

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 FEU4C159050 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 FEU4C159050 F4LC-SQLWW-H  
 Description: 4 INCH 1500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 5000K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH H FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

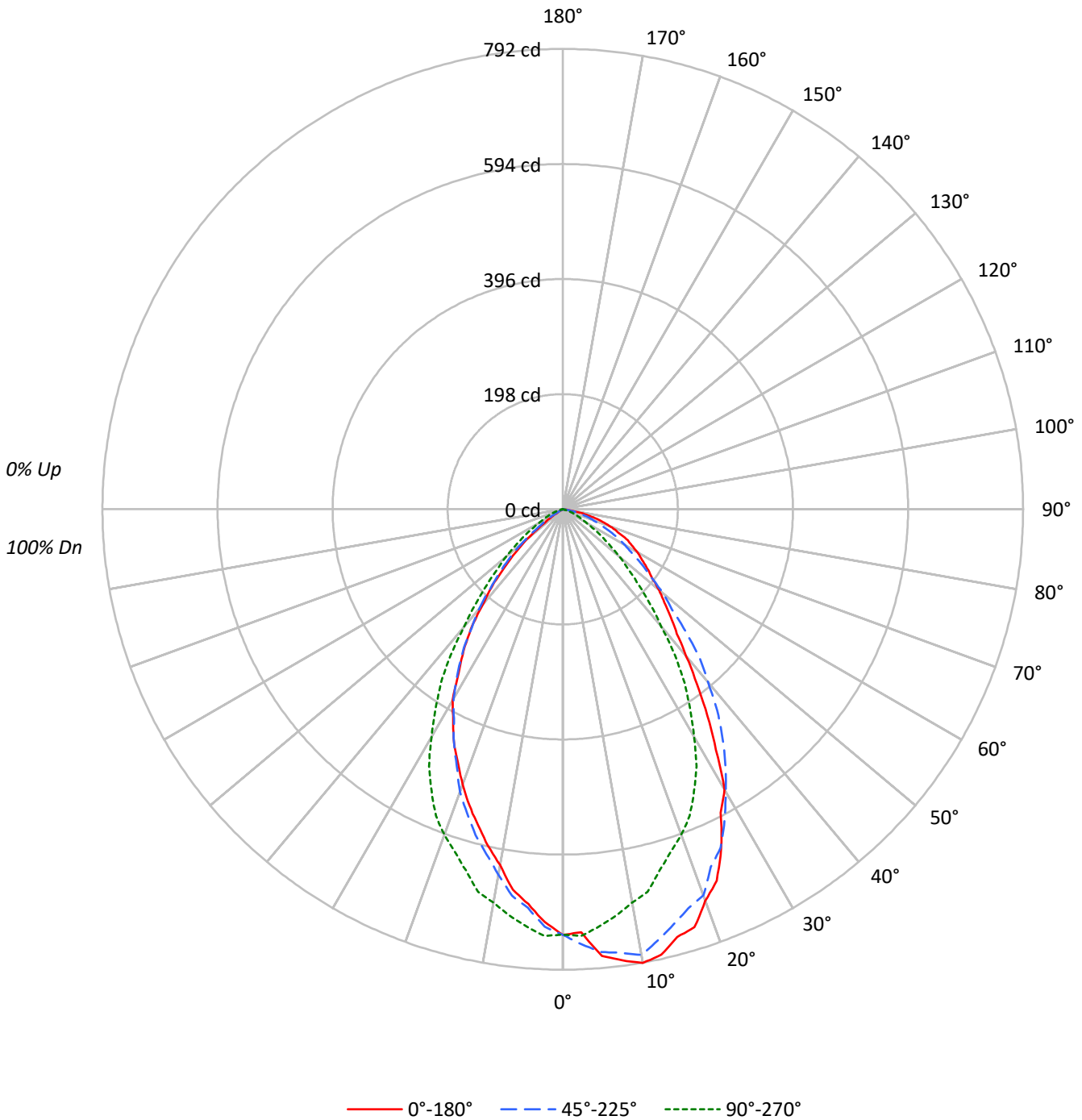
Lumens per Lamp: N/A  
 Luminaire Lumens: 1049.0 lumens  
 Efficiency: N/A  
 Efficacy: 66.4 lumens/watt  
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 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	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°	70611	70611	70611
5°	74706	69776	66037
10°	77637	67320	60864
15°	76078	64251	56190
20°	73612	61178	51721
25°	68669	56894	47174
30°	61981	50349	42238
35°	51062	43100	35043
40°	41667	33265	26967
45°	35806	25272	19404
50°	32409	19229	12249
55°	29826	13878	4424
60°	28619	9475	675
65°	27649	6416	205
70°	24741	4457	254
75°	20281	2311	0
80°	12669	1000	0
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	68.6	6.5
10°-20°	184.7	17.6
20°-30°	246.7	23.5
30°-40°	234.2	22.3
40°-50°	161.9	15.4
50°-60°	89.4	8.5
60°-70°	44.4	4.2
70°-80°	17.5	1.7
80°-90°	1.7	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°	500.0	47.7
0°-40°	734.1	70.0
0°-60°	985.4	93.9
0°-90°	1049.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1049.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	732	732	732	732	732	
5°	771	764	720	688	682	74
15°	762	739	643	580	562	215
25°	645	642	534	443	443	294
35°	434	479	366	301	298	272
45°	262	301	185	152	142	205
55°	177	167	82	42	26	160
65°	121	88	28	1	1	118
75°	54	33	6	0	0	58
85°	0	1	0	0	0	5
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°	731.8	731.8	731.8	731.8	731.8	731.8	731.8	731.8	731.8	731.8	731.8
2.5°	728.3	748.5	750.2	748.5	751.1	750.2	754.6	750.2	755.5	747.6	749.4
5°	771.3	763.4	780.1	771.3	771.3	770.4	767.8	766.9	770.4	759.0	764.3
7.5°	782.7	794.1	809.1	790.6	791.5	791.5	786.2	784.5	784.5	763.4	769.6
10°	792.4	785.3	793.2	786.2	792.4	791.5	795.0	783.6	791.5	779.2	778.3
12.5°	784.5	781.8	792.4	781.0	777.5	778.3	774.0	771.3	774.0	759.9	759.0
15°	761.6	764.3	780.1	767.8	766.0	764.3	759.0	750.2	757.3	738.0	738.9
17.5°	753.8	749.4	752.0	741.5	744.1	742.4	741.5	733.6	731.8	719.5	719.5
20°	716.9	726.5	726.5	719.5	719.5	718.7	707.3	714.3	706.4	702.9	706.4
22.5°	691.4	692.3	692.3	686.2	687.1	683.6	677.4	673.0	677.4	673.0	666.0
25°	645.0	646.7	657.2	645.8	644.1	647.6	642.3	639.7	638.8	628.3	642.3
27.5°	588.8	606.3	605.5	601.1	606.3	599.3	596.7	597.6	600.2	599.3	602.8
30°	556.3	559.0	561.6	558.1	559.0	556.3	556.3	557.2	564.2	561.6	560.7
32.5°	490.5	499.3	506.3	506.3	507.2	509.8	508.9	527.4	531.8	523.0	521.2
35°	433.5	439.6	445.7	446.6	458.1	458.9	459.8	465.1	477.3	480.0	479.1
37.5°	379.1	385.2	387.0	394.9	401.0	407.1	414.2	421.2	431.7	440.5	436.1
40°	330.8	333.4	337.8	341.3	353.6	353.6	357.1	371.2	382.6	389.6	388.7
42.5°	290.5	291.3	294.8	301.0	312.4	309.7	312.4	322.1	338.7	339.6	349.2
45°	262.4	261.5	264.1	265.0	272.0	275.5	277.3	284.3	298.3	300.1	301.0
47.5°	236.9	236.0	240.4	242.2	244.8	248.3	248.3	249.2	254.5	258.9	255.4
50°	215.9	215.9	215.9	217.6	222.0	221.1	222.0	225.5	228.1	226.4	225.5
52.5°	193.0	196.5	199.2	200.1	200.9	200.9	201.8	200.1	199.2	196.5	191.3
55°	177.3	180.8	180.8	180.8	180.8	184.3	179.9	180.8	180.8	173.7	166.7
57.5°	161.5	165.0	167.6	164.1	167.6	164.1	162.3	161.5	159.7	152.7	142.2
60°	148.3	150.1	149.2	148.3	150.1	147.4	145.7	142.2	140.4	130.7	123.7
62.5°	133.4	134.2	135.1	133.4	131.6	130.7	127.2	122.0	118.5	110.6	104.4
65°	121.1	118.5	117.6	116.7	115.0	112.3	109.7	103.5	100.9	93.9	87.7
67.5°	102.7	101.8	103.5	100.9	96.5	96.5	93.9	88.6	82.5	78.1	72.0
70°	87.7	86.9	85.1	82.5	81.6	78.1	78.1	72.0	70.2	62.3	57.0
72.5°	72.0	72.0	69.3	66.7	64.0	62.3	61.4	57.0	54.4	50.0	45.6
75°	54.4	54.4	53.5	50.9	49.1	47.4	46.5	43.0	40.4	36.0	33.3
77.5°	38.6	38.6	35.1	33.3	34.2	32.5	30.7	29.8	28.9	26.3	22.8
80°	22.8	21.9	19.3	20.2	19.3	19.3	18.4	17.5	15.8	14.0	12.3
82.5°	6.2	7.0	7.0	7.0	7.9	6.2	6.2	6.2	7.0	7.0	4.4
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	1.8	3.5	3.5	3.5	3.5	3.5	2.6	2.6	2.6	1.8
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°	731.8	731.8	731.8	731.8	731.8	731.8	731.8	731.8	731.8	731.8	731.8
2.5°	740.6	739.7	740.6	734.5	748.5	738.0	736.2	734.5	740.6	734.5	725.7
5°	756.4	747.6	745.0	742.4	750.2	738.0	735.3	736.2	731.8	720.4	721.3
7.5°	761.6	753.8	745.9	729.2	736.2	733.6	726.5	721.3	714.3	704.6	702.9
10°	763.4	754.6	743.2	738.0	727.4	723.9	721.3	712.5	703.8	687.1	682.7
12.5°	758.1	747.6	733.6	729.2	721.3	709.9	703.8	695.0	687.1	673.9	664.3
15°	735.3	726.5	722.2	707.3	703.8	696.7	684.4	672.2	660.7	643.2	637.9
17.5°	709.0	705.5	701.1	689.7	688.8	681.8	670.4	659.9	645.0	617.7	609.0
20°	681.8	681.8	667.8	663.4	672.2	658.1	649.3	639.7	609.0	595.8	580.0
22.5°	661.6	652.0	644.1	637.1	637.9	629.2	616.9	597.6	586.1	570.4	551.9
25°	622.1	625.6	608.1	605.5	608.1	587.9	581.8	566.0	549.3	534.4	520.3
27.5°	597.6	587.9	576.5	566.9	566.9	559.0	541.4	537.9	512.4	498.4	480.8
30°	560.7	553.7	544.0	530.0	528.3	522.1	508.1	499.3	473.0	451.9	442.2
32.5°	514.2	511.6	503.7	487.9	482.6	475.6	458.1	443.1	430.9	407.1	395.8
35°	480.8	471.2	454.5	441.4	437.0	424.7	410.6	400.1	387.0	365.9	351.0
37.5°	430.9	421.2	405.4	389.6	389.6	377.3	358.0	347.5	329.1	316.8	304.5
40°	387.0	374.7	358.9	340.5	337.8	320.3	312.4	294.8	283.4	264.1	262.4
42.5°	337.8	326.4	312.4	298.3	287.8	279.0	258.9	245.7	233.4	223.8	221.1
45°	293.1	278.2	265.9	248.3	237.8	227.3	214.1	205.3	195.7	185.2	179.0
47.5°	254.5	242.2	224.6	208.8	198.3	193.0	178.1	168.5	160.6	153.6	149.2
50°	215.0	200.1	190.4	172.9	171.1	158.8	146.6	138.6	134.2	128.1	122.0
52.5°	185.2	171.1	157.9	144.8	137.8	133.4	122.0	114.1	107.9	103.5	100.0
55°	156.2	143.9	133.4	120.2	115.8	109.7	96.5	94.8	88.6	82.5	78.1
57.5°	134.2	122.8	110.6	101.8	93.9	89.5	79.0	72.0	68.4	63.2	58.8
60°	114.1	101.8	92.1	81.6	78.1	72.0	64.0	57.9	53.5	49.1	44.8
62.5°	95.6	85.1	74.6	65.8	60.5	57.0	50.9	45.6	41.3	37.7	34.2
65°	79.0	69.3	60.5	51.8	49.1	44.8	40.4	36.0	32.5	28.1	24.6
67.5°	64.9	56.2	47.4	41.3	38.6	36.9	31.6	27.2	24.6	21.9	18.4
70°	50.9	44.8	37.7	32.5	29.8	27.2	23.7	21.1	17.5	15.8	13.2
72.5°	39.5	34.2	28.1	23.7	21.9	20.2	16.7	14.0	12.3	10.5	8.8
75°	28.1	23.7	20.2	15.8	14.9	14.0	11.4	9.7	7.9	6.2	5.3
77.5°	19.3	15.8	12.3	10.5	9.7	7.9	7.0	5.3	4.4	3.5	2.6
80°	10.5	7.9	6.2	5.3	4.4	3.5	3.5	2.6	1.8	1.8	0.9
82.5°	3.5	2.6	1.8	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°	731.8	731.8	731.8	731.8	731.8	731.8	731.8	731.8	731.8	731.8	731.8
2.5°	730.9	721.3	723.9	723.9	722.2	722.2	720.4	717.8	718.7	713.4	702.0
5°	723.0	710.8	709.0	710.8	703.8	702.0	698.5	703.8	687.9	694.1	687.1
7.5°	700.2	688.8	686.2	692.3	683.6	678.3	677.4	684.4	670.4	663.4	655.5
10°	674.8	670.4	662.5	658.1	655.5	656.3	649.3	640.6	637.9	636.2	629.2
12.5°	652.0	642.3	635.3	630.0	628.3	628.3	616.9	615.1	607.2	605.5	594.9
15°	624.8	613.4	609.0	602.0	595.8	599.3	586.1	582.6	580.0	568.6	570.4
17.5°	601.1	588.8	578.3	573.9	568.6	563.4	551.0	553.7	547.5	547.5	531.8
20°	570.4	557.2	549.3	540.5	540.5	533.5	524.7	525.6	517.7	509.8	495.8
22.5°	537.9	523.9	514.2	510.7	501.9	500.2	489.6	487.0	476.5	477.3	465.1
25°	503.7	489.6	476.5	477.3	469.5	466.0	459.8	447.5	443.1	437.9	434.4
27.5°	463.3	453.7	442.2	441.4	426.5	427.3	419.4	415.9	405.4	408.0	400.1
30°	426.5	412.4	401.9	399.3	393.1	391.4	379.1	373.8	375.6	368.5	364.2
32.5°	388.7	367.7	363.3	358.0	354.5	350.1	341.3	344.8	336.9	338.7	331.7
35°	338.7	329.9	318.5	318.5	315.0	311.5	305.4	308.9	301.0	297.5	290.5
37.5°	296.6	288.7	277.3	280.8	274.6	269.4	264.1	265.0	258.0	257.1	250.1
40°	251.0	246.6	238.7	238.7	234.3	234.3	231.6	229.0	224.6	219.4	211.5
42.5°	208.0	204.4	200.9	201.8	195.7	200.9	193.9	198.3	184.3	183.4	178.1
45°	176.4	168.5	169.3	165.8	162.3	164.1	157.9	159.7	151.8	150.1	144.8
47.5°	143.0	140.4	135.1	133.4	133.4	130.7	128.1	127.2	123.7	119.3	112.3
50°	117.6	107.9	106.2	103.5	101.8	101.8	98.3	93.0	93.9	89.5	82.5
52.5°	92.1	84.2	80.7	79.9	76.4	74.6	70.2	66.7	64.0	62.3	57.9
55°	71.1	64.0	59.7	59.7	54.4	54.4	48.3	45.6	42.1	38.6	36.0
57.5°	53.5	50.0	45.6	42.1	40.4	36.0	32.5	28.1	25.4	20.2	16.7
60°	40.4	36.9	32.5	29.8	28.1	23.7	19.3	15.8	9.7	7.9	7.0
62.5°	29.8	26.3	21.9	20.2	18.4	14.9	10.5	5.3	2.6	2.6	2.6
65°	21.9	17.5	14.0	12.3	10.5	7.9	3.5	1.8	0.9	0.9	0.9
67.5°	14.9	11.4	7.9	7.0	5.3	2.6	0.9	0.9	0.9	0.9	0.9
70°	9.7	7.0	3.5	2.6	1.8	0.9	0.9	0.9	0.9	0.9	0.9
72.5°	6.2	3.5	1.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	3.5	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	1.8	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 FEU4C159050 F4LC-SQLWW-H

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	731.8	731.8	731.8	731.8	731.8	731.8	731.8	731.8
2.5°	714.3	708.1	711.6	703.8	707.3	713.4	709.0	710.8
5°	689.7	686.2	681.8	670.4	679.2	686.2	682.7	681.8
7.5°	663.4	651.1	657.2	653.7	652.0	659.0	651.1	659.9
10°	636.2	627.4	626.5	620.4	620.4	625.6	626.5	621.2
12.5°	595.8	591.4	591.4	590.5	589.7	594.9	595.8	593.2
15°	566.9	565.1	560.7	559.8	554.6	562.5	563.4	562.5
17.5°	531.8	532.6	528.3	528.3	531.8	534.4	527.4	534.4
20°	508.1	503.7	501.9	494.0	498.4	502.8	502.8	503.7
22.5°	473.8	466.8	469.5	465.1	462.4	468.6	468.6	471.2
25°	435.2	435.2	437.0	434.4	436.1	439.6	437.0	443.1
27.5°	398.4	401.9	401.9	398.4	400.1	410.6	415.0	408.0
30°	364.2	365.0	367.7	365.9	371.2	374.7	373.8	379.1
32.5°	325.6	329.9	331.7	329.1	330.8	338.7	334.3	333.4
35°	295.7	287.8	287.0	287.8	291.3	293.1	291.3	297.5
37.5°	252.7	250.1	246.6	247.5	250.1	253.6	255.4	259.7
40°	211.5	208.0	208.0	207.1	204.4	214.1	214.1	214.1
42.5°	175.5	174.6	170.2	170.2	173.7	176.4	174.6	180.8
45°	143.9	140.4	137.8	137.8	140.4	140.4	143.0	142.2
47.5°	113.2	109.7	110.6	107.9	110.6	114.1	109.7	110.6
50°	85.1	85.1	83.4	85.1	84.2	85.1	83.4	81.6
52.5°	57.9	65.8	66.7	63.2	55.3	48.3	43.9	47.4
55°	33.3	29.8	29.8	28.9	27.2	26.3	23.7	26.3
57.5°	16.7	14.9	14.9	14.9	14.0	13.2	11.4	11.4
60°	7.0	6.2	6.2	5.3	4.4	3.5	2.6	3.5
62.5°	2.6	1.8	1.8	1.8	1.8	1.8	1.8	1.8
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)