

Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

CR2 835 15 xx xx RD2SP RB2BS xx RA2LS
Nom 2.5 inch dia cylinder with spot optic and Solite lens

Test Number

SP-01274_3

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	1570
Efficacy	80.51 lm/W

Luminous Dimensions

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

Spacing Criterion

Two luminaires, plane 0°	0.39
Two luminaires, plane 90°	0.39
Four luminaires	0.4

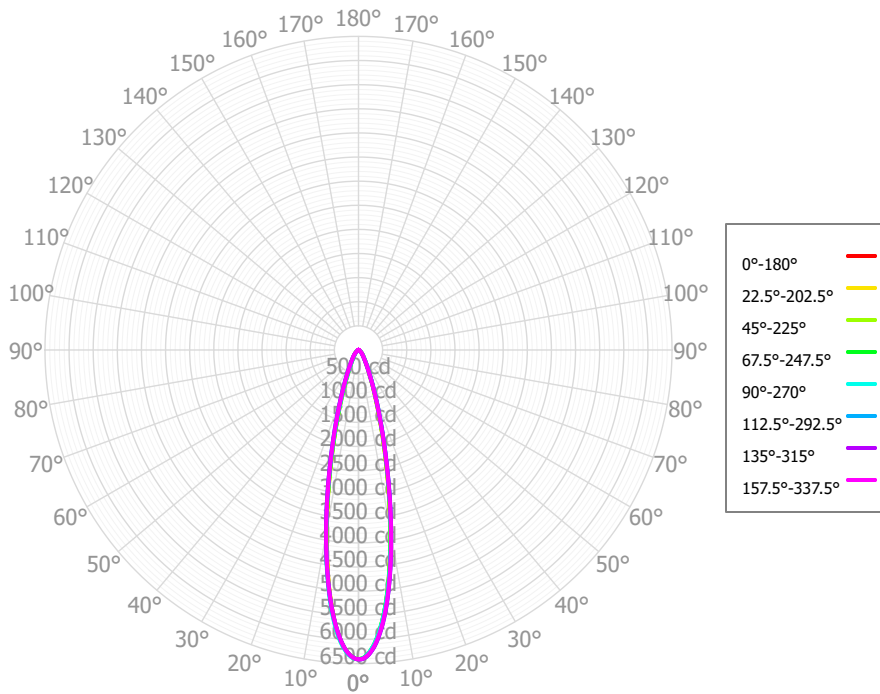
Full Beam Angle

0° - 180°	23°
90° - 270°	23°

IES File Header Contents

Keyword	Value
TEST	SP-01274_3
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
TESTDATE	9/24/2021
ISSUEDATE	10/8/2021
LUMCAT	CR2 835 15 xx xx RD2SP RB2BS xx RA2LS
LUMINAIRE	Nom 2.5 inch dia cylinder with spot optic and Solite lens
OTHER	Beam Angle: 23 deg
LAMPCAT	N/A
LAMP	N/A, 6mm LES
OTHER	80 CRI, 3500K tested
OTHER	LER (luminaire efficacy) = 81 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°	480.78	30.62%	90.00° - 100.00°	1.78	0.11%
10.00° - 20.00°	578.29	36.83%	100.00° - 110.00°	1.79	0.11%
20.00° - 30.00°	253.47	16.14%	100.00° - 120.00°	3.38	0.22%
30.00° - 40.00°	124.91	7.96%	120.00° - 130.00°	1.59	0.10%
40.00° - 50.00°	73.59	4.69%	130.00° - 140.00°	1.40	0.09%
50.00° - 60.00°	33.57	2.14%	140.00° - 150.00°	1.22	0.08%
60.00° - 70.00°	9.71	0.62%	150.00° - 160.00°	1.00	0.06%
70.00° - 80.00°	2.82	0.18%	160.00° - 170.00°	0.59	0.04%
80.00° - 90.00°	1.72	0.11%	170.00° - 180.00°	0.18	0.01%
0.00° - 90.00°	1558.85	99.29%	0.00° - 180.00°	1569.99	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°	6413.23	6413.23	6413.23	6413.23	6413.23	6413.23	6413.23	6413.23	6413.23	6413.23	6413.23	6413.23	6413.23	6413.23	6413.23	6413.23	6413.23
0.50°	6408.54	6401.24	6398.32	6401.50	6400.34	6402.17	6403.79	6404.58	6404.23	6399.54	6401.26	6405.06	6407.28	6414.54	6413.42	6409.04	6408.54
1.00°	6381.62	6382.77	6380.57	6375.71	6381.21	6370.60	6379.37	6377.39	6373.33	6381.30	6387.78	6384.07	6393.18	6390.45	6398.58	6387.61	6381.62
1.50°	6352.01	6340.39	6332.78	6331.72	6330.05	6337.69	6336.43	6339.17	6337.22	6337.17	6341.84	6348.68	6355.53	6361.88	6359.82	6351.61	6352.01
2.00°	6293.80	6288.80	6280.96	6276.77	6275.40	6278.59	6284.17	6282.75	6279.74	6289.14	6294.13	6297.14	6309.68	6304.22	6315.42	6299.36	6293.80
2.50°	6234.00	6213.68	6204.27	6202.57	6198.66	6217.06	6214.18	6217.81	6214.66	6213.66	6220.24	6231.29	6239.50	6242.62	6246.38	6233.74	6234.00
3.00°	6142.31	6129.96	6122.71	6119.15	6120.68	6124.67	6130.81	6129.55	6126.10	6135.85	6142.82	6149.72	6161.86	6163.41	6173.26	6156.03	6142.31
3.50°	6049.10	6029.06	6020.18	6016.35	6013.51	6029.18	6026.81	6032.82	6029.51	6030.79	6038.27	6056.87	6067.23	6075.94	6073.79	6059.97	6049.10
4.00°	5931.84	5917.15	5910.62	5906.21	5905.08	5911.38	5913.09	5915.89	5913.94	5924.35	5929.32	5945.50	5961.86	5961.53	5971.75	5950.30	5931.84
4.50°	5811.99	5787.49	5778.90	5775.51	5775.18	5789.57	5787.29	5793.34	5790.07	5789.80	5798.53	5823.30	5836.85	5841.02	5847.29	5827.44	5811.99
5.00°	5671.59	5648.35	5640.84	5638.95	5642.96	5648.80	5652.11	5651.81	5650.55	5653.44	5662.11	5682.28	5702.77	5705.37	5721.69	5696.74	5671.59
5.50°	5527.49	5496.91	5487.53	5485.41	5490.97	5504.49	5507.46	5506.53	5501.42	5494.90	5505.40	5532.55	5555.43	5562.91	5572.90	5550.92	5527.49
6.00°	5364.60	5336.43	5327.31	5328.41	5336.19	5347.89	5350.22	5345.88	5337.80	5334.28	5343.94	5369.48	5397.59	5407.02	5422.47	5397.97	5364.60
6.50°	5197.77	5166.45	5153.88	5156.14	5166.45	5185.64	5182.56	5183.19	5167.12	5159.48	5169.61	5201.53	5227.18	5241.94	5248.47	5229.00	5197.77
7.00°	5016.41	4984.82	4973.71	4981.77	4994.26	5008.59	5008.27	5004.35	4987.84	4981.65	4991.28	5021.91	5048.56	5062.42	5073.09	5054.05	5016.41
7.50°	4831.62	4793.12	4783.25	4797.21	4812.64	4828.57	4829.56	4824.41	4801.36	4789.75	4804.52	4839.08	4861.97	4877.65	4887.38	4868.04	4831.62
8.00°	4637.35	4597.04	4591.45	4611.91	4628.89	4642.51	4643.78	4633.18	4607.68	4596.02	4612.82	4643.37	4671.61	4686.23	4699.79	4678.92	4637.35
8.50°	4442.09	4397.90	4398.00	4415.28	4439.01	4453.59	4454.23	4441.62	4412.76	4396.13	4412.76	4445.11	4478.28	4491.38	4502.74	4481.90	4442.09
9.00°	4244.70	4197.68	4200.36	4218.42	4246.73	4259.98	4261.80	4245.72	4216.83	4195.33	4210.18	4240.14	4279.78	4292.96	4304.82	4283.25	4244.70
9.50°	4044.99	3996.86	3998.48	4020.87	4049.14	4066.51	4068.13	4049.93	4018.61	3992.20	4004.20	4034.32	4077.97	4092.66	4103.77	4081.66	4044.99
10.00°	3841.29	3796.38	3796.70	3823.20	3853.02	3873.22	3876.10	3855.30	3818.89	3790.19	3799.05	3831.99	3874.52	3890.77	3903.39	3879.68	3841.29
10.50°	3638.37	3596.06	3594.98	3624.02	3659.51	3680.09	3684.60	3661.22	3623.11	3590.46	3594.83	3629.89	3670.24	3691.61	3704.80	3679.55	3638.37
11.00°	3436.52	3397.38	3396.48	3425.71	3466.62	3487.13	3494.91	3470.51	3429.40	3393.06	3395.35	3431.14	3471.68	3494.34	3507.14	3479.57	3436.52
11.50°	3238.88	3199.28	3200.11	3232.94	3274.60	3298.49	3305.66	3280.45	3238.35	3199.46	3200.15	3232.73	3275.42	3301.34	3311.45	3283.70	3238.88
12.00°	3046.02	3010.59	3012.22	3042.56	3087.26	3113.68	3122.38	3093.15	3048.42	3009.17	3009.21	3041.58	3083.76	3110.70	3118.35	3088.34	3046.02
12.50°	2860.95	2824.31	2828.89	2862.60	2905.37	2933.20	2940.10	2909.04	2866.15	2823.20	2821.38	2851.52	2893.55	2925.83	2929.60	2904.86	2860.95
13.00°	2683.05	2648.47	2654.16	2685.76	2730.38	2755.81	2767.91	2734.75	2686.36	2644.66	2642.49	2671.90	2717.60	2743.53	2748.56	2722.62	2683.05
13.50°	2513.25	2474.55	2483.06	2518.98	2561.93	2590.82	2596.78	2564.55	2517.74	2474.01	2468.93	2494.72	2544.89	2571.43	2578.08	2553.52	2513.25
14.00°	2349.57	2315.77	2322.61	2356.00	2402.64	2432.91	2440.69	2404.22	2351.78	2311.28	2305.49	2332.24	2382.37	2402.81	2413.78	2386.63	2349.57
14.50°	2193.87	2158.73	2165.67	2202.40	2250.38	2283.44	2285.40	2249.64	2201.07	2155.45	2146.83	2173.11	2221.41	2249.92	2256.33	2233.53	2193.87
15.00°	2043.01	2015.97	2021.35	2055.13	2106.18	2137.83	2143.13	2105.94	2052.91	2009.08	2002.17	2027.86	2075.77	2101.01	2107.50	2083.02	2043.01
15.50°	1904.01	1874.03	1880.08	1920.09	1967.04	2003.91	2001.75	1968.53	1917.20	1869.38	1862.75	1885.82	1931.52	1963.60	1966.54	1943.53	1904.01
16.00°	1770.72	1748.48	1754.17	1790.57	1838.64	1874.13	1874.87	1840.76	1782.73	1740.71	1733.87	1753.78	1800.88	1828.27	1832.65	1808.20	1770.72
16.50°	1648.92	1623.76	1630.90	1669.66	1715.60	1753.02	1749.66	1717.95	1662.75	1618.26	1607.95	1627.26	1671.02	1706.67	1703.98	1686.13	1648.92
17.00°	1531.49	1515.13	1519.37	1554.77	1602.16	1634.25	1637.95	1601.27	1543.54	1504.78	1496.23	1513.83	1559.39	1586.62	1587.52	1568.44	1531.49
17.50°	1427.93	1407.84	1409.06	1447.43	1492.45	1530.78	1528.38	1493.77	1441.44	1395.37	1387.35	1405.46	1448.64	1479.80	1478.30	1461.41	1427.93
18.00°	1328.37	1312.48	1315.63	1348.34	1395.72	1430.24	1429.78	1395.60	1340.11	1299.14	1290.13	1306.73	1349.40	1373.67	1377.95	1359.49	1328.37
18.50°	1238.91	1219.24	1223.00	1257.80	1302.89	1339.84	1333.88	1302.58	1250.18	1207.54	1194.48	1213.27	1251.85	1282.66	1281.83	1267.29	1238.91
19.00°	1151.54	1137.77	1140.43	1172.82	1219.39	1250.72	1247.99	1213.82	1161.84	1125.17	1111.29	1127.79	1166.77	1192.28	1195.01	1179.67	1151.54
19.50°	1073.53	1058.88	1058.65	1092.51	1137.91	1170.95	1164.61	1132.72	1085.67	1045.21	1028.98	1047.22	1083.33	1112.92	1111.64	1099.10	1073.53
20.00°	996.83	990.22	989.33	1019.30	1064.87	1091.78	1088.17	1056.72	1011.09	975.11	961.45	972.66	1007.78	1034.57	1035.31	1023.20	996.83
20.50°	932.28	923.76	921.19	950.97	993.08	1023.19	1015.35	987.72	944.55	906.86	894.34	904.25	935.15	964.75	960.95	953.11	932.28
21.00°	868.64	863.78	862.45	888.55	930.84	955.12	950.31	922.50	880.12	846.84	832.99	842.03	872.61	896.57	897.66	888.16	868.64
21.50°	813.60	806.32	804.74	829.38	869.41	896.93	888.83	863.94	823.29	787.80	772.53	784.07	812.64	837.27	836.64	828.45	813.60
22.00°	758.93	754.57	752.42	776.17	816.62	839.47	833.51	808.19	768.69	737.29	721.21	729.59	759.52	779.34	783.24	773.91	758.93
22.50°	710.70	705.50	702.37	725.54	764.16	789.10	781.10	758.01	720.12	687.29	671.18	680.26	708.20	726.61	730.84	723.67	710.70

Coefficients of Utilization – Zonal Cavity Method

Values are lumens delivered to the workplane.

RCR	pfc	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	0%
	pcc	80%	80%	80%	80%	70%	70%	70%	70%	50%	50%	50%	30%	30%	30%	10%	10%	0%
	pw	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	30%
	0	1866	1866	1866	1866	1822	1822	1822	1822	1738	1738	1738	1662	1662	1662	1592	1592	1559
	1	1793	1755	1721	1691	1754	1721	1690	1663	1656	1632	1610	1596	1578	1560	1541	1527	1496
	2	1722	1657	1603	1558	1687	1630	1581	1540	1578	1539	1505	1531	1499	1471	1487	1462	1433
	3	1655	1571	1506	1454	1625	1549	1489	1441	1507	1458	1417	1469	1429	1394	1434	1401	1374
	4	1592	1495	1423	1369	1565	1477	1411	1360	1443	1387	1343	1412	1365	1327	1383	1344	1319
	5	1534	1427	1353	1297	1510	1413	1343	1291	1385	1325	1279	1360	1308	1268	1336	1291	1268
	6	1480	1367	1291	1237	1459	1355	1284	1232	1332	1270	1223	1311	1256	1215	1291	1243	1222
	7	1430	1313	1237	1184	1411	1303	1231	1181	1284	1220	1174	1266	1210	1168	1249	1199	1180
	8	1383	1264	1189	1138	1366	1255	1184	1135	1239	1175	1130	1224	1167	1125	1209	1158	1140
	9	1339	1219	1146	1096	1324	1212	1142	1094	1198	1135	1090	1185	1128	1087	1173	1121	1104
	10	1299	1179	1107	1059	1285	1173	1104	1057	1161	1098	1054	1149	1092	1051	1138	1086	1071

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	212.0 fc	2.3 ft
6.5 ft	151.8 fc	2.7 ft
7.5 ft	114.0 fc	3.1 ft
8.0 ft	100.2 fc	3.3 ft
10.0 ft	64.1 fc	4.1 ft
12.0 ft	44.5 fc	4.9 ft
14.0 ft	32.7 fc	5.8 ft
16.0 ft	25.1 fc	6.6 ft
20.0 ft	16.0 fc	8.2 ft
24.0 ft	11.1 fc	9.9 ft
28.0 ft	8.2 fc	11.5 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	1993051	1993051	1993051
45.00°	41179	42627	43493
55.00°	20110	18826	19345
65.00°	6348	6364	6518
75.00°	3031	2478	3328
85.00°	5986	6758	4663

UGR CIE 190:2010

Ceiling reflectance		0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Wall reflectance		0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Plane reflectance		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions		Viewed crosswise					Viewed endwise				
2H	2H	13.7	14.7	14.1	15.0	15.4	13.3	14.3	13.7	14.6	14.9
	3H	13.8	14.7	14.2	15.0	15.4	13.4	14.2	13.8	14.6	15.0
	4H	13.8	14.6	14.2	15.0	15.4	13.4	14.1	13.8	14.5	14.9
	6H	13.8	14.5	14.2	14.9	15.3	13.3	14.1	13.8	14.4	14.9
	8H	13.8	14.4	14.2	14.9	15.3	13.3	14.0	13.8	14.4	14.8
	12H	13.8	14.4	14.2	14.8	15.3	13.3	14.0	13.8	14.4	14.8
4H	2H	13.6	14.4	14.1	14.8	15.2	13.2	14.0	13.6	14.3	14.8
	3H	13.8	14.4	14.2	14.9	15.3	13.3	14.0	13.8	14.4	14.8
	4H	13.8	14.4	14.3	14.8	15.3	13.3	13.9	13.8	14.3	14.8
	6H	13.8	14.3	14.3	14.8	15.3	13.4	13.8	13.8	14.3	14.8
	8H	13.8	14.3	14.3	14.7	15.2	13.4	13.8	13.9	14.3	14.8
	12H	13.9	14.3	14.4	14.8	15.3	13.4	13.8	13.9	14.3	14.8
8H	4H	13.7	14.1	14.2	14.6	15.1	13.2	13.7	13.7	14.1	14.6
	6H	13.7	14.1	14.2	14.6	15.1	13.3	13.7	13.8	14.2	14.7
	8H	13.8	14.1	14.3	14.6	15.2	13.3	13.7	13.9	14.2	14.7
	12H	13.9	14.2	14.5	14.7	15.3	13.5	13.8	14.0	14.3	14.9
12H	4H	13.6	14.0	14.1	14.5	15.0	13.2	13.6	13.7	14.1	14.6
	6H	13.7	14.0	14.2	14.5	15.1	13.3	13.6	13.8	14.1	14.6
	8H	13.8	14.1	14.3	14.6	15.2	13.4	13.6	13.9	14.1	14.7

Corrected UGR values based on total output energy
 SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0