

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: P914609

Luminaire Tested: DFN2DIP-SQ3F0-060D070US927-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P914609  
REPORT IS A COMBINATION OF REPORTS P901439 AND P898289  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-060D070US927-FLLONL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

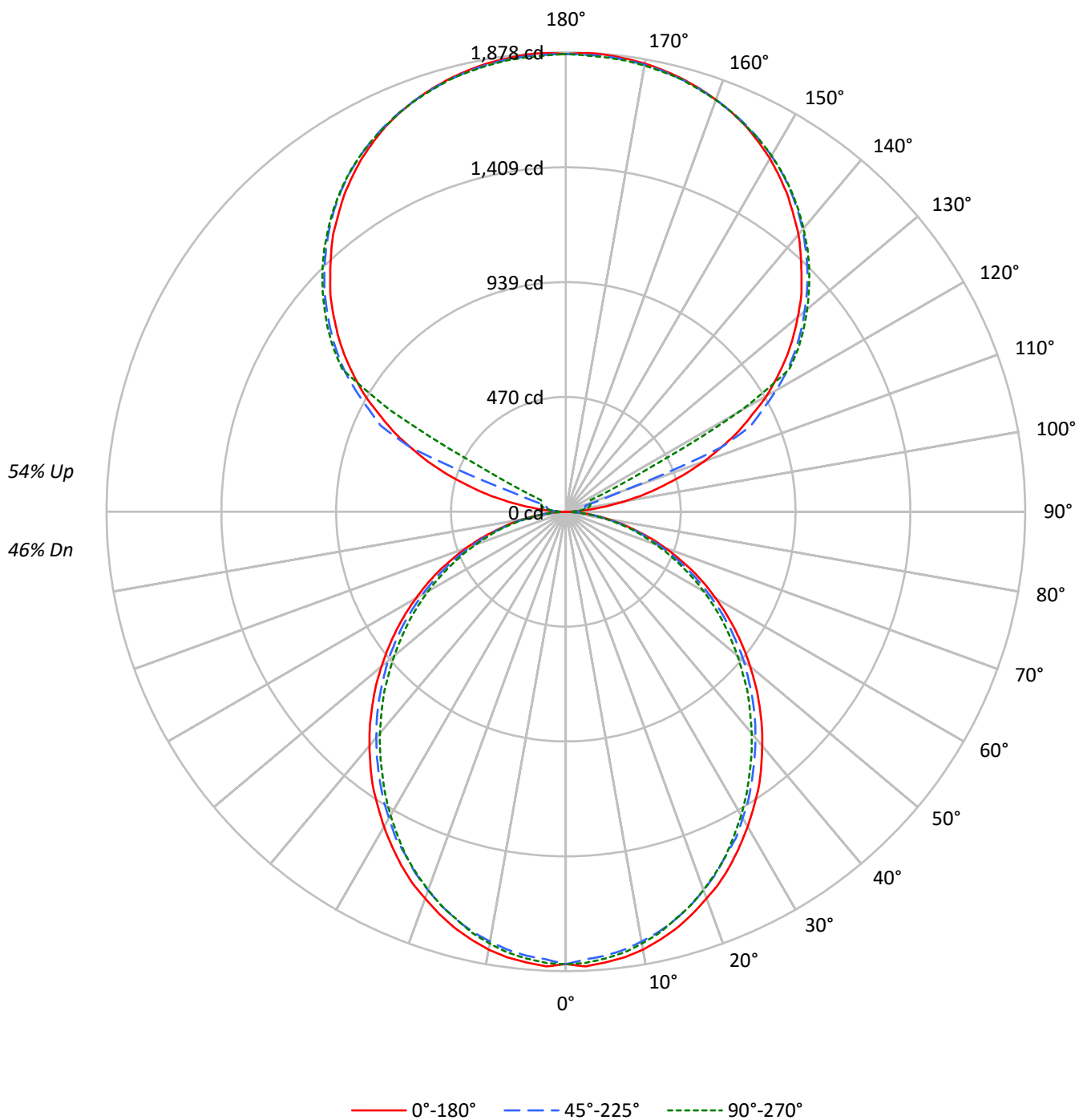
Lumens per Lamp: N/A  
Luminaire Lumens: 10195.4 lumens  
Efficiency: N/A  
Efficacy: 96.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 105.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9971  
Total Harmonic Distortion (THDi): 0.049  
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 | 98 | 98 | 98 | 98 | 81 | 81 | 81 | 66 | 66 | 66 | 53 | 53 | 53 |
| 1   | 97  | 93  | 89  | 85  | 89 | 85 | 82 | 79 | 71 | 69 | 67 | 58 | 57 | 55 | 46 | 45 | 44 |
| 2   | 88  | 81  | 75  | 70  | 81 | 74 | 69 | 65 | 62 | 59 | 55 | 51 | 48 | 46 | 41 | 39 | 37 |
| 3   | 81  | 71  | 64  | 58  | 74 | 66 | 59 | 54 | 55 | 50 | 46 | 45 | 42 | 39 | 36 | 34 | 32 |
| 4   | 74  | 63  | 55  | 49  | 67 | 58 | 51 | 46 | 49 | 44 | 40 | 40 | 37 | 33 | 32 | 30 | 27 |
| 5   | 68  | 56  | 48  | 42  | 62 | 52 | 45 | 39 | 44 | 38 | 34 | 36 | 32 | 29 | 29 | 26 | 24 |
| 6   | 62  | 50  | 42  | 36  | 57 | 46 | 39 | 34 | 39 | 34 | 30 | 33 | 29 | 25 | 26 | 23 | 21 |
| 7   | 58  | 45  | 37  | 32  | 53 | 42 | 35 | 30 | 36 | 30 | 26 | 30 | 26 | 22 | 24 | 21 | 19 |
| 8   | 53  | 41  | 33  | 28  | 49 | 38 | 31 | 26 | 33 | 27 | 23 | 27 | 23 | 20 | 22 | 19 | 17 |
| 9   | 50  | 38  | 30  | 25  | 46 | 35 | 28 | 24 | 30 | 24 | 21 | 25 | 21 | 18 | 21 | 17 | 15 |
| 10  | 46  | 34  | 27  | 22  | 43 | 32 | 26 | 21 | 27 | 22 | 19 | 23 | 19 | 16 | 19 | 16 | 14 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2119 | 2119 | 2119 |
| 5°  | 2121 | 2088 | 2103 |
| 10° | 2103 | 2059 | 2074 |
| 15° | 2070 | 2023 | 2029 |
| 20° | 2027 | 1975 | 1982 |
| 25° | 1984 | 1917 | 1929 |
| 30° | 1931 | 1863 | 1861 |
| 35° | 1880 | 1800 | 1790 |
| 40° | 1818 | 1736 | 1722 |
| 45° | 1755 | 1672 | 1652 |
| 50° | 1687 | 1605 | 1571 |
| 55° | 1616 | 1526 | 1497 |
| 60° | 1535 | 1434 | 1412 |
| 65° | 1447 | 1338 | 1311 |
| 70° | 1334 | 1221 | 1203 |
| 75° | 1179 | 1081 | 1102 |
| 80° | 991  | 902  | 911  |
| 85° | 697  | 597  | 597  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1755 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 174.1   | 1.7       |
| 10°-20°   | 489.8   | 4.8       |
| 20°-30°   | 719.8   | 7.1       |
| 30°-40°   | 836.0   | 8.2       |
| 40°-50°   | 834.9   | 8.2       |
| 50°-60°   | 728.0   | 7.1       |
| 60°-70°   | 538.2   | 5.3       |
| 70°-80°   | 304.5   | 3.0       |
| 80°-90°   | 83.7    | 0.8       |
| 90°-100°  | 61.7    | 0.6       |
| 100°-110° | 230.0   | 2.3       |
| 110°-120° | 610.1   | 6.0       |
| 120°-130° | 1011.9  | 9.9       |
| 130°-140° | 1074.9  | 10.5      |
| 140°-150° | 999.0   | 9.8       |
| 150°-160° | 803.2   | 7.9       |
| 160°-170° | 517.5   | 5.1       |
| 170°-180° | 178.1   | 1.7       |
| 0°-30°    | 1383.6  | 13.6      |
| 0°-40°    | 2219.6  | 21.8      |
| 0°-60°    | 3782.5  | 37.1      |
| 0°-90°    | 4708.8  | 46.2      |
| 90°-120°  | 901.9   | 8.8       |
| 90°-150°  | 3987.7  | 39.1      |
| 90°-180°  | 5487.0  | 53.8      |
| 0°-180°   | 10195.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1849 | 1849  | 1849 | 1849  | 1849 |      |
| 5°   | 1849 | 1842  | 1823 | 1837  | 1834 | 176  |
| 15°  | 1760 | 1750  | 1727 | 1734  | 1725 | 496  |
| 25°  | 1593 | 1579  | 1549 | 1552  | 1549 | 733  |
| 35°  | 1375 | 1357  | 1328 | 1318  | 1309 | 858  |
| 45°  | 1119 | 1106  | 1079 | 1060  | 1053 | 863  |
| 55°  | 847  | 836   | 814  | 793   | 784  | 757  |
| 65°  | 571  | 560   | 542  | 526   | 518  | 564  |
| 75°  | 299  | 295   | 286  | 276   | 279  | 319  |
| 85°  | 73   | 71    | 69   | 64    | 62   | 81   |
| 90°  | 1    | 16    | 27   | 34    | 36   | 9    |
| 95°  | 88   | 43    | 53   | 60    | 58   | 104  |
| 105° | 412  | 452   | 83   | 97    | 103  | 440  |
| 115° | 779  | 802   | 836  | 209   | 111  | 767  |
| 125° | 1101 | 1119  | 1144 | 1154  | 1158 | 982  |
| 135° | 1362 | 1384  | 1396 | 1410  | 1407 | 1052 |
| 145° | 1580 | 1579  | 1602 | 1612  | 1605 | 988  |
| 155° | 1740 | 1728  | 1744 | 1752  | 1742 | 802  |
| 165° | 1834 | 1826  | 1830 | 1839  | 1830 | 518  |
| 175° | 1876 | 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°     | 1849.4 | 1849.4 | 1849.4 | 1849.4 | 1849.4 |
| 2.5°   | 1860.2 | 1851.3 | 1831.7 | 1849.4 | 1846.0 |
| 5°     | 1849.4 | 1842.5 | 1822.8 | 1837.0 | 1833.6 |
| 7.5°   | 1837.0 | 1826.5 | 1806.8 | 1821.1 | 1817.6 |
| 10°    | 1817.6 | 1805.1 | 1783.8 | 1797.9 | 1792.6 |
| 12.5°  | 1790.8 | 1780.2 | 1758.9 | 1767.8 | 1764.2 |
| 15°    | 1760.5 | 1750.0 | 1726.8 | 1734.0 | 1725.1 |
| 17.5°  | 1723.2 | 1712.7 | 1689.5 | 1698.3 | 1689.5 |
| 20°    | 1682.3 | 1671.7 | 1646.8 | 1652.1 | 1645.1 |
| 22.5°  | 1641.6 | 1625.5 | 1602.3 | 1602.3 | 1598.7 |
| 25°    | 1593.4 | 1579.3 | 1549.0 | 1552.4 | 1549.0 |
| 27.5°  | 1540.0 | 1527.6 | 1504.5 | 1499.3 | 1490.4 |
| 30°    | 1486.8 | 1472.4 | 1445.9 | 1440.6 | 1433.4 |
| 32.5°  | 1429.8 | 1419.3 | 1390.8 | 1380.0 | 1372.8 |
| 35°    | 1374.8 | 1357.0 | 1328.5 | 1317.7 | 1308.8 |
| 37.5°  | 1312.5 | 1296.4 | 1268.0 | 1255.4 | 1246.6 |
| 40°    | 1248.5 | 1234.1 | 1205.7 | 1189.9 | 1182.6 |
| 42.5°  | 1186.2 | 1171.9 | 1143.6 | 1125.7 | 1115.1 |
| 45°    | 1118.7 | 1106.2 | 1079.4 | 1060.0 | 1052.8 |
| 47.5°  | 1052.8 | 1040.4 | 1011.9 | 992.3  | 981.7  |
| 50°    | 983.4  | 974.5  | 949.7  | 924.7  | 915.8  |
| 52.5°  | 915.8  | 903.4  | 880.4  | 860.8  | 848.3  |
| 55°    | 846.6  | 835.8  | 814.5  | 793.2  | 784.3  |
| 57.5°  | 777.2  | 768.3  | 745.1  | 723.8  | 716.6  |
| 60°    | 707.7  | 700.8  | 675.9  | 656.2  | 650.9  |
| 62.5°  | 640.2  | 627.7  | 610.0  | 592.2  | 585.1  |
| 65°    | 570.9  | 560.2  | 542.5  | 526.4  | 517.5  |
| 67.5°  | 499.8  | 490.8  | 474.9  | 462.5  | 455.3  |
| 70°    | 434.0  | 426.8  | 410.7  | 398.3  | 391.3  |
| 72.5°  | 366.4  | 359.3  | 350.4  | 337.9  | 332.6  |
| 75°    | 298.7  | 295.3  | 286.2  | 275.7  | 279.2  |
| 77.5°  | 238.3  | 231.2  | 227.5  | 222.3  | 217.0  |
| 80°    | 177.9  | 176.0  | 172.5  | 167.2  | 163.6  |
| 82.5°  | 121.0  | 121.0  | 119.2  | 112.1  | 112.1  |
| 85°    | 72.8   | 71.1   | 69.4   | 63.9   | 62.3   |
| 87.5°  | 32.1   | 28.5   | 24.9   | 19.6   | 17.7   |
| 90°    | 1.3    | 16.2   | 27.0   | 33.9   | 36.5   |
| 92.5°  | 33.9   | 28.4   | 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   | 74.5   |
| 100°   | 239.8  | 54.2   | 77.2   | 87.9   | 90.7   |
| 102.5° | 329.0  | 326.5  | 79.9   | 94.7   | 98.9   |
| 105°   | 411.7  | 452.3  | 82.6   | 97.4   | 102.9  |
| 107.5° | 507.8  | 541.6  | 85.4   | 100.2  | 105.7  |
| 110°   | 600.0  | 628.3  | 237.0  | 101.6  | 106.9  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 686.7  | 710.9  | 687.9  | 104.2  | 108.4  |
| 115°   | 778.6  | 801.6  | 835.5  | 208.6  | 111.1  |
| 117.5° | 858.6  | 885.6  | 908.7  | 714.9  | 360.2  |
| 120°   | 947.9  | 968.2  | 992.7  | 1008.9 | 826.1  |
| 122.5° | 1023.7 | 1045.4 | 1072.6 | 1080.6 | 1082.0 |
| 125°   | 1100.9 | 1118.6 | 1144.3 | 1153.8 | 1157.8 |
| 127.5° | 1171.3 | 1190.3 | 1210.7 | 1224.2 | 1225.5 |
| 130°   | 1237.7 | 1259.4 | 1274.2 | 1289.2 | 1287.9 |
| 132.5° | 1305.4 | 1323.1 | 1337.9 | 1350.1 | 1348.8 |
| 135°   | 1362.3 | 1384.0 | 1396.1 | 1409.8 | 1407.1 |
| 137.5° | 1421.8 | 1438.1 | 1451.8 | 1465.3 | 1461.3 |
| 140°   | 1480.0 | 1491.0 | 1505.8 | 1518.0 | 1511.2 |
| 142.5° | 1528.9 | 1538.4 | 1555.9 | 1566.7 | 1560.0 |
| 145°   | 1580.4 | 1579.0 | 1601.9 | 1611.5 | 1604.7 |
| 147.5° | 1624.9 | 1621.0 | 1643.9 | 1650.7 | 1645.4 |
| 150°   | 1668.3 | 1658.9 | 1680.6 | 1688.6 | 1681.9 |
| 152.5° | 1704.9 | 1694.1 | 1714.4 | 1722.5 | 1713.1 |
| 155°   | 1740.1 | 1728.0 | 1744.2 | 1752.3 | 1741.5 |
| 157.5° | 1768.5 | 1757.8 | 1770.0 | 1779.5 | 1768.5 |
| 160°   | 1793.0 | 1784.8 | 1793.0 | 1801.0 | 1791.5 |
| 162.5° | 1814.6 | 1806.5 | 1813.2 | 1822.7 | 1810.5 |
| 165°   | 1833.5 | 1825.5 | 1829.5 | 1839.0 | 1829.5 |
| 167.5° | 1848.5 | 1840.2 | 1844.4 | 1853.9 | 1841.7 |
| 170°   | 1860.7 | 1852.5 | 1855.2 | 1864.7 | 1852.5 |
| 172.5° | 1868.8 | 1860.7 | 1863.4 | 1872.9 | 1860.7 |
| 175°   | 1875.5 | 1866.0 | 1868.8 | 1878.2 | 1864.7 |
| 177.5° | 1878.2 | 1868.8 | 1870.2 | 1879.7 | 1867.4 |
| 180°   | 1871.4 | 1871.4 | 1871.4 | 1871.4 | 1871.4 |

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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 | 9.48             | 10.31 | 10.47 | 11.31 | 12.64 | 9.04           | 9.87  | 10.03 | 10.87 | 12.19 |
|                 | 3H   | 11.14            | 11.88 | 12.14 | 12.89 | 14.24 | 10.65          | 11.39 | 11.65 | 12.40 | 13.75 |
|                 | 4H   | 11.72            | 12.42 | 12.73 | 13.44 | 14.79 | 11.23          | 11.93 | 12.24 | 12.94 | 14.30 |
|                 | 6H   | 12.11            | 12.76 | 13.14 | 13.78 | 15.15 | 11.61          | 12.26 | 12.64 | 13.28 | 14.65 |
|                 | 8H   | 12.22            | 12.83 | 13.25 | 13.87 | 15.23 | 11.72          | 12.33 | 12.74 | 13.37 | 14.73 |
|                 | 12H  | 12.26            | 12.85 | 13.30 | 13.88 | 15.26 | 11.75          | 12.34 | 12.79 | 13.37 | 14.75 |
| 4H              | 2H   | 9.94             | 10.64 | 10.96 | 11.65 | 13.01 | 9.58           | 10.29 | 10.60 | 11.30 | 12.65 |
|                 | 3H   | 11.79            | 12.38 | 12.82 | 13.42 | 14.79 | 11.39          | 11.97 | 12.41 | 13.02 | 14.38 |
|                 | 4H   | 12.50            | 13.04 | 13.54 | 14.08 | 15.46 | 12.08          | 12.62 | 13.11 | 13.65 | 15.04 |
|                 | 6H   | 13.01            | 13.47 | 14.06 | 14.53 | 15.92 | 12.58          | 13.04 | 13.63 | 14.10 | 15.49 |
|                 | 8H   | 13.16            | 13.59 | 14.21 | 14.64 | 16.04 | 12.72          | 13.15 | 13.77 | 14.20 | 15.60 |
|                 | 12H  | 13.23            | 13.62 | 14.29 | 14.68 | 16.09 | 12.78          | 13.17 | 13.84 | 14.23 | 15.64 |
| 8H              | 4H   | 12.69            | 13.13 | 13.74 | 14.18 | 15.58 | 12.32          | 12.75 | 13.36 | 13.80 | 15.20 |
|                 | 6H   | 13.32            | 13.67 | 14.39 | 14.77 | 16.16 | 12.93          | 13.29 | 14.00 | 14.38 | 15.78 |
|                 | 8H   | 13.53            | 13.85 | 14.61 | 14.92 | 16.34 | 13.14          | 13.46 | 14.22 | 14.53 | 15.95 |
|                 | 12H  | 13.66            | 13.94 | 14.74 | 15.01 | 16.47 | 13.25          | 13.53 | 14.33 | 14.60 | 16.06 |
| 12H             | 4H   | 12.68            | 13.07 | 13.74 | 14.13 | 15.54 | 12.31          | 12.70 | 13.37 | 13.76 | 15.17 |
|                 | 6H   | 13.34            | 13.66 | 14.42 | 14.73 | 16.15 | 12.97          | 13.29 | 14.05 | 14.36 | 15.78 |
|                 | 8H   | 13.58            | 13.86 | 14.66 | 14.93 | 16.39 | 13.20          | 13.48 | 14.28 | 14.55 | 16.01 |