

Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

TSRA25 13L 35K XW E1 BET xx
Nominal 2.4" Diameter Track Spot Luminaire with Recessed Arm

Test Number

SP-15008_3

Test Date

9/14/2023

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

Summary of Results

Power

Input Watts	15 W
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Lumen Output

Output Lumens	1330
Efficacy	88.68 lm/W

Luminous Dimensions

0° - 180° Size	0.41
90° - 270° Size	0.41
Height	0.18

Spacing Criterion

Two luminaires, plane 0°	0.87
Two luminaires, plane 90°	0.87
Four luminaires	0.8

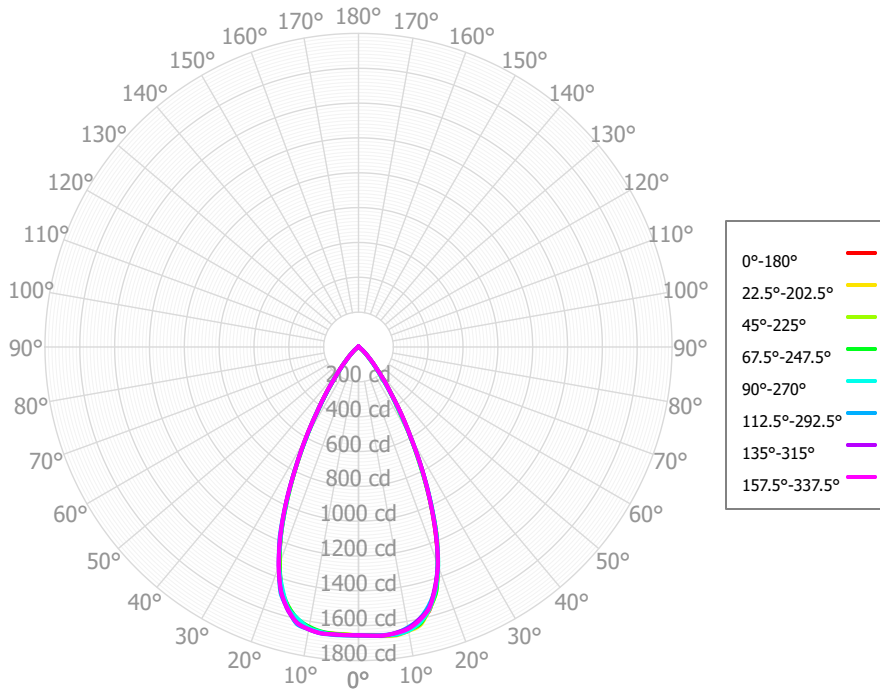
Full Beam Angle

0° - 180°	54°
90° - 270°	54°

IES File Header Contents

Keyword	Value
TEST	SP-15008_3
TESTLAB	Spectrum Lighting Potometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
TESTDATE	9/14/2023
ISSUEDATE	9/15/2023
LUMCAT	TSRA25 13L 35K XW E1 BET xx
LUMINAIRE	Nominal 2.4" Diameter Track Spot Luminaire with Recessed Arm
OTHER	Xtra Wide Beam
OTHER	60 Degree Beam Angle
OTHER	This report prepared by Spectrum Lighting
_CRI	80+
_CCTMULT	30K x .93

Candela Polar Plot



Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	160.35	12.05%	90.00° - 100.00°	1.26	0.09%
10.00° - 20.00°	429.01	32.25%	100.00° - 110.00°	1.18	0.09%
20.00° - 30.00°	437.93	32.92%	100.00° - 120.00°	2.42	0.18%
30.00° - 40.00°	208.74	15.69%	120.00° - 130.00°	1.18	0.09%
40.00° - 50.00°	63.85	4.80%	130.00° - 140.00°	1.06	0.08%
50.00° - 60.00°	16.10	1.21%	140.00° - 150.00°	0.93	0.07%
60.00° - 70.00°	3.43	0.26%	150.00° - 160.00°	0.70	0.05%
70.00° - 80.00°	1.34	0.10%	160.00° - 170.00°	0.42	0.03%
80.00° - 90.00°	1.31	0.10%	170.00° - 180.00°	0.15	0.01%
0.00° - 90.00°	1322.06	99.39%	0.00° - 180.00°	1330.18	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°	1655.76	1655.76	1655.76	1655.76	1655.76	1655.76	1655.76	1655.76	1655.76	1655.76	1655.76	1655.76	1655.76	1655.76	1655.76	1655.76	1655.76
2.50°	1658.92	1658.24	1655.57	1656.52	1659.26	1656.11	1656.91	1655.19	1654.43	1651.23	1652.58	1654.01	1657.85	1659.13	1659.02	1658.69	1658.92
5.00°	1665.43	1664.39	1661.67	1660.84	1661.71	1657.44	1657.20	1655.89	1654.08	1651.74	1652.24	1652.82	1659.48	1659.98	1663.31	1661.64	1665.43
7.50°	1661.91	1669.81	1664.10	1665.95	1665.14	1659.33	1657.13	1658.02	1653.05	1650.88	1652.01	1647.13	1650.56	1655.55	1654.12	1656.81	1661.91
10.00°	1654.79	1655.15	1651.60	1649.88	1654.17	1645.81	1646.72	1645.46	1641.63	1635.58	1632.90	1630.45	1637.32	1634.35	1639.06	1643.72	1654.79
12.50°	1615.93	1636.11	1627.06	1629.55	1622.85	1630.29	1622.43	1624.32	1613.79	1613.66	1612.30	1601.33	1600.18	1602.65	1602.01	1609.90	1615.93
15.00°	1567.71	1561.44	1564.56	1557.88	1562.96	1559.96	1566.46	1560.92	1556.85	1547.62	1546.26	1546.60	1554.89	1543.81	1556.95	1557.58	1567.71
17.50°	1457.90	1478.11	1479.46	1478.95	1469.20	1485.14	1474.79	1477.13	1461.51	1468.31	1477.93	1461.14	1452.89	1460.67	1453.69	1460.90	1457.90
20.00°	1334.18	1329.14	1335.38	1328.33	1338.39	1335.85	1342.18	1337.31	1330.93	1322.72	1325.20	1323.53	1335.76	1325.63	1333.69	1331.05	1334.18
22.50°	1155.72	1172.71	1173.32	1170.82	1169.62	1183.42	1169.69	1175.51	1160.20	1166.87	1170.22	1161.84	1160.51	1169.07	1159.83	1163.12	1155.72
25.00°	967.75	974.89	973.17	970.68	982.97	982.18	982.37	983.07	976.34	972.47	972.54	965.07	973.30	974.66	973.58	970.68	967.75
27.50°	783.29	781.91	779.49	768.58	780.92	781.90	782.93	780.66	779.91	781.92	776.62	775.18	784.23	786.42	785.73	786.26	783.29
30.00°	599.25	608.80	597.47	594.55	599.55	602.24	606.14	608.34	604.77	602.71	599.42	593.67	594.87	607.46	597.62	606.12	599.25
32.50°	459.84	449.45	440.22	422.87	433.54	428.59	445.33	443.62	446.71	440.57	430.66	440.79	452.85	453.25	455.37	458.38	459.84
35.00°	323.31	333.71	320.05	313.86	310.62	317.38	323.71	328.99	324.40	320.18	318.57	317.20	315.37	330.23	318.21	325.31	323.31
37.50°	241.13	232.16	224.08	209.05	214.39	212.99	225.11	224.28	226.83	219.05	215.56	223.31	233.96	233.89	235.93	236.26	241.13
40.00°	161.06	167.79	158.86	152.86	150.33	155.08	159.56	163.05	159.67	156.34	157.07	155.69	155.57	166.58	157.37	163.34	161.06
42.50°	118.81	113.97	109.08	100.14	102.76	102.06	110.03	107.85	110.03	105.72	104.69	108.33	115.66	115.94	116.82	117.29	118.81
45.00°	77.75	82.61	76.00	73.88	72.19	73.36	77.79	77.97	77.33	75.69	75.38	76.02	76.66	80.54	77.37	79.02	77.75
47.50°	57.13	56.61	52.31	49.71	49.00	48.26	52.63	50.25	52.96	51.76	50.00	53.04	56.13	55.36	57.71	55.69	57.13
50.00°	37.35	40.34	37.15	36.58	34.23	36.62	37.94	37.16	37.99	36.46	36.20	36.02	36.27	38.03	38.50	35.83	37.35
52.50°	25.20	26.78	25.07	24.55	22.41	25.85	26.67	24.72	26.78	24.11	23.76	24.52	24.98	25.06	26.35	24.69	25.20
55.00°	14.22	17.32	15.40	16.81	15.77	17.74	18.40	16.97	18.51	15.28	14.68	15.94	14.48	14.97	14.93	15.02	14.22
57.50°	10.28	10.50	10.09	10.15	10.61	10.90	10.92	9.43	11.18	9.31	8.02	10.57	9.98	9.52	9.90	10.75	10.28
60.00°	6.70	7.01	7.64	6.91	7.15	7.17	7.58	7.23	7.32	6.28	6.21	6.59	5.90	6.62	5.38	7.13	6.70
62.50°	4.77	4.65	5.46	4.32	4.05	4.22	5.08	5.08	4.36	4.17	4.45	4.25	4.15	4.64	4.03	5.18	4.77
65.00°	3.07	3.54	3.43	3.37	2.94	2.87	3.51	3.58	3.18	2.85	2.80	2.50	2.62	3.09	2.76	3.35	3.07
67.50°	2.12	2.53	2.17	2.46	2.14	1.84	2.08	2.18	2.35	1.92	1.89	1.97	1.98	2.24	1.87	2.57	2.12
70.00°	1.37	1.60	1.26	1.64	1.57	1.35	1.48	1.59	1.77	1.28	2.02	1.80	1.44	1.66	1.19	1.83	1.37
72.50°	1.21	1.15	1.08	1.12	1.04	1.15	0.95	1.11	1.23	1.11	1.89	1.54	1.22	1.48	1.26	1.52	1.21
75.00°	1.13	1.09	1.16	1.14	1.09	1.34	1.02	1.24	1.16	1.22	1.45	1.26	1.10	1.42	1.29	1.23	1.13
77.50°	1.21	1.06	1.22	1.17	1.18	1.51	1.11	1.32	1.12	1.19	1.26	1.05	1.26	1.38	1.20	1.19	1.21
80.00°	1.21	1.03	1.26	1.22	1.08	1.65	1.30	1.19	1.19	1.08	1.33	0.85	1.32	1.34	1.10	1.19	1.21
82.50°	1.04	1.06	1.33	1.18	0.98	1.53	1.48	1.11	1.27	1.09	1.18	1.15	1.15	1.20	0.96	1.51	1.04
85.00°	0.98	1.12	1.40	1.03	1.17	1.14	1.54	1.16	1.35	1.14	0.84	1.49	1.10	1.04	0.89	1.74	0.98
87.50°	1.11	1.24	1.29	1.06	1.32	1.05	1.58	1.16	1.43	1.09	0.88	1.43	1.23	1.18	0.94	1.45	1.11
90.00°	1.17	1.38	1.16	1.27	0.99	1.23	1.33	1.05	1.31	1.01	1.20	1.35	1.29	1.36	1.06	1.18	1.17
92.50°	1.14	1.37	1.23	1.40	0.69	1.31	1.12	0.97	1.20	1.06	1.33	1.23	1.25	1.20	1.26	1.03	1.14
95.00°	1.09	1.31	1.33	1.46	0.72	1.31	1.22	0.99	1.09	1.16	1.33	1.10	1.15	1.01	1.26	0.93	1.09
97.50°	1.04	1.11	1.23	1.48	0.78	1.33	1.32	0.97	1.00	1.25	1.36	1.07	0.98	1.06	1.00	0.97	1.04
100.00°	1.12	0.88	1.12	1.48	1.02	1.37	1.36	0.89	1.08	1.33	1.40	1.04	0.89	1.12	0.94	0.95	1.12
102.50°	1.33	0.87	0.98	1.48	1.22	1.17	1.36	0.86	1.14	1.34	1.38	0.99	0.89	0.94	1.11	0.76	1.33
105.00°	1.41	0.91	0.84	1.49	1.27	0.85	1.19	0.93	1.08	1.33	1.33	0.94	0.86	0.79	1.17	0.73	1.41

Coefficients of Utilization – Zonal Cavity Method

Values are lumens delivered to the workplane.

RCR	ptc	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	1582	1582	1582	1582	1544	1544	1544	1544	1473	1473	1473	1409	1409	1409	1350	1350	1322
	1	1510	1475	1443	1414	1477	1445	1417	1391	1390	1367	1346	1339	1321	1305	1293	1279	1253
	2	1439	1377	1325	1282	1410	1354	1307	1267	1309	1271	1238	1269	1238	1210	1231	1206	1182
	3	1371	1289	1226	1175	1344	1270	1212	1165	1234	1186	1145	1201	1161	1127	1171	1137	1115
	4	1306	1209	1139	1085	1281	1194	1129	1078	1165	1109	1065	1137	1090	1052	1112	1072	1052
	5	1244	1137	1063	1009	1222	1125	1055	1004	1100	1040	994	1078	1026	985	1056	1012	993
	6	1185	1072	996	942	1166	1061	990	938	1041	978	931	1022	967	924	1004	955	939
	7	1130	1013	936	883	1113	1003	931	880	986	922	875	970	913	870	955	904	888
	8	1079	958	882	830	1063	950	878	828	936	871	824	922	863	820	909	856	842
	9	1031	909	833	783	1016	902	830	781	889	824	778	877	818	775	866	812	799
	10	986	863	789	740	973	857	787	739	846	781	737	836	776	734	826	771	760

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	54.7 fc	5.6 ft
6.5 ft	39.2 fc	6.6 ft
7.5 ft	29.4 fc	7.6 ft
8.0 ft	25.9 fc	8.1 ft
10.0 ft	16.6 fc	10.1 ft
12.0 ft	11.5 fc	12.1 ft
14.0 ft	8.4 fc	14.1 ft
16.0 ft	6.5 fc	16.2 ft
20.0 ft	4.1 fc	20.2 ft
24.0 ft	2.9 fc	24.2 ft
28.0 ft	2.1 fc	28.3 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	106023	106023	106023
45.00°	4893	4246	4543
55.00°	976	911	1082
65.00°	239	223	229
75.00°	106	87	102
85.00°	120	127	143

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	0.9	1.9	1.3	2.2	2.5	1.0	1.9	1.3	2.2	2.6
	3H	0.9	1.8	1.3	2.1	2.5	0.9	1.8	1.3	2.1	2.5
	4H	0.9	1.6	1.3	2.0	2.4	0.9	1.7	1.3	2.0	2.4
	6H	0.9	1.6	1.3	2.0	2.4	0.9	1.6	1.3	2.0	2.4
	8H	0.9	1.5	1.3	1.9	2.4	0.9	1.6	1.3	2.0	2.4
	12H	0.9	1.5	1.3	1.9	2.4	0.9	1.6	1.4	1.9	2.4
4H	2H	0.7	1.5	1.2	1.9	2.3	0.8	1.6	1.2	1.9	2.3
	3H	0.8	1.4	1.2	1.8	2.2	0.8	1.4	1.2	1.8	2.3
	4H	0.7	1.3	1.2	1.7	2.2	0.8	1.3	1.2	1.8	2.2
	6H	0.8	1.3	1.3	1.7	2.2	0.8	1.3	1.3	1.8	2.3
	8H	0.8	1.3	1.3	1.7	2.2	0.9	1.3	1.4	1.8	2.3
	12H	0.9	1.3	1.4	1.8	2.3	1.0	1.4	1.5	1.9	2.3
8H	4H	0.6	1.1	1.1	1.5	2.0	0.7	1.1	1.1	1.6	2.1
	6H	0.7	1.1	1.2	1.6	2.1	0.8	1.1	1.3	1.7	2.2
	8H	0.8	1.1	1.4	1.7	2.2	0.9	1.2	1.4	1.8	2.3
	12H	1.0	1.3	1.5	1.8	2.4	1.1	1.4	1.6	1.9	2.5
12H	4H	0.6	1.0	1.1	1.5	1.9	0.6	1.0	1.1	1.5	2.0
	6H	0.7	1.0	1.2	1.5	2.0	0.8	1.1	1.3	1.6	2.1
	8H	0.8	1.1	1.4	1.6	2.2	0.9	1.2	1.5	1.7	2.3

Corrected UGR values based on total output energy
 SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0