

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: **FLDSQ4C40D010 FEU4C409030 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: FLDSQ4C40D010 FEU4C409030 F4LC-SQLWW-H
 Description: 4 INCH 4000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH H FINISH
 Light Source: -
 Ballast/Driver: -

Summary

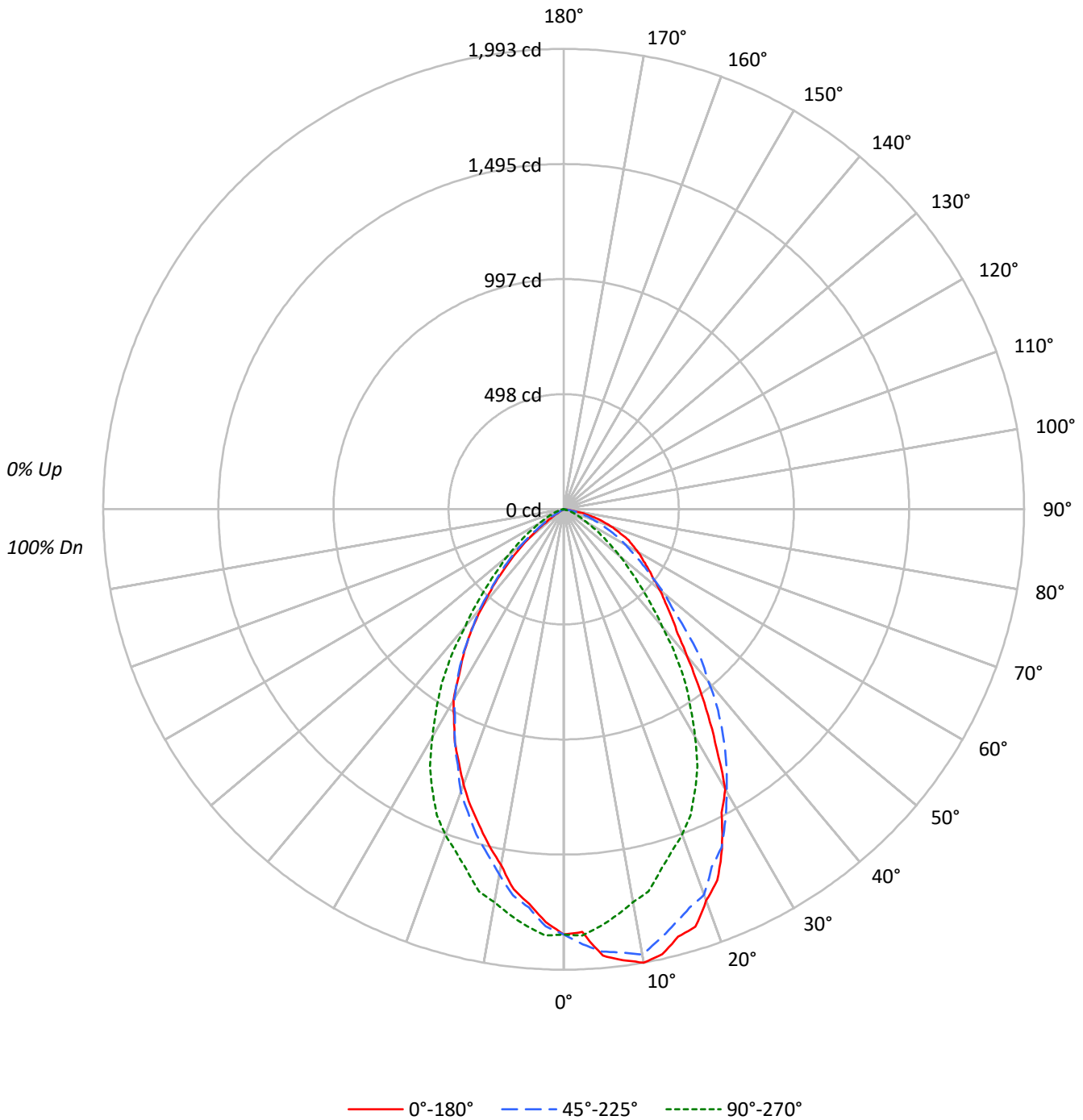
Lumens per Lamp: N/A
 Luminaire Lumens: 2638.0 lumens
 Efficiency: N/A
 Efficacy: 56.1 lumens/watt
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 47
 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: FLDSQ4C40D010 FEU4C409030 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°	177569	177569	177569
5°	187874	175477	166072
10°	195240	169295	153070
15°	191334	161576	141298
20°	185124	153847	130056
25°	172673	143066	118643
30°	155882	126613	106213
35°	128404	108391	88120
40°	104784	83661	67815
45°	90034	63534	48783
50°	81480	48365	30803
55°	74994	34890	11136
60°	71981	23833	1698
65°	69521	16119	502
70°	62234	11200	621
75°	51037	5778	0
80°	31895	2445	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	172.4	6.5
10°-20°	464.5	17.6
20°-30°	620.3	23.5
30°-40°	588.9	22.3
40°-50°	407.0	15.4
50°-60°	224.9	8.5
60°-70°	111.7	4.2
70°-80°	44.0	1.7
80°-90°	4.2	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°	1257.3	47.7
0°-40°	1846.2	70.0
0°-60°	2478.1	93.9
0°-90°	2638.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2638.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1840	1840	1840	1840	1840	
5°	1940	1922	1812	1730	1715	186
15°	1915	1858	1618	1459	1414	542
25°	1622	1615	1344	1114	1114	739
35°	1090	1205	920	757	748	683
45°	660	757	466	382	358	515
55°	446	419	207	106	66	401
65°	304	221	71	2	2	296
75°	137	84	16	0	0	146
85°	0	2	0	0	0	13
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°	1840.3	1840.3	1840.3	1840.3	1840.3	1840.3	1840.3	1840.3	1840.3	1840.3	1840.3
2.5°	1831.5	1882.3	1886.7	1882.3	1888.9	1886.7	1897.7	1886.7	1900.0	1880.1	1884.5
5°	1939.7	1919.8	1961.7	1939.7	1939.7	1937.5	1930.8	1928.6	1937.5	1908.8	1922.0
7.5°	1968.4	1997.1	2034.6	1988.3	1990.4	1990.4	1977.2	1972.8	1972.8	1919.8	1935.3
10°	1992.7	1974.9	1994.8	1977.2	1992.7	1990.4	1999.2	1970.5	1990.4	1959.5	1957.3
12.5°	1972.8	1966.1	1992.7	1964.0	1955.1	1957.3	1946.3	1939.7	1946.3	1911.0	1908.8
15°	1915.4	1922.0	1961.7	1930.8	1926.4	1922.0	1908.8	1886.7	1904.4	1855.8	1858.1
17.5°	1895.6	1884.5	1891.2	1864.6	1871.3	1866.9	1864.6	1844.8	1840.3	1809.5	1809.5
20°	1802.9	1827.1	1827.1	1809.5	1809.5	1807.3	1778.6	1796.2	1776.4	1767.5	1776.4
22.5°	1738.8	1741.1	1741.1	1725.6	1727.9	1719.0	1703.6	1692.5	1703.6	1692.5	1674.9
25°	1621.9	1626.4	1652.8	1624.1	1619.7	1628.5	1615.3	1608.6	1606.5	1580.0	1615.3
27.5°	1480.7	1524.8	1522.6	1511.5	1524.8	1507.1	1500.6	1502.7	1509.4	1507.1	1516.0
30°	1399.1	1405.6	1412.3	1403.5	1405.6	1399.1	1399.1	1401.2	1418.9	1412.3	1410.1
32.5°	1233.5	1255.6	1273.3	1273.3	1275.4	1282.1	1279.9	1326.2	1337.3	1315.2	1310.8
35°	1090.1	1105.6	1121.0	1123.2	1151.9	1154.1	1156.3	1169.5	1200.4	1207.1	1204.8
37.5°	953.3	968.7	973.1	993.0	1008.5	1023.9	1041.6	1059.2	1085.7	1107.7	1096.7
40°	831.9	838.5	849.6	858.4	889.3	889.3	898.1	933.4	962.1	979.8	977.5
42.5°	730.4	732.6	741.4	756.9	785.6	778.9	785.6	809.9	851.7	854.0	878.3
45°	659.8	657.6	664.2	666.4	684.1	692.9	697.3	715.0	750.2	754.6	756.9
47.5°	595.8	593.6	604.7	609.1	615.6	624.5	624.5	626.7	639.9	651.0	642.2
50°	542.8	542.8	542.8	547.2	558.3	556.1	558.3	567.1	573.7	569.3	567.1
52.5°	485.4	494.3	500.9	503.2	505.3	505.3	507.6	503.2	500.9	494.3	481.0
55°	445.8	454.6	454.6	454.6	454.6	463.4	452.4	454.6	454.6	436.9	419.3
57.5°	406.1	414.9	421.5	412.6	421.5	412.6	408.2	406.1	401.6	383.9	357.5
60°	373.0	377.4	375.1	373.0	377.4	370.7	366.3	357.5	353.1	328.8	311.1
62.5°	335.4	337.6	339.8	335.4	331.0	328.8	320.0	306.7	297.9	278.0	262.6
65°	304.5	297.9	295.7	293.5	289.1	282.4	275.9	260.4	253.7	236.1	220.6
67.5°	258.1	256.0	260.4	253.7	242.8	242.8	236.1	222.9	207.4	196.4	180.9
70°	220.6	218.5	214.1	207.4	205.2	196.4	196.4	180.9	176.5	156.7	143.4
72.5°	180.9	180.9	174.3	167.7	161.1	156.7	154.5	143.4	136.9	125.8	114.7
75°	136.9	136.9	134.6	128.0	123.5	119.1	117.0	108.2	101.5	90.5	83.9
77.5°	97.1	97.1	88.3	83.9	86.0	81.6	77.2	75.0	72.8	66.2	57.4
80°	57.4	55.2	48.6	50.7	48.6	48.6	46.3	44.1	39.7	35.3	30.9
82.5°	15.5	17.6	17.6	17.6	19.9	15.5	15.5	15.5	17.6	17.6	11.1
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	2.2	2.2
87.5°	2.2	4.4	8.8	8.8	8.8	8.8	8.8	6.7	6.7	6.7	4.4
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°	1840.3	1840.3	1840.3	1840.3	1840.3	1840.3	1840.3	1840.3	1840.3	1840.3	1840.3
2.5°	1862.5	1860.2	1862.5	1847.0	1882.3	1855.8	1851.4	1847.0	1862.5	1847.0	1824.9
5°	1902.1	1880.1	1873.4	1866.9	1886.7	1855.8	1849.2	1851.4	1840.3	1811.7	1813.9
7.5°	1915.4	1895.6	1875.7	1833.8	1851.4	1844.8	1827.1	1813.9	1796.2	1771.9	1767.5
10°	1919.8	1897.7	1869.0	1855.8	1829.3	1820.5	1813.9	1791.8	1769.8	1727.9	1716.8
12.5°	1906.6	1880.1	1844.8	1833.8	1813.9	1785.2	1769.8	1747.7	1727.9	1694.7	1670.4
15°	1849.2	1827.1	1816.1	1778.6	1769.8	1752.1	1721.2	1690.3	1661.6	1617.5	1604.2
17.5°	1783.0	1774.2	1763.1	1734.4	1732.3	1714.6	1685.9	1659.4	1621.9	1553.5	1531.4
20°	1714.6	1714.6	1679.3	1668.3	1690.3	1655.0	1632.9	1608.6	1531.4	1498.3	1458.6
22.5°	1663.9	1639.6	1619.7	1602.1	1604.2	1582.2	1551.3	1502.7	1474.0	1434.3	1388.0
25°	1564.5	1573.4	1529.3	1522.6	1529.3	1478.4	1463.0	1423.3	1381.3	1343.8	1308.6
27.5°	1502.7	1478.4	1449.8	1425.5	1425.5	1405.6	1361.6	1352.7	1288.7	1253.4	1209.2
30°	1410.1	1392.4	1368.1	1332.8	1328.4	1313.0	1277.7	1255.6	1189.4	1136.4	1112.1
32.5°	1293.1	1286.5	1266.6	1226.9	1213.7	1196.0	1151.9	1114.4	1083.5	1023.9	995.2
35°	1209.2	1185.0	1143.1	1110.0	1098.9	1068.0	1032.7	1006.2	973.1	920.2	882.7
37.5°	1083.5	1059.2	1019.5	979.8	979.8	948.9	900.3	873.9	827.5	796.6	765.7
40°	973.1	942.3	902.6	856.2	849.6	805.4	785.6	741.4	712.7	664.2	659.8
42.5°	849.6	820.9	785.6	750.2	723.8	701.7	651.0	617.9	587.0	562.7	556.1
45°	737.0	699.5	668.6	624.5	598.0	571.5	538.4	516.4	492.1	465.6	450.2
47.5°	639.9	609.1	564.9	525.2	498.7	485.4	447.9	423.7	403.8	386.2	375.1
50°	540.7	503.2	478.9	434.7	430.3	399.4	368.5	348.7	337.6	322.2	306.7
52.5°	465.6	430.3	397.2	364.1	346.4	335.4	306.7	286.9	271.5	260.4	251.6
55°	392.8	361.9	335.4	302.3	291.3	275.9	242.8	238.4	222.9	207.4	196.4
57.5°	337.6	308.9	278.0	256.0	236.1	225.1	198.6	180.9	172.1	158.9	147.8
60°	286.9	256.0	231.7	205.2	196.4	180.9	161.1	145.7	134.6	123.5	112.6
62.5°	240.5	214.1	187.6	165.5	152.2	143.4	128.0	114.7	103.7	94.9	86.0
65°	198.6	174.3	152.2	130.2	123.5	112.6	101.5	90.5	81.6	70.6	61.8
67.5°	163.3	141.3	119.1	103.7	97.1	92.7	79.5	68.4	61.8	55.2	46.3
70°	128.0	112.6	94.9	81.6	75.0	68.4	59.6	53.0	44.1	39.7	33.1
72.5°	99.3	86.0	70.6	59.6	55.2	50.7	41.9	35.3	30.9	26.5	22.0
75°	70.6	59.6	50.7	39.7	37.5	35.3	28.7	24.3	19.9	15.5	13.2
77.5°	48.6	39.7	30.9	26.5	24.3	19.9	17.6	13.2	11.1	8.8	6.7
80°	26.5	19.9	15.5	13.2	11.1	8.8	8.8	6.7	4.4	4.4	2.2
82.5°	8.8	6.7	4.4	2.2	2.2	2.2	2.2	2.2	2.2	0.0	2.2
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°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	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°	1840.3	1840.3	1840.3	1840.3	1840.3	1840.3	1840.3	1840.3	1840.3	1840.3	1840.3
2.5°	1838.2	1813.9	1820.5	1820.5	1816.1	1816.1	1811.7	1805.1	1807.3	1794.0	1765.4
5°	1818.3	1787.4	1783.0	1787.4	1769.8	1765.4	1756.6	1769.8	1730.0	1745.5	1727.9
7.5°	1761.0	1732.3	1725.6	1741.1	1719.0	1705.7	1703.6	1721.2	1685.9	1668.3	1648.4
10°	1696.9	1685.9	1666.0	1655.0	1648.4	1650.6	1632.9	1610.9	1604.2	1599.8	1582.2
12.5°	1639.6	1615.3	1597.7	1584.4	1580.0	1580.0	1551.3	1546.9	1527.0	1522.6	1496.2
15°	1571.1	1542.5	1531.4	1513.8	1498.3	1507.1	1474.0	1465.2	1458.6	1429.9	1434.3
17.5°	1511.5	1480.7	1454.2	1443.2	1429.9	1416.7	1385.8	1392.4	1376.9	1376.9	1337.3
20°	1434.3	1401.2	1381.3	1359.3	1359.3	1341.7	1319.6	1321.8	1301.9	1282.1	1246.7
22.5°	1352.7	1317.4	1293.1	1284.3	1262.2	1257.8	1231.4	1224.7	1198.2	1200.4	1169.5
25°	1266.6	1231.4	1198.2	1200.4	1180.6	1171.8	1156.3	1125.4	1114.4	1101.2	1092.3
27.5°	1165.1	1140.8	1112.1	1110.0	1072.5	1074.6	1054.8	1046.0	1019.5	1026.1	1006.2
30°	1072.5	1037.2	1010.6	1004.1	988.6	984.2	953.3	940.0	944.5	926.8	915.8
32.5°	977.5	924.6	913.6	900.3	891.5	880.4	858.4	867.2	847.3	851.7	834.1
35°	851.7	829.7	801.0	801.0	792.2	783.4	768.0	776.8	756.9	748.1	730.4
37.5°	745.8	726.0	697.3	706.1	690.7	677.4	664.2	666.4	648.7	646.6	628.9
40°	631.1	620.0	600.2	600.2	589.2	589.2	582.5	576.0	564.9	551.7	531.8
42.5°	523.0	514.1	505.3	507.6	492.1	505.3	487.7	498.7	463.4	461.2	447.9
45°	443.5	423.7	425.9	417.1	408.2	412.6	397.2	401.6	381.8	377.4	364.1
47.5°	359.7	353.1	339.8	335.4	335.4	328.8	322.2	320.0	311.1	300.1	282.4
50°	295.7	271.5	267.0	260.4	256.0	256.0	247.2	233.9	236.1	225.1	207.4
52.5°	231.7	211.8	203.0	200.8	192.0	187.6	176.5	167.7	161.1	156.7	145.7
55°	178.7	161.1	150.1	150.1	136.9	136.9	121.4	114.7	105.9	97.1	90.5
57.5°	134.6	125.8	114.7	105.9	101.5	90.5	81.6	70.6	64.0	50.7	41.9
60°	101.5	92.7	81.6	75.0	70.6	59.6	48.6	39.7	24.3	19.9	17.6
62.5°	75.0	66.2	55.2	50.7	46.3	37.5	26.5	13.2	6.7	6.7	6.7
65°	55.2	44.1	35.3	30.9	26.5	19.9	8.8	4.4	2.2	2.2	2.2
67.5°	37.5	28.7	19.9	17.6	13.2	6.7	2.2	2.2	2.2	2.2	2.2
70°	24.3	17.6	8.8	6.7	4.4	2.2	2.2	2.2	2.2	2.2	2.2
72.5°	15.5	8.8	4.4	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	8.8	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	4.4	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	2.2	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	2.2	2.2	2.2
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: FLDSQ4C40D010 FEU4C409030 F4LC-SQLWW-H

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1840.3	1840.3	1840.3	1840.3	1840.3	1840.3	1840.3	1840.3
2.5°	1796.2	1780.8	1789.6	1769.8	1778.6	1794.0	1783.0	1787.4
5°	1734.4	1725.6	1714.6	1685.9	1708.0	1725.6	1716.8	1714.6
7.5°	1668.3	1637.3	1652.8	1644.0	1639.6	1657.2	1637.3	1659.4
10°	1599.8	1577.8	1575.6	1560.1	1560.1	1573.4	1575.6	1562.3
12.5°	1498.3	1487.3	1487.3	1485.1	1482.8	1496.2	1498.3	1491.7
15°	1425.5	1421.1	1410.1	1407.9	1394.7	1414.5	1416.7	1414.5
17.5°	1337.3	1339.4	1328.4	1328.4	1337.3	1343.8	1326.2	1343.8
20°	1277.7	1266.6	1262.2	1242.3	1253.4	1264.5	1264.5	1266.6
22.5°	1191.6	1173.9	1180.6	1169.5	1162.9	1178.4	1178.4	1185.0
25°	1094.5	1094.5	1098.9	1092.3	1096.7	1105.6	1098.9	1114.4
27.5°	1001.8	1010.6	1010.6	1001.8	1006.2	1032.7	1043.7	1026.1
30°	915.8	918.0	924.6	920.2	933.4	942.3	940.0	953.3
32.5°	818.7	829.7	834.1	827.5	831.9	851.7	840.8	838.5
35°	743.7	723.8	721.6	723.8	732.6	737.0	732.6	748.1
37.5°	635.5	628.9	620.0	622.3	628.9	637.8	642.2	653.2
40°	531.8	523.0	523.0	520.8	514.1	538.4	538.4	538.4
42.5°	441.3	439.1	428.1	428.1	436.9	443.5	439.1	454.6
45°	361.9	353.1	346.4	346.4	353.1	353.1	359.7	357.5
47.5°	284.7	275.9	278.0	271.5	278.0	286.9	275.9	278.0
50°	214.1	214.1	209.6	214.1	211.8	214.1	209.6	205.2
52.5°	145.7	165.5	167.7	158.9	139.0	121.4	110.3	119.1
55°	83.9	75.0	75.0	72.8	68.4	66.2	59.6	66.2
57.5°	41.9	37.5	37.5	37.5	35.3	33.1	28.7	28.7
60°	17.6	15.5	15.5	13.2	11.1	8.8	6.7	8.8
62.5°	6.7	4.4	4.4	4.4	4.4	4.4	4.4	4.4
65°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
67.5°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
70°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
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)