

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: P392528

Luminaire Tested: **MWL-2-28-31-UNV-L840-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392528
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-2-28-31-UNV-L840-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

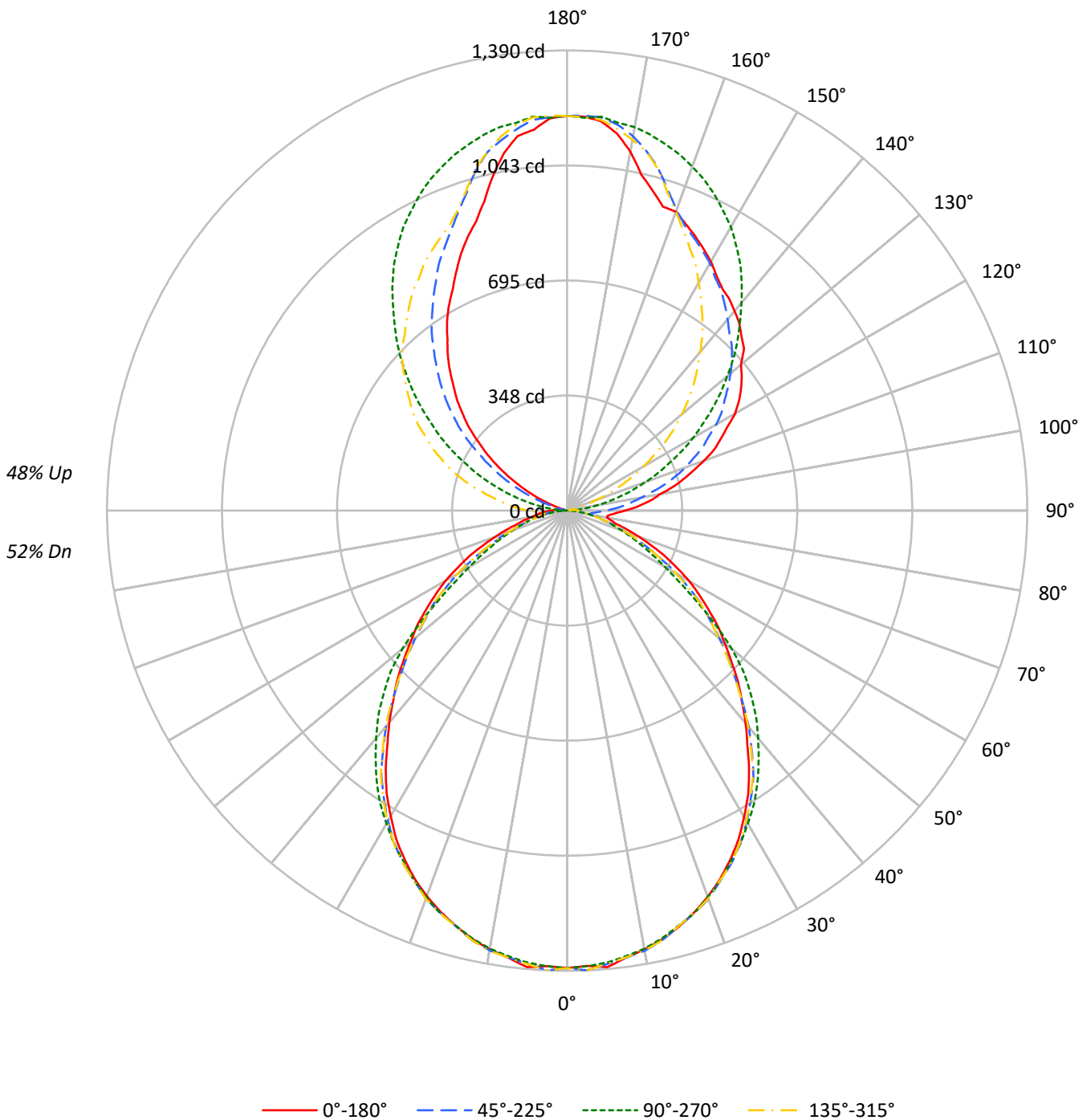
Lumens per Lamp: N/A
Luminaire Lumens: 6002.1 lumens
Efficiency: N/A
Efficacy: 91.5 lumens/watt
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: General Diffuse

Input Watts (W): 65.6
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	108	108	108	108	100	100	100	100	85	85	85	71	71	71	58	58	58	52				
1	99	94	91	87	91	88	84	81	75	72	70	63	61	60	52	51	50	45				
2	90	83	77	72	83	77	72	67	66	62	59	56	53	51	46	44	43	38				
3	83	73	66	60	76	68	62	57	59	54	50	50	46	43	41	39	37	33				
4	76	65	57	51	70	61	54	49	52	47	43	45	41	37	37	34	32	29				
5	70	58	50	44	64	54	47	42	47	42	37	40	36	33	34	31	28	25				
6	64	52	44	39	59	49	42	37	43	37	33	36	32	29	31	28	25	22				
7	60	47	40	34	55	44	37	32	39	33	29	33	29	26	28	25	22	20				
8	55	43	35	30	51	40	34	29	35	30	26	31	26	23	26	23	20	18				
9	52	39	32	27	48	37	30	26	32	27	23	28	24	21	24	21	18	16				
10	48	36	29	24	45	34	28	23	30	25	21	26	22	19	22	19	17	15				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	17850	17850	17850	17850
5°	17629	16343	17629	16343
10°	17029	14984	17029	14984
15°	16485	13691	16452	13691
20°	15864	12521	15830	12521
25°	15129	11366	15097	11366
30°	14228	10320	14184	10320
35°	13182	9297	13147	9297
40°	12040	8226	11992	8226
45°	11021	7162	10983	7162
50°	9981	5954	9940	5954
55°	9028	4419	8999	4419
60°	8076	3229	8058	3229
65°	6876	2398	6876	2398
70°	5517	1781	5536	1781
75°	4259	1242	4329	1242
80°	4150	789	3604	789
85°	5873	331	3476	331



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	130.3	2.2
10°-20°	366.7	6.1
20°-30°	537.7	9.0
30°-40°	610.0	10.2
40°-50°	569.2	9.5
50°-60°	446.5	7.4
60°-70°	278.8	4.6
70°-80°	135.2	2.3
80°-90°	76.5	1.3
90°-100°	99.4	1.7
100°-110°	184.0	3.1
110°-120°	317.1	5.3
120°-130°	430.8	7.2
130°-140°	491.4	8.2
140°-150°	490.1	8.2
150°-160°	426.8	7.1
160°-170°	300.0	5.0
170°-180°	111.7	1.9
0°-30°	1034.7	17.2
0°-40°	1644.7	27.4
0°-60°	2660.4	44.3
0°-90°	3150.8	52.5
90°-120°	600.5	10.0
90°-150°	2012.8	33.5
90°-180°	2851.0	47.5
0°-180°	6002.1	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1382	1382	1382	1382	1382	
5°	1384	1371	1384	1371	1384	130
15°	1302	1298	1299	1298	1302	367
25°	1165	1169	1162	1169	1165	535
35°	958	1002	955	1002	958	598
45°	729	784	726	784	729	561
55°	520	476	518	476	520	467
65°	326	247	326	247	326	322
75°	152	118	154	118	152	172
85°	134	28	79	28	134	107
90°	174	2	48	2	174	96
95°	231	35	32	35	231	200
105°	362	167	8	167	362	382
115°	512	341	118	341	512	508
125°	641	534	292	534	641	573
135°	745	729	469	729	745	575
145°	818	911	630	911	818	516
155°	915	1053	794	1053	915	422
165°	1000	1146	967	1146	1000	284
175°	1180	1194	1155	1194	1180	110
180°	1192	1192	1192	1192	1192	



TEST NUMBER: P392528

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1381.9	1381.9	1381.9	1381.9	1381.9	1381.9	1381.9	1381.9	1381.9	1381.9	1381.9
2.5°	1376.4	1385.0	1389.7	1376.6	1377.6	1375.7	1389.7	1385.0	1377.2	1385.0	1389.7
5°	1384.4	1375.0	1374.7	1373.7	1370.7	1373.7	1373.9	1375.0	1384.4	1375.0	1373.9
7.5°	1362.2	1368.9	1361.9	1360.7	1357.7	1359.9	1361.0	1368.0	1362.2	1368.0	1361.0
10°	1346.0	1350.9	1349.9	1342.9	1343.9	1342.0	1349.0	1349.2	1346.0	1349.2	1349.0
12.5°	1326.7	1329.9	1329.0	1321.0	1323.2	1321.0	1329.0	1328.2	1325.0	1328.2	1329.0
15°	1301.6	1300.9	1300.0	1297.0	1298.2	1296.2	1299.2	1299.2	1299.0	1299.2	1299.2
17.5°	1273.6	1275.9	1275.0	1275.2	1275.2	1275.2	1274.2	1275.0	1271.0	1275.0	1274.2
20°	1241.6	1246.7	1248.0	1242.2	1242.4	1241.4	1247.2	1245.0	1239.0	1245.0	1247.2
22.5°	1205.7	1206.7	1209.0	1201.2	1209.4	1200.4	1208.2	1205.0	1204.0	1205.0	1208.2
25°	1164.7	1165.7	1174.9	1170.2	1169.4	1169.4	1173.2	1163.2	1162.2	1163.2	1173.2
27.5°	1120.7	1120.7	1132.9	1129.0	1133.4	1128.2	1131.2	1118.2	1118.2	1118.2	1131.2
30°	1068.7	1077.7	1084.7	1098.9	1091.4	1097.2	1082.2	1075.2	1065.4	1075.2	1082.2
32.5°	1017.7	1022.7	1032.7	1042.9	1050.2	1041.2	1030.2	1019.4	1014.4	1019.4	1030.2
35°	957.9	957.9	980.9	999.9	1002.4	997.4	978.4	955.4	955.4	955.4	978.4
37.5°	893.9	895.9	915.9	944.9	950.2	942.4	913.4	893.4	891.4	893.4	913.4
40°	838.9	834.9	853.9	891.0	897.2	889.4	850.5	831.5	835.5	831.5	850.5
42.5°	780.9	774.9	784.0	830.0	845.2	828.4	781.5	771.5	777.5	771.5	781.5
45°	729.0	717.0	719.0	762.0	784.2	760.4	715.7	714.5	726.5	714.5	715.7
47.5°	672.0	668.0	660.0	688.2	724.2	687.4	656.7	665.5	669.5	665.5	656.7
50°	620.0	612.0	600.0	623.2	649.4	621.5	596.7	608.7	617.5	608.7	596.7
52.5°	574.0	567.0	544.2	558.2	563.4	556.5	541.7	563.7	571.5	563.7	541.7
55°	520.2	519.2	496.2	489.4	476.5	487.7	493.7	516.7	518.5	516.7	493.7
57.5°	472.2	470.2	437.2	425.4	401.5	423.7	434.7	467.7	470.5	467.7	434.7
60°	425.4	418.4	382.4	353.5	341.5	352.7	380.7	416.7	424.5	416.7	380.7
62.5°	373.4	369.4	325.4	294.5	291.7	293.7	323.7	367.7	372.5	367.7	323.7
65°	325.5	310.5	273.5	245.5	246.7	244.7	272.7	309.7	325.5	309.7	272.7
67.5°	274.5	259.5	227.5	201.7	209.7	201.7	226.7	258.7	274.5	258.7	226.7
70°	229.7	209.7	185.7	164.7	176.7	164.7	185.7	210.5	230.5	210.5	185.7
72.5°	188.7	167.7	149.7	134.7	144.8	133.8	149.7	168.5	190.4	168.5	149.7
75°	151.7	132.7	115.8	107.8	117.8	107.8	116.7	133.5	154.2	133.5	116.7
77.5°	134.4	111.0	87.8	83.8	95.8	83.8	88.7	108.5	131.0	108.5	88.7
80°	121.7	104.8	70.4	62.8	70.8	62.8	68.7	91.4	105.7	91.4	68.7
82.5°	122.9	110.3	69.5	44.8	48.8	44.8	59.4	80.0	90.9	80.0	59.4
85°	134.0	124.5	78.0	36.4	27.8	34.7	53.6	73.3	79.3	73.3	53.6
87.5°	151.2	146.7	95.3	41.0	8.0	29.2	47.4	65.9	64.6	65.9	47.4
90°	174.0	170.6	118.6	50.6	1.8	18.7	35.4	52.0	47.9	52.0	35.4
92.5°	205.0	197.9	143.7	67.7	14.5	9.7	28.5	42.4	40.2	42.4	28.5
95°	230.8	225.8	171.9	88.5	34.6	4.4	20.5	30.7	31.5	30.7	20.5
97.5°	260.8	254.6	197.9	118.7	60.7	11.1	12.0	23.4	25.4	23.4	12.0
100°	284.6	280.8	229.7	154.9	92.7	28.8	6.9	16.7	19.7	16.7	6.9
102.5°	325.5	312.5	264.2	189.4	127.1	53.1	13.6	9.7	12.7	9.7	13.6
105°	361.9	350.1	305.4	225.5	166.7	85.9	33.8	12.1	7.9	12.1	33.8
107.5°	398.1	389.7	343.4	262.5	208.7	123.8	63.4	33.1	21.3	33.1	63.4
110°	440.1	430.0	379.6	299.5	252.4	164.1	96.2	60.0	46.6	60.0	96.2



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CATALOG NUMBER: MWL-2-28-31-UNV-L840-EDD

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	297.8	208.9	136.5	93.7	81.0	93.7	136.5
115°	511.6	507.4	451.9	375.4	340.9	258.5	181.1	133.2	118.0	133.2	181.1
117.5°	544.4	543.6	480.5	412.4	391.3	303.0	222.3	172.7	156.7	172.7	222.3
120°	585.6	578.9	520.0	449.4	439.3	350.1	267.7	218.1	202.1	218.1	267.7
122.5°	615.2	610.0	553.6	484.7	484.7	398.1	311.5	261.8	246.0	261.8	311.5
125°	641.3	639.6	579.9	520.0	533.5	442.6	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°	685.0	693.4	643.8	595.0	631.2	538.7	452.0	396.5	383.9	396.5	452.0
132.5°	724.5	719.5	675.7	631.2	681.6	584.1	497.5	439.4	425.1	439.4	497.5
135°	744.7	746.4	703.5	662.3	728.7	629.5	540.3	483.2	468.9	483.2	540.3
137.5°	769.1	764.0	725.3	700.1	772.4	673.2	582.4	529.4	506.7	529.4	582.4
140°	786.7	785.9	753.9	733.8	819.5	716.1	625.3	571.5	550.4	571.5	625.3
142.5°	805.2	810.3	782.5	770.8	866.6	761.5	671.5	612.7	592.5	612.7	671.5
145°	817.8	829.8	811.1	817.0	911.2	812.0	711.9	653.2	630.3	653.2	711.9
147.5°	839.9	854.2	833.1	849.8	949.9	856.5	753.3	694.4	675.1	694.4	753.3
150°	868.5	875.2	862.6	895.2	989.4	906.1	794.5	733.9	714.6	733.9	794.5
152.5°	891.2	899.6	885.3	944.8	1020.5	951.6	839.9	772.6	749.9	772.6	839.9
155°	914.7	918.1	908.0	992.8	1053.3	996.1	876.0	815.5	793.6	815.5	876.0
157.5°	936.6	943.3	930.5	1028.9	1081.9	1034.8	916.2	858.4	839.0	858.4	916.2
160°	960.1	960.1	965.8	1071.0	1105.4	1068.4	960.0	905.5	878.6	905.5	960.0
162.5°	962.6	978.6	1013.8	1100.4	1128.1	1097.9	1007.1	939.1	915.6	939.1	1007.1
165°	999.6	1012.9	1067.6	1126.5	1145.8	1123.9	1065.1	993.6	966.8	993.6	1065.1
167.5°	1038.3	1067.6	1111.3	1155.9	1162.6	1148.3	1109.6	1060.0	1035.8	1060.0	1109.6
170°	1100.4	1126.5	1148.3	1166.8	1176.1	1167.7	1137.4	1113.0	1097.0	1113.0	1137.4
172.5°	1149.0	1166.8	1175.2	1187.0	1181.1	1177.8	1162.6	1150.9	1141.4	1150.9	1162.6
175°	1180.1	1184.5	1192.1	1188.9	1193.9	1184.6	1184.5	1190.4	1154.9	1190.4	1184.5
177.5°	1191.1	1196.9	1193.7	1187.2	1188.0	1186.3	1188.7	1191.1	1186.0	1191.1	1188.7
180°	1192.1	1192.1	1192.1	1192.1	1192.1	1192.1	1192.1	1192.1	1192.1	1192.1	1192.1



TEST NUMBER: P392528

CATALOG NUMBER: MWL-2-28-31-UNV-L840-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1381.9	1381.9	1381.9	1381.9	1381.9	1381.9
2.5°	1375.7	1377.6	1376.6	1389.7	1385.0	1376.4
5°	1373.7	1370.7	1373.7	1374.7	1375.0	1384.4
7.5°	1359.9	1357.7	1360.7	1361.9	1368.9	1362.2
10°	1342.0	1343.9	1342.9	1349.9	1350.9	1346.0
12.5°	1321.0	1323.2	1321.0	1329.0	1329.9	1326.7
15°	1296.2	1298.2	1297.0	1300.0	1300.9	1301.6
17.5°	1275.2	1275.2	1275.2	1275.0	1275.9	1273.6
20°	1241.4	1242.4	1242.2	1248.0	1246.7	1241.6
22.5°	1200.4	1209.4	1201.2	1209.0	1206.7	1205.7
25°	1169.4	1169.4	1170.2	1174.9	1165.7	1164.7
27.5°	1128.2	1133.4	1129.0	1132.9	1120.7	1120.7
30°	1097.2	1091.4	1098.9	1084.7	1077.7	1068.7
32.5°	1041.2	1050.2	1042.9	1032.7	1022.7	1017.7
35°	997.4	1002.4	999.9	980.9	957.9	957.9
37.5°	942.4	950.2	944.9	915.9	895.9	893.9
40°	889.4	897.2	891.0	853.9	834.9	838.9
42.5°	828.4	845.2	830.0	784.0	774.9	780.9
45°	760.4	784.2	762.0	719.0	717.0	729.0
47.5°	687.4	724.2	688.2	660.0	668.0	672.0
50°	621.5	649.4	623.2	600.0	612.0	620.0
52.5°	556.5	563.4	558.2	544.2	567.0	574.0
55°	487.7	476.5	489.4	496.2	519.2	520.2
57.5°	423.7	401.5	425.4	437.2	470.2	472.2
60°	352.7	341.5	353.5	382.4	418.4	425.4
62.5°	293.7	291.7	294.5	325.4	369.4	373.4
65°	244.7	246.7	245.5	273.5	310.5	325.5
67.5°	201.7	209.7	201.7	227.5	259.5	274.5
70°	164.7	176.7	164.7	185.7	209.7	229.7
72.5°	133.8	144.8	134.7	149.7	167.7	188.7
75°	107.8	117.8	107.8	115.8	132.7	151.7
77.5°	83.8	95.8	83.8	87.8	111.0	134.4
80°	62.8	70.8	62.8	70.4	104.8	121.7
82.5°	44.8	48.8	44.8	69.5	110.3	122.9
85°	34.7	27.8	36.4	78.0	124.5	134.0
87.5°	29.2	8.0	41.0	95.3	146.7	151.2
90°	18.7	1.8	50.6	118.6	170.6	174.0
92.5°	9.7	14.5	67.7	143.7	197.9	205.0
95°	4.4	34.6	88.5	171.9	225.8	230.8
97.5°	11.1	60.7	118.7	197.9	254.6	260.8
100°	28.8	92.7	154.9	229.7	280.8	284.6
102.5°	53.1	127.1	189.4	264.2	312.5	325.5
105°	85.9	166.7	225.5	305.4	350.1	361.9
107.5°	123.8	208.7	262.5	343.4	389.7	398.1
110°	164.1	252.4	299.5	379.6	430.0	440.1



TEST NUMBER: P392528

CATALOG NUMBER: MWL-2-28-31-UNV-L840-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	208.9	297.8	339.2	413.2	472.9	480.5
115°	258.5	340.9	375.4	451.9	507.4	511.6
117.5°	303.0	391.3	412.4	480.5	543.6	544.4
120°	350.1	439.3	449.4	520.0	578.9	585.6
122.5°	398.1	484.7	484.7	553.6	610.0	615.2
125°	442.6	533.5	520.0	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	685.0
132.5°	584.1	681.6	631.2	675.7	719.5	724.5
135°	629.5	728.7	662.3	703.5	746.4	744.7
137.5°	673.2	772.4	700.1	725.3	764.0	769.1
140°	716.1	819.5	733.8	753.9	785.9	786.7
142.5°	761.5	866.6	770.8	782.5	810.3	805.2
145°	812.0	911.2	817.0	811.1	829.8	817.8
147.5°	856.5	949.9	849.8	833.1	854.2	839.9
150°	906.1	989.4	895.2	862.6	875.2	868.5
152.5°	951.6	1020.5	944.8	885.3	899.6	891.2
155°	996.1	1053.3	992.8	908.0	918.1	914.7
157.5°	1034.8	1081.9	1028.9	930.5	943.3	936.6
160°	1068.4	1105.4	1071.0	965.8	960.1	960.1
162.5°	1097.9	1128.1	1100.4	1013.8	978.6	962.6
165°	1123.9	1145.8	1126.5	1067.6	1012.9	999.6
167.5°	1148.3	1162.6	1155.9	1111.3	1067.6	1038.3
170°	1167.7	1176.1	1166.8	1148.3	1126.5	1100.4
172.5°	1177.8	1181.1	1187.0	1175.2	1166.8	1149.0
175°	1184.6	1193.9	1188.9	1192.1	1184.5	1180.1
177.5°	1186.3	1188.0	1187.2	1193.7	1196.9	1191.1
180°	1192.1	1192.1	1192.1	1192.1	1192.1	1192.1

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