

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: P905346

Luminaire Tested: DFN2DIP-HX3F0-070D040US835-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P905346  
REPORT IS A COMBINATION OF REPORTS P899223 AND P896089  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-070D040US835-FLLFL  
Description: 3 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

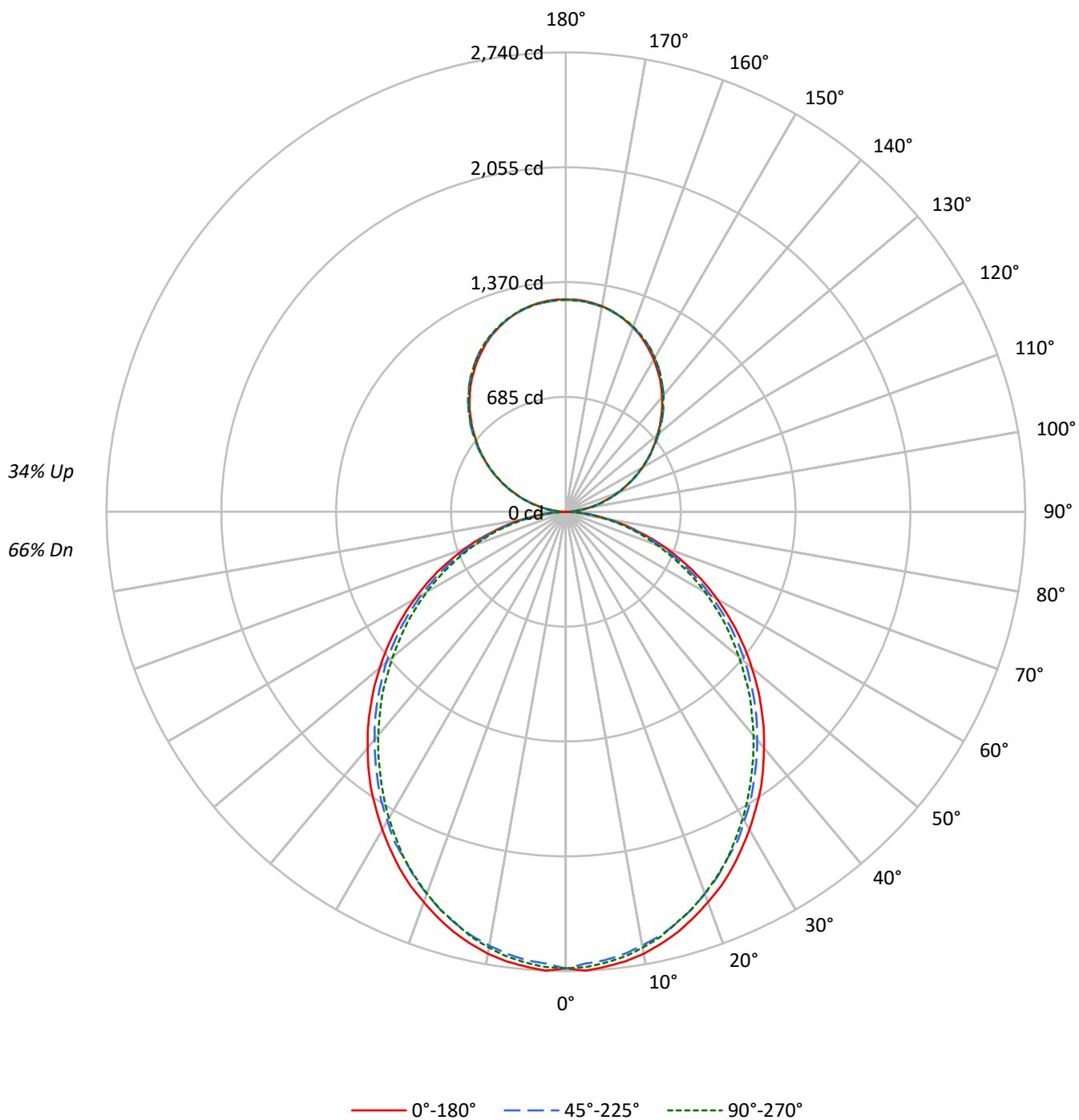
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 10470.0 lumens  
Efficiency: N/A  
Efficacy: 105.9 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): 98.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9789  
Total Harmonic Distortion (THDi): 0.074  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P905346

CATALOG NUMBER: DFN2DIP-HX3F0-070D040US835-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P905346

CATALOG NUMBER: DFN2DIP-HX3F0-070D040US835-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   | 111 | 111 | 111 | 111 | 104 | 104 | 104 | 104 | 92 | 92 | 92 | 81 | 81 | 81 | 71 | 71 | 71 |
| 1   | 101 | 97  | 93  | 89  | 95  | 91  | 88  | 85  | 81 | 78 | 76 | 72 | 70 | 68 | 63 | 61 | 60 |
| 2   | 92  | 85  | 78  | 73  | 87  | 80  | 74  | 70  | 71 | 67 | 63 | 63 | 60 | 57 | 55 | 53 | 51 |
| 3   | 84  | 75  | 67  | 61  | 79  | 70  | 64  | 58  | 63 | 57 | 53 | 56 | 51 | 48 | 49 | 46 | 43 |
| 4   | 77  | 66  | 58  | 52  | 72  | 63  | 55  | 50  | 56 | 50 | 45 | 50 | 45 | 41 | 44 | 40 | 37 |
| 5   | 71  | 59  | 51  | 44  | 67  | 56  | 48  | 43  | 50 | 44 | 39 | 45 | 40 | 36 | 40 | 36 | 32 |
| 6   | 65  | 53  | 45  | 39  | 61  | 50  | 43  | 37  | 45 | 39 | 34 | 40 | 35 | 31 | 36 | 32 | 29 |
| 7   | 61  | 48  | 40  | 34  | 57  | 46  | 38  | 33  | 41 | 35 | 30 | 37 | 32 | 28 | 33 | 29 | 25 |
| 8   | 56  | 44  | 36  | 30  | 53  | 42  | 34  | 29  | 38 | 31 | 27 | 34 | 29 | 25 | 30 | 26 | 23 |
| 9   | 53  | 40  | 32  | 27  | 49  | 38  | 31  | 26  | 34 | 28 | 24 | 31 | 26 | 22 | 28 | 24 | 21 |
| 10  | 49  | 37  | 29  | 24  | 46  | 35  | 28  | 24  | 32 | 26 | 22 | 29 | 24 | 20 | 26 | 22 | 19 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3155 | 3155 | 3155 |
| 5°  | 3159 | 3109 | 3130 |
| 10° | 3132 | 3065 | 3086 |
| 15° | 3084 | 3012 | 3018 |
| 20° | 3020 | 2940 | 2949 |
| 25° | 2957 | 2854 | 2869 |
| 30° | 2878 | 2774 | 2767 |
| 35° | 2803 | 2679 | 2660 |
| 40° | 2711 | 2584 | 2558 |
| 45° | 2619 | 2488 | 2453 |
| 50° | 2518 | 2388 | 2333 |
| 55° | 2413 | 2272 | 2221 |
| 60° | 2293 | 2134 | 2093 |
| 65° | 2163 | 1991 | 1942 |
| 70° | 1997 | 1817 | 1779 |
| 75° | 1767 | 1607 | 1627 |
| 80° | 1490 | 1341 | 1339 |
| 85° | 1057 | 888  | 869  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2619 cd/sqm

TEST NUMBER: P905346

CATALOG NUMBER: DFN2DIP-HX3F0-070D040US835-FLLFLL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 256.4   | 2.4       |
| 10°-20°   | 721.3   | 6.9       |
| 20°-30°   | 1060.0  | 10.1      |
| 30°-40°   | 1231.1  | 11.8      |
| 40°-50°   | 1229.6  | 11.7      |
| 50°-60°   | 1072.2  | 10.2      |
| 60°-70°   | 792.6   | 7.6       |
| 70°-80°   | 448.4   | 4.3       |
| 80°-90°   | 122.0   | 1.2       |
| 90°-100°  | 78.3    | 0.7       |
| 100°-110° | 248.7   | 2.4       |
| 110°-120° | 425.6   | 4.1       |
| 120°-130° | 559.8   | 5.3       |
| 130°-140° | 628.3   | 6.0       |
| 140°-150° | 616.2   | 5.9       |
| 150°-160° | 516.9   | 4.9       |
| 160°-170° | 342.8   | 3.3       |
| 170°-180° | 119.8   | 1.1       |
| 0°-30°    | 2037.7  | 19.5      |
| 0°-40°    | 3268.8  | 31.2      |
| 0°-60°    | 5570.6  | 53.2      |
| 0°-90°    | 6933.6  | 66.2      |
| 90°-120°  | 752.7   | 7.2       |
| 90°-150°  | 2556.9  | 24.4      |
| 90°-180°  | 3536.0  | 33.8      |
| 0°-180°   | 10470.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2724 | 2724  | 2724 | 2724  | 2724 |      |
| 5°   | 2724 | 2714  | 2685 | 2705  | 2700 | 259  |
| 15°  | 2593 | 2577  | 2543 | 2554  | 2541 | 730  |
| 25°  | 2347 | 2326  | 2281 | 2286  | 2281 | 1080 |
| 35°  | 2025 | 1998  | 1956 | 1941  | 1928 | 1264 |
| 45°  | 1648 | 1629  | 1590 | 1561  | 1550 | 1271 |
| 55°  | 1247 | 1231  | 1200 | 1168  | 1155 | 1115 |
| 65°  | 841  | 825   | 799  | 775   | 762  | 831  |
| 75°  | 440  | 435   | 422  | 406   | 411  | 470  |
| 85°  | 107  | 105   | 102  | 94    | 92   | 120  |
| 90°  | 1    | 14    | 37   | 35    | 36   | 10   |
| 95°  | 56   | 66    | 68   | 68    | 66   | 62   |
| 105° | 230  | 233   | 235  | 237   | 237  | 242  |
| 115° | 427  | 433   | 431  | 430   | 427  | 422  |
| 125° | 621  | 631   | 628  | 624   | 623  | 555  |
| 135° | 804  | 815   | 818  | 816   | 814  | 621  |
| 145° | 976  | 983   | 989  | 990   | 986  | 610  |
| 155° | 1116 | 1119  | 1122 | 1127  | 1124 | 513  |
| 165° | 1214 | 1212  | 1212 | 1220  | 1215 | 342  |
| 175° | 1263 | 1260  | 1257 | 1265  | 1259 | 120  |
| 180° | 1265 | 1265  | 1265 | 1265  | 1265 |      |

TEST NUMBER: P905346

CATALOG NUMBER: DFN2DIP-HX3F0-070D040US835-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2723.7 | 2723.7 | 2723.7 | 2723.7 | 2723.7 |
| 2.5°   | 2739.6 | 2726.5 | 2697.6 | 2723.7 | 2718.7 |
| 5°     | 2723.7 | 2713.5 | 2684.6 | 2705.4 | 2700.4 |
| 7.5°   | 2705.4 | 2689.8 | 2660.9 | 2682.1 | 2676.8 |
| 10°    | 2676.8 | 2658.4 | 2627.0 | 2647.9 | 2640.1 |
| 12.5°  | 2637.3 | 2621.8 | 2590.4 | 2603.4 | 2598.1 |
| 15°    | 2592.9 | 2577.3 | 2543.1 | 2553.7 | 2540.6 |
| 17.5°  | 2537.8 | 2522.3 | 2488.1 | 2501.2 | 2488.1 |
| 20°    | 2477.5 | 2462.0 | 2425.3 | 2433.1 | 2422.8 |
| 22.5°  | 2417.5 | 2393.9 | 2359.7 | 2359.7 | 2354.4 |
| 25°    | 2346.7 | 2325.8 | 2281.4 | 2286.4 | 2281.4 |
| 27.5°  | 2268.0 | 2249.7 | 2215.8 | 2208.0 | 2194.9 |
| 30°    | 2189.7 | 2168.5 | 2129.4 | 2121.6 | 2111.0 |
| 32.5°  | 2105.7 | 2090.2 | 2048.2 | 2032.4 | 2021.8 |
| 35°    | 2024.6 | 1998.5 | 1956.5 | 1940.7 | 1927.6 |
| 37.5°  | 1932.9 | 1909.3 | 1867.3 | 1849.0 | 1835.9 |
| 40°    | 1838.7 | 1817.6 | 1775.6 | 1752.3 | 1741.7 |
| 42.5°  | 1747.0 | 1725.9 | 1684.2 | 1657.8 | 1642.2 |
| 45°    | 1647.5 | 1629.2 | 1589.7 | 1561.1 | 1550.5 |
| 47.5°  | 1550.5 | 1532.2 | 1490.2 | 1461.3 | 1445.8 |
| 50°    | 1448.3 | 1435.2 | 1398.5 | 1361.9 | 1348.8 |
| 52.5°  | 1348.8 | 1330.5 | 1296.6 | 1267.7 | 1249.3 |
| 55°    | 1246.8 | 1231.0 | 1199.6 | 1168.2 | 1155.1 |
| 57.5°  | 1144.6 | 1131.5 | 1097.3 | 1065.9 | 1055.4 |
| 60°    | 1042.3 | 1032.0 | 995.4  | 966.5  | 958.7  |
| 62.5°  | 942.8  | 924.5  | 898.4  | 872.3  | 861.7  |
| 65°    | 840.9  | 825.0  | 798.9  | 775.3  | 762.2  |
| 67.5°  | 736.1  | 722.8  | 699.4  | 681.1  | 670.5  |
| 70°    | 639.1  | 628.6  | 604.9  | 586.6  | 576.3  |
| 72.5°  | 539.6  | 529.1  | 516.0  | 497.7  | 489.9  |
| 75°    | 439.9  | 434.9  | 421.5  | 406.0  | 411.3  |
| 77.5°  | 351.0  | 340.4  | 335.1  | 327.3  | 319.6  |
| 80°    | 262.0  | 259.3  | 254.0  | 246.2  | 240.9  |
| 82.5°  | 178.1  | 178.1  | 175.6  | 165.1  | 165.1  |
| 85°    | 107.3  | 104.8  | 102.3  | 94.2   | 91.7   |
| 87.5°  | 47.2   | 42.0   | 36.7   | 28.9   | 26.1   |
| 90°    | 1.1    | 13.7   | 37.4   | 35.1   | 36.2   |
| 92.5°  | 23.6   | 32.0   | 33.2   | 34.3   | 34.3   |
| 95°    | 55.7   | 66.4   | 68.3   | 68.3   | 66.4   |
| 97.5°  | 92.7   | 102.6  | 106.8  | 106.8  | 106.8  |
| 100°   | 135.4  | 144.2  | 147.2  | 147.2  | 146.1  |
| 102.5° | 180.4  | 186.9  | 191.1  | 192.2  | 191.1  |
| 105°   | 229.6  | 232.6  | 234.9  | 236.8  | 236.8  |
| 107.5° | 278.4  | 283.0  | 283.0  | 283.7  | 278.4  |
| 110°   | 325.7  | 331.8  | 331.8  | 331.8  | 328.8  |

TEST NUMBER: P905346

CATALOG NUMBER: DFN2DIP-HX3F0-070D040US835-FLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 376.8  | 383.3  | 382.1  | 379.1  | 376.8  |
| 115°   | 427.1  | 433.3  | 431.3  | 430.2  | 427.1  |
| 117.5° | 477.1  | 485.5  | 480.2  | 477.1  | 474.1  |
| 120°   | 527.5  | 535.8  | 527.5  | 527.5  | 524.0  |
| 122.5° | 573.2  | 583.9  | 578.6  | 575.5  | 573.2  |
| 125°   | 621.3  | 630.8  | 627.8  | 624.3  | 623.2  |
| 127.5° | 668.2  | 680.0  | 675.8  | 671.2  | 668.2  |
| 130°   | 712.0  | 725.8  | 723.9  | 721.6  | 717.4  |
| 132.5° | 761.2  | 771.9  | 772.7  | 767.3  | 764.3  |
| 135°   | 803.6  | 815.4  | 817.7  | 816.5  | 813.5  |
| 137.5° | 850.9  | 860.4  | 862.3  | 861.5  | 857.0  |
| 140°   | 892.4  | 902.0  | 907.3  | 907.3  | 903.1  |
| 142.5° | 935.2  | 944.7  | 947.7  | 948.9  | 944.7  |
| 145°   | 975.6  | 983.2  | 989.3  | 990.5  | 986.3  |
| 147.5° | 1011.8 | 1021.3 | 1025.9 | 1027.8 | 1023.6 |
| 150°   | 1049.2 | 1055.7 | 1059.9 | 1063.3 | 1059.9 |
| 152.5° | 1082.4 | 1088.8 | 1094.2 | 1098.4 | 1094.2 |
| 155°   | 1115.5 | 1118.6 | 1122.0 | 1127.4 | 1123.9 |
| 157.5° | 1144.2 | 1146.4 | 1148.3 | 1156.0 | 1150.6 |
| 160°   | 1169.7 | 1172.0 | 1173.1 | 1179.6 | 1175.0 |
| 162.5° | 1193.3 | 1193.3 | 1194.5 | 1201.7 | 1196.4 |
| 165°   | 1213.6 | 1212.4 | 1212.4 | 1220.0 | 1214.7 |
| 167.5° | 1231.9 | 1228.4 | 1228.4 | 1236.1 | 1230.7 |
| 170°   | 1245.6 | 1242.5 | 1241.4 | 1249.0 | 1242.5 |
| 172.5° | 1255.1 | 1252.1 | 1250.9 | 1258.6 | 1252.1 |
| 175°   | 1262.8 | 1259.7 | 1257.4 | 1265.0 | 1258.6 |
| 177.5° | 1267.0 | 1263.9 | 1261.6 | 1268.1 | 1261.6 |
| 180°   | 1265.0 | 1265.0 | 1265.0 | 1265.0 | 1265.0 |

TEST NUMBER: P905346

CATALOG NUMBER: DFN2DIP-HX3F0-070D040US835-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 | 12.60            | 13.62 | 13.40 | 14.45 | 15.47 | 12.17          | 13.20 | 12.97 | 14.02 | 15.04 |
|                 | 3H   | 14.26            | 15.19 | 15.08 | 16.02 | 17.07 | 13.79          | 14.72 | 14.61 | 15.55 | 16.60 |
|                 | 4H   | 14.85            | 15.72 | 15.69 | 16.57 | 17.63 | 14.38          | 15.26 | 15.22 | 16.10 | 17.16 |
|                 | 6H   | 15.25            | 16.06 | 16.10 | 16.91 | 17.98 | 14.78          | 15.59 | 15.63 | 16.44 | 17.51 |
|                 | 8H   | 15.36            | 16.13 | 16.22 | 17.00 | 18.07 | 14.89          | 15.66 | 15.75 | 16.53 | 17.60 |
|                 | 12H  | 15.41            | 16.14 | 16.27 | 17.01 | 18.10 | 14.94          | 15.67 | 15.80 | 16.53 | 17.63 |
| 4H              | 2H   | 13.07            | 13.95 | 13.91 | 14.79 | 15.85 | 12.73          | 13.60 | 13.57 | 14.45 | 15.51 |
|                 | 3H   | 14.95            | 15.68 | 15.80 | 16.55 | 17.63 | 14.56          | 15.29 | 15.41 | 16.16 | 17.24 |
|                 | 4H   | 15.66            | 16.33 | 16.53 | 17.20 | 18.30 | 15.26          | 15.92 | 16.12 | 16.80 | 17.90 |
|                 | 6H   | 16.18            | 16.75 | 17.06 | 17.65 | 18.76 | 15.77          | 16.35 | 16.65 | 17.25 | 18.35 |
|                 | 8H   | 16.33            | 16.87 | 17.21 | 17.76 | 18.88 | 15.92          | 16.46 | 16.80 | 17.35 | 18.47 |
|                 | 12H  | 16.41            | 16.89 | 17.31 | 17.80 | 18.93 | 15.99          | 16.47 | 16.89 | 17.39 | 18.51 |
| 8H              | 4H   | 15.87            | 16.41 | 16.75 | 17.30 | 18.42 | 15.51          | 16.05 | 16.39 | 16.94 | 18.06 |
|                 | 6H   | 16.50            | 16.94 | 17.41 | 17.88 | 18.99 | 16.14          | 16.58 | 17.05 | 17.52 | 18.64 |
|                 | 8H   | 16.72            | 17.11 | 17.63 | 18.04 | 19.17 | 16.35          | 16.74 | 17.27 | 17.67 | 18.81 |
|                 | 12H  | 16.85            | 17.20 | 17.77 | 18.12 | 19.30 | 16.47          | 16.82 | 17.39 | 17.74 | 18.92 |
| 12H             | 4H   | 15.86            | 16.35 | 16.76 | 17.26 | 18.38 | 15.51          | 16.00 | 16.41 | 16.91 | 18.03 |
|                 | 6H   | 16.53            | 16.92 | 17.45 | 17.85 | 18.98 | 16.18          | 16.57 | 17.10 | 17.50 | 18.64 |
|                 | 8H   | 16.77            | 17.12 | 17.69 | 18.04 | 19.23 | 16.42          | 16.77 | 17.34 | 17.69 | 18.87 |