

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 FEU4C209030 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 FEU4C209030 F4LC-SQLWW-H  
 Description: 4 INCH 2000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH H FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

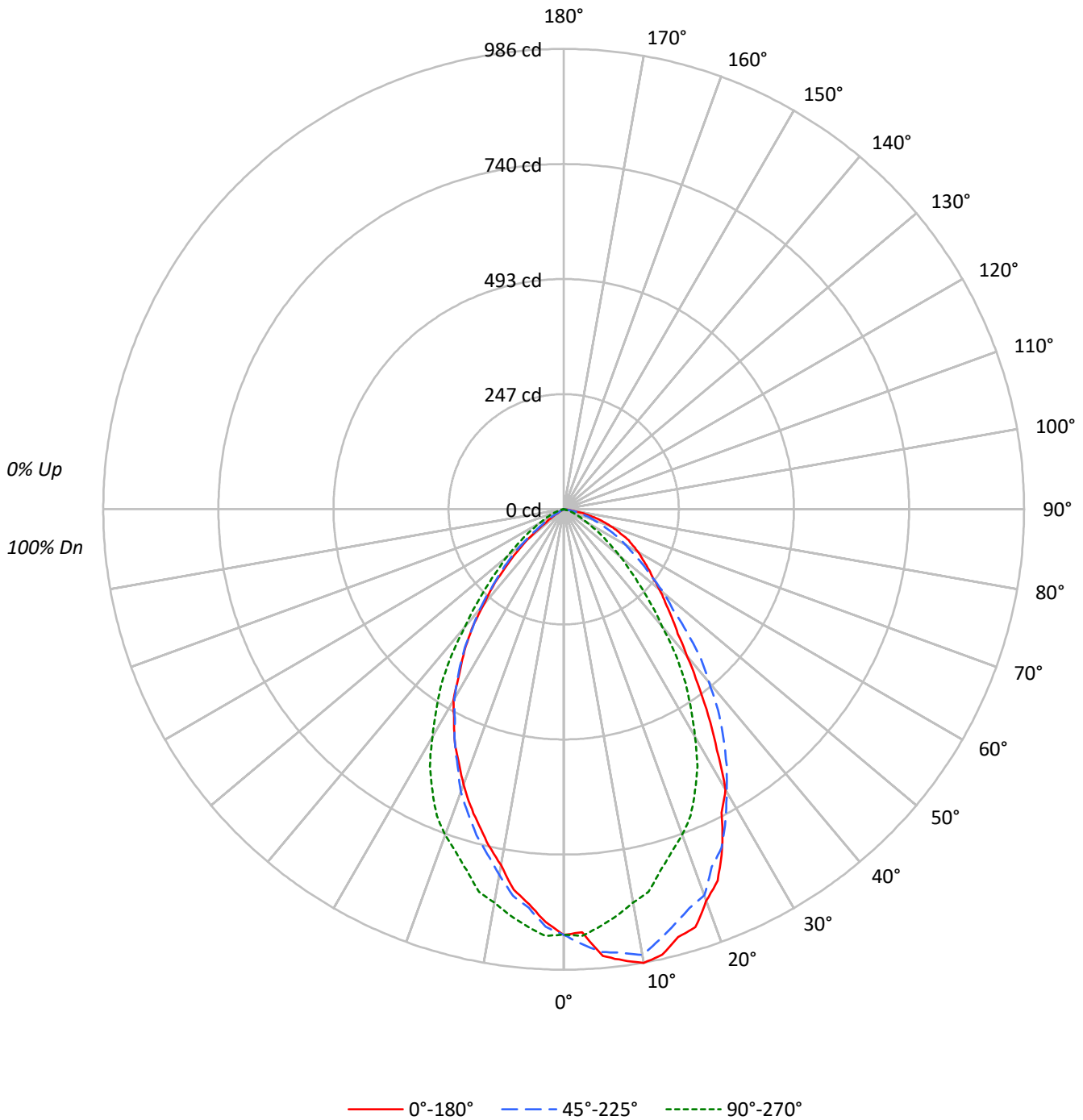
Lumens per Lamp: N/A  
 Luminaire Lumens: 1306.0 lumens  
 Efficiency: N/A  
 Efficacy: 59.9 lumens/watt  
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

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 FEU4C209030 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°	87911	87911	87911
5°	93012	86871	82222
10°	96655	83810	75776
15°	94718	79994	69955
20°	91653	76169	64391
25°	85490	70830	58736
30°	77167	62683	52588
35°	63572	53666	43630
40°	51882	41415	33580
45°	44580	31453	24153
50°	40335	23943	15251
55°	37127	17277	5518
60°	35624	11810	849
65°	34407	7991	251
70°	30807	5529	310
75°	25276	2871	0
80°	15781	1222	0
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	85.4	6.5
10°-20°	230.0	17.6
20°-30°	307.1	23.5
30°-40°	291.5	22.3
40°-50°	201.5	15.4
50°-60°	111.3	8.5
60°-70°	55.3	4.2
70°-80°	21.8	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°	622.5	47.7
0°-40°	914.0	70.0
0°-60°	1226.9	93.9
0°-90°	1306.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1306.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	911	911	911	911	911	
5°	960	952	897	856	849	92
15°	948	920	801	722	700	268
25°	803	800	665	552	552	366
35°	540	596	456	375	370	338
45°	327	375	230	189	177	255
55°	221	208	103	52	33	199
65°	151	109	35	1	1	146
75°	68	42	8	0	0	72
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°	911.1	911.1	911.1	911.1	911.1	911.1	911.1	911.1	911.1	911.1	911.1
2.5°	906.7	931.9	934.0	931.9	935.1	934.0	939.5	934.0	940.6	930.8	933.0
5°	960.3	950.4	971.2	960.3	960.3	959.2	955.9	954.8	959.2	945.0	951.5
7.5°	974.5	988.7	1007.3	984.3	985.4	985.4	978.8	976.7	976.7	950.4	958.1
10°	986.5	977.7	987.6	978.8	986.5	985.4	989.8	975.6	985.4	970.1	969.0
12.5°	976.7	973.4	986.5	972.3	967.9	969.0	963.6	960.3	963.6	946.1	945.0
15°	948.2	951.5	971.2	955.9	953.7	951.5	945.0	934.0	942.8	918.8	919.9
17.5°	938.4	933.0	936.3	923.1	926.4	924.2	923.1	913.3	911.1	895.8	895.8
20°	892.6	904.5	904.5	895.8	895.8	894.7	880.5	889.3	879.4	875.1	879.4
22.5°	860.8	862.0	862.0	854.3	855.4	851.0	843.4	837.9	843.4	837.9	829.2
25°	803.0	805.2	818.3	804.1	801.9	806.2	799.7	796.4	795.3	782.2	799.7
27.5°	733.0	754.9	753.8	748.3	754.9	746.1	742.9	744.0	747.3	746.1	750.5
30°	692.6	695.9	699.2	694.8	695.9	692.6	692.6	693.7	702.4	699.2	698.1
32.5°	610.7	621.6	630.4	630.4	631.4	634.7	633.6	656.6	662.0	651.1	648.9
35°	539.7	547.3	555.0	556.1	570.3	571.3	572.5	579.0	594.3	597.6	596.5
37.5°	472.0	479.6	481.8	491.6	499.3	506.9	515.7	524.4	537.5	548.4	543.0
40°	411.9	415.1	420.6	425.0	440.2	440.2	444.6	462.1	476.3	485.1	483.9
42.5°	361.6	362.7	367.1	374.7	388.9	385.6	388.9	401.0	421.7	422.8	434.8
45°	326.7	325.5	328.8	329.9	338.7	343.0	345.2	354.0	371.4	373.6	374.7
47.5°	295.0	293.9	299.3	301.5	304.8	309.1	309.1	310.3	316.8	322.3	317.9
50°	268.7	268.7	268.7	270.9	276.4	275.3	276.4	280.8	284.0	281.8	280.8
52.5°	240.3	244.7	248.0	249.1	250.2	250.2	251.3	249.1	248.0	244.7	238.1
55°	220.7	225.0	225.0	225.0	225.0	229.4	224.0	225.0	225.0	216.3	207.6
57.5°	201.0	205.4	208.7	204.3	208.7	204.3	202.1	201.0	198.8	190.1	177.0
60°	184.6	186.8	185.7	184.6	186.8	183.5	181.3	177.0	174.8	162.8	154.0
62.5°	166.1	167.1	168.2	166.1	163.9	162.8	158.4	151.9	147.5	137.6	130.0
65°	150.7	147.5	146.4	145.3	143.1	139.8	136.6	128.9	125.6	116.9	109.2
67.5°	127.8	126.7	128.9	125.6	120.2	120.2	116.9	110.3	102.7	97.2	89.6
70°	109.2	108.2	106.0	102.7	101.6	97.2	97.2	89.6	87.4	77.6	71.0
72.5°	89.6	89.6	86.3	83.0	79.7	77.6	76.5	71.0	67.8	62.3	56.8
75°	67.8	67.8	66.6	63.3	61.2	59.0	57.9	53.5	50.2	44.8	41.5
77.5°	48.1	48.1	43.7	41.5	42.6	40.4	38.2	37.2	36.0	32.8	28.4
80°	28.4	27.3	24.1	25.1	24.1	24.1	22.9	21.8	19.6	17.5	15.3
82.5°	7.7	8.7	8.7	8.7	9.8	7.7	7.7	7.7	8.7	8.7	5.5
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°	911.1	911.1	911.1	911.1	911.1	911.1	911.1	911.1	911.1	911.1	911.1
2.5°	922.1	920.9	922.1	914.4	931.9	918.8	916.6	914.4	922.1	914.4	903.5
5°	941.7	930.8	927.5	924.2	934.0	918.8	915.5	916.6	911.1	896.9	898.0
7.5°	948.2	938.4	928.6	907.8	916.6	913.3	904.5	898.0	889.3	877.2	875.1
10°	950.4	939.5	925.3	918.8	905.7	901.3	898.0	887.1	876.2	855.4	849.9
12.5°	943.9	930.8	913.3	907.8	898.0	883.8	876.2	865.2	855.4	839.0	827.0
15°	915.5	904.5	899.1	880.5	876.2	867.4	852.1	836.8	822.6	800.8	794.2
17.5°	882.7	878.4	872.9	858.7	857.6	848.9	834.7	821.5	803.0	769.1	758.2
20°	848.9	848.9	831.4	825.9	836.8	819.3	808.4	796.4	758.2	741.8	722.1
22.5°	823.7	811.7	801.9	793.1	794.2	783.3	768.0	744.0	729.7	710.1	687.2
25°	774.6	778.9	757.1	753.8	757.1	731.9	724.3	704.6	683.9	665.3	647.8
27.5°	744.0	731.9	717.8	705.7	705.7	695.9	674.1	669.7	638.0	620.5	598.7
30°	698.1	689.3	677.3	659.9	657.7	650.0	632.5	621.6	588.9	562.6	550.6
32.5°	640.2	636.9	627.1	607.4	600.9	592.1	570.3	551.7	536.4	506.9	492.7
35°	598.7	586.7	565.9	549.5	544.0	528.8	511.3	498.2	481.8	455.6	437.0
37.5°	536.4	524.4	504.7	485.1	485.1	469.8	445.7	432.6	409.7	394.4	379.1
40°	481.8	466.5	446.8	423.9	420.6	398.7	388.9	367.1	352.8	328.8	326.7
42.5°	420.6	406.4	388.9	371.4	358.3	347.4	322.3	305.9	290.6	278.6	275.3
45°	364.9	346.3	331.0	309.1	296.1	283.0	266.6	255.6	243.6	230.5	222.9
47.5°	316.8	301.5	279.7	260.0	246.9	240.3	221.7	209.8	199.9	191.2	185.7
50°	267.7	249.1	237.1	215.2	213.0	197.7	182.5	172.6	167.1	159.5	151.9
52.5°	230.5	213.0	196.6	180.3	171.5	166.1	151.9	142.0	134.4	128.9	124.5
55°	194.4	179.2	166.1	149.7	144.2	136.6	120.2	118.0	110.3	102.7	97.2
57.5°	167.1	152.9	137.6	126.7	116.9	111.5	98.3	89.6	85.2	78.7	73.2
60°	142.0	126.7	114.7	101.6	97.2	89.6	79.7	72.1	66.6	61.2	55.7
62.5°	119.1	106.0	92.9	81.9	75.4	71.0	63.3	56.8	51.4	47.0	42.6
65°	98.3	86.3	75.4	64.5	61.2	55.7	50.2	44.8	40.4	35.0	30.6
67.5°	80.9	69.9	59.0	51.4	48.1	45.9	39.3	33.9	30.6	27.3	22.9
70°	63.3	55.7	47.0	40.4	37.2	33.9	29.5	26.2	21.8	19.6	16.4
72.5°	49.2	42.6	35.0	29.5	27.3	25.1	20.8	17.5	15.3	13.1	10.9
75°	35.0	29.5	25.1	19.6	18.6	17.5	14.2	12.0	9.8	7.7	6.5
77.5°	24.1	19.6	15.3	13.1	12.0	9.8	8.7	6.5	5.5	4.4	3.3
80°	13.1	9.8	7.7	6.5	5.5	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°	911.1	911.1	911.1	911.1	911.1	911.1	911.1	911.1	911.1	911.1	911.1
2.5°	910.0	898.0	901.3	901.3	899.1	899.1	896.9	893.6	894.7	888.2	874.0
5°	900.2	884.9	882.7	884.9	876.2	874.0	869.6	876.2	856.5	864.1	855.4
7.5°	871.8	857.6	854.3	862.0	851.0	844.5	843.4	852.1	834.7	825.9	816.1
10°	840.1	834.7	824.8	819.3	816.1	817.1	808.4	797.5	794.2	792.0	783.3
12.5°	811.7	799.7	791.0	784.4	782.2	782.2	768.0	765.8	756.0	753.8	740.7
15°	777.8	763.6	758.2	749.4	741.8	746.1	729.7	725.4	722.1	707.9	710.1
17.5°	748.3	733.0	719.9	714.5	707.9	701.4	686.1	689.3	681.7	681.7	662.0
20°	710.1	693.7	683.9	673.0	673.0	664.2	653.3	654.4	644.5	634.7	617.2
22.5°	669.7	652.2	640.2	635.8	624.9	622.7	609.6	606.3	593.2	594.3	579.0
25°	627.1	609.6	593.2	594.3	584.5	580.1	572.5	557.2	551.7	545.2	540.8
27.5°	576.8	564.8	550.6	549.5	530.9	532.0	522.2	517.8	504.7	508.0	498.2
30°	530.9	513.5	500.3	497.1	489.4	487.2	472.0	465.4	467.6	458.8	453.4
32.5°	483.9	457.8	452.3	445.7	441.4	435.9	425.0	429.3	419.5	421.7	412.9
35°	421.7	410.8	396.5	396.5	392.2	387.8	380.2	384.6	374.7	370.4	361.6
37.5°	369.2	359.4	345.2	349.6	341.9	335.4	328.8	329.9	321.2	320.1	311.3
40°	312.4	307.0	297.2	297.2	291.7	291.7	288.4	285.1	279.7	273.1	263.3
42.5°	258.9	254.5	250.2	251.3	243.6	250.2	241.4	246.9	229.4	228.3	221.7
45°	219.6	209.8	210.8	206.5	202.1	204.3	196.6	198.8	189.0	186.8	180.3
47.5°	178.1	174.8	168.2	166.1	166.1	162.8	159.5	158.4	154.0	148.6	139.8
50°	146.4	134.4	132.2	128.9	126.7	126.7	122.4	115.8	116.9	111.5	102.7
52.5°	114.7	104.9	100.5	99.4	95.1	92.9	87.4	83.0	79.7	77.6	72.1
55°	88.5	79.7	74.3	74.3	67.8	67.8	60.1	56.8	52.4	48.1	44.8
57.5°	66.6	62.3	56.8	52.4	50.2	44.8	40.4	35.0	31.7	25.1	20.8
60°	50.2	45.9	40.4	37.2	35.0	29.5	24.1	19.6	12.0	9.8	8.7
62.5°	37.2	32.8	27.3	25.1	22.9	18.6	13.1	6.5	3.3	3.3	3.3
65°	27.3	21.8	17.5	15.3	13.1	9.8	4.4	2.2	1.1	1.1	1.1
67.5°	18.6	14.2	9.8	8.7	6.5	3.3	1.1	1.1	1.1	1.1	1.1
70°	12.0	8.7	4.4	3.3	2.2	1.1	1.1	1.1	1.1	1.1	1.1
72.5°	7.7	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 FEU4C209030 F4LC-SQLWW-H

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	911.1	911.1	911.1	911.1	911.1	911.1	911.1	911.1
2.5°	889.3	881.6	886.0	876.2	880.5	888.2	882.7	884.9
5°	858.7	854.3	848.9	834.7	845.6	854.3	849.9	848.9
7.5°	825.9	810.6	818.3	813.9	811.7	820.4	810.6	821.5
10°	792.0	781.1	780.0	772.4	772.4	778.9	780.0	773.4
12.5°	741.8	736.3	736.3	735.2	734.1	740.7	741.8	738.5
15°	705.7	703.6	698.1	697.0	690.5	700.3	701.4	700.3
17.5°	662.0	663.1	657.7	657.7	662.0	665.3	656.6	665.3
20°	632.5	627.1	624.9	615.0	620.5	626.0	626.0	627.1
22.5°	589.9	581.2	584.5	579.0	575.7	583.4	583.4	586.7
25°	541.9	541.9	544.0	540.8	543.0	547.3	544.0	551.7
27.5°	496.0	500.3	500.3	496.0	498.2	511.3	516.7	508.0
30°	453.4	454.5	457.8	455.6	462.1	466.5	465.4	472.0
32.5°	405.3	410.8	412.9	409.7	411.9	421.7	416.2	415.1
35°	368.2	358.3	357.3	358.3	362.7	364.9	362.7	370.4
37.5°	314.6	311.3	307.0	308.1	311.3	315.7	317.9	323.4
40°	263.3	258.9	258.9	257.8	254.5	266.6	266.6	266.6
42.5°	218.5	217.4	211.9	211.9	216.3	219.6	217.4	225.0
45°	179.2	174.8	171.5	171.5	174.8	174.8	178.1	177.0
47.5°	140.9	136.6	137.6	134.4	137.6	142.0	136.6	137.6
50°	106.0	106.0	103.8	106.0	104.9	106.0	103.8	101.6
52.5°	72.1	81.9	83.0	78.7	68.8	60.1	54.6	59.0
55°	41.5	37.2	37.2	36.0	33.9	32.8	29.5	32.8
57.5°	20.8	18.6	18.6	18.6	17.5	16.4	14.2	14.2
60°	8.7	7.7	7.7	6.5	5.5	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)