

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: P920861

Luminaire Tested: DFN2DIP-TR3F0-080D030US935-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P920861  
REPORT IS A COMBINATION OF REPORTS P901802 AND P898751  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-080D030US935-RLLONL  
Description: 3 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

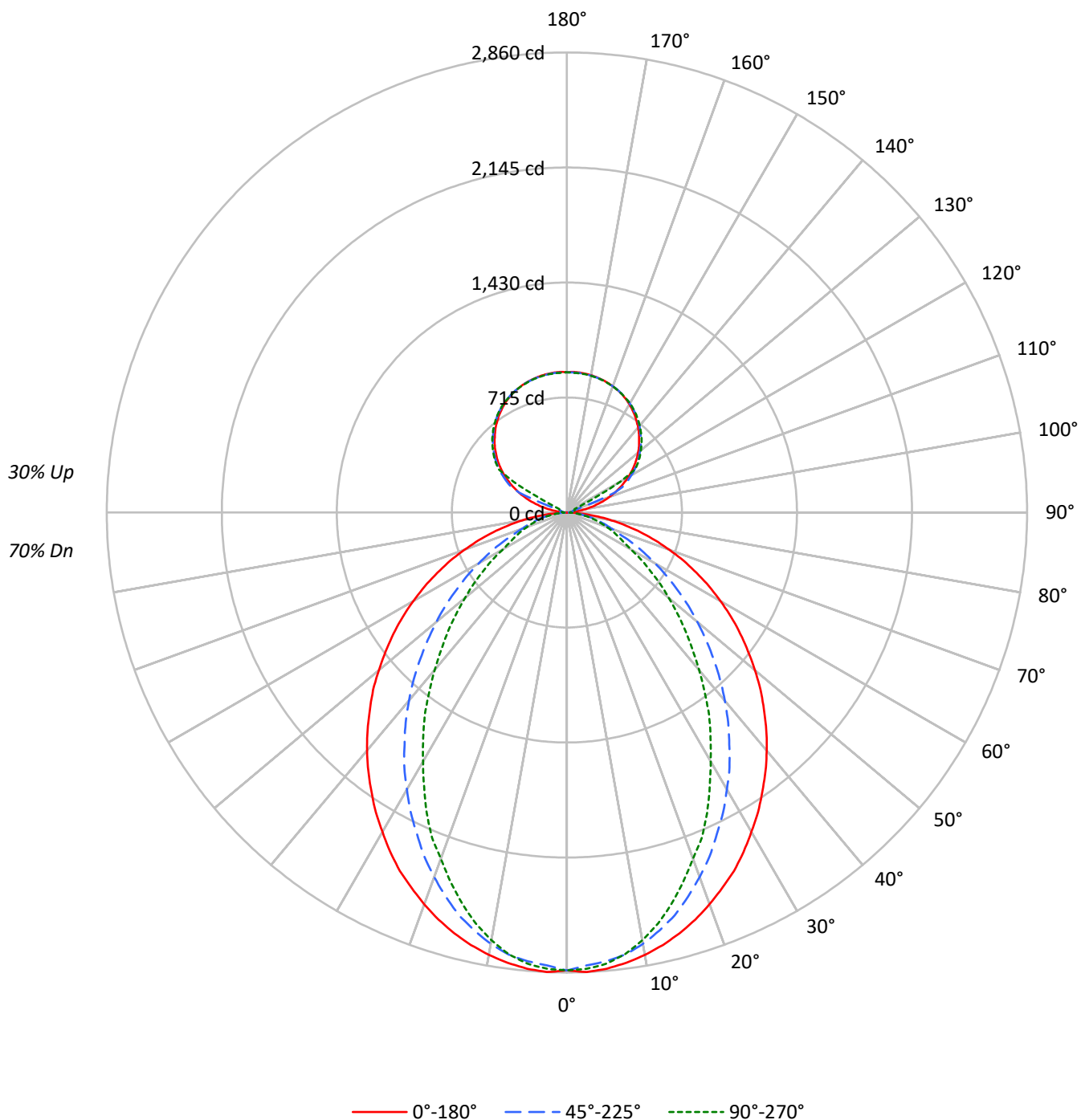
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 8412.0 lumens  
Efficiency: N/A  
Efficacy: 81.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 103.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9968  
Total Harmonic Distortion (THDi): 0.064  
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 | 74 | 74 | 74 |
| 1   | 103 | 99  | 95  | 92  | 97  | 93  | 90  | 87  | 84 | 81 | 79 | 75 | 73 | 71 | 67 | 65 | 64 |
| 2   | 94  | 87  | 81  | 76  | 89  | 83  | 77  | 73  | 74 | 70 | 67 | 67 | 63 | 61 | 59 | 57 | 55 |
| 3   | 86  | 77  | 70  | 64  | 82  | 73  | 67  | 62  | 66 | 61 | 57 | 59 | 55 | 52 | 53 | 50 | 48 |
| 4   | 79  | 69  | 61  | 55  | 75  | 65  | 58  | 53  | 59 | 54 | 49 | 53 | 49 | 45 | 48 | 45 | 42 |
| 5   | 73  | 62  | 54  | 48  | 69  | 59  | 52  | 46  | 53 | 47 | 43 | 48 | 44 | 40 | 44 | 40 | 37 |
| 6   | 68  | 56  | 48  | 42  | 64  | 53  | 46  | 41  | 49 | 42 | 38 | 44 | 39 | 35 | 40 | 36 | 33 |
| 7   | 63  | 51  | 43  | 37  | 60  | 49  | 41  | 36  | 44 | 38 | 34 | 40 | 35 | 32 | 37 | 32 | 29 |
| 8   | 59  | 46  | 39  | 33  | 56  | 44  | 37  | 32  | 41 | 35 | 30 | 37 | 32 | 28 | 34 | 30 | 27 |
| 9   | 55  | 43  | 35  | 30  | 52  | 41  | 34  | 29  | 37 | 32 | 27 | 34 | 29 | 26 | 31 | 27 | 24 |
| 10  | 51  | 39  | 32  | 27  | 49  | 38  | 31  | 26  | 35 | 29 | 25 | 32 | 27 | 24 | 29 | 25 | 22 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3547 | 3547 | 3547 |
| 5°  | 3551 | 3488 | 3511 |
| 10° | 3514 | 3417 | 3395 |
| 15° | 3464 | 3301 | 3216 |
| 20° | 3398 | 3143 | 2997 |
| 25° | 3330 | 2965 | 2786 |
| 30° | 3240 | 2784 | 2519 |
| 35° | 3152 | 2589 | 2285 |
| 40° | 3062 | 2388 | 2017 |
| 45° | 2957 | 2166 | 1774 |
| 50° | 2849 | 1941 | 1536 |
| 55° | 2736 | 1702 | 1309 |
| 60° | 2605 | 1452 | 1075 |
| 65° | 2454 | 1198 | 965  |
| 70° | 2271 | 961  | 870  |
| 75° | 2041 | 841  | 786  |
| 80° | 1708 | 696  | 674  |
| 85° | 1162 | 451  | 493  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 2957 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 266.8  | 3.2       |
| 10°-20°   | 732.4  | 8.7       |
| 20°-30°   | 1028.3 | 12.2      |
| 30°-40°   | 1120.9 | 13.3      |
| 40°-50°   | 1030.3 | 12.2      |
| 50°-60°   | 809.1  | 9.6       |
| 60°-70°   | 526.6  | 6.3       |
| 70°-80°   | 271.1  | 3.2       |
| 80°-90°   | 70.7   | 0.8       |
| 90°-100°  | 28.7   | 0.3       |
| 100°-110° | 107.2  | 1.3       |
| 110°-120° | 284.2  | 3.4       |
| 120°-130° | 471.3  | 5.6       |
| 130°-140° | 500.7  | 6.0       |
| 140°-150° | 465.3  | 5.5       |
| 150°-160° | 374.1  | 4.4       |
| 160°-170° | 241.1  | 2.9       |
| 170°-180° | 83.0   | 1.0       |
| 0°-30°    | 2027.6 | 24.1      |
| 0°-40°    | 3148.5 | 37.4      |
| 0°-60°    | 4987.8 | 59.3      |
| 0°-90°    | 5856.3 | 69.6      |
| 90°-120°  | 420.1  | 5.0       |
| 90°-150°  | 1857.5 | 22.1      |
| 90°-180°  | 2556.0 | 30.4      |
| 0°-180°   | 8412.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2847 | 2847  | 2847 | 2847  | 2847 |      |
| 5°   | 2847 | 2834  | 2800 | 2824  | 2816 | 270  |
| 15°  | 2708 | 2679  | 2592 | 2543  | 2517 | 763  |
| 25°  | 2458 | 2375  | 2205 | 2100  | 2061 | 1130 |
| 35°  | 2118 | 1986  | 1760 | 1597  | 1540 | 1326 |
| 45°  | 1731 | 1559  | 1288 | 1105  | 1043 | 1337 |
| 55°  | 1316 | 1116  | 837  | 683   | 634  | 1176 |
| 65°  | 889  | 680   | 448  | 361   | 353  | 881  |
| 75°  | 474  | 294   | 206  | 188   | 186  | 501  |
| 85°  | 111  | 57    | 49   | 49    | 49   | 127  |
| 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°     | 2846.8 | 2846.8 | 2846.8 | 2846.8 | 2846.8 |
| 2.5°   | 2859.6 | 2846.8 | 2818.4 | 2844.3 | 2839.1 |
| 5°     | 2846.8 | 2834.0 | 2800.3 | 2823.6 | 2815.9 |
| 7.5°   | 2823.6 | 2808.2 | 2772.2 | 2782.3 | 2769.4 |
| 10°    | 2792.6 | 2774.7 | 2723.3 | 2715.3 | 2700.0 |
| 12.5°  | 2754.2 | 2730.9 | 2661.2 | 2645.8 | 2617.4 |
| 15°    | 2707.7 | 2679.3 | 2591.8 | 2542.9 | 2517.1 |
| 17.5°  | 2653.5 | 2612.3 | 2504.0 | 2447.5 | 2406.1 |
| 20°    | 2591.8 | 2540.1 | 2411.4 | 2347.2 | 2290.3 |
| 22.5°  | 2524.8 | 2465.5 | 2316.0 | 2228.5 | 2189.9 |
| 25°    | 2457.8 | 2375.3 | 2205.3 | 2099.8 | 2061.0 |
| 27.5°  | 2378.0 | 2290.3 | 2102.2 | 1981.2 | 1921.8 |
| 30°    | 2293.0 | 2194.9 | 1988.8 | 1857.6 | 1787.9 |
| 32.5°  | 2210.4 | 2091.9 | 1880.8 | 1726.1 | 1661.6 |
| 35°    | 2117.8 | 1986.3 | 1759.7 | 1597.4 | 1540.5 |
| 37.5°  | 2027.6 | 1885.8 | 1646.3 | 1468.3 | 1404.1 |
| 40°    | 1932.3 | 1777.8 | 1527.7 | 1344.8 | 1277.8 |
| 42.5°  | 1834.4 | 1669.6 | 1409.3 | 1218.6 | 1154.3 |
| 45°    | 1731.3 | 1558.6 | 1288.2 | 1105.1 | 1043.4 |
| 47.5°  | 1633.5 | 1450.6 | 1172.3 | 989.2  | 932.6  |
| 50°    | 1525.2 | 1342.4 | 1058.9 | 881.0  | 827.1  |
| 52.5°  | 1419.4 | 1226.1 | 950.6  | 780.7  | 731.8  |
| 55°    | 1316.4 | 1115.5 | 837.2  | 682.8  | 633.9  |
| 57.5°  | 1210.9 | 1004.8 | 736.9  | 592.6  | 551.3  |
| 60°    | 1102.6 | 896.6  | 631.1  | 499.9  | 458.7  |
| 62.5°  | 997.1  | 791.0  | 541.0  | 417.4  | 396.9  |
| 65°    | 888.9  | 680.0  | 448.2  | 360.8  | 352.8  |
| 67.5°  | 785.8  | 577.0  | 360.8  | 316.8  | 309.2  |
| 70°    | 677.6  | 476.7  | 298.8  | 273.0  | 262.7  |
| 72.5°  | 574.5  | 383.7  | 249.9  | 229.4  | 224.1  |
| 75°    | 474.0  | 293.6  | 206.1  | 188.0  | 185.6  |
| 77.5°  | 373.7  | 208.5  | 162.4  | 152.0  | 146.8  |
| 80°    | 280.7  | 149.6  | 123.6  | 113.4  | 113.4  |
| 82.5°  | 195.7  | 100.6  | 85.0   | 79.8   | 79.8   |
| 85°    | 110.7  | 56.6   | 48.9   | 48.9   | 48.9   |
| 87.5°  | 41.2   | 20.5   | 20.5   | 18.1   | 18.1   |
| 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 | 13.16            | 14.18 | 13.93 | 14.97 | 15.93 | 9.13           | 10.16 | 9.91  | 10.95 | 11.91 |
|                 | 3H   | 14.84            | 15.75 | 15.63 | 16.56 | 17.55 | 10.33          | 11.25 | 11.12 | 12.05 | 13.04 |
|                 | 4H   | 15.45            | 16.31 | 16.26 | 17.12 | 18.13 | 10.79          | 11.65 | 11.59 | 12.46 | 13.46 |
|                 | 6H   | 15.87            | 16.67 | 16.69 | 17.49 | 18.50 | 11.11          | 11.91 | 11.93 | 12.72 | 13.74 |
|                 | 8H   | 16.00            | 16.76 | 16.83 | 17.59 | 18.61 | 11.21          | 11.96 | 12.03 | 12.80 | 13.82 |
|                 | 12H  | 16.07            | 16.78 | 16.90 | 17.62 | 18.66 | 11.25          | 11.97 | 12.09 | 12.80 | 13.85 |
| 4H              | 2H   | 13.20            | 14.06 | 14.01 | 14.87 | 15.87 | 9.75           | 10.61 | 10.56 | 11.42 | 12.42 |
|                 | 3H   | 15.03            | 15.75 | 15.86 | 16.59 | 17.61 | 11.11          | 11.82 | 11.93 | 12.67 | 13.69 |
|                 | 4H   | 15.73            | 16.37 | 16.56 | 17.22 | 18.27 | 11.66          | 12.31 | 12.49 | 13.15 | 14.20 |
|                 | 6H   | 16.24            | 16.80 | 17.09 | 17.67 | 18.72 | 12.08          | 12.64 | 12.93 | 13.51 | 14.56 |
|                 | 8H   | 16.42            | 16.94 | 17.27 | 17.80 | 18.87 | 12.21          | 12.73 | 13.07 | 13.60 | 14.66 |
|                 | 12H  | 16.51            | 16.98 | 17.39 | 17.87 | 18.94 | 12.28          | 12.75 | 13.16 | 13.63 | 14.71 |
| 8H              | 4H   | 15.71            | 16.23 | 16.56 | 17.09 | 18.16 | 11.95          | 12.47 | 12.80 | 13.33 | 14.40 |
|                 | 6H   | 16.27            | 16.70 | 17.15 | 17.61 | 18.67 | 12.46          | 12.90 | 13.35 | 13.80 | 14.87 |
|                 | 8H   | 16.48            | 16.86 | 17.37 | 17.76 | 18.85 | 12.65          | 13.03 | 13.55 | 13.93 | 15.02 |
|                 | 12H  | 16.62            | 16.96 | 17.52 | 17.85 | 18.99 | 12.77          | 13.11 | 13.67 | 14.00 | 15.14 |
| 12H             | 4H   | 15.67            | 16.14 | 16.54 | 17.02 | 18.09 | 11.96          | 12.43 | 12.83 | 13.31 | 14.38 |
|                 | 6H   | 16.24            | 16.63 | 17.14 | 17.53 | 18.61 | 12.51          | 12.90 | 13.41 | 13.80 | 14.88 |
|                 | 8H   | 16.47            | 16.80 | 17.36 | 17.69 | 18.83 | 12.73          | 13.06 | 13.62 | 13.95 | 15.09 |