

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: P905733

Luminaire Tested: DFN2DIP-PN3F0-050D030US835-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P905733  
REPORT IS A COMBINATION OF REPORTS P901035 AND P897955  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-050D030US835-FLLONL  
Description: 3 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

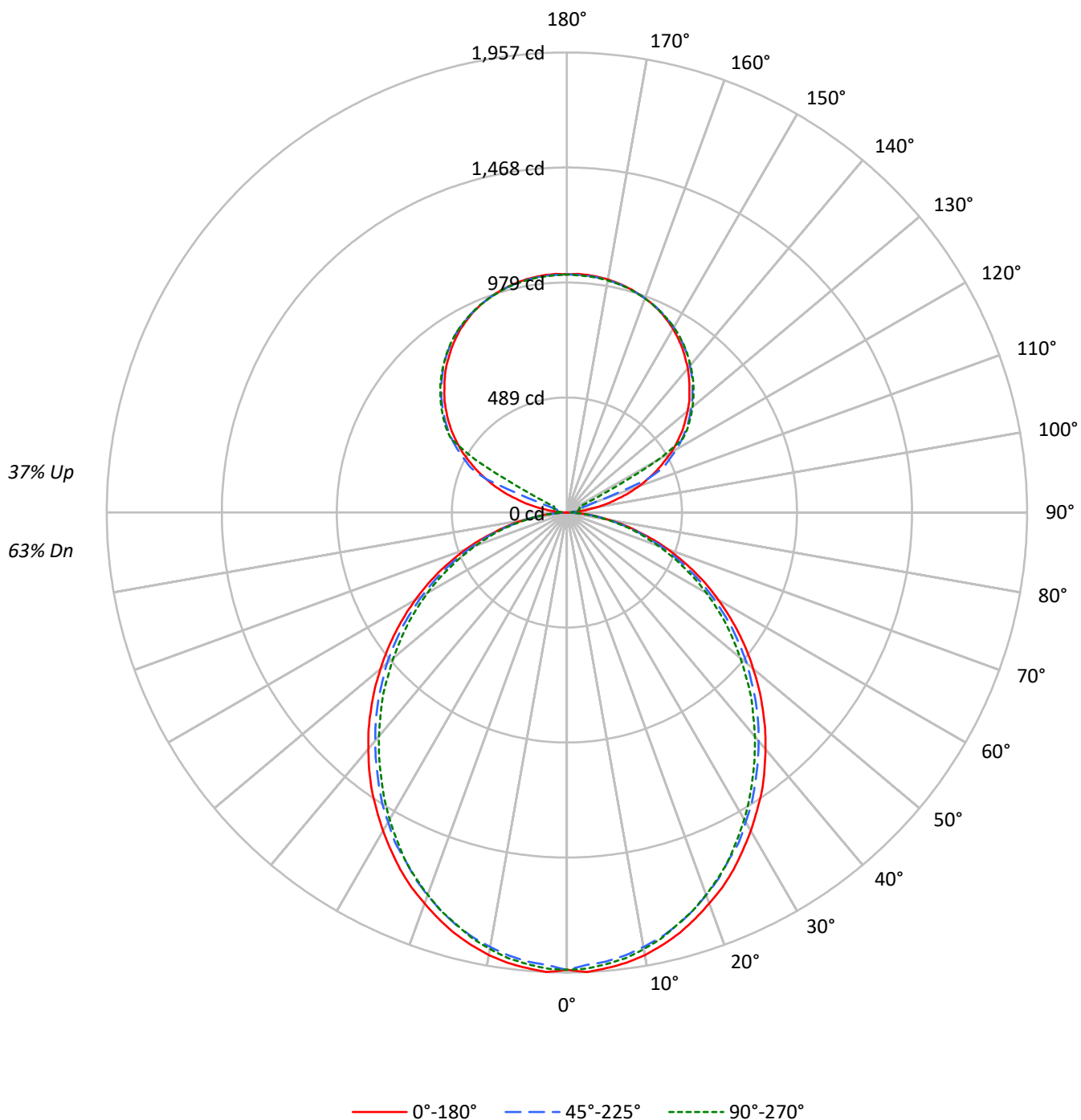
Lumens per Lamp: N/A  
Luminaire Lumens: 7920.0 lumens  
Efficiency: N/A  
Efficacy: 116.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 68.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9613  
Total Harmonic Distortion (THDi): 0.083  
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   | 110 | 110 | 110 | 110 | 103 | 103 | 103 | 103 | 90 | 90 | 90 | 78 | 78 | 78 | 68 | 68 | 68 |
| 1   | 101 | 96  | 92  | 89  | 94  | 90  | 87  | 84  | 79 | 77 | 74 | 69 | 67 | 65 | 60 | 58 | 57 |
| 2   | 92  | 84  | 78  | 72  | 86  | 79  | 73  | 69  | 69 | 65 | 62 | 61 | 58 | 55 | 53 | 50 | 48 |
| 3   | 84  | 74  | 66  | 60  | 78  | 70  | 63  | 57  | 61 | 56 | 52 | 54 | 50 | 46 | 47 | 44 | 41 |
| 4   | 77  | 65  | 57  | 51  | 71  | 62  | 54  | 49  | 55 | 49 | 44 | 48 | 43 | 40 | 42 | 38 | 35 |
| 5   | 70  | 58  | 50  | 44  | 66  | 55  | 48  | 42  | 49 | 43 | 38 | 43 | 38 | 34 | 38 | 34 | 31 |
| 6   | 65  | 53  | 44  | 38  | 61  | 50  | 42  | 37  | 44 | 38 | 33 | 39 | 34 | 30 | 34 | 30 | 27 |
| 7   | 60  | 47  | 39  | 34  | 56  | 45  | 38  | 32  | 40 | 34 | 30 | 35 | 31 | 27 | 31 | 27 | 24 |
| 8   | 56  | 43  | 35  | 30  | 52  | 41  | 34  | 29  | 37 | 31 | 26 | 33 | 28 | 24 | 29 | 25 | 22 |
| 9   | 52  | 40  | 32  | 27  | 49  | 37  | 30  | 26  | 34 | 28 | 24 | 30 | 25 | 22 | 27 | 23 | 20 |
| 10  | 49  | 36  | 29  | 24  | 46  | 34  | 28  | 23  | 31 | 25 | 21 | 28 | 23 | 20 | 25 | 21 | 18 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2274 | 2274 | 2274 |
| 5°  | 2277 | 2241 | 2257 |
| 10° | 2257 | 2209 | 2225 |
| 15° | 2222 | 2171 | 2176 |
| 20° | 2176 | 2119 | 2127 |
| 25° | 2130 | 2057 | 2069 |
| 30° | 2073 | 1999 | 1996 |
| 35° | 2018 | 1931 | 1920 |
| 40° | 1952 | 1863 | 1846 |
| 45° | 1885 | 1794 | 1771 |
| 50° | 1812 | 1721 | 1684 |
| 55° | 1735 | 1637 | 1604 |
| 60° | 1649 | 1538 | 1513 |
| 65° | 1554 | 1435 | 1404 |
| 70° | 1434 | 1309 | 1288 |
| 75° | 1267 | 1158 | 1178 |
| 80° | 1066 | 966  | 972  |
| 85° | 751  | 639  | 634  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 1885 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 183.1  | 2.3       |
| 10°-20°   | 515.2  | 6.5       |
| 20°-30°   | 757.2  | 9.6       |
| 30°-40°   | 879.4  | 11.1      |
| 40°-50°   | 878.3  | 11.1      |
| 50°-60°   | 765.8  | 9.7       |
| 60°-70°   | 566.1  | 7.1       |
| 70°-80°   | 320.3  | 4.0       |
| 80°-90°   | 86.3   | 1.1       |
| 90°-100°  | 33.4   | 0.4       |
| 100°-110° | 124.4  | 1.6       |
| 110°-120° | 330.1  | 4.2       |
| 120°-130° | 547.5  | 6.9       |
| 130°-140° | 581.5  | 7.3       |
| 140°-150° | 540.5  | 6.8       |
| 150°-160° | 434.5  | 5.5       |
| 160°-170° | 280.0  | 3.5       |
| 170°-180° | 96.4   | 1.2       |
| 0°-30°    | 1455.5 | 18.4      |
| 0°-40°    | 2334.9 | 29.5      |
| 0°-60°    | 3979.0 | 50.2      |
| 0°-90°    | 4951.8 | 62.5      |
| 90°-120°  | 487.9  | 6.2       |
| 90°-150°  | 2157.3 | 27.2      |
| 90°-180°  | 2968.0 | 37.5      |
| 0°-180°   | 7920.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1946 | 1946  | 1946 | 1946  | 1946 |      |
| 5°   | 1946 | 1938  | 1918 | 1932  | 1929 | 185  |
| 15°  | 1852 | 1841  | 1816 | 1824  | 1815 | 522  |
| 25°  | 1676 | 1661  | 1630 | 1633  | 1630 | 771  |
| 35°  | 1446 | 1428  | 1398 | 1386  | 1377 | 903  |
| 45°  | 1177 | 1164  | 1136 | 1115  | 1108 | 908  |
| 55°  | 891  | 879   | 857  | 834   | 825  | 796  |
| 65°  | 601  | 589   | 571  | 554   | 544  | 594  |
| 75°  | 314  | 311   | 301  | 290   | 294  | 335  |
| 85°  | 77   | 75    | 73   | 67    | 66   | 85   |
| 90°  | 1    | 9     | 15   | 18    | 20   | 7    |
| 95°  | 48   | 23    | 28   | 32    | 32   | 56   |
| 105° | 223  | 245   | 45   | 53    | 56   | 238  |
| 115° | 421  | 434   | 452  | 113   | 60   | 415  |
| 125° | 596  | 605   | 619  | 624   | 626  | 531  |
| 135° | 737  | 749   | 755  | 763   | 761  | 569  |
| 145° | 855  | 854   | 867  | 872   | 868  | 535  |
| 155° | 941  | 935   | 944  | 948   | 942  | 434  |
| 165° | 992  | 988   | 990  | 995   | 990  | 280  |
| 175° | 1015 | 1010  | 1011 | 1016  | 1009 | 97   |
| 180° | 1012 | 1012  | 1012 | 1012  | 1012 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1945.5 | 1945.5 | 1945.5 | 1945.5 | 1945.5 |
| 2.5°   | 1956.8 | 1947.5 | 1926.9 | 1945.5 | 1942.0 |
| 5°     | 1945.5 | 1938.2 | 1917.5 | 1932.4 | 1928.9 |
| 7.5°   | 1932.4 | 1921.3 | 1900.7 | 1915.8 | 1912.0 |
| 10°    | 1912.0 | 1898.9 | 1876.5 | 1891.3 | 1885.8 |
| 12.5°  | 1883.8 | 1872.7 | 1850.3 | 1859.6 | 1855.8 |
| 15°    | 1852.0 | 1840.9 | 1816.5 | 1824.1 | 1814.7 |
| 17.5°  | 1812.7 | 1801.6 | 1777.2 | 1786.5 | 1777.2 |
| 20°    | 1769.7 | 1758.6 | 1732.4 | 1737.9 | 1730.6 |
| 22.5°  | 1726.8 | 1709.9 | 1685.5 | 1685.5 | 1681.7 |
| 25°    | 1676.2 | 1661.3 | 1629.5 | 1633.1 | 1629.5 |
| 27.5°  | 1620.0 | 1606.9 | 1582.7 | 1577.1 | 1567.8 |
| 30°    | 1564.0 | 1549.0 | 1521.0 | 1515.4 | 1507.9 |
| 32.5°  | 1504.1 | 1493.0 | 1463.0 | 1451.7 | 1444.2 |
| 35°    | 1446.1 | 1427.5 | 1397.5 | 1386.2 | 1376.9 |
| 37.5°  | 1380.6 | 1363.8 | 1333.8 | 1320.7 | 1311.4 |
| 40°    | 1313.4 | 1298.3 | 1268.3 | 1251.6 | 1244.1 |
| 42.5°  | 1247.9 | 1232.8 | 1203.0 | 1184.1 | 1173.0 |
| 45°    | 1176.8 | 1163.7 | 1135.5 | 1115.1 | 1107.5 |
| 47.5°  | 1107.5 | 1094.4 | 1064.5 | 1043.8 | 1032.7 |
| 50°    | 1034.5 | 1025.2 | 999.0  | 972.8  | 963.4  |
| 52.5°  | 963.4  | 950.3  | 926.1  | 905.5  | 892.4  |
| 55°    | 890.6  | 879.3  | 856.8  | 834.4  | 825.1  |
| 57.5°  | 817.5  | 808.2  | 783.8  | 761.4  | 753.8  |
| 60°    | 744.5  | 737.2  | 711.0  | 690.3  | 684.8  |
| 62.5°  | 673.5  | 660.4  | 641.7  | 623.0  | 615.5  |
| 65°    | 600.6  | 589.3  | 570.6  | 553.8  | 544.4  |
| 67.5°  | 525.8  | 516.3  | 499.6  | 486.5  | 478.9  |
| 70°    | 456.5  | 449.0  | 432.1  | 419.0  | 411.7  |
| 72.5°  | 385.5  | 377.9  | 368.6  | 355.5  | 349.9  |
| 75°    | 314.2  | 310.6  | 301.1  | 290.0  | 293.8  |
| 77.5°  | 250.7  | 243.1  | 239.4  | 233.8  | 228.3  |
| 80°    | 187.2  | 185.2  | 181.4  | 175.9  | 172.1  |
| 82.5°  | 127.2  | 127.2  | 125.4  | 117.9  | 117.9  |
| 85°    | 76.6   | 74.8   | 73.0   | 67.3   | 65.5   |
| 87.5°  | 33.7   | 30.0   | 26.2   | 20.6   | 18.7   |
| 90°    | 0.7    | 8.8    | 14.6   | 18.4   | 19.7   |
| 92.5°  | 18.4   | 15.4   | 17.6   | 19.1   | 19.7   |
| 95°    | 47.6   | 23.4   | 28.5   | 32.3   | 31.5   |
| 97.5°  | 85.7   | 25.7   | 37.3   | 39.6   | 40.3   |
| 100°   | 129.7  | 29.3   | 41.8   | 47.6   | 49.1   |
| 102.5° | 178.0  | 176.6  | 43.2   | 51.2   | 53.5   |
| 105°   | 222.7  | 244.7  | 44.7   | 52.7   | 55.7   |
| 107.5° | 274.7  | 293.0  | 46.2   | 54.2   | 57.2   |
| 110°   | 324.6  | 339.9  | 128.2  | 55.0   | 57.9   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 371.5  | 384.6  | 372.2  | 56.4   | 58.6   |
| 115°   | 421.2  | 433.7  | 452.0  | 112.8  | 60.1   |
| 117.5° | 464.5  | 479.1  | 491.6  | 386.8  | 194.9  |
| 120°   | 512.8  | 523.8  | 537.0  | 545.8  | 446.9  |
| 122.5° | 553.8  | 565.6  | 580.3  | 584.6  | 585.4  |
| 125°   | 595.6  | 605.1  | 619.1  | 624.2  | 626.4  |
| 127.5° | 633.7  | 643.9  | 655.0  | 662.3  | 663.0  |
| 130°   | 669.6  | 681.4  | 689.4  | 697.4  | 696.8  |
| 132.5° | 706.2  | 715.8  | 723.8  | 730.4  | 729.7  |
| 135°   | 737.0  | 748.8  | 755.3  | 762.7  | 761.2  |
| 137.5° | 769.2  | 778.0  | 785.4  | 792.7  | 790.5  |
| 140°   | 800.7  | 806.6  | 814.6  | 821.2  | 817.6  |
| 142.5° | 827.2  | 832.3  | 841.8  | 847.6  | 844.0  |
| 145°   | 855.0  | 854.2  | 866.7  | 871.8  | 868.1  |
| 147.5° | 879.1  | 876.9  | 889.4  | 893.0  | 890.1  |
| 150°   | 902.6  | 897.5  | 909.2  | 913.5  | 909.9  |
| 152.5° | 922.3  | 916.5  | 927.5  | 931.9  | 926.8  |
| 155°   | 941.4  | 934.9  | 943.6  | 948.0  | 942.2  |
| 157.5° | 956.8  | 951.0  | 957.6  | 962.7  | 956.8  |
| 160°   | 970.0  | 965.6  | 970.0  | 974.4  | 969.2  |
| 162.5° | 981.7  | 977.3  | 981.0  | 986.1  | 979.5  |
| 165°   | 991.9  | 987.6  | 989.8  | 994.9  | 989.8  |
| 167.5° | 1000.0 | 995.6  | 997.8  | 1003.0 | 996.4  |
| 170°   | 1006.6 | 1002.2 | 1003.7 | 1008.8 | 1002.2 |
| 172.5° | 1011.0 | 1006.6 | 1008.1 | 1013.2 | 1006.6 |
| 175°   | 1014.6 | 1009.5 | 1011.0 | 1016.1 | 1008.8 |
| 177.5° | 1016.1 | 1011.0 | 1011.8 | 1016.9 | 1010.3 |
| 180°   | 1012.5 | 1012.5 | 1012.5 | 1012.5 | 1012.5 |

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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 | 11.17            | 12.16 | 12.01 | 13.02 | 14.10 | 10.73          | 11.72 | 11.57 | 12.58 | 13.66 |
|                 | 3H   | 12.83            | 13.72 | 13.69 | 14.59 | 15.70 | 12.35          | 13.24 | 13.20 | 14.11 | 15.22 |
|                 | 4H   | 13.42            | 14.26 | 14.29 | 15.14 | 16.26 | 12.94          | 13.77 | 13.81 | 14.65 | 15.77 |
|                 | 6H   | 13.82            | 14.60 | 14.71 | 15.48 | 16.61 | 13.33          | 14.11 | 14.22 | 14.99 | 16.12 |
|                 | 8H   | 13.93            | 14.67 | 14.82 | 15.57 | 16.70 | 13.44          | 14.17 | 14.33 | 15.08 | 16.21 |
|                 | 12H  | 13.98            | 14.68 | 14.88 | 15.58 | 16.74 | 13.48          | 14.18 | 14.38 | 15.08 | 16.24 |
| 4H              | 2H   | 11.64            | 12.48 | 12.52 | 13.36 | 14.48 | 11.29          | 12.13 | 12.17 | 13.01 | 14.13 |
|                 | 3H   | 13.51            | 14.21 | 14.40 | 15.12 | 16.26 | 13.11          | 13.81 | 14.00 | 14.72 | 15.85 |
|                 | 4H   | 14.23            | 14.86 | 15.12 | 15.77 | 16.93 | 13.81          | 14.45 | 14.71 | 15.36 | 16.51 |
|                 | 6H   | 14.74            | 15.29 | 15.66 | 16.23 | 17.39 | 14.32          | 14.87 | 15.23 | 15.80 | 16.96 |
|                 | 8H   | 14.89            | 15.41 | 15.81 | 16.33 | 17.51 | 14.47          | 14.98 | 15.38 | 15.91 | 17.08 |
|                 | 12H  | 14.97            | 15.43 | 15.90 | 16.38 | 17.56 | 14.53          | 15.00 | 15.47 | 15.94 | 17.12 |
| 8H              | 4H   | 14.43            | 14.94 | 15.34 | 15.87 | 17.04 | 14.06          | 14.57 | 14.97 | 15.50 | 16.67 |
|                 | 6H   | 15.06            | 15.48 | 16.00 | 16.45 | 17.63 | 14.68          | 15.11 | 15.63 | 16.08 | 17.25 |
|                 | 8H   | 15.28            | 15.65 | 16.23 | 16.61 | 17.80 | 14.89          | 15.27 | 15.85 | 16.23 | 17.42 |
|                 | 12H  | 15.41            | 15.74 | 16.36 | 16.69 | 17.93 | 15.01          | 15.34 | 15.96 | 16.29 | 17.53 |
| 12H             | 4H   | 14.42            | 14.88 | 15.36 | 15.83 | 17.01 | 14.06          | 14.52 | 14.99 | 15.47 | 16.65 |
|                 | 6H   | 15.09            | 15.46 | 16.04 | 16.42 | 17.61 | 14.72          | 15.10 | 15.68 | 16.06 | 17.25 |
|                 | 8H   | 15.33            | 15.66 | 16.29 | 16.61 | 17.85 | 14.96          | 15.29 | 15.91 | 16.24 | 17.48 |