

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: P924690

Luminaire Tested: DFN2DIP-PN2F0-020D060US950-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P924690  
REPORT IS A COMBINATION OF REPORTS P899502 AND P896349  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN2F0-020D060US950-RLLFLL  
Description: 2 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

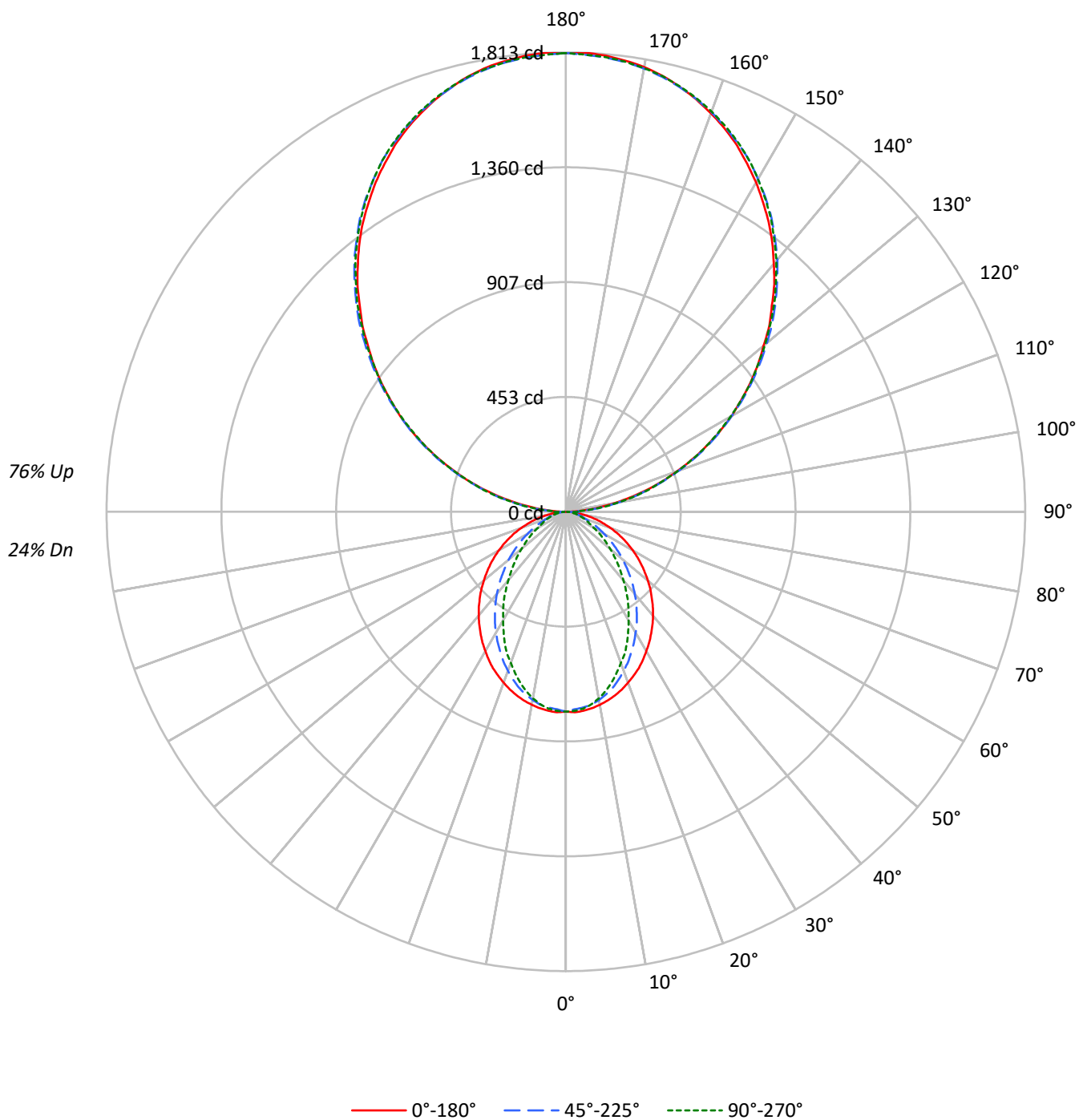
Lumens per Lamp: N/A  
Luminaire Lumens: 6687.5 lumens  
Efficiency: N/A  
Efficacy: 96.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.17' x L: 2.29' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 69  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.099  
Total Harmonic Distortion (THDi): 0.979  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P924690

CATALOG NUMBER: DFN2DIP-PN2F0-020D060US950-RLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P924690

CATALOG NUMBER: DFN2DIP-PN2F0-020D060US950-RLLFLL

**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   | 101 | 101 | 101 | 101 | 90 | 90 | 90 | 90 | 69 | 69 | 69 | 50 | 50 | 50 | 33 | 33 | 33 |
| 1   | 92  | 88  | 85  | 81  | 82 | 79 | 76 | 73 | 61 | 59 | 57 | 44 | 43 | 42 | 29 | 28 | 28 |
| 2   | 84  | 77  | 71  | 67  | 75 | 69 | 64 | 60 | 53 | 50 | 47 | 39 | 37 | 35 | 26 | 25 | 24 |
| 3   | 77  | 68  | 61  | 56  | 68 | 61 | 55 | 50 | 47 | 43 | 40 | 35 | 32 | 30 | 23 | 22 | 20 |
| 4   | 70  | 60  | 53  | 47  | 62 | 54 | 48 | 43 | 42 | 38 | 34 | 31 | 28 | 26 | 21 | 19 | 18 |
| 5   | 64  | 54  | 46  | 40  | 57 | 48 | 42 | 37 | 38 | 33 | 29 | 28 | 25 | 22 | 19 | 17 | 16 |
| 6   | 59  | 48  | 40  | 35  | 53 | 43 | 37 | 32 | 34 | 29 | 26 | 25 | 22 | 20 | 17 | 15 | 14 |
| 7   | 55  | 43  | 36  | 30  | 49 | 39 | 32 | 28 | 31 | 26 | 23 | 23 | 20 | 17 | 16 | 14 | 12 |
| 8   | 51  | 39  | 32  | 27  | 45 | 35 | 29 | 24 | 28 | 23 | 20 | 21 | 18 | 16 | 14 | 12 | 11 |
| 9   | 47  | 36  | 29  | 24  | 42 | 32 | 26 | 22 | 25 | 21 | 18 | 19 | 16 | 14 | 13 | 11 | 10 |
| 10  | 44  | 33  | 26  | 21  | 39 | 29 | 23 | 19 | 23 | 19 | 16 | 18 | 15 | 13 | 12 | 10 | 9  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1708 | 1708 | 1708 |
| 5°  | 1708 | 1677 | 1689 |
| 10° | 1688 | 1641 | 1632 |
| 15° | 1662 | 1583 | 1545 |
| 20° | 1629 | 1505 | 1438 |
| 25° | 1595 | 1418 | 1336 |
| 30° | 1549 | 1329 | 1206 |
| 35° | 1505 | 1234 | 1093 |
| 40° | 1460 | 1136 | 963  |
| 45° | 1407 | 1028 | 846  |
| 50° | 1353 | 919  | 732  |
| 55° | 1296 | 803  | 622  |
| 60° | 1230 | 683  | 510  |
| 65° | 1154 | 560  | 456  |
| 70° | 1061 | 446  | 409  |
| 75° | 945  | 386  | 367  |
| 80° | 777  | 314  | 311  |
| 85° | 507  | 194  | 220  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2439 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 73.9   | 1.1       |
| 10°-20°   | 202.9  | 3.0       |
| 20°-30°   | 284.8  | 4.3       |
| 30°-40°   | 310.5  | 4.6       |
| 40°-50°   | 285.4  | 4.3       |
| 50°-60°   | 224.1  | 3.4       |
| 60°-70°   | 145.9  | 2.2       |
| 70°-80°   | 75.1   | 1.1       |
| 80°-90°   | 24.3   | 0.4       |
| 90°-100°  | 112.0  | 1.7       |
| 100°-110° | 355.9  | 5.3       |
| 110°-120° | 609.1  | 9.1       |
| 120°-130° | 801.1  | 12.0      |
| 130°-140° | 899.2  | 13.4      |
| 140°-150° | 881.7  | 13.2      |
| 150°-160° | 739.6  | 11.1      |
| 160°-170° | 490.5  | 7.3       |
| 170°-180° | 171.4  | 2.6       |
| 0°-30°    | 561.6  | 8.4       |
| 0°-40°    | 872.1  | 13.0      |
| 0°-60°    | 1381.7 | 20.7      |
| 0°-90°    | 1626.9 | 24.3      |
| 90°-120°  | 1077.0 | 16.1      |
| 90°-150°  | 3659.0 | 54.7      |
| 90°-180°  | 5061.0 | 75.7      |
| 0°-180°   | 6687.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 789  | 789   | 789  | 789   | 789  |      |
| 5°   | 789  | 785   | 776  | 782   | 780  | 75   |
| 15°  | 750  | 742   | 718  | 704   | 697  | 211  |
| 25°  | 681  | 658   | 611  | 582   | 571  | 313  |
| 35°  | 587  | 550   | 488  | 442   | 427  | 367  |
| 45°  | 480  | 432   | 357  | 306   | 289  | 370  |
| 55°  | 365  | 309   | 232  | 189   | 176  | 326  |
| 65°  | 246  | 188   | 124  | 100   | 98   | 244  |
| 75°  | 131  | 81    | 57   | 52    | 51   | 139  |
| 85°  | 31   | 16    | 14   | 14    | 14   | 35   |
| 90°  | 2    | 20    | 54   | 50    | 52   | 7    |
| 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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CATALOG NUMBER: DFN2DIP-PN2F0-020D060US950-RLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 0°     | 788.6 | 788.6 | 788.6 | 788.6 | 788.6 |
| 2.5°   | 792.1 | 788.6 | 780.7 | 787.9 | 786.5 |
| 5°     | 788.6 | 785.0 | 775.7 | 782.2 | 780.0 |
| 7.5°   | 782.2 | 777.9 | 767.9 | 770.7 | 767.1 |
| 10°    | 773.6 | 768.5 | 754.3 | 752.1 | 747.9 |
| 12.5°  | 762.9 | 756.4 | 737.2 | 733.0 | 725.0 |
| 15°    | 750.0 | 742.1 | 717.9 | 704.3 | 697.3 |
| 17.5°  | 735.1 | 723.6 | 693.7 | 677.9 | 666.6 |
| 20°    | 717.9 | 703.6 | 668.0 | 650.2 | 634.4 |
| 22.5°  | 699.4 | 683.0 | 641.6 | 617.3 | 606.6 |
| 25°    | 680.9 | 658.0 | 610.8 | 581.7 | 570.9 |
| 27.5°  | 658.7 | 634.4 | 582.3 | 548.7 | 532.3 |
| 30°    | 635.2 | 608.0 | 550.9 | 514.6 | 495.2 |
| 32.5°  | 612.3 | 579.5 | 521.0 | 478.1 | 460.3 |
| 35°    | 586.6 | 550.3 | 487.5 | 442.5 | 426.7 |
| 37.5°  | 561.6 | 522.3 | 456.0 | 406.8 | 388.9 |
| 40°    | 535.2 | 492.5 | 423.2 | 372.5 | 353.9 |
| 42.5°  | 508.1 | 462.5 | 390.4 | 337.5 | 319.8 |
| 45°    | 479.6 | 431.7 | 356.9 | 306.1 | 289.0 |
| 47.5°  | 452.5 | 401.8 | 324.7 | 274.0 | 258.3 |
| 50°    | 422.5 | 371.9 | 293.4 | 244.0 | 229.2 |
| 52.5°  | 393.1 | 339.6 | 263.3 | 216.3 | 202.7 |
| 55°    | 364.6 | 309.0 | 231.9 | 189.2 | 175.5 |
| 57.5°  | 335.4 | 278.3 | 204.2 | 164.2 | 152.7 |
| 60°    | 305.5 | 248.3 | 174.9 | 138.5 | 127.1 |
| 62.5°  | 276.2 | 219.1 | 149.9 | 115.6 | 109.9 |
| 65°    | 246.2 | 188.4 | 124.2 | 100.0 | 97.8  |
| 67.5°  | 217.7 | 159.8 | 100.0 | 87.8  | 85.7  |
| 70°    | 187.7 | 132.0 | 82.7  | 75.7  | 72.8  |
| 72.5°  | 159.1 | 106.3 | 69.2  | 63.5  | 62.1  |
| 75°    | 131.3 | 81.3  | 57.0  | 52.1  | 51.4  |
| 77.5°  | 103.5 | 57.8  | 44.9  | 42.1  | 40.6  |
| 80°    | 77.8  | 41.4  | 34.2  | 31.4  | 31.4  |
| 82.5°  | 54.2  | 27.9  | 23.6  | 22.1  | 22.1  |
| 85°    | 30.6  | 15.6  | 13.5  | 13.5  | 13.5  |
| 87.5°  | 11.4  | 5.7   | 5.7   | 5.0   | 5.0   |
| 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 |

TEST NUMBER: P924690

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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 | 5.80             | 6.46 | 6.96  | 7.60  | 9.20  | 1.77           | 2.43 | 2.93 | 3.57 | 5.17 |
|                 | 3H   | 7.45             | 8.04 | 8.61  | 9.18  | 10.80 | 2.93           | 3.52 | 4.10 | 4.67 | 6.28 |
|                 | 4H   | 8.03             | 8.59 | 9.21  | 9.74  | 11.36 | 3.36           | 3.92 | 4.53 | 5.07 | 6.69 |
|                 | 6H   | 8.43             | 8.94 | 9.61  | 10.09 | 11.72 | 3.66           | 4.17 | 4.84 | 5.32 | 6.95 |
|                 | 8H   | 8.54             | 9.03 | 9.72  | 10.20 | 11.82 | 3.74           | 4.23 | 4.92 | 5.39 | 7.01 |
|                 | 12H  | 8.59             | 9.05 | 9.77  | 10.21 | 11.85 | 3.77           | 4.23 | 4.95 | 5.39 | 7.03 |
| 4H              | 2H   | 5.80             | 6.36 | 6.98  | 7.50  | 9.12  | 2.34           | 2.90 | 3.52 | 4.04 | 5.66 |
|                 | 3H   | 7.59             | 8.05 | 8.77  | 9.22  | 10.85 | 3.65           | 4.12 | 4.83 | 5.29 | 6.92 |
|                 | 4H   | 8.26             | 8.68 | 9.44  | 9.84  | 11.49 | 4.18           | 4.61 | 5.36 | 5.77 | 7.42 |
|                 | 6H   | 8.74             | 9.11 | 9.93  | 10.29 | 11.93 | 4.57           | 4.93 | 5.76 | 6.12 | 7.76 |
|                 | 8H   | 8.90             | 9.24 | 10.09 | 10.42 | 12.07 | 4.68           | 5.03 | 5.87 | 6.20 | 7.85 |
|                 | 12H  | 8.98             | 9.29 | 10.18 | 10.47 | 12.13 | 4.73           | 5.04 | 5.93 | 6.23 | 7.88 |
| 8H              | 4H   | 8.21             | 8.55 | 9.39  | 9.72  | 11.38 | 4.43           | 4.77 | 5.62 | 5.95 | 7.60 |
|                 | 6H   | 8.74             | 9.03 | 9.95  | 10.24 | 11.89 | 4.92           | 5.20 | 6.13 | 6.42 | 8.07 |
|                 | 8H   | 8.95             | 9.19 | 10.16 | 10.39 | 12.06 | 5.10           | 5.34 | 6.31 | 6.54 | 8.21 |
|                 | 12H  | 9.06             | 9.28 | 10.28 | 10.47 | 12.17 | 5.19           | 5.41 | 6.41 | 6.60 | 8.30 |
| 12H             | 4H   | 8.15             | 8.46 | 9.35  | 9.64  | 11.30 | 4.43           | 4.74 | 5.63 | 5.92 | 7.58 |
|                 | 6H   | 8.72             | 8.96 | 9.93  | 10.16 | 11.83 | 4.96           | 5.21 | 6.17 | 6.40 | 8.07 |
|                 | 8H   | 8.92             | 9.13 | 10.13 | 10.32 | 12.02 | 5.15           | 5.37 | 6.37 | 6.56 | 8.26 |