

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 FEU4C209050 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 FEU4C209050 F4LC-SQLWW-LI
 Description: 4 INCH 2000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 5000K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

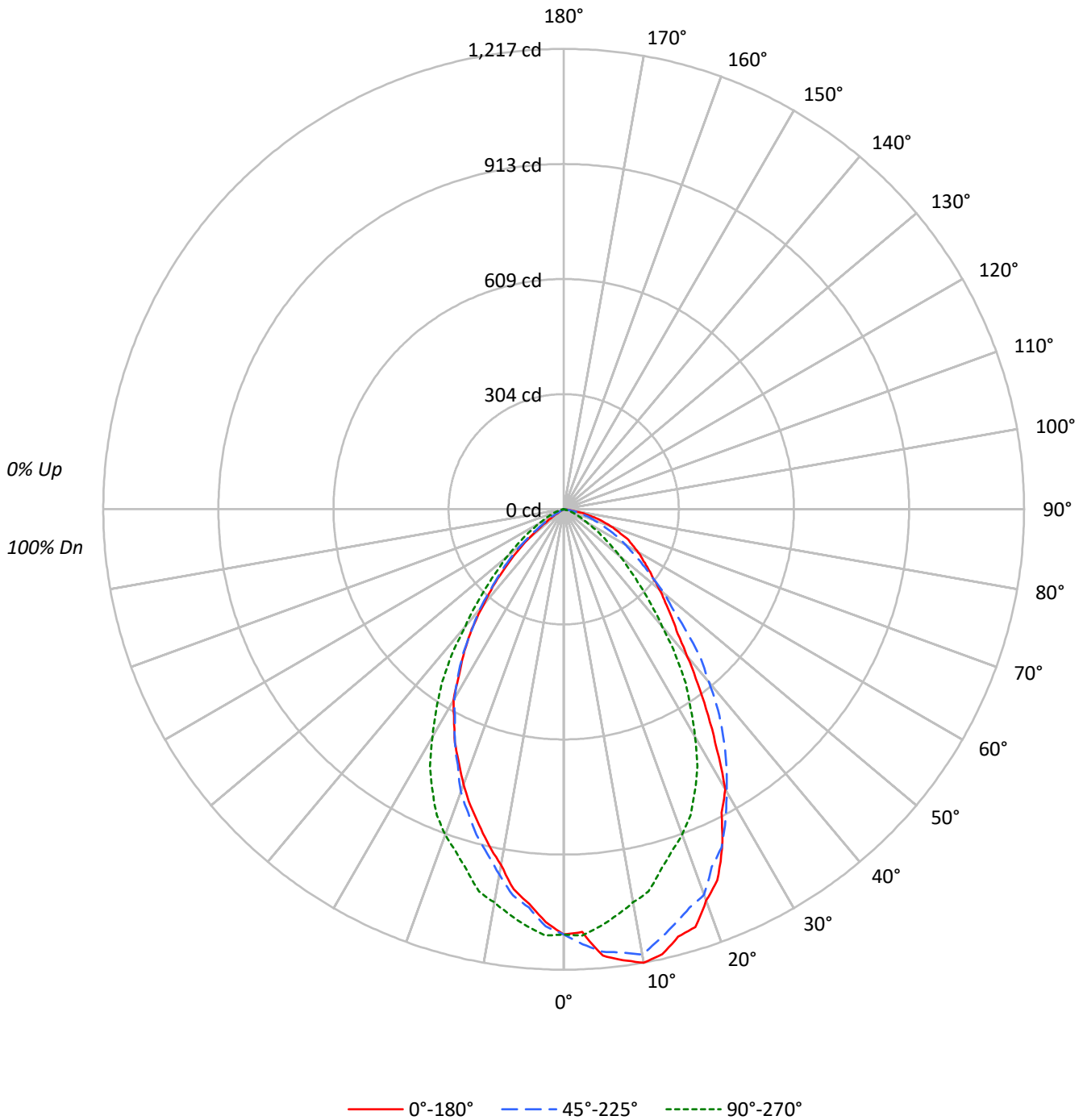
Lumens per Lamp: N/A
 Luminaire Lumens: 1611.0 lumens
 Efficiency: N/A
 Efficacy: 73.9 lumens/watt
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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 FEU4C209050 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	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°	108444	108444	108444
5°	114728	107163	101419
10°	119229	103386	93480
15°	116844	98674	86287
20°	113052	93953	79424
25°	105452	87375	72449
30°	95194	77323	64866
35°	78414	66199	53807
40°	63999	51088	41415
45°	54978	38808	29788
50°	49761	29542	18809
55°	45790	21314	6796
60°	43960	14551	1042
65°	42443	9840	320
70°	38001	6827	395
75°	31166	3542	0
80°	19504	1500	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	105.3	6.5
10°-20°	283.7	17.6
20°-30°	378.8	23.5
30°-40°	359.6	22.3
40°-50°	248.6	15.4
50°-60°	137.4	8.5
60°-70°	68.2	4.2
70°-80°	26.9	1.7
80°-90°	2.6	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°	767.8	47.7
0°-40°	1127.4	70.0
0°-60°	1513.4	93.9
0°-90°	1611.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1611.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1124	1124	1124	1124	1124	
5°	1184	1174	1106	1056	1047	113
15°	1170	1135	988	891	864	331
25°	990	986	821	680	680	452
35°	666	736	562	462	457	417
45°	403	462	284	233	218	314
55°	272	256	127	65	40	245
65°	186	135	43	1	1	180
75°	84	51	10	0	0	89
85°	0	1	0	0	0	8
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°	1123.9	1123.9	1123.9	1123.9	1123.9	1123.9	1123.9	1123.9	1123.9	1123.9	1123.9
2.5°	1118.5	1149.5	1152.2	1149.5	1153.5	1152.2	1158.9	1152.2	1160.3	1148.2	1150.8
5°	1184.5	1172.4	1198.0	1184.5	1184.5	1183.2	1179.1	1177.8	1183.2	1165.7	1173.8
7.5°	1202.1	1219.6	1242.5	1214.2	1215.5	1215.5	1207.4	1204.8	1204.8	1172.4	1181.8
10°	1216.9	1206.1	1218.2	1207.4	1216.9	1215.5	1220.9	1203.4	1215.5	1196.7	1195.3
12.5°	1204.8	1200.7	1216.9	1199.4	1194.0	1195.3	1188.6	1184.5	1188.6	1167.0	1165.7
15°	1169.7	1173.8	1198.0	1179.1	1176.5	1173.8	1165.7	1152.2	1163.0	1133.3	1134.7
17.5°	1157.6	1150.8	1154.9	1138.7	1142.8	1140.1	1138.7	1126.6	1123.9	1105.0	1105.0
20°	1101.0	1115.8	1115.8	1105.0	1105.0	1103.7	1086.2	1096.9	1084.8	1079.4	1084.8
22.5°	1061.9	1063.3	1063.3	1053.8	1055.2	1049.8	1040.3	1033.6	1040.3	1033.6	1022.8
25°	990.5	993.2	1009.4	991.8	989.1	994.5	986.4	982.4	981.1	964.9	986.4
27.5°	904.2	931.2	929.8	923.1	931.2	920.4	916.4	917.7	921.8	920.4	925.8
30°	854.4	858.4	862.5	857.1	858.4	854.4	854.4	855.7	866.5	862.5	861.1
32.5°	753.3	766.8	777.6	777.6	778.9	783.0	781.6	809.9	816.6	803.2	800.5
35°	665.7	675.2	684.6	685.9	703.5	704.8	706.1	714.2	733.1	737.1	735.8
37.5°	582.2	591.6	594.3	606.4	615.9	625.3	636.1	646.9	663.0	676.5	669.8
40°	508.1	512.1	518.8	524.2	543.1	543.1	548.4	570.0	587.6	598.3	597.0
42.5°	446.1	447.4	452.8	462.2	479.8	475.7	479.8	494.6	520.1	521.5	536.4
45°	402.9	401.6	405.6	407.0	417.8	423.2	425.9	436.6	458.2	460.9	462.2
47.5°	363.9	362.5	369.3	371.9	376.0	381.3	381.3	382.7	390.8	397.6	392.2
50°	331.5	331.5	331.5	334.2	341.0	339.6	341.0	346.3	350.4	347.7	346.3
52.5°	296.5	301.8	305.9	307.3	308.6	308.6	310.0	307.3	305.9	301.8	293.8
55°	272.2	277.6	277.6	277.6	277.6	283.0	276.3	277.6	277.6	266.8	256.1
57.5°	248.0	253.4	257.4	252.0	257.4	252.0	249.3	248.0	245.2	234.5	218.3
60°	227.8	230.5	229.1	227.8	230.5	226.4	223.7	218.3	215.6	200.8	190.0
62.5°	204.8	206.2	207.5	204.8	202.2	200.8	195.4	187.3	181.9	169.8	160.3
65°	185.9	181.9	180.6	179.2	176.6	172.5	168.5	159.0	155.0	144.2	134.7
67.5°	157.6	156.3	159.0	155.0	148.3	148.3	144.2	136.1	126.7	120.0	110.5
70°	134.7	133.4	130.7	126.7	125.3	120.0	120.0	110.5	107.8	95.7	87.6
72.5°	110.5	110.5	106.4	102.4	98.4	95.7	94.3	87.6	83.6	76.8	70.1
75°	83.6	83.6	82.2	78.1	75.4	72.8	71.4	66.0	62.0	55.3	51.2
77.5°	59.3	59.3	53.9	51.2	52.5	49.8	47.1	45.8	44.5	40.4	35.1
80°	35.1	33.7	29.7	31.0	29.7	29.7	28.3	26.9	24.2	21.5	18.8
82.5°	9.5	10.8	10.8	10.8	12.1	9.5	9.5	9.5	10.8	10.8	6.8
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	1.4
87.5°	1.4	2.7	5.4	5.4	5.4	5.4	5.4	4.1	4.1	4.1	2.7
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°	1123.9	1123.9	1123.9	1123.9	1123.9	1123.9	1123.9	1123.9	1123.9	1123.9	1123.9
2.5°	1137.4	1136.0	1137.4	1127.9	1149.5	1133.3	1130.6	1127.9	1137.4	1127.9	1114.5
5°	1161.6	1148.2	1144.1	1140.1	1152.2	1133.3	1129.3	1130.6	1123.9	1106.4	1107.7
7.5°	1169.7	1157.6	1145.5	1119.9	1130.6	1126.6	1115.8	1107.7	1096.9	1082.1	1079.4
10°	1172.4	1158.9	1141.4	1133.3	1117.2	1111.8	1107.7	1094.3	1080.8	1055.2	1048.4
12.5°	1164.3	1148.2	1126.6	1119.9	1107.7	1090.2	1080.8	1067.3	1055.2	1035.0	1020.1
15°	1129.3	1115.8	1109.1	1086.2	1080.8	1070.0	1051.1	1032.3	1014.7	987.8	979.7
17.5°	1088.9	1083.5	1076.7	1059.2	1057.9	1047.1	1029.6	1013.4	990.5	948.7	935.2
20°	1047.1	1047.1	1025.5	1018.8	1032.3	1010.7	997.2	982.4	935.2	915.0	890.8
22.5°	1016.1	1001.3	989.1	978.4	979.7	966.2	947.4	917.7	900.2	875.9	847.6
25°	955.5	960.8	933.9	929.8	933.9	902.9	893.5	869.2	843.6	820.7	799.1
27.5°	917.7	902.9	885.4	870.6	870.6	858.4	831.5	826.1	787.0	765.4	738.5
30°	861.1	850.3	835.5	814.0	811.3	801.8	780.3	766.8	726.4	694.0	679.2
32.5°	789.7	785.7	773.5	749.3	741.2	730.4	703.5	680.5	661.7	625.3	607.8
35°	738.5	723.7	698.1	677.8	671.1	652.2	630.6	614.5	594.3	562.0	539.0
37.5°	661.7	646.9	622.6	598.3	598.3	579.5	549.8	533.7	505.4	486.5	467.6
40°	594.3	575.4	551.2	522.9	518.8	491.8	479.8	452.8	435.3	405.6	402.9
42.5°	518.8	501.3	479.8	458.2	442.0	428.5	397.6	377.3	358.5	343.6	339.6
45°	450.1	427.2	408.3	381.3	365.2	349.0	328.8	315.4	300.5	284.4	274.9
47.5°	390.8	371.9	345.0	320.7	304.6	296.5	273.5	258.8	246.6	235.8	229.1
50°	330.2	307.3	292.4	265.5	262.8	243.9	225.1	212.9	206.2	196.8	187.3
52.5°	284.4	262.8	242.5	222.4	211.6	204.8	187.3	175.2	165.8	159.0	153.6
55°	239.9	221.0	204.8	184.6	177.9	168.5	148.3	145.6	136.1	126.7	120.0
57.5°	206.2	188.6	169.8	156.3	144.2	137.5	121.3	110.5	105.1	97.0	90.3
60°	175.2	156.3	141.5	125.3	120.0	110.5	98.4	89.0	82.2	75.4	68.7
62.5°	146.9	130.7	114.6	101.1	93.0	87.6	78.1	70.1	63.4	58.0	52.5
65°	121.3	106.4	93.0	79.5	75.4	68.7	62.0	55.3	49.8	43.1	37.7
67.5°	99.7	86.3	72.8	63.4	59.3	56.6	48.5	41.8	37.7	33.7	28.3
70°	78.1	68.7	58.0	49.8	45.8	41.8	36.4	32.4	26.9	24.2	20.2
72.5°	60.7	52.5	43.1	36.4	33.7	31.0	25.6	21.5	18.8	16.2	13.5
75°	43.1	36.4	31.0	24.2	22.9	21.5	17.5	14.8	12.1	9.5	8.1
77.5°	29.7	24.2	18.8	16.2	14.8	12.1	10.8	8.1	6.8	5.4	4.1
80°	16.2	12.1	9.5	8.1	6.8	5.4	5.4	4.1	2.7	2.7	1.4
82.5°	5.4	4.1	2.7	1.4	1.4	1.4	1.4	1.4	1.4	0.0	1.4
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°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	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°	1123.9	1123.9	1123.9	1123.9	1123.9	1123.9	1123.9	1123.9	1123.9	1123.9	1123.9
2.5°	1122.6	1107.7	1111.8	1111.8	1109.1	1109.1	1106.4	1102.3	1103.7	1095.6	1078.1
5°	1110.4	1091.6	1088.9	1091.6	1080.8	1078.1	1072.7	1080.8	1056.5	1066.0	1055.2
7.5°	1075.4	1057.9	1053.8	1063.3	1049.8	1041.7	1040.3	1051.1	1029.6	1018.8	1006.7
10°	1036.3	1029.6	1017.4	1010.7	1006.7	1008.0	997.2	983.7	979.7	977.0	966.2
12.5°	1001.3	986.4	975.7	967.6	964.9	964.9	947.4	944.7	932.5	929.8	913.7
15°	959.5	942.0	935.2	924.5	915.0	920.4	900.2	894.8	890.8	873.2	875.9
17.5°	923.1	904.2	888.1	881.3	873.2	865.2	846.3	850.3	840.9	840.9	816.6
20°	875.9	855.7	843.6	830.1	830.1	819.3	805.9	807.2	795.1	783.0	761.4
22.5°	826.1	804.5	789.7	784.3	770.8	768.1	752.0	747.9	731.8	733.1	714.2
25°	773.5	752.0	731.8	733.1	721.0	715.6	706.1	687.3	680.5	672.5	667.1
27.5°	711.5	696.7	679.2	677.8	654.9	656.3	644.2	638.8	622.6	626.6	614.5
30°	654.9	633.4	617.2	613.2	603.7	601.0	582.2	574.1	576.8	566.0	559.3
32.5°	597.0	564.7	557.9	549.8	544.4	537.7	524.2	529.6	517.5	520.1	509.4
35°	520.1	506.7	489.2	489.2	483.8	478.4	469.0	474.4	462.2	456.8	446.1
37.5°	455.5	443.4	425.9	431.2	421.8	413.7	405.6	407.0	396.2	394.9	384.0
40°	385.4	378.7	366.6	366.6	359.8	359.8	355.7	351.7	345.0	336.9	324.7
42.5°	319.4	314.0	308.6	310.0	300.5	308.6	297.8	304.6	283.0	281.7	273.5
45°	270.8	258.8	260.1	254.7	249.3	252.0	242.5	245.2	233.1	230.5	222.4
47.5°	219.7	215.6	207.5	204.8	204.8	200.8	196.8	195.4	190.0	183.3	172.5
50°	180.6	165.8	163.0	159.0	156.3	156.3	150.9	142.9	144.2	137.5	126.7
52.5°	141.5	129.4	124.0	122.6	117.3	114.6	107.8	102.4	98.4	95.7	89.0
55°	109.1	98.4	91.7	91.7	83.6	83.6	74.1	70.1	64.7	59.3	55.3
57.5°	82.2	76.8	70.1	64.7	62.0	55.3	49.8	43.1	39.1	31.0	25.6
60°	62.0	56.6	49.8	45.8	43.1	36.4	29.7	24.2	14.8	12.1	10.8
62.5°	45.8	40.4	33.7	31.0	28.3	22.9	16.2	8.1	4.1	4.1	4.1
65°	33.7	26.9	21.5	18.8	16.2	12.1	5.4	2.7	1.4	1.4	1.4
67.5°	22.9	17.5	12.1	10.8	8.1	4.1	1.4	1.4	1.4	1.4	1.4
70°	14.8	10.8	5.4	4.1	2.7	1.4	1.4	1.4	1.4	1.4	1.4
72.5°	9.5	5.4	2.7	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	5.4	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	2.7	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	1.4	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	1.4	1.4	1.4
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 FEU4C209050 F4LC-SQLWW-LI

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1123.9	1123.9	1123.9	1123.9	1123.9	1123.9	1123.9	1123.9
2.5°	1096.9	1087.5	1092.9	1080.8	1086.2	1095.6	1088.9	1091.6
5°	1059.2	1053.8	1047.1	1029.6	1043.0	1053.8	1048.4	1047.1
7.5°	1018.8	999.9	1009.4	1004.0	1001.3	1012.0	999.9	1013.4
10°	977.0	963.5	962.2	952.8	952.8	960.8	962.2	954.1
12.5°	915.0	908.3	908.3	906.9	905.6	913.7	915.0	911.0
15°	870.6	867.9	861.1	859.8	851.7	863.8	865.2	863.8
17.5°	816.6	818.0	811.3	811.3	816.6	820.7	809.9	820.7
20°	780.3	773.5	770.8	758.7	765.4	772.2	772.2	773.5
22.5°	727.7	716.9	721.0	714.2	710.2	719.6	719.6	723.7
25°	668.4	668.4	671.1	667.1	669.8	675.2	671.1	680.5
27.5°	611.8	617.2	617.2	611.8	614.5	630.6	637.4	626.6
30°	559.3	560.6	564.7	562.0	570.0	575.4	574.1	582.2
32.5°	500.0	506.7	509.4	505.4	508.1	520.1	513.4	512.1
35°	454.2	442.0	440.7	442.0	447.4	450.1	447.4	456.8
37.5°	388.1	384.0	378.7	380.0	384.0	389.5	392.2	398.9
40°	324.7	319.4	319.4	318.0	314.0	328.8	328.8	328.8
42.5°	269.5	268.2	261.4	261.4	266.8	270.8	268.2	277.6
45°	221.0	215.6	211.6	211.6	215.6	215.6	219.7	218.3
47.5°	173.9	168.5	169.8	165.8	169.8	175.2	168.5	169.8
50°	130.7	130.7	128.0	130.7	129.4	130.7	128.0	125.3
52.5°	89.0	101.1	102.4	97.0	84.9	74.1	67.4	72.8
55°	51.2	45.8	45.8	44.5	41.8	40.4	36.4	40.4
57.5°	25.6	22.9	22.9	22.9	21.5	20.2	17.5	17.5
60°	10.8	9.5	9.5	8.1	6.8	5.4	4.1	5.4
62.5°	4.1	2.7	2.7	2.7	2.7	2.7	2.7	2.7
65°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
67.5°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
70°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
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)