

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: P904324

Luminaire Tested: DFN2DIP-TR2F0-050D030US830-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P904324  
REPORT IS A COMBINATION OF REPORTS P900237 AND P897145  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR2F0-050D030US830-FLLFLL  
Description: 2 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

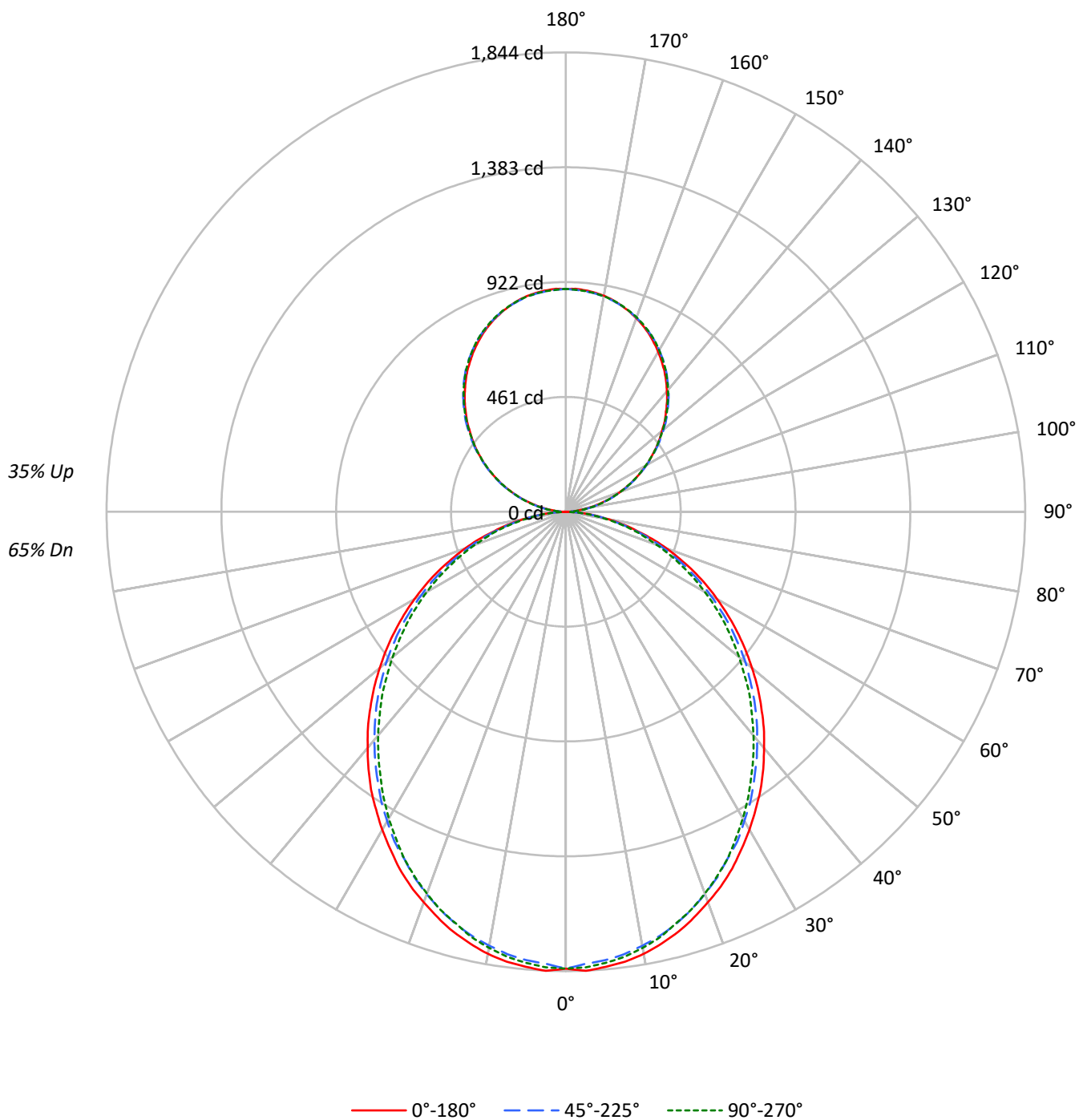
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 7168.0 lumens  
Efficiency: N/A  
Efficacy: 103.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.04' x L: 2.36' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 69.3  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9789  
Total Harmonic Distortion (THDi): 0.074  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P904324

CATALOG NUMBER: DFN2DIP-TR2F0-050D030US830-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P904324

CATALOG NUMBER: DFN2DIP-TR2F0-050D030US830-FLLFLL

**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   | 111 | 111 | 111 | 111 | 104 | 104 | 104 | 104 | 92 | 92 | 92 | 80 | 80 | 80 | 70 | 70 | 70 |
| 1   | 101 | 97  | 93  | 89  | 95  | 91  | 88  | 84  | 81 | 78 | 75 | 71 | 69 | 67 | 62 | 60 | 59 |
| 2   | 92  | 85  | 78  | 73  | 86  | 80  | 74  | 69  | 71 | 66 | 63 | 62 | 59 | 56 | 55 | 52 | 50 |
| 3   | 84  | 74  | 67  | 61  | 79  | 70  | 63  | 58  | 62 | 57 | 53 | 55 | 51 | 47 | 48 | 45 | 42 |
| 4   | 77  | 66  | 58  | 52  | 72  | 62  | 55  | 49  | 55 | 50 | 45 | 49 | 44 | 41 | 43 | 40 | 37 |
| 5   | 71  | 59  | 50  | 44  | 66  | 56  | 48  | 42  | 50 | 44 | 39 | 44 | 39 | 35 | 39 | 35 | 32 |
| 6   | 65  | 53  | 45  | 39  | 61  | 50  | 43  | 37  | 45 | 39 | 34 | 40 | 35 | 31 | 35 | 31 | 28 |
| 7   | 60  | 48  | 40  | 34  | 57  | 45  | 38  | 33  | 41 | 35 | 30 | 36 | 31 | 28 | 32 | 28 | 25 |
| 8   | 56  | 44  | 36  | 30  | 53  | 41  | 34  | 29  | 37 | 31 | 27 | 33 | 28 | 25 | 30 | 26 | 22 |
| 9   | 52  | 40  | 32  | 27  | 49  | 38  | 31  | 26  | 34 | 28 | 24 | 31 | 26 | 22 | 27 | 23 | 20 |
| 10  | 49  | 37  | 29  | 24  | 46  | 35  | 28  | 23  | 32 | 26 | 22 | 28 | 24 | 20 | 25 | 21 | 19 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4090 | 4090 | 4090 |
| 5°  | 4090 | 4024 | 4053 |
| 10° | 4051 | 3961 | 3991 |
| 15° | 3986 | 3886 | 3898 |
| 20° | 3899 | 3787 | 3804 |
| 25° | 3813 | 3669 | 3696 |
| 30° | 3706 | 3560 | 3560 |
| 35° | 3604 | 3431 | 3417 |
| 40° | 3481 | 3302 | 3280 |
| 45° | 3357 | 3171 | 3139 |
| 50° | 3221 | 3034 | 2977 |
| 55° | 3078 | 2875 | 2827 |
| 60° | 2916 | 2689 | 2655 |
| 65° | 2739 | 2493 | 2451 |
| 70° | 2514 | 2256 | 2230 |
| 75° | 2203 | 1971 | 2018 |
| 80° | 1827 | 1608 | 1631 |
| 85° | 1245 | 1013 | 1013 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3357 cd/sqm

TEST NUMBER: P904324

CATALOG NUMBER: DFN2DIP-TR2F0-050D030US830-FLLFLL

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 172.6  | 2.4       |
| 10°-20°   | 485.6  | 6.8       |
| 20°-30°   | 713.7  | 10.0      |
| 30°-40°   | 828.9  | 11.6      |
| 40°-50°   | 827.8  | 11.5      |
| 50°-60°   | 721.8  | 10.1      |
| 60°-70°   | 533.6  | 7.4       |
| 70°-80°   | 301.9  | 4.2       |
| 80°-90°   | 82.2   | 1.1       |
| 90°-100°  | 55.3   | 0.8       |
| 100°-110° | 175.8  | 2.5       |
| 110°-120° | 300.9  | 4.2       |
| 120°-130° | 395.7  | 5.5       |
| 130°-140° | 444.2  | 6.2       |
| 140°-150° | 435.6  | 6.1       |
| 150°-160° | 365.4  | 5.1       |
| 160°-170° | 242.3  | 3.4       |
| 170°-180° | 84.7   | 1.2       |
| 0°-30°    | 1371.9 | 19.1      |
| 0°-40°    | 2200.7 | 30.7      |
| 0°-60°    | 3750.4 | 52.3      |
| 0°-90°    | 4668.1 | 65.1      |
| 90°-120°  | 532.1  | 7.4       |
| 90°-150°  | 1807.5 | 25.2      |
| 90°-180°  | 2500.0 | 34.9      |
| 0°-180°   | 7168.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1834 | 1834  | 1834 | 1834  | 1834 |      |
| 5°   | 1834 | 1827  | 1807 | 1821  | 1818 | 174  |
| 15°  | 1746 | 1735  | 1712 | 1719  | 1710 | 492  |
| 25°  | 1580 | 1566  | 1536 | 1539  | 1536 | 727  |
| 35°  | 1363 | 1346  | 1317 | 1307  | 1298 | 851  |
| 45°  | 1109 | 1097  | 1070 | 1051  | 1044 | 856  |
| 55°  | 839  | 829   | 808  | 786   | 778  | 750  |
| 65°  | 566  | 555   | 538  | 522   | 513  | 560  |
| 75°  | 296  | 293   | 284  | 273   | 277  | 316  |
| 85°  | 72   | 70    | 69   | 63    | 62   | 81   |
| 90°  | 1    | 10    | 26   | 25    | 26   | 7    |
| 95°  | 39   | 47    | 48   | 48    | 47   | 44   |
| 105° | 162  | 164   | 166  | 167   | 167  | 171  |
| 115° | 302  | 306   | 305  | 304   | 302  | 299  |
| 125° | 439  | 446   | 444  | 441   | 440  | 392  |
| 135° | 568  | 576   | 578  | 577   | 575  | 439  |
| 145° | 690  | 695   | 699  | 700   | 697  | 431  |
| 155° | 789  | 791   | 793  | 797   | 795  | 363  |
| 165° | 858  | 857   | 857  | 862   | 859  | 242  |
| 175° | 893  | 890   | 889  | 894   | 890  | 85   |
| 180° | 894  | 894   | 894  | 894   | 894  |      |

TEST NUMBER: P904324

CATALOG NUMBER: DFN2DIP-TR2F0-050D030US830-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1833.7 | 1833.7 | 1833.7 | 1833.7 | 1833.7 |
| 2.5°   | 1844.4 | 1835.6 | 1816.2 | 1833.7 | 1830.4 |
| 5°     | 1833.7 | 1826.8 | 1807.3 | 1821.4 | 1818.1 |
| 7.5°   | 1821.4 | 1810.9 | 1791.5 | 1805.7 | 1802.1 |
| 10°    | 1802.1 | 1789.8 | 1768.7 | 1782.6 | 1777.4 |
| 12.5°  | 1775.6 | 1765.1 | 1744.0 | 1752.8 | 1749.2 |
| 15°    | 1745.6 | 1735.1 | 1712.1 | 1719.3 | 1710.4 |
| 17.5°  | 1708.5 | 1698.1 | 1675.1 | 1683.9 | 1675.1 |
| 20°    | 1668.0 | 1657.6 | 1632.9 | 1638.0 | 1631.2 |
| 22.5°  | 1627.6 | 1611.7 | 1588.7 | 1588.7 | 1585.1 |
| 25°    | 1579.9 | 1565.8 | 1535.9 | 1539.3 | 1535.9 |
| 27.5°  | 1526.9 | 1514.6 | 1491.8 | 1486.5 | 1477.7 |
| 30°    | 1474.1 | 1460.0 | 1433.6 | 1428.3 | 1421.3 |
| 32.5°  | 1417.7 | 1407.2 | 1378.9 | 1368.3 | 1361.2 |
| 35°    | 1363.0 | 1345.5 | 1317.2 | 1306.6 | 1297.8 |
| 37.5°  | 1301.3 | 1285.4 | 1257.2 | 1244.8 | 1236.0 |
| 40°    | 1237.9 | 1223.7 | 1195.4 | 1179.7 | 1172.6 |
| 42.5°  | 1176.2 | 1162.0 | 1133.9 | 1116.1 | 1105.6 |
| 45°    | 1109.2 | 1096.8 | 1070.3 | 1051.0 | 1043.9 |
| 47.5°  | 1043.9 | 1031.5 | 1003.3 | 983.8  | 973.4  |
| 50°    | 975.1  | 966.3  | 941.6  | 916.9  | 908.0  |
| 52.5°  | 908.0  | 895.7  | 872.9  | 853.5  | 841.1  |
| 55°    | 839.4  | 828.8  | 807.6  | 786.5  | 777.7  |
| 57.5°  | 770.5  | 761.8  | 738.8  | 717.7  | 710.5  |
| 60°    | 701.7  | 694.8  | 670.1  | 650.6  | 645.5  |
| 62.5°  | 634.8  | 622.5  | 604.8  | 587.2  | 580.1  |
| 65°    | 566.1  | 555.4  | 537.8  | 522.0  | 513.1  |
| 67.5°  | 495.6  | 486.6  | 470.9  | 458.5  | 451.4  |
| 70°    | 430.3  | 423.2  | 407.3  | 394.9  | 388.0  |
| 72.5°  | 363.4  | 356.2  | 347.4  | 335.1  | 329.8  |
| 75°    | 296.1  | 292.8  | 283.8  | 273.3  | 276.9  |
| 77.5°  | 236.3  | 229.1  | 225.6  | 220.4  | 215.2  |
| 80°    | 176.4  | 174.6  | 171.0  | 165.8  | 162.2  |
| 82.5°  | 119.9  | 119.9  | 118.2  | 111.1  | 111.1  |
| 85°    | 72.2   | 70.5   | 68.8   | 63.4   | 61.7   |
| 87.5°  | 31.8   | 28.3   | 24.7   | 19.4   | 17.6   |
| 90°    | 0.8    | 9.7    | 26.4   | 24.8   | 25.6   |
| 92.5°  | 16.7   | 22.6   | 23.5   | 24.2   | 24.2   |
| 95°    | 39.4   | 46.9   | 48.3   | 48.3   | 46.9   |
| 97.5°  | 65.5   | 72.5   | 75.5   | 75.5   | 75.5   |
| 100°   | 95.7   | 101.9  | 104.1  | 104.1  | 103.3  |
| 102.5° | 127.5  | 132.1  | 135.1  | 135.9  | 135.1  |
| 105°   | 162.3  | 164.5  | 166.1  | 167.4  | 167.4  |
| 107.5° | 196.8  | 200.0  | 200.0  | 200.6  | 196.8  |
| 110°   | 230.3  | 234.6  | 234.6  | 234.6  | 232.4  |



TEST NUMBER: P904324

CATALOG NUMBER: DFN2DIP-TR2F0-050D030US830-FLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 266.4 | 271.0 | 270.1 | 268.0 | 266.4 |
| 115°   | 302.0 | 306.2 | 304.9 | 304.2 | 302.0 |
| 117.5° | 337.2 | 343.2 | 339.4 | 337.2 | 335.1 |
| 120°   | 372.9 | 378.8 | 372.9 | 372.9 | 370.4 |
| 122.5° | 405.2 | 412.7 | 409.0 | 406.8 | 405.2 |
| 125°   | 439.2 | 445.9 | 443.7 | 441.3 | 440.5 |
| 127.5° | 472.3 | 480.7 | 477.8 | 474.5 | 472.3 |
| 130°   | 503.3 | 513.0 | 511.7 | 510.1 | 507.1 |
| 132.5° | 538.1 | 545.6 | 546.2 | 542.4 | 540.3 |
| 135°   | 568.1 | 576.4 | 578.1 | 577.2 | 575.0 |
| 137.5° | 601.4 | 608.2 | 609.5 | 609.1 | 605.8 |
| 140°   | 630.8 | 637.6 | 641.4 | 641.4 | 638.4 |
| 142.5° | 661.1 | 667.8 | 670.0 | 670.8 | 667.8 |
| 145°   | 689.7 | 695.0 | 699.4 | 700.1 | 697.2 |
| 147.5° | 715.3 | 722.0 | 725.2 | 726.6 | 723.6 |
| 150°   | 741.7 | 746.3 | 749.2 | 751.7 | 749.2 |
| 152.5° | 765.2 | 769.7 | 773.5 | 776.5 | 773.5 |
| 155°   | 788.6 | 790.7 | 793.1 | 796.9 | 794.6 |
| 157.5° | 808.8 | 810.4 | 811.8 | 817.2 | 813.4 |
| 160°   | 826.9 | 828.5 | 829.3 | 833.9 | 830.7 |
| 162.5° | 843.6 | 843.6 | 844.4 | 849.5 | 845.7 |
| 165°   | 857.9 | 857.1 | 857.1 | 862.4 | 858.7 |
| 167.5° | 870.8 | 868.4 | 868.4 | 873.7 | 870.0 |
| 170°   | 880.5 | 878.4 | 877.6 | 883.0 | 878.4 |
| 172.5° | 887.2 | 885.1 | 884.3 | 889.7 | 885.1 |
| 175°   | 892.7 | 890.5 | 888.9 | 894.3 | 889.7 |
| 177.5° | 895.6 | 893.4 | 891.8 | 896.5 | 891.8 |
| 180°   | 894.3 | 894.3 | 894.3 | 894.3 | 894.3 |

TEST NUMBER: P904324

CATALOG NUMBER: DFN2DIP-TR2F0-050D030US830-FLLFLL

**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 | 13.33            | 14.34 | 14.14 | 15.18 | 16.22 | 12.90          | 13.92 | 13.72 | 14.76 | 15.79 |
|                 | 3H   | 14.97            | 15.89 | 15.80 | 16.73 | 17.80 | 14.51          | 15.43 | 15.34 | 16.27 | 17.34 |
|                 | 4H   | 15.55            | 16.42 | 16.40 | 17.27 | 18.35 | 15.09          | 15.96 | 15.94 | 16.81 | 17.89 |
|                 | 6H   | 15.94            | 16.74 | 16.80 | 17.60 | 18.69 | 15.48          | 16.28 | 16.34 | 17.14 | 18.23 |
|                 | 8H   | 16.04            | 16.80 | 16.91 | 17.68 | 18.77 | 15.58          | 16.34 | 16.45 | 17.22 | 18.31 |
|                 | 12H  | 16.09            | 16.81 | 16.96 | 17.68 | 18.80 | 15.62          | 16.35 | 16.50 | 17.22 | 18.34 |
| 4H              | 2H   | 13.80            | 14.66 | 14.65 | 15.51 | 16.59 | 13.46          | 14.32 | 14.31 | 15.17 | 16.25 |
|                 | 3H   | 15.65            | 16.37 | 16.51 | 17.26 | 18.35 | 15.27          | 15.99 | 16.13 | 16.87 | 17.96 |
|                 | 4H   | 16.35            | 17.01 | 17.23 | 17.89 | 19.01 | 15.96          | 16.61 | 16.83 | 17.50 | 18.62 |
|                 | 6H   | 16.85            | 17.42 | 17.74 | 18.33 | 19.45 | 16.46          | 17.02 | 17.35 | 17.93 | 19.05 |
|                 | 8H   | 16.99            | 17.52 | 17.89 | 18.43 | 19.56 | 16.60          | 17.13 | 17.49 | 18.03 | 19.17 |
|                 | 12H  | 17.06            | 17.54 | 17.98 | 18.46 | 19.60 | 16.66          | 17.14 | 17.57 | 18.06 | 19.20 |
| 8H              | 4H   | 16.55            | 17.08 | 17.44 | 17.98 | 19.12 | 16.20          | 16.73 | 17.09 | 17.63 | 18.77 |
|                 | 6H   | 17.16            | 17.60 | 18.08 | 18.54 | 19.68 | 16.81          | 17.25 | 17.73 | 18.19 | 19.33 |
|                 | 8H   | 17.37            | 17.76 | 18.30 | 18.69 | 19.84 | 17.01          | 17.40 | 17.94 | 18.34 | 19.49 |
|                 | 12H  | 17.49            | 17.83 | 18.42 | 18.76 | 19.96 | 17.12          | 17.46 | 18.05 | 18.39 | 19.60 |
| 12H             | 4H   | 16.54            | 17.02 | 17.45 | 17.94 | 19.08 | 16.20          | 16.67 | 17.11 | 17.60 | 18.74 |
|                 | 6H   | 17.19            | 17.58 | 18.12 | 18.51 | 19.66 | 16.84          | 17.23 | 17.77 | 18.17 | 19.32 |
|                 | 8H   | 17.42            | 17.76 | 18.35 | 18.69 | 19.89 | 17.07          | 17.42 | 18.00 | 18.34 | 19.55 |