

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: P918100

Luminaire Tested: DFN2DIP-TR3F0-060D080US930-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P918100  
REPORT IS A COMBINATION OF REPORTS P900348 AND P897195  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-060D080US930-RLLFLL  
Description: 3 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

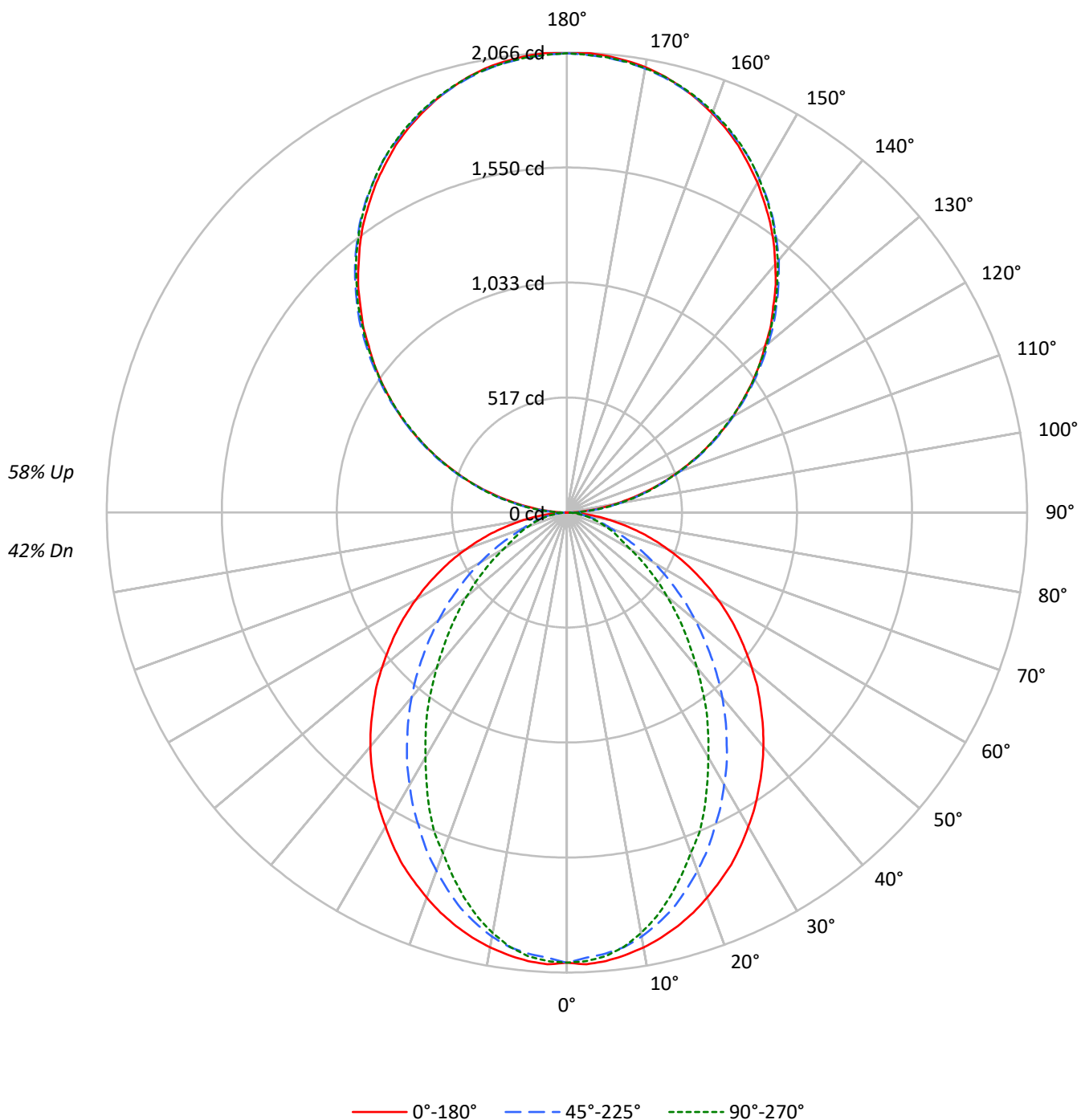
Lumens per Lamp: N/A  
Luminaire Lumens: 9930.3 lumens  
Efficiency: N/A  
Efficacy: 83.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 118.5  
Input Voltage (V):  
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



TEST NUMBER: P918100

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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   | 105 | 105 | 105 | 105 | 96 | 96 | 96 | 96 | 79 | 79 | 79 | 63 | 63 | 63 | 49 | 49 | 49 |
| 1   | 96  | 92  | 89  | 85  | 88 | 84 | 81 | 78 | 70 | 67 | 65 | 56 | 55 | 53 | 44 | 43 | 42 |
| 2   | 88  | 81  | 75  | 70  | 80 | 74 | 69 | 65 | 61 | 58 | 55 | 50 | 47 | 45 | 39 | 37 | 36 |
| 3   | 81  | 72  | 65  | 59  | 73 | 66 | 60 | 55 | 55 | 50 | 47 | 44 | 41 | 39 | 35 | 33 | 31 |
| 4   | 74  | 64  | 56  | 50  | 67 | 58 | 52 | 47 | 49 | 44 | 40 | 40 | 36 | 33 | 31 | 29 | 27 |
| 5   | 68  | 57  | 49  | 43  | 62 | 52 | 45 | 40 | 44 | 39 | 35 | 36 | 32 | 29 | 28 | 26 | 24 |
| 6   | 63  | 51  | 43  | 38  | 57 | 47 | 40 | 35 | 40 | 34 | 30 | 33 | 29 | 26 | 26 | 23 | 21 |
| 7   | 58  | 46  | 38  | 33  | 53 | 43 | 36 | 31 | 36 | 31 | 27 | 30 | 26 | 23 | 24 | 21 | 19 |
| 8   | 54  | 42  | 34  | 29  | 49 | 39 | 32 | 28 | 33 | 28 | 24 | 27 | 23 | 21 | 22 | 19 | 17 |
| 9   | 50  | 38  | 31  | 26  | 46 | 36 | 29 | 25 | 30 | 25 | 22 | 25 | 21 | 19 | 20 | 18 | 16 |
| 10  | 47  | 35  | 28  | 24  | 43 | 33 | 26 | 22 | 28 | 23 | 19 | 23 | 19 | 17 | 19 | 16 | 14 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2519 | 2519 | 2519 |
| 5°  | 2522 | 2477 | 2494 |
| 10° | 2496 | 2427 | 2411 |
| 15° | 2460 | 2344 | 2284 |
| 20° | 2413 | 2232 | 2129 |
| 25° | 2365 | 2106 | 1979 |
| 30° | 2301 | 1977 | 1789 |
| 35° | 2238 | 1839 | 1623 |
| 40° | 2174 | 1696 | 1432 |
| 45° | 2100 | 1538 | 1260 |
| 50° | 2024 | 1379 | 1091 |
| 55° | 1943 | 1209 | 929  |
| 60° | 1850 | 1031 | 763  |
| 65° | 1743 | 851  | 685  |
| 70° | 1613 | 682  | 617  |
| 75° | 1449 | 597  | 558  |
| 80° | 1212 | 494  | 479  |
| 85° | 825  | 320  | 350  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2100 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 189.5  | 1.9       |
| 10°-20°   | 520.2  | 5.2       |
| 20°-30°   | 730.3  | 7.4       |
| 30°-40°   | 796.1  | 8.0       |
| 40°-50°   | 731.7  | 7.4       |
| 50°-60°   | 574.6  | 5.8       |
| 60°-70°   | 374.0  | 3.8       |
| 70°-80°   | 192.5  | 1.9       |
| 80°-90°   | 55.0   | 0.6       |
| 90°-100°  | 127.6  | 1.3       |
| 100°-110° | 405.6  | 4.1       |
| 110°-120° | 694.1  | 7.0       |
| 120°-130° | 912.8  | 9.2       |
| 130°-140° | 1024.6 | 10.3      |
| 140°-150° | 1004.7 | 10.1      |
| 150°-160° | 842.8  | 8.5       |
| 160°-170° | 558.9  | 5.6       |
| 170°-180° | 195.4  | 2.0       |
| 0°-30°    | 1439.9 | 14.5      |
| 0°-40°    | 2236.0 | 22.5      |
| 0°-60°    | 3542.3 | 35.7      |
| 0°-90°    | 4163.9 | 41.9      |
| 90°-120°  | 1227.3 | 12.4      |
| 90°-150°  | 4169.4 | 42.0      |
| 90°-180°  | 5766.0 | 58.1      |
| 0°-180°   | 9930.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2022 | 2022  | 2022 | 2022  | 2022 |      |
| 5°   | 2022 | 2013  | 1989 | 2005  | 2000 | 192  |
| 15°  | 1923 | 1903  | 1841 | 1806  | 1788 | 542  |
| 25°  | 1746 | 1687  | 1566 | 1491  | 1464 | 803  |
| 35°  | 1504 | 1411  | 1250 | 1134  | 1094 | 941  |
| 45°  | 1230 | 1107  | 915  | 785   | 741  | 950  |
| 55°  | 935  | 792   | 595  | 485   | 450  | 835  |
| 65°  | 631  | 483   | 318  | 256   | 251  | 626  |
| 75°  | 337  | 208   | 146  | 134   | 132  | 356  |
| 85°  | 79   | 40    | 35   | 35    | 35   | 90   |
| 90°  | 2    | 22    | 61   | 57    | 59   | 10   |
| 95°  | 91   | 108   | 111  | 111   | 108  | 101  |
| 105° | 374  | 379   | 383  | 386   | 386  | 395  |
| 115° | 696  | 706   | 703  | 702   | 696  | 689  |
| 125° | 1013 | 1029  | 1024 | 1018  | 1016 | 905  |
| 135° | 1310 | 1330  | 1333 | 1332  | 1326 | 1013 |
| 145° | 1591 | 1603  | 1613 | 1615  | 1608 | 994  |
| 155° | 1819 | 1824  | 1830 | 1838  | 1833 | 837  |
| 165° | 1979 | 1977  | 1977 | 1989  | 1981 | 558  |
| 175° | 2059 | 2054  | 2050 | 2063  | 2052 | 196  |
| 180° | 2063 | 2063  | 2063 | 2063  | 2063 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2021.8 | 2021.8 | 2021.8 | 2021.8 | 2021.8 |
| 2.5°   | 2030.9 | 2021.8 | 2001.6 | 2020.0 | 2016.3 |
| 5°     | 2021.8 | 2012.6 | 1988.8 | 2005.3 | 1999.8 |
| 7.5°   | 2005.3 | 1994.4 | 1968.8 | 1976.0 | 1966.8 |
| 10°    | 1983.3 | 1970.5 | 1934.1 | 1928.4 | 1917.5 |
| 12.5°  | 1956.0 | 1939.4 | 1889.9 | 1879.1 | 1858.9 |
| 15°    | 1923.0 | 1902.7 | 1840.6 | 1805.9 | 1787.6 |
| 17.5°  | 1884.6 | 1855.2 | 1778.3 | 1738.1 | 1708.9 |
| 20°    | 1840.6 | 1803.9 | 1712.5 | 1666.9 | 1626.5 |
| 22.5°  | 1793.1 | 1750.9 | 1644.8 | 1582.7 | 1555.3 |
| 25°    | 1745.6 | 1686.9 | 1566.2 | 1491.3 | 1463.7 |
| 27.5°  | 1688.9 | 1626.5 | 1493.0 | 1407.0 | 1364.9 |
| 30°    | 1628.5 | 1558.8 | 1412.4 | 1319.2 | 1269.7 |
| 32.5°  | 1569.9 | 1485.6 | 1335.8 | 1225.9 | 1180.1 |
| 35°    | 1504.1 | 1410.7 | 1249.8 | 1134.4 | 1094.0 |
| 37.5°  | 1440.0 | 1339.2 | 1169.2 | 1042.8 | 997.2  |
| 40°    | 1372.2 | 1262.6 | 1084.9 | 955.0  | 907.5  |
| 42.5°  | 1302.8 | 1185.7 | 1000.9 | 865.4  | 819.8  |
| 45°    | 1229.6 | 1106.8 | 914.9  | 784.8  | 740.9  |
| 47.5°  | 1160.1 | 1030.2 | 832.6  | 702.5  | 662.3  |
| 50°    | 1083.2 | 953.3  | 752.0  | 625.7  | 587.4  |
| 52.5°  | 1008.0 | 870.8  | 675.1  | 554.4  | 519.7  |
| 55°    | 934.9  | 792.2  | 594.6  | 484.9  | 450.1  |
| 57.5°  | 860.0  | 713.5  | 523.3  | 420.9  | 391.5  |
| 60°    | 783.1  | 636.7  | 448.3  | 355.1  | 325.7  |
| 62.5°  | 708.2  | 561.8  | 384.2  | 296.4  | 281.8  |
| 65°    | 631.3  | 483.0  | 318.4  | 256.2  | 250.6  |
| 67.5°  | 558.1  | 409.8  | 256.2  | 225.0  | 219.6  |
| 70°    | 481.2  | 338.5  | 212.1  | 194.0  | 186.5  |
| 72.5°  | 408.1  | 272.6  | 177.4  | 162.9  | 159.1  |
| 75°    | 336.6  | 208.5  | 146.3  | 133.5  | 131.8  |
| 77.5°  | 265.4  | 148.1  | 115.3  | 107.9  | 104.3  |
| 80°    | 199.3  | 106.2  | 87.7   | 80.6   | 80.6   |
| 82.5°  | 139.0  | 71.4   | 60.3   | 56.7   | 56.7   |
| 85°    | 78.6   | 40.2   | 34.7   | 34.7   | 34.7   |
| 87.5°  | 29.4   | 14.6   | 14.6   | 12.8   | 12.8   |
| 90°    | 1.9    | 22.4   | 61.0   | 57.2   | 59.1   |
| 92.5°  | 38.6   | 52.3   | 54.1   | 55.9   | 55.9   |
| 95°    | 90.8   | 108.2  | 111.3  | 111.3  | 108.2  |
| 97.5°  | 151.2  | 167.3  | 174.1  | 174.1  | 174.1  |
| 100°   | 220.8  | 235.1  | 240.0  | 240.0  | 238.1  |
| 102.5° | 294.2  | 304.8  | 311.5  | 313.4  | 311.5  |
| 105°   | 374.4  | 379.4  | 383.1  | 386.2  | 386.2  |
| 107.5° | 454.0  | 461.5  | 461.5  | 462.7  | 454.0  |
| 110°   | 531.1  | 541.0  | 541.0  | 541.0  | 536.1  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 614.4  | 625.0  | 623.1  | 618.2  | 614.4  |
| 115°   | 696.5  | 706.5  | 703.4  | 701.5  | 696.5  |
| 117.5° | 778.0  | 791.7  | 782.9  | 778.0  | 773.0  |
| 120°   | 860.1  | 873.8  | 860.1  | 860.1  | 854.4  |
| 122.5° | 934.7  | 952.1  | 943.4  | 938.4  | 934.7  |
| 125°   | 1013.0 | 1028.6 | 1023.6 | 1018.0 | 1016.2 |
| 127.5° | 1089.6 | 1108.8 | 1102.0 | 1094.5 | 1089.6 |
| 130°   | 1161.1 | 1183.4 | 1180.3 | 1176.6 | 1169.8 |
| 132.5° | 1241.3 | 1258.7 | 1260.0 | 1251.2 | 1246.3 |
| 135°   | 1310.3 | 1329.6 | 1333.3 | 1331.5 | 1326.5 |
| 137.5° | 1387.4 | 1403.0 | 1406.1 | 1404.8 | 1397.3 |
| 140°   | 1455.2 | 1470.7 | 1479.4 | 1479.4 | 1472.6 |
| 142.5° | 1524.9 | 1540.4 | 1545.4 | 1547.3 | 1540.4 |
| 145°   | 1590.8 | 1603.2 | 1613.1 | 1615.0 | 1608.2 |
| 147.5° | 1649.8 | 1665.4 | 1672.8 | 1676.0 | 1669.2 |
| 150°   | 1710.8 | 1721.3 | 1728.2 | 1733.8 | 1728.2 |
| 152.5° | 1764.9 | 1775.5 | 1784.2 | 1791.0 | 1784.2 |
| 155°   | 1819.0 | 1824.0 | 1829.6 | 1838.3 | 1832.7 |
| 157.5° | 1865.6 | 1869.4 | 1872.5 | 1884.9 | 1876.2 |
| 160°   | 1907.3 | 1911.1 | 1912.9 | 1923.5 | 1916.0 |
| 162.5° | 1945.9 | 1945.9 | 1947.7 | 1959.6 | 1950.8 |
| 165°   | 1978.8 | 1976.9 | 1976.9 | 1989.4 | 1980.7 |
| 167.5° | 2008.7 | 2003.1 | 2003.1 | 2015.5 | 2006.8 |
| 170°   | 2031.1 | 2026.1 | 2024.2 | 2036.7 | 2026.1 |
| 172.5° | 2046.6 | 2041.7 | 2039.8 | 2052.2 | 2041.7 |
| 175°   | 2059.0 | 2054.1 | 2050.3 | 2062.8 | 2052.2 |
| 177.5° | 2065.9 | 2060.9 | 2057.2 | 2067.8 | 2057.2 |
| 180°   | 2062.8 | 2062.8 | 2062.8 | 2062.8 | 2062.8 |

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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 | 9.50             | 10.27 | 10.53 | 11.30 | 12.69 | 5.48           | 6.25 | 6.51  | 7.28  | 8.66  |
|                 | 3H   | 11.16            | 11.85 | 12.20 | 12.89 | 14.30 | 6.66           | 7.34 | 7.70  | 8.39  | 9.79  |
|                 | 4H   | 11.76            | 12.41 | 12.81 | 13.46 | 14.87 | 7.10           | 7.75 | 8.15  | 8.79  | 10.21 |
|                 | 6H   | 12.17            | 12.77 | 13.24 | 13.82 | 15.24 | 7.41           | 8.01 | 8.47  | 9.06  | 10.48 |
|                 | 8H   | 12.29            | 12.86 | 13.36 | 13.93 | 15.35 | 7.50           | 8.07 | 8.57  | 9.13  | 10.55 |
|                 | 12H  | 12.35            | 12.89 | 13.42 | 13.95 | 15.39 | 7.54           | 8.08 | 8.61  | 9.14  | 10.58 |
| 4H              | 2H   | 9.51             | 10.16 | 10.57 | 11.20 | 12.62 | 6.06           | 6.71 | 7.12  | 7.76  | 9.17  |
|                 | 3H   | 11.32            | 11.86 | 12.39 | 12.94 | 14.36 | 7.40           | 7.94 | 8.46  | 9.01  | 10.44 |
|                 | 4H   | 12.01            | 12.50 | 13.08 | 13.56 | 15.01 | 7.94           | 8.43 | 9.01  | 9.50  | 10.94 |
|                 | 6H   | 12.51            | 12.93 | 13.59 | 14.02 | 15.46 | 8.35           | 8.77 | 9.43  | 9.86  | 11.30 |
|                 | 8H   | 12.68            | 13.07 | 13.76 | 14.15 | 15.61 | 8.47           | 8.87 | 9.55  | 9.95  | 11.40 |
|                 | 12H  | 12.76            | 13.12 | 13.86 | 14.21 | 15.67 | 8.53           | 8.89 | 9.63  | 9.98  | 11.44 |
| 8H              | 4H   | 11.97            | 12.36 | 13.05 | 13.44 | 14.90 | 8.21           | 8.61 | 9.29  | 9.68  | 11.14 |
|                 | 6H   | 12.52            | 12.85 | 13.62 | 13.97 | 15.42 | 8.72           | 9.04 | 9.82  | 10.16 | 11.62 |
|                 | 8H   | 12.73            | 13.02 | 13.84 | 14.12 | 15.59 | 8.90           | 9.19 | 10.01 | 10.29 | 11.77 |
|                 | 12H  | 12.86            | 13.11 | 13.97 | 14.21 | 15.72 | 9.01           | 9.27 | 10.13 | 10.37 | 11.88 |
| 12H             | 4H   | 11.92            | 12.27 | 13.01 | 13.37 | 14.83 | 8.21           | 8.57 | 9.31  | 9.66  | 11.12 |
|                 | 6H   | 12.50            | 12.78 | 13.60 | 13.89 | 15.36 | 8.76           | 9.05 | 9.87  | 10.15 | 11.63 |
|                 | 8H   | 12.71            | 12.96 | 13.82 | 14.06 | 15.57 | 8.97           | 9.22 | 10.08 | 10.32 | 11.83 |