

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-LI**

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

**Summary**

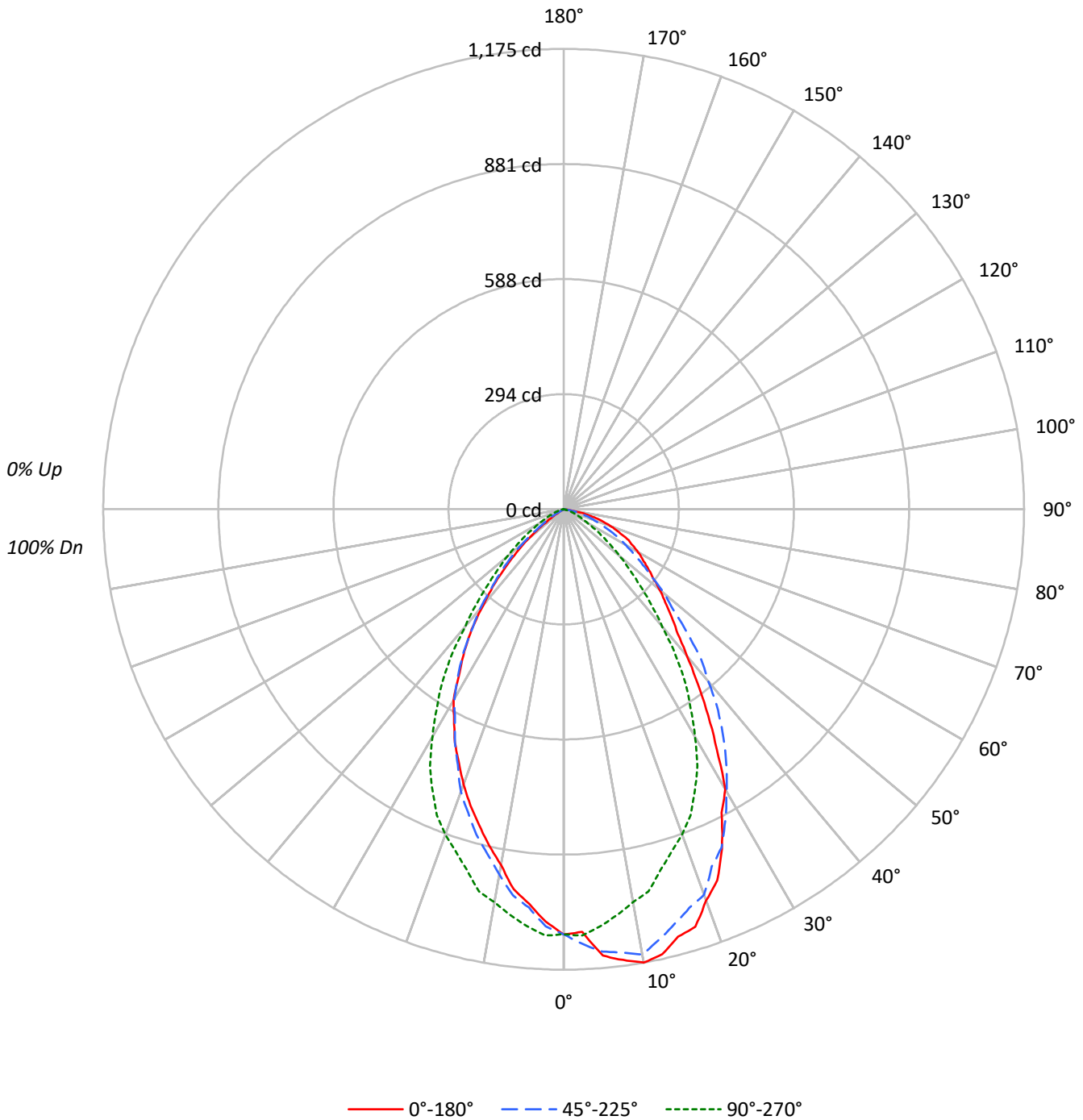
Lumens per Lamp: N/A  
 Luminaire Lumens: 1555.0 lumens  
 Efficiency: N/A  
 Efficacy: 71.3 lumens/watt  
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

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-LI

**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°	104671	104671	104671
5°	110747	103434	97894
10°	115084	99790	90227
15°	112779	95238	83290
20°	109119	90688	76662
25°	101790	84330	69936
30°	91885	74637	62605
35°	75693	63890	51946
40°	61769	49312	39979
45°	53068	37457	28751
50°	48035	28506	18163
55°	44209	20574	6561
60°	42417	14049	1003
65°	40982	9498	297
70°	36703	6601	367
75°	30085	3393	0
80°	18781	1445	0
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	101.6	6.5
10°-20°	273.8	17.6
20°-30°	365.7	23.5
30°-40°	347.1	22.3
40°-50°	239.9	15.4
50°-60°	132.6	8.5
60°-70°	65.8	4.2
70°-80°	25.9	1.7
80°-90°	2.5	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°	741.1	47.7
0°-40°	1088.2	70.0
0°-60°	1460.8	93.9
0°-90°	1555.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1555.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1085	1085	1085	1085	1085	
5°	1143	1133	1068	1020	1011	109
15°	1129	1095	953	860	834	319
25°	956	952	792	657	657	436
35°	643	710	542	446	441	403
45°	389	446	274	225	211	303
55°	263	247	122	62	39	237
65°	180	130	42	1	1	174
75°	81	49	9	0	0	86
85°	0	1	0	0	0	7
90°	0	0	0	0	0	

TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C20D010 FEU4C209030 F4LC-SQLWW-LI

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	1084.8	1084.8	1084.8	1084.8	1084.8	1084.8	1084.8	1084.8	1084.8	1084.8	1084.8
2.5°	1079.6	1109.5	1112.1	1109.5	1113.4	1112.1	1118.6	1112.1	1120.0	1108.2	1110.8
5°	1143.4	1131.6	1156.4	1143.4	1143.4	1142.1	1138.2	1136.8	1142.1	1125.2	1133.0
7.5°	1160.3	1177.2	1199.3	1172.0	1173.3	1173.3	1165.5	1162.9	1162.9	1131.6	1140.8
10°	1174.6	1164.1	1175.9	1165.5	1174.6	1173.3	1178.5	1161.6	1173.3	1155.1	1153.8
12.5°	1162.9	1159.0	1174.6	1157.7	1152.5	1153.8	1147.3	1143.4	1147.3	1126.4	1125.2
15°	1129.0	1133.0	1156.4	1138.2	1135.6	1133.0	1125.2	1112.1	1122.6	1093.9	1095.3
17.5°	1117.4	1110.8	1114.8	1099.1	1103.0	1100.4	1099.1	1087.5	1084.8	1066.6	1066.6
20°	1062.7	1077.0	1077.0	1066.6	1066.6	1065.3	1048.4	1058.8	1047.1	1041.9	1047.1
22.5°	1025.0	1026.3	1026.3	1017.2	1018.5	1013.3	1004.2	997.7	1004.2	997.7	987.3
25°	956.1	958.7	974.3	957.4	954.8	959.9	952.2	948.2	947.0	931.4	952.2
27.5°	872.8	898.8	897.5	891.0	898.8	888.4	884.5	885.8	889.7	888.4	893.6
30°	824.7	828.6	832.5	827.3	828.6	824.7	824.7	826.0	836.4	832.5	831.2
32.5°	727.1	740.1	750.6	750.6	751.8	755.7	754.4	781.7	788.3	775.3	772.7
35°	642.6	651.7	660.8	662.1	679.0	680.3	681.6	689.4	707.6	711.5	710.2
37.5°	561.9	571.0	573.6	585.3	594.5	603.5	614.0	624.4	640.0	653.0	646.5
40°	490.4	494.3	500.8	506.0	524.2	524.2	529.4	550.2	567.1	577.5	576.2
42.5°	430.6	431.8	437.0	446.2	463.1	459.2	463.1	477.4	502.1	503.4	517.7
45°	388.9	387.6	391.5	392.8	403.3	408.5	411.1	421.4	442.2	444.8	446.2
47.5°	351.2	349.9	356.4	359.0	362.9	368.1	368.1	369.4	377.2	383.7	378.5
50°	320.0	320.0	320.0	322.6	329.1	327.8	329.1	334.3	338.2	335.6	334.3
52.5°	286.1	291.3	295.3	296.6	297.9	297.9	299.2	296.6	295.3	291.3	283.5
55°	262.8	268.0	268.0	268.0	268.0	273.2	266.7	268.0	268.0	257.6	247.2
57.5°	239.4	244.6	248.4	243.2	248.4	243.2	240.6	239.4	236.7	226.3	210.7
60°	219.8	222.4	221.1	219.8	222.4	218.5	215.9	210.7	208.1	193.8	183.4
62.5°	197.7	199.0	200.3	197.7	195.1	193.8	188.6	180.8	175.6	163.9	154.8
65°	179.5	175.6	174.3	173.0	170.4	166.5	162.6	153.5	149.6	139.2	130.1
67.5°	152.2	150.9	153.5	149.6	143.1	143.1	139.2	131.4	122.3	115.8	106.7
70°	130.1	128.8	126.2	122.3	121.0	115.8	115.8	106.7	104.1	92.3	84.5
72.5°	106.7	106.7	102.7	98.9	94.9	92.3	91.1	84.5	80.7	74.1	67.6
75°	80.7	80.7	79.3	75.4	72.8	70.2	69.0	63.8	59.8	53.4	49.4
77.5°	57.2	57.2	52.0	49.4	50.7	48.1	45.5	44.2	42.9	39.0	33.8
80°	33.8	32.5	28.6	29.9	28.6	28.6	27.3	26.0	23.4	20.8	18.2
82.5°	9.1	10.4	10.4	10.4	11.7	9.1	9.1	9.1	10.4	10.4	6.5
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3
87.5°	1.3	2.6	5.2	5.2	5.2	5.2	5.2	3.9	3.9	3.9	2.6
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°	1084.8	1084.8	1084.8	1084.8	1084.8	1084.8	1084.8	1084.8	1084.8	1084.8	1084.8
2.5°	1097.8	1096.5	1097.8	1088.7	1109.5	1093.9	1091.3	1088.7	1097.8	1088.7	1075.7
5°	1121.2	1108.2	1104.3	1100.4	1112.1	1093.9	1090.1	1091.3	1084.8	1067.9	1069.2
7.5°	1129.0	1117.4	1105.6	1080.9	1091.3	1087.5	1077.0	1069.2	1058.8	1044.5	1041.9
10°	1131.6	1118.6	1101.7	1093.9	1078.3	1073.1	1069.2	1056.2	1043.2	1018.5	1012.0
12.5°	1123.8	1108.2	1087.5	1080.9	1069.2	1052.3	1043.2	1030.2	1018.5	999.0	984.7
15°	1090.1	1077.0	1070.5	1048.4	1043.2	1032.8	1014.6	996.4	979.5	953.4	945.6
17.5°	1051.0	1045.8	1039.3	1022.4	1021.1	1010.7	993.8	978.1	956.1	915.7	902.7
20°	1010.7	1010.7	989.9	983.4	996.4	975.5	962.5	948.2	902.7	883.2	859.8
22.5°	980.8	966.5	954.8	944.4	945.6	932.6	914.4	885.8	868.9	845.5	818.2
25°	922.2	927.4	901.4	897.5	901.4	871.5	862.4	839.0	814.3	792.1	771.3
27.5°	885.8	871.5	854.6	840.3	840.3	828.6	802.6	797.4	759.6	738.8	712.8
30°	831.2	820.8	806.5	785.7	783.1	773.9	753.2	740.1	701.1	669.9	655.6
32.5°	762.2	758.3	746.6	723.2	715.4	705.0	679.0	656.9	638.7	603.5	586.7
35°	712.8	698.5	673.8	654.3	647.8	629.6	608.7	593.1	573.6	542.4	520.3
37.5°	638.7	624.4	600.9	577.5	577.5	559.3	530.7	515.1	487.8	469.6	451.4
40°	573.6	555.4	532.0	504.7	500.8	474.8	463.1	437.0	420.1	391.5	388.9
42.5°	500.8	483.9	463.1	442.2	426.6	413.6	383.7	364.2	346.0	331.7	327.8
45°	434.4	412.3	394.1	368.1	352.5	336.9	317.4	304.4	290.1	274.5	265.4
47.5°	377.2	359.0	333.0	309.6	294.0	286.1	264.0	249.8	238.0	227.6	221.1
50°	318.7	296.6	282.3	256.2	253.6	235.4	217.2	205.5	199.0	189.9	180.8
52.5°	274.5	253.6	234.1	214.6	204.2	197.7	180.8	169.1	160.0	153.5	148.3
55°	231.5	213.3	197.7	178.2	171.7	162.6	143.1	140.5	131.4	122.3	115.8
57.5°	199.0	182.1	163.9	150.9	139.2	132.7	117.1	106.7	101.5	93.7	87.1
60°	169.1	150.9	136.6	121.0	115.8	106.7	94.9	85.9	79.3	72.8	66.4
62.5°	141.8	126.2	110.6	97.5	89.7	84.5	75.4	67.6	61.2	56.0	50.7
65°	117.1	102.7	89.7	76.7	72.8	66.4	59.8	53.4	48.1	41.6	36.4
67.5°	96.3	83.3	70.2	61.2	57.2	54.6	46.8	40.3	36.4	32.5	27.3
70°	75.4	66.4	56.0	48.1	44.2	40.3	35.1	31.2	26.0	23.4	19.5
72.5°	58.6	50.7	41.6	35.1	32.5	29.9	24.7	20.8	18.2	15.6	13.0
75°	41.6	35.1	29.9	23.4	22.1	20.8	16.9	14.3	11.7	9.1	7.8
77.5°	28.6	23.4	18.2	15.6	14.3	11.7	10.4	7.8	6.5	5.2	3.9
80°	15.6	11.7	9.1	7.8	6.5	5.2	5.2	3.9	2.6	2.6	1.3
82.5°	5.2	3.9	2.6	1.3	1.3	1.3	1.3	1.3	1.3	0.0	1.3
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°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	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°	1084.8	1084.8	1084.8	1084.8	1084.8	1084.8	1084.8	1084.8	1084.8	1084.8	1084.8
2.5°	1083.5	1069.2	1073.1	1073.1	1070.5	1070.5	1067.9	1064.0	1065.3	1057.5	1040.6
5°	1071.8	1053.6	1051.0	1053.6	1043.2	1040.6	1035.4	1043.2	1019.8	1028.9	1018.5
7.5°	1038.0	1021.1	1017.2	1026.3	1013.3	1005.5	1004.2	1014.6	993.8	983.4	971.7
10°	1000.3	993.8	982.1	975.5	971.7	972.9	962.5	949.6	945.6	943.0	932.6
12.5°	966.5	952.2	941.8	934.0	931.4	931.4	914.4	911.8	900.1	897.5	881.9
15°	926.1	909.2	902.7	892.3	883.2	888.4	868.9	863.7	859.8	842.9	845.5
17.5°	891.0	872.8	857.2	850.7	842.9	835.1	816.9	820.8	811.7	811.7	788.3
20°	845.5	826.0	814.3	801.3	801.3	790.9	777.9	779.1	767.4	755.7	734.9
22.5°	797.4	776.5	762.2	757.0	744.0	741.4	725.8	721.9	706.3	707.6	689.4
25°	746.6	725.8	706.3	707.6	695.9	690.7	681.6	663.4	656.9	649.1	643.9
27.5°	686.8	672.5	655.6	654.3	632.2	633.4	621.8	616.6	600.9	604.9	593.1
30°	632.2	611.4	595.7	591.9	582.7	580.1	561.9	554.1	556.7	546.3	539.8
32.5°	576.2	545.0	538.5	530.7	525.5	519.0	506.0	511.2	499.5	502.1	491.7
35°	502.1	489.1	472.2	472.2	467.0	461.8	452.7	457.9	446.2	441.0	430.6
37.5°	439.6	428.0	411.1	416.2	407.1	399.3	391.5	392.8	382.4	381.1	370.7
40°	372.0	365.5	353.8	353.8	347.3	347.3	343.4	339.5	333.0	325.2	313.5
42.5°	308.3	303.1	297.9	299.2	290.1	297.9	287.5	294.0	273.2	271.9	264.0
45°	261.4	249.8	251.0	245.8	240.6	243.2	234.1	236.7	225.0	222.4	214.6
47.5°	212.0	208.1	200.3	197.7	197.7	193.8	189.9	188.6	183.4	176.9	166.5
50°	174.3	160.0	157.4	153.5	150.9	150.9	145.7	137.9	139.2	132.7	122.3
52.5°	136.6	124.9	119.7	118.4	113.2	110.6	104.1	98.9	94.9	92.3	85.9
55°	105.3	94.9	88.5	88.5	80.7	80.7	71.5	67.6	62.4	57.2	53.4
57.5°	79.3	74.1	67.6	62.4	59.8	53.4	48.1	41.6	37.7	29.9	24.7
60°	59.8	54.6	48.1	44.2	41.6	35.1	28.6	23.4	14.3	11.7	10.4
62.5°	44.2	39.0	32.5	29.9	27.3	22.1	15.6	7.8	3.9	3.9	3.9
65°	32.5	26.0	20.8	18.2	15.6	11.7	5.2	2.6	1.3	1.3	1.3
67.5°	22.1	16.9	11.7	10.4	7.8	3.9	1.3	1.3	1.3	1.3	1.3
70°	14.3	10.4	5.2	3.9	2.6	1.3	1.3	1.3	1.3	1.3	1.3
72.5°	9.1	5.2	2.6	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	5.2	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	2.6	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	1.3	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	1.3	1.3	1.3
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-LI

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1084.8	1084.8	1084.8	1084.8	1084.8	1084.8	1084.8	1084.8
2.5°	1058.8	1049.7	1054.9	1043.2	1048.4	1057.5	1051.0	1053.6
5°	1022.4	1017.2	1010.7	993.8	1006.8	1017.2	1012.0	1010.7
7.5°	983.4	965.1	974.3	969.1	966.5	976.9	965.1	978.1
10°	943.0	930.0	928.8	919.6	919.6	927.4	928.8	920.9
12.5°	883.2	876.7	876.7	875.4	874.1	881.9	883.2	879.3
15°	840.3	837.7	831.2	829.9	822.1	833.8	835.1	833.8
17.5°	788.3	789.5	783.1	783.1	788.3	792.1	781.7	792.1
20°	753.2	746.6	744.0	732.3	738.8	745.4	745.4	746.6
22.5°	702.4	692.0	695.9	689.4	685.5	694.6	694.6	698.5
25°	645.2	645.2	647.8	643.9	646.5	651.7	647.8	656.9
27.5°	590.5	595.7	595.7	590.5	593.1	608.7	615.3	604.9
30°	539.8	541.1	545.0	542.4	550.2	555.4	554.1	561.9
32.5°	482.6	489.1	491.7	487.8	490.4	502.1	495.6	494.3
35°	438.4	426.6	425.4	426.6	431.8	434.4	431.8	441.0
37.5°	374.6	370.7	365.5	366.8	370.7	375.9	378.5	385.0
40°	313.5	308.3	308.3	307.0	303.1	317.4	317.4	317.4
42.5°	260.2	258.8	252.4	252.4	257.6	261.4	258.8	268.0
45°	213.3	208.1	204.2	204.2	208.1	208.1	212.0	210.7
47.5°	167.8	162.6	163.9	160.0	163.9	169.1	162.6	163.9
50°	126.2	126.2	123.6	126.2	124.9	126.2	123.6	121.0
52.5°	85.9	97.5	98.9	93.7	81.9	71.5	65.0	70.2
55°	49.4	44.2	44.2	42.9	40.3	39.0	35.1	39.0
57.5°	24.7	22.1	22.1	22.1	20.8	19.5	16.9	16.9
60°	10.4	9.1	9.1	7.8	6.5	5.2	3.9	5.2
62.5°	3.9	2.6	2.6	2.6	2.6	2.6	2.6	2.6
65°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
67.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
70°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
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)