

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: P911379

Luminaire Tested: DFN2DIP-PN4F0-050D070US850-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P911379  
REPORT IS A COMBINATION OF REPORTS P901186 AND P898053  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-050D070US850-RLLONL  
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

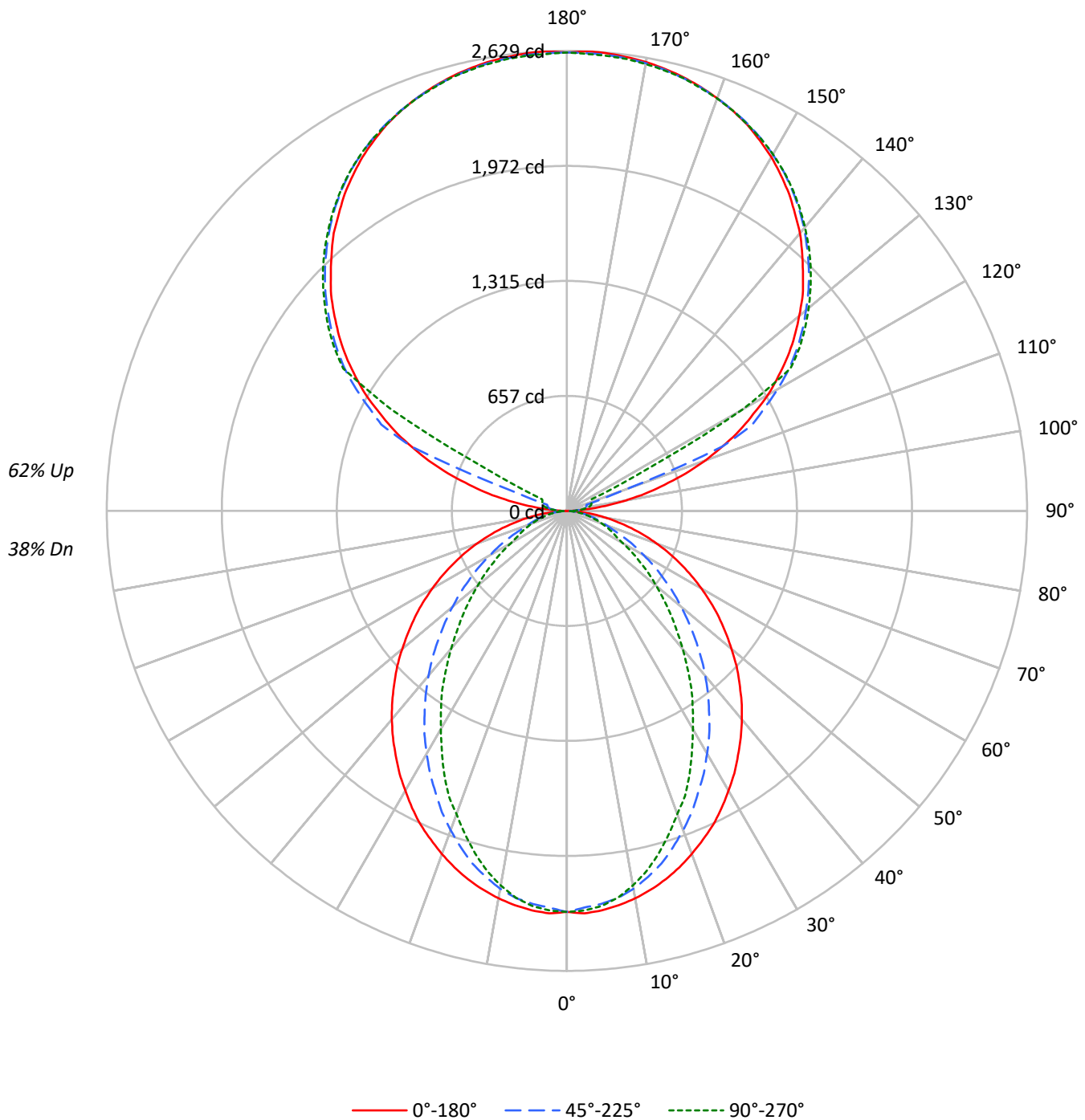
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 12398.7 lumens  
Efficiency: N/A  
Efficacy: 128.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: Semi-Indirect  
  
Input Watts (W): 96.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9951  
Total Harmonic Distortion (THDi): 0.07  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P911379

CATALOG NUMBER: DFN2DIP-PN4F0-050D070US850-RLLONL

### Luminous Intensity Polar Plot



TEST NUMBER: P911379

CATALOG NUMBER: DFN2DIP-PN4F0-050D070US850-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   | 104 | 104 | 104 | 104 | 95 | 95 | 95 | 95 | 77 | 77 | 77 | 60 | 60 | 60 | 45 | 45 | 45 |
| 1   | 95  | 91  | 88  | 84  | 87 | 83 | 80 | 77 | 68 | 66 | 64 | 54 | 52 | 51 | 40 | 40 | 39 |
| 2   | 87  | 80  | 74  | 69  | 79 | 73 | 68 | 64 | 60 | 56 | 53 | 47 | 45 | 43 | 36 | 35 | 33 |
| 3   | 80  | 71  | 64  | 58  | 72 | 65 | 59 | 54 | 53 | 49 | 45 | 42 | 39 | 37 | 32 | 30 | 29 |
| 4   | 73  | 63  | 55  | 50  | 66 | 57 | 51 | 46 | 47 | 42 | 39 | 38 | 34 | 32 | 29 | 27 | 25 |
| 5   | 67  | 56  | 48  | 43  | 61 | 51 | 45 | 40 | 42 | 37 | 34 | 34 | 31 | 28 | 26 | 24 | 22 |
| 6   | 62  | 50  | 43  | 37  | 56 | 46 | 39 | 34 | 38 | 33 | 29 | 31 | 27 | 24 | 24 | 22 | 20 |
| 7   | 57  | 45  | 38  | 32  | 52 | 42 | 35 | 30 | 35 | 30 | 26 | 28 | 24 | 22 | 22 | 19 | 18 |
| 8   | 53  | 41  | 34  | 29  | 48 | 38 | 31 | 27 | 32 | 27 | 23 | 26 | 22 | 19 | 20 | 18 | 16 |
| 9   | 50  | 38  | 31  | 26  | 45 | 35 | 28 | 24 | 29 | 24 | 21 | 24 | 20 | 18 | 19 | 16 | 14 |
| 10  | 46  | 35  | 28  | 23  | 42 | 32 | 26 | 22 | 27 | 22 | 19 | 22 | 18 | 16 | 17 | 15 | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1673 | 1673 | 1673 |
| 5°  | 1676 | 1647 | 1657 |
| 10° | 1659 | 1614 | 1603 |
| 15° | 1636 | 1561 | 1520 |
| 20° | 1606 | 1488 | 1418 |
| 25° | 1575 | 1406 | 1320 |
| 30° | 1533 | 1321 | 1195 |
| 35° | 1493 | 1231 | 1085 |
| 40° | 1451 | 1137 | 959  |
| 45° | 1403 | 1032 | 844  |
| 50° | 1353 | 927  | 733  |
| 55° | 1302 | 815  | 626  |
| 60° | 1241 | 697  | 515  |
| 65° | 1172 | 578  | 464  |
| 70° | 1088 | 466  | 421  |
| 75° | 983  | 411  | 383  |
| 80° | 830  | 346  | 333  |
| 85° | 579  | 232  | 253  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1403 cd/sqm

TEST NUMBER: P911379

CATALOG NUMBER: DFN2DIP-PN4F0-050D070US850-RLLONL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 214.8   | 1.7       |
| 10°-20°   | 589.6   | 4.8       |
| 20°-30°   | 827.8   | 6.7       |
| 30°-40°   | 902.4   | 7.3       |
| 40°-50°   | 829.4   | 6.7       |
| 50°-60°   | 651.3   | 5.3       |
| 60°-70°   | 424.0   | 3.4       |
| 70°-80°   | 218.2   | 1.8       |
| 80°-90°   | 60.3    | 0.5       |
| 90°-100°  | 86.4    | 0.7       |
| 100°-110° | 322.1   | 2.6       |
| 110°-120° | 854.1   | 6.9       |
| 120°-130° | 1416.6  | 11.4      |
| 130°-140° | 1504.8  | 12.1      |
| 140°-150° | 1398.5  | 11.3      |
| 150°-160° | 1124.4  | 9.1       |
| 160°-170° | 724.5   | 5.8       |
| 170°-180° | 249.4   | 2.0       |
| 0°-30°    | 1632.2  | 13.2      |
| 0°-40°    | 2534.6  | 20.4      |
| 0°-60°    | 4015.3  | 32.4      |
| 0°-90°    | 4717.9  | 38.1      |
| 90°-120°  | 1262.6  | 10.2      |
| 90°-150°  | 5582.5  | 45.0      |
| 90°-180°  | 7681.0  | 62.0      |
| 0°-180°   | 12398.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2292 | 2292  | 2292 | 2292  | 2292 |      |
| 5°   | 2292 | 2281  | 2254 | 2273  | 2267 | 217  |
| 15°  | 2180 | 2157  | 2086 | 2047  | 2026 | 614  |
| 25°  | 1979 | 1912  | 1775 | 1690  | 1659 | 910  |
| 35°  | 1705 | 1599  | 1417 | 1286  | 1240 | 1067 |
| 45°  | 1394 | 1255  | 1037 | 890   | 840  | 1076 |
| 55°  | 1060 | 898   | 674  | 550   | 510  | 947  |
| 65°  | 716  | 548   | 361  | 290   | 284  | 709  |
| 75°  | 382  | 236   | 166  | 151   | 149  | 404  |
| 85°  | 89   | 46    | 39   | 39    | 39   | 102  |
| 90°  | 2    | 23    | 38   | 48    | 51   | 12   |
| 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 |      |

TEST NUMBER: P911379

CATALOG NUMBER: DFN2DIP-PN4F0-050D070US850-RLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2291.7 | 2291.7 | 2291.7 | 2291.7 | 2291.7 |
| 2.5°   | 2302.1 | 2291.7 | 2268.9 | 2289.8 | 2285.5 |
| 5°     | 2291.7 | 2281.4 | 2254.4 | 2273.0 | 2266.9 |
| 7.5°   | 2273.0 | 2260.7 | 2231.6 | 2239.8 | 2229.4 |
| 10°    | 2248.2 | 2233.6 | 2192.3 | 2185.9 | 2173.5 |
| 12.5°  | 2217.1 | 2198.5 | 2142.4 | 2130.1 | 2107.1 |
| 15°    | 2179.7 | 2156.9 | 2086.5 | 2047.1 | 2026.4 |
| 17.5°  | 2136.2 | 2103.0 | 2015.8 | 1970.2 | 1937.0 |
| 20°    | 2086.5 | 2044.9 | 1941.2 | 1889.5 | 1843.7 |
| 22.5°  | 2032.6 | 1984.8 | 1864.5 | 1794.0 | 1763.0 |
| 25°    | 1978.6 | 1912.1 | 1775.3 | 1690.3 | 1659.1 |
| 27.5°  | 1914.4 | 1843.7 | 1692.3 | 1594.9 | 1547.2 |
| 30°    | 1845.9 | 1767.0 | 1601.1 | 1495.4 | 1439.3 |
| 32.5°  | 1779.5 | 1684.0 | 1514.1 | 1389.6 | 1337.7 |
| 35°    | 1704.9 | 1599.1 | 1416.6 | 1285.9 | 1240.2 |
| 37.5°  | 1632.2 | 1518.1 | 1325.4 | 1182.1 | 1130.4 |
| 40°    | 1555.5 | 1431.2 | 1229.8 | 1082.6 | 1028.7 |
| 42.5°  | 1476.7 | 1344.0 | 1134.5 | 980.9  | 929.2  |
| 45°    | 1393.8 | 1254.7 | 1037.0 | 889.6  | 839.8  |
| 47.5°  | 1314.9 | 1167.8 | 943.8  | 796.4  | 750.8  |
| 50°    | 1227.9 | 1080.6 | 852.5  | 709.2  | 665.8  |
| 52.5°  | 1142.7 | 987.1  | 765.3  | 628.5  | 589.1  |
| 55°    | 1059.8 | 898.0  | 673.9  | 549.6  | 510.3  |
| 57.5°  | 974.8  | 808.9  | 593.2  | 477.1  | 443.8  |
| 60°    | 887.6  | 721.7  | 508.0  | 402.5  | 369.2  |
| 62.5°  | 802.7  | 636.8  | 435.5  | 336.0  | 319.5  |
| 65°    | 715.5  | 547.5  | 360.9  | 290.4  | 284.1  |
| 67.5°  | 632.6  | 464.6  | 290.4  | 255.1  | 248.9  |
| 70°    | 545.5  | 383.7  | 240.5  | 219.8  | 211.5  |
| 72.5°  | 462.6  | 309.0  | 201.2  | 184.6  | 180.4  |
| 75°    | 381.6  | 236.3  | 165.9  | 151.4  | 149.4  |
| 77.5°  | 300.8  | 167.9  | 130.8  | 122.3  | 118.1  |
| 80°    | 226.0  | 120.3  | 99.5   | 91.3   | 91.3   |
| 82.5°  | 157.6  | 81.0   | 68.4   | 64.2   | 64.2   |
| 85°    | 89.2   | 45.6   | 39.4   | 39.4   | 39.4   |
| 87.5°  | 33.3   | 16.5   | 16.5   | 14.5   | 14.5   |
| 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  |

TEST NUMBER: P911379

CATALOG NUMBER: DFN2DIP-PN4F0-050D070US850-RLLONL

**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 |

TEST NUMBER: P911379

CATALOG NUMBER: DFN2DIP-PN4F0-050D070US850-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 | 7.71             | 8.45  | 8.77  | 9.51  | 10.95 | 3.68           | 4.42 | 4.74 | 5.48 | 6.91  |
|                 | 3H   | 9.39             | 10.05 | 10.46 | 11.12 | 12.57 | 4.86           | 5.52 | 5.93 | 6.59 | 8.04  |
|                 | 4H   | 9.99             | 10.62 | 11.07 | 11.69 | 13.15 | 5.31           | 5.94 | 6.39 | 7.01 | 8.46  |
|                 | 6H   | 10.41            | 10.99 | 11.50 | 12.06 | 13.53 | 5.62           | 6.20 | 6.71 | 7.28 | 8.75  |
|                 | 8H   | 10.54            | 11.09 | 11.63 | 12.18 | 13.64 | 5.71           | 6.26 | 6.81 | 7.35 | 8.82  |
|                 | 12H  | 10.60            | 11.12 | 11.70 | 12.20 | 13.69 | 5.75           | 6.28 | 6.85 | 7.36 | 8.85  |
| 4H              | 2H   | 7.72             | 8.35  | 8.81  | 9.42  | 10.88 | 4.26           | 4.89 | 5.35 | 5.96 | 7.42  |
|                 | 3H   | 9.55             | 10.07 | 10.64 | 11.16 | 12.64 | 5.61           | 6.13 | 6.70 | 7.23 | 8.70  |
|                 | 4H   | 10.24            | 10.71 | 11.33 | 11.80 | 13.29 | 6.15           | 6.63 | 7.25 | 7.72 | 9.21  |
|                 | 6H   | 10.75            | 11.16 | 11.86 | 12.27 | 13.76 | 6.57           | 6.98 | 7.67 | 8.09 | 9.57  |
|                 | 8H   | 10.92            | 11.31 | 12.03 | 12.41 | 13.91 | 6.70           | 7.08 | 7.80 | 8.18 | 9.68  |
|                 | 12H  | 11.02            | 11.36 | 12.14 | 12.48 | 13.99 | 6.76           | 7.10 | 7.88 | 8.22 | 9.73  |
| 8H              | 4H   | 10.20            | 10.58 | 11.30 | 11.68 | 13.18 | 6.43           | 6.81 | 7.53 | 7.91 | 9.42  |
|                 | 6H   | 10.76            | 11.08 | 11.89 | 12.22 | 13.72 | 6.94           | 7.26 | 8.07 | 8.40 | 9.90  |
|                 | 8H   | 10.98            | 11.26 | 12.12 | 12.38 | 13.90 | 7.14           | 7.41 | 8.27 | 8.54 | 10.06 |
|                 | 12H  | 11.12            | 11.36 | 12.26 | 12.48 | 14.04 | 7.25           | 7.49 | 8.39 | 8.62 | 10.17 |
| 12H             | 4H   | 10.15            | 10.49 | 11.27 | 11.61 | 13.11 | 6.43           | 6.78 | 7.55 | 7.89 | 9.40  |
|                 | 6H   | 10.74            | 11.02 | 11.87 | 12.14 | 13.66 | 6.99           | 7.27 | 8.13 | 8.40 | 9.91  |
|                 | 8H   | 10.96            | 11.20 | 12.09 | 12.32 | 13.88 | 7.20           | 7.44 | 8.34 | 8.57 | 10.12 |