

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: P904311

Luminaire Tested: DFN2DIP-TR2F0-040D040US830-RLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P904311  
REPORT IS A COMBINATION OF REPORTS P901766 AND P897145  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR2F0-040D040US830-RLLONL  
Description: 2 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

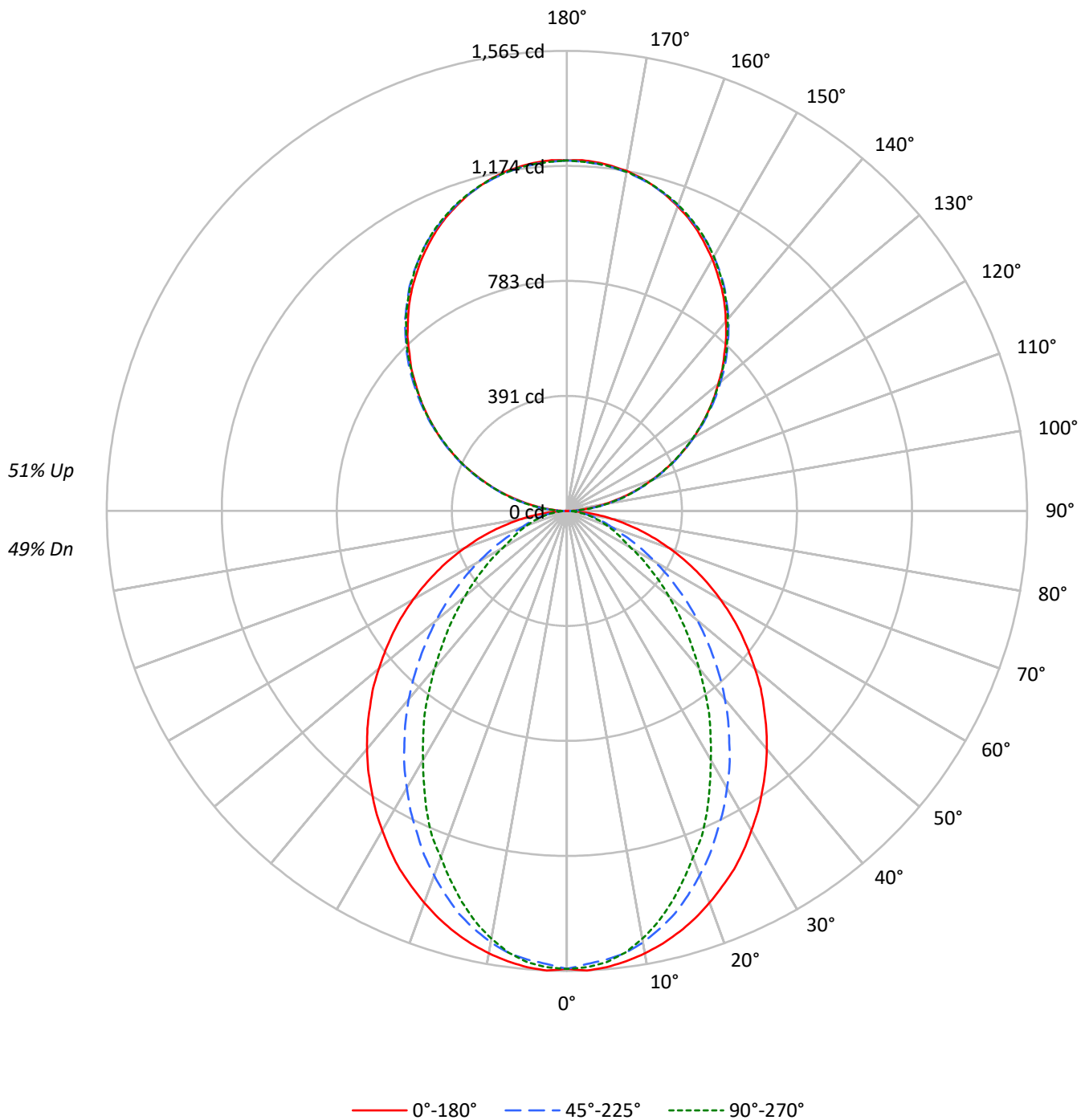
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 6541.2 lumens  
Efficiency: N/A  
Efficacy: 100.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.04' x L: 2.36' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 65.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9933  
Total Harmonic Distortion (THDi): 0.066  
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   | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 83 | 83 | 83 | 68 | 68 | 68 | 55 | 55 | 55 |
| 1   | 98  | 94  | 90  | 87  | 90 | 87 | 84 | 81 | 73 | 71 | 69 | 61 | 59 | 58 | 50 | 49 | 48 |
| 2   | 90  | 83  | 77  | 72  | 82 | 76 | 71 | 67 | 65 | 61 | 58 | 54 | 51 | 49 | 44 | 42 | 41 |
| 3   | 82  | 73  | 66  | 60  | 75 | 68 | 61 | 57 | 58 | 53 | 49 | 48 | 45 | 42 | 40 | 37 | 35 |
| 4   | 75  | 65  | 57  | 51  | 69 | 60 | 54 | 48 | 51 | 46 | 42 | 43 | 40 | 36 | 36 | 33 | 31 |
| 5   | 69  | 58  | 50  | 44  | 64 | 54 | 47 | 42 | 46 | 41 | 37 | 39 | 35 | 32 | 32 | 29 | 27 |
| 6   | 64  | 52  | 44  | 39  | 59 | 49 | 42 | 37 | 42 | 36 | 32 | 35 | 31 | 28 | 30 | 26 | 24 |
| 7   | 59  | 47  | 40  | 34  | 55 | 44 | 37 | 32 | 38 | 33 | 29 | 32 | 28 | 25 | 27 | 24 | 22 |
| 8   | 55  | 43  | 36  | 30  | 51 | 40 | 33 | 29 | 35 | 29 | 26 | 30 | 26 | 23 | 25 | 22 | 20 |
| 9   | 51  | 39  | 32  | 27  | 47 | 37 | 30 | 26 | 32 | 27 | 23 | 27 | 23 | 20 | 23 | 20 | 18 |
| 10  | 48  | 36  | 29  | 24  | 44 | 34 | 28 | 23 | 30 | 24 | 21 | 25 | 21 | 19 | 22 | 18 | 16 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3475 | 3475 | 3475 |
| 5°  | 3476 | 3413 | 3436 |
| 10° | 3436 | 3338 | 3319 |
| 15° | 3384 | 3220 | 3140 |
| 20° | 3316 | 3061 | 2923 |
| 25° | 3247 | 2884 | 2714 |
| 30° | 3155 | 2703 | 2451 |
| 35° | 3065 | 2509 | 2220 |
| 40° | 2974 | 2310 | 1956 |
| 45° | 2868 | 2089 | 1717 |
| 50° | 2758 | 1868 | 1484 |
| 55° | 2642 | 1632 | 1261 |
| 60° | 2508 | 1386 | 1033 |
| 65° | 2354 | 1137 | 922  |
| 70° | 2167 | 906  | 826  |
| 75° | 1930 | 783  | 740  |
| 80° | 1591 | 636  | 624  |
| 85° | 1045 | 395  | 440  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2868 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 146.0  | 2.2       |
| 10°-20°   | 400.9  | 6.1       |
| 20°-30°   | 562.8  | 8.6       |
| 30°-40°   | 613.5  | 9.4       |
| 40°-50°   | 563.9  | 8.6       |
| 50°-60°   | 442.9  | 6.8       |
| 60°-70°   | 288.3  | 4.4       |
| 70°-80°   | 148.4  | 2.3       |
| 80°-90°   | 41.3   | 0.6       |
| 90°-100°  | 73.8   | 1.1       |
| 100°-110° | 234.4  | 3.6       |
| 110°-120° | 401.2  | 6.1       |
| 120°-130° | 527.6  | 8.1       |
| 130°-140° | 592.2  | 9.1       |
| 140°-150° | 580.8  | 8.9       |
| 150°-160° | 487.2  | 7.4       |
| 160°-170° | 323.1  | 4.9       |
| 170°-180° | 112.9  | 1.7       |
| 0°-30°    | 1109.8 | 17.0      |
| 0°-40°    | 1723.3 | 26.3      |
| 0°-60°    | 2730.1 | 41.7      |
| 0°-90°    | 3208.0 | 49.0      |
| 90°-120°  | 709.4  | 10.8      |
| 90°-150°  | 2410.0 | 36.8      |
| 90°-180°  | 3333.0 | 51.0      |
| 0°-180°   | 6541.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1558 | 1558  | 1558 | 1558  | 1558 |      |
| 5°   | 1558 | 1551  | 1533 | 1546  | 1541 | 148  |
| 15°  | 1482 | 1466  | 1419 | 1392  | 1378 | 418  |
| 25°  | 1345 | 1300  | 1207 | 1149  | 1128 | 619  |
| 35°  | 1159 | 1087  | 963  | 874   | 843  | 726  |
| 45°  | 948  | 853   | 705  | 605   | 571  | 732  |
| 55°  | 721  | 611   | 458  | 374   | 347  | 644  |
| 65°  | 486  | 372   | 245  | 198   | 193  | 482  |
| 75°  | 259  | 161   | 113  | 103   | 102  | 274  |
| 85°  | 61   | 31    | 27   | 27    | 27   | 70   |
| 90°  | 1    | 13    | 35   | 33    | 34   | 6    |
| 95°  | 52   | 63    | 64   | 64    | 63   | 58   |
| 105° | 216  | 219   | 221  | 223   | 223  | 228  |
| 115° | 403  | 408   | 406  | 406   | 403  | 398  |
| 125° | 586  | 595   | 592  | 588   | 587  | 523  |
| 135° | 757  | 768   | 771  | 770   | 767  | 585  |
| 145° | 920  | 927   | 932  | 934   | 930  | 575  |
| 155° | 1051 | 1054  | 1058 | 1063  | 1059 | 484  |
| 165° | 1144 | 1143  | 1143 | 1150  | 1145 | 323  |
| 175° | 1190 | 1187  | 1185 | 1192  | 1186 | 113  |
| 180° | 1192 | 1192  | 1192 | 1192  | 1192 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1558.2 | 1558.2 | 1558.2 | 1558.2 | 1558.2 |
| 2.5°   | 1565.3 | 1558.2 | 1542.7 | 1556.9 | 1554.0 |
| 5°     | 1558.2 | 1551.1 | 1532.8 | 1545.5 | 1541.3 |
| 7.5°   | 1545.5 | 1537.1 | 1517.4 | 1522.9 | 1515.9 |
| 10°    | 1528.6 | 1518.7 | 1490.5 | 1486.2 | 1477.9 |
| 12.5°  | 1507.5 | 1494.8 | 1456.6 | 1448.2 | 1432.7 |
| 15°    | 1482.1 | 1466.5 | 1418.6 | 1391.9 | 1377.8 |
| 17.5°  | 1452.5 | 1429.8 | 1370.6 | 1339.6 | 1317.0 |
| 20°    | 1418.6 | 1390.3 | 1319.8 | 1284.7 | 1253.6 |
| 22.5°  | 1382.0 | 1349.5 | 1267.6 | 1219.7 | 1198.7 |
| 25°    | 1345.3 | 1300.1 | 1207.0 | 1149.3 | 1128.0 |
| 27.5°  | 1301.7 | 1253.6 | 1150.7 | 1084.4 | 1051.9 |
| 30°    | 1255.1 | 1201.4 | 1088.5 | 1016.7 | 978.6  |
| 32.5°  | 1209.9 | 1145.0 | 1029.4 | 944.8  | 909.5  |
| 35°    | 1159.2 | 1087.2 | 963.2  | 874.3  | 843.2  |
| 37.5°  | 1109.8 | 1032.2 | 901.1  | 803.7  | 768.5  |
| 40°    | 1057.6 | 973.1  | 836.2  | 736.1  | 699.5  |
| 42.5°  | 1004.0 | 913.8  | 771.4  | 666.9  | 631.8  |
| 45°    | 947.6  | 853.1  | 705.1  | 604.9  | 571.1  |
| 47.5°  | 894.1  | 794.0  | 641.7  | 541.5  | 510.5  |
| 50°    | 834.8  | 734.7  | 579.6  | 482.2  | 452.7  |
| 52.5°  | 776.9  | 671.2  | 520.4  | 427.3  | 400.5  |
| 55°    | 720.6  | 610.6  | 458.3  | 373.7  | 346.9  |
| 57.5°  | 662.8  | 550.0  | 403.3  | 324.3  | 301.8  |
| 60°    | 603.5  | 490.7  | 345.4  | 273.6  | 251.1  |
| 62.5°  | 545.8  | 433.0  | 296.1  | 228.5  | 217.3  |
| 65°    | 486.5  | 372.2  | 245.3  | 197.5  | 193.1  |
| 67.5°  | 430.2  | 315.8  | 197.5  | 173.4  | 169.2  |
| 70°    | 370.9  | 260.9  | 163.5  | 149.5  | 143.7  |
| 72.5°  | 314.5  | 210.1  | 136.8  | 125.5  | 122.7  |
| 75°    | 259.4  | 160.7  | 112.8  | 102.9  | 101.6  |
| 77.5°  | 204.5  | 114.1  | 88.9   | 83.2   | 80.3   |
| 80°    | 153.6  | 81.8   | 67.6   | 62.1   | 62.1   |
| 82.5°  | 107.2  | 55.0   | 46.6   | 43.6   | 43.6   |
| 85°    | 60.6   | 31.0   | 26.8   | 26.8   | 26.8   |
| 87.5°  | 22.6   | 11.2   | 11.2   | 9.9    | 9.9    |
| 90°    | 1.0    | 12.9   | 35.3   | 33.1   | 34.1   |
| 92.5°  | 22.2   | 30.2   | 31.3   | 32.3   | 32.3   |
| 95°    | 52.5   | 62.6   | 64.4   | 64.4   | 62.6   |
| 97.5°  | 87.4   | 96.7   | 100.7  | 100.7  | 100.7  |
| 100°   | 127.6  | 135.9  | 138.7  | 138.7  | 137.7  |
| 102.5° | 170.0  | 176.2  | 180.1  | 181.2  | 180.1  |
| 105°   | 216.4  | 219.2  | 221.4  | 223.2  | 223.2  |
| 107.5° | 262.4  | 266.7  | 266.7  | 267.4  | 262.4  |
| 110°   | 307.0  | 312.7  | 312.7  | 312.7  | 309.9  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 355.1  | 361.3  | 360.1  | 357.3  | 355.1  |
| 115°   | 402.6  | 408.4  | 406.5  | 405.5  | 402.6  |
| 117.5° | 449.7  | 457.6  | 452.6  | 449.7  | 446.9  |
| 120°   | 497.2  | 505.0  | 497.2  | 497.2  | 493.9  |
| 122.5° | 540.3  | 550.4  | 545.4  | 542.4  | 540.3  |
| 125°   | 585.6  | 594.6  | 591.7  | 588.4  | 587.4  |
| 127.5° | 629.8  | 640.9  | 637.0  | 632.6  | 629.8  |
| 130°   | 671.1  | 684.1  | 682.3  | 680.1  | 676.2  |
| 132.5° | 717.5  | 727.5  | 728.3  | 723.2  | 720.4  |
| 135°   | 757.4  | 768.5  | 770.7  | 769.6  | 766.8  |
| 137.5° | 802.0  | 811.0  | 812.8  | 812.0  | 807.8  |
| 140°   | 841.1  | 850.2  | 855.2  | 855.2  | 851.2  |
| 142.5° | 881.5  | 890.4  | 893.2  | 894.4  | 890.4  |
| 145°   | 919.5  | 926.7  | 932.5  | 933.6  | 929.6  |
| 147.5° | 953.7  | 962.6  | 967.0  | 968.7  | 964.8  |
| 150°   | 988.9  | 995.0  | 999.0  | 1002.2 | 999.0  |
| 152.5° | 1020.2 | 1026.2 | 1031.3 | 1035.3 | 1031.3 |
| 155°   | 1051.4 | 1054.3 | 1057.5 | 1062.6 | 1059.3 |
| 157.5° | 1078.5 | 1080.5 | 1082.3 | 1089.6 | 1084.5 |
| 160°   | 1102.5 | 1104.7 | 1105.7 | 1111.8 | 1107.5 |
| 162.5° | 1124.7 | 1124.7 | 1125.9 | 1132.7 | 1127.7 |
| 165°   | 1143.9 | 1142.7 | 1142.7 | 1149.9 | 1144.9 |
| 167.5° | 1161.1 | 1157.8 | 1157.8 | 1165.1 | 1160.0 |
| 170°   | 1174.0 | 1171.1 | 1170.1 | 1177.2 | 1171.1 |
| 172.5° | 1183.0 | 1180.2 | 1179.0 | 1186.3 | 1180.2 |
| 175°   | 1190.2 | 1187.3 | 1185.2 | 1192.3 | 1186.3 |
| 177.5° | 1194.2 | 1191.3 | 1189.1 | 1195.2 | 1189.1 |
| 180°   | 1192.3 | 1192.3 | 1192.3 | 1192.3 | 1192.3 |

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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 | 11.26            | 12.08 | 12.23 | 13.06 | 14.35 | 7.24           | 8.06  | 8.21  | 9.04  | 10.33 |
|                 | 3H   | 12.91            | 13.64 | 13.89 | 14.63 | 15.94 | 8.41           | 9.14  | 9.39  | 10.13 | 11.44 |
|                 | 4H   | 13.50            | 14.20 | 14.50 | 15.19 | 16.51 | 8.85           | 9.54  | 9.84  | 10.54 | 11.85 |
|                 | 6H   | 13.90            | 14.54 | 14.91 | 15.54 | 16.87 | 9.15           | 9.79  | 10.16 | 10.79 | 12.12 |
|                 | 8H   | 14.02            | 14.63 | 15.03 | 15.64 | 16.97 | 9.24           | 9.85  | 10.25 | 10.86 | 12.19 |
|                 | 12H  | 14.07            | 14.65 | 15.09 | 15.66 | 17.01 | 9.27           | 9.85  | 10.29 | 10.86 | 12.21 |
| 4H              | 2H   | 11.27            | 11.96 | 12.27 | 12.96 | 14.28 | 7.82           | 8.51  | 8.82  | 9.51  | 10.82 |
|                 | 3H   | 13.07            | 13.65 | 14.08 | 14.67 | 16.00 | 9.15           | 9.73  | 10.16 | 10.75 | 12.08 |
|                 | 4H   | 13.74            | 14.27 | 14.76 | 15.29 | 16.64 | 9.68           | 10.21 | 10.70 | 11.23 | 12.58 |
|                 | 6H   | 14.24            | 14.69 | 15.27 | 15.73 | 17.08 | 10.08          | 10.54 | 11.11 | 11.58 | 12.93 |
|                 | 8H   | 14.40            | 14.82 | 15.43 | 15.85 | 17.22 | 10.20          | 10.63 | 11.23 | 11.66 | 13.02 |
|                 | 12H  | 14.48            | 14.86 | 15.53 | 15.91 | 17.28 | 10.26          | 10.64 | 11.31 | 11.69 | 13.06 |
| 8H              | 4H   | 13.71            | 14.13 | 14.74 | 15.16 | 16.53 | 9.95           | 10.37 | 10.98 | 11.40 | 12.77 |
|                 | 6H   | 14.25            | 14.60 | 15.30 | 15.67 | 17.03 | 10.44          | 10.79 | 11.50 | 11.87 | 13.23 |
|                 | 8H   | 14.45            | 14.76 | 15.51 | 15.81 | 17.20 | 10.62          | 10.93 | 11.68 | 11.99 | 13.37 |
|                 | 12H  | 14.57            | 14.84 | 15.63 | 15.89 | 17.32 | 10.73          | 11.00 | 11.79 | 12.05 | 13.48 |
| 12H             | 4H   | 13.66            | 14.04 | 14.71 | 15.09 | 16.46 | 9.95           | 10.33 | 11.00 | 11.38 | 12.75 |
|                 | 6H   | 14.22            | 14.53 | 15.28 | 15.59 | 16.97 | 10.49          | 10.79 | 11.55 | 11.85 | 13.24 |
|                 | 8H   | 14.42            | 14.69 | 15.49 | 15.75 | 17.17 | 10.68          | 10.95 | 11.75 | 12.01 | 13.43 |