

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

Summary

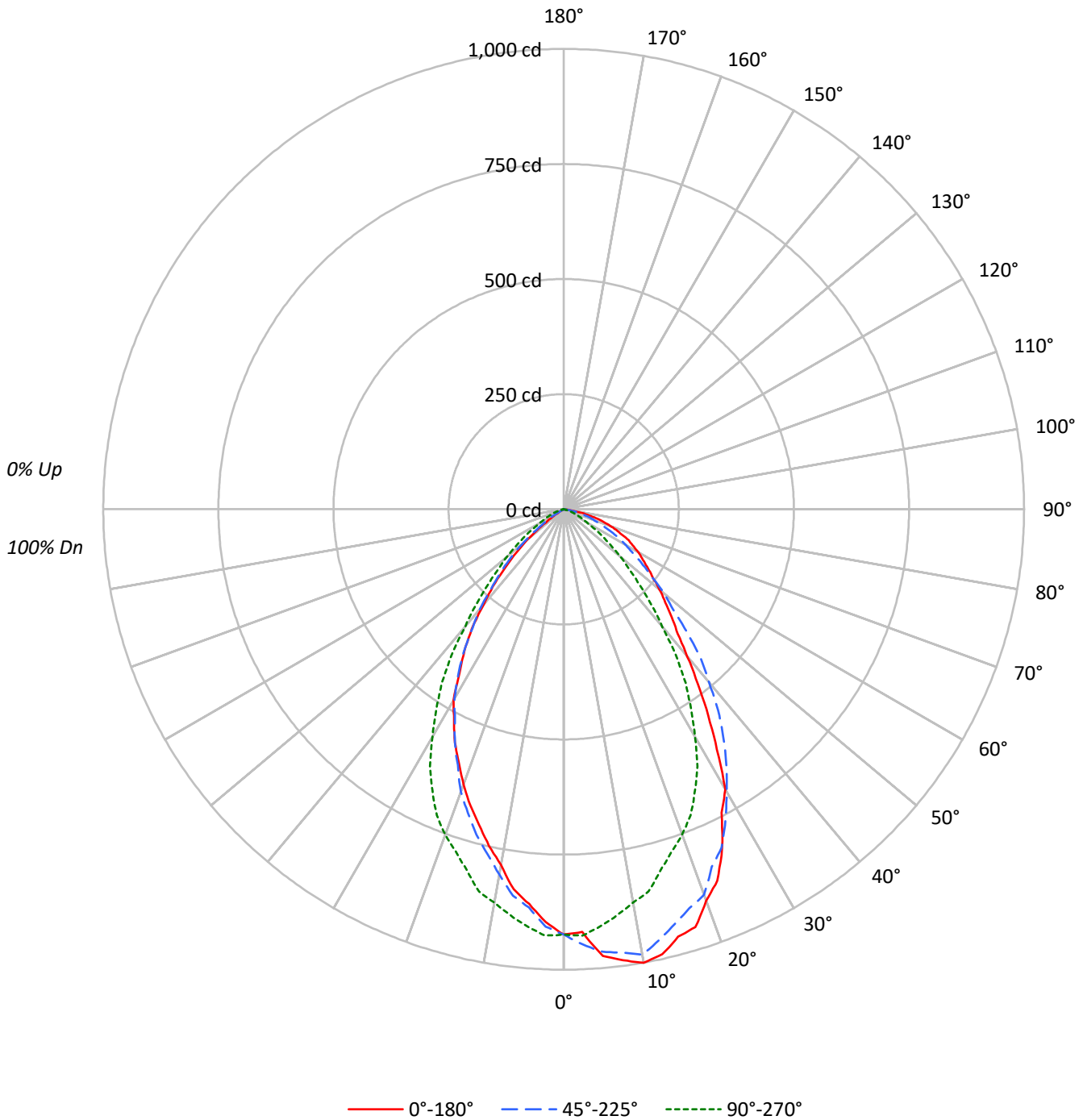
Lumens per Lamp: N/A
 Luminaire Lumens: 1324.0 lumens
 Efficiency: N/A
 Efficacy: 60.7 lumens/watt
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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-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	50	30	10	0	
RCR																						
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100				100
1	112	108	105	102	109	106	103	101	102	100	98	98	96	95	95	93	92	90				90
2	104	98	93	89	102	96	92	88	93	89	86	90	87	84	87	84	82	80				80
3	97	89	83	78	95	88	82	77	85	80	76	82	78	75	80	77	74	72				72
4	91	81	74	69	89	80	74	69	78	72	68	76	71	67	74	70	66	64				64
5	85	75	67	62	83	74	67	62	72	66	61	70	65	60	68	64	60	58				58
6	80	69	61	56	78	68	61	56	66	60	55	65	59	55	63	58	54	53				53
7	75	63	56	51	73	63	56	51	61	55	50	60	54	50	59	54	50	48				48
8	70	59	52	47	69	58	51	46	57	51	46	56	50	46	55	50	46	44				44
9	66	55	48	43	65	54	47	43	53	47	43	52	46	42	51	46	42	41				41
10	62	51	44	40	61	51	44	40	50	44	39	49	43	39	48	43	39	38				38

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	89127	89127	89127
5°	94291	88072	83356
10°	97987	84966	76824
15°	96027	81093	70914
20°	92916	77216	65275
25°	86661	71810	59545
30°	78236	63552	53312
35°	64444	54396	44231
40°	52587	41994	34034
45°	45194	31890	24480
50°	40890	24273	15461
55°	37632	17512	5585
60°	36125	11965	849
65°	34886	8105	251
70°	31230	5614	310
75°	25612	2908	0
80°	16003	1222	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	86.5	6.5
10°-20°	233.2	17.6
20°-30°	311.3	23.5
30°-40°	295.6	22.3
40°-50°	204.3	15.4
50°-60°	112.9	8.5
60°-70°	56.0	4.2
70°-80°	22.1	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°	631.0	47.7
0°-40°	926.6	70.0
0°-60°	1243.8	93.9
0°-90°	1324.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1324.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	924	924	924	924	924	
5°	974	965	909	868	861	93
15°	961	932	812	732	710	272
25°	814	811	674	559	559	371
35°	547	605	462	380	376	343
45°	331	380	234	192	179	258
55°	224	210	104	53	33	201
65°	153	111	36	1	1	148
75°	69	42	8	0	0	73
85°	0	1	0	0	0	6
90°	0	0	0	0	0	

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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	923.7	923.7	923.7	923.7	923.7	923.7	923.7	923.7	923.7	923.7	923.7
2.5°	919.2	944.7	946.9	944.7	948.0	946.9	952.5	946.9	953.6	943.6	945.8
5°	973.5	963.5	984.6	973.5	973.5	972.4	969.1	968.0	972.4	958.0	964.7
7.5°	987.9	1002.3	1021.2	997.9	999.0	999.0	992.3	990.1	990.1	963.5	971.3
10°	1000.1	991.2	1001.2	992.3	1000.1	999.0	1003.4	989.0	999.0	983.5	982.4
12.5°	990.1	986.8	1000.1	985.7	981.3	982.4	976.8	973.5	976.8	959.1	958.0
15°	961.3	964.7	984.6	969.1	966.9	964.7	958.0	946.9	955.8	931.4	932.5
17.5°	951.4	945.8	949.2	935.8	939.2	937.0	935.8	925.9	923.7	908.2	908.2
20°	904.9	917.0	917.0	908.2	908.2	907.1	892.7	901.5	891.5	887.1	891.5
22.5°	872.7	873.8	873.8	866.1	867.2	862.8	855.0	849.5	855.0	849.5	840.6
25°	814.0	816.3	829.5	815.1	812.9	817.3	810.7	807.4	806.3	793.0	810.7
27.5°	743.1	765.3	764.2	758.6	765.3	756.4	753.1	754.2	757.6	756.4	760.9
30°	702.2	705.5	708.8	704.4	705.5	702.2	702.2	703.3	712.1	708.8	707.7
32.5°	619.1	630.2	639.1	639.1	640.1	643.5	642.4	665.6	671.2	660.1	657.9
35°	547.1	554.9	562.6	563.7	578.1	579.2	580.3	587.0	602.5	605.8	604.7
37.5°	478.5	486.2	488.4	498.4	506.1	513.9	522.8	531.6	544.9	556.0	550.5
40°	417.5	420.8	426.4	430.8	446.3	446.3	450.7	468.5	482.9	491.7	490.6
42.5°	366.6	367.7	372.1	379.9	394.3	390.9	394.3	406.5	427.5	428.6	440.8
45°	331.2	330.0	333.4	334.5	343.3	347.8	350.0	358.8	376.5	378.8	379.9
47.5°	299.0	297.9	303.5	305.7	309.0	313.4	313.4	314.5	321.2	326.7	322.3
50°	272.4	272.4	272.4	274.7	280.2	279.1	280.2	284.6	287.9	285.7	284.6
52.5°	243.6	248.1	251.4	252.5	253.6	253.6	254.7	252.5	251.4	248.1	241.4
55°	223.7	228.1	228.1	228.1	228.1	232.6	227.1	228.1	228.1	219.3	210.4
57.5°	203.8	208.2	211.5	207.1	211.5	207.1	204.9	203.8	201.5	192.7	179.4
60°	187.2	189.4	188.3	187.2	189.4	186.1	183.8	179.4	177.2	165.0	156.2
62.5°	168.4	169.4	170.6	168.4	166.1	165.0	160.6	153.9	149.5	139.5	131.8
65°	152.8	149.5	148.4	147.3	145.1	141.8	138.5	130.7	127.4	118.5	110.7
67.5°	129.6	128.5	130.7	127.4	121.8	121.8	118.5	111.9	104.1	98.6	90.8
70°	110.7	109.6	107.4	104.1	103.0	98.6	98.6	90.8	88.6	78.6	72.0
72.5°	90.8	90.8	87.5	84.2	80.8	78.6	77.5	72.0	68.7	63.1	57.6
75°	68.7	68.7	67.6	64.2	62.0	59.8	58.7	54.3	50.9	45.4	42.1
77.5°	48.7	48.7	44.3	42.1	43.2	41.0	38.7	37.7	36.5	33.2	28.8
80°	28.8	27.7	24.4	25.5	24.4	24.4	23.3	22.1	19.9	17.7	15.5
82.5°	7.8	8.9	8.9	8.9	10.0	7.8	7.8	7.8	8.9	8.9	5.6
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°	923.7	923.7	923.7	923.7	923.7	923.7	923.7	923.7	923.7	923.7	923.7
2.5°	934.8	933.6	934.8	927.0	944.7	931.4	929.2	927.0	934.8	927.0	915.9
5°	954.7	943.6	940.3	937.0	946.9	931.4	928.1	929.2	923.7	909.3	910.4
7.5°	961.3	951.4	941.4	920.4	929.2	925.9	917.0	910.4	901.5	889.3	887.1
10°	963.5	952.5	938.1	931.4	918.1	913.7	910.4	899.3	888.2	867.2	861.6
12.5°	956.9	943.6	925.9	920.4	910.4	896.0	888.2	877.1	867.2	850.6	838.4
15°	928.1	917.0	911.5	892.7	888.2	879.4	863.9	848.4	834.0	811.8	805.2
17.5°	894.9	890.5	884.9	870.5	869.4	860.6	846.2	832.8	814.0	779.7	768.6
20°	860.6	860.6	842.8	837.3	848.4	830.6	819.6	807.4	768.6	752.0	732.1
22.5°	835.1	822.9	812.9	804.1	805.2	794.1	778.6	754.2	739.8	719.9	696.6
25°	785.2	789.7	767.5	764.2	767.5	742.0	734.3	714.3	693.3	674.5	656.8
27.5°	754.2	742.0	727.7	715.5	715.5	705.5	683.4	678.9	646.8	629.1	606.9
30°	707.7	698.8	686.7	669.0	666.7	659.0	641.3	630.2	597.0	570.4	558.2
32.5°	649.0	645.7	635.7	615.8	609.2	600.3	578.1	559.3	543.8	513.9	499.5
35°	606.9	594.8	573.7	557.1	551.5	536.0	518.3	505.0	488.4	461.8	443.0
37.5°	543.8	531.6	511.7	491.7	491.7	476.3	451.9	438.6	415.3	399.8	384.3
40°	488.4	472.9	453.0	429.7	426.4	404.2	394.3	372.1	357.7	333.4	331.2
42.5°	426.4	412.0	394.3	376.5	363.3	352.2	326.7	310.1	294.6	282.4	279.1
45°	369.9	351.1	335.6	313.4	300.1	286.9	270.2	259.2	247.0	233.7	225.9
47.5°	321.2	305.7	283.5	263.6	250.3	243.6	224.8	212.7	202.7	193.8	188.3
50°	271.4	252.5	240.3	218.2	216.0	200.5	185.0	175.0	169.4	161.7	153.9
52.5°	233.7	216.0	199.3	182.8	173.9	168.4	153.9	144.0	136.2	130.7	126.3
55°	197.1	181.6	168.4	151.7	146.2	138.5	121.8	119.6	111.9	104.1	98.6
57.5°	169.4	155.0	139.5	128.5	118.5	113.0	99.7	90.8	86.4	79.8	74.2
60°	144.0	128.5	116.3	103.0	98.6	90.8	80.8	73.1	67.6	62.0	56.5
62.5°	120.7	107.4	94.2	83.0	76.4	72.0	64.2	57.6	52.1	47.6	43.2
65°	99.7	87.5	76.4	65.3	62.0	56.5	50.9	45.4	41.0	35.5	31.0
67.5°	82.0	70.9	59.8	52.1	48.7	46.5	39.9	34.3	31.0	27.7	23.3
70°	64.2	56.5	47.6	41.0	37.7	34.3	29.9	26.6	22.1	19.9	16.6
72.5°	49.9	43.2	35.5	29.9	27.7	25.5	21.0	17.7	15.5	13.3	11.1
75°	35.5	29.9	25.5	19.9	18.8	17.7	14.4	12.2	10.0	7.8	6.6
77.5°	24.4	19.9	15.5	13.3	12.2	10.0	8.9	6.6	5.6	4.4	3.3
80°	13.3	10.0	7.8	6.6	5.6	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°	923.7	923.7	923.7	923.7	923.7	923.7	923.7	923.7	923.7	923.7	923.7
2.5°	922.6	910.4	913.7	913.7	911.5	911.5	909.3	905.9	907.1	900.4	886.0
5°	912.6	897.1	894.9	897.1	888.2	886.0	881.6	888.2	868.3	876.1	867.2
7.5°	883.8	869.4	866.1	873.8	862.8	856.1	855.0	863.9	846.2	837.3	827.3
10°	851.7	846.2	836.2	830.6	827.3	828.4	819.6	808.5	805.2	802.9	794.1
12.5°	822.9	810.7	801.9	795.2	793.0	793.0	778.6	776.4	766.4	764.2	750.9
15°	788.5	774.2	768.6	759.8	752.0	756.4	739.8	735.4	732.1	717.7	719.9
17.5°	758.6	743.1	729.9	724.3	717.7	711.0	695.5	698.8	691.1	691.1	671.2
20°	719.9	703.3	693.3	682.2	682.2	673.4	662.3	663.4	653.4	643.5	625.7
22.5°	678.9	661.2	649.0	644.6	633.5	631.3	618.0	614.7	601.4	602.5	587.0
25°	635.7	618.0	601.4	602.5	592.5	588.1	580.3	564.9	559.3	552.7	548.2
27.5°	584.8	572.6	558.2	557.1	538.3	539.3	529.4	525.0	511.7	515.0	505.0
30°	538.3	520.6	507.2	503.9	496.2	494.0	478.5	471.8	474.0	465.1	459.6
32.5°	490.6	464.1	458.5	451.9	447.4	441.9	430.8	435.2	425.3	427.5	418.6
35°	427.5	416.4	402.0	402.0	397.6	393.2	385.4	389.9	379.9	375.5	366.6
37.5°	374.3	364.4	350.0	354.4	346.6	340.0	333.4	334.5	325.6	324.5	315.6
40°	316.8	311.2	301.3	301.3	295.7	295.7	292.4	289.1	283.5	276.9	266.9
42.5°	262.5	258.0	253.6	254.7	247.0	253.6	244.8	250.3	232.6	231.5	224.8
45°	222.6	212.7	213.7	209.3	204.9	207.1	199.3	201.5	191.6	189.4	182.8
47.5°	180.5	177.2	170.6	168.4	168.4	165.0	161.7	160.6	156.2	150.6	141.8
50°	148.4	136.2	134.0	130.7	128.5	128.5	124.1	117.4	118.5	113.0	104.1
52.5°	116.3	106.3	101.9	100.8	96.4	94.2	88.6	84.2	80.8	78.6	73.1
55°	89.7	80.8	75.3	75.3	68.7	68.7	60.9	57.6	53.2	48.7	45.4
57.5°	67.6	63.1	57.6	53.2	50.9	45.4	41.0	35.5	32.1	25.5	21.0
60°	50.9	46.5	41.0	37.7	35.5	29.9	24.4	19.9	12.2	10.0	8.9
62.5°	37.7	33.2	27.7	25.5	23.3	18.8	13.3	6.6	3.3	3.3	3.3
65°	27.7	22.1	17.7	15.5	13.3	10.0	4.4	2.2	1.1	1.1	1.1
67.5°	18.8	14.4	10.0	8.9	6.6	3.3	1.1	1.1	1.1	1.1	1.1
70°	12.2	8.9	4.4	3.3	2.2	1.1	1.1	1.1	1.1	1.1	1.1
72.5°	7.8	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 FEU4C209035 F4LC-SQLWW-H

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	923.7	923.7	923.7	923.7	923.7	923.7	923.7	923.7
2.5°	901.5	893.8	898.2	888.2	892.7	900.4	894.9	897.1
5°	870.5	866.1	860.6	846.2	857.2	866.1	861.6	860.6
7.5°	837.3	821.8	829.5	825.1	822.9	831.8	821.8	832.8
10°	802.9	791.9	790.8	783.0	783.0	789.7	790.8	784.1
12.5°	752.0	746.5	746.5	745.4	744.2	750.9	752.0	748.7
15°	715.5	713.3	707.7	706.6	700.0	709.9	711.0	709.9
17.5°	671.2	672.2	666.7	666.7	671.2	674.5	665.6	674.5
20°	641.3	635.7	633.5	623.5	629.1	634.6	634.6	635.7
22.5°	598.1	589.2	592.5	587.0	583.6	591.4	591.4	594.8
25°	549.3	549.3	551.5	548.2	550.5	554.9	551.5	559.3
27.5°	502.8	507.2	507.2	502.8	505.0	518.3	523.9	515.0
30°	459.6	460.7	464.1	461.8	468.5	472.9	471.8	478.5
32.5°	410.9	416.4	418.6	415.3	417.5	427.5	422.0	420.8
35°	373.2	363.3	362.2	363.3	367.7	369.9	367.7	375.5
37.5°	319.0	315.6	311.2	312.3	315.6	320.1	322.3	327.8
40°	266.9	262.5	262.5	261.4	258.0	270.2	270.2	270.2
42.5°	221.5	220.4	214.9	214.9	219.3	222.6	220.4	228.1
45°	181.6	177.2	173.9	173.9	177.2	177.2	180.5	179.4
47.5°	142.9	138.5	139.5	136.2	139.5	144.0	138.5	139.5
50°	107.4	107.4	105.2	107.4	106.3	107.4	105.2	103.0
52.5°	73.1	83.0	84.2	79.8	69.8	60.9	55.4	59.8
55°	42.1	37.7	37.7	36.5	34.3	33.2	29.9	33.2
57.5°	21.0	18.8	18.8	18.8	17.7	16.6	14.4	14.4
60°	8.9	7.8	7.8	6.6	5.6	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)