

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: P921079

Luminaire Tested: DFN2DIP-TR4F0-080D100US935-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P921079  
REPORT IS A COMBINATION OF REPORTS P902005 AND P898849  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-080D100US935-FLLONL  
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

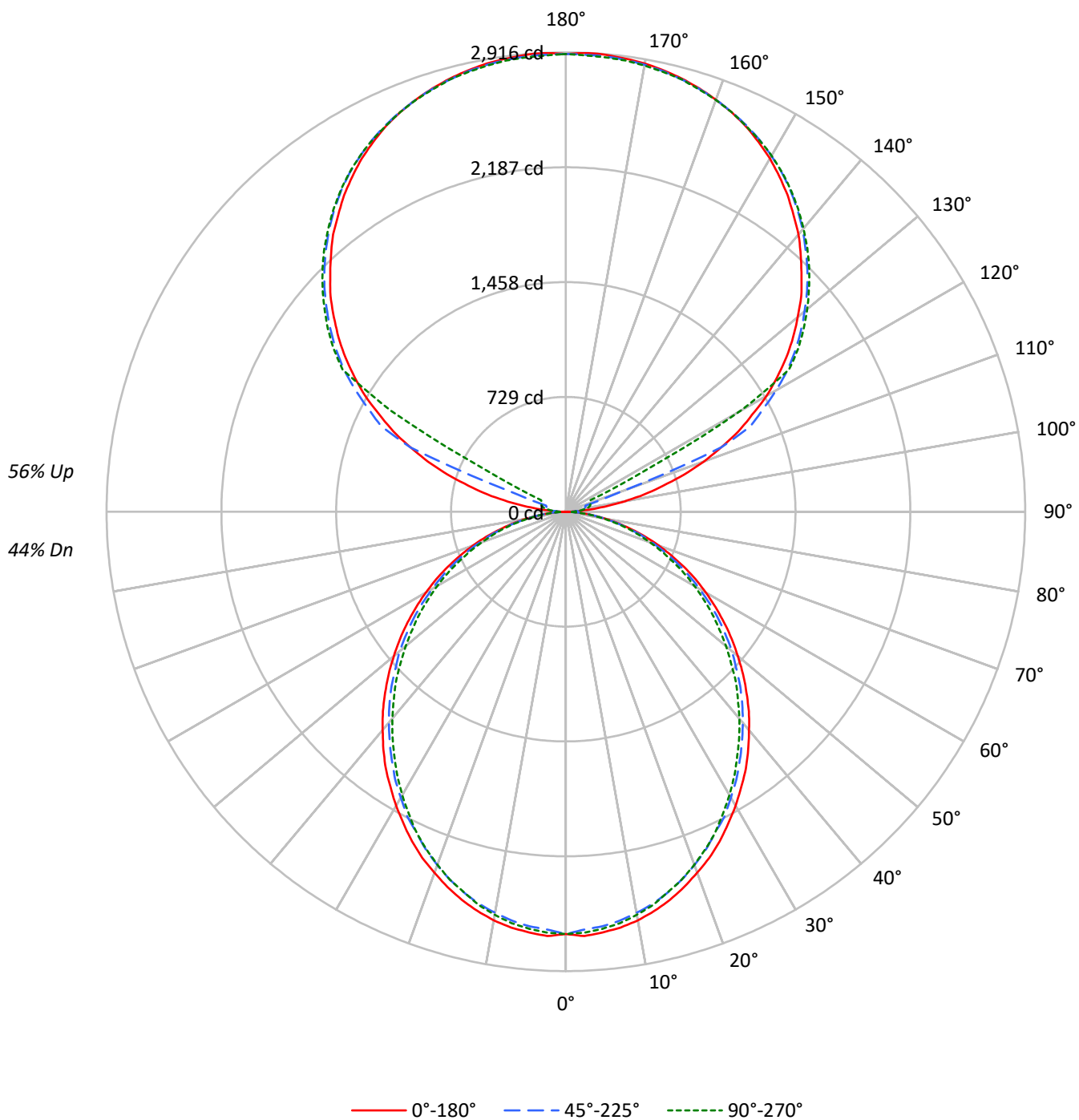
Lumens per Lamp: N/A  
Luminaire Lumens: 15343.0 lumens  
Efficiency: N/A  
Efficacy: 101.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 151.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9957  
Total Harmonic Distortion (THDi): 0.049  
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: P921079

CATALOG NUMBER: DFN2DIP-TR4F0-080D100US935-FLONL

**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   | 106 | 106 | 106 | 106 | 97 | 97 | 97 | 97 | 80 | 80 | 80 | 65 | 65 | 65 | 51 | 51 | 51 |
| 1   | 97  | 92  | 88  | 85  | 88 | 85 | 81 | 78 | 70 | 68 | 66 | 57 | 56 | 54 | 45 | 44 | 43 |
| 2   | 88  | 81  | 74  | 69  | 80 | 74 | 69 | 64 | 62 | 58 | 55 | 50 | 48 | 45 | 40 | 38 | 36 |
| 3   | 80  | 71  | 64  | 58  | 73 | 65 | 59 | 54 | 54 | 50 | 46 | 44 | 41 | 38 | 35 | 33 | 31 |
| 4   | 73  | 63  | 55  | 49  | 67 | 58 | 51 | 46 | 48 | 43 | 39 | 40 | 36 | 33 | 31 | 29 | 27 |
| 5   | 67  | 56  | 48  | 42  | 61 | 51 | 44 | 39 | 43 | 38 | 34 | 35 | 31 | 28 | 28 | 25 | 23 |
| 6   | 62  | 50  | 42  | 36  | 57 | 46 | 39 | 34 | 39 | 33 | 29 | 32 | 28 | 25 | 26 | 23 | 20 |
| 7   | 57  | 45  | 37  | 32  | 52 | 42 | 35 | 30 | 35 | 30 | 26 | 29 | 25 | 22 | 23 | 20 | 18 |
| 8   | 53  | 41  | 33  | 28  | 49 | 38 | 31 | 26 | 32 | 27 | 23 | 27 | 23 | 20 | 22 | 19 | 16 |
| 9   | 49  | 37  | 30  | 25  | 45 | 35 | 28 | 23 | 29 | 24 | 20 | 25 | 20 | 18 | 20 | 17 | 15 |
| 10  | 46  | 34  | 27  | 22  | 42 | 32 | 25 | 21 | 27 | 22 | 18 | 23 | 19 | 16 | 18 | 15 | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2129 | 2129 | 2129 |
| 5°  | 2133 | 2100 | 2114 |
| 10° | 2115 | 2071 | 2085 |
| 15° | 2084 | 2037 | 2040 |
| 20° | 2042 | 1990 | 1994 |
| 25° | 2000 | 1933 | 1941 |
| 30° | 1948 | 1880 | 1874 |
| 35° | 1898 | 1818 | 1803 |
| 40° | 1837 | 1755 | 1735 |
| 45° | 1776 | 1692 | 1666 |
| 50° | 1710 | 1626 | 1585 |
| 55° | 1640 | 1550 | 1511 |
| 60° | 1561 | 1459 | 1427 |
| 65° | 1475 | 1365 | 1327 |
| 70° | 1366 | 1250 | 1219 |
| 75° | 1214 | 1113 | 1120 |
| 80° | 1032 | 938  | 930  |
| 85° | 747  | 637  | 616  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 1776 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 252.3   | 1.6       |
| 10°-20°   | 709.8   | 4.6       |
| 20°-30°   | 1043.1  | 6.8       |
| 30°-40°   | 1211.4  | 7.9       |
| 40°-50°   | 1209.9  | 7.9       |
| 50°-60°   | 1055.0  | 6.9       |
| 60°-70°   | 779.9   | 5.1       |
| 70°-80°   | 441.2   | 2.9       |
| 80°-90°   | 121.6   | 0.8       |
| 90°-100°  | 95.8    | 0.6       |
| 100°-110° | 357.2   | 2.3       |
| 110°-120° | 947.3   | 6.2       |
| 120°-130° | 1571.2  | 10.2      |
| 130°-140° | 1669.0  | 10.9      |
| 140°-150° | 1551.1  | 10.1      |
| 150°-160° | 1247.1  | 8.1       |
| 160°-170° | 803.6   | 5.2       |
| 170°-180° | 276.6   | 1.8       |
| 0°-30°    | 2005.1  | 13.1      |
| 0°-40°    | 3216.5  | 21.0      |
| 0°-60°    | 5481.5  | 35.7      |
| 0°-90°    | 6824.2  | 44.5      |
| 90°-120°  | 1400.3  | 9.1       |
| 90°-150°  | 6191.6  | 40.4      |
| 90°-180°  | 8519.0  | 55.5      |
| 0°-180°   | 15343.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2680 | 2680  | 2680 | 2680  | 2680 |      |
| 5°   | 2680 | 2670  | 2642 | 2662  | 2657 | 254  |
| 15°  | 2551 | 2536  | 2502 | 2513  | 2500 | 719  |
| 25°  | 2309 | 2289  | 2245 | 2250  | 2245 | 1063 |
| 35°  | 1992 | 1966  | 1925 | 1910  | 1897 | 1244 |
| 45°  | 1621 | 1603  | 1564 | 1536  | 1526 | 1251 |
| 55°  | 1227 | 1211  | 1180 | 1150  | 1137 | 1097 |
| 65°  | 827  | 812   | 786  | 763   | 750  | 818  |
| 75°  | 433  | 428   | 415  | 400   | 405  | 462  |
| 85°  | 106  | 103   | 101  | 93    | 90   | 118  |
| 90°  | 2    | 25    | 42   | 53    | 57   | 14   |
| 95°  | 137  | 67    | 82   | 93    | 90   | 162  |
| 105° | 639  | 702   | 128  | 151   | 160  | 683  |
| 115° | 1209 | 1245  | 1297 | 324   | 172  | 1190 |
| 125° | 1709 | 1737  | 1777 | 1792  | 1798 | 1524 |
| 135° | 2115 | 2149  | 2168 | 2189  | 2185 | 1634 |
| 145° | 2454 | 2452  | 2487 | 2502  | 2492 | 1535 |
| 155° | 2702 | 2683  | 2708 | 2721  | 2704 | 1245 |
| 165° | 2847 | 2834  | 2841 | 2855  | 2841 | 804  |
| 175° | 2912 | 2897  | 2902 | 2916  | 2895 | 277  |
| 180° | 2906 | 2906  | 2906 | 2906  | 2906 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2680.1 | 2680.1 | 2680.1 | 2680.1 | 2680.1 |
| 2.5°   | 2695.7 | 2682.9 | 2654.5 | 2680.1 | 2675.2 |
| 5°     | 2680.1 | 2670.0 | 2641.6 | 2662.1 | 2657.2 |
| 7.5°   | 2662.1 | 2646.8 | 2618.4 | 2639.1 | 2634.0 |
| 10°    | 2634.0 | 2615.9 | 2585.0 | 2605.5 | 2597.9 |
| 12.5°  | 2595.1 | 2579.8 | 2548.9 | 2561.7 | 2556.6 |
| 15°    | 2551.4 | 2536.1 | 2502.4 | 2512.8 | 2500.0 |
| 17.5°  | 2497.2 | 2481.9 | 2448.2 | 2461.2 | 2448.2 |
| 20°    | 2437.9 | 2422.6 | 2386.5 | 2394.2 | 2384.0 |
| 22.5°  | 2378.9 | 2355.6 | 2321.9 | 2321.9 | 2316.8 |
| 25°    | 2309.1 | 2288.6 | 2244.9 | 2249.8 | 2244.9 |
| 27.5°  | 2231.7 | 2213.7 | 2180.3 | 2172.6 | 2159.8 |
| 30°    | 2154.6 | 2133.8 | 2095.3 | 2087.7 | 2077.2 |
| 32.5°  | 2072.1 | 2056.8 | 2015.4 | 1999.8 | 1989.5 |
| 35°    | 1992.2 | 1966.5 | 1925.2 | 1909.6 | 1896.8 |
| 37.5°  | 1901.9 | 1878.7 | 1837.5 | 1819.4 | 1806.5 |
| 40°    | 1809.3 | 1788.5 | 1747.2 | 1724.2 | 1713.8 |
| 42.5°  | 1719.1 | 1698.2 | 1657.2 | 1631.2 | 1616.0 |
| 45°    | 1621.2 | 1603.1 | 1564.3 | 1536.1 | 1525.8 |
| 47.5°  | 1525.8 | 1507.7 | 1466.4 | 1438.0 | 1422.6 |
| 50°    | 1425.1 | 1412.3 | 1376.1 | 1340.1 | 1327.2 |
| 52.5°  | 1327.2 | 1309.1 | 1275.8 | 1247.4 | 1229.3 |
| 55°    | 1226.8 | 1211.3 | 1180.4 | 1149.5 | 1136.6 |
| 57.5°  | 1126.3 | 1113.4 | 1079.8 | 1048.9 | 1038.4 |
| 60°    | 1025.6 | 1015.5 | 979.4  | 951.0  | 943.3  |
| 62.5°  | 927.7  | 909.7  | 884.0  | 858.3  | 847.9  |
| 65°    | 827.4  | 811.8  | 786.1  | 762.8  | 750.0  |
| 67.5°  | 724.3  | 711.2  | 688.2  | 670.2  | 659.8  |
| 70°    | 628.9  | 618.5  | 595.3  | 577.2  | 567.1  |
| 72.5°  | 531.0  | 520.6  | 507.7  | 489.7  | 482.1  |
| 75°    | 432.8  | 427.9  | 414.8  | 399.5  | 404.7  |
| 77.5°  | 345.3  | 334.9  | 329.8  | 322.1  | 314.4  |
| 80°    | 257.9  | 255.1  | 249.9  | 242.3  | 237.0  |
| 82.5°  | 175.3  | 175.3  | 172.8  | 162.4  | 162.4  |
| 85°    | 105.6  | 103.1  | 100.7  | 92.7   | 90.2   |
| 87.5°  | 46.5   | 41.3   | 36.1   | 28.4   | 25.7   |
| 90°    | 2.0    | 25.2   | 41.9   | 52.7   | 56.7   |
| 92.5°  | 52.7   | 44.2   | 50.5   | 54.7   | 56.7   |
| 95°    | 136.6  | 67.2   | 81.9   | 92.6   | 90.4   |
| 97.5°  | 245.9  | 73.6   | 107.1  | 113.6  | 115.6  |
| 100°   | 372.3  | 84.1   | 119.9  | 136.6  | 140.9  |
| 102.5° | 510.8  | 506.9  | 124.1  | 147.1  | 153.5  |
| 105°   | 639.2  | 702.3  | 128.4  | 151.3  | 159.8  |
| 107.5° | 788.5  | 840.9  | 132.6  | 155.6  | 164.0  |
| 110°   | 931.5  | 975.5  | 368.0  | 157.8  | 166.0  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1066.1 | 1103.8 | 1068.2 | 161.8  | 168.3  |
| 115°   | 1208.9 | 1244.7 | 1297.4 | 323.8  | 172.5  |
| 117.5° | 1333.0 | 1375.0 | 1410.9 | 1110.1 | 559.3  |
| 120°   | 1471.9 | 1503.3 | 1541.3 | 1566.5 | 1282.6 |
| 122.5° | 1589.5 | 1623.2 | 1665.3 | 1677.8 | 1680.1 |
| 125°   | 1709.3 | 1736.8 | 1776.8 | 1791.5 | 1797.7 |
| 127.5° | 1818.7 | 1848.1 | 1879.8 | 1900.8 | 1902.8 |
| 130°   | 1921.7 | 1955.5 | 1978.5 | 2001.6 | 1999.7 |
| 132.5° | 2026.9 | 2054.3 | 2077.3 | 2096.3 | 2094.3 |
| 135°   | 2115.3 | 2149.0 | 2167.7 | 2188.9 | 2184.7 |
| 137.5° | 2207.7 | 2232.9 | 2254.1 | 2275.1 | 2268.8 |
| 140°   | 2298.0 | 2315.1 | 2338.0 | 2357.0 | 2346.5 |
| 142.5° | 2373.9 | 2388.7 | 2415.9 | 2432.6 | 2422.2 |
| 145°   | 2453.8 | 2451.6 | 2487.3 | 2502.1 | 2491.6 |
| 147.5° | 2523.0 | 2516.8 | 2552.4 | 2562.9 | 2554.8 |
| 150°   | 2590.4 | 2575.7 | 2609.4 | 2621.9 | 2611.4 |
| 152.5° | 2647.1 | 2630.3 | 2661.9 | 2674.5 | 2659.8 |
| 155°   | 2701.8 | 2683.0 | 2708.3 | 2720.8 | 2704.0 |
| 157.5° | 2746.0 | 2729.3 | 2748.2 | 2762.9 | 2746.0 |
| 160°   | 2784.0 | 2771.2 | 2784.0 | 2796.4 | 2781.7 |
| 162.5° | 2817.4 | 2804.9 | 2815.4 | 2830.1 | 2811.2 |
| 165°   | 2846.8 | 2834.3 | 2840.6 | 2855.3 | 2840.6 |
| 167.5° | 2870.1 | 2857.3 | 2863.9 | 2878.6 | 2859.5 |
| 170°   | 2889.0 | 2876.3 | 2880.6 | 2895.3 | 2876.3 |
| 172.5° | 2901.5 | 2889.0 | 2893.3 | 2908.0 | 2889.0 |
| 175°   | 2912.0 | 2897.3 | 2901.5 | 2916.3 | 2895.3 |
| 177.5° | 2916.3 | 2901.5 | 2903.8 | 2918.5 | 2899.5 |
| 180°   | 2905.8 | 2905.8 | 2905.8 | 2905.8 | 2905.8 |

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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 | 9.36             | 10.17 | 10.36 | 11.19 | 12.53 | 8.93           | 9.74  | 9.93  | 10.76 | 12.10 |
|                 | 3H   | 11.02            | 11.75 | 12.03 | 12.77 | 14.14 | 10.54          | 11.27 | 11.56 | 12.30 | 13.66 |
|                 | 4H   | 11.60            | 12.29 | 12.63 | 13.32 | 14.69 | 11.13          | 11.82 | 12.15 | 12.85 | 14.22 |
|                 | 6H   | 12.00            | 12.63 | 13.03 | 13.66 | 15.05 | 11.52          | 12.16 | 12.56 | 13.19 | 14.58 |
|                 | 8H   | 12.10            | 12.71 | 13.14 | 13.75 | 15.14 | 11.63          | 12.23 | 12.67 | 13.28 | 14.66 |
|                 | 12H  | 12.15            | 12.72 | 13.20 | 13.76 | 15.17 | 11.67          | 12.24 | 12.71 | 13.28 | 14.69 |
| 4H              | 2H   | 9.82             | 10.51 | 10.85 | 11.53 | 12.91 | 9.47           | 10.16 | 10.50 | 11.19 | 12.56 |
|                 | 3H   | 11.68            | 12.25 | 12.72 | 13.31 | 14.70 | 11.28          | 11.86 | 12.33 | 12.91 | 14.30 |
|                 | 4H   | 12.39            | 12.92 | 13.44 | 13.96 | 15.37 | 11.98          | 12.51 | 13.03 | 13.56 | 14.97 |
|                 | 6H   | 12.90            | 13.36 | 13.96 | 14.42 | 15.83 | 12.49          | 12.95 | 13.55 | 14.02 | 15.42 |
|                 | 8H   | 13.05            | 13.47 | 14.11 | 14.54 | 15.96 | 12.64          | 13.06 | 13.70 | 14.12 | 15.55 |
|                 | 12H  | 13.12            | 13.50 | 14.20 | 14.58 | 16.01 | 12.70          | 13.08 | 13.78 | 14.16 | 15.59 |
| 8H              | 4H   | 12.58            | 13.01 | 13.64 | 14.07 | 15.49 | 12.22          | 12.65 | 13.28 | 13.71 | 15.13 |
|                 | 6H   | 13.21            | 13.56 | 14.29 | 14.67 | 16.08 | 12.85          | 13.20 | 13.93 | 14.30 | 15.72 |
|                 | 8H   | 13.43            | 13.74 | 14.52 | 14.83 | 16.27 | 13.06          | 13.37 | 14.15 | 14.46 | 15.90 |
|                 | 12H  | 13.56            | 13.83 | 14.65 | 14.91 | 16.39 | 13.18          | 13.45 | 14.27 | 14.53 | 16.01 |
| 12H             | 4H   | 12.57            | 12.95 | 13.64 | 14.02 | 15.45 | 12.21          | 12.60 | 13.29 | 13.67 | 15.10 |
|                 | 6H   | 13.24            | 13.55 | 14.33 | 14.64 | 16.07 | 12.89          | 13.20 | 13.98 | 14.28 | 15.72 |
|                 | 8H   | 13.48            | 13.75 | 14.57 | 14.83 | 16.31 | 13.12          | 13.39 | 14.22 | 14.48 | 15.96 |