

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: P913895

Luminaire Tested: DFN2DIP-PN3F0-040D040US927-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P913895  
REPORT IS A COMBINATION OF REPORTS P901048 AND P897955  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-040D040US927-RLLONL  
Description: 3 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

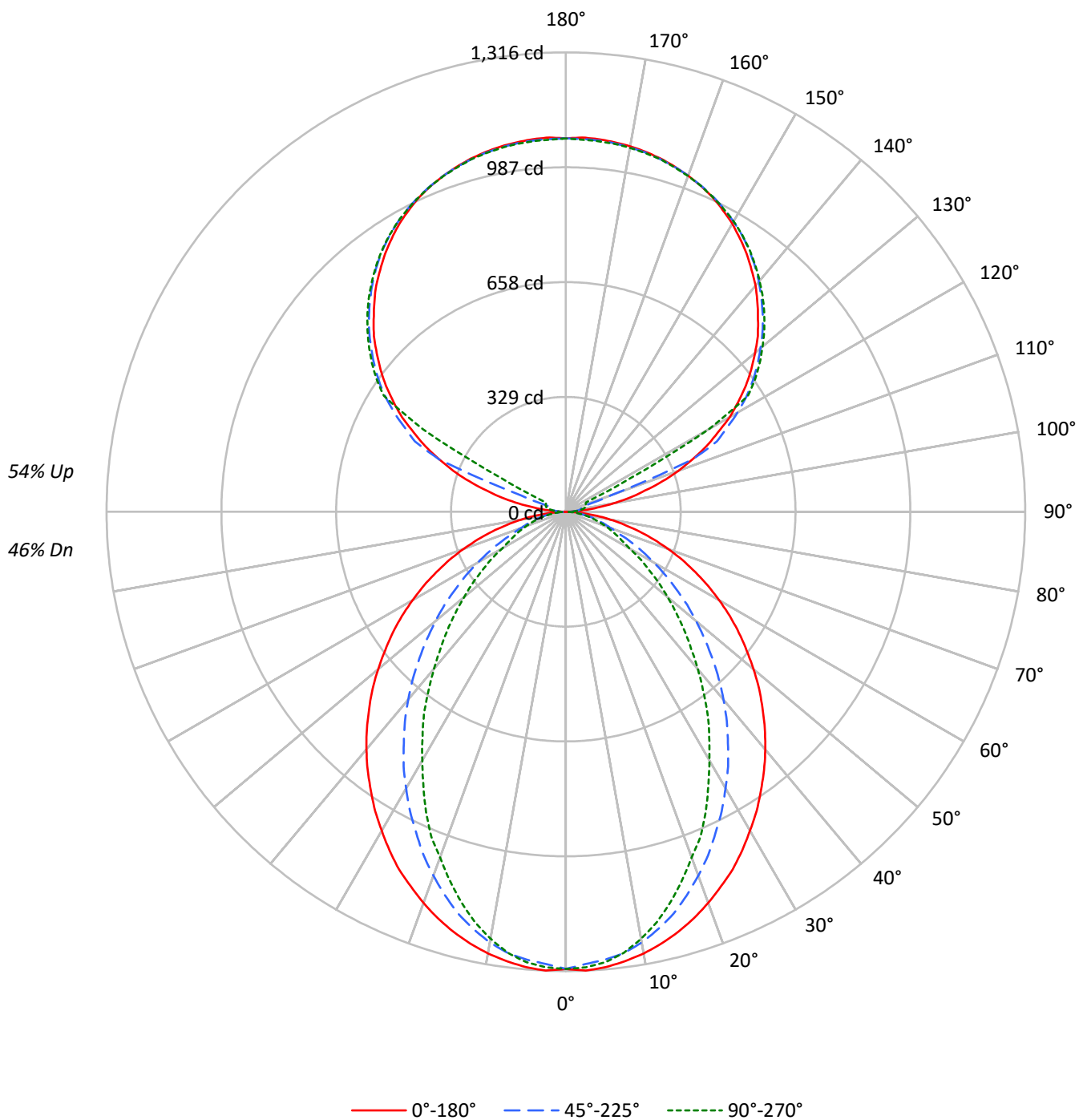
Lumens per Lamp: N/A  
Luminaire Lumens: 5830.4 lumens  
Efficiency: N/A  
Efficacy: 90.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 64.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9972  
Total Harmonic Distortion (THDi): 0.128  
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   | 106 | 106 | 106 | 106 | 98 | 98 | 98 | 98 | 81 | 81 | 81 | 66 | 66 | 66 | 53 | 53 | 53 |
| 1   | 97  | 93  | 90  | 86  | 89 | 86 | 83 | 80 | 72 | 70 | 68 | 59 | 58 | 56 | 47 | 46 | 45 |
| 2   | 89  | 82  | 76  | 71  | 82 | 76 | 70 | 66 | 63 | 60 | 57 | 52 | 50 | 48 | 42 | 40 | 39 |
| 3   | 81  | 72  | 65  | 60  | 75 | 67 | 61 | 56 | 56 | 52 | 48 | 47 | 43 | 41 | 38 | 35 | 34 |
| 4   | 75  | 64  | 57  | 51  | 68 | 60 | 53 | 48 | 50 | 45 | 41 | 42 | 38 | 35 | 34 | 31 | 29 |
| 5   | 69  | 58  | 50  | 44  | 63 | 53 | 46 | 41 | 45 | 40 | 36 | 38 | 34 | 31 | 31 | 28 | 26 |
| 6   | 63  | 52  | 44  | 38  | 58 | 48 | 41 | 36 | 41 | 36 | 32 | 34 | 30 | 27 | 28 | 25 | 23 |
| 7   | 59  | 47  | 39  | 34  | 54 | 44 | 37 | 32 | 37 | 32 | 28 | 31 | 27 | 24 | 26 | 23 | 21 |
| 8   | 55  | 43  | 35  | 30  | 50 | 40 | 33 | 28 | 34 | 29 | 25 | 29 | 25 | 22 | 24 | 21 | 19 |
| 9   | 51  | 39  | 32  | 27  | 47 | 36 | 30 | 25 | 31 | 26 | 22 | 27 | 23 | 20 | 22 | 19 | 17 |
| 10  | 48  | 36  | 29  | 24  | 44 | 33 | 27 | 23 | 29 | 24 | 20 | 25 | 21 | 18 | 20 | 18 | 15 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1531 | 1531 | 1531 |
| 5°  | 1532 | 1505 | 1516 |
| 10° | 1516 | 1475 | 1466 |
| 15° | 1495 | 1425 | 1389 |
| 20° | 1466 | 1357 | 1295 |
| 25° | 1437 | 1281 | 1204 |
| 30° | 1398 | 1203 | 1089 |
| 35° | 1360 | 1119 | 988  |
| 40° | 1321 | 1032 | 872  |
| 45° | 1276 | 936  | 768  |
| 50° | 1229 | 839  | 665  |
| 55° | 1180 | 736  | 567  |
| 60° | 1123 | 628  | 466  |
| 65° | 1058 | 519  | 419  |
| 70° | 979  | 416  | 378  |
| 75° | 879  | 365  | 343  |
| 80° | 735  | 302  | 295  |
| 85° | 499  | 197  | 218  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1276 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 122.7  | 2.1       |
| 10°-20°   | 336.9  | 5.8       |
| 20°-30°   | 473.1  | 8.1       |
| 30°-40°   | 515.7  | 8.8       |
| 40°-50°   | 473.9  | 8.1       |
| 50°-60°   | 372.2  | 6.4       |
| 60°-70°   | 242.3  | 4.2       |
| 70°-80°   | 124.7  | 2.1       |
| 80°-90°   | 33.7   | 0.6       |
| 90°-100°  | 35.2   | 0.6       |
| 100°-110° | 131.5  | 2.3       |
| 110°-120° | 348.6  | 6.0       |
| 120°-130° | 578.2  | 9.9       |
| 130°-140° | 614.2  | 10.5      |
| 140°-150° | 570.9  | 9.8       |
| 150°-160° | 458.9  | 7.9       |
| 160°-170° | 295.7  | 5.1       |
| 170°-180° | 101.8  | 1.7       |
| 0°-30°    | 932.7  | 16.0      |
| 0°-40°    | 1448.4 | 24.8      |
| 0°-60°    | 2294.6 | 39.4      |
| 0°-90°    | 2695.3 | 46.2      |
| 90°-120°  | 515.3  | 8.8       |
| 90°-150°  | 2278.7 | 39.1      |
| 90°-180°  | 3135.0 | 53.8      |
| 0°-180°   | 5830.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1310 | 1310  | 1310 | 1310  | 1310 |      |
| 5°   | 1310 | 1304  | 1288 | 1299  | 1296 | 124  |
| 15°  | 1246 | 1233  | 1192 | 1170  | 1158 | 351  |
| 25°  | 1131 | 1093  | 1014 | 966   | 948  | 520  |
| 35°  | 974  | 914   | 810  | 735   | 709  | 610  |
| 45°  | 796  | 717   | 593  | 508   | 480  | 615  |
| 55°  | 606  | 513   | 385  | 314   | 292  | 541  |
| 65°  | 409  | 313   | 206  | 166   | 162  | 405  |
| 75°  | 218  | 135   | 95   | 86    | 85   | 231  |
| 85°  | 51   | 26    | 22   | 22    | 22   | 58   |
| 90°  | 1    | 9     | 15   | 19    | 21   | 5    |
| 95°  | 50   | 25    | 30   | 34    | 33   | 60   |
| 105° | 235  | 258   | 47   | 56    | 59   | 251  |
| 115° | 445  | 458   | 477  | 119   | 64   | 438  |
| 125° | 629  | 639   | 654  | 659   | 662  | 561  |
| 135° | 778  | 791   | 798  | 806   | 804  | 601  |
| 145° | 903  | 902   | 915  | 921   | 917  | 565  |
| 155° | 994  | 988   | 997  | 1001  | 995  | 458  |
| 165° | 1048 | 1043  | 1045 | 1051  | 1045 | 296  |
| 175° | 1072 | 1066  | 1068 | 1073  | 1066 | 102  |
| 180° | 1069 | 1069  | 1069 | 1069  | 1069 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1309.6 | 1309.6 | 1309.6 | 1309.6 | 1309.6 |
| 2.5°   | 1315.6 | 1309.6 | 1296.6 | 1308.5 | 1306.1 |
| 5°     | 1309.6 | 1303.7 | 1288.2 | 1298.9 | 1295.5 |
| 7.5°   | 1298.9 | 1291.9 | 1275.3 | 1279.9 | 1274.1 |
| 10°    | 1284.8 | 1276.4 | 1252.8 | 1249.1 | 1242.1 |
| 12.5°  | 1267.0 | 1256.3 | 1224.2 | 1217.2 | 1204.1 |
| 15°    | 1245.6 | 1232.6 | 1192.3 | 1169.8 | 1158.0 |
| 17.5°  | 1220.8 | 1201.7 | 1151.9 | 1125.9 | 1106.9 |
| 20°    | 1192.3 | 1168.5 | 1109.3 | 1079.7 | 1053.6 |
| 22.5°  | 1161.5 | 1134.2 | 1065.4 | 1025.2 | 1007.5 |
| 25°    | 1130.7 | 1092.7 | 1014.5 | 966.0  | 948.1  |
| 27.5°  | 1094.0 | 1053.6 | 967.1  | 911.4  | 884.1  |
| 30°    | 1054.9 | 1009.7 | 914.9  | 854.5  | 822.5  |
| 32.5°  | 1016.9 | 962.3  | 865.2  | 794.1  | 764.4  |
| 35°    | 974.3  | 913.8  | 809.5  | 734.8  | 708.7  |
| 37.5°  | 932.8  | 867.5  | 757.3  | 675.5  | 645.9  |
| 40°    | 888.9  | 817.8  | 702.8  | 618.7  | 587.9  |
| 42.5°  | 843.8  | 768.0  | 648.3  | 560.5  | 531.0  |
| 45°    | 796.5  | 717.0  | 592.6  | 508.4  | 480.0  |
| 47.5°  | 751.5  | 667.3  | 539.3  | 455.1  | 429.0  |
| 50°    | 701.6  | 617.5  | 487.1  | 405.3  | 380.5  |
| 52.5°  | 653.0  | 564.1  | 437.4  | 359.1  | 336.6  |
| 55°    | 605.6  | 513.2  | 385.2  | 314.1  | 291.6  |
| 57.5°  | 557.1  | 462.2  | 339.0  | 272.6  | 253.7  |
| 60°    | 507.2  | 412.4  | 290.3  | 230.0  | 211.0  |
| 62.5°  | 458.8  | 363.9  | 248.8  | 192.0  | 182.6  |
| 65°    | 408.9  | 312.8  | 206.2  | 166.0  | 162.3  |
| 67.5°  | 361.6  | 265.5  | 166.0  | 145.8  | 142.2  |
| 70°    | 311.7  | 219.3  | 137.4  | 125.6  | 120.8  |
| 72.5°  | 264.4  | 176.6  | 114.9  | 105.5  | 103.1  |
| 75°    | 218.0  | 135.1  | 94.8   | 86.5   | 85.4   |
| 77.5°  | 171.9  | 95.9   | 74.7   | 69.9   | 67.5   |
| 80°    | 129.1  | 68.8   | 56.8   | 52.2   | 52.2   |
| 82.5°  | 90.1   | 46.3   | 39.1   | 36.7   | 36.7   |
| 85°    | 50.9   | 26.1   | 22.5   | 22.5   | 22.5   |
| 87.5°  | 19.0   | 9.4    | 9.4    | 8.3    | 8.3    |
| 90°    | 0.7    | 9.3    | 15.4   | 19.4   | 20.8   |
| 92.5°  | 19.4   | 16.2   | 18.5   | 20.1   | 20.8   |
| 95°    | 50.2   | 24.7   | 30.1   | 34.1   | 33.3   |
| 97.5°  | 90.5   | 27.1   | 39.5   | 41.8   | 42.5   |
| 100°   | 137.0  | 31.0   | 44.1   | 50.2   | 51.8   |
| 102.5° | 188.0  | 186.6  | 45.6   | 54.1   | 56.5   |
| 105°   | 235.2  | 258.5  | 47.2   | 55.7   | 58.8   |
| 107.5° | 290.2  | 309.5  | 48.8   | 57.3   | 60.4   |
| 110°   | 342.9  | 359.0  | 135.5  | 58.1   | 61.1   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 392.4  | 406.2  | 393.1  | 59.6   | 61.9   |
| 115°   | 444.9  | 458.0  | 477.4  | 119.1  | 63.5   |
| 117.5° | 490.6  | 506.0  | 519.3  | 408.5  | 205.8  |
| 120°   | 541.7  | 553.3  | 567.2  | 576.5  | 472.1  |
| 122.5° | 584.9  | 597.4  | 612.9  | 617.5  | 618.3  |
| 125°   | 629.1  | 639.2  | 653.9  | 659.3  | 661.6  |
| 127.5° | 669.3  | 680.2  | 691.8  | 699.6  | 700.3  |
| 130°   | 707.3  | 719.7  | 728.1  | 736.6  | 735.9  |
| 132.5° | 745.9  | 756.1  | 764.5  | 771.5  | 770.8  |
| 135°   | 778.5  | 790.9  | 797.8  | 805.6  | 804.1  |
| 137.5° | 812.5  | 821.7  | 829.6  | 837.3  | 835.0  |
| 140°   | 845.7  | 852.0  | 860.5  | 867.4  | 863.6  |
| 142.5° | 873.7  | 879.1  | 889.1  | 895.2  | 891.4  |
| 145°   | 903.1  | 902.3  | 915.4  | 920.8  | 916.9  |
| 147.5° | 928.5  | 926.2  | 939.4  | 943.3  | 940.2  |
| 150°   | 953.3  | 947.9  | 960.4  | 965.0  | 961.1  |
| 152.5° | 974.2  | 968.0  | 979.6  | 984.3  | 978.9  |
| 155°   | 994.3  | 987.5  | 996.7  | 1001.3 | 995.1  |
| 157.5° | 1010.6 | 1004.4 | 1011.5 | 1016.8 | 1010.6 |
| 160°   | 1024.5 | 1019.9 | 1024.5 | 1029.1 | 1023.7 |
| 162.5° | 1036.9 | 1032.3 | 1036.2 | 1041.6 | 1034.6 |
| 165°   | 1047.7 | 1043.1 | 1045.4 | 1050.8 | 1045.4 |
| 167.5° | 1056.3 | 1051.5 | 1054.0 | 1059.4 | 1052.4 |
| 170°   | 1063.3 | 1058.6 | 1060.1 | 1065.6 | 1058.6 |
| 172.5° | 1067.9 | 1063.3 | 1064.8 | 1070.2 | 1063.3 |
| 175°   | 1071.7 | 1066.3 | 1067.9 | 1073.2 | 1065.6 |
| 177.5° | 1073.2 | 1067.9 | 1068.7 | 1074.1 | 1067.1 |
| 180°   | 1069.4 | 1069.4 | 1069.4 | 1069.4 | 1069.4 |

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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 | 8.22             | 9.02  | 9.22  | 10.03 | 11.35 | 4.19           | 4.99 | 5.19 | 5.99 | 7.32  |
|                 | 3H   | 9.89             | 10.61 | 10.90 | 11.62 | 12.97 | 5.37           | 6.09 | 6.38 | 7.10 | 8.45  |
|                 | 4H   | 10.50            | 11.17 | 11.52 | 12.19 | 13.54 | 5.82           | 6.49 | 6.84 | 7.51 | 8.86  |
|                 | 6H   | 10.91            | 11.54 | 11.94 | 12.55 | 13.92 | 6.13           | 6.75 | 7.16 | 7.77 | 9.14  |
|                 | 8H   | 11.04            | 11.63 | 12.07 | 12.66 | 14.03 | 6.22           | 6.81 | 7.25 | 7.84 | 9.21  |
|                 | 12H  | 11.09            | 11.66 | 12.13 | 12.69 | 14.07 | 6.26           | 6.82 | 7.30 | 7.85 | 9.24  |
| 4H              | 2H   | 8.24             | 8.91  | 9.26  | 9.93  | 11.28 | 4.78           | 5.46 | 5.80 | 6.47 | 7.83  |
|                 | 3H   | 10.06            | 10.62 | 11.09 | 11.66 | 13.03 | 6.12           | 6.68 | 7.15 | 7.73 | 9.09  |
|                 | 4H   | 10.74            | 11.26 | 11.78 | 12.29 | 13.69 | 6.66           | 7.18 | 7.70 | 8.21 | 9.60  |
|                 | 6H   | 11.25            | 11.69 | 12.30 | 12.75 | 14.14 | 7.07           | 7.51 | 8.12 | 8.57 | 9.96  |
|                 | 8H   | 11.42            | 11.84 | 12.47 | 12.89 | 14.29 | 7.20           | 7.61 | 8.25 | 8.66 | 10.06 |
|                 | 12H  | 11.51            | 11.89 | 12.58 | 12.95 | 14.36 | 7.26           | 7.63 | 8.33 | 8.70 | 10.10 |
| 8H              | 4H   | 10.71            | 11.12 | 11.76 | 12.17 | 13.57 | 6.94           | 7.35 | 7.99 | 8.40 | 9.80  |
|                 | 6H   | 11.27            | 11.61 | 12.34 | 12.70 | 14.10 | 7.44           | 7.79 | 8.52 | 8.88 | 10.28 |
|                 | 8H   | 11.48            | 11.78 | 12.56 | 12.85 | 14.27 | 7.63           | 7.93 | 8.71 | 9.01 | 10.43 |
|                 | 12H  | 11.61            | 11.87 | 12.70 | 12.95 | 14.41 | 7.74           | 8.01 | 8.83 | 9.08 | 10.54 |
| 12H             | 4H   | 10.66            | 11.03 | 11.73 | 12.10 | 13.50 | 6.94           | 7.31 | 8.01 | 8.38 | 9.78  |
|                 | 6H   | 11.24            | 11.54 | 12.32 | 12.62 | 14.04 | 7.49           | 7.79 | 8.57 | 8.87 | 10.29 |
|                 | 8H   | 11.46            | 11.72 | 12.54 | 12.79 | 14.25 | 7.70           | 7.96 | 8.78 | 9.03 | 10.49 |