Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

CR2 835 15 xx xx RD2FL RB2BS xx RA2LS

Nom 2.5 inch dia cylinder with flood optic and Solite lens

Test Number

SP-01273_5

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

Lumen Output

Output Lumens	1705
Efficacy	87.46 lm/W

Luminous Dimensions

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

Spacing Criterion

Two luminaires, plane 0°	0.52
Two luminaires, plane 90°	0.55
Four luminaires	0.54

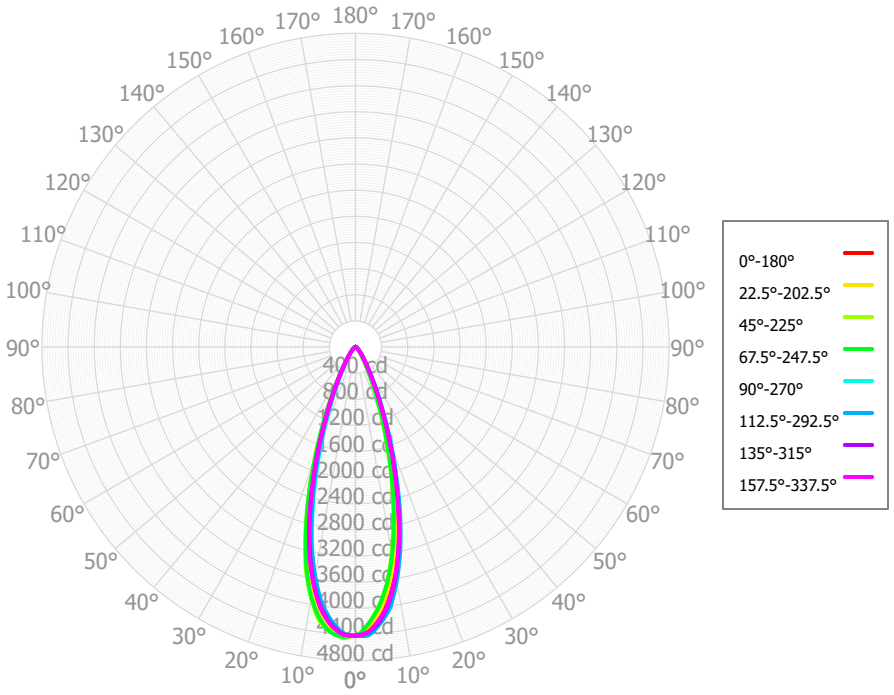
Full Beam Angle

0° - 180°	33°
90° - 270°	33°

IES File Header Contents

Keyword	Value
TEST	SP-01273_5
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 RD2FL RB2BS xx RA2LS
LUMINAIRE	Nom 2.5 inch dia cylinder with flood optic and Solite lens
OTHER	Beam Angle: 33 deg
LAMPCAT	N/A
LAMP	N/A, 6mm LES
OTHER	80 CRI, 3500K tested
OTHER	LER (luminaire efficacy) = 87 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°	387.18	22.70%	90.00° - 100.00°	1.35	0.08%
10.00° - 20.00°	695.53	40.78%	100.00° - 110.00°	1.38	0.08%
20.00° - 30.00°	380.24	22.30%	100.00° - 120.00°	2.62	0.15%
30.00° - 40.00°	137.39	8.06%	120.00° - 130.00°	1.22	0.07%
40.00° - 50.00°	58.80	3.45%	130.00° - 140.00°	1.18	0.07%
50.00° - 60.00°	25.39	1.49%	140.00° - 150.00°	1.02	0.06%
60.00° - 70.00°	8.31	0.49%	150.00° - 160.00°	0.81	0.05%
70.00° - 80.00°	2.43	0.14%	160.00° - 170.00°	0.47	0.03%
80.00° - 90.00°	1.36	0.08%	170.00° - 180.00°	0.15	0.01%
0.00° - 90.00°	1696.64	99.48%	0.00° - 180.00°	1705.47	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°	4419.48	4419.48	4419.48	4419.48	4419.48	4419.48	4419.48	4419.48	4419.48	4419.48	4419.48	4419.48	4419.48	4419.48	4419.48	4419.48	4419.48
2.50°	4307.60	4293.63	4259.04	4256.07	4390.38	4382.62	4399.14	4405.19	4424.78	4419.01	4452.12	4441.26	4412.70	4419.49	4372.08	4367.68	4307.60
5.00°	4106.38	4094.46	3995.72	4010.46	4217.18	4208.94	4265.39	4276.34	4330.85	4355.29	4371.89	4382.53	4257.96	4260.59	4219.89	4186.75	4106.38
7.50°	3792.83	3761.35	3665.06	3665.63	3967.20	3954.86	4031.60	4050.92	4140.43	4132.38	4230.61	4195.21	3992.25	4031.27	3940.05	3926.63	3792.83
10.00°	3372.96	3358.86	3198.07	3229.79	3585.72	3559.67	3683.16	3694.81	3818.42	3834.80	3903.05	3895.05	3579.65	3637.10	3551.79	3530.66	3372.96
12.50°	2883.02	2839.93	2702.06	2710.44	3125.85	3108.47	3226.08	3255.68	3384.47	3372.40	3504.29	3465.37	3094.10	3169.26	3073.89	3054.63	2883.02
15.00°	2331.39	2316.10	2151.81	2188.14	2610.69	2566.26	2718.71	2712.15	2870.63	2838.95	2968.04	2929.99	2518.81	2633.87	2525.20	2529.34	2331.39
17.50°	1819.90	1784.65	1643.65	1663.33	2065.03	2042.71	2167.02	2175.66	2293.63	2279.02	2384.54	2375.14	1976.16	2070.78	2006.32	1977.22	1819.90
20.00°	1341.28	1319.18	1208.15	1231.73	1587.55	1547.27	1670.07	1647.40	1768.39	1708.63	1847.52	1805.52	1470.86	1590.85	1509.32	1509.44	1341.28
22.50°	970.75	948.83	846.60	874.08	1144.77	1127.40	1217.99	1204.84	1281.19	1262.91	1325.00	1336.68	1060.86	1142.09	1116.14	1084.10	970.75
25.00°	682.47	657.01	603.31	615.44	828.66	813.15	875.71	855.48	914.85	862.18	960.20	938.81	752.29	835.64	793.70	787.66	682.47
27.50°	482.51	470.31	413.25	429.79	572.71	567.47	617.07	593.58	630.95	610.94	639.81	657.38	522.87	577.82	568.55	550.95	482.51
30.00°	344.96	328.89	302.11	305.53	411.36	410.78	437.76	420.17	440.79	408.76	456.51	452.03	371.82	421.50	404.85	400.08	344.96
32.50°	251.35	243.81	216.51	223.28	290.80	292.00	314.56	296.20	309.92	294.26	307.84	317.88	263.21	296.66	294.59	285.75	251.35
35.00°	186.55	178.98	166.06	167.29	216.87	218.95	230.79	218.74	224.97	205.81	227.39	226.85	193.68	222.10	215.59	214.56	186.55
37.50°	142.40	137.56	126.05	127.96	161.36	163.17	172.89	162.59	166.92	156.84	162.28	167.51	143.58	161.61	162.72	160.19	142.40
40.00°	110.78	105.56	99.38	100.80	125.77	126.76	132.87	125.11	127.47	118.42	126.64	125.92	110.14	125.67	123.99	124.40	110.78
42.50°	87.88	83.67	78.36	80.78	97.38	98.62	103.74	97.11	98.08	94.57	96.83	97.63	85.73	95.90	96.54	95.22	87.88
45.00°	69.87	65.87	64.05	65.00	78.48	79.11	82.37	76.84	77.60	74.20	78.75	76.22	68.51	76.36	74.72	75.88	69.87
47.50°	55.22	52.17	51.45	51.53	62.69	62.81	65.36	61.12	61.57	60.22	62.70	60.99	54.01	59.10	58.12	59.73	55.22
50.00°	42.32	40.72	40.73	40.71	50.18	49.64	51.92	48.86	49.34	47.59	50.23	48.72	41.52	46.72	43.92	47.38	42.32
52.50°	32.38	31.38	31.59	31.21	38.64	38.56	40.32	38.91	38.85	38.20	38.29	39.04	31.47	35.30	34.09	36.15	32.38
55.00°	23.85	23.86	24.07	23.82	30.12	29.38	31.28	30.58	29.98	29.41	30.36	30.49	23.08	27.32	26.10	27.53	23.85
57.50°	17.60	17.91	17.62	17.39	22.41	21.93	23.47	23.26	21.79	22.70	22.93	23.25	17.26	19.92	19.59	19.60	17.60
60.00°	12.37	13.16	12.17	12.78	16.64	15.96	17.09	16.60	16.26	16.32	17.43	16.54	13.06	15.22	13.66	14.79	12.37
62.50°	9.18	9.37	8.35	8.95	11.34	11.70	11.36	11.77	11.76	12.09	12.12	12.15	9.95	10.92	10.14	10.70	9.18
65.00°	6.82	6.51	5.97	6.70	8.24	8.79	8.32	8.05	9.13	8.15	9.30	8.61	7.48	8.23	7.49	7.92	6.82
67.50°	4.77	4.33	4.25	5.06	5.62	6.73	6.37	5.70	7.16	6.45	6.67	6.03	5.38	5.74	5.45	5.42	4.77
70.00°	2.85	3.03	3.09	3.48	4.14	5.28	4.68	4.11	5.11	5.00	5.30	3.76	3.49	4.38	3.61	4.00	2.85
72.50°	2.05	2.33	2.26	1.92	2.88	3.74	3.10	3.12	3.04	3.73	3.99	2.79	2.39	3.14	2.61	2.78	2.05
75.00°	1.62	1.79	1.70	1.55	2.02	2.12	2.22	2.42	2.47	2.48	2.71	2.21	1.68	2.36	1.85	2.19	1.62
77.50°	1.29	1.35	1.39	1.56	1.23	1.40	1.56	1.90	2.34	1.73	1.44	1.95	1.24	1.61	1.61	1.70	1.29
80.00°	1.00	1.20	1.26	1.63	1.04	1.24	1.32	1.47	1.88	1.01	1.38	1.78	0.93	1.62	1.50	1.41	1.00
82.50°	0.91	1.22	1.12	1.72	0.93	1.23	1.21	1.14	1.34	1.07	1.35	1.57	0.94	1.68	1.32	1.16	0.91
85.00°	0.88	1.21	0.98	1.55	0.93	1.31	1.31	0.88	1.49	1.16	1.25	1.34	1.09	1.49	1.11	1.04	0.88
87.50°	1.05	1.17	0.98	1.32	0.95	1.23	1.48	1.16	1.80	1.40	1.15	1.42	1.17	1.29	1.06	0.94	1.05
90.00°	1.28	1.22	1.06	1.39	1.02	1.07	1.45	1.66	1.59	1.64	1.36	1.56	1.22	1.24	1.04	1.11	1.28
92.50°	1.26	1.30	1.06	1.52	1.09	1.00	1.37	1.47	1.28	1.38	1.57	1.43	1.14	1.20	1.05	1.30	1.26
95.00°	1.18	1.40	1.01	1.49	1.14	0.97	1.29	1.03	1.10	1.12	1.54	1.25	1.00	1.40	1.06	1.39	1.18
97.50°	1.08	1.52	1.07	1.43	1.18	0.92	1.20	1.06	0.96	1.22	1.52	1.23	1.00	1.60	0.93	1.47	1.08
100.00°	0.96	1.46	1.17	1.44	1.28	0.85	1.33	1.23	1.09	1.33	1.53	1.25	1.03	1.53	0.78	1.29	0.96
102.50°	1.15	1.32	1.23	1.45	1.38	0.99	1.50	1.26	1.27	1.42	1.52	1.37	0.99	1.45	1.12	1.11	1.15
105.00°	1.38	1.33	1.26	1.28	1.45	1.22	1.41	1.25	1.21	1.52	1.32	1.50	0.93	1.31	1.52	1.22	1.38
107.50°	1.54	1.39	1.33	1.07	1.52	1.19	1.29	1.32	1.12	1.63	1.17	1.57	1.07	1.17	1.41	1.35	1.54
110.00°	1.68	1.43	1.42	1.16	1.53	1.08	1.14	1.41	1.05	1.71	1.54	1.62	1.26	1.05	1.23	1.40	1.68
112.50°	1.51	1.46	1.46	1.29	1.54	1.03	0.98	1.27	0.98	1.43	1.84	1.38	1.06	0.94	1.31	1.45	1.51

Coefficients of Utilization – Zonal Cavity Method

Values are lumens delivered to the workplane.

	ρfc	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	0%
	ρcc	80%	80%	80%	80%	70%	70%	70%	70%	50%	50%	50%	30%	30%	30%	10%	10%	10%	0%
	ρw	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	30%
RCR	0	2028	2028	2028	2028	1980	1980	1980	1980	1890	1890	1890	1808	1808	1808	1732	1732	1732	1697
	1	1947	1905	1868	1834	1905	1868	1834	1804	1798	1771	1747	1733	1713	1694	1674	1658	1644	1625
	2	1867	1795	1736	1686	1830	1766	1712	1667	1710	1667	1629	1659	1624	1593	1612	1584	1559	1553
	3	1792	1699	1626	1568	1759	1675	1609	1555	1630	1575	1530	1589	1544	1505	1551	1513	1481	1484
	4	1721	1612	1533	1472	1692	1593	1519	1463	1557	1494	1445	1523	1470	1427	1492	1447	1411	1421
	5	1655	1535	1451	1390	1629	1519	1441	1383	1489	1422	1371	1462	1404	1358	1436	1386	1346	1361
	6	1592	1465	1380	1319	1569	1452	1372	1314	1427	1357	1305	1404	1343	1296	1382	1329	1287	1306
	7	1533	1402	1316	1257	1513	1391	1310	1253	1370	1298	1246	1350	1287	1239	1332	1276	1233	1255
	8	1478	1344	1259	1201	1460	1335	1254	1198	1317	1245	1193	1300	1236	1188	1285	1227	1183	1207
	9	1427	1291	1208	1151	1410	1283	1204	1149	1268	1196	1145	1254	1188	1141	1240	1181	1137	1163
	10	1379	1242	1160	1106	1363	1235	1157	1104	1222	1151	1101	1210	1144	1098	1198	1138	1095	1122

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	146.1 fc	3.2 ft
6.5 ft	104.6 fc	3.8 ft
7.5 ft	78.6 fc	4.3 ft
8.0 ft	69.1 fc	4.6 ft
10.0 ft	44.2 fc	5.8 ft
12.0 ft	30.7 fc	6.9 ft
14.0 ft	22.5 fc	8.1 ft
16.0 ft	17.3 fc	9.3 ft
20.0 ft	11.0 fc	11.6 ft
24.0 ft	7.7 fc	13.9 ft
28.0 ft	5.6 fc	16.2 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	1373451	1373451	1373451
45.00°	30707	28150	34491
55.00°	12921	13044	16320
65.00°	5012	4390	6063
75.00°	1949	2040	2426
85.00°	3127	3512	3327

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	10.9	11.8	11.2	12.1	12.5	12.1	13.0	12.4	13.3	13.7
	3H	11.0	11.8	11.4	12.2	12.6	12.2	13.1	12.6	13.4	13.8
	4H	11.0	11.7	11.4	12.1	12.5	12.2	13.0	12.6	13.3	13.7
	6H	10.9	11.6	11.3	12.0	12.4	12.1	12.8	12.6	13.2	13.6
	8H	10.9	11.5	11.3	12.0	12.4	12.1	12.8	12.5	13.2	13.6
	12H	10.9	11.5	11.3	11.9	12.3	12.1	12.7	12.5	13.1	13.6
4H	2H	10.8	11.6	11.2	11.9	12.3	12.0	12.8	12.5	13.2	13.6
	3H	11.0	11.6	11.4	12.0	12.4	12.3	12.9	12.7	13.3	13.7
	4H	11.0	11.5	11.4	12.0	12.4	12.3	12.8	12.7	13.3	13.7
	6H	11.0	11.5	11.5	11.9	12.4	12.2	12.7	12.7	13.2	13.7
	8H	11.0	11.4	11.5	11.9	12.4	12.2	12.7	12.7	13.1	13.6
	12H	11.0	11.4	11.5	11.9	12.4	12.2	12.6	12.7	13.1	13.6
8H	4H	10.9	11.3	11.4	11.8	12.3	12.2	12.6	12.6	13.1	13.6
	6H	10.9	11.3	11.4	11.8	12.3	12.2	12.5	12.7	13.0	13.5
	8H	11.0	11.3	11.5	11.8	12.3	12.2	12.5	12.7	13.0	13.6
	12H	11.1	11.3	11.6	11.8	12.4	12.3	12.6	12.8	13.1	13.7
12H	4H	10.8	11.2	11.3	11.7	12.2	12.1	12.5	12.6	13.0	13.5
	6H	10.9	11.2	11.4	11.7	12.2	12.1	12.4	12.7	12.9	13.5
	8H	11.0	11.2	11.5	11.7	12.3	12.2	12.5	12.7	13.0	13.6

Corrected UGR values based on total output energy
SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0