



PHOTOMETRIC EVALUATION OF AN LED STRIP LUMINAIRE

Model: Spyder – Narrow Beam

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Bryan Cubitt, Technical Team Leader



Program Description

Photometric Evaluation of a strip LED luminaire.

Executive Summary

The following table provides a brief overview of the key results for the narrow beam Spyder LED sample:

Sample	Luminous Efficacy (Lumens / Watt)	Luminous Flux (Lumens)	Input Power (Watts)	Stabilization Time
Spyder Narrow Beam	38.69	1217.7	31.47	37 minutes



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Test Results – Spyder Narrow Beam	
The following results were measured after stabilization. Stability is reached when the variation of 3 readings of light output and electrical power, taken 15 minutes apart, is less than 0.50% (in accordance with IES LM-79-08).	
Key Photometric Results	Sample Reference# Spyder Narrow Beam
Luminous Efficacy (Lumens/Watt)	38.69
Total Luminous Flux (Lumens)	1217.7
Stabilization Time	37 minutes
Total Run Time – Goniophotometer	74 minutes
Electrical Input Results:	Sample Reference# Spyder Narrow Beam
Input Power (Watts)	31.47
Input Voltage (Volts AC)	120.0
Input Current (Amps)	0.571
Input Frequency (Hertz)	60.0
Power Factor	0.459
Additional Information	Sample Reference# Spyder Narrow Beam
Ambient Temperature	25.5° C

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Test Results – Zonal Lumen Summary

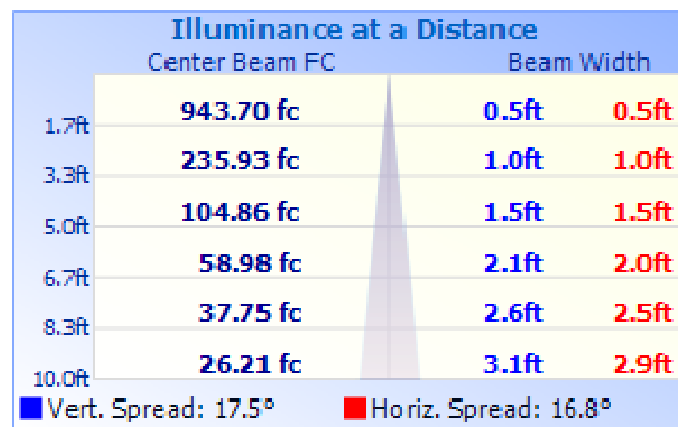
The following table depicts the zonal lumen summary for the narrow beam Spyder strip luminaire:

Zone	Lumens	% Total
0 - 10	231.2	19.0
10 - 20	424.1	34.8
20 - 30	271.7	22.3
30 - 40	120.7	9.9
40 - 50	75.1	6.2
50 - 60	50.9	4.2
60 - 70	27.9	2.3
70 - 80	12.5	1.0
80 - 90	3.7	0.3
Total	1217.7 Lumens	100%

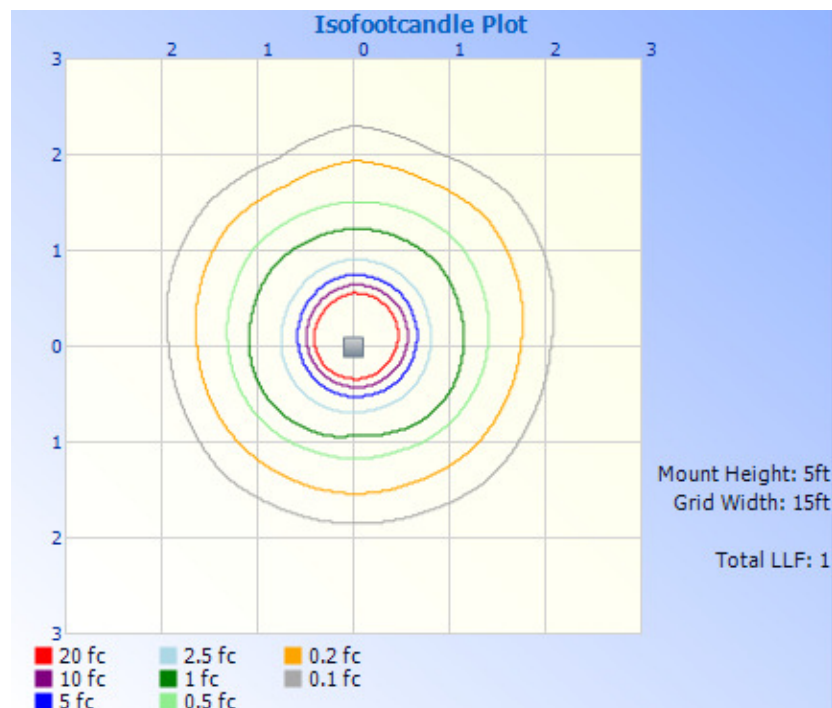
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Test Results – Illuminance Plots

The following images depict the illuminance characteristics of the luminaire.



Illuminance Beam Spread (Footcandles)

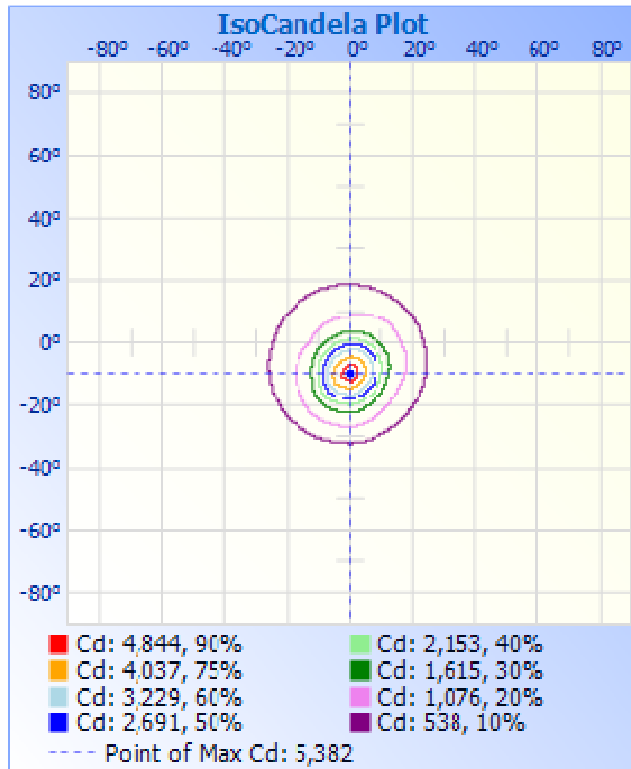


Illuminance Distribution Plot (Footcandles)

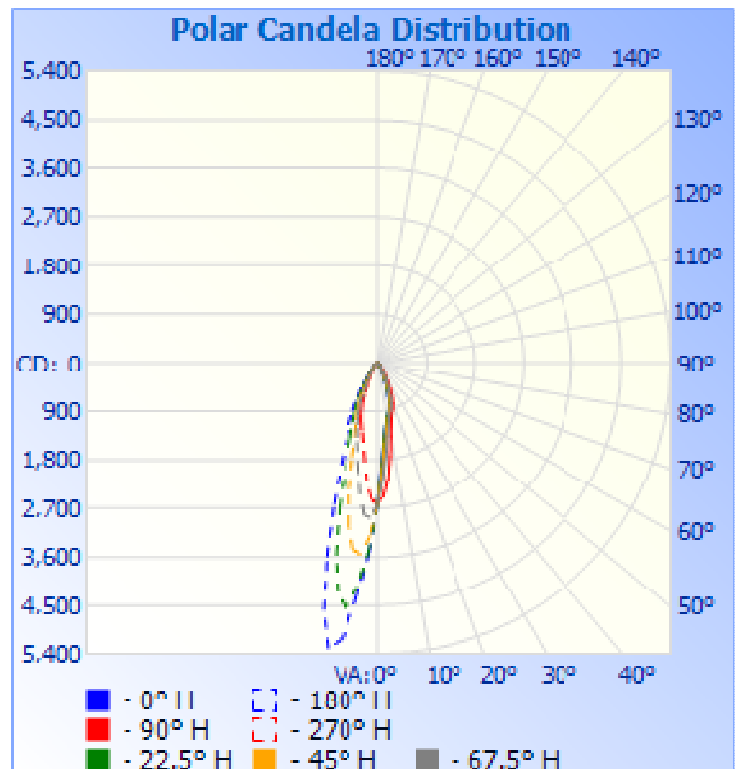
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Test Results – Candela Plots

The following images depict the luminous intensity distribution characteristics of the narrow beam Spyder strip LED luminaire.



Isocandela Plot



Polar Candela Distribution

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Test Results – Candela Tabulation

The following table provides the tabulated Candela measurements:

	0.0	22.5	45.0	67.5	90.0	112.5	135.0	157.5	180.0	202.5	225.0	247.5	270.0	292.5	315.0	337.5	360.0
0.0	2621.40	2621.40	2621.40	2621.40	2621.40	2621.40	2621.40	2621.40	2621.40	2621.40	2621.40	2621.40	2621.40	2621.40	2621.40	2621.40	2621.40
2.5	1852.20	1876.90	1980.80	2176.20	2464.80	2798.90	3125.50	3376.30	3499.80	3443.70	3208.00	2878.10	2533.80	2246.90	2029.90	1903.80	1853.60
5.0	1406.60	1425.30	1515.30	1728.90	2162.70	2760.80	3422.90	3971.60	4328.30	4159.10	3556.00	2825.50	2226.10	1810.40	1573.70	1456.90	1406.60
7.5	1162.50	1170.20	1227.20	1381.30	1744.30	2464.20	3459.50	4615.70	5154.50	4598.30	3484.20	2447.60	1818.80	1479.00	1303.40	1200.30	1162.30
10.0	1021.00	1017.50	1055.40	1144.10	1372.70	2028.60	3193.70	4888.60	5382.40	4328.40	3051.30	2026.70	1502.30	1279.90	1151.50	1062.70	1021.00
12.5	930.32	920.30	945.06	993.87	1128.80	1609.90	2614.30	4363.20	4699.60	3645.10	2402.30	1681.70	1299.50	1164.00	1064.10	964.89	929.00
15.0	816.46	812.85	850.87	896.11	991.27	1305.20	2002.80	3451.70	3716.70	2792.80	1805.00	1433.30	1148.40	1053.60	945.36	838.26	816.52
17.5	639.05	666.18	733.10	805.51	908.79	1135.10	1546.00	2597.50	2750.10	2013.00	1374.00	1214.70	1001.40	881.63	751.61	637.24	639.04
20.0	458.01	496.32	583.01	691.60	817.23	1039.40	1256.10	1906.60	2005.90	1498.80	1124.20	1033.70	816.14	658.97	532.00	447.88	458.01
22.5	316.81	356.25	421.26	550.29	698.75	925.12	1081.90	1466.90	1544.00	1207.50	961.04	829.09	600.34	443.25	347.93	319.56	316.81
25.0	220.35	249.69	293.69	408.76	548.43	774.46	941.37	1194.80	1271.10	986.72	765.64	595.61	397.78	288.72	239.40	228.83	220.59
27.5	169.03	185.48	218.67	288.95	405.77	588.36	776.62	932.39	1008.70	754.72	564.83	391.02	262.50	205.20	182.12	174.95	169.23
30.0	133.92	147.63	175.14	210.06	284.92	414.57	572.38	676.21	726.57	543.53	390.61	259.41	193.95	162.44	148.88	146.70	133.93
32.5	116.86	122.96	142.97	165.45	205.30	283.60	394.66	461.08	479.49	374.94	268.03	192.19	159.22	138.23	129.91	126.06	116.87
35.0	105.15	106.27	122.72	137.47	162.68	205.35	270.83	316.28	325.56	266.11	200.10	155.33	137.40	123.42	117.84	110.20	105.16
37.5	92.42	97.25	109.32	119.73	137.05	161.98	201.69	231.15	239.25	206.57	160.70	133.75	123.51	113.98	108.27	102.32	92.48
40.0	76.94	86.90	99.96	107.87	119.80	135.51	162.00	183.70	189.66	167.10	136.63	120.09	113.61	105.69	101.35	94.07	76.95
42.5	62.04	75.51	92.16	98.34	108.19	119.72	137.57	154.12	157.98	140.20	121.88	109.31	103.91	97.55	92.27	78.57	62.11
45.0	53.92	61.11	83.22	91.13	99.24	108.33	123.15	131.90	133.03	122.48	112.34	100.50	93.67	88.42	75.31	61.80	53.92
47.5	48.36	51.41	67.96	84.80	90.26	99.23	113.08	116.41	118.18	109.51	103.55	90.36	83.06	74.66	61.55	50.88	48.36
50.0	43.33	44.04	55.39	72.09	81.98	90.28	103.73	104.36	105.53	98.16	94.92	81.12	70.80	59.92	50.68	43.18	43.35
52.5	38.02	38.60	45.84	57.71	71.19	81.98	93.64	94.83	95.00	89.71	85.35	70.47	57.89	49.21	42.07	37.80	37.97
55.0	33.26	34.07	39.73	47.71	58.97	71.78	84.50	86.27	82.70	79.10	74.76	58.25	46.92	41.35	35.60	33.08	33.30
57.5	29.52	29.41	34.73	40.06	48.26	61.84	74.43	73.54	72.79	63.73	62.36	48.36	38.65	34.16	30.92	28.60	29.53
60.0	25.48	26.48	30.50	33.76	39.89	51.24	63.05	60.35	63.46	51.24	50.34	40.19	31.82	28.49	26.88	25.88	25.46
62.5	20.82	22.79	27.07	28.71	32.78	42.61	51.42	48.16	53.97	41.35	40.39	33.54	26.10	23.83	24.38	21.67	20.86
65.0	16.11	17.96	24.26	24.18	27.16	35.84	42.43	37.98	45.11	31.87	33.27	28.05	21.40	19.97	22.01	16.71	16.13
67.5	10.82	12.83	21.57	20.31	22.18	29.88	34.80	28.94	37.58	25.06	27.54	23.49	17.61	16.71	18.57	11.57	10.85
70.0	6.54	7.94	16.32	17.31	18.22	24.99	28.83	22.76	31.66	20.66	22.34	19.74	14.31	14.68	13.06	6.93	6.58
72.5	4.22	4.48	10.63	15.40	15.02	20.79	24.35	19.65	26.40	17.47	19.24	16.47	11.41	13.17	8.05	3.82	4.22
75.0	3.55	2.92	6.20	13.68	11.97	17.33	20.69	16.82	21.92	13.38	16.20	13.79	8.66	10.71	4.48	2.73	3.55
77.5	3.40	2.53	3.45	10.31	9.15	14.51	17.79	12.78	18.48	10.73	13.93	11.80	6.38	7.14	2.83	2.44	3.40
80.0	3.37	2.30	2.57	6.52	6.78	12.71	14.85	10.51	1.83	8.13	9.52	10.13	4.47	4.12	2.36	2.32	3.37
82.5	3.38	2.38	2.27	3.78	4.60	10.87	10.29	7.54	0.08	5.06	5.69	7.43	2.51	2.37	2.11	2.23	3.37
85.0	3.16	2.36	2.02	2.35	2.59	7.75	5.83	5.01	0.07	3.20	3.05	4.42	1.44	1.63	1.90	2.12	3.18
87.5	2.96	2.30	1.80	1.61	1.48	4.54	3.20	3.22	0.07	1.98	1.79	2.25	1.04	1.18	1.69	2.00	2.96
90.0	2.74	1.84	1.58	1.19	1.31	2.44	1.97	2.58	2.31	1.49	1.29	1.38	1.27	0.85	1.48	1.87	3.03

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Photometric Testing Information

This sample was evaluated for photometric and electrical characteristics using a goniophotometer located in purpose-built, temperature and humidity-controlled, draft free environment. The goniophotometer was manufactured by Mayer Engineering and is calibrated using a frosted tungsten filament FDS/DZE lamp with the following specifications:

Manufacturer: General Electric
Part Number: CSB-110
Bulb Number: 108-A
Voltage: 24.0 Volts
Wattage: 150.0 Watts
Calibration Current: 4.799 Amperes
Luminous Intensity: 150.3 Candelas
Calibration Date: 4-14-2009 (NIST traceable)