

Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

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

Test Number

SP-15008

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	1328
Efficacy	88.56 lm/W

Luminous Dimensions

0° - 180° Size	0.04
90° - 270° Size	0.04
Height	0.02

Spacing Criterion

Two luminaires, plane 0°	0.33
Two luminaires, plane 90°	0.33
Four luminaires	0.33

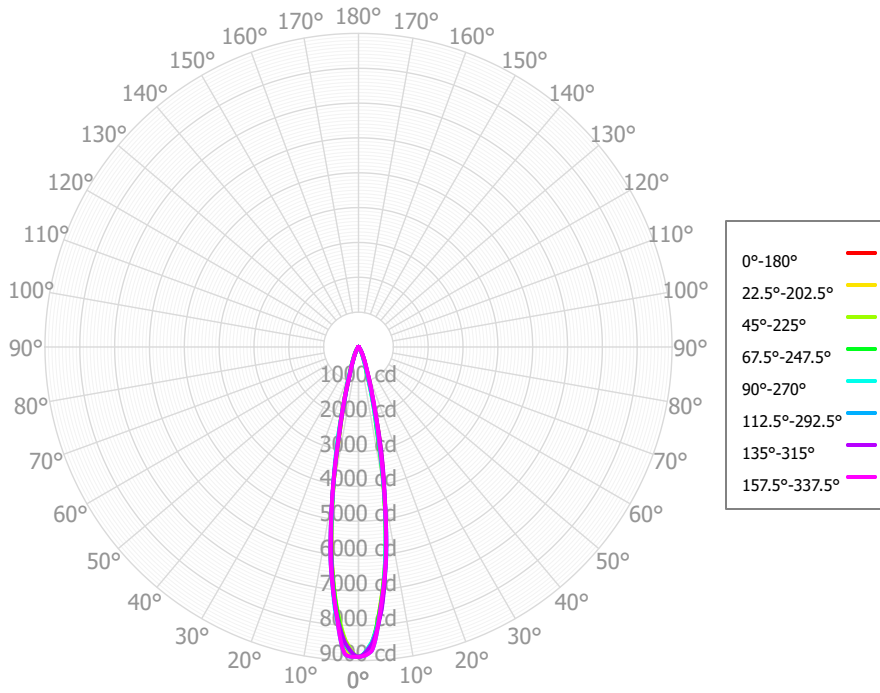
Full Beam Angle

0° - 180°	19°
90° - 270°	19°

IES File Header Contents

Keyword	Value
TEST	SP-15008
TESTLAB	Spectrum Lighting Potometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
TESTDATE	9/14/2023
ISSUEDATE	9/15/2023
LUMCAT	TSRA25 13L 35K XN E1 BET xx
LUMINAIRE	Nominal 2.4" Diameter Track Spot Luminaire with Recessed Arm
OTHER	Xtra Narrow Beam
OTHER	15 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°	611.91	46.06%	90.00° - 100.00°	1.27	0.10%
10.00° - 20.00°	475.40	35.79%	100.00° - 110.00°	1.15	0.09%
20.00° - 30.00°	147.47	11.10%	100.00° - 120.00°	2.33	0.18%
30.00° - 40.00°	55.49	4.18%	120.00° - 130.00°	1.13	0.09%
40.00° - 50.00°	18.54	1.40%	130.00° - 140.00°	1.08	0.08%
50.00° - 60.00°	6.21	0.47%	140.00° - 150.00°	0.93	0.07%
60.00° - 70.00°	2.73	0.21%	150.00° - 160.00°	0.70	0.05%
70.00° - 80.00°	1.37	0.10%	160.00° - 170.00°	0.42	0.03%
80.00° - 90.00°	1.28	0.10%	170.00° - 180.00°	0.13	0.01%
0.00° - 90.00°	1320.39	99.40%	0.00° - 180.00°	1328.39	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°	8893.07	8893.07	8893.07	8893.07	8893.07	8893.07	8893.07	8893.07	8893.07	8893.07	8893.07	8893.07	8893.07	8893.07	8893.07	8893.07	8893.07
2.50°	8531.84	8598.17	8515.32	8536.98	8499.57	8834.19	8524.30	8829.33	8506.17	8761.06	8441.20	8568.47	8554.32	8727.77	8551.42	8730.29	8531.84
5.00°	7525.43	7343.72	7465.14	7380.85	7543.91	7539.77	7566.40	7529.18	7505.11	7471.27	7383.97	7427.17	7632.57	7452.60	7587.29	7436.16	7525.43
7.50°	5998.08	6022.32	6011.11	5941.06	5924.84	6159.38	5993.11	6154.47	5939.46	6085.46	5936.19	5993.68	6007.75	6095.90	6037.19	6060.31	5998.08
10.00°	4262.26	4237.30	4237.59	4184.34	4264.74	4273.07	4318.63	4277.40	4256.95	4229.79	4234.94	4184.26	4256.13	4279.47	4328.87	4285.91	4262.26
12.50°	2894.39	2640.80	2796.73	2375.39	2554.22	2598.47	2547.70	2597.86	2491.60	2606.74	2443.49	2724.00	2826.35	2677.19	2948.44	2729.45	2894.39
15.00°	1611.90	1685.67	1527.80	1536.90	1454.82	1572.09	1475.35	1592.11	1496.13	1610.60	1554.86	1563.19	1461.40	1711.93	1610.70	1769.44	1611.90
17.50°	1092.37	947.08	948.34	772.76	856.18	810.12	850.64	833.62	858.61	883.75	840.09	932.50	1010.79	980.66	1121.54	1044.44	1092.37
20.00°	651.94	658.99	590.52	561.14	535.70	553.15	546.72	582.53	576.62	612.25	602.45	605.51	604.00	679.07	671.15	722.08	651.94
22.50°	490.79	441.56	425.50	368.54	366.92	365.48	375.82	393.29	392.83	415.18	401.45	429.32	452.31	458.30	500.11	487.60	490.79
25.00°	338.29	319.51	292.47	277.39	267.48	265.63	275.15	287.68	292.33	302.34	305.12	307.03	318.53	336.30	344.95	353.82	338.29
27.50°	254.92	228.85	220.89	196.68	191.38	192.17	191.18	208.65	202.71	219.28	214.65	229.77	240.20	244.17	260.10	255.41	254.92
30.00°	178.87	166.83	153.95	146.40	143.39	141.00	145.21	153.57	154.32	159.01	161.93	161.47	173.07	176.73	185.51	184.02	178.87
32.50°	130.63	120.56	116.51	104.18	100.54	104.28	103.15	113.06	108.45	116.37	114.70	122.00	127.18	127.92	137.10	132.82	130.63
35.00°	89.78	83.80	81.55	76.50	75.40	75.58	77.94	81.23	82.94	82.53	85.27	85.06	90.04	89.21	96.46	91.82	89.78
37.50°	65.70	61.23	60.35	54.83	51.82	56.34	54.15	59.75	59.11	59.40	60.17	63.53	63.75	64.96	68.37	65.49	65.70
40.00°	46.17	44.15	41.90	40.41	40.14	40.43	42.02	42.22	42.86	39.57	43.61	43.35	44.57	45.54	47.20	43.66	46.17
42.50°	33.25	31.68	31.51	29.35	29.12	31.08	30.90	32.05	29.38	29.95	30.45	31.94	31.34	34.11	33.41	31.29	33.25
45.00°	23.50	20.19	22.57	20.99	21.92	23.01	23.67	23.48	22.98	21.91	21.71	22.05	23.63	24.12	24.01	20.42	23.50
47.50°	16.83	15.28	16.31	15.52	15.38	15.95	16.72	15.97	17.13	17.57	15.72	17.23	18.99	18.12	17.78	15.82	16.83
50.00°	12.01	10.96	11.38	11.59	10.90	9.19	10.42	8.72	12.21	13.38	12.16	12.82	13.50	12.43	13.26	11.57	12.01
52.50°	8.40	7.56	8.06	8.46	7.29	8.33	6.23	8.16	8.48	9.45	8.83	9.26	7.71	8.75	9.54	9.18	8.40
55.00°	6.69	4.56	5.98	5.58	5.34	7.31	5.17	7.44	6.03	6.00	5.64	6.49	7.30	5.55	7.93	7.05	6.69
57.50°	5.78	4.50	4.91	4.63	4.49	5.36	4.31	5.64	4.84	5.11	4.61	4.77	7.90	5.14	6.92	6.28	5.78
60.00°	4.66	4.28	3.92	4.02	5.02	3.74	3.63	4.04	4.57	4.43	4.37	3.91	5.53	4.61	5.40	5.26	4.66
62.50°	3.48	3.53	2.96	3.13	4.80	3.22	3.01	3.15	3.66	4.35	3.69	3.81	3.03	3.72	3.80	3.52	3.48
65.00°	2.77	2.70	2.44	2.23	3.95	2.65	2.43	2.30	2.45	3.79	2.91	3.33	2.24	2.77	2.44	2.17	2.77
67.50°	2.12	1.73	2.06	1.55	2.99	1.97	1.87	1.53	1.69	2.38	2.04	2.62	1.58	1.70	1.19	1.52	2.12
70.00°	1.53	1.22	1.45	1.03	1.95	1.42	1.32	1.20	1.07	1.57	1.19	1.98	1.68	1.18	1.42	1.10	1.53
72.50°	0.98	1.35	0.79	1.45	1.39	1.07	1.15	1.49	0.98	1.45	1.63	1.36	1.71	1.34	1.65	0.96	0.98
75.00°	0.74	1.27	1.06	1.71	0.98	0.91	1.07	1.47	0.97	1.43	1.98	1.24	1.55	1.28	1.87	1.02	0.74
77.50°	0.63	1.00	1.35	1.46	1.29	0.93	1.34	1.18	1.00	1.49	1.63	1.22	1.38	1.02	1.91	1.23	0.63
80.00°	1.05	1.23	1.38	1.21	1.73	0.94	1.65	1.15	1.02	1.45	1.34	1.07	1.17	1.11	1.48	1.27	1.05
82.50°	1.23	1.78	1.38	0.96	1.43	0.96	1.35	1.27	1.03	1.37	1.25	0.92	1.06	1.41	1.20	1.22	1.23
85.00°	0.87	1.56	1.15	0.89	1.10	1.19	1.09	1.39	1.02	1.06	1.23	0.93	1.08	1.47	1.15	1.16	0.87
87.50°	0.70	1.03	0.94	1.05	1.07	1.50	1.20	1.52	0.97	0.69	1.34	0.96	1.12	1.46	1.13	1.09	0.70
90.00°	0.81	1.12	0.82	1.19	1.07	1.63	1.28	1.34	1.06	0.63	1.35	1.16	1.18	1.12	1.12	1.07	0.81
92.50°	0.94	1.34	0.88	1.32	1.30	1.73	1.28	1.08	1.53	0.62	1.23	1.29	1.22	0.72	1.14	1.06	0.94
95.00°	1.08	1.28	1.28	1.17	1.47	1.41	1.19	0.99	1.58	0.96	1.13	1.16	1.24	0.95	1.18	1.11	1.08
97.50°	1.33	1.18	1.46	0.88	1.47	1.07	0.87	0.92	0.93	1.29	1.03	1.07	1.39	1.20	1.20	1.18	1.33
100.00°	1.67	1.29	1.35	0.86	1.36	1.02	0.76	1.32	0.76	1.22	0.98	1.06	1.59	1.01	1.22	1.44	1.67
102.50°	1.42	1.35	1.21	0.93	1.03	1.00	0.98	1.64	1.11	1.13	0.96	1.05	1.28	0.84	1.10	1.60	1.42
105.00°	0.91	1.10	1.03	1.04	0.88	1.15	1.19	1.21	1.11	1.02	0.90	1.04	0.88	0.80	0.95	1.24	0.91

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%	10%
	0	1580	1580	1580	1580	1542	1542	1542	1542	1472	1472	1472	1407	1407	1407	1348	1348	1320
	1	1528	1500	1476	1454	1496	1471	1450	1430	1417	1400	1385	1367	1355	1343	1322	1312	1286
	2	1480	1434	1395	1363	1452	1411	1377	1348	1369	1341	1318	1330	1308	1289	1293	1276	1252
	3	1436	1377	1331	1294	1412	1359	1317	1284	1325	1291	1263	1294	1266	1243	1265	1243	1219
	4	1395	1327	1277	1239	1374	1313	1267	1231	1286	1247	1217	1261	1229	1203	1237	1211	1189
	5	1357	1283	1231	1193	1339	1272	1224	1188	1250	1209	1177	1229	1194	1167	1210	1181	1160
	6	1322	1244	1192	1154	1306	1234	1186	1150	1217	1174	1142	1200	1163	1135	1184	1152	1133
	7	1289	1209	1157	1120	1275	1201	1152	1117	1186	1143	1111	1172	1134	1106	1159	1126	1108
	8	1258	1177	1125	1090	1246	1170	1122	1088	1158	1114	1083	1146	1107	1079	1135	1101	1084
	9	1230	1148	1097	1063	1219	1142	1094	1061	1131	1088	1058	1121	1083	1055	1112	1077	1061
	10	1203	1121	1071	1039	1193	1116	1069	1037	1107	1064	1035	1098	1059	1032	1090	1055	1040

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	294.0 fc	1.9 ft
6.5 ft	210.5 fc	2.2 ft
7.5 ft	158.1 fc	2.6 ft
8.0 ft	139.0 fc	2.7 ft
10.0 ft	88.9 fc	3.4 ft
12.0 ft	61.8 fc	4.1 ft
14.0 ft	45.4 fc	4.8 ft
16.0 ft	34.7 fc	5.5 ft
20.0 ft	22.2 fc	6.9 ft
24.0 ft	15.4 fc	8.2 ft
28.0 ft	11.3 fc	9.6 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	59827602	59827602	59827602
45.00°	149080	125813	139024
55.00°	45786	34882	36565
65.00°	21313	15407	30356
75.00°	6742	7540	8906
85.00°	10036	9745	12651

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	12.5	13.4	12.9	13.8	14.1	12.2	13.1	12.6	13.4	13.7
	3H	12.8	13.6	13.2	13.9	14.3	12.7	13.5	13.1	13.9	14.2
	4H	12.8	13.5	13.2	13.9	14.3	12.9	13.6	13.3	14.0	14.4
	6H	12.9	13.5	13.3	13.9	14.3	13.1	13.8	13.6	14.2	14.6
	8H	13.0	13.7	13.5	14.1	14.5	13.3	13.9	13.7	14.3	14.7
	12H	13.2	13.8	13.6	14.2	14.6	13.4	14.0	13.9	14.4	14.9
4H	2H	12.5	13.2	12.9	13.6	14.0	12.2	12.9	12.6	13.3	13.7
	3H	12.8	13.4	13.2	13.8	14.2	12.8	13.4	13.2	13.8	14.3
	4H	12.9	13.4	13.3	13.9	14.3	13.0	13.5	13.5	14.0	14.4
	6H	13.1	13.6	13.6	14.0	14.5	13.4	13.8	13.9	14.3	14.8
	8H	13.4	13.8	13.9	14.3	14.8	13.6	14.0	14.1	14.5	15.0
	12H	13.7	14.0	14.2	14.5	15.0	13.9	14.2	14.4	14.7	15.2
8H	4H	12.9	13.4	13.4	13.8	14.3	13.0	13.5	13.5	13.9	14.4
	6H	13.4	13.7	13.9	14.2	14.7	13.5	13.9	14.1	14.4	14.9
	8H	13.8	14.1	14.4	14.7	15.2	13.8	14.1	14.4	14.7	15.2
	12H	14.3	14.5	14.8	15.1	15.7	14.2	14.5	14.8	15.0	15.6
12H	4H	12.9	13.3	13.4	13.8	14.3	13.0	13.4	13.5	13.9	14.4
	6H	13.4	13.7	14.0	14.2	14.8	13.6	13.9	14.1	14.4	14.9
	8H	14.0	14.2	14.5	14.7	15.3	14.0	14.2	14.5	14.7	15.3

Corrected UGR values based on total output energy
 SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0