

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: **FLDSQ4C90D010 FEU4C909035 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: FLDSQ4C90D010 FEU4C909035 F4LC-SQLWW-LI
 Description: 4 INCH 9000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3500K, 90CRI LEDS AND F4LC-SQLWW TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

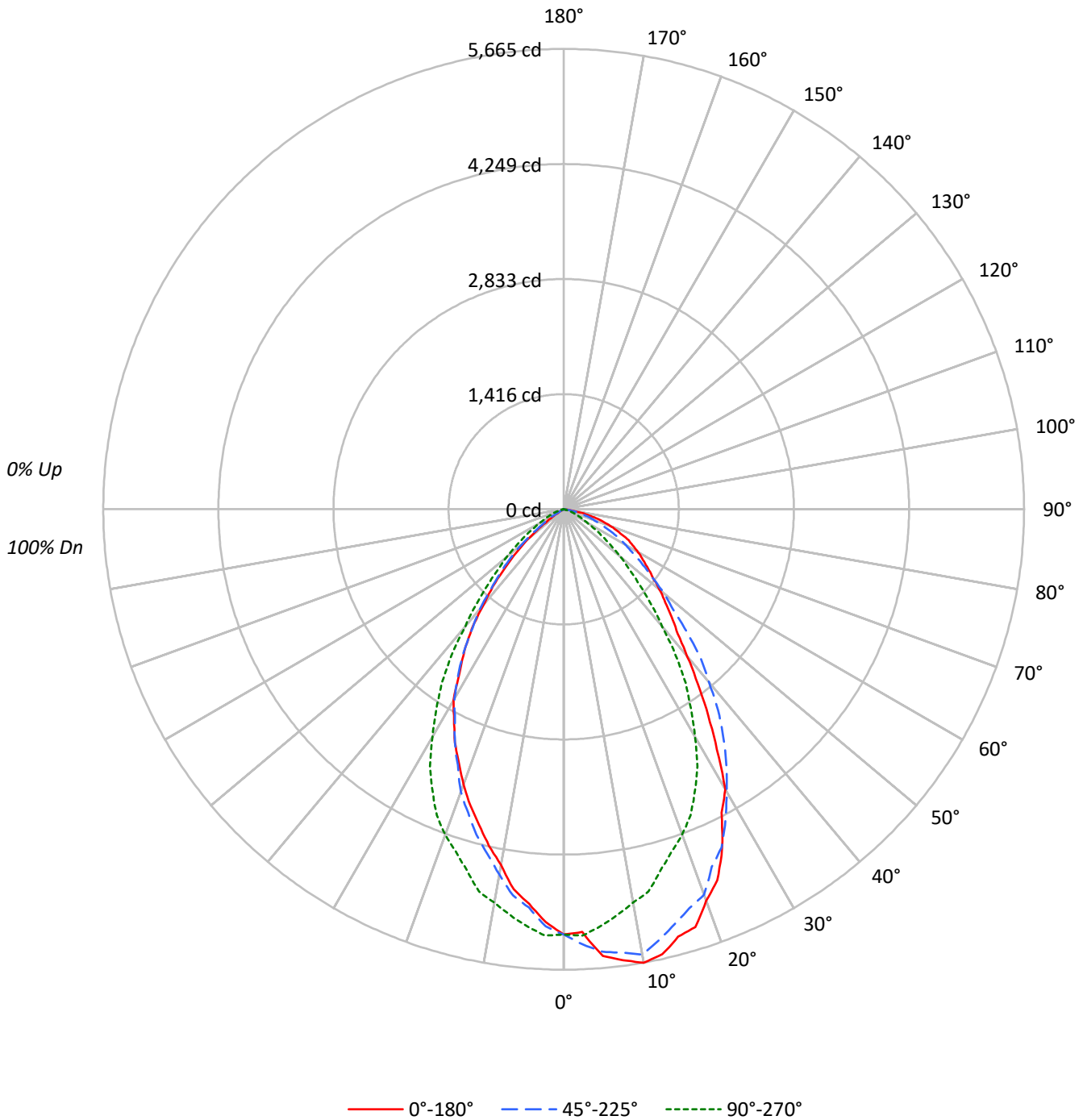
Lumens per Lamp: N/A
 Luminaire Lumens: 7500.0 lumens
 Efficiency: N/A
 Efficacy: 77.2 lumens/watt
 Spacing Criteria (0/90/45): 1.01 / 1 / 1.06
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 97.1
 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: FLDSQ4C90D010 FEU4C909035 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°	504849	504849	504849
5°	534130	498893	472161
10°	555071	481304	435186
15°	543965	459356	401708
20°	526314	437402	369766
25°	490936	406755	337309
30°	443167	359973	301970
35°	365058	308165	250518
40°	297927	237858	192815
45°	255978	180640	138680
50°	231665	137516	87589
55°	213189	99201	31676
60°	204614	67774	4844
65°	197650	45845	1461
70°	176971	31823	1806
75°	145058	16403	0
80°	90683	6946	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	490.2	6.5
10°-20°	1320.7	17.6
20°-30°	1763.6	23.5
30°-40°	1674.2	22.3
40°-50°	1157.3	15.4
50°-60°	639.4	8.5
60°-70°	317.5	4.2
70°-80°	125.1	1.7
80°-90°	11.9	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°	3574.6	47.7
0°-40°	5248.8	70.0
0°-60°	7045.5	93.9
0°-90°	7500.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	7500.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	5232	5232	5232	5232	5232	
5°	5515	5464	5151	4918	4875	528
15°	5446	5283	4598	4147	4021	1540
25°	4611	4592	3821	3168	3168	2102
35°	3099	3425	2616	2152	2127	1942
45°	1876	2152	1324	1085	1016	1463
55°	1267	1192	590	301	188	1141
65°	866	627	201	6	6	840
75°	389	238	44	0	0	415
85°	0	6	0	0	0	36
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°	5232.2	5232.2	5232.2	5232.2	5232.2	5232.2	5232.2	5232.2	5232.2	5232.2	5232.2
2.5°	5207.1	5351.4	5363.9	5351.4	5370.3	5363.9	5395.4	5363.9	5401.8	5345.2	5357.8
5°	5514.6	5458.1	5577.3	5514.6	5514.6	5508.4	5489.5	5483.1	5508.4	5426.8	5464.4
7.5°	5596.2	5677.8	5784.5	5652.7	5658.9	5658.9	5621.3	5608.7	5608.7	5458.1	5502.1
10°	5665.3	5614.9	5671.4	5621.3	5665.3	5658.9	5683.9	5602.3	5658.9	5571.1	5564.7
12.5°	5608.7	5589.8	5665.3	5583.7	5558.6	5564.7	5533.5	5514.6	5533.5	5433.0	5426.8
15°	5445.5	5464.4	5577.3	5489.5	5477.0	5464.4	5426.8	5363.9	5414.3	5276.2	5282.6
17.5°	5389.2	5357.8	5376.7	5301.2	5320.2	5307.6	5301.2	5245.0	5232.2	5144.4	5144.4
20°	5125.7	5194.6	5194.6	5144.4	5144.4	5138.3	5056.7	5106.8	5050.3	5025.2	5050.3
22.5°	4943.6	4950.0	4950.0	4906.0	4912.4	4887.3	4843.3	4811.9	4843.3	4811.9	4761.7
25°	4611.3	4623.8	4699.0	4617.4	4604.9	4630.0	4592.4	4573.4	4567.3	4492.1	4592.4
27.5°	4209.7	4335.0	4328.9	4297.4	4335.0	4284.9	4266.2	4272.4	4291.3	4284.9	4310.0
30°	3977.6	3996.3	4015.3	3990.2	3996.3	3977.6	3977.6	3983.8	4033.9	4015.3	4008.9
32.5°	3507.0	3569.6	3620.0	3620.0	3626.2	3645.1	3638.7	3770.4	3801.9	3739.2	3726.7
35°	3099.2	3143.2	3186.9	3193.3	3274.9	3281.1	3287.5	3325.1	3412.8	3431.7	3425.4
37.5°	2710.3	2754.1	2766.6	2823.2	2867.2	2910.9	2961.3	3011.4	3086.7	3149.3	3118.1
40°	2365.3	2383.9	2415.4	2440.5	2528.2	2528.2	2553.3	2653.8	2735.4	2785.6	2779.2
42.5°	2076.7	2082.8	2107.9	2151.9	2233.5	2214.6	2233.5	2302.6	2421.5	2427.9	2497.0
45°	1875.9	1869.5	1888.4	1894.6	1945.0	1970.0	1982.6	2032.7	2133.0	2145.5	2151.9
47.5°	1694.0	1687.6	1719.1	1731.6	1750.3	1775.4	1775.4	1781.7	1819.4	1850.8	1825.7
50°	1543.3	1543.3	1543.3	1555.9	1587.3	1580.9	1587.3	1612.4	1631.1	1618.5	1612.4
52.5°	1380.1	1405.2	1424.1	1430.5	1436.7	1436.7	1443.0	1430.5	1424.1	1405.2	1367.6
55°	1267.3	1292.4	1292.4	1292.4	1292.4	1317.4	1286.2	1292.4	1292.4	1242.2	1192.1
57.5°	1154.5	1179.6	1198.2	1173.2	1198.2	1173.2	1160.6	1154.5	1141.7	1091.6	1016.3
60°	1060.3	1072.9	1066.5	1060.3	1072.9	1054.0	1041.4	1016.3	1003.8	934.7	884.6
62.5°	953.7	959.8	966.2	953.7	941.1	934.7	909.7	872.1	847.0	790.5	746.5
65°	865.7	847.0	840.6	834.5	821.9	803.0	784.3	740.3	721.4	671.3	627.3
67.5°	733.9	727.8	740.3	721.4	690.2	690.2	671.3	633.7	589.7	558.4	514.4
70°	627.3	621.1	608.6	589.7	583.5	558.4	558.4	514.4	501.9	445.4	407.8
72.5°	514.4	514.4	495.5	476.8	457.9	445.4	439.2	407.8	389.1	357.6	326.2
75°	389.1	389.1	382.7	363.8	351.2	338.7	332.6	307.5	288.6	257.3	238.4
77.5°	276.0	276.0	251.0	238.4	244.6	232.0	219.5	213.3	207.0	188.3	163.2
80°	163.2	156.8	138.1	144.3	138.1	138.1	131.7	125.4	112.8	100.3	87.7
82.5°	44.0	50.1	50.1	50.1	56.5	44.0	44.0	44.0	50.1	50.1	31.5
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	6.4	6.4
87.5°	6.4	12.5	25.1	25.1	25.1	25.1	25.1	18.9	18.9	18.9	12.5
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°	5232.2	5232.2	5232.2	5232.2	5232.2	5232.2	5232.2	5232.2	5232.2	5232.2	5232.2
2.5°	5295.1	5288.7	5295.1	5251.1	5351.4	5276.2	5263.6	5251.1	5295.1	5251.1	5188.4
5°	5407.9	5345.2	5326.3	5307.6	5363.9	5276.2	5257.5	5263.6	5232.2	5150.8	5157.0
7.5°	5445.5	5389.2	5332.7	5213.5	5263.6	5245.0	5194.6	5157.0	5106.8	5037.8	5025.2
10°	5458.1	5395.4	5313.8	5276.2	5201.0	5175.9	5157.0	5094.3	5031.6	4912.4	4880.9
12.5°	5420.4	5345.2	5245.0	5213.5	5157.0	5075.4	5031.6	4968.7	4912.4	4818.3	4749.2
15°	5257.5	5194.6	5163.3	5056.7	5031.6	4981.2	4893.5	4805.7	4724.1	4598.5	4560.9
17.5°	5069.2	5044.1	5012.7	4931.1	4924.9	4874.8	4793.2	4717.7	4611.3	4416.6	4354.0
20°	4874.8	4874.8	4774.3	4743.0	4805.7	4705.2	4642.5	4573.4	4354.0	4259.8	4147.0
22.5°	4730.5	4661.4	4604.9	4554.8	4560.9	4498.2	4410.5	4272.4	4190.8	4077.9	3946.2
25°	4448.1	4473.2	4347.8	4328.9	4347.8	4203.3	4159.5	4046.5	3927.3	3820.6	3720.3
27.5°	4272.4	4203.3	4121.9	4052.9	4052.9	3996.3	3871.0	3845.9	3663.8	3563.5	3437.9
30°	4008.9	3958.7	3889.7	3789.4	3776.8	3732.8	3632.6	3569.6	3381.6	3230.9	3161.9
32.5°	3676.3	3657.6	3601.1	3488.3	3450.7	3400.3	3274.9	3168.3	3080.5	2910.9	2829.6
35°	3437.9	3369.1	3249.9	3155.7	3124.3	3036.5	2936.0	2860.8	2766.6	2616.2	2509.5
37.5°	3080.5	3011.4	2898.4	2785.6	2785.6	2697.8	2559.7	2484.5	2352.7	2264.7	2177.0
40°	2766.6	2678.9	2566.1	2434.3	2415.4	2289.8	2233.5	2107.9	2026.3	1888.4	1875.9
42.5°	2415.4	2333.8	2233.5	2133.0	2057.8	1995.1	1850.8	1756.7	1668.9	1599.9	1580.9
45°	2095.4	1988.7	1901.0	1775.4	1700.1	1624.9	1530.8	1468.1	1399.0	1323.8	1279.8
47.5°	1819.4	1731.6	1606.0	1493.2	1418.0	1380.1	1273.4	1204.6	1148.1	1098.0	1066.5
50°	1537.2	1430.5	1361.4	1235.8	1223.3	1135.6	1047.8	991.3	959.8	916.1	872.1
52.5°	1323.8	1223.3	1129.2	1035.3	984.9	953.7	872.1	815.5	771.8	740.3	715.3
55°	1116.6	1028.9	953.7	859.5	828.1	784.3	690.2	677.6	633.7	589.7	558.4
57.5°	959.8	878.2	790.5	727.8	671.3	640.0	564.6	514.4	489.4	451.8	420.3
60°	815.5	727.8	658.7	583.5	558.4	514.4	457.9	414.2	382.7	351.2	320.0
62.5°	683.8	608.6	533.4	470.4	432.8	407.8	363.8	326.2	295.0	269.9	244.6
65°	564.6	495.5	432.8	370.2	351.2	320.0	288.6	257.3	232.0	200.8	175.7
67.5°	464.3	401.6	338.7	295.0	276.0	263.5	225.9	194.4	175.7	156.8	131.7
70°	363.8	320.0	269.9	232.0	213.3	194.4	169.4	150.7	125.4	112.8	94.1
72.5°	282.4	244.6	200.8	169.4	156.8	144.3	119.2	100.3	87.7	75.2	62.7
75°	200.8	169.4	144.3	112.8	106.7	100.3	81.6	69.1	56.5	44.0	37.6
77.5°	138.1	112.8	87.7	75.2	69.1	56.5	50.1	37.6	31.5	25.1	18.9
80°	75.2	56.5	44.0	37.6	31.5	25.1	25.1	18.9	12.5	12.5	6.4
82.5°	25.1	18.9	12.5	6.4	6.4	6.4	6.4	6.4	6.4	0.0	6.4
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°	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	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°	5232.2	5232.2	5232.2	5232.2	5232.2	5232.2	5232.2	5232.2	5232.2	5232.2	5232.2
2.5°	5226.0	5157.0	5175.9	5175.9	5163.3	5163.3	5150.8	5131.9	5138.3	5100.4	5019.1
5°	5169.5	5081.7	5069.2	5081.7	5031.6	5019.1	4994.0	5031.6	4918.5	4962.5	4912.4
7.5°	5006.5	4924.9	4906.0	4950.0	4887.3	4849.5	4843.3	4893.5	4793.2	4743.0	4686.5
10°	4824.4	4793.2	4736.7	4705.2	4686.5	4692.7	4642.5	4579.8	4560.9	4548.4	4498.2
12.5°	4661.4	4592.4	4542.2	4504.6	4492.1	4492.1	4410.5	4398.0	4341.4	4328.9	4253.7
15°	4466.8	4385.4	4354.0	4303.8	4259.8	4284.9	4190.8	4165.7	4147.0	4065.4	4077.9
17.5°	4297.4	4209.7	4134.5	4103.0	4065.4	4027.8	3939.8	3958.7	3914.7	3914.7	3801.9
20°	4077.9	3983.8	3927.3	3864.6	3864.6	3814.4	3751.8	3757.9	3701.4	3645.1	3544.6
22.5°	3845.9	3745.4	3676.3	3651.2	3588.6	3576.0	3500.8	3481.9	3406.7	3412.8	3325.1
25°	3601.1	3500.8	3406.7	3412.8	3356.5	3331.5	3287.5	3199.7	3168.3	3130.7	3105.6
27.5°	3312.5	3243.5	3161.9	3155.7	3049.0	3055.2	2998.9	2973.8	2898.4	2917.3	2860.8
30°	3049.0	2948.8	2873.3	2854.6	2810.6	2798.1	2710.3	2672.5	2685.3	2634.9	2603.7
32.5°	2779.2	2628.7	2597.3	2559.7	2534.6	2503.1	2440.5	2465.5	2409.0	2421.5	2371.4
35°	2421.5	2358.9	2277.3	2277.3	2252.2	2227.1	2183.4	2208.4	2151.9	2126.8	2076.7
37.5°	2120.4	2064.2	1982.6	2007.6	1963.6	1926.0	1888.4	1894.6	1844.4	1838.3	1787.9
40°	1794.3	1762.8	1706.5	1706.5	1675.1	1675.1	1656.1	1637.5	1606.0	1568.4	1511.9
42.5°	1486.8	1461.7	1436.7	1443.0	1399.0	1436.7	1386.5	1418.0	1317.4	1311.3	1273.4
45°	1260.9	1204.6	1210.8	1185.7	1160.6	1173.2	1129.2	1141.7	1085.4	1072.9	1035.3
47.5°	1022.7	1003.8	966.2	953.7	953.7	934.7	916.1	909.7	884.6	853.1	803.0
50°	840.6	771.8	759.0	740.3	727.8	727.8	702.7	665.1	671.3	640.0	589.7
52.5°	658.7	602.2	577.1	571.0	545.9	533.4	501.9	476.8	457.9	445.4	414.2
55°	508.1	457.9	426.7	426.7	389.1	389.1	345.1	326.2	301.1	276.0	257.3
57.5°	382.7	357.6	326.2	301.1	288.6	257.3	232.0	200.8	181.9	144.3	119.2
60°	288.6	263.5	232.0	213.3	200.8	169.4	138.1	112.8	69.1	56.5	50.1
62.5°	213.3	188.3	156.8	144.3	131.7	106.7	75.2	37.6	18.9	18.9	18.9
65°	156.8	125.4	100.3	87.7	75.2	56.5	25.1	12.5	6.4	6.4	6.4
67.5°	106.7	81.6	56.5	50.1	37.6	18.9	6.4	6.4	6.4	6.4	6.4
70°	69.1	50.1	25.1	18.9	12.5	6.4	6.4	6.4	6.4	6.4	6.4
72.5°	44.0	25.1	12.5	6.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	25.1	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	12.5	6.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	6.4	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	6.4	6.4	6.4
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: FLDSQ4C90D010 FEU4C909035 F4LC-SQLWW-LI

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	5232.2	5232.2	5232.2	5232.2	5232.2	5232.2	5232.2	5232.2
2.5°	5106.8	5062.8	5087.9	5031.6	5056.7	5100.4	5069.2	5081.7
5°	4931.1	4906.0	4874.8	4793.2	4855.9	4906.0	4880.9	4874.8
7.5°	4743.0	4655.1	4699.0	4674.0	4661.4	4711.6	4655.1	4717.7
10°	4548.4	4485.7	4479.6	4435.6	4435.6	4473.2	4479.6	4441.7
12.5°	4259.8	4228.6	4228.6	4222.2	4215.8	4253.7	4259.8	4241.1
15°	4052.9	4040.3	4008.9	4002.7	3965.1	4021.4	4027.8	4021.4
17.5°	3801.9	3808.1	3776.8	3776.8	3801.9	3820.6	3770.4	3820.6
20°	3632.6	3601.1	3588.6	3532.0	3563.5	3595.0	3595.0	3601.1
22.5°	3387.7	3337.6	3356.5	3325.1	3306.1	3350.1	3350.1	3369.1
25°	3111.7	3111.7	3124.3	3105.6	3118.1	3143.2	3124.3	3168.3
27.5°	2848.2	2873.3	2873.3	2848.2	2860.8	2936.0	2967.4	2917.3
30°	2603.7	2609.8	2628.7	2616.2	2653.8	2678.9	2672.5	2710.3
32.5°	2327.6	2358.9	2371.4	2352.7	2365.3	2421.5	2390.3	2383.9
35°	2114.3	2057.8	2051.6	2057.8	2082.8	2095.4	2082.8	2126.8
37.5°	1806.8	1787.9	1762.8	1769.2	1787.9	1813.2	1825.7	1857.0
40°	1511.9	1486.8	1486.8	1480.7	1461.7	1530.8	1530.8	1530.8
42.5°	1254.8	1248.4	1217.2	1217.2	1242.2	1260.9	1248.4	1292.4
45°	1028.9	1003.8	984.9	984.9	1003.8	1003.8	1022.7	1016.3
47.5°	809.4	784.3	790.5	771.8	790.5	815.5	784.3	790.5
50°	608.6	608.6	596.0	608.6	602.2	608.6	596.0	583.5
52.5°	414.2	470.4	476.8	451.8	395.2	345.1	313.6	338.7
55°	238.4	213.3	213.3	207.0	194.4	188.3	169.4	188.3
57.5°	119.2	106.7	106.7	106.7	100.3	94.1	81.6	81.6
60°	50.1	44.0	44.0	37.6	31.5	25.1	18.9	25.1
62.5°	18.9	12.5	12.5	12.5	12.5	12.5	12.5	12.5
65°	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
67.5°	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
70°	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
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)