

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: P#

Luminaire Tested: **FLDSQ4C65D010 FEU4C659040 F4LC-SQLWW-H**

Issue Date: 12/13/2022

Tested By:

Approved By:



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**Test Information**

Test Method: LM-79-08  
 Report Number: P#  
 Test Lab: INNOVATION CENTER  
 Issue Date: 12/13/2022  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: FAIL-SAFE  
 Catalog Number: FLDSQ4C65D010 FEU4C659040 F4LC-SQLWW-H  
 Description: 4 INCH 6500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 4000K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH H FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

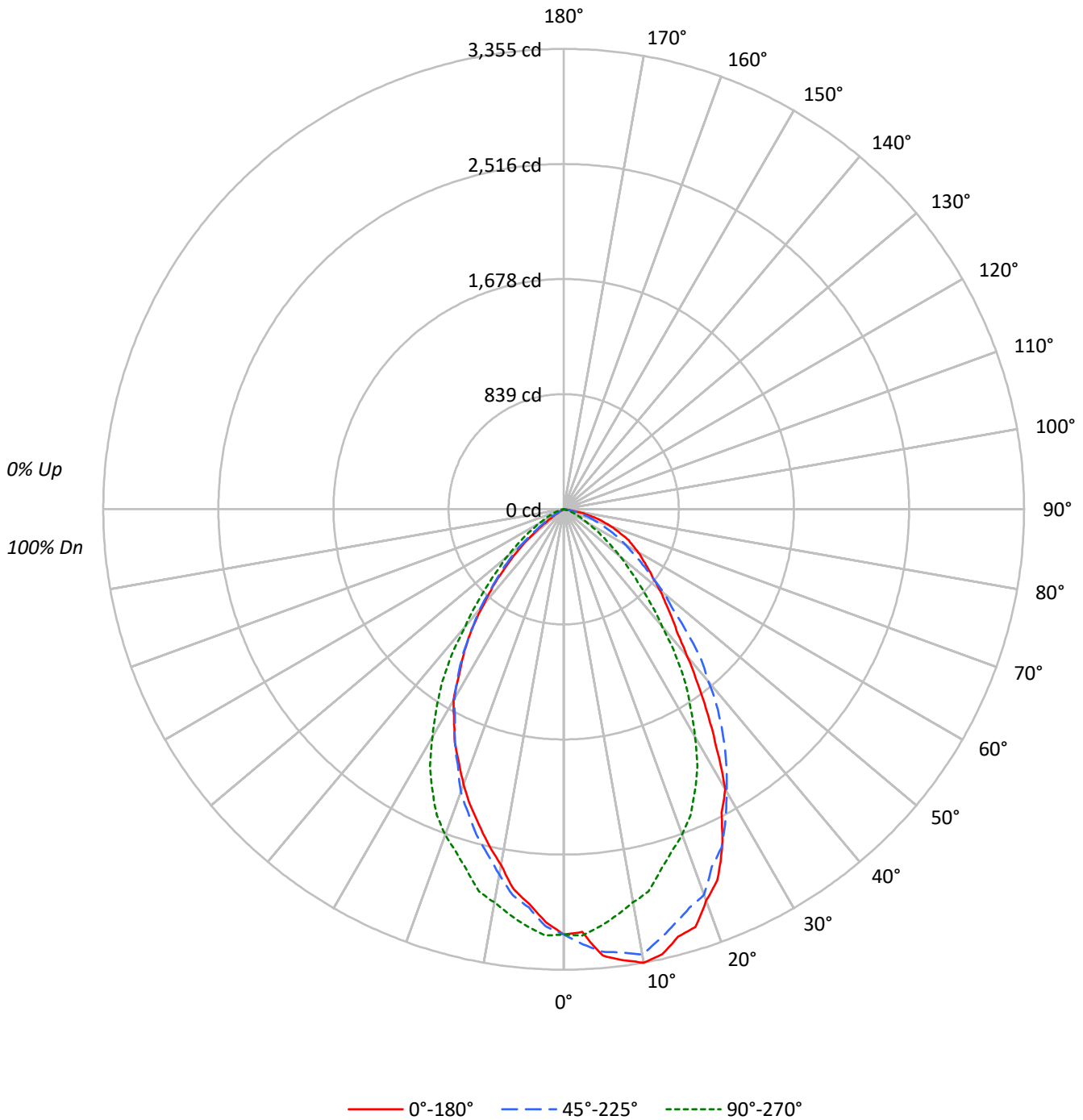
Lumens per Lamp: N/A  
 Luminaire Lumens: 4441.0 lumens  
 Efficiency: N/A  
 Efficacy: 61.3 lumens/watt  
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 72.4  
 Input Voltage (V):  
 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

Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	GONIO 1 IN0055	4/22/2021	10/22/2021
Power Meter	XITRON 2801 IN0197	12/1/2020	12/1/2021
AC Power Source	CHROMA 61505 IN0196	12/1/2020	12/1/2021
DC Power Supply	AGILENT E3634A IN0198	11/30/2020	11/30/2021
Room Thermometer	ONSET IN0143	12/1/2020	12/1/2021

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### Luminous Intensity Polar Plot



TEST NUMBER: P#

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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		106	106	106		102	102	102	100
1	112	108	105	102	109	106	103	101	102	100	98		98	96	95		95	93	92	90
2	104	98	93	89	102	96	92	88	93	89	86		90	87	84		87	84	82	80
3	97	89	83	78	95	88	82	77	85	80	76		82	78	75		80	77	74	72
4	91	81	74	69	89	80	74	69	78	72	68		76	71	67		74	70	66	64
5	85	75	67	62	83	74	67	62	72	66	61		70	65	60		68	64	60	58
6	80	69	61	56	78	68	61	56	66	60	55		65	59	55		63	58	54	53
7	75	63	56	51	73	63	56	51	61	55	50		60	54	50		59	54	50	48
8	70	59	52	47	69	58	51	46	57	51	46		56	50	46		55	50	46	44
9	66	55	48	43	65	54	47	43	53	47	43		52	46	42		51	46	42	41
10	62	51	44	40	61	51	44	40	50	44	39		49	43	39		48	43	39	38

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°
0°	298932	298932	298932
5°	316278	295415	279579
10°	328675	284997	257690
15°	322104	271998	237864
20°	311648	259003	218947
25°	290699	240853	199726
30°	262418	213150	178811
35°	216159	182470	148346
40°	176403	140845	114168
45°	151575	106968	82119
50°	137186	81420	51863
55°	126235	58744	18757
60°	121171	40139	2856
65°	117033	27146	868
70°	104777	18845	1072
75°	85894	9730	0
80°	53677	4112	0
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	290.3	6.5
10°-20°	782.1	17.6
20°-30°	1044.3	23.5
30°-40°	991.3	22.3
40°-50°	685.3	15.4
50°-60°	378.6	8.5
60°-70°	188.0	4.2
70°-80°	74.1	1.7
80°-90°	7.1	0.2
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	2116.6	47.7
0°-40°	3108.0	70.0
0°-60°	4171.9	93.9
0°-90°	4441.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4441.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	3098	3098	3098	3098	3098	
5°	3265	3236	3050	2912	2886	313
15°	3224	3128	2723	2456	2381	912
25°	2730	2719	2262	1876	1876	1245
35°	1835	2028	1549	1274	1259	1150
45°	1111	1274	784	643	602	866
55°	750	706	349	178	112	675
65°	513	371	119	4	4	498
75°	230	141	26	0	0	246
85°	0	4	0	0	0	21
90°	0	0	0	0	0	

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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	3098.1	3098.1	3098.1	3098.1	3098.1	3098.1	3098.1	3098.1	3098.1	3098.1	3098.1
2.5°	3083.3	3168.7	3176.2	3168.7	3179.9	3176.2	3194.8	3176.2	3198.6	3165.1	3172.5
5°	3265.4	3231.9	3302.5	3265.4	3265.4	3261.7	3250.5	3246.7	3261.7	3213.4	3235.7
7.5°	3313.7	3362.0	3425.2	3347.2	3350.8	3350.8	3328.5	3321.1	3321.1	3231.9	3257.9
10°	3354.6	3324.8	3358.2	3328.5	3354.6	3350.8	3365.6	3317.3	3350.8	3298.8	3295.1
12.5°	3321.1	3309.9	3354.6	3306.3	3291.4	3295.1	3276.6	3265.4	3276.6	3217.1	3213.4
15°	3224.5	3235.7	3302.5	3250.5	3243.1	3235.7	3213.4	3176.2	3206.0	3124.2	3128.0
17.5°	3191.1	3172.5	3183.7	3139.0	3150.2	3142.8	3139.0	3105.7	3098.1	3046.2	3046.2
20°	3035.1	3075.9	3075.9	3046.2	3046.2	3042.5	2994.2	3023.9	2990.4	2975.6	2990.4
22.5°	2927.3	2931.1	2931.1	2905.0	2908.8	2893.9	2867.9	2849.3	2867.9	2849.3	2819.6
25°	2730.5	2737.9	2782.5	2734.1	2726.7	2741.6	2719.3	2708.1	2704.5	2659.9	2719.3
27.5°	2492.7	2566.9	2563.3	2544.6	2566.9	2537.2	2526.2	2529.8	2541.0	2537.2	2552.1
30°	2355.3	2366.4	2377.6	2362.7	2366.4	2355.3	2355.3	2358.9	2388.6	2377.6	2373.8
32.5°	2076.6	2113.7	2143.5	2143.5	2147.2	2158.4	2154.6	2232.6	2251.2	2214.1	2206.7
35°	1835.1	1861.2	1887.1	1890.9	1939.2	1942.8	1946.6	1968.9	2020.8	2032.1	2028.3
37.5°	1604.9	1630.8	1638.2	1671.7	1697.7	1723.6	1753.5	1783.2	1827.7	1864.8	1846.3
40°	1400.5	1411.6	1430.2	1445.1	1497.0	1497.0	1511.9	1571.4	1619.7	1649.4	1645.6
42.5°	1229.7	1233.3	1248.2	1274.2	1322.5	1311.3	1322.5	1363.4	1433.9	1437.7	1478.6
45°	1110.8	1107.0	1118.2	1121.8	1151.7	1166.5	1173.9	1203.6	1263.0	1270.4	1274.2
47.5°	1003.1	999.3	1017.9	1025.3	1036.4	1051.2	1051.2	1055.0	1077.3	1095.9	1081.1
50°	913.9	913.9	913.9	921.3	939.9	936.1	939.9	954.8	965.8	958.4	954.8
52.5°	817.2	832.1	843.3	847.1	850.7	850.7	854.5	847.1	843.3	832.1	809.8
55°	750.4	765.3	765.3	765.3	765.3	780.1	761.6	765.3	765.3	735.6	705.9
57.5°	683.6	698.5	709.5	694.7	709.5	694.7	687.2	683.6	676.0	646.4	601.8
60°	627.9	635.3	631.5	627.9	635.3	624.1	616.7	601.8	594.4	553.5	523.8
62.5°	564.7	568.3	572.1	564.7	557.3	553.5	538.6	516.4	501.5	468.1	442.0
65°	512.6	501.5	497.8	494.1	486.7	475.5	464.4	438.4	427.2	397.5	371.4
67.5°	434.6	430.9	438.4	427.2	408.7	408.7	397.5	375.2	349.2	330.7	304.6
70°	371.4	367.8	360.4	349.2	345.5	330.7	330.7	304.6	297.2	263.7	241.5
72.5°	304.6	304.6	293.4	282.4	271.1	263.7	260.1	241.5	230.4	211.8	193.1
75°	230.4	230.4	226.6	215.4	208.0	200.6	196.9	182.1	170.9	152.4	141.2
77.5°	163.4	163.4	148.6	141.2	144.8	137.4	130.0	126.3	122.5	111.5	96.6
80°	96.6	92.9	81.8	85.4	81.8	81.8	78.0	74.2	66.8	59.4	52.0
82.5°	26.1	29.7	29.7	29.7	33.5	26.1	26.1	26.1	29.7	29.7	18.6
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	3.8	3.8
87.5°	3.8	7.4	14.8	14.8	14.8	14.8	14.8	11.2	11.2	11.2	7.4
90°	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):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	3098.1	3098.1	3098.1	3098.1	3098.1	3098.1	3098.1	3098.1	3098.1	3098.1	3098.1
2.5°	3135.4	3131.6	3135.4	3109.3	3168.7	3124.2	3116.8	3109.3	3135.4	3109.3	3072.2
5°	3202.2	3165.1	3153.9	3142.8	3176.2	3124.2	3113.1	3116.8	3098.1	3050.0	3053.6
7.5°	3224.5	3191.1	3157.7	3087.1	3116.8	3105.7	3075.9	3053.6	3023.9	2983.0	2975.6
10°	3231.9	3194.8	3146.5	3124.2	3079.7	3064.8	3053.6	3016.5	2979.4	2908.8	2890.2
12.5°	3209.6	3165.1	3105.7	3087.1	3053.6	3005.3	2979.4	2942.1	2908.8	2853.1	2812.2
15°	3113.1	3075.9	3057.4	2994.2	2979.4	2949.5	2897.6	2845.6	2797.3	2722.9	2700.7
17.5°	3001.6	2986.8	2968.2	2919.9	2916.2	2886.5	2838.2	2793.5	2730.5	2615.2	2578.1
20°	2886.5	2886.5	2827.0	2808.5	2845.6	2786.1	2749.0	2708.1	2578.1	2522.4	2455.6
22.5°	2801.1	2760.2	2726.7	2697.0	2700.7	2663.6	2611.6	2529.8	2481.5	2414.7	2336.7
25°	2633.9	2648.7	2574.5	2563.3	2574.5	2488.9	2463.0	2396.1	2325.5	2262.3	2202.9
27.5°	2529.8	2488.9	2440.7	2399.8	2399.8	2366.4	2292.1	2277.3	2169.4	2110.1	2035.7
30°	2373.8	2344.1	2303.2	2243.8	2236.4	2210.3	2151.0	2113.7	2002.4	1913.1	1872.2
32.5°	2176.9	2165.8	2132.3	2065.5	2043.3	2013.4	1939.2	1876.0	1824.1	1723.6	1675.5
35°	2035.7	1994.9	1924.4	1868.6	1850.0	1798.0	1738.5	1694.0	1638.2	1549.1	1486.0
37.5°	1824.1	1783.2	1716.2	1649.4	1649.4	1597.5	1515.7	1471.1	1393.1	1341.0	1289.1
40°	1638.2	1586.3	1519.5	1441.4	1430.2	1355.9	1322.5	1248.2	1199.8	1118.2	1110.8
42.5°	1430.2	1381.9	1322.5	1263.0	1218.5	1181.4	1095.9	1040.2	988.2	947.3	936.1
45°	1240.7	1177.6	1125.6	1051.2	1006.7	962.2	906.4	869.3	828.4	783.9	757.8
47.5°	1077.3	1025.3	951.0	884.2	839.6	817.2	754.1	713.3	679.8	650.1	631.5
50°	910.2	847.1	806.2	731.8	724.4	672.4	620.4	587.0	568.3	542.4	516.4
52.5°	783.9	724.4	668.6	613.0	583.2	564.7	516.4	482.9	457.0	438.4	423.5
55°	661.2	609.2	564.7	509.0	490.3	464.4	408.7	401.3	375.2	349.2	330.7
57.5°	568.3	520.0	468.1	430.9	397.5	379.0	334.3	304.6	289.8	267.5	248.9
60°	482.9	430.9	390.1	345.5	330.7	304.6	271.1	245.2	226.6	208.0	189.5
62.5°	404.9	360.4	315.8	278.6	256.3	241.5	215.4	193.1	174.6	159.8	144.8
65°	334.3	293.4	256.3	219.2	208.0	189.5	170.9	152.4	137.4	118.9	104.1
67.5°	274.9	237.8	200.6	174.6	163.4	156.0	133.8	115.1	104.1	92.9	78.0
70°	215.4	189.5	159.8	137.4	126.3	115.1	100.3	89.2	74.2	66.8	55.7
72.5°	167.2	144.8	118.9	100.3	92.9	85.4	70.6	59.4	52.0	44.5	37.1
75°	118.9	100.3	85.4	66.8	63.2	59.4	48.3	40.9	33.5	26.1	22.3
77.5°	81.8	66.8	52.0	44.5	40.9	33.5	29.7	22.3	18.6	14.8	11.2
80°	44.5	33.5	26.1	22.3	18.6	14.8	14.8	11.2	7.4	7.4	3.8
82.5°	14.8	11.2	7.4	3.8	3.8	3.8	3.8	3.8	3.8	0.0	3.8
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	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

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**CANDELA DISTRIBUTION (continued):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	3098.1	3098.1	3098.1	3098.1	3098.1	3098.1	3098.1	3098.1	3098.1	3098.1	3098.1
2.5°	3094.5	3053.6	3064.8	3064.8	3057.4	3057.4	3050.0	3038.8	3042.5	3020.1	2972.0
5°	3061.0	3009.1	3001.6	3009.1	2979.4	2972.0	2957.1	2979.4	2912.4	2938.5	2908.8
7.5°	2964.5	2916.2	2905.0	2931.1	2893.9	2871.5	2867.9	2897.6	2838.2	2808.5	2775.0
10°	2856.7	2838.2	2804.7	2786.1	2775.0	2778.7	2749.0	2711.9	2700.7	2693.2	2663.6
12.5°	2760.2	2719.3	2689.6	2667.3	2659.9	2659.9	2611.6	2604.2	2570.7	2563.3	2518.7
15°	2644.9	2596.8	2578.1	2548.4	2522.4	2537.2	2481.5	2466.6	2455.6	2407.3	2414.7
17.5°	2544.6	2492.7	2448.2	2429.5	2407.3	2385.0	2332.9	2344.1	2318.0	2318.0	2251.2
20°	2414.7	2358.9	2325.5	2288.3	2288.3	2258.7	2221.5	2225.2	2191.7	2158.4	2098.9
22.5°	2277.3	2217.8	2176.9	2162.0	2124.9	2117.5	2072.9	2061.7	2017.2	2020.8	1968.9
25°	2132.3	2072.9	2017.2	2020.8	1987.5	1972.7	1946.6	1894.7	1876.0	1853.8	1838.9
27.5°	1961.5	1920.6	1872.2	1868.6	1805.4	1809.1	1775.8	1760.9	1716.2	1727.4	1694.0
30°	1805.4	1746.1	1701.4	1690.3	1664.3	1656.8	1604.9	1582.5	1590.0	1560.2	1541.7
32.5°	1645.6	1556.6	1537.9	1515.7	1500.8	1482.2	1445.1	1459.9	1426.5	1433.9	1404.2
35°	1433.9	1396.8	1348.4	1348.4	1333.6	1318.8	1292.8	1307.7	1274.2	1259.4	1229.7
37.5°	1255.6	1222.3	1173.9	1188.8	1162.7	1140.5	1118.2	1121.8	1092.1	1088.5	1058.7
40°	1062.5	1043.8	1010.5	1010.5	991.9	991.9	980.7	969.6	951.0	928.7	895.2
42.5°	880.4	865.5	850.7	854.5	828.4	850.7	821.0	839.6	780.1	776.5	754.1
45°	746.6	713.3	716.9	702.1	687.2	694.7	668.6	676.0	642.7	635.3	613.0
47.5°	605.6	594.4	572.1	564.7	564.7	553.5	542.4	538.6	523.8	505.2	475.5
50°	497.8	457.0	449.4	438.4	430.9	430.9	416.1	393.8	397.5	379.0	349.2
52.5°	390.1	356.6	341.7	338.1	323.2	315.8	297.2	282.4	271.1	263.7	245.2
55°	300.8	271.1	252.7	252.7	230.4	230.4	204.3	193.1	178.3	163.4	152.4
57.5°	226.6	211.8	193.1	178.3	170.9	152.4	137.4	118.9	107.7	85.4	70.6
60°	170.9	156.0	137.4	126.3	118.9	100.3	81.8	66.8	40.9	33.5	29.7
62.5°	126.3	111.5	92.9	85.4	78.0	63.2	44.5	22.3	11.2	11.2	11.2
65°	92.9	74.2	59.4	52.0	44.5	33.5	14.8	7.4	3.8	3.8	3.8
67.5°	63.2	48.3	33.5	29.7	22.3	11.2	3.8	3.8	3.8	3.8	3.8
70°	40.9	29.7	14.8	11.2	7.4	3.8	3.8	3.8	3.8	3.8	3.8
72.5°	26.1	14.8	7.4	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	14.8	7.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	7.4	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	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	3.8	3.8	3.8
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C65D010 FEU4C659040 F4LC-SQLWW-H

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	3098.1	3098.1	3098.1	3098.1	3098.1	3098.1	3098.1	3098.1
2.5°	3023.9	2997.9	3012.7	2979.4	2994.2	3020.1	3001.6	3009.1
5°	2919.9	2905.0	2886.5	2838.2	2875.3	2905.0	2890.2	2886.5
7.5°	2808.5	2756.4	2782.5	2767.6	2760.2	2789.9	2756.4	2793.5
10°	2693.2	2656.1	2652.5	2626.4	2626.4	2648.7	2652.5	2630.1
12.5°	2522.4	2503.9	2503.9	2500.1	2496.3	2518.7	2522.4	2511.3
15°	2399.8	2392.4	2373.8	2370.1	2347.9	2381.2	2385.0	2381.2
17.5°	2251.2	2254.9	2236.4	2236.4	2251.2	2262.3	2232.6	2262.3
20°	2151.0	2132.3	2124.9	2091.4	2110.1	2128.7	2128.7	2132.3
22.5°	2006.0	1976.3	1987.5	1968.9	1957.7	1983.7	1983.7	1994.9
25°	1842.6	1842.6	1850.0	1838.9	1846.3	1861.2	1850.0	1876.0
27.5°	1686.5	1701.4	1701.4	1686.5	1694.0	1738.5	1757.1	1727.4
30°	1541.7	1545.4	1556.6	1549.1	1571.4	1586.3	1582.5	1604.9
32.5°	1378.3	1396.8	1404.2	1393.1	1400.5	1433.9	1415.4	1411.6
35°	1251.9	1218.5	1214.8	1218.5	1233.3	1240.7	1233.3	1259.4
37.5°	1069.9	1058.7	1043.8	1047.6	1058.7	1073.7	1081.1	1099.6
40°	895.2	880.4	880.4	876.7	865.5	906.4	906.4	906.4
42.5°	743.0	739.2	720.7	720.7	735.6	746.6	739.2	765.3
45°	609.2	594.4	583.2	583.2	594.4	594.4	605.6	601.8
47.5°	479.3	464.4	468.1	457.0	468.1	482.9	464.4	468.1
50°	360.4	360.4	352.9	360.4	356.6	360.4	352.9	345.5
52.5°	245.2	278.6	282.4	267.5	234.0	204.3	185.7	200.6
55°	141.2	126.3	126.3	122.5	115.1	111.5	100.3	111.5
57.5°	70.6	63.2	63.2	63.2	59.4	55.7	48.3	48.3
60°	29.7	26.1	26.1	22.3	18.6	14.8	11.2	14.8
62.5°	11.2	7.4	7.4	7.4	7.4	7.4	7.4	7.4
65°	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
67.5°	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
70°	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
72.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	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
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)