

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: P925481

Luminaire Tested: DFN2DIP-SQ3F0-050D060US950-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P925481  
REPORT IS A COMBINATION OF REPORTS P901419 AND P898289  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-050D060US950-FLLONL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

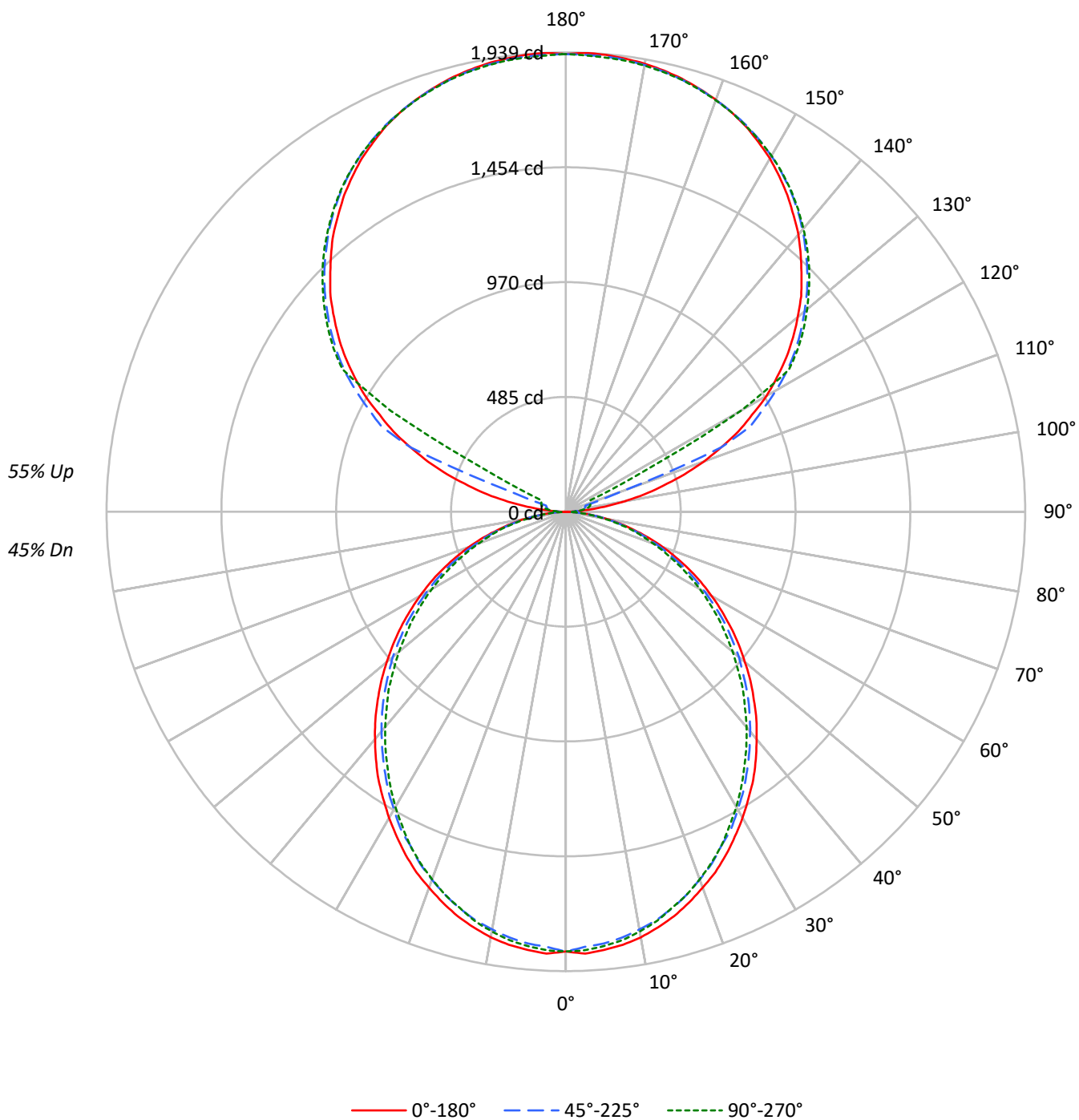
Lumens per Lamp: N/A  
Luminaire Lumens: 10389.0 lumens  
Efficiency: N/A  
Efficacy: 119.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 87.3  
Input Voltage (V): 120  
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



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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   | 106 | 106 | 106 | 106 | 97 | 97 | 97 | 97 | 81 | 81 | 81 | 66 | 66 | 66 | 52 | 52 | 52 |
| 1   | 97  | 92  | 89  | 85  | 89 | 85 | 82 | 79 | 71 | 68 | 66 | 58 | 56 | 55 | 46 | 45 | 44 |
| 2   | 88  | 81  | 75  | 70  | 81 | 74 | 69 | 65 | 62 | 58 | 55 | 51 | 48 | 46 | 40 | 39 | 37 |
| 3   | 80  | 71  | 64  | 58  | 73 | 65 | 59 | 54 | 55 | 50 | 46 | 45 | 42 | 39 | 36 | 33 | 31 |
| 4   | 74  | 63  | 55  | 49  | 67 | 58 | 51 | 46 | 49 | 43 | 39 | 40 | 36 | 33 | 32 | 29 | 27 |
| 5   | 67  | 56  | 48  | 42  | 62 | 52 | 45 | 39 | 43 | 38 | 34 | 36 | 32 | 29 | 29 | 26 | 24 |
| 6   | 62  | 50  | 42  | 36  | 57 | 46 | 39 | 34 | 39 | 34 | 30 | 32 | 28 | 25 | 26 | 23 | 21 |
| 7   | 57  | 45  | 37  | 32  | 53 | 42 | 35 | 30 | 35 | 30 | 26 | 30 | 25 | 22 | 24 | 21 | 18 |
| 8   | 53  | 41  | 33  | 28  | 49 | 38 | 31 | 26 | 32 | 27 | 23 | 27 | 23 | 20 | 22 | 19 | 17 |
| 9   | 50  | 37  | 30  | 25  | 45 | 35 | 28 | 24 | 30 | 24 | 21 | 25 | 21 | 18 | 20 | 17 | 15 |
| 10  | 46  | 34  | 27  | 22  | 42 | 32 | 25 | 21 | 27 | 22 | 19 | 23 | 19 | 16 | 19 | 16 | 14 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2127 | 2127 | 2127 |
| 5°  | 2129 | 2096 | 2111 |
| 10° | 2110 | 2066 | 2081 |
| 15° | 2078 | 2030 | 2036 |
| 20° | 2034 | 1982 | 1989 |
| 25° | 1991 | 1924 | 1936 |
| 30° | 1938 | 1870 | 1868 |
| 35° | 1887 | 1806 | 1796 |
| 40° | 1824 | 1742 | 1728 |
| 45° | 1762 | 1678 | 1658 |
| 50° | 1693 | 1610 | 1577 |
| 55° | 1622 | 1532 | 1502 |
| 60° | 1541 | 1439 | 1417 |
| 65° | 1452 | 1343 | 1316 |
| 70° | 1339 | 1226 | 1208 |
| 75° | 1183 | 1085 | 1106 |
| 80° | 994  | 905  | 914  |
| 85° | 700  | 599  | 598  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1762 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 174.7   | 1.7       |
| 10°-20°   | 491.5   | 4.7       |
| 20°-30°   | 722.3   | 7.0       |
| 30°-40°   | 838.9   | 8.1       |
| 40°-50°   | 837.9   | 8.1       |
| 50°-60°   | 730.6   | 7.0       |
| 60°-70°   | 540.1   | 5.2       |
| 70°-80°   | 305.6   | 2.9       |
| 80°-90°   | 84.0    | 0.8       |
| 90°-100°  | 63.7    | 0.6       |
| 100°-110° | 237.5   | 2.3       |
| 110°-120° | 629.8   | 6.1       |
| 120°-130° | 1044.5  | 10.1      |
| 130°-140° | 1109.5  | 10.7      |
| 140°-150° | 1031.2  | 9.9       |
| 150°-160° | 829.1   | 8.0       |
| 160°-170° | 534.2   | 5.1       |
| 170°-180° | 183.9   | 1.8       |
| 0°-30°    | 1388.5  | 13.4      |
| 0°-40°    | 2227.5  | 21.4      |
| 0°-60°    | 3796.0  | 36.5      |
| 0°-90°    | 4725.7  | 45.5      |
| 90°-120°  | 930.9   | 9.0       |
| 90°-150°  | 4116.2  | 39.6      |
| 90°-180°  | 5663.0  | 54.5      |
| 0°-180°   | 10389.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1856 | 1856  | 1856 | 1856  | 1856 |      |
| 5°   | 1856 | 1849  | 1829 | 1844  | 1840 | 176  |
| 15°  | 1767 | 1756  | 1733 | 1740  | 1731 | 498  |
| 25°  | 1599 | 1585  | 1554 | 1558  | 1554 | 736  |
| 35°  | 1380 | 1362  | 1333 | 1322  | 1314 | 862  |
| 45°  | 1123 | 1110  | 1083 | 1064  | 1057 | 866  |
| 55°  | 850  | 839   | 817  | 796   | 787  | 760  |
| 65°  | 573  | 562   | 544  | 528   | 519  | 567  |
| 75°  | 300  | 296   | 287  | 277   | 280  | 320  |
| 85°  | 73   | 71    | 70   | 64    | 62   | 82   |
| 90°  | 1    | 17    | 28   | 35    | 38   | 10   |
| 95°  | 91   | 45    | 54   | 62    | 60   | 108  |
| 105° | 425  | 467   | 85   | 101   | 106  | 454  |
| 115° | 804  | 828   | 862  | 215   | 115  | 791  |
| 125° | 1136 | 1155  | 1181 | 1191  | 1195 | 1014 |
| 135° | 1406 | 1429  | 1441 | 1455  | 1452 | 1086 |
| 145° | 1631 | 1630  | 1654 | 1663  | 1656 | 1020 |
| 155° | 1796 | 1784  | 1800 | 1809  | 1798 | 828  |
| 165° | 1893 | 1884  | 1888 | 1898  | 1888 | 535  |
| 175° | 1936 | 1926  | 1929 | 1939  | 1925 | 184  |
| 180° | 1932 | 1932  | 1932 | 1932  | 1932 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1856.0 | 1856.0 | 1856.0 | 1856.0 | 1856.0 |
| 2.5°   | 1866.8 | 1857.9 | 1838.3 | 1856.0 | 1852.7 |
| 5°     | 1856.0 | 1849.0 | 1829.3 | 1843.5 | 1840.2 |
| 7.5°   | 1843.5 | 1832.9 | 1813.3 | 1827.7 | 1824.0 |
| 10°    | 1824.0 | 1811.6 | 1790.2 | 1804.3 | 1799.1 |
| 12.5°  | 1797.1 | 1786.6 | 1765.2 | 1774.1 | 1770.4 |
| 15°    | 1766.8 | 1756.2 | 1732.9 | 1740.2 | 1731.2 |
| 17.5°  | 1729.3 | 1718.7 | 1695.4 | 1704.3 | 1695.4 |
| 20°    | 1688.3 | 1677.7 | 1652.7 | 1658.0 | 1651.0 |
| 22.5°  | 1647.4 | 1631.2 | 1608.0 | 1608.0 | 1604.3 |
| 25°    | 1599.1 | 1584.9 | 1554.5 | 1558.0 | 1554.5 |
| 27.5°  | 1545.5 | 1533.0 | 1509.9 | 1504.6 | 1495.7 |
| 30°    | 1492.1 | 1477.7 | 1451.0 | 1445.7 | 1438.5 |
| 32.5°  | 1434.9 | 1424.3 | 1395.7 | 1384.9 | 1377.8 |
| 35°    | 1379.6 | 1361.8 | 1333.2 | 1322.4 | 1313.6 |
| 37.5°  | 1317.1 | 1301.1 | 1272.4 | 1259.9 | 1251.1 |
| 40°    | 1253.0 | 1238.6 | 1210.0 | 1194.0 | 1186.9 |
| 42.5°  | 1190.5 | 1176.1 | 1147.7 | 1129.6 | 1119.0 |
| 45°    | 1122.7 | 1110.2 | 1083.3 | 1063.8 | 1056.6 |
| 47.5°  | 1056.6 | 1044.1 | 1015.5 | 995.8  | 985.2  |
| 50°    | 986.9  | 978.0  | 953.0  | 928.1  | 919.1  |
| 52.5°  | 919.1  | 906.6  | 883.5  | 863.8  | 851.3  |
| 55°    | 849.6  | 838.9  | 817.4  | 796.0  | 787.1  |
| 57.5°  | 779.9  | 771.0  | 747.7  | 726.4  | 719.1  |
| 60°    | 710.3  | 703.3  | 678.3  | 658.5  | 653.3  |
| 62.5°  | 642.5  | 630.0  | 612.2  | 594.3  | 587.2  |
| 65°    | 573.0  | 562.2  | 544.4  | 528.3  | 519.4  |
| 67.5°  | 501.6  | 492.6  | 476.6  | 464.1  | 456.9  |
| 70°    | 435.5  | 428.3  | 412.2  | 399.7  | 392.8  |
| 72.5°  | 367.8  | 360.5  | 351.6  | 339.1  | 333.8  |
| 75°    | 299.7  | 296.3  | 287.2  | 276.7  | 280.3  |
| 77.5°  | 239.2  | 231.9  | 228.4  | 223.0  | 217.8  |
| 80°    | 178.6  | 176.7  | 173.1  | 167.8  | 164.2  |
| 82.5°  | 121.3  | 121.3  | 119.6  | 112.5  | 112.5  |
| 85°    | 73.1   | 71.4   | 69.6   | 64.2   | 62.5   |
| 87.5°  | 32.1   | 28.6   | 25.0   | 19.7   | 17.8   |
| 90°    | 1.3    | 16.8   | 27.9   | 35.0   | 37.7   |
| 92.5°  | 35.0   | 29.4   | 33.5   | 36.3   | 37.7   |
| 95°    | 90.8   | 44.6   | 54.5   | 61.6   | 60.1   |
| 97.5°  | 163.5  | 48.9   | 71.2   | 75.6   | 76.9   |
| 100°   | 247.5  | 55.9   | 79.7   | 90.8   | 93.6   |
| 102.5° | 339.6  | 337.0  | 82.5   | 97.8   | 102.1  |
| 105°   | 424.9  | 466.9  | 85.3   | 100.6  | 106.3  |
| 107.5° | 524.2  | 559.0  | 88.1   | 103.4  | 109.0  |
| 110°   | 619.3  | 648.5  | 244.7  | 104.9  | 110.4  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 708.7  | 733.8  | 710.1  | 107.5  | 111.9  |
| 115°   | 803.7  | 827.5  | 862.5  | 215.3  | 114.7  |
| 117.5° | 886.2  | 914.1  | 938.0  | 738.0  | 371.8  |
| 120°   | 978.5  | 999.4  | 1024.7 | 1041.4 | 852.7  |
| 122.5° | 1056.7 | 1079.1 | 1107.1 | 1115.4 | 1116.9 |
| 125°   | 1136.4 | 1154.6 | 1181.1 | 1191.0 | 1195.1 |
| 127.5° | 1209.1 | 1228.7 | 1249.7 | 1263.7 | 1265.0 |
| 130°   | 1277.6 | 1300.0 | 1315.3 | 1330.7 | 1329.4 |
| 132.5° | 1347.5 | 1365.7 | 1381.0 | 1393.6 | 1392.3 |
| 135°   | 1406.3 | 1428.7 | 1441.1 | 1455.2 | 1452.4 |
| 137.5° | 1467.6 | 1484.4 | 1498.5 | 1512.5 | 1508.4 |
| 140°   | 1527.7 | 1539.1 | 1554.4 | 1566.9 | 1560.0 |
| 142.5° | 1578.2 | 1588.0 | 1606.2 | 1617.2 | 1610.3 |
| 145°   | 1631.3 | 1629.8 | 1653.6 | 1663.4 | 1656.4 |
| 147.5° | 1677.3 | 1673.1 | 1696.9 | 1703.8 | 1698.4 |
| 150°   | 1722.2 | 1712.3 | 1734.8 | 1743.1 | 1736.1 |
| 152.5° | 1759.8 | 1748.7 | 1769.6 | 1778.1 | 1768.2 |
| 155°   | 1796.2 | 1783.7 | 1800.5 | 1808.8 | 1797.6 |
| 157.5° | 1825.6 | 1814.4 | 1827.0 | 1836.8 | 1825.6 |
| 160°   | 1850.8 | 1842.3 | 1850.8 | 1859.1 | 1849.3 |
| 162.5° | 1873.0 | 1864.7 | 1871.7 | 1881.5 | 1868.9 |
| 165°   | 1892.6 | 1884.3 | 1888.4 | 1898.3 | 1888.4 |
| 167.5° | 1908.0 | 1899.6 | 1903.9 | 1913.7 | 1901.0 |
| 170°   | 1920.7 | 1912.2 | 1915.1 | 1924.8 | 1912.2 |
| 172.5° | 1929.0 | 1920.7 | 1923.5 | 1933.3 | 1920.7 |
| 175°   | 1936.0 | 1926.1 | 1929.0 | 1938.7 | 1924.8 |
| 177.5° | 1938.7 | 1929.0 | 1930.4 | 1940.2 | 1927.7 |
| 180°   | 1931.8 | 1931.8 | 1931.8 | 1931.8 | 1931.8 |

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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 | 9.43             | 10.25 | 10.42 | 11.26 | 12.59 | 8.98           | 9.81  | 9.98  | 10.81 | 12.15 |
|                 | 3H   | 11.08            | 11.82 | 12.09 | 12.83 | 14.19 | 10.59          | 11.33 | 11.60 | 12.34 | 13.70 |
|                 | 4H   | 11.66            | 12.36 | 12.68 | 13.38 | 14.74 | 11.17          | 11.87 | 12.19 | 12.89 | 14.25 |
|                 | 6H   | 12.06            | 12.70 | 13.09 | 13.72 | 15.10 | 11.56          | 12.20 | 12.59 | 13.22 | 14.60 |
|                 | 8H   | 12.16            | 12.77 | 13.19 | 13.81 | 15.18 | 11.66          | 12.27 | 12.69 | 13.31 | 14.68 |
|                 | 12H  | 12.20            | 12.79 | 13.24 | 13.82 | 15.22 | 11.70          | 12.28 | 12.73 | 13.31 | 14.71 |
| 4H              | 2H   | 9.88             | 10.58 | 10.90 | 11.60 | 12.96 | 9.52           | 10.22 | 10.55 | 11.24 | 12.60 |
|                 | 3H   | 11.74            | 12.32 | 12.77 | 13.37 | 14.74 | 11.33          | 11.91 | 12.36 | 12.96 | 14.33 |
|                 | 4H   | 12.45            | 12.98 | 13.49 | 14.02 | 15.42 | 12.02          | 12.56 | 13.06 | 13.59 | 14.99 |
|                 | 6H   | 12.95            | 13.41 | 14.00 | 14.47 | 15.87 | 12.52          | 12.98 | 13.57 | 14.04 | 15.44 |
|                 | 8H   | 13.10            | 13.53 | 14.15 | 14.58 | 15.99 | 12.66          | 13.09 | 13.71 | 14.15 | 15.56 |
|                 | 12H  | 13.17            | 13.56 | 14.24 | 14.63 | 16.04 | 12.72          | 13.11 | 13.79 | 14.18 | 15.59 |
| 8H              | 4H   | 12.63            | 13.06 | 13.69 | 14.12 | 15.53 | 12.26          | 12.69 | 13.31 | 13.74 | 15.15 |
|                 | 6H   | 13.26            | 13.61 | 14.33 | 14.71 | 16.12 | 12.87          | 13.23 | 13.95 | 14.33 | 15.73 |
|                 | 8H   | 13.47            | 13.79 | 14.56 | 14.87 | 16.29 | 13.08          | 13.39 | 14.16 | 14.47 | 15.90 |
|                 | 12H  | 13.60            | 13.88 | 14.69 | 14.95 | 16.42 | 13.19          | 13.47 | 14.28 | 14.54 | 16.01 |
| 12H             | 4H   | 12.62            | 13.00 | 13.69 | 14.07 | 15.49 | 12.25          | 12.64 | 13.32 | 13.71 | 15.12 |
|                 | 6H   | 13.29            | 13.60 | 14.37 | 14.68 | 16.10 | 12.91          | 13.23 | 14.00 | 14.31 | 15.73 |
|                 | 8H   | 13.52            | 13.80 | 14.61 | 14.87 | 16.34 | 13.14          | 13.42 | 14.23 | 14.49 | 15.96 |