

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: **FLDSQ4C15D010 FEU4C159030 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: FLDSQ4C15D010 FEU4C159030 F4LC-SQLWW-H  
 Description: 4 INCH 1500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH H FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

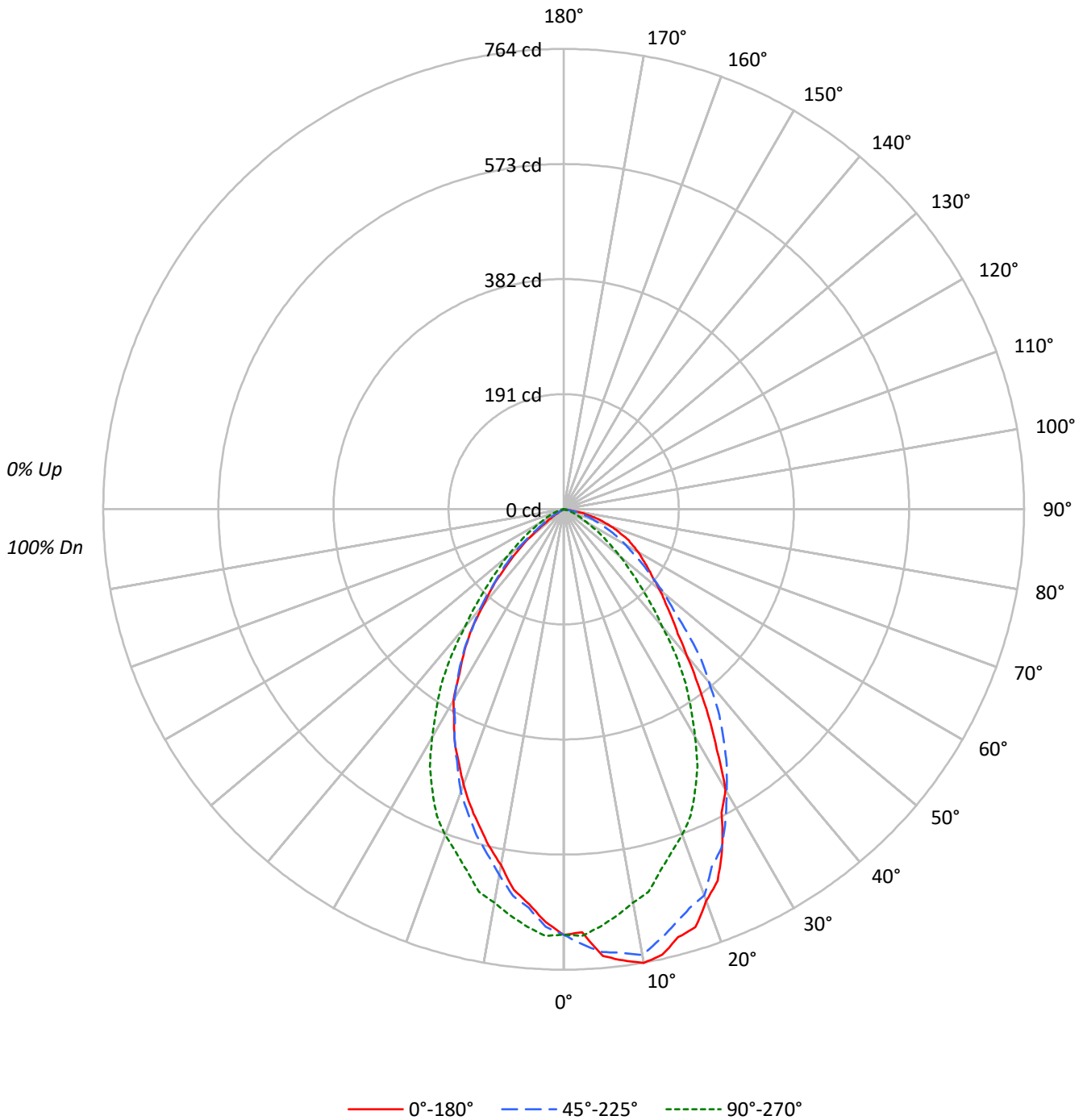
Lumens per Lamp: N/A  
 Luminaire Lumens: 1012.0 lumens  
 Efficiency: N/A  
 Efficacy: 64.1 lumens/watt  
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 15.8  
 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#  
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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°	68121	68121	68121
5°	72072	67316	63713
10°	74894	64939	58718
15°	73401	61983	54202
20°	71014	59021	49893
25°	66242	54882	45513
30°	59797	48577	40745
35°	49260	41580	33806
40°	40206	32094	26023
45°	34537	24371	18708
50°	31253	18554	11814
55°	28766	13391	4273
60°	27615	9147	656
65°	26667	6187	205
70°	23867	4288	254
75°	19572	2200	0
80°	12224	945	0
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	66.1	6.5
10°-20°	178.2	17.6
20°-30°	238.0	23.5
30°-40°	225.9	22.3
40°-50°	156.2	15.4
50°-60°	86.3	8.5
60°-70°	42.9	4.2
70°-80°	16.9	1.7
80°-90°	1.6	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°	482.3	47.7
0°-40°	708.2	70.0
0°-60°	950.7	93.9
0°-90°	1012.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1012.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	706	706	706	706	706	
5°	744	737	695	664	658	71
15°	735	713	620	560	543	208
25°	622	620	516	428	428	284
35°	418	462	353	290	287	262
45°	253	290	179	146	137	197
55°	171	161	80	41	25	154
65°	117	85	27	1	1	113
75°	52	32	6	0	0	56
85°	0	1	0	0	0	5
90°	0	0	0	0	0	

TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C15D010 FEU4C159030 F4LC-SQLWW-H

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	706.0	706.0	706.0	706.0	706.0	706.0	706.0	706.0	706.0	706.0	706.0
2.5°	702.6	722.1	723.8	722.1	724.6	723.8	728.0	723.8	728.9	721.3	722.9
5°	744.1	736.5	752.6	744.1	744.1	743.3	740.7	739.9	743.3	732.3	737.3
7.5°	755.1	766.1	780.5	762.7	763.6	763.6	758.5	756.8	756.8	736.5	742.4
10°	764.4	757.6	765.3	758.5	764.4	763.6	767.0	755.9	763.6	751.7	750.9
12.5°	756.8	754.3	764.4	753.4	750.0	750.9	746.7	744.1	746.7	733.1	732.3
15°	734.8	737.3	752.6	740.7	739.0	737.3	732.3	723.8	730.6	711.9	712.8
17.5°	727.2	722.9	725.5	715.3	717.9	716.2	715.3	707.7	706.0	694.2	694.2
20°	691.6	700.9	700.9	694.2	694.2	693.3	682.3	689.1	681.5	678.1	681.5
22.5°	667.1	667.9	667.9	662.0	662.8	659.5	653.5	649.3	653.5	649.3	642.5
25°	622.2	623.9	634.1	623.0	621.4	624.7	619.7	617.1	616.3	606.1	619.7
27.5°	568.0	584.9	584.1	579.9	584.9	578.2	575.7	576.5	579.0	578.2	581.6
30°	536.7	539.2	541.8	538.4	539.2	536.7	536.7	537.5	544.3	541.8	540.9
32.5°	473.2	481.7	488.5	488.5	489.3	491.8	491.0	508.8	513.0	504.5	502.9
35°	418.2	424.1	430.0	430.9	441.9	442.7	443.6	448.7	460.5	463.1	462.2
37.5°	365.7	371.6	373.3	380.9	386.9	392.8	399.6	406.3	416.5	424.9	420.7
40°	319.2	321.7	325.9	329.3	341.1	341.1	344.5	358.1	369.1	375.9	375.0
42.5°	280.2	281.0	284.4	290.4	301.4	298.8	301.4	310.7	326.7	327.6	336.9
45°	253.1	252.3	254.8	255.6	262.4	265.8	267.5	274.3	287.8	289.5	290.4
47.5°	228.6	227.7	232.0	233.7	236.2	239.6	239.6	240.4	245.5	249.7	246.4
50°	208.2	208.2	208.2	209.9	214.2	213.3	214.2	217.6	220.1	218.4	217.6
52.5°	186.2	189.6	192.2	193.0	193.9	193.9	194.7	193.0	192.2	189.6	184.5
55°	171.0	174.4	174.4	174.4	174.4	177.8	173.6	174.4	174.4	167.6	160.9
57.5°	155.8	159.2	161.7	158.3	161.7	158.3	156.6	155.8	154.1	147.3	137.1
60°	143.1	144.8	143.9	143.1	144.8	142.2	140.5	137.1	135.4	126.1	119.4
62.5°	128.7	129.5	130.4	128.7	127.0	126.1	122.7	117.7	114.3	106.7	100.7
65°	116.8	114.3	113.4	112.6	110.9	108.4	105.8	99.9	97.3	90.6	84.6
67.5°	99.0	98.2	99.9	97.3	93.1	93.1	90.6	85.5	79.6	75.4	69.4
70°	84.6	83.8	82.1	79.6	78.7	75.4	75.4	69.4	67.7	60.1	55.0
72.5°	69.4	69.4	66.9	64.3	61.8	60.1	59.3	55.0	52.5	48.3	44.0
75°	52.5	52.5	51.6	49.1	47.4	45.7	44.9	41.5	38.9	34.7	32.2
77.5°	37.2	37.2	33.9	32.2	33.0	31.3	29.6	28.8	27.9	25.4	22.0
80°	22.0	21.2	18.6	19.5	18.6	18.6	17.8	16.9	15.2	13.5	11.8
82.5°	5.9	6.8	6.8	6.8	7.6	5.9	5.9	5.9	6.8	6.8	4.2
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.9
87.5°	0.9	1.7	3.4	3.4	3.4	3.4	3.4	2.6	2.6	2.6	1.7
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°	706.0	706.0	706.0	706.0	706.0	706.0	706.0	706.0	706.0	706.0	706.0
2.5°	714.5	713.6	714.5	708.5	722.1	711.9	710.2	708.5	714.5	708.5	700.1
5°	729.7	721.3	718.7	716.2	723.8	711.9	709.4	710.2	706.0	695.0	695.8
7.5°	734.8	727.2	719.6	703.5	710.2	707.7	700.9	695.8	689.1	679.8	678.1
10°	736.5	728.0	717.0	711.9	701.8	698.4	695.8	687.4	678.9	662.8	658.6
12.5°	731.4	721.3	707.7	703.5	695.8	684.8	678.9	670.4	662.8	650.1	640.8
15°	709.4	700.9	696.7	682.3	678.9	672.1	660.3	648.5	637.4	620.5	615.4
17.5°	684.0	680.6	676.4	665.4	664.5	657.8	646.8	636.6	622.2	596.0	587.5
20°	657.8	657.8	644.2	640.0	648.5	634.9	626.4	617.1	587.5	574.8	559.6
22.5°	638.3	629.0	621.4	614.6	615.4	607.0	595.1	576.5	565.5	550.2	532.5
25°	600.2	603.6	586.7	584.1	586.7	567.2	561.3	546.0	529.9	515.5	502.0
27.5°	576.5	567.2	556.2	546.9	546.9	539.2	522.3	518.9	494.4	480.8	463.9
30°	540.9	534.2	524.8	511.3	509.6	503.7	490.2	481.7	456.3	436.0	426.6
32.5°	496.1	493.5	485.9	470.7	465.6	458.8	441.9	427.5	415.7	392.8	381.8
35°	463.9	454.6	438.5	425.8	421.6	409.7	396.2	386.0	373.3	353.0	338.6
37.5°	415.7	406.3	391.1	375.9	375.9	364.0	345.4	335.2	317.5	305.6	293.7
40°	373.3	361.5	346.2	328.5	325.9	309.0	301.4	284.4	273.4	254.8	253.1
42.5°	325.9	314.9	301.4	287.8	277.7	269.2	249.7	237.0	225.2	215.9	213.3
45°	282.7	268.3	256.5	239.6	229.4	219.3	206.6	198.1	188.8	178.6	172.7
47.5°	245.5	233.7	216.7	201.5	191.3	186.2	171.8	162.5	154.9	148.2	143.9
50°	207.4	193.0	183.7	166.8	165.1	153.2	141.4	133.8	129.5	123.6	117.7
52.5°	178.6	165.1	152.4	139.7	132.9	128.7	117.7	110.0	104.1	99.9	96.5
55°	150.7	138.8	128.7	116.0	111.7	105.8	93.1	91.4	85.5	79.6	75.4
57.5°	129.5	118.5	106.7	98.2	90.6	86.4	76.2	69.4	66.0	61.0	56.7
60°	110.0	98.2	88.9	78.7	75.4	69.4	61.8	55.9	51.6	47.4	43.2
62.5°	92.3	82.1	72.0	63.5	58.4	55.0	49.1	44.0	39.8	36.4	33.0
65°	76.2	66.9	58.4	49.9	47.4	43.2	38.9	34.7	31.3	27.1	23.7
67.5°	62.6	54.2	45.7	39.8	37.2	35.6	30.5	26.2	23.7	21.2	17.8
70°	49.1	43.2	36.4	31.3	28.8	26.2	22.9	20.3	16.9	15.2	12.7
72.5°	38.1	33.0	27.1	22.9	21.2	19.5	16.1	13.5	11.8	10.1	8.5
75°	27.1	22.9	19.5	15.2	14.4	13.5	11.0	9.3	7.6	5.9	5.1
77.5°	18.6	15.2	11.8	10.1	9.3	7.6	6.8	5.1	4.2	3.4	2.6
80°	10.1	7.6	5.9	5.1	4.2	3.4	3.4	2.6	1.7	1.7	0.9
82.5°	3.4	2.6	1.7	0.9	0.9	0.9	0.9	0.9	0.9	0.0	0.9
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°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	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°	706.0	706.0	706.0	706.0	706.0	706.0	706.0	706.0	706.0	706.0	706.0
2.5°	705.2	695.8	698.4	698.4	696.7	696.7	695.0	692.5	693.3	688.2	677.2
5°	697.5	685.7	684.0	685.7	678.9	677.2	673.9	678.9	663.7	669.6	662.8
7.5°	675.5	664.5	662.0	667.9	659.5	654.4	653.5	660.3	646.8	640.0	632.4
10°	651.0	646.8	639.1	634.9	632.4	633.2	626.4	618.0	615.4	613.7	607.0
12.5°	629.0	619.7	612.9	607.8	606.1	606.1	595.1	593.4	585.8	584.1	574.0
15°	602.7	591.7	587.5	580.7	574.8	578.2	565.5	562.1	559.6	548.6	550.2
17.5°	579.9	568.0	557.9	553.6	548.6	543.5	531.6	534.2	528.2	528.2	513.0
20°	550.2	537.5	529.9	521.5	521.5	514.7	506.2	507.1	499.4	491.8	478.3
22.5°	518.9	505.4	496.1	492.7	484.2	482.5	472.4	469.8	459.7	460.5	448.7
25°	485.9	472.4	459.7	460.5	452.9	449.5	443.6	431.7	427.5	422.4	419.0
27.5°	447.0	437.7	426.6	425.8	411.4	412.2	404.7	401.3	391.1	393.6	386.0
30°	411.4	397.9	387.7	385.2	379.2	377.6	365.7	360.6	362.3	355.5	351.3
32.5°	375.0	354.7	350.5	345.4	342.0	337.8	329.3	332.7	325.1	326.7	320.0
35°	326.7	318.3	307.3	307.3	303.9	300.5	294.6	298.0	290.4	287.0	280.2
37.5°	286.1	278.5	267.5	270.9	265.0	259.9	254.8	255.6	248.9	248.0	241.2
40°	242.1	237.9	230.3	230.3	226.0	226.0	223.5	220.9	216.7	211.6	204.0
42.5°	200.6	197.2	193.9	194.7	188.8	193.9	187.1	191.3	177.8	176.9	171.8
45°	170.1	162.5	163.4	160.0	156.6	158.3	152.4	154.1	146.5	144.8	139.7
47.5°	138.0	135.4	130.4	128.7	128.7	126.1	123.6	122.7	119.4	115.1	108.4
50°	113.4	104.1	102.4	99.9	98.2	98.2	94.8	89.7	90.6	86.4	79.6
52.5°	88.9	81.3	77.9	77.0	73.7	72.0	67.7	64.3	61.8	60.1	55.9
55°	68.6	61.8	57.6	57.6	52.5	52.5	46.6	44.0	40.6	37.2	34.7
57.5°	51.6	48.3	44.0	40.6	38.9	34.7	31.3	27.1	24.5	19.5	16.1
60°	38.9	35.6	31.3	28.8	27.1	22.9	18.6	15.2	9.3	7.6	6.8
62.5°	28.8	25.4	21.2	19.5	17.8	14.4	10.1	5.1	2.6	2.6	2.6
65°	21.2	16.9	13.5	11.8	10.1	7.6	3.4	1.7	0.9	0.9	0.9
67.5°	14.4	11.0	7.6	6.8	5.1	2.6	0.9	0.9	0.9	0.9	0.9
70°	9.3	6.8	3.4	2.6	1.7	0.9	0.9	0.9	0.9	0.9	0.9
72.5°	5.9	3.4	1.7	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	3.4	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	1.7	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	0.9	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	0.9	0.9	0.9
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: FLDSQ4C15D010 FEU4C159030 F4LC-SQLWW-H

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	706.0	706.0	706.0	706.0	706.0	706.0	706.0	706.0
2.5°	689.1	683.1	686.5	678.9	682.3	688.2	684.0	685.7
5°	665.4	662.0	657.8	646.8	655.2	662.0	658.6	657.8
7.5°	640.0	628.1	634.1	630.7	629.0	635.7	628.1	636.6
10°	613.7	605.3	604.4	598.5	598.5	603.6	604.4	599.3
12.5°	574.8	570.6	570.6	569.7	568.9	574.0	574.8	572.3
15°	546.9	545.2	540.9	540.1	535.0	542.6	543.5	542.6
17.5°	513.0	513.8	509.6	509.6	513.0	515.5	508.8	515.5
20°	490.2	485.9	484.2	476.6	480.8	485.1	485.1	485.9
22.5°	457.1	450.4	452.9	448.7	446.1	452.0	452.0	454.6
25°	419.9	419.9	421.6	419.0	420.7	424.1	421.6	427.5
27.5°	384.3	387.7	387.7	384.3	386.0	396.2	400.4	393.6
30°	351.3	352.2	354.7	353.0	358.1	361.5	360.6	365.7
32.5°	314.1	318.3	320.0	317.5	319.2	326.7	322.5	321.7
35°	285.3	277.7	276.8	277.7	281.0	282.7	281.0	287.0
37.5°	243.8	241.2	237.9	238.7	241.2	244.7	246.4	250.6
40°	204.0	200.6	200.6	199.8	197.2	206.6	206.6	206.6
42.5°	169.3	168.4	164.2	164.2	167.6	170.1	168.4	174.4
45°	138.8	135.4	132.9	132.9	135.4	135.4	138.0	137.1
47.5°	109.2	105.8	106.7	104.1	106.7	110.0	105.8	106.7
50°	82.1	82.1	80.4	82.1	81.3	82.1	80.4	78.7
52.5°	55.9	63.5	64.3	61.0	53.3	46.6	42.3	45.7
55°	32.2	28.8	28.8	27.9	26.2	25.4	22.9	25.4
57.5°	16.1	14.4	14.4	14.4	13.5	12.7	11.0	11.0
60°	6.8	5.9	5.9	5.1	4.2	3.4	2.6	3.4
62.5°	2.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7
65°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
67.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
70°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
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)