

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

Summary

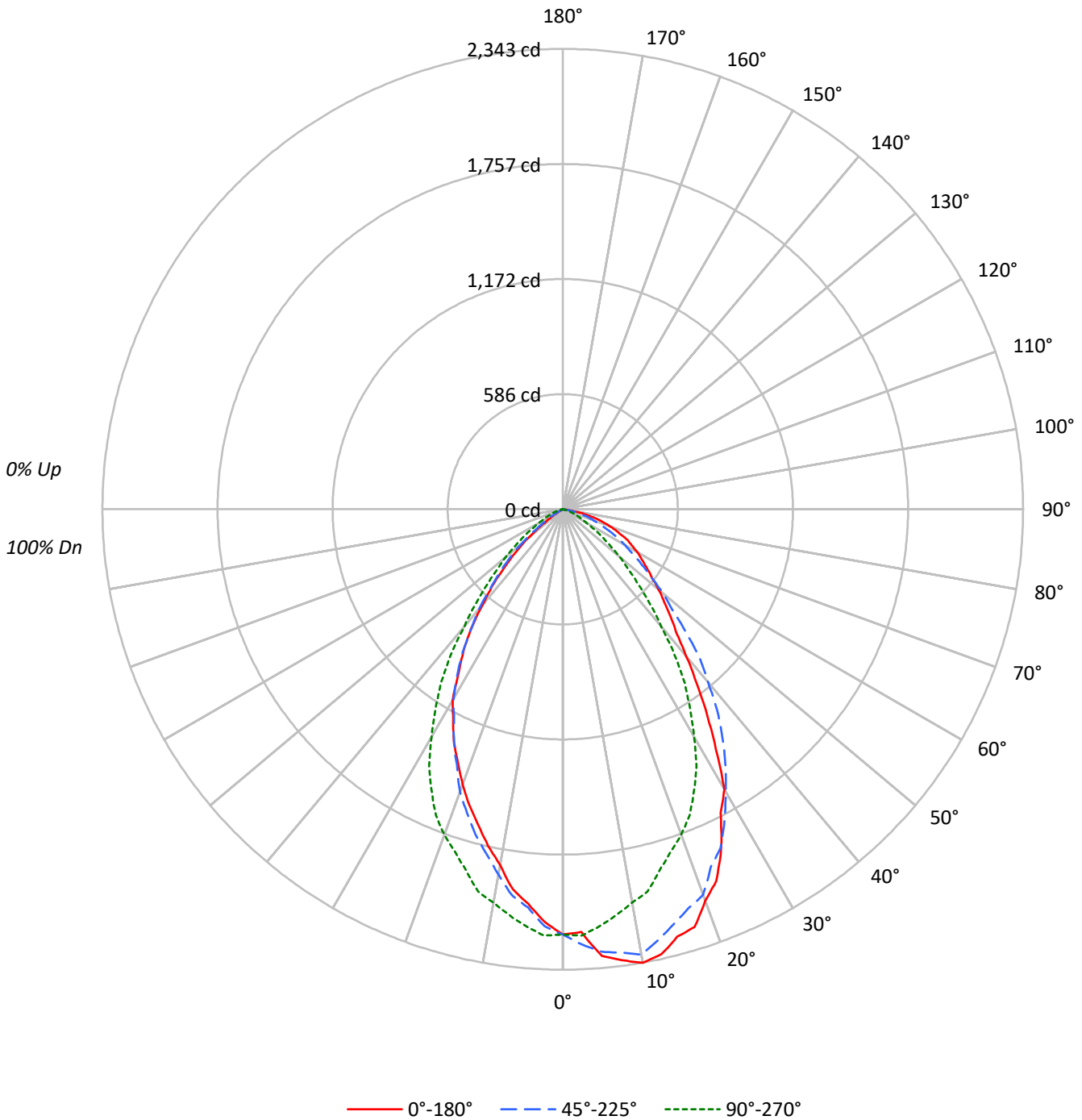
Lumens per Lamp: N/A
 Luminaire Lumens: 3102.0 lumens
 Efficiency: N/A
 Efficacy: 62.5 lumens/watt
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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 FEU4C459040 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	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°	208802	208802	208802
5°	220913	206345	195284
10°	229581	199070	179994
15°	224988	189986	166151
20°	217684	180914	152934
25°	203048	168234	139510
30°	183301	148885	124897
35°	150985	127462	103621
40°	123224	98385	79744
45°	105876	74710	57366
50°	95815	56877	36222
55°	88183	41030	13105
60°	84640	28040	2007
65°	81736	18973	594
70°	73181	13175	733
75°	59984	6785	0
80°	37507	2889	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	202.8	6.5
10°-20°	546.3	17.6
20°-30°	729.4	23.5
30°-40°	692.4	22.3
40°-50°	478.6	15.4
50°-60°	264.5	8.5
60°-70°	131.3	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°	1478.4	47.7
0°-40°	2170.9	70.0
0°-60°	2914.0	93.9
0°-90°	3102.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3102.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	2164	2164	2164	2164	2164	
5°	2281	2260	2130	2034	2016	218
15°	2252	2185	1902	1715	1663	637
25°	1907	1899	1580	1310	1310	869
35°	1282	1417	1082	890	880	803
45°	776	890	548	449	420	605
55°	524	493	244	124	78	472
65°	358	259	83	3	3	348
75°	161	99	18	0	0	172
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°	2164.0	2164.0	2164.0	2164.0	2164.0	2164.0	2164.0	2164.0	2164.0	2164.0	2164.0
2.5°	2153.7	2213.3	2218.5	2213.3	2221.2	2218.5	2231.5	2218.5	2234.2	2210.8	2216.0
5°	2280.8	2257.5	2306.8	2280.8	2280.8	2278.3	2270.5	2267.8	2278.3	2244.5	2260.1
7.5°	2314.6	2348.3	2392.5	2338.0	2340.5	2340.5	2325.0	2319.8	2319.8	2257.5	2275.6
10°	2343.2	2322.3	2345.7	2325.0	2343.2	2340.5	2350.9	2317.1	2340.5	2304.2	2301.6
12.5°	2319.8	2311.9	2343.2	2309.4	2299.0	2301.6	2288.7	2280.8	2288.7	2247.1	2244.5
15°	2252.3	2260.1	2306.8	2270.5	2265.3	2260.1	2244.5	2218.5	2239.4	2182.2	2184.9
17.5°	2229.0	2216.0	2223.8	2192.6	2200.4	2195.2	2192.6	2169.3	2164.0	2127.7	2127.7
20°	2120.0	2148.5	2148.5	2127.7	2127.7	2125.2	2091.4	2112.2	2088.8	2078.4	2088.8
22.5°	2044.7	2047.3	2047.3	2029.1	2031.8	2021.4	2003.2	1990.2	2003.2	1990.2	1969.4
25°	1907.2	1912.4	1943.5	1909.8	1904.6	1915.0	1899.4	1891.6	1889.0	1857.9	1899.4
27.5°	1741.1	1793.0	1790.4	1777.4	1793.0	1772.2	1764.5	1767.0	1774.9	1772.2	1782.6
30°	1645.2	1652.9	1660.7	1650.3	1652.9	1645.2	1645.2	1647.7	1668.4	1660.7	1658.1
32.5°	1450.5	1476.4	1497.2	1497.2	1499.8	1507.6	1505.0	1559.5	1572.5	1546.5	1541.4
35°	1281.8	1300.0	1318.1	1320.8	1354.5	1357.1	1359.7	1375.2	1411.5	1419.4	1416.7
37.5°	1121.0	1139.1	1144.3	1167.7	1185.9	1204.0	1224.8	1245.5	1276.6	1302.6	1289.7
40°	978.3	986.0	999.0	1009.4	1045.7	1045.7	1056.0	1097.6	1131.4	1152.1	1149.5
42.5°	858.9	861.5	871.8	890.0	923.8	916.0	923.8	952.3	1001.5	1004.2	1032.8
45°	775.9	773.2	781.1	783.6	804.4	814.8	820.0	840.7	882.2	887.4	890.0
47.5°	700.6	698.0	711.0	716.2	723.9	734.3	734.3	736.9	752.5	765.5	755.1
50°	638.3	638.3	638.3	643.5	656.5	653.9	656.5	666.9	674.6	669.4	666.9
52.5°	570.8	581.2	589.0	591.7	594.2	594.2	596.8	591.7	589.0	581.2	565.6
55°	524.2	534.5	534.5	534.5	534.5	544.9	532.0	534.5	534.5	513.8	493.0
57.5°	477.5	487.9	495.6	485.2	495.6	485.2	480.0	477.5	472.2	451.5	420.4
60°	438.6	443.7	441.1	438.6	443.7	435.9	430.7	420.4	415.2	386.6	365.9
62.5°	394.4	397.0	399.6	394.4	389.3	386.6	376.2	360.7	350.3	326.9	308.7
65°	358.0	350.3	347.7	345.1	339.9	332.1	324.4	306.2	298.4	277.6	259.4
67.5°	303.6	301.0	306.2	298.4	285.5	285.5	277.6	262.1	243.9	231.0	212.8
70°	259.4	256.9	251.7	243.9	241.3	231.0	231.0	212.8	207.6	184.2	168.7
72.5°	212.8	212.8	204.9	197.2	189.4	184.2	181.7	168.7	160.9	147.9	134.9
75°	160.9	160.9	158.3	150.5	145.3	140.1	137.5	127.2	119.3	106.4	98.6
77.5°	114.2	114.2	103.8	98.6	101.2	96.0	90.8	88.2	85.6	77.9	67.5
80°	67.5	64.9	57.1	59.7	57.1	57.1	54.5	51.8	46.7	41.5	36.3
82.5°	18.2	20.7	20.7	20.7	23.4	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°	2164.0	2164.0	2164.0	2164.0	2164.0	2164.0	2164.0	2164.0	2164.0	2164.0	2164.0
2.5°	2190.1	2187.4	2190.1	2171.9	2213.3	2182.2	2177.0	2171.9	2190.1	2171.9	2145.9
5°	2236.7	2210.8	2203.0	2195.2	2218.5	2182.2	2174.5	2177.0	2164.0	2130.4	2132.9
7.5°	2252.3	2229.0	2205.6	2156.3	2177.0	2169.3	2148.5	2132.9	2112.2	2083.6	2078.4
10°	2257.5	2231.5	2197.8	2182.2	2151.1	2140.7	2132.9	2107.0	2081.1	2031.8	2018.8
12.5°	2241.9	2210.8	2169.3	2156.3	2132.9	2099.2	2081.1	2055.0	2031.8	1992.8	1964.3
15°	2174.5	2148.5	2135.6	2091.4	2081.1	2060.2	2023.9	1987.6	1953.9	1901.9	1886.4
17.5°	2096.6	2086.3	2073.2	2039.5	2037.0	2016.2	1982.5	1951.3	1907.2	1826.7	1800.8
20°	2016.2	2016.2	1974.6	1961.7	1987.6	1946.1	1920.1	1891.6	1800.8	1761.9	1715.2
22.5°	1956.5	1928.0	1904.6	1883.9	1886.4	1860.5	1824.2	1767.0	1733.3	1686.6	1632.1
25°	1839.7	1850.1	1798.3	1790.4	1798.3	1738.5	1720.4	1673.6	1624.3	1580.2	1538.7
27.5°	1767.0	1738.5	1704.8	1676.3	1676.3	1652.9	1601.0	1590.7	1515.3	1473.9	1421.9
30°	1658.1	1637.3	1608.8	1567.3	1562.1	1543.9	1502.4	1476.4	1398.6	1336.3	1307.7
32.5°	1520.5	1512.8	1489.4	1442.8	1427.2	1406.4	1354.5	1310.4	1274.1	1204.0	1170.3
35°	1421.9	1393.4	1344.1	1305.2	1292.2	1255.9	1214.3	1183.2	1144.3	1082.1	1037.9
37.5°	1274.1	1245.5	1198.8	1152.1	1152.1	1115.8	1058.7	1027.6	973.1	936.7	900.4
40°	1144.3	1108.0	1061.3	1006.8	999.0	947.1	923.8	871.8	838.1	781.1	775.9
42.5°	999.0	965.3	923.8	882.2	851.1	825.2	765.5	726.6	690.3	661.7	653.9
45°	866.6	822.5	786.2	734.3	703.2	672.1	633.1	607.2	578.6	547.5	529.3
47.5°	752.5	716.2	664.2	617.6	586.5	570.8	526.7	498.2	474.9	454.1	441.1
50°	635.8	591.7	563.1	511.1	506.0	469.7	433.4	410.0	397.0	378.9	360.7
52.5°	547.5	506.0	467.0	428.2	407.3	394.4	360.7	337.3	319.2	306.2	295.8
55°	461.8	425.5	394.4	355.5	342.5	324.4	285.5	280.3	262.1	243.9	231.0
57.5°	397.0	363.2	326.9	301.0	277.6	264.7	233.5	212.8	202.4	186.9	173.8
60°	337.3	301.0	272.4	241.3	231.0	212.8	189.4	171.3	158.3	145.3	132.4
62.5°	282.8	251.7	220.6	194.6	179.0	168.7	150.5	134.9	122.0	111.6	101.2
65°	233.5	204.9	179.0	153.1	145.3	132.4	119.3	106.4	96.0	83.1	72.7
67.5°	192.0	166.1	140.1	122.0	114.2	109.0	93.4	80.4	72.7	64.9	54.5
70°	150.5	132.4	111.6	96.0	88.2	80.4	70.0	62.3	51.8	46.7	38.9
72.5°	116.8	101.2	83.1	70.0	64.9	59.7	49.3	41.5	36.3	31.1	25.9
75°	83.1	70.0	59.7	46.7	44.1	41.5	33.8	28.6	23.4	18.2	15.6
77.5°	57.1	46.7	36.3	31.1	28.6	23.4	20.7	15.6	13.0	10.4	7.8
80°	31.1	23.4	18.2	15.6	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°	2164.0	2164.0	2164.0	2164.0	2164.0	2164.0	2164.0	2164.0	2164.0	2164.0	2164.0
2.5°	2161.5	2132.9	2140.7	2140.7	2135.6	2135.6	2130.4	2122.5	2125.2	2109.5	2075.9
5°	2138.1	2101.8	2096.6	2101.8	2081.1	2075.9	2065.5	2081.1	2034.3	2052.5	2031.8
7.5°	2070.7	2037.0	2029.1	2047.3	2021.4	2005.7	2003.2	2023.9	1982.5	1961.7	1938.3
10°	1995.4	1982.5	1959.1	1946.1	1938.3	1940.9	1920.1	1894.2	1886.4	1881.2	1860.5
12.5°	1928.0	1899.4	1878.7	1863.1	1857.9	1857.9	1824.2	1819.0	1795.6	1790.4	1759.3
15°	1847.5	1813.8	1800.8	1780.1	1761.9	1772.2	1733.3	1722.9	1715.2	1681.4	1686.6
17.5°	1777.4	1741.1	1710.0	1697.0	1681.4	1665.9	1629.5	1637.3	1619.1	1619.1	1572.5
20°	1686.6	1647.7	1624.3	1598.4	1598.4	1577.7	1551.7	1554.3	1530.9	1507.6	1466.0
22.5°	1590.7	1549.1	1520.5	1510.2	1484.2	1479.0	1447.9	1440.1	1409.0	1411.5	1375.2
25°	1489.4	1447.9	1409.0	1411.5	1388.3	1377.9	1359.7	1323.4	1310.4	1294.8	1284.5
27.5°	1370.1	1341.5	1307.7	1305.2	1261.1	1263.6	1240.3	1230.0	1198.8	1206.6	1183.2
30°	1261.1	1219.6	1188.4	1180.7	1162.5	1157.3	1121.0	1105.3	1110.6	1089.8	1076.9
32.5°	1149.5	1087.2	1074.2	1058.7	1048.3	1035.3	1009.4	1019.7	996.4	1001.5	980.8
35°	1001.5	975.6	941.9	941.9	931.5	921.1	903.0	913.4	890.0	879.7	858.9
37.5°	877.0	853.7	820.0	830.4	812.2	796.6	781.1	783.6	762.9	760.3	739.5
40°	742.1	729.1	705.8	705.8	692.8	692.8	685.0	677.3	664.2	648.7	625.3
42.5°	614.9	604.6	594.2	596.8	578.6	594.2	573.5	586.5	544.9	542.4	526.7
45°	521.5	498.2	500.8	490.4	480.0	485.2	467.0	472.2	448.9	443.7	428.2
47.5°	423.0	415.2	399.6	394.4	394.4	386.6	378.9	376.2	365.9	352.9	332.1
50°	347.7	319.2	313.9	306.2	301.0	301.0	290.6	275.1	277.6	264.7	243.9
52.5°	272.4	249.1	238.7	236.2	225.8	220.6	207.6	197.2	189.4	184.2	171.3
55°	210.1	189.4	176.5	176.5	160.9	160.9	142.7	134.9	124.5	114.2	106.4
57.5°	158.3	147.9	134.9	124.5	119.3	106.4	96.0	83.1	75.2	59.7	49.3
60°	119.3	109.0	96.0	88.2	83.1	70.0	57.1	46.7	28.6	23.4	20.7
62.5°	88.2	77.9	64.9	59.7	54.5	44.1	31.1	15.6	7.8	7.8	7.8
65°	64.9	51.8	41.5	36.3	31.1	23.4	10.4	5.2	2.6	2.6	2.6
67.5°	44.1	33.8	23.4	20.7	15.6	7.8	2.6	2.6	2.6	2.6	2.6
70°	28.6	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 FEU4C459040 F4LC-SQLWW-H

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	2164.0	2164.0	2164.0	2164.0	2164.0	2164.0	2164.0	2164.0
2.5°	2112.2	2094.0	2104.4	2081.1	2091.4	2109.5	2096.6	2101.8
5°	2039.5	2029.1	2016.2	1982.5	2008.4	2029.1	2018.8	2016.2
7.5°	1961.7	1925.3	1943.5	1933.2	1928.0	1948.7	1925.3	1951.3
10°	1881.2	1855.3	1852.7	1834.5	1834.5	1850.1	1852.7	1837.1
12.5°	1761.9	1749.0	1749.0	1746.3	1743.7	1759.3	1761.9	1754.1
15°	1676.3	1671.1	1658.1	1655.5	1640.0	1663.3	1665.9	1663.3
17.5°	1572.5	1575.0	1562.1	1562.1	1572.5	1580.2	1559.5	1580.2
20°	1502.4	1489.4	1484.2	1460.8	1473.9	1486.9	1486.9	1489.4
22.5°	1401.2	1380.4	1388.3	1375.2	1367.4	1385.6	1385.6	1393.4
25°	1287.0	1287.0	1292.2	1284.5	1289.7	1300.0	1292.2	1310.4
27.5°	1178.0	1188.4	1188.4	1178.0	1183.2	1214.3	1227.3	1206.6
30°	1076.9	1079.4	1087.2	1082.1	1097.6	1108.0	1105.3	1121.0
32.5°	962.7	975.6	980.8	973.1	978.3	1001.5	988.6	986.0
35°	874.5	851.1	848.6	851.1	861.5	866.6	861.5	879.7
37.5°	747.3	739.5	729.1	731.7	739.5	749.9	755.1	768.0
40°	625.3	614.9	614.9	612.4	604.6	633.1	633.1	633.1
42.5°	519.0	516.3	503.4	503.4	513.8	521.5	516.3	534.5
45°	425.5	415.2	407.3	407.3	415.2	415.2	423.0	420.4
47.5°	334.8	324.4	326.9	319.2	326.9	337.3	324.4	326.9
50°	251.7	251.7	246.5	251.7	249.1	251.7	246.5	241.3
52.5°	171.3	194.6	197.2	186.9	163.5	142.7	129.7	140.1
55°	98.6	88.2	88.2	85.6	80.4	77.9	70.0	77.9
57.5°	49.3	44.1	44.1	44.1	41.5	38.9	33.8	33.8
60°	20.7	18.2	18.2	15.6	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)