Indoor Distribution Test Report

Spectrum Lighting Inc.

994 Jefferson Street
Fall River, MA 02721
+1.508.678.2303

Spectrum Lighting Photometric Lab

Luminaire

GL04IND96LX 20L 35K EX DW XX MW

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

Test Number

SP-00618_2

Test Date

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

Summary of Results

Power

Input Watts	120.2 W

Lumen Output

Output Lumens	13655
Efficacy	113.6 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

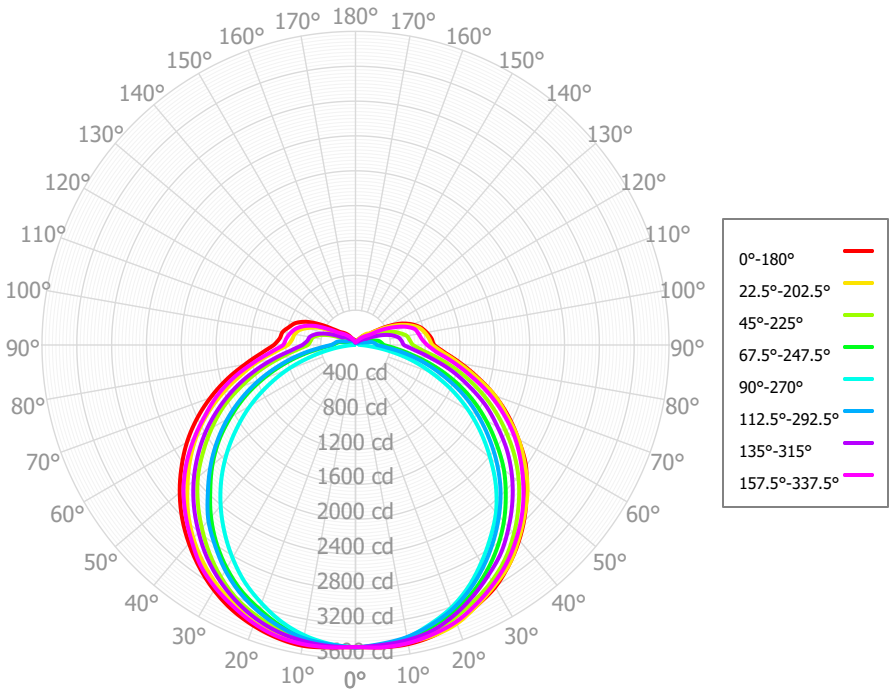
Full Beam Angle

0° - 180°	139°
90° - 270°	108°

IES File Header Contents

Keyword	Value
TEST	SP-00618_2
TESTLAB	VLS-245-981
MANUFAC	Spectrum Lighting
ISSUEDATE	10/16/2017
UPDATE	3/9/2020
LUMCAT	GL04IND96LX 20L 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, 2000 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
_CRI	80+
_CCTMULT	30K x 0.98, 35K x 1.0, 40K x 1.03, 50K x 1.06
_LAMPMULT	5L x 0.28, 7L x 0.35, 12L x 0.64, 15L x 0.78

Candela Polar Plot



Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	350.33	2.57%	90.00° - 100.00°	559.05	4.09%
10.00° - 20.00°	956.35	7.00%	100.00° - 110.00°	453.18	3.32%
20.00° - 30.00°	1,474.89	10.80%	100.00° - 120.00°	741.30	5.43%
30.00° - 40.00°	1,824.79	13.36%	120.00° - 130.00°	141.67	1.04%
40.00° - 50.00°	1,967.75	14.41%	130.00° - 140.00°	78.75	0.58%
50.00° - 60.00°	1,897.64	13.90%	140.00° - 150.00°	43.83	0.32%
60.00° - 70.00°	1,626.94	11.91%	150.00° - 160.00°	23.10	0.17%
70.00° - 80.00°	1,197.43	8.77%	160.00° - 170.00°	11.31	0.08%
80.00° - 90.00°	756.33	5.54%	170.00° - 180.00°	3.27	0.02%
0.00° - 90.00°	12,052.43	88.27%	0.00° - 180.00°	13,654.70	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°	3,470.53	3,470.53	3,470.53	3,470.53	3,470.53	3,470.53	3,470.53	3,470.53	3,470.53	3,470.53	3,470.53	3,470.53	3,470.53	3,470.53	3,470.53	3,470.53	3,470.53
5.00°	3,485.44	3,474.51	3,461.87	3,463.22	3,456.55	3,449.80	3,470.70	3,484.28	3,486.40	3,474.32	3,462.99	3,457.07	3,443.92	3,443.62	3,457.86	3,485.36	3,485.44
10.00°	3,487.67	3,468.10	3,452.22	3,428.67	3,408.95	3,418.53	3,451.03	3,487.33	3,506.26	3,472.08	3,439.88	3,403.00	3,384.37	3,405.55	3,440.32	3,476.43	3,487.67
15.00°	3,456.74	3,455.08	3,412.02	3,354.54	3,318.21	3,350.69	3,412.62	3,463.96	3,481.69	3,436.38	3,383.03	3,335.27	3,288.33	3,331.18	3,397.35	3,438.41	3,456.74
20.00°	3,386.85	3,404.62	3,334.23	3,266.37	3,211.24	3,257.40	3,344.22	3,403.72	3,429.06	3,391.98	3,311.78	3,226.57	3,155.17	3,234.67	3,304.71	3,381.63	3,386.85
25.00°	3,299.78	3,300.28	3,238.12	3,152.14	3,065.71	3,139.39	3,243.87	3,315.44	3,354.76	3,285.51	3,217.83	3,109.02	3,006.17	3,100.67	3,185.74	3,282.16	3,299.78
30.00°	3,209.71	3,192.67	3,130.19	3,006.06	2,887.20	2,989.16	3,120.64	3,218.07	3,250.01	3,179.84	3,083.44	2,957.59	2,823.50	2,937.57	3,052.60	3,168.56	3,209.71
35.00°	3,076.68	3,077.02	2,997.16	2,838.76	2,700.27	2,811.35	2,975.12	3,096.57	3,121.65	3,047.69	2,922.37	2,781.52	2,623.06	2,756.31	2,913.51	3,038.74	3,076.68
40.00°	2,924.33	2,915.00	2,829.74	2,650.04	2,509.67	2,628.15	2,803.56	2,929.33	2,974.73	2,896.09	2,744.21	2,580.86	2,408.94	2,562.25	2,734.84	2,881.96	2,924.33
45.00°	2,753.18	2,747.12	2,644.52	2,439.92	2,279.11	2,397.23	2,623.08	2,759.28	2,814.69	2,719.04	2,560.17	2,358.05	2,178.08	2,354.92	2,547.44	2,709.69	2,753.18
50.00°	2,561.93	2,578.77	2,448.64	2,223.26	2,019.25	2,174.57	2,425.42	2,578.55	2,634.57	2,518.76	2,362.39	2,145.17	1,927.02	2,121.65	2,345.76	2,516.25	2,561.93
55.00°	2,386.25	2,372.77	2,232.52	1,975.91	1,760.13	1,942.43	2,210.25	2,369.80	2,438.25	2,320.78	2,134.20	1,914.64	1,662.18	1,874.97	2,127.74	2,315.32	2,386.25
60.00°	2,158.47	2,161.25	1,996.23	1,730.60	1,495.57	1,697.97	1,983.03	2,137.84	2,234.36	2,110.10	1,904.07	1,656.86	1,396.45	1,628.83	1,884.51	2,110.29	2,158.47
65.00°	1,937.48	1,921.87	1,757.70	1,479.86	1,219.30	1,439.89	1,738.48	1,901.97	2,010.62	1,878.05	1,669.45	1,398.90	1,114.16	1,377.75	1,653.46	1,876.36	1,937.48
70.00°	1,703.69	1,704.21	1,509.35	1,210.42	929.39	1,172.68	1,486.53	1,685.86	1,773.16	1,626.20	1,399.32	1,124.38	837.60	1,105.62	1,388.81	1,629.94	1,703.69
75.00°	1,457.26	1,441.99	1,258.00	933.29	659.27	902.38	1,225.43	1,446.71	1,531.54	1,372.89	1,145.53	854.36	542.68	842.83	1,143.21	1,370.12	1,457.26
80.00°	1,230.85	1,207.70	1,008.78	664.78	386.98	650.84	971.56	1,194.48	1,289.72	1,149.69	891.68	599.49	291.94	596.13	884.64	1,138.35	1,230.85
85.00°	1,032.77	1,011.09	784.71	462.23	162.83	425.99	748.46	980.62	1,084.81	931.04	683.72	385.95	102.64	372.66	682.16	933.89	1,032.77
90.00°	904.90	883.66	659.94	326.61	58.64	279.13	610.09	831.21	937.62	776.05	547.08	259.24	20.00	249.22	555.87	823.23	904.90
95.00°	875.40	847.63	625.58	298.56	41.72	239.94	555.06	799.87	873.50	730.73	518.03	224.15	19.73	222.55	531.89	766.21	875.40
100.00°	829.82	810.46	598.67	270.33	45.84	214.30	533.34	762.80	850.71	709.67	499.03	189.11	13.53	188.96	500.40	736.30	829.82
105.00°	775.30	759.58	526.60	194.05	35.04	160.57	475.39	713.38	791.11	664.90	432.73	102.99	12.50	116.07	431.59	704.97	775.30
110.00°	691.94	662.13	445.27	126.29	46.81	114.94	383.82	633.03	734.67	574.12	331.61	64.83	14.23	80.04	333.64	612.65	691.94
115.00°	582.09	540.49	315.21	109.75	44.61	102.46	274.99	518.77	631.00	470.69	210.33	60.53	16.30	70.66	222.70	479.78	582.09
120.00°	431.26	401.27	194.65	98.60	47.44	91.75	173.82	370.80	474.14	317.47	127.86	50.44	18.64	54.67	142.39	346.75	431.26
125.00°	281.15	271.86	168.42	88.63	38.86	82.60	155.03	252.69	320.85	192.47	106.63	40.70	20.11	43.83	119.23	212.00	281.15
130.00°	183.21	205.45	145.40	72.87	36.50	76.38	132.79	204.71	232.50	162.00	96.69	40.77	17.60	31.90	91.55	165.59	183.21
135.00°	156.88	183.20	118.75	64.49	40.11	68.75	94.73	172.11	199.23	138.13	77.06	41.03	15.81	32.87	72.91	135.95	156.88
140.00°	136.21	146.22	106.55	60.86	35.60	58.93	86.50	137.43	168.84	104.18	58.35	30.52	22.11	31.09	54.30	108.64	136.21
145.00°	104.30	104.70	73.39	45.80	36.95	52.63	75.56	113.66	135.31	74.56	45.51	32.73	21.50	30.34	47.19	87.35	104.30
150.00°	76.30	80.77	66.75	42.93	34.12	47.84	70.83	93.16	98.46	65.44	41.63	28.97	17.55	26.62	46.37	68.00	76.30
155.00°	60.00	72.68	55.47	45.01	30.81	40.55	56.77	74.43	78.53	53.34	39.66	28.48	19.09	22.05	42.29	52.98	60.00
160.00°	50.50	64.25	53.41	35.38	32.41	39.81	53.37	62.27	71.92	52.56	33.68	26.34	21.83	27.07	38.67	46.53	50.50
165.00°	50.54	44.02	43.73	38.40	30.85	30.30	43.06	50.91	62.81	39.45	36.15	25.78	19.60	28.18	35.54	40.26	50.54
170.00°	37.99	38.56	34.37	32.94	26.95	31.80	36.78	42.42	60.04	37.98	27.96	31.13	27.95	24.06	31.80	33.29	37.99
175.00°	32.73	30.67	30.12	26.96	25.44	28.78	29.77	33.79	35.38	30.95	31.31	26.41	26.90	22.50	27.97	36.06	32.73
180.00°	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00

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%
	ρcc	80%	80%	80%	80%	70%	70%	70%	70%	50%	50%	50%	30%	30%	30%	10%	10%	10%
	ρw	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%
	0	15,874	15,874	15,874	15,874	15,319	15,319	15,319	15,319	14,282	14,282	14,282	13,333	13,333	13,333	12,462	12,462	12,462
	1	14,203	13,438	12,753	12,136	13,653	12,966	12,347	11,785	12,082	11,579	11,117	11,270	10,865	10,491	10,521	10,201	9,901
	2	12,801	11,555	10,526	9,661	12,277	11,154	10,215	9,419	10,400	9,623	8,953	9,704	9,067	8,509	9,061	8,544	8,084
	3	11,606	10,057	8,859	7,905	11,117	9,715	8,615	7,728	9,070	8,146	7,385	8,474	7,702	7,053	7,920	7,281	6,733
	4	10,584	8,853	7,585	6,617	10,135	8,560	7,388	6,482	8,007	7,009	6,218	7,494	6,647	5,961	7,017	6,303	5,712
RCR	5	9,704	7,870	6,588	5,641	9,294	7,618	6,426	5,535	7,142	6,114	5,326	6,699	5,815	5,122	6,285	5,529	4,922
	6	8,941	7,056	5,791	4,883	8,568	6,839	5,656	4,797	6,427	5,396	4,627	6,042	5,146	4,461	5,682	4,905	4,297
	7	8,275	6,375	5,143	4,280	7,936	6,186	5,030	4,209	5,828	4,810	4,068	5,492	4,598	3,930	5,177	4,393	3,794
	8	7,690	5,799	4,609	3,792	7,382	5,634	4,513	3,733	5,321	4,325	3,615	5,026	4,144	3,498	4,749	3,968	3,384
	9	7,174	5,308	4,164	3,392	6,895	5,163	4,081	3,341	4,887	3,919	3,241	4,627	3,762	3,141	4,381	3,610	3,043
	10	6,718	4,885	3,789	3,058	6,463	4,758	3,716	3,015	4,513	3,575	2,928	4,282	3,439	2,843	4,063	3,306	2,758

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	114.7 fc	22.2 ft
6.5 ft	82.1 fc	26.2 ft
7.5 ft	61.7 fc	30.2 ft
8.0 ft	54.2 fc	32.3 ft
10.0 ft	34.7 fc	40.3 ft
12.0 ft	24.1 fc	48.4 ft
14.0 ft	17.7 fc	56.5 ft
16.0 ft	13.6 fc	64.5 ft
20.0 ft	8.7 fc	80.7 ft
24.0 ft	6.0 fc	96.8 ft
28.0 ft	4.4 fc	112.9 ft

Average Luminaire Luminance [cd/m

	0.00°	45.00°	90.00°
0.00°	10,832	10,832	10,832
45.00°	8,710	9,017	9,851
55.00°	8,299	8,552	9,297
65.00°	7,744	7,956	8,614
75.00°	7,099	7,227	7,368
85.00°	6,702	6,436	4,694

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	19.9	21.4	20.4	21.9	22.5	17.3	18.7	17.8	19.3	19.9
	3H	22.4	23.8	23.0	24.3	24.9	18.8	20.1	19.3	20.6	21.3
	4H	23.6	24.9	24.2	25.4	26.1	19.2	20.5	19.8	21.1	21.7
	6H	24.8	26.0	25.4	26.6	27.2	19.5	20.7	20.1	21.3	21.9
	8H	25.5	26.6	26.1	27.2	27.9	19.6	20.7	20.2	21.3	22.0
	12H	26.2	27.3	26.8	27.8	28.5	19.6	20.7	20.2	21.3	21.9
4H	2H	20.3	21.6	20.9	22.2	22.8	18.3	19.6	18.9	20.2	20.8
	3H	23.1	24.2	23.7	24.8	25.4	20.1	21.2	20.7	21.8	22.4
	4H	24.4	25.4	25.0	26.0	26.7	20.7	21.7	21.3	22.3	23.0
	6H	25.8	26.7	26.5	27.4	28.1	21.1	22.0	21.7	22.6	23.3
	8H	26.6	27.4	27.2	28.0	28.8	21.2	22.0	21.8	22.6	23.4
	12H	27.4	28.1	28.0	28.8	29.5	21.2	22.0	21.9	22.6	23.4
8H	4H	24.6	25.5	25.3	26.1	26.8	21.4	22.3	22.1	22.9	23.6
	6H	26.2	26.9	26.9	27.6	28.3	22.0	22.7	22.7	23.4	24.1
	8H	27.1	27.7	27.8	28.4	29.1	22.2	22.9	22.9	23.6	24.3
	12H	28.1	28.6	28.8	29.3	30.1	22.4	22.9	23.0	23.6	24.4
12H	4H	24.7	25.4	25.3	26.1	26.8	21.7	22.4	22.3	23.1	23.8
	6H	26.3	26.9	26.9	27.5	28.3	22.4	23.0	23.0	23.6	24.4
	8H	27.2	27.8	27.9	28.4	29.2	22.6	23.2	23.3	23.9	24.7

Corrected UGR values based on total output lumens

SHR = 1.0