

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: P920851

Luminaire Tested: DFN2DIP-TR3F0-070D070US935-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P920851  
REPORT IS A COMBINATION OF REPORTS P901856 AND P898751  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-070D070US935-RLLONL  
Description: 3 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

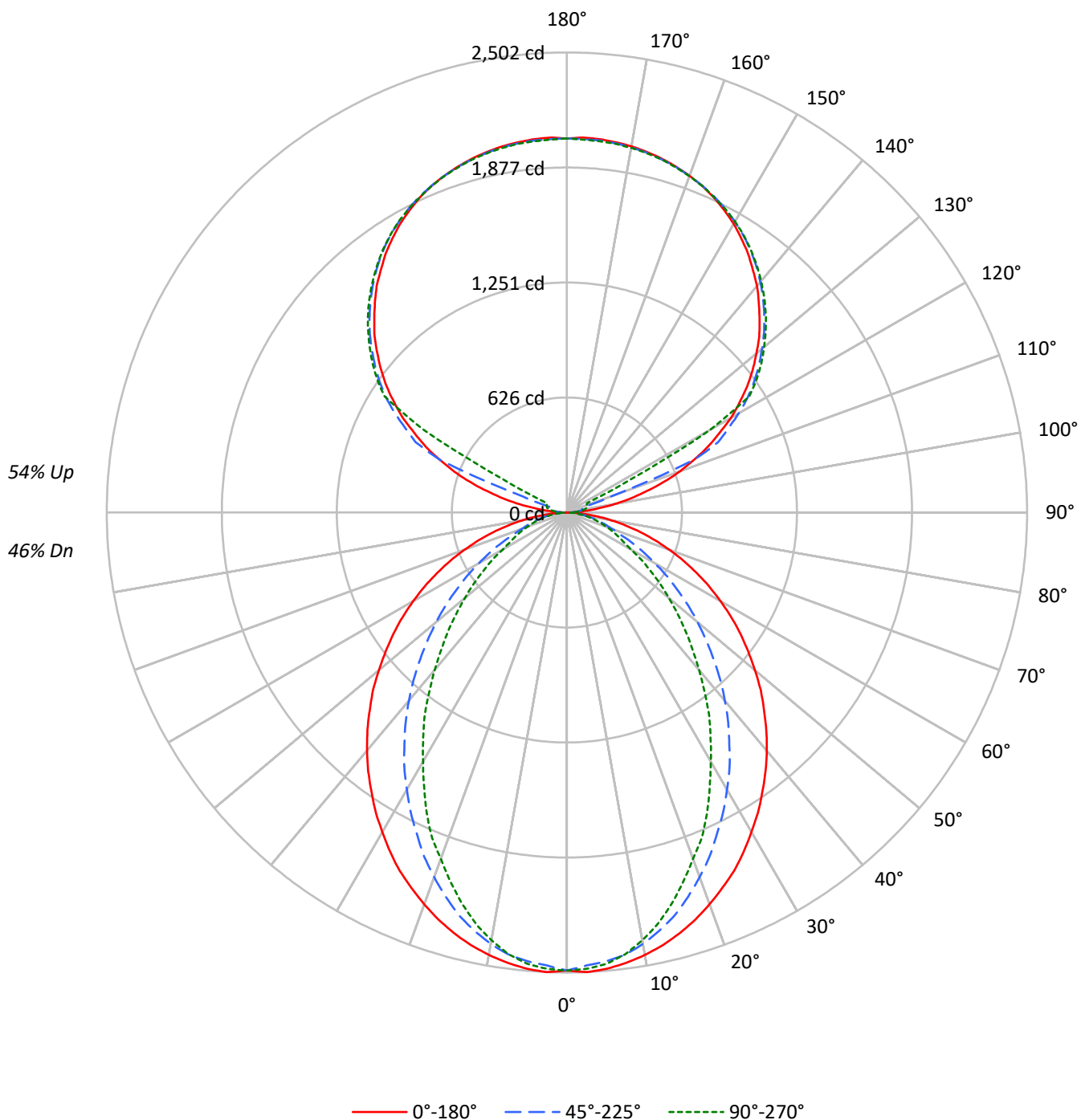
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 11089.6 lumens  
Efficiency: N/A  
Efficacy: 89.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 123.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9971  
Total Harmonic Distortion (THDi): 0.049  
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°  | 3104 | 3104 | 3104 |
| 5°  | 3107 | 3052 | 3072 |
| 10° | 3075 | 2990 | 2970 |
| 15° | 3031 | 2888 | 2814 |
| 20° | 2973 | 2750 | 2623 |
| 25° | 2914 | 2595 | 2438 |
| 30° | 2835 | 2436 | 2204 |
| 35° | 2758 | 2266 | 1999 |
| 40° | 2679 | 2090 | 1765 |
| 45° | 2588 | 1895 | 1552 |
| 50° | 2493 | 1698 | 1345 |
| 55° | 2394 | 1489 | 1145 |
| 60° | 2279 | 1270 | 941  |
| 65° | 2147 | 1048 | 844  |
| 70° | 1987 | 841  | 761  |
| 75° | 1786 | 736  | 688  |
| 80° | 1494 | 609  | 590  |
| 85° | 1017 | 394  | 432  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2588 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 233.5   | 2.1       |
| 10°-20°   | 640.9   | 5.8       |
| 20°-30°   | 899.8   | 8.1       |
| 30°-40°   | 980.8   | 8.8       |
| 40°-50°   | 901.5   | 8.1       |
| 50°-60°   | 708.0   | 6.4       |
| 60°-70°   | 460.8   | 4.2       |
| 70°-80°   | 237.2   | 2.1       |
| 80°-90°   | 64.1    | 0.6       |
| 90°-100°  | 67.1    | 0.6       |
| 100°-110° | 250.0   | 2.3       |
| 110°-120° | 663.1   | 6.0       |
| 120°-130° | 1099.8  | 9.9       |
| 130°-140° | 1168.3  | 10.5      |
| 140°-150° | 1085.8  | 9.8       |
| 150°-160° | 872.9   | 7.9       |
| 160°-170° | 562.5   | 5.1       |
| 170°-180° | 193.6   | 1.7       |
| 0°-30°    | 1774.1  | 16.0      |
| 0°-40°    | 2754.9  | 24.8      |
| 0°-60°    | 4364.3  | 39.4      |
| 0°-90°    | 5126.5  | 46.2      |
| 90°-120°  | 980.2   | 8.8       |
| 90°-150°  | 4334.1  | 39.1      |
| 90°-180°  | 5963.0  | 53.8      |
| 0°-180°   | 11089.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2491 | 2491  | 2491 | 2491  | 2491 |      |
| 5°   | 2491 | 2480  | 2450 | 2471  | 2464 | 236  |
| 15°  | 2369 | 2344  | 2268 | 2225  | 2202 | 668  |
| 25°  | 2151 | 2078  | 1930 | 1837  | 1803 | 989  |
| 35°  | 1853 | 1738  | 1540 | 1398  | 1348 | 1160 |
| 45°  | 1515 | 1364  | 1127 | 967   | 913  | 1170 |
| 55°  | 1152 | 976   | 732  | 597   | 555  | 1029 |
| 65°  | 778  | 595   | 392  | 316   | 309  | 771  |
| 75°  | 415  | 257   | 180  | 164   | 162  | 439  |
| 85°  | 97   | 50    | 43   | 43    | 43   | 111  |
| 90°  | 1    | 18    | 29   | 37    | 40   | 10   |
| 95°  | 96   | 47    | 57   | 65    | 63   | 113  |
| 105° | 448  | 492   | 90   | 106   | 112  | 478  |
| 115° | 846  | 871   | 908  | 227   | 121  | 833  |
| 125° | 1196 | 1216  | 1244 | 1254  | 1258 | 1067 |
| 135° | 1481 | 1504  | 1517 | 1532  | 1529 | 1144 |
| 145° | 1718 | 1716  | 1741 | 1751  | 1744 | 1074 |
| 155° | 1891 | 1878  | 1896 | 1904  | 1893 | 872  |
| 165° | 1993 | 1984  | 1988 | 1999  | 1988 | 563  |
| 175° | 2038 | 2028  | 2031 | 2041  | 2027 | 194  |
| 180° | 2034 | 2034  | 2034 | 2034  | 2034 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2491.0 | 2491.0 | 2491.0 | 2491.0 | 2491.0 |
| 2.5°   | 2502.1 | 2491.0 | 2466.1 | 2488.8 | 2484.2 |
| 5°     | 2491.0 | 2479.7 | 2450.3 | 2470.6 | 2463.9 |
| 7.5°   | 2470.6 | 2457.2 | 2425.7 | 2434.5 | 2423.3 |
| 10°    | 2443.6 | 2427.8 | 2382.8 | 2375.9 | 2362.5 |
| 12.5°  | 2409.8 | 2389.5 | 2328.6 | 2315.1 | 2290.3 |
| 15°    | 2369.2 | 2344.3 | 2267.8 | 2225.0 | 2202.5 |
| 17.5°  | 2321.9 | 2285.8 | 2191.1 | 2141.5 | 2105.4 |
| 20°    | 2267.8 | 2222.6 | 2110.0 | 2053.7 | 2004.0 |
| 22.5°  | 2209.2 | 2157.3 | 2026.4 | 1949.9 | 1916.2 |
| 25°    | 2150.6 | 2078.4 | 1929.6 | 1837.3 | 1803.4 |
| 27.5°  | 2080.8 | 2004.0 | 1839.4 | 1733.5 | 1681.6 |
| 30°    | 2006.4 | 1920.5 | 1740.2 | 1625.4 | 1564.4 |
| 32.5°  | 1934.1 | 1830.4 | 1645.7 | 1510.4 | 1453.9 |
| 35°    | 1853.0 | 1738.0 | 1539.8 | 1397.7 | 1348.0 |
| 37.5°  | 1774.2 | 1650.0 | 1440.5 | 1284.8 | 1228.6 |
| 40°    | 1690.7 | 1555.6 | 1336.7 | 1176.7 | 1118.1 |
| 42.5°  | 1605.1 | 1460.9 | 1233.1 | 1066.2 | 1010.0 |
| 45°    | 1514.9 | 1363.7 | 1127.2 | 967.0  | 912.9  |
| 47.5°  | 1429.3 | 1269.3 | 1025.8 | 865.6  | 816.1  |
| 50°    | 1334.5 | 1174.6 | 926.5  | 770.9  | 723.8  |
| 52.5°  | 1242.0 | 1072.9 | 831.8  | 683.0  | 640.2  |
| 55°    | 1151.8 | 976.0  | 732.5  | 597.4  | 554.7  |
| 57.5°  | 1059.5 | 879.2  | 644.8  | 518.5  | 482.4  |
| 60°    | 964.8  | 784.5  | 552.2  | 437.5  | 401.3  |
| 62.5°  | 872.4  | 692.2  | 473.3  | 365.2  | 347.2  |
| 65°    | 777.7  | 595.0  | 392.3  | 315.7  | 308.8  |
| 67.5°  | 687.6  | 504.9  | 315.7  | 277.2  | 270.5  |
| 70°    | 592.9  | 417.1  | 261.4  | 238.9  | 229.8  |
| 72.5°  | 502.7  | 335.8  | 218.6  | 200.7  | 196.1  |
| 75°    | 414.7  | 256.8  | 180.3  | 164.5  | 162.4  |
| 77.5°  | 326.9  | 182.4  | 142.1  | 132.9  | 128.5  |
| 80°    | 245.6  | 130.8  | 108.1  | 99.3   | 99.3   |
| 82.5°  | 171.3  | 88.0   | 74.4   | 69.8   | 69.8   |
| 85°    | 96.9   | 49.5   | 42.8   | 42.8   | 42.8   |
| 87.5°  | 36.1   | 17.9   | 17.9   | 15.8   | 15.8   |
| 90°    | 1.4    | 17.7   | 29.4   | 36.9   | 39.7   |
| 92.5°  | 36.9   | 30.9   | 35.3   | 38.3   | 39.7   |
| 95°    | 95.6   | 47.0   | 57.3   | 64.8   | 63.3   |
| 97.5°  | 172.1  | 51.6   | 75.0   | 79.6   | 80.9   |
| 100°   | 260.6  | 58.9   | 83.9   | 95.6   | 98.6   |
| 102.5° | 357.6  | 354.8  | 86.9   | 103.0  | 107.5  |
| 105°   | 447.5  | 491.6  | 89.8   | 105.9  | 111.8  |
| 107.5° | 551.9  | 588.7  | 92.8   | 108.9  | 114.9  |
| 110°   | 652.1  | 682.9  | 257.6  | 110.5  | 116.2  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 746.3  | 772.7  | 747.7  | 113.2  | 117.8  |
| 115°   | 846.3  | 871.2  | 908.1  | 226.7  | 120.8  |
| 117.5° | 933.1  | 962.5  | 987.7  | 777.1  | 391.5  |
| 120°   | 1030.3 | 1052.3 | 1078.9 | 1096.6 | 897.8  |
| 122.5° | 1112.6 | 1136.2 | 1165.8 | 1174.5 | 1176.0 |
| 125°   | 1196.5 | 1215.7 | 1243.7 | 1254.0 | 1258.3 |
| 127.5° | 1273.1 | 1293.6 | 1315.9 | 1330.6 | 1332.0 |
| 130°   | 1345.2 | 1368.8 | 1384.9 | 1401.2 | 1399.8 |
| 132.5° | 1418.8 | 1438.0 | 1454.1 | 1467.4 | 1466.0 |
| 135°   | 1480.7 | 1504.2 | 1517.4 | 1532.2 | 1529.3 |
| 137.5° | 1545.3 | 1563.1 | 1577.9 | 1592.6 | 1588.2 |
| 140°   | 1608.6 | 1620.5 | 1636.6 | 1649.8 | 1642.5 |
| 142.5° | 1661.7 | 1672.1 | 1691.1 | 1702.8 | 1695.5 |
| 145°   | 1717.7 | 1716.1 | 1741.1 | 1751.4 | 1744.1 |
| 147.5° | 1766.1 | 1761.8 | 1786.7 | 1794.1 | 1788.3 |
| 150°   | 1813.3 | 1803.0 | 1826.6 | 1835.3 | 1828.0 |
| 152.5° | 1853.0 | 1841.2 | 1863.3 | 1872.2 | 1861.9 |
| 155°   | 1891.3 | 1878.1 | 1895.7 | 1904.5 | 1892.8 |
| 157.5° | 1922.2 | 1910.5 | 1923.7 | 1934.1 | 1922.2 |
| 160°   | 1948.8 | 1939.8 | 1948.8 | 1957.5 | 1947.1 |
| 162.5° | 1972.2 | 1963.4 | 1970.7 | 1981.1 | 1967.8 |
| 165°   | 1992.8 | 1984.1 | 1988.4 | 1998.7 | 1988.4 |
| 167.5° | 2009.1 | 2000.1 | 2004.7 | 2015.0 | 2001.7 |
| 170°   | 2022.3 | 2013.4 | 2016.4 | 2026.7 | 2013.4 |
| 172.5° | 2031.1 | 2022.3 | 2025.3 | 2035.6 | 2022.3 |
| 175°   | 2038.4 | 2028.1 | 2031.1 | 2041.3 | 2026.7 |
| 177.5° | 2041.3 | 2031.1 | 2032.6 | 2043.0 | 2029.6 |
| 180°   | 2034.0 | 2034.0 | 2034.0 | 2034.0 | 2034.0 |

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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 | 10.67            | 11.47 | 11.66 | 12.47 | 13.80 | 6.64           | 7.44  | 7.64  | 8.45  | 9.77  |
|                 | 3H   | 12.33            | 13.05 | 13.34 | 14.06 | 15.41 | 7.82           | 8.54  | 8.83  | 9.55  | 10.90 |
|                 | 4H   | 12.93            | 13.61 | 13.95 | 14.63 | 15.98 | 8.27           | 8.95  | 9.29  | 9.96  | 11.32 |
|                 | 6H   | 13.35            | 13.97 | 14.38 | 14.99 | 16.36 | 8.59           | 9.21  | 9.61  | 10.23 | 11.59 |
|                 | 8H   | 13.47            | 14.06 | 14.50 | 15.10 | 16.46 | 8.67           | 9.26  | 9.71  | 10.30 | 11.66 |
|                 | 12H  | 13.52            | 14.09 | 14.56 | 15.12 | 16.50 | 8.71           | 9.27  | 9.75  | 10.30 | 11.69 |
| 4H              | 2H   | 10.68            | 11.36 | 11.71 | 12.37 | 13.73 | 7.23           | 7.91  | 8.26  | 8.92  | 10.28 |
|                 | 3H   | 12.50            | 13.06 | 13.53 | 14.10 | 15.47 | 8.57           | 9.13  | 9.60  | 10.18 | 11.55 |
|                 | 4H   | 13.18            | 13.70 | 14.22 | 14.73 | 16.12 | 9.11           | 9.63  | 10.15 | 10.66 | 12.05 |
|                 | 6H   | 13.68            | 14.13 | 14.74 | 15.18 | 16.57 | 9.53           | 9.97  | 10.58 | 11.03 | 12.41 |
|                 | 8H   | 13.85            | 14.27 | 14.91 | 15.32 | 16.72 | 9.65           | 10.06 | 10.70 | 11.11 | 12.52 |
|                 | 12H  | 13.94            | 14.31 | 15.01 | 15.38 | 16.79 | 9.71           | 10.08 | 10.78 | 11.15 | 12.56 |
| 8H              | 4H   | 13.14            | 13.56 | 14.20 | 14.61 | 16.01 | 9.39           | 9.80  | 10.44 | 10.85 | 12.25 |
|                 | 6H   | 13.70            | 14.04 | 14.77 | 15.13 | 16.53 | 9.90           | 10.24 | 10.97 | 11.33 | 12.73 |
|                 | 8H   | 13.91            | 14.21 | 14.99 | 15.29 | 16.70 | 10.08          | 10.38 | 11.16 | 11.46 | 12.88 |
|                 | 12H  | 14.04            | 14.30 | 15.12 | 15.37 | 16.84 | 10.19          | 10.46 | 11.28 | 11.53 | 12.99 |
| 12H             | 4H   | 13.09            | 13.47 | 14.16 | 14.53 | 15.94 | 9.39           | 9.76  | 10.46 | 10.83 | 12.23 |
|                 | 6H   | 13.67            | 13.97 | 14.76 | 15.05 | 16.47 | 9.94           | 10.24 | 11.02 | 11.32 | 12.74 |
|                 | 8H   | 13.89            | 14.15 | 14.97 | 15.22 | 16.68 | 10.15          | 10.41 | 11.23 | 11.48 | 12.94 |