

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

Summary

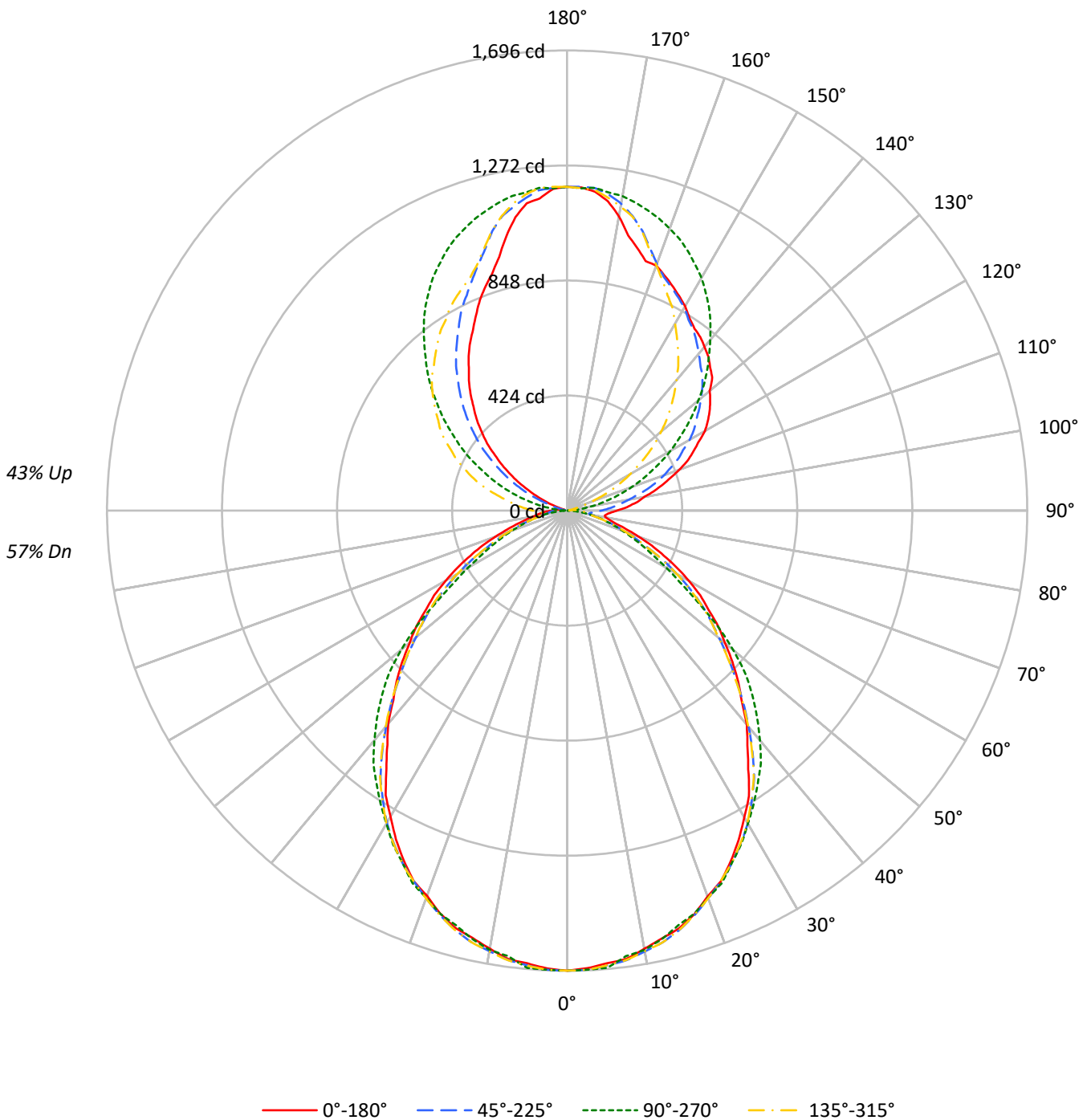
Lumens per Lamp: N/A
Luminaire Lumens: 6708.2 lumens
Efficiency: N/A
Efficacy: 89.3 lumens/watt
Spacing Criteria (0/90/45): 1.15 / 1.18 / 1.24
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: General Diffuse

Input Watts (W): 75.1
Input Voltage (V): NR
Input Current (A_{in}): 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°	21904	21904	21904	21904
5°	21333	20169	21333	20169
10°	20747	18328	20747	18328
15°	20195	16686	20162	16686
20°	19338	15301	19304	15301
25°	18532	13941	18499	13941
30°	17382	12598	17338	12598
35°	16015	11364	15981	11364
40°	14782	10133	14733	10133
45°	13470	8825	13432	8825
50°	12234	7329	12194	7329
55°	11024	5439	10995	5439
60°	9822	3995	9805	3995
65°	8313	2971	8313	2971
70°	6718	2174	6737	2174
75°	5214	1527	5284	1527
80°	4900	968	4354	968
85°	6487	403	4089	403



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	159.4	2.4
10°-20°	448.5	6.7
20°-30°	658.0	9.8
30°-40°	746.2	11.1
40°-50°	696.6	10.4
50°-60°	547.2	8.2
60°-70°	340.8	5.1
70°-80°	165.1	2.5
80°-90°	88.2	1.3
90°-100°	103.2	1.5
100°-110°	184.4	2.7
110°-120°	317.4	4.7
120°-130°	431.3	6.4
130°-140°	492.0	7.3
140°-150°	490.6	7.3
150°-160°	427.2	6.4
160°-170°	300.2	4.5
170°-180°	111.8	1.7
0°-30°	1266.0	18.9
0°-40°	2012.3	30.0
0°-60°	3256.0	48.5
0°-90°	3850.1	57.4
90°-120°	605.0	9.0
90°-150°	2018.9	30.1
90°-180°	2858.0	42.6
0°-180°	6708.2	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1696	1696	1696	1696	1696	
5°	1675	1692	1675	1692	1675	159
15°	1594	1582	1592	1582	1594	448
25°	1427	1434	1424	1434	1427	655
35°	1164	1225	1161	1225	1164	730
45°	891	966	888	966	891	687
55°	635	586	634	586	635	572
65°	394	306	394	306	394	392
75°	186	145	188	145	186	207
85°	148	34	93	34	148	120
90°	183	2	57	2	183	102
95°	237	35	38	35	237	205
105°	362	167	8	167	362	383
115°	513	341	119	341	513	508
125°	641	534	292	534	641	573
135°	746	730	470	730	746	576
145°	819	912	631	912	819	516
155°	916	1054	795	1054	916	422
165°	1001	1146	968	1146	1001	284
175°	1180	1194	1155	1194	1180	110
180°	1193	1193	1193	1193	1193	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1695.8	1695.8	1695.8	1695.8	1695.8	1695.8	1695.8	1695.8	1695.8	1695.8	1695.8
2.5°	1688.3	1684.9	1693.6	1688.5	1693.5	1687.6	1693.6	1684.9	1689.1	1684.9	1693.6
5°	1675.3	1679.9	1683.6	1680.6	1691.6	1680.6	1682.8	1679.9	1675.3	1679.9	1682.8
7.5°	1667.1	1670.8	1671.8	1667.6	1656.6	1666.8	1670.9	1669.9	1667.1	1669.9	1670.9
10°	1639.9	1652.8	1649.8	1645.8	1643.8	1644.9	1648.9	1651.1	1639.9	1651.1	1648.9
12.5°	1614.6	1617.8	1629.9	1620.9	1617.1	1620.9	1629.9	1616.1	1612.9	1616.1	1629.9
15°	1594.5	1590.8	1599.9	1589.9	1582.1	1589.1	1599.1	1589.1	1591.9	1589.1	1599.1
17.5°	1559.5	1553.8	1562.9	1562.1	1558.1	1562.1	1562.1	1552.9	1556.9	1552.9	1562.1
20°	1513.5	1522.6	1520.9	1523.1	1518.3	1522.3	1520.1	1520.9	1510.9	1520.9	1520.1
22.5°	1479.6	1477.6	1478.9	1482.1	1487.3	1481.3	1478.1	1475.9	1477.9	1475.9	1478.1
25°	1426.6	1423.6	1435.8	1433.1	1434.3	1432.3	1434.1	1421.1	1424.1	1421.1	1434.1
27.5°	1368.6	1366.6	1384.8	1387.9	1388.3	1387.1	1383.1	1364.1	1366.1	1364.1	1383.1
30°	1305.6	1310.6	1331.6	1333.8	1332.3	1332.1	1329.1	1308.1	1302.3	1308.1	1329.1
32.5°	1247.6	1243.6	1266.6	1282.8	1280.1	1281.1	1264.1	1240.3	1244.3	1240.3	1264.1
35°	1163.8	1168.8	1201.8	1221.8	1225.3	1219.3	1199.3	1166.3	1161.3	1166.3	1199.3
37.5°	1090.9	1094.9	1121.8	1161.8	1173.1	1159.3	1119.3	1092.4	1088.4	1092.4	1119.3
40°	1029.9	1017.9	1040.9	1088.0	1105.2	1086.4	1037.5	1014.5	1026.5	1014.5	1037.5
42.5°	951.9	946.9	961.0	1013.0	1037.2	1011.4	958.5	943.5	948.5	943.5	958.5
45°	891.0	877.0	879.0	932.0	966.2	930.4	875.7	874.5	888.5	874.5	875.7
47.5°	826.0	808.0	806.0	849.2	892.2	848.4	802.7	805.5	823.5	805.5	802.7
50°	760.0	751.0	731.0	762.2	799.4	760.5	727.7	747.7	757.5	747.7	727.7
52.5°	703.0	691.0	668.2	687.2	697.4	685.5	665.7	687.7	700.5	687.7	665.7
55°	635.2	630.2	604.2	605.4	586.5	603.7	601.7	627.7	633.5	627.7	601.7
57.5°	582.2	575.2	536.2	518.4	494.5	516.7	533.7	572.7	580.5	572.7	533.7
60°	517.4	509.4	466.4	434.5	422.5	433.7	464.7	507.7	516.5	507.7	464.7
62.5°	456.4	447.4	401.4	360.5	355.7	359.7	399.7	445.7	455.5	445.7	399.7
65°	393.5	378.5	332.5	298.5	305.7	297.7	331.7	377.7	393.5	377.7	331.7
67.5°	337.5	314.5	279.5	247.7	258.7	247.7	278.7	313.7	337.5	313.7	278.7
70°	279.7	254.7	229.7	203.7	215.7	203.7	229.7	255.5	280.5	255.5	229.7
72.5°	228.7	205.7	184.7	166.7	176.8	165.8	184.7	206.5	230.4	206.5	184.7
75°	185.7	160.7	142.8	131.8	144.8	131.8	143.7	161.5	188.2	161.5	143.7
77.5°	159.4	135.0	106.8	102.8	114.8	102.8	107.7	132.5	156.0	132.5	107.7
80°	143.7	124.8	85.4	76.8	86.8	76.8	83.7	111.4	127.7	111.4	83.7
82.5°	139.9	126.3	81.5	53.8	57.8	53.8	71.4	96.0	107.9	96.0	71.4
85°	148.0	137.5	89.0	43.4	33.8	41.7	64.6	86.3	93.3	86.3	64.6
87.5°	162.2	158.7	104.3	47.0	10.0	35.2	56.4	77.9	75.6	77.9	56.4
90°	183.0	180.6	126.6	54.6	1.8	22.7	43.4	62.0	56.9	62.0	43.4
92.5°	213.0	205.9	149.7	68.7	14.5	10.7	34.5	50.4	48.2	50.4	34.5
95°	236.8	232.8	174.9	88.5	34.6	4.4	23.5	37.7	37.5	37.7	23.5
97.5°	265.8	258.6	199.9	118.7	60.7	11.1	14.0	27.4	30.4	27.4	14.0
100°	287.6	281.8	230.7	154.9	92.7	28.8	7.9	17.7	22.7	17.7	7.9
102.5°	325.5	313.5	264.2	189.4	127.1	53.1	13.6	10.7	12.7	10.7	13.6
105°	361.9	350.1	306.4	225.5	166.7	85.9	34.8	12.1	7.9	12.1	34.8
107.5°	398.1	389.7	343.4	263.5	208.7	124.8	63.4	33.1	21.3	33.1	63.4
110°	440.1	430.0	379.6	300.5	253.4	165.1	96.2	60.0	46.6	60.0	96.2



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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°	480.5	472.9	413.2	339.2	298.8	208.9	136.5	93.7	81.0	93.7	136.5
115°	512.6	507.4	451.9	375.4	340.9	258.5	181.1	133.2	119.0	133.2	181.1
117.5°	545.4	544.6	481.5	412.4	391.3	303.0	223.3	173.7	157.7	173.7	223.3
120°	586.6	579.9	521.0	450.4	440.3	351.1	268.7	219.1	203.1	219.1	268.7
122.5°	615.2	611.0	554.6	485.7	485.7	399.1	312.5	262.8	246.0	262.8	312.5
125°	641.3	639.6	579.9	521.0	534.5	443.6	361.2	310.8	292.3	310.8	361.2
127.5°	664.8	667.3	612.7	559.7	584.1	489.1	409.2	353.7	334.3	353.7	409.2
130°	686.0	693.4	643.8	595.0	631.2	538.7	452.0	396.5	384.9	396.5	452.0
132.5°	725.5	720.5	675.7	632.2	682.6	585.1	497.5	440.4	426.1	440.4	497.5
135°	745.7	747.4	704.5	663.3	729.7	630.5	541.3	484.2	469.9	484.2	541.3
137.5°	770.1	765.0	726.3	701.1	773.4	674.2	583.4	530.4	507.7	530.4	583.4
140°	787.7	786.9	754.9	734.8	820.5	717.1	626.3	572.5	551.4	572.5	626.3
142.5°	806.2	811.3	783.5	771.8	867.6	762.5	672.5	613.7	593.5	613.7	672.5
145°	818.8	829.8	812.1	818.0	912.2	813.0	712.9	653.2	631.3	653.2	712.9
147.5°	839.9	854.2	833.1	850.8	950.9	857.5	753.3	694.4	675.1	694.4	753.3
150°	869.5	876.2	863.6	896.2	990.4	907.1	795.5	734.9	715.6	734.9	795.5
152.5°	892.2	900.6	886.3	945.8	1021.5	952.6	840.9	773.6	750.9	773.6	840.9
155°	915.7	919.1	908.0	993.8	1054.3	997.1	876.0	816.5	794.6	816.5	876.0
157.5°	937.6	944.3	931.5	1029.9	1082.9	1035.8	917.2	859.4	840.0	859.4	917.2
160°	961.1	961.1	966.8	1072.0	1105.4	1069.4	961.0	906.5	879.6	906.5	961.0
162.5°	963.6	978.6	1014.8	1101.4	1128.0	1098.9	1008.1	939.1	916.6	939.1	1008.1
165°	1000.6	1013.9	1068.6	1127.4	1145.7	1124.8	1066.1	994.6	967.8	994.6	1066.1
167.5°	1038.3	1068.6	1112.2	1155.8	1162.5	1148.2	1110.5	1061.0	1035.8	1061.0	1110.5
170°	1101.4	1127.4	1148.2	1167.7	1177.0	1168.6	1137.3	1113.9	1098.0	1113.9	1137.3
172.5°	1149.9	1167.7	1175.1	1187.9	1182.0	1178.7	1162.5	1151.8	1142.3	1151.8	1162.5
175°	1180.0	1184.4	1193.0	1188.8	1193.8	1184.5	1185.4	1190.3	1154.8	1190.3	1185.4
177.5°	1192.0	1197.8	1194.6	1188.1	1188.9	1187.2	1189.6	1192.0	1186.9	1192.0	1189.6
180°	1193.0	1193.0	1193.0	1193.0	1193.0	1193.0	1193.0	1193.0	1193.0	1193.0	1193.0



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1695.8	1695.8	1695.8	1695.8	1695.8	1695.8
2.5°	1687.6	1693.5	1688.5	1693.6	1684.9	1688.3
5°	1680.6	1691.6	1680.6	1683.6	1679.9	1675.3
7.5°	1666.8	1656.6	1667.6	1671.8	1670.8	1667.1
10°	1644.9	1643.8	1645.8	1649.8	1652.8	1639.9
12.5°	1620.9	1617.1	1620.9	1629.9	1617.8	1614.6
15°	1589.1	1582.1	1589.9	1599.9	1590.8	1594.5
17.5°	1562.1	1558.1	1562.1	1562.9	1553.8	1559.5
20°	1522.3	1518.3	1523.1	1520.9	1522.6	1513.5
22.5°	1481.3	1487.3	1482.1	1478.9	1477.6	1479.6
25°	1432.3	1434.3	1433.1	1435.8	1423.6	1426.6
27.5°	1387.1	1388.3	1387.9	1384.8	1366.6	1368.6
30°	1332.1	1332.3	1333.8	1331.6	1310.6	1305.6
32.5°	1281.1	1280.1	1282.8	1266.6	1243.6	1247.6
35°	1219.3	1225.3	1221.8	1201.8	1168.8	1163.8
37.5°	1159.3	1173.1	1161.8	1121.8	1094.9	1090.9
40°	1086.4	1105.2	1088.0	1040.9	1017.9	1029.9
42.5°	1011.4	1037.2	1013.0	961.0	946.9	951.9
45°	930.4	966.2	932.0	879.0	877.0	891.0
47.5°	848.4	892.2	849.2	806.0	808.0	826.0
50°	760.5	799.4	762.2	731.0	751.0	760.0
52.5°	685.5	697.4	687.2	668.2	691.0	703.0
55°	603.7	586.5	605.4	604.2	630.2	635.2
57.5°	516.7	494.5	518.4	536.2	575.2	582.2
60°	433.7	422.5	434.5	466.4	509.4	517.4
62.5°	359.7	355.7	360.5	401.4	447.4	456.4
65°	297.7	305.7	298.5	332.5	378.5	393.5
67.5°	247.7	258.7	247.7	279.5	314.5	337.5
70°	203.7	215.7	203.7	229.7	254.7	279.7
72.5°	165.8	176.8	166.7	184.7	205.7	228.7
75°	131.8	144.8	131.8	142.8	160.7	185.7
77.5°	102.8	114.8	102.8	106.8	135.0	159.4
80°	76.8	86.8	76.8	85.4	124.8	143.7
82.5°	53.8	57.8	53.8	81.5	126.3	139.9
85°	41.7	33.8	43.4	89.0	137.5	148.0
87.5°	35.2	10.0	47.0	104.3	158.7	162.2
90°	22.7	1.8	54.6	126.6	180.6	183.0
92.5°	10.7	14.5	68.7	149.7	205.9	213.0
95°	4.4	34.6	88.5	174.9	232.8	236.8
97.5°	11.1	60.7	118.7	199.9	258.6	265.8
100°	28.8	92.7	154.9	230.7	281.8	287.6
102.5°	53.1	127.1	189.4	264.2	313.5	325.5
105°	85.9	166.7	225.5	306.4	350.1	361.9
107.5°	124.8	208.7	263.5	343.4	389.7	398.1
110°	165.1	253.4	300.5	379.6	430.0	440.1



TEST NUMBER: P392531

CATALOG NUMBER: MWL-2-28-38-UNV-L840-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	208.9	298.8	339.2	413.2	472.9	480.5
115°	258.5	340.9	375.4	451.9	507.4	512.6
117.5°	303.0	391.3	412.4	481.5	544.6	545.4
120°	351.1	440.3	450.4	521.0	579.9	586.6
122.5°	399.1	485.7	485.7	554.6	611.0	615.2
125°	443.6	534.5	521.0	579.9	639.6	641.3
127.5°	489.1	584.1	559.7	612.7	667.3	664.8
130°	538.7	631.2	595.0	643.8	693.4	686.0
132.5°	585.1	682.6	632.2	675.7	720.5	725.5
135°	630.5	729.7	663.3	704.5	747.4	745.7
137.5°	674.2	773.4	701.1	726.3	765.0	770.1
140°	717.1	820.5	734.8	754.9	786.9	787.7
142.5°	762.5	867.6	771.8	783.5	811.3	806.2
145°	813.0	912.2	818.0	812.1	829.8	818.8
147.5°	857.5	950.9	850.8	833.1	854.2	839.9
150°	907.1	990.4	896.2	863.6	876.2	869.5
152.5°	952.6	1021.5	945.8	886.3	900.6	892.2
155°	997.1	1054.3	993.8	908.0	919.1	915.7
157.5°	1035.8	1082.9	1029.9	931.5	944.3	937.6
160°	1069.4	1105.4	1072.0	966.8	961.1	961.1
162.5°	1098.9	1128.0	1101.4	1014.8	978.6	963.6
165°	1124.8	1145.7	1127.4	1068.6	1013.9	1000.6
167.5°	1148.2	1162.5	1155.8	1112.2	1068.6	1038.3
170°	1168.6	1177.0	1167.7	1148.2	1127.4	1101.4
172.5°	1178.7	1182.0	1187.9	1175.1	1167.7	1149.9
175°	1184.5	1193.8	1188.8	1193.0	1184.4	1180.0
177.5°	1187.2	1188.9	1188.1	1194.6	1197.8	1192.0
180°	1193.0	1193.0	1193.0	1193.0	1193.0	1193.0

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