

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: **FLDSQ4C05D010 FEU4C059040 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: FLDSQ4C05D010 FEU4C059040 F4LC-SQLWW-H
 Description: 4 INCH 500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 4000K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH H FINISH
 Light Source: -
 Ballast/Driver: -

Summary

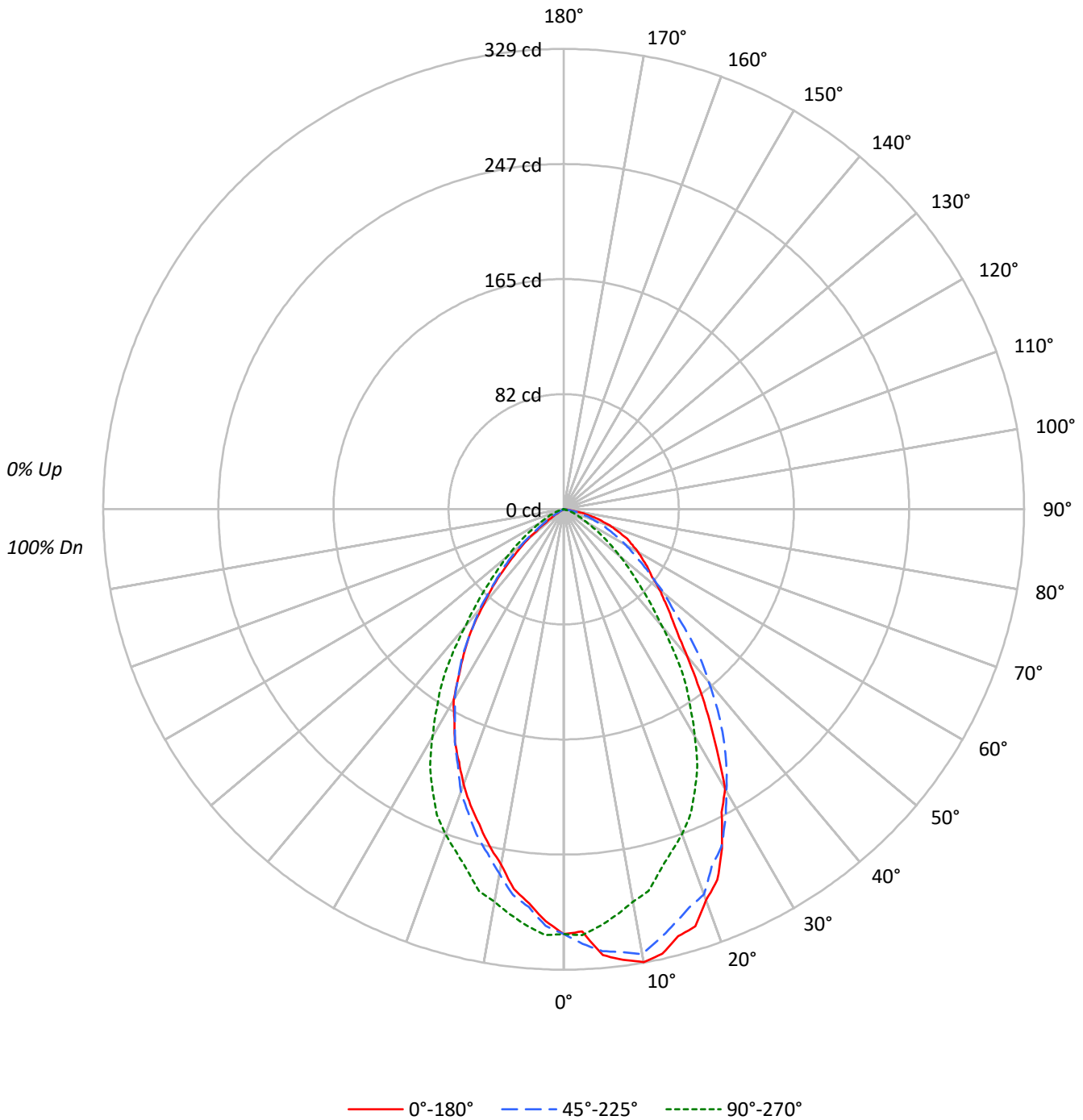
Lumens per Lamp: N/A
 Luminaire Lumens: 435.0 lumens
 Efficiency: N/A
 Efficacy: 60.4 lumens/watt
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 7.2
 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

TEST NUMBER: P#
CATALOG NUMBER: FLDSQ4C05D010 FEU4C059040 F4LC-SQLWW-H

Luminous Intensity Polar Plot



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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°	29284	29284	29284
5°	30975	28931	27382
10°	32195	27914	25239
15°	31546	26641	23295
20°	30527	25373	21450
25°	28479	23592	19568
30°	25704	20879	17515
35°	21179	17869	14535
40°	17281	13792	11185
45°	14846	10480	8037
50°	13435	7971	5074
55°	12364	5753	1834
60°	11868	3937	289
65°	11461	2648	91
70°	10269	1834	113
75°	8425	969	0
80°	5279	389	0
85°	0	0	0

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 CATALOG NUMBER: FLDSQ4C05D010 FEU4C059040 F4LC-SQLWW-H

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	28.4	6.5
10°-20°	76.6	17.6
20°-30°	102.3	23.5
30°-40°	97.1	22.3
40°-50°	67.1	15.4
50°-60°	37.1	8.5
60°-70°	18.4	4.2
70°-80°	7.3	1.7
80°-90°	0.7	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°	207.3	47.7
0°-40°	304.4	70.0
0°-60°	408.6	93.9
0°-90°	435.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	435.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	304	304	304	304	304	
5°	320	317	299	285	283	31
15°	316	306	267	240	233	89
25°	268	266	222	184	184	122
35°	180	199	152	125	123	113
45°	109	125	77	63	59	85
55°	74	69	34	18	11	66
65°	50	36	12	0	0	49
75°	23	14	3	0	0	24
85°	0	0	0	0	0	2
90°	0	0	0	0	0	

TEST NUMBER: P#
 CATALOG NUMBER: FLDSQ4C05D010 FEU4C059040 F4LC-SQLWW-H

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	303.5	303.5	303.5	303.5	303.5	303.5	303.5	303.5	303.5	303.5	303.5
2.5°	302.0	310.4	311.1	310.4	311.5	311.1	312.9	311.1	313.3	310.0	310.8
5°	319.8	316.6	323.5	319.8	319.8	319.5	318.4	318.0	319.5	314.8	316.9
7.5°	324.6	329.3	335.5	327.9	328.2	328.2	326.0	325.3	325.3	316.6	319.1
10°	328.6	325.7	328.9	326.0	328.6	328.2	329.7	324.9	328.2	323.1	322.8
12.5°	325.3	324.2	328.6	323.9	322.4	322.8	320.9	319.8	320.9	315.1	314.8
15°	315.8	316.9	323.5	318.4	317.7	316.9	314.8	311.1	314.0	306.0	306.4
17.5°	312.6	310.8	311.8	307.5	308.6	307.8	307.5	304.2	303.5	298.4	298.4
20°	297.3	301.3	301.3	298.4	298.4	298.0	293.3	296.2	292.9	291.5	292.9
22.5°	286.7	287.1	287.1	284.5	284.9	283.5	280.9	279.1	280.9	279.1	276.2
25°	267.5	268.2	272.5	267.8	267.1	268.5	266.4	265.3	264.9	260.5	266.4
27.5°	244.2	251.4	251.1	249.3	251.4	248.5	247.4	247.8	248.9	248.5	250.0
30°	230.7	231.8	232.9	231.4	231.8	230.7	230.7	231.1	234.0	232.9	232.5
32.5°	203.4	207.0	210.0	210.0	210.3	211.4	211.0	218.7	220.5	216.9	216.1
35°	179.8	182.3	184.8	185.2	189.9	190.3	190.7	192.9	197.9	199.0	198.7
37.5°	157.2	159.7	160.5	163.7	166.3	168.8	171.8	174.7	179.0	182.7	180.9
40°	137.2	138.3	140.1	141.5	146.6	146.6	148.1	153.9	158.7	161.6	161.2
42.5°	120.4	120.8	122.3	124.8	129.5	128.4	129.5	133.5	140.4	140.8	144.8
45°	108.8	108.4	109.5	109.9	112.8	114.3	115.0	117.9	123.7	124.4	124.8
47.5°	98.3	97.9	99.7	100.4	101.5	103.0	103.0	103.3	105.5	107.3	105.9
50°	89.5	89.5	89.5	90.2	92.1	91.7	92.1	93.5	94.6	93.9	93.5
52.5°	80.0	81.5	82.6	83.0	83.3	83.3	83.7	83.0	82.6	81.5	79.3
55°	73.5	75.0	75.0	75.0	75.0	76.4	74.6	75.0	75.0	72.0	69.1
57.5°	67.0	68.4	69.5	68.0	69.5	68.0	67.3	67.0	66.2	63.3	58.9
60°	61.5	62.2	61.9	61.5	62.2	61.1	60.4	58.9	58.2	54.2	51.3
62.5°	55.3	55.7	56.0	55.3	54.6	54.2	52.8	50.6	49.1	45.8	43.3
65°	50.2	49.1	48.8	48.4	47.7	46.6	45.5	42.9	41.8	38.9	36.4
67.5°	42.6	42.2	42.9	41.8	40.0	40.0	38.9	36.8	34.2	32.4	29.8
70°	36.4	36.0	35.3	34.2	33.8	32.4	32.4	29.8	29.1	25.8	23.7
72.5°	29.8	29.8	28.7	27.7	26.6	25.8	25.5	23.7	22.6	20.7	18.9
75°	22.6	22.6	22.2	21.1	20.4	19.6	19.3	17.8	16.7	14.9	13.8
77.5°	16.0	16.0	14.6	13.8	14.2	13.5	12.7	12.4	12.0	10.9	9.5
80°	9.5	9.1	8.0	8.4	8.0	8.0	7.6	7.3	6.5	5.8	5.1
82.5°	2.6	2.9	2.9	2.9	3.3	2.6	2.6	2.6	2.9	2.9	1.8
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4
87.5°	0.4	0.7	1.5	1.5	1.5	1.5	1.5	1.1	1.1	1.1	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: FLDSQ4C05D010 FEU4C059040 F4LC-SQLWW-H

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	303.5	303.5	303.5	303.5	303.5	303.5	303.5	303.5	303.5	303.5	303.5
2.5°	307.1	306.7	307.1	304.6	310.4	306.0	305.3	304.6	307.1	304.6	300.9
5°	313.7	310.0	308.9	307.8	311.1	306.0	304.9	305.3	303.5	298.7	299.1
7.5°	315.8	312.6	309.3	302.4	305.3	304.2	301.3	299.1	296.2	292.2	291.5
10°	316.6	312.9	308.2	306.0	301.7	300.2	299.1	295.5	291.8	284.9	283.1
12.5°	314.4	310.0	304.2	302.4	299.1	294.4	291.8	288.2	284.9	279.5	275.5
15°	304.9	301.3	299.5	293.3	291.8	288.9	283.8	278.7	274.0	266.7	264.5
17.5°	294.0	292.6	290.7	286.0	285.6	282.7	278.0	273.6	267.5	256.2	252.5
20°	282.7	282.7	276.9	275.1	278.7	272.9	269.3	265.3	252.5	247.1	240.5
22.5°	274.4	270.4	267.1	264.2	264.5	260.9	255.8	247.8	243.1	236.5	228.9
25°	258.0	259.4	252.2	251.1	252.2	243.8	241.3	234.7	227.8	221.6	215.8
27.5°	247.8	243.8	239.1	235.1	235.1	231.8	224.5	223.1	212.5	206.7	199.4
30°	232.5	229.6	225.6	219.8	219.1	216.5	210.7	207.0	196.1	187.4	183.4
32.5°	213.2	212.1	208.9	202.3	200.1	197.2	189.9	183.8	178.7	168.8	164.1
35°	199.4	195.4	188.5	183.0	181.2	176.1	170.3	165.9	160.5	151.7	145.6
37.5°	178.7	174.7	168.1	161.6	161.6	156.5	148.5	144.1	136.5	131.4	126.3
40°	160.5	155.4	148.8	141.2	140.1	132.8	129.5	122.3	117.5	109.5	108.8
42.5°	140.1	135.4	129.5	123.7	119.4	115.7	107.3	101.9	96.8	92.8	91.7
45°	121.5	115.3	110.3	103.0	98.6	94.2	88.8	85.2	81.1	76.8	74.2
47.5°	105.5	100.4	93.1	86.6	82.2	80.0	73.9	69.9	66.6	63.7	61.9
50°	89.2	83.0	79.0	71.7	71.0	65.9	60.8	57.5	55.7	53.1	50.6
52.5°	76.8	71.0	65.5	60.0	57.1	55.3	50.6	47.3	44.8	42.9	41.5
55°	64.8	59.7	55.3	49.9	48.0	45.5	40.0	39.3	36.8	34.2	32.4
57.5°	55.7	50.9	45.8	42.2	38.9	37.1	32.7	29.8	28.4	26.2	24.4
60°	47.3	42.2	38.2	33.8	32.4	29.8	26.6	24.0	22.2	20.4	18.6
62.5°	39.7	35.3	30.9	27.3	25.1	23.7	21.1	18.9	17.1	15.7	14.2
65°	32.7	28.7	25.1	21.5	20.4	18.6	16.7	14.9	13.5	11.6	10.2
67.5°	26.9	23.3	19.6	17.1	16.0	15.3	13.1	11.3	10.2	9.1	7.6
70°	21.1	18.6	15.7	13.5	12.4	11.3	9.8	8.7	7.3	6.5	5.5
72.5°	16.4	14.2	11.6	9.8	9.1	8.4	6.9	5.8	5.1	4.4	3.6
75°	11.6	9.8	8.4	6.5	6.2	5.8	4.7	4.0	3.3	2.6	2.2
77.5°	8.0	6.5	5.1	4.4	4.0	3.3	2.9	2.2	1.8	1.5	1.1
80°	4.4	3.3	2.6	2.2	1.8	1.5	1.5	1.1	0.7	0.7	0.4
82.5°	1.5	1.1	0.7	0.4	0.4	0.4	0.4	0.4	0.4	0.0	0.4
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°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	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

TEST NUMBER: P#
 CATALOG NUMBER: FLDSQ4C05D010 FEU4C059040 F4LC-SQLWW-H

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	303.5	303.5	303.5	303.5	303.5	303.5	303.5	303.5	303.5	303.5	303.5
2.5°	303.1	299.1	300.2	300.2	299.5	299.5	298.7	297.6	298.0	295.8	291.1
5°	299.8	294.7	294.0	294.7	291.8	291.1	289.7	291.8	285.3	287.8	284.9
7.5°	290.4	285.6	284.5	287.1	283.5	281.3	280.9	283.8	278.0	275.1	271.8
10°	279.8	278.0	274.7	272.9	271.8	272.2	269.3	265.6	264.5	263.8	260.9
12.5°	270.4	266.4	263.4	261.3	260.5	260.5	255.8	255.1	251.8	251.1	246.7
15°	259.1	254.4	252.5	249.6	247.1	248.5	243.1	241.6	240.5	235.8	236.5
17.5°	249.3	244.2	239.8	238.0	235.8	233.6	228.5	229.6	227.1	227.1	220.5
20°	236.5	231.1	227.8	224.1	224.1	221.2	217.6	218.0	214.7	211.4	205.6
22.5°	223.1	217.2	213.2	211.8	208.1	207.4	203.0	201.9	197.6	197.9	192.9
25°	208.9	203.0	197.6	197.9	194.7	193.2	190.7	185.6	183.8	181.6	180.1
27.5°	192.1	188.1	183.4	183.0	176.8	177.2	173.9	172.5	168.1	169.2	165.9
30°	176.8	171.0	166.7	165.6	163.0	162.3	157.2	155.0	155.7	152.8	151.0
32.5°	161.2	152.5	150.6	148.5	147.0	145.2	141.5	143.0	139.7	140.4	137.5
35°	140.4	136.8	132.1	132.1	130.6	129.2	126.6	128.1	124.8	123.4	120.4
37.5°	123.0	119.7	115.0	116.4	113.9	111.7	109.5	109.9	107.0	106.6	103.7
40°	104.1	102.2	99.0	99.0	97.2	97.2	96.1	95.0	93.1	91.0	87.7
42.5°	86.2	84.8	83.3	83.7	81.1	83.3	80.4	82.2	76.4	76.1	73.9
45°	73.1	69.9	70.2	68.8	67.3	68.0	65.5	66.2	63.0	62.2	60.0
47.5°	59.3	58.2	56.0	55.3	55.3	54.2	53.1	52.8	51.3	49.5	46.6
50°	48.8	44.8	44.0	42.9	42.2	42.2	40.8	38.6	38.9	37.1	34.2
52.5°	38.2	34.9	33.5	33.1	31.7	30.9	29.1	27.7	26.6	25.8	24.0
55°	29.5	26.6	24.7	24.7	22.6	22.6	20.0	18.9	17.5	16.0	14.9
57.5°	22.2	20.7	18.9	17.5	16.7	14.9	13.5	11.6	10.5	8.4	6.9
60°	16.7	15.3	13.5	12.4	11.6	9.8	8.0	6.5	4.0	3.3	2.9
62.5°	12.4	10.9	9.1	8.4	7.6	6.2	4.4	2.2	1.1	1.1	1.1
65°	9.1	7.3	5.8	5.1	4.4	3.3	1.5	0.7	0.4	0.4	0.4
67.5°	6.2	4.7	3.3	2.9	2.2	1.1	0.4	0.4	0.4	0.4	0.4
70°	4.0	2.9	1.5	1.1	0.7	0.4	0.4	0.4	0.4	0.4	0.4
72.5°	2.6	1.5	0.7	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	1.5	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	0.7	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	0.4	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	0.4	0.4	0.4
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: FLDSQ4C05D010 FEU4C059040 F4LC-SQLWW-H

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	303.5	303.5	303.5	303.5	303.5	303.5	303.5	303.5
2.5°	296.2	293.6	295.1	291.8	293.3	295.8	294.0	294.7
5°	286.0	284.5	282.7	278.0	281.6	284.5	283.1	282.7
7.5°	275.1	270.0	272.5	271.1	270.4	273.3	270.0	273.6
10°	263.8	260.2	259.8	257.3	257.3	259.4	259.8	257.6
12.5°	247.1	245.3	245.3	244.9	244.5	246.7	247.1	246.0
15°	235.1	234.3	232.5	232.2	230.0	233.2	233.6	233.2
17.5°	220.5	220.9	219.1	219.1	220.5	221.6	218.7	221.6
20°	210.7	208.9	208.1	204.9	206.7	208.5	208.5	208.9
22.5°	196.5	193.6	194.7	192.9	191.8	194.3	194.3	195.4
25°	180.5	180.5	181.2	180.1	180.9	182.3	181.2	183.8
27.5°	165.2	166.7	166.7	165.2	165.9	170.3	172.1	169.2
30°	151.0	151.4	152.5	151.7	153.9	155.4	155.0	157.2
32.5°	135.0	136.8	137.5	136.5	137.2	140.4	138.6	138.3
35°	122.6	119.4	119.0	119.4	120.8	121.5	120.8	123.4
37.5°	104.8	103.7	102.2	102.6	103.7	105.2	105.9	107.7
40°	87.7	86.2	86.2	85.9	84.8	88.8	88.8	88.8
42.5°	72.8	72.4	70.6	70.6	72.0	73.1	72.4	75.0
45°	59.7	58.2	57.1	57.1	58.2	58.2	59.3	58.9
47.5°	46.9	45.5	45.8	44.8	45.8	47.3	45.5	45.8
50°	35.3	35.3	34.6	35.3	34.9	35.3	34.6	33.8
52.5°	24.0	27.3	27.7	26.2	22.9	20.0	18.2	19.6
55°	13.8	12.4	12.4	12.0	11.3	10.9	9.8	10.9
57.5°	6.9	6.2	6.2	6.2	5.8	5.5	4.7	4.7
60°	2.9	2.6	2.6	2.2	1.8	1.5	1.1	1.5
62.5°	1.1	0.7	0.7	0.7	0.7	0.7	0.7	0.7
65°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
67.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
70°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
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)