

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 FEU4C109040 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: FLDSQ4C10D010 FEU4C109040 F4LC-SQLWW-LI
 Description: 4 INCH 1000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 4000K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

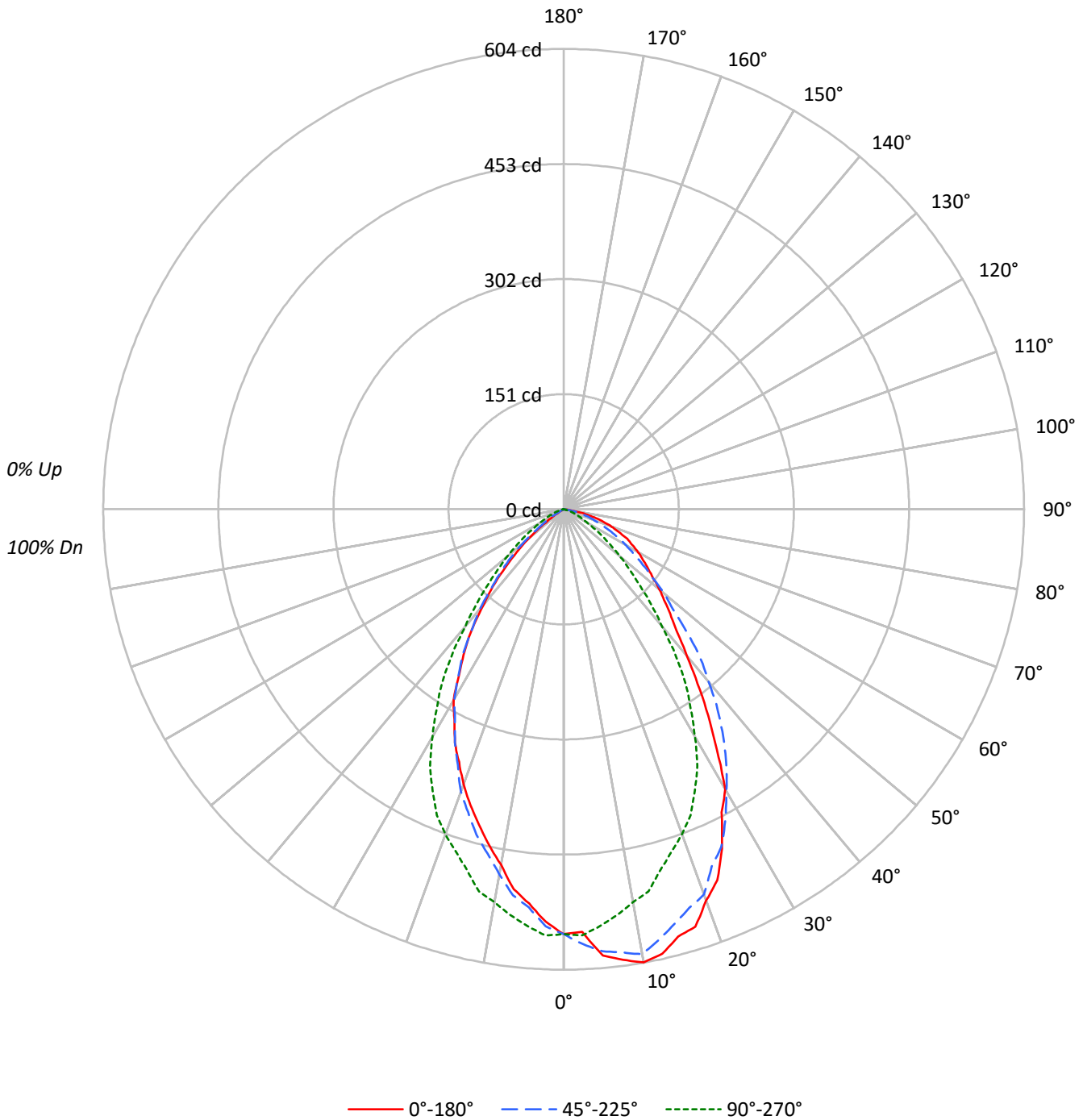
Lumens per Lamp: N/A
 Luminaire Lumens: 799.0 lumens
 Efficiency: N/A
 Efficacy: 81.5 lumens/watt
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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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CATALOG NUMBER: FLDSQ4C10D010 FEU4C109040 F4LC-SQLWW-LI

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°	53783	53783	53783
5°	56904	53146	50298
10°	59129	51272	46363
15°	57948	48937	42794
20°	56074	46597	39389
25°	52306	43331	35932
30°	47218	38349	32166
35°	38895	32828	26691
40°	31741	25343	20544
45°	27264	19240	14778
50°	24678	14651	9337
55°	22710	10564	3381
60°	21806	7217	521
65°	21050	4886	160
70°	18845	3385	197
75°	15471	1752	0
80°	9668	722	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	52.2	6.5
10°-20°	140.7	17.6
20°-30°	187.9	23.5
30°-40°	178.4	22.3
40°-50°	123.3	15.4
50°-60°	68.1	8.5
60°-70°	33.8	4.2
70°-80°	13.3	1.7
80°-90°	1.3	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°	380.8	47.7
0°-40°	559.2	70.0
0°-60°	750.6	93.9
0°-90°	799.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	799.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	557	557	557	557	557	
5°	588	582	549	524	519	56
15°	580	563	490	442	428	164
25°	491	489	407	338	338	224
35°	330	365	279	229	227	207
45°	200	229	141	116	108	156
55°	135	127	63	32	20	122
65°	92	67	21	1	1	90
75°	42	25	5	0	0	44
85°	0	1	0	0	0	4
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°	557.4	557.4	557.4	557.4	557.4	557.4	557.4	557.4	557.4	557.4	557.4
2.5°	554.7	570.1	571.4	570.1	572.1	571.4	574.8	571.4	575.5	569.4	570.8
5°	587.5	581.5	594.2	587.5	587.5	586.8	584.8	584.1	586.8	578.1	582.1
7.5°	596.2	604.9	616.2	602.2	602.9	602.9	598.9	597.5	597.5	581.5	586.2
10°	603.5	598.2	604.2	598.9	603.5	602.9	605.5	596.8	602.9	593.5	592.8
12.5°	597.5	595.5	603.5	594.8	592.2	592.8	589.5	587.5	589.5	578.8	578.1
15°	580.1	582.1	594.2	584.8	583.5	582.1	578.1	571.4	576.8	562.1	562.8
17.5°	574.1	570.8	572.8	564.8	566.8	565.4	564.8	558.8	557.4	548.1	548.1
20°	546.1	553.4	553.4	548.1	548.1	547.4	538.7	544.0	538.0	535.4	538.0
22.5°	526.7	527.3	527.3	522.7	523.3	520.7	516.0	512.6	516.0	512.6	507.3
25°	491.3	492.6	500.6	491.9	490.6	493.2	489.2	487.2	486.6	478.6	489.2
27.5°	448.5	461.8	461.2	457.8	461.8	456.5	454.5	455.1	457.2	456.5	459.2
30°	423.8	425.7	427.8	425.1	425.7	423.8	423.8	424.4	429.7	427.8	427.1
32.5°	373.6	380.3	385.7	385.7	386.3	388.3	387.6	401.7	405.0	398.4	397.0
35°	330.2	334.9	339.5	340.2	348.9	349.5	350.2	354.2	363.6	365.6	364.9
37.5°	288.7	293.4	294.7	300.8	305.4	310.1	315.5	320.8	328.8	335.5	332.2
40°	252.0	254.0	257.3	260.0	269.3	269.3	272.0	282.7	291.4	296.8	296.1
42.5°	221.2	221.9	224.6	229.2	237.9	235.9	237.9	245.3	258.0	258.7	266.0
45°	199.8	199.2	201.2	201.8	207.2	209.9	211.2	216.6	227.2	228.6	229.2
47.5°	180.5	179.8	183.1	184.5	186.5	189.1	189.1	189.8	193.8	197.2	194.5
50°	164.4	164.4	164.4	165.8	169.1	168.4	169.1	171.8	173.8	172.4	171.8
52.5°	147.0	149.7	151.7	152.4	153.1	153.1	153.7	152.4	151.7	149.7	145.7
55°	135.0	137.7	137.7	137.7	137.7	140.4	137.0	137.7	137.7	132.3	127.0
57.5°	123.0	125.7	127.7	125.0	127.7	125.0	123.6	123.0	121.6	116.3	108.3
60°	113.0	114.3	113.6	113.0	114.3	112.3	110.9	108.3	106.9	99.6	94.2
62.5°	101.6	102.3	102.9	101.6	100.3	99.6	96.9	92.9	90.2	84.2	79.5
65°	92.2	90.2	89.6	88.9	87.6	85.5	83.6	78.9	76.9	71.5	66.8
67.5°	78.2	77.5	78.9	76.9	73.5	73.5	71.5	67.5	62.8	59.5	54.8
70°	66.8	66.2	64.8	62.8	62.2	59.5	59.5	54.8	53.5	47.4	43.4
72.5°	54.8	54.8	52.8	50.8	48.8	47.4	46.8	43.4	41.5	38.1	34.7
75°	41.5	41.5	40.8	38.8	37.4	36.1	35.4	32.8	30.7	27.4	25.4
77.5°	29.4	29.4	26.7	25.4	26.1	24.7	23.4	22.7	22.0	20.1	17.4
80°	17.4	16.7	14.7	15.4	14.7	14.7	14.0	13.4	12.0	10.7	9.3
82.5°	4.7	5.3	5.3	5.3	6.0	4.7	4.7	4.7	5.3	5.3	3.4
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.7	0.7
87.5°	0.7	1.3	2.7	2.7	2.7	2.7	2.7	2.0	2.0	2.0	1.3
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°	557.4	557.4	557.4	557.4	557.4	557.4	557.4	557.4	557.4	557.4	557.4
2.5°	564.1	563.4	564.1	559.4	570.1	562.1	560.8	559.4	564.1	559.4	552.7
5°	576.1	569.4	567.4	565.4	571.4	562.1	560.1	560.8	557.4	548.7	549.4
7.5°	580.1	574.1	568.1	555.4	560.8	558.8	553.4	549.4	544.0	536.7	535.4
10°	581.5	574.8	566.1	562.1	554.1	551.4	549.4	542.7	536.0	523.3	520.0
12.5°	577.5	569.4	558.8	555.4	549.4	540.7	536.0	529.3	523.3	513.3	505.9
15°	560.1	553.4	550.1	538.7	536.0	530.7	521.3	512.0	503.3	489.9	485.9
17.5°	540.0	537.4	534.0	525.3	524.7	519.3	510.6	502.6	491.3	470.5	463.8
20°	519.3	519.3	508.6	505.3	512.0	501.3	494.6	487.2	463.8	453.8	441.8
22.5°	504.0	496.6	490.6	485.2	485.9	479.2	469.9	455.1	446.5	434.4	420.4
25°	473.9	476.5	463.2	461.2	463.2	447.8	443.1	431.1	418.4	407.0	396.3
27.5°	455.1	447.8	439.1	431.8	431.8	425.7	412.4	409.7	390.3	379.6	366.2
30°	427.1	421.7	414.4	403.7	402.4	397.7	387.0	380.3	360.3	344.2	336.8
32.5°	391.6	389.7	383.6	371.6	367.6	362.2	348.9	337.5	328.2	310.1	301.4
35°	366.2	358.9	346.2	336.2	332.8	323.5	312.8	304.8	294.7	278.7	267.3
37.5°	328.2	320.8	308.8	296.8	296.8	287.4	272.7	264.7	250.6	241.3	231.9
40°	294.7	285.4	273.4	259.3	257.3	243.9	237.9	224.6	215.9	201.2	199.8
42.5°	257.3	248.6	237.9	227.2	219.2	212.5	197.2	187.1	177.8	170.4	168.4
45°	223.2	211.9	202.5	189.1	181.1	173.1	163.1	156.4	149.0	141.0	136.3
47.5°	193.8	184.5	171.1	159.1	151.1	147.0	135.7	128.3	122.3	117.0	113.6
50°	163.8	152.4	145.0	131.7	130.3	121.0	111.6	105.6	102.3	97.6	92.9
52.5°	141.0	130.3	120.3	110.3	104.9	101.6	92.9	86.9	82.2	78.9	76.2
55°	119.0	109.6	101.6	91.6	88.2	83.6	73.5	72.2	67.5	62.8	59.5
57.5°	102.3	93.6	84.2	77.5	71.5	68.2	60.1	54.8	52.1	48.1	44.8
60°	86.9	77.5	70.2	62.2	59.5	54.8	48.8	44.1	40.8	37.4	34.1
62.5°	72.8	64.8	56.8	50.1	46.1	43.4	38.8	34.7	31.4	28.8	26.1
65°	60.1	52.8	46.1	39.4	37.4	34.1	30.7	27.4	24.7	21.4	18.7
67.5°	49.5	42.8	36.1	31.4	29.4	28.1	24.1	20.7	18.7	16.7	14.0
70°	38.8	34.1	28.8	24.7	22.7	20.7	18.0	16.1	13.4	12.0	10.0
72.5°	30.1	26.1	21.4	18.0	16.7	15.4	12.7	10.7	9.3	8.0	6.7
75°	21.4	18.0	15.4	12.0	11.4	10.7	8.7	7.4	6.0	4.7	4.0
77.5°	14.7	12.0	9.3	8.0	7.4	6.0	5.3	4.0	3.4	2.7	2.0
80°	8.0	6.0	4.7	4.0	3.4	2.7	2.7	2.0	1.3	1.3	0.7
82.5°	2.7	2.0	1.3	0.7	0.7	0.7	0.7	0.7	0.7	0.0	0.7
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°	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	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°	557.4	557.4	557.4	557.4	557.4	557.4	557.4	557.4	557.4	557.4	557.4
2.5°	556.7	549.4	551.4	551.4	550.1	550.1	548.7	546.7	547.4	543.4	534.7
5°	550.7	541.4	540.0	541.4	536.0	534.7	532.0	536.0	524.0	528.7	523.3
7.5°	533.4	524.7	522.7	527.3	520.7	516.6	516.0	521.3	510.6	505.3	499.3
10°	514.0	510.6	504.6	501.3	499.3	499.9	494.6	487.9	485.9	484.6	479.2
12.5°	496.6	489.2	483.9	479.9	478.6	478.6	469.9	468.5	462.5	461.2	453.2
15°	475.9	467.2	463.8	458.5	453.8	456.5	446.5	443.8	441.8	433.1	434.4
17.5°	457.8	448.5	440.5	437.1	433.1	429.1	419.7	421.7	417.0	417.0	405.0
20°	434.4	424.4	418.4	411.7	411.7	406.4	399.7	400.3	394.3	388.3	377.6
22.5°	409.7	399.0	391.6	389.0	382.3	381.0	373.0	370.9	362.9	363.6	354.2
25°	383.6	373.0	362.9	363.6	357.6	354.9	350.2	340.9	337.5	333.5	330.8
27.5°	352.9	345.5	336.8	336.2	324.8	325.5	319.5	316.8	308.8	310.8	304.8
30°	324.8	314.1	306.1	304.1	299.4	298.1	288.7	284.7	286.1	280.7	277.4
32.5°	296.1	280.0	276.7	272.7	270.0	266.7	260.0	262.7	256.6	258.0	252.6
35°	258.0	251.3	242.6	242.6	239.9	237.3	232.6	235.3	229.2	226.6	221.2
37.5°	225.9	219.9	211.2	213.9	209.2	205.2	201.2	201.8	196.5	195.8	190.5
40°	191.2	187.8	181.8	181.8	178.5	178.5	176.4	174.4	171.1	167.1	161.1
42.5°	158.4	155.7	153.1	153.7	149.0	153.1	147.7	151.1	140.4	139.7	135.7
45°	134.3	128.3	129.0	126.3	123.6	125.0	120.3	121.6	115.6	114.3	110.3
47.5°	109.0	106.9	102.9	101.6	101.6	99.6	97.6	96.9	94.2	90.9	85.5
50°	89.6	82.2	80.9	78.9	77.5	77.5	74.9	70.9	71.5	68.2	62.8
52.5°	70.2	64.2	61.5	60.8	58.2	56.8	53.5	50.8	48.8	47.4	44.1
55°	54.1	48.8	45.5	45.5	41.5	41.5	36.8	34.7	32.1	29.4	27.4
57.5°	40.8	38.1	34.7	32.1	30.7	27.4	24.7	21.4	19.4	15.4	12.7
60°	30.7	28.1	24.7	22.7	21.4	18.0	14.7	12.0	7.4	6.0	5.3
62.5°	22.7	20.1	16.7	15.4	14.0	11.4	8.0	4.0	2.0	2.0	2.0
65°	16.7	13.4	10.7	9.3	8.0	6.0	2.7	1.3	0.7	0.7	0.7
67.5°	11.4	8.7	6.0	5.3	4.0	2.0	0.7	0.7	0.7	0.7	0.7
70°	7.4	5.3	2.7	2.0	1.3	0.7	0.7	0.7	0.7	0.7	0.7
72.5°	4.7	2.7	1.3	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	2.7	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	1.3	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	0.7	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	0.7	0.7	0.7
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: FLDSQ4C10D010 FEU4C109040 F4LC-SQLWW-LI

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	557.4	557.4	557.4	557.4	557.4	557.4	557.4	557.4
2.5°	544.0	539.4	542.0	536.0	538.7	543.4	540.0	541.4
5°	525.3	522.7	519.3	510.6	517.3	522.7	520.0	519.3
7.5°	505.3	495.9	500.6	497.9	496.6	501.9	495.9	502.6
10°	484.6	477.9	477.2	472.5	472.5	476.5	477.2	473.2
12.5°	453.8	450.5	450.5	449.8	449.1	453.2	453.8	451.8
15°	431.8	430.4	427.1	426.4	422.4	428.4	429.1	428.4
17.5°	405.0	405.7	402.4	402.4	405.0	407.0	401.7	407.0
20°	387.0	383.6	382.3	376.3	379.6	383.0	383.0	383.6
22.5°	360.9	355.6	357.6	354.2	352.2	356.9	356.9	358.9
25°	331.5	331.5	332.8	330.8	332.2	334.9	332.8	337.5
27.5°	303.4	306.1	306.1	303.4	304.8	312.8	316.1	310.8
30°	277.4	278.0	280.0	278.7	282.7	285.4	284.7	288.7
32.5°	248.0	251.3	252.6	250.6	252.0	258.0	254.6	254.0
35°	225.2	219.2	218.6	219.2	221.9	223.2	221.9	226.6
37.5°	192.5	190.5	187.8	188.5	190.5	193.2	194.5	197.8
40°	161.1	158.4	158.4	157.7	155.7	163.1	163.1	163.1
42.5°	133.7	133.0	129.7	129.7	132.3	134.3	133.0	137.7
45°	109.6	106.9	104.9	104.9	106.9	106.9	109.0	108.3
47.5°	86.2	83.6	84.2	82.2	84.2	86.9	83.6	84.2
50°	64.8	64.8	63.5	64.8	64.2	64.8	63.5	62.2
52.5°	44.1	50.1	50.8	48.1	42.1	36.8	33.4	36.1
55°	25.4	22.7	22.7	22.0	20.7	20.1	18.0	20.1
57.5°	12.7	11.4	11.4	11.4	10.7	10.0	8.7	8.7
60°	5.3	4.7	4.7	4.0	3.4	2.7	2.0	2.7
62.5°	2.0	1.3	1.3	1.3	1.3	1.3	1.3	1.3
65°	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
67.5°	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
70°	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
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)