

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 FEU4C209040 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 FEU4C209040 F4LC-SQLWW-H
 Description: 4 INCH 2000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 4000K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH H FINISH
 Light Source: -
 Ballast/Driver: -

Summary

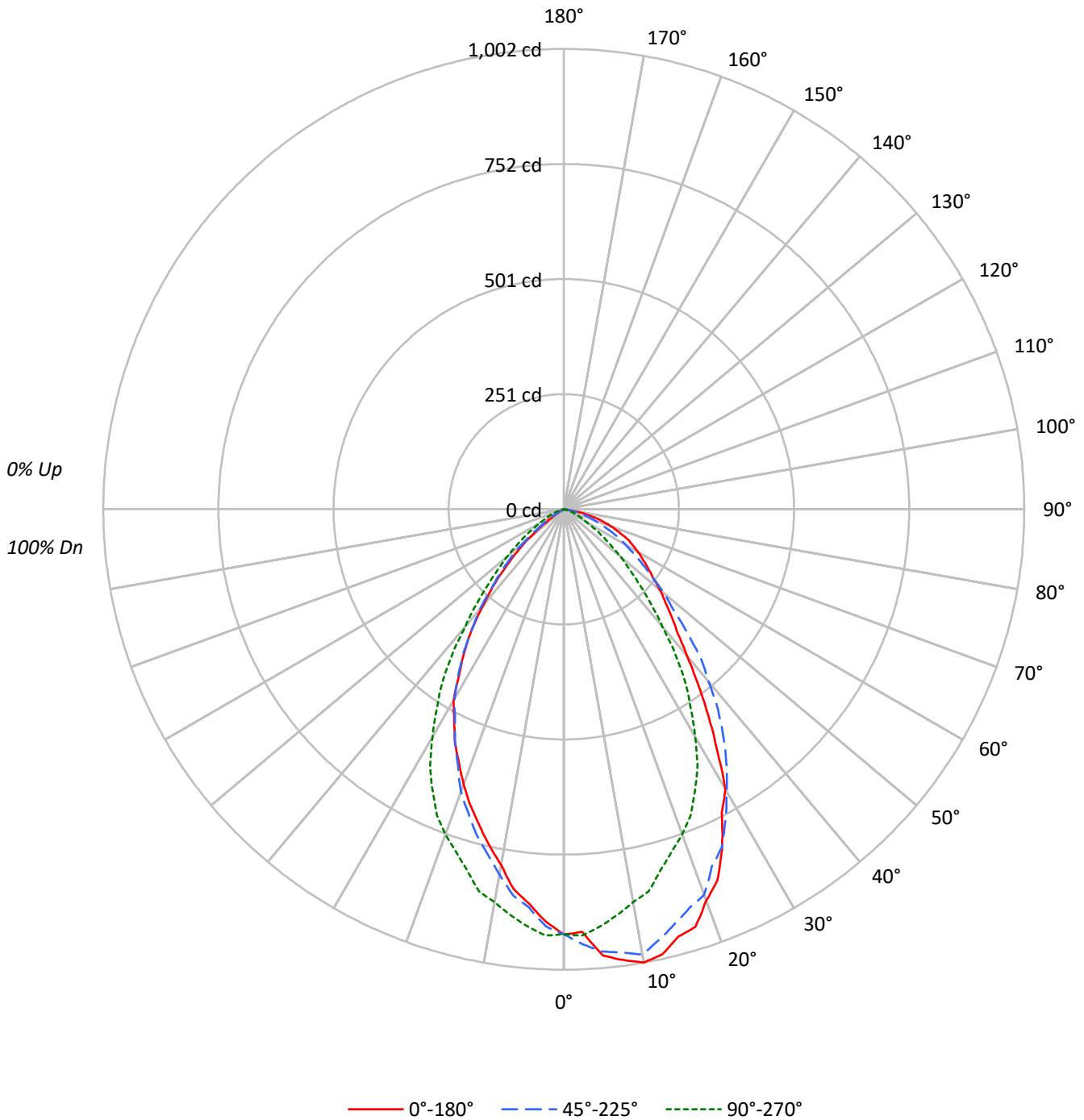
Lumens per Lamp: N/A
 Luminaire Lumens: 1326.0 lumens
 Efficiency: N/A
 Efficacy: 60.8 lumens/watt
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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 FEU4C209040 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	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°	89252	89252	89252
5°	94436	88208	83481
10°	98134	85093	76942
15°	96177	81213	71024
20°	93050	77329	65377
25°	86800	71916	59630
30°	78348	63641	53390
35°	64538	54478	44289
40°	52675	42057	34084
45°	45262	31944	24521
50°	40965	24318	15491
55°	37699	17546	5602
60°	36183	11984	849
65°	34955	8105	251
70°	31287	5614	310
75°	25649	2908	0
80°	16058	1222	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	86.7	6.5
10°-20°	233.5	17.6
20°-30°	311.8	23.5
30°-40°	296.0	22.3
40°-50°	204.6	15.4
50°-60°	113.1	8.5
60°-70°	56.1	4.2
70°-80°	22.1	1.7
80°-90°	2.1	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°	632.0	47.7
0°-40°	928.0	70.0
0°-60°	1245.6	93.9
0°-90°	1326.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1326.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	925	925	925	925	925	
5°	975	966	911	870	862	93
15°	963	934	813	733	711	272
25°	815	812	676	560	560	372
35°	548	606	462	380	376	343
45°	332	380	234	192	180	259
55°	224	211	104	53	33	202
65°	153	111	36	1	1	149
75°	69	42	8	0	0	73
85°	0	1	0	0	0	6
90°	0	0	0	0	0	

TEST NUMBER: P#
 CATALOG NUMBER: FLDSQ4C20D010 FEU4C209040 F4LC-SQLWW-H

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	925.0	925.0	925.0	925.0	925.0	925.0	925.0	925.0	925.0	925.0	925.0
2.5°	920.6	946.1	948.3	946.1	949.5	948.3	953.9	948.3	955.0	945.0	947.3
5°	975.0	965.0	986.1	975.0	975.0	973.9	970.5	969.4	973.9	959.5	966.1
7.5°	989.4	1003.8	1022.7	999.4	1000.5	1000.5	993.8	991.6	991.6	965.0	972.8
10°	1001.6	992.7	1002.7	993.8	1001.6	1000.5	1004.9	990.5	1000.5	985.0	983.8
12.5°	991.6	988.3	1001.6	987.2	982.8	983.8	978.3	975.0	978.3	960.6	959.5
15°	962.8	966.1	986.1	970.5	968.3	966.1	959.5	948.3	957.2	932.8	934.0
17.5°	952.8	947.3	950.6	937.3	940.6	938.4	937.3	927.3	925.0	909.5	909.5
20°	906.2	918.4	918.4	909.5	909.5	908.4	894.0	902.9	892.9	888.5	892.9
22.5°	874.0	875.2	875.2	867.4	868.5	864.1	856.3	850.7	856.3	850.7	841.9
25°	815.3	817.5	830.8	816.4	814.1	818.6	811.9	808.6	807.5	794.2	811.9
27.5°	744.3	766.4	765.3	759.8	766.4	757.6	754.3	755.4	758.7	757.6	762.0
30°	703.2	706.6	709.9	705.5	706.6	703.2	703.2	704.3	713.2	709.9	708.8
32.5°	620.0	631.1	640.0	640.0	641.1	644.5	643.3	666.6	672.2	661.1	658.9
35°	547.9	555.7	563.5	564.6	579.0	580.1	581.2	587.9	603.4	606.7	605.6
37.5°	479.2	486.9	489.1	499.1	506.9	514.6	523.6	532.4	545.7	556.8	551.3
40°	418.2	421.5	427.0	431.5	447.0	447.0	451.4	469.2	483.6	492.5	491.4
42.5°	367.2	368.2	372.7	380.5	394.9	391.5	394.9	407.1	428.1	429.3	441.5
45°	331.7	330.5	333.9	335.0	343.9	348.3	350.5	359.4	377.1	379.3	380.5
47.5°	299.5	298.4	303.9	306.1	309.5	313.9	313.9	315.0	321.7	327.2	322.8
50°	272.9	272.9	272.9	275.1	280.6	279.5	280.6	285.1	288.4	286.2	285.1
52.5°	244.0	248.4	251.8	252.9	254.0	254.0	255.1	252.9	251.8	248.4	241.8
55°	224.1	228.5	228.5	228.5	228.5	232.9	227.4	228.5	228.5	219.6	210.8
57.5°	204.1	208.5	211.8	207.4	211.8	207.4	205.2	204.1	201.9	193.0	179.7
60°	187.5	189.7	188.6	187.5	189.7	186.3	184.1	179.7	177.5	165.3	156.4
62.5°	168.6	169.7	170.8	168.6	166.4	165.3	160.8	154.2	149.7	139.8	132.0
65°	153.1	149.7	148.6	147.5	145.3	142.0	138.7	130.9	127.5	118.7	110.9
67.5°	129.8	128.7	130.9	127.5	122.0	122.0	118.7	112.0	104.3	98.7	91.0
70°	110.9	109.8	107.6	104.3	103.2	98.7	98.7	91.0	88.7	78.7	72.1
72.5°	91.0	91.0	87.6	84.3	81.0	78.7	77.7	72.1	68.8	63.2	57.7
75°	68.8	68.8	67.7	64.3	62.1	59.9	58.8	54.4	51.0	45.5	42.2
77.5°	48.8	48.8	44.4	42.2	43.2	41.0	38.8	37.7	36.6	33.3	28.9
80°	28.9	27.7	24.4	25.5	24.4	24.4	23.3	22.2	19.9	17.7	15.5
82.5°	7.8	8.9	8.9	8.9	10.0	7.8	7.8	7.8	8.9	8.9	5.6
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1
87.5°	1.1	2.2	4.4	4.4	4.4	4.4	4.4	3.3	3.3	3.3	2.2
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°	925.0	925.0	925.0	925.0	925.0	925.0	925.0	925.0	925.0	925.0	925.0
2.5°	936.2	935.0	936.2	928.4	946.1	932.8	930.6	928.4	936.2	928.4	917.3
5°	956.1	945.0	941.7	938.4	948.3	932.8	929.5	930.6	925.0	910.7	911.8
7.5°	962.8	952.8	942.8	921.7	930.6	927.3	918.4	911.8	902.9	890.7	888.5
10°	965.0	953.9	939.5	932.8	919.5	915.1	911.8	900.7	889.6	868.5	862.9
12.5°	958.3	945.0	927.3	921.7	911.8	897.3	889.6	878.5	868.5	851.9	839.7
15°	929.5	918.4	912.9	894.0	889.6	880.7	865.2	849.7	835.2	813.0	806.4
17.5°	896.2	891.8	886.2	871.8	870.7	861.9	847.4	834.1	815.3	780.9	769.8
20°	861.9	861.9	844.1	838.6	849.7	831.9	820.8	808.6	769.8	753.1	733.2
22.5°	836.4	824.1	814.1	805.3	806.4	795.3	779.8	755.4	740.9	721.0	697.7
25°	786.4	790.9	768.7	765.3	768.7	743.1	735.4	715.4	694.3	675.5	657.8
27.5°	755.4	743.1	728.8	716.5	716.5	706.6	684.4	680.0	647.8	630.0	607.8
30°	708.8	699.9	687.7	670.0	667.7	660.0	642.2	631.1	597.9	571.2	559.0
32.5°	650.0	646.7	636.7	616.7	610.1	601.2	579.0	560.1	544.6	514.6	500.3
35°	607.8	595.7	574.6	557.9	552.4	536.9	519.1	505.8	489.1	462.5	443.7
37.5°	544.6	532.4	512.4	492.5	492.5	477.0	452.6	439.3	416.0	400.4	384.9
40°	489.1	473.6	453.7	430.4	427.0	404.8	394.9	372.7	358.3	333.9	331.7
42.5°	427.0	412.6	394.9	377.1	363.8	352.7	327.2	310.6	295.1	282.9	279.5
45°	370.5	351.6	336.1	313.9	300.6	287.3	270.6	259.6	247.4	234.1	226.3
47.5°	321.7	306.1	283.9	264.0	250.7	244.0	225.1	213.0	203.0	194.1	188.6
50°	271.8	252.9	240.7	218.5	216.3	200.8	185.3	175.3	169.7	162.0	154.2
52.5°	234.1	216.3	199.6	183.0	174.1	168.6	154.2	144.2	136.5	130.9	126.5
55°	197.4	181.9	168.6	152.0	146.4	138.7	122.0	119.8	112.0	104.3	98.7
57.5°	169.7	155.3	139.8	128.7	118.7	113.2	99.8	91.0	86.5	79.9	74.3
60°	144.2	128.7	116.5	103.2	98.7	91.0	81.0	73.2	67.7	62.1	56.6
62.5°	120.9	107.6	94.3	83.2	76.5	72.1	64.3	57.7	52.1	47.7	43.2
65°	99.8	87.6	76.5	65.4	62.1	56.6	51.0	45.5	41.0	35.5	31.1
67.5°	82.1	71.0	59.9	52.1	48.8	46.6	39.9	34.4	31.1	27.7	23.3
70°	64.3	56.6	47.7	41.0	37.7	34.4	29.9	26.6	22.2	19.9	16.6
72.5°	49.9	43.2	35.5	29.9	27.7	25.5	21.1	17.7	15.5	13.3	11.1
75°	35.5	29.9	25.5	19.9	18.9	17.7	14.4	12.2	10.0	7.8	6.6
77.5°	24.4	19.9	15.5	13.3	12.2	10.0	8.9	6.6	5.6	4.4	3.3
80°	13.3	10.0	7.8	6.6	5.6	4.4	4.4	3.3	2.2	2.2	1.1
82.5°	4.4	3.3	2.2	1.1	1.1	1.1	1.1	1.1	1.1	0.0	1.1
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°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	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°	925.0	925.0	925.0	925.0	925.0	925.0	925.0	925.0	925.0	925.0	925.0
2.5°	924.0	911.8	915.1	915.1	912.9	912.9	910.7	907.3	908.4	901.8	887.4
5°	914.0	898.5	896.2	898.5	889.6	887.4	882.9	889.6	869.6	877.4	868.5
7.5°	885.2	870.7	867.4	875.2	864.1	857.4	856.3	865.2	847.4	838.6	828.6
10°	853.0	847.4	837.4	831.9	828.6	829.7	820.8	809.7	806.4	804.2	795.3
12.5°	824.1	811.9	803.1	796.4	794.2	794.2	779.8	777.6	767.6	765.3	752.0
15°	789.7	775.3	769.8	760.9	753.1	757.6	740.9	736.5	733.2	718.8	721.0
17.5°	759.8	744.3	731.0	725.4	718.8	712.1	696.6	699.9	692.1	692.1	672.2
20°	721.0	704.3	694.3	683.3	683.3	674.4	663.3	664.4	654.4	644.5	626.7
22.5°	680.0	662.2	650.0	645.5	634.5	632.2	618.9	615.6	602.3	603.4	587.9
25°	636.7	618.9	602.3	603.4	593.4	589.0	581.2	565.7	560.1	553.5	549.1
27.5°	585.7	573.4	559.0	557.9	539.1	540.2	530.2	525.8	512.4	515.8	505.8
30°	539.1	521.3	508.0	504.7	496.9	494.7	479.2	472.5	474.8	465.8	460.3
32.5°	491.4	464.8	459.2	452.6	448.1	442.6	431.5	435.9	425.9	428.1	419.3
35°	428.1	417.0	402.6	402.6	398.2	393.8	386.0	390.5	380.5	376.0	367.2
37.5°	374.9	364.9	350.5	354.9	347.2	340.5	333.9	335.0	326.1	325.0	316.1
40°	317.2	311.7	301.7	301.7	296.2	296.2	292.8	289.5	283.9	277.3	267.3
42.5°	262.9	258.4	254.0	255.1	247.4	254.0	245.1	250.7	232.9	231.8	225.1
45°	222.9	213.0	214.1	209.6	205.2	207.4	199.6	201.9	191.9	189.7	183.0
47.5°	180.8	177.5	170.8	168.6	168.6	165.3	162.0	160.8	156.4	150.8	142.0
50°	148.6	136.5	134.2	130.9	128.7	128.7	124.2	117.6	118.7	113.2	104.3
52.5°	116.5	106.5	102.0	100.9	96.5	94.3	88.7	84.3	81.0	78.7	73.2
55°	89.8	81.0	75.4	75.4	68.8	68.8	61.0	57.7	53.2	48.8	45.5
57.5°	67.7	63.2	57.7	53.2	51.0	45.5	41.0	35.5	32.2	25.5	21.1
60°	51.0	46.6	41.0	37.7	35.5	29.9	24.4	19.9	12.2	10.0	8.9
62.5°	37.7	33.3	27.7	25.5	23.3	18.9	13.3	6.6	3.3	3.3	3.3
65°	27.7	22.2	17.7	15.5	13.3	10.0	4.4	2.2	1.1	1.1	1.1
67.5°	18.9	14.4	10.0	8.9	6.6	3.3	1.1	1.1	1.1	1.1	1.1
70°	12.2	8.9	4.4	3.3	2.2	1.1	1.1	1.1	1.1	1.1	1.1
72.5°	7.8	4.4	2.2	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	4.4	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	2.2	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	1.1	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	1.1	1.1	1.1
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 FEU4C209040 F4LC-SQLWW-H

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	925.0	925.0	925.0	925.0	925.0	925.0	925.0	925.0
2.5°	902.9	895.1	899.5	889.6	894.0	901.8	896.2	898.5
5°	871.8	867.4	861.9	847.4	858.5	867.4	862.9	861.9
7.5°	838.6	823.0	830.8	826.4	824.1	833.0	823.0	834.1
10°	804.2	793.1	792.0	784.2	784.2	790.9	792.0	785.3
12.5°	753.1	747.6	747.6	746.5	745.4	752.0	753.1	749.8
15°	716.5	714.3	708.8	707.7	701.0	711.0	712.1	711.0
17.5°	672.2	673.3	667.7	667.7	672.2	675.5	666.6	675.5
20°	642.2	636.7	634.5	624.5	630.0	635.6	635.6	636.7
22.5°	599.0	590.1	593.4	587.9	584.5	592.3	592.3	595.7
25°	550.2	550.2	552.4	549.1	551.3	555.7	552.4	560.1
27.5°	503.6	508.0	508.0	503.6	505.8	519.1	524.6	515.8
30°	460.3	461.4	464.8	462.5	469.2	473.6	472.5	479.2
32.5°	411.5	417.0	419.3	416.0	418.2	428.1	422.6	421.5
35°	373.8	363.8	362.7	363.8	368.2	370.5	368.2	376.0
37.5°	319.4	316.1	311.7	312.8	316.1	320.6	322.8	328.3
40°	267.3	262.9	262.9	261.8	258.4	270.6	270.6	270.6
42.5°	221.8	220.7	215.2	215.2	219.6	222.9	220.7	228.5
45°	181.9	177.5	174.1	174.1	177.5	177.5	180.8	179.7
47.5°	143.1	138.7	139.8	136.5	139.8	144.2	138.7	139.8
50°	107.6	107.6	105.4	107.6	106.5	107.6	105.4	103.2
52.5°	73.2	83.2	84.3	79.9	69.9	61.0	55.4	59.9
55°	42.2	37.7	37.7	36.6	34.4	33.3	29.9	33.3
57.5°	21.1	18.9	18.9	18.9	17.7	16.6	14.4	14.4
60°	8.9	7.8	7.8	6.6	5.6	4.4	3.3	4.4
62.5°	3.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2
65°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
67.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
70°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
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)