

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: P382280

Luminaire Tested: **MWL-2-28-31-UNV-L830-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P382280
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1910-565-25 &
Test Lab: INNOVATION CENTER
Issue Date: 12/2/2019
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: MWL-2-28-31-UNV-L830-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

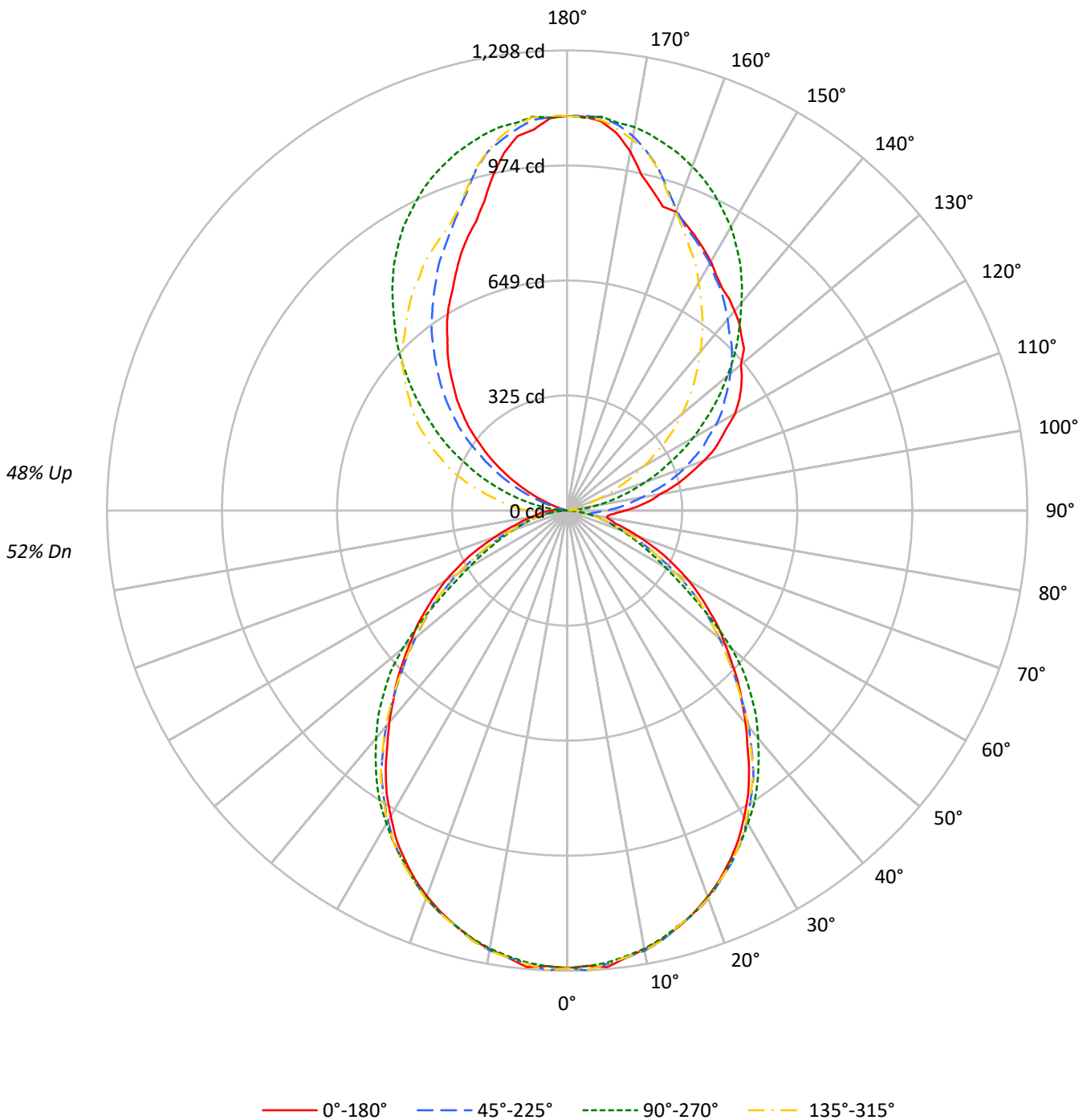
Lumens per Lamp: N/A
Luminaire Lumens: 5605.0 lumens
Efficiency: N/A
Efficacy: 85.4 lumens/watt
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: General Diffuse

Input Watts (W): 65.6
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	0
RCR																		
0	108	108	108	108	100	100	100	100	85	85	85	71	71	71	58	58	58	52
1	99	94	91	87	91	88	84	81	75	72	70	63	61	60	52	51	50	45
2	90	83	77	72	83	77	72	67	66	62	59	56	53	51	46	44	43	38
3	83	73	66	60	76	68	62	57	59	54	50	50	46	43	41	39	37	33
4	76	65	57	51	70	61	54	49	52	47	43	45	41	37	37	34	32	29
5	70	58	50	44	64	54	47	42	47	42	37	40	36	33	34	31	28	25
6	64	52	44	39	59	49	42	37	43	37	33	36	32	29	31	28	25	22
7	60	47	40	34	55	44	37	32	39	33	29	33	29	26	28	25	22	20
8	55	43	35	30	51	40	34	29	35	30	26	31	26	23	26	23	20	18
9	52	39	32	27	48	37	30	26	32	27	23	28	24	21	24	21	18	16
10	48	36	29	24	45	34	28	23	30	25	21	26	22	19	22	19	17	15

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	16669	16669	16669	16669
5°	16462	15261	16462	15261
10°	15901	13993	15901	13993
15°	15395	12785	15364	12785
20°	14815	11692	14783	11692
25°	14128	10614	14098	10614
30°	13287	9637	13246	9637
35°	12309	8682	12278	8682
40°	11244	7681	11198	7681
45°	10292	6688	10256	6688
50°	9321	5560	9282	5560
55°	8431	4127	8404	4127
60°	7542	3015	7525	3015
65°	6422	2239	6422	2239
70°	5152	1663	5169	1663
75°	3978	1160	4043	1160
80°	3873	737	3365	737
85°	5483	310	3248	310



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	121.7	2.2
10°-20°	342.4	6.1
20°-30°	502.1	9.0
30°-40°	569.6	10.2
40°-50°	531.5	9.5
50°-60°	417.0	7.4
60°-70°	260.4	4.6
70°-80°	126.2	2.3
80°-90°	71.4	1.3
90°-100°	92.8	1.7
100°-110°	171.9	3.1
110°-120°	296.1	5.3
120°-130°	402.3	7.2
130°-140°	458.9	8.2
140°-150°	457.7	8.2
150°-160°	398.5	7.1
160°-170°	280.2	5.0
170°-180°	104.3	1.9
0°-30°	966.2	17.2
0°-40°	1535.9	27.4
0°-60°	2484.3	44.3
0°-90°	2942.4	52.5
90°-120°	560.8	10.0
90°-150°	1879.6	33.5
90°-180°	2663.0	47.5
0°-180°	5605.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1290	1290	1290	1290	1290	
5°	1293	1280	1293	1280	1293	122
15°	1216	1212	1213	1212	1216	342
25°	1088	1092	1085	1092	1088	500
35°	894	936	892	936	894	558
45°	681	732	678	732	681	524
55°	486	445	484	445	486	436
65°	304	230	304	230	304	300
75°	142	110	144	110	142	160
85°	125	26	74	26	125	100
90°	162	2	45	2	162	90
95°	216	32	29	32	216	187
105°	338	156	7	156	338	357
115°	478	318	110	318	478	474
125°	599	498	273	498	599	535
135°	695	680	438	680	695	537
145°	764	851	589	851	764	482
155°	854	984	741	984	854	394
165°	934	1070	903	1070	934	265
175°	1102	1115	1078	1115	1102	103
180°	1113	1113	1113	1113	1113	



TEST NUMBER: P382280

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1290.5	1290.5	1290.5	1290.5	1290.5	1290.5	1290.5	1290.5	1290.5	1290.5	1290.5
2.5°	1285.3	1293.4	1297.8	1285.5	1286.5	1284.7	1297.8	1293.4	1286.1	1293.4	1297.8
5°	1292.8	1284.0	1283.7	1282.8	1280.0	1282.8	1283.0	1284.0	1292.8	1284.0	1283.0
7.5°	1272.1	1278.3	1271.8	1270.7	1267.9	1269.9	1271.0	1277.5	1272.1	1277.5	1271.0
10°	1256.9	1261.5	1260.6	1254.0	1255.0	1253.2	1259.7	1259.9	1256.9	1259.9	1259.7
12.5°	1238.9	1241.9	1241.1	1233.6	1235.7	1233.6	1241.1	1240.3	1237.3	1240.3	1241.1
15°	1215.5	1214.8	1214.0	1211.2	1212.3	1210.4	1213.2	1213.2	1213.1	1213.2	1213.2
17.5°	1189.3	1191.5	1190.6	1190.8	1190.8	1190.8	1189.9	1190.6	1186.9	1190.6	1189.9
20°	1159.5	1164.2	1165.4	1160.0	1160.2	1159.3	1164.7	1162.6	1157.0	1162.6	1164.7
22.5°	1125.9	1126.9	1129.0	1121.7	1129.4	1121.0	1128.3	1125.3	1124.3	1125.3	1128.3
25°	1087.6	1088.6	1097.2	1092.8	1092.0	1092.0	1095.6	1086.2	1085.3	1086.2	1095.6
27.5°	1046.6	1046.6	1057.9	1054.3	1058.4	1053.6	1056.4	1044.2	1044.2	1044.2	1056.4
30°	998.0	1006.4	1012.9	1026.2	1019.2	1024.6	1010.6	1004.1	994.9	1004.1	1010.6
32.5°	950.4	955.0	964.4	973.9	980.7	972.3	962.0	952.0	947.3	952.0	962.0
35°	894.5	894.5	916.0	933.7	936.1	931.4	913.7	892.2	892.2	892.2	913.7
37.5°	834.8	836.6	855.3	882.4	887.3	880.0	853.0	834.3	832.4	834.3	853.0
40°	783.4	779.7	797.4	832.0	837.8	830.6	794.2	776.5	780.2	776.5	794.2
42.5°	729.2	723.6	732.1	775.1	789.3	773.6	729.8	720.5	726.1	720.5	729.8
45°	680.8	669.6	671.4	711.6	732.3	710.1	668.3	667.2	678.4	667.2	668.3
47.5°	627.5	623.8	616.3	642.7	676.3	641.9	613.3	621.5	625.2	621.5	613.3
50°	579.0	571.5	560.3	582.0	606.4	580.4	557.2	568.4	576.6	568.4	557.2
52.5°	536.0	529.5	508.2	521.3	526.1	519.7	505.9	526.4	533.7	526.4	505.9
55°	485.8	484.8	463.4	457.0	445.0	455.4	461.0	482.5	484.2	482.5	461.0
57.5°	441.0	439.1	408.3	397.3	374.9	395.7	405.9	436.8	439.4	436.8	405.9
60°	397.3	390.7	357.1	330.1	318.9	329.4	355.5	389.1	396.4	389.1	355.5
62.5°	348.7	345.0	303.9	275.0	272.4	274.3	302.3	343.4	347.9	343.4	302.3
65°	304.0	290.0	255.4	229.3	230.4	228.5	254.7	289.2	304.0	289.2	254.7
67.5°	256.3	242.3	212.4	188.4	195.8	188.4	211.7	241.6	256.3	241.6	211.7
70°	214.5	195.8	173.4	153.8	165.0	153.8	173.4	196.6	215.2	196.6	173.4
72.5°	176.2	156.6	139.8	125.8	135.2	124.9	139.8	157.4	177.8	157.4	139.8
75°	141.7	123.9	108.1	100.7	110.0	100.7	109.0	124.7	144.0	124.7	109.0
77.5°	125.5	103.7	82.0	78.3	89.5	78.3	82.8	101.3	122.3	101.3	82.8
80°	113.6	97.9	65.7	58.6	66.1	58.6	64.2	85.4	98.7	85.4	64.2
82.5°	114.8	103.0	64.9	41.8	45.6	41.8	55.5	74.7	84.9	74.7	55.5
85°	125.1	116.3	72.8	34.0	26.0	32.4	50.1	68.5	74.1	68.5	50.1
87.5°	141.2	137.0	89.0	38.3	7.5	27.3	44.3	61.5	60.3	61.5	44.3
90°	162.5	159.3	110.8	47.3	1.7	17.5	33.1	48.6	44.7	48.6	33.1
92.5°	191.4	184.8	134.2	63.2	13.5	9.1	26.6	39.6	37.5	39.6	26.6
95°	215.5	210.9	160.5	82.6	32.3	4.1	19.1	28.7	29.4	28.7	19.1
97.5°	243.5	237.8	184.8	110.8	56.7	10.4	11.2	21.9	23.7	21.9	11.2
100°	265.8	262.2	214.5	144.7	86.6	26.9	6.4	15.6	18.4	15.6	6.4
102.5°	304.0	291.8	246.7	176.9	118.7	49.6	12.7	9.1	11.9	9.1	12.7
105°	338.0	326.9	285.2	210.6	155.7	80.2	31.6	11.3	7.4	11.3	31.6
107.5°	371.8	363.9	320.7	245.1	194.9	115.6	59.2	30.9	19.9	30.9	59.2
110°	411.0	401.5	354.5	279.7	235.7	153.2	89.8	56.0	43.5	56.0	89.8



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CATALOG NUMBER: MWL-2-28-31-UNV-L830-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	448.7	441.6	385.9	316.8	278.1	195.1	127.5	87.5	75.6	87.5	127.5
115°	477.8	473.8	422.0	350.6	318.3	241.4	169.1	124.4	110.2	124.4	169.1
117.5°	508.4	507.6	448.7	385.1	365.4	283.0	207.6	161.3	146.3	161.3	207.6
120°	546.9	540.6	485.6	419.7	410.2	326.9	250.0	203.7	188.7	203.7	250.0
122.5°	574.5	569.6	517.0	452.6	452.6	371.8	290.9	244.5	229.7	244.5	290.9
125°	598.9	597.3	541.5	485.6	498.2	413.3	337.3	290.2	273.0	290.2	337.3
127.5°	620.8	623.1	572.2	522.7	545.5	456.7	382.1	330.3	312.2	330.3	382.1
130°	639.7	647.5	601.2	555.6	589.4	503.1	422.1	370.3	358.5	370.3	422.1
132.5°	676.6	671.9	631.0	589.4	636.5	545.5	464.6	410.3	397.0	410.3	464.6
135°	695.4	697.0	657.0	618.5	680.5	587.9	504.6	451.2	437.9	451.2	504.6
137.5°	718.2	713.5	677.3	653.8	721.3	628.7	543.9	494.4	473.2	494.4	543.9
140°	734.6	733.9	704.0	685.2	765.3	668.7	583.9	533.7	514.0	533.7	583.9
142.5°	751.9	756.7	730.7	719.8	809.3	711.1	627.1	572.2	553.3	572.2	627.1
145°	763.7	774.9	757.4	762.9	850.9	758.3	664.8	610.0	588.6	610.0	664.8
147.5°	784.3	797.7	778.0	793.6	887.1	799.8	703.5	648.5	630.4	648.5	703.5
150°	811.0	817.3	805.5	836.0	923.9	846.1	741.9	685.3	667.3	685.3	741.9
152.5°	832.2	840.1	826.7	882.3	953.0	888.6	784.3	721.5	700.3	721.5	784.3
155°	854.2	857.4	847.9	927.1	983.6	930.2	818.0	761.5	741.1	761.5	818.0
157.5°	874.6	880.9	868.9	960.8	1010.3	966.3	855.6	801.6	783.5	801.6	855.6
160°	896.6	896.6	901.9	1000.1	1032.3	997.7	896.5	845.6	820.5	845.6	896.5
162.5°	898.9	913.9	946.7	1027.6	1053.5	1025.3	940.5	877.0	855.0	877.0	940.5
165°	933.5	945.9	997.0	1052.0	1070.0	1049.5	994.6	927.9	902.8	927.9	994.6
167.5°	969.6	997.0	1037.8	1079.4	1085.7	1072.3	1036.2	989.9	967.3	989.9	1036.2
170°	1027.6	1052.0	1072.3	1089.6	1098.3	1090.4	1062.1	1039.4	1024.4	1039.4	1062.1
172.5°	1073.0	1089.6	1097.4	1108.5	1103.0	1099.9	1085.7	1074.8	1065.9	1074.8	1085.7
175°	1102.0	1106.1	1113.2	1110.2	1114.9	1106.2	1106.1	1111.6	1078.5	1111.6	1106.1
177.5°	1112.3	1117.7	1114.7	1108.7	1109.4	1107.8	1110.1	1112.3	1107.5	1112.3	1110.1
180°	1113.2	1113.2	1113.2	1113.2	1113.2	1113.2	1113.2	1113.2	1113.2	1113.2	1113.2



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CATALOG NUMBER: MWL-2-28-31-UNV-L830-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1290.5	1290.5	1290.5	1290.5	1290.5	1290.5
2.5°	1284.7	1286.5	1285.5	1297.8	1293.4	1285.3
5°	1282.8	1280.0	1282.8	1283.7	1284.0	1292.8
7.5°	1269.9	1267.9	1270.7	1271.8	1278.3	1272.1
10°	1253.2	1255.0	1254.0	1260.6	1261.5	1256.9
12.5°	1233.6	1235.7	1233.6	1241.1	1241.9	1238.9
15°	1210.4	1212.3	1211.2	1214.0	1214.8	1215.5
17.5°	1190.8	1190.8	1190.8	1190.6	1191.5	1189.3
20°	1159.3	1160.2	1160.0	1165.4	1164.2	1159.5
22.5°	1121.0	1129.4	1121.7	1129.0	1126.9	1125.9
25°	1092.0	1092.0	1092.8	1097.2	1088.6	1087.6
27.5°	1053.6	1058.4	1054.3	1057.9	1046.6	1046.6
30°	1024.6	1019.2	1026.2	1012.9	1006.4	998.0
32.5°	972.3	980.7	973.9	964.4	955.0	950.4
35°	931.4	936.1	933.7	916.0	894.5	894.5
37.5°	880.0	887.3	882.4	855.3	836.6	834.8
40°	830.6	837.8	832.0	797.4	779.7	783.4
42.5°	773.6	789.3	775.1	732.1	723.6	729.2
45°	710.1	732.3	711.6	671.4	669.6	680.8
47.5°	641.9	676.3	642.7	616.3	623.8	627.5
50°	580.4	606.4	582.0	560.3	571.5	579.0
52.5°	519.7	526.1	521.3	508.2	529.5	536.0
55°	455.4	445.0	457.0	463.4	484.8	485.8
57.5°	395.7	374.9	397.3	408.3	439.1	441.0
60°	329.4	318.9	330.1	357.1	390.7	397.3
62.5°	274.3	272.4	275.0	303.9	345.0	348.7
65°	228.5	230.4	229.3	255.4	290.0	304.0
67.5°	188.4	195.8	188.4	212.4	242.3	256.3
70°	153.8	165.0	153.8	173.4	195.8	214.5
72.5°	124.9	135.2	125.8	139.8	156.6	176.2
75°	100.7	110.0	100.7	108.1	123.9	141.7
77.5°	78.3	89.5	78.3	82.0	103.7	125.5
80°	58.6	66.1	58.6	65.7	97.9	113.6
82.5°	41.8	45.6	41.8	64.9	103.0	114.8
85°	32.4	26.0	34.0	72.8	116.3	125.1
87.5°	27.3	7.5	38.3	89.0	137.0	141.2
90°	17.5	1.7	47.3	110.8	159.3	162.5
92.5°	9.1	13.5	63.2	134.2	184.8	191.4
95°	4.1	32.3	82.6	160.5	210.9	215.5
97.5°	10.4	56.7	110.8	184.8	237.8	243.5
100°	26.9	86.6	144.7	214.5	262.2	265.8
102.5°	49.6	118.7	176.9	246.7	291.8	304.0
105°	80.2	155.7	210.6	285.2	326.9	338.0
107.5°	115.6	194.9	245.1	320.7	363.9	371.8
110°	153.2	235.7	279.7	354.5	401.5	411.0



TEST NUMBER: P382280

CATALOG NUMBER: MWL-2-28-31-UNV-L830-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	195.1	278.1	316.8	385.9	441.6	448.7
115°	241.4	318.3	350.6	422.0	473.8	477.8
117.5°	283.0	365.4	385.1	448.7	507.6	508.4
120°	326.9	410.2	419.7	485.6	540.6	546.9
122.5°	371.8	452.6	452.6	517.0	569.6	574.5
125°	413.3	498.2	485.6	541.5	597.3	598.9
127.5°	456.7	545.5	522.7	572.2	623.1	620.8
130°	503.1	589.4	555.6	601.2	647.5	639.7
132.5°	545.5	636.5	589.4	631.0	671.9	676.6
135°	587.9	680.5	618.5	657.0	697.0	695.4
137.5°	628.7	721.3	653.8	677.3	713.5	718.2
140°	668.7	765.3	685.2	704.0	733.9	734.6
142.5°	711.1	809.3	719.8	730.7	756.7	751.9
145°	758.3	850.9	762.9	757.4	774.9	763.7
147.5°	799.8	887.1	793.6	778.0	797.7	784.3
150°	846.1	923.9	836.0	805.5	817.3	811.0
152.5°	888.6	953.0	882.3	826.7	840.1	832.2
155°	930.2	983.6	927.1	847.9	857.4	854.2
157.5°	966.3	1010.3	960.8	868.9	880.9	874.6
160°	997.7	1032.3	1000.1	901.9	896.6	896.6
162.5°	1025.3	1053.5	1027.6	946.7	913.9	898.9
165°	1049.5	1070.0	1052.0	997.0	945.9	933.5
167.5°	1072.3	1085.7	1079.4	1037.8	997.0	969.6
170°	1090.4	1098.3	1089.6	1072.3	1052.0	1027.6
172.5°	1099.9	1103.0	1108.5	1097.4	1089.6	1073.0
175°	1106.2	1114.9	1110.2	1113.2	1106.1	1102.0
177.5°	1107.8	1109.4	1108.7	1114.7	1117.7	1112.3
180°	1113.2	1113.2	1113.2	1113.2	1113.2	1113.2

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