

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: P907910

Luminaire Tested: DFN2DIP-HX2F0-030D060US840-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P907910  
REPORT IS A COMBINATION OF REPORTS P899193 AND P896039  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX2F0-030D060US840-FLLFLL  
Description: 2 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

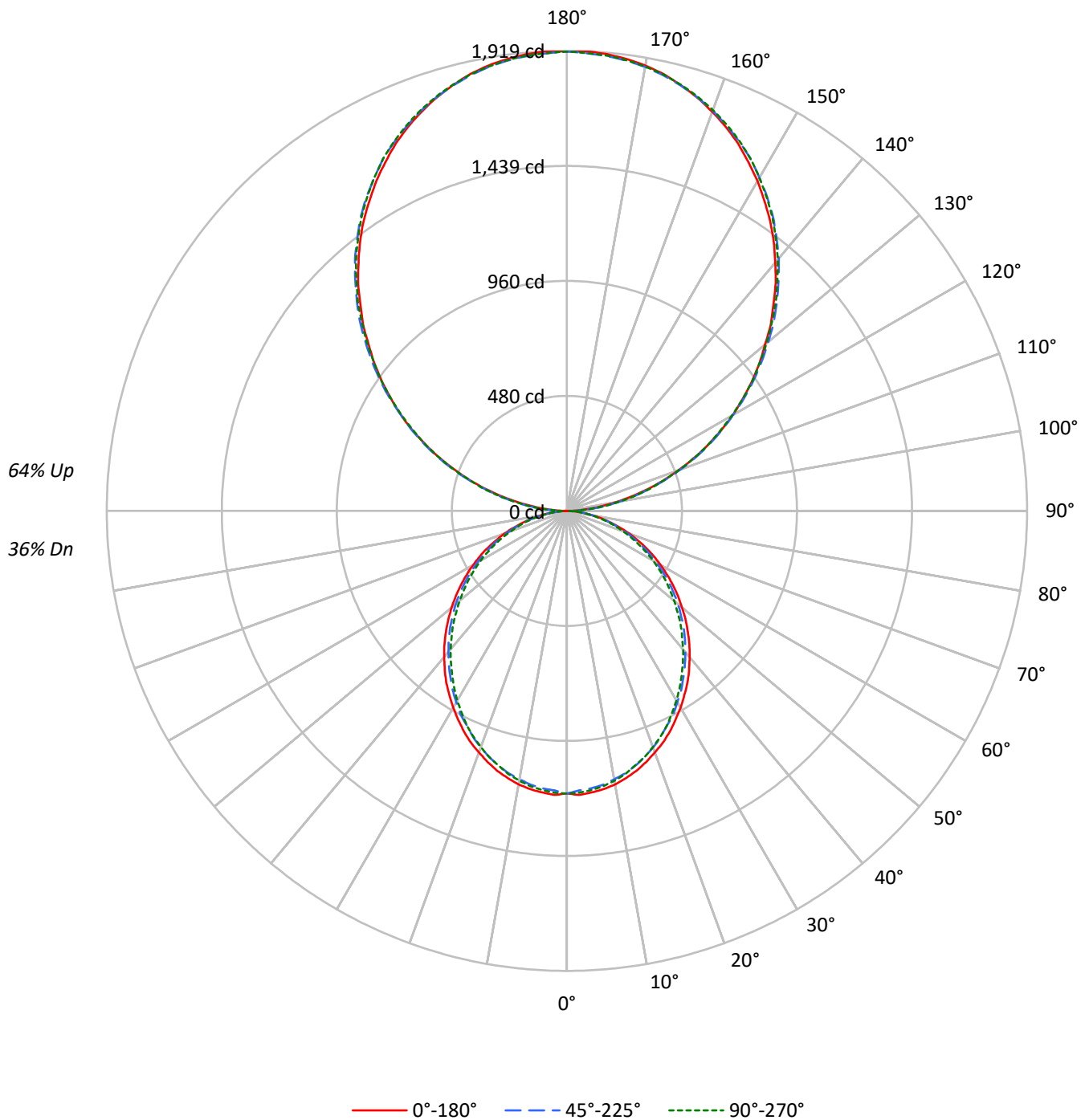
Lumens per Lamp: N/A  
Luminaire Lumens: 8361.7 lumens  
Efficiency: N/A  
Efficacy: 113.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 1.99' x L: 2.3' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 73.6  
Input Voltage (V): 120  
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

TEST NUMBER: P907910

CATALOG NUMBER: DFN2DIP-HX2F0-030D060US840-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P907910

CATALOG NUMBER: DFN2DIP-HX2F0-030D060US840-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°  | 2777 | 2777 | 2777 |
| 5°  | 2777 | 2732 | 2752 |
| 10° | 2751 | 2689 | 2710 |
| 15° | 2706 | 2638 | 2646 |
| 20° | 2647 | 2570 | 2582 |
| 25° | 2588 | 2490 | 2508 |
| 30° | 2515 | 2415 | 2415 |
| 35° | 2446 | 2328 | 2318 |
| 40° | 2361 | 2239 | 2225 |
| 45° | 2277 | 2150 | 2129 |
| 50° | 2184 | 2056 | 2019 |
| 55° | 2087 | 1948 | 1916 |
| 60° | 1977 | 1821 | 1799 |
| 65° | 1856 | 1688 | 1660 |
| 70° | 1702 | 1526 | 1510 |
| 75° | 1491 | 1332 | 1364 |
| 80° | 1234 | 1084 | 1101 |
| 85° | 839  | 680  | 682  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2568 cd/sqm

TEST NUMBER: P907910

CATALOG NUMBER: DFN2DIP-HX2F0-030D060US840-FLLFLL

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 111.0  | 1.3       |
| 10°-20°   | 312.2  | 3.7       |
| 20°-30°   | 458.8  | 5.5       |
| 30°-40°   | 532.8  | 6.4       |
| 40°-50°   | 532.2  | 6.4       |
| 50°-60°   | 464.1  | 5.5       |
| 60°-70°   | 343.1  | 4.1       |
| 70°-80°   | 194.1  | 2.3       |
| 80°-90°   | 56.7   | 0.7       |
| 90°-100°  | 118.6  | 1.4       |
| 100°-110° | 376.8  | 4.5       |
| 110°-120° | 644.8  | 7.7       |
| 120°-130° | 848.0  | 10.1      |
| 130°-140° | 951.8  | 11.4      |
| 140°-150° | 933.4  | 11.2      |
| 150°-160° | 783.0  | 9.4       |
| 160°-170° | 519.2  | 6.2       |
| 170°-180° | 181.5  | 2.2       |
| 0°-30°    | 881.9  | 10.5      |
| 0°-40°    | 1414.7 | 16.9      |
| 0°-60°    | 2411.0 | 28.8      |
| 0°-90°    | 3004.8 | 35.9      |
| 90°-120°  | 1140.1 | 13.6      |
| 90°-150°  | 3873.3 | 46.3      |
| 90°-180°  | 5357.0 | 64.1      |
| 0°-180°   | 8361.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1179 | 1179  | 1179 | 1179  | 1179 |      |
| 5°   | 1179 | 1174  | 1162 | 1171  | 1169 | 112  |
| 15°  | 1122 | 1116  | 1101 | 1105  | 1100 | 316  |
| 25°  | 1016 | 1007  | 987  | 990   | 987  | 467  |
| 35°  | 876  | 865   | 847  | 840   | 834  | 547  |
| 45°  | 713  | 705   | 688  | 676   | 671  | 550  |
| 55°  | 540  | 533   | 519  | 506   | 500  | 482  |
| 65°  | 364  | 357   | 346  | 336   | 330  | 360  |
| 75°  | 190  | 188   | 182  | 176   | 178  | 203  |
| 85°  | 46   | 45    | 44   | 41    | 40   | 52   |
| 90°  | 2    | 21    | 57   | 53    | 55   | 8    |
| 95°  | 84   | 100   | 103  | 103   | 100  | 94   |
| 105° | 348  | 352   | 356  | 359   | 359  | 367  |
| 115° | 647  | 656   | 653  | 652   | 647  | 640  |
| 125° | 941  | 956   | 951  | 946   | 944  | 841  |
| 135° | 1217 | 1235  | 1239 | 1237  | 1232 | 941  |
| 145° | 1478 | 1489  | 1499 | 1500  | 1494 | 923  |
| 155° | 1690 | 1694  | 1700 | 1708  | 1702 | 778  |
| 165° | 1838 | 1836  | 1836 | 1848  | 1840 | 519  |
| 175° | 1913 | 1908  | 1905 | 1916  | 1906 | 182  |
| 180° | 1916 | 1916  | 1916 | 1916  | 1916 |      |

TEST NUMBER: P907910

CATALOG NUMBER: DFN2DIP-HX2F0-030D060US840-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1178.8 | 1178.8 | 1178.8 | 1178.8 | 1178.8 |
| 2.5°   | 1185.7 | 1180.0 | 1167.5 | 1178.8 | 1176.7 |
| 5°     | 1178.8 | 1174.4 | 1161.9 | 1170.9 | 1168.7 |
| 7.5°   | 1170.9 | 1164.2 | 1151.7 | 1160.8 | 1158.5 |
| 10°    | 1158.5 | 1150.5 | 1137.0 | 1146.0 | 1142.7 |
| 12.5°  | 1141.5 | 1134.7 | 1121.2 | 1126.7 | 1124.5 |
| 15°    | 1122.2 | 1115.5 | 1100.7 | 1105.2 | 1099.5 |
| 17.5°  | 1098.3 | 1091.7 | 1076.8 | 1082.5 | 1076.8 |
| 20°    | 1072.3 | 1065.5 | 1049.7 | 1053.0 | 1048.5 |
| 22.5°  | 1046.3 | 1036.1 | 1021.3 | 1021.3 | 1019.0 |
| 25°    | 1015.6 | 1006.6 | 987.3  | 989.6  | 987.3  |
| 27.5°  | 981.6  | 973.6  | 959.0  | 955.6  | 950.0  |
| 30°    | 947.7  | 938.6  | 921.6  | 918.2  | 913.6  |
| 32.5°  | 911.4  | 904.6  | 886.5  | 879.6  | 875.0  |
| 35°    | 876.3  | 864.9  | 846.8  | 839.9  | 834.2  |
| 37.5°  | 836.6  | 826.4  | 808.2  | 800.2  | 794.6  |
| 40°    | 795.8  | 786.7  | 768.5  | 758.4  | 753.9  |
| 42.5°  | 756.1  | 747.0  | 728.9  | 717.5  | 710.7  |
| 45°    | 713.1  | 705.1  | 688.0  | 675.6  | 671.1  |
| 47.5°  | 671.1  | 663.2  | 645.0  | 632.5  | 625.7  |
| 50°    | 626.8  | 621.2  | 605.3  | 589.5  | 583.8  |
| 52.5°  | 583.8  | 575.8  | 561.2  | 548.7  | 540.7  |
| 55°    | 539.7  | 532.8  | 519.2  | 505.6  | 500.0  |
| 57.5°  | 495.3  | 489.7  | 474.9  | 461.3  | 456.8  |
| 60°    | 451.1  | 446.7  | 430.8  | 418.3  | 415.0  |
| 62.5°  | 408.1  | 400.1  | 388.8  | 377.5  | 372.9  |
| 65°    | 364.0  | 357.1  | 345.8  | 335.6  | 329.9  |
| 67.5°  | 318.6  | 312.9  | 302.7  | 294.8  | 290.2  |
| 70°    | 276.6  | 272.1  | 261.9  | 253.9  | 249.4  |
| 72.5°  | 233.6  | 228.9  | 223.3  | 215.4  | 212.1  |
| 75°    | 190.4  | 188.2  | 182.5  | 175.7  | 178.0  |
| 77.5°  | 151.9  | 147.3  | 145.0  | 141.7  | 138.4  |
| 80°    | 113.4  | 112.2  | 109.9  | 106.5  | 104.3  |
| 82.5°  | 77.1   | 77.1   | 76.0   | 71.4   | 71.4   |
| 85°    | 46.5   | 45.3   | 44.2   | 40.8   | 39.7   |
| 87.5°  | 20.4   | 18.2   | 15.9   | 12.5   | 11.3   |
| 90°    | 1.7    | 20.8   | 56.7   | 53.1   | 54.8   |
| 92.5°  | 35.9   | 48.6   | 50.3   | 52.0   | 52.0   |
| 95°    | 84.3   | 100.5  | 103.4  | 103.4  | 100.5  |
| 97.5°  | 140.4  | 155.4  | 161.8  | 161.8  | 161.8  |
| 100°   | 205.1  | 218.3  | 223.0  | 223.0  | 221.3  |
| 102.5° | 273.3  | 283.1  | 289.4  | 291.1  | 289.4  |
| 105°   | 347.8  | 352.4  | 355.9  | 358.8  | 358.8  |
| 107.5° | 421.7  | 428.7  | 428.7  | 429.8  | 421.7  |
| 110°   | 493.4  | 502.6  | 502.6  | 502.6  | 498.0  |

TEST NUMBER: P907910

CATALOG NUMBER: DFN2DIP-HX2F0-030D060US840-FLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 570.8  | 580.6  | 578.9  | 574.2  | 570.8  |
| 115°   | 647.0  | 656.3  | 653.4  | 651.7  | 647.0  |
| 117.5° | 722.8  | 735.5  | 727.3  | 722.8  | 718.1  |
| 120°   | 799.0  | 811.7  | 799.0  | 799.0  | 793.8  |
| 122.5° | 868.3  | 884.4  | 876.4  | 871.8  | 868.3  |
| 125°   | 941.1  | 955.5  | 950.9  | 945.7  | 944.0  |
| 127.5° | 1012.2 | 1030.1 | 1023.7 | 1016.8 | 1012.2 |
| 130°   | 1078.6 | 1099.4 | 1096.5 | 1093.1 | 1086.7 |
| 132.5° | 1153.2 | 1169.3 | 1170.4 | 1162.4 | 1157.7 |
| 135°   | 1217.3 | 1235.2 | 1238.6 | 1236.9 | 1232.2 |
| 137.5° | 1288.9 | 1303.3 | 1306.3 | 1305.0 | 1298.2 |
| 140°   | 1351.9 | 1366.3 | 1374.4 | 1374.4 | 1368.1 |
| 142.5° | 1416.5 | 1431.0 | 1435.6 | 1437.3 | 1431.0 |
| 145°   | 1477.8 | 1489.3 | 1498.6 | 1500.4 | 1494.0 |
| 147.5° | 1532.7 | 1547.1 | 1554.1 | 1556.9 | 1550.5 |
| 150°   | 1589.3 | 1599.1 | 1605.5 | 1610.6 | 1605.5 |
| 152.5° | 1639.5 | 1649.4 | 1657.5 | 1663.9 | 1657.5 |
| 155°   | 1689.8 | 1694.5 | 1699.6 | 1707.8 | 1702.5 |
| 157.5° | 1733.1 | 1736.7 | 1739.5 | 1751.1 | 1743.0 |
| 160°   | 1771.9 | 1775.3 | 1777.1 | 1786.9 | 1780.0 |
| 162.5° | 1807.7 | 1807.7 | 1809.4 | 1820.4 | 1812.3 |
| 165°   | 1838.3 | 1836.5 | 1836.5 | 1848.2 | 1840.1 |
| 167.5° | 1866.0 | 1860.9 | 1860.9 | 1872.4 | 1864.3 |
| 170°   | 1886.8 | 1882.2 | 1880.5 | 1892.0 | 1882.2 |
| 172.5° | 1901.3 | 1896.6 | 1894.9 | 1906.4 | 1896.6 |
| 175°   | 1912.8 | 1908.2 | 1904.7 | 1916.3 | 1906.4 |
| 177.5° | 1919.1 | 1914.6 | 1911.1 | 1920.9 | 1911.1 |
| 180°   | 1916.3 | 1916.3 | 1916.3 | 1916.3 | 1916.3 |

TEST NUMBER: P907910

CATALOG NUMBER: DFN2DIP-HX2F0-030D060US840-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 | 9.22             | 9.97  | 10.29 | 11.04 | 12.50 | 8.80           | 9.54  | 9.87  | 10.62 | 12.07 |
|                 | 3H   | 10.85            | 11.52 | 11.93 | 12.60 | 14.07 | 10.39          | 11.06 | 11.46 | 12.14 | 13.61 |
|                 | 4H   | 11.41            | 12.05 | 12.50 | 13.13 | 14.61 | 10.95          | 11.59 | 12.04 | 12.67 | 14.15 |
|                 | 6H   | 11.79            | 12.37 | 12.89 | 13.46 | 14.95 | 11.33          | 11.91 | 12.43 | 13.00 | 14.49 |
|                 | 8H   | 11.88            | 12.44 | 12.98 | 13.54 | 15.02 | 11.42          | 11.98 | 12.52 | 13.08 | 14.57 |
|                 | 12H  | 11.91            | 12.44 | 13.02 | 13.54 | 15.05 | 11.45          | 11.98 | 12.56 | 13.07 | 14.59 |
| 4H              | 2H   | 9.66             | 10.29 | 10.75 | 11.37 | 12.86 | 9.32           | 9.95  | 10.42 | 11.04 | 12.52 |
|                 | 3H   | 11.48            | 12.01 | 12.59 | 13.12 | 14.62 | 11.10          | 11.63 | 12.20 | 12.74 | 14.24 |
|                 | 4H   | 12.17            | 12.66 | 13.28 | 13.76 | 15.28 | 11.78          | 12.27 | 12.89 | 13.37 | 14.88 |
|                 | 6H   | 12.66            | 13.08 | 13.77 | 14.20 | 15.71 | 12.26          | 12.68 | 13.38 | 13.80 | 15.31 |
|                 | 8H   | 12.79            | 13.18 | 13.91 | 14.30 | 15.82 | 12.40          | 12.79 | 13.51 | 13.90 | 15.43 |
|                 | 12H  | 12.85            | 13.20 | 13.98 | 14.33 | 15.86 | 12.45          | 12.80 | 13.58 | 13.92 | 15.45 |
| 8H              | 4H   | 12.35            | 12.74 | 13.47 | 13.85 | 15.38 | 12.00          | 12.39 | 13.11 | 13.50 | 15.03 |
|                 | 6H   | 12.95            | 13.27 | 14.08 | 14.42 | 15.95 | 12.60          | 12.92 | 13.73 | 14.07 | 15.60 |
|                 | 8H   | 13.15            | 13.43 | 14.29 | 14.57 | 16.11 | 12.79          | 13.08 | 13.94 | 14.21 | 15.75 |
|                 | 12H  | 13.26            | 13.51 | 14.41 | 14.64 | 16.22 | 12.89          | 13.14 | 14.04 | 14.27 | 15.85 |
| 12H             | 4H   | 12.33            | 12.68 | 13.46 | 13.81 | 15.34 | 11.98          | 12.34 | 13.12 | 13.46 | 14.99 |
|                 | 6H   | 12.97            | 13.25 | 14.11 | 14.39 | 15.93 | 12.63          | 12.91 | 13.77 | 14.05 | 15.59 |
|                 | 8H   | 13.19            | 13.44 | 14.34 | 14.57 | 16.15 | 12.84          | 13.09 | 13.99 | 14.22 | 15.80 |