

## **Indoor Distribution Test Report**

# **Spectrum Lighting Inc.**

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## **Spectrum Lighting Photometric Lab**

### **Luminaire**

CR2 835 15 xx xx RD2SP RB2BS xx xx  
Nom 2.5 inch dia cylinder with spot optic and standard black bezel

### **Test Number**

SP-01274

### **Test Date**

9/24/2021

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	1663
Efficacy	85.29 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°	0.36
Four luminaires	0.34

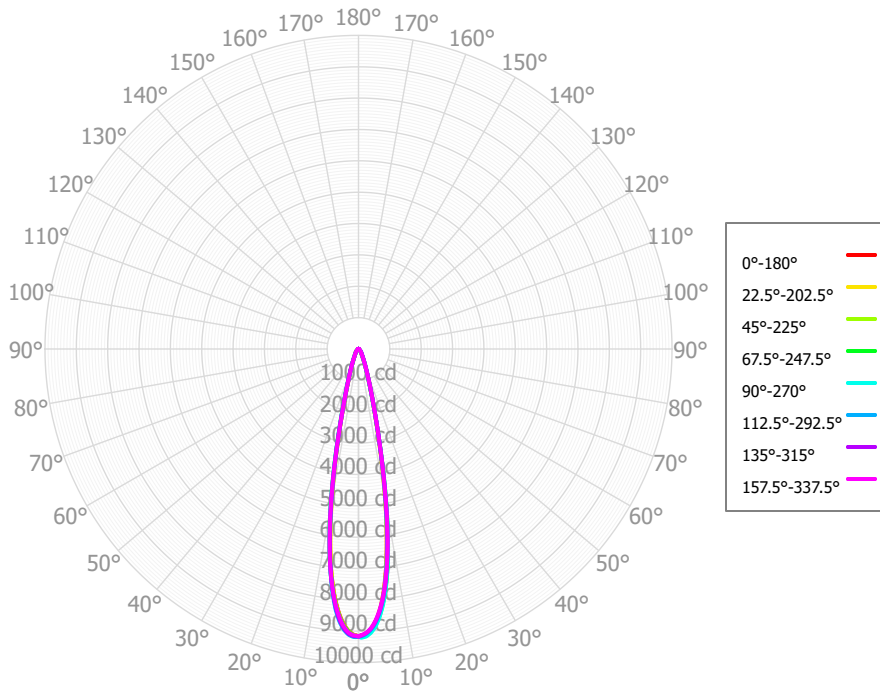
#### Full Beam Angle

0° - 180°	21°
90° - 270°	21°

### IES File Header Contents

Keyword	Value
TEST	SP-01274
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
TESTDATE	9/24/2021
ISSUEDATE	10/1/2021
LUMCAT	CR2 835 15 xx xx RD2SP RB2BS xx xx
LUMINAIRE	Nom 2.5 inch dia cylinder with spot optic and standard black bezel
OTHER	Beam Angle: 21 deg
LAMPCAT	N/A
LAMP	N/A, 6mm LES
OTHER	80 CRI, 3500K tested
OTHER	LER (luminaire efficacy) = 85 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+

### Candela Polar Plot



### Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	684.26	41.14%	90.00° - 100.00°	1.70	0.10%
10.00° - 20.00°	566.24	34.04%	100.00° - 110.00°	1.61	0.10%
20.00° - 30.00°	188.89	11.36%	100.00° - 120.00°	3.27	0.20%
30.00° - 40.00°	103.48	6.22%	120.00° - 130.00°	1.45	0.09%
40.00° - 50.00°	66.92	4.02%	130.00° - 140.00°	1.40	0.08%
50.00° - 60.00°	31.29	1.88%	140.00° - 150.00°	1.25	0.08%
60.00° - 70.00°	7.30	0.44%	150.00° - 160.00°	0.97	0.06%
70.00° - 80.00°	2.25	0.14%	160.00° - 170.00°	0.55	0.03%
80.00° - 90.00°	1.82	0.11%	170.00° - 180.00°	0.18	0.01%
0.00° - 90.00°	1652.45	99.35%	0.00° - 180.00°	1663.22	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°	9167.02	9167.02	9167.02	9167.02	9167.02	9167.02	9167.02	9167.02	9167.02	9167.02	9167.02	9167.02	9167.02	9167.02	9167.02	9167.02	9167.02
0.50°	9134.33	9145.00	9163.54	9176.17	9208.35	9186.28	9162.41	9144.39	9134.63	9140.89	9151.18	9160.06	9190.79	9163.69	9142.06	9130.34	9134.33
1.00°	9115.92	9125.93	9151.50	9166.39	9194.70	9183.53	9156.14	9130.32	9113.18	9117.69	9128.89	9135.76	9162.98	9136.69	9112.48	9101.11	9115.92
1.50°	9073.06	9083.58	9111.99	9140.52	9174.89	9153.91	9128.82	9096.55	9064.22	9065.24	9076.07	9085.86	9126.07	9092.59	9068.66	9059.12	9073.06
2.00°	9023.72	9030.98	9063.89	9096.61	9122.26	9115.52	9087.07	9044.59	9003.11	9007.56	9018.85	9024.43	9068.75	9039.28	9009.15	8998.84	9023.72
2.50°	8942.17	8948.47	8986.90	9027.14	9061.17	9044.25	9016.81	8966.48	8915.29	8917.17	8935.19	8941.09	8997.34	8968.84	8934.58	8925.52	8942.17
3.00°	8853.85	8855.43	8897.79	8938.56	8969.20	8964.19	8929.46	8867.42	8811.47	8822.49	8848.90	8849.29	8899.04	8879.62	8837.39	8823.01	8853.85
3.50°	8725.78	8736.29	8775.05	8826.55	8870.94	8842.87	8806.27	8741.48	8677.71	8687.86	8714.75	8718.71	8783.55	8760.43	8721.38	8702.56	8725.78
4.00°	8591.14	8599.20	8640.11	8693.04	8725.92	8712.56	8664.68	8596.65	8526.79	8549.74	8577.82	8575.70	8639.46	8621.02	8583.37	8557.49	8591.14
4.50°	8410.12	8424.43	8476.27	8536.71	8573.71	8534.91	8486.06	8423.74	8347.93	8368.64	8390.51	8403.63	8474.35	8453.38	8429.53	8399.24	8410.12
5.00°	8223.61	8232.00	8297.94	8355.67	8377.78	8349.34	8291.31	8233.85	8153.21	8185.51	8201.42	8223.97	8279.14	8261.17	8245.21	8212.88	8223.61
5.50°	7984.11	8007.93	8090.54	8151.57	8176.92	8107.51	8054.18	8015.22	7936.24	7947.26	7966.52	8005.52	8060.44	8039.30	8041.66	8013.71	7984.11
6.00°	7740.60	7761.91	7863.87	7920.89	7925.83	7858.90	7801.26	7781.69	7698.56	7707.12	7729.25	7778.82	7812.64	7788.50	7807.13	7777.72	7740.60
6.50°	7446.30	7481.61	7604.14	7668.69	7671.21	7554.57	7512.82	7518.97	7435.70	7416.75	7445.26	7514.93	7544.76	7507.42	7555.82	7527.58	7446.30
7.00°	7149.97	7176.53	7321.31	7385.79	7365.94	7245.69	7213.41	7243.17	7149.56	7123.50	7158.00	7245.01	7255.02	7200.50	7267.90	7243.03	7149.97
7.50°	6810.80	6838.05	7003.89	7081.41	7058.85	6894.38	6884.39	6930.40	6838.56	6780.50	6833.44	6936.60	6941.20	6869.80	6963.11	6947.28	6810.80
8.00°	6470.66	6478.78	6663.04	6740.08	6709.41	6541.30	6547.95	6603.71	6500.69	6434.17	6505.09	6623.72	6604.68	6518.10	6622.47	6611.73	6470.66
8.50°	6105.42	6095.25	6291.89	6376.14	6358.51	6155.29	6190.35	6241.38	6137.93	6054.17	6147.76	6269.69	6253.73	6149.65	6267.67	6265.60	6105.42
9.00°	5738.58	5704.91	5905.25	5984.66	5970.04	5768.80	5828.46	5867.92	5760.59	5672.98	5787.61	5912.47	5891.00	5764.51	5883.10	5883.92	5738.58
9.50°	5348.64	5307.60	5501.27	5578.73	5579.39	5370.24	5443.10	5473.37	5371.55	5283.42	5411.63	5525.37	5512.39	5367.87	5488.74	5494.73	5348.64
10.00°	4958.93	4907.67	5087.67	5163.25	5161.16	4972.14	5054.16	5073.35	4974.25	4894.42	5035.12	5137.15	5122.39	4973.56	5081.17	5086.14	4958.93
10.50°	4571.25	4505.42	4664.58	4743.50	4743.35	4580.71	4665.60	4672.78	4571.13	4508.43	4656.26	4737.13	4734.24	4580.66	4670.05	4674.33	4571.25
11.00°	4185.82	4113.38	4250.53	4331.11	4329.08	4191.70	4277.08	4272.10	4178.73	4126.19	4278.02	4337.54	4347.22	4199.10	4268.03	4270.05	4185.82
11.50°	3814.65	3729.20	3844.19	3921.54	3919.65	3824.75	3900.40	3882.46	3792.83	3759.56	3902.01	3951.23	3972.44	3823.40	3868.01	3866.66	3814.65
12.00°	3450.82	3371.39	3461.52	3540.02	3539.83	3462.36	3524.54	3494.54	3429.26	3402.92	3534.79	3567.48	3604.15	3474.22	3503.42	3506.05	3450.82
12.50°	3123.30	3031.38	3096.35	3167.40	3170.08	3130.22	3191.48	3152.03	3077.28	3079.86	3193.26	3219.47	3257.14	3136.65	3144.81	3148.72	3123.30
13.00°	2807.16	2731.08	2772.24	2839.96	2847.33	2806.98	2860.02	2814.72	2761.99	2768.42	2867.34	2877.60	2919.90	2835.40	2837.39	2844.20	2807.16
13.50°	2535.47	2453.84	2474.72	2524.18	2538.37	2528.29	2577.49	2532.48	2463.19	2489.81	2580.21	2589.45	2625.70	2547.53	2536.22	2541.83	2535.47
14.00°	2277.27	2214.90	2221.57	2270.61	2280.71	2261.73	2297.30	2254.21	2211.12	2228.87	2310.63	2309.50	2348.16	2299.90	2291.54	2296.53	2277.27
14.50°	2061.94	1995.27	1993.10	2030.08	2037.13	2043.02	2075.66	2035.23	1976.72	2009.78	2077.89	2082.31	2115.16	2064.77	2051.55	2053.25	2061.94
15.00°	1858.87	1809.27	1799.93	1834.46	1837.17	1836.12	1857.88	1818.21	1782.08	1806.14	1863.45	1863.64	1896.49	1871.43	1863.78	1865.12	1858.87
15.50°	1688.68	1637.66	1623.50	1645.99	1650.17	1667.80	1688.38	1650.84	1599.91	1633.50	1681.80	1686.49	1715.09	1688.63	1678.25	1679.69	1688.68
16.00°	1530.54	1493.42	1478.82	1497.51	1496.55	1509.64	1523.20	1484.93	1453.06	1475.60	1517.56	1518.22	1543.68	1540.26	1532.51	1533.53	1530.54
16.50°	1399.60	1359.01	1347.10	1353.57	1355.38	1379.00	1393.10	1357.70	1315.40	1343.39	1380.53	1384.26	1407.45	1398.74	1387.89	1390.56	1399.60
17.00°	1277.35	1246.83	1233.55	1237.86	1241.24	1257.14	1267.21	1232.45	1202.70	1223.91	1257.43	1257.76	1278.72	1281.90	1276.30	1276.39	1277.35
17.50°	1171.79	1141.38	1126.20	1124.27	1134.29	1155.26	1166.80	1132.77	1095.16	1123.52	1153.12	1155.15	1170.44	1168.76	1165.85	1164.88	1171.79
18.00°	1073.42	1052.42	1038.23	1034.69	1040.84	1059.57	1069.98	1035.57	1009.70	1030.98	1059.05	1058.92	1065.49	1076.59	1072.60	1070.32	1073.42
18.50°	987.07	967.50	955.68	945.98	953.35	976.03	989.81	959.72	927.71	948.60	976.95	979.65	984.18	986.71	981.32	978.67	987.07
19.00°	906.36	891.61	883.36	876.21	875.47	899.01	912.91	886.00	857.45	874.91	901.51	904.30	905.74	915.77	908.13	901.46	906.36
19.50°	833.77	817.46	813.40	806.82	805.74	832.95	848.14	825.44	788.54	811.09	832.91	837.69	838.44	846.09	836.70	827.62	833.77
20.00°	767.88	755.35	752.97	748.46	747.36	772.40	786.63	766.09	733.02	752.14	772.45	775.04	772.02	786.83	776.99	767.02	767.88

### 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%	20%	0%
	<b>pcc</b>	80%	80%	80%	80%	70%	70%	70%	70%	50%	50%	50%	30%	30%	30%	10%	10%	10%	0%
	<b>pw</b>	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	30%
	<b>0</b>	1977	1977	1977	1977	1930	1930	1930	1930	1842	1842	1842	1761	1761	1761	1687	1687	1687	1652
	<b>1</b>	1906	1869	1836	1806	1865	1833	1803	1776	1764	1741	1720	1701	1684	1667	1644	1630	1617	1597
	<b>2</b>	1838	1775	1722	1678	1803	1746	1699	1659	1692	1654	1622	1643	1612	1586	1597	1573	1552	1542
	<b>3</b>	1775	1693	1630	1580	1744	1671	1613	1566	1628	1580	1541	1588	1549	1516	1551	1519	1492	1490
	<b>4</b>	1717	1622	1553	1500	1689	1604	1540	1491	1569	1515	1473	1537	1492	1455	1507	1469	1438	1443
	<b>5</b>	1662	1559	1488	1434	1638	1545	1478	1428	1516	1459	1415	1490	1441	1402	1465	1424	1390	1399
	<b>6</b>	1612	1504	1431	1379	1591	1492	1424	1374	1468	1409	1365	1446	1395	1355	1426	1381	1346	1358
	<b>7</b>	1566	1454	1382	1331	1547	1444	1376	1327	1425	1364	1320	1406	1353	1313	1389	1342	1306	1321
	<b>8</b>	1523	1409	1338	1289	1506	1401	1333	1286	1384	1324	1281	1369	1315	1275	1355	1306	1270	1286
	<b>9</b>	1483	1369	1299	1252	1468	1362	1295	1250	1348	1288	1245	1335	1280	1241	1322	1273	1237	1255
	<b>10</b>	1446	1332	1264	1218	1433	1326	1261	1217	1314	1254	1213	1302	1248	1210	1292	1242	1207	1225

### Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	303.0 fc	2.0 ft
6.5 ft	217.0 fc	2.4 ft
7.5 ft	163.0 fc	2.8 ft
8.0 ft	143.2 fc	3.0 ft
10.0 ft	91.7 fc	3.7 ft
12.0 ft	63.7 fc	4.4 ft
14.0 ft	46.8 fc	5.2 ft
16.0 ft	35.8 fc	5.9 ft
20.0 ft	22.9 fc	7.4 ft
24.0 ft	15.9 fc	8.9 ft
28.0 ft	11.7 fc	10.3 ft

### Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
<b>0.00°</b>	2848852	2848852	2848852
<b>45.00°</b>	34572	31045	35666
<b>55.00°</b>	18103	18867	20173
<b>65.00°</b>	4584	5691	5718
<b>75.00°</b>	2881	2783	2365
<b>85.00°</b>	6556	5804	6463

### 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>	11.9	12.8	12.3	13.2	13.5	12.6	13.6	13.0	13.9	14.2
	<b>3H</b>	11.9	12.8	12.3	13.1	13.5	12.6	13.4	13.0	13.8	14.2
	<b>4H</b>	11.9	12.7	12.4	13.1	13.5	12.5	13.3	13.0	13.7	14.1
	<b>6H</b>	11.9	12.6	12.4	13.0	13.5	12.5	13.2	12.9	13.6	14.0
	<b>8H</b>	12.0	12.6	12.4	13.0	13.5	12.5	13.2	13.0	13.6	14.0
	<b>12H</b>	12.0	12.7	12.5	13.1	13.5	12.6	13.2	13.1	13.6	14.1
<b>4H</b>	<b>2H</b>	11.8	12.5	12.2	12.9	13.3	12.5	13.2	12.9	13.6	14.0
	<b>3H</b>	11.9	12.5	12.3	12.9	13.3	12.4	13.1	12.9	13.5	13.9
	<b>4H</b>	11.9	12.5	12.3	12.9	13.4	12.4	13.0	12.9	13.4	13.9
	<b>6H</b>	11.9	12.4	12.4	12.9	13.4	12.4	12.9	12.9	13.4	13.9
	<b>8H</b>	12.0	12.4	12.5	12.9	13.4	12.5	13.0	13.0	13.4	13.9
	<b>12H</b>	12.2	12.5	12.7	13.0	13.5	12.7	13.0	13.2	13.5	14.0
<b>8H</b>	<b>4H</b>	11.8	12.2	12.2	12.7	13.2	12.3	12.7	12.8	13.2	13.7
	<b>6H</b>	11.9	12.2	12.4	12.7	13.2	12.4	12.7	12.9	13.2	13.7
	<b>8H</b>	12.0	12.3	12.5	12.8	13.3	12.5	12.8	13.1	13.4	13.9
	<b>12H</b>	12.3	12.5	12.8	13.1	13.6	12.8	13.0	13.3	13.6	14.2
<b>12H</b>	<b>4H</b>	11.7	12.1	12.2	12.6	13.1	12.2	12.6	12.7	13.1	13.6
	<b>6H</b>	11.8	12.1	12.4	12.6	13.2	12.3	12.7	12.9	13.1	13.7
	<b>8H</b>	12.0	12.3	12.5	12.8	13.4	12.5	12.8	13.1	13.3	13.9

Corrected UGR values based on total output energy  
 SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0