

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: **FLDSQ4C20D010 FEU4C209050 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: FLDSQ4C20D010 FEU4C209050 F4LC-SQLWW-H
 Description: 4 INCH 2000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 5000K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH H FINISH
 Light Source: -
 Ballast/Driver: -

Summary

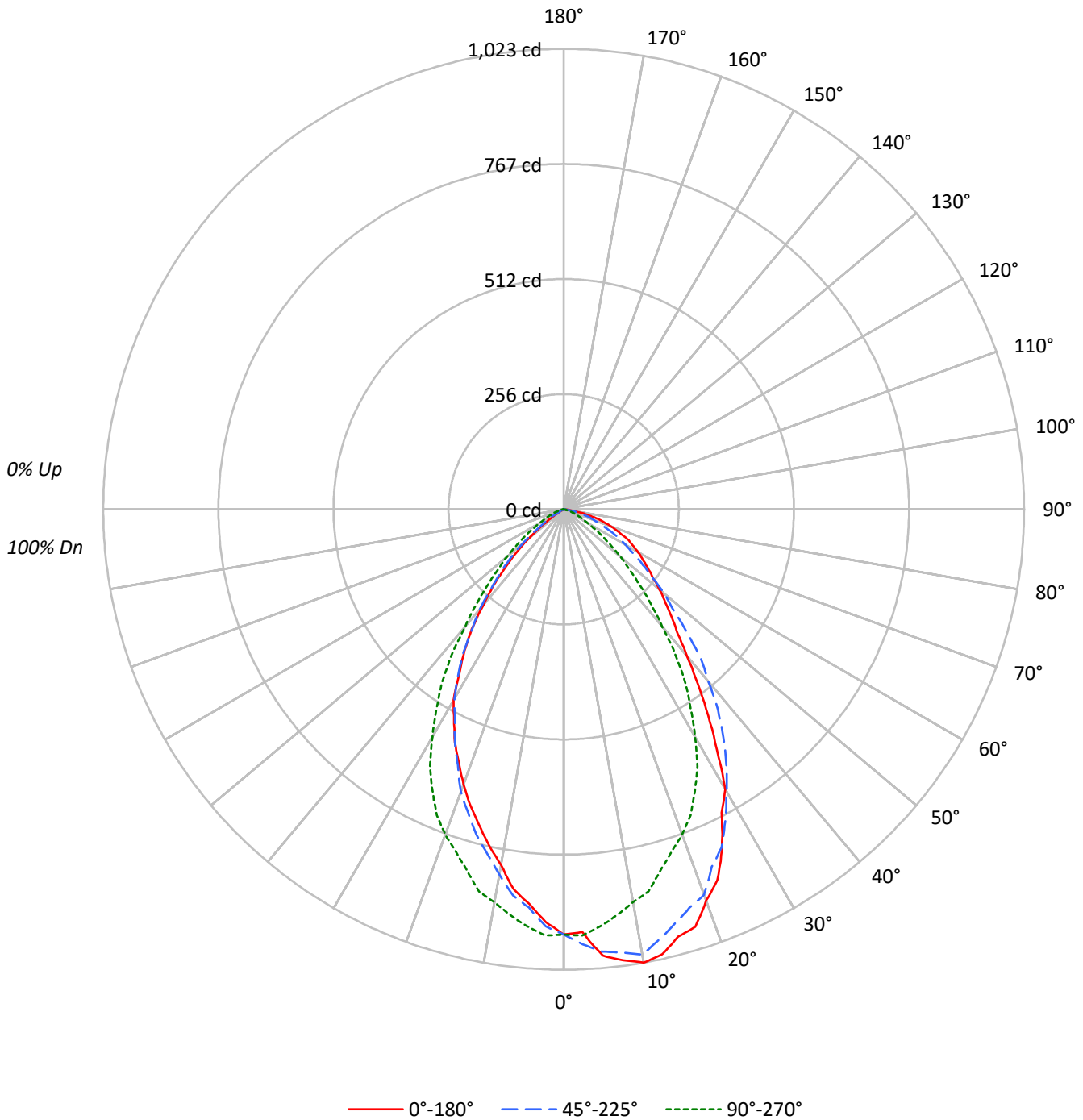
Lumens per Lamp: N/A
 Luminaire Lumens: 1354.0 lumens
 Efficiency: N/A
 Efficacy: 62.1 lumens/watt
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 21.8
 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: FLDSQ4C20D010 FEU4C209050 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°	91143	91143	91143
5°	96431	90068	85244
10°	100211	86896	78568
15°	98204	82931	72522
20°	95021	78962	66753
25°	88631	73428	60897
30°	80008	64989	54516
35°	65904	55633	45232
40°	53784	42939	34815
45°	46218	32613	25040
50°	41821	24828	15807
55°	38489	17916	5720
60°	36936	12235	868
65°	35685	8288	274
70°	31935	5755	339
75°	26171	2945	0
80°	16392	1278	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	88.5	6.5
10°-20°	238.4	17.6
20°-30°	318.4	23.5
30°-40°	302.2	22.3
40°-50°	208.9	15.4
50°-60°	115.4	8.5
60°-70°	57.3	4.2
70°-80°	22.6	1.7
80°-90°	2.2	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°	645.3	47.7
0°-40°	947.6	70.0
0°-60°	1271.9	93.9
0°-90°	1354.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1354.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	945	945	945	945	945	
5°	996	986	930	888	880	95
15°	983	954	830	749	726	278
25°	832	829	690	572	572	380
35°	560	618	472	388	384	351
45°	339	388	239	196	184	264
55°	229	215	106	54	34	206
65°	156	113	36	1	1	152
75°	70	43	8	0	0	75
85°	0	1	0	0	0	6
90°	0	0	0	0	0	

TEST NUMBER: P#
 CATALOG NUMBER: FLDSQ4C20D010 FEU4C209050 F4LC-SQLWW-H

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	944.6	944.6	944.6	944.6	944.6	944.6	944.6	944.6	944.6	944.6	944.6
2.5°	940.1	966.1	968.4	966.1	969.5	968.4	974.0	968.4	975.2	965.0	967.3
5°	995.6	985.4	1006.9	995.6	995.6	994.5	991.0	989.9	994.5	979.7	986.5
7.5°	1010.3	1025.0	1044.3	1020.5	1021.6	1021.6	1014.8	1012.6	1012.6	985.4	993.3
10°	1022.8	1013.7	1023.9	1014.8	1022.8	1021.6	1026.1	1011.4	1021.6	1005.8	1004.6
12.5°	1012.6	1009.1	1022.8	1008.0	1003.5	1004.6	999.0	995.6	999.0	980.8	979.7
15°	983.1	986.5	1006.9	991.0	988.8	986.5	979.7	968.4	977.5	952.5	953.7
17.5°	972.9	967.3	970.7	957.1	960.5	958.2	957.1	946.9	944.6	928.7	928.7
20°	925.4	937.8	937.8	928.7	928.7	927.6	912.9	922.0	911.7	907.2	911.7
22.5°	892.5	893.6	893.6	885.7	886.9	882.3	874.4	868.7	874.4	868.7	859.7
25°	832.5	834.8	848.3	833.6	831.3	835.9	829.1	825.7	824.6	811.0	829.1
27.5°	760.0	782.6	781.5	775.8	782.6	773.6	770.2	771.3	774.7	773.6	778.1
30°	718.1	721.5	724.9	720.4	721.5	718.1	718.1	719.2	728.3	724.9	723.7
32.5°	633.1	644.4	653.5	653.5	654.6	658.1	656.9	680.7	686.4	675.1	672.8
35°	559.5	567.4	575.3	576.5	591.2	592.3	593.5	600.3	616.1	619.5	618.4
37.5°	489.3	497.2	499.5	509.7	517.6	525.5	534.6	543.7	557.2	568.6	562.9
40°	427.0	430.4	436.1	440.6	456.4	456.4	461.0	479.1	493.8	502.9	501.7
42.5°	374.9	376.0	380.5	388.5	403.2	399.8	403.2	415.7	437.2	438.3	450.8
45°	338.7	337.5	340.9	342.0	351.1	355.7	357.9	367.0	385.1	387.3	388.5
47.5°	305.8	304.7	310.3	312.6	316.0	320.5	320.5	321.7	328.5	334.1	329.6
50°	278.6	278.6	278.6	280.9	286.6	285.4	286.6	291.1	294.5	292.2	291.1
52.5°	249.2	253.7	257.1	258.3	259.4	259.4	260.5	258.3	257.1	253.7	246.9
55°	228.8	233.3	233.3	233.3	233.3	237.8	232.2	233.3	233.3	224.3	215.2
57.5°	208.4	212.9	216.3	211.8	216.3	211.8	209.5	208.4	206.1	197.1	183.5
60°	191.4	193.7	192.5	191.4	193.7	190.3	188.0	183.5	181.2	168.8	159.7
62.5°	172.2	173.3	174.4	172.2	169.9	168.8	164.2	157.4	152.9	142.7	134.8
65°	156.3	152.9	151.8	150.6	148.4	145.0	141.6	133.7	130.2	121.2	113.2
67.5°	132.5	131.4	133.7	130.2	124.6	124.6	121.2	114.4	106.5	100.8	92.9
70°	113.2	112.1	109.9	106.5	105.3	100.8	100.8	92.9	90.6	80.4	73.6
72.5°	92.9	92.9	89.5	86.1	82.7	80.4	79.3	73.6	70.2	64.6	58.9
75°	70.2	70.2	69.1	65.7	63.4	61.1	60.0	55.5	52.1	46.5	43.0
77.5°	49.8	49.8	45.3	43.0	44.2	41.9	39.6	38.5	37.4	34.0	29.5
80°	29.5	28.3	24.9	26.0	24.9	24.9	23.8	22.6	20.4	18.1	15.8
82.5°	7.9	9.1	9.1	9.1	10.2	7.9	7.9	7.9	9.1	9.1	5.7
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2
87.5°	1.2	2.3	4.5	4.5	4.5	4.5	4.5	3.4	3.4	3.4	2.3
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°	944.6	944.6	944.6	944.6	944.6	944.6	944.6	944.6	944.6	944.6	944.6
2.5°	955.9	954.8	955.9	948.0	966.1	952.5	950.3	948.0	955.9	948.0	936.7
5°	976.3	965.0	961.6	958.2	968.4	952.5	949.2	950.3	944.6	929.9	931.0
7.5°	983.1	972.9	962.7	941.2	950.3	946.9	937.8	931.0	922.0	909.5	907.2
10°	985.4	974.0	959.3	952.5	938.9	934.4	931.0	919.7	908.4	886.9	881.2
12.5°	978.6	965.0	946.9	941.2	931.0	916.3	908.4	897.0	886.9	869.9	857.4
15°	949.2	937.8	932.2	912.9	908.4	899.3	883.4	867.6	852.9	830.2	823.4
17.5°	915.2	910.6	905.0	890.2	889.1	880.1	865.3	851.7	832.5	797.3	786.0
20°	880.1	880.1	861.9	856.3	867.6	849.4	838.1	825.7	786.0	769.0	748.7
22.5°	854.0	841.5	831.3	822.3	823.4	812.1	796.2	771.3	756.6	736.2	712.4
25°	803.0	807.6	784.9	781.5	784.9	758.8	750.9	730.5	709.0	689.7	671.6
27.5°	771.3	758.8	744.1	731.7	731.7	721.5	698.8	694.3	661.4	643.3	620.7
30°	723.7	714.7	702.2	684.1	681.8	673.9	655.8	644.4	610.5	583.3	570.8
32.5°	663.7	660.3	650.1	629.8	623.0	613.9	591.2	572.0	556.1	525.5	510.8
35°	620.7	608.2	586.7	569.7	564.0	548.2	530.0	516.5	499.5	472.3	453.1
37.5°	556.1	543.7	523.3	502.9	502.9	487.0	462.1	448.5	424.7	408.9	393.0
40°	499.5	483.6	463.3	439.5	436.1	413.4	403.2	380.5	365.8	340.9	338.7
42.5°	436.1	421.3	403.2	385.1	371.5	360.2	334.1	317.1	301.3	288.8	285.4
45°	378.3	359.0	343.2	320.5	306.9	293.4	276.4	265.0	252.6	239.0	231.1
47.5°	328.5	312.6	289.9	269.6	256.0	249.2	229.9	217.5	207.3	198.2	192.5
50°	277.5	258.3	245.8	223.1	220.8	205.0	189.2	179.0	173.3	165.4	157.4
52.5°	239.0	220.8	203.9	186.9	177.8	172.2	157.4	147.2	139.3	133.7	129.1
55°	201.6	185.7	172.2	155.2	149.5	141.6	124.6	122.3	114.4	106.5	100.8
57.5°	173.3	158.5	142.7	131.4	121.2	115.5	101.9	92.9	88.3	81.6	75.9
60°	147.2	131.4	118.9	105.3	100.8	92.9	82.7	74.8	69.1	63.4	57.8
62.5°	123.4	109.9	96.3	84.9	78.1	73.6	65.7	58.9	53.2	48.7	44.2
65°	101.9	89.5	78.1	66.8	63.4	57.8	52.1	46.5	41.9	36.3	31.7
67.5°	83.8	72.5	61.1	53.2	49.8	47.6	40.8	35.1	31.7	28.3	23.8
70°	65.7	57.8	48.7	41.9	38.5	35.1	30.6	27.2	22.6	20.4	17.0
72.5°	51.0	44.2	36.3	30.6	28.3	26.0	21.5	18.1	15.8	13.6	11.3
75°	36.3	30.6	26.0	20.4	19.3	18.1	14.7	12.5	10.2	7.9	6.8
77.5°	24.9	20.4	15.8	13.6	12.5	10.2	9.1	6.8	5.7	4.5	3.4
80°	13.6	10.2	7.9	6.8	5.7	4.5	4.5	3.4	2.3	2.3	1.2
82.5°	4.5	3.4	2.3	1.2	1.2	1.2	1.2	1.2	1.2	0.0	1.2
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°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	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°	944.6	944.6	944.6	944.6	944.6	944.6	944.6	944.6	944.6	944.6	944.6
2.5°	943.5	931.0	934.4	934.4	932.2	932.2	929.9	926.5	927.6	920.8	906.1
5°	933.3	917.4	915.2	917.4	908.4	906.1	901.6	908.4	888.0	895.9	886.9
7.5°	903.8	889.1	885.7	893.6	882.3	875.5	874.4	883.4	865.3	856.3	846.1
10°	871.0	865.3	855.1	849.4	846.1	847.2	838.1	826.8	823.4	821.1	812.1
12.5°	841.5	829.1	820.0	813.2	811.0	811.0	796.2	794.0	783.8	781.5	767.9
15°	806.4	791.7	786.0	777.0	769.0	773.6	756.6	752.0	748.7	733.9	736.2
17.5°	775.8	760.0	746.4	740.7	733.9	727.2	711.3	714.7	706.7	706.7	686.4
20°	736.2	719.2	709.0	697.7	697.7	688.6	677.3	678.4	668.2	658.1	639.9
22.5°	694.3	676.2	663.7	659.2	647.9	645.6	632.0	628.6	615.0	616.1	600.3
25°	650.1	632.0	615.0	616.1	606.0	601.4	593.5	577.7	572.0	565.2	560.7
27.5°	598.0	585.6	570.8	569.7	550.5	551.6	541.4	536.9	523.3	526.7	516.5
30°	550.5	532.4	518.7	515.4	507.4	505.1	489.3	482.5	484.8	475.7	470.0
32.5°	501.7	474.6	468.9	462.1	457.6	451.9	440.6	445.1	434.9	437.2	428.1
35°	437.2	425.9	411.1	411.1	406.6	402.1	394.2	398.7	388.5	384.0	374.9
37.5°	382.8	372.6	357.9	362.4	354.5	347.7	340.9	342.0	333.0	331.9	322.8
40°	323.9	318.2	308.1	308.1	302.4	302.4	299.0	295.6	289.9	283.1	272.9
42.5°	268.4	263.9	259.4	260.5	252.6	259.4	250.3	256.0	237.8	236.7	229.9
45°	227.6	217.5	218.6	214.1	209.5	211.8	203.9	206.1	196.0	193.7	186.9
47.5°	184.6	181.2	174.4	172.2	172.2	168.8	165.4	164.2	159.7	154.0	145.0
50°	151.8	139.3	137.0	133.7	131.4	131.4	126.9	120.1	121.2	115.5	106.5
52.5°	118.9	108.7	104.2	103.1	98.6	96.3	90.6	86.1	82.7	80.4	74.8
55°	91.7	82.7	77.0	77.0	70.2	70.2	62.3	58.9	54.4	49.8	46.5
57.5°	69.1	64.6	58.9	54.4	52.1	46.5	41.9	36.3	32.8	26.0	21.5
60°	52.1	47.6	41.9	38.5	36.3	30.6	24.9	20.4	12.5	10.2	9.1
62.5°	38.5	34.0	28.3	26.0	23.8	19.3	13.6	6.8	3.4	3.4	3.4
65°	28.3	22.6	18.1	15.8	13.6	10.2	4.5	2.3	1.2	1.2	1.2
67.5°	19.3	14.7	10.2	9.1	6.8	3.4	1.2	1.2	1.2	1.2	1.2
70°	12.5	9.1	4.5	3.4	2.3	1.2	1.2	1.2	1.2	1.2	1.2
72.5°	7.9	4.5	2.3	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	4.5	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	2.3	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	1.2	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	1.2	1.2	1.2
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: FLDSQ4C20D010 FEU4C209050 F4LC-SQLWW-H

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	944.6	944.6	944.6	944.6	944.6	944.6	944.6	944.6
2.5°	922.0	914.0	918.5	908.4	912.9	920.8	915.2	917.4
5°	890.2	885.7	880.1	865.3	876.6	885.7	881.2	880.1
7.5°	856.3	840.4	848.3	843.8	841.5	850.6	840.4	851.7
10°	821.1	809.8	808.7	800.8	800.8	807.6	808.7	801.9
12.5°	769.0	763.4	763.4	762.3	761.1	767.9	769.0	765.7
15°	731.7	729.4	723.7	722.6	715.8	726.0	727.2	726.0
17.5°	686.4	687.5	681.8	681.8	686.4	689.7	680.7	689.7
20°	655.8	650.1	647.9	637.6	643.3	649.0	649.0	650.1
22.5°	611.6	602.5	606.0	600.3	596.9	604.8	604.8	608.2
25°	561.8	561.8	564.0	560.7	562.9	567.4	564.0	572.0
27.5°	514.2	518.7	518.7	514.2	516.5	530.0	535.7	526.7
30°	470.0	471.2	474.6	472.3	479.1	483.6	482.5	489.3
32.5°	420.2	425.9	428.1	424.7	427.0	437.2	431.5	430.4
35°	381.7	371.5	370.4	371.5	376.0	378.3	376.0	384.0
37.5°	326.2	322.8	318.2	319.4	322.8	327.3	329.6	335.2
40°	272.9	268.4	268.4	267.3	263.9	276.4	276.4	276.4
42.5°	226.5	225.4	219.7	219.7	224.3	227.6	225.4	233.3
45°	185.7	181.2	177.8	177.8	181.2	181.2	184.6	183.5
47.5°	146.1	141.6	142.7	139.3	142.7	147.2	141.6	142.7
50°	109.9	109.9	107.6	109.9	108.7	109.9	107.6	105.3
52.5°	74.8	84.9	86.1	81.6	71.4	62.3	56.6	61.1
55°	43.0	38.5	38.5	37.4	35.1	34.0	30.6	34.0
57.5°	21.5	19.3	19.3	19.3	18.1	17.0	14.7	14.7
60°	9.1	7.9	7.9	6.8	5.7	4.5	3.4	4.5
62.5°	3.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3
65°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
67.5°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
70°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
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)