

Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

CF04XXPC 20L 35K WD XX NL XX
Nom 4" diam Gamma Cylinder, WD optic, no lens

Test Number

SP-01070_1

Test Date

1/31/2020

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

Summary of Results

Power

Input Watts	12.9 W
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Lumen Output

Output Lumens	1601
Efficacy	124.13 lm/W

Luminous Dimensions

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

Spacing Criterion

Two luminaires, plane 0°	0.81
Two luminaires, plane 90°	0.81
Four luminaires	0.79

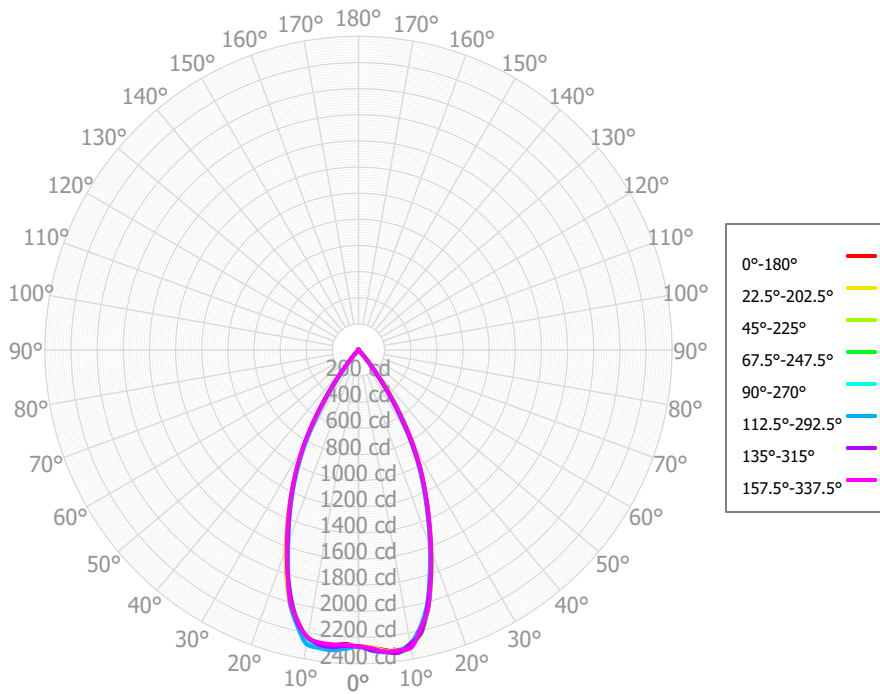
Full Beam Angle

0° - 180°	51°
90° - 270°	51°

IES File Header Contents

Keyword	Value
TEST	SP-01070_1
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
TESTDATE	1/31/2020
ISSUEDATE	12/8/2020
LUMCAT	CF04XXPC 20L 35K WD XX NL XX
LUMINAIRE	Nom 4" diam Gamma Cylinder, WD optic, no lens
OTHER	Beam Angle: 49.4 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
_CRI	80
_CCTMULT	27K x 0.972, 30K x 0.981, 40K x 1.04
_CCTMULTA	27HK x 0.89, 30HK x 0.83
_LAMPMULT	10L x 0.5, 15L x 0.74

Candela Polar Plot



Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	221.98	13.86%	90.00° - 100.00°	1.55	0.10%
10.00° - 20.00°	552.22	34.48%	100.00° - 110.00°	1.44	0.09%
20.00° - 30.00°	546.44	34.12%	100.00° - 120.00°	2.74	0.17%
30.00° - 40.00°	249.52	15.58%	120.00° - 130.00°	1.23	0.08%
40.00° - 50.00°	15.71	0.98%	130.00° - 140.00°	1.14	0.07%
50.00° - 60.00°	1.42	0.09%	140.00° - 150.00°	1.04	0.06%
60.00° - 70.00°	1.52	0.10%	150.00° - 160.00°	0.80	0.05%
70.00° - 80.00°	1.76	0.11%	160.00° - 170.00°	0.48	0.03%
80.00° - 90.00°	1.62	0.10%	170.00° - 180.00°	0.16	0.01%
0.00° - 90.00°	1592.20	99.43%	0.00° - 180.00°	1601.33	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°	2269.38	2269.38	2269.38	2269.38	2269.38	2269.38	2269.38	2269.38	2269.38	2269.38	2269.38	2269.38	2269.38	2269.38	2269.38	2269.38	2269.38
2.50°	2281.99	2277.22	2287.50	2296.12	2288.69	2288.69	2268.72	2259.08	2252.25	2262.47	2260.70	2274.03	2290.60	2305.40	2299.89	2285.50	2281.99
5.00°	2304.91	2311.68	2312.10	2317.65	2318.33	2307.35	2282.54	2261.70	2269.06	2268.25	2271.34	2285.71	2297.77	2321.89	2319.05	2318.21	2304.91
7.50°	2327.46	2313.73	2339.05	2335.80	2321.87	2300.69	2276.59	2259.27	2267.12	2273.94	2265.96	2269.78	2303.29	2322.33	2337.69	2318.32	2327.46
10.00°	2282.29	2302.41	2291.49	2307.66	2299.10	2287.10	2233.93	2238.12	2244.38	2241.58	2230.25	2244.80	2247.22	2283.49	2285.91	2315.13	2282.29
12.50°	2204.48	2193.09	2225.69	2208.94	2201.33	2164.46	2144.76	2134.11	2156.44	2160.98	2146.00	2128.52	2158.14	2175.93	2216.40	2188.78	2204.48
15.00°	2034.50	2052.81	2050.36	2057.35	2040.38	2019.50	1984.38	2007.62	2009.77	2024.96	1988.17	1990.11	1991.84	2024.01	2036.08	2055.97	2034.50
17.50°	1828.62	1846.32	1856.52	1840.65	1837.14	1800.62	1800.03	1805.55	1824.03	1831.97	1808.87	1793.95	1792.94	1809.75	1836.33	1835.73	1828.62
20.00°	1615.11	1623.78	1637.70	1622.09	1605.08	1571.87	1586.04	1604.84	1609.78	1630.60	1602.51	1587.58	1590.60	1598.43	1621.82	1617.36	1615.11
22.50°	1399.33	1418.85	1416.13	1401.66	1393.54	1379.32	1389.25	1407.60	1407.44	1422.03	1405.34	1393.66	1387.15	1390.44	1405.72	1413.64	1399.33
25.00°	1209.74	1216.86	1219.43	1199.37	1193.20	1189.31	1209.73	1213.42	1212.30	1219.47	1217.57	1201.10	1192.20	1190.82	1212.44	1212.85	1209.74
27.50°	1025.74	1031.24	1023.98	1012.25	1006.11	1008.58	1022.67	1025.37	1005.74	1021.09	1012.11	998.60	999.38	999.17	1020.42	1026.80	1025.74
30.00°	832.16	847.26	832.04	817.33	824.91	827.17	829.30	821.24	793.69	792.86	791.99	795.62	775.44	786.06	803.49	833.86	832.16
32.50°	637.14	644.12	639.82	617.17	625.41	618.48	622.32	590.66	570.04	548.00	567.68	562.23	546.11	556.42	587.45	616.12	637.14
35.00°	441.46	440.27	442.81	428.82	419.60	413.59	406.12	382.82	342.05	345.19	340.48	333.27	352.50	359.14	387.74	410.28	441.46
37.50°	245.73	273.65	253.57	246.88	256.08	250.61	238.98	205.09	188.92	161.52	182.50	187.74	162.69	181.97	197.84	237.83	245.73
40.00°	131.68	113.35	133.22	127.20	103.40	101.73	98.47	87.10	57.90	72.11	62.88	54.31	83.67	82.40	99.45	101.07	131.68
42.50°	21.71	55.98	29.05	34.97	46.53	48.72	36.76	33.25	20.79	15.98	17.56	26.31	10.67	22.50	14.65	42.01	21.71
45.00°	11.42	4.36	14.23	7.79	7.80	4.89	9.95	6.21	3.74	3.20	4.76	2.37	6.02	4.02	7.55	4.14	11.42
47.50°	1.82	2.88	2.36	2.75	2.64	2.86	2.40	3.22	1.75	1.87	1.34	1.77	1.63	2.14	1.89	2.87	1.82
50.00°	1.55	1.61	1.96	1.64	1.51	1.34	1.43	1.89	1.89	1.37	1.20	1.34	1.71	1.71	1.94	2.11	1.55
52.50°	1.32	1.48	1.66	1.53	1.40	1.53	1.42	1.78	1.74	1.04	1.43	1.62	1.78	1.71	1.92	2.09	1.32
55.00°	1.30	1.39	1.65	1.53	1.34	1.62	1.65	1.66	1.57	1.39	1.75	1.82	1.68	1.78	1.68	1.83	1.30
57.50°	1.31	1.47	1.59	1.55	1.47	1.47	1.64	1.55	1.56	1.82	1.69	1.75	1.60	1.87	1.50	1.30	1.31
60.00°	1.47	1.49	1.41	1.48	1.57	1.42	1.57	1.78	1.56	1.64	1.56	1.69	1.65	1.66	1.45	1.28	1.47
62.50°	1.59	1.37	1.30	1.39	1.25	1.59	1.59	2.18	1.65	1.41	1.26	1.65	1.72	1.39	1.38	1.73	1.59
65.00°	1.55	1.27	1.32	1.44	0.99	1.64	1.62	2.04	1.73	1.34	0.94	1.62	1.84	1.60	1.25	1.82	1.55
67.50°	1.56	1.24	1.34	1.50	1.34	1.50	1.67	1.71	1.58	1.27	1.30	1.63	1.85	1.85	1.38	1.62	1.56
70.00°	1.74	1.27	1.35	1.51	1.58	1.42	1.73	1.67	1.45	1.42	1.70	1.60	1.57	1.93	1.90	2.22	1.74
72.50°	1.89	1.39	1.44	1.52	1.16	1.41	1.69	1.72	1.51	1.54	1.58	1.53	1.41	2.01	2.28	3.30	1.89
75.00°	2.01	1.42	1.65	1.61	0.90	1.51	1.64	1.74	1.54	1.34	1.46	1.50	1.49	1.86	2.49	3.16	2.01
77.50°	1.91	1.33	1.76	1.67	1.28	1.72	1.47	1.76	1.42	1.17	1.46	1.53	1.54	1.72	2.40	2.39	1.91
80.00°	1.43	1.35	1.78	1.38	1.54	1.82	1.33	1.65	1.30	1.17	1.44	1.56	1.50	1.66	2.01	2.04	1.43
82.50°	1.19	1.51	1.79	1.15	1.41	1.82	1.56	1.51	1.18	1.13	1.28	1.59	1.45	1.63	1.68	1.84	1.19
85.00°	1.26	1.59	1.79	1.29	1.32	1.83	1.73	1.59	1.12	0.96	1.13	1.51	1.37	1.82	1.39	1.71	1.26
87.50°	1.34	1.58	1.85	1.36	1.35	1.85	1.63	1.69	1.23	0.88	1.10	1.34	1.38	1.94	1.40	1.60	1.34
90.00°	1.42	1.55	1.96	1.17	1.39	1.76	1.56	1.55	1.35	1.09	1.06	1.27	1.50	1.73	1.62	1.64	1.42
92.50°	1.47	1.51	1.77	1.08	1.48	1.60	1.67	1.40	1.50	1.22	0.93	1.28	1.43	1.57	1.72	1.73	1.47
95.00°	1.49	1.42	1.42	1.27	1.48	1.51	1.72	1.25	1.51	1.16	0.89	1.28	1.17	1.62	1.76	1.74	1.49
97.50°	1.46	1.30	1.26	1.30	1.35	1.45	1.59	1.15	1.30	1.11	1.15	1.27	1.11	1.62	1.79	1.74	1.46
100.00°	1.38	1.52	1.19	0.95	1.25	1.36	1.54	1.60	1.16	1.09	1.29	1.17	1.20	1.48	1.82	1.75	1.38
102.50°	1.33	1.92	1.24	0.84	1.19	1.25	1.70	1.94	1.12	1.18	1.10	1.03	1.19	1.42	1.73	1.77	1.33
105.00°	1.29	1.83	1.32	1.20	1.27	1.31	1.71	1.63	1.12	1.45	1.02	1.04	1.09	1.53	1.61	1.60	1.29
107.50°	1.25	1.52	1.33	1.31	1.47	1.43	1.46	1.39	1.14	1.47	1.15	1.09	1.05	1.58	1.67	1.44	1.25
110.00°	1.20	1.47	1.33	1.04	1.43	1.51	1.37	1.43	1.07	1.17	1.16	1.05	1.03	1.55	1.77	1.76	1.20
112.50°	1.19	1.51	1.22	0.86	1.17	1.59	1.53	1.53	0.92	1.08	1.01	0.99	1.25	1.47	1.66	2.05	1.19

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%	0%
	pcc	80%	80%	80%	80%	70%	70%	70%	70%	50%	50%	50%	30%	30%	30%	10%	10%	0%
	pw	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	30%
	0	1904	1904	1904	1904	1859	1859	1859	1859	1774	1774	1774	1697	1697	1697	1626	1626	1592
	1	1823	1782	1745	1711	1783	1746	1713	1683	1680	1654	1630	1619	1599	1580	1563	1548	1516
	2	1743	1671	1612	1563	1707	1643	1590	1545	1591	1547	1510	1542	1507	1476	1498	1469	1440
	3	1666	1572	1500	1442	1634	1550	1484	1430	1507	1452	1407	1468	1422	1384	1432	1394	1367
	4	1592	1483	1403	1341	1564	1464	1390	1333	1430	1366	1316	1397	1344	1300	1367	1322	1297
	5	1522	1401	1317	1254	1497	1386	1307	1248	1357	1289	1236	1330	1271	1225	1305	1255	1232
	6	1455	1326	1240	1178	1433	1314	1232	1173	1290	1218	1165	1267	1204	1156	1246	1191	1170
	7	1392	1258	1171	1109	1372	1247	1165	1106	1227	1153	1100	1208	1143	1094	1190	1132	1113
	8	1333	1195	1108	1048	1314	1186	1103	1046	1168	1094	1041	1152	1085	1036	1137	1077	1059
	9	1277	1137	1051	993	1260	1129	1047	991	1114	1040	987	1100	1032	984	1087	1025	1010
	10	1225	1083	999	942	1209	1077	996	941	1064	989	938	1051	983	935	1040	977	963

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	75.0 fc	5.2 ft
6.5 ft	53.7 fc	6.2 ft
7.5 ft	40.3 fc	7.1 ft
8.0 ft	35.5 fc	7.6 ft
10.0 ft	22.7 fc	9.5 ft
12.0 ft	15.8 fc	11.4 ft
14.0 ft	11.6 fc	13.3 ft
16.0 ft	8.9 fc	15.2 ft
20.0 ft	5.7 fc	19.0 ft
24.0 ft	3.9 fc	22.8 ft
28.0 ft	2.9 fc	26.6 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	285600	285600	285600
45.00°	2032	2532	1389
55.00°	285	363	295
65.00°	461	393	296
75.00°	976	800	435
85.00°	1826	2584	1908

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	-9.9	-9.0	-9.5	-8.7	-8.4	-8.9	-8.0	-8.5	-7.7	-7.3
	3H	-5.7	-4.9	-5.3	-4.5	-4.1	-5.5	-4.7	-5.1	-4.3	-3.9
	4H	-2.6	-1.9	-2.2	-1.5	-1.1	-4.1	-3.3	-3.6	-3.0	-2.6
	6H	-0.7	0.0	-0.3	0.3	0.8	-1.9	-1.2	-1.5	-0.8	-0.4
	8H	0.0	0.6	0.4	1.0	1.4	-0.7	-0.1	-0.3	0.3	0.7
	12H	0.8	1.4	1.2	1.8	2.2	0.4	1.0	0.9	1.4	1.9
4H	2H	-9.0	-8.3	-8.6	-8.0	-7.5	-8.2	-7.5	-7.8	-7.1	-6.7
	3H	-4.0	-3.4	-3.6	-3.0	-2.6	-4.4	-3.8	-3.9	-3.4	-2.9
	4H	-0.8	-0.3	-0.4	0.2	0.6	-2.6	-2.1	-2.2	-1.7	-1.2
	6H	1.1	1.5	1.6	2.0	2.5	-0.2	0.2	0.3	0.7	1.2
	8H	1.8	2.2	2.3	2.7	3.2	1.0	1.4	1.5	1.9	2.4
	12H	2.7	3.1	3.2	3.6	4.1	2.3	2.7	2.8	3.2	3.7
8H	4H	0.0	0.4	0.5	0.9	1.4	-1.8	-1.4	-1.3	-0.9	-0.5
	6H	2.1	2.5	2.7	3.0	3.5	0.9	1.2	1.4	1.7	2.2
	8H	3.1	3.4	3.7	4.0	4.5	2.4	2.6	2.9	3.2	3.7
	12H	4.3	4.6	4.9	5.1	5.7	3.9	4.2	4.5	4.7	5.3
12H	4H	0.2	0.5	0.7	1.0	1.5	-1.6	-1.3	-1.1	-0.8	-0.3
	6H	2.4	2.7	3.0	3.2	3.8	1.1	1.4	1.7	1.9	2.5
	8H	3.6	3.8	4.1	4.3	4.9	2.8	3.0	3.3	3.5	4.1

Corrected UGR values based on total output energy
 SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0