

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: P392709

Luminaire Tested: **MWL-4-66-60-UNV-L830-EDD**

Issue Date: 12/2/2019

**Test Information**

Test Method: LM-79-08  
Report Number: P392709  
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-L830-EDD  
Description: MWL 4FT MEDICAL LED FIXTURE  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

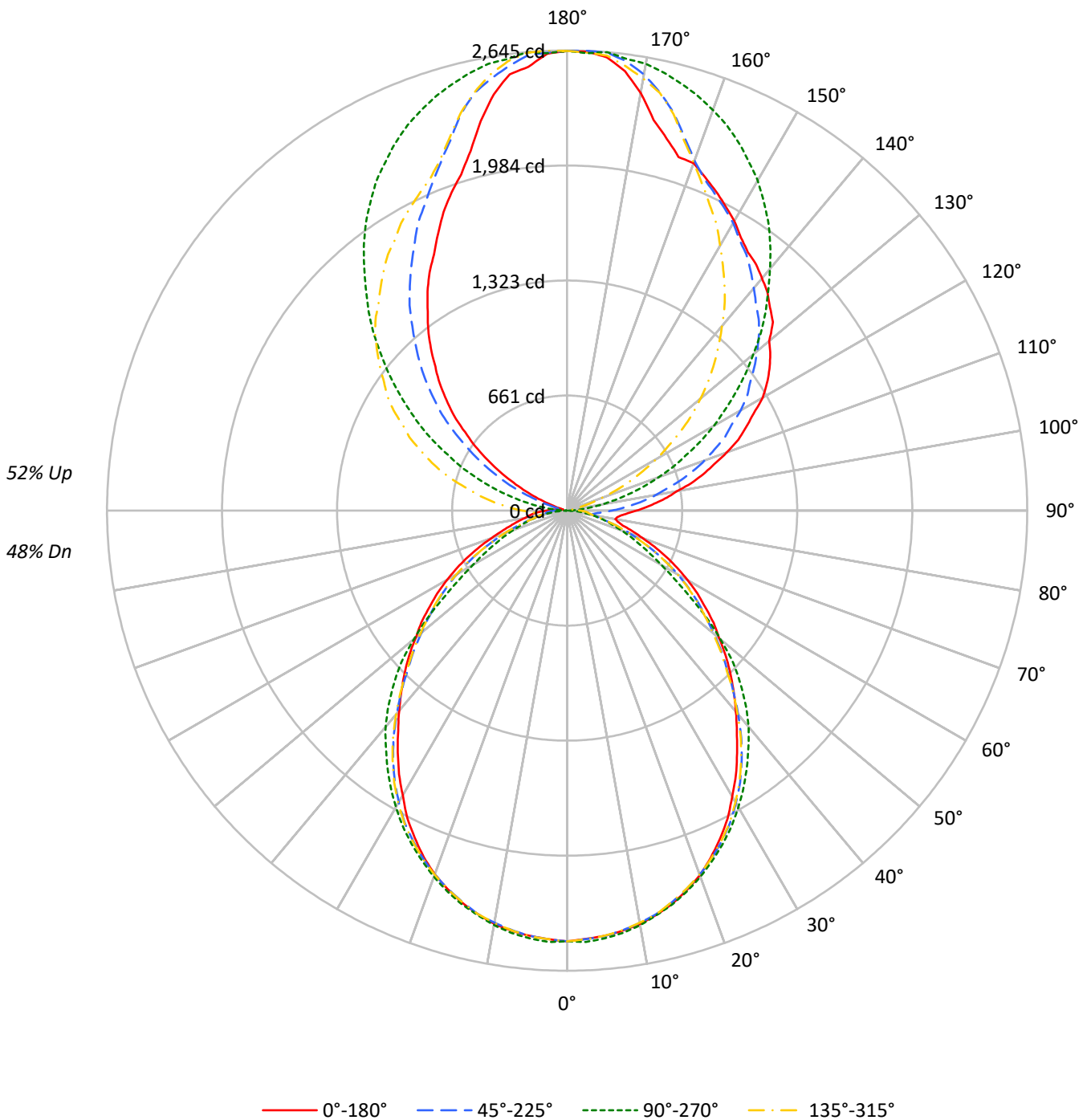
Lumens per Lamp: N/A  
Luminaire Lumens: 12107.0 lumens  
Efficiency: N/A  
Efficacy: 81.0 lumens/watt  
Spacing Criteria (0/90/45): 1.15 / 1.19 / 1.25  
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 4' x H: 0.42')  
CIE Type: General Diffuse

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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### 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	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°	15992	15992	15992	15992
5°	15767	14715	15767	14715
10°	15538	13489	15538	13489
15°	15213	12349	15177	12349
20°	14769	11288	14731	11288
25°	14133	10276	14095	10276
30°	13346	9302	13294	9302
35°	12510	8350	12469	8350
40°	11703	7444	11645	7444
45°	10978	6434	10932	6434
50°	10198	5275	10148	5275
55°	9500	3974	9463	3974
60°	8736	2953	8716	2953
65°	7851	2238	7851	2238
70°	6749	1658	6775	1658
75°	5931	1204	6032	1204
80°	6586	780	5756	780
85°	10598	354	6495	354



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	233.4	1.9
10°-20°	658.1	5.4
20°-30°	965.2	8.0
30°-40°	1093.1	9.0
40°-50°	1030.0	8.5
50°-60°	824.0	6.8
60°-70°	541.5	4.5
70°-80°	278.3	2.3
80°-90°	165.0	1.4
90°-100°	221.6	1.8
100°-110°	410.8	3.4
110°-120°	702.0	5.8
120°-130°	953.8	7.9
130°-140°	1087.9	9.0
140°-150°	1085.2	9.0
150°-160°	944.9	7.8
160°-170°	664.7	5.5
170°-180°	247.6	2.0
0°-30°	1856.7	15.3
0°-40°	2949.9	24.4
0°-60°	4803.9	39.7
0°-90°	5788.7	47.8
90°-120°	1334.4	11.0
90°-150°	4461.2	36.8
90°-180°	6318.0	52.2
0°-180°	12107.0	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	2476	2476	2476	2476	2476	
5°	2454	2468	2454	2468	2454	233
15°	2339	2342	2333	2342	2339	658
25°	2080	2114	2074	2114	2080	956
35°	1702	1801	1697	1801	1702	1065
45°	1327	1409	1322	1409	1327	1024
55°	969	857	966	857	969	869
65°	628	461	628	461	628	621
75°	330	228	336	228	330	367
85°	313	59	192	59	313	250
90°	398	3	118	3	398	220
95°	513	76	71	76	513	447
105°	811	370	26	370	811	854
115°	1134	754	261	754	1134	1126
125°	1420	1182	646	1182	1420	1268
135°	1649	1613	1037	1613	1649	1273
145°	1813	2018	1396	2018	1813	1142
155°	2024	2334	1756	2334	2024	934
165°	2213	2539	2140	2539	2213	628
175°	2616	2645	2560	2645	2616	244
180°	2642	2642	2642	2642	2642	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	2476.1	2476.1	2476.1	2476.1	2476.1	2476.1	2476.1	2476.1	2476.1	2476.1	2476.1
2.5°	2463.8	2472.4	2466.4	2480.8	2481.8	2478.9	2466.4	2472.4	2465.7	2472.4	2466.4
5°	2454.2	2461.8	2455.9	2467.4	2468.4	2467.4	2454.0	2461.8	2454.2	2461.8	2454.0
7.5°	2435.9	2443.5	2433.9	2449.2	2448.2	2447.3	2432.1	2441.7	2435.9	2441.7	2432.1
10°	2412.9	2412.8	2407.0	2419.5	2419.5	2417.7	2405.2	2409.0	2412.9	2409.0	2405.2
12.5°	2379.1	2379.2	2374.5	2384.1	2381.2	2384.1	2374.5	2375.4	2375.4	2375.4	2374.5
15°	2338.8	2334.1	2330.3	2343.8	2341.8	2341.8	2328.4	2330.3	2333.2	2330.3	2328.4
17.5°	2287.9	2286.1	2281.4	2292.9	2293.8	2292.9	2279.4	2284.2	2282.3	2284.2	2279.4
20°	2230.3	2229.3	2227.6	2240.1	2240.2	2238.3	2225.7	2225.7	2224.7	2225.7	2225.7
22.5°	2158.3	2166.0	2166.2	2181.5	2178.8	2179.7	2164.3	2162.3	2154.7	2162.3	2164.3
25°	2079.6	2086.3	2098.9	2116.3	2114.4	2114.4	2095.1	2080.7	2074.0	2080.7	2095.1
27.5°	1997.0	2006.6	2025.9	2049.1	2046.3	2047.2	2022.2	2001.1	1991.5	2001.1	2022.2
30°	1897.2	1909.7	1940.4	1971.2	1967.6	1967.5	1934.8	1904.1	1889.8	1904.1	1934.8
32.5°	1805.1	1814.7	1850.2	1890.6	1887.8	1886.9	1844.6	1807.3	1797.7	1807.3	1844.6
35°	1702.5	1712.1	1748.5	1800.4	1800.6	1794.8	1743.0	1706.5	1696.9	1706.5	1743.0
37.5°	1601.7	1607.4	1643.9	1705.3	1712.2	1699.8	1638.3	1601.9	1596.1	1601.9	1638.3
40°	1509.5	1503.8	1528.7	1598.9	1623.8	1595.1	1521.2	1496.3	1502.0	1496.3	1521.2
42.5°	1417.4	1405.9	1416.5	1488.5	1520.2	1484.8	1410.8	1398.4	1409.9	1398.4	1410.8
45°	1327.2	1302.3	1303.2	1371.4	1408.8	1367.6	1295.8	1296.6	1321.6	1296.6	1295.8
47.5°	1237.0	1213.0	1203.4	1253.3	1295.6	1251.5	1195.9	1207.3	1231.3	1207.3	1195.9
50°	1141.0	1125.7	1100.7	1134.3	1150.7	1130.6	1093.2	1118.2	1135.4	1118.2	1093.2
52.5°	1061.3	1042.1	1004.7	1018.2	1008.6	1014.4	999.1	1034.7	1055.7	1034.7	999.1
55°	969.2	958.6	917.4	896.3	857.0	892.6	911.8	953.1	965.5	953.1	911.8
57.5°	888.6	879.9	827.1	781.2	730.3	777.4	821.6	874.4	884.8	874.4	821.6
60°	798.4	798.4	735.1	662.1	624.7	660.3	731.3	794.7	796.5	794.7	731.3
62.5°	713.0	710.1	642.9	556.5	539.4	554.7	639.2	706.4	711.1	706.4	639.2
65°	628.5	615.1	549.8	466.3	460.6	464.5	548.0	613.3	628.5	613.3	548.0
67.5°	542.1	525.8	461.5	386.7	395.4	386.7	459.7	524.0	542.1	524.0	459.7
70°	459.7	436.7	383.9	319.5	329.1	319.5	383.9	438.5	461.5	438.5	383.9
72.5°	392.5	355.1	309.0	262.0	275.4	260.0	309.0	356.9	396.2	356.9	309.0
75°	330.1	287.9	238.9	209.2	228.4	209.2	240.8	289.7	335.7	289.7	240.8
77.5°	298.9	243.5	187.1	162.1	183.2	162.1	189.0	237.9	291.5	237.9	189.0
80°	281.7	227.4	154.3	120.8	140.0	120.8	150.6	197.5	246.2	197.5	150.6
82.5°	290.0	236.7	148.9	87.3	96.9	87.3	126.5	169.6	219.1	169.6	126.5
85°	313.3	266.8	170.8	72.8	59.4	69.0	116.6	153.0	192.0	153.0	116.6
87.5°	349.7	314.7	205.6	87.3	19.2	61.1	99.3	135.6	157.6	135.6	99.3
90°	397.5	367.3	258.4	111.1	2.8	40.2	73.7	104.3	117.7	104.3	73.7
92.5°	457.5	430.3	314.9	152.6	30.8	23.9	59.3	85.2	91.9	85.2	59.3
95°	513.0	501.8	380.8	200.7	75.5	14.2	44.9	69.0	70.8	69.0	44.9
97.5°	579.8	570.4	448.5	263.1	133.4	24.3	36.2	57.4	57.4	57.4	36.2
100°	639.1	635.3	518.9	343.4	205.2	63.4	24.6	49.4	51.4	49.4	24.6
102.5°	731.9	706.7	587.7	419.8	281.7	117.6	31.9	35.0	37.9	35.0	31.9
105°	810.9	781.0	678.3	500.0	369.5	190.3	75.6	31.0	25.5	31.0	75.6
107.5°	884.4	863.9	760.3	582.1	462.7	274.3	139.1	72.9	48.7	72.9	139.1
110°	975.8	953.5	840.5	664.1	559.7	363.8	211.8	132.6	102.7	132.6	211.8



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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°	1065.4	1048.6	915.2	750.1	660.5	460.8	301.4	207.1	179.2	207.1	301.4
115°	1134.4	1124.1	1001.0	830.2	753.7	570.9	400.3	293.9	261.3	293.9	400.3
117.5°	1207.2	1204.3	1064.4	913.2	866.6	670.8	491.7	381.6	347.1	381.6	491.7
120°	1298.5	1283.7	1152.1	995.4	972.9	775.2	592.4	483.3	447.9	483.3	592.4
122.5°	1362.0	1352.7	1226.6	1073.7	1073.7	881.6	689.4	580.3	543.0	580.3	689.4
125°	1419.8	1416.0	1283.7	1152.1	1181.9	980.4	798.5	686.6	645.6	686.6	798.5
127.5°	1472.0	1477.7	1356.4	1237.9	1292.0	1081.2	904.9	781.7	738.8	781.7	904.9
130°	1516.8	1535.4	1425.4	1316.2	1396.4	1191.2	1000.0	877.0	848.9	877.0	1000.0
132.5°	1604.5	1593.3	1496.3	1397.4	1508.4	1293.0	1100.8	972.1	940.3	972.1	1100.8
135°	1649.3	1653.0	1557.9	1466.4	1612.9	1393.7	1195.9	1069.0	1037.4	1069.0	1195.9
137.5°	1703.3	1692.2	1606.4	1550.4	1709.8	1490.7	1289.2	1171.6	1121.3	1171.6	1289.2
140°	1742.6	1740.7	1669.8	1625.0	1814.4	1585.8	1384.3	1264.9	1218.3	1264.9	1384.3
142.5°	1783.6	1795.8	1733.2	1707.1	1918.8	1686.6	1487.0	1357.4	1311.6	1357.4	1487.0
145°	1812.6	1836.7	1796.6	1809.7	2017.7	1798.5	1576.5	1445.0	1396.5	1445.0	1576.5
147.5°	1859.2	1890.9	1843.3	1882.4	2103.5	1897.4	1666.1	1536.4	1493.5	1536.4	1666.1
150°	1921.6	1936.6	1908.5	1983.2	2191.1	2007.4	1757.5	1623.2	1580.3	1623.2	1757.5
152.5°	1972.0	1990.6	1958.9	2093.2	2260.2	2108.2	1858.2	1709.0	1658.6	1709.0	1858.2
155°	2024.2	2031.7	2009.3	2199.6	2334.0	2207.1	1938.4	1804.1	1755.6	1804.1	1938.4
157.5°	2072.8	2087.7	2061.6	2279.8	2397.3	2292.9	2029.9	1899.2	1856.3	1899.2	2029.9
160°	2125.0	2125.0	2139.9	2373.1	2449.6	2367.5	2126.8	2003.8	1944.1	2003.8	2126.8
162.5°	2130.6	2166.0	2246.2	2438.4	2499.9	2432.8	2231.4	2078.3	2026.1	2078.3	2231.4
165°	2212.6	2244.4	2365.6	2496.2	2539.1	2490.6	2360.1	2201.5	2139.9	2201.5	2360.1
167.5°	2298.5	2365.6	2462.7	2562.5	2577.4	2545.7	2458.9	2348.8	2292.9	2348.8	2458.9
170°	2437.4	2496.2	2544.8	2585.7	2607.2	2587.7	2520.5	2466.3	2430.0	2466.3	2520.5
172.5°	2546.6	2585.7	2604.5	2631.5	2618.5	2611.0	2576.4	2550.3	2529.8	2550.3	2576.4
175°	2615.6	2624.9	2641.7	2633.4	2644.6	2624.0	2624.9	2638.0	2559.6	2638.0	2624.9
177.5°	2639.8	2654.8	2645.4	2629.6	2631.5	2627.8	2634.3	2641.7	2628.7	2641.7	2634.3
180°	2641.7	2641.7	2641.7	2641.7	2641.7	2641.7	2641.7	2641.7	2641.7	2641.7	2641.7



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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2476.1	2476.1	2476.1	2476.1	2476.1	2476.1
2.5°	2478.9	2481.8	2480.8	2466.4	2472.4	2463.8
5°	2467.4	2468.4	2467.4	2455.9	2461.8	2454.2
7.5°	2447.3	2448.2	2449.2	2433.9	2443.5	2435.9
10°	2417.7	2419.5	2419.5	2407.0	2412.8	2412.9
12.5°	2384.1	2381.2	2384.1	2374.5	2379.2	2379.1
15°	2341.8	2341.8	2343.8	2330.3	2334.1	2338.8
17.5°	2292.9	2293.8	2292.9	2281.4	2286.1	2287.9
20°	2238.3	2240.2	2240.1	2227.6	2229.3	2230.3
22.5°	2179.7	2178.8	2181.5	2166.2	2166.0	2158.3
25°	2114.4	2114.4	2116.3	2098.9	2086.3	2079.6
27.5°	2047.2	2046.3	2049.1	2025.9	2006.6	1997.0
30°	1967.5	1967.6	1971.2	1940.4	1909.7	1897.2
32.5°	1886.9	1887.8	1890.6	1850.2	1814.7	1805.1
35°	1794.8	1800.6	1800.4	1748.5	1712.1	1702.5
37.5°	1699.8	1712.2	1705.3	1643.9	1607.4	1601.7
40°	1595.1	1623.8	1598.9	1528.7	1503.8	1509.5
42.5°	1484.8	1520.2	1488.5	1416.5	1405.9	1417.4
45°	1367.6	1408.8	1371.4	1303.2	1302.3	1327.2
47.5°	1251.5	1295.6	1253.3	1203.4	1213.0	1237.0
50°	1130.6	1150.7	1134.3	1100.7	1125.7	1141.0
52.5°	1014.4	1008.6	1018.2	1004.7	1042.1	1061.3
55°	892.6	857.0	896.3	917.4	958.6	969.2
57.5°	777.4	730.3	781.2	827.1	879.9	888.6
60°	660.3	624.7	662.1	735.1	798.4	798.4
62.5°	554.7	539.4	556.5	642.9	710.1	713.0
65°	464.5	460.6	466.3	549.8	615.1	628.5
67.5°	386.7	395.4	386.7	461.5	525.8	542.1
70°	319.5	329.1	319.5	383.9	436.7	459.7
72.5°	260.0	275.4	262.0	309.0	355.1	392.5
75°	209.2	228.4	209.2	238.9	287.9	330.1
77.5°	162.1	183.2	162.1	187.1	243.5	298.9
80°	120.8	140.0	120.8	154.3	227.4	281.7
82.5°	87.3	96.9	87.3	148.9	236.7	290.0
85°	69.0	59.4	72.8	170.8	266.8	313.3
87.5°	61.1	19.2	87.3	205.6	314.7	349.7
90°	40.2	2.8	111.1	258.4	367.3	397.5
92.5°	23.9	30.8	152.6	314.9	430.3	457.5
95°	14.2	75.5	200.7	380.8	501.8	513.0
97.5°	24.3	133.4	263.1	448.5	570.4	579.8
100°	63.4	205.2	343.4	518.9	635.3	639.1
102.5°	117.6	281.7	419.8	587.7	706.7	731.9
105°	190.3	369.5	500.0	678.3	781.0	810.9
107.5°	274.3	462.7	582.1	760.3	863.9	884.4
110°	363.8	559.7	664.1	840.5	953.5	975.8





TEST NUMBER: P392709

CATALOG NUMBER: MWL-4-66-60-UNV-L830-EDD

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	460.8	660.5	750.1	915.2	1048.6	1065.4
115°	570.9	753.7	830.2	1001.0	1124.1	1134.4
117.5°	670.8	866.6	913.2	1064.4	1204.3	1207.2
120°	775.2	972.9	995.4	1152.1	1283.7	1298.5
122.5°	881.6	1073.7	1073.7	1226.6	1352.7	1362.0
125°	980.4	1181.9	1152.1	1283.7	1416.0	1419.8
127.5°	1081.2	1292.0	1237.9	1356.4	1477.7	1472.0
130°	1191.2	1396.4	1316.2	1425.4	1535.4	1516.8
132.5°	1293.0	1508.4	1397.4	1496.3	1593.3	1604.5
135°	1393.7	1612.9	1466.4	1557.9	1653.0	1649.3
137.5°	1490.7	1709.8	1550.4	1606.4	1692.2	1703.3
140°	1585.8	1814.4	1625.0	1669.8	1740.7	1742.6
142.5°	1686.6	1918.8	1707.1	1733.2	1795.8	1783.6
145°	1798.5	2017.7	1809.7	1796.6	1836.7	1812.6
147.5°	1897.4	2103.5	1882.4	1843.3	1890.9	1859.2
150°	2007.4	2191.1	1983.2	1908.5	1936.6	1921.6
152.5°	2108.2	2260.2	2093.2	1958.9	1990.6	1972.0
155°	2207.1	2334.0	2199.6	2009.3	2031.7	2024.2
157.5°	2292.9	2397.3	2279.8	2061.6	2087.7	2072.8
160°	2367.5	2449.6	2373.1	2139.9	2125.0	2125.0
162.5°	2432.8	2499.9	2438.4	2246.2	2166.0	2130.6
165°	2490.6	2539.1	2496.2	2365.6	2244.4	2212.6
167.5°	2545.7	2577.4	2562.5	2462.7	2365.6	2298.5
170°	2587.7	2607.2	2585.7	2544.8	2496.2	2437.4
172.5°	2611.0	2618.5	2631.5	2604.5	2585.7	2546.6
175°	2624.0	2644.6	2633.4	2641.7	2624.9	2615.6
177.5°	2627.8	2631.5	2629.6	2645.4	2654.8	2639.8
180°	2641.7	2641.7	2641.7	2641.7	2641.7	2641.7

(END OF REPORT)