

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: P916620

Luminaire Tested: DFN2DIP-PN3F0-040D040US930-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P916620  
REPORT IS A COMBINATION OF REPORTS P899527 AND P896399  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-040D040US930-FLLFLL  
Description: 3 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

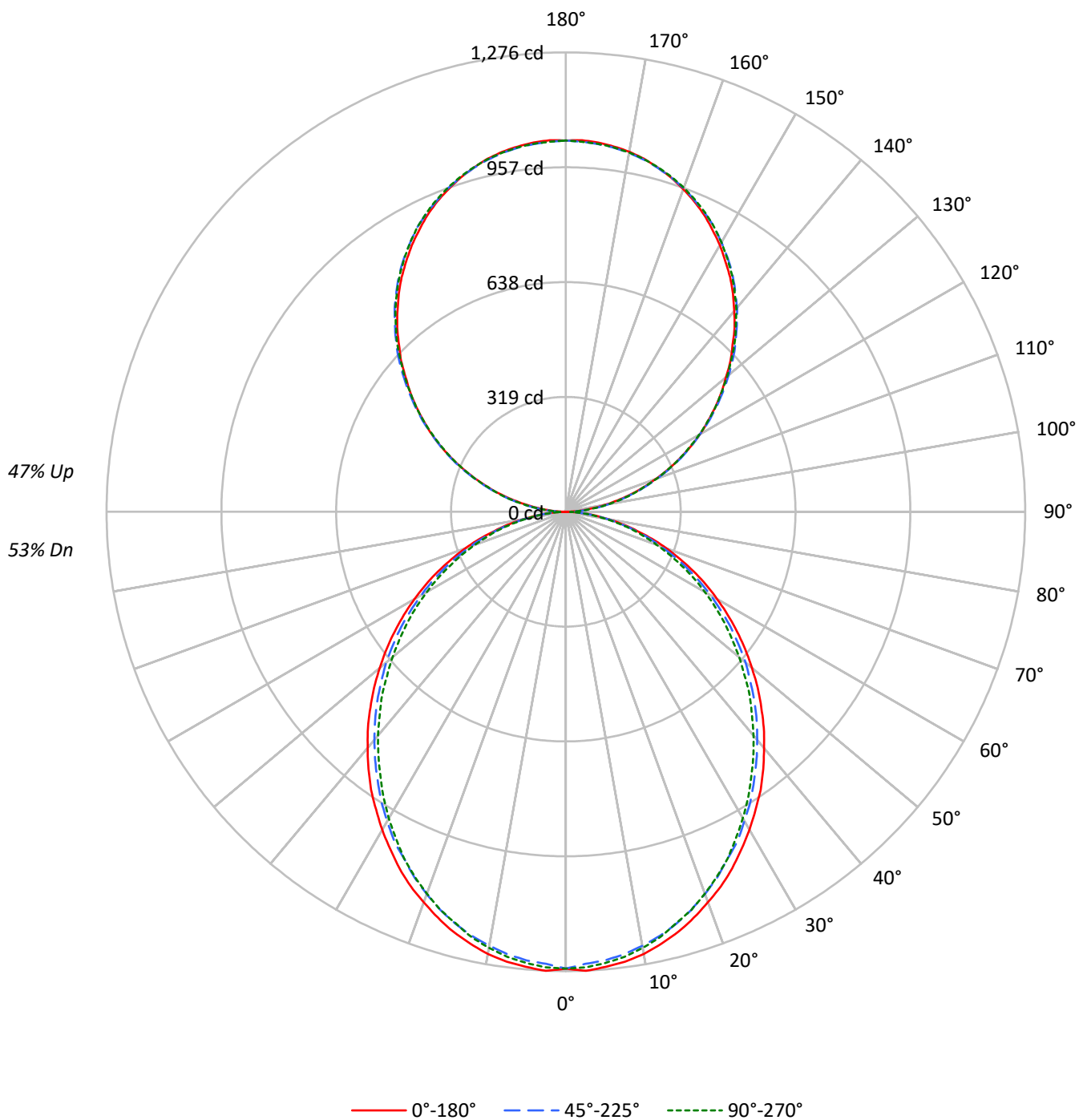
Lumens per Lamp: N/A  
Luminaire Lumens: 6114.7 lumens  
Efficiency: N/A  
Efficacy: 94.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: General Diffuse

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



TEST NUMBER: P916620

CATALOG NUMBER: DFN2DIP-PN3F0-040D040US930-FLLFL

**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   | 108 | 108 | 108 | 108 | 100 | 100 | 100 | 100 | 85 | 85 | 85 | 71 | 71 | 71 | 59 | 59 | 59 |
| 1   | 98  | 94  | 90  | 87  | 91  | 87  | 84  | 81  | 74 | 72 | 70 | 63 | 61 | 59 | 52 | 51 | 50 |
| 2   | 90  | 82  | 76  | 71  | 83  | 76  | 71  | 66  | 65 | 61 | 58 | 55 | 52 | 50 | 46 | 44 | 42 |
| 3   | 82  | 72  | 65  | 59  | 75  | 67  | 61  | 55  | 58 | 53 | 49 | 49 | 45 | 42 | 41 | 38 | 36 |
| 4   | 75  | 64  | 56  | 50  | 69  | 60  | 52  | 47  | 51 | 46 | 41 | 43 | 39 | 36 | 36 | 33 | 31 |
| 5   | 69  | 57  | 49  | 43  | 63  | 53  | 46  | 40  | 46 | 40 | 36 | 39 | 35 | 31 | 33 | 29 | 27 |
| 6   | 63  | 51  | 43  | 37  | 58  | 48  | 40  | 35  | 41 | 36 | 31 | 35 | 31 | 27 | 30 | 26 | 24 |
| 7   | 59  | 46  | 38  | 33  | 54  | 43  | 36  | 31  | 37 | 32 | 28 | 32 | 28 | 24 | 27 | 24 | 21 |
| 8   | 54  | 42  | 34  | 29  | 50  | 39  | 32  | 27  | 34 | 29 | 24 | 29 | 25 | 22 | 25 | 21 | 19 |
| 9   | 51  | 38  | 31  | 26  | 47  | 36  | 29  | 24  | 31 | 26 | 22 | 27 | 23 | 19 | 23 | 20 | 17 |
| 10  | 47  | 35  | 28  | 23  | 44  | 33  | 26  | 22  | 29 | 23 | 20 | 25 | 21 | 18 | 21 | 18 | 15 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1483 | 1483 | 1483 |
| 5°  | 1485 | 1462 | 1472 |
| 10° | 1472 | 1441 | 1451 |
| 15° | 1449 | 1416 | 1420 |
| 20° | 1419 | 1382 | 1387 |
| 25° | 1389 | 1342 | 1350 |
| 30° | 1352 | 1304 | 1302 |
| 35° | 1316 | 1260 | 1252 |
| 40° | 1273 | 1215 | 1204 |
| 45° | 1229 | 1170 | 1155 |
| 50° | 1182 | 1123 | 1099 |
| 55° | 1132 | 1068 | 1046 |
| 60° | 1075 | 1003 | 986  |
| 65° | 1014 | 936  | 916  |
| 70° | 935  | 854  | 840  |
| 75° | 827  | 756  | 768  |
| 80° | 695  | 630  | 634  |
| 85° | 490  | 416  | 413  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 1229 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 119.4  | 2.0       |
| 10°-20°   | 336.0  | 5.5       |
| 20°-30°   | 493.8  | 8.1       |
| 30°-40°   | 573.6  | 9.4       |
| 40°-50°   | 572.9  | 9.4       |
| 50°-60°   | 499.5  | 8.2       |
| 60°-70°   | 369.3  | 6.0       |
| 70°-80°   | 208.9  | 3.4       |
| 80°-90°   | 58.1   | 0.9       |
| 90°-100°  | 63.8   | 1.0       |
| 100°-110° | 202.8  | 3.3       |
| 110°-120° | 347.0  | 5.7       |
| 120°-130° | 456.4  | 7.5       |
| 130°-140° | 512.3  | 8.4       |
| 140°-150° | 502.4  | 8.2       |
| 150°-160° | 421.4  | 6.9       |
| 160°-170° | 279.5  | 4.6       |
| 170°-180° | 97.7   | 1.6       |
| 0°-30°    | 949.3  | 15.5      |
| 0°-40°    | 1522.9 | 24.9      |
| 0°-60°    | 2595.3 | 42.4      |
| 0°-90°    | 3231.5 | 52.8      |
| 90°-120°  | 613.6  | 10.0      |
| 90°-150°  | 2084.7 | 34.1      |
| 90°-180°  | 2883.0 | 47.1      |
| 0°-180°   | 6114.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1269 | 1269  | 1269 | 1269  | 1269 |      |
| 5°   | 1269 | 1264  | 1251 | 1260  | 1258 | 120  |
| 15°  | 1208 | 1201  | 1185 | 1190  | 1184 | 340  |
| 25°  | 1093 | 1084  | 1063 | 1065  | 1063 | 503  |
| 35°  | 943  | 931   | 912  | 904   | 898  | 589  |
| 45°  | 768  | 759   | 741  | 727   | 722  | 592  |
| 55°  | 581  | 574   | 559  | 544   | 538  | 519  |
| 65°  | 392  | 384   | 372  | 361   | 355  | 387  |
| 75°  | 205  | 203   | 196  | 189   | 192  | 219  |
| 85°  | 50   | 49    | 48   | 44    | 43   | 56   |
| 90°  | 1    | 11    | 30   | 29    | 30   | 6    |
| 95°  | 45   | 54    | 56   | 56    | 54   | 51   |
| 105° | 187  | 190   | 192  | 193   | 193  | 198  |
| 115° | 348  | 353   | 352  | 351   | 348  | 344  |
| 125° | 506  | 514   | 512  | 509   | 508  | 453  |
| 135° | 655  | 665   | 667  | 666   | 663  | 506  |
| 145° | 795  | 802   | 807  | 808   | 804  | 497  |
| 155° | 910  | 912   | 915  | 919   | 916  | 419  |
| 165° | 989  | 988   | 988  | 995   | 990  | 279  |
| 175° | 1030 | 1027  | 1025 | 1031  | 1026 | 98   |
| 180° | 1031 | 1031  | 1031 | 1031  | 1031 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1268.9 | 1268.9 | 1268.9 | 1268.9 | 1268.9 |
| 2.5°   | 1276.3 | 1270.2 | 1256.8 | 1268.9 | 1266.6 |
| 5°     | 1268.9 | 1264.1 | 1250.7 | 1260.4 | 1258.1 |
| 7.5°   | 1260.4 | 1253.1 | 1239.7 | 1249.5 | 1247.1 |
| 10°    | 1247.1 | 1238.5 | 1223.9 | 1233.6 | 1230.0 |
| 12.5°  | 1228.7 | 1221.4 | 1206.8 | 1212.9 | 1210.4 |
| 15°    | 1207.9 | 1200.7 | 1184.8 | 1189.7 | 1183.6 |
| 17.5°  | 1182.3 | 1175.1 | 1159.2 | 1165.2 | 1159.2 |
| 20°    | 1154.2 | 1147.0 | 1129.9 | 1133.5 | 1128.8 |
| 22.5°  | 1126.3 | 1115.2 | 1099.3 | 1099.3 | 1096.9 |
| 25°    | 1093.2 | 1083.5 | 1062.8 | 1065.2 | 1062.8 |
| 27.5°  | 1056.6 | 1048.1 | 1032.3 | 1028.7 | 1022.6 |
| 30°    | 1020.1 | 1010.3 | 992.1  | 988.4  | 983.5  |
| 32.5°  | 981.0  | 973.8  | 954.2  | 946.9  | 941.9  |
| 35°    | 943.2  | 931.1  | 911.5  | 904.2  | 898.1  |
| 37.5°  | 900.5  | 889.5  | 869.9  | 861.4  | 855.3  |
| 40°    | 856.6  | 846.8  | 827.2  | 816.4  | 811.5  |
| 42.5°  | 813.9  | 804.0  | 784.6  | 772.3  | 765.1  |
| 45°    | 767.5  | 759.0  | 740.6  | 727.3  | 722.4  |
| 47.5°  | 722.4  | 713.8  | 694.3  | 680.9  | 673.6  |
| 50°    | 674.7  | 668.6  | 651.6  | 634.5  | 628.4  |
| 52.5°  | 628.4  | 619.9  | 604.1  | 590.6  | 582.0  |
| 55°    | 580.9  | 573.5  | 558.9  | 544.2  | 538.2  |
| 57.5°  | 533.2  | 527.2  | 511.2  | 496.6  | 491.7  |
| 60°    | 485.6  | 480.8  | 463.7  | 450.3  | 446.6  |
| 62.5°  | 439.3  | 430.7  | 418.6  | 406.3  | 401.5  |
| 65°    | 391.8  | 384.3  | 372.2  | 361.2  | 355.1  |
| 67.5°  | 342.9  | 336.7  | 325.9  | 317.3  | 312.4  |
| 70°    | 297.7  | 292.9  | 281.8  | 273.3  | 268.5  |
| 72.5°  | 251.4  | 246.5  | 240.4  | 231.9  | 228.2  |
| 75°    | 205.0  | 202.6  | 196.4  | 189.1  | 191.6  |
| 77.5°  | 163.5  | 158.6  | 156.1  | 152.5  | 148.9  |
| 80°    | 122.1  | 120.7  | 118.3  | 114.7  | 112.3  |
| 82.5°  | 83.0   | 83.0   | 81.9   | 76.9   | 76.9   |
| 85°    | 50.0   | 48.8   | 47.6   | 43.9   | 42.7   |
| 87.5°  | 22.0   | 19.6   | 17.1   | 13.5   | 12.1   |
| 90°    | 0.9    | 11.2   | 30.5   | 28.6   | 29.5   |
| 92.5°  | 19.2   | 26.1   | 27.1   | 28.0   | 28.0   |
| 95°    | 45.4   | 54.1   | 55.7   | 55.7   | 54.1   |
| 97.5°  | 75.6   | 83.6   | 87.1   | 87.1   | 87.1   |
| 100°   | 110.4  | 117.6  | 120.0  | 120.0  | 119.1  |
| 102.5° | 147.1  | 152.4  | 155.8  | 156.7  | 155.8  |
| 105°   | 187.2  | 189.6  | 191.5  | 193.1  | 193.1  |
| 107.5° | 227.0  | 230.7  | 230.7  | 231.3  | 227.0  |
| 110°   | 265.5  | 270.5  | 270.5  | 270.5  | 268.1  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 307.2  | 312.5  | 311.5  | 309.1  | 307.2  |
| 115°   | 348.2  | 353.3  | 351.6  | 350.7  | 348.2  |
| 117.5° | 389.0  | 395.8  | 391.5  | 389.0  | 386.5  |
| 120°   | 430.1  | 436.8  | 430.1  | 430.1  | 427.2  |
| 122.5° | 467.3  | 476.1  | 471.7  | 469.2  | 467.3  |
| 125°   | 506.5  | 514.3  | 511.8  | 509.0  | 508.1  |
| 127.5° | 544.8  | 554.4  | 551.0  | 547.2  | 544.8  |
| 130°   | 580.5  | 591.7  | 590.2  | 588.3  | 584.9  |
| 132.5° | 620.6  | 629.3  | 630.0  | 625.6  | 623.1  |
| 135°   | 655.2  | 664.8  | 666.7  | 665.7  | 663.2  |
| 137.5° | 693.7  | 701.5  | 703.0  | 702.4  | 698.7  |
| 140°   | 727.6  | 735.4  | 739.7  | 739.7  | 736.3  |
| 142.5° | 762.5  | 770.2  | 772.7  | 773.6  | 770.2  |
| 145°   | 795.4  | 801.6  | 806.6  | 807.6  | 804.1  |
| 147.5° | 824.9  | 832.7  | 836.4  | 838.0  | 834.5  |
| 150°   | 855.4  | 860.7  | 864.1  | 866.9  | 864.1  |
| 152.5° | 882.5  | 887.7  | 892.1  | 895.5  | 892.1  |
| 155°   | 909.5  | 912.0  | 914.8  | 919.2  | 916.3  |
| 157.5° | 932.9  | 934.7  | 936.2  | 942.5  | 938.1  |
| 160°   | 953.7  | 955.5  | 956.4  | 961.7  | 958.0  |
| 162.5° | 972.9  | 972.9  | 973.9  | 979.7  | 975.4  |
| 165°   | 989.4  | 988.5  | 988.5  | 994.7  | 990.3  |
| 167.5° | 1004.4 | 1001.5 | 1001.5 | 1007.8 | 1003.4 |
| 170°   | 1015.5 | 1013.0 | 1012.1 | 1018.3 | 1013.0 |
| 172.5° | 1023.3 | 1020.8 | 1019.9 | 1026.1 | 1020.8 |
| 175°   | 1029.6 | 1027.0 | 1025.2 | 1031.4 | 1026.1 |
| 177.5° | 1033.0 | 1030.5 | 1028.6 | 1033.9 | 1028.6 |
| 180°   | 1031.4 | 1031.4 | 1031.4 | 1031.4 | 1031.4 |

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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 | 8.86             | 9.75  | 9.79  | 10.70 | 11.93 | 8.42           | 9.31  | 9.35  | 10.26 | 11.49 |
|                 | 3H   | 10.52            | 11.31 | 11.46 | 12.27 | 13.53 | 10.04          | 10.83 | 10.98 | 11.79 | 13.04 |
|                 | 4H   | 11.10            | 11.86 | 12.06 | 12.82 | 14.08 | 10.62          | 11.37 | 11.58 | 12.33 | 13.60 |
|                 | 6H   | 11.50            | 12.19 | 12.47 | 13.16 | 14.44 | 11.01          | 11.70 | 11.98 | 12.67 | 13.95 |
|                 | 8H   | 11.60            | 12.26 | 12.58 | 13.25 | 14.52 | 11.11          | 11.77 | 12.09 | 12.76 | 14.03 |
|                 | 12H  | 11.65            | 12.28 | 12.63 | 13.26 | 14.56 | 11.15          | 11.78 | 12.13 | 12.76 | 14.06 |
| 4H              | 2H   | 9.32             | 10.08 | 10.29 | 11.04 | 12.30 | 8.97           | 9.72  | 9.94  | 10.69 | 11.95 |
|                 | 3H   | 11.18            | 11.81 | 12.16 | 12.81 | 14.08 | 10.78          | 11.41 | 11.76 | 12.40 | 13.68 |
|                 | 4H   | 11.89            | 12.47 | 12.88 | 13.46 | 14.76 | 11.48          | 12.05 | 12.46 | 13.04 | 14.34 |
|                 | 6H   | 12.40            | 12.90 | 13.40 | 13.91 | 15.21 | 11.98          | 12.48 | 12.98 | 13.49 | 14.79 |
|                 | 8H   | 12.55            | 13.01 | 13.55 | 14.02 | 15.33 | 12.13          | 12.59 | 13.12 | 13.59 | 14.90 |
|                 | 12H  | 12.62            | 13.04 | 13.64 | 14.06 | 15.38 | 12.19          | 12.60 | 13.20 | 13.62 | 14.94 |
| 8H              | 4H   | 12.09            | 12.55 | 13.08 | 13.56 | 14.87 | 11.72          | 12.18 | 12.71 | 13.18 | 14.50 |
|                 | 6H   | 12.71            | 13.10 | 13.73 | 14.14 | 15.45 | 12.34          | 12.72 | 13.36 | 13.77 | 15.08 |
|                 | 8H   | 12.93            | 13.27 | 13.96 | 14.30 | 15.63 | 12.55          | 12.88 | 13.58 | 13.92 | 15.25 |
|                 | 12H  | 13.06            | 13.36 | 14.09 | 14.38 | 15.76 | 12.66          | 12.96 | 13.69 | 13.98 | 15.36 |
| 12H             | 4H   | 12.07            | 12.49 | 13.09 | 13.51 | 14.83 | 11.71          | 12.13 | 12.73 | 13.15 | 14.47 |
|                 | 6H   | 12.74            | 13.08 | 13.77 | 14.11 | 15.44 | 12.38          | 12.72 | 13.41 | 13.75 | 15.08 |
|                 | 8H   | 12.98            | 13.28 | 14.01 | 14.30 | 15.68 | 12.61          | 12.91 | 13.64 | 13.93 | 15.31 |