

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: P915404

Luminaire Tested: DFN2DIP-TR3F0-080D030US927-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P915404  
REPORT IS A COMBINATION OF REPORTS P900282 AND P897195  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-080D030US927-RLLFLL  
Description: 3 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

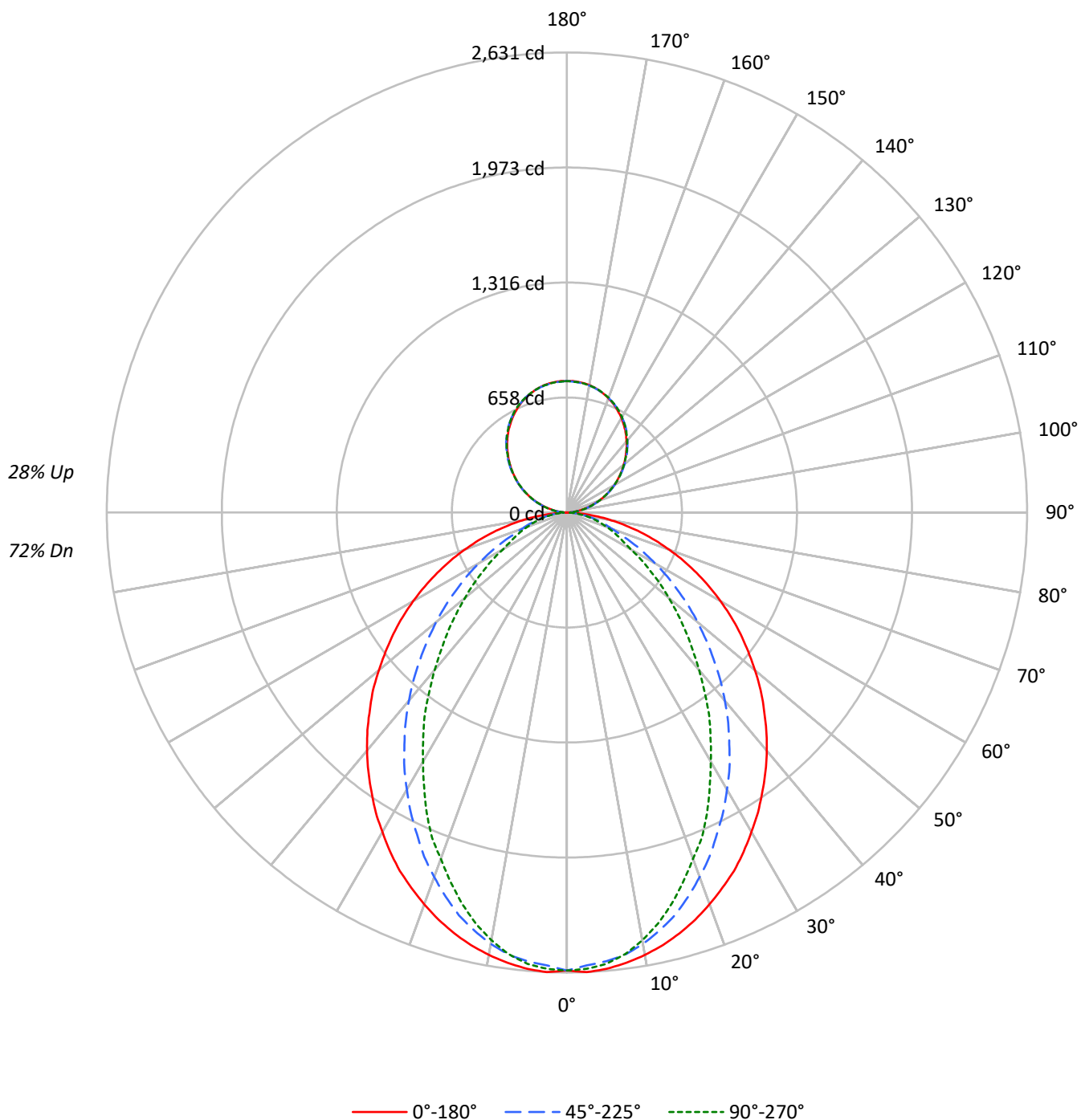
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 7490.1 lumens  
Efficiency: N/A  
Efficacy: 72.3 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 | 96 | 96 | 96 | 85 | 85 | 85 | 76 | 76 | 76 |
| 1   | 103 | 99  | 95  | 92  | 98  | 94  | 91  | 88  | 85 | 82 | 80 | 76 | 75 | 73 | 69 | 67 | 66 |
| 2   | 95  | 87  | 81  | 76  | 90  | 83  | 78  | 73  | 75 | 71 | 67 | 68 | 65 | 62 | 61 | 59 | 57 |
| 3   | 87  | 78  | 70  | 65  | 82  | 74  | 67  | 62  | 67 | 62 | 58 | 61 | 57 | 53 | 55 | 52 | 49 |
| 4   | 80  | 69  | 61  | 55  | 76  | 66  | 59  | 53  | 60 | 54 | 50 | 55 | 50 | 46 | 50 | 46 | 43 |
| 5   | 74  | 62  | 54  | 48  | 70  | 59  | 52  | 47  | 54 | 48 | 44 | 49 | 45 | 41 | 45 | 41 | 38 |
| 6   | 68  | 56  | 48  | 42  | 65  | 54  | 46  | 41  | 49 | 43 | 39 | 45 | 40 | 36 | 41 | 37 | 34 |
| 7   | 63  | 51  | 43  | 38  | 60  | 49  | 42  | 36  | 45 | 39 | 34 | 41 | 36 | 32 | 38 | 33 | 30 |
| 8   | 59  | 47  | 39  | 34  | 56  | 45  | 38  | 33  | 41 | 35 | 31 | 38 | 33 | 29 | 35 | 31 | 27 |
| 9   | 55  | 43  | 35  | 30  | 52  | 41  | 34  | 30  | 38 | 32 | 28 | 35 | 30 | 26 | 32 | 28 | 25 |
| 10  | 52  | 40  | 32  | 28  | 49  | 38  | 31  | 27  | 35 | 29 | 25 | 33 | 28 | 24 | 30 | 26 | 23 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3264 | 3264 | 3264 |
| 5°  | 3267 | 3209 | 3230 |
| 10° | 3233 | 3144 | 3123 |
| 15° | 3187 | 3037 | 2959 |
| 20° | 3126 | 2891 | 2758 |
| 25° | 3064 | 2728 | 2563 |
| 30° | 2981 | 2562 | 2318 |
| 35° | 2900 | 2383 | 2102 |
| 40° | 2817 | 2197 | 1856 |
| 45° | 2721 | 1993 | 1632 |
| 50° | 2622 | 1786 | 1414 |
| 55° | 2518 | 1566 | 1204 |
| 60° | 2397 | 1336 | 989  |
| 65° | 2258 | 1102 | 888  |
| 70° | 2090 | 884  | 800  |
| 75° | 1878 | 774  | 724  |
| 80° | 1571 | 641  | 620  |
| 85° | 1070 | 415  | 454  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2721 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 245.5  | 3.3       |
| 10°-20°   | 673.9  | 9.0       |
| 20°-30°   | 946.1  | 12.6      |
| 30°-40°   | 1031.3 | 13.8      |
| 40°-50°   | 947.9  | 12.7      |
| 50°-60°   | 744.4  | 9.9       |
| 60°-70°   | 484.5  | 6.5       |
| 70°-80°   | 249.4  | 3.3       |
| 80°-90°   | 65.8   | 0.9       |
| 90°-100°  | 46.5   | 0.6       |
| 100°-110° | 147.8  | 2.0       |
| 110°-120° | 252.9  | 3.4       |
| 120°-130° | 332.6  | 4.4       |
| 130°-140° | 373.3  | 5.0       |
| 140°-150° | 366.1  | 4.9       |
| 150°-160° | 307.1  | 4.1       |
| 160°-170° | 203.7  | 2.7       |
| 170°-180° | 71.2   | 1.0       |
| 0°-30°    | 1865.5 | 24.9      |
| 0°-40°    | 2896.8 | 38.7      |
| 0°-60°    | 4589.2 | 61.3      |
| 0°-90°    | 5389.0 | 71.9      |
| 90°-120°  | 447.2  | 6.0       |
| 90°-150°  | 1519.2 | 20.3      |
| 90°-180°  | 2101.0 | 28.1      |
| 0°-180°   | 7490.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2619 | 2619  | 2619 | 2619  | 2619 |      |
| 5°   | 2619 | 2608  | 2576 | 2598  | 2591 | 248  |
| 15°  | 2491 | 2465  | 2385 | 2340  | 2316 | 702  |
| 25°  | 2261 | 2186  | 2029 | 1932  | 1896 | 1040 |
| 35°  | 1948 | 1828  | 1619 | 1470  | 1417 | 1220 |
| 45°  | 1593 | 1434  | 1185 | 1017  | 960  | 1230 |
| 55°  | 1211 | 1026  | 770  | 628   | 583  | 1082 |
| 65°  | 818  | 626   | 412  | 332   | 325  | 811  |
| 75°  | 436  | 270   | 190  | 173   | 171  | 461  |
| 85°  | 102  | 52    | 45   | 45    | 45   | 117  |
| 90°  | 1    | 8     | 22   | 21    | 22   | 7    |
| 95°  | 33   | 40    | 41   | 41    | 40   | 37   |
| 105° | 136  | 138   | 140  | 141   | 141  | 144  |
| 115° | 254  | 257   | 256  | 256   | 254  | 251  |
| 125° | 369  | 375   | 373  | 371   | 370  | 330  |
| 135° | 477  | 484   | 486  | 485   | 483  | 369  |
| 145° | 580  | 584   | 588  | 588   | 586  | 362  |
| 155° | 663  | 665   | 667  | 670   | 668  | 305  |
| 165° | 721  | 720   | 720  | 725   | 722  | 203  |
| 175° | 750  | 748   | 747  | 752   | 748  | 71   |
| 180° | 752  | 752   | 752  | 752   | 752  |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2619.3 | 2619.3 | 2619.3 | 2619.3 | 2619.3 |
| 2.5°   | 2631.1 | 2619.3 | 2593.1 | 2617.0 | 2612.2 |
| 5°     | 2619.3 | 2607.5 | 2576.5 | 2597.9 | 2590.8 |
| 7.5°   | 2597.9 | 2583.8 | 2550.6 | 2559.9 | 2548.1 |
| 10°    | 2569.4 | 2552.9 | 2505.6 | 2498.3 | 2484.2 |
| 12.5°  | 2534.0 | 2512.6 | 2448.5 | 2434.4 | 2408.2 |
| 15°    | 2491.3 | 2465.1 | 2384.6 | 2339.6 | 2315.9 |
| 17.5°  | 2441.4 | 2403.5 | 2303.9 | 2251.9 | 2213.8 |
| 20°    | 2384.6 | 2337.1 | 2218.7 | 2159.6 | 2107.2 |
| 22.5°  | 2323.0 | 2268.4 | 2130.9 | 2050.4 | 2014.9 |
| 25°    | 2261.4 | 2185.5 | 2029.0 | 1932.0 | 1896.2 |
| 27.5°  | 2187.9 | 2107.2 | 1934.2 | 1822.8 | 1768.2 |
| 30°    | 2109.7 | 2019.4 | 1829.9 | 1709.1 | 1645.0 |
| 32.5°  | 2033.8 | 1924.7 | 1730.5 | 1588.2 | 1528.8 |
| 35°    | 1948.5 | 1827.6 | 1619.1 | 1469.7 | 1417.4 |
| 37.5°  | 1865.5 | 1735.0 | 1514.7 | 1351.0 | 1291.9 |
| 40°    | 1777.8 | 1635.7 | 1405.6 | 1237.3 | 1175.7 |
| 42.5°  | 1687.7 | 1536.1 | 1296.6 | 1121.2 | 1062.0 |
| 45°    | 1592.9 | 1434.0 | 1185.3 | 1016.8 | 960.0  |
| 47.5°  | 1502.9 | 1334.7 | 1078.6 | 910.1  | 858.1  |
| 50°    | 1403.3 | 1235.1 | 974.3  | 810.6  | 761.0  |
| 52.5°  | 1306.0 | 1128.1 | 874.6  | 718.3  | 673.3  |
| 55°    | 1211.2 | 1026.3 | 770.3  | 628.2  | 583.2  |
| 57.5°  | 1114.1 | 924.5  | 678.0  | 545.3  | 507.2  |
| 60°    | 1014.5 | 824.9  | 580.7  | 459.9  | 422.0  |
| 62.5°  | 917.4  | 727.8  | 497.7  | 384.0  | 365.2  |
| 65°    | 817.8  | 625.7  | 412.4  | 332.0  | 324.6  |
| 67.5°  | 723.0  | 530.9  | 332.0  | 291.4  | 284.5  |
| 70°    | 623.4  | 438.6  | 274.9  | 251.2  | 241.7  |
| 72.5°  | 528.6  | 353.1  | 229.9  | 211.0  | 206.2  |
| 75°    | 436.1  | 270.1  | 189.6  | 173.0  | 170.8  |
| 77.5°  | 343.8  | 191.9  | 149.4  | 139.8  | 135.1  |
| 80°    | 258.3  | 137.6  | 113.7  | 104.3  | 104.3  |
| 82.5°  | 180.1  | 92.5   | 78.2   | 73.4   | 73.4   |
| 85°    | 101.9  | 52.0   | 45.0   | 45.0   | 45.0   |
| 87.5°  | 37.9   | 18.9   | 18.9   | 16.6   | 16.6   |
| 90°    | 0.7    | 8.2    | 22.2   | 20.8   | 21.5   |
| 92.5°  | 14.0   | 19.0   | 19.7   | 20.4   | 20.4   |
| 95°    | 33.1   | 39.5   | 40.6   | 40.6   | 39.5   |
| 97.5°  | 55.1   | 60.9   | 63.5   | 63.5   | 63.5   |
| 100°   | 80.4   | 85.6   | 87.5   | 87.5   | 86.8   |
| 102.5° | 107.2  | 111.1  | 113.5  | 114.2  | 113.5  |
| 105°   | 136.4  | 138.2  | 139.6  | 140.7  | 140.7  |
| 107.5° | 165.4  | 168.1  | 168.1  | 168.6  | 165.4  |
| 110°   | 193.5  | 197.2  | 197.2  | 197.2  | 195.4  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 223.9 | 227.8 | 227.0 | 225.2 | 223.9 |
| 115°   | 253.8 | 257.4 | 256.3 | 255.6 | 253.8 |
| 117.5° | 283.4 | 288.4 | 285.3 | 283.4 | 281.6 |
| 120°   | 313.4 | 318.4 | 313.4 | 313.4 | 311.3 |
| 122.5° | 340.6 | 346.9 | 343.7 | 341.9 | 340.6 |
| 125°   | 369.2 | 374.8 | 373.0 | 370.9 | 370.3 |
| 127.5° | 397.0 | 404.0 | 401.6 | 398.8 | 397.0 |
| 130°   | 423.0 | 431.2 | 430.1 | 428.7 | 426.2 |
| 132.5° | 452.3 | 458.6 | 459.1 | 455.9 | 454.1 |
| 135°   | 477.4 | 484.4 | 485.8 | 485.1 | 483.3 |
| 137.5° | 505.5 | 511.2 | 512.3 | 511.9 | 509.1 |
| 140°   | 530.2 | 535.9 | 539.1 | 539.1 | 536.5 |
| 142.5° | 555.6 | 561.3 | 563.1 | 563.8 | 561.3 |
| 145°   | 579.6 | 584.2 | 587.8 | 588.4 | 586.0 |
| 147.5° | 601.2 | 606.8 | 609.5 | 610.7 | 608.2 |
| 150°   | 623.4 | 627.2 | 629.7 | 631.8 | 629.7 |
| 152.5° | 643.1 | 646.9 | 650.1 | 652.6 | 650.1 |
| 155°   | 662.8 | 664.6 | 666.6 | 669.8 | 667.8 |
| 157.5° | 679.8 | 681.1 | 682.3 | 686.8 | 683.7 |
| 160°   | 695.0 | 696.3 | 697.0 | 700.8 | 698.1 |
| 162.5° | 709.0 | 709.0 | 709.7 | 714.0 | 710.8 |
| 165°   | 721.0 | 720.3 | 720.3 | 724.8 | 721.7 |
| 167.5° | 731.9 | 729.8 | 729.8 | 734.4 | 731.2 |
| 170°   | 740.1 | 738.2 | 737.6 | 742.1 | 738.2 |
| 172.5° | 745.7 | 743.9 | 743.2 | 747.7 | 743.9 |
| 175°   | 750.3 | 748.5 | 747.1 | 751.6 | 747.7 |
| 177.5° | 752.7 | 750.9 | 749.6 | 753.4 | 749.6 |
| 180°   | 751.6 | 751.6 | 751.6 | 751.6 | 751.6 |

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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 | 13.05            | 14.10 | 13.80 | 14.86 | 15.78 | 9.03           | 10.07 | 9.78  | 10.84 | 11.76 |
|                 | 3H   | 14.73            | 15.67 | 15.50 | 16.45 | 17.40 | 10.22          | 11.16 | 10.99 | 11.94 | 12.89 |
|                 | 4H   | 15.34            | 16.23 | 16.13 | 17.01 | 17.98 | 10.68          | 11.56 | 11.46 | 12.35 | 13.32 |
|                 | 6H   | 15.77            | 16.58 | 16.56 | 17.38 | 18.36 | 11.01          | 11.82 | 11.80 | 12.62 | 13.59 |
|                 | 8H   | 15.90            | 16.67 | 16.70 | 17.49 | 18.47 | 11.10          | 11.88 | 11.91 | 12.69 | 13.67 |
|                 | 12H  | 15.96            | 16.70 | 16.77 | 17.51 | 18.51 | 11.15          | 11.89 | 11.96 | 12.69 | 13.70 |
| 4H              | 2H   | 13.09            | 13.98 | 13.88 | 14.76 | 15.73 | 9.64           | 10.53 | 10.43 | 11.31 | 12.28 |
|                 | 3H   | 14.93            | 15.66 | 15.73 | 16.48 | 17.46 | 11.00          | 11.74 | 11.80 | 12.56 | 13.54 |
|                 | 4H   | 15.62            | 16.29 | 16.43 | 17.11 | 18.12 | 11.56          | 12.22 | 12.37 | 13.04 | 14.05 |
|                 | 6H   | 16.14            | 16.72 | 16.97 | 17.56 | 18.58 | 11.98          | 12.56 | 12.81 | 13.40 | 14.42 |
|                 | 8H   | 16.31            | 16.85 | 17.15 | 17.69 | 18.72 | 12.11          | 12.65 | 12.94 | 13.49 | 14.51 |
|                 | 12H  | 16.41            | 16.90 | 17.27 | 17.76 | 18.79 | 12.18          | 12.66 | 13.03 | 13.52 | 14.56 |
| 8H              | 4H   | 15.61            | 16.14 | 16.44 | 16.98 | 18.01 | 11.85          | 12.38 | 12.68 | 13.22 | 14.25 |
|                 | 6H   | 16.17            | 16.61 | 17.03 | 17.49 | 18.52 | 12.36          | 12.81 | 13.22 | 13.69 | 14.72 |
|                 | 8H   | 16.38            | 16.77 | 17.25 | 17.65 | 18.70 | 12.55          | 12.95 | 13.42 | 13.82 | 14.87 |
|                 | 12H  | 16.52            | 16.87 | 17.39 | 17.74 | 18.84 | 12.68          | 13.02 | 13.55 | 13.89 | 14.99 |
| 12H             | 4H   | 15.57            | 16.05 | 16.42 | 16.91 | 17.94 | 11.86          | 12.34 | 12.71 | 13.20 | 14.23 |
|                 | 6H   | 16.14            | 16.54 | 17.02 | 17.42 | 18.46 | 12.41          | 12.81 | 13.28 | 13.68 | 14.73 |
|                 | 8H   | 16.37            | 16.72 | 17.24 | 17.58 | 18.68 | 12.63          | 12.97 | 13.50 | 13.84 | 14.94 |