

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: P910745

Luminaire Tested: DFN2DIP-HX3F0-040D070US850-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P910745  
REPORT IS A COMBINATION OF REPORTS P900780 AND P897645  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-040D070US850-RLLONL  
Description: 3 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

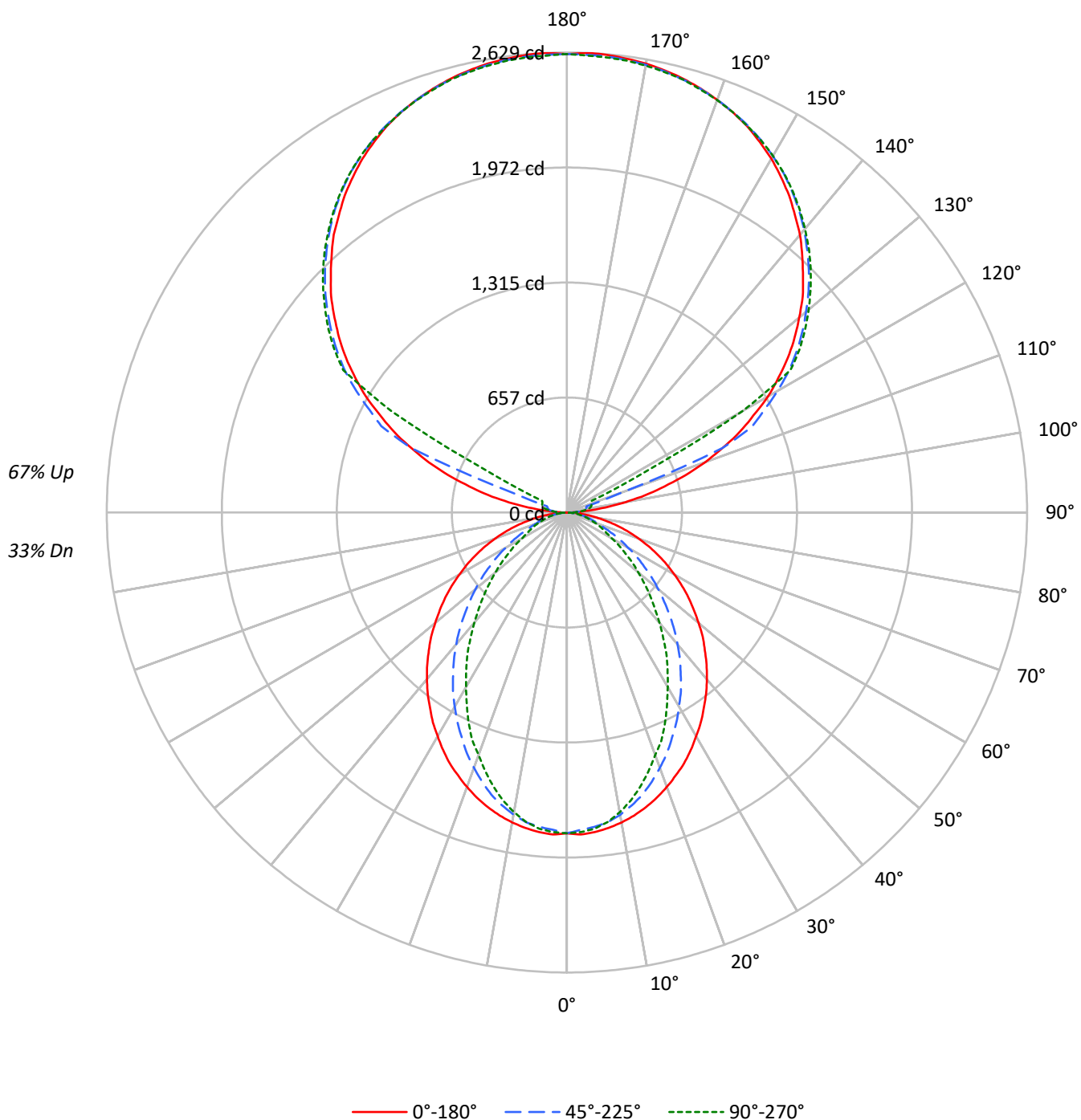
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 11456.0 lumens  
Efficiency: N/A  
Efficacy: 130.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.84' x L: 3.28' x H: 0.1')  
CIE Type: Semi-Indirect  
  
Input Watts (W): 87.9  
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

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### 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   | 103 | 103 | 103 | 103 | 93 | 93 | 93 | 93 | 74 | 74 | 74 | 56 | 56 | 56 | 40 | 40 | 40 |
| 1   | 94  | 90  | 87  | 83  | 85 | 81 | 78 | 76 | 65 | 63 | 61 | 50 | 49 | 48 | 36 | 35 | 35 |
| 2   | 86  | 79  | 73  | 68  | 77 | 72 | 67 | 62 | 57 | 54 | 51 | 44 | 42 | 40 | 32 | 31 | 30 |
| 3   | 79  | 70  | 63  | 57  | 71 | 63 | 57 | 53 | 51 | 47 | 43 | 39 | 37 | 34 | 29 | 27 | 26 |
| 4   | 72  | 62  | 54  | 49  | 65 | 56 | 50 | 45 | 45 | 41 | 37 | 35 | 32 | 30 | 26 | 24 | 22 |
| 5   | 66  | 55  | 47  | 42  | 59 | 50 | 43 | 38 | 41 | 36 | 32 | 32 | 28 | 26 | 24 | 21 | 20 |
| 6   | 61  | 49  | 42  | 36  | 55 | 45 | 38 | 33 | 37 | 32 | 28 | 29 | 25 | 23 | 21 | 19 | 17 |
| 7   | 56  | 45  | 37  | 32  | 51 | 41 | 34 | 29 | 33 | 28 | 25 | 26 | 23 | 20 | 20 | 17 | 16 |
| 8   | 52  | 41  | 33  | 28  | 47 | 37 | 31 | 26 | 30 | 25 | 22 | 24 | 21 | 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 | 26 | 21 | 18 | 20 | 17 | 15 | 16 | 13 | 12 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2124 | 2124 | 2124 |
| 5°  | 2126 | 2089 | 2102 |
| 10° | 2104 | 2046 | 2033 |
| 15° | 2074 | 1977 | 1926 |
| 20° | 2035 | 1882 | 1795 |
| 25° | 1995 | 1777 | 1669 |
| 30° | 1941 | 1668 | 1509 |
| 35° | 1888 | 1552 | 1369 |
| 40° | 1835 | 1432 | 1209 |
| 45° | 1772 | 1299 | 1063 |
| 50° | 1708 | 1164 | 921  |
| 55° | 1641 | 1021 | 785  |
| 60° | 1562 | 871  | 645  |
| 65° | 1473 | 720  | 579  |
| 70° | 1364 | 578  | 522  |
| 75° | 1226 | 506  | 473  |
| 80° | 1028 | 420  | 406  |
| 85° | 703  | 273  | 298  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1772 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   | 5.8       |
| 30°-40°   | 721.9   | 6.3       |
| 40°-50°   | 663.5   | 5.8       |
| 50°-60°   | 521.1   | 4.5       |
| 60°-70°   | 339.2   | 3.0       |
| 70°-80°   | 174.6   | 1.5       |
| 80°-90°   | 49.2    | 0.4       |
| 90°-100°  | 86.4    | 0.8       |
| 100°-110° | 322.1   | 2.8       |
| 110°-120° | 854.1   | 7.5       |
| 120°-130° | 1416.6  | 12.4      |
| 130°-140° | 1504.8  | 13.1      |
| 140°-150° | 1398.5  | 12.2      |
| 150°-160° | 1124.4  | 9.8       |
| 160°-170° | 724.5   | 6.3       |
| 170°-180° | 249.4   | 2.2       |
| 0°-30°    | 1305.8  | 11.4      |
| 0°-40°    | 2027.7  | 17.7      |
| 0°-60°    | 3212.2  | 28.0      |
| 0°-90°    | 3775.2  | 33.0      |
| 90°-120°  | 1262.6  | 11.0      |
| 90°-150°  | 5582.5  | 48.7      |
| 90°-180°  | 7681.0  | 67.0      |
| 0°-180°   | 11456.0 | 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°  | 2    | 23    | 38   | 48    | 51   | 11   |
| 95°  | 123  | 61    | 74   | 84    | 82   | 146  |
| 105° | 576  | 633   | 116  | 136   | 144  | 616  |
| 115° | 1090 | 1122  | 1170 | 292   | 156  | 1073 |
| 125° | 1541 | 1566  | 1602 | 1615  | 1621 | 1375 |
| 135° | 1907 | 1938  | 1954 | 1974  | 1970 | 1473 |
| 145° | 2212 | 2210  | 2243 | 2256  | 2246 | 1384 |
| 155° | 2436 | 2419  | 2442 | 2453  | 2438 | 1123 |
| 165° | 2567 | 2556  | 2561 | 2574  | 2561 | 725  |
| 175° | 2626 | 2612  | 2616 | 2629  | 2610 | 250  |
| 180° | 2620 | 2620  | 2620 | 2620  | 2620 |      |

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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°    | 1.8    | 22.7   | 37.8   | 47.5   | 51.1   |
| 92.5°  | 47.5   | 39.8   | 45.5   | 49.4   | 51.1   |
| 95°    | 123.1  | 60.6   | 73.9   | 83.5   | 81.5   |
| 97.5°  | 221.7  | 66.4   | 96.6   | 102.5  | 104.2  |
| 100°   | 335.7  | 75.9   | 108.0  | 123.1  | 127.0  |
| 102.5° | 460.6  | 457.0  | 111.9  | 132.6  | 138.4  |
| 105°   | 576.3  | 633.2  | 115.7  | 136.4  | 144.1  |
| 107.5° | 710.9  | 758.2  | 119.6  | 140.3  | 147.9  |
| 110°   | 840.0  | 879.5  | 331.8  | 142.3  | 149.7  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 961.3  | 995.2  | 963.1  | 145.8  | 151.7  |
| 115°   | 1090.0 | 1122.2 | 1169.7 | 292.0  | 155.6  |
| 117.5° | 1201.9 | 1239.8 | 1272.1 | 1000.9 | 504.3  |
| 120°   | 1327.0 | 1355.4 | 1389.7 | 1412.4 | 1156.5 |
| 122.5° | 1433.0 | 1463.4 | 1501.6 | 1512.8 | 1514.8 |
| 125°   | 1541.2 | 1565.9 | 1602.0 | 1615.3 | 1620.8 |
| 127.5° | 1639.8 | 1666.3 | 1694.9 | 1713.8 | 1715.6 |
| 130°   | 1732.7 | 1763.1 | 1783.8 | 1804.8 | 1803.0 |
| 132.5° | 1827.5 | 1852.3 | 1873.0 | 1890.1 | 1888.3 |
| 135°   | 1907.1 | 1937.5 | 1954.5 | 1973.6 | 1969.8 |
| 137.5° | 1990.4 | 2013.3 | 2032.4 | 2051.3 | 2045.7 |
| 140°   | 2071.9 | 2087.2 | 2108.0 | 2125.1 | 2115.6 |
| 142.5° | 2140.4 | 2153.7 | 2178.2 | 2193.3 | 2183.8 |
| 145°   | 2212.5 | 2210.5 | 2242.6 | 2255.9 | 2246.5 |
| 147.5° | 2274.8 | 2269.2 | 2301.4 | 2310.8 | 2303.4 |
| 150°   | 2335.6 | 2322.4 | 2352.7 | 2363.9 | 2354.5 |
| 152.5° | 2386.7 | 2371.6 | 2400.0 | 2411.4 | 2398.2 |
| 155°   | 2436.0 | 2419.1 | 2441.8 | 2453.1 | 2438.0 |
| 157.5° | 2475.8 | 2460.8 | 2477.8 | 2491.1 | 2475.8 |
| 160°   | 2510.1 | 2498.6 | 2510.1 | 2521.3 | 2508.0 |
| 162.5° | 2540.3 | 2529.0 | 2538.4 | 2551.7 | 2534.6 |
| 165°   | 2566.8 | 2555.6 | 2561.1 | 2574.4 | 2561.1 |
| 167.5° | 2587.7 | 2576.2 | 2582.1 | 2595.4 | 2578.3 |
| 170°   | 2604.8 | 2593.4 | 2597.2 | 2610.5 | 2593.4 |
| 172.5° | 2616.1 | 2604.8 | 2608.7 | 2621.9 | 2604.8 |
| 175°   | 2625.6 | 2612.2 | 2616.1 | 2629.3 | 2610.5 |
| 177.5° | 2629.3 | 2616.1 | 2618.1 | 2631.4 | 2614.2 |
| 180°   | 2619.9 | 2619.9 | 2619.9 | 2619.9 | 2619.9 |

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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 | 7.88             | 8.59  | 8.98  | 9.68  | 11.17 | 3.85           | 4.56 | 4.95 | 5.65 | 7.15  |
|                 | 3H   | 9.54             | 10.17 | 10.64 | 11.27 | 12.79 | 5.03           | 5.66 | 6.13 | 6.76 | 8.28  |
|                 | 4H   | 10.14            | 10.74 | 11.25 | 11.84 | 13.36 | 5.47           | 6.07 | 6.59 | 7.17 | 8.69  |
|                 | 6H   | 10.55            | 11.10 | 11.67 | 12.20 | 13.73 | 5.78           | 6.33 | 6.91 | 7.44 | 8.97  |
|                 | 8H   | 10.67            | 11.19 | 11.79 | 12.31 | 13.83 | 5.87           | 6.39 | 6.99 | 7.51 | 9.04  |
|                 | 12H  | 10.72            | 11.22 | 11.85 | 12.33 | 13.88 | 5.90           | 6.40 | 7.04 | 7.51 | 9.06  |
| 4H              | 2H   | 7.88             | 8.48  | 9.00  | 9.58  | 11.10 | 4.43           | 5.03 | 5.55 | 6.13 | 7.65  |
|                 | 3H   | 9.69             | 10.19 | 10.82 | 11.32 | 12.85 | 5.76           | 6.26 | 6.89 | 7.39 | 8.92  |
|                 | 4H   | 10.37            | 10.83 | 11.50 | 11.95 | 13.50 | 6.30           | 6.76 | 7.44 | 7.88 | 9.43  |
|                 | 6H   | 10.87            | 11.27 | 12.01 | 12.40 | 13.95 | 6.71           | 7.10 | 7.85 | 8.24 | 9.79  |
|                 | 8H   | 11.04            | 11.41 | 12.18 | 12.54 | 14.10 | 6.84           | 7.20 | 7.97 | 8.33 | 9.89  |
|                 | 12H  | 11.13            | 11.46 | 12.28 | 12.60 | 14.17 | 6.89           | 7.22 | 8.05 | 8.37 | 9.93  |
| 8H              | 4H   | 10.33            | 10.70 | 11.47 | 11.83 | 13.39 | 6.57           | 6.94 | 7.71 | 8.07 | 9.63  |
|                 | 6H   | 10.88            | 11.18 | 12.04 | 12.36 | 13.91 | 7.08           | 7.38 | 8.24 | 8.55 | 10.11 |
|                 | 8H   | 11.09            | 11.36 | 12.26 | 12.51 | 14.09 | 7.26           | 7.53 | 8.43 | 8.68 | 10.26 |
|                 | 12H  | 11.22            | 11.45 | 12.39 | 12.60 | 14.21 | 7.37           | 7.61 | 8.54 | 8.75 | 10.37 |
| 12H             | 4H   | 10.28            | 10.61 | 11.43 | 11.75 | 13.32 | 6.57           | 6.90 | 7.72 | 8.04 | 9.61  |
|                 | 6H   | 10.86            | 11.12 | 12.02 | 12.27 | 13.85 | 7.13           | 7.39 | 8.29 | 8.54 | 10.12 |
|                 | 8H   | 11.07            | 11.30 | 12.23 | 12.45 | 14.06 | 7.33           | 7.56 | 8.49 | 8.71 | 10.32 |