

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: P920400

Luminaire Tested: DFN2DIP-SQ4F0-080D120US935-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P920400  
REPORT IS A COMBINATION OF REPORTS P900171 AND P896915  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-080D120US935-FLLFLL  
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

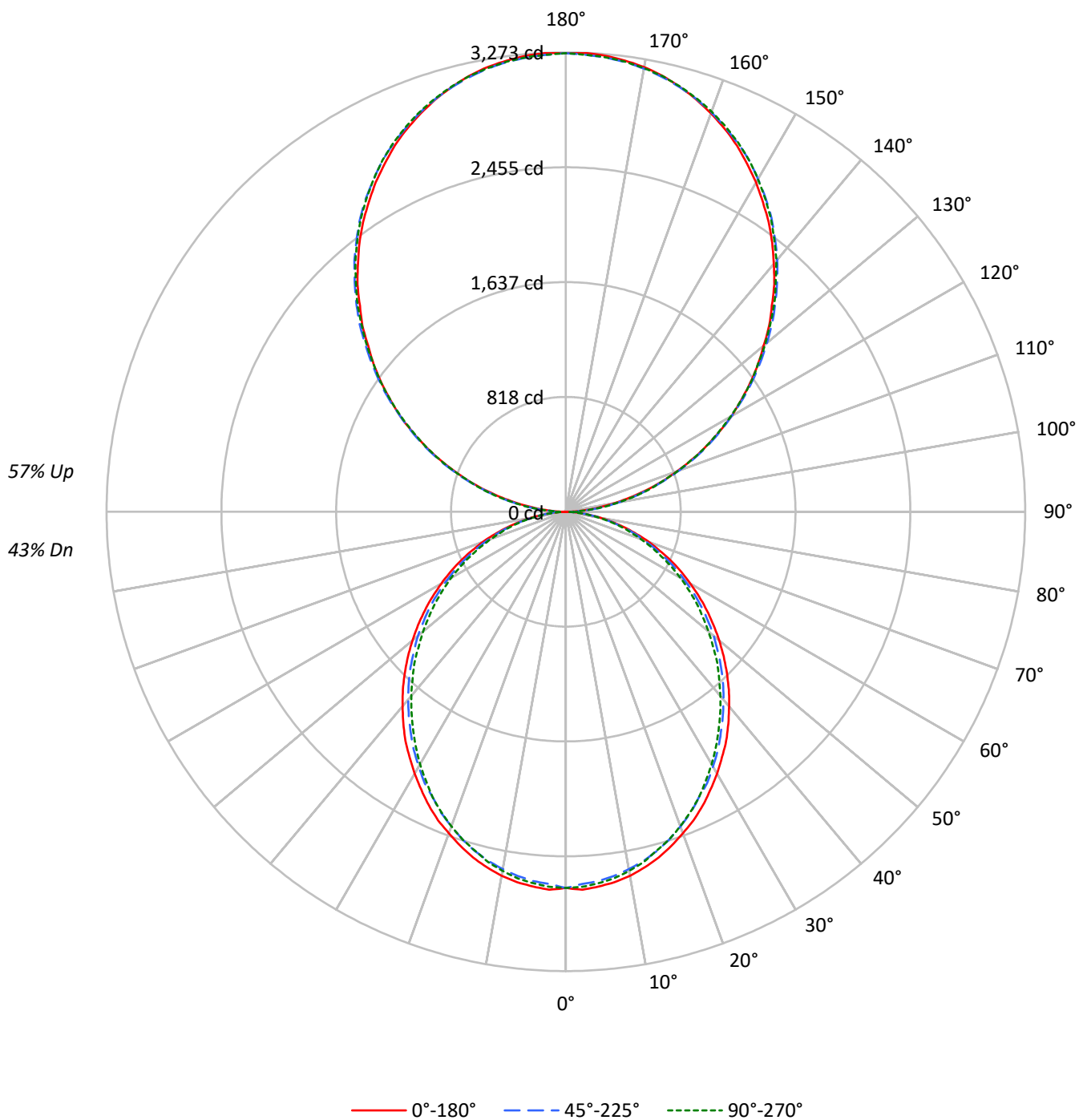
Lumens per Lamp: N/A  
Luminaire Lumens: 15962.9 lumens  
Efficiency: N/A  
Efficacy: 98.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 161.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9954  
Total Harmonic Distortion (THDi): 0.076  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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CATALOG NUMBER: DFN2DIP-SQ4F0-080D120US935-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P920400

CATALOG NUMBER: DFN2DIP-SQ4F0-080D120US935-FLLFL

**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 | 79 | 79 | 79 | 64 | 64 | 64 | 49 | 49 | 49 |
| 1   | 96  | 92  | 88  | 85  | 88 | 84 | 81 | 78 | 69 | 67 | 65 | 56 | 54 | 53 | 44 | 43 | 42 |
| 2   | 88  | 80  | 74  | 69  | 80 | 73 | 68 | 64 | 61 | 57 | 54 | 49 | 47 | 44 | 38 | 37 | 35 |
| 3   | 80  | 70  | 63  | 57  | 73 | 65 | 58 | 53 | 54 | 49 | 45 | 44 | 40 | 37 | 34 | 32 | 30 |
| 4   | 73  | 62  | 55  | 49  | 66 | 57 | 50 | 45 | 48 | 43 | 39 | 39 | 35 | 32 | 30 | 28 | 26 |
| 5   | 67  | 56  | 47  | 42  | 61 | 51 | 44 | 39 | 43 | 37 | 33 | 35 | 31 | 28 | 27 | 25 | 22 |
| 6   | 62  | 50  | 42  | 36  | 56 | 46 | 39 | 34 | 38 | 33 | 29 | 31 | 27 | 24 | 25 | 22 | 20 |
| 7   | 57  | 45  | 37  | 31  | 52 | 41 | 34 | 29 | 35 | 29 | 25 | 29 | 24 | 21 | 23 | 20 | 18 |
| 8   | 53  | 41  | 33  | 28  | 48 | 38 | 31 | 26 | 32 | 26 | 23 | 26 | 22 | 19 | 21 | 18 | 16 |
| 9   | 49  | 37  | 30  | 25  | 45 | 34 | 28 | 23 | 29 | 24 | 20 | 24 | 20 | 17 | 19 | 16 | 14 |
| 10  | 46  | 34  | 27  | 22  | 42 | 31 | 25 | 21 | 27 | 22 | 18 | 22 | 18 | 15 | 18 | 15 | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1881 | 1881 | 1881 |
| 5°  | 1884 | 1855 | 1867 |
| 10° | 1868 | 1830 | 1843 |
| 15° | 1841 | 1800 | 1804 |
| 20° | 1804 | 1759 | 1764 |
| 25° | 1767 | 1709 | 1718 |
| 30° | 1720 | 1663 | 1659 |
| 35° | 1677 | 1608 | 1596 |
| 40° | 1623 | 1553 | 1537 |
| 45° | 1569 | 1498 | 1476 |
| 50° | 1510 | 1440 | 1406 |
| 55° | 1448 | 1373 | 1342 |
| 60° | 1378 | 1294 | 1268 |
| 65° | 1302 | 1211 | 1181 |
| 70° | 1206 | 1111 | 1087 |
| 75° | 1071 | 991  | 1002 |
| 80° | 910  | 838  | 837  |
| 85° | 658  | 574  | 562  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2572 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 252.3   | 1.6       |
| 10°-20°   | 709.8   | 4.4       |
| 20°-30°   | 1043.1  | 6.5       |
| 30°-40°   | 1211.4  | 7.6       |
| 40°-50°   | 1209.9  | 7.6       |
| 50°-60°   | 1055.0  | 6.6       |
| 60°-70°   | 779.9   | 4.9       |
| 70°-80°   | 441.2   | 2.8       |
| 80°-90°   | 125.8   | 0.8       |
| 90°-100°  | 202.2   | 1.3       |
| 100°-110° | 642.4   | 4.0       |
| 110°-120° | 1099.4  | 6.9       |
| 120°-130° | 1445.9  | 9.1       |
| 130°-140° | 1623.0  | 10.2      |
| 140°-150° | 1591.6  | 10.0      |
| 150°-160° | 1335.1  | 8.4       |
| 160°-170° | 885.4   | 5.5       |
| 170°-180° | 309.5   | 1.9       |
| 0°-30°    | 2005.1  | 12.6      |
| 0°-40°    | 3216.5  | 20.1      |
| 0°-60°    | 5481.5  | 34.3      |
| 0°-90°    | 6828.4  | 42.8      |
| 90°-120°  | 1944.1  | 12.2      |
| 90°-150°  | 6604.6  | 41.4      |
| 90°-180°  | 9134.0  | 57.2      |
| 0°-180°   | 15962.9 | 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°  | 3    | 36    | 96   | 91    | 94   | 16   |
| 95°  | 144  | 171   | 176  | 176   | 171  | 160  |
| 105° | 593  | 601   | 607  | 612   | 612  | 626  |
| 115° | 1103 | 1119  | 1114 | 1111  | 1103 | 1091 |
| 125° | 1605 | 1629  | 1622 | 1613  | 1610 | 1434 |
| 135° | 2076 | 2106  | 2112 | 2109  | 2101 | 1604 |
| 145° | 2520 | 2540  | 2555 | 2558  | 2548 | 1574 |
| 155° | 2881 | 2889  | 2898 | 2912  | 2903 | 1326 |
| 165° | 3135 | 3132  | 3132 | 3151  | 3138 | 884  |
| 175° | 3262 | 3254  | 3248 | 3268  | 3251 | 310  |
| 180° | 3268 | 3268  | 3268 | 3268  | 3268 |      |

TEST NUMBER: P920400

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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°    | 2.9    | 35.5   | 96.5   | 90.7   | 93.6   |
| 92.5°  | 61.0   | 82.7   | 85.7   | 88.7   | 88.7   |
| 95°    | 143.8  | 171.4  | 176.3  | 176.3  | 171.4  |
| 97.5°  | 239.4  | 265.0  | 275.9  | 275.9  | 275.9  |
| 100°   | 349.7  | 372.4  | 380.2  | 380.2  | 377.3  |
| 102.5° | 466.0  | 482.7  | 493.5  | 496.5  | 493.5  |
| 105°   | 593.1  | 600.9  | 606.8  | 611.7  | 611.7  |
| 107.5° | 719.1  | 731.0  | 731.0  | 732.9  | 719.1  |
| 110°   | 841.3  | 857.0  | 857.0  | 857.0  | 849.2  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 973.3  | 990.1  | 987.0  | 979.2  | 973.3  |
| 115°   | 1103.3 | 1119.1 | 1114.1 | 1111.2 | 1103.3 |
| 117.5° | 1232.3 | 1254.0 | 1240.3 | 1232.3 | 1224.5 |
| 120°   | 1362.4 | 1384.1 | 1362.4 | 1362.4 | 1353.6 |
| 122.5° | 1480.7 | 1508.2 | 1494.4 | 1486.5 | 1480.7 |
| 125°   | 1604.7 | 1629.4 | 1621.5 | 1612.6 | 1609.6 |
| 127.5° | 1726.0 | 1756.4 | 1745.6 | 1733.8 | 1726.0 |
| 130°   | 1839.2 | 1874.7 | 1869.7 | 1863.8 | 1853.0 |
| 132.5° | 1966.3 | 1993.9 | 1995.8 | 1982.0 | 1974.2 |
| 135°   | 2075.6 | 2106.2 | 2112.1 | 2109.1 | 2101.3 |
| 137.5° | 2197.8 | 2222.4 | 2227.3 | 2225.3 | 2213.5 |
| 140°   | 2305.1 | 2329.8 | 2343.6 | 2343.6 | 2332.7 |
| 142.5° | 2415.5 | 2440.2 | 2448.0 | 2450.9 | 2440.2 |
| 145°   | 2519.9 | 2539.6 | 2555.4 | 2558.4 | 2547.5 |
| 147.5° | 2613.5 | 2638.1 | 2650.0 | 2654.9 | 2644.0 |
| 150°   | 2710.1 | 2726.8 | 2737.6 | 2746.5 | 2737.6 |
| 152.5° | 2795.7 | 2812.4 | 2826.3 | 2837.2 | 2826.3 |
| 155°   | 2881.4 | 2889.3 | 2898.2 | 2912.0 | 2903.1 |
| 157.5° | 2955.4 | 2961.2 | 2966.1 | 2985.9 | 2972.1 |
| 160°   | 3021.3 | 3027.3 | 3030.2 | 3047.0 | 3035.1 |
| 162.5° | 3082.4 | 3082.4 | 3085.4 | 3104.1 | 3090.3 |
| 165°   | 3134.6 | 3131.7 | 3131.7 | 3151.3 | 3137.6 |
| 167.5° | 3181.9 | 3173.0 | 3173.0 | 3192.8 | 3179.0 |
| 170°   | 3217.4 | 3209.5 | 3206.5 | 3226.2 | 3209.5 |
| 172.5° | 3242.0 | 3234.1 | 3231.2 | 3250.9 | 3234.1 |
| 175°   | 3261.7 | 3253.8 | 3247.9 | 3267.6 | 3250.9 |
| 177.5° | 3272.6 | 3264.6 | 3258.7 | 3275.5 | 3258.7 |
| 180°   | 3267.6 | 3267.6 | 3267.6 | 3267.6 | 3267.6 |

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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 | 8.77             | 9.57  | 9.79  | 10.60 | 11.97 | 8.33           | 9.13  | 9.34  | 10.15 | 11.52 |
|                 | 3H   | 10.43            | 11.15 | 11.46 | 12.18 | 13.57 | 9.94           | 10.66 | 10.97 | 11.69 | 13.08 |
|                 | 4H   | 11.02            | 11.70 | 12.06 | 12.73 | 14.13 | 10.52          | 11.20 | 11.56 | 12.24 | 13.64 |
|                 | 6H   | 11.42            | 12.04 | 12.47 | 13.09 | 14.50 | 10.92          | 11.54 | 11.97 | 12.58 | 14.00 |
|                 | 8H   | 11.52            | 12.12 | 12.58 | 13.18 | 14.58 | 11.02          | 11.62 | 12.08 | 12.67 | 14.08 |
|                 | 12H  | 11.57            | 12.14 | 12.63 | 13.19 | 14.62 | 11.06          | 11.63 | 12.12 | 12.68 | 14.11 |
| 4H              | 2H   | 9.22             | 9.90  | 10.27 | 10.94 | 12.34 | 8.87           | 9.55  | 9.92  | 10.59 | 11.98 |
|                 | 3H   | 11.09            | 11.66 | 12.14 | 12.72 | 14.13 | 10.68          | 11.25 | 11.74 | 12.31 | 13.73 |
|                 | 4H   | 11.80            | 12.32 | 12.86 | 13.38 | 14.81 | 11.38          | 11.90 | 12.44 | 12.96 | 14.39 |
|                 | 6H   | 12.32            | 12.77 | 13.39 | 13.85 | 15.27 | 11.89          | 12.33 | 12.96 | 13.41 | 14.84 |
|                 | 8H   | 12.47            | 12.89 | 13.54 | 13.96 | 15.40 | 12.03          | 12.45 | 13.10 | 13.52 | 14.97 |
|                 | 12H  | 12.54            | 12.92 | 13.63 | 14.01 | 15.46 | 12.09          | 12.47 | 13.18 | 13.56 | 15.01 |
| 8H              | 4H   | 12.00            | 12.41 | 13.07 | 13.49 | 14.93 | 11.62          | 12.04 | 12.69 | 13.11 | 14.55 |
|                 | 6H   | 12.63            | 12.97 | 13.72 | 14.09 | 15.53 | 12.25          | 12.59 | 13.34 | 13.71 | 15.15 |
|                 | 8H   | 12.85            | 13.16 | 13.95 | 14.25 | 15.71 | 12.46          | 12.76 | 13.56 | 13.86 | 15.32 |
|                 | 12H  | 12.98            | 13.25 | 14.09 | 14.34 | 15.84 | 12.57          | 12.84 | 13.68 | 13.93 | 15.43 |
| 12H             | 4H   | 11.98            | 12.36 | 13.07 | 13.44 | 14.89 | 11.61          | 11.99 | 12.70 | 13.07 | 14.52 |
|                 | 6H   | 12.66            | 12.96 | 13.76 | 14.06 | 15.52 | 12.29          | 12.59 | 13.39 | 13.69 | 15.15 |
|                 | 8H   | 12.90            | 13.17 | 14.01 | 14.26 | 15.76 | 12.52          | 12.79 | 13.63 | 13.88 | 15.38 |