

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: P915743

Luminaire Tested: DFN2DIP-TR4F0-120D040US927-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P915743  
REPORT IS A COMBINATION OF REPORTS P901905 AND P898849  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-120D040US927-FLLONL  
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

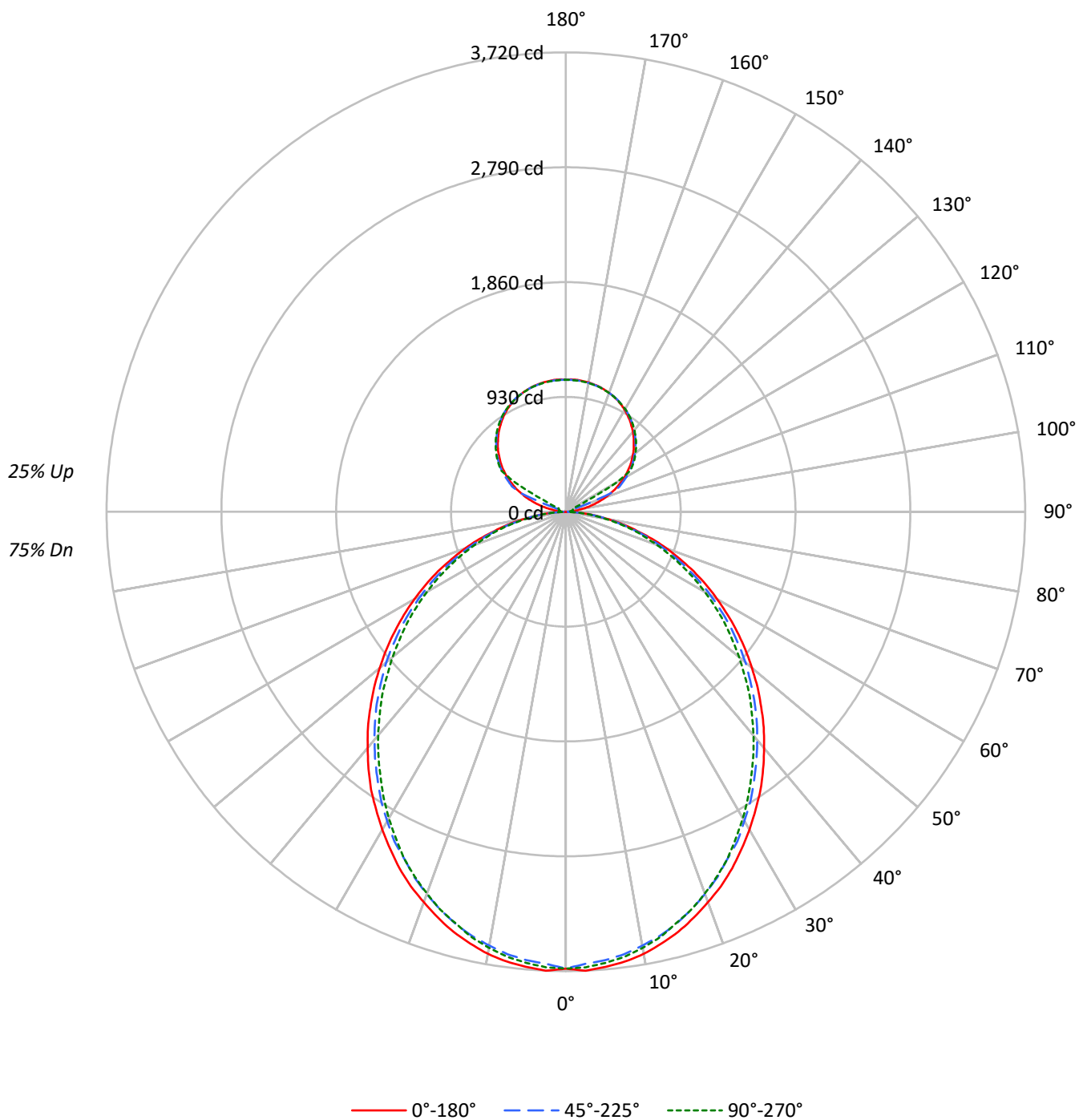
Lumens per Lamp: N/A  
Luminaire Lumens: 12548.1 lumens  
Efficiency: N/A  
Efficacy: 80.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 156  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9821  
Total Harmonic Distortion (THDi): 0.08  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P915743

CATALOG NUMBER: DFN2DIP-TR4F0-120D040US927-FLLONL

### Luminous Intensity Polar Plot



TEST NUMBER: P915743

CATALOG NUMBER: DFN2DIP-TR4F0-120D040US927-FLONL

**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  | 46  | 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  | 37 | 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°  | 2939 | 2939 | 2939 |
| 5°  | 2943 | 2898 | 2917 |
| 10° | 2919 | 2859 | 2877 |
| 15° | 2877 | 2811 | 2816 |
| 20° | 2819 | 2746 | 2752 |
| 25° | 2761 | 2668 | 2679 |
| 30° | 2689 | 2595 | 2586 |
| 35° | 2620 | 2509 | 2488 |
| 40° | 2536 | 2422 | 2394 |
| 45° | 2452 | 2336 | 2299 |
| 50° | 2360 | 2244 | 2188 |
| 55° | 2263 | 2139 | 2086 |
| 60° | 2155 | 2013 | 1969 |
| 65° | 2036 | 1884 | 1831 |
| 70° | 1885 | 1726 | 1683 |
| 75° | 1676 | 1536 | 1546 |
| 80° | 1424 | 1295 | 1284 |
| 85° | 1030 | 879  | 851  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 2452 cd/sqm

TEST NUMBER: P915743

CATALOG NUMBER: DFN2DIP-TR4F0-120D040US927-FLLONL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 348.1   | 2.8       |
| 10°-20°   | 979.5   | 7.8       |
| 20°-30°   | 1439.5  | 11.5      |
| 30°-40°   | 1671.9  | 13.3      |
| 40°-50°   | 1669.9  | 13.3      |
| 50°-60°   | 1456.0  | 11.6      |
| 60°-70°   | 1076.3  | 8.6       |
| 70°-80°   | 609.0   | 4.9       |
| 80°-90°   | 162.6   | 1.3       |
| 90°-100°  | 35.2    | 0.3       |
| 100°-110° | 131.5   | 1.0       |
| 110°-120° | 348.6   | 2.8       |
| 120°-130° | 578.2   | 4.6       |
| 130°-140° | 614.2   | 4.9       |
| 140°-150° | 570.9   | 4.5       |
| 150°-160° | 458.9   | 3.7       |
| 160°-170° | 295.7   | 2.4       |
| 170°-180° | 101.8   | 0.8       |
| 0°-30°    | 2767.2  | 22.1      |
| 0°-40°    | 4439.1  | 35.4      |
| 0°-60°    | 7565.0  | 60.3      |
| 0°-90°    | 9413.0  | 75.0      |
| 90°-120°  | 515.3   | 4.1       |
| 90°-150°  | 2278.7  | 18.2      |
| 90°-180°  | 3135.0  | 25.0      |
| 0°-180°   | 12548.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3699 | 3699  | 3699 | 3699  | 3699 |      |
| 5°   | 3699 | 3685  | 3646 | 3674  | 3667 | 351  |
| 15°  | 3521 | 3500  | 3454 | 3468  | 3450 | 992  |
| 25°  | 3187 | 3158  | 3098 | 3105  | 3098 | 1466 |
| 35°  | 2749 | 2714  | 2657 | 2636  | 2618 | 1717 |
| 45°  | 2237 | 2212  | 2159 | 2120  | 2106 | 1727 |
| 55°  | 1693 | 1672  | 1629 | 1586  | 1569 | 1514 |
| 65°  | 1142 | 1120  | 1085 | 1053  | 1035 | 1129 |
| 75°  | 597  | 591   | 572  | 551   | 558  | 638  |
| 85°  | 146  | 142   | 139  | 128   | 124  | 162  |
| 90°  | 1    | 9     | 15   | 19    | 21   | 12   |
| 95°  | 50   | 25    | 30   | 34    | 33   | 60   |
| 105° | 235  | 258   | 47   | 56    | 59   | 251  |
| 115° | 445  | 458   | 477  | 119   | 64   | 438  |
| 125° | 629  | 639   | 654  | 659   | 662  | 561  |
| 135° | 778  | 791   | 798  | 806   | 804  | 601  |
| 145° | 903  | 902   | 915  | 921   | 917  | 565  |
| 155° | 994  | 988   | 997  | 1001  | 995  | 458  |
| 165° | 1048 | 1043  | 1045 | 1051  | 1045 | 296  |
| 175° | 1072 | 1066  | 1068 | 1073  | 1066 | 102  |
| 180° | 1069 | 1069  | 1069 | 1069  | 1069 |      |

TEST NUMBER: P915743

CATALOG NUMBER: DFN2DIP-TR4F0-120D040US927-FLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3698.9 | 3698.9 | 3698.9 | 3698.9 | 3698.9 |
| 2.5°   | 3720.4 | 3702.7 | 3663.4 | 3698.9 | 3692.1 |
| 5°     | 3698.9 | 3684.9 | 3645.7 | 3674.0 | 3667.2 |
| 7.5°   | 3674.0 | 3652.8 | 3613.6 | 3642.3 | 3635.2 |
| 10°    | 3635.2 | 3610.2 | 3567.6 | 3595.9 | 3585.3 |
| 12.5°  | 3581.5 | 3560.4 | 3517.8 | 3535.5 | 3528.3 |
| 15°    | 3521.2 | 3500.0 | 3453.6 | 3467.9 | 3450.2 |
| 17.5°  | 3446.5 | 3425.3 | 3378.9 | 3396.6 | 3378.9 |
| 20°    | 3364.6 | 3343.4 | 3293.7 | 3304.2 | 3290.2 |
| 22.5°  | 3283.0 | 3251.0 | 3204.5 | 3204.5 | 3197.4 |
| 25°    | 3186.8 | 3158.5 | 3098.1 | 3105.0 | 3098.1 |
| 27.5°  | 3080.0 | 3055.1 | 3009.1 | 2998.5 | 2980.8 |
| 30°    | 2973.6 | 2944.9 | 2891.7 | 2881.2 | 2866.8 |
| 32.5°  | 2859.6 | 2838.5 | 2781.5 | 2760.0 | 2745.7 |
| 35°    | 2749.4 | 2714.0 | 2657.0 | 2635.5 | 2617.8 |
| 37.5°  | 2624.9 | 2592.9 | 2535.9 | 2511.0 | 2493.2 |
| 40°    | 2497.0 | 2468.4 | 2411.3 | 2379.6 | 2365.3 |
| 42.5°  | 2372.5 | 2343.8 | 2287.2 | 2251.4 | 2230.2 |
| 45°    | 2237.4 | 2212.5 | 2158.9 | 2120.0 | 2105.7 |
| 47.5°  | 2105.7 | 2080.7 | 2023.8 | 1984.6 | 1963.4 |
| 50°    | 1966.8 | 1949.1 | 1899.3 | 1849.4 | 1831.7 |
| 52.5°  | 1831.7 | 1806.8 | 1760.8 | 1721.5 | 1696.6 |
| 55°    | 1693.2 | 1671.7 | 1629.0 | 1586.4 | 1568.7 |
| 57.5°  | 1554.3 | 1536.6 | 1490.2 | 1447.6 | 1433.2 |
| 60°    | 1415.5 | 1401.5 | 1351.7 | 1312.5 | 1301.9 |
| 62.5°  | 1280.4 | 1255.4 | 1220.0 | 1184.5 | 1170.2 |
| 65°    | 1141.9 | 1120.4 | 1084.9 | 1052.8 | 1035.1 |
| 67.5°  | 999.7  | 981.5  | 949.8  | 925.0  | 910.6  |
| 70°    | 867.9  | 853.6  | 821.5  | 796.6  | 782.7  |
| 72.5°  | 732.8  | 718.5  | 700.8  | 675.9  | 665.3  |
| 75°    | 597.4  | 590.6  | 572.4  | 551.4  | 558.5  |
| 77.5°  | 476.6  | 462.2  | 455.1  | 444.5  | 434.0  |
| 80°    | 355.8  | 352.0  | 344.9  | 334.4  | 327.2  |
| 82.5°  | 241.9  | 241.9  | 238.5  | 224.2  | 224.2  |
| 85°    | 145.7  | 142.3  | 138.9  | 127.9  | 124.5  |
| 87.5°  | 64.2   | 57.0   | 49.8   | 39.2   | 35.5   |
| 90°    | 0.7    | 9.3    | 15.4   | 19.4   | 20.8   |
| 92.5°  | 19.4   | 16.2   | 18.5   | 20.1   | 20.8   |
| 95°    | 50.2   | 24.7   | 30.1   | 34.1   | 33.3   |
| 97.5°  | 90.5   | 27.1   | 39.5   | 41.8   | 42.5   |
| 100°   | 137.0  | 31.0   | 44.1   | 50.2   | 51.8   |
| 102.5° | 188.0  | 186.6  | 45.6   | 54.1   | 56.5   |
| 105°   | 235.2  | 258.5  | 47.2   | 55.7   | 58.8   |
| 107.5° | 290.2  | 309.5  | 48.8   | 57.3   | 60.4   |
| 110°   | 342.9  | 359.0  | 135.5  | 58.1   | 61.1   |



TEST NUMBER: P915743

CATALOG NUMBER: DFN2DIP-TR4F0-120D040US927-FLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 392.4  | 406.2  | 393.1  | 59.6   | 61.9   |
| 115°   | 444.9  | 458.0  | 477.4  | 119.1  | 63.5   |
| 117.5° | 490.6  | 506.0  | 519.3  | 408.5  | 205.8  |
| 120°   | 541.7  | 553.3  | 567.2  | 576.5  | 472.1  |
| 122.5° | 584.9  | 597.4  | 612.9  | 617.5  | 618.3  |
| 125°   | 629.1  | 639.2  | 653.9  | 659.3  | 661.6  |
| 127.5° | 669.3  | 680.2  | 691.8  | 699.6  | 700.3  |
| 130°   | 707.3  | 719.7  | 728.1  | 736.6  | 735.9  |
| 132.5° | 745.9  | 756.1  | 764.5  | 771.5  | 770.8  |
| 135°   | 778.5  | 790.9  | 797.8  | 805.6  | 804.1  |
| 137.5° | 812.5  | 821.7  | 829.6  | 837.3  | 835.0  |
| 140°   | 845.7  | 852.0  | 860.5  | 867.4  | 863.6  |
| 142.5° | 873.7  | 879.1  | 889.1  | 895.2  | 891.4  |
| 145°   | 903.1  | 902.3  | 915.4  | 920.8  | 916.9  |
| 147.5° | 928.5  | 926.2  | 939.4  | 943.3  | 940.2  |
| 150°   | 953.3  | 947.9  | 960.4  | 965.0  | 961.1  |
| 152.5° | 974.2  | 968.0  | 979.6  | 984.3  | 978.9  |
| 155°   | 994.3  | 987.5  | 996.7  | 1001.3 | 995.1  |
| 157.5° | 1010.6 | 1004.4 | 1011.5 | 1016.8 | 1010.6 |
| 160°   | 1024.5 | 1019.9 | 1024.5 | 1029.1 | 1023.7 |
| 162.5° | 1036.9 | 1032.3 | 1036.2 | 1041.6 | 1034.6 |
| 165°   | 1047.7 | 1043.1 | 1045.4 | 1050.8 | 1045.4 |
| 167.5° | 1056.3 | 1051.5 | 1054.0 | 1059.4 | 1052.4 |
| 170°   | 1063.3 | 1058.6 | 1060.1 | 1065.6 | 1058.6 |
| 172.5° | 1067.9 | 1063.3 | 1064.8 | 1070.2 | 1063.3 |
| 175°   | 1071.7 | 1066.3 | 1067.9 | 1073.2 | 1065.6 |
| 177.5° | 1073.2 | 1067.9 | 1068.7 | 1074.1 | 1067.1 |
| 180°   | 1069.4 | 1069.4 | 1069.4 | 1069.4 | 1069.4 |

TEST NUMBER: P915743

CATALOG NUMBER: DFN2DIP-TR4F0-120D040US927-FLLONL

**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 | 13.06            | 14.20 | 13.77 | 14.93 | 15.79 | 12.63          | 13.77 | 13.34 | 14.50 | 15.36 |
|                 | 3H   | 14.74            | 15.77 | 15.46 | 16.50 | 17.40 | 14.27          | 15.29 | 14.99 | 16.03 | 16.93 |
|                 | 4H   | 15.34            | 16.31 | 16.08 | 17.06 | 17.96 | 14.87          | 15.84 | 15.61 | 16.58 | 17.49 |
|                 | 6H   | 15.75            | 16.65 | 16.51 | 17.41 | 18.33 | 15.28          | 16.17 | 16.03 | 16.93 | 17.85 |
|                 | 8H   | 15.87            | 16.72 | 16.63 | 17.50 | 18.42 | 15.39          | 16.24 | 16.16 | 17.02 | 17.94 |
|                 | 12H  | 15.92            | 16.74 | 16.69 | 17.51 | 18.46 | 15.44          | 16.26 | 16.21 | 17.03 | 17.98 |
| 4H              | 2H   | 13.55            | 14.52 | 14.30 | 15.27 | 16.18 | 13.21          | 14.18 | 13.95 | 14.93 | 15.83 |
|                 | 3H   | 15.44            | 16.25 | 16.20 | 17.04 | 17.96 | 15.05          | 15.86 | 15.81 | 16.64 | 17.57 |
|                 | 4H   | 16.17            | 16.91 | 16.94 | 17.69 | 18.64 | 15.76          | 16.50 | 16.54 | 17.28 | 18.24 |
|                 | 6H   | 16.70            | 17.34 | 17.49 | 18.15 | 19.11 | 16.29          | 16.93 | 17.08 | 17.74 | 18.70 |
|                 | 8H   | 16.86            | 17.45 | 17.65 | 18.26 | 19.23 | 16.45          | 17.04 | 17.24 | 17.85 | 18.82 |
|                 | 12H  | 16.94            | 17.48 | 17.76 | 18.31 | 19.28 | 16.52          | 17.06 | 17.34 | 17.89 | 18.86 |
| 8H              | 4H   | 16.39            | 16.99 | 17.18 | 17.79 | 18.76 | 16.03          | 16.63 | 16.82 | 17.43 | 18.40 |
|                 | 6H   | 17.03            | 17.53 | 17.85 | 18.37 | 19.35 | 16.67          | 17.16 | 17.49 | 18.01 | 18.98 |
|                 | 8H   | 17.25            | 17.69 | 18.09 | 18.54 | 19.53 | 16.89          | 17.33 | 17.72 | 18.17 | 19.16 |
|                 | 12H  | 17.40            | 17.79 | 18.24 | 18.62 | 19.67 | 17.02          | 17.40 | 17.85 | 18.24 | 19.29 |
| 12H             | 4H   | 16.39            | 16.92 | 17.20 | 17.75 | 18.73 | 16.04          | 16.57 | 16.85 | 17.40 | 18.38 |
|                 | 6H   | 17.06            | 17.50 | 17.90 | 18.35 | 19.34 | 16.71          | 17.15 | 17.55 | 18.00 | 18.99 |
|                 | 8H   | 17.32            | 17.71 | 18.16 | 18.54 | 19.59 | 16.96          | 17.35 | 17.80 | 18.19 | 19.23 |