

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: P920833

Luminaire Tested: DFN2DIP-TR3F0-070D030US935-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P920833  
REPORT IS A COMBINATION OF REPORTS P901799 AND P898751  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-070D030US935-FLLONL  
Description: 3 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

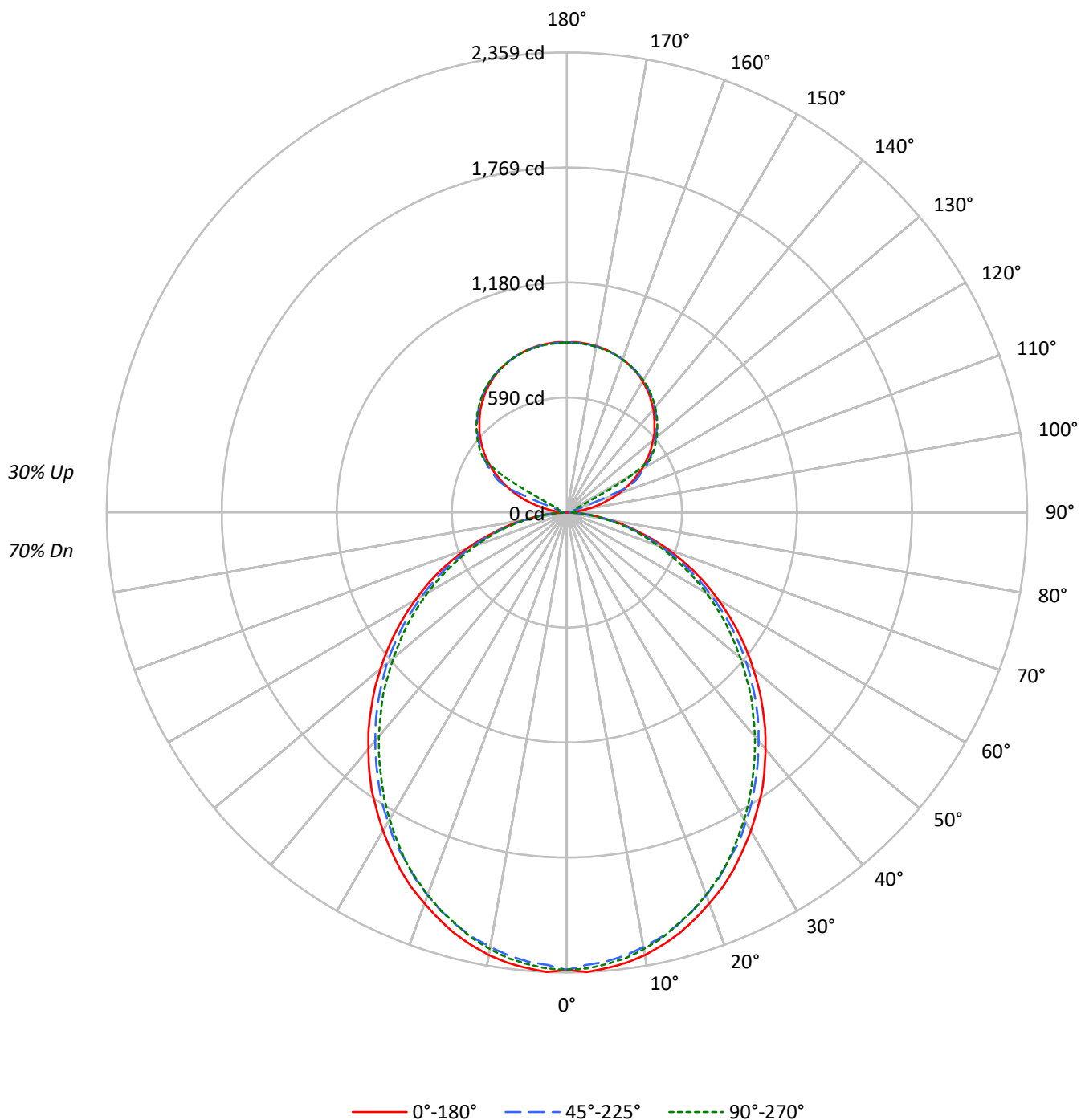
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 8523.9 lumens  
Efficiency: N/A  
Efficacy: 91.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 92.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9971  
Total Harmonic Distortion (THDi): 0.049  
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   | 112 | 112 | 112 | 112 | 106 | 106 | 106 | 106 | 94 | 94 | 94 | 84 | 84 | 84 | 75 | 75 | 75 |
| 1   | 102 | 98  | 94  | 90  | 97  | 93  | 89  | 86  | 83 | 80 | 78 | 74 | 72 | 70 | 66 | 64 | 63 |
| 2   | 93  | 85  | 79  | 74  | 88  | 81  | 75  | 71  | 73 | 68 | 64 | 65 | 62 | 59 | 58 | 55 | 53 |
| 3   | 85  | 75  | 68  | 62  | 80  | 71  | 65  | 59  | 64 | 59 | 54 | 58 | 53 | 50 | 51 | 48 | 45 |
| 4   | 78  | 67  | 58  | 52  | 73  | 63  | 56  | 50  | 57 | 51 | 46 | 51 | 47 | 43 | 46 | 42 | 39 |
| 5   | 72  | 60  | 51  | 45  | 67  | 57  | 49  | 43  | 51 | 45 | 40 | 46 | 41 | 37 | 41 | 37 | 34 |
| 6   | 66  | 54  | 45  | 39  | 62  | 51  | 43  | 38  | 46 | 40 | 35 | 42 | 37 | 33 | 38 | 33 | 30 |
| 7   | 61  | 48  | 40  | 34  | 58  | 46  | 39  | 33  | 42 | 36 | 31 | 38 | 33 | 29 | 34 | 30 | 27 |
| 8   | 57  | 44  | 36  | 31  | 54  | 42  | 35  | 30  | 38 | 32 | 28 | 35 | 30 | 26 | 32 | 27 | 24 |
| 9   | 53  | 40  | 33  | 27  | 50  | 39  | 32  | 27  | 35 | 29 | 25 | 32 | 27 | 23 | 29 | 25 | 22 |
| 10  | 50  | 37  | 30  | 25  | 47  | 36  | 29  | 24  | 33 | 27 | 23 | 30 | 25 | 21 | 27 | 23 | 20 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2922 | 2922 | 2922 |
| 5°  | 2925 | 2879 | 2899 |
| 10° | 2900 | 2838 | 2858 |
| 15° | 2856 | 2789 | 2795 |
| 20° | 2796 | 2721 | 2730 |
| 25° | 2738 | 2641 | 2655 |
| 30° | 2664 | 2567 | 2561 |
| 35° | 2594 | 2479 | 2462 |
| 40° | 2509 | 2390 | 2367 |
| 45° | 2423 | 2301 | 2270 |
| 50° | 2330 | 2207 | 2157 |
| 55° | 2231 | 2099 | 2053 |
| 60° | 2120 | 1971 | 1935 |
| 65° | 1999 | 1838 | 1794 |
| 70° | 1844 | 1675 | 1643 |
| 75° | 1631 | 1481 | 1500 |
| 80° | 1372 | 1232 | 1233 |
| 85° | 970  | 812  | 797  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2423 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 220.7  | 2.6       |
| 10°-20°   | 621.0  | 7.3       |
| 20°-30°   | 912.7  | 10.7      |
| 30°-40°   | 1060.0 | 12.4      |
| 40°-50°   | 1058.7 | 12.4      |
| 50°-60°   | 923.2  | 10.8      |
| 60°-70°   | 682.4  | 8.0       |
| 70°-80°   | 386.1  | 4.5       |
| 80°-90°   | 103.5  | 1.2       |
| 90°-100°  | 28.7   | 0.3       |
| 100°-110° | 107.2  | 1.3       |
| 110°-120° | 284.2  | 3.3       |
| 120°-130° | 471.3  | 5.5       |
| 130°-140° | 500.7  | 5.9       |
| 140°-150° | 465.3  | 5.5       |
| 150°-160° | 374.1  | 4.4       |
| 160°-170° | 241.1  | 2.8       |
| 170°-180° | 83.0   | 1.0       |
| <hr/>     |        |           |
| 0°-30°    | 1754.4 | 20.6      |
| 0°-40°    | 2814.4 | 33.0      |
| 0°-60°    | 4796.3 | 56.3      |
| 0°-90°    | 5968.3 | 70.0      |
| 90°-120°  | 420.1  | 4.9       |
| 90°-150°  | 1857.5 | 21.8      |
| 90°-180°  | 2556.0 | 30.0      |
| 0°-180°   | 8523.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2345 | 2345  | 2345 | 2345  | 2345 |      |
| 5°   | 2345 | 2336  | 2311 | 2329  | 2325 | 223  |
| 15°  | 2232 | 2219  | 2190 | 2199  | 2188 | 629  |
| 25°  | 2020 | 2002  | 1964 | 1969  | 1964 | 930  |
| 35°  | 1743 | 1721  | 1684 | 1671  | 1660 | 1089 |
| 45°  | 1418 | 1403  | 1369 | 1344  | 1335 | 1095 |
| 55°  | 1074 | 1060  | 1033 | 1006  | 994  | 960  |
| 65°  | 724  | 710   | 688  | 668   | 656  | 716  |
| 75°  | 379  | 374   | 363  | 350   | 354  | 404  |
| 85°  | 92   | 90    | 88   | 81    | 79   | 103  |
| 90°  | 1    | 8     | 13   | 16    | 17   | 8    |
| 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°     | 2345.1 | 2345.1 | 2345.1 | 2345.1 | 2345.1 |
| 2.5°   | 2358.8 | 2347.5 | 2322.6 | 2345.1 | 2340.8 |
| 5°     | 2345.1 | 2336.3 | 2311.4 | 2329.3 | 2325.0 |
| 7.5°   | 2329.3 | 2315.9 | 2291.0 | 2309.3 | 2304.7 |
| 10°    | 2304.7 | 2288.9 | 2261.8 | 2279.8 | 2273.1 |
| 12.5°  | 2270.7 | 2257.4 | 2230.3 | 2241.5 | 2237.0 |
| 15°    | 2232.5 | 2219.0 | 2189.6 | 2198.7 | 2187.5 |
| 17.5°  | 2185.0 | 2171.7 | 2142.2 | 2153.5 | 2142.2 |
| 20°    | 2133.1 | 2119.8 | 2088.2 | 2094.9 | 2086.0 |
| 22.5°  | 2081.5 | 2061.1 | 2031.7 | 2031.7 | 2027.1 |
| 25°    | 2020.5 | 2002.5 | 1964.3 | 1968.6 | 1964.3 |
| 27.5°  | 1952.7 | 1937.0 | 1907.8 | 1901.1 | 1889.8 |
| 30°    | 1885.3 | 1867.1 | 1833.4 | 1826.7 | 1817.6 |
| 32.5°  | 1813.0 | 1799.7 | 1763.5 | 1749.9 | 1740.8 |
| 35°    | 1743.2 | 1720.7 | 1684.5 | 1670.9 | 1659.7 |
| 37.5°  | 1664.2 | 1643.9 | 1607.7 | 1592.0 | 1580.7 |
| 40°    | 1583.1 | 1564.9 | 1528.8 | 1508.7 | 1499.6 |
| 42.5°  | 1504.2 | 1486.0 | 1450.1 | 1427.4 | 1413.9 |
| 45°    | 1418.5 | 1402.7 | 1368.7 | 1344.1 | 1335.0 |
| 47.5°  | 1335.0 | 1319.2 | 1283.1 | 1258.2 | 1244.8 |
| 50°    | 1247.0 | 1235.7 | 1204.1 | 1172.6 | 1161.3 |
| 52.5°  | 1161.3 | 1145.6 | 1116.4 | 1091.5 | 1075.6 |
| 55°    | 1073.5 | 1059.9 | 1032.9 | 1005.8 | 994.5  |
| 57.5°  | 985.5  | 974.2  | 944.8  | 917.7  | 908.7  |
| 60°    | 897.4  | 888.5  | 857.0  | 832.2  | 825.4  |
| 62.5°  | 811.7  | 796.0  | 773.5  | 751.0  | 741.9  |
| 65°    | 724.0  | 710.3  | 687.9  | 667.5  | 656.3  |
| 67.5°  | 633.8  | 622.3  | 602.2  | 586.4  | 577.3  |
| 70°    | 550.3  | 541.2  | 520.8  | 505.1  | 496.2  |
| 72.5°  | 464.6  | 455.6  | 444.3  | 428.5  | 421.8  |
| 75°    | 378.8  | 374.4  | 362.9  | 349.6  | 354.1  |
| 77.5°  | 302.2  | 293.1  | 288.5  | 281.8  | 275.2  |
| 80°    | 225.6  | 223.3  | 218.7  | 212.0  | 207.4  |
| 82.5°  | 153.3  | 153.3  | 151.2  | 142.2  | 142.2  |
| 85°    | 92.4   | 90.2   | 88.1   | 81.1   | 79.0   |
| 87.5°  | 40.6   | 36.2   | 31.6   | 24.9   | 22.5   |
| 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 | 12.62            | 13.69 | 13.38 | 14.48 | 15.43 | 12.19          | 13.26 | 12.95 | 14.05 | 15.00 |
|                 | 3H   | 14.28            | 15.25 | 15.06 | 16.05 | 17.03 | 13.81          | 14.78 | 14.59 | 15.58 | 16.56 |
|                 | 4H   | 14.87            | 15.79 | 15.67 | 16.59 | 17.59 | 14.41          | 15.32 | 15.20 | 16.12 | 17.12 |
|                 | 6H   | 15.28            | 16.12 | 16.09 | 16.93 | 17.94 | 14.81          | 15.65 | 15.62 | 16.46 | 17.47 |
|                 | 8H   | 15.39            | 16.19 | 16.20 | 17.02 | 18.03 | 14.92          | 15.72 | 15.73 | 16.55 | 17.56 |
|                 | 12H  | 15.44            | 16.20 | 16.26 | 17.03 | 18.06 | 14.96          | 15.73 | 15.79 | 16.55 | 17.59 |
| 4H              | 2H   | 13.10            | 14.01 | 13.90 | 14.82 | 15.81 | 12.76          | 13.67 | 13.56 | 14.47 | 15.47 |
|                 | 3H   | 14.97            | 15.74 | 15.79 | 16.57 | 17.59 | 14.59          | 15.35 | 15.40 | 16.19 | 17.20 |
|                 | 4H   | 15.69            | 16.38 | 16.52 | 17.22 | 18.26 | 15.29          | 15.98 | 16.11 | 16.82 | 17.86 |
|                 | 6H   | 16.21            | 16.81 | 17.05 | 17.67 | 18.71 | 15.80          | 16.40 | 16.65 | 17.27 | 18.31 |
|                 | 8H   | 16.36            | 16.92 | 17.20 | 17.78 | 18.83 | 15.95          | 16.51 | 16.80 | 17.37 | 18.43 |
|                 | 12H  | 16.44            | 16.94 | 17.30 | 17.82 | 18.88 | 16.02          | 16.53 | 16.89 | 17.41 | 18.47 |
| 8H              | 4H   | 15.90            | 16.46 | 16.74 | 17.32 | 18.37 | 15.54          | 16.10 | 16.39 | 16.96 | 18.02 |
|                 | 6H   | 16.53            | 16.99 | 17.40 | 17.89 | 18.95 | 16.17          | 16.64 | 17.04 | 17.53 | 18.59 |
|                 | 8H   | 16.75            | 17.16 | 17.63 | 18.05 | 19.13 | 16.38          | 16.79 | 17.27 | 17.69 | 18.76 |
|                 | 12H  | 16.88            | 17.24 | 17.77 | 18.13 | 19.26 | 16.50          | 16.87 | 17.39 | 17.75 | 18.88 |
| 12H             | 4H   | 15.89            | 16.40 | 16.76 | 17.28 | 18.34 | 15.55          | 16.05 | 16.41 | 16.93 | 17.99 |
|                 | 6H   | 16.56            | 16.97 | 17.44 | 17.87 | 18.94 | 16.21          | 16.62 | 17.10 | 17.52 | 18.59 |
|                 | 8H   | 16.80            | 17.17 | 17.69 | 18.05 | 19.18 | 16.45          | 16.82 | 17.34 | 17.70 | 18.83 |