

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-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: FLDSQ4C15D010 FEU4C159027 F4LC-SQLWW-LI
 Description: 4 INCH 1500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 2700K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

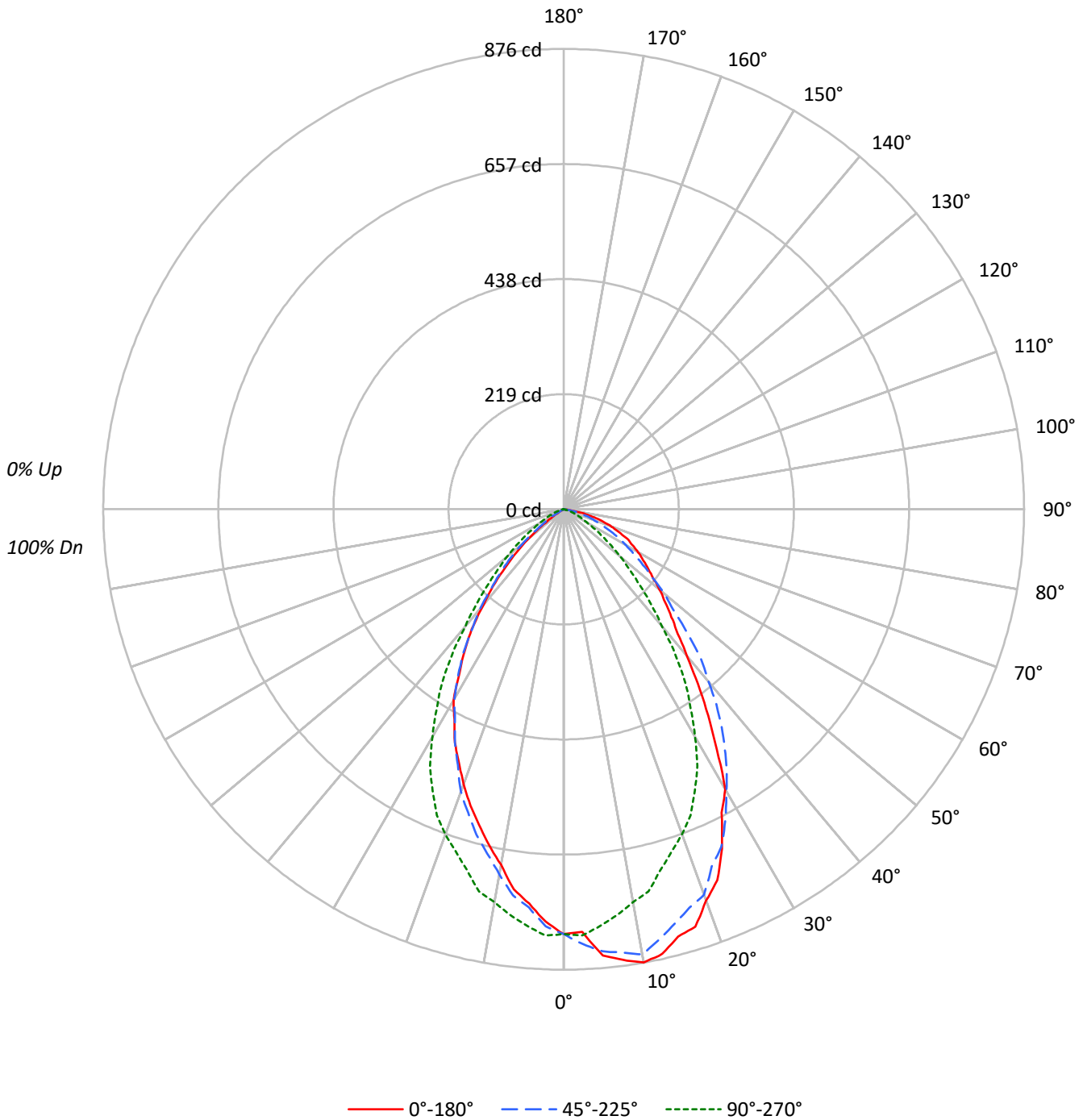
Lumens per Lamp: N/A
 Luminaire Lumens: 1159.0 lumens
 Efficiency: N/A
 Efficacy: 73.4 lumens/watt
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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#

CATALOG NUMBER: FLDSQ4C15D010 FEU4C159027 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°	78011	78011	78011
5°	82542	77099	72963
10°	85779	74375	67252
15°	84060	70984	62073
20°	81334	67595	57142
25°	75866	62856	52125
30°	68487	55630	46661
35°	56410	47623	38718
40°	46037	36754	29801
45°	39559	27919	21437
50°	35801	21256	13540
55°	32938	15325	4895
60°	31629	10479	753
65°	30548	7078	228
70°	27337	4909	282
75°	22406	2535	0
80°	14003	1056	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	75.8	6.5
10°-20°	204.1	17.6
20°-30°	272.5	23.5
30°-40°	258.7	22.3
40°-50°	178.8	15.4
50°-60°	98.8	8.5
60°-70°	49.1	4.2
70°-80°	19.3	1.7
80°-90°	1.8	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°	552.4	47.7
0°-40°	811.1	70.0
0°-60°	1088.8	93.9
0°-90°	1159.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1159.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	808	808	808	808	808	
5°	852	844	796	760	753	82
15°	842	816	711	641	621	238
25°	713	710	590	490	490	325
35°	479	529	404	332	329	300
45°	290	332	205	168	157	226
55°	196	184	91	46	29	176
65°	134	97	31	1	1	130
75°	60	37	7	0	0	64
85°	0	1	0	0	0	6
90°	0	0	0	0	0	

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

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5
2.5°	804.7	827.0	828.9	827.0	829.9	828.9	833.8	828.9	834.8	826.0	828.0
5°	852.2	843.5	861.9	852.2	852.2	851.2	848.3	847.3	851.2	838.6	844.4
7.5°	864.8	877.4	893.9	873.5	874.5	874.5	868.7	866.7	866.7	843.5	850.3
10°	875.5	867.7	876.4	868.7	875.5	874.5	878.4	865.7	874.5	860.9	859.9
12.5°	866.7	863.8	875.5	862.9	859.0	859.9	855.1	852.2	855.1	839.6	838.6
15°	841.5	844.4	861.9	848.3	846.4	844.4	838.6	828.9	836.7	815.3	816.3
17.5°	832.8	828.0	830.9	819.2	822.1	820.2	819.2	810.5	808.5	795.0	795.0
20°	792.1	802.7	802.7	795.0	795.0	794.0	781.4	789.2	780.4	776.6	780.4
22.5°	764.0	764.9	764.9	758.1	759.1	755.3	748.5	743.6	748.5	743.6	735.8
25°	712.6	714.5	726.2	713.5	711.6	715.5	709.7	706.8	705.8	694.2	709.7
27.5°	650.5	669.9	669.0	664.1	669.9	662.2	659.3	660.2	663.1	662.2	666.0
30°	614.7	617.6	620.5	616.6	617.6	614.7	614.7	615.6	623.4	620.5	619.5
32.5°	541.9	551.6	559.4	559.4	560.4	563.3	562.3	582.7	587.5	577.8	575.9
35°	478.9	485.7	492.5	493.5	506.1	507.0	508.0	513.8	527.4	530.3	529.3
37.5°	418.8	425.6	427.5	436.3	443.1	449.8	457.6	465.4	477.0	486.7	481.9
40°	365.5	368.4	373.3	377.1	390.7	390.7	394.6	410.1	422.7	430.5	429.5
42.5°	320.9	321.9	325.7	332.5	345.2	342.2	345.2	355.8	374.2	375.2	385.9
45°	289.9	288.9	291.8	292.8	300.6	304.4	306.4	314.1	329.6	331.6	332.5
47.5°	261.8	260.8	265.7	267.6	270.5	274.4	274.4	275.3	281.2	286.0	282.1
50°	238.5	238.5	238.5	240.4	245.3	244.3	245.3	249.2	252.1	250.1	249.2
52.5°	213.3	217.1	220.1	221.1	222.0	222.0	223.0	221.1	220.1	217.1	211.3
55°	195.8	199.7	199.7	199.7	199.7	203.6	198.8	199.7	199.7	192.0	184.2
57.5°	178.4	182.3	185.2	181.3	185.2	181.3	179.4	178.4	176.4	168.7	157.1
60°	163.9	165.8	164.8	163.9	165.8	162.9	160.9	157.1	155.1	144.4	136.7
62.5°	147.4	148.3	149.3	147.4	145.4	144.4	140.6	134.8	130.9	122.2	115.4
65°	133.8	130.9	129.9	129.0	127.0	124.1	121.2	114.4	111.5	103.7	96.9
67.5°	113.4	112.5	114.4	111.5	106.7	106.7	103.7	97.9	91.1	86.3	79.5
70°	96.9	96.0	94.0	91.1	90.2	86.3	86.3	79.5	77.6	68.8	63.0
72.5°	79.5	79.5	76.6	73.7	70.8	68.8	67.9	63.0	60.1	55.3	50.4
75°	60.1	60.1	59.1	56.2	54.3	52.3	51.4	47.5	44.6	39.8	36.8
77.5°	42.7	42.7	38.8	36.8	37.8	35.9	33.9	33.0	32.0	29.1	25.2
80°	25.2	24.2	21.3	22.3	21.3	21.3	20.4	19.4	17.4	15.5	13.6
82.5°	6.8	7.7	7.7	7.7	8.7	6.8	6.8	6.8	7.7	7.7	4.9
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0
87.5°	1.0	1.9	3.9	3.9	3.9	3.9	3.9	2.9	2.9	2.9	1.9
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°	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5
2.5°	818.3	817.3	818.3	811.5	827.0	815.3	813.4	811.5	818.3	811.5	801.8
5°	835.7	826.0	823.1	820.2	828.9	815.3	812.5	813.4	808.5	796.0	796.9
7.5°	841.5	832.8	824.1	805.7	813.4	810.5	802.7	796.9	789.2	778.5	776.6
10°	843.5	833.8	821.2	815.3	803.7	799.8	796.9	787.2	777.6	759.1	754.3
12.5°	837.6	826.0	810.5	805.7	796.9	784.3	777.6	767.8	759.1	744.6	733.9
15°	812.5	802.7	797.9	781.4	777.6	769.8	756.2	742.6	730.0	710.6	704.8
17.5°	783.4	779.5	774.6	762.0	761.1	753.3	740.7	729.0	712.6	682.5	672.8
20°	753.3	753.3	737.8	733.0	742.6	727.1	717.4	706.8	672.8	658.3	640.8
22.5°	731.0	720.3	711.6	703.9	704.8	695.1	681.6	660.2	647.6	630.2	609.8
25°	687.4	691.3	671.9	669.0	671.9	649.5	642.8	625.3	606.9	590.4	574.9
27.5°	660.2	649.5	637.0	626.3	626.3	617.6	598.2	594.3	566.2	550.7	531.3
30°	619.5	611.8	601.1	585.6	583.6	576.8	561.4	551.6	522.6	499.3	488.6
32.5°	568.1	565.2	556.5	539.1	533.2	525.5	506.1	489.6	476.0	449.8	437.3
35°	531.3	520.6	502.2	487.7	482.8	469.2	453.7	442.1	427.5	404.3	387.8
37.5°	476.0	465.4	447.9	430.5	430.5	416.9	395.6	383.9	363.6	350.0	336.4
40°	427.5	414.0	396.5	376.2	373.3	353.8	345.2	325.7	313.1	291.8	289.9
42.5°	373.3	360.6	345.2	329.6	318.0	308.3	286.0	271.5	257.9	247.2	244.3
45°	323.8	307.3	293.8	274.4	262.7	251.1	236.6	226.9	216.2	204.6	197.8
47.5°	281.2	267.6	248.2	230.7	219.1	213.3	196.8	186.2	177.4	169.7	164.8
50°	237.5	221.1	210.4	191.0	189.0	175.5	161.9	153.2	148.3	141.6	134.8
52.5°	204.6	189.0	174.5	160.0	152.2	147.4	134.8	126.0	119.3	114.4	110.5
55°	172.6	159.0	147.4	132.8	128.0	121.2	106.7	104.7	97.9	91.1	86.3
57.5°	148.3	135.7	122.2	112.5	103.7	98.9	87.2	79.5	75.6	69.8	65.0
60°	126.0	112.5	101.8	90.2	86.3	79.5	70.8	64.0	59.1	54.3	49.5
62.5°	105.7	94.0	82.4	72.7	66.9	63.0	56.2	50.4	45.6	41.7	37.8
65°	87.2	76.6	66.9	57.2	54.3	49.5	44.6	39.8	35.9	31.0	27.2
67.5°	71.7	62.1	52.3	45.6	42.7	40.7	34.9	30.0	27.2	24.2	20.4
70°	56.2	49.5	41.7	35.9	33.0	30.0	26.2	23.3	19.4	17.4	14.5
72.5°	43.6	37.8	31.0	26.2	24.2	22.3	18.4	15.5	13.6	11.6	9.7
75°	31.0	26.2	22.3	17.4	16.5	15.5	12.6	10.7	8.7	6.8	5.8
77.5°	21.3	17.4	13.6	11.6	10.7	8.7	7.7	5.8	4.9	3.9	2.9
80°	11.6	8.7	6.8	5.8	4.9	3.9	3.9	2.9	1.9	1.9	1.0
82.5°	3.9	2.9	1.9	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0
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°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	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°	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5
2.5°	807.6	796.9	799.8	799.8	797.9	797.9	796.0	793.0	794.0	788.2	775.6
5°	798.9	785.3	783.4	785.3	777.6	775.6	771.7	777.6	760.1	766.9	759.1
7.5°	773.7	761.1	758.1	764.9	755.3	749.4	748.5	756.2	740.7	733.0	724.2
10°	745.5	740.7	732.0	727.1	724.2	725.2	717.4	707.7	704.8	702.9	695.1
12.5°	720.3	709.7	701.9	696.1	694.2	694.2	681.6	679.6	670.9	669.0	657.3
15°	690.3	677.7	672.8	665.1	658.3	662.2	647.6	643.7	640.8	628.2	630.2
17.5°	664.1	650.5	638.9	634.1	628.2	622.4	608.8	611.8	605.0	605.0	587.5
20°	630.2	615.6	606.9	597.2	597.2	589.5	579.8	580.7	572.0	563.3	547.8
22.5°	594.3	578.8	568.1	564.2	554.6	552.6	541.0	538.1	526.4	527.4	513.8
25°	556.5	541.0	526.4	527.4	518.7	514.8	508.0	494.5	489.6	483.8	479.9
27.5°	511.9	501.2	488.6	487.7	471.2	472.1	463.4	459.6	447.9	450.8	442.1
30°	471.2	455.7	444.0	441.1	434.3	432.4	418.8	413.0	415.0	407.2	402.4
32.5°	429.5	406.2	401.4	395.6	391.7	386.8	377.1	381.0	372.3	374.2	366.5
35°	374.2	364.5	351.9	351.9	348.0	344.2	337.4	341.3	332.5	328.7	320.9
37.5°	327.7	319.0	306.4	310.2	303.4	297.6	291.8	292.8	285.0	284.1	276.3
40°	277.3	272.4	263.7	263.7	258.9	258.9	255.9	253.0	248.2	242.4	233.6
42.5°	229.8	225.9	222.0	223.0	216.2	222.0	214.3	219.1	203.6	202.6	196.8
45°	194.9	186.2	187.1	183.2	179.4	181.3	174.5	176.4	167.7	165.8	160.0
47.5°	158.0	155.1	149.3	147.4	147.4	144.4	141.6	140.6	136.7	131.8	124.1
50°	129.9	119.3	117.3	114.4	112.5	112.5	108.6	102.8	103.7	98.9	91.1
52.5°	101.8	93.1	89.2	88.2	84.4	82.4	77.6	73.7	70.8	68.8	64.0
55°	78.5	70.8	65.9	65.9	60.1	60.1	53.3	50.4	46.5	42.7	39.8
57.5°	59.1	55.3	50.4	46.5	44.6	39.8	35.9	31.0	28.1	22.3	18.4
60°	44.6	40.7	35.9	33.0	31.0	26.2	21.3	17.4	10.7	8.7	7.7
62.5°	33.0	29.1	24.2	22.3	20.4	16.5	11.6	5.8	2.9	2.9	2.9
65°	24.2	19.4	15.5	13.6	11.6	8.7	3.9	1.9	1.0	1.0	1.0
67.5°	16.5	12.6	8.7	7.7	5.8	2.9	1.0	1.0	1.0	1.0	1.0
70°	10.7	7.7	3.9	2.9	1.9	1.0	1.0	1.0	1.0	1.0	1.0
72.5°	6.8	3.9	1.9	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	3.9	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	1.9	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	1.0	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	1.0	1.0	1.0
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-LI

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5
2.5°	789.2	782.4	786.2	777.6	781.4	788.2	783.4	785.3
5°	762.0	758.1	753.3	740.7	750.4	758.1	754.3	753.3
7.5°	733.0	719.4	726.2	722.3	720.3	728.1	719.4	729.0
10°	702.9	693.2	692.2	685.4	685.4	691.3	692.2	686.4
12.5°	658.3	653.5	653.5	652.5	651.5	657.3	658.3	655.4
15°	626.3	624.4	619.5	618.6	612.7	621.4	622.4	621.4
17.5°	587.5	588.5	583.6	583.6	587.5	590.4	582.7	590.4
20°	561.4	556.5	554.6	545.8	550.7	555.5	555.5	556.5
22.5°	523.5	515.8	518.7	513.8	510.9	517.7	517.7	520.6
25°	480.9	480.9	482.8	479.9	481.9	485.7	482.8	489.6
27.5°	440.1	444.0	444.0	440.1	442.1	453.7	458.6	450.8
30°	402.4	403.3	406.2	404.3	410.1	414.0	413.0	418.8
32.5°	359.7	364.5	366.5	363.6	365.5	374.2	369.4	368.4
35°	326.7	318.0	317.0	318.0	321.9	323.8	321.9	328.7
37.5°	279.2	276.3	272.4	273.4	276.3	280.2	282.1	287.0
40°	233.6	229.8	229.8	228.8	225.9	236.6	236.6	236.6
42.5°	193.9	192.9	188.1	188.1	192.0	194.9	192.9	199.7
45°	159.0	155.1	152.2	152.2	155.1	155.1	158.0	157.1
47.5°	125.1	121.2	122.2	119.3	122.2	126.0	121.2	122.2
50°	94.0	94.0	92.1	94.0	93.1	94.0	92.1	90.2
52.5°	64.0	72.7	73.7	69.8	61.1	53.3	48.5	52.3
55°	36.8	33.0	33.0	32.0	30.0	29.1	26.2	29.1
57.5°	18.4	16.5	16.5	16.5	15.5	14.5	12.6	12.6
60°	7.7	6.8	6.8	5.8	4.9	3.9	2.9	3.9
62.5°	2.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
65°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
67.5°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
70°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)