

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: P925018

Luminaire Tested: DFN2DIP-PN4F0-050D070US950-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P925018  
REPORT IS A COMBINATION OF REPORTS P899666 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-050D070US950-RLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

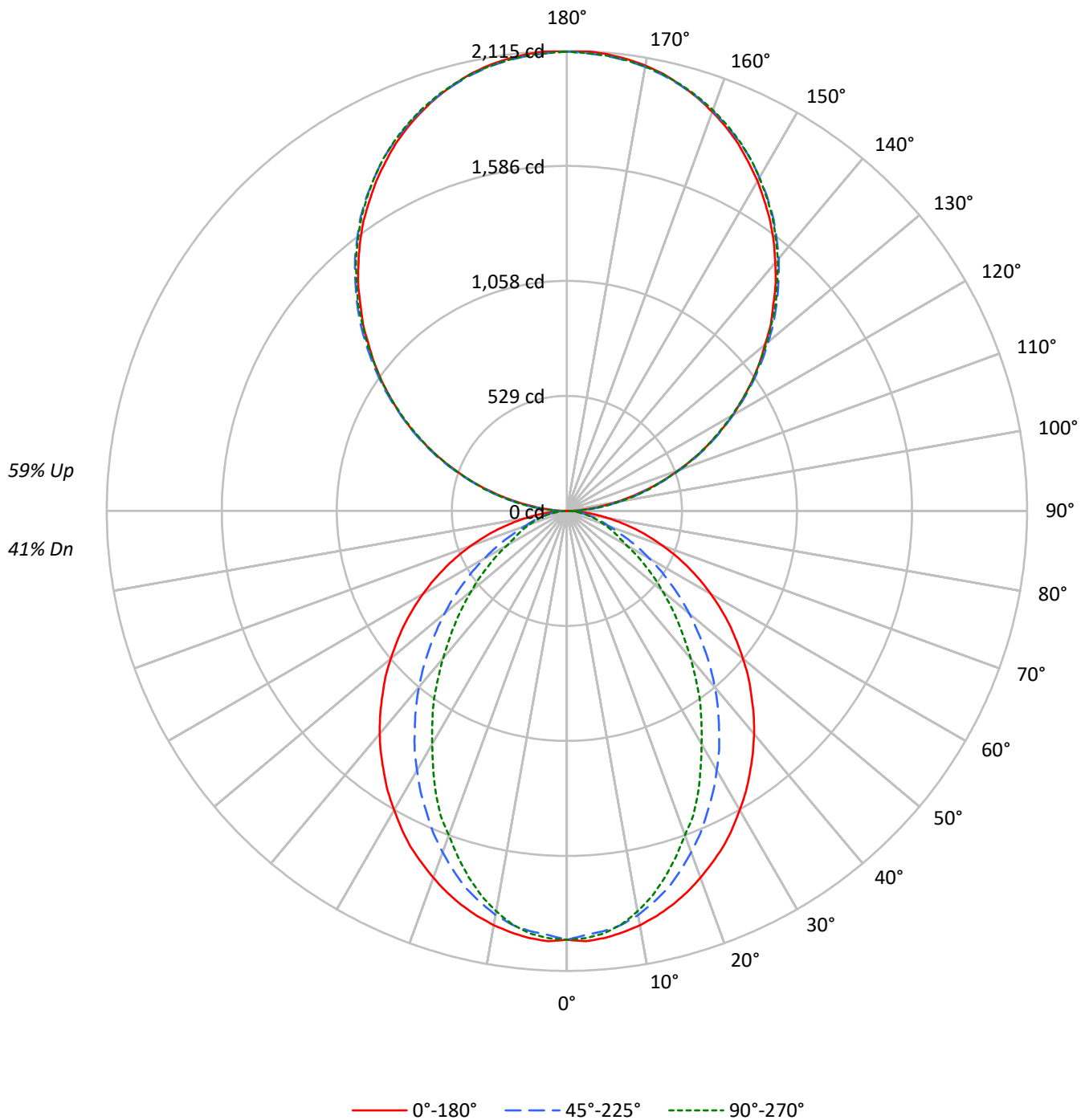
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 9964.6 lumens  
Efficiency: N/A  
Efficacy: 103.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 96.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9951  
Total Harmonic Distortion (THDi): 0.07  
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   | 105 | 105 | 105 | 105 | 96 | 96 | 96 | 96 | 78 | 78 | 78 | 62 | 62 | 62 | 48 | 48 | 48 |
| 1   | 96  | 92  | 88  | 85  | 87 | 84 | 81 | 78 | 69 | 67 | 65 | 55 | 54 | 53 | 43 | 42 | 41 |
| 2   | 88  | 81  | 75  | 70  | 80 | 74 | 69 | 65 | 61 | 57 | 54 | 49 | 47 | 44 | 38 | 36 | 35 |
| 3   | 80  | 71  | 64  | 59  | 73 | 65 | 59 | 54 | 54 | 50 | 46 | 44 | 41 | 38 | 34 | 32 | 30 |
| 4   | 74  | 63  | 56  | 50  | 67 | 58 | 52 | 46 | 48 | 43 | 40 | 39 | 36 | 33 | 31 | 28 | 26 |
| 5   | 68  | 57  | 49  | 43  | 62 | 52 | 45 | 40 | 43 | 38 | 34 | 35 | 32 | 29 | 28 | 25 | 23 |
| 6   | 62  | 51  | 43  | 37  | 57 | 47 | 40 | 35 | 39 | 34 | 30 | 32 | 28 | 25 | 25 | 23 | 21 |
| 7   | 58  | 46  | 38  | 33  | 53 | 42 | 36 | 31 | 36 | 30 | 27 | 29 | 25 | 23 | 23 | 21 | 19 |
| 8   | 54  | 42  | 34  | 29  | 49 | 39 | 32 | 27 | 32 | 27 | 24 | 27 | 23 | 20 | 21 | 19 | 17 |
| 9   | 50  | 38  | 31  | 26  | 46 | 35 | 29 | 24 | 30 | 25 | 21 | 25 | 21 | 18 | 20 | 17 | 15 |
| 10  | 47  | 35  | 28  | 23  | 43 | 32 | 26 | 22 | 27 | 23 | 19 | 23 | 19 | 17 | 18 | 16 | 14 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1439 | 1439 | 1439 |
| 5°  | 1441 | 1416 | 1426 |
| 10° | 1427 | 1389 | 1379 |
| 15° | 1407 | 1343 | 1308 |
| 20° | 1382 | 1280 | 1220 |
| 25° | 1355 | 1209 | 1135 |
| 30° | 1319 | 1137 | 1028 |
| 35° | 1284 | 1059 | 933  |
| 40° | 1248 | 978  | 825  |
| 45° | 1207 | 888  | 726  |
| 50° | 1164 | 798  | 630  |
| 55° | 1120 | 701  | 538  |
| 60° | 1068 | 600  | 443  |
| 65° | 1008 | 497  | 399  |
| 70° | 936  | 401  | 362  |
| 75° | 846  | 354  | 330  |
| 80° | 714  | 298  | 287  |
| 85° | 498  | 200  | 218  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1654 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 184.8  | 1.9       |
| 10°-20°   | 507.2  | 5.1       |
| 20°-30°   | 712.1  | 7.1       |
| 30°-40°   | 776.3  | 7.8       |
| 40°-50°   | 713.5  | 7.2       |
| 50°-60°   | 560.3  | 5.6       |
| 60°-70°   | 364.7  | 3.7       |
| 70°-80°   | 187.7  | 1.9       |
| 80°-90°   | 53.9   | 0.5       |
| 90°-100°  | 130.7  | 1.3       |
| 100°-110° | 415.3  | 4.2       |
| 110°-120° | 710.6  | 7.1       |
| 120°-130° | 934.6  | 9.4       |
| 130°-140° | 1049.0 | 10.5      |
| 140°-150° | 1028.7 | 10.3      |
| 150°-160° | 862.9  | 8.7       |
| 160°-170° | 572.3  | 5.7       |
| 170°-180° | 200.0  | 2.0       |
| 0°-30°    | 1404.1 | 14.1      |
| 0°-40°    | 2180.4 | 21.9      |
| 0°-60°    | 3454.1 | 34.7      |
| 0°-90°    | 4060.5 | 40.7      |
| 90°-120°  | 1256.6 | 12.6      |
| 90°-150°  | 4268.9 | 42.8      |
| 90°-180°  | 5904.0 | 59.2      |
| 0°-180°   | 9964.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1971 | 1971  | 1971 | 1971  | 1971 |      |
| 5°   | 1971 | 1963  | 1939 | 1955  | 1950 | 187  |
| 15°  | 1875 | 1855  | 1795 | 1761  | 1743 | 528  |
| 25°  | 1702 | 1645  | 1527 | 1454  | 1427 | 783  |
| 35°  | 1467 | 1376  | 1219 | 1106  | 1067 | 918  |
| 45°  | 1199 | 1079  | 892  | 765   | 722  | 926  |
| 55°  | 912  | 772   | 580  | 473   | 439  | 815  |
| 65°  | 616  | 471   | 310  | 250   | 244  | 610  |
| 75°  | 328  | 203   | 143  | 130   | 128  | 347  |
| 85°  | 77   | 39    | 34   | 34    | 34   | 88   |
| 90°  | 2    | 23    | 62   | 59    | 60   | 10   |
| 95°  | 93   | 111   | 114  | 114   | 111  | 103  |
| 105° | 383  | 388   | 392  | 395   | 395  | 405  |
| 115° | 713  | 723   | 720  | 718   | 713  | 705  |
| 125° | 1037 | 1053  | 1048 | 1042  | 1040 | 927  |
| 135° | 1342 | 1361  | 1365 | 1363  | 1358 | 1037 |
| 145° | 1629 | 1642  | 1652 | 1654  | 1647 | 1018 |
| 155° | 1862 | 1868  | 1873 | 1882  | 1876 | 857  |
| 165° | 2026 | 2024  | 2024 | 2037  | 2028 | 572  |
| 175° | 2108 | 2103  | 2099 | 2112  | 2101 | 200  |
| 180° | 2112 | 2112  | 2112 | 2112  | 2112 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1971.4 | 1971.4 | 1971.4 | 1971.4 | 1971.4 |
| 2.5°   | 1980.3 | 1971.4 | 1951.8 | 1969.7 | 1966.1 |
| 5°     | 1971.4 | 1962.6 | 1939.3 | 1955.3 | 1950.1 |
| 7.5°   | 1955.3 | 1944.7 | 1919.7 | 1926.8 | 1917.8 |
| 10°    | 1933.9 | 1921.5 | 1885.9 | 1880.4 | 1869.7 |
| 12.5°  | 1907.2 | 1891.2 | 1842.9 | 1832.3 | 1812.6 |
| 15°    | 1875.1 | 1855.4 | 1794.9 | 1761.0 | 1743.1 |
| 17.5°  | 1837.6 | 1809.1 | 1734.1 | 1694.9 | 1666.3 |
| 20°    | 1794.9 | 1759.1 | 1669.9 | 1625.4 | 1586.0 |
| 22.5°  | 1748.5 | 1707.4 | 1603.9 | 1543.3 | 1516.6 |
| 25°    | 1702.0 | 1644.9 | 1527.2 | 1454.1 | 1427.2 |
| 27.5°  | 1646.8 | 1586.0 | 1455.8 | 1371.9 | 1330.9 |
| 30°    | 1587.9 | 1520.0 | 1377.3 | 1286.4 | 1238.1 |
| 32.5°  | 1530.8 | 1448.6 | 1302.5 | 1195.4 | 1150.7 |
| 35°    | 1466.6 | 1375.6 | 1218.6 | 1106.2 | 1066.9 |
| 37.5°  | 1404.1 | 1305.9 | 1140.1 | 1016.9 | 972.4  |
| 40°    | 1338.1 | 1231.1 | 1057.9 | 931.3  | 884.9  |
| 42.5°  | 1270.3 | 1156.2 | 975.9  | 843.8  | 799.4  |
| 45°    | 1199.0 | 1079.4 | 892.1  | 765.3  | 722.5  |
| 47.5°  | 1131.2 | 1004.6 | 811.9  | 685.1  | 645.9  |
| 50°    | 1056.3 | 929.6  | 733.3  | 610.1  | 572.8  |
| 52.5°  | 983.0  | 849.2  | 658.4  | 540.6  | 506.8  |
| 55°    | 911.6  | 772.5  | 579.7  | 472.8  | 438.9  |
| 57.5°  | 838.6  | 695.8  | 510.3  | 410.4  | 381.8  |
| 60°    | 763.6  | 620.9  | 437.0  | 346.2  | 317.6  |
| 62.5°  | 690.5  | 547.8  | 374.6  | 289.1  | 274.8  |
| 65°    | 615.5  | 471.0  | 310.4  | 249.9  | 244.4  |
| 67.5°  | 544.2  | 399.6  | 249.9  | 219.4  | 214.1  |
| 70°    | 469.3  | 330.1  | 206.9  | 189.1  | 181.9  |
| 72.5°  | 397.9  | 265.8  | 173.1  | 158.8  | 155.2  |
| 75°    | 328.3  | 203.3  | 142.7  | 130.2  | 128.5  |
| 77.5°  | 258.7  | 144.4  | 112.5  | 105.2  | 101.6  |
| 80°    | 194.4  | 103.5  | 85.6   | 78.5   | 78.5   |
| 82.5°  | 135.6  | 69.6   | 58.9   | 55.2   | 55.2   |
| 85°    | 76.7   | 39.2   | 33.9   | 33.9   | 33.9   |
| 87.5°  | 28.6   | 14.2   | 14.2   | 12.5   | 12.5   |
| 90°    | 1.9    | 22.9   | 62.4   | 58.6   | 60.5   |
| 92.5°  | 39.5   | 53.5   | 55.4   | 57.3   | 57.3   |
| 95°    | 92.9   | 110.8  | 114.0  | 114.0  | 110.8  |
| 97.5°  | 154.7  | 171.2  | 178.3  | 178.3  | 178.3  |
| 100°   | 226.0  | 240.7  | 245.8  | 245.8  | 243.8  |
| 102.5° | 301.2  | 312.0  | 319.0  | 320.9  | 319.0  |
| 105°   | 383.3  | 388.4  | 392.2  | 395.4  | 395.4  |
| 107.5° | 464.8  | 472.4  | 472.4  | 473.8  | 464.8  |
| 110°   | 543.8  | 554.0  | 554.0  | 554.0  | 548.8  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 629.1  | 639.9  | 638.0  | 632.9  | 629.1  |
| 115°   | 713.1  | 723.3  | 720.2  | 718.3  | 713.1  |
| 117.5° | 796.5  | 810.5  | 801.6  | 796.5  | 791.4  |
| 120°   | 880.5  | 894.6  | 880.5  | 880.5  | 874.8  |
| 122.5° | 957.0  | 974.8  | 965.9  | 960.8  | 957.0  |
| 125°   | 1037.2 | 1053.1 | 1048.1 | 1042.3 | 1040.4 |
| 127.5° | 1115.5 | 1135.3 | 1128.3 | 1120.7 | 1115.5 |
| 130°   | 1188.8 | 1211.7 | 1208.5 | 1204.7 | 1197.7 |
| 132.5° | 1270.9 | 1288.8 | 1290.0 | 1281.1 | 1276.0 |
| 135°   | 1341.6 | 1361.3 | 1365.2 | 1363.2 | 1358.1 |
| 137.5° | 1420.5 | 1436.4 | 1439.6 | 1438.3 | 1430.7 |
| 140°   | 1490.0 | 1505.9 | 1514.8 | 1514.8 | 1507.8 |
| 142.5° | 1561.2 | 1577.2 | 1582.2 | 1584.1 | 1577.2 |
| 145°   | 1628.8 | 1641.5 | 1651.7 | 1653.6 | 1646.6 |
| 147.5° | 1689.2 | 1705.2 | 1712.8 | 1716.0 | 1709.0 |
| 150°   | 1751.6 | 1762.4 | 1769.5 | 1775.2 | 1769.5 |
| 152.5° | 1807.0 | 1817.8 | 1826.7 | 1833.8 | 1826.7 |
| 155°   | 1862.4 | 1867.5 | 1873.3 | 1882.1 | 1876.4 |
| 157.5° | 1910.2 | 1914.0 | 1917.2 | 1929.9 | 1921.0 |
| 160°   | 1952.8 | 1956.7 | 1958.6 | 1969.3 | 1961.7 |
| 162.5° | 1992.3 | 1992.3 | 1994.2 | 2006.3 | 1997.4 |
| 165°   | 2026.0 | 2024.1 | 2024.1 | 2036.9 | 2027.9 |
| 167.5° | 2056.6 | 2050.9 | 2050.9 | 2063.6 | 2054.7 |
| 170°   | 2079.5 | 2074.5 | 2072.6 | 2085.3 | 2074.5 |
| 172.5° | 2095.5 | 2090.3 | 2088.4 | 2101.2 | 2090.3 |
| 175°   | 2108.1 | 2103.1 | 2099.3 | 2112.0 | 2101.2 |
| 177.5° | 2115.2 | 2110.1 | 2106.2 | 2117.1 | 2106.2 |
| 180°   | 2112.0 | 2112.0 | 2112.0 | 2112.0 | 2112.0 |

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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 | 7.49             | 8.25  | 8.53  | 9.29  | 10.69 | 3.45           | 4.21 | 4.49 | 5.25 | 6.65 |
|                 | 3H   | 9.16             | 9.84  | 10.21 | 10.89 | 12.31 | 4.64           | 5.32 | 5.68 | 6.37 | 7.78 |
|                 | 4H   | 9.77             | 10.41 | 10.83 | 11.47 | 12.89 | 5.08           | 5.73 | 6.14 | 6.78 | 8.21 |
|                 | 6H   | 10.19            | 10.78 | 11.26 | 11.84 | 13.28 | 5.40           | 5.99 | 6.47 | 7.05 | 8.49 |
|                 | 8H   | 10.32            | 10.88 | 11.39 | 11.95 | 13.38 | 5.49           | 6.05 | 6.56 | 7.12 | 8.56 |
|                 | 12H  | 10.38            | 10.91 | 11.46 | 11.98 | 13.43 | 5.53           | 6.07 | 6.61 | 7.13 | 8.59 |
| 4H              | 2H   | 7.50             | 8.14  | 8.56  | 9.19  | 10.62 | 4.04           | 4.68 | 5.11 | 5.74 | 7.16 |
|                 | 3H   | 9.32             | 9.86  | 10.40 | 10.94 | 12.38 | 5.39           | 5.92 | 6.46 | 7.00 | 8.44 |
|                 | 4H   | 10.01            | 10.50 | 11.09 | 11.58 | 13.04 | 5.93           | 6.42 | 7.01 | 7.49 | 8.95 |
|                 | 6H   | 10.53            | 10.95 | 11.62 | 12.04 | 13.50 | 6.35           | 6.77 | 7.44 | 7.86 | 9.32 |
|                 | 8H   | 10.70            | 11.10 | 11.79 | 12.18 | 13.65 | 6.47           | 6.87 | 7.56 | 7.95 | 9.42 |
|                 | 12H  | 10.80            | 11.15 | 11.90 | 12.25 | 13.73 | 6.54           | 6.89 | 7.64 | 7.99 | 9.47 |
| 8H              | 4H   | 9.98             | 10.37 | 11.07 | 11.46 | 12.93 | 6.21           | 6.60 | 7.30 | 7.69 | 9.16 |
|                 | 6H   | 10.54            | 10.87 | 11.65 | 12.00 | 13.46 | 6.72           | 7.05 | 7.83 | 8.18 | 9.64 |
|                 | 8H   | 10.76            | 11.05 | 11.88 | 12.16 | 13.64 | 6.92           | 7.20 | 8.03 | 8.31 | 9.80 |
|                 | 12H  | 10.90            | 11.15 | 12.02 | 12.25 | 13.78 | 7.03           | 7.28 | 8.15 | 8.39 | 9.91 |
| 12H             | 4H   | 9.93             | 10.28 | 11.03 | 11.38 | 12.86 | 6.21           | 6.56 | 7.32 | 7.66 | 9.14 |
|                 | 6H   | 10.52            | 10.80 | 11.64 | 11.91 | 13.40 | 6.77           | 7.06 | 7.89 | 8.17 | 9.65 |
|                 | 8H   | 10.74            | 10.99 | 11.86 | 12.09 | 13.62 | 6.98           | 7.23 | 8.10 | 8.34 | 9.86 |