

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: P920632

Luminaire Tested: DFN2DIP-TR2F0-020D030US935-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P920632  
REPORT IS A COMBINATION OF REPORTS P900231 AND P897145  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR2F0-020D030US935-FLLFLL  
Description: 2 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

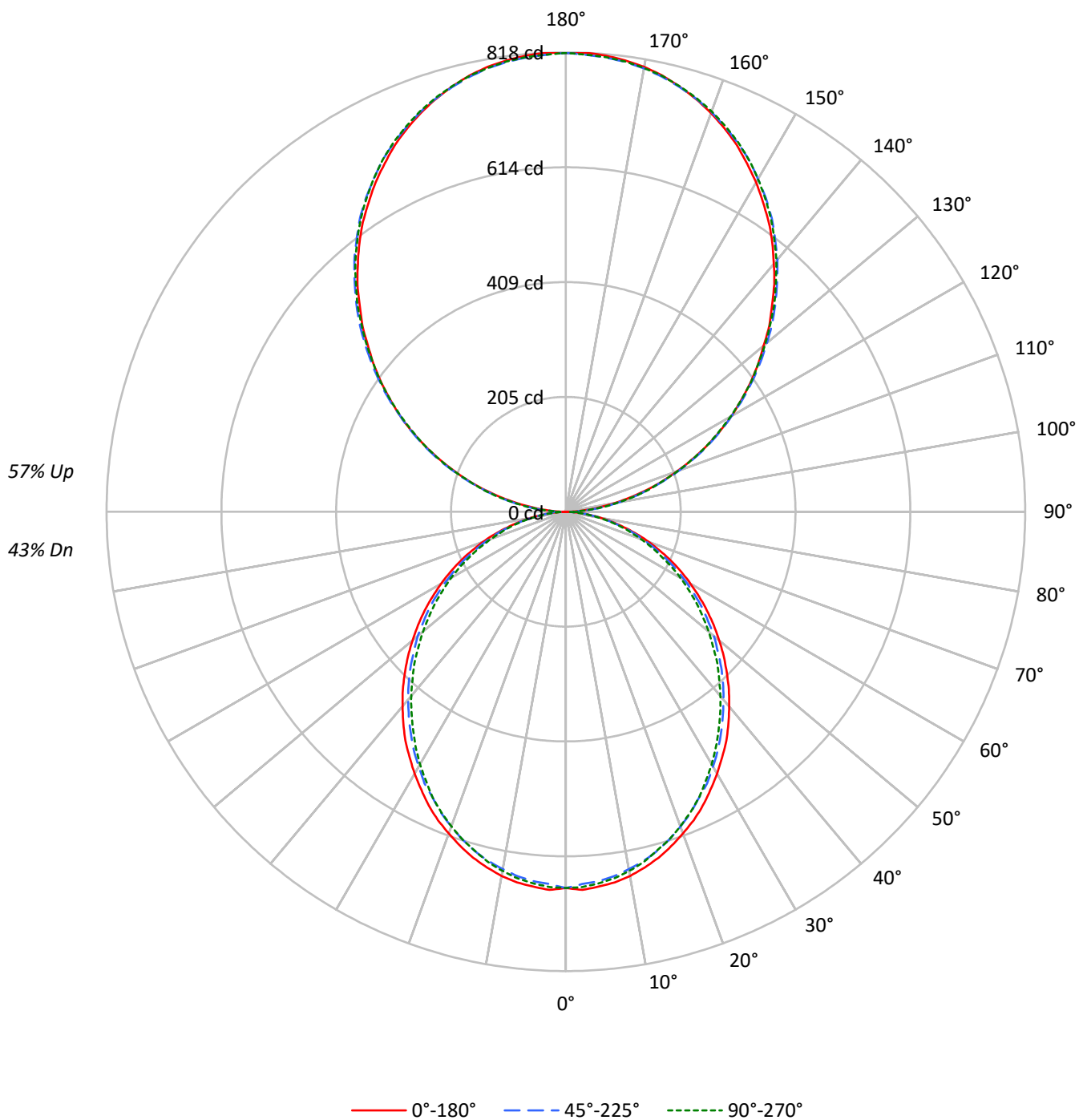
Lumens per Lamp: N/A  
Luminaire Lumens: 3990.7 lumens  
Efficiency: N/A  
Efficacy: 107.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.04' x L: 2.36' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 37  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9968  
Total Harmonic Distortion (THDi): 0.064  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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CATALOG NUMBER: DFN2DIP-TR2F0-020D030US935-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P920632

CATALOG NUMBER: DFN2DIP-TR2F0-020D030US935-FLLFL

**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 | 96 | 96 | 96 | 96 | 79 | 79 | 79 | 64 | 64 | 64 | 49 | 49 | 49 |
| 1   | 96  | 92  | 88  | 85  | 88 | 84 | 81 | 78 | 69 | 67 | 65 | 56 | 54 | 53 | 44 | 43 | 42 |
| 2   | 88  | 80  | 74  | 69  | 80 | 73 | 68 | 64 | 61 | 57 | 54 | 49 | 47 | 44 | 38 | 37 | 35 |
| 3   | 80  | 70  | 63  | 57  | 73 | 65 | 58 | 53 | 54 | 49 | 45 | 44 | 40 | 37 | 34 | 32 | 30 |
| 4   | 73  | 62  | 55  | 49  | 66 | 57 | 50 | 45 | 48 | 43 | 39 | 39 | 35 | 32 | 30 | 28 | 26 |
| 5   | 67  | 56  | 47  | 42  | 61 | 51 | 44 | 39 | 43 | 37 | 33 | 35 | 31 | 28 | 27 | 25 | 22 |
| 6   | 62  | 50  | 42  | 36  | 56 | 46 | 39 | 34 | 38 | 33 | 29 | 31 | 27 | 24 | 25 | 22 | 20 |
| 7   | 57  | 45  | 37  | 31  | 52 | 41 | 34 | 29 | 35 | 29 | 25 | 29 | 24 | 21 | 23 | 20 | 18 |
| 8   | 53  | 41  | 33  | 28  | 48 | 38 | 31 | 26 | 32 | 26 | 23 | 26 | 22 | 19 | 21 | 18 | 16 |
| 9   | 49  | 37  | 30  | 25  | 45 | 34 | 28 | 23 | 29 | 24 | 20 | 24 | 20 | 17 | 19 | 16 | 14 |
| 10  | 46  | 34  | 27  | 22  | 42 | 31 | 25 | 21 | 27 | 22 | 18 | 22 | 18 | 15 | 18 | 15 | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1494 | 1494 | 1494 |
| 5°  | 1495 | 1470 | 1481 |
| 10° | 1480 | 1447 | 1458 |
| 15° | 1456 | 1420 | 1425 |
| 20° | 1425 | 1384 | 1390 |
| 25° | 1393 | 1341 | 1350 |
| 30° | 1354 | 1301 | 1301 |
| 35° | 1317 | 1254 | 1248 |
| 40° | 1272 | 1206 | 1198 |
| 45° | 1226 | 1159 | 1147 |
| 50° | 1177 | 1109 | 1088 |
| 55° | 1125 | 1051 | 1033 |
| 60° | 1066 | 983  | 970  |
| 65° | 1001 | 911  | 896  |
| 70° | 918  | 824  | 815  |
| 75° | 805  | 720  | 737  |
| 80° | 668  | 588  | 595  |
| 85° | 453  | 370  | 371  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1226 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 63.1   | 1.6       |
| 10°-20°   | 177.4  | 4.4       |
| 20°-30°   | 260.8  | 6.5       |
| 30°-40°   | 302.9  | 7.6       |
| 40°-50°   | 302.5  | 7.6       |
| 50°-60°   | 263.8  | 6.6       |
| 60°-70°   | 195.0  | 4.9       |
| 70°-80°   | 110.3  | 2.8       |
| 80°-90°   | 31.4   | 0.8       |
| 90°-100°  | 50.6   | 1.3       |
| 100°-110° | 160.6  | 4.0       |
| 110°-120° | 274.9  | 6.9       |
| 120°-130° | 361.5  | 9.1       |
| 130°-140° | 405.7  | 10.2      |
| 140°-150° | 397.9  | 10.0      |
| 150°-160° | 333.8  | 8.4       |
| 160°-170° | 221.3  | 5.5       |
| 170°-180° | 77.4   | 1.9       |
| <hr/>     |        |           |
| 0°-30°    | 501.3  | 12.6      |
| 0°-40°    | 804.1  | 20.2      |
| 0°-60°    | 1370.4 | 34.3      |
| 0°-90°    | 1707.1 | 42.8      |
| 90°-120°  | 486.0  | 12.2      |
| 90°-150°  | 1651.1 | 41.4      |
| 90°-180°  | 2284.0 | 57.2      |
| 0°-180°   | 3990.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|------|-----|-------|-----|-------|-----|------|
| 0°   | 670 | 670   | 670 | 670   | 670 |      |
| 5°   | 670 | 668   | 660 | 666   | 664 | 64   |
| 15°  | 638 | 634   | 626 | 628   | 625 | 180  |
| 25°  | 577 | 572   | 561 | 562   | 561 | 266  |
| 35°  | 498 | 492   | 481 | 477   | 474 | 311  |
| 45°  | 405 | 401   | 391 | 384   | 381 | 313  |
| 55°  | 307 | 303   | 295 | 287   | 284 | 274  |
| 65°  | 207 | 203   | 197 | 191   | 188 | 205  |
| 75°  | 108 | 107   | 104 | 100   | 101 | 116  |
| 85°  | 26  | 26    | 25  | 23    | 23  | 29   |
| 90°  | 1   | 9     | 24  | 23    | 23  | 4    |
| 95°  | 36  | 43    | 44  | 44    | 43  | 40   |
| 105° | 148 | 150   | 152 | 153   | 153 | 156  |
| 115° | 276 | 280   | 278 | 278   | 276 | 273  |
| 125° | 401 | 407   | 405 | 403   | 402 | 358  |
| 135° | 519 | 526   | 528 | 527   | 525 | 401  |
| 145° | 630 | 635   | 639 | 640   | 637 | 394  |
| 155° | 720 | 722   | 724 | 728   | 726 | 332  |
| 165° | 784 | 783   | 783 | 788   | 784 | 221  |
| 175° | 816 | 814   | 812 | 817   | 813 | 77   |
| 180° | 817 | 817   | 817 | 817   | 817 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 0°     | 670.0 | 670.0 | 670.0 | 670.0 | 670.0 |
| 2.5°   | 673.9 | 670.7 | 663.6 | 670.0 | 668.8 |
| 5°     | 670.0 | 667.5 | 660.4 | 665.6 | 664.3 |
| 7.5°   | 665.6 | 661.7 | 654.6 | 659.8 | 658.5 |
| 10°    | 658.5 | 654.0 | 646.3 | 651.3 | 649.5 |
| 12.5°  | 648.8 | 645.0 | 637.2 | 640.4 | 639.1 |
| 15°    | 637.8 | 634.0 | 625.6 | 628.2 | 625.0 |
| 17.5°  | 624.3 | 620.5 | 612.1 | 615.3 | 612.1 |
| 20°    | 609.5 | 605.6 | 596.6 | 598.6 | 596.0 |
| 22.5°  | 594.7 | 588.9 | 580.5 | 580.5 | 579.2 |
| 25°    | 577.3 | 572.1 | 561.2 | 562.4 | 561.2 |
| 27.5°  | 557.9 | 553.4 | 545.1 | 543.2 | 539.9 |
| 30°    | 538.6 | 533.5 | 523.8 | 521.9 | 519.3 |
| 32.5°  | 518.0 | 514.2 | 503.9 | 500.0 | 497.4 |
| 35°    | 498.1 | 491.6 | 481.3 | 477.4 | 474.2 |
| 37.5°  | 475.5 | 469.7 | 459.3 | 454.9 | 451.6 |
| 40°    | 452.3 | 447.1 | 436.8 | 431.1 | 428.4 |
| 42.5°  | 429.7 | 424.6 | 414.3 | 407.9 | 404.0 |
| 45°    | 405.3 | 400.8 | 391.1 | 384.0 | 381.4 |
| 47.5°  | 381.4 | 376.9 | 366.6 | 359.5 | 355.7 |
| 50°    | 356.3 | 353.1 | 344.1 | 335.0 | 331.8 |
| 52.5°  | 331.8 | 327.3 | 318.9 | 311.9 | 307.4 |
| 55°    | 306.7 | 302.8 | 295.1 | 287.4 | 284.1 |
| 57.5°  | 281.5 | 278.4 | 269.9 | 262.3 | 259.6 |
| 60°    | 256.4 | 253.9 | 244.9 | 237.7 | 235.8 |
| 62.5°  | 232.0 | 227.4 | 221.0 | 214.6 | 212.0 |
| 65°    | 206.8 | 202.9 | 196.6 | 190.7 | 187.5 |
| 67.5°  | 181.1 | 177.8 | 172.0 | 167.6 | 165.0 |
| 70°    | 157.2 | 154.6 | 148.8 | 144.3 | 141.8 |
| 72.5°  | 132.8 | 130.2 | 126.9 | 122.4 | 120.5 |
| 75°    | 108.2 | 107.0 | 103.7 | 99.9  | 101.2 |
| 77.5°  | 86.4  | 83.8  | 82.4  | 80.5  | 78.6  |
| 80°    | 64.5  | 63.8  | 62.5  | 60.5  | 59.2  |
| 82.5°  | 43.8  | 43.8  | 43.2  | 40.6  | 40.6  |
| 85°    | 26.3  | 25.7  | 25.1  | 23.2  | 22.6  |
| 87.5°  | 11.6  | 10.3  | 9.0   | 7.1   | 6.5   |
| 90°    | 0.8   | 8.9   | 24.1  | 22.6  | 23.4  |
| 92.5°  | 15.2  | 20.7  | 21.4  | 22.1  | 22.1  |
| 95°    | 36.0  | 42.9  | 44.1  | 44.1  | 42.9  |
| 97.5°  | 59.8  | 66.2  | 69.0  | 69.0  | 69.0  |
| 100°   | 87.4  | 93.1  | 95.1  | 95.1  | 94.4  |
| 102.5° | 116.5 | 120.7 | 123.4 | 124.2 | 123.4 |
| 105°   | 148.3 | 150.2 | 151.7 | 152.9 | 152.9 |
| 107.5° | 179.8 | 182.7 | 182.7 | 183.2 | 179.8 |
| 110°   | 210.3 | 214.3 | 214.3 | 214.3 | 212.3 |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 243.3 | 247.5 | 246.8 | 244.8 | 243.3 |
| 115°   | 275.9 | 279.7 | 278.5 | 277.8 | 275.9 |
| 117.5° | 308.1 | 313.5 | 310.0 | 308.1 | 306.1 |
| 120°   | 340.6 | 346.0 | 340.6 | 340.6 | 338.4 |
| 122.5° | 370.1 | 377.0 | 373.6 | 371.6 | 370.1 |
| 125°   | 401.2 | 407.3 | 405.4 | 403.1 | 402.4 |
| 127.5° | 431.4 | 439.1 | 436.4 | 433.4 | 431.4 |
| 130°   | 459.8 | 468.6 | 467.4 | 466.0 | 463.2 |
| 132.5° | 491.5 | 498.4 | 498.9 | 495.5 | 493.5 |
| 135°   | 518.9 | 526.5 | 528.0 | 527.3 | 525.3 |
| 137.5° | 549.4 | 555.6 | 556.8 | 556.4 | 553.4 |
| 140°   | 576.3 | 582.5 | 585.9 | 585.9 | 583.2 |
| 142.5° | 603.9 | 610.0 | 612.0 | 612.8 | 610.0 |
| 145°   | 630.0 | 634.9 | 638.9 | 639.5 | 636.9 |
| 147.5° | 653.4 | 659.5 | 662.5 | 663.7 | 661.0 |
| 150°   | 677.5 | 681.7 | 684.4 | 686.6 | 684.4 |
| 152.5° | 699.0 | 703.1 | 706.5 | 709.3 | 706.5 |
| 155°   | 720.4 | 722.3 | 724.5 | 728.0 | 725.8 |
| 157.5° | 738.8 | 740.3 | 741.6 | 746.5 | 743.0 |
| 160°   | 755.4 | 756.8 | 757.6 | 761.7 | 758.8 |
| 162.5° | 770.6 | 770.6 | 771.4 | 776.0 | 772.6 |
| 165°   | 783.7 | 782.9 | 782.9 | 787.8 | 784.4 |
| 167.5° | 795.5 | 793.2 | 793.2 | 798.1 | 794.7 |
| 170°   | 804.3 | 802.4 | 801.7 | 806.6 | 802.4 |
| 172.5° | 810.5 | 808.6 | 807.8 | 812.7 | 808.6 |
| 175°   | 815.5 | 813.5 | 812.0 | 816.9 | 812.7 |
| 177.5° | 818.1 | 816.1 | 814.7 | 818.9 | 814.7 |
| 180°   | 816.9 | 816.9 | 816.9 | 816.9 | 816.9 |

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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 | 7.83             | 8.63  | 8.85  | 9.66  | 11.03 | 7.41           | 8.21  | 8.43  | 9.23  | 10.61 |
|                 | 3H   | 9.46             | 10.18 | 10.49 | 11.21 | 12.61 | 9.00           | 9.72  | 10.03 | 10.75 | 12.15 |
|                 | 4H   | 10.03            | 10.71 | 11.07 | 11.75 | 13.15 | 9.57           | 10.25 | 10.61 | 11.29 | 12.69 |
|                 | 6H   | 10.41            | 11.04 | 11.46 | 12.08 | 13.49 | 9.95           | 10.58 | 11.00 | 11.62 | 13.03 |
|                 | 8H   | 10.50            | 11.10 | 11.56 | 12.16 | 13.56 | 10.05          | 10.64 | 11.10 | 11.70 | 13.11 |
|                 | 12H  | 10.54            | 11.11 | 11.60 | 12.16 | 13.59 | 10.08          | 10.65 | 11.14 | 11.70 | 13.13 |
| 4H              | 2H   | 8.28             | 8.96  | 9.32  | 9.99  | 11.39 | 7.94           | 8.62  | 8.98  | 9.65  | 11.05 |
|                 | 3H   | 10.11            | 10.68 | 11.16 | 11.74 | 13.15 | 9.73           | 10.29 | 10.78 | 11.36 | 12.77 |
|                 | 4H   | 10.80            | 11.32 | 11.86 | 12.38 | 13.81 | 10.41          | 10.93 | 11.47 | 11.98 | 13.42 |
|                 | 6H   | 11.29            | 11.74 | 12.36 | 12.82 | 14.25 | 10.90          | 11.34 | 11.96 | 12.42 | 13.85 |
|                 | 8H   | 11.43            | 11.85 | 12.50 | 12.92 | 14.36 | 11.03          | 11.45 | 12.10 | 12.52 | 13.96 |
|                 | 12H  | 11.49            | 11.87 | 12.58 | 12.95 | 14.40 | 11.08          | 11.46 | 12.17 | 12.55 | 13.99 |
| 8H              | 4H   | 10.98            | 11.40 | 12.05 | 12.47 | 13.92 | 10.63          | 11.05 | 11.70 | 12.12 | 13.57 |
|                 | 6H   | 11.58            | 11.93 | 12.68 | 13.04 | 14.48 | 11.23          | 11.58 | 12.33 | 12.69 | 14.13 |
|                 | 8H   | 11.79            | 12.09 | 12.89 | 13.19 | 14.65 | 11.43          | 11.73 | 12.53 | 12.83 | 14.29 |
|                 | 12H  | 11.90            | 12.17 | 13.01 | 13.26 | 14.76 | 11.53          | 11.80 | 12.64 | 12.89 | 14.39 |
| 12H             | 4H   | 10.96            | 11.34 | 12.05 | 12.43 | 13.88 | 10.62          | 11.00 | 11.71 | 12.08 | 13.53 |
|                 | 6H   | 11.61            | 11.91 | 12.71 | 13.01 | 14.47 | 11.27          | 11.57 | 12.37 | 12.67 | 14.13 |
|                 | 8H   | 11.83            | 12.10 | 12.93 | 13.19 | 14.69 | 11.48          | 11.75 | 12.59 | 12.84 | 14.34 |