

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: P188260

Luminaire Tested: **MPBL-4-LD4-UNV-2LO-2LO-40**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P188260
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P27392)
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-2LO-2LO-40
Description:
Light Source: (336) NICHIA ELM 4000K LED
2UT217042A8404A
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 9252.0 lumens
Efficiency: N/A
Efficacy: 72.1 lumens/watt
Spacing Criteria (0/90/45): 1.24 / 1.19 / 1.34
Luminous Opening: Rectangular w/ Sides (W: 4' x L: 0.42' x H: 0.29')
CIE Type: General Diffuse

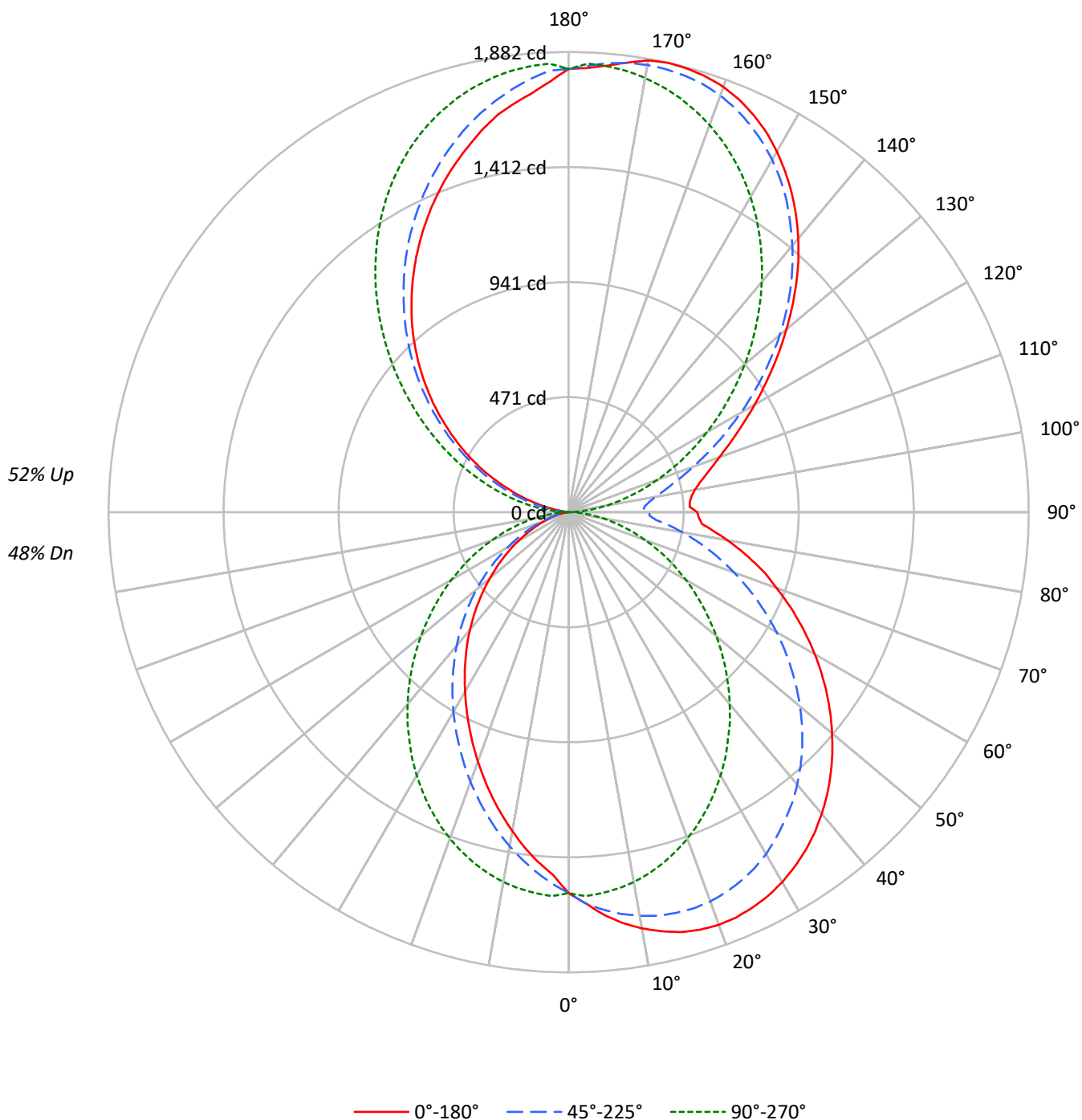
Input Watts (W): 128.3
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	107	107	107	107	98	98	98	98	82	82	82	67	67	67	54	54	54
1	97	92	88	84	89	85	81	78	71	68	66	58	56	55	47	45	44
2	88	80	74	68	80	74	68	63	62	58	54	51	48	45	41	39	37
3	80	70	63	57	73	65	58	53	54	49	45	45	41	38	36	33	31
4	73	62	54	48	67	57	50	45	48	43	39	40	36	33	32	29	27
5	67	55	47	41	61	51	44	38	43	37	33	36	31	28	29	26	23
6	62	49	41	35	56	46	38	33	39	33	29	32	28	25	26	23	20
7	57	45	37	31	52	41	34	29	35	29	25	29	25	22	24	21	18
8	53	40	33	27	48	38	31	26	32	26	22	27	22	19	22	19	16
9	49	37	29	24	45	34	27	23	29	24	20	25	20	17	20	17	15
10	46	34	27	22	42	31	25	20	27	22	18	23	19	16	19	16	13

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	10061	10061	10061
5°	10098	10075	8768
10°	10091	9945	7734
15°	10010	9752	6793
20°	9835	9512	5945
25°	9578	9223	5179
30°	9278	8892	4501
35°	8936	8521	3894
40°	8553	8143	3335
45°	8144	7729	2807
50°	7705	7288	2301
55°	7258	6821	1840
60°	6792	6349	1406
65°	6315	5842	1013
70°	5841	5246	678
75°	5408	4510	404
80°	4928	3626	174
85°	4502	2538	70



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	147.3	1.6
10°-20°	418.9	4.5
20°-30°	624.2	6.7
30°-40°	736.2	8.0
40°-50°	747.4	8.1
50°-60°	666.0	7.2
60°-70°	519.5	5.6
70°-80°	348.6	3.8
80°-90°	204.4	2.2
90°-100°	183.5	2.0
100°-110°	328.0	3.5
110°-120°	530.5	5.7
120°-130°	720.5	7.8
130°-140°	841.4	9.1
140°-150°	848.9	9.2
150°-160°	727.0	7.9
160°-170°	488.3	5.3
170°-180°	171.5	1.9
0°-30°	1190.4	12.9
0°-40°	1926.7	20.8
0°-60°	3340.0	36.1
0°-90°	4412.4	47.7
90°-120°	1042.0	11.3
90°-150°	3452.8	37.3
90°-180°	4840.0	52.3
0°-180°	9252.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1558	1558	1558	1558	1558	
5°	1653	1632	1564	1480	1435	160
15°	1778	1697	1487	1285	1207	503
25°	1783	1665	1338	1058	964	823
35°	1689	1541	1136	826	736	1057
45°	1516	1351	908	601	522	1170
55°	1289	1111	669	387	327	1153
65°	1034	850	442	200	166	1024
75°	783	593	230	70	58	827
85°	547	358	63	8	8	474
90°	526	329	4	12	17	285
95°	498	315	66	0	0	413
105°	578	437	266	175	134	615
115°	756	670	516	398	362	753
125°	1014	968	794	649	612	909
135°	1316	1282	1086	914	870	1015
145°	1591	1554	1365	1174	1117	995
155°	1791	1751	1596	1418	1350	825
165°	1878	1847	1754	1627	1558	531
175°	1833	1843	1830	1779	1720	176
180°	1813	1813	1813	1813	1813	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	1557.8	1557.8	1557.8	1557.8	1557.8	1557.8	1557.8	1557.8	1557.8	1557.8	1557.8
2.5°	1601.1	1599.9	1600.5	1603.6	1603.6	1606.0	1606.0	1604.8	1606.6	1606.6	1601.7
5°	1653.0	1651.7	1649.3	1648.7	1645.0	1646.3	1645.0	1642.0	1642.6	1639.6	1632.2
7.5°	1694.4	1693.8	1690.8	1688.3	1683.5	1682.8	1681.0	1675.5	1673.1	1667.6	1657.2
10°	1728.6	1726.1	1723.1	1719.4	1713.9	1712.7	1709.7	1703.6	1698.1	1689.5	1676.1
12.5°	1755.4	1754.8	1751.7	1746.9	1740.8	1736.5	1733.4	1724.9	1717.6	1707.2	1690.2
15°	1778.0	1776.1	1773.1	1768.8	1761.5	1756.6	1751.7	1741.4	1730.4	1717.0	1696.9
17.5°	1790.2	1788.9	1786.5	1781.0	1773.1	1767.6	1762.1	1750.5	1737.1	1721.3	1698.7
20°	1795.6	1794.4	1790.2	1784.1	1774.9	1769.4	1763.3	1750.5	1735.3	1718.2	1693.8
22.5°	1793.2	1791.4	1787.7	1780.4	1770.0	1762.7	1756.6	1742.6	1726.1	1707.8	1682.2
25°	1782.8	1781.0	1778.0	1771.3	1760.3	1753.6	1746.3	1731.0	1712.7	1692.6	1665.2
27.5°	1768.2	1766.4	1762.7	1755.4	1744.4	1737.7	1730.4	1714.5	1695.0	1672.5	1643.2
30°	1746.9	1744.4	1740.8	1734.1	1722.5	1714.5	1707.2	1688.3	1668.8	1645.6	1614.6
32.5°	1720.0	1719.4	1713.9	1707.2	1694.4	1688.3	1678.6	1658.5	1635.9	1613.3	1578.6
35°	1688.9	1687.7	1682.2	1673.7	1661.5	1655.4	1645.0	1624.9	1600.5	1574.3	1540.8
37.5°	1652.4	1653.0	1645.6	1636.5	1623.7	1617.6	1606.6	1585.3	1560.9	1535.3	1500.5
40°	1610.3	1611.5	1603.6	1593.8	1581.0	1574.9	1563.3	1541.4	1515.8	1489.6	1454.8
42.5°	1565.2	1565.8	1557.2	1547.5	1534.7	1528.6	1516.4	1493.2	1467.6	1440.2	1404.8
45°	1515.8	1516.4	1508.5	1498.1	1484.1	1478.6	1466.4	1443.2	1415.8	1387.7	1351.2
47.5°	1462.7	1463.3	1454.8	1445.0	1429.8	1424.3	1411.5	1389.0	1360.9	1331.6	1294.4
50°	1406.6	1407.2	1399.3	1389.0	1373.1	1367.0	1354.8	1331.6	1303.6	1270.1	1235.3
52.5°	1348.7	1349.3	1342.0	1331.0	1314.0	1307.9	1295.1	1270.1	1240.8	1211.5	1173.7
55°	1289.0	1289.0	1282.3	1270.7	1253.0	1247.5	1233.5	1209.1	1179.2	1148.7	1110.9
57.5°	1226.2	1227.4	1219.5	1207.3	1190.2	1184.1	1170.7	1148.1	1118.2	1084.7	1046.9
60°	1163.4	1164.0	1156.0	1143.2	1126.2	1120.7	1106.7	1083.5	1053.0	1020.1	981.7
62.5°	1098.1	1099.3	1091.4	1079.2	1064.0	1054.8	1040.8	1015.2	984.7	953.6	915.8
65°	1033.5	1034.7	1026.8	1014.0	995.1	989.6	975.0	950.0	919.5	887.8	850.0
67.5°	968.9	970.1	961.5	948.7	933.5	923.7	910.3	884.1	853.6	825.6	784.1
70°	904.2	903.0	896.9	884.1	868.9	859.1	845.7	819.5	788.4	758.5	719.5
72.5°	846.9	839.6	832.9	822.5	804.8	793.9	781.7	754.8	724.4	695.1	655.5
75°	782.9	777.4	768.9	759.1	739.6	730.5	718.9	690.8	660.3	632.9	592.7
77.5°	720.1	714.0	706.1	696.3	678.6	667.6	655.5	628.0	598.1	570.1	531.1
80°	658.5	651.8	644.5	634.1	617.0	606.1	593.9	566.4	540.2	509.1	471.9
82.5°	598.1	592.7	584.7	574.4	557.3	546.3	534.1	506.7	483.5	450.0	413.4
85°	546.9	543.3	535.3	521.3	501.8	491.4	479.2	451.2	426.8	395.1	357.9
87.5°	533.5	529.9	521.3	507.9	489.0	477.4	465.2	436.6	405.5	370.1	331.7
90°	525.6	522.5	514.0	500.6	481.7	470.1	458.5	430.5	399.4	365.2	329.3
92.5°	495.1	492.0	484.1	471.3	453.6	442.7	431.7	404.9	375.0	342.1	306.7
95°	498.1	495.1	487.2	474.4	456.7	446.9	435.3	409.7	380.5	348.8	315.2
97.5°	507.3	503.6	496.3	484.1	467.7	457.9	446.9	422.5	395.7	365.2	333.5
100°	523.8	520.7	513.4	501.8	486.6	478.0	467.0	444.5	418.9	390.8	361.0
102.5°	547.5	544.5	537.8	526.2	512.8	504.9	494.5	473.1	449.4	423.1	395.1
105°	578.0	574.4	568.3	557.9	545.1	538.4	528.6	508.5	486.6	462.2	437.2
107.5°	614.0	610.3	604.8	595.1	583.5	575.6	567.7	550.0	531.1	508.5	487.2
110°	654.8	651.8	644.5	638.4	627.4	620.1	613.4	598.1	581.7	562.2	542.0



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CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	703.0	699.4	692.6	687.8	678.0	673.7	665.8	652.4	638.4	620.1	602.4
115°	756.1	753.0	746.9	742.6	734.1	729.2	723.1	712.2	700.6	687.8	670.1
117.5°	814.0	810.9	806.1	801.8	794.5	789.6	785.3	776.8	767.0	756.1	738.4
120°	877.4	874.3	869.5	866.4	859.7	856.1	852.4	845.7	837.8	827.4	812.8
122.5°	943.9	941.4	937.1	934.1	928.6	926.2	923.1	918.2	911.5	902.4	889.6
125°	1014.0	1012.1	1007.9	1005.4	1001.2	998.7	996.9	993.2	988.4	981.0	967.6
127.5°	1087.8	1085.9	1081.7	1079.8	1076.2	1074.3	1073.7	1072.5	1067.6	1060.3	1047.5
130°	1162.7	1160.9	1157.3	1156.6	1154.8	1153.0	1153.0	1151.8	1146.9	1139.0	1127.4
132.5°	1239.0	1239.0	1234.7	1234.1	1232.3	1230.4	1231.0	1229.2	1223.7	1213.4	1205.4
135°	1316.4	1315.8	1311.5	1310.3	1309.1	1306.0	1307.9	1305.4	1299.9	1290.2	1282.3
137.5°	1390.8	1390.2	1385.3	1384.7	1382.9	1380.4	1381.0	1379.2	1373.1	1363.3	1354.2
140°	1461.5	1461.5	1456.6	1455.4	1453.6	1451.8	1452.4	1448.7	1442.0	1433.5	1423.1
142.5°	1528.6	1528.6	1524.3	1522.5	1521.3	1518.2	1518.8	1515.2	1508.5	1500.5	1489.6
145°	1591.4	1591.4	1587.1	1585.3	1583.5	1581.6	1582.2	1578.6	1573.1	1565.2	1554.2
147.5°	1649.3	1648.7	1645.0	1643.8	1642.6	1640.8	1642.0	1637.7	1629.2	1623.7	1612.7
150°	1703.6	1702.4	1699.3	1696.9	1695.0	1693.8	1693.2	1688.3	1681.0	1674.3	1664.6
152.5°	1751.7	1749.9	1745.6	1742.6	1740.2	1738.3	1737.7	1732.8	1726.7	1719.4	1710.9
155°	1791.4	1789.5	1785.9	1783.4	1781.6	1780.4	1779.2	1773.7	1768.8	1760.3	1751.1
157.5°	1824.9	1823.1	1820.6	1818.8	1817.6	1816.4	1815.2	1809.1	1804.2	1795.0	1785.9
160°	1851.1	1848.7	1845.6	1843.2	1841.4	1840.8	1839.5	1833.4	1830.4	1821.9	1813.3
162.5°	1867.6	1865.2	1861.5	1859.1	1857.2	1857.2	1856.0	1851.1	1849.3	1842.0	1834.1
165°	1878.0	1875.5	1872.5	1870.6	1869.4	1869.4	1868.2	1863.3	1861.5	1855.4	1846.9
167.5°	1882.2	1879.8	1877.3	1874.9	1873.1	1873.1	1871.2	1867.0	1866.4	1862.1	1854.8
170°	1876.1	1873.1	1870.6	1867.6	1866.4	1867.0	1866.4	1864.5	1864.5	1862.7	1857.2
172.5°	1854.8	1853.0	1852.3	1853.0	1855.4	1857.2	1857.2	1856.6	1858.4	1857.8	1853.0
175°	1833.4	1832.2	1834.7	1837.1	1839.5	1842.0	1842.6	1843.2	1845.6	1847.5	1843.2
177.5°	1818.2	1817.0	1815.2	1815.8	1817.0	1819.4	1820.6	1823.1	1826.7	1829.8	1827.3
180°	1812.7	1812.7	1812.7	1812.7	1812.7	1812.7	1812.7	1812.7	1812.7	1812.7	1812.7



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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	1557.8	1557.8	1557.8	1557.8	1557.8	1557.8	1557.8	1557.8	1557.8	1557.8	1557.8
2.5°	1588.3	1582.8	1579.8	1576.8	1574.9	1574.9	1573.7	1573.7	1574.9	1571.9	1563.3
5°	1615.8	1606.6	1599.3	1592.0	1588.3	1585.9	1580.4	1576.1	1572.5	1563.9	1551.8
7.5°	1637.1	1624.3	1613.3	1601.7	1596.3	1592.0	1581.6	1573.1	1565.2	1552.4	1535.3
10°	1653.0	1636.5	1621.9	1606.6	1598.7	1591.4	1578.0	1565.2	1552.4	1535.9	1513.9
12.5°	1664.6	1643.8	1624.9	1605.4	1595.7	1586.5	1568.8	1551.8	1534.7	1513.9	1487.7
15°	1668.8	1645.0	1622.5	1599.3	1587.7	1576.1	1554.2	1533.5	1511.5	1487.1	1457.2
17.5°	1667.6	1640.2	1613.3	1587.7	1574.3	1560.3	1535.3	1510.3	1484.7	1455.4	1423.1
20°	1661.5	1630.4	1599.9	1570.0	1555.4	1540.2	1510.9	1482.2	1453.6	1420.7	1385.3
22.5°	1648.1	1613.9	1581.6	1548.1	1531.6	1514.6	1481.6	1449.9	1417.6	1381.0	1342.6
25°	1629.8	1592.6	1557.8	1521.3	1503.6	1484.7	1449.3	1414.0	1378.0	1338.3	1297.5
27.5°	1606.6	1566.4	1528.6	1488.9	1470.0	1449.9	1411.5	1373.7	1334.7	1292.0	1249.3
30°	1577.4	1534.1	1495.7	1453.0	1432.9	1410.9	1368.2	1327.4	1287.7	1242.6	1197.5
32.5°	1542.6	1498.7	1457.9	1412.7	1391.4	1368.8	1323.1	1279.8	1237.1	1192.6	1143.8
35°	1503.6	1459.7	1414.6	1368.8	1346.3	1322.5	1274.9	1229.8	1184.7	1135.9	1088.4
37.5°	1460.9	1416.4	1371.3	1321.9	1298.7	1273.1	1224.3	1177.4	1129.8	1082.9	1031.7
40°	1414.0	1368.8	1322.5	1271.9	1247.5	1221.9	1170.7	1121.9	1073.1	1024.9	973.7
42.5°	1363.3	1318.2	1271.3	1221.9	1194.5	1168.2	1115.2	1065.8	1015.8	967.0	915.8
45°	1309.1	1265.2	1214.6	1164.0	1139.0	1112.1	1059.1	1008.5	957.3	907.9	857.3
47.5°	1252.4	1209.1	1157.9	1108.5	1081.0	1053.6	1000.6	950.0	896.9	848.1	798.1
50°	1193.2	1149.9	1099.3	1049.3	1021.3	994.5	941.4	890.2	836.5	788.4	739.0
52.5°	1131.7	1089.6	1039.6	988.4	960.3	934.1	879.2	828.0	776.2	728.0	679.8
55°	1068.8	1024.3	977.4	926.2	898.7	872.5	818.9	768.3	716.4	668.9	622.5
57.5°	1004.8	963.4	913.4	863.4	835.9	810.3	760.3	706.7	656.7	610.9	568.3
60°	940.2	898.7	849.3	800.0	773.7	748.1	699.4	646.9	598.1	553.6	509.1
62.5°	874.3	834.1	789.0	736.5	710.3	682.3	635.9	587.2	539.6	495.7	455.5
65°	809.1	767.0	725.0	673.7	648.1	621.3	576.2	528.6	482.3	442.1	401.8
67.5°	747.5	705.5	661.6	612.2	587.2	560.3	516.4	470.7	428.0	386.0	350.0
70°	680.5	641.4	598.8	550.6	526.2	500.6	457.9	416.4	371.3	333.5	295.7
72.5°	620.7	578.6	537.2	491.4	465.8	442.1	401.8	357.9	320.7	281.1	245.1
75°	559.1	517.0	476.2	432.9	407.9	382.9	345.7	303.6	266.5	229.9	196.3
77.5°	497.5	456.7	417.1	375.0	354.3	329.9	292.7	251.2	219.5	181.7	150.6
80°	437.8	398.8	361.6	320.1	298.2	276.8	240.8	202.4	170.7	137.8	109.8
82.5°	381.1	343.3	305.5	266.5	247.5	225.0	190.8	157.3	128.0	97.6	72.6
85°	327.4	289.0	254.3	218.3	196.9	177.4	145.7	114.6	88.4	62.8	39.6
87.5°	293.9	251.8	209.7	173.2	153.7	138.4	107.9	77.4	53.7	29.9	12.2
90°	290.2	250.0	209.1	168.9	150.0	130.5	92.7	58.5	25.6	3.7	3.7
92.5°	269.5	232.3	194.5	157.9	139.6	122.6	90.2	59.8	37.8	23.2	13.4
95°	280.5	245.1	210.4	176.2	159.7	145.1	117.1	91.5	76.8	65.9	57.9
97.5°	301.8	268.9	236.6	204.3	189.6	176.2	153.0	133.5	121.9	111.0	101.2
100°	331.7	301.8	270.1	241.5	228.0	217.7	195.7	181.7	171.3	159.1	148.8
102.5°	366.4	339.6	312.8	287.8	275.6	266.5	248.2	236.0	224.4	210.4	199.4
105°	412.8	387.2	363.4	340.2	329.9	321.3	306.1	292.7	280.5	265.8	253.0
107.5°	464.6	441.4	420.1	401.2	389.6	382.3	367.7	354.3	336.6	324.4	309.7
110°	522.5	501.8	482.3	462.8	454.2	447.5	432.9	417.7	398.8	385.3	369.5



TEST NUMBER: P188260

CATALOG NUMBER: MPBL-4-LD4-UNV-2LO-2LO-40

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
112.5°	585.3	566.4	549.4	531.1	522.5	515.8	500.0	484.1	463.4	448.1	431.1
115°	653.0	636.6	620.7	605.5	599.4	589.6	569.5	553.0	529.9	516.4	495.1
117.5°	724.4	710.3	695.1	679.2	670.1	658.5	637.8	623.1	598.1	582.9	560.9
120°	800.0	786.5	771.3	754.2	745.7	732.9	714.6	695.1	668.9	652.4	629.2
122.5°	878.0	864.6	848.7	830.4	821.9	811.5	785.3	768.3	740.2	723.1	698.7
125°	957.3	943.9	926.2	906.7	896.9	887.8	860.9	842.6	813.4	794.5	770.1
127.5°	1037.1	1022.5	1003.0	982.9	971.3	959.1	936.5	913.4	887.2	867.0	841.4
130°	1116.4	1100.6	1079.8	1057.9	1047.5	1034.7	1012.8	989.0	962.1	940.8	914.6
132.5°	1195.1	1178.0	1156.0	1129.2	1121.3	1109.7	1087.1	1062.8	1036.5	1013.4	987.1
135°	1272.5	1253.6	1230.4	1205.4	1193.8	1182.9	1161.5	1140.2	1110.3	1085.9	1059.1
137.5°	1343.8	1324.3	1301.2	1271.9	1264.6	1254.2	1234.1	1209.1	1187.1	1158.5	1130.4
140°	1411.5	1391.4	1368.2	1340.8	1334.7	1323.7	1304.8	1279.8	1258.5	1229.2	1201.2
142.5°	1478.0	1456.6	1432.9	1407.2	1400.5	1390.8	1371.9	1347.5	1323.7	1297.5	1270.1
145°	1540.8	1518.8	1493.8	1470.0	1463.3	1454.8	1436.5	1412.7	1393.2	1364.6	1337.1
147.5°	1596.9	1574.9	1550.5	1529.2	1523.7	1515.2	1498.1	1474.9	1456.6	1428.0	1401.1
150°	1648.1	1628.0	1604.2	1584.7	1579.8	1571.9	1554.8	1533.5	1515.8	1488.3	1462.1
152.5°	1693.2	1674.3	1651.1	1634.1	1629.2	1622.5	1606.6	1587.1	1570.0	1544.4	1518.8
155°	1732.2	1714.5	1692.6	1677.4	1674.3	1668.2	1653.6	1635.3	1620.0	1595.7	1571.3
157.5°	1767.0	1749.9	1730.4	1717.0	1714.5	1709.7	1695.6	1679.8	1665.8	1643.2	1620.0
160°	1796.3	1779.2	1761.5	1749.9	1748.1	1743.8	1731.6	1717.6	1705.4	1685.3	1663.9
162.5°	1817.0	1801.7	1786.5	1776.7	1775.5	1772.5	1761.5	1749.9	1739.5	1721.9	1703.0
165°	1832.2	1818.8	1806.6	1800.5	1799.3	1797.5	1787.7	1778.6	1770.6	1754.2	1737.1
167.5°	1841.4	1829.8	1820.6	1816.4	1816.4	1815.8	1809.1	1803.0	1795.0	1781.6	1767.0
170°	1845.0	1835.9	1829.2	1826.7	1828.0	1828.0	1823.7	1818.8	1814.5	1803.0	1791.4
172.5°	1842.0	1834.7	1831.0	1831.0	1832.8	1834.7	1832.8	1830.4	1828.0	1820.0	1810.3
175°	1834.7	1829.2	1827.3	1830.4	1832.8	1835.9	1835.9	1835.9	1837.1	1830.4	1824.3
177.5°	1820.6	1817.0	1817.6	1823.1	1826.1	1831.0	1833.4	1835.9	1839.5	1835.9	1832.2
180°	1812.7	1812.7	1812.7	1812.7	1812.7	1812.7	1812.7	1812.7	1812.7	1812.7	1812.7



TEST NUMBER: P188260

CATALOG NUMBER: MPBL-4-LD4-UNV-2LO-2LO-40

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	1557.8	1557.8	1557.8	1557.8	1557.8	1557.8	1557.8	1557.8	1557.8	1557.8	1557.8
2.5°	1552.4	1541.4	1534.1	1531.6	1529.2	1526.8	1520.7	1518.2	1521.3	1521.3	1516.4
5°	1535.9	1521.9	1509.7	1506.0	1501.8	1495.7	1485.9	1480.4	1480.4	1477.4	1469.4
7.5°	1515.8	1497.5	1481.6	1476.1	1470.0	1459.1	1447.5	1439.0	1435.3	1429.8	1419.4
10°	1490.2	1468.2	1448.7	1442.0	1433.5	1419.4	1404.8	1393.2	1387.7	1379.8	1367.0
12.5°	1461.5	1434.7	1412.1	1403.6	1393.8	1376.2	1359.1	1345.7	1337.7	1327.4	1312.7
15°	1427.4	1396.9	1371.9	1361.5	1350.5	1329.8	1310.3	1295.7	1284.7	1272.5	1256.0
17.5°	1389.6	1356.0	1328.6	1317.0	1304.8	1281.0	1259.1	1242.6	1229.8	1217.0	1199.3
20°	1348.7	1311.5	1282.3	1268.2	1255.4	1229.8	1206.0	1186.5	1173.7	1159.7	1140.8
22.5°	1303.0	1264.0	1232.3	1217.6	1204.2	1176.2	1150.6	1129.2	1116.4	1100.6	1080.4
25°	1256.0	1214.6	1181.0	1165.2	1151.2	1121.3	1095.1	1075.6	1058.5	1042.0	1022.5
27.5°	1203.0	1162.7	1126.8	1110.3	1096.3	1065.2	1037.8	1018.2	1000.6	984.1	967.6
30°	1149.9	1108.5	1071.9	1054.8	1040.2	1008.5	981.0	957.9	942.6	926.2	907.3
32.5°	1095.7	1053.6	1015.2	998.1	982.9	948.7	924.3	903.6	884.1	867.0	849.3
35°	1040.2	997.5	958.5	940.8	926.2	892.6	867.6	845.7	826.2	809.1	792.6
37.5°	983.5	940.8	901.8	884.1	869.5	835.3	811.5	789.6	768.9	752.4	736.5
40°	925.0	883.5	845.1	827.4	812.2	778.6	754.8	732.9	712.2	696.3	680.5
42.5°	867.6	826.2	788.4	771.3	756.1	722.5	698.7	676.8	656.7	640.8	625.6
45°	810.9	770.1	732.3	715.2	700.0	667.0	643.9	621.3	601.2	586.6	571.3
47.5°	753.0	714.0	675.6	659.1	643.9	612.2	589.0	565.8	546.9	531.7	514.6
50°	695.7	654.8	620.1	603.0	587.8	554.2	534.7	511.6	492.7	478.0	462.2
52.5°	639.0	600.0	564.0	550.0	532.3	500.6	478.6	457.9	439.6	424.4	410.3
55°	583.5	544.5	508.5	492.0	477.4	447.5	425.6	404.9	387.2	373.2	361.0
57.5°	526.8	488.4	453.6	440.2	423.1	393.9	375.6	353.6	336.6	323.8	312.2
60°	470.7	434.1	400.0	387.2	370.7	342.1	325.0	304.3	288.4	276.8	267.1
62.5°	418.3	382.3	346.9	335.3	319.5	292.7	273.8	256.7	242.1	232.3	224.4
65°	363.4	328.6	297.5	286.0	270.7	244.5	228.0	212.8	200.0	192.1	185.4
67.5°	311.0	277.4	248.2	236.6	222.5	199.4	185.4	171.9	161.6	154.9	149.4
70°	260.4	229.9	201.2	190.8	178.6	157.9	146.3	135.4	126.2	121.3	116.5
72.5°	212.2	182.3	157.3	147.6	138.4	120.7	111.0	103.0	95.7	91.5	89.0
75°	166.5	139.0	118.3	109.8	100.6	87.8	80.5	75.6	70.1	67.7	65.9
77.5°	123.8	100.0	82.9	76.8	70.7	60.4	56.1	53.0	50.6	47.6	45.7
80°	85.4	65.9	53.7	49.4	45.1	39.0	36.6	34.1	32.3	29.9	28.7
82.5°	51.8	38.4	31.1	29.3	26.8	23.2	22.0	19.5	18.3	16.5	15.2
85°	25.0	18.3	14.6	13.4	12.2	10.4	9.8	9.1	8.5	8.5	8.5
87.5°	7.3	5.5	5.5	4.9	5.5	6.1	6.7	8.5	9.8	11.0	11.6
90°	4.9	6.1	7.3	7.9	8.5	9.1	10.4	11.0	12.2	12.2	12.2
92.5°	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
95°	47.6	41.5	31.7	28.0	21.3	11.6	4.9	0.0	0.0	0.0	0.0
97.5°	90.2	84.1	74.4	69.5	65.2	55.5	46.9	39.6	32.9	23.8	18.3
100°	136.6	129.9	120.1	114.0	110.4	100.6	93.9	85.4	78.7	70.1	62.8
102.5°	186.0	178.0	167.7	159.1	157.9	147.6	138.4	132.9	125.6	117.1	110.4
105°	239.0	230.5	218.3	209.1	207.3	197.6	188.4	181.7	175.0	165.8	159.7
107.5°	293.9	282.3	271.9	262.8	260.4	250.0	240.8	234.1	228.0	217.7	211.6
110°	352.4	342.7	328.6	321.9	316.4	306.1	295.7	289.0	282.3	272.5	266.5



TEST NUMBER: P188260

CATALOG NUMBER: MPBL-4-LD4-UNV-2LO-2LO-40

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
112.5°	412.8	402.4	387.8	379.9	374.4	363.4	353.0	345.7	338.4	328.6	322.5
115°	476.2	465.2	449.4	443.3	435.3	423.8	413.4	405.5	397.5	387.8	381.7
117.5°	540.2	525.6	512.8	505.5	498.8	486.0	475.0	467.0	456.7	448.8	442.7
120°	606.7	594.5	578.0	571.3	563.4	550.0	538.4	529.9	520.1	511.6	505.5
122.5°	674.4	657.3	645.1	638.4	629.2	615.8	603.0	594.5	584.7	575.6	568.9
125°	743.9	725.6	712.2	704.2	696.9	682.9	669.5	659.7	648.7	640.2	634.1
127.5°	814.0	793.3	779.2	771.9	764.6	749.4	735.9	726.2	714.0	705.5	698.7
130°	885.9	859.1	847.5	839.6	832.9	817.6	803.6	793.9	781.1	771.3	764.0
132.5°	957.3	929.2	916.4	907.9	901.2	885.9	871.3	860.9	847.5	837.2	829.2
135°	1028.6	1003.0	985.3	975.6	969.5	954.8	939.6	928.6	914.0	903.0	895.1
137.5°	1099.9	1069.5	1053.6	1043.2	1035.9	1021.9	1007.3	995.7	979.8	968.2	959.7
140°	1170.7	1142.0	1121.3	1110.3	1103.0	1087.8	1072.5	1060.3	1045.1	1032.3	1023.7
142.5°	1239.0	1206.6	1189.0	1176.8	1168.8	1153.0	1137.1	1124.9	1109.1	1096.3	1086.5
145°	1306.0	1273.7	1254.8	1242.6	1234.1	1217.6	1201.8	1187.1	1174.3	1160.3	1149.9
147.5°	1370.7	1338.3	1318.2	1306.0	1296.9	1280.4	1265.2	1250.5	1238.4	1224.9	1213.4
150°	1432.2	1401.1	1379.8	1368.2	1358.5	1342.0	1326.2	1315.8	1300.5	1286.5	1274.3
152.5°	1489.6	1459.1	1438.3	1427.4	1417.6	1400.5	1385.3	1371.9	1359.7	1346.3	1332.3
155°	1543.8	1513.9	1493.2	1483.5	1473.7	1457.2	1442.0	1428.6	1418.2	1404.2	1390.2
157.5°	1593.8	1565.8	1545.7	1535.9	1526.8	1510.9	1496.3	1484.1	1474.3	1462.1	1448.1
160°	1640.2	1613.3	1593.8	1584.7	1576.1	1560.9	1547.5	1535.9	1527.4	1515.8	1501.8
162.5°	1680.4	1656.0	1637.7	1629.8	1621.9	1608.5	1595.7	1584.7	1578.0	1567.0	1552.4
165°	1717.0	1696.3	1677.4	1671.3	1663.9	1651.7	1640.8	1631.6	1626.7	1617.0	1601.7
167.5°	1749.3	1730.4	1713.9	1707.8	1701.7	1691.4	1681.6	1673.7	1670.0	1662.1	1647.5
170°	1775.5	1759.1	1745.0	1740.8	1735.3	1726.7	1718.8	1712.7	1710.3	1703.6	1688.9
172.5°	1798.1	1783.4	1771.9	1768.2	1763.9	1757.8	1751.1	1747.5	1746.9	1742.0	1728.0
175°	1814.5	1803.0	1793.8	1791.4	1788.9	1784.7	1779.8	1778.0	1779.2	1776.7	1765.2
177.5°	1824.9	1816.4	1809.7	1808.4	1807.2	1804.8	1803.0	1803.6	1807.2	1806.6	1795.6
180°	1812.7	1812.7	1812.7	1812.7	1812.7	1812.7	1812.7	1812.7	1812.7	1812.7	1812.7



TEST NUMBER: P188260

CATALOG NUMBER: MPBL-4-LD4-UNV-2LO-2LO-40

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1557.8	1557.8	1557.8	1557.8	1557.8	1557.8	1557.8	1557.8
2.5°	1509.7	1508.5	1504.2	1504.2	1497.5	1490.2	1485.3	1484.1
5°	1460.3	1457.2	1451.8	1451.1	1445.0	1439.0	1435.9	1435.3
7.5°	1408.5	1404.2	1398.7	1398.1	1392.0	1385.9	1382.2	1382.9
10°	1354.8	1349.9	1342.6	1341.4	1334.1	1326.8	1324.3	1324.9
12.5°	1298.7	1292.0	1284.7	1283.5	1274.9	1268.2	1266.4	1266.4
15°	1242.0	1232.9	1227.4	1226.8	1217.6	1210.3	1207.9	1206.6
17.5°	1184.7	1175.6	1169.5	1168.2	1161.5	1149.9	1147.5	1145.7
20°	1124.9	1115.8	1111.5	1104.8	1100.6	1089.0	1084.7	1085.3
22.5°	1067.0	1054.2	1049.9	1044.5	1039.6	1028.0	1023.7	1024.3
25°	1006.0	995.7	991.4	985.3	980.4	968.2	964.0	964.0
27.5°	948.1	937.8	932.9	926.8	921.9	909.7	904.8	904.8
30°	890.2	879.2	874.3	868.9	864.0	852.4	848.1	847.5
32.5°	832.9	821.9	817.0	812.2	805.4	796.9	792.0	791.4
35°	776.8	765.2	760.9	756.1	750.6	742.6	737.2	735.9
37.5°	720.7	709.7	705.5	703.6	695.7	687.8	685.3	682.3
40°	664.6	654.8	650.6	648.7	640.2	635.9	631.1	628.0
42.5°	609.7	600.6	596.9	595.1	586.6	582.3	577.4	575.0
45°	556.1	546.9	543.3	541.4	534.1	527.4	525.0	522.5
47.5°	503.6	493.9	490.2	488.4	481.7	475.6	472.5	470.7
50°	450.6	441.4	438.4	436.6	428.6	425.6	421.9	420.1
52.5°	401.2	391.4	388.4	387.2	380.5	378.0	374.4	372.5
55°	352.4	346.3	340.8	339.6	334.1	331.7	328.0	326.8
57.5°	305.5	300.0	295.1	293.9	288.4	286.6	283.5	282.9
60°	261.0	256.7	252.4	250.6	246.3	245.1	242.1	240.8
62.5°	219.5	215.2	211.0	209.7	206.1	204.9	202.4	201.2
65°	181.1	176.8	173.8	173.2	170.1	168.9	166.5	165.8
67.5°	145.7	142.1	139.0	138.4	136.0	135.4	133.5	132.9
70°	113.4	111.6	109.1	109.1	107.3	106.7	106.1	104.9
72.5°	87.2	85.4	84.1	84.1	82.9	82.9	82.3	81.1
75°	64.6	63.4	62.2	61.6	60.4	60.4	60.4	58.5
77.5°	44.5	43.3	42.1	41.5	41.5	40.9	40.2	39.0
80°	28.0	26.8	25.6	25.6	25.6	24.4	24.4	23.2
82.5°	14.6	14.0	13.4	13.4	13.4	12.8	12.2	11.6
85°	8.5	8.5	8.5	8.5	8.5	9.1	9.1	8.5
87.5°	12.2	12.8	13.4	13.4	14.0	14.0	14.6	15.9
90°	12.2	13.4	13.4	14.0	14.6	15.2	16.5	17.1
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°	12.8	10.4	9.8	7.9	6.1	4.9	3.0	3.0
100°	57.9	52.4	50.6	48.2	43.9	41.5	39.0	37.2
102.5°	103.0	100.0	98.2	95.7	91.5	89.0	86.0	84.1
105°	155.5	149.4	148.2	145.1	141.5	139.0	134.7	133.5
107.5°	204.9	201.2	200.6	196.9	193.9	192.1	190.2	186.6
110°	259.1	255.5	254.9	251.2	245.7	246.3	242.1	240.8



TEST NUMBER: P188260

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CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
112.5°	315.8	312.2	311.0	308.5	305.5	303.6	301.8	296.9
115°	374.4	371.3	369.5	367.7	361.6	363.4	361.6	362.2
117.5°	434.7	432.3	428.6	428.0	422.5	423.8	422.5	422.5
120°	496.9	493.9	490.8	490.2	487.8	486.0	484.7	485.3
122.5°	560.3	557.3	554.9	553.6	548.1	549.4	547.5	548.1
125°	625.0	621.3	617.7	617.7	612.8	614.0	612.2	611.6
127.5°	689.6	685.9	681.7	682.9	676.8	678.0	676.8	676.2
130°	755.5	751.2	746.9	747.5	742.6	743.3	741.4	741.4
132.5°	820.1	815.8	811.5	812.2	806.7	807.9	803.0	805.4
135°	884.7	881.1	875.6	876.8	871.3	871.9	867.0	869.5
137.5°	949.3	945.1	939.6	940.8	935.9	935.9	930.4	932.9
140°	1013.4	1009.1	1004.2	1004.8	999.9	999.3	993.2	995.7
142.5°	1075.6	1071.3	1066.4	1067.0	1062.1	1060.9	1055.4	1056.0
145°	1139.6	1133.5	1128.6	1129.2	1123.1	1121.9	1115.8	1117.0
147.5°	1201.8	1195.1	1190.2	1190.2	1184.1	1182.3	1176.2	1176.8
150°	1262.1	1255.4	1251.2	1250.5	1244.4	1242.6	1235.3	1235.3
152.5°	1318.2	1311.5	1307.3	1307.3	1301.8	1300.5	1293.8	1293.8
155°	1376.2	1368.8	1364.6	1364.6	1359.1	1357.2	1349.9	1349.9
157.5°	1434.1	1426.8	1423.1	1422.5	1417.0	1414.0	1405.4	1404.8
160°	1487.7	1480.4	1477.4	1476.1	1471.3	1468.2	1459.1	1458.5
162.5°	1537.1	1530.4	1526.8	1526.1	1521.3	1518.2	1509.7	1509.1
165°	1586.5	1579.2	1576.1	1575.5	1570.7	1567.6	1559.1	1558.5
167.5°	1633.5	1626.1	1624.3	1623.7	1618.8	1616.4	1607.8	1607.8
170°	1675.5	1670.0	1668.2	1668.2	1664.6	1661.5	1653.0	1652.4
172.5°	1715.8	1710.3	1709.1	1708.5	1703.6	1699.3	1689.5	1687.7
175°	1753.6	1748.7	1748.1	1746.9	1741.4	1734.7	1721.9	1720.0
177.5°	1785.9	1781.6	1781.0	1781.6	1778.0	1773.1	1762.7	1762.1
180°	1812.7	1812.7	1812.7	1812.7	1812.7	1812.7	1812.7	1812.7

(END OF REPORT)