

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: P919886

Luminaire Tested: DFN2DIP-SQ2F0-050D030US935-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P919886  
REPORT IS A COMBINATION OF REPORTS P899776 AND P896659  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ2F0-050D030US935-RLLFLL  
Description: 2 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

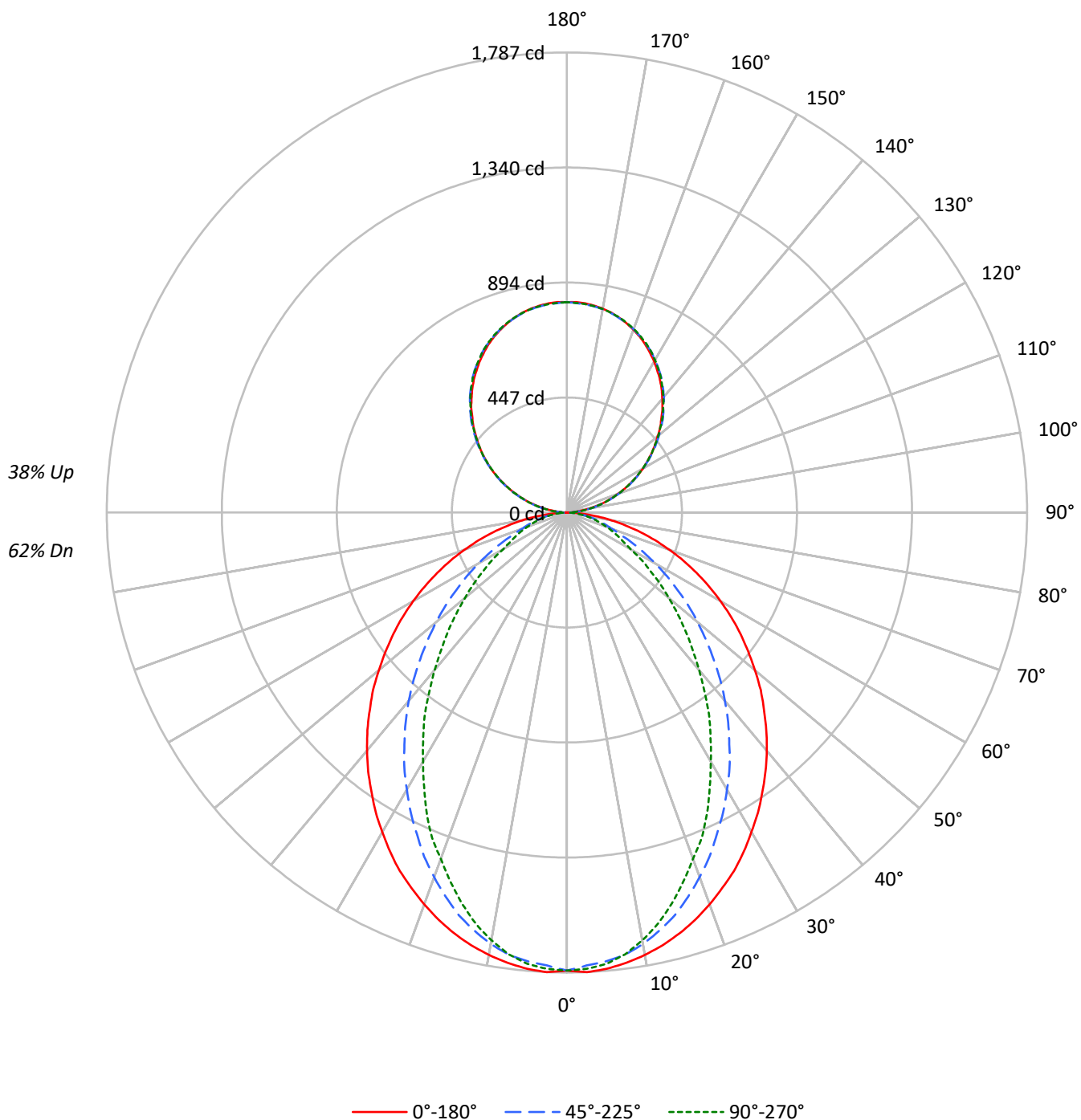
Lumens per Lamp: N/A  
Luminaire Lumens: 5945.2 lumens  
Efficiency: N/A  
Efficacy: 88.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 67  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.996  
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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### 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   | 110 | 110 | 110 | 110 | 103 | 103 | 103 | 103 | 90 | 90 | 90 | 78 | 78 | 78 | 67 | 67 | 67 |
| 1   | 101 | 97  | 93  | 90  | 94  | 91  | 88  | 85  | 80 | 77 | 75 | 69 | 68 | 66 | 60 | 59 | 58 |
| 2   | 92  | 85  | 79  | 74  | 86  | 80  | 75  | 70  | 71 | 67 | 63 | 62 | 59 | 56 | 53 | 51 | 49 |
| 3   | 85  | 75  | 68  | 63  | 79  | 71  | 65  | 60  | 63 | 58 | 54 | 55 | 51 | 48 | 48 | 45 | 43 |
| 4   | 78  | 67  | 60  | 54  | 73  | 63  | 57  | 51  | 56 | 51 | 46 | 49 | 45 | 42 | 43 | 40 | 37 |
| 5   | 72  | 60  | 52  | 46  | 67  | 57  | 50  | 44  | 51 | 45 | 41 | 45 | 40 | 37 | 39 | 36 | 33 |
| 6   | 66  | 54  | 46  | 41  | 62  | 51  | 44  | 39  | 46 | 40 | 36 | 41 | 36 | 32 | 36 | 32 | 29 |
| 7   | 62  | 49  | 42  | 36  | 58  | 47  | 40  | 35  | 42 | 36 | 32 | 37 | 33 | 29 | 33 | 29 | 26 |
| 8   | 57  | 45  | 37  | 32  | 54  | 43  | 36  | 31  | 38 | 33 | 28 | 34 | 30 | 26 | 30 | 27 | 24 |
| 9   | 53  | 41  | 34  | 29  | 50  | 39  | 32  | 28  | 35 | 30 | 26 | 32 | 27 | 24 | 28 | 24 | 22 |
| 10  | 50  | 38  | 31  | 26  | 47  | 36  | 30  | 25  | 33 | 27 | 23 | 29 | 25 | 22 | 26 | 22 | 20 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3912 | 3912 | 3912 |
| 5°  | 3912 | 3842 | 3870 |
| 10° | 3866 | 3758 | 3738 |
| 15° | 3806 | 3626 | 3538 |
| 20° | 3729 | 3446 | 3295 |
| 25° | 3650 | 3247 | 3061 |
| 30° | 3546 | 3044 | 2765 |
| 35° | 3444 | 2826 | 2505 |
| 40° | 3340 | 2601 | 2209 |
| 45° | 3219 | 2353 | 1940 |
| 50° | 3094 | 2104 | 1678 |
| 55° | 2963 | 1838 | 1426 |
| 60° | 2810 | 1562 | 1169 |
| 65° | 2635 | 1282 | 1046 |
| 70° | 2422 | 1022 | 939  |
| 75° | 2154 | 884  | 843  |
| 80° | 1769 | 717  | 715  |
| 85° | 1151 | 446  | 509  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3219 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 166.8  | 2.8       |
| 10°-20°   | 457.8  | 7.7       |
| 20°-30°   | 642.7  | 10.8      |
| 30°-40°   | 700.6  | 11.8      |
| 40°-50°   | 643.9  | 10.8      |
| 50°-60°   | 505.7  | 8.5       |
| 60°-70°   | 329.2  | 5.5       |
| 70°-80°   | 169.5  | 2.9       |
| 80°-90°   | 45.6   | 0.8       |
| 90°-100°  | 50.6   | 0.9       |
| 100°-110° | 160.6  | 2.7       |
| 110°-120° | 274.9  | 4.6       |
| 120°-130° | 361.5  | 6.1       |
| 130°-140° | 405.7  | 6.8       |
| 140°-150° | 397.9  | 6.7       |
| 150°-160° | 333.8  | 5.6       |
| 160°-170° | 221.3  | 3.7       |
| 170°-180° | 77.4   | 1.3       |
| 0°-30°    | 1267.2 | 21.3      |
| 0°-40°    | 1967.8 | 33.1      |
| 0°-60°    | 3117.4 | 52.4      |
| 0°-90°    | 3661.6 | 61.6      |
| 90°-120°  | 486.0  | 8.2       |
| 90°-150°  | 1651.1 | 27.8      |
| 90°-180°  | 2284.0 | 38.4      |
| 0°-180°   | 5945.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1779 | 1779  | 1779 | 1779  | 1779 |      |
| 5°   | 1779 | 1771  | 1750 | 1765  | 1760 | 169  |
| 15°  | 1692 | 1675  | 1620 | 1589  | 1573 | 477  |
| 25°  | 1536 | 1484  | 1378 | 1312  | 1288 | 706  |
| 35°  | 1324 | 1242  | 1100 | 998   | 963  | 828  |
| 45°  | 1082 | 974   | 805  | 691   | 652  | 836  |
| 55°  | 823  | 697   | 523  | 427   | 396  | 735  |
| 65°  | 556  | 425   | 280  | 226   | 221  | 551  |
| 75°  | 296  | 184   | 129  | 118   | 116  | 313  |
| 85°  | 69   | 35    | 31   | 31    | 31   | 79   |
| 90°  | 1    | 9     | 24   | 23    | 23   | 6    |
| 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°     | 1779.3 | 1779.3 | 1779.3 | 1779.3 | 1779.3 |
| 2.5°   | 1787.3 | 1779.3 | 1761.5 | 1777.7 | 1774.4 |
| 5°     | 1779.3 | 1771.2 | 1750.2 | 1764.7 | 1760.0 |
| 7.5°   | 1764.7 | 1755.1 | 1732.6 | 1739.0 | 1730.9 |
| 10°    | 1745.4 | 1734.1 | 1702.0 | 1697.1 | 1687.5 |
| 12.5°  | 1721.3 | 1706.8 | 1663.3 | 1653.7 | 1635.9 |
| 15°    | 1692.3 | 1674.6 | 1619.9 | 1589.3 | 1573.2 |
| 17.5°  | 1658.5 | 1632.7 | 1565.0 | 1529.6 | 1503.8 |
| 20°    | 1619.9 | 1587.6 | 1507.1 | 1467.0 | 1431.4 |
| 22.5°  | 1578.0 | 1540.9 | 1447.5 | 1392.8 | 1368.7 |
| 25°    | 1536.1 | 1484.5 | 1378.3 | 1312.3 | 1288.1 |
| 27.5°  | 1486.3 | 1431.4 | 1313.9 | 1238.2 | 1201.2 |
| 30°    | 1433.1 | 1371.8 | 1243.0 | 1161.0 | 1117.4 |
| 32.5°  | 1381.6 | 1307.4 | 1175.5 | 1078.8 | 1038.5 |
| 35°    | 1323.6 | 1241.5 | 1099.8 | 998.3  | 962.9  |
| 37.5°  | 1267.2 | 1178.6 | 1029.0 | 917.7  | 877.6  |
| 40°    | 1207.6 | 1111.1 | 954.8  | 840.5  | 798.7  |
| 42.5°  | 1146.5 | 1043.4 | 880.8  | 761.6  | 721.4  |
| 45°    | 1082.1 | 974.1  | 805.1  | 690.7  | 652.0  |
| 47.5°  | 1020.9 | 906.6  | 732.7  | 618.3  | 582.9  |
| 50°    | 953.3  | 839.0  | 661.8  | 550.6  | 516.9  |
| 52.5°  | 887.2  | 766.4  | 594.2  | 487.9  | 457.4  |
| 55°    | 822.8  | 697.1  | 523.2  | 426.7  | 396.1  |
| 57.5°  | 756.8  | 628.0  | 460.5  | 370.4  | 344.6  |
| 60°    | 689.1  | 560.3  | 394.4  | 312.5  | 286.6  |
| 62.5°  | 623.2  | 494.4  | 338.1  | 260.9  | 248.1  |
| 65°    | 555.5  | 425.1  | 280.2  | 225.5  | 220.6  |
| 67.5°  | 491.1  | 360.7  | 225.5  | 198.0  | 193.2  |
| 70°    | 423.5  | 297.9  | 186.8  | 170.6  | 164.2  |
| 72.5°  | 359.1  | 239.9  | 156.2  | 143.4  | 140.1  |
| 75°    | 296.3  | 183.5  | 128.8  | 117.5  | 116.0  |
| 77.5°  | 233.5  | 130.4  | 101.5  | 95.0   | 91.7   |
| 80°    | 175.5  | 93.4   | 77.2   | 70.9   | 70.9   |
| 82.5°  | 122.3  | 62.9   | 53.1   | 49.9   | 49.9   |
| 85°    | 69.2   | 35.4   | 30.6   | 30.6   | 30.6   |
| 87.5°  | 25.8   | 12.8   | 12.8   | 11.3   | 11.3   |
| 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 | 12.79            | 13.72 | 13.65 | 14.60 | 15.70 | 8.75           | 9.68  | 9.61  | 10.56 | 11.66 |
|                 | 3H   | 14.45            | 15.29 | 15.33 | 16.17 | 17.30 | 9.93           | 10.76 | 10.80 | 11.65 | 12.77 |
|                 | 4H   | 15.06            | 15.84 | 15.94 | 16.73 | 17.87 | 10.37          | 11.16 | 11.26 | 12.05 | 13.19 |
|                 | 6H   | 15.47            | 16.19 | 16.36 | 17.09 | 18.24 | 10.68          | 11.41 | 11.58 | 12.30 | 13.45 |
|                 | 8H   | 15.59            | 16.28 | 16.49 | 17.19 | 18.34 | 10.77          | 11.46 | 11.67 | 12.37 | 13.52 |
|                 | 12H  | 15.64            | 16.30 | 16.56 | 17.21 | 18.38 | 10.80          | 11.46 | 11.72 | 12.37 | 13.54 |
| 4H              | 2H   | 12.82            | 13.60 | 13.71 | 14.49 | 15.63 | 9.35           | 10.14 | 10.24 | 11.03 | 12.16 |
|                 | 3H   | 14.63            | 15.29 | 15.53 | 16.21 | 17.36 | 10.69          | 11.34 | 11.59 | 12.26 | 13.41 |
|                 | 4H   | 15.31            | 15.91 | 16.23 | 16.83 | 18.00 | 11.22          | 11.82 | 12.14 | 12.74 | 13.91 |
|                 | 6H   | 15.81            | 16.33 | 16.74 | 17.27 | 18.45 | 11.63          | 12.14 | 12.56 | 13.08 | 14.26 |
|                 | 8H   | 15.98            | 16.46 | 16.91 | 17.40 | 18.59 | 11.75          | 12.23 | 12.68 | 13.16 | 14.35 |
|                 | 12H  | 16.07            | 16.50 | 17.02 | 17.46 | 18.65 | 11.81          | 12.24 | 12.76 | 13.19 | 14.39 |
| 8H              | 4H   | 15.28            | 15.76 | 16.21 | 16.70 | 17.89 | 11.50          | 11.98 | 12.43 | 12.91 | 14.10 |
|                 | 6H   | 15.83            | 16.23 | 16.79 | 17.21 | 18.40 | 12.00          | 12.39 | 12.95 | 13.37 | 14.56 |
|                 | 8H   | 16.04            | 16.39 | 17.00 | 17.35 | 18.56 | 12.17          | 12.52 | 13.14 | 13.49 | 14.70 |
|                 | 12H  | 16.16            | 16.47 | 17.13 | 17.43 | 18.69 | 12.28          | 12.59 | 13.25 | 13.55 | 14.81 |
| 12H             | 4H   | 15.24            | 15.67 | 16.19 | 16.62 | 17.82 | 11.50          | 11.94 | 12.45 | 12.89 | 14.09 |
|                 | 6H   | 15.81            | 16.16 | 16.77 | 17.12 | 18.33 | 12.04          | 12.39 | 13.01 | 13.36 | 14.57 |
|                 | 8H   | 16.02            | 16.33 | 16.98 | 17.29 | 18.54 | 12.24          | 12.55 | 13.21 | 13.51 | 14.77 |