

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: P909346

Luminaire Tested: DFN2DIP-SQ3F0-110D100US840-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P909346  
REPORT IS A COMBINATION OF REPORTS P899984 AND P896733  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-110D100US840-RLLFLL  
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

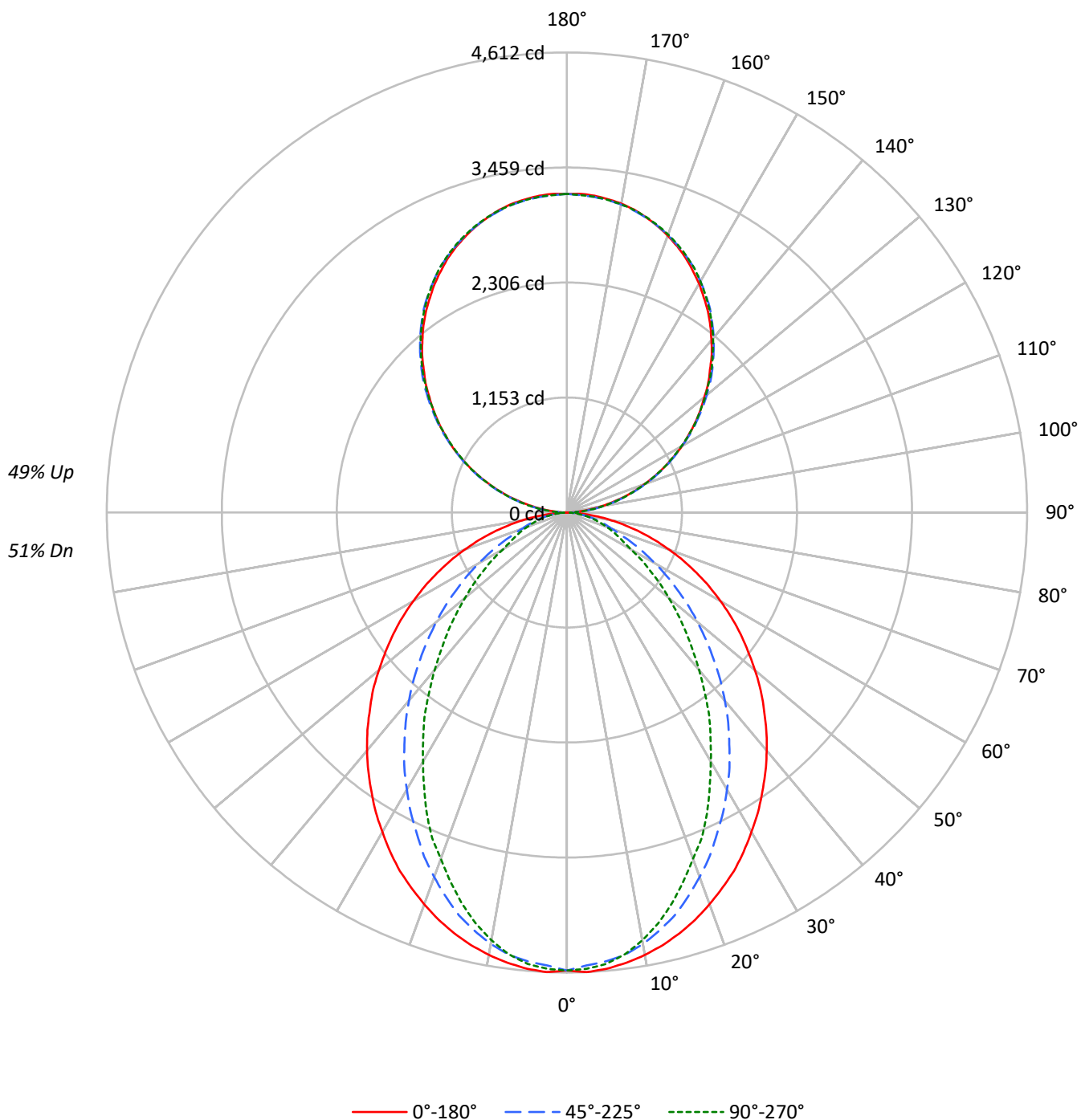
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 18379.6 lumens  
Efficiency: N/A  
Efficacy: 97.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 189.4  
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

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### Luminous Intensity Polar Plot



TEST NUMBER: P909346

CATALOG NUMBER: DFN2DIP-SQ3F0-110D100US840-RLFL

**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   | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 84 | 84 | 84 | 70 | 70 | 70 | 57 | 57 | 57 |
| 1   | 99  | 94  | 91  | 87  | 91 | 87 | 84 | 81 | 74 | 72 | 70 | 63 | 61 | 59 | 52 | 50 | 49 |
| 2   | 90  | 83  | 77  | 72  | 83 | 77 | 72 | 68 | 66 | 62 | 59 | 56 | 53 | 50 | 46 | 44 | 42 |
| 3   | 83  | 73  | 66  | 61  | 76 | 68 | 62 | 57 | 59 | 54 | 50 | 50 | 46 | 43 | 41 | 39 | 37 |
| 4   | 76  | 65  | 58  | 52  | 70 | 61 | 54 | 49 | 52 | 47 | 43 | 44 | 41 | 37 | 37 | 34 | 32 |
| 5   | 70  | 58  | 51  | 45  | 64 | 55 | 48 | 42 | 47 | 42 | 38 | 40 | 36 | 33 | 34 | 31 | 28 |
| 6   | 64  | 53  | 45  | 39  | 59 | 49 | 42 | 37 | 43 | 37 | 33 | 36 | 32 | 29 | 31 | 28 | 25 |
| 7   | 60  | 48  | 40  | 34  | 55 | 45 | 38 | 33 | 39 | 33 | 29 | 33 | 29 | 26 | 28 | 25 | 23 |
| 8   | 55  | 43  | 36  | 31  | 51 | 41 | 34 | 29 | 36 | 30 | 26 | 31 | 26 | 23 | 26 | 23 | 20 |
| 9   | 52  | 40  | 32  | 27  | 48 | 37 | 31 | 26 | 33 | 27 | 24 | 28 | 24 | 21 | 24 | 21 | 18 |
| 10  | 48  | 37  | 29  | 25  | 45 | 34 | 28 | 24 | 30 | 25 | 21 | 26 | 22 | 19 | 22 | 19 | 17 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 5261 | 5261 | 5261 |
| 5°  | 5266 | 5174 | 5209 |
| 10° | 5210 | 5069 | 5037 |
| 15° | 5135 | 4898 | 4774 |
| 20° | 5037 | 4664 | 4451 |
| 25° | 4936 | 4402 | 4139 |
| 30° | 4802 | 4133 | 3744 |
| 35° | 4671 | 3845 | 3398 |
| 40° | 4537 | 3548 | 3000 |
| 45° | 4382 | 3218 | 2640 |
| 50° | 4220 | 2886 | 2289 |
| 55° | 4052 | 2530 | 1951 |
| 60° | 3857 | 2160 | 1604 |
| 65° | 3632 | 1784 | 1442 |
| 70° | 3360 | 1432 | 1302 |
| 75° | 3017 | 1255 | 1181 |
| 80° | 2521 | 1042 | 1019 |
| 85° | 1709 | 679  | 756  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 4382 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 430.3   | 2.3       |
| 10°-20°   | 1181.2  | 6.4       |
| 20°-30°   | 1658.4  | 9.0       |
| 30°-40°   | 1807.8  | 9.8       |
| 40°-50°   | 1661.5  | 9.0       |
| 50°-60°   | 1304.9  | 7.1       |
| 60°-70°   | 849.4   | 4.6       |
| 70°-80°   | 437.2   | 2.4       |
| 80°-90°   | 120.7   | 0.7       |
| 90°-100°  | 197.6   | 1.1       |
| 100°-110° | 627.9   | 3.4       |
| 110°-120° | 1074.6  | 5.8       |
| 120°-130° | 1413.3  | 7.7       |
| 130°-140° | 1586.4  | 8.6       |
| 140°-150° | 1555.6  | 8.5       |
| 150°-160° | 1304.9  | 7.1       |
| 160°-170° | 865.4   | 4.7       |
| 170°-180° | 302.5   | 1.6       |
| 0°-30°    | 3269.9  | 17.8      |
| 0°-40°    | 5077.7  | 27.6      |
| 0°-60°    | 8044.1  | 43.8      |
| 0°-90°    | 9451.3  | 51.4      |
| 90°-120°  | 1900.2  | 10.3      |
| 90°-150°  | 6455.4  | 35.1      |
| 90°-180°  | 8928.0  | 48.6      |
| 0°-180°   | 18379.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 4591 | 4591  | 4591 | 4591  | 4591 |      |
| 5°   | 4591 | 4570  | 4516 | 4554  | 4541 | 435  |
| 15°  | 4367 | 4321  | 4180 | 4101  | 4060 | 1231 |
| 25°  | 3964 | 3831  | 3556 | 3386  | 3324 | 1823 |
| 35°  | 3416 | 3203  | 2838 | 2576  | 2484 | 2138 |
| 45°  | 2792 | 2514  | 2078 | 1782  | 1683 | 2156 |
| 55°  | 2123 | 1799  | 1350 | 1101  | 1022 | 1897 |
| 65°  | 1434 | 1097  | 723  | 582   | 569  | 1421 |
| 75°  | 764  | 473   | 332  | 303   | 299  | 808  |
| 85°  | 178  | 91    | 79   | 79    | 79   | 205  |
| 90°  | 3    | 35    | 94   | 89    | 92   | 18   |
| 95°  | 141  | 168   | 172  | 172   | 168  | 156  |
| 105° | 580  | 587   | 593  | 598   | 598  | 612  |
| 115° | 1078 | 1094  | 1089 | 1086  | 1078 | 1067 |
| 125° | 1568 | 1593  | 1585 | 1576  | 1573 | 1402 |
| 135° | 2029 | 2059  | 2064 | 2062  | 2054 | 1568 |
| 145° | 2463 | 2482  | 2498 | 2500  | 2490 | 1539 |
| 155° | 2816 | 2824  | 2833 | 2846  | 2838 | 1296 |
| 165° | 3064 | 3061  | 3061 | 3080  | 3067 | 864  |
| 175° | 3188 | 3180  | 3175 | 3194  | 3177 | 303  |
| 180° | 3194 | 3194  | 3194 | 3194  | 3194 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 4591.2 | 4591.2 | 4591.2 | 4591.2 | 4591.2 |
| 2.5°   | 4611.9 | 4591.2 | 4545.3 | 4587.2 | 4578.8 |
| 5°     | 4591.2 | 4570.4 | 4516.2 | 4553.7 | 4541.4 |
| 7.5°   | 4553.7 | 4528.9 | 4470.8 | 4487.1 | 4466.3 |
| 10°    | 4503.9 | 4474.7 | 4391.9 | 4379.1 | 4354.4 |
| 12.5°  | 4441.7 | 4404.2 | 4291.8 | 4267.1 | 4221.2 |
| 15°    | 4366.8 | 4320.9 | 4179.8 | 4101.0 | 4059.5 |
| 17.5°  | 4279.5 | 4213.0 | 4038.4 | 3947.1 | 3880.5 |
| 20°    | 4179.8 | 4096.5 | 3888.9 | 3785.3 | 3693.6 |
| 22.5°  | 4071.9 | 3976.1 | 3735.1 | 3594.0 | 3531.8 |
| 25°    | 3963.8 | 3830.7 | 3556.5 | 3386.4 | 3323.8 |
| 27.5°  | 3835.2 | 3693.6 | 3390.3 | 3195.0 | 3099.4 |
| 30°    | 3698.0 | 3539.8 | 3207.4 | 2995.8 | 2883.4 |
| 32.5°  | 3564.9 | 3373.6 | 3033.2 | 2783.8 | 2679.8 |
| 35°    | 3415.5 | 3203.4 | 2838.0 | 2576.2 | 2484.5 |
| 37.5°  | 3270.0 | 3041.2 | 2655.0 | 2368.0 | 2264.5 |
| 40°    | 3116.1 | 2867.1 | 2463.8 | 2168.8 | 2060.8 |
| 42.5°  | 2958.3 | 2692.5 | 2272.9 | 1965.2 | 1861.6 |
| 45°    | 2792.2 | 2513.6 | 2077.6 | 1782.2 | 1682.6 |
| 47.5°  | 2634.3 | 2339.5 | 1890.7 | 1595.3 | 1504.1 |
| 50°    | 2459.7 | 2164.8 | 1707.8 | 1420.8 | 1333.9 |
| 52.5°  | 2289.2 | 1977.5 | 1533.2 | 1259.0 | 1180.0 |
| 55°    | 2122.9 | 1799.0 | 1350.2 | 1101.2 | 1022.3 |
| 57.5°  | 1952.9 | 1620.4 | 1188.4 | 955.7  | 889.1  |
| 60°    | 1778.3 | 1445.9 | 1017.8 | 806.3  | 739.7  |
| 62.5°  | 1608.1 | 1275.8 | 872.4  | 673.2  | 640.1  |
| 65°    | 1433.5 | 1096.7 | 723.0  | 581.9  | 569.1  |
| 67.5°  | 1267.4 | 930.6  | 581.9  | 510.9  | 498.6  |
| 70°    | 1092.8 | 768.8  | 481.8  | 440.4  | 423.6  |
| 72.5°  | 926.6  | 618.9  | 402.9  | 369.8  | 361.4  |
| 75°    | 764.4  | 473.4  | 332.3  | 303.3  | 299.3  |
| 77.5°  | 602.6  | 336.4  | 261.9  | 245.1  | 236.7  |
| 80°    | 452.7  | 241.2  | 199.2  | 183.0  | 183.0  |
| 82.5°  | 315.6  | 162.2  | 137.1  | 128.8  | 128.8  |
| 85°    | 178.5  | 91.3   | 78.9   | 78.9   | 78.9   |
| 87.5°  | 66.6   | 33.0   | 33.0   | 29.1   | 29.1   |
| 90°    | 2.9    | 34.6   | 94.3   | 88.6   | 91.5   |
| 92.5°  | 59.7   | 80.9   | 83.8   | 86.6   | 86.6   |
| 95°    | 140.6  | 167.5  | 172.4  | 172.4  | 167.5  |
| 97.5°  | 234.0  | 259.0  | 269.6  | 269.6  | 269.6  |
| 100°   | 341.8  | 364.0  | 371.6  | 371.6  | 368.8  |
| 102.5° | 455.4  | 471.8  | 482.4  | 485.2  | 482.4  |
| 105°   | 579.7  | 587.3  | 593.1  | 597.9  | 597.9  |
| 107.5° | 702.9  | 714.5  | 714.5  | 716.4  | 702.9  |
| 110°   | 822.3  | 837.7  | 837.7  | 837.7  | 830.0  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 951.3  | 967.7  | 964.8  | 957.0  | 951.3  |
| 115°   | 1078.4 | 1093.8 | 1089.0 | 1086.1 | 1078.4 |
| 117.5° | 1204.6 | 1225.8 | 1212.2 | 1204.6 | 1196.8 |
| 120°   | 1331.6 | 1352.8 | 1331.6 | 1331.6 | 1323.0 |
| 122.5° | 1447.1 | 1474.1 | 1460.7 | 1453.0 | 1447.1 |
| 125°   | 1568.5 | 1592.6 | 1584.9 | 1576.2 | 1573.4 |
| 127.5° | 1687.0 | 1716.8 | 1706.2 | 1694.7 | 1687.0 |
| 130°   | 1797.7 | 1832.3 | 1827.6 | 1821.7 | 1811.2 |
| 132.5° | 1921.9 | 1948.8 | 1950.8 | 1937.3 | 1929.6 |
| 135°   | 2028.7 | 2058.6 | 2064.4 | 2061.5 | 2053.8 |
| 137.5° | 2148.2 | 2172.2 | 2177.1 | 2175.1 | 2163.5 |
| 140°   | 2253.1 | 2277.1 | 2290.7 | 2290.7 | 2280.1 |
| 142.5° | 2361.0 | 2385.0 | 2392.7 | 2395.6 | 2385.0 |
| 145°   | 2463.0 | 2482.2 | 2497.7 | 2500.5 | 2489.9 |
| 147.5° | 2554.5 | 2578.6 | 2590.1 | 2595.0 | 2584.3 |
| 150°   | 2648.9 | 2665.2 | 2675.8 | 2684.4 | 2675.8 |
| 152.5° | 2732.6 | 2749.0 | 2762.5 | 2773.1 | 2762.5 |
| 155°   | 2816.4 | 2824.1 | 2832.8 | 2846.2 | 2837.5 |
| 157.5° | 2888.6 | 2894.4 | 2899.2 | 2918.4 | 2905.0 |
| 160°   | 2953.1 | 2958.9 | 2961.7 | 2978.1 | 2966.6 |
| 162.5° | 3012.8 | 3012.8 | 3015.7 | 3033.9 | 3020.5 |
| 165°   | 3063.8 | 3060.9 | 3060.9 | 3080.2 | 3066.8 |
| 167.5° | 3110.1 | 3101.4 | 3101.4 | 3120.7 | 3107.2 |
| 170°   | 3144.7 | 3137.0 | 3134.1 | 3153.4 | 3137.0 |
| 172.5° | 3168.8 | 3161.1 | 3158.2 | 3177.4 | 3161.1 |
| 175°   | 3188.0 | 3180.4 | 3174.6 | 3193.8 | 3177.4 |
| 177.5° | 3198.6 | 3191.0 | 3185.1 | 3201.5 | 3185.1 |
| 180°   | 3193.8 | 3193.8 | 3193.8 | 3193.8 | 3193.8 |

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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 | 13.01            | 13.85 | 13.96 | 14.82 | 16.07 | 8.97           | 9.81  | 9.92  | 10.78 | 12.03 |
|                 | 3H   | 14.69            | 15.44 | 15.65 | 16.41 | 17.69 | 10.16          | 10.91 | 11.12 | 11.88 | 13.16 |
|                 | 4H   | 15.29            | 16.00 | 16.27 | 16.98 | 18.27 | 10.60          | 11.31 | 11.58 | 12.29 | 13.58 |
|                 | 6H   | 15.71            | 16.37 | 16.70 | 17.35 | 18.64 | 10.92          | 11.57 | 11.91 | 12.55 | 13.85 |
|                 | 8H   | 15.84            | 16.46 | 16.83 | 17.46 | 18.75 | 11.01          | 11.63 | 12.00 | 12.63 | 13.92 |
|                 | 12H  | 15.90            | 16.49 | 16.89 | 17.48 | 18.80 | 11.05          | 11.64 | 12.05 | 12.63 | 13.95 |
| 4H              | 2H   | 13.03            | 13.74 | 14.01 | 14.72 | 16.00 | 9.57           | 10.28 | 10.55 | 11.26 | 12.54 |
|                 | 3H   | 14.85            | 15.45 | 15.85 | 16.45 | 17.75 | 10.91          | 11.50 | 11.90 | 12.51 | 13.81 |
|                 | 4H   | 15.54            | 16.08 | 16.54 | 17.08 | 18.41 | 11.45          | 11.99 | 12.45 | 12.99 | 14.32 |
|                 | 6H   | 16.06            | 16.52 | 17.07 | 17.54 | 18.86 | 11.87          | 12.33 | 12.88 | 13.35 | 14.67 |
|                 | 8H   | 16.23            | 16.66 | 17.24 | 17.68 | 19.01 | 11.99          | 12.43 | 13.01 | 13.44 | 14.78 |
|                 | 12H  | 16.32            | 16.71 | 17.35 | 17.74 | 19.08 | 12.05          | 12.45 | 13.09 | 13.48 | 14.82 |
| 8H              | 4H   | 15.51            | 15.94 | 16.52 | 16.96 | 18.29 | 11.73          | 12.17 | 12.75 | 13.18 | 14.52 |
|                 | 6H   | 16.07            | 16.43 | 17.11 | 17.49 | 18.82 | 12.24          | 12.60 | 13.28 | 13.66 | 14.99 |
|                 | 8H   | 16.29            | 16.60 | 17.33 | 17.64 | 18.99 | 12.43          | 12.74 | 13.47 | 13.79 | 15.14 |
|                 | 12H  | 16.42            | 16.70 | 17.47 | 17.74 | 19.13 | 12.54          | 12.82 | 13.59 | 13.86 | 15.25 |
| 12H             | 4H   | 15.46            | 15.85 | 16.49 | 16.88 | 18.22 | 11.74          | 12.13 | 12.77 | 13.16 | 14.50 |
|                 | 6H   | 16.05            | 16.36 | 17.09 | 17.41 | 18.76 | 12.29          | 12.61 | 13.34 | 13.65 | 15.00 |
|                 | 8H   | 16.26            | 16.54 | 17.31 | 17.58 | 18.97 | 12.50          | 12.77 | 13.54 | 13.81 | 15.21 |