

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: P188232

Luminaire Tested: **MPBL-4-LD4-UNV-1DN-STD-40**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P188232
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P27378)
Test Lab: INNOVATION CENTER-P2
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: MPBL-4-LD4-UNV-1DN-STD-40
Description:
Light Source: (84) NICHIA ELM 4000K LED
2UT217042A8404A
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3333.2 lumens
Efficiency: N/A
Efficacy: 96.3 lumens/watt
Spacing Criteria (0/90/45): 1.29 / 1.19 / 1.37
Luminous Opening: Rectangular w/ Sides (W: 4' x L: 0.42' x H: 0.29')
CIE Type: Direct

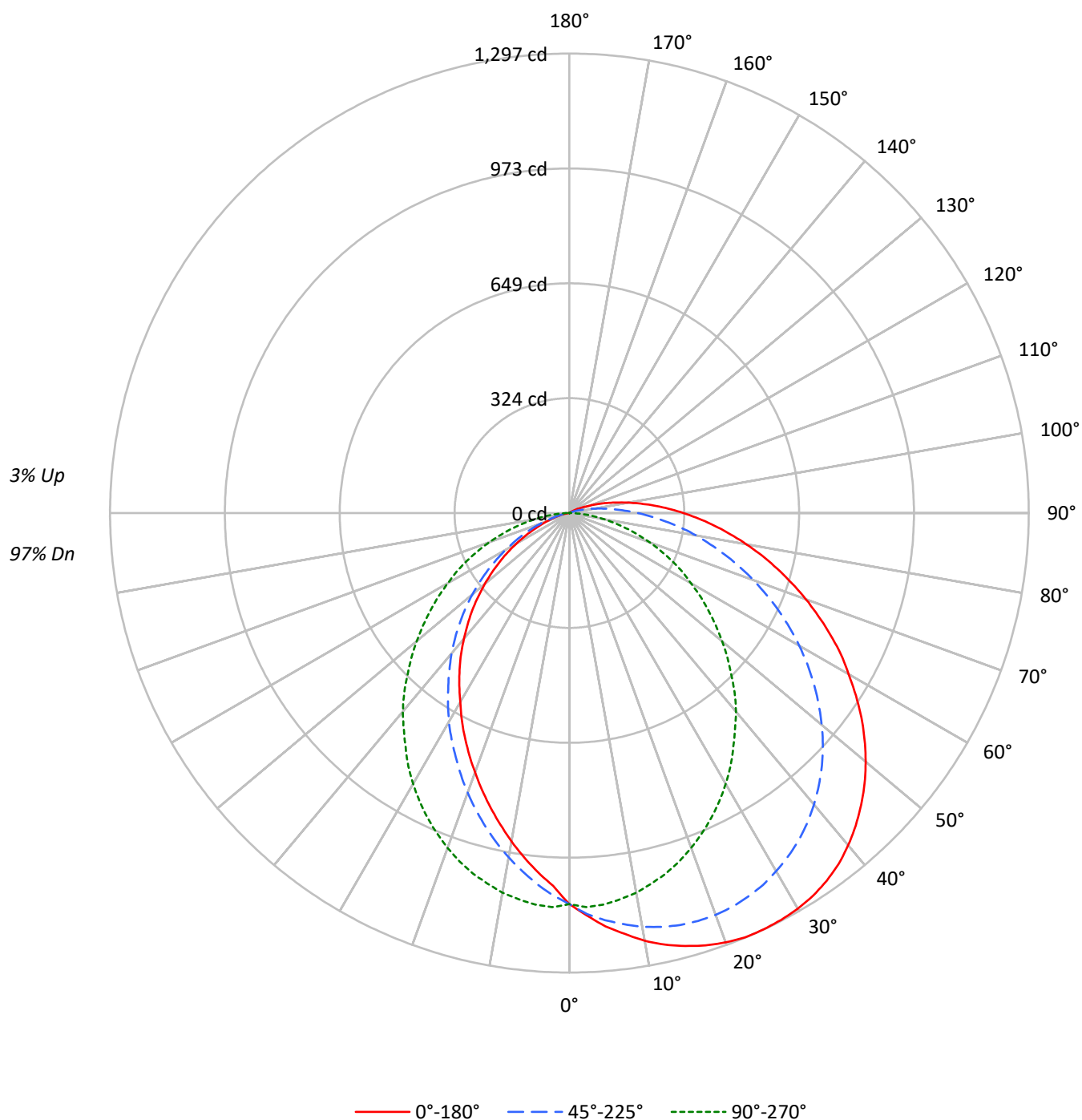
Input Watts (W): 34.6
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10
RCR																	
0	118	118	118	118	115	115	115	115	109	109	109	104	104	104	99	99	99
1	107	102	97	93	104	99	95	91	94	91	87	90	87	84	86	83	81
2	97	88	81	75	94	86	79	74	82	76	72	78	74	69	75	71	67
3	88	77	69	62	85	75	68	61	72	65	60	69	63	58	66	61	57
4	81	68	59	52	78	67	58	52	64	57	51	61	55	50	59	53	49
5	74	61	52	45	72	60	51	45	57	50	44	55	48	43	53	47	42
6	68	55	46	39	66	54	45	39	52	44	38	50	43	38	48	42	37
7	64	50	41	35	62	49	40	34	47	39	34	45	39	33	44	38	33
8	59	45	37	31	57	45	36	31	43	36	30	42	35	30	40	34	30
9	55	42	33	28	54	41	33	28	40	32	27	38	32	27	37	31	27
10	52	38	30	25	50	38	30	25	37	30	25	35	29	25	34	29	24

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	7127	7127	7127
5°	7155	7146	6219
10°	7157	7045	5495
15°	7123	6906	4845
20°	7064	6733	4267
25°	6967	6537	3751
30°	6849	6316	3271
35°	6702	6051	2861
40°	6503	5813	2461
45°	6258	5506	2082
50°	5983	5203	1711
55°	5668	4883	1350
60°	5315	4537	1009
65°	4969	4214	693
70°	4590	3772	427
75°	4198	3233	237
80°	3797	2555	91
85°	3391	1681	7



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	104.4	3.1
10°-20°	297.9	8.9
20°-30°	448.0	13.4
30°-40°	536.3	16.1
40°-50°	552.8	16.6
50°-60°	498.1	14.9
60°-70°	389.7	11.7
70°-80°	260.3	7.8
80°-90°	144.9	4.3
90°-100°	67.5	2.0
100°-110°	24.8	0.7
110°-120°	7.0	0.2
120°-130°	1.5	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	850.3	25.5
0°-40°	1386.6	41.6
0°-60°	2437.5	73.1
0°-90°	3232.4	97.0
90°-120°	99.3	3.0
90°-150°	100.8	3.0
90°-180°	101.0	3.0
0°-180°	3333.2	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1104	1104	1104	1104	1104	
5°	1171	1153	1109	1051	1018	113
15°	1265	1204	1053	916	861	359
25°	1297	1194	949	759	698	599
35°	1267	1128	807	596	541	793
45°	1165	1008	647	436	388	899
55°	1007	843	479	281	240	900
65°	813	652	319	142	113	805
75°	608	454	165	42	34	642
85°	412	273	42	2	1	356
90°	322	193	1	0	0	177
95°	241	124	0	0	0	182
105°	109	33	1	0	0	119
115°	33	6	2	1	0	35
125°	5	2	2	2	0	5
135°	0	0	0	0	0	0
145°	0	0	0	0	0	0
155°	0	0	0	0	0	0
165°	0	0	0	0	0	0
175°	0	0	0	0	0	0
180°	0	0	0	0	0	0



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	1103.6	1103.6	1103.6	1103.6	1103.6	1103.6	1103.6	1103.6	1103.6	1103.6	1103.6
2.5°	1137.1	1135.4	1136.3	1135.4	1135.4	1134.6	1133.8	1133.8	1138.7	1135.4	1133.0
5°	1171.3	1169.7	1169.7	1168.1	1164.8	1164.0	1162.4	1159.9	1162.4	1159.1	1153.4
7.5°	1198.2	1198.2	1197.4	1195.8	1192.5	1190.1	1187.6	1184.4	1184.4	1178.7	1170.5
10°	1226.0	1223.5	1221.9	1218.6	1214.6	1212.1	1209.7	1204.8	1203.1	1195.8	1186.0
12.5°	1248.0	1246.4	1243.9	1240.7	1235.0	1232.5	1228.4	1221.1	1217.0	1208.9	1196.6
15°	1265.1	1265.1	1263.5	1259.4	1254.5	1249.6	1244.7	1235.8	1230.1	1219.5	1204.0
17.5°	1279.8	1279.8	1277.4	1272.5	1266.0	1261.1	1256.2	1245.6	1236.6	1224.4	1207.2
20°	1289.6	1289.6	1285.5	1280.6	1272.5	1266.8	1261.1	1248.8	1239.0	1226.0	1207.2
22.5°	1296.1	1294.5	1291.2	1284.7	1275.7	1270.0	1263.5	1248.8	1237.4	1222.7	1203.1
25°	1296.9	1296.1	1291.2	1285.5	1275.7	1269.2	1262.7	1247.2	1233.3	1217.8	1194.2
27.5°	1294.5	1293.7	1289.6	1282.3	1272.5	1266.0	1258.6	1241.5	1226.0	1208.0	1183.6
30°	1289.6	1288.8	1283.9	1275.7	1265.1	1258.6	1250.5	1232.5	1213.7	1195.0	1167.3
32.5°	1280.6	1279.0	1274.1	1266.0	1253.7	1246.4	1237.4	1218.6	1198.2	1177.0	1149.3
35°	1266.8	1264.3	1259.4	1251.3	1238.2	1230.1	1221.9	1201.5	1179.5	1156.6	1128.1
37.5°	1248.8	1246.4	1241.5	1231.7	1217.8	1210.5	1201.5	1179.5	1156.6	1132.2	1102.8
40°	1224.4	1222.7	1217.8	1208.9	1194.2	1186.0	1177.0	1154.2	1130.5	1104.4	1074.3
42.5°	1196.6	1197.4	1190.9	1181.1	1165.6	1158.3	1148.5	1125.7	1101.2	1073.4	1042.5
45°	1164.8	1164.8	1159.9	1150.1	1133.8	1126.5	1116.7	1093.0	1068.6	1039.2	1008.2
47.5°	1130.5	1129.7	1124.8	1114.2	1098.7	1091.4	1080.8	1056.3	1032.7	1002.5	970.7
50°	1092.2	1091.4	1085.7	1075.1	1060.4	1052.2	1042.5	1018.0	993.5	961.7	929.9
52.5°	1050.6	1049.0	1044.1	1033.5	1018.8	1010.6	999.2	975.6	951.1	920.1	887.5
55°	1006.6	1004.1	1000.0	990.2	974.8	966.6	955.2	930.7	907.0	876.1	842.6
57.5°	959.3	959.3	952.7	942.1	929.9	919.3	909.5	883.4	860.6	831.2	796.9
60°	910.3	909.5	903.8	894.0	880.9	870.3	861.4	835.3	812.4	780.6	749.6
62.5°	864.6	857.3	854.0	844.2	831.2	820.6	809.2	786.3	762.7	734.9	700.7
65°	813.2	806.7	802.6	792.0	778.2	770.0	759.4	735.8	712.1	682.7	651.7
67.5°	761.0	755.3	751.3	741.5	730.0	717.8	707.2	685.2	662.3	634.6	602.0
70°	710.5	703.9	700.7	690.1	678.7	667.2	657.4	635.4	612.6	584.9	552.2
72.5°	658.3	653.4	650.1	639.5	627.3	618.3	606.1	585.7	561.2	535.9	503.3
75°	607.7	602.0	597.9	587.3	576.7	567.7	557.9	533.5	512.3	487.0	454.3
77.5°	557.1	551.4	549.0	539.2	526.9	517.1	508.2	486.2	462.5	438.8	407.0
80°	507.4	501.6	500.0	489.4	477.2	468.2	459.2	438.0	415.2	391.5	363.0
82.5°	458.4	455.2	451.1	441.3	426.6	420.1	411.1	389.9	367.9	345.0	317.3
85°	411.9	408.7	403.0	392.3	380.1	373.6	367.1	342.6	323.0	300.2	273.3
87.5°	365.4	363.0	356.5	349.9	335.2	328.7	322.2	300.2	279.8	256.9	231.7
90°	322.2	318.9	313.2	306.7	292.0	286.3	279.8	259.4	239.0	217.0	193.3
92.5°	279.8	277.3	272.4	263.5	251.2	244.7	239.0	217.8	199.8	179.5	156.6
95°	240.6	237.4	232.5	223.5	212.9	207.2	200.7	181.9	165.6	145.2	124.0
97.5°	203.1	199.8	195.0	187.6	177.0	172.1	166.4	148.5	133.8	115.0	96.3
100°	168.8	166.4	163.1	155.8	144.4	140.3	134.6	118.3	104.4	88.1	71.0
102.5°	137.9	135.4	132.1	125.6	115.8	110.9	106.9	93.0	79.1	64.4	49.8
105°	109.3	106.9	102.8	97.1	89.7	85.6	81.6	68.5	57.9	44.9	33.4
107.5°	84.0	81.6	79.1	75.0	66.9	63.6	59.5	48.9	40.0	31.0	22.8
110°	62.0	60.4	57.9	54.7	48.1	45.7	42.4	34.3	28.5	21.2	15.5



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CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	44.9	44.0	42.4	39.2	35.1	32.6	31.0	24.5	19.6	14.7	9.8
115°	32.6	31.8	31.0	28.5	24.5	22.8	21.2	17.1	13.1	9.8	5.7
117.5°	22.8	22.8	21.2	19.6	16.3	15.5	13.9	11.4	8.2	5.7	3.3
120°	15.5	14.7	14.7	13.1	11.4	9.8	9.0	6.5	4.9	3.3	1.6
122.5°	9.8	9.0	9.0	8.2	6.5	5.7	4.9	3.3	2.4	1.6	1.6
125°	4.9	4.9	4.9	4.1	3.3	3.3	2.4	1.6	1.6	1.6	1.6
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
142.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
145°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
147.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
152.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
157.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
162.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
167.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
172.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	1103.6	1103.6	1103.6	1103.6	1103.6	1103.6	1103.6	1103.6	1103.6	1103.6	1103.6
2.5°	1126.5	1119.9	1115.0	1115.0	1115.0	1116.7	1116.7	1117.5	1117.5	1113.4	1106.9
5°	1145.2	1136.3	1128.9	1125.7	1124.0	1124.0	1121.6	1118.3	1115.9	1109.3	1098.7
7.5°	1159.9	1147.7	1137.9	1131.4	1129.7	1127.3	1121.6	1115.9	1109.3	1099.6	1086.5
10°	1172.1	1157.5	1143.6	1135.4	1131.4	1127.3	1118.3	1110.2	1100.4	1088.1	1071.8
12.5°	1180.3	1162.4	1146.9	1133.8	1128.9	1123.2	1111.8	1099.6	1087.3	1071.0	1053.1
15°	1185.2	1164.8	1145.2	1130.5	1123.2	1116.7	1101.2	1086.5	1071.8	1053.1	1031.8
17.5°	1186.8	1163.2	1141.2	1122.4	1114.2	1106.1	1088.1	1070.2	1053.1	1031.0	1007.4
20°	1183.6	1158.3	1133.0	1111.8	1102.0	1092.2	1071.0	1050.6	1031.0	1005.7	978.8
22.5°	1177.9	1150.1	1121.6	1097.9	1086.5	1075.1	1051.4	1027.8	1005.7	978.0	949.5
25°	1168.1	1137.1	1106.9	1080.8	1067.7	1053.9	1028.6	1002.5	978.0	948.6	917.7
27.5°	1155.0	1122.4	1088.9	1059.6	1045.7	1031.0	1002.5	975.6	947.8	916.8	883.4
30°	1138.7	1104.4	1068.6	1035.1	1021.2	1005.7	974.8	945.4	916.0	882.6	847.5
32.5°	1118.3	1081.6	1044.1	1010.6	994.3	976.4	945.4	912.8	880.9	846.7	810.0
35°	1094.7	1057.1	1018.0	982.1	964.1	947.0	912.8	877.7	844.2	806.7	773.3
37.5°	1069.4	1030.2	991.1	951.1	932.3	911.9	877.7	841.0	806.7	768.4	734.1
40°	1040.0	1000.0	959.3	917.7	898.1	879.3	841.0	802.6	767.6	731.7	693.3
42.5°	1007.4	967.4	925.8	883.4	862.2	842.6	803.5	764.3	727.6	690.9	653.4
45°	972.3	931.5	889.1	845.9	824.7	803.5	763.5	724.3	686.8	646.8	611.8
47.5°	934.0	893.2	850.8	807.5	783.9	763.5	722.7	684.4	645.2	605.2	571.0
50°	894.0	852.4	810.8	766.7	743.1	722.7	681.1	640.3	602.8	562.8	530.2
52.5°	849.1	810.0	768.4	723.5	703.1	681.1	638.7	600.3	558.7	520.4	487.0
55°	805.9	765.9	724.3	680.3	657.4	638.7	595.5	557.1	516.3	478.8	447.0
57.5°	759.4	719.4	678.7	637.1	615.0	593.8	552.2	513.9	473.1	438.8	407.8
60°	712.1	673.8	633.0	591.4	570.2	549.8	509.0	471.5	430.7	395.6	367.1
62.5°	664.8	626.5	586.5	544.1	525.3	504.9	464.1	428.2	389.9	359.7	325.5
65°	616.7	579.1	540.0	498.4	479.6	460.9	420.9	385.8	348.3	318.9	287.1
67.5°	567.7	531.0	493.5	452.7	433.9	416.0	377.7	344.2	307.5	279.0	247.2
70°	519.6	484.5	447.0	407.8	389.9	372.8	332.8	302.6	268.4	239.8	210.4
72.5°	471.5	435.6	402.1	363.0	347.5	328.7	291.2	260.2	228.4	201.5	173.7
75°	423.3	389.1	354.8	318.9	304.3	285.5	251.2	221.1	190.1	164.8	137.9
77.5°	376.0	345.0	312.4	275.7	261.0	243.9	212.1	181.9	153.3	128.9	105.2
80°	331.2	301.0	269.2	234.1	220.2	203.9	173.7	145.2	119.1	97.1	75.9
82.5°	287.1	257.8	227.6	196.6	181.1	166.4	137.9	111.7	87.3	67.7	48.9
85°	243.9	217.0	186.0	159.1	145.2	130.5	105.2	81.6	59.5	41.6	25.3
87.5°	203.9	178.6	151.7	124.0	110.9	97.9	75.0	53.8	35.1	17.9	4.9
90°	166.4	141.1	117.5	92.2	80.8	69.3	48.9	30.2	10.6	0.8	0.0
92.5°	132.1	109.3	86.5	65.3	54.7	44.9	26.1	10.6	1.6	0.0	0.0
95°	102.8	81.6	62.0	42.4	34.3	25.3	11.4	3.3	0.0	0.0	0.0
97.5°	76.7	58.7	41.6	25.3	17.9	12.2	4.9	0.8	0.0	0.0	0.0
100°	54.7	38.3	24.5	13.1	9.0	5.7	1.6	0.0	0.0	0.0	0.8
102.5°	35.9	23.7	14.7	7.3	4.9	3.3	0.8	0.8	0.8	0.8	0.8
105°	22.8	14.7	9.0	4.1	2.4	1.6	0.8	0.8	0.8	0.8	0.8
107.5°	15.5	9.8	4.9	2.4	1.6	1.6	1.6	1.6	1.6	1.6	1.6
110°	9.8	5.7	2.4	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6



TEST NUMBER: P188232

CATALOG NUMBER: MPBL-4-LD4-UNV-1DN-STD-40

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
112.5°	6.5	3.3	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
115°	3.3	1.6	1.6	1.6	1.6	1.6	1.6	2.4	2.4	2.4	2.4
117.5°	1.6	1.6	1.6	1.6	1.6	2.4	2.4	2.4	2.4	2.4	2.4
120°	1.6	1.6	1.6	1.6	2.4	2.4	2.4	2.4	2.4	2.4	2.4
122.5°	1.6	1.6	1.6	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
125°	1.6	1.6	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
142.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
145°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
147.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
152.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
157.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
162.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
167.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
172.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P188232

CATALOG NUMBER: MPBL-4-LD4-UNV-1DN-STD-40

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	1103.6	1103.6	1103.6	1103.6	1103.6	1103.6	1103.6	1103.6	1103.6	1103.6	1103.6
2.5°	1098.7	1090.6	1085.7	1084.9	1084.9	1083.2	1080.8	1077.5	1079.2	1078.3	1072.6
5°	1088.1	1076.7	1069.4	1066.9	1065.3	1062.0	1056.3	1052.2	1051.4	1047.3	1040.8
7.5°	1072.6	1059.6	1049.0	1045.7	1042.5	1036.7	1029.4	1022.1	1019.6	1013.9	1006.6
10°	1055.5	1038.4	1027.0	1022.1	1018.0	1009.8	1000.0	991.9	987.0	979.6	970.7
12.5°	1034.3	1015.5	1000.9	994.3	989.4	978.8	968.2	958.4	952.7	943.8	933.2
15°	1009.8	989.4	972.3	965.0	959.3	947.0	934.8	921.7	916.0	905.4	895.6
17.5°	982.9	960.1	940.5	934.0	927.4	912.8	898.1	885.0	878.5	867.9	858.9
20°	953.5	929.1	907.9	901.3	893.2	876.9	861.4	848.3	840.2	830.4	819.0
22.5°	922.5	895.6	873.6	864.6	857.3	840.2	823.0	810.0	800.2	789.6	777.4
25°	886.7	860.6	836.9	827.9	819.8	801.0	783.9	769.2	759.4	748.0	736.6
27.5°	850.8	823.8	799.4	789.6	781.4	761.9	743.9	730.0	720.3	708.0	696.6
30°	814.1	786.3	761.0	751.3	740.6	721.9	704.8	690.9	680.3	668.9	656.6
32.5°	775.7	747.2	724.3	712.9	703.1	681.9	666.4	650.1	637.9	627.3	615.8
35°	735.8	707.2	683.5	673.8	663.2	641.1	625.6	609.3	596.3	586.5	575.9
37.5°	696.6	667.2	644.4	633.8	622.4	601.2	585.7	568.5	556.3	546.5	535.9
40°	655.0	626.5	603.6	593.0	582.4	560.4	545.7	528.6	517.1	507.4	495.9
42.5°	615.0	587.3	564.5	553.9	542.4	521.2	505.7	488.6	478.0	467.4	456.8
45°	574.2	546.5	522.0	512.3	502.5	481.3	465.8	448.6	436.4	428.2	416.8
47.5°	533.5	509.0	482.1	473.1	462.5	441.3	426.6	408.7	398.1	386.6	378.5
50°	492.7	466.6	442.9	434.8	423.3	402.1	386.6	370.3	358.1	348.3	339.3
52.5°	452.7	428.2	405.4	394.8	384.2	362.2	347.5	332.0	318.9	309.1	300.2
55°	412.7	387.5	366.2	354.0	345.0	323.0	308.3	293.6	281.4	271.6	263.5
57.5°	372.8	349.1	327.1	316.5	305.1	284.7	270.0	255.3	243.1	234.9	226.8
60°	332.8	309.1	287.9	278.2	266.7	247.2	233.3	218.6	207.2	199.0	192.5
62.5°	293.6	272.4	250.4	239.8	230.0	212.1	196.6	183.5	174.6	165.6	159.9
65°	255.3	234.9	213.7	203.1	193.3	176.2	162.3	150.9	141.9	134.6	128.9
67.5°	220.2	198.2	177.8	167.2	158.2	142.7	130.5	120.7	112.6	106.0	101.1
70°	184.3	161.5	143.6	133.8	125.6	110.9	101.1	93.0	84.8	79.9	75.9
72.5°	148.5	128.1	110.9	102.8	95.4	83.2	73.4	67.7	60.4	56.3	53.8
75°	115.8	97.9	81.6	74.2	68.5	58.7	50.6	45.7	41.6	39.2	37.5
77.5°	86.5	68.5	55.5	49.8	44.9	36.7	31.8	29.4	26.9	25.3	24.5
80°	57.9	43.2	33.4	28.5	25.3	20.4	18.8	17.1	15.5	14.7	13.9
82.5°	34.3	22.0	15.5	13.9	12.2	9.8	9.0	8.2	7.3	7.3	6.5
85°	13.1	7.3	4.9	4.1	4.1	3.3	2.4	2.4	1.6	1.6	1.6
87.5°	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
92.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
95°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
97.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102.5°	0.8	0.8	0.8	0.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0
105°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0	0.0	0.0
107.5°	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0
110°	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.0	0.0



TEST NUMBER: P188232

CATALOG NUMBER: MPBL-4-LD4-UNV-1DN-STD-40

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
112.5°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8
115°	2.4	2.4	1.6	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8
117.5°	2.4	2.4	2.4	2.4	2.4	1.6	1.6	1.6	1.6	0.8	0.8
120°	2.4	2.4	2.4	2.4	2.4	2.4	1.6	1.6	1.6	1.6	0.8
122.5°	2.4	2.4	2.4	2.4	2.4	2.4	1.6	1.6	1.6	1.6	0.8
125°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	1.6	1.6	1.6	1.6
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
142.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
145°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
147.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
152.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
157.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
162.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
167.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
172.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P188232

CATALOG NUMBER: MPBL-4-LD4-UNV-1DN-STD-40

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1103.6	1103.6	1103.6	1103.6	1103.6	1103.6	1103.6	1103.6
2.5°	1070.2	1067.7	1066.9	1066.9	1064.5	1060.4	1056.3	1053.1
5°	1036.7	1032.7	1031.8	1031.0	1027.8	1023.7	1018.8	1018.0
7.5°	1000.9	998.4	995.1	995.1	993.5	987.0	982.9	980.5
10°	964.1	960.1	957.6	956.0	951.9	947.8	941.3	941.3
12.5°	925.8	919.3	916.8	915.2	912.8	907.0	901.3	900.5
15°	887.5	881.8	878.5	876.9	872.0	867.1	862.2	860.6
17.5°	849.1	842.6	839.3	836.1	833.6	826.3	820.6	819.8
20°	807.5	801.8	798.6	795.3	792.0	784.7	780.6	779.0
22.5°	766.7	760.2	757.0	753.7	751.3	744.7	740.6	739.0
25°	725.1	719.4	716.2	712.9	709.7	703.1	699.9	698.2
27.5°	685.2	679.5	676.2	672.9	669.7	662.3	659.1	658.3
30°	646.0	639.5	637.1	633.0	629.7	624.0	620.7	615.8
32.5°	605.2	600.3	597.1	593.8	590.6	584.0	581.6	578.3
35°	566.9	560.4	558.7	554.7	551.4	545.7	542.4	540.8
37.5°	525.3	521.2	519.6	515.5	512.3	506.5	504.1	502.5
40°	487.8	482.1	479.6	476.4	473.1	467.4	465.8	463.3
42.5°	451.1	442.9	441.3	439.7	434.8	429.9	427.4	425.0
45°	411.9	403.8	403.0	400.5	395.6	390.7	389.1	387.5
47.5°	372.8	365.4	363.8	361.4	356.5	352.4	350.7	349.1
50°	334.4	327.1	325.5	323.0	318.9	314.0	313.2	312.4
52.5°	296.1	287.9	287.9	281.4	281.4	278.2	275.7	275.7
55°	259.4	252.0	251.2	244.7	245.5	242.3	240.6	239.8
57.5°	223.5	216.2	216.2	211.3	211.3	208.0	206.4	206.4
60°	189.2	182.7	181.9	177.8	177.8	174.6	172.9	172.9
62.5°	156.6	150.9	150.1	145.2	146.0	143.6	142.7	141.9
65°	126.4	120.7	119.9	115.8	116.6	114.2	113.4	113.4
67.5°	98.7	93.8	93.0	88.9	90.5	88.1	87.3	87.3
70°	72.6	69.3	69.3	67.7	67.7	66.9	66.1	66.1
72.5°	53.0	51.4	50.6	48.9	49.8	50.6	48.9	48.9
75°	37.5	35.9	35.9	34.3	35.1	34.3	34.3	34.3
77.5°	23.7	23.7	22.8	22.0	22.0	22.8	21.2	21.2
80°	13.9	13.1	13.1	12.2	12.2	13.1	12.2	12.2
82.5°	6.5	6.5	6.5	5.7	5.7	5.7	4.9	4.9
85°	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8
87.5°	0.8	0.8	0.8	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
92.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
95°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
97.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
105°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
107.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
110°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P188232

CATALOG NUMBER: MPBL-4-LD4-UNV-1DN-STD-40

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
112.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
115°	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
117.5°	0.8	0.8	0.8	0.8	0.0	0.0	0.0	0.0
120°	0.8	0.8	0.8	0.8	0.0	0.0	0.0	0.0
122.5°	0.8	0.8	0.8	0.8	0.0	0.0	0.0	0.0
125°	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
142.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
145°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
147.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
152.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
157.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
162.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
167.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
172.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)