

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: P910442

Luminaire Tested: DFN2DIP-4P3F0-060D030US850-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P910442  
REPORT IS A COMBINATION OF REPORTS P899047 AND P895917  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-4P3F0-060D030US850-FLLFLL  
Description: 3 foot, 90deg - 4way Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

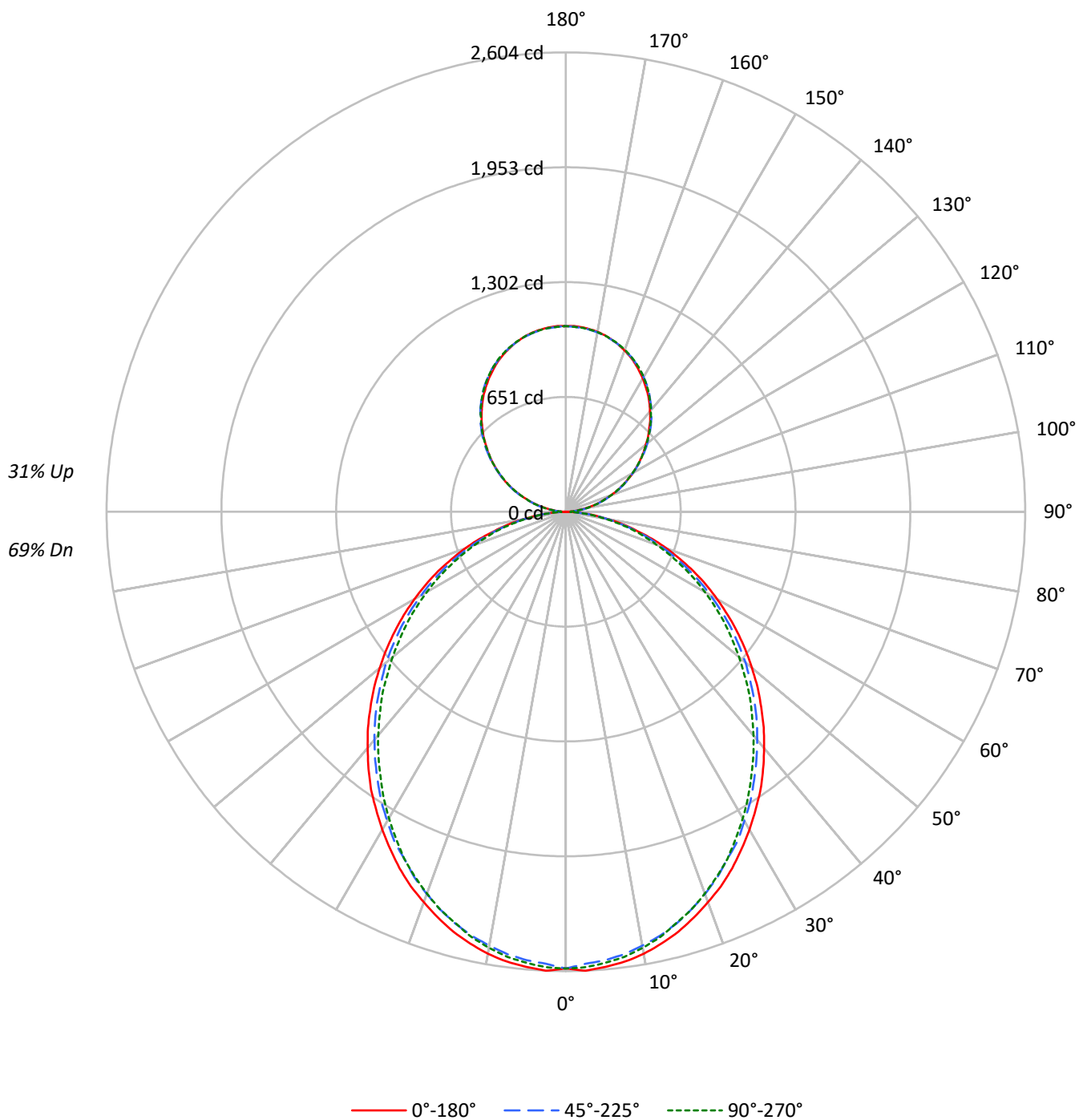
Lumens per Lamp: N/A  
Luminaire Lumens: 9531.8 lumens  
Efficiency: N/A  
Efficacy: 113.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.07' x L: 3.07' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 84.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9963  
Total Harmonic Distortion (THDi): 0.065  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P910442

CATALOG NUMBER: DFN2DIP-4P3F0-060D030US850-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P910442

CATALOG NUMBER: DFN2DIP-4P3F0-060D030US850-FLLFLL

**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 | 36 | 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°  | 2951 | 2951 | 2951 |
| 5°  | 2953 | 2907 | 2928 |
| 10° | 2928 | 2866 | 2887 |
| 15° | 2883 | 2817 | 2825 |
| 20° | 2823 | 2750 | 2760 |
| 25° | 2763 | 2669 | 2686 |
| 30° | 2689 | 2595 | 2592 |
| 35° | 2618 | 2507 | 2492 |
| 40° | 2531 | 2418 | 2397 |
| 45° | 2444 | 2328 | 2301 |
| 50° | 2350 | 2235 | 2188 |
| 55° | 2250 | 2126 | 2085 |
| 60° | 2138 | 1997 | 1966 |
| 65° | 2015 | 1864 | 1826 |
| 70° | 1858 | 1701 | 1675 |
| 75° | 1642 | 1506 | 1535 |
| 80° | 1380 | 1256 | 1269 |
| 85° | 971  | 832  | 831  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2444 cd/sqm

TEST NUMBER: P910442

CATALOG NUMBER: DFN2DIP-4P3F0-060D030US850-FLLFLL

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 243.7  | 2.6       |
| 10°-20°   | 685.6  | 7.2       |
| 20°-30°   | 1007.6 | 10.6      |
| 30°-40°   | 1170.3 | 12.3      |
| 40°-50°   | 1168.8 | 12.3      |
| 50°-60°   | 1019.2 | 10.7      |
| 60°-70°   | 753.4  | 7.9       |
| 70°-80°   | 426.3  | 4.5       |
| 80°-90°   | 115.5  | 1.2       |
| 90°-100°  | 65.1   | 0.7       |
| 100°-110° | 206.9  | 2.2       |
| 110°-120° | 354.0  | 3.7       |
| 120°-130° | 465.6  | 4.9       |
| 130°-140° | 522.6  | 5.5       |
| 140°-150° | 512.5  | 5.4       |
| 150°-160° | 429.9  | 4.5       |
| 160°-170° | 285.1  | 3.0       |
| 170°-180° | 99.7   | 1.0       |
| 0°-30°    | 1937.0 | 20.3      |
| 0°-40°    | 3107.2 | 32.6      |
| 0°-60°    | 5295.3 | 55.6      |
| 0°-90°    | 6590.4 | 69.1      |
| 90°-120°  | 626.0  | 6.6       |
| 90°-150°  | 2126.7 | 22.3      |
| 90°-180°  | 2941.0 | 30.9      |
| 0°-180°   | 9531.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2589 | 2589  | 2589 | 2589  | 2589 |      |
| 5°   | 2589 | 2579  | 2552 | 2572  | 2567 | 246  |
| 15°  | 2465 | 2450  | 2417 | 2428  | 2415 | 694  |
| 25°  | 2231 | 2211  | 2168 | 2173  | 2168 | 1026 |
| 35°  | 1925 | 1900  | 1860 | 1845  | 1832 | 1202 |
| 45°  | 1566 | 1549  | 1511 | 1484  | 1474 | 1209 |
| 55°  | 1185 | 1170  | 1140 | 1110  | 1098 | 1060 |
| 65°  | 799  | 784   | 759  | 737   | 724  | 790  |
| 75°  | 418  | 413   | 401  | 386   | 391  | 446  |
| 85°  | 102  | 100   | 97   | 90    | 87   | 114  |
| 90°  | 1    | 11    | 31   | 29    | 30   | 9    |
| 95°  | 46   | 55    | 57   | 57    | 55   | 52   |
| 105° | 191  | 194   | 195  | 197   | 197  | 202  |
| 115° | 355  | 360   | 359  | 358   | 355  | 351  |
| 125° | 517  | 525   | 522  | 519   | 518  | 462  |
| 135° | 668  | 678   | 680  | 679   | 677  | 517  |
| 145° | 812  | 818   | 823  | 824   | 820  | 507  |
| 155° | 928  | 930   | 933  | 938   | 935  | 427  |
| 165° | 1009 | 1008  | 1008 | 1015  | 1010 | 285  |
| 175° | 1050 | 1048  | 1046 | 1052  | 1047 | 100  |
| 180° | 1052 | 1052  | 1052 | 1052  | 1052 |      |

TEST NUMBER: P910442

CATALOG NUMBER: DFN2DIP-4P3F0-060D030US850-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2589.1 | 2589.1 | 2589.1 | 2589.1 | 2589.1 |
| 2.5°   | 2604.2 | 2591.7 | 2564.2 | 2589.1 | 2584.3 |
| 5°     | 2589.1 | 2579.3 | 2551.8 | 2571.7 | 2566.9 |
| 7.5°   | 2571.7 | 2556.9 | 2529.4 | 2549.5 | 2544.5 |
| 10°    | 2544.5 | 2527.1 | 2497.1 | 2517.0 | 2509.6 |
| 12.5°  | 2507.0 | 2492.1 | 2462.3 | 2474.7 | 2469.7 |
| 15°    | 2464.6 | 2449.9 | 2417.4 | 2427.5 | 2415.1 |
| 17.5°  | 2412.4 | 2397.7 | 2365.2 | 2377.5 | 2365.2 |
| 20°    | 2355.1 | 2340.3 | 2305.4 | 2312.8 | 2303.1 |
| 22.5°  | 2298.1 | 2275.6 | 2243.1 | 2243.1 | 2238.1 |
| 25°    | 2230.6 | 2210.9 | 2168.5 | 2173.3 | 2168.5 |
| 27.5°  | 2155.9 | 2138.5 | 2106.2 | 2098.9 | 2086.5 |
| 30°    | 2081.5 | 2061.3 | 2024.1 | 2016.7 | 2006.6 |
| 32.5°  | 2001.6 | 1986.9 | 1947.0 | 1931.9 | 1921.9 |
| 35°    | 1924.6 | 1899.7 | 1859.8 | 1844.7 | 1832.3 |
| 37.5°  | 1837.4 | 1814.9 | 1775.1 | 1757.5 | 1745.1 |
| 40°    | 1747.8 | 1727.7 | 1687.9 | 1665.7 | 1655.6 |
| 42.5°  | 1660.6 | 1640.5 | 1601.0 | 1575.9 | 1561.0 |
| 45°    | 1566.1 | 1548.6 | 1511.1 | 1484.0 | 1473.9 |
| 47.5°  | 1473.9 | 1456.4 | 1416.6 | 1389.1 | 1374.3 |
| 50°    | 1376.7 | 1364.3 | 1329.5 | 1294.5 | 1282.1 |
| 52.5°  | 1282.1 | 1264.7 | 1232.4 | 1205.0 | 1187.6 |
| 55°    | 1185.2 | 1170.1 | 1140.3 | 1110.4 | 1098.0 |
| 57.5°  | 1088.0 | 1075.6 | 1043.1 | 1013.3 | 1003.2 |
| 60°    | 990.8  | 981.0  | 946.2  | 918.7  | 911.3  |
| 62.5°  | 896.2  | 878.8  | 853.9  | 829.1  | 819.1  |
| 65°    | 799.3  | 784.3  | 759.4  | 736.9  | 724.5  |
| 67.5°  | 699.7  | 687.0  | 664.8  | 647.4  | 637.3  |
| 70°    | 607.5  | 597.5  | 575.0  | 557.6  | 547.8  |
| 72.5°  | 512.9  | 502.9  | 490.5  | 473.1  | 465.7  |
| 75°    | 418.1  | 413.4  | 400.7  | 385.9  | 390.9  |
| 77.5°  | 333.6  | 323.6  | 318.5  | 311.2  | 303.8  |
| 80°    | 249.1  | 246.4  | 241.4  | 234.0  | 229.0  |
| 82.5°  | 169.3  | 169.3  | 166.9  | 156.9  | 156.9  |
| 85°    | 101.9  | 99.6   | 97.1   | 89.5   | 87.2   |
| 87.5°  | 44.9   | 39.9   | 34.8   | 27.5   | 24.8   |
| 90°    | 1.0    | 11.4   | 31.1   | 29.2   | 30.2   |
| 92.5°  | 19.6   | 26.6   | 27.6   | 28.5   | 28.5   |
| 95°    | 46.4   | 55.2   | 56.8   | 56.8   | 55.2   |
| 97.5°  | 77.1   | 85.3   | 88.8   | 88.8   | 88.8   |
| 100°   | 112.6  | 119.9  | 122.4  | 122.4  | 121.5  |
| 102.5° | 150.0  | 155.5  | 158.9  | 159.9  | 158.9  |
| 105°   | 191.0  | 193.5  | 195.4  | 197.0  | 197.0  |
| 107.5° | 231.6  | 235.3  | 235.3  | 236.0  | 231.6  |
| 110°   | 270.9  | 276.0  | 276.0  | 276.0  | 273.5  |

TEST NUMBER: P910442

CATALOG NUMBER: DFN2DIP-4P3F0-060D030US850-FLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 313.4  | 318.8  | 317.8  | 315.3  | 313.4  |
| 115°   | 355.3  | 360.3  | 358.8  | 357.9  | 355.3  |
| 117.5° | 396.8  | 403.8  | 399.4  | 396.8  | 394.2  |
| 120°   | 438.7  | 445.7  | 438.7  | 438.7  | 435.8  |
| 122.5° | 476.8  | 485.6  | 481.2  | 478.6  | 476.8  |
| 125°   | 516.8  | 524.7  | 522.1  | 519.2  | 518.3  |
| 127.5° | 555.7  | 565.6  | 562.2  | 558.3  | 555.7  |
| 130°   | 592.2  | 603.6  | 602.1  | 600.2  | 596.6  |
| 132.5° | 633.1  | 642.0  | 642.7  | 638.2  | 635.7  |
| 135°   | 668.4  | 678.2  | 680.1  | 679.2  | 676.6  |
| 137.5° | 707.7  | 715.6  | 717.2  | 716.6  | 712.8  |
| 140°   | 742.3  | 750.2  | 754.7  | 754.7  | 751.1  |
| 142.5° | 777.9  | 785.7  | 788.3  | 789.3  | 785.7  |
| 145°   | 811.5  | 817.8  | 822.9  | 823.8  | 820.3  |
| 147.5° | 841.6  | 849.5  | 853.3  | 854.9  | 851.4  |
| 150°   | 872.7  | 878.1  | 881.5  | 884.4  | 881.5  |
| 152.5° | 900.3  | 905.6  | 910.0  | 913.6  | 910.0  |
| 155°   | 927.9  | 930.3  | 933.2  | 937.7  | 934.9  |
| 157.5° | 951.6  | 953.5  | 955.2  | 961.5  | 957.1  |
| 160°   | 972.9  | 974.8  | 975.8  | 981.1  | 977.4  |
| 162.5° | 992.6  | 992.6  | 993.6  | 999.5  | 995.1  |
| 165°   | 1009.4 | 1008.4 | 1008.4 | 1014.7 | 1010.3 |
| 167.5° | 1024.6 | 1021.7 | 1021.7 | 1028.0 | 1023.6 |
| 170°   | 1036.0 | 1033.5 | 1032.6 | 1038.9 | 1033.5 |
| 172.5° | 1043.9 | 1041.5 | 1040.5 | 1046.8 | 1041.5 |
| 175°   | 1050.3 | 1047.8 | 1045.9 | 1052.2 | 1046.8 |
| 177.5° | 1053.8 | 1051.2 | 1049.3 | 1054.8 | 1049.3 |
| 180°   | 1052.2 | 1052.2 | 1052.2 | 1052.2 | 1052.2 |

TEST NUMBER: P910442

CATALOG NUMBER: DFN2DIP-4P3F0-060D030US850-FLLFLL

**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 | 12.60            | 13.66 | 13.37 | 14.46 | 15.43 | 12.16          | 13.22 | 12.93 | 14.02 | 14.99 |
|                 | 3H   | 14.27            | 15.23 | 15.06 | 16.03 | 17.03 | 13.78          | 14.74 | 14.57 | 15.54 | 16.54 |
|                 | 4H   | 14.86            | 15.77 | 15.67 | 16.58 | 17.59 | 14.37          | 15.27 | 15.18 | 16.09 | 17.10 |
|                 | 6H   | 15.27            | 16.11 | 16.09 | 16.93 | 17.95 | 14.77          | 15.61 | 15.59 | 16.43 | 17.45 |
|                 | 8H   | 15.38            | 16.17 | 16.21 | 17.02 | 18.04 | 14.88          | 15.67 | 15.71 | 16.51 | 17.54 |
|                 | 12H  | 15.43            | 16.19 | 16.27 | 17.03 | 18.08 | 14.92          | 15.68 | 15.76 | 16.52 | 17.57 |
| 4H              | 2H   | 13.08            | 13.98 | 13.89 | 14.80 | 15.81 | 12.73          | 13.63 | 13.54 | 14.44 | 15.45 |
|                 | 3H   | 14.96            | 15.71 | 15.78 | 16.56 | 17.59 | 14.55          | 15.31 | 15.37 | 16.15 | 17.18 |
|                 | 4H   | 15.68            | 16.37 | 16.51 | 17.21 | 18.27 | 15.26          | 15.94 | 16.09 | 16.79 | 17.84 |
|                 | 6H   | 16.20            | 16.80 | 17.05 | 17.67 | 18.72 | 15.77          | 16.36 | 16.62 | 17.23 | 18.29 |
|                 | 8H   | 16.35            | 16.91 | 17.21 | 17.77 | 18.85 | 15.92          | 16.47 | 16.77 | 17.34 | 18.41 |
|                 | 12H  | 16.43            | 16.93 | 17.31 | 17.82 | 18.90 | 15.99          | 16.49 | 16.86 | 17.37 | 18.45 |
| 8H              | 4H   | 15.89            | 16.44 | 16.74 | 17.31 | 18.38 | 15.51          | 16.07 | 16.36 | 16.93 | 18.00 |
|                 | 6H   | 16.52            | 16.98 | 17.40 | 17.89 | 18.96 | 16.14          | 16.60 | 17.02 | 17.51 | 18.58 |
|                 | 8H   | 16.74            | 17.15 | 17.63 | 18.05 | 19.14 | 16.35          | 16.76 | 17.24 | 17.66 | 18.75 |
|                 | 12H  | 16.88            | 17.24 | 17.77 | 18.13 | 19.27 | 16.47          | 16.83 | 17.36 | 17.72 | 18.86 |
| 12H             | 4H   | 15.88            | 16.38 | 16.76 | 17.27 | 18.34 | 15.51          | 16.01 | 16.39 | 16.90 | 17.98 |
|                 | 6H   | 16.55            | 16.96 | 17.44 | 17.86 | 18.95 | 16.18          | 16.59 | 17.07 | 17.49 | 18.58 |
|                 | 8H   | 16.80            | 17.16 | 17.69 | 18.05 | 19.19 | 16.42          | 16.78 | 17.31 | 17.67 | 18.81 |