

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: P392531

Luminaire Tested: **MWL-2-28-38-UNV-L940-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392531
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-2-28-38-UNV-L940-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

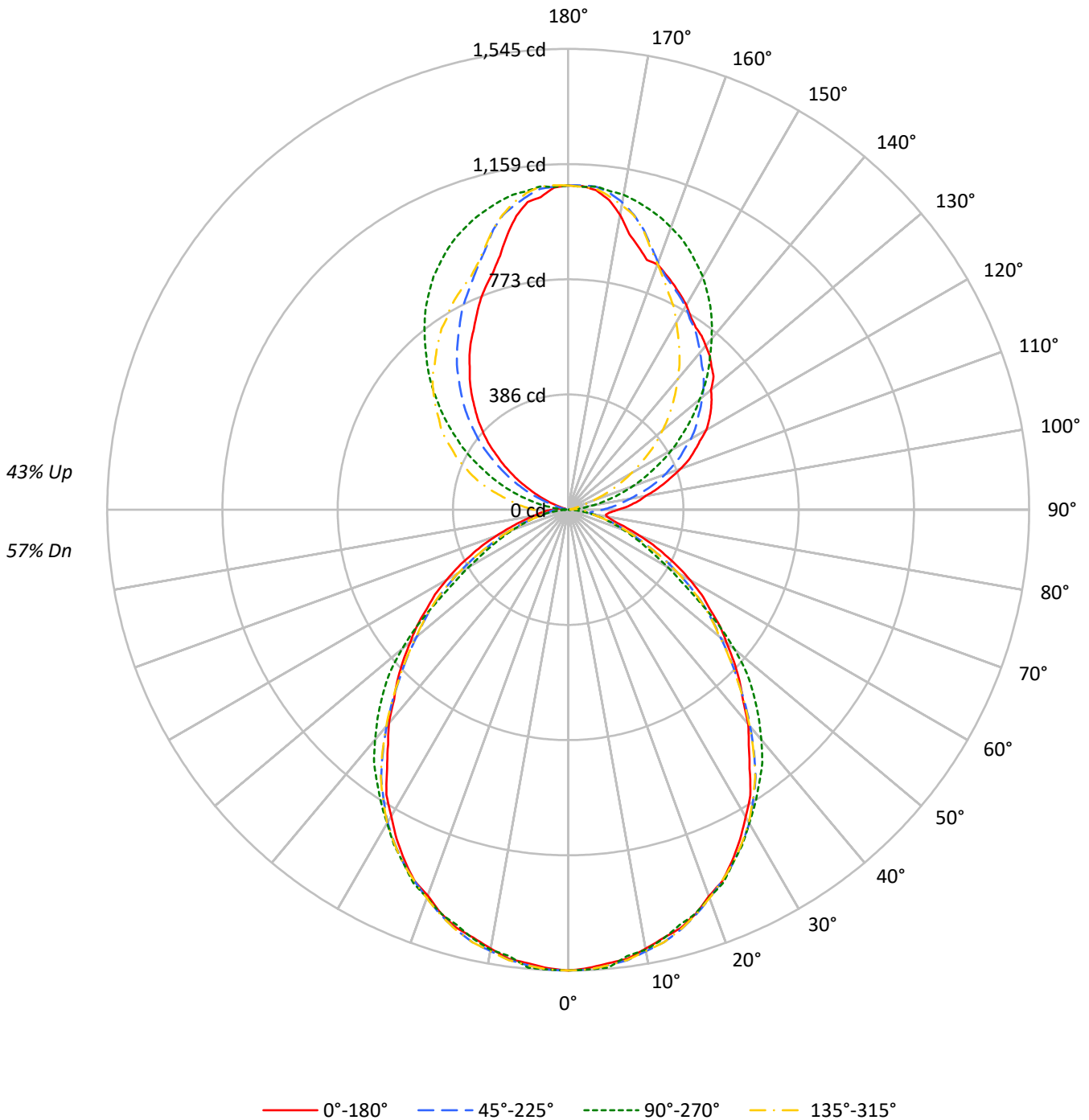
Lumens per Lamp: N/A
Luminaire Lumens: 6111.8 lumens
Efficiency: N/A
Efficacy: 80.6 lumens/watt
Spacing Criteria (0/90/45): 1.15 / 1.18 / 1.24
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: General Diffuse

Input Watts (W): 75.851
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	109	109	109	109	101	101	101	101	87	87	87		75	75	75		63	63	63	57
1	100	96	92	88	93	89	86	83	77	75	73		66	64	63		56	55	54	49
2	91	84	78	73	85	79	73	69	68	64	61		59	56	53		50	48	46	42
3	84	74	67	61	78	70	63	58	61	56	52		52	49	46		45	42	40	36
4	77	66	58	52	71	62	55	50	54	49	45		47	43	39		40	37	35	31
5	71	59	51	45	66	56	48	43	49	43	39		42	38	35		36	33	30	27
6	65	53	45	39	61	50	43	38	44	38	34		38	34	30		33	30	27	24
7	60	48	40	35	56	45	38	33	40	34	30		35	31	27		30	27	24	22
8	56	44	36	31	52	41	34	30	37	31	27		32	28	24		28	24	22	19
9	52	40	33	28	49	38	31	27	34	28	24		30	25	22		26	22	20	18
10	49	37	30	25	46	35	28	24	31	26	22		28	23	20		24	21	18	16

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	19956	19956	19956	19956
5°	19437	18376	19437	18376
10°	18902	16699	18902	16699
15°	18399	15203	18370	15203
20°	17618	13940	17589	13940
25°	16884	12702	16855	12702
30°	15836	11478	15797	11478
35°	14591	10354	14560	10354
40°	13467	9232	13422	9232
45°	12272	8040	12238	8040
50°	11146	6677	11111	6677
55°	10044	4956	10018	4956
60°	8949	3639	8934	3639
65°	7573	2707	7573	2707
70°	6120	1980	6139	1980
75°	4751	1391	4815	1391
80°	4463	882	3966	882
85°	5908	367	3726	367



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	145.3	2.4
10°-20°	408.7	6.7
20°-30°	599.5	9.8
30°-40°	679.9	11.1
40°-50°	634.6	10.4
50°-60°	498.5	8.2
60°-70°	310.5	5.1
70°-80°	150.5	2.5
80°-90°	80.3	1.3
90°-100°	94.0	1.5
100°-110°	168.0	2.7
110°-120°	289.2	4.7
120°-130°	392.9	6.4
130°-140°	448.3	7.3
140°-150°	447.0	7.3
150°-160°	389.2	6.4
160°-170°	273.5	4.5
170°-180°	101.8	1.7
0°-30°	1153.5	18.9
0°-40°	1833.4	30.0
0°-60°	2966.5	48.5
0°-90°	3507.8	57.4
90°-120°	551.2	9.0
90°-150°	1839.4	30.1
90°-180°	2604.0	42.6
0°-180°	6111.8	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1545	1545	1545	1545	1545	
5°	1526	1541	1526	1541	1526	145
15°	1453	1442	1450	1442	1453	408
25°	1300	1307	1298	1307	1300	597
35°	1060	1116	1058	1116	1060	665
45°	812	880	810	880	812	626
55°	579	534	577	534	579	521
65°	358	278	358	278	358	357
75°	169	132	172	132	169	189
85°	135	31	85	31	135	109
90°	167	2	52	2	167	93
95°	216	32	34	32	216	187
105°	330	152	7	152	330	349
115°	467	311	108	311	467	463
125°	584	487	266	487	584	522
135°	679	665	428	665	679	524
145°	746	831	575	831	746	470
155°	834	961	724	961	834	385
165°	912	1044	882	1044	912	259
175°	1075	1088	1052	1088	1075	100
180°	1087	1087	1087	1087	1087	



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CATALOG NUMBER: MWL-2-28-38-UNV-L940-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1545.0	1545.0	1545.0	1545.0	1545.0	1545.0	1545.0	1545.0	1545.0	1545.0	1545.0
2.5°	1538.2	1535.1	1543.0	1538.4	1542.9	1537.6	1543.0	1535.1	1538.9	1535.1	1543.0
5°	1526.4	1530.6	1533.9	1531.2	1541.2	1531.2	1533.2	1530.6	1526.4	1530.6	1533.2
7.5°	1518.9	1522.3	1523.2	1519.4	1509.3	1518.6	1522.4	1521.4	1518.9	1521.4	1522.4
10°	1494.1	1505.9	1503.1	1499.5	1497.7	1498.7	1502.3	1504.3	1494.1	1504.3	1502.3
12.5°	1471.1	1474.0	1485.0	1476.8	1473.3	1476.8	1485.0	1472.4	1469.5	1472.4	1485.0
15°	1452.7	1449.4	1457.7	1448.6	1441.5	1447.8	1456.9	1447.8	1450.4	1447.8	1456.9
17.5°	1420.9	1415.7	1424.0	1423.2	1419.6	1423.2	1423.2	1414.8	1418.5	1414.8	1423.2
20°	1378.9	1387.2	1385.7	1387.7	1383.3	1387.0	1385.0	1385.7	1376.6	1385.7	1385.0
22.5°	1348.1	1346.2	1347.4	1350.3	1355.1	1349.6	1346.7	1344.7	1346.5	1344.7	1346.7
25°	1299.8	1297.0	1308.2	1305.7	1306.8	1305.0	1306.6	1294.8	1297.5	1294.8	1306.6
27.5°	1246.9	1245.1	1261.7	1264.5	1264.9	1263.8	1260.1	1242.8	1244.7	1242.8	1260.1
30°	1189.5	1194.1	1213.2	1215.2	1213.9	1213.7	1210.9	1191.8	1186.5	1191.8	1210.9
32.5°	1136.7	1133.0	1154.0	1168.8	1166.3	1167.2	1151.7	1130.0	1133.7	1130.0	1151.7
35°	1060.3	1064.9	1095.0	1113.2	1116.4	1110.9	1092.7	1062.6	1058.1	1062.6	1092.7
37.5°	993.9	997.6	1022.1	1058.5	1068.8	1056.2	1019.8	995.3	991.6	995.3	1019.8
40°	938.3	927.4	948.4	991.3	1006.9	989.8	945.3	924.3	935.2	924.3	945.3
42.5°	867.3	862.7	875.6	922.9	945.0	921.5	873.3	859.6	864.2	859.6	873.3
45°	811.8	799.0	800.9	849.1	880.3	847.7	797.9	796.8	809.5	796.8	797.9
47.5°	752.6	736.2	734.3	773.7	812.9	773.0	731.3	733.9	750.3	733.9	731.3
50°	692.4	684.2	666.0	694.4	728.3	692.9	663.0	681.2	690.2	681.2	663.0
52.5°	640.5	629.6	608.8	626.1	635.4	624.6	606.5	626.6	638.2	626.6	606.5
55°	578.7	574.2	550.5	551.6	534.4	550.0	548.2	571.9	577.2	571.9	548.2
57.5°	530.4	524.1	488.5	472.3	450.5	470.8	486.3	521.8	528.9	521.8	486.3
60°	471.4	464.1	424.9	395.9	384.9	395.1	423.4	462.6	470.6	462.6	423.4
62.5°	415.8	407.6	365.7	328.5	324.1	327.7	364.2	406.1	415.0	406.1	364.2
65°	358.5	344.9	302.9	272.0	278.5	271.2	302.2	344.1	358.5	344.1	302.2
67.5°	307.5	286.5	254.7	225.7	235.7	225.7	253.9	285.8	307.5	285.8	253.9
70°	254.8	232.1	209.3	185.6	196.5	185.6	209.3	232.8	255.6	232.8	209.3
72.5°	208.4	187.4	168.3	151.9	161.1	151.1	168.3	188.1	209.9	188.1	168.3
75°	169.2	146.4	130.1	120.1	131.9	120.1	130.9	147.1	171.5	147.1	130.9
77.5°	145.2	123.0	97.3	93.7	104.6	93.7	98.1	120.7	142.1	120.7	98.1
80°	130.9	113.7	77.8	70.0	79.1	70.0	76.3	101.5	116.3	101.5	76.3
82.5°	127.5	115.1	74.3	49.0	52.7	49.0	65.1	87.5	98.3	87.5	65.1
85°	134.8	125.3	81.1	39.5	30.8	38.0	58.9	78.6	85.0	78.6	58.9
87.5°	147.8	144.6	95.0	42.8	9.1	32.1	51.4	71.0	68.9	71.0	51.4
90°	166.7	164.5	115.3	49.7	1.6	20.7	39.5	56.5	51.8	56.5	39.5
92.5°	194.1	187.6	136.4	62.6	13.2	9.7	31.4	45.9	43.9	45.9	31.4
95°	215.7	212.1	159.4	80.6	31.5	4.0	21.4	34.3	34.2	34.3	21.4
97.5°	242.2	235.6	182.1	108.1	55.3	10.1	12.8	25.0	27.7	25.0	12.8
100°	262.0	256.7	210.2	141.1	84.5	26.2	7.2	16.1	20.7	16.1	7.2
102.5°	296.6	285.6	240.7	172.6	115.8	48.4	12.4	9.7	11.6	9.7	12.4
105°	329.7	319.0	279.2	205.5	151.9	78.3	31.7	11.0	7.2	11.0	31.7
107.5°	362.7	355.1	312.9	240.1	190.1	113.7	57.8	30.2	19.4	30.2	57.8
110°	401.0	391.8	345.9	273.8	230.9	150.4	87.6	54.7	42.5	54.7	87.6



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CATALOG NUMBER: MWL-2-28-38-UNV-L940-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	437.8	430.9	376.5	309.0	272.2	190.3	124.4	85.4	73.8	85.4	124.4
115°	467.0	462.3	411.7	342.0	310.6	235.5	165.0	121.4	108.4	121.4	165.0
117.5°	496.9	496.2	438.7	375.7	356.5	276.1	203.4	158.3	143.7	158.3	203.4
120°	534.5	528.3	474.7	410.4	401.2	319.9	244.8	199.6	185.0	199.6	244.8
122.5°	560.5	556.7	505.3	442.5	442.5	363.6	284.7	239.4	224.1	239.4	284.7
125°	584.3	582.7	528.3	474.7	487.0	404.2	329.1	283.2	266.3	283.2	329.1
127.5°	605.7	608.0	558.2	509.9	532.2	445.6	372.8	322.3	304.6	322.3	372.8
130°	625.0	631.8	586.6	542.1	575.1	490.8	411.8	361.3	350.7	361.3	411.8
132.5°	661.0	656.4	615.6	576.0	621.9	533.1	453.3	401.2	388.2	401.2	453.3
135°	679.4	681.0	641.9	604.3	664.8	574.4	493.2	441.2	428.1	441.2	493.2
137.5°	701.6	697.0	661.7	638.8	704.6	614.3	531.5	483.2	462.6	483.2	531.5
140°	717.7	716.9	687.8	669.5	747.6	653.3	570.6	521.6	502.4	521.6	570.6
142.5°	734.5	739.2	713.8	703.2	790.5	694.7	612.7	559.1	540.7	559.1	612.7
145°	746.0	756.0	739.9	745.3	831.1	740.7	649.5	595.1	575.2	595.1	649.5
147.5°	765.2	778.3	759.0	775.2	866.4	781.3	686.3	632.7	615.1	632.7	686.3
150°	792.2	798.3	786.8	816.5	902.4	826.5	724.8	669.6	652.0	669.6	724.8
152.5°	812.9	820.5	807.5	861.7	930.7	867.9	766.1	704.8	684.1	704.8	766.1
155°	834.3	837.4	827.3	905.5	960.6	908.5	798.1	743.9	724.0	743.9	798.1
157.5°	854.2	860.4	848.7	938.3	986.6	943.7	835.7	783.0	765.3	783.0	835.7
160°	875.7	875.7	880.9	976.7	1007.1	974.3	875.6	825.9	801.4	825.9	875.6
162.5°	877.9	891.6	924.6	1003.5	1027.7	1001.2	918.5	855.6	835.1	855.6	918.5
165°	911.6	923.8	973.6	1027.2	1043.8	1024.8	971.3	906.2	881.8	906.2	971.3
167.5°	946.0	973.6	1013.3	1053.0	1059.2	1046.1	1011.8	966.7	943.7	966.7	1011.8
170°	1003.5	1027.2	1046.1	1063.9	1072.4	1064.7	1036.2	1014.9	1000.4	1014.9	1036.2
172.5°	1047.7	1063.9	1070.6	1082.3	1076.9	1073.9	1059.2	1049.4	1040.7	1049.4	1059.2
175°	1075.1	1079.1	1086.9	1083.1	1087.7	1079.2	1080.0	1084.5	1052.1	1084.5	1080.0
177.5°	1086.0	1091.3	1088.4	1082.5	1083.2	1081.7	1083.8	1086.0	1081.4	1086.0	1083.8
180°	1086.9	1086.9	1086.9	1086.9	1086.9	1086.9	1086.9	1086.9	1086.9	1086.9	1086.9



TEST NUMBER: P392531

CATALOG NUMBER: MWL-2-28-38-UNV-L940-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1545.0	1545.0	1545.0	1545.0	1545.0	1545.0
2.5°	1537.6	1542.9	1538.4	1543.0	1535.1	1538.2
5°	1531.2	1541.2	1531.2	1533.9	1530.6	1526.4
7.5°	1518.6	1509.3	1519.4	1523.2	1522.3	1518.9
10°	1498.7	1497.7	1499.5	1503.1	1505.9	1494.1
12.5°	1476.8	1473.3	1476.8	1485.0	1474.0	1471.1
15°	1447.8	1441.5	1448.6	1457.7	1449.4	1452.7
17.5°	1423.2	1419.6	1423.2	1424.0	1415.7	1420.9
20°	1387.0	1383.3	1387.7	1385.7	1387.2	1378.9
22.5°	1349.6	1355.1	1350.3	1347.4	1346.2	1348.1
25°	1305.0	1306.8	1305.7	1308.2	1297.0	1299.8
27.5°	1263.8	1264.9	1264.5	1261.7	1245.1	1246.9
30°	1213.7	1213.9	1215.2	1213.2	1194.1	1189.5
32.5°	1167.2	1166.3	1168.8	1154.0	1133.0	1136.7
35°	1110.9	1116.4	1113.2	1095.0	1064.9	1060.3
37.5°	1056.2	1068.8	1058.5	1022.1	997.6	993.9
40°	989.8	1006.9	991.3	948.4	927.4	938.3
42.5°	921.5	945.0	922.9	875.6	862.7	867.3
45°	847.7	880.3	849.1	800.9	799.0	811.8
47.5°	773.0	812.9	773.7	734.3	736.2	752.6
50°	692.9	728.3	694.4	666.0	684.2	692.4
52.5°	624.6	635.4	626.1	608.8	629.6	640.5
55°	550.0	534.4	551.6	550.5	574.2	578.7
57.5°	470.8	450.5	472.3	488.5	524.1	530.4
60°	395.1	384.9	395.9	424.9	464.1	471.4
62.5°	327.7	324.1	328.5	365.7	407.6	415.8
65°	271.2	278.5	272.0	302.9	344.9	358.5
67.5°	225.7	235.7	225.7	254.7	286.5	307.5
70°	185.6	196.5	185.6	209.3	232.1	254.8
72.5°	151.1	161.1	151.9	168.3	187.4	208.4
75°	120.1	131.9	120.1	130.1	146.4	169.2
77.5°	93.7	104.6	93.7	97.3	123.0	145.2
80°	70.0	79.1	70.0	77.8	113.7	130.9
82.5°	49.0	52.7	49.0	74.3	115.1	127.5
85°	38.0	30.8	39.5	81.1	125.3	134.8
87.5°	32.1	9.1	42.8	95.0	144.6	147.8
90°	20.7	1.6	49.7	115.3	164.5	166.7
92.5°	9.7	13.2	62.6	136.4	187.6	194.1
95°	4.0	31.5	80.6	159.4	212.1	215.7
97.5°	10.1	55.3	108.1	182.1	235.6	242.2
100°	26.2	84.5	141.1	210.2	256.7	262.0
102.5°	48.4	115.8	172.6	240.7	285.6	296.6
105°	78.3	151.9	205.5	279.2	319.0	329.7
107.5°	113.7	190.1	240.1	312.9	355.1	362.7
110°	150.4	230.9	273.8	345.9	391.8	401.0



TEST NUMBER: P392531

CATALOG NUMBER: MWL-2-28-38-UNV-L940-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	190.3	272.2	309.0	376.5	430.9	437.8
115°	235.5	310.6	342.0	411.7	462.3	467.0
117.5°	276.1	356.5	375.7	438.7	496.2	496.9
120°	319.9	401.2	410.4	474.7	528.3	534.5
122.5°	363.6	442.5	442.5	505.3	556.7	560.5
125°	404.2	487.0	474.7	528.3	582.7	584.3
127.5°	445.6	532.2	509.9	558.2	608.0	605.7
130°	490.8	575.1	542.1	586.6	631.8	625.0
132.5°	533.1	621.9	576.0	615.6	656.4	661.0
135°	574.4	664.8	604.3	641.9	681.0	679.4
137.5°	614.3	704.6	638.8	661.7	697.0	701.6
140°	653.3	747.6	669.5	687.8	716.9	717.7
142.5°	694.7	790.5	703.2	713.8	739.2	734.5
145°	740.7	831.1	745.3	739.9	756.0	746.0
147.5°	781.3	866.4	775.2	759.0	778.3	765.2
150°	826.5	902.4	816.5	786.8	798.3	792.2
152.5°	867.9	930.7	861.7	807.5	820.5	812.9
155°	908.5	960.6	905.5	827.3	837.4	834.3
157.5°	943.7	986.6	938.3	848.7	860.4	854.2
160°	974.3	1007.1	976.7	880.9	875.7	875.7
162.5°	1001.2	1027.7	1003.5	924.6	891.6	877.9
165°	1024.8	1043.8	1027.2	973.6	923.8	911.6
167.5°	1046.1	1059.2	1053.0	1013.3	973.6	946.0
170°	1064.7	1072.4	1063.9	1046.1	1027.2	1003.5
172.5°	1073.9	1076.9	1082.3	1070.6	1063.9	1047.7
175°	1079.2	1087.7	1083.1	1086.9	1079.1	1075.1
177.5°	1081.7	1083.2	1082.5	1088.4	1091.3	1086.0
180°	1086.9	1086.9	1086.9	1086.9	1086.9	1086.9

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