

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: P920796

Luminaire Tested: DFN2DIP-TR3F0-050D070US935-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P920796  
REPORT IS A COMBINATION OF REPORTS P900331 AND P897195  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-050D070US935-FLLFLL  
Description: 3 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

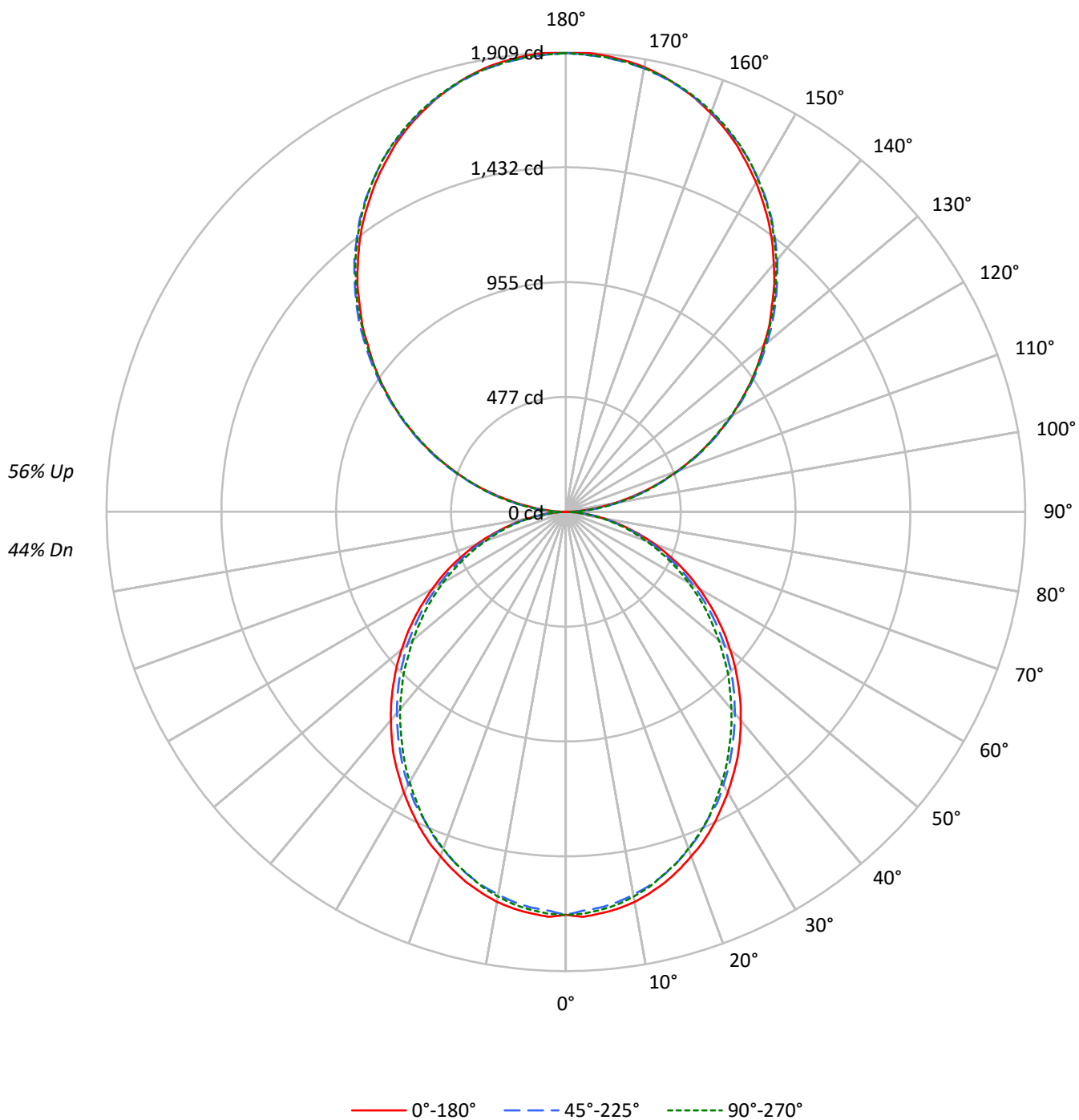
Lumens per Lamp: N/A  
Luminaire Lumens: 9595.9 lumens  
Efficiency: N/A  
Efficacy: 97.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 98.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9933  
Total Harmonic Distortion (THDi): 0.066  
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 |    |    |    |    | 0  |
| RW  | 70  | 50  | 30  | 10  | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 |
| RCR |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 0   | 106 | 106 | 106 | 106 | 97 | 97 | 97 | 97 | 80 | 80 | 80 | 65 | 65 | 65 | 51 | 51 | 51 |    |    | 44 |
| 1   | 97  | 92  | 88  | 85  | 88 | 85 | 81 | 78 | 70 | 68 | 66 | 57 | 56 | 54 | 45 | 44 | 43 |    |    | 37 |
| 2   | 88  | 81  | 74  | 69  | 80 | 74 | 69 | 64 | 62 | 58 | 55 | 50 | 48 | 45 | 40 | 38 | 36 |    |    | 31 |
| 3   | 80  | 71  | 64  | 58  | 73 | 65 | 59 | 54 | 54 | 50 | 46 | 44 | 41 | 38 | 35 | 33 | 31 |    |    | 27 |
| 4   | 73  | 63  | 55  | 49  | 67 | 58 | 51 | 45 | 48 | 43 | 39 | 40 | 36 | 33 | 31 | 29 | 27 |    |    | 23 |
| 5   | 67  | 56  | 48  | 42  | 61 | 51 | 44 | 39 | 43 | 38 | 34 | 35 | 31 | 28 | 28 | 25 | 23 |    |    | 20 |
| 6   | 62  | 50  | 42  | 36  | 57 | 46 | 39 | 34 | 39 | 33 | 29 | 32 | 28 | 25 | 26 | 23 | 20 |    |    | 17 |
| 7   | 57  | 45  | 37  | 32  | 52 | 42 | 35 | 30 | 35 | 30 | 26 | 29 | 25 | 22 | 23 | 20 | 18 |    |    | 15 |
| 8   | 53  | 41  | 33  | 28  | 49 | 38 | 31 | 26 | 32 | 27 | 23 | 27 | 23 | 20 | 22 | 19 | 16 |    |    | 14 |
| 9   | 49  | 37  | 30  | 25  | 45 | 35 | 28 | 23 | 29 | 24 | 20 | 24 | 20 | 18 | 20 | 17 | 15 |    |    | 12 |
| 10  | 46  | 34  | 27  | 22  | 42 | 32 | 25 | 21 | 27 | 22 | 18 | 23 | 19 | 16 | 18 | 15 | 13 |    |    | 11 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2087 | 2087 | 2087 |
| 5°  | 2090 | 2056 | 2071 |
| 10° | 2071 | 2027 | 2041 |
| 15° | 2040 | 1992 | 1996 |
| 20° | 1998 | 1944 | 1950 |
| 25° | 1955 | 1887 | 1897 |
| 30° | 1903 | 1833 | 1829 |
| 35° | 1853 | 1771 | 1758 |
| 40° | 1792 | 1707 | 1691 |
| 45° | 1731 | 1644 | 1621 |
| 50° | 1664 | 1577 | 1541 |
| 55° | 1594 | 1499 | 1467 |
| 60° | 1514 | 1408 | 1382 |
| 65° | 1428 | 1313 | 1281 |
| 70° | 1317 | 1197 | 1174 |
| 75° | 1165 | 1058 | 1072 |
| 80° | 981  | 880  | 881  |
| 85° | 693  | 580  | 569  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1861 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 157.7  | 1.6       |
| 10°-20°   | 443.6  | 4.6       |
| 20°-30°   | 651.9  | 6.8       |
| 30°-40°   | 757.2  | 7.9       |
| 40°-50°   | 756.2  | 7.9       |
| 50°-60°   | 659.4  | 6.9       |
| 60°-70°   | 487.4  | 5.1       |
| 70°-80°   | 275.8  | 2.9       |
| 80°-90°   | 78.2   | 0.8       |
| 90°-100°  | 117.9  | 1.2       |
| 100°-110° | 374.8  | 3.9       |
| 110°-120° | 641.3  | 6.7       |
| 120°-130° | 843.5  | 8.8       |
| 130°-140° | 946.7  | 9.9       |
| 140°-150° | 928.4  | 9.7       |
| 150°-160° | 778.8  | 8.1       |
| 160°-170° | 516.5  | 5.4       |
| 170°-180° | 180.5  | 1.9       |
| 0°-30°    | 1253.2 | 13.1      |
| 0°-40°    | 2010.3 | 20.9      |
| 0°-60°    | 3425.9 | 35.7      |
| 0°-90°    | 4267.4 | 44.5      |
| 90°-120°  | 1134.1 | 11.8      |
| 90°-150°  | 3852.7 | 40.1      |
| 90°-180°  | 5328.0 | 55.5      |
| 0°-180°   | 9595.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1675 | 1675  | 1675 | 1675  | 1675 |      |
| 5°   | 1675 | 1669  | 1651 | 1664  | 1661 | 159  |
| 15°  | 1595 | 1585  | 1564 | 1570  | 1562 | 449  |
| 25°  | 1443 | 1430  | 1403 | 1406  | 1403 | 664  |
| 35°  | 1245 | 1229  | 1203 | 1194  | 1186 | 778  |
| 45°  | 1013 | 1002  | 978  | 960   | 954  | 782  |
| 55°  | 767  | 757   | 738  | 718   | 710  | 686  |
| 65°  | 517  | 507   | 491  | 477   | 469  | 511  |
| 75°  | 270  | 267   | 259  | 250   | 253  | 289  |
| 85°  | 66   | 64    | 63   | 58    | 56   | 74   |
| 90°  | 2    | 21    | 56   | 53    | 55   | 9    |
| 95°  | 84   | 100   | 103  | 103   | 100  | 93   |
| 105° | 346  | 350   | 354  | 357   | 357  | 365  |
| 115° | 644  | 653   | 650  | 648   | 644  | 637  |
| 125° | 936  | 950   | 946  | 941   | 939  | 837  |
| 135° | 1211 | 1229  | 1232 | 1230  | 1226 | 936  |
| 145° | 1470 | 1481  | 1491 | 1492  | 1486 | 918  |
| 155° | 1681 | 1685  | 1691 | 1699  | 1694 | 774  |
| 165° | 1828 | 1827  | 1827 | 1838  | 1830 | 516  |
| 175° | 1903 | 1898  | 1895 | 1906  | 1896 | 181  |
| 180° | 1906 | 1906  | 1906 | 1906  | 1906 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1675.1 | 1675.1 | 1675.1 | 1675.1 | 1675.1 |
| 2.5°   | 1684.8 | 1676.8 | 1659.1 | 1675.1 | 1672.1 |
| 5°     | 1675.1 | 1668.8 | 1651.0 | 1663.8 | 1660.8 |
| 7.5°   | 1663.8 | 1654.2 | 1636.5 | 1649.5 | 1646.2 |
| 10°    | 1646.2 | 1634.9 | 1615.7 | 1628.4 | 1623.7 |
| 12.5°  | 1621.9 | 1612.4 | 1593.1 | 1601.1 | 1597.8 |
| 15°    | 1594.6 | 1585.0 | 1564.0 | 1570.5 | 1562.5 |
| 17.5°  | 1560.7 | 1551.2 | 1530.2 | 1538.2 | 1530.2 |
| 20°    | 1523.7 | 1514.2 | 1491.6 | 1496.3 | 1490.0 |
| 22.5°  | 1486.8 | 1472.2 | 1451.2 | 1451.2 | 1447.9 |
| 25°    | 1443.2 | 1430.4 | 1403.0 | 1406.1 | 1403.0 |
| 27.5°  | 1394.8 | 1383.5 | 1362.7 | 1357.9 | 1349.9 |
| 30°    | 1346.6 | 1333.7 | 1309.6 | 1304.8 | 1298.3 |
| 32.5°  | 1295.0 | 1285.5 | 1259.6 | 1249.9 | 1243.5 |
| 35°    | 1245.1 | 1229.1 | 1203.2 | 1193.5 | 1185.5 |
| 37.5°  | 1188.7 | 1174.2 | 1148.4 | 1137.1 | 1129.1 |
| 40°    | 1130.8 | 1117.8 | 1092.0 | 1077.6 | 1071.2 |
| 42.5°  | 1074.4 | 1061.4 | 1035.8 | 1019.5 | 1010.0 |
| 45°    | 1013.2 | 1001.9 | 977.7  | 960.1  | 953.6  |
| 47.5°  | 953.6  | 942.3  | 916.5  | 898.7  | 889.2  |
| 50°    | 890.7  | 882.7  | 860.1  | 837.6  | 829.5  |
| 52.5°  | 829.5  | 818.2  | 797.4  | 779.6  | 768.4  |
| 55°    | 766.8  | 757.1  | 737.7  | 718.4  | 710.4  |
| 57.5°  | 703.9  | 695.9  | 674.9  | 655.6  | 649.0  |
| 60°    | 641.0  | 634.7  | 612.2  | 594.3  | 589.6  |
| 62.5°  | 579.9  | 568.6  | 552.5  | 536.4  | 529.9  |
| 65°    | 517.1  | 507.4  | 491.3  | 476.8  | 468.7  |
| 67.5°  | 452.7  | 444.5  | 430.2  | 418.9  | 412.3  |
| 70°    | 393.0  | 386.6  | 372.0  | 360.8  | 354.5  |
| 72.5°  | 331.9  | 325.4  | 317.4  | 306.1  | 301.3  |
| 75°    | 270.5  | 267.4  | 259.2  | 249.7  | 253.0  |
| 77.5°  | 215.9  | 209.3  | 206.1  | 201.3  | 196.6  |
| 80°    | 161.2  | 159.5  | 156.2  | 151.4  | 148.2  |
| 82.5°  | 109.5  | 109.5  | 108.0  | 101.5  | 101.5  |
| 85°    | 66.0   | 64.4   | 62.9   | 57.9   | 56.4   |
| 87.5°  | 29.0   | 25.8   | 22.6   | 17.7   | 16.1   |
| 90°    | 1.7    | 20.7   | 56.3   | 52.9   | 54.6   |
| 92.5°  | 35.6   | 48.3   | 50.0   | 51.7   | 51.7   |
| 95°    | 83.9   | 100.0  | 102.9  | 102.9  | 100.0  |
| 97.5°  | 139.7  | 154.5  | 160.9  | 160.9  | 160.9  |
| 100°   | 204.0  | 217.2  | 221.8  | 221.8  | 220.1  |
| 102.5° | 271.8  | 281.5  | 287.9  | 289.6  | 287.9  |
| 105°   | 345.9  | 350.5  | 354.0  | 356.9  | 356.9  |
| 107.5° | 419.5  | 426.4  | 426.4  | 427.6  | 419.5  |
| 110°   | 490.8  | 500.0  | 500.0  | 500.0  | 495.3  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 567.7  | 577.6  | 575.8  | 571.2  | 567.7  |
| 115°   | 643.6  | 652.8  | 650.0  | 648.2  | 643.6  |
| 117.5° | 718.8  | 731.5  | 723.5  | 718.8  | 714.3  |
| 120°   | 794.7  | 807.4  | 794.7  | 794.7  | 789.5  |
| 122.5° | 863.7  | 879.8  | 871.8  | 867.1  | 863.7  |
| 125°   | 936.1  | 950.5  | 945.9  | 940.7  | 939.0  |
| 127.5° | 1006.8 | 1024.6 | 1018.3 | 1011.4 | 1006.8 |
| 130°   | 1072.9 | 1093.6 | 1090.7 | 1087.3 | 1080.9 |
| 132.5° | 1147.0 | 1163.1 | 1164.2 | 1156.2 | 1151.6 |
| 135°   | 1210.8 | 1228.6 | 1232.1 | 1230.3 | 1225.7 |
| 137.5° | 1282.0 | 1296.4 | 1299.2 | 1298.1 | 1291.2 |
| 140°   | 1344.7 | 1359.1 | 1367.1 | 1367.1 | 1360.8 |
| 142.5° | 1409.0 | 1423.4 | 1428.0 | 1429.7 | 1423.4 |
| 145°   | 1470.0 | 1481.4 | 1490.6 | 1492.4 | 1486.1 |
| 147.5° | 1524.6 | 1538.9 | 1545.8 | 1548.7 | 1542.4 |
| 150°   | 1580.9 | 1590.6 | 1597.0 | 1602.1 | 1597.0 |
| 152.5° | 1630.8 | 1640.6 | 1648.6 | 1655.0 | 1648.6 |
| 155°   | 1680.8 | 1685.4 | 1690.7 | 1698.7 | 1693.5 |
| 157.5° | 1724.0 | 1727.4 | 1730.3 | 1741.8 | 1733.7 |
| 160°   | 1762.5 | 1765.9 | 1767.6 | 1777.4 | 1770.5 |
| 162.5° | 1798.1 | 1798.1 | 1799.8 | 1810.7 | 1802.7 |
| 165°   | 1828.5 | 1826.8 | 1826.8 | 1838.3 | 1830.2 |
| 167.5° | 1856.1 | 1851.0 | 1851.0 | 1862.4 | 1854.4 |
| 170°   | 1876.8 | 1872.2 | 1870.5 | 1882.0 | 1872.2 |
| 172.5° | 1891.2 | 1886.5 | 1884.8 | 1896.3 | 1886.5 |
| 175°   | 1902.6 | 1898.1 | 1894.6 | 1906.1 | 1896.3 |
| 177.5° | 1909.0 | 1904.4 | 1900.9 | 1910.7 | 1900.9 |
| 180°   | 1906.1 | 1906.1 | 1906.1 | 1906.1 | 1906.1 |

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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 | 9.24             | 10.06 | 10.24 | 11.07 | 12.42 | 8.81           | 9.63  | 9.82  | 10.64 | 11.99 |
|                 | 3H   | 10.89            | 11.62 | 11.90 | 12.64 | 14.01 | 10.42          | 11.15 | 11.43 | 12.17 | 13.54 |
|                 | 4H   | 11.47            | 12.16 | 12.49 | 13.18 | 14.56 | 11.00          | 11.69 | 12.03 | 12.72 | 14.09 |
|                 | 6H   | 11.86            | 12.49 | 12.89 | 13.52 | 14.91 | 11.39          | 12.03 | 12.43 | 13.06 | 14.44 |
|                 | 8H   | 11.96            | 12.56 | 13.00 | 13.61 | 14.99 | 11.49          | 12.10 | 12.53 | 13.14 | 14.53 |
|                 | 12H  | 12.00            | 12.58 | 13.05 | 13.62 | 15.03 | 11.53          | 12.10 | 12.57 | 13.14 | 14.55 |
| 4H              | 2H   | 9.69             | 10.38 | 10.73 | 11.41 | 12.79 | 9.35           | 10.04 | 10.38 | 11.07 | 12.44 |
|                 | 3H   | 11.54            | 12.12 | 12.59 | 13.18 | 14.56 | 11.16          | 11.73 | 12.20 | 12.79 | 14.18 |
|                 | 4H   | 12.25            | 12.78 | 13.30 | 13.82 | 15.24 | 11.85          | 12.38 | 12.90 | 13.42 | 14.83 |
|                 | 6H   | 12.75            | 13.21 | 13.81 | 14.28 | 15.68 | 12.35          | 12.80 | 13.41 | 13.87 | 15.28 |
|                 | 8H   | 12.90            | 13.32 | 13.96 | 14.38 | 15.81 | 12.49          | 12.92 | 13.55 | 13.98 | 15.40 |
|                 | 12H  | 12.96            | 13.35 | 14.04 | 14.42 | 15.85 | 12.55          | 12.93 | 13.62 | 14.01 | 15.44 |
| 8H              | 4H   | 12.44            | 12.86 | 13.50 | 13.92 | 15.35 | 12.08          | 12.51 | 13.14 | 13.57 | 14.99 |
|                 | 6H   | 13.06            | 13.41 | 14.14 | 14.51 | 15.93 | 12.70          | 13.05 | 13.78 | 14.15 | 15.57 |
|                 | 8H   | 13.27            | 13.58 | 14.36 | 14.67 | 16.10 | 12.91          | 13.22 | 14.00 | 14.30 | 15.74 |
|                 | 12H  | 13.39            | 13.66 | 14.49 | 14.75 | 16.23 | 13.02          | 13.29 | 14.11 | 14.37 | 15.85 |
| 12H             | 4H   | 12.42            | 12.80 | 13.50 | 13.88 | 15.31 | 12.07          | 12.46 | 13.15 | 13.53 | 14.96 |
|                 | 6H   | 13.08            | 13.39 | 14.17 | 14.48 | 15.92 | 12.74          | 13.05 | 13.83 | 14.13 | 15.57 |
|                 | 8H   | 13.32            | 13.59 | 14.41 | 14.67 | 16.15 | 12.96          | 13.24 | 14.06 | 14.32 | 15.80 |