Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

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: METALUX

Report Number: P130660

Luminaire Tested: **TBLED-LD1-6-M-UNV-L835-CD1-CMS**

Issue Date: 3/3/2020

Report Generated By E9911574 / USPTCWHP6081592

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Peachtree City, GA 30269



**Test Information**

| | |
|---|---|
| Test Method: | LM-79-08 |
| Report Number: | P130660 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P25346) |
| Test Lab: | INNOVATION CENTER-P2 |
| Issue Date: | 3/3/2020 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | METALUX |
| Catalog Number: | TBLED-LD1-6-M-UNV-L835-CD1-CMS |
| Description: | METALUX TOP BAY LED LOW-BAY LUMINAIRE. MEDIUM DISTRIBUTION WITH MINI SENSOR. |
| Light Source: | (160) 3500K CCT, 80 CRI LEDS |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 5408.0 lumens |
| Efficiency: | N/A |
| Efficacy: | 106.0 lumens/watt |
| Spacing Criteria (0/90/45): | 1.34 / 1.34 / 1.33 |
| Luminous Opening: | Circular (Dia: 1.12' x H: 0') |
| CIE Type: | Direct |

| | |
|---|---|
| Input Watts (W): | 51 |
| 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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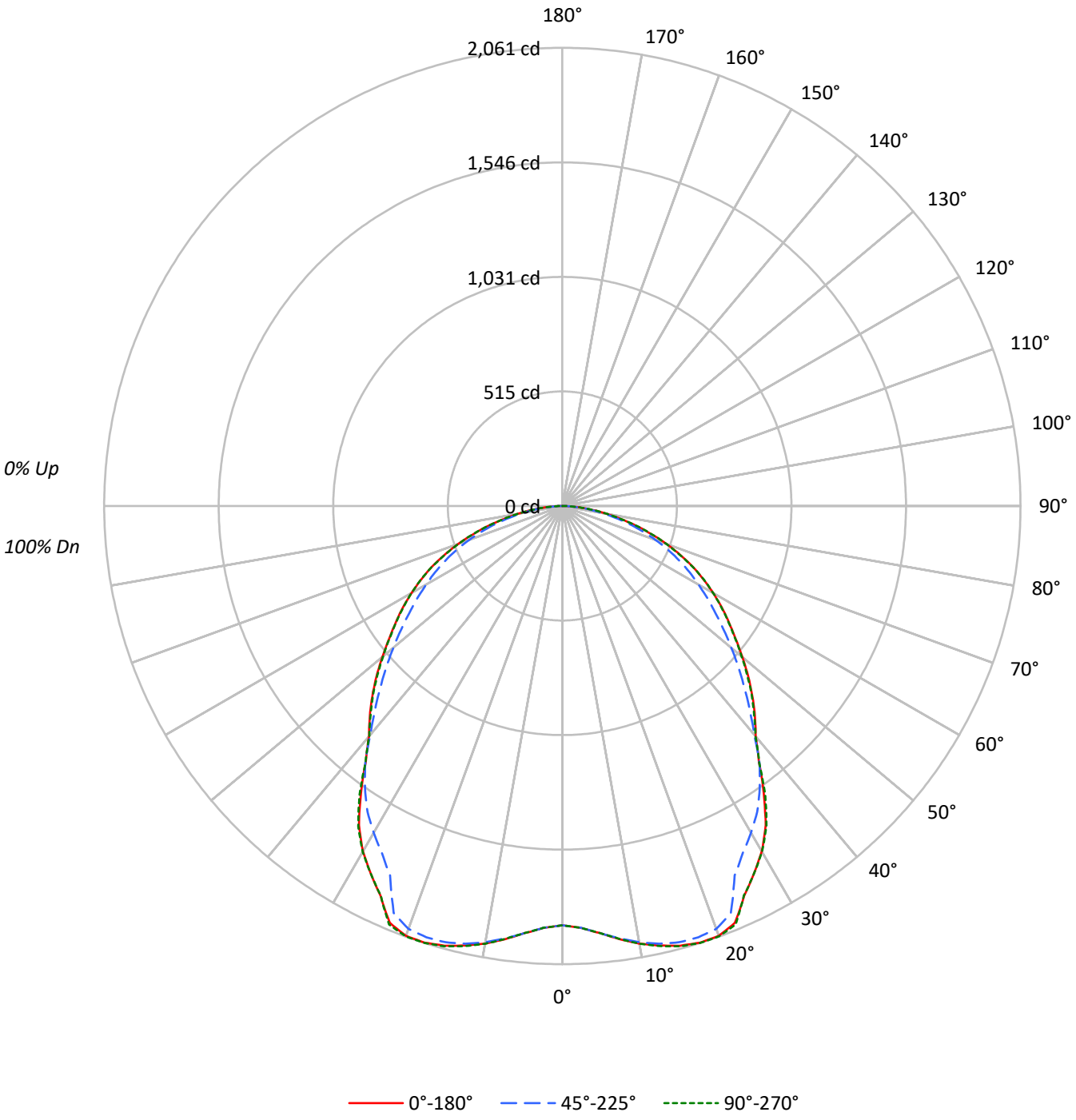
## Luminous Intensity Polar Plot



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## COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

| RF | 20 | | | | 20 | | | | 20 | | | 20 | | | 20 | | | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RC | 80 | | | | 70 | | | | 50 | | | 30 | | | 10 | | | 0 |
| RW | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0 |
| RCR | | | | | | | | | | | | | | | | | | |
| 0 | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |
| 1 | 109 | 104 | 100 | 96 | 106 | 102 | 98 | 95 | 98 | 95 | 92 | 94 | 91 | 89 | 90 | 88 | 86 | 84 |
| 2 | 99 | 91 | 85 | 79 | 97 | 89 | 83 | 78 | 86 | 81 | 76 | 83 | 78 | 74 | 80 | 76 | 73 | 71 |
| 3 | 91 | 80 | 72 | 66 | 88 | 79 | 71 | 65 | 76 | 70 | 64 | 73 | 68 | 63 | 71 | 66 | 62 | 60 |
| 4 | 83 | 72 | 63 | 56 | 81 | 70 | 62 | 56 | 68 | 61 | 55 | 65 | 59 | 54 | 63 | 58 | 54 | 52 |
| 5 | 77 | 64 | 55 | 49 | 75 | 63 | 55 | 48 | 61 | 54 | 48 | 59 | 52 | 47 | 57 | 51 | 47 | 45 |
| 6 | 71 | 58 | 49 | 43 | 69 | 57 | 49 | 43 | 55 | 48 | 42 | 53 | 47 | 42 | 52 | 46 | 41 | 39 |
| 7 | 66 | 53 | 44 | 38 | 64 | 52 | 44 | 38 | 50 | 43 | 38 | 49 | 42 | 37 | 48 | 42 | 37 | 35 |
| 8 | 61 | 48 | 40 | 34 | 60 | 47 | 39 | 34 | 46 | 39 | 34 | 45 | 38 | 33 | 44 | 38 | 33 | 31 |
| 9 | 58 | 44 | 36 | 31 | 56 | 44 | 36 | 31 | 43 | 35 | 30 | 41 | 35 | 30 | 40 | 34 | 30 | 28 |
| 10 | 54 | 41 | 33 | 28 | 53 | 40 | 33 | 28 | 39 | 32 | 28 | 38 | 32 | 28 | 38 | 32 | 27 | 26 |

## AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|---|---|---|---|
| 0° | 20428 | 20428 | 20428 |
| 5° | 20962 | 20962 | 20954 |
| 10° | 21979 | 21906 | 21979 |
| 15° | 22953 | 22773 | 22983 |
| 20° | 23709 | 23325 | 23739 |
| 25° | 23120 | 21904 | 23096 |
| 30° | 22433 | 21219 | 22457 |
| 35° | 20885 | 20464 | 21035 |
| 40° | 19129 | 18987 | 19100 |
| 45° | 18513 | 17749 | 18452 |
| 50° | 17800 | 16725 | 17733 |
| 55° | 17274 | 15881 | 17237 |
| 60° | 16964 | 15323 | 16964 |
| 65° | 16611 | 14856 | 16560 |
| 70° | 15770 | 14127 | 15748 |
| 75° | 14355 | 12991 | 14409 |
| 80° | 12566 | 11406 | 12603 |
| 85° | 10909 | 9505 | 10909 |

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**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 186.3 | 3.4 |
| 10°-20° | 577.4 | 10.7 |
| 20°-30° | 873.1 | 16.1 |
| 30°-40° | 953.1 | 17.6 |
| 40°-50° | 935.6 | 17.3 |
| 50°-60° | 819.1 | 15.1 |
| 60°-70° | 615.5 | 11.4 |
| 70°-80° | 351.9 | 6.5 |
| 80°-90° | 96.0 | 1.8 |
| 90°-100° | 0.0 | 0.0 |
| 100°-110° | 0.0 | 0.0 |
| 110°-120° | 0.0 | 0.0 |
| 120°-130° | 0.0 | 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° | 1636.8 | 30.3 |
| 0°-40° | 2589.9 | 47.9 |
| 0°-60° | 4344.6 | 80.3 |
| 0°-90° | 5408.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 5408.0 | 100.0 |

**CANDELA DISTRIBUTION:**

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|---|---|---|---|---|---|---|
| 0° | 1886 | 1886 | 1886 | 1886 | 1886 | |
| 5° | 1928 | 1929 | 1928 | 1928 | 1928 | 186 |
| 15° | 2047 | 2046 | 2031 | 2047 | 2050 | 579 |
| 25° | 1935 | 1938 | 1833 | 1937 | 1933 | 894 |
| 35° | 1580 | 1502 | 1548 | 1496 | 1591 | 985 |
| 45° | 1209 | 1233 | 1159 | 1226 | 1205 | 932 |
| 55° | 915 | 929 | 841 | 926 | 913 | 821 |
| 65° | 648 | 623 | 580 | 623 | 646 | 638 |
| 75° | 343 | 330 | 310 | 330 | 344 | 364 |
| 85° | 88 | 82 | 76 | 83 | 88 | 98 |
| 90° | 0 | 0 | 0 | 0 | 0 | |

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**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 10° | 15° | 20° | 25° | 30° | 35° | 40° | 45° | 50° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1886.5 | 1886.5 | 1886.5 | 1886.5 | 1886.5 | 1886.5 | 1886.5 | 1886.5 | 1886.5 | 1886.5 | 1886.5 |
| 2.5° | 1899.1 | 1897.8 | 1898.5 | 1897.8 | 1899.1 | 1899.1 | 1898.5 | 1899.1 | 1898.5 | 1898.5 | 1898.5 |
| 5° | 1928.4 | 1927.0 | 1927.7 | 1926.4 | 1928.4 | 1929.0 | 1928.4 | 1929.0 | 1929.0 | 1928.4 | 1928.4 |
| 7.5° | 1964.9 | 1962.3 | 1963.0 | 1961.6 | 1963.6 | 1963.6 | 1963.0 | 1963.0 | 1962.3 | 1961.6 | 1962.3 |
| 10° | 1998.9 | 1997.5 | 1997.5 | 1996.9 | 1998.2 | 1997.5 | 1996.2 | 1995.5 | 1992.9 | 1992.2 | 1993.5 |
| 12.5° | 2024.8 | 2026.1 | 2028.1 | 2028.1 | 2027.5 | 2026.8 | 2023.5 | 2021.5 | 2017.5 | 2016.8 | 2018.1 |
| 15° | 2047.4 | 2048.1 | 2050.1 | 2049.4 | 2047.4 | 2044.1 | 2040.8 | 2036.8 | 2033.4 | 2031.4 | 2033.4 |
| 17.5° | *2059.4* | *2059.4* | *2058.7* | *2056.7* | *2052.7* | *2048.7* | *2044.1* | *2040.1* | *2036.8* | *2034.1* | *2036.8* |
| 20° | 2057.4 | 2057.4 | 2054.1 | 2050.1 | 2043.4 | 2037.4 | 2032.8 | 2028.8 | 2025.5 | 2024.1 | 2026.1 |
| 22.5° | 2029.4 | 2031.4 | 2028.8 | 2028.1 | 2022.8 | 2014.8 | 2005.5 | 1995.5 | 1984.9 | 1981.6 | 1986.2 |
| 25° | 1935.0 | 1933.7 | 1935.0 | 1947.7 | 1951.0 | 1924.4 | 1890.5 | 1859.2 | 1840.6 | 1833.3 | 1843.3 |
| 27.5° | 1865.2 | 1863.9 | 1847.2 | 1820.7 | 1784.1 | 1766.8 | 1769.4 | 1766.8 | 1762.1 | 1758.8 | 1763.5 |
| 30° | 1794.1 | 1784.1 | 1738.9 | 1690.3 | 1655.1 | 1649.8 | 1665.1 | 1684.3 | 1696.3 | 1697.0 | 1695.0 |
| 32.5° | 1702.3 | 1682.3 | 1623.8 | 1586.6 | 1572.0 | 1569.3 | 1574.0 | 1593.9 | 1621.2 | 1631.8 | 1617.8 |
| 35° | 1579.9 | 1568.6 | 1532.7 | 1508.8 | 1504.1 | 1500.8 | 1492.8 | 1502.8 | 1536.7 | 1548.0 | 1535.4 |
| 37.5° | 1452.9 | 1463.6 | 1448.3 | 1439.6 | 1439.0 | 1432.3 | 1421.0 | 1422.3 | 1440.3 | 1456.3 | 1438.3 |
| 40° | 1353.2 | 1363.8 | 1373.8 | 1373.1 | 1370.5 | 1360.5 | 1351.9 | 1347.2 | 1345.9 | 1343.2 | 1347.2 |
| 42.5° | 1282.0 | 1278.0 | 1297.3 | 1308.0 | 1301.3 | 1294.7 | 1287.4 | 1284.0 | 1259.4 | 1248.1 | 1262.8 |
| 45° | 1208.9 | 1207.6 | 1220.9 | 1243.5 | 1238.1 | 1228.8 | 1226.8 | 1213.5 | 1171.7 | 1159.0 | 1175.0 |
| 47.5° | 1133.8 | 1139.1 | 1151.0 | 1169.7 | 1173.0 | 1165.0 | 1159.0 | 1131.8 | 1089.2 | 1073.9 | 1088.5 |
| 50° | 1056.6 | 1068.6 | 1085.2 | 1092.5 | 1095.8 | 1091.2 | 1087.2 | 1052.0 | 1008.7 | 992.8 | 1009.4 |
| 52.5° | 982.8 | 999.4 | 1021.4 | 1015.4 | 1012.7 | 1014.7 | 1008.1 | 976.2 | 934.3 | 915.0 | 934.9 |
| 55° | 915.0 | 930.9 | 950.2 | 938.3 | 925.6 | 932.9 | 926.9 | 901.7 | 865.1 | 841.2 | 863.8 |
| 57.5° | 851.1 | 861.1 | 876.4 | 860.5 | 845.8 | 854.5 | 848.5 | 828.5 | 794.6 | 774.0 | 796.0 |
| 60° | 783.3 | 791.3 | 799.9 | 784.6 | 769.4 | 774.0 | 771.3 | 753.4 | 725.5 | 707.5 | 724.1 |
| 62.5° | 715.5 | 719.5 | 725.5 | 708.8 | 696.2 | 696.2 | 694.9 | 677.6 | 655.6 | 645.7 | 655.0 |
| 65° | 648.3 | 647.7 | 649.7 | 633.0 | 623.7 | 622.4 | 619.7 | 603.8 | 586.5 | 579.8 | 587.2 |
| 67.5° | 572.5 | 573.9 | 574.5 | 559.2 | 551.9 | 548.6 | 546.6 | 532.0 | 518.0 | 513.3 | 518.7 |
| 70° | 498.1 | 498.7 | 498.7 | 484.8 | 479.4 | 474.1 | 472.1 | 460.8 | 449.5 | 446.2 | 450.8 |
| 72.5° | 419.6 | 424.2 | 422.2 | 410.9 | 407.0 | 400.3 | 399.0 | 391.7 | 383.0 | 378.4 | 383.0 |
| 75° | 343.1 | 349.8 | 347.8 | 337.8 | 333.1 | 326.5 | 327.2 | 323.2 | 313.9 | 310.5 | 315.2 |
| 77.5° | 269.3 | 273.3 | 274.0 | 268.6 | 261.3 | 256.7 | 258.7 | 258.0 | 251.4 | 243.4 | 249.4 |
| 80° | 201.5 | 206.1 | 206.8 | 202.1 | 196.2 | 192.2 | 194.8 | 194.8 | 189.5 | 182.9 | 188.2 |
| 82.5° | 140.3 | 143.6 | 143.6 | 141.0 | 138.3 | 134.3 | 135.7 | 136.3 | 133.0 | 126.3 | 131.0 |
| 85° | 87.8 | 88.4 | 87.1 | 85.1 | 83.1 | 81.8 | 81.8 | 83.1 | 80.5 | 76.5 | 79.8 |
| 87.5° | 32.6 | 33.2 | 32.6 | 34.6 | 32.6 | 31.9 | 32.6 | 34.6 | 31.9 | 31.9 | 32.6 |
| 90° | 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):**

| | 55° | 60° | 65° | 70° | 75° | 80° | 85° | 90° |
|---|---|---|---|---|---|---|---|---|
| 0° | 1886.5 | 1886.5 | 1886.5 | 1886.5 | 1886.5 | 1886.5 | *1886.5* | 1886.5 |
| 2.5° | 1898.5 | 1899.1 | 1899.1 | 1898.5 | 1898.5 | 1898.5 | *1897.8* | 1898.5 |
| 5° | 1928.4 | 1929.0 | 1929.0 | 1927.7 | 1928.4 | 1927.7 | *1927.0* | 1927.7 |
| 7.5° | 1963.0 | 1964.3 | 1963.6 | 1964.3 | 1964.9 | 1963.6 | *1963.6* | 1963.6 |
| 10° | 1994.9 | 1996.9 | 1998.2 | 1999.5 | 2000.2 | 1998.9 | *1999.5* | 1998.9 |
| 12.5° | 2020.8 | 2024.8 | 2027.5 | 2028.8 | 2030.1 | 2030.1 | *2028.8* | 2027.5 |
| 15° | 2036.8 | 2041.4 | 2044.7 | 2048.7 | 2051.4 | 2052.1 | *2050.7* | 2050.1 |
| 17.5° | *2040.8* | *2044.7* | *2049.4* | *2053.4* | *2057.4* | *2060.0* | *2061.4* | *2060.7* |
| 20° | 2029.4 | 2032.8 | 2038.1 | 2044.1 | 2049.4 | 2054.7 | *2058.7* | 2060.0 |
| 22.5° | 1996.9 | 2006.2 | 2016.1 | 2023.5 | 2028.1 | 2030.8 | *2032.8* | 2037.4 |
| 25° | 1863.2 | 1887.8 | 1923.7 | 1951.0 | 1946.3 | 1933.7 | *1929.0* | 1933.0 |
| 27.5° | 1768.1 | 1765.5 | 1761.5 | 1782.7 | 1816.0 | 1845.3 | *1859.2* | 1865.9 |
| 30° | 1683.0 | 1663.1 | 1644.4 | 1651.8 | 1685.7 | 1736.2 | *1778.8* | 1796.0 |
| 32.5° | 1593.9 | 1566.6 | 1564.0 | 1568.6 | 1584.6 | 1618.5 | *1676.4* | 1708.9 |
| 35° | 1500.1 | 1485.5 | 1493.5 | 1499.5 | 1504.8 | 1522.1 | *1562.0* | 1591.2 |
| 37.5° | 1416.4 | 1413.7 | 1424.3 | 1431.7 | 1434.3 | 1443.0 | *1458.2* | 1454.3 |
| 40° | 1342.5 | 1344.5 | 1353.9 | 1361.8 | 1367.2 | 1367.8 | *1358.5* | 1351.2 |
| 42.5° | 1276.1 | 1284.7 | 1284.7 | 1294.7 | 1304.0 | 1291.3 | *1272.1* | 1277.4 |
| 45° | 1208.2 | 1222.2 | 1221.5 | 1230.2 | 1238.8 | 1216.9 | *1200.9* | 1204.9 |
| 47.5° | 1128.4 | 1155.0 | 1159.0 | 1168.3 | 1168.3 | 1145.7 | *1133.1* | 1128.4 |
| 50° | 1047.3 | 1081.9 | 1086.5 | 1091.9 | 1089.2 | 1080.6 | *1063.9* | 1052.6 |
| 52.5° | 972.2 | 1004.7 | 1009.4 | 1007.4 | 1012.7 | 1016.7 | *994.1* | 980.1 |
| 55° | 898.4 | 923.6 | 929.6 | 923.0 | 935.6 | 946.9 | *925.6* | 913.0 |
| 57.5° | 825.2 | 844.5 | 849.8 | 844.5 | 858.5 | 871.1 | *857.1* | 848.5 |
| 60° | 751.4 | 768.7 | 772.0 | 767.4 | 784.0 | 795.3 | *788.6* | 783.3 |
| 62.5° | 678.9 | 690.9 | 694.2 | 696.2 | 706.2 | 719.5 | *718.2* | 717.5 |
| 65° | 605.8 | 618.4 | 619.7 | 625.7 | 632.4 | 649.7 | *646.3* | 646.3 |
| 67.5° | 534.6 | 543.3 | 545.3 | 554.6 | 557.2 | 573.9 | *571.9* | 569.2 |
| 70° | 460.8 | 469.5 | 472.1 | 481.4 | 485.4 | 498.7 | *499.4* | 497.4 |
| 72.5° | 393.0 | 396.3 | 399.0 | 407.6 | 410.9 | 423.6 | *423.6* | 420.9 |
| 75° | 323.8 | 323.2 | 325.8 | 334.5 | 337.8 | 348.4 | *347.8* | 344.4 |
| 77.5° | 258.7 | 255.3 | 257.3 | 263.3 | 267.3 | 275.3 | *272.6* | 270.0 |
| 80° | 197.5 | 192.2 | 192.8 | 198.8 | 201.5 | 206.8 | *204.1* | 202.1 |
| 82.5° | 139.6 | 135.0 | 133.7 | 138.3 | 142.3 | 143.0 | *142.3* | 141.0 |
| 85° | 85.1 | 81.1 | 81.8 | 83.8 | 86.4 | 86.4 | *87.8* | 87.8 |
| 87.5° | 33.2 | 31.3 | 31.3 | 33.2 | 33.2 | 33.9 | *33.2* | 31.9 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | *0.0* | 0.0 |

(END OF REPORT)