

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 FEU4C159027 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 FEU4C159027 F4LC-SQLWW-H  
 Description: 4 INCH 1500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 2700K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH H FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

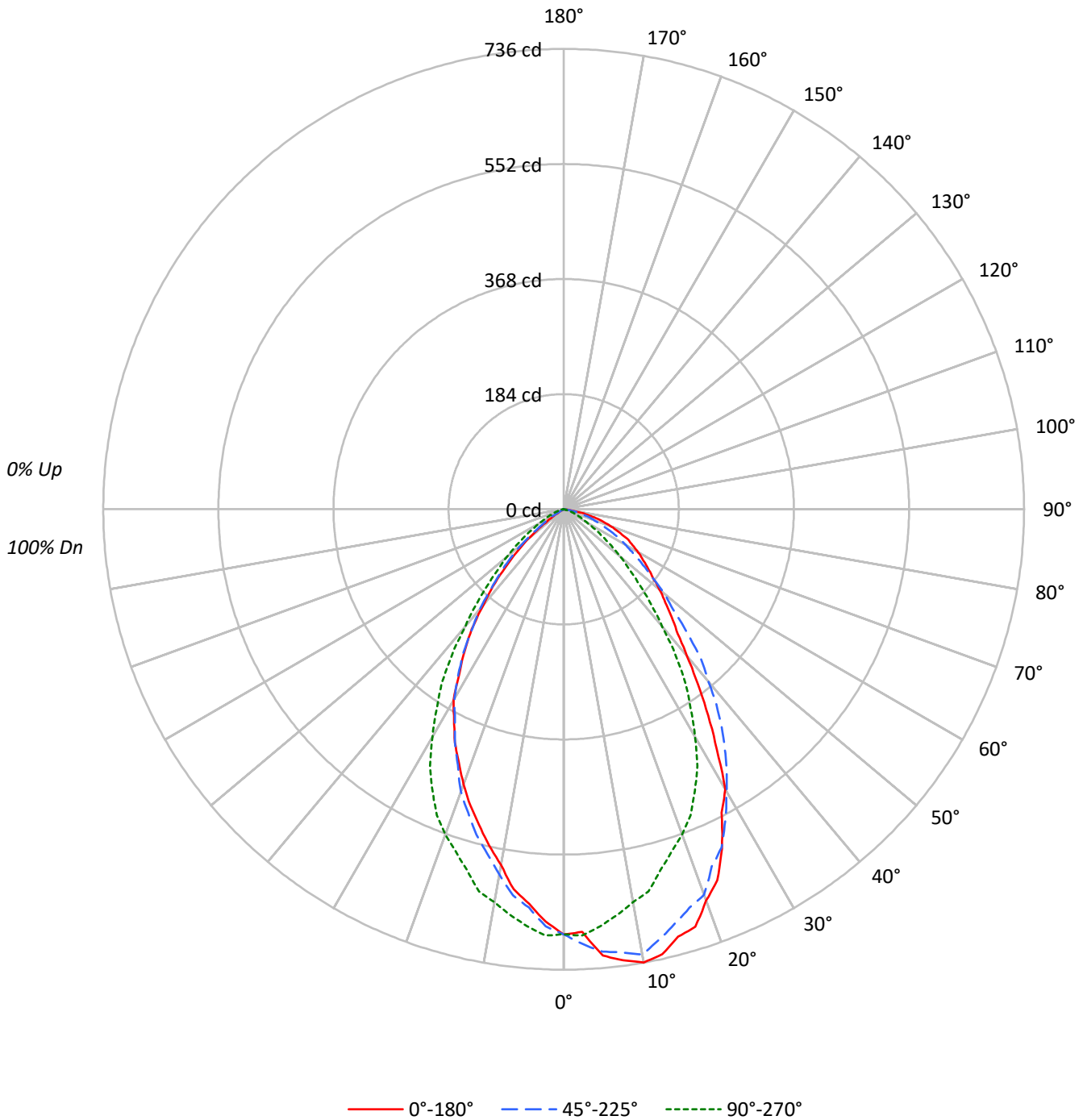
Lumens per Lamp: N/A  
 Luminaire Lumens: 974.0 lumens  
 Efficiency: N/A  
 Efficacy: 61.6 lumens/watt  
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

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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CATALOG NUMBER: FLDSQ4C15D010 FEU4C159027 F4LC-SQLWW-H

### Luminous Intensity Polar Plot



TEST NUMBER: P#

CATALOG NUMBER: FLDSQ4C15D010 FEU4C159027 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°	65564	65564	65564
5°	69369	64788	61320
10°	72082	62510	56513
15°	70644	59656	52164
20°	68355	56803	48024
25°	63761	52827	43810
30°	57557	46750	39218
35°	47411	40025	32534
40°	38694	30885	25040
45°	33241	23457	18012
50°	30082	17863	11378
55°	27690	12886	4121
60°	26573	8800	637
65°	25662	5959	183
70°	22992	4147	226
75°	18827	2125	0
80°	11780	889	0
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	63.7	6.5
10°-20°	171.5	17.6
20°-30°	229.0	23.5
30°-40°	217.4	22.3
40°-50°	150.3	15.4
50°-60°	83.0	8.5
60°-70°	41.2	4.2
70°-80°	16.2	1.7
80°-90°	1.5	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°	464.2	47.7
0°-40°	681.6	70.0
0°-60°	915.0	93.9
0°-90°	974.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	974.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	680	680	680	680	680	
5°	716	710	669	639	633	69
15°	707	686	597	539	522	200
25°	599	596	496	412	412	273
35°	402	445	340	280	276	252
45°	244	280	172	141	132	190
55°	165	155	77	39	24	148
65°	112	82	26	1	1	109
75°	50	31	6	0	0	54
85°	0	1	0	0	0	5
90°	0	0	0	0	0	

TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C15D010 FEU4C159027 F4LC-SQLWW-H

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	679.5	679.5	679.5	679.5	679.5	679.5	679.5	679.5	679.5	679.5	679.5
2.5°	676.2	695.0	696.6	695.0	697.4	696.6	700.7	696.6	701.5	694.2	695.8
5°	716.2	708.8	724.3	716.2	716.2	715.4	712.9	712.1	715.4	704.8	709.6
7.5°	726.8	737.4	751.2	734.1	734.9	734.9	730.0	728.4	728.4	708.8	714.5
10°	735.7	729.2	736.5	730.0	735.7	734.9	738.2	727.6	734.9	723.5	722.7
12.5°	728.4	725.9	735.7	725.1	721.9	722.7	718.6	716.2	718.6	705.6	704.8
15°	707.2	709.6	724.3	712.9	711.3	709.6	704.8	696.6	703.1	685.2	686.0
17.5°	699.9	695.8	698.3	688.5	690.9	689.3	688.5	681.1	679.5	668.1	668.1
20°	665.7	674.6	674.6	668.1	668.1	667.3	656.7	663.2	655.9	652.6	655.9
22.5°	642.0	642.8	642.8	637.1	638.0	634.7	629.0	624.9	629.0	624.9	618.4
25°	598.9	600.5	610.2	599.7	598.0	601.3	596.4	593.9	593.1	583.4	596.4
27.5°	546.7	563.0	562.2	558.1	563.0	556.5	554.0	554.8	557.3	556.5	559.7
30°	516.6	519.0	521.4	518.2	519.0	516.6	516.6	517.4	523.9	521.4	520.6
32.5°	455.4	463.6	470.1	470.1	470.9	473.4	472.5	489.7	493.7	485.6	484.0
35°	402.5	408.2	413.9	414.7	425.3	426.1	426.9	431.8	443.2	445.7	444.8
37.5°	352.0	357.7	359.3	366.6	372.3	378.0	384.6	391.1	400.9	409.0	404.9
40°	307.2	309.6	313.7	316.9	328.3	328.3	331.6	344.6	355.2	361.8	360.9
42.5°	269.7	270.5	273.7	279.5	290.1	287.6	290.1	299.0	314.5	315.3	324.3
45°	243.6	242.8	245.2	246.0	252.6	255.8	257.5	264.0	277.0	278.6	279.5
47.5°	220.0	219.2	223.2	224.9	227.3	230.6	230.6	231.4	236.3	240.4	237.1
50°	200.4	200.4	200.4	202.1	206.1	205.3	206.1	209.4	211.8	210.2	209.4
52.5°	179.2	182.5	184.9	185.8	186.6	186.6	187.4	185.8	184.9	182.5	177.6
55°	164.6	167.8	167.8	167.8	167.8	171.1	167.0	167.8	167.8	161.3	154.8
57.5°	149.9	153.2	155.6	152.4	155.6	152.4	150.7	149.9	148.3	141.8	132.0
60°	137.7	139.3	138.5	137.7	139.3	136.9	135.2	132.0	130.4	121.4	114.9
62.5°	123.9	124.6	125.5	123.9	122.2	121.4	118.1	113.3	110.0	102.7	96.9
65°	112.4	110.0	109.2	108.4	106.7	104.3	101.9	96.1	93.7	87.2	81.5
67.5°	95.3	94.5	96.1	93.7	89.6	89.6	87.2	82.3	76.6	72.5	66.8
70°	81.5	80.7	79.0	76.6	75.8	72.5	72.5	66.8	65.2	57.8	53.0
72.5°	66.8	66.8	64.4	61.9	59.5	57.8	57.0	53.0	50.5	46.4	42.4
75°	50.5	50.5	49.7	47.2	45.6	44.0	43.2	39.9	37.5	33.4	31.0
77.5°	35.8	35.8	32.6	31.0	31.8	30.1	28.5	27.7	26.9	24.5	21.2
80°	21.2	20.4	17.9	18.7	17.9	17.9	17.1	16.3	14.7	13.0	11.4
82.5°	5.7	6.5	6.5	6.5	7.3	5.7	5.7	5.7	6.5	6.5	4.1
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8
87.5°	0.8	1.6	3.3	3.3	3.3	3.3	3.3	2.5	2.5	2.5	1.6
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°	679.5	679.5	679.5	679.5	679.5	679.5	679.5	679.5	679.5	679.5	679.5
2.5°	687.7	686.8	687.7	681.9	695.0	685.2	683.6	681.9	687.7	681.9	673.8
5°	702.3	694.2	691.7	689.3	696.6	685.2	682.8	683.6	679.5	668.9	669.7
7.5°	707.2	699.9	692.5	677.1	683.6	681.1	674.6	669.7	663.2	654.2	652.6
10°	708.8	700.7	690.1	685.2	675.4	672.2	669.7	661.6	653.4	638.0	633.9
12.5°	703.9	694.2	681.1	677.1	669.7	659.1	653.4	645.3	638.0	625.7	616.8
15°	682.8	674.6	670.5	656.7	653.4	646.9	635.5	624.1	613.5	597.2	592.3
17.5°	658.3	655.1	651.0	640.4	639.6	633.1	622.5	612.7	598.9	573.6	565.4
20°	633.1	633.1	620.0	616.0	624.1	611.0	602.9	593.9	565.4	553.2	538.6
22.5°	614.3	605.4	598.0	591.5	592.3	584.2	572.8	554.8	544.2	529.6	512.5
25°	577.7	580.9	564.6	562.2	564.6	545.9	540.2	525.5	510.0	496.2	483.1
27.5°	554.8	545.9	535.3	526.3	526.3	519.0	502.7	499.5	475.8	462.8	446.5
30°	520.6	514.1	505.1	492.1	490.5	484.8	471.7	463.6	439.2	419.6	410.6
32.5°	477.4	475.0	467.7	453.0	448.1	441.6	425.3	411.5	400.1	378.0	367.5
35°	446.5	437.5	422.0	409.8	405.7	394.3	381.3	371.5	359.3	339.8	325.9
37.5°	400.1	391.1	376.4	361.8	361.8	350.4	332.4	322.6	305.5	294.1	282.7
40°	359.3	347.9	333.2	316.1	313.7	297.4	290.1	273.7	263.1	245.2	243.6
42.5°	313.7	303.1	290.1	277.0	267.2	259.1	240.4	228.1	216.7	207.8	205.3
45°	272.1	258.3	246.9	230.6	220.8	211.0	198.8	190.7	181.7	171.9	166.2
47.5°	236.3	224.9	208.6	193.9	184.1	179.2	165.4	156.4	149.1	142.6	138.5
50°	199.6	185.8	176.8	160.5	158.9	147.5	136.1	128.7	124.6	119.0	113.3
52.5°	171.9	158.9	146.6	134.4	127.9	123.9	113.3	105.9	100.2	96.1	92.9
55°	145.0	133.6	123.9	111.6	107.5	101.9	89.6	88.0	82.3	76.6	72.5
57.5°	124.6	114.1	102.7	94.5	87.2	83.1	73.3	66.8	63.6	58.7	54.6
60°	105.9	94.5	85.5	75.8	72.5	66.8	59.5	53.8	49.7	45.6	41.6
62.5°	88.8	79.0	69.3	61.1	56.2	53.0	47.2	42.4	38.3	35.0	31.8
65°	73.3	64.4	56.2	48.1	45.6	41.6	37.5	33.4	30.1	26.1	22.8
67.5°	60.3	52.2	44.0	38.3	35.8	34.2	29.3	25.2	22.8	20.4	17.1
70°	47.2	41.6	35.0	30.1	27.7	25.2	22.0	19.6	16.3	14.7	12.2
72.5°	36.7	31.8	26.1	22.0	20.4	18.7	15.5	13.0	11.4	9.8	8.1
75°	26.1	22.0	18.7	14.7	13.9	13.0	10.6	9.0	7.3	5.7	4.9
77.5°	17.9	14.7	11.4	9.8	9.0	7.3	6.5	4.9	4.1	3.3	2.5
80°	9.8	7.3	5.7	4.9	4.1	3.3	3.3	2.5	1.6	1.6	0.8
82.5°	3.3	2.5	1.6	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.8
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°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	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°	679.5	679.5	679.5	679.5	679.5	679.5	679.5	679.5	679.5	679.5	679.5
2.5°	678.7	669.7	672.2	672.2	670.5	670.5	668.9	666.5	667.3	662.4	651.8
5°	671.3	659.9	658.3	659.9	653.4	651.8	648.6	653.4	638.8	644.5	638.0
7.5°	650.2	639.6	637.1	642.8	634.7	629.8	629.0	635.5	622.5	616.0	608.6
10°	626.5	622.5	615.1	611.0	608.6	609.4	602.9	594.8	592.3	590.7	584.2
12.5°	605.4	596.4	589.9	585.0	583.4	583.4	572.8	571.1	563.8	562.2	552.4
15°	580.1	569.5	565.4	558.9	553.2	556.5	544.2	541.0	538.6	528.0	529.6
17.5°	558.1	546.7	536.9	532.8	528.0	523.1	511.6	514.1	508.4	508.4	493.7
20°	529.6	517.4	510.0	501.9	501.9	495.4	487.2	488.0	480.7	473.4	460.3
22.5°	499.5	486.4	477.4	474.2	466.0	464.4	454.6	452.2	442.4	443.2	431.8
25°	467.7	454.6	442.4	443.2	435.9	432.6	426.9	415.5	411.5	406.6	403.3
27.5°	430.2	421.2	410.6	409.8	396.0	396.8	389.5	386.2	376.4	378.9	371.5
30°	396.0	382.9	373.1	370.7	365.0	363.4	352.0	347.1	348.7	342.2	338.1
32.5°	360.9	341.4	337.3	332.4	329.2	325.1	316.9	320.2	312.8	314.5	308.0
35°	314.5	306.3	295.7	295.7	292.5	289.2	283.5	286.8	279.5	276.2	269.7
37.5°	275.4	268.1	257.5	260.7	255.0	250.1	245.2	246.0	239.5	238.7	232.2
40°	233.0	228.9	221.6	221.6	217.5	217.5	215.1	212.7	208.6	203.7	196.3
42.5°	193.1	189.8	186.6	187.4	181.7	186.6	180.1	184.1	171.1	170.3	165.4
45°	163.8	156.4	157.2	154.0	150.7	152.4	146.6	148.3	141.0	139.3	134.4
47.5°	132.8	130.4	125.5	123.9	123.9	121.4	119.0	118.1	114.9	110.8	104.3
50°	109.2	100.2	98.6	96.1	94.5	94.5	91.3	86.4	87.2	83.1	76.6
52.5°	85.5	78.2	74.9	74.2	70.9	69.3	65.2	61.9	59.5	57.8	53.8
55°	66.0	59.5	55.4	55.4	50.5	50.5	44.8	42.4	39.1	35.8	33.4
57.5°	49.7	46.4	42.4	39.1	37.5	33.4	30.1	26.1	23.6	18.7	15.5
60°	37.5	34.2	30.1	27.7	26.1	22.0	17.9	14.7	9.0	7.3	6.5
62.5°	27.7	24.5	20.4	18.7	17.1	13.9	9.8	4.9	2.5	2.5	2.5
65°	20.4	16.3	13.0	11.4	9.8	7.3	3.3	1.6	0.8	0.8	0.8
67.5°	13.9	10.6	7.3	6.5	4.9	2.5	0.8	0.8	0.8	0.8	0.8
70°	9.0	6.5	3.3	2.5	1.6	0.8	0.8	0.8	0.8	0.8	0.8
72.5°	5.7	3.3	1.6	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	3.3	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	1.6	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	0.8	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	0.8	0.8	0.8
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 FEU4C159027 F4LC-SQLWW-H

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	679.5	679.5	679.5	679.5	679.5	679.5	679.5	679.5
2.5°	663.2	657.5	660.7	653.4	656.7	662.4	658.3	659.9
5°	640.4	637.1	633.1	622.5	630.6	637.1	633.9	633.1
7.5°	616.0	604.5	610.2	607.0	605.4	611.9	604.5	612.7
10°	590.7	582.5	581.7	576.0	576.0	580.9	581.7	576.8
12.5°	553.2	549.2	549.2	548.3	547.5	552.4	553.2	550.8
15°	526.3	524.7	520.6	519.8	514.9	522.2	523.1	522.2
17.5°	493.7	494.5	490.5	490.5	493.7	496.2	489.7	496.2
20°	471.7	467.7	466.0	458.7	462.8	466.9	466.9	467.7
22.5°	440.0	433.4	435.9	431.8	429.4	435.1	435.1	437.5
25°	404.1	404.1	405.7	403.3	404.9	408.2	405.7	411.5
27.5°	369.9	373.1	373.1	369.9	371.5	381.3	385.4	378.9
30°	338.1	338.9	341.4	339.8	344.6	347.9	347.1	352.0
32.5°	302.3	306.3	308.0	305.5	307.2	314.5	310.4	309.6
35°	274.6	267.2	266.4	267.2	270.5	272.1	270.5	276.2
37.5°	234.6	232.2	228.9	229.8	232.2	235.5	237.1	241.2
40°	196.3	193.1	193.1	192.3	189.8	198.8	198.8	198.8
42.5°	163.0	162.1	158.1	158.1	161.3	163.8	162.1	167.8
45°	133.6	130.4	127.9	127.9	130.4	130.4	132.8	132.0
47.5°	105.1	101.9	102.7	100.2	102.7	105.9	101.9	102.7
50°	79.0	79.0	77.4	79.0	78.2	79.0	77.4	75.8
52.5°	53.8	61.1	61.9	58.7	51.3	44.8	40.7	44.0
55°	31.0	27.7	27.7	26.9	25.2	24.5	22.0	24.5
57.5°	15.5	13.9	13.9	13.9	13.0	12.2	10.6	10.6
60°	6.5	5.7	5.7	4.9	4.1	3.3	2.5	3.3
62.5°	2.5	1.6	1.6	1.6	1.6	1.6	1.6	1.6
65°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
67.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
70°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
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)