

## **Indoor Distribution Test Report**

# **Spectrum Lighting Inc.**

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## **Spectrum Lighting Photometric Lab**

### **Luminaire**

CR2 835 15 xx xx RD2XS RB2BD xx xx

Nom 2.5 inch dia cylinder with xtra narrow spot optic and deep cutoff snoot

### **Test Number**

SP-01276\_1

### **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	1513
Efficacy	77.59 lm/W

#### Luminous Dimensions

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

#### Spacing Criterion

Two luminaires, plane 0°	0.21
Two luminaires, plane 90°	0.21
Four luminaires	0.23

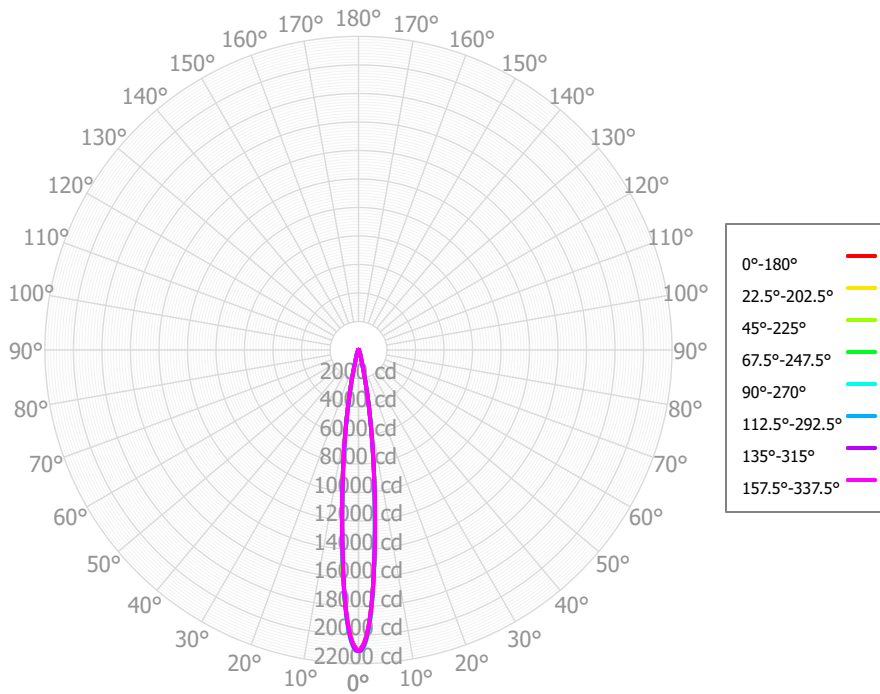
#### Full Beam Angle

0° - 180°	12°
90° - 270°	12°

### IES File Header Contents

Keyword	Value
TEST	SP-01276_1
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 RD2XS RB2BD xx xx
LUMINAIRE	Nom 2.5 inch dia cylinder with xtra narrow spot optic and deep cutoff snoot
OTHER	Beam Angle: 12 deg
LAMPCAT	N/A
LAMP	N/A, 6mm LES
OTHER	80 CRI, 3500K tested
OTHER	LER (luminaire efficacy) = 78 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°	968.26	63.99%	90.00° - 100.00°	2.03	0.13%
10.00° - 20.00°	368.40	24.35%	100.00° - 110.00°	2.07	0.14%
20.00° - 30.00°	110.85	7.33%	100.00° - 120.00°	4.08	0.27%
30.00° - 40.00°	36.58	2.42%	120.00° - 130.00°	1.72	0.11%
40.00° - 50.00°	7.18	0.47%	130.00° - 140.00°	1.77	0.12%
50.00° - 60.00°	2.29	0.15%	140.00° - 150.00°	1.56	0.10%
60.00° - 70.00°	2.06	0.14%	150.00° - 160.00°	1.17	0.08%
70.00° - 80.00°	2.02	0.13%	160.00° - 170.00°	0.75	0.05%
80.00° - 90.00°	2.06	0.14%	170.00° - 180.00°	0.26	0.02%
0.00° - 90.00°	1499.69	99.12%	0.00° - 180.00°	1513.04	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°
0.00°	21114.68	21114.68	21114.68	21114.68	21114.68	21114.68	21114.68	21114.68	21114.68	21114.68	21114.68	21114.68	21114.68	21114.68	21114.68	21114.68
0.50°	20901.45	20957.68	21065.43	21122.79	21095.19	21105.80	21046.70	20935.43	20908.06	20960.85	21042.23	21084.46	21060.52	21082.02	21054.74	20941.12
1.00°	20611.09	20674.54	20799.18	20863.92	20834.29	20839.19	20776.09	20669.18	20623.41	20684.08	20761.64	20801.39	20769.89	20786.51	20752.98	20642.34
1.50°	20144.07	20204.18	20331.05	20407.62	20377.27	20389.47	20314.93	20213.96	20167.40	20220.51	20297.84	20322.09	20289.75	20302.79	20280.29	20160.01
2.00°	19500.80	19553.43	19681.01	19756.59	19726.50	19752.16	19649.92	19570.71	19537.78	19591.44	19659.81	19667.98	19628.03	19624.73	19614.03	19513.27
2.50°	18681.91	18723.65	18855.37	18919.31	18897.99	18913.57	18819.08	18752.88	18731.61	18806.75	18863.70	18849.75	18788.18	18766.66	18767.91	18700.37
3.00°	17709.84	17739.13	17823.75	17923.83	17907.25	17893.05	17824.19	17768.71	17789.34	17874.94	17910.00	17867.42	17791.57	17756.23	17783.63	17725.69
3.50°	16626.16	16652.03	16701.90	16814.44	16783.63	16749.03	16672.08	16663.51	16723.77	16795.78	16839.89	16790.71	16676.52	16646.05	16673.61	16631.81
4.00°	15489.73	15511.64	15541.38	15623.53	15568.71	15519.62	15438.82	15486.31	15565.02	15633.82	15677.35	15607.48	15508.21	15469.72	15501.22	15473.66
4.50°	14344.68	14372.80	14352.10	14398.60	14324.11	14271.91	14192.32	14277.66	14363.00	14434.94	14481.99	14405.19	14311.98	14292.59	14325.54	14315.30
5.00°	13197.20	13236.33	13229.30	13206.13	13108.24	13076.35	13023.36	13089.99	13160.09	13244.06	13296.57	13221.89	13134.87	13120.12	13164.07	13163.65
5.50°	12063.62	12121.88	12112.67	12061.70	11963.13	11963.17	11943.29	11971.10	12002.50	12099.56	12147.00	12067.49	11994.24	11984.68	12036.05	12036.71
6.00°	10973.47	11047.02	11042.69	10981.25	10902.11	10915.32	10939.35	10946.02	10944.09	11025.30	11059.88	10972.58	10908.64	10913.14	10967.23	10963.36
6.50°	9941.72	10018.95	10030.53	9976.13	9918.79	9931.82	10003.64	9986.92	9963.10	10036.66	10055.40	9955.54	9890.48	9907.51	9964.17	9945.95
7.00°	8966.22	9050.72	9086.45	9036.28	9002.01	9013.57	9111.84	9092.85	9055.02	9125.74	9129.88	9017.88	8929.28	8970.98	9018.52	8983.31
7.50°	8048.61	8125.20	8188.11	8170.52	8123.12	8144.66	8262.42	8247.80	8178.69	8249.45	8267.86	8163.49	8039.13	8083.30	8125.15	8077.31
8.00°	7196.48	7253.46	7347.14	7350.63	7290.88	7322.13	7446.88	7444.17	7362.21	7446.11	7463.64	7358.09	7204.52	7245.25	7290.67	7226.99
8.50°	6410.65	6446.58	6556.64	6573.61	6505.34	6542.95	6674.25	6691.21	6606.07	6682.86	6722.69	6620.89	6425.75	6468.01	6502.80	6430.47
9.00°	5692.22	5710.07	5841.19	5857.72	5774.14	5811.92	5954.98	5980.96	5891.47	5968.83	6028.53	5919.22	5720.17	5744.43	5774.28	5713.84
9.50°	5021.36	5033.10	5171.15	5191.95	5099.85	5137.26	5288.10	5313.04	5229.77	5310.51	5358.49	5270.31	5059.24	5076.76	5102.97	5040.74
10.00°	4407.28	4423.10	4551.01	4574.18	4497.67	4523.59	4669.25	4701.49	4620.83	4697.31	4738.71	4649.41	4458.97	4458.01	4482.01	4427.45
10.50°	3848.41	3855.95	3978.99	4012.04	3942.52	3965.29	4103.41	4126.77	4056.94	4125.94	4169.80	4070.92	3898.33	3897.47	3906.08	3869.30
11.00°	3328.00	3341.53	3455.92	3495.87	3448.49	3449.73	3584.11	3601.92	3543.95	3606.74	3647.88	3549.57	3393.48	3379.79	3377.58	3349.64
11.50°	2866.93	2880.55	2983.04	3026.36	2990.94	2987.03	3108.03	3119.87	3078.98	3131.22	3157.86	3071.33	2923.60	2905.03	2897.62	2879.95
12.00°	2450.48	2471.49	2564.69	2607.26	2574.54	2568.97	2676.92	2687.07	2650.97	2695.57	2718.53	2639.89	2504.34	2485.03	2471.52	2468.65
12.50°	2088.62	2104.27	2186.30	2231.74	2202.24	2198.31	2292.38	2301.20	2272.26	2306.24	2325.01	2255.07	2137.98	2112.28	2101.73	2100.49
13.00°	1765.15	1786.53	1858.90	1898.05	1876.79	1876.13	1952.57	1954.96	1935.83	1956.77	1975.24	1909.50	1817.50	1792.24	1782.52	1781.99
13.50°	1498.55	1512.49	1575.28	1618.32	1598.48	1597.11	1659.35	1658.17	1640.77	1661.30	1676.65	1617.85	1542.85	1518.05	1512.44	1514.05
14.00°	1272.24	1285.71	1335.37	1376.15	1360.61	1359.53	1411.51	1408.01	1390.09	1407.58	1421.98	1376.09	1315.82	1288.12	1286.83	1287.07
14.50°	1085.02	1096.74	1140.53	1174.59	1166.26	1164.07	1205.50	1199.27	1184.96	1199.46	1204.98	1175.90	1126.13	1103.82	1102.52	1102.32
15.00°	936.51	946.08	983.24	1010.46	1005.65	998.21	1034.46	1029.06	1020.32	1031.14	1040.01	1012.95	975.02	957.27	953.53	954.70
15.50°	822.05	824.19	858.88	879.36	876.10	870.35	895.57	894.17	887.68	898.35	899.99	882.82	853.85	836.87	839.14	833.18
16.00°	726.77	731.87	757.20	770.46	770.48	767.39	785.58	786.49	781.77	792.00	796.06	782.87	759.13	744.32	744.96	737.60
16.50°	654.56	655.45	677.72	694.55	686.81	682.93	698.92	699.95	696.09	707.82	716.92	701.39	680.18	669.01	669.30	660.97
17.00°	596.69	591.17	614.64	624.81	618.24	607.55	622.95	633.36	628.70	638.90	652.12	635.09	617.87	609.53	611.38	603.08
17.50°	544.81	541.86	559.42	571.28	566.97	565.09	570.48	575.00	572.36	583.32	594.86	584.09	565.31	557.64	556.28	554.27
18.00°	499.60	498.32	516.28	523.46	520.91	518.41	520.31	524.40	526.88	536.38	544.72	539.52	524.18	517.90	516.53	511.87
18.50°	463.94	467.46	479.14	482.28	482.92	479.57	485.58	488.35	487.65	496.36	504.36	501.83	487.24	482.22	477.61	475.07
19.00°	435.71	437.04	446.73	448.64	449.98	449.46	454.06	453.60	453.42	463.13	470.03	468.06	456.85	455.26	452.60	444.04
19.50°	410.27	408.90	419.53	421.07	421.87	417.67	423.63	426.07	425.29	434.44	443.24	439.34	433.14	433.54	426.69	417.64
20.00°	389.19	387.35	394.18	394.84	390.43	390.53	398.52	404.86	398.39	409.53	423.48	419.20	410.86	404.34	409.45	394.86
20.50°	372.86	364.95	371.21	371.76	369.50	369.18	375.75	382.64	379.98	387.37	398.50	393.59	391.86	388.68	385.60	377.36
21.00°	352.91	345.94	350.12	353.32	351.83	355.65	356.88	360.21	361.21	367.99	382.93	382.53	373.95	371.19	369.32	363.74
21.50°	333.29	330.72	331.54	337.23	331.29	337.88	340.73	344.14	346.50	354.31	363.34	366.31	356.19	355.56	357.47	348.71
22.00°	317.61	311.25	318.47	321.41	318.39	322.01	324.54	329.34	330.41	337.86	351.40	349.25	340.23	344.15	340.64	329.94
22.50°	300.69	294.36	297.36	305.39	306.40	306.30	308.26	311.83	311.09	322.48	338.96	336.86	327.18	328.41	327.90	310.56

CR2 835 15 xx xx RD2XS RB2BD xx xx

### 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>	1798	1798	1798	1798	1755	1755	1755	1755	1674	1674	1674	1600	1600	1600	1532	1532	1500
	<b>1</b>	1747	1718	1693	1670	1710	1685	1663	1643	1623	1606	1590	1566	1553	1541	1513	1504	1473
	<b>2</b>	1701	1654	1615	1583	1669	1628	1594	1565	1580	1553	1529	1535	1514	1495	1494	1477	1449
	<b>3</b>	1660	1601	1555	1518	1633	1580	1539	1506	1542	1509	1481	1507	1480	1457	1474	1453	1426
	<b>4</b>	1622	1555	1506	1469	1599	1539	1494	1460	1509	1472	1442	1481	1450	1425	1454	1429	1404
	<b>5</b>	1589	1516	1466	1429	1569	1503	1457	1422	1479	1439	1409	1456	1423	1397	1435	1407	1383
	<b>6</b>	1558	1482	1432	1395	1540	1472	1425	1390	1452	1411	1381	1433	1398	1372	1416	1386	1363
	<b>7</b>	1529	1452	1402	1367	1514	1443	1397	1363	1427	1386	1356	1411	1376	1349	1397	1366	1342
	<b>8</b>	1503	1425	1376	1342	1490	1418	1372	1340	1404	1363	1334	1391	1355	1329	1379	1347	1327
	<b>9</b>	1478	1400	1353	1321	1467	1394	1349	1318	1383	1342	1314	1372	1336	1310	1362	1330	1311
	<b>10</b>	1456	1378	1332	1301	1445	1373	1329	1299	1363	1323	1296	1354	1318	1293	1345	1313	1289

### Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	698.0 fc	1.2 ft
6.5 ft	499.8 fc	1.4 ft
7.5 ft	375.4 fc	1.6 ft
8.0 ft	329.9 fc	1.7 ft
10.0 ft	211.1 fc	2.2 ft
12.0 ft	146.6 fc	2.6 ft
14.0 ft	107.7 fc	3.0 ft
16.0 ft	82.5 fc	3.5 ft
20.0 ft	52.8 fc	4.3 ft
24.0 ft	36.7 fc	5.2 ft
28.0 ft	26.9 fc	6.1 ft

### Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
<b>0.00°</b>	6561847	6561847	6561847
<b>45.00°</b>	3326	2851	2860
<b>55.00°</b>	906	1341	1403
<b>65.00°</b>	1237	1610	1087
<b>75.00°</b>	2160	2525	2374
<b>85.00°</b>	4573	7835	5331

### 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>	-4.7	-3.8	-4.3	-3.4	-3.1	-3.9	-3.0	-3.5	-2.7	-2.3
	<b>3H</b>	-0.6	0.2	-0.2	0.5	0.9	-0.9	-0.1	-0.5	0.3	0.7
	<b>4H</b>	1.4	2.1	1.8	2.4	2.9	0.4	1.1	0.8	1.5	1.9
	<b>6H</b>	3.1	3.8	3.5	4.2	4.6	3.0	3.6	3.4	4.0	4.5
	<b>8H</b>	3.8	4.5	4.3	4.9	5.3	4.3	4.9	4.7	5.3	5.7
	<b>12H</b>	4.6	5.2	5.0	5.6	6.0	5.7	6.3	6.1	6.7	7.1
<b>4H</b>	<b>2H</b>	-3.0	-2.3	-2.6	-1.9	-1.5	-1.6	-0.9	-1.2	-0.5	-0.1
	<b>3H</b>	0.9	1.5	1.4	1.9	2.4	0.7	1.3	1.2	1.8	2.2
	<b>4H</b>	3.1	3.6	3.6	4.1	4.6	2.1	2.6	2.5	3.0	3.5
	<b>6H</b>	4.9	5.3	5.3	5.8	6.3	4.7	5.1	5.2	5.6	6.1
	<b>8H</b>	5.6	6.0	6.1	6.5	7.0	6.0	6.4	6.5	6.9	7.4
	<b>12H</b>	6.4	6.8	6.9	7.3	7.8	7.5	7.9	8.0	8.4	8.9
<b>8H</b>	<b>4H</b>	3.9	4.3	4.4	4.8	5.3	3.1	3.5	3.6	4.0	4.5
	<b>6H</b>	5.9	6.2	6.4	6.8	7.3	5.9	6.2	6.4	6.8	7.3
	<b>8H</b>	6.8	7.1	7.4	7.7	8.2	7.4	7.7	8.0	8.3	8.8
	<b>12H</b>	7.8	8.1	8.4	8.6	9.2	9.1	9.3	9.6	9.8	10.4
<b>12H</b>	<b>4H</b>	4.1	4.5	4.6	5.0	5.5	3.3	3.6	3.8	4.2	4.7
	<b>6H</b>	6.3	6.6	6.8	7.1	7.6	6.3	6.6	6.9	7.1	7.7
	<b>8H</b>	7.4	7.6	7.9	8.1	8.7	8.0	8.3	8.6	8.8	9.4

Corrected UGR values based on total output energy  
 SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0