

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: P392714

Luminaire Tested: **MWL-4-66-73-UNV-L840-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392714
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-L840-EDD
Description: MWL 4FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

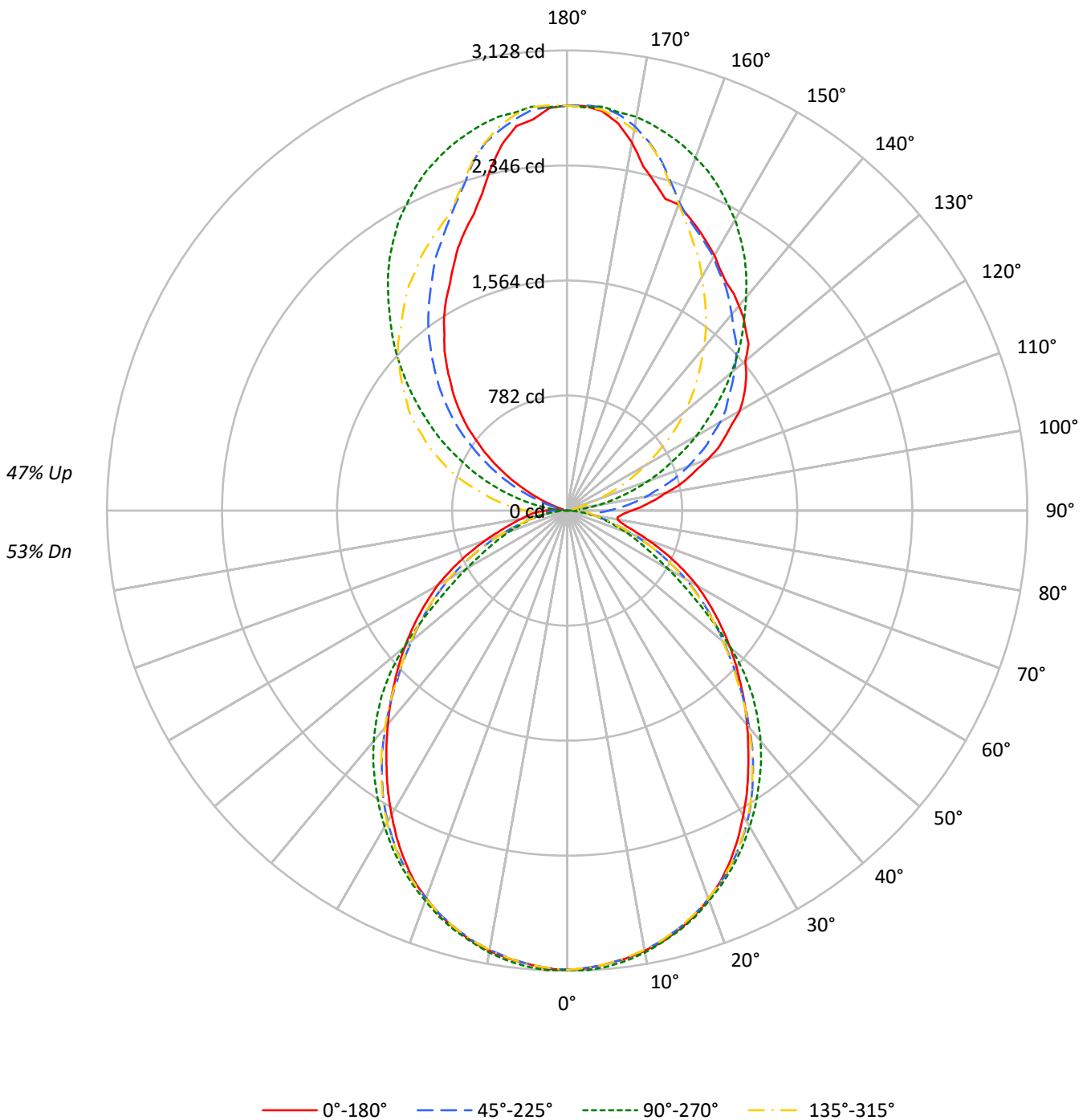
Lumens per Lamp: N/A
Luminaire Lumens: 13890.8 lumens
Efficiency: N/A
Efficacy: 81.9 lumens/watt
Spacing Criteria (0/90/45): 1.15 / 1.19 / 1.25
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 4' x H: 0.42')
CIE Type: General Diffuse

Input Watts (W): 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			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°	20160	20160	20160	20160
5°	19870	18549	19870	18549
10°	19568	17007	19568	17007
15°	19172	15575	19135	15575
20°	18604	14219	18565	14219
25°	17843	12965	17803	12965
30°	16844	11729	16790	11729
35°	15766	10535	15724	10535
40°	14759	9378	14698	9378
45°	13795	8146	13746	8146
50°	12921	6655	12869	6655
55°	12024	5007	11985	5007
60°	11148	3729	11126	3729
65°	9916	2808	9916	2808
70°	8616	2116	8644	2116
75°	7527	1513	7631	1513
80°	8148	975	7283	975
85°	12428	441	8152	441



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	294.3	2.1
10°-20°	830.0	6.0
20°-30°	1217.3	8.8
30°-40°	1378.4	9.9
40°-50°	1299.0	9.4
50°-60°	1039.8	7.5
60°-70°	685.1	4.9
70°-80°	351.6	2.5
80°-90°	198.3	1.4
90°-100°	240.3	1.7
100°-110°	429.6	3.1
110°-120°	732.1	5.3
120°-130°	994.3	7.2
130°-140°	1134.0	8.2
140°-150°	1131.1	8.1
150°-160°	984.8	7.1
160°-170°	692.8	5.0
170°-180°	258.0	1.9
0°-30°	2341.6	16.9
0°-40°	3719.9	26.8
0°-60°	6058.7	43.6
0°-90°	7293.8	52.5
90°-120°	1402.0	10.1
90°-150°	4661.4	33.6
90°-180°	6597.0	47.5
0°-180°	13890.8	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	3122	3122	3122	3122	3122	
5°	3093	3112	3093	3112	3093	294
15°	2948	2954	2942	2954	2948	830
25°	2626	2668	2620	2668	2626	1206
35°	2146	2272	2140	2272	2146	1343
45°	1668	1784	1662	1784	1668	1289
55°	1227	1080	1223	1080	1227	1099
65°	794	578	794	578	794	789
75°	419	287	425	287	419	463
85°	367	74	241	74	367	295
90°	437	3	146	3	437	242
95°	549	80	89	80	549	477
105°	848	385	30	385	848	894
115°	1183	786	273	786	1183	1174
125°	1480	1231	674	1231	1480	1322
135°	1719	1681	1082	1681	1719	1327
145°	1888	2103	1455	2103	1888	1191
155°	2110	2432	1830	2432	2110	973
165°	2306	2647	2230	2647	2306	654
175°	2726	2756	2668	2756	2726	254
180°	2753	2753	2753	2753	2753	



TEST NUMBER: P392714

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	3121.6	3121.6	3121.6	3121.6	3121.6	3121.6	3121.6	3121.6	3121.6	3121.6	3121.6
2.5°	3114.8	3116.7	3110.5	3128.5	3127.5	3126.5	3110.5	3116.7	3116.7	3116.7	3110.5
5°	3092.8	3100.7	3095.5	3112.5	3111.5	3112.5	3093.6	3100.7	3092.8	3100.7	3093.6
7.5°	3070.7	3080.6	3067.6	3088.5	3086.5	3086.6	3065.7	3078.7	3070.7	3078.7	3065.7
10°	3038.7	3042.6	3033.6	3051.6	3050.6	3049.7	3031.7	3038.7	3038.7	3038.7	3031.7
12.5°	3000.5	2998.6	2990.7	3006.7	3003.7	3006.7	2990.7	2994.7	2996.7	2994.7	2990.7
15°	2947.5	2944.6	2938.7	2954.7	2953.7	2952.7	2936.7	2940.7	2941.7	2940.7	2936.7
17.5°	2886.5	2882.6	2878.7	2894.7	2894.7	2894.7	2876.7	2880.7	2880.7	2880.7	2876.7
20°	2809.5	2811.5	2807.7	2823.7	2821.8	2821.8	2805.7	2807.7	2803.7	2807.7	2805.7
22.5°	2726.5	2729.5	2732.7	2753.7	2748.8	2751.8	2730.7	2725.7	2722.7	2725.7	2730.7
25°	2625.5	2631.5	2648.6	2669.7	2667.8	2667.8	2644.7	2625.7	2619.7	2625.7	2644.7
27.5°	2513.5	2529.5	2552.6	2580.7	2578.8	2578.7	2548.7	2523.7	2507.7	2523.7	2548.7
30°	2394.5	2411.5	2447.5	2487.6	2480.8	2483.7	2441.7	2405.7	2386.8	2405.7	2441.7
32.5°	2273.5	2290.5	2331.5	2379.6	2381.7	2375.7	2325.7	2282.8	2265.8	2282.8	2325.7
35°	2145.6	2153.6	2200.6	2274.6	2271.8	2268.8	2194.8	2147.8	2139.8	2147.8	2194.8
37.5°	2022.6	2024.6	2071.6	2149.6	2164.7	2143.8	2065.8	2018.8	2016.8	2018.8	2065.8
40°	1903.6	1893.6	1926.6	2012.7	2045.7	2008.8	1918.8	1885.8	1895.8	1885.8	1918.8
42.5°	1785.6	1773.6	1786.7	1872.7	1916.7	1868.8	1780.8	1765.8	1777.8	1765.8	1780.8
45°	1667.7	1645.7	1642.7	1728.7	1783.7	1724.8	1634.9	1639.8	1661.8	1639.8	1634.9
47.5°	1556.7	1530.7	1515.7	1580.7	1630.7	1578.8	1507.9	1524.8	1550.8	1524.8	1507.9
50°	1445.7	1420.7	1385.7	1430.7	1451.8	1426.8	1377.9	1412.9	1439.8	1412.9	1377.9
52.5°	1335.7	1316.7	1270.7	1286.7	1260.8	1282.8	1264.9	1308.9	1329.8	1308.9	1264.9
55°	1226.7	1209.7	1154.7	1132.8	1079.8	1128.9	1148.9	1203.9	1222.8	1203.9	1148.9
57.5°	1120.7	1110.7	1042.7	979.8	922.8	975.9	1036.9	1104.9	1116.8	1104.9	1036.9
60°	1018.8	1007.8	928.8	831.8	788.8	829.9	924.9	1003.9	1016.8	1003.9	924.9
62.5°	904.8	899.8	810.8	701.8	672.9	699.9	806.9	895.9	902.8	895.9	806.9
65°	793.8	778.8	695.8	589.8	577.9	587.9	693.9	776.9	793.8	776.9	693.9
67.5°	687.8	665.8	588.8	491.9	494.9	491.9	586.9	663.9	687.8	663.9	586.9
70°	586.9	552.9	483.9	406.9	419.9	406.9	483.9	554.8	588.8	554.8	483.9
72.5°	493.9	451.9	388.9	331.9	346.9	329.9	388.9	453.8	497.8	453.8	388.9
75°	418.9	365.9	301.9	263.9	286.9	263.9	303.9	367.8	424.7	367.8	303.9
77.5°	373.4	308.7	235.9	203.9	231.9	203.9	237.9	302.8	365.7	302.8	237.9
80°	348.5	282.9	192.8	150.9	174.9	150.9	188.9	251.8	311.5	251.8	188.9
82.5°	346.1	284.6	184.1	108.9	122.9	108.9	160.8	214.7	272.3	214.7	160.8
85°	367.4	310.9	200.9	90.8	73.9	86.9	144.5	192.4	241.0	192.4	144.5
87.5°	393.3	351.8	233.2	101.9	27.0	74.7	122.4	165.3	193.2	165.3	122.4
90°	437.1	403.7	284.2	123.7	2.9	49.9	91.8	129.7	145.6	129.7	91.8
92.5°	496.6	467.3	340.1	165.0	33.1	30.9	73.8	107.8	115.7	107.8	73.8
95°	549.4	535.8	406.7	211.1	79.7	16.8	56.8	84.9	88.8	84.9	56.8
97.5°	616.0	606.2	472.2	274.1	140.0	25.3	42.7	71.8	71.8	71.8	42.7
100°	674.8	669.8	543.6	357.7	213.8	66.1	28.6	59.5	62.5	59.5	28.6
102.5°	768.5	741.2	613.3	437.3	293.5	122.5	34.2	41.5	45.5	41.5	34.2
105°	847.8	815.6	706.6	520.9	384.9	198.3	78.8	34.3	29.6	34.3	78.8
107.5°	922.4	901.0	792.1	607.4	482.0	286.8	144.9	76.9	51.7	76.9	144.9
110°	1017.6	994.3	875.6	692.9	584.1	380.0	220.7	139.1	108.0	139.1	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°	1110.9	1093.4	953.4	782.4	689.1	481.1	314.0	216.8	187.7	216.8	314.0
115°	1182.8	1172.1	1043.8	865.9	786.2	595.8	418.0	307.2	273.2	307.2	418.0
117.5°	1258.6	1255.6	1109.9	951.4	902.8	698.8	513.2	398.5	362.6	398.5	513.2
120°	1353.8	1337.3	1201.2	1037.0	1013.6	807.6	618.2	503.5	467.6	503.5	618.2
122.5°	1419.9	1410.2	1278.9	1119.6	1118.6	919.4	719.2	605.5	566.7	605.5	719.2
125°	1480.1	1476.2	1337.3	1201.2	1231.3	1022.4	831.9	716.3	673.6	716.3	831.9
127.5°	1534.5	1540.4	1414.1	1290.6	1347.0	1127.4	943.7	815.4	770.7	815.4	943.7
130°	1581.2	1600.6	1486.0	1372.2	1455.8	1242.0	1042.8	914.6	885.4	914.6	1042.8
132.5°	1672.5	1660.9	1559.8	1455.8	1572.4	1347.0	1147.8	1013.7	980.6	1013.7	1147.8
135°	1719.2	1723.1	1624.0	1527.7	1681.3	1451.9	1246.9	1114.7	1081.7	1114.7	1246.9
137.5°	1775.5	1763.9	1674.5	1616.2	1782.3	1554.0	1344.1	1221.6	1169.2	1221.6	1344.1
140°	1816.4	1814.4	1740.6	1693.9	1891.2	1653.1	1443.2	1318.8	1270.2	1318.8	1443.2
142.5°	1860.1	1871.8	1806.6	1779.4	2000.0	1758.1	1550.1	1415.1	1368.4	1415.1	1550.1
145°	1888.3	1914.5	1872.7	1886.3	2103.0	1874.7	1643.4	1506.4	1454.9	1506.4	1643.4
147.5°	1937.9	1969.9	1921.3	1962.1	2192.4	1977.7	1736.7	1600.6	1556.9	1600.6	1736.7
150°	2002.9	2018.5	1989.3	2067.1	2283.7	2092.3	1831.9	1692.0	1647.3	1692.0	1831.9
152.5°	2055.4	2074.8	2041.8	2181.7	2355.7	2197.3	1936.9	1781.4	1728.9	1781.4	1936.9
155°	2109.8	2117.6	2094.3	2292.5	2432.5	2300.3	2020.4	1880.5	1830.0	1880.5	2020.4
157.5°	2160.4	2175.9	2148.7	2376.1	2498.5	2389.7	2115.7	1979.6	1934.9	1979.6	2115.7
160°	2214.8	2214.8	2230.3	2473.3	2553.0	2467.4	2216.7	2088.5	2026.3	2088.5	2216.7
162.5°	2220.6	2257.5	2341.1	2541.3	2605.4	2535.5	2325.6	2166.2	2111.8	2166.2	2325.6
165°	2306.1	2339.2	2465.5	2601.5	2647.2	2595.7	2459.7	2294.5	2230.3	2294.5	2459.7
167.5°	2394.5	2464.5	2566.6	2670.6	2686.1	2653.1	2562.7	2447.0	2388.7	2447.0	2562.7
170°	2539.3	2601.5	2652.1	2695.8	2717.2	2697.8	2626.8	2570.4	2531.5	2570.4	2626.8
172.5°	2654.0	2694.8	2714.3	2742.5	2728.9	2721.1	2685.1	2657.9	2636.5	2657.9	2685.1
175°	2725.9	2735.6	2753.1	2744.4	2756.1	2734.7	2735.6	2749.2	2667.6	2749.2	2735.6
177.5°	2751.1	2766.7	2757.0	2740.5	2742.5	2738.6	2745.4	2753.1	2739.5	2753.1	2745.4
180°	2753.1	2753.1	2753.1	2753.1	2753.1	2753.1	2753.1	2753.1	2753.1	2753.1	2753.1



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	3121.6	3121.6	3121.6	3121.6	3121.6	3121.6
2.5°	3126.5	3127.5	3128.5	3110.5	3116.7	3114.8
5°	3112.5	3111.5	3112.5	3095.5	3100.7	3092.8
7.5°	3086.6	3086.5	3088.5	3067.6	3080.6	3070.7
10°	3049.7	3050.6	3051.6	3033.6	3042.6	3038.7
12.5°	3006.7	3003.7	3006.7	2990.7	2998.6	3000.5
15°	2952.7	2953.7	2954.7	2938.7	2944.6	2947.5
17.5°	2894.7	2894.7	2894.7	2878.7	2882.6	2886.5
20°	2821.8	2821.8	2823.7	2807.7	2811.5	2809.5
22.5°	2751.8	2748.8	2753.7	2732.7	2729.5	2726.5
25°	2667.8	2667.8	2669.7	2648.6	2631.5	2625.5
27.5°	2578.7	2578.8	2580.7	2552.6	2529.5	2513.5
30°	2483.7	2480.8	2487.6	2447.5	2411.5	2394.5
32.5°	2375.7	2381.7	2379.6	2331.5	2290.5	2273.5
35°	2268.8	2271.8	2274.6	2200.6	2153.6	2145.6
37.5°	2143.8	2164.7	2149.6	2071.6	2024.6	2022.6
40°	2008.8	2045.7	2012.7	1926.6	1893.6	1903.6
42.5°	1868.8	1916.7	1872.7	1786.7	1773.6	1785.6
45°	1724.8	1783.7	1728.7	1642.7	1645.7	1667.7
47.5°	1578.8	1630.7	1580.7	1515.7	1530.7	1556.7
50°	1426.8	1451.8	1430.7	1385.7	1420.7	1445.7
52.5°	1282.8	1260.8	1286.7	1270.7	1316.7	1335.7
55°	1128.9	1079.8	1132.8	1154.7	1209.7	1226.7
57.5°	975.9	922.8	979.8	1042.7	1110.7	1120.7
60°	829.9	788.8	831.8	928.8	1007.8	1018.8
62.5°	699.9	672.9	701.8	810.8	899.8	904.8
65°	587.9	577.9	589.8	695.8	778.8	793.8
67.5°	491.9	494.9	491.9	588.8	665.8	687.8
70°	406.9	419.9	406.9	483.9	552.9	586.9
72.5°	329.9	346.9	331.9	388.9	451.9	493.9
75°	263.9	286.9	263.9	301.9	365.9	418.9
77.5°	203.9	231.9	203.9	235.9	308.7	373.4
80°	150.9	174.9	150.9	192.8	282.9	348.5
82.5°	108.9	122.9	108.9	184.1	284.6	346.1
85°	86.9	73.9	90.8	200.9	310.9	367.4
87.5°	74.7	27.0	101.9	233.2	351.8	393.3
90°	49.9	2.9	123.7	284.2	403.7	437.1
92.5°	30.9	33.1	165.0	340.1	467.3	496.6
95°	16.8	79.7	211.1	406.7	535.8	549.4
97.5°	25.3	140.0	274.1	472.2	606.2	616.0
100°	66.1	213.8	357.7	543.6	669.8	674.8
102.5°	122.5	293.5	437.3	613.3	741.2	768.5
105°	198.3	384.9	520.9	706.6	815.6	847.8
107.5°	286.8	482.0	607.4	792.1	901.0	922.4
110°	380.0	584.1	692.9	875.6	994.3	1017.6



TEST NUMBER: P392714

CATALOG NUMBER: MWL-4-66-73-UNV-L840-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	481.1	689.1	782.4	953.4	1093.4	1110.9
115°	595.8	786.2	865.9	1043.8	1172.1	1182.8
117.5°	698.8	902.8	951.4	1109.9	1255.6	1258.6
120°	807.6	1013.6	1037.0	1201.2	1337.3	1353.8
122.5°	919.4	1118.6	1119.6	1278.9	1410.2	1419.9
125°	1022.4	1231.3	1201.2	1337.3	1476.2	1480.1
127.5°	1127.4	1347.0	1290.6	1414.1	1540.4	1534.5
130°	1242.0	1455.8	1372.2	1486.0	1600.6	1581.2
132.5°	1347.0	1572.4	1455.8	1559.8	1660.9	1672.5
135°	1451.9	1681.3	1527.7	1624.0	1723.1	1719.2
137.5°	1554.0	1782.3	1616.2	1674.5	1763.9	1775.5
140°	1653.1	1891.2	1693.9	1740.6	1814.4	1816.4
142.5°	1758.1	2000.0	1779.4	1806.6	1871.8	1860.1
145°	1874.7	2103.0	1886.3	1872.7	1914.5	1888.3
147.5°	1977.7	2192.4	1962.1	1921.3	1969.9	1937.9
150°	2092.3	2283.7	2067.1	1989.3	2018.5	2002.9
152.5°	2197.3	2355.7	2181.7	2041.8	2074.8	2055.4
155°	2300.3	2432.5	2292.5	2094.3	2117.6	2109.8
157.5°	2389.7	2498.5	2376.1	2148.7	2175.9	2160.4
160°	2467.4	2553.0	2473.3	2230.3	2214.8	2214.8
162.5°	2535.5	2605.4	2541.3	2341.1	2257.5	2220.6
165°	2595.7	2647.2	2601.5	2465.5	2339.2	2306.1
167.5°	2653.1	2686.1	2670.6	2566.6	2464.5	2394.5
170°	2697.8	2717.2	2695.8	2652.1	2601.5	2539.3
172.5°	2721.1	2728.9	2742.5	2714.3	2694.8	2654.0
175°	2734.7	2756.1	2744.4	2753.1	2735.6	2725.9
177.5°	2738.6	2742.5	2740.5	2757.0	2766.7	2751.1
180°	2753.1	2753.1	2753.1	2753.1	2753.1	2753.1

(END OF REPORT)