Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

GL04IND96LX 07L 35K EX DW XX MW

Milltown Light 5.1" Wide x 96" linear pendant or surface mount luminaire

Test Number

SP-00618_2_M-07L

Test Date

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

Summary of Results

Power

Input Watts	42 W

Lumen Output

Output Lumens	4779
Efficacy	113.79 lm/W

Luminous Dimensions

0° - 180° Size	0.43
90° - 270° Size	8.02
Height	0.17

Spacing Criterion

Two luminaires, plane 0°	1.36
Two luminaires, plane 90°	1.23
Four luminaires	1.45

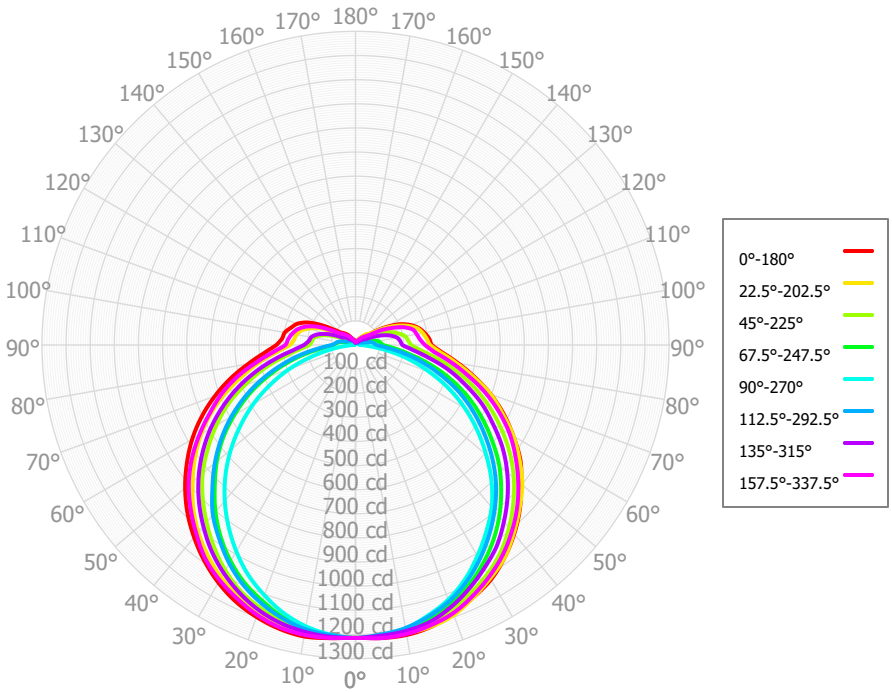
Full Beam Angle

0° - 180°	139°
90° - 270°	108°

IES File Header Contents

Keyword	Value
TEST	SP-00618_2_M-07L
TESTLAB	VLS-245-981
MANUFAC	Spectrum Lighting
ISSUEDATE	10/16/2017
UPDATE	3/9/2020
LUMCAT	GL04IND96LX 07L 35K EX DW XX MW
LUMINAIRE	Milltown Light 5.1" Wide x 96" linear pendant or surface mount luminaire
OTHER	96" Linear LED, Diffuse White Acrylic Lens
OTHER	Matte White interior finish
OTHER	112 Degree Beam Angle
LAMPCAT	N/A
LAMP	N/A, 700 Source Lms/Ft
OTHER	Total Luminaire Watts is approximate
OTHER	CCT Output Multipiers: 30K x 0.98, 35K x 1.0, 40K x 1.03, 50K x 1.06
OTHER	This report prepared by Spectrum Lighting, scaled from 20L

Candela Polar Plot



Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	122.61	2.57%	90.00° - 100.00°	195.67	4.09%
10.00° - 20.00°	334.72	7.00%	100.00° - 110.00°	158.61	3.32%
20.00° - 30.00°	516.21	10.80%	100.00° - 120.00°	259.46	5.43%
30.00° - 40.00°	638.68	13.36%	120.00° - 130.00°	49.58	1.04%
40.00° - 50.00°	688.71	14.41%	130.00° - 140.00°	27.56	0.58%
50.00° - 60.00°	664.17	13.90%	140.00° - 150.00°	15.34	0.32%
60.00° - 70.00°	569.43	11.91%	150.00° - 160.00°	8.08	0.17%
70.00° - 80.00°	419.10	8.77%	160.00° - 170.00°	3.96	0.08%
80.00° - 90.00°	264.71	5.54%	170.00° - 180.00°	1.14	0.02%
0.00° - 90.00°	4,218.35	88.27%	0.00° - 180.00°	4,779.14	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°	1,214.68	1,214.68	1,214.68	1,214.68	1,214.68	1,214.68	1,214.68	1,214.68	1,214.68	1,214.68	1,214.68	1,214.68	1,214.68	1,214.68	1,214.68	1,214.68	1,214.68
5.00°	1,219.90	1,216.08	1,211.65	1,212.13	1,209.79	1,207.43	1,214.74	1,219.50	1,220.24	1,216.01	1,212.04	1,209.97	1,205.37	1,205.27	1,210.25	1,219.88	1,219.90
10.00°	1,220.69	1,213.83	1,208.28	1,200.03	1,193.13	1,196.49	1,207.86	1,220.57	1,227.19	1,215.23	1,203.96	1,191.05	1,184.53	1,191.94	1,204.11	1,216.75	1,220.69
15.00°	1,209.86	1,209.28	1,194.21	1,174.09	1,161.37	1,172.74	1,194.42	1,212.38	1,218.59	1,202.73	1,184.06	1,167.34	1,150.92	1,165.91	1,189.07	1,203.44	1,209.86
20.00°	1,185.40	1,191.62	1,166.98	1,143.23	1,123.93	1,140.09	1,170.48	1,191.30	1,200.17	1,187.19	1,159.12	1,129.30	1,104.31	1,132.13	1,156.65	1,183.57	1,185.40
25.00°	1,154.92	1,155.10	1,133.34	1,103.25	1,073.00	1,098.79	1,135.35	1,160.40	1,174.17	1,149.93	1,126.24	1,088.16	1,052.16	1,085.23	1,115.01	1,148.76	1,154.92
30.00°	1,123.40	1,117.43	1,095.56	1,052.12	1,010.52	1,046.21	1,092.22	1,126.32	1,137.50	1,112.94	1,079.20	1,035.16	988.23	1,028.15	1,068.41	1,108.99	1,123.40
35.00°	1,076.84	1,076.96	1,049.01	993.56	945.09	983.97	1,041.29	1,083.80	1,092.58	1,066.69	1,022.83	973.53	918.07	964.71	1,019.73	1,063.56	1,076.84
40.00°	1,023.52	1,020.25	990.41	927.52	878.38	919.85	981.24	1,025.27	1,041.16	1,013.63	960.47	903.30	843.13	896.79	957.19	1,008.68	1,023.52
45.00°	963.61	961.49	925.58	853.97	797.69	839.03	918.08	965.75	985.14	951.66	896.06	825.32	762.33	824.22	891.60	948.39	963.61
50.00°	896.68	902.57	857.02	778.14	706.74	761.10	848.90	902.49	922.10	881.57	826.84	750.81	674.46	742.58	821.02	880.69	896.68
55.00°	835.19	830.47	781.38	691.57	616.05	679.85	773.59	829.43	853.39	812.27	746.97	670.12	581.76	656.24	744.71	810.36	835.19
60.00°	755.46	756.44	698.68	605.71	523.45	594.29	694.06	748.24	782.03	738.54	666.42	579.90	488.76	570.09	659.58	738.60	755.46
65.00°	678.12	672.65	615.20	517.95	426.76	503.96	608.47	665.69	703.72	657.32	584.31	489.62	389.96	482.21	578.71	656.72	678.12
70.00°	596.29	596.47	528.27	423.65	325.29	410.44	520.29	590.05	620.61	569.17	489.76	393.53	293.16	386.97	486.08	570.48	596.29
75.00°	510.04	504.70	440.30	326.65	230.75	315.83	428.90	506.35	536.04	480.51	400.94	299.02	189.94	294.99	400.12	479.54	510.04
80.00°	430.80	422.69	353.07	232.67	135.44	227.79	340.05	418.07	451.40	402.39	312.09	209.82	102.18	208.65	309.62	398.42	430.80
85.00°	361.47	353.88	274.65	161.78	56.99	149.10	261.96	343.22	379.68	325.86	239.30	135.08	35.92	130.43	238.75	326.86	361.47
90.00°	316.72	309.28	230.98	114.31	20.53	97.70	213.53	290.92	328.17	271.62	191.48	90.73	7.00	87.23	194.55	288.13	316.72
95.00°	306.39	296.67	218.95	104.50	14.60	83.98	194.27	279.95	305.72	255.76	181.31	78.45	6.90	77.89	186.16	268.17	306.39
100.00°	290.44	283.66	209.54	94.61	16.04	75.00	186.67	266.98	297.75	248.38	174.66	66.19	4.74	66.14	175.14	257.71	290.44
105.00°	271.35	265.85	184.31	67.92	12.26	56.20	166.39	249.68	276.89	232.71	151.46	36.05	4.37	40.62	151.06	246.74	271.35
110.00°	242.18	231.74	155.85	44.20	16.38	40.23	134.34	221.56	257.13	200.94	116.06	22.69	4.98	28.02	116.77	214.43	242.18
115.00°	203.73	189.17	110.32	38.41	15.61	35.86	96.24	181.57	220.85	164.74	73.62	21.19	5.70	24.73	77.95	167.92	203.73
120.00°	150.94	140.45	68.13	34.51	16.60	32.11	60.84	129.78	165.95	111.11	44.75	17.65	6.52	19.14	49.84	121.36	150.94
125.00°	98.40	95.15	58.95	31.02	13.60	28.91	54.26	88.44	112.30	67.36	37.32	14.24	7.04	15.34	41.73	74.20	98.40
130.00°	64.12	71.91	50.89	25.51	12.77	26.73	46.48	71.65	81.37	56.70	33.84	14.27	6.16	11.17	32.04	57.96	64.12
135.00°	54.91	64.12	41.56	22.57	14.04	24.06	33.16	60.24	69.73	48.35	26.97	14.36	5.53	11.50	25.52	47.58	54.91
140.00°	47.67	51.18	37.29	21.30	12.46	20.63	30.28	48.10	59.09	36.46	20.42	10.68	7.74	10.88	19.00	38.02	47.67
145.00°	36.51	36.64	25.69	16.03	12.93	18.42	26.45	39.78	47.36	26.10	15.93	11.45	7.52	10.62	16.51	30.57	36.51
150.00°	26.70	28.27	23.36	15.03	11.94	16.74	24.79	32.61	34.46	22.90	14.57	10.14	6.14	9.32	16.23	23.80	26.70
155.00°	21.00	25.44	19.41	15.75	10.78	14.19	19.87	26.05	27.48	18.67	13.88	9.97	6.68	7.72	14.80	18.54	21.00
160.00°	17.68	22.49	18.69	12.38	11.34	13.93	18.68	21.79	25.17	18.40	11.79	9.22	7.64	9.48	13.53	16.29	17.68
165.00°	17.69	15.41	15.31	13.44	10.80	10.60	15.07	17.82	21.98	13.81	12.65	9.02	6.86	9.86	12.44	14.09	17.69
170.00°	13.30	13.50	12.03	11.53	9.43	11.13	12.87	14.85	21.01	13.29	9.79	10.90	9.78	8.42	11.13	11.65	13.30
175.00°	11.46	10.73	10.54	9.44	8.90	10.07	10.42	11.83	12.38	10.83	10.96	9.24	9.42	7.87	9.79	12.62	11.46
180.00°	11.20	11.20	11.20	11.20	11.20	11.20	11.20	11.20	11.20	11.20	11.20	11.20	11.20	11.20	11.20	11.20	11.20

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	5,556	5,556	5,556	5,556	5,362	5,362	5,362	5,362	4,999	4,999	4,999	4,667	4,667	4,667	4,362	4,362	4,362	4,218
	1	4,971	4,703	4,464	4,248	4,779	4,538	4,321	4,125	4,229	4,052	3,891	3,944	3,803	3,672	3,682	3,570	3,465	3,444
	2	4,480	4,044	3,684	3,381	4,297	3,904	3,575	3,297	3,640	3,368	3,134	3,397	3,174	2,978	3,171	2,991	2,829	2,881
	3	4,062	3,520	3,101	2,767	3,891	3,400	3,015	2,705	3,175	2,851	2,585	2,966	2,696	2,469	2,772	2,548	2,357	2,453
	4	3,705	3,098	2,655	2,316	3,547	2,996	2,586	2,269	2,803	2,453	2,176	2,623	2,327	2,087	2,456	2,206	1,999	2,124
	5	3,397	2,754	2,306	1,975	3,253	2,666	2,249	1,937	2,500	2,140	1,864	2,345	2,035	1,793	2,200	1,935	1,723	1,865
	6	3,129	2,470	2,027	1,709	2,999	2,394	1,980	1,679	2,249	1,889	1,619	2,115	1,801	1,561	1,989	1,717	1,504	1,656
	7	2,896	2,231	1,800	1,498	2,777	2,165	1,761	1,473	2,040	1,683	1,424	1,922	1,609	1,376	1,812	1,538	1,328	1,484
	8	2,691	2,030	1,613	1,327	2,584	1,972	1,580	1,306	1,862	1,514	1,265	1,759	1,450	1,224	1,662	1,389	1,184	1,342
	9	2,511	1,858	1,457	1,187	2,413	1,807	1,428	1,169	1,710	1,372	1,134	1,619	1,317	1,099	1,534	1,264	1,065	1,223
	10	2,351	1,710	1,326	1,070	2,262	1,665	1,301	1,055	1,579	1,251	1,025	1,499	1,203	995	1,422	1,157	965	1,121

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	40.2 fc	22.2 ft
6.5 ft	28.7 fc	26.2 ft
7.5 ft	21.6 fc	30.2 ft
8.0 ft	19.0 fc	32.3 ft
10.0 ft	12.1 fc	40.3 ft
12.0 ft	8.4 fc	48.4 ft
14.0 ft	6.2 fc	56.5 ft
16.0 ft	4.7 fc	64.5 ft
20.0 ft	3.0 fc	80.7 ft
24.0 ft	2.1 fc	96.8 ft
28.0 ft	1.5 fc	112.9 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	3,791	3,791	3,791
45.00°	3,048	3,156	3,448
55.00°	2,905	2,993	3,254
65.00°	2,710	2,785	3,015
75.00°	2,485	2,529	2,579
85.00°	2,346	2,252	1,643

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	16.2	17.7	16.8	18.2	18.8	13.6	15.1	14.2	15.6	16.2
	3H	18.8	20.1	19.3	20.7	21.3	15.1	16.5	15.7	17.0	17.6
	4H	20.0	21.2	20.5	21.8	22.4	15.6	16.9	16.2	17.4	18.1
	6H	21.2	22.4	21.8	22.9	23.6	15.9	17.0	16.4	17.6	18.3
	8H	21.8	23.0	22.4	23.6	24.2	15.9	17.0	16.5	17.6	18.3
	12H	22.5	23.6	23.1	24.2	24.9	15.9	17.0	16.5	17.6	18.3
4H	2H	16.7	17.9	17.3	18.5	19.2	14.7	15.9	15.2	16.5	17.2
	3H	19.4	20.5	20.0	21.1	21.8	16.4	17.5	17.0	18.1	18.8
	4H	20.8	21.8	21.4	22.4	23.1	17.0	18.0	17.6	18.6	19.3
	6H	22.2	23.1	22.8	23.7	24.4	17.4	18.3	18.1	19.0	19.7
	8H	22.9	23.8	23.6	24.4	25.1	17.5	18.4	18.2	19.0	19.7
	12H	23.7	24.5	24.4	25.2	25.9	17.6	18.3	18.2	19.0	19.7
8H	4H	21.0	21.8	21.6	22.5	23.2	17.8	18.6	18.4	19.3	20.0
	6H	22.6	23.3	23.2	23.9	24.7	18.4	19.1	19.1	19.8	20.5
	8H	23.4	24.1	24.1	24.8	25.5	18.6	19.2	19.3	19.9	20.6
	12H	24.4	25.0	25.1	25.7	26.5	18.7	19.3	19.4	20.0	20.8
12H	4H	21.0	21.8	21.6	22.4	23.1	18.0	18.8	18.6	19.4	20.1
	6H	22.6	23.3	23.3	23.9	24.7	18.7	19.3	19.4	20.0	20.8
	8H	23.5	24.1	24.2	24.8	25.6	19.0	19.6	19.7	20.2	21.0

Corrected UGR values based on total output lumens

SHR = 1.0