

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

Summary

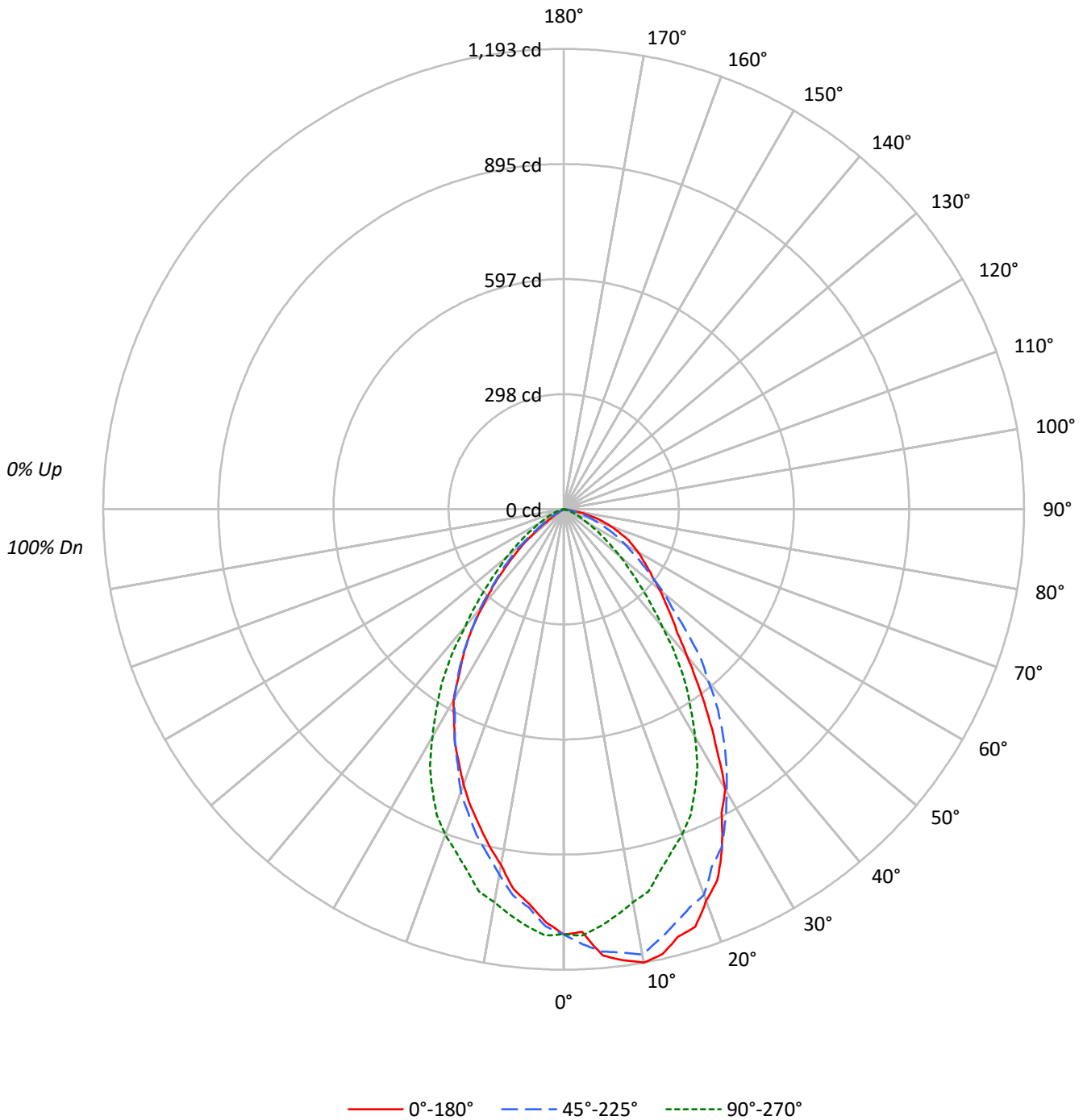
Lumens per Lamp: N/A
 Luminaire Lumens: 1579.0 lumens
 Efficiency: N/A
 Efficacy: 72.4 lumens/watt
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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#
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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°	106283	106283	106283
5°	112452	105032	99405
10°	116858	101328	91619
15°	114527	96706	84569
20°	110803	92085	77853
25°	103355	85639	71011
30°	93300	75785	63574
35°	76859	64879	52747
40°	62727	50081	40596
45°	53886	38030	29202
50°	48771	28956	18434
55°	44882	20877	6662
60°	43073	14261	1023
65°	41621	9658	297
70°	37267	6714	367
75°	30533	3467	0
80°	19115	1445	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	103.2	6.5
10°-20°	278.1	17.6
20°-30°	371.3	23.5
30°-40°	352.5	22.3
40°-50°	243.6	15.4
50°-60°	134.6	8.5
60°-70°	66.8	4.2
70°-80°	26.3	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°	752.6	47.7
0°-40°	1105.0	70.0
0°-60°	1483.3	93.9
0°-90°	1579.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1579.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1102	1102	1102	1102	1102	
5°	1161	1150	1084	1036	1026	111
15°	1146	1112	968	873	847	324
25°	971	967	804	667	667	443
35°	652	721	551	453	448	409
45°	395	453	279	228	214	308
55°	267	251	124	63	40	240
65°	182	132	42	1	1	177
75°	82	50	9	0	0	87
85°	0	1	0	0	0	8
90°	0	0	0	0	0	

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

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	1101.5	1101.5	1101.5	1101.5	1101.5	1101.5	1101.5	1101.5	1101.5	1101.5	1101.5
2.5°	1096.3	1126.6	1129.3	1126.6	1130.6	1129.3	1135.9	1129.3	1137.3	1125.4	1128.0
5°	1161.0	1149.1	1174.2	1161.0	1161.0	1159.7	1155.7	1154.4	1159.7	1142.5	1150.4
7.5°	1178.2	1195.4	1217.8	1190.1	1191.4	1191.4	1183.5	1180.8	1180.8	1149.1	1158.4
10°	1192.7	1182.1	1194.0	1183.5	1192.7	1191.4	1196.7	1179.5	1191.4	1172.9	1171.6
12.5°	1180.8	1176.8	1192.7	1175.5	1170.3	1171.6	1165.0	1161.0	1165.0	1143.8	1142.5
15°	1146.5	1150.4	1174.2	1155.7	1153.1	1150.4	1142.5	1129.3	1139.9	1110.8	1112.2
17.5°	1134.6	1128.0	1132.0	1116.1	1120.1	1117.4	1116.1	1104.2	1101.5	1083.1	1083.1
20°	1079.1	1093.6	1093.6	1083.1	1083.1	1081.8	1064.6	1075.2	1063.3	1058.0	1063.3
22.5°	1040.8	1042.1	1042.1	1032.9	1034.2	1028.9	1019.7	1013.1	1019.7	1013.1	1002.5
25°	970.8	973.5	989.3	972.1	969.5	974.8	966.8	962.9	961.6	945.7	966.8
27.5°	886.3	912.7	911.4	904.8	912.7	902.1	898.2	899.5	903.5	902.1	907.4
30°	837.4	841.4	845.3	840.1	841.4	837.4	837.4	838.7	849.3	845.3	844.0
32.5°	738.3	751.5	762.1	762.1	763.4	767.4	766.1	793.8	800.4	787.2	784.6
35°	652.5	661.7	671.0	672.3	689.5	690.8	692.1	700.0	718.5	722.5	721.2
37.5°	570.6	579.8	582.5	594.4	603.6	612.8	623.5	634.0	649.8	663.0	656.5
40°	498.0	501.9	508.5	513.8	532.3	532.3	537.6	558.7	575.9	586.5	585.1
42.5°	437.2	438.5	443.8	453.0	470.2	466.2	470.2	484.8	509.8	511.2	525.7
45°	394.9	393.6	397.6	398.9	409.5	414.8	417.4	428.0	449.1	451.7	453.0
47.5°	356.6	355.3	361.9	364.6	368.5	373.8	373.8	375.1	383.0	389.7	384.4
50°	324.9	324.9	324.9	327.6	334.2	332.8	334.2	339.5	343.4	340.8	339.5
52.5°	290.6	295.8	299.8	301.2	302.5	302.5	303.8	301.2	299.8	295.8	287.9
55°	266.8	272.1	272.1	272.1	272.1	277.4	270.8	272.1	272.1	261.5	251.0
57.5°	243.1	248.3	252.3	247.0	252.3	247.0	244.4	243.1	240.4	229.8	214.0
60°	223.2	225.9	224.5	223.2	225.9	221.9	219.3	214.0	211.3	196.8	186.2
62.5°	200.8	202.1	203.4	200.8	198.1	196.8	191.5	183.6	178.3	166.4	157.2
65°	182.3	178.3	177.0	175.7	173.0	169.1	165.1	155.9	151.9	141.3	132.1
67.5°	154.5	153.2	155.9	151.9	145.3	145.3	141.3	133.4	124.1	117.6	108.3
70°	132.1	130.8	128.1	124.1	122.8	117.6	117.6	108.3	105.7	93.8	85.8
72.5°	108.3	108.3	104.3	100.4	96.4	93.8	92.5	85.8	81.9	75.3	68.7
75°	81.9	81.9	80.6	76.6	73.9	71.3	70.0	64.7	60.8	54.2	50.2
77.5°	58.1	58.1	52.8	50.2	51.5	48.8	46.2	44.9	43.6	39.6	34.4
80°	34.4	33.0	29.1	30.4	29.1	29.1	27.7	26.4	23.8	21.1	18.5
82.5°	9.3	10.6	10.6	10.6	11.9	9.3	9.3	9.3	10.6	10.6	6.6
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	5.3	5.3	5.3	5.3	5.3	4.0	4.0	4.0	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°	1101.5	1101.5	1101.5	1101.5	1101.5	1101.5	1101.5	1101.5	1101.5	1101.5	1101.5
2.5°	1114.8	1113.4	1114.8	1105.5	1126.6	1110.8	1108.2	1105.5	1114.8	1105.5	1092.3
5°	1138.5	1125.4	1121.4	1117.4	1129.3	1110.8	1106.9	1108.2	1101.5	1084.4	1085.7
7.5°	1146.5	1134.6	1122.7	1097.6	1108.2	1104.2	1093.6	1085.7	1075.2	1060.6	1058.0
10°	1149.1	1135.9	1118.7	1110.8	1095.0	1089.7	1085.7	1072.5	1059.3	1034.2	1027.6
12.5°	1141.2	1125.4	1104.2	1097.6	1085.7	1068.5	1059.3	1046.1	1034.2	1014.4	999.9
15°	1106.9	1093.6	1087.1	1064.6	1059.3	1048.7	1030.2	1011.8	994.6	968.1	960.2
17.5°	1067.2	1062.0	1055.3	1038.2	1036.9	1026.3	1009.1	993.2	970.8	929.8	916.7
20°	1026.3	1026.3	1005.1	998.6	1011.8	990.6	977.4	962.9	916.7	896.8	873.1
22.5°	995.9	981.4	969.5	958.9	960.2	947.0	928.6	899.5	882.3	858.5	830.8
25°	936.5	941.8	915.4	911.4	915.4	884.9	875.7	851.9	826.8	804.4	783.2
27.5°	899.5	884.9	867.8	853.3	853.3	841.4	815.0	809.7	771.3	750.2	723.8
30°	844.0	833.4	818.9	797.8	795.2	785.9	764.8	751.5	711.9	680.2	665.7
32.5°	774.0	770.1	758.2	734.4	726.5	715.9	689.5	667.0	648.5	612.8	595.7
35°	723.8	709.3	684.2	664.4	657.8	639.3	618.1	602.3	582.5	550.8	528.3
37.5°	648.5	634.0	610.2	586.5	586.5	568.0	538.9	523.1	495.3	476.8	458.3
40°	582.5	564.0	540.2	512.5	508.5	482.1	470.2	443.8	426.6	397.6	394.9
42.5°	508.5	491.3	470.2	449.1	433.2	420.0	389.7	369.8	351.4	336.8	332.8
45°	441.1	418.7	400.2	373.8	357.9	342.1	322.3	309.1	294.5	278.7	269.4
47.5°	383.0	364.6	338.1	314.4	298.5	290.6	268.1	253.6	241.7	231.2	224.5
50°	323.6	301.2	286.6	260.2	257.5	239.1	220.6	208.7	202.1	192.9	183.6
52.5°	278.7	257.5	237.7	218.0	207.4	200.8	183.6	171.7	162.5	155.9	150.6
55°	235.1	216.6	200.8	181.0	174.3	165.1	145.3	142.7	133.4	124.1	117.6
57.5°	202.1	184.9	166.4	153.2	141.3	134.8	118.9	108.3	103.0	95.1	88.5
60°	171.7	153.2	138.7	122.8	117.6	108.3	96.4	87.2	80.6	73.9	67.4
62.5°	144.0	128.1	112.3	99.0	91.1	85.8	76.6	68.7	62.1	56.8	51.5
65°	118.9	104.3	91.1	77.9	73.9	67.4	60.8	54.2	48.8	42.3	37.0
67.5°	97.8	84.6	71.3	62.1	58.1	55.5	47.6	40.9	37.0	33.0	27.7
70°	76.6	67.4	56.8	48.8	44.9	40.9	35.7	31.7	26.4	23.8	19.8
72.5°	59.5	51.5	42.3	35.7	33.0	30.4	25.1	21.1	18.5	15.8	13.2
75°	42.3	35.7	30.4	23.8	22.5	21.1	17.2	14.5	11.9	9.3	7.9
77.5°	29.1	23.8	18.5	15.8	14.5	11.9	10.6	7.9	6.6	5.3	4.0
80°	15.8	11.9	9.3	7.9	6.6	5.3	5.3	4.0	2.6	2.6	1.3
82.5°	5.3	4.0	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°	1101.5	1101.5	1101.5	1101.5	1101.5	1101.5	1101.5	1101.5	1101.5	1101.5	1101.5
2.5°	1100.3	1085.7	1089.7	1089.7	1087.1	1087.1	1084.4	1080.4	1081.8	1073.8	1056.7
5°	1088.4	1069.9	1067.2	1069.9	1059.3	1056.7	1051.4	1059.3	1035.5	1044.8	1034.2
7.5°	1054.0	1036.9	1032.9	1042.1	1028.9	1021.0	1019.7	1030.2	1009.1	998.6	986.7
10°	1015.7	1009.1	997.2	990.6	986.7	988.0	977.4	964.2	960.2	957.6	947.0
12.5°	981.4	966.8	956.3	948.4	945.7	945.7	928.6	925.9	914.0	911.4	895.5
15°	940.4	923.3	916.7	906.1	896.8	902.1	882.3	877.0	873.1	855.9	858.5
17.5°	904.8	886.3	870.4	863.8	855.9	848.0	829.5	833.4	824.2	824.2	800.4
20°	858.5	838.7	826.8	813.6	813.6	803.1	789.9	791.2	779.3	767.4	746.2
22.5°	809.7	788.5	774.0	768.7	755.5	752.9	737.0	733.1	717.2	718.5	700.0
25°	758.2	737.0	717.2	718.5	706.7	701.4	692.1	673.6	667.0	659.1	653.8
27.5°	697.4	682.9	665.7	664.4	641.9	643.2	631.4	626.1	610.2	614.2	602.3
30°	641.9	620.8	604.9	601.0	591.7	589.1	570.6	562.6	565.3	554.7	548.2
32.5°	585.1	553.4	546.8	538.9	533.6	527.0	513.8	519.1	507.2	509.8	499.3
35°	509.8	496.6	479.4	479.4	474.2	468.9	459.7	465.0	453.0	447.8	437.2
37.5°	446.4	434.6	417.4	422.7	413.4	405.5	397.6	398.9	388.3	387.0	376.4
40°	377.8	371.1	359.3	359.3	352.7	352.7	348.7	344.7	338.1	330.2	318.3
42.5°	313.0	307.7	302.5	303.8	294.5	302.5	291.9	298.5	277.4	276.1	268.1
45°	265.5	253.6	254.9	249.6	244.4	247.0	237.7	240.4	228.5	225.9	218.0
47.5°	215.3	211.3	203.4	200.8	200.8	196.8	192.9	191.5	186.2	179.6	169.1
50°	177.0	162.5	159.8	155.9	153.2	153.2	147.9	140.0	141.3	134.8	124.1
52.5°	138.7	126.8	121.5	120.2	114.9	112.3	105.7	100.4	96.4	93.8	87.2
55°	107.0	96.4	89.8	89.8	81.9	81.9	72.7	68.7	63.4	58.1	54.2
57.5°	80.6	75.3	68.7	63.4	60.8	54.2	48.8	42.3	38.3	30.4	25.1
60°	60.8	55.5	48.8	44.9	42.3	35.7	29.1	23.8	14.5	11.9	10.6
62.5°	44.9	39.6	33.0	30.4	27.7	22.5	15.8	7.9	4.0	4.0	4.0
65°	33.0	26.4	21.1	18.5	15.8	11.9	5.3	2.6	1.3	1.3	1.3
67.5°	22.5	17.2	11.9	10.6	7.9	4.0	1.3	1.3	1.3	1.3	1.3
70°	14.5	10.6	5.3	4.0	2.6	1.3	1.3	1.3	1.3	1.3	1.3
72.5°	9.3	5.3	2.6	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	5.3	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 FEU4C209040 F4LC-SQLWW-LI

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1101.5	1101.5	1101.5	1101.5	1101.5	1101.5	1101.5	1101.5
2.5°	1075.2	1065.9	1071.2	1059.3	1064.6	1073.8	1067.2	1069.9
5°	1038.2	1032.9	1026.3	1009.1	1022.3	1032.9	1027.6	1026.3
7.5°	998.6	980.0	989.3	984.0	981.4	991.9	980.0	993.2
10°	957.6	944.4	943.1	933.8	933.8	941.8	943.1	935.1
12.5°	896.8	890.3	890.3	888.9	887.6	895.5	896.8	892.9
15°	853.3	850.6	844.0	842.7	834.8	846.6	848.0	846.6
17.5°	800.4	801.7	795.2	795.2	800.4	804.4	793.8	804.4
20°	764.8	758.2	755.5	743.6	750.2	756.9	756.9	758.2
22.5°	713.2	702.7	706.7	700.0	696.1	705.3	705.3	709.3
25°	655.1	655.1	657.8	653.8	656.5	661.7	657.8	667.0
27.5°	599.6	604.9	604.9	599.6	602.3	618.1	624.7	614.2
30°	548.2	549.5	553.4	550.8	558.7	564.0	562.6	570.6
32.5°	490.0	496.6	499.3	495.3	498.0	509.8	503.2	501.9
35°	445.1	433.2	431.9	433.2	438.5	441.1	438.5	447.8
37.5°	380.4	376.4	371.1	372.5	376.4	381.7	384.4	391.0
40°	318.3	313.0	313.0	311.7	307.7	322.3	322.3	322.3
42.5°	264.2	262.8	256.3	256.3	261.5	265.5	262.8	272.1
45°	216.6	211.3	207.4	207.4	211.3	211.3	215.3	214.0
47.5°	170.4	165.1	166.4	162.5	166.4	171.7	165.1	166.4
50°	128.1	128.1	125.5	128.1	126.8	128.1	125.5	122.8
52.5°	87.2	99.0	100.4	95.1	83.2	72.7	66.0	71.3
55°	50.2	44.9	44.9	43.6	40.9	39.6	35.7	39.6
57.5°	25.1	22.5	22.5	22.5	21.1	19.8	17.2	17.2
60°	10.6	9.3	9.3	7.9	6.6	5.3	4.0	5.3
62.5°	4.0	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)