

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 FEU4C459035 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 FEU4C459035 F4LC-SQLWW-LI
 Description: 4 INCH 4500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3500K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

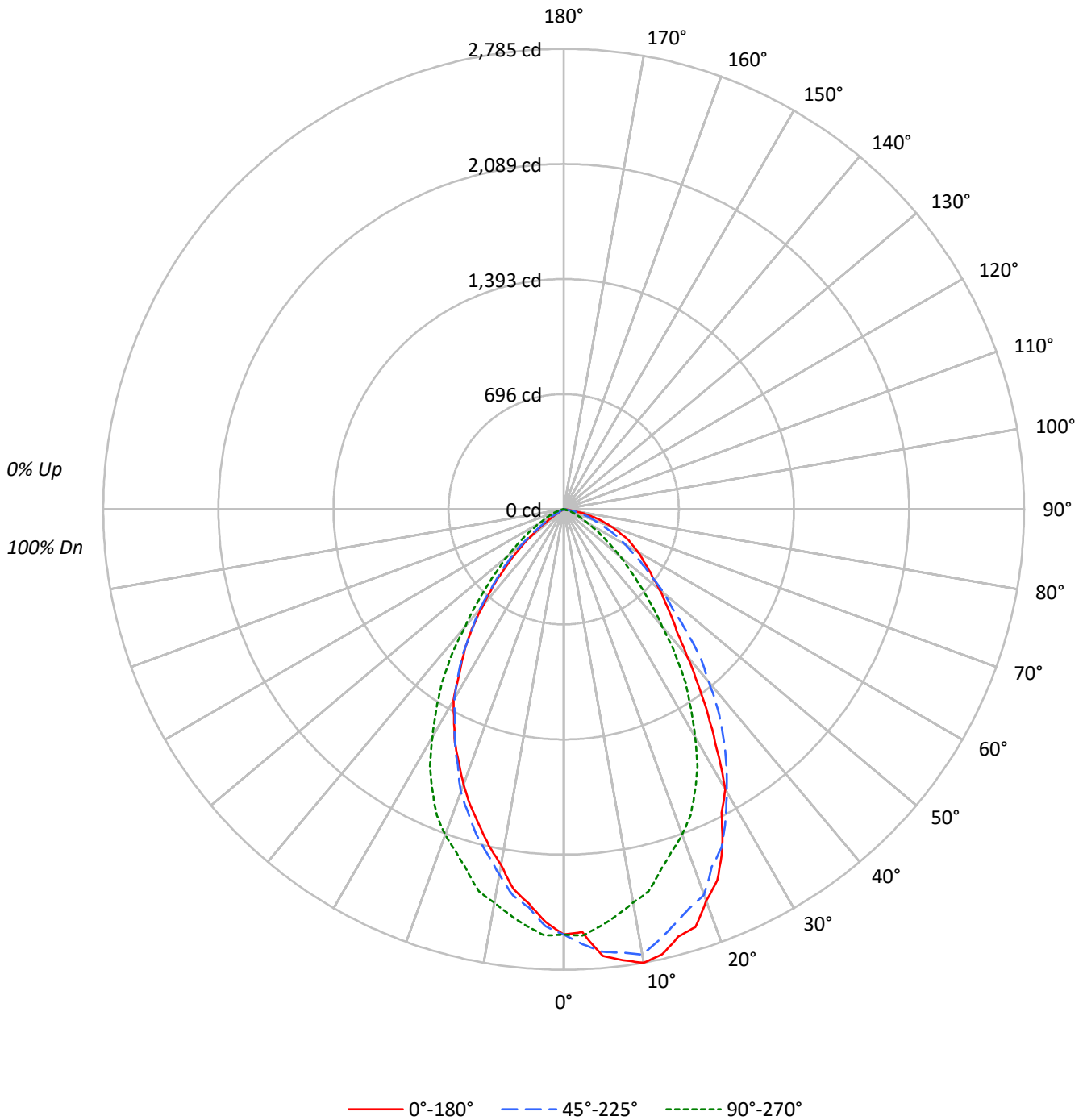
Lumens per Lamp: N/A
 Luminaire Lumens: 3687.0 lumens
 Efficiency: N/A
 Efficacy: 74.3 lumens/watt
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 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 FEU4C459035 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°	248179	248179	248179
5°	262581	245253	232109
10°	272867	236606	213934
15°	267413	225817	197478
20°	258736	215025	181777
25°	241343	199960	165817
30°	217862	176962	148450
35°	179467	151491	123162
40°	146463	116926	94783
45°	125840	88806	68173
50°	113889	67595	43067
55°	104803	48768	15577
60°	100599	33327	2374
65°	97170	22534	708
70°	87004	15657	875
75°	71317	8053	0
80°	44564	3445	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	241.0	6.5
10°-20°	649.3	17.6
20°-30°	867.0	23.5
30°-40°	823.0	22.3
40°-50°	568.9	15.4
50°-60°	314.3	8.5
60°-70°	156.1	4.2
70°-80°	61.5	1.7
80°-90°	5.8	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°	1757.3	47.7
0°-40°	2580.3	70.0
0°-60°	3463.5	93.9
0°-90°	3687.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3687.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	2572	2572	2572	2572	2572	
5°	2711	2686	2532	2418	2396	260
15°	2677	2597	2261	2039	1977	757
25°	2267	2258	1878	1558	1558	1033
35°	1524	1684	1286	1058	1046	954
45°	922	1058	651	534	500	719
55°	623	586	290	148	93	561
65°	426	308	99	3	3	413
75°	191	117	22	0	0	204
85°	0	3	0	0	0	18
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°	2572.1	2572.1	2572.1	2572.1	2572.1	2572.1	2572.1	2572.1	2572.1	2572.1	2572.1
2.5°	2559.8	2630.7	2636.9	2630.7	2640.0	2636.9	2652.4	2636.9	2655.5	2627.7	2633.9
5°	2711.0	2683.2	2741.8	2711.0	2711.0	2707.9	2698.6	2695.5	2707.9	2667.8	2686.3
7.5°	2751.1	2791.2	2843.6	2778.9	2781.9	2781.9	2763.4	2757.2	2757.2	2683.2	2704.8
10°	2785.0	2760.3	2788.1	2763.4	2785.0	2781.9	2794.2	2754.1	2781.9	2738.8	2735.6
12.5°	2757.2	2747.9	2785.0	2744.9	2732.6	2735.6	2720.3	2711.0	2720.3	2670.9	2667.8
15°	2677.0	2686.3	2741.8	2698.6	2692.5	2686.3	2667.8	2636.9	2661.7	2593.8	2596.9
17.5°	2649.3	2633.9	2643.2	2606.1	2615.4	2609.2	2606.1	2578.4	2572.1	2529.0	2529.0
20°	2519.8	2553.6	2553.6	2529.0	2529.0	2526.0	2485.9	2510.5	2482.7	2470.4	2482.7
22.5°	2430.3	2433.4	2433.4	2411.8	2414.9	2402.6	2381.0	2365.5	2381.0	2365.5	2340.9
25°	2266.9	2273.1	2310.1	2269.9	2263.8	2276.1	2257.6	2248.3	2245.3	2208.3	2257.6
27.5°	2069.5	2131.1	2128.1	2112.6	2131.1	2106.5	2097.3	2100.3	2109.6	2106.5	2118.8
30°	1955.4	1964.6	1973.9	1961.6	1964.6	1955.4	1955.4	1958.4	1983.1	1973.9	1970.8
32.5°	1724.0	1754.8	1779.6	1779.6	1782.6	1791.9	1788.8	1853.6	1869.0	1838.2	1832.0
35°	1523.6	1545.2	1566.7	1569.8	1610.0	1613.0	1616.1	1634.6	1677.7	1687.0	1683.9
37.5°	1332.4	1353.9	1360.1	1387.9	1409.5	1431.0	1455.8	1480.4	1517.4	1548.2	1532.9
40°	1162.8	1171.9	1187.4	1199.7	1242.9	1242.9	1255.2	1304.6	1344.7	1369.4	1366.2
42.5°	1020.9	1023.9	1036.2	1057.9	1098.0	1088.7	1098.0	1131.9	1190.4	1193.6	1227.5
45°	922.2	919.0	928.3	931.4	956.1	968.5	974.6	999.3	1048.6	1054.7	1057.9
47.5°	832.8	829.6	845.1	851.3	860.4	872.8	872.8	875.9	894.4	909.9	897.5
50°	758.7	758.7	758.7	764.9	780.3	777.2	780.3	792.7	801.8	795.7	792.7
52.5°	678.5	690.8	700.1	703.2	706.3	706.3	709.4	703.2	700.1	690.8	672.3
55°	623.0	635.3	635.3	635.3	635.3	647.7	632.3	635.3	635.3	610.7	586.0
57.5°	567.5	579.9	589.1	576.7	589.1	576.7	570.6	567.5	561.3	536.6	499.6
60°	521.3	527.4	524.3	521.3	527.4	518.1	512.0	499.6	493.5	459.5	434.9
62.5°	468.8	471.8	475.0	468.8	462.7	459.5	447.2	428.7	416.4	388.6	367.0
65°	425.6	416.4	413.2	410.2	404.1	394.8	385.6	363.9	354.6	330.0	308.4
67.5°	360.8	357.8	363.9	354.6	339.3	339.3	330.0	311.5	289.9	274.5	252.9
70°	308.4	305.3	299.2	289.9	286.9	274.5	274.5	252.9	246.7	218.9	200.5
72.5°	252.9	252.9	243.6	234.4	225.1	218.9	215.9	200.5	191.3	175.8	160.3
75°	191.3	191.3	188.1	178.8	172.7	166.5	163.5	151.2	141.9	126.5	117.2
77.5°	135.7	135.7	123.4	117.2	120.2	114.1	107.9	104.9	101.7	92.6	80.2
80°	80.2	77.1	67.9	70.9	67.9	67.9	64.8	61.6	55.5	49.3	43.1
82.5°	21.6	24.6	24.6	24.6	27.8	21.6	21.6	21.6	24.6	24.6	15.5
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	3.1	3.1
87.5°	3.1	6.2	12.3	12.3	12.3	12.3	12.3	9.3	9.3	9.3	6.2
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°	2572.1	2572.1	2572.1	2572.1	2572.1	2572.1	2572.1	2572.1	2572.1	2572.1	2572.1
2.5°	2603.1	2599.9	2603.1	2581.4	2630.7	2593.8	2587.6	2581.4	2603.1	2581.4	2550.6
5°	2658.5	2627.7	2618.4	2609.2	2636.9	2593.8	2584.6	2587.6	2572.1	2532.1	2535.2
7.5°	2677.0	2649.3	2621.6	2563.0	2587.6	2578.4	2553.6	2535.2	2510.5	2476.6	2470.4
10°	2683.2	2652.4	2612.3	2593.8	2556.8	2544.5	2535.2	2504.3	2473.5	2414.9	2399.5
12.5°	2664.7	2627.7	2578.4	2563.0	2535.2	2495.0	2473.5	2442.6	2414.9	2368.7	2334.7
15°	2584.6	2553.6	2538.3	2485.9	2473.5	2448.8	2405.6	2362.5	2322.4	2260.6	2242.1
17.5°	2492.0	2479.7	2464.2	2424.1	2421.1	2396.4	2356.3	2319.2	2266.9	2171.2	2140.4
20°	2396.4	2396.4	2347.0	2331.7	2362.5	2313.1	2282.3	2248.3	2140.4	2094.1	2038.7
22.5°	2325.5	2291.6	2263.8	2239.1	2242.1	2211.3	2168.2	2100.3	2060.2	2004.7	1939.9
25°	2186.7	2199.0	2137.4	2128.1	2137.4	2066.3	2044.8	1989.2	1930.6	1878.2	1828.9
27.5°	2100.3	2066.3	2026.3	1992.4	1992.4	1964.6	1903.0	1890.6	1801.1	1751.8	1690.1
30°	1970.8	1946.1	1912.2	1862.9	1856.7	1835.1	1785.8	1754.8	1662.4	1588.3	1554.4
32.5°	1807.3	1798.1	1770.3	1714.8	1696.4	1671.6	1610.0	1557.5	1514.4	1431.0	1391.0
35°	1690.1	1656.2	1597.6	1551.4	1535.9	1492.7	1443.3	1406.4	1360.1	1286.1	1233.7
37.5°	1514.4	1480.4	1424.8	1369.4	1369.4	1326.2	1258.3	1221.4	1156.6	1113.3	1070.2
40°	1360.1	1316.9	1261.5	1196.7	1187.4	1125.7	1098.0	1036.2	996.1	928.3	922.2
42.5°	1187.4	1147.3	1098.0	1048.6	1011.6	980.8	909.9	863.6	820.4	786.5	777.2
45°	1030.1	977.6	934.5	872.8	835.8	798.8	752.5	721.7	687.8	650.8	629.2
47.5°	894.4	851.3	789.5	734.1	697.1	678.5	626.0	592.2	564.4	539.8	524.3
50°	755.7	703.2	669.3	607.5	601.4	558.2	515.1	487.3	471.8	450.3	428.7
52.5°	650.8	601.4	555.1	508.9	484.2	468.8	428.7	400.9	379.4	363.9	351.6
55°	548.9	505.8	468.8	422.5	407.1	385.6	339.3	333.1	311.5	289.9	274.5
57.5°	471.8	431.7	388.6	357.8	330.0	314.6	277.5	252.9	240.6	222.1	206.6
60°	400.9	357.8	323.8	286.9	274.5	252.9	225.1	203.6	188.1	172.7	157.3
62.5°	336.2	299.2	262.2	231.3	212.8	200.5	178.8	160.3	145.0	132.7	120.2
65°	277.5	243.6	212.8	182.0	172.7	157.3	141.9	126.5	114.1	98.7	86.4
67.5°	228.3	197.4	166.5	145.0	135.7	129.5	111.0	95.6	86.4	77.1	64.8
70°	178.8	157.3	132.7	114.1	104.9	95.6	83.3	74.1	61.6	55.5	46.3
72.5°	138.8	120.2	98.7	83.3	77.1	70.9	58.6	49.3	43.1	37.0	30.8
75°	98.7	83.3	70.9	55.5	52.4	49.3	40.1	34.0	27.8	21.6	18.5
77.5°	67.9	55.5	43.1	37.0	34.0	27.8	24.6	18.5	15.5	12.3	9.3
80°	37.0	27.8	21.6	18.5	15.5	12.3	12.3	9.3	6.2	6.2	3.1
82.5°	12.3	9.3	6.2	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1
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°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	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°	2572.1	2572.1	2572.1	2572.1	2572.1	2572.1	2572.1	2572.1	2572.1	2572.1	2572.1
2.5°	2569.1	2535.2	2544.5	2544.5	2538.3	2538.3	2532.1	2522.8	2526.0	2507.4	2467.4
5°	2541.3	2498.2	2492.0	2498.2	2473.5	2467.4	2455.1	2473.5	2418.0	2439.6	2414.9
7.5°	2461.2	2421.1	2411.8	2433.4	2402.6	2384.0	2381.0	2405.6	2356.3	2331.7	2303.9
10°	2371.7	2356.3	2328.5	2313.1	2303.9	2306.9	2282.3	2251.4	2242.1	2236.0	2211.3
12.5°	2291.6	2257.6	2233.0	2214.5	2208.3	2208.3	2168.2	2162.0	2134.2	2128.1	2091.1
15°	2195.9	2155.9	2140.4	2115.8	2094.1	2106.5	2060.2	2047.8	2038.7	1998.5	2004.7
17.5°	2112.6	2069.5	2032.5	2017.0	1998.5	1980.1	1936.8	1946.1	1924.5	1924.5	1869.0
20°	2004.7	1958.4	1930.6	1899.8	1899.8	1875.2	1844.4	1847.4	1819.6	1791.9	1742.5
22.5°	1890.6	1841.2	1807.3	1794.9	1764.1	1758.0	1721.0	1711.7	1674.7	1677.7	1634.6
25°	1770.3	1721.0	1674.7	1677.7	1650.1	1637.7	1616.1	1573.0	1557.5	1539.0	1526.7
27.5°	1628.4	1594.5	1554.4	1551.4	1498.9	1501.9	1474.3	1461.9	1424.8	1434.1	1406.4
30°	1498.9	1449.6	1412.5	1403.3	1381.7	1375.5	1332.4	1313.8	1320.1	1295.3	1280.0
32.5°	1366.2	1292.3	1276.8	1258.3	1246.0	1230.5	1199.7	1212.1	1184.3	1190.4	1165.8
35°	1190.4	1159.6	1119.5	1119.5	1107.2	1094.9	1073.3	1085.7	1057.9	1045.6	1020.9
37.5°	1042.4	1014.7	974.6	986.9	965.3	946.8	928.3	931.4	906.7	903.7	878.9
40°	882.1	866.6	838.9	838.9	823.5	823.5	814.2	805.0	789.5	771.0	743.2
42.5°	730.9	718.6	706.3	709.4	687.8	706.3	681.6	697.1	647.7	644.6	626.0
45°	619.9	592.2	595.2	582.9	570.6	576.7	555.1	561.3	533.6	527.4	508.9
47.5°	502.8	493.5	475.0	468.8	468.8	459.5	450.3	447.2	434.9	419.4	394.8
50°	413.2	379.4	373.1	363.9	357.8	357.8	345.5	327.0	330.0	314.6	289.9
52.5°	323.8	296.0	283.7	280.7	268.4	262.2	246.7	234.4	225.1	218.9	203.6
55°	249.8	225.1	209.8	209.8	191.3	191.3	169.6	160.3	148.0	135.7	126.5
57.5°	188.1	175.8	160.3	148.0	141.9	126.5	114.1	98.7	89.4	70.9	58.6
60°	141.9	129.5	114.1	104.9	98.7	83.3	67.9	55.5	34.0	27.8	24.6
62.5°	104.9	92.6	77.1	70.9	64.8	52.4	37.0	18.5	9.3	9.3	9.3
65°	77.1	61.6	49.3	43.1	37.0	27.8	12.3	6.2	3.1	3.1	3.1
67.5°	52.4	40.1	27.8	24.6	18.5	9.3	3.1	3.1	3.1	3.1	3.1
70°	34.0	24.6	12.3	9.3	6.2	3.1	3.1	3.1	3.1	3.1	3.1
72.5°	21.6	12.3	6.2	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	12.3	6.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	6.2	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	3.1	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	3.1	3.1	3.1
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 FEU4C459035 F4LC-SQLWW-LI

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	2572.1	2572.1	2572.1	2572.1	2572.1	2572.1	2572.1	2572.1
2.5°	2510.5	2488.9	2501.2	2473.5	2485.9	2507.4	2492.0	2498.2
5°	2424.1	2411.8	2396.4	2356.3	2387.1	2411.8	2399.5	2396.4
7.5°	2331.7	2288.4	2310.1	2297.7	2291.6	2316.2	2288.4	2319.2
10°	2236.0	2205.2	2202.2	2180.5	2180.5	2199.0	2202.2	2183.5
12.5°	2094.1	2078.8	2078.8	2075.6	2072.5	2091.1	2094.1	2084.9
15°	1992.4	1986.2	1970.8	1967.7	1949.3	1976.9	1980.1	1976.9
17.5°	1869.0	1872.0	1856.7	1856.7	1869.0	1878.2	1853.6	1878.2
20°	1785.8	1770.3	1764.1	1736.3	1751.8	1767.3	1767.3	1770.3
22.5°	1665.4	1640.8	1650.1	1634.6	1625.3	1646.9	1646.9	1656.2
25°	1529.7	1529.7	1535.9	1526.7	1532.9	1545.2	1535.9	1557.5
27.5°	1400.2	1412.5	1412.5	1400.2	1406.4	1443.3	1458.8	1434.1
30°	1280.0	1283.0	1292.3	1286.1	1304.6	1316.9	1313.8	1332.4
32.5°	1144.3	1159.6	1165.8	1156.6	1162.8	1190.4	1175.1	1171.9
35°	1039.4	1011.6	1008.6	1011.6	1023.9	1030.1	1023.9	1045.6
37.5°	888.2	878.9	866.6	869.7	878.9	891.4	897.5	912.9
40°	743.2	730.9	730.9	727.9	718.6	752.5	752.5	752.5
42.5°	616.8	613.7	598.4	598.4	610.7	619.9	613.7	635.3
45°	505.8	493.5	484.2	484.2	493.5	493.5	502.8	499.6
47.5°	397.9	385.6	388.6	379.4	388.6	400.9	385.6	388.6
50°	299.2	299.2	293.0	299.2	296.0	299.2	293.0	286.9
52.5°	203.6	231.3	234.4	222.1	194.3	169.6	154.2	166.5
55°	117.2	104.9	104.9	101.7	95.6	92.6	83.3	92.6
57.5°	58.6	52.4	52.4	52.4	49.3	46.3	40.1	40.1
60°	24.6	21.6	21.6	18.5	15.5	12.3	9.3	12.3
62.5°	9.3	6.2	6.2	6.2	6.2	6.2	6.2	6.2
65°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
67.5°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
70°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
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)