

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: P382190

Luminaire Tested: **MWL-2-13-38-UNV-L830-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P382190
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-2-13-38-UNV-L830-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

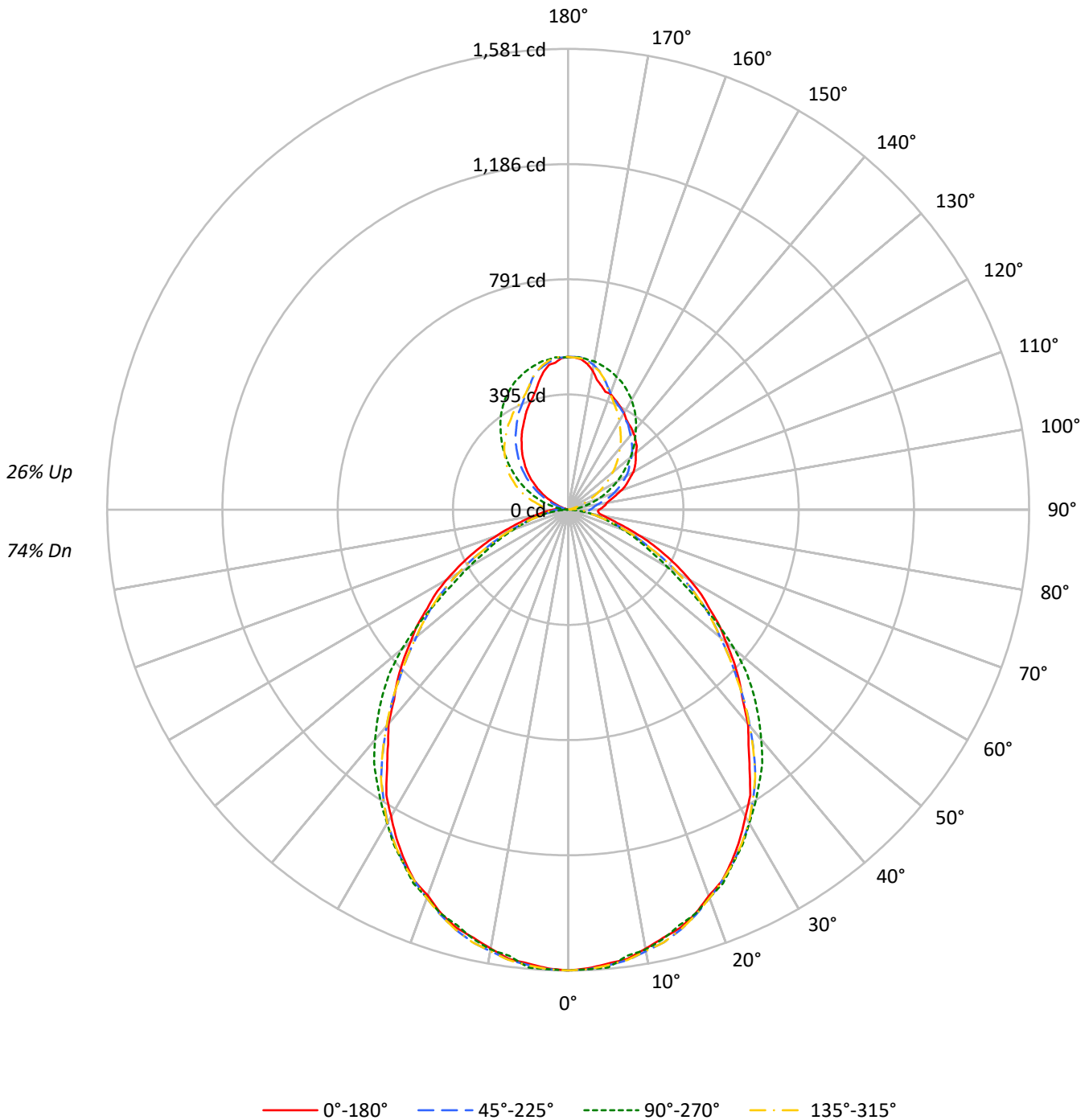
Lumens per Lamp: N/A
Luminaire Lumens: 4845.0 lumens
Efficiency: N/A
Efficacy: 89.4 lumens/watt
Spacing Criteria (0/90/45): 1.15 / 1.18 / 1.24
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: Semi-Direct

Input Watts (W): 54.2
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



TEST NUMBER: P382190
CATALOG NUMBER: MWL-2-13-38-UNV-L830-EDD

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	113	113	113	113	107	107	107	107	97	97	97	87	87	87	78	78	78	74
1	104	99	95	92	98	95	91	88	86	83	81	77	75	74	70	68	67	63
2	95	88	81	76	90	83	78	73	76	71	68	69	65	62	62	60	57	54
3	87	78	70	64	82	74	67	62	67	62	58	61	57	54	56	52	50	46
4	80	69	61	55	76	66	59	53	60	55	50	55	50	46	50	46	43	40
5	74	62	54	48	70	59	52	46	54	48	44	50	45	41	45	41	38	35
6	68	56	48	42	65	54	46	41	49	43	38	45	40	36	41	37	34	31
7	63	51	43	37	60	49	41	36	45	39	34	41	36	32	38	34	30	28
8	59	46	39	33	56	45	37	32	41	35	31	38	33	29	35	31	27	25
9	55	43	35	30	52	41	34	29	38	32	28	35	30	26	32	28	25	23
10	52	39	32	27	49	38	31	26	35	29	25	33	27	24	30	26	23	21

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	20417	20417	20417	20417
5°	19901	18795	19901	18795
10°	19344	17084	19344	17084
15°	18811	15560	18798	15560
20°	18010	14272	17996	14272
25°	17264	13003	17249	13003
30°	16189	11749	16169	11749
35°	14917	10597	14900	10597
40°	13761	9443	13740	9443
45°	12541	8222	12525	8222
50°	11386	6829	11367	6829
55°	10259	5068	10245	5068
60°	9140	3719	9133	3719
65°	7736	2766	7736	2766
70°	6252	2022	6262	2022
75°	4846	1422	4877	1422
80°	4191	900	3955	900
85°	4554	372	3506	372



TEST NUMBER: P382190

CATALOG NUMBER: MWL-2-13-38-UNV-L830-EDD

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	148.6	3.1
10°-20°	418.2	8.6
20°-30°	613.4	12.7
30°-40°	695.4	14.4
40°-50°	649.0	13.4
50°-60°	509.6	10.5
60°-70°	317.2	6.5
70°-80°	153.0	3.2
80°-90°	71.0	1.5
90°-100°	55.9	1.2
100°-110°	82.0	1.7
110°-120°	140.0	2.9
120°-130°	190.0	3.9
130°-140°	216.7	4.5
140°-150°	215.9	4.5
150°-160°	187.9	3.9
160°-170°	131.9	2.7
170°-180°	49.1	1.0
0°-30°	1180.3	24.4
0°-40°	1875.7	38.7
0°-60°	3034.3	62.6
0°-90°	3575.5	73.8
90°-120°	277.9	5.7
90°-150°	900.6	18.6
90°-180°	1270.0	26.2
0°-180°	4845.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1581	1581	1581	1581	1581	
5°	1563	1576	1563	1576	1563	148
15°	1485	1475	1484	1475	1485	417
25°	1329	1338	1328	1338	1329	610
35°	1084	1143	1083	1143	1084	680
45°	830	900	828	900	830	640
55°	591	546	590	546	591	532
65°	366	285	366	285	366	365
75°	173	135	174	135	173	190
85°	104	31	80	31	104	89
90°	105	1	50	1	105	59
95°	121	16	34	16	121	102
105°	159	73	4	73	159	170
115°	226	150	54	150	226	224
125°	282	235	129	235	282	252
135°	328	321	208	321	328	253
145°	360	401	278	401	360	227
155°	403	463	350	463	403	186
165°	440	503	426	503	440	125
175°	517	524	506	524	517	48
180°	524	524	524	524	524	



TEST NUMBER: P382190

CATALOG NUMBER: MWL-2-13-38-UNV-L830-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1580.7	1580.7	1580.7	1580.7	1580.7	1580.7	1580.7	1580.7	1580.7	1580.7	1580.7
2.5°	1574.9	1571.0	1578.3	1573.0	1577.7	1572.7	1578.3	1571.0	1575.3	1571.0	1578.3
5°	1562.8	1566.4	1569.0	1566.2	1576.4	1566.2	1568.6	1566.4	1562.8	1566.4	1568.6
7.5°	1554.8	1557.4	1558.3	1554.0	1543.8	1553.7	1558.0	1557.0	1554.8	1557.0	1558.0
10°	1529.0	1540.6	1537.8	1534.0	1532.2	1533.7	1537.4	1539.8	1529.0	1539.8	1537.4
12.5°	1504.5	1507.9	1519.7	1511.3	1508.1	1511.3	1519.7	1507.2	1503.8	1507.2	1519.7
15°	1485.2	1482.7	1491.7	1482.3	1475.4	1481.9	1491.3	1481.9	1484.2	1481.9	1491.3
17.5°	1452.5	1448.1	1457.1	1456.7	1453.0	1456.7	1456.7	1447.8	1451.5	1447.8	1456.7
20°	1409.6	1418.6	1417.9	1420.3	1416.2	1419.9	1417.5	1417.9	1408.5	1417.9	1417.5
22.5°	1378.5	1376.6	1378.7	1382.0	1387.3	1381.7	1378.3	1375.9	1377.7	1375.9	1378.3
25°	1329.0	1326.2	1337.9	1336.3	1337.8	1335.9	1337.2	1325.1	1327.9	1325.1	1337.2
27.5°	1274.8	1273.0	1290.3	1293.7	1294.8	1293.3	1289.6	1271.8	1273.7	1271.8	1289.6
30°	1216.0	1220.7	1240.3	1242.7	1242.5	1242.0	1239.2	1219.5	1214.5	1219.5	1239.2
32.5°	1161.8	1158.1	1179.6	1195.1	1193.4	1194.3	1178.5	1156.6	1160.3	1156.6	1178.5
35°	1084.0	1088.6	1119.4	1138.1	1142.6	1137.0	1118.3	1087.5	1082.8	1087.5	1118.3
37.5°	1015.8	1019.5	1044.7	1082.1	1093.5	1081.0	1043.6	1018.4	1014.7	1018.4	1043.6
40°	958.8	947.6	969.1	1013.5	1030.0	1012.8	967.6	946.1	957.3	946.1	967.6
42.5°	886.0	881.3	895.0	943.5	966.5	942.8	893.8	879.8	884.5	879.8	893.8
45°	829.6	816.5	818.4	867.9	900.2	867.1	816.9	815.4	828.5	815.4	816.9
47.5°	768.9	752.1	750.2	790.9	831.1	790.6	748.7	751.0	767.8	751.0	748.7
50°	707.3	698.9	680.2	709.7	744.8	708.9	678.7	697.4	706.1	697.4	678.7
52.5°	654.0	642.8	621.9	639.7	649.6	638.9	620.8	641.3	652.9	641.3	620.8
55°	591.1	586.4	562.1	563.6	546.5	562.9	561.0	585.3	590.3	585.3	561.0
57.5°	541.6	535.1	498.6	482.4	460.6	481.7	497.5	533.9	540.9	533.9	497.5
60°	481.5	474.0	433.8	404.5	393.3	404.1	433.1	473.3	481.1	473.3	433.1
62.5°	424.5	416.1	373.1	335.4	331.3	335.0	372.4	415.4	424.1	415.4	372.4
65°	366.2	352.2	309.3	277.5	284.6	277.2	308.9	351.9	366.2	351.9	308.9
67.5°	313.9	292.5	259.8	230.5	240.7	230.5	259.4	292.1	313.9	292.1	259.4
70°	260.3	237.0	213.7	189.4	200.6	189.4	213.7	237.4	260.7	237.4	213.7
72.5°	212.7	191.2	171.6	154.8	164.7	154.5	171.6	191.6	213.5	191.6	171.6
75°	172.6	149.2	133.0	122.7	134.8	122.7	133.3	149.6	173.7	149.6	133.3
77.5°	144.6	123.6	99.4	95.6	106.8	95.6	99.7	122.5	143.2	122.5	99.7
80°	122.9	108.2	78.1	71.3	80.7	71.3	77.3	102.3	116.0	102.3	77.3
82.5°	109.3	100.4	69.4	49.9	53.6	49.9	65.0	87.2	95.3	87.2	65.0
85°	103.9	98.4	67.2	38.8	31.2	38.1	56.5	75.9	80.0	75.9	56.5
87.5°	102.3	102.6	69.5	36.0	9.3	30.8	48.5	67.3	64.3	67.3	48.5
90°	105.4	107.3	75.3	34.4	1.3	20.4	38.8	55.5	50.2	55.5	38.8
92.5°	115.0	113.5	81.4	34.6	6.8	9.2	31.0	45.4	43.0	45.4	31.0
95°	121.0	119.7	86.9	39.2	15.7	2.4	20.7	34.4	33.8	34.4	20.7
97.5°	129.7	125.0	91.9	52.5	27.1	5.3	10.6	23.9	26.7	23.9	10.6
100°	133.8	128.8	102.0	68.3	41.0	13.1	4.5	13.3	17.9	13.3	4.5
102.5°	145.4	139.1	116.1	83.4	56.1	23.7	6.4	6.7	8.6	6.7	6.4
105°	159.3	154.2	135.0	99.2	73.4	38.1	16.2	6.3	4.5	6.3	16.2
107.5°	175.2	171.4	151.3	116.3	91.8	55.6	28.8	15.5	10.4	15.5	28.8
110°	193.6	189.1	167.1	132.5	111.9	73.2	43.0	27.3	21.4	27.3	43.0



TEST NUMBER: P382190

CATALOG NUMBER: MWL-2-13-38-UNV-L830-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	211.2	207.9	181.8	149.4	131.8	92.4	60.7	41.9	36.4	41.9	60.7
115°	225.8	223.0	198.7	165.2	150.2	114.1	80.2	59.3	53.6	59.3	80.2
117.5°	240.1	239.7	212.2	181.4	172.2	133.6	99.2	77.5	70.5	77.5	99.2
120°	258.1	255.2	229.4	198.5	194.1	155.1	119.1	97.4	90.4	97.4	119.1
122.5°	270.6	268.8	244.2	214.0	214.0	176.1	138.2	116.4	109.2	116.4	138.2
125°	282.0	281.4	255.2	229.4	235.3	195.6	159.5	137.5	129.3	137.5	159.5
127.5°	292.4	293.5	269.5	246.3	257.1	215.4	180.5	156.2	147.7	156.2	180.5
130°	302.1	304.9	283.1	261.8	277.6	237.2	199.3	175.0	170.4	175.0	199.3
132.5°	319.4	317.2	297.1	278.6	300.7	258.0	219.2	194.7	188.4	194.7	219.2
135°	328.2	329.0	310.2	292.2	321.2	277.8	238.9	213.8	207.6	213.8	238.9
137.5°	338.9	336.7	319.7	308.7	340.4	296.9	257.3	234.0	224.1	234.0	257.3
140°	346.6	346.3	332.2	323.5	361.0	315.7	276.0	252.4	243.3	252.4	276.0
142.5°	354.8	356.9	344.8	339.6	381.6	335.6	296.2	270.4	261.7	270.4	296.2
145°	360.3	365.0	357.3	359.9	401.1	357.6	313.9	287.8	278.2	287.8	313.9
147.5°	369.4	375.7	366.5	374.3	418.0	377.2	331.6	305.8	297.3	305.8	331.6
150°	382.9	385.8	380.3	394.1	435.3	398.9	350.5	324.0	315.5	324.0	350.5
152.5°	392.9	396.5	390.2	415.8	448.9	418.7	370.3	340.9	331.0	340.9	370.3
155°	403.1	404.6	399.2	436.7	463.3	438.2	385.3	359.7	350.2	359.7	385.3
157.5°	412.6	415.6	409.6	452.6	475.8	455.1	403.3	378.5	370.0	378.5	403.3
160°	423.0	423.0	425.0	471.0	485.1	469.9	422.5	399.1	387.3	399.1	422.5
162.5°	424.1	430.1	446.0	483.9	495.1	482.8	443.0	412.8	403.5	412.8	443.0
165°	440.3	445.6	469.5	495.3	502.8	494.2	468.4	437.1	425.9	437.1	468.4
167.5°	456.3	469.5	488.7	507.2	510.1	503.9	487.9	466.2	455.1	466.2	487.9
170°	483.9	495.3	503.9	512.9	517.0	513.3	499.1	489.4	482.4	489.4	499.1
172.5°	504.6	512.9	515.6	521.7	519.2	517.7	510.1	505.9	501.4	505.9	510.1
175°	517.3	519.8	524.0	522.1	524.3	520.3	520.7	522.3	506.3	522.3	520.7
177.5°	523.0	525.6	524.7	522.4	522.6	522.0	522.5	523.0	520.8	523.0	522.5
180°	524.0	524.0	524.0	524.0	524.0	524.0	524.0	524.0	524.0	524.0	524.0



TEST NUMBER: P382190

CATALOG NUMBER: MWL-2-13-38-UNV-L830-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1580.7	1580.7	1580.7	1580.7	1580.7	1580.7
2.5°	1572.7	1577.7	1573.0	1578.3	1571.0	1574.9
5°	1566.2	1576.4	1566.2	1569.0	1566.4	1562.8
7.5°	1553.7	1543.8	1554.0	1558.3	1557.4	1554.8
10°	1533.7	1532.2	1534.0	1537.8	1540.6	1529.0
12.5°	1511.3	1508.1	1511.3	1519.7	1507.9	1504.5
15°	1481.9	1475.4	1482.3	1491.7	1482.7	1485.2
17.5°	1456.7	1453.0	1456.7	1457.1	1448.1	1452.5
20°	1419.9	1416.2	1420.3	1417.9	1418.6	1409.6
22.5°	1381.7	1387.3	1382.0	1378.7	1376.6	1378.5
25°	1335.9	1337.8	1336.3	1337.9	1326.2	1329.0
27.5°	1293.3	1294.8	1293.7	1290.3	1273.0	1274.8
30°	1242.0	1242.5	1242.7	1240.3	1220.7	1216.0
32.5°	1194.3	1193.4	1195.1	1179.6	1158.1	1161.8
35°	1137.0	1142.6	1138.1	1119.4	1088.6	1084.0
37.5°	1081.0	1093.5	1082.1	1044.7	1019.5	1015.8
40°	1012.8	1030.0	1013.5	969.1	947.6	958.8
42.5°	942.8	966.5	943.5	895.0	881.3	886.0
45°	867.1	900.2	867.9	818.4	816.5	829.6
47.5°	790.6	831.1	790.9	750.2	752.1	768.9
50°	708.9	744.8	709.7	680.2	698.9	707.3
52.5°	638.9	649.6	639.7	621.9	642.8	654.0
55°	562.9	546.5	563.6	562.1	586.4	591.1
57.5°	481.7	460.6	482.4	498.6	535.1	541.6
60°	404.1	393.3	404.5	433.8	474.0	481.5
62.5°	335.0	331.3	335.4	373.1	416.1	424.5
65°	277.2	284.6	277.5	309.3	352.2	366.2
67.5°	230.5	240.7	230.5	259.8	292.5	313.9
70°	189.4	200.6	189.4	213.7	237.0	260.3
72.5°	154.5	164.7	154.8	171.6	191.2	212.7
75°	122.7	134.8	122.7	133.0	149.2	172.6
77.5°	95.6	106.8	95.6	99.4	123.6	144.6
80°	71.3	80.7	71.3	78.1	108.2	122.9
82.5°	49.9	53.6	49.9	69.4	100.4	109.3
85°	38.1	31.2	38.8	67.2	98.4	103.9
87.5°	30.8	9.3	36.0	69.5	102.6	102.3
90°	20.4	1.3	34.4	75.3	107.3	105.4
92.5°	9.2	6.8	34.6	81.4	113.5	115.0
95°	2.4	15.7	39.2	86.9	119.7	121.0
97.5°	5.3	27.1	52.5	91.9	125.0	129.7
100°	13.1	41.0	68.3	102.0	128.8	133.8
102.5°	23.7	56.1	83.4	116.1	139.1	145.4
105°	38.1	73.4	99.2	135.0	154.2	159.3
107.5°	55.6	91.8	116.3	151.3	171.4	175.2
110°	73.2	111.9	132.5	167.1	189.1	193.6



TEST NUMBER: P382190

CATALOG NUMBER: MWL-2-13-38-UNV-L830-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	92.4	131.8	149.4	181.8	207.9	211.2
115°	114.1	150.2	165.2	198.7	223.0	225.8
117.5°	133.6	172.2	181.4	212.2	239.7	240.1
120°	155.1	194.1	198.5	229.4	255.2	258.1
122.5°	176.1	214.0	214.0	244.2	268.8	270.6
125°	195.6	235.3	229.4	255.2	281.4	282.0
127.5°	215.4	257.1	246.3	269.5	293.5	292.4
130°	237.2	277.6	261.8	283.1	304.9	302.1
132.5°	258.0	300.7	278.6	297.1	317.2	319.4
135°	277.8	321.2	292.2	310.2	329.0	328.2
137.5°	296.9	340.4	308.7	319.7	336.7	338.9
140°	315.7	361.0	323.5	332.2	346.3	346.6
142.5°	335.6	381.6	339.6	344.8	356.9	354.8
145°	357.6	401.1	359.9	357.3	365.0	360.3
147.5°	377.2	418.0	374.3	366.5	375.7	369.4
150°	398.9	435.3	394.1	380.3	385.8	382.9
152.5°	418.7	448.9	415.8	390.2	396.5	392.9
155°	438.2	463.3	436.7	399.2	404.6	403.1
157.5°	455.1	475.8	452.6	409.6	415.6	412.6
160°	469.9	485.1	471.0	425.0	423.0	423.0
162.5°	482.8	495.1	483.9	446.0	430.1	424.1
165°	494.2	502.8	495.3	469.5	445.6	440.3
167.5°	503.9	510.1	507.2	488.7	469.5	456.3
170°	513.3	517.0	512.9	503.9	495.3	483.9
172.5°	517.7	519.2	521.7	515.6	512.9	504.6
175°	520.3	524.3	522.1	524.0	519.8	517.3
177.5°	522.0	522.6	522.4	524.7	525.6	523.0
180°	524.0	524.0	524.0	524.0	524.0	524.0

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