

## Indoor Distribution Test Report

### Spectrum Lighting Inc.

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### Spectrum Lighting Photometric Lab

#### Luminaire

TS - RA31 - 21L - 35HK - XW - xx - xx - MW

Track light for accent, display and general illumination.

#### Test Number

TSRA31-4

#### Test Date

2/18/25

The results contained in this report pertain only to this IES file.

## Summary of Results

### Power

Input Watts	20.35 W
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### Lumen Output

Output Lumens	1930
Efficacy	94.84 lm/W

### Luminous Dimensions

0° - 180° Size	0
90° - 270° Size	0.2
Height	0.59

### Spacing Criterion

Two luminaires, plane 0°	0.91
Two luminaires, plane 90°	0.91
Four luminaires	0.88

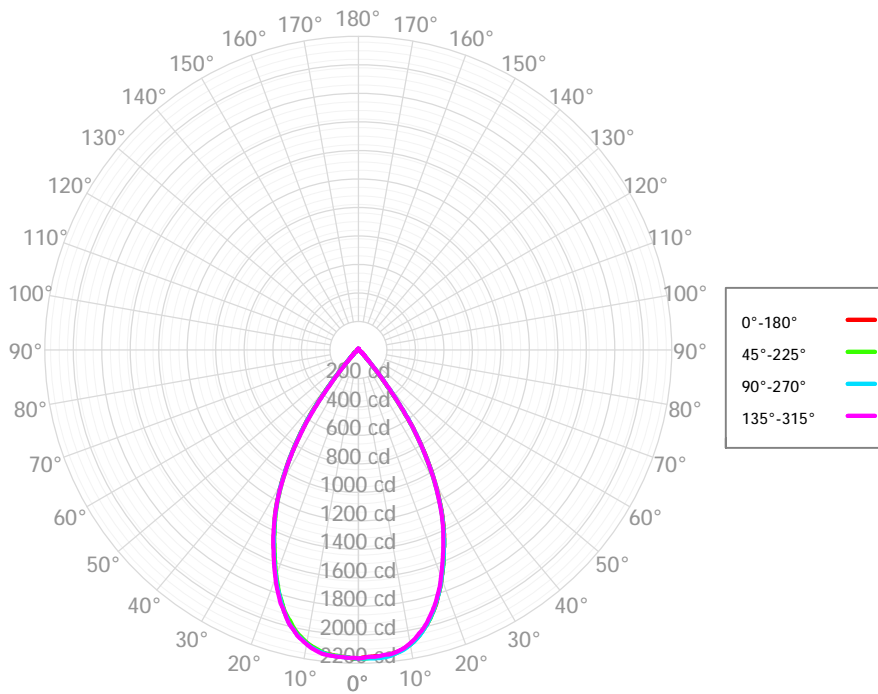
### Full Beam Angle

0° - 180°	60°
90° - 270°	60°

## IES File Header Contents

Keyword	Value
TEST	TSRA31-4
TESTLAB	Spectrum Lighting Photometric Lab.
MANUFAC	Spectrum Lighting
TESTDATE	2/18/25
ISSUEDATE	2/18/25
LUMCAT	TS - RA31 - 21L - 35HK - XW - xx - xx - MW
LUMINAIRE	Track light for accent, display and general illumination.

### Candela Polar Plot



### Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	204.32	10.59%	90.00° - 100.00°	4.80	0.25%
10.00° - 20.00°	540.13	27.99%	100.00° - 110.00°	4.56	0.24%
20.00° - 30.00°	639.21	33.12%	100.00° - 120.00°	9.14	0.47%
30.00° - 40.00°	406.37	21.05%	120.00° - 130.00°	4.25	0.22%
40.00° - 50.00°	73.20	3.79%	130.00° - 140.00°	3.83	0.20%
50.00° - 60.00°	19.92	1.03%	140.00° - 150.00°	3.40	0.18%
60.00° - 70.00°	6.98	0.36%	150.00° - 160.00°	2.69	0.14%
70.00° - 80.00°	4.86	0.25%	160.00° - 170.00°	1.77	0.09%
80.00° - 90.00°	4.60	0.24%	170.00° - 180.00°	0.62	0.03%
0.00° - 90.00°	1899.59	98.42%	0.00° - 180.00°	1930.08	100.00%

### Candela Distribution

	0.00°	45.00°	90.00°	135.00°	180.00°	225.00°	270.00°	315.00°	360.00°
0.00°	2164.45	2164.45	2164.45	2164.45	2164.45	2164.45	2164.45	2164.45	2164.45
1.00°	2158.66	2167.12	2166.77	2160.32	2166.55	2164.19	2164.24	2160.79	2158.66
2.00°	2155.99	2163.51	2165.62	2161.51	2159.15	2158.11	2160.55	2154.56	2155.99
3.00°	2153.38	2162.81	2167.22	2158.79	2157.25	2156.52	2158.20	2156.40	2153.38
4.00°	2155.87	2160.17	2167.63	2157.67	2156.90	2151.10	2155.90	2153.25	2155.87
5.00°	2155.07	2157.60	2164.22	2154.56	2147.89	2149.87	2154.17	2148.07	2155.07
6.00°	2149.72	2155.33	2159.02	2151.53	2146.55	2142.88	2147.11	2147.65	2149.72
7.00°	2139.18	2145.06	2145.91	2144.97	2138.98	2133.77	2137.95	2138.34	2139.18
8.00°	2130.37	2132.65	2136.33	2131.41	2124.44	2117.73	2127.01	2126.81	2130.37
9.00°	2115.97	2115.64	2121.58	2116.44	2105.52	2104.89	2111.80	2111.87	2115.97
10.00°	2093.87	2100.99	2101.13	2096.49	2087.92	2085.22	2093.75	2090.97	2093.87
11.00°	2074.17	2078.08	2078.61	2073.93	2066.49	2060.88	2069.96	2067.94	2074.17
12.00°	2049.57	2050.77	2053.24	2051.94	2040.71	2036.74	2048.13	2037.69	2049.57
13.00°	2016.12	2018.89	2021.24	2017.54	2013.56	2004.83	2015.28	2011.07	2016.12
14.00°	1985.28	1986.38	1987.20	1988.76	1977.93	1965.80	1987.18	1976.52	1985.28
15.00°	1949.51	1951.14	1949.04	1947.26	1944.91	1932.17	1943.81	1936.81	1949.51
16.00°	1908.05	1907.72	1906.57	1900.87	1899.39	1892.83	1899.49	1896.87	1908.05
17.00°	1866.64	1863.27	1860.65	1862.62	1853.44	1840.93	1851.73	1854.17	1866.64
18.00°	1812.32	1812.80	1813.52	1809.46	1802.75	1796.61	1798.75	1803.54	1812.32
19.00°	1764.21	1764.65	1762.20	1759.38	1751.18	1738.00	1750.94	1755.38	1764.21
20.00°	1708.15	1706.91	1706.70	1701.65	1693.22	1684.11	1690.30	1695.91	1708.15
21.00°	1652.60	1653.01	1649.36	1642.80	1636.13	1624.89	1636.22	1638.70	1652.60
22.00°	1593.55	1599.92	1594.24	1582.37	1578.80	1563.33	1574.84	1581.15	1593.55
23.00°	1534.62	1537.63	1536.10	1523.29	1518.25	1505.06	1513.82	1524.04	1534.62
24.00°	1482.45	1479.33	1480.00	1467.97	1460.99	1448.24	1458.23	1463.49	1482.45
25.00°	1423.59	1420.46	1418.96	1407.38	1400.18	1390.59	1396.55	1412.19	1423.59
26.00°	1360.55	1356.53	1356.73	1344.13	1343.09	1332.19	1340.29	1348.55	1360.55
27.00°	1296.53	1289.31	1290.90	1281.55	1284.83	1272.42	1278.89	1283.90	1296.53
28.00°	1224.59	1218.05	1219.61	1214.80	1219.27	1210.76	1213.59	1213.67	1224.59
29.00°	1154.53	1143.50	1146.21	1144.87	1150.25	1136.91	1148.78	1141.53	1154.53
30.00°	1079.91	1067.20	1076.05	1069.18	1079.88	1068.26	1076.60	1068.93	1079.91
31.00°	1004.24	987.66	996.87	993.36	1002.65	991.76	1001.05	991.55	1004.24
32.00°	922.87	904.67	916.81	916.86	929.96	917.74	925.67	909.29	922.87
33.00°	842.30	828.58	832.49	838.86	850.80	839.35	849.08	831.43	842.30
34.00°	757.32	741.31	755.08	751.48	773.46	757.89	768.95	746.77	757.32
35.00°	672.97	661.16	673.72	670.66	694.19	679.19	686.48	666.10	672.97
36.00°	577.00	560.40	584.25	588.95	613.04	601.02	609.53	572.01	577.00
37.00°	476.30	462.84	485.20	493.21	528.32	514.04	514.76	477.95	476.30
38.00°	382.28	372.80	395.49	402.15	436.27	424.57	422.87	385.77	382.28
39.00°	296.71	289.10	311.82	317.43	346.89	339.06	336.44	300.67	296.71
40.00°	226.63	225.69	240.98	247.54	274.78	263.65	267.28	234.67	226.63
41.00°	172.53	173.81	183.60	188.72	209.92	205.62	207.80	182.99	172.53
42.00°	132.33	132.94	140.41	141.59	159.67	155.56	158.22	141.05	132.33
43.00°	103.04	106.97	109.37	109.41	123.50	117.71	122.95	108.45	103.04

### 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	2290	2290	2290	2290	2234	2234	2234	2234	2128	2128	2128	2031	2031	2031	1941	1941	1900
	1	2182	2128	2080	2036	2131	2083	2040	2001	2000	1965	1934	1923	1896	1871	1852	1831	1792
	2	2075	1980	1903	1837	2029	1945	1874	1814	1877	1820	1770	1815	1768	1727	1758	1720	1684
	3	1971	1847	1752	1676	1930	1818	1731	1660	1763	1690	1630	1713	1652	1600	1665	1615	1582
	4	1872	1727	1621	1540	1835	1703	1605	1529	1658	1574	1508	1616	1545	1487	1577	1517	1487
	5	1778	1619	1507	1424	1745	1598	1494	1416	1561	1470	1401	1525	1447	1386	1492	1425	1398
	6	1690	1520	1405	1323	1660	1503	1396	1317	1471	1376	1306	1441	1358	1295	1413	1341	1316
	7	1608	1430	1315	1234	1580	1416	1307	1230	1388	1292	1221	1363	1277	1213	1339	1263	1240
	8	1530	1348	1234	1155	1505	1336	1227	1152	1312	1215	1145	1290	1203	1138	1270	1191	1171
	9	1458	1273	1160	1084	1435	1263	1155	1081	1242	1145	1076	1223	1135	1071	1205	1125	1107
	10	1391	1205	1094	1020	1370	1196	1090	1018	1178	1081	1014	1161	1072	1010	1146	1064	1048

### Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	71.6 fc	6.3 ft
6.5 ft	51.2 fc	7.5 ft
7.5 ft	38.5 fc	8.6 ft
8.0 ft	33.8 fc	9.2 ft
10.0 ft	21.6 fc	11.5 ft
12.0 ft	15.0 fc	13.8 ft
14.0 ft	11.0 fc	16.1 ft
16.0 ft	8.5 fc	18.4 ft
20.0 ft	5.4 fc	23.0 ft
24.0 ft	3.8 fc	27.7 ft
28.0 ft	2.8 fc	32.3 ft

### Average Luminaire Luminance [cd/m<sup>2</sup>]

	0.00°	45.00°	90.00°
0.00°	0	0	0
45.00°	9316	13597	156315339710102274048
55.00°	2099	2884	35262913162105270272
65.00°	623	931	10922107575154071552
75.00°	416	592	5902843064611504128
85.00°	386	564	5427913978882327552

### 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		Viewing C0-180					Viewing C90-270				
2H	2H	3.6	4.5	4.0	4.9	5.3	7.4	8.3	7.7	8.6	9.0
	3H	4.0	4.8	4.4	5.2	5.6	8.1	8.9	8.5	9.3	9.7
	4H	4.2	4.9	4.6	5.3	5.8	8.6	9.3	9.0	9.7	10.2
	6H	4.4	5.1	4.9	5.5	6.0	9.3	10.0	9.8	10.4	10.9
	8H	4.5	5.2	5.0	5.6	6.1	9.9	10.6	10.4	11.0	11.4
	12H	4.7	5.3	5.1	5.7	6.2	10.6	11.2	11.0	11.6	12.1
4H	2H	3.7	4.4	4.1	4.8	5.2	7.2	8.0	7.7	8.4	8.8
	3H	4.2	4.8	4.6	5.3	5.7	8.0	8.6	8.4	9.1	9.5
	4H	4.5	5.1	5.0	5.5	6.0	8.6	9.1	9.0	9.6	10.1
	6H	4.9	5.4	5.4	5.9	6.4	9.4	9.9	9.9	10.4	10.9
	8H	5.1	5.5	5.6	6.0	6.5	10.1	10.5	10.6	11.0	11.5
	12H	5.3	5.7	5.8	6.2	6.7	10.8	11.2	11.4	11.7	12.3
8H	4H	4.6	5.1	5.2	5.6	6.1	8.5	9.0	9.0	9.4	9.9
	6H	5.2	5.6	5.8	6.1	6.7	9.5	9.8	10.0	10.3	10.9
	8H	5.5	5.8	6.1	6.4	6.9	10.2	10.5	10.7	11.0	11.6
	12H	5.9	6.2	6.4	6.7	7.3	11.0	11.3	11.6	11.8	12.4
12H	4H	4.7	5.1	5.2	5.6	6.1	8.5	8.8	9.0	9.4	9.9
	6H	5.3	5.7	5.9	6.2	6.7	9.4	9.7	10.0	10.2	10.8
	8H	5.7	6.0	6.3	6.5	7.1	10.2	10.4	10.7	11.0	11.6

Corrected UGR values based on total output energy  
SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0