

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-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: FLDSQ4C45D010 FEU4C459035 F4LC-SQLWW-H  
 Description: 4 INCH 4500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3500K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH H FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

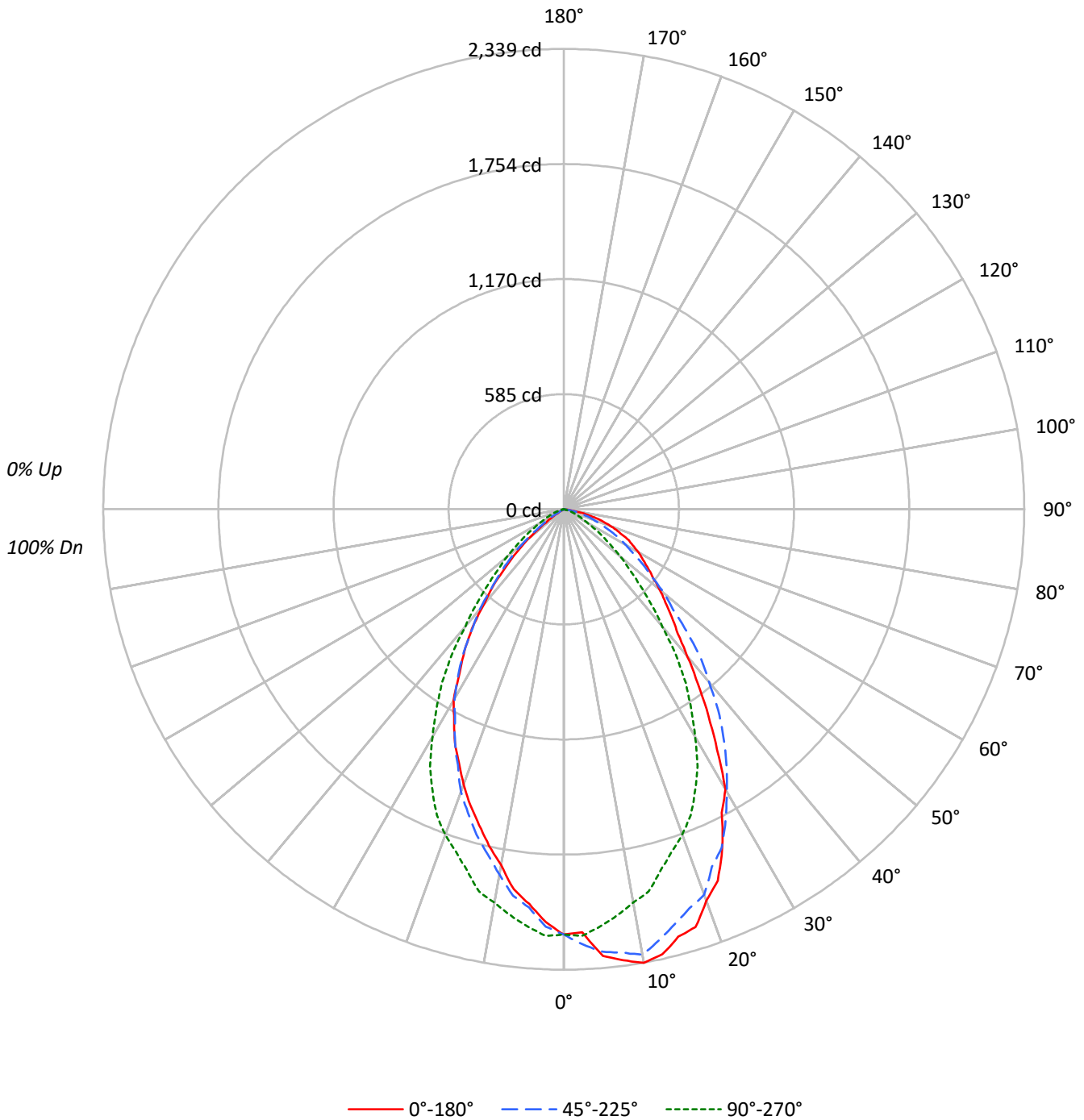
Lumens per Lamp: N/A  
 Luminaire Lumens: 3097.0 lumens  
 Efficiency: N/A  
 Efficacy: 62.4 lumens/watt  
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

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-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				
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°	208464	208464	208464
5°	220564	206006	194974
10°	229208	198747	179700
15°	224619	189686	165882
20°	217335	180616	152687
25°	202728	167957	139286
30°	183000	148651	124697
35°	150749	127250	103444
40°	123023	98222	79618
45°	105699	74600	57271
50°	95665	56787	36177
55°	88031	40962	13071
60°	84505	27982	2007
65°	81622	18927	594
70°	73068	13147	733
75°	59910	6785	0
80°	37451	2889	0
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	202.4	6.5
10°-20°	545.4	17.6
20°-30°	728.3	23.5
30°-40°	691.3	22.3
40°-50°	477.9	15.4
50°-60°	264.0	8.5
60°-70°	131.1	4.2
70°-80°	51.7	1.7
80°-90°	4.9	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°	1476.1	47.7
0°-40°	2167.4	70.0
0°-60°	2909.3	93.9
0°-90°	3097.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3097.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	2160	2160	2160	2160	2160	
5°	2277	2256	2127	2031	2013	218
15°	2249	2181	1899	1712	1661	636
25°	1904	1896	1578	1308	1308	868
35°	1280	1414	1080	889	878	802
45°	775	889	547	448	420	604
55°	523	492	244	124	78	471
65°	358	259	83	3	3	347
75°	161	98	18	0	0	171
85°	0	3	0	0	0	15
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°	2160.5	2160.5	2160.5	2160.5	2160.5	2160.5	2160.5	2160.5	2160.5	2160.5	2160.5
2.5°	2150.2	2209.8	2214.9	2209.8	2217.6	2214.9	2227.9	2214.9	2230.6	2207.2	2212.4
5°	2277.2	2253.8	2303.0	2277.2	2277.2	2274.6	2266.8	2264.2	2274.6	2240.9	2256.5
7.5°	2310.9	2344.5	2388.6	2334.2	2336.7	2336.7	2321.2	2316.0	2316.0	2253.8	2272.0
10°	2339.4	2318.6	2341.9	2321.2	2339.4	2336.7	2347.1	2313.4	2336.7	2300.5	2297.9
12.5°	2316.0	2308.2	2339.4	2305.7	2295.3	2297.9	2285.0	2277.2	2285.0	2243.5	2240.9
15°	2248.6	2256.5	2303.0	2266.8	2261.6	2256.5	2240.9	2214.9	2235.7	2178.7	2181.3
17.5°	2225.4	2212.4	2220.2	2189.1	2196.9	2191.7	2189.1	2165.8	2160.5	2124.3	2124.3
20°	2116.6	2145.0	2145.0	2124.3	2124.3	2121.8	2088.1	2108.8	2085.4	2075.1	2085.4
22.5°	2041.4	2044.0	2044.0	2025.9	2028.5	2018.1	2000.0	1987.0	2000.0	1987.0	1966.3
25°	1904.2	1909.3	1940.4	1906.7	1901.5	1911.9	1896.3	1888.5	1886.0	1854.9	1896.3
27.5°	1738.3	1790.1	1787.5	1774.6	1790.1	1769.4	1761.7	1764.2	1772.0	1769.4	1779.7
30°	1642.5	1650.2	1658.0	1647.7	1650.2	1642.5	1642.5	1645.0	1665.7	1658.0	1655.4
32.5°	1448.1	1474.0	1494.8	1494.8	1497.4	1505.2	1502.5	1556.9	1569.9	1544.1	1538.9
35°	1279.8	1297.9	1316.0	1318.6	1352.3	1354.9	1357.5	1373.0	1409.3	1417.1	1414.4
37.5°	1119.2	1137.3	1142.4	1165.8	1183.9	1202.0	1222.8	1243.5	1274.6	1300.5	1287.6
40°	976.7	984.4	997.4	1007.8	1044.0	1044.0	1054.3	1095.8	1129.5	1150.3	1147.6
42.5°	857.5	860.1	870.4	888.6	922.3	914.5	922.3	950.8	999.9	1002.6	1031.1
45°	774.6	772.0	779.8	782.3	803.1	813.5	818.7	839.4	880.8	886.0	888.6
47.5°	699.5	696.9	709.9	715.0	722.8	733.1	733.1	735.7	751.3	764.3	753.9
50°	637.3	637.3	637.3	642.5	655.5	652.8	655.5	665.8	673.5	668.3	665.8
52.5°	569.9	580.3	588.1	590.7	593.2	593.2	595.9	590.7	588.1	580.3	564.7
55°	523.3	533.7	533.7	533.7	533.7	544.0	531.1	533.7	533.7	513.0	492.3
57.5°	476.7	487.1	494.8	484.4	494.8	484.4	479.3	476.7	471.4	450.7	419.7
60°	437.9	443.0	440.4	437.9	443.0	435.2	430.0	419.7	414.5	386.0	365.3
62.5°	393.8	396.3	399.0	393.8	388.6	386.0	375.6	360.1	349.8	326.4	308.2
65°	357.5	349.8	347.1	344.6	339.4	331.6	323.9	305.7	297.9	277.2	259.0
67.5°	303.1	300.5	305.7	297.9	285.0	285.0	277.2	261.7	243.5	230.6	212.4
70°	259.0	256.5	251.3	243.5	241.0	230.6	230.6	212.4	207.3	183.9	168.4
72.5°	212.4	212.4	204.6	196.9	189.1	183.9	181.4	168.4	160.7	147.7	134.7
75°	160.7	160.7	158.0	150.2	145.0	139.9	137.3	127.0	119.2	106.3	98.5
77.5°	114.0	114.0	103.6	98.5	101.0	95.8	90.6	88.1	85.5	77.7	67.4
80°	67.4	64.8	57.0	59.6	57.0	57.0	54.4	51.8	46.6	41.4	36.2
82.5°	18.2	20.7	20.7	20.7	23.3	18.2	18.2	18.2	20.7	20.7	13.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	2.6	2.6
87.5°	2.6	5.2	10.4	10.4	10.4	10.4	10.4	7.8	7.8	7.8	5.2
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°	2160.5	2160.5	2160.5	2160.5	2160.5	2160.5	2160.5	2160.5	2160.5	2160.5	2160.5
2.5°	2186.5	2183.9	2186.5	2168.4	2209.8	2178.7	2173.5	2168.4	2186.5	2168.4	2142.5
5°	2233.1	2207.2	2199.4	2191.7	2214.9	2178.7	2171.0	2173.5	2160.5	2126.9	2129.5
7.5°	2248.6	2225.4	2202.0	2152.8	2173.5	2165.8	2145.0	2129.5	2108.8	2080.3	2075.1
10°	2253.8	2227.9	2194.2	2178.7	2147.6	2137.3	2129.5	2103.6	2077.7	2028.5	2015.5
12.5°	2238.3	2207.2	2165.8	2152.8	2129.5	2095.8	2077.7	2051.7	2028.5	1989.6	1961.1
15°	2171.0	2145.0	2132.1	2088.1	2077.7	2056.9	2020.7	1984.4	1950.7	1898.9	1883.4
17.5°	2093.2	2082.9	2069.9	2036.2	2033.7	2013.0	1979.3	1948.1	1904.2	1823.8	1797.9
20°	2013.0	2013.0	1971.5	1958.6	1984.4	1942.9	1917.0	1888.5	1797.9	1759.0	1712.4
22.5°	1953.4	1924.9	1901.5	1880.8	1883.4	1857.5	1821.2	1764.2	1730.5	1683.9	1629.5
25°	1836.8	1847.1	1795.4	1787.5	1795.4	1735.7	1717.6	1670.9	1621.7	1577.6	1536.2
27.5°	1764.2	1735.7	1702.1	1673.6	1673.6	1650.2	1598.5	1588.1	1512.9	1471.5	1419.6
30°	1655.4	1634.7	1606.2	1564.8	1559.6	1541.4	1500.0	1474.0	1396.4	1334.2	1305.6
32.5°	1518.1	1510.4	1487.0	1440.4	1424.9	1404.1	1352.3	1308.3	1272.0	1202.0	1168.4
35°	1419.6	1391.2	1342.0	1303.1	1290.1	1253.9	1212.4	1181.3	1142.4	1080.3	1036.3
37.5°	1272.0	1243.5	1196.8	1150.3	1150.3	1114.0	1057.0	1025.9	971.5	935.2	898.9
40°	1142.4	1106.2	1059.6	1005.2	997.4	945.5	922.3	870.4	836.7	779.8	774.6
42.5°	997.4	963.7	922.3	880.8	849.7	823.8	764.3	725.4	689.2	660.6	652.8
45°	865.3	821.2	785.0	733.1	702.0	671.0	632.1	606.2	577.7	546.7	528.5
47.5°	751.3	715.0	663.2	616.6	585.5	569.9	525.8	497.4	474.1	453.4	440.4
50°	634.8	590.7	562.2	510.3	505.1	468.9	432.7	409.3	396.3	378.3	360.1
52.5°	546.7	505.1	466.3	427.5	406.7	393.8	360.1	336.8	318.7	305.7	295.4
55°	461.1	424.9	393.8	354.9	341.9	323.9	285.0	279.8	261.7	243.5	230.6
57.5°	396.3	362.6	326.4	300.5	277.2	264.3	233.1	212.4	202.1	186.5	173.6
60°	336.8	300.5	272.0	241.0	230.6	212.4	189.1	171.0	158.0	145.0	132.1
62.5°	282.4	251.3	220.2	194.3	178.7	168.4	150.2	134.7	121.8	111.4	101.0
65°	233.1	204.6	178.7	152.9	145.0	132.1	119.2	106.3	95.8	82.9	72.6
67.5°	191.7	165.8	139.9	121.8	114.0	108.8	93.3	80.3	72.6	64.8	54.4
70°	150.2	132.1	111.4	95.8	88.1	80.3	69.9	62.2	51.8	46.6	38.9
72.5°	116.6	101.0	82.9	69.9	64.8	59.6	49.2	41.4	36.2	31.1	25.9
75°	82.9	69.9	59.6	46.6	44.0	41.4	33.7	28.5	23.3	18.2	15.5
77.5°	57.0	46.6	36.2	31.1	28.5	23.3	20.7	15.5	13.0	10.4	7.8
80°	31.1	23.3	18.2	15.5	13.0	10.4	10.4	7.8	5.2	5.2	2.6
82.5°	10.4	7.8	5.2	2.6	2.6	2.6	2.6	2.6	2.6	0.0	2.6
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°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	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°	2160.5	2160.5	2160.5	2160.5	2160.5	2160.5	2160.5	2160.5	2160.5	2160.5	2160.5
2.5°	2158.0	2129.5	2137.3	2137.3	2132.1	2132.1	2126.9	2119.1	2121.8	2106.1	2072.5
5°	2134.7	2098.4	2093.2	2098.4	2077.7	2072.5	2062.2	2077.7	2031.0	2049.2	2028.5
7.5°	2067.4	2033.7	2025.9	2044.0	2018.1	2002.5	2000.0	2020.7	1979.3	1958.6	1935.2
10°	1992.2	1979.3	1955.9	1942.9	1935.2	1937.8	1917.0	1891.2	1883.4	1878.2	1857.5
12.5°	1924.9	1896.3	1875.6	1860.1	1854.9	1854.9	1821.2	1816.1	1792.7	1787.5	1756.5
15°	1844.5	1810.9	1797.9	1777.2	1759.0	1769.4	1730.5	1720.1	1712.4	1678.7	1683.9
17.5°	1774.6	1738.3	1707.3	1694.3	1678.7	1663.2	1626.9	1634.7	1616.5	1616.5	1569.9
20°	1683.9	1645.0	1621.7	1595.8	1595.8	1575.1	1549.2	1551.8	1528.4	1505.2	1463.7
22.5°	1588.1	1546.6	1518.1	1507.7	1481.8	1476.7	1445.6	1437.8	1406.7	1409.3	1373.0
25°	1487.0	1445.6	1406.7	1409.3	1386.0	1375.7	1357.5	1321.3	1308.3	1292.8	1282.4
27.5°	1367.9	1339.3	1305.6	1303.1	1259.1	1261.6	1238.3	1228.0	1196.8	1204.7	1181.3
30°	1259.1	1217.6	1186.5	1178.8	1160.6	1155.4	1119.2	1103.6	1108.8	1088.0	1075.1
32.5°	1147.6	1085.5	1072.5	1057.0	1046.6	1033.6	1007.8	1018.1	994.8	999.9	979.2
35°	999.9	974.1	940.4	940.4	930.0	919.7	901.6	911.9	888.6	878.2	857.5
37.5°	875.6	852.4	818.7	829.0	810.8	795.3	779.8	782.3	761.6	759.1	738.3
40°	740.9	727.9	704.7	704.7	691.7	691.7	683.9	676.2	663.2	647.6	624.3
42.5°	613.9	603.6	593.2	595.9	577.7	593.2	572.5	585.5	544.0	541.5	525.8
45°	520.7	497.4	500.0	489.6	479.3	484.4	466.3	471.4	448.2	443.0	427.5
47.5°	422.3	414.5	399.0	393.8	393.8	386.0	378.3	375.6	365.3	352.3	331.6
50°	347.1	318.7	313.4	305.7	300.5	300.5	290.2	274.6	277.2	264.3	243.5
52.5°	272.0	248.7	238.3	235.8	225.4	220.2	207.3	196.9	189.1	183.9	171.0
55°	209.8	189.1	176.2	176.2	160.7	160.7	142.5	134.7	124.3	114.0	106.3
57.5°	158.0	147.7	134.7	124.3	119.2	106.3	95.8	82.9	75.1	59.6	49.2
60°	119.2	108.8	95.8	88.1	82.9	69.9	57.0	46.6	28.5	23.3	20.7
62.5°	88.1	77.7	64.8	59.6	54.4	44.0	31.1	15.5	7.8	7.8	7.8
65°	64.8	51.8	41.4	36.2	31.1	23.3	10.4	5.2	2.6	2.6	2.6
67.5°	44.0	33.7	23.3	20.7	15.5	7.8	2.6	2.6	2.6	2.6	2.6
70°	28.5	20.7	10.4	7.8	5.2	2.6	2.6	2.6	2.6	2.6	2.6
72.5°	18.2	10.4	5.2	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	10.4	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	5.2	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	2.6	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	2.6	2.6	2.6
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-H

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	2160.5	2160.5	2160.5	2160.5	2160.5	2160.5	2160.5	2160.5
2.5°	2108.8	2090.6	2101.0	2077.7	2088.1	2106.1	2093.2	2098.4
5°	2036.2	2025.9	2013.0	1979.3	2005.1	2025.9	2015.5	2013.0
7.5°	1958.6	1922.2	1940.4	1930.0	1924.9	1945.6	1922.2	1948.1
10°	1878.2	1852.3	1849.8	1831.6	1831.6	1847.1	1849.8	1834.1
12.5°	1759.0	1746.1	1746.1	1743.5	1740.9	1756.5	1759.0	1751.3
15°	1673.6	1668.4	1655.4	1652.9	1637.3	1660.6	1663.2	1660.6
17.5°	1569.9	1572.5	1559.6	1559.6	1569.9	1577.6	1556.9	1577.6
20°	1500.0	1487.0	1481.8	1458.5	1471.5	1484.5	1484.5	1487.0
22.5°	1398.9	1378.2	1386.0	1373.0	1365.2	1383.4	1383.4	1391.2
25°	1284.9	1284.9	1290.1	1282.4	1287.6	1297.9	1290.1	1308.3
27.5°	1176.1	1186.5	1186.5	1176.1	1181.3	1212.4	1225.4	1204.7
30°	1075.1	1077.7	1085.5	1080.3	1095.8	1106.2	1103.6	1119.2
32.5°	961.2	974.1	979.2	971.5	976.7	999.9	987.0	984.4
35°	873.1	849.7	847.2	849.7	860.1	865.3	860.1	878.2
37.5°	746.1	738.3	727.9	730.6	738.3	748.7	753.9	766.8
40°	624.3	613.9	613.9	611.4	603.6	632.1	632.1	632.1
42.5°	518.1	515.5	502.6	502.6	513.0	520.7	515.5	533.7
45°	424.9	414.5	406.7	406.7	414.5	414.5	422.3	419.7
47.5°	334.2	323.9	326.4	318.7	326.4	336.8	323.9	326.4
50°	251.3	251.3	246.1	251.3	248.7	251.3	246.1	241.0
52.5°	171.0	194.3	196.9	186.5	163.2	142.5	129.5	139.9
55°	98.5	88.1	88.1	85.5	80.3	77.7	69.9	77.7
57.5°	49.2	44.0	44.0	44.0	41.4	38.9	33.7	33.7
60°	20.7	18.2	18.2	15.5	13.0	10.4	7.8	10.4
62.5°	7.8	5.2	5.2	5.2	5.2	5.2	5.2	5.2
65°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
67.5°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
70°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
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)