

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 FEU4C459040 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 FEU4C459040 F4LC-SQLWW-LI
 Description: 4 INCH 4500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 4000K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

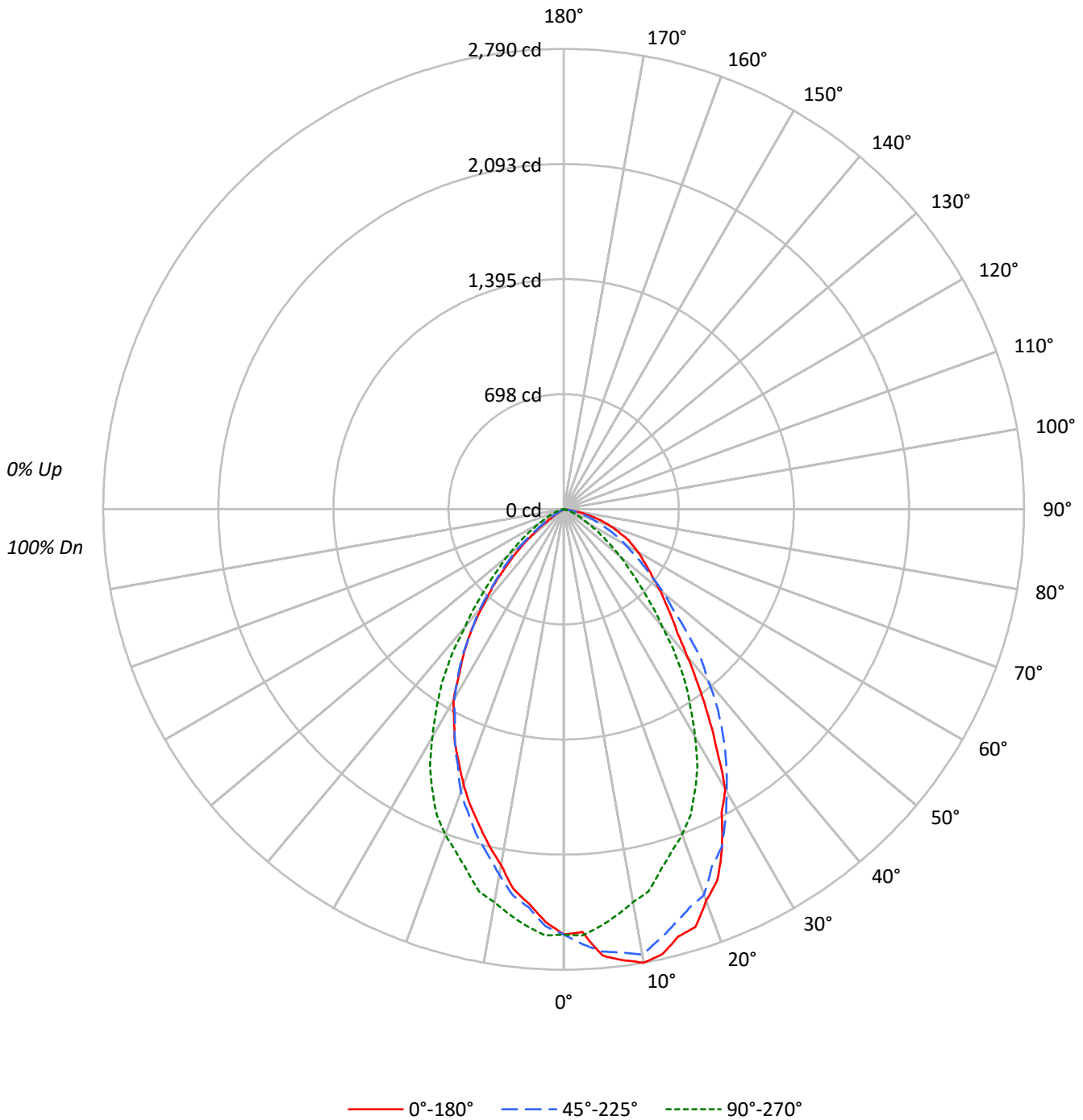
Lumens per Lamp: N/A
 Luminaire Lumens: 3693.0 lumens
 Efficiency: N/A
 Efficacy: 74.5 lumens/watt
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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



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CATALOG NUMBER: FLDSQ4C45D010 FEU4C459040 F4LC-SQLWW-LI

COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20					20					20					20				
RC	80					70					50					30				
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°	248584	248584	248584
5°	263007	245660	232487
10°	273318	236998	214286
15°	267852	226187	197797
20°	259157	215374	182075
25°	241737	200290	166083
30°	218219	177251	148695
35°	179749	151739	123363
40°	146702	117128	94947
45°	126044	88956	68296
50°	114069	67715	43127
55°	104971	48835	15594
60°	100754	33366	2374
65°	97329	22580	708
70°	87145	15686	875
75°	71429	8090	0
80°	44675	3445	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	241.4	6.5
10°-20°	650.3	17.6
20°-30°	868.4	23.5
30°-40°	824.4	22.3
40°-50°	569.8	15.4
50°-60°	314.9	8.5
60°-70°	156.3	4.2
70°-80°	61.6	1.7
80°-90°	5.9	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°	1760.1	47.7
0°-40°	2584.5	70.0
0°-60°	3469.2	93.9
0°-90°	3693.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3693.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	2576	2576	2576	2576	2576	
5°	2715	2691	2536	2422	2400	260
15°	2681	2601	2264	2042	1980	759
25°	2271	2261	1881	1560	1560	1035
35°	1526	1687	1288	1060	1047	956
45°	924	1060	652	534	500	720
55°	624	587	290	148	93	562
65°	426	309	99	3	3	414
75°	192	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°	2576.3	2576.3	2576.3	2576.3	2576.3	2576.3	2576.3	2576.3	2576.3	2576.3	2576.3
2.5°	2564.0	2635.0	2641.2	2635.0	2644.3	2641.2	2656.7	2641.2	2659.8	2632.0	2638.2
5°	2715.4	2687.5	2746.2	2715.4	2715.4	2712.4	2703.0	2699.9	2712.4	2672.2	2690.7
7.5°	2755.6	2795.7	2848.3	2783.4	2786.4	2786.4	2767.9	2761.7	2761.7	2687.5	2709.2
10°	2789.6	2764.8	2792.6	2767.9	2789.6	2786.4	2798.8	2758.6	2786.4	2743.2	2740.1
12.5°	2761.7	2752.4	2789.6	2749.4	2737.0	2740.1	2724.7	2715.4	2724.7	2675.2	2672.2
15°	2681.4	2690.7	2746.2	2703.0	2696.9	2690.7	2672.2	2641.2	2666.0	2598.0	2601.1
17.5°	2653.7	2638.2	2647.5	2610.3	2619.6	2613.5	2610.3	2582.6	2576.3	2533.1	2533.1
20°	2523.9	2557.8	2557.8	2533.1	2533.1	2530.1	2489.9	2514.6	2486.8	2474.4	2486.8
22.5°	2434.2	2437.4	2437.4	2415.7	2418.9	2406.5	2384.9	2369.4	2384.9	2369.4	2344.7
25°	2270.6	2276.8	2313.8	2273.6	2267.5	2279.8	2261.3	2252.0	2248.9	2211.9	2261.3
27.5°	2072.8	2134.6	2131.5	2116.1	2134.6	2109.9	2100.7	2103.7	2113.0	2109.9	2122.2
30°	1958.6	1967.8	1977.1	1964.8	1967.8	1958.6	1958.6	1961.6	1986.3	1977.1	1974.0
32.5°	1726.8	1757.7	1782.5	1782.5	1785.5	1794.8	1791.7	1856.6	1872.1	1841.2	1835.0
35°	1526.0	1547.7	1569.2	1572.4	1612.6	1615.6	1618.7	1637.3	1680.5	1689.8	1686.6
37.5°	1334.6	1356.1	1362.3	1390.1	1411.8	1433.3	1458.1	1482.8	1519.9	1550.7	1535.4
40°	1164.7	1173.8	1189.3	1201.7	1244.9	1244.9	1257.2	1306.7	1346.9	1371.6	1368.5
42.5°	1022.6	1025.6	1037.9	1059.6	1099.8	1090.5	1099.8	1133.8	1192.4	1195.5	1229.5
45°	923.7	920.5	929.9	932.9	957.7	970.0	976.2	1000.9	1050.3	1056.5	1059.6
47.5°	834.1	831.0	846.5	852.6	861.8	874.2	874.2	877.3	895.8	911.3	899.0
50°	759.9	759.9	759.9	766.1	781.6	778.5	781.6	793.9	803.1	797.0	793.9
52.5°	679.6	691.9	701.2	704.4	707.4	707.4	710.6	704.4	701.2	691.9	673.4
55°	624.0	636.4	636.4	636.4	636.4	648.7	633.3	636.4	636.4	611.7	587.0
57.5°	568.5	580.8	590.0	577.7	590.0	577.7	571.5	568.5	562.2	537.5	500.5
60°	522.1	528.3	525.1	522.1	528.3	519.0	512.8	500.5	494.3	460.3	435.6
62.5°	469.6	472.6	475.8	469.6	463.4	460.3	447.9	429.4	417.1	389.2	367.6
65°	426.3	417.1	413.9	410.9	404.7	395.4	386.2	364.5	355.2	330.5	308.9
67.5°	361.4	358.4	364.5	355.2	339.8	339.8	330.5	312.0	290.3	275.0	253.3
70°	308.9	305.8	299.7	290.3	287.3	275.0	275.0	253.3	247.1	219.3	200.8
72.5°	253.3	253.3	244.0	234.8	225.5	219.3	216.3	200.8	191.6	176.1	160.6
75°	191.6	191.6	188.4	179.1	172.9	166.8	163.8	151.4	142.1	126.7	117.4
77.5°	135.9	135.9	123.6	117.4	120.4	114.3	108.1	105.1	101.9	92.7	80.4
80°	80.4	77.2	68.0	71.0	68.0	68.0	64.9	61.7	55.6	49.4	43.2
82.5°	21.7	24.7	24.7	24.7	27.8	21.7	21.7	21.7	24.7	24.7	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°	2576.3	2576.3	2576.3	2576.3	2576.3	2576.3	2576.3	2576.3	2576.3	2576.3	2576.3
2.5°	2607.3	2604.2	2607.3	2585.6	2635.0	2598.0	2591.8	2585.6	2607.3	2585.6	2554.8
5°	2662.9	2632.0	2622.7	2613.5	2641.2	2598.0	2588.8	2591.8	2576.3	2536.3	2539.3
7.5°	2681.4	2653.7	2625.8	2567.1	2591.8	2582.6	2557.8	2539.3	2514.6	2480.6	2474.4
10°	2687.5	2656.7	2616.5	2598.0	2561.0	2548.6	2539.3	2508.4	2477.6	2418.9	2403.4
12.5°	2669.0	2632.0	2582.6	2567.1	2539.3	2499.1	2477.6	2446.6	2418.9	2372.5	2338.5
15°	2588.8	2557.8	2542.4	2489.9	2477.6	2452.8	2409.5	2366.3	2326.2	2264.3	2245.8
17.5°	2496.1	2483.7	2468.2	2428.1	2425.0	2400.3	2360.2	2323.0	2270.6	2174.8	2143.9
20°	2400.3	2400.3	2350.8	2335.5	2366.3	2316.8	2286.0	2252.0	2143.9	2097.5	2042.0
22.5°	2329.3	2295.3	2267.5	2242.8	2245.8	2214.9	2171.7	2103.7	2063.5	2008.0	1943.1
25°	2190.2	2202.6	2140.9	2131.5	2140.9	2069.7	2048.2	1992.5	1933.8	1881.3	1831.9
27.5°	2103.7	2069.7	2029.6	1995.6	1995.6	1967.8	1906.1	1893.7	1804.0	1754.7	1692.8
30°	1974.0	1949.3	1915.3	1865.9	1859.7	1838.1	1788.7	1757.7	1665.1	1590.9	1556.9
32.5°	1810.2	1801.0	1773.2	1717.6	1699.1	1674.3	1612.6	1560.0	1516.8	1433.3	1393.3
35°	1692.8	1658.9	1600.2	1553.9	1538.4	1495.2	1445.7	1408.6	1362.3	1288.2	1235.7
37.5°	1516.8	1482.8	1427.2	1371.6	1371.6	1328.4	1260.4	1223.4	1158.5	1115.2	1071.9
40°	1362.3	1319.1	1263.5	1198.7	1189.3	1127.5	1099.8	1037.9	997.8	929.9	923.7
42.5°	1189.3	1149.2	1099.8	1050.3	1013.2	982.4	911.3	865.0	821.8	787.8	778.5
45°	1031.8	979.2	936.0	874.2	837.2	800.1	753.8	722.9	688.9	651.9	630.2
47.5°	895.8	852.6	790.8	735.2	698.2	679.6	627.0	593.2	565.3	540.6	525.1
50°	756.9	704.4	670.4	608.5	602.4	559.1	515.9	488.1	472.6	451.1	429.4
52.5°	651.9	602.4	556.0	509.8	485.0	469.6	429.4	401.6	380.0	364.5	352.2
55°	549.8	506.6	469.6	423.2	407.7	386.2	339.8	333.7	312.0	290.3	275.0
57.5°	472.6	432.4	389.2	358.4	330.5	315.2	278.0	253.3	241.0	222.4	207.0
60°	401.6	358.4	324.4	287.3	275.0	253.3	225.5	203.9	188.4	172.9	157.6
62.5°	336.7	299.7	262.6	231.6	213.1	200.8	179.1	160.6	145.2	132.9	120.4
65°	278.0	244.0	213.1	182.3	172.9	157.6	142.1	126.7	114.3	98.9	86.5
67.5°	228.6	197.8	166.8	145.2	135.9	129.7	111.2	95.7	86.5	77.2	64.9
70°	179.1	157.6	132.9	114.3	105.1	95.7	83.4	74.2	61.7	55.6	46.4
72.5°	139.1	120.4	98.9	83.4	77.2	71.0	58.7	49.4	43.2	37.0	30.9
75°	98.9	83.4	71.0	55.6	52.5	49.4	40.2	34.0	27.8	21.7	18.5
77.5°	68.0	55.6	43.2	37.0	34.0	27.8	24.7	18.5	15.5	12.3	9.3
80°	37.0	27.8	21.7	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°	2576.3	2576.3	2576.3	2576.3	2576.3	2576.3	2576.3	2576.3	2576.3	2576.3	2576.3
2.5°	2573.3	2539.3	2548.6	2548.6	2542.4	2542.4	2536.3	2526.9	2530.1	2511.5	2471.4
5°	2545.5	2502.3	2496.1	2502.3	2477.6	2471.4	2459.0	2477.6	2421.9	2443.6	2418.9
7.5°	2465.2	2425.0	2415.7	2437.4	2406.5	2387.9	2384.9	2409.5	2360.2	2335.5	2307.6
10°	2375.5	2360.2	2332.3	2316.8	2307.6	2310.7	2286.0	2255.1	2245.8	2239.6	2214.9
12.5°	2295.3	2261.3	2236.6	2218.1	2211.9	2211.9	2171.7	2165.6	2137.7	2131.5	2094.5
15°	2199.4	2159.4	2143.9	2119.2	2097.5	2109.9	2063.5	2051.2	2042.0	2001.8	2008.0
17.5°	2116.1	2072.8	2035.8	2020.3	2001.8	1983.3	1940.0	1949.3	1927.6	1927.6	1872.1
20°	2008.0	1961.6	1933.8	1902.9	1902.9	1878.2	1847.4	1850.4	1822.6	1794.8	1745.3
22.5°	1893.7	1844.2	1810.2	1797.9	1767.0	1760.8	1723.8	1714.5	1677.4	1680.5	1637.3
25°	1773.2	1723.8	1677.4	1680.5	1652.8	1640.4	1618.7	1575.5	1560.0	1541.5	1529.2
27.5°	1631.1	1597.1	1556.9	1553.9	1501.4	1504.4	1476.7	1464.3	1427.2	1436.5	1408.6
30°	1501.4	1452.0	1414.8	1405.6	1384.0	1377.8	1334.6	1315.9	1322.2	1297.4	1282.0
32.5°	1368.5	1294.4	1278.9	1260.4	1248.0	1232.5	1201.7	1214.0	1186.2	1192.4	1167.7
35°	1192.4	1161.5	1121.3	1121.3	1109.0	1096.6	1075.1	1087.4	1059.6	1047.3	1022.6
37.5°	1044.1	1016.4	976.2	988.6	966.9	948.4	929.9	932.9	908.2	905.2	880.4
40°	883.5	868.0	840.3	840.3	824.8	824.8	815.5	806.3	790.8	772.3	744.4
42.5°	732.1	719.8	707.4	710.6	688.9	707.4	682.7	698.2	648.7	645.7	627.0
45°	620.9	593.2	596.2	583.8	571.5	577.7	556.0	562.2	534.5	528.3	509.8
47.5°	503.6	494.3	475.8	469.6	469.6	460.3	451.1	447.9	435.6	420.1	395.4
50°	413.9	380.0	373.7	364.5	358.4	358.4	346.0	327.5	330.5	315.2	290.3
52.5°	324.4	296.5	284.2	281.1	268.8	262.6	247.1	234.8	225.5	219.3	203.9
55°	250.2	225.5	210.1	210.1	191.6	191.6	169.9	160.6	148.3	135.9	126.7
57.5°	188.4	176.1	160.6	148.3	142.1	126.7	114.3	98.9	89.6	71.0	58.7
60°	142.1	129.7	114.3	105.1	98.9	83.4	68.0	55.6	34.0	27.8	24.7
62.5°	105.1	92.7	77.2	71.0	64.9	52.5	37.0	18.5	9.3	9.3	9.3
65°	77.2	61.7	49.4	43.2	37.0	27.8	12.3	6.2	3.1	3.1	3.1
67.5°	52.5	40.2	27.8	24.7	18.5	9.3	3.1	3.1	3.1	3.1	3.1
70°	34.0	24.7	12.3	9.3	6.2	3.1	3.1	3.1	3.1	3.1	3.1
72.5°	21.7	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 FEU4C459040 F4LC-SQLWW-LI

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	2576.3	2576.3	2576.3	2576.3	2576.3	2576.3	2576.3	2576.3
2.5°	2514.6	2492.9	2505.3	2477.6	2489.9	2511.5	2496.1	2502.3
5°	2428.1	2415.7	2400.3	2360.2	2391.0	2415.7	2403.4	2400.3
7.5°	2335.5	2292.1	2313.8	2301.5	2295.3	2320.0	2292.1	2323.0
10°	2239.6	2208.8	2205.7	2184.1	2184.1	2202.6	2205.7	2187.1
12.5°	2097.5	2082.2	2082.2	2079.0	2075.9	2094.5	2097.5	2088.3
15°	1995.6	1989.5	1974.0	1970.9	1952.4	1980.1	1983.3	1980.1
17.5°	1872.1	1875.1	1859.7	1859.7	1872.1	1881.3	1856.6	1881.3
20°	1788.7	1773.2	1767.0	1739.2	1754.7	1770.2	1770.2	1773.2
22.5°	1668.1	1643.4	1652.8	1637.3	1627.9	1649.6	1649.6	1658.9
25°	1532.2	1532.2	1538.4	1529.2	1535.4	1547.7	1538.4	1560.0
27.5°	1402.5	1414.8	1414.8	1402.5	1408.6	1445.7	1461.2	1436.5
30°	1282.0	1285.1	1294.4	1288.2	1306.7	1319.1	1315.9	1334.6
32.5°	1146.1	1161.5	1167.7	1158.5	1164.7	1192.4	1177.0	1173.8
35°	1041.1	1013.2	1010.2	1013.2	1025.6	1031.8	1025.6	1047.3
37.5°	889.7	880.4	868.0	871.2	880.4	892.8	899.0	914.4
40°	744.4	732.1	732.1	729.1	719.8	753.8	753.8	753.8
42.5°	617.8	614.7	599.3	599.3	611.7	620.9	614.7	636.4
45°	506.6	494.3	485.0	485.0	494.3	494.3	503.6	500.5
47.5°	398.5	386.2	389.2	380.0	389.2	401.6	386.2	389.2
50°	299.7	299.7	293.5	299.7	296.5	299.7	293.5	287.3
52.5°	203.9	231.6	234.8	222.4	194.6	169.9	154.4	166.8
55°	117.4	105.1	105.1	101.9	95.7	92.7	83.4	92.7
57.5°	58.7	52.5	52.5	52.5	49.4	46.4	40.2	40.2
60°	24.7	21.7	21.7	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)