

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: P188229

Luminaire Tested: **MPBL-3-LD4-UNV-2DN-LO-40**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P188229
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P27372)
Test Lab: INNOVATION CENTER-P2
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: MPBL-3-LD4-UNV-2DN-LO-40
Description:
Light Source: (168) NICHIA ELM 4000K LED
2UT217042A8404A
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3775.5 lumens
Efficiency: N/A
Efficacy: 72.7 lumens/watt
Spacing Criteria (0/90/45): 1.22 / 1.18 / 1.33
Luminous Opening: Rectangular w/ Sides (W: 3' x L: 0.42' x H: 0.29')
CIE Type: Direct

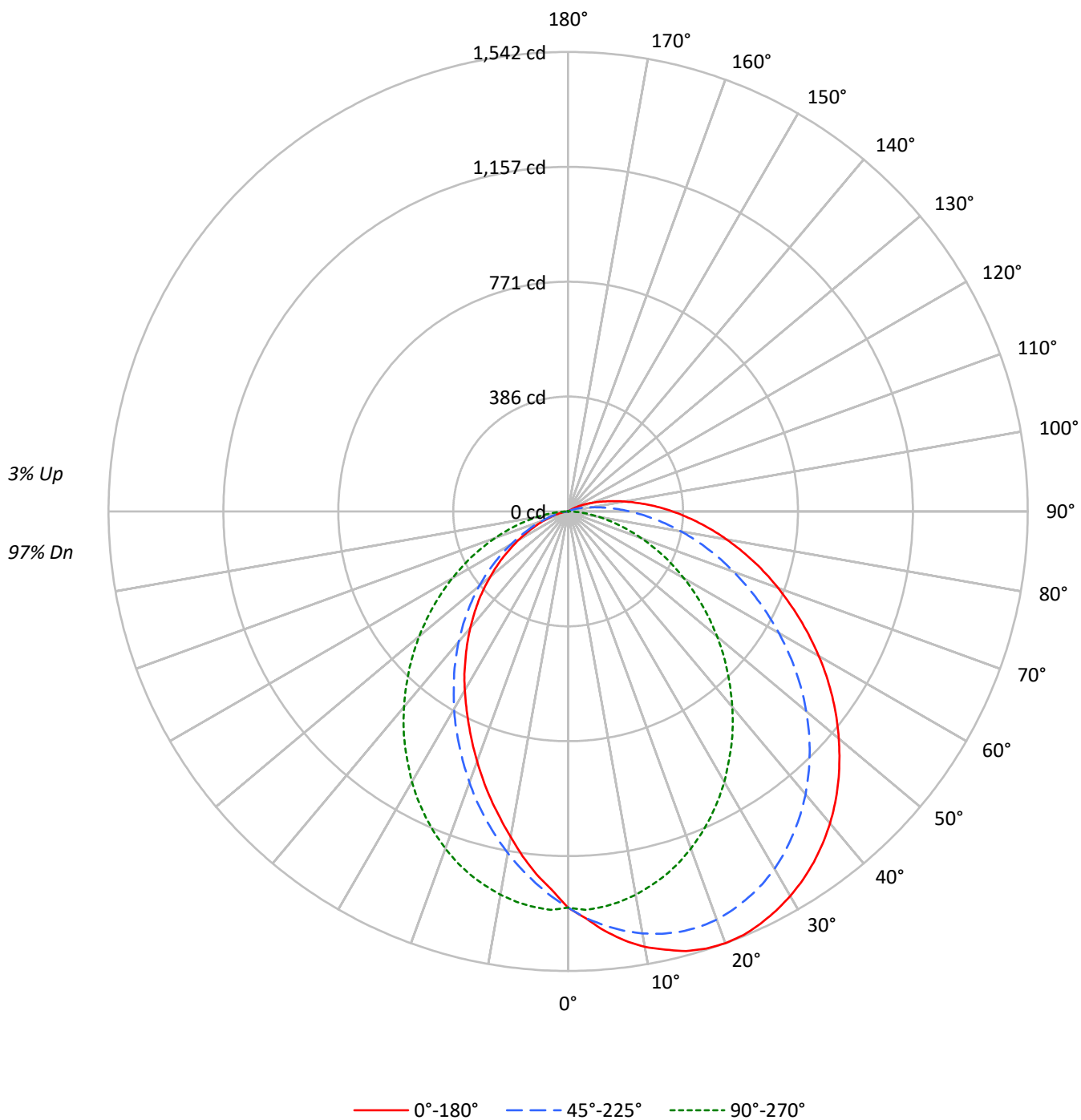
Input Watts (W): 51.9
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	95	91	88	90	87	85	86	84	82
2	97	89	82	76	94	87	80	74	82	77	72	79	74	70	75	71	68
3	89	78	70	63	86	76	68	62	73	66	61	69	64	59	66	62	58
4	81	69	60	53	79	68	59	53	65	57	52	62	56	51	59	54	50
5	75	62	53	46	72	60	52	46	58	51	45	56	49	44	54	48	43
6	69	56	47	40	67	55	46	40	52	45	39	50	44	39	49	43	38
7	64	51	42	36	62	50	41	35	48	40	35	46	39	34	44	38	34
8	60	46	38	32	58	45	37	32	44	36	31	42	36	31	41	35	30
9	56	42	34	29	54	42	34	28	40	33	28	39	33	28	38	32	28
10	52	39	31	26	51	39	31	26	37	30	26	36	30	25	35	29	25

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	11446	11446	11446
5°	11510	11418	9951
10°	11549	11230	8635
15°	11465	10977	7508
20°	11260	10653	6519
25°	10936	10281	5650
30°	10554	9865	4910
35°	10135	9403	4226
40°	9678	8900	3614
45°	9184	8379	3046
50°	8658	7830	2492
55°	8120	7245	1981
60°	7559	6614	1495
65°	6996	5957	1057
70°	6449	5184	692
75°	5918	4304	412
80°	5381	3321	169
85°	4846	2204	40



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	125.5	3.3
10°-20°	355.8	9.4
20°-30°	527.4	14.0
30°-40°	618.7	16.4
40°-50°	623.5	16.5
50°-60°	549.6	14.6
60°-70°	422.5	11.2
70°-80°	280.0	7.4
80°-90°	156.6	4.1
90°-100°	74.7	2.0
100°-110°	30.2	0.8
110°-120°	9.4	0.2
120°-130°	1.7	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°	1008.6	26.7
0°-40°	1627.3	43.1
0°-60°	2800.5	74.2
0°-90°	3659.5	96.9
90°-120°	114.3	3.0
90°-150°	116.0	3.1
90°-180°	116.0	3.1
0°-180°	3775.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1329	1329	1329	1329	1329	
5°	1413	1394	1332	1252	1222	137
15°	1527	1460	1263	1069	1000	432
25°	1527	1430	1131	865	789	704
35°	1437	1318	955	667	599	899
45°	1282	1146	755	478	425	989
55°	1082	932	550	303	264	967
65°	859	701	353	151	130	851
75°	643	485	176	50	45	680
85°	442	290	47	4	4	381
90°	350	206	1	2	2	192
95°	266	135	0	1	0	202
105°	131	45	1	1	0	142
115°	48	6	2	1	0	50
125°	5	2	3	2	1	6
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°	1329.2	1329.2	1329.2	1329.2	1329.2	1329.2	1329.2	1329.2	1329.2	1329.2	1329.2
2.5°	1367.2	1366.6	1368.5	1370.3	1373.3	1374.5	1375.7	1376.3	1371.5	1370.3	1366.0
5°	1413.1	1413.1	1413.1	1413.1	1413.7	1414.4	1413.7	1412.5	1405.3	1401.7	1394.4
7.5°	1452.4	1453.0	1451.8	1451.8	1451.2	1450.0	1448.8	1444.5	1435.5	1428.2	1418.6
10°	1483.8	1483.2	1483.2	1481.4	1479.6	1478.4	1476.0	1471.1	1460.2	1450.6	1437.9
12.5°	1506.1	1507.4	1505.5	1504.3	1501.3	1500.1	1496.5	1489.8	1479.0	1466.3	1451.8
15°	1527.3	1527.3	1526.1	1523.1	1519.4	1517.0	1513.4	1504.9	1492.3	1477.2	1460.2
17.5°	1538.2	1539.4	1537.5	1533.9	1529.7	1526.7	1523.1	1512.8	1498.9	1482.0	1462.1
20°	1541.8	1542.4	1540.0	1535.7	1530.9	1526.7	1522.5	1511.6	1497.7	1478.4	1457.8
22.5°	1538.2	1538.2	1535.1	1530.3	1524.3	1520.6	1515.8	1503.1	1488.6	1468.1	1446.4
25°	1526.7	1527.3	1524.3	1518.8	1512.2	1508.0	1503.1	1489.8	1474.1	1453.0	1430.1
27.5°	1510.4	1511.0	1508.0	1502.5	1496.5	1491.0	1486.2	1474.1	1456.6	1434.9	1410.1
30°	1490.4	1490.4	1487.4	1480.8	1474.1	1469.3	1463.9	1450.6	1433.1	1408.9	1384.8
32.5°	1465.7	1465.7	1461.5	1454.8	1447.6	1442.1	1437.3	1421.6	1402.9	1381.7	1354.0
35°	1436.7	1436.7	1432.5	1424.6	1416.8	1411.9	1404.1	1389.6	1369.7	1347.9	1318.3
37.5°	1403.5	1403.5	1398.7	1390.8	1381.7	1377.5	1370.9	1354.6	1333.4	1311.1	1280.9
40°	1366.6	1366.0	1361.2	1352.1	1343.1	1337.7	1329.2	1314.7	1293.0	1270.6	1239.2
42.5°	1326.2	1325.0	1319.5	1310.5	1302.6	1295.4	1288.1	1271.2	1248.9	1225.3	1193.9
45°	1282.1	1280.3	1274.8	1265.2	1254.9	1247.7	1239.8	1224.1	1201.2	1177.6	1146.2
47.5°	1234.4	1233.2	1227.1	1219.9	1206.6	1201.8	1190.9	1175.2	1151.0	1125.1	1096.1
50°	1185.5	1184.3	1177.6	1169.8	1157.1	1151.0	1140.2	1123.3	1099.1	1072.5	1042.9
52.5°	1134.1	1133.5	1125.7	1120.2	1105.2	1097.9	1088.2	1069.5	1044.8	1018.8	988.0
55°	1081.6	1078.6	1073.1	1066.5	1051.4	1044.2	1033.9	1014.6	989.2	963.2	931.8
57.5°	1027.2	1026.0	1020.6	1011.5	995.2	988.0	977.1	957.8	932.4	905.3	874.5
60°	971.1	969.9	962.0	955.4	938.5	931.2	920.4	900.4	875.1	847.9	816.5
62.5°	914.9	914.3	908.9	899.2	882.3	875.1	863.6	843.7	817.7	790.5	758.5
65°	858.8	856.3	853.3	843.1	826.7	817.7	807.4	786.9	760.3	734.4	701.1
67.5°	803.2	803.2	797.2	787.5	770.6	762.1	751.3	730.7	704.2	677.0	645.0
70°	748.8	748.8	743.4	730.7	715.6	706.6	696.3	673.4	649.2	622.0	589.4
72.5°	695.7	695.7	687.2	677.6	661.9	652.8	642.6	620.2	593.6	568.3	538.1
75°	642.6	642.0	635.3	625.0	608.7	599.7	588.8	567.7	541.1	514.5	484.9
77.5°	590.0	590.0	582.8	571.9	556.8	547.1	539.9	515.1	488.6	463.2	433.6
80°	539.3	539.9	532.0	521.8	506.1	496.4	486.7	464.4	437.8	413.1	383.5
82.5°	489.8	489.8	482.5	472.3	456.6	446.9	439.6	414.9	389.5	364.2	336.4
85°	441.5	441.5	434.8	424.5	408.2	399.2	391.9	368.4	343.0	317.7	289.9
87.5°	395.0	394.4	388.3	378.0	361.7	353.3	345.4	322.5	298.3	273.6	247.0
90°	350.3	349.7	343.6	333.4	317.7	308.6	302.0	279.6	256.1	231.9	205.9
92.5°	307.4	306.2	298.9	291.7	275.4	267.5	260.3	239.8	216.8	193.3	169.1
95°	265.7	264.5	258.5	249.4	235.5	227.7	220.4	200.5	180.0	157.0	134.7
97.5°	227.1	225.9	220.4	212.0	198.7	190.8	184.2	165.5	146.7	125.6	105.1
100°	191.4	190.8	185.4	177.5	164.9	158.2	152.2	134.1	117.8	99.0	80.9
102.5°	159.4	158.8	154.0	146.1	135.3	129.2	123.8	109.3	93.0	76.7	61.0
105°	131.0	130.4	126.2	119.6	109.3	103.9	99.0	85.8	72.5	58.0	44.7
107.5°	106.3	106.9	102.1	96.0	87.0	82.1	77.9	66.4	54.4	42.9	31.4
110°	83.9	83.3	80.3	74.9	67.6	63.4	59.8	49.5	39.9	29.6	20.5



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CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	64.6	64.0	61.6	56.8	50.7	47.1	44.1	35.6	27.2	19.3	12.1
115°	47.7	47.7	45.3	41.7	36.2	33.2	30.2	23.6	16.9	10.9	6.0
117.5°	34.4	33.2	30.8	27.8	23.6	21.1	18.7	13.9	9.1	5.4	2.4
120°	20.5	20.5	19.3	16.9	13.9	12.1	10.3	6.6	3.6	1.8	1.2
122.5°	11.5	11.5	10.9	8.5	6.6	5.4	4.2	2.4	1.2	1.2	1.8
125°	4.8	4.2	3.6	2.4	1.8	1.2	1.2	1.2	1.2	1.2	1.8
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°	1329.2	1329.2	1329.2	1329.2	1329.2	1329.2	1329.2	1329.2	1329.2	1329.2	1329.2
2.5°	1363.6	1358.8	1352.8	1346.7	1343.1	1340.1	1338.3	1338.3	1338.3	1338.3	1334.0
5°	1389.0	1381.1	1370.9	1361.2	1355.8	1350.9	1344.9	1341.3	1336.4	1332.2	1323.8
7.5°	1409.5	1398.7	1386.0	1371.5	1364.2	1357.6	1347.3	1338.9	1330.4	1321.4	1309.3
10°	1425.8	1411.3	1395.0	1376.9	1367.9	1359.4	1344.3	1332.2	1319.5	1306.3	1289.3
12.5°	1436.7	1419.2	1399.9	1377.5	1366.0	1355.8	1337.1	1320.7	1303.8	1285.7	1265.8
15°	1442.7	1422.8	1399.9	1373.3	1361.2	1349.1	1326.2	1305.6	1285.1	1263.4	1239.2
17.5°	1442.1	1419.2	1393.2	1364.2	1349.7	1335.8	1309.3	1285.1	1260.4	1235.6	1208.4
20°	1435.5	1410.7	1381.7	1350.3	1334.0	1318.3	1288.7	1261.0	1232.6	1203.6	1174.0
22.5°	1423.4	1396.8	1365.4	1331.6	1314.1	1297.8	1264.0	1232.6	1201.8	1169.2	1137.2
25°	1405.9	1377.5	1344.3	1308.1	1289.3	1271.2	1236.8	1201.2	1166.7	1131.1	1096.1
27.5°	1384.2	1354.0	1318.3	1280.9	1261.0	1241.0	1204.2	1164.9	1128.7	1090.7	1053.2
30°	1357.6	1325.0	1288.7	1249.5	1229.0	1207.8	1168.6	1126.9	1087.6	1047.8	1007.9
32.5°	1325.0	1291.8	1256.1	1213.9	1193.3	1170.4	1129.3	1087.6	1043.6	1000.7	960.8
35°	1289.3	1255.5	1218.7	1175.2	1153.5	1130.5	1088.2	1044.2	998.3	955.4	912.5
37.5°	1250.7	1216.3	1178.2	1133.5	1111.8	1088.2	1042.3	998.9	951.2	907.1	863.6
40°	1209.0	1173.4	1134.7	1091.9	1068.3	1042.3	995.8	950.6	902.2	856.3	812.9
42.5°	1163.1	1126.9	1088.2	1044.2	1021.2	994.6	947.5	901.6	852.7	805.6	762.1
45°	1114.2	1077.4	1038.7	992.2	969.3	944.5	896.8	850.3	801.4	754.9	711.4
47.5°	1063.5	1026.0	987.4	940.3	917.9	895.0	844.9	799.0	752.5	704.2	657.7
50°	1008.5	972.9	933.6	887.7	864.8	842.5	791.7	745.8	698.1	652.2	607.5
52.5°	954.2	917.9	878.7	833.4	809.8	788.7	737.4	692.7	645.6	600.3	555.0
55°	898.0	861.2	822.5	778.4	754.9	733.7	682.4	638.9	594.2	549.6	505.5
57.5°	840.0	803.8	765.8	721.1	701.1	677.6	627.5	585.2	541.1	498.8	455.3
60°	782.1	746.4	708.4	664.9	642.6	622.0	573.7	532.0	489.2	448.7	407.0
62.5°	725.3	689.1	651.6	609.3	589.4	567.7	520.0	480.1	439.6	400.4	360.5
65°	668.5	632.9	595.5	555.0	535.1	514.5	468.0	430.0	393.1	353.3	315.2
67.5°	612.4	577.3	541.1	500.6	481.3	461.4	419.1	379.9	342.4	305.6	269.9
70°	557.4	523.0	487.4	448.1	431.8	410.7	367.8	334.0	296.5	260.9	227.1
72.5°	504.3	468.0	434.2	396.8	378.7	360.5	320.7	286.3	251.8	217.4	186.0
75°	451.1	417.3	383.5	347.9	329.7	312.2	272.4	241.6	208.3	176.3	147.4
77.5°	400.4	369.0	335.2	299.5	283.8	265.7	229.5	199.3	167.3	138.3	111.7
80°	352.1	318.9	289.3	254.2	237.9	222.2	187.8	158.8	130.4	103.9	80.3
82.5°	306.8	275.4	242.8	210.8	195.7	180.6	149.2	122.6	96.0	73.1	51.9
85°	262.1	231.9	201.1	170.9	156.4	142.5	112.3	90.0	66.4	47.1	26.6
87.5°	219.8	191.4	161.8	133.5	120.2	107.5	82.1	61.0	39.9	21.7	5.4
90°	178.8	152.2	126.2	100.2	88.2	76.7	52.5	35.0	15.1	0.6	0.0
92.5°	144.3	118.4	95.4	70.7	60.4	50.1	30.2	15.1	1.8	0.0	0.0
95°	111.7	89.4	67.0	47.7	38.7	30.8	14.5	4.2	0.0	0.0	0.0
97.5°	85.2	65.8	47.1	30.8	23.6	17.5	5.4	0.6	0.6	0.6	0.6
100°	63.4	46.5	31.4	18.1	12.7	8.5	1.2	0.6	0.6	0.6	0.6
102.5°	45.3	32.0	19.3	10.3	6.0	3.0	0.6	0.6	0.6	0.6	0.6
105°	31.4	20.5	10.9	4.2	1.8	0.6	0.6	1.2	1.2	1.2	1.2
107.5°	20.5	12.1	5.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
110°	12.1	6.0	1.8	1.2	1.2	1.2	1.2	1.2	1.8	1.8	1.8



TEST NUMBER: P188229

CATALOG NUMBER: MPBL-3-LD4-UNV-2DN-LO-40

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
112.5°	6.0	2.4	1.2	1.2	1.2	1.8	1.8	1.8	1.8	1.8	1.8
115°	2.4	1.2	1.2	1.8	1.8	1.8	1.8	1.8	1.8	2.4	2.4
117.5°	1.2	1.8	1.8	1.8	1.8	2.4	2.4	2.4	2.4	2.4	2.4
120°	1.8	1.8	1.8	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
122.5°	1.8	1.8	2.4	2.4	2.4	2.4	2.4	3.0	3.0	3.0	3.0
125°	1.8	1.8	2.4	2.4	2.4	2.4	3.0	3.0	3.0	3.0	3.0
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: P188229

CATALOG NUMBER: MPBL-3-LD4-UNV-2DN-LO-40

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	1329.2	1329.2	1329.2	1329.2	1329.2	1329.2	1329.2	1329.2	1329.2	1329.2	1329.2
2.5°	1325.6	1318.3	1311.1	1305.6	1303.8	1299.6	1294.8	1294.2	1292.4	1287.5	1289.3
5°	1311.1	1299.6	1288.7	1280.9	1277.3	1270.0	1261.6	1257.3	1251.9	1243.4	1242.8
7.5°	1292.4	1277.3	1262.2	1252.5	1247.7	1236.2	1225.9	1217.5	1209.0	1198.8	1195.7
10°	1268.8	1250.1	1232.0	1220.5	1214.5	1198.2	1186.7	1173.4	1164.9	1151.7	1146.8
12.5°	1241.0	1218.7	1198.2	1184.3	1177.6	1160.1	1144.4	1128.7	1117.2	1102.7	1096.1
15°	1210.8	1185.5	1161.3	1146.2	1138.4	1117.8	1099.7	1081.6	1068.9	1053.2	1045.4
17.5°	1176.4	1148.0	1119.6	1107.0	1096.1	1073.1	1053.2	1033.9	1019.4	1002.5	992.8
20°	1139.0	1107.6	1077.4	1062.9	1049.6	1026.0	1004.9	986.8	967.5	947.5	939.7
22.5°	1100.3	1065.3	1033.3	1017.6	1003.7	978.3	955.4	934.2	916.1	895.6	886.5
25°	1057.4	1020.0	986.2	970.5	955.4	929.4	905.9	885.9	865.4	844.3	835.8
27.5°	1012.1	972.9	938.5	920.4	907.1	879.9	855.7	835.8	815.3	796.6	785.7
30°	965.6	925.8	890.2	872.0	858.2	830.4	806.2	785.7	765.2	744.0	735.6
32.5°	917.3	878.1	840.6	823.1	808.0	779.6	755.5	735.0	713.8	698.7	685.4
35°	868.4	829.2	791.1	775.4	758.5	730.7	706.6	685.4	666.7	648.6	638.3
37.5°	819.5	780.2	742.2	727.1	709.6	682.4	657.7	637.7	619.0	601.5	591.2
40°	769.4	730.1	692.7	677.0	660.7	633.5	609.3	589.4	571.3	554.4	544.7
42.5°	718.7	680.0	643.8	625.6	614.2	585.2	561.0	541.7	524.2	508.5	499.4
45°	668.5	630.5	594.2	577.3	565.9	536.9	513.3	495.2	478.3	462.6	454.1
47.5°	617.8	581.0	548.3	530.2	517.5	489.8	469.2	449.3	433.6	417.9	410.1
50°	568.3	532.0	496.4	481.9	468.6	443.3	420.9	402.2	388.9	375.0	366.6
52.5°	518.8	483.7	451.7	434.8	423.3	397.4	378.7	358.7	345.4	332.1	324.3
55°	469.8	436.0	405.8	389.5	377.4	352.7	334.0	315.8	303.2	291.1	283.8
57.5°	422.7	389.5	359.3	343.6	332.1	308.6	291.1	274.2	261.5	250.0	244.0
60°	374.4	343.0	315.2	300.1	289.3	266.9	250.0	232.5	222.2	212.0	207.1
62.5°	328.5	298.3	271.8	257.9	247.6	225.9	207.7	194.5	185.4	176.9	172.7
65°	284.4	254.8	230.7	216.8	207.7	187.2	170.9	159.4	151.0	144.3	140.7
67.5°	241.0	213.8	189.6	176.9	168.5	150.4	136.5	126.8	120.2	114.7	111.7
70°	199.9	174.5	152.8	140.1	132.9	117.2	106.3	98.4	93.0	88.8	87.0
72.5°	161.8	137.7	117.8	106.3	100.9	88.8	78.5	73.7	70.1	65.8	65.2
75°	125.6	104.5	85.8	76.7	72.5	62.8	56.2	52.5	49.5	47.1	46.5
77.5°	92.4	73.7	58.6	51.9	48.9	42.9	37.4	36.2	33.8	31.4	31.4
80°	62.8	47.1	36.8	32.0	30.8	26.6	22.9	22.3	20.5	18.7	18.7
82.5°	36.8	26.6	19.9	17.5	16.3	14.5	12.1	11.5	10.9	9.7	9.7
85°	16.3	11.5	7.9	6.6	6.6	5.4	4.2	4.2	4.2	3.6	3.6
87.5°	3.0	1.8	1.2	1.2	1.2	1.8	1.8	1.8	1.8	2.4	2.4
90°	0.6	0.6	0.6	0.6	1.2	1.2	1.2	1.2	1.8	1.8	1.2
92.5°	0.0	0.0	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
95°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.0	0.0
97.5°	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100°	0.6	0.6	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.0	0.0
102.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.0	0.0	0.0
105°	1.2	1.2	1.2	0.6	0.6	0.6	0.6	0.6	0.6	0.0	0.0
107.5°	1.2	1.2	1.2	1.2	1.2	1.2	0.6	0.6	0.6	0.6	0.0
110°	1.8	1.8	1.2	1.2	1.2	1.2	1.2	0.6	0.6	0.6	0.6



TEST NUMBER: P188229

CATALOG NUMBER: MPBL-3-LD4-UNV-2DN-LO-40

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
112.5°	1.8	1.8	1.8	1.8	1.8	1.2	1.2	1.2	0.6	0.6	0.6
115°	2.4	2.4	1.8	1.8	1.8	1.8	1.8	1.2	1.2	1.2	0.6
117.5°	2.4	2.4	2.4	2.4	2.4	2.4	1.8	1.8	1.8	1.2	1.2
120°	3.0	2.4	2.4	2.4	2.4	2.4	1.8	1.8	1.8	1.8	1.2
122.5°	3.0	3.0	3.0	3.0	2.4	2.4	2.4	2.4	1.8	1.8	1.2
125°	3.0	3.0	3.0	3.0	3.0	2.4	2.4	2.4	1.8	1.8	1.8
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: P188229

CATALOG NUMBER: MPBL-3-LD4-UNV-2DN-LO-40

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1329.2	1329.2	1329.2	1329.2	1329.2	1329.2	1329.2	1329.2
2.5°	1283.9	1280.9	1278.5	1274.2	1273.0	1270.6	1268.2	1270.0
5°	1235.6	1232.0	1229.0	1224.1	1223.5	1220.5	1219.3	1221.7
7.5°	1186.1	1181.8	1178.2	1172.8	1171.0	1167.4	1164.9	1167.4
10°	1135.3	1126.3	1124.5	1118.4	1115.4	1110.6	1108.2	1109.4
12.5°	1083.4	1073.1	1071.3	1064.7	1061.1	1055.6	1053.2	1053.8
15°	1032.1	1021.8	1018.8	1012.8	1007.9	1002.5	999.5	1000.1
17.5°	978.9	968.7	965.0	959.0	953.6	948.1	946.3	946.3
20°	924.6	914.9	910.7	905.3	899.2	893.8	892.6	892.6
22.5°	872.0	861.8	857.5	852.7	846.7	841.2	840.6	840.0
25°	823.1	810.4	806.8	801.4	795.3	789.9	788.7	788.7
27.5°	773.0	760.9	757.3	751.9	745.2	740.4	739.8	739.8
30°	721.1	712.0	709.0	703.6	697.5	693.3	692.1	693.3
32.5°	674.6	663.7	660.1	658.3	649.8	646.2	645.6	647.4
35°	626.9	616.6	612.4	609.3	604.5	600.3	600.3	599.1
37.5°	581.0	571.3	567.1	566.5	559.8	556.2	556.2	555.0
40°	535.1	526.0	523.6	519.4	515.1	512.1	511.5	510.3
42.5°	490.4	481.3	479.5	477.7	471.7	468.6	468.0	466.8
45°	445.7	437.2	434.2	431.8	428.2	425.8	425.2	425.2
47.5°	401.6	394.4	391.9	389.5	385.9	382.9	382.9	382.9
50°	358.7	352.7	349.7	347.9	344.8	341.8	342.4	341.2
52.5°	317.7	311.6	308.6	308.0	304.4	302.0	301.3	301.3
55°	277.2	273.0	269.9	269.3	266.3	263.9	263.9	263.9
57.5°	240.4	234.3	231.9	231.9	228.9	227.1	228.3	226.5
60°	202.3	198.7	196.9	196.3	194.5	192.6	193.9	192.0
62.5°	169.7	166.1	164.3	164.3	161.8	160.0	160.0	160.0
65°	138.9	134.1	133.5	134.1	131.7	130.4	130.4	129.8
67.5°	111.1	108.1	106.3	106.9	105.1	103.9	103.9	103.9
70°	85.2	83.9	83.3	82.7	81.5	80.9	80.3	80.3
72.5°	64.0	62.8	62.2	62.2	62.2	61.0	60.4	62.2
75°	45.9	45.3	44.7	43.5	43.5	43.5	42.9	44.7
77.5°	30.8	30.8	29.6	29.0	29.6	29.0	28.4	29.0
80°	18.7	18.1	17.5	16.9	17.5	16.9	16.3	16.9
82.5°	9.1	9.1	8.5	7.9	8.5	7.9	7.9	8.5
85°	4.2	4.2	4.2	3.6	3.6	4.2	3.6	3.6
87.5°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
90°	1.2	1.2	1.2	0.6	1.2	1.2	1.8	1.8
92.5°	0.6	0.6	0.6	0.6	0.6	0.6	1.2	1.2
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: P188229

CATALOG NUMBER: MPBL-3-LD4-UNV-2DN-LO-40

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
112.5°	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
115°	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.0
117.5°	1.2	0.6	0.6	0.6	0.6	0.6	0.0	0.0
120°	1.2	0.6	0.6	0.6	0.6	0.6	0.0	0.0
122.5°	1.2	1.2	1.2	1.2	0.6	0.6	0.6	0.6
125°	1.2	1.2	1.2	1.2	0.6	0.6	0.6	0.6
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)