

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: P913109

Luminaire Tested: DFN2DIP-4P3F0-030D020US927-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P913109  
REPORT IS A COMBINATION OF REPORTS P900552 AND P897473  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-4P3F0-030D020US927-RLLONL  
Description: 3 foot, 90deg - 4way Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

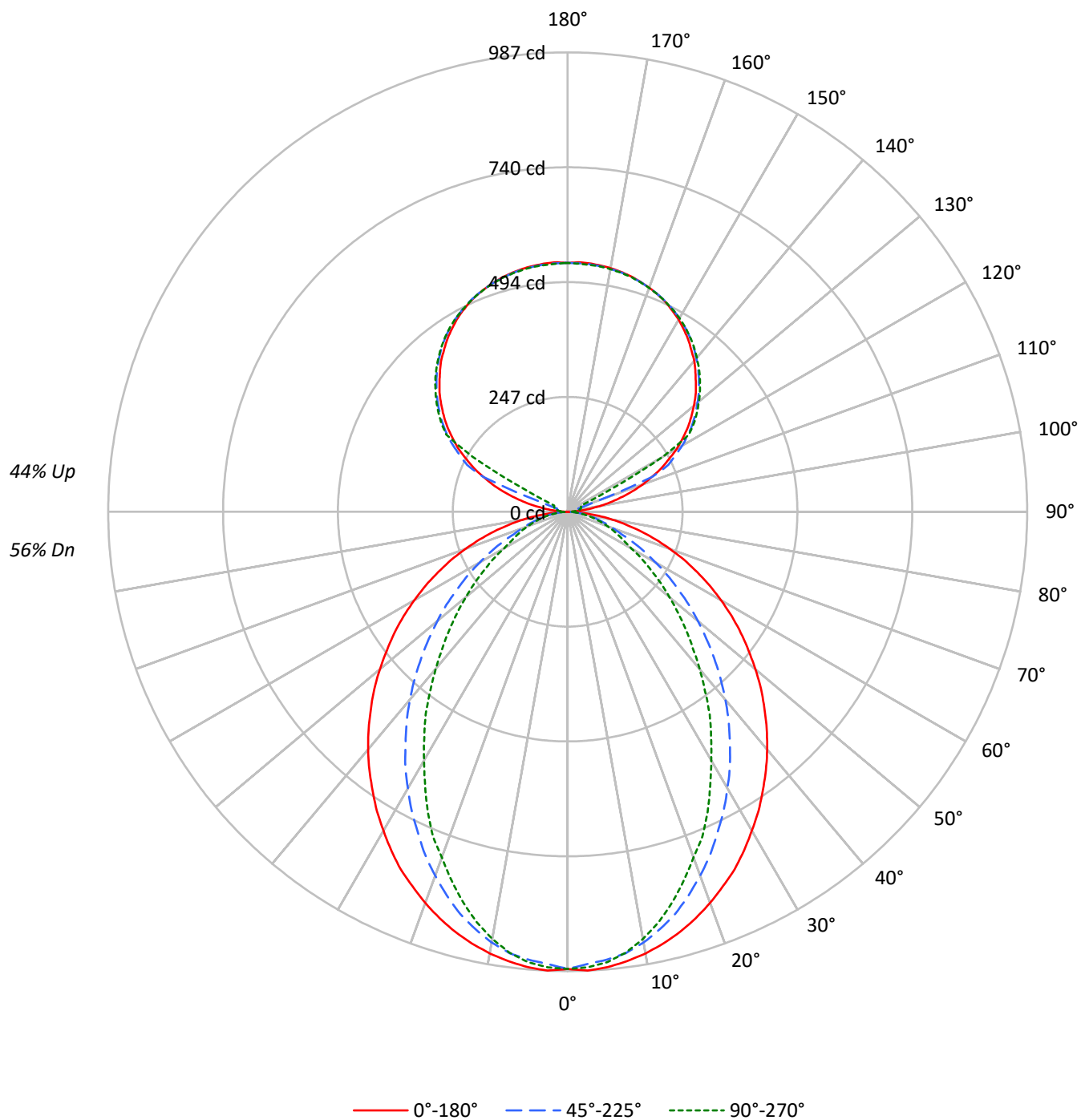
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 3588.6 lumens  
Efficiency: N/A  
Efficacy: 86.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.07' x L: 3.07' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 41.3  
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

TEST NUMBER: P913109

CATALOG NUMBER: DFN2DIP-4P3F0-030D020US927-RLLONL

### Luminous Intensity Polar Plot



TEST NUMBER: P913109

CATALOG NUMBER: DFN2DIP-4P3F0-030D020US927-RLONL

**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 | 101 | 101 | 101 | 101 | 87 | 87 | 87 | 74 | 74 | 74 | 62 | 62 | 62 |
| 1   | 100 | 96  | 92  | 88  | 93  | 89  | 86  | 83  | 77 | 75 | 72 | 66 | 64 | 63 | 56 | 54 | 53 |
| 2   | 91  | 84  | 78  | 73  | 85  | 79  | 73  | 69  | 68 | 64 | 61 | 58 | 56 | 53 | 50 | 48 | 46 |
| 3   | 84  | 74  | 67  | 62  | 78  | 70  | 63  | 58  | 61 | 56 | 52 | 52 | 49 | 46 | 44 | 42 | 40 |
| 4   | 77  | 66  | 59  | 53  | 71  | 62  | 55  | 50  | 54 | 49 | 45 | 47 | 43 | 40 | 40 | 37 | 35 |
| 5   | 71  | 59  | 51  | 46  | 66  | 56  | 49  | 43  | 49 | 43 | 39 | 42 | 38 | 35 | 36 | 33 | 31 |
| 6   | 65  | 54  | 46  | 40  | 61  | 50  | 43  | 38  | 44 | 39 | 34 | 39 | 34 | 31 | 33 | 30 | 27 |
| 7   | 61  | 49  | 41  | 35  | 56  | 46  | 39  | 34  | 40 | 35 | 30 | 35 | 31 | 27 | 30 | 27 | 24 |
| 8   | 56  | 44  | 37  | 31  | 52  | 42  | 35  | 30  | 37 | 31 | 27 | 32 | 28 | 25 | 28 | 25 | 22 |
| 9   | 53  | 41  | 33  | 28  | 49  | 38  | 32  | 27  | 34 | 28 | 25 | 30 | 25 | 22 | 26 | 23 | 20 |
| 10  | 49  | 37  | 30  | 25  | 46  | 35  | 29  | 24  | 31 | 26 | 22 | 28 | 23 | 20 | 24 | 21 | 18 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1119 | 1119 | 1119 |
| 5°  | 1120 | 1101 | 1108 |
| 10° | 1109 | 1079 | 1072 |
| 15° | 1093 | 1042 | 1016 |
| 20° | 1072 | 992  | 947  |
| 25° | 1050 | 937  | 881  |
| 30° | 1022 | 880  | 797  |
| 35° | 994  | 818  | 723  |
| 40° | 965  | 755  | 638  |
| 45° | 932  | 685  | 562  |
| 50° | 898  | 614  | 487  |
| 55° | 862  | 538  | 415  |
| 60° | 821  | 460  | 342  |
| 65° | 773  | 379  | 307  |
| 70° | 715  | 305  | 277  |
| 75° | 642  | 267  | 251  |
| 80° | 537  | 222  | 217  |
| 85° | 364  | 145  | 161  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 932 cd/sqm

TEST NUMBER: P913109

CATALOG NUMBER: DFN2DIP-4P3F0-030D020US927-RLLONL

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 92.1   | 2.6       |
| 10°-20°   | 252.7  | 7.0       |
| 20°-30°   | 354.8  | 9.9       |
| 30°-40°   | 386.8  | 10.8      |
| 40°-50°   | 355.5  | 9.9       |
| 50°-60°   | 279.2  | 7.8       |
| 60°-70°   | 181.7  | 5.1       |
| 70°-80°   | 93.5   | 2.6       |
| 80°-90°   | 24.8   | 0.7       |
| 90°-100°  | 17.6   | 0.5       |
| 100°-110° | 65.7   | 1.8       |
| 110°-120° | 174.3  | 4.9       |
| 120°-130° | 289.1  | 8.1       |
| 130°-140° | 307.1  | 8.6       |
| 140°-150° | 285.4  | 8.0       |
| 150°-160° | 229.5  | 6.4       |
| 160°-170° | 147.9  | 4.1       |
| 170°-180° | 50.9   | 1.4       |
| 0°-30°    | 699.6  | 19.5      |
| 0°-40°    | 1086.3 | 30.3      |
| 0°-60°    | 1720.9 | 48.0      |
| 0°-90°    | 2021.0 | 56.3      |
| 90°-120°  | 257.7  | 7.2       |
| 90°-150°  | 1139.3 | 31.7      |
| 90°-180°  | 1568.0 | 43.7      |
| 0°-180°   | 3588.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|------|-----|-------|-----|-------|-----|------|
| 0°   | 982 | 982   | 982 | 982   | 982 |      |
| 5°   | 982 | 978   | 966 | 974   | 972 | 93   |
| 15°  | 934 | 924   | 894 | 877   | 868 | 263  |
| 25°  | 848 | 820   | 761 | 724   | 711 | 390  |
| 35°  | 731 | 685   | 607 | 551   | 532 | 457  |
| 45°  | 597 | 538   | 444 | 381   | 360 | 461  |
| 55°  | 454 | 385   | 289 | 236   | 219 | 406  |
| 65°  | 307 | 235   | 155 | 124   | 122 | 304  |
| 75°  | 164 | 101   | 71  | 65    | 64  | 173  |
| 85°  | 38  | 20    | 17  | 17    | 17  | 44   |
| 90°  | 0   | 5     | 8   | 10    | 10  | 3    |
| 95°  | 25  | 12    | 15  | 17    | 17  | 30   |
| 105° | 118 | 129   | 24  | 28    | 29  | 126  |
| 115° | 222 | 229   | 239 | 60    | 32  | 219  |
| 125° | 315 | 320   | 327 | 330   | 331 | 281  |
| 135° | 389 | 396   | 399 | 403   | 402 | 301  |
| 145° | 452 | 451   | 458 | 460   | 458 | 282  |
| 155° | 497 | 494   | 498 | 501   | 498 | 229  |
| 165° | 524 | 522   | 523 | 526   | 523 | 148  |
| 175° | 536 | 533   | 534 | 537   | 533 | 51   |
| 180° | 535 | 535   | 535 | 535   | 535 |      |

TEST NUMBER: P913109

CATALOG NUMBER: DFN2DIP-4P3F0-030D020US927-RLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 0°     | 982.2 | 982.2 | 982.2 | 982.2 | 982.2 |
| 2.5°   | 986.7 | 982.2 | 972.4 | 981.4 | 979.6 |
| 5°     | 982.2 | 977.8 | 966.2 | 974.2 | 971.5 |
| 7.5°   | 974.2 | 968.9 | 956.5 | 960.0 | 955.5 |
| 10°    | 963.5 | 957.4 | 939.6 | 936.8 | 931.6 |
| 12.5°  | 950.2 | 942.2 | 918.2 | 912.9 | 903.1 |
| 15°    | 934.2 | 924.4 | 894.2 | 877.3 | 868.5 |
| 17.5°  | 915.5 | 901.3 | 864.0 | 844.5 | 830.2 |
| 20°    | 894.2 | 876.4 | 831.9 | 809.8 | 790.2 |
| 22.5°  | 871.2 | 850.6 | 799.1 | 768.9 | 755.6 |
| 25°    | 848.0 | 819.5 | 760.9 | 724.4 | 711.1 |
| 27.5°  | 820.5 | 790.2 | 725.3 | 683.6 | 663.1 |
| 30°    | 791.2 | 757.3 | 686.2 | 641.0 | 616.9 |
| 32.5°  | 762.6 | 721.8 | 649.0 | 595.6 | 573.3 |
| 35°    | 730.7 | 685.3 | 607.1 | 551.1 | 531.6 |
| 37.5°  | 699.6 | 650.6 | 568.0 | 506.6 | 484.5 |
| 40°    | 666.7 | 613.4 | 527.1 | 464.0 | 440.9 |
| 42.5°  | 632.9 | 576.1 | 486.2 | 420.4 | 398.2 |
| 45°    | 597.4 | 537.7 | 444.5 | 381.3 | 360.0 |
| 47.5°  | 563.6 | 500.5 | 404.5 | 341.3 | 321.8 |
| 50°    | 526.2 | 463.1 | 365.4 | 304.0 | 285.3 |
| 52.5°  | 489.7 | 423.1 | 328.0 | 269.3 | 252.5 |
| 55°    | 454.2 | 384.8 | 288.8 | 235.6 | 218.7 |
| 57.5°  | 417.8 | 346.7 | 254.3 | 204.5 | 190.2 |
| 60°    | 380.4 | 309.3 | 217.8 | 172.5 | 158.3 |
| 62.5°  | 344.0 | 272.9 | 186.6 | 144.0 | 137.0 |
| 65°    | 306.7 | 234.6 | 154.6 | 124.5 | 121.8 |
| 67.5°  | 271.2 | 199.1 | 124.5 | 109.3 | 106.6 |
| 70°    | 233.8 | 164.5 | 103.1 | 94.2  | 90.6  |
| 72.5°  | 198.2 | 132.4 | 86.2  | 79.1  | 77.3  |
| 75°    | 163.5 | 101.3 | 71.1  | 64.9  | 64.0  |
| 77.5°  | 128.9 | 71.9  | 56.0  | 52.4  | 50.6  |
| 80°    | 96.9  | 51.6  | 42.6  | 39.1  | 39.1  |
| 82.5°  | 67.5  | 34.7  | 29.3  | 27.6  | 27.6  |
| 85°    | 38.2  | 19.5  | 16.9  | 16.9  | 16.9  |
| 87.5°  | 14.3  | 7.1   | 7.1   | 6.3   | 6.3   |
| 90°    | 0.4   | 4.7   | 7.7   | 9.7   | 10.5  |
| 92.5°  | 9.7   | 8.2   | 9.3   | 10.1  | 10.5  |
| 95°    | 25.1  | 12.4  | 15.1  | 17.0  | 16.6  |
| 97.5°  | 45.2  | 13.5  | 19.7  | 20.9  | 21.3  |
| 100°   | 68.5  | 15.4  | 22.0  | 25.1  | 25.9  |
| 102.5° | 94.0  | 93.2  | 22.8  | 27.1  | 28.3  |
| 105°   | 117.6 | 129.2 | 23.6  | 27.8  | 29.4  |
| 107.5° | 145.1 | 154.7 | 24.4  | 28.6  | 30.2  |
| 110°   | 171.4 | 179.5 | 67.7  | 29.1  | 30.6  |



TEST NUMBER: P913109

CATALOG NUMBER: DFN2DIP-4P3F0-030D020US927-RLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 196.1 | 203.1 | 196.5 | 29.8  | 31.0  |
| 115°   | 222.4 | 229.0 | 238.8 | 59.6  | 31.8  |
| 117.5° | 245.3 | 253.0 | 259.6 | 204.3 | 102.9 |
| 120°   | 270.8 | 276.6 | 283.6 | 288.3 | 236.0 |
| 122.5° | 292.5 | 298.7 | 306.4 | 308.7 | 309.2 |
| 125°   | 314.6 | 319.6 | 326.9 | 329.6 | 330.8 |
| 127.5° | 334.7 | 340.1 | 345.9 | 349.7 | 350.1 |
| 130°   | 353.6 | 359.8 | 364.1 | 368.4 | 368.0 |
| 132.5° | 373.0 | 378.0 | 382.2 | 385.7 | 385.4 |
| 135°   | 389.3 | 395.5 | 398.9 | 402.8 | 402.0 |
| 137.5° | 406.2 | 410.9 | 414.8 | 418.7 | 417.5 |
| 140°   | 422.9 | 426.0 | 430.2 | 433.7 | 431.8 |
| 142.5° | 436.8 | 439.6 | 444.6 | 447.7 | 445.7 |
| 145°   | 451.5 | 451.1 | 457.7 | 460.4 | 458.5 |
| 147.5° | 464.3 | 463.1 | 469.7 | 471.6 | 470.1 |
| 150°   | 476.7 | 474.0 | 480.1 | 482.4 | 480.5 |
| 152.5° | 487.1 | 484.0 | 489.8 | 492.2 | 489.4 |
| 155°   | 497.2 | 493.7 | 498.4 | 500.7 | 497.6 |
| 157.5° | 505.3 | 502.2 | 505.7 | 508.4 | 505.3 |
| 160°   | 512.3 | 509.9 | 512.3 | 514.6 | 511.9 |
| 162.5° | 518.4 | 516.1 | 518.1 | 520.8 | 517.3 |
| 165°   | 523.9 | 521.6 | 522.7 | 525.5 | 522.7 |
| 167.5° | 528.1 | 525.8 | 527.0 | 529.7 | 526.2 |
| 170°   | 531.6 | 529.3 | 530.0 | 532.7 | 529.3 |
| 172.5° | 533.9 | 531.6 | 532.4 | 535.1 | 531.6 |
| 175°   | 535.8 | 533.1 | 533.9 | 536.6 | 532.7 |
| 177.5° | 536.6 | 533.9 | 534.3 | 537.0 | 533.5 |
| 180°   | 534.7 | 534.7 | 534.7 | 534.7 | 534.7 |

TEST NUMBER: P913109

CATALOG NUMBER: DFN2DIP-4P3F0-030D020US927-RLONL

**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 | 8.08             | 8.96  | 8.98  | 9.88  | 11.06 | 4.04           | 4.92 | 4.95 | 5.84 | 7.03  |
|                 | 3H   | 9.75             | 10.54 | 10.67 | 11.48 | 12.68 | 5.22           | 6.01 | 6.14 | 6.95 | 8.15  |
|                 | 4H   | 10.36            | 11.11 | 11.30 | 12.05 | 13.26 | 5.67           | 6.42 | 6.61 | 7.35 | 8.57  |
|                 | 6H   | 10.78            | 11.47 | 11.73 | 12.41 | 13.64 | 5.99           | 6.68 | 6.93 | 7.62 | 8.85  |
|                 | 8H   | 10.91            | 11.56 | 11.86 | 12.52 | 13.75 | 6.08           | 6.73 | 7.03 | 7.69 | 8.92  |
|                 | 12H  | 10.97            | 11.59 | 11.93 | 12.55 | 13.80 | 6.12           | 6.74 | 7.08 | 7.70 | 8.95  |
| 4H              | 2H   | 8.10             | 8.85  | 9.04  | 9.78  | 11.00 | 4.64           | 5.38 | 5.58 | 6.32 | 7.54  |
|                 | 3H   | 9.93             | 10.55 | 10.88 | 11.52 | 12.75 | 5.98           | 6.60 | 6.93 | 7.57 | 8.80  |
|                 | 4H   | 10.62            | 11.18 | 11.58 | 12.15 | 13.40 | 6.53           | 7.09 | 7.49 | 8.06 | 9.31  |
|                 | 6H   | 11.13            | 11.62 | 12.11 | 12.60 | 13.86 | 6.94           | 7.43 | 7.92 | 8.42 | 9.67  |
|                 | 8H   | 11.31            | 11.76 | 12.28 | 12.74 | 14.01 | 7.07           | 7.52 | 8.04 | 8.50 | 9.77  |
|                 | 12H  | 11.40            | 11.81 | 12.39 | 12.81 | 14.08 | 7.13           | 7.54 | 8.13 | 8.54 | 9.81  |
| 8H              | 4H   | 10.59            | 11.04 | 11.56 | 12.02 | 13.29 | 6.81           | 7.26 | 7.78 | 8.24 | 9.51  |
|                 | 6H   | 11.15            | 11.53 | 12.15 | 12.55 | 13.81 | 7.32           | 7.70 | 8.32 | 8.72 | 9.98  |
|                 | 8H   | 11.37            | 11.70 | 12.37 | 12.71 | 13.99 | 7.51           | 7.84 | 8.52 | 8.85 | 10.13 |
|                 | 12H  | 11.50            | 11.79 | 12.51 | 12.80 | 14.13 | 7.62           | 7.92 | 8.64 | 8.92 | 10.25 |
| 12H             | 4H   | 10.54            | 10.95 | 11.54 | 11.95 | 13.22 | 6.82           | 7.23 | 7.81 | 8.22 | 9.49  |
|                 | 6H   | 11.13            | 11.46 | 12.13 | 12.47 | 13.75 | 7.37           | 7.70 | 8.38 | 8.71 | 9.99  |
|                 | 8H   | 11.35            | 11.64 | 12.36 | 12.64 | 13.97 | 7.58           | 7.87 | 8.59 | 8.87 | 10.20 |