

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: P910801

Luminaire Tested: DFN2DIP-HX3F0-070D030US850-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P910801  
REPORT IS A COMBINATION OF REPORTS P900730 AND P897645  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-070D030US850-RLLONL  
Description: 3 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

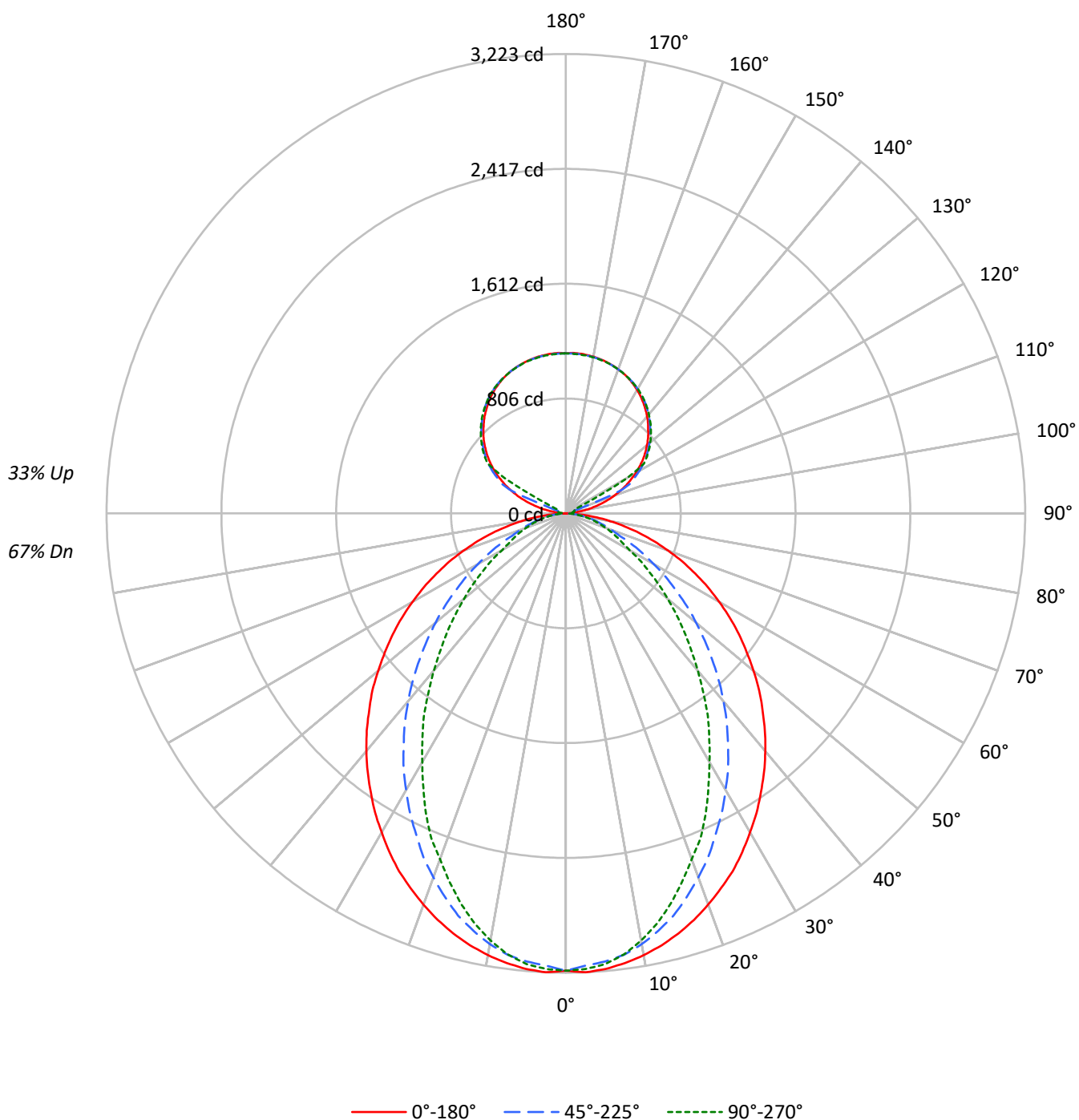
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 9892.2 lumens  
Efficiency: N/A  
Efficacy: 107.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.84' x L: 3.28' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 92.1  
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

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### Luminous Intensity Polar Plot



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**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 | 105 | 105 | 105 | 105 | 93 | 93 | 93 | 82 | 82 | 82 | 71 | 71 | 71 |
| 1   | 102 | 98  | 94  | 91  | 96  | 93  | 89  | 86  | 82 | 80 | 78 | 73 | 71 | 69 | 64 | 63 | 62 |
| 2   | 94  | 86  | 80  | 75  | 88  | 82  | 76  | 72  | 73 | 69 | 65 | 65 | 62 | 59 | 57 | 55 | 53 |
| 3   | 86  | 77  | 69  | 64  | 81  | 72  | 66  | 61  | 65 | 60 | 56 | 58 | 54 | 51 | 51 | 48 | 46 |
| 4   | 79  | 68  | 60  | 54  | 74  | 65  | 58  | 52  | 58 | 53 | 48 | 52 | 48 | 44 | 46 | 43 | 40 |
| 5   | 73  | 61  | 53  | 47  | 68  | 58  | 51  | 45  | 52 | 47 | 42 | 47 | 42 | 39 | 42 | 38 | 35 |
| 6   | 67  | 55  | 47  | 41  | 63  | 53  | 45  | 40  | 48 | 42 | 37 | 43 | 38 | 34 | 38 | 35 | 31 |
| 7   | 62  | 50  | 42  | 37  | 59  | 48  | 41  | 36  | 43 | 37 | 33 | 39 | 34 | 31 | 35 | 31 | 28 |
| 8   | 58  | 46  | 38  | 33  | 55  | 44  | 37  | 32  | 40 | 34 | 30 | 36 | 31 | 28 | 33 | 29 | 26 |
| 9   | 54  | 42  | 35  | 30  | 51  | 40  | 33  | 29  | 37 | 31 | 27 | 33 | 29 | 25 | 30 | 26 | 23 |
| 10  | 51  | 39  | 32  | 27  | 48  | 37  | 31  | 26  | 34 | 28 | 24 | 31 | 26 | 23 | 28 | 24 | 21 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3716 | 3716 | 3716 |
| 5°  | 3721 | 3655 | 3679 |
| 10° | 3682 | 3581 | 3557 |
| 15° | 3630 | 3460 | 3370 |
| 20° | 3561 | 3294 | 3142 |
| 25° | 3491 | 3109 | 2921 |
| 30° | 3397 | 2920 | 2642 |
| 35° | 3305 | 2716 | 2396 |
| 40° | 3211 | 2506 | 2115 |
| 45° | 3102 | 2273 | 1861 |
| 50° | 2989 | 2038 | 1612 |
| 55° | 2871 | 1787 | 1374 |
| 60° | 2734 | 1525 | 1129 |
| 65° | 2577 | 1259 | 1013 |
| 70° | 2386 | 1011 | 914  |
| 75° | 2146 | 886  | 827  |
| 80° | 1799 | 735  | 711  |
| 85° | 1230 | 478  | 522  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 3102 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 300.7  | 3.0       |
| 10°-20°   | 825.5  | 8.3       |
| 20°-30°   | 1158.9 | 11.7      |
| 30°-40°   | 1263.3 | 12.8      |
| 40°-50°   | 1161.1 | 11.7      |
| 50°-60°   | 911.9  | 9.2       |
| 60°-70°   | 593.5  | 6.0       |
| 70°-80°   | 305.5  | 3.1       |
| 80°-90°   | 80.0   | 0.8       |
| 90°-100°  | 37.0   | 0.4       |
| 100°-110° | 138.0  | 1.4       |
| 110°-120° | 366.1  | 3.7       |
| 120°-130° | 607.1  | 6.1       |
| 130°-140° | 644.9  | 6.5       |
| 140°-150° | 599.4  | 6.1       |
| 150°-160° | 481.9  | 4.9       |
| 160°-170° | 310.5  | 3.1       |
| 170°-180° | 106.9  | 1.1       |
| 0°-30°    | 2285.1 | 23.1      |
| 0°-40°    | 3548.4 | 35.9      |
| 0°-60°    | 5621.4 | 56.8      |
| 0°-90°    | 6600.5 | 66.7      |
| 90°-120°  | 541.1  | 5.5       |
| 90°-150°  | 2392.5 | 24.2      |
| 90°-180°  | 3292.0 | 33.3      |
| 0°-180°   | 9892.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3208 | 3208  | 3208 | 3208  | 3208 |      |
| 5°   | 3208 | 3194  | 3156 | 3182  | 3174 | 304  |
| 15°  | 3052 | 3020  | 2921 | 2866  | 2837 | 860  |
| 25°  | 2770 | 2677  | 2485 | 2366  | 2323 | 1274 |
| 35°  | 2387 | 2239  | 1983 | 1800  | 1736 | 1494 |
| 45°  | 1951 | 1756  | 1452 | 1246  | 1176 | 1507 |
| 55°  | 1484 | 1257  | 944  | 770   | 714  | 1326 |
| 65°  | 1002 | 766   | 505  | 407   | 398  | 993  |
| 75°  | 534  | 331   | 232  | 212   | 209  | 565  |
| 85°  | 125  | 64    | 55   | 55    | 55   | 143  |
| 90°  | 1    | 10    | 16   | 20    | 22   | 9    |
| 95°  | 53   | 26    | 32   | 36    | 35   | 63   |
| 105° | 247  | 271   | 50   | 58    | 62   | 264  |
| 115° | 467  | 481   | 501  | 125   | 67   | 460  |
| 125° | 660  | 671   | 687  | 692   | 695  | 589  |
| 135° | 817  | 830   | 838  | 846   | 844  | 631  |
| 145° | 948  | 947   | 961  | 967   | 963  | 593  |
| 155° | 1044 | 1037  | 1046 | 1051  | 1045 | 481  |
| 165° | 1100 | 1095  | 1098 | 1103  | 1098 | 311  |
| 175° | 1125 | 1120  | 1121 | 1127  | 1119 | 107  |
| 180° | 1123 | 1123  | 1123 | 1123  | 1123 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3208.4 | 3208.4 | 3208.4 | 3208.4 | 3208.4 |
| 2.5°   | 3222.9 | 3208.4 | 3176.4 | 3205.7 | 3199.8 |
| 5°     | 3208.4 | 3193.9 | 3156.1 | 3182.3 | 3173.6 |
| 7.5°   | 3182.3 | 3165.0 | 3124.4 | 3135.7 | 3121.3 |
| 10°    | 3147.5 | 3127.2 | 3069.2 | 3060.3 | 3043.0 |
| 12.5°  | 3104.0 | 3077.8 | 2999.3 | 2982.0 | 2949.9 |
| 15°    | 3051.6 | 3019.6 | 2921.0 | 2865.9 | 2836.9 |
| 17.5°  | 2990.6 | 2944.2 | 2822.2 | 2758.3 | 2711.8 |
| 20°    | 2921.0 | 2862.8 | 2717.7 | 2645.3 | 2581.2 |
| 22.5°  | 2845.6 | 2778.7 | 2610.1 | 2511.6 | 2468.2 |
| 25°    | 2770.1 | 2677.0 | 2485.4 | 2366.5 | 2322.8 |
| 27.5°  | 2680.1 | 2581.2 | 2369.3 | 2232.9 | 2166.0 |
| 30°    | 2584.3 | 2473.7 | 2241.4 | 2093.6 | 2015.1 |
| 32.5°  | 2491.3 | 2357.6 | 2119.7 | 1945.4 | 1872.7 |
| 35°    | 2386.8 | 2238.6 | 1983.3 | 1800.4 | 1736.3 |
| 37.5°  | 2285.2 | 2125.3 | 1855.5 | 1654.8 | 1582.5 |
| 40°    | 2177.6 | 2003.6 | 1721.7 | 1515.7 | 1440.1 |
| 42.5°  | 2067.4 | 1881.6 | 1588.3 | 1373.3 | 1301.0 |
| 45°    | 1951.3 | 1756.5 | 1451.9 | 1245.5 | 1175.9 |
| 47.5°  | 1840.9 | 1634.9 | 1321.3 | 1114.9 | 1051.1 |
| 50°    | 1719.0 | 1512.9 | 1193.4 | 992.9  | 932.2  |
| 52.5°  | 1599.7 | 1381.9 | 1071.4 | 879.8  | 824.7  |
| 55°    | 1483.6 | 1257.2 | 943.5  | 769.5  | 714.4  |
| 57.5°  | 1364.7 | 1132.4 | 830.5  | 667.8  | 621.4  |
| 60°    | 1242.7 | 1010.4 | 711.3  | 563.5  | 516.9  |
| 62.5°  | 1123.7 | 891.5  | 609.6  | 470.4  | 447.3  |
| 65°    | 1001.8 | 766.4  | 505.3  | 406.7  | 397.7  |
| 67.5°  | 885.6  | 650.3  | 406.7  | 357.0  | 348.4  |
| 70°    | 763.7  | 537.2  | 336.7  | 307.7  | 296.0  |
| 72.5°  | 647.5  | 432.5  | 281.6  | 258.5  | 252.6  |
| 75°    | 534.2  | 330.8  | 232.2  | 211.9  | 209.2  |
| 77.5°  | 421.1  | 235.0  | 183.0  | 171.2  | 165.5  |
| 80°    | 316.4  | 168.5  | 139.3  | 127.9  | 127.9  |
| 82.5°  | 220.6  | 113.3  | 95.8   | 89.9   | 89.9   |
| 85°    | 124.8  | 63.8   | 55.1   | 55.1   | 55.1   |
| 87.5°  | 46.5   | 23.1   | 23.1   | 20.3   | 20.3   |
| 90°    | 0.8    | 9.8    | 16.2   | 20.4   | 21.8   |
| 92.5°  | 20.4   | 17.1   | 19.5   | 21.2   | 21.8   |
| 95°    | 52.8   | 26.0   | 31.6   | 35.8   | 34.9   |
| 97.5°  | 95.0   | 28.5   | 41.4   | 43.9   | 44.7   |
| 100°   | 143.8  | 32.5   | 46.4   | 52.8   | 54.5   |
| 102.5° | 197.4  | 195.8  | 47.9   | 56.8   | 59.3   |
| 105°   | 247.0  | 271.4  | 49.6   | 58.4   | 61.8   |
| 107.5° | 304.6  | 324.9  | 51.2   | 60.1   | 63.4   |
| 110°   | 360.0  | 376.9  | 142.2  | 61.0   | 64.2   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 412.0  | 426.5  | 412.8  | 62.5   | 65.0   |
| 115°   | 467.1  | 481.0  | 501.3  | 125.1  | 66.7   |
| 117.5° | 515.1  | 531.3  | 545.2  | 429.0  | 216.1  |
| 120°   | 568.7  | 580.9  | 595.5  | 605.3  | 495.6  |
| 122.5° | 614.2  | 627.3  | 643.6  | 648.3  | 649.2  |
| 125°   | 660.5  | 671.1  | 686.6  | 692.2  | 694.7  |
| 127.5° | 702.8  | 714.1  | 726.4  | 734.5  | 735.3  |
| 130°   | 742.6  | 755.7  | 764.5  | 773.4  | 772.8  |
| 132.5° | 783.2  | 793.8  | 802.7  | 810.0  | 809.2  |
| 135°   | 817.3  | 830.4  | 837.6  | 845.8  | 844.2  |
| 137.5° | 853.0  | 862.8  | 871.0  | 879.1  | 876.7  |
| 140°   | 888.0  | 894.5  | 903.4  | 910.7  | 906.7  |
| 142.5° | 917.4  | 923.0  | 933.6  | 940.0  | 936.0  |
| 145°   | 948.2  | 947.3  | 961.2  | 966.8  | 962.7  |
| 147.5° | 974.9  | 972.5  | 986.3  | 990.3  | 987.1  |
| 150°   | 1001.0 | 995.3  | 1008.3 | 1013.1 | 1009.1 |
| 152.5° | 1022.8 | 1016.4 | 1028.6 | 1033.5 | 1027.8 |
| 155°   | 1044.0 | 1036.8 | 1046.5 | 1051.3 | 1044.9 |
| 157.5° | 1061.1 | 1054.7 | 1062.0 | 1067.6 | 1061.1 |
| 160°   | 1075.7 | 1070.9 | 1075.7 | 1080.6 | 1074.8 |
| 162.5° | 1088.7 | 1083.8 | 1087.9 | 1093.6 | 1086.3 |
| 165°   | 1100.0 | 1095.2 | 1097.7 | 1103.3 | 1097.7 |
| 167.5° | 1109.0 | 1104.1 | 1106.6 | 1112.3 | 1105.0 |
| 170°   | 1116.3 | 1111.4 | 1113.1 | 1118.8 | 1111.4 |
| 172.5° | 1121.2 | 1116.3 | 1118.0 | 1123.6 | 1116.3 |
| 175°   | 1125.2 | 1119.5 | 1121.2 | 1126.9 | 1118.8 |
| 177.5° | 1126.9 | 1121.2 | 1122.1 | 1127.7 | 1120.4 |
| 180°   | 1122.9 | 1122.9 | 1122.9 | 1122.9 | 1122.9 |

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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 | 13.10            | 14.09 | 13.91 | 14.91 | 15.92 | 9.08           | 10.06 | 9.88  | 10.89 | 11.90 |
|                 | 3H   | 14.78            | 15.67 | 15.60 | 16.50 | 17.54 | 10.27          | 11.16 | 11.09 | 11.99 | 13.03 |
|                 | 4H   | 15.39            | 16.23 | 16.23 | 17.07 | 18.12 | 10.73          | 11.56 | 11.56 | 12.40 | 13.45 |
|                 | 6H   | 15.81            | 16.58 | 16.66 | 17.43 | 18.50 | 11.05          | 11.82 | 11.90 | 12.67 | 13.73 |
|                 | 8H   | 15.94            | 16.67 | 16.80 | 17.54 | 18.61 | 11.14          | 11.87 | 12.00 | 12.74 | 13.81 |
|                 | 12H  | 16.01            | 16.70 | 16.87 | 17.56 | 18.65 | 11.19          | 11.89 | 12.05 | 12.75 | 13.84 |
| 4H              | 2H   | 13.14            | 13.97 | 13.98 | 14.81 | 15.86 | 9.69           | 10.52 | 10.53 | 11.36 | 12.41 |
|                 | 3H   | 14.97            | 15.66 | 15.82 | 16.54 | 17.61 | 11.04          | 11.74 | 11.90 | 12.61 | 13.68 |
|                 | 4H   | 15.66            | 16.29 | 16.53 | 17.16 | 18.26 | 11.60          | 12.22 | 12.46 | 13.10 | 14.19 |
|                 | 6H   | 16.18            | 16.72 | 17.06 | 17.62 | 18.72 | 12.02          | 12.56 | 12.90 | 13.46 | 14.56 |
|                 | 8H   | 16.35            | 16.86 | 17.24 | 17.75 | 18.86 | 12.15          | 12.65 | 13.03 | 13.54 | 14.66 |
|                 | 12H  | 16.45            | 16.91 | 17.35 | 17.82 | 18.93 | 12.22          | 12.67 | 13.12 | 13.58 | 14.70 |
| 8H              | 4H   | 15.64            | 16.15 | 16.52 | 17.04 | 18.15 | 11.88          | 12.39 | 12.77 | 13.28 | 14.39 |
|                 | 6H   | 16.20            | 16.62 | 17.11 | 17.56 | 18.67 | 12.40          | 12.82 | 13.31 | 13.75 | 14.86 |
|                 | 8H   | 16.42            | 16.79 | 17.34 | 17.71 | 18.84 | 12.59          | 12.96 | 13.51 | 13.88 | 15.01 |
|                 | 12H  | 16.56            | 16.88 | 17.48 | 17.80 | 18.98 | 12.71          | 13.04 | 13.63 | 13.95 | 15.13 |
| 12H             | 4H   | 15.60            | 16.06 | 16.50 | 16.97 | 18.08 | 11.89          | 12.35 | 12.80 | 13.26 | 14.38 |
|                 | 6H   | 16.18            | 16.55 | 17.10 | 17.48 | 18.61 | 12.45          | 12.82 | 13.37 | 13.74 | 14.87 |
|                 | 8H   | 16.40            | 16.73 | 17.32 | 17.65 | 18.83 | 12.66          | 12.99 | 13.58 | 13.90 | 15.09 |