

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: P918814

Luminaire Tested: DFN2DIP-HX2F0-030D040US935-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P918814  
REPORT IS A COMBINATION OF REPORTS P899173 AND P896039  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX2F0-030D040US935-FLLFLL  
Description: 2 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

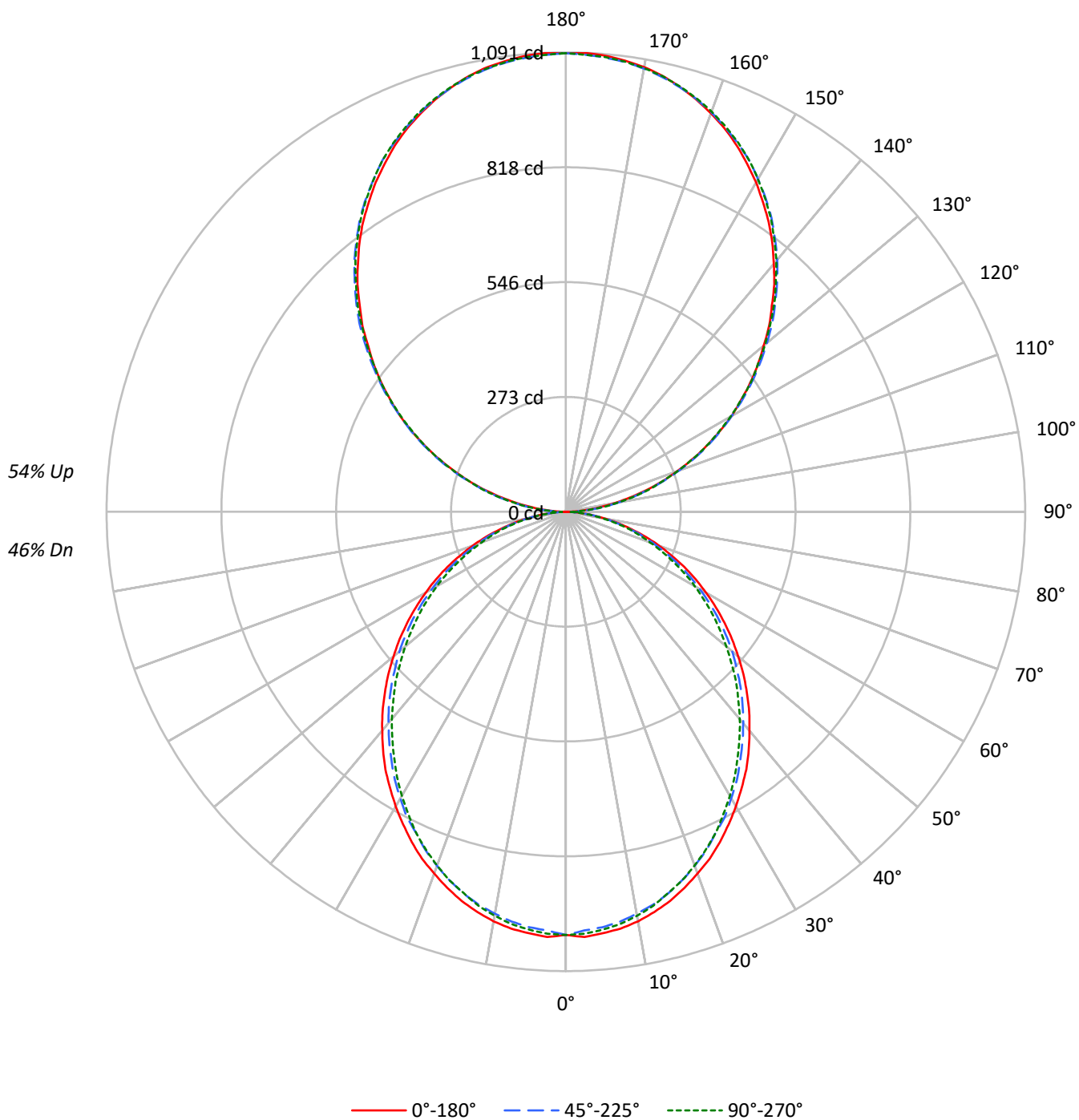
Lumens per Lamp: N/A  
Luminaire Lumens: 5605.1 lumens  
Efficiency: N/A  
Efficacy: 102.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 1.99' x L: 2.3' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 54.6  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9951  
Total Harmonic Distortion (THDi): 0.07  
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: P918814

CATALOG NUMBER: DFN2DIP-HX2F0-030D040US935-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   | 106 | 106 | 106 | 106 | 97 | 97 | 97 | 97 | 81 | 81 | 81 | 66 | 66 | 66 | 52 | 52 | 52 |
| 1   | 97  | 93  | 89  | 85  | 89 | 85 | 82 | 79 | 71 | 69 | 66 | 58 | 56 | 55 | 46 | 45 | 44 |
| 2   | 88  | 81  | 75  | 70  | 81 | 74 | 69 | 65 | 62 | 58 | 55 | 51 | 48 | 46 | 41 | 39 | 37 |
| 3   | 80  | 71  | 64  | 58  | 73 | 65 | 59 | 54 | 55 | 50 | 46 | 45 | 42 | 39 | 36 | 34 | 32 |
| 4   | 74  | 63  | 55  | 49  | 67 | 58 | 51 | 46 | 49 | 43 | 39 | 40 | 36 | 33 | 32 | 29 | 27 |
| 5   | 67  | 56  | 48  | 42  | 62 | 52 | 45 | 39 | 44 | 38 | 34 | 36 | 32 | 29 | 29 | 26 | 24 |
| 6   | 62  | 50  | 42  | 36  | 57 | 46 | 39 | 34 | 39 | 34 | 30 | 33 | 28 | 25 | 26 | 23 | 21 |
| 7   | 57  | 45  | 37  | 32  | 53 | 42 | 35 | 30 | 36 | 30 | 26 | 30 | 25 | 22 | 24 | 21 | 19 |
| 8   | 53  | 41  | 33  | 28  | 49 | 38 | 31 | 26 | 32 | 27 | 23 | 27 | 23 | 20 | 22 | 19 | 17 |
| 9   | 50  | 37  | 30  | 25  | 45 | 35 | 28 | 24 | 30 | 24 | 21 | 25 | 21 | 18 | 20 | 17 | 15 |
| 10  | 46  | 34  | 27  | 22  | 42 | 32 | 25 | 21 | 27 | 22 | 19 | 23 | 19 | 16 | 19 | 16 | 14 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2368 | 2368 | 2368 |
| 5°  | 2368 | 2329 | 2346 |
| 10° | 2345 | 2292 | 2310 |
| 15° | 2307 | 2249 | 2256 |
| 20° | 2256 | 2191 | 2201 |
| 25° | 2206 | 2123 | 2138 |
| 30° | 2144 | 2059 | 2059 |
| 35° | 2085 | 1984 | 1976 |
| 40° | 2013 | 1909 | 1897 |
| 45° | 1941 | 1833 | 1815 |
| 50° | 1862 | 1753 | 1721 |
| 55° | 1779 | 1661 | 1634 |
| 60° | 1685 | 1552 | 1534 |
| 65° | 1582 | 1439 | 1416 |
| 70° | 1451 | 1301 | 1287 |
| 75° | 1271 | 1135 | 1164 |
| 80° | 1052 | 924  | 939  |
| 85° | 715  | 580  | 580  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1941 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 94.6   | 1.7       |
| 10°-20°   | 266.2  | 4.7       |
| 20°-30°   | 391.1  | 7.0       |
| 30°-40°   | 454.3  | 8.1       |
| 40°-50°   | 453.7  | 8.1       |
| 50°-60°   | 395.6  | 7.1       |
| 60°-70°   | 292.5  | 5.2       |
| 70°-80°   | 165.5  | 3.0       |
| 80°-90°   | 46.8   | 0.8       |
| 90°-100°  | 67.4   | 1.2       |
| 100°-110° | 214.2  | 3.8       |
| 110°-120° | 366.5  | 6.5       |
| 120°-130° | 482.0  | 8.6       |
| 130°-140° | 541.0  | 9.7       |
| 140°-150° | 530.5  | 9.5       |
| 150°-160° | 445.0  | 7.9       |
| 160°-170° | 295.1  | 5.3       |
| 170°-180° | 103.2  | 1.8       |
| 0°-30°    | 751.9  | 13.4      |
| 0°-40°    | 1206.2 | 21.5      |
| 0°-60°    | 2055.6 | 36.7      |
| 0°-90°    | 2560.3 | 45.7      |
| 90°-120°  | 648.0  | 11.6      |
| 90°-150°  | 2201.5 | 39.3      |
| 90°-180°  | 3045.0 | 54.3      |
| 0°-180°   | 5605.1 | 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    | 12    | 32   | 30    | 31   | 5    |
| 95°  | 48   | 57    | 59   | 59    | 57   | 53   |
| 105° | 198  | 200   | 202  | 204   | 204  | 209  |
| 115° | 368  | 373   | 371  | 370   | 368  | 364  |
| 125° | 535  | 543   | 540  | 538   | 537  | 478  |
| 135° | 692  | 702   | 704  | 703   | 700  | 535  |
| 145° | 840  | 846   | 852  | 853   | 849  | 525  |
| 155° | 960  | 963   | 966  | 971   | 968  | 442  |
| 165° | 1045 | 1044  | 1044 | 1050  | 1046 | 295  |
| 175° | 1087 | 1085  | 1083 | 1089  | 1084 | 103  |
| 180° | 1089 | 1089  | 1089 | 1089  | 1089 |      |

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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°    | 0.9    | 11.8   | 32.2   | 30.2   | 31.2   |
| 92.5°  | 20.3   | 27.6   | 28.6   | 29.5   | 29.5   |
| 95°    | 48.0   | 57.2   | 58.8   | 58.8   | 57.2   |
| 97.5°  | 79.8   | 88.3   | 92.0   | 92.0   | 92.0   |
| 100°   | 116.6  | 124.2  | 126.7  | 126.7  | 125.8  |
| 102.5° | 155.3  | 160.9  | 164.5  | 165.5  | 164.5  |
| 105°   | 197.7  | 200.3  | 202.2  | 203.9  | 203.9  |
| 107.5° | 239.7  | 243.7  | 243.7  | 244.3  | 239.7  |
| 110°   | 280.4  | 285.7  | 285.7  | 285.7  | 283.1  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 324.4  | 330.0  | 329.0  | 326.4  | 324.4  |
| 115°   | 367.7  | 373.1  | 371.3  | 370.4  | 367.7  |
| 117.5° | 410.8  | 418.0  | 413.5  | 410.8  | 408.2  |
| 120°   | 454.2  | 461.3  | 454.2  | 454.2  | 451.2  |
| 122.5° | 493.5  | 502.7  | 498.2  | 495.5  | 493.5  |
| 125°   | 534.9  | 543.1  | 540.5  | 537.5  | 536.6  |
| 127.5° | 575.3  | 585.5  | 581.9  | 577.9  | 575.3  |
| 130°   | 613.0  | 624.9  | 623.3  | 621.3  | 617.7  |
| 132.5° | 655.4  | 664.6  | 665.3  | 660.6  | 658.1  |
| 135°   | 691.9  | 702.1  | 704.0  | 703.0  | 700.4  |
| 137.5° | 732.6  | 740.8  | 742.4  | 741.7  | 737.9  |
| 140°   | 768.4  | 776.6  | 781.2  | 781.2  | 777.6  |
| 142.5° | 805.2  | 813.4  | 816.0  | 817.0  | 813.4  |
| 145°   | 840.0  | 846.5  | 851.8  | 852.8  | 849.2  |
| 147.5° | 871.2  | 879.3  | 883.3  | 884.9  | 881.3  |
| 150°   | 903.4  | 909.0  | 912.6  | 915.5  | 912.6  |
| 152.5° | 931.9  | 937.5  | 942.1  | 945.7  | 942.1  |
| 155°   | 960.4  | 963.1  | 966.0  | 970.7  | 967.7  |
| 157.5° | 985.2  | 987.0  | 988.7  | 995.3  | 990.7  |
| 160°   | 1007.1 | 1009.1 | 1010.0 | 1015.6 | 1011.7 |
| 162.5° | 1027.4 | 1027.4 | 1028.5 | 1034.7 | 1030.1 |
| 165°   | 1044.9 | 1043.9 | 1043.9 | 1050.4 | 1045.9 |
| 167.5° | 1060.7 | 1057.6 | 1057.6 | 1064.3 | 1059.6 |
| 170°   | 1072.5 | 1069.8 | 1068.8 | 1075.4 | 1069.8 |
| 172.5° | 1080.6 | 1078.1 | 1077.0 | 1083.7 | 1078.1 |
| 175°   | 1087.3 | 1084.6 | 1082.6 | 1089.2 | 1083.7 |
| 177.5° | 1090.9 | 1088.2 | 1086.2 | 1091.8 | 1086.2 |
| 180°   | 1089.2 | 1089.2 | 1089.2 | 1089.2 | 1089.2 |

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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 | 9.71             | 10.54 | 10.71 | 11.54 | 12.88 | 9.29           | 10.12 | 10.28 | 11.12 | 12.45 |
|                 | 3H   | 11.35            | 12.09 | 12.35 | 13.10 | 14.45 | 10.89          | 11.63 | 11.89 | 12.64 | 13.99 |
|                 | 4H   | 11.92            | 12.62 | 12.93 | 13.63 | 14.99 | 11.46          | 12.16 | 12.47 | 13.17 | 14.53 |
|                 | 6H   | 12.29            | 12.94 | 13.32 | 13.96 | 15.33 | 11.84          | 12.48 | 12.86 | 13.50 | 14.88 |
|                 | 8H   | 12.39            | 13.00 | 13.42 | 14.04 | 15.41 | 11.93          | 12.55 | 12.96 | 13.58 | 14.95 |
|                 | 12H  | 12.43            | 13.01 | 13.46 | 14.04 | 15.44 | 11.97          | 12.55 | 13.00 | 13.58 | 14.97 |
| 4H              | 2H   | 10.16            | 10.86 | 11.18 | 11.88 | 13.24 | 9.82           | 10.52 | 10.85 | 11.54 | 12.90 |
|                 | 3H   | 12.00            | 12.58 | 13.03 | 13.62 | 15.00 | 11.61          | 12.20 | 12.64 | 13.24 | 14.62 |
|                 | 4H   | 12.69            | 13.22 | 13.73 | 14.26 | 15.66 | 12.29          | 12.83 | 13.33 | 13.87 | 15.26 |
|                 | 6H   | 13.18            | 13.64 | 14.23 | 14.70 | 16.09 | 12.78          | 13.24 | 13.83 | 14.30 | 15.70 |
|                 | 8H   | 13.31            | 13.74 | 14.36 | 14.80 | 16.20 | 12.92          | 13.35 | 13.97 | 14.40 | 15.81 |
|                 | 12H  | 13.37            | 13.76 | 14.44 | 14.83 | 16.24 | 12.97          | 13.36 | 14.04 | 14.43 | 15.84 |
| 8H              | 4H   | 12.87            | 13.30 | 13.92 | 14.35 | 15.76 | 12.52          | 12.95 | 13.57 | 14.00 | 15.41 |
|                 | 6H   | 13.47            | 13.83 | 14.54 | 14.92 | 16.33 | 13.12          | 13.48 | 14.19 | 14.57 | 15.98 |
|                 | 8H   | 13.67            | 13.99 | 14.76 | 15.07 | 16.49 | 13.32          | 13.63 | 14.40 | 14.71 | 16.13 |
|                 | 12H  | 13.79            | 14.06 | 14.87 | 15.14 | 16.60 | 13.42          | 13.69 | 14.50 | 14.77 | 16.23 |
| 12H             | 4H   | 12.85            | 13.24 | 13.92 | 14.31 | 15.72 | 12.51          | 12.90 | 13.58 | 13.97 | 15.38 |
|                 | 6H   | 13.50            | 13.81 | 14.58 | 14.89 | 16.31 | 13.15          | 13.47 | 14.24 | 14.55 | 15.97 |
|                 | 8H   | 13.72            | 13.99 | 14.80 | 15.07 | 16.53 | 13.37          | 13.65 | 14.46 | 14.72 | 16.19 |