

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 FEU4C409027 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 FEU4C409027 F4LC-SQLWW-H  
 Description: 4 INCH 4000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 2700K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH H FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

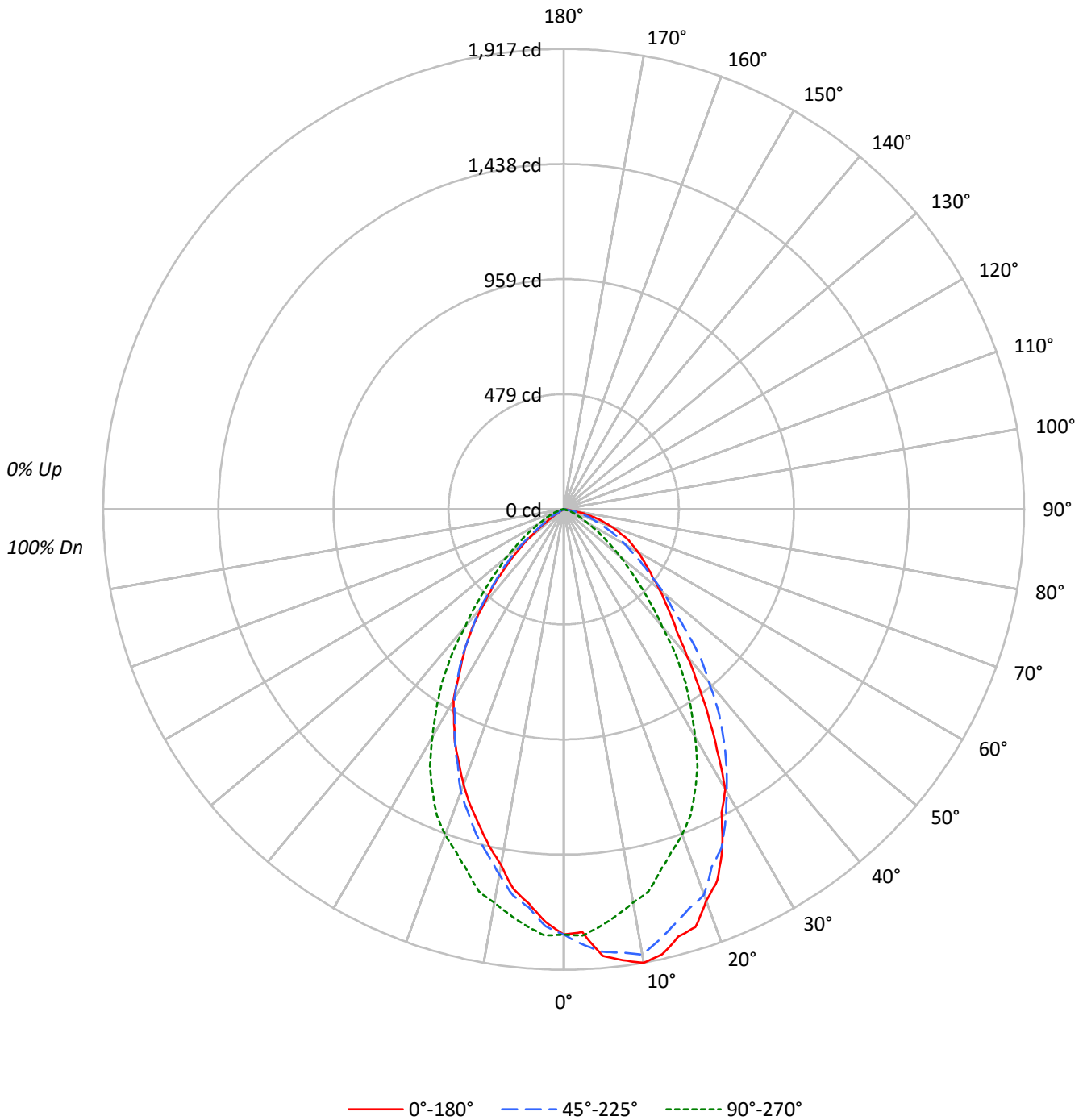
Lumens per Lamp: N/A  
 Luminaire Lumens: 2538.0 lumens  
 Efficiency: N/A  
 Efficacy: 54.0 lumens/watt  
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

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#  
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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	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°	170843	170843	170843
5°	180746	168823	159776
10°	187832	162878	147270
15°	184082	155443	135934
20°	178111	148015	125127
25°	166137	137647	114140
30°	149966	121811	102191
35°	123539	104281	84774
40°	100816	80487	65246
45°	86622	61132	46927
50°	78402	46534	29647
55°	72151	33561	10716
60°	69240	22945	1640
65°	66873	15525	502
70°	59893	10777	621
75°	49098	5555	0
80°	30672	2334	0
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	165.9	6.5
10°-20°	446.9	17.6
20°-30°	596.8	23.5
30°-40°	566.5	22.3
40°-50°	391.6	15.4
50°-60°	216.4	8.5
60°-70°	107.5	4.2
70°-80°	42.3	1.7
80°-90°	4.0	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°	1209.6	47.7
0°-40°	1776.2	70.0
0°-60°	2384.2	93.9
0°-90°	2538.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2538.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1771	1771	1771	1771	1771	
5°	1866	1849	1743	1664	1650	179
15°	1843	1788	1556	1403	1361	521
25°	1560	1554	1293	1072	1072	711
35°	1049	1159	885	728	720	657
45°	635	728	448	367	344	495
55°	429	403	200	102	64	386
65°	293	212	68	2	2	284
75°	132	81	15	0	0	140
85°	0	2	0	0	0	12
90°	0	0	0	0	0	

TEST NUMBER: P#  
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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	1770.6	1770.6	1770.6	1770.6	1770.6	1770.6	1770.6	1770.6	1770.6	1770.6	1770.6
2.5°	1762.1	1810.9	1815.1	1810.9	1817.3	1815.1	1825.8	1815.1	1828.0	1808.8	1813.1
5°	1866.1	1847.0	1887.3	1866.1	1866.1	1864.1	1857.7	1855.5	1864.1	1836.4	1849.2
7.5°	1893.8	1921.4	1957.5	1912.9	1915.0	1915.0	1902.2	1898.0	1898.0	1847.0	1861.9
10°	1917.1	1900.1	1919.2	1902.2	1917.1	1915.0	1923.4	1895.8	1915.0	1885.3	1883.1
12.5°	1898.0	1891.6	1917.1	1889.5	1881.0	1883.1	1872.5	1866.1	1872.5	1838.5	1836.4
15°	1842.8	1849.2	1887.3	1857.7	1853.4	1849.2	1836.4	1815.1	1832.2	1785.5	1787.6
17.5°	1823.7	1813.1	1819.5	1793.9	1800.3	1796.1	1793.9	1774.9	1770.6	1740.9	1740.9
20°	1734.6	1757.8	1757.8	1740.9	1740.9	1738.8	1711.2	1728.1	1709.0	1700.5	1709.0
22.5°	1672.9	1675.1	1675.1	1660.2	1662.4	1653.9	1639.0	1628.3	1639.0	1628.3	1611.4
25°	1560.5	1564.7	1590.2	1562.5	1558.3	1566.8	1554.1	1547.7	1545.6	1520.1	1554.1
27.5°	1424.6	1467.0	1464.9	1454.2	1467.0	1450.0	1443.7	1445.8	1452.2	1450.0	1458.5
30°	1346.0	1352.4	1358.8	1350.3	1352.4	1346.0	1346.0	1348.1	1365.1	1358.8	1356.6
32.5°	1186.8	1208.0	1225.0	1225.0	1227.1	1233.5	1231.3	1275.9	1286.6	1265.4	1261.1
35°	1048.8	1063.7	1078.5	1080.6	1108.2	1110.3	1112.5	1125.2	1154.9	1161.3	1159.1
37.5°	917.2	932.0	936.2	955.4	970.2	985.1	1002.1	1019.1	1044.5	1065.7	1055.2
40°	800.4	806.7	817.4	825.9	855.5	855.5	864.0	898.1	925.7	942.6	940.5
42.5°	702.8	704.8	713.3	728.2	755.8	749.4	755.8	779.2	819.4	821.6	845.0
45°	634.8	632.6	639.0	641.1	658.2	666.7	670.9	687.9	721.8	726.0	728.2
47.5°	573.2	571.1	581.7	586.0	592.3	600.8	600.8	602.9	615.7	626.3	617.8
50°	522.3	522.3	522.3	526.5	537.2	535.0	537.2	545.6	552.0	547.7	545.6
52.5°	467.0	475.5	481.9	484.1	486.2	486.2	488.3	484.1	481.9	475.5	462.8
55°	428.9	437.3	437.3	437.3	437.3	445.8	435.3	437.3	437.3	420.4	403.4
57.5°	390.7	399.2	405.5	397.0	405.5	397.0	392.8	390.7	386.4	369.4	343.9
60°	358.8	363.1	360.9	358.8	363.1	356.7	352.4	343.9	339.7	316.3	299.4
62.5°	322.7	324.8	327.0	322.7	318.5	316.3	307.8	295.1	286.6	267.5	252.6
65°	292.9	286.6	284.5	282.4	278.1	271.7	265.4	250.5	244.1	227.2	212.3
67.5°	248.4	246.3	250.5	244.1	233.6	233.6	227.2	214.4	199.5	189.0	174.1
70°	212.3	210.2	205.9	199.5	197.5	189.0	189.0	174.1	169.8	150.7	138.0
72.5°	174.1	174.1	167.7	161.4	155.0	150.7	148.6	138.0	131.7	121.0	110.4
75°	131.7	131.7	129.5	123.1	118.9	114.6	112.5	104.1	97.6	87.1	80.7
77.5°	93.4	93.4	84.9	80.7	82.8	78.5	74.3	72.2	70.0	63.7	55.2
80°	55.2	53.1	46.7	48.8	46.7	46.7	44.6	42.4	38.2	33.9	29.7
82.5°	14.9	17.0	17.0	17.0	19.1	14.9	14.9	14.9	17.0	17.0	10.6
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	4.2	8.5	8.5	8.5	8.5	8.5	6.4	6.4	6.4	4.2
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°	1770.6	1770.6	1770.6	1770.6	1770.6	1770.6	1770.6	1770.6	1770.6	1770.6	1770.6
2.5°	1791.9	1789.7	1791.9	1777.0	1810.9	1785.5	1781.2	1777.0	1791.9	1777.0	1755.8
5°	1830.0	1808.8	1802.4	1796.1	1815.1	1785.5	1779.1	1781.2	1770.6	1743.0	1745.1
7.5°	1842.8	1823.7	1804.6	1764.2	1781.2	1774.9	1757.8	1745.1	1728.1	1704.8	1700.5
10°	1847.0	1825.8	1798.2	1785.5	1760.0	1751.5	1745.1	1723.9	1702.7	1662.4	1651.7
12.5°	1834.3	1808.8	1774.9	1764.2	1745.1	1717.5	1702.7	1681.4	1662.4	1630.5	1607.1
15°	1779.1	1757.8	1747.3	1711.2	1702.7	1685.6	1656.0	1626.3	1598.6	1556.1	1543.4
17.5°	1715.4	1706.9	1696.3	1668.7	1666.6	1649.6	1622.0	1596.5	1560.5	1494.6	1473.4
20°	1649.6	1649.6	1615.6	1605.0	1626.3	1592.2	1571.0	1547.7	1473.4	1441.5	1403.3
22.5°	1600.8	1577.4	1558.3	1541.3	1543.4	1522.2	1492.5	1445.8	1418.2	1380.0	1335.4
25°	1505.2	1513.7	1471.3	1464.9	1471.3	1422.4	1407.6	1369.3	1329.0	1292.9	1259.0
27.5°	1445.8	1422.4	1394.9	1371.5	1371.5	1352.4	1309.9	1301.5	1239.8	1205.9	1163.4
30°	1356.6	1339.6	1316.3	1282.3	1278.1	1263.2	1229.3	1208.0	1144.3	1093.3	1070.0
32.5°	1244.1	1237.7	1218.6	1180.4	1167.7	1150.7	1108.2	1072.1	1042.4	985.1	957.5
35°	1163.4	1140.1	1099.8	1067.9	1057.2	1027.6	993.5	968.1	936.2	885.3	849.2
37.5°	1042.4	1019.1	980.8	942.6	942.6	912.9	866.2	840.7	796.2	766.4	736.7
40°	936.2	906.5	868.4	823.8	817.4	774.9	755.8	713.3	685.7	639.0	634.8
42.5°	817.4	789.8	755.8	721.8	696.3	675.1	626.3	594.5	564.8	541.4	535.0
45°	709.1	673.0	643.3	600.8	575.3	549.9	518.0	496.8	473.4	448.0	433.1
47.5°	615.7	586.0	543.5	505.3	479.8	467.0	430.9	407.6	388.5	371.5	360.9
50°	520.2	484.1	460.7	418.2	414.0	384.3	354.6	335.4	324.8	310.0	295.1
52.5°	448.0	414.0	382.1	350.3	333.3	322.7	295.1	276.0	261.2	250.5	242.0
55°	377.9	348.2	322.7	290.9	280.2	265.4	233.6	229.3	214.4	199.5	189.0
57.5°	324.8	297.2	267.5	246.3	227.2	216.6	191.1	174.1	165.6	152.9	142.2
60°	276.0	246.3	222.9	197.5	189.0	174.1	155.0	140.2	129.5	118.9	108.3
62.5°	231.4	205.9	180.5	159.2	146.5	138.0	123.1	110.4	99.8	91.3	82.8
65°	191.1	167.7	146.5	125.3	118.9	108.3	97.6	87.1	78.5	68.0	59.5
67.5°	157.1	135.9	114.6	99.8	93.4	89.2	76.4	65.8	59.5	53.1	44.6
70°	123.1	108.3	91.3	78.5	72.2	65.8	57.3	51.0	42.4	38.2	31.9
72.5°	95.6	82.8	68.0	57.3	53.1	48.8	40.3	33.9	29.7	25.5	21.2
75°	68.0	57.3	48.8	38.2	36.1	33.9	27.6	23.4	19.1	14.9	12.7
77.5°	46.7	38.2	29.7	25.5	23.4	19.1	17.0	12.7	10.6	8.5	6.4
80°	25.5	19.1	14.9	12.7	10.6	8.5	8.5	6.4	4.2	4.2	2.2
82.5°	8.5	6.4	4.2	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°	1770.6	1770.6	1770.6	1770.6	1770.6	1770.6	1770.6	1770.6	1770.6	1770.6	1770.6
2.5°	1768.5	1745.1	1751.5	1751.5	1747.3	1747.3	1743.0	1736.6	1738.8	1726.0	1698.5
5°	1749.4	1719.7	1715.4	1719.7	1702.7	1698.5	1690.0	1702.7	1664.4	1679.3	1662.4
7.5°	1694.2	1666.6	1660.2	1675.1	1653.9	1641.1	1639.0	1656.0	1622.0	1605.0	1585.9
10°	1632.6	1622.0	1602.9	1592.2	1585.9	1588.0	1571.0	1549.8	1543.4	1539.2	1522.2
12.5°	1577.4	1554.1	1537.1	1524.4	1520.1	1520.1	1492.5	1488.3	1469.1	1464.9	1439.4
15°	1511.6	1484.0	1473.4	1456.4	1441.5	1450.0	1418.2	1409.7	1403.3	1375.7	1380.0
17.5°	1454.2	1424.6	1399.1	1388.5	1375.7	1363.0	1333.2	1339.6	1324.7	1324.7	1286.6
20°	1380.0	1348.1	1329.0	1307.8	1307.8	1290.8	1269.6	1271.7	1252.5	1233.5	1199.5
22.5°	1301.5	1267.4	1244.1	1235.6	1214.4	1210.1	1184.7	1178.3	1152.8	1154.9	1125.2
25°	1218.6	1184.7	1152.8	1154.9	1135.9	1127.4	1112.5	1082.8	1072.1	1059.4	1050.9
27.5°	1121.0	1097.6	1070.0	1067.9	1031.8	1033.9	1014.8	1006.3	980.8	987.2	968.1
30°	1031.8	997.9	972.3	966.0	951.1	946.9	917.2	904.4	908.7	891.6	881.1
32.5°	940.5	889.6	878.9	866.2	857.7	847.1	825.9	834.3	815.2	819.4	802.5
35°	819.4	798.2	770.6	770.6	762.1	753.7	738.9	747.3	728.2	719.7	702.8
37.5°	717.6	698.5	670.9	679.4	664.5	651.8	639.0	641.1	624.2	622.1	605.0
40°	607.2	596.5	577.5	577.5	566.8	566.8	560.4	554.1	543.5	530.7	511.6
42.5°	503.1	494.6	486.2	488.3	473.4	486.2	469.2	479.8	445.8	443.7	430.9
45°	426.7	407.6	409.7	401.2	392.8	397.0	382.1	386.4	367.3	363.1	350.3
47.5°	346.1	339.7	327.0	322.7	322.7	316.3	310.0	307.8	299.4	288.7	271.7
50°	284.5	261.2	256.8	250.5	246.3	246.3	237.8	225.1	227.2	216.6	199.5
52.5°	222.9	203.8	195.3	193.2	184.7	180.5	169.8	161.4	155.0	150.7	140.2
55°	171.9	155.0	144.4	144.4	131.7	131.7	116.8	110.4	101.9	93.4	87.1
57.5°	129.5	121.0	110.4	101.9	97.6	87.1	78.5	68.0	61.6	48.8	40.3
60°	97.6	89.2	78.5	72.2	68.0	57.3	46.7	38.2	23.4	19.1	17.0
62.5°	72.2	63.7	53.1	48.8	44.6	36.1	25.5	12.7	6.4	6.4	6.4
65°	53.1	42.4	33.9	29.7	25.5	19.1	8.5	4.2	2.2	2.2	2.2
67.5°	36.1	27.6	19.1	17.0	12.7	6.4	2.2	2.2	2.2	2.2	2.2
70°	23.4	17.0	8.5	6.4	4.2	2.2	2.2	2.2	2.2	2.2	2.2
72.5°	14.9	8.5	4.2	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	8.5	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	4.2	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 FEU4C409027 F4LC-SQLWW-H

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1770.6	1770.6	1770.6	1770.6	1770.6	1770.6	1770.6	1770.6
2.5°	1728.1	1713.3	1721.7	1702.7	1711.2	1726.0	1715.4	1719.7
5°	1668.7	1660.2	1649.6	1622.0	1643.2	1660.2	1651.7	1649.6
7.5°	1605.0	1575.3	1590.2	1581.7	1577.4	1594.4	1575.3	1596.5
10°	1539.2	1518.0	1515.9	1501.0	1501.0	1513.7	1515.9	1503.1
12.5°	1441.5	1431.0	1431.0	1428.8	1426.6	1439.4	1441.5	1435.2
15°	1371.5	1367.2	1356.6	1354.5	1341.8	1360.8	1363.0	1360.8
17.5°	1286.6	1288.6	1278.1	1278.1	1286.6	1292.9	1275.9	1292.9
20°	1229.3	1218.6	1214.4	1195.2	1205.9	1216.5	1216.5	1218.6
22.5°	1146.4	1129.4	1135.9	1125.2	1118.8	1133.7	1133.7	1140.1
25°	1053.0	1053.0	1057.2	1050.9	1055.2	1063.7	1057.2	1072.1
27.5°	963.8	972.3	972.3	963.8	968.1	993.5	1004.2	987.2
30°	881.1	883.2	889.6	885.3	898.1	906.5	904.4	917.2
32.5°	787.7	798.2	802.5	796.2	800.4	819.4	808.9	806.7
35°	715.5	696.3	694.3	696.3	704.8	709.1	704.8	719.7
37.5°	611.4	605.0	596.5	598.7	605.0	613.6	617.8	628.4
40°	511.6	503.1	503.1	501.1	494.6	518.0	518.0	518.0
42.5°	424.6	422.5	411.9	411.9	420.4	426.7	422.5	437.3
45°	348.2	339.7	333.3	333.3	339.7	339.7	346.1	343.9
47.5°	273.9	265.4	267.5	261.2	267.5	276.0	265.4	267.5
50°	205.9	205.9	201.7	205.9	203.8	205.9	201.7	197.5
52.5°	140.2	159.2	161.4	152.9	133.7	116.8	106.1	114.6
55°	80.7	72.2	72.2	70.0	65.8	63.7	57.3	63.7
57.5°	40.3	36.1	36.1	36.1	33.9	31.9	27.6	27.6
60°	17.0	14.9	14.9	12.7	10.6	8.5	6.4	8.5
62.5°	6.4	4.2	4.2	4.2	4.2	4.2	4.2	4.2
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)