

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: P906396

Luminaire Tested: DFN2DIP-SQ3F0-050D090US835-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P906396  
REPORT IS A COMBINATION OF REPORTS P899953 AND P896733  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-050D090US835-FLLFLL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

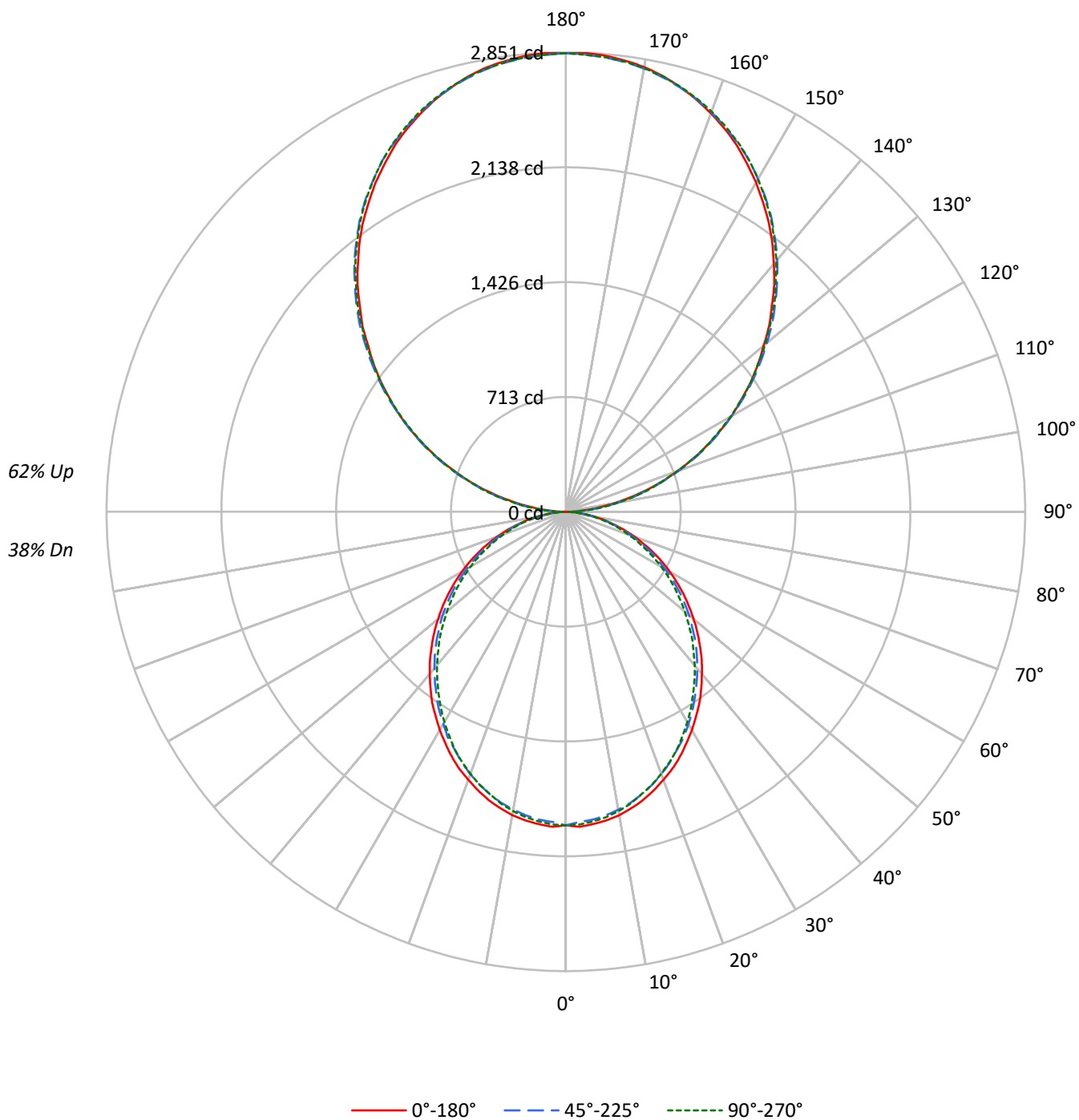
Lumens per Lamp: N/A  
Luminaire Lumens: 12915.0 lumens  
Efficiency: N/A  
Efficacy: 116.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 110.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9789  
Total Harmonic Distortion (THDi): 0.074  
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: P906396

CATALOG NUMBER: DFN2DIP-SQ3F0-050D090US835-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   | 104 | 104 | 104 | 104 | 95 | 95 | 95 | 95 | 77 | 77 | 77 | 61 | 61 | 61 | 45 | 45 | 45 |
| 1   | 95  | 91  | 87  | 84  | 86 | 83 | 79 | 77 | 67 | 65 | 63 | 53 | 52 | 50 | 40 | 39 | 38 |
| 2   | 87  | 79  | 73  | 68  | 78 | 72 | 67 | 63 | 59 | 55 | 52 | 47 | 44 | 42 | 35 | 34 | 32 |
| 3   | 79  | 70  | 63  | 57  | 71 | 64 | 57 | 52 | 52 | 47 | 44 | 41 | 38 | 35 | 31 | 29 | 27 |
| 4   | 72  | 62  | 54  | 48  | 65 | 56 | 50 | 44 | 46 | 41 | 37 | 37 | 33 | 30 | 28 | 26 | 24 |
| 5   | 66  | 55  | 47  | 41  | 60 | 50 | 43 | 38 | 41 | 36 | 32 | 33 | 29 | 26 | 25 | 23 | 21 |
| 6   | 61  | 49  | 41  | 35  | 55 | 45 | 38 | 33 | 37 | 32 | 28 | 30 | 26 | 23 | 23 | 20 | 18 |
| 7   | 56  | 44  | 36  | 31  | 51 | 41 | 34 | 29 | 34 | 28 | 25 | 27 | 23 | 20 | 21 | 18 | 16 |
| 8   | 52  | 40  | 33  | 27  | 47 | 37 | 30 | 25 | 31 | 25 | 22 | 25 | 21 | 18 | 19 | 16 | 14 |
| 9   | 49  | 37  | 29  | 24  | 44 | 34 | 27 | 23 | 28 | 23 | 19 | 23 | 19 | 16 | 18 | 15 | 13 |
| 10  | 45  | 33  | 26  | 22  | 41 | 31 | 24 | 20 | 26 | 21 | 17 | 21 | 17 | 15 | 16 | 14 | 12 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2229 | 2229 | 2229 |
| 5°  | 2231 | 2197 | 2212 |
| 10° | 2212 | 2166 | 2182 |
| 15° | 2178 | 2128 | 2134 |
| 20° | 2133 | 2077 | 2085 |
| 25° | 2087 | 2017 | 2029 |
| 30° | 2031 | 1960 | 1958 |
| 35° | 1978 | 1894 | 1883 |
| 40° | 1912 | 1826 | 1811 |
| 45° | 1847 | 1759 | 1738 |
| 50° | 1775 | 1688 | 1653 |
| 55° | 1700 | 1606 | 1575 |
| 60° | 1615 | 1509 | 1485 |
| 65° | 1522 | 1408 | 1379 |
| 70° | 1404 | 1285 | 1266 |
| 75° | 1240 | 1137 | 1159 |
| 80° | 1042 | 949  | 958  |
| 85° | 733  | 628  | 627  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2862 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 183.1   | 1.4       |
| 10°-20°   | 515.2   | 4.0       |
| 20°-30°   | 757.2   | 5.9       |
| 30°-40°   | 879.4   | 6.8       |
| 40°-50°   | 878.3   | 6.8       |
| 50°-60°   | 765.8   | 5.9       |
| 60°-70°   | 566.1   | 4.4       |
| 70°-80°   | 320.3   | 2.5       |
| 80°-90°   | 92.6    | 0.7       |
| 90°-100°  | 176.1   | 1.4       |
| 100°-110° | 559.6   | 4.3       |
| 110°-120° | 957.7   | 7.4       |
| 120°-130° | 1259.5  | 9.8       |
| 130°-140° | 1413.8  | 10.9      |
| 140°-150° | 1386.4  | 10.7      |
| 150°-160° | 1163.0  | 9.0       |
| 160°-170° | 771.2   | 6.0       |
| 170°-180° | 269.6   | 2.1       |
| 0°-30°    | 1455.5  | 11.3      |
| 0°-40°    | 2334.9  | 18.1      |
| 0°-60°    | 3979.0  | 30.8      |
| 0°-90°    | 4958.1  | 38.4      |
| 90°-120°  | 1693.5  | 13.1      |
| 90°-150°  | 5753.1  | 44.5      |
| 90°-180°  | 7957.0  | 61.6      |
| 0°-180°   | 12915.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1946 | 1946  | 1946 | 1946  | 1946 |      |
| 5°   | 1946 | 1938  | 1918 | 1932  | 1929 | 185  |
| 15°  | 1852 | 1841  | 1816 | 1824  | 1815 | 522  |
| 25°  | 1676 | 1661  | 1630 | 1633  | 1630 | 771  |
| 35°  | 1446 | 1428  | 1398 | 1386  | 1377 | 903  |
| 45°  | 1177 | 1164  | 1136 | 1115  | 1108 | 908  |
| 55°  | 891  | 879   | 857  | 834   | 825  | 796  |
| 65°  | 601  | 589   | 571  | 554   | 544  | 594  |
| 75°  | 314  | 311   | 301  | 290   | 294  | 335  |
| 85°  | 77   | 75    | 73   | 67    | 66   | 85   |
| 90°  | 3    | 31    | 84   | 79    | 82   | 13   |
| 95°  | 125  | 149   | 154  | 154   | 149  | 139  |
| 105° | 517  | 523   | 529  | 533   | 533  | 545  |
| 115° | 961  | 975   | 970  | 968   | 961  | 951  |
| 125° | 1398 | 1419  | 1412 | 1405  | 1402 | 1249 |
| 135° | 1808 | 1835  | 1840 | 1837  | 1830 | 1398 |
| 145° | 2195 | 2212  | 2226 | 2228  | 2219 | 1372 |
| 155° | 2510 | 2517  | 2525 | 2537  | 2529 | 1155 |
| 165° | 2730 | 2728  | 2728 | 2745  | 2733 | 770  |
| 175° | 2841 | 2834  | 2829 | 2846  | 2832 | 270  |
| 180° | 2846 | 2846  | 2846 | 2846  | 2846 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1945.5 | 1945.5 | 1945.5 | 1945.5 | 1945.5 |
| 2.5°   | 1956.8 | 1947.5 | 1926.9 | 1945.5 | 1942.0 |
| 5°     | 1945.5 | 1938.2 | 1917.5 | 1932.4 | 1928.9 |
| 7.5°   | 1932.4 | 1921.3 | 1900.7 | 1915.8 | 1912.0 |
| 10°    | 1912.0 | 1898.9 | 1876.5 | 1891.3 | 1885.8 |
| 12.5°  | 1883.8 | 1872.7 | 1850.3 | 1859.6 | 1855.8 |
| 15°    | 1852.0 | 1840.9 | 1816.5 | 1824.1 | 1814.7 |
| 17.5°  | 1812.7 | 1801.6 | 1777.2 | 1786.5 | 1777.2 |
| 20°    | 1769.7 | 1758.6 | 1732.4 | 1737.9 | 1730.6 |
| 22.5°  | 1726.8 | 1709.9 | 1685.5 | 1685.5 | 1681.7 |
| 25°    | 1676.2 | 1661.3 | 1629.5 | 1633.1 | 1629.5 |
| 27.5°  | 1620.0 | 1606.9 | 1582.7 | 1577.1 | 1567.8 |
| 30°    | 1564.0 | 1549.0 | 1521.0 | 1515.4 | 1507.9 |
| 32.5°  | 1504.1 | 1493.0 | 1463.0 | 1451.7 | 1444.2 |
| 35°    | 1446.1 | 1427.5 | 1397.5 | 1386.2 | 1376.9 |
| 37.5°  | 1380.6 | 1363.8 | 1333.8 | 1320.7 | 1311.4 |
| 40°    | 1313.4 | 1298.3 | 1268.3 | 1251.6 | 1244.1 |
| 42.5°  | 1247.9 | 1232.8 | 1203.0 | 1184.1 | 1173.0 |
| 45°    | 1176.8 | 1163.7 | 1135.5 | 1115.1 | 1107.5 |
| 47.5°  | 1107.5 | 1094.4 | 1064.5 | 1043.8 | 1032.7 |
| 50°    | 1034.5 | 1025.2 | 999.0  | 972.8  | 963.4  |
| 52.5°  | 963.4  | 950.3  | 926.1  | 905.5  | 892.4  |
| 55°    | 890.6  | 879.3  | 856.8  | 834.4  | 825.1  |
| 57.5°  | 817.5  | 808.2  | 783.8  | 761.4  | 753.8  |
| 60°    | 744.5  | 737.2  | 711.0  | 690.3  | 684.8  |
| 62.5°  | 673.5  | 660.4  | 641.7  | 623.0  | 615.5  |
| 65°    | 600.6  | 589.3  | 570.6  | 553.8  | 544.4  |
| 67.5°  | 525.8  | 516.3  | 499.6  | 486.5  | 478.9  |
| 70°    | 456.5  | 449.0  | 432.1  | 419.0  | 411.7  |
| 72.5°  | 385.5  | 377.9  | 368.6  | 355.5  | 349.9  |
| 75°    | 314.2  | 310.6  | 301.1  | 290.0  | 293.8  |
| 77.5°  | 250.7  | 243.1  | 239.4  | 233.8  | 228.3  |
| 80°    | 187.2  | 185.2  | 181.4  | 175.9  | 172.1  |
| 82.5°  | 127.2  | 127.2  | 125.4  | 117.9  | 117.9  |
| 85°    | 76.6   | 74.8   | 73.0   | 67.3   | 65.5   |
| 87.5°  | 33.7   | 30.0   | 26.2   | 20.6   | 18.7   |
| 90°    | 2.6    | 30.9   | 84.1   | 78.9   | 81.5   |
| 92.5°  | 53.2   | 72.1   | 74.7   | 77.2   | 77.2   |
| 95°    | 125.3  | 149.3  | 153.6  | 153.6  | 149.3  |
| 97.5°  | 208.5  | 230.8  | 240.3  | 240.3  | 240.3  |
| 100°   | 304.6  | 324.4  | 331.2  | 331.2  | 328.7  |
| 102.5° | 405.9  | 420.5  | 429.9  | 432.5  | 429.9  |
| 105°   | 516.6  | 523.4  | 528.6  | 532.9  | 532.9  |
| 107.5° | 626.4  | 636.7  | 636.7  | 638.4  | 626.4  |
| 110°   | 732.8  | 746.6  | 746.6  | 746.6  | 739.7  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 847.8  | 862.4  | 859.8  | 853.0  | 847.8  |
| 115°   | 961.1  | 974.8  | 970.5  | 968.0  | 961.1  |
| 117.5° | 1073.5 | 1092.4 | 1080.4 | 1073.5 | 1066.6 |
| 120°   | 1186.8 | 1205.6 | 1186.8 | 1186.8 | 1179.0 |
| 122.5° | 1289.7 | 1313.8 | 1301.8 | 1294.9 | 1289.7 |
| 125°   | 1397.9 | 1419.3 | 1412.5 | 1404.7 | 1402.2 |
| 127.5° | 1503.4 | 1530.0 | 1520.6 | 1510.3 | 1503.4 |
| 130°   | 1602.1 | 1633.0 | 1628.7 | 1623.5 | 1614.1 |
| 132.5° | 1712.8 | 1736.8 | 1738.5 | 1726.5 | 1719.7 |
| 135°   | 1808.0 | 1834.6 | 1839.8 | 1837.2 | 1830.4 |
| 137.5° | 1914.4 | 1935.9 | 1940.2 | 1938.5 | 1928.2 |
| 140°   | 2008.0 | 2029.4 | 2041.4 | 2041.4 | 2032.0 |
| 142.5° | 2104.1 | 2125.5 | 2132.4 | 2135.0 | 2125.5 |
| 145°   | 2195.1 | 2212.2 | 2225.9 | 2228.5 | 2219.1 |
| 147.5° | 2276.6 | 2298.0 | 2308.3 | 2312.6 | 2303.2 |
| 150°   | 2360.7 | 2375.3 | 2384.7 | 2392.4 | 2384.7 |
| 152.5° | 2435.3 | 2449.9 | 2461.9 | 2471.4 | 2461.9 |
| 155°   | 2510.0 | 2516.8 | 2524.6 | 2536.6 | 2528.9 |
| 157.5° | 2574.3 | 2579.5 | 2583.8 | 2600.9 | 2588.9 |
| 160°   | 2631.8 | 2637.0 | 2639.6 | 2654.1 | 2643.8 |
| 162.5° | 2685.0 | 2685.0 | 2687.6 | 2703.9 | 2691.9 |
| 165°   | 2730.5 | 2727.9 | 2727.9 | 2745.1 | 2733.1 |
| 167.5° | 2771.7 | 2764.0 | 2764.0 | 2781.1 | 2769.1 |
| 170°   | 2802.6 | 2795.7 | 2793.2 | 2810.3 | 2795.7 |
| 172.5° | 2824.0 | 2817.2 | 2814.6 | 2831.8 | 2817.2 |
| 175°   | 2841.2 | 2834.3 | 2829.2 | 2846.4 | 2831.8 |
| 177.5° | 2850.6 | 2843.8 | 2838.6 | 2853.2 | 2838.6 |
| 180°   | 2846.4 | 2846.4 | 2846.4 | 2846.4 | 2846.4 |

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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 | 8.84             | 9.61  | 9.89  | 10.66 | 12.09 | 8.40           | 9.16  | 9.45  | 10.22 | 11.65 |
|                 | 3H   | 10.49            | 11.18 | 11.55 | 12.24 | 13.69 | 10.00          | 10.69 | 11.06 | 11.75 | 13.20 |
|                 | 4H   | 11.07            | 11.72 | 12.14 | 12.79 | 14.24 | 10.58          | 11.23 | 11.65 | 12.29 | 13.75 |
|                 | 6H   | 11.46            | 12.06 | 12.54 | 13.13 | 14.60 | 10.96          | 11.56 | 12.04 | 12.63 | 14.10 |
|                 | 8H   | 11.56            | 12.13 | 12.65 | 13.22 | 14.68 | 11.06          | 11.63 | 12.15 | 12.72 | 14.18 |
|                 | 12H  | 11.61            | 12.15 | 12.70 | 13.23 | 14.71 | 11.10          | 11.64 | 12.19 | 12.72 | 14.20 |
| 4H              | 2H   | 9.29             | 9.94  | 10.37 | 11.00 | 12.46 | 8.93           | 9.58  | 10.01 | 10.65 | 12.10 |
|                 | 3H   | 11.14            | 11.68 | 12.22 | 12.78 | 14.24 | 10.73          | 11.27 | 11.82 | 12.37 | 13.83 |
|                 | 4H   | 11.85            | 12.34 | 12.94 | 13.43 | 14.91 | 11.42          | 11.92 | 12.51 | 13.00 | 14.49 |
|                 | 6H   | 12.35            | 12.78 | 13.45 | 13.89 | 15.37 | 11.92          | 12.35 | 13.02 | 13.45 | 14.93 |
|                 | 8H   | 12.50            | 12.90 | 13.60 | 13.99 | 15.49 | 12.06          | 12.46 | 13.16 | 13.56 | 15.05 |
|                 | 12H  | 12.56            | 12.92 | 13.68 | 14.04 | 15.54 | 12.11          | 12.47 | 13.23 | 13.59 | 15.09 |
| 8H              | 4H   | 12.03            | 12.43 | 13.13 | 13.53 | 15.03 | 11.65          | 12.05 | 12.75 | 13.15 | 14.65 |
|                 | 6H   | 12.65            | 12.98 | 13.77 | 14.12 | 15.62 | 12.27          | 12.60 | 13.39 | 13.74 | 15.23 |
|                 | 8H   | 12.87            | 13.16 | 14.00 | 14.28 | 15.79 | 12.47          | 12.76 | 13.60 | 13.89 | 15.40 |
|                 | 12H  | 12.99            | 13.25 | 14.12 | 14.36 | 15.91 | 12.58          | 12.84 | 13.71 | 13.95 | 15.50 |
| 12H             | 4H   | 12.01            | 12.37 | 13.13 | 13.48 | 14.99 | 11.64          | 12.00 | 12.76 | 13.12 | 14.62 |
|                 | 6H   | 12.68            | 12.97 | 13.81 | 14.09 | 15.60 | 12.31          | 12.60 | 13.43 | 13.72 | 15.23 |
|                 | 8H   | 12.91            | 13.17 | 14.04 | 14.28 | 15.83 | 12.53          | 12.79 | 13.66 | 13.90 | 15.45 |