

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: P916272

Luminaire Tested: DFN2DIP-HX3F0-070D070US930-RLLFLL

Issue Date: 11/21/2024

**Test Information**

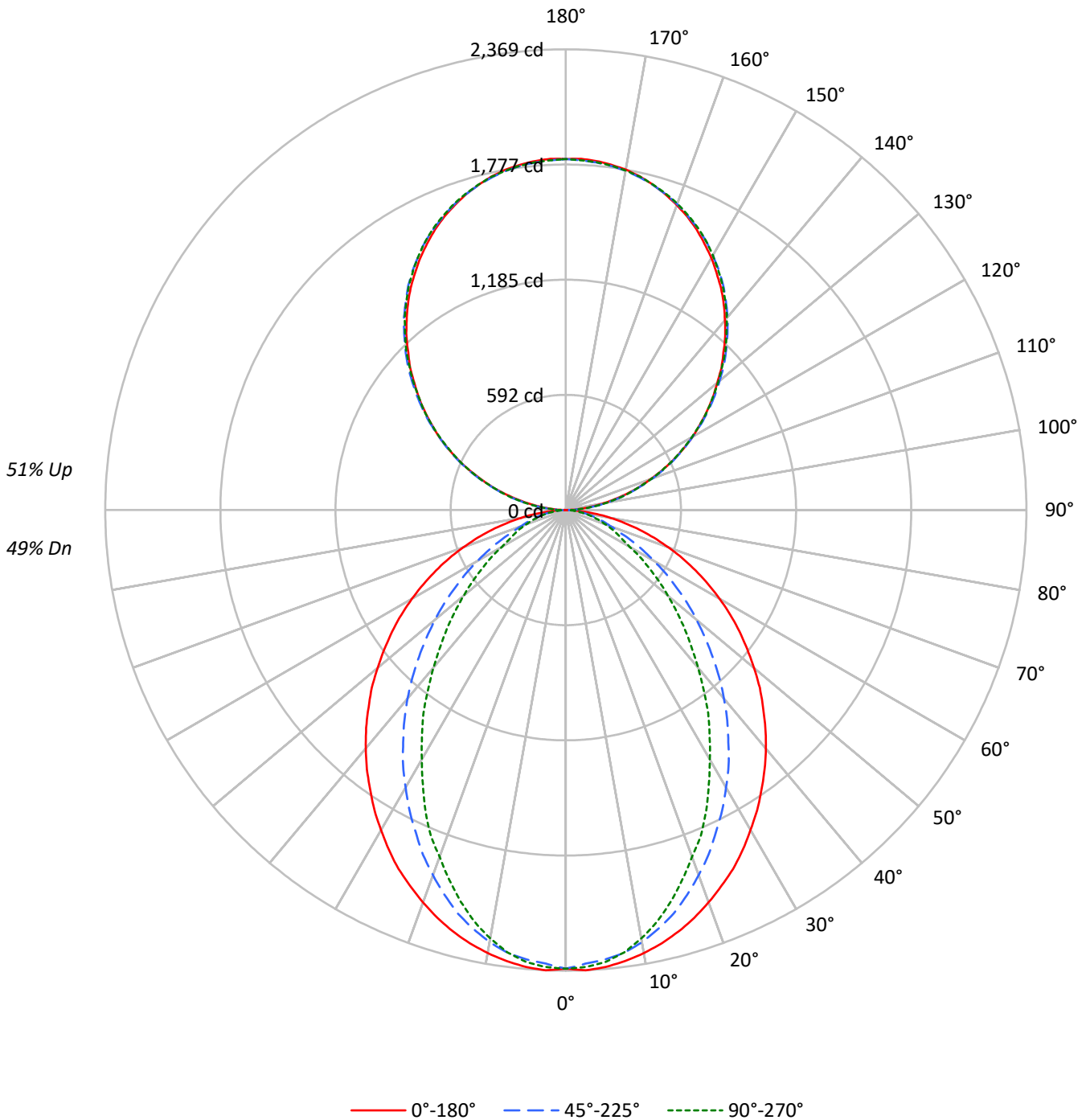
Test Method: LM-79-2019  
Report Number: P916272  
REPORT IS A COMBINATION OF REPORTS P899266 AND P896089  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-070D070US930-RLLFLL  
Description: 3 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 9901.8 lumens  
Efficiency: N/A  
Efficacy: 80.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.84' x L: 3.28' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 122.6  
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

TEST NUMBER: P916272  
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### Luminous Intensity Polar Plot



51% Up

49% Dn



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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| RF  | 20  |     |     |     | 20 |    |    |    | 20 |    |    |    | 20 |    |    |    | 20 |    |    |    |
| RC  | 80  |     |     |     | 70 |    |    |    | 50 |    |    |    | 30 |    |    |    | 10 |    | 0  |    |
| RW  | 70  | 50  | 30  | 10  | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 |
| RCR |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 0   | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 83 | 83 | 83 | 68 | 68 | 68 | 55 | 55 | 55 | 49 |    |    |
| 1   | 98  | 94  | 90  | 87  | 90 | 87 | 84 | 81 | 73 | 71 | 69 | 61 | 59 | 58 | 50 | 49 | 48 | 42 |    |    |
| 2   | 90  | 83  | 77  | 72  | 82 | 76 | 71 | 67 | 65 | 61 | 58 | 54 | 51 | 49 | 44 | 42 | 41 | 36 |    |    |
| 3   | 82  | 73  | 66  | 60  | 75 | 68 | 61 | 57 | 58 | 53 | 49 | 48 | 45 | 42 | 40 | 37 | 35 | 31 |    |    |
| 4   | 75  | 65  | 57  | 51  | 69 | 60 | 54 | 48 | 51 | 46 | 42 | 43 | 40 | 36 | 36 | 33 | 31 | 27 |    |    |
| 5   | 69  | 58  | 50  | 44  | 64 | 54 | 47 | 42 | 46 | 41 | 37 | 39 | 35 | 32 | 32 | 29 | 27 | 24 |    |    |
| 6   | 64  | 52  | 44  | 39  | 59 | 49 | 42 | 37 | 42 | 36 | 32 | 35 | 31 | 28 | 30 | 26 | 24 | 21 |    |    |
| 7   | 59  | 47  | 40  | 34  | 55 | 44 | 37 | 32 | 38 | 33 | 29 | 32 | 28 | 25 | 27 | 24 | 22 | 19 |    |    |
| 8   | 55  | 43  | 36  | 30  | 51 | 40 | 33 | 29 | 35 | 29 | 26 | 30 | 26 | 23 | 25 | 22 | 20 | 17 |    |    |
| 9   | 51  | 39  | 32  | 27  | 47 | 37 | 30 | 26 | 32 | 27 | 23 | 27 | 23 | 20 | 23 | 20 | 18 | 16 |    |    |
| 10  | 48  | 36  | 29  | 24  | 44 | 34 | 28 | 23 | 30 | 24 | 21 | 25 | 21 | 19 | 22 | 18 | 16 | 14 |    |    |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2732 | 2732 | 2732 |
| 5°  | 2735 | 2687 | 2705 |
| 10° | 2707 | 2632 | 2615 |
| 15° | 2669 | 2543 | 2478 |
| 20° | 2618 | 2422 | 2310 |
| 25° | 2566 | 2286 | 2147 |
| 30° | 2497 | 2146 | 1942 |
| 35° | 2429 | 1997 | 1761 |
| 40° | 2360 | 1842 | 1555 |
| 45° | 2280 | 1671 | 1368 |
| 50° | 2197 | 1498 | 1185 |
| 55° | 2111 | 1314 | 1010 |
| 60° | 2010 | 1121 | 830  |
| 65° | 1895 | 926  | 745  |
| 70° | 1754 | 743  | 672  |
| 75° | 1578 | 651  | 608  |
| 80° | 1323 | 540  | 523  |
| 85° | 903  | 351  | 384  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2280 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 221.1  | 2.2       |
| 10°-20°   | 606.9  | 6.1       |
| 20°-30°   | 852.0  | 8.6       |
| 30°-40°   | 928.8  | 9.4       |
| 40°-50°   | 853.6  | 8.6       |
| 50°-60°   | 670.4  | 6.8       |
| 60°-70°   | 436.4  | 4.4       |
| 70°-80°   | 224.6  | 2.3       |
| 80°-90°   | 62.5   | 0.6       |
| 90°-100°  | 111.7  | 1.1       |
| 100°-110° | 354.9  | 3.6       |
| 110°-120° | 607.3  | 6.1       |
| 120°-130° | 798.7  | 8.1       |
| 130°-140° | 896.5  | 9.1       |
| 140°-150° | 879.1  | 8.9       |
| 150°-160° | 737.5  | 7.4       |
| 160°-170° | 489.1  | 4.9       |
| 170°-180° | 170.9  | 1.7       |
| 0°-30°    | 1679.9 | 17.0      |
| 0°-40°    | 2608.7 | 26.3      |
| 0°-60°    | 4132.7 | 41.7      |
| 0°-90°    | 4856.1 | 49.0      |
| 90°-120°  | 1073.9 | 10.8      |
| 90°-150°  | 3648.2 | 36.8      |
| 90°-180°  | 5046.0 | 51.0      |
| 0°-180°   | 9901.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2359 | 2359  | 2359 | 2359  | 2359 |      |
| 5°   | 2359 | 2348  | 2320 | 2340  | 2333 | 224  |
| 15°  | 2244 | 2220  | 2147 | 2107  | 2086 | 632  |
| 25°  | 2036 | 1968  | 1827 | 1740  | 1708 | 937  |
| 35°  | 1755 | 1646  | 1458 | 1324  | 1276 | 1098 |
| 45°  | 1434 | 1291  | 1067 | 916   | 864  | 1108 |
| 55°  | 1091 | 924   | 694  | 566   | 525  | 975  |
| 65°  | 736  | 564   | 371  | 299   | 292  | 730  |
| 75°  | 393  | 243   | 171  | 156   | 154  | 415  |
| 85°  | 92   | 47    | 40   | 40    | 40   | 105  |
| 90°  | 2    | 20    | 53   | 50    | 52   | 10   |
| 95°  | 79   | 95    | 97   | 97    | 95   | 88   |
| 105° | 328  | 332   | 335  | 338   | 338  | 346  |
| 115° | 609  | 618   | 616  | 614   | 609  | 603  |
| 125° | 886  | 900   | 896  | 891   | 889  | 792  |
| 135° | 1147 | 1163  | 1167 | 1165  | 1161 | 886  |
| 145° | 1392 | 1403  | 1412 | 1413  | 1407 | 870  |
| 155° | 1592 | 1596  | 1601 | 1608  | 1604 | 733  |
| 165° | 1731 | 1730  | 1730 | 1741  | 1733 | 488  |
| 175° | 1802 | 1797  | 1794 | 1805  | 1796 | 171  |
| 180° | 1805 | 1805  | 1805 | 1805  | 1805 |      |



TEST NUMBER: P916272

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2358.7 | 2358.7 | 2358.7 | 2358.7 | 2358.7 |
| 2.5°   | 2369.3 | 2358.7 | 2335.2 | 2356.7 | 2352.4 |
| 5°     | 2358.7 | 2348.1 | 2320.3 | 2339.5 | 2333.1 |
| 7.5°   | 2339.5 | 2326.8 | 2296.9 | 2305.3 | 2294.7 |
| 10°    | 2313.9 | 2299.0 | 2256.3 | 2249.8 | 2237.1 |
| 12.5°  | 2281.9 | 2262.7 | 2205.0 | 2192.3 | 2168.7 |
| 15°    | 2243.5 | 2219.9 | 2147.4 | 2106.9 | 2085.6 |
| 17.5°  | 2198.6 | 2164.5 | 2074.8 | 2027.8 | 1993.6 |
| 20°    | 2147.4 | 2104.6 | 1998.0 | 1944.7 | 1897.6 |
| 22.5°  | 2092.0 | 2042.8 | 1918.9 | 1846.4 | 1814.5 |
| 25°    | 2036.5 | 1968.0 | 1827.2 | 1739.8 | 1707.6 |
| 27.5°  | 1970.3 | 1897.6 | 1741.8 | 1641.5 | 1592.4 |
| 30°    | 1899.9 | 1818.6 | 1647.8 | 1539.1 | 1481.4 |
| 32.5°  | 1831.5 | 1733.2 | 1558.4 | 1430.2 | 1376.7 |
| 35°    | 1754.7 | 1645.8 | 1458.1 | 1323.6 | 1276.4 |
| 37.5°  | 1680.0 | 1562.4 | 1364.1 | 1216.6 | 1163.4 |
| 40°    | 1600.9 | 1473.0 | 1265.8 | 1114.3 | 1058.7 |
| 42.5°  | 1519.9 | 1383.3 | 1167.7 | 1009.6 | 956.4  |
| 45°    | 1434.5 | 1291.4 | 1067.4 | 915.7  | 864.5  |
| 47.5°  | 1353.4 | 1201.9 | 971.3  | 819.6  | 772.7  |
| 50°    | 1263.7 | 1112.2 | 877.3  | 729.9  | 685.3  |
| 52.5°  | 1176.1 | 1015.9 | 787.7  | 646.8  | 606.3  |
| 55°    | 1090.7 | 924.2  | 693.7  | 565.7  | 525.2  |
| 57.5°  | 1003.3 | 832.5  | 610.6  | 491.0  | 456.8  |
| 60°    | 913.6  | 742.8  | 522.9  | 414.3  | 380.0  |
| 62.5°  | 826.1  | 655.4  | 448.2  | 345.8  | 328.8  |
| 65°    | 736.5  | 563.5  | 371.4  | 299.0  | 292.4  |
| 67.5°  | 651.1  | 478.1  | 299.0  | 262.4  | 256.2  |
| 70°    | 561.4  | 394.9  | 247.5  | 226.2  | 217.6  |
| 72.5°  | 476.1  | 318.0  | 207.0  | 190.0  | 185.7  |
| 75°    | 392.7  | 243.2  | 170.7  | 155.8  | 153.8  |
| 77.5°  | 309.6  | 172.8  | 134.5  | 125.9  | 121.6  |
| 80°    | 232.6  | 123.8  | 102.4  | 94.0   | 94.0   |
| 82.5°  | 162.2  | 83.3   | 70.4   | 66.1   | 66.1   |
| 85°    | 91.7   | 46.9   | 40.5   | 40.5   | 40.5   |
| 87.5°  | 34.2   | 17.0   | 17.0   | 14.9   | 14.9   |
| 90°    | 1.6    | 19.6   | 53.3   | 50.1   | 51.7   |
| 92.5°  | 33.8   | 45.7   | 47.4   | 49.0   | 49.0   |
| 95°    | 79.4   | 94.7   | 97.4   | 97.4   | 94.7   |
| 97.5°  | 132.2  | 146.3  | 152.4  | 152.4  | 152.4  |
| 100°   | 193.1  | 205.7  | 210.0  | 210.0  | 208.4  |
| 102.5° | 257.4  | 266.6  | 272.6  | 274.3  | 272.6  |
| 105°   | 327.6  | 331.9  | 335.2  | 337.9  | 337.9  |
| 107.5° | 397.2  | 403.7  | 403.7  | 404.9  | 397.2  |
| 110°   | 464.7  | 473.4  | 473.4  | 473.4  | 469.0  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 537.6  | 546.9  | 545.3  | 540.9  | 537.6  |
| 115°   | 609.4  | 618.2  | 615.5  | 613.8  | 609.4  |
| 117.5° | 680.7  | 692.7  | 685.1  | 680.7  | 676.4  |
| 120°   | 752.5  | 764.5  | 752.5  | 752.5  | 747.6  |
| 122.5° | 817.8  | 833.1  | 825.5  | 821.1  | 817.8  |
| 125°   | 886.4  | 900.0  | 895.7  | 890.8  | 889.2  |
| 127.5° | 953.3  | 970.2  | 964.3  | 957.7  | 953.3  |
| 130°   | 1015.9 | 1035.5 | 1032.8 | 1029.6 | 1023.5 |
| 132.5° | 1086.1 | 1101.4 | 1102.4 | 1094.9 | 1090.5 |
| 135°   | 1146.6 | 1163.3 | 1166.7 | 1165.0 | 1160.7 |
| 137.5° | 1214.0 | 1227.6 | 1230.3 | 1229.2 | 1222.7 |
| 140°   | 1273.3 | 1286.9 | 1294.5 | 1294.5 | 1288.6 |
| 142.5° | 1334.2 | 1347.9 | 1352.2 | 1353.8 | 1347.9 |
| 145°   | 1392.0 | 1402.8 | 1411.5 | 1413.2 | 1407.2 |
| 147.5° | 1443.6 | 1457.3 | 1463.8 | 1466.5 | 1460.5 |
| 150°   | 1497.0 | 1506.2 | 1512.2 | 1517.1 | 1512.2 |
| 152.5° | 1544.3 | 1553.6 | 1561.1 | 1567.2 | 1561.1 |
| 155°   | 1591.6 | 1595.9 | 1600.9 | 1608.5 | 1603.6 |
| 157.5° | 1632.5 | 1635.7 | 1638.4 | 1649.3 | 1641.7 |
| 160°   | 1668.9 | 1672.2 | 1673.8 | 1683.0 | 1676.5 |
| 162.5° | 1702.7 | 1702.7 | 1704.3 | 1714.6 | 1707.0 |
| 165°   | 1731.4 | 1729.8 | 1729.8 | 1740.7 | 1733.1 |
| 167.5° | 1757.6 | 1752.7 | 1752.7 | 1763.6 | 1756.0 |
| 170°   | 1777.2 | 1772.9 | 1771.2 | 1782.1 | 1772.9 |
| 172.5° | 1790.8 | 1786.4 | 1784.8 | 1795.7 | 1786.4 |
| 175°   | 1801.6 | 1797.3 | 1794.1 | 1804.9 | 1795.7 |
| 177.5° | 1807.7 | 1803.3 | 1800.0 | 1809.3 | 1800.0 |
| 180°   | 1804.9 | 1804.9 | 1804.9 | 1804.9 | 1804.9 |



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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 | 10.50            | 11.33 | 11.48 | 12.31 | 13.60 | 6.48           | 7.30  | 7.45  | 8.28  | 9.57  |
|                 | 3H   | 12.17            | 12.91 | 13.16 | 13.90 | 15.21 | 7.66           | 8.40  | 8.65  | 9.39  | 10.70 |
|                 | 4H   | 12.78            | 13.47 | 13.77 | 14.47 | 15.78 | 8.11           | 8.81  | 9.11  | 9.80  | 11.12 |
|                 | 6H   | 13.19            | 13.83 | 14.20 | 14.83 | 16.16 | 8.43           | 9.07  | 9.43  | 10.07 | 11.40 |
|                 | 8H   | 13.31            | 13.92 | 14.33 | 14.94 | 16.26 | 8.52           | 9.12  | 9.53  | 10.14 | 11.47 |
|                 | 12H  | 13.37            | 13.95 | 14.39 | 14.96 | 16.31 | 8.56           | 9.14  | 9.57  | 10.14 | 11.49 |
| 4H              | 2H   | 10.52            | 11.22 | 11.52 | 12.21 | 13.53 | 7.07           | 7.77  | 8.07  | 8.76  | 10.08 |
|                 | 3H   | 12.34            | 12.92 | 13.35 | 13.94 | 15.27 | 8.41           | 8.99  | 9.43  | 10.02 | 11.35 |
|                 | 4H   | 13.03            | 13.55 | 14.04 | 14.57 | 15.92 | 8.96           | 9.49  | 9.98  | 10.50 | 11.86 |
|                 | 6H   | 13.53            | 13.99 | 14.56 | 15.03 | 16.38 | 9.37           | 9.83  | 10.40 | 10.86 | 12.22 |
|                 | 8H   | 13.70            | 14.13 | 14.73 | 15.16 | 16.52 | 9.50           | 9.92  | 10.53 | 10.95 | 12.32 |
|                 | 12H  | 13.79            | 14.18 | 14.84 | 15.22 | 16.59 | 9.56           | 9.94  | 10.61 | 10.99 | 12.36 |
| 8H              | 4H   | 12.99            | 13.42 | 14.02 | 14.45 | 15.81 | 9.23           | 9.66  | 10.26 | 10.69 | 12.05 |
|                 | 6H   | 13.55            | 13.90 | 14.60 | 14.97 | 16.34 | 9.74           | 10.09 | 10.80 | 11.17 | 12.53 |
|                 | 8H   | 13.76            | 14.07 | 14.82 | 15.13 | 16.51 | 9.93           | 10.24 | 10.99 | 11.30 | 12.68 |
|                 | 12H  | 13.89            | 14.16 | 14.96 | 15.22 | 16.64 | 10.05          | 10.32 | 11.11 | 11.37 | 12.80 |
| 12H             | 4H   | 12.94            | 13.33 | 13.99 | 14.37 | 15.74 | 9.24           | 9.62  | 10.28 | 10.67 | 12.04 |
|                 | 6H   | 13.52            | 13.83 | 14.59 | 14.89 | 16.27 | 9.79           | 10.10 | 10.85 | 11.16 | 12.54 |
|                 | 8H   | 13.74            | 14.01 | 14.80 | 15.06 | 16.49 | 10.00          | 10.27 | 11.06 | 11.32 | 12.75 |