

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: P382238

Luminaire Tested: **MWL-2-35-31-UNV-L830-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P382238
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-2-35-31-UNV-L830-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 6233.0 lumens
Efficiency: N/A
Efficacy: 83.1 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: General Diffuse

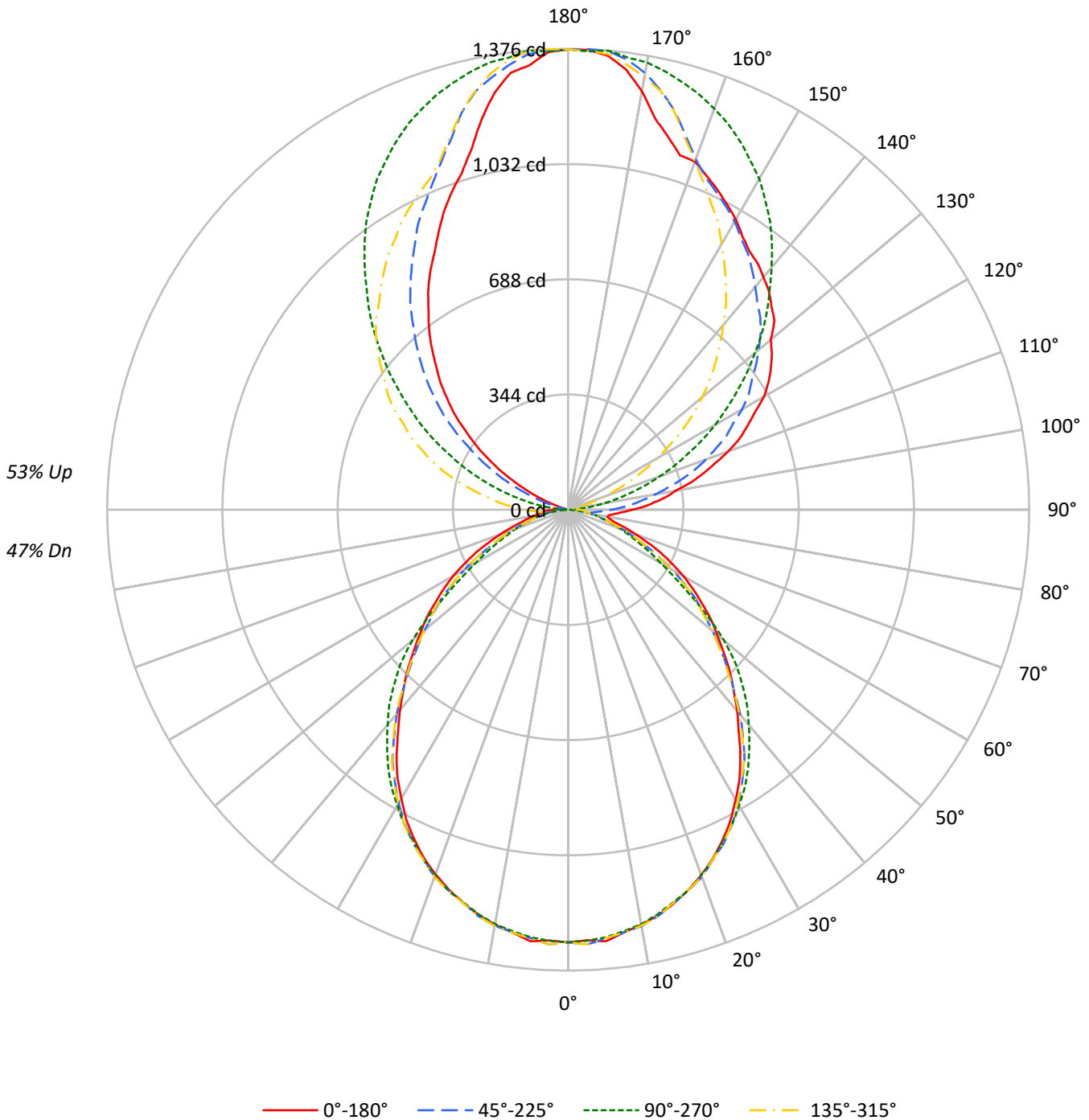
Input Watts (W): 75
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20									20									20									20										
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	50	30	10	0														
RCR																																						
0	107	107	107	107	98	98	98	98	82	82	82	67	67	67	54	54	54	47																				
1	97	93	89	86	89	86	83	80	72	70	68	59	58	56	48	47	46	40																				
2	89	82	76	71	82	75	70	66	64	60	57	53	50	48	43	41	39	34																				
3	81	72	65	59	75	67	61	56	56	52	48	47	44	41	38	36	34	30																				
4	75	64	56	51	68	59	53	47	50	45	41	42	38	35	34	32	29	26																				
5	69	57	49	44	63	53	46	41	45	40	36	38	34	31	31	28	26	23																				
6	63	52	44	38	58	48	41	36	41	35	31	34	30	27	28	25	23	20																				
7	59	47	39	33	54	43	36	31	37	32	28	31	27	24	26	23	20	18																				
8	54	42	35	30	50	39	33	28	34	29	25	29	25	22	24	21	18	16																				
9	51	39	31	26	47	36	29	25	31	26	22	26	22	19	22	19	17	15																				
10	47	36	28	24	44	33	27	22	29	24	20	24	20	18	20	17	15	13																				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	16687	16687	16687	16687
5°	16473	15280	16473	15280
10°	15918	14009	15918	14009
15°	15416	12796	15380	12796
20°	14835	11700	14798	11700
25°	14149	10622	14111	10622
30°	13308	9645	13256	9645
35°	12328	8689	12289	8689
40°	11264	7690	11206	7690
45°	10309	6698	10265	6698
50°	9338	5567	9292	5567
55°	8447	4133	8414	4133
60°	7555	3021	7536	3021
65°	6433	2243	6433	2243
70°	5161	1667	5183	1667
75°	3987	1162	4068	1162
80°	4044	739	3417	739
85°	6149	311	3384	311



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	121.8	2.0
10°-20°	342.7	5.5
20°-30°	502.6	8.1
30°-40°	570.3	9.2
40°-50°	532.2	8.5
50°-60°	417.6	6.7
60°-70°	260.8	4.2
70°-80°	126.8	2.0
80°-90°	76.4	1.2
90°-100°	110.7	1.8
100°-110°	211.8	3.4
110°-120°	365.2	5.9
120°-130°	496.4	8.0
130°-140°	566.2	9.1
140°-150°	564.8	9.1
150°-160°	491.8	7.9
160°-170°	345.8	5.5
170°-180°	128.8	2.1
0°-30°	967.2	15.5
0°-40°	1537.5	24.7
0°-60°	2487.3	39.9
0°-90°	2951.4	47.4
90°-120°	687.7	11.0
90°-150°	2315.1	37.1
90°-180°	3282.0	52.7
0°-180°	6233.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1292	1292	1292	1292	1292	
5°	1294	1282	1294	1282	1294	122
15°	1217	1213	1214	1213	1217	343
25°	1089	1093	1086	1093	1089	501
35°	896	937	893	937	896	559
45°	682	733	679	733	682	525
55°	487	446	485	446	487	437
65°	304	231	304	231	304	301
75°	142	110	145	110	142	162
85°	140	26	77	26	140	110
90°	191	2	46	2	191	106
95°	260	40	30	40	260	227
105°	417	192	9	192	417	440
115°	590	393	136	393	590	585
125°	739	615	336	615	739	660
135°	858	840	540	840	858	662
145°	943	1050	726	1050	943	594
155°	1054	1214	914	1214	1054	486
165°	1152	1321	1114	1321	1152	327
175°	1361	1376	1332	1376	1361	127
180°	1374	1374	1374	1374	1374	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1291.9	1291.9	1291.9	1291.9	1291.9	1291.9	1291.9	1291.9	1291.9	1291.9	1291.9
2.5°	1286.2	1294.6	1299.3	1287.2	1288.1	1286.3	1299.3	1294.6	1287.1	1294.6	1299.3
5°	1293.6	1285.2	1285.3	1284.4	1281.6	1284.4	1284.4	1285.2	1293.6	1285.2	1284.4
7.5°	1273.1	1279.7	1273.2	1272.3	1269.5	1271.3	1272.2	1278.7	1273.1	1278.7	1272.2
10°	1258.2	1262.9	1262.0	1255.4	1256.4	1254.4	1261.0	1261.0	1258.2	1261.0	1261.0
12.5°	1240.5	1243.3	1242.3	1234.8	1236.7	1234.8	1242.3	1241.3	1238.5	1241.3	1242.3
15°	1217.2	1216.2	1215.2	1212.4	1213.3	1211.5	1214.3	1214.3	1214.3	1214.3	1214.3
17.5°	1191.0	1192.9	1191.8	1191.8	1191.8	1191.8	1190.9	1191.8	1188.1	1191.8	1190.9
20°	1161.1	1165.8	1166.6	1161.0	1161.0	1160.1	1165.7	1163.8	1158.2	1163.8	1165.7
22.5°	1127.5	1128.4	1130.2	1122.7	1130.2	1121.8	1129.3	1126.5	1125.5	1126.5	1129.3
25°	1089.2	1090.1	1098.5	1093.8	1092.8	1092.8	1096.6	1087.2	1086.3	1087.2	1096.6
27.5°	1048.1	1048.1	1059.3	1055.5	1059.2	1054.6	1057.4	1045.2	1045.2	1045.2	1057.4
30°	999.6	1008.0	1014.5	1027.6	1020.0	1025.6	1011.6	1005.1	995.7	1005.1	1011.6
32.5°	951.9	956.6	965.9	975.3	981.7	973.3	963.0	952.8	948.1	952.8	963.0
35°	895.9	895.9	917.4	935.1	936.9	932.2	914.5	893.0	893.0	893.0	914.5
37.5°	836.1	838.0	856.7	883.7	888.3	880.9	853.8	835.1	833.2	835.1	853.8
40°	784.8	781.0	798.8	833.2	838.8	831.4	794.8	777.1	780.8	777.1	794.8
42.5°	730.6	725.0	733.3	776.3	790.3	774.4	730.4	721.1	726.7	721.1	730.4
45°	681.9	670.7	672.6	712.8	733.3	710.9	668.8	667.8	679.0	667.8	668.8
47.5°	628.7	625.0	617.5	643.6	677.3	642.7	613.7	622.1	625.8	622.1	613.7
50°	580.1	572.7	561.5	582.9	607.2	581.0	557.6	568.8	577.2	568.8	557.6
52.5°	537.2	530.6	509.2	522.2	526.9	520.3	506.3	526.8	534.3	526.8	506.3
55°	486.7	485.8	464.3	457.8	445.6	455.8	461.4	482.9	484.8	482.9	461.4
57.5°	441.9	440.1	409.2	398.0	375.5	396.1	406.3	437.2	440.0	437.2	406.3
60°	398.0	391.5	357.9	330.7	319.5	329.8	355.9	389.5	397.0	389.5	355.9
62.5°	349.5	345.7	304.6	275.6	272.8	274.7	302.7	343.8	348.4	343.8	302.7
65°	304.5	290.5	256.0	229.8	230.8	228.9	255.0	289.6	304.5	289.6	255.0
67.5°	256.9	242.9	213.0	188.7	196.2	188.7	212.1	242.0	256.9	242.0	212.1
70°	214.9	196.2	173.8	154.2	165.4	154.2	173.8	197.1	215.8	197.1	173.8
72.5°	176.6	157.0	140.2	126.2	135.4	125.1	140.2	157.9	178.6	157.9	140.2
75°	142.0	124.3	108.3	100.9	110.2	100.9	109.4	125.2	144.9	125.2	109.4
77.5°	127.4	104.8	82.2	78.4	89.7	78.4	83.2	101.9	123.5	101.9	83.2
80°	118.6	101.6	66.5	58.8	66.3	58.8	64.5	86.1	100.2	86.1	64.5
82.5°	124.2	110.8	67.8	42.0	45.8	42.0	56.2	75.8	87.3	75.8	56.2
85°	140.3	129.6	79.8	34.7	26.1	32.8	51.6	70.4	77.2	70.4	51.6
87.5°	163.0	157.1	101.4	41.7	7.5	28.2	46.1	64.0	63.1	64.0	46.1
90°	191.4	186.5	129.8	54.6	1.9	17.8	33.8	49.7	46.0	49.7	33.8
92.5°	228.5	219.7	160.1	76.3	16.4	9.4	27.2	40.3	38.5	40.3	27.2
95°	259.8	254.0	194.3	101.8	39.7	4.9	19.7	29.0	30.0	29.0	19.7
97.5°	296.0	289.2	226.7	136.7	69.8	12.6	12.3	22.6	24.5	22.6	12.3
100°	325.4	321.6	264.8	178.4	106.7	33.0	7.8	17.1	19.9	17.1	7.8
102.5°	374.1	359.7	304.5	218.2	146.4	61.1	15.5	10.6	13.4	10.6	15.5
105°	417.0	403.4	352.0	259.9	192.0	98.9	38.8	13.5	8.7	13.5	38.8
107.5°	458.6	448.9	395.6	302.6	240.5	142.5	72.7	37.7	24.2	37.7	72.7
110°	507.2	495.5	437.3	345.3	290.9	189.1	110.5	68.8	53.2	68.8	110.5



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CATALOG NUMBER: MWL-2-35-31-UNV-L830-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	553.7	545.0	476.1	390.7	343.3	240.5	157.1	107.6	93.0	107.6	157.1
115°	589.6	584.7	520.7	432.5	392.7	297.6	208.4	153.2	135.7	153.2	208.4
117.5°	627.4	626.5	553.7	475.2	450.9	349.1	256.0	198.7	180.3	198.7	256.0
120°	674.9	667.2	599.3	517.8	506.2	403.4	308.4	251.1	232.7	251.1	308.4
122.5°	708.8	703.0	638.1	558.6	558.6	458.6	358.8	301.6	283.1	301.6	358.8
125°	738.9	736.9	668.1	599.3	614.8	510.1	416.0	357.8	336.4	357.8	416.0
127.5°	766.1	769.0	705.9	644.9	673.0	563.4	471.2	407.3	385.0	407.3	471.2
130°	789.3	799.0	741.8	685.6	727.3	620.6	520.7	456.7	442.1	456.7	520.7
132.5°	834.9	829.1	778.7	727.3	785.5	673.0	573.0	506.2	489.6	506.2	573.0
135°	858.3	860.1	810.7	763.2	839.8	725.4	622.5	556.6	540.1	556.6	622.5
137.5°	886.4	880.5	835.9	806.8	890.2	775.8	671.0	609.9	583.8	609.9	671.0
140°	906.7	905.7	868.9	845.6	944.5	825.3	720.5	658.4	634.2	658.4	720.5
142.5°	928.0	933.9	901.9	888.3	998.8	877.6	773.8	705.9	682.7	705.9	773.8
145°	942.6	956.1	934.8	941.7	1050.3	935.8	820.4	752.4	726.3	752.4	820.4
147.5°	967.8	984.2	960.0	979.5	1094.9	987.2	867.9	800.0	777.7	800.0	867.9
150°	1000.8	1008.5	993.9	1031.9	1140.5	1044.5	915.4	845.6	823.2	845.6	915.4
152.5°	1026.9	1036.6	1020.2	1089.0	1176.3	1096.8	967.8	890.2	864.0	890.2	967.8
155°	1054.1	1058.0	1046.3	1144.3	1214.2	1148.2	1009.5	939.7	914.5	939.7	1009.5
157.5°	1079.3	1087.1	1072.6	1186.1	1247.1	1192.8	1056.1	989.1	966.8	989.1	1056.1
160°	1106.5	1106.5	1113.3	1234.5	1274.3	1231.6	1106.5	1043.4	1012.3	1043.4	1106.5
162.5°	1109.4	1127.8	1168.6	1268.4	1300.5	1265.5	1160.8	1082.2	1055.0	1082.2	1160.8
165°	1152.1	1167.6	1230.6	1298.5	1320.8	1295.6	1227.7	1145.3	1114.2	1145.3	1227.7
167.5°	1196.7	1230.6	1281.0	1332.5	1340.2	1323.7	1279.2	1221.9	1193.7	1221.9	1279.2
170°	1268.4	1298.5	1323.7	1345.1	1355.7	1346.0	1311.1	1283.0	1264.6	1283.0	1311.1
172.5°	1324.7	1345.1	1354.8	1368.4	1361.5	1357.7	1340.2	1326.7	1316.1	1326.7	1340.2
175°	1360.6	1365.5	1374.1	1370.3	1376.1	1365.5	1365.5	1372.3	1331.6	1372.3	1365.5
177.5°	1373.2	1380.0	1376.1	1368.4	1369.3	1367.3	1370.3	1373.2	1367.4	1373.2	1370.3
180°	1374.1	1374.1	1374.1	1374.1	1374.1	1374.1	1374.1	1374.1	1374.1	1374.1	1374.1



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1291.9	1291.9	1291.9	1291.9	1291.9	1291.9
2.5°	1286.3	1288.1	1287.2	1299.3	1294.6	1286.2
5°	1284.4	1281.6	1284.4	1285.3	1285.2	1293.6
7.5°	1271.3	1269.5	1272.3	1273.2	1279.7	1273.1
10°	1254.4	1256.4	1255.4	1262.0	1262.9	1258.2
12.5°	1234.8	1236.7	1234.8	1242.3	1243.3	1240.5
15°	1211.5	1213.3	1212.4	1215.2	1216.2	1217.2
17.5°	1191.8	1191.8	1191.8	1191.8	1192.9	1191.0
20°	1160.1	1161.0	1161.0	1166.6	1165.8	1161.1
22.5°	1121.8	1130.2	1122.7	1130.2	1128.4	1127.5
25°	1092.8	1092.8	1093.8	1098.5	1090.1	1089.2
27.5°	1054.6	1059.2	1055.5	1059.3	1048.1	1048.1
30°	1025.6	1020.0	1027.6	1014.5	1008.0	999.6
32.5°	973.3	981.7	975.3	965.9	956.6	951.9
35°	932.2	936.9	935.1	917.4	895.9	895.9
37.5°	880.9	888.3	883.7	856.7	838.0	836.1
40°	831.4	838.8	833.2	798.8	781.0	784.8
42.5°	774.4	790.3	776.3	733.3	725.0	730.6
45°	710.9	733.3	712.8	672.6	670.7	681.9
47.5°	642.7	677.3	643.6	617.5	625.0	628.7
50°	581.0	607.2	582.9	561.5	572.7	580.1
52.5°	520.3	526.9	522.2	509.2	530.6	537.2
55°	455.8	445.6	457.8	464.3	485.8	486.7
57.5°	396.1	375.5	398.0	409.2	440.1	441.9
60°	329.8	319.5	330.7	357.9	391.5	398.0
62.5°	274.7	272.8	275.6	304.6	345.7	349.5
65°	228.9	230.8	229.8	256.0	290.5	304.5
67.5°	188.7	196.2	188.7	213.0	242.9	256.9
70°	154.2	165.4	154.2	173.8	196.2	214.9
72.5°	125.1	135.4	126.2	140.2	157.0	176.6
75°	100.9	110.2	100.9	108.3	124.3	142.0
77.5°	78.4	89.7	78.4	82.2	104.8	127.4
80°	58.8	66.3	58.8	66.5	101.6	118.6
82.5°	42.0	45.8	42.0	67.8	110.8	124.2
85°	32.8	26.1	34.7	79.8	129.6	140.3
87.5°	28.2	7.5	41.7	101.4	157.1	163.0
90°	17.8	1.9	54.6	129.8	186.5	191.4
92.5°	9.4	16.4	76.3	160.1	219.7	228.5
95°	4.9	39.7	101.8	194.3	254.0	259.8
97.5°	12.6	69.8	136.7	226.7	289.2	296.0
100°	33.0	106.7	178.4	264.8	321.6	325.4
102.5°	61.1	146.4	218.2	304.5	359.7	374.1
105°	98.9	192.0	259.9	352.0	403.4	417.0
107.5°	142.5	240.5	302.6	395.6	448.9	458.6
110°	189.1	290.9	345.3	437.3	495.5	507.2



TEST NUMBER: P382238

CATALOG NUMBER: MWL-2-35-31-UNV-L830-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	240.5	343.3	390.7	476.1	545.0	553.7
115°	297.6	392.7	432.5	520.7	584.7	589.6
117.5°	349.1	450.9	475.2	553.7	626.5	627.4
120°	403.4	506.2	517.8	599.3	667.2	674.9
122.5°	458.6	558.6	558.6	638.1	703.0	708.8
125°	510.1	614.8	599.3	668.1	736.9	738.9
127.5°	563.4	673.0	644.9	705.9	769.0	766.1
130°	620.6	727.3	685.6	741.8	799.0	789.3
132.5°	673.0	785.5	727.3	778.7	829.1	834.9
135°	725.4	839.8	763.2	810.7	860.1	858.3
137.5°	775.8	890.2	806.8	835.9	880.5	886.4
140°	825.3	944.5	845.6	868.9	905.7	906.7
142.5°	877.6	998.8	888.3	901.9	933.9	928.0
145°	935.8	1050.3	941.7	934.8	956.1	942.6
147.5°	987.2	1094.9	979.5	960.0	984.2	967.8
150°	1044.5	1140.5	1031.9	993.9	1008.5	1000.8
152.5°	1096.8	1176.3	1089.0	1020.2	1036.6	1026.9
155°	1148.2	1214.2	1144.3	1046.3	1058.0	1054.1
157.5°	1192.8	1247.1	1186.1	1072.6	1087.1	1079.3
160°	1231.6	1274.3	1234.5	1113.3	1106.5	1106.5
162.5°	1265.5	1300.5	1268.4	1168.6	1127.8	1109.4
165°	1295.6	1320.8	1298.5	1230.6	1167.6	1152.1
167.5°	1323.7	1340.2	1332.5	1281.0	1230.6	1196.7
170°	1346.0	1355.7	1345.1	1323.7	1298.5	1268.4
172.5°	1357.7	1361.5	1368.4	1354.8	1345.1	1324.7
175°	1365.5	1376.1	1370.3	1374.1	1365.5	1360.6
177.5°	1367.3	1369.3	1368.4	1376.1	1380.0	1373.2
180°	1374.1	1374.1	1374.1	1374.1	1374.1	1374.1

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