

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: P917987

Luminaire Tested: DFN2DIP-TR2F0-060D030US930-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P917987  
REPORT IS A COMBINATION OF REPORTS P901760 AND P897145  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR2F0-060D030US930-RLLONL  
Description: 2 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

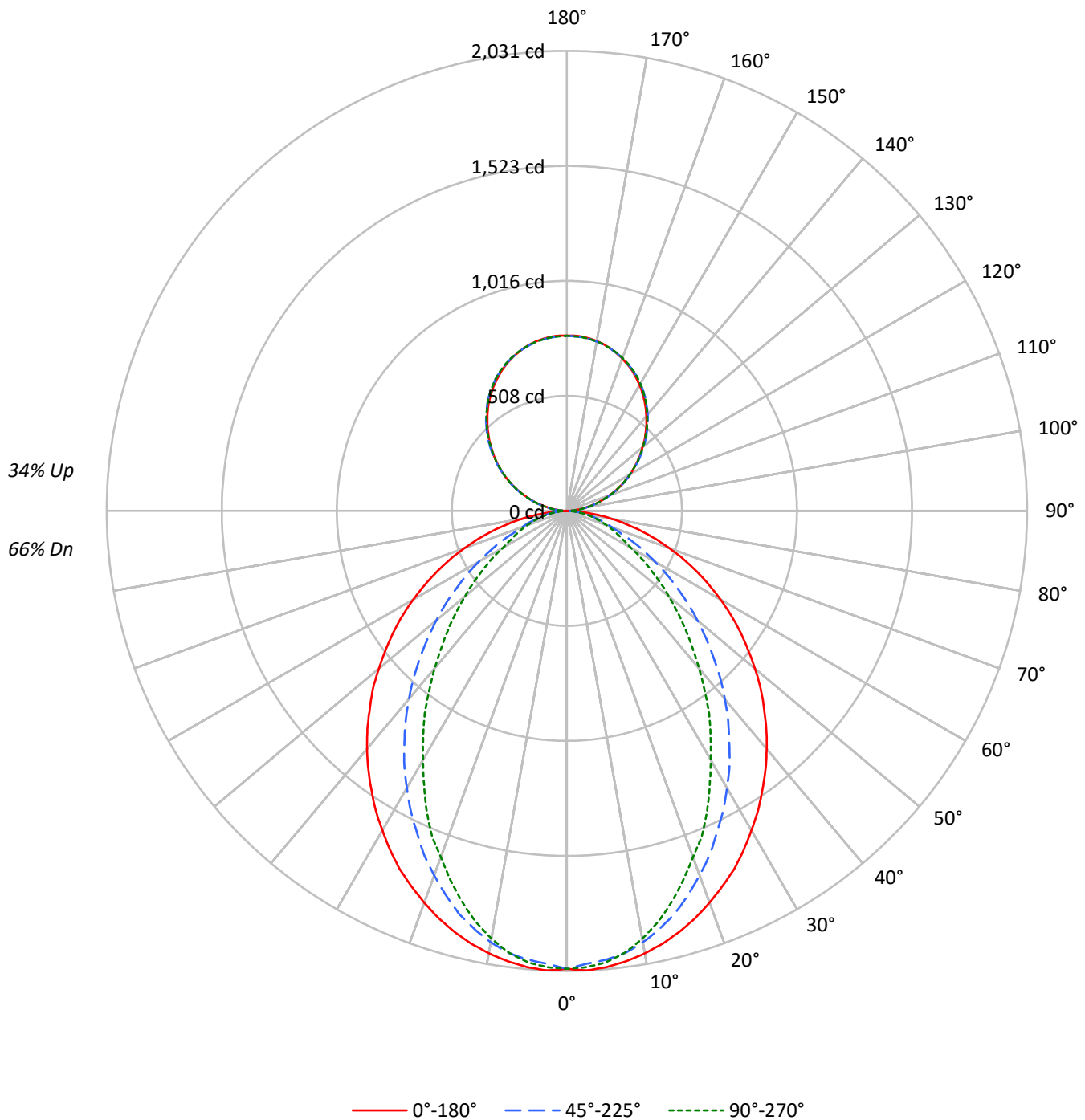
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 6322.6 lumens  
Efficiency: N/A  
Efficacy: 77.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.04' x L: 2.36' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 81.2  
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 |
| RCR |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |
| 0   | 111 | 111 | 111 | 111 | 104 | 104 | 104 | 104 | 92 | 92 | 92 | 81 | 81 | 81 | 71 | 71 | 71 |
| 1   | 102 | 98  | 94  | 91  | 96  | 92  | 89  | 86  | 82 | 79 | 77 | 72 | 70 | 69 | 63 | 62 | 61 |
| 2   | 93  | 86  | 80  | 75  | 88  | 81  | 76  | 72  | 72 | 68 | 65 | 64 | 61 | 58 | 57 | 54 | 52 |
| 3   | 86  | 76  | 69  | 63  | 80  | 72  | 66  | 61  | 65 | 59 | 55 | 57 | 53 | 50 | 51 | 48 | 45 |
| 4   | 79  | 68  | 60  | 54  | 74  | 65  | 58  | 52  | 58 | 52 | 48 | 52 | 47 | 44 | 46 | 42 | 40 |
| 5   | 73  | 61  | 53  | 47  | 68  | 58  | 51  | 45  | 52 | 46 | 42 | 47 | 42 | 38 | 42 | 38 | 35 |
| 6   | 67  | 55  | 47  | 41  | 63  | 52  | 45  | 40  | 47 | 41 | 37 | 42 | 38 | 34 | 38 | 34 | 31 |
| 7   | 62  | 50  | 42  | 37  | 59  | 48  | 40  | 35  | 43 | 37 | 33 | 39 | 34 | 30 | 35 | 31 | 28 |
| 8   | 58  | 46  | 38  | 33  | 55  | 44  | 37  | 32  | 40 | 34 | 29 | 36 | 31 | 27 | 32 | 28 | 25 |
| 9   | 54  | 42  | 35  | 29  | 51  | 40  | 33  | 29  | 36 | 31 | 27 | 33 | 28 | 25 | 30 | 26 | 23 |
| 10  | 51  | 39  | 31  | 27  | 48  | 37  | 30  | 26  | 34 | 28 | 24 | 31 | 26 | 23 | 28 | 24 | 21 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4509 | 4509 | 4509 |
| 5°  | 4510 | 4428 | 4458 |
| 10° | 4459 | 4331 | 4306 |
| 15° | 4391 | 4178 | 4074 |
| 20° | 4302 | 3971 | 3793 |
| 25° | 4213 | 3742 | 3522 |
| 30° | 4094 | 3507 | 3180 |
| 35° | 3977 | 3256 | 2880 |
| 40° | 3858 | 2997 | 2538 |
| 45° | 3721 | 2711 | 2228 |
| 50° | 3578 | 2423 | 1926 |
| 55° | 3428 | 2117 | 1636 |
| 60° | 3255 | 1799 | 1339 |
| 65° | 3054 | 1476 | 1197 |
| 70° | 2811 | 1175 | 1072 |
| 75° | 2505 | 1016 | 960  |
| 80° | 2064 | 825  | 810  |
| 85° | 1355 | 511  | 570  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3721 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 189.5  | 3.0       |
| 10°-20°   | 520.2  | 8.2       |
| 20°-30°   | 730.3  | 11.6      |
| 30°-40°   | 796.1  | 12.6      |
| 40°-50°   | 731.7  | 11.6      |
| 50°-60°   | 574.6  | 9.1       |
| 60°-70°   | 374.0  | 5.9       |
| 70°-80°   | 192.5  | 3.0       |
| 80°-90°   | 51.3   | 0.8       |
| 90°-100°  | 47.9   | 0.8       |
| 100°-110° | 152.1  | 2.4       |
| 110°-120° | 260.3  | 4.1       |
| 120°-130° | 342.3  | 5.4       |
| 130°-140° | 384.2  | 6.1       |
| 140°-150° | 376.8  | 6.0       |
| 150°-160° | 316.1  | 5.0       |
| 160°-170° | 209.6  | 3.3       |
| 170°-180° | 73.3   | 1.2       |
| 0°-30°    | 1439.9 | 22.8      |
| 0°-40°    | 2236.0 | 35.4      |
| 0°-60°    | 3542.3 | 56.0      |
| 0°-90°    | 4160.2 | 65.8      |
| 90°-120°  | 460.2  | 7.3       |
| 90°-150°  | 1563.5 | 24.7      |
| 90°-180°  | 2162.0 | 34.2      |
| 0°-180°   | 6322.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2022 | 2022  | 2022 | 2022  | 2022 |      |
| 5°   | 2022 | 2013  | 1989 | 2005  | 2000 | 192  |
| 15°  | 1923 | 1903  | 1841 | 1806  | 1788 | 542  |
| 25°  | 1746 | 1687  | 1566 | 1491  | 1464 | 803  |
| 35°  | 1504 | 1411  | 1250 | 1134  | 1094 | 941  |
| 45°  | 1230 | 1107  | 915  | 785   | 741  | 950  |
| 55°  | 935  | 792   | 595  | 485   | 450  | 835  |
| 65°  | 631  | 483   | 318  | 256   | 251  | 626  |
| 75°  | 337  | 208   | 146  | 134   | 132  | 356  |
| 85°  | 79   | 40    | 35   | 35    | 35   | 90   |
| 90°  | 1    | 8     | 23   | 21    | 22   | 6    |
| 95°  | 34   | 41    | 42   | 42    | 41   | 38   |
| 105° | 140  | 142   | 144  | 145   | 145  | 148  |
| 115° | 261  | 265   | 264  | 263   | 261  | 258  |
| 125° | 380  | 386   | 384  | 382   | 381  | 339  |
| 135° | 491  | 499   | 500  | 499   | 497  | 380  |
| 145° | 597  | 601   | 605  | 606   | 603  | 373  |
| 155° | 682  | 684   | 686  | 689   | 687  | 314  |
| 165° | 742  | 741   | 741  | 746   | 743  | 209  |
| 175° | 772  | 770   | 769  | 774   | 770  | 73   |
| 180° | 774  | 774   | 774  | 774   | 774  |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2021.8 | 2021.8 | 2021.8 | 2021.8 | 2021.8 |
| 2.5°   | 2030.9 | 2021.8 | 2001.6 | 2020.0 | 2016.3 |
| 5°     | 2021.8 | 2012.6 | 1988.8 | 2005.3 | 1999.8 |
| 7.5°   | 2005.3 | 1994.4 | 1968.8 | 1976.0 | 1966.8 |
| 10°    | 1983.3 | 1970.5 | 1934.1 | 1928.4 | 1917.5 |
| 12.5°  | 1956.0 | 1939.4 | 1889.9 | 1879.1 | 1858.9 |
| 15°    | 1923.0 | 1902.7 | 1840.6 | 1805.9 | 1787.6 |
| 17.5°  | 1884.6 | 1855.2 | 1778.3 | 1738.1 | 1708.9 |
| 20°    | 1840.6 | 1803.9 | 1712.5 | 1666.9 | 1626.5 |
| 22.5°  | 1793.1 | 1750.9 | 1644.8 | 1582.7 | 1555.3 |
| 25°    | 1745.6 | 1686.9 | 1566.2 | 1491.3 | 1463.7 |
| 27.5°  | 1688.9 | 1626.5 | 1493.0 | 1407.0 | 1364.9 |
| 30°    | 1628.5 | 1558.8 | 1412.4 | 1319.2 | 1269.7 |
| 32.5°  | 1569.9 | 1485.6 | 1335.8 | 1225.9 | 1180.1 |
| 35°    | 1504.1 | 1410.7 | 1249.8 | 1134.4 | 1094.0 |
| 37.5°  | 1440.0 | 1339.2 | 1169.2 | 1042.8 | 997.2  |
| 40°    | 1372.2 | 1262.6 | 1084.9 | 955.0  | 907.5  |
| 42.5°  | 1302.8 | 1185.7 | 1000.9 | 865.4  | 819.8  |
| 45°    | 1229.6 | 1106.8 | 914.9  | 784.8  | 740.9  |
| 47.5°  | 1160.1 | 1030.2 | 832.6  | 702.5  | 662.3  |
| 50°    | 1083.2 | 953.3  | 752.0  | 625.7  | 587.4  |
| 52.5°  | 1008.0 | 870.8  | 675.1  | 554.4  | 519.7  |
| 55°    | 934.9  | 792.2  | 594.6  | 484.9  | 450.1  |
| 57.5°  | 860.0  | 713.5  | 523.3  | 420.9  | 391.5  |
| 60°    | 783.1  | 636.7  | 448.3  | 355.1  | 325.7  |
| 62.5°  | 708.2  | 561.8  | 384.2  | 296.4  | 281.8  |
| 65°    | 631.3  | 483.0  | 318.4  | 256.2  | 250.6  |
| 67.5°  | 558.1  | 409.8  | 256.2  | 225.0  | 219.6  |
| 70°    | 481.2  | 338.5  | 212.1  | 194.0  | 186.5  |
| 72.5°  | 408.1  | 272.6  | 177.4  | 162.9  | 159.1  |
| 75°    | 336.6  | 208.5  | 146.3  | 133.5  | 131.8  |
| 77.5°  | 265.4  | 148.1  | 115.3  | 107.9  | 104.3  |
| 80°    | 199.3  | 106.2  | 87.7   | 80.6   | 80.6   |
| 82.5°  | 139.0  | 71.4   | 60.3   | 56.7   | 56.7   |
| 85°    | 78.6   | 40.2   | 34.7   | 34.7   | 34.7   |
| 87.5°  | 29.4   | 14.6   | 14.6   | 12.8   | 12.8   |
| 90°    | 0.7    | 8.4    | 22.8   | 21.4   | 22.2   |
| 92.5°  | 14.4   | 19.6   | 20.3   | 21.0   | 21.0   |
| 95°    | 34.1   | 40.6   | 41.7   | 41.7   | 40.6   |
| 97.5°  | 56.7   | 62.7   | 65.3   | 65.3   | 65.3   |
| 100°   | 82.8   | 88.1   | 90.0   | 90.0   | 89.4   |
| 102.5° | 110.3  | 114.3  | 116.8  | 117.6  | 116.8  |
| 105°   | 140.4  | 142.3  | 143.7  | 144.8  | 144.8  |
| 107.5° | 170.2  | 173.0  | 173.0  | 173.5  | 170.2  |
| 110°   | 199.2  | 202.9  | 202.9  | 202.9  | 201.1  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 230.4 | 234.4 | 233.7 | 231.8 | 230.4 |
| 115°   | 261.2 | 264.9 | 263.7 | 263.1 | 261.2 |
| 117.5° | 291.7 | 296.9 | 293.6 | 291.7 | 289.8 |
| 120°   | 322.5 | 327.7 | 322.5 | 322.5 | 320.4 |
| 122.5° | 350.5 | 357.0 | 353.8 | 351.9 | 350.5 |
| 125°   | 379.9 | 385.7 | 383.8 | 381.7 | 381.1 |
| 127.5° | 408.5 | 415.8 | 413.3 | 410.4 | 408.5 |
| 130°   | 435.4 | 443.8 | 442.6 | 441.2 | 438.6 |
| 132.5° | 465.5 | 472.0 | 472.5 | 469.2 | 467.3 |
| 135°   | 491.4 | 498.6 | 500.0 | 499.3 | 497.4 |
| 137.5° | 520.2 | 526.1 | 527.3 | 526.8 | 524.0 |
| 140°   | 545.7 | 551.5 | 554.8 | 554.8 | 552.2 |
| 142.5° | 571.9 | 577.6 | 579.5 | 580.2 | 577.6 |
| 145°   | 596.6 | 601.2 | 605.0 | 605.6 | 603.1 |
| 147.5° | 618.7 | 624.5 | 627.3 | 628.5 | 625.9 |
| 150°   | 641.6 | 645.6 | 648.1 | 650.2 | 648.1 |
| 152.5° | 661.9 | 665.8 | 669.0 | 671.6 | 669.0 |
| 155°   | 682.2 | 684.0 | 686.1 | 689.3 | 687.3 |
| 157.5° | 699.6 | 701.0 | 702.2 | 706.9 | 703.6 |
| 160°   | 715.3 | 716.6 | 717.4 | 721.3 | 718.5 |
| 162.5° | 729.7 | 729.7 | 730.4 | 734.8 | 731.6 |
| 165°   | 742.1 | 741.4 | 741.4 | 746.0 | 742.7 |
| 167.5° | 753.3 | 751.1 | 751.1 | 755.8 | 752.5 |
| 170°   | 761.7 | 759.8 | 759.1 | 763.8 | 759.8 |
| 172.5° | 767.4 | 765.6 | 764.9 | 769.6 | 765.6 |
| 175°   | 772.2 | 770.3 | 768.9 | 773.6 | 769.6 |
| 177.5° | 774.7 | 772.8 | 771.4 | 775.4 | 771.4 |
| 180°   | 773.6 | 773.6 | 773.6 | 773.6 | 773.6 |

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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 | 13.61            | 14.59 | 14.43 | 15.42 | 16.45 | 9.59           | 10.57 | 10.41 | 11.41 | 12.43 |
|                 | 3H   | 15.28            | 16.15 | 16.11 | 16.99 | 18.05 | 10.78          | 11.65 | 11.61 | 12.50 | 13.55 |
|                 | 4H   | 15.88            | 16.70 | 16.72 | 17.55 | 18.62 | 11.22          | 12.05 | 12.07 | 12.90 | 13.97 |
|                 | 6H   | 16.29            | 17.05 | 17.14 | 17.90 | 18.98 | 11.54          | 12.30 | 12.40 | 13.16 | 14.24 |
|                 | 8H   | 16.41            | 17.13 | 17.27 | 18.00 | 19.09 | 11.63          | 12.35 | 12.49 | 13.23 | 14.31 |
|                 | 12H  | 16.46            | 17.15 | 17.33 | 18.02 | 19.13 | 11.67          | 12.36 | 12.54 | 13.23 | 14.33 |
| 4H              | 2H   | 13.64            | 14.47 | 14.49 | 15.32 | 16.39 | 10.19          | 11.02 | 11.04 | 11.87 | 12.94 |
|                 | 3H   | 15.46            | 16.14 | 16.32 | 17.03 | 18.11 | 11.54          | 12.22 | 12.40 | 13.11 | 14.19 |
|                 | 4H   | 16.14            | 16.76 | 17.01 | 17.64 | 18.75 | 12.08          | 12.70 | 12.95 | 13.58 | 14.69 |
|                 | 6H   | 16.64            | 17.18 | 17.53 | 18.08 | 19.20 | 12.49          | 13.03 | 13.38 | 13.93 | 15.05 |
|                 | 8H   | 16.80            | 17.31 | 17.70 | 18.20 | 19.33 | 12.61          | 13.11 | 13.50 | 14.01 | 15.14 |
|                 | 12H  | 16.89            | 17.34 | 17.80 | 18.26 | 19.39 | 12.67          | 13.13 | 13.59 | 14.04 | 15.18 |
| 8H              | 4H   | 16.11            | 16.62 | 17.01 | 17.51 | 18.64 | 12.36          | 12.86 | 13.25 | 13.76 | 14.88 |
|                 | 6H   | 16.66            | 17.07 | 17.58 | 18.01 | 19.14 | 12.86          | 13.27 | 13.78 | 14.21 | 15.34 |
|                 | 8H   | 16.86            | 17.23 | 17.79 | 18.16 | 19.31 | 13.04          | 13.40 | 13.97 | 14.34 | 15.48 |
|                 | 12H  | 16.99            | 17.31 | 17.92 | 18.24 | 19.43 | 13.15          | 13.47 | 14.08 | 14.40 | 15.59 |
| 12H             | 4H   | 16.07            | 16.52 | 16.98 | 17.44 | 18.57 | 12.36          | 12.81 | 13.27 | 13.73 | 14.86 |
|                 | 6H   | 16.63            | 17.00 | 17.56 | 17.93 | 19.08 | 12.90          | 13.27 | 13.83 | 14.20 | 15.35 |
|                 | 8H   | 16.84            | 17.17 | 17.78 | 18.09 | 19.29 | 13.10          | 13.43 | 14.03 | 14.35 | 15.55 |