

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: P392708

Luminaire Tested: **MWL-4-66-45-UNV-L840-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392708
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-L840-EDD
Description: MWL 4FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

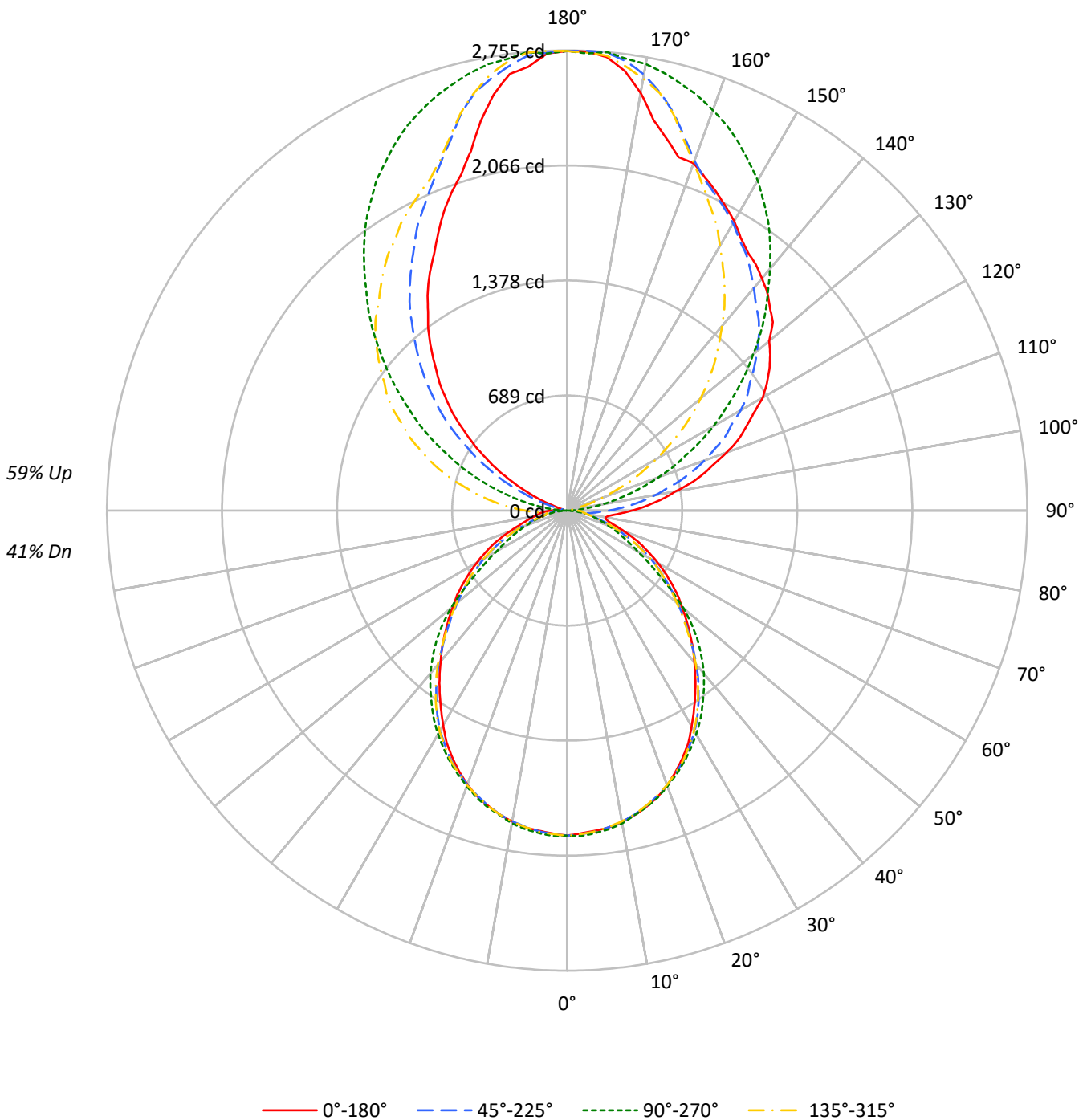
Lumens per Lamp: N/A
Luminaire Lumens: 11122.9 lumens
Efficiency: N/A
Efficacy: 85.3 lumens/watt
Spacing Criteria (0/90/45): 1.15 / 1.19 / 1.25
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 4' x H: 0.42')
CIE Type: General Diffuse

Input Watts (W): 130.4
Input Voltage (V): NR
Input Current (A_{in}): 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



TEST NUMBER: P392708
CATALOG NUMBER: MWL-4-66-45-UNV-L840-EDD

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°	12565	12565	12565	12565
5°	12359	11556	12359	11556
10°	12176	10601	12176	10601
15°	11939	9691	11901	9691
20°	11598	8847	11560	8847
25°	11108	8061	11068	8061
30°	10492	7308	10438	7308
35°	9822	6556	9779	6556
40°	9200	5839	9139	5839
45°	8584	5063	8535	5063
50°	8015	4162	7962	4162
55°	7476	3111	7437	3111
60°	6859	2306	6837	2306
65°	6206	1754	6206	1754
70°	5328	1315	5356	1315
75°	4616	949	4720	949
80°	5483	607	4618	607
85°	9620	286	5345	286



TEST NUMBER: P392708

CATALOG NUMBER: MWL-4-66-45-UNV-L840-EDD

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	183.3	1.6
10°-20°	516.7	4.6
20°-30°	757.6	6.8
30°-40°	858.1	7.7
40°-50°	808.6	7.3
50°-60°	646.1	5.8
60°-70°	425.2	3.8
70°-80°	219.2	2.0
80°-90°	142.0	1.3
90°-100°	220.2	2.0
100°-110°	426.0	3.8
110°-120°	730.8	6.6
120°-130°	992.9	8.9
130°-140°	1132.6	10.2
140°-150°	1129.7	10.2
150°-160°	983.9	8.8
160°-170°	692.2	6.2
170°-180°	257.8	2.3
0°-30°	1457.6	13.1
0°-40°	2315.7	20.8
0°-60°	3770.4	33.9
0°-90°	4556.8	41.0
90°-120°	1376.9	12.4
90°-150°	4632.1	41.6
90°-180°	6566.0	59.0
0°-180°	11122.9	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1946	1946	1946	1946	1946	
5°	1924	1938	1924	1938	1924	183
15°	1836	1838	1830	1838	1836	517
25°	1634	1659	1629	1659	1634	751
35°	1337	1414	1331	1414	1337	836
45°	1038	1109	1032	1109	1038	803
55°	763	671	759	671	763	683
65°	497	361	497	361	497	490
75°	257	180	263	180	257	289
85°	284	48	158	48	284	223
90°	387	3	96	3	387	214
95°	516	79	56	79	516	452
105°	842	384	24	384	842	886
115°	1181	785	271	785	1181	1172
125°	1478	1230	672	1230	1478	1320
135°	1717	1679	1080	1679	1717	1325
145°	1886	2102	1453	2102	1886	1189
155°	2108	2430	1828	2430	2108	972
165°	2304	2644	2228	2644	2304	654
175°	2725	2754	2667	2754	2725	254
180°	2751	2751	2751	2751	2751	



TEST NUMBER: P392708

CATALOG NUMBER: MWL-4-66-45-UNV-L840-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1945.6	1945.6	1945.6	1945.6	1945.6	1945.6	1945.6	1945.6	1945.6	1945.6	1945.6
2.5°	1933.8	1941.7	1938.5	1950.5	1949.5	1948.5	1938.5	1941.7	1935.7	1941.7	1938.5
5°	1923.8	1931.7	1929.5	1937.5	1938.5	1937.5	1927.6	1931.7	1923.8	1931.7	1927.6
7.5°	1913.7	1916.6	1911.6	1923.5	1923.5	1921.6	1909.7	1914.7	1913.7	1914.7	1909.7
10°	1890.7	1895.6	1890.6	1901.6	1901.6	1899.7	1888.7	1891.7	1890.7	1891.7	1888.7
12.5°	1867.5	1867.6	1863.7	1872.7	1867.7	1872.7	1863.7	1863.7	1863.7	1863.7	1863.7
15°	1835.5	1832.6	1830.7	1840.7	1837.7	1838.7	1828.7	1828.7	1829.7	1828.7	1828.7
17.5°	1798.5	1795.6	1791.7	1800.7	1801.7	1800.7	1789.7	1793.7	1792.7	1793.7	1789.7
20°	1751.5	1749.5	1749.7	1756.7	1755.8	1754.8	1747.7	1745.7	1745.7	1745.7	1747.7
22.5°	1693.5	1699.5	1699.7	1710.7	1708.8	1708.8	1697.7	1695.7	1689.7	1695.7	1697.7
25°	1634.5	1641.5	1651.6	1659.7	1658.8	1657.8	1647.7	1635.7	1628.7	1635.7	1647.7
27.5°	1569.5	1577.5	1587.6	1607.7	1603.8	1605.7	1583.7	1571.7	1563.7	1571.7	1583.7
30°	1491.5	1503.5	1526.5	1547.6	1545.8	1543.7	1520.7	1497.7	1483.8	1497.7	1520.7
32.5°	1413.5	1425.5	1453.5	1481.6	1484.7	1477.7	1447.7	1417.8	1405.8	1417.8	1447.7
35°	1336.6	1344.6	1372.6	1413.6	1413.8	1407.8	1366.8	1338.8	1330.8	1338.8	1366.8
37.5°	1260.6	1262.6	1289.6	1338.6	1345.7	1332.8	1283.8	1256.8	1254.8	1256.8	1283.8
40°	1186.6	1181.6	1204.6	1253.7	1273.7	1249.8	1196.8	1173.8	1178.8	1173.8	1196.8
42.5°	1114.6	1103.6	1110.7	1170.7	1191.7	1166.8	1104.8	1095.8	1106.8	1095.8	1104.8
45°	1037.7	1024.7	1024.7	1078.7	1108.7	1074.8	1016.9	1018.8	1031.8	1018.8	1016.9
47.5°	967.7	951.7	944.7	988.7	1013.7	986.8	936.9	945.8	961.8	945.8	936.9
50°	896.7	883.7	863.7	889.7	907.8	885.8	855.9	875.9	890.8	875.9	855.9
52.5°	835.7	817.7	789.7	798.7	785.8	794.8	783.9	809.9	829.8	809.9	783.9
55°	762.7	752.7	718.7	707.8	670.8	703.9	712.9	746.9	758.8	746.9	712.9
57.5°	696.7	690.7	647.7	609.8	574.8	605.9	641.9	684.9	692.8	684.9	641.9
60°	626.8	623.8	577.8	520.8	487.8	518.9	573.9	619.9	624.8	619.9	573.9
62.5°	559.8	555.8	504.8	436.8	421.9	434.9	500.9	551.9	557.8	551.9	500.9
65°	496.8	485.8	432.8	364.8	360.9	362.9	430.9	483.9	496.8	483.9	430.9
67.5°	429.8	412.8	362.8	303.9	308.9	303.9	360.9	410.9	429.8	410.9	360.9
70°	362.9	340.9	300.9	252.9	260.9	252.9	300.9	342.8	364.8	342.8	300.9
72.5°	303.9	278.9	242.9	206.9	217.9	204.9	242.9	280.8	307.8	280.8	242.9
75°	256.9	227.9	189.9	163.9	179.9	163.9	191.9	229.8	262.7	229.8	191.9
77.5°	236.4	192.7	145.9	126.9	144.9	126.9	147.9	186.8	228.7	186.8	147.9
80°	234.5	188.9	121.8	94.9	108.9	94.9	117.9	157.8	197.5	157.8	117.9
82.5°	250.1	203.6	124.1	67.9	76.9	67.9	100.8	133.7	176.3	133.7	100.8
85°	284.4	243.9	151.9	58.8	47.9	54.9	95.5	125.4	158.0	125.4	95.5
87.5°	331.3	297.8	193.2	76.9	16.0	49.7	82.4	111.3	131.2	111.3	82.4
90°	387.1	358.7	252.2	105.7	2.9	31.9	59.8	84.7	95.6	84.7	59.8
92.5°	454.6	428.3	314.1	155.0	32.1	20.9	47.8	68.8	73.7	68.8	47.8
95°	516.4	505.8	386.7	208.1	78.7	13.8	36.8	54.9	55.8	54.9	36.8
97.5°	590.0	581.2	460.2	273.1	139.0	24.3	30.7	46.8	45.8	46.8	30.7
100°	655.8	652.8	537.6	356.7	212.8	65.1	22.6	42.5	43.5	42.5	22.6
102.5°	757.5	731.2	611.3	436.3	292.5	121.5	32.2	31.5	34.5	31.5	32.2
105°	841.8	811.6	705.6	519.9	383.9	197.3	77.8	30.3	23.6	30.3	77.8
107.5°	919.4	899.0	791.1	606.4	481.0	285.8	143.9	74.9	48.7	74.9	143.9
110°	1015.6	992.3	874.6	691.9	583.1	379.0	219.7	137.1	106.0	137.1	219.7



TEST NUMBER: P392708

CATALOG NUMBER: MWL-4-66-45-UNV-L840-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	1108.9	1091.4	952.4	781.4	688.1	480.1	313.0	214.8	185.7	214.8	313.0
115°	1180.8	1171.1	1041.8	864.9	785.2	594.8	416.0	306.2	271.2	306.2	416.0
117.5°	1256.6	1254.6	1107.9	950.4	901.8	697.8	511.2	397.5	360.6	397.5	511.2
120°	1351.8	1336.3	1200.2	1036.0	1012.6	806.6	617.2	502.5	465.6	502.5	617.2
122.5°	1417.9	1408.2	1277.9	1117.6	1117.6	917.4	718.2	603.5	564.7	603.5	718.2
125°	1478.1	1474.2	1336.3	1199.2	1230.3	1020.4	830.9	714.3	671.6	714.3	830.9
127.5°	1532.5	1538.4	1412.1	1289.6	1345.0	1126.4	941.7	813.4	768.7	813.4	941.7
130°	1579.2	1598.6	1484.0	1371.2	1453.8	1241.0	1040.8	912.6	883.4	912.6	1040.8
132.5°	1670.5	1658.9	1557.8	1454.8	1570.4	1346.0	1145.8	1011.7	978.6	1011.7	1145.8
135°	1717.2	1721.1	1622.0	1526.7	1679.3	1450.9	1244.9	1112.7	1079.7	1112.7	1244.9
137.5°	1773.5	1761.9	1672.5	1614.2	1780.3	1552.0	1342.1	1219.6	1167.2	1219.6	1342.1
140°	1814.4	1812.4	1738.6	1691.9	1889.2	1651.1	1441.2	1316.8	1268.2	1316.8	1441.2
142.5°	1857.1	1868.8	1804.6	1777.4	1998.0	1756.1	1548.1	1412.1	1365.4	1412.1	1548.1
145°	1886.3	1911.5	1870.7	1884.3	2102.0	1872.7	1641.4	1503.4	1452.9	1503.4	1641.4
147.5°	1934.9	1967.9	1919.3	1960.1	2190.4	1975.7	1734.7	1598.6	1553.9	1598.6	1734.7
150°	2000.9	2016.5	1987.3	2065.1	2282.7	2090.3	1829.9	1690.0	1645.3	1690.0	1829.9
152.5°	2053.4	2072.8	2039.8	2179.7	2354.7	2195.3	1934.9	1779.4	1726.9	1779.4	1934.9
155°	2107.8	2115.6	2092.3	2290.5	2430.5	2298.3	2018.4	1878.5	1828.0	1878.5	2018.4
157.5°	2158.4	2173.9	2146.7	2374.1	2496.5	2387.7	2113.7	1977.6	1932.9	1977.6	2113.7
160°	2212.8	2212.8	2228.3	2471.3	2551.0	2465.4	2214.7	2086.5	2024.3	2086.5	2214.7
162.5°	2218.6	2255.5	2339.1	2539.3	2603.4	2533.5	2323.6	2164.2	2109.8	2164.2	2323.6
165°	2304.1	2337.2	2463.5	2599.5	2644.2	2593.7	2457.7	2292.5	2228.3	2292.5	2457.7
167.5°	2393.5	2463.5	2564.6	2667.6	2683.1	2650.1	2560.7	2446.0	2387.7	2446.0	2560.7
170°	2538.3	2599.5	2650.1	2692.8	2714.2	2694.8	2624.8	2568.4	2530.5	2568.4	2624.8
172.5°	2653.0	2692.8	2712.3	2739.5	2726.9	2718.1	2683.1	2655.9	2635.5	2655.9	2683.1
175°	2724.9	2733.6	2751.1	2741.4	2754.1	2731.7	2733.6	2747.2	2666.6	2747.2	2733.6
177.5°	2750.1	2764.7	2755.0	2737.5	2739.5	2735.6	2743.4	2751.1	2738.5	2751.1	2743.4
180°	2751.1	2751.1	2751.1	2751.1	2751.1	2751.1	2751.1	2751.1	2751.1	2751.1	2751.1



TEST NUMBER: P392708

CATALOG NUMBER: MWL-4-66-45-UNV-L840-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1945.6	1945.6	1945.6	1945.6	1945.6	1945.6
2.5°	1948.5	1949.5	1950.5	1938.5	1941.7	1933.8
5°	1937.5	1938.5	1937.5	1929.5	1931.7	1923.8
7.5°	1921.6	1923.5	1923.5	1911.6	1916.6	1913.7
10°	1899.7	1901.6	1901.6	1890.6	1895.6	1890.7
12.5°	1872.7	1867.7	1872.7	1863.7	1867.6	1867.5
15°	1838.7	1837.7	1840.7	1830.7	1832.6	1835.5
17.5°	1800.7	1801.7	1800.7	1791.7	1795.6	1798.5
20°	1754.8	1755.8	1756.7	1749.7	1749.5	1751.5
22.5°	1708.8	1708.8	1710.7	1699.7	1699.5	1693.5
25°	1657.8	1658.8	1659.7	1651.6	1641.5	1634.5
27.5°	1605.7	1603.8	1607.7	1587.6	1577.5	1569.5
30°	1543.7	1545.8	1547.6	1526.5	1503.5	1491.5
32.5°	1477.7	1484.7	1481.6	1453.5	1425.5	1413.5
35°	1407.8	1413.8	1413.6	1372.6	1344.6	1336.6
37.5°	1332.8	1345.7	1338.6	1289.6	1262.6	1260.6
40°	1249.8	1273.7	1253.7	1204.6	1181.6	1186.6
42.5°	1166.8	1191.7	1170.7	1110.7	1103.6	1114.6
45°	1074.8	1108.7	1078.7	1024.7	1024.7	1037.7
47.5°	986.8	1013.7	988.7	944.7	951.7	967.7
50°	885.8	907.8	889.7	863.7	883.7	896.7
52.5°	794.8	785.8	798.7	789.7	817.7	835.7
55°	703.9	670.8	707.8	718.7	752.7	762.7
57.5°	605.9	574.8	609.8	647.7	690.7	696.7
60°	518.9	487.8	520.8	577.8	623.8	626.8
62.5°	434.9	421.9	436.8	504.8	555.8	559.8
65°	362.9	360.9	364.8	432.8	485.8	496.8
67.5°	303.9	308.9	303.9	362.8	412.8	429.8
70°	252.9	260.9	252.9	300.9	340.9	362.9
72.5°	204.9	217.9	206.9	242.9	278.9	303.9
75°	163.9	179.9	163.9	189.9	227.9	256.9
77.5°	126.9	144.9	126.9	145.9	192.7	236.4
80°	94.9	108.9	94.9	121.8	188.9	234.5
82.5°	67.9	76.9	67.9	124.1	203.6	250.1
85°	54.9	47.9	58.8	151.9	243.9	284.4
87.5°	49.7	16.0	76.9	193.2	297.8	331.3
90°	31.9	2.9	105.7	252.2	358.7	387.1
92.5°	20.9	32.1	155.0	314.1	428.3	454.6
95°	13.8	78.7	208.1	386.7	505.8	516.4
97.5°	24.3	139.0	273.1	460.2	581.2	590.0
100°	65.1	212.8	356.7	537.6	652.8	655.8
102.5°	121.5	292.5	436.3	611.3	731.2	757.5
105°	197.3	383.9	519.9	705.6	811.6	841.8
107.5°	285.8	481.0	606.4	791.1	899.0	919.4
110°	379.0	583.1	691.9	874.6	992.3	1015.6



TEST NUMBER: P392708

CATALOG NUMBER: MWL-4-66-45-UNV-L840-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	480.1	688.1	781.4	952.4	1091.4	1108.9
115°	594.8	785.2	864.9	1041.8	1171.1	1180.8
117.5°	697.8	901.8	950.4	1107.9	1254.6	1256.6
120°	806.6	1012.6	1036.0	1200.2	1336.3	1351.8
122.5°	917.4	1117.6	1117.6	1277.9	1408.2	1417.9
125°	1020.4	1230.3	1199.2	1336.3	1474.2	1478.1
127.5°	1126.4	1345.0	1289.6	1412.1	1538.4	1532.5
130°	1241.0	1453.8	1371.2	1484.0	1598.6	1579.2
132.5°	1346.0	1570.4	1454.8	1557.8	1658.9	1670.5
135°	1450.9	1679.3	1526.7	1622.0	1721.1	1717.2
137.5°	1552.0	1780.3	1614.2	1672.5	1761.9	1773.5
140°	1651.1	1889.2	1691.9	1738.6	1812.4	1814.4
142.5°	1756.1	1998.0	1777.4	1804.6	1868.8	1857.1
145°	1872.7	2102.0	1884.3	1870.7	1911.5	1886.3
147.5°	1975.7	2190.4	1960.1	1919.3	1967.9	1934.9
150°	2090.3	2282.7	2065.1	1987.3	2016.5	2000.9
152.5°	2195.3	2354.7	2179.7	2039.8	2072.8	2053.4
155°	2298.3	2430.5	2290.5	2092.3	2115.6	2107.8
157.5°	2387.7	2496.5	2374.1	2146.7	2173.9	2158.4
160°	2465.4	2551.0	2471.3	2228.3	2212.8	2212.8
162.5°	2533.5	2603.4	2539.3	2339.1	2255.5	2218.6
165°	2593.7	2644.2	2599.5	2463.5	2337.2	2304.1
167.5°	2650.1	2683.1	2667.6	2564.6	2463.5	2393.5
170°	2694.8	2714.2	2692.8	2650.1	2599.5	2538.3
172.5°	2718.1	2726.9	2739.5	2712.3	2692.8	2653.0
175°	2731.7	2754.1	2741.4	2751.1	2733.6	2724.9
177.5°	2735.6	2739.5	2737.5	2755.0	2764.7	2750.1
180°	2751.1	2751.1	2751.1	2751.1	2751.1	2751.1

(END OF REPORT)