

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: P916524

Luminaire Tested: DFN2DIP-PN2F0-030D060US930-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P916524  
REPORT IS A COMBINATION OF REPORTS P899503 AND P896349  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN2F0-030D060US930-FLLFLL  
Description: 2 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

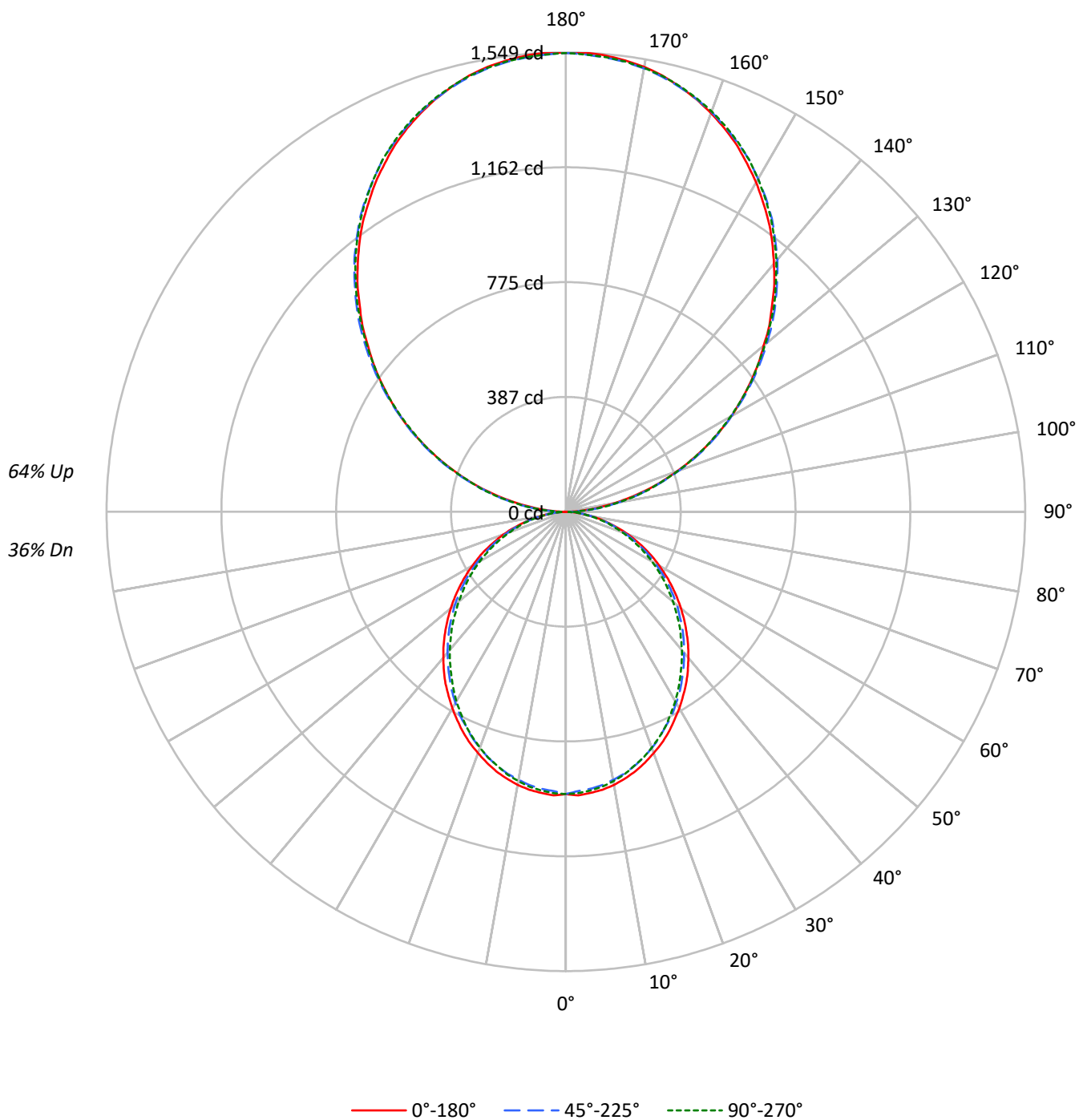
Lumens per Lamp: N/A  
Luminaire Lumens: 6750.7 lumens  
Efficiency: N/A  
Efficacy: 83.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.17' x L: 2.29' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 80.5  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9972  
Total Harmonic Distortion (THDi): 0.128  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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CATALOG NUMBER: DFN2DIP-PN2F0-030D060US930-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P916524

CATALOG NUMBER: DFN2DIP-PN2F0-030D060US930-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   | 104 | 104 | 104 | 104 | 94 | 94 | 94 | 94 | 76 | 76 | 76 | 59 | 59 | 59 | 43 | 43 | 43 |
| 1   | 95  | 90  | 87  | 83  | 85 | 82 | 79 | 76 | 66 | 64 | 62 | 52 | 50 | 49 | 38 | 37 | 36 |
| 2   | 86  | 79  | 73  | 68  | 78 | 72 | 66 | 62 | 58 | 54 | 51 | 45 | 43 | 41 | 34 | 32 | 31 |
| 3   | 79  | 69  | 62  | 56  | 71 | 63 | 57 | 52 | 51 | 47 | 43 | 40 | 37 | 34 | 30 | 28 | 26 |
| 4   | 72  | 61  | 54  | 48  | 65 | 56 | 49 | 44 | 45 | 40 | 37 | 36 | 32 | 29 | 27 | 24 | 22 |
| 5   | 66  | 54  | 47  | 41  | 59 | 50 | 43 | 38 | 40 | 35 | 31 | 32 | 28 | 25 | 24 | 22 | 20 |
| 6   | 61  | 49  | 41  | 35  | 55 | 45 | 38 | 33 | 36 | 31 | 27 | 29 | 25 | 22 | 22 | 19 | 17 |
| 7   | 56  | 44  | 36  | 31  | 50 | 40 | 33 | 28 | 33 | 28 | 24 | 26 | 22 | 20 | 20 | 17 | 15 |
| 8   | 52  | 40  | 32  | 27  | 47 | 36 | 30 | 25 | 30 | 25 | 21 | 24 | 20 | 17 | 18 | 16 | 14 |
| 9   | 48  | 36  | 29  | 24  | 44 | 33 | 27 | 22 | 27 | 22 | 19 | 22 | 18 | 16 | 17 | 14 | 12 |
| 10  | 45  | 33  | 26  | 21  | 41 | 30 | 24 | 20 | 25 | 20 | 17 | 20 | 17 | 14 | 16 | 13 | 11 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2061 | 2061 | 2061 |
| 5°  | 2061 | 2028 | 2043 |
| 10° | 2041 | 1996 | 2013 |
| 15° | 2008 | 1959 | 1966 |
| 20° | 1964 | 1909 | 1919 |
| 25° | 1920 | 1850 | 1865 |
| 30° | 1866 | 1795 | 1797 |
| 35° | 1815 | 1731 | 1725 |
| 40° | 1752 | 1665 | 1657 |
| 45° | 1689 | 1600 | 1587 |
| 50° | 1621 | 1531 | 1506 |
| 55° | 1548 | 1451 | 1430 |
| 60° | 1466 | 1357 | 1344 |
| 65° | 1377 | 1259 | 1243 |
| 70° | 1262 | 1140 | 1132 |
| 75° | 1106 | 997  | 1026 |
| 80° | 915  | 814  | 833  |
| 85° | 621  | 514  | 521  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2086 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 89.6   | 1.3       |
| 10°-20°   | 252.0  | 3.7       |
| 20°-30°   | 370.4  | 5.5       |
| 30°-40°   | 430.2  | 6.4       |
| 40°-50°   | 429.7  | 6.4       |
| 50°-60°   | 374.6  | 5.5       |
| 60°-70°   | 277.0  | 4.1       |
| 70°-80°   | 156.7  | 2.3       |
| 80°-90°   | 45.7   | 0.7       |
| 90°-100°  | 95.7   | 1.4       |
| 100°-110° | 304.2  | 4.5       |
| 110°-120° | 520.6  | 7.7       |
| 120°-130° | 684.6  | 10.1      |
| 130°-140° | 768.4  | 11.4      |
| 140°-150° | 753.5  | 11.2      |
| 150°-160° | 632.1  | 9.4       |
| 160°-170° | 419.2  | 6.2       |
| 170°-180° | 146.5  | 2.2       |
| 0°-30°    | 712.0  | 10.5      |
| 0°-40°    | 1142.2 | 16.9      |
| 0°-60°    | 1946.5 | 28.8      |
| 0°-90°    | 2425.8 | 35.9      |
| 90°-120°  | 920.5  | 13.6      |
| 90°-150°  | 3127.0 | 46.3      |
| 90°-180°  | 4325.0 | 64.1      |
| 0°-180°   | 6750.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 952  | 952   | 952  | 952   | 952  |      |
| 5°   | 952  | 948   | 938  | 945   | 944  | 90   |
| 15°  | 906  | 901   | 889  | 892   | 888  | 255  |
| 25°  | 820  | 813   | 797  | 799   | 797  | 377  |
| 35°  | 707  | 698   | 684  | 678   | 674  | 442  |
| 45°  | 576  | 569   | 556  | 545   | 542  | 444  |
| 55°  | 436  | 430   | 419  | 408   | 404  | 390  |
| 65°  | 294  | 288   | 279  | 271   | 266  | 290  |
| 75°  | 154  | 152   | 147  | 142   | 144  | 164  |
| 85°  | 38   | 37    | 36   | 33    | 32   | 42   |
| 90°  | 1    | 17    | 46   | 43    | 44   | 7    |
| 95°  | 68   | 81    | 84   | 84    | 81   | 76   |
| 105° | 281  | 284   | 287  | 290   | 290  | 296  |
| 115° | 522  | 530   | 528  | 526   | 522  | 517  |
| 125° | 760  | 771   | 768  | 764   | 762  | 679  |
| 135° | 983  | 997   | 1000 | 999   | 995  | 760  |
| 145° | 1193 | 1202  | 1210 | 1211  | 1206 | 745  |
| 155° | 1364 | 1368  | 1372 | 1379  | 1374 | 628  |
| 165° | 1484 | 1483  | 1483 | 1492  | 1486 | 419  |
| 175° | 1544 | 1541  | 1538 | 1547  | 1539 | 147  |
| 180° | 1547 | 1547  | 1547 | 1547  | 1547 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 0°     | 951.7 | 951.7 | 951.7 | 951.7 | 951.7 |
| 2.5°   | 957.2 | 952.7 | 942.6 | 951.7 | 950.0 |
| 5°     | 951.7 | 948.1 | 938.0 | 945.3 | 943.5 |
| 7.5°   | 945.3 | 939.9 | 929.8 | 937.2 | 935.3 |
| 10°    | 935.3 | 928.9 | 917.9 | 925.2 | 922.5 |
| 12.5°  | 921.5 | 916.1 | 905.1 | 909.6 | 907.8 |
| 15°    | 906.0 | 900.6 | 888.6 | 892.3 | 887.7 |
| 17.5°  | 886.7 | 881.3 | 869.4 | 873.9 | 869.4 |
| 20°    | 865.7 | 860.2 | 847.4 | 850.1 | 846.5 |
| 22.5°  | 844.7 | 836.5 | 824.5 | 824.5 | 822.6 |
| 25°    | 819.9 | 812.7 | 797.1 | 798.9 | 797.1 |
| 27.5°  | 792.5 | 786.0 | 774.2 | 771.5 | 767.0 |
| 30°    | 765.1 | 757.7 | 744.0 | 741.3 | 737.6 |
| 32.5°  | 735.8 | 730.3 | 715.7 | 710.1 | 706.5 |
| 35°    | 707.4 | 698.3 | 683.6 | 678.1 | 673.5 |
| 37.5°  | 675.4 | 667.2 | 652.5 | 646.0 | 641.5 |
| 40°    | 642.5 | 635.1 | 620.4 | 612.3 | 608.6 |
| 42.5°  | 610.4 | 603.1 | 588.5 | 579.3 | 573.8 |
| 45°    | 575.7 | 569.2 | 555.5 | 545.4 | 541.8 |
| 47.5°  | 541.8 | 535.4 | 520.7 | 510.6 | 505.2 |
| 50°    | 506.1 | 501.5 | 488.7 | 475.9 | 471.3 |
| 52.5°  | 471.3 | 464.9 | 453.1 | 443.0 | 436.5 |
| 55°    | 435.7 | 430.2 | 419.1 | 408.2 | 403.7 |
| 57.5°  | 399.9 | 395.3 | 383.4 | 372.4 | 368.8 |
| 60°    | 364.2 | 360.6 | 347.8 | 337.7 | 335.0 |
| 62.5°  | 329.5 | 323.0 | 313.9 | 304.8 | 301.1 |
| 65°    | 293.8 | 288.3 | 279.2 | 270.9 | 266.4 |
| 67.5°  | 257.2 | 252.6 | 244.3 | 238.0 | 234.3 |
| 70°    | 223.3 | 219.6 | 211.4 | 205.0 | 201.4 |
| 72.5°  | 188.6 | 184.8 | 180.3 | 173.9 | 171.2 |
| 75°    | 153.7 | 152.0 | 147.3 | 141.9 | 143.7 |
| 77.5°  | 122.6 | 119.0 | 117.1 | 114.4 | 111.7 |
| 80°    | 91.6  | 90.6  | 88.7  | 86.0  | 84.2  |
| 82.5°  | 62.2  | 62.2  | 61.4  | 57.6  | 57.6  |
| 85°    | 37.5  | 36.6  | 35.7  | 32.9  | 32.0  |
| 87.5°  | 16.5  | 14.7  | 12.8  | 10.1  | 9.1   |
| 90°    | 1.4   | 16.8  | 45.7  | 42.9  | 44.3  |
| 92.5°  | 28.9  | 39.2  | 40.6  | 42.0  | 42.0  |
| 95°    | 68.1  | 81.1  | 83.5  | 83.5  | 81.1  |
| 97.5°  | 113.3 | 125.5 | 130.6 | 130.6 | 130.6 |
| 100°   | 165.6 | 176.3 | 180.0 | 180.0 | 178.6 |
| 102.5° | 220.6 | 228.5 | 233.7 | 235.1 | 233.7 |
| 105°   | 280.8 | 284.5 | 287.3 | 289.7 | 289.7 |
| 107.5° | 340.5 | 346.1 | 346.1 | 347.0 | 340.5 |
| 110°   | 398.4 | 405.8 | 405.8 | 405.8 | 402.0 |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 460.8  | 468.7  | 467.3  | 463.6  | 460.8  |
| 115°   | 522.4  | 529.9  | 527.5  | 526.1  | 522.4  |
| 117.5° | 583.5  | 593.8  | 587.2  | 583.5  | 579.8  |
| 120°   | 645.1  | 655.3  | 645.1  | 645.1  | 640.8  |
| 122.5° | 701.0  | 714.0  | 707.5  | 703.8  | 701.0  |
| 125°   | 759.8  | 771.4  | 767.7  | 763.5  | 762.1  |
| 127.5° | 817.2  | 831.6  | 826.5  | 820.9  | 817.2  |
| 130°   | 870.8  | 887.6  | 885.3  | 882.5  | 877.3  |
| 132.5° | 931.0  | 944.0  | 944.9  | 938.4  | 934.7  |
| 135°   | 982.8  | 997.2  | 1000.0 | 998.6  | 994.8  |
| 137.5° | 1040.6 | 1052.2 | 1054.6 | 1053.6 | 1048.1 |
| 140°   | 1091.4 | 1103.1 | 1109.6 | 1109.6 | 1104.5 |
| 142.5° | 1143.6 | 1155.3 | 1159.0 | 1160.4 | 1155.3 |
| 145°   | 1193.1 | 1202.4 | 1209.9 | 1211.3 | 1206.2 |
| 147.5° | 1237.4 | 1249.0 | 1254.7 | 1256.9 | 1251.8 |
| 150°   | 1283.1 | 1291.0 | 1296.2 | 1300.3 | 1296.2 |
| 152.5° | 1323.6 | 1331.6 | 1338.1 | 1343.3 | 1338.1 |
| 155°   | 1364.2 | 1368.0 | 1372.1 | 1378.8 | 1374.5 |
| 157.5° | 1399.2 | 1402.1 | 1404.4 | 1413.7 | 1407.2 |
| 160°   | 1430.5 | 1433.3 | 1434.7 | 1442.6 | 1437.0 |
| 162.5° | 1459.4 | 1459.4 | 1460.8 | 1469.7 | 1463.1 |
| 165°   | 1484.1 | 1482.7 | 1482.7 | 1492.1 | 1485.6 |
| 167.5° | 1506.5 | 1502.4 | 1502.4 | 1511.6 | 1505.1 |
| 170°   | 1523.3 | 1519.6 | 1518.2 | 1527.5 | 1519.6 |
| 172.5° | 1535.0 | 1531.2 | 1529.8 | 1539.1 | 1531.2 |
| 175°   | 1544.3 | 1540.6 | 1537.7 | 1547.1 | 1539.1 |
| 177.5° | 1549.4 | 1545.7 | 1542.9 | 1550.8 | 1542.9 |
| 180°   | 1547.1 | 1547.1 | 1547.1 | 1547.1 | 1547.1 |

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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 | 8.20             | 8.95  | 9.27  | 10.02 | 11.48 | 7.77           | 8.51  | 8.84  | 9.58  | 11.04 |
|                 | 3H   | 9.84             | 10.51 | 10.91 | 11.58 | 13.06 | 9.36           | 10.03 | 10.43 | 11.11 | 12.58 |
|                 | 4H   | 10.40            | 11.04 | 11.49 | 12.12 | 13.60 | 9.92           | 10.56 | 11.01 | 11.64 | 13.12 |
|                 | 6H   | 10.78            | 11.37 | 11.88 | 12.45 | 13.95 | 10.30          | 10.88 | 11.40 | 11.97 | 13.46 |
|                 | 8H   | 10.88            | 11.43 | 11.98 | 12.53 | 14.02 | 10.39          | 10.95 | 11.49 | 12.05 | 13.54 |
|                 | 12H  | 10.91            | 11.44 | 12.02 | 12.54 | 14.05 | 10.42          | 10.95 | 11.53 | 12.04 | 13.56 |
| 4H              | 2H   | 8.64             | 9.28  | 9.74  | 10.36 | 11.84 | 8.29           | 8.93  | 9.39  | 10.01 | 11.49 |
|                 | 3H   | 10.47            | 11.00 | 11.58 | 12.11 | 13.61 | 10.07          | 10.60 | 11.18 | 11.71 | 13.21 |
|                 | 4H   | 11.17            | 11.65 | 12.27 | 12.75 | 14.27 | 10.75          | 11.24 | 11.86 | 12.34 | 13.85 |
|                 | 6H   | 11.66            | 12.07 | 12.77 | 13.19 | 14.70 | 11.24          | 11.65 | 12.35 | 12.78 | 14.28 |
|                 | 8H   | 11.79            | 12.18 | 12.91 | 13.30 | 14.82 | 11.37          | 11.76 | 12.48 | 12.87 | 14.40 |
|                 | 12H  | 11.85            | 12.20 | 12.98 | 13.33 | 14.86 | 11.42          | 11.77 | 12.55 | 12.90 | 14.43 |
| 8H              | 4H   | 11.34            | 11.73 | 12.46 | 12.85 | 14.37 | 10.97          | 11.36 | 12.09 | 12.48 | 14.00 |
|                 | 6H   | 11.94            | 12.27 | 13.08 | 13.42 | 14.94 | 11.57          | 11.89 | 12.71 | 13.05 | 14.57 |
|                 | 8H   | 12.15            | 12.43 | 13.29 | 13.57 | 15.11 | 11.77          | 12.05 | 12.91 | 13.19 | 14.73 |
|                 | 12H  | 12.26            | 12.51 | 13.41 | 13.64 | 15.22 | 11.87          | 12.11 | 13.01 | 13.25 | 14.83 |
| 12H             | 4H   | 11.32            | 11.67 | 12.45 | 12.80 | 14.33 | 10.96          | 11.31 | 12.09 | 12.44 | 13.97 |
|                 | 6H   | 11.97            | 12.25 | 13.11 | 13.39 | 14.93 | 11.61          | 11.89 | 12.75 | 13.02 | 14.57 |
|                 | 8H   | 12.19            | 12.44 | 13.34 | 13.57 | 15.15 | 11.82          | 12.07 | 12.97 | 13.20 | 14.78 |