

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: P924924

Luminaire Tested: DFN2DIP-PN3F0-080D060US950-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P924924  
REPORT IS A COMBINATION OF REPORTS P899563 AND P896399  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-080D060US950-FLLFLL  
Description: 3 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

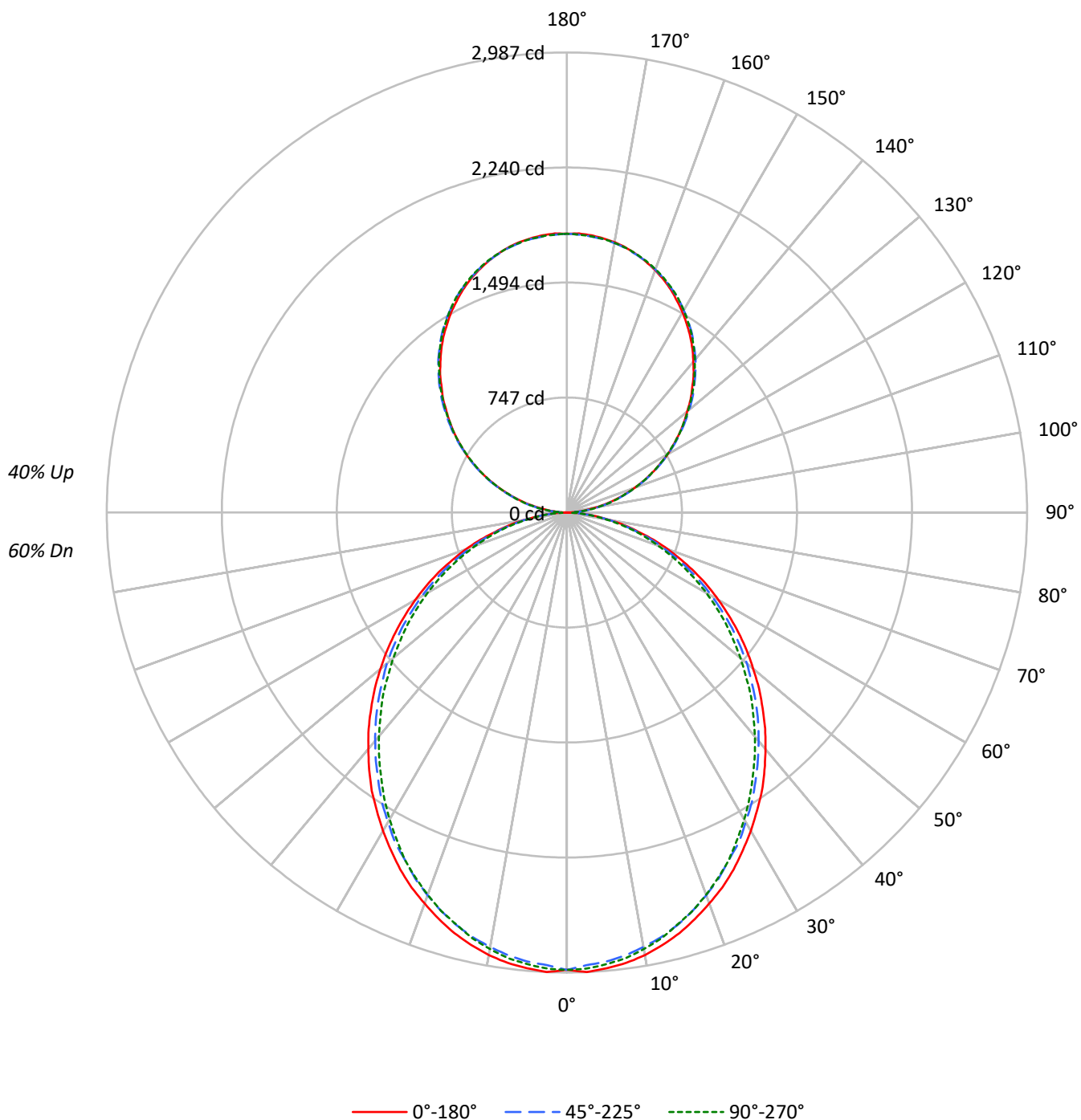
Lumens per Lamp: N/A  
Luminaire Lumens: 12621.4 lumens  
Efficiency: N/A  
Efficacy: 100.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 125.9  
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

TEST NUMBER: P924924

CATALOG NUMBER: DFN2DIP-PN3F0-080D060US950-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P924924

CATALOG NUMBER: DFN2DIP-PN3F0-080D060US950-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   | 110 | 110 | 110 | 110 | 102 | 102 | 102 | 102 | 89 | 89 | 89 | 77 | 77 | 77 | 65 | 65 | 65 |
| 1   | 100 | 96  | 92  | 88  | 93  | 89  | 86  | 83  | 78 | 75 | 73 | 67 | 66 | 64 | 58 | 56 | 55 |
| 2   | 91  | 84  | 77  | 72  | 85  | 78  | 73  | 68  | 68 | 64 | 61 | 59 | 56 | 53 | 51 | 48 | 46 |
| 3   | 83  | 73  | 66  | 60  | 77  | 69  | 62  | 57  | 60 | 55 | 51 | 52 | 48 | 45 | 45 | 42 | 40 |
| 4   | 76  | 65  | 57  | 51  | 71  | 61  | 54  | 48  | 54 | 48 | 43 | 47 | 42 | 39 | 40 | 37 | 34 |
| 5   | 70  | 58  | 50  | 44  | 65  | 55  | 47  | 42  | 48 | 42 | 38 | 42 | 37 | 34 | 36 | 33 | 30 |
| 6   | 64  | 52  | 44  | 38  | 60  | 49  | 42  | 36  | 43 | 37 | 33 | 38 | 33 | 29 | 33 | 29 | 26 |
| 7   | 60  | 47  | 39  | 33  | 56  | 44  | 37  | 32  | 39 | 33 | 29 | 35 | 30 | 26 | 30 | 26 | 23 |
| 8   | 55  | 43  | 35  | 30  | 52  | 40  | 33  | 28  | 36 | 30 | 26 | 32 | 27 | 23 | 28 | 24 | 21 |
| 9   | 52  | 39  | 32  | 26  | 48  | 37  | 30  | 25  | 33 | 27 | 23 | 29 | 24 | 21 | 26 | 22 | 19 |
| 10  | 48  | 36  | 29  | 24  | 45  | 34  | 27  | 23  | 30 | 25 | 21 | 27 | 22 | 19 | 24 | 20 | 17 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3471 | 3471 | 3471 |
| 5°  | 3475 | 3421 | 3445 |
| 10° | 3445 | 3372 | 3397 |
| 15° | 3392 | 3314 | 3322 |
| 20° | 3322 | 3235 | 3246 |
| 25° | 3251 | 3140 | 3159 |
| 30° | 3164 | 3052 | 3047 |
| 35° | 3081 | 2948 | 2930 |
| 40° | 2979 | 2843 | 2818 |
| 45° | 2877 | 2738 | 2704 |
| 50° | 2766 | 2627 | 2571 |
| 55° | 2649 | 2499 | 2449 |
| 60° | 2517 | 2348 | 2309 |
| 65° | 2372 | 2190 | 2143 |
| 70° | 2188 | 1998 | 1965 |
| 75° | 1934 | 1768 | 1798 |
| 80° | 1627 | 1474 | 1483 |
| 85° | 1148 | 976  | 968  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2877 cd/sqm

TEST NUMBER: P924924

CATALOG NUMBER: DFN2DIP-PN3F0-080D060US950-FLLFLL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 279.5   | 2.2       |
| 10°-20°   | 786.4   | 6.2       |
| 20°-30°   | 1155.7  | 9.2       |
| 30°-40°   | 1342.3  | 10.6      |
| 40°-50°   | 1340.6  | 10.6      |
| 50°-60°   | 1169.0  | 9.3       |
| 60°-70°   | 864.1   | 6.8       |
| 70°-80°   | 488.9   | 3.9       |
| 80°-90°   | 134.2   | 1.1       |
| 90°-100°  | 112.0   | 0.9       |
| 100°-110° | 355.9   | 2.8       |
| 110°-120° | 609.1   | 4.8       |
| 120°-130° | 801.1   | 6.3       |
| 130°-140° | 899.2   | 7.1       |
| 140°-150° | 881.7   | 7.0       |
| 150°-160° | 739.6   | 5.9       |
| 160°-170° | 490.5   | 3.9       |
| 170°-180° | 171.4   | 1.4       |
| 0°-30°    | 2221.6  | 17.6      |
| 0°-40°    | 3563.9  | 28.2      |
| 0°-60°    | 6073.6  | 48.1      |
| 0°-90°    | 7560.8  | 59.9      |
| 90°-120°  | 1077.0  | 8.5       |
| 90°-150°  | 3659.0  | 29.0      |
| 90°-180°  | 5061.0  | 40.1      |
| 0°-180°   | 12621.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2970 | 2970  | 2970 | 2970  | 2970 |      |
| 5°   | 2970 | 2958  | 2927 | 2950  | 2944 | 282  |
| 15°  | 2827 | 2810  | 2773 | 2784  | 2770 | 796  |
| 25°  | 2558 | 2536  | 2487 | 2493  | 2487 | 1177 |
| 35°  | 2207 | 2179  | 2133 | 2116  | 2102 | 1378 |
| 45°  | 1796 | 1776  | 1733 | 1702  | 1691 | 1386 |
| 55°  | 1359 | 1342  | 1308 | 1274  | 1259 | 1215 |
| 65°  | 917  | 900   | 871  | 845   | 831  | 906  |
| 75°  | 480  | 474   | 460  | 443   | 448  | 512  |
| 85°  | 117  | 114   | 112  | 103   | 100  | 130  |
| 90°  | 2    | 20    | 54   | 50    | 52   | 12   |
| 95°  | 80   | 95    | 98   | 98    | 95   | 89   |
| 105° | 329  | 333   | 336  | 339   | 339  | 347  |
| 115° | 611  | 620   | 617  | 616   | 611  | 605  |
| 125° | 889  | 903   | 898  | 893   | 892  | 794  |
| 135° | 1150 | 1167  | 1170 | 1168  | 1164 | 889  |
| 145° | 1396 | 1407  | 1416 | 1417  | 1411 | 872  |
| 155° | 1596 | 1601  | 1606 | 1613  | 1608 | 735  |
| 165° | 1737 | 1735  | 1735 | 1746  | 1738 | 490  |
| 175° | 1807 | 1803  | 1799 | 1810  | 1801 | 172  |
| 180° | 1810 | 1810  | 1810 | 1810  | 1810 |      |

TEST NUMBER: P924924

CATALOG NUMBER: DFN2DIP-PN3F0-080D060US950-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2969.6 | 2969.6 | 2969.6 | 2969.6 | 2969.6 |
| 2.5°   | 2986.9 | 2972.7 | 2941.2 | 2969.6 | 2964.2 |
| 5°     | 2969.6 | 2958.4 | 2927.0 | 2949.7 | 2944.2 |
| 7.5°   | 2949.7 | 2932.7 | 2901.2 | 2924.2 | 2918.5 |
| 10°    | 2918.5 | 2898.4 | 2864.2 | 2886.9 | 2878.5 |
| 12.5°  | 2875.5 | 2858.5 | 2824.2 | 2838.4 | 2832.7 |
| 15°    | 2827.0 | 2810.0 | 2772.7 | 2784.2 | 2770.0 |
| 17.5°  | 2767.0 | 2750.0 | 2712.7 | 2727.0 | 2712.7 |
| 20°    | 2701.3 | 2684.3 | 2644.3 | 2652.8 | 2641.5 |
| 22.5°  | 2635.8 | 2610.0 | 2572.7 | 2572.7 | 2567.0 |
| 25°    | 2558.5 | 2535.8 | 2487.4 | 2492.8 | 2487.4 |
| 27.5°  | 2472.8 | 2452.8 | 2415.8 | 2407.3 | 2393.1 |
| 30°    | 2387.4 | 2364.3 | 2321.7 | 2313.2 | 2301.6 |
| 32.5°  | 2295.9 | 2278.9 | 2233.1 | 2215.9 | 2204.4 |
| 35°    | 2207.4 | 2178.9 | 2133.1 | 2115.9 | 2101.7 |
| 37.5°  | 2107.4 | 2081.6 | 2035.9 | 2015.9 | 2001.7 |
| 40°    | 2004.7 | 1981.6 | 1936.0 | 1910.5 | 1898.9 |
| 42.5°  | 1904.8 | 1881.7 | 1836.3 | 1807.4 | 1790.6 |
| 45°    | 1796.3 | 1776.3 | 1733.2 | 1702.0 | 1690.6 |
| 47.5°  | 1690.6 | 1670.5 | 1624.8 | 1593.3 | 1576.3 |
| 50°    | 1579.1 | 1564.8 | 1524.8 | 1484.8 | 1470.6 |
| 52.5°  | 1470.6 | 1450.6 | 1413.6 | 1382.2 | 1362.1 |
| 55°    | 1359.4 | 1342.1 | 1307.9 | 1273.7 | 1259.4 |
| 57.5°  | 1247.9 | 1233.7 | 1196.4 | 1162.2 | 1150.6 |
| 60°    | 1136.4 | 1125.2 | 1085.2 | 1053.7 | 1045.2 |
| 62.5°  | 1027.9 | 1008.0 | 979.5  | 951.0  | 939.5  |
| 65°    | 916.8  | 899.5  | 871.0  | 845.2  | 831.0  |
| 67.5°  | 802.5  | 788.0  | 762.5  | 742.6  | 731.1  |
| 70°    | 696.8  | 685.3  | 659.6  | 639.6  | 628.3  |
| 72.5°  | 588.3  | 576.9  | 562.6  | 542.6  | 534.1  |
| 75°    | 479.6  | 474.1  | 459.6  | 442.7  | 448.4  |
| 77.5°  | 382.6  | 371.1  | 365.4  | 356.9  | 348.4  |
| 80°    | 285.7  | 282.7  | 276.9  | 268.5  | 262.6  |
| 82.5°  | 194.2  | 194.2  | 191.5  | 179.9  | 179.9  |
| 85°    | 117.0  | 114.2  | 111.5  | 102.7  | 100.0  |
| 87.5°  | 51.5   | 45.8   | 40.0   | 31.5   | 28.5   |
| 90°    | 1.6    | 19.7   | 53.5   | 50.2   | 51.8   |
| 92.5°  | 33.9   | 45.9   | 47.5   | 49.1   | 49.1   |
| 95°    | 79.7   | 94.9   | 97.7   | 97.7   | 94.9   |
| 97.5°  | 132.6  | 146.8  | 152.8  | 152.8  | 152.8  |
| 100°   | 193.8  | 206.3  | 210.6  | 210.6  | 209.0  |
| 102.5° | 258.2  | 267.4  | 273.4  | 275.0  | 273.4  |
| 105°   | 328.6  | 332.9  | 336.2  | 339.0  | 339.0  |
| 107.5° | 398.4  | 405.0  | 405.0  | 406.0  | 398.4  |
| 110°   | 466.1  | 474.8  | 474.8  | 474.8  | 470.4  |

TEST NUMBER: P924924

CATALOG NUMBER: DFN2DIP-PN3F0-080D060US950-FLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 539.2  | 548.5  | 546.8  | 542.4  | 539.2  |
| 115°   | 611.2  | 620.0  | 617.2  | 615.6  | 611.2  |
| 117.5° | 682.8  | 694.8  | 687.1  | 682.8  | 678.4  |
| 120°   | 754.8  | 766.8  | 754.8  | 754.8  | 749.8  |
| 122.5° | 820.2  | 835.5  | 827.9  | 823.6  | 820.2  |
| 125°   | 889.0  | 902.7  | 898.3  | 893.4  | 891.8  |
| 127.5° | 956.2  | 973.1  | 967.1  | 960.6  | 956.2  |
| 130°   | 1019.0 | 1038.6 | 1035.9 | 1032.6 | 1026.6 |
| 132.5° | 1089.4 | 1104.6 | 1105.7 | 1098.1 | 1093.7 |
| 135°   | 1150.0 | 1166.8 | 1170.1 | 1168.5 | 1164.1 |
| 137.5° | 1217.6 | 1231.2 | 1234.0 | 1232.9 | 1226.4 |
| 140°   | 1277.1 | 1290.8 | 1298.4 | 1298.4 | 1292.4 |
| 142.5° | 1338.2 | 1351.8 | 1356.2 | 1357.8 | 1351.8 |
| 145°   | 1396.1 | 1407.0 | 1415.7 | 1417.4 | 1411.3 |
| 147.5° | 1447.9 | 1461.5 | 1468.1 | 1470.8 | 1464.8 |
| 150°   | 1501.4 | 1510.7 | 1516.7 | 1521.5 | 1516.7 |
| 152.5° | 1548.8 | 1558.2 | 1565.8 | 1571.8 | 1565.8 |
| 155°   | 1596.3 | 1600.7 | 1605.6 | 1613.3 | 1608.3 |
| 157.5° | 1637.3 | 1640.6 | 1643.3 | 1654.2 | 1646.6 |
| 160°   | 1673.9 | 1677.1 | 1678.8 | 1688.0 | 1681.5 |
| 162.5° | 1707.7 | 1707.7 | 1709.3 | 1719.7 | 1712.0 |
| 165°   | 1736.6 | 1734.9 | 1734.9 | 1745.9 | 1738.3 |
| 167.5° | 1762.8 | 1757.9 | 1757.9 | 1768.8 | 1761.2 |
| 170°   | 1782.5 | 1778.1 | 1776.4 | 1787.3 | 1778.1 |
| 172.5° | 1796.1 | 1791.7 | 1790.1 | 1801.0 | 1791.7 |
| 175°   | 1807.0 | 1802.7 | 1799.3 | 1810.3 | 1801.0 |
| 177.5° | 1813.0 | 1808.7 | 1805.3 | 1814.6 | 1805.3 |
| 180°   | 1810.3 | 1810.3 | 1810.3 | 1810.3 | 1810.3 |

TEST NUMBER: P924924

CATALOG NUMBER: DFN2DIP-PN3F0-080D060US950-FLLFLL

**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 | 12.42            | 13.38 | 13.29 | 14.27 | 15.39 | 11.98          | 12.94 | 12.85 | 13.83 | 14.95 |
|                 | 3H   | 14.08            | 14.94 | 14.96 | 15.84 | 16.99 | 13.60          | 14.46 | 14.48 | 15.36 | 16.51 |
|                 | 4H   | 14.67            | 15.49 | 15.57 | 16.39 | 17.55 | 14.19          | 15.00 | 15.08 | 15.90 | 17.06 |
|                 | 6H   | 15.07            | 15.82 | 15.98 | 16.73 | 17.90 | 14.58          | 15.33 | 15.49 | 16.24 | 17.41 |
|                 | 8H   | 15.18            | 15.89 | 16.09 | 16.82 | 17.99 | 14.69          | 15.40 | 15.60 | 16.33 | 17.50 |
|                 | 12H  | 15.23            | 15.91 | 16.15 | 16.83 | 18.03 | 14.73          | 15.41 | 15.65 | 16.33 | 17.53 |
| 4H              | 2H   | 12.89            | 13.71 | 13.79 | 14.61 | 15.77 | 12.54          | 13.35 | 13.44 | 14.26 | 15.42 |
|                 | 3H   | 14.76            | 15.44 | 15.67 | 16.37 | 17.55 | 14.36          | 15.04 | 15.27 | 15.97 | 17.15 |
|                 | 4H   | 15.47            | 16.09 | 16.40 | 17.02 | 18.22 | 15.06          | 15.68 | 15.98 | 16.61 | 17.81 |
|                 | 6H   | 15.99            | 16.52 | 16.92 | 17.48 | 18.68 | 15.57          | 16.10 | 16.50 | 17.05 | 18.25 |
|                 | 8H   | 16.14            | 16.64 | 17.08 | 17.59 | 18.80 | 15.71          | 16.21 | 16.65 | 17.16 | 18.37 |
|                 | 12H  | 16.21            | 16.66 | 17.17 | 17.63 | 18.85 | 15.77          | 16.22 | 16.73 | 17.19 | 18.41 |
| 8H              | 4H   | 15.67            | 16.17 | 16.61 | 17.12 | 18.33 | 15.30          | 15.80 | 16.24 | 16.75 | 17.96 |
|                 | 6H   | 16.30            | 16.71 | 17.27 | 17.71 | 18.92 | 15.93          | 16.34 | 16.89 | 17.33 | 18.54 |
|                 | 8H   | 16.52            | 16.88 | 17.49 | 17.86 | 19.09 | 16.14          | 16.50 | 17.11 | 17.48 | 18.71 |
|                 | 12H  | 16.65            | 16.97 | 17.63 | 17.95 | 19.22 | 16.25          | 16.57 | 17.23 | 17.55 | 18.82 |
| 12H             | 4H   | 15.66            | 16.11 | 16.62 | 17.08 | 18.30 | 15.30          | 15.75 | 16.26 | 16.72 | 17.94 |
|                 | 6H   | 16.33            | 16.70 | 17.30 | 17.68 | 18.91 | 15.97          | 16.33 | 16.94 | 17.31 | 18.54 |
|                 | 8H   | 16.57            | 16.89 | 17.55 | 17.87 | 19.15 | 16.20          | 16.52 | 17.18 | 17.50 | 18.77 |