Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

TWH4FX 70L 35K xx MW

Wallwash Tracklight with Prismatic Glass lens

Test Number

SP-01254

Test Date

6/24/2021

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

Summary of Results

Power

Input Watts	53.2 W

Lumen Output

Output Lumens	6051
Efficacy	113.73 lm/W

Luminous Dimensions

0° - 180° Size	0.27
90° - 270° Size	0.58
Height	0

Spacing Criterion

Two luminaires, plane 0°	1.09
Two luminaires, plane 90°	1.02
Four luminaires	1.09

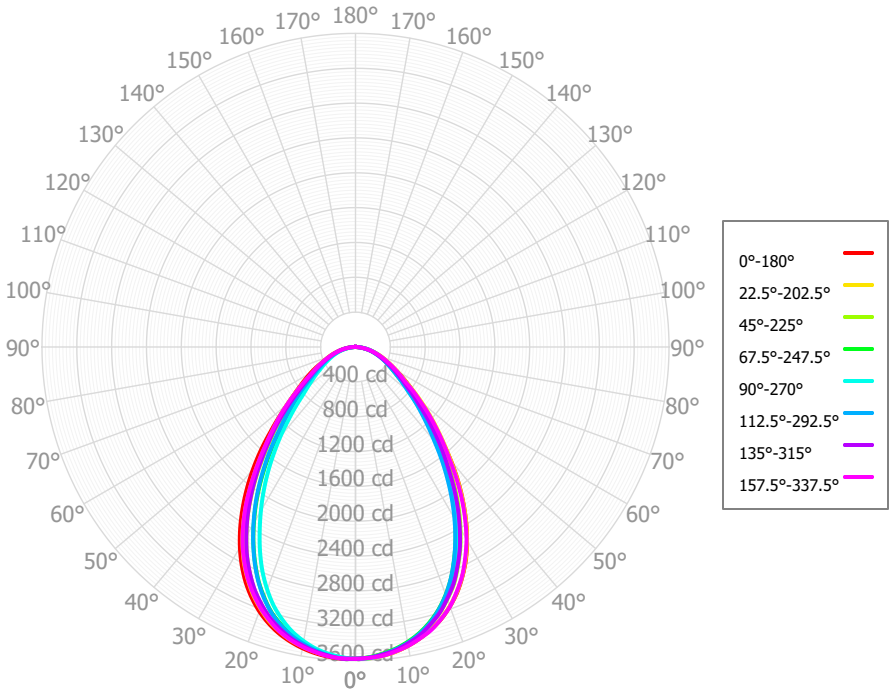
Full Beam Angle

0° - 180°	79°
90° - 270°	71°

IES File Header Contents

Keyword	Value
TEST	SP-01254
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
TESTDATE	6/24/2021
ISSUEDATE	8/1/2021
LUMCAT	TWH4FX 70L 35K xx MW
LUMINAIRE	Wallwash Tracklight with Prismatic Glass lens
OTHER	Beam Angle: 71 deg x 79 deg
LAMPCAT	N/A
LAMP	(2) 35L emitters, 7000 Total Source Lumens
OTHER	Total luminaire wattage is approximate
OTHER	CCT Output Multipliers: 30K x 1.0, 40K x 1.08
OTHER	This report prepared by Spectrum Lighting
_CRI	80+
_CCTMULT	30K x 1.0, 40K x 1.08
_LAMPMULT	20L x 0.29, 30L x 0.43, 40L x 0.57, 50L x 0.71, 60L x 0.86

Candela Polar Plot



Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	341.49	5.64%	90.00° - 100.00°	2.60	0.04%
10.00° - 20.00°	933.36	15.43%	100.00° - 110.00°	1.49	0.02%
20.00° - 30.00°	1284.26	21.23%	100.00° - 120.00°	3.10	0.05%
30.00° - 40.00°	1256.73	20.77%	120.00° - 130.00°	1.47	0.02%
40.00° - 50.00°	940.42	15.54%	130.00° - 140.00°	1.58	0.03%
50.00° - 60.00°	608.53	10.06%	140.00° - 150.00°	1.42	0.02%
60.00° - 70.00°	389.28	6.43%	150.00° - 160.00°	1.09	0.02%
70.00° - 80.00°	219.79	3.63%	160.00° - 170.00°	0.65	0.01%
80.00° - 90.00°	64.59	1.07%	170.00° - 180.00°	0.23	0.00%
0.00° - 90.00°	6038.47	99.80%	0.00° - 180.00°	6050.61	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°	3579.93	3579.93	3579.93	3579.93	3579.93	3579.93	3579.93	3579.93	3579.93	3579.93	3579.93	3579.93	3579.93	3579.93	3579.93	3579.93	3579.93
2.50°	3575.15	3579.09	3565.28	3567.50	3578.02	3577.42	3582.02	3577.84	3582.62	3575.82	3574.96	3571.30	3566.01	3568.00	3572.02	3573.29	3575.15
5.00°	3555.79	3561.11	3537.73	3537.14	3555.78	3554.66	3558.07	3565.21	3569.74	3558.25	3557.50	3547.70	3535.74	3543.07	3545.47	3560.13	3555.79
7.50°	3527.89	3530.07	3503.75	3496.03	3518.12	3512.53	3527.08	3534.53	3546.30	3533.41	3531.41	3513.08	3493.06	3503.27	3512.55	3526.84	3527.89
10.00°	3483.52	3482.39	3448.13	3439.47	3463.18	3458.67	3480.73	3496.33	3511.55	3494.84	3484.07	3457.19	3428.64	3449.65	3457.14	3484.65	3483.52
12.50°	3426.83	3424.48	3385.90	3367.90	3392.36	3394.66	3424.74	3444.82	3463.93	3447.67	3428.04	3389.52	3348.68	3376.22	3393.70	3427.28	3426.83
15.00°	3355.89	3354.34	3299.08	3276.15	3304.84	3308.28	3349.50	3379.38	3403.54	3380.05	3352.20	3299.48	3242.34	3285.48	3303.51	3363.81	3355.89
17.50°	3274.99	3268.84	3205.53	3164.37	3194.21	3203.76	3261.26	3291.25	3325.23	3300.46	3264.50	3198.08	3118.57	3168.81	3204.71	3272.61	3274.99
20.00°	3170.44	3166.36	3081.52	3027.69	3061.09	3070.23	3148.82	3189.54	3230.46	3195.67	3152.08	3061.80	2964.29	3031.20	3076.78	3171.12	3170.44
22.50°	3050.61	3044.21	2949.93	2868.17	2900.34	2914.96	3021.32	3067.16	3115.37	3077.34	3024.75	2909.31	2791.16	2866.45	2940.43	3039.69	3050.61
25.00°	2906.31	2901.93	2781.52	2682.01	2714.38	2737.04	2868.06	2929.53	2982.76	2934.16	2868.96	2729.68	2593.73	2681.45	2772.25	2898.19	2906.31
27.50°	2747.23	2740.37	2605.04	2488.80	2516.23	2543.46	2699.69	2770.43	2827.72	2778.73	2699.65	2538.33	2382.48	2481.80	2595.69	2728.76	2747.23
30.00°	2561.38	2560.26	2408.66	2287.96	2307.78	2342.41	2507.51	2594.70	2654.81	2594.92	2506.23	2333.28	2172.39	2271.91	2392.71	2550.72	2561.38
32.50°	2360.64	2361.22	2208.38	2081.35	2100.87	2136.54	2307.63	2397.03	2463.79	2398.11	2304.14	2122.86	1962.90	2055.76	2183.58	2343.29	2360.64
35.00°	2148.26	2145.34	1994.38	1868.88	1895.16	1924.61	2096.39	2185.93	2259.23	2181.14	2087.86	1905.87	1752.19	1835.58	1965.38	2127.74	2148.26
37.50°	1929.83	1925.22	1778.06	1657.87	1689.67	1709.07	1884.44	1958.46	2046.99	1955.74	1870.28	1686.51	1540.89	1620.20	1745.32	1903.55	1929.83
40.00°	1705.81	1701.61	1579.77	1448.22	1484.35	1501.32	1671.53	1739.36	1829.46	1736.06	1650.73	1478.00	1340.43	1407.67	1549.42	1677.19	1705.81
42.50°	1479.14	1502.02	1384.06	1262.35	1287.91	1297.91	1474.21	1529.68	1608.05	1518.55	1448.91	1273.05	1144.79	1228.87	1357.90	1486.01	1479.14
45.00°	1281.66	1320.95	1209.44	1097.08	1097.49	1133.81	1296.48	1342.18	1384.13	1339.62	1272.18	1111.75	978.31	1068.78	1179.29	1302.62	1281.66
47.50°	1096.86	1153.44	1037.41	950.21	935.05	989.81	1123.40	1178.13	1190.57	1174.23	1103.52	963.57	823.85	925.70	1002.68	1135.46	1096.86
50.00°	955.16	995.56	893.00	818.29	790.04	857.48	955.79	1021.60	1015.09	1021.78	945.57	834.44	717.17	791.27	866.50	971.43	955.16
52.50°	830.80	853.35	751.31	702.51	687.79	730.71	813.74	872.43	881.05	873.42	806.95	710.43	628.38	686.23	735.75	834.17	830.80
55.00°	725.78	721.44	661.46	598.83	610.44	630.74	699.61	746.77	769.69	747.03	692.03	613.63	554.01	595.11	648.78	701.49	725.78
57.50°	627.82	622.02	575.54	521.57	539.44	542.45	605.85	642.71	676.41	627.01	599.10	523.30	484.62	522.03	566.63	615.12	627.82
60.00°	541.50	542.60	508.76	462.62	471.83	478.41	532.96	557.46	592.34	549.19	531.09	465.10	429.36	456.76	497.26	535.46	541.50
62.50°	459.03	475.22	443.09	410.88	417.86	423.99	466.46	488.19	510.53	482.26	466.40	413.78	378.49	403.76	429.06	468.89	459.03
65.00°	398.96	414.66	388.49	363.83	370.67	377.23	406.03	424.82	429.77	422.28	405.24	366.25	335.53	355.69	373.15	403.89	398.96
67.50°	345.67	360.83	334.29	321.00	329.05	333.29	350.98	366.07	370.94	363.93	349.22	319.43	294.78	309.92	318.09	352.15	345.67
70.00°	296.41	310.56	285.89	280.69	289.98	289.40	300.71	314.30	321.48	316.34	298.26	279.80	256.85	264.98	274.52	301.75	296.41
72.50°	248.24	261.51	237.61	240.52	251.88	245.53	257.01	267.66	274.05	270.96	251.90	241.33	219.64	225.43	231.49	254.08	248.24
75.00°	206.11	213.06	198.24	200.44	214.19	207.35	218.70	222.89	227.42	224.69	209.72	201.55	182.49	187.64	194.28	206.63	206.11
77.50°	165.47	169.92	158.89	161.42	177.21	170.87	180.81	179.39	187.07	178.26	169.77	161.58	145.36	150.10	157.25	166.28	165.47
80.00°	124.62	129.18	121.40	122.94	140.50	134.20	143.25	138.80	148.97	137.46	131.72	123.48	108.91	112.64	117.55	126.36	124.62
82.50°	83.73	89.70	83.94	86.74	103.11	97.47	105.91	100.03	109.95	97.53	94.66	85.59	72.60	76.09	77.87	86.50	83.73
85.00°	48.14	50.74	47.58	51.62	65.48	62.63	68.73	63.86	70.63	60.55	58.39	51.51	40.77	39.80	42.23	46.64	48.14
87.50°	13.57	26.29	12.87	27.20	36.16	28.24	38.59	29.21	39.04	23.94	30.94	17.79	9.71	20.08	7.44	24.11	13.57
90.00°	5.64	7.25	6.78	7.44	9.51	13.39	13.07	11.93	9.74	11.85	10.04	8.53	3.78	4.32	4.43	1.94	5.64
92.50°	2.13	2.15	1.12	1.57	2.64	2.78	2.87	4.01	2.61	2.35	1.36	1.03	1.55	1.59	1.55	1.61	2.13
95.00°	1.57	1.85	1.18	1.23	1.46	1.16	1.97	1.28	1.46	1.44	1.04	0.88	1.22	1.66	1.65	1.31	1.57
97.50°	1.42	1.67	1.22	1.45	1.28	1.25	1.40	1.15	1.26	1.28	1.17	1.12	1.14	1.42	1.74	1.20	1.42
100.00°	1.26	1.55	1.07	1.89	1.34	1.46	1.02	1.32	1.28	1.25	1.58	1.38	1.37	1.13	1.75	1.11	1.26
102.50°	1.10	1.73	0.95	1.81	1.46	1.69	0.79	1.62	1.21	1.23	1.59	1.65	1.63	1.23	1.74	1.60	1.10
105.00°	1.46	2.01	1.18	1.56	1.60	1.47	0.66	1.47	1.13	1.13	1.38	1.16	1.18	1.40	1.57	2.07	1.46
107.50°	1.87	2.15	1.41	1.69	1.46	1.18	0.85	1.14	1.15	1.02	1.17	0.66	0.67	1.47	1.48	2.21	1.87
110.00°	1.86	2.27	1.70	1.93	1.27	1.24	1.20	1.30	1.18	1.32	0.98	1.00	1.33	1.53	2.11	2.29	1.86
112.50°	1.82	2.38	1.95	1.97	1.23	1.33	1.33	1.64	1.26	1.63	0.94	1.32	2.07	1.71	2.62	1.70	1.82

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	7200	7200	7200	7200	7031	7031	7031	7031	6716	6716	6716	6428	6428	6428	6163	6163	6163	6038
	1	6698	6460	6246	6054	6538	6324	6130	5955	6069	5911	5767	5836	5708	5590	5620	5519	5424	5403
	2	6204	5789	5446	5157	6054	5677	5363	5096	5468	5205	4978	5275	5057	4866	5097	4918	4758	4814
	3	5752	5214	4797	4466	5612	5121	4736	4426	4948	4620	4350	4787	4509	4276	4638	4404	4204	4312
	4	5343	4723	4269	3922	5215	4646	4223	3896	4501	4134	3844	4366	4050	3794	4241	3969	3745	3887
	5	4976	4302	3832	3485	4858	4238	3796	3466	4115	3728	3430	4002	3662	3395	3895	3599	3361	3527
	6	4645	3940	3466	3126	4538	3885	3438	3113	3781	3384	3087	3684	3332	3062	3594	3282	3037	3218
	7	4348	3625	3156	2827	4251	3578	3134	2818	3490	3090	2799	3407	3048	2780	3329	3008	2762	2951
	8	4080	3350	2891	2575	3992	3310	2872	2568	3234	2837	2554	3163	2803	2540	3096	2770	2526	2720
	9	3838	3109	2662	2360	3759	3074	2647	2354	3009	2618	2343	2947	2589	2333	2888	2562	2322	2518
	10	3620	2896	2463	2174	3548	2866	2450	2170	2809	2426	2161	2755	2402	2153	2704	2379	2145	2340

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	118.3 fc	8.5 ft
6.5 ft	84.7 fc	10.0 ft
7.5 ft	63.6 fc	11.6 ft
8.0 ft	55.9 fc	12.4 ft
10.0 ft	35.8 fc	15.4 ft
12.0 ft	24.9 fc	18.5 ft
14.0 ft	18.3 fc	21.6 ft
16.0 ft	14.0 fc	24.7 ft
20.0 ft	8.9 fc	30.9 ft
24.0 ft	6.2 fc	37.1 ft
28.0 ft	4.6 fc	43.3 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	246066	246066	246066
45.00°	124586	117565	106682
55.00°	86974	79266	73153
65.00°	64887	63184	60287
75.00°	54737	52646	56883
85.00°	37964	37523	51640

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	26.0	27.4	26.3	27.7	28.0	24.9	26.3	25.3	26.6	26.9
	3H	27.4	28.6	27.7	28.9	29.3	26.5	27.7	26.8	28.0	28.4
	4H	27.9	29.1	28.3	29.4	29.8	27.1	28.3	27.5	28.6	29.0
	6H	28.3	29.4	28.7	29.7	30.1	27.6	28.7	28.0	29.0	29.4
	8H	28.4	29.4	28.8	29.8	30.2	27.7	28.8	28.2	29.2	29.6
	12H	28.5	29.4	28.9	29.8	30.3	27.9	28.8	28.3	29.2	29.6
4H	2H	26.4	27.5	26.8	27.9	28.3	25.5	26.7	26.0	27.1	27.5
	3H	28.0	28.9	28.4	29.4	29.8	27.3	28.3	27.7	28.7	29.1
	4H	28.6	29.5	29.1	29.9	30.4	28.1	28.9	28.5	29.4	29.8
	6H	29.2	29.9	29.6	30.4	30.8	28.7	29.4	29.2	29.9	30.4
	8H	29.3	30.0	29.8	30.5	31.0	28.9	29.6	29.4	30.1	30.5
	12H	29.4	30.1	29.9	30.5	31.0	29.1	29.7	29.5	30.2	30.6
8H	4H	28.8	29.5	29.3	30.0	30.5	28.4	29.1	28.9	29.6	30.0
	6H	29.5	30.1	30.0	30.6	31.1	29.2	29.7	29.7	30.2	30.7
	8H	29.7	30.2	30.2	30.8	31.3	29.4	30.0	30.0	30.5	31.0
	12H	29.9	30.3	30.4	30.8	31.4	29.7	30.1	30.2	30.6	31.2
12H	4H	28.9	29.5	29.3	30.0	30.4	28.4	29.1	28.9	29.5	30.0
	6H	29.5	30.0	30.1	30.5	31.1	29.2	29.8	29.8	30.2	30.8
	8H	29.8	30.3	30.3	30.8	31.3	29.6	30.0	30.1	30.5	31.1

Corrected UGR values based on total output energy
SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0