

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: P917115

Luminaire Tested: DFN2DIP-SQ2F0-030D040US930-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P917115  
REPORT IS A COMBINATION OF REPORTS P901304 AND P898215  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ2F0-030D040US930-RLLONL  
Description: 2 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

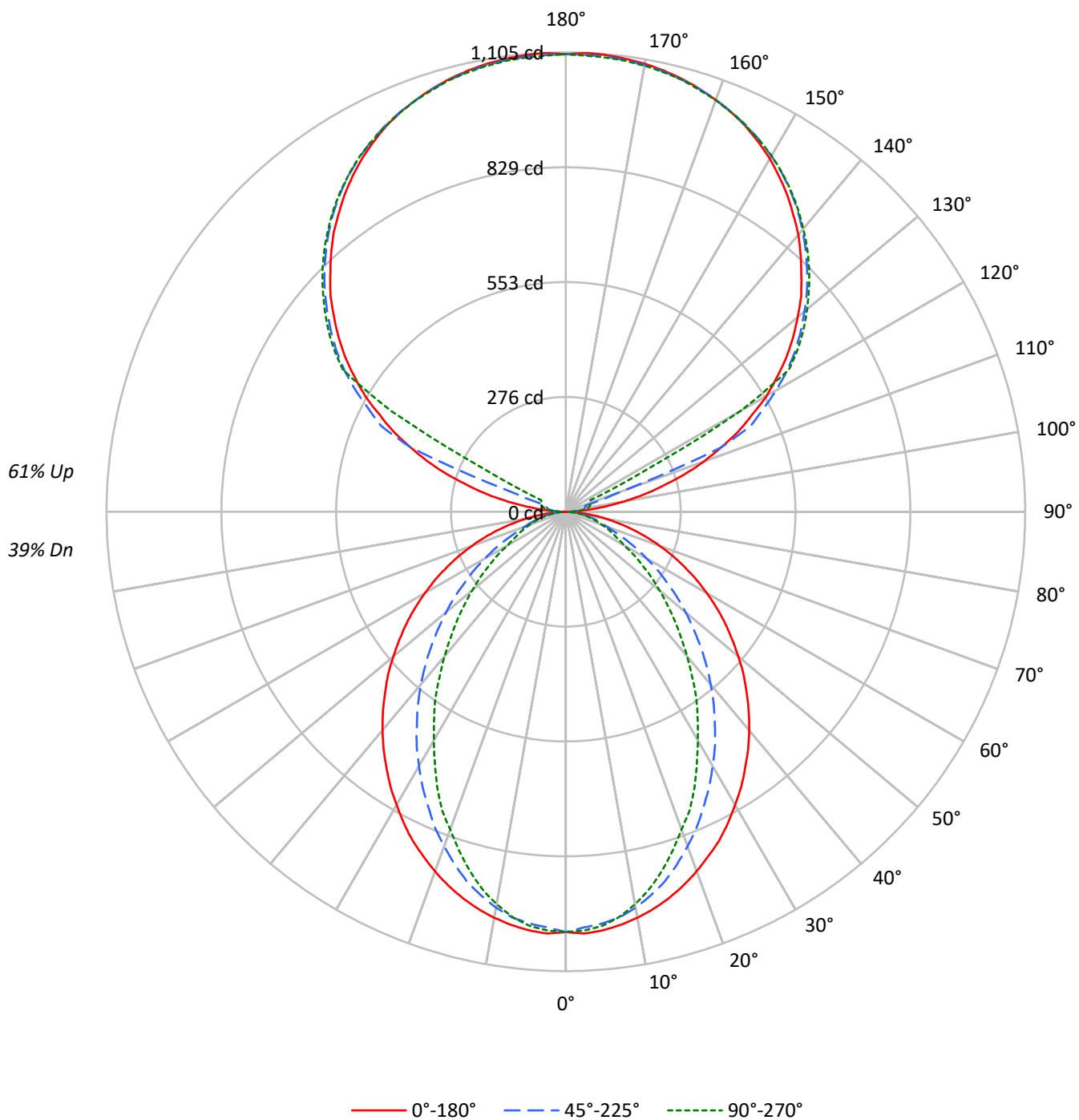
Lumens per Lamp: N/A  
Luminaire Lumens: 5307.6 lumens  
Efficiency: N/A  
Efficacy: 101.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 52.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9963  
Total Harmonic Distortion (THDi): 0.065  
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   | 105 | 105 | 105 | 105 | 95 | 95 | 95 | 95 | 77 | 77 | 77 | 61 | 61 | 61 | 46 | 46 | 46 |
| 1   | 96  | 92  | 88  | 85  | 87 | 83 | 80 | 78 | 68 | 66 | 64 | 54 | 53 | 52 | 41 | 41 | 40 |
| 2   | 87  | 80  | 75  | 70  | 79 | 73 | 68 | 64 | 60 | 57 | 54 | 48 | 46 | 44 | 37 | 35 | 34 |
| 3   | 80  | 71  | 64  | 58  | 73 | 65 | 59 | 54 | 53 | 49 | 46 | 43 | 40 | 37 | 33 | 31 | 29 |
| 4   | 73  | 63  | 55  | 50  | 67 | 58 | 51 | 46 | 48 | 43 | 39 | 38 | 35 | 32 | 30 | 27 | 26 |
| 5   | 67  | 56  | 48  | 43  | 61 | 52 | 45 | 40 | 43 | 38 | 34 | 35 | 31 | 28 | 27 | 25 | 23 |
| 6   | 62  | 51  | 43  | 37  | 56 | 46 | 40 | 35 | 39 | 34 | 30 | 31 | 28 | 25 | 25 | 22 | 20 |
| 7   | 57  | 46  | 38  | 33  | 52 | 42 | 35 | 31 | 35 | 30 | 26 | 29 | 25 | 22 | 23 | 20 | 18 |
| 8   | 53  | 42  | 34  | 29  | 49 | 38 | 32 | 27 | 32 | 27 | 23 | 26 | 22 | 20 | 21 | 18 | 16 |
| 9   | 50  | 38  | 31  | 26  | 45 | 35 | 29 | 24 | 29 | 24 | 21 | 24 | 20 | 18 | 19 | 17 | 15 |
| 10  | 46  | 35  | 28  | 23  | 42 | 32 | 26 | 22 | 27 | 22 | 19 | 22 | 19 | 16 | 18 | 15 | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2223 | 2223 | 2223 |
| 5°  | 2223 | 2183 | 2198 |
| 10° | 2197 | 2135 | 2124 |
| 15° | 2163 | 2060 | 2010 |
| 20° | 2119 | 1958 | 1872 |
| 25° | 2074 | 1845 | 1739 |
| 30° | 2015 | 1729 | 1571 |
| 35° | 1957 | 1605 | 1424 |
| 40° | 1898 | 1478 | 1255 |
| 45° | 1829 | 1337 | 1102 |
| 50° | 1758 | 1195 | 953  |
| 55° | 1683 | 1044 | 811  |
| 60° | 1597 | 887  | 664  |
| 65° | 1497 | 728  | 594  |
| 70° | 1376 | 580  | 534  |
| 75° | 1223 | 502  | 479  |
| 80° | 1005 | 408  | 406  |
| 85° | 654  | 254  | 289  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1829 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 94.7   | 1.8       |
| 10°-20°   | 260.1  | 4.9       |
| 20°-30°   | 365.1  | 6.9       |
| 30°-40°   | 398.0  | 7.5       |
| 40°-50°   | 365.8  | 6.9       |
| 50°-60°   | 287.3  | 5.4       |
| 60°-70°   | 187.0  | 3.5       |
| 70°-80°   | 96.3   | 1.8       |
| 80°-90°   | 26.5   | 0.5       |
| 90°-100°  | 36.3   | 0.7       |
| 100°-110° | 135.3  | 2.5       |
| 110°-120° | 358.8  | 6.8       |
| 120°-130° | 595.1  | 11.2      |
| 130°-140° | 632.1  | 11.9      |
| 140°-150° | 587.5  | 11.1      |
| 150°-160° | 472.3  | 8.9       |
| 160°-170° | 304.4  | 5.7       |
| 170°-180° | 104.8  | 2.0       |
| 0°-30°    | 720.0  | 13.6      |
| 0°-40°    | 1118.0 | 21.1      |
| 0°-60°    | 1771.2 | 33.4      |
| 0°-90°    | 2080.9 | 39.2      |
| 90°-120°  | 530.4  | 10.0      |
| 90°-150°  | 2345.2 | 44.2      |
| 90°-180°  | 3227.0 | 60.8      |
| 0°-180°   | 5307.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1011 | 1011  | 1011 | 1011  | 1011 |      |
| 5°   | 1011 | 1006  | 994  | 1003  | 1000 | 96   |
| 15°  | 962  | 951   | 920  | 903   | 894  | 271  |
| 25°  | 873  | 843   | 783  | 746   | 732  | 401  |
| 35°  | 752  | 705   | 625  | 567   | 547  | 471  |
| 45°  | 615  | 553   | 458  | 392   | 370  | 475  |
| 55°  | 467  | 396   | 297  | 242   | 225  | 418  |
| 65°  | 316  | 242   | 159  | 128   | 125  | 313  |
| 75°  | 168  | 104   | 73   | 67    | 66   | 178  |
| 85°  | 39   | 20    | 17   | 17    | 17   | 45   |
| 90°  | 1    | 10    | 16   | 20    | 21   | 5    |
| 95°  | 52   | 25    | 31   | 35    | 34   | 61   |
| 105° | 242  | 266   | 49   | 57    | 60   | 259  |
| 115° | 458  | 471   | 491  | 123   | 65   | 451  |
| 125° | 647  | 658   | 673  | 679   | 681  | 577  |
| 135° | 801  | 814   | 821  | 829   | 828  | 619  |
| 145° | 929  | 929   | 942  | 948   | 944  | 581  |
| 155° | 1023 | 1016  | 1026 | 1030  | 1024 | 472  |
| 165° | 1078 | 1074  | 1076 | 1082  | 1076 | 305  |
| 175° | 1103 | 1097  | 1099 | 1105  | 1097 | 105  |
| 180° | 1101 | 1101  | 1101 | 1101  | 1101 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1010.9 | 1010.9 | 1010.9 | 1010.9 | 1010.9 |
| 2.5°   | 1015.5 | 1010.9 | 1000.8 | 1010.0 | 1008.2 |
| 5°     | 1010.9 | 1006.3 | 994.4  | 1002.7 | 999.9  |
| 7.5°   | 1002.7 | 997.2  | 984.4  | 988.0  | 983.4  |
| 10°    | 991.6  | 985.3  | 967.0  | 964.2  | 958.8  |
| 12.5°  | 978.0  | 969.7  | 945.0  | 939.5  | 929.4  |
| 15°    | 961.5  | 951.4  | 920.3  | 902.9  | 893.8  |
| 17.5°  | 942.2  | 927.6  | 889.2  | 869.1  | 854.4  |
| 20°    | 920.3  | 902.0  | 856.2  | 833.5  | 813.3  |
| 22.5°  | 896.6  | 875.5  | 822.4  | 791.3  | 777.6  |
| 25°    | 872.8  | 843.4  | 783.1  | 745.6  | 731.8  |
| 27.5°  | 844.4  | 813.3  | 746.5  | 703.5  | 682.4  |
| 30°    | 814.2  | 779.4  | 706.2  | 659.7  | 634.9  |
| 32.5°  | 784.9  | 742.8  | 667.9  | 612.9  | 590.0  |
| 35°    | 752.0  | 705.3  | 624.8  | 567.2  | 547.1  |
| 37.5°  | 720.0  | 669.6  | 584.6  | 521.4  | 498.6  |
| 40°    | 686.2  | 631.3  | 542.5  | 477.5  | 453.8  |
| 42.5°  | 651.3  | 592.9  | 500.4  | 432.7  | 409.9  |
| 45°    | 614.8  | 553.4  | 457.5  | 392.4  | 370.5  |
| 47.5°  | 580.0  | 515.1  | 416.3  | 351.2  | 331.2  |
| 50°    | 541.6  | 476.6  | 376.0  | 312.8  | 293.7  |
| 52.5°  | 504.0  | 435.5  | 337.6  | 277.2  | 259.8  |
| 55°    | 467.4  | 396.1  | 297.3  | 242.5  | 225.1  |
| 57.5°  | 430.0  | 356.8  | 261.7  | 210.4  | 195.8  |
| 60°    | 391.5  | 318.4  | 224.1  | 177.5  | 162.9  |
| 62.5°  | 354.1  | 280.9  | 192.1  | 148.2  | 141.0  |
| 65°    | 315.6  | 241.5  | 159.1  | 128.1  | 125.3  |
| 67.5°  | 279.1  | 204.9  | 128.1  | 112.5  | 109.7  |
| 70°    | 240.6  | 169.3  | 106.1  | 96.9   | 93.3   |
| 72.5°  | 204.0  | 136.2  | 88.7   | 81.4   | 79.6   |
| 75°    | 168.3  | 104.3  | 73.2   | 66.8   | 65.9   |
| 77.5°  | 132.6  | 74.0   | 57.6   | 54.0   | 52.1   |
| 80°    | 99.7   | 53.1   | 43.9   | 40.3   | 40.3   |
| 82.5°  | 69.5   | 35.7   | 30.2   | 28.4   | 28.4   |
| 85°    | 39.3   | 20.1   | 17.4   | 17.4   | 17.4   |
| 87.5°  | 14.7   | 7.3    | 7.3    | 6.4    | 6.4    |
| 90°    | 0.7    | 9.5    | 15.9   | 20.0   | 21.4   |
| 92.5°  | 20.0   | 16.7   | 19.1   | 20.7   | 21.4   |
| 95°    | 51.7   | 25.4   | 31.0   | 35.1   | 34.2   |
| 97.5°  | 93.2   | 27.9   | 40.6   | 43.0   | 43.8   |
| 100°   | 141.0  | 31.9   | 45.4   | 51.7   | 53.3   |
| 102.5° | 193.5  | 192.0  | 47.0   | 55.7   | 58.1   |
| 105°   | 242.1  | 266.0  | 48.6   | 57.3   | 60.5   |
| 107.5° | 298.6  | 318.5  | 50.2   | 58.9   | 62.1   |
| 110°   | 352.9  | 369.5  | 139.4  | 59.8   | 62.9   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 403.8  | 418.1  | 404.6  | 61.3   | 63.8   |
| 115°   | 457.9  | 471.4  | 491.4  | 122.6  | 65.4   |
| 117.5° | 504.9  | 520.8  | 534.4  | 420.4  | 211.8  |
| 120°   | 557.5  | 569.4  | 583.8  | 593.4  | 485.8  |
| 122.5° | 602.0  | 614.8  | 630.8  | 635.5  | 636.3  |
| 125°   | 647.4  | 657.9  | 672.9  | 678.6  | 680.9  |
| 127.5° | 688.8  | 700.0  | 712.0  | 720.0  | 720.7  |
| 130°   | 727.9  | 740.7  | 749.3  | 758.1  | 757.4  |
| 132.5° | 767.7  | 778.1  | 786.8  | 794.0  | 793.3  |
| 135°   | 801.2  | 814.0  | 821.1  | 829.1  | 827.5  |
| 137.5° | 836.2  | 845.7  | 853.8  | 861.7  | 859.3  |
| 140°   | 870.4  | 876.9  | 885.6  | 892.8  | 888.8  |
| 142.5° | 899.2  | 904.7  | 915.1  | 921.4  | 917.5  |
| 145°   | 929.4  | 928.6  | 942.1  | 947.7  | 943.7  |
| 147.5° | 955.6  | 953.2  | 966.8  | 970.8  | 967.7  |
| 150°   | 981.1  | 975.6  | 988.4  | 993.1  | 989.1  |
| 152.5° | 1002.7 | 996.3  | 1008.2 | 1013.0 | 1007.5 |
| 155°   | 1023.4 | 1016.3 | 1025.8 | 1030.5 | 1024.2 |
| 157.5° | 1040.1 | 1033.7 | 1041.0 | 1046.5 | 1040.1 |
| 160°   | 1054.4 | 1049.6 | 1054.4 | 1059.2 | 1053.6 |
| 162.5° | 1067.1 | 1062.4 | 1066.4 | 1072.0 | 1064.8 |
| 165°   | 1078.3 | 1073.6 | 1075.9 | 1081.5 | 1075.9 |
| 167.5° | 1087.1 | 1082.2 | 1084.8 | 1090.3 | 1083.1 |
| 170°   | 1094.3 | 1089.5 | 1091.0 | 1096.7 | 1089.5 |
| 172.5° | 1099.0 | 1094.3 | 1095.9 | 1101.5 | 1094.3 |
| 175°   | 1102.9 | 1097.4 | 1099.0 | 1104.6 | 1096.7 |
| 177.5° | 1104.6 | 1099.0 | 1099.8 | 1105.5 | 1098.3 |
| 180°   | 1100.7 | 1100.7 | 1100.7 | 1100.7 | 1100.7 |

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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 | 8.71             | 9.46  | 9.76  | 10.51 | 11.93 | 4.67           | 5.42 | 5.72 | 6.47 | 7.89  |
|                 | 3H   | 10.36            | 11.03 | 11.42 | 12.09 | 13.53 | 5.83           | 6.50 | 6.89 | 7.56 | 9.00  |
|                 | 4H   | 10.95            | 11.59 | 12.02 | 12.65 | 14.09 | 6.27           | 6.90 | 7.34 | 7.96 | 9.41  |
|                 | 6H   | 11.35            | 11.94 | 12.43 | 13.00 | 14.46 | 6.57           | 7.15 | 7.65 | 8.22 | 9.67  |
|                 | 8H   | 11.47            | 12.02 | 12.55 | 13.11 | 14.56 | 6.65           | 7.20 | 7.73 | 8.28 | 9.74  |
|                 | 12H  | 11.52            | 12.05 | 12.61 | 13.12 | 14.60 | 6.68           | 7.21 | 7.77 | 8.28 | 9.76  |
| 4H              | 2H   | 8.71             | 9.35  | 9.79  | 10.41 | 11.85 | 5.24           | 5.88 | 6.32 | 6.94 | 8.39  |
|                 | 3H   | 10.51            | 11.04 | 11.60 | 12.13 | 13.59 | 6.56           | 7.09 | 7.65 | 8.18 | 9.64  |
|                 | 4H   | 11.19            | 11.67 | 12.28 | 12.75 | 14.23 | 7.09           | 7.58 | 8.18 | 8.66 | 10.14 |
|                 | 6H   | 11.68            | 12.09 | 12.78 | 13.19 | 14.67 | 7.49           | 7.90 | 8.59 | 9.01 | 10.48 |
|                 | 8H   | 11.84            | 12.23 | 12.94 | 13.32 | 14.81 | 7.61           | 7.99 | 8.71 | 9.09 | 10.58 |
|                 | 12H  | 11.92            | 12.27 | 13.04 | 13.38 | 14.87 | 7.66           | 8.01 | 8.77 | 9.12 | 10.61 |
| 8H              | 4H   | 11.14            | 11.53 | 12.24 | 12.62 | 14.11 | 7.36           | 7.74 | 8.46 | 8.84 | 10.33 |
|                 | 6H   | 11.68            | 12.00 | 12.80 | 13.14 | 14.63 | 7.85           | 8.17 | 8.97 | 9.30 | 10.79 |
|                 | 8H   | 11.89            | 12.17 | 13.01 | 13.28 | 14.79 | 8.03           | 8.30 | 9.15 | 9.42 | 10.93 |
|                 | 12H  | 12.01            | 12.25 | 13.14 | 13.37 | 14.91 | 8.13           | 8.37 | 9.26 | 9.49 | 11.03 |
| 12H             | 4H   | 11.09            | 11.44 | 12.21 | 12.55 | 14.04 | 7.35           | 7.70 | 8.47 | 8.81 | 10.31 |
|                 | 6H   | 11.66            | 11.94 | 12.78 | 13.06 | 14.56 | 7.89           | 8.17 | 9.02 | 9.29 | 10.80 |
|                 | 8H   | 11.86            | 12.11 | 12.99 | 13.22 | 14.76 | 8.08           | 8.33 | 9.21 | 9.44 | 10.99 |