

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



Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: NEO-RAY

Report Number: P911167

Luminaire Tested: DFN2DIP-PN3F0-040D040US850-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P911167  
REPORT IS A COMBINATION OF REPORTS P901048 AND P897955  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-040D040US850-RLLONL  
Description: 3 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

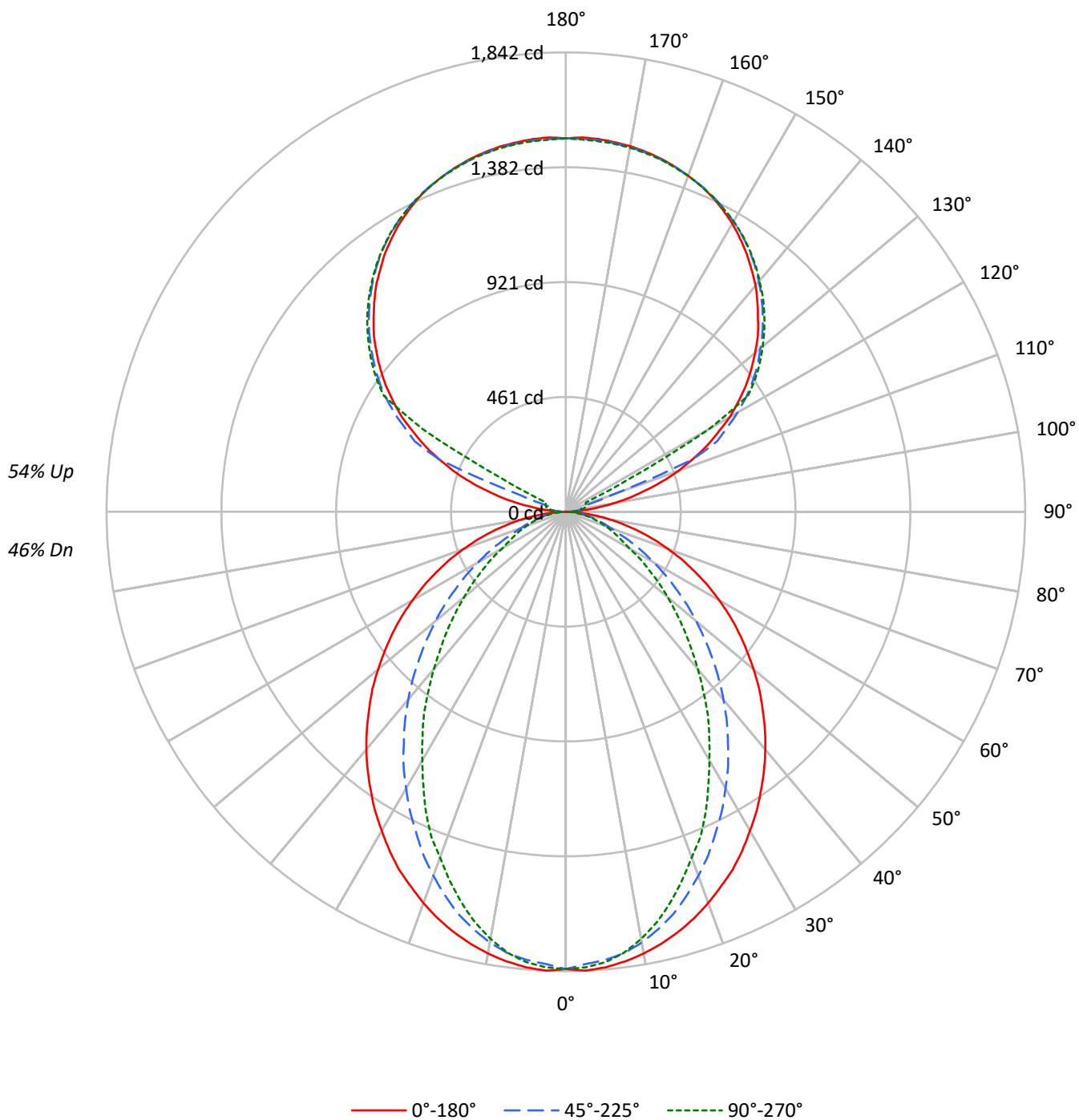
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 8162.2 lumens  
Efficiency: N/A  
Efficacy: 126.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 64.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9972  
Total Harmonic Distortion (THDi): 0.128  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 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 | 50 | 30 | 10 |
| RCR |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 0   | 106 | 106 | 106 | 106 | 98 | 98 | 98 | 98 | 81 | 81 | 81 | 66 | 66 | 66 | 53 | 53 | 53 |    |    | 46 |
| 1   | 97  | 93  | 90  | 86  | 89 | 86 | 83 | 80 | 72 | 70 | 68 | 59 | 58 | 56 | 47 | 46 | 45 |    |    | 40 |
| 2   | 89  | 82  | 76  | 71  | 82 | 76 | 70 | 66 | 63 | 60 | 57 | 52 | 50 | 48 | 42 | 40 | 39 |    |    | 34 |
| 3   | 81  | 72  | 65  | 60  | 75 | 67 | 61 | 56 | 56 | 52 | 48 | 47 | 43 | 41 | 38 | 35 | 34 |    |    | 29 |
| 4   | 75  | 64  | 57  | 51  | 68 | 60 | 53 | 48 | 50 | 45 | 41 | 42 | 38 | 35 | 34 | 31 | 29 |    |    | 26 |
| 5   | 69  | 58  | 50  | 44  | 63 | 53 | 46 | 41 | 45 | 40 | 36 | 38 | 34 | 31 | 31 | 28 | 26 |    |    | 23 |
| 6   | 63  | 52  | 44  | 38  | 58 | 48 | 41 | 36 | 41 | 36 | 32 | 34 | 30 | 27 | 28 | 25 | 23 |    |    | 20 |
| 7   | 59  | 47  | 39  | 34  | 54 | 44 | 37 | 32 | 37 | 32 | 28 | 31 | 27 | 24 | 26 | 23 | 21 |    |    | 18 |
| 8   | 55  | 43  | 35  | 30  | 50 | 40 | 33 | 28 | 34 | 29 | 25 | 29 | 25 | 22 | 24 | 21 | 19 |    |    | 16 |
| 9   | 51  | 39  | 32  | 27  | 47 | 36 | 30 | 25 | 31 | 26 | 22 | 27 | 23 | 20 | 22 | 19 | 17 |    |    | 15 |
| 10  | 48  | 36  | 29  | 24  | 44 | 33 | 27 | 23 | 29 | 24 | 20 | 25 | 21 | 18 | 20 | 18 | 15 |    |    | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2143 | 2143 | 2143 |
| 5°  | 2145 | 2108 | 2122 |
| 10° | 2123 | 2065 | 2052 |
| 15° | 2092 | 1995 | 1944 |
| 20° | 2052 | 1900 | 1813 |
| 25° | 2012 | 1793 | 1685 |
| 30° | 1957 | 1684 | 1525 |
| 35° | 1904 | 1566 | 1383 |
| 40° | 1849 | 1445 | 1221 |
| 45° | 1786 | 1310 | 1074 |
| 50° | 1720 | 1175 | 931  |
| 55° | 1652 | 1030 | 794  |
| 60° | 1573 | 879  | 652  |
| 65° | 1481 | 726  | 586  |
| 70° | 1371 | 583  | 529  |
| 75° | 1231 | 511  | 480  |
| 80° | 1029 | 423  | 413  |
| 85° | 699  | 276  | 305  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1786 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 171.8  | 2.1       |
| 10°-20°   | 471.7  | 5.8       |
| 20°-30°   | 662.3  | 8.1       |
| 30°-40°   | 721.9  | 8.8       |
| 40°-50°   | 663.5  | 8.1       |
| 50°-60°   | 521.1  | 6.4       |
| 60°-70°   | 339.2  | 4.2       |
| 70°-80°   | 174.6  | 2.1       |
| 80°-90°   | 47.2   | 0.6       |
| 90°-100°  | 49.4   | 0.6       |
| 100°-110° | 184.0  | 2.3       |
| 110°-120° | 488.1  | 6.0       |
| 120°-130° | 809.5  | 9.9       |
| 130°-140° | 859.9  | 10.5      |
| 140°-150° | 799.2  | 9.8       |
| 150°-160° | 642.5  | 7.9       |
| 160°-170° | 414.0  | 5.1       |
| 170°-180° | 142.5  | 1.7       |
| 0°-30°    | 1305.8 | 16.0      |
| 0°-40°    | 2027.7 | 24.8      |
| 0°-60°    | 3212.2 | 39.4      |
| 0°-90°    | 3773.2 | 46.2      |
| 90°-120°  | 721.5  | 8.8       |
| 90°-150°  | 3190.0 | 39.1      |
| 90°-180°  | 4389.0 | 53.8      |
| 0°-180°   | 8162.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1833 | 1833  | 1833 | 1833  | 1833 |      |
| 5°   | 1833 | 1825  | 1804 | 1818  | 1814 | 174  |
| 15°  | 1744 | 1726  | 1669 | 1638  | 1621 | 491  |
| 25°  | 1583 | 1530  | 1420 | 1352  | 1327 | 728  |
| 35°  | 1364 | 1279  | 1133 | 1029  | 992  | 854  |
| 45°  | 1115 | 1004  | 830  | 712   | 672  | 861  |
| 55°  | 848  | 718   | 539  | 440   | 408  | 758  |
| 65°  | 572  | 438   | 289  | 232   | 227  | 568  |
| 75°  | 305  | 189   | 133  | 121   | 120  | 323  |
| 85°  | 71   | 36    | 32   | 32    | 32   | 82   |
| 90°  | 1    | 13    | 22   | 27    | 29   | 8    |
| 95°  | 70   | 35    | 42   | 48    | 47   | 83   |
| 105° | 329  | 362   | 66   | 78    | 82   | 352  |
| 115° | 623  | 641   | 668  | 167   | 89   | 613  |
| 125° | 881  | 895   | 915  | 923   | 926  | 785  |
| 135° | 1090 | 1107  | 1117 | 1128  | 1126 | 842  |
| 145° | 1264 | 1263  | 1281 | 1289  | 1284 | 791  |
| 155° | 1392 | 1382  | 1395 | 1402  | 1393 | 641  |
| 165° | 1467 | 1460  | 1464 | 1471  | 1464 | 414  |
| 175° | 1500 | 1493  | 1495 | 1502  | 1492 | 143  |
| 180° | 1497 | 1497  | 1497 | 1497  | 1497 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1833.4 | 1833.4 | 1833.4 | 1833.4 | 1833.4 |
| 2.5°   | 1841.7 | 1833.4 | 1815.1 | 1831.8 | 1828.4 |
| 5°     | 1833.4 | 1825.1 | 1803.5 | 1818.4 | 1813.5 |
| 7.5°   | 1818.4 | 1808.6 | 1785.4 | 1791.8 | 1783.6 |
| 10°    | 1798.6 | 1786.9 | 1753.8 | 1748.7 | 1738.9 |
| 12.5°  | 1773.7 | 1758.8 | 1713.8 | 1704.0 | 1685.7 |
| 15°    | 1743.8 | 1725.5 | 1669.2 | 1637.7 | 1621.1 |
| 17.5°  | 1709.0 | 1682.4 | 1612.6 | 1576.2 | 1549.6 |
| 20°    | 1669.2 | 1635.9 | 1552.9 | 1511.6 | 1475.0 |
| 22.5°  | 1626.0 | 1587.9 | 1491.5 | 1435.2 | 1410.4 |
| 25°    | 1582.9 | 1529.8 | 1420.2 | 1352.3 | 1327.3 |
| 27.5°  | 1531.5 | 1475.0 | 1353.9 | 1275.9 | 1237.6 |
| 30°    | 1476.7 | 1413.5 | 1280.8 | 1196.3 | 1151.5 |
| 32.5°  | 1423.6 | 1347.2 | 1211.2 | 1111.7 | 1070.1 |
| 35°    | 1364.0 | 1279.2 | 1133.3 | 1028.7 | 992.1  |
| 37.5°  | 1305.8 | 1214.5 | 1060.2 | 945.6  | 904.3  |
| 40°    | 1244.4 | 1144.9 | 983.9  | 866.1  | 823.0  |
| 42.5°  | 1181.3 | 1075.2 | 907.6  | 784.7  | 743.4  |
| 45°    | 1115.0 | 1003.8 | 829.6  | 711.8  | 671.9  |
| 47.5°  | 1052.0 | 934.2  | 755.0  | 637.1  | 600.6  |
| 50°    | 982.2  | 864.5  | 681.9  | 567.4  | 532.7  |
| 52.5°  | 914.1  | 789.7  | 612.3  | 502.7  | 471.2  |
| 55°    | 847.8  | 718.4  | 539.2  | 439.7  | 408.2  |
| 57.5°  | 779.8  | 647.1  | 474.5  | 381.6  | 355.1  |
| 60°    | 710.1  | 577.3  | 406.4  | 321.9  | 295.4  |
| 62.5°  | 642.2  | 509.5  | 348.3  | 268.8  | 255.6  |
| 65°    | 572.5  | 437.9  | 288.7  | 232.3  | 227.2  |
| 67.5°  | 506.1  | 371.6  | 232.3  | 204.1  | 199.1  |
| 70°    | 436.4  | 307.0  | 192.4  | 175.9  | 169.1  |
| 72.5°  | 370.1  | 247.2  | 160.9  | 147.7  | 144.4  |
| 75°    | 305.2  | 189.1  | 132.7  | 121.1  | 119.6  |
| 77.5°  | 240.7  | 134.3  | 104.6  | 97.9   | 94.5   |
| 80°    | 180.8  | 96.3   | 79.5   | 73.1   | 73.1   |
| 82.5°  | 126.1  | 64.8   | 54.8   | 51.3   | 51.3   |
| 85°    | 71.3   | 36.5   | 31.5   | 31.5   | 31.5   |
| 87.5°  | 26.6   | 13.2   | 13.2   | 11.6   | 11.6   |
| 90°    | 1.0    | 13.0   | 21.6   | 27.2   | 29.2   |
| 92.5°  | 27.2   | 22.7   | 26.0   | 28.2   | 29.2   |
| 95°    | 70.3   | 34.6   | 42.1   | 47.7   | 46.6   |
| 97.5°  | 126.8  | 37.9   | 55.2   | 58.6   | 59.6   |
| 100°   | 191.7  | 43.4   | 61.8   | 70.3   | 72.5   |
| 102.5° | 263.2  | 261.2  | 63.9   | 75.7   | 79.1   |
| 105°   | 329.3  | 361.9  | 66.1   | 78.0   | 82.3   |
| 107.5° | 406.2  | 433.3  | 68.3   | 80.2   | 84.5   |
| 110°   | 480.0  | 502.6  | 189.6  | 81.3   | 85.5   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 549.3  | 568.7  | 550.3  | 83.4   | 86.7   |
| 115°   | 622.8  | 641.2  | 668.4  | 166.8  | 88.9   |
| 117.5° | 686.8  | 708.4  | 726.9  | 571.9  | 288.1  |
| 120°   | 758.3  | 774.5  | 794.0  | 807.1  | 660.9  |
| 122.5° | 818.9  | 836.3  | 858.0  | 864.5  | 865.6  |
| 125°   | 880.7  | 894.9  | 915.4  | 923.0  | 926.2  |
| 127.5° | 937.0  | 952.2  | 968.5  | 979.4  | 980.4  |
| 130°   | 990.1  | 1007.5 | 1019.3 | 1031.3 | 1030.3 |
| 132.5° | 1044.2 | 1058.4 | 1070.3 | 1080.1 | 1079.1 |
| 135°   | 1089.8 | 1107.2 | 1116.9 | 1127.7 | 1125.6 |
| 137.5° | 1137.4 | 1150.4 | 1161.3 | 1172.1 | 1168.9 |
| 140°   | 1184.0 | 1192.7 | 1204.6 | 1214.4 | 1208.9 |
| 142.5° | 1223.1 | 1230.7 | 1244.7 | 1253.3 | 1248.0 |
| 145°   | 1264.3 | 1263.2 | 1281.4 | 1289.1 | 1283.7 |
| 147.5° | 1299.9 | 1296.6 | 1315.1 | 1320.5 | 1316.3 |
| 150°   | 1334.6 | 1327.0 | 1344.4 | 1350.9 | 1345.4 |
| 152.5° | 1363.8 | 1355.2 | 1371.4 | 1377.9 | 1370.4 |
| 155°   | 1392.0 | 1382.4 | 1395.3 | 1401.8 | 1393.1 |
| 157.5° | 1414.8 | 1406.1 | 1416.0 | 1423.5 | 1414.8 |
| 160°   | 1434.3 | 1427.7 | 1434.3 | 1440.7 | 1433.2 |
| 162.5° | 1451.6 | 1445.1 | 1450.6 | 1458.1 | 1448.4 |
| 165°   | 1466.8 | 1460.3 | 1463.5 | 1471.1 | 1463.5 |
| 167.5° | 1478.7 | 1472.1 | 1475.5 | 1483.1 | 1473.3 |
| 170°   | 1488.5 | 1482.0 | 1484.1 | 1491.7 | 1482.0 |
| 172.5° | 1494.9 | 1488.5 | 1490.7 | 1498.3 | 1488.5 |
| 175°   | 1500.3 | 1492.7 | 1494.9 | 1502.5 | 1491.7 |
| 177.5° | 1502.5 | 1494.9 | 1496.0 | 1503.7 | 1493.9 |
| 180°   | 1497.2 | 1497.2 | 1497.2 | 1497.2 | 1497.2 |

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**CIE UGR TABLE:**

| Reflectances:   |      |                  |       |       |       |       |                |      |       |       |       |
|-----------------|------|------------------|-------|-------|-------|-------|----------------|------|-------|-------|-------|
| Ceiling         |      | 0.7              | 0.7   | 0.5   | 0.5   | 0.3   | 0.7            | 0.7  | 0.5   | 0.5   | 0.3   |
| Wall            |      | 0.5              | 0.3   | 0.5   | 0.3   | 0.3   | 0.5            | 0.3  | 0.5   | 0.3   | 0.3   |
| Reference plane |      | 0.2              | 0.2   | 0.2   | 0.2   | 0.2   | 0.2            | 0.2  | 0.2   | 0.2   | 0.2   |
| Room dimensions |      | Viewed crosswise |       |       |       |       | Viewed endwise |      |       |       |       |
| X=2H            | Y=2H | 9.39             | 10.19 | 10.39 | 11.20 | 12.52 | 5.36           | 6.16 | 6.35  | 7.16  | 8.49  |
|                 | 3H   | 11.06            | 11.78 | 12.07 | 12.79 | 14.14 | 6.54           | 7.26 | 7.55  | 8.27  | 9.61  |
|                 | 4H   | 11.67            | 12.34 | 12.68 | 13.36 | 14.71 | 6.98           | 7.66 | 8.00  | 8.68  | 10.03 |
|                 | 6H   | 12.08            | 12.70 | 13.11 | 13.72 | 15.09 | 7.30           | 7.92 | 8.33  | 8.94  | 10.31 |
|                 | 8H   | 12.20            | 12.80 | 13.24 | 13.83 | 15.20 | 7.39           | 7.98 | 8.42  | 9.01  | 10.38 |
|                 | 12H  | 12.26            | 12.83 | 13.30 | 13.85 | 15.24 | 7.43           | 7.99 | 8.46  | 9.02  | 10.40 |
| 4H              | 2H   | 9.41             | 10.08 | 10.43 | 11.10 | 12.45 | 5.95           | 6.62 | 6.97  | 7.64  | 8.99  |
|                 | 3H   | 11.23            | 11.79 | 12.26 | 12.83 | 14.20 | 7.29           | 7.85 | 8.32  | 8.89  | 10.26 |
|                 | 4H   | 11.91            | 12.43 | 12.95 | 13.46 | 14.85 | 7.83           | 8.35 | 8.87  | 9.38  | 10.77 |
|                 | 6H   | 12.42            | 12.86 | 13.47 | 13.92 | 15.31 | 8.24           | 8.68 | 9.29  | 9.74  | 11.13 |
|                 | 8H   | 12.59            | 13.00 | 13.64 | 14.05 | 15.46 | 8.37           | 8.78 | 9.42  | 9.83  | 11.23 |
|                 | 12H  | 12.68            | 13.05 | 13.75 | 14.12 | 15.53 | 8.43           | 8.80 | 9.49  | 9.86  | 11.27 |
| 8H              | 4H   | 11.88            | 12.29 | 12.93 | 13.34 | 14.74 | 8.10           | 8.52 | 9.16  | 9.57  | 10.97 |
|                 | 6H   | 12.43            | 12.78 | 13.51 | 13.87 | 15.27 | 8.61           | 8.95 | 9.69  | 10.05 | 11.45 |
|                 | 8H   | 12.65            | 12.95 | 13.73 | 14.02 | 15.44 | 8.80           | 9.10 | 9.88  | 10.18 | 11.59 |
|                 | 12H  | 12.78            | 13.04 | 13.86 | 14.11 | 15.58 | 8.91           | 9.18 | 10.00 | 10.25 | 11.71 |
| 12H             | 4H   | 11.83            | 12.20 | 12.90 | 13.26 | 14.67 | 8.11           | 8.48 | 9.18  | 9.55  | 10.95 |
|                 | 6H   | 12.41            | 12.71 | 13.49 | 13.79 | 15.20 | 8.66           | 8.96 | 9.74  | 10.04 | 11.46 |
|                 | 8H   | 12.62            | 12.89 | 13.71 | 13.96 | 15.42 | 8.86           | 9.13 | 9.95  | 10.20 | 11.66 |