

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: P919861

Luminaire Tested: DFN2DIP-SQ2F0-040D030US935-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P919861  
REPORT IS A COMBINATION OF REPORTS P901293 AND P898215  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ2F0-040D030US935-FLLONL  
Description: 2 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

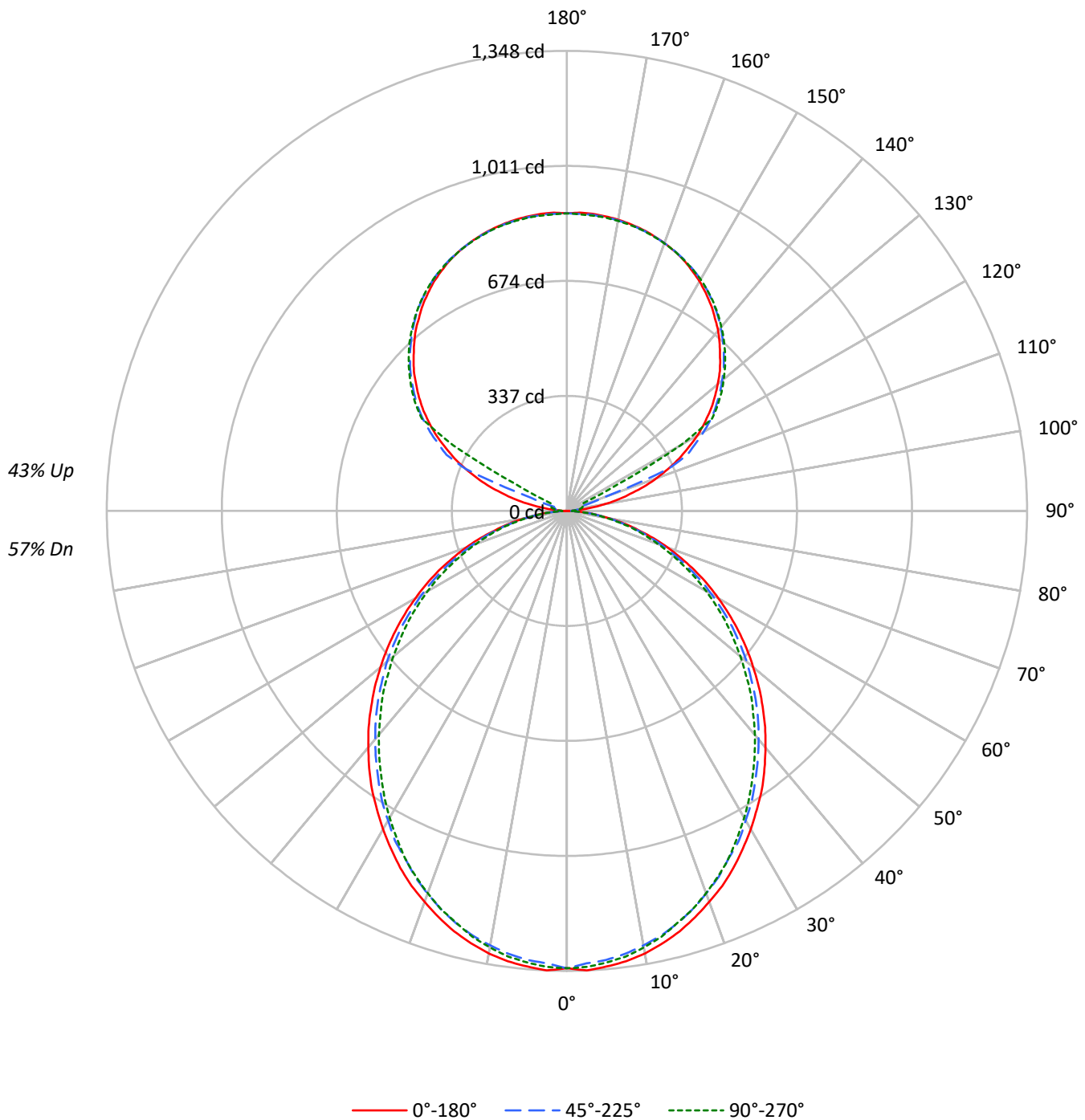
Lumens per Lamp: N/A  
Luminaire Lumens: 5966.7 lumens  
Efficiency: N/A  
Efficacy: 105.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 56.5  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9952  
Total Harmonic Distortion (THDi): 0.069  
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   | 109 | 109 | 109 | 109 | 101 | 101 | 101 | 101 | 87 | 87 | 87 | 74 | 74 | 74 | 63 | 63 | 63 |
| 1   | 99  | 95  | 91  | 88  | 92  | 89  | 85  | 82  | 77 | 74 | 72 | 66 | 64 | 62 | 55 | 54 | 53 |
| 2   | 91  | 83  | 77  | 72  | 84  | 77  | 72  | 67  | 67 | 63 | 59 | 58 | 55 | 52 | 49 | 47 | 45 |
| 3   | 83  | 73  | 66  | 60  | 77  | 68  | 62  | 56  | 59 | 54 | 50 | 51 | 47 | 44 | 43 | 40 | 38 |
| 4   | 76  | 65  | 57  | 50  | 70  | 61  | 53  | 48  | 53 | 47 | 43 | 45 | 41 | 38 | 39 | 35 | 33 |
| 5   | 69  | 58  | 49  | 43  | 64  | 54  | 47  | 41  | 47 | 41 | 37 | 41 | 36 | 33 | 35 | 31 | 29 |
| 6   | 64  | 52  | 44  | 38  | 59  | 49  | 41  | 36  | 43 | 37 | 32 | 37 | 32 | 29 | 32 | 28 | 25 |
| 7   | 59  | 47  | 39  | 33  | 55  | 44  | 37  | 31  | 39 | 33 | 28 | 34 | 29 | 25 | 29 | 25 | 22 |
| 8   | 55  | 43  | 35  | 29  | 51  | 40  | 33  | 28  | 35 | 29 | 25 | 31 | 26 | 23 | 27 | 23 | 20 |
| 9   | 51  | 39  | 31  | 26  | 48  | 37  | 30  | 25  | 32 | 27 | 23 | 28 | 24 | 20 | 25 | 21 | 18 |
| 10  | 48  | 36  | 28  | 24  | 45  | 34  | 27  | 22  | 30 | 24 | 20 | 26 | 22 | 18 | 23 | 19 | 17 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2947 | 2947 | 2947 |
| 5°  | 2946 | 2899 | 2921 |
| 10° | 2917 | 2854 | 2877 |
| 15° | 2869 | 2800 | 2812 |
| 20° | 2806 | 2729 | 2744 |
| 25° | 2743 | 2644 | 2667 |
| 30° | 2666 | 2565 | 2570 |
| 35° | 2592 | 2473 | 2468 |
| 40° | 2502 | 2380 | 2370 |
| 45° | 2411 | 2286 | 2270 |
| 50° | 2313 | 2187 | 2154 |
| 55° | 2209 | 2073 | 2047 |
| 60° | 2091 | 1939 | 1924 |
| 65° | 1962 | 1798 | 1779 |
| 70° | 1798 | 1627 | 1621 |
| 75° | 1574 | 1423 | 1471 |
| 80° | 1299 | 1161 | 1195 |
| 85° | 878  | 733  | 750  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2411 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 126.1  | 2.1       |
| 10°-20°   | 354.9  | 5.9       |
| 20°-30°   | 521.5  | 8.7       |
| 30°-40°   | 605.7  | 10.2      |
| 40°-50°   | 605.0  | 10.1      |
| 50°-60°   | 527.5  | 8.8       |
| 60°-70°   | 389.9  | 6.5       |
| 70°-80°   | 220.6  | 3.7       |
| 80°-90°   | 59.8   | 1.0       |
| 90°-100°  | 28.7   | 0.5       |
| 100°-110° | 107.2  | 1.8       |
| 110°-120° | 284.2  | 4.8       |
| 120°-130° | 471.3  | 7.9       |
| 130°-140° | 500.7  | 8.4       |
| 140°-150° | 465.3  | 7.8       |
| 150°-160° | 374.1  | 6.3       |
| 160°-170° | 241.1  | 4.0       |
| 170°-180° | 83.0   | 1.4       |
| 0°-30°    | 1002.5 | 16.8      |
| 0°-40°    | 1608.3 | 27.0      |
| 0°-60°    | 2740.7 | 45.9      |
| 0°-90°    | 3411.1 | 57.2      |
| 90°-120°  | 420.1  | 7.0       |
| 90°-150°  | 1857.5 | 31.1      |
| 90°-180°  | 2556.0 | 42.8      |
| 0°-180°   | 5966.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1340 | 1340  | 1340 | 1340  | 1340 |      |
| 5°   | 1340 | 1335  | 1321 | 1331  | 1329 | 127  |
| 15°  | 1276 | 1268  | 1251 | 1256  | 1250 | 359  |
| 25°  | 1154 | 1144  | 1122 | 1125  | 1122 | 531  |
| 35°  | 996  | 983   | 963  | 955   | 948  | 622  |
| 45°  | 810  | 802   | 782  | 768   | 763  | 626  |
| 55°  | 614  | 606   | 590  | 575   | 568  | 548  |
| 65°  | 414  | 406   | 393  | 381   | 375  | 409  |
| 75°  | 216  | 214   | 207  | 200   | 202  | 231  |
| 85°  | 53   | 52    | 50   | 46    | 45   | 59   |
| 90°  | 1    | 8     | 13   | 16    | 17   | 6    |
| 95°  | 41   | 20    | 24   | 28    | 27   | 49   |
| 105° | 192  | 211   | 38   | 45    | 48   | 205  |
| 115° | 363  | 373   | 389  | 97    | 52   | 357  |
| 125° | 513  | 521   | 533  | 537   | 539  | 457  |
| 135° | 635  | 645   | 650  | 657   | 655  | 490  |
| 145° | 736  | 736   | 746  | 751   | 747  | 460  |
| 155° | 810  | 805   | 812  | 816   | 811  | 373  |
| 165° | 854  | 850   | 852  | 857   | 852  | 241  |
| 175° | 874  | 869   | 870  | 875   | 869  | 83   |
| 180° | 872  | 872   | 872  | 872   | 872  |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1340.1 | 1340.1 | 1340.1 | 1340.1 | 1340.1 |
| 2.5°   | 1347.9 | 1341.4 | 1327.2 | 1340.1 | 1337.6 |
| 5°     | 1340.1 | 1335.0 | 1320.8 | 1331.0 | 1328.6 |
| 7.5°   | 1331.0 | 1323.4 | 1309.1 | 1319.6 | 1317.0 |
| 10°    | 1317.0 | 1307.9 | 1292.5 | 1302.8 | 1298.9 |
| 12.5°  | 1297.5 | 1289.9 | 1274.4 | 1280.9 | 1278.2 |
| 15°    | 1275.7 | 1268.0 | 1251.2 | 1256.4 | 1250.0 |
| 17.5°  | 1248.6 | 1241.0 | 1224.2 | 1230.5 | 1224.2 |
| 20°    | 1218.9 | 1211.3 | 1193.3 | 1197.0 | 1192.1 |
| 22.5°  | 1189.4 | 1177.8 | 1161.0 | 1161.0 | 1158.4 |
| 25°    | 1154.5 | 1144.3 | 1122.4 | 1124.9 | 1122.4 |
| 27.5°  | 1115.9 | 1106.8 | 1090.2 | 1086.3 | 1079.9 |
| 30°    | 1077.3 | 1066.9 | 1047.7 | 1043.8 | 1038.6 |
| 32.5°  | 1036.0 | 1028.4 | 1007.7 | 1000.0 | 994.7  |
| 35°    | 996.1  | 983.3  | 962.6  | 954.8  | 948.4  |
| 37.5°  | 951.0  | 939.3  | 918.7  | 909.7  | 903.3  |
| 40°    | 904.7  | 894.2  | 873.6  | 862.1  | 857.0  |
| 42.5°  | 859.5  | 849.1  | 828.6  | 815.6  | 808.0  |
| 45°    | 810.5  | 801.6  | 782.1  | 768.1  | 762.8  |
| 47.5°  | 762.8  | 753.8  | 733.2  | 719.0  | 711.4  |
| 50°    | 712.6  | 706.1  | 688.1  | 670.0  | 663.6  |
| 52.5°  | 663.6  | 654.6  | 637.9  | 623.7  | 614.7  |
| 55°    | 613.5  | 605.6  | 590.2  | 574.7  | 568.3  |
| 57.5°  | 563.1  | 556.7  | 539.8  | 524.4  | 519.3  |
| 60°    | 512.8  | 507.7  | 489.7  | 475.5  | 471.7  |
| 62.5°  | 463.9  | 454.9  | 442.0  | 429.1  | 424.0  |
| 65°    | 413.7  | 405.9  | 393.0  | 381.4  | 375.1  |
| 67.5°  | 362.1  | 355.6  | 344.1  | 335.1  | 329.9  |
| 70°    | 314.4  | 309.3  | 297.6  | 288.6  | 283.5  |
| 72.5°  | 265.5  | 260.3  | 253.9  | 244.9  | 241.0  |
| 75°    | 216.5  | 214.0  | 207.4  | 199.8  | 202.3  |
| 77.5°  | 172.6  | 167.5  | 164.9  | 161.0  | 157.2  |
| 80°    | 128.9  | 127.5  | 124.9  | 121.1  | 118.6  |
| 82.5°  | 87.6   | 87.6   | 86.4   | 81.2   | 81.2   |
| 85°    | 52.8   | 51.6   | 50.3   | 46.3   | 45.1   |
| 87.5°  | 23.2   | 20.7   | 18.1   | 14.2   | 12.8   |
| 90°    | 0.6    | 7.6    | 12.6   | 15.8   | 17.0   |
| 92.5°  | 15.8   | 13.3   | 15.2   | 16.4   | 17.0   |
| 95°    | 41.0   | 20.1   | 24.5   | 27.8   | 27.1   |
| 97.5°  | 73.8   | 22.1   | 32.1   | 34.1   | 34.7   |
| 100°   | 111.7  | 25.2   | 36.0   | 41.0   | 42.3   |
| 102.5° | 153.3  | 152.1  | 37.2   | 44.1   | 46.1   |
| 105°   | 191.7  | 210.7  | 38.5   | 45.4   | 48.0   |
| 107.5° | 236.5  | 252.3  | 39.8   | 46.7   | 49.2   |
| 110°   | 279.5  | 292.7  | 110.4  | 47.4   | 49.9   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 319.9 | 331.1 | 320.5 | 48.6  | 50.5  |
| 115°   | 362.7 | 373.4 | 389.2 | 97.1  | 51.7  |
| 117.5° | 399.9 | 412.5 | 423.3 | 333.0 | 167.8 |
| 120°   | 441.5 | 451.0 | 462.4 | 469.9 | 384.8 |
| 122.5° | 476.8 | 487.0 | 499.6 | 503.3 | 504.0 |
| 125°   | 512.8 | 521.0 | 533.0 | 537.4 | 539.3 |
| 127.5° | 545.6 | 554.4 | 564.0 | 570.2 | 570.8 |
| 130°   | 576.5 | 586.7 | 593.6 | 600.5 | 599.9 |
| 132.5° | 608.0 | 616.3 | 623.2 | 628.9 | 628.3 |
| 135°   | 634.6 | 644.7 | 650.3 | 656.7 | 655.4 |
| 137.5° | 662.3 | 669.9 | 676.2 | 682.5 | 680.6 |
| 140°   | 689.4 | 694.5 | 701.4 | 707.1 | 704.0 |
| 142.5° | 712.2 | 716.6 | 724.8 | 729.8 | 726.7 |
| 145°   | 736.2 | 735.5 | 746.2 | 750.6 | 747.4 |
| 147.5° | 756.9 | 755.0 | 765.8 | 768.9 | 766.4 |
| 150°   | 777.1 | 772.7 | 782.8 | 786.5 | 783.4 |
| 152.5° | 794.1 | 789.1 | 798.6 | 802.4 | 798.0 |
| 155°   | 810.5 | 804.9 | 812.4 | 816.2 | 811.2 |
| 157.5° | 823.8 | 818.8 | 824.5 | 828.9 | 823.8 |
| 160°   | 835.2 | 831.4 | 835.2 | 839.0 | 834.5 |
| 162.5° | 845.2 | 841.5 | 844.6 | 849.0 | 843.3 |
| 165°   | 854.0 | 850.3 | 852.2 | 856.6 | 852.2 |
| 167.5° | 861.0 | 857.2 | 859.1 | 863.6 | 857.9 |
| 170°   | 866.7 | 862.9 | 864.2 | 868.6 | 862.9 |
| 172.5° | 870.5 | 866.7 | 868.0 | 872.4 | 866.7 |
| 175°   | 873.6 | 869.2 | 870.5 | 874.9 | 868.6 |
| 177.5° | 874.9 | 870.5 | 871.2 | 875.5 | 869.9 |
| 180°   | 871.8 | 871.8 | 871.8 | 871.8 | 871.8 |

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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 | 11.55            | 12.48 | 12.44 | 13.39 | 14.56 | 11.10          | 12.03 | 12.00 | 12.95 | 14.11 |
|                 | 3H   | 13.19            | 14.03 | 14.10 | 14.95 | 16.14 | 12.70          | 13.54 | 13.61 | 14.46 | 15.65 |
|                 | 4H   | 13.77            | 14.56 | 14.69 | 15.49 | 16.69 | 13.28          | 14.07 | 14.20 | 15.00 | 16.19 |
|                 | 6H   | 14.16            | 14.89 | 15.09 | 15.82 | 17.03 | 13.66          | 14.39 | 14.59 | 15.32 | 16.53 |
|                 | 8H   | 14.26            | 14.95 | 15.20 | 15.90 | 17.11 | 13.76          | 14.45 | 14.70 | 15.40 | 16.61 |
|                 | 12H  | 14.30            | 14.96 | 15.25 | 15.91 | 17.14 | 13.79          | 14.45 | 14.74 | 15.40 | 16.64 |
| 4H              | 2H   | 12.01            | 12.80 | 12.93 | 13.72 | 14.92 | 11.65          | 12.44 | 12.58 | 13.37 | 14.57 |
|                 | 3H   | 13.86            | 14.51 | 14.79 | 15.47 | 16.69 | 13.45          | 14.11 | 14.38 | 15.06 | 16.28 |
|                 | 4H   | 14.56            | 15.16 | 15.50 | 16.11 | 17.35 | 14.13          | 14.73 | 15.08 | 15.69 | 16.93 |
|                 | 6H   | 15.06            | 15.58 | 16.02 | 16.55 | 17.79 | 14.63          | 15.14 | 15.59 | 16.12 | 17.36 |
|                 | 8H   | 15.20            | 15.68 | 16.16 | 16.65 | 17.91 | 14.76          | 15.25 | 15.72 | 16.22 | 17.47 |
|                 | 12H  | 15.27            | 15.70 | 16.25 | 16.69 | 17.95 | 14.82          | 15.26 | 15.80 | 16.24 | 17.50 |
| 8H              | 4H   | 14.75            | 15.23 | 15.71 | 16.20 | 17.46 | 14.37          | 14.85 | 15.33 | 15.83 | 17.08 |
|                 | 6H   | 15.36            | 15.76 | 16.35 | 16.77 | 18.02 | 14.97          | 15.37 | 15.96 | 16.39 | 17.64 |
|                 | 8H   | 15.57            | 15.92 | 16.56 | 16.92 | 18.19 | 15.17          | 15.53 | 16.17 | 16.53 | 17.80 |
|                 | 12H  | 15.69            | 16.00 | 16.69 | 16.99 | 18.31 | 15.28          | 15.59 | 16.28 | 16.58 | 17.90 |
| 12H             | 4H   | 14.73            | 15.17 | 15.72 | 16.16 | 17.42 | 14.36          | 14.80 | 15.35 | 15.79 | 17.05 |
|                 | 6H   | 15.38            | 15.74 | 16.38 | 16.74 | 18.01 | 15.01          | 15.36 | 16.01 | 16.37 | 17.64 |
|                 | 8H   | 15.61            | 15.93 | 16.61 | 16.92 | 18.24 | 15.23          | 15.54 | 16.23 | 16.54 | 17.85 |