

Scaled data based on original data using
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State
Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: FAIL-SAFE

Report Number:

Luminaire Tested: **FHL-11L-56**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number:
Test Lab: Cooper Crouse Hinds
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: FHL-11L-56
Description: LED AREA LIGHT

Light Source: LED

NA. LUMINAIRE OUTPUT = 8806 LMS

Ballast/Driver: -

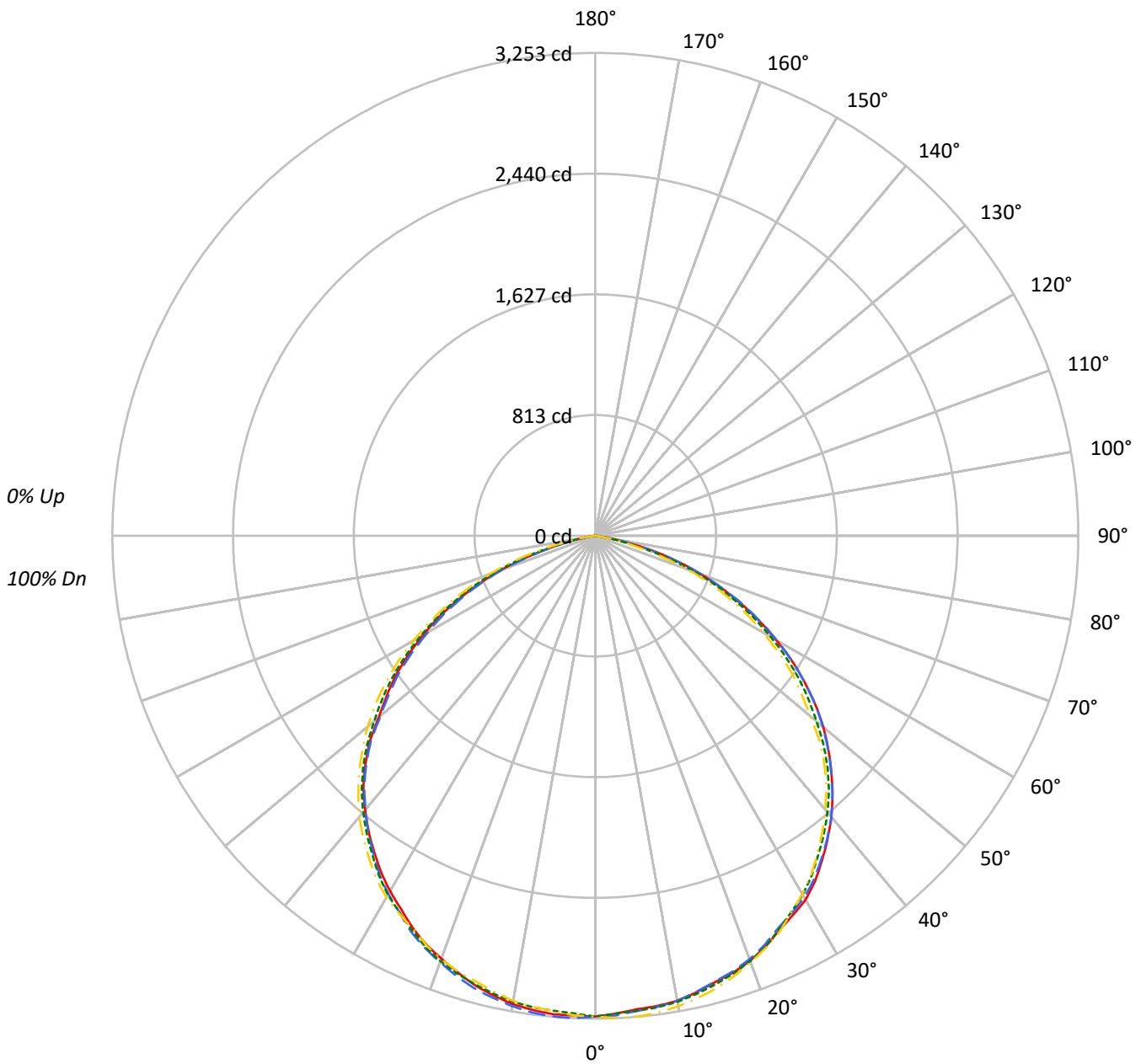
Summary

Lumens per Lamp: 8806 (1 lamp)
Luminaire Lumens: 8816.1 lumens
Efficiency: 100.1%
Efficacy: 64.9 lumens/watt
Spacing Criteria (0/90/45): 1.28 / 1.28 / 1.39
Luminous Opening: Rectangular (W 0.58' x L: 0.58' x H: 0')
CIE Type: Direct

Input Watts (W): 135.8
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT

TEST NUMBER:
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Luminous Intensity Polar Plot



— 0°-180° - - 45°-225° - - - 90°-270° - - - 135°-315°



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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				20				20				20				20			
RC	80				70				50				30				10	0		
RW	70	50	30	10	70	50	30	10	50	30	10		50	30	10		50	30	10	0
RCR																				
0	119	119	119	119	116	116	116	116	111	111	111		107	107	107		102	102	102	100
1	110	106	102	98	107	103	100	97	99	96	94		95	93	91		92	90	88	86
2	100	93	86	81	98	91	85	80	87	82	78		84	80	76		81	78	75	73
3	92	82	74	68	89	80	73	67	77	71	66		74	69	65		72	67	64	62
4	84	72	64	58	82	71	63	57	69	62	56		66	60	56		64	59	55	53
5	77	65	56	50	75	64	55	49	62	54	49		60	53	48		58	52	48	46
6	71	58	50	43	70	57	49	43	56	48	43		54	47	42		52	47	42	40
7	66	53	44	38	64	52	44	38	51	43	38		49	42	38		48	42	37	35
8	62	48	40	34	60	48	40	34	46	39	34		45	38	34		44	38	33	31
9	58	44	36	31	56	44	36	31	43	35	30		41	35	30		40	34	30	28
10	54	41	33	28	53	40	33	28	39	32	28		38	32	27		37	32	27	26

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	103639	103639	103639	103639
5°	102850	103191	103923	103191
10°	103325	103604	104104	103604
15°	103171	103652	103867	103652
20°	103763	103831	103239	103831
25°	103494	103338	102848	103338
30°	104628	103209	102130	103209
35°	104083	102334	101459	102334
40°	103309	101567	100702	101567
45°	101788	100095	99181	100095
50°	99807	96771	94695	96771
55°	96063	93190	91450	93190
60°	90194	87270	85625	87270
65°	81966	79286	77098	79286
70°	70446	66639	63299	66639
75°	52962	43962	37768	43962
80°	13967	14023	14317	14023
85°	1101	587	0	587



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ZONAL LUMENS:

CANDELA DISTRIBUTION:

Zone	Lumens	% Fixture	% Lamp		0°	90°	180°	270°	360°	Flux
0°-10°	307.1	3.5	3.5	0°	3239	3239	3239	3239	3239	
10°-20°	884.2	10.0	10.0	5°	3202	3213	3236	3213	3202	305
20°-30°	1350.2	15.3	15.3	15°	3114	3129	3136	3129	3114	881
30°-40°	1643.3	18.6	18.7	25°	2931	2927	2913	2927	2931	1357
40°-50°	1703.1	19.3	19.3	35°	2665	2620	2597	2620	2665	1667
50°-60°	1490.0	16.9	16.9	45°	2249	2212	2192	2212	2249	1734
60°-70°	1032.4	11.7	11.7	55°	1722	1670	1639	1670	1722	1535
70°-80°	389.5	4.4	4.4	65°	1083	1047	1018	1047	1083	1069
80°-90°	16.3	0.2	0.2	75°	428	356	306	356	428	442
90°-100°	0.0	0.0	0.0	85°	3	2	0	2	3	16
100°-110°	0.0	0.0	0.0	90°	0	0	0	0	0	0
110°-120°	0.0	0.0	0.0	95°	0	0	0	0	0	0
120°-130°	0.0	0.0	0.0	105°	0	0	0	0	0	0
130°-140°	0.0	0.0	0.0	115°	0	0	0	0	0	0
140°-150°	0.0	0.0	0.0	125°	0	0	0	0	0	0
150°-160°	0.0	0.0	0.0	135°	0	0	0	0	0	0
160°-170°	0.0	0.0	0.0	145°	0	0	0	0	0	0
170°-180°	0.0	0.0	0.0	155°	0	0	0	0	0	0
0°-30°	2541.5	28.8	28.9	165°	0	0	0	0	0	0
0°-40°	4184.8	47.5	47.5	175°	0	0	0	0	0	0
0°-60°	7377.9	83.7	83.8	180°	0	0	0	0	0	0
0°-90°	8816.1	100.0	100.1							
90°-120°	0.0	0.0	0.0							
90°-150°	0.0	0.0	0.0							
90°-180°	0.0	0.0	0.0							
0°-180°	8816.1	100.0	100.1							



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	3239.0	3239.0	3239.0	3239.0	3239.0	3239.0	3239.0	3239.0	3239.0	3239.0	3239.0
2.5°	3221.9	3233.7	3233.7	3230.9	3221.5	3244.3	3253.2	3239.9	3235.0	3239.9	3253.2
5°	3202.1	3220.2	3213.7	3213.5	3212.7	3241.9	3251.2	3234.1	3235.5	3234.1	3251.2
7.5°	3195.3	3213.7	3200.9	3205.0	3204.1	3233.8	3240.4	3219.7	3223.0	3219.7	3240.4
10°	3180.1	3196.9	3181.8	3187.1	3188.7	3214.1	3219.1	3196.2	3204.1	3196.2	3219.1
12.5°	3149.7	3161.0	3146.3	3153.1	3160.1	3183.8	3188.3	3166.5	3172.3	3166.5	3188.3
15°	3114.5	3120.7	3108.7	3113.7	3129.0	3152.7	3155.9	3134.1	3135.5	3134.1	3155.9
17.5°	3086.0	3086.4	3077.3	3081.1	3093.0	3107.7	3109.6	3089.8	3084.1	3089.8	3109.6
20°	3047.3	3044.8	3036.9	3039.4	3049.3	3057.6	3057.7	3043.5	3031.9	3043.5	3057.7
22.5°	2996.2	2986.3	2981.8	2981.0	2995.3	3005.6	3004.7	2994.2	2979.5	2994.2	3004.7
25°	2931.4	2916.2	2915.8	2909.1	2927.0	2941.5	2940.6	2931.7	2913.1	2931.7	2940.6
27.5°	2881.5	2866.8	2866.4	2856.5	2858.4	2857.6	2858.7	2852.3	2834.4	2852.3	2858.7
30°	2831.8	2811.5	2814.5	2798.1	2793.4	2784.0	2786.3	2780.1	2764.2	2780.1	2786.3
32.5°	2756.3	2735.1	2741.9	2720.9	2712.5	2702.3	2706.1	2700.6	2686.8	2700.6	2706.1
35°	2664.6	2646.0	2656.0	2635.0	2619.8	2603.7	2608.1	2604.5	2597.4	2604.5	2608.1
37.5°	2571.5	2556.5	2566.3	2549.4	2529.2	2504.1	2512.8	2509.0	2508.8	2509.0	2512.8
40°	2473.3	2462.9	2472.8	2459.9	2431.6	2399.5	2408.7	2403.7	2410.9	2403.7	2408.7
42.5°	2364.8	2356.5	2363.7	2356.7	2329.0	2294.9	2303.4	2301.2	2312.1	2301.2	2303.4
45°	2249.4	2244.5	2247.6	2245.8	2212.0	2174.5	2181.9	2181.4	2191.8	2181.4	2181.9
47.5°	2127.3	2121.9	2124.8	2128.3	2085.4	2044.9	2050.7	2052.8	2064.5	2052.8	2050.7
50°	2005.0	2001.1	2000.8	2007.1	1944.0	1885.7	1887.4	1894.3	1902.3	1894.3	1887.4
52.5°	1867.6	1862.3	1865.1	1873.9	1809.9	1751.0	1750.5	1764.2	1770.6	1764.2	1750.5
55°	1722.0	1717.4	1721.6	1732.0	1670.5	1615.8	1615.9	1632.3	1639.3	1632.3	1615.9
57.5°	1571.2	1568.9	1572.6	1585.2	1520.6	1464.1	1462.6	1484.7	1491.9	1484.7	1462.6
60°	1409.4	1410.8	1415.7	1427.5	1363.7	1304.1	1304.4	1325.9	1338.0	1325.9	1304.4
62.5°	1245.0	1249.2	1254.1	1264.2	1209.2	1153.5	1153.6	1176.2	1185.7	1176.2	1153.6
65°	1082.6	1090.8	1095.4	1100.8	1047.2	988.6	990.3	1008.9	1018.3	1008.9	990.3
67.5°	916.3	925.5	929.2	931.9	882.8	830.2	831.2	844.0	852.3	844.0	831.2
70°	753.0	760.4	761.3	760.3	712.3	660.4	655.5	664.8	676.6	664.8	655.5
72.5°	590.6	594.2	588.3	578.5	536.2	487.1	466.9	471.8	489.5	471.8	466.9
75°	428.4	423.4	404.1	385.8	355.6	322.9	296.3	298.4	305.5	298.4	296.3
77.5°	248.2	245.4	233.5	226.2	190.5	154.5	155.3	163.4	167.0	163.4	155.3
80°	75.8	97.7	106.2	119.8	76.1	44.2	55.8	63.7	77.7	63.7	55.8
82.5°	18.8	23.2	25.9	34.7	21.6	7.2	13.2	8.9	14.1	8.9	13.2
85°	3.0	1.7	2.2	1.9	1.6	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
92.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
95°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
97.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
105°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
107.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
110°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
115°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
117.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
122.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
125°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
142.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
145°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
147.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
152.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
157.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
162.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
167.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
172.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	3239.0	3239.0	3239.0	3239.0	3239.0	3239.0
2.5°	3244.3	3221.5	3230.9	3233.7	3233.7	3221.9
5°	3241.9	3212.7	3213.5	3213.7	3220.2	3202.1
7.5°	3233.8	3204.1	3205.0	3200.9	3213.7	3195.3
10°	3214.1	3188.7	3187.1	3181.8	3196.9	3180.1
12.5°	3183.8	3160.1	3153.1	3146.3	3161.0	3149.7
15°	3152.7	3129.0	3113.7	3108.7	3120.7	3114.5
17.5°	3107.7	3093.0	3081.1	3077.3	3086.4	3086.0
20°	3057.6	3049.3	3039.4	3036.9	3044.8	3047.3
22.5°	3005.6	2995.3	2981.0	2981.8	2986.3	2996.2
25°	2941.5	2927.0	2909.1	2915.8	2916.2	2931.4
27.5°	2857.6	2858.4	2856.5	2866.4	2866.8	2881.5
30°	2784.0	2793.4	2798.1	2814.5	2811.5	2831.8
32.5°	2702.3	2712.5	2720.9	2741.9	2735.1	2756.3
35°	2603.7	2619.8	2635.0	2656.0	2646.0	2664.6
37.5°	2504.1	2529.2	2549.4	2566.3	2556.5	2571.5
40°	2399.5	2431.6	2459.9	2472.8	2462.9	2473.3
42.5°	2294.9	2329.0	2356.7	2363.7	2356.5	2364.8
45°	2174.5	2212.0	2245.8	2247.6	2244.5	2249.4
47.5°	2044.9	2085.4	2128.3	2124.8	2121.9	2127.3
50°	1885.7	1944.0	2007.1	2000.8	2001.1	2005.0
52.5°	1751.0	1809.9	1873.9	1865.1	1862.3	1867.6
55°	1615.8	1670.5	1732.0	1721.6	1717.4	1722.0
57.5°	1464.1	1520.6	1585.2	1572.6	1568.9	1571.2
60°	1304.1	1363.7	1427.5	1415.7	1410.8	1409.4
62.5°	1153.5	1209.2	1264.2	1254.1	1249.2	1245.0
65°	988.6	1047.2	1100.8	1095.4	1090.8	1082.6
67.5°	830.2	882.8	931.9	929.2	925.5	916.3
70°	660.4	712.3	760.3	761.3	760.4	753.0
72.5°	487.1	536.2	578.5	588.3	594.2	590.6
75°	322.9	355.6	385.8	404.1	423.4	428.4
77.5°	154.5	190.5	226.2	233.5	245.4	248.2
80°	44.2	76.1	119.8	106.2	97.7	75.8
82.5°	7.2	21.6	34.7	25.9	23.2	18.8
85°	0.0	1.6	1.9	2.2	1.7	3.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0
92.5°	0.0	0.0	0.0	0.0	0.0	0.0
95°	0.0	0.0	0.0	0.0	0.0	0.0
97.5°	0.0	0.0	0.0	0.0	0.0	0.0
100°	0.0	0.0	0.0	0.0	0.0	0.0
102.5°	0.0	0.0	0.0	0.0	0.0	0.0
105°	0.0	0.0	0.0	0.0	0.0	0.0
107.5°	0.0	0.0	0.0	0.0	0.0	0.0
110°	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER:

CATALOG NUMBER: FHL-11L-56

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	0.0	0.0	0.0	0.0	0.0	0.0
115°	0.0	0.0	0.0	0.0	0.0	0.0
117.5°	0.0	0.0	0.0	0.0	0.0	0.0
120°	0.0	0.0	0.0	0.0	0.0	0.0
122.5°	0.0	0.0	0.0	0.0	0.0	0.0
125°	0.0	0.0	0.0	0.0	0.0	0.0
127.5°	0.0	0.0	0.0	0.0	0.0	0.0
130°	0.0	0.0	0.0	0.0	0.0	0.0
132.5°	0.0	0.0	0.0	0.0	0.0	0.0
135°	0.0	0.0	0.0	0.0	0.0	0.0
137.5°	0.0	0.0	0.0	0.0	0.0	0.0
140°	0.0	0.0	0.0	0.0	0.0	0.0
142.5°	0.0	0.0	0.0	0.0	0.0	0.0
145°	0.0	0.0	0.0	0.0	0.0	0.0
147.5°	0.0	0.0	0.0	0.0	0.0	0.0
150°	0.0	0.0	0.0	0.0	0.0	0.0
152.5°	0.0	0.0	0.0	0.0	0.0	0.0
155°	0.0	0.0	0.0	0.0	0.0	0.0
157.5°	0.0	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0	0.0
162.5°	0.0	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0	0.0
167.5°	0.0	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0	0.0
172.5°	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)