

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: P926161

Luminaire Tested: DFN2DIP-TR2F0-050D060US950-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P926161  
REPORT IS A COMBINATION OF REPORTS P901787 AND P897145  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR2F0-050D060US950-FLLONL  
Description: 2 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

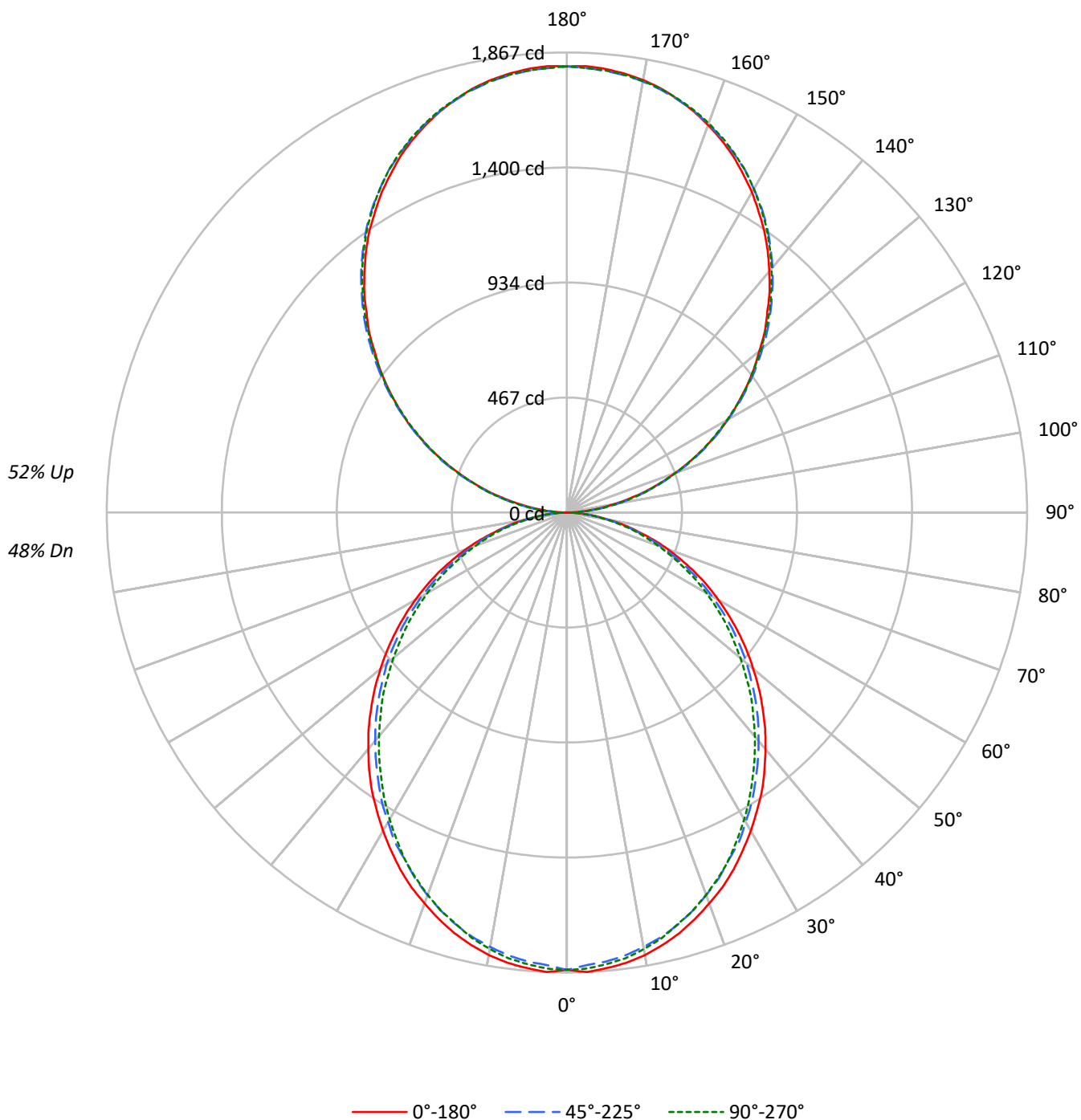
Lumens per Lamp: N/A  
Luminaire Lumens: 9788.0 lumens  
Efficiency: N/A  
Efficacy: 102.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.04' x L: 2.36' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 95.9  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9789  
Total Harmonic Distortion (THDi): 0.074  
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   | 107 | 107 | 107 | 107 | 98 | 98 | 98 | 98 | 82 | 82 | 82 | 68 | 68 | 68 | 55 | 55 | 55 |
| 1   | 97  | 93  | 89  | 86  | 89 | 86 | 82 | 79 | 72 | 70 | 68 | 60 | 58 | 57 | 48 | 47 | 46 |
| 2   | 89  | 81  | 75  | 70  | 81 | 75 | 70 | 65 | 63 | 59 | 56 | 52 | 50 | 47 | 42 | 41 | 39 |
| 3   | 81  | 71  | 64  | 58  | 74 | 66 | 60 | 54 | 56 | 51 | 47 | 46 | 43 | 40 | 38 | 35 | 33 |
| 4   | 74  | 63  | 55  | 49  | 68 | 59 | 52 | 46 | 50 | 44 | 40 | 41 | 37 | 34 | 34 | 31 | 28 |
| 5   | 68  | 56  | 48  | 42  | 62 | 52 | 45 | 40 | 44 | 39 | 35 | 37 | 33 | 30 | 30 | 27 | 25 |
| 6   | 63  | 51  | 42  | 37  | 57 | 47 | 40 | 34 | 40 | 34 | 30 | 34 | 29 | 26 | 27 | 24 | 22 |
| 7   | 58  | 46  | 38  | 32  | 53 | 42 | 35 | 30 | 36 | 31 | 27 | 30 | 26 | 23 | 25 | 22 | 19 |
| 8   | 54  | 41  | 34  | 28  | 49 | 39 | 32 | 27 | 33 | 28 | 24 | 28 | 24 | 20 | 23 | 20 | 17 |
| 9   | 50  | 38  | 30  | 25  | 46 | 35 | 28 | 24 | 30 | 25 | 21 | 26 | 21 | 18 | 21 | 18 | 16 |
| 10  | 47  | 35  | 27  | 23  | 43 | 32 | 26 | 21 | 28 | 23 | 19 | 24 | 20 | 17 | 20 | 17 | 14 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4140 | 4140 | 4140 |
| 5°  | 4140 | 4073 | 4103 |
| 10° | 4100 | 4009 | 4040 |
| 15° | 4034 | 3933 | 3946 |
| 20° | 3946 | 3833 | 3850 |
| 25° | 3859 | 3714 | 3740 |
| 30° | 3751 | 3603 | 3603 |
| 35° | 3648 | 3473 | 3458 |
| 40° | 3523 | 3342 | 3320 |
| 45° | 3397 | 3210 | 3177 |
| 50° | 3260 | 3071 | 3014 |
| 55° | 3115 | 2910 | 2861 |
| 60° | 2952 | 2722 | 2687 |
| 65° | 2772 | 2524 | 2481 |
| 70° | 2544 | 2283 | 2258 |
| 75° | 2230 | 1995 | 2043 |
| 80° | 1850 | 1628 | 1651 |
| 85° | 1260 | 1025 | 1026 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 3397 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 174.7  | 1.8       |
| 10°-20°   | 491.5  | 5.0       |
| 20°-30°   | 722.3  | 7.4       |
| 30°-40°   | 838.9  | 8.6       |
| 40°-50°   | 837.9  | 8.6       |
| 50°-60°   | 730.6  | 7.5       |
| 60°-70°   | 540.1  | 5.5       |
| 70°-80°   | 305.6  | 3.1       |
| 80°-90°   | 85.8   | 0.9       |
| 90°-100°  | 112.0  | 1.1       |
| 100°-110° | 355.9  | 3.6       |
| 110°-120° | 609.1  | 6.2       |
| 120°-130° | 801.1  | 8.2       |
| 130°-140° | 899.2  | 9.2       |
| 140°-150° | 881.7  | 9.0       |
| 150°-160° | 739.6  | 7.6       |
| 160°-170° | 490.5  | 5.0       |
| 170°-180° | 171.4  | 1.8       |
| 0°-30°    | 1388.5 | 14.2      |
| 0°-40°    | 2227.5 | 22.8      |
| 0°-60°    | 3796.0 | 38.8      |
| 0°-90°    | 4727.4 | 48.3      |
| 90°-120°  | 1077.0 | 11.0      |
| 90°-150°  | 3659.0 | 37.4      |
| 90°-180°  | 5061.0 | 51.7      |
| 0°-180°   | 9788.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1856 | 1856  | 1856 | 1856  | 1856 |      |
| 5°   | 1856 | 1849  | 1829 | 1844  | 1840 | 176  |
| 15°  | 1767 | 1756  | 1733 | 1740  | 1731 | 498  |
| 25°  | 1599 | 1585  | 1554 | 1558  | 1554 | 736  |
| 35°  | 1380 | 1362  | 1333 | 1322  | 1314 | 862  |
| 45°  | 1123 | 1110  | 1083 | 1064  | 1057 | 866  |
| 55°  | 850  | 839   | 817  | 796   | 787  | 760  |
| 65°  | 573  | 562   | 544  | 528   | 519  | 567  |
| 75°  | 300  | 296   | 287  | 277   | 280  | 320  |
| 85°  | 73   | 71    | 70   | 64    | 62   | 82   |
| 90°  | 2    | 20    | 54   | 50    | 52   | 9    |
| 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 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1856.0 | 1856.0 | 1856.0 | 1856.0 | 1856.0 |
| 2.5°   | 1866.8 | 1857.9 | 1838.3 | 1856.0 | 1852.7 |
| 5°     | 1856.0 | 1849.0 | 1829.3 | 1843.5 | 1840.2 |
| 7.5°   | 1843.5 | 1832.9 | 1813.3 | 1827.7 | 1824.0 |
| 10°    | 1824.0 | 1811.6 | 1790.2 | 1804.3 | 1799.1 |
| 12.5°  | 1797.1 | 1786.6 | 1765.2 | 1774.1 | 1770.4 |
| 15°    | 1766.8 | 1756.2 | 1732.9 | 1740.2 | 1731.2 |
| 17.5°  | 1729.3 | 1718.7 | 1695.4 | 1704.3 | 1695.4 |
| 20°    | 1688.3 | 1677.7 | 1652.7 | 1658.0 | 1651.0 |
| 22.5°  | 1647.4 | 1631.2 | 1608.0 | 1608.0 | 1604.3 |
| 25°    | 1599.1 | 1584.9 | 1554.5 | 1558.0 | 1554.5 |
| 27.5°  | 1545.5 | 1533.0 | 1509.9 | 1504.6 | 1495.7 |
| 30°    | 1492.1 | 1477.7 | 1451.0 | 1445.7 | 1438.5 |
| 32.5°  | 1434.9 | 1424.3 | 1395.7 | 1384.9 | 1377.8 |
| 35°    | 1379.6 | 1361.8 | 1333.2 | 1322.4 | 1313.6 |
| 37.5°  | 1317.1 | 1301.1 | 1272.4 | 1259.9 | 1251.1 |
| 40°    | 1253.0 | 1238.6 | 1210.0 | 1194.0 | 1186.9 |
| 42.5°  | 1190.5 | 1176.1 | 1147.7 | 1129.6 | 1119.0 |
| 45°    | 1122.7 | 1110.2 | 1083.3 | 1063.8 | 1056.6 |
| 47.5°  | 1056.6 | 1044.1 | 1015.5 | 995.8  | 985.2  |
| 50°    | 986.9  | 978.0  | 953.0  | 928.1  | 919.1  |
| 52.5°  | 919.1  | 906.6  | 883.5  | 863.8  | 851.3  |
| 55°    | 849.6  | 838.9  | 817.4  | 796.0  | 787.1  |
| 57.5°  | 779.9  | 771.0  | 747.7  | 726.4  | 719.1  |
| 60°    | 710.3  | 703.3  | 678.3  | 658.5  | 653.3  |
| 62.5°  | 642.5  | 630.0  | 612.2  | 594.3  | 587.2  |
| 65°    | 573.0  | 562.2  | 544.4  | 528.3  | 519.4  |
| 67.5°  | 501.6  | 492.6  | 476.6  | 464.1  | 456.9  |
| 70°    | 435.5  | 428.3  | 412.2  | 399.7  | 392.8  |
| 72.5°  | 367.8  | 360.5  | 351.6  | 339.1  | 333.8  |
| 75°    | 299.7  | 296.3  | 287.2  | 276.7  | 280.3  |
| 77.5°  | 239.2  | 231.9  | 228.4  | 223.0  | 217.8  |
| 80°    | 178.6  | 176.7  | 173.1  | 167.8  | 164.2  |
| 82.5°  | 121.3  | 121.3  | 119.6  | 112.5  | 112.5  |
| 85°    | 73.1   | 71.4   | 69.6   | 64.2   | 62.5   |
| 87.5°  | 32.1   | 28.6   | 25.0   | 19.7   | 17.8   |
| 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  |

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**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 |

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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 | 11.92            | 12.76 | 12.89 | 13.75 | 15.04 | 11.49          | 12.34 | 12.47 | 13.33 | 14.62 |
|                 | 3H   | 13.55            | 14.31 | 14.54 | 15.31 | 16.62 | 13.09          | 13.85 | 14.07 | 14.85 | 16.16 |
|                 | 4H   | 14.12            | 14.84 | 15.12 | 15.84 | 17.17 | 13.67          | 14.38 | 14.66 | 15.38 | 16.71 |
|                 | 6H   | 14.51            | 15.17 | 15.51 | 16.17 | 17.51 | 14.05          | 14.71 | 15.05 | 15.71 | 17.05 |
|                 | 8H   | 14.60            | 15.23 | 15.61 | 16.25 | 17.58 | 14.14          | 14.77 | 15.15 | 15.79 | 17.13 |
|                 | 12H  | 14.64            | 15.24 | 15.66 | 16.25 | 17.61 | 14.18          | 14.78 | 15.19 | 15.79 | 17.15 |
| 4H              | 2H   | 12.37            | 13.09 | 13.37 | 14.09 | 15.41 | 12.03          | 12.75 | 13.03 | 13.75 | 15.07 |
|                 | 3H   | 14.21            | 14.81 | 15.22 | 15.83 | 17.17 | 13.82          | 14.42 | 14.83 | 15.45 | 16.79 |
|                 | 4H   | 14.90            | 15.45 | 15.92 | 16.47 | 17.83 | 14.51          | 15.06 | 15.53 | 16.07 | 17.44 |
|                 | 6H   | 15.39            | 15.87 | 16.42 | 16.91 | 18.27 | 15.00          | 15.47 | 16.03 | 16.51 | 17.87 |
|                 | 8H   | 15.53            | 15.97 | 16.56 | 17.01 | 18.38 | 15.13          | 15.57 | 16.16 | 16.61 | 17.98 |
|                 | 12H  | 15.59            | 15.99 | 16.64 | 17.04 | 18.42 | 15.19          | 15.59 | 16.24 | 16.64 | 18.02 |
| 8H              | 4H   | 15.09            | 15.53 | 16.12 | 16.56 | 17.94 | 14.73          | 15.18 | 15.76 | 16.21 | 17.58 |
|                 | 6H   | 15.69            | 16.05 | 16.74 | 17.13 | 18.50 | 15.34          | 15.70 | 16.39 | 16.78 | 18.15 |
|                 | 8H   | 15.89            | 16.21 | 16.96 | 17.28 | 18.67 | 15.54          | 15.86 | 16.60 | 16.92 | 18.31 |
|                 | 12H  | 16.01            | 16.29 | 17.07 | 17.35 | 18.78 | 15.64          | 15.92 | 16.71 | 16.98 | 18.41 |
| 12H             | 4H   | 15.07            | 15.47 | 16.12 | 16.52 | 17.90 | 14.72          | 15.12 | 15.77 | 16.17 | 17.55 |
|                 | 6H   | 15.71            | 16.04 | 16.78 | 17.10 | 18.49 | 15.37          | 15.69 | 16.43 | 16.76 | 18.15 |
|                 | 8H   | 15.94            | 16.22 | 17.00 | 17.28 | 18.71 | 15.59          | 15.87 | 16.66 | 16.93 | 18.36 |