63	568.57	568.91	559.66	559.36	563.64
25.00°	502.08	502.01	504.19	506.62	504.33	504.60	504.61	502.56	505.20	502.84	504.65	504.00	503.63	504.03	498.77	499.04	502.08
27.50°	472.69	473.72	476.05	476.95	473.55	474.96	470.44	471.09	472.19	470.15	466.87	470.09	469.47	470.00	466.90	469.12	472.69
30.00°	429.69	432.08	426.00	425.49	418.91	415.69	406.92	405.29	407.55	403.59	410.82	413.68	416.35	420.73	430.47	431.55	429.69
32.50°	351.97	353.90	360.07	352.12	344.77	338.75	337.49	329.64	324.37	318.64	318.63	325.83	330.32	334.07	341.42	346.31	351.97
35.00°	264.15	266.74	267.06	260.09	251.34	242.44	234.00	228.53	227.80	220.76	222.65	230.62	236.71	241.84	250.38	257.42	264.15
37.50°	158.30	162.25	159.72	154.12	146.29	137.97	127.14	122.96	125.69	117.99	121.29	127.91	133.58	139.86	148.61	155.24	158.30
40.00°	77.24	80.80	86.32	80.97	75.30	70.74	65.57	64.02	63.69	59.56	52.50	59.93	62.52	64.54	62.60	70.64	77.24
42.50°	28.16	31.31	25.40	25.49	18.81	14.15	8.08	8.98	12.88	12.23	17.98	17.95	21.01	23.05	27.97	29.09	28.16
45.00°	3.15	4.97	8.51	6.72	4.06	3.72	4.18	4.85	3.44	3.93	2.35	2.29	3.16	2.52	3.59	2.42	3.15
47.50°	1.21	2.12	2.04	1.95	1.17	1.11	0.83	1.03	0.76	1.11	1.25	1.04	1.45	1.74	2.20	1.35	1.21
50.00°	0.55	0.99	1.31	1.00	0.70	0.87	0.89	0.86	0.74	0.86	0.99	0.74	0.91	1.33	1.28	0.81	0.55
52.50°	0.79	1.16	1.33	0.98	0.65	0.80	0.96	0.73	0.89	0.74	1.18	0.80	0.96	1.17	1.11	0.92	0.79
55.00°	0.92	1.15	1.08	1.06	0.70	1.12	1.10	0.81	1.04	0.91	1.14	1.05	1.18	1.12	1.13	1.01	0.92
57.50°	1.00	1.06	0.83	1.14	0.76	1.40	1.20	0.94	1.16	1.05	1.00	1.33	1.45	1.11	1.37	1.08	1.00
60.00°	1.15	0.86	0.94	1.16	0.90	1.16	1.20	1.20	1.04	0.90	1.36	0.99	1.40	1.12	1.49	1.29	1.15
62.50°	1.33	0.62	1.09	1.17	1.02	0.96	1.34	1.61	0.93	0.81	1.85	0.57	1.28	1.14	1.48	1.60	1.33
65.00°	1.15	0.66	1.45	1.01	0.86	0.93	1.70	2.37	0.94	0.96	2.18	1.03	1.50	1.02	1.38	1.64	1.15
67.50°	0.90	0.77	1.68	0.86	0.73	0.97	1.88	2.73	0.89	1.04	2.49	1.50	1.75	0.87	1.23	1.55	0.90
70.00°	0.82	0.88	1.46	0.80	0.78	1.16	1.88	2.52	0.71	0.93	2.11	1.35	1.36	0.92	1.15	1.76	0.82
72.50°	0.79	1.00	1.42	0.86	0.80	1.10	1.68	1.96	0.71	1.03	1.79	1.28	1.11	1.03	1.10	2.01	0.79
75.00°	0.88	1.18	1.61	1.07	0.80	0.80	1.42	1.28	0.86	1.31	1.72	1.41	1.29	1.38	1.22	1.45	0.88
77.50°	0.72	1.12	1.11	0.71	0.95	0.67	1.15	1.17	0.78	1.08	1.37	1.24	1.44	1.21	1.23	1.10	0.72
80.00°	0.48	0.96	0.96	0.75	0.78	0.68	0.83	0.99	0.67	1.13	1.01	1.03	1.43	0.86	1.10	0.98	0.48
82.50°	0.57	0.92	1.13	1.04	0.57	0.64	1.14	0.80	1.04	1.22	0.87	0.97	1.09	0.99	1.02	1.04	0.57
85.00°	0.87	1.05	0.97	0.94	0.74	0.76	1.34	0.85	1.19	0.91	1.01	0.56	1.24	1.03	0.80	0.92	0.87
87.50°	0.87	0.76	1.04	1.03	0.82	0.89	0.94	1.19	0.68	0.61	1.02	0.82	1.15	0.89	0.74	0.90	0.87
90.00°	0.59	0.55	0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.83	0.67	0.69	0.88	0.69	0.59
92.50°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95.00°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
97.50°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
102.50°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105.00°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
107.50°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110.00°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
112.50°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### 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>	1388	1388	1388	1388	1356	1356	1356	1356	1296	1296	1296	1240	1240	1240	1190	1190	1166
	<b>1</b>	1337	1311	1287	1266	1309	1286	1265	1246	1239	1223	1207	1196	1184	1172	1157	1147	1138
	<b>2</b>	1288	1243	1205	1174	1264	1223	1190	1161	1187	1159	1136	1153	1131	1112	1122	1104	1089
	<b>3</b>	1242	1183	1138	1101	1221	1168	1126	1093	1139	1104	1076	1112	1083	1059	1087	1063	1043
	<b>4</b>	1198	1130	1080	1042	1180	1118	1072	1036	1094	1055	1024	1072	1039	1013	1052	1024	1001
	<b>5</b>	1157	1082	1030	991	1141	1072	1024	987	1053	1011	979	1035	999	971	1019	988	963
	<b>6</b>	1119	1039	986	948	1104	1031	981	945	1015	971	939	1000	962	933	987	953	927
	<b>7</b>	1083	1000	947	909	1069	993	943	907	980	935	903	968	928	898	956	921	894
	<b>8</b>	1049	965	912	875	1037	959	908	874	948	902	870	937	897	867	927	891	864
	<b>9</b>	1017	932	880	844	1006	927	877	843	917	872	841	908	867	838	900	863	836
	<b>10</b>	987	902	851	817	978	897	849	816	889	845	814	882	841	812	874	837	810

### Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	199.0 fc	1.8 ft
6.5 ft	142.5 fc	2.2 ft
7.5 ft	107.0 fc	2.5 ft
8.0 ft	94.1 fc	2.7 ft
10.0 ft	60.2 fc	3.3 ft
12.0 ft	41.8 fc	4.0 ft
14.0 ft	30.7 fc	4.6 ft
16.0 ft	23.5 fc	5.3 ft
20.0 ft	15.0 fc	6.6 ft
24.0 ft	10.5 fc	8.0 ft
28.0 ft	7.7 fc	9.3 ft

### Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
<b>0.00°</b>	757598	757598	757598
<b>45.00°</b>	561	1515	723
<b>55.00°</b>	202	236	153
<b>65.00°</b>	343	431	255
<b>75.00°</b>	429	785	390
<b>85.00°</b>	1257	1394	1062

### 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	-10.6	-9.7	-10.2	-9.4	-9.1	-9.2	-8.3	-8.8	-8.0	-7.7
	3H	-7.1	-6.3	-6.7	-5.9	-5.6	-5.9	-5.1	-5.5	-4.8	-4.4
	4H	-5.2	-4.5	-4.8	-4.2	-3.8	-4.4	-3.7	-4.0	-3.4	-3.0
	6H	-4.1	-3.5	-3.7	-3.1	-2.7	-2.5	-1.9	-2.1	-1.5	-1.1
	8H	-3.6	-3.0	-3.2	-2.6	-2.2	-1.8	-1.2	-1.3	-0.8	-0.4
	12H	-2.4	-1.8	-2.0	-1.4	-1.0	-0.8	-0.2	-0.4	0.2	0.6
4H	2H	-8.8	-8.1	-8.4	-7.8	-7.4	-7.0	-6.3	-6.6	-6.0	-5.6
	3H	-5.1	-4.5	-4.7	-4.1	-3.7	-3.9	-3.4	-3.5	-2.9	-2.5
	4H	-3.1	-2.6	-2.7	-2.2	-1.7	-2.6	-2.1	-2.1	-1.6	-1.2
	6H	-1.9	-1.5	-1.4	-1.0	-0.5	-0.9	-0.5	-0.4	0.0	0.5
	8H	-1.3	-0.9	-0.8	-0.4	0.0	-0.2	0.3	0.3	0.7	1.2
	12H	-0.2	0.2	0.3	0.7	1.2	0.8	1.2	1.3	1.7	2.2
8H	4H	-2.3	-1.9	-1.9	-1.5	-1.0	-1.7	-1.3	-1.2	-0.9	-0.4
	6H	-0.7	-0.4	-0.2	0.1	0.6	0.0	0.3	0.5	0.8	1.3
	8H	0.2	0.5	0.7	1.0	1.5	0.8	1.1	1.4	1.6	2.1
	12H	1.6	1.8	2.1	2.3	2.9	1.9	2.2	2.5	2.7	3.3
12H	4H	-2.2	-1.9	-1.7	-1.4	-0.9	-1.6	-1.3	-1.1	-0.8	-0.3
	6H	-0.4	-0.1	0.1	0.3	0.9	0.2	0.5	0.7	1.0	1.5
	8H	0.7	0.9	1.2	1.4	2.0	1.2	1.4	1.7	1.9	2.5

Corrected UGR values based on total output energy  
 SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0