

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: P392483

Luminaire Tested: **MWL-2-13-31-UNV-L940-EDD**

Issue Date: 12/2/2019

**Test Information**

Test Method: LM-79-08  
Report Number: P392483  
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-2-13-31-UNV-L940-EDD  
Description: MWL 2FT MEDICAL LED FIXTURE  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

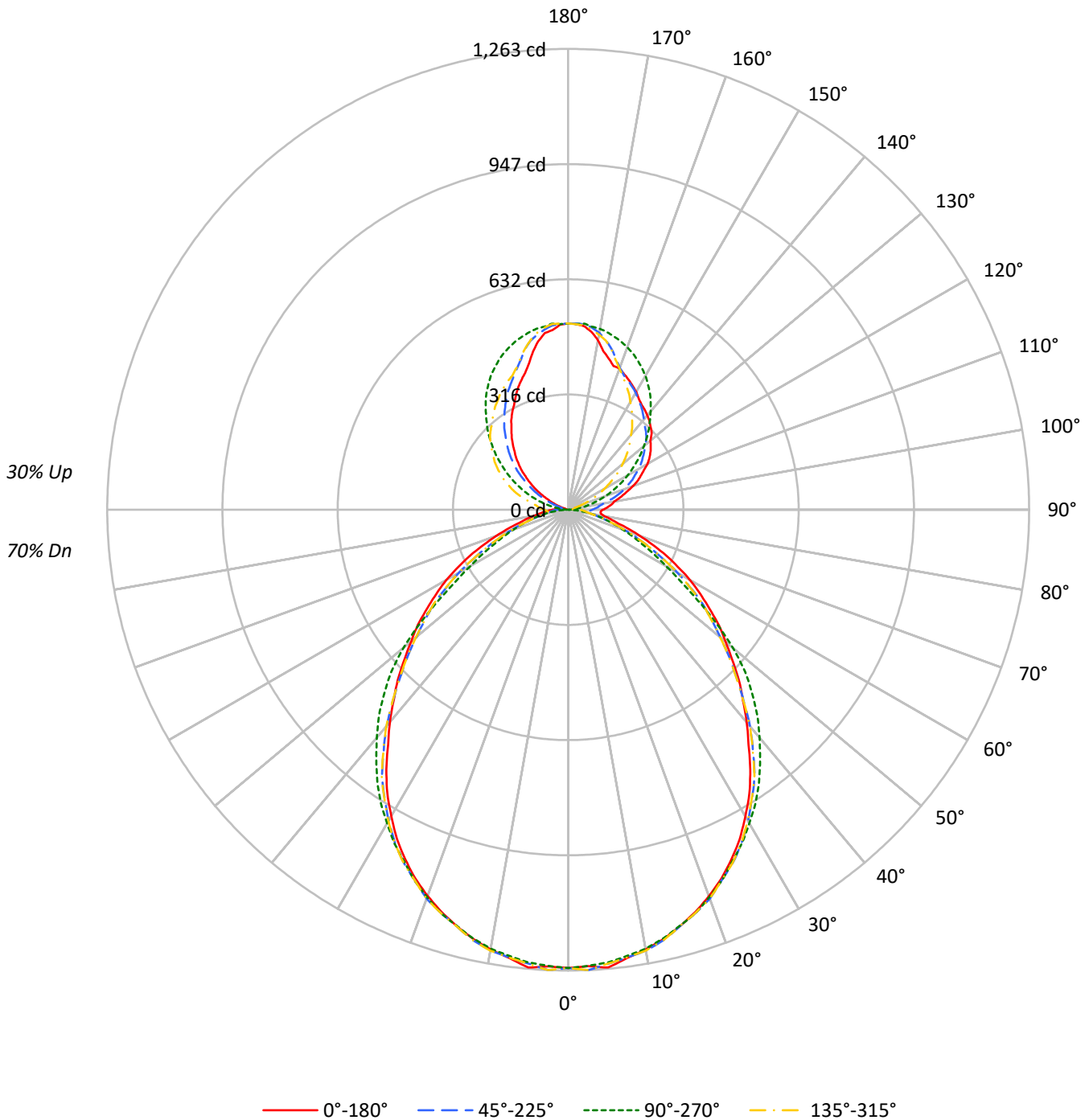
Lumens per Lamp: N/A  
Luminaire Lumens: 4083.6 lumens  
Efficiency: N/A  
Efficacy: 90.5 lumens/watt  
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25  
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')  
CIE Type: Semi-Direct

Input Watts (W): 45.147  
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: P392483  
CATALOG NUMBER: MWL-2-13-31-UNV-L940-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	112	112	112	112	106	106	106	106	94	94	94	84	84	84	74	74	74	70
1	103	98	95	91	97	93	90	87	84	81	79	75	73	71	66	65	64	60
2	94	87	81	75	89	82	77	72	74	70	66	66	63	60	59	57	55	51
3	86	77	69	64	81	73	66	61	66	61	56	59	55	52	53	50	47	44
4	79	68	60	54	75	65	58	52	59	53	49	53	49	45	48	44	41	38
5	73	61	53	47	69	58	51	46	53	47	42	48	43	39	43	39	36	33
6	67	55	47	41	64	53	45	40	48	42	37	44	39	35	39	35	32	30
7	63	50	42	37	59	48	41	35	44	38	33	40	35	31	36	32	29	26
8	58	46	38	33	55	44	37	32	40	34	30	37	32	28	33	29	26	24
9	54	42	34	29	52	40	33	28	37	31	27	34	29	25	31	27	24	22
10	51	39	31	27	48	37	30	26	34	28	24	31	26	23	29	25	21	20

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

	0°	90°	180°	270°
0°	16225	16225	16225	16225
5°	16040	14851	16040	14851
10°	15484	13620	15484	13620
15°	14972	12452	14959	12452
20°	14405	11390	14392	11390
25°	13742	10339	13728	10339
30°	12919	9386	12901	9386
35°	11969	8455	11954	8455
40°	10928	7475	10906	7475
45°	10005	6507	9988	6507
50°	9055	5409	9037	5409
55°	8190	4016	8178	4016
60°	7326	2931	7320	2931
65°	6240	2176	6240	2176
70°	5008	1614	5015	1614
75°	3858	1128	3889	1128
80°	3406	715	3174	715
85°	3888	298	2862	298



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	118.5	2.9
10°-20°	333.4	8.2
20°-30°	488.8	12.0
30°-40°	554.3	13.6
40°-50°	517.1	12.7
50°-60°	405.6	9.9
60°-70°	253.0	6.2
70°-80°	122.0	3.0
80°-90°	58.6	1.4
90°-100°	51.1	1.3
100°-110°	79.6	2.0
110°-120°	136.3	3.3
120°-130°	185.0	4.5
130°-140°	210.9	5.2
140°-150°	210.2	5.1
150°-160°	183.0	4.5
160°-170°	128.5	3.1
170°-180°	47.8	1.2
0°-30°	940.6	23.0
0°-40°	1494.9	36.6
0°-60°	2417.6	59.2
0°-90°	2851.2	69.8
90°-120°	267.0	6.5
90°-150°	873.1	21.4
90°-180°	1232.0	30.2
0°-180°	4083.6	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	1256	1256	1256	1256	1256	
5°	1260	1246	1260	1246	1260	119
15°	1182	1181	1181	1181	1182	333
25°	1058	1064	1057	1064	1058	486
35°	870	912	869	912	870	543
45°	662	712	661	712	662	509
55°	472	433	471	433	472	423
65°	295	224	295	224	295	292
75°	137	107	138	107	137	153
85°	89	25	65	25	89	75
90°	95	1	41	1	95	53
95°	113	15	28	15	113	96
105°	155	72	4	72	155	165
115°	219	146	51	146	219	218
125°	275	229	126	229	275	246
135°	319	312	202	312	319	246
145°	351	390	270	390	351	221
155°	392	451	341	451	392	181
165°	429	490	415	490	429	122
175°	505	512	494	512	505	47
180°	510	510	510	510	510	



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CATALOG NUMBER: MWL-2-13-31-UNV-L940-EDD

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1256.1	1256.1	1256.1	1256.1	1256.1	1256.1	1256.1	1256.1	1256.1	1256.1	1256.1
2.5°	1252.3	1259.4	1262.9	1250.4	1251.3	1250.1	1262.9	1259.4	1252.7	1259.4	1262.9
5°	1259.6	1250.3	1249.2	1248.3	1245.6	1248.3	1248.8	1250.3	1259.6	1250.3	1248.8
7.5°	1239.0	1244.3	1237.9	1236.5	1233.7	1236.1	1237.5	1243.9	1239.0	1243.9	1237.5
10°	1223.9	1227.9	1227.0	1220.6	1221.5	1220.2	1226.6	1227.2	1223.9	1227.2	1226.6
12.5°	1205.5	1208.8	1208.4	1201.1	1203.5	1201.1	1208.4	1208.0	1204.7	1208.0	1208.4
15°	1182.1	1182.3	1182.0	1179.2	1180.7	1178.9	1181.6	1181.6	1181.1	1181.6	1181.6
17.5°	1156.6	1159.6	1159.2	1159.7	1159.7	1159.7	1158.8	1159.2	1155.5	1159.2	1158.8
20°	1127.4	1132.6	1134.6	1129.7	1130.2	1129.3	1134.2	1131.9	1126.4	1131.9	1134.2
22.5°	1095.2	1096.1	1099.1	1092.3	1100.2	1092.0	1098.7	1095.4	1094.5	1095.4	1098.7
25°	1057.9	1058.8	1067.5	1064.1	1063.7	1063.7	1066.8	1057.7	1056.8	1057.7	1066.8
27.5°	1017.8	1017.8	1029.3	1026.2	1030.9	1025.8	1028.5	1016.7	1016.7	1016.7	1028.5
30°	970.4	978.6	985.0	998.3	992.6	997.6	983.9	977.5	969.0	977.5	983.9
32.5°	923.9	928.5	937.6	947.3	954.7	946.5	936.5	927.0	922.5	927.0	936.5
35°	869.8	869.8	890.8	908.1	911.6	907.0	889.7	868.7	868.7	868.7	889.7
37.5°	811.5	813.3	831.6	858.0	863.6	856.9	830.5	812.2	810.4	812.2	830.5
40°	761.4	757.8	775.1	809.3	815.3	808.6	773.6	756.3	759.9	756.3	773.6
42.5°	708.7	703.2	711.9	753.8	768.0	753.0	710.8	701.7	707.2	701.7	710.8
45°	661.8	650.9	652.7	691.9	712.4	691.2	651.3	649.8	660.7	649.8	651.3
47.5°	609.9	606.2	599.0	625.0	657.8	624.7	597.5	605.2	608.8	605.2	597.5
50°	562.5	555.2	544.3	565.8	590.0	565.1	542.8	553.8	561.4	553.8	542.8
52.5°	520.6	514.2	493.8	506.6	511.7	505.8	492.7	512.8	519.5	512.8	492.7
55°	471.9	471.0	450.1	444.3	433.0	443.5	449.0	469.9	471.2	469.9	449.0
57.5°	428.2	426.4	396.3	385.9	364.6	385.2	395.2	425.3	427.5	425.3	395.2
60°	385.9	379.6	346.8	320.9	310.0	320.5	346.0	378.8	385.6	378.8	346.0
62.5°	338.6	334.9	294.8	267.1	264.9	266.8	294.1	334.2	338.2	334.2	294.1
65°	295.4	281.7	248.0	222.5	223.9	222.1	247.6	281.3	295.4	281.3	247.6
67.5°	248.9	235.2	206.1	182.9	190.2	182.9	205.7	234.9	248.9	234.9	205.7
70°	208.5	190.2	168.4	149.2	160.2	149.2	168.4	190.6	208.8	190.6	168.4
72.5°	171.1	152.0	135.6	121.9	131.6	121.5	135.6	152.3	171.8	152.3	135.6
75°	137.4	120.1	105.1	97.9	107.0	97.9	105.5	120.4	138.5	120.4	105.5
77.5°	118.4	98.8	79.6	76.0	86.9	76.0	80.0	97.7	117.0	97.7	80.0
80°	99.9	87.4	62.5	56.9	64.1	56.9	61.8	81.6	93.1	81.6	61.8
82.5°	91.2	83.4	56.8	40.5	44.1	40.5	52.5	70.5	77.5	70.5	52.5
85°	88.7	84.2	55.6	31.5	25.0	30.8	45.1	62.2	65.3	62.2	45.1
87.5°	89.7	89.2	59.6	29.6	7.3	24.6	39.1	54.8	52.8	54.8	39.1
90°	94.7	95.6	66.1	29.9	1.3	16.2	30.6	45.0	40.8	45.0	30.6
92.5°	105.0	103.4	74.0	32.8	6.7	8.0	24.8	37.0	34.6	37.0	24.8
95°	112.6	110.4	82.1	38.3	15.3	2.4	17.5	27.2	27.5	27.2	17.5
97.5°	122.0	118.4	87.8	51.2	26.4	5.2	8.6	19.7	21.5	19.7	8.6
100°	127.8	124.7	98.6	66.6	40.0	12.8	3.5	12.0	14.8	12.0	3.5
102.5°	141.9	134.8	113.2	81.4	54.8	23.1	6.3	5.6	8.4	5.6	6.3
105°	155.4	150.4	130.8	96.8	71.6	37.2	14.9	6.1	4.4	6.1	14.9
107.5°	170.9	167.3	147.6	112.5	89.6	53.3	28.1	15.1	10.1	15.1	28.1
110°	188.9	184.5	163.0	128.4	108.2	70.5	42.0	26.6	20.9	26.6	42.0



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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°	206.1	202.8	177.4	145.8	127.6	90.1	59.2	40.9	35.5	40.9	59.2
115°	219.4	217.6	193.9	161.2	146.5	111.3	78.3	57.9	51.4	57.9	78.3
117.5°	233.3	233.0	206.1	177.0	168.0	130.4	95.8	74.7	67.9	74.7	95.8
120°	250.9	248.1	222.9	192.8	188.5	150.4	115.3	94.1	87.3	94.1	115.3
122.5°	264.0	261.4	237.3	207.9	207.9	170.9	133.9	112.7	106.5	112.7	133.9
125°	275.2	274.5	249.0	222.9	228.7	190.0	155.6	134.1	126.2	134.1	155.6
127.5°	285.3	286.4	262.9	240.3	250.8	210.2	176.1	152.4	144.1	152.4	176.1
130°	293.8	297.5	276.2	255.5	270.9	231.4	194.4	170.7	165.4	170.7	194.4
132.5°	310.7	308.6	289.9	270.9	292.5	250.8	213.8	189.1	182.9	189.1	213.8
135°	319.3	320.1	301.8	284.2	312.5	270.1	232.1	207.7	201.6	207.7	232.1
137.5°	329.7	327.6	311.0	300.3	331.2	288.8	250.1	227.4	217.8	227.4	250.1
140°	337.3	336.9	323.3	314.7	351.3	307.1	268.4	245.4	236.4	245.4	268.4
142.5°	345.2	347.3	335.5	330.5	371.4	326.5	288.1	262.9	254.4	262.9	288.1
145°	350.6	356.1	347.7	350.2	390.4	348.0	305.3	280.8	270.5	280.8	305.3
147.5°	360.4	366.5	357.6	364.3	406.9	367.1	323.5	298.4	290.1	298.4	323.5
150°	372.6	375.6	370.2	383.6	423.8	388.3	341.1	315.2	306.9	315.2	341.1
152.5°	382.4	385.9	379.8	404.8	437.1	407.6	360.4	331.7	322.1	331.7	360.4
155°	392.4	393.9	389.5	425.2	451.1	426.7	375.9	350.0	340.8	350.0	375.9
157.5°	401.7	404.6	398.7	440.7	463.3	443.2	392.6	368.4	360.1	368.4	392.6
160°	411.8	411.8	413.7	458.6	473.3	457.6	411.3	388.5	377.0	388.5	411.3
162.5°	412.9	419.7	434.2	471.2	483.1	470.1	431.3	402.8	392.8	402.8	431.3
165°	428.7	433.9	457.2	482.3	490.5	481.2	456.1	425.6	414.6	425.6	456.1
167.5°	445.2	457.2	475.9	494.9	497.7	491.6	475.1	454.0	444.1	454.0	475.1
170°	471.2	482.3	491.6	499.6	503.5	499.9	487.0	476.6	469.8	476.6	487.0
172.5°	491.4	499.6	503.1	508.1	505.7	504.2	497.7	492.7	488.3	492.7	497.7
175°	504.7	507.1	510.3	509.4	511.6	507.7	507.1	509.6	494.0	509.6	507.1
177.5°	509.4	511.9	511.0	508.8	509.0	508.4	508.8	509.4	507.2	509.4	508.8
180°	510.3	510.3	510.3	510.3	510.3	510.3	510.3	510.3	510.3	510.3	510.3



TEST NUMBER: P392483

CATALOG NUMBER: MWL-2-13-31-UNV-L940-EDD

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1256.1	1256.1	1256.1	1256.1	1256.1	1256.1
2.5°	1250.1	1251.3	1250.4	1262.9	1259.4	1252.3
5°	1248.3	1245.6	1248.3	1249.2	1250.3	1259.6
7.5°	1236.1	1233.7	1236.5	1237.9	1244.3	1239.0
10°	1220.2	1221.5	1220.6	1227.0	1227.9	1223.9
12.5°	1201.1	1203.5	1201.1	1208.4	1208.8	1205.5
15°	1178.9	1180.7	1179.2	1182.0	1182.3	1182.1
17.5°	1159.7	1159.7	1159.7	1159.2	1159.6	1156.6
20°	1129.3	1130.2	1129.7	1134.6	1132.6	1127.4
22.5°	1092.0	1100.2	1092.3	1099.1	1096.1	1095.2
25°	1063.7	1063.7	1064.1	1067.5	1058.8	1057.9
27.5°	1025.8	1030.9	1026.2	1029.3	1017.8	1017.8
30°	997.6	992.6	998.3	985.0	978.6	970.4
32.5°	946.5	954.7	947.3	937.6	928.5	923.9
35°	907.0	911.6	908.1	890.8	869.8	869.8
37.5°	856.9	863.6	858.0	831.6	813.3	811.5
40°	808.6	815.3	809.3	775.1	757.8	761.4
42.5°	753.0	768.0	753.8	711.9	703.2	708.7
45°	691.2	712.4	691.9	652.7	650.9	661.8
47.5°	624.7	657.8	625.0	599.0	606.2	609.9
50°	565.1	590.0	565.8	544.3	555.2	562.5
52.5°	505.8	511.7	506.6	493.8	514.2	520.6
55°	443.5	433.0	444.3	450.1	471.0	471.9
57.5°	385.2	364.6	385.9	396.3	426.4	428.2
60°	320.5	310.0	320.9	346.8	379.6	385.9
62.5°	266.8	264.9	267.1	294.8	334.9	338.6
65°	222.1	223.9	222.5	248.0	281.7	295.4
67.5°	182.9	190.2	182.9	206.1	235.2	248.9
70°	149.2	160.2	149.2	168.4	190.2	208.5
72.5°	121.5	131.6	121.9	135.6	152.0	171.1
75°	97.9	107.0	97.9	105.1	120.1	137.4
77.5°	76.0	86.9	76.0	79.6	98.8	118.4
80°	56.9	64.1	56.9	62.5	87.4	99.9
82.5°	40.5	44.1	40.5	56.8	83.4	91.2
85°	30.8	25.0	31.5	55.6	84.2	88.7
87.5°	24.6	7.3	29.6	59.6	89.2	89.7
90°	16.2	1.3	29.9	66.1	95.6	94.7
92.5°	8.0	6.7	32.8	74.0	103.4	105.0
95°	2.4	15.3	38.3	82.1	110.4	112.6
97.5°	5.2	26.4	51.2	87.8	118.4	122.0
100°	12.8	40.0	66.6	98.6	124.7	127.8
102.5°	23.1	54.8	81.4	113.2	134.8	141.9
105°	37.2	71.6	96.8	130.8	150.4	155.4
107.5°	53.3	89.6	112.5	147.6	167.3	170.9
110°	70.5	108.2	128.4	163.0	184.5	188.9





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CATALOG NUMBER: MWL-2-13-31-UNV-L940-EDD

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	90.1	127.6	145.8	177.4	202.8	206.1
115°	111.3	146.5	161.2	193.9	217.6	219.4
117.5°	130.4	168.0	177.0	206.1	233.0	233.3
120°	150.4	188.5	192.8	222.9	248.1	250.9
122.5°	170.9	207.9	207.9	237.3	261.4	264.0
125°	190.0	228.7	222.9	249.0	274.5	275.2
127.5°	210.2	250.8	240.3	262.9	286.4	285.3
130°	231.4	270.9	255.5	276.2	297.5	293.8
132.5°	250.8	292.5	270.9	289.9	308.6	310.7
135°	270.1	312.5	284.2	301.8	320.1	319.3
137.5°	288.8	331.2	300.3	311.0	327.6	329.7
140°	307.1	351.3	314.7	323.3	336.9	337.3
142.5°	326.5	371.4	330.5	335.5	347.3	345.2
145°	348.0	390.4	350.2	347.7	356.1	350.6
147.5°	367.1	406.9	364.3	357.6	366.5	360.4
150°	388.3	423.8	383.6	370.2	375.6	372.6
152.5°	407.6	437.1	404.8	379.8	385.9	382.4
155°	426.7	451.1	425.2	389.5	393.9	392.4
157.5°	443.2	463.3	440.7	398.7	404.6	401.7
160°	457.6	473.3	458.6	413.7	411.8	411.8
162.5°	470.1	483.1	471.2	434.2	419.7	412.9
165°	481.2	490.5	482.3	457.2	433.9	428.7
167.5°	491.6	497.7	494.9	475.9	457.2	445.2
170°	499.9	503.5	499.6	491.6	482.3	471.2
172.5°	504.2	505.7	508.1	503.1	499.6	491.4
175°	507.7	511.6	509.4	510.3	507.1	504.7
177.5°	508.4	509.0	508.8	511.0	511.9	509.4
180°	510.3	510.3	510.3	510.3	510.3	510.3

(END OF REPORT)