

## Indoor Distribution Test Report

# Spectrum Lighting Inc.

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## Spectrum Lighting Photometric Lab

### Luminaire

CR2 835 15 xx xx RD2SP RB2BSA2 xx xx  
Nom 2.5 inch dia cylinder with spot optic and 2 inch acrylic style bezel

### Test Number

SP-01274\_4

### 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	1598
Efficacy	81.92 lm/W

#### Luminous Dimensions

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

#### Spacing Criterion

Two luminaires, plane 0°	0.35
Two luminaires, plane 90°	0.35
Four luminaires	0.33

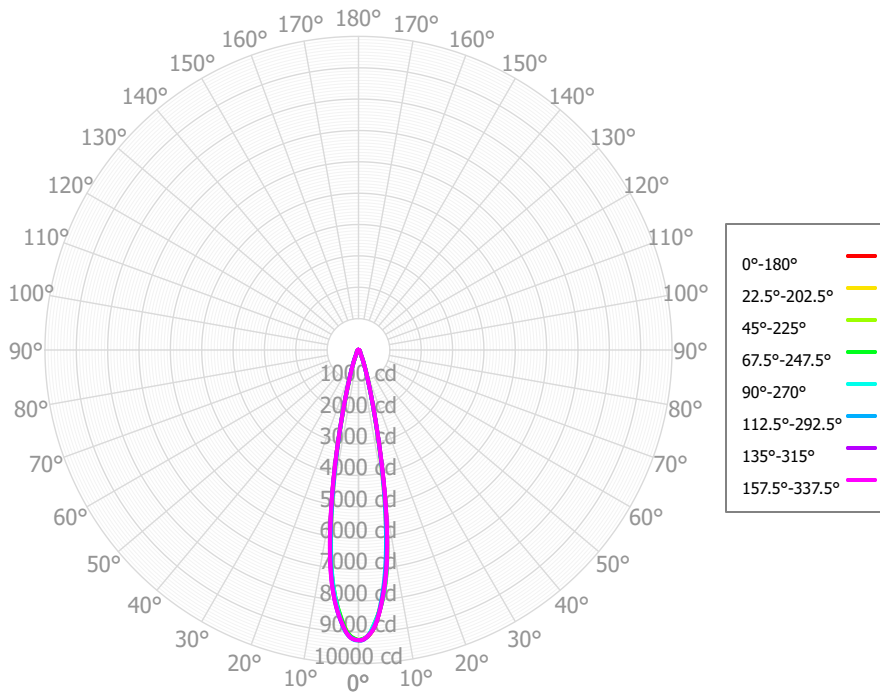
#### Full Beam Angle

0° - 180°	21°
90° - 270°	21°

### IES File Header Contents

Keyword	Value
TEST	SP-01274_4
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 RD2SP RB2BSA2 xx xx
LUMINAIRE	Nom 2.5 inch dia cylinder with spot optic and 2 inch acrylic style bezel
OTHER	Beam Angle: 21 deg
LAMPCAT	N/A
LAMP	N/A, 6mm LES
OTHER	80 CRI, 3500K tested
OTHER	LER (luminaire efficacy) = 82 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°	675.27	42.27%	90.00° - 100.00°	10.47	0.66%
10.00° - 20.00°	516.50	32.33%	100.00° - 110.00°	8.23	0.52%
20.00° - 30.00°	125.65	7.87%	100.00° - 120.00°	14.98	0.94%
30.00° - 40.00°	60.39	3.78%	120.00° - 130.00°	3.85	0.24%
40.00° - 50.00°	57.51	3.60%	130.00° - 140.00°	2.07	0.13%
50.00° - 60.00°	49.77	3.12%	140.00° - 150.00°	1.19	0.07%
60.00° - 70.00°	37.85	2.37%	150.00° - 160.00°	0.88	0.06%
70.00° - 80.00°	25.10	1.57%	160.00° - 170.00°	0.51	0.03%
80.00° - 90.00°	15.36	0.96%	170.00° - 180.00°	0.17	0.01%
0.00° - 90.00°	1563.41	97.86%	0.00° - 180.00°	1597.53	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°	9255.10	9255.10	9255.10	9255.10	9255.10	9255.10	9255.10	9255.10	9255.10	9255.10	9255.10	9255.10	9255.10	9255.10	9255.10	9255.10	9255.10
0.50°	9247.19	9249.56	9240.05	9232.62	9251.24	9254.91	9250.48	9248.34	9235.86	9236.10	9228.43	9225.88	9262.12	9271.63	9256.82	9262.48	9247.19
1.00°	9223.96	9211.51	9215.66	9209.94	9225.51	9220.12	9228.45	9221.78	9204.35	9200.21	9194.13	9188.61	9240.64	9236.81	9242.32	9221.74	9223.96
1.50°	9179.97	9168.70	9170.65	9174.24	9169.44	9178.02	9186.28	9193.92	9152.64	9160.63	9138.28	9144.07	9184.72	9186.79	9184.26	9177.80	9179.97
2.00°	9125.57	9102.05	9113.26	9095.30	9102.11	9102.78	9120.84	9107.21	9076.38	9070.52	9055.66	9059.06	9117.61	9104.37	9109.70	9107.96	9125.57
2.50°	9037.04	9022.89	9007.35	8997.12	8975.07	9016.11	9009.73	9017.58	8962.81	8974.56	8938.69	8965.83	9028.41	9012.64	9019.38	9032.01	9037.04
3.00°	8933.05	8889.92	8874.96	8842.28	8827.95	8881.97	8885.12	8866.82	8832.38	8824.92	8800.89	8803.82	8909.53	8902.95	8923.75	8916.00	8933.05
3.50°	8782.00	8743.62	8717.66	8688.41	8682.03	8733.29	8736.44	8714.47	8678.56	8670.52	8638.30	8629.65	8736.72	8765.26	8777.48	8790.20	8782.00
4.00°	8611.42	8547.45	8548.03	8537.08	8536.47	8568.99	8578.02	8552.40	8513.70	8499.07	8467.05	8447.71	8545.79	8577.79	8615.73	8609.24	8611.42
4.50°	8411.73	8347.81	8372.45	8379.10	8370.56	8400.39	8403.57	8389.75	8334.66	8326.47	8286.36	8264.63	8324.92	8365.89	8407.60	8422.11	8411.73
5.00°	8201.20	8136.49	8194.17	8205.19	8199.20	8195.19	8210.53	8194.71	8139.36	8110.21	8086.58	8057.65	8097.09	8114.49	8187.00	8205.45	8201.20
5.50°	7968.23	7913.62	7986.19	8015.67	7986.80	7981.18	7989.61	7998.06	7924.94	7892.08	7867.77	7847.83	7858.77	7858.08	7947.87	7984.06	7968.23
6.00°	7727.83	7656.37	7766.07	7792.45	7764.83	7720.79	7749.61	7760.06	7689.21	7626.83	7625.42	7604.82	7602.49	7594.26	7704.41	7743.08	7727.83
6.50°	7454.85	7383.00	7509.36	7549.03	7500.35	7450.78	7483.49	7518.90	7430.55	7360.66	7361.29	7358.62	7321.17	7308.65	7434.30	7492.86	7454.85
7.00°	7172.12	7066.81	7239.23	7266.13	7227.35	7123.81	7194.09	7224.46	7143.16	7026.19	7071.99	7066.56	7022.07	6993.29	7158.68	7208.59	7172.12
7.50°	6850.88	6736.75	6921.23	6953.60	6886.84	6786.55	6875.17	6924.24	6827.06	6690.43	6761.38	6771.29	6700.32	6660.41	6841.30	6910.69	6850.88
8.00°	6519.51	6373.11	6587.29	6587.73	6534.57	6382.13	6525.53	6555.87	6477.98	6298.11	6416.62	6425.73	6367.52	6305.66	6516.59	6568.54	6519.51
8.50°	6150.55	5989.67	6187.26	6200.73	6136.22	5967.58	6140.25	6184.76	6098.74	5905.60	6045.41	6077.91	6021.85	5934.56	6152.06	6213.61	6150.55
9.00°	5772.97	5563.03	5767.75	5779.14	5731.22	5560.71	5747.08	5789.09	5709.91	5508.86	5668.24	5698.30	5655.44	5544.81	5781.73	5821.81	5772.97
9.50°	5352.34	5141.55	5345.31	5356.24	5313.63	5154.79	5345.52	5391.28	5313.06	5112.66	5286.86	5317.88	5266.62	5151.27	5371.26	5419.55	5352.34
10.00°	4923.02	4730.24	4922.12	4931.41	4894.56	4754.38	4943.61	4977.71	4912.31	4724.47	4898.04	4915.78	4877.51	4753.73	4955.91	4989.85	4923.02
10.50°	4504.68	4322.93	4492.75	4509.55	4477.96	4354.52	4541.35	4565.30	4508.53	4337.44	4504.35	4513.73	4488.12	4360.62	4537.62	4563.07	4504.68
11.00°	4088.21	3922.89	4061.96	4091.81	4061.58	3978.12	4147.82	4160.02	4113.20	3963.02	4116.84	4116.86	4103.63	3971.83	4119.05	4143.16	4088.21
11.50°	3696.02	3504.45	3663.42	3690.34	3672.98	3603.43	3762.16	3760.07	3723.88	3591.94	3733.03	3721.09	3723.60	3597.56	3718.03	3735.26	3696.02
12.00°	3307.26	3187.13	3271.25	3309.41	3286.26	3262.10	3392.41	3387.53	3351.05	3248.89	3366.02	3353.22	3360.41	3236.18	3318.21	3352.86	3307.26
12.50°	2971.14	2857.21	2935.42	2956.89	2949.86	2922.39	3035.80	3023.72	2988.91	2910.88	3008.13	2988.44	3011.39	2902.58	2977.65	2991.27	2971.14
13.00°	2641.21	2562.54	2608.97	2637.18	2615.64	2629.09	2711.18	2698.31	2661.56	2608.03	2683.89	2671.96	2689.62	2591.88	2639.94	2670.29	2641.21
13.50°	2369.58	2292.44	2336.18	2349.36	2344.50	2337.10	2411.06	2386.29	2355.03	2313.61	2376.46	2360.56	2388.80	2316.93	2362.48	2374.00	2369.58
14.00°	2103.22	2056.62	2071.01	2095.76	2074.83	2102.14	2146.92	2126.64	2089.65	2068.06	2111.74	2105.76	2123.81	2068.94	2086.48	2121.41	2103.22
14.50°	1891.54	1842.00	1860.61	1869.08	1862.07	1868.31	1907.96	1879.88	1846.65	1830.64	1866.31	1856.58	1883.98	1848.57	1874.71	1889.25	1891.54
15.00°	1683.40	1654.40	1656.44	1668.85	1650.50	1683.60	1702.84	1677.33	1638.79	1633.09	1660.92	1657.60	1675.64	1647.21	1663.76	1689.99	1683.40
15.50°	1516.34	1487.21	1493.82	1493.95	1491.30	1500.30	1519.33	1486.32	1448.24	1444.66	1471.79	1464.12	1487.77	1474.02	1494.54	1508.97	1516.34
16.00°	1351.09	1343.79	1334.80	1341.82	1333.38	1356.24	1361.95	1330.29	1290.90	1295.65	1313.21	1309.94	1328.19	1318.76	1326.94	1355.16	1351.09
16.50°	1227.01	1214.68	1216.91	1209.21	1206.20	1214.05	1219.98	1184.17	1148.60	1153.11	1165.97	1161.45	1185.34	1184.67	1199.25	1215.44	1227.01
17.00°	1103.82	1101.06	1101.72	1092.86	1080.90	1102.66	1098.58	1065.31	1028.85	1034.87	1045.37	1046.55	1063.46	1062.85	1073.19	1094.88	1103.82
17.50°	1002.42	999.75	1005.69	990.68	984.15	993.26	988.21	954.19	918.27	923.74	933.59	935.70	952.85	958.39	972.04	986.20	1002.42
18.00°	901.44	910.66	910.43	899.30	889.11	906.92	898.23	862.14	830.17	836.14	846.29	845.64	857.55	863.07	872.70	892.30	901.44
18.50°	820.27	828.54	834.61	820.52	812.63	822.35	818.14	777.23	750.28	753.79	766.14	759.56	769.83	781.43	794.22	805.78	820.27
19.00°	739.82	752.75	759.15	750.52	737.69	754.07	747.61	708.19	681.34	687.14	697.66	690.90	697.85	706.41	717.17	727.65	739.82
19.50°	675.64	685.06	695.88	685.70	676.30	687.29	681.33	643.82	616.02	623.88	632.23	625.16	632.91	641.98	652.78	658.41	675.64
20.00°	612.23	624.17	632.89	624.22	616.23	631.52	623.76	588.98	561.61	569.65	576.78	570.58	577.09	582.16	590.27	598.55	612.23
20.50°	560.05	570.58	581.71	571.78	565.36	576.77	569.68	537.60	510.39	517.39	523.60	518.30	524.94	532.32	541.15	545.41	560.05
21.00°	508.83	522.61	530.92	524.65	515.51	528.17	522.80	492.62	466.54	469.82	478.98	473.75	479.69	486.40	493.82	498.78	508.83
21.50°	468.09	478.30	487.98	480.93	471.61	481.13	478.49	449.99	424.59	425.67	436.04	431.19	436.97	446.49	457.30	457.27	468.09
22.00°	427.79	436.58	445.47	439.04	428.93	442.23	440.20	411.30	389.09	388.99	398.38	394.68	399.48	408.73	421.40	420.35	427.79
22.50°	391.11	398.73	408.75	402.18	392.44	404.57	403.86	376.01	355.06	354.62	361.61	359.74	363.69	376.24	388.66	385.95	391.11

### 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>	1894	1894	1894	1894	1846	1846	1846	1846	1756	1756	1756	1674	1674	1674	1599	1599	1563
	<b>1</b>	1812	1770	1733	1699	1769	1732	1699	1669	1662	1636	1612	1597	1577	1558	1537	1522	1489
	<b>2</b>	1739	1670	1612	1565	1701	1640	1588	1544	1583	1542	1506	1531	1498	1469	1483	1457	1426
	<b>3</b>	1674	1586	1519	1465	1641	1562	1501	1451	1517	1466	1424	1475	1433	1398	1436	1402	1373
	<b>4</b>	1615	1516	1444	1388	1586	1497	1430	1378	1460	1404	1359	1425	1378	1340	1394	1354	1328
	<b>5</b>	1563	1457	1382	1327	1538	1441	1371	1320	1410	1351	1306	1382	1331	1292	1355	1312	1288
	<b>6</b>	1516	1405	1330	1277	1493	1392	1322	1271	1366	1306	1261	1343	1290	1250	1321	1275	1253
	<b>7</b>	1473	1359	1286	1235	1453	1348	1279	1230	1327	1266	1222	1307	1254	1214	1289	1242	1221
	<b>8</b>	1433	1319	1247	1198	1416	1310	1242	1195	1292	1231	1188	1275	1221	1182	1259	1211	1192
	<b>9</b>	1397	1283	1213	1166	1381	1275	1209	1164	1260	1200	1158	1245	1192	1153	1232	1184	1165
	<b>10</b>	1364	1251	1183	1138	1349	1244	1179	1136	1230	1172	1131	1218	1165	1127	1206	1158	1141

### Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	306.0 fc	2.0 ft
6.5 ft	219.1 fc	2.4 ft
7.5 ft	164.5 fc	2.7 ft
8.0 ft	144.6 fc	2.9 ft
10.0 ft	92.6 fc	3.6 ft
12.0 ft	64.3 fc	4.4 ft
14.0 ft	47.2 fc	5.1 ft
16.0 ft	36.2 fc	5.8 ft
20.0 ft	23.1 fc	7.3 ft
24.0 ft	16.1 fc	8.7 ft
28.0 ft	11.8 fc	10.2 ft

### Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
<b>0.00°</b>	2876225	2876225	2876225
<b>45.00°</b>	33639	32322	31713
<b>55.00°</b>	29674	30014	29678
<b>65.00°</b>	28638	28702	28310
<b>75.00°</b>	30761	27144	29319
<b>85.00°</b>	44237	51325	52196

### 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>	18.1	19.1	18.5	19.5	19.8	18.1	19.1	18.5	19.5	19.9
	<b>3H</b>	19.8	20.7	20.2	21.1	21.5	19.9	20.9	20.4	21.2	21.7
	<b>4H</b>	20.7	21.5	21.1	21.9	22.4	20.7	21.6	21.1	22.0	22.4
	<b>6H</b>	21.6	22.4	22.0	22.8	23.2	21.4	22.2	21.9	22.7	23.1
	<b>8H</b>	22.0	22.7	22.4	23.1	23.6	21.9	22.6	22.3	23.0	23.5
	<b>12H</b>	22.3	23.0	22.8	23.4	23.9	22.3	23.0	22.8	23.4	23.9
<b>4H</b>	<b>2H</b>	18.6	19.4	19.0	19.8	20.3	18.7	19.5	19.1	19.9	20.4
	<b>3H</b>	20.6	21.3	21.0	21.7	22.2	20.7	21.4	21.2	21.9	22.3
	<b>4H</b>	21.6	22.2	22.1	22.7	23.2	21.6	22.2	22.1	22.7	23.2
	<b>6H</b>	22.7	23.2	23.2	23.7	24.2	22.5	23.1	23.0	23.5	24.1
	<b>8H</b>	23.1	23.6	23.6	24.1	24.6	23.0	23.5	23.5	24.0	24.5
	<b>12H</b>	23.6	24.0	24.1	24.5	25.1	23.6	24.0	24.1	24.6	25.1
<b>8H</b>	<b>4H</b>	21.9	22.4	22.4	22.9	23.5	21.9	22.4	22.4	22.9	23.5
	<b>6H</b>	23.2	23.6	23.7	24.1	24.6	23.1	23.5	23.6	24.0	24.5
	<b>8H</b>	23.8	24.1	24.3	24.7	25.2	23.7	24.1	24.3	24.6	25.2
	<b>12H</b>	24.4	24.8	25.0	25.3	25.9	24.5	24.8	25.1	25.4	26.0
<b>12H</b>	<b>4H</b>	22.0	22.4	22.5	22.9	23.5	22.0	22.4	22.5	23.0	23.5
	<b>6H</b>	23.3	23.6	23.8	24.2	24.7	23.2	23.6	23.8	24.1	24.7
	<b>8H</b>	24.0	24.3	24.5	24.8	25.5	24.0	24.3	24.5	24.8	25.4

Corrected UGR values based on total output energy  
 SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0