

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: P905349

Luminaire Tested: DFN2DIP-HX3F0-070D040US835-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P905349  
REPORT IS A COMBINATION OF REPORTS P900744 AND P897645  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-070D040US835-RLLONL  
Description: 3 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

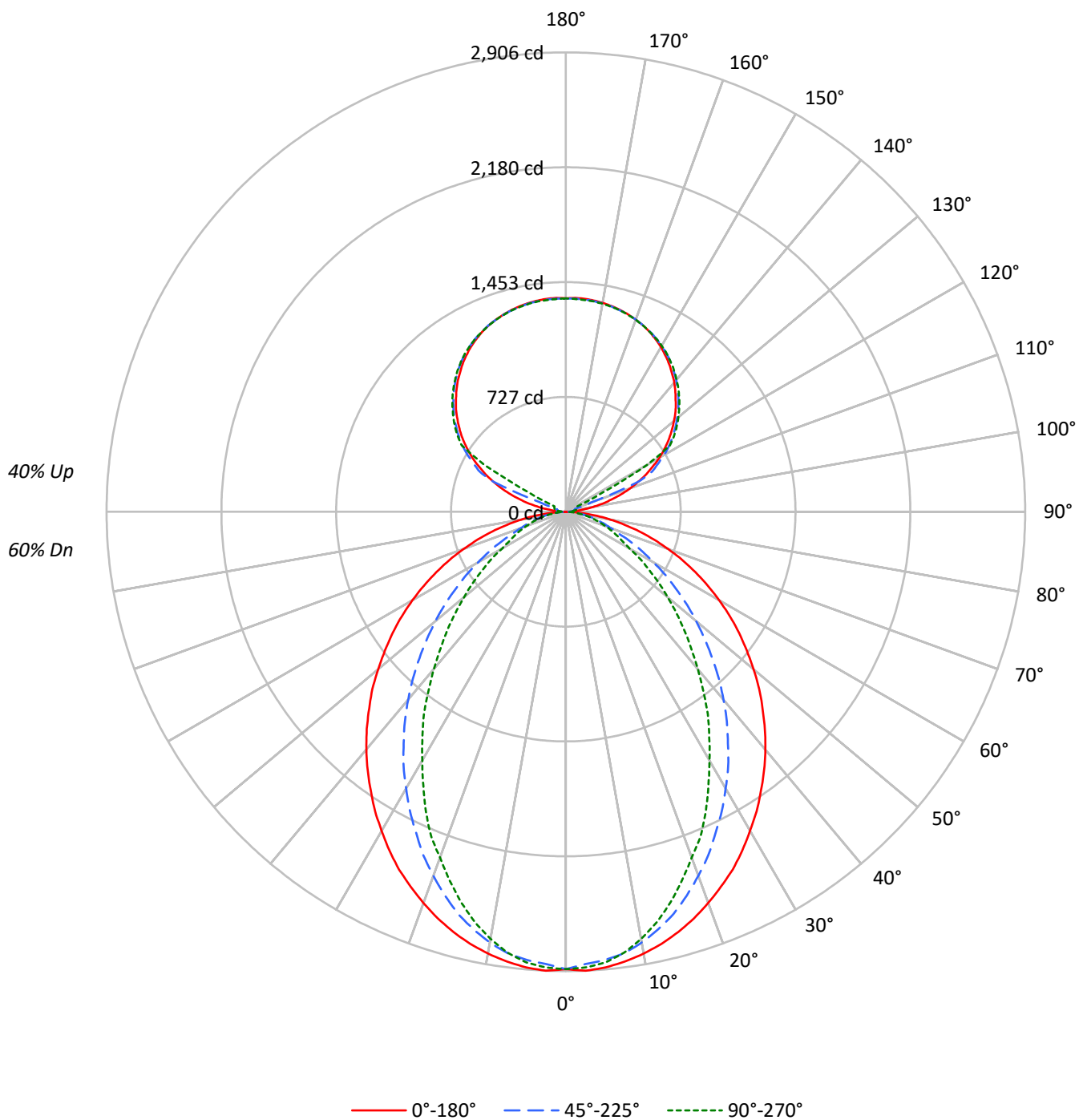
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 9909.9 lumens  
Efficiency: N/A  
Efficacy: 100.2 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): 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

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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   | 110 | 110 | 110 | 110 | 102 | 102 | 102 | 102 | 89 | 89 | 89 | 77 | 77 | 77 | 65 | 65 | 65 |
| 1   | 101 | 96  | 93  | 89  | 94  | 90  | 87  | 84  | 79 | 77 | 74 | 68 | 67 | 65 | 59 | 57 | 56 |
| 2   | 92  | 85  | 79  | 74  | 86  | 80  | 74  | 70  | 70 | 66 | 62 | 61 | 58 | 55 | 52 | 50 | 48 |
| 3   | 84  | 75  | 68  | 62  | 79  | 71  | 64  | 59  | 62 | 57 | 53 | 54 | 51 | 47 | 47 | 44 | 42 |
| 4   | 78  | 67  | 59  | 53  | 72  | 63  | 56  | 51  | 56 | 50 | 46 | 49 | 45 | 41 | 42 | 39 | 37 |
| 5   | 71  | 60  | 52  | 46  | 67  | 57  | 49  | 44  | 50 | 44 | 40 | 44 | 40 | 36 | 38 | 35 | 32 |
| 6   | 66  | 54  | 46  | 40  | 62  | 51  | 44  | 39  | 45 | 40 | 35 | 40 | 35 | 32 | 35 | 32 | 29 |
| 7   | 61  | 49  | 41  | 36  | 57  | 46  | 39  | 34  | 41 | 36 | 31 | 37 | 32 | 29 | 32 | 29 | 26 |
| 8   | 57  | 45  | 37  | 32  | 53  | 42  | 35  | 31  | 38 | 32 | 28 | 34 | 29 | 26 | 30 | 26 | 23 |
| 9   | 53  | 41  | 34  | 29  | 50  | 39  | 32  | 28  | 35 | 29 | 25 | 31 | 27 | 23 | 28 | 24 | 21 |
| 10  | 50  | 38  | 31  | 26  | 47  | 36  | 29  | 25  | 32 | 27 | 23 | 29 | 24 | 21 | 26 | 22 | 19 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3351 | 3351 | 3351 |
| 5°  | 3355 | 3296 | 3317 |
| 10° | 3320 | 3229 | 3207 |
| 15° | 3273 | 3120 | 3039 |
| 20° | 3211 | 2971 | 2833 |
| 25° | 3148 | 2804 | 2634 |
| 30° | 3063 | 2633 | 2382 |
| 35° | 2980 | 2449 | 2161 |
| 40° | 2895 | 2259 | 1907 |
| 45° | 2797 | 2049 | 1678 |
| 50° | 2695 | 1837 | 1454 |
| 55° | 2589 | 1611 | 1239 |
| 60° | 2466 | 1375 | 1018 |
| 65° | 2324 | 1135 | 914  |
| 70° | 2152 | 912  | 824  |
| 75° | 1935 | 799  | 746  |
| 80° | 1622 | 663  | 641  |
| 85° | 1108 | 431  | 471  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 2797 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 271.1  | 2.7       |
| 10°-20°   | 744.3  | 7.5       |
| 20°-30°   | 1045.0 | 10.5      |
| 30°-40°   | 1139.2 | 11.5      |
| 40°-50°   | 1047.0 | 10.6      |
| 50°-60°   | 822.3  | 8.3       |
| 60°-70°   | 535.2  | 5.4       |
| 70°-80°   | 275.5  | 2.8       |
| 80°-90°   | 72.7   | 0.7       |
| 90°-100°  | 44.5   | 0.4       |
| 100°-110° | 165.9  | 1.7       |
| 110°-120° | 440.1  | 4.4       |
| 120°-130° | 729.9  | 7.4       |
| 130°-140° | 775.4  | 7.8       |
| 140°-150° | 720.6  | 7.3       |
| 150°-160° | 579.4  | 5.8       |
| 160°-170° | 373.3  | 3.8       |
| 170°-180° | 128.5  | 1.3       |
| 0°-30°    | 2060.5 | 20.8      |
| 0°-40°    | 3199.7 | 32.3      |
| 0°-60°    | 5068.9 | 51.1      |
| 0°-90°    | 5952.3 | 60.1      |
| 90°-120°  | 650.5  | 6.6       |
| 90°-150°  | 2876.4 | 29.0      |
| 90°-180°  | 3958.0 | 39.9      |
| 0°-180°   | 9909.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2893 | 2893  | 2893 | 2893  | 2893 |      |
| 5°   | 2893 | 2880  | 2846 | 2870  | 2862 | 274  |
| 15°  | 2752 | 2723  | 2634 | 2584  | 2558 | 775  |
| 25°  | 2498 | 2414  | 2241 | 2134  | 2094 | 1149 |
| 35°  | 2152 | 2019  | 1788 | 1623  | 1566 | 1347 |
| 45°  | 1760 | 1584  | 1309 | 1123  | 1060 | 1359 |
| 55°  | 1338 | 1134  | 851  | 694   | 644  | 1195 |
| 65°  | 903  | 691   | 456  | 367   | 359  | 896  |
| 75°  | 482  | 298   | 209  | 191   | 189  | 509  |
| 85°  | 112  | 58    | 50   | 50    | 50   | 129  |
| 90°  | 1    | 12    | 20   | 24    | 26   | 9    |
| 95°  | 63   | 31    | 38   | 43    | 42   | 75   |
| 105° | 297  | 326   | 60   | 70    | 74   | 317  |
| 115° | 562  | 578   | 603  | 150   | 80   | 553  |
| 125° | 794  | 807   | 825  | 832   | 835  | 708  |
| 135° | 983  | 998   | 1007 | 1017  | 1015 | 759  |
| 145° | 1140 | 1139  | 1156 | 1162  | 1158 | 713  |
| 155° | 1255 | 1246  | 1258 | 1264  | 1256 | 578  |
| 165° | 1323 | 1317  | 1320 | 1326  | 1320 | 374  |
| 175° | 1353 | 1346  | 1348 | 1355  | 1345 | 129  |
| 180° | 1350 | 1350  | 1350 | 1350  | 1350 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2893.1 | 2893.1 | 2893.1 | 2893.1 | 2893.1 |
| 2.5°   | 2906.1 | 2893.1 | 2864.2 | 2890.6 | 2885.3 |
| 5°     | 2893.1 | 2880.0 | 2845.9 | 2869.5 | 2861.7 |
| 7.5°   | 2869.5 | 2853.9 | 2817.3 | 2827.5 | 2814.5 |
| 10°    | 2838.1 | 2819.8 | 2767.5 | 2759.5 | 2743.9 |
| 12.5°  | 2798.9 | 2775.3 | 2704.5 | 2688.9 | 2660.0 |
| 15°    | 2751.7 | 2722.8 | 2633.9 | 2584.2 | 2558.1 |
| 17.5°  | 2696.7 | 2654.8 | 2544.8 | 2487.2 | 2445.3 |
| 20°    | 2633.9 | 2581.4 | 2450.6 | 2385.3 | 2327.5 |
| 22.5°  | 2565.9 | 2505.6 | 2353.6 | 2264.7 | 2225.6 |
| 25°    | 2497.8 | 2413.9 | 2241.1 | 2133.9 | 2094.5 |
| 27.5°  | 2416.7 | 2327.5 | 2136.4 | 2013.4 | 1953.1 |
| 30°    | 2330.3 | 2230.6 | 2021.1 | 1887.8 | 1817.0 |
| 32.5°  | 2246.4 | 2125.9 | 1911.4 | 1754.2 | 1688.6 |
| 35°    | 2152.2 | 2018.6 | 1788.4 | 1623.4 | 1565.6 |
| 37.5°  | 2060.6 | 1916.4 | 1673.1 | 1492.2 | 1427.0 |
| 40°    | 1963.6 | 1806.7 | 1552.5 | 1366.7 | 1298.6 |
| 42.5°  | 1864.2 | 1696.7 | 1432.2 | 1238.3 | 1173.1 |
| 45°    | 1759.5 | 1583.9 | 1309.2 | 1123.1 | 1060.3 |
| 47.5°  | 1660.0 | 1474.2 | 1191.4 | 1005.3 | 947.8  |
| 50°    | 1550.0 | 1364.2 | 1076.1 | 895.3  | 840.6  |
| 52.5°  | 1442.5 | 1246.1 | 966.1  | 793.3  | 743.6  |
| 55°    | 1337.8 | 1133.6 | 850.8  | 693.9  | 644.2  |
| 57.5°  | 1230.6 | 1021.1 | 748.9  | 602.2  | 560.3  |
| 60°    | 1120.6 | 911.1  | 641.4  | 508.1  | 466.1  |
| 62.5°  | 1013.3 | 803.9  | 549.7  | 424.2  | 403.3  |
| 65°    | 903.3  | 691.1  | 455.6  | 366.7  | 358.6  |
| 67.5°  | 798.6  | 586.4  | 366.7  | 321.9  | 314.2  |
| 70°    | 688.6  | 484.4  | 303.6  | 277.5  | 266.9  |
| 72.5°  | 583.9  | 390.0  | 253.9  | 233.1  | 227.8  |
| 75°    | 481.7  | 298.3  | 209.4  | 191.1  | 188.6  |
| 77.5°  | 379.7  | 211.9  | 165.0  | 154.4  | 149.2  |
| 80°    | 285.3  | 151.9  | 125.6  | 115.3  | 115.3  |
| 82.5°  | 198.9  | 102.2  | 86.4   | 81.1   | 81.1   |
| 85°    | 112.5  | 57.5   | 49.7   | 49.7   | 49.7   |
| 87.5°  | 41.9   | 20.8   | 20.8   | 18.3   | 18.3   |
| 90°    | 0.9    | 11.7   | 19.5   | 24.5   | 26.3   |
| 92.5°  | 24.5   | 20.5   | 23.4   | 25.4   | 26.3   |
| 95°    | 63.4   | 31.2   | 38.0   | 43.0   | 42.0   |
| 97.5°  | 114.3  | 34.2   | 49.8   | 52.8   | 53.7   |
| 100°   | 172.9  | 39.1   | 55.7   | 63.4   | 65.4   |
| 102.5° | 237.3  | 235.5  | 57.6   | 68.3   | 71.3   |
| 105°   | 296.9  | 326.3  | 59.6   | 70.3   | 74.2   |
| 107.5° | 366.3  | 390.7  | 61.6   | 72.3   | 76.2   |
| 110°   | 432.8  | 453.2  | 171.0  | 73.3   | 77.1   |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 495.3  | 512.8  | 496.2  | 75.2   | 78.2   |
| 115°   | 561.6  | 578.2  | 602.7  | 150.4  | 80.2   |
| 117.5° | 619.3  | 638.8  | 655.5  | 515.7  | 259.8  |
| 120°   | 683.8  | 698.4  | 716.0  | 727.8  | 595.9  |
| 122.5° | 738.4  | 754.1  | 773.7  | 779.5  | 780.5  |
| 125°   | 794.1  | 806.9  | 825.4  | 832.3  | 835.2  |
| 127.5° | 844.9  | 858.6  | 873.3  | 883.1  | 884.0  |
| 130°   | 892.8  | 908.5  | 919.1  | 929.9  | 929.0  |
| 132.5° | 941.6  | 954.4  | 965.1  | 973.9  | 973.0  |
| 135°   | 982.7  | 998.4  | 1007.1 | 1016.9 | 1015.0 |
| 137.5° | 1025.6 | 1037.3 | 1047.2 | 1056.9 | 1054.0 |
| 140°   | 1067.6 | 1075.5 | 1086.2 | 1095.0 | 1090.1 |
| 142.5° | 1102.9 | 1109.7 | 1122.4 | 1130.1 | 1125.3 |
| 145°   | 1140.0 | 1139.0 | 1155.5 | 1162.4 | 1157.5 |
| 147.5° | 1172.1 | 1169.2 | 1185.8 | 1190.7 | 1186.9 |
| 150°   | 1203.4 | 1196.6 | 1212.3 | 1218.1 | 1213.2 |
| 152.5° | 1229.8 | 1222.0 | 1236.6 | 1242.5 | 1235.7 |
| 155°   | 1255.2 | 1246.5 | 1258.2 | 1264.0 | 1256.2 |
| 157.5° | 1275.7 | 1267.9 | 1276.8 | 1283.6 | 1275.7 |
| 160°   | 1293.3 | 1287.4 | 1293.3 | 1299.1 | 1292.3 |
| 162.5° | 1308.9 | 1303.1 | 1308.0 | 1314.8 | 1306.0 |
| 165°   | 1322.6 | 1316.8 | 1319.7 | 1326.5 | 1319.7 |
| 167.5° | 1333.4 | 1327.4 | 1330.5 | 1337.3 | 1328.5 |
| 170°   | 1342.2 | 1336.3 | 1338.2 | 1345.1 | 1336.3 |
| 172.5° | 1348.0 | 1342.2 | 1344.2 | 1351.0 | 1342.2 |
| 175°   | 1352.8 | 1346.0 | 1348.0 | 1354.8 | 1345.1 |
| 177.5° | 1354.8 | 1348.0 | 1349.0 | 1355.9 | 1347.1 |
| 180°   | 1350.0 | 1350.0 | 1350.0 | 1350.0 | 1350.0 |

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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 | 12.20            | 13.12 | 13.07 | 14.00 | 15.13 | 8.17           | 9.09  | 9.05  | 9.98  | 11.10 |
|                 | 3H   | 13.87            | 14.70 | 14.76 | 15.59 | 16.74 | 9.36           | 10.19 | 10.25 | 11.08 | 12.23 |
|                 | 4H   | 14.48            | 15.26 | 15.38 | 16.16 | 17.32 | 9.81           | 10.59 | 10.72 | 11.50 | 12.65 |
|                 | 6H   | 14.90            | 15.61 | 15.81 | 16.53 | 17.70 | 10.14          | 10.85 | 11.05 | 11.76 | 12.93 |
|                 | 8H   | 15.03            | 15.71 | 15.95 | 16.63 | 17.80 | 10.23          | 10.91 | 11.15 | 11.84 | 13.01 |
|                 | 12H  | 15.09            | 15.73 | 16.01 | 16.66 | 17.85 | 10.27          | 10.92 | 11.20 | 11.84 | 13.04 |
| 4H              | 2H   | 12.22            | 13.00 | 13.13 | 13.90 | 15.06 | 8.77           | 9.55  | 9.68  | 10.45 | 11.61 |
|                 | 3H   | 14.05            | 14.70 | 14.97 | 15.63 | 16.81 | 10.13          | 10.77 | 11.04 | 11.71 | 12.88 |
|                 | 4H   | 14.74            | 15.33 | 15.67 | 16.26 | 17.46 | 10.68          | 11.26 | 11.60 | 12.19 | 13.39 |
|                 | 6H   | 15.25            | 15.76 | 16.20 | 16.72 | 17.92 | 11.09          | 11.60 | 12.04 | 12.55 | 13.76 |
|                 | 8H   | 15.43            | 15.90 | 16.37 | 16.85 | 18.06 | 11.22          | 11.69 | 12.17 | 12.64 | 13.86 |
|                 | 12H  | 15.52            | 15.95 | 16.48 | 16.91 | 18.13 | 11.29          | 11.71 | 12.25 | 12.68 | 13.90 |
| 8H              | 4H   | 14.72            | 15.19 | 15.66 | 16.14 | 17.35 | 10.96          | 11.43 | 11.90 | 12.38 | 13.59 |
|                 | 6H   | 15.28            | 15.67 | 16.25 | 16.66 | 17.87 | 11.47          | 11.86 | 12.44 | 12.85 | 14.07 |
|                 | 8H   | 15.49            | 15.83 | 16.47 | 16.81 | 18.04 | 11.66          | 12.00 | 12.64 | 12.99 | 14.22 |
|                 | 12H  | 15.63            | 15.93 | 16.61 | 16.90 | 18.18 | 11.78          | 12.08 | 12.76 | 13.06 | 14.33 |
| 12H             | 4H   | 14.67            | 15.10 | 15.63 | 16.06 | 17.28 | 10.96          | 11.39 | 11.93 | 12.36 | 13.57 |
|                 | 6H   | 15.25            | 15.60 | 16.23 | 16.58 | 17.81 | 11.52          | 11.86 | 12.50 | 12.85 | 14.08 |
|                 | 8H   | 15.47            | 15.77 | 16.45 | 16.75 | 18.03 | 11.73          | 12.03 | 12.71 | 13.01 | 14.29 |