Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

CF04XXPC 15L 35K XW XX CL XX

Nom 4" diam Gamma Cylinder, XW optic, clear glass lens

Test Number

SP-01071_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

Lumen Output

Output Lumens	1086
Efficacy	114.37 lm/W

Luminous Dimensions

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

Spacing Criterion

Two luminaires, plane 0°	0.98
Two luminaires, plane 90°	1
Four luminaires	0.88

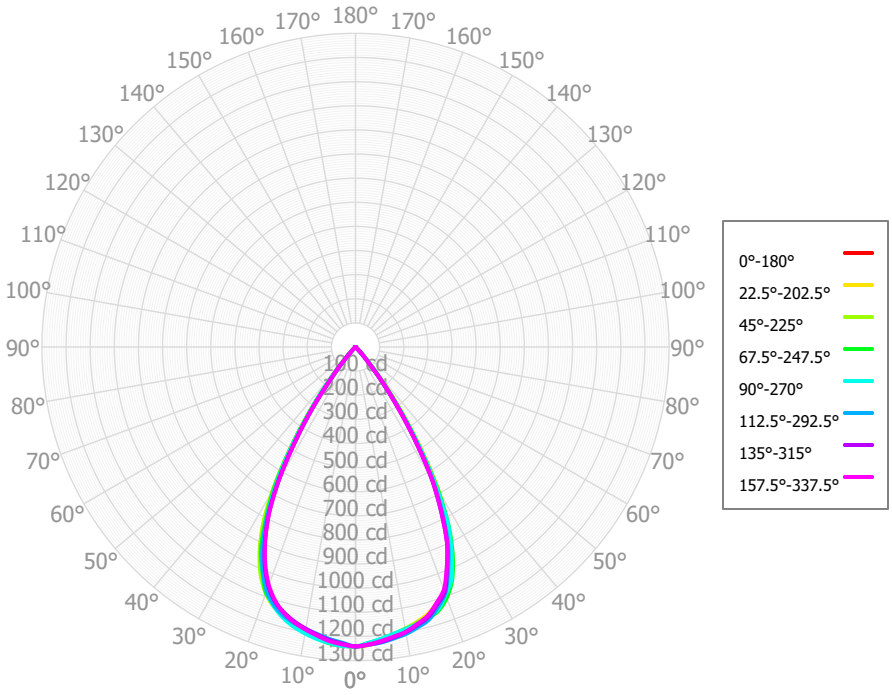
Full Beam Angle

0° - 180°	61°
90° - 270°	61°

IES File Header Contents

Keyword	Value
TEST	SP-01071_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 XW XX CL XX
LUMINAIRE	Nom 4" diam Gamma Cylinder, XW optic, clear glass lens
OTHER	Beam Angle: 61.1 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°	117.60	10.82%	90.00° - 100.00°	0.08	0.01%
10.00° - 20.00°	323.29	29.76%	100.00° - 110.00°	0.00	0.00%
20.00° - 30.00°	409.87	37.72%	100.00° - 120.00°	0.00	0.00%
30.00° - 40.00°	208.62	19.20%	120.00° - 130.00°	0.00	0.00%
40.00° - 50.00°	19.99	1.84%	130.00° - 140.00°	0.00	0.00%
50.00° - 60.00°	2.56	0.24%	140.00° - 150.00°	0.00	0.00%
60.00° - 70.00°	1.73	0.16%	150.00° - 160.00°	0.00	0.00%
70.00° - 80.00°	1.54	0.14%	160.00° - 170.00°	0.00	0.00%
80.00° - 90.00°	1.20	0.11%	170.00° - 180.00°	0.00	0.00%
0.00° - 90.00°	1086.40	99.99%	0.00° - 180.00°	1086.48	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°	1241.57	1241.57	1241.57	1241.57	1241.57	1241.57	1241.57	1241.57	1241.57	1241.57	1241.57	1241.57	1241.57	1241.57	1241.57	1241.57	1241.57
2.50°	1236.43	1237.30	1232.44	1228.78	1228.00	1227.90	1231.17	1234.80	1235.58	1238.31	1239.06	1239.47	1241.19	1235.39	1235.51	1234.71	1236.43
5.00°	1225.80	1223.56	1217.85	1215.81	1214.64	1216.11	1220.42	1224.78	1225.65	1228.04	1231.82	1233.71	1232.31	1229.84	1227.67	1223.38	1225.80
7.50°	1210.21	1206.40	1202.01	1200.84	1200.37	1201.64	1204.14	1207.99	1209.87	1212.50	1216.53	1219.29	1221.54	1219.17	1214.97	1211.40	1210.21
10.00°	1193.82	1188.70	1186.06	1187.77	1188.32	1187.14	1186.46	1190.23	1192.44	1194.80	1199.55	1202.89	1206.25	1208.13	1201.23	1199.34	1193.82
12.50°	1173.68	1168.89	1171.32	1177.78	1176.52	1172.58	1166.50	1170.32	1171.70	1172.71	1178.37	1179.77	1187.44	1190.88	1181.47	1177.34	1173.68
15.00°	1153.23	1148.91	1156.10	1164.16	1159.03	1153.15	1141.00	1143.40	1146.40	1148.11	1155.16	1155.75	1162.22	1171.79	1160.92	1154.52	1153.23
17.50°	1116.50	1115.74	1128.43	1145.98	1140.29	1122.60	1108.42	1104.71	1114.26	1119.65	1128.17	1120.90	1126.66	1133.23	1122.33	1114.57	1116.50
20.00°	1077.35	1080.33	1096.32	1106.72	1092.91	1076.70	1055.66	1050.89	1067.91	1078.15	1087.18	1085.10	1076.93	1087.96	1081.85	1071.33	1077.35
22.50°	1001.42	1009.87	1026.98	1047.15	1040.62	1004.88	983.23	977.85	1005.38	1021.26	1026.71	1008.52	1004.42	1003.51	991.55	988.78	1001.42
25.00°	919.97	932.98	948.56	954.43	942.25	912.04	888.59	885.75	918.53	937.84	941.28	928.32	908.13	909.89	898.08	899.68	919.97
27.50°	797.33	811.96	824.82	837.39	832.37	792.39	777.43	775.22	809.95	830.50	829.45	804.36	790.46	782.58	767.92	771.97	797.33
30.00°	665.51	681.00	687.99	678.92	663.64	645.71	631.61	634.86	664.93	682.43	685.03	674.21	655.28	644.50	631.90	635.37	665.51
32.50°	493.39	508.90	508.43	496.85	494.81	471.94	465.79	471.86	495.14	506.01	513.56	507.17	501.47	478.93	461.75	465.84	493.39
35.00°	330.42	344.86	340.29	332.93	325.63	315.62	314.98	319.87	336.90	343.83	351.74	346.49	336.11	324.05	301.35	306.97	330.42
37.50°	194.49	204.36	198.58	176.61	180.25	172.61	170.56	174.18	184.54	189.18	196.00	210.64	207.17	189.76	176.69	176.58	194.49
40.00°	87.19	93.85	91.00	93.92	91.82	86.75	90.96	91.16	97.21	100.11	103.64	98.46	95.01	90.60	75.83	76.87	87.19
42.50°	42.65	46.40	43.52	32.97	29.94	33.80	30.86	34.57	34.79	36.41	40.95	49.80	44.75	42.19	37.87	36.71	42.65
45.00°	13.13	15.04	13.78	15.50	15.52	13.07	14.21	14.95	15.20	15.84	17.68	15.49	15.67	14.01	11.42	11.18	13.13
47.50°	8.02	8.86	7.60	6.79	6.37	6.48	6.51	6.77	6.97	6.85	8.15	9.19	7.51	8.06	7.12	6.95	8.02
50.00°	4.60	4.78	4.10	4.36	4.30	4.20	4.54	4.37	4.85	4.39	5.24	4.89	4.17	4.79	4.24	4.19	4.60
52.50°	3.24	3.27	3.31	2.63	3.12	3.26	3.23	3.15	3.73	3.11	3.89	3.60	3.54	3.83	3.41	3.11	3.24
55.00°	2.48	2.32	2.84	2.28	2.84	2.66	2.68	2.47	2.89	2.63	2.92	2.76	3.27	3.18	2.71	2.40	2.48
57.50°	2.32	1.91	2.60	2.00	2.40	2.12	2.17	1.85	2.07	2.22	2.00	2.40	2.70	2.72	2.14	2.01	2.32
60.00°	2.19	1.81	2.38	1.95	1.83	1.94	1.88	1.85	2.22	2.13	1.82	2.21	2.13	2.40	1.73	1.92	2.19
62.50°	2.10	1.92	2.17	1.90	1.52	1.79	1.61	1.87	2.37	2.05	1.70	2.14	1.89	2.15	1.44	2.01	2.10
65.00°	1.86	1.77	1.86	1.74	1.38	1.62	1.41	1.68	2.20	1.94	1.53	2.03	1.66	1.97	1.35	1.84	1.86
67.50°	1.54	1.46	1.50	1.59	1.28	1.48	1.25	1.53	1.97	1.84	1.38	1.87	1.39	1.82	1.38	1.53	1.54
70.00°	1.49	1.29	1.46	1.46	1.20	1.70	1.21	1.58	1.44	1.78	1.34	1.62	1.27	1.70	1.84	1.76	1.49
72.50°	1.54	1.17	1.47	1.35	1.11	1.75	1.17	1.63	1.19	1.59	1.28	1.32	1.70	1.65	2.46	2.13	1.54
75.00°	1.59	1.09	1.35	1.23	1.21	1.51	1.12	1.67	1.19	1.24	1.18	1.61	1.86	1.98	2.14	2.08	1.59
77.50°	1.50	1.18	1.42	1.21	1.48	1.35	1.37	1.25	1.03	1.06	1.14	1.84	1.75	1.62	1.74	1.70	1.50
80.00°	1.22	1.38	1.46	1.04	0.86	1.13	1.18	1.05	1.08	0.97	1.19	1.94	2.08	1.07	1.30	1.05	1.22
82.50°	0.93	1.23	1.09	0.88	1.06	0.89	1.02	1.09	1.16	1.13	1.16	1.71	2.01	1.18	1.40	0.74	0.93
85.00°	0.89	1.22	1.19	1.17	0.91	0.85	1.21	1.07	0.97	1.28	1.01	1.68	1.65	1.52	1.38	1.00	0.89
87.50°	0.87	1.08	1.31	1.11	0.82	1.18	1.17	1.16	1.00	1.29	1.04	1.24	1.51	1.19	1.06	0.88	0.87
90.00°	0.77	1.04	1.03	0.00	0.00	0.51	0.00	0.00	0.00	0.00	0.17	1.10	1.62	1.06	1.22	0.71	0.77
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.

	ρfc	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	0%
	ρcc	80%	80%	80%	80%	70%	70%	70%	70%	50%	50%	50%	30%	30%	30%	10%	10%	10%	0%
	ρw	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	30%
RCR	0	1293	1293	1293	1293	1263	1263	1263	1263	1207	1207	1207	1156	1156	1156	1109	1109	1109	1086
	1	1236	1207	1180	1157	1209	1183	1160	1139	1139	1121	1104	1099	1084	1071	1062	1050	1040	1030
	2	1178	1127	1085	1050	1154	1109	1071	1038	1074	1043	1016	1042	1016	994	1012	991	973	972
	3	1122	1056	1004	963	1101	1041	994	955	1013	973	940	986	953	926	962	935	911	917
	4	1069	991	934	890	1050	979	926	885	955	910	874	934	895	864	914	881	854	865
	5	1018	932	871	827	1001	921	865	823	902	853	816	885	842	808	868	831	801	816
	6	970	877	815	771	954	869	811	768	853	801	763	838	793	758	824	784	753	771
	7	924	828	765	722	910	821	762	720	807	754	716	794	747	712	783	740	708	728
	8	881	782	720	677	869	776	717	676	765	711	673	754	705	670	744	700	667	689
	9	841	741	679	637	830	735	676	636	725	672	634	716	667	632	707	663	630	652
	10	803	702	641	601	793	698	639	600	689	635	599	681	632	597	673	628	595	619

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	41.0 fc	6.5 ft
6.5 ft	29.4 fc	7.7 ft
7.5 ft	22.1 fc	8.9 ft
8.0 ft	19.4 fc	9.5 ft
10.0 ft	12.4 fc	11.8 ft
12.0 ft	8.6 fc	14.2 ft
14.0 ft	6.3 fc	16.6 ft
16.0 ft	4.8 fc	19.0 ft
20.0 ft	3.1 fc	23.7 ft
24.0 ft	2.2 fc	28.4 ft
28.0 ft	1.6 fc	33.2 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	156251	156251	156251
45.00°	2337	2453	2763
55.00°	545	622	624
65.00°	555	554	411
75.00°	773	657	589
85.00°	1290	1718	1314

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	-5.9	-5.0	-5.5	-4.7	-4.4	-5.0	-4.1	-4.6	-3.8	-3.5
	3H	-3.6	-2.8	-3.2	-2.4	-2.1	-3.2	-2.4	-2.8	-2.0	-1.7
	4H	-1.9	-1.1	-1.5	-0.8	-0.4	-1.7	-1.0	-1.3	-0.7	-0.3
	6H	-0.4	0.3	0.1	0.7	1.1	0.2	0.8	0.6	1.2	1.6
	8H	0.2	0.8	0.6	1.2	1.6	1.2	1.8	1.6	2.2	2.6
	12H	0.8	1.4	1.2	1.7	2.2	2.2	2.8	2.7	3.2	3.6
4H	2H	-5.3	-4.5	-4.9	-4.2	-3.8	-4.7	-4.0	-4.3	-3.6	-3.2
	3H	-2.4	-1.8	-2.0	-1.4	-1.0	-2.4	-1.8	-2.0	-1.4	-1.0
	4H	-0.5	0.0	-0.1	0.5	0.9	-0.7	-0.1	-0.2	0.3	0.8
	6H	1.1	1.5	1.6	2.0	2.5	1.5	2.0	2.0	2.4	2.9
	8H	1.7	2.1	2.1	2.5	3.0	2.7	3.1	3.1	3.5	4.0
	12H	2.4	2.7	2.9	3.2	3.7	3.8	4.1	4.3	4.6	5.1
8H	4H	0.2	0.7	0.7	1.1	1.6	-0.2	0.2	0.3	0.7	1.2
	6H	2.0	2.3	2.5	2.8	3.3	2.3	2.6	2.8	3.1	3.6
	8H	2.7	3.0	3.2	3.5	4.0	3.6	3.9	4.1	4.4	4.9
	12H	3.7	3.9	4.2	4.4	5.0	4.9	5.2	5.5	5.7	6.3
12H	4H	0.3	0.7	0.8	1.2	1.7	-0.1	0.2	0.4	0.7	1.2
	6H	2.2	2.5	2.7	3.0	3.5	2.4	2.7	2.9	3.2	3.7
	8H	3.1	3.3	3.6	3.8	4.4	3.8	4.1	4.3	4.6	5.1

Corrected UGR values based on total output energy
SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0