

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 FEU4C459027 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 FEU4C459027 F4LC-SQLWW-LI
 Description: 4 INCH 4500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 2700K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

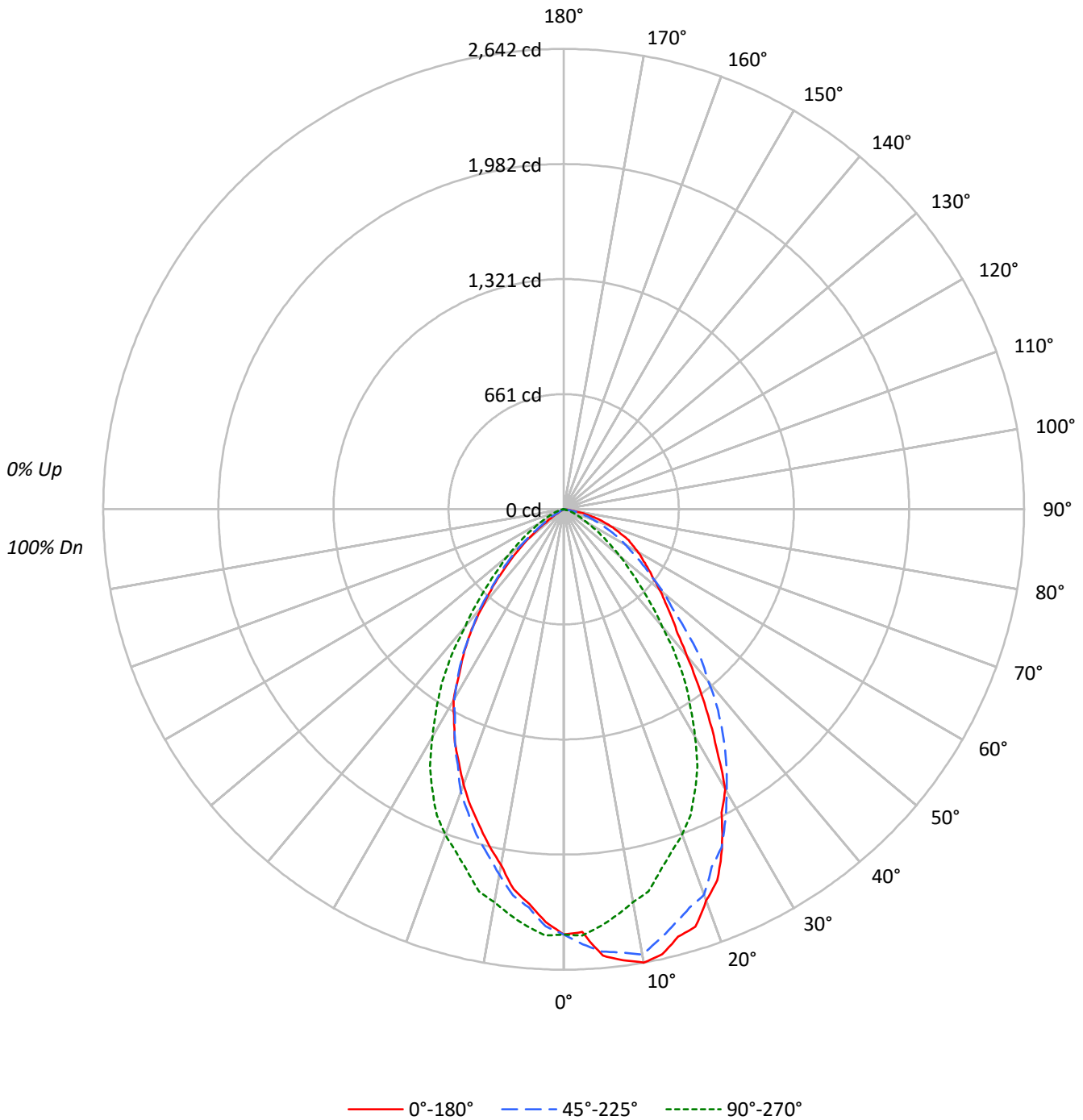
Lumens per Lamp: N/A
 Luminaire Lumens: 3497.0 lumens
 Efficiency: N/A
 Efficacy: 70.5 lumens/watt
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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



TEST NUMBER: P#

CATALOG NUMBER: FLDSQ4C45D010 FEU4C459027 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				
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°	235394	235394	235394
5°	249050	232623	220157
10°	258807	224417	202911
15°	253637	214180	187299
20°	245408	203946	172412
25°	228908	189654	157279
30°	206632	167848	140796
35°	170208	143693	116814
40°	138906	110905	89908
45°	119358	84234	64666
50°	108019	64112	40845
55°	99403	46245	14770
60°	95408	31610	2258
65°	92147	21370	685
70°	82519	14839	846
75°	67627	7642	0
80°	42286	3223	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	228.6	6.5
10°-20°	615.8	17.6
20°-30°	822.3	23.5
30°-40°	780.6	22.3
40°-50°	539.6	15.4
50°-60°	298.1	8.5
60°-70°	148.1	4.2
70°-80°	58.3	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°	1666.7	47.7
0°-40°	2447.3	70.0
0°-60°	3285.1	93.9
0°-90°	3497.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3497.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	2440	2440	2440	2440	2440	
5°	2571	2548	2402	2293	2273	246
15°	2539	2463	2144	1934	1875	718
25°	2150	2141	1781	1477	1477	980
35°	1445	1597	1220	1003	992	905
45°	875	1003	617	506	474	682
55°	591	556	275	140	88	532
65°	404	292	94	3	3	392
75°	181	111	20	0	0	193
85°	0	3	0	0	0	17
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°	2439.6	2439.6	2439.6	2439.6	2439.6	2439.6	2439.6	2439.6	2439.6	2439.6	2439.6
2.5°	2427.9	2495.2	2501.0	2495.2	2504.0	2501.0	2515.7	2501.0	2518.7	2492.3	2498.2
5°	2571.3	2544.9	2600.5	2571.3	2571.3	2568.4	2559.6	2556.6	2568.4	2530.4	2547.9
7.5°	2609.3	2647.4	2697.1	2635.7	2638.5	2638.5	2621.0	2615.2	2615.2	2544.9	2565.4
10°	2641.5	2618.0	2644.4	2621.0	2641.5	2638.5	2650.2	2612.2	2638.5	2597.6	2594.6
12.5°	2615.2	2606.3	2641.5	2603.5	2591.8	2594.6	2580.1	2571.3	2580.1	2533.2	2530.4
15°	2539.1	2547.9	2600.5	2559.6	2553.7	2547.9	2530.4	2501.0	2524.5	2460.1	2463.1
17.5°	2512.8	2498.2	2507.0	2471.8	2480.6	2474.8	2471.8	2445.5	2439.6	2398.7	2398.7
20°	2390.0	2422.1	2422.1	2398.7	2398.7	2395.8	2357.8	2381.1	2354.8	2343.1	2354.8
22.5°	2305.0	2308.0	2308.0	2287.5	2290.5	2278.8	2258.3	2243.6	2258.3	2243.6	2220.2
25°	2150.1	2155.9	2191.0	2153.0	2147.1	2158.8	2141.3	2132.4	2129.6	2094.5	2141.3
27.5°	1962.8	2021.3	2018.4	2003.7	2021.3	1997.9	1989.2	1992.1	2000.9	1997.9	2009.6
30°	1854.6	1863.4	1872.2	1860.5	1863.4	1854.6	1854.6	1857.5	1880.9	1872.2	1869.2
32.5°	1635.2	1664.4	1687.9	1687.9	1690.8	1699.6	1696.6	1758.0	1772.7	1743.5	1737.6
35°	1445.0	1465.6	1486.0	1488.9	1527.0	1529.9	1532.8	1550.4	1591.3	1600.1	1597.1
37.5°	1263.7	1284.1	1290.0	1316.3	1336.9	1357.3	1380.8	1404.1	1439.2	1468.4	1453.9
40°	1102.8	1111.5	1126.2	1137.9	1178.8	1178.8	1190.5	1237.4	1275.4	1298.8	1295.8
42.5°	968.3	971.2	982.8	1003.4	1041.4	1032.6	1041.4	1073.6	1129.1	1132.1	1164.3
45°	874.7	871.7	880.5	883.4	906.9	918.6	924.4	947.8	994.5	1000.4	1003.4
47.5°	789.9	786.9	801.5	807.4	816.1	827.8	827.8	830.8	848.3	863.0	851.3
50°	719.6	719.6	719.6	725.4	740.1	737.1	740.1	751.8	760.5	754.7	751.8
52.5°	643.5	655.2	664.0	667.0	669.9	669.9	672.8	667.0	664.0	655.2	637.7
55°	590.9	602.6	602.6	602.6	602.6	614.3	599.7	602.6	602.6	579.2	555.8
57.5°	538.3	550.0	558.7	547.0	558.7	547.0	541.2	538.3	532.3	509.0	473.9
60°	494.4	500.2	497.3	494.4	500.2	491.4	485.6	473.9	468.0	435.8	412.5
62.5°	444.7	447.5	450.5	444.7	438.8	435.8	424.2	406.6	394.9	368.6	348.1
65°	403.6	394.9	391.9	389.1	383.2	374.4	365.7	345.2	336.4	313.0	292.5
67.5°	342.2	339.3	345.2	336.4	321.8	321.8	313.0	295.5	274.9	260.4	239.9
70°	292.5	289.6	283.8	274.9	272.1	260.4	260.4	239.9	234.0	207.7	190.1
72.5°	239.9	239.9	231.0	222.3	213.5	207.7	204.8	190.1	181.4	166.7	152.1
75°	181.4	181.4	178.4	169.6	163.8	157.9	155.1	143.4	134.5	120.0	111.2
77.5°	128.7	128.7	117.0	111.2	114.0	108.2	102.3	99.5	96.5	87.8	76.1
80°	76.1	73.1	64.4	67.3	64.4	64.4	61.4	58.4	52.6	46.8	40.9
82.5°	20.5	23.4	23.4	23.4	26.4	20.5	20.5	20.5	23.4	23.4	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	5.8	11.7	11.7	11.7	11.7	11.7	8.8	8.8	8.8	5.8
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°	2439.6	2439.6	2439.6	2439.6	2439.6	2439.6	2439.6	2439.6	2439.6	2439.6	2439.6
2.5°	2468.9	2465.9	2468.9	2448.4	2495.2	2460.1	2454.3	2448.4	2468.9	2448.4	2419.2
5°	2521.5	2492.3	2483.5	2474.8	2501.0	2460.1	2451.4	2454.3	2439.6	2401.7	2404.5
7.5°	2539.1	2512.8	2486.5	2430.9	2454.3	2445.5	2422.1	2404.5	2381.1	2348.9	2343.1
10°	2544.9	2515.7	2477.6	2460.1	2425.0	2413.3	2404.5	2375.3	2346.1	2290.5	2275.8
12.5°	2527.4	2492.3	2445.5	2430.9	2404.5	2366.5	2346.1	2316.7	2290.5	2246.6	2214.4
15°	2451.4	2422.1	2407.5	2357.8	2346.1	2322.6	2281.7	2240.7	2202.7	2144.1	2126.6
17.5°	2363.6	2351.9	2337.2	2299.2	2296.3	2273.0	2234.9	2199.7	2150.1	2059.3	2030.1
20°	2273.0	2273.0	2226.1	2211.5	2240.7	2193.9	2164.7	2132.4	2030.1	1986.2	1933.6
22.5°	2205.7	2173.5	2147.1	2123.7	2126.6	2097.4	2056.5	1992.1	1954.0	1901.4	1840.0
25°	2074.0	2085.7	2027.2	2018.4	2027.2	1959.9	1939.5	1886.7	1831.2	1781.4	1734.7
27.5°	1992.1	1959.9	1921.9	1889.7	1889.7	1863.4	1804.9	1793.2	1708.3	1661.5	1603.0
30°	1869.2	1845.8	1813.6	1766.9	1761.0	1740.5	1693.7	1664.4	1576.7	1506.5	1474.3
32.5°	1714.1	1705.4	1679.1	1626.5	1608.9	1585.4	1527.0	1477.3	1436.3	1357.3	1319.3
35°	1603.0	1570.9	1515.3	1471.4	1456.7	1415.8	1369.0	1333.9	1290.0	1219.9	1170.1
37.5°	1436.3	1404.1	1351.4	1298.8	1298.8	1257.9	1193.5	1158.4	1097.0	1056.0	1015.1
40°	1290.0	1249.1	1196.5	1135.0	1126.2	1067.7	1041.4	982.8	944.8	880.5	874.7
42.5°	1126.2	1088.2	1041.4	994.5	959.5	930.2	863.0	819.1	778.2	746.0	737.1
45°	977.0	927.3	886.4	827.8	792.7	757.7	713.8	684.5	652.3	617.3	596.7
47.5°	848.3	807.4	748.8	696.2	661.2	643.5	593.8	561.7	535.3	511.9	497.3
50°	716.7	667.0	634.8	576.2	570.4	529.5	488.6	462.2	447.5	427.1	406.6
52.5°	617.3	570.4	526.5	482.7	459.2	444.7	406.6	380.3	359.9	345.2	333.5
55°	520.6	479.7	444.7	400.8	386.1	365.7	321.8	316.0	295.5	274.9	260.4
57.5°	447.5	409.5	368.6	339.3	313.0	298.4	263.2	239.9	228.2	210.6	196.0
60°	380.3	339.3	307.1	272.1	260.4	239.9	213.5	193.1	178.4	163.8	149.2
62.5°	318.8	283.8	248.7	219.4	201.8	190.1	169.6	152.1	137.5	125.8	114.0
65°	263.2	231.0	201.8	172.6	163.8	149.2	134.5	120.0	108.2	93.6	81.9
67.5°	216.5	187.3	157.9	137.5	128.7	122.9	105.3	90.7	81.9	73.1	61.4
70°	169.6	149.2	125.8	108.2	99.5	90.7	79.0	70.3	58.4	52.6	43.9
72.5°	131.7	114.0	93.6	79.0	73.1	67.3	55.6	46.8	40.9	35.1	29.2
75°	93.6	79.0	67.3	52.6	49.7	46.8	38.0	32.2	26.4	20.5	17.5
77.5°	64.4	52.6	40.9	35.1	32.2	26.4	23.4	17.5	14.7	11.7	8.8
80°	35.1	26.4	20.5	17.5	14.7	11.7	11.7	8.8	5.8	5.8	3.0
82.5°	11.7	8.8	5.8	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

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CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	2439.6	2439.6	2439.6	2439.6	2439.6	2439.6	2439.6	2439.6	2439.6	2439.6	2439.6
2.5°	2436.7	2404.5	2413.3	2413.3	2407.5	2407.5	2401.7	2392.8	2395.8	2378.2	2340.2
5°	2410.4	2369.4	2363.6	2369.4	2346.1	2340.2	2328.5	2346.1	2293.4	2313.9	2290.5
7.5°	2334.4	2296.3	2287.5	2308.0	2278.8	2261.1	2258.3	2281.7	2234.9	2211.5	2185.2
10°	2249.5	2234.9	2208.5	2193.9	2185.2	2188.0	2164.7	2135.4	2126.6	2120.8	2097.4
12.5°	2173.5	2141.3	2117.9	2100.4	2094.5	2094.5	2056.5	2050.6	2024.3	2018.4	1983.3
15°	2082.7	2044.8	2030.1	2006.7	1986.2	1997.9	1954.0	1942.3	1933.6	1895.6	1901.4
17.5°	2003.7	1962.8	1927.8	1913.1	1895.6	1878.0	1837.0	1845.8	1825.3	1825.3	1772.7
20°	1901.4	1857.5	1831.2	1801.9	1801.9	1778.5	1749.3	1752.2	1725.8	1699.6	1652.7
22.5°	1793.2	1746.3	1714.1	1702.5	1673.2	1667.4	1632.3	1623.5	1588.4	1591.3	1550.4
25°	1679.1	1632.3	1588.4	1591.3	1565.0	1553.4	1532.8	1491.9	1477.3	1459.7	1448.0
27.5°	1544.5	1512.3	1474.3	1471.4	1421.7	1424.5	1398.3	1386.6	1351.4	1360.2	1333.9
30°	1421.7	1374.9	1339.7	1331.0	1310.5	1304.7	1263.7	1246.1	1252.1	1228.6	1214.0
32.5°	1295.8	1225.7	1211.0	1193.5	1181.8	1167.1	1137.9	1149.6	1123.2	1129.1	1105.7
35°	1129.1	1099.9	1061.8	1061.8	1050.1	1038.4	1018.0	1029.7	1003.4	991.7	968.3
37.5°	988.7	962.4	924.4	936.1	915.6	898.0	880.5	883.4	860.0	857.1	833.6
40°	836.6	821.9	795.7	795.7	781.0	781.0	772.2	763.5	748.8	731.3	704.9
42.5°	693.2	681.6	669.9	672.8	652.3	669.9	646.5	661.2	614.3	611.4	593.8
45°	587.9	561.7	564.5	552.9	541.2	547.0	526.5	532.3	506.1	500.2	482.7
47.5°	476.9	468.0	450.5	444.7	444.7	435.8	427.1	424.2	412.5	397.8	374.4
50°	391.9	359.9	353.9	345.2	339.3	339.3	327.7	310.1	313.0	298.4	274.9
52.5°	307.1	280.8	269.1	266.2	254.5	248.7	234.0	222.3	213.5	207.7	193.1
55°	236.9	213.5	199.0	199.0	181.4	181.4	160.9	152.1	140.4	128.7	120.0
57.5°	178.4	166.7	152.1	140.4	134.5	120.0	108.2	93.6	84.8	67.3	55.6
60°	134.5	122.9	108.2	99.5	93.6	79.0	64.4	52.6	32.2	26.4	23.4
62.5°	99.5	87.8	73.1	67.3	61.4	49.7	35.1	17.5	8.8	8.8	8.8
65°	73.1	58.4	46.8	40.9	35.1	26.4	11.7	5.8	3.0	3.0	3.0
67.5°	49.7	38.0	26.4	23.4	17.5	8.8	3.0	3.0	3.0	3.0	3.0
70°	32.2	23.4	11.7	8.8	5.8	3.0	3.0	3.0	3.0	3.0	3.0
72.5°	20.5	11.7	5.8	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	11.7	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	5.8	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: FLDSQ4C45D010 FEU4C459027 F4LC-SQLWW-LI

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	2439.6	2439.6	2439.6	2439.6	2439.6	2439.6	2439.6	2439.6
2.5°	2381.1	2360.6	2372.3	2346.1	2357.8	2378.2	2363.6	2369.4
5°	2299.2	2287.5	2273.0	2234.9	2264.1	2287.5	2275.8	2273.0
7.5°	2211.5	2170.5	2191.0	2179.3	2173.5	2196.9	2170.5	2199.7
10°	2120.8	2091.5	2088.7	2068.2	2068.2	2085.7	2088.7	2071.0
12.5°	1986.2	1971.7	1971.7	1968.7	1965.7	1983.3	1986.2	1977.5
15°	1889.7	1883.9	1869.2	1866.3	1848.8	1875.0	1878.0	1875.0
17.5°	1772.7	1775.6	1761.0	1761.0	1772.7	1781.4	1758.0	1781.4
20°	1693.7	1679.1	1673.2	1646.9	1661.5	1676.2	1676.2	1679.1
22.5°	1579.6	1556.2	1565.0	1550.4	1541.5	1562.1	1562.1	1570.9
25°	1450.9	1450.9	1456.7	1448.0	1453.9	1465.6	1456.7	1477.3
27.5°	1328.0	1339.7	1339.7	1328.0	1333.9	1369.0	1383.6	1360.2
30°	1214.0	1216.9	1225.7	1219.9	1237.4	1249.1	1246.1	1263.7
32.5°	1085.3	1099.9	1105.7	1097.0	1102.8	1129.1	1114.5	1111.5
35°	985.8	959.5	956.6	959.5	971.2	977.0	971.2	991.7
37.5°	842.5	833.6	821.9	824.9	833.6	845.4	851.3	865.8
40°	704.9	693.2	693.2	690.4	681.6	713.8	713.8	713.8
42.5°	585.1	582.1	567.5	567.5	579.2	587.9	582.1	602.6
45°	479.7	468.0	459.2	459.2	468.0	468.0	476.9	473.9
47.5°	377.4	365.7	368.6	359.9	368.6	380.3	365.7	368.6
50°	283.8	283.8	277.9	283.8	280.8	283.8	277.9	272.1
52.5°	193.1	219.4	222.3	210.6	184.3	160.9	146.2	157.9
55°	111.2	99.5	99.5	96.5	90.7	87.8	79.0	87.8
57.5°	55.6	49.7	49.7	49.7	46.8	43.9	38.0	38.0
60°	23.4	20.5	20.5	17.5	14.7	11.7	8.8	11.7
62.5°	8.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
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)