

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: P912485

Luminaire Tested: DFN2DIP-TR2F0-040D020US850-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P912485  
REPORT IS A COMBINATION OF REPORTS P901745 AND P897145  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR2F0-040D020US850-FLLONL  
Description: 2 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

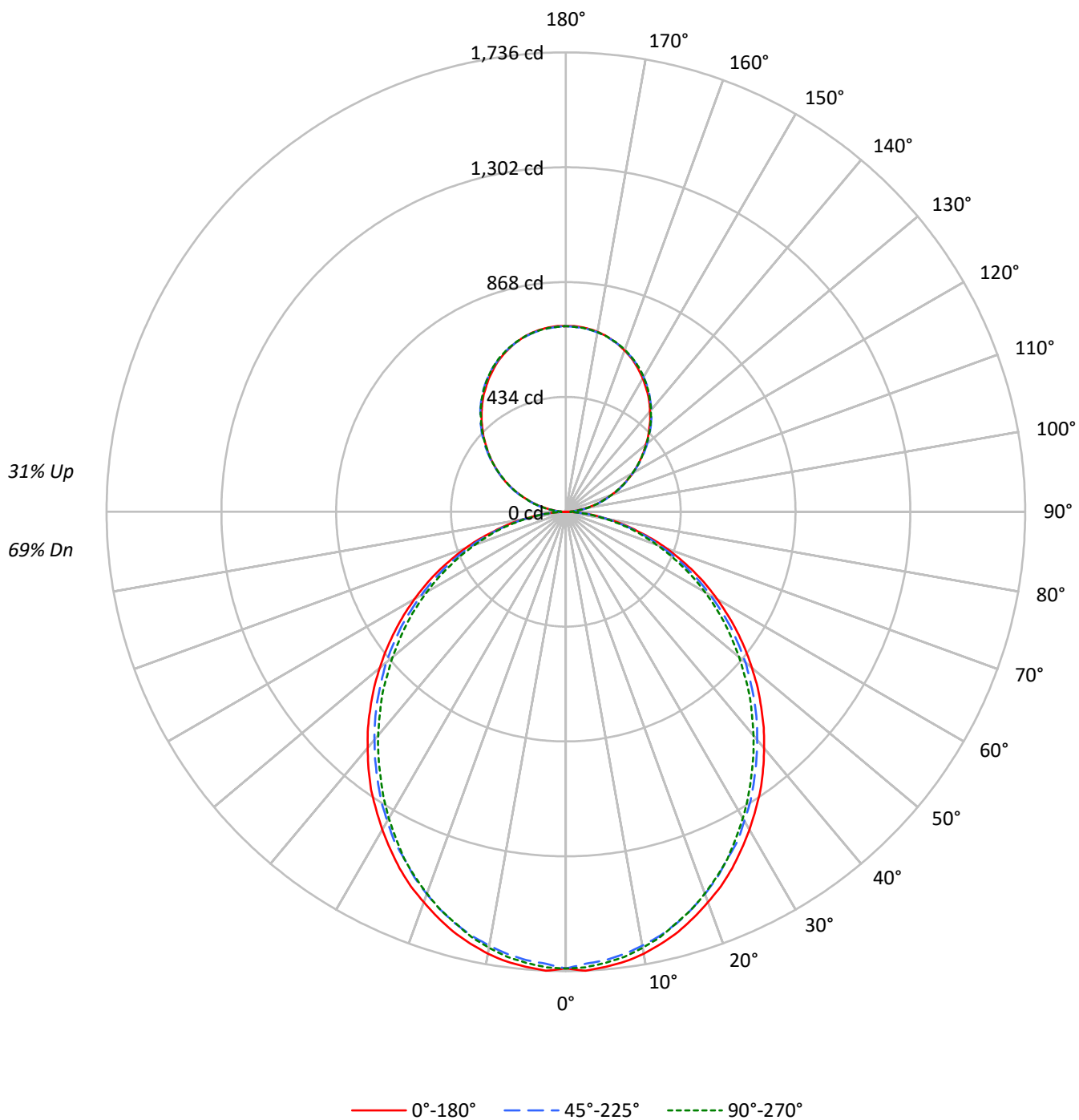
Lumens per Lamp: N/A  
Luminaire Lumens: 6354.6 lumens  
Efficiency: N/A  
Efficacy: 123.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.04' x L: 2.36' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 51.3  
Input Voltage (V): 120  
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



TEST NUMBER: P912485

CATALOG NUMBER: DFN2DIP-TR2F0-040D020US850-FLONL

**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   | 112 | 112 | 112 | 112 | 106 | 106 | 106 | 106 | 94 | 94 | 94 | 83 | 83 | 83 | 74 | 74 | 74 |
| 1   | 102 | 98  | 94  | 90  | 96  | 92  | 89  | 86  | 83 | 80 | 77 | 74 | 71 | 70 | 65 | 64 | 62 |
| 2   | 93  | 85  | 79  | 74  | 88  | 81  | 75  | 70  | 72 | 68 | 64 | 65 | 61 | 58 | 57 | 55 | 52 |
| 3   | 85  | 75  | 67  | 61  | 80  | 71  | 64  | 59  | 64 | 58 | 54 | 57 | 53 | 49 | 51 | 48 | 45 |
| 4   | 78  | 67  | 58  | 52  | 73  | 63  | 56  | 50  | 57 | 51 | 46 | 51 | 46 | 42 | 46 | 42 | 39 |
| 5   | 71  | 59  | 51  | 45  | 67  | 56  | 49  | 43  | 51 | 45 | 40 | 46 | 41 | 37 | 41 | 37 | 34 |
| 6   | 66  | 53  | 45  | 39  | 62  | 51  | 43  | 38  | 46 | 40 | 35 | 41 | 36 | 32 | 37 | 33 | 30 |
| 7   | 61  | 48  | 40  | 34  | 58  | 46  | 39  | 33  | 42 | 35 | 31 | 38 | 33 | 29 | 34 | 30 | 26 |
| 8   | 57  | 44  | 36  | 31  | 54  | 42  | 35  | 30  | 38 | 32 | 28 | 35 | 29 | 26 | 31 | 27 | 24 |
| 9   | 53  | 40  | 33  | 27  | 50  | 39  | 31  | 26  | 35 | 29 | 25 | 32 | 27 | 23 | 29 | 25 | 21 |
| 10  | 50  | 37  | 30  | 25  | 47  | 36  | 29  | 24  | 32 | 27 | 22 | 30 | 25 | 21 | 27 | 23 | 20 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3850 | 3850 | 3850 |
| 5°  | 3850 | 3788 | 3815 |
| 10° | 3813 | 3728 | 3757 |
| 15° | 3752 | 3658 | 3670 |
| 20° | 3670 | 3564 | 3581 |
| 25° | 3589 | 3454 | 3479 |
| 30° | 3488 | 3350 | 3351 |
| 35° | 3393 | 3230 | 3216 |
| 40° | 3276 | 3108 | 3087 |
| 45° | 3159 | 2985 | 2955 |
| 50° | 3032 | 2856 | 2802 |
| 55° | 2898 | 2707 | 2661 |
| 60° | 2745 | 2531 | 2498 |
| 65° | 2578 | 2347 | 2308 |
| 70° | 2366 | 2124 | 2099 |
| 75° | 2075 | 1856 | 1899 |
| 80° | 1719 | 1513 | 1535 |
| 85° | 1173 | 954  | 954  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3159 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 162.5  | 2.6       |
| 10°-20°   | 457.1  | 7.2       |
| 20°-30°   | 671.7  | 10.6      |
| 30°-40°   | 780.2  | 12.3      |
| 40°-50°   | 779.2  | 12.3      |
| 50°-60°   | 679.5  | 10.7      |
| 60°-70°   | 502.3  | 7.9       |
| 70°-80°   | 284.2  | 4.5       |
| 80°-90°   | 77.0   | 1.2       |
| 90°-100°  | 43.4   | 0.7       |
| 100°-110° | 137.9  | 2.2       |
| 110°-120° | 236.0  | 3.7       |
| 120°-130° | 310.4  | 4.9       |
| 130°-140° | 348.4  | 5.5       |
| 140°-150° | 341.7  | 5.4       |
| 150°-160° | 286.6  | 4.5       |
| 160°-170° | 190.1  | 3.0       |
| 170°-180° | 66.4   | 1.0       |
| 0°-30°    | 1291.3 | 20.3      |
| 0°-40°    | 2071.5 | 32.6      |
| 0°-60°    | 3530.2 | 55.6      |
| 0°-90°    | 4393.7 | 69.1      |
| 90°-120°  | 417.3  | 6.6       |
| 90°-150°  | 1417.8 | 22.3      |
| 90°-180°  | 1961.0 | 30.9      |
| 0°-180°   | 6354.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1726 | 1726  | 1726 | 1726  | 1726 |      |
| 5°   | 1726 | 1720  | 1701 | 1714  | 1711 | 164  |
| 15°  | 1643 | 1633  | 1612 | 1618  | 1610 | 463  |
| 25°  | 1487 | 1474  | 1446 | 1449  | 1446 | 684  |
| 35°  | 1283 | 1266  | 1240 | 1230  | 1222 | 801  |
| 45°  | 1044 | 1032  | 1007 | 989   | 983  | 806  |
| 55°  | 790  | 780   | 760  | 740   | 732  | 706  |
| 65°  | 533  | 523   | 506  | 491   | 483  | 527  |
| 75°  | 279  | 276   | 267  | 257   | 261  | 298  |
| 85°  | 68   | 66    | 65   | 60    | 58   | 76   |
| 90°  | 1    | 8     | 21   | 19    | 20   | 6    |
| 95°  | 31   | 37    | 38   | 38    | 37   | 34   |
| 105° | 127  | 129   | 130  | 131   | 131  | 134  |
| 115° | 237  | 240   | 239  | 238   | 237  | 234  |
| 125° | 344  | 350   | 348  | 346   | 346  | 308  |
| 135° | 446  | 452   | 453  | 453   | 451  | 344  |
| 145° | 541  | 545   | 549  | 549   | 547  | 338  |
| 155° | 619  | 620   | 622  | 625   | 623  | 285  |
| 165° | 673  | 672   | 672  | 676   | 674  | 190  |
| 175° | 700  | 699   | 697  | 701   | 698  | 67   |
| 180° | 701  | 701   | 701  | 701   | 701  |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1726.0 | 1726.0 | 1726.0 | 1726.0 | 1726.0 |
| 2.5°   | 1736.1 | 1727.8 | 1709.5 | 1726.0 | 1722.9 |
| 5°     | 1726.0 | 1719.5 | 1701.2 | 1714.4 | 1711.3 |
| 7.5°   | 1714.4 | 1704.5 | 1686.2 | 1699.7 | 1696.3 |
| 10°    | 1696.3 | 1684.7 | 1664.8 | 1678.0 | 1673.0 |
| 12.5°  | 1671.3 | 1661.4 | 1641.5 | 1649.9 | 1646.4 |
| 15°    | 1643.1 | 1633.2 | 1611.6 | 1618.3 | 1610.0 |
| 17.5°  | 1608.3 | 1598.4 | 1576.8 | 1585.0 | 1576.8 |
| 20°    | 1570.0 | 1560.1 | 1537.0 | 1541.8 | 1535.4 |
| 22.5°  | 1532.0 | 1517.0 | 1495.4 | 1495.4 | 1492.0 |
| 25°    | 1487.1 | 1473.9 | 1445.7 | 1448.9 | 1445.7 |
| 27.5°  | 1437.3 | 1425.6 | 1404.2 | 1399.2 | 1391.0 |
| 30°    | 1387.6 | 1374.3 | 1349.4 | 1344.4 | 1337.8 |
| 32.5°  | 1334.5 | 1324.6 | 1298.0 | 1288.0 | 1281.2 |
| 35°    | 1283.0 | 1266.5 | 1239.9 | 1229.9 | 1221.6 |
| 37.5°  | 1224.9 | 1209.9 | 1183.3 | 1171.8 | 1163.5 |
| 40°    | 1165.2 | 1151.8 | 1125.2 | 1110.4 | 1103.8 |
| 42.5°  | 1107.1 | 1093.7 | 1067.3 | 1050.6 | 1040.7 |
| 45°    | 1044.0 | 1032.5 | 1007.4 | 989.3  | 982.6  |
| 47.5°  | 982.6  | 970.9  | 944.4  | 926.1  | 916.3  |
| 50°    | 917.8  | 909.5  | 886.3  | 863.0  | 854.7  |
| 52.5°  | 854.7  | 843.2  | 821.7  | 803.4  | 791.7  |
| 55°    | 790.2  | 780.1  | 760.2  | 740.3  | 732.1  |
| 57.5°  | 725.3  | 717.1  | 695.3  | 675.5  | 668.8  |
| 60°    | 660.5  | 654.0  | 630.8  | 612.5  | 607.5  |
| 62.5°  | 597.5  | 585.9  | 569.4  | 552.7  | 546.1  |
| 65°    | 532.9  | 522.8  | 506.3  | 491.3  | 483.1  |
| 67.5°  | 466.4  | 458.0  | 443.3  | 431.6  | 425.0  |
| 70°    | 405.0  | 398.4  | 383.4  | 371.7  | 365.2  |
| 72.5°  | 342.0  | 335.3  | 327.0  | 315.4  | 310.4  |
| 75°    | 278.8  | 275.6  | 267.2  | 257.3  | 260.6  |
| 77.5°  | 222.4  | 215.7  | 212.4  | 207.4  | 202.5  |
| 80°    | 166.0  | 164.2  | 160.9  | 156.0  | 152.7  |
| 82.5°  | 112.9  | 112.9  | 111.3  | 104.6  | 104.6  |
| 85°    | 68.0   | 66.4   | 64.8   | 59.7   | 58.1   |
| 87.5°  | 29.9   | 26.6   | 23.3   | 18.3   | 16.5   |
| 90°    | 0.7    | 7.7    | 20.7   | 19.4   | 20.1   |
| 92.5°  | 13.1   | 17.7   | 18.4   | 19.1   | 19.1   |
| 95°    | 30.8   | 36.8   | 37.8   | 37.8   | 36.8   |
| 97.5°  | 51.3   | 56.9   | 59.2   | 59.2   | 59.2   |
| 100°   | 75.1   | 80.0   | 81.6   | 81.6   | 81.0   |
| 102.5° | 100.0  | 103.6  | 105.9  | 106.6  | 105.9  |
| 105°   | 127.3  | 129.0  | 130.3  | 131.3  | 131.3  |
| 107.5° | 154.4  | 156.9  | 156.9  | 157.4  | 154.4  |
| 110°   | 180.7  | 184.0  | 184.0  | 184.0  | 182.3  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 208.9 | 212.5 | 211.9 | 210.2 | 208.9 |
| 115°   | 236.9 | 240.2 | 239.2 | 238.5 | 236.9 |
| 117.5° | 264.6 | 269.3 | 266.3 | 264.6 | 262.8 |
| 120°   | 292.4 | 297.1 | 292.4 | 292.4 | 290.6 |
| 122.5° | 317.8 | 323.7 | 320.8 | 319.2 | 317.8 |
| 125°   | 344.5 | 349.8 | 348.1 | 346.2 | 345.6 |
| 127.5° | 370.5 | 377.1 | 374.7 | 372.2 | 370.5 |
| 130°   | 394.8 | 402.5 | 401.3 | 400.1 | 397.8 |
| 132.5° | 422.1 | 428.1 | 428.4 | 425.5 | 423.7 |
| 135°   | 445.6 | 452.1 | 453.4 | 452.8 | 451.0 |
| 137.5° | 471.8 | 477.1 | 478.2 | 477.8 | 475.2 |
| 140°   | 494.8 | 500.2 | 503.2 | 503.2 | 500.8 |
| 142.5° | 518.6 | 523.8 | 525.6 | 526.1 | 523.8 |
| 145°   | 541.0 | 545.2 | 548.6 | 549.2 | 546.8 |
| 147.5° | 561.0 | 566.4 | 568.9 | 569.9 | 567.6 |
| 150°   | 581.8 | 585.3 | 587.7 | 589.5 | 587.7 |
| 152.5° | 600.2 | 603.7 | 606.7 | 609.1 | 606.7 |
| 155°   | 618.6 | 620.3 | 622.1 | 625.1 | 623.3 |
| 157.5° | 634.5 | 635.7 | 636.8 | 641.0 | 638.0 |
| 160°   | 648.7 | 649.9 | 650.5 | 654.1 | 651.5 |
| 162.5° | 661.7 | 661.7 | 662.3 | 666.4 | 663.4 |
| 165°   | 672.9 | 672.3 | 672.3 | 676.5 | 673.6 |
| 167.5° | 683.0 | 681.1 | 681.1 | 685.4 | 682.5 |
| 170°   | 690.7 | 689.0 | 688.4 | 692.6 | 689.0 |
| 172.5° | 696.0 | 694.2 | 693.7 | 697.9 | 694.2 |
| 175°   | 700.2 | 698.6 | 697.2 | 701.4 | 697.9 |
| 177.5° | 702.6 | 700.9 | 699.6 | 703.1 | 699.6 |
| 180°   | 701.4 | 701.4 | 701.4 | 701.4 | 701.4 |

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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 | 13.43            | 14.49 | 14.20 | 15.29 | 16.26 | 13.01          | 14.07 | 13.78 | 14.87 | 15.84 |
|                 | 3H   | 15.08            | 16.04 | 15.87 | 16.84 | 17.84 | 14.62          | 15.58 | 15.41 | 16.38 | 17.38 |
|                 | 4H   | 15.66            | 16.57 | 16.47 | 17.38 | 18.39 | 15.20          | 16.11 | 16.01 | 16.92 | 17.93 |
|                 | 6H   | 16.05            | 16.89 | 16.87 | 17.71 | 18.73 | 15.59          | 16.43 | 16.41 | 17.25 | 18.27 |
|                 | 8H   | 16.16            | 16.95 | 16.98 | 17.79 | 18.81 | 15.70          | 16.49 | 16.52 | 17.33 | 18.36 |
|                 | 12H  | 16.20            | 16.96 | 17.03 | 17.79 | 18.85 | 15.74          | 16.50 | 16.57 | 17.33 | 18.38 |
| 4H              | 2H   | 13.91            | 14.81 | 14.71 | 15.62 | 16.63 | 13.57          | 14.47 | 14.38 | 15.28 | 16.29 |
|                 | 3H   | 15.76            | 16.52 | 16.58 | 17.36 | 18.39 | 15.38          | 16.13 | 16.20 | 16.98 | 18.01 |
|                 | 4H   | 16.47            | 17.15 | 17.30 | 18.00 | 19.05 | 16.07          | 16.76 | 16.91 | 17.60 | 18.66 |
|                 | 6H   | 16.97            | 17.57 | 17.82 | 18.44 | 19.49 | 16.57          | 17.17 | 17.43 | 18.04 | 19.10 |
|                 | 8H   | 17.11            | 17.67 | 17.97 | 18.53 | 19.61 | 16.72          | 17.27 | 17.57 | 18.14 | 19.21 |
|                 | 12H  | 17.19            | 17.69 | 18.06 | 18.57 | 19.65 | 16.78          | 17.28 | 17.65 | 18.17 | 19.24 |
| 8H              | 4H   | 16.67            | 17.22 | 17.52 | 18.09 | 19.16 | 16.32          | 16.87 | 17.17 | 17.74 | 18.81 |
|                 | 6H   | 17.28            | 17.74 | 18.16 | 18.65 | 19.72 | 16.93          | 17.39 | 17.81 | 18.30 | 19.37 |
|                 | 8H   | 17.49            | 17.90 | 18.38 | 18.80 | 19.89 | 17.13          | 17.54 | 18.02 | 18.44 | 19.53 |
|                 | 12H  | 17.61            | 17.97 | 18.51 | 18.87 | 20.01 | 17.24          | 17.60 | 18.14 | 18.50 | 19.64 |
| 12H             | 4H   | 16.66            | 17.16 | 17.54 | 18.05 | 19.12 | 16.32          | 16.82 | 17.19 | 17.70 | 18.78 |
|                 | 6H   | 17.31            | 17.72 | 18.20 | 18.62 | 19.71 | 16.97          | 17.38 | 17.86 | 18.28 | 19.36 |
|                 | 8H   | 17.54            | 17.90 | 18.44 | 18.80 | 19.94 | 17.20          | 17.56 | 18.09 | 18.45 | 19.59 |