

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 FEU4C459030 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 FEU4C459030 F4LC-SQLWW-H
 Description: 4 INCH 4500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH H FINISH
 Light Source: -
 Ballast/Driver: -

Summary

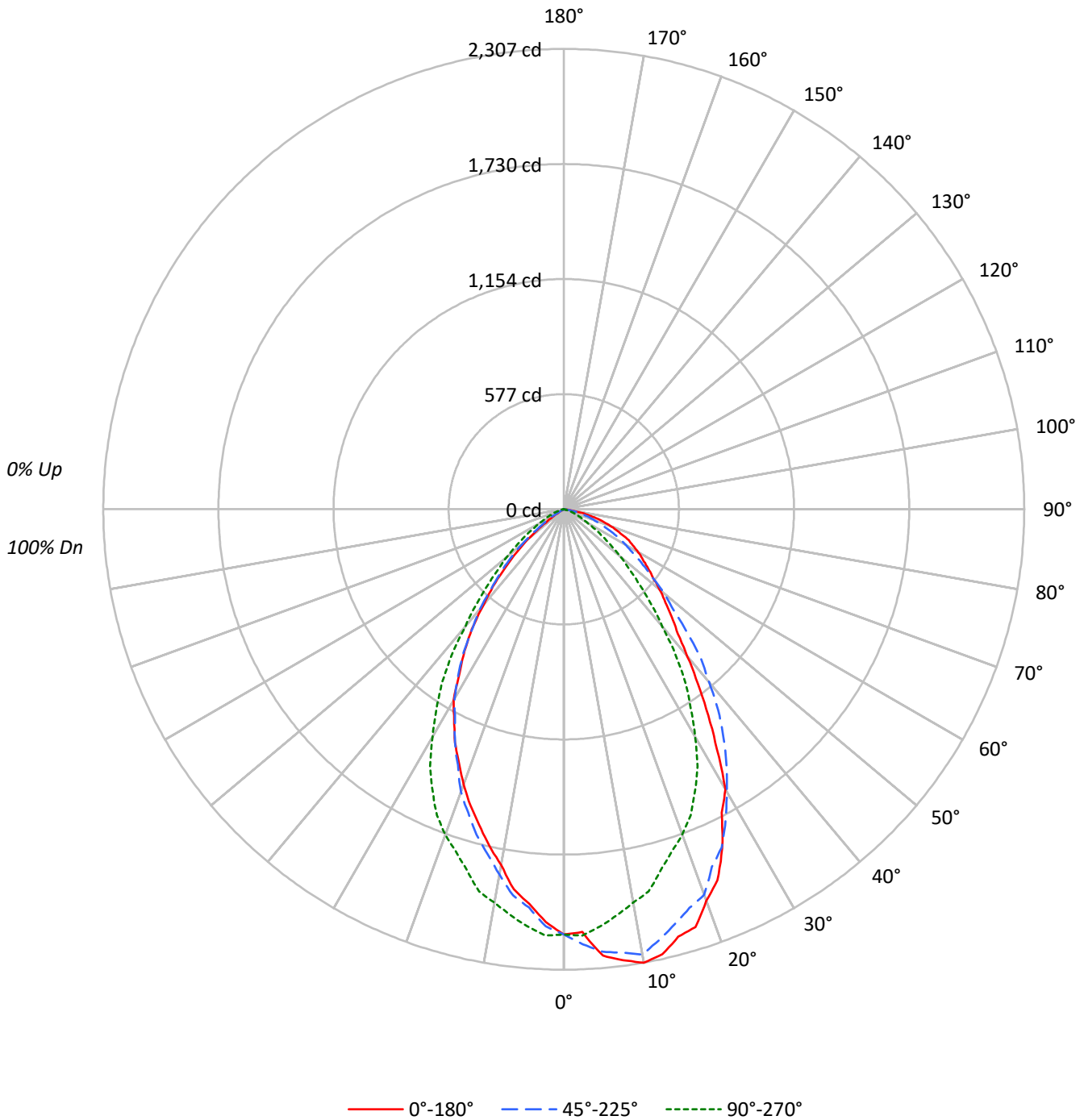
Lumens per Lamp: N/A
 Luminaire Lumens: 3054.0 lumens
 Efficiency: N/A
 Efficacy: 61.6 lumens/watt
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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#

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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	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°	205570	205570	205570
5°	217493	203149	192262
10°	226024	195984	177212
15°	221502	187049	163574
20°	214316	178111	150572
25°	199907	165626	137349
30°	180460	146579	122970
35°	148652	125483	102007
40°	121309	96861	78509
45°	104239	73563	56479
50°	94329	55991	35666
55°	86803	40390	12903
60°	83328	27596	1968
65°	80480	18676	594
70°	72052	12949	733
75°	59052	6673	0
80°	36951	2834	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	199.6	6.5
10°-20°	537.8	17.6
20°-30°	718.1	23.5
30°-40°	681.7	22.3
40°-50°	471.2	15.4
50°-60°	260.4	8.5
60°-70°	129.3	4.2
70°-80°	50.9	1.7
80°-90°	4.8	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°	1455.6	47.7
0°-40°	2137.3	70.0
0°-60°	2868.9	93.9
0°-90°	3054.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3054.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	2130	2130	2130	2130	2130	
5°	2246	2225	2097	2003	1985	215
15°	2217	2151	1872	1689	1638	627
25°	1878	1870	1556	1290	1290	856
35°	1262	1395	1065	876	866	791
45°	764	876	539	442	414	596
55°	516	485	240	123	77	464
65°	352	255	82	3	3	342
75°	158	97	18	0	0	169
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°	2130.5	2130.5	2130.5	2130.5	2130.5	2130.5	2130.5	2130.5	2130.5	2130.5	2130.5
2.5°	2120.3	2179.1	2184.2	2179.1	2186.8	2184.2	2197.0	2184.2	2199.6	2176.6	2181.7
5°	2245.5	2222.5	2271.1	2245.5	2245.5	2243.0	2235.3	2232.7	2243.0	2209.8	2225.1
7.5°	2278.8	2312.0	2355.4	2301.8	2304.3	2304.3	2289.0	2283.9	2283.9	2222.5	2240.4
10°	2306.9	2286.4	2309.4	2289.0	2306.9	2304.3	2314.5	2281.3	2304.3	2268.6	2266.0
12.5°	2283.9	2276.2	2306.9	2273.7	2263.5	2266.0	2253.2	2245.5	2253.2	2212.3	2209.8
15°	2217.4	2225.1	2271.1	2235.3	2230.2	2225.1	2209.8	2184.2	2204.7	2148.5	2151.1
17.5°	2194.5	2181.7	2189.4	2158.7	2166.4	2161.3	2158.7	2135.7	2130.5	2094.8	2094.8
20°	2087.2	2115.2	2115.2	2094.8	2094.8	2092.3	2059.1	2079.5	2056.5	2046.3	2056.5
22.5°	2013.0	2015.6	2015.6	1997.7	2000.3	1990.1	1972.2	1959.4	1972.2	1959.4	1939.0
25°	1877.7	1882.8	1913.5	1880.2	1875.1	1885.3	1870.0	1862.3	1859.8	1829.2	1870.0
27.5°	1714.2	1765.2	1762.7	1749.9	1765.2	1744.8	1737.2	1739.7	1747.4	1744.8	1755.0
30°	1619.7	1627.3	1635.0	1624.8	1627.3	1619.7	1619.7	1622.2	1642.6	1635.0	1632.4
32.5°	1428.0	1453.6	1474.1	1474.1	1476.6	1484.3	1481.7	1535.3	1548.1	1522.6	1517.5
35°	1262.0	1279.9	1297.7	1300.3	1333.6	1336.1	1338.7	1354.0	1389.7	1397.4	1394.8
37.5°	1103.7	1121.5	1126.6	1149.6	1167.5	1185.3	1205.8	1226.3	1256.9	1282.4	1269.7
40°	963.1	970.7	983.5	993.8	1029.5	1029.5	1039.7	1080.6	1113.9	1134.3	1131.7
42.5°	845.6	848.1	858.3	876.3	909.5	901.8	909.5	937.6	986.1	988.7	1016.8
45°	763.9	761.3	769.0	771.5	792.0	802.2	807.3	827.7	868.6	873.7	876.3
47.5°	689.8	687.2	700.0	705.1	712.7	722.9	722.9	725.5	740.8	753.7	743.4
50°	628.4	628.4	628.4	633.5	646.4	643.8	646.4	656.6	664.2	659.1	656.6
52.5°	562.0	572.2	579.9	582.5	585.0	585.0	587.6	582.5	579.9	572.2	556.9
55°	516.0	526.3	526.3	526.3	526.3	536.5	523.8	526.3	526.3	505.8	485.4
57.5°	470.1	480.3	487.9	477.7	487.9	477.7	472.6	470.1	464.9	444.5	413.9
60°	431.8	436.9	434.3	431.8	436.9	429.2	424.1	413.9	408.8	380.6	360.2
62.5°	388.3	390.8	393.4	388.3	383.2	380.6	370.4	355.1	344.9	321.9	304.0
65°	352.5	344.9	342.3	339.8	334.7	327.0	319.4	301.5	293.8	273.3	255.4
67.5°	298.9	296.4	301.5	293.8	281.0	281.0	273.3	258.0	240.1	227.4	209.5
70°	255.4	252.9	247.8	240.1	237.6	227.4	227.4	209.5	204.4	181.4	166.0
72.5°	209.5	209.5	201.8	194.2	186.5	181.4	178.9	166.0	158.4	145.6	132.8
75°	158.4	158.4	155.8	148.1	143.0	137.9	135.4	125.2	117.5	104.8	97.1
77.5°	112.4	112.4	102.2	97.1	99.6	94.5	89.4	86.9	84.3	76.7	66.5
80°	66.5	63.9	56.2	58.8	56.2	56.2	53.6	51.0	45.9	40.8	35.7
82.5°	17.9	20.4	20.4	20.4	23.0	17.9	17.9	17.9	20.4	20.4	12.8
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	5.1	10.2	10.2	10.2	10.2	10.2	7.7	7.7	7.7	5.1
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°	2130.5	2130.5	2130.5	2130.5	2130.5	2130.5	2130.5	2130.5	2130.5	2130.5	2130.5
2.5°	2156.2	2153.6	2156.2	2138.2	2179.1	2148.5	2143.4	2138.2	2156.2	2138.2	2112.7
5°	2202.1	2176.6	2168.9	2161.3	2184.2	2148.5	2140.8	2143.4	2130.5	2097.4	2099.9
7.5°	2217.4	2194.5	2171.5	2122.9	2143.4	2135.7	2115.2	2099.9	2079.5	2051.4	2046.3
10°	2222.5	2197.0	2163.8	2148.5	2117.8	2107.6	2099.9	2074.4	2048.9	2000.3	1987.5
12.5°	2207.2	2176.6	2135.7	2122.9	2099.9	2066.7	2048.9	2023.2	2000.3	1962.0	1933.9
15°	2140.8	2115.2	2102.5	2059.1	2048.9	2028.4	1992.6	1956.9	1923.7	1872.5	1857.2
17.5°	2064.2	2054.0	2041.2	2007.9	2005.4	1985.0	1951.8	1921.1	1877.7	1798.5	1772.9
20°	1985.0	1985.0	1944.1	1931.4	1956.9	1916.0	1890.4	1862.3	1772.9	1734.6	1688.7
22.5°	1926.3	1898.1	1875.1	1854.7	1857.2	1831.7	1796.0	1739.7	1706.5	1660.5	1606.9
25°	1811.3	1821.5	1770.4	1762.7	1770.4	1711.6	1693.8	1647.7	1599.2	1555.7	1514.9
27.5°	1739.7	1711.6	1678.4	1650.3	1650.3	1627.3	1576.3	1566.1	1491.9	1451.1	1399.9
30°	1632.4	1612.0	1583.9	1543.0	1537.9	1520.0	1479.2	1453.6	1377.0	1315.6	1287.5
32.5°	1497.0	1489.4	1466.4	1420.4	1405.1	1384.6	1333.6	1290.1	1254.4	1185.3	1152.2
35°	1399.9	1371.9	1323.3	1285.0	1272.2	1236.5	1195.5	1164.9	1126.6	1065.3	1021.9
37.5°	1254.4	1226.3	1180.2	1134.3	1134.3	1098.5	1042.3	1011.7	958.0	922.2	886.5
40°	1126.6	1090.8	1044.9	991.3	983.5	932.4	909.5	858.3	825.1	769.0	763.9
42.5°	983.5	950.3	909.5	868.6	837.9	812.4	753.7	715.3	679.6	651.5	643.8
45°	853.2	809.8	774.1	722.9	692.3	661.7	623.3	597.8	569.7	539.1	521.2
47.5°	740.8	705.1	654.0	608.0	577.4	562.0	518.5	490.5	467.5	447.1	434.3
50°	625.9	582.5	554.4	503.2	498.1	462.4	426.7	403.6	390.8	373.0	355.1
52.5°	539.1	498.1	459.8	421.6	401.0	388.3	355.1	332.1	314.3	301.5	291.3
55°	454.7	419.0	388.3	350.0	337.2	319.4	281.0	275.9	258.0	240.1	227.4
57.5°	390.8	357.6	321.9	296.4	273.3	260.6	229.9	209.5	199.3	184.0	171.1
60°	332.1	296.4	268.2	237.6	227.4	209.5	186.5	168.6	155.8	143.0	130.3
62.5°	278.4	247.8	217.2	191.6	176.3	166.0	148.1	132.8	120.1	109.9	99.6
65°	229.9	201.8	176.3	150.7	143.0	130.3	117.5	104.8	94.5	81.8	71.6
67.5°	189.1	163.5	137.9	120.1	112.4	107.3	92.0	79.2	71.6	63.9	53.6
70°	148.1	130.3	109.9	94.5	86.9	79.2	69.0	61.4	51.0	45.9	38.3
72.5°	115.0	99.6	81.8	69.0	63.9	58.8	48.5	40.8	35.7	30.6	25.5
75°	81.8	69.0	58.8	45.9	43.4	40.8	33.2	28.1	23.0	17.9	15.3
77.5°	56.2	45.9	35.7	30.6	28.1	23.0	20.4	15.3	12.8	10.2	7.7
80°	30.6	23.0	17.9	15.3	12.8	10.2	10.2	7.7	5.1	5.1	2.6
82.5°	10.2	7.7	5.1	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°	2130.5	2130.5	2130.5	2130.5	2130.5	2130.5	2130.5	2130.5	2130.5	2130.5	2130.5
2.5°	2128.0	2099.9	2107.6	2107.6	2102.5	2102.5	2097.4	2089.7	2092.3	2076.9	2043.8
5°	2105.0	2069.3	2064.2	2069.3	2048.9	2043.8	2033.6	2048.9	2002.8	2020.7	2000.3
7.5°	2038.7	2005.4	1997.7	2015.6	1990.1	1974.7	1972.2	1992.6	1951.8	1931.4	1908.3
10°	1964.5	1951.8	1928.8	1916.0	1908.3	1910.9	1890.4	1864.9	1857.2	1852.1	1831.7
12.5°	1898.1	1870.0	1849.6	1834.3	1829.2	1829.2	1796.0	1790.8	1767.8	1762.7	1732.1
15°	1818.9	1785.7	1772.9	1752.5	1734.6	1744.8	1706.5	1696.3	1688.7	1655.4	1660.5
17.5°	1749.9	1714.2	1683.6	1670.7	1655.4	1640.1	1604.3	1612.0	1594.1	1594.1	1548.1
20°	1660.5	1622.2	1599.2	1573.7	1573.7	1553.2	1527.7	1530.2	1507.2	1484.3	1443.3
22.5°	1566.1	1525.1	1497.0	1486.8	1461.3	1456.2	1425.5	1417.8	1387.2	1389.7	1354.0
25°	1466.4	1425.5	1387.2	1389.7	1366.8	1356.6	1338.7	1302.9	1290.1	1274.8	1264.6
27.5°	1348.9	1320.7	1287.5	1285.0	1241.6	1244.1	1221.2	1210.9	1180.2	1187.9	1164.9
30°	1241.6	1200.7	1170.0	1162.4	1144.5	1139.4	1103.7	1088.2	1093.4	1072.9	1060.2
32.5°	1131.7	1070.4	1057.6	1042.3	1032.1	1019.3	993.8	1004.0	980.9	986.1	965.6
35°	986.1	960.5	927.3	927.3	917.1	906.9	889.1	899.3	876.3	866.0	845.6
37.5°	863.4	840.5	807.3	817.5	799.6	784.3	769.0	771.5	751.0	748.5	728.0
40°	730.6	717.8	694.9	694.9	682.1	682.1	674.4	666.8	654.0	638.7	615.6
42.5°	605.4	595.2	585.0	587.6	569.7	585.0	564.6	577.4	536.5	534.0	518.5
45°	513.4	490.5	493.0	482.8	472.6	477.7	459.8	464.9	442.0	436.9	421.6
47.5°	416.5	408.8	393.4	388.3	388.3	380.6	373.0	370.4	360.2	347.4	327.0
50°	342.3	314.3	309.1	301.5	296.4	296.4	286.1	270.8	273.3	260.6	240.1
52.5°	268.2	245.2	235.0	232.5	222.3	217.2	204.4	194.2	186.5	181.4	168.6
55°	206.9	186.5	173.8	173.8	158.4	158.4	140.5	132.8	122.6	112.4	104.8
57.5°	155.8	145.6	132.8	122.6	117.5	104.8	94.5	81.8	74.1	58.8	48.5
60°	117.5	107.3	94.5	86.9	81.8	69.0	56.2	45.9	28.1	23.0	20.4
62.5°	86.9	76.7	63.9	58.8	53.6	43.4	30.6	15.3	7.7	7.7	7.7
65°	63.9	51.0	40.8	35.7	30.6	23.0	10.2	5.1	2.6	2.6	2.6
67.5°	43.4	33.2	23.0	20.4	15.3	7.7	2.6	2.6	2.6	2.6	2.6
70°	28.1	20.4	10.2	7.7	5.1	2.6	2.6	2.6	2.6	2.6	2.6
72.5°	17.9	10.2	5.1	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	10.2	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	5.1	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 FEU4C459030 F4LC-SQLWW-H

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	2130.5	2130.5	2130.5	2130.5	2130.5	2130.5	2130.5	2130.5
2.5°	2079.5	2061.6	2071.8	2048.9	2059.1	2076.9	2064.2	2069.3
5°	2007.9	1997.7	1985.0	1951.8	1977.3	1997.7	1987.5	1985.0
7.5°	1931.4	1895.5	1913.5	1903.2	1898.1	1918.6	1895.5	1921.1
10°	1852.1	1826.6	1824.1	1806.2	1806.2	1821.5	1824.1	1808.7
12.5°	1734.6	1721.9	1721.9	1719.3	1716.7	1732.1	1734.6	1727.0
15°	1650.3	1645.2	1632.4	1629.9	1614.6	1637.5	1640.1	1637.5
17.5°	1548.1	1550.6	1537.9	1537.9	1548.1	1555.7	1535.3	1555.7
20°	1479.2	1466.4	1461.3	1438.2	1451.1	1463.9	1463.9	1466.4
22.5°	1379.5	1359.1	1366.8	1354.0	1346.3	1364.2	1364.2	1371.9
25°	1267.1	1267.1	1272.2	1264.6	1269.7	1279.9	1272.2	1290.1
27.5°	1159.8	1170.0	1170.0	1159.8	1164.9	1195.5	1208.3	1187.9
30°	1060.2	1062.7	1070.4	1065.3	1080.6	1090.8	1088.2	1103.7
32.5°	947.8	960.5	965.6	958.0	963.1	986.1	973.3	970.7
35°	860.9	837.9	835.4	837.9	848.1	853.2	848.1	866.0
37.5°	735.7	728.0	717.8	720.4	728.0	738.3	743.4	756.2
40°	615.6	605.4	605.4	602.9	595.2	623.3	623.3	623.3
42.5°	510.9	508.3	495.6	495.6	505.8	513.4	508.3	526.3
45°	419.0	408.8	401.0	401.0	408.8	408.8	416.5	413.9
47.5°	329.6	319.4	321.9	314.3	321.9	332.1	319.4	321.9
50°	247.8	247.8	242.7	247.8	245.2	247.8	242.7	237.6
52.5°	168.6	191.6	194.2	184.0	160.9	140.5	127.7	137.9
55°	97.1	86.9	86.9	84.3	79.2	76.7	69.0	76.7
57.5°	48.5	43.4	43.4	43.4	40.8	38.3	33.2	33.2
60°	20.4	17.9	17.9	15.3	12.8	10.2	7.7	10.2
62.5°	7.7	5.1	5.1	5.1	5.1	5.1	5.1	5.1
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)