

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: P926304

Luminaire Tested: DFN2DIP-TR3F0-070D070US950-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P926304  
REPORT IS A COMBINATION OF REPORTS P900335 AND P897195  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-070D070US950-FLLFLL  
Description: 3 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

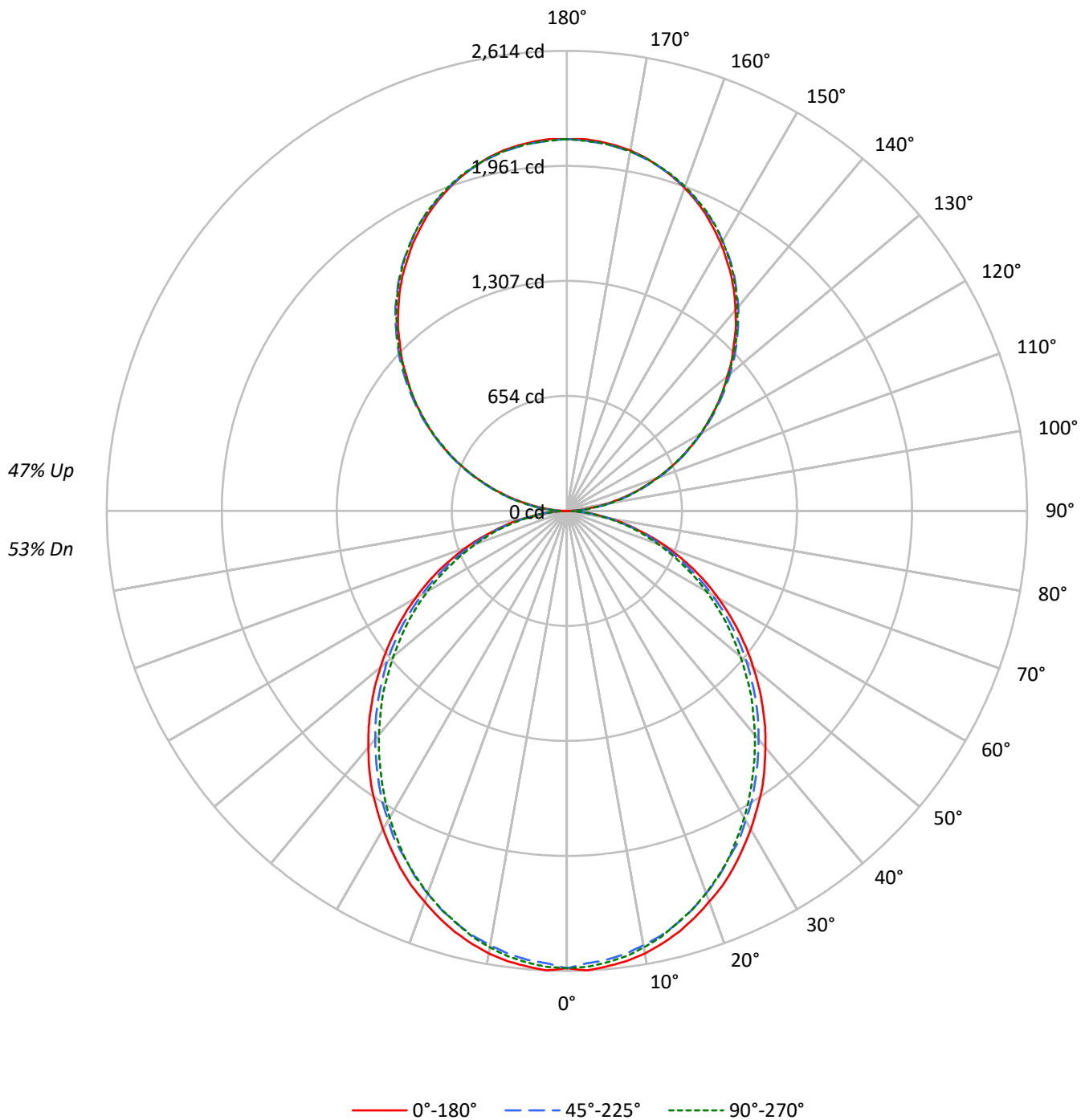
Lumens per Lamp: N/A  
Luminaire Lumens: 12521.3 lumens  
Efficiency: N/A  
Efficacy: 101.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 123.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9971  
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: P926304

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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   | 108 | 108 | 108 | 108 | 100 | 100 | 100 | 100 | 85 | 85 | 85 | 71 | 71 | 71 | 59 | 59 | 59 |
| 1   | 98  | 94  | 90  | 87  | 91  | 87  | 84  | 81  | 74 | 72 | 70 | 63 | 61 | 59 | 52 | 51 | 50 |
| 2   | 90  | 82  | 76  | 71  | 83  | 76  | 71  | 66  | 65 | 61 | 58 | 55 | 52 | 50 | 46 | 44 | 42 |
| 3   | 82  | 72  | 65  | 59  | 75  | 67  | 61  | 55  | 58 | 53 | 49 | 49 | 45 | 42 | 41 | 38 | 36 |
| 4   | 75  | 64  | 56  | 50  | 69  | 60  | 52  | 47  | 51 | 46 | 41 | 43 | 39 | 36 | 36 | 33 | 31 |
| 5   | 69  | 57  | 49  | 43  | 63  | 53  | 46  | 40  | 46 | 40 | 36 | 39 | 35 | 31 | 33 | 29 | 27 |
| 6   | 63  | 51  | 43  | 37  | 58  | 48  | 40  | 35  | 41 | 36 | 31 | 35 | 31 | 27 | 30 | 26 | 24 |
| 7   | 59  | 46  | 38  | 33  | 54  | 43  | 36  | 31  | 37 | 32 | 28 | 32 | 28 | 24 | 27 | 24 | 21 |
| 8   | 54  | 42  | 34  | 29  | 50  | 39  | 32  | 27  | 34 | 29 | 24 | 29 | 25 | 22 | 25 | 21 | 19 |
| 9   | 51  | 38  | 31  | 26  | 47  | 36  | 29  | 24  | 31 | 26 | 22 | 27 | 23 | 19 | 23 | 20 | 17 |
| 10  | 47  | 35  | 28  | 23  | 44  | 33  | 26  | 22  | 29 | 23 | 20 | 25 | 21 | 18 | 21 | 18 | 15 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3238 | 3238 | 3238 |
| 5°  | 3241 | 3190 | 3212 |
| 10° | 3213 | 3144 | 3167 |
| 15° | 3164 | 3090 | 3096 |
| 20° | 3098 | 3015 | 3025 |
| 25° | 3033 | 2927 | 2942 |
| 30° | 2952 | 2844 | 2838 |
| 35° | 2874 | 2747 | 2728 |
| 40° | 2780 | 2648 | 2622 |
| 45° | 2685 | 2550 | 2515 |
| 50° | 2581 | 2446 | 2390 |
| 55° | 2472 | 2326 | 2275 |
| 60° | 2349 | 2184 | 2144 |
| 65° | 2215 | 2037 | 1988 |
| 70° | 2044 | 1857 | 1820 |
| 75° | 1807 | 1641 | 1662 |
| 80° | 1520 | 1365 | 1366 |
| 85° | 1075 | 899  | 882  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2685 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 244.6   | 2.0       |
| 10°-20°   | 688.1   | 5.5       |
| 20°-30°   | 1011.3  | 8.1       |
| 30°-40°   | 1174.5  | 9.4       |
| 40°-50°   | 1173.1  | 9.4       |
| 50°-60°   | 1022.9  | 8.2       |
| 60°-70°   | 756.1   | 6.0       |
| 70°-80°   | 427.8   | 3.4       |
| 80°-90°   | 118.9   | 0.9       |
| 90°-100°  | 130.7   | 1.0       |
| 100°-110° | 415.3   | 3.3       |
| 110°-120° | 710.6   | 5.7       |
| 120°-130° | 934.6   | 7.5       |
| 130°-140° | 1049.0  | 8.4       |
| 140°-150° | 1028.7  | 8.2       |
| 150°-160° | 862.9   | 6.9       |
| 160°-170° | 572.3   | 4.6       |
| 170°-180° | 200.0   | 1.6       |
| 0°-30°    | 1943.9  | 15.5      |
| 0°-40°    | 3118.5  | 24.9      |
| 0°-60°    | 5314.4  | 42.4      |
| 0°-90°    | 6617.3  | 52.8      |
| 90°-120°  | 1256.6  | 10.0      |
| 90°-150°  | 4268.9  | 34.1      |
| 90°-180°  | 5904.0  | 47.2      |
| 0°-180°   | 12521.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2598 | 2598  | 2598 | 2598  | 2598 |      |
| 5°   | 2598 | 2589  | 2561 | 2581  | 2576 | 247  |
| 15°  | 2474 | 2459  | 2426 | 2436  | 2424 | 697  |
| 25°  | 2239 | 2219  | 2176 | 2181  | 2176 | 1030 |
| 35°  | 1932 | 1907  | 1866 | 1851  | 1839 | 1206 |
| 45°  | 1572 | 1554  | 1517 | 1489  | 1479 | 1213 |
| 55°  | 1189 | 1174  | 1144 | 1114  | 1102 | 1063 |
| 65°  | 802  | 787   | 762  | 740   | 727  | 793  |
| 75°  | 420  | 415   | 402  | 387   | 392  | 448  |
| 85°  | 102  | 100   | 98   | 90    | 88   | 114  |
| 90°  | 2    | 23    | 62   | 59    | 60   | 12   |
| 95°  | 93   | 111   | 114  | 114   | 111  | 103  |
| 105° | 383  | 388   | 392  | 395   | 395  | 405  |
| 115° | 713  | 723   | 720  | 718   | 713  | 705  |
| 125° | 1037 | 1053  | 1048 | 1042  | 1040 | 927  |
| 135° | 1342 | 1361  | 1365 | 1363  | 1358 | 1037 |
| 145° | 1629 | 1642  | 1652 | 1654  | 1647 | 1018 |
| 155° | 1862 | 1868  | 1873 | 1882  | 1876 | 857  |
| 165° | 2026 | 2024  | 2024 | 2037  | 2028 | 572  |
| 175° | 2108 | 2103  | 2099 | 2112  | 2101 | 200  |
| 180° | 2112 | 2112  | 2112 | 2112  | 2112 |      |

TEST NUMBER: P926304

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2598.4 | 2598.4 | 2598.4 | 2598.4 | 2598.4 |
| 2.5°   | 2613.6 | 2601.1 | 2573.5 | 2598.4 | 2593.6 |
| 5°     | 2598.4 | 2588.7 | 2561.1 | 2581.0 | 2576.2 |
| 7.5°   | 2581.0 | 2566.1 | 2538.5 | 2558.7 | 2553.7 |
| 10°    | 2553.7 | 2536.1 | 2506.2 | 2526.1 | 2518.7 |
| 12.5°  | 2516.0 | 2501.2 | 2471.2 | 2483.6 | 2478.6 |
| 15°    | 2473.6 | 2458.7 | 2426.1 | 2436.2 | 2423.7 |
| 17.5°  | 2421.1 | 2406.3 | 2373.6 | 2386.1 | 2373.6 |
| 20°    | 2363.5 | 2348.7 | 2313.7 | 2321.2 | 2311.4 |
| 22.5°  | 2306.3 | 2283.8 | 2251.2 | 2251.2 | 2246.1 |
| 25°    | 2238.8 | 2218.8 | 2176.5 | 2181.2 | 2176.5 |
| 27.5°  | 2163.7 | 2146.2 | 2113.9 | 2106.4 | 2093.9 |
| 30°    | 2089.0 | 2068.7 | 2031.4 | 2024.0 | 2013.9 |
| 32.5°  | 2008.8 | 1994.1 | 1954.0 | 1938.9 | 1928.8 |
| 35°    | 1931.5 | 1906.6 | 1866.5 | 1851.4 | 1838.9 |
| 37.5°  | 1844.0 | 1821.5 | 1781.4 | 1763.9 | 1751.4 |
| 40°    | 1754.1 | 1734.0 | 1693.9 | 1671.7 | 1661.6 |
| 42.5°  | 1666.6 | 1646.5 | 1606.7 | 1581.5 | 1566.7 |
| 45°    | 1571.7 | 1554.3 | 1516.6 | 1489.3 | 1479.2 |
| 47.5°  | 1479.2 | 1461.7 | 1421.7 | 1394.1 | 1379.3 |
| 50°    | 1381.7 | 1369.2 | 1334.2 | 1299.3 | 1286.8 |
| 52.5°  | 1286.8 | 1269.3 | 1237.0 | 1209.4 | 1191.8 |
| 55°    | 1189.4 | 1174.4 | 1144.4 | 1114.5 | 1102.0 |
| 57.5°  | 1091.9 | 1079.5 | 1046.8 | 1016.9 | 1006.9 |
| 60°    | 994.4  | 984.5  | 949.6  | 922.0  | 914.6  |
| 62.5°  | 899.4  | 882.0  | 857.1  | 832.2  | 822.1  |
| 65°    | 802.2  | 787.0  | 762.2  | 739.6  | 727.1  |
| 67.5°  | 702.2  | 689.6  | 667.2  | 649.8  | 639.7  |
| 70°    | 609.7  | 599.7  | 577.1  | 559.6  | 549.8  |
| 72.5°  | 514.8  | 504.8  | 492.3  | 474.8  | 467.4  |
| 75°    | 419.7  | 414.9  | 402.1  | 387.3  | 392.4  |
| 77.5°  | 334.9  | 324.7  | 319.7  | 312.2  | 304.9  |
| 80°    | 249.9  | 247.4  | 242.3  | 234.9  | 229.8  |
| 82.5°  | 169.9  | 169.9  | 167.5  | 157.5  | 157.5  |
| 85°    | 102.4  | 100.0  | 97.6   | 89.9   | 87.5   |
| 87.5°  | 45.0   | 40.1   | 35.0   | 27.6   | 24.9   |
| 90°    | 1.9    | 22.9   | 62.4   | 58.6   | 60.5   |
| 92.5°  | 39.5   | 53.5   | 55.4   | 57.3   | 57.3   |
| 95°    | 92.9   | 110.8  | 114.0  | 114.0  | 110.8  |
| 97.5°  | 154.7  | 171.2  | 178.3  | 178.3  | 178.3  |
| 100°   | 226.0  | 240.7  | 245.8  | 245.8  | 243.8  |
| 102.5° | 301.2  | 312.0  | 319.0  | 320.9  | 319.0  |
| 105°   | 383.3  | 388.4  | 392.2  | 395.4  | 395.4  |
| 107.5° | 464.8  | 472.4  | 472.4  | 473.8  | 464.8  |
| 110°   | 543.8  | 554.0  | 554.0  | 554.0  | 548.8  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 629.1  | 639.9  | 638.0  | 632.9  | 629.1  |
| 115°   | 713.1  | 723.3  | 720.2  | 718.3  | 713.1  |
| 117.5° | 796.5  | 810.5  | 801.6  | 796.5  | 791.4  |
| 120°   | 880.5  | 894.6  | 880.5  | 880.5  | 874.8  |
| 122.5° | 957.0  | 974.8  | 965.9  | 960.8  | 957.0  |
| 125°   | 1037.2 | 1053.1 | 1048.1 | 1042.3 | 1040.4 |
| 127.5° | 1115.5 | 1135.3 | 1128.3 | 1120.7 | 1115.5 |
| 130°   | 1188.8 | 1211.7 | 1208.5 | 1204.7 | 1197.7 |
| 132.5° | 1270.9 | 1288.8 | 1290.0 | 1281.1 | 1276.0 |
| 135°   | 1341.6 | 1361.3 | 1365.2 | 1363.2 | 1358.1 |
| 137.5° | 1420.5 | 1436.4 | 1439.6 | 1438.3 | 1430.7 |
| 140°   | 1490.0 | 1505.9 | 1514.8 | 1514.8 | 1507.8 |
| 142.5° | 1561.2 | 1577.2 | 1582.2 | 1584.1 | 1577.2 |
| 145°   | 1628.8 | 1641.5 | 1651.7 | 1653.6 | 1646.6 |
| 147.5° | 1689.2 | 1705.2 | 1712.8 | 1716.0 | 1709.0 |
| 150°   | 1751.6 | 1762.4 | 1769.5 | 1775.2 | 1769.5 |
| 152.5° | 1807.0 | 1817.8 | 1826.7 | 1833.8 | 1826.7 |
| 155°   | 1862.4 | 1867.5 | 1873.3 | 1882.1 | 1876.4 |
| 157.5° | 1910.2 | 1914.0 | 1917.2 | 1929.9 | 1921.0 |
| 160°   | 1952.8 | 1956.7 | 1958.6 | 1969.3 | 1961.7 |
| 162.5° | 1992.3 | 1992.3 | 1994.2 | 2006.3 | 1997.4 |
| 165°   | 2026.0 | 2024.1 | 2024.1 | 2036.9 | 2027.9 |
| 167.5° | 2056.6 | 2050.9 | 2050.9 | 2063.6 | 2054.7 |
| 170°   | 2079.5 | 2074.5 | 2072.6 | 2085.3 | 2074.5 |
| 172.5° | 2095.5 | 2090.3 | 2088.4 | 2101.2 | 2090.3 |
| 175°   | 2108.1 | 2103.1 | 2099.3 | 2112.0 | 2101.2 |
| 177.5° | 2115.2 | 2110.1 | 2106.2 | 2117.1 | 2106.2 |
| 180°   | 2112.0 | 2112.0 | 2112.0 | 2112.0 | 2112.0 |

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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 | 11.56            | 12.45 | 12.49 | 13.40 | 14.63 | 11.13          | 12.02 | 12.06 | 12.97 | 14.20 |
|                 | 3H   | 13.21            | 14.01 | 14.16 | 14.97 | 16.22 | 12.75          | 13.54 | 13.69 | 14.50 | 15.75 |
|                 | 4H   | 13.80            | 14.55 | 14.75 | 15.51 | 16.78 | 13.33          | 14.08 | 14.29 | 15.05 | 16.31 |
|                 | 6H   | 14.19            | 14.88 | 15.16 | 15.85 | 17.13 | 13.72          | 14.42 | 14.69 | 15.38 | 16.66 |
|                 | 8H   | 14.29            | 14.95 | 15.27 | 15.94 | 17.21 | 13.82          | 14.48 | 14.80 | 15.47 | 16.74 |
|                 | 12H  | 14.34            | 14.97 | 15.32 | 15.95 | 17.24 | 13.86          | 14.49 | 14.85 | 15.47 | 16.77 |
| 4H              | 2H   | 12.02            | 12.78 | 12.99 | 13.74 | 15.00 | 11.68          | 12.43 | 12.64 | 13.40 | 14.66 |
|                 | 3H   | 13.88            | 14.51 | 14.85 | 15.50 | 16.78 | 13.49          | 14.12 | 14.46 | 15.11 | 16.39 |
|                 | 4H   | 14.59            | 15.16 | 15.57 | 16.15 | 17.45 | 14.19          | 14.76 | 15.17 | 15.75 | 17.05 |
|                 | 6H   | 15.10            | 15.59 | 16.09 | 16.60 | 17.90 | 14.69          | 15.19 | 15.69 | 16.20 | 17.50 |
|                 | 8H   | 15.24            | 15.70 | 16.24 | 16.71 | 18.02 | 14.83          | 15.30 | 15.83 | 16.30 | 17.61 |
|                 | 12H  | 15.31            | 15.73 | 16.33 | 16.75 | 18.07 | 14.90          | 15.31 | 15.91 | 16.33 | 17.65 |
| 8H              | 4H   | 14.78            | 15.25 | 15.78 | 16.25 | 17.56 | 14.43          | 14.89 | 15.42 | 15.89 | 17.20 |
|                 | 6H   | 15.40            | 15.79 | 16.42 | 16.83 | 18.14 | 15.05          | 15.43 | 16.07 | 16.47 | 17.78 |
|                 | 8H   | 15.62            | 15.96 | 16.65 | 16.99 | 18.32 | 15.25          | 15.59 | 16.28 | 16.62 | 17.95 |
|                 | 12H  | 15.75            | 16.04 | 16.78 | 17.07 | 18.44 | 15.37          | 15.66 | 16.40 | 16.69 | 18.06 |
| 12H             | 4H   | 14.77            | 15.19 | 15.78 | 16.21 | 17.52 | 14.42          | 14.84 | 15.43 | 15.86 | 17.18 |
|                 | 6H   | 15.43            | 15.77 | 16.46 | 16.80 | 18.13 | 15.08          | 15.42 | 16.11 | 16.45 | 17.78 |
|                 | 8H   | 15.67            | 15.97 | 16.70 | 16.99 | 18.37 | 15.32          | 15.61 | 16.35 | 16.64 | 18.01 |