

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: P915430

Luminaire Tested: DFN2DIP-TR3F0-090D030US927-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P915430  
REPORT IS A COMBINATION OF REPORTS P900284 AND P897195  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-090D030US927-RLLFLL  
Description: 3 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

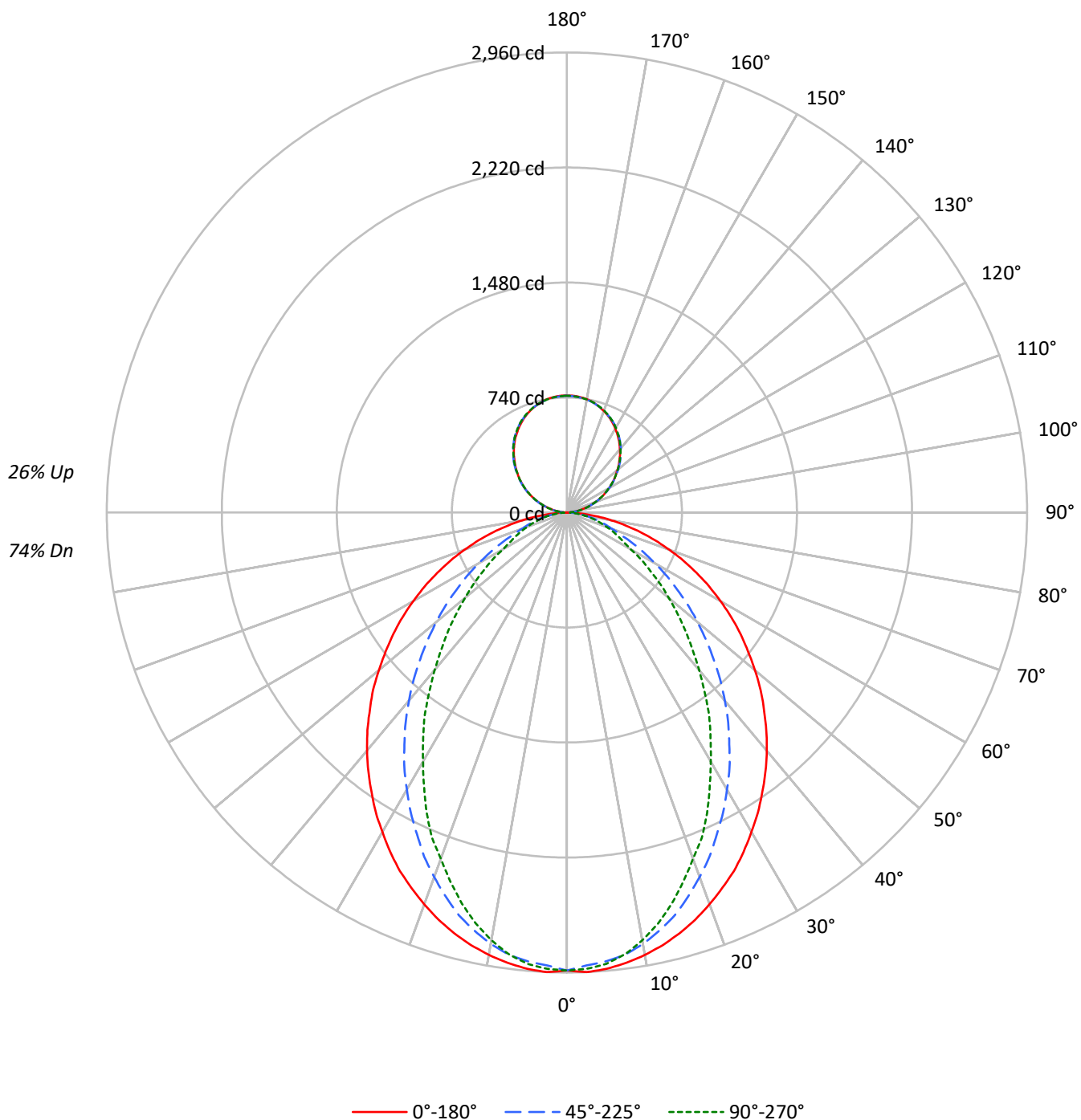
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 8163.5 lumens  
Efficiency: N/A  
Efficacy: 69.4 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): 117.6  
Input Voltage (V):  
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

TEST NUMBER: P915430

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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   | 113 | 113 | 113 | 113 | 107 | 107 | 107 | 107 | 97 | 97 | 97 | 87 | 87 | 87 | 78 | 78 | 78 |
| 1   | 104 | 100 | 96  | 93  | 99  | 95  | 92  | 89  | 86 | 84 | 81 | 78 | 76 | 74 | 70 | 69 | 68 |
| 2   | 95  | 88  | 82  | 77  | 90  | 84  | 79  | 74  | 76 | 72 | 68 | 69 | 66 | 63 | 63 | 60 | 58 |
| 3   | 87  | 78  | 71  | 65  | 83  | 75  | 68  | 63  | 68 | 63 | 58 | 62 | 58 | 54 | 56 | 53 | 50 |
| 4   | 80  | 70  | 62  | 56  | 76  | 67  | 60  | 54  | 61 | 55 | 51 | 56 | 51 | 47 | 51 | 47 | 44 |
| 5   | 74  | 63  | 54  | 48  | 70  | 60  | 53  | 47  | 55 | 49 | 44 | 51 | 45 | 42 | 46 | 42 | 39 |
| 6   | 69  | 57  | 48  | 43  | 65  | 54  | 47  | 41  | 50 | 44 | 39 | 46 | 41 | 37 | 42 | 38 | 35 |
| 7   | 64  | 51  | 43  | 38  | 61  | 49  | 42  | 37  | 46 | 39 | 35 | 42 | 37 | 33 | 39 | 34 | 31 |
| 8   | 59  | 47  | 39  | 34  | 57  | 45  | 38  | 33  | 42 | 36 | 31 | 39 | 34 | 30 | 36 | 31 | 28 |
| 9   | 56  | 43  | 36  | 31  | 53  | 42  | 35  | 30  | 39 | 33 | 28 | 36 | 31 | 27 | 33 | 29 | 26 |
| 10  | 52  | 40  | 33  | 28  | 50  | 39  | 32  | 27  | 36 | 30 | 26 | 33 | 28 | 25 | 31 | 27 | 23 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3672 | 3672 | 3672 |
| 5°  | 3676 | 3611 | 3634 |
| 10° | 3637 | 3537 | 3514 |
| 15° | 3585 | 3417 | 3329 |
| 20° | 3517 | 3253 | 3102 |
| 25° | 3447 | 3069 | 2884 |
| 30° | 3354 | 2882 | 2608 |
| 35° | 3262 | 2680 | 2365 |
| 40° | 3169 | 2472 | 2088 |
| 45° | 3061 | 2242 | 1836 |
| 50° | 2949 | 2009 | 1590 |
| 55° | 2832 | 1761 | 1355 |
| 60° | 2696 | 1503 | 1113 |
| 65° | 2540 | 1240 | 999  |
| 70° | 2351 | 995  | 900  |
| 75° | 2112 | 870  | 814  |
| 80° | 1768 | 721  | 698  |
| 85° | 1202 | 466  | 510  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3061 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 276.2  | 3.4       |
| 10°-20°   | 758.1  | 9.3       |
| 20°-30°   | 1064.4 | 13.0      |
| 30°-40°   | 1160.3 | 14.2      |
| 40°-50°   | 1066.4 | 13.1      |
| 50°-60°   | 837.5  | 10.3      |
| 60°-70°   | 545.1  | 6.7       |
| 70°-80°   | 280.6  | 3.4       |
| 80°-90°   | 73.8   | 0.9       |
| 90°-100°  | 46.5   | 0.6       |
| 100°-110° | 147.8  | 1.8       |
| 110°-120° | 252.9  | 3.1       |
| 120°-130° | 332.6  | 4.1       |
| 130°-140° | 373.3  | 4.6       |
| 140°-150° | 366.1  | 4.5       |
| 150°-160° | 307.1  | 3.8       |
| 160°-170° | 203.7  | 2.5       |
| 170°-180° | 71.2   | 0.9       |
| 0°-30°    | 2098.7 | 25.7      |
| 0°-40°    | 3258.9 | 39.9      |
| 0°-60°    | 5162.8 | 63.2      |
| 0°-90°    | 6062.3 | 74.3      |
| 90°-120°  | 447.2  | 5.5       |
| 90°-150°  | 1519.2 | 18.6      |
| 90°-180°  | 2101.0 | 25.7      |
| 0°-180°   | 8163.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2947 | 2947  | 2947 | 2947  | 2947 |      |
| 5°   | 2947 | 2933  | 2899 | 2923  | 2915 | 279  |
| 15°  | 2803 | 2773  | 2683 | 2632  | 2606 | 790  |
| 25°  | 2544 | 2459  | 2283 | 2173  | 2133 | 1170 |
| 35°  | 2192 | 2056  | 1822 | 1653  | 1595 | 1372 |
| 45°  | 1792 | 1613  | 1333 | 1144  | 1080 | 1384 |
| 55°  | 1363 | 1155  | 867  | 707   | 656  | 1218 |
| 65°  | 920  | 704   | 464  | 373   | 365  | 912  |
| 75°  | 491  | 304   | 213  | 195   | 192  | 519  |
| 85°  | 114  | 58    | 51   | 51    | 51   | 132  |
| 90°  | 1    | 8     | 22   | 21    | 22   | 8    |
| 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  |      |

TEST NUMBER: P915430

CATALOG NUMBER: DFN2DIP-TR3F0-090D030US927-RLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2946.7 | 2946.7 | 2946.7 | 2946.7 | 2946.7 |
| 2.5°   | 2960.0 | 2946.7 | 2917.2 | 2944.1 | 2938.8 |
| 5°     | 2946.7 | 2933.4 | 2898.6 | 2922.6 | 2914.7 |
| 7.5°   | 2922.6 | 2906.8 | 2869.4 | 2879.9 | 2866.6 |
| 10°    | 2890.7 | 2872.0 | 2818.8 | 2810.6 | 2794.7 |
| 12.5°  | 2850.7 | 2826.7 | 2754.6 | 2738.7 | 2709.3 |
| 15°    | 2802.7 | 2773.3 | 2682.7 | 2632.0 | 2605.5 |
| 17.5°  | 2746.7 | 2704.0 | 2591.9 | 2533.3 | 2490.6 |
| 20°    | 2682.7 | 2629.2 | 2495.9 | 2429.5 | 2370.6 |
| 22.5°  | 2613.4 | 2552.0 | 2397.2 | 2306.7 | 2266.8 |
| 25°    | 2544.1 | 2458.6 | 2282.7 | 2173.4 | 2133.3 |
| 27.5°  | 2461.5 | 2370.6 | 2176.0 | 2050.6 | 1989.2 |
| 30°    | 2373.5 | 2271.9 | 2058.6 | 1922.8 | 1850.6 |
| 32.5°  | 2288.0 | 2165.2 | 1946.8 | 1786.7 | 1719.9 |
| 35°    | 2192.1 | 2056.0 | 1821.5 | 1653.4 | 1594.6 |
| 37.5°  | 2098.7 | 1951.9 | 1704.1 | 1519.9 | 1453.4 |
| 40°    | 2000.0 | 1840.2 | 1581.3 | 1392.0 | 1322.7 |
| 42.5°  | 1898.7 | 1728.1 | 1458.7 | 1261.3 | 1194.8 |
| 45°    | 1792.1 | 1613.3 | 1333.4 | 1143.8 | 1079.9 |
| 47.5°  | 1690.8 | 1501.5 | 1213.5 | 1023.9 | 965.4  |
| 50°    | 1578.7 | 1389.4 | 1096.1 | 911.9  | 856.1  |
| 52.5°  | 1469.3 | 1269.2 | 984.0  | 808.0  | 757.4  |
| 55°    | 1362.6 | 1154.6 | 866.6  | 706.8  | 656.1  |
| 57.5°  | 1253.4 | 1040.1 | 762.8  | 613.4  | 570.7  |
| 60°    | 1141.3 | 928.0  | 653.3  | 517.5  | 474.8  |
| 62.5°  | 1032.1 | 818.8  | 559.9  | 432.1  | 410.8  |
| 65°    | 920.0  | 703.9  | 464.0  | 373.4  | 365.3  |
| 67.5°  | 813.4  | 597.2  | 373.4  | 327.9  | 320.0  |
| 70°    | 701.4  | 493.4  | 309.3  | 282.7  | 271.9  |
| 72.5°  | 594.7  | 397.2  | 258.6  | 237.3  | 232.0  |
| 75°    | 490.6  | 303.9  | 213.3  | 194.6  | 192.1  |
| 77.5°  | 386.7  | 215.9  | 168.0  | 157.3  | 151.9  |
| 80°    | 290.6  | 154.8  | 127.9  | 117.4  | 117.4  |
| 82.5°  | 202.6  | 104.1  | 88.0   | 82.6   | 82.6   |
| 85°    | 114.5  | 58.5   | 50.6   | 50.6   | 50.6   |
| 87.5°  | 42.7   | 21.2   | 21.2   | 18.7   | 18.7   |
| 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  |



TEST NUMBER: P915430

CATALOG NUMBER: DFN2DIP-TR3F0-090D030US927-RLLFLL

**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 | 13.63            | 14.71 | 14.36 | 15.45 | 16.33 | 9.61           | 10.69 | 10.34 | 11.43 | 12.31 |
|                 | 3H   | 15.32            | 16.29 | 16.06 | 17.03 | 17.95 | 10.81          | 11.78 | 11.55 | 12.53 | 13.44 |
|                 | 4H   | 15.93            | 16.84 | 16.69 | 17.60 | 18.53 | 11.27          | 12.18 | 12.03 | 12.94 | 13.86 |
|                 | 6H   | 16.36            | 17.20 | 17.13 | 17.97 | 18.90 | 11.60          | 12.44 | 12.37 | 13.20 | 14.14 |
|                 | 8H   | 16.49            | 17.29 | 17.27 | 18.07 | 19.01 | 11.69          | 12.49 | 12.47 | 13.28 | 14.22 |
|                 | 12H  | 16.56            | 17.31 | 17.34 | 18.09 | 19.06 | 11.74          | 12.50 | 12.53 | 13.28 | 14.25 |
| 4H              | 2H   | 13.68            | 14.59 | 14.44 | 15.35 | 16.27 | 10.23          | 11.14 | 10.99 | 11.90 | 12.82 |
|                 | 3H   | 15.52            | 16.28 | 16.29 | 17.07 | 18.01 | 11.60          | 12.35 | 12.37 | 13.15 | 14.09 |
|                 | 4H   | 16.22            | 16.90 | 17.00 | 17.69 | 18.66 | 12.15          | 12.83 | 12.94 | 13.63 | 14.60 |
|                 | 6H   | 16.74            | 17.33 | 17.54 | 18.14 | 19.12 | 12.58          | 13.17 | 13.38 | 13.98 | 14.96 |
|                 | 8H   | 16.91            | 17.46 | 17.72 | 18.28 | 19.26 | 12.71          | 13.26 | 13.51 | 14.07 | 15.06 |
|                 | 12H  | 17.01            | 17.51 | 17.84 | 18.34 | 19.34 | 12.78          | 13.27 | 13.61 | 14.11 | 15.10 |
| 8H              | 4H   | 16.20            | 16.75 | 17.01 | 17.57 | 18.55 | 12.44          | 12.99 | 13.25 | 13.81 | 14.80 |
|                 | 6H   | 16.77            | 17.22 | 17.60 | 18.08 | 19.07 | 12.96          | 13.42 | 13.80 | 14.27 | 15.26 |
|                 | 8H   | 16.98            | 17.38 | 17.82 | 18.24 | 19.24 | 13.15          | 13.55 | 14.00 | 14.41 | 15.41 |
|                 | 12H  | 17.12            | 17.48 | 17.97 | 18.32 | 19.38 | 13.27          | 13.63 | 14.12 | 14.47 | 15.54 |
| 12H             | 4H   | 16.16            | 16.66 | 16.99 | 17.50 | 18.49 | 12.46          | 12.95 | 13.28 | 13.79 | 14.78 |
|                 | 6H   | 16.74            | 17.15 | 17.59 | 18.00 | 19.01 | 13.01          | 13.41 | 13.86 | 14.27 | 15.27 |
|                 | 8H   | 16.97            | 17.32 | 17.81 | 18.17 | 19.23 | 13.22          | 13.58 | 14.07 | 14.43 | 15.49 |