

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: P915435

Luminaire Tested: DFN2DIP-TR3F0-090D040US927-RLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P915435  
REPORT IS A COMBINATION OF REPORTS P901818 AND P898751  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-090D040US927-RLLONL  
Description: 3 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

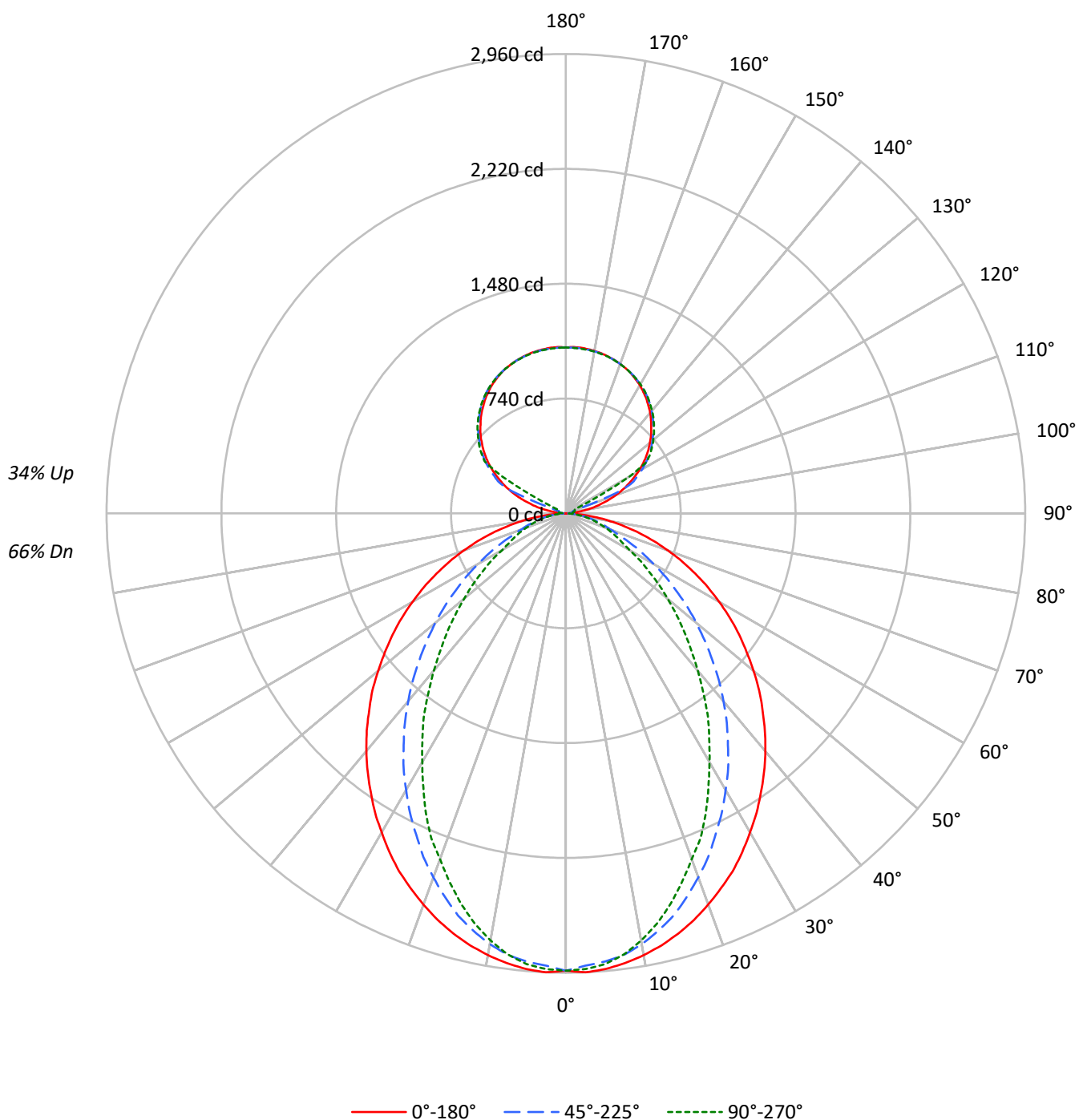
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 9197.2 lumens  
Efficiency: N/A  
Efficacy: 73.9 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): 124.4  
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

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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 | 104 | 104 | 104 | 104 | 92 | 92 | 92 | 81 | 81 | 81 | 71 | 71 | 71 |
| 1   | 102 | 98  | 94  | 91  | 96  | 92  | 89  | 86  | 82 | 79 | 77 | 72 | 71 | 69 | 64 | 62 | 61 |
| 2   | 93  | 86  | 80  | 75  | 88  | 81  | 76  | 72  | 73 | 68 | 65 | 64 | 61 | 59 | 57 | 54 | 52 |
| 3   | 86  | 76  | 69  | 63  | 80  | 72  | 66  | 61  | 65 | 60 | 55 | 57 | 54 | 50 | 51 | 48 | 45 |
| 4   | 79  | 68  | 60  | 54  | 74  | 65  | 58  | 52  | 58 | 52 | 48 | 52 | 47 | 44 | 46 | 42 | 40 |
| 5   | 73  | 61  | 53  | 47  | 68  | 58  | 51  | 45  | 52 | 46 | 42 | 47 | 42 | 38 | 42 | 38 | 35 |
| 6   | 67  | 55  | 47  | 41  | 63  | 52  | 45  | 40  | 47 | 41 | 37 | 43 | 38 | 34 | 38 | 34 | 31 |
| 7   | 62  | 50  | 42  | 37  | 59  | 48  | 40  | 35  | 43 | 37 | 33 | 39 | 34 | 30 | 35 | 31 | 28 |
| 8   | 58  | 46  | 38  | 33  | 55  | 44  | 37  | 32  | 40 | 34 | 29 | 36 | 31 | 27 | 32 | 28 | 25 |
| 9   | 54  | 42  | 35  | 29  | 51  | 40  | 33  | 29  | 37 | 31 | 27 | 33 | 28 | 25 | 30 | 26 | 23 |
| 10  | 51  | 39  | 32  | 27  | 48  | 37  | 30  | 26  | 34 | 28 | 24 | 31 | 26 | 23 | 28 | 24 | 21 |

**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  | 3.0       |
| 10°-20°   | 758.1  | 8.2       |
| 20°-30°   | 1064.4 | 11.6      |
| 30°-40°   | 1160.3 | 12.6      |
| 40°-50°   | 1066.4 | 11.6      |
| 50°-60°   | 837.5  | 9.1       |
| 60°-70°   | 545.1  | 5.9       |
| 70°-80°   | 280.6  | 3.1       |
| 80°-90°   | 73.5   | 0.8       |
| 90°-100°  | 35.2   | 0.4       |
| 100°-110° | 131.5  | 1.4       |
| 110°-120° | 348.6  | 3.8       |
| 120°-130° | 578.2  | 6.3       |
| 130°-140° | 614.2  | 6.7       |
| 140°-150° | 570.9  | 6.2       |
| 150°-160° | 458.9  | 5.0       |
| 160°-170° | 295.7  | 3.2       |
| 170°-180° | 101.8  | 1.1       |
| 0°-30°    | 2098.7 | 22.8      |
| 0°-40°    | 3258.9 | 35.4      |
| 0°-60°    | 5162.8 | 56.1      |
| 0°-90°    | 6062.1 | 65.9      |
| 90°-120°  | 515.3  | 5.6       |
| 90°-150°  | 2278.7 | 24.8      |
| 90°-180°  | 3135.0 | 34.1      |
| 0°-180°   | 9197.2 | 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    | 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°     | 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    | 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 | 12.98            | 13.96 | 13.80 | 14.80 | 15.82 | 8.96           | 9.94  | 9.78  | 10.77 | 11.80 |
|                 | 3H   | 14.66            | 15.54 | 15.49 | 16.38 | 17.44 | 10.16          | 11.03 | 10.98 | 11.87 | 12.93 |
|                 | 4H   | 15.27            | 16.10 | 16.12 | 16.95 | 18.02 | 10.61          | 11.44 | 11.45 | 12.28 | 13.35 |
|                 | 6H   | 15.69            | 16.46 | 16.55 | 17.31 | 18.39 | 10.93          | 11.69 | 11.79 | 12.55 | 13.63 |
|                 | 8H   | 15.82            | 16.54 | 16.69 | 17.42 | 18.50 | 11.02          | 11.75 | 11.89 | 12.62 | 13.70 |
|                 | 12H  | 15.88            | 16.57 | 16.75 | 17.44 | 18.55 | 11.07          | 11.76 | 11.94 | 12.63 | 13.73 |
| 4H              | 2H   | 13.02            | 13.85 | 13.87 | 14.69 | 15.76 | 9.57           | 10.40 | 10.42 | 11.24 | 12.31 |
|                 | 3H   | 14.85            | 15.54 | 15.71 | 16.42 | 17.50 | 10.93          | 11.61 | 11.79 | 12.50 | 13.58 |
|                 | 4H   | 15.54            | 16.17 | 16.42 | 17.05 | 18.15 | 11.48          | 12.10 | 12.35 | 12.98 | 14.09 |
|                 | 6H   | 16.06            | 16.59 | 16.95 | 17.50 | 18.61 | 11.90          | 12.43 | 12.79 | 13.34 | 14.45 |
|                 | 8H   | 16.23            | 16.73 | 17.12 | 17.63 | 18.75 | 12.03          | 12.53 | 12.92 | 13.43 | 14.55 |
|                 | 12H  | 16.33            | 16.78 | 17.24 | 17.69 | 18.82 | 12.09          | 12.55 | 13.00 | 13.46 | 14.59 |
| 8H              | 4H   | 15.52            | 16.02 | 16.41 | 16.92 | 18.04 | 11.76          | 12.26 | 12.65 | 13.16 | 14.29 |
|                 | 6H   | 16.08            | 16.50 | 17.00 | 17.44 | 18.56 | 12.28          | 12.69 | 13.19 | 13.63 | 14.76 |
|                 | 8H   | 16.29            | 16.66 | 17.22 | 17.59 | 18.73 | 12.46          | 12.83 | 13.39 | 13.76 | 14.91 |
|                 | 12H  | 16.43            | 16.75 | 17.36 | 17.68 | 18.87 | 12.58          | 12.91 | 13.51 | 13.83 | 15.03 |
| 12H             | 4H   | 15.48            | 15.93 | 16.39 | 16.85 | 17.98 | 11.77          | 12.22 | 12.68 | 13.14 | 14.27 |
|                 | 6H   | 16.06            | 16.42 | 16.98 | 17.36 | 18.50 | 12.32          | 12.69 | 13.25 | 13.62 | 14.77 |
|                 | 8H   | 16.28            | 16.60 | 17.21 | 17.52 | 18.72 | 12.54          | 12.86 | 13.47 | 13.78 | 14.98 |