

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: P916296

Luminaire Tested: DFN2DIP-HX3F0-080D070US930-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P916296  
REPORT IS A COMBINATION OF REPORTS P899268 AND P896089  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-080D070US930-RLLFLL  
Description: 3 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

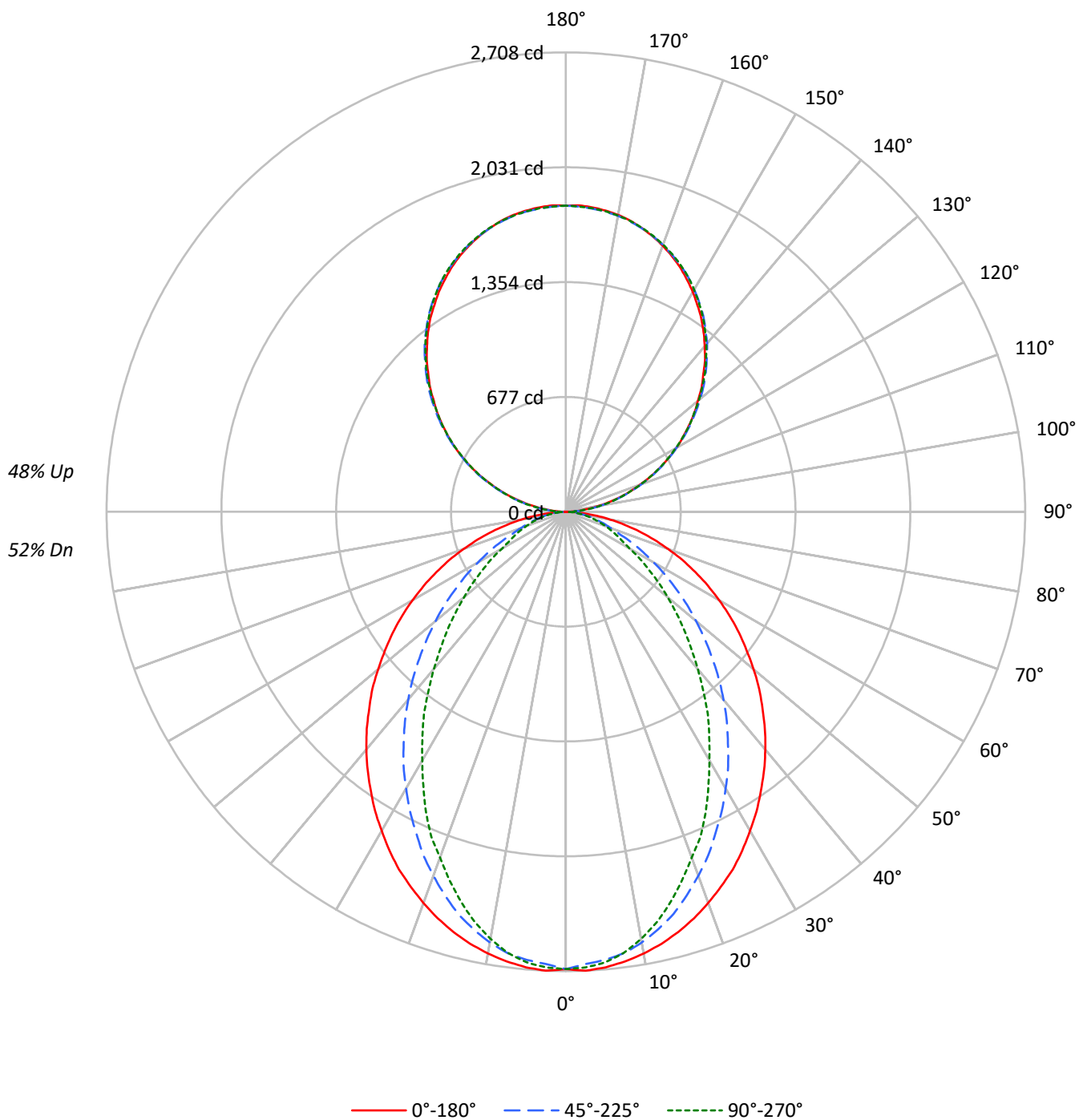
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 10594.8 lumens  
Efficiency: N/A  
Efficacy: 79.4 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): 133.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9971  
Total Harmonic Distortion (THDi): 0.049  
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   | 108 | 108 | 108 | 108 | 100 | 100 | 100 | 100 | 85 | 85 | 85 | 71 | 71 | 71 | 58 | 58 | 58 |
| 1   | 99  | 95  | 91  | 88  | 91  | 88  | 85  | 82  | 75 | 73 | 71 | 63 | 62 | 60 | 52 | 51 | 50 |
| 2   | 90  | 83  | 77  | 72  | 83  | 77  | 72  | 68  | 66 | 63 | 59 | 56 | 53 | 51 | 47 | 45 | 43 |
| 3   | 83  | 74  | 67  | 61  | 76  | 69  | 62  | 57  | 59 | 54 | 50 | 50 | 47 | 44 | 42 | 39 | 37 |
| 4   | 76  | 66  | 58  | 52  | 70  | 61  | 54  | 49  | 53 | 48 | 43 | 45 | 41 | 38 | 38 | 35 | 33 |
| 5   | 70  | 59  | 51  | 45  | 65  | 55  | 48  | 43  | 47 | 42 | 38 | 41 | 36 | 33 | 34 | 31 | 29 |
| 6   | 65  | 53  | 45  | 39  | 60  | 49  | 42  | 37  | 43 | 37 | 33 | 37 | 33 | 29 | 31 | 28 | 25 |
| 7   | 60  | 48  | 40  | 35  | 55  | 45  | 38  | 33  | 39 | 34 | 30 | 34 | 29 | 26 | 29 | 25 | 23 |
| 8   | 56  | 44  | 36  | 31  | 52  | 41  | 34  | 29  | 36 | 30 | 26 | 31 | 27 | 23 | 26 | 23 | 21 |
| 9   | 52  | 40  | 33  | 28  | 48  | 38  | 31  | 26  | 33 | 28 | 24 | 29 | 24 | 21 | 24 | 21 | 19 |
| 10  | 49  | 37  | 30  | 25  | 45  | 35  | 28  | 24  | 30 | 25 | 22 | 26 | 22 | 19 | 23 | 20 | 17 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3123 | 3123 | 3123 |
| 5°  | 3126 | 3071 | 3091 |
| 10° | 3094 | 3008 | 2989 |
| 15° | 3050 | 2907 | 2832 |
| 20° | 2992 | 2768 | 2639 |
| 25° | 2933 | 2612 | 2454 |
| 30° | 2854 | 2453 | 2219 |
| 35° | 2776 | 2282 | 2013 |
| 40° | 2698 | 2105 | 1777 |
| 45° | 2606 | 1909 | 1563 |
| 50° | 2511 | 1712 | 1354 |
| 55° | 2412 | 1501 | 1154 |
| 60° | 2297 | 1281 | 948  |
| 65° | 2165 | 1058 | 851  |
| 70° | 2005 | 850  | 768  |
| 75° | 1803 | 744  | 695  |
| 80° | 1511 | 618  | 597  |
| 85° | 1033 | 402  | 439  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2606 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 252.6   | 2.4       |
| 10°-20°   | 693.6   | 6.5       |
| 20°-30°   | 973.7   | 9.2       |
| 30°-40°   | 1061.4  | 10.0      |
| 40°-50°   | 975.6   | 9.2       |
| 50°-60°   | 766.2   | 7.2       |
| 60°-70°   | 498.7   | 4.7       |
| 70°-80°   | 256.7   | 2.4       |
| 80°-90°   | 70.7    | 0.7       |
| 90°-100°  | 111.7   | 1.1       |
| 100°-110° | 354.9   | 3.3       |
| 110°-120° | 607.3   | 5.7       |
| 120°-130° | 798.7   | 7.5       |
| 130°-140° | 896.5   | 8.5       |
| 140°-150° | 879.1   | 8.3       |
| 150°-160° | 737.5   | 7.0       |
| 160°-170° | 489.1   | 4.6       |
| 170°-180° | 170.9   | 1.6       |
| 0°-30°    | 1919.9  | 18.1      |
| 0°-40°    | 2981.4  | 28.1      |
| 0°-60°    | 4723.1  | 44.6      |
| 0°-90°    | 5549.2  | 52.4      |
| 90°-120°  | 1073.9  | 10.1      |
| 90°-150°  | 3648.2  | 34.4      |
| 90°-180°  | 5046.0  | 47.6      |
| 0°-180°   | 10594.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2696 | 2696  | 2696 | 2696  | 2696 |      |
| 5°   | 2696 | 2684  | 2652 | 2674  | 2666 | 256  |
| 15°  | 2564 | 2537  | 2454 | 2408  | 2384 | 722  |
| 25°  | 2327 | 2249  | 2088 | 1988  | 1952 | 1070 |
| 35°  | 2005 | 1881  | 1666 | 1513  | 1459 | 1255 |
| 45°  | 1639 | 1476  | 1220 | 1046  | 988  | 1266 |
| 55°  | 1246 | 1056  | 793  | 646   | 600  | 1114 |
| 65°  | 842  | 644   | 424  | 342   | 334  | 834  |
| 75°  | 449  | 278   | 195  | 178   | 176  | 475  |
| 85°  | 105  | 54    | 46   | 46    | 46   | 120  |
| 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 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2695.7 | 2695.7 | 2695.7 | 2695.7 | 2695.7 |
| 2.5°   | 2707.9 | 2695.7 | 2668.8 | 2693.3 | 2688.4 |
| 5°     | 2695.7 | 2683.6 | 2651.7 | 2673.7 | 2666.4 |
| 7.5°   | 2673.7 | 2659.2 | 2625.0 | 2634.6 | 2622.4 |
| 10°    | 2644.4 | 2627.4 | 2578.7 | 2571.2 | 2556.7 |
| 12.5°  | 2608.0 | 2586.0 | 2519.9 | 2505.4 | 2478.5 |
| 15°    | 2563.9 | 2537.0 | 2454.2 | 2407.9 | 2383.5 |
| 17.5°  | 2512.7 | 2473.6 | 2371.1 | 2317.6 | 2278.4 |
| 20°    | 2454.2 | 2405.3 | 2283.4 | 2222.6 | 2168.7 |
| 22.5°  | 2390.8 | 2334.6 | 2193.1 | 2110.2 | 2073.7 |
| 25°    | 2327.4 | 2249.2 | 2088.2 | 1988.3 | 1951.6 |
| 27.5°  | 2251.8 | 2168.7 | 1990.6 | 1876.0 | 1819.8 |
| 30°    | 2171.3 | 2078.4 | 1883.3 | 1759.0 | 1693.0 |
| 32.5°  | 2093.1 | 1980.8 | 1781.0 | 1634.5 | 1573.4 |
| 35°    | 2005.4 | 1880.9 | 1666.3 | 1512.6 | 1458.7 |
| 37.5°  | 1919.9 | 1785.7 | 1558.9 | 1390.4 | 1329.6 |
| 40°    | 1829.7 | 1683.4 | 1446.6 | 1273.4 | 1210.0 |
| 42.5°  | 1737.0 | 1580.9 | 1334.5 | 1153.9 | 1093.0 |
| 45°    | 1639.4 | 1475.9 | 1219.8 | 1046.4 | 988.0  |
| 47.5°  | 1546.8 | 1373.6 | 1110.1 | 936.7  | 883.1  |
| 50°    | 1444.2 | 1271.1 | 1002.7 | 834.2  | 783.2  |
| 52.5°  | 1344.1 | 1161.1 | 900.2  | 739.2  | 692.9  |
| 55°    | 1246.5 | 1056.3 | 792.8  | 646.5  | 600.2  |
| 57.5°  | 1146.6 | 951.5  | 697.8  | 561.2  | 522.0  |
| 60°    | 1044.1 | 849.0  | 597.6  | 473.4  | 434.3  |
| 62.5°  | 944.2  | 749.0  | 512.3  | 395.3  | 375.9  |
| 65°    | 841.7  | 643.9  | 424.4  | 341.7  | 334.1  |
| 67.5°  | 744.1  | 546.4  | 341.7  | 299.9  | 292.8  |
| 70°    | 641.6  | 451.4  | 282.9  | 258.5  | 248.7  |
| 72.5°  | 544.0  | 363.4  | 236.6  | 217.2  | 212.2  |
| 75°    | 448.8  | 278.0  | 195.2  | 178.1  | 175.8  |
| 77.5°  | 353.8  | 197.5  | 153.8  | 143.9  | 139.0  |
| 80°    | 265.8  | 141.6  | 117.0  | 107.4  | 107.4  |
| 82.5°  | 185.3  | 95.2   | 80.5   | 75.6   | 75.6   |
| 85°    | 104.8  | 53.6   | 46.3   | 46.3   | 46.3   |
| 87.5°  | 39.1   | 19.4   | 19.4   | 17.1   | 17.1   |
| 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 | 11.28            | 12.13 | 12.22 | 13.08 | 14.32 | 7.25           | 8.10  | 8.20  | 9.06  | 10.30 |
|                 | 3H   | 12.95            | 13.71 | 13.90 | 14.67 | 15.94 | 8.44           | 9.20  | 9.39  | 10.16 | 11.43 |
|                 | 4H   | 13.55            | 14.27 | 14.52 | 15.24 | 16.51 | 8.89           | 9.61  | 9.86  | 10.58 | 11.85 |
|                 | 6H   | 13.97            | 14.63 | 14.95 | 15.60 | 16.89 | 9.21           | 9.87  | 10.19 | 10.84 | 12.13 |
|                 | 8H   | 14.09            | 14.72 | 15.08 | 15.71 | 16.99 | 9.30           | 9.92  | 10.28 | 10.92 | 12.20 |
|                 | 12H  | 14.15            | 14.75 | 15.14 | 15.73 | 17.04 | 9.34           | 9.94  | 10.33 | 10.92 | 12.23 |
| 4H              | 2H   | 11.30            | 12.02 | 12.27 | 12.98 | 14.26 | 7.85           | 8.57  | 8.82  | 9.53  | 10.81 |
|                 | 3H   | 13.12            | 13.72 | 14.10 | 14.72 | 16.00 | 9.19           | 9.79  | 10.18 | 10.79 | 12.07 |
|                 | 4H   | 13.81            | 14.35 | 14.80 | 15.34 | 16.65 | 9.74           | 10.28 | 10.73 | 11.28 | 12.59 |
|                 | 6H   | 14.32            | 14.78 | 15.32 | 15.80 | 17.11 | 10.15          | 10.62 | 11.16 | 11.64 | 12.95 |
|                 | 8H   | 14.49            | 14.92 | 15.49 | 15.93 | 17.25 | 10.28          | 10.72 | 11.29 | 11.73 | 13.05 |
|                 | 12H  | 14.58            | 14.97 | 15.60 | 16.00 | 17.32 | 10.34          | 10.74 | 11.37 | 11.76 | 13.09 |
| 8H              | 4H   | 13.77            | 14.21 | 14.78 | 15.22 | 16.54 | 10.02          | 10.45 | 11.02 | 11.46 | 12.78 |
|                 | 6H   | 14.33            | 14.69 | 15.36 | 15.74 | 17.06 | 10.53          | 10.89 | 11.56 | 11.94 | 13.26 |
|                 | 8H   | 14.54            | 14.86 | 15.58 | 15.90 | 17.24 | 10.72          | 11.03 | 11.75 | 12.07 | 13.41 |
|                 | 12H  | 14.68            | 14.96 | 15.72 | 15.99 | 17.37 | 10.83          | 11.11 | 11.87 | 12.14 | 13.53 |
| 12H             | 4H   | 13.73            | 14.12 | 14.75 | 15.15 | 16.47 | 10.02          | 10.42 | 11.04 | 11.44 | 12.77 |
|                 | 6H   | 14.31            | 14.63 | 15.35 | 15.66 | 17.00 | 10.58          | 10.89 | 11.61 | 11.93 | 13.27 |
|                 | 8H   | 14.52            | 14.80 | 15.56 | 15.83 | 17.22 | 10.78          | 11.06 | 11.82 | 12.09 | 13.48 |