

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: P906826

Luminaire Tested: DFN2DIP-SQ4F0-100D100US835-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P906826  
REPORT IS A COMBINATION OF REPORTS P900140 AND P896915  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-100D100US835-RLLFLL  
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

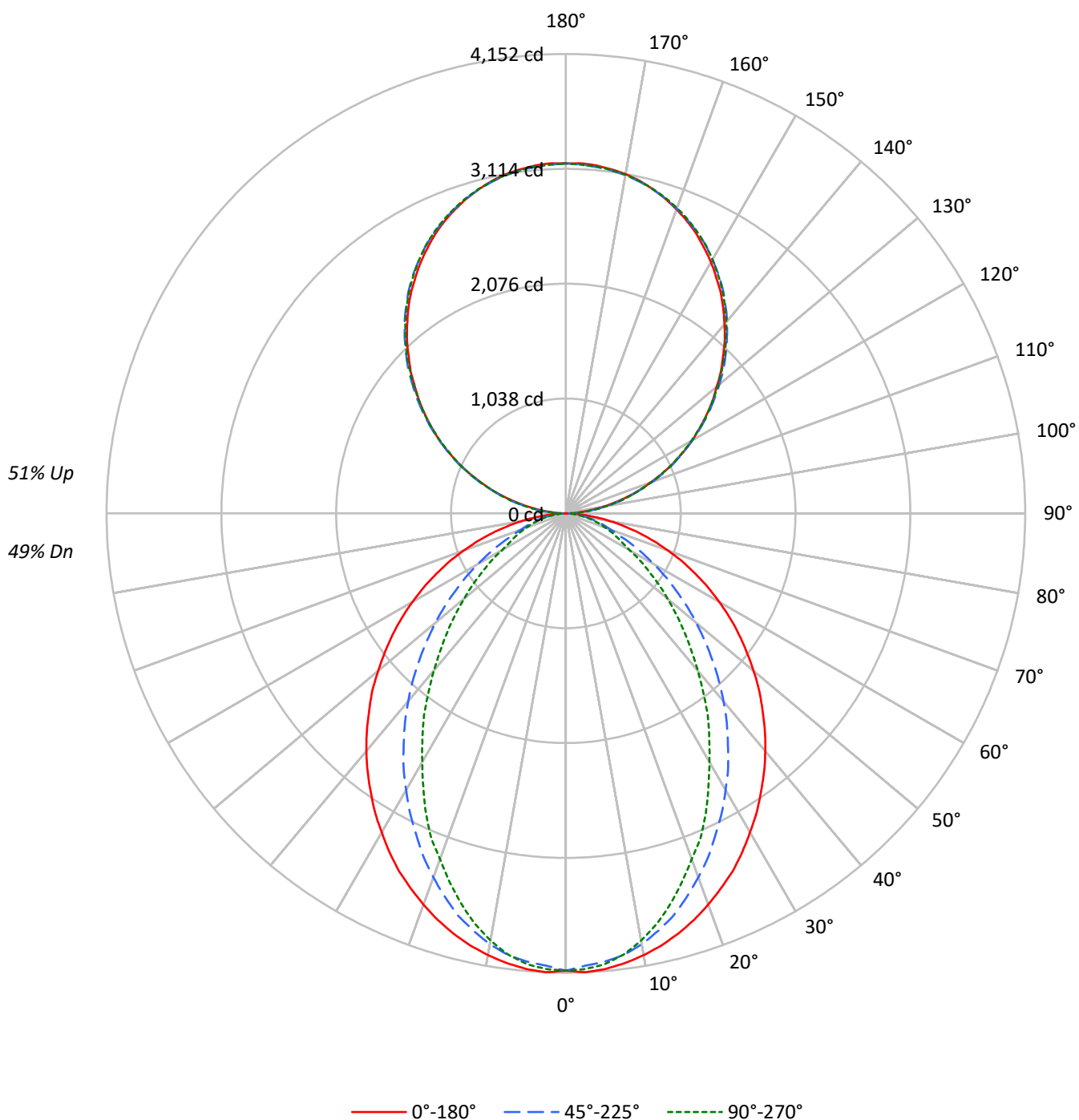
Lumens per Lamp: N/A  
Luminaire Lumens: 17350.0 lumens  
Efficiency: N/A  
Efficacy: 103.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 167.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9968  
Total Harmonic Distortion (THDi): 0.064  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P906826

CATALOG NUMBER: DFN2DIP-SQ4F0-100D100US835-RLFL

### 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   | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 83 | 83 | 83 | 68 | 68 | 68 | 55 | 55 | 55 |
| 1   | 98  | 94  | 90  | 87  | 90 | 87 | 84 | 81 | 73 | 71 | 69 | 61 | 59 | 58 | 50 | 49 | 48 |
| 2   | 90  | 83  | 77  | 72  | 82 | 76 | 71 | 67 | 65 | 61 | 58 | 54 | 51 | 49 | 44 | 42 | 41 |
| 3   | 82  | 73  | 66  | 60  | 75 | 68 | 61 | 57 | 58 | 53 | 49 | 48 | 45 | 42 | 40 | 37 | 35 |
| 4   | 75  | 65  | 57  | 51  | 69 | 60 | 54 | 48 | 51 | 46 | 42 | 43 | 40 | 36 | 36 | 33 | 31 |
| 5   | 69  | 58  | 50  | 44  | 64 | 54 | 47 | 42 | 46 | 41 | 37 | 39 | 35 | 32 | 32 | 29 | 27 |
| 6   | 64  | 52  | 44  | 39  | 59 | 49 | 42 | 37 | 42 | 36 | 32 | 35 | 31 | 28 | 30 | 26 | 24 |
| 7   | 59  | 47  | 40  | 34  | 55 | 44 | 37 | 32 | 38 | 33 | 29 | 32 | 28 | 25 | 27 | 24 | 22 |
| 8   | 55  | 43  | 36  | 30  | 51 | 40 | 33 | 29 | 35 | 29 | 26 | 30 | 26 | 23 | 25 | 22 | 20 |
| 9   | 51  | 39  | 32  | 27  | 47 | 37 | 30 | 26 | 32 | 27 | 23 | 27 | 23 | 20 | 23 | 20 | 18 |
| 10  | 48  | 36  | 29  | 24  | 44 | 34 | 28 | 23 | 30 | 24 | 21 | 25 | 21 | 19 | 22 | 18 | 16 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2900 | 2900 | 2900 |
| 5°  | 2905 | 2855 | 2873 |
| 10° | 2876 | 2799 | 2780 |
| 15° | 2836 | 2707 | 2637 |
| 20° | 2784 | 2580 | 2460 |
| 25° | 2730 | 2438 | 2289 |
| 30° | 2658 | 2292 | 2073 |
| 35° | 2587 | 2134 | 1882 |
| 40° | 2516 | 1972 | 1664 |
| 45° | 2432 | 1791 | 1466 |
| 50° | 2346 | 1609 | 1272 |
| 55° | 2256 | 1414 | 1086 |
| 60° | 2151 | 1210 | 895  |
| 65° | 2031 | 1003 | 806  |
| 70° | 1886 | 809  | 731  |
| 75° | 1703 | 715  | 667  |
| 80° | 1438 | 602  | 581  |
| 85° | 1002 | 405  | 442  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2490 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 387.3   | 2.2       |
| 10°-20°   | 1063.3  | 6.1       |
| 20°-30°   | 1492.9  | 8.6       |
| 30°-40°   | 1627.4  | 9.4       |
| 40°-50°   | 1495.7  | 8.6       |
| 50°-60°   | 1174.7  | 6.8       |
| 60°-70°   | 764.6   | 4.4       |
| 70°-80°   | 393.6   | 2.3       |
| 80°-90°   | 109.5   | 0.6       |
| 90°-100°  | 195.7   | 1.1       |
| 100°-110° | 621.8   | 3.6       |
| 110°-120° | 1064.1  | 6.1       |
| 120°-130° | 1399.5  | 8.1       |
| 130°-140° | 1570.9  | 9.1       |
| 140°-150° | 1540.4  | 8.9       |
| 150°-160° | 1292.2  | 7.4       |
| 160°-170° | 856.9   | 4.9       |
| 170°-180° | 299.5   | 1.7       |
| 0°-30°    | 2943.6  | 17.0      |
| 0°-40°    | 4571.0  | 26.3      |
| 0°-60°    | 7241.3  | 41.7      |
| 0°-90°    | 8509.0  | 49.0      |
| 90°-120°  | 1881.6  | 10.8      |
| 90°-150°  | 6392.4  | 36.8      |
| 90°-180°  | 8841.0  | 51.0      |
| 0°-180°   | 17350.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 4133 | 4133  | 4133 | 4133  | 4133 |      |
| 5°   | 4133 | 4114  | 4066 | 4099  | 4088 | 392  |
| 15°  | 3931 | 3890  | 3763 | 3692  | 3654 | 1108 |
| 25°  | 3568 | 3448  | 3202 | 3048  | 2992 | 1641 |
| 35°  | 3075 | 2884  | 2555 | 2319  | 2236 | 1924 |
| 45°  | 2514 | 2263  | 1870 | 1604  | 1515 | 1941 |
| 55°  | 1911 | 1620  | 1216 | 991   | 920  | 1708 |
| 65°  | 1290 | 987   | 651  | 524   | 512  | 1279 |
| 75°  | 688  | 426   | 299  | 273   | 269  | 728  |
| 85°  | 161  | 82    | 71   | 71    | 71   | 184  |
| 90°  | 3    | 34    | 93   | 88    | 91   | 17   |
| 95°  | 139  | 166   | 171  | 171   | 166  | 155  |
| 105° | 574  | 582   | 587  | 592   | 592  | 606  |
| 115° | 1068 | 1083  | 1078 | 1076  | 1068 | 1056 |
| 125° | 1553 | 1577  | 1569 | 1561  | 1558 | 1388 |
| 135° | 2009 | 2038  | 2044 | 2041  | 2034 | 1553 |
| 145° | 2439 | 2458  | 2473 | 2476  | 2466 | 1524 |
| 155° | 2789 | 2796  | 2805 | 2818  | 2810 | 1284 |
| 165° | 3034 | 3031  | 3031 | 3050  | 3037 | 856  |
| 175° | 3157 | 3149  | 3144 | 3163  | 3146 | 300  |
| 180° | 3163 | 3163  | 3163 | 3163  | 3163 |      |

TEST NUMBER: P906826

CATALOG NUMBER: DFN2DIP-SQ4F0-100D100US835-RLFL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 4133.0 | 4133.0 | 4133.0 | 4133.0 | 4133.0 |
| 2.5°   | 4151.6 | 4133.0 | 4091.7 | 4129.4 | 4121.9 |
| 5°     | 4133.0 | 4114.3 | 4065.5 | 4099.3 | 4088.1 |
| 7.5°   | 4099.3 | 4077.0 | 4024.6 | 4039.3 | 4020.7 |
| 10°    | 4054.4 | 4028.2 | 3953.6 | 3942.1 | 3919.9 |
| 12.5°  | 3998.5 | 3964.7 | 3863.5 | 3841.3 | 3800.0 |
| 15°    | 3931.0 | 3889.7 | 3762.7 | 3691.7 | 3654.4 |
| 17.5°  | 3852.4 | 3792.5 | 3635.4 | 3553.2 | 3493.3 |
| 20°    | 3762.7 | 3687.7 | 3500.8 | 3407.6 | 3325.0 |
| 22.5°  | 3665.5 | 3579.4 | 3362.3 | 3235.4 | 3179.4 |
| 25°    | 3568.3 | 3448.5 | 3201.6 | 3048.4 | 2992.1 |
| 27.5°  | 3452.4 | 3325.0 | 3052.0 | 2876.2 | 2790.1 |
| 30°    | 3329.0 | 3186.5 | 2887.3 | 2696.9 | 2595.7 |
| 32.5°  | 3209.2 | 3036.9 | 2730.6 | 2506.0 | 2412.3 |
| 35°    | 3074.6 | 2883.8 | 2554.8 | 2319.1 | 2236.5 |
| 37.5°  | 2943.7 | 2737.7 | 2390.1 | 2131.8 | 2038.5 |
| 40°    | 2805.2 | 2581.0 | 2217.9 | 1952.4 | 1855.2 |
| 42.5°  | 2663.1 | 2423.8 | 2046.1 | 1769.1 | 1675.8 |
| 45°    | 2513.5 | 2262.7 | 1870.3 | 1604.4 | 1514.7 |
| 47.5°  | 2371.5 | 2106.0 | 1702.0 | 1436.1 | 1354.0 |
| 50°    | 2214.3 | 1948.8 | 1537.3 | 1279.0 | 1200.8 |
| 52.5°  | 2060.7 | 1780.2 | 1380.2 | 1133.3 | 1062.3 |
| 55°    | 1911.1 | 1619.5 | 1215.5 | 991.3  | 920.2  |
| 57.5°  | 1758.0 | 1458.7 | 1069.9 | 860.3  | 800.4  |
| 60°    | 1600.8 | 1301.6 | 916.3  | 725.8  | 665.9  |
| 62.5°  | 1447.6 | 1148.4 | 785.3  | 606.0  | 576.2  |
| 65°    | 1290.5 | 987.3  | 650.8  | 523.8  | 512.3  |
| 67.5°  | 1140.9 | 837.7  | 523.8  | 459.9  | 448.8  |
| 70°    | 983.7  | 692.1  | 433.7  | 396.4  | 381.4  |
| 72.5°  | 834.1  | 557.1  | 362.7  | 332.9  | 325.4  |
| 75°    | 688.1  | 426.2  | 299.2  | 273.0  | 269.4  |
| 77.5°  | 542.5  | 302.8  | 235.7  | 220.6  | 213.1  |
| 80°    | 407.5  | 217.1  | 179.4  | 164.7  | 164.7  |
| 82.5°  | 284.1  | 146.0  | 123.4  | 115.9  | 115.9  |
| 85°    | 160.7  | 82.1   | 71.0   | 71.0   | 71.0   |
| 87.5°  | 59.9   | 29.8   | 29.8   | 26.2   | 26.2   |
| 90°    | 2.9    | 34.3   | 93.4   | 87.7   | 90.6   |
| 92.5°  | 59.1   | 80.1   | 83.0   | 85.8   | 85.8   |
| 95°    | 139.2  | 165.9  | 170.7  | 170.7  | 165.9  |
| 97.5°  | 231.7  | 256.5  | 267.0  | 267.0  | 267.0  |
| 100°   | 338.5  | 360.4  | 368.0  | 368.0  | 365.2  |
| 102.5° | 451.0  | 467.2  | 477.7  | 480.5  | 477.7  |
| 105°   | 574.0  | 581.6  | 587.3  | 592.1  | 592.1  |
| 107.5° | 696.0  | 707.5  | 707.5  | 709.4  | 696.0  |
| 110°   | 814.3  | 829.5  | 829.5  | 829.5  | 821.9  |

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CATALOG NUMBER: DFN2DIP-SQ4F0-100D100US835-RLFL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 942.0  | 958.2  | 955.4  | 947.7  | 942.0  |
| 115°   | 1067.9 | 1083.1 | 1078.4 | 1075.5 | 1067.9 |
| 117.5° | 1192.8 | 1213.8 | 1200.4 | 1192.8 | 1185.1 |
| 120°   | 1318.6 | 1339.6 | 1318.6 | 1318.6 | 1310.1 |
| 122.5° | 1433.0 | 1459.7 | 1446.4 | 1438.8 | 1433.0 |
| 125°   | 1553.2 | 1577.0 | 1569.4 | 1560.8 | 1558.0 |
| 127.5° | 1670.5 | 1700.0 | 1689.5 | 1678.1 | 1670.5 |
| 130°   | 1780.1 | 1814.4 | 1809.7 | 1803.9 | 1793.5 |
| 132.5° | 1903.1 | 1929.8 | 1931.7 | 1918.4 | 1910.7 |
| 135°   | 2008.9 | 2038.5 | 2044.2 | 2041.4 | 2033.7 |
| 137.5° | 2127.2 | 2151.0 | 2155.8 | 2153.9 | 2142.4 |
| 140°   | 2231.1 | 2254.9 | 2268.3 | 2268.3 | 2257.8 |
| 142.5° | 2337.9 | 2361.7 | 2369.3 | 2372.2 | 2361.7 |
| 145°   | 2438.9 | 2458.0 | 2473.3 | 2476.1 | 2465.6 |
| 147.5° | 2529.5 | 2553.4 | 2564.8 | 2569.6 | 2559.1 |
| 150°   | 2623.0 | 2639.2 | 2649.7 | 2658.2 | 2649.7 |
| 152.5° | 2705.9 | 2722.1 | 2735.5 | 2746.0 | 2735.5 |
| 155°   | 2788.9 | 2796.5 | 2805.1 | 2818.4 | 2809.8 |
| 157.5° | 2860.4 | 2866.1 | 2870.9 | 2889.9 | 2876.6 |
| 160°   | 2924.3 | 2930.0 | 2932.8 | 2949.0 | 2937.6 |
| 162.5° | 2983.4 | 2983.4 | 2986.2 | 3004.3 | 2991.0 |
| 165°   | 3033.9 | 3031.0 | 3031.0 | 3050.1 | 3036.8 |
| 167.5° | 3079.7 | 3071.1 | 3071.1 | 3090.2 | 3076.8 |
| 170°   | 3114.0 | 3106.4 | 3103.5 | 3122.6 | 3106.4 |
| 172.5° | 3137.8 | 3130.2 | 3127.3 | 3146.4 | 3130.2 |
| 175°   | 3156.9 | 3149.3 | 3143.6 | 3162.6 | 3146.4 |
| 177.5° | 3167.4 | 3159.8 | 3154.0 | 3170.2 | 3154.0 |
| 180°   | 3162.6 | 3162.6 | 3162.6 | 3162.6 | 3162.6 |

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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 | 10.77            | 11.59 | 11.74 | 12.57 | 13.86 | 6.73           | 7.55  | 7.70  | 8.53  | 9.82  |
|                 | 3H   | 12.45            | 13.18 | 13.43 | 14.17 | 15.48 | 7.92           | 8.65  | 8.90  | 9.64  | 10.95 |
|                 | 4H   | 13.06            | 13.75 | 14.06 | 14.75 | 16.07 | 8.37           | 9.06  | 9.36  | 10.06 | 11.37 |
|                 | 6H   | 13.48            | 14.12 | 14.49 | 15.12 | 16.45 | 8.69           | 9.33  | 9.69  | 10.33 | 11.66 |
|                 | 8H   | 13.61            | 14.22 | 14.63 | 15.24 | 16.56 | 8.78           | 9.39  | 9.79  | 10.40 | 11.73 |
|                 | 12H  | 13.68            | 14.25 | 14.69 | 15.26 | 16.61 | 8.82           | 9.40  | 9.84  | 10.41 | 11.76 |
| 4H              | 2H   | 10.78            | 11.48 | 11.79 | 12.47 | 13.79 | 7.32           | 8.02  | 8.33  | 9.01  | 10.33 |
|                 | 3H   | 12.62            | 13.20 | 13.63 | 14.22 | 15.55 | 8.67           | 9.25  | 9.69  | 10.28 | 11.61 |
|                 | 4H   | 13.31            | 13.84 | 14.33 | 14.86 | 16.21 | 9.22           | 9.75  | 10.24 | 10.77 | 12.12 |
|                 | 6H   | 13.83            | 14.29 | 14.86 | 15.32 | 16.68 | 9.64           | 10.10 | 10.67 | 11.14 | 12.49 |
|                 | 8H   | 14.01            | 14.43 | 15.04 | 15.46 | 16.83 | 9.77           | 10.20 | 10.80 | 11.23 | 12.59 |
|                 | 12H  | 14.11            | 14.49 | 15.15 | 15.54 | 16.91 | 9.84           | 10.22 | 10.89 | 11.27 | 12.64 |
| 8H              | 4H   | 13.28            | 13.70 | 14.31 | 14.74 | 16.10 | 9.51           | 9.93  | 10.54 | 10.96 | 12.33 |
|                 | 6H   | 13.85            | 14.20 | 14.90 | 15.27 | 16.64 | 10.02          | 10.37 | 11.08 | 11.45 | 12.81 |
|                 | 8H   | 14.07            | 14.38 | 15.13 | 15.44 | 16.82 | 10.22          | 10.52 | 11.28 | 11.58 | 12.97 |
|                 | 12H  | 14.21            | 14.48 | 15.28 | 15.54 | 16.96 | 10.34          | 10.61 | 11.40 | 11.66 | 13.09 |
| 12H             | 4H   | 13.23            | 13.61 | 14.28 | 14.66 | 16.03 | 9.51           | 9.89  | 10.56 | 10.94 | 12.31 |
|                 | 6H   | 13.83            | 14.13 | 14.89 | 15.19 | 16.58 | 10.07          | 10.38 | 11.14 | 11.44 | 12.82 |
|                 | 8H   | 14.05            | 14.32 | 15.11 | 15.37 | 16.80 | 10.29          | 10.56 | 11.35 | 11.61 | 13.04 |