

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: P911911

Luminaire Tested: DFN2DIP-SQ3F0-070D050US850-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P911911  
REPORT IS A COMBINATION OF REPORTS P901406 AND P898289  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-070D050US850-RLLONL  
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

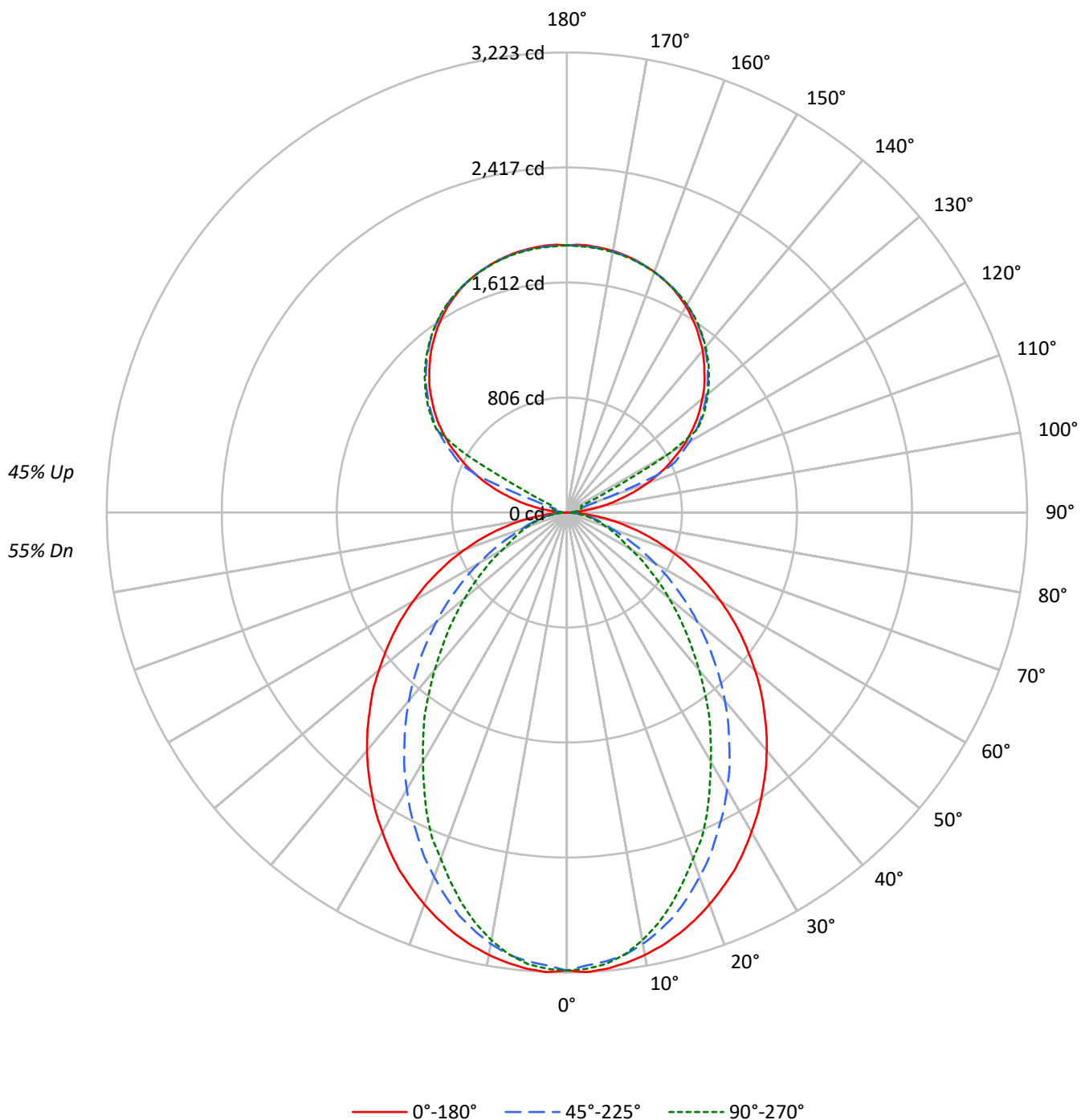
Lumens per Lamp: N/A  
Luminaire Lumens: 12088.1 lumens  
Efficiency: N/A  
Efficacy: 117.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 102.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9963  
Total Harmonic Distortion (THDi): 0.065  
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   | 108 | 108 | 108 | 108 | 100 | 100 | 100 | 100 | 86 | 86 | 86 | 73 | 73 | 73 | 60 | 60 | 60 |
| 1   | 99  | 95  | 91  | 88  | 92  | 89  | 85  | 82  | 76 | 74 | 72 | 65 | 63 | 62 | 54 | 53 | 52 |
| 2   | 91  | 84  | 78  | 73  | 84  | 78  | 73  | 69  | 67 | 63 | 60 | 57 | 55 | 52 | 48 | 46 | 45 |
| 3   | 83  | 74  | 67  | 61  | 77  | 69  | 63  | 58  | 60 | 55 | 51 | 51 | 48 | 45 | 43 | 41 | 39 |
| 4   | 76  | 66  | 58  | 52  | 71  | 62  | 55  | 50  | 54 | 48 | 44 | 46 | 42 | 39 | 39 | 36 | 34 |
| 5   | 70  | 59  | 51  | 45  | 65  | 55  | 48  | 43  | 48 | 43 | 38 | 42 | 37 | 34 | 35 | 32 | 30 |
| 6   | 65  | 53  | 45  | 40  | 60  | 50  | 43  | 38  | 44 | 38 | 34 | 38 | 33 | 30 | 32 | 29 | 26 |
| 7   | 60  | 48  | 40  | 35  | 56  | 45  | 38  | 33  | 40 | 34 | 30 | 35 | 30 | 27 | 30 | 26 | 24 |
| 8   | 56  | 44  | 36  | 31  | 52  | 41  | 34  | 30  | 36 | 31 | 27 | 32 | 27 | 24 | 27 | 24 | 21 |
| 9   | 52  | 40  | 33  | 28  | 49  | 38  | 31  | 27  | 34 | 28 | 24 | 29 | 25 | 22 | 25 | 22 | 19 |
| 10  | 49  | 37  | 30  | 25  | 46  | 35  | 28  | 24  | 31 | 26 | 22 | 27 | 23 | 20 | 24 | 20 | 18 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3676 | 3676 | 3676 |
| 5°  | 3680 | 3615 | 3640 |
| 10° | 3641 | 3542 | 3520 |
| 15° | 3588 | 3423 | 3336 |
| 20° | 3520 | 3259 | 3110 |
| 25° | 3450 | 3076 | 2893 |
| 30° | 3356 | 2889 | 2617 |
| 35° | 3264 | 2687 | 2374 |
| 40° | 3170 | 2479 | 2097 |
| 45° | 3062 | 2249 | 1845 |
| 50° | 2950 | 2016 | 1600 |
| 55° | 2832 | 1768 | 1364 |
| 60° | 2695 | 1509 | 1121 |
| 65° | 2538 | 1247 | 1008 |
| 70° | 2348 | 1001 | 910  |
| 75° | 2108 | 877  | 826  |
| 80° | 1762 | 729  | 712  |
| 85° | 1195 | 474  | 528  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3062 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 300.7   | 2.5       |
| 10°-20°   | 825.5   | 6.8       |
| 20°-30°   | 1158.9  | 9.6       |
| 30°-40°   | 1263.3  | 10.5      |
| 40°-50°   | 1161.1  | 9.6       |
| 50°-60°   | 911.9   | 7.5       |
| 60°-70°   | 593.5   | 4.9       |
| 70°-80°   | 305.5   | 2.5       |
| 80°-90°   | 81.3    | 0.7       |
| 90°-100°  | 61.7    | 0.5       |
| 100°-110° | 230.0   | 1.9       |
| 110°-120° | 610.1   | 5.0       |
| 120°-130° | 1011.9  | 8.4       |
| 130°-140° | 1074.8  | 8.9       |
| 140°-150° | 999.0   | 8.3       |
| 150°-160° | 803.1   | 6.6       |
| 160°-170° | 517.5   | 4.3       |
| 170°-180° | 178.1   | 1.5       |
| 0°-30°    | 2285.1  | 18.9      |
| 0°-40°    | 3548.4  | 29.4      |
| 0°-60°    | 5621.4  | 46.5      |
| 0°-90°    | 6601.8  | 54.6      |
| 90°-120°  | 901.9   | 7.5       |
| 90°-150°  | 3987.5  | 33.0      |
| 90°-180°  | 5486.0  | 45.4      |
| 0°-180°   | 12088.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3208 | 3208  | 3208 | 3208  | 3208 |      |
| 5°   | 3208 | 3194  | 3156 | 3182  | 3174 | 304  |
| 15°  | 3052 | 3020  | 2921 | 2866  | 2837 | 860  |
| 25°  | 2770 | 2677  | 2485 | 2366  | 2323 | 1274 |
| 35°  | 2387 | 2239  | 1983 | 1800  | 1736 | 1494 |
| 45°  | 1951 | 1756  | 1452 | 1246  | 1176 | 1507 |
| 55°  | 1484 | 1257  | 944  | 770   | 714  | 1326 |
| 65°  | 1002 | 766   | 505  | 407   | 398  | 993  |
| 75°  | 534  | 331   | 232  | 212   | 209  | 565  |
| 85°  | 125  | 64    | 55   | 55    | 55   | 143  |
| 90°  | 1    | 16    | 27   | 34    | 36   | 11   |
| 95°  | 88   | 43    | 53   | 60    | 58   | 104  |
| 105° | 412  | 452   | 83   | 98    | 103  | 440  |
| 115° | 779  | 802   | 836  | 209   | 111  | 767  |
| 125° | 1101 | 1118  | 1144 | 1154  | 1158 | 982  |
| 135° | 1362 | 1384  | 1396 | 1410  | 1407 | 1052 |
| 145° | 1580 | 1579  | 1602 | 1611  | 1605 | 988  |
| 155° | 1740 | 1728  | 1744 | 1752  | 1742 | 802  |
| 165° | 1833 | 1825  | 1829 | 1839  | 1829 | 518  |
| 175° | 1875 | 1866  | 1869 | 1878  | 1865 | 178  |
| 180° | 1871 | 1871  | 1871 | 1871  | 1871 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3208.4 | 3208.4 | 3208.4 | 3208.4 | 3208.4 |
| 2.5°   | 3222.9 | 3208.4 | 3176.4 | 3205.7 | 3199.8 |
| 5°     | 3208.4 | 3193.9 | 3156.1 | 3182.3 | 3173.6 |
| 7.5°   | 3182.3 | 3165.0 | 3124.4 | 3135.7 | 3121.3 |
| 10°    | 3147.5 | 3127.2 | 3069.2 | 3060.3 | 3043.0 |
| 12.5°  | 3104.0 | 3077.8 | 2999.3 | 2982.0 | 2949.9 |
| 15°    | 3051.6 | 3019.6 | 2921.0 | 2865.9 | 2836.9 |
| 17.5°  | 2990.6 | 2944.2 | 2822.2 | 2758.3 | 2711.8 |
| 20°    | 2921.0 | 2862.8 | 2717.7 | 2645.3 | 2581.2 |
| 22.5°  | 2845.6 | 2778.7 | 2610.1 | 2511.6 | 2468.2 |
| 25°    | 2770.1 | 2677.0 | 2485.4 | 2366.5 | 2322.8 |
| 27.5°  | 2680.1 | 2581.2 | 2369.3 | 2232.9 | 2166.0 |
| 30°    | 2584.3 | 2473.7 | 2241.4 | 2093.6 | 2015.1 |
| 32.5°  | 2491.3 | 2357.6 | 2119.7 | 1945.4 | 1872.7 |
| 35°    | 2386.8 | 2238.6 | 1983.3 | 1800.4 | 1736.3 |
| 37.5°  | 2285.2 | 2125.3 | 1855.5 | 1654.8 | 1582.5 |
| 40°    | 2177.6 | 2003.6 | 1721.7 | 1515.7 | 1440.1 |
| 42.5°  | 2067.4 | 1881.6 | 1588.3 | 1373.3 | 1301.0 |
| 45°    | 1951.3 | 1756.5 | 1451.9 | 1245.5 | 1175.9 |
| 47.5°  | 1840.9 | 1634.9 | 1321.3 | 1114.9 | 1051.1 |
| 50°    | 1719.0 | 1512.9 | 1193.4 | 992.9  | 932.2  |
| 52.5°  | 1599.7 | 1381.9 | 1071.4 | 879.8  | 824.7  |
| 55°    | 1483.6 | 1257.2 | 943.5  | 769.5  | 714.4  |
| 57.5°  | 1364.7 | 1132.4 | 830.5  | 667.8  | 621.4  |
| 60°    | 1242.7 | 1010.4 | 711.3  | 563.5  | 516.9  |
| 62.5°  | 1123.7 | 891.5  | 609.6  | 470.4  | 447.3  |
| 65°    | 1001.8 | 766.4  | 505.3  | 406.7  | 397.7  |
| 67.5°  | 885.6  | 650.3  | 406.7  | 357.0  | 348.4  |
| 70°    | 763.7  | 537.2  | 336.7  | 307.7  | 296.0  |
| 72.5°  | 647.5  | 432.5  | 281.6  | 258.5  | 252.6  |
| 75°    | 534.2  | 330.8  | 232.2  | 211.9  | 209.2  |
| 77.5°  | 421.1  | 235.0  | 183.0  | 171.2  | 165.5  |
| 80°    | 316.4  | 168.5  | 139.3  | 127.9  | 127.9  |
| 82.5°  | 220.6  | 113.3  | 95.8   | 89.9   | 89.9   |
| 85°    | 124.8  | 63.8   | 55.1   | 55.1   | 55.1   |
| 87.5°  | 46.5   | 23.1   | 23.1   | 20.3   | 20.3   |
| 90°    | 1.3    | 16.2   | 27.1   | 33.9   | 36.5   |
| 92.5°  | 33.9   | 28.5   | 32.5   | 35.3   | 36.5   |
| 95°    | 87.9   | 43.3   | 52.8   | 59.7   | 58.2   |
| 97.5°  | 158.4  | 47.5   | 69.0   | 73.2   | 74.4   |
| 100°   | 239.8  | 54.2   | 77.2   | 87.9   | 90.7   |
| 102.5° | 329.0  | 326.4  | 80.0   | 94.7   | 98.9   |
| 105°   | 411.7  | 452.4  | 82.6   | 97.5   | 102.9  |
| 107.5° | 507.8  | 541.5  | 85.4   | 100.1  | 105.7  |
| 110°   | 600.0  | 628.2  | 237.0  | 101.6  | 106.9  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 686.6  | 710.9  | 687.9  | 104.2  | 108.3  |
| 115°   | 778.6  | 801.6  | 835.5  | 208.6  | 111.1  |
| 117.5° | 858.5  | 885.5  | 908.7  | 714.9  | 360.2  |
| 120°   | 947.9  | 968.2  | 992.6  | 1008.9 | 826.0  |
| 122.5° | 1023.6 | 1045.3 | 1072.5 | 1080.6 | 1082.1 |
| 125°   | 1100.8 | 1118.5 | 1144.3 | 1153.7 | 1157.8 |
| 127.5° | 1171.2 | 1190.2 | 1210.7 | 1224.1 | 1225.4 |
| 130°   | 1237.6 | 1259.4 | 1274.1 | 1289.1 | 1287.9 |
| 132.5° | 1305.4 | 1323.0 | 1337.8 | 1350.1 | 1348.8 |
| 135°   | 1362.3 | 1384.0 | 1396.0 | 1409.8 | 1407.0 |
| 137.5° | 1421.7 | 1438.0 | 1451.7 | 1465.2 | 1461.2 |
| 140°   | 1480.0 | 1490.9 | 1505.7 | 1517.9 | 1511.2 |
| 142.5° | 1528.9 | 1538.4 | 1555.9 | 1566.7 | 1559.9 |
| 145°   | 1580.3 | 1578.9 | 1601.8 | 1611.4 | 1604.6 |
| 147.5° | 1624.9 | 1620.8 | 1643.9 | 1650.6 | 1645.3 |
| 150°   | 1668.3 | 1658.8 | 1680.5 | 1688.6 | 1681.8 |
| 152.5° | 1704.8 | 1694.0 | 1714.3 | 1722.5 | 1713.0 |
| 155°   | 1740.0 | 1727.9 | 1744.1 | 1752.2 | 1741.5 |
| 157.5° | 1768.4 | 1757.7 | 1769.9 | 1779.4 | 1768.4 |
| 160°   | 1792.9 | 1784.7 | 1792.9 | 1800.9 | 1791.5 |
| 162.5° | 1814.4 | 1806.5 | 1813.1 | 1822.6 | 1810.4 |
| 165°   | 1833.4 | 1825.4 | 1829.4 | 1838.8 | 1829.4 |
| 167.5° | 1848.4 | 1840.2 | 1844.4 | 1853.8 | 1841.6 |
| 170°   | 1860.6 | 1852.4 | 1855.1 | 1864.6 | 1852.4 |
| 172.5° | 1868.7 | 1860.6 | 1863.3 | 1872.8 | 1860.6 |
| 175°   | 1875.4 | 1865.9 | 1868.7 | 1878.1 | 1864.6 |
| 177.5° | 1878.1 | 1868.7 | 1870.1 | 1879.5 | 1867.3 |
| 180°   | 1871.3 | 1871.3 | 1871.3 | 1871.3 | 1871.3 |

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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 | 12.06            | 12.93 | 12.98 | 13.86 | 15.07 | 8.02           | 8.89  | 8.94  | 9.82  | 11.03 |
|                 | 3H   | 13.73            | 14.51 | 14.67 | 15.46 | 16.69 | 9.20           | 9.98  | 10.14 | 10.93 | 12.16 |
|                 | 4H   | 14.34            | 15.07 | 15.29 | 16.03 | 17.27 | 9.65           | 10.38 | 10.60 | 11.34 | 12.58 |
|                 | 6H   | 14.76            | 15.44 | 15.72 | 16.39 | 17.64 | 9.97           | 10.64 | 10.93 | 11.60 | 12.85 |
|                 | 8H   | 14.89            | 15.53 | 15.85 | 16.50 | 17.75 | 10.06          | 10.70 | 11.02 | 11.67 | 12.92 |
|                 | 12H  | 14.95            | 15.56 | 15.92 | 16.53 | 17.80 | 10.10          | 10.71 | 11.07 | 11.68 | 12.95 |
| 4H              | 2H   | 12.08            | 12.81 | 13.03 | 13.76 | 15.00 | 8.62           | 9.35  | 9.57  | 10.30 | 11.54 |
|                 | 3H   | 13.91            | 14.52 | 14.87 | 15.50 | 16.75 | 9.96           | 10.57 | 10.93 | 11.55 | 12.81 |
|                 | 4H   | 14.60            | 15.15 | 15.57 | 16.13 | 17.41 | 10.51          | 11.06 | 11.48 | 12.04 | 13.32 |
|                 | 6H   | 15.11            | 15.59 | 16.10 | 16.59 | 17.86 | 10.92          | 11.40 | 11.91 | 12.40 | 13.67 |
|                 | 8H   | 15.28            | 15.73 | 16.27 | 16.72 | 18.01 | 11.05          | 11.49 | 12.03 | 12.48 | 13.78 |
|                 | 12H  | 15.38            | 15.78 | 16.38 | 16.79 | 18.08 | 11.11          | 11.51 | 12.12 | 12.52 | 13.82 |
| 8H              | 4H   | 14.56            | 15.01 | 15.55 | 16.00 | 17.29 | 10.79          | 11.23 | 11.77 | 12.22 | 13.52 |
|                 | 6H   | 15.13            | 15.50 | 16.14 | 16.53 | 17.82 | 11.30          | 11.67 | 12.31 | 12.70 | 13.99 |
|                 | 8H   | 15.34            | 15.67 | 16.36 | 16.69 | 17.99 | 11.48          | 11.81 | 12.50 | 12.83 | 14.14 |
|                 | 12H  | 15.48            | 15.76 | 16.50 | 16.78 | 18.13 | 11.60          | 11.89 | 12.62 | 12.90 | 14.25 |
| 12H             | 4H   | 14.52            | 14.92 | 15.52 | 15.93 | 17.22 | 10.79          | 11.19 | 11.80 | 12.20 | 13.50 |
|                 | 6H   | 15.10            | 15.43 | 16.12 | 16.45 | 17.76 | 11.35          | 11.67 | 12.37 | 12.69 | 14.00 |
|                 | 8H   | 15.32            | 15.61 | 16.34 | 16.62 | 17.97 | 11.55          | 11.84 | 12.58 | 12.85 | 14.21 |