

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 FEU4C209027 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 FEU4C209027 F4LC-SQLWW-H  
 Description: 4 INCH 2000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 2700K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH H FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

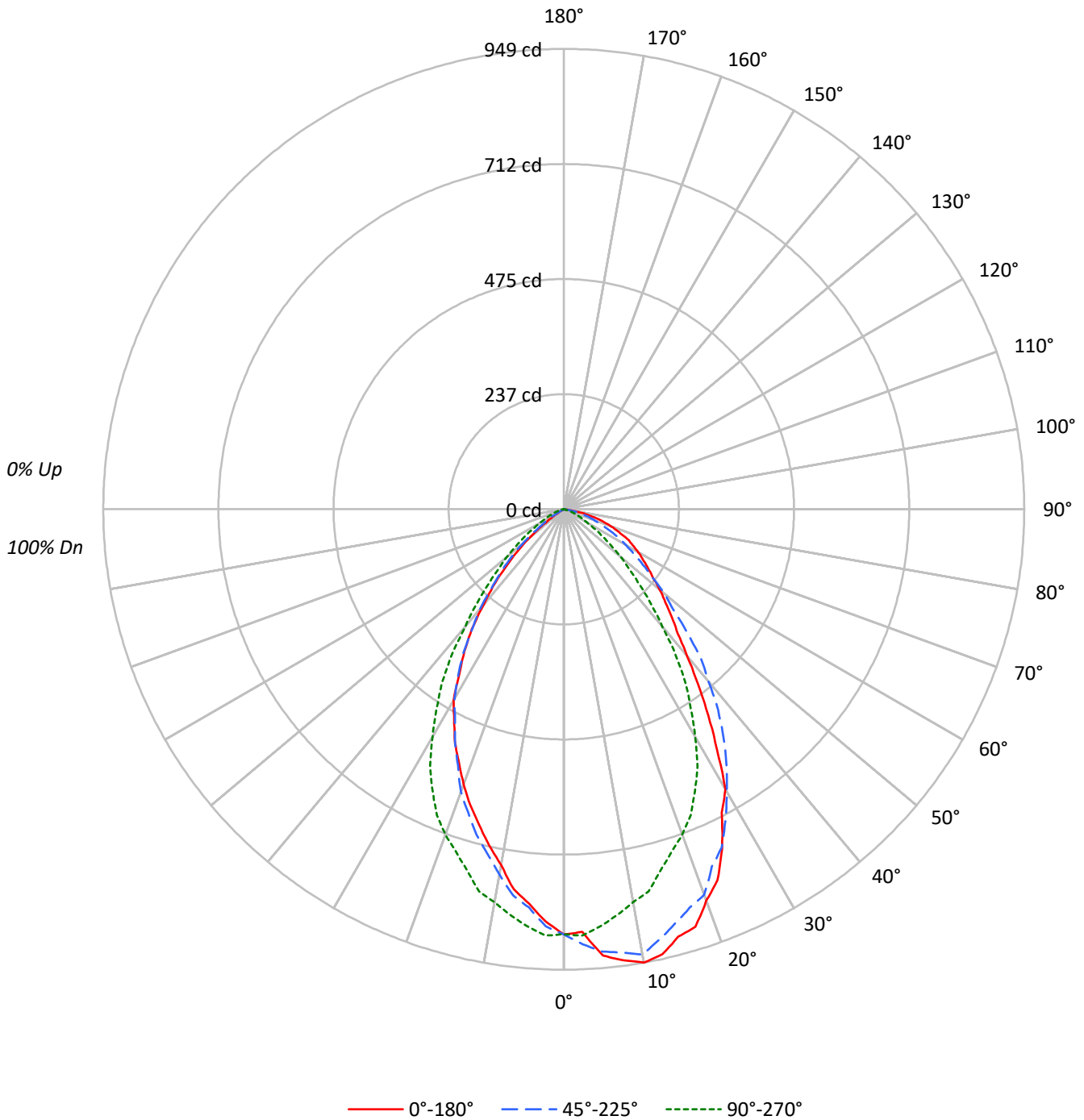
Lumens per Lamp: N/A  
 Luminaire Lumens: 1256.0 lumens  
 Efficiency: N/A  
 Efficacy: 57.6 lumens/watt  
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

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 FEU4C209027 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°	84544	84544	84544
5°	89448	83549	79074
10°	92951	80606	72876
15°	91092	76927	67278
20°	88142	73253	61927
25°	82211	68115	56490
30°	74214	60287	50572
35°	61134	51604	41957
40°	49892	39828	32295
45°	42861	30252	23225
50°	38803	23027	14666
55°	35697	16604	5299
60°	34273	11347	811
65°	33105	7671	251
70°	29622	5332	310
75°	24307	2759	0
80°	15169	1167	0
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	82.1	6.5
10°-20°	221.2	17.6
20°-30°	295.3	23.5
30°-40°	280.4	22.3
40°-50°	193.8	15.4
50°-60°	107.1	8.5
60°-70°	53.2	4.2
70°-80°	21.0	1.7
80°-90°	2.0	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°	598.6	47.7
0°-40°	879.0	70.0
0°-60°	1179.9	93.9
0°-90°	1256.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1256.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	876	876	876	876	876	
5°	924	915	863	824	816	88
15°	912	885	770	694	674	258
25°	772	769	640	531	531	352
35°	519	574	438	360	356	325
45°	314	360	222	182	170	245
55°	212	200	99	50	32	191
65°	145	105	34	1	1	141
75°	65	40	7	0	0	69
85°	0	1	0	0	0	6
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°	876.2	876.2	876.2	876.2	876.2	876.2	876.2	876.2	876.2	876.2	876.2
2.5°	872.0	896.2	898.3	896.2	899.3	898.3	903.5	898.3	904.6	895.1	897.2
5°	923.5	914.0	934.0	923.5	923.5	922.5	919.3	918.2	922.5	908.8	915.1
7.5°	937.2	950.8	968.7	946.6	947.7	947.7	941.4	939.3	939.3	914.0	921.4
10°	948.7	940.3	949.8	941.4	948.7	947.7	951.9	938.2	947.7	933.0	931.9
12.5°	939.3	936.1	948.7	935.1	930.9	931.9	926.7	923.5	926.7	909.8	908.8
15°	911.9	915.1	934.0	919.3	917.2	915.1	908.8	898.3	906.7	883.6	884.7
17.5°	902.5	897.2	900.4	887.8	891.0	888.9	887.8	878.4	876.2	861.5	861.5
20°	858.4	869.9	869.9	861.5	861.5	860.5	846.8	855.2	845.8	841.6	845.8
22.5°	827.9	829.0	829.0	821.6	822.7	818.5	811.1	805.8	811.1	805.8	797.4
25°	772.2	774.3	786.9	773.3	771.2	775.4	769.1	765.9	764.9	752.3	769.1
27.5°	705.0	726.0	724.9	719.7	726.0	717.6	714.4	715.5	718.6	717.6	721.8
30°	666.1	669.3	672.4	668.2	669.3	666.1	666.1	667.2	675.5	672.4	671.4
32.5°	587.3	597.8	606.2	606.2	607.3	610.4	609.4	631.4	636.7	626.2	624.1
35°	519.0	526.4	533.7	534.8	548.4	549.5	550.5	556.8	571.5	574.7	573.6
37.5°	453.9	461.2	463.3	472.8	480.2	487.5	495.9	504.3	516.9	527.4	522.2
40°	396.1	399.2	404.5	408.7	423.4	423.4	427.6	444.4	458.1	466.5	465.4
42.5°	347.8	348.8	353.0	360.4	374.0	370.9	374.0	385.6	405.5	406.6	418.2
45°	314.1	313.1	316.2	317.3	325.7	329.9	332.0	340.4	357.2	359.3	360.4
47.5°	283.7	282.6	287.9	290.0	293.1	297.3	297.3	298.4	304.7	309.9	305.8
50°	258.5	258.5	258.5	260.6	265.8	264.8	265.8	270.0	273.2	271.1	270.0
52.5°	231.1	235.3	238.5	239.6	240.6	240.6	241.7	239.6	238.5	235.3	229.0
55°	212.2	216.4	216.4	216.4	216.4	220.6	215.4	216.4	216.4	208.0	199.6
57.5°	193.3	197.5	200.7	196.5	200.7	196.5	194.4	193.3	191.2	182.8	170.2
60°	177.6	179.7	178.6	177.6	179.7	176.5	174.4	170.2	168.1	156.5	148.1
62.5°	159.7	160.7	161.8	159.7	157.6	156.5	152.3	146.0	141.8	132.4	125.0
65°	145.0	141.8	140.8	139.7	137.6	134.5	131.3	124.0	120.8	112.4	105.0
67.5°	122.9	121.9	124.0	120.8	115.6	115.6	112.4	106.1	98.7	93.5	86.2
70°	105.0	104.0	101.9	98.7	97.7	93.5	93.5	86.2	84.1	74.6	68.3
72.5°	86.2	86.2	83.0	79.9	76.7	74.6	73.6	68.3	65.2	59.9	54.6
75°	65.2	65.2	64.1	60.9	58.8	56.7	55.7	51.5	48.3	43.1	39.9
77.5°	46.2	46.2	42.0	39.9	41.0	38.9	36.8	35.7	34.7	31.5	27.3
80°	27.3	26.3	23.1	24.2	23.1	23.1	22.1	21.0	18.9	16.8	14.7
82.5°	7.4	8.4	8.4	8.4	9.5	7.4	7.4	7.4	8.4	8.4	5.3
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	2.1	4.2	4.2	4.2	4.2	4.2	3.2	3.2	3.2	2.1
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°	876.2	876.2	876.2	876.2	876.2	876.2	876.2	876.2	876.2	876.2	876.2
2.5°	886.8	885.7	886.8	879.4	896.2	883.6	881.5	879.4	886.8	879.4	868.9
5°	905.6	895.1	892.0	888.9	898.3	883.6	880.5	881.5	876.2	862.6	863.6
7.5°	911.9	902.5	893.0	873.1	881.5	878.4	869.9	863.6	855.2	843.7	841.6
10°	914.0	903.5	889.9	883.6	871.0	866.8	863.6	853.1	842.6	822.7	817.4
12.5°	907.7	895.1	878.4	873.1	863.6	850.0	842.6	832.1	822.7	806.9	795.3
15°	880.5	869.9	864.7	846.8	842.6	834.2	819.5	804.8	791.1	770.1	763.8
17.5°	848.9	844.7	839.5	825.8	824.8	816.4	802.7	790.1	772.2	739.6	729.1
20°	816.4	816.4	799.5	794.3	804.8	788.0	777.5	765.9	729.1	713.4	694.5
22.5°	792.2	780.6	771.2	762.8	763.8	753.3	738.6	715.5	701.8	682.9	660.9
25°	744.9	749.1	728.1	724.9	728.1	703.9	696.6	677.6	657.7	639.8	623.0
27.5°	715.5	703.9	690.3	678.7	678.7	669.3	648.3	644.1	613.6	596.8	575.7
30°	671.4	663.0	651.4	634.6	632.5	625.1	608.3	597.8	566.3	541.1	529.5
32.5°	615.7	612.5	603.1	584.2	577.9	569.4	548.4	530.6	515.9	487.5	473.9
35°	575.7	564.2	544.2	528.5	523.2	508.5	491.7	479.1	463.3	438.1	420.3
37.5°	515.9	504.3	485.4	466.5	466.5	451.8	428.7	416.1	394.0	379.3	364.6
40°	463.3	448.6	429.7	407.7	404.5	383.5	374.0	353.0	339.3	316.2	314.1
42.5°	404.5	390.8	374.0	357.2	344.6	334.1	309.9	294.2	279.5	267.9	264.8
45°	350.9	333.0	318.3	297.3	284.7	272.1	256.4	245.9	234.3	221.7	214.3
47.5°	304.7	290.0	269.0	250.1	237.5	231.1	213.3	201.7	192.3	183.9	178.6
50°	257.4	239.6	228.0	207.0	204.9	190.2	175.5	166.0	160.7	153.4	146.0
52.5°	221.7	204.9	189.1	173.4	164.9	159.7	146.0	136.6	129.2	124.0	119.8
55°	187.0	172.3	159.7	143.9	138.7	131.3	115.6	113.5	106.1	98.7	93.5
57.5°	160.7	147.1	132.4	121.9	112.4	107.2	94.5	86.2	82.0	75.7	70.4
60°	136.6	121.9	110.3	97.7	93.5	86.2	76.7	69.4	64.1	58.8	53.6
62.5°	114.5	101.9	89.3	78.8	72.5	68.3	60.9	54.6	49.4	45.2	41.0
65°	94.5	83.0	72.5	62.0	58.8	53.6	48.3	43.1	38.9	33.6	29.4
67.5°	77.8	67.3	56.7	49.4	46.2	44.1	37.8	32.6	29.4	26.3	22.1
70°	60.9	53.6	45.2	38.9	35.7	32.6	28.4	25.2	21.0	18.9	15.8
72.5°	47.3	41.0	33.6	28.4	26.3	24.2	20.0	16.8	14.7	12.6	10.5
75°	33.6	28.4	24.2	18.9	17.9	16.8	13.7	11.6	9.5	7.4	6.3
77.5°	23.1	18.9	14.7	12.6	11.6	9.5	8.4	6.3	5.3	4.2	3.2
80°	12.6	9.5	7.4	6.3	5.3	4.2	4.2	3.2	2.1	2.1	1.1
82.5°	4.2	3.2	2.1	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°	876.2	876.2	876.2	876.2	876.2	876.2	876.2	876.2	876.2	876.2	876.2
2.5°	875.2	863.6	866.8	866.8	864.7	864.7	862.6	859.4	860.5	854.2	840.5
5°	865.7	851.0	848.9	851.0	842.6	840.5	836.3	842.6	823.7	831.1	822.7
7.5°	838.4	824.8	821.6	829.0	818.5	812.1	811.1	819.5	802.7	794.3	784.8
10°	807.9	802.7	793.2	788.0	784.8	785.9	777.5	767.0	763.8	761.7	753.3
12.5°	780.6	769.1	760.7	754.4	752.3	752.3	738.6	736.5	727.0	724.9	712.3
15°	748.0	734.4	729.1	720.7	713.4	717.6	701.8	697.6	694.5	680.8	682.9
17.5°	719.7	705.0	692.4	687.1	680.8	674.5	659.8	663.0	655.6	655.6	636.7
20°	682.9	667.2	657.7	647.2	647.2	638.8	628.3	629.3	619.9	610.4	593.6
22.5°	644.1	627.2	615.7	611.5	601.0	598.9	586.3	583.1	570.5	571.5	556.8
25°	603.1	586.3	570.5	571.5	562.1	557.9	550.5	535.8	530.6	524.3	520.1
27.5°	554.7	543.2	529.5	528.5	510.6	511.6	502.2	498.0	485.4	488.6	479.1
30°	510.6	493.8	481.2	478.1	470.7	468.6	453.9	447.6	449.7	441.3	436.0
32.5°	465.4	440.2	435.0	428.7	424.5	419.2	408.7	412.9	403.4	405.5	397.1
35°	405.5	395.0	381.4	381.4	377.2	373.0	365.6	369.8	360.4	356.2	347.8
37.5°	355.1	345.7	332.0	336.2	328.8	322.5	316.2	317.3	308.9	307.9	299.4
40°	300.5	295.2	285.8	285.8	280.5	280.5	277.3	274.2	269.0	262.7	253.2
42.5°	249.0	244.8	240.6	241.7	234.3	240.6	232.2	237.5	220.6	219.6	213.3
45°	211.2	201.7	202.8	198.6	194.4	196.5	189.1	191.2	181.8	179.7	173.4
47.5°	171.3	168.1	161.8	159.7	159.7	156.5	153.4	152.3	148.1	142.9	134.5
50°	140.8	129.2	127.1	124.0	121.9	121.9	117.7	111.4	112.4	107.2	98.7
52.5°	110.3	100.8	96.6	95.6	91.4	89.3	84.1	79.9	76.7	74.6	69.4
55°	85.1	76.7	71.5	71.5	65.2	65.2	57.8	54.6	50.4	46.2	43.1
57.5°	64.1	59.9	54.6	50.4	48.3	43.1	38.9	33.6	30.5	24.2	20.0
60°	48.3	44.1	38.9	35.7	33.6	28.4	23.1	18.9	11.6	9.5	8.4
62.5°	35.7	31.5	26.3	24.2	22.1	17.9	12.6	6.3	3.2	3.2	3.2
65°	26.3	21.0	16.8	14.7	12.6	9.5	4.2	2.1	1.1	1.1	1.1
67.5°	17.9	13.7	9.5	8.4	6.3	3.2	1.1	1.1	1.1	1.1	1.1
70°	11.6	8.4	4.2	3.2	2.1	1.1	1.1	1.1	1.1	1.1	1.1
72.5°	7.4	4.2	2.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	4.2	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	2.1	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 FEU4C209027 F4LC-SQLWW-H

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	876.2	876.2	876.2	876.2	876.2	876.2	876.2	876.2
2.5°	855.2	847.9	852.1	842.6	846.8	854.2	848.9	851.0
5°	825.8	821.6	816.4	802.7	813.2	821.6	817.4	816.4
7.5°	794.3	779.6	786.9	782.7	780.6	789.0	779.6	790.1
10°	761.7	751.2	750.2	742.8	742.8	749.1	750.2	743.8
12.5°	713.4	708.2	708.2	707.1	706.0	712.3	713.4	710.2
15°	678.7	676.6	671.4	670.3	664.0	673.5	674.5	673.5
17.5°	636.7	637.7	632.5	632.5	636.7	639.8	631.4	639.8
20°	608.3	603.1	601.0	591.5	596.8	602.0	602.0	603.1
22.5°	567.3	558.9	562.1	556.8	553.7	561.0	561.0	564.2
25°	521.1	521.1	523.2	520.1	522.2	526.4	523.2	530.6
27.5°	477.0	481.2	481.2	477.0	479.1	491.7	496.9	488.6
30°	436.0	437.1	440.2	438.1	444.4	448.6	447.6	453.9
32.5°	389.8	395.0	397.1	394.0	396.1	405.5	400.3	399.2
35°	354.1	344.6	343.6	344.6	348.8	350.9	348.8	356.2
37.5°	302.6	299.4	295.2	296.3	299.4	303.7	305.8	311.0
40°	253.2	249.0	249.0	248.0	244.8	256.4	256.4	256.4
42.5°	210.1	209.1	203.8	203.8	208.0	211.2	209.1	216.4
45°	172.3	168.1	164.9	164.9	168.1	168.1	171.3	170.2
47.5°	135.5	131.3	132.4	129.2	132.4	136.6	131.3	132.4
50°	101.9	101.9	99.8	101.9	100.8	101.9	99.8	97.7
52.5°	69.4	78.8	79.9	75.7	66.2	57.8	52.5	56.7
55°	39.9	35.7	35.7	34.7	32.6	31.5	28.4	31.5
57.5°	20.0	17.9	17.9	17.9	16.8	15.8	13.7	13.7
60°	8.4	7.4	7.4	6.3	5.3	4.2	3.2	4.2
62.5°	3.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
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)