

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: P392667

Luminaire Tested: **MWL-4-34-73-UNV-L830-EDD**

Issue Date: 12/2/2019

**Test Information**

Test Method: LM-79-08  
Report Number: P392667  
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-4-34-73-UNV-L830-EDD  
Description: MWL 4FT MEDICAL LED FIXTURE  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 10319.0 lumens  
Efficiency: N/A  
Efficacy: 86.9 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: Semi-Direct

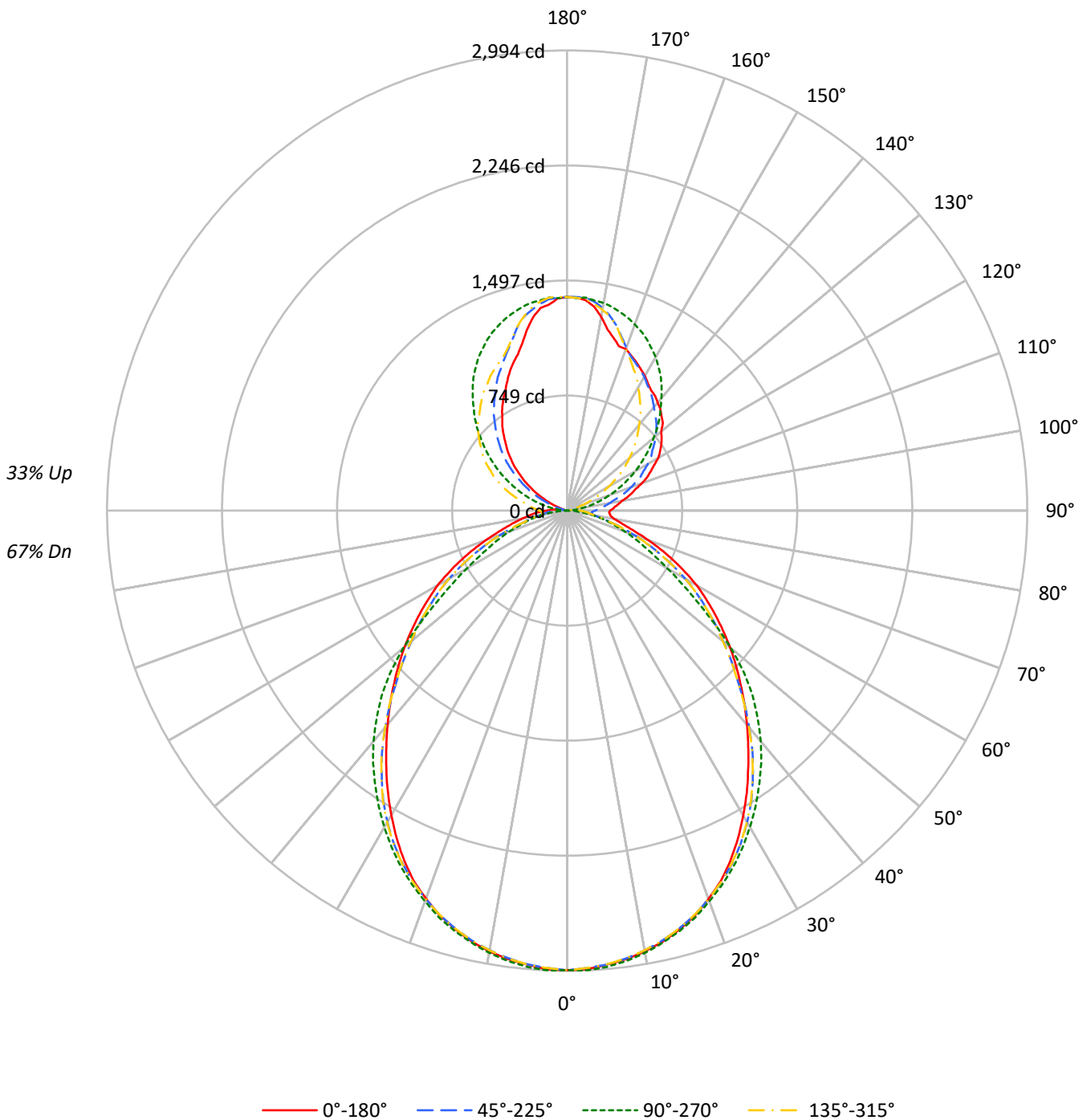
Input Watts (W): 118.7  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20					20					20					20					20	
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	111	111	111	111	105	105	105	105	93	93	93	82	82	82	72	72	72	67				
1	102	98	94	90	96	92	89	86	82	79	77	73	71	69	64	63	61	57				
2	93	86	80	74	88	81	76	71	72	68	65	64	61	58	57	55	52	49				
3	85	76	68	63	80	72	65	60	64	59	55	57	53	50	51	48	45	42				
4	78	67	60	53	74	64	57	51	58	52	47	51	47	43	46	42	39	36				
5	72	60	52	46	68	57	50	44	52	46	41	46	42	38	42	38	35	32				
6	67	54	46	40	63	52	44	39	47	41	36	42	37	33	38	34	31	28				
7	62	49	41	36	58	47	40	35	43	37	32	39	33	30	35	31	27	25				
8	58	45	37	32	54	43	36	31	39	33	29	35	30	27	32	28	25	22				
9	54	41	34	29	51	39	32	28	36	30	26	33	28	24	30	25	22	20				
10	50	38	31	26	48	36	30	25	33	27	23	30	25	22	27	23	20	19				

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

	0°	90°	180°	270°
0°	19312	19312	19312	19312
5°	19050	17764	19050	17764
10°	18749	16291	18749	16291
15°	18352	14928	18333	14928
20°	17805	13631	17786	13631
25°	17080	12428	17060	12428
30°	16119	11242	16092	11242
35°	15089	10096	15068	10096
40°	14119	8982	14089	8982
45°	13198	7799	13174	7799
50°	12356	6372	12330	6372
55°	11498	4794	11480	4794
60°	10662	3568	10652	3568
65°	9486	2687	9486	2687
70°	8245	2022	8260	2022
75°	7193	1447	7246	1447
80°	7260	931	6827	931
85°	9468	418	7317	418



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	281.9	2.7
10°-20°	795.2	7.7
20°-30°	1166.2	11.3
30°-40°	1320.0	12.8
40°-50°	1243.8	12.1
50°-60°	995.3	9.6
60°-70°	655.4	6.4
70°-80°	335.0	3.2
80°-90°	166.2	1.6
90°-100°	144.8	1.4
100°-110°	220.7	2.1
110°-120°	370.5	3.6
120°-130°	502.7	4.9
130°-140°	573.0	5.6
140°-150°	571.3	5.5
150°-160°	497.2	4.8
160°-170°	349.7	3.4
170°-180°	130.2	1.3
0°-30°	2243.3	21.7
0°-40°	3563.4	34.5
0°-60°	5802.4	56.2
0°-90°	6959.0	67.4
90°-120°	736.0	7.1
90°-150°	2382.9	23.1
90°-180°	3360.0	32.6
0°-180°	10319.0	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	2990	2990	2990	2990	2990	
5°	2965	2980	2965	2980	2965	281
15°	2821	2831	2818	2831	2821	795
25°	2513	2557	2510	2557	2513	1154
35°	2053	2177	2050	2177	2053	1285
45°	1596	1708	1593	1708	1596	1233
55°	1173	1034	1171	1034	1173	1051
65°	759	553	759	553	759	754
75°	400	274	403	274	400	438
85°	280	70	216	70	280	234
90°	280	2	134	2	280	155
95°	315	41	83	41	315	268
105°	434	195	22	195	434	460
115°	598	398	140	398	598	594
125°	748	622	342	622	748	668
135°	868	849	547	849	868	670
145°	954	1061	735	1061	954	601
155°	1065	1228	924	1228	1065	491
165°	1164	1336	1126	1336	1164	330
175°	1375	1391	1345	1391	1375	128
180°	1389	1389	1389	1389	1389	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	2990.3	2990.3	2990.3	2990.3	2990.3	2990.3	2990.3	2990.3	2990.3	2990.3	2990.3
2.5°	2986.4	2986.4	2978.8	2995.2	2994.2	2994.2	2978.8	2986.4	2987.4	2986.4	2978.8
5°	2965.3	2971.1	2964.4	2980.8	2979.8	2980.8	2963.4	2971.1	2965.3	2971.1	2963.4
7.5°	2943.2	2950.9	2938.4	2957.7	2955.8	2956.7	2937.5	2949.9	2943.2	2949.9	2937.5
10°	2911.5	2914.4	2905.8	2923.1	2922.1	2922.1	2904.8	2912.5	2911.5	2912.5	2904.8
12.5°	2873.2	2872.2	2865.5	2880.8	2878.9	2880.8	2865.5	2870.3	2871.2	2870.3	2865.5
15°	2821.4	2820.3	2815.5	2830.9	2830.9	2829.9	2814.6	2818.4	2818.4	2818.4	2814.6
17.5°	2762.8	2760.8	2758.0	2774.3	2774.3	2774.3	2757.0	2759.9	2759.9	2759.9	2757.0
20°	2688.9	2691.8	2689.8	2706.1	2705.2	2705.2	2688.8	2689.8	2686.0	2689.8	2688.8
22.5°	2610.2	2613.1	2617.8	2638.9	2635.1	2638.0	2616.8	2611.1	2608.2	2611.1	2616.8
25°	2513.3	2519.0	2536.2	2558.3	2557.3	2557.3	2534.3	2516.1	2510.3	2516.1	2534.3
27.5°	2405.8	2421.1	2444.1	2471.9	2471.9	2470.9	2442.1	2418.1	2402.8	2418.1	2442.1
30°	2291.5	2307.8	2342.4	2381.7	2377.8	2379.7	2339.4	2304.9	2287.6	2304.9	2339.4
32.5°	2175.4	2191.7	2231.1	2278.0	2281.8	2276.1	2228.1	2187.8	2171.4	2187.8	2228.1
35°	2053.4	2061.0	2106.2	2177.2	2177.2	2174.3	2103.3	2058.2	2050.5	2058.2	2103.3
37.5°	1935.3	1937.2	1982.3	2057.2	2073.5	2054.3	1979.5	1934.3	1932.4	1934.3	1979.5
40°	1821.1	1811.5	1843.1	1926.7	1959.3	1924.7	1839.3	1807.6	1817.2	1807.6	1839.3
42.5°	1707.8	1696.3	1709.7	1792.3	1835.5	1790.4	1706.8	1692.4	1704.0	1692.4	1706.8
45°	1595.5	1574.4	1571.5	1654.0	1707.8	1652.1	1567.6	1571.5	1592.6	1571.5	1567.6
47.5°	1488.9	1464.0	1449.6	1512.9	1560.9	1512.0	1445.6	1461.1	1486.1	1461.1	1445.6
50°	1382.4	1358.4	1324.8	1368.9	1390.1	1367.0	1320.9	1354.5	1379.5	1354.5	1320.9
52.5°	1276.8	1258.6	1215.4	1230.7	1206.7	1228.8	1212.4	1254.6	1273.9	1254.6	1212.4
55°	1173.1	1156.8	1104.0	1083.8	1033.9	1081.8	1101.0	1153.8	1171.2	1153.8	1101.0
57.5°	1071.4	1061.8	996.5	937.0	883.2	935.0	993.5	1058.8	1069.4	1058.8	993.5
60°	974.4	963.9	888.0	795.9	754.6	794.8	886.0	961.8	973.5	961.8	886.0
62.5°	865.0	860.2	774.8	671.1	644.1	670.0	772.7	858.2	864.0	858.2	772.7
65°	759.4	745.0	665.3	563.6	552.9	562.5	664.3	743.9	759.4	743.9	664.3
67.5°	657.6	636.5	562.6	470.4	473.2	470.4	561.6	635.5	657.6	635.5	561.6
70°	561.6	528.9	462.7	388.8	401.2	388.8	462.7	530.0	562.6	530.0	462.7
72.5°	472.3	432.0	371.5	316.8	332.1	315.8	371.5	433.0	474.3	433.0	371.5
75°	400.3	349.4	288.9	252.5	274.5	252.5	289.9	350.5	403.3	350.5	289.9
77.5°	349.6	291.0	225.6	194.9	221.7	194.9	226.5	288.1	345.7	288.1	226.5
80°	310.5	253.8	181.5	144.0	167.0	144.0	179.5	238.2	292.0	238.2	179.5
82.5°	287.0	235.9	162.5	103.7	117.1	103.7	150.8	200.7	249.9	200.7	150.8
85°	279.9	234.6	159.2	83.6	70.1	81.6	130.7	174.9	216.3	174.9	130.7
87.5°	273.0	241.1	164.4	81.0	25.9	67.3	108.7	147.2	172.1	147.2	108.7
90°	280.4	257.2	181.5	83.3	1.9	46.1	84.6	119.1	133.5	119.1	84.6
92.5°	298.5	281.1	202.4	95.4	17.6	27.8	68.3	99.9	106.6	99.9	68.3
95°	314.7	306.9	228.2	110.5	41.1	12.6	51.9	79.7	82.6	79.7	51.9
97.5°	339.5	334.6	252.0	139.0	71.4	13.6	35.6	65.4	65.4	65.4	35.6
100°	361.4	357.5	280.7	181.1	108.7	34.3	21.2	50.1	53.0	50.1	21.2
102.5°	400.9	385.3	311.3	221.3	148.8	62.6	19.5	32.8	36.7	32.8	19.5
105°	434.5	415.9	357.3	263.3	194.8	100.8	41.1	22.3	22.2	22.3	41.1
107.5°	467.9	456.2	400.4	307.4	243.7	145.8	74.4	41.0	29.3	41.0	74.4
110°	514.9	503.2	442.5	350.5	295.7	192.8	112.5	72.4	56.7	72.4	112.5



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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°	561.9	553.1	481.7	395.5	348.5	243.7	159.5	111.5	96.9	111.5	159.5
115°	598.1	592.3	527.7	437.6	397.5	301.5	212.4	156.6	140.0	156.6	212.4
117.5°	636.3	634.4	561.0	480.6	456.3	353.4	260.3	202.6	185.0	202.6	260.3
120°	684.3	675.5	607.0	523.7	512.0	408.3	313.2	255.4	237.9	255.4	313.2
122.5°	717.5	712.6	646.1	565.9	564.9	465.0	364.2	307.4	287.8	307.4	364.2
125°	748.0	746.0	675.5	607.0	621.6	516.9	420.9	363.1	341.6	363.1	420.9
127.5°	775.3	778.3	714.7	652.0	680.4	569.7	477.8	413.1	390.6	413.1	477.8
130°	798.8	808.6	750.9	693.2	735.2	627.5	527.7	463.1	448.4	463.1	527.7
132.5°	844.8	839.0	788.1	735.2	794.0	680.4	580.5	513.0	496.3	513.0	580.5
135°	868.3	870.4	820.3	771.5	848.8	733.3	630.5	563.9	547.3	563.9	630.5
137.5°	896.8	890.9	845.9	816.5	899.7	785.1	679.4	617.7	591.3	617.7	679.4
140°	917.3	916.3	879.1	855.7	954.5	835.0	729.3	666.7	642.2	666.7	729.3
142.5°	939.9	945.7	912.4	898.7	1009.4	887.9	783.2	715.6	692.1	715.6	783.2
145°	953.6	967.2	945.7	952.5	1061.3	946.7	830.1	761.6	735.2	761.6	830.1
147.5°	979.0	994.7	970.2	990.7	1106.3	998.6	877.2	808.6	787.0	808.6	877.2
150°	1011.3	1019.1	1004.5	1043.6	1152.3	1056.4	925.2	854.6	832.2	854.6	925.2
152.5°	1037.8	1047.6	1030.9	1101.4	1188.6	1109.2	978.1	899.7	873.2	899.7	978.1
155°	1065.1	1069.1	1057.4	1157.2	1227.7	1161.1	1020.1	949.7	924.2	949.7	1020.1
157.5°	1090.7	1098.4	1084.7	1199.3	1261.0	1206.1	1068.1	999.6	977.0	999.6	1068.1
160°	1118.0	1118.0	1125.9	1248.3	1288.4	1245.3	1119.0	1054.4	1023.1	1054.4	1119.0
162.5°	1121.0	1139.6	1181.7	1282.6	1314.8	1279.6	1173.9	1093.5	1066.2	1093.5	1173.9
165°	1164.1	1180.7	1244.3	1312.9	1336.4	1309.9	1241.4	1158.1	1125.9	1158.1	1241.4
167.5°	1208.2	1243.4	1295.2	1348.1	1356.0	1339.3	1293.3	1234.6	1205.2	1234.6	1293.3
170°	1280.6	1312.9	1338.3	1360.9	1371.6	1361.8	1325.7	1297.2	1276.7	1297.2	1325.7
172.5°	1338.4	1359.9	1369.7	1384.3	1377.5	1373.6	1355.0	1341.3	1329.6	1341.3	1355.0
175°	1374.6	1380.5	1389.3	1385.4	1391.2	1380.5	1380.5	1387.3	1345.2	1387.3	1380.5
177.5°	1387.4	1396.1	1391.2	1383.3	1384.3	1382.4	1385.4	1389.3	1381.4	1389.3	1385.4
180°	1389.3	1389.3	1389.3	1389.3	1389.3	1389.3	1389.3	1389.3	1389.3	1389.3	1389.3



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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2990.3	2990.3	2990.3	2990.3	2990.3	2990.3
2.5°	2994.2	2994.2	2995.2	2978.8	2986.4	2986.4
5°	2980.8	2979.8	2980.8	2964.4	2971.1	2965.3
7.5°	2956.7	2955.8	2957.7	2938.4	2950.9	2943.2
10°	2922.1	2922.1	2923.1	2905.8	2914.4	2911.5
12.5°	2880.8	2878.9	2880.8	2865.5	2872.2	2873.2
15°	2829.9	2830.9	2830.9	2815.5	2820.3	2821.4
17.5°	2774.3	2774.3	2774.3	2758.0	2760.8	2762.8
20°	2705.2	2705.2	2706.1	2689.8	2691.8	2688.9
22.5°	2638.0	2635.1	2638.9	2617.8	2613.1	2610.2
25°	2557.3	2557.3	2558.3	2536.2	2519.0	2513.3
27.5°	2470.9	2471.9	2471.9	2444.1	2421.1	2405.8
30°	2379.7	2377.8	2381.7	2342.4	2307.8	2291.5
32.5°	2276.1	2281.8	2278.0	2231.1	2191.7	2175.4
35°	2174.3	2177.2	2177.2	2106.2	2061.0	2053.4
37.5°	2054.3	2073.5	2057.2	1982.3	1937.2	1935.3
40°	1924.7	1959.3	1926.7	1843.1	1811.5	1821.1
42.5°	1790.4	1835.5	1792.3	1709.7	1696.3	1707.8
45°	1652.1	1707.8	1654.0	1571.5	1574.4	1595.5
47.5°	1512.0	1560.9	1512.9	1449.6	1464.0	1488.9
50°	1367.0	1390.1	1368.9	1324.8	1358.4	1382.4
52.5°	1228.8	1206.7	1230.7	1215.4	1258.6	1276.8
55°	1081.8	1033.9	1083.8	1104.0	1156.8	1173.1
57.5°	935.0	883.2	937.0	996.5	1061.8	1071.4
60°	794.8	754.6	795.9	888.0	963.9	974.4
62.5°	670.0	644.1	671.1	774.8	860.2	865.0
65°	562.5	552.9	563.6	665.3	745.0	759.4
67.5°	470.4	473.2	470.4	562.6	636.5	657.6
70°	388.8	401.2	388.8	462.7	528.9	561.6
72.5°	315.8	332.1	316.8	371.5	432.0	472.3
75°	252.5	274.5	252.5	288.9	349.4	400.3
77.5°	194.9	221.7	194.9	225.6	291.0	349.6
80°	144.0	167.0	144.0	181.5	253.8	310.5
82.5°	103.7	117.1	103.7	162.5	235.9	287.0
85°	81.6	70.1	83.6	159.2	234.6	279.9
87.5°	67.3	25.9	81.0	164.4	241.1	273.0
90°	46.1	1.9	83.3	181.5	257.2	280.4
92.5°	27.8	17.6	95.4	202.4	281.1	298.5
95°	12.6	41.1	110.5	228.2	306.9	314.7
97.5°	13.6	71.4	139.0	252.0	334.6	339.5
100°	34.3	108.7	181.1	280.7	357.5	361.4
102.5°	62.6	148.8	221.3	311.3	385.3	400.9
105°	100.8	194.8	263.3	357.3	415.9	434.5
107.5°	145.8	243.7	307.4	400.4	456.2	467.9
110°	192.8	295.7	350.5	442.5	503.2	514.9





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CATALOG NUMBER: MWL-4-34-73-UNV-L830-EDD

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	243.7	348.5	395.5	481.7	553.1	561.9
115°	301.5	397.5	437.6	527.7	592.3	598.1
117.5°	353.4	456.3	480.6	561.0	634.4	636.3
120°	408.3	512.0	523.7	607.0	675.5	684.3
122.5°	465.0	564.9	565.9	646.1	712.6	717.5
125°	516.9	621.6	607.0	675.5	746.0	748.0
127.5°	569.7	680.4	652.0	714.7	778.3	775.3
130°	627.5	735.2	693.2	750.9	808.6	798.8
132.5°	680.4	794.0	735.2	788.1	839.0	844.8
135°	733.3	848.8	771.5	820.3	870.4	868.3
137.5°	785.1	899.7	816.5	845.9	890.9	896.8
140°	835.0	954.5	855.7	879.1	916.3	917.3
142.5°	887.9	1009.4	898.7	912.4	945.7	939.9
145°	946.7	1061.3	952.5	945.7	967.2	953.6
147.5°	998.6	1106.3	990.7	970.2	994.7	979.0
150°	1056.4	1152.3	1043.6	1004.5	1019.1	1011.3
152.5°	1109.2	1188.6	1101.4	1030.9	1047.6	1037.8
155°	1161.1	1227.7	1157.2	1057.4	1069.1	1065.1
157.5°	1206.1	1261.0	1199.3	1084.7	1098.4	1090.7
160°	1245.3	1288.4	1248.3	1125.9	1118.0	1118.0
162.5°	1279.6	1314.8	1282.6	1181.7	1139.6	1121.0
165°	1309.9	1336.4	1312.9	1244.3	1180.7	1164.1
167.5°	1339.3	1356.0	1348.1	1295.2	1243.4	1208.2
170°	1361.8	1371.6	1360.9	1338.3	1312.9	1280.6
172.5°	1373.6	1377.5	1384.3	1369.7	1359.9	1338.4
175°	1380.5	1391.2	1385.4	1389.3	1380.5	1374.6
177.5°	1382.4	1384.3	1383.3	1391.2	1396.1	1387.4
180°	1389.3	1389.3	1389.3	1389.3	1389.3	1389.3

(END OF REPORT)