

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: P188228

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

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P188228
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-STD-40
Description:
Light Source: (168) NICHIA ELM 4000K LED
2UT217042A8404A
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 5100.1 lumens
Efficiency: N/A
Efficacy: 86.0 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

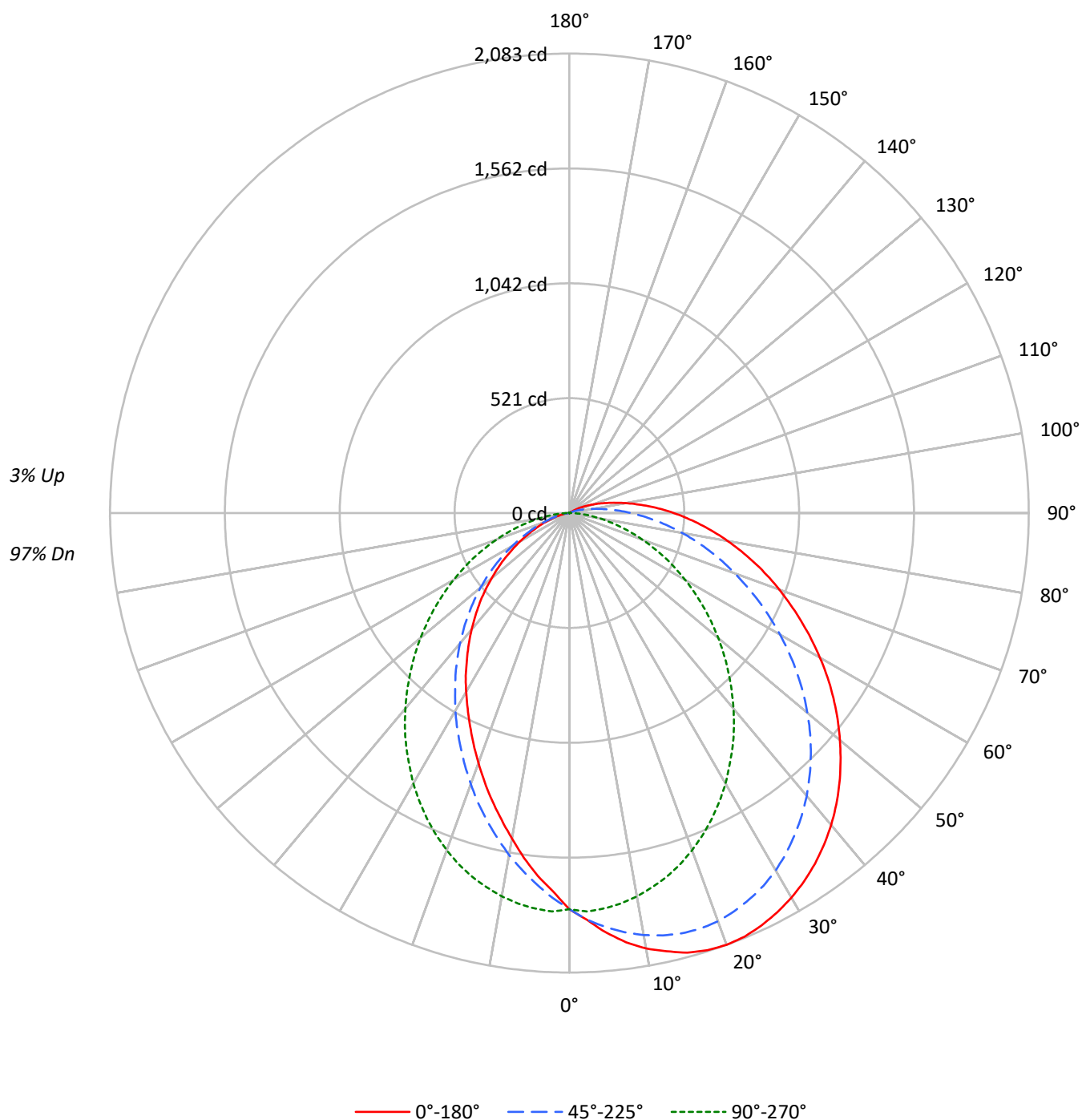
Input Watts (W): 59.28
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P188228

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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				0
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°	15461	15461	15461
5°	15548	15425	13442
10°	15601	15169	11664
15°	15487	14828	10141
20°	15210	14390	8805
25°	14773	13888	7632
30°	14258	13326	6632
35°	13691	12702	5709
40°	13073	12023	4881
45°	12406	11318	4114
50°	11696	10578	3366
55°	10969	9787	2676
60°	10211	8934	2019
65°	9450	8046	1429
70°	8713	7002	934
75°	7994	5815	556
80°	7269	4485	227
85°	6545	2976	54



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	169.5	3.3
10°-20°	480.6	9.4
20°-30°	712.4	14.0
30°-40°	835.7	16.4
40°-50°	842.3	16.5
50°-60°	742.5	14.6
60°-70°	570.7	11.2
70°-80°	378.2	7.4
80°-90°	211.5	4.1
90°-100°	101.0	2.0
100°-110°	40.8	0.8
110°-120°	12.7	0.2
120°-130°	2.3	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°	1362.5	26.7
0°-40°	2198.3	43.1
0°-60°	3783.0	74.2
0°-90°	4943.4	96.9
90°-120°	154.5	3.0
90°-150°	156.7	3.1
90°-180°	157.0	3.1
0°-180°	5100.1	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1796	1796	1796	1796	1796	
5°	1909	1884	1800	1691	1650	185
15°	2063	1973	1707	1444	1351	584
25°	2062	1932	1528	1169	1065	951
35°	1941	1781	1291	901	809	1215
45°	1732	1548	1020	646	574	1336
55°	1461	1259	742	410	356	1307
65°	1160	947	477	204	175	1150
75°	868	655	238	67	60	918
85°	596	392	64	6	5	514
90°	473	278	1	2	2	260
95°	359	182	0	1	0	273
105°	177	60	2	1	0	192
115°	64	8	3	2	0	67
125°	6	2	4	2	1	8
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



TEST NUMBER: P188228

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

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	1795.5	1795.5	1795.5	1795.5	1795.5	1795.5	1795.5	1795.5	1795.5	1795.5	1795.5
2.5°	1846.9	1846.1	1848.6	1851.0	1855.1	1856.7	1858.4	1859.2	1852.7	1851.0	1845.3
5°	1908.9	1908.9	1908.9	1908.9	1909.8	1910.6	1909.8	1908.1	1898.3	1893.4	1883.7
7.5°	1962.0	1962.8	1961.2	1961.2	1960.3	1958.7	1957.1	1951.4	1939.1	1929.3	1916.3
10°	2004.4	2003.6	2003.6	2001.1	1998.7	1997.0	1993.8	1987.3	1972.6	1959.5	1942.4
12.5°	2034.6	2036.2	2033.8	2032.1	2028.0	2026.4	2021.5	2012.5	1997.9	1980.7	1961.2
15°	2063.1	2063.1	2061.5	2057.4	2052.5	2049.3	2044.4	2032.9	2015.8	1995.4	1972.6
17.5°	2077.8	2079.4	2077.0	2072.1	2066.4	2062.3	2057.4	2043.5	2024.8	2001.9	1975.0
20°	2082.7	2083.5	2080.3	2074.5	2068.0	2062.3	2056.6	2041.9	2023.2	1997.0	1969.3
22.5°	2077.8	2077.8	2073.7	2067.2	2059.0	2054.2	2047.6	2030.5	2010.9	1983.2	1953.8
25°	2062.3	2063.1	2059.0	2051.7	2042.7	2037.0	2030.5	2012.5	1991.3	1962.8	1931.8
27.5°	2040.3	2041.1	2037.0	2029.7	2021.5	2014.2	2007.7	1991.3	1967.7	1938.3	1904.9
30°	2013.4	2013.4	2009.3	2000.3	1991.3	1984.8	1977.5	1959.5	1935.9	1903.2	1870.6
32.5°	1979.9	1979.9	1974.2	1965.2	1955.4	1948.1	1941.6	1920.4	1895.1	1866.5	1829.0
35°	1940.8	1940.8	1935.0	1924.4	1913.8	1907.3	1896.7	1877.1	1850.2	1820.8	1780.9
37.5°	1895.9	1895.9	1889.4	1878.8	1866.5	1860.8	1851.8	1829.8	1801.3	1771.1	1730.3
40°	1846.1	1845.3	1838.8	1826.5	1814.3	1807.0	1795.5	1776.0	1746.6	1716.4	1674.0
42.5°	1791.5	1789.8	1782.5	1770.3	1759.7	1749.9	1740.1	1717.2	1687.0	1655.2	1612.8
45°	1731.9	1729.5	1722.1	1709.1	1695.2	1685.4	1674.8	1653.6	1622.6	1590.8	1548.4
47.5°	1667.5	1665.8	1657.7	1647.9	1629.9	1623.4	1608.7	1587.5	1554.9	1519.8	1480.7
50°	1601.4	1599.8	1590.8	1580.2	1563.0	1554.9	1540.2	1517.4	1484.7	1448.8	1408.9
52.5°	1532.0	1531.2	1520.6	1513.3	1492.9	1483.1	1470.0	1444.8	1411.3	1376.2	1334.6
55°	1461.1	1457.0	1449.7	1440.7	1420.3	1410.5	1396.6	1370.5	1336.3	1301.2	1258.8
57.5°	1387.7	1386.0	1378.7	1366.4	1344.4	1334.6	1319.9	1293.8	1259.6	1222.9	1181.3
60°	1311.8	1310.2	1299.5	1290.6	1267.7	1257.9	1243.3	1216.3	1182.1	1145.4	1102.9
62.5°	1235.9	1235.1	1227.8	1214.7	1191.9	1182.1	1166.6	1139.7	1104.6	1067.9	1024.6
65°	1160.0	1156.8	1152.7	1138.8	1116.8	1104.6	1090.7	1063.0	1027.1	992.0	947.1
67.5°	1085.0	1085.0	1076.8	1063.8	1040.9	1029.5	1014.8	987.1	951.2	914.5	871.3
70°	1011.6	1011.6	1004.2	987.1	966.7	954.5	940.6	909.6	877.0	840.3	796.2
72.5°	939.8	939.8	928.4	915.3	894.1	881.9	868.0	837.8	801.9	767.7	726.9
75°	868.0	867.2	858.2	844.3	822.3	810.1	795.4	766.8	730.9	695.1	655.1
77.5°	797.0	797.0	787.2	772.6	752.2	739.1	729.3	695.9	660.0	625.7	585.7
80°	728.5	729.3	718.7	704.8	683.6	670.6	657.5	627.3	591.4	558.0	518.0
82.5°	661.6	661.6	651.8	637.9	616.7	603.7	593.9	560.4	526.2	491.9	454.4
85°	596.3	596.3	587.4	573.5	551.5	539.2	529.4	497.6	463.4	429.1	391.6
87.5°	533.5	532.7	524.6	510.7	488.7	477.2	466.6	435.6	403.0	369.6	333.7
90°	473.2	472.3	464.2	450.3	429.1	416.9	407.9	377.7	345.9	313.3	278.2
92.5°	415.2	413.6	403.8	394.0	372.0	361.4	351.6	323.9	292.9	261.1	228.4
95°	358.9	357.3	349.2	336.9	318.2	307.6	297.8	270.8	243.1	212.1	181.9
97.5°	306.7	305.1	297.8	286.3	268.4	257.8	248.8	223.5	198.2	169.7	141.9
100°	258.6	257.8	250.4	239.8	222.7	213.7	205.6	181.1	159.1	133.8	109.3
102.5°	215.4	214.6	208.0	197.4	182.7	174.6	167.2	147.7	125.6	103.6	82.4
105°	177.0	176.2	170.5	161.5	147.7	140.3	133.8	115.8	97.9	78.3	60.4
107.5°	143.6	144.4	137.9	129.7	117.5	110.9	105.2	89.7	73.4	57.9	42.4
110°	113.4	112.6	108.5	101.2	91.4	85.7	80.8	66.9	53.8	40.0	27.7



TEST NUMBER: P188228

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

CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	87.3	86.5	83.2	76.7	68.5	63.6	59.6	48.1	36.7	26.1	16.3
115°	64.4	64.4	61.2	56.3	48.9	44.9	40.8	31.8	22.8	14.7	8.2
117.5°	46.5	44.9	41.6	37.5	31.8	28.6	25.3	18.8	12.2	7.3	3.3
120°	27.7	27.7	26.1	22.8	18.8	16.3	13.9	9.0	4.9	2.4	1.6
122.5°	15.5	15.5	14.7	11.4	9.0	7.3	5.7	3.3	1.6	1.6	2.4
125°	6.5	5.7	4.9	3.3	2.4	1.6	1.6	1.6	1.6	1.6	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: P188228

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

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	1795.5	1795.5	1795.5	1795.5	1795.5	1795.5	1795.5	1795.5	1795.5	1795.5	1795.5
2.5°	1842.0	1835.5	1827.4	1819.2	1814.3	1810.2	1807.8	1807.8	1807.8	1807.8	1802.1
5°	1876.3	1865.7	1851.8	1838.8	1831.4	1824.9	1816.8	1811.9	1805.3	1799.6	1788.2
7.5°	1904.0	1889.4	1872.2	1852.7	1842.9	1833.9	1820.0	1808.6	1797.2	1784.9	1768.6
10°	1926.1	1906.5	1884.5	1860.0	1847.8	1836.3	1815.9	1799.6	1782.5	1764.5	1741.7
12.5°	1940.8	1917.1	1891.0	1860.8	1845.3	1831.4	1806.2	1784.1	1761.3	1736.8	1709.9
15°	1948.9	1922.0	1891.0	1855.1	1838.8	1822.5	1791.5	1763.7	1736.0	1706.6	1674.0
17.5°	1948.1	1917.1	1882.0	1842.9	1823.3	1804.5	1768.6	1736.0	1702.5	1669.1	1632.4
20°	1939.1	1905.7	1866.5	1824.1	1802.1	1780.9	1740.9	1703.4	1665.0	1625.9	1585.9
22.5°	1922.8	1886.9	1844.5	1798.8	1775.2	1753.1	1707.4	1665.0	1623.4	1579.4	1536.1
25°	1899.2	1860.8	1815.9	1767.0	1741.7	1717.2	1670.7	1622.6	1576.1	1528.0	1480.7
27.5°	1869.8	1829.0	1780.9	1730.3	1703.4	1676.4	1626.7	1573.7	1524.7	1473.3	1422.7
30°	1833.9	1789.8	1740.9	1687.9	1660.1	1631.6	1578.5	1522.3	1469.2	1415.4	1361.5
32.5°	1789.8	1745.0	1696.8	1639.7	1612.0	1581.0	1525.5	1469.2	1409.7	1351.8	1297.9
35°	1741.7	1696.0	1646.3	1587.5	1558.2	1527.2	1470.0	1410.5	1348.5	1290.6	1232.7
37.5°	1689.5	1643.0	1591.6	1531.2	1501.9	1470.0	1408.0	1349.3	1284.9	1225.3	1166.6
40°	1633.2	1585.1	1532.9	1474.9	1443.1	1408.0	1345.2	1284.0	1218.8	1156.8	1098.0
42.5°	1571.2	1522.3	1470.0	1410.5	1379.5	1343.6	1280.0	1218.0	1151.9	1088.3	1029.5
45°	1505.1	1455.4	1403.2	1340.3	1309.3	1275.9	1211.4	1148.6	1082.5	1019.7	961.0
47.5°	1436.6	1386.0	1333.8	1270.2	1240.0	1209.0	1141.3	1079.3	1016.5	951.2	888.4
50°	1362.4	1314.2	1261.2	1199.2	1168.2	1138.0	1069.5	1007.5	943.1	881.1	820.7
52.5°	1288.9	1240.0	1187.0	1125.8	1094.0	1065.4	996.1	935.7	872.1	810.9	749.7
55°	1213.1	1163.3	1111.1	1051.5	1019.7	991.2	921.8	863.1	802.7	742.4	682.8
57.5°	1134.8	1085.8	1034.4	974.1	947.1	915.3	847.6	790.5	730.9	673.8	615.1
60°	1056.4	1008.3	956.9	898.2	868.0	840.3	775.0	718.7	660.8	606.1	549.8
62.5°	979.8	930.8	880.2	823.1	796.2	766.8	702.4	648.6	593.9	540.9	487.0
65°	903.1	854.9	804.4	749.7	722.8	695.1	632.2	580.8	531.1	477.2	425.8
67.5°	827.2	779.9	730.9	676.3	650.2	623.3	566.2	513.1	462.6	412.8	364.7
70°	753.0	706.5	658.3	605.3	583.3	554.7	496.8	451.1	400.6	352.4	306.7
72.5°	681.2	632.2	586.6	536.0	511.5	487.0	433.2	386.7	340.2	293.7	251.3
75°	609.4	563.7	518.0	469.9	445.4	421.8	367.9	326.3	281.4	238.2	199.1
77.5°	540.9	498.4	452.8	404.6	383.4	358.9	310.0	269.2	226.0	186.8	150.9
80°	475.6	430.7	390.8	343.4	321.4	300.2	253.7	214.6	176.2	140.3	108.5
82.5°	414.4	372.0	327.9	284.7	264.3	243.9	201.5	165.6	129.7	98.7	70.2
85°	354.1	313.3	271.7	230.9	211.3	192.5	151.7	121.6	89.7	63.6	35.9
87.5°	296.9	258.6	218.6	180.3	162.3	145.2	110.9	82.4	53.8	29.4	7.3
90°	241.5	205.6	170.5	135.4	119.1	103.6	71.0	47.3	20.4	0.8	0.0
92.5°	195.0	159.9	128.9	95.4	81.6	67.7	40.8	20.4	2.4	0.0	0.0
95°	150.9	120.7	90.6	64.4	52.2	41.6	19.6	5.7	0.0	0.0	0.0
97.5°	115.0	88.9	63.6	41.6	31.8	23.7	7.3	0.8	0.8	0.8	0.8
100°	85.7	62.8	42.4	24.5	17.1	11.4	1.6	0.8	0.8	0.8	0.8
102.5°	61.2	43.2	26.1	13.9	8.2	4.1	0.8	0.8	0.8	0.8	0.8
105°	42.4	27.7	14.7	5.7	2.4	0.8	0.8	1.6	1.6	1.6	1.6
107.5°	27.7	16.3	7.3	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
110°	16.3	8.2	2.4	1.6	1.6	1.6	1.6	1.6	2.4	2.4	2.4



TEST NUMBER: P188228

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

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
112.5°	8.2	3.3	1.6	1.6	1.6	2.4	2.4	2.4	2.4	2.4	2.4
115°	3.3	1.6	1.6	2.4	2.4	2.4	2.4	2.4	2.4	3.3	3.3
117.5°	1.6	2.4	2.4	2.4	2.4	3.3	3.3	3.3	3.3	3.3	3.3
120°	2.4	2.4	2.4	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
122.5°	2.4	2.4	3.3	3.3	3.3	3.3	3.3	4.1	4.1	4.1	4.1
125°	2.4	2.4	3.3	3.3	3.3	3.3	4.1	4.1	4.1	4.1	4.1
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: P188228

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

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	1795.5	1795.5	1795.5	1795.5	1795.5	1795.5	1795.5	1795.5	1795.5	1795.5	1795.5
2.5°	1790.7	1780.9	1771.1	1763.7	1761.3	1755.6	1749.0	1748.2	1745.8	1739.3	1741.7
5°	1771.1	1755.6	1740.9	1730.3	1725.4	1715.6	1704.2	1698.5	1691.1	1679.7	1678.9
7.5°	1745.8	1725.4	1705.0	1691.9	1685.4	1669.9	1656.0	1644.6	1633.2	1619.3	1615.3
10°	1714.0	1688.7	1664.2	1648.7	1640.5	1618.5	1603.0	1585.1	1573.7	1555.7	1549.2
12.5°	1676.4	1646.3	1618.5	1599.8	1590.8	1567.1	1545.9	1524.7	1509.2	1489.6	1480.7
15°	1635.7	1601.4	1568.8	1548.4	1537.8	1510.0	1485.5	1461.1	1443.9	1422.7	1412.1
17.5°	1589.2	1550.8	1512.5	1495.3	1480.7	1449.7	1422.7	1396.6	1377.0	1354.2	1341.2
20°	1538.6	1496.2	1455.4	1435.8	1417.8	1386.0	1357.5	1333.0	1306.9	1280.0	1269.4
22.5°	1486.4	1439.0	1395.8	1374.6	1355.8	1321.6	1290.6	1262.0	1237.5	1209.8	1197.6
25°	1428.4	1377.9	1332.2	1311.0	1290.6	1255.5	1223.7	1196.8	1169.0	1140.5	1129.0
27.5°	1367.3	1314.2	1267.7	1243.3	1225.3	1188.6	1156.0	1129.0	1101.3	1076.0	1061.3
30°	1304.4	1250.6	1202.5	1178.0	1159.2	1121.7	1089.1	1061.3	1033.6	1005.0	993.6
32.5°	1239.2	1186.2	1135.6	1111.9	1091.5	1053.2	1020.5	992.8	964.3	943.9	925.9
35°	1173.1	1120.1	1068.7	1047.5	1024.6	987.1	954.5	925.9	900.6	876.2	862.3
37.5°	1107.0	1054.0	1002.6	982.2	958.6	921.8	888.4	861.5	836.2	812.5	798.7
40°	1039.3	986.3	935.7	914.5	892.5	855.8	823.1	796.2	771.7	748.9	735.8
42.5°	970.8	918.6	869.6	845.2	829.7	790.5	757.9	731.8	708.1	686.9	674.7
45°	903.1	851.7	802.7	779.9	764.4	725.2	693.4	668.9	646.1	624.9	613.5
47.5°	834.6	784.8	740.7	716.3	699.1	661.6	633.9	606.9	585.7	564.5	553.9
50°	767.7	718.7	670.6	651.0	633.1	598.8	568.6	543.3	525.4	506.6	495.2
52.5°	700.8	653.4	610.2	587.4	571.9	536.8	511.5	484.6	466.6	448.7	438.1
55°	634.7	589.0	548.2	526.2	509.9	476.4	451.1	426.7	409.5	393.2	383.4
57.5°	571.1	526.2	485.4	464.2	448.7	416.9	393.2	370.4	353.2	337.7	329.6
60°	505.8	463.4	425.8	405.4	390.8	360.6	337.7	314.1	300.2	286.3	279.8
62.5°	443.8	403.0	367.1	348.3	334.5	305.1	280.6	262.7	250.4	239.0	233.3
65°	384.2	344.3	311.6	292.9	280.6	252.9	230.9	215.4	203.9	195.0	190.1
67.5°	325.5	288.8	256.2	239.0	227.6	203.1	184.4	171.3	162.3	155.0	150.9
70°	270.0	235.8	206.4	189.3	179.5	158.3	143.6	133.0	125.6	119.9	117.5
72.5°	218.6	186.0	159.1	143.6	136.2	119.9	106.1	99.5	94.6	88.9	88.1
75°	169.7	141.1	115.8	103.6	97.9	84.8	75.9	71.0	66.9	63.6	62.8
77.5°	124.8	99.5	79.1	70.2	66.1	57.9	50.6	48.9	45.7	42.4	42.4
80°	84.8	63.6	49.8	43.2	41.6	35.9	31.0	30.2	27.7	25.3	25.3
82.5°	49.8	35.9	26.9	23.7	22.0	19.6	16.3	15.5	14.7	13.1	13.1
85°	22.0	15.5	10.6	9.0	9.0	7.3	5.7	5.7	5.7	4.9	4.9
87.5°	4.1	2.4	1.6	1.6	1.6	2.4	2.4	2.4	2.4	3.3	3.3
90°	0.8	0.8	0.8	0.8	1.6	1.6	1.6	1.6	2.4	2.4	1.6
92.5°	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
95°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.0	0.0
97.5°	0.8	0.8	0.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100°	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0	0.0	0.0	0.0
102.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0	0.0
105°	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0
107.5°	1.6	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.0
110°	2.4	2.4	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8



TEST NUMBER: P188228

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

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
112.5°	2.4	2.4	2.4	2.4	2.4	1.6	1.6	1.6	0.8	0.8	0.8
115°	3.3	3.3	2.4	2.4	2.4	2.4	2.4	1.6	1.6	1.6	0.8
117.5°	3.3	3.3	3.3	3.3	3.3	3.3	2.4	2.4	2.4	1.6	1.6
120°	4.1	3.3	3.3	3.3	3.3	3.3	2.4	2.4	2.4	2.4	1.6
122.5°	4.1	4.1	4.1	4.1	3.3	3.3	3.3	3.3	2.4	2.4	1.6
125°	4.1	4.1	4.1	4.1	4.1	3.3	3.3	3.3	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: P188228

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

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1795.5	1795.5	1795.5	1795.5	1795.5	1795.5	1795.5	1795.5
2.5°	1734.4	1730.3	1727.0	1721.3	1719.7	1716.4	1713.2	1715.6
5°	1669.1	1664.2	1660.1	1653.6	1652.8	1648.7	1647.1	1650.3
7.5°	1602.2	1596.5	1591.6	1584.3	1581.8	1576.9	1573.7	1576.9
10°	1533.7	1521.4	1519.0	1510.8	1506.8	1500.2	1497.0	1498.6
12.5°	1463.5	1449.7	1447.2	1438.2	1433.3	1426.0	1422.7	1423.5
15°	1394.2	1380.3	1376.2	1368.1	1361.5	1354.2	1350.1	1350.9
17.5°	1322.4	1308.5	1303.6	1295.5	1288.1	1280.8	1278.3	1278.3
20°	1249.0	1235.9	1230.2	1222.9	1214.7	1207.4	1205.7	1205.7
22.5°	1178.0	1164.1	1158.4	1151.9	1143.7	1136.4	1135.6	1134.8
25°	1111.9	1094.8	1089.9	1082.5	1074.4	1067.0	1065.4	1065.4
27.5°	1044.2	1027.9	1023.0	1015.7	1006.7	1000.2	999.3	999.3
30°	974.1	961.8	957.7	950.4	942.2	936.5	934.9	936.5
32.5°	911.2	896.6	891.7	889.2	877.8	872.9	872.1	874.5
35°	846.8	832.9	827.2	823.1	816.6	810.9	810.9	809.3
37.5°	784.8	771.7	766.0	765.2	756.2	751.3	751.3	749.7
40°	722.8	710.6	707.3	701.6	695.9	691.8	691.0	689.3
42.5°	662.4	650.2	647.7	645.3	637.1	633.1	632.2	630.6
45°	602.1	590.6	586.6	583.3	578.4	575.1	574.3	574.3
47.5°	542.5	532.7	529.4	526.2	521.3	517.2	517.2	517.2
50°	484.6	476.4	472.3	469.9	465.8	461.7	462.6	460.9
52.5°	429.1	420.9	416.9	416.1	411.2	407.9	407.1	407.1
55°	374.4	368.7	364.7	363.8	359.8	356.5	356.5	356.5
57.5°	324.7	316.5	313.3	313.3	309.2	306.7	308.4	305.9
60°	273.3	268.4	265.9	265.1	262.7	260.2	261.9	259.4
62.5°	229.2	224.3	221.9	221.9	218.6	216.2	216.2	216.2
65°	187.6	181.1	180.3	181.1	177.8	176.2	176.2	175.4
67.5°	150.1	146.0	143.6	144.4	141.9	140.3	140.3	140.3
70°	115.0	113.4	112.6	111.8	110.1	109.3	108.5	108.5
72.5°	86.5	84.8	84.0	84.0	84.0	82.4	81.6	84.0
75°	62.0	61.2	60.4	58.7	58.7	58.7	57.9	60.4
77.5°	41.6	41.6	40.0	39.2	40.0	39.2	38.3	39.2
80°	25.3	24.5	23.7	22.8	23.7	22.8	22.0	22.8
82.5°	12.2	12.2	11.4	10.6	11.4	10.6	10.6	11.4
85°	5.7	5.7	5.7	4.9	4.9	5.7	4.9	4.9
87.5°	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
90°	1.6	1.6	1.6	0.8	1.6	1.6	2.4	2.4
92.5°	0.8	0.8	0.8	0.8	0.8	0.8	1.6	1.6
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: P188228

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

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
112.5°	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
115°	0.8	0.8	0.8	0.8	0.0	0.0	0.0	0.0
117.5°	1.6	0.8	0.8	0.8	0.8	0.8	0.0	0.0
120°	1.6	0.8	0.8	0.8	0.8	0.8	0.0	0.0
122.5°	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8
125°	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8
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)