

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: P915673

Luminaire Tested: DFN2DIP-TR4F0-100D040US927-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P915673  
REPORT IS A COMBINATION OF REPORTS P901902 AND P898849  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-100D040US927-RLLONL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

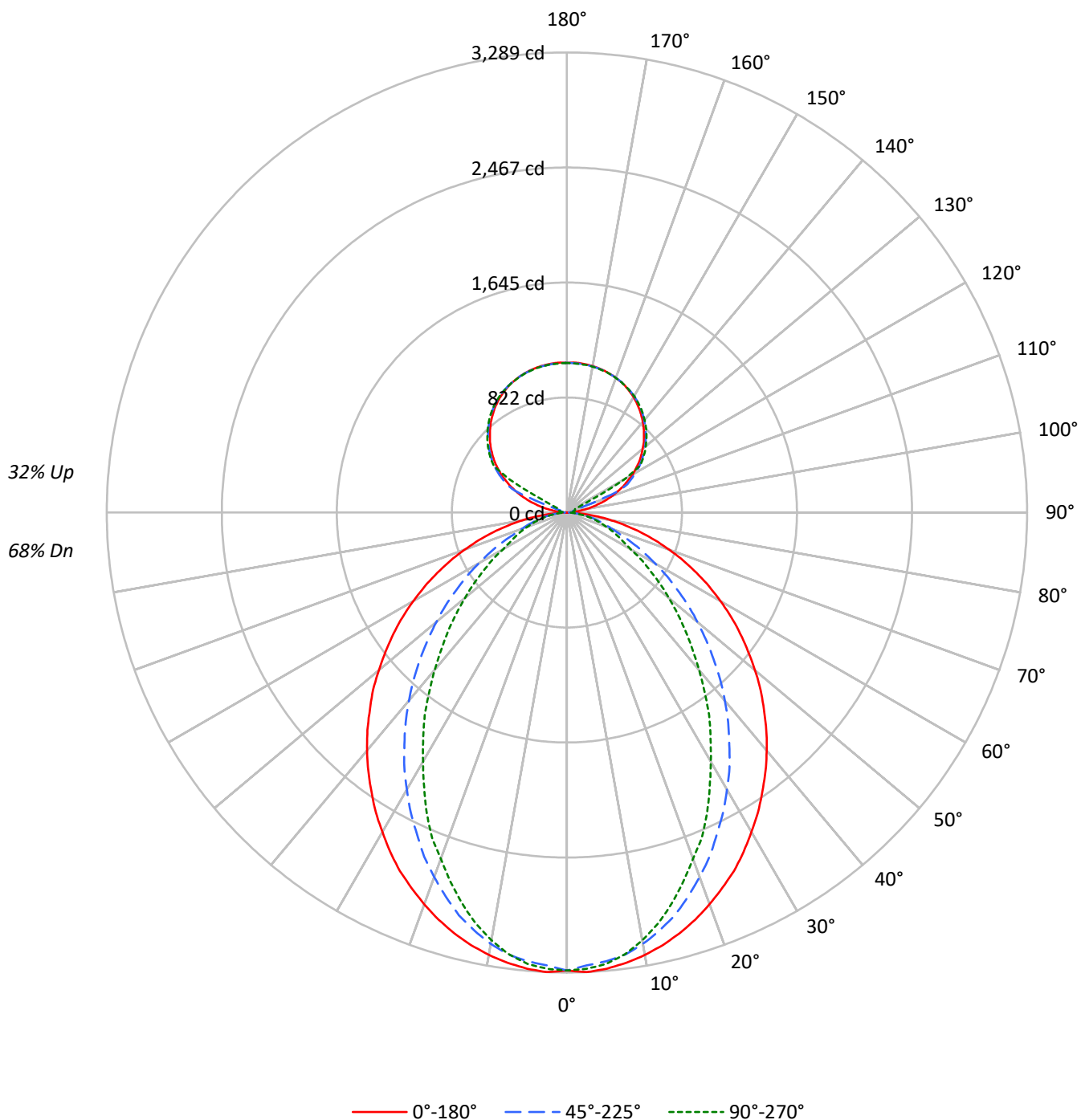
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 9870.5 lumens  
Efficiency: N/A  
Efficacy: 75.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 131.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9972  
Total Harmonic Distortion (THDi): 0.128  
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   | 111 | 111 | 111 | 111 | 105 | 105 | 105 | 105 | 93 | 93 | 93 | 83 | 83 | 83 | 73 | 73 | 73 |
| 1   | 103 | 98  | 95  | 91  | 97  | 93  | 90  | 87  | 83 | 81 | 78 | 74 | 72 | 70 | 65 | 64 | 63 |
| 2   | 94  | 87  | 81  | 76  | 88  | 82  | 77  | 72  | 74 | 69 | 66 | 66 | 63 | 60 | 58 | 56 | 54 |
| 3   | 86  | 77  | 70  | 64  | 81  | 73  | 66  | 61  | 66 | 60 | 56 | 59 | 55 | 51 | 52 | 49 | 47 |
| 4   | 79  | 69  | 61  | 55  | 75  | 65  | 58  | 53  | 59 | 53 | 49 | 53 | 48 | 45 | 47 | 44 | 41 |
| 5   | 73  | 62  | 53  | 48  | 69  | 59  | 51  | 46  | 53 | 47 | 42 | 48 | 43 | 39 | 43 | 39 | 36 |
| 6   | 68  | 56  | 47  | 42  | 64  | 53  | 46  | 40  | 48 | 42 | 38 | 43 | 39 | 35 | 39 | 35 | 32 |
| 7   | 63  | 50  | 43  | 37  | 59  | 48  | 41  | 36  | 44 | 38 | 33 | 40 | 35 | 31 | 36 | 32 | 29 |
| 8   | 58  | 46  | 38  | 33  | 55  | 44  | 37  | 32  | 40 | 34 | 30 | 37 | 32 | 28 | 33 | 29 | 26 |
| 9   | 55  | 42  | 35  | 30  | 52  | 41  | 34  | 29  | 37 | 31 | 27 | 34 | 29 | 25 | 31 | 27 | 24 |
| 10  | 51  | 39  | 32  | 27  | 48  | 37  | 31  | 26  | 34 | 29 | 25 | 31 | 27 | 23 | 29 | 25 | 22 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2601 | 2601 | 2601 |
| 5°  | 2605 | 2560 | 2576 |
| 10° | 2579 | 2510 | 2492 |
| 15° | 2544 | 2426 | 2362 |
| 20° | 2497 | 2312 | 2203 |
| 25° | 2449 | 2184 | 2050 |
| 30° | 2384 | 2053 | 1855 |
| 35° | 2321 | 1911 | 1684 |
| 40° | 2257 | 1765 | 1488 |
| 45° | 2182 | 1603 | 1310 |
| 50° | 2105 | 1439 | 1136 |
| 55° | 2024 | 1264 | 969  |
| 60° | 1930 | 1081 | 798  |
| 65° | 1823 | 895  | 718  |
| 70° | 1693 | 722  | 650  |
| 75° | 1529 | 636  | 591  |
| 80° | 1292 | 534  | 512  |
| 85° | 900  | 356  | 384  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2182 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 306.9  | 3.1       |
| 10°-20°   | 842.4  | 8.5       |
| 20°-30°   | 1182.6 | 12.0      |
| 30°-40°   | 1289.2 | 13.1      |
| 40°-50°   | 1184.9 | 12.0      |
| 50°-60°   | 930.5  | 9.4       |
| 60°-70°   | 605.7  | 6.1       |
| 70°-80°   | 311.8  | 3.2       |
| 80°-90°   | 81.5   | 0.8       |
| 90°-100°  | 35.2   | 0.4       |
| 100°-110° | 131.5  | 1.3       |
| 110°-120° | 348.6  | 3.5       |
| 120°-130° | 578.2  | 5.9       |
| 130°-140° | 614.2  | 6.2       |
| 140°-150° | 570.9  | 5.8       |
| 150°-160° | 458.9  | 4.6       |
| 160°-170° | 295.7  | 3.0       |
| 170°-180° | 101.8  | 1.0       |
| 0°-30°    | 2331.9 | 23.6      |
| 0°-40°    | 3621.0 | 36.7      |
| 0°-60°    | 5736.5 | 58.1      |
| 0°-90°    | 6735.4 | 68.2      |
| 90°-120°  | 515.3  | 5.2       |
| 90°-150°  | 2278.7 | 23.1      |
| 90°-180°  | 3135.0 | 31.8      |
| 0°-180°   | 9870.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3274 | 3274  | 3274 | 3274  | 3274 |      |
| 5°   | 3274 | 3259  | 3221 | 3247  | 3238 | 310  |
| 15°  | 3114 | 3081  | 2981 | 2924  | 2895 | 878  |
| 25°  | 2827 | 2732  | 2536 | 2415  | 2370 | 1300 |
| 35°  | 2436 | 2284  | 2024 | 1837  | 1772 | 1524 |
| 45°  | 1991 | 1792  | 1482 | 1271  | 1200 | 1538 |
| 55°  | 1514 | 1283  | 963  | 785   | 729  | 1353 |
| 65°  | 1022 | 782   | 516  | 415   | 406  | 1014 |
| 75°  | 545  | 338   | 237  | 216   | 213  | 577  |
| 85°  | 127  | 65    | 56   | 56    | 56   | 146  |
| 90°  | 1    | 9     | 15   | 19    | 21   | 9    |
| 95°  | 50   | 25    | 30   | 34    | 33   | 60   |
| 105° | 235  | 258   | 47   | 56    | 59   | 251  |
| 115° | 445  | 458   | 477  | 119   | 64   | 438  |
| 125° | 629  | 639   | 654  | 659   | 662  | 561  |
| 135° | 778  | 791   | 798  | 806   | 804  | 601  |
| 145° | 903  | 902   | 915  | 921   | 917  | 565  |
| 155° | 994  | 988   | 997  | 1001  | 995  | 458  |
| 165° | 1048 | 1043  | 1045 | 1051  | 1045 | 296  |
| 175° | 1072 | 1066  | 1068 | 1073  | 1066 | 102  |
| 180° | 1069 | 1069  | 1069 | 1069  | 1069 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3274.1 | 3274.1 | 3274.1 | 3274.1 | 3274.1 |
| 2.5°   | 3288.8 | 3274.1 | 3241.4 | 3271.2 | 3265.3 |
| 5°     | 3274.1 | 3259.3 | 3220.6 | 3247.4 | 3238.5 |
| 7.5°   | 3247.4 | 3229.7 | 3188.2 | 3199.9 | 3185.1 |
| 10°    | 3211.8 | 3191.1 | 3132.0 | 3122.9 | 3105.3 |
| 12.5°  | 3167.5 | 3140.8 | 3060.6 | 3043.0 | 3010.3 |
| 15°    | 3114.1 | 3081.3 | 2980.7 | 2924.5 | 2894.9 |
| 17.5°  | 3051.8 | 3004.3 | 2879.9 | 2814.8 | 2767.3 |
| 20°    | 2980.7 | 2921.3 | 2773.3 | 2699.4 | 2634.0 |
| 22.5°  | 2903.7 | 2835.5 | 2663.6 | 2563.0 | 2518.7 |
| 25°    | 2826.7 | 2731.8 | 2536.2 | 2414.9 | 2370.3 |
| 27.5°  | 2734.9 | 2634.0 | 2417.7 | 2278.5 | 2210.3 |
| 30°    | 2637.2 | 2524.3 | 2287.3 | 2136.4 | 2056.3 |
| 32.5°  | 2542.3 | 2405.8 | 2163.1 | 1985.2 | 1911.0 |
| 35°    | 2435.6 | 2284.5 | 2023.9 | 1837.1 | 1771.7 |
| 37.5°  | 2331.9 | 2168.8 | 1893.4 | 1688.8 | 1614.9 |
| 40°    | 2222.2 | 2044.6 | 1757.0 | 1546.7 | 1469.7 |
| 42.5°  | 2109.7 | 1920.1 | 1620.9 | 1401.4 | 1327.5 |
| 45°    | 1991.1 | 1792.5 | 1481.6 | 1271.0 | 1199.9 |
| 47.5°  | 1878.7 | 1668.3 | 1348.3 | 1137.7 | 1072.6 |
| 50°    | 1754.1 | 1543.8 | 1217.8 | 1013.2 | 951.3  |
| 52.5°  | 1632.4 | 1410.2 | 1093.4 | 897.8  | 841.5  |
| 55°    | 1513.9 | 1282.9 | 962.9  | 785.3  | 729.0  |
| 57.5°  | 1392.7 | 1155.6 | 847.6  | 681.5  | 634.1  |
| 60°    | 1268.1 | 1031.1 | 725.9  | 575.0  | 527.5  |
| 62.5°  | 1146.8 | 909.7  | 622.1  | 480.1  | 456.5  |
| 65°    | 1022.3 | 782.1  | 515.6  | 414.9  | 405.8  |
| 67.5°  | 903.8  | 663.6  | 414.9  | 364.3  | 355.5  |
| 70°    | 779.3  | 548.3  | 343.6  | 314.0  | 302.1  |
| 72.5°  | 660.8  | 441.3  | 287.3  | 263.7  | 257.8  |
| 75°    | 545.1  | 337.6  | 237.0  | 216.3  | 213.4  |
| 77.5°  | 429.8  | 239.9  | 186.7  | 174.8  | 168.8  |
| 80°    | 322.8  | 172.0  | 142.1  | 130.5  | 130.5  |
| 82.5°  | 225.1  | 115.7  | 97.8   | 91.8   | 91.8   |
| 85°    | 127.3  | 65.0   | 56.2   | 56.2   | 56.2   |
| 87.5°  | 47.5   | 23.6   | 23.6   | 20.8   | 20.8   |
| 90°    | 0.7    | 9.3    | 15.4   | 19.4   | 20.8   |
| 92.5°  | 19.4   | 16.2   | 18.5   | 20.1   | 20.8   |
| 95°    | 50.2   | 24.7   | 30.1   | 34.1   | 33.3   |
| 97.5°  | 90.5   | 27.1   | 39.5   | 41.8   | 42.5   |
| 100°   | 137.0  | 31.0   | 44.1   | 50.2   | 51.8   |
| 102.5° | 188.0  | 186.6  | 45.6   | 54.1   | 56.5   |
| 105°   | 235.2  | 258.5  | 47.2   | 55.7   | 58.8   |
| 107.5° | 290.2  | 309.5  | 48.8   | 57.3   | 60.4   |
| 110°   | 342.9  | 359.0  | 135.5  | 58.1   | 61.1   |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 392.4  | 406.2  | 393.1  | 59.6   | 61.9   |
| 115°   | 444.9  | 458.0  | 477.4  | 119.1  | 63.5   |
| 117.5° | 490.6  | 506.0  | 519.3  | 408.5  | 205.8  |
| 120°   | 541.7  | 553.3  | 567.2  | 576.5  | 472.1  |
| 122.5° | 584.9  | 597.4  | 612.9  | 617.5  | 618.3  |
| 125°   | 629.1  | 639.2  | 653.9  | 659.3  | 661.6  |
| 127.5° | 669.3  | 680.2  | 691.8  | 699.6  | 700.3  |
| 130°   | 707.3  | 719.7  | 728.1  | 736.6  | 735.9  |
| 132.5° | 745.9  | 756.1  | 764.5  | 771.5  | 770.8  |
| 135°   | 778.5  | 790.9  | 797.8  | 805.6  | 804.1  |
| 137.5° | 812.5  | 821.7  | 829.6  | 837.3  | 835.0  |
| 140°   | 845.7  | 852.0  | 860.5  | 867.4  | 863.6  |
| 142.5° | 873.7  | 879.1  | 889.1  | 895.2  | 891.4  |
| 145°   | 903.1  | 902.3  | 915.4  | 920.8  | 916.9  |
| 147.5° | 928.5  | 926.2  | 939.4  | 943.3  | 940.2  |
| 150°   | 953.3  | 947.9  | 960.4  | 965.0  | 961.1  |
| 152.5° | 974.2  | 968.0  | 979.6  | 984.3  | 978.9  |
| 155°   | 994.3  | 987.5  | 996.7  | 1001.3 | 995.1  |
| 157.5° | 1010.6 | 1004.4 | 1011.5 | 1016.8 | 1010.6 |
| 160°   | 1024.5 | 1019.9 | 1024.5 | 1029.1 | 1023.7 |
| 162.5° | 1036.9 | 1032.3 | 1036.2 | 1041.6 | 1034.6 |
| 165°   | 1047.7 | 1043.1 | 1045.4 | 1050.8 | 1045.4 |
| 167.5° | 1056.3 | 1051.5 | 1054.0 | 1059.4 | 1052.4 |
| 170°   | 1063.3 | 1058.6 | 1060.1 | 1065.6 | 1058.6 |
| 172.5° | 1067.9 | 1063.3 | 1064.8 | 1070.2 | 1063.3 |
| 175°   | 1071.7 | 1066.3 | 1067.9 | 1073.2 | 1065.6 |
| 177.5° | 1073.2 | 1067.9 | 1068.7 | 1074.1 | 1067.1 |
| 180°   | 1069.4 | 1069.4 | 1069.4 | 1069.4 | 1069.4 |

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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 | 12.02            | 13.02 | 12.81 | 13.83 | 14.82 | 7.99           | 9.00  | 8.78  | 9.80  | 10.79 |
|                 | 3H   | 13.71            | 14.61 | 14.51 | 15.42 | 16.44 | 9.19           | 10.09 | 10.00 | 10.91 | 11.93 |
|                 | 4H   | 14.32            | 15.17 | 15.15 | 16.00 | 17.03 | 9.65           | 10.50 | 10.47 | 11.33 | 12.35 |
|                 | 6H   | 14.76            | 15.54 | 15.59 | 16.37 | 17.41 | 9.98           | 10.76 | 10.82 | 11.60 | 12.64 |
|                 | 8H   | 14.89            | 15.63 | 15.73 | 16.48 | 17.52 | 10.08          | 10.82 | 10.92 | 11.67 | 12.72 |
|                 | 12H  | 14.95            | 15.66 | 15.80 | 16.51 | 17.57 | 10.13          | 10.84 | 10.98 | 11.68 | 12.75 |
| 4H              | 2H   | 12.06            | 12.91 | 12.88 | 13.73 | 14.76 | 8.61           | 9.46  | 9.43  | 10.28 | 11.31 |
|                 | 3H   | 13.90            | 14.61 | 14.74 | 15.47 | 16.51 | 9.97           | 10.68 | 10.81 | 11.54 | 12.58 |
|                 | 4H   | 14.60            | 15.24 | 15.45 | 16.10 | 17.17 | 10.53          | 11.17 | 11.38 | 12.03 | 13.10 |
|                 | 6H   | 15.13            | 15.68 | 15.99 | 16.56 | 17.63 | 10.96          | 11.51 | 11.83 | 12.39 | 13.47 |
|                 | 8H   | 15.30            | 15.82 | 16.17 | 16.69 | 17.78 | 11.09          | 11.61 | 11.96 | 12.48 | 13.57 |
|                 | 12H  | 15.41            | 15.87 | 16.29 | 16.77 | 17.86 | 11.17          | 11.63 | 12.05 | 12.53 | 13.62 |
| 8H              | 4H   | 14.58            | 15.10 | 15.45 | 15.97 | 17.06 | 10.82          | 11.34 | 11.69 | 12.21 | 13.30 |
|                 | 6H   | 15.15            | 15.58 | 16.05 | 16.50 | 17.59 | 11.35          | 11.77 | 12.24 | 12.69 | 13.78 |
|                 | 8H   | 15.37            | 15.75 | 16.28 | 16.66 | 17.77 | 11.54          | 11.92 | 12.45 | 12.83 | 13.94 |
|                 | 12H  | 15.52            | 15.85 | 16.43 | 16.75 | 17.91 | 11.67          | 12.00 | 12.58 | 12.90 | 14.06 |
| 12H             | 4H   | 14.54            | 15.00 | 15.43 | 15.90 | 16.99 | 10.84          | 11.30 | 11.72 | 12.19 | 13.29 |
|                 | 6H   | 15.13            | 15.51 | 16.04 | 16.42 | 17.52 | 11.40          | 11.78 | 12.31 | 12.69 | 13.79 |
|                 | 8H   | 15.36            | 15.69 | 16.27 | 16.59 | 17.75 | 11.62          | 11.95 | 12.53 | 12.85 | 14.01 |