

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: P903060

Luminaire Tested: DFN2DIP-PN3F0-070D030US830-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P903060  
REPORT IS A COMBINATION OF REPORTS P899519 AND P896399  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-070D030US830-FLLFLL  
Description: 3 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

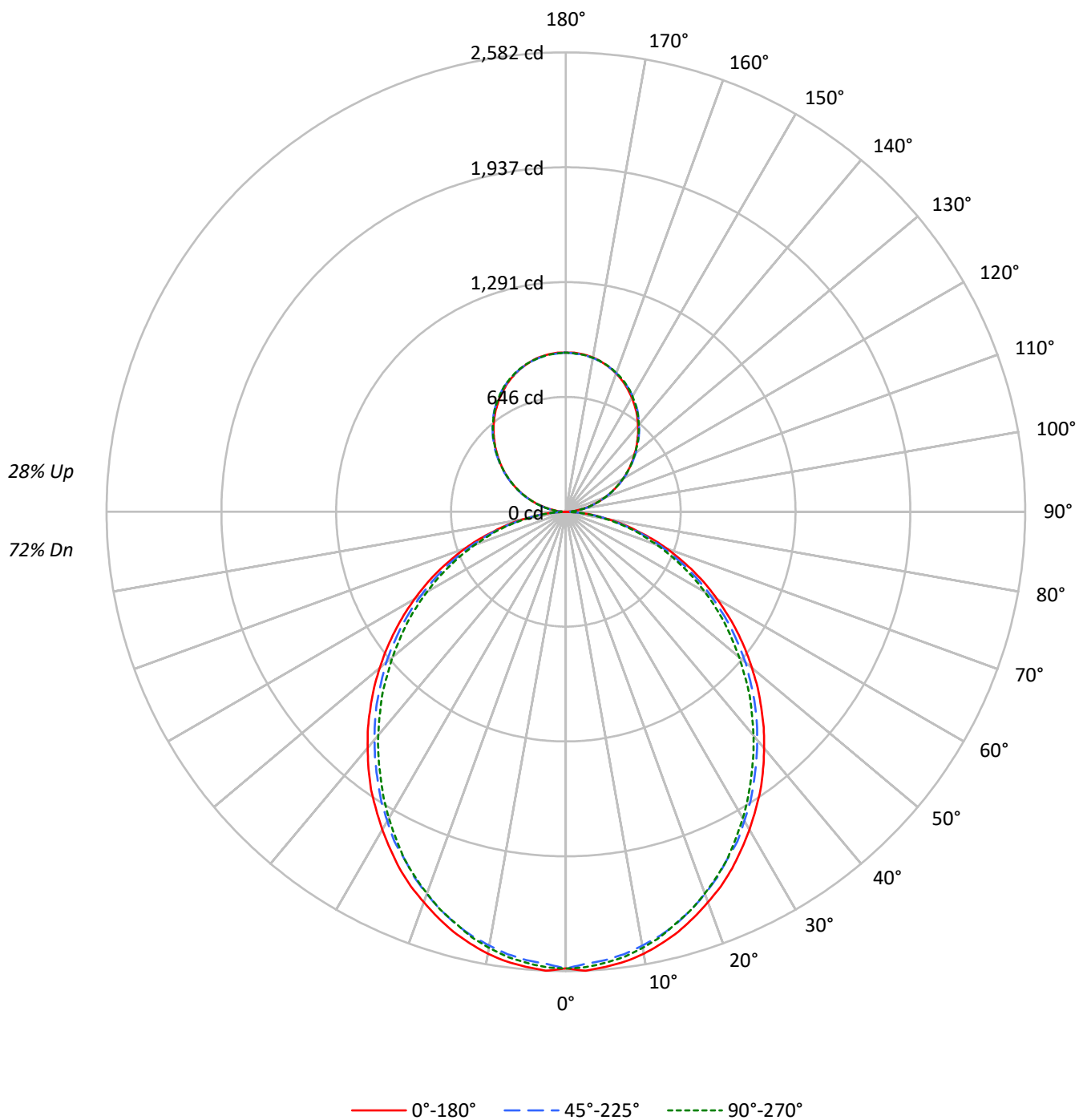
Lumens per Lamp: N/A  
Luminaire Lumens: 9034.3 lumens  
Efficiency: N/A  
Efficacy: 97.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 92.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.946  
Total Harmonic Distortion (THDi): 0.132  
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



TEST NUMBER: P903060

CATALOG NUMBER: DFN2DIP-PN3F0-070D030US830-FLLFL

**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 | 107 | 107 | 107 | 107 | 96 | 96 | 96 | 86 | 86 | 86 | 77 | 77 | 77 |
| 1   | 103 | 98  | 94  | 91  | 97  | 93  | 90  | 87  | 84 | 81 | 79 | 76 | 74 | 72 | 68 | 66 | 65 |
| 2   | 94  | 86  | 80  | 74  | 89  | 82  | 76  | 71  | 74 | 69 | 65 | 66 | 63 | 60 | 60 | 57 | 55 |
| 3   | 85  | 76  | 68  | 62  | 81  | 72  | 65  | 60  | 65 | 60 | 55 | 59 | 54 | 51 | 53 | 49 | 46 |
| 4   | 78  | 67  | 59  | 52  | 74  | 64  | 56  | 51  | 58 | 52 | 47 | 52 | 48 | 44 | 47 | 43 | 40 |
| 5   | 72  | 60  | 51  | 45  | 68  | 57  | 49  | 44  | 52 | 46 | 41 | 47 | 42 | 38 | 43 | 38 | 35 |
| 6   | 66  | 54  | 45  | 39  | 63  | 51  | 44  | 38  | 47 | 40 | 36 | 43 | 37 | 33 | 39 | 34 | 31 |
| 7   | 62  | 49  | 41  | 35  | 58  | 47  | 39  | 34  | 43 | 36 | 32 | 39 | 34 | 30 | 35 | 31 | 27 |
| 8   | 57  | 44  | 36  | 31  | 54  | 43  | 35  | 30  | 39 | 33 | 28 | 36 | 30 | 26 | 33 | 28 | 25 |
| 9   | 53  | 41  | 33  | 28  | 51  | 39  | 32  | 27  | 36 | 30 | 25 | 33 | 28 | 24 | 30 | 26 | 22 |
| 10  | 50  | 37  | 30  | 25  | 47  | 36  | 29  | 24  | 33 | 27 | 23 | 30 | 25 | 22 | 28 | 24 | 20 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3001 | 3001 | 3001 |
| 5°  | 3004 | 2957 | 2978 |
| 10° | 2978 | 2915 | 2936 |
| 15° | 2932 | 2865 | 2872 |
| 20° | 2871 | 2796 | 2806 |
| 25° | 2811 | 2715 | 2730 |
| 30° | 2735 | 2638 | 2634 |
| 35° | 2663 | 2548 | 2533 |
| 40° | 2575 | 2458 | 2436 |
| 45° | 2487 | 2367 | 2337 |
| 50° | 2391 | 2271 | 2222 |
| 55° | 2290 | 2161 | 2117 |
| 60° | 2176 | 2030 | 1996 |
| 65° | 2051 | 1894 | 1853 |
| 70° | 1892 | 1727 | 1699 |
| 75° | 1672 | 1529 | 1555 |
| 80° | 1406 | 1275 | 1283 |
| 85° | 992  | 843  | 836  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 2487 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 241.6  | 2.7       |
| 10°-20°   | 679.9  | 7.5       |
| 20°-30°   | 999.1  | 11.1      |
| 30°-40°   | 1160.4 | 12.8      |
| 40°-50°   | 1159.0 | 12.8      |
| 50°-60°   | 1010.6 | 11.2      |
| 60°-70°   | 747.1  | 8.3       |
| 70°-80°   | 422.7  | 4.7       |
| 80°-90°   | 114.1  | 1.3       |
| 90°-100°  | 55.3   | 0.6       |
| 100°-110° | 175.8  | 1.9       |
| 110°-120° | 300.9  | 3.3       |
| 120°-130° | 395.7  | 4.4       |
| 130°-140° | 444.2  | 4.9       |
| 140°-150° | 435.6  | 4.8       |
| 150°-160° | 365.4  | 4.0       |
| 160°-170° | 242.3  | 2.7       |
| 170°-180° | 84.7   | 0.9       |
| 0°-30°    | 1920.6 | 21.3      |
| 0°-40°    | 3081.0 | 34.1      |
| 0°-60°    | 5250.6 | 58.1      |
| 0°-90°    | 6534.4 | 72.3      |
| 90°-120°  | 532.1  | 5.9       |
| 90°-150°  | 1807.5 | 20.0      |
| 90°-180°  | 2500.0 | 27.7      |
| 0°-180°   | 9034.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2567 | 2567  | 2567 | 2567  | 2567 |      |
| 5°   | 2567 | 2558  | 2530 | 2550  | 2545 | 244  |
| 15°  | 2444 | 2429  | 2397 | 2407  | 2395 | 688  |
| 25°  | 2212 | 2192  | 2150 | 2155  | 2150 | 1018 |
| 35°  | 1908 | 1884  | 1844 | 1829  | 1817 | 1192 |
| 45°  | 1553 | 1536  | 1498 | 1471  | 1461 | 1198 |
| 55°  | 1175 | 1160  | 1131 | 1101  | 1089 | 1051 |
| 65°  | 793  | 778   | 753  | 731   | 718  | 784  |
| 75°  | 415  | 410   | 397  | 383   | 388  | 443  |
| 85°  | 101  | 99    | 96   | 89    | 86   | 113  |
| 90°  | 1    | 10    | 26   | 25    | 26   | 9    |
| 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  |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2567.2 | 2567.2 | 2567.2 | 2567.2 | 2567.2 |
| 2.5°   | 2582.2 | 2569.8 | 2542.6 | 2567.2 | 2562.5 |
| 5°     | 2567.2 | 2557.6 | 2530.3 | 2550.0 | 2545.2 |
| 7.5°   | 2550.0 | 2535.3 | 2508.0 | 2528.0 | 2523.0 |
| 10°    | 2523.0 | 2505.7 | 2476.1 | 2495.8 | 2488.4 |
| 12.5°  | 2485.8 | 2471.2 | 2441.6 | 2453.8 | 2448.8 |
| 15°    | 2443.9 | 2429.2 | 2397.0 | 2407.0 | 2394.6 |
| 17.5°  | 2392.0 | 2377.4 | 2345.1 | 2357.5 | 2345.1 |
| 20°    | 2335.1 | 2320.5 | 2285.9 | 2293.3 | 2283.6 |
| 22.5°  | 2278.6 | 2256.4 | 2224.1 | 2224.1 | 2219.1 |
| 25°    | 2211.9 | 2192.2 | 2150.3 | 2155.0 | 2150.3 |
| 27.5°  | 2137.7 | 2120.4 | 2088.5 | 2081.1 | 2068.8 |
| 30°    | 2063.9 | 2043.9 | 2007.0 | 1999.7 | 1989.7 |
| 32.5°  | 1984.7 | 1970.1 | 1930.5 | 1915.6 | 1905.6 |
| 35°    | 1908.3 | 1883.7 | 1844.1 | 1829.2 | 1816.8 |
| 37.5°  | 1821.8 | 1799.6 | 1760.0 | 1742.8 | 1730.4 |
| 40°    | 1733.1 | 1713.2 | 1673.6 | 1651.6 | 1641.6 |
| 42.5°  | 1646.6 | 1626.7 | 1587.4 | 1562.5 | 1547.8 |
| 45°    | 1552.8 | 1535.6 | 1498.4 | 1471.4 | 1461.4 |
| 47.5°  | 1461.4 | 1444.2 | 1404.6 | 1377.3 | 1362.7 |
| 50°    | 1365.1 | 1352.7 | 1318.1 | 1283.6 | 1271.3 |
| 52.5°  | 1271.3 | 1254.1 | 1222.1 | 1194.9 | 1177.5 |
| 55°    | 1175.2 | 1160.3 | 1130.7 | 1101.1 | 1088.7 |
| 57.5°  | 1078.8 | 1066.5 | 1034.3 | 1004.7 | 994.8  |
| 60°    | 982.4  | 972.7  | 938.2  | 911.0  | 903.6  |
| 62.5°  | 888.6  | 871.4  | 846.8  | 822.2  | 812.2  |
| 65°    | 792.6  | 777.6  | 753.0  | 730.8  | 718.4  |
| 67.5°  | 693.8  | 681.3  | 659.2  | 642.0  | 632.0  |
| 70°    | 602.4  | 592.5  | 570.1  | 552.9  | 543.2  |
| 72.5°  | 508.6  | 498.7  | 486.4  | 469.1  | 461.8  |
| 75°    | 414.6  | 409.9  | 397.3  | 382.7  | 387.7  |
| 77.5°  | 330.8  | 320.8  | 315.8  | 308.5  | 301.2  |
| 80°    | 246.9  | 244.4  | 239.4  | 232.1  | 227.1  |
| 82.5°  | 167.9  | 167.9  | 165.5  | 155.6  | 155.6  |
| 85°    | 101.1  | 98.8   | 96.4   | 88.8   | 86.4   |
| 87.5°  | 44.5   | 39.6   | 34.6   | 27.2   | 24.6   |
| 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  |



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**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 |

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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 | 12.90            | 14.00 | 13.64 | 14.76 | 15.67 | 12.46          | 13.56 | 13.20 | 14.32 | 15.24 |
|                 | 3H   | 14.57            | 15.56 | 15.32 | 16.33 | 17.28 | 14.09          | 15.08 | 14.84 | 15.85 | 16.79 |
|                 | 4H   | 15.16            | 16.10 | 15.93 | 16.88 | 17.84 | 14.68          | 15.62 | 15.45 | 16.40 | 17.35 |
|                 | 6H   | 15.57            | 16.44 | 16.35 | 17.22 | 18.19 | 15.08          | 15.95 | 15.86 | 16.74 | 17.70 |
|                 | 8H   | 15.68            | 16.51 | 16.47 | 17.31 | 18.28 | 15.19          | 16.02 | 15.98 | 16.82 | 17.79 |
|                 | 12H  | 15.73            | 16.52 | 16.53 | 17.32 | 18.32 | 15.24          | 16.02 | 16.04 | 16.83 | 17.82 |
| 4H              | 2H   | 13.38            | 14.32 | 14.16 | 15.10 | 16.05 | 13.03          | 13.97 | 13.81 | 14.75 | 15.70 |
|                 | 3H   | 15.26            | 16.05 | 16.05 | 16.86 | 17.83 | 14.86          | 15.65 | 15.65 | 16.46 | 17.43 |
|                 | 4H   | 15.98            | 16.70 | 16.78 | 17.51 | 18.51 | 15.57          | 16.28 | 16.37 | 17.09 | 18.09 |
|                 | 6H   | 16.51            | 17.12 | 17.32 | 17.96 | 18.97 | 16.08          | 16.70 | 16.90 | 17.54 | 18.54 |
|                 | 8H   | 16.66            | 17.24 | 17.48 | 18.07 | 19.09 | 16.23          | 16.81 | 17.05 | 17.64 | 18.66 |
|                 | 12H  | 16.74            | 17.26 | 17.58 | 18.11 | 19.14 | 16.30          | 16.82 | 17.15 | 17.68 | 18.70 |
| 8H              | 4H   | 16.20            | 16.77 | 17.02 | 17.61 | 18.62 | 15.82          | 16.40 | 16.65 | 17.24 | 18.25 |
|                 | 6H   | 16.83            | 17.31 | 17.68 | 18.18 | 19.20 | 16.45          | 16.93 | 17.30 | 17.81 | 18.83 |
|                 | 8H   | 17.05            | 17.47 | 17.91 | 18.34 | 19.38 | 16.66          | 17.09 | 17.53 | 17.96 | 19.00 |
|                 | 12H  | 17.19            | 17.56 | 18.05 | 18.42 | 19.51 | 16.79          | 17.16 | 17.65 | 18.02 | 19.12 |
| 12H             | 4H   | 16.19            | 16.71 | 17.03 | 17.57 | 18.59 | 15.83          | 16.35 | 16.67 | 17.20 | 18.23 |
|                 | 6H   | 16.86            | 17.28 | 17.72 | 18.16 | 19.19 | 16.50          | 16.92 | 17.36 | 17.79 | 18.83 |
|                 | 8H   | 17.11            | 17.48 | 17.97 | 18.35 | 19.44 | 16.74          | 17.11 | 17.60 | 17.97 | 19.07 |