

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: P392497

Luminaire Tested: **MWL-2-18-31-UNV-L835-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392497
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-2-18-31-UNV-L835-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

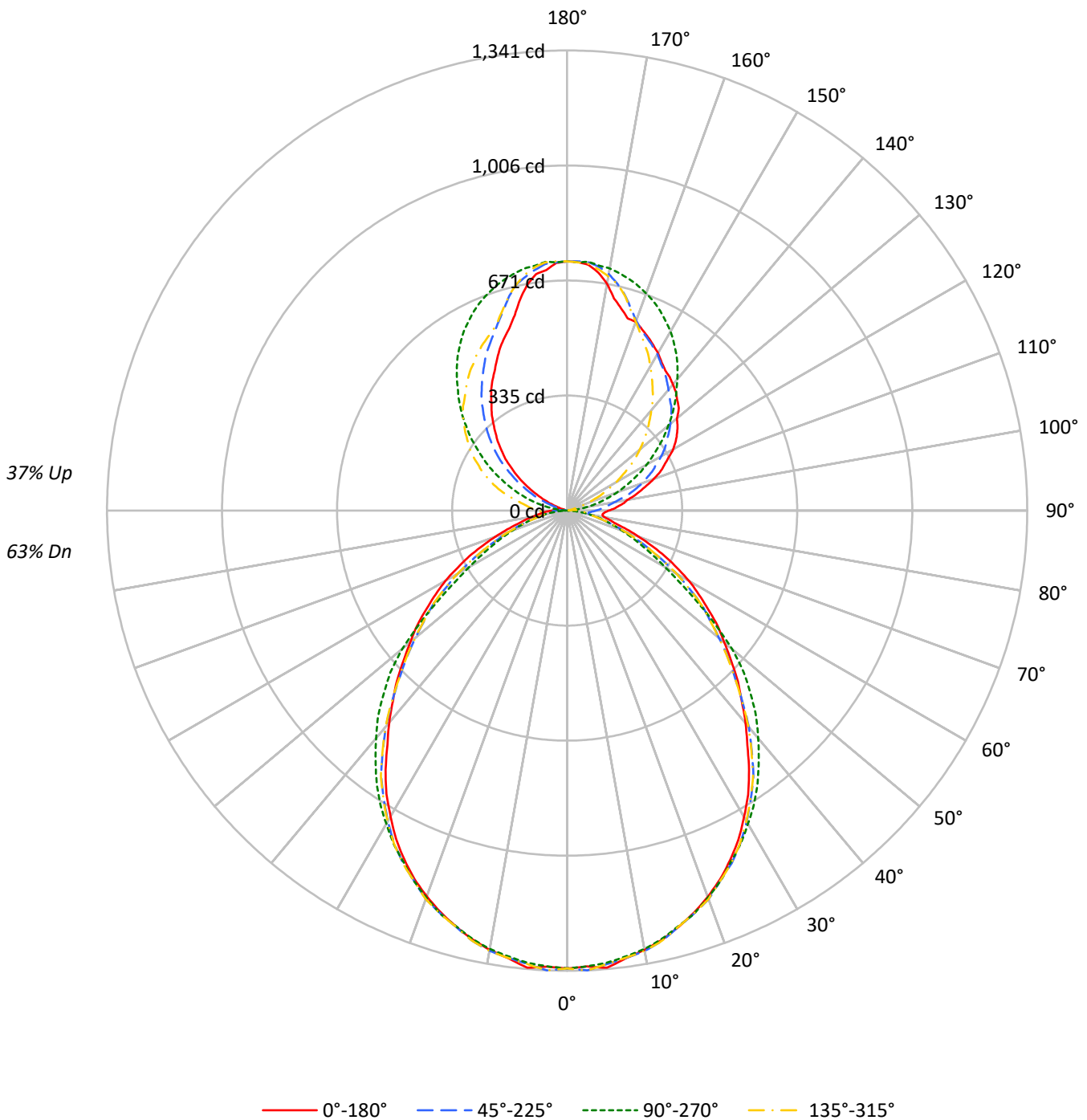
Lumens per Lamp: N/A
Luminaire Lumens: 4778.0 lumens
Efficiency: N/A
Efficacy: 96.7 lumens/watt
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: Semi-Direct

Input Watts (W): 49.4
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	110	110	110	110	104	104	104	104	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	59	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	49	49	46	43	40				
4	78	67	59	53	73	63	56	51	56	51	46	50	46	42	44	41	38	35				
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	33	36	32	30	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	36	31	38	32	28	34	30	26	31	27	24	22				
9	53	41	34	29	50	39	32	28	35	30	26	32	27	24	28	24	22	20				
10	50	38	31	26	47	36	29	25	33	27	23	29	25	21	26	23	20	18				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	17232	17232	17232	17232
5°	17030	15774	17030	15774
10°	16444	14466	16444	14466
15°	15906	13223	15887	13223
20°	15305	12094	15285	12094
25°	14598	10978	14579	10978
30°	13726	9967	13700	9967
35°	12717	8978	12696	8978
40°	11613	7940	11582	7940
45°	10631	6912	10606	6912
50°	9623	5746	9598	5746
55°	8704	4265	8687	4265
60°	7785	3115	7776	3115
65°	6631	2313	6631	2313
70°	5320	1716	5332	1716
75°	4102	1198	4144	1198
80°	3737	760	3403	760
85°	4593	317	3138	317



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	125.8	2.6
10°-20°	354.1	7.4
20°-30°	519.1	10.9
30°-40°	588.8	12.3
40°-50°	549.3	11.5
50°-60°	430.8	9.0
60°-70°	268.8	5.6
70°-80°	129.9	2.7
80°-90°	65.7	1.4
90°-100°	66.9	1.4
100°-110°	112.7	2.4
110°-120°	193.5	4.1
120°-130°	262.9	5.5
130°-140°	299.7	6.3
140°-150°	298.8	6.3
150°-160°	260.2	5.4
160°-170°	182.8	3.8
170°-180°	68.1	1.4
0°-30°	999.0	20.9
0°-40°	1587.8	33.2
0°-60°	2567.9	53.7
0°-90°	3032.4	63.5
90°-120°	373.2	7.8
90°-150°	1234.6	25.8
90°-180°	1746.0	36.5
0°-180°	4778.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1334	1334	1334	1334	1334	
5°	1337	1323	1337	1323	1337	126
15°	1256	1254	1254	1254	1256	354
25°	1124	1130	1122	1130	1124	517
35°	924	968	923	968	924	576
45°	703	757	702	757	703	541
55°	502	460	500	460	502	450
65°	314	238	314	238	314	310
75°	146	114	148	114	146	164
85°	105	27	72	27	105	87
90°	121	2	44	2	121	67
95°	151	22	30	22	151	129
105°	221	102	6	102	221	234
115°	312	208	72	208	312	310
125°	391	325	179	325	391	349
135°	454	444	286	444	454	350
145°	499	555	384	555	499	315
155°	558	642	484	642	558	257
165°	610	698	590	698	610	173
175°	719	728	703	728	719	67
180°	726	726	726	726	726	



TEST NUMBER: P392497

CATALOG NUMBER: MWL-2-18-31-UNV-L835-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1334.1	1334.1	1334.1	1334.1	1334.1	1334.1	1334.1	1334.1	1334.1	1334.1	1334.1
2.5°	1329.7	1337.5	1341.4	1328.4	1329.4	1327.9	1341.4	1337.5	1330.2	1337.5	1341.4
5°	1337.4	1327.9	1326.9	1325.9	1323.0	1325.9	1326.4	1327.9	1337.4	1327.9	1326.4
7.5°	1315.7	1321.6	1314.8	1313.3	1310.4	1312.9	1314.3	1321.1	1315.7	1321.1	1314.3
10°	1299.8	1304.2	1303.2	1296.4	1297.4	1295.9	1302.7	1303.1	1299.8	1303.1	1302.7
12.5°	1280.5	1283.9	1283.4	1275.6	1278.0	1275.6	1283.4	1282.8	1279.5	1282.8	1283.4
15°	1255.9	1255.8	1255.3	1252.4	1253.8	1251.8	1254.7	1254.7	1254.4	1254.7	1254.7
17.5°	1228.8	1231.6	1231.2	1231.5	1231.5	1231.5	1230.6	1231.2	1227.3	1231.2	1230.6
20°	1197.9	1203.1	1205.0	1199.6	1200.1	1199.1	1204.5	1202.1	1196.3	1202.1	1204.5
22.5°	1163.5	1164.4	1167.3	1160.0	1168.2	1159.5	1166.8	1163.5	1162.5	1163.5	1166.8
25°	1123.8	1124.8	1134.0	1130.0	1129.5	1129.5	1132.9	1123.2	1122.3	1123.2	1132.9
27.5°	1081.3	1081.3	1093.4	1090.0	1094.7	1089.4	1092.3	1079.7	1079.7	1079.7	1092.3
30°	1031.0	1039.7	1046.5	1060.5	1054.1	1059.4	1044.9	1038.1	1029.0	1038.1	1044.9
32.5°	981.7	986.5	996.2	1006.3	1014.0	1005.3	994.6	984.5	979.6	984.5	994.6
35°	924.1	924.1	946.4	964.8	968.0	963.2	944.8	922.6	922.6	922.6	944.8
37.5°	862.3	864.2	883.5	911.6	917.3	910.0	882.0	862.6	860.7	862.6	882.0
40°	809.1	805.2	823.6	859.8	866.0	858.8	821.5	803.2	807.0	803.2	821.5
42.5°	753.0	747.2	756.4	800.9	815.7	799.8	754.8	745.2	751.0	745.2	754.8
45°	703.2	691.6	693.5	735.1	756.8	734.0	691.5	690.0	701.6	690.0	691.5
47.5°	648.1	644.2	636.5	663.9	698.7	663.4	634.4	642.7	646.5	642.7	634.4
50°	597.8	590.0	578.4	601.1	626.7	600.1	576.4	588.0	596.2	588.0	576.4
52.5°	553.3	546.5	524.7	538.2	543.5	537.3	523.2	544.5	551.8	544.5	523.2
55°	501.5	500.5	478.3	472.0	459.9	471.0	476.8	499.1	500.5	499.1	476.8
57.5°	455.1	453.1	421.2	410.1	387.4	409.1	419.8	451.7	454.1	451.7	419.8
60°	410.1	403.3	368.5	341.0	329.4	340.5	367.5	402.4	409.6	402.4	367.5
62.5°	359.8	355.9	313.4	283.9	281.5	283.4	312.4	355.0	359.3	355.0	312.4
65°	313.9	299.4	263.6	236.5	238.0	236.0	263.1	298.9	313.9	298.9	263.1
67.5°	264.6	250.1	219.1	194.5	202.2	194.5	218.6	249.6	264.6	249.6	218.6
70°	221.5	202.2	179.0	158.7	170.3	158.7	179.0	202.7	222.0	202.7	179.0
72.5°	181.9	161.6	144.2	129.7	139.7	129.1	144.2	162.1	182.9	162.1	144.2
75°	146.1	127.7	111.7	104.0	113.6	104.0	112.3	128.2	147.6	128.2	112.3
77.5°	127.0	105.6	84.6	80.7	92.3	80.7	85.2	104.0	124.9	104.0	85.2
80°	109.6	95.3	66.8	60.4	68.2	60.4	65.9	87.1	99.8	87.1	65.9
82.5°	103.5	94.0	62.4	43.0	46.9	43.0	56.2	75.6	84.0	75.6	56.2
85°	104.8	98.7	63.9	33.9	26.6	33.0	49.1	67.5	71.6	67.5	49.1
87.5°	110.6	109.0	71.9	33.9	7.7	26.7	42.8	59.9	57.9	59.9	42.8
90°	120.9	120.7	83.6	36.9	1.5	17.5	33.0	48.5	44.2	48.5	33.0
92.5°	137.6	134.4	96.8	44.1	9.2	8.8	26.7	39.7	37.3	39.7	26.7
95°	150.8	147.8	111.0	54.2	21.5	3.0	19.0	29.1	29.6	29.1	19.0
97.5°	166.5	162.1	122.9	72.6	37.3	7.1	9.9	21.4	23.3	21.4	9.9
100°	177.8	174.3	140.1	94.6	56.8	17.9	4.5	13.7	16.6	13.7	4.5
102.5°	200.2	191.2	161.1	115.6	77.6	32.7	8.6	7.0	9.9	7.0	8.6
105°	220.9	213.7	186.1	137.5	101.7	52.6	20.9	8.0	5.5	8.0	20.9
107.5°	242.8	237.7	209.6	160.0	127.4	75.6	39.3	20.9	13.7	20.9	39.3
110°	268.4	262.2	231.6	182.6	153.9	100.2	59.2	37.2	29.0	37.2	59.2



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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°	293.0	288.4	252.1	207.0	181.5	127.7	83.7	57.7	50.0	57.7	83.7
115°	311.9	309.3	275.6	229.1	208.1	157.9	110.9	81.7	72.5	81.7	110.9
117.5°	331.9	331.3	293.0	251.5	238.7	185.1	136.0	105.8	96.0	105.8	136.0
120°	356.9	352.9	317.0	274.0	267.9	213.7	163.5	133.3	123.7	133.3	163.5
122.5°	375.3	371.7	337.5	295.5	295.5	242.8	190.2	159.9	150.8	159.9	190.2
125°	391.1	390.1	353.8	317.0	325.2	270.0	220.8	190.1	178.9	190.1	220.8
127.5°	405.5	407.0	373.7	341.5	356.3	298.5	250.0	216.2	204.4	216.2	250.0
130°	417.7	422.9	392.7	363.0	385.0	328.7	276.1	242.3	234.6	242.3	276.1
132.5°	441.7	438.7	412.1	385.0	415.7	356.3	303.6	268.3	259.6	268.3	303.6
135°	454.0	455.1	429.0	403.9	444.3	384.0	329.7	294.9	286.2	294.9	329.7
137.5°	468.9	465.8	442.3	426.9	470.9	410.6	355.3	323.1	309.2	323.1	355.3
140°	479.6	479.1	459.7	447.4	499.5	436.7	381.4	348.7	335.8	348.7	381.4
142.5°	490.8	493.9	477.0	469.9	528.2	464.2	409.5	373.7	361.5	373.7	409.5
145°	498.6	506.1	494.4	498.0	555.3	495.0	434.1	398.8	384.5	398.8	434.1
147.5°	512.3	521.0	508.1	518.0	578.8	522.1	459.6	423.8	412.0	423.8	459.6
150°	529.7	533.8	526.1	545.6	602.9	552.2	484.6	447.8	436.1	447.8	484.6
152.5°	543.4	548.6	539.9	575.7	621.8	579.9	512.3	471.4	457.6	471.4	512.3
155°	557.8	559.9	553.7	604.9	641.8	607.0	534.3	497.4	484.2	497.4	534.3
157.5°	571.1	575.2	567.0	626.9	659.1	630.5	558.3	523.5	511.8	523.5	558.3
160°	585.4	585.4	588.6	652.5	673.5	651.0	585.0	552.1	535.8	552.1	585.0
162.5°	587.0	596.7	617.7	670.4	687.2	668.9	613.6	572.6	558.3	572.6	613.6
165°	609.5	617.2	650.5	686.3	698.0	684.7	648.9	605.4	589.6	605.4	648.9
167.5°	633.0	650.5	677.1	704.2	708.2	699.5	676.0	645.8	631.4	645.8	676.0
170°	670.4	686.3	699.5	710.8	716.4	711.3	692.9	678.0	668.4	678.0	692.9
172.5°	699.6	710.8	716.0	723.1	719.5	717.4	708.2	701.1	695.0	701.1	708.2
175°	718.6	721.6	726.1	724.6	727.7	722.0	721.6	725.1	703.2	725.1	721.6
177.5°	725.1	728.7	727.2	723.5	724.1	723.0	724.1	725.1	722.1	725.1	724.1
180°	726.1	726.1	726.1	726.1	726.1	726.1	726.1	726.1	726.1	726.1	726.1



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CATALOG NUMBER: MWL-2-18-31-UNV-L835-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1334.1	1334.1	1334.1	1334.1	1334.1	1334.1
2.5°	1327.9	1329.4	1328.4	1341.4	1337.5	1329.7
5°	1325.9	1323.0	1325.9	1326.9	1327.9	1337.4
7.5°	1312.9	1310.4	1313.3	1314.8	1321.6	1315.7
10°	1295.9	1297.4	1296.4	1303.2	1304.2	1299.8
12.5°	1275.6	1278.0	1275.6	1283.4	1283.9	1280.5
15°	1251.8	1253.8	1252.4	1255.3	1255.8	1255.9
17.5°	1231.5	1231.5	1231.5	1231.2	1231.6	1228.8
20°	1199.1	1200.1	1199.6	1205.0	1203.1	1197.9
22.5°	1159.5	1168.2	1160.0	1167.3	1164.4	1163.5
25°	1129.5	1129.5	1130.0	1134.0	1124.8	1123.8
27.5°	1089.4	1094.7	1090.0	1093.4	1081.3	1081.3
30°	1059.4	1054.1	1060.5	1046.5	1039.7	1031.0
32.5°	1005.3	1014.0	1006.3	996.2	986.5	981.7
35°	963.2	968.0	964.8	946.4	924.1	924.1
37.5°	910.0	917.3	911.6	883.5	864.2	862.3
40°	858.8	866.0	859.8	823.6	805.2	809.1
42.5°	799.8	815.7	800.9	756.4	747.2	753.0
45°	734.0	756.8	735.1	693.5	691.6	703.2
47.5°	663.4	698.7	663.9	636.5	644.2	648.1
50°	600.1	626.7	601.1	578.4	590.0	597.8
52.5°	537.3	543.5	538.2	524.7	546.5	553.3
55°	471.0	459.9	472.0	478.3	500.5	501.5
57.5°	409.1	387.4	410.1	421.2	453.1	455.1
60°	340.5	329.4	341.0	368.5	403.3	410.1
62.5°	283.4	281.5	283.9	313.4	355.9	359.8
65°	236.0	238.0	236.5	263.6	299.4	313.9
67.5°	194.5	202.2	194.5	219.1	250.1	264.6
70°	158.7	170.3	158.7	179.0	202.2	221.5
72.5°	129.1	139.7	129.7	144.2	161.6	181.9
75°	104.0	113.6	104.0	111.7	127.7	146.1
77.5°	80.7	92.3	80.7	84.6	105.6	127.0
80°	60.4	68.2	60.4	66.8	95.3	109.6
82.5°	43.0	46.9	43.0	62.4	94.0	103.5
85°	33.0	26.6	33.9	63.9	98.7	104.8
87.5°	26.7	7.7	33.9	71.9	109.0	110.6
90°	17.5	1.5	36.9	83.6	120.7	120.9
92.5°	8.8	9.2	44.1	96.8	134.4	137.6
95°	3.0	21.5	54.2	111.0	147.8	150.8
97.5°	7.1	37.3	72.6	122.9	162.1	166.5
100°	17.9	56.8	94.6	140.1	174.3	177.8
102.5°	32.7	77.6	115.6	161.1	191.2	200.2
105°	52.6	101.7	137.5	186.1	213.7	220.9
107.5°	75.6	127.4	160.0	209.6	237.7	242.8
110°	100.2	153.9	182.6	231.6	262.2	268.4



TEST NUMBER: P392497

CATALOG NUMBER: MWL-2-18-31-UNV-L835-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	127.7	181.5	207.0	252.1	288.4	293.0
115°	157.9	208.1	229.1	275.6	309.3	311.9
117.5°	185.1	238.7	251.5	293.0	331.3	331.9
120°	213.7	267.9	274.0	317.0	352.9	356.9
122.5°	242.8	295.5	295.5	337.5	371.7	375.3
125°	270.0	325.2	317.0	353.8	390.1	391.1
127.5°	298.5	356.3	341.5	373.7	407.0	405.5
130°	328.7	385.0	363.0	392.7	422.9	417.7
132.5°	356.3	415.7	385.0	412.1	438.7	441.7
135°	384.0	444.3	403.9	429.0	455.1	454.0
137.5°	410.6	470.9	426.9	442.3	465.8	468.9
140°	436.7	499.5	447.4	459.7	479.1	479.6
142.5°	464.2	528.2	469.9	477.0	493.9	490.8
145°	495.0	555.3	498.0	494.4	506.1	498.6
147.5°	522.1	578.8	518.0	508.1	521.0	512.3
150°	552.2	602.9	545.6	526.1	533.8	529.7
152.5°	579.9	621.8	575.7	539.9	548.6	543.4
155°	607.0	641.8	604.9	553.7	559.9	557.8
157.5°	630.5	659.1	626.9	567.0	575.2	571.1
160°	651.0	673.5	652.5	588.6	585.4	585.4
162.5°	668.9	687.2	670.4	617.7	596.7	587.0
165°	684.7	698.0	686.3	650.5	617.2	609.5
167.5°	699.5	708.2	704.2	677.1	650.5	633.0
170°	711.3	716.4	710.8	699.5	686.3	670.4
172.5°	717.4	719.5	723.1	716.0	710.8	699.6
175°	722.0	727.7	724.6	726.1	721.6	718.6
177.5°	723.0	724.1	723.5	727.2	728.7	725.1
180°	726.1	726.1	726.1	726.1	726.1	726.1

(END OF REPORT)