

## Indoor Distribution Test Report

# Spectrum Lighting Inc.

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## Spectrum Lighting Photometric Lab

### Luminaire

CW04XXPC 20L 35K MD XX CL XX

Nom 4" diam Gamma Cylinder (wet location), MD optic, clear glass lens

### Test Number

SP-01047

### Test Date

1/30/2020

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	1098
Efficacy	85.13 lm/W

#### Luminous Dimensions

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

#### Spacing Criterion

Two luminaires, plane 0°	0.45
Two luminaires, plane 90°	0.44
Four luminaires	0.47

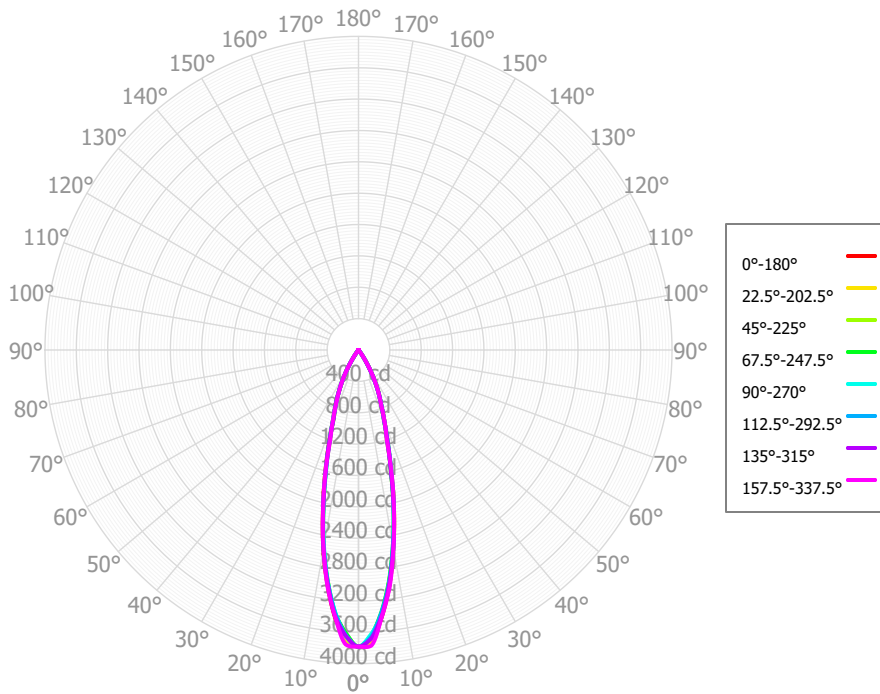
#### Full Beam Angle

0° - 180°	27°
90° - 270°	27°

### IES File Header Contents

Keyword	Value
TEST	SP-01047
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
TESTDATE	1/30/2020
ISSUEDATE	12/8/2020
LUMCAT	CW04XXPC 20L 35K MD XX CL XX
LUMINAIRE	Nom 4" diam Gamma Cylinder (wet location), MD optic, clear glass lens
OTHER	Beam Angle: 27.2 deg
OTHER	Medium optic
LAMPCAT	N/A
LAMP	N/A
OTHER	CCT Output Multipliers: 27K x 0.97, 30K x 0.98, 40K x 1.04, 27HK x 0.89, 30K x 0.83
OTHER	Total luminaire wattage is approximate
OTHER	This report prepared by Spectrum Lighting
_CRI	80
_CCTMULT	27K x 0.97, 30K x 0.98, 40K x 1.04
_CCTMULTA	27HK x 0.89, 30HK x 0.83
_LAMPMULT	10L x 0.50, 15L x 0.74

### Candela Polar Plot



### Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	299.22	27.25%	90.00° - 100.00°	0.08	0.01%
10.00° - 20.00°	444.99	40.52%	100.00° - 110.00°	0.00	0.00%
20.00° - 30.00°	272.49	24.81%	100.00° - 120.00°	0.00	0.00%
30.00° - 40.00°	67.80	6.17%	120.00° - 130.00°	0.00	0.00%
40.00° - 50.00°	5.36	0.49%	130.00° - 140.00°	0.00	0.00%
50.00° - 60.00°	3.17	0.29%	140.00° - 150.00°	0.00	0.00%
60.00° - 70.00°	2.17	0.20%	150.00° - 160.00°	0.00	0.00%
70.00° - 80.00°	1.63	0.15%	160.00° - 170.00°	0.00	0.00%
80.00° - 90.00°	1.28	0.12%	170.00° - 180.00°	0.00	0.00%
0.00° - 90.00°	1098.10	99.99%	0.00° - 180.00°	1098.19	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°	3784.75	3784.75	3784.75	3784.75	3784.75	3784.75	3784.75	3784.75	3784.75	3784.75	3784.75	3784.75	3784.75	3784.75	3784.75	3784.75	3784.75
2.50°	3735.56	3735.92	3650.41	3649.93	3633.78	3645.41	3655.15	3759.61	3693.22	3703.73	3624.37	3622.84	3658.76	3666.51	3687.00	3773.91	3735.56
5.00°	3415.55	3388.24	3379.84	3356.15	3391.54	3382.34	3412.69	3419.12	3427.89	3393.24	3388.02	3382.43	3370.48	3361.70	3404.83	3416.51	3415.55
7.50°	3026.71	3018.49	2983.32	2974.74	2997.44	3002.09	3006.97	3036.62	3025.86	3016.48	2985.32	2994.25	2991.76	2996.26	3007.34	3047.49	3026.71
10.00°	2564.96	2548.94	2545.47	2527.27	2565.22	2559.76	2577.69	2568.86	2583.34	2560.21	2564.40	2565.57	2539.42	2528.92	2558.37	2565.76	2564.96
12.50°	2094.41	2081.36	2073.19	2067.10	2078.45	2074.17	2085.05	2088.26	2096.42	2081.72	2074.76	2074.15	2074.58	2064.40	2083.47	2086.47	2094.41
15.00°	1614.06	1623.53	1588.83	1596.85	1632.15	1633.85	1622.74	1640.49	1649.09	1640.10	1610.04	1623.05	1599.04	1604.86	1596.30	1634.93	1614.06
17.50°	1231.80	1200.66	1240.33	1233.54	1246.87	1226.73	1247.37	1198.21	1247.41	1209.55	1246.88	1237.78	1229.22	1218.05	1241.25	1198.80	1231.80
20.00°	964.39	966.88	942.59	959.44	943.39	947.16	924.74	953.52	946.77	953.93	921.44	931.72	954.58	967.45	952.37	972.66	964.39
22.50°	753.24	746.10	755.00	753.95	769.90	766.01	763.62	745.32	768.69	754.61	762.69	762.08	745.16	750.86	755.40	750.91	753.24
25.00°	611.41	602.91	611.22	608.66	604.31	604.76	605.61	592.59	601.86	592.22	605.03	599.26	597.48	601.60	607.08	603.45	611.41
27.50°	465.58	459.56	461.93	459.67	451.97	459.67	457.77	451.09	449.41	442.54	452.54	448.86	449.18	452.01	456.16	456.14	465.58
30.00°	314.57	315.12	310.31	307.27	308.37	319.02	314.76	313.21	307.14	303.49	304.70	306.50	300.26	301.73	303.79	312.41	314.57
32.50°	186.74	178.07	189.16	182.49	180.24	182.16	188.73	176.13	178.56	168.33	181.27	179.60	178.30	171.75	183.87	170.75	186.74
35.00°	90.51	95.94	81.68	84.51	81.81	90.17	80.94	97.88	84.64	89.19	71.18	81.68	84.55	86.84	83.10	94.02	90.51
37.50°	28.24	21.70	33.84	28.04	38.82	38.45	42.35	33.73	39.74	31.95	38.40	42.61	28.96	24.28	33.05	18.58	28.24
40.00°	14.72	14.06	14.32	13.89	9.50	11.39	10.77	15.26	11.64	12.43	9.70	14.68	15.33	14.35	14.58	12.20	14.72
42.50°	6.45	7.03	7.00	6.24	7.16	7.61	7.92	8.64	8.56	8.60	7.28	10.72	7.94	7.02	7.09	5.87	6.45
45.00°	6.14	6.05	5.80	5.54	5.34	5.37	5.51	6.48	6.48	6.84	5.15	7.54	7.74	6.20	6.80	5.72	6.14
47.50°	5.56	5.10	4.82	5.07	4.58	4.66	5.05	5.56	5.98	5.99	5.20	6.16	7.08	5.47	6.06	5.56	5.56
50.00°	4.57	4.51	3.96	4.84	3.81	3.94	4.57	4.81	5.33	5.16	5.18	5.07	5.85	5.01	5.01	5.07	4.57
52.50°	3.68	3.90	3.41	4.16	2.98	3.22	4.01	4.10	4.43	4.34	4.55	4.69	4.84	4.45	4.22	4.58	3.68
55.00°	2.96	2.85	3.03	2.95	2.49	2.66	3.53	3.66	3.58	3.86	3.92	4.24	4.13	3.61	3.63	3.69	2.96
57.50°	2.52	1.86	2.81	2.30	2.81	2.28	3.46	3.32	2.80	3.56	3.26	3.60	3.64	2.97	3.30	2.80	2.52
60.00°	2.56	1.89	2.68	2.33	2.87	2.05	3.37	2.80	2.34	2.92	2.64	3.04	3.44	2.94	3.17	2.81	2.56
62.50°	2.46	1.90	2.20	2.17	2.25	1.99	3.07	2.24	2.46	2.10	2.44	2.68	2.98	2.81	2.99	2.86	2.46
65.00°	2.14	1.56	1.51	1.74	1.76	1.76	2.75	2.19	2.39	1.63	2.26	2.32	2.13	2.40	2.79	2.87	2.14
67.50°	1.86	1.23	1.34	1.53	1.60	1.31	2.30	2.33	1.93	1.36	2.27	1.94	1.68	2.05	2.77	2.89	1.86
70.00°	1.67	1.32	1.52	1.61	1.48	1.07	1.88	2.00	1.56	1.26	2.26	1.61	1.82	1.98	2.91	2.69	1.67
72.50°	1.54	1.41	1.40	1.66	1.47	1.11	1.69	1.50	1.36	1.28	1.89	1.45	1.82	1.89	2.56	2.48	1.54
75.00°	1.53	1.46	1.05	1.66	1.51	1.16	1.54	1.31	1.21	1.23	1.55	1.35	1.61	1.80	1.78	1.98	1.53
77.50°	1.49	1.51	0.99	1.61	1.73	1.24	1.60	1.25	1.18	1.15	1.59	1.48	1.55	1.68	1.30	1.45	1.49
80.00°	1.37	1.54	1.12	1.51	1.73	1.37	1.49	1.28	1.20	1.33	1.47	1.55	1.68	1.50	1.10	1.33	1.37
82.50°	1.24	1.46	1.29	1.25	1.47	1.51	1.19	1.23	1.23	1.37	1.05	1.53	1.75	1.28	1.17	1.21	1.24
85.00°	1.09	1.15	1.32	1.01	1.07	1.49	1.48	1.09	1.15	0.99	1.17	1.28	1.66	1.03	1.36	1.04	1.09
87.50°	0.94	1.11	1.10	0.98	0.84	1.14	1.32	1.18	1.17	0.98	1.19	1.08	1.40	0.94	1.62	1.11	0.94
90.00°	1.02	0.91	1.39	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.13	1.15	1.14	1.50	1.15	1.02
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>	1307	1307	1307	1307	1277	1277	1277	1277	1220	1220	1220	1168	1168	1168	1121	1121	1098
	<b>1</b>	1259	1233	1211	1190	1232	1210	1190	1172	1166	1150	1136	1126	1113	1102	1089	1079	1058
	<b>2</b>	1212	1169	1134	1104	1189	1151	1119	1091	1116	1090	1068	1085	1064	1045	1055	1039	1019
	<b>3</b>	1169	1113	1070	1035	1148	1098	1059	1027	1071	1038	1011	1045	1018	996	1022	1000	981
	<b>4</b>	1127	1063	1015	979	1110	1051	1007	973	1029	992	962	1008	977	951	989	963	945
	<b>5</b>	1088	1017	968	931	1073	1008	962	927	990	950	919	973	938	911	957	928	904
	<b>6</b>	1051	976	925	889	1037	968	921	886	953	912	881	939	903	875	926	894	870
	<b>7</b>	1017	938	888	852	1004	932	884	850	919	877	846	908	870	842	897	863	838
	<b>8</b>	984	904	853	819	973	898	850	817	888	845	814	878	839	811	868	834	808
	<b>9</b>	953	872	822	788	943	867	820	787	858	815	785	849	810	782	841	806	779
	<b>10</b>	923	842	793	761	914	838	791	760	830	787	758	823	784	756	816	780	754

### Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	125.1 fc	2.7 ft
6.5 ft	89.6 fc	3.1 ft
7.5 ft	67.3 fc	3.6 ft
8.0 ft	59.1 fc	3.9 ft
10.0 ft	37.8 fc	4.8 ft
12.0 ft	26.3 fc	5.8 ft
14.0 ft	19.3 fc	6.7 ft
16.0 ft	14.8 fc	7.7 ft
20.0 ft	9.5 fc	9.6 ft
24.0 ft	6.6 fc	11.6 ft
28.0 ft	4.8 fc	13.5 ft

### Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
<b>0.00°</b>	476310	476310	476310
<b>45.00°</b>	1093	1031	950
<b>55.00°</b>	650	665	547
<b>65.00°</b>	636	449	524
<b>75.00°</b>	743	510	736
<b>85.00°</b>	1580	1908	1542

### 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	-4.7	-3.8	-4.4	-3.5	-3.2	-3.1	-2.2	-2.7	-1.9	-1.6
	3H	-2.1	-1.3	-1.7	-1.0	-0.6	-1.8	-1.1	-1.5	-0.7	-0.4
	4H	-0.9	-0.2	-0.5	0.2	0.6	-0.9	-0.2	-0.5	0.2	0.6
	6H	0.4	1.1	0.8	1.4	1.8	0.6	1.3	1.1	1.7	2.1
	8H	1.1	1.7	1.5	2.1	2.5	1.6	2.2	2.0	2.6	3.0
	12H	1.8	2.4	2.2	2.7	3.2	2.6	3.1	3.0	3.5	4.0
4H	2H	-3.8	-3.1	-3.4	-2.7	-2.3	-2.4	-1.7	-2.0	-1.4	-1.0
	3H	-0.8	-0.2	-0.4	0.2	0.6	-1.0	-0.4	-0.5	0.0	0.4
	4H	0.5	1.0	0.9	1.5	1.9	0.0	0.6	0.5	1.0	1.4
	6H	1.9	2.3	2.4	2.8	3.3	1.8	2.3	2.3	2.7	3.2
	8H	2.6	3.1	3.1	3.5	4.0	2.9	3.3	3.4	3.8	4.3
	12H	3.4	3.8	3.9	4.3	4.7	4.0	4.4	4.5	4.9	5.3
8H	4H	0.9	1.3	1.4	1.8	2.2	0.6	1.0	1.0	1.4	1.9
	6H	2.5	2.9	3.1	3.4	3.9	2.6	2.9	3.1	3.4	3.9
	8H	3.5	3.8	4.0	4.3	4.8	3.9	4.2	4.4	4.7	5.2
	12H	4.5	4.8	5.0	5.3	5.9	5.2	5.5	5.8	6.0	6.6
12H	4H	1.0	1.3	1.5	1.8	2.3	0.7	1.0	1.2	1.5	2.0
	6H	2.7	3.0	3.3	3.5	4.0	2.8	3.1	3.3	3.5	4.1
	8H	3.8	4.1	4.3	4.6	5.1	4.2	4.4	4.7	4.9	5.5

Corrected UGR values based on total output energy  
 SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0