

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: **FLDSQ4C45D010 FEU4C459050 F4LC-SQLWW-LI**

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: FLDSQ4C45D010 FEU4C459050 F4LC-SQLWW-LI  
 Description: 4 INCH 4500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 5000K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH LI FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

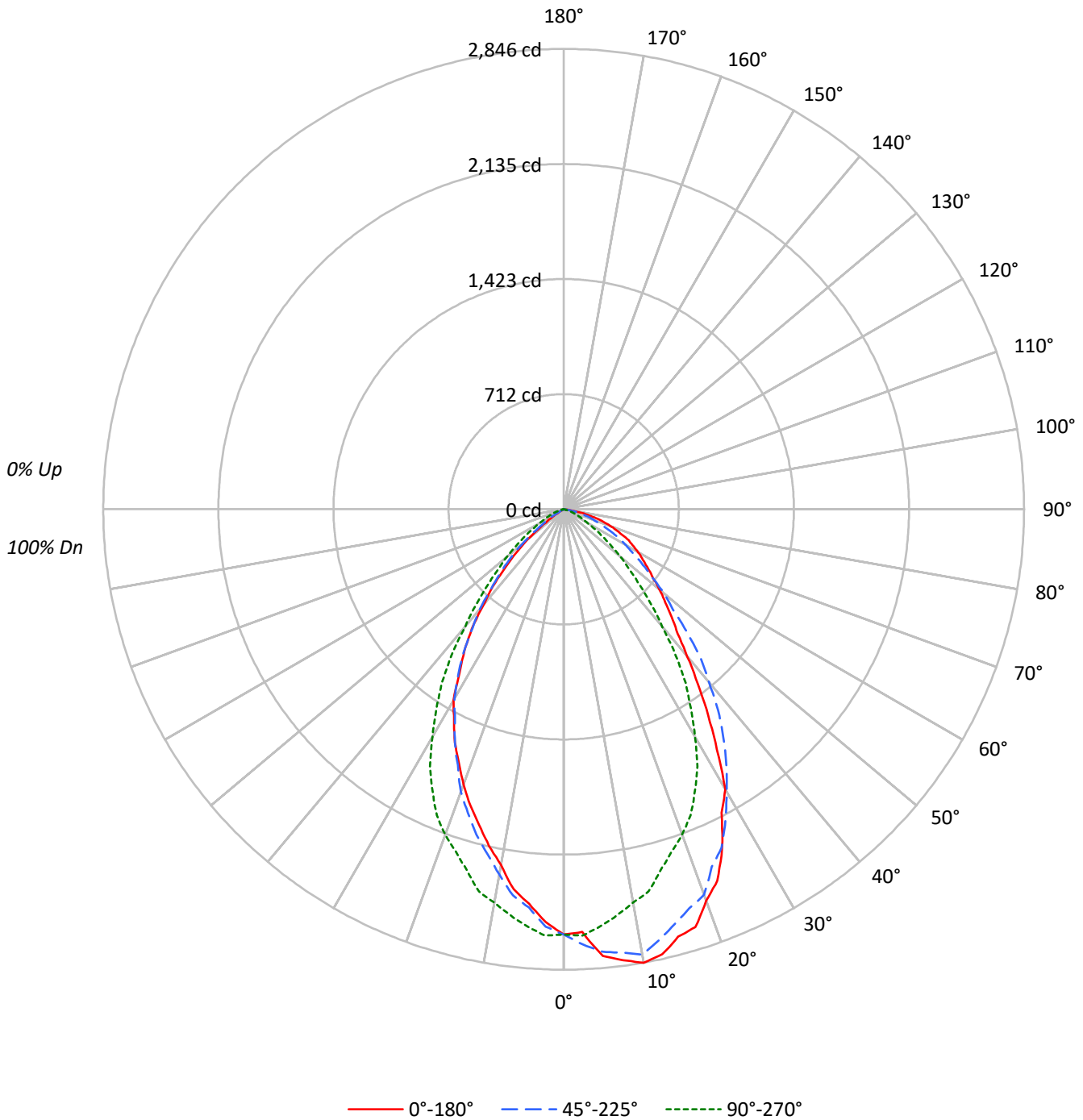
Lumens per Lamp: N/A  
 Luminaire Lumens: 3768.0 lumens  
 Efficiency: N/A  
 Efficacy: 76.0 lumens/watt  
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 49.6  
 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#

CATALOG NUMBER: FLDSQ4C45D010 FEU4C459050 F4LC-SQLWW-LI

**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	50	30	10	0	
RCR																						
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100				100
1	112	108	105	102	109	106	103	101	102	100	98	98	96	95	95	93	92	90				90
2	104	98	93	89	102	96	92	88	93	89	86	90	87	84	87	84	82	80				80
3	97	89	83	78	95	88	82	77	85	80	76	82	78	75	80	77	74	72				72
4	91	81	74	69	89	80	74	69	78	72	68	76	71	67	74	70	66	64				64
5	85	75	67	62	83	74	67	62	72	66	61	70	65	60	68	64	60	58				58
6	80	69	61	56	78	68	61	56	66	60	55	65	59	55	63	58	54	53				53
7	75	63	56	51	73	63	56	51	61	55	50	60	54	50	59	54	50	48				48
8	70	59	52	47	69	58	51	46	57	51	46	56	50	46	55	50	46	44				44
9	66	55	48	43	65	54	47	43	53	47	43	52	46	42	51	46	42	41				41
10	62	51	44	40	61	51	44	40	50	44	39	49	43	39	48	43	39	38				38

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

	0°	90°	180°
0°	253631	253631	253631
5°	268344	250648	237214
10°	278863	241808	218637
15°	273286	230782	201823
20°	264425	219748	185771
25°	246644	204357	169458
30°	222653	180850	151715
35°	183401	154825	125860
40°	149675	119496	96874
45°	128596	90757	69674
50°	116395	69081	44012
55°	107108	49828	15914
60°	102799	34061	2432
65°	99293	23037	731
70°	88894	15996	903
75°	72883	8239	0
80°	45564	3501	0
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	246.3	6.5
10°-20°	663.5	17.6
20°-30°	886.0	23.5
30°-40°	841.1	22.3
40°-50°	581.4	15.4
50°-60°	321.3	8.5
60°-70°	159.5	4.2
70°-80°	62.9	1.7
80°-90°	6.0	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°	1795.9	47.7
0°-40°	2637.0	70.0
0°-60°	3539.6	93.9
0°-90°	3768.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3768.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	2629	2629	2629	2629	2629	
5°	2770	2745	2588	2471	2449	265
15°	2736	2654	2310	2084	2020	774
25°	2317	2307	1920	1592	1592	1056
35°	1557	1721	1314	1081	1068	975
45°	942	1081	665	545	511	735
55°	637	599	296	151	95	573
65°	435	315	101	3	3	422
75°	196	120	22	0	0	208
85°	0	3	0	0	0	18
90°	0	0	0	0	0	

TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C45D010 FEU4C459050 F4LC-SQLWW-LI

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	2628.6	2628.6	2628.6	2628.6	2628.6	2628.6	2628.6	2628.6	2628.6	2628.6	2628.6
2.5°	2616.0	2688.5	2694.8	2688.5	2698.0	2694.8	2710.6	2694.8	2713.8	2685.4	2691.7
5°	2770.5	2742.1	2802.0	2770.5	2770.5	2767.4	2757.9	2754.7	2767.4	2726.4	2745.3
7.5°	2811.5	2852.5	2906.1	2839.9	2843.0	2843.0	2824.1	2817.8	2817.8	2742.1	2764.2
10°	2846.2	2820.9	2849.3	2824.1	2846.2	2843.0	2855.6	2814.6	2843.0	2798.9	2795.7
12.5°	2817.8	2808.3	2846.2	2805.2	2792.6	2795.7	2780.0	2770.5	2780.0	2729.5	2726.4
15°	2735.8	2745.3	2802.0	2757.9	2751.6	2745.3	2726.4	2694.8	2720.1	2650.7	2654.0
17.5°	2707.6	2691.7	2701.3	2663.3	2672.9	2666.6	2663.3	2635.1	2628.6	2584.6	2584.6
20°	2575.2	2609.7	2609.7	2584.6	2584.6	2581.5	2540.5	2565.7	2537.3	2524.7	2537.3
22.5°	2483.7	2486.9	2486.9	2464.8	2468.0	2455.4	2433.3	2417.5	2433.3	2417.5	2392.3
25°	2316.7	2323.0	2360.8	2319.8	2313.5	2326.1	2307.2	2297.7	2294.6	2256.8	2307.2
27.5°	2114.9	2177.9	2174.8	2159.0	2177.9	2152.7	2143.3	2146.4	2155.9	2152.7	2165.3
30°	1998.4	2007.8	2017.3	2004.7	2007.8	1998.4	1998.4	2001.5	2026.6	2017.3	2014.1
32.5°	1761.9	1793.4	1818.7	1818.7	1821.8	1831.3	1828.1	1894.3	1910.1	1878.6	1872.3
35°	1557.0	1579.1	1601.1	1604.3	1645.3	1648.4	1651.6	1670.5	1714.6	1724.1	1720.9
37.5°	1361.7	1383.7	1390.0	1418.4	1440.5	1462.4	1487.8	1512.9	1550.7	1582.2	1566.5
40°	1188.3	1197.7	1213.5	1226.1	1270.2	1270.2	1282.8	1333.3	1374.3	1399.5	1396.3
42.5°	1043.3	1046.4	1059.0	1081.1	1122.1	1112.6	1122.1	1156.8	1216.6	1219.8	1254.5
45°	942.4	939.2	948.7	951.8	977.1	989.7	996.0	1021.2	1071.6	1077.9	1081.1
47.5°	851.1	847.9	863.7	870.0	879.3	891.9	891.9	895.1	914.0	929.8	917.3
50°	775.4	775.4	775.4	781.7	797.5	794.3	797.5	810.1	819.5	813.2	810.1
52.5°	693.4	706.0	715.5	718.7	721.8	721.8	725.0	718.7	715.5	706.0	687.1
55°	636.7	649.3	649.3	649.3	649.3	661.9	646.2	649.3	649.3	624.1	598.9
57.5°	580.0	592.6	602.0	589.4	602.0	589.4	583.1	580.0	573.6	548.4	510.6
60°	532.7	539.0	535.8	532.7	539.0	529.5	523.2	510.6	504.3	469.6	444.4
62.5°	479.1	482.2	485.4	479.1	472.8	469.6	457.0	438.1	425.5	397.1	375.0
65°	434.9	425.5	422.3	419.2	412.9	403.4	394.0	371.9	362.4	337.2	315.1
67.5°	368.7	365.6	371.9	362.4	346.7	346.7	337.2	318.3	296.2	280.6	258.5
70°	315.1	312.0	305.8	296.2	293.2	280.6	280.6	258.5	252.2	223.8	204.9
72.5°	258.5	258.5	248.9	239.6	230.1	223.8	220.7	204.9	195.5	179.7	163.9
75°	195.5	195.5	192.3	182.8	176.5	170.2	167.1	154.5	145.0	129.3	119.8
77.5°	138.7	138.7	126.1	119.8	122.9	116.6	110.3	107.2	104.0	94.6	82.0
80°	82.0	78.8	69.4	72.5	69.4	69.4	66.2	63.0	56.7	50.4	44.1
82.5°	22.1	25.2	25.2	25.2	28.4	22.1	22.1	22.1	25.2	25.2	15.8
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	3.2	3.2
87.5°	3.2	6.3	12.6	12.6	12.6	12.6	12.6	9.5	9.5	9.5	6.3
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°	2628.6	2628.6	2628.6	2628.6	2628.6	2628.6	2628.6	2628.6	2628.6	2628.6	2628.6
2.5°	2660.3	2657.0	2660.3	2638.2	2688.5	2650.7	2644.4	2638.2	2660.3	2638.2	2606.7
5°	2716.9	2685.4	2675.9	2666.6	2694.8	2650.7	2641.4	2644.4	2628.6	2587.8	2590.9
7.5°	2735.8	2707.6	2679.1	2619.3	2644.4	2635.1	2609.7	2590.9	2565.7	2531.0	2524.7
10°	2742.1	2710.6	2669.6	2650.7	2613.0	2600.4	2590.9	2559.4	2527.9	2468.0	2452.2
12.5°	2723.2	2685.4	2635.1	2619.3	2590.9	2549.9	2527.9	2496.3	2468.0	2420.7	2386.0
15°	2641.4	2609.7	2594.1	2540.5	2527.9	2502.6	2458.5	2414.4	2373.4	2310.3	2291.4
17.5°	2546.8	2534.2	2518.4	2477.4	2474.3	2449.1	2408.1	2370.2	2316.7	2218.9	2187.4
20°	2449.1	2449.1	2398.6	2382.9	2414.4	2363.9	2332.4	2297.7	2187.4	2140.1	2083.5
22.5°	2376.6	2341.9	2313.5	2288.3	2291.4	2259.9	2215.8	2146.4	2105.4	2048.8	1982.6
25°	2234.7	2247.3	2184.3	2174.8	2184.3	2111.7	2089.8	2032.9	1973.1	1919.5	1869.1
27.5°	2146.4	2111.7	2070.9	2036.2	2036.2	2007.8	1944.8	1932.2	1840.7	1790.3	1727.2
30°	2014.1	1988.9	1954.2	1903.8	1897.5	1875.4	1825.0	1793.4	1698.9	1623.2	1588.5
32.5°	1847.0	1837.6	1809.2	1752.5	1733.6	1708.3	1645.3	1591.7	1547.6	1462.4	1421.6
35°	1727.2	1692.6	1632.7	1585.4	1569.6	1525.5	1475.0	1437.3	1390.0	1314.4	1260.8
37.5°	1547.6	1512.9	1456.1	1399.5	1399.5	1355.4	1286.0	1248.2	1182.0	1137.8	1093.7
40°	1390.0	1345.9	1289.2	1223.0	1213.5	1150.4	1122.1	1059.0	1018.0	948.7	942.4
42.5°	1213.5	1172.5	1122.1	1071.6	1033.8	1002.3	929.8	882.6	838.5	803.8	794.3
45°	1052.7	999.1	955.0	891.9	854.2	816.4	769.1	737.6	702.9	665.1	643.0
47.5°	914.0	870.0	806.9	750.2	712.4	693.4	639.8	605.2	576.8	551.6	535.8
50°	772.3	718.7	684.0	620.9	614.6	570.5	526.4	498.0	482.2	460.2	438.1
52.5°	665.1	614.6	567.3	520.1	494.8	479.1	438.1	409.7	387.7	371.9	359.3
55°	561.0	516.9	479.1	431.8	416.0	394.0	346.7	340.5	318.3	296.2	280.6
57.5°	482.2	441.2	397.1	365.6	337.2	321.6	283.6	258.5	245.9	227.0	211.2
60°	409.7	365.6	330.9	293.2	280.6	258.5	230.1	208.1	192.3	176.5	160.8
62.5°	343.5	305.8	268.0	236.4	217.5	204.9	182.8	163.9	148.2	135.6	122.9
65°	283.6	248.9	217.5	186.0	176.5	160.8	145.0	129.3	116.6	100.9	88.3
67.5°	233.3	201.8	170.2	148.2	138.7	132.4	113.5	97.7	88.3	78.8	66.2
70°	182.8	160.8	135.6	116.6	107.2	97.7	85.1	75.7	63.0	56.7	47.3
72.5°	141.9	122.9	100.9	85.1	78.8	72.5	59.9	50.4	44.1	37.8	31.5
75°	100.9	85.1	72.5	56.7	53.6	50.4	41.0	34.7	28.4	22.1	18.9
77.5°	69.4	56.7	44.1	37.8	34.7	28.4	25.2	18.9	15.8	12.6	9.5
80°	37.8	28.4	22.1	18.9	15.8	12.6	12.6	9.5	6.3	6.3	3.2
82.5°	12.6	9.5	6.3	3.2	3.2	3.2	3.2	3.2	3.2	0.0	3.2
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°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	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°	2628.6	2628.6	2628.6	2628.6	2628.6	2628.6	2628.6	2628.6	2628.6	2628.6	2628.6
2.5°	2625.6	2590.9	2600.4	2600.4	2594.1	2594.1	2587.8	2578.3	2581.5	2562.5	2521.6
5°	2597.2	2553.1	2546.8	2553.1	2527.9	2521.6	2509.0	2527.9	2471.1	2493.2	2468.0
7.5°	2515.3	2474.3	2464.8	2486.9	2455.4	2436.4	2433.3	2458.5	2408.1	2382.9	2354.5
10°	2423.8	2408.1	2379.7	2363.9	2354.5	2357.6	2332.4	2300.9	2291.4	2285.1	2259.9
12.5°	2341.9	2307.2	2282.0	2263.1	2256.8	2256.8	2215.8	2209.5	2181.1	2174.8	2137.0
15°	2244.1	2203.2	2187.4	2162.2	2140.1	2152.7	2105.4	2092.8	2083.5	2042.5	2048.8
17.5°	2159.0	2114.9	2077.2	2061.3	2042.5	2023.6	1979.4	1988.9	1966.8	1966.8	1910.1
20°	2048.8	2001.5	1973.1	1941.6	1941.6	1916.4	1884.9	1888.0	1859.6	1831.3	1780.8
22.5°	1932.2	1881.7	1847.0	1834.4	1802.9	1796.6	1758.8	1749.3	1711.5	1714.6	1670.5
25°	1809.2	1758.8	1711.5	1714.6	1686.3	1673.7	1651.6	1607.5	1591.7	1572.8	1560.2
27.5°	1664.2	1629.5	1588.5	1585.4	1531.8	1534.9	1506.7	1494.1	1456.1	1465.7	1437.3
30°	1531.8	1481.5	1443.5	1434.2	1412.1	1405.8	1361.7	1342.7	1349.1	1323.8	1308.1
32.5°	1396.3	1320.7	1304.9	1286.0	1273.4	1257.6	1226.1	1238.7	1210.3	1216.6	1191.4
35°	1216.6	1185.1	1144.1	1144.1	1131.5	1118.9	1096.9	1109.5	1081.1	1068.5	1043.3
37.5°	1065.3	1037.0	996.0	1008.6	986.5	967.6	948.7	951.8	926.6	923.6	898.2
40°	901.4	885.6	857.4	857.4	841.6	841.6	832.0	822.7	806.9	788.0	759.6
42.5°	747.0	734.4	721.8	725.0	702.9	721.8	696.6	712.4	661.9	658.8	639.8
45°	633.5	605.2	608.3	595.7	583.1	589.4	567.3	573.6	545.3	539.0	520.1
47.5°	513.8	504.3	485.4	479.1	479.1	469.6	460.2	457.0	444.4	428.6	403.4
50°	422.3	387.7	381.3	371.9	365.6	365.6	353.0	334.2	337.2	321.6	296.2
52.5°	330.9	302.5	289.9	286.9	274.3	268.0	252.2	239.6	230.1	223.8	208.1
55°	255.2	230.1	214.4	214.4	195.5	195.5	173.4	163.9	151.3	138.7	129.3
57.5°	192.3	179.7	163.9	151.3	145.0	129.3	116.6	100.9	91.4	72.5	59.9
60°	145.0	132.4	116.6	107.2	100.9	85.1	69.4	56.7	34.7	28.4	25.2
62.5°	107.2	94.6	78.8	72.5	66.2	53.6	37.8	18.9	9.5	9.5	9.5
65°	78.8	63.0	50.4	44.1	37.8	28.4	12.6	6.3	3.2	3.2	3.2
67.5°	53.6	41.0	28.4	25.2	18.9	9.5	3.2	3.2	3.2	3.2	3.2
70°	34.7	25.2	12.6	9.5	6.3	3.2	3.2	3.2	3.2	3.2	3.2
72.5°	22.1	12.6	6.3	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	12.6	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	6.3	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	3.2	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	3.2	3.2	3.2
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: FLDSQ4C45D010 FEU4C459050 F4LC-SQLWW-LI

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	2628.6	2628.6	2628.6	2628.6	2628.6	2628.6	2628.6	2628.6
2.5°	2565.7	2543.6	2556.2	2527.9	2540.5	2562.5	2546.8	2553.1
5°	2477.4	2464.8	2449.1	2408.1	2439.6	2464.8	2452.2	2449.1
7.5°	2382.9	2338.7	2360.8	2348.2	2341.9	2367.1	2338.7	2370.2
10°	2285.1	2253.6	2250.5	2228.4	2228.4	2247.3	2250.5	2231.5
12.5°	2140.1	2124.5	2124.5	2121.2	2118.0	2137.0	2140.1	2130.7
15°	2036.2	2029.9	2014.1	2011.0	1992.1	2020.4	2023.6	2020.4
17.5°	1910.1	1913.2	1897.5	1897.5	1910.1	1919.5	1894.3	1919.5
20°	1825.0	1809.2	1802.9	1774.5	1790.3	1806.1	1806.1	1809.2
22.5°	1702.0	1676.8	1686.3	1670.5	1661.0	1683.1	1683.1	1692.6
25°	1563.3	1563.3	1569.6	1560.2	1566.5	1579.1	1569.6	1591.7
27.5°	1431.0	1443.5	1443.5	1431.0	1437.3	1475.0	1490.8	1465.7
30°	1308.1	1311.2	1320.7	1314.4	1333.3	1345.9	1342.7	1361.7
32.5°	1169.4	1185.1	1191.4	1182.0	1188.3	1216.6	1200.9	1197.7
35°	1062.2	1033.8	1030.7	1033.8	1046.4	1052.7	1046.4	1068.5
37.5°	907.7	898.2	885.6	888.9	898.2	911.0	917.3	932.9
40°	759.6	747.0	747.0	743.9	734.4	769.1	769.1	769.1
42.5°	630.4	627.2	611.5	611.5	624.1	633.5	627.2	649.3
45°	516.9	504.3	494.8	494.8	504.3	504.3	513.8	510.6
47.5°	406.6	394.0	397.1	387.7	397.1	409.7	394.0	397.1
50°	305.8	305.8	299.5	305.8	302.5	305.8	299.5	293.2
52.5°	208.1	236.4	239.6	227.0	198.6	173.4	157.6	170.2
55°	119.8	107.2	107.2	104.0	97.7	94.6	85.1	94.6
57.5°	59.9	53.6	53.6	53.6	50.4	47.3	41.0	41.0
60°	25.2	22.1	22.1	18.9	15.8	12.6	9.5	12.6
62.5°	9.5	6.3	6.3	6.3	6.3	6.3	6.3	6.3
65°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
67.5°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
70°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
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)