

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: P924884

Luminaire Tested: DFN2DIP-PN3F0-070D030US950-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P924884  
REPORT IS A COMBINATION OF REPORTS P899519 AND P896399  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-070D030US950-FLLFLL  
Description: 3 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

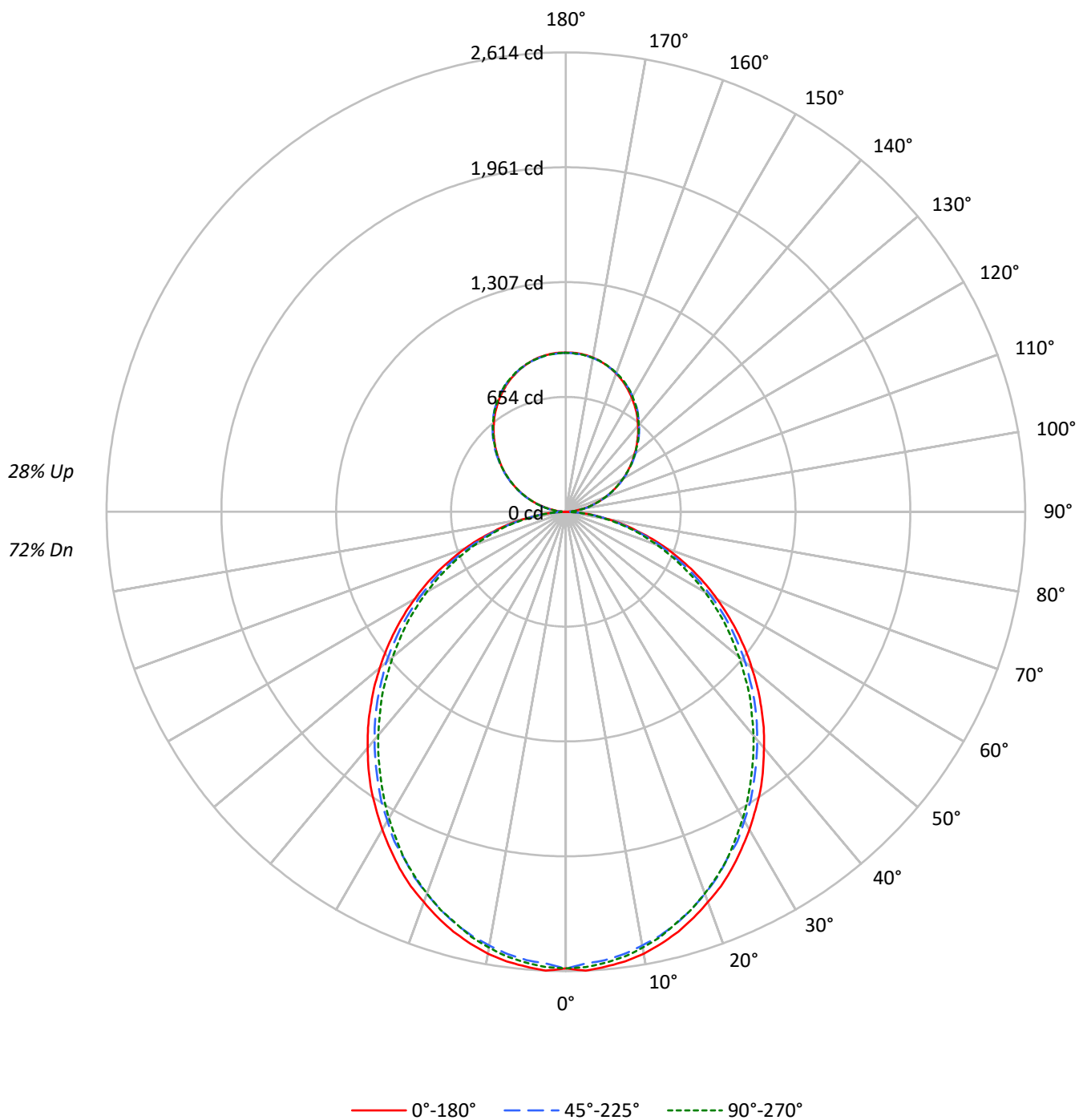
Lumens per Lamp: N/A  
Luminaire Lumens: 9144.1 lumens  
Efficiency: N/A  
Efficacy: 98.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 92.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.946  
Total Harmonic Distortion (THDi): 0.132  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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CATALOG NUMBER: DFN2DIP-PN3F0-070D030US950-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P924884

CATALOG NUMBER: DFN2DIP-PN3F0-070D030US950-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   | 112 | 112 | 112 | 112 | 107 | 107 | 107 | 107 | 96 | 96 | 96 | 86 | 86 | 86 | 77 | 77 | 77 |
| 1   | 103 | 98  | 94  | 91  | 97  | 93  | 90  | 87  | 84 | 81 | 79 | 76 | 74 | 72 | 68 | 66 | 65 |
| 2   | 94  | 86  | 80  | 74  | 89  | 82  | 76  | 71  | 74 | 69 | 65 | 66 | 63 | 60 | 60 | 57 | 55 |
| 3   | 85  | 76  | 68  | 62  | 81  | 72  | 65  | 60  | 65 | 60 | 55 | 59 | 54 | 51 | 53 | 49 | 46 |
| 4   | 78  | 67  | 59  | 52  | 74  | 64  | 56  | 51  | 58 | 52 | 47 | 52 | 48 | 44 | 47 | 43 | 40 |
| 5   | 72  | 60  | 51  | 45  | 68  | 57  | 49  | 44  | 52 | 46 | 41 | 47 | 42 | 38 | 43 | 38 | 35 |
| 6   | 66  | 54  | 45  | 39  | 63  | 51  | 44  | 38  | 47 | 40 | 36 | 43 | 37 | 33 | 39 | 34 | 31 |
| 7   | 62  | 49  | 41  | 35  | 58  | 47  | 39  | 34  | 43 | 36 | 32 | 39 | 34 | 30 | 35 | 31 | 27 |
| 8   | 57  | 44  | 36  | 31  | 54  | 43  | 35  | 30  | 39 | 33 | 28 | 36 | 30 | 26 | 33 | 28 | 25 |
| 9   | 53  | 41  | 33  | 28  | 51  | 39  | 32  | 27  | 36 | 30 | 25 | 33 | 28 | 24 | 30 | 26 | 22 |
| 10  | 50  | 37  | 30  | 25  | 47  | 36  | 29  | 24  | 33 | 27 | 23 | 30 | 25 | 22 | 28 | 24 | 20 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3037 | 3037 | 3037 |
| 5°  | 3041 | 2993 | 3014 |
| 10° | 3014 | 2951 | 2972 |
| 15° | 2968 | 2900 | 2907 |
| 20° | 2906 | 2830 | 2840 |
| 25° | 2845 | 2748 | 2764 |
| 30° | 2768 | 2670 | 2666 |
| 35° | 2696 | 2579 | 2564 |
| 40° | 2606 | 2488 | 2466 |
| 45° | 2517 | 2396 | 2365 |
| 50° | 2420 | 2299 | 2250 |
| 55° | 2318 | 2187 | 2143 |
| 60° | 2202 | 2054 | 2020 |
| 65° | 2076 | 1917 | 1875 |
| 70° | 1915 | 1748 | 1719 |
| 75° | 1693 | 1547 | 1574 |
| 80° | 1423 | 1290 | 1298 |
| 85° | 1004 | 854  | 847  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2517 cd/sqm

TEST NUMBER: P924884

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 244.6  | 2.7       |
| 10°-20°   | 688.1  | 7.5       |
| 20°-30°   | 1011.3 | 11.1      |
| 30°-40°   | 1174.5 | 12.8      |
| 40°-50°   | 1173.1 | 12.8      |
| 50°-60°   | 1022.9 | 11.2      |
| 60°-70°   | 756.1  | 8.3       |
| 70°-80°   | 427.8  | 4.7       |
| 80°-90°   | 115.5  | 1.3       |
| 90°-100°  | 56.0   | 0.6       |
| 100°-110° | 178.0  | 1.9       |
| 110°-120° | 304.6  | 3.3       |
| 120°-130° | 400.5  | 4.4       |
| 130°-140° | 449.6  | 4.9       |
| 140°-150° | 440.9  | 4.8       |
| 150°-160° | 369.8  | 4.0       |
| 160°-170° | 245.3  | 2.7       |
| 170°-180° | 85.7   | 0.9       |
| 0°-30°    | 1943.9 | 21.3      |
| 0°-40°    | 3118.5 | 34.1      |
| 0°-60°    | 5314.4 | 58.1      |
| 0°-90°    | 6613.8 | 72.3      |
| 90°-120°  | 538.5  | 5.9       |
| 90°-150°  | 1829.5 | 20.0      |
| 90°-180°  | 2530.0 | 27.7      |
| 0°-180°   | 9144.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2598 | 2598  | 2598 | 2598  | 2598 |      |
| 5°   | 2598 | 2589  | 2561 | 2581  | 2576 | 247  |
| 15°  | 2474 | 2459  | 2426 | 2436  | 2424 | 697  |
| 25°  | 2239 | 2219  | 2176 | 2181  | 2176 | 1030 |
| 35°  | 1932 | 1907  | 1866 | 1851  | 1839 | 1206 |
| 45°  | 1572 | 1554  | 1517 | 1489  | 1479 | 1213 |
| 55°  | 1189 | 1174  | 1144 | 1114  | 1102 | 1063 |
| 65°  | 802  | 787   | 762  | 740   | 727  | 793  |
| 75°  | 420  | 415   | 402  | 387   | 392  | 448  |
| 85°  | 102  | 100   | 98   | 90    | 88   | 114  |
| 90°  | 1    | 10    | 27   | 25    | 26   | 9    |
| 95°  | 40   | 48    | 49   | 49    | 48   | 44   |
| 105° | 164  | 166   | 168  | 169   | 169  | 173  |
| 115° | 306  | 310   | 309  | 308   | 306  | 302  |
| 125° | 445  | 451   | 449  | 447   | 446  | 397  |
| 135° | 575  | 583   | 585  | 584   | 582  | 444  |
| 145° | 698  | 704   | 708  | 709   | 706  | 436  |
| 155° | 798  | 800   | 803  | 807   | 804  | 367  |
| 165° | 868  | 868   | 868  | 873   | 869  | 245  |
| 175° | 904  | 901   | 900  | 905   | 900  | 86   |
| 180° | 905  | 905   | 905  | 905   | 905  |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2598.4 | 2598.4 | 2598.4 | 2598.4 | 2598.4 |
| 2.5°   | 2613.6 | 2601.1 | 2573.5 | 2598.4 | 2593.6 |
| 5°     | 2598.4 | 2588.7 | 2561.1 | 2581.0 | 2576.2 |
| 7.5°   | 2581.0 | 2566.1 | 2538.5 | 2558.7 | 2553.7 |
| 10°    | 2553.7 | 2536.1 | 2506.2 | 2526.1 | 2518.7 |
| 12.5°  | 2516.0 | 2501.2 | 2471.2 | 2483.6 | 2478.6 |
| 15°    | 2473.6 | 2458.7 | 2426.1 | 2436.2 | 2423.7 |
| 17.5°  | 2421.1 | 2406.3 | 2373.6 | 2386.1 | 2373.6 |
| 20°    | 2363.5 | 2348.7 | 2313.7 | 2321.2 | 2311.4 |
| 22.5°  | 2306.3 | 2283.8 | 2251.2 | 2251.2 | 2246.1 |
| 25°    | 2238.8 | 2218.8 | 2176.5 | 2181.2 | 2176.5 |
| 27.5°  | 2163.7 | 2146.2 | 2113.9 | 2106.4 | 2093.9 |
| 30°    | 2089.0 | 2068.7 | 2031.4 | 2024.0 | 2013.9 |
| 32.5°  | 2008.8 | 1994.1 | 1954.0 | 1938.9 | 1928.8 |
| 35°    | 1931.5 | 1906.6 | 1866.5 | 1851.4 | 1838.9 |
| 37.5°  | 1844.0 | 1821.5 | 1781.4 | 1763.9 | 1751.4 |
| 40°    | 1754.1 | 1734.0 | 1693.9 | 1671.7 | 1661.6 |
| 42.5°  | 1666.6 | 1646.5 | 1606.7 | 1581.5 | 1566.7 |
| 45°    | 1571.7 | 1554.3 | 1516.6 | 1489.3 | 1479.2 |
| 47.5°  | 1479.2 | 1461.7 | 1421.7 | 1394.1 | 1379.3 |
| 50°    | 1381.7 | 1369.2 | 1334.2 | 1299.3 | 1286.8 |
| 52.5°  | 1286.8 | 1269.3 | 1237.0 | 1209.4 | 1191.8 |
| 55°    | 1189.4 | 1174.4 | 1144.4 | 1114.5 | 1102.0 |
| 57.5°  | 1091.9 | 1079.5 | 1046.8 | 1016.9 | 1006.9 |
| 60°    | 994.4  | 984.5  | 949.6  | 922.0  | 914.6  |
| 62.5°  | 899.4  | 882.0  | 857.1  | 832.2  | 822.1  |
| 65°    | 802.2  | 787.0  | 762.2  | 739.6  | 727.1  |
| 67.5°  | 702.2  | 689.6  | 667.2  | 649.8  | 639.7  |
| 70°    | 609.7  | 599.7  | 577.1  | 559.6  | 549.8  |
| 72.5°  | 514.8  | 504.8  | 492.3  | 474.8  | 467.4  |
| 75°    | 419.7  | 414.9  | 402.1  | 387.3  | 392.4  |
| 77.5°  | 334.9  | 324.7  | 319.7  | 312.2  | 304.9  |
| 80°    | 249.9  | 247.4  | 242.3  | 234.9  | 229.8  |
| 82.5°  | 169.9  | 169.9  | 167.5  | 157.5  | 157.5  |
| 85°    | 102.4  | 100.0  | 97.6   | 89.9   | 87.5   |
| 87.5°  | 45.0   | 40.1   | 35.0   | 27.6   | 24.9   |
| 90°    | 0.9    | 9.8    | 26.7   | 25.1   | 25.9   |
| 92.5°  | 16.9   | 22.9   | 23.8   | 24.5   | 24.5   |
| 95°    | 39.9   | 47.5   | 48.8   | 48.8   | 47.5   |
| 97.5°  | 66.3   | 73.4   | 76.4   | 76.4   | 76.4   |
| 100°   | 96.8   | 103.1  | 105.3  | 105.3  | 104.6  |
| 102.5° | 129.1  | 133.8  | 136.7  | 137.6  | 136.7  |
| 105°   | 164.3  | 166.5  | 168.1  | 169.4  | 169.4  |
| 107.5° | 199.2  | 202.4  | 202.4  | 203.0  | 199.2  |
| 110°   | 233.1  | 237.5  | 237.5  | 237.5  | 235.3  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 269.6 | 274.3 | 273.4 | 271.2 | 269.6 |
| 115°   | 305.7 | 310.0 | 308.6 | 307.9 | 305.7 |
| 117.5° | 341.3 | 347.4 | 343.5 | 341.3 | 339.1 |
| 120°   | 377.4 | 383.4 | 377.4 | 377.4 | 374.9 |
| 122.5° | 410.1 | 417.8 | 413.9 | 411.7 | 410.1 |
| 125°   | 444.6 | 451.3 | 449.1 | 446.7 | 445.9 |
| 127.5° | 478.0 | 486.5 | 483.6 | 480.2 | 478.0 |
| 130°   | 509.4 | 519.3 | 517.9 | 516.3 | 513.3 |
| 132.5° | 544.6 | 552.3 | 552.8 | 549.0 | 546.8 |
| 135°   | 575.0 | 583.4 | 585.1 | 584.2 | 582.0 |
| 137.5° | 608.7 | 615.6 | 617.0 | 616.5 | 613.1 |
| 140°   | 638.5 | 645.4 | 649.2 | 649.2 | 646.1 |
| 142.5° | 669.1 | 675.9 | 678.1 | 679.0 | 675.9 |
| 145°   | 698.0 | 703.5 | 707.9 | 708.6 | 705.7 |
| 147.5° | 724.0 | 730.8 | 734.0 | 735.4 | 732.4 |
| 150°   | 750.7 | 755.4 | 758.3 | 760.8 | 758.3 |
| 152.5° | 774.5 | 779.0 | 782.9 | 785.9 | 782.9 |
| 155°   | 798.2 | 800.3 | 802.8 | 806.6 | 804.2 |
| 157.5° | 818.6 | 820.2 | 821.7 | 827.1 | 823.3 |
| 160°   | 836.9 | 838.6 | 839.4 | 844.0 | 840.8 |
| 162.5° | 853.8 | 853.8 | 854.7 | 859.8 | 856.0 |
| 165°   | 868.3 | 867.5 | 867.5 | 872.9 | 869.1 |
| 167.5° | 881.4 | 878.9 | 878.9 | 884.4 | 880.5 |
| 170°   | 891.2 | 889.0 | 888.3 | 893.7 | 889.0 |
| 172.5° | 898.0 | 895.9 | 895.0 | 900.5 | 895.9 |
| 175°   | 903.5 | 901.3 | 899.7 | 905.2 | 900.5 |
| 177.5° | 906.5 | 904.3 | 902.7 | 907.3 | 902.7 |
| 180°   | 905.2 | 905.2 | 905.2 | 905.2 | 905.2 |

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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 | 12.94            | 14.04 | 13.68 | 14.80 | 15.72 | 12.50          | 13.60 | 13.24 | 14.37 | 15.28 |
|                 | 3H   | 14.61            | 15.60 | 15.36 | 16.37 | 17.32 | 14.13          | 15.12 | 14.88 | 15.89 | 16.83 |
|                 | 4H   | 15.21            | 16.14 | 15.98 | 16.92 | 17.88 | 14.72          | 15.66 | 15.49 | 16.44 | 17.39 |
|                 | 6H   | 15.61            | 16.48 | 16.40 | 17.27 | 18.24 | 15.12          | 15.99 | 15.91 | 16.78 | 17.75 |
|                 | 8H   | 15.72            | 16.55 | 16.52 | 17.35 | 18.33 | 15.23          | 16.06 | 16.02 | 16.86 | 17.83 |
|                 | 12H  | 15.78            | 16.56 | 16.58 | 17.36 | 18.36 | 15.28          | 16.07 | 16.08 | 16.87 | 17.86 |
| 4H              | 2H   | 13.43            | 14.36 | 14.20 | 15.14 | 16.10 | 13.07          | 14.01 | 13.85 | 14.79 | 15.75 |
|                 | 3H   | 15.31            | 16.09 | 16.09 | 16.90 | 17.87 | 14.90          | 15.69 | 15.69 | 16.50 | 17.47 |
|                 | 4H   | 16.03            | 16.74 | 16.83 | 17.55 | 18.55 | 15.61          | 16.32 | 16.41 | 17.14 | 18.14 |
|                 | 6H   | 16.55            | 17.17 | 17.37 | 18.00 | 19.01 | 16.13          | 16.74 | 16.94 | 17.58 | 18.59 |
|                 | 8H   | 16.70            | 17.28 | 17.52 | 18.11 | 19.13 | 16.27          | 16.85 | 17.10 | 17.68 | 18.70 |
|                 | 12H  | 16.78            | 17.30 | 17.62 | 18.16 | 19.18 | 16.35          | 16.86 | 17.19 | 17.72 | 18.74 |
| 8H              | 4H   | 16.24            | 16.81 | 17.06 | 17.65 | 18.67 | 15.87          | 16.44 | 16.69 | 17.28 | 18.30 |
|                 | 6H   | 16.87            | 17.35 | 17.72 | 18.22 | 19.24 | 16.50          | 16.97 | 17.35 | 17.85 | 18.87 |
|                 | 8H   | 17.09            | 17.51 | 17.95 | 18.39 | 19.42 | 16.71          | 17.13 | 17.57 | 18.00 | 19.04 |
|                 | 12H  | 17.23            | 17.60 | 18.09 | 18.47 | 19.56 | 16.83          | 17.20 | 17.69 | 18.07 | 19.16 |
| 12H             | 4H   | 16.23            | 16.75 | 17.08 | 17.61 | 18.63 | 15.87          | 16.39 | 16.71 | 17.25 | 18.27 |
|                 | 6H   | 16.90            | 17.33 | 17.76 | 18.20 | 19.23 | 16.54          | 16.96 | 17.40 | 17.83 | 18.87 |
|                 | 8H   | 17.15            | 17.52 | 18.01 | 18.39 | 19.48 | 16.78          | 17.15 | 17.64 | 18.02 | 19.11 |