

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: **FLDSQ4C10D010 FEU4C109035 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: FLDSQ4C10D010 FEU4C109035 F4LC-SQLWW-H
 Description: 4 INCH 1000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3500K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH H FINISH
 Light Source: -
 Ballast/Driver: -

Summary

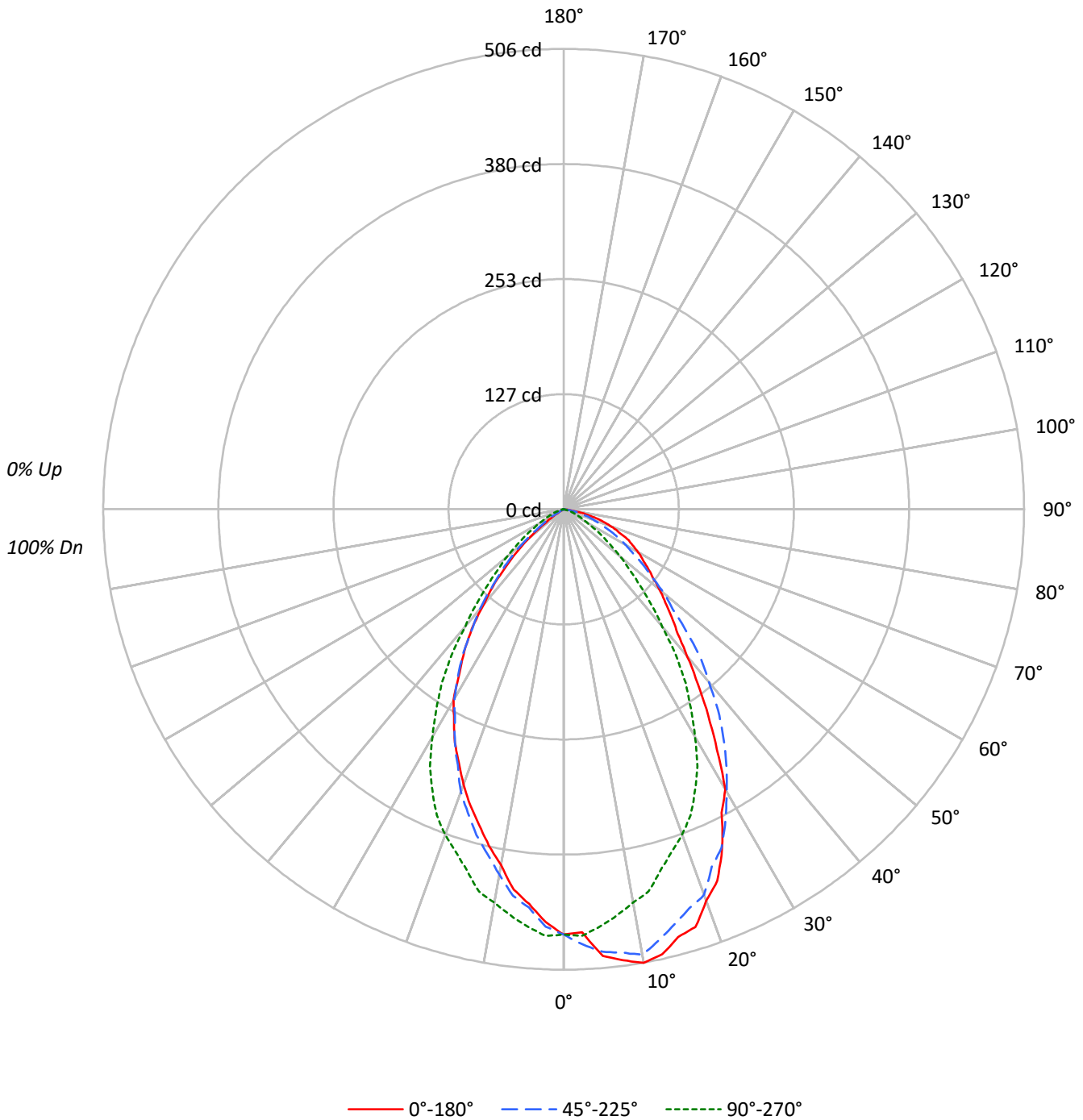
Lumens per Lamp: N/A
 Luminaire Lumens: 670.0 lumens
 Efficiency: N/A
 Efficacy: 68.4 lumens/watt
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 9.8
 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: FLDSQ4C10D010 FEU4C109035 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°	45099	45099	45099
5°	47712	44564	42181
10°	49586	42992	38877
15°	48598	41036	35881
20°	47018	39070	33033
25°	43852	36336	30129
30°	39586	32155	26974
35°	32616	27528	22380
40°	26615	21249	17231
45°	22870	16143	12390
50°	20700	12279	7821
55°	19043	8865	2826
60°	18275	6060	425
65°	17649	4087	137
70°	15798	2849	169
75°	12974	1454	0
80°	8113	611	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	43.8	6.5
10°-20°	118.0	17.6
20°-30°	157.6	23.5
30°-40°	149.6	22.3
40°-50°	103.4	15.4
50°-60°	57.1	8.5
60°-70°	28.4	4.2
70°-80°	11.2	1.7
80°-90°	1.1	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°	319.3	47.7
0°-40°	468.9	70.0
0°-60°	629.4	93.9
0°-90°	670.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	670.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	467	467	467	467	467	
5°	493	488	460	439	436	47
15°	486	472	411	370	359	138
25°	412	410	341	283	283	188
35°	277	306	234	192	190	173
45°	168	192	118	97	91	131
55°	113	106	53	27	17	102
65°	77	56	18	1	1	75
75°	35	21	4	0	0	37
85°	0	1	0	0	0	3
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°	467.4	467.4	467.4	467.4	467.4	467.4	467.4	467.4	467.4	467.4	467.4
2.5°	465.2	478.1	479.2	478.1	479.7	479.2	482.0	479.2	482.6	477.5	478.6
5°	492.6	487.6	498.2	492.6	492.6	492.1	490.4	489.8	492.1	484.8	488.2
7.5°	499.9	507.2	516.7	505.0	505.5	505.5	502.2	501.0	501.0	487.6	491.5
10°	506.1	501.6	506.6	502.2	506.1	505.5	507.8	500.5	505.5	497.7	497.1
12.5°	501.0	499.4	506.1	498.8	496.6	497.1	494.3	492.6	494.3	485.3	484.8
15°	486.5	488.2	498.2	490.4	489.3	488.2	484.8	479.2	483.7	471.3	471.9
17.5°	481.4	478.6	480.3	473.6	475.3	474.1	473.6	468.5	467.4	459.6	459.6
20°	457.9	464.0	464.0	459.6	459.6	459.0	451.7	456.2	451.2	448.9	451.2
22.5°	441.6	442.2	442.2	438.3	438.8	436.6	432.7	429.9	432.7	429.9	425.4
25°	411.9	413.1	419.8	412.5	411.4	413.6	410.3	408.6	408.0	401.3	410.3
27.5°	376.1	387.3	386.7	383.9	387.3	382.8	381.1	381.7	383.4	382.8	385.0
30°	355.3	357.0	358.7	356.5	357.0	355.3	355.3	355.9	360.4	358.7	358.1
32.5°	313.3	318.9	323.4	323.4	323.9	325.6	325.1	336.8	339.6	334.0	332.9
35°	276.9	280.8	284.7	285.3	292.6	293.1	293.7	297.0	304.9	306.6	306.0
37.5°	242.1	246.0	247.2	252.2	256.1	260.0	264.5	269.0	275.7	281.3	278.6
40°	211.3	213.0	215.8	218.0	225.9	225.9	228.1	237.1	244.4	248.8	248.3
42.5°	185.5	186.1	188.3	192.2	199.5	197.8	199.5	205.7	216.3	216.9	223.1
45°	167.6	167.0	168.7	169.2	173.7	176.0	177.1	181.6	190.5	191.7	192.2
47.5°	151.3	150.8	153.6	154.7	156.4	158.6	158.6	159.2	162.5	165.3	163.1
50°	137.9	137.9	137.9	139.0	141.8	141.2	141.8	144.0	145.7	144.6	144.0
52.5°	123.3	125.5	127.2	127.8	128.3	128.3	128.9	127.8	127.2	125.5	122.2
55°	113.2	115.5	115.5	115.5	115.5	117.7	114.9	115.5	115.5	111.0	106.5
57.5°	103.1	105.4	107.0	104.8	107.0	104.8	103.7	103.1	102.0	97.5	90.8
60°	94.7	95.8	95.3	94.7	95.8	94.2	93.0	90.8	89.7	83.5	79.0
62.5°	85.2	85.7	86.3	85.2	84.1	83.5	81.3	77.9	75.7	70.6	66.7
65°	77.3	75.7	75.1	74.5	73.4	71.7	70.1	66.1	64.4	60.0	56.0
67.5°	65.6	65.0	66.1	64.4	61.7	61.7	60.0	56.6	52.7	49.9	46.0
70°	56.0	55.5	54.4	52.7	52.1	49.9	49.9	46.0	44.8	39.8	36.4
72.5°	46.0	46.0	44.3	42.6	40.9	39.8	39.2	36.4	34.8	31.9	29.1
75°	34.8	34.8	34.2	32.5	31.4	30.3	29.7	27.5	25.8	23.0	21.3
77.5°	24.7	24.7	22.4	21.3	21.8	20.7	19.6	19.1	18.5	16.8	14.6
80°	14.6	14.0	12.3	12.9	12.3	12.3	11.8	11.2	10.1	9.0	7.8
82.5°	3.9	4.5	4.5	4.5	5.1	3.9	3.9	3.9	4.5	4.5	2.8
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6
87.5°	0.6	1.1	2.2	2.2	2.2	2.2	2.2	1.7	1.7	1.7	1.1
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°	467.4	467.4	467.4	467.4	467.4	467.4	467.4	467.4	467.4	467.4	467.4
2.5°	473.0	472.5	473.0	469.1	478.1	471.3	470.2	469.1	473.0	469.1	463.5
5°	483.1	477.5	475.8	474.1	479.2	471.3	469.7	470.2	467.4	460.1	460.7
7.5°	486.5	481.4	476.4	465.7	470.2	468.5	464.0	460.7	456.2	450.0	448.9
10°	487.6	482.0	474.7	471.3	464.6	462.4	460.7	455.1	449.5	438.8	436.0
12.5°	484.2	477.5	468.5	465.7	460.7	453.4	449.5	443.9	438.8	430.4	424.3
15°	469.7	464.0	461.3	451.7	449.5	445.0	437.2	429.3	422.0	410.8	407.4
17.5°	452.8	450.6	447.8	440.5	440.0	435.5	428.2	421.5	411.9	394.6	389.0
20°	435.5	435.5	426.5	423.7	429.3	420.3	414.7	408.6	389.0	380.5	370.5
22.5°	422.6	416.4	411.4	406.9	407.4	401.8	394.0	381.7	374.4	364.3	352.5
25°	397.4	399.6	388.4	386.7	388.4	375.5	371.6	361.5	350.8	341.3	332.3
27.5°	381.7	375.5	368.2	362.1	362.1	357.0	345.8	343.6	327.3	318.3	307.1
30°	358.1	353.6	347.5	338.5	337.4	333.5	324.5	318.9	302.1	288.6	282.5
32.5°	328.4	326.7	321.7	311.6	308.3	303.8	292.6	283.0	275.2	260.0	252.8
35°	307.1	301.0	290.3	281.9	279.1	271.3	262.3	255.6	247.2	233.7	224.2
37.5°	275.2	269.0	258.9	248.8	248.8	241.0	228.7	221.9	210.2	202.3	194.5
40°	247.2	239.3	229.2	217.5	215.8	204.6	199.5	188.3	181.0	168.7	167.6
42.5°	215.8	208.5	199.5	190.5	183.8	178.2	165.3	156.9	149.1	142.9	141.2
45°	187.2	177.7	169.8	158.6	151.9	145.2	136.8	131.2	125.0	118.3	114.3
47.5°	162.5	154.7	143.5	133.4	126.7	123.3	113.8	107.6	102.6	98.1	95.3
50°	137.3	127.8	121.6	110.4	109.3	101.4	93.6	88.6	85.7	81.8	77.9
52.5°	118.3	109.3	100.9	92.5	88.0	85.2	77.9	72.9	68.9	66.1	63.9
55°	99.8	91.9	85.2	76.8	74.0	70.1	61.7	60.5	56.6	52.7	49.9
57.5°	85.7	78.5	70.6	65.0	60.0	57.2	50.4	46.0	43.7	40.4	37.5
60°	72.9	65.0	58.8	52.1	49.9	46.0	40.9	37.0	34.2	31.4	28.6
62.5°	61.1	54.4	47.6	42.0	38.7	36.4	32.5	29.1	26.3	24.1	21.8
65°	50.4	44.3	38.7	33.1	31.4	28.6	25.8	23.0	20.7	17.9	15.7
67.5°	41.5	35.9	30.3	26.3	24.7	23.5	20.2	17.4	15.7	14.0	11.8
70°	32.5	28.6	24.1	20.7	19.1	17.4	15.1	13.5	11.2	10.1	8.4
72.5°	25.2	21.8	17.9	15.1	14.0	12.9	10.6	9.0	7.8	6.7	5.6
75°	17.9	15.1	12.9	10.1	9.5	9.0	7.3	6.2	5.1	3.9	3.4
77.5°	12.3	10.1	7.8	6.7	6.2	5.1	4.5	3.4	2.8	2.2	1.7
80°	6.7	5.1	3.9	3.4	2.8	2.2	2.2	1.7	1.1	1.1	0.6
82.5°	2.2	1.7	1.1	0.6	0.6	0.6	0.6	0.6	0.6	0.0	0.6
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°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	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°	467.4	467.4	467.4	467.4	467.4	467.4	467.4	467.4	467.4	467.4	467.4
2.5°	466.9	460.7	462.4	462.4	461.3	461.3	460.1	458.4	459.0	455.6	448.4
5°	461.8	454.0	452.8	454.0	449.5	448.4	446.1	449.5	439.4	443.3	438.8
7.5°	447.3	440.0	438.3	442.2	436.6	433.2	432.7	437.2	428.2	423.7	418.7
10°	431.0	428.2	423.1	420.3	418.7	419.2	414.7	409.1	407.4	406.3	401.8
12.5°	416.4	410.3	405.8	402.4	401.3	401.3	394.0	392.9	387.8	386.7	380.0
15°	399.0	391.8	389.0	384.5	380.5	382.8	374.4	372.1	370.5	363.2	364.3
17.5°	383.9	376.1	369.3	366.5	363.2	359.8	352.0	353.6	349.7	349.7	339.6
20°	364.3	355.9	350.8	345.2	345.2	340.8	335.2	335.7	330.7	325.6	316.6
22.5°	343.6	334.6	328.4	326.2	320.6	319.5	312.7	311.0	304.3	304.9	297.0
25°	321.7	312.7	304.3	304.9	299.9	297.6	293.7	285.8	283.0	279.7	277.4
27.5°	295.9	289.7	282.5	281.9	272.4	272.9	267.9	265.7	258.9	260.6	255.6
30°	272.4	263.4	256.7	255.0	251.1	250.0	242.1	238.7	239.9	235.4	232.6
32.5°	248.3	234.8	232.0	228.7	226.4	223.6	218.0	220.3	215.2	216.3	211.8
35°	216.3	210.7	203.4	203.4	201.2	199.0	195.0	197.3	192.2	190.0	185.5
37.5°	189.4	184.4	177.1	179.3	175.4	172.1	168.7	169.2	164.8	164.2	159.7
40°	160.3	157.5	152.5	152.5	149.6	149.6	147.9	146.3	143.5	140.1	135.1
42.5°	132.8	130.6	128.3	128.9	125.0	128.3	123.9	126.7	117.7	117.1	113.8
45°	112.6	107.6	108.2	105.9	103.7	104.8	100.9	102.0	97.0	95.8	92.5
47.5°	91.4	89.7	86.3	85.2	85.2	83.5	81.8	81.3	79.0	76.2	71.7
50°	75.1	68.9	67.8	66.1	65.0	65.0	62.8	59.4	60.0	57.2	52.7
52.5°	58.8	53.8	51.6	51.0	48.8	47.6	44.8	42.6	40.9	39.8	37.0
55°	45.4	40.9	38.1	38.1	34.8	34.8	30.8	29.1	26.9	24.7	23.0
57.5°	34.2	31.9	29.1	26.9	25.8	23.0	20.7	17.9	16.2	12.9	10.6
60°	25.8	23.5	20.7	19.1	17.9	15.1	12.3	10.1	6.2	5.1	4.5
62.5°	19.1	16.8	14.0	12.9	11.8	9.5	6.7	3.4	1.7	1.7	1.7
65°	14.0	11.2	9.0	7.8	6.7	5.1	2.2	1.1	0.6	0.6	0.6
67.5°	9.5	7.3	5.1	4.5	3.4	1.7	0.6	0.6	0.6	0.6	0.6
70°	6.2	4.5	2.2	1.7	1.1	0.6	0.6	0.6	0.6	0.6	0.6
72.5°	3.9	2.2	1.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	2.2	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	1.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	0.6	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	0.6	0.6	0.6
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: FLDSQ4C10D010 FEU4C109035 F4LC-SQLWW-H

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	467.4	467.4	467.4	467.4	467.4	467.4	467.4	467.4
2.5°	456.2	452.3	454.5	449.5	451.7	455.6	452.8	454.0
5°	440.5	438.3	435.5	428.2	433.8	438.3	436.0	435.5
7.5°	423.7	415.9	419.8	417.5	416.4	420.9	415.9	421.5
10°	406.3	400.7	400.2	396.2	396.2	399.6	400.2	396.8
12.5°	380.5	377.8	377.8	377.2	376.6	380.0	380.5	378.9
15°	362.1	360.9	358.1	357.6	354.2	359.2	359.8	359.2
17.5°	339.6	340.2	337.4	337.4	339.6	341.3	336.8	341.3
20°	324.5	321.7	320.6	315.5	318.3	321.1	321.1	321.7
22.5°	302.6	298.2	299.9	297.0	295.3	299.3	299.3	301.0
25°	278.0	278.0	279.1	277.4	278.6	280.8	279.1	283.0
27.5°	254.4	256.7	256.7	254.4	255.6	262.3	265.1	260.6
30°	232.6	233.1	234.8	233.7	237.1	239.3	238.7	242.1
32.5°	207.9	210.7	211.8	210.2	211.3	216.3	213.5	213.0
35°	188.9	183.8	183.3	183.8	186.1	187.2	186.1	190.0
37.5°	161.4	159.7	157.5	158.0	159.7	162.0	163.1	165.9
40°	135.1	132.8	132.8	132.3	130.6	136.8	136.8	136.8
42.5°	112.1	111.5	108.7	108.7	111.0	112.6	111.5	115.5
45°	91.9	89.7	88.0	88.0	89.7	89.7	91.4	90.8
47.5°	72.3	70.1	70.6	68.9	70.6	72.9	70.1	70.6
50°	54.4	54.4	53.2	54.4	53.8	54.4	53.2	52.1
52.5°	37.0	42.0	42.6	40.4	35.3	30.8	28.0	30.3
55°	21.3	19.1	19.1	18.5	17.4	16.8	15.1	16.8
57.5°	10.6	9.5	9.5	9.5	9.0	8.4	7.3	7.3
60°	4.5	3.9	3.9	3.4	2.8	2.2	1.7	2.2
62.5°	1.7	1.1	1.1	1.1	1.1	1.1	1.1	1.1
65°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
67.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
70°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
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)