

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: P925813

Luminaire Tested: DFN2DIP-SQ4F0-070D100US950-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P925813  
REPORT IS A COMBINATION OF REPORTS P901653 AND P898471  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-070D100US950-FLLONL  
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

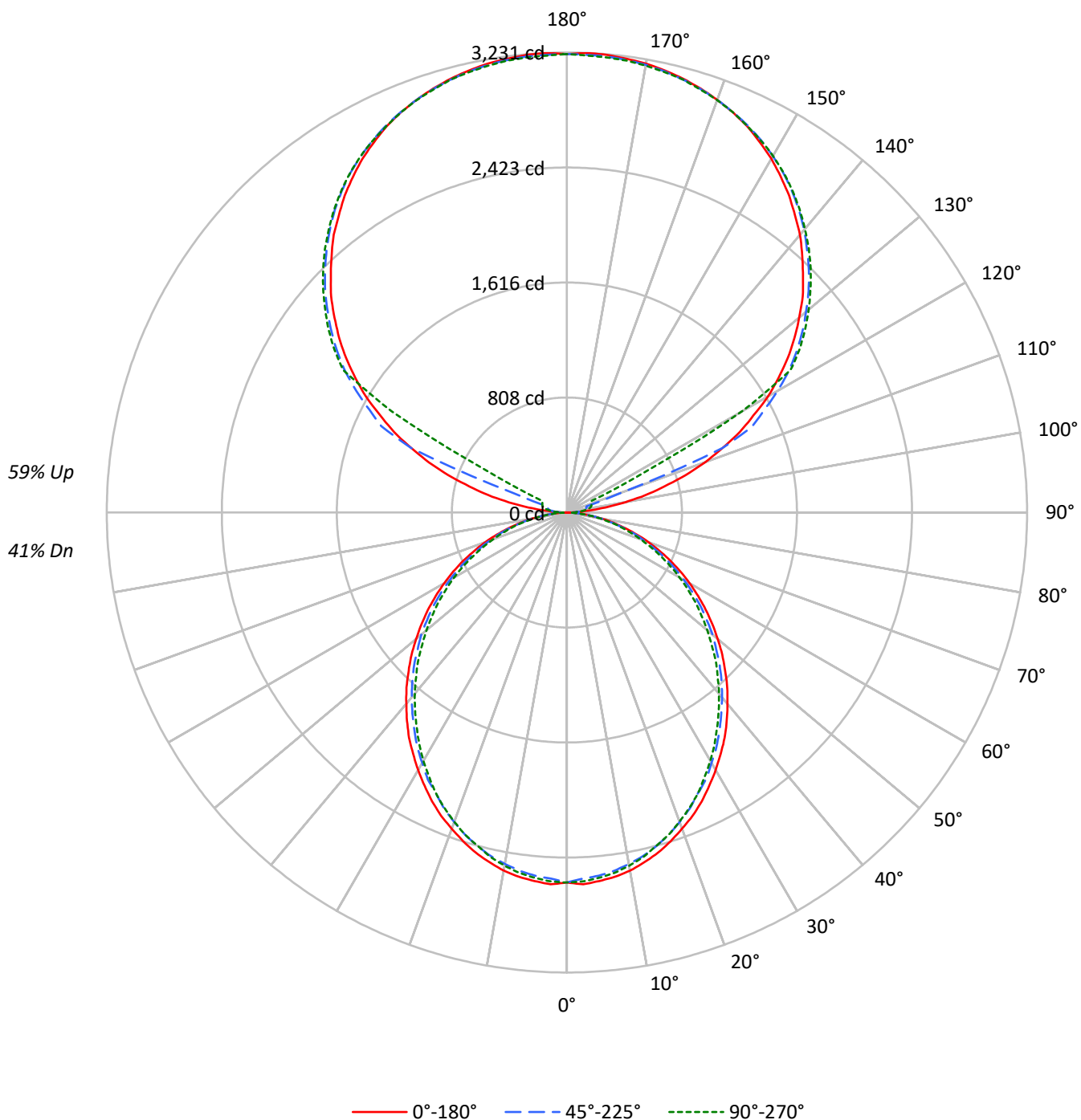
Lumens per Lamp: N/A  
Luminaire Lumens: 16055.9 lumens  
Efficiency: N/A  
Efficacy: 118.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 136  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9967  
Total Harmonic Distortion (THDi): 0.063  
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   | 105 | 105 | 105 | 105 | 96 | 96 | 96 | 96 | 78 | 78 | 78 | 63 | 63 | 63 | 48 | 48 | 48 |
| 1   | 96  | 92  | 88  | 84  | 87 | 84 | 80 | 77 | 69 | 66 | 64 | 55 | 54 | 52 | 42 | 41 | 41 |
| 2   | 87  | 80  | 74  | 69  | 79 | 73 | 68 | 63 | 60 | 56 | 53 | 48 | 46 | 43 | 37 | 36 | 34 |
| 3   | 80  | 70  | 63  | 57  | 72 | 64 | 58 | 53 | 53 | 49 | 45 | 43 | 39 | 37 | 33 | 31 | 29 |
| 4   | 73  | 62  | 54  | 48  | 66 | 57 | 50 | 45 | 47 | 42 | 38 | 38 | 34 | 31 | 30 | 27 | 25 |
| 5   | 67  | 55  | 47  | 41  | 61 | 51 | 44 | 38 | 42 | 37 | 33 | 34 | 30 | 27 | 27 | 24 | 22 |
| 6   | 61  | 50  | 42  | 36  | 56 | 46 | 38 | 33 | 38 | 33 | 29 | 31 | 27 | 24 | 24 | 21 | 19 |
| 7   | 57  | 45  | 37  | 31  | 52 | 41 | 34 | 29 | 34 | 29 | 25 | 28 | 24 | 21 | 22 | 19 | 17 |
| 8   | 53  | 40  | 33  | 28  | 48 | 37 | 31 | 26 | 31 | 26 | 22 | 26 | 22 | 19 | 20 | 17 | 15 |
| 9   | 49  | 37  | 30  | 25  | 45 | 34 | 27 | 23 | 29 | 23 | 20 | 24 | 20 | 17 | 19 | 16 | 14 |
| 10  | 46  | 34  | 27  | 22  | 42 | 31 | 25 | 21 | 26 | 21 | 18 | 22 | 18 | 15 | 17 | 15 | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1823 | 1823 | 1823 |
| 5°  | 1826 | 1798 | 1811 |
| 10° | 1811 | 1774 | 1787 |
| 15° | 1785 | 1746 | 1749 |
| 20° | 1749 | 1705 | 1710 |
| 25° | 1713 | 1657 | 1665 |
| 30° | 1668 | 1612 | 1608 |
| 35° | 1625 | 1559 | 1548 |
| 40° | 1573 | 1506 | 1490 |
| 45° | 1521 | 1453 | 1431 |
| 50° | 1464 | 1396 | 1363 |
| 55° | 1404 | 1331 | 1301 |
| 60° | 1336 | 1254 | 1229 |
| 65° | 1263 | 1175 | 1145 |
| 70° | 1169 | 1077 | 1054 |
| 75° | 1039 | 961  | 971  |
| 80° | 882  | 813  | 811  |
| 85° | 638  | 556  | 545  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1726 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 244.6   | 1.5       |
| 10°-20°   | 688.1   | 4.3       |
| 20°-30°   | 1011.3  | 6.3       |
| 30°-40°   | 1174.5  | 7.3       |
| 40°-50°   | 1173.1  | 7.3       |
| 50°-60°   | 1022.9  | 6.4       |
| 60°-70°   | 756.1   | 4.7       |
| 70°-80°   | 427.8   | 2.7       |
| 80°-90°   | 118.6   | 0.7       |
| 90°-100°  | 106.2   | 0.7       |
| 100°-110° | 395.8   | 2.5       |
| 110°-120° | 1049.6  | 6.5       |
| 120°-130° | 1740.9  | 10.8      |
| 130°-140° | 1849.2  | 11.5      |
| 140°-150° | 1718.7  | 10.7      |
| 150°-160° | 1381.8  | 8.6       |
| 160°-170° | 890.4   | 5.5       |
| 170°-180° | 306.5   | 1.9       |
| 0°-30°    | 1943.9  | 12.1      |
| 0°-40°    | 3118.5  | 19.4      |
| 0°-60°    | 5314.4  | 33.1      |
| 0°-90°    | 6616.9  | 41.2      |
| 90°-120°  | 1551.6  | 9.7       |
| 90°-150°  | 6860.4  | 42.7      |
| 90°-180°  | 9439.0  | 58.8      |
| 0°-180°   | 16055.9 | 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    | 28    | 46   | 58    | 63   | 15   |
| 95°  | 151  | 74    | 91   | 103   | 100  | 179  |
| 105° | 708  | 778   | 142  | 168   | 177  | 757  |
| 115° | 1340 | 1379  | 1438 | 359   | 191  | 1319 |
| 125° | 1894 | 1924  | 1969 | 1985  | 1992 | 1689 |
| 135° | 2344 | 2381  | 2402 | 2425  | 2421 | 1810 |
| 145° | 2719 | 2716  | 2756 | 2772  | 2761 | 1700 |
| 155° | 2994 | 2973  | 3001 | 3015  | 2996 | 1380 |
| 165° | 3154 | 3140  | 3147 | 3164  | 3147 | 891  |
| 175° | 3226 | 3210  | 3215 | 3231  | 3208 | 307  |
| 180° | 3220 | 3220  | 3220 | 3220  | 3220 |      |

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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°    | 2.2    | 28.0   | 46.5   | 58.4   | 62.8   |
| 92.5°  | 58.4   | 48.9   | 55.9   | 60.6   | 62.8   |
| 95°    | 151.3  | 74.4   | 90.7   | 102.7  | 100.2  |
| 97.5°  | 272.5  | 81.6   | 118.7  | 125.8  | 128.1  |
| 100°   | 412.5  | 93.2   | 132.8  | 151.3  | 156.1  |
| 102.5° | 566.0  | 561.6  | 137.5  | 162.9  | 170.1  |
| 105°   | 708.2  | 778.2  | 142.2  | 167.6  | 177.1  |
| 107.5° | 873.7  | 931.8  | 146.9  | 172.4  | 181.7  |
| 110°   | 1032.1 | 1080.9 | 407.7  | 174.9  | 183.9  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1181.2 | 1223.0 | 1183.5 | 179.3  | 186.5  |
| 115°   | 1339.5 | 1379.1 | 1437.5 | 358.8  | 191.2  |
| 117.5° | 1477.0 | 1523.5 | 1563.3 | 1230.0 | 619.7  |
| 120°   | 1630.9 | 1665.7 | 1707.8 | 1735.7 | 1421.2 |
| 122.5° | 1761.2 | 1798.5 | 1845.2 | 1859.1 | 1861.5 |
| 125°   | 1894.0 | 1924.4 | 1968.7 | 1985.0 | 1991.9 |
| 127.5° | 2015.1 | 2047.8 | 2082.9 | 2106.1 | 2108.3 |
| 130°   | 2129.3 | 2166.7 | 2192.2 | 2217.9 | 2215.7 |
| 132.5° | 2245.8 | 2276.2 | 2301.7 | 2322.7 | 2320.5 |
| 135°   | 2343.8 | 2381.1 | 2401.9 | 2425.4 | 2420.7 |
| 137.5° | 2446.2 | 2474.1 | 2497.6 | 2520.8 | 2513.9 |
| 140°   | 2546.2 | 2565.1 | 2590.5 | 2611.6 | 2599.9 |
| 142.5° | 2630.4 | 2646.7 | 2676.8 | 2695.3 | 2683.8 |
| 145°   | 2718.9 | 2716.4 | 2756.0 | 2772.3 | 2760.7 |
| 147.5° | 2795.5 | 2788.6 | 2828.1 | 2839.8 | 2830.7 |
| 150°   | 2870.2 | 2853.9 | 2891.3 | 2905.1 | 2893.5 |
| 152.5° | 2933.0 | 2914.5 | 2949.4 | 2963.4 | 2947.1 |
| 155°   | 2993.7 | 2972.9 | 3000.8 | 3014.6 | 2996.1 |
| 157.5° | 3042.6 | 3024.1 | 3045.1 | 3061.4 | 3042.6 |
| 160°   | 3084.7 | 3070.5 | 3084.7 | 3098.5 | 3082.2 |
| 162.5° | 3121.7 | 3107.8 | 3119.5 | 3135.8 | 3114.8 |
| 165°   | 3154.3 | 3140.5 | 3147.4 | 3163.8 | 3147.4 |
| 167.5° | 3180.1 | 3165.9 | 3173.2 | 3189.5 | 3168.4 |
| 170°   | 3201.1 | 3187.0 | 3191.7 | 3208.0 | 3187.0 |
| 172.5° | 3214.9 | 3201.1 | 3205.8 | 3222.1 | 3201.1 |
| 175°   | 3226.5 | 3210.2 | 3214.9 | 3231.3 | 3208.0 |
| 177.5° | 3231.3 | 3214.9 | 3217.5 | 3233.8 | 3212.7 |
| 180°   | 3219.7 | 3219.7 | 3219.7 | 3219.7 | 3219.7 |

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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 | 8.50             | 9.29  | 9.53  | 10.32 | 11.72 | 8.06           | 8.84  | 9.09  | 9.88  | 11.27 |
|                 | 3H   | 10.16            | 10.87 | 11.20 | 11.91 | 13.32 | 9.67           | 10.38 | 10.71 | 11.42 | 12.83 |
|                 | 4H   | 10.75            | 11.42 | 11.80 | 12.46 | 13.88 | 10.25          | 10.92 | 11.30 | 11.97 | 13.39 |
|                 | 6H   | 11.15            | 11.76 | 12.21 | 12.81 | 14.24 | 10.65          | 11.26 | 11.71 | 12.31 | 13.74 |
|                 | 8H   | 11.25            | 11.84 | 12.32 | 12.91 | 14.33 | 10.75          | 11.34 | 11.81 | 12.40 | 13.83 |
|                 | 12H  | 11.30            | 11.86 | 12.37 | 12.92 | 14.37 | 10.79          | 11.35 | 11.86 | 12.41 | 13.86 |
| 4H              | 2H   | 8.95             | 9.62  | 10.01 | 10.67 | 12.09 | 8.60           | 9.27  | 9.66  | 10.32 | 11.73 |
|                 | 3H   | 10.82            | 11.38 | 11.88 | 12.45 | 13.88 | 10.41          | 10.97 | 11.47 | 12.04 | 13.47 |
|                 | 4H   | 11.53            | 12.04 | 12.60 | 13.11 | 14.56 | 11.11          | 11.62 | 12.18 | 12.69 | 14.14 |
|                 | 6H   | 12.05            | 12.49 | 13.13 | 13.58 | 15.02 | 11.61          | 12.05 | 12.69 | 13.14 | 14.59 |
|                 | 8H   | 12.20            | 12.61 | 13.28 | 13.69 | 15.15 | 11.76          | 12.17 | 12.84 | 13.25 | 14.72 |
|                 | 12H  | 12.27            | 12.64 | 13.37 | 13.74 | 15.20 | 11.82          | 12.19 | 12.92 | 13.29 | 14.75 |
| 8H              | 4H   | 11.72            | 12.13 | 12.80 | 13.22 | 14.68 | 11.35          | 11.76 | 12.43 | 12.84 | 14.30 |
|                 | 6H   | 12.36            | 12.70 | 13.46 | 13.82 | 15.28 | 11.97          | 12.31 | 13.08 | 13.44 | 14.90 |
|                 | 8H   | 12.58            | 12.88 | 13.69 | 13.98 | 15.46 | 12.19          | 12.48 | 13.30 | 13.59 | 15.07 |
|                 | 12H  | 12.71            | 12.97 | 13.82 | 14.07 | 15.59 | 12.30          | 12.56 | 13.41 | 13.66 | 15.18 |
| 12H             | 4H   | 11.70            | 12.08 | 12.80 | 13.17 | 14.64 | 11.34          | 11.71 | 12.44 | 12.80 | 14.27 |
|                 | 6H   | 12.39            | 12.68 | 13.50 | 13.79 | 15.27 | 12.01          | 12.31 | 13.12 | 13.42 | 14.90 |
|                 | 8H   | 12.63            | 12.89 | 13.74 | 13.99 | 15.51 | 12.25          | 12.51 | 13.36 | 13.61 | 15.13 |