

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: NEO-RAY

Report Number: P243394

Luminaire Tested: **S123RDR-H1165D830-X4F0-XX-UDD-F-W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P243394  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-64)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: NEO-RAY  
Catalog Number: S123RDR-H1165D830-X4F0-XX-UDD-F-W  
Description: DEFINE 3 REGRESSED DIRECT RECESSED WITH SATIN FLUSH DIFFUSER.  
HIGH PERFORMANCE LIGHT ENGINE  
Light Source: (184) 3000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 3897.4 lumens  
Efficiency: N/A  
Efficacy: 103.4 lumens/watt  
Spacing Criteria (0/90/45): 1.21 / 1.07 / 1.22  
Luminous Opening: Rectangular (W 0.23' x L: 3.88' x H: 0')  
CIE Type: Direct

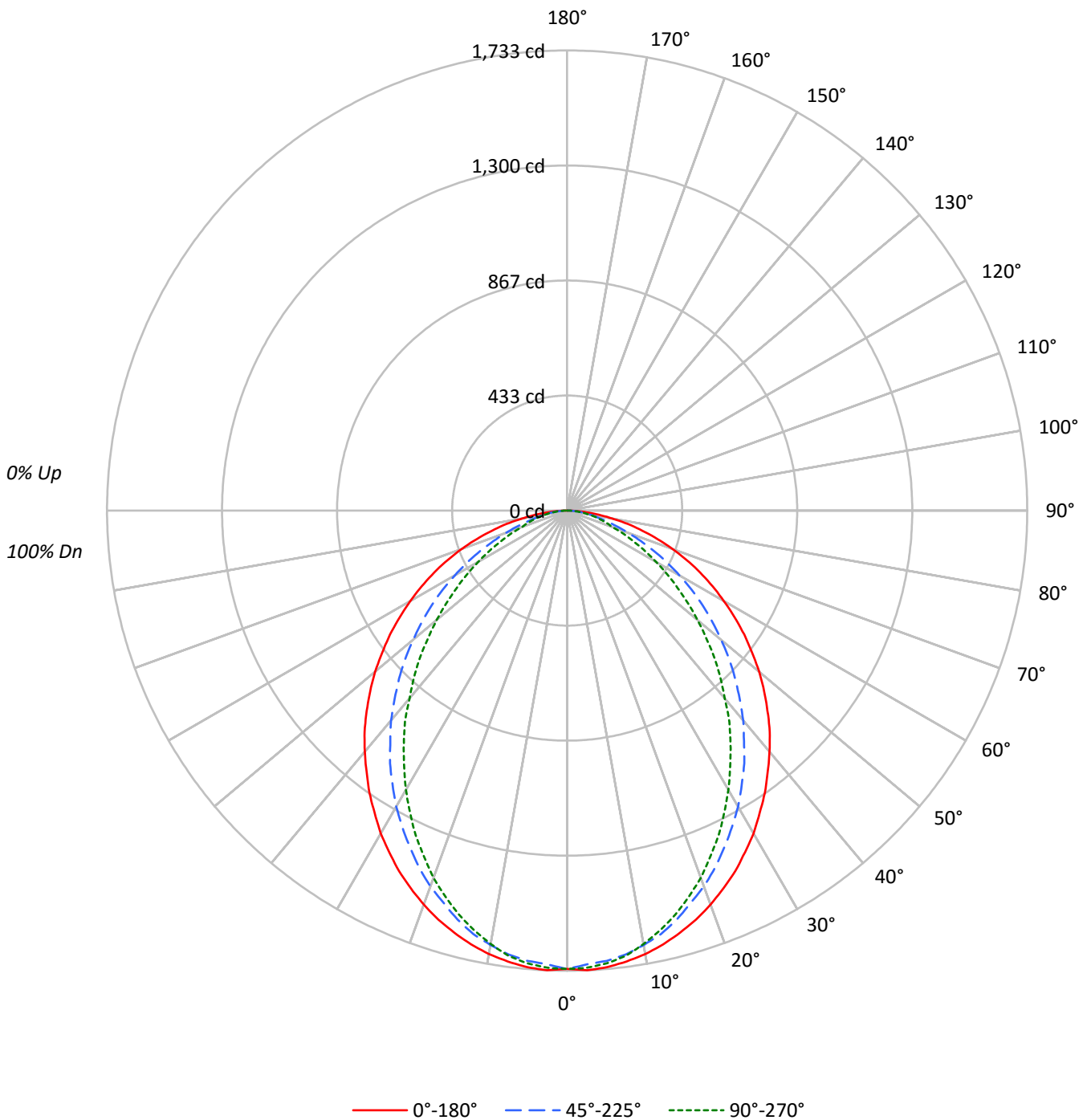
Input Watts (W): 37.7  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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  | 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   | 110 | 105 | 101 | 98  | 107 | 103 | 99  | 96  | 99  | 96  | 93  | 95  | 93  | 90  | 91  | 89  | 88  | 86  |
| 2   | 101 | 93  | 87  | 81  | 98  | 91  | 85  | 80  | 87  | 83  | 78  | 84  | 80  | 77  | 81  | 78  | 75  | 73  |
| 3   | 92  | 82  | 75  | 69  | 90  | 81  | 74  | 68  | 78  | 72  | 67  | 75  | 70  | 66  | 73  | 68  | 65  | 62  |
| 4   | 85  | 73  | 65  | 59  | 83  | 72  | 64  | 58  | 70  | 63  | 58  | 67  | 62  | 57  | 65  | 60  | 56  | 54  |
| 5   | 78  | 66  | 58  | 51  | 76  | 65  | 57  | 51  | 63  | 56  | 50  | 61  | 55  | 50  | 59  | 54  | 49  | 47  |
| 6   | 73  | 60  | 51  | 45  | 71  | 59  | 51  | 45  | 57  | 50  | 45  | 56  | 49  | 44  | 54  | 48  | 44  | 42  |
| 7   | 67  | 55  | 46  | 40  | 66  | 54  | 46  | 40  | 52  | 45  | 40  | 51  | 44  | 40  | 49  | 44  | 39  | 37  |
| 8   | 63  | 50  | 42  | 36  | 61  | 49  | 41  | 36  | 48  | 41  | 36  | 47  | 40  | 36  | 46  | 40  | 35  | 34  |
| 9   | 59  | 46  | 38  | 33  | 58  | 45  | 38  | 33  | 44  | 37  | 32  | 43  | 37  | 32  | 42  | 36  | 32  | 30  |
| 10  | 55  | 43  | 35  | 30  | 54  | 42  | 35  | 30  | 41  | 34  | 30  | 40  | 34  | 30  | 39  | 34  | 29  | 28  |

**AVERAGE LUMINANCE (cd/sqm):**

|     | 0°    | 45°   | 90°   |
|-----|-------|-------|-------|
| 0°  | 20924 | 20924 | 20924 |
| 5°  | 21004 | 20713 | 20826 |
| 10° | 20871 | 20446 | 20397 |
| 15° | 20647 | 20014 | 19764 |
| 20° | 20368 | 19427 | 18982 |
| 25° | 20036 | 18724 | 18051 |
| 30° | 19651 | 18018 | 16997 |
| 35° | 19207 | 17205 | 15872 |
| 40° | 18755 | 16322 | 14622 |
| 45° | 18296 | 15340 | 13455 |
| 50° | 17801 | 14275 | 12101 |
| 55° | 17202 | 13168 | 10731 |
| 60° | 16521 | 11859 | 9353  |
| 65° | 15858 | 10380 | 7985  |
| 70° | 14942 | 8693  | 6390  |
| 75° | 13783 | 6894  | 6084  |
| 80° | 12034 | 6108  | 5549  |
| 85° | 10139 | 5340  | 5160  |



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 162.4  | 4.2       |
| 10°-20°   | 452.1  | 11.6      |
| 20°-30°   | 650.8  | 16.7      |
| 30°-40°   | 733.1  | 18.8      |
| 40°-50°   | 700.4  | 18.0      |
| 50°-60°   | 572.7  | 14.7      |
| 60°-70°   | 384.5  | 9.9       |
| 70°-80°   | 191.8  | 4.9       |
| 80°-90°   | 49.6   | 1.3       |
| 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°    | 1265.3 | 32.5      |
| 0°-40°    | 1998.4 | 51.3      |
| 0°-60°    | 3271.5 | 83.9      |
| 0°-90°    | 3897.4 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 3897.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1726 | 1726  | 1726 | 1726  | 1726 |      |
| 5°  | 1726 | 1720  | 1702 | 1716  | 1712 | 164  |
| 15° | 1645 | 1633  | 1595 | 1586  | 1575 | 464  |
| 25° | 1498 | 1465  | 1400 | 1370  | 1350 | 690  |
| 35° | 1298 | 1248  | 1163 | 1098  | 1073 | 811  |
| 45° | 1067 | 1004  | 895  | 817   | 785  | 824  |
| 55° | 814  | 741   | 623  | 537   | 508  | 727  |
| 65° | 553  | 476   | 362  | 296   | 278  | 547  |
| 75° | 294  | 224   | 147  | 133   | 130  | 312  |
| 85° | 73   | 42    | 38   | 36    | 37   | 85   |
| 90° | 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°    | 1726.2 | 1726.2 | 1726.2 | 1726.2 | 1726.2 | 1726.2 | 1726.2 | 1726.2 | 1726.2 | 1726.2 | 1726.2 |
| 2.5°  | 1732.8 | 1728.8 | 1723.5 | 1724.9 | 1726.2 | 1727.5 | 1727.5 | 1726.2 | 1722.2 | 1716.9 | 1710.3 |
| 5°    | 1726.2 | 1722.2 | 1716.9 | 1716.9 | 1719.6 | 1719.6 | 1719.6 | 1718.2 | 1714.3 | 1708.9 | 1702.3 |
| 7.5°  | 1712.9 | 1710.3 | 1703.6 | 1705.0 | 1706.3 | 1706.3 | 1706.3 | 1705.0 | 1699.7 | 1693.0 | 1686.4 |
| 10°   | 1695.7 | 1691.7 | 1686.4 | 1686.4 | 1687.7 | 1687.7 | 1687.7 | 1685.1 | 1678.5 | 1670.5 | 1661.2 |
| 12.5° | 1673.2 | 1669.2 | 1663.9 | 1663.9 | 1663.9 | 1663.9 | 1663.9 | 1659.9 | 1649.3 | 1641.3 | 1633.4 |
| 15°   | 1645.3 | 1641.3 | 1636.0 | 1636.0 | 1634.7 | 1633.4 | 1630.7 | 1624.1 | 1614.8 | 1605.5 | 1594.9 |
| 17.5° | 1614.8 | 1609.5 | 1602.9 | 1601.6 | 1600.2 | 1598.9 | 1594.9 | 1591.0 | 1577.7 | 1564.4 | 1548.5 |
| 20°   | 1579.0 | 1573.7 | 1567.1 | 1565.8 | 1561.8 | 1557.8 | 1555.2 | 1547.2 | 1532.6 | 1516.7 | 1506.1 |
| 22.5° | 1539.2 | 1533.9 | 1527.3 | 1524.7 | 1516.7 | 1514.1 | 1510.1 | 1498.1 | 1482.2 | 1467.7 | 1455.7 |
| 25°   | 1498.1 | 1491.5 | 1483.6 | 1479.6 | 1470.3 | 1465.0 | 1463.7 | 1446.4 | 1430.5 | 1414.6 | 1400.0 |
| 27.5° | 1450.4 | 1445.1 | 1438.5 | 1430.5 | 1421.3 | 1414.6 | 1412.0 | 1396.1 | 1376.2 | 1357.6 | 1344.4 |
| 30°   | 1404.0 | 1396.1 | 1389.4 | 1380.2 | 1366.9 | 1360.3 | 1355.0 | 1339.1 | 1321.8 | 1299.3 | 1287.3 |
| 32.5° | 1349.7 | 1344.4 | 1336.4 | 1327.1 | 1313.9 | 1308.6 | 1300.6 | 1280.7 | 1258.2 | 1242.3 | 1223.7 |
| 35°   | 1298.0 | 1292.6 | 1280.7 | 1271.4 | 1252.9 | 1247.6 | 1239.6 | 1222.4 | 1197.2 | 1178.6 | 1162.7 |
| 37.5° | 1240.9 | 1234.3 | 1225.0 | 1211.8 | 1195.9 | 1189.2 | 1178.6 | 1161.4 | 1132.2 | 1113.7 | 1093.8 |
| 40°   | 1185.3 | 1176.0 | 1165.4 | 1150.8 | 1134.9 | 1128.3 | 1119.0 | 1093.8 | 1069.9 | 1048.7 | 1031.5 |
| 42.5° | 1129.6 | 1119.0 | 1105.7 | 1092.5 | 1075.2 | 1065.9 | 1055.3 | 1031.5 | 1005.0 | 985.1  | 961.2  |
| 45°   | 1067.3 | 1059.3 | 1046.1 | 1030.1 | 1010.3 | 1003.6 | 991.7  | 966.5  | 940.0  | 918.8  | 894.9  |
| 47.5° | 1006.3 | 997.0  | 983.7  | 967.8  | 947.9  | 938.7  | 926.7  | 901.5  | 875.0  | 848.5  | 827.3  |
| 50°   | 944.0  | 934.7  | 918.8  | 902.9  | 884.3  | 872.4  | 861.8  | 836.6  | 807.4  | 783.5  | 757.0  |
| 52.5° | 877.7  | 869.7  | 856.5  | 840.6  | 816.7  | 807.4  | 796.8  | 769.0  | 741.1  | 713.3  | 689.4  |
| 55°   | 814.0  | 808.7  | 792.8  | 776.9  | 751.7  | 741.1  | 730.5  | 701.3  | 673.5  | 645.7  | 623.1  |
| 57.5° | 747.7  | 743.8  | 727.9  | 709.3  | 686.8  | 676.2  | 662.9  | 633.7  | 607.2  | 579.4  | 555.5  |
| 60°   | 681.5  | 677.5  | 661.6  | 643.0  | 621.8  | 608.5  | 594.0  | 571.4  | 540.9  | 515.7  | 489.2  |
| 62.5° | 617.8  | 612.5  | 599.3  | 579.4  | 555.5  | 542.3  | 529.0  | 502.5  | 474.6  | 448.1  | 424.3  |
| 65°   | 552.9  | 546.2  | 530.3  | 510.4  | 487.9  | 476.0  | 462.7  | 437.5  | 409.7  | 384.5  | 361.9  |
| 67.5° | 487.9  | 481.3  | 464.0  | 448.1  | 421.6  | 409.7  | 397.7  | 372.5  | 346.0  | 320.8  | 299.6  |
| 70°   | 421.6  | 415.0  | 401.7  | 380.5  | 358.0  | 346.0  | 334.1  | 307.6  | 283.7  | 265.2  | 245.3  |
| 72.5° | 356.6  | 351.3  | 338.1  | 318.2  | 297.0  | 285.0  | 271.8  | 249.2  | 228.0  | 208.1  | 193.6  |
| 75°   | 294.3  | 286.4  | 274.4  | 255.9  | 234.7  | 224.1  | 214.8  | 192.2  | 172.4  | 159.1  | 147.2  |
| 77.5° | 234.7  | 225.4  | 212.1  | 197.5  | 177.7  | 167.1  | 157.8  | 139.2  | 126.0  | 116.7  | 114.0  |
| 80°   | 172.4  | 171.0  | 157.8  | 141.9  | 124.6  | 116.7  | 107.4  | 95.5   | 91.5   | 90.2   | 87.5   |
| 82.5° | 120.6  | 115.3  | 104.7  | 90.2   | 76.9   | 71.6   | 68.9   | 66.3   | 63.6   | 63.6   | 61.0   |
| 85°   | 72.9   | 67.6   | 58.3   | 46.4   | 43.8   | 42.4   | 41.1   | 41.1   | 39.8   | 38.4   | 38.4   |
| 87.5° | 31.8   | 26.5   | 19.9   | 18.6   | 17.2   | 17.2   | 18.6   | 18.6   | 18.6   | 17.2   | 17.2   |
| 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):**

|       | 50°    | 55°    | 60°    | 65°    | 67.5°  | 70°    | 75°    | 80°    | 85°    | 90°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1726.2 | 1726.2 | 1726.2 | 1726.2 | 1726.2 | 1726.2 | 1726.2 | 1726.2 | 1726.2 | 1726.2 |
| 2.5°  | 1712.9 | 1719.6 | 1723.5 | 1724.9 | 1724.9 | 1724.9 | 1726.2 | 1726.2 | 1724.9 | 1723.5 |
| 5°    | 1703.6 | 1710.3 | 1712.9 | 1715.6 | 1715.6 | 1715.6 | 1715.6 | 1715.6 | 1714.3 | 1711.6 |
| 7.5°  | 1689.1 | 1693.0 | 1697.0 | 1695.7 | 1695.7 | 1694.4 | 1693.0 | 1694.4 | 1691.7 | 1691.7 |
| 10°   | 1662.5 | 1666.5 | 1669.2 | 1665.2 | 1665.2 | 1666.5 | 1666.5 | 1665.2 | 1661.2 | 1657.2 |
| 12.5° | 1632.1 | 1636.0 | 1632.1 | 1633.4 | 1630.7 | 1628.1 | 1626.8 | 1625.4 | 1621.4 | 1618.8 |
| 15°   | 1592.3 | 1592.3 | 1589.6 | 1589.6 | 1585.7 | 1580.3 | 1579.0 | 1580.3 | 1575.0 | 1575.0 |
| 17.5° | 1548.5 | 1545.9 | 1541.9 | 1539.2 | 1537.9 | 1537.9 | 1532.6 | 1532.6 | 1526.0 | 1524.7 |
| 20°   | 1500.8 | 1498.1 | 1494.2 | 1487.5 | 1484.9 | 1486.2 | 1480.9 | 1476.9 | 1473.0 | 1471.6 |
| 22.5° | 1450.4 | 1443.8 | 1439.8 | 1433.2 | 1427.9 | 1427.9 | 1423.9 | 1417.3 | 1413.3 | 1409.3 |
| 25°   | 1393.4 | 1386.8 | 1378.8 | 1373.5 | 1369.5 | 1362.9 | 1360.3 | 1355.0 | 1351.0 | 1349.7 |
| 27.5° | 1335.1 | 1324.5 | 1313.9 | 1308.6 | 1305.9 | 1298.0 | 1294.0 | 1291.3 | 1283.4 | 1282.0 |
| 30°   | 1272.8 | 1264.8 | 1251.6 | 1242.3 | 1235.6 | 1237.0 | 1227.7 | 1222.4 | 1218.4 | 1214.4 |
| 32.5° | 1213.1 | 1199.8 | 1186.6 | 1174.7 | 1166.7 | 1165.4 | 1156.1 | 1150.8 | 1146.8 | 1142.8 |
| 35°   | 1145.5 | 1132.2 | 1116.3 | 1105.7 | 1097.8 | 1093.8 | 1084.5 | 1081.8 | 1075.2 | 1072.6 |
| 37.5° | 1077.9 | 1063.3 | 1047.4 | 1034.1 | 1028.8 | 1019.5 | 1015.6 | 1008.9 | 1003.6 | 1003.6 |
| 40°   | 1011.6 | 994.3  | 978.4  | 962.5  | 955.9  | 950.6  | 940.0  | 934.7  | 928.1  | 924.1  |
| 42.5° | 942.6  | 922.8  | 908.2  | 893.6  | 884.3  | 880.3  | 868.4  | 861.8  | 855.1  | 853.8  |
| 45°   | 873.7  | 853.8  | 835.3  | 820.7  | 816.7  | 808.7  | 796.8  | 787.5  | 786.2  | 784.9  |
| 47.5° | 803.4  | 783.5  | 766.3  | 750.4  | 745.1  | 735.8  | 727.9  | 721.2  | 713.3  | 709.3  |
| 50°   | 735.8  | 715.9  | 697.4  | 680.1  | 673.5  | 665.5  | 657.6  | 648.3  | 645.7  | 641.7  |
| 52.5° | 668.2  | 645.7  | 625.8  | 609.9  | 604.6  | 597.9  | 588.7  | 580.7  | 576.7  | 574.1  |
| 55°   | 599.3  | 576.7  | 559.5  | 543.6  | 536.9  | 533.0  | 522.4  | 515.7  | 510.4  | 507.8  |
| 57.5° | 531.6  | 509.1  | 493.2  | 481.3  | 472.0  | 468.0  | 457.4  | 450.8  | 448.1  | 446.8  |
| 60°   | 468.0  | 446.8  | 429.6  | 417.6  | 409.7  | 405.7  | 397.7  | 391.1  | 387.1  | 385.8  |
| 62.5° | 404.4  | 385.8  | 369.9  | 358.0  | 352.7  | 347.4  | 340.7  | 335.4  | 331.4  | 331.4  |
| 65°   | 343.4  | 324.8  | 310.2  | 301.0  | 295.7  | 293.0  | 285.0  | 282.4  | 278.4  | 278.4  |
| 67.5° | 283.7  | 270.5  | 259.9  | 247.9  | 243.9  | 243.9  | 236.0  | 233.3  | 230.7  | 230.7  |
| 70°   | 232.0  | 220.1  | 208.1  | 201.5  | 197.5  | 196.2  | 189.6  | 185.6  | 183.0  | 180.3  |
| 72.5° | 181.6  | 171.0  | 160.4  | 159.1  | 159.1  | 157.8  | 157.8  | 155.1  | 155.1  | 156.4  |
| 75°   | 139.2  | 136.6  | 133.9  | 133.9  | 132.6  | 131.3  | 131.3  | 129.9  | 129.9  | 129.9  |
| 77.5° | 111.4  | 110.0  | 108.7  | 107.4  | 107.4  | 106.1  | 104.7  | 104.7  | 104.7  | 104.7  |
| 80°   | 84.9   | 83.5   | 83.5   | 82.2   | 80.9   | 82.2   | 80.9   | 80.9   | 79.5   | 79.5   |
| 82.5° | 59.7   | 59.7   | 59.7   | 58.3   | 58.3   | 58.3   | 58.3   | 57.0   | 57.0   | 58.3   |
| 85°   | 37.1   | 37.1   | 37.1   | 37.1   | 35.8   | 37.1   | 35.8   | 35.8   | 35.8   | 37.1   |
| 87.5° | 15.9   | 17.2   | 15.9   | 17.2   | 17.2   | 15.9   | 15.9   | 15.9   | 15.9   | 15.9   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)