

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: P904627

Luminaire Tested: DFN2DIP-TR4F0-060D070US830-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P904627  
REPORT IS A COMBINATION OF REPORTS P901947 AND P898849  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-060D070US830-FLLONL  
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

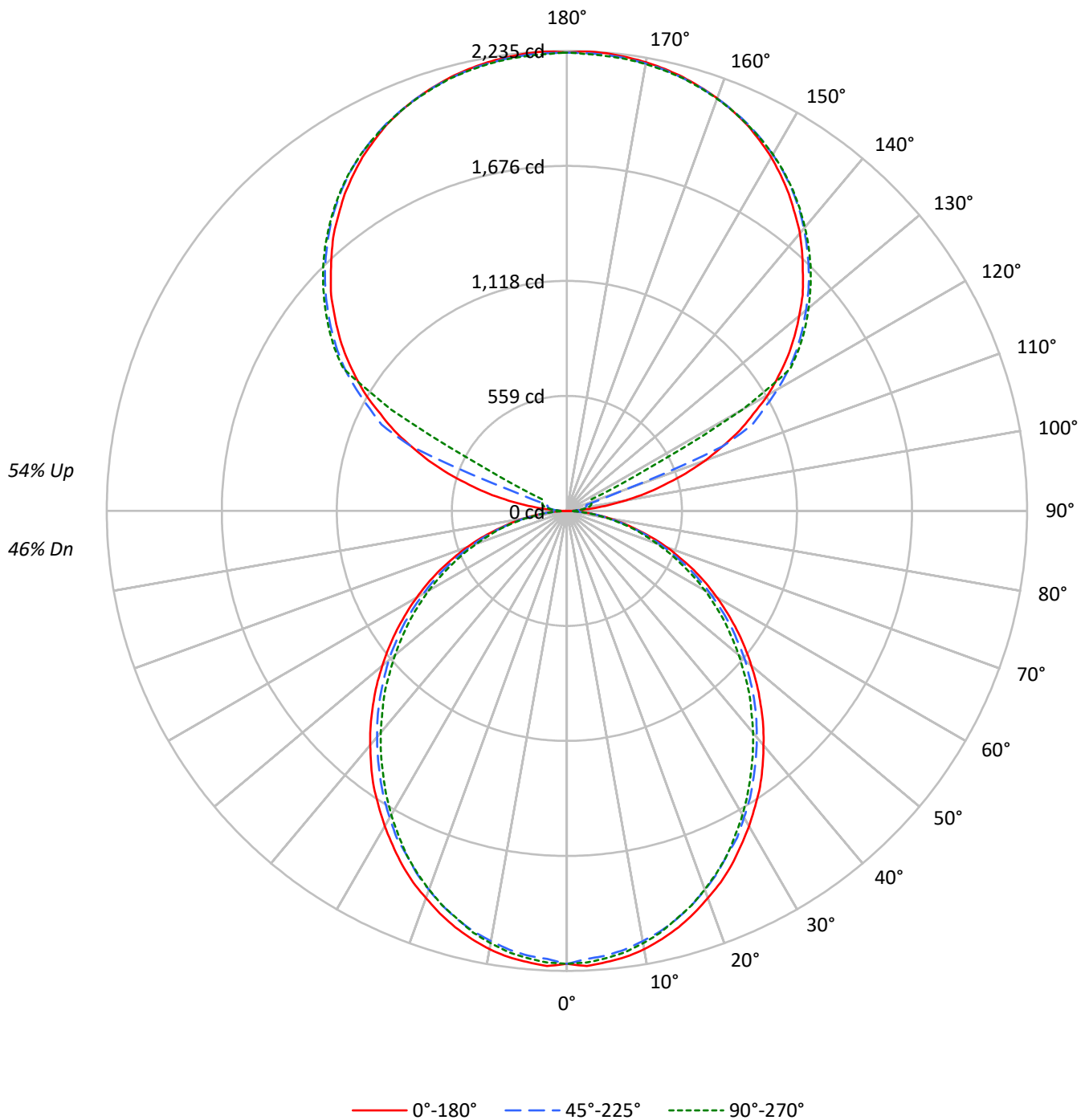
Lumens per Lamp: N/A  
Luminaire Lumens: 12130.5 lumens  
Efficiency: N/A  
Efficacy: 115.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 105.5  
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



TEST NUMBER: P904627

CATALOG NUMBER: DFN2DIP-TR4F0-060D070US830-FLONL

**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°  | 1748 | 1748 | 1748 |
| 5°  | 1751 | 1724 | 1735 |
| 10° | 1737 | 1700 | 1712 |
| 15° | 1711 | 1673 | 1675 |
| 20° | 1677 | 1634 | 1637 |
| 25° | 1642 | 1587 | 1594 |
| 30° | 1600 | 1544 | 1538 |
| 35° | 1559 | 1493 | 1480 |
| 40° | 1508 | 1441 | 1424 |
| 45° | 1459 | 1389 | 1367 |
| 50° | 1404 | 1335 | 1302 |
| 55° | 1347 | 1272 | 1241 |
| 60° | 1282 | 1198 | 1171 |
| 65° | 1211 | 1121 | 1089 |
| 70° | 1121 | 1027 | 1001 |
| 75° | 997  | 914  | 920  |
| 80° | 847  | 770  | 764  |
| 85° | 612  | 523  | 506  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 1459 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 207.1   | 1.7       |
| 10°-20°   | 582.7   | 4.8       |
| 20°-30°   | 856.4   | 7.1       |
| 30°-40°   | 994.6   | 8.2       |
| 40°-50°   | 993.4   | 8.2       |
| 50°-60°   | 866.2   | 7.1       |
| 60°-70°   | 640.3   | 5.3       |
| 70°-80°   | 362.3   | 3.0       |
| 80°-90°   | 99.5    | 0.8       |
| 90°-100°  | 73.4    | 0.6       |
| 100°-110° | 273.7   | 2.3       |
| 110°-120° | 725.9   | 6.0       |
| 120°-130° | 1204.0  | 9.9       |
| 130°-140° | 1278.9  | 10.5      |
| 140°-150° | 1188.6  | 9.8       |
| 150°-160° | 955.6   | 7.9       |
| 160°-170° | 615.8   | 5.1       |
| 170°-180° | 211.9   | 1.7       |
| 0°-30°    | 1646.2  | 13.6      |
| 0°-40°    | 2640.9  | 21.8      |
| 0°-60°    | 4500.5  | 37.1      |
| 0°-90°    | 5602.6  | 46.2      |
| 90°-120°  | 1073.0  | 8.8       |
| 90°-150°  | 4744.6  | 39.1      |
| 90°-180°  | 6528.0  | 53.8      |
| 0°-180°   | 12130.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2200 | 2200  | 2200 | 2200  | 2200 |      |
| 5°   | 2200 | 2192  | 2169 | 2186  | 2182 | 209  |
| 15°  | 2095 | 2082  | 2055 | 2063  | 2053 | 590  |
| 25°  | 1896 | 1879  | 1843 | 1847  | 1843 | 872  |
| 35°  | 1636 | 1615  | 1581 | 1568  | 1557 | 1021 |
| 45°  | 1331 | 1316  | 1284 | 1261  | 1253 | 1027 |
| 55°  | 1007 | 994   | 969  | 944   | 933  | 901  |
| 65°  | 679  | 667   | 646  | 626   | 616  | 672  |
| 75°  | 355  | 351   | 340  | 328   | 332  | 379  |
| 85°  | 87   | 85    | 83   | 76    | 74   | 97   |
| 90°  | 2    | 19    | 32   | 40    | 44   | 11   |
| 95°  | 105  | 52    | 63   | 71    | 69   | 124  |
| 105° | 490  | 538   | 98   | 116   | 122  | 523  |
| 115° | 926  | 954   | 994  | 248   | 132  | 912  |
| 125° | 1310 | 1331  | 1362 | 1373  | 1378 | 1168 |
| 135° | 1621 | 1647  | 1661 | 1677  | 1674 | 1252 |
| 145° | 1880 | 1879  | 1906 | 1917  | 1909 | 1176 |
| 155° | 2070 | 2056  | 2075 | 2085  | 2072 | 954  |
| 165° | 2182 | 2172  | 2177 | 2188  | 2177 | 616  |
| 175° | 2232 | 2220  | 2224 | 2235  | 2219 | 212  |
| 180° | 2227 | 2227  | 2227 | 2227  | 2227 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2200.5 | 2200.5 | 2200.5 | 2200.5 | 2200.5 |
| 2.5°   | 2213.3 | 2202.7 | 2179.3 | 2200.5 | 2196.4 |
| 5°     | 2200.5 | 2192.2 | 2168.8 | 2185.7 | 2181.6 |
| 7.5°   | 2185.7 | 2173.1 | 2149.8 | 2166.8 | 2162.6 |
| 10°    | 2162.6 | 2147.8 | 2122.3 | 2139.2 | 2132.9 |
| 12.5°  | 2130.7 | 2118.1 | 2092.7 | 2103.3 | 2099.0 |
| 15°    | 2094.7 | 2082.2 | 2054.6 | 2063.1 | 2052.6 |
| 17.5°  | 2050.3 | 2037.8 | 2010.2 | 2020.6 | 2010.2 |
| 20°    | 2001.6 | 1989.0 | 1959.4 | 1965.7 | 1957.4 |
| 22.5°  | 1953.1 | 1934.0 | 1906.4 | 1906.4 | 1902.1 |
| 25°    | 1895.8 | 1879.1 | 1843.0 | 1847.1 | 1843.0 |
| 27.5°  | 1832.3 | 1817.5 | 1790.1 | 1783.9 | 1773.3 |
| 30°    | 1769.1 | 1751.9 | 1720.3 | 1714.0 | 1705.4 |
| 32.5°  | 1701.2 | 1688.7 | 1654.7 | 1641.9 | 1633.4 |
| 35°    | 1635.7 | 1614.6 | 1580.6 | 1567.8 | 1557.3 |
| 37.5°  | 1561.6 | 1542.5 | 1508.6 | 1493.7 | 1483.2 |
| 40°    | 1485.4 | 1468.4 | 1434.5 | 1415.7 | 1407.1 |
| 42.5°  | 1411.4 | 1394.3 | 1360.7 | 1339.4 | 1326.7 |
| 45°    | 1331.1 | 1316.2 | 1284.3 | 1261.2 | 1252.6 |
| 47.5°  | 1252.6 | 1237.8 | 1204.0 | 1180.6 | 1168.0 |
| 50°    | 1170.1 | 1159.5 | 1129.9 | 1100.2 | 1089.7 |
| 52.5°  | 1089.7 | 1074.9 | 1047.4 | 1024.2 | 1009.4 |
| 55°    | 1007.3 | 994.5  | 969.1  | 943.8  | 933.2  |
| 57.5°  | 924.7  | 914.2  | 886.6  | 861.2  | 852.6  |
| 60°    | 842.1  | 833.8  | 804.2  | 780.8  | 774.5  |
| 62.5°  | 761.7  | 746.9  | 725.8  | 704.6  | 696.2  |
| 65°    | 679.3  | 666.6  | 645.5  | 626.3  | 615.8  |
| 67.5°  | 594.6  | 583.9  | 565.1  | 550.3  | 541.7  |
| 70°    | 516.3  | 507.8  | 488.7  | 473.9  | 465.6  |
| 72.5°  | 435.9  | 427.4  | 416.9  | 402.1  | 395.8  |
| 75°    | 355.3  | 351.4  | 340.5  | 328.0  | 332.2  |
| 77.5°  | 283.5  | 275.0  | 270.7  | 264.5  | 258.2  |
| 80°    | 211.7  | 209.4  | 205.2  | 198.9  | 194.6  |
| 82.5°  | 143.9  | 143.9  | 141.9  | 133.4  | 133.4  |
| 85°    | 86.6   | 84.6   | 82.6   | 76.1   | 74.1   |
| 87.5°  | 38.2   | 33.9   | 29.6   | 23.4   | 21.1   |
| 90°    | 1.5    | 19.3   | 32.1   | 40.3   | 43.5   |
| 92.5°  | 40.3   | 33.8   | 38.6   | 41.9   | 43.5   |
| 95°    | 104.6  | 51.5   | 62.8   | 71.0   | 69.3   |
| 97.5°  | 188.4  | 56.5   | 82.1   | 87.1   | 88.6   |
| 100°   | 285.3  | 64.5   | 91.8   | 104.6  | 107.9  |
| 102.5° | 391.4  | 388.4  | 95.1   | 112.7  | 117.6  |
| 105°   | 489.8  | 538.2  | 98.3   | 115.9  | 122.4  |
| 107.5° | 604.2  | 644.4  | 101.6  | 119.2  | 125.7  |
| 110°   | 713.9  | 747.5  | 282.0  | 120.9  | 127.2  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 817.0  | 845.8  | 818.5  | 123.9  | 128.9  |
| 115°   | 926.4  | 953.8  | 994.1  | 248.2  | 132.2  |
| 117.5° | 1021.5 | 1053.7 | 1081.2 | 850.6  | 428.6  |
| 120°   | 1127.8 | 1152.0 | 1181.1 | 1200.4 | 982.9  |
| 122.5° | 1218.0 | 1243.8 | 1276.2 | 1285.7 | 1287.4 |
| 125°   | 1309.9 | 1330.9 | 1361.5 | 1372.8 | 1377.5 |
| 127.5° | 1393.6 | 1416.2 | 1440.5 | 1456.6 | 1458.1 |
| 130°   | 1472.6 | 1498.5 | 1516.1 | 1533.9 | 1532.4 |
| 132.5° | 1553.2 | 1574.2 | 1591.9 | 1606.4 | 1604.9 |
| 135°   | 1620.9 | 1646.7 | 1661.1 | 1677.3 | 1674.1 |
| 137.5° | 1691.7 | 1711.1 | 1727.3 | 1743.4 | 1738.6 |
| 140°   | 1761.0 | 1774.0 | 1791.6 | 1806.1 | 1798.1 |
| 142.5° | 1819.1 | 1830.4 | 1851.2 | 1864.1 | 1856.1 |
| 145°   | 1880.4 | 1878.7 | 1906.0 | 1917.3 | 1909.3 |
| 147.5° | 1933.3 | 1928.6 | 1956.0 | 1964.0 | 1957.7 |
| 150°   | 1985.0 | 1973.8 | 1999.6 | 2009.1 | 2001.1 |
| 152.5° | 2028.4 | 2015.6 | 2039.8 | 2049.5 | 2038.2 |
| 155°   | 2070.4 | 2056.0 | 2075.3 | 2084.9 | 2072.1 |
| 157.5° | 2104.2 | 2091.4 | 2105.9 | 2117.2 | 2104.2 |
| 160°   | 2133.4 | 2123.5 | 2133.4 | 2142.9 | 2131.6 |
| 162.5° | 2159.0 | 2149.4 | 2157.4 | 2168.7 | 2154.2 |
| 165°   | 2181.5 | 2172.0 | 2176.7 | 2188.0 | 2176.7 |
| 167.5° | 2199.3 | 2189.5 | 2194.5 | 2205.8 | 2191.3 |
| 170°   | 2213.8 | 2204.1 | 2207.3 | 2218.7 | 2204.1 |
| 172.5° | 2223.5 | 2213.8 | 2217.1 | 2228.4 | 2213.8 |
| 175°   | 2231.5 | 2220.2 | 2223.5 | 2234.7 | 2218.7 |
| 177.5° | 2234.7 | 2223.5 | 2225.2 | 2236.5 | 2221.9 |
| 180°   | 2226.7 | 2226.7 | 2226.7 | 2226.7 | 2226.7 |

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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 | 8.84             | 9.67  | 9.83  | 10.67 | 12.00 | 8.41           | 9.24  | 9.40  | 10.24 | 11.57 |
|                 | 3H   | 10.50            | 11.24 | 11.50 | 12.25 | 13.60 | 10.03          | 10.77 | 11.03 | 11.78 | 13.13 |
|                 | 4H   | 11.09            | 11.79 | 12.10 | 12.80 | 14.16 | 10.61          | 11.32 | 11.63 | 12.33 | 13.68 |
|                 | 6H   | 11.49            | 12.13 | 12.51 | 13.15 | 14.52 | 11.01          | 11.66 | 12.03 | 12.68 | 14.04 |
|                 | 8H   | 11.59            | 12.21 | 12.62 | 13.24 | 14.60 | 11.11          | 11.73 | 12.14 | 12.77 | 14.13 |
|                 | 12H  | 11.64            | 12.22 | 12.67 | 13.25 | 14.64 | 11.16          | 11.74 | 12.19 | 12.77 | 14.16 |
| 4H              | 2H   | 9.30             | 10.01 | 10.32 | 11.02 | 12.37 | 8.96           | 9.66  | 9.98  | 10.67 | 12.03 |
|                 | 3H   | 11.16            | 11.75 | 12.19 | 12.79 | 14.16 | 10.77          | 11.36 | 11.80 | 12.40 | 13.77 |
|                 | 4H   | 11.88            | 12.41 | 12.91 | 13.45 | 14.84 | 11.47          | 12.01 | 12.51 | 13.04 | 14.43 |
|                 | 6H   | 12.39            | 12.85 | 13.44 | 13.91 | 15.30 | 11.98          | 12.44 | 13.03 | 13.50 | 14.89 |
|                 | 8H   | 12.54            | 12.97 | 13.59 | 14.02 | 15.42 | 12.13          | 12.56 | 13.17 | 13.61 | 15.01 |
|                 | 12H  | 12.61            | 13.00 | 13.67 | 14.07 | 15.47 | 12.19          | 12.58 | 13.25 | 13.64 | 15.05 |
| 8H              | 4H   | 12.07            | 12.50 | 13.12 | 13.55 | 14.95 | 11.71          | 12.14 | 12.76 | 13.19 | 14.59 |
|                 | 6H   | 12.70            | 13.06 | 13.77 | 14.15 | 15.55 | 12.34          | 12.70 | 13.41 | 13.79 | 15.19 |
|                 | 8H   | 12.92            | 13.24 | 14.00 | 14.31 | 15.73 | 12.55          | 12.87 | 13.63 | 13.94 | 15.36 |
|                 | 12H  | 13.05            | 13.33 | 14.13 | 14.40 | 15.86 | 12.67          | 12.94 | 13.75 | 14.01 | 15.47 |
| 12H             | 4H   | 12.06            | 12.45 | 13.12 | 13.51 | 14.92 | 11.70          | 12.09 | 12.77 | 13.16 | 14.56 |
|                 | 6H   | 12.73            | 13.04 | 13.81 | 14.12 | 15.54 | 12.38          | 12.69 | 13.46 | 13.77 | 15.19 |
|                 | 8H   | 12.97            | 13.25 | 14.05 | 14.32 | 15.78 | 12.61          | 12.89 | 13.70 | 13.96 | 15.42 |