

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 FEU4C459050 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 FEU4C459050 F4LC-SQLWW-H
 Description: 4 INCH 4500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 5000K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH H FINISH
 Light Source: -
 Ballast/Driver: -

Summary

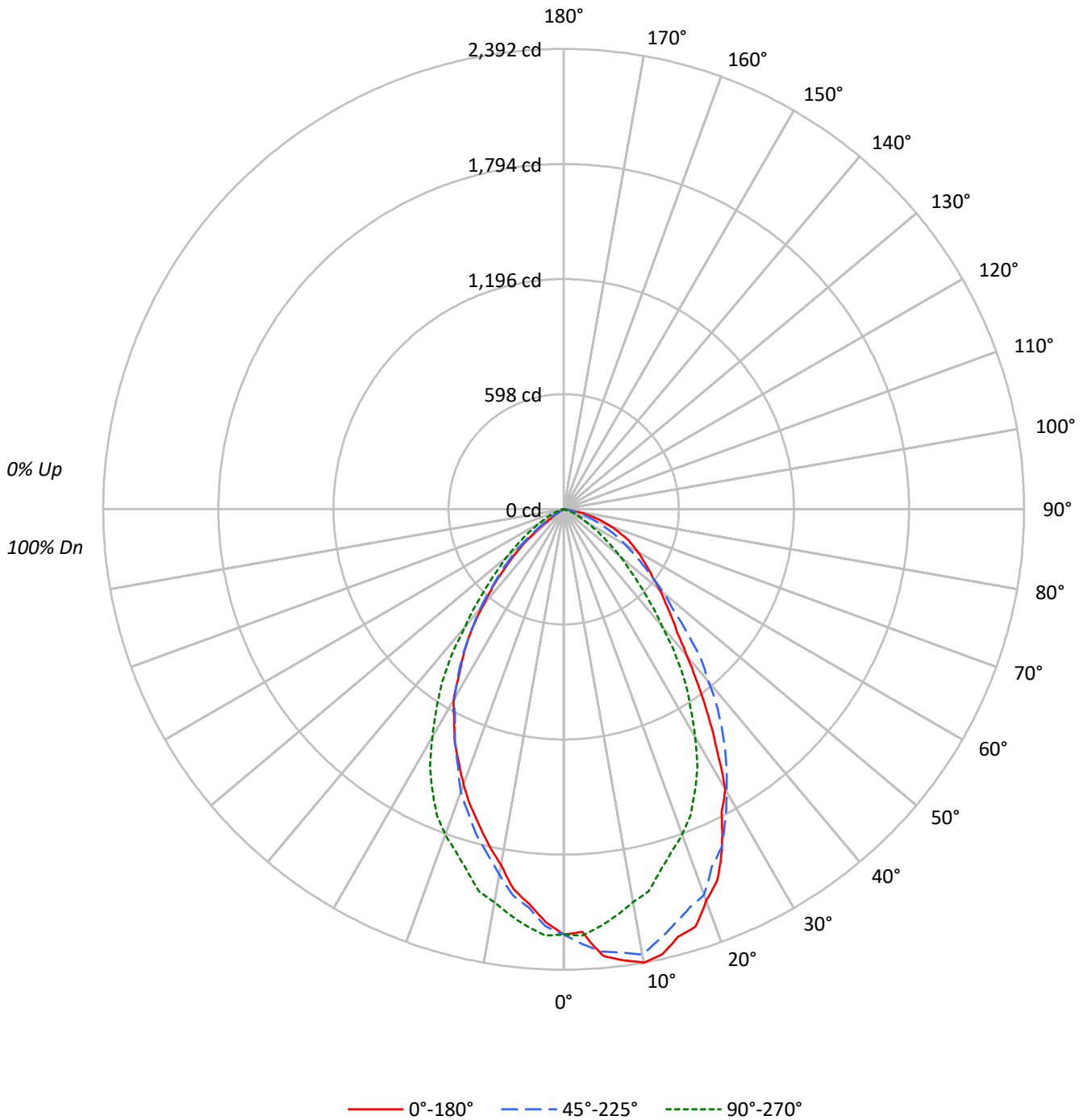
Lumens per Lamp: N/A
 Luminaire Lumens: 3166.0 lumens
 Efficiency: N/A
 Efficacy: 63.8 lumens/watt
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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





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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				100
1	112	108	105	102	109	106	103	101	102	100	98	98	96	95	95	93	92	90				90
2	104	98	93	89	102	96	92	88	93	89	86	90	87	84	87	84	82	80				80
3	97	89	83	78	95	88	82	77	85	80	76	82	78	75	80	77	74	72				72
4	91	81	74	69	89	80	74	69	78	72	68	76	71	67	74	70	66	64				64
5	85	75	67	62	83	74	67	62	72	66	61	70	65	60	68	64	60	58				58
6	80	69	61	56	78	68	61	56	66	60	55	65	59	55	63	58	54	53				53
7	75	63	56	51	73	63	56	51	61	55	50	60	54	50	59	54	50	48				48
8	70	59	52	47	69	58	51	46	57	51	46	56	50	46	55	50	46	44				44
9	66	55	48	43	65	54	47	43	53	47	43	52	46	42	51	46	42	41				41
10	62	51	44	40	61	51	44	40	50	44	39	49	43	39	48	43	39	38				38

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	213115	213115	213115
5°	225474	210597	199313
10°	234313	203176	183708
15°	229623	193912	169578
20°	222172	184642	156086
25°	207242	171705	142385
30°	187078	151960	127471
35°	154106	130089	105753
40°	125768	100413	81394
45°	108059	76252	58540
50°	97797	58048	36972
55°	89999	41871	13374
60°	86377	28619	2046
65°	83425	19361	616
70°	74704	13429	762
75°	61214	6934	0
80°	38285	2945	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	206.9	6.5
10°-20°	557.5	17.6
20°-30°	744.5	23.5
30°-40°	706.7	22.3
40°-50°	488.5	15.4
50°-60°	269.9	8.5
60°-70°	134.0	4.2
70°-80°	52.8	1.7
80°-90°	5.0	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°	1509.0	47.7
0°-40°	2215.7	70.0
0°-60°	2974.1	93.9
0°-90°	3166.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3166.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	2209	2209	2209	2209	2209	
5°	2328	2307	2174	2076	2058	223
15°	2299	2230	1941	1751	1698	650
25°	1947	1939	1613	1337	1337	887
35°	1308	1446	1104	908	898	820
45°	792	908	559	458	429	618
55°	535	503	249	127	80	482
65°	365	265	85	3	3	355
75°	164	101	19	0	0	175
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°	2208.7	2208.7	2208.7	2208.7	2208.7	2208.7	2208.7	2208.7	2208.7	2208.7	2208.7
2.5°	2198.1	2259.0	2264.3	2259.0	2267.0	2264.3	2277.6	2264.3	2280.3	2256.4	2261.7
5°	2327.9	2304.0	2354.3	2327.9	2327.9	2325.3	2317.3	2314.6	2325.3	2290.8	2306.7
7.5°	2362.3	2396.8	2441.8	2386.2	2388.8	2388.8	2372.9	2367.6	2367.6	2304.0	2322.6
10°	2391.5	2370.2	2394.1	2372.9	2391.5	2388.8	2399.4	2364.9	2388.8	2351.8	2349.1
12.5°	2367.6	2359.6	2391.5	2357.0	2346.5	2349.1	2335.9	2327.9	2335.9	2293.4	2290.8
15°	2298.7	2306.7	2354.3	2317.3	2312.0	2306.7	2290.8	2264.3	2285.6	2227.2	2229.9
17.5°	2275.0	2261.7	2269.7	2237.8	2245.8	2240.5	2237.8	2214.1	2208.7	2171.6	2171.6
20°	2163.7	2192.8	2192.8	2171.6	2171.6	2169.0	2134.6	2155.8	2131.9	2121.3	2131.9
22.5°	2086.9	2089.6	2089.6	2071.0	2073.7	2063.1	2044.5	2031.2	2044.5	2031.2	2010.1
25°	1946.6	1951.9	1983.6	1949.2	1943.9	1954.5	1938.6	1930.6	1928.0	1896.3	1938.6
27.5°	1777.0	1830.0	1827.4	1814.1	1830.0	1808.8	1800.9	1803.5	1811.5	1808.8	1819.4
30°	1679.1	1687.0	1695.0	1684.4	1687.0	1679.1	1679.1	1681.7	1702.9	1695.0	1692.3
32.5°	1480.4	1506.9	1528.1	1528.1	1530.7	1538.7	1536.0	1591.6	1604.9	1578.5	1573.2
35°	1308.3	1326.8	1345.3	1348.0	1382.5	1385.1	1387.7	1403.6	1440.7	1448.7	1446.0
37.5°	1144.1	1162.6	1167.9	1191.8	1210.3	1228.8	1250.1	1271.2	1303.0	1329.4	1316.3
40°	998.5	1006.3	1019.6	1030.2	1067.2	1067.2	1077.8	1120.3	1154.7	1175.9	1173.2
42.5°	876.6	879.2	889.8	908.4	942.8	934.9	942.8	972.0	1022.2	1024.9	1054.1
45°	791.9	789.2	797.2	799.8	821.0	831.6	836.9	858.1	900.4	905.7	908.4
47.5°	715.1	712.4	725.7	731.0	738.9	749.4	749.4	752.1	768.0	781.3	770.7
50°	651.5	651.5	651.5	656.8	670.1	667.4	670.1	680.6	688.5	683.2	680.6
52.5°	582.6	593.2	601.2	603.9	606.5	606.5	609.2	603.9	601.2	593.2	577.3
55°	535.0	545.6	545.6	545.6	545.6	556.1	543.0	545.6	545.6	524.4	503.2
57.5°	487.3	497.9	505.8	495.2	505.8	495.2	489.9	487.3	482.0	460.8	429.0
60°	447.6	452.9	450.2	447.6	452.9	444.9	439.6	429.0	423.7	394.6	373.4
62.5°	402.6	405.2	407.9	402.6	397.3	394.6	384.0	368.1	357.5	333.7	315.1
65°	365.4	357.5	354.8	352.3	347.0	339.0	331.1	312.5	304.5	283.4	264.8
67.5°	309.8	307.2	312.5	304.5	291.3	291.3	283.4	267.5	248.9	235.7	217.2
70°	264.8	262.2	256.9	248.9	246.3	235.7	235.7	217.2	211.9	188.0	172.1
72.5°	217.2	217.2	209.2	201.3	193.3	188.0	185.4	172.1	164.2	151.0	137.7
75°	164.2	164.2	161.5	153.6	148.3	143.0	140.4	129.8	121.8	108.6	100.6
77.5°	116.5	116.5	105.9	100.6	103.2	97.9	92.7	90.1	87.4	79.5	68.9
80°	68.9	66.2	58.3	60.9	58.3	58.3	55.6	52.9	47.6	42.3	37.0
82.5°	18.6	21.2	21.2	21.2	23.9	18.6	18.6	18.6	21.2	21.2	13.3
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	2.7	2.7
87.5°	2.7	5.3	10.6	10.6	10.6	10.6	10.6	8.0	8.0	8.0	5.3
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°	2208.7	2208.7	2208.7	2208.7	2208.7	2208.7	2208.7	2208.7	2208.7	2208.7	2208.7
2.5°	2235.2	2232.5	2235.2	2216.7	2259.0	2227.2	2222.0	2216.7	2235.2	2216.7	2190.2
5°	2282.9	2256.4	2248.4	2240.5	2264.3	2227.2	2219.4	2222.0	2208.7	2174.3	2176.9
7.5°	2298.7	2275.0	2251.1	2200.8	2222.0	2214.1	2192.8	2176.9	2155.8	2126.6	2121.3
10°	2304.0	2277.6	2243.1	2227.2	2195.5	2184.9	2176.9	2150.5	2124.0	2073.7	2060.4
12.5°	2288.2	2256.4	2214.1	2200.8	2176.9	2142.5	2124.0	2097.4	2073.7	2033.9	2004.8
15°	2219.4	2192.8	2179.6	2134.6	2124.0	2102.7	2065.7	2028.7	1994.2	1941.2	1925.3
17.5°	2139.9	2129.3	2116.0	2081.6	2079.0	2057.8	2023.4	1991.5	1946.6	1864.4	1838.0
20°	2057.8	2057.8	2015.4	2002.2	2028.7	1986.2	1959.8	1930.6	1838.0	1798.2	1750.6
22.5°	1996.9	1967.8	1943.9	1922.7	1925.3	1898.9	1861.8	1803.5	1769.1	1721.4	1665.8
25°	1877.7	1888.3	1835.4	1827.4	1835.4	1774.3	1755.9	1708.2	1657.8	1612.8	1570.5
27.5°	1803.5	1774.3	1740.0	1710.8	1710.8	1687.0	1634.1	1623.5	1546.6	1504.3	1451.2
30°	1692.3	1671.1	1642.0	1599.6	1594.3	1575.8	1533.4	1506.9	1427.5	1363.9	1334.7
32.5°	1551.9	1544.0	1520.1	1472.5	1456.6	1435.4	1382.5	1337.4	1300.4	1228.8	1194.4
35°	1451.2	1422.2	1371.9	1332.1	1318.9	1281.8	1239.4	1207.6	1167.9	1104.4	1059.4
37.5°	1300.4	1271.2	1223.5	1175.9	1175.9	1138.8	1080.5	1048.8	993.2	956.0	919.0
40°	1167.9	1130.8	1083.2	1027.6	1019.6	966.6	942.8	889.8	855.4	797.2	791.9
42.5°	1019.6	985.2	942.8	900.4	868.7	842.2	781.3	741.6	704.5	675.4	667.4
45°	884.5	839.5	802.5	749.4	717.7	685.9	646.2	619.7	590.6	558.8	540.3
47.5°	768.0	731.0	677.9	630.3	598.6	582.6	537.6	508.5	484.6	463.5	450.2
50°	648.9	603.9	574.7	521.7	516.4	479.4	442.3	418.5	405.2	386.7	368.1
52.5°	558.8	516.4	476.7	437.0	415.8	402.6	368.1	344.3	325.8	312.5	301.9
55°	471.4	434.3	402.6	362.8	349.6	331.1	291.3	286.1	267.5	248.9	235.7
57.5°	405.2	370.7	333.7	307.2	283.4	270.2	238.3	217.2	206.6	190.7	177.4
60°	344.3	307.2	278.1	246.3	235.7	217.2	193.3	174.8	161.5	148.3	135.1
62.5°	288.7	256.9	225.2	198.6	182.7	172.1	153.6	137.7	124.5	113.9	103.2
65°	238.3	209.2	182.7	156.3	148.3	135.1	121.8	108.6	97.9	84.8	74.2
67.5°	196.0	169.5	143.0	124.5	116.5	111.2	95.4	82.1	74.2	66.2	55.6
70°	153.6	135.1	113.9	97.9	90.1	82.1	71.5	63.6	52.9	47.6	39.7
72.5°	119.2	103.2	84.8	71.5	66.2	60.9	50.3	42.3	37.0	31.7	26.5
75°	84.8	71.5	60.9	47.6	45.0	42.3	34.4	29.2	23.9	18.6	15.9
77.5°	58.3	47.6	37.0	31.7	29.2	23.9	21.2	15.9	13.3	10.6	8.0
80°	31.7	23.9	18.6	15.9	13.3	10.6	10.6	8.0	5.3	5.3	2.7
82.5°	10.6	8.0	5.3	2.7	2.7	2.7	2.7	2.7	2.7	0.0	2.7
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°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	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°	2208.7	2208.7	2208.7	2208.7	2208.7	2208.7	2208.7	2208.7	2208.7	2208.7	2208.7
2.5°	2206.1	2176.9	2184.9	2184.9	2179.6	2179.6	2174.3	2166.3	2169.0	2153.1	2118.7
5°	2182.2	2145.2	2139.9	2145.2	2124.0	2118.7	2108.1	2124.0	2076.3	2094.9	2073.7
7.5°	2113.4	2079.0	2071.0	2089.6	2063.1	2047.1	2044.5	2065.7	2023.4	2002.2	1978.3
10°	2036.5	2023.4	1999.5	1986.2	1978.3	1980.9	1959.8	1933.3	1925.3	1920.0	1898.9
12.5°	1967.8	1938.6	1917.4	1901.6	1896.3	1896.3	1861.8	1856.5	1832.7	1827.4	1795.6
15°	1885.6	1851.2	1838.0	1816.8	1798.2	1808.8	1769.1	1758.5	1750.6	1716.1	1721.4
17.5°	1814.1	1777.0	1745.3	1732.0	1716.1	1700.3	1663.1	1671.1	1652.5	1652.5	1604.9
20°	1721.4	1681.7	1657.8	1631.4	1631.4	1610.2	1583.7	1586.3	1562.5	1538.7	1496.3
22.5°	1623.5	1581.0	1551.9	1541.3	1514.9	1509.6	1477.8	1469.8	1438.1	1440.7	1403.6
25°	1520.1	1477.8	1438.1	1440.7	1416.9	1406.3	1387.7	1350.7	1337.4	1321.6	1311.0
27.5°	1398.3	1369.2	1334.7	1332.1	1287.1	1289.7	1265.9	1255.4	1223.5	1231.5	1207.6
30°	1287.1	1244.8	1212.9	1205.0	1186.5	1181.2	1144.1	1128.1	1133.5	1112.3	1099.1
32.5°	1173.2	1109.7	1096.4	1080.5	1069.9	1056.7	1030.2	1040.8	1016.9	1022.2	1001.0
35°	1022.2	995.8	961.3	961.3	950.7	940.1	921.7	932.3	908.4	897.8	876.6
37.5°	895.1	871.4	836.9	847.5	828.9	813.0	797.2	799.8	778.6	776.0	754.7
40°	757.4	744.1	720.4	720.4	707.1	707.1	699.1	691.2	677.9	662.1	638.2
42.5°	627.6	617.0	606.5	609.2	590.6	606.5	585.3	598.6	556.1	553.5	537.6
45°	532.3	508.5	511.1	500.5	489.9	495.2	476.7	482.0	458.2	452.9	437.0
47.5°	431.7	423.7	407.9	402.6	402.6	394.6	386.7	384.0	373.4	360.1	339.0
50°	354.8	325.8	320.4	312.5	307.2	307.2	296.6	280.8	283.4	270.2	248.9
52.5°	278.1	254.2	243.6	241.0	230.4	225.2	211.9	201.3	193.3	188.0	174.8
55°	214.5	193.3	180.1	180.1	164.2	164.2	145.7	137.7	127.1	116.5	108.6
57.5°	161.5	151.0	137.7	127.1	121.8	108.6	97.9	84.8	76.8	60.9	50.3
60°	121.8	111.2	97.9	90.1	84.8	71.5	58.3	47.6	29.2	23.9	21.2
62.5°	90.1	79.5	66.2	60.9	55.6	45.0	31.7	15.9	8.0	8.0	8.0
65°	66.2	52.9	42.3	37.0	31.7	23.9	10.6	5.3	2.7	2.7	2.7
67.5°	45.0	34.4	23.9	21.2	15.9	8.0	2.7	2.7	2.7	2.7	2.7
70°	29.2	21.2	10.6	8.0	5.3	2.7	2.7	2.7	2.7	2.7	2.7
72.5°	18.6	10.6	5.3	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	10.6	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	5.3	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	2.7	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	2.7	2.7	2.7
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 FEU4C459050 F4LC-SQLWW-H

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	2208.7	2208.7	2208.7	2208.7	2208.7	2208.7	2208.7	2208.7
2.5°	2155.8	2137.2	2147.8	2124.0	2134.6	2153.1	2139.9	2145.2
5°	2081.6	2071.0	2057.8	2023.4	2049.8	2071.0	2060.4	2057.8
7.5°	2002.2	1965.1	1983.6	1973.0	1967.8	1988.9	1965.1	1991.5
10°	1920.0	1893.6	1891.0	1872.4	1872.4	1888.3	1891.0	1875.0
12.5°	1798.2	1785.0	1785.0	1782.3	1779.6	1795.6	1798.2	1790.3
15°	1710.8	1705.6	1692.3	1689.7	1673.8	1697.6	1700.3	1697.6
17.5°	1604.9	1607.5	1594.3	1594.3	1604.9	1612.8	1591.6	1612.8
20°	1533.4	1520.1	1514.9	1491.0	1504.3	1517.5	1517.5	1520.1
22.5°	1430.1	1408.9	1416.9	1403.6	1395.6	1414.2	1414.2	1422.2
25°	1313.6	1313.6	1318.9	1311.0	1316.3	1326.8	1318.9	1337.4
27.5°	1202.3	1212.9	1212.9	1202.3	1207.6	1239.4	1252.7	1231.5
30°	1099.1	1101.7	1109.7	1104.4	1120.3	1130.8	1128.1	1144.1
32.5°	982.6	995.8	1001.0	993.2	998.5	1022.2	1009.0	1006.3
35°	892.5	868.7	866.1	868.7	879.2	884.5	879.2	897.8
37.5°	762.7	754.7	744.1	746.8	754.7	765.4	770.7	783.9
40°	638.2	627.6	627.6	625.0	617.0	646.2	646.2	646.2
42.5°	529.7	527.0	513.8	513.8	524.4	532.3	527.0	545.6
45°	434.3	423.7	415.8	415.8	423.7	423.7	431.7	429.0
47.5°	341.7	331.1	333.7	325.8	333.7	344.3	331.1	333.7
50°	256.9	256.9	251.6	256.9	254.2	256.9	251.6	246.3
52.5°	174.8	198.6	201.3	190.7	166.8	145.7	132.4	143.0
55°	100.6	90.1	90.1	87.4	82.1	79.5	71.5	79.5
57.5°	50.3	45.0	45.0	45.0	42.3	39.7	34.4	34.4
60°	21.2	18.6	18.6	15.9	13.3	10.6	8.0	10.6
62.5°	8.0	5.3	5.3	5.3	5.3	5.3	5.3	5.3
65°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
67.5°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
70°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
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)