

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: P914468

Luminaire Tested: DFN2DIP-SQ2F0-060D070US927-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P914468  
REPORT IS A COMBINATION OF REPORTS P899825 AND P896659  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ2F0-060D070US927-FLLFLL  
Description: 2 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

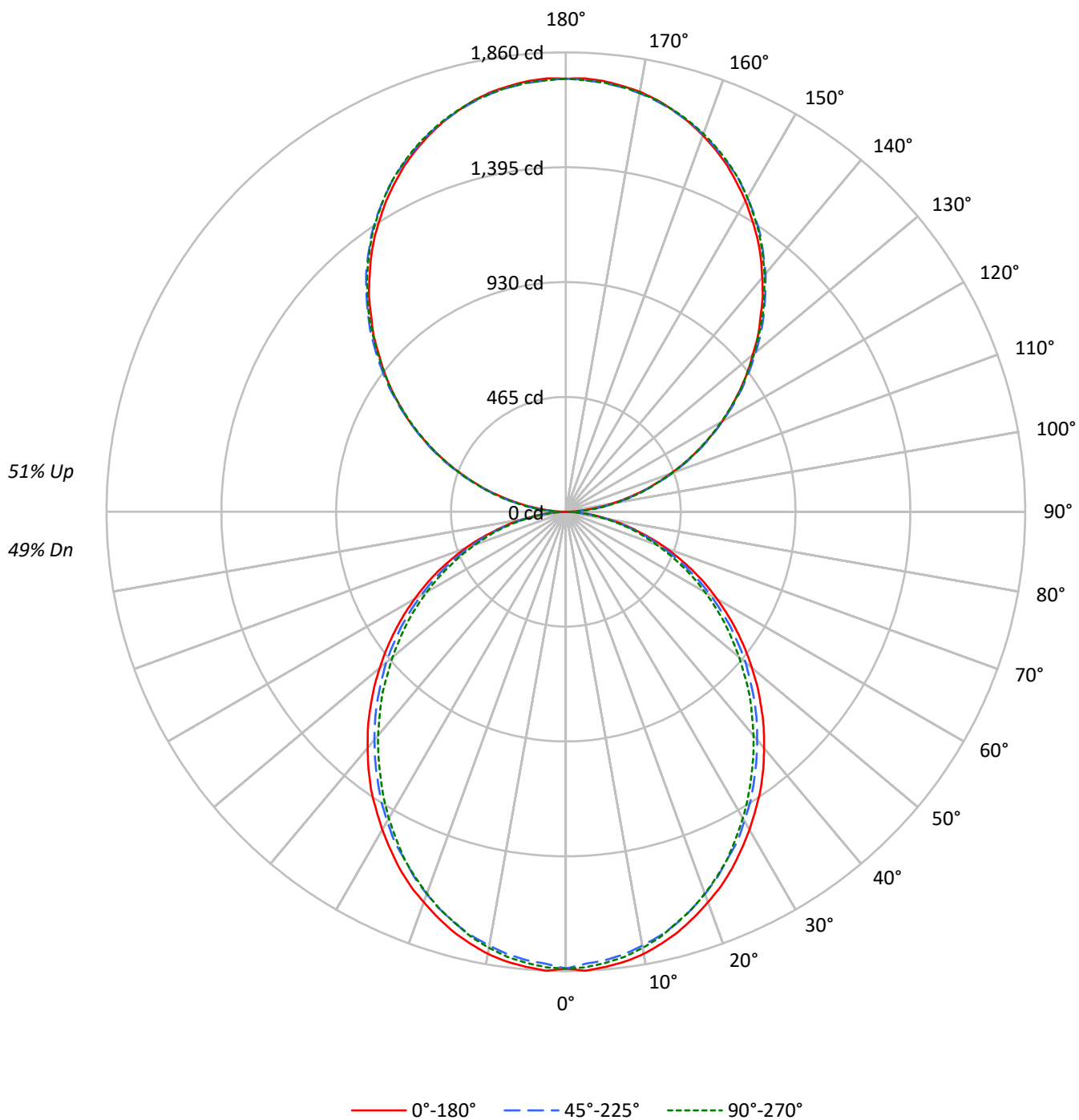
Lumens per Lamp: N/A  
Luminaire Lumens: 9613.1 lumens  
Efficiency: N/A  
Efficacy: 87.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 109.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9781  
Total Harmonic Distortion (THDi): 0.075  
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   | 107 | 107 | 107 | 107 | 98 | 98 | 98 | 98 | 83 | 83 | 83 | 68 | 68 | 68 | 55 | 55 | 55 |
| 1   | 98  | 93  | 89  | 86  | 90 | 86 | 83 | 80 | 73 | 70 | 68 | 60 | 59 | 57 | 49 | 48 | 47 |
| 2   | 89  | 81  | 75  | 70  | 82 | 75 | 70 | 65 | 64 | 60 | 56 | 53 | 50 | 48 | 43 | 41 | 39 |
| 3   | 81  | 72  | 64  | 58  | 74 | 66 | 60 | 55 | 56 | 51 | 47 | 47 | 43 | 40 | 38 | 36 | 33 |
| 4   | 74  | 63  | 55  | 49  | 68 | 59 | 52 | 46 | 50 | 45 | 40 | 42 | 38 | 34 | 34 | 31 | 29 |
| 5   | 68  | 56  | 48  | 42  | 62 | 52 | 45 | 40 | 45 | 39 | 35 | 37 | 33 | 30 | 31 | 28 | 25 |
| 6   | 63  | 51  | 43  | 37  | 58 | 47 | 40 | 35 | 40 | 35 | 30 | 34 | 29 | 26 | 28 | 25 | 22 |
| 7   | 58  | 46  | 38  | 32  | 53 | 42 | 35 | 30 | 36 | 31 | 27 | 31 | 26 | 23 | 25 | 22 | 20 |
| 8   | 54  | 41  | 34  | 28  | 49 | 39 | 32 | 27 | 33 | 28 | 24 | 28 | 24 | 21 | 23 | 20 | 18 |
| 9   | 50  | 38  | 30  | 25  | 46 | 35 | 29 | 24 | 30 | 25 | 21 | 26 | 22 | 19 | 22 | 18 | 16 |
| 10  | 47  | 35  | 28  | 23  | 43 | 32 | 26 | 22 | 28 | 23 | 19 | 24 | 20 | 17 | 20 | 17 | 14 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4067 | 4067 | 4067 |
| 5°  | 4066 | 4001 | 4031 |
| 10° | 4026 | 3939 | 3971 |
| 15° | 3960 | 3865 | 3880 |
| 20° | 3873 | 3766 | 3787 |
| 25° | 3786 | 3649 | 3681 |
| 30° | 3679 | 3541 | 3547 |
| 35° | 3577 | 3413 | 3406 |
| 40° | 3453 | 3285 | 3271 |
| 45° | 3328 | 3155 | 3132 |
| 50° | 3192 | 3019 | 2973 |
| 55° | 3049 | 2861 | 2824 |
| 60° | 2886 | 2676 | 2655 |
| 65° | 2708 | 2482 | 2455 |
| 70° | 2482 | 2246 | 2238 |
| 75° | 2171 | 1963 | 2030 |
| 80° | 1793 | 1603 | 1649 |
| 85° | 1211 | 1012 | 1036 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3328 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 174.1  | 1.8       |
| 10°-20°   | 489.8  | 5.1       |
| 20°-30°   | 719.8  | 7.5       |
| 30°-40°   | 836.0  | 8.7       |
| 40°-50°   | 834.9  | 8.7       |
| 50°-60°   | 728.0  | 7.6       |
| 60°-70°   | 538.2  | 5.6       |
| 70°-80°   | 304.5  | 3.2       |
| 80°-90°   | 85.3   | 0.9       |
| 90°-100°  | 108.5  | 1.1       |
| 100°-110° | 344.8  | 3.6       |
| 110°-120° | 590.1  | 6.1       |
| 120°-130° | 776.1  | 8.1       |
| 130°-140° | 871.1  | 9.1       |
| 140°-150° | 854.2  | 8.9       |
| 150°-160° | 716.6  | 7.5       |
| 160°-170° | 475.2  | 4.9       |
| 170°-180° | 166.1  | 1.7       |
| 0°-30°    | 1383.6 | 14.4      |
| 0°-40°    | 2219.6 | 23.1      |
| 0°-60°    | 3782.5 | 39.3      |
| 0°-90°    | 4710.5 | 49.0      |
| 90°-120°  | 1043.4 | 10.9      |
| 90°-150°  | 3544.8 | 36.9      |
| 90°-180°  | 4903.0 | 51.0      |
| 0°-180°   | 9613.1 | 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°  | 2    | 19    | 52   | 49    | 50   | 9    |
| 95°  | 77   | 92    | 95   | 95    | 92   | 86   |
| 105° | 318  | 322   | 326  | 328   | 328  | 336  |
| 115° | 592  | 601   | 598  | 596   | 592  | 586  |
| 125° | 861  | 874   | 870  | 866   | 864  | 770  |
| 135° | 1114 | 1130  | 1134 | 1132  | 1128 | 861  |
| 145° | 1352 | 1363  | 1372 | 1373  | 1367 | 845  |
| 155° | 1546 | 1551  | 1556 | 1563  | 1558 | 712  |
| 165° | 1682 | 1681  | 1681 | 1691  | 1684 | 475  |
| 175° | 1751 | 1746  | 1743 | 1754  | 1745 | 166  |
| 180° | 1754 | 1754  | 1754 | 1754  | 1754 |      |

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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°    | 1.6    | 19.0   | 51.8   | 48.6   | 50.2   |
| 92.5°  | 32.8   | 44.4   | 46.0   | 47.6   | 47.6   |
| 95°    | 77.2   | 92.0   | 94.7   | 94.7   | 92.0   |
| 97.5°  | 128.5  | 142.2  | 148.1  | 148.1  | 148.1  |
| 100°   | 187.7  | 199.9  | 204.1  | 204.1  | 202.5  |
| 102.5° | 250.1  | 259.0  | 264.9  | 266.5  | 264.9  |
| 105°   | 318.3  | 322.5  | 325.7  | 328.4  | 328.4  |
| 107.5° | 386.0  | 392.3  | 392.3  | 393.4  | 386.0  |
| 110°   | 451.5  | 460.0  | 460.0  | 460.0  | 455.7  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 522.4  | 531.4  | 529.8  | 525.5  | 522.4  |
| 115°   | 592.2  | 600.6  | 598.0  | 596.4  | 592.2  |
| 117.5° | 661.4  | 673.0  | 665.7  | 661.4  | 657.2  |
| 120°   | 731.2  | 742.8  | 731.2  | 731.2  | 726.4  |
| 122.5° | 794.6  | 809.5  | 802.1  | 797.8  | 794.6  |
| 125°   | 861.3  | 874.5  | 870.3  | 865.5  | 864.0  |
| 127.5° | 926.3  | 942.7  | 936.9  | 930.6  | 926.3  |
| 130°   | 987.1  | 1006.1 | 1003.5 | 1000.4 | 994.5  |
| 132.5° | 1055.3 | 1070.2 | 1071.2 | 1063.8 | 1059.5 |
| 135°   | 1114.0 | 1130.4 | 1133.6 | 1131.9 | 1127.7 |
| 137.5° | 1179.6 | 1192.8 | 1195.4 | 1194.4 | 1188.0 |
| 140°   | 1237.2 | 1250.5 | 1257.8 | 1257.8 | 1252.0 |
| 142.5° | 1296.4 | 1309.6 | 1313.8 | 1315.4 | 1309.6 |
| 145°   | 1352.5 | 1363.0 | 1371.5 | 1373.1 | 1367.3 |
| 147.5° | 1402.7 | 1415.9 | 1422.3 | 1424.9 | 1419.1 |
| 150°   | 1454.5 | 1463.5 | 1469.3 | 1474.1 | 1469.3 |
| 152.5° | 1500.5 | 1509.5 | 1516.9 | 1522.7 | 1516.9 |
| 155°   | 1546.5 | 1550.7 | 1555.5 | 1562.9 | 1558.1 |
| 157.5° | 1586.2 | 1589.4 | 1592.0 | 1602.6 | 1595.1 |
| 160°   | 1621.6 | 1624.8 | 1626.3 | 1635.3 | 1629.0 |
| 162.5° | 1654.4 | 1654.4 | 1656.0 | 1666.0 | 1658.6 |
| 165°   | 1682.4 | 1680.8 | 1680.8 | 1691.4 | 1683.9 |
| 167.5° | 1707.8 | 1703.0 | 1703.0 | 1713.6 | 1706.2 |
| 170°   | 1726.8 | 1722.6 | 1721.0 | 1731.5 | 1722.6 |
| 172.5° | 1740.0 | 1735.7 | 1734.2 | 1744.8 | 1735.7 |
| 175°   | 1750.6 | 1746.4 | 1743.2 | 1753.7 | 1744.8 |
| 177.5° | 1756.4 | 1752.1 | 1749.0 | 1758.0 | 1749.0 |
| 180°   | 1753.7 | 1753.7 | 1753.7 | 1753.7 | 1753.7 |

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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 | 11.94            | 12.79 | 12.90 | 13.77 | 15.05 | 11.49          | 12.34 | 12.46 | 13.32 | 14.61 |
|                 | 3H   | 13.58            | 14.34 | 14.55 | 15.33 | 16.64 | 13.09          | 13.85 | 14.06 | 14.84 | 16.15 |
|                 | 4H   | 14.15            | 14.87 | 15.14 | 15.87 | 17.18 | 13.66          | 14.38 | 14.65 | 15.37 | 16.69 |
|                 | 6H   | 14.54            | 15.20 | 15.54 | 16.20 | 17.53 | 14.04          | 14.70 | 15.04 | 15.70 | 17.03 |
|                 | 8H   | 14.63            | 15.27 | 15.64 | 16.28 | 17.61 | 14.13          | 14.77 | 15.14 | 15.78 | 17.11 |
|                 | 12H  | 14.67            | 15.28 | 15.69 | 16.29 | 17.64 | 14.16          | 14.77 | 15.18 | 15.78 | 17.13 |
| 4H              | 2H   | 12.39            | 13.11 | 13.38 | 14.10 | 15.42 | 12.03          | 12.75 | 13.03 | 13.75 | 15.06 |
|                 | 3H   | 14.23            | 14.83 | 15.23 | 15.85 | 17.18 | 13.82          | 14.42 | 14.82 | 15.45 | 16.77 |
|                 | 4H   | 14.93            | 15.48 | 15.94 | 16.49 | 17.85 | 14.50          | 15.05 | 15.52 | 16.07 | 17.42 |
|                 | 6H   | 15.42            | 15.90 | 16.45 | 16.94 | 18.29 | 14.99          | 15.47 | 16.01 | 16.50 | 17.85 |
|                 | 8H   | 15.56            | 16.01 | 16.59 | 17.04 | 18.40 | 15.12          | 15.57 | 16.15 | 16.60 | 17.96 |
|                 | 12H  | 15.63            | 16.03 | 16.67 | 17.07 | 18.44 | 15.18          | 15.58 | 16.22 | 16.63 | 18.00 |
| 8H              | 4H   | 15.11            | 15.55 | 16.14 | 16.59 | 17.95 | 14.73          | 15.18 | 15.76 | 16.21 | 17.57 |
|                 | 6H   | 15.72            | 16.08 | 16.77 | 17.16 | 18.52 | 15.33          | 15.70 | 16.38 | 16.77 | 18.13 |
|                 | 8H   | 15.92            | 16.25 | 16.98 | 17.31 | 18.69 | 15.53          | 15.85 | 16.59 | 16.91 | 18.29 |
|                 | 12H  | 16.04            | 16.33 | 17.10 | 17.38 | 18.80 | 15.63          | 15.92 | 16.69 | 16.97 | 18.39 |
| 12H             | 4H   | 15.09            | 15.49 | 16.14 | 16.54 | 17.91 | 14.72          | 15.12 | 15.77 | 16.17 | 17.54 |
|                 | 6H   | 15.74            | 16.07 | 16.80 | 17.12 | 18.50 | 15.37          | 15.69 | 16.43 | 16.75 | 18.13 |
|                 | 8H   | 15.97            | 16.25 | 17.03 | 17.31 | 18.73 | 15.59          | 15.87 | 16.65 | 16.92 | 18.35 |