

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: **FLDSQ4C50D010 FEU4C509035 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: FLDSQ4C50D010 FEU4C509035 F4LC-SQLWW-H
 Description: 4 INCH 5000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3500K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH H FINISH
 Light Source: -
 Ballast/Driver: -

Summary

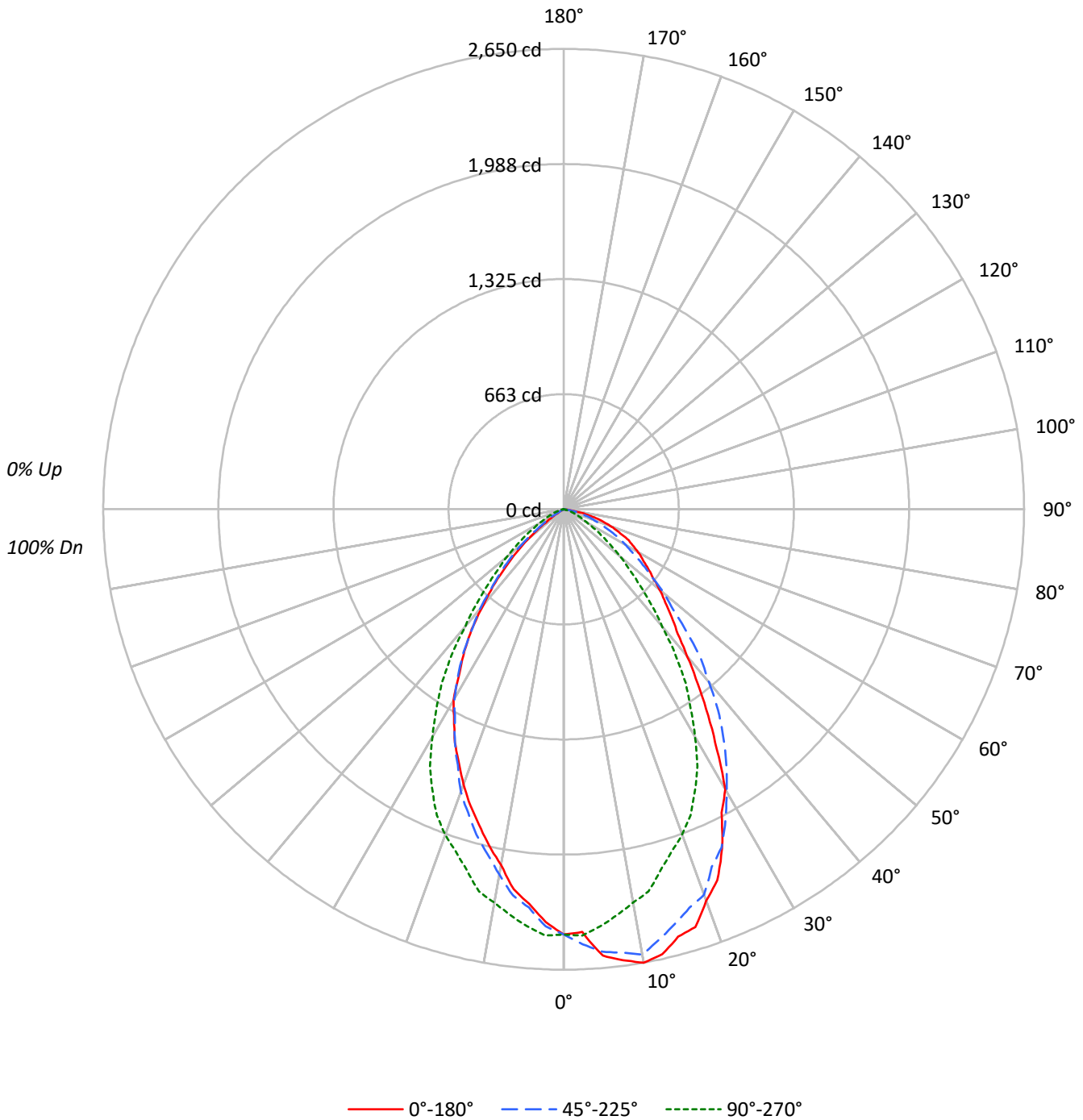
Lumens per Lamp: N/A
 Luminaire Lumens: 3508.0 lumens
 Efficiency: N/A
 Efficacy: 60.1 lumens/watt
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 58.4
 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

TEST NUMBER: P#
CATALOG NUMBER: FLDSQ4C50D010 FEU4C509035 F4LC-SQLWW-H

Luminous Intensity Polar Plot



TEST NUMBER: P#

CATALOG NUMBER: FLDSQ4C50D010 FEU4C509035 F4LC-SQLWW-H

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°	236137	236137	236137
5°	249834	233349	220845
10°	259620	225123	203548
15°	254437	214859	187888
20°	246179	204593	172956
25°	229632	190251	157769
30°	207289	168372	141242
35°	170750	144141	117179
40°	139347	111258	90185
45°	119726	84493	64871
50°	108364	64322	40965
55°	99723	46396	14820
60°	95717	31706	2258
65°	92444	21439	685
70°	82772	14896	846
75°	67850	7680	0
80°	42397	3278	0
85°	0	0	0

TEST NUMBER: P#
 CATALOG NUMBER: FLDSQ4C50D010 FEU4C509035 F4LC-SQLWW-H

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	229.3	6.5
10°-20°	617.8	17.6
20°-30°	824.9	23.5
30°-40°	783.1	22.3
40°-50°	541.3	15.4
50°-60°	299.1	8.5
60°-70°	148.5	4.2
70°-80°	58.5	1.7
80°-90°	5.6	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°	1672.0	47.7
0°-40°	2455.0	70.0
0°-60°	3295.4	93.9
0°-90°	3508.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3508.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	2447	2447	2447	2447	2447	
5°	2579	2556	2409	2301	2280	247
15°	2547	2471	2151	1940	1881	721
25°	2157	2148	1787	1482	1482	983
35°	1450	1602	1224	1006	995	908
45°	877	1006	619	508	475	684
55°	593	558	276	141	88	534
65°	405	293	94	3	3	393
75°	182	112	21	0	0	194
85°	0	3	0	0	0	17
90°	0	0	0	0	0	

TEST NUMBER: P#
 CATALOG NUMBER: FLDSQ4C50D010 FEU4C509035 F4LC-SQLWW-H

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	2447.3	2447.3	2447.3	2447.3	2447.3	2447.3	2447.3	2447.3	2447.3	2447.3	2447.3
2.5°	2435.5	2503.0	2508.9	2503.0	2511.9	2508.9	2523.6	2508.9	2526.6	2500.1	2506.0
5°	2579.4	2552.9	2608.7	2579.4	2579.4	2576.5	2567.6	2564.6	2576.5	2538.3	2555.9
7.5°	2617.5	2655.7	2705.6	2644.0	2646.8	2646.8	2629.3	2623.4	2623.4	2552.9	2573.5
10°	2649.8	2626.3	2652.7	2629.3	2649.8	2646.8	2658.6	2620.4	2646.8	2605.8	2602.8
12.5°	2623.4	2614.5	2649.8	2611.7	2599.9	2602.8	2588.2	2579.4	2588.2	2541.2	2538.3
15°	2547.1	2555.9	2608.7	2567.6	2561.8	2555.9	2538.3	2508.9	2532.5	2467.8	2470.8
17.5°	2520.7	2506.0	2514.9	2479.6	2488.4	2482.6	2479.6	2453.2	2447.3	2406.2	2406.2
20°	2397.5	2429.7	2429.7	2406.2	2406.2	2403.3	2365.2	2388.6	2362.2	2350.5	2362.2
22.5°	2312.3	2315.3	2315.3	2294.7	2297.7	2286.0	2265.4	2250.7	2265.4	2250.7	2227.2
25°	2156.9	2162.7	2197.9	2159.7	2153.9	2165.6	2148.0	2139.2	2136.3	2101.1	2148.0
27.5°	1969.0	2027.6	2024.8	2010.0	2027.6	2004.2	1995.4	1998.3	2007.2	2004.2	2015.9
30°	1860.5	1869.2	1878.1	1866.3	1869.2	1860.5	1860.5	1863.4	1886.8	1878.1	1875.1
32.5°	1640.3	1669.6	1693.2	1693.2	1696.1	1704.9	1701.9	1763.6	1778.3	1749.0	1743.1
35°	1449.6	1470.2	1490.6	1493.6	1531.8	1534.7	1537.7	1555.2	1596.3	1605.1	1602.2
37.5°	1267.7	1288.2	1294.0	1320.5	1341.1	1361.5	1385.1	1408.6	1443.7	1473.0	1458.4
40°	1106.3	1115.0	1129.8	1141.5	1182.5	1182.5	1194.3	1241.3	1279.4	1302.9	1299.9
42.5°	971.3	974.2	985.9	1006.5	1044.7	1035.8	1044.7	1077.0	1132.6	1135.6	1167.9
45°	877.4	874.4	883.3	886.2	909.7	921.4	927.3	950.8	997.7	1003.5	1006.5
47.5°	792.3	789.4	804.1	809.9	818.7	830.4	830.4	833.4	851.0	865.7	854.0
50°	721.9	721.9	721.9	727.7	742.4	739.5	742.4	754.2	762.9	757.0	754.2
52.5°	645.5	657.3	666.1	669.1	672.0	672.0	675.0	669.1	666.1	657.3	639.7
55°	592.8	604.5	604.5	604.5	604.5	616.2	601.6	604.5	604.5	581.0	557.6
57.5°	540.0	551.7	560.5	548.7	560.5	548.7	542.9	540.0	534.0	510.6	475.4
60°	496.0	501.8	498.8	496.0	501.8	493.0	487.1	475.4	469.5	437.2	413.8
62.5°	446.1	448.9	451.9	446.1	440.2	437.2	425.5	407.9	396.2	369.7	349.1
65°	404.9	396.2	393.2	390.3	384.4	375.6	366.9	346.3	337.4	314.0	293.4
67.5°	343.3	340.4	346.3	337.4	322.8	322.8	314.0	296.4	275.8	261.2	240.6
70°	293.4	290.5	284.7	275.8	272.9	261.2	261.2	240.6	234.8	208.3	190.7
72.5°	240.6	240.6	231.8	223.0	214.2	208.3	205.4	190.7	182.0	167.3	152.6
75°	182.0	182.0	179.0	170.1	164.3	158.4	155.5	143.8	135.0	120.4	111.5
77.5°	129.1	129.1	117.4	111.5	114.4	108.5	102.7	99.8	96.8	88.1	76.3
80°	76.3	73.3	64.6	67.5	64.6	64.6	61.6	58.6	52.8	46.9	41.0
82.5°	20.6	23.5	23.5	23.5	26.4	20.6	20.6	20.6	23.5	23.5	14.7
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	3.0
87.5°	3.0	5.9	11.7	11.7	11.7	11.7	11.7	8.9	8.9	8.9	5.9
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: FLDSQ4C50D010 FEU4C509035 F4LC-SQLWW-H

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	2447.3	2447.3	2447.3	2447.3	2447.3	2447.3	2447.3	2447.3	2447.3	2447.3	2447.3
2.5°	2476.7	2473.7	2476.7	2456.1	2503.0	2467.8	2462.0	2456.1	2476.7	2456.1	2426.8
5°	2529.5	2500.1	2491.3	2482.6	2508.9	2467.8	2459.1	2462.0	2447.3	2409.2	2412.1
7.5°	2547.1	2520.7	2494.3	2438.5	2462.0	2453.2	2429.7	2412.1	2388.6	2356.3	2350.5
10°	2552.9	2523.6	2485.4	2467.8	2432.7	2420.9	2412.1	2382.8	2353.4	2297.7	2283.0
12.5°	2535.3	2500.1	2453.2	2438.5	2412.1	2373.9	2353.4	2324.0	2297.7	2253.7	2221.4
15°	2459.1	2429.7	2415.1	2365.2	2353.4	2329.9	2288.8	2247.8	2209.6	2150.9	2133.3
17.5°	2371.0	2359.3	2344.6	2306.4	2303.6	2280.1	2241.9	2206.6	2156.9	2065.8	2036.5
20°	2280.1	2280.1	2233.1	2218.5	2247.8	2200.8	2171.5	2139.2	2036.5	1992.5	1939.7
22.5°	2212.6	2180.3	2153.9	2130.4	2133.3	2104.0	2062.9	1998.3	1960.2	1907.4	1845.8
25°	2080.5	2092.2	2033.6	2024.8	2033.6	1966.0	1945.6	1892.7	1836.9	1787.0	1740.1
27.5°	1998.3	1966.0	1928.0	1895.7	1895.7	1869.2	1810.6	1798.9	1713.7	1666.8	1608.0
30°	1875.1	1851.6	1819.3	1772.4	1766.6	1746.0	1699.1	1669.6	1581.7	1511.2	1478.9
32.5°	1719.5	1710.8	1684.4	1631.6	1614.0	1590.4	1531.8	1481.9	1440.9	1361.5	1323.5
35°	1608.0	1575.8	1520.1	1476.0	1461.3	1420.3	1373.3	1338.1	1294.0	1223.7	1173.8
37.5°	1440.9	1408.6	1355.7	1302.9	1302.9	1261.9	1197.2	1162.1	1100.4	1059.3	1018.2
40°	1294.0	1253.0	1200.2	1138.6	1129.8	1071.0	1044.7	985.9	947.8	883.3	877.4
42.5°	1129.8	1091.6	1044.7	997.7	962.5	933.2	865.7	821.7	780.6	748.3	739.5
45°	980.1	930.2	889.1	830.4	795.2	760.0	716.0	686.7	654.4	619.2	598.6
47.5°	851.0	809.9	751.2	698.4	663.2	645.5	595.6	563.4	537.0	513.5	498.8
50°	719.0	669.1	636.8	578.0	572.2	531.1	490.1	463.7	448.9	428.5	407.9
52.5°	619.2	572.2	528.1	484.2	460.7	446.1	407.9	381.5	361.0	346.3	334.5
55°	522.3	481.2	446.1	402.0	387.3	366.9	322.8	317.0	296.4	275.8	261.2
57.5°	448.9	410.8	369.7	340.4	314.0	299.4	264.1	240.6	228.9	211.3	196.6
60°	381.5	340.4	308.1	272.9	261.2	240.6	214.2	193.7	179.0	164.3	149.7
62.5°	319.8	284.7	249.5	220.0	202.5	190.7	170.1	152.6	138.0	126.2	114.4
65°	264.1	231.8	202.5	173.1	164.3	149.7	135.0	120.4	108.5	93.9	82.2
67.5°	217.2	187.9	158.4	138.0	129.1	123.2	105.7	90.9	82.2	73.3	61.6
70°	170.1	149.7	126.2	108.5	99.8	90.9	79.2	70.5	58.6	52.8	44.0
72.5°	132.1	114.4	93.9	79.2	73.3	67.5	55.8	46.9	41.0	35.2	29.3
75°	93.9	79.2	67.5	52.8	49.9	46.9	38.2	32.3	26.4	20.6	17.6
77.5°	64.6	52.8	41.0	35.2	32.3	26.4	23.5	17.6	14.7	11.7	8.9
80°	35.2	26.4	20.6	17.6	14.7	11.7	11.7	8.9	5.9	5.9	3.0
82.5°	11.7	8.9	5.9	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0
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°	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	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

TEST NUMBER: P#
 CATALOG NUMBER: FLDSQ4C50D010 FEU4C509035 F4LC-SQLWW-H

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	2447.3	2447.3	2447.3	2447.3	2447.3	2447.3	2447.3	2447.3	2447.3	2447.3	2447.3
2.5°	2444.4	2412.1	2420.9	2420.9	2415.1	2415.1	2409.2	2400.4	2403.3	2385.6	2347.6
5°	2417.9	2376.9	2371.0	2376.9	2353.4	2347.6	2335.9	2353.4	2300.6	2321.1	2297.7
7.5°	2341.7	2303.6	2294.7	2315.3	2286.0	2268.3	2265.4	2288.8	2241.9	2218.5	2192.0
10°	2256.5	2241.9	2215.5	2200.8	2192.0	2194.9	2171.5	2142.1	2133.3	2127.4	2104.0
12.5°	2180.3	2148.0	2124.6	2107.0	2101.1	2101.1	2062.9	2057.1	2030.6	2024.8	1989.6
15°	2089.3	2051.2	2036.5	2013.0	1992.5	2004.2	1960.2	1948.4	1939.7	1901.5	1907.4
17.5°	2010.0	1969.0	1933.8	1919.1	1901.5	1883.9	1842.8	1851.6	1831.0	1831.0	1778.3
20°	1907.4	1863.4	1836.9	1807.6	1807.6	1784.1	1754.8	1757.7	1731.3	1704.9	1657.9
22.5°	1798.9	1751.8	1719.5	1707.8	1678.5	1672.6	1637.4	1628.6	1593.4	1596.3	1555.2
25°	1684.4	1637.4	1593.4	1596.3	1570.0	1558.2	1537.7	1496.6	1481.9	1464.3	1452.6
27.5°	1549.4	1517.1	1478.9	1476.0	1426.1	1429.0	1402.7	1391.0	1355.7	1364.5	1338.1
30°	1426.1	1379.2	1343.9	1335.2	1314.6	1308.8	1267.7	1250.0	1256.0	1232.4	1217.8
32.5°	1299.9	1229.6	1214.8	1197.2	1185.5	1170.8	1141.5	1153.2	1126.8	1132.6	1109.2
35°	1132.6	1103.3	1065.2	1065.2	1053.4	1041.7	1021.2	1033.0	1006.5	994.8	971.3
37.5°	991.8	965.5	927.3	939.0	918.5	900.9	883.3	886.2	862.7	859.8	836.3
40°	839.2	824.5	798.2	798.2	783.5	783.5	774.6	765.9	751.2	733.6	707.2
42.5°	695.4	683.7	672.0	675.0	654.4	672.0	648.5	663.2	616.2	613.3	595.6
45°	589.8	563.4	566.3	554.6	542.9	548.7	528.1	534.0	507.7	501.8	484.2
47.5°	478.4	469.5	451.9	446.1	446.1	437.2	428.5	425.5	413.8	399.0	375.6
50°	393.2	361.0	355.0	346.3	340.4	340.4	328.7	311.1	314.0	299.4	275.8
52.5°	308.1	281.7	269.9	267.1	255.3	249.5	234.8	223.0	214.2	208.3	193.7
55°	237.6	214.2	199.6	199.6	182.0	182.0	161.4	152.6	140.8	129.1	120.4
57.5°	179.0	167.3	152.6	140.8	135.0	120.4	108.5	93.9	85.1	67.5	55.8
60°	135.0	123.2	108.5	99.8	93.9	79.2	64.6	52.8	32.3	26.4	23.5
62.5°	99.8	88.1	73.3	67.5	61.6	49.9	35.2	17.6	8.9	8.9	8.9
65°	73.3	58.6	46.9	41.0	35.2	26.4	11.7	5.9	3.0	3.0	3.0
67.5°	49.9	38.2	26.4	23.5	17.6	8.9	3.0	3.0	3.0	3.0	3.0
70°	32.3	23.5	11.7	8.9	5.9	3.0	3.0	3.0	3.0	3.0	3.0
72.5°	20.6	11.7	5.9	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	11.7	5.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	5.9	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	3.0	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	3.0	3.0	3.0
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: FLDSQ4C50D010 FEU4C509035 F4LC-SQLWW-H

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	2447.3	2447.3	2447.3	2447.3	2447.3	2447.3	2447.3	2447.3
2.5°	2388.6	2368.1	2379.8	2353.4	2365.2	2385.6	2371.0	2376.9
5°	2306.4	2294.7	2280.1	2241.9	2271.2	2294.7	2283.0	2280.1
7.5°	2218.5	2177.3	2197.9	2186.2	2180.3	2203.8	2177.3	2206.6
10°	2127.4	2098.1	2095.2	2074.7	2074.7	2092.2	2095.2	2077.5
12.5°	1992.5	1977.9	1977.9	1974.9	1971.9	1989.6	1992.5	1983.7
15°	1895.7	1889.8	1875.1	1872.2	1854.6	1880.9	1883.9	1880.9
17.5°	1778.3	1781.2	1766.6	1766.6	1778.3	1787.0	1763.6	1787.0
20°	1699.1	1684.4	1678.5	1652.0	1666.8	1681.5	1681.5	1684.4
22.5°	1584.6	1561.1	1570.0	1555.2	1546.4	1567.0	1567.0	1575.8
25°	1455.5	1455.5	1461.3	1452.6	1458.4	1470.2	1461.3	1481.9
27.5°	1332.2	1343.9	1343.9	1332.2	1338.1	1373.3	1388.0	1364.5
30°	1217.8	1220.7	1229.6	1223.7	1241.3	1253.0	1250.0	1267.7
32.5°	1088.7	1103.3	1109.2	1100.4	1106.3	1132.6	1118.0	1115.0
35°	988.9	962.5	959.6	962.5	974.2	980.1	974.2	994.8
37.5°	845.1	836.3	824.5	827.5	836.3	848.1	854.0	868.6
40°	707.2	695.4	695.4	692.5	683.7	716.0	716.0	716.0
42.5°	586.9	583.9	569.3	569.3	581.0	589.8	583.9	604.5
45°	481.2	469.5	460.7	460.7	469.5	469.5	478.4	475.4
47.5°	378.6	366.9	369.7	361.0	369.7	381.5	366.9	369.7
50°	284.7	284.7	278.8	284.7	281.7	284.7	278.8	272.9
52.5°	193.7	220.0	223.0	211.3	184.9	161.4	146.7	158.4
55°	111.5	99.8	99.8	96.8	90.9	88.1	79.2	88.1
57.5°	55.8	49.9	49.9	49.9	46.9	44.0	38.2	38.2
60°	23.5	20.6	20.6	17.6	14.7	11.7	8.9	11.7
62.5°	8.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
65°	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
67.5°	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
70°	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
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)