

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: P904415

Luminaire Tested: DFN2DIP-TR3F0-050D030US830-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P904415  
REPORT IS A COMBINATION OF REPORTS P901796 AND P898751  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-050D030US830-RLLONL  
Description: 3 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

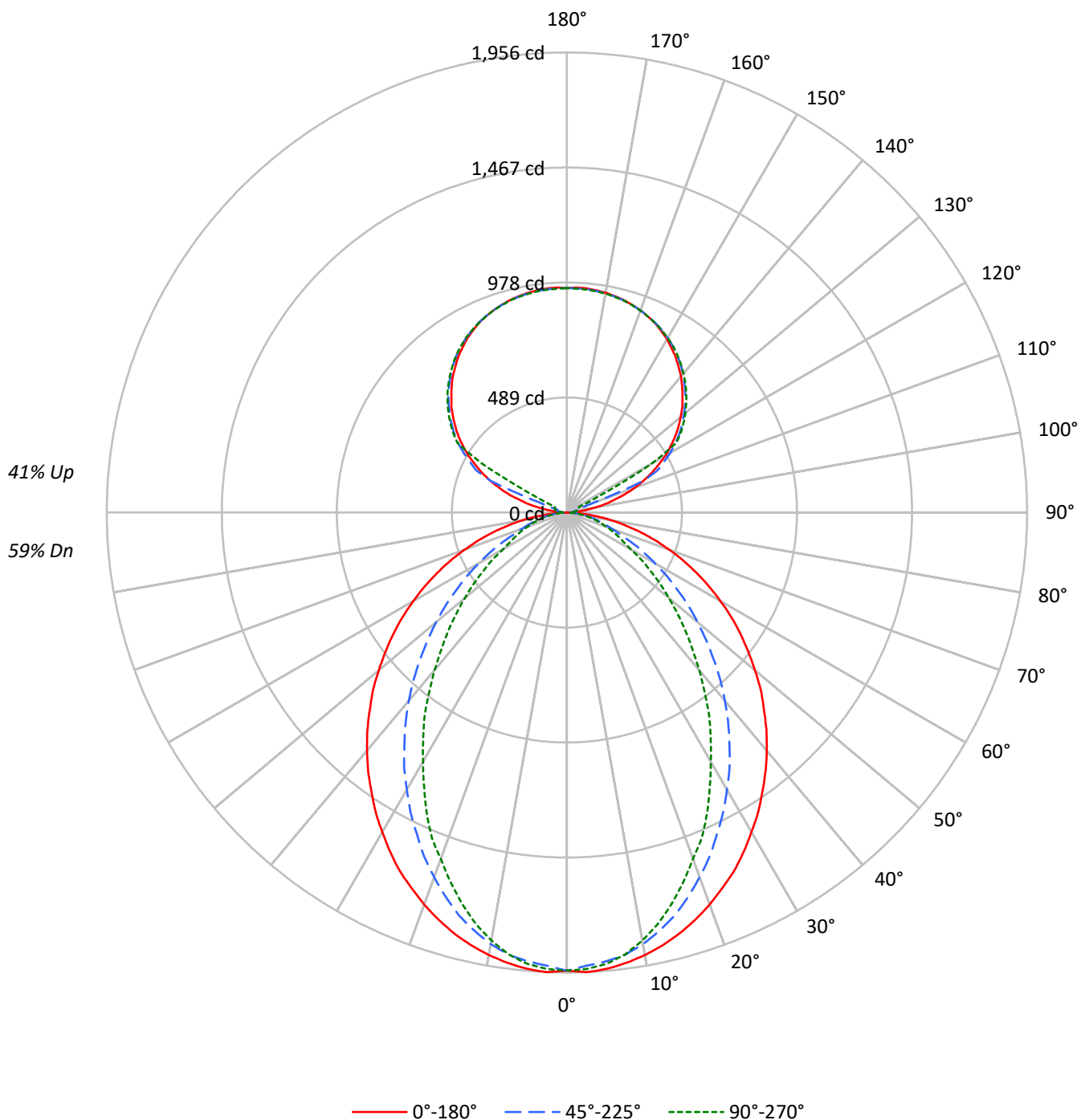
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 6805.2 lumens  
Efficiency: N/A  
Efficacy: 99.9 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): 68.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9933  
Total Harmonic Distortion (THDi): 0.066  
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 |
| RCR |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |
| 0   | 109 | 109 | 109 | 109 | 102 | 102 | 102 | 102 | 88 | 88 | 88 | 76 | 76 | 76 | 64 | 64 | 64 |
| 1   | 100 | 96  | 92  | 89  | 94  | 90  | 87  | 84  | 78 | 76 | 74 | 68 | 66 | 64 | 58 | 57 | 55 |
| 2   | 92  | 85  | 79  | 74  | 86  | 79  | 74  | 70  | 69 | 65 | 62 | 60 | 57 | 55 | 51 | 49 | 48 |
| 3   | 84  | 75  | 68  | 62  | 78  | 70  | 64  | 59  | 62 | 57 | 53 | 54 | 50 | 47 | 46 | 43 | 41 |
| 4   | 77  | 67  | 59  | 53  | 72  | 63  | 56  | 51  | 55 | 50 | 46 | 48 | 44 | 41 | 42 | 39 | 36 |
| 5   | 71  | 60  | 52  | 46  | 66  | 56  | 49  | 44  | 50 | 44 | 40 | 44 | 39 | 36 | 38 | 34 | 32 |
| 6   | 66  | 54  | 46  | 40  | 61  | 51  | 44  | 38  | 45 | 39 | 35 | 40 | 35 | 32 | 35 | 31 | 28 |
| 7   | 61  | 49  | 41  | 36  | 57  | 46  | 39  | 34  | 41 | 35 | 31 | 36 | 32 | 28 | 32 | 28 | 25 |
| 8   | 57  | 45  | 37  | 32  | 53  | 42  | 35  | 30  | 38 | 32 | 28 | 33 | 29 | 25 | 29 | 26 | 23 |
| 9   | 53  | 41  | 34  | 29  | 50  | 39  | 32  | 27  | 35 | 29 | 25 | 31 | 26 | 23 | 27 | 23 | 21 |
| 10  | 50  | 38  | 31  | 26  | 46  | 36  | 29  | 25  | 32 | 27 | 23 | 29 | 24 | 21 | 25 | 22 | 19 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2427 | 2427 | 2427 |
| 5°  | 2430 | 2387 | 2402 |
| 10° | 2404 | 2338 | 2322 |
| 15° | 2370 | 2258 | 2200 |
| 20° | 2325 | 2150 | 2051 |
| 25° | 2278 | 2029 | 1906 |
| 30° | 2217 | 1905 | 1724 |
| 35° | 2156 | 1772 | 1563 |
| 40° | 2095 | 1634 | 1380 |
| 45° | 2024 | 1482 | 1214 |
| 50° | 1950 | 1328 | 1051 |
| 55° | 1872 | 1164 | 895  |
| 60° | 1782 | 993  | 735  |
| 65° | 1679 | 820  | 660  |
| 70° | 1554 | 658  | 595  |
| 75° | 1396 | 575  | 538  |
| 80° | 1169 | 476  | 461  |
| 85° | 796  | 309  | 338  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2024 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 182.5  | 2.7       |
| 10°-20°   | 501.1  | 7.4       |
| 20°-30°   | 703.6  | 10.3      |
| 30°-40°   | 766.9  | 11.3      |
| 40°-50°   | 704.9  | 10.4      |
| 50°-60°   | 553.6  | 8.1       |
| 60°-70°   | 360.3  | 5.3       |
| 70°-80°   | 185.5  | 2.7       |
| 80°-90°   | 49.0   | 0.7       |
| 90°-100°  | 31.5   | 0.5       |
| 100°-110° | 117.3  | 1.7       |
| 110°-120° | 311.1  | 4.6       |
| 120°-130° | 516.0  | 7.6       |
| 130°-140° | 548.1  | 8.1       |
| 140°-150° | 509.4  | 7.5       |
| 150°-160° | 409.6  | 6.0       |
| 160°-170° | 263.9  | 3.9       |
| 170°-180° | 90.8   | 1.3       |
| 0°-30°    | 1387.2 | 20.4      |
| 0°-40°    | 2154.2 | 31.7      |
| 0°-60°    | 3412.7 | 50.1      |
| 0°-90°    | 4007.5 | 58.9      |
| 90°-120°  | 459.9  | 6.8       |
| 90°-150°  | 2033.4 | 29.9      |
| 90°-180°  | 2798.0 | 41.1      |
| 0°-180°   | 6805.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1948 | 1948  | 1948 | 1948  | 1948 |      |
| 5°   | 1948 | 1939  | 1916 | 1932  | 1927 | 185  |
| 15°  | 1853 | 1833  | 1773 | 1740  | 1722 | 522  |
| 25°  | 1682 | 1625  | 1509 | 1437  | 1410 | 773  |
| 35°  | 1449 | 1359  | 1204 | 1093  | 1054 | 907  |
| 45°  | 1185 | 1066  | 881  | 756   | 714  | 915  |
| 55°  | 901  | 763   | 573  | 467   | 434  | 805  |
| 65°  | 608  | 465   | 307  | 247   | 242  | 603  |
| 75°  | 324  | 201   | 141  | 129   | 127  | 343  |
| 85°  | 76   | 39    | 34   | 34    | 34   | 87   |
| 90°  | 1    | 8     | 14   | 17    | 19   | 6    |
| 95°  | 45   | 22    | 27   | 30    | 30   | 53   |
| 105° | 210  | 231   | 42   | 50    | 52   | 224  |
| 115° | 397  | 409   | 426  | 106   | 57   | 391  |
| 125° | 561  | 570   | 584  | 588   | 590  | 501  |
| 135° | 695  | 706   | 712  | 719   | 718  | 537  |
| 145° | 806  | 805   | 817  | 822   | 818  | 504  |
| 155° | 887  | 881   | 889  | 894   | 888  | 409  |
| 165° | 935  | 931   | 933  | 938   | 933  | 264  |
| 175° | 956  | 952   | 953  | 958   | 951  | 91   |
| 180° | 954  | 954   | 954  | 954   | 954  |      |



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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1947.8 | 1947.8 | 1947.8 | 1947.8 | 1947.8 |
| 2.5°   | 1956.5 | 1947.8 | 1928.3 | 1946.1 | 1942.5 |
| 5°     | 1947.8 | 1939.0 | 1916.0 | 1931.8 | 1926.7 |
| 7.5°   | 1931.8 | 1921.4 | 1896.7 | 1903.7 | 1894.8 |
| 10°    | 1910.7 | 1898.4 | 1863.2 | 1857.8 | 1847.3 |
| 12.5°  | 1884.3 | 1868.5 | 1820.8 | 1810.3 | 1790.8 |
| 15°    | 1852.6 | 1833.2 | 1773.3 | 1739.8 | 1722.2 |
| 17.5°  | 1815.5 | 1787.3 | 1713.3 | 1674.5 | 1646.2 |
| 20°    | 1773.3 | 1738.0 | 1649.8 | 1605.9 | 1567.0 |
| 22.5°  | 1727.5 | 1686.9 | 1584.6 | 1524.8 | 1498.4 |
| 25°    | 1681.6 | 1625.1 | 1508.8 | 1436.6 | 1410.0 |
| 27.5°  | 1627.0 | 1567.0 | 1438.3 | 1355.5 | 1314.9 |
| 30°    | 1568.9 | 1501.8 | 1360.7 | 1270.9 | 1223.2 |
| 32.5°  | 1512.4 | 1431.3 | 1286.9 | 1181.0 | 1136.9 |
| 35°    | 1449.0 | 1359.1 | 1204.0 | 1092.9 | 1054.0 |
| 37.5°  | 1387.2 | 1290.2 | 1126.4 | 1004.7 | 960.7  |
| 40°    | 1322.0 | 1216.4 | 1045.2 | 920.1  | 874.3  |
| 42.5°  | 1255.1 | 1142.3 | 964.2  | 833.7  | 789.8  |
| 45°    | 1184.6 | 1066.4 | 881.4  | 756.1  | 713.8  |
| 47.5°  | 1117.6 | 992.5  | 802.1  | 676.8  | 638.1  |
| 50°    | 1043.6 | 918.4  | 724.5  | 602.8  | 565.9  |
| 52.5°  | 971.2  | 839.0  | 650.4  | 534.1  | 500.7  |
| 55°    | 900.7  | 763.2  | 572.8  | 467.1  | 433.7  |
| 57.5°  | 828.5  | 687.5  | 504.2  | 405.5  | 377.2  |
| 60°    | 754.4  | 613.4  | 431.8  | 342.0  | 313.8  |
| 62.5°  | 682.2  | 541.2  | 370.1  | 285.6  | 271.5  |
| 65°    | 608.1  | 465.3  | 306.7  | 246.9  | 241.5  |
| 67.5°  | 537.6  | 394.8  | 246.9  | 216.8  | 211.5  |
| 70°    | 463.6  | 326.1  | 204.4  | 186.8  | 179.7  |
| 72.5°  | 393.1  | 262.6  | 171.0  | 156.9  | 153.4  |
| 75°    | 324.3  | 200.9  | 141.0  | 128.7  | 127.0  |
| 77.5°  | 255.6  | 142.7  | 111.1  | 104.0  | 100.4  |
| 80°    | 192.1  | 102.3  | 84.5   | 77.6   | 77.6   |
| 82.5°  | 133.9  | 68.8   | 58.2   | 54.6   | 54.6   |
| 85°    | 75.8   | 38.7   | 33.5   | 33.5   | 33.5   |
| 87.5°  | 28.3   | 14.0   | 14.0   | 12.3   | 12.3   |
| 90°    | 0.7    | 8.3    | 13.8   | 17.3   | 18.6   |
| 92.5°  | 17.3   | 14.5   | 16.6   | 18.0   | 18.6   |
| 95°    | 44.9   | 22.1   | 26.9   | 30.4   | 29.7   |
| 97.5°  | 80.8   | 24.2   | 35.2   | 37.3   | 38.0   |
| 100°   | 122.2  | 27.6   | 39.4   | 44.9   | 46.3   |
| 102.5° | 167.8  | 166.5  | 40.7   | 48.3   | 50.4   |
| 105°   | 209.9  | 230.6  | 42.1   | 49.7   | 52.5   |
| 107.5° | 258.9  | 276.2  | 43.5   | 51.1   | 53.9   |
| 110°   | 305.9  | 320.4  | 120.8  | 51.8   | 54.6   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 350.2 | 362.5 | 350.8 | 53.2  | 55.2  |
| 115°   | 397.0 | 408.8 | 426.0 | 106.3 | 56.6  |
| 117.5° | 437.8 | 451.6 | 463.4 | 364.6 | 183.7 |
| 120°   | 483.3 | 493.7 | 506.1 | 514.4 | 421.2 |
| 122.5° | 522.0 | 533.1 | 547.0 | 551.0 | 551.8 |
| 125°   | 561.4 | 570.3 | 583.5 | 588.3 | 590.4 |
| 127.5° | 597.3 | 606.9 | 617.4 | 624.2 | 624.9 |
| 130°   | 631.1 | 642.2 | 649.8 | 657.3 | 656.8 |
| 132.5° | 665.6 | 674.7 | 682.2 | 688.4 | 687.8 |
| 135°   | 694.7 | 705.8 | 711.9 | 718.9 | 717.5 |
| 137.5° | 725.0 | 733.3 | 740.3 | 747.2 | 745.1 |
| 140°   | 754.7 | 760.3 | 767.8 | 774.0 | 770.6 |
| 142.5° | 779.7 | 784.5 | 793.4 | 798.9 | 795.5 |
| 145°   | 805.9 | 805.1 | 816.9 | 821.7 | 818.2 |
| 147.5° | 828.6 | 826.5 | 838.3 | 841.7 | 839.0 |
| 150°   | 850.7 | 845.9 | 857.0 | 861.0 | 857.6 |
| 152.5° | 869.3 | 863.8 | 874.2 | 878.4 | 873.5 |
| 155°   | 887.3 | 881.2 | 889.4 | 893.5 | 888.1 |
| 157.5° | 901.8 | 896.4 | 902.6 | 907.4 | 901.8 |
| 160°   | 914.3 | 910.1 | 914.3 | 918.4 | 913.5 |
| 162.5° | 925.3 | 921.1 | 924.6 | 929.4 | 923.2 |
| 165°   | 934.9 | 930.9 | 932.9 | 937.7 | 932.9 |
| 167.5° | 942.5 | 938.4 | 940.5 | 945.4 | 939.1 |
| 170°   | 948.8 | 944.6 | 946.0 | 950.8 | 944.6 |
| 172.5° | 952.9 | 948.8 | 950.2 | 955.0 | 948.8 |
| 175°   | 956.3 | 951.5 | 952.9 | 957.7 | 950.8 |
| 177.5° | 957.7 | 952.9 | 953.7 | 958.5 | 952.3 |
| 180°   | 954.3 | 954.3 | 954.3 | 954.3 | 954.3 |

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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 | 10.97            | 11.88 | 11.85 | 12.78 | 13.92 | 6.94           | 7.85  | 7.83  | 8.75  | 9.89  |
|                 | 3H   | 12.64            | 13.45 | 13.54 | 14.36 | 15.53 | 8.13           | 8.95  | 9.03  | 9.86  | 11.02 |
|                 | 4H   | 13.25            | 14.01 | 14.16 | 14.93 | 16.11 | 8.58           | 9.35  | 9.50  | 10.27 | 11.44 |
|                 | 6H   | 13.67            | 14.37 | 14.59 | 15.29 | 16.48 | 8.90           | 9.61  | 9.83  | 10.53 | 11.72 |
|                 | 8H   | 13.79            | 14.46 | 14.72 | 15.40 | 16.59 | 8.99           | 9.67  | 9.93  | 10.60 | 11.79 |
|                 | 12H  | 13.85            | 14.49 | 14.79 | 15.42 | 16.63 | 9.04           | 9.68  | 9.97  | 10.61 | 11.82 |
| 4H              | 2H   | 10.99            | 11.76 | 11.91 | 12.68 | 13.85 | 7.54           | 8.31  | 8.46  | 9.23  | 10.40 |
|                 | 3H   | 12.82            | 13.46 | 13.75 | 14.40 | 15.59 | 8.90           | 9.53  | 9.82  | 10.48 | 11.67 |
|                 | 4H   | 13.51            | 14.09 | 14.45 | 15.03 | 16.25 | 9.44           | 10.02 | 10.38 | 10.96 | 12.18 |
|                 | 6H   | 14.02            | 14.52 | 14.97 | 15.48 | 16.70 | 9.86           | 10.36 | 10.81 | 11.32 | 12.54 |
|                 | 8H   | 14.19            | 14.66 | 15.14 | 15.61 | 16.85 | 9.99           | 10.45 | 10.94 | 11.41 | 12.64 |
|                 | 12H  | 14.28            | 14.70 | 15.26 | 15.68 | 16.91 | 10.05          | 10.47 | 11.02 | 11.45 | 12.68 |
| 8H              | 4H   | 13.48            | 13.95 | 14.43 | 14.91 | 16.14 | 9.72           | 10.19 | 10.68 | 11.15 | 12.38 |
|                 | 6H   | 14.04            | 14.42 | 15.02 | 15.42 | 16.65 | 10.24          | 10.62 | 11.21 | 11.62 | 12.85 |
|                 | 8H   | 14.25            | 14.59 | 15.24 | 15.58 | 16.83 | 10.42          | 10.76 | 11.41 | 11.75 | 13.00 |
|                 | 12H  | 14.39            | 14.68 | 15.38 | 15.67 | 16.96 | 10.54          | 10.84 | 11.53 | 11.82 | 13.12 |
| 12H             | 4H   | 13.44            | 13.86 | 14.41 | 14.83 | 16.07 | 9.73           | 10.15 | 10.70 | 11.12 | 12.36 |
|                 | 6H   | 14.01            | 14.35 | 15.00 | 15.34 | 16.59 | 10.28          | 10.62 | 11.27 | 11.61 | 12.86 |
|                 | 8H   | 14.23            | 14.53 | 15.22 | 15.51 | 16.81 | 10.49          | 10.79 | 11.48 | 11.77 | 13.07 |