

## **Indoor Distribution Test Report**

# **Spectrum Lighting Inc.**

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## **Spectrum Lighting Photometric Lab**

### **Luminaire**

CR2 835 15 xx xx RD2FL RB2BS xx RA2LC

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

### **Test Number**

SP-01273\_3

### **Test Date**

9/23/2021

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

### Summary of Results

#### Power

Input Watts	19.5 W
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#### Lumen Output

Output Lumens	1737
Efficacy	89.1 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	0.52

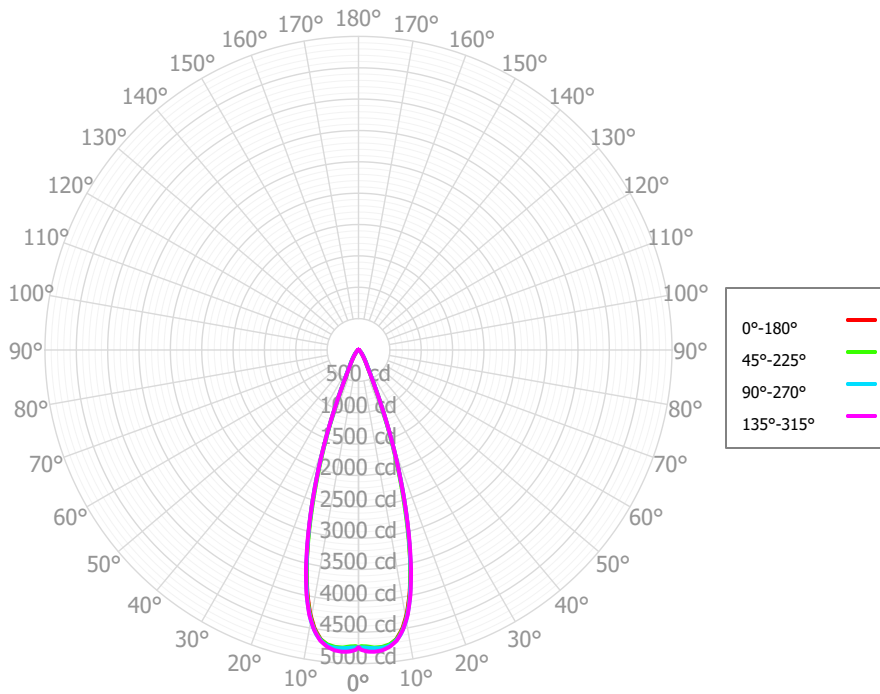
#### Full Beam Angle

0° - 180°	34°
90° - 270°	35°

### IES File Header Contents

Keyword	Value
TEST	SP-01273_3
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
TESTDATE	9/23/2021
ISSUEDATE	10/8/2021
LUMCAT	CR2 835 15 xx xx RD2FL RB2BS xx RA2LC
LUMINAIRE	Nom 2.5 inch dia cylinder with flood optic, standard black bezel, and clear lens
OTHER	Beam Angle: 34 deg
LAMPCAT	N/A
LAMP	N/A, 6mm LES
OTHER	80 CRI, 3500K tested
OTHER	LER (luminaire efficacy) = 89 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
_CRI	80+
_CCTMULT	822 x 0.75, 827 x 0.93, 830 x 1.0, 840 x 1.0
_CCTMULTA	927 x 0.81, 930 x 0.81, 935 x 0.81, 940 x 0.87
_LAMPMULT	N/A

### Candela Polar Plot



### Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	443.60	25.53%	90.00° - 100.00°	1.71	0.10%
10.00° - 20.00°	821.70	47.29%	100.00° - 110.00°	1.69	0.10%
20.00° - 30.00°	286.35	16.48%	100.00° - 120.00°	3.36	0.19%
30.00° - 40.00°	95.17	5.48%	120.00° - 130.00°	1.47	0.08%
40.00° - 50.00°	46.26	2.66%	130.00° - 140.00°	1.42	0.08%
50.00° - 60.00°	22.21	1.28%	140.00° - 150.00°	1.22	0.07%
60.00° - 70.00°	7.29	0.42%	150.00° - 160.00°	1.05	0.06%
70.00° - 80.00°	2.19	0.13%	160.00° - 170.00°	0.58	0.03%
80.00° - 90.00°	1.72	0.10%	170.00° - 180.00°	0.18	0.01%
0.00° - 90.00°	1726.48	99.37%	0.00° - 180.00°	1737.47	100.00%

### Candela Distribution

	0.00°	45.00°	90.00°	135.00°	180.00°	225.00°	270.00°	315.00°	360.00°
0.00°	4745.10	4745.10	4745.10	4745.10	4745.10	4745.10	4745.10	4745.10	4745.10
0.50°	4748.34	4725.04	4745.11	4780.04	4748.34	4725.04	4745.11	4780.04	4748.34
1.00°	4758.06	4727.34	4745.25	4793.55	4758.06	4727.34	4745.25	4793.55	4758.06
1.50°	4767.78	4729.63	4749.84	4807.07	4767.78	4729.63	4749.84	4807.07	4767.78
2.00°	4774.46	4736.38	4754.42	4813.76	4774.46	4736.38	4754.42	4813.76	4774.46
2.50°	4781.01	4744.14	4758.87	4816.18	4781.01	4744.14	4758.87	4816.18	4781.01
3.00°	4787.48	4751.91	4761.73	4818.60	4787.48	4751.91	4761.73	4818.60	4787.48
3.50°	4785.93	4752.14	4764.59	4815.81	4785.93	4752.14	4764.59	4815.81	4785.93
4.00°	4784.38	4751.23	4766.60	4810.42	4784.38	4751.23	4766.60	4810.42	4784.38
4.50°	4781.94	4750.33	4762.97	4805.04	4781.94	4750.33	4762.97	4805.04	4781.94
5.00°	4766.01	4741.29	4759.34	4791.73	4766.01	4741.29	4759.34	4791.73	4766.01
5.50°	4750.08	4731.51	4753.40	4775.28	4750.08	4731.51	4753.40	4775.28	4750.08
6.00°	4732.87	4721.74	4737.24	4758.82	4732.87	4721.74	4737.24	4758.82	4732.87
6.50°	4705.26	4699.26	4721.09	4732.48	4705.26	4699.26	4721.09	4732.48	4705.26
7.00°	4677.65	4676.39	4699.80	4703.16	4677.65	4676.39	4699.80	4703.16	4677.65
7.50°	4646.28	4652.90	4662.04	4673.85	4646.28	4652.90	4662.04	4673.85	4646.28
8.00°	4595.64	4604.14	4624.28	4625.42	4595.64	4604.14	4624.28	4625.42	4595.64
8.50°	4545.00	4555.38	4579.20	4572.71	4545.00	4555.38	4579.20	4572.71	4545.00
9.00°	4488.74	4504.66	4515.78	4520.00	4488.74	4504.66	4515.78	4520.00	4488.74
9.50°	4411.55	4428.71	4452.36	4448.28	4411.55	4428.71	4452.36	4448.28	4411.55
10.00°	4334.35	4352.76	4378.79	4373.73	4334.35	4352.76	4378.79	4373.73	4334.35
10.50°	4250.04	4273.16	4285.44	4299.17	4250.04	4273.16	4285.44	4299.17	4250.04
11.00°	4145.95	4168.06	4192.09	4196.22	4145.95	4168.06	4192.09	4196.22	4145.95
11.50°	4041.86	4062.96	4086.12	4090.74	4041.86	4062.96	4086.12	4090.74	4041.86
12.00°	3929.78	3952.61	3960.18	3985.27	3929.78	3952.61	3960.18	3985.27	3929.78
12.50°	3800.11	3818.12	3834.23	3853.12	3800.11	3818.12	3834.23	3853.12	3800.11
13.00°	3670.45	3683.63	3700.55	3720.21	3670.45	3683.63	3700.55	3720.21	3670.45
13.50°	3536.01	3544.05	3557.04	3586.80	3536.01	3544.05	3557.04	3586.80	3536.01
14.00°	3393.33	3387.11	3413.53	3434.48	3393.33	3387.11	3413.53	3434.48	3393.33
14.50°	3250.64	3230.17	3265.65	3282.16	3250.64	3230.17	3265.65	3282.16	3250.64
15.00°	3103.64	3071.40	3113.20	3129.24	3103.64	3071.40	3113.20	3129.24	3103.64
15.50°	2950.65	2907.94	2960.75	2968.72	2950.65	2907.94	2960.75	2968.72	2950.65
16.00°	2797.67	2744.48	2806.50	2808.21	2797.67	2744.48	2806.50	2808.21	2797.67
16.50°	2642.69	2582.52	2650.71	2647.78	2642.69	2582.52	2650.71	2647.78	2642.69
17.00°	2485.45	2423.57	2494.92	2487.94	2485.45	2423.57	2494.92	2487.94	2485.45
17.50°	2328.20	2264.62	2339.39	2328.10	2328.20	2264.62	2339.39	2328.10	2328.20
18.00°	2172.71	2108.44	2184.02	2169.73	2172.71	2108.44	2184.02	2169.73	2172.71
18.50°	2018.83	1956.75	2028.65	2018.04	2018.83	1956.75	2028.65	2018.04	2018.83
19.00°	1864.96	1805.07	1875.56	1866.35	1864.96	1805.07	1875.56	1866.35	1864.96
19.50°	1715.18	1658.43	1723.73	1716.97	1715.18	1658.43	1723.73	1716.97	1715.18
20.00°	1568.43	1518.36	1571.91	1575.44	1568.43	1518.36	1571.91	1575.44	1568.43
20.50°	1421.68	1378.28	1429.98	1433.90	1421.68	1378.28	1429.98	1433.90	1421.68
21.00°	1285.81	1246.78	1292.35	1295.75	1285.81	1246.78	1292.35	1295.75	1285.81
21.50°	1156.52	1124.46	1154.73	1166.25	1156.52	1124.46	1154.73	1166.25	1156.52
22.00°	1027.24	1002.13	1040.03	1036.74	1027.24	1002.13	1040.03	1036.74	1027.24
22.50°	919.17	895.86	932.96	918.76	919.17	895.86	932.96	918.76	919.17

### 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>	2066	2066	2066	2066	2016	2016	2016	2016	1924	1924	1924	1840	1840	1840	1763	1763	1726
	<b>1</b>	1987	1946	1910	1877	1944	1908	1876	1846	1837	1811	1788	1771	1751	1733	1710	1695	1661
	<b>2</b>	1912	1842	1785	1736	1874	1812	1760	1716	1755	1713	1677	1703	1670	1640	1655	1629	1596
	<b>3</b>	1841	1751	1681	1625	1808	1727	1663	1612	1681	1629	1585	1639	1596	1559	1601	1565	1535
	<b>4</b>	1774	1669	1593	1534	1745	1650	1579	1525	1613	1554	1506	1579	1529	1488	1548	1506	1478
	<b>5</b>	1711	1597	1517	1458	1686	1581	1507	1451	1551	1487	1438	1523	1468	1425	1497	1450	1424
	<b>6</b>	1653	1531	1450	1392	1630	1518	1442	1387	1493	1427	1377	1470	1412	1367	1448	1398	1374
	<b>7</b>	1598	1472	1390	1333	1577	1461	1384	1330	1440	1372	1322	1421	1360	1315	1402	1349	1327
	<b>8</b>	1546	1418	1337	1281	1528	1408	1332	1279	1391	1322	1273	1374	1313	1268	1358	1303	1283
	<b>9</b>	1497	1368	1288	1234	1481	1360	1284	1232	1345	1276	1228	1330	1268	1224	1317	1261	1242
	<b>10</b>	1452	1321	1243	1192	1437	1315	1240	1190	1302	1234	1187	1289	1227	1183	1278	1221	1204

### Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	156.9 fc	3.4 ft
6.5 ft	112.3 fc	4.0 ft
7.5 ft	84.4 fc	4.7 ft
8.0 ft	74.1 fc	5.0 ft
10.0 ft	47.5 fc	6.2 ft
12.0 ft	33.0 fc	7.5 ft
14.0 ft	24.2 fc	8.7 ft
16.0 ft	18.5 fc	9.9 ft
20.0 ft	11.9 fc	12.4 ft
24.0 ft	8.2 fc	14.9 ft
28.0 ft	6.1 fc	17.4 ft

### Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
<b>0.00°</b>	1474642	1474642	1474642
<b>45.00°</b>	24498	25716	26927
<b>55.00°</b>	13267	13578	12605
<b>65.00°</b>	5413	4876	4538
<b>75.00°</b>	2490	2144	2540
<b>85.00°</b>	5067	6123	5822

### 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>	10.8	11.8	11.2	12.1	12.4	10.5	11.5	10.9	11.8	12.1
	<b>3H</b>	11.0	11.8	11.4	12.2	12.6	10.6	11.4	11.0	11.8	12.2
	<b>4H</b>	11.0	11.8	11.4	12.1	12.5	10.6	11.4	11.0	11.7	12.1
	<b>6H</b>	11.0	11.7	11.4	12.1	12.5	10.6	11.3	11.1	11.7	12.1
	<b>8H</b>	11.0	11.7	11.5	12.1	12.5	10.7	11.3	11.1	11.8	12.2
	<b>12H</b>	11.1	11.7	11.5	12.1	12.6	10.8	11.4	11.2	11.8	12.3
<b>4H</b>	<b>2H</b>	10.8	11.5	11.2	11.9	12.3	10.5	11.2	10.9	11.6	12.0
	<b>3H</b>	11.0	11.6	11.4	12.0	12.5	10.6	11.2	11.0	11.7	12.1
	<b>4H</b>	11.0	11.6	11.5	12.0	12.5	10.6	11.2	11.1	11.6	12.1
	<b>6H</b>	11.1	11.5	11.6	12.0	12.5	10.8	11.2	11.2	11.7	12.2
	<b>8H</b>	11.1	11.6	11.6	12.0	12.5	10.9	11.3	11.3	11.8	12.2
	<b>12H</b>	11.3	11.7	11.8	12.2	12.6	11.1	11.4	11.6	11.9	12.4
<b>8H</b>	<b>4H</b>	10.9	11.3	11.4	11.8	12.3	10.5	11.0	11.0	11.4	11.9
	<b>6H</b>	11.0	11.4	11.6	11.9	12.4	10.7	11.1	11.2	11.6	12.1
	<b>8H</b>	11.2	11.5	11.7	12.0	12.5	10.9	11.2	11.5	11.8	12.3
	<b>12H</b>	11.5	11.7	12.0	12.2	12.8	11.3	11.6	11.8	12.1	12.7
<b>12H</b>	<b>4H</b>	10.8	11.2	11.3	11.7	12.2	10.5	10.9	11.0	11.4	11.9
	<b>6H</b>	11.0	11.3	11.6	11.8	12.4	10.7	11.0	11.3	11.5	12.1
	<b>8H</b>	11.2	11.5	11.8	12.0	12.6	11.0	11.2	11.5	11.8	12.3

Corrected UGR values based on total output energy  
 SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0