

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: P914449

Luminaire Tested: DFN2DIP-SQ2F0-050D080US927-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P914449  
REPORT IS A COMBINATION OF REPORTS P901355 AND P898215  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ2F0-050D080US927-FLLONL  
Description: 2 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

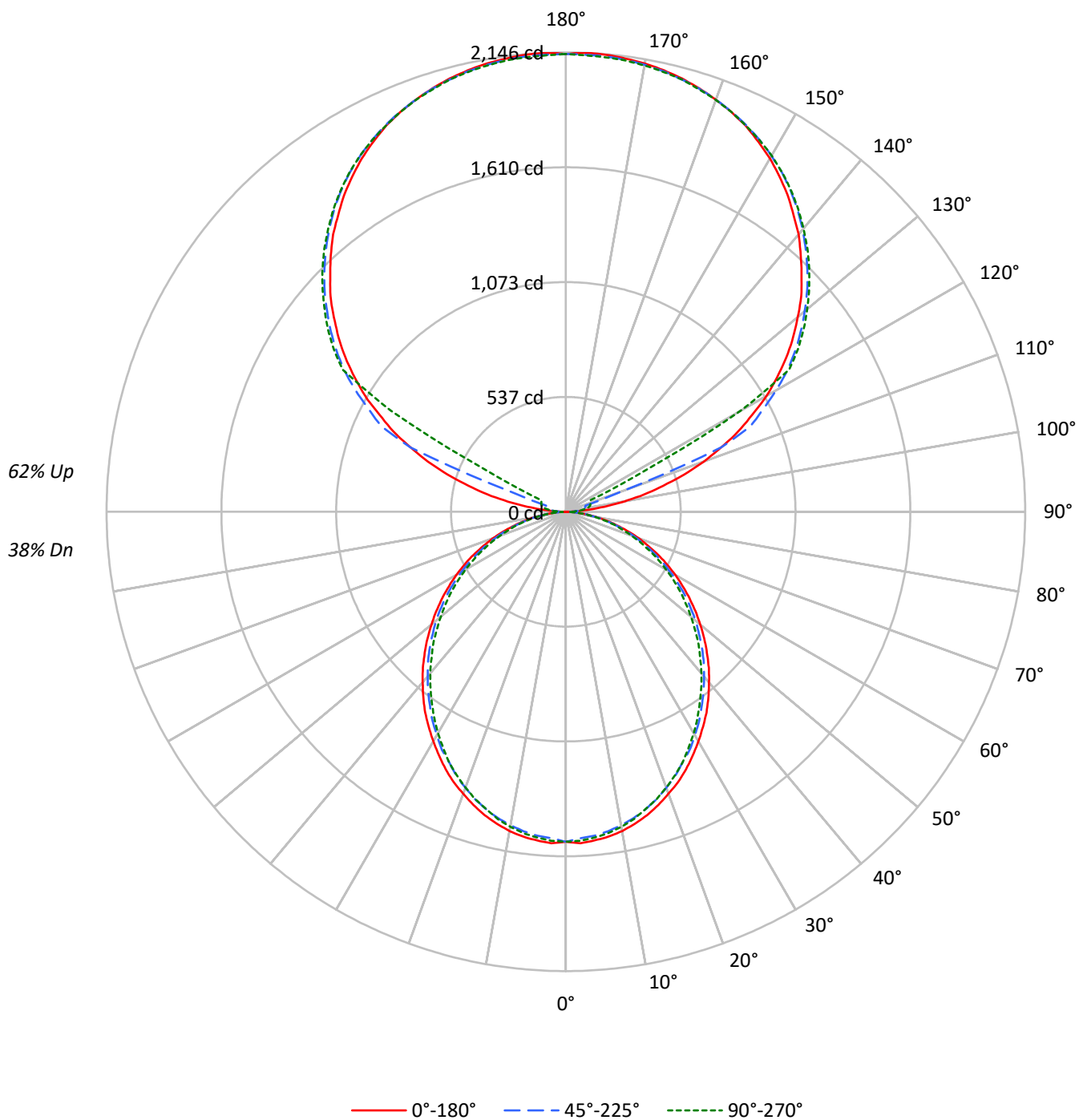
Lumens per Lamp: N/A  
Luminaire Lumens: 10195.3 lumens  
Efficiency: N/A  
Efficacy: 93.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 109.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.996  
Total Harmonic Distortion (THDi): 0.064  
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   | 104 | 104 | 104 | 104 | 95 | 95 | 95 | 95 | 77 | 77 | 77 | 61 | 61 | 61 | 46 | 46 | 46 |
| 1   | 95  | 91  | 87  | 84  | 86 | 83 | 80 | 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 | 48 | 44 | 41 | 38 | 36 | 31 | 29 | 28 |
| 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  | 36  | 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 | 25 | 20 | 26 | 21 | 17 | 21 | 17 | 15 | 16 | 14 | 12 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3389 | 3389 | 3389 |
| 5°  | 3388 | 3334 | 3359 |
| 10° | 3355 | 3282 | 3309 |
| 15° | 3300 | 3221 | 3233 |
| 20° | 3227 | 3138 | 3156 |
| 25° | 3155 | 3041 | 3067 |
| 30° | 3066 | 2950 | 2956 |
| 35° | 2981 | 2845 | 2838 |
| 40° | 2878 | 2737 | 2726 |
| 45° | 2774 | 2629 | 2610 |
| 50° | 2660 | 2516 | 2477 |
| 55° | 2541 | 2384 | 2354 |
| 60° | 2405 | 2230 | 2213 |
| 65° | 2257 | 2068 | 2046 |
| 70° | 2068 | 1872 | 1865 |
| 75° | 1809 | 1636 | 1692 |
| 80° | 1495 | 1336 | 1374 |
| 85° | 1010 | 843  | 863  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 2774 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 145.1   | 1.4       |
| 10°-20°   | 408.1   | 4.0       |
| 20°-30°   | 599.8   | 5.9       |
| 30°-40°   | 696.6   | 6.8       |
| 40°-50°   | 695.8   | 6.8       |
| 50°-60°   | 606.7   | 6.0       |
| 60°-70°   | 448.5   | 4.4       |
| 70°-80°   | 253.7   | 2.5       |
| 80°-90°   | 70.7    | 0.7       |
| 90°-100°  | 70.5    | 0.7       |
| 100°-110° | 262.9   | 2.6       |
| 110°-120° | 697.3   | 6.8       |
| 120°-130° | 1156.5  | 11.3      |
| 130°-140° | 1228.4  | 12.0      |
| 140°-150° | 1141.7  | 11.2      |
| 150°-160° | 917.9   | 9.0       |
| 160°-170° | 591.5   | 5.8       |
| 170°-180° | 203.6   | 2.0       |
| 0°-30°    | 1153.0  | 11.3      |
| 0°-40°    | 1849.6  | 18.1      |
| 0°-60°    | 3152.1  | 30.9      |
| 0°-90°    | 3925.0  | 38.5      |
| 90°-120°  | 1030.7  | 10.1      |
| 90°-150°  | 4557.3  | 44.7      |
| 90°-180°  | 6270.0  | 61.5      |
| 0°-180°   | 10195.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1541 | 1541  | 1541 | 1541  | 1541 |      |
| 5°   | 1541 | 1535  | 1519 | 1531  | 1528 | 146  |
| 15°  | 1467 | 1458  | 1439 | 1445  | 1438 | 413  |
| 25°  | 1328 | 1316  | 1291 | 1294  | 1291 | 611  |
| 35°  | 1146 | 1131  | 1107 | 1098  | 1091 | 715  |
| 45°  | 932  | 922   | 900  | 883   | 877  | 719  |
| 55°  | 706  | 697   | 679  | 661   | 654  | 631  |
| 65°  | 476  | 467   | 452  | 439   | 431  | 470  |
| 75°  | 249  | 246   | 238  | 230   | 233  | 266  |
| 85°  | 61   | 59    | 58   | 53    | 52   | 68   |
| 90°  | 2    | 18    | 31   | 39    | 42   | 9    |
| 95°  | 100  | 49    | 60   | 68    | 66   | 119  |
| 105° | 470  | 517   | 94   | 111   | 118  | 503  |
| 115° | 890  | 916   | 955  | 238   | 127  | 876  |
| 125° | 1258 | 1278  | 1308 | 1319  | 1323 | 1122 |
| 135° | 1557 | 1582  | 1596 | 1611  | 1608 | 1203 |
| 145° | 1806 | 1804  | 1831 | 1842  | 1834 | 1130 |
| 155° | 1989 | 1975  | 1993 | 2003  | 1990 | 916  |
| 165° | 2096 | 2086  | 2091 | 2102  | 2091 | 592  |
| 175° | 2143 | 2133  | 2136 | 2146  | 2131 | 204  |
| 180° | 2139 | 2139  | 2139 | 2139  | 2139 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1541.2 | 1541.2 | 1541.2 | 1541.2 | 1541.2 |
| 2.5°   | 1550.1 | 1542.8 | 1526.5 | 1541.2 | 1538.4 |
| 5°     | 1541.2 | 1535.4 | 1519.0 | 1530.8 | 1528.0 |
| 7.5°   | 1530.8 | 1522.0 | 1505.7 | 1517.7 | 1514.7 |
| 10°    | 1514.7 | 1504.3 | 1486.5 | 1498.3 | 1493.9 |
| 12.5°  | 1492.3 | 1483.5 | 1465.8 | 1473.1 | 1470.1 |
| 15°    | 1467.1 | 1458.3 | 1439.0 | 1445.0 | 1437.6 |
| 17.5°  | 1436.0 | 1427.2 | 1407.9 | 1415.2 | 1407.9 |
| 20°    | 1401.9 | 1393.1 | 1372.4 | 1376.7 | 1370.9 |
| 22.5°  | 1367.9 | 1354.6 | 1335.2 | 1335.2 | 1332.2 |
| 25°    | 1327.9 | 1316.1 | 1290.9 | 1293.7 | 1290.9 |
| 27.5°  | 1283.3 | 1273.0 | 1253.8 | 1249.3 | 1242.0 |
| 30°    | 1239.0 | 1227.1 | 1204.9 | 1200.5 | 1194.5 |
| 32.5°  | 1191.5 | 1182.7 | 1159.0 | 1150.0 | 1144.1 |
| 35°    | 1145.6 | 1130.8 | 1107.1 | 1098.1 | 1090.8 |
| 37.5°  | 1093.7 | 1080.4 | 1056.6 | 1046.2 | 1038.9 |
| 40°    | 1040.5 | 1028.5 | 1004.7 | 991.5  | 985.6  |
| 42.5°  | 988.6  | 976.6  | 953.0  | 938.0  | 929.2  |
| 45°    | 932.2  | 921.9  | 899.5  | 883.4  | 877.3  |
| 47.5°  | 877.3  | 867.0  | 843.3  | 826.9  | 818.1  |
| 50°    | 819.5  | 812.1  | 791.4  | 770.6  | 763.2  |
| 52.5°  | 763.2  | 752.8  | 733.6  | 717.3  | 706.9  |
| 55°    | 705.5  | 696.6  | 678.7  | 661.0  | 653.6  |
| 57.5°  | 647.6  | 640.2  | 620.9  | 603.2  | 597.1  |
| 60°    | 589.8  | 584.0  | 563.2  | 546.8  | 542.5  |
| 62.5°  | 533.5  | 523.2  | 508.3  | 493.5  | 487.6  |
| 65°    | 475.8  | 466.8  | 452.0  | 438.7  | 431.3  |
| 67.5°  | 416.5  | 409.0  | 395.8  | 385.4  | 379.4  |
| 70°    | 361.6  | 355.7  | 342.3  | 331.9  | 326.1  |
| 72.5°  | 305.4  | 299.4  | 292.0  | 281.6  | 277.2  |
| 75°    | 248.9  | 246.1  | 238.5  | 229.7  | 232.7  |
| 77.5°  | 198.6  | 192.6  | 189.6  | 185.2  | 180.9  |
| 80°    | 148.3  | 146.7  | 143.7  | 139.3  | 136.3  |
| 82.5°  | 100.8  | 100.8  | 99.3   | 93.4   | 93.4   |
| 85°    | 60.7   | 59.3   | 57.8   | 53.3   | 51.9   |
| 87.5°  | 26.7   | 23.8   | 20.8   | 16.3   | 14.8   |
| 90°    | 1.5    | 18.5   | 30.9   | 38.7   | 41.7   |
| 92.5°  | 38.7   | 32.6   | 37.2   | 40.2   | 41.7   |
| 95°    | 100.5  | 49.4   | 60.3   | 68.2   | 66.5   |
| 97.5°  | 181.0  | 54.2   | 78.8   | 83.7   | 85.1   |
| 100°   | 274.0  | 61.9   | 88.2   | 100.5  | 103.6  |
| 102.5° | 376.0  | 373.0  | 91.3   | 108.2  | 113.0  |
| 105°   | 470.5  | 517.0  | 94.4   | 111.4  | 117.6  |
| 107.5° | 580.4  | 618.9  | 97.6   | 114.5  | 120.7  |
| 110°   | 685.7  | 718.0  | 270.9  | 116.1  | 122.2  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 784.7  | 812.5  | 786.2  | 119.1  | 123.9  |
| 115°   | 889.9  | 916.2  | 954.9  | 238.4  | 127.0  |
| 117.5° | 981.2  | 1012.1 | 1038.5 | 817.1  | 411.7  |
| 120°   | 1083.4 | 1106.5 | 1134.5 | 1153.0 | 944.0  |
| 122.5° | 1169.9 | 1194.8 | 1225.8 | 1235.0 | 1236.7 |
| 125°   | 1258.1 | 1278.3 | 1307.7 | 1318.6 | 1323.2 |
| 127.5° | 1338.6 | 1360.3 | 1383.7 | 1399.1 | 1400.6 |
| 130°   | 1414.5 | 1439.3 | 1456.3 | 1473.4 | 1471.9 |
| 132.5° | 1491.9 | 1512.1 | 1529.1 | 1543.0 | 1541.5 |
| 135°   | 1557.0 | 1581.7 | 1595.5 | 1611.2 | 1608.0 |
| 137.5° | 1625.0 | 1643.5 | 1659.1 | 1674.6 | 1670.0 |
| 140°   | 1691.5 | 1704.0 | 1720.9 | 1734.9 | 1727.1 |
| 142.5° | 1747.4 | 1758.2 | 1778.2 | 1790.6 | 1782.8 |
| 145°   | 1806.2 | 1804.5 | 1830.8 | 1841.7 | 1833.9 |
| 147.5° | 1857.1 | 1852.5 | 1878.7 | 1886.5 | 1880.4 |
| 150°   | 1906.7 | 1895.8 | 1920.6 | 1929.8 | 1922.1 |
| 152.5° | 1948.4 | 1936.1 | 1959.2 | 1968.6 | 1957.8 |
| 155°   | 1988.7 | 1974.9 | 1993.4 | 2002.6 | 1990.4 |
| 157.5° | 2021.2 | 2008.9 | 2022.8 | 2033.7 | 2021.2 |
| 160°   | 2049.1 | 2039.8 | 2049.1 | 2058.3 | 2047.5 |
| 162.5° | 2073.8 | 2064.6 | 2072.3 | 2083.1 | 2069.2 |
| 165°   | 2095.5 | 2086.3 | 2090.9 | 2101.7 | 2090.9 |
| 167.5° | 2112.5 | 2103.2 | 2107.9 | 2118.8 | 2104.8 |
| 170°   | 2126.5 | 2117.1 | 2120.3 | 2131.1 | 2117.1 |
| 172.5° | 2135.7 | 2126.5 | 2129.6 | 2140.5 | 2126.5 |
| 175°   | 2143.4 | 2132.6 | 2135.7 | 2146.5 | 2131.1 |
| 177.5° | 2146.5 | 2135.7 | 2137.3 | 2148.2 | 2134.2 |
| 180°   | 2138.8 | 2138.8 | 2138.8 | 2138.8 | 2138.8 |

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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 | 10.23            | 11.00 | 11.28 | 12.05 | 13.48 | 9.79           | 10.55 | 10.84 | 11.61 | 13.03 |
|                 | 3H   | 11.86            | 12.55 | 12.92 | 13.61 | 15.06 | 11.37          | 12.06 | 12.43 | 13.12 | 14.57 |
|                 | 4H   | 12.43            | 13.09 | 13.51 | 14.15 | 15.60 | 11.94          | 12.59 | 13.01 | 13.66 | 15.11 |
|                 | 6H   | 12.81            | 13.41 | 13.90 | 14.48 | 15.95 | 12.32          | 12.91 | 13.40 | 13.98 | 15.45 |
|                 | 8H   | 12.91            | 13.48 | 13.99 | 14.56 | 16.02 | 12.41          | 12.98 | 13.49 | 14.06 | 15.52 |
|                 | 12H  | 12.95            | 13.49 | 14.04 | 14.57 | 16.05 | 12.44          | 12.98 | 13.53 | 14.06 | 15.54 |
| 4H              | 2H   | 10.67            | 11.32 | 11.75 | 12.39 | 13.84 | 10.31          | 10.97 | 11.39 | 12.03 | 13.48 |
|                 | 3H   | 12.50            | 13.05 | 13.59 | 14.14 | 15.60 | 12.10          | 12.64 | 13.18 | 13.73 | 15.20 |
|                 | 4H   | 13.20            | 13.70 | 14.29 | 14.78 | 16.27 | 12.77          | 13.27 | 13.86 | 14.36 | 15.84 |
|                 | 6H   | 13.69            | 14.12 | 14.79 | 15.22 | 16.70 | 13.26          | 13.69 | 14.36 | 14.79 | 16.27 |
|                 | 8H   | 13.83            | 14.23 | 14.93 | 15.33 | 16.82 | 13.39          | 13.79 | 14.49 | 14.89 | 16.38 |
|                 | 12H  | 13.89            | 14.25 | 15.00 | 15.36 | 16.86 | 13.44          | 13.80 | 14.55 | 14.91 | 16.41 |
| 8H              | 4H   | 13.38            | 13.78 | 14.47 | 14.87 | 16.37 | 13.00          | 13.40 | 14.10 | 14.50 | 15.99 |
|                 | 6H   | 13.98            | 14.31 | 15.10 | 15.45 | 16.94 | 13.59          | 13.92 | 14.72 | 15.06 | 16.56 |
|                 | 8H   | 14.19            | 14.47 | 15.31 | 15.60 | 17.11 | 13.79          | 14.08 | 14.92 | 15.20 | 16.72 |
|                 | 12H  | 14.30            | 14.55 | 15.43 | 15.67 | 17.22 | 13.89          | 14.14 | 15.02 | 15.26 | 16.81 |
| 12H             | 4H   | 13.35            | 13.72 | 14.47 | 14.83 | 16.33 | 12.98          | 13.35 | 14.10 | 14.46 | 15.96 |
|                 | 6H   | 14.00            | 14.29 | 15.13 | 15.41 | 16.93 | 13.63          | 13.92 | 14.76 | 15.04 | 16.55 |
|                 | 8H   | 14.23            | 14.48 | 15.36 | 15.60 | 17.15 | 13.84          | 14.10 | 14.97 | 15.22 | 16.77 |