

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: P914000

Luminaire Tested: DFN2DIP-PN3F0-080D030US927-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P914000  
REPORT IS A COMBINATION OF REPORTS P899521 AND P896399  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-080D030US927-FLLFLL  
Description: 3 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

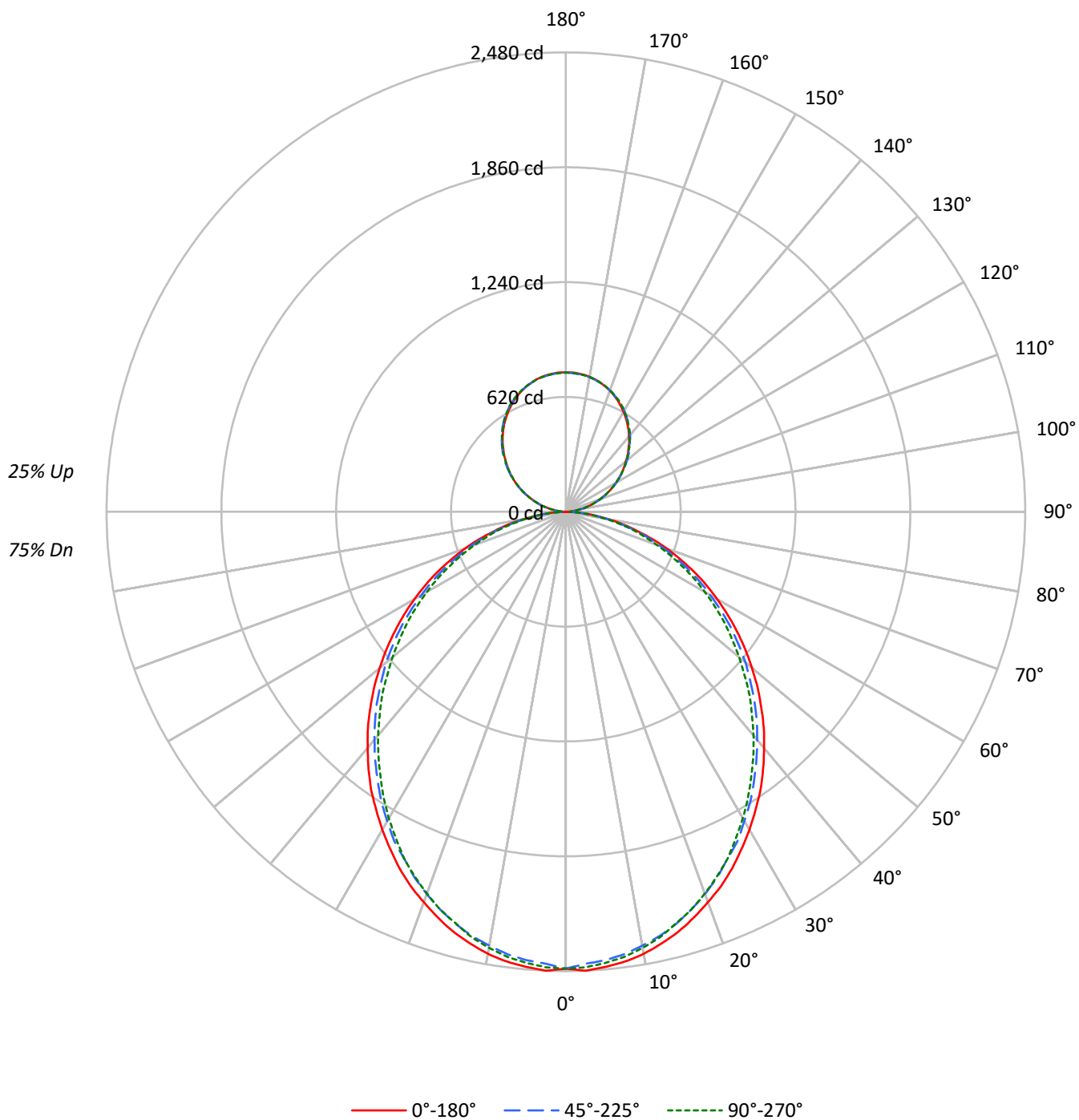
Lumens per Lamp: N/A  
Luminaire Lumens: 8377.3 lumens  
Efficiency: N/A  
Efficacy: 81.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 103.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9967  
Total Harmonic Distortion (THDi): 0.063  
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   | 113 | 113 | 113 | 113 | 108 | 108 | 108 | 108 | 97 | 97 | 97 | 88 | 88 | 88 | 79 | 79 | 79 |
| 1   | 103 | 99  | 95  | 91  | 98  | 94  | 91  | 87  | 85 | 83 | 80 | 77 | 75 | 73 | 70 | 68 | 67 |
| 2   | 94  | 86  | 80  | 75  | 89  | 82  | 77  | 72  | 75 | 70 | 66 | 68 | 64 | 61 | 62 | 59 | 56 |
| 3   | 86  | 76  | 68  | 62  | 81  | 73  | 66  | 60  | 66 | 61 | 56 | 60 | 56 | 52 | 55 | 51 | 48 |
| 4   | 79  | 67  | 59  | 53  | 75  | 64  | 57  | 51  | 59 | 53 | 48 | 54 | 49 | 45 | 49 | 45 | 41 |
| 5   | 72  | 60  | 52  | 45  | 69  | 58  | 50  | 44  | 53 | 46 | 41 | 48 | 43 | 39 | 44 | 40 | 36 |
| 6   | 67  | 54  | 46  | 40  | 63  | 52  | 44  | 39  | 48 | 41 | 36 | 44 | 38 | 34 | 40 | 35 | 32 |
| 7   | 62  | 49  | 41  | 35  | 59  | 47  | 39  | 34  | 43 | 37 | 32 | 40 | 34 | 30 | 37 | 32 | 28 |
| 8   | 58  | 45  | 37  | 31  | 55  | 43  | 36  | 30  | 40 | 33 | 29 | 37 | 31 | 27 | 34 | 29 | 25 |
| 9   | 54  | 41  | 33  | 28  | 51  | 39  | 32  | 27  | 36 | 30 | 26 | 34 | 28 | 24 | 31 | 26 | 23 |
| 10  | 50  | 38  | 30  | 25  | 48  | 36  | 29  | 25  | 34 | 28 | 23 | 31 | 26 | 22 | 29 | 24 | 21 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2883 | 2883 | 2883 |
| 5°  | 2885 | 2840 | 2860 |
| 10° | 2860 | 2800 | 2820 |
| 15° | 2817 | 2752 | 2759 |
| 20° | 2758 | 2686 | 2696 |
| 25° | 2700 | 2607 | 2623 |
| 30° | 2627 | 2534 | 2530 |
| 35° | 2558 | 2448 | 2433 |
| 40° | 2474 | 2361 | 2340 |
| 45° | 2389 | 2273 | 2245 |
| 50° | 2297 | 2181 | 2135 |
| 55° | 2200 | 2075 | 2033 |
| 60° | 2090 | 1949 | 1917 |
| 65° | 1970 | 1819 | 1780 |
| 70° | 1817 | 1659 | 1632 |
| 75° | 1606 | 1468 | 1493 |
| 80° | 1351 | 1225 | 1232 |
| 85° | 952  | 810  | 803  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 2389 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 232.1  | 2.8       |
| 10°-20°   | 653.0  | 7.8       |
| 20°-30°   | 959.7  | 11.5      |
| 30°-40°   | 1114.6 | 13.3      |
| 40°-50°   | 1113.2 | 13.3      |
| 50°-60°   | 970.7  | 11.6      |
| 60°-70°   | 717.6  | 8.6       |
| 70°-80°   | 406.0  | 4.8       |
| 80°-90°   | 109.3  | 1.3       |
| 90°-100°  | 46.5   | 0.6       |
| 100°-110° | 147.8  | 1.8       |
| 110°-120° | 252.9  | 3.0       |
| 120°-130° | 332.6  | 4.0       |
| 130°-140° | 373.3  | 4.5       |
| 140°-150° | 366.1  | 4.4       |
| 150°-160° | 307.1  | 3.7       |
| 160°-170° | 203.7  | 2.4       |
| 170°-180° | 71.2   | 0.8       |
| 0°-30°    | 1844.8 | 22.0      |
| 0°-40°    | 2959.4 | 35.3      |
| 0°-60°    | 5043.4 | 60.2      |
| 0°-90°    | 6276.2 | 74.9      |
| 90°-120°  | 447.2  | 5.3       |
| 90°-150°  | 1519.2 | 18.1      |
| 90°-180°  | 2101.0 | 25.1      |
| 0°-180°   | 8377.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2466 | 2466  | 2466 | 2466  | 2466 |      |
| 5°   | 2466 | 2457  | 2430 | 2449  | 2445 | 234  |
| 15°  | 2348 | 2333  | 2302 | 2312  | 2300 | 661  |
| 25°  | 2125 | 2106  | 2066 | 2070  | 2066 | 978  |
| 35°  | 1833 | 1809  | 1771 | 1757  | 1745 | 1145 |
| 45°  | 1492 | 1475  | 1439 | 1413  | 1404 | 1151 |
| 55°  | 1129 | 1114  | 1086 | 1058  | 1046 | 1009 |
| 65°  | 761  | 747   | 723  | 702   | 690  | 753  |
| 75°  | 398  | 394   | 382  | 368   | 372  | 425  |
| 85°  | 97   | 95    | 93   | 85    | 83   | 108  |
| 90°  | 1    | 8     | 22   | 21    | 22   | 8    |
| 95°  | 33   | 40    | 41   | 41    | 40   | 37   |
| 105° | 136  | 138   | 140  | 141   | 141  | 144  |
| 115° | 254  | 257   | 256  | 256   | 254  | 251  |
| 125° | 369  | 375   | 373  | 371   | 370  | 330  |
| 135° | 477  | 484   | 486  | 485   | 483  | 369  |
| 145° | 580  | 584   | 588  | 588   | 586  | 362  |
| 155° | 663  | 665   | 667  | 670   | 668  | 305  |
| 165° | 721  | 720   | 720  | 725   | 722  | 203  |
| 175° | 750  | 748   | 747  | 752   | 748  | 71   |
| 180° | 752  | 752   | 752  | 752   | 752  |      |



TEST NUMBER: P914000

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2465.9 | 2465.9 | 2465.9 | 2465.9 | 2465.9 |
| 2.5°   | 2480.2 | 2468.4 | 2442.3 | 2465.9 | 2461.4 |
| 5°     | 2465.9 | 2456.6 | 2430.5 | 2449.3 | 2444.8 |
| 7.5°   | 2449.3 | 2435.2 | 2409.1 | 2428.2 | 2423.4 |
| 10°    | 2423.4 | 2406.8 | 2378.4 | 2397.2 | 2390.2 |
| 12.5°  | 2387.7 | 2373.6 | 2345.2 | 2357.0 | 2352.2 |
| 15°    | 2347.5 | 2333.4 | 2302.4 | 2312.0 | 2300.2 |
| 17.5°  | 2297.6 | 2283.5 | 2252.6 | 2264.4 | 2252.6 |
| 20°    | 2243.1 | 2229.0 | 2195.8 | 2202.8 | 2193.5 |
| 22.5°  | 2188.7 | 2167.3 | 2136.4 | 2136.4 | 2131.6 |
| 25°    | 2124.6 | 2105.7 | 2065.5 | 2070.0 | 2065.5 |
| 27.5°  | 2053.3 | 2036.8 | 2006.0 | 1999.0 | 1987.2 |
| 30°    | 1982.4 | 1963.3 | 1927.9 | 1920.8 | 1911.2 |
| 32.5°  | 1906.5 | 1892.4 | 1854.3 | 1840.0 | 1830.5 |
| 35°    | 1832.9 | 1809.3 | 1771.3 | 1757.0 | 1745.2 |
| 37.5°  | 1749.9 | 1728.5 | 1690.6 | 1674.0 | 1662.2 |
| 40°    | 1664.7 | 1645.5 | 1607.6 | 1586.4 | 1576.8 |
| 42.5°  | 1581.7 | 1562.5 | 1524.8 | 1500.9 | 1486.8 |
| 45°    | 1491.6 | 1475.0 | 1439.2 | 1413.3 | 1403.8 |
| 47.5°  | 1403.8 | 1387.2 | 1349.2 | 1323.0 | 1308.9 |
| 50°    | 1311.2 | 1299.4 | 1266.1 | 1233.0 | 1221.1 |
| 52.5°  | 1221.1 | 1204.5 | 1173.9 | 1147.7 | 1131.1 |
| 55°    | 1128.8 | 1114.4 | 1086.1 | 1057.6 | 1045.8 |
| 57.5°  | 1036.3 | 1024.4 | 993.5  | 965.0  | 955.4  |
| 60°    | 943.6  | 934.4  | 901.1  | 875.0  | 867.9  |
| 62.5°  | 853.6  | 837.0  | 813.3  | 789.7  | 780.1  |
| 65°    | 761.3  | 746.9  | 723.3  | 701.9  | 690.1  |
| 67.5°  | 666.4  | 654.3  | 633.2  | 616.6  | 607.0  |
| 70°    | 578.6  | 569.0  | 547.7  | 531.1  | 521.7  |
| 72.5°  | 488.5  | 479.0  | 467.1  | 450.6  | 443.5  |
| 75°    | 398.2  | 393.7  | 381.7  | 367.6  | 372.3  |
| 77.5°  | 317.7  | 308.2  | 303.4  | 296.4  | 289.3  |
| 80°    | 237.3  | 234.7  | 230.0  | 222.9  | 218.1  |
| 82.5°  | 161.3  | 161.3  | 159.0  | 149.4  | 149.4  |
| 85°    | 97.1   | 94.8   | 92.6   | 85.3   | 83.0   |
| 87.5°  | 42.8   | 38.0   | 33.2   | 26.1   | 23.7   |
| 90°    | 0.7    | 8.2    | 22.2   | 20.8   | 21.5   |
| 92.5°  | 14.0   | 19.0   | 19.7   | 20.4   | 20.4   |
| 95°    | 33.1   | 39.5   | 40.6   | 40.6   | 39.5   |
| 97.5°  | 55.1   | 60.9   | 63.5   | 63.5   | 63.5   |
| 100°   | 80.4   | 85.6   | 87.5   | 87.5   | 86.8   |
| 102.5° | 107.2  | 111.1  | 113.5  | 114.2  | 113.5  |
| 105°   | 136.4  | 138.2  | 139.6  | 140.7  | 140.7  |
| 107.5° | 165.4  | 168.1  | 168.1  | 168.6  | 165.4  |
| 110°   | 193.5  | 197.2  | 197.2  | 197.2  | 195.4  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 223.9 | 227.8 | 227.0 | 225.2 | 223.9 |
| 115°   | 253.8 | 257.4 | 256.3 | 255.6 | 253.8 |
| 117.5° | 283.4 | 288.4 | 285.3 | 283.4 | 281.6 |
| 120°   | 313.4 | 318.4 | 313.4 | 313.4 | 311.3 |
| 122.5° | 340.6 | 346.9 | 343.7 | 341.9 | 340.6 |
| 125°   | 369.2 | 374.8 | 373.0 | 370.9 | 370.3 |
| 127.5° | 397.0 | 404.0 | 401.6 | 398.8 | 397.0 |
| 130°   | 423.0 | 431.2 | 430.1 | 428.7 | 426.2 |
| 132.5° | 452.3 | 458.6 | 459.1 | 455.9 | 454.1 |
| 135°   | 477.4 | 484.4 | 485.8 | 485.1 | 483.3 |
| 137.5° | 505.5 | 511.2 | 512.3 | 511.9 | 509.1 |
| 140°   | 530.2 | 535.9 | 539.1 | 539.1 | 536.5 |
| 142.5° | 555.6 | 561.3 | 563.1 | 563.8 | 561.3 |
| 145°   | 579.6 | 584.2 | 587.8 | 588.4 | 586.0 |
| 147.5° | 601.2 | 606.8 | 609.5 | 610.7 | 608.2 |
| 150°   | 623.4 | 627.2 | 629.7 | 631.8 | 629.7 |
| 152.5° | 643.1 | 646.9 | 650.1 | 652.6 | 650.1 |
| 155°   | 662.8 | 664.6 | 666.6 | 669.8 | 667.8 |
| 157.5° | 679.8 | 681.1 | 682.3 | 686.8 | 683.7 |
| 160°   | 695.0 | 696.3 | 697.0 | 700.8 | 698.1 |
| 162.5° | 709.0 | 709.0 | 709.7 | 714.0 | 710.8 |
| 165°   | 721.0 | 720.3 | 720.3 | 724.8 | 721.7 |
| 167.5° | 731.9 | 729.8 | 729.8 | 734.4 | 731.2 |
| 170°   | 740.1 | 738.2 | 737.6 | 742.1 | 738.2 |
| 172.5° | 745.7 | 743.9 | 743.2 | 747.7 | 743.9 |
| 175°   | 750.3 | 748.5 | 747.1 | 751.6 | 747.7 |
| 177.5° | 752.7 | 750.9 | 749.6 | 753.4 | 749.6 |
| 180°   | 751.6 | 751.6 | 751.6 | 751.6 | 751.6 |

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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 | 12.95            | 14.09 | 13.66 | 14.82 | 15.68 | 12.51          | 13.65 | 13.22 | 14.38 | 15.25 |
|                 | 3H   | 14.63            | 15.65 | 15.35 | 16.39 | 17.29 | 14.14          | 15.17 | 14.86 | 15.91 | 16.80 |
|                 | 4H   | 15.22            | 16.19 | 15.96 | 16.94 | 17.85 | 14.74          | 15.70 | 15.48 | 16.45 | 17.36 |
|                 | 6H   | 15.63            | 16.52 | 16.39 | 17.28 | 18.21 | 15.14          | 16.03 | 15.90 | 16.79 | 17.72 |
|                 | 8H   | 15.74            | 16.59 | 16.51 | 17.37 | 18.30 | 15.25          | 16.10 | 16.02 | 16.88 | 17.81 |
|                 | 12H  | 15.80            | 16.61 | 16.57 | 17.38 | 18.33 | 15.30          | 16.11 | 16.07 | 16.88 | 17.84 |
| 4H              | 2H   | 13.44            | 14.41 | 14.19 | 15.16 | 16.07 | 13.09          | 14.06 | 13.83 | 14.81 | 15.72 |
|                 | 3H   | 15.32            | 16.13 | 16.08 | 16.92 | 17.84 | 14.92          | 15.73 | 15.68 | 16.52 | 17.44 |
|                 | 4H   | 16.05            | 16.78 | 16.82 | 17.57 | 18.52 | 15.63          | 16.36 | 16.40 | 17.15 | 18.10 |
|                 | 6H   | 16.57            | 17.21 | 17.36 | 18.02 | 18.98 | 16.15          | 16.79 | 16.94 | 17.60 | 18.56 |
|                 | 8H   | 16.72            | 17.32 | 17.52 | 18.13 | 19.10 | 16.30          | 16.89 | 17.09 | 17.70 | 18.67 |
|                 | 12H  | 16.81            | 17.34 | 17.62 | 18.17 | 19.15 | 16.37          | 16.91 | 17.18 | 17.73 | 18.71 |
| 8H              | 4H   | 16.26            | 16.86 | 17.05 | 17.66 | 18.64 | 15.89          | 16.49 | 16.68 | 17.29 | 18.27 |
|                 | 6H   | 16.90            | 17.39 | 17.72 | 18.24 | 19.21 | 16.52          | 17.01 | 17.34 | 17.86 | 18.84 |
|                 | 8H   | 17.11            | 17.55 | 17.95 | 18.40 | 19.39 | 16.73          | 17.17 | 17.57 | 18.02 | 19.01 |
|                 | 12H  | 17.26            | 17.64 | 18.09 | 18.48 | 19.53 | 16.86          | 17.24 | 17.69 | 18.08 | 19.13 |
| 12H             | 4H   | 16.26            | 16.79 | 17.07 | 17.62 | 18.60 | 15.90          | 16.43 | 16.71 | 17.26 | 18.24 |
|                 | 6H   | 16.93            | 17.37 | 17.76 | 18.21 | 19.20 | 16.56          | 17.00 | 17.40 | 17.85 | 18.84 |
|                 | 8H   | 17.18            | 17.56 | 18.01 | 18.40 | 19.45 | 16.81          | 17.19 | 17.64 | 18.03 | 19.08 |