

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: P913829

Luminaire Tested: DFN2DIP-PN2F0-050D040US927-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P913829  
REPORT IS A COMBINATION OF REPORTS P901007 AND P897905  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN2F0-050D040US927-FLLONL  
Description: 2 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

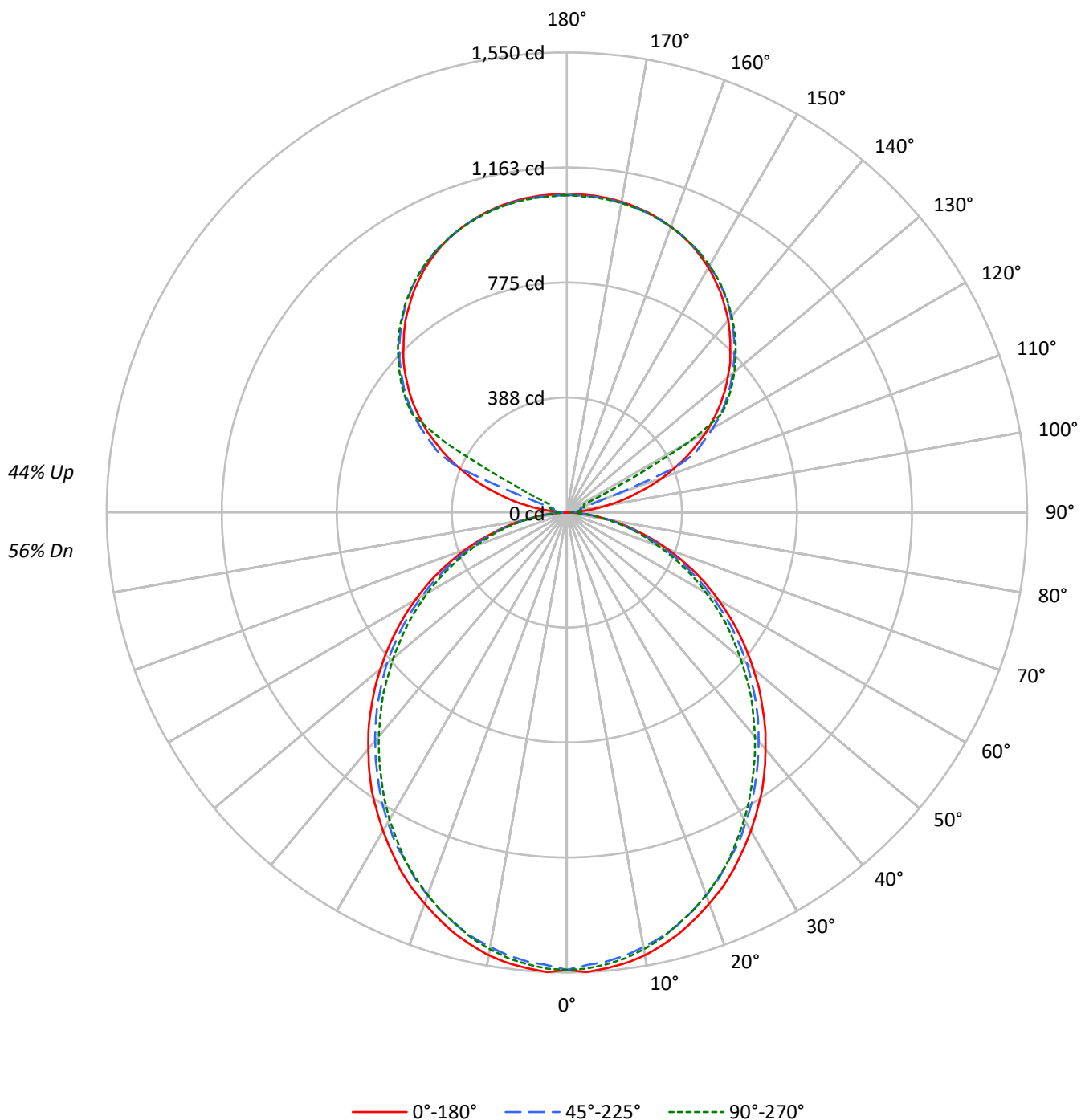
Lumens per Lamp: N/A  
Luminaire Lumens: 7058.3 lumens  
Efficiency: N/A  
Efficacy: 86.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.17' x L: 2.29' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 82  
Input Voltage (V): 120  
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

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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   | 108 | 108 | 108 | 108 |  | 101 | 101 | 101 | 101 |  | 86 | 86 | 86 |  | 73 | 73 | 73 |  | 61 | 61 | 61 |
| 1   | 99  | 95  | 91  | 87  |  | 92  | 88  | 85  | 82  |  | 76 | 73 | 71 |  | 65 | 63 | 61 |  | 54 | 53 | 52 |
| 2   | 90  | 83  | 76  | 71  |  | 84  | 77  | 72  | 67  |  | 66 | 62 | 59 |  | 57 | 54 | 51 |  | 48 | 46 | 44 |
| 3   | 82  | 73  | 65  | 59  |  | 76  | 68  | 61  | 56  |  | 59 | 54 | 50 |  | 50 | 46 | 43 |  | 42 | 39 | 37 |
| 4   | 75  | 64  | 56  | 50  |  | 70  | 60  | 53  | 48  |  | 52 | 47 | 42 |  | 45 | 40 | 37 |  | 38 | 35 | 32 |
| 5   | 69  | 57  | 49  | 43  |  | 64  | 54  | 46  | 41  |  | 47 | 41 | 36 |  | 40 | 36 | 32 |  | 34 | 31 | 28 |
| 6   | 64  | 52  | 43  | 37  |  | 59  | 48  | 41  | 36  |  | 42 | 36 | 32 |  | 36 | 32 | 28 |  | 31 | 27 | 25 |
| 7   | 59  | 47  | 39  | 33  |  | 55  | 44  | 36  | 31  |  | 38 | 32 | 28 |  | 33 | 28 | 25 |  | 28 | 25 | 22 |
| 8   | 55  | 42  | 34  | 29  |  | 51  | 40  | 33  | 28  |  | 35 | 29 | 25 |  | 30 | 26 | 22 |  | 26 | 22 | 20 |
| 9   | 51  | 39  | 31  | 26  |  | 47  | 36  | 29  | 25  |  | 32 | 26 | 22 |  | 28 | 23 | 20 |  | 24 | 20 | 18 |
| 10  | 48  | 35  | 28  | 23  |  | 44  | 33  | 27  | 22  |  | 29 | 24 | 20 |  | 26 | 21 | 18 |  | 22 | 19 | 16 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3338 | 3338 | 3338 |
| 5°  | 3338 | 3284 | 3309 |
| 10° | 3306 | 3233 | 3259 |
| 15° | 3252 | 3173 | 3184 |
| 20° | 3181 | 3092 | 3108 |
| 25° | 3110 | 2996 | 3020 |
| 30° | 3022 | 2907 | 2910 |
| 35° | 2939 | 2803 | 2794 |
| 40° | 2838 | 2697 | 2683 |
| 45° | 2736 | 2591 | 2569 |
| 50° | 2624 | 2479 | 2438 |
| 55° | 2507 | 2350 | 2316 |
| 60° | 2375 | 2198 | 2177 |
| 65° | 2229 | 2039 | 2012 |
| 70° | 2044 | 1846 | 1833 |
| 75° | 1791 | 1614 | 1662 |
| 80° | 1482 | 1318 | 1348 |
| 85° | 1006 | 833  | 845  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2736 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 145.1  | 2.1       |
| 10°-20°   | 408.1  | 5.8       |
| 20°-30°   | 599.8  | 8.5       |
| 30°-40°   | 696.6  | 9.9       |
| 40°-50°   | 695.8  | 9.9       |
| 50°-60°   | 606.7  | 8.6       |
| 60°-70°   | 448.5  | 6.4       |
| 70°-80°   | 253.7  | 3.6       |
| 80°-90°   | 68.8   | 1.0       |
| 90°-100°  | 35.2   | 0.5       |
| 100°-110° | 131.5  | 1.9       |
| 110°-120° | 348.6  | 4.9       |
| 120°-130° | 578.2  | 8.2       |
| 130°-140° | 614.2  | 8.7       |
| 140°-150° | 570.9  | 8.1       |
| 150°-160° | 458.9  | 6.5       |
| 160°-170° | 295.7  | 4.2       |
| 170°-180° | 101.8  | 1.4       |
| 0°-30°    | 1153.0 | 16.3      |
| 0°-40°    | 1849.6 | 26.2      |
| 0°-60°    | 3152.1 | 44.7      |
| 0°-90°    | 3923.2 | 55.6      |
| 90°-120°  | 515.3  | 7.3       |
| 90°-150°  | 2278.7 | 32.3      |
| 90°-180°  | 3135.0 | 44.4      |
| 0°-180°   | 7058.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1541 | 1541  | 1541 | 1541  | 1541 |      |
| 5°   | 1541 | 1535  | 1519 | 1531  | 1528 | 146  |
| 15°  | 1467 | 1458  | 1439 | 1445  | 1438 | 413  |
| 25°  | 1328 | 1316  | 1291 | 1294  | 1291 | 611  |
| 35°  | 1146 | 1131  | 1107 | 1098  | 1091 | 715  |
| 45°  | 932  | 922   | 900  | 883   | 877  | 719  |
| 55°  | 706  | 697   | 679  | 661   | 654  | 631  |
| 65°  | 476  | 467   | 452  | 439   | 431  | 470  |
| 75°  | 249  | 246   | 238  | 230   | 233  | 266  |
| 85°  | 61   | 59    | 58   | 53    | 52   | 68   |
| 90°  | 1    | 9     | 15   | 19    | 21   | 7    |
| 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 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1541.2 | 1541.2 | 1541.2 | 1541.2 | 1541.2 |
| 2.5°   | 1550.1 | 1542.8 | 1526.5 | 1541.2 | 1538.4 |
| 5°     | 1541.2 | 1535.4 | 1519.0 | 1530.8 | 1528.0 |
| 7.5°   | 1530.8 | 1522.0 | 1505.7 | 1517.7 | 1514.7 |
| 10°    | 1514.7 | 1504.3 | 1486.5 | 1498.3 | 1493.9 |
| 12.5°  | 1492.3 | 1483.5 | 1465.8 | 1473.1 | 1470.1 |
| 15°    | 1467.1 | 1458.3 | 1439.0 | 1445.0 | 1437.6 |
| 17.5°  | 1436.0 | 1427.2 | 1407.9 | 1415.2 | 1407.9 |
| 20°    | 1401.9 | 1393.1 | 1372.4 | 1376.7 | 1370.9 |
| 22.5°  | 1367.9 | 1354.6 | 1335.2 | 1335.2 | 1332.2 |
| 25°    | 1327.9 | 1316.1 | 1290.9 | 1293.7 | 1290.9 |
| 27.5°  | 1283.3 | 1273.0 | 1253.8 | 1249.3 | 1242.0 |
| 30°    | 1239.0 | 1227.1 | 1204.9 | 1200.5 | 1194.5 |
| 32.5°  | 1191.5 | 1182.7 | 1159.0 | 1150.0 | 1144.1 |
| 35°    | 1145.6 | 1130.8 | 1107.1 | 1098.1 | 1090.8 |
| 37.5°  | 1093.7 | 1080.4 | 1056.6 | 1046.2 | 1038.9 |
| 40°    | 1040.5 | 1028.5 | 1004.7 | 991.5  | 985.6  |
| 42.5°  | 988.6  | 976.6  | 953.0  | 938.0  | 929.2  |
| 45°    | 932.2  | 921.9  | 899.5  | 883.4  | 877.3  |
| 47.5°  | 877.3  | 867.0  | 843.3  | 826.9  | 818.1  |
| 50°    | 819.5  | 812.1  | 791.4  | 770.6  | 763.2  |
| 52.5°  | 763.2  | 752.8  | 733.6  | 717.3  | 706.9  |
| 55°    | 705.5  | 696.6  | 678.7  | 661.0  | 653.6  |
| 57.5°  | 647.6  | 640.2  | 620.9  | 603.2  | 597.1  |
| 60°    | 589.8  | 584.0  | 563.2  | 546.8  | 542.5  |
| 62.5°  | 533.5  | 523.2  | 508.3  | 493.5  | 487.6  |
| 65°    | 475.8  | 466.8  | 452.0  | 438.7  | 431.3  |
| 67.5°  | 416.5  | 409.0  | 395.8  | 385.4  | 379.4  |
| 70°    | 361.6  | 355.7  | 342.3  | 331.9  | 326.1  |
| 72.5°  | 305.4  | 299.4  | 292.0  | 281.6  | 277.2  |
| 75°    | 248.9  | 246.1  | 238.5  | 229.7  | 232.7  |
| 77.5°  | 198.6  | 192.6  | 189.6  | 185.2  | 180.9  |
| 80°    | 148.3  | 146.7  | 143.7  | 139.3  | 136.3  |
| 82.5°  | 100.8  | 100.8  | 99.3   | 93.4   | 93.4   |
| 85°    | 60.7   | 59.3   | 57.8   | 53.3   | 51.9   |
| 87.5°  | 26.7   | 23.8   | 20.8   | 16.3   | 14.8   |
| 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   |



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**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 |

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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 | 11.84            | 12.76 | 12.75 | 13.68 | 14.87 | 11.41          | 12.32 | 12.31 | 13.25 | 14.44 |
|                 | 3H   | 13.49            | 14.31 | 14.41 | 15.24 | 16.46 | 13.01          | 13.83 | 13.93 | 14.76 | 15.98 |
|                 | 4H   | 14.06            | 14.84 | 15.00 | 15.78 | 17.00 | 13.58          | 14.36 | 14.52 | 15.30 | 16.52 |
|                 | 6H   | 14.45            | 15.17 | 15.40 | 16.11 | 17.35 | 13.97          | 14.68 | 14.91 | 15.63 | 16.86 |
|                 | 8H   | 14.55            | 15.23 | 15.50 | 16.19 | 17.43 | 14.06          | 14.74 | 15.02 | 15.71 | 16.94 |
|                 | 12H  | 14.59            | 15.24 | 15.55 | 16.20 | 17.46 | 14.10          | 14.75 | 15.06 | 15.71 | 16.96 |
| 4H              | 2H   | 12.30            | 13.08 | 13.24 | 14.02 | 15.24 | 11.95          | 12.73 | 12.89 | 13.67 | 14.89 |
|                 | 3H   | 14.15            | 14.80 | 15.10 | 15.77 | 17.00 | 13.75          | 14.40 | 14.70 | 15.37 | 16.60 |
|                 | 4H   | 14.85            | 15.44 | 15.81 | 16.41 | 17.67 | 14.43          | 15.03 | 15.39 | 15.99 | 17.25 |
|                 | 6H   | 15.35            | 15.86 | 16.32 | 16.85 | 18.11 | 14.93          | 15.44 | 15.90 | 16.43 | 17.69 |
|                 | 8H   | 15.49            | 15.96 | 16.46 | 16.95 | 18.22 | 15.06          | 15.54 | 16.04 | 16.52 | 17.80 |
|                 | 12H  | 15.55            | 15.98 | 16.55 | 16.98 | 18.26 | 15.12          | 15.55 | 16.11 | 16.55 | 17.83 |
| 8H              | 4H   | 15.04            | 15.51 | 16.01 | 16.50 | 17.77 | 14.67          | 15.15 | 15.64 | 16.13 | 17.40 |
|                 | 6H   | 15.65            | 16.04 | 16.65 | 17.07 | 18.34 | 15.27          | 15.67 | 16.27 | 16.69 | 17.97 |
|                 | 8H   | 15.85            | 16.20 | 16.86 | 17.22 | 18.51 | 15.47          | 15.82 | 16.48 | 16.83 | 18.13 |
|                 | 12H  | 15.98            | 16.28 | 16.99 | 17.29 | 18.63 | 15.58          | 15.89 | 16.59 | 16.89 | 18.23 |
| 12H             | 4H   | 15.02            | 15.45 | 16.02 | 16.45 | 17.73 | 14.66          | 15.09 | 15.66 | 16.09 | 17.37 |
|                 | 6H   | 15.67            | 16.02 | 16.68 | 17.03 | 18.33 | 15.31          | 15.66 | 16.32 | 16.67 | 17.96 |
|                 | 8H   | 15.90            | 16.21 | 16.91 | 17.21 | 18.55 | 15.53          | 15.84 | 16.54 | 16.84 | 18.18 |