

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: P382169

Luminaire Tested: **MWL-2-22-38-UNV-L830-EDD**

Issue Date: 12/2/2019

**Test Information**

Test Method: LM-79-08  
Report Number: P382169  
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-2-22-38-UNV-L830-EDD  
Description: MWL 2FT MEDICAL LED FIXTURE  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 5671.0 lumens  
Efficiency: N/A  
Efficacy: 88.7 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

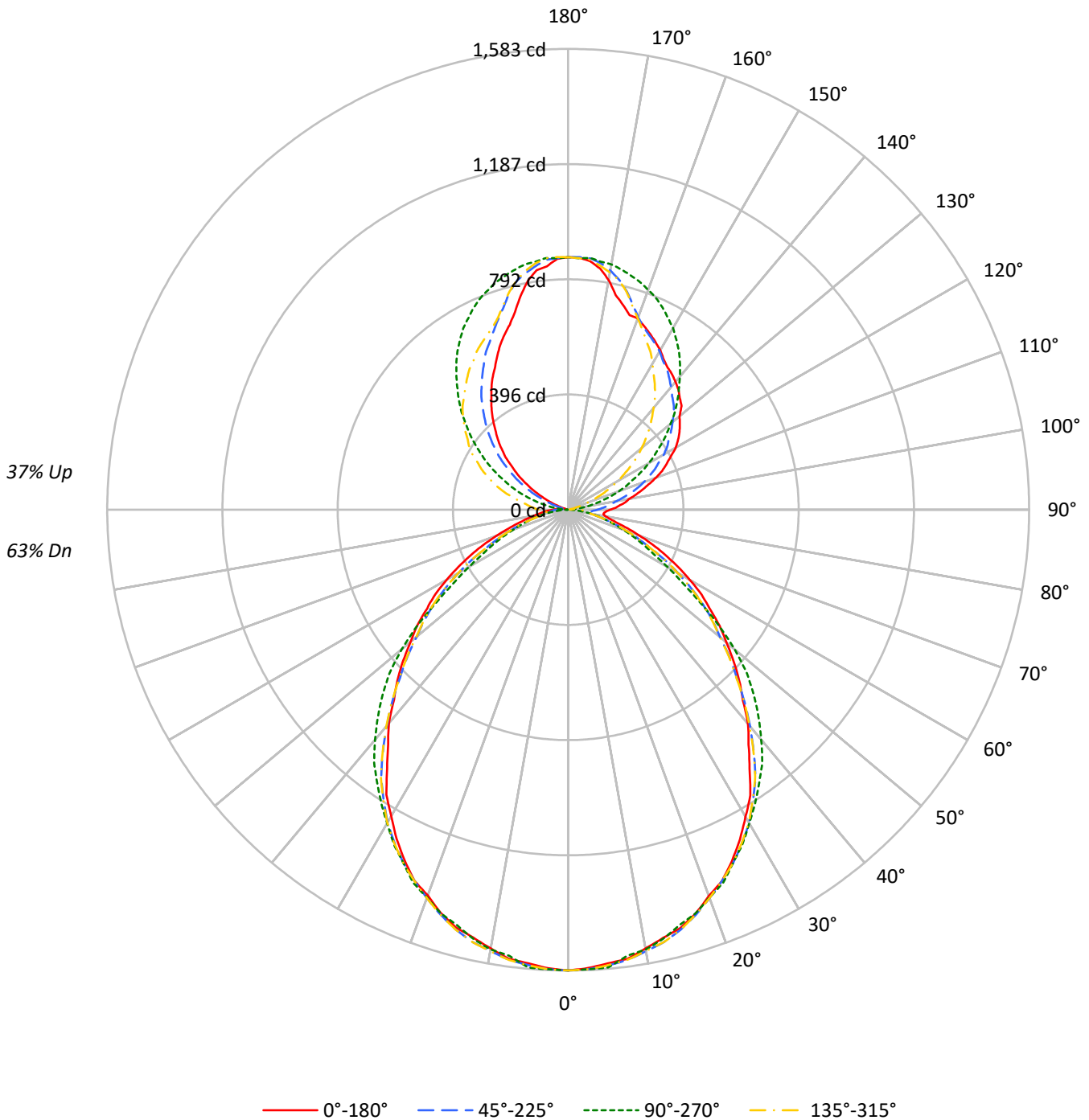
Input Watts (W): 63.9  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	110	110	110	110	103	103	103	103	91	91	91	79	79	79	68	68	68	63
1	101	97	93	90	95	91	88	85	80	78	75	70	68	67	61	60	58	54
2	93	85	79	74	87	80	75	70	71	67	63	62	59	57	54	52	50	46
3	85	75	68	62	79	71	65	60	63	58	54	56	52	48	49	46	43	40
4	78	67	59	53	73	63	56	51	56	51	46	50	46	42	44	40	38	34
5	72	60	52	46	67	57	50	44	51	45	40	45	40	37	40	36	33	30
6	66	54	46	40	62	51	44	39	46	40	36	41	36	32	36	32	29	27
7	61	49	41	36	58	47	39	34	42	36	32	37	33	29	33	29	26	24
8	57	45	37	32	54	43	35	31	38	32	28	34	29	26	31	27	24	22
9	53	41	34	28	50	39	32	27	35	29	25	32	27	23	28	24	22	19
10	50	38	31	26	47	36	29	25	33	27	23	29	25	21	26	22	20	18

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

	0°	90°	180°	270°
0°	20442	20442	20442	20442
5°	19915	18820	19915	18820
10°	19364	17104	19364	17104
15°	18841	15575	18817	15575
20°	18041	14283	18017	14283
25°	17290	13013	17266	13013
30°	16216	11759	16184	11759
35°	14942	10607	14916	10607
40°	13787	9455	13753	9455
45°	12564	8234	12537	8234
50°	11409	6838	11381	6838
55°	10282	5076	10261	5076
60°	9159	3726	9148	3726
65°	7753	2771	7753	2771
70°	6264	2027	6281	2027
75°	4860	1425	4911	1425
80°	4416	903	4020	903
85°	5426	376	3686	376



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	148.8	2.6
10°-20°	418.6	7.4
20°-30°	614.1	10.8
30°-40°	696.3	12.3
40°-50°	649.9	11.5
50°-60°	510.5	9.0
60°-70°	317.8	5.6
70°-80°	153.7	2.7
80°-90°	77.6	1.4
90°-100°	79.4	1.4
100°-110°	134.5	2.4
110°-120°	231.0	4.1
120°-130°	313.8	5.5
130°-140°	357.9	6.3
140°-150°	356.8	6.3
150°-160°	310.7	5.5
160°-170°	218.3	3.8
170°-180°	81.3	1.4
0°-30°	1181.6	20.8
0°-40°	1877.9	33.1
0°-60°	3038.3	53.6
0°-90°	3587.4	63.3
90°-120°	444.9	7.8
90°-150°	1473.4	26.0
90°-180°	2084.0	36.7
0°-180°	5671.0	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	1583	1583	1583	1583	1583	
5°	1564	1578	1564	1578	1564	149
15°	1488	1477	1486	1477	1488	418
25°	1331	1339	1329	1339	1331	611
35°	1086	1144	1084	1144	1086	681
45°	831	902	829	902	831	641
55°	592	547	591	547	592	533
65°	367	285	367	285	367	366
75°	173	135	175	135	173	192
85°	124	32	84	32	124	102
90°	144	2	52	2	144	80
95°	179	25	35	25	179	154
105°	263	121	6	121	263	279
115°	373	248	87	248	373	370
125°	466	389	213	389	466	417
135°	542	531	342	531	542	419
145°	596	663	459	663	596	375
155°	666	766	578	766	666	307
165°	728	833	704	833	728	206
175°	857	868	839	868	857	80
180°	867	867	867	867	867	



TEST NUMBER: P382169

CATALOG NUMBER: MWL-2-22-38-UNV-L830-EDD

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6
2.5°	1576.1	1572.6	1580.4	1575.4	1580.1	1574.7	1580.4	1572.6	1576.7	1572.6	1580.4
5°	1563.9	1567.9	1571.0	1568.2	1578.5	1568.2	1570.5	1567.9	1563.9	1567.9	1570.5
7.5°	1556.2	1559.2	1560.2	1556.1	1545.8	1555.5	1559.5	1558.6	1556.2	1558.6	1559.5
10°	1530.6	1542.4	1539.6	1535.9	1534.0	1535.2	1539.0	1541.2	1530.6	1541.2	1539.0
12.5°	1506.6	1509.7	1521.2	1512.8	1509.5	1512.8	1521.2	1508.5	1505.4	1508.5	1521.2
15°	1487.6	1484.5	1493.2	1483.9	1476.8	1483.3	1492.7	1483.3	1485.7	1483.3	1492.7
17.5°	1454.9	1450.0	1458.7	1458.1	1454.4	1458.1	1458.1	1449.3	1453.1	1449.3	1458.1
20°	1412.0	1420.7	1419.4	1421.7	1417.3	1421.0	1418.9	1419.4	1410.1	1419.4	1418.9
22.5°	1380.5	1378.6	1380.2	1383.4	1388.3	1382.7	1379.7	1377.4	1379.3	1377.4	1379.7
25°	1331.0	1328.2	1339.8	1337.6	1338.8	1337.0	1338.6	1326.4	1329.2	1326.4	1338.6
27.5°	1276.8	1275.0	1292.1	1295.2	1295.9	1294.7	1290.9	1273.2	1275.1	1273.2	1290.9
30°	1218.0	1222.7	1242.3	1244.5	1243.6	1243.3	1240.5	1220.9	1215.6	1220.9	1240.5
32.5°	1163.8	1160.1	1181.6	1196.9	1194.7	1195.7	1179.8	1157.7	1161.4	1157.7	1179.8
35°	1085.8	1090.4	1121.2	1139.9	1143.7	1138.1	1119.4	1088.6	1083.9	1088.6	1119.4
37.5°	1017.6	1021.3	1046.5	1083.9	1094.8	1082.0	1044.7	1019.4	1015.7	1019.4	1044.7
40°	960.6	949.4	970.9	1015.1	1031.3	1013.8	968.5	947.0	958.2	947.0	968.5
42.5°	887.8	883.1	896.5	945.0	967.8	943.8	894.7	880.7	885.3	880.7	894.7
45°	831.1	818.0	819.9	869.4	901.5	868.2	817.4	816.2	829.3	816.2	817.4
47.5°	770.4	753.6	751.7	792.2	832.4	791.6	749.3	751.8	768.6	751.8	749.3
50°	708.7	700.3	681.7	711.0	745.8	709.8	679.2	697.9	707.0	697.9	679.2
52.5°	655.5	644.3	623.2	640.9	650.6	639.7	621.3	641.9	653.7	641.9	621.3
55°	592.4	587.7	563.4	564.6	547.3	563.4	561.6	585.8	591.2	585.8	561.6
57.5°	542.9	536.3	499.9	483.4	461.3	482.2	498.1	534.5	541.7	534.5	498.1
60°	482.5	475.0	434.8	405.3	394.1	404.7	433.6	473.8	481.9	473.8	433.6
62.5°	425.5	417.1	374.1	336.2	331.8	335.6	372.9	415.9	424.9	415.9	372.9
65°	367.0	353.0	310.1	278.3	285.1	277.6	309.4	352.4	367.0	352.4	309.4
67.5°	314.7	293.2	260.6	231.0	241.2	231.0	259.9	292.6	314.7	292.6	259.9
70°	260.8	237.5	214.1	189.9	201.1	189.9	214.1	238.1	261.5	238.1	214.1
72.5°	213.2	191.7	172.1	155.3	165.0	154.7	172.1	192.4	214.4	192.4	172.1
75°	173.1	149.7	133.3	123.0	135.1	123.0	133.8	150.4	174.9	150.4	133.8
77.5°	147.1	125.0	99.6	95.9	107.1	95.9	100.2	123.3	144.7	123.3	100.2
80°	129.5	113.1	79.0	71.6	81.0	71.6	77.8	103.3	117.9	103.3	77.8
82.5°	121.7	110.7	73.3	50.2	53.9	50.2	65.9	88.6	98.5	88.6	65.9
85°	123.8	115.9	76.4	39.8	31.5	38.6	58.7	78.6	84.1	78.6	58.7
87.5°	130.9	129.2	85.7	40.5	9.3	32.0	50.9	70.5	68.0	70.5	50.9
90°	143.5	143.0	100.3	44.1	1.6	20.8	39.8	56.9	51.9	56.9	39.8
92.5°	163.8	159.3	115.3	51.7	10.7	9.6	31.8	46.3	44.2	46.3	31.8
95°	179.2	176.5	131.4	64.4	25.4	3.4	21.5	34.8	34.6	34.8	21.5
97.5°	198.6	192.8	147.0	86.4	44.3	8.2	12.0	24.8	27.6	24.8	12.0
100°	212.2	207.0	168.0	112.7	67.5	21.1	6.2	15.1	19.8	15.1	6.2
102.5°	237.7	228.4	192.1	137.8	92.5	38.8	10.1	8.6	10.5	8.6	10.1
105°	263.3	254.7	222.9	164.0	121.2	62.6	25.7	9.2	6.2	9.2	25.7
107.5°	289.5	283.4	249.8	191.8	151.8	91.1	46.4	24.5	15.9	24.5	46.4
110°	320.0	312.7	276.1	218.6	184.4	120.4	70.2	44.0	34.3	44.0	70.2



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CATALOG NUMBER: MWL-2-22-38-UNV-L830-EDD

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	349.4	343.9	300.5	246.7	217.4	152.1	99.6	68.5	59.3	68.5	99.6
115°	372.9	368.9	328.5	273.0	248.0	188.1	132.0	97.1	87.0	97.1	132.0
117.5°	396.7	396.1	350.3	299.9	284.7	220.5	162.8	126.7	115.2	126.7	162.8
120°	426.6	421.8	379.0	327.7	320.3	255.6	195.7	159.8	148.1	159.8	195.7
122.5°	447.4	444.4	403.4	353.3	353.3	290.4	227.5	191.5	179.3	191.5	227.5
125°	466.3	465.1	421.8	379.0	388.8	322.9	263.0	226.3	212.8	226.3	263.0
127.5°	483.4	485.3	445.6	407.1	424.8	355.8	297.7	257.5	243.4	257.5	297.7
130°	499.0	504.2	468.2	432.8	459.0	391.8	328.9	288.6	280.4	288.6	328.9
132.5°	527.7	524.0	491.3	459.9	496.6	425.8	361.9	320.7	310.3	320.7	361.9
135°	542.4	543.6	512.4	482.5	530.7	458.7	394.0	352.5	342.1	352.5	394.0
137.5°	560.1	556.4	528.3	510.0	562.5	490.5	424.5	386.1	369.5	386.1	424.5
140°	572.9	572.3	549.0	534.5	596.8	521.6	455.7	416.5	401.3	416.5	455.7
142.5°	586.3	590.0	569.9	561.3	630.9	554.6	489.3	446.5	431.8	446.5	489.3
145°	595.5	603.4	590.6	594.9	663.3	591.3	518.6	475.2	459.3	475.2	518.6
147.5°	610.8	621.1	605.9	618.7	691.4	623.6	547.8	505.1	491.0	505.1	547.8
150°	632.4	637.4	628.1	651.7	720.0	659.6	578.7	534.8	520.7	534.8	578.7
152.5°	649.0	655.0	644.7	687.7	742.6	692.6	611.7	562.9	546.3	562.9	611.7
155°	666.1	668.5	660.3	722.6	766.5	725.0	637.0	594.0	578.1	594.0	637.0
157.5°	681.9	686.8	677.4	748.8	787.3	753.1	667.0	625.2	611.1	625.2	667.0
160°	699.0	699.0	702.9	779.3	803.4	777.5	698.7	659.3	639.8	659.3	698.7
162.5°	700.9	711.5	737.8	800.7	819.9	798.9	732.9	682.9	666.6	682.9	732.9
165°	727.7	737.2	776.9	819.6	832.8	817.8	775.0	723.1	703.9	723.1	775.0
167.5°	754.9	776.9	808.7	840.0	844.9	834.5	807.5	771.4	753.1	771.4	807.5
170°	800.7	819.6	834.5	848.9	855.6	849.6	826.6	809.9	798.2	809.9	826.6
172.5°	835.8	848.9	854.1	863.6	859.3	856.9	844.9	837.3	830.3	837.3	844.9
175°	857.4	860.9	867.2	864.2	867.9	861.2	861.8	865.1	839.1	865.1	861.8
177.5°	866.3	870.6	868.4	864.0	864.5	863.3	864.8	866.3	862.6	866.3	864.8
180°	867.2	867.2	867.2	867.2	867.2	867.2	867.2	867.2	867.2	867.2	867.2



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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6
2.5°	1574.7	1580.1	1575.4	1580.4	1572.6	1576.1
5°	1568.2	1578.5	1568.2	1571.0	1567.9	1563.9
7.5°	1555.5	1545.8	1556.1	1560.2	1559.2	1556.2
10°	1535.2	1534.0	1535.9	1539.6	1542.4	1530.6
12.5°	1512.8	1509.5	1512.8	1521.2	1509.7	1506.6
15°	1483.3	1476.8	1483.9	1493.2	1484.5	1487.6
17.5°	1458.1	1454.4	1458.1	1458.7	1450.0	1454.9
20°	1421.0	1417.3	1421.7	1419.4	1420.7	1412.0
22.5°	1382.7	1388.3	1383.4	1380.2	1378.6	1380.5
25°	1337.0	1338.8	1337.6	1339.8	1328.2	1331.0
27.5°	1294.7	1295.9	1295.2	1292.1	1275.0	1276.8
30°	1243.3	1243.6	1244.5	1242.3	1222.7	1218.0
32.5°	1195.7	1194.7	1196.9	1181.6	1160.1	1163.8
35°	1138.1	1143.7	1139.9	1121.2	1090.4	1085.8
37.5°	1082.0	1094.8	1083.9	1046.5	1021.3	1017.6
40°	1013.8	1031.3	1015.1	970.9	949.4	960.6
42.5°	943.8	967.8	945.0	896.5	883.1	887.8
45°	868.2	901.5	869.4	819.9	818.0	831.1
47.5°	791.6	832.4	792.2	751.7	753.6	770.4
50°	709.8	745.8	711.0	681.7	700.3	708.7
52.5°	639.7	650.6	640.9	623.2	644.3	655.5
55°	563.4	547.3	564.6	563.4	587.7	592.4
57.5°	482.2	461.3	483.4	499.9	536.3	542.9
60°	404.7	394.1	405.3	434.8	475.0	482.5
62.5°	335.6	331.8	336.2	374.1	417.1	425.5
65°	277.6	285.1	278.3	310.1	353.0	367.0
67.5°	231.0	241.2	231.0	260.6	293.2	314.7
70°	189.9	201.1	189.9	214.1	237.5	260.8
72.5°	154.7	165.0	155.3	172.1	191.7	213.2
75°	123.0	135.1	123.0	133.3	149.7	173.1
77.5°	95.9	107.1	95.9	99.6	125.0	147.1
80°	71.6	81.0	71.6	79.0	113.1	129.5
82.5°	50.2	53.9	50.2	73.3	110.7	121.7
85°	38.6	31.5	39.8	76.4	115.9	123.8
87.5°	32.0	9.3	40.5	85.7	129.2	130.9
90°	20.8	1.6	44.1	100.3	143.0	143.5
92.5°	9.6	10.7	51.7	115.3	159.3	163.8
95°	3.4	25.4	64.4	131.4	176.5	179.2
97.5°	8.2	44.3	86.4	147.0	192.8	198.6
100°	21.1	67.5	112.7	168.0	207.0	212.2
102.5°	38.8	92.5	137.8	192.1	228.4	237.7
105°	62.6	121.2	164.0	222.9	254.7	263.3
107.5°	91.1	151.8	191.8	249.8	283.4	289.5
110°	120.4	184.4	218.6	276.1	312.7	320.0





TEST NUMBER: P382169

CATALOG NUMBER: MWL-2-22-38-UNV-L830-EDD

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	152.1	217.4	246.7	300.5	343.9	349.4
115°	188.1	248.0	273.0	328.5	368.9	372.9
117.5°	220.5	284.7	299.9	350.3	396.1	396.7
120°	255.6	320.3	327.7	379.0	421.8	426.6
122.5°	290.4	353.3	353.3	403.4	444.4	447.4
125°	322.9	388.8	379.0	421.8	465.1	466.3
127.5°	355.8	424.8	407.1	445.6	485.3	483.4
130°	391.8	459.0	432.8	468.2	504.2	499.0
132.5°	425.8	496.6	459.9	491.3	524.0	527.7
135°	458.7	530.7	482.5	512.4	543.6	542.4
137.5°	490.5	562.5	510.0	528.3	556.4	560.1
140°	521.6	596.8	534.5	549.0	572.3	572.9
142.5°	554.6	630.9	561.3	569.9	590.0	586.3
145°	591.3	663.3	594.9	590.6	603.4	595.5
147.5°	623.6	691.4	618.7	605.9	621.1	610.8
150°	659.6	720.0	651.7	628.1	637.4	632.4
152.5°	692.6	742.6	687.7	644.7	655.0	649.0
155°	725.0	766.5	722.6	660.3	668.5	666.1
157.5°	753.1	787.3	748.8	677.4	686.8	681.9
160°	777.5	803.4	779.3	702.9	699.0	699.0
162.5°	798.9	819.9	800.7	737.8	711.5	700.9
165°	817.8	832.8	819.6	776.9	737.2	727.7
167.5°	834.5	844.9	840.0	808.7	776.9	754.9
170°	849.6	855.6	848.9	834.5	819.6	800.7
172.5°	856.9	859.3	863.6	854.1	848.9	835.8
175°	861.2	867.9	864.2	867.2	860.9	857.4
177.5°	863.3	864.5	864.0	868.4	870.6	866.3
180°	867.2	867.2	867.2	867.2	867.2	867.2

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