

Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

CR2 835 15 xx xx RD2XS RB2BS xx RA2LL

Nom 2.5 inch dia cylinder with xtra narrow spot optic and linear spread lens

Test Number

SP-01276_2

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	1345
Efficacy	68.95 lm/W

Luminous Dimensions

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

Spacing Criterion

Two luminaires, plane 0°	0.59
Two luminaires, plane 90°	0.25
Four luminaires	0.35

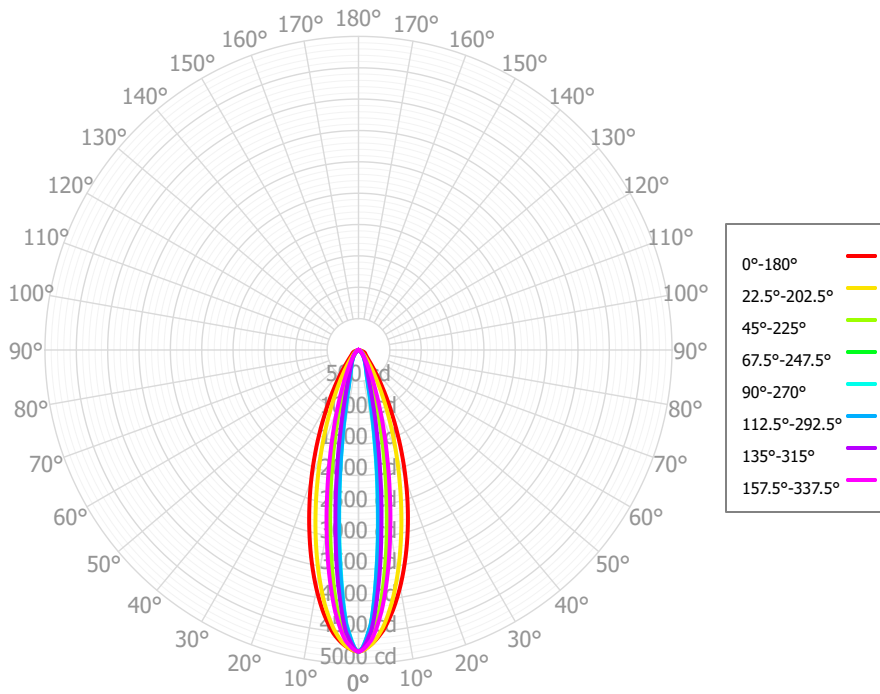
Full Beam Angle

0° - 180°	37°
90° - 270°	15°

IES File Header Contents

Keyword	Value
TEST	SP-01276_2
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 RB2BS xx RA2LL
LUMINAIRE	Nom 2.5 inch dia cylinder with xtra narrow spot optic and linear spread lens
OTHER	Beam Angle: 15 X 38 degrees
LAMPCAT	N/A
LAMP	N/A, 6mm LES
OTHER	80 CRI, 3500K tested
OTHER	LER (luminaire efficacy) = 69 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°	327.53	24.36%	90.00° - 100.00°	1.56	0.12%
10.00° - 20.00°	412.06	30.65%	100.00° - 110.00°	1.58	0.12%
20.00° - 30.00°	268.48	19.97%	100.00° - 120.00°	3.08	0.23%
30.00° - 40.00°	153.89	11.45%	120.00° - 130.00°	1.33	0.10%
40.00° - 50.00°	86.73	6.45%	130.00° - 140.00°	1.25	0.09%
50.00° - 60.00°	48.32	3.59%	140.00° - 150.00°	1.13	0.08%
60.00° - 70.00°	26.61	1.98%	150.00° - 160.00°	0.84	0.06%
70.00° - 80.00°	9.44	0.70%	160.00° - 170.00°	0.46	0.03%
80.00° - 90.00°	1.75	0.13%	170.00° - 180.00°	0.16	0.01%
0.00° - 90.00°	1334.81	99.27%	0.00° - 180.00°	1344.62	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°	4808.49	4808.49	4808.49	4808.49	4808.49	4808.49	4808.49	4808.49	4808.49	4808.49	4808.49	4808.49	4808.49	4808.49	4808.49	4808.49	4808.49
2.50°	4697.77	4703.27	4604.26	4476.98	4393.29	4400.69	4508.62	4645.84	4726.47	4720.64	4618.94	4475.33	4379.35	4399.98	4502.59	4635.75	4697.77
5.00°	4493.10	4446.61	4055.76	3625.98	3377.81	3417.72	3735.97	4208.48	4542.32	4475.23	4063.03	3604.06	3354.47	3399.67	3719.11	4192.06	4493.11
7.50°	4190.59	4064.80	3331.80	2648.55	2313.26	2366.00	2817.04	3593.24	4240.40	4101.15	3328.30	2642.58	2316.21	2367.97	2801.88	3577.54	4190.59
10.00°	3831.85	3609.37	2598.06	1807.28	1457.26	1512.11	1981.46	2924.41	3865.88	3636.71	2601.25	1815.83	1475.53	1528.79	1991.95	2915.40	3831.85
12.50°	3435.60	3119.41	1951.66	1178.83	887.60	926.56	1329.87	2294.92	3452.34	3138.17	1960.16	1188.87	904.76	946.68	1348.69	2296.73	3435.60
15.00°	3024.07	2634.92	1426.31	767.58	582.21	599.78	872.34	1748.45	3022.85	2639.20	1438.16	778.45	588.88	610.03	897.22	1766.15	3024.07
17.50°	2608.90	2173.85	1024.98	540.15	437.88	448.35	592.66	1307.58	2602.22	2166.78	1035.30	545.51	437.88	447.13	609.72	1334.34	2608.90
20.00°	2202.34	1761.08	745.82	419.90	358.85	362.24	439.64	965.67	2202.50	1744.76	747.93	414.13	358.22	360.32	443.27	989.87	2202.34
22.50°	1819.04	1394.43	559.99	342.17	304.51	306.62	351.01	705.78	1821.69	1377.83	550.56	336.12	303.52	305.57	350.16	729.48	1819.04
25.00°	1467.06	1085.14	433.25	288.79	263.16	264.91	292.58	519.88	1478.14	1067.78	423.31	283.23	257.21	259.44	289.35	537.95	1467.06
27.50°	1163.67	834.20	350.17	245.84	229.63	228.50	248.83	391.94	1175.89	820.16	331.38	240.98	222.28	224.62	245.15	401.35	1163.67
30.00°	919.55	632.68	284.07	212.78	199.44	200.44	213.83	301.74	931.43	623.09	268.40	206.45	195.19	194.64	209.17	308.12	919.55
32.50°	716.31	485.75	237.42	184.31	175.61	175.77	184.52	240.32	726.32	473.65	217.05	177.47	170.46	170.45	179.20	238.90	716.31
35.00°	557.00	372.21	198.39	161.34	155.40	153.35	157.58	194.59	566.21	362.14	177.07	153.45	149.23	147.45	153.75	189.51	557.00
37.50°	437.39	286.44	165.43	140.96	136.00	135.13	137.88	161.55	443.17	278.30	148.08	131.68	131.39	128.50	131.33	154.63	437.39
40.00°	349.03	223.62	135.90	120.81	117.97	117.55	117.56	132.40	349.98	217.89	120.32	111.89	114.56	111.78	110.68	127.30	349.03
42.50°	282.35	180.31	113.73	103.60	102.03	99.37	96.55	109.23	279.72	176.55	99.41	94.41	96.62	95.12	91.49	104.04	282.35
45.00°	235.26	148.48	94.28	86.98	87.40	85.62	80.81	90.72	233.46	145.31	81.52	78.00	80.99	77.94	73.98	83.93	235.26
47.50°	203.24	124.08	76.83	71.13	72.65	71.54	66.38	74.67	197.59	122.91	65.84	63.04	65.76	63.31	60.28	70.95	203.24
50.00°	176.46	105.49	63.58	56.22	58.10	57.26	53.20	62.33	169.11	104.69	53.72	49.21	50.80	49.65	47.58	59.39	176.46
52.50°	160.57	90.32	51.36	44.23	45.69	46.13	42.61	51.57	150.73	90.18	44.42	39.18	39.50	38.98	36.47	49.65	160.57
55.00°	145.69	78.70	40.73	32.91	34.13	35.61	32.55	42.14	133.84	78.52	35.88	29.62	28.88	28.90	26.42	40.36	145.69
57.50°	135.39	68.80	31.93	25.62	25.33	27.03	24.90	33.78	124.10	68.89	27.66	21.47	21.30	20.87	19.66	31.67	135.39
60.00°	126.23	60.10	24.85	18.68	17.63	18.70	17.40	25.92	114.52	60.34	21.25	14.51	14.02	13.92	13.76	25.27	126.23
62.50°	120.20	52.98	19.36	13.60	12.50	13.56	13.68	21.03	106.24	52.26	15.44	10.07	10.50	10.10	9.90	20.32	120.20
65.00°	113.17	46.69	15.09	8.85	8.27	8.71	10.00	17.38	97.83	44.41	11.78	6.84	7.20	6.81	6.72	15.80	113.17
67.50°	103.30	39.70	11.63	6.77	5.91	6.49	6.86	13.67	87.71	36.41	8.68	5.57	5.72	4.78	4.88	11.59	103.30
70.00°	88.96	31.92	8.68	4.89	4.10	4.46	3.98	9.95	75.96	27.15	6.08	4.26	4.27	3.24	3.51	7.91	88.96
72.50°	64.90	22.74	5.95	4.11	3.19	3.50	3.08	6.82	57.14	16.81	3.56	2.78	3.11	2.52	2.91	4.50	64.90
75.00°	41.40	13.51	3.34	3.27	2.45	2.60	2.26	3.82	38.21	10.54	2.49	1.80	2.10	2.03	2.37	3.00	41.40
77.50°	18.53	6.83	2.15	2.15	1.87	1.98	1.88	2.53	19.09	4.70	1.59	1.35	1.67	1.88	1.93	2.05	18.53
80.00°	4.26	2.27	1.57	1.39	1.64	1.51	1.54	1.64	4.85	2.36	1.59	1.16	1.38	1.81	1.63	1.57	4.26
82.50°	2.24	1.36	1.45	1.75	1.84	1.47	1.38	1.60	2.94	1.73	1.65	1.19	1.60	1.86	1.48	1.21	2.24
85.00°	1.25	1.28	1.48	1.95	1.95	1.45	1.23	1.69	1.71	1.55	1.55	1.19	1.71	1.88	1.42	1.22	1.25
87.50°	1.44	1.28	1.43	1.67	1.93	1.51	1.13	1.45	1.78	1.54	1.46	1.19	1.45	1.83	1.43	1.28	1.44
90.00°	1.52	1.25	1.36	1.46	1.89	1.53	1.11	1.18	1.71	1.42	1.51	1.31	1.30	1.72	1.38	1.25	1.52
92.50°	1.50	1.22	1.46	1.46	1.85	1.49	1.30	1.20	1.46	1.28	1.55	1.51	1.39	1.57	1.28	1.22	1.50
95.00°	1.50	1.20	1.59	1.50	1.66	1.41	1.35	1.20	1.41	1.28	1.44	1.62	1.47	1.75	1.16	1.22	1.50
97.50°	1.51	1.32	1.32	1.55	1.38	1.29	1.13	1.26	1.64	1.33	1.39	1.69	1.54	2.14	1.03	1.21	1.51
100.00°	1.50	1.46	0.99	1.55	1.39	1.24	1.13	1.34	1.73	1.53	1.70	1.55	1.59	2.09	1.11	1.20	1.50
102.50°	1.47	1.54	1.10	1.53	1.52	1.25	1.47	1.37	1.65	1.68	1.88	1.27	1.65	1.83	1.29	1.21	1.47
105.00°	1.59	1.64	1.22	1.49	1.62	1.33	1.64	1.38	1.56	1.70	1.46	1.36	1.66	1.63	1.37	1.43	1.59
107.50°	1.78	1.68	1.41	1.44	1.71	1.48	1.57	1.39	1.44	1.69	1.15	1.65	1.55	1.44	1.41	1.60	1.78
110.00°	1.84	1.70	1.59	1.42	1.68	1.55	1.52	1.41	1.44	1.59	1.25	1.57	1.53	1.46	1.37	1.41	1.84
112.50°	1.87	1.71	1.55	1.43	1.63	1.55	1.50	1.45	1.53	1.46	1.37	1.37	1.66	1.57	1.30	1.29	1.87

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	1598	1598	1598	1598	1560	1560	1560	1560	1489	1489	1489	1423	1423	1423	1363	1363	1335
	1	1526	1490	1457	1428	1492	1460	1431	1404	1404	1380	1359	1352	1334	1317	1305	1290	1264
	2	1454	1391	1339	1295	1424	1367	1320	1280	1323	1284	1250	1281	1250	1222	1243	1218	1193
	3	1387	1305	1241	1191	1360	1286	1228	1181	1250	1201	1161	1216	1175	1141	1185	1151	1129
	4	1325	1230	1160	1106	1301	1214	1149	1099	1184	1129	1085	1157	1110	1072	1131	1091	1071
	5	1268	1163	1090	1036	1246	1150	1082	1031	1126	1067	1021	1103	1052	1012	1081	1038	1019
	6	1214	1104	1030	977	1195	1094	1024	974	1073	1012	966	1054	1000	959	1036	989	972
	7	1166	1052	978	926	1148	1043	973	924	1025	963	918	1009	954	913	994	945	929
	8	1121	1005	932	882	1105	997	928	880	982	920	876	968	913	872	955	905	891
	9	1079	962	891	843	1065	956	888	841	943	881	838	931	875	835	920	869	856
	10	1040	924	854	808	1027	918	852	807	907	846	804	897	841	802	887	836	824

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	159.0 fc	2.6 ft
6.5 ft	113.8 fc	3.0 ft
7.5 ft	85.5 fc	3.5 ft
8.0 ft	75.1 fc	3.7 ft
10.0 ft	48.1 fc	4.7 ft
12.0 ft	33.4 fc	5.6 ft
14.0 ft	24.5 fc	6.5 ft
16.0 ft	18.8 fc	7.5 ft
20.0 ft	12.0 fc	9.3 ft
24.0 ft	8.3 fc	11.2 ft
28.0 ft	6.1 fc	13.1 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	1494343	1494343	1494343
45.00°	103397	41437	38411
55.00°	78935	22066	18491
65.00°	83216	11093	6082
75.00°	49714	4004	2945
85.00°	4471	5277	6950

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	20.6	21.6	21.0	22.0	22.3	13.4	14.4	13.7	14.8	15.1
	3H	23.7	24.6	24.1	24.9	25.3	13.5	14.4	13.9	14.8	15.2
	4H	24.3	25.2	24.7	25.5	26.0	13.5	14.3	13.9	14.7	15.1
	6H	24.3	25.1	24.8	25.5	25.9	13.4	14.2	13.9	14.6	15.0
	8H	24.3	25.0	24.7	25.4	25.9	13.4	14.2	13.9	14.6	15.0
	12H	24.2	25.0	24.7	25.4	25.8	13.5	14.2	13.9	14.6	15.0
4H	2H	20.3	21.2	20.8	21.6	22.0	13.4	14.3	13.9	14.7	15.1
	3H	23.5	24.2	23.9	24.6	25.0	13.6	14.3	14.0	14.7	15.2
	4H	24.1	24.7	24.6	25.2	25.6	13.6	14.2	14.1	14.7	15.1
	6H	24.2	24.7	24.6	25.2	25.6	13.6	14.1	14.1	14.6	15.1
	8H	24.1	24.6	24.6	25.1	25.6	13.6	14.1	14.1	14.6	15.1
	12H	24.0	24.5	24.5	25.0	25.5	13.7	14.2	14.2	14.7	15.2
8H	4H	23.9	24.4	24.4	24.9	25.4	13.7	14.2	14.2	14.6	15.1
	6H	24.0	24.4	24.5	24.9	25.4	13.7	14.1	14.2	14.6	15.1
	8H	23.9	24.3	24.5	24.8	25.3	13.7	14.1	14.3	14.6	15.1
	12H	23.9	24.2	24.4	24.7	25.3	13.9	14.2	14.5	14.7	15.3
12H	4H	23.9	24.3	24.4	24.8	25.3	13.6	14.1	14.1	14.6	15.1
	6H	23.9	24.3	24.5	24.8	25.3	13.7	14.0	14.2	14.5	15.1
	8H	23.9	24.2	24.4	24.7	25.3	13.8	14.1	14.3	14.6	15.2

Corrected UGR values based on total output energy
 SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0