

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-L840-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-L840-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

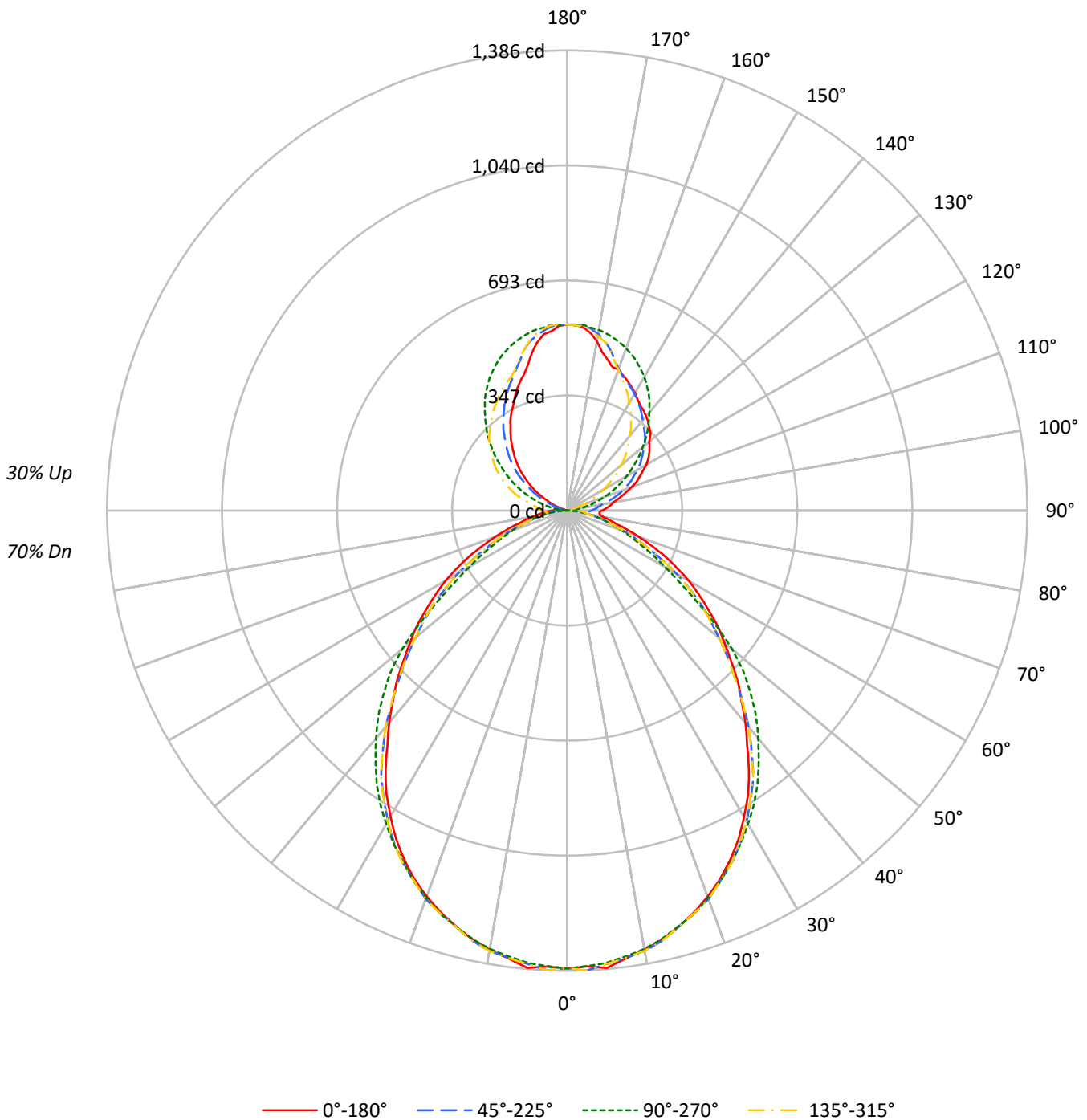
Lumens per Lamp: N/A
Luminaire Lumens: 4482.1 lumens
Efficiency: N/A
Efficacy: 100.3 lumens/watt
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: Semi-Direct

Input Watts (W): 44.7
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	112	112	112	112	106	106	106	106	94	94	94	84	84	84	74	74	74	74	74	74	70	
1	103	98	95	91	97	93	90	87	84	81	79	75	73	71	66	65	64	64	64	64	60	
2	94	87	81	75	89	82	77	72	74	70	66	66	63	60	59	57	55	55	55	55	51	
3	86	77	69	64	81	73	66	61	66	61	56	59	55	52	53	50	47	47	47	47	44	
4	79	68	60	54	75	65	58	52	59	53	49	53	49	45	48	44	41	41	41	41	38	
5	73	61	53	47	69	58	51	46	53	47	42	48	43	39	43	39	36	36	36	36	33	
6	67	55	47	41	64	53	45	40	48	42	37	44	39	35	39	35	32	32	32	32	30	
7	63	50	42	37	59	48	41	35	44	38	33	40	35	31	36	32	29	29	29	29	26	
8	58	46	38	33	55	44	37	32	40	34	30	37	32	28	33	29	26	26	26	26	24	
9	54	42	34	29	52	40	33	28	37	31	27	34	29	25	31	27	24	24	24	24	22	
10	51	39	31	27	48	37	30	26	34	28	24	31	26	23	29	25	21	21	21	21	20	

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	17808	17808	17808	17808
5°	17605	16300	17605	16300
10°	16994	14949	16994	14949
15°	16432	13667	16418	13667
20°	15810	12501	15796	12501
25°	15083	11348	15067	11348
30°	14180	10302	14159	10302
35°	13138	9279	13121	9279
40°	11994	8205	11971	8205
45°	10981	7141	10963	7141
50°	9939	5937	9920	5937
55°	8990	4407	8976	4407
60°	8041	3217	8034	3217
65°	6849	2389	6849	2389
70°	5495	1772	5505	1772
75°	4234	1238	4268	1238
80°	3737	785	3485	785
85°	4265	327	3143	327



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	130.0	2.9
10°-20°	365.9	8.2
20°-30°	536.5	12.0
30°-40°	608.4	13.6
40°-50°	567.6	12.7
50°-60°	445.1	9.9
60°-70°	277.7	6.2
70°-80°	133.9	3.0
80°-90°	64.3	1.4
90°-100°	56.1	1.3
100°-110°	87.4	2.0
110°-120°	149.6	3.3
120°-130°	203.1	4.5
130°-140°	231.5	5.2
140°-150°	230.7	5.1
150°-160°	200.8	4.5
160°-170°	141.1	3.1
170°-180°	52.5	1.2
0°-30°	1032.4	23.0
0°-40°	1640.8	36.6
0°-60°	2653.5	59.2
0°-90°	3129.4	69.8
90°-120°	293.1	6.5
90°-150°	958.3	21.4
90°-180°	1353.0	30.2
0°-180°	4482.1	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1379	1379	1379	1379	1379	
5°	1382	1367	1382	1367	1382	130
15°	1297	1296	1296	1296	1297	366
25°	1161	1168	1160	1168	1161	534
35°	955	1000	954	1000	955	595
45°	726	782	725	782	726	559
55°	518	475	517	475	518	465
65°	324	246	324	246	324	320
75°	151	117	152	117	151	168
85°	97	27	72	27	97	82
90°	104	1	45	1	104	58
95°	124	17	30	17	124	105
105°	171	79	5	79	171	182
115°	241	161	56	161	241	239
125°	302	251	138	251	302	270
135°	350	343	221	343	350	271
145°	385	428	297	428	385	243
155°	431	495	374	495	431	199
165°	470	538	455	538	470	133
175°	554	562	542	562	554	52
180°	560	560	560	560	560	



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CATALOG NUMBER: MWL-2-13-31-UNV-L840-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1378.7	1378.7	1378.7	1378.7	1378.7	1378.7	1378.7	1378.7	1378.7	1378.7	1378.7
2.5°	1374.5	1382.3	1386.1	1372.4	1373.4	1372.1	1386.1	1382.3	1374.9	1382.3	1386.1
5°	1382.5	1372.3	1371.1	1370.1	1367.1	1370.1	1370.7	1372.3	1382.5	1372.3	1370.7
7.5°	1359.9	1365.7	1358.7	1357.1	1354.1	1356.7	1358.3	1365.3	1359.9	1365.3	1358.3
10°	1343.3	1347.7	1346.7	1339.7	1340.7	1339.3	1346.3	1346.9	1343.3	1346.9	1346.3
12.5°	1323.1	1326.7	1326.3	1318.3	1320.9	1318.3	1326.3	1325.9	1322.3	1325.9	1326.3
15°	1297.4	1297.7	1297.3	1294.3	1295.9	1293.9	1296.9	1296.9	1296.3	1296.9	1296.9
17.5°	1269.4	1272.7	1272.3	1272.9	1272.9	1272.9	1271.9	1272.3	1268.3	1272.3	1271.9
20°	1237.4	1243.1	1245.3	1239.9	1240.5	1239.5	1244.9	1242.3	1236.3	1242.3	1244.9
22.5°	1202.1	1203.1	1206.3	1198.9	1207.5	1198.5	1205.9	1202.3	1201.3	1202.3	1205.9
25°	1161.1	1162.1	1171.7	1167.9	1167.5	1167.5	1170.9	1160.9	1159.9	1160.9	1170.9
27.5°	1117.1	1117.1	1129.7	1126.3	1131.5	1125.9	1128.9	1115.9	1115.9	1115.9	1128.9
30°	1065.1	1074.1	1081.1	1095.7	1089.5	1094.9	1079.9	1072.9	1063.5	1072.9	1079.9
32.5°	1014.1	1019.1	1029.1	1039.7	1047.9	1038.9	1027.9	1017.5	1012.5	1017.5	1027.9
35°	954.7	954.7	977.7	996.7	1000.5	995.5	976.5	953.5	953.5	953.5	976.5
37.5°	890.7	892.7	912.7	941.7	947.9	940.5	911.5	891.5	889.5	891.5	911.5
40°	835.7	831.7	850.7	888.3	894.9	887.5	849.1	830.1	834.1	830.1	849.1
42.5°	777.8	771.8	781.4	827.3	842.9	826.5	780.2	770.2	776.2	770.2	780.2
45°	726.4	714.4	716.4	759.4	781.9	758.6	714.8	713.2	725.2	713.2	714.8
47.5°	669.4	665.4	657.4	686.0	722.0	685.6	655.8	664.2	668.2	664.2	655.8
50°	617.4	609.4	597.4	621.0	647.6	620.2	595.8	607.8	616.2	607.8	595.8
52.5°	571.4	564.4	542.0	556.0	561.6	555.2	540.8	562.8	570.2	562.8	540.8
55°	518.0	517.0	494.0	487.6	475.2	486.8	492.8	515.8	517.2	515.8	492.8
57.5°	470.0	468.0	435.0	423.6	400.2	422.8	433.8	466.8	469.2	466.8	433.8
60°	423.6	416.6	380.6	352.2	340.2	351.8	379.8	415.8	423.2	415.8	379.8
62.5°	371.6	367.6	323.6	293.2	290.8	292.8	322.8	366.8	371.2	366.8	322.8
65°	324.2	309.2	272.2	244.2	245.8	243.8	271.8	308.8	324.2	308.8	271.8
67.5°	273.2	258.2	226.2	200.8	208.8	200.8	225.8	257.8	273.2	257.8	225.8
70°	228.8	208.8	184.8	163.8	175.8	163.8	184.8	209.2	229.2	209.2	184.8
72.5°	187.8	166.8	148.8	133.8	144.4	133.4	148.8	167.2	188.6	167.2	148.8
75°	150.8	131.8	115.4	107.4	117.4	107.4	115.8	132.2	152.0	132.2	115.8
77.5°	129.9	108.4	87.4	83.4	95.4	83.4	87.8	107.2	128.4	107.2	87.8
80°	109.6	95.9	68.6	62.4	70.4	62.4	67.8	89.6	102.2	89.6	67.8
82.5°	100.1	91.5	62.3	44.4	48.4	44.4	57.6	77.4	85.1	77.4	57.6
85°	97.3	92.4	61.0	34.6	27.4	33.8	49.5	68.3	71.7	68.3	49.5
87.5°	98.5	97.9	65.4	32.5	8.0	27.0	42.9	60.1	57.9	60.1	42.9
90°	103.9	104.9	72.6	32.8	1.4	17.8	33.6	49.4	44.8	49.4	33.6
92.5°	115.2	113.5	81.2	36.0	7.3	8.8	27.2	40.6	38.0	40.6	27.2
95°	123.6	121.2	90.1	42.0	16.8	2.6	19.2	29.8	30.2	29.8	19.2
97.5°	133.9	129.9	96.4	56.2	29.0	5.7	9.4	21.6	23.6	21.6	9.4
100°	140.3	136.9	108.2	73.1	43.9	14.0	3.8	13.2	16.2	13.2	3.8
102.5°	155.7	148.0	124.3	89.3	60.1	25.4	6.9	6.2	9.2	6.2	6.9
105°	170.6	165.1	143.6	106.2	78.6	40.8	16.4	6.7	4.8	6.7	16.4
107.5°	187.6	183.6	162.0	123.5	98.3	58.5	30.8	16.6	11.1	16.6	30.8
110°	207.3	202.5	178.9	140.9	118.8	77.4	46.1	29.2	22.9	29.2	46.1



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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°	226.2	222.6	194.7	160.0	140.1	98.9	65.0	44.9	39.0	44.9	65.0
115°	240.8	238.8	212.8	176.9	160.8	122.2	85.9	63.5	56.4	63.5	85.9
117.5°	256.1	255.7	226.2	194.3	184.4	143.1	105.2	82.0	74.5	82.0	105.2
120°	275.4	272.3	244.7	211.6	206.9	165.1	126.5	103.3	95.8	103.3	126.5
122.5°	289.8	286.9	260.5	228.2	228.2	187.6	147.0	123.7	116.9	123.7	147.0
125°	302.0	301.3	273.3	244.7	251.0	208.5	170.8	147.2	138.5	147.2	170.8
127.5°	313.1	314.3	288.6	263.8	275.3	230.7	193.3	167.3	158.2	167.3	193.3
130°	322.5	326.5	303.2	280.4	297.3	254.0	213.4	187.4	181.5	187.4	213.4
132.5°	341.0	338.7	318.2	297.3	321.0	275.3	234.7	207.5	200.8	207.5	234.7
135°	350.5	351.3	331.2	311.9	343.0	296.5	254.8	228.0	221.3	228.0	254.8
137.5°	361.9	359.6	341.4	329.6	363.5	317.0	274.5	249.6	239.0	249.6	274.5
140°	370.2	369.8	354.8	345.4	385.6	337.1	294.6	269.3	259.5	269.3	294.6
142.5°	378.9	381.2	368.2	362.7	407.6	358.4	316.2	288.6	279.2	288.6	316.2
145°	384.8	390.9	381.6	384.4	428.5	382.0	335.1	308.2	296.9	308.2	335.1
147.5°	395.6	402.3	392.5	399.8	446.6	402.9	355.1	327.5	318.4	327.5	355.1
150°	409.0	412.2	406.3	421.0	465.2	426.2	374.4	346.0	336.9	346.0	374.4
152.5°	419.7	423.6	416.9	444.3	479.7	447.4	395.6	364.1	353.5	364.1	395.6
155°	430.7	432.3	427.5	466.7	495.1	468.3	412.6	384.2	374.0	384.2	412.6
157.5°	440.9	444.1	437.6	483.7	508.5	486.4	430.9	404.3	395.2	404.3	430.9
160°	452.0	452.0	454.1	503.4	519.5	502.2	451.4	426.4	413.8	426.4	451.4
162.5°	453.2	460.6	476.6	517.2	530.2	516.0	473.4	442.1	431.1	442.1	473.4
165°	470.5	476.2	501.8	529.4	538.4	528.2	500.6	467.1	455.1	467.1	500.6
167.5°	488.6	501.8	522.3	543.2	546.3	539.6	521.5	498.3	487.4	498.3	521.5
170°	517.2	529.4	539.6	548.3	552.6	548.7	534.5	523.1	515.6	523.1	534.5
172.5°	539.4	548.3	552.2	557.7	555.0	553.4	546.3	540.8	535.9	540.8	546.3
175°	554.0	556.6	560.1	559.1	561.5	557.2	556.6	559.3	542.2	559.3	556.6
177.5°	559.1	561.9	560.9	558.4	558.7	558.0	558.5	559.1	556.7	559.1	558.5
180°	560.1	560.1	560.1	560.1	560.1	560.1	560.1	560.1	560.1	560.1	560.1



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CATALOG NUMBER: MWL-2-13-31-UNV-L840-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1378.7	1378.7	1378.7	1378.7	1378.7	1378.7
2.5°	1372.1	1373.4	1372.4	1386.1	1382.3	1374.5
5°	1370.1	1367.1	1370.1	1371.1	1372.3	1382.5
7.5°	1356.7	1354.1	1357.1	1358.7	1365.7	1359.9
10°	1339.3	1340.7	1339.7	1346.7	1347.7	1343.3
12.5°	1318.3	1320.9	1318.3	1326.3	1326.7	1323.1
15°	1293.9	1295.9	1294.3	1297.3	1297.7	1297.4
17.5°	1272.9	1272.9	1272.9	1272.3	1272.7	1269.4
20°	1239.5	1240.5	1239.9	1245.3	1243.1	1237.4
22.5°	1198.5	1207.5	1198.9	1206.3	1203.1	1202.1
25°	1167.5	1167.5	1167.9	1171.7	1162.1	1161.1
27.5°	1125.9	1131.5	1126.3	1129.7	1117.1	1117.1
30°	1094.9	1089.5	1095.7	1081.1	1074.1	1065.1
32.5°	1038.9	1047.9	1039.7	1029.1	1019.1	1014.1
35°	995.5	1000.5	996.7	977.7	954.7	954.7
37.5°	940.5	947.9	941.7	912.7	892.7	890.7
40°	887.5	894.9	888.3	850.7	831.7	835.7
42.5°	826.5	842.9	827.3	781.4	771.8	777.8
45°	758.6	781.9	759.4	716.4	714.4	726.4
47.5°	685.6	722.0	686.0	657.4	665.4	669.4
50°	620.2	647.6	621.0	597.4	609.4	617.4
52.5°	555.2	561.6	556.0	542.0	564.4	571.4
55°	486.8	475.2	487.6	494.0	517.0	518.0
57.5°	422.8	400.2	423.6	435.0	468.0	470.0
60°	351.8	340.2	352.2	380.6	416.6	423.6
62.5°	292.8	290.8	293.2	323.6	367.6	371.6
65°	243.8	245.8	244.2	272.2	309.2	324.2
67.5°	200.8	208.8	200.8	226.2	258.2	273.2
70°	163.8	175.8	163.8	184.8	208.8	228.8
72.5°	133.4	144.4	133.8	148.8	166.8	187.8
75°	107.4	117.4	107.4	115.4	131.8	150.8
77.5°	83.4	95.4	83.4	87.4	108.4	129.9
80°	62.4	70.4	62.4	68.6	95.9	109.6
82.5°	44.4	48.4	44.4	62.3	91.5	100.1
85°	33.8	27.4	34.6	61.0	92.4	97.3
87.5°	27.0	8.0	32.5	65.4	97.9	98.5
90°	17.8	1.4	32.8	72.6	104.9	103.9
92.5°	8.8	7.3	36.0	81.2	113.5	115.2
95°	2.6	16.8	42.0	90.1	121.2	123.6
97.5°	5.7	29.0	56.2	96.4	129.9	133.9
100°	14.0	43.9	73.1	108.2	136.9	140.3
102.5°	25.4	60.1	89.3	124.3	148.0	155.7
105°	40.8	78.6	106.2	143.6	165.1	170.6
107.5°	58.5	98.3	123.5	162.0	183.6	187.6
110°	77.4	118.8	140.9	178.9	202.5	207.3



TEST NUMBER: P392483

CATALOG NUMBER: MWL-2-13-31-UNV-L840-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	98.9	140.1	160.0	194.7	222.6	226.2
115°	122.2	160.8	176.9	212.8	238.8	240.8
117.5°	143.1	184.4	194.3	226.2	255.7	256.1
120°	165.1	206.9	211.6	244.7	272.3	275.4
122.5°	187.6	228.2	228.2	260.5	286.9	289.8
125°	208.5	251.0	244.7	273.3	301.3	302.0
127.5°	230.7	275.3	263.8	288.6	314.3	313.1
130°	254.0	297.3	280.4	303.2	326.5	322.5
132.5°	275.3	321.0	297.3	318.2	338.7	341.0
135°	296.5	343.0	311.9	331.2	351.3	350.5
137.5°	317.0	363.5	329.6	341.4	359.6	361.9
140°	337.1	385.6	345.4	354.8	369.8	370.2
142.5°	358.4	407.6	362.7	368.2	381.2	378.9
145°	382.0	428.5	384.4	381.6	390.9	384.8
147.5°	402.9	446.6	399.8	392.5	402.3	395.6
150°	426.2	465.2	421.0	406.3	412.2	409.0
152.5°	447.4	479.7	444.3	416.9	423.6	419.7
155°	468.3	495.1	466.7	427.5	432.3	430.7
157.5°	486.4	508.5	483.7	437.6	444.1	440.9
160°	502.2	519.5	503.4	454.1	452.0	452.0
162.5°	516.0	530.2	517.2	476.6	460.6	453.2
165°	528.2	538.4	529.4	501.8	476.2	470.5
167.5°	539.6	546.3	543.2	522.3	501.8	488.6
170°	548.7	552.6	548.3	539.6	529.4	517.2
172.5°	553.4	555.0	557.7	552.2	548.3	539.4
175°	557.2	561.5	559.1	560.1	556.6	554.0
177.5°	558.0	558.7	558.4	560.9	561.9	559.1
180°	560.1	560.1	560.1	560.1	560.1	560.1

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