

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: P911182

Luminaire Tested: DFN2DIP-PN3F0-040D080US850-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P911182  
REPORT IS A COMBINATION OF REPORTS P899584 AND P896399  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-040D080US850-RLLFLL  
Description: 3 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

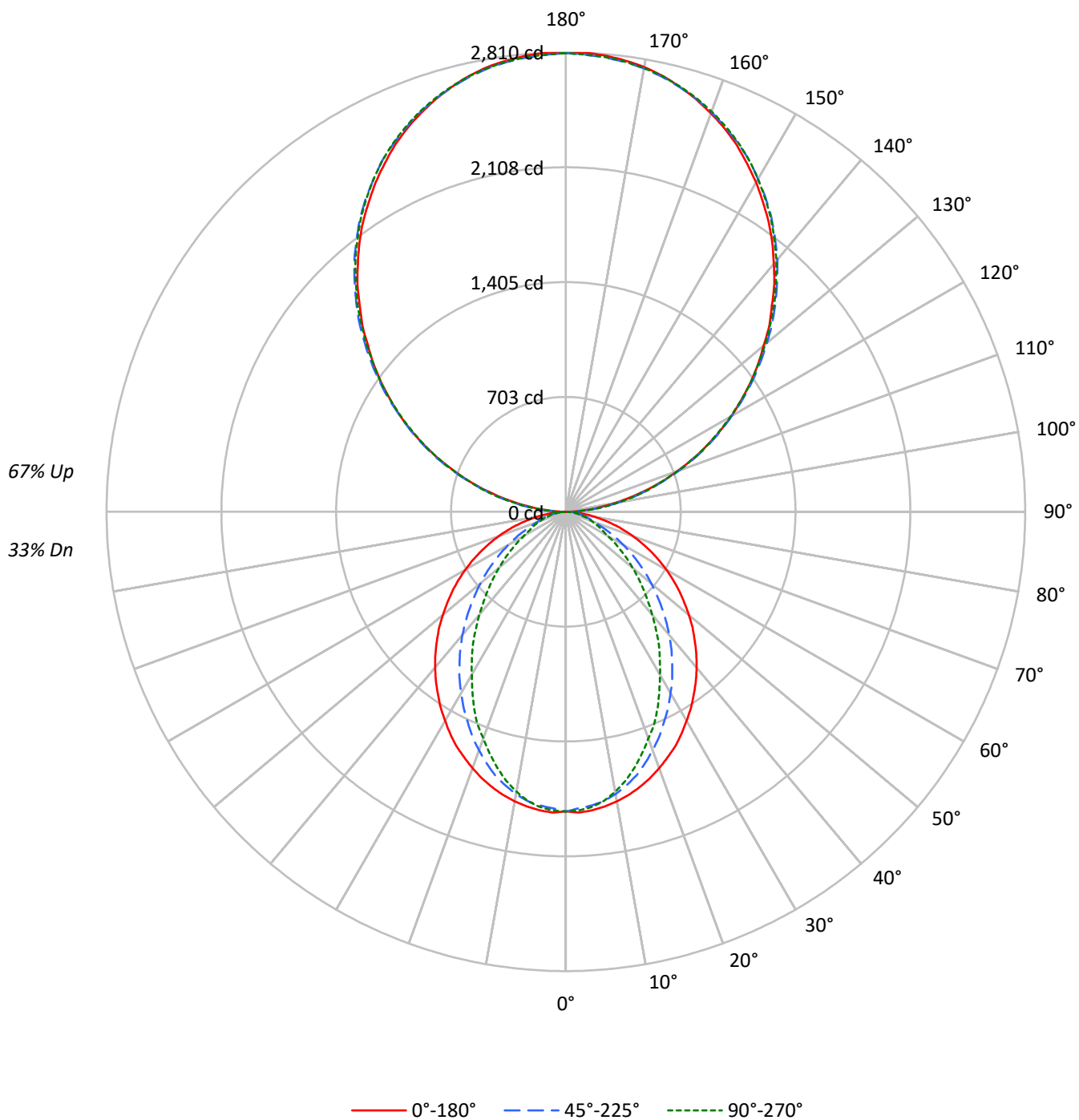
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 11622.3 lumens  
Efficiency: N/A  
Efficacy: 120.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: Semi-Indirect  
  
Input Watts (W): 96.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9972  
Total Harmonic Distortion (THDi): 0.128  
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: P911182

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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   | 103 | 103 | 103 | 103 | 93 | 93 | 93 | 93 | 74 | 74 | 74 | 56 | 56 | 56 | 40 | 40 | 40 |
| 1   | 94  | 90  | 86  | 83  | 85 | 81 | 78 | 75 | 65 | 63 | 61 | 50 | 48 | 47 | 36 | 35 | 34 |
| 2   | 86  | 79  | 73  | 68  | 77 | 71 | 67 | 62 | 57 | 54 | 51 | 44 | 42 | 40 | 32 | 31 | 29 |
| 3   | 79  | 70  | 63  | 57  | 71 | 63 | 57 | 52 | 51 | 46 | 43 | 39 | 36 | 34 | 29 | 27 | 25 |
| 4   | 72  | 62  | 54  | 49  | 65 | 56 | 50 | 45 | 45 | 41 | 37 | 35 | 32 | 29 | 26 | 24 | 22 |
| 5   | 66  | 55  | 47  | 42  | 59 | 50 | 43 | 38 | 40 | 36 | 32 | 32 | 28 | 26 | 23 | 21 | 19 |
| 6   | 61  | 49  | 42  | 36  | 55 | 45 | 38 | 33 | 36 | 32 | 28 | 29 | 25 | 23 | 21 | 19 | 17 |
| 7   | 56  | 45  | 37  | 32  | 51 | 41 | 34 | 29 | 33 | 28 | 25 | 26 | 23 | 20 | 19 | 17 | 15 |
| 8   | 52  | 40  | 33  | 28  | 47 | 37 | 30 | 26 | 30 | 25 | 22 | 24 | 20 | 18 | 18 | 16 | 14 |
| 9   | 49  | 37  | 30  | 25  | 44 | 34 | 27 | 23 | 28 | 23 | 20 | 22 | 19 | 16 | 17 | 14 | 13 |
| 10  | 45  | 34  | 27  | 22  | 41 | 31 | 25 | 21 | 25 | 21 | 18 | 20 | 17 | 15 | 15 | 13 | 11 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2143 | 2143 | 2143 |
| 5°  | 2145 | 2108 | 2122 |
| 10° | 2123 | 2065 | 2052 |
| 15° | 2092 | 1995 | 1944 |
| 20° | 2052 | 1900 | 1813 |
| 25° | 2012 | 1793 | 1685 |
| 30° | 1957 | 1684 | 1525 |
| 35° | 1904 | 1566 | 1383 |
| 40° | 1849 | 1445 | 1221 |
| 45° | 1786 | 1310 | 1074 |
| 50° | 1720 | 1175 | 931  |
| 55° | 1652 | 1030 | 794  |
| 60° | 1573 | 879  | 652  |
| 65° | 1481 | 726  | 586  |
| 70° | 1371 | 583  | 529  |
| 75° | 1231 | 511  | 480  |
| 80° | 1029 | 423  | 413  |
| 85° | 699  | 276  | 305  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2781 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 171.8   | 1.5       |
| 10°-20°   | 471.7   | 4.1       |
| 20°-30°   | 662.3   | 5.7       |
| 30°-40°   | 721.9   | 6.2       |
| 40°-50°   | 663.5   | 5.7       |
| 50°-60°   | 521.1   | 4.5       |
| 60°-70°   | 339.2   | 2.9       |
| 70°-80°   | 174.6   | 1.5       |
| 80°-90°   | 52.6    | 0.5       |
| 90°-100°  | 173.6   | 1.5       |
| 100°-110° | 551.7   | 4.7       |
| 110°-120° | 944.1   | 8.1       |
| 120°-130° | 1241.6  | 10.7      |
| 130°-140° | 1393.7  | 12.0      |
| 140°-150° | 1366.6  | 11.8      |
| 150°-160° | 1146.4  | 9.9       |
| 160°-170° | 760.3   | 6.5       |
| 170°-180° | 265.7   | 2.3       |
| 0°-30°    | 1305.8  | 11.2      |
| 0°-40°    | 2027.7  | 17.4      |
| 0°-60°    | 3212.2  | 27.6      |
| 0°-90°    | 3778.6  | 32.5      |
| 90°-120°  | 1669.4  | 14.4      |
| 90°-150°  | 5671.3  | 48.8      |
| 90°-180°  | 7844.0  | 67.5      |
| 0°-180°   | 11622.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1833 | 1833  | 1833 | 1833  | 1833 |      |
| 5°   | 1833 | 1825  | 1804 | 1818  | 1814 | 174  |
| 15°  | 1744 | 1726  | 1669 | 1638  | 1621 | 491  |
| 25°  | 1583 | 1530  | 1420 | 1352  | 1327 | 728  |
| 35°  | 1364 | 1279  | 1133 | 1029  | 992  | 854  |
| 45°  | 1115 | 1004  | 830  | 712   | 672  | 861  |
| 55°  | 848  | 718   | 539  | 440   | 408  | 758  |
| 65°  | 572  | 438   | 289  | 232   | 227  | 568  |
| 75°  | 305  | 189   | 133  | 121   | 120  | 323  |
| 85°  | 71   | 36    | 32   | 32    | 32   | 82   |
| 90°  | 3    | 30    | 83   | 78    | 80   | 12   |
| 95°  | 124  | 147   | 151  | 151   | 147  | 137  |
| 105° | 509  | 516   | 521  | 525   | 525  | 537  |
| 115° | 947  | 961   | 957  | 954   | 947  | 937  |
| 125° | 1378 | 1399  | 1392 | 1385  | 1382 | 1231 |
| 135° | 1782 | 1809  | 1814 | 1811  | 1804 | 1378 |
| 145° | 2164 | 2181  | 2194 | 2197  | 2188 | 1352 |
| 155° | 2474 | 2481  | 2489 | 2500  | 2493 | 1139 |
| 165° | 2692 | 2689  | 2689 | 2706  | 2694 | 759  |
| 175° | 2801 | 2794  | 2789 | 2806  | 2792 | 266  |
| 180° | 2806 | 2806  | 2806 | 2806  | 2806 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1833.4 | 1833.4 | 1833.4 | 1833.4 | 1833.4 |
| 2.5°   | 1841.7 | 1833.4 | 1815.1 | 1831.8 | 1828.4 |
| 5°     | 1833.4 | 1825.1 | 1803.5 | 1818.4 | 1813.5 |
| 7.5°   | 1818.4 | 1808.6 | 1785.4 | 1791.8 | 1783.6 |
| 10°    | 1798.6 | 1786.9 | 1753.8 | 1748.7 | 1738.9 |
| 12.5°  | 1773.7 | 1758.8 | 1713.8 | 1704.0 | 1685.7 |
| 15°    | 1743.8 | 1725.5 | 1669.2 | 1637.7 | 1621.1 |
| 17.5°  | 1709.0 | 1682.4 | 1612.6 | 1576.2 | 1549.6 |
| 20°    | 1669.2 | 1635.9 | 1552.9 | 1511.6 | 1475.0 |
| 22.5°  | 1626.0 | 1587.9 | 1491.5 | 1435.2 | 1410.4 |
| 25°    | 1582.9 | 1529.8 | 1420.2 | 1352.3 | 1327.3 |
| 27.5°  | 1531.5 | 1475.0 | 1353.9 | 1275.9 | 1237.6 |
| 30°    | 1476.7 | 1413.5 | 1280.8 | 1196.3 | 1151.5 |
| 32.5°  | 1423.6 | 1347.2 | 1211.2 | 1111.7 | 1070.1 |
| 35°    | 1364.0 | 1279.2 | 1133.3 | 1028.7 | 992.1  |
| 37.5°  | 1305.8 | 1214.5 | 1060.2 | 945.6  | 904.3  |
| 40°    | 1244.4 | 1144.9 | 983.9  | 866.1  | 823.0  |
| 42.5°  | 1181.3 | 1075.2 | 907.6  | 784.7  | 743.4  |
| 45°    | 1115.0 | 1003.8 | 829.6  | 711.8  | 671.9  |
| 47.5°  | 1052.0 | 934.2  | 755.0  | 637.1  | 600.6  |
| 50°    | 982.2  | 864.5  | 681.9  | 567.4  | 532.7  |
| 52.5°  | 914.1  | 789.7  | 612.3  | 502.7  | 471.2  |
| 55°    | 847.8  | 718.4  | 539.2  | 439.7  | 408.2  |
| 57.5°  | 779.8  | 647.1  | 474.5  | 381.6  | 355.1  |
| 60°    | 710.1  | 577.3  | 406.4  | 321.9  | 295.4  |
| 62.5°  | 642.2  | 509.5  | 348.3  | 268.8  | 255.6  |
| 65°    | 572.5  | 437.9  | 288.7  | 232.3  | 227.2  |
| 67.5°  | 506.1  | 371.6  | 232.3  | 204.1  | 199.1  |
| 70°    | 436.4  | 307.0  | 192.4  | 175.9  | 169.1  |
| 72.5°  | 370.1  | 247.2  | 160.9  | 147.7  | 144.4  |
| 75°    | 305.2  | 189.1  | 132.7  | 121.1  | 119.6  |
| 77.5°  | 240.7  | 134.3  | 104.6  | 97.9   | 94.5   |
| 80°    | 180.8  | 96.3   | 79.5   | 73.1   | 73.1   |
| 82.5°  | 126.1  | 64.8   | 54.8   | 51.3   | 51.3   |
| 85°    | 71.3   | 36.5   | 31.5   | 31.5   | 31.5   |
| 87.5°  | 26.6   | 13.2   | 13.2   | 11.6   | 11.6   |
| 90°    | 2.6    | 30.5   | 83.0   | 77.9   | 80.4   |
| 92.5°  | 52.5   | 71.1   | 73.6   | 76.1   | 76.1   |
| 95°    | 123.5  | 147.2  | 151.4  | 151.4  | 147.2  |
| 97.5°  | 205.6  | 227.6  | 236.9  | 236.9  | 236.9  |
| 100°   | 300.3  | 319.7  | 326.5  | 326.5  | 323.9  |
| 102.5° | 400.1  | 414.5  | 423.7  | 426.3  | 423.7  |
| 105°   | 509.3  | 516.0  | 521.1  | 525.3  | 525.3  |
| 107.5° | 617.5  | 627.7  | 627.7  | 629.4  | 617.5  |
| 110°   | 722.4  | 735.9  | 735.9  | 735.9  | 729.2  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 835.7  | 850.2  | 847.6  | 840.8  | 835.7  |
| 115°   | 947.4  | 960.9  | 956.7  | 954.2  | 947.4  |
| 117.5° | 1058.2 | 1076.8 | 1065.0 | 1058.2 | 1051.4 |
| 120°   | 1169.9 | 1188.5 | 1169.9 | 1169.9 | 1162.2 |
| 122.5° | 1271.4 | 1295.1 | 1283.2 | 1276.5 | 1271.4 |
| 125°   | 1377.9 | 1399.1 | 1392.3 | 1384.7 | 1382.3 |
| 127.5° | 1482.1 | 1508.2 | 1498.9 | 1488.8 | 1482.1 |
| 130°   | 1579.3 | 1609.7 | 1605.5 | 1600.5 | 1591.2 |
| 132.5° | 1688.5 | 1712.1 | 1713.8 | 1702.0 | 1695.2 |
| 135°   | 1782.3 | 1808.6 | 1813.7 | 1811.1 | 1804.3 |
| 137.5° | 1887.2 | 1908.4 | 1912.6 | 1910.9 | 1900.7 |
| 140°   | 1979.5 | 2000.5 | 2012.4 | 2012.4 | 2003.1 |
| 142.5° | 2074.2 | 2095.3 | 2102.1 | 2104.7 | 2095.3 |
| 145°   | 2163.9 | 2180.7 | 2194.3 | 2196.8 | 2187.5 |
| 147.5° | 2244.2 | 2265.4 | 2275.4 | 2279.8 | 2270.5 |
| 150°   | 2327.1 | 2341.4 | 2350.7 | 2358.4 | 2350.7 |
| 152.5° | 2400.7 | 2415.1 | 2426.9 | 2436.3 | 2426.9 |
| 155°   | 2474.3 | 2481.1 | 2488.7 | 2500.5 | 2492.9 |
| 157.5° | 2537.7 | 2542.8 | 2547.0 | 2563.9 | 2552.1 |
| 160°   | 2594.4 | 2599.5 | 2602.0 | 2616.4 | 2606.3 |
| 162.5° | 2646.9 | 2646.9 | 2649.4 | 2665.5 | 2653.6 |
| 165°   | 2691.7 | 2689.1 | 2689.1 | 2706.1 | 2694.2 |
| 167.5° | 2732.2 | 2724.7 | 2724.7 | 2741.6 | 2729.7 |
| 170°   | 2762.7 | 2756.0 | 2753.4 | 2770.4 | 2756.0 |
| 172.5° | 2783.9 | 2777.2 | 2774.6 | 2791.5 | 2777.2 |
| 175°   | 2800.8 | 2794.0 | 2788.9 | 2805.9 | 2791.5 |
| 177.5° | 2810.1 | 2803.3 | 2798.2 | 2812.6 | 2798.2 |
| 180°   | 2805.9 | 2805.9 | 2805.9 | 2805.9 | 2805.9 |

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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 | 7.86             | 8.56  | 8.95  | 9.65  | 11.16 | 3.82           | 4.53 | 4.92 | 5.62 | 7.12  |
|                 | 3H   | 9.52             | 10.15 | 10.63 | 11.25 | 12.77 | 4.99           | 5.62 | 6.10 | 6.73 | 8.25  |
|                 | 4H   | 10.12            | 10.71 | 11.23 | 11.82 | 13.34 | 5.43           | 6.03 | 6.55 | 7.14 | 8.66  |
|                 | 6H   | 10.53            | 11.08 | 11.65 | 12.18 | 13.72 | 5.74           | 6.29 | 6.87 | 7.40 | 8.94  |
|                 | 8H   | 10.65            | 11.17 | 11.78 | 12.29 | 13.82 | 5.83           | 6.35 | 6.96 | 7.47 | 9.00  |
|                 | 12H  | 10.70            | 11.20 | 11.84 | 12.31 | 13.87 | 5.86           | 6.36 | 7.00 | 7.48 | 9.03  |
| 4H              | 2H   | 7.86             | 8.45  | 8.98  | 9.56  | 11.08 | 4.40           | 5.00 | 5.52 | 6.10 | 7.62  |
|                 | 3H   | 9.67             | 10.16 | 10.80 | 11.29 | 12.83 | 5.73           | 6.23 | 6.86 | 7.36 | 8.89  |
|                 | 4H   | 10.35            | 10.81 | 11.48 | 11.93 | 13.48 | 6.27           | 6.73 | 7.40 | 7.84 | 9.40  |
|                 | 6H   | 10.85            | 11.24 | 11.99 | 12.38 | 13.93 | 6.67           | 7.07 | 7.82 | 8.21 | 9.76  |
|                 | 8H   | 11.02            | 11.39 | 12.16 | 12.52 | 14.09 | 6.80           | 7.16 | 7.94 | 8.29 | 9.86  |
|                 | 12H  | 11.11            | 11.44 | 12.26 | 12.58 | 14.15 | 6.85           | 7.18 | 8.01 | 8.33 | 9.90  |
| 8H              | 4H   | 10.31            | 10.67 | 11.45 | 11.80 | 13.37 | 6.54           | 6.90 | 7.68 | 8.03 | 9.60  |
|                 | 6H   | 10.86            | 11.16 | 12.02 | 12.34 | 13.90 | 7.04           | 7.34 | 8.20 | 8.52 | 10.08 |
|                 | 8H   | 11.07            | 11.34 | 12.24 | 12.49 | 14.07 | 7.23           | 7.49 | 8.39 | 8.64 | 10.23 |
|                 | 12H  | 11.20            | 11.43 | 12.37 | 12.58 | 14.20 | 7.33           | 7.57 | 8.50 | 8.72 | 10.33 |
| 12H             | 4H   | 10.25            | 10.58 | 11.41 | 11.73 | 13.30 | 6.53           | 6.86 | 7.69 | 8.01 | 9.58  |
|                 | 6H   | 10.84            | 11.10 | 12.00 | 12.25 | 13.84 | 7.09           | 7.35 | 8.25 | 8.51 | 10.09 |
|                 | 8H   | 11.05            | 11.28 | 12.22 | 12.43 | 14.05 | 7.29           | 7.52 | 8.46 | 8.67 | 10.29 |