

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: P919245

Luminaire Tested: DFN2DIP-PN2F0-030D040US935-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P919245  
REPORT IS A COMBINATION OF REPORTS P901003 AND P897905  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN2F0-030D040US935-FLLONL  
Description: 2 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

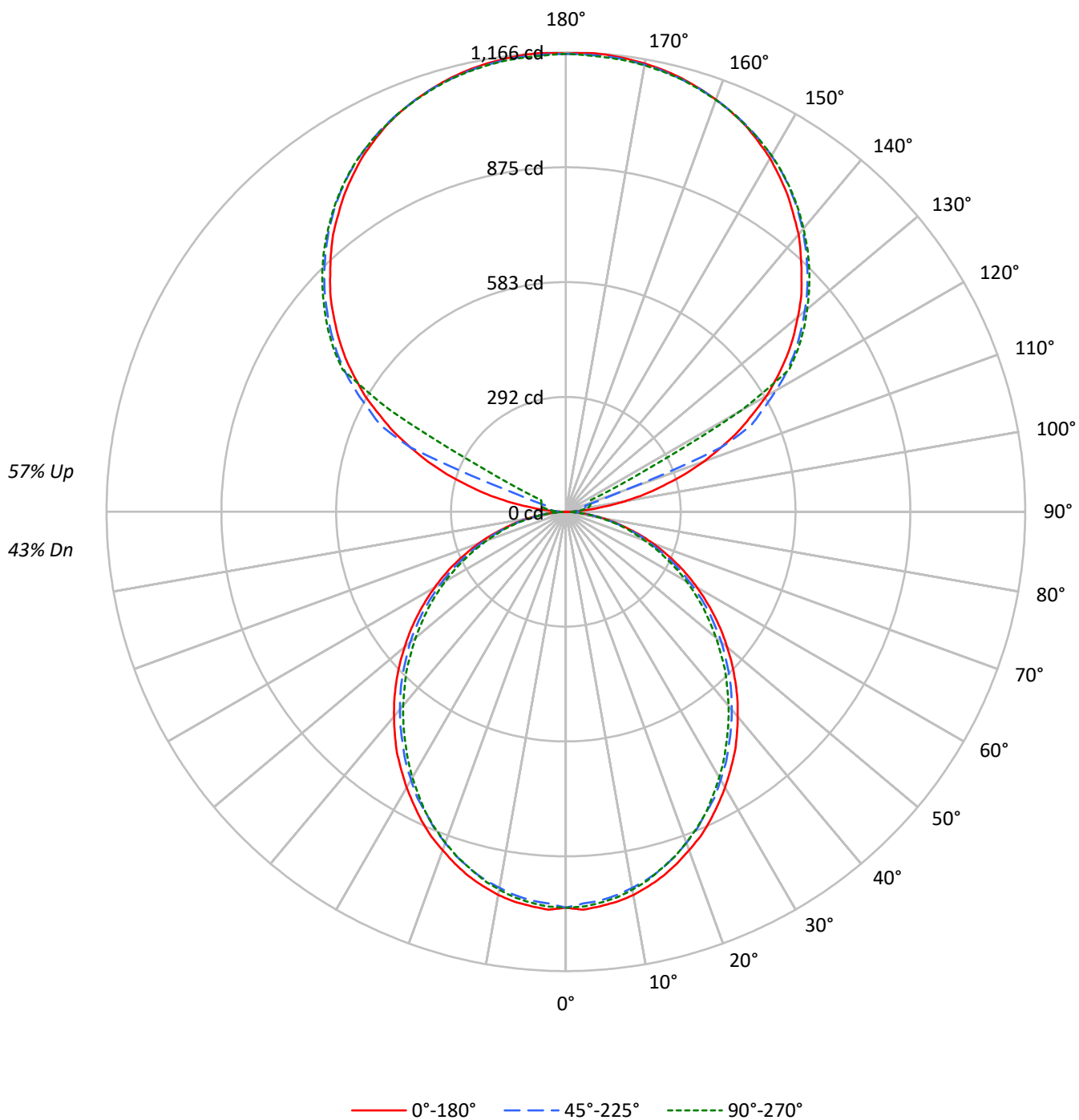
Lumens per Lamp: N/A  
Luminaire Lumens: 5966.7 lumens  
Efficiency: N/A  
Efficacy: 101.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.17' x L: 2.29' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 58.8  
Input Voltage (V): 120  
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   | 105 | 105 | 105 | 105 | 96 | 96 | 96 | 96 | 79 | 79 | 79 | 64 | 64 | 64 | 50 | 50 | 50 |
| 1   | 96  | 92  | 88  | 85  | 88 | 84 | 81 | 78 | 70 | 67 | 65 | 56 | 55 | 53 | 44 | 43 | 42 |
| 2   | 88  | 80  | 74  | 69  | 80 | 74 | 68 | 64 | 61 | 57 | 54 | 49 | 47 | 44 | 39 | 37 | 35 |
| 3   | 80  | 71  | 63  | 58  | 73 | 65 | 58 | 53 | 54 | 49 | 45 | 44 | 40 | 38 | 34 | 32 | 30 |
| 4   | 73  | 62  | 55  | 49  | 66 | 57 | 50 | 45 | 48 | 43 | 39 | 39 | 35 | 32 | 31 | 28 | 26 |
| 5   | 67  | 56  | 48  | 42  | 61 | 51 | 44 | 39 | 43 | 37 | 33 | 35 | 31 | 28 | 28 | 25 | 23 |
| 6   | 62  | 50  | 42  | 36  | 56 | 46 | 39 | 34 | 38 | 33 | 29 | 31 | 27 | 24 | 25 | 22 | 20 |
| 7   | 57  | 45  | 37  | 32  | 52 | 41 | 34 | 29 | 35 | 29 | 25 | 29 | 25 | 22 | 23 | 20 | 18 |
| 8   | 53  | 41  | 33  | 28  | 48 | 38 | 31 | 26 | 32 | 26 | 23 | 26 | 22 | 19 | 21 | 18 | 16 |
| 9   | 49  | 37  | 30  | 25  | 45 | 34 | 28 | 23 | 29 | 24 | 20 | 24 | 20 | 17 | 19 | 16 | 14 |
| 10  | 46  | 34  | 27  | 22  | 42 | 31 | 25 | 21 | 27 | 22 | 18 | 22 | 18 | 16 | 18 | 15 | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2177 | 2177 | 2177 |
| 5°  | 2177 | 2142 | 2158 |
| 10° | 2156 | 2108 | 2125 |
| 15° | 2120 | 2069 | 2077 |
| 20° | 2074 | 2016 | 2027 |
| 25° | 2028 | 1954 | 1969 |
| 30° | 1971 | 1896 | 1898 |
| 35° | 1917 | 1828 | 1822 |
| 40° | 1850 | 1759 | 1750 |
| 45° | 1784 | 1690 | 1675 |
| 50° | 1711 | 1617 | 1590 |
| 55° | 1635 | 1532 | 1511 |
| 60° | 1549 | 1433 | 1419 |
| 65° | 1454 | 1330 | 1312 |
| 70° | 1333 | 1204 | 1196 |
| 75° | 1168 | 1053 | 1084 |
| 80° | 966  | 859  | 879  |
| 85° | 656  | 543  | 551  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1784 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 94.6   | 1.6       |
| 10°-20°   | 266.2  | 4.5       |
| 20°-30°   | 391.1  | 6.6       |
| 30°-40°   | 454.3  | 7.6       |
| 40°-50°   | 453.7  | 7.6       |
| 50°-60°   | 395.6  | 6.6       |
| 60°-70°   | 292.5  | 4.9       |
| 70°-80°   | 165.5  | 2.8       |
| 80°-90°   | 45.7   | 0.8       |
| 90°-100°  | 38.3   | 0.6       |
| 100°-110° | 142.9  | 2.4       |
| 110°-120° | 378.9  | 6.4       |
| 120°-130° | 628.5  | 10.5      |
| 130°-140° | 667.6  | 11.2      |
| 140°-150° | 620.4  | 10.4      |
| 150°-160° | 498.8  | 8.4       |
| 160°-170° | 321.4  | 5.4       |
| 170°-180° | 110.6  | 1.9       |
| 0°-30°    | 751.9  | 12.6      |
| 0°-40°    | 1206.2 | 20.2      |
| 0°-60°    | 2055.6 | 34.5      |
| 0°-90°    | 2559.2 | 42.9      |
| 90°-120°  | 560.1  | 9.4       |
| 90°-150°  | 2476.6 | 41.5      |
| 90°-180°  | 3407.0 | 57.1      |
| 0°-180°   | 5966.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1005 | 1005  | 1005 | 1005  | 1005 |      |
| 5°   | 1005 | 1001  | 991  | 998   | 996  | 95   |
| 15°  | 957  | 951   | 938  | 942   | 938  | 269  |
| 25°  | 866  | 858   | 842  | 844   | 842  | 398  |
| 35°  | 747  | 737   | 722  | 716   | 711  | 467  |
| 45°  | 608  | 601   | 587  | 576   | 572  | 469  |
| 55°  | 460  | 454   | 443  | 431   | 426  | 411  |
| 65°  | 310  | 304   | 295  | 286   | 281  | 307  |
| 75°  | 162  | 160   | 156  | 150   | 152  | 173  |
| 85°  | 40   | 39    | 38   | 35    | 34   | 44   |
| 90°  | 1    | 10    | 17   | 21    | 23   | 5    |
| 95°  | 55   | 27    | 33   | 37    | 36   | 65   |
| 105° | 256  | 281   | 51   | 60    | 64   | 273  |
| 115° | 484  | 498   | 519  | 130   | 69   | 476  |
| 125° | 684  | 695   | 711  | 717   | 719  | 610  |
| 135° | 846  | 860   | 867  | 876   | 874  | 654  |
| 145° | 982  | 981   | 995  | 1001  | 997  | 614  |
| 155° | 1081 | 1073  | 1083 | 1088  | 1082 | 498  |
| 165° | 1139 | 1134  | 1136 | 1142  | 1136 | 322  |
| 175° | 1165 | 1159  | 1161 | 1166  | 1158 | 111  |
| 180° | 1162 | 1162  | 1162 | 1162  | 1162 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1005.0 | 1005.0 | 1005.0 | 1005.0 | 1005.0 |
| 2.5°   | 1010.9 | 1006.1 | 995.4  | 1005.0 | 1003.2 |
| 5°     | 1005.0 | 1001.3 | 990.6  | 998.3  | 996.4  |
| 7.5°   | 998.3  | 992.6  | 981.9  | 989.7  | 987.7  |
| 10°    | 987.7  | 980.9  | 969.4  | 977.1  | 974.2  |
| 12.5°  | 973.2  | 967.4  | 955.9  | 960.6  | 958.7  |
| 15°    | 956.7  | 951.1  | 938.4  | 942.3  | 937.5  |
| 17.5°  | 936.4  | 930.7  | 918.1  | 922.9  | 918.1  |
| 20°    | 914.2  | 908.4  | 894.9  | 897.8  | 894.0  |
| 22.5°  | 892.1  | 883.4  | 870.7  | 870.7  | 868.7  |
| 25°    | 865.9  | 858.2  | 841.8  | 843.7  | 841.8  |
| 27.5°  | 836.9  | 830.1  | 817.6  | 814.8  | 809.9  |
| 30°    | 808.0  | 800.2  | 785.7  | 782.8  | 778.9  |
| 32.5°  | 777.1  | 771.3  | 755.8  | 749.9  | 746.1  |
| 35°    | 747.1  | 737.4  | 721.9  | 716.1  | 711.3  |
| 37.5°  | 713.3  | 704.6  | 689.1  | 682.3  | 677.4  |
| 40°    | 678.5  | 670.7  | 655.2  | 646.6  | 642.7  |
| 42.5°  | 644.6  | 636.9  | 621.5  | 611.7  | 606.0  |
| 45°    | 608.0  | 601.1  | 586.6  | 576.0  | 572.1  |
| 47.5°  | 572.1  | 565.4  | 549.9  | 539.2  | 533.5  |
| 50°    | 534.4  | 529.6  | 516.1  | 502.6  | 497.7  |
| 52.5°  | 497.7  | 490.9  | 478.5  | 467.8  | 461.0  |
| 55°    | 460.1  | 454.3  | 442.6  | 431.1  | 426.3  |
| 57.5°  | 422.3  | 417.5  | 404.9  | 393.3  | 389.4  |
| 60°    | 384.6  | 380.8  | 367.3  | 356.6  | 353.8  |
| 62.5°  | 347.9  | 341.1  | 331.5  | 321.8  | 318.0  |
| 65°    | 310.3  | 304.4  | 294.8  | 286.1  | 281.3  |
| 67.5°  | 271.6  | 266.7  | 258.0  | 251.3  | 247.5  |
| 70°    | 235.8  | 232.0  | 223.3  | 216.5  | 212.7  |
| 72.5°  | 199.1  | 195.2  | 190.4  | 183.7  | 180.8  |
| 75°    | 162.3  | 160.5  | 155.6  | 149.8  | 151.8  |
| 77.5°  | 129.5  | 125.6  | 123.6  | 120.8  | 118.0  |
| 80°    | 96.7   | 95.7   | 93.7   | 90.8   | 88.9   |
| 82.5°  | 65.7   | 65.7   | 64.8   | 60.9   | 60.9   |
| 85°    | 39.6   | 38.7   | 37.7   | 34.8   | 33.8   |
| 87.5°  | 17.4   | 15.5   | 13.5   | 10.7   | 9.6    |
| 90°    | 0.8    | 10.1   | 16.8   | 21.1   | 22.6   |
| 92.5°  | 21.1   | 17.7   | 20.1   | 21.9   | 22.6   |
| 95°    | 54.6   | 26.9   | 32.7   | 37.0   | 36.2   |
| 97.5°  | 98.4   | 29.4   | 42.9   | 45.5   | 46.2   |
| 100°   | 148.9  | 33.7   | 48.0   | 54.6   | 56.3   |
| 102.5° | 204.3  | 202.8  | 49.6   | 58.8   | 61.4   |
| 105°   | 255.6  | 280.9  | 51.3   | 60.5   | 63.9   |
| 107.5° | 315.4  | 336.4  | 53.0   | 62.3   | 65.6   |
| 110°   | 372.6  | 390.2  | 147.2  | 63.1   | 66.4   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 426.5  | 441.5  | 427.2  | 64.7   | 67.3   |
| 115°   | 483.5  | 497.8  | 518.9  | 129.5  | 69.1   |
| 117.5° | 533.2  | 550.0  | 564.4  | 444.0  | 223.7  |
| 120°   | 588.8  | 601.3  | 616.5  | 626.6  | 513.1  |
| 122.5° | 635.8  | 649.3  | 666.2  | 671.1  | 672.0  |
| 125°   | 683.7  | 694.7  | 710.7  | 716.6  | 719.1  |
| 127.5° | 727.5  | 739.3  | 751.9  | 760.3  | 761.1  |
| 130°   | 768.7  | 782.2  | 791.3  | 800.6  | 799.9  |
| 132.5° | 810.7  | 821.7  | 830.9  | 838.5  | 837.8  |
| 135°   | 846.1  | 859.6  | 867.1  | 875.5  | 873.9  |
| 137.5° | 883.0  | 893.1  | 901.6  | 910.0  | 907.5  |
| 140°   | 919.2  | 926.0  | 935.2  | 942.8  | 938.6  |
| 142.5° | 949.6  | 955.4  | 966.4  | 973.0  | 968.9  |
| 145°   | 981.5  | 980.7  | 994.9  | 1000.8 | 996.6  |
| 147.5° | 1009.2 | 1006.7 | 1021.0 | 1025.2 | 1021.9 |
| 150°   | 1036.1 | 1030.3 | 1043.8 | 1048.8 | 1044.6 |
| 152.5° | 1058.9 | 1052.1 | 1064.7 | 1069.8 | 1063.9 |
| 155°   | 1080.7 | 1073.2 | 1083.3 | 1088.3 | 1081.6 |
| 157.5° | 1098.4 | 1091.7 | 1099.3 | 1105.2 | 1098.4 |
| 160°   | 1113.5 | 1108.4 | 1113.5 | 1118.5 | 1112.7 |
| 162.5° | 1127.0 | 1122.0 | 1126.2 | 1132.0 | 1124.5 |
| 165°   | 1138.8 | 1133.8 | 1136.3 | 1142.1 | 1136.3 |
| 167.5° | 1148.1 | 1142.9 | 1145.6 | 1151.4 | 1143.8 |
| 170°   | 1155.6 | 1150.6 | 1152.2 | 1158.1 | 1150.6 |
| 172.5° | 1160.6 | 1155.6 | 1157.4 | 1163.2 | 1155.6 |
| 175°   | 1164.8 | 1158.9 | 1160.6 | 1166.5 | 1158.1 |
| 177.5° | 1166.5 | 1160.6 | 1161.5 | 1167.4 | 1159.9 |
| 180°   | 1162.3 | 1162.3 | 1162.3 | 1162.3 | 1162.3 |

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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 | 9.16             | 9.96  | 10.18 | 10.99 | 12.36 | 8.73           | 9.53  | 9.74  | 10.55 | 11.92 |
|                 | 3H   | 10.80            | 11.52 | 11.82 | 12.55 | 13.94 | 10.32          | 11.04 | 11.34 | 12.07 | 13.46 |
|                 | 4H   | 11.37            | 12.05 | 12.41 | 13.09 | 14.48 | 10.89          | 11.57 | 11.93 | 12.60 | 14.00 |
|                 | 6H   | 11.75            | 12.38 | 12.80 | 13.42 | 14.83 | 11.27          | 11.89 | 12.31 | 12.93 | 14.34 |
|                 | 8H   | 11.85            | 12.44 | 12.90 | 13.50 | 14.90 | 11.36          | 11.96 | 12.41 | 13.01 | 14.42 |
|                 | 12H  | 11.88            | 12.45 | 12.94 | 13.50 | 14.93 | 11.39          | 11.96 | 12.45 | 13.01 | 14.44 |
| 4H              | 2H   | 9.61             | 10.29 | 10.65 | 11.32 | 12.72 | 9.26           | 9.94  | 10.30 | 10.97 | 12.37 |
|                 | 3H   | 11.44            | 12.01 | 12.50 | 13.08 | 14.49 | 11.04          | 11.61 | 12.10 | 12.68 | 14.09 |
|                 | 4H   | 12.14            | 12.66 | 13.20 | 13.72 | 15.15 | 11.73          | 12.25 | 12.79 | 13.30 | 14.73 |
|                 | 6H   | 12.63            | 13.08 | 13.70 | 14.16 | 15.58 | 12.21          | 12.66 | 13.28 | 13.74 | 15.16 |
|                 | 8H   | 12.77            | 13.19 | 13.84 | 14.26 | 15.70 | 12.35          | 12.76 | 13.42 | 13.84 | 15.28 |
|                 | 12H  | 12.83            | 13.21 | 13.92 | 14.29 | 15.74 | 12.40          | 12.78 | 13.48 | 13.86 | 15.31 |
| 8H              | 4H   | 12.32            | 12.74 | 13.39 | 13.81 | 15.25 | 11.95          | 12.37 | 13.02 | 13.44 | 14.88 |
|                 | 6H   | 12.92            | 13.27 | 14.02 | 14.38 | 15.82 | 12.55          | 12.90 | 13.64 | 14.01 | 15.45 |
|                 | 8H   | 13.13            | 13.43 | 14.23 | 14.53 | 15.99 | 12.75          | 13.05 | 13.85 | 14.15 | 15.61 |
|                 | 12H  | 13.25            | 13.51 | 14.35 | 14.60 | 16.10 | 12.85          | 13.12 | 13.95 | 14.21 | 15.71 |
| 12H             | 4H   | 12.30            | 12.68 | 13.39 | 13.76 | 15.21 | 11.94          | 12.32 | 13.03 | 13.40 | 14.85 |
|                 | 6H   | 12.95            | 13.25 | 14.05 | 14.35 | 15.81 | 12.59          | 12.89 | 13.69 | 13.99 | 15.44 |
|                 | 8H   | 13.17            | 13.44 | 14.28 | 14.53 | 16.03 | 12.80          | 13.07 | 13.91 | 14.16 | 15.66 |