

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: P917504

Luminaire Tested: DFN2DIP-SQ3F0-110D040US930-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P917504  
REPORT IS A COMBINATION OF REPORTS P899875 AND P896733  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-110D040US930-FLLFLL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

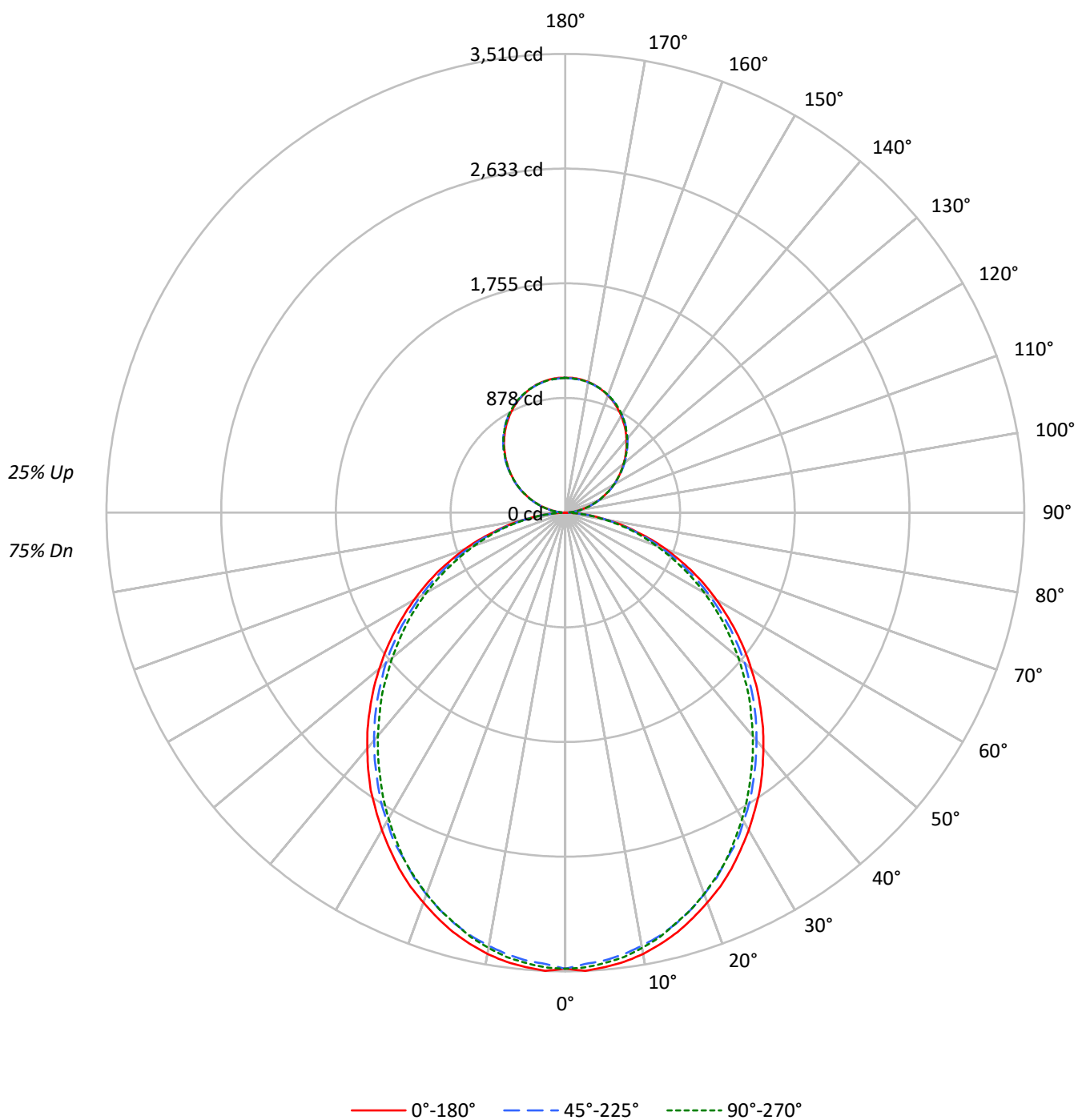
Lumens per Lamp: N/A  
Luminaire Lumens: 11764.7 lumens  
Efficiency: N/A  
Efficacy: 82.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 142.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9977  
Total Harmonic Distortion (THDi): 0.049  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P917504

CATALOG NUMBER: DFN2DIP-SQ3F0-110D040US930-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P917504

CATALOG NUMBER: DFN2DIP-SQ3F0-110D040US930-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   | 113 | 113 | 113 | 113 | 108 | 108 | 108 | 108 | 97 | 97 | 97 | 88 | 88 | 88 | 80 | 80 | 80 |
| 1   | 104 | 99  | 95  | 91  | 98  | 94  | 91  | 88  | 86 | 83 | 80 | 78 | 76 | 74 | 70 | 69 | 67 |
| 2   | 94  | 87  | 80  | 75  | 89  | 83  | 77  | 72  | 75 | 71 | 67 | 68 | 65 | 62 | 62 | 59 | 57 |
| 3   | 86  | 76  | 68  | 62  | 82  | 73  | 66  | 60  | 66 | 61 | 56 | 60 | 56 | 52 | 55 | 51 | 48 |
| 4   | 79  | 68  | 59  | 53  | 75  | 65  | 57  | 51  | 59 | 53 | 48 | 54 | 49 | 45 | 49 | 45 | 42 |
| 5   | 73  | 60  | 52  | 46  | 69  | 58  | 50  | 44  | 53 | 46 | 42 | 48 | 43 | 39 | 44 | 40 | 36 |
| 6   | 67  | 54  | 46  | 40  | 63  | 52  | 44  | 39  | 48 | 41 | 36 | 44 | 38 | 34 | 40 | 36 | 32 |
| 7   | 62  | 49  | 41  | 35  | 59  | 47  | 40  | 34  | 44 | 37 | 32 | 40 | 34 | 30 | 37 | 32 | 29 |
| 8   | 58  | 45  | 37  | 31  | 55  | 43  | 36  | 30  | 40 | 33 | 29 | 37 | 31 | 27 | 34 | 29 | 26 |
| 9   | 54  | 41  | 33  | 28  | 51  | 40  | 32  | 27  | 37 | 30 | 26 | 34 | 28 | 25 | 31 | 27 | 23 |
| 10  | 50  | 38  | 30  | 25  | 48  | 36  | 29  | 25  | 34 | 28 | 23 | 31 | 26 | 22 | 29 | 24 | 21 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3998 | 3998 | 3998 |
| 5°  | 4002 | 3940 | 3968 |
| 10° | 3967 | 3884 | 3913 |
| 15° | 3906 | 3818 | 3828 |
| 20° | 3825 | 3726 | 3741 |
| 25° | 3744 | 3617 | 3640 |
| 30° | 3643 | 3516 | 3512 |
| 35° | 3547 | 3396 | 3377 |
| 40° | 3430 | 3276 | 3249 |
| 45° | 3312 | 3155 | 3117 |
| 50° | 3184 | 3027 | 2965 |
| 55° | 3049 | 2880 | 2825 |
| 60° | 2897 | 2706 | 2664 |
| 65° | 2730 | 2525 | 2475 |
| 70° | 2517 | 2304 | 2270 |
| 75° | 2224 | 2040 | 2079 |
| 80° | 1869 | 1702 | 1719 |
| 85° | 1317 | 1128 | 1125 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3312 cd/sqm

TEST NUMBER: P917504

CATALOG NUMBER: DFN2DIP-SQ3F0-110D040US930-FLLFLL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 328.4   | 2.8       |
| 10°-20°   | 924.1   | 7.9       |
| 20°-30°   | 1358.1  | 11.5      |
| 30°-40°   | 1577.3  | 13.4      |
| 40°-50°   | 1575.4  | 13.4      |
| 50°-60°   | 1373.7  | 11.7      |
| 60°-70°   | 1015.5  | 8.6       |
| 70°-80°   | 574.5   | 4.9       |
| 80°-90°   | 154.6   | 1.3       |
| 90°-100°  | 63.8    | 0.5       |
| 100°-110° | 202.8   | 1.7       |
| 110°-120° | 347.0   | 2.9       |
| 120°-130° | 456.4   | 3.9       |
| 130°-140° | 512.3   | 4.4       |
| 140°-150° | 502.4   | 4.3       |
| 150°-160° | 421.4   | 3.6       |
| 160°-170° | 279.5   | 2.4       |
| 170°-180° | 97.7    | 0.8       |
| 0°-30°    | 2610.6  | 22.2      |
| 0°-40°    | 4187.9  | 35.6      |
| 0°-60°    | 7137.0  | 60.7      |
| 0°-90°    | 8881.5  | 75.5      |
| 90°-120°  | 613.6   | 5.2       |
| 90°-150°  | 2084.7  | 17.7      |
| 90°-180°  | 2883.0  | 24.5      |
| 0°-180°   | 11764.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3490 | 3490  | 3490 | 3490  | 3490 |      |
| 5°   | 3490 | 3476  | 3439 | 3466  | 3460 | 331  |
| 15°  | 3322 | 3302  | 3258 | 3272  | 3255 | 936  |
| 25°  | 3006 | 2980  | 2923 | 2929  | 2923 | 1383 |
| 35°  | 2594 | 2560  | 2507 | 2486  | 2470 | 1620 |
| 45°  | 2111 | 2087  | 2037 | 2000  | 1987 | 1629 |
| 55°  | 1597 | 1577  | 1537 | 1497  | 1480 | 1428 |
| 65°  | 1077 | 1057  | 1024 | 993   | 977  | 1065 |
| 75°  | 564  | 557   | 540  | 520   | 527  | 602  |
| 85°  | 138  | 134   | 131  | 121   | 118  | 153  |
| 90°  | 1    | 11    | 30   | 29    | 30   | 11   |
| 95°  | 45   | 54    | 56   | 56    | 54   | 51   |
| 105° | 187  | 190   | 192  | 193   | 193  | 198  |
| 115° | 348  | 353   | 352  | 351   | 348  | 344  |
| 125° | 506  | 514   | 512  | 509   | 508  | 453  |
| 135° | 655  | 665   | 667  | 666   | 663  | 506  |
| 145° | 795  | 802   | 807  | 808   | 804  | 497  |
| 155° | 910  | 912   | 915  | 919   | 916  | 419  |
| 165° | 989  | 988   | 988  | 995   | 990  | 279  |
| 175° | 1030 | 1027  | 1025 | 1031  | 1026 | 98   |
| 180° | 1031 | 1031  | 1031 | 1031  | 1031 |      |

TEST NUMBER: P917504

CATALOG NUMBER: DFN2DIP-SQ3F0-110D040US930-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3489.6 | 3489.6 | 3489.6 | 3489.6 | 3489.6 |
| 2.5°   | 3509.9 | 3493.1 | 3456.1 | 3489.6 | 3483.2 |
| 5°     | 3489.6 | 3476.4 | 3439.4 | 3466.1 | 3459.7 |
| 7.5°   | 3466.1 | 3446.2 | 3409.2 | 3436.2 | 3429.5 |
| 10°    | 3429.5 | 3405.9 | 3365.7 | 3392.4 | 3382.4 |
| 12.5°  | 3378.9 | 3358.9 | 3318.8 | 3335.5 | 3328.7 |
| 15°    | 3321.9 | 3302.0 | 3258.2 | 3271.7 | 3255.0 |
| 17.5°  | 3251.4 | 3231.5 | 3187.7 | 3204.4 | 3187.7 |
| 20°    | 3174.2 | 3154.2 | 3107.3 | 3117.2 | 3104.1 |
| 22.5°  | 3097.3 | 3067.0 | 3023.2 | 3023.2 | 3016.4 |
| 25°    | 3006.5 | 2979.8 | 2922.8 | 2929.3 | 2922.8 |
| 27.5°  | 2905.7 | 2882.2 | 2838.8 | 2828.8 | 2812.1 |
| 30°    | 2805.4 | 2778.3 | 2728.1 | 2718.1 | 2704.6 |
| 32.5°  | 2697.8 | 2677.9 | 2624.1 | 2603.8 | 2590.3 |
| 35°    | 2593.9 | 2560.4 | 2506.6 | 2486.3 | 2469.6 |
| 37.5°  | 2476.4 | 2446.1 | 2392.4 | 2368.8 | 2352.1 |
| 40°    | 2355.7 | 2328.7 | 2274.9 | 2245.0 | 2231.5 |
| 42.5°  | 2238.2 | 2211.2 | 2157.8 | 2123.9 | 2104.0 |
| 45°    | 2110.8 | 2087.2 | 2036.7 | 2000.1 | 1986.6 |
| 47.5°  | 1986.6 | 1963.1 | 1909.3 | 1872.3 | 1852.3 |
| 50°    | 1855.5 | 1838.8 | 1791.8 | 1744.8 | 1728.1 |
| 52.5°  | 1728.1 | 1704.5 | 1661.2 | 1624.1 | 1600.6 |
| 55°    | 1597.4 | 1577.1 | 1536.9 | 1496.6 | 1479.9 |
| 57.5°  | 1466.4 | 1449.7 | 1405.9 | 1365.6 | 1352.1 |
| 60°    | 1335.4 | 1322.3 | 1275.2 | 1238.2 | 1228.2 |
| 62.5°  | 1207.9 | 1184.5 | 1151.0 | 1117.5 | 1104.0 |
| 65°    | 1077.3 | 1057.0 | 1023.5 | 993.3  | 976.6  |
| 67.5°  | 943.1  | 926.0  | 896.1  | 872.6  | 859.1  |
| 70°    | 818.8  | 805.3  | 775.0  | 751.5  | 738.3  |
| 72.5°  | 691.4  | 677.8  | 661.1  | 637.6  | 627.6  |
| 75°    | 563.5  | 557.2  | 540.1  | 520.2  | 526.9  |
| 77.5°  | 449.6  | 436.1  | 429.3  | 419.4  | 409.4  |
| 80°    | 335.7  | 332.2  | 325.4  | 315.4  | 308.7  |
| 82.5°  | 228.2  | 228.2  | 225.0  | 211.5  | 211.5  |
| 85°    | 137.5  | 134.2  | 131.0  | 120.7  | 117.5  |
| 87.5°  | 60.5   | 53.7   | 47.0   | 37.0   | 33.4   |
| 90°    | 0.9    | 11.2   | 30.5   | 28.6   | 29.5   |
| 92.5°  | 19.2   | 26.1   | 27.1   | 28.0   | 28.0   |
| 95°    | 45.4   | 54.1   | 55.7   | 55.7   | 54.1   |
| 97.5°  | 75.6   | 83.6   | 87.1   | 87.1   | 87.1   |
| 100°   | 110.4  | 117.6  | 120.0  | 120.0  | 119.1  |
| 102.5° | 147.1  | 152.4  | 155.8  | 156.7  | 155.8  |
| 105°   | 187.2  | 189.6  | 191.5  | 193.1  | 193.1  |
| 107.5° | 227.0  | 230.7  | 230.7  | 231.3  | 227.0  |
| 110°   | 265.5  | 270.5  | 270.5  | 270.5  | 268.1  |

TEST NUMBER: P917504

CATALOG NUMBER: DFN2DIP-SQ3F0-110D040US930-FLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 307.2  | 312.5  | 311.5  | 309.1  | 307.2  |
| 115°   | 348.2  | 353.3  | 351.6  | 350.7  | 348.2  |
| 117.5° | 389.0  | 395.8  | 391.5  | 389.0  | 386.5  |
| 120°   | 430.1  | 436.8  | 430.1  | 430.1  | 427.2  |
| 122.5° | 467.3  | 476.1  | 471.7  | 469.2  | 467.3  |
| 125°   | 506.5  | 514.3  | 511.8  | 509.0  | 508.1  |
| 127.5° | 544.8  | 554.4  | 551.0  | 547.2  | 544.8  |
| 130°   | 580.5  | 591.7  | 590.2  | 588.3  | 584.9  |
| 132.5° | 620.6  | 629.3  | 630.0  | 625.6  | 623.1  |
| 135°   | 655.2  | 664.8  | 666.7  | 665.7  | 663.2  |
| 137.5° | 693.7  | 701.5  | 703.0  | 702.4  | 698.7  |
| 140°   | 727.6  | 735.4  | 739.7  | 739.7  | 736.3  |
| 142.5° | 762.5  | 770.2  | 772.7  | 773.6  | 770.2  |
| 145°   | 795.4  | 801.6  | 806.6  | 807.6  | 804.1  |
| 147.5° | 824.9  | 832.7  | 836.4  | 838.0  | 834.5  |
| 150°   | 855.4  | 860.7  | 864.1  | 866.9  | 864.1  |
| 152.5° | 882.5  | 887.7  | 892.1  | 895.5  | 892.1  |
| 155°   | 909.5  | 912.0  | 914.8  | 919.2  | 916.3  |
| 157.5° | 932.9  | 934.7  | 936.2  | 942.5  | 938.1  |
| 160°   | 953.7  | 955.5  | 956.4  | 961.7  | 958.0  |
| 162.5° | 972.9  | 972.9  | 973.9  | 979.7  | 975.4  |
| 165°   | 989.4  | 988.5  | 988.5  | 994.7  | 990.3  |
| 167.5° | 1004.4 | 1001.5 | 1001.5 | 1007.8 | 1003.4 |
| 170°   | 1015.5 | 1013.0 | 1012.1 | 1018.3 | 1013.0 |
| 172.5° | 1023.3 | 1020.8 | 1019.9 | 1026.1 | 1020.8 |
| 175°   | 1029.6 | 1027.0 | 1025.2 | 1031.4 | 1026.1 |
| 177.5° | 1033.0 | 1030.5 | 1028.6 | 1033.9 | 1028.6 |
| 180°   | 1031.4 | 1031.4 | 1031.4 | 1031.4 | 1031.4 |

TEST NUMBER: P917504

CATALOG NUMBER: DFN2DIP-SQ3F0-110D040US930-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 | 14.14            | 15.28 | 14.84 | 16.01 | 16.86 | 13.69          | 14.84 | 14.39 | 15.56 | 16.41 |
|                 | 3H   | 15.81            | 16.84 | 16.53 | 17.58 | 18.46 | 15.32          | 16.35 | 16.04 | 17.09 | 17.97 |
|                 | 4H   | 16.41            | 17.38 | 17.14 | 18.13 | 19.02 | 15.91          | 16.89 | 16.65 | 17.63 | 18.53 |
|                 | 6H   | 16.82            | 17.72 | 17.57 | 18.47 | 19.38 | 16.32          | 17.22 | 17.07 | 17.97 | 18.88 |
|                 | 8H   | 16.93            | 17.79 | 17.69 | 18.56 | 19.48 | 16.43          | 17.29 | 17.19 | 18.06 | 18.97 |
|                 | 12H  | 16.99            | 17.81 | 17.75 | 18.57 | 19.51 | 16.48          | 17.30 | 17.24 | 18.06 | 19.00 |
| 4H              | 2H   | 14.63            | 15.60 | 15.36 | 16.34 | 17.24 | 14.27          | 15.25 | 15.01 | 15.99 | 16.89 |
|                 | 3H   | 16.51            | 17.33 | 17.26 | 18.10 | 19.02 | 16.10          | 16.92 | 16.85 | 17.70 | 18.61 |
|                 | 4H   | 17.23            | 17.97 | 18.00 | 18.75 | 19.70 | 16.81          | 17.55 | 17.58 | 18.33 | 19.27 |
|                 | 6H   | 17.76            | 18.40 | 18.54 | 19.21 | 20.16 | 17.33          | 17.97 | 18.11 | 18.77 | 19.73 |
|                 | 8H   | 17.91            | 18.51 | 18.70 | 19.31 | 20.28 | 17.48          | 18.08 | 18.27 | 18.88 | 19.84 |
|                 | 12H  | 18.00            | 18.54 | 18.81 | 19.36 | 20.33 | 17.55          | 18.09 | 18.36 | 18.91 | 19.88 |
| 8H              | 4H   | 17.45            | 18.05 | 18.24 | 18.85 | 19.81 | 17.07          | 17.67 | 17.86 | 18.47 | 19.44 |
|                 | 6H   | 18.09            | 18.58 | 18.90 | 19.43 | 20.39 | 17.70          | 18.20 | 18.52 | 19.04 | 20.01 |
|                 | 8H   | 18.31            | 18.75 | 19.14 | 19.59 | 20.57 | 17.91          | 18.36 | 18.74 | 19.20 | 20.18 |
|                 | 12H  | 18.45            | 18.84 | 19.28 | 19.67 | 20.71 | 18.04          | 18.43 | 18.87 | 19.26 | 20.30 |
| 12H             | 4H   | 17.45            | 17.99 | 18.26 | 18.81 | 19.78 | 17.08          | 17.62 | 17.89 | 18.44 | 19.41 |
|                 | 6H   | 18.12            | 18.56 | 18.95 | 19.40 | 20.38 | 17.74          | 18.19 | 18.57 | 19.03 | 20.01 |
|                 | 8H   | 18.37            | 18.76 | 19.20 | 19.59 | 20.63 | 17.99          | 18.38 | 18.82 | 19.21 | 20.25 |