

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: P392711

Luminaire Tested: **MWL-4-66-60-UNV-L840-EDD**

Issue Date: 12/2/2019

**Test Information**

Test Method: LM-79-08  
Report Number: P392711  
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-4-66-60-UNV-L840-EDD  
Description: MWL 4FT MEDICAL LED FIXTURE  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

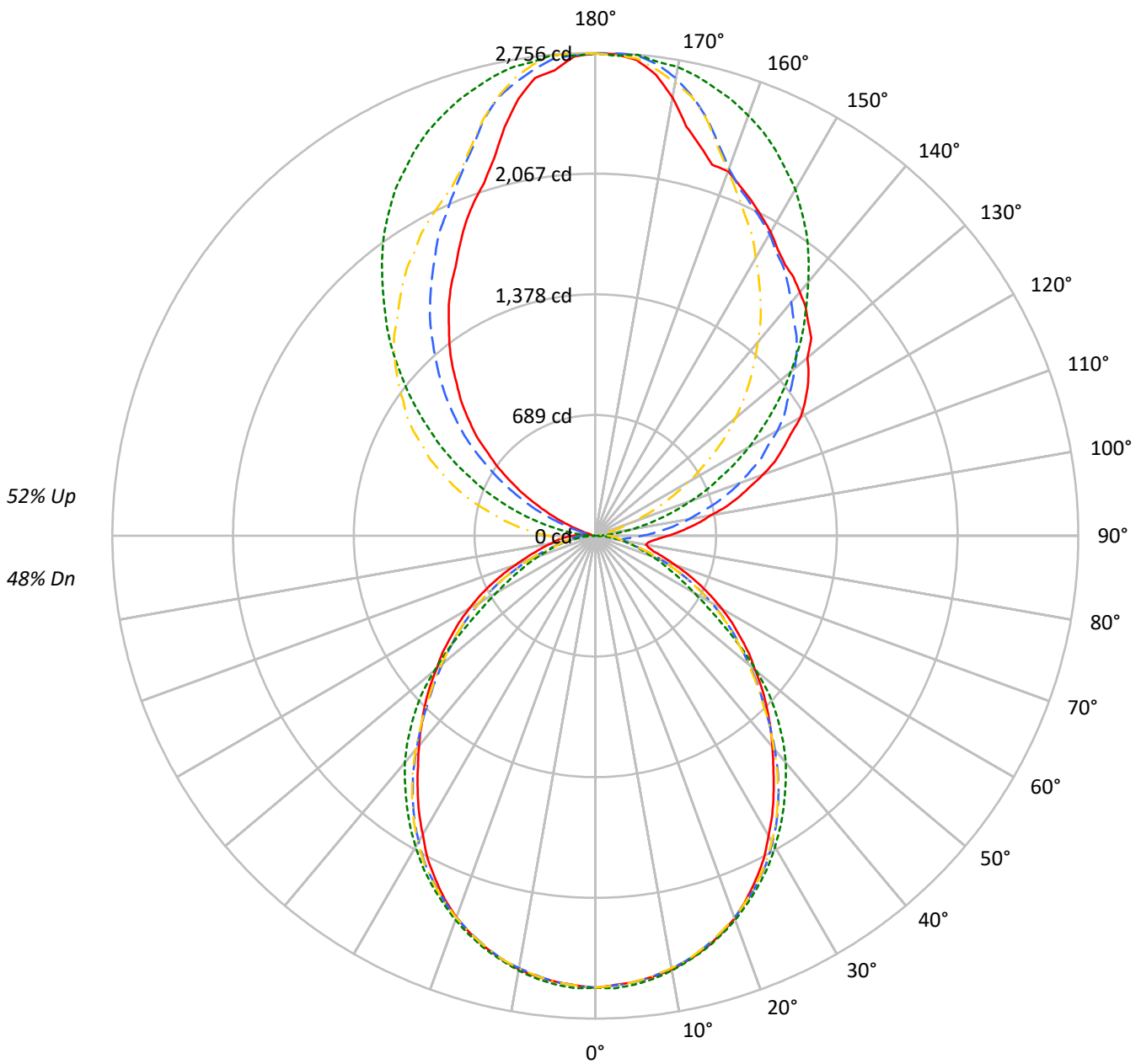
Lumens per Lamp: N/A  
Luminaire Lumens: 12612.9 lumens  
Efficiency: N/A  
Efficacy: 84.4 lumens/watt  
Spacing Criteria (0/90/45): 1.15 / 1.19 / 1.25  
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 4' x H: 0.42')  
CIE Type: General Diffuse

Input Watts (W): 149.5  
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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CATALOG NUMBER: MWL-4-66-60-UNV-L840-EDD

### Luminous Intensity Polar Plot



— 0°-180°    - - 45°-225°    - - - 90°-270°    - - - 135°-315°



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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	50	30	10	0	
RCR																						
0	107	107	107	107	98	98	98	98	82	82	82	68	68	68	54	54	54	48	48	48	48	
1	97	93	89	86	89	86	83	80	72	70	68	60	58	56	48	47	46	40	40	40	40	
2	89	82	76	71	82	75	70	66	64	60	56	53	50	48	43	41	39	34	34	34	34	
3	81	72	65	59	75	67	60	55	56	52	48	47	43	41	38	36	34	29	29	29	29	
4	75	64	56	50	68	59	52	47	50	45	41	42	38	35	34	31	29	26	26	26	26	
5	68	57	49	43	63	53	46	41	45	40	36	38	34	31	31	28	26	22	22	22	22	
6	63	51	43	38	58	48	41	35	41	35	31	34	30	27	28	25	23	20	20	20	20	
7	58	46	39	33	54	43	36	31	37	31	27	31	27	24	26	23	20	18	18	18	18	
8	54	42	35	29	50	39	32	28	34	28	24	29	24	21	24	21	18	16	16	16	16	
9	51	39	31	26	47	36	29	25	31	26	22	26	22	19	22	19	17	14	14	14	14	
10	47	35	28	23	44	33	27	22	29	23	20	24	20	17	20	17	15	13	13	13	13	

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

	0°	90°	180°	270°
0°	16660	16660	16660	16660
5°	16426	15330	16426	15330
10°	16187	14052	16187	14052
15°	15848	12865	15811	12865
20°	15386	11760	15347	11760
25°	14723	10705	14684	10705
30°	13903	9691	13849	9691
35°	13033	8698	12990	8698
40°	12193	7755	12132	7755
45°	11437	6703	11389	6703
50°	10624	5496	10572	5496
55°	9897	4140	9858	4140
60°	9102	3077	9080	3077
65°	8179	2332	8179	2332
70°	7031	1728	7059	1728
75°	6179	1254	6283	1254
80°	6862	813	5997	813
85°	11041	369	6765	369



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	243.2	1.9
10°-20°	685.6	5.4
20°-30°	1005.5	8.0
30°-40°	1138.8	9.0
40°-50°	1073.1	8.5
50°-60°	858.4	6.8
60°-70°	564.1	4.5
70°-80°	289.9	2.3
80°-90°	171.9	1.4
90°-100°	230.8	1.8
100°-110°	428.0	3.4
110°-120°	731.4	5.8
120°-130°	993.6	7.9
130°-140°	1133.3	9.0
140°-150°	1130.5	9.0
150°-160°	984.4	7.8
160°-170°	692.5	5.5
170°-180°	257.9	2.0
0°-30°	1934.3	15.3
0°-40°	3073.1	24.4
0°-60°	5004.6	39.7
0°-90°	6030.6	47.8
90°-120°	1390.1	11.0
90°-150°	4647.6	36.8
90°-180°	6582.0	52.2
0°-180°	12612.9	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	2580	2580	2580	2580	2580	
5°	2557	2572	2557	2572	2557	243
15°	2436	2440	2431	2440	2436	686
25°	2166	2203	2161	2203	2166	996
35°	1774	1876	1768	1876	1774	1110
45°	1383	1468	1377	1468	1383	1066
55°	1010	893	1006	893	1010	906
65°	655	480	655	480	655	647
75°	344	238	350	238	344	383
85°	326	62	200	62	326	261
90°	414	3	123	3	414	229
95°	534	79	74	79	534	465
105°	845	385	27	385	845	890
115°	1182	785	272	785	1182	1173
125°	1479	1231	673	1231	1479	1321
135°	1718	1680	1081	1680	1718	1326
145°	1888	2102	1455	2102	1888	1190
155°	2109	2432	1829	2432	2109	973
165°	2305	2645	2229	2645	2305	654
175°	2725	2755	2667	2755	2725	254
180°	2752	2752	2752	2752	2752	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	2579.6	2579.6	2579.6	2579.6	2579.6	2579.6	2579.6	2579.6	2579.6	2579.6	2579.6
2.5°	2566.8	2575.7	2569.5	2584.5	2585.5	2582.5	2569.5	2575.7	2568.7	2575.7	2569.5
5°	2556.8	2564.7	2558.5	2570.5	2571.5	2570.5	2556.6	2564.7	2556.8	2564.7	2556.6
7.5°	2537.7	2545.6	2535.6	2551.5	2550.5	2549.6	2533.7	2543.7	2537.7	2543.7	2533.7
10°	2513.7	2513.6	2507.6	2520.6	2520.6	2518.7	2505.7	2509.7	2513.7	2509.7	2505.7
12.5°	2478.5	2478.6	2473.7	2483.7	2480.7	2483.7	2473.7	2474.7	2474.7	2474.7	2473.7
15°	2436.5	2431.6	2427.7	2441.7	2439.7	2439.7	2425.7	2427.7	2430.7	2427.7	2425.7
17.5°	2383.5	2381.6	2376.7	2388.7	2389.7	2388.7	2374.7	2379.7	2377.7	2379.7	2374.7
20°	2323.5	2322.5	2320.7	2333.7	2333.8	2331.8	2318.7	2318.7	2317.7	2318.7	2318.7
22.5°	2248.5	2256.5	2256.7	2272.7	2269.8	2270.8	2254.7	2252.7	2244.7	2252.7	2254.7
25°	2166.5	2173.5	2186.6	2204.7	2202.8	2202.8	2182.7	2167.7	2160.7	2167.7	2182.7
27.5°	2080.5	2090.5	2110.6	2134.7	2131.8	2132.7	2106.7	2084.7	2074.7	2084.7	2106.7
30°	1976.5	1989.5	2021.5	2053.6	2049.8	2049.7	2015.7	1983.7	1968.8	1983.7	2015.7
32.5°	1880.5	1890.5	1927.5	1969.6	1966.7	1965.7	1921.7	1882.8	1872.8	1882.8	1921.7
35°	1773.6	1783.6	1821.6	1875.6	1875.8	1869.8	1815.8	1777.8	1767.8	1777.8	1815.8
37.5°	1668.6	1674.6	1712.6	1776.6	1783.7	1770.8	1706.8	1668.8	1662.8	1668.8	1706.8
40°	1572.6	1566.6	1592.6	1665.7	1691.7	1661.8	1584.8	1558.8	1564.8	1558.8	1584.8
42.5°	1476.6	1464.6	1475.7	1550.7	1583.7	1546.8	1469.8	1456.8	1468.8	1456.8	1469.8
45°	1382.7	1356.7	1357.7	1428.7	1467.7	1424.8	1349.9	1350.8	1376.8	1350.8	1349.9
47.5°	1288.7	1263.7	1253.7	1305.7	1349.7	1303.8	1245.9	1257.8	1282.8	1257.8	1245.9
50°	1188.7	1172.7	1146.7	1181.7	1198.8	1177.8	1138.9	1164.9	1182.8	1164.9	1138.9
52.5°	1105.7	1085.7	1046.7	1060.7	1050.8	1056.8	1040.9	1077.9	1099.8	1077.9	1040.9
55°	1009.7	998.7	955.7	933.8	892.8	929.9	949.9	992.9	1005.8	992.9	949.9
57.5°	925.7	916.7	861.7	813.8	760.8	809.9	855.9	910.9	921.8	910.9	855.9
60°	831.8	831.8	765.8	689.8	650.8	687.9	761.9	827.9	829.8	827.9	761.9
62.5°	742.8	739.8	669.8	579.8	561.9	577.9	665.9	735.9	740.8	735.9	665.9
65°	654.8	640.8	572.8	485.8	479.9	483.9	570.9	638.9	654.8	638.9	570.9
67.5°	564.8	547.8	480.8	402.9	411.9	402.9	478.9	545.9	564.8	545.9	478.9
70°	478.9	454.9	399.9	332.9	342.9	332.9	399.9	456.8	480.8	456.8	399.9
72.5°	408.9	369.9	321.9	272.9	286.9	270.9	321.9	371.8	412.8	371.8	321.9
75°	343.9	299.9	248.9	217.9	237.9	217.9	250.9	301.8	349.7	301.8	250.9
77.5°	311.4	253.7	194.9	168.9	190.9	168.9	196.9	247.8	303.7	247.8	196.9
80°	293.5	236.9	160.8	125.9	145.9	125.9	156.9	205.8	256.5	205.8	156.9
82.5°	302.1	246.6	155.1	90.9	100.9	90.9	131.8	176.7	228.3	176.7	131.8
85°	326.4	277.9	177.9	75.8	61.9	71.9	121.5	159.4	200.0	159.4	121.5
87.5°	364.3	327.8	214.2	90.9	20.0	63.7	103.4	141.3	164.2	141.3	103.4
90°	414.1	382.7	269.2	115.7	2.9	41.9	76.8	108.7	122.6	108.7	76.8
92.5°	476.6	448.3	328.1	159.0	32.1	24.9	61.8	88.8	95.7	88.8	61.8
95°	534.4	522.8	396.7	209.1	78.7	14.8	46.8	71.9	73.8	71.9	46.8
97.5°	604.0	594.2	467.2	274.1	139.0	25.3	37.7	59.8	59.8	59.8	37.7
100°	665.8	661.8	540.6	357.7	213.8	66.1	25.6	51.5	53.5	51.5	25.6
102.5°	762.5	736.2	612.3	437.3	293.5	122.5	33.2	36.5	39.5	36.5	33.2
105°	844.8	813.6	706.6	520.9	384.9	198.3	78.8	32.3	26.6	32.3	78.8
107.5°	921.4	900.0	792.1	606.4	482.0	285.8	144.9	75.9	50.7	75.9	144.9
110°	1016.6	993.3	875.6	691.9	583.1	379.0	220.7	138.1	107.0	138.1	220.7



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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°	1109.9	1092.4	953.4	781.4	688.1	480.1	314.0	215.8	186.7	215.8	314.0
115°	1181.8	1171.1	1042.8	864.9	785.2	594.8	417.0	306.2	272.2	306.2	417.0
117.5°	1257.6	1254.6	1108.9	951.4	902.8	698.8	512.2	397.5	361.6	397.5	512.2
120°	1352.8	1337.3	1200.2	1037.0	1013.6	807.6	617.2	503.5	466.6	503.5	617.2
122.5°	1418.9	1409.2	1277.9	1118.6	1118.6	918.4	718.2	604.5	565.7	604.5	718.2
125°	1479.1	1475.2	1337.3	1200.2	1231.3	1021.4	831.9	715.3	672.6	715.3	831.9
127.5°	1533.5	1539.4	1413.1	1289.6	1346.0	1126.4	942.7	814.4	769.7	814.4	942.7
130°	1580.2	1599.6	1485.0	1371.2	1454.8	1241.0	1041.8	913.6	884.4	913.6	1041.8
132.5°	1671.5	1659.9	1558.8	1455.8	1571.4	1347.0	1146.8	1012.7	979.6	1012.7	1146.8
135°	1718.2	1722.1	1623.0	1527.7	1680.3	1451.9	1245.9	1113.7	1080.7	1113.7	1245.9
137.5°	1774.5	1762.9	1673.5	1615.2	1781.3	1553.0	1343.1	1220.6	1168.2	1220.6	1343.1
140°	1815.4	1813.4	1739.6	1692.9	1890.2	1652.1	1442.2	1317.8	1269.2	1317.8	1442.2
142.5°	1858.1	1870.8	1805.6	1778.4	1999.0	1757.1	1549.1	1414.1	1366.4	1414.1	1549.1
145°	1888.3	1913.5	1871.7	1885.3	2102.0	1873.7	1642.4	1505.4	1454.9	1505.4	1642.4
147.5°	1936.9	1969.9	1920.3	1961.1	2191.4	1976.7	1735.7	1600.6	1555.9	1600.6	1735.7
150°	2001.9	2017.5	1988.3	2066.1	2282.7	2091.3	1830.9	1691.0	1646.3	1691.0	1830.9
152.5°	2054.4	2073.8	2040.8	2180.7	2354.7	2196.3	1935.9	1780.4	1727.9	1780.4	1935.9
155°	2108.8	2116.6	2093.3	2291.5	2431.5	2299.3	2019.4	1879.5	1829.0	1879.5	2019.4
157.5°	2159.4	2174.9	2147.7	2375.1	2497.5	2388.7	2114.7	1978.6	1933.9	1978.6	2114.7
160°	2213.8	2213.8	2229.3	2472.3	2552.0	2466.4	2215.7	2087.5	2025.3	2087.5	2215.7
162.5°	2219.6	2256.5	2340.1	2540.3	2604.4	2534.5	2324.6	2165.2	2110.8	2165.2	2324.6
165°	2305.1	2338.2	2464.5	2600.5	2645.2	2594.7	2458.7	2293.5	2229.3	2293.5	2458.7
167.5°	2394.5	2464.5	2565.6	2669.6	2685.1	2652.1	2561.7	2447.0	2388.7	2447.0	2561.7
170°	2539.3	2600.5	2651.1	2693.8	2716.2	2695.8	2625.8	2569.4	2531.5	2569.4	2625.8
172.5°	2653.0	2693.8	2713.3	2741.5	2727.9	2720.1	2684.1	2656.9	2635.5	2656.9	2684.1
175°	2724.9	2734.6	2752.1	2743.4	2755.1	2733.7	2734.6	2748.2	2666.6	2748.2	2734.6
177.5°	2750.1	2765.7	2756.0	2739.5	2741.5	2737.6	2744.4	2752.1	2738.5	2752.1	2744.4
180°	2752.1	2752.1	2752.1	2752.1	2752.1	2752.1	2752.1	2752.1	2752.1	2752.1	2752.1



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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2579.6	2579.6	2579.6	2579.6	2579.6	2579.6
2.5°	2582.5	2585.5	2584.5	2569.5	2575.7	2566.8
5°	2570.5	2571.5	2570.5	2558.5	2564.7	2556.8
7.5°	2549.6	2550.5	2551.5	2535.6	2545.6	2537.7
10°	2518.7	2520.6	2520.6	2507.6	2513.6	2513.7
12.5°	2483.7	2480.7	2483.7	2473.7	2478.6	2478.5
15°	2439.7	2439.7	2441.7	2427.7	2431.6	2436.5
17.5°	2388.7	2389.7	2388.7	2376.7	2381.6	2383.5
20°	2331.8	2333.8	2333.7	2320.7	2322.5	2323.5
22.5°	2270.8	2269.8	2272.7	2256.7	2256.5	2248.5
25°	2202.8	2202.8	2204.7	2186.6	2173.5	2166.5
27.5°	2132.7	2131.8	2134.7	2110.6	2090.5	2080.5
30°	2049.7	2049.8	2053.6	2021.5	1989.5	1976.5
32.5°	1965.7	1966.7	1969.6	1927.5	1890.5	1880.5
35°	1869.8	1875.8	1875.6	1821.6	1783.6	1773.6
37.5°	1770.8	1783.7	1776.6	1712.6	1674.6	1668.6
40°	1661.8	1691.7	1665.7	1592.6	1566.6	1572.6
42.5°	1546.8	1583.7	1550.7	1475.7	1464.6	1476.6
45°	1424.8	1467.7	1428.7	1357.7	1356.7	1382.7
47.5°	1303.8	1349.7	1305.7	1253.7	1263.7	1288.7
50°	1177.8	1198.8	1181.7	1146.7	1172.7	1188.7
52.5°	1056.8	1050.8	1060.7	1046.7	1085.7	1105.7
55°	929.9	892.8	933.8	955.7	998.7	1009.7
57.5°	809.9	760.8	813.8	861.7	916.7	925.7
60°	687.9	650.8	689.8	765.8	831.8	831.8
62.5°	577.9	561.9	579.8	669.8	739.8	742.8
65°	483.9	479.9	485.8	572.8	640.8	654.8
67.5°	402.9	411.9	402.9	480.8	547.8	564.8
70°	332.9	342.9	332.9	399.9	454.9	478.9
72.5°	270.9	286.9	272.9	321.9	369.9	408.9
75°	217.9	237.9	217.9	248.9	299.9	343.9
77.5°	168.9	190.9	168.9	194.9	253.7	311.4
80°	125.9	145.9	125.9	160.8	236.9	293.5
82.5°	90.9	100.9	90.9	155.1	246.6	302.1
85°	71.9	61.9	75.8	177.9	277.9	326.4
87.5°	63.7	20.0	90.9	214.2	327.8	364.3
90°	41.9	2.9	115.7	269.2	382.7	414.1
92.5°	24.9	32.1	159.0	328.1	448.3	476.6
95°	14.8	78.7	209.1	396.7	522.8	534.4
97.5°	25.3	139.0	274.1	467.2	594.2	604.0
100°	66.1	213.8	357.7	540.6	661.8	665.8
102.5°	122.5	293.5	437.3	612.3	736.2	762.5
105°	198.3	384.9	520.9	706.6	813.6	844.8
107.5°	285.8	482.0	606.4	792.1	900.0	921.4
110°	379.0	583.1	691.9	875.6	993.3	1016.6





TEST NUMBER: P392711

CATALOG NUMBER: MWL-4-66-60-UNV-L840-EDD

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	480.1	688.1	781.4	953.4	1092.4	1109.9
115°	594.8	785.2	864.9	1042.8	1171.1	1181.8
117.5°	698.8	902.8	951.4	1108.9	1254.6	1257.6
120°	807.6	1013.6	1037.0	1200.2	1337.3	1352.8
122.5°	918.4	1118.6	1118.6	1277.9	1409.2	1418.9
125°	1021.4	1231.3	1200.2	1337.3	1475.2	1479.1
127.5°	1126.4	1346.0	1289.6	1413.1	1539.4	1533.5
130°	1241.0	1454.8	1371.2	1485.0	1599.6	1580.2
132.5°	1347.0	1571.4	1455.8	1558.8	1659.9	1671.5
135°	1451.9	1680.3	1527.7	1623.0	1722.1	1718.2
137.5°	1553.0	1781.3	1615.2	1673.5	1762.9	1774.5
140°	1652.1	1890.2	1692.9	1739.6	1813.4	1815.4
142.5°	1757.1	1999.0	1778.4	1805.6	1870.8	1858.1
145°	1873.7	2102.0	1885.3	1871.7	1913.5	1888.3
147.5°	1976.7	2191.4	1961.1	1920.3	1969.9	1936.9
150°	2091.3	2282.7	2066.1	1988.3	2017.5	2001.9
152.5°	2196.3	2354.7	2180.7	2040.8	2073.8	2054.4
155°	2299.3	2431.5	2291.5	2093.3	2116.6	2108.8
157.5°	2388.7	2497.5	2375.1	2147.7	2174.9	2159.4
160°	2466.4	2552.0	2472.3	2229.3	2213.8	2213.8
162.5°	2534.5	2604.4	2540.3	2340.1	2256.5	2219.6
165°	2594.7	2645.2	2600.5	2464.5	2338.2	2305.1
167.5°	2652.1	2685.1	2669.6	2565.6	2464.5	2394.5
170°	2695.8	2716.2	2693.8	2651.1	2600.5	2539.3
172.5°	2720.1	2727.9	2741.5	2713.3	2693.8	2653.0
175°	2733.7	2755.1	2743.4	2752.1	2734.6	2724.9
177.5°	2737.6	2741.5	2739.5	2756.0	2765.7	2750.1
180°	2752.1	2752.1	2752.1	2752.1	2752.1	2752.1

(END OF REPORT)