

## **Indoor Distribution Test Report**

# **Spectrum Lighting Inc.**

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## **Spectrum Lighting Photometric Lab**

### **Luminaire**

CR2 835 20 xx xx RD2FL RB2BS xx xx

Nom 2.5 inch dia cylinder with flood optic and standard black bezel

### **Test Number**

SP-01273\_13

### **Test Date**

9/23/2021

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

### Summary of Results

#### Power

Input Watts	27 W
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#### Lumen Output

Output Lumens	2338
Efficacy	86.6 lm/W

#### Luminous Dimensions

0° - 180° Size	-0.21
90° - 270° Size	-0.21
Height	0

#### Spacing Criterion

Two luminaires, plane 0°	0.58
Two luminaires, plane 90°	0.58
Four luminaires	0.53

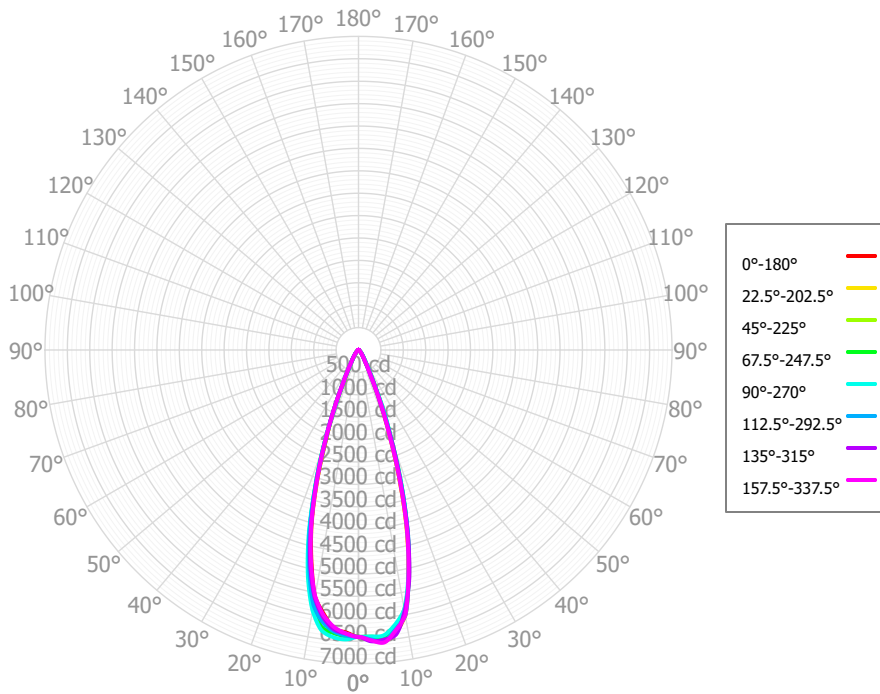
#### Full Beam Angle

0° - 180°	34°
90° - 270°	35°

### IES File Header Contents

Keyword	Value
TEST	SP-01273_13
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
TESTDATE	9/23/2021
ISSUEDATE	11/4/2021
LUMCAT	CR2 835 20 xx xx RD2FL RB2BS xx xx
LUMINAIRE	Nom 2.5 inch dia cylinder with flood optic and standard black bezel
OTHER	Beam Angle: xx deg
LAMPCAT	N/A
LAMP	N/A, 6mm LES
OTHER	80 CRI, 3500K tested
OTHER	LER (luminaire efficacy) = xx lms / watt
OTHER	CCT Output Multipliers: 822 x 0.75, 827 x 0.93, 830 x 1.0, 840 x 1.0
OTHER	CCT Output Multipliers: 927 x 0.81, 930 x 0.81, 935 x 0.81, 940 x 0.87
OTHER	Total luminaire wattages are approximate
OTHER	This report prepared by Spectrum Lighting

### Candela Polar Plot



### Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	600.13	25.67%	90.00° - 100.00°	1.39	0.06%
10.00° - 20.00°	1099.77	47.04%	100.00° - 110.00°	1.33	0.06%
20.00° - 30.00°	414.49	17.73%	100.00° - 120.00°	2.66	0.11%
30.00° - 40.00°	118.18	5.05%	120.00° - 130.00°	1.21	0.05%
40.00° - 50.00°	56.13	2.40%	130.00° - 140.00°	1.17	0.05%
50.00° - 60.00°	28.17	1.20%	140.00° - 150.00°	1.11	0.05%
60.00° - 70.00°	8.95	0.38%	150.00° - 160.00°	0.92	0.04%
70.00° - 80.00°	1.76	0.08%	160.00° - 170.00°	0.56	0.02%
80.00° - 90.00°	1.41	0.06%	170.00° - 180.00°	0.17	0.01%
0.00° - 90.00°	2328.99	99.61%	0.00° - 180.00°	2338.18	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°	6406.02	6406.02	6406.02	6406.02	6406.02	6406.02	6406.02	6406.02	6406.02	6406.02	6406.02	6406.02	6406.02	6406.02	6406.02	6406.02	6406.02
2.50°	6491.30	6466.91	6456.39	6407.38	6404.31	6383.33	6338.20	6339.13	6314.63	6341.44	6353.56	6400.33	6468.13	6470.07	6509.81	6488.33	6491.30
5.00°	6521.88	6541.81	6479.32	6432.04	6398.99	6309.87	6264.33	6212.47	6246.66	6233.44	6342.47	6341.63	6437.32	6524.49	6493.53	6555.69	6521.88
7.50°	6372.11	6330.28	6343.83	6276.69	6195.07	6128.39	6027.83	5974.64	5946.18	6027.92	6078.94	6251.66	6314.83	6297.67	6409.01	6323.25	6372.11
10.00°	5994.97	6023.33	5998.07	5891.06	5884.21	5783.56	5622.02	5579.08	5593.39	5630.80	5767.29	5782.64	5906.96	6017.44	5926.18	6014.37	5994.97
12.50°	5155.04	5161.09	5175.16	5214.22	5151.57	5067.19	4967.37	4889.25	4855.81	4941.04	5001.01	5156.58	5208.83	5181.80	5234.31	5151.40	5155.04
15.00°	4201.31	4158.90	4253.79	4231.04	4236.96	4236.56	4099.49	4089.76	4058.13	4109.17	4177.67	4236.78	4304.31	4276.79	4251.92	4187.13	4201.31
17.50°	3060.34	3085.94	3153.11	3221.98	3227.67	3197.41	3160.68	3124.07	3090.99	3099.56	3159.69	3221.99	3227.04	3193.69	3147.62	3101.78	3060.34
20.00°	2063.89	2000.22	2165.85	2190.49	2186.35	2243.17	2171.99	2220.86	2107.81	2177.27	2128.63	2256.80	2245.08	2098.73	2174.32	2002.07	2063.89
22.50°	1261.64	1305.59	1346.58	1415.16	1450.05	1414.95	1423.41	1395.23	1408.23	1344.83	1407.49	1303.69	1328.56	1366.90	1243.99	1308.73	1261.64
25.00°	716.41	656.42	771.02	821.92	790.74	827.37	812.39	828.26	724.94	799.05	708.40	836.12	789.79	658.64	776.69	640.12	716.41
27.50°	454.98	457.81	491.34	503.34	530.63	532.54	508.50	525.46	516.04	496.02	503.77	452.34	462.08	463.26	424.01	452.28	454.98
30.00°	290.45	285.68	312.86	343.92	344.08	345.20	346.26	340.09	315.35	324.09	310.68	331.43	305.61	279.17	297.42	273.70	290.45
32.50°	214.02	221.73	235.47	253.03	263.73	265.45	257.68	253.42	245.09	243.24	245.23	239.27	226.02	219.33	210.66	215.86	214.02
35.00°	160.51	159.91	179.55	194.14	195.75	203.89	195.94	192.56	178.47	185.25	183.39	189.02	175.48	163.14	165.16	160.17	160.51
37.50°	124.12	129.71	141.27	152.31	157.12	157.30	154.65	149.49	142.04	140.19	145.39	140.96	135.21	130.98	124.31	126.70	124.12
40.00°	98.31	100.40	112.01	116.78	120.22	123.24	119.08	117.68	108.44	111.23	110.78	116.17	108.58	101.17	99.89	95.41	98.31
42.50°	78.96	80.11	88.83	93.31	99.15	97.62	96.06	92.18	90.14	89.60	91.57	91.72	85.63	81.96	76.38	77.81	78.96
45.00°	64.79	61.36	71.42	73.28	78.46	78.25	75.61	73.55	72.98	72.52	73.45	73.46	68.20	64.64	63.75	61.76	64.79
47.50°	53.18	52.16	57.16	60.56	64.05	62.30	62.43	58.03	60.26	57.08	59.03	56.19	51.84	53.64	51.38	52.54	53.18
50.00°	45.20	43.50	47.37	49.37	50.11	51.08	50.26	48.28	48.51	47.27	46.79	48.24	44.24	43.67	43.42	43.94	45.20
52.50°	38.65	37.16	39.54	41.21	41.02	41.93	41.79	40.58	39.62	39.01	40.23	40.21	37.77	36.35	35.64	37.35	38.65
55.00°	31.48	30.80	32.10	33.47	32.07	33.12	33.61	32.32	31.37	31.08	33.07	31.77	29.45	29.07	29.69	30.52	31.48
57.50°	24.12	24.35	24.81	26.00	24.04	24.43	25.57	23.91	24.61	23.23	24.65	23.81	20.99	21.88	23.57	23.09	24.12
60.00°	18.17	18.38	18.82	18.55	16.83	18.16	17.62	17.97	18.69	17.85	17.53	17.82	15.64	15.91	16.51	16.55	18.17
62.50°	12.55	13.65	13.19	14.01	13.16	12.53	13.28	12.53	14.29	12.81	12.58	12.21	10.40	11.99	10.16	11.84	12.55
65.00°	8.56	9.14	9.12	9.58	9.48	8.72	9.00	9.06	9.97	8.93	8.40	7.78	6.99	8.16	6.87	7.89	8.56
67.50°	4.83	5.04	5.35	5.87	5.78	5.25	5.56	5.85	5.75	5.15	5.27	4.22	3.77	4.47	4.05	5.21	4.83
70.00°	3.04	2.28	3.71	2.38	2.87	3.53	2.49	3.84	2.97	3.18	3.07	2.79	2.69	2.37	2.75	3.10	3.04
72.50°	1.43	1.71	2.34	1.77	1.97	2.04	2.09	1.92	1.99	1.30	1.90	1.73	1.70	2.05	1.80	1.77	1.43
75.00°	1.05	1.44	1.77	1.24	1.31	1.88	1.72	1.63	1.35	1.35	1.34	1.42	1.31	1.70	1.69	1.11	1.05
77.50°	0.73	1.58	1.25	1.33	1.16	1.82	1.51	1.38	1.06	1.38	1.32	1.23	0.99	1.32	1.59	1.20	0.73
80.00°	0.96	1.52	1.27	1.41	1.05	1.48	1.31	1.34	1.01	1.25	1.36	1.20	1.01	1.08	1.47	1.34	0.96
82.50°	1.18	1.24	1.29	1.42	1.01	1.15	1.15	1.31	1.17	1.13	1.45	1.27	1.06	0.93	1.35	1.52	1.18
85.00°	1.30	1.08	1.29	1.44	1.19	1.34	1.13	1.23	1.27	1.20	1.55	1.46	1.21	1.03	1.20	1.51	1.30
87.50°	1.39	1.04	1.27	1.50	1.66	1.50	1.47	1.17	1.34	1.27	1.67	1.46	1.36	1.28	1.14	1.35	1.39
90.00°	1.29	1.15	1.02	1.52	1.61	1.37	1.57	1.23	1.50	1.37	1.64	1.27	1.49	1.23	1.21	1.36	1.29
92.50°	1.22	1.37	0.83	1.41	1.02	1.22	1.15	1.26	1.71	1.44	1.53	1.16	1.52	1.02	1.31	1.47	1.22
95.00°	1.33	1.45	1.12	1.28	0.80	0.97	0.95	1.22	1.85	1.38	1.37	1.11	1.32	1.10	1.45	1.34	1.33
97.50°	1.36	1.46	1.36	1.07	0.92	0.80	1.12	1.19	1.95	1.34	1.19	1.13	1.19	1.30	1.47	1.09	1.36
100.00°	1.05	1.35	1.41	1.04	1.02	1.06	1.25	1.20	1.67	1.38	1.19	1.18	1.18	1.25	1.37	1.19	1.05
102.50°	0.84	1.17	1.46	1.32	1.11	1.26	1.32	1.19	1.27	1.33	1.25	1.39	1.22	1.13	1.28	1.43	0.84
105.00°	0.89	1.18	1.53	1.46	1.06	1.28	1.37	1.12	1.31	1.11	1.20	1.69	1.34	1.03	1.20	1.48	0.89
107.50°	0.97	1.26	1.57	1.40	0.94	1.31	1.39	1.08	1.48	1.04	1.13	1.59	1.37	0.94	1.14	1.47	0.97
110.00°	1.11	1.33	1.53	1.42	1.05	1.33	1.44	1.10	1.37	1.25	1.05	1.31	1.28	1.21	1.10	1.38	1.11
112.50°	1.25	1.40	1.55	1.53	1.26	1.27	1.54	1.16	1.20	1.32	0.97	1.30	1.18	1.53	1.45	1.28	1.25

### 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>	2781	2781	2781	2781	2716	2716	2716	2716	2593	2593	2593	2481	2481	2481	2377	2377	2329
	<b>1</b>	2677	2622	2574	2530	2620	2572	2528	2489	2476	2442	2411	2389	2363	2338	2308	2288	2243
	<b>2</b>	2576	2483	2407	2342	2526	2443	2374	2315	2368	2312	2264	2299	2254	2215	2235	2200	2157
	<b>3</b>	2481	2361	2268	2194	2438	2329	2244	2176	2269	2199	2141	2214	2156	2107	2162	2115	2075
	<b>4</b>	2392	2253	2150	2072	2354	2227	2133	2060	2178	2099	2035	2133	2066	2012	2091	2035	1998
	<b>5</b>	2308	2155	2049	1970	2274	2134	2035	1961	2095	2009	1943	2058	1984	1926	2023	1960	1926
	<b>6</b>	2230	2068	1959	1881	2199	2050	1948	1874	2018	1928	1862	1987	1909	1849	1958	1890	1858
	<b>7</b>	2156	1988	1879	1802	2129	1973	1871	1798	1946	1855	1788	1920	1839	1779	1896	1825	1795
	<b>8</b>	2087	1915	1807	1732	2062	1903	1800	1729	1879	1787	1722	1857	1775	1715	1837	1763	1736
	<b>9</b>	2021	1848	1741	1669	1999	1837	1736	1666	1817	1725	1661	1798	1715	1656	1781	1706	1680
	<b>10</b>	1960	1785	1681	1611	1940	1776	1677	1609	1759	1668	1605	1743	1660	1601	1728	1652	1628

### Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	211.8 fc	3.4 ft
6.5 ft	151.6 fc	4.0 ft
7.5 ft	113.9 fc	4.6 ft
8.0 ft	100.1 fc	5.0 ft
10.0 ft	64.1 fc	6.2 ft
12.0 ft	44.5 fc	7.4 ft
14.0 ft	32.7 fc	8.7 ft
16.0 ft	25.0 fc	9.9 ft
20.0 ft	16.0 fc	12.4 ft
24.0 ft	11.1 fc	14.9 ft
28.0 ft	8.2 fc	17.3 ft

### Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
<b>0.00°</b>	1990809	1990809	1990809
<b>45.00°</b>	28474	31388	34485
<b>55.00°</b>	17056	17395	17378
<b>65.00°</b>	6293	6705	6973
<b>75.00°</b>	1266	2127	1576
<b>85.00°</b>	4620	4613	4251

### UGR CIE 190:2010

<b>Ceiling reflectance</b>		<b>0.7</b>	<b>0.7</b>	<b>0.5</b>	<b>0.5</b>	<b>0.3</b>	<b>0.7</b>	<b>0.7</b>	<b>0.5</b>	<b>0.5</b>	<b>0.3</b>
<b>Wall reflectance</b>		<b>0.5</b>	<b>0.3</b>	<b>0.5</b>	<b>0.3</b>	<b>0.3</b>	<b>0.5</b>	<b>0.3</b>	<b>0.5</b>	<b>0.3</b>	<b>0.3</b>
<b>Plane reflectance</b>		<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
<b>Room dimensions</b>		<b>Viewed crosswise</b>					<b>Viewed endwise</b>				
<b>2H</b>	<b>2H</b>	11.5	12.5	11.9	12.8	13.1	11.5	12.5	11.9	12.8	13.1
	<b>3H</b>	11.5	12.3	11.9	12.7	13.1	11.5	12.3	11.9	12.7	13.1
	<b>4H</b>	11.4	12.2	11.8	12.6	13.0	11.5	12.2	11.9	12.6	13.0
	<b>6H</b>	11.3	12.0	11.8	12.4	12.8	11.4	12.1	11.8	12.4	12.9
	<b>8H</b>	11.3	12.0	11.8	12.4	12.8	11.3	12.0	11.8	12.4	12.8
	<b>12H</b>	11.3	11.9	11.8	12.3	12.8	11.3	11.9	11.8	12.3	12.8
<b>4H</b>	<b>2H</b>	11.4	12.2	11.8	12.5	12.9	11.5	12.2	11.9	12.6	13.0
	<b>3H</b>	11.4	12.0	11.8	12.5	12.9	11.5	12.1	11.9	12.5	12.9
	<b>4H</b>	11.3	11.9	11.8	12.3	12.8	11.4	11.9	11.8	12.4	12.8
	<b>6H</b>	11.3	11.7	11.8	12.2	12.7	11.3	11.8	11.8	12.3	12.8
	<b>8H</b>	11.3	11.7	11.7	12.2	12.6	11.3	11.8	11.8	12.2	12.7
	<b>12H</b>	11.3	11.7	11.8	12.2	12.7	11.4	11.7	11.9	12.2	12.7
<b>8H</b>	<b>4H</b>	11.2	11.6	11.7	12.1	12.6	11.2	11.7	11.7	12.1	12.6
	<b>6H</b>	11.2	11.5	11.7	12.0	12.5	11.2	11.6	11.7	12.1	12.6
	<b>8H</b>	11.2	11.5	11.7	12.0	12.5	11.2	11.5	11.8	12.1	12.6
	<b>12H</b>	11.3	11.6	11.9	12.1	12.7	11.4	11.6	11.9	12.1	12.7
<b>12H</b>	<b>4H</b>	11.1	11.5	11.6	12.0	12.5	11.2	11.6	11.7	12.1	12.5
	<b>6H</b>	11.1	11.4	11.7	11.9	12.5	11.2	11.5	11.7	12.0	12.5
	<b>8H</b>	11.2	11.4	11.7	12.0	12.5	11.2	11.5	11.8	12.0	12.6

Corrected UGR values based on total output energy  
 SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0