

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 FEU4C109027 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 FEU4C109027 F4LC-SQLWW-H
 Description: 4 INCH 1000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 2700K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH H FINISH
 Light Source: -
 Ballast/Driver: -

Summary

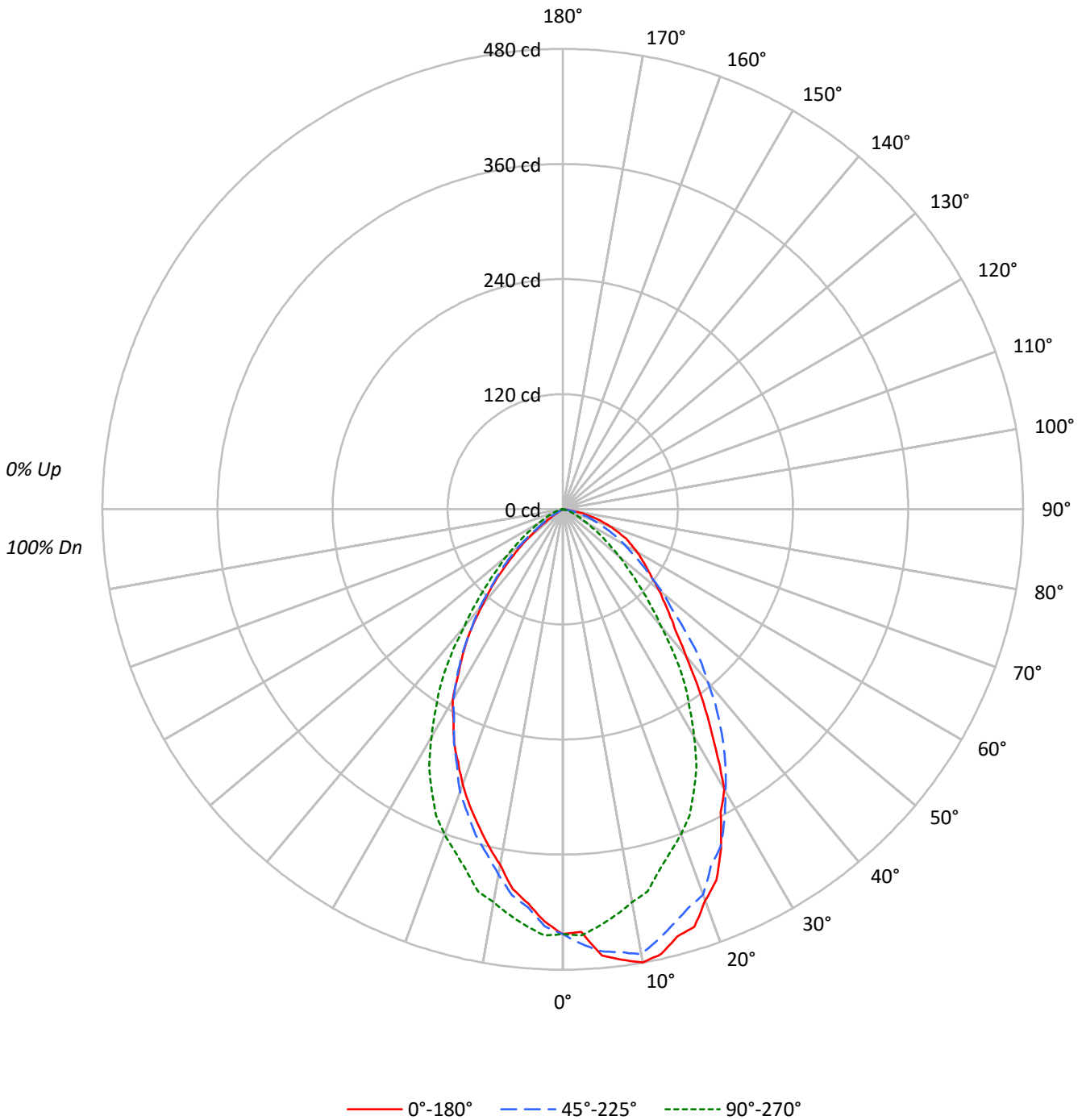
Lumens per Lamp: N/A
 Luminaire Lumens: 635.0 lumens
 Efficiency: N/A
 Efficacy: 64.8 lumens/watt
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 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





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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	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°	42745	42745	42745
5°	45223	42240	39973
10°	47000	40749	36849
15°	46061	38888	34013
20°	44564	37037	31308
25°	41563	34441	28554
30°	37525	30483	25570
35°	30908	26091	21214
40°	25229	20141	16324
45°	21669	15297	11749
50°	19619	11649	7415
55°	18050	8394	2675
60°	17329	5731	405
65°	16735	3881	114
70°	14980	2708	141
75°	12265	1379	0
80°	7668	611	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	41.5	6.5
10°-20°	111.8	17.6
20°-30°	149.3	23.5
30°-40°	141.7	22.3
40°-50°	98.0	15.4
50°-60°	54.1	8.5
60°-70°	26.9	4.2
70°-80°	10.6	1.7
80°-90°	1.0	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°	302.6	47.7
0°-40°	444.4	70.0
0°-60°	596.5	93.9
0°-90°	635.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	635.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	443	443	443	443	443	
5°	467	463	436	416	413	45
15°	461	447	389	351	340	130
25°	390	389	324	268	268	178
35°	262	290	222	182	180	164
45°	159	182	112	92	86	124
55°	107	101	50	26	16	97
65°	73	53	17	0	0	71
75°	33	20	4	0	0	35
85°	0	0	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°	443.0	443.0	443.0	443.0	443.0	443.0	443.0	443.0	443.0	443.0	443.0
2.5°	440.9	453.1	454.1	453.1	454.7	454.1	456.8	454.1	457.3	452.6	453.6
5°	466.9	462.1	472.2	466.9	466.9	466.4	464.8	464.2	466.4	459.5	462.7
7.5°	473.8	480.7	489.8	478.6	479.1	479.1	475.9	474.9	474.9	462.1	465.8
10°	479.7	475.4	480.2	475.9	479.7	479.1	481.2	474.3	479.1	471.7	471.1
12.5°	474.9	473.3	479.7	472.7	470.6	471.1	468.5	466.9	468.5	460.0	459.5
15°	461.1	462.7	472.2	464.8	463.7	462.7	459.5	454.1	458.4	446.7	447.3
17.5°	456.3	453.6	455.2	448.8	450.4	449.4	448.8	444.1	443.0	435.6	435.6
20°	434.0	439.8	439.8	435.6	435.6	435.0	428.1	432.4	427.6	425.5	427.6
22.5°	418.6	419.1	419.1	415.4	415.9	413.8	410.1	407.4	410.1	407.4	403.2
25°	390.4	391.5	397.9	390.9	389.9	392.0	388.8	387.2	386.7	380.3	388.8
27.5°	356.4	367.0	366.5	363.8	367.0	362.8	361.2	361.7	363.3	362.8	364.9
30°	336.8	338.4	340.0	337.8	338.4	336.8	336.8	337.3	341.5	340.0	339.4
32.5°	296.9	302.2	306.5	306.5	307.0	308.6	308.1	319.2	321.9	316.6	315.5
35°	262.4	266.1	269.8	270.4	277.3	277.8	278.3	281.5	289.0	290.6	290.0
37.5°	229.5	233.2	234.2	239.0	242.8	246.5	250.7	255.0	261.3	266.6	264.0
40°	200.3	201.8	204.5	206.6	214.1	214.1	216.2	224.7	231.6	235.8	235.3
42.5°	175.8	176.3	178.5	182.2	189.1	187.5	189.1	195.0	205.0	205.6	211.4
45°	158.8	158.3	159.9	160.4	164.7	166.8	167.9	172.1	180.6	181.7	182.2
47.5°	143.4	142.9	145.5	146.6	148.2	150.3	150.3	150.9	154.0	156.7	154.6
50°	130.7	130.7	130.7	131.7	134.4	133.9	134.4	136.5	138.1	137.0	136.5
52.5°	116.9	119.0	120.6	121.1	121.6	121.6	122.2	121.1	120.6	119.0	115.8
55°	107.3	109.4	109.4	109.4	109.4	111.5	108.9	109.4	109.4	105.2	100.9
57.5°	97.7	99.9	101.5	99.3	101.5	99.3	98.3	97.7	96.7	92.4	86.1
60°	89.8	90.8	90.3	89.8	90.8	89.2	88.2	86.1	85.0	79.1	74.9
62.5°	80.7	81.3	81.8	80.7	79.7	79.1	77.0	73.8	71.7	66.9	63.2
65°	73.3	71.7	71.2	70.7	69.6	68.0	66.4	62.7	61.1	56.8	53.1
67.5°	62.1	61.6	62.7	61.1	58.4	58.4	56.8	53.6	49.9	47.3	43.6
70°	53.1	52.6	51.5	49.9	49.4	47.3	47.3	43.6	42.5	37.7	34.5
72.5°	43.6	43.6	42.0	40.4	38.8	37.7	37.2	34.5	32.9	30.3	27.6
75°	32.9	32.9	32.4	30.8	29.7	28.7	28.2	26.0	24.4	21.8	20.2
77.5°	23.4	23.4	21.2	20.2	20.7	19.6	18.6	18.1	17.5	15.9	13.8
80°	13.8	13.3	11.7	12.2	11.7	11.7	11.2	10.6	9.6	8.5	7.4
82.5°	3.7	4.2	4.2	4.2	4.8	3.7	3.7	3.7	4.2	4.2	2.7
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5
87.5°	0.5	1.1	2.1	2.1	2.1	2.1	2.1	1.6	1.6	1.6	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°	443.0	443.0	443.0	443.0	443.0	443.0	443.0	443.0	443.0	443.0	443.0
2.5°	448.3	447.8	448.3	444.6	453.1	446.7	445.7	444.6	448.3	444.6	439.3
5°	457.9	452.6	451.0	449.4	454.1	446.7	445.1	445.7	443.0	436.1	436.6
7.5°	461.1	456.3	451.5	441.4	445.7	444.1	439.8	436.6	432.4	426.5	425.5
10°	462.1	456.8	449.9	446.7	440.3	438.2	436.6	431.3	426.0	415.9	413.3
12.5°	458.9	452.6	444.1	441.4	436.6	429.7	426.0	420.7	415.9	407.9	402.1
15°	445.1	439.8	437.2	428.1	426.0	421.7	414.3	406.9	400.0	389.3	386.2
17.5°	429.2	427.1	424.4	417.5	417.0	412.7	405.8	399.4	390.4	373.9	368.6
20°	412.7	412.7	404.2	401.6	406.9	398.4	393.1	387.2	368.6	360.7	351.1
22.5°	400.5	394.7	389.9	385.6	386.2	380.9	373.4	361.7	354.8	345.3	334.1
25°	376.6	378.7	368.1	366.5	368.1	355.9	352.2	342.6	332.5	323.5	315.0
27.5°	361.7	355.9	349.0	343.1	343.1	338.4	327.7	325.6	310.2	301.7	291.1
30°	339.4	335.2	329.3	320.8	319.8	316.0	307.6	302.2	286.3	273.6	267.7
32.5°	311.3	309.7	304.9	295.3	292.2	287.9	277.3	268.2	260.8	246.5	239.6
35°	291.1	285.2	275.2	267.2	264.5	257.1	248.6	242.2	234.2	221.5	212.5
37.5°	260.8	255.0	245.4	235.8	235.8	228.4	216.7	210.4	199.2	191.7	184.3
40°	234.2	226.8	217.3	206.1	204.5	193.9	189.1	178.5	171.6	159.9	158.8
42.5°	204.5	197.6	189.1	180.6	174.2	168.9	156.7	148.7	141.3	135.5	133.9
45°	177.4	168.4	160.9	150.3	143.9	137.6	129.6	124.3	118.5	112.1	108.4
47.5°	154.0	146.6	136.0	126.4	120.1	116.9	107.8	102.0	97.2	93.0	90.3
50°	130.1	121.1	115.3	104.6	103.6	96.1	88.7	83.9	81.3	77.6	73.8
52.5°	112.1	103.6	95.6	87.7	83.4	80.7	73.8	69.0	65.3	62.7	60.6
55°	94.5	87.1	80.7	72.8	70.1	66.4	58.4	57.4	53.6	49.9	47.3
57.5°	81.3	74.4	66.9	61.6	56.8	54.2	47.8	43.6	41.4	38.2	35.6
60°	69.0	61.6	55.8	49.4	47.3	43.6	38.8	35.1	32.4	29.7	27.1
62.5°	57.9	51.5	45.2	39.8	36.6	34.5	30.8	27.6	25.0	22.8	20.7
65°	47.8	42.0	36.6	31.3	29.7	27.1	24.4	21.8	19.6	17.0	14.9
67.5°	39.3	34.0	28.7	25.0	23.4	22.3	19.1	16.5	14.9	13.3	11.2
70°	30.8	27.1	22.8	19.6	18.1	16.5	14.3	12.8	10.6	9.6	8.0
72.5°	23.9	20.7	17.0	14.3	13.3	12.2	10.1	8.5	7.4	6.4	5.3
75°	17.0	14.3	12.2	9.6	9.0	8.5	6.9	5.8	4.8	3.7	3.2
77.5°	11.7	9.6	7.4	6.4	5.8	4.8	4.2	3.2	2.7	2.1	1.6
80°	6.4	4.8	3.7	3.2	2.7	2.1	2.1	1.6	1.1	1.1	0.5
82.5°	2.1	1.6	1.1	0.5	0.5	0.5	0.5	0.5	0.5	0.0	0.5
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°	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	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°	443.0	443.0	443.0	443.0	443.0	443.0	443.0	443.0	443.0	443.0	443.0
2.5°	442.5	436.6	438.2	438.2	437.2	437.2	436.1	434.5	435.0	431.8	424.9
5°	437.7	430.3	429.2	430.3	426.0	424.9	422.8	426.0	416.4	420.2	415.9
7.5°	423.9	417.0	415.4	419.1	413.8	410.6	410.1	414.3	405.8	401.6	396.8
10°	408.5	405.8	401.0	398.4	396.8	397.3	393.1	387.8	386.2	385.1	380.9
12.5°	394.7	388.8	384.6	381.4	380.3	380.3	373.4	372.4	367.6	366.5	360.1
15°	378.2	371.3	368.6	364.4	360.7	362.8	354.8	352.7	351.1	344.2	345.3
17.5°	363.8	356.4	350.1	347.4	344.2	341.0	333.6	335.2	331.4	331.4	321.9
20°	345.3	337.3	332.5	327.2	327.2	323.0	317.6	318.2	313.4	308.6	300.1
22.5°	325.6	317.1	311.3	309.1	303.8	302.8	296.4	294.8	288.4	289.0	281.5
25°	304.9	296.4	288.4	289.0	284.2	282.1	278.3	270.9	268.2	265.1	262.9
27.5°	280.5	274.6	267.7	267.2	258.2	258.7	253.9	251.8	245.4	247.0	242.2
30°	258.2	249.7	243.3	241.7	238.0	236.9	229.5	226.3	227.4	223.1	220.4
32.5°	235.3	222.6	219.9	216.7	214.6	211.9	206.6	208.7	204.0	205.0	200.8
35°	205.0	199.7	192.8	192.8	190.7	188.6	184.9	187.0	182.2	180.1	175.8
37.5°	179.5	174.8	167.9	170.0	166.3	163.1	159.9	160.4	156.2	155.6	151.4
40°	151.9	149.3	144.5	144.5	141.8	141.8	140.2	138.6	136.0	132.8	128.0
42.5°	125.9	123.8	121.6	122.2	118.5	121.6	117.4	120.1	111.5	111.0	107.8
45°	106.8	102.0	102.5	100.4	98.3	99.3	95.6	96.7	91.9	90.8	87.7
47.5°	86.6	85.0	81.8	80.7	80.7	79.1	77.6	77.0	74.9	72.2	68.0
50°	71.2	65.3	64.3	62.7	61.6	61.6	59.5	56.3	56.8	54.2	49.9
52.5°	55.8	51.0	48.9	48.3	46.2	45.2	42.5	40.4	38.8	37.7	35.1
55°	43.0	38.8	36.1	36.1	32.9	32.9	29.2	27.6	25.5	23.4	21.8
57.5°	32.4	30.3	27.6	25.5	24.4	21.8	19.6	17.0	15.4	12.2	10.1
60°	24.4	22.3	19.6	18.1	17.0	14.3	11.7	9.6	5.8	4.8	4.2
62.5°	18.1	15.9	13.3	12.2	11.2	9.0	6.4	3.2	1.6	1.6	1.6
65°	13.3	10.6	8.5	7.4	6.4	4.8	2.1	1.1	0.5	0.5	0.5
67.5°	9.0	6.9	4.8	4.2	3.2	1.6	0.5	0.5	0.5	0.5	0.5
70°	5.8	4.2	2.1	1.6	1.1	0.5	0.5	0.5	0.5	0.5	0.5
72.5°	3.7	2.1	1.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	2.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	1.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	0.5	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	0.5	0.5	0.5
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 FEU4C109027 F4LC-SQLWW-H

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	443.0	443.0	443.0	443.0	443.0	443.0	443.0	443.0
2.5°	432.4	428.7	430.8	426.0	428.1	431.8	429.2	430.3
5°	417.5	415.4	412.7	405.8	411.1	415.4	413.3	412.7
7.5°	401.6	394.1	397.9	395.7	394.7	398.9	394.1	399.4
10°	385.1	379.8	379.3	375.5	375.5	378.7	379.3	376.1
12.5°	360.7	358.0	358.0	357.5	356.9	360.1	360.7	359.1
15°	343.1	342.1	339.4	338.9	335.7	340.5	341.0	340.5
17.5°	321.9	322.4	319.8	319.8	321.9	323.5	319.2	323.5
20°	307.6	304.9	303.8	299.0	301.7	304.4	304.4	304.9
22.5°	286.8	282.6	284.2	281.5	279.9	283.6	283.6	285.2
25°	263.5	263.5	264.5	262.9	264.0	266.1	264.5	268.2
27.5°	241.2	243.3	243.3	241.2	242.2	248.6	251.2	247.0
30°	220.4	221.0	222.6	221.5	224.7	226.8	226.3	229.5
32.5°	197.1	199.7	200.8	199.2	200.3	205.0	202.4	201.8
35°	179.0	174.2	173.7	174.2	176.3	177.4	176.3	180.1
37.5°	153.0	151.4	149.3	149.8	151.4	153.5	154.6	157.2
40°	128.0	125.9	125.9	125.4	123.8	129.6	129.6	129.6
42.5°	106.2	105.7	103.1	103.1	105.2	106.8	105.7	109.4
45°	87.1	85.0	83.4	83.4	85.0	85.0	86.6	86.1
47.5°	68.5	66.4	66.9	65.3	66.9	69.0	66.4	66.9
50°	51.5	51.5	50.5	51.5	51.0	51.5	50.5	49.4
52.5°	35.1	39.8	40.4	38.2	33.5	29.2	26.6	28.7
55°	20.2	18.1	18.1	17.5	16.5	15.9	14.3	15.9
57.5°	10.1	9.0	9.0	9.0	8.5	8.0	6.9	6.9
60°	4.2	3.7	3.7	3.2	2.7	2.1	1.6	2.1
62.5°	1.6	1.1	1.1	1.1	1.1	1.1	1.1	1.1
65°	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
67.5°	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
70°	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
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)