

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: P908406

Luminaire Tested: DFN2DIP-PN3F0-030D030US840-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P908406  
REPORT IS A COMBINATION OF REPORTS P899512 AND P896399  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-030D030US840-RLLFLL  
Description: 3 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

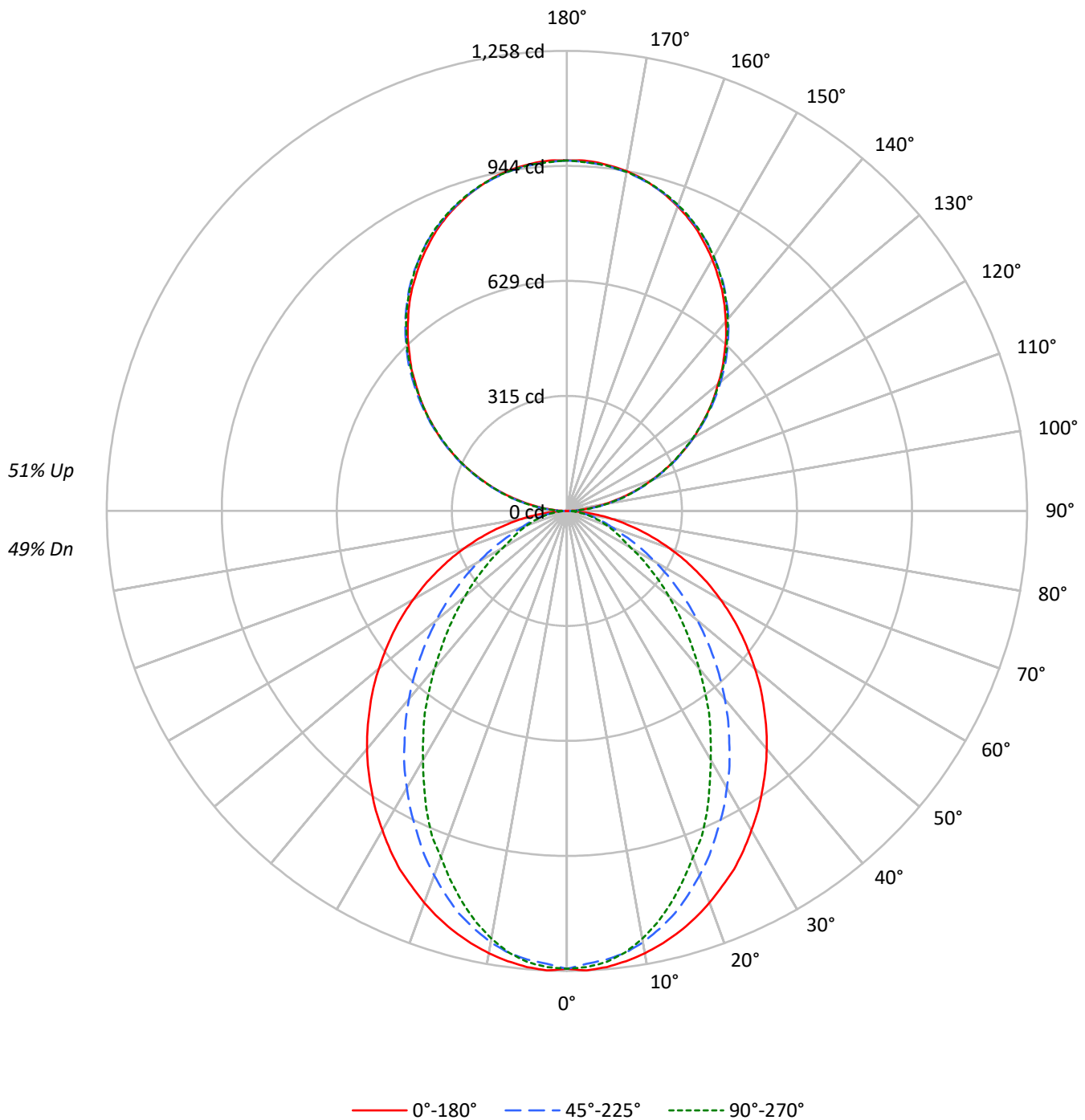
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 5256.3 lumens  
Efficiency: N/A  
Efficacy: 111.4 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): 47.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.099  
Total Harmonic Distortion (THDi): 0.979  
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°  | 1464 | 1464 | 1464 |
| 5°  | 1465 | 1439 | 1449 |
| 10° | 1450 | 1410 | 1401 |
| 15° | 1429 | 1363 | 1328 |
| 20° | 1402 | 1297 | 1238 |
| 25° | 1374 | 1225 | 1151 |
| 30° | 1337 | 1150 | 1041 |
| 35° | 1300 | 1070 | 945  |
| 40° | 1263 | 987  | 834  |
| 45° | 1220 | 895  | 734  |
| 50° | 1175 | 802  | 636  |
| 55° | 1128 | 704  | 542  |
| 60° | 1074 | 601  | 446  |
| 65° | 1012 | 496  | 400  |
| 70° | 936  | 398  | 361  |
| 75° | 840  | 349  | 327  |
| 80° | 703  | 289  | 282  |
| 85° | 478  | 188  | 208  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1220 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 117.4  | 2.2       |
| 10°-20°   | 322.1  | 6.1       |
| 20°-30°   | 452.3  | 8.6       |
| 30°-40°   | 493.0  | 9.4       |
| 40°-50°   | 453.1  | 8.6       |
| 50°-60°   | 355.9  | 6.8       |
| 60°-70°   | 231.6  | 4.4       |
| 70°-80°   | 119.2  | 2.3       |
| 80°-90°   | 33.2   | 0.6       |
| 90°-100°  | 59.3   | 1.1       |
| 100°-110° | 188.4  | 3.6       |
| 110°-120° | 322.4  | 6.1       |
| 120°-130° | 424.0  | 8.1       |
| 130°-140° | 475.9  | 9.1       |
| 140°-150° | 466.7  | 8.9       |
| 150°-160° | 391.5  | 7.4       |
| 160°-170° | 259.6  | 4.9       |
| 170°-180° | 90.7   | 1.7       |
| 0°-30°    | 891.8  | 17.0      |
| 0°-40°    | 1384.8 | 26.3      |
| 0°-60°    | 2193.8 | 41.7      |
| 0°-90°    | 2577.8 | 49.0      |
| 90°-120°  | 570.1  | 10.8      |
| 90°-150°  | 1936.6 | 36.8      |
| 90°-180°  | 2678.0 | 50.9      |
| 0°-180°   | 5256.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1252 | 1252  | 1252 | 1252  | 1252 |      |
| 5°   | 1252 | 1246  | 1232 | 1242  | 1238 | 119  |
| 15°  | 1191 | 1178  | 1140 | 1118  | 1107 | 336  |
| 25°  | 1081 | 1045  | 970  | 924   | 906  | 497  |
| 35°  | 932  | 874   | 774  | 703   | 678  | 583  |
| 45°  | 762  | 686   | 567  | 486   | 459  | 588  |
| 55°  | 579  | 491   | 368  | 300   | 279  | 517  |
| 65°  | 391  | 299   | 197  | 159   | 155  | 388  |
| 75°  | 208  | 129   | 91   | 83    | 82   | 220  |
| 85°  | 49   | 25    | 22   | 22    | 22   | 56   |
| 90°  | 1    | 10    | 28   | 27    | 28   | 5    |
| 95°  | 42   | 50    | 52   | 52    | 50   | 47   |
| 105° | 174  | 176   | 178  | 179   | 179  | 184  |
| 115° | 324  | 328   | 327  | 326   | 324  | 320  |
| 125° | 471  | 478   | 475  | 473   | 472  | 420  |
| 135° | 609  | 618   | 619  | 618   | 616  | 470  |
| 145° | 739  | 745   | 749  | 750   | 747  | 462  |
| 155° | 845  | 847   | 850  | 854   | 851  | 389  |
| 165° | 919  | 918   | 918  | 924   | 920  | 259  |
| 175° | 956  | 954   | 952  | 958   | 953  | 91   |
| 180° | 958  | 958   | 958  | 958   | 958  |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1252.1 | 1252.1 | 1252.1 | 1252.1 | 1252.1 |
| 2.5°   | 1257.8 | 1252.1 | 1239.6 | 1251.0 | 1248.8 |
| 5°     | 1252.1 | 1246.5 | 1231.7 | 1241.9 | 1238.5 |
| 7.5°   | 1241.9 | 1235.2 | 1219.3 | 1223.8 | 1218.1 |
| 10°    | 1228.3 | 1220.4 | 1197.8 | 1194.3 | 1187.6 |
| 12.5°  | 1211.3 | 1201.1 | 1170.5 | 1163.8 | 1151.2 |
| 15°    | 1190.9 | 1178.4 | 1139.9 | 1118.4 | 1107.1 |
| 17.5°  | 1167.1 | 1149.0 | 1101.4 | 1076.5 | 1058.3 |
| 20°    | 1139.9 | 1117.2 | 1060.6 | 1032.4 | 1007.3 |
| 22.5°  | 1110.5 | 1084.4 | 1018.7 | 980.2  | 963.2  |
| 25°    | 1081.1 | 1044.7 | 970.0  | 923.5  | 906.5  |
| 27.5°  | 1045.9 | 1007.3 | 924.6  | 871.4  | 845.3  |
| 30°    | 1008.6 | 965.4  | 874.7  | 817.1  | 786.4  |
| 32.5°  | 972.2  | 920.1  | 827.3  | 759.2  | 730.8  |
| 35°    | 931.5  | 873.6  | 774.0  | 702.6  | 677.6  |
| 37.5°  | 891.8  | 829.4  | 724.1  | 645.8  | 617.6  |
| 40°    | 849.9  | 781.9  | 672.0  | 591.5  | 562.1  |
| 42.5°  | 806.8  | 734.4  | 619.9  | 535.9  | 507.7  |
| 45°    | 761.5  | 685.5  | 566.6  | 486.0  | 458.9  |
| 47.5°  | 718.4  | 638.0  | 515.6  | 435.1  | 410.2  |
| 50°    | 670.9  | 590.4  | 465.7  | 387.5  | 363.8  |
| 52.5°  | 624.3  | 539.4  | 418.2  | 343.4  | 321.8  |
| 55°    | 579.0  | 490.6  | 368.2  | 300.3  | 278.8  |
| 57.5°  | 532.6  | 441.9  | 324.2  | 260.6  | 242.5  |
| 60°    | 484.9  | 394.4  | 277.6  | 219.8  | 201.8  |
| 62.5°  | 438.6  | 347.9  | 237.9  | 183.6  | 174.6  |
| 65°    | 390.9  | 299.1  | 197.1  | 158.6  | 155.2  |
| 67.5°  | 345.7  | 253.8  | 158.6  | 139.4  | 135.9  |
| 70°    | 298.0  | 209.6  | 131.4  | 120.1  | 115.5  |
| 72.5°  | 252.7  | 168.7  | 109.9  | 100.9  | 98.6   |
| 75°    | 208.4  | 129.2  | 90.7   | 82.7   | 81.6   |
| 77.5°  | 164.3  | 91.7   | 71.4   | 66.9   | 64.5   |
| 80°    | 123.5  | 65.7   | 54.3   | 49.9   | 49.9   |
| 82.5°  | 86.0   | 44.2   | 37.4   | 35.1   | 35.1   |
| 85°    | 48.7   | 24.8   | 21.5   | 21.5   | 21.5   |
| 87.5°  | 18.2   | 9.0    | 9.0    | 8.0    | 8.0    |
| 90°    | 0.9    | 10.4   | 28.3   | 26.6   | 27.5   |
| 92.5°  | 17.9   | 24.2   | 25.1   | 26.0   | 26.0   |
| 95°    | 42.2   | 50.3   | 51.7   | 51.7   | 50.3   |
| 97.5°  | 70.2   | 77.7   | 80.9   | 80.9   | 80.9   |
| 100°   | 102.5  | 109.2  | 111.5  | 111.5  | 110.7  |
| 102.5° | 136.6  | 141.6  | 144.7  | 145.6  | 144.7  |
| 105°   | 173.9  | 176.2  | 177.9  | 179.4  | 179.4  |
| 107.5° | 210.9  | 214.3  | 214.3  | 214.9  | 210.9  |
| 110°   | 246.7  | 251.4  | 251.4  | 251.4  | 249.0  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 285.4 | 290.3 | 289.4 | 287.1 | 285.4 |
| 115°   | 323.6 | 328.1 | 326.7 | 325.9 | 323.6 |
| 117.5° | 361.3 | 367.7 | 363.7 | 361.3 | 359.0 |
| 120°   | 399.5 | 405.9 | 399.5 | 399.5 | 396.9 |
| 122.5° | 434.1 | 442.2 | 438.2 | 435.9 | 434.1 |
| 125°   | 470.6 | 477.8 | 475.4 | 472.8 | 472.0 |
| 127.5° | 506.0 | 515.0 | 511.9 | 508.4 | 506.0 |
| 130°   | 539.3 | 549.7 | 548.3 | 546.5 | 543.3 |
| 132.5° | 576.5 | 584.6 | 585.2 | 581.2 | 578.9 |
| 135°   | 608.6 | 617.5 | 619.4 | 618.4 | 616.1 |
| 137.5° | 644.4 | 651.7 | 653.1 | 652.6 | 649.0 |
| 140°   | 675.9 | 683.2 | 687.2 | 687.2 | 684.0 |
| 142.5° | 708.3 | 715.5 | 717.8 | 718.7 | 715.5 |
| 145°   | 738.9 | 744.7 | 749.3 | 750.1 | 747.0 |
| 147.5° | 766.4 | 773.6 | 777.0 | 778.5 | 775.3 |
| 150°   | 794.7 | 799.6 | 802.7 | 805.4 | 802.7 |
| 152.5° | 819.8 | 824.7 | 828.7 | 831.9 | 828.7 |
| 155°   | 845.0 | 847.2 | 849.8 | 853.8 | 851.3 |
| 157.5° | 866.6 | 868.3 | 869.8 | 875.6 | 871.5 |
| 160°   | 886.0 | 887.7 | 888.6 | 893.4 | 890.0 |
| 162.5° | 903.8 | 903.8 | 904.7 | 910.2 | 906.2 |
| 165°   | 919.2 | 918.3 | 918.3 | 924.0 | 920.0 |
| 167.5° | 933.0 | 930.4 | 930.4 | 936.1 | 932.1 |
| 170°   | 943.4 | 941.1 | 940.3 | 946.0 | 941.1 |
| 172.5° | 950.6 | 948.4 | 947.5 | 953.2 | 948.4 |
| 175°   | 956.4 | 954.1 | 952.4 | 958.2 | 953.2 |
| 177.5° | 959.6 | 957.3 | 955.5 | 960.5 | 955.5 |
| 180°   | 958.2 | 958.2 | 958.2 | 958.2 | 958.2 |

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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 | 8.34             | 9.16  | 9.31  | 10.14 | 11.43 | 4.30           | 5.13 | 5.28 | 6.11 | 7.40  |
|                 | 3H   | 10.01            | 10.75 | 10.99 | 11.74 | 13.05 | 5.49           | 6.22 | 6.47 | 7.21 | 8.52  |
|                 | 4H   | 10.61            | 11.31 | 11.61 | 12.30 | 13.62 | 5.93           | 6.63 | 6.93 | 7.62 | 8.94  |
|                 | 6H   | 11.03            | 11.67 | 12.04 | 12.67 | 14.00 | 6.25           | 6.89 | 7.26 | 7.89 | 9.22  |
|                 | 8H   | 11.15            | 11.76 | 12.17 | 12.78 | 14.10 | 6.34           | 6.94 | 7.35 | 7.96 | 9.29  |
|                 | 12H  | 11.21            | 11.79 | 12.23 | 12.80 | 14.15 | 6.38           | 6.95 | 7.39 | 7.96 | 9.31  |
| 4H              | 2H   | 8.35             | 9.05  | 9.36  | 10.04 | 11.36 | 4.90           | 5.59 | 5.90 | 6.59 | 7.90  |
|                 | 3H   | 10.18            | 10.75 | 11.19 | 11.78 | 13.11 | 6.24           | 6.82 | 7.25 | 7.84 | 9.17  |
|                 | 4H   | 10.86            | 11.39 | 11.88 | 12.41 | 13.76 | 6.78           | 7.31 | 7.80 | 8.33 | 9.68  |
|                 | 6H   | 11.37            | 11.83 | 12.40 | 12.87 | 14.22 | 7.19           | 7.65 | 8.22 | 8.69 | 10.04 |
|                 | 8H   | 11.54            | 11.97 | 12.57 | 13.00 | 14.37 | 7.32           | 7.74 | 8.35 | 8.77 | 10.14 |
|                 | 12H  | 11.63            | 12.02 | 12.68 | 13.06 | 14.44 | 7.38           | 7.76 | 8.43 | 8.81 | 10.18 |
| 8H              | 4H   | 10.83            | 11.25 | 11.86 | 12.29 | 13.65 | 7.06           | 7.48 | 8.09 | 8.51 | 9.88  |
|                 | 6H   | 11.39            | 11.74 | 12.44 | 12.81 | 14.18 | 7.57           | 7.92 | 8.62 | 8.99 | 10.35 |
|                 | 8H   | 11.60            | 11.91 | 12.66 | 12.97 | 14.35 | 7.75           | 8.06 | 8.82 | 9.12 | 10.50 |
|                 | 12H  | 11.73            | 12.00 | 12.80 | 13.06 | 14.48 | 7.87           | 8.14 | 8.93 | 9.19 | 10.62 |
| 12H             | 4H   | 10.78            | 11.16 | 11.83 | 12.21 | 13.58 | 7.06           | 7.44 | 8.11 | 8.49 | 9.86  |
|                 | 6H   | 11.36            | 11.67 | 12.42 | 12.73 | 14.11 | 7.62           | 7.92 | 8.68 | 8.98 | 10.36 |
|                 | 8H   | 11.58            | 11.85 | 12.64 | 12.90 | 14.33 | 7.82           | 8.09 | 8.88 | 9.14 | 10.57 |