

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: P392706

Luminaire Tested: **MWL-4-66-45-UNV-L830-EDD**

Issue Date: 12/2/2019

**Test Information**

Test Method: LM-79-08  
Report Number: P392706  
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-4-66-45-UNV-L830-EDD  
Description: MWL 4FT MEDICAL LED FIXTURE  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

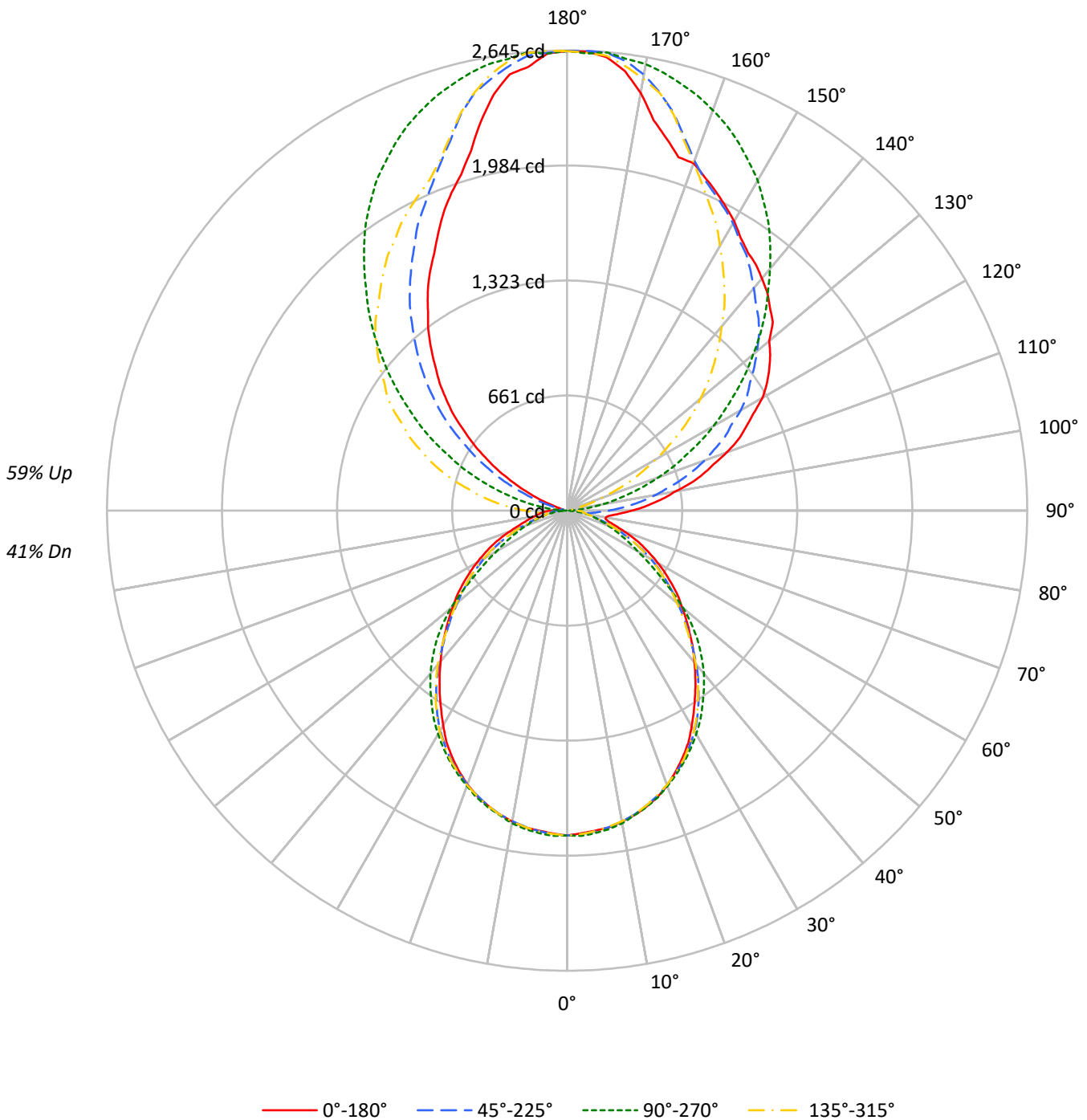
Lumens per Lamp: N/A  
Luminaire Lumens: 10677.0 lumens  
Efficiency: N/A  
Efficacy: 81.9 lumens/watt  
Spacing Criteria (0/90/45): 1.15 / 1.19 / 1.25  
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 4' x H: 0.42')  
CIE Type: General Diffuse

Input Watts (W): 130.4  
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										
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	50	30	10	0														
RCR																																						
0	105	105	105	105	96	96	96	96	78	78	78	62	62	62	48	48	48	41																				
1	96	92	88	84	87	84	80	77	69	66	64	55	53	52	42	41	40	35																				
2	87	80	74	69	79	73	68	64	60	57	54	49	46	44	38	36	34	29																				
3	80	71	64	58	73	65	59	54	54	49	45	43	40	37	34	31	30	25																				
4	73	63	55	49	66	58	51	46	48	43	39	39	35	32	30	28	26	22																				
5	67	56	48	42	61	51	44	39	43	38	34	35	31	28	27	25	23	19																				
6	62	50	42	37	56	46	39	34	39	33	29	31	28	25	25	22	20	17																				
7	57	45	38	32	52	42	35	30	35	30	26	29	25	22	23	20	18	15																				
8	53	41	34	28	48	38	31	27	32	27	23	26	22	19	21	18	16	14																				
9	49	38	30	25	45	35	28	24	29	24	21	24	20	18	19	17	14	12																				
10	46	34	27	23	42	32	26	21	27	22	19	22	19	16	18	15	13	11																				

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

	0°	90°	180°	270°
0°	12062	12062	12062	12062
5°	11864	11093	11864	11093
10°	11687	10177	11687	10177
15°	11460	9302	11425	9302
20°	11133	8492	11096	8492
25°	10663	7738	10625	7738
30°	10071	7015	10019	7015
35°	9428	6293	9387	6293
40°	8831	5605	8773	5605
45°	8240	4860	8192	4860
50°	7694	3995	7643	3995
55°	7176	2986	7140	2986
60°	6584	2214	6563	2214
65°	5957	1683	5957	1683
70°	5115	1262	5141	1262
75°	4431	911	4532	911
80°	5263	583	4433	583
85°	9235	274	5131	274



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	175.9	1.6
10°-20°	496.0	4.6
20°-30°	727.3	6.8
30°-40°	823.7	7.7
40°-50°	776.2	7.3
50°-60°	620.2	5.8
60°-70°	408.1	3.8
70°-80°	210.5	2.0
80°-90°	136.3	1.3
90°-100°	211.4	2.0
100°-110°	408.9	3.8
110°-120°	701.5	6.6
120°-130°	953.1	8.9
130°-140°	1087.2	10.2
140°-150°	1084.5	10.2
150°-160°	944.5	8.8
160°-170°	664.4	6.2
170°-180°	247.5	2.3
0°-30°	1399.2	13.1
0°-40°	2222.9	20.8
0°-60°	3619.2	33.9
0°-90°	4374.2	41.0
90°-120°	1321.7	12.4
90°-150°	4446.5	41.6
90°-180°	6303.0	59.0
0°-180°	10677.0	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	1868	1868	1868	1868	1868	
5°	1847	1861	1847	1861	1847	175
15°	1762	1764	1756	1764	1762	496
25°	1569	1592	1563	1592	1569	721
35°	1283	1357	1278	1357	1283	803
45°	996	1064	990	1064	996	770
55°	732	644	728	644	732	656
65°	477	346	477	346	477	470
75°	247	173	252	173	247	278
85°	273	46	152	46	273	214
90°	372	3	92	3	372	205
95°	496	76	54	76	496	434
105°	808	368	23	368	808	850
115°	1134	754	260	754	1134	1125
125°	1419	1181	645	1181	1419	1267
135°	1648	1612	1036	1612	1648	1272
145°	1811	2018	1395	2018	1811	1142
155°	2023	2333	1755	2333	2023	933
165°	2212	2538	2139	2538	2212	627
175°	2616	2644	2560	2644	2616	244
180°	2641	2641	2641	2641	2641	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1867.6	1867.6	1867.6	1867.6	1867.6	1867.6	1867.6	1867.6	1867.6	1867.6	1867.6
2.5°	1856.3	1863.9	1860.8	1872.3	1871.4	1870.4	1860.8	1863.9	1858.1	1863.9	1860.8
5°	1846.7	1854.3	1852.2	1859.8	1860.8	1859.8	1850.3	1854.3	1846.7	1854.3	1850.3
7.5°	1837.0	1839.8	1835.0	1846.4	1846.4	1844.6	1833.1	1837.9	1837.0	1837.9	1833.1
10°	1814.9	1819.6	1814.8	1825.4	1825.4	1823.5	1813.0	1815.9	1814.9	1815.9	1813.0
12.5°	1792.6	1792.7	1789.0	1797.6	1792.8	1797.6	1789.0	1789.0	1789.0	1789.0	1789.0
15°	1761.9	1759.1	1757.3	1766.9	1764.0	1765.0	1755.4	1755.4	1756.4	1755.4	1755.4
17.5°	1726.4	1723.6	1719.9	1728.5	1729.5	1728.5	1718.0	1721.8	1720.8	1721.8	1718.0
20°	1681.3	1679.4	1679.6	1686.3	1685.4	1684.5	1677.6	1675.7	1675.7	1675.7	1677.6
22.5°	1625.6	1631.4	1631.6	1642.1	1640.3	1640.3	1629.6	1627.7	1622.0	1627.7	1629.6
25°	1569.0	1575.7	1585.4	1593.2	1592.3	1591.3	1581.7	1570.1	1563.4	1570.1	1581.7
27.5°	1506.6	1514.3	1524.0	1543.3	1539.5	1541.3	1520.2	1508.7	1501.0	1508.7	1520.2
30°	1431.7	1443.2	1465.3	1485.6	1483.8	1481.8	1459.7	1437.7	1424.3	1437.7	1459.7
32.5°	1356.8	1368.4	1395.2	1422.2	1425.2	1418.5	1389.7	1361.0	1349.4	1361.0	1389.7
35°	1283.0	1290.7	1317.6	1356.9	1357.1	1351.4	1312.0	1285.1	1277.5	1285.1	1312.0
37.5°	1210.1	1212.0	1237.9	1284.9	1291.8	1279.4	1232.3	1206.4	1204.5	1206.4	1232.3
40°	1139.0	1134.2	1156.3	1203.4	1222.6	1199.7	1148.8	1126.7	1131.5	1126.7	1148.8
42.5°	1069.9	1059.4	1066.2	1123.8	1143.9	1120.0	1060.5	1051.9	1062.4	1051.9	1060.5
45°	996.1	983.6	983.6	1035.5	1064.3	1031.7	976.1	978.0	990.4	978.0	976.1
47.5°	928.9	913.6	906.8	949.1	973.1	947.2	899.3	907.9	923.2	907.9	899.3
50°	860.8	848.3	829.1	854.0	871.4	850.3	821.6	840.8	855.1	840.8	821.6
52.5°	802.2	784.9	758.0	766.7	754.3	762.9	752.5	777.4	796.5	777.4	752.5
55°	732.1	722.5	689.9	679.4	643.9	675.7	684.3	717.0	728.4	717.0	684.3
57.5°	668.8	663.0	621.7	585.4	551.8	581.6	616.2	657.4	665.0	657.4	616.2
60°	601.7	598.8	554.6	499.9	468.2	498.1	550.9	595.1	599.8	595.1	550.9
62.5°	537.4	533.5	484.6	419.3	405.0	417.5	480.8	529.8	535.4	529.8	480.8
65°	476.9	466.3	415.5	350.2	346.4	348.4	413.6	464.5	476.9	464.5	413.6
67.5°	412.6	396.3	348.3	291.7	296.5	291.7	346.4	394.4	412.6	394.4	346.4
70°	348.4	327.2	288.8	242.8	250.4	242.8	288.8	329.1	350.2	329.1	288.8
72.5°	291.7	267.7	233.2	198.6	209.2	196.7	233.2	269.5	295.5	269.5	233.2
75°	246.6	218.8	182.3	157.3	172.7	157.3	184.2	220.6	252.2	220.6	184.2
77.5°	226.9	185.0	140.1	121.8	139.1	121.8	142.0	179.3	219.5	179.3	142.0
80°	225.1	181.3	116.9	91.1	104.5	91.1	113.2	151.5	189.6	151.5	113.2
82.5°	240.1	195.4	119.1	65.2	73.8	65.2	96.8	128.3	169.2	128.3	96.8
85°	273.0	234.1	145.8	56.4	46.0	52.7	91.7	120.4	151.7	120.4	91.7
87.5°	318.0	285.9	185.5	73.8	15.4	47.7	79.1	106.8	125.9	106.8	79.1
90°	371.6	344.3	242.1	101.5	2.8	30.6	57.4	81.3	91.8	81.3	57.4
92.5°	436.4	411.1	301.5	148.8	30.8	20.1	45.9	66.0	70.7	66.0	45.9
95°	495.7	485.5	371.2	199.8	75.5	13.2	35.3	52.7	53.6	52.7	35.3
97.5°	566.3	557.9	441.8	262.2	133.4	23.3	29.5	44.9	44.0	44.9	29.5
100°	629.5	626.6	516.0	342.4	204.3	62.5	21.7	40.8	41.8	40.8	21.7
102.5°	727.1	701.9	586.8	418.8	280.8	116.6	30.9	30.2	33.1	30.2	30.9
105°	808.1	779.1	677.3	499.1	368.5	189.4	74.7	29.1	22.7	29.1	74.7
107.5°	882.5	863.0	759.4	582.1	461.7	274.3	138.1	71.9	46.7	71.9	138.1
110°	974.9	952.5	839.5	664.2	559.7	363.8	210.9	131.6	101.8	131.6	210.9



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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°	1064.4	1047.7	914.2	750.1	660.5	460.9	300.5	206.2	178.3	206.2	300.5
115°	1133.5	1124.2	1000.0	830.2	753.7	571.0	399.3	293.9	260.3	293.9	399.3
117.5°	1206.2	1204.3	1063.5	912.3	865.7	669.8	490.7	381.6	346.1	381.6	490.7
120°	1297.6	1282.7	1152.1	994.5	972.0	774.3	592.5	482.4	446.9	482.4	592.5
122.5°	1361.1	1351.8	1226.7	1072.8	1072.8	880.6	689.4	579.3	542.1	579.3	689.4
125°	1418.8	1415.1	1282.7	1151.1	1181.0	979.5	797.6	685.7	644.7	685.7	797.6
127.5°	1471.1	1476.7	1355.5	1237.9	1291.1	1081.2	904.0	780.8	737.9	780.8	904.0
130°	1515.9	1534.5	1424.5	1316.2	1395.5	1191.3	999.1	876.0	848.0	876.0	999.1
132.5°	1603.5	1592.4	1495.4	1396.5	1507.4	1292.0	1099.9	971.1	939.4	971.1	1099.9
135°	1648.4	1652.1	1557.0	1465.5	1612.0	1392.7	1195.0	1068.1	1036.4	1068.1	1195.0
137.5°	1702.4	1691.3	1605.5	1549.5	1708.9	1489.8	1288.3	1170.7	1120.4	1170.7	1288.3
140°	1741.7	1739.7	1668.9	1624.1	1813.5	1584.9	1383.4	1264.0	1217.4	1264.0	1383.4
142.5°	1782.7	1793.9	1732.3	1706.2	1917.9	1685.7	1486.0	1355.5	1310.7	1355.5	1486.0
145°	1810.7	1834.9	1795.7	1808.8	2017.7	1797.6	1575.6	1443.1	1394.7	1443.1	1575.6
147.5°	1857.3	1889.0	1842.4	1881.5	2102.6	1896.5	1665.2	1534.5	1491.6	1534.5	1665.2
150°	1920.7	1935.7	1907.6	1982.3	2191.2	2006.5	1756.5	1622.3	1579.3	1622.3	1756.5
152.5°	1971.1	1989.7	1958.0	2092.3	2260.3	2107.3	1857.3	1708.1	1657.7	1708.1	1857.3
155°	2023.3	2030.8	2008.4	2198.7	2333.1	2206.2	1937.5	1803.2	1754.7	1803.2	1937.5
157.5°	2071.9	2086.8	2060.6	2278.9	2396.4	2292.0	2029.0	1898.3	1855.4	1898.3	2029.0
160°	2124.1	2124.1	2139.0	2372.2	2448.7	2366.6	2125.9	2002.9	1943.2	2002.9	2125.9
162.5°	2129.7	2165.1	2245.3	2437.5	2499.0	2431.9	2230.5	2077.4	2025.2	2077.4	2230.5
165°	2211.7	2243.5	2364.7	2495.3	2538.2	2489.7	2359.2	2200.6	2139.0	2200.6	2359.2
167.5°	2297.6	2364.7	2461.8	2560.7	2575.5	2543.9	2458.1	2347.9	2292.0	2347.9	2458.1
170°	2436.5	2495.3	2543.9	2584.9	2605.4	2586.8	2519.6	2465.4	2429.1	2465.4	2519.6
172.5°	2546.7	2584.9	2603.6	2629.7	2617.6	2609.1	2575.5	2549.4	2529.9	2549.4	2575.5
175°	2615.7	2624.0	2640.8	2631.5	2643.7	2622.2	2624.0	2637.1	2559.7	2637.1	2624.0
177.5°	2639.9	2653.9	2644.6	2627.8	2629.7	2625.9	2633.4	2640.8	2628.7	2640.8	2633.4
180°	2640.8	2640.8	2640.8	2640.8	2640.8	2640.8	2640.8	2640.8	2640.8	2640.8	2640.8



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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1867.6	1867.6	1867.6	1867.6	1867.6	1867.6
2.5°	1870.4	1871.4	1872.3	1860.8	1863.9	1856.3
5°	1859.8	1860.8	1859.8	1852.2	1854.3	1846.7
7.5°	1844.6	1846.4	1846.4	1835.0	1839.8	1837.0
10°	1823.5	1825.4	1825.4	1814.8	1819.6	1814.9
12.5°	1797.6	1792.8	1797.6	1789.0	1792.7	1792.6
15°	1765.0	1764.0	1766.9	1757.3	1759.1	1761.9
17.5°	1728.5	1729.5	1728.5	1719.9	1723.6	1726.4
20°	1684.5	1685.4	1686.3	1679.6	1679.4	1681.3
22.5°	1640.3	1640.3	1642.1	1631.6	1631.4	1625.6
25°	1591.3	1592.3	1593.2	1585.4	1575.7	1569.0
27.5°	1541.3	1539.5	1543.3	1524.0	1514.3	1506.6
30°	1481.8	1483.8	1485.6	1465.3	1443.2	1431.7
32.5°	1418.5	1425.2	1422.2	1395.2	1368.4	1356.8
35°	1351.4	1357.1	1356.9	1317.6	1290.7	1283.0
37.5°	1279.4	1291.8	1284.9	1237.9	1212.0	1210.1
40°	1199.7	1222.6	1203.4	1156.3	1134.2	1139.0
42.5°	1120.0	1143.9	1123.8	1066.2	1059.4	1069.9
45°	1031.7	1064.3	1035.5	983.6	983.6	996.1
47.5°	947.2	973.1	949.1	906.8	913.6	928.9
50°	850.3	871.4	854.0	829.1	848.3	860.8
52.5°	762.9	754.3	766.7	758.0	784.9	802.2
55°	675.7	643.9	679.4	689.9	722.5	732.1
57.5°	581.6	551.8	585.4	621.7	663.0	668.8
60°	498.1	468.2	499.9	554.6	598.8	601.7
62.5°	417.5	405.0	419.3	484.6	533.5	537.4
65°	348.4	346.4	350.2	415.5	466.3	476.9
67.5°	291.7	296.5	291.7	348.3	396.3	412.6
70°	242.8	250.4	242.8	288.8	327.2	348.4
72.5°	196.7	209.2	198.6	233.2	267.7	291.7
75°	157.3	172.7	157.3	182.3	218.8	246.6
77.5°	121.8	139.1	121.8	140.1	185.0	226.9
80°	91.1	104.5	91.1	116.9	181.3	225.1
82.5°	65.2	73.8	65.2	119.1	195.4	240.1
85°	52.7	46.0	56.4	145.8	234.1	273.0
87.5°	47.7	15.4	73.8	185.5	285.9	318.0
90°	30.6	2.8	101.5	242.1	344.3	371.6
92.5°	20.1	30.8	148.8	301.5	411.1	436.4
95°	13.2	75.5	199.8	371.2	485.5	495.7
97.5°	23.3	133.4	262.2	441.8	557.9	566.3
100°	62.5	204.3	342.4	516.0	626.6	629.5
102.5°	116.6	280.8	418.8	586.8	701.9	727.1
105°	189.4	368.5	499.1	677.3	779.1	808.1
107.5°	274.3	461.7	582.1	759.4	863.0	882.5
110°	363.8	559.7	664.2	839.5	952.5	974.9





TEST NUMBER: P392706

CATALOG NUMBER: MWL-4-66-45-UNV-L830-EDD

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	460.9	660.5	750.1	914.2	1047.7	1064.4
115°	571.0	753.7	830.2	1000.0	1124.2	1133.5
117.5°	669.8	865.7	912.3	1063.5	1204.3	1206.2
120°	774.3	972.0	994.5	1152.1	1282.7	1297.6
122.5°	880.6	1072.8	1072.8	1226.7	1351.8	1361.1
125°	979.5	1181.0	1151.1	1282.7	1415.1	1418.8
127.5°	1081.2	1291.1	1237.9	1355.5	1476.7	1471.1
130°	1191.3	1395.5	1316.2	1424.5	1534.5	1515.9
132.5°	1292.0	1507.4	1396.5	1495.4	1592.4	1603.5
135°	1392.7	1612.0	1465.5	1557.0	1652.1	1648.4
137.5°	1489.8	1708.9	1549.5	1605.5	1691.3	1702.4
140°	1584.9	1813.5	1624.1	1668.9	1739.7	1741.7
142.5°	1685.7	1917.9	1706.2	1732.3	1793.9	1782.7
145°	1797.6	2017.7	1808.8	1795.7	1834.9	1810.7
147.5°	1896.5	2102.6	1881.5	1842.4	1889.0	1857.3
150°	2006.5	2191.2	1982.3	1907.6	1935.7	1920.7
152.5°	2107.3	2260.3	2092.3	1958.0	1989.7	1971.1
155°	2206.2	2333.1	2198.7	2008.4	2030.8	2023.3
157.5°	2292.0	2396.4	2278.9	2060.6	2086.8	2071.9
160°	2366.6	2448.7	2372.2	2139.0	2124.1	2124.1
162.5°	2431.9	2499.0	2437.5	2245.3	2165.1	2129.7
165°	2489.7	2538.2	2495.3	2364.7	2243.5	2211.7
167.5°	2543.9	2575.5	2560.7	2461.8	2364.7	2297.6
170°	2586.8	2605.4	2584.9	2543.9	2495.3	2436.5
172.5°	2609.1	2617.6	2629.7	2603.6	2584.9	2546.7
175°	2622.2	2643.7	2631.5	2640.8	2624.0	2615.7
177.5°	2625.9	2629.7	2627.8	2644.6	2653.9	2639.9
180°	2640.8	2640.8	2640.8	2640.8	2640.8	2640.8

(END OF REPORT)