

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: P913574

Luminaire Tested: DFN2DIP-HX3F0-090D030US927-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P913574  
REPORT IS A COMBINATION OF REPORTS P899213 AND P896089  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-090D030US927-FLLFLL  
Description: 3 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

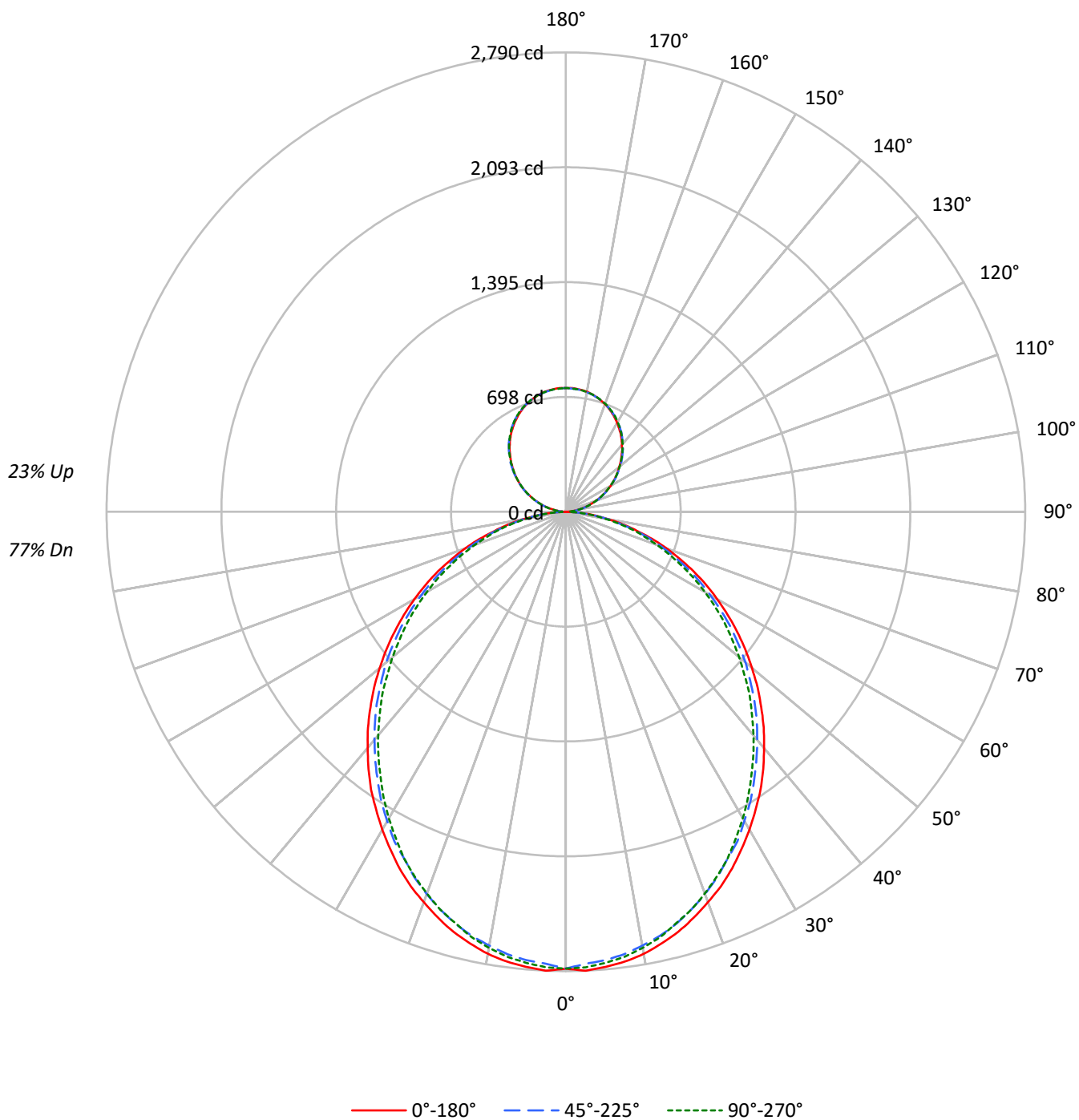
Lumens per Lamp: N/A  
Luminaire Lumens: 9161.6 lumens  
Efficiency: N/A  
Efficacy: 79.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.84' x L: 3.28' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 115.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9968  
Total Harmonic Distortion (THDi): 0.064  
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



TEST NUMBER: P913574

CATALOG NUMBER: DFN2DIP-HX3F0-090D030US927-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   | 114 | 114 | 114 | 114 | 108 | 108 | 108 | 108 | 98 | 98 | 98 | 89 | 89 | 89 | 81 | 81 | 81 |
| 1   | 104 | 99  | 95  | 92  | 99  | 95  | 91  | 88  | 86 | 84 | 81 | 79 | 77 | 75 | 72 | 70 | 68 |
| 2   | 95  | 87  | 80  | 75  | 90  | 83  | 77  | 72  | 76 | 71 | 67 | 69 | 66 | 62 | 63 | 60 | 58 |
| 3   | 86  | 76  | 69  | 63  | 82  | 73  | 66  | 61  | 67 | 61 | 57 | 61 | 57 | 53 | 56 | 52 | 49 |
| 4   | 79  | 68  | 59  | 53  | 75  | 65  | 57  | 52  | 60 | 53 | 48 | 55 | 50 | 45 | 50 | 46 | 42 |
| 5   | 73  | 61  | 52  | 46  | 69  | 58  | 50  | 44  | 53 | 47 | 42 | 49 | 44 | 39 | 45 | 41 | 37 |
| 6   | 67  | 55  | 46  | 40  | 64  | 52  | 45  | 39  | 48 | 42 | 37 | 45 | 39 | 35 | 41 | 36 | 33 |
| 7   | 62  | 49  | 41  | 35  | 59  | 48  | 40  | 34  | 44 | 37 | 33 | 41 | 35 | 31 | 37 | 33 | 29 |
| 8   | 58  | 45  | 37  | 31  | 55  | 43  | 36  | 31  | 40 | 34 | 29 | 37 | 32 | 28 | 34 | 30 | 26 |
| 9   | 54  | 41  | 33  | 28  | 52  | 40  | 32  | 27  | 37 | 31 | 26 | 34 | 29 | 25 | 32 | 27 | 24 |
| 10  | 51  | 38  | 30  | 25  | 48  | 37  | 30  | 25  | 34 | 28 | 24 | 32 | 26 | 23 | 30 | 25 | 22 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3213 | 3213 | 3213 |
| 5°  | 3217 | 3166 | 3188 |
| 10° | 3190 | 3122 | 3143 |
| 15° | 3141 | 3068 | 3074 |
| 20° | 3076 | 2994 | 3003 |
| 25° | 3012 | 2907 | 2922 |
| 30° | 2931 | 2825 | 2818 |
| 35° | 2855 | 2729 | 2709 |
| 40° | 2761 | 2632 | 2605 |
| 45° | 2667 | 2534 | 2499 |
| 50° | 2565 | 2432 | 2376 |
| 55° | 2457 | 2314 | 2262 |
| 60° | 2336 | 2174 | 2132 |
| 65° | 2203 | 2028 | 1978 |
| 70° | 2034 | 1850 | 1812 |
| 75° | 1800 | 1638 | 1657 |
| 80° | 1518 | 1365 | 1364 |
| 85° | 1076 | 904  | 885  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2667 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 261.1  | 2.9       |
| 10°-20°   | 734.7  | 8.0       |
| 20°-30°   | 1079.6 | 11.8      |
| 30°-40°   | 1253.9 | 13.7      |
| 40°-50°   | 1252.4 | 13.7      |
| 50°-60°   | 1092.1 | 11.9      |
| 60°-70°   | 807.3  | 8.8       |
| 70°-80°   | 456.7  | 5.0       |
| 80°-90°   | 122.7  | 1.3       |
| 90°-100°  | 46.5   | 0.5       |
| 100°-110° | 147.8  | 1.6       |
| 110°-120° | 252.9  | 2.8       |
| 120°-130° | 332.6  | 3.6       |
| 130°-140° | 373.3  | 4.1       |
| 140°-150° | 366.1  | 4.0       |
| 150°-160° | 307.1  | 3.4       |
| 160°-170° | 203.7  | 2.2       |
| 170°-180° | 71.2   | 0.8       |
| 0°-30°    | 2075.4 | 22.7      |
| 0°-40°    | 3329.4 | 36.3      |
| 0°-60°    | 5673.8 | 61.9      |
| 0°-90°    | 7060.5 | 77.1      |
| 90°-120°  | 447.2  | 4.9       |
| 90°-150°  | 1519.2 | 16.6      |
| 90°-180°  | 2101.0 | 22.9      |
| 0°-180°   | 9161.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2774 | 2774  | 2774 | 2774  | 2774 |      |
| 5°   | 2774 | 2764  | 2734 | 2756  | 2750 | 263  |
| 15°  | 2641 | 2625  | 2590 | 2601  | 2588 | 744  |
| 25°  | 2390 | 2369  | 2324 | 2329  | 2324 | 1100 |
| 35°  | 2062 | 2036  | 1993 | 1977  | 1963 | 1288 |
| 45°  | 1678 | 1659  | 1619 | 1590  | 1579 | 1295 |
| 55°  | 1270 | 1254  | 1222 | 1190  | 1176 | 1135 |
| 65°  | 856  | 840   | 814  | 790   | 776  | 847  |
| 75°  | 448  | 443   | 429  | 414   | 419  | 478  |
| 85°  | 109  | 107   | 104  | 96    | 93   | 122  |
| 90°  | 1    | 8     | 22   | 21    | 22   | 9    |
| 95°  | 33   | 40    | 41   | 41    | 40   | 37   |
| 105° | 136  | 138   | 140  | 141   | 141  | 144  |
| 115° | 254  | 257   | 256  | 256   | 254  | 251  |
| 125° | 369  | 375   | 373  | 371   | 370  | 330  |
| 135° | 477  | 484   | 486  | 485   | 483  | 369  |
| 145° | 580  | 584   | 588  | 588   | 586  | 362  |
| 155° | 663  | 665   | 667  | 670   | 668  | 305  |
| 165° | 721  | 720   | 720  | 725   | 722  | 203  |
| 175° | 750  | 748   | 747  | 752   | 748  | 71   |
| 180° | 752  | 752   | 752  | 752   | 752  |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2774.1 | 2774.1 | 2774.1 | 2774.1 | 2774.1 |
| 2.5°   | 2790.3 | 2777.0 | 2747.6 | 2774.1 | 2769.1 |
| 5°     | 2774.1 | 2763.7 | 2734.3 | 2755.5 | 2750.4 |
| 7.5°   | 2755.5 | 2739.7 | 2710.2 | 2731.8 | 2726.4 |
| 10°    | 2726.4 | 2707.7 | 2675.7 | 2696.9 | 2689.0 |
| 12.5°  | 2686.1 | 2670.3 | 2638.4 | 2651.6 | 2646.3 |
| 15°    | 2640.9 | 2625.1 | 2590.2 | 2601.0 | 2587.7 |
| 17.5°  | 2584.8 | 2569.0 | 2534.2 | 2547.5 | 2534.2 |
| 20°    | 2523.4 | 2507.6 | 2470.2 | 2478.1 | 2467.6 |
| 22.5°  | 2462.3 | 2438.3 | 2403.4 | 2403.4 | 2398.0 |
| 25°    | 2390.1 | 2368.9 | 2323.6 | 2328.7 | 2323.6 |
| 27.5°  | 2310.0 | 2291.3 | 2256.8 | 2248.9 | 2235.6 |
| 30°    | 2230.2 | 2208.7 | 2168.8 | 2160.8 | 2150.1 |
| 32.5°  | 2144.8 | 2128.9 | 2086.1 | 2070.0 | 2059.3 |
| 35°    | 2062.1 | 2035.5 | 1992.7 | 1976.7 | 1963.3 |
| 37.5°  | 1968.7 | 1944.6 | 1901.9 | 1883.3 | 1869.9 |
| 40°    | 1872.7 | 1851.2 | 1808.5 | 1784.7 | 1774.0 |
| 42.5°  | 1779.3 | 1757.8 | 1715.4 | 1688.5 | 1672.7 |
| 45°    | 1678.0 | 1659.4 | 1619.1 | 1590.0 | 1579.3 |
| 47.5°  | 1579.3 | 1560.6 | 1517.8 | 1488.4 | 1472.6 |
| 50°    | 1475.1 | 1461.8 | 1424.4 | 1387.1 | 1373.8 |
| 52.5°  | 1373.8 | 1355.1 | 1320.6 | 1291.2 | 1272.5 |
| 55°    | 1269.9 | 1253.8 | 1221.8 | 1189.9 | 1176.5 |
| 57.5°  | 1165.8 | 1152.5 | 1117.7 | 1085.7 | 1074.9 |
| 60°    | 1061.6 | 1051.1 | 1013.8 | 984.4  | 976.4  |
| 62.5°  | 960.3  | 941.6  | 915.0  | 888.4  | 877.7  |
| 65°    | 856.4  | 840.3  | 813.6  | 789.6  | 776.3  |
| 67.5°  | 749.7  | 736.2  | 712.3  | 693.7  | 682.9  |
| 70°    | 650.9  | 640.2  | 616.2  | 597.5  | 587.0  |
| 72.5°  | 549.6  | 538.8  | 525.5  | 506.9  | 499.0  |
| 75°    | 448.1  | 442.9  | 429.4  | 413.5  | 418.9  |
| 77.5°  | 357.4  | 346.7  | 341.4  | 333.4  | 325.5  |
| 80°    | 266.9  | 264.0  | 258.6  | 250.7  | 245.4  |
| 82.5°  | 181.4  | 181.4  | 178.9  | 168.1  | 168.1  |
| 85°    | 109.2  | 106.7  | 104.2  | 95.9   | 93.4   |
| 87.5°  | 48.1   | 42.7   | 37.4   | 29.5   | 26.6   |
| 90°    | 0.7    | 8.2    | 22.2   | 20.8   | 21.5   |
| 92.5°  | 14.0   | 19.0   | 19.7   | 20.4   | 20.4   |
| 95°    | 33.1   | 39.5   | 40.6   | 40.6   | 39.5   |
| 97.5°  | 55.1   | 60.9   | 63.5   | 63.5   | 63.5   |
| 100°   | 80.4   | 85.6   | 87.5   | 87.5   | 86.8   |
| 102.5° | 107.2  | 111.1  | 113.5  | 114.2  | 113.5  |
| 105°   | 136.4  | 138.2  | 139.6  | 140.7  | 140.7  |
| 107.5° | 165.4  | 168.1  | 168.1  | 168.6  | 165.4  |
| 110°   | 193.5  | 197.2  | 197.2  | 197.2  | 195.4  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 223.9 | 227.8 | 227.0 | 225.2 | 223.9 |
| 115°   | 253.8 | 257.4 | 256.3 | 255.6 | 253.8 |
| 117.5° | 283.4 | 288.4 | 285.3 | 283.4 | 281.6 |
| 120°   | 313.4 | 318.4 | 313.4 | 313.4 | 311.3 |
| 122.5° | 340.6 | 346.9 | 343.7 | 341.9 | 340.6 |
| 125°   | 369.2 | 374.8 | 373.0 | 370.9 | 370.3 |
| 127.5° | 397.0 | 404.0 | 401.6 | 398.8 | 397.0 |
| 130°   | 423.0 | 431.2 | 430.1 | 428.7 | 426.2 |
| 132.5° | 452.3 | 458.6 | 459.1 | 455.9 | 454.1 |
| 135°   | 477.4 | 484.4 | 485.8 | 485.1 | 483.3 |
| 137.5° | 505.5 | 511.2 | 512.3 | 511.9 | 509.1 |
| 140°   | 530.2 | 535.9 | 539.1 | 539.1 | 536.5 |
| 142.5° | 555.6 | 561.3 | 563.1 | 563.8 | 561.3 |
| 145°   | 579.6 | 584.2 | 587.8 | 588.4 | 586.0 |
| 147.5° | 601.2 | 606.8 | 609.5 | 610.7 | 608.2 |
| 150°   | 623.4 | 627.2 | 629.7 | 631.8 | 629.7 |
| 152.5° | 643.1 | 646.9 | 650.1 | 652.6 | 650.1 |
| 155°   | 662.8 | 664.6 | 666.6 | 669.8 | 667.8 |
| 157.5° | 679.8 | 681.1 | 682.3 | 686.8 | 683.7 |
| 160°   | 695.0 | 696.3 | 697.0 | 700.8 | 698.1 |
| 162.5° | 709.0 | 709.0 | 709.7 | 714.0 | 710.8 |
| 165°   | 721.0 | 720.3 | 720.3 | 724.8 | 721.7 |
| 167.5° | 731.9 | 729.8 | 729.8 | 734.4 | 731.2 |
| 170°   | 740.1 | 738.2 | 737.6 | 742.1 | 738.2 |
| 172.5° | 745.7 | 743.9 | 743.2 | 747.7 | 743.9 |
| 175°   | 750.3 | 748.5 | 747.1 | 751.6 | 747.7 |
| 177.5° | 752.7 | 750.9 | 749.6 | 753.4 | 749.6 |
| 180°   | 751.6 | 751.6 | 751.6 | 751.6 | 751.6 |

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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 | 13.48            | 14.65 | 14.17 | 15.36 | 16.18 | 13.05          | 14.22 | 13.74 | 14.93 | 15.75 |
|                 | 3H   | 15.16            | 16.21 | 15.86 | 16.92 | 17.78 | 14.69          | 15.74 | 15.39 | 16.45 | 17.31 |
|                 | 4H   | 15.75            | 16.75 | 16.47 | 17.47 | 18.34 | 15.28          | 16.28 | 16.00 | 17.00 | 17.87 |
|                 | 6H   | 16.16            | 17.08 | 16.89 | 17.81 | 18.70 | 15.69          | 16.61 | 16.42 | 17.34 | 18.23 |
|                 | 8H   | 16.27            | 17.15 | 17.01 | 17.90 | 18.79 | 15.80          | 16.68 | 16.54 | 17.43 | 18.32 |
|                 | 12H  | 16.33            | 17.16 | 17.08 | 17.91 | 18.82 | 15.85          | 16.69 | 16.60 | 17.44 | 18.35 |
| 4H              | 2H   | 13.98            | 14.97 | 14.70 | 15.69 | 16.56 | 13.63          | 14.63 | 14.35 | 15.35 | 16.22 |
|                 | 3H   | 15.86            | 16.69 | 16.59 | 17.45 | 18.34 | 15.47          | 16.30 | 16.20 | 17.06 | 17.95 |
|                 | 4H   | 16.58            | 17.34 | 17.33 | 18.10 | 19.01 | 16.18          | 16.94 | 16.93 | 17.70 | 18.61 |
|                 | 6H   | 17.11            | 17.76 | 17.87 | 18.55 | 19.47 | 16.70          | 17.36 | 17.47 | 18.14 | 19.07 |
|                 | 8H   | 17.26            | 17.87 | 18.03 | 18.65 | 19.59 | 16.85          | 17.47 | 17.62 | 18.25 | 19.18 |
|                 | 12H  | 17.34            | 17.90 | 18.14 | 18.70 | 19.64 | 16.93          | 17.48 | 17.72 | 18.28 | 19.23 |
| 8H              | 4H   | 16.80            | 17.41 | 17.57 | 18.19 | 19.13 | 16.44          | 17.06 | 17.21 | 17.84 | 18.77 |
|                 | 6H   | 17.44            | 17.94 | 18.24 | 18.77 | 19.71 | 17.08          | 17.58 | 17.88 | 18.41 | 19.35 |
|                 | 8H   | 17.65            | 18.11 | 18.47 | 18.93 | 19.88 | 17.29          | 17.74 | 18.10 | 18.56 | 19.52 |
|                 | 12H  | 17.79            | 18.19 | 18.61 | 19.01 | 20.02 | 17.42          | 17.81 | 18.23 | 18.63 | 19.64 |
| 12H             | 4H   | 16.80            | 17.35 | 17.59 | 18.16 | 19.10 | 16.45          | 17.00 | 17.24 | 17.81 | 18.75 |
|                 | 6H   | 17.47            | 17.92 | 18.28 | 18.74 | 19.70 | 17.12          | 17.57 | 17.93 | 18.39 | 19.35 |
|                 | 8H   | 17.72            | 18.12 | 18.53 | 18.93 | 19.94 | 17.36          | 17.76 | 18.18 | 18.58 | 19.59 |