

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: **FLDSQ4C90D010 FEU4C909027 F4LC-SQLWW-LI**

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: FLDSQ4C90D010 FEU4C909027 F4LC-SQLWW-LI
 Description: 4 INCH 9000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 2700K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

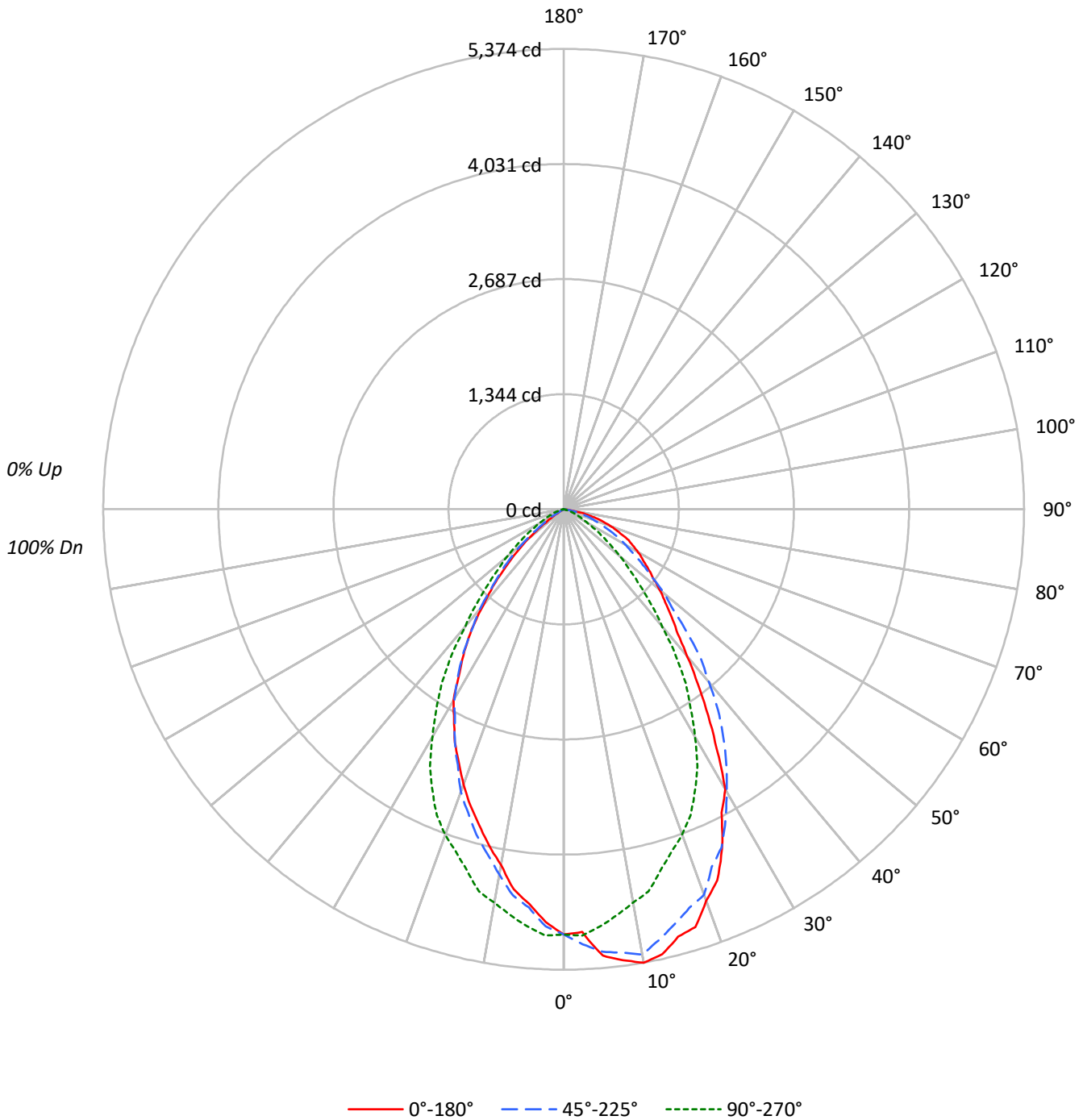
Lumens per Lamp: N/A
 Luminaire Lumens: 7114.0 lumens
 Efficiency: N/A
 Efficacy: 73.3 lumens/watt
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 97.1
 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				
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°	478865	478865	478865
5°	506642	473217	447859
10°	526501	456535	412789
15°	515976	435712	381031
20°	499226	414894	350739
25°	465672	385825	319945
30°	420361	341445	286439
35°	346271	292311	237632
40°	282585	225615	182890
45°	242796	171348	131543
50°	219746	130431	83086
55°	202221	94087	30045
60°	194097	64300	4593
65°	187467	43493	1393
70°	167858	30186	1721
75°	137602	15546	0
80°	86016	6612	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	465.0	6.5
10°-20°	1252.8	17.6
20°-30°	1672.9	23.5
30°-40°	1588.0	22.3
40°-50°	1097.7	15.4
50°-60°	606.5	8.5
60°-70°	301.2	4.2
70°-80°	118.7	1.7
80°-90°	11.3	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°	3390.6	47.7
0°-40°	4978.6	70.0
0°-60°	6682.9	93.9
0°-90°	7114.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	7114.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	4963	4963	4963	4963	4963	
5°	5231	5183	4886	4665	4624	501
15°	5165	5011	4362	3934	3814	1461
25°	4374	4356	3624	3005	3005	1994
35°	2940	3249	2482	2041	2017	1842
45°	1779	2041	1256	1030	964	1388
55°	1202	1131	559	286	179	1082
65°	821	595	190	6	6	797
75°	369	226	42	0	0	393
85°	0	6	0	0	0	34
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°	4962.9	4962.9	4962.9	4962.9	4962.9	4962.9	4962.9	4962.9	4962.9	4962.9	4962.9
2.5°	4939.1	5076.0	5087.9	5076.0	5093.9	5087.9	5117.7	5087.9	5123.8	5070.1	5082.0
5°	5230.8	5177.1	5290.2	5230.8	5230.8	5224.9	5207.0	5200.9	5224.9	5147.5	5183.2
7.5°	5308.2	5385.6	5486.8	5361.8	5367.6	5367.6	5332.0	5320.1	5320.1	5177.1	5218.9
10°	5373.7	5325.9	5379.5	5332.0	5373.7	5367.6	5391.4	5314.0	5367.6	5284.4	5278.3
12.5°	5320.1	5302.1	5373.7	5296.3	5272.5	5278.3	5248.7	5230.8	5248.7	5153.4	5147.5
15°	5165.3	5183.2	5290.2	5207.0	5195.1	5183.2	5147.5	5087.9	5135.6	5004.6	5010.7
17.5°	5111.9	5082.0	5100.0	5028.4	5046.4	5034.5	5028.4	4975.0	4962.9	4879.7	4879.7
20°	4861.9	4927.2	4927.2	4879.7	4879.7	4873.8	4796.4	4844.0	4790.4	4766.6	4790.4
22.5°	4689.2	4695.2	4695.2	4653.5	4659.6	4635.8	4594.1	4564.2	4594.1	4564.2	4516.7
25°	4374.0	4385.9	4457.2	4379.8	4367.9	4391.7	4356.0	4338.1	4332.2	4260.9	4356.0
27.5°	3993.0	4111.9	4106.1	4076.3	4111.9	4064.4	4046.6	4052.5	4070.4	4064.4	4088.1
30°	3772.9	3790.7	3808.6	3784.8	3790.7	3772.9	3772.9	3778.8	3826.3	3808.6	3802.5
32.5°	3326.5	3385.9	3433.7	3433.7	3439.5	3457.5	3451.4	3576.4	3606.2	3546.8	3534.9
35°	2939.7	2981.4	3022.9	3029.0	3106.4	3112.2	3118.3	3153.9	3237.2	3255.1	3249.1
37.5°	2570.9	2612.4	2624.2	2677.9	2719.6	2761.1	2808.9	2856.5	2927.8	2987.2	2957.6
40°	2243.5	2261.2	2291.1	2314.9	2398.1	2398.1	2421.9	2517.2	2594.6	2642.2	2636.1
42.5°	1969.8	1975.6	1999.4	2041.2	2118.6	2100.6	2118.6	2184.1	2296.9	2303.0	2368.5
45°	1779.3	1773.3	1791.2	1797.1	1844.9	1868.6	1880.5	1928.1	2023.2	2035.1	2041.2
47.5°	1606.8	1600.8	1630.6	1642.5	1660.2	1684.0	1684.0	1690.0	1725.7	1755.6	1731.8
50°	1463.9	1463.9	1463.9	1475.8	1505.6	1499.6	1505.6	1529.4	1547.1	1535.2	1529.4
52.5°	1309.1	1332.9	1350.8	1356.9	1362.7	1362.7	1368.8	1356.9	1350.8	1332.9	1297.2
55°	1202.1	1225.9	1225.9	1225.9	1225.9	1249.6	1220.0	1225.9	1225.9	1178.3	1130.7
57.5°	1095.1	1118.8	1136.6	1112.8	1136.6	1112.8	1100.9	1095.1	1082.9	1035.4	964.0
60°	1005.8	1017.7	1011.6	1005.8	1017.7	999.7	987.8	964.0	952.2	886.6	839.1
62.5°	904.6	910.4	916.5	904.6	892.7	886.6	862.9	827.2	803.4	749.8	708.1
65°	821.1	803.4	797.3	791.5	779.6	761.7	744.0	702.2	684.3	636.7	595.0
67.5°	696.2	690.3	702.2	684.3	654.7	654.7	636.7	601.0	559.3	529.7	488.0
70°	595.0	589.1	577.3	559.3	553.5	529.7	529.7	488.0	476.1	422.5	386.8
72.5°	488.0	488.0	470.0	452.3	434.3	422.5	416.6	386.8	369.1	339.2	309.4
75°	369.1	369.1	363.0	345.0	333.2	321.3	315.4	291.7	273.7	244.1	226.1
77.5°	261.8	261.8	238.0	226.1	232.0	220.1	208.2	202.4	196.3	178.6	154.8
80°	154.8	148.7	131.0	136.9	131.0	131.0	125.0	118.9	107.0	95.1	83.2
82.5°	41.7	47.6	47.6	47.6	53.6	41.7	41.7	41.7	47.6	47.6	29.8
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.1	6.1	6.1
87.5°	6.1	11.9	23.8	23.8	23.8	23.8	23.8	18.0	18.0	18.0	11.9
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°	4962.9	4962.9	4962.9	4962.9	4962.9	4962.9	4962.9	4962.9	4962.9	4962.9	4962.9
2.5°	5022.6	5016.5	5022.6	4980.8	5076.0	5004.6	4992.7	4980.8	5022.6	4980.8	4921.4
5°	5129.6	5070.1	5052.2	5034.5	5087.9	5004.6	4986.9	4992.7	4962.9	4885.7	4891.5
7.5°	5165.3	5111.9	5058.2	4945.2	4992.7	4975.0	4927.2	4891.5	4844.0	4778.5	4766.6
10°	5177.1	5117.7	5040.3	5004.6	4933.3	4909.5	4891.5	4832.1	4772.6	4659.6	4629.7
12.5°	5141.5	5070.1	4975.0	4945.2	4891.5	4814.1	4772.6	4713.0	4659.6	4570.3	4504.8
15°	4986.9	4927.2	4897.6	4796.4	4772.6	4724.9	4641.6	4558.4	4481.0	4361.8	4326.2
17.5°	4808.3	4784.5	4754.7	4677.3	4671.5	4623.9	4546.5	4474.9	4374.0	4189.3	4129.9
20°	4623.9	4623.9	4528.5	4498.9	4558.4	4463.0	4403.6	4338.1	4129.9	4040.6	3933.6
22.5°	4487.0	4421.5	4367.9	4320.4	4326.2	4266.7	4183.5	4052.5	3975.1	3868.1	3743.1
25°	4219.2	4242.9	4124.0	4106.1	4124.0	3987.0	3945.5	3838.2	3725.1	3624.0	3528.8
27.5°	4052.5	3987.0	3909.8	3844.3	3844.3	3790.7	3671.7	3648.0	3475.2	3380.1	3261.0
30°	3802.5	3755.0	3689.5	3594.3	3582.5	3540.7	3445.6	3385.9	3207.6	3064.6	2999.1
32.5°	3487.1	3469.4	3415.8	3308.7	3273.1	3225.3	3106.4	3005.2	2922.0	2761.1	2683.9
35°	3261.0	3195.7	3082.6	2993.3	2963.5	2880.2	2784.9	2713.5	2624.2	2481.6	2380.4
37.5°	2922.0	2856.5	2749.2	2642.2	2642.2	2559.0	2427.9	2356.6	2231.6	2148.2	2064.9
40°	2624.2	2541.0	2434.0	2309.0	2291.1	2171.9	2118.6	1999.4	1922.0	1791.2	1779.3
42.5°	2291.1	2213.7	2118.6	2023.2	1951.9	1892.4	1755.6	1666.3	1583.0	1517.5	1499.6
45°	1987.5	1886.4	1803.1	1684.0	1612.6	1541.3	1452.0	1392.6	1327.0	1255.7	1214.0
47.5°	1725.7	1642.5	1523.3	1416.3	1345.0	1309.1	1207.9	1142.6	1089.0	1041.4	1011.6
50°	1458.1	1356.9	1291.4	1172.2	1160.3	1077.1	993.9	940.3	910.4	868.9	827.2
52.5°	1255.7	1160.3	1071.1	982.0	934.2	904.6	827.2	773.6	732.1	702.2	678.4
55°	1059.2	975.9	904.6	815.3	785.5	744.0	654.7	642.8	601.0	559.3	529.7
57.5°	910.4	833.0	749.8	690.3	636.7	607.1	535.5	488.0	464.2	428.5	398.7
60°	773.6	690.3	624.8	553.5	529.7	488.0	434.3	392.8	363.0	333.2	303.6
62.5°	648.6	577.3	505.9	446.2	410.6	386.8	345.0	309.4	279.8	256.0	232.0
65°	535.5	470.0	410.6	351.1	333.2	303.6	273.7	244.1	220.1	190.5	166.7
67.5°	440.4	381.0	321.3	279.8	261.8	249.9	214.3	184.4	166.7	148.7	125.0
70°	345.0	303.6	256.0	220.1	202.4	184.4	160.6	142.9	118.9	107.0	89.3
72.5°	267.9	232.0	190.5	160.6	148.7	136.9	113.1	95.1	83.2	71.3	59.5
75°	190.5	160.6	136.9	107.0	101.2	95.1	77.4	65.5	53.6	41.7	35.7
77.5°	131.0	107.0	83.2	71.3	65.5	53.6	47.6	35.7	29.8	23.8	18.0
80°	71.3	53.6	41.7	35.7	29.8	23.8	23.8	18.0	11.9	11.9	6.1
82.5°	23.8	18.0	11.9	6.1	6.1	6.1	6.1	6.1	6.1	0.0	6.1
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°	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	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°	4962.9	4962.9	4962.9	4962.9	4962.9	4962.9	4962.9	4962.9	4962.9	4962.9	4962.9
2.5°	4957.1	4891.5	4909.5	4909.5	4897.6	4897.6	4885.7	4867.8	4873.8	4837.9	4760.8
5°	4903.4	4820.2	4808.3	4820.2	4772.6	4760.8	4737.0	4772.6	4665.4	4707.1	4659.6
7.5°	4748.9	4671.5	4653.5	4695.2	4635.8	4599.9	4594.1	4641.6	4546.5	4498.9	4445.3
10°	4576.1	4546.5	4492.9	4463.0	4445.3	4451.1	4403.6	4344.1	4326.2	4314.3	4266.7
12.5°	4421.5	4356.0	4308.5	4272.8	4260.9	4260.9	4183.5	4171.6	4118.0	4106.1	4034.8
15°	4236.9	4159.7	4129.9	4082.3	4040.6	4064.4	3975.1	3951.3	3933.6	3856.2	3868.1
17.5°	4076.3	3993.0	3921.7	3891.8	3856.2	3820.5	3737.0	3755.0	3713.2	3713.2	3606.2
20°	3868.1	3778.8	3725.1	3665.7	3665.7	3618.1	3558.7	3564.5	3510.9	3457.5	3362.1
22.5°	3648.0	3552.6	3487.1	3463.3	3403.9	3392.0	3320.6	3302.7	3231.3	3237.2	3153.9
25°	3415.8	3320.6	3231.3	3237.2	3183.8	3160.0	3118.3	3035.0	3005.2	2969.5	2945.7
27.5°	3142.1	3076.5	2999.1	2993.3	2892.1	2898.0	2844.6	2820.8	2749.2	2767.2	2713.5
30°	2892.1	2797.0	2725.4	2707.7	2666.0	2654.1	2570.9	2535.0	2547.1	2499.3	2469.7
32.5°	2636.1	2493.5	2463.6	2427.9	2404.2	2374.3	2314.9	2338.6	2285.0	2296.9	2249.4
35°	2296.9	2237.5	2160.1	2160.1	2136.3	2112.5	2071.0	2094.8	2041.2	2017.4	1969.8
37.5°	2011.3	1957.9	1880.5	1904.3	1862.6	1826.9	1791.2	1797.1	1749.5	1743.7	1695.9
40°	1701.9	1672.1	1618.7	1618.7	1588.9	1588.9	1570.9	1553.2	1523.3	1487.7	1434.1
42.5°	1410.3	1386.5	1362.7	1368.8	1327.0	1362.7	1315.2	1345.0	1249.6	1243.8	1207.9
45°	1196.0	1142.6	1148.5	1124.7	1100.9	1112.8	1071.1	1082.9	1029.6	1017.7	982.0
47.5°	970.1	952.2	916.5	904.6	904.6	886.6	868.9	862.9	839.1	809.2	761.7
50°	797.3	732.1	719.9	702.2	690.3	690.3	666.6	630.9	636.7	607.1	559.3
52.5°	624.8	571.2	547.4	541.6	517.8	505.9	476.1	452.3	434.3	422.5	392.8
55°	481.9	434.3	404.7	404.7	369.1	369.1	327.3	309.4	285.6	261.8	244.1
57.5°	363.0	339.2	309.4	285.6	273.7	244.1	220.1	190.5	172.5	136.9	113.1
60°	273.7	249.9	220.1	202.4	190.5	160.6	131.0	107.0	65.5	53.6	47.6
62.5°	202.4	178.6	148.7	136.9	125.0	101.2	71.3	35.7	18.0	18.0	18.0
65°	148.7	118.9	95.1	83.2	71.3	53.6	23.8	11.9	6.1	6.1	6.1
67.5°	101.2	77.4	53.6	47.6	35.7	18.0	6.1	6.1	6.1	6.1	6.1
70°	65.5	47.6	23.8	18.0	11.9	6.1	6.1	6.1	6.1	6.1	6.1
72.5°	41.7	23.8	11.9	6.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	23.8	11.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	11.9	6.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	6.1	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	6.1	6.1	6.1
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: FLDSQ4C90D010 FEU4C909027 F4LC-SQLWW-LI

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	4962.9	4962.9	4962.9	4962.9	4962.9	4962.9	4962.9	4962.9
2.5°	4844.0	4802.3	4826.0	4772.6	4796.4	4837.9	4808.3	4820.2
5°	4677.3	4653.5	4623.9	4546.5	4605.9	4653.5	4629.7	4623.9
7.5°	4498.9	4415.5	4457.2	4433.4	4421.5	4469.1	4415.5	4474.9
10°	4314.3	4254.8	4249.0	4207.3	4207.3	4242.9	4249.0	4213.1
12.5°	4040.6	4011.0	4011.0	4004.9	3998.8	4034.8	4040.6	4022.9
15°	3844.3	3832.4	3802.5	3796.7	3761.0	3814.4	3820.5	3814.4
17.5°	3606.2	3612.1	3582.5	3582.5	3606.2	3624.0	3576.4	3624.0
20°	3445.6	3415.8	3403.9	3350.2	3380.1	3409.9	3409.9	3415.8
22.5°	3213.4	3165.8	3183.8	3153.9	3136.0	3177.7	3177.7	3195.7
25°	2951.6	2951.6	2963.5	2945.7	2957.6	2981.4	2963.5	3005.2
27.5°	2701.6	2725.4	2725.4	2701.6	2713.5	2784.9	2814.7	2767.2
30°	2469.7	2475.5	2493.5	2481.6	2517.2	2541.0	2535.0	2570.9
32.5°	2207.9	2237.5	2249.4	2231.6	2243.5	2296.9	2267.3	2261.2
35°	2005.5	1951.9	1946.0	1951.9	1975.6	1987.5	1975.6	2017.4
37.5°	1713.8	1695.9	1672.1	1678.2	1695.9	1719.9	1731.8	1761.4
40°	1434.1	1410.3	1410.3	1404.4	1386.5	1452.0	1452.0	1452.0
42.5°	1190.2	1184.1	1154.5	1154.5	1178.3	1196.0	1184.1	1225.9
45°	975.9	952.2	934.2	934.2	952.2	952.2	970.1	964.0
47.5°	767.7	744.0	749.8	732.1	749.8	773.6	744.0	749.8
50°	577.3	577.3	565.4	577.3	571.2	577.3	565.4	553.5
52.5°	392.8	446.2	452.3	428.5	374.9	327.3	297.5	321.3
55°	226.1	202.4	202.4	196.3	184.4	178.6	160.6	178.6
57.5°	113.1	101.2	101.2	101.2	95.1	89.3	77.4	77.4
60°	47.6	41.7	41.7	35.7	29.8	23.8	18.0	23.8
62.5°	18.0	11.9	11.9	11.9	11.9	11.9	11.9	11.9
65°	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
67.5°	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
70°	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
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)