

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: P907413

Luminaire Tested: DFN2DIP-TR4F0-070D120US835-RLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P907413  
REPORT IS A COMBINATION OF REPORTS P902040 AND P898849  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-070D120US835-RLLONL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

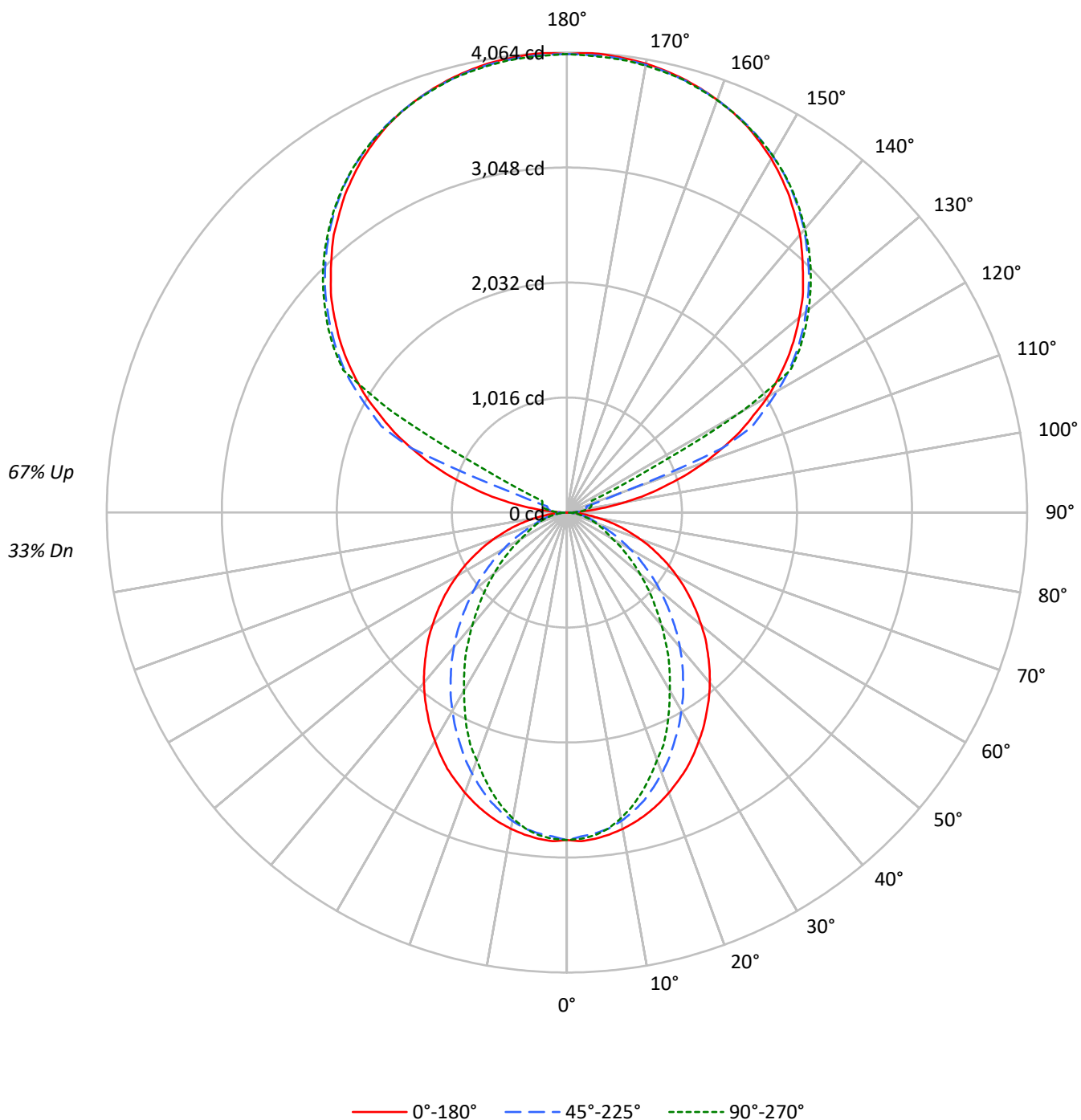
Lumens per Lamp: N/A  
Luminaire Lumens: 17830.0 lumens  
Efficiency: N/A  
Efficacy: 113.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 156.9  
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: P907413

CATALOG NUMBER: DFN2DIP-TR4F0-070D120US835-RLLONL

### Luminous Intensity Polar Plot



TEST NUMBER: P907413

CATALOG NUMBER: DFN2DIP-TR4F0-070D120US835-RLLONL

**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   | 103 | 103 | 103 | 103 | 93 | 93 | 93 | 93 | 74 | 74 | 74 | 57 | 57 | 57 | 41 | 41 | 41 |
| 1   | 94  | 90  | 87  | 83  | 85 | 82 | 79 | 76 | 65 | 63 | 61 | 50 | 49 | 48 | 37 | 36 | 35 |
| 2   | 86  | 79  | 73  | 69  | 78 | 72 | 67 | 63 | 58 | 54 | 51 | 45 | 42 | 40 | 33 | 31 | 30 |
| 3   | 79  | 70  | 63  | 57  | 71 | 63 | 57 | 53 | 51 | 47 | 43 | 40 | 37 | 35 | 29 | 27 | 26 |
| 4   | 72  | 62  | 54  | 49  | 65 | 56 | 50 | 45 | 45 | 41 | 37 | 36 | 32 | 30 | 26 | 24 | 23 |
| 5   | 66  | 55  | 48  | 42  | 60 | 50 | 44 | 39 | 41 | 36 | 32 | 32 | 29 | 26 | 24 | 22 | 20 |
| 6   | 61  | 50  | 42  | 36  | 55 | 45 | 38 | 34 | 37 | 32 | 28 | 29 | 25 | 23 | 22 | 19 | 18 |
| 7   | 56  | 45  | 37  | 32  | 51 | 41 | 34 | 29 | 33 | 28 | 25 | 26 | 23 | 20 | 20 | 18 | 16 |
| 8   | 52  | 41  | 33  | 28  | 47 | 37 | 31 | 26 | 30 | 26 | 22 | 24 | 21 | 18 | 18 | 16 | 14 |
| 9   | 49  | 37  | 30  | 25  | 44 | 34 | 28 | 23 | 28 | 23 | 20 | 22 | 19 | 16 | 17 | 15 | 13 |
| 10  | 45  | 34  | 27  | 22  | 41 | 31 | 25 | 21 | 26 | 21 | 18 | 21 | 17 | 15 | 16 | 13 | 12 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2298 | 2298 | 2298 |
| 5°  | 2302 | 2262 | 2276 |
| 10° | 2279 | 2217 | 2202 |
| 15° | 2248 | 2144 | 2088 |
| 20° | 2206 | 2043 | 1947 |
| 25° | 2164 | 1930 | 1811 |
| 30° | 2107 | 1814 | 1639 |
| 35° | 2051 | 1689 | 1488 |
| 40° | 1994 | 1560 | 1315 |
| 45° | 1928 | 1416 | 1157 |
| 50° | 1860 | 1272 | 1004 |
| 55° | 1788 | 1117 | 857  |
| 60° | 1706 | 955  | 705  |
| 65° | 1611 | 791  | 634  |
| 70° | 1496 | 638  | 574  |
| 75° | 1351 | 562  | 522  |
| 80° | 1142 | 472  | 453  |
| 85° | 796  | 315  | 340  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2150 cd/sqm

TEST NUMBER: P907413

CATALOG NUMBER: DFN2DIP-TR4F0-070D120US835-RLLONL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 271.1   | 1.5       |
| 10°-20°   | 744.3   | 4.2       |
| 20°-30°   | 1045.0  | 5.9       |
| 30°-40°   | 1139.2  | 6.4       |
| 40°-50°   | 1047.0  | 5.9       |
| 50°-60°   | 822.3   | 4.6       |
| 60°-70°   | 535.2   | 3.0       |
| 70°-80°   | 275.5   | 1.5       |
| 80°-90°   | 77.4    | 0.4       |
| 90°-100°  | 133.5   | 0.7       |
| 100°-110° | 497.8   | 2.8       |
| 110°-120° | 1320.3  | 7.4       |
| 120°-130° | 2189.8  | 12.3      |
| 130°-140° | 2326.1  | 13.0      |
| 140°-150° | 2161.8  | 12.1      |
| 150°-160° | 1738.1  | 9.7       |
| 160°-170° | 1119.9  | 6.3       |
| 170°-180° | 385.5   | 2.2       |
| 0°-30°    | 2060.5  | 11.6      |
| 0°-40°    | 3199.7  | 17.9      |
| 0°-60°    | 5068.9  | 28.4      |
| 0°-90°    | 5957.1  | 33.4      |
| 90°-120°  | 1951.7  | 10.9      |
| 90°-150°  | 8629.4  | 48.4      |
| 90°-180°  | 11873.0 | 66.6      |
| 0°-180°   | 17830.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2893 | 2893  | 2893 | 2893  | 2893 |      |
| 5°   | 2893 | 2880  | 2846 | 2870  | 2862 | 274  |
| 15°  | 2752 | 2723  | 2634 | 2584  | 2558 | 775  |
| 25°  | 2498 | 2414  | 2241 | 2134  | 2094 | 1149 |
| 35°  | 2152 | 2019  | 1788 | 1623  | 1566 | 1347 |
| 45°  | 1760 | 1584  | 1309 | 1123  | 1060 | 1359 |
| 55°  | 1338 | 1134  | 851  | 694   | 644  | 1195 |
| 65°  | 903  | 691   | 456  | 367   | 359  | 896  |
| 75°  | 482  | 298   | 209  | 191   | 189  | 509  |
| 85°  | 112  | 58    | 50   | 50    | 50   | 129  |
| 90°  | 3    | 35    | 58   | 73    | 79   | 17   |
| 95°  | 190  | 94    | 114  | 129   | 126  | 225  |
| 105° | 891  | 979   | 179  | 211   | 223  | 952  |
| 115° | 1685 | 1735  | 1808 | 451   | 240  | 1659 |
| 125° | 2382 | 2421  | 2476 | 2497  | 2506 | 2125 |
| 135° | 2948 | 2995  | 3021 | 3051  | 3045 | 2277 |
| 145° | 3420 | 3417  | 3467 | 3487  | 3472 | 2139 |
| 155° | 3766 | 3739  | 3775 | 3792  | 3769 | 1735 |
| 165° | 3968 | 3950  | 3959 | 3980  | 3959 | 1121 |
| 175° | 4058 | 4038  | 4044 | 4064  | 4035 | 386  |
| 180° | 4050 | 4050  | 4050 | 4050  | 4050 |      |

TEST NUMBER: P907413

CATALOG NUMBER: DFN2DIP-TR4F0-070D120US835-RLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2893.1 | 2893.1 | 2893.1 | 2893.1 | 2893.1 |
| 2.5°   | 2906.1 | 2893.1 | 2864.2 | 2890.6 | 2885.3 |
| 5°     | 2893.1 | 2880.0 | 2845.9 | 2869.5 | 2861.7 |
| 7.5°   | 2869.5 | 2853.9 | 2817.3 | 2827.5 | 2814.5 |
| 10°    | 2838.1 | 2819.8 | 2767.5 | 2759.5 | 2743.9 |
| 12.5°  | 2798.9 | 2775.3 | 2704.5 | 2688.9 | 2660.0 |
| 15°    | 2751.7 | 2722.8 | 2633.9 | 2584.2 | 2558.1 |
| 17.5°  | 2696.7 | 2654.8 | 2544.8 | 2487.2 | 2445.3 |
| 20°    | 2633.9 | 2581.4 | 2450.6 | 2385.3 | 2327.5 |
| 22.5°  | 2565.9 | 2505.6 | 2353.6 | 2264.7 | 2225.6 |
| 25°    | 2497.8 | 2413.9 | 2241.1 | 2133.9 | 2094.5 |
| 27.5°  | 2416.7 | 2327.5 | 2136.4 | 2013.4 | 1953.1 |
| 30°    | 2330.3 | 2230.6 | 2021.1 | 1887.8 | 1817.0 |
| 32.5°  | 2246.4 | 2125.9 | 1911.4 | 1754.2 | 1688.6 |
| 35°    | 2152.2 | 2018.6 | 1788.4 | 1623.4 | 1565.6 |
| 37.5°  | 2060.6 | 1916.4 | 1673.1 | 1492.2 | 1427.0 |
| 40°    | 1963.6 | 1806.7 | 1552.5 | 1366.7 | 1298.6 |
| 42.5°  | 1864.2 | 1696.7 | 1432.2 | 1238.3 | 1173.1 |
| 45°    | 1759.5 | 1583.9 | 1309.2 | 1123.1 | 1060.3 |
| 47.5°  | 1660.0 | 1474.2 | 1191.4 | 1005.3 | 947.8  |
| 50°    | 1550.0 | 1364.2 | 1076.1 | 895.3  | 840.6  |
| 52.5°  | 1442.5 | 1246.1 | 966.1  | 793.3  | 743.6  |
| 55°    | 1337.8 | 1133.6 | 850.8  | 693.9  | 644.2  |
| 57.5°  | 1230.6 | 1021.1 | 748.9  | 602.2  | 560.3  |
| 60°    | 1120.6 | 911.1  | 641.4  | 508.1  | 466.1  |
| 62.5°  | 1013.3 | 803.9  | 549.7  | 424.2  | 403.3  |
| 65°    | 903.3  | 691.1  | 455.6  | 366.7  | 358.6  |
| 67.5°  | 798.6  | 586.4  | 366.7  | 321.9  | 314.2  |
| 70°    | 688.6  | 484.4  | 303.6  | 277.5  | 266.9  |
| 72.5°  | 583.9  | 390.0  | 253.9  | 233.1  | 227.8  |
| 75°    | 481.7  | 298.3  | 209.4  | 191.1  | 188.6  |
| 77.5°  | 379.7  | 211.9  | 165.0  | 154.4  | 149.2  |
| 80°    | 285.3  | 151.9  | 125.6  | 115.3  | 115.3  |
| 82.5°  | 198.9  | 102.2  | 86.4   | 81.1   | 81.1   |
| 85°    | 112.5  | 57.5   | 49.7   | 49.7   | 49.7   |
| 87.5°  | 41.9   | 20.8   | 20.8   | 18.3   | 18.3   |
| 90°    | 2.8    | 35.1   | 58.5   | 73.4   | 79.0   |
| 92.5°  | 73.4   | 61.6   | 70.3   | 76.2   | 79.0   |
| 95°    | 190.3  | 93.6   | 114.1  | 129.1  | 126.0  |
| 97.5°  | 342.8  | 102.7  | 149.3  | 158.3  | 161.1  |
| 100°   | 518.8  | 117.3  | 167.0  | 190.3  | 196.3  |
| 102.5° | 712.0  | 706.4  | 172.9  | 205.0  | 214.0  |
| 105°   | 890.8  | 978.9  | 178.9  | 210.9  | 222.7  |
| 107.5° | 1098.9 | 1172.0 | 184.8  | 216.8  | 228.6  |
| 110°   | 1298.3 | 1359.6 | 512.9  | 219.9  | 231.4  |

TEST NUMBER: P907413

CATALOG NUMBER: DFN2DIP-TR4F0-070D120US835-RLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1485.9 | 1538.4 | 1488.7 | 225.5  | 234.5  |
| 115°   | 1684.9 | 1734.7 | 1808.1 | 451.3  | 240.5  |
| 117.5° | 1857.9 | 1916.4 | 1966.5 | 1547.1 | 779.5  |
| 120°   | 2051.4 | 2095.2 | 2148.1 | 2183.3 | 1787.6 |
| 122.5° | 2215.3 | 2262.3 | 2321.1 | 2338.5 | 2341.6 |
| 125°   | 2382.3 | 2420.6 | 2476.3 | 2496.8 | 2505.5 |
| 127.5° | 2534.7 | 2575.8 | 2620.0 | 2649.2 | 2652.0 |
| 130°   | 2678.4 | 2725.4 | 2757.4 | 2789.8 | 2787.0 |
| 132.5° | 2824.9 | 2863.2 | 2895.2 | 2921.7 | 2918.9 |
| 135°   | 2948.1 | 2995.1 | 3021.2 | 3050.8 | 3044.9 |
| 137.5° | 3076.9 | 3112.0 | 3141.6 | 3170.8 | 3162.1 |
| 140°   | 3202.9 | 3226.5 | 3258.5 | 3285.0 | 3270.4 |
| 142.5° | 3308.6 | 3329.2 | 3367.1 | 3390.4 | 3375.8 |
| 145°   | 3420.0 | 3416.9 | 3466.6 | 3487.2 | 3472.5 |
| 147.5° | 3516.4 | 3507.7 | 3557.5 | 3572.1 | 3560.6 |
| 150°   | 3610.3 | 3589.8 | 3636.8 | 3654.2 | 3639.6 |
| 152.5° | 3689.3 | 3666.0 | 3709.9 | 3727.6 | 3707.1 |
| 155°   | 3765.5 | 3739.4 | 3774.6 | 3792.0 | 3768.7 |
| 157.5° | 3827.1 | 3803.8 | 3830.3 | 3850.8 | 3827.1 |
| 160°   | 3880.0 | 3862.3 | 3880.0 | 3897.4 | 3876.9 |
| 162.5° | 3926.7 | 3909.3 | 3923.9 | 3944.4 | 3918.0 |
| 165°   | 3967.7 | 3950.3 | 3959.0 | 3979.6 | 3959.0 |
| 167.5° | 4000.1 | 3982.3 | 3991.4 | 4011.9 | 3985.5 |
| 170°   | 4026.5 | 4008.8 | 4014.7 | 4035.2 | 4008.8 |
| 172.5° | 4043.9 | 4026.5 | 4032.5 | 4053.0 | 4026.5 |
| 175°   | 4058.5 | 4038.0 | 4043.9 | 4064.5 | 4035.2 |
| 177.5° | 4064.5 | 4043.9 | 4047.1 | 4067.6 | 4041.2 |
| 180°   | 4049.9 | 4049.9 | 4049.9 | 4049.9 | 4049.9 |

TEST NUMBER: P907413

CATALOG NUMBER: DFN2DIP-TR4F0-070D120US835-RLONL

**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 | 8.25             | 8.96  | 9.34  | 10.05 | 11.54 | 4.22           | 4.93 | 5.32 | 6.02 | 7.51  |
|                 | 3H   | 9.92             | 10.55 | 11.02 | 11.65 | 13.16 | 5.40           | 6.04 | 6.50 | 7.13 | 8.64  |
|                 | 4H   | 10.52            | 11.12 | 11.63 | 12.22 | 13.74 | 5.85           | 6.45 | 6.96 | 7.55 | 9.06  |
|                 | 6H   | 10.94            | 11.49 | 12.06 | 12.59 | 14.12 | 6.16           | 6.72 | 7.29 | 7.82 | 9.35  |
|                 | 8H   | 11.06            | 11.59 | 12.18 | 12.70 | 14.22 | 6.25           | 6.78 | 7.38 | 7.89 | 9.42  |
|                 | 12H  | 11.12            | 11.62 | 12.24 | 12.73 | 14.27 | 6.29           | 6.79 | 7.42 | 7.90 | 9.44  |
| 4H              | 2H   | 8.25             | 8.86  | 9.37  | 9.95  | 11.47 | 4.80           | 5.41 | 5.92 | 6.50 | 8.02  |
|                 | 3H   | 10.07            | 10.57 | 11.20 | 11.70 | 13.22 | 6.14           | 6.65 | 7.27 | 7.77 | 9.30  |
|                 | 4H   | 10.76            | 11.22 | 11.89 | 12.33 | 13.88 | 6.69           | 7.15 | 7.82 | 8.26 | 9.81  |
|                 | 6H   | 11.27            | 11.66 | 12.40 | 12.80 | 14.34 | 7.10           | 7.50 | 8.24 | 8.63 | 10.17 |
|                 | 8H   | 11.44            | 11.81 | 12.57 | 12.94 | 14.49 | 7.23           | 7.60 | 8.36 | 8.72 | 10.28 |
|                 | 12H  | 11.53            | 11.86 | 12.68 | 13.00 | 14.56 | 7.29           | 7.62 | 8.44 | 8.76 | 10.32 |
| 8H              | 4H   | 10.72            | 11.09 | 11.85 | 12.21 | 13.77 | 6.96           | 7.33 | 8.09 | 8.45 | 10.01 |
|                 | 6H   | 11.28            | 11.58 | 12.43 | 12.75 | 14.31 | 7.47           | 7.78 | 8.63 | 8.95 | 10.50 |
|                 | 8H   | 11.50            | 11.76 | 12.66 | 12.91 | 14.48 | 7.67           | 7.93 | 8.83 | 9.08 | 10.65 |
|                 | 12H  | 11.63            | 11.86 | 12.79 | 13.01 | 14.62 | 7.78           | 8.01 | 8.94 | 9.16 | 10.77 |
| 12H             | 4H   | 10.66            | 11.00 | 11.82 | 12.14 | 13.70 | 6.96           | 7.29 | 8.11 | 8.43 | 9.99  |
|                 | 6H   | 11.25            | 11.52 | 12.42 | 12.67 | 14.24 | 7.52           | 7.79 | 8.68 | 8.94 | 10.51 |
|                 | 8H   | 11.47            | 11.70 | 12.63 | 12.85 | 14.46 | 7.73           | 7.96 | 8.89 | 9.11 | 10.72 |