

Scaled data based on original data using  
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: P392713

Luminaire Tested: **MWL-4-66-73-UNV-L835-EDD**

Issue Date: 12/2/2019

**Test Information**

Test Method: LM-79-08  
Report Number: P392713  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1910-565-1 &  
Test Lab: INNOVATION CENTER  
Issue Date: 12/2/2019  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: FAIL-SAFE  
Catalog Number: MWL-4-66-73-UNV-L835-EDD  
Description: MWL 4FT MEDICAL LED FIXTURE  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

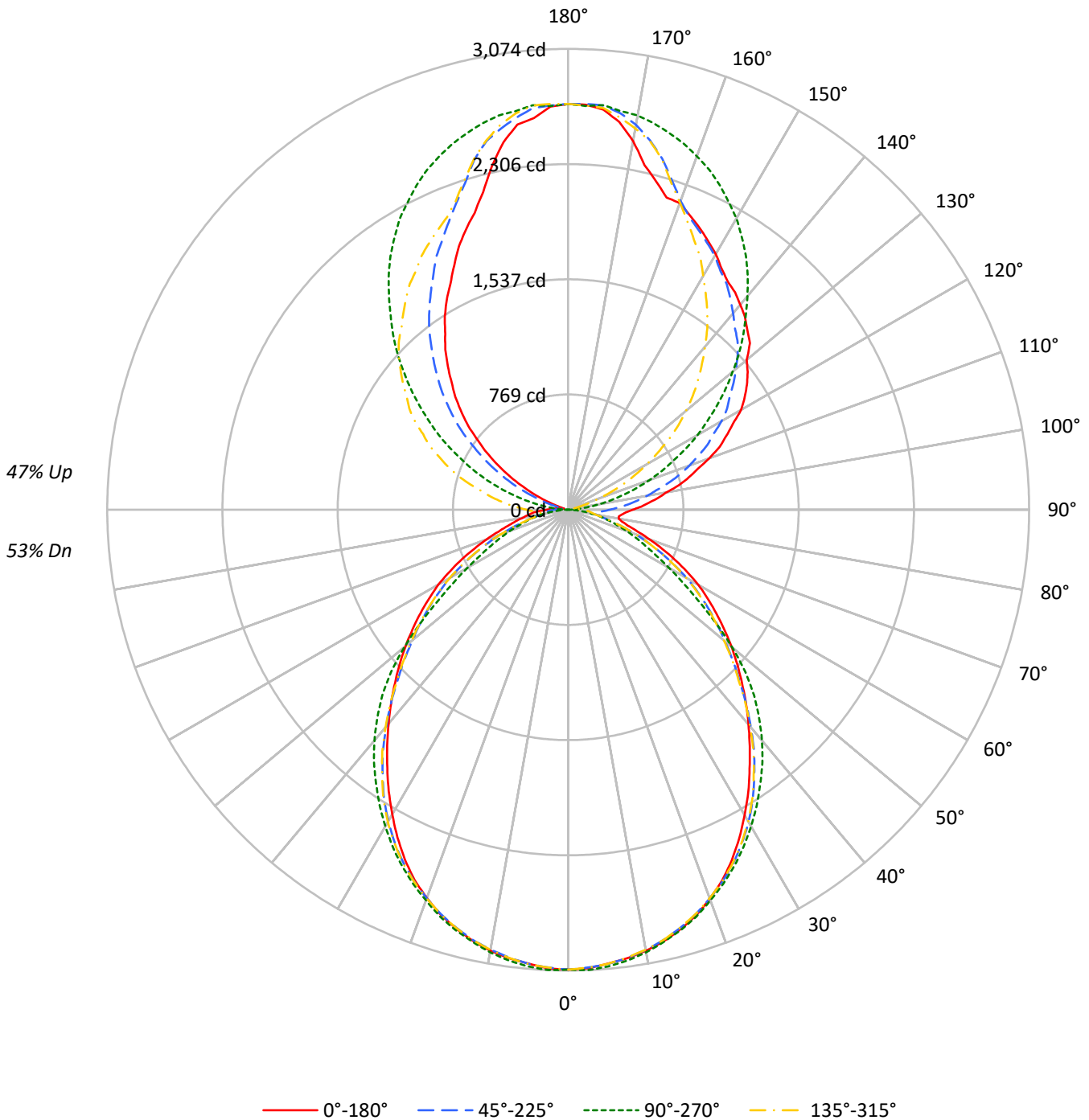
Lumens per Lamp: N/A  
Luminaire Lumens: 13652.0 lumens  
Efficiency: N/A  
Efficacy: 80.4 lumens/watt  
Spacing Criteria (0/90/45): 1.15 / 1.19 / 1.25  
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 4' x H: 0.42')  
CIE Type: General Diffuse

Input Watts (W): 169.7  
Input Voltage (V): NR  
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



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### Luminous Intensity Polar Plot





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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	108	108	108	108	100	100	100	100	85	85	85	71	71	71	58	58	58	53
1	98	94	90	87	91	87	84	81	74	72	70	63	61	59	52	51	50	44
2	90	83	77	71	83	77	71	67	66	62	58	55	53	50	46	44	42	38
3	82	73	66	60	76	68	61	56	58	53	49	49	46	43	41	39	36	32
4	75	65	57	51	70	60	53	48	52	47	42	44	40	37	37	34	32	28
5	69	58	50	44	64	54	47	42	47	41	37	40	36	32	33	30	28	25
6	64	52	44	38	59	49	41	36	42	37	32	36	32	28	30	27	25	22
7	59	47	39	34	55	44	37	32	38	33	29	33	29	25	28	25	22	19
8	55	43	35	30	51	40	33	28	35	29	25	30	26	23	26	22	20	17
9	51	39	32	27	48	37	30	25	32	27	23	28	24	20	24	20	18	16
10	48	36	29	24	44	34	27	23	30	24	21	26	22	19	22	19	16	14

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°	270°
0°	19814	19814	19814	19814
5°	19528	18230	19528	18230
10°	19232	16715	19232	16715
15°	18843	15308	18805	15308
20°	18284	13974	18246	13974
25°	17536	12742	17497	12742
30°	16554	11527	16501	11527
35°	15495	10353	15453	10353
40°	14505	9216	14446	9216
45°	13558	8005	13510	8005
50°	12699	6541	12647	6541
55°	11817	4921	11780	4921
60°	10957	3665	10935	3665
65°	9746	2760	9746	2760
70°	8468	2080	8496	2080
75°	7397	1487	7500	1487
80°	8008	958	7157	958
85°	12215	433	8013	433



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	289.2	2.1
10°-20°	815.7	6.0
20°-30°	1196.4	8.8
30°-40°	1354.7	9.9
40°-50°	1276.6	9.4
50°-60°	1021.9	7.5
60°-70°	673.3	4.9
70°-80°	345.6	2.5
80°-90°	194.9	1.4
90°-100°	236.2	1.7
100°-110°	422.2	3.1
110°-120°	719.5	5.3
120°-130°	977.2	7.2
130°-140°	1114.5	8.2
140°-150°	1111.6	8.1
150°-160°	967.9	7.1
160°-170°	680.9	5.0
170°-180°	253.6	1.9
0°-30°	2301.3	16.9
0°-40°	3656.0	26.8
0°-60°	5954.5	43.6
0°-90°	7168.4	52.5
90°-120°	1377.9	10.1
90°-150°	4581.3	33.6
90°-180°	6484.0	47.5
0°-180°	13652.0	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	3068	3068	3068	3068	3068	
5°	3040	3058	3040	3058	3040	289
15°	2897	2903	2891	2903	2897	816
25°	2580	2622	2575	2622	2580	1185
35°	2109	2233	2103	2233	2109	1320
45°	1639	1753	1633	1753	1639	1267
55°	1206	1061	1202	1061	1206	1080
65°	780	568	780	568	780	775
75°	412	282	417	282	412	455
85°	361	73	237	73	361	290
90°	430	3	143	3	430	238
95°	540	78	87	78	540	469
105°	833	378	29	378	833	879
115°	1162	773	268	773	1162	1154
125°	1455	1210	662	1210	1455	1299
135°	1690	1652	1063	1652	1690	1304
145°	1856	2067	1430	2067	1856	1170
155°	2074	2391	1798	2391	2074	956
165°	2266	2602	2192	2602	2266	643
175°	2679	2709	2622	2709	2679	250
180°	2706	2706	2706	2706	2706	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	3067.9	3067.9	3067.9	3067.9	3067.9	3067.9	3067.9	3067.9	3067.9	3067.9	3067.9
2.5°	3061.2	3063.1	3057.0	3074.7	3073.7	3072.7	3057.0	3063.1	3063.1	3063.1	3057.0
5°	3039.6	3047.4	3042.3	3059.0	3058.0	3059.0	3040.4	3047.4	3039.6	3047.4	3040.4
7.5°	3017.9	3027.6	3014.9	3035.4	3033.4	3033.5	3013.0	3025.8	3017.9	3025.8	3013.0
10°	2986.5	2990.3	2981.4	2999.1	2998.2	2997.3	2979.6	2986.5	2986.5	2986.5	2979.6
12.5°	2948.9	2947.0	2939.3	2955.0	2952.1	2955.0	2939.3	2943.2	2945.2	2943.2	2939.3
15°	2896.8	2894.0	2888.2	2903.9	2902.9	2901.9	2886.2	2890.1	2891.1	2890.1	2886.2
17.5°	2836.9	2833.0	2829.2	2844.9	2844.9	2844.9	2827.2	2831.2	2831.2	2831.2	2827.2
20°	2761.2	2763.2	2759.4	2775.2	2773.3	2773.3	2757.5	2759.4	2755.5	2759.4	2757.5
22.5°	2679.6	2682.6	2685.7	2706.4	2701.5	2704.5	2683.8	2678.8	2675.9	2678.8	2683.8
25°	2580.4	2586.3	2603.1	2623.8	2621.9	2621.9	2599.2	2580.6	2574.7	2580.6	2599.2
27.5°	2470.3	2486.0	2508.7	2536.3	2534.5	2534.4	2504.9	2480.3	2464.6	2480.3	2504.9
30°	2353.3	2370.0	2405.4	2444.8	2438.1	2441.0	2399.7	2364.3	2345.8	2364.3	2399.7
32.5°	2234.4	2251.1	2291.4	2338.7	2340.8	2334.9	2285.7	2243.6	2226.8	2243.6	2285.7
35°	2108.7	2116.6	2162.8	2235.5	2232.7	2229.8	2157.1	2110.9	2103.0	2110.9	2157.1
37.5°	1987.8	1989.8	2036.0	2112.6	2127.5	2106.9	2030.3	1984.1	1982.1	1984.1	2030.3
40°	1870.9	1861.0	1893.5	1978.1	2010.5	1974.3	1885.8	1853.4	1863.2	1853.4	1885.8
42.5°	1754.9	1743.1	1756.0	1840.5	1883.7	1836.7	1750.2	1735.4	1747.2	1735.4	1750.2
45°	1639.0	1617.4	1614.5	1699.0	1753.0	1695.1	1606.8	1611.6	1633.2	1611.6	1606.8
47.5°	1529.9	1504.4	1489.6	1553.5	1602.7	1551.7	1482.0	1498.6	1524.1	1498.6	1482.0
50°	1420.8	1396.3	1361.9	1406.1	1426.8	1402.3	1354.2	1388.6	1415.0	1388.6	1354.2
52.5°	1312.7	1294.1	1248.9	1264.6	1239.1	1260.7	1243.2	1286.4	1306.9	1286.4	1243.2
55°	1205.6	1188.9	1134.8	1113.3	1061.2	1109.5	1129.1	1183.2	1201.8	1183.2	1129.1
57.5°	1101.4	1091.6	1024.8	963.0	906.9	959.1	1019.1	1085.9	1097.6	1085.9	1019.1
60°	1001.3	990.5	912.8	817.5	775.2	815.6	909.0	986.6	999.3	986.6	909.0
62.5°	889.2	884.3	796.9	689.7	661.3	687.9	793.0	880.5	887.3	880.5	793.0
65°	780.2	765.4	683.8	579.7	568.0	577.8	682.0	763.5	780.2	763.5	682.0
67.5°	676.0	654.4	578.7	483.4	486.4	483.4	576.8	652.5	676.0	652.5	576.8
70°	576.8	543.4	475.6	399.9	412.7	399.9	475.6	545.3	578.7	545.3	475.6
72.5°	485.4	444.1	382.2	326.2	340.9	324.2	382.2	446.0	489.2	446.0	382.2
75°	411.7	359.6	296.7	259.4	282.0	259.4	298.7	361.5	417.4	361.5	298.7
77.5°	367.0	303.4	231.8	200.4	227.9	200.4	233.8	297.6	359.4	297.6	233.8
80°	342.5	278.0	189.5	148.3	171.9	148.3	185.7	247.5	306.1	247.5	185.7
82.5°	340.1	279.7	180.9	107.0	120.8	107.0	158.0	211.0	267.6	211.0	158.0
85°	361.1	305.6	197.4	89.2	72.6	85.4	142.0	189.1	236.9	189.1	142.0
87.5°	386.5	345.8	229.2	100.1	26.5	73.4	120.3	162.5	189.9	162.5	120.3
90°	429.6	396.8	279.3	121.6	2.9	49.0	90.2	127.5	143.1	127.5	90.2
92.5°	488.1	459.3	334.3	162.2	32.5	30.4	72.5	105.9	113.7	105.9	72.5
95°	540.0	526.6	399.7	207.5	78.3	16.5	55.8	83.4	87.3	83.4	55.8
97.5°	605.4	595.8	464.1	269.4	137.6	24.9	42.0	70.6	70.6	70.6	42.0
100°	663.2	658.3	534.3	351.6	210.1	65.0	28.1	58.5	61.4	58.5	28.1
102.5°	755.3	728.5	602.8	429.8	288.5	120.4	33.6	40.8	44.7	40.8	33.6
105°	833.2	801.6	694.5	511.9	378.3	194.9	77.4	33.7	29.1	33.7	77.4
107.5°	906.5	885.5	778.5	597.0	473.7	281.9	142.4	75.6	50.8	75.6	142.4
110°	1000.1	977.2	860.5	681.0	574.1	373.5	216.9	136.7	106.1	136.7	216.9



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	1091.8	1074.6	937.0	768.9	677.3	472.8	308.6	213.1	184.5	213.1	308.6
115°	1162.5	1151.9	1025.9	851.0	772.7	585.6	410.8	301.9	268.5	301.9	410.8
117.5°	1237.0	1234.0	1090.8	935.0	887.3	686.8	504.4	391.6	356.4	391.6	504.4
120°	1330.5	1314.3	1180.5	1019.2	996.2	793.7	607.6	494.8	459.6	494.8	607.6
122.5°	1395.5	1386.0	1256.9	1100.4	1099.4	903.6	706.8	595.1	557.0	595.1	706.8
125°	1454.7	1450.8	1314.3	1180.5	1210.1	1004.8	817.6	704.0	662.0	704.0	817.6
127.5°	1508.1	1513.9	1389.8	1268.4	1323.8	1108.0	927.5	801.4	757.4	801.4	927.5
130°	1554.0	1573.1	1460.5	1348.6	1430.8	1220.6	1024.9	898.9	870.2	898.9	1024.9
132.5°	1643.7	1632.3	1533.0	1430.8	1545.4	1323.8	1128.1	996.3	963.7	996.3	1128.1
135°	1689.6	1693.5	1596.1	1501.4	1652.4	1426.9	1225.5	1095.5	1063.1	1095.5	1225.5
137.5°	1745.0	1733.6	1645.7	1588.4	1751.7	1527.3	1321.0	1200.6	1149.1	1200.6	1321.0
140°	1785.2	1783.2	1710.7	1664.8	1858.7	1624.7	1418.4	1296.1	1248.4	1296.1	1418.4
142.5°	1828.1	1839.6	1775.5	1748.8	1965.6	1727.9	1523.4	1390.8	1344.9	1390.8	1523.4
145°	1855.8	1881.6	1840.5	1853.9	2066.8	1842.5	1615.1	1480.5	1429.9	1480.5	1615.1
147.5°	1904.6	1936.0	1888.3	1928.4	2154.7	1943.7	1706.8	1573.1	1530.1	1573.1	1706.8
150°	1968.5	1983.8	1955.1	2031.6	2244.4	2056.3	1800.4	1662.9	1619.0	1662.9	1800.4
152.5°	2020.1	2039.1	2006.7	2144.2	2315.2	2159.5	1903.6	1750.8	1699.2	1750.8	1903.6
155°	2073.5	2081.2	2058.3	2253.1	2390.7	2260.8	1985.7	1848.2	1798.5	1848.2	1985.7
157.5°	2123.3	2138.5	2111.8	2335.2	2455.5	2348.6	2079.3	1945.6	1901.6	1945.6	2079.3
160°	2176.7	2176.7	2192.0	2430.8	2509.1	2425.0	2178.6	2052.6	1991.5	2052.6	2178.6
162.5°	2182.4	2218.7	2300.8	2497.6	2560.6	2491.9	2285.6	2129.0	2075.5	2129.0	2285.6
165°	2266.5	2299.0	2423.1	2556.8	2601.7	2551.1	2417.4	2255.1	2192.0	2255.1	2417.4
167.5°	2353.3	2422.1	2522.5	2624.7	2639.9	2607.5	2518.6	2404.9	2347.6	2404.9	2518.6
170°	2495.6	2556.8	2606.5	2649.5	2670.5	2651.4	2581.6	2526.2	2488.0	2526.2	2581.6
172.5°	2608.4	2648.5	2667.6	2695.3	2682.0	2674.3	2638.9	2612.2	2591.2	2612.2	2638.9
175°	2679.0	2688.6	2705.8	2697.2	2708.7	2687.7	2688.6	2701.9	2621.7	2701.9	2688.6
177.5°	2703.8	2719.1	2709.6	2693.4	2695.3	2691.5	2698.2	2705.8	2692.4	2705.8	2698.2
180°	2705.8	2705.8	2705.8	2705.8	2705.8	2705.8	2705.8	2705.8	2705.8	2705.8	2705.8



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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	3067.9	3067.9	3067.9	3067.9	3067.9	3067.9
2.5°	3072.7	3073.7	3074.7	3057.0	3063.1	3061.2
5°	3059.0	3058.0	3059.0	3042.3	3047.4	3039.6
7.5°	3033.5	3033.4	3035.4	3014.9	3027.6	3017.9
10°	2997.3	2998.2	2999.1	2981.4	2990.3	2986.5
12.5°	2955.0	2952.1	2955.0	2939.3	2947.0	2948.9
15°	2901.9	2902.9	2903.9	2888.2	2894.0	2896.8
17.5°	2844.9	2844.9	2844.9	2829.2	2833.0	2836.9
20°	2773.3	2773.3	2775.2	2759.4	2763.2	2761.2
22.5°	2704.5	2701.5	2706.4	2685.7	2682.6	2679.6
25°	2621.9	2621.9	2623.8	2603.1	2586.3	2580.4
27.5°	2534.4	2534.5	2536.3	2508.7	2486.0	2470.3
30°	2441.0	2438.1	2444.8	2405.4	2370.0	2353.3
32.5°	2334.9	2340.8	2338.7	2291.4	2251.1	2234.4
35°	2229.8	2232.7	2235.5	2162.8	2116.6	2108.7
37.5°	2106.9	2127.5	2112.6	2036.0	1989.8	1987.8
40°	1974.3	2010.5	1978.1	1893.5	1861.0	1870.9
42.5°	1836.7	1883.7	1840.5	1756.0	1743.1	1754.9
45°	1695.1	1753.0	1699.0	1614.5	1617.4	1639.0
47.5°	1551.7	1602.7	1553.5	1489.6	1504.4	1529.9
50°	1402.3	1426.8	1406.1	1361.9	1396.3	1420.8
52.5°	1260.7	1239.1	1264.6	1248.9	1294.1	1312.7
55°	1109.5	1061.2	1113.3	1134.8	1188.9	1205.6
57.5°	959.1	906.9	963.0	1024.8	1091.6	1101.4
60°	815.6	775.2	817.5	912.8	990.5	1001.3
62.5°	687.9	661.3	689.7	796.9	884.3	889.2
65°	577.8	568.0	579.7	683.8	765.4	780.2
67.5°	483.4	486.4	483.4	578.7	654.4	676.0
70°	399.9	412.7	399.9	475.6	543.4	576.8
72.5°	324.2	340.9	326.2	382.2	444.1	485.4
75°	259.4	282.0	259.4	296.7	359.6	411.7
77.5°	200.4	227.9	200.4	231.8	303.4	367.0
80°	148.3	171.9	148.3	189.5	278.0	342.5
82.5°	107.0	120.8	107.0	180.9	279.7	340.1
85°	85.4	72.6	89.2	197.4	305.6	361.1
87.5°	73.4	26.5	100.1	229.2	345.8	386.5
90°	49.0	2.9	121.6	279.3	396.8	429.6
92.5°	30.4	32.5	162.2	334.3	459.3	488.1
95°	16.5	78.3	207.5	399.7	526.6	540.0
97.5°	24.9	137.6	269.4	464.1	595.8	605.4
100°	65.0	210.1	351.6	534.3	658.3	663.2
102.5°	120.4	288.5	429.8	602.8	728.5	755.3
105°	194.9	378.3	511.9	694.5	801.6	833.2
107.5°	281.9	473.7	597.0	778.5	885.5	906.5
110°	373.5	574.1	681.0	860.5	977.2	1000.1





TEST NUMBER: P392713

CATALOG NUMBER: MWL-4-66-73-UNV-L835-EDD

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	472.8	677.3	768.9	937.0	1074.6	1091.8
115°	585.6	772.7	851.0	1025.9	1151.9	1162.5
117.5°	686.8	887.3	935.0	1090.8	1234.0	1237.0
120°	793.7	996.2	1019.2	1180.5	1314.3	1330.5
122.5°	903.6	1099.4	1100.4	1256.9	1386.0	1395.5
125°	1004.8	1210.1	1180.5	1314.3	1450.8	1454.7
127.5°	1108.0	1323.8	1268.4	1389.8	1513.9	1508.1
130°	1220.6	1430.8	1348.6	1460.5	1573.1	1554.0
132.5°	1323.8	1545.4	1430.8	1533.0	1632.3	1643.7
135°	1426.9	1652.4	1501.4	1596.1	1693.5	1689.6
137.5°	1527.3	1751.7	1588.4	1645.7	1733.6	1745.0
140°	1624.7	1858.7	1664.8	1710.7	1783.2	1785.2
142.5°	1727.9	1965.6	1748.8	1775.5	1839.6	1828.1
145°	1842.5	2066.8	1853.9	1840.5	1881.6	1855.8
147.5°	1943.7	2154.7	1928.4	1888.3	1936.0	1904.6
150°	2056.3	2244.4	2031.6	1955.1	1983.8	1968.5
152.5°	2159.5	2315.2	2144.2	2006.7	2039.1	2020.1
155°	2260.8	2390.7	2253.1	2058.3	2081.2	2073.5
157.5°	2348.6	2455.5	2335.2	2111.8	2138.5	2123.3
160°	2425.0	2509.1	2430.8	2192.0	2176.7	2176.7
162.5°	2491.9	2560.6	2497.6	2300.8	2218.7	2182.4
165°	2551.1	2601.7	2556.8	2423.1	2299.0	2266.5
167.5°	2607.5	2639.9	2624.7	2522.5	2422.1	2353.3
170°	2651.4	2670.5	2649.5	2606.5	2556.8	2495.6
172.5°	2674.3	2682.0	2695.3	2667.6	2648.5	2608.4
175°	2687.7	2708.7	2697.2	2705.8	2688.6	2679.0
177.5°	2691.5	2695.3	2693.4	2709.6	2719.1	2703.8
180°	2705.8	2705.8	2705.8	2705.8	2705.8	2705.8

(END OF REPORT)