

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 FEU4C209035 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 FEU4C209035 F4LC-SQLWW-LI
 Description: 4 INCH 2000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3500K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

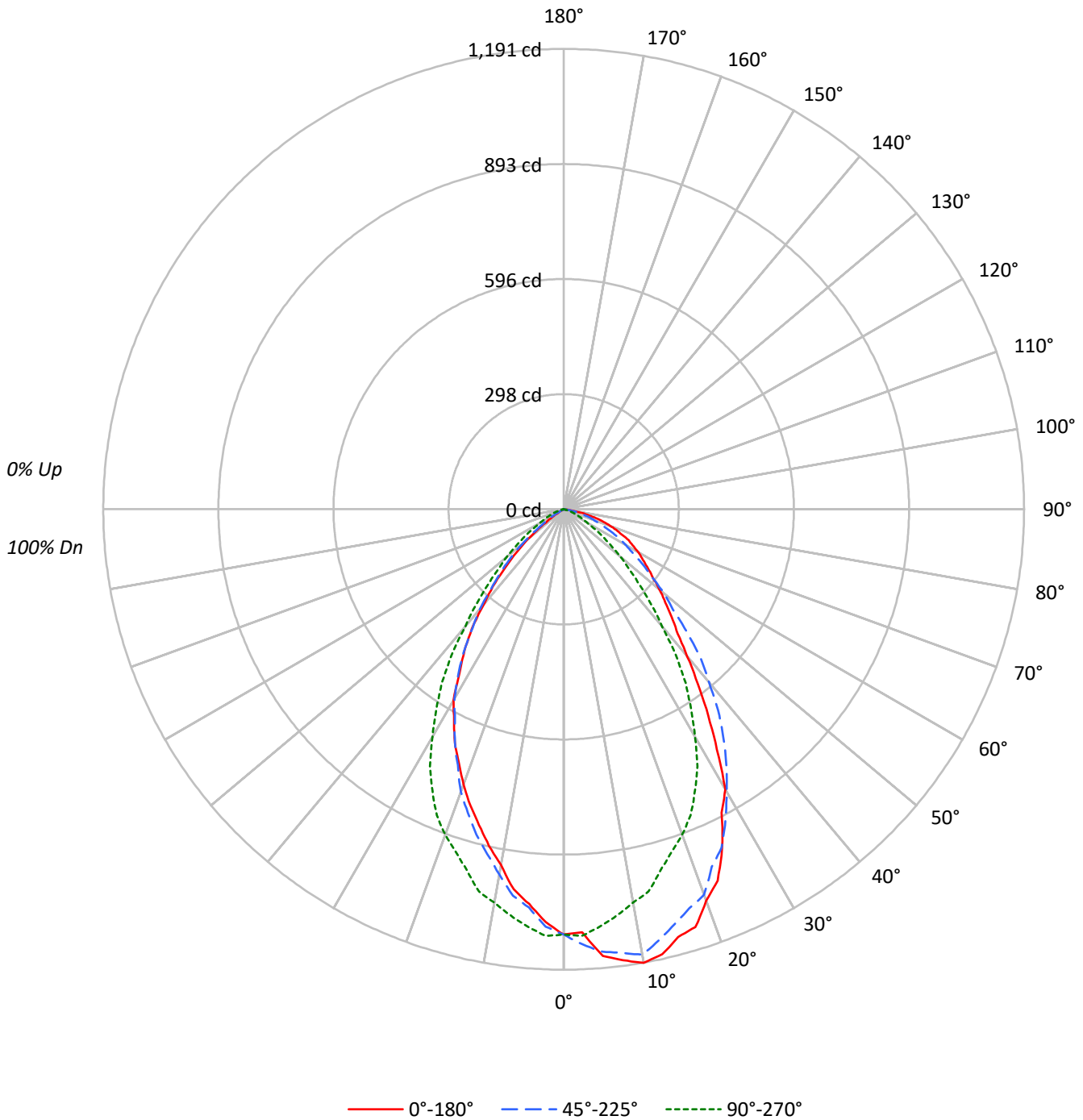
Lumens per Lamp: N/A
 Luminaire Lumens: 1577.0 lumens
 Efficiency: N/A
 Efficacy: 72.3 lumens/watt
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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 FEU4C209035 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°	106157	106157	106157
5°	112306	104897	99279
10°	116711	101201	91501
15°	114377	96586	84469
20°	110670	91972	77750
25°	103227	85522	70926
30°	93188	75696	63496
35°	76765	64797	52676
40°	62639	50018	40546
45°	53818	37989	29161
50°	48711	28911	18419
55°	44831	20860	6662
60°	43034	14261	1023
65°	41553	9635	297
70°	37211	6686	367
75°	30495	3467	0
80°	19059	1445	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	103.1	6.5
10°-20°	277.7	17.6
20°-30°	370.8	23.5
30°-40°	352.0	22.3
40°-50°	243.3	15.4
50°-60°	134.4	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°	751.6	47.7
0°-40°	1103.6	70.0
0°-60°	1481.4	93.9
0°-90°	1577.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1577.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1100	1100	1100	1100	1100	
5°	1160	1149	1083	1034	1025	111
15°	1145	1111	967	872	846	324
25°	970	966	803	666	666	442
35°	652	720	550	452	447	408
45°	394	452	278	228	214	308
55°	266	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 FEU4C209035 F4LC-SQLWW-LI

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	1100.2	1100.2	1100.2	1100.2	1100.2	1100.2	1100.2	1100.2	1100.2	1100.2	1100.2
2.5°	1094.9	1125.2	1127.9	1125.2	1129.2	1127.9	1134.5	1127.9	1135.8	1123.9	1126.6
5°	1159.5	1147.6	1172.7	1159.5	1159.5	1158.2	1154.3	1152.9	1158.2	1141.1	1149.0
7.5°	1176.7	1193.9	1216.3	1188.6	1189.9	1189.9	1182.0	1179.3	1179.3	1147.6	1156.9
10°	1191.2	1180.6	1192.5	1182.0	1191.2	1189.9	1195.1	1178.0	1189.9	1171.4	1170.1
12.5°	1179.3	1175.3	1191.2	1174.1	1168.8	1170.1	1163.5	1159.5	1163.5	1142.4	1141.1
15°	1145.0	1149.0	1172.7	1154.3	1151.6	1149.0	1141.1	1127.9	1138.4	1109.4	1110.7
17.5°	1133.2	1126.6	1130.5	1114.7	1118.7	1116.0	1114.7	1102.8	1100.2	1081.7	1081.7
20°	1077.8	1092.2	1092.2	1081.7	1081.7	1080.4	1063.3	1073.8	1061.9	1056.6	1061.9
22.5°	1039.5	1040.8	1040.8	1031.6	1032.9	1027.6	1018.4	1011.8	1018.4	1011.8	1001.2
25°	969.6	972.2	988.1	970.9	968.3	973.5	965.6	961.6	960.4	944.5	965.6
27.5°	885.2	911.5	910.2	903.6	911.5	901.0	897.0	898.3	902.3	901.0	906.2
30°	836.4	840.3	844.3	839.0	840.3	836.4	836.4	837.7	848.2	844.3	842.9
32.5°	737.4	750.6	761.2	761.2	762.5	766.4	765.1	792.8	799.4	786.2	783.6
35°	651.7	660.9	670.1	671.5	688.6	689.9	691.2	699.2	717.6	721.6	720.2
37.5°	569.9	579.1	581.7	593.6	602.9	612.1	622.7	633.2	649.0	662.2	655.6
40°	497.3	501.3	507.9	513.1	531.6	531.6	536.9	558.0	575.2	585.7	584.4
42.5°	436.7	438.0	443.2	452.5	469.6	465.7	469.6	484.2	509.2	510.5	525.0
45°	394.4	393.1	397.1	398.4	409.0	414.2	416.9	427.4	448.5	451.1	452.5
47.5°	356.2	354.8	361.5	364.1	368.0	373.3	373.3	374.6	382.5	389.2	383.9
50°	324.5	324.5	324.5	327.1	333.8	332.4	333.8	339.0	343.0	340.3	339.0
52.5°	290.2	295.5	299.4	300.8	302.1	302.1	303.4	300.8	299.4	295.5	287.6
55°	266.5	271.7	271.7	271.7	271.7	277.0	270.5	271.7	271.7	261.2	250.7
57.5°	242.7	248.0	251.9	246.7	251.9	246.7	244.0	242.7	240.1	229.5	213.7
60°	223.0	225.6	224.2	223.0	225.6	221.6	219.0	213.7	211.1	196.5	186.0
62.5°	200.5	201.8	203.2	200.5	197.9	196.5	191.3	183.4	178.1	166.2	157.0
65°	182.0	178.1	176.8	175.5	172.8	168.8	164.9	155.7	151.7	141.1	131.9
67.5°	154.3	153.0	155.7	151.7	145.1	145.1	141.1	133.2	124.0	117.4	108.2
70°	131.9	130.6	128.0	124.0	122.7	117.4	117.4	108.2	105.5	93.6	85.7
72.5°	108.2	108.2	104.2	100.3	96.3	93.6	92.4	85.7	81.8	75.2	68.6
75°	81.8	81.8	80.5	76.5	73.9	71.2	69.9	64.7	60.7	54.1	50.1
77.5°	58.0	58.0	52.8	50.1	51.4	48.8	46.2	44.9	43.5	39.6	34.3
80°	34.3	33.0	29.0	30.3	29.0	29.0	27.7	26.4	23.7	21.1	18.5
82.5°	9.3	10.5	10.5	10.5	11.9	9.3	9.3	9.3	10.5	10.5	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°	1100.2	1100.2	1100.2	1100.2	1100.2	1100.2	1100.2	1100.2	1100.2	1100.2	1100.2
2.5°	1113.4	1112.0	1113.4	1104.1	1125.2	1109.4	1106.8	1104.1	1113.4	1104.1	1091.0
5°	1137.1	1123.9	1119.9	1116.0	1127.9	1109.4	1105.5	1106.8	1100.2	1083.0	1084.3
7.5°	1145.0	1133.2	1121.3	1096.2	1106.8	1102.8	1092.2	1084.3	1073.8	1059.3	1056.6
10°	1147.6	1134.5	1117.3	1109.4	1093.6	1088.3	1084.3	1071.2	1058.0	1032.9	1026.3
12.5°	1139.7	1123.9	1102.8	1096.2	1084.3	1067.2	1058.0	1044.7	1032.9	1013.1	998.6
15°	1105.5	1092.2	1085.7	1063.3	1058.0	1047.4	1028.9	1010.5	993.3	966.9	959.0
17.5°	1065.9	1060.6	1054.0	1036.8	1035.5	1025.0	1007.8	992.0	969.6	928.7	915.5
20°	1025.0	1025.0	1003.9	997.3	1010.5	989.3	976.2	961.6	915.5	895.7	872.0
22.5°	994.7	980.1	968.3	957.7	959.0	945.8	927.4	898.3	881.2	857.5	829.8
25°	935.3	940.6	914.2	910.2	914.2	883.8	874.6	850.8	825.8	803.3	782.3
27.5°	898.3	883.8	866.7	852.2	852.2	840.3	813.9	808.7	770.4	749.3	722.9
30°	842.9	832.4	817.9	796.8	794.1	784.9	763.8	750.6	711.0	679.4	664.8
32.5°	773.0	769.1	757.2	733.5	725.6	715.0	688.6	666.2	647.7	612.1	595.0
35°	722.9	708.4	683.3	663.5	656.9	638.5	617.3	601.5	581.7	550.1	527.7
37.5°	647.7	633.2	609.4	585.7	585.7	567.3	538.2	522.4	494.7	476.2	457.7
40°	581.7	563.3	539.6	511.9	507.9	481.5	469.6	443.2	426.1	397.1	394.4
42.5°	507.9	490.7	469.6	448.5	432.7	419.5	389.2	369.4	350.9	336.4	332.4
45°	440.6	418.2	399.7	373.3	357.5	341.7	321.9	308.7	294.2	278.4	269.1
47.5°	382.5	364.1	337.7	314.0	298.2	290.2	267.8	253.3	241.4	230.9	224.2
50°	323.2	300.8	286.3	259.9	257.2	238.8	220.3	208.4	201.8	192.6	183.4
52.5°	278.4	257.2	237.4	217.7	207.1	200.5	183.4	171.5	162.3	155.7	150.4
55°	234.8	216.3	200.5	180.7	174.1	164.9	145.1	142.5	133.2	124.0	117.4
57.5°	201.8	184.7	166.2	153.0	141.1	134.6	118.7	108.2	102.9	95.0	88.4
60°	171.5	153.0	138.5	122.7	117.4	108.2	96.3	87.1	80.5	73.9	67.3
62.5°	143.8	128.0	112.1	98.9	91.0	85.7	76.5	68.6	62.0	56.7	51.4
65°	118.7	104.2	91.0	77.8	73.9	67.3	60.7	54.1	48.8	42.2	37.0
67.5°	97.6	84.4	71.2	62.0	58.0	55.4	47.5	40.9	37.0	33.0	27.7
70°	76.5	67.3	56.7	48.8	44.9	40.9	35.6	31.7	26.4	23.7	19.8
72.5°	59.4	51.4	42.2	35.6	33.0	30.3	25.1	21.1	18.5	15.8	13.2
75°	42.2	35.6	30.3	23.7	22.4	21.1	17.2	14.5	11.9	9.3	7.9
77.5°	29.0	23.7	18.5	15.8	14.5	11.9	10.5	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°	1100.2	1100.2	1100.2	1100.2	1100.2	1100.2	1100.2	1100.2	1100.2	1100.2	1100.2
2.5°	1098.9	1084.3	1088.3	1088.3	1085.7	1085.7	1083.0	1079.1	1080.4	1072.4	1055.3
5°	1087.0	1068.5	1065.9	1068.5	1058.0	1055.3	1050.1	1058.0	1034.2	1043.5	1032.9
7.5°	1052.7	1035.5	1031.6	1040.8	1027.6	1019.7	1018.4	1028.9	1007.8	997.3	985.4
10°	1014.4	1007.8	996.0	989.3	985.4	986.7	976.2	963.0	959.0	956.4	945.8
12.5°	980.1	965.6	955.1	947.2	944.5	944.5	927.4	924.7	912.9	910.2	894.4
15°	939.2	922.1	915.5	904.9	895.7	901.0	881.2	875.9	872.0	854.8	857.5
17.5°	903.6	885.2	869.3	862.7	854.8	846.9	828.4	832.4	823.1	823.1	799.4
20°	857.5	837.7	825.8	812.6	812.6	802.1	788.9	790.2	778.3	766.4	745.3
22.5°	808.7	787.5	773.0	767.7	754.6	751.9	736.1	732.1	716.3	717.6	699.2
25°	757.2	736.1	716.3	717.6	705.8	700.5	691.2	672.8	666.2	658.3	653.0
27.5°	696.5	682.0	664.8	663.5	641.1	642.4	630.6	625.3	609.4	613.4	601.5
30°	641.1	620.0	604.2	600.2	591.0	588.3	569.9	561.9	564.6	554.0	547.5
32.5°	584.4	552.7	546.1	538.2	532.9	526.3	513.1	518.4	506.5	509.2	498.6
35°	509.2	496.0	478.8	478.8	473.6	468.3	459.1	464.4	452.5	447.2	436.7
37.5°	445.9	434.0	416.9	422.1	412.9	405.0	397.1	398.4	387.8	386.5	375.9
40°	377.3	370.7	358.8	358.8	352.2	352.2	348.2	344.3	337.7	329.8	317.9
42.5°	312.6	307.4	302.1	303.4	294.2	302.1	291.5	298.2	277.0	275.7	267.8
45°	265.1	253.3	254.6	249.3	244.0	246.7	237.4	240.1	228.2	225.6	217.7
47.5°	215.0	211.1	203.2	200.5	200.5	196.5	192.6	191.3	186.0	179.4	168.8
50°	176.8	162.3	159.6	155.7	153.0	153.0	147.8	139.9	141.1	134.6	124.0
52.5°	138.5	126.6	121.3	120.1	114.8	112.1	105.5	100.3	96.3	93.6	87.1
55°	106.8	96.3	89.7	89.7	81.8	81.8	72.6	68.6	63.3	58.0	54.1
57.5°	80.5	75.2	68.6	63.3	60.7	54.1	48.8	42.2	38.2	30.3	25.1
60°	60.7	55.4	48.8	44.9	42.2	35.6	29.0	23.7	14.5	11.9	10.5
62.5°	44.9	39.6	33.0	30.3	27.7	22.4	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°	22.4	17.2	11.9	10.5	7.9	4.0	1.3	1.3	1.3	1.3	1.3
70°	14.5	10.5	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 FEU4C209035 F4LC-SQLWW-LI

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1100.2	1100.2	1100.2	1100.2	1100.2	1100.2	1100.2	1100.2
2.5°	1073.8	1064.5	1069.8	1058.0	1063.3	1072.4	1065.9	1068.5
5°	1036.8	1031.6	1025.0	1007.8	1021.0	1031.6	1026.3	1025.0
7.5°	997.3	978.8	988.1	982.8	980.1	990.7	978.8	992.0
10°	956.4	943.2	941.9	932.7	932.7	940.6	941.9	933.9
12.5°	895.7	889.1	889.1	887.8	886.4	894.4	895.7	891.8
15°	852.2	849.5	842.9	841.6	833.7	845.6	846.9	845.6
17.5°	799.4	800.7	794.1	794.1	799.4	803.3	792.8	803.3
20°	763.8	757.2	754.6	742.7	749.3	755.9	755.9	757.2
22.5°	712.3	701.8	705.8	699.2	695.2	704.4	704.4	708.4
25°	654.3	654.3	656.9	653.0	655.6	660.9	656.9	666.2
27.5°	598.9	604.2	604.2	598.9	601.5	617.3	624.0	613.4
30°	547.5	548.8	552.7	550.1	558.0	563.3	561.9	569.9
32.5°	489.4	496.0	498.6	494.7	497.3	509.2	502.6	501.3
35°	444.6	432.7	431.4	432.7	438.0	440.6	438.0	447.2
37.5°	379.9	375.9	370.7	372.0	375.9	381.3	383.9	390.5
40°	317.9	312.6	312.6	311.3	307.4	321.9	321.9	321.9
42.5°	263.8	262.5	255.9	255.9	261.2	265.1	262.5	271.7
45°	216.3	211.1	207.1	207.1	211.1	211.1	215.0	213.7
47.5°	170.2	164.9	166.2	162.3	166.2	171.5	164.9	166.2
50°	128.0	128.0	125.3	128.0	126.6	128.0	125.3	122.7
52.5°	87.1	98.9	100.3	95.0	83.1	72.6	65.9	71.2
55°	50.1	44.9	44.9	43.5	40.9	39.6	35.6	39.6
57.5°	25.1	22.4	22.4	22.4	21.1	19.8	17.2	17.2
60°	10.5	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)