

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: P919019

Luminaire Tested: DFN2DIP-HX3F0-080D060US935-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P919019  
REPORT IS A COMBINATION OF REPORTS P900773 AND P897645  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-080D060US935-FLLONL  
Description: 3 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

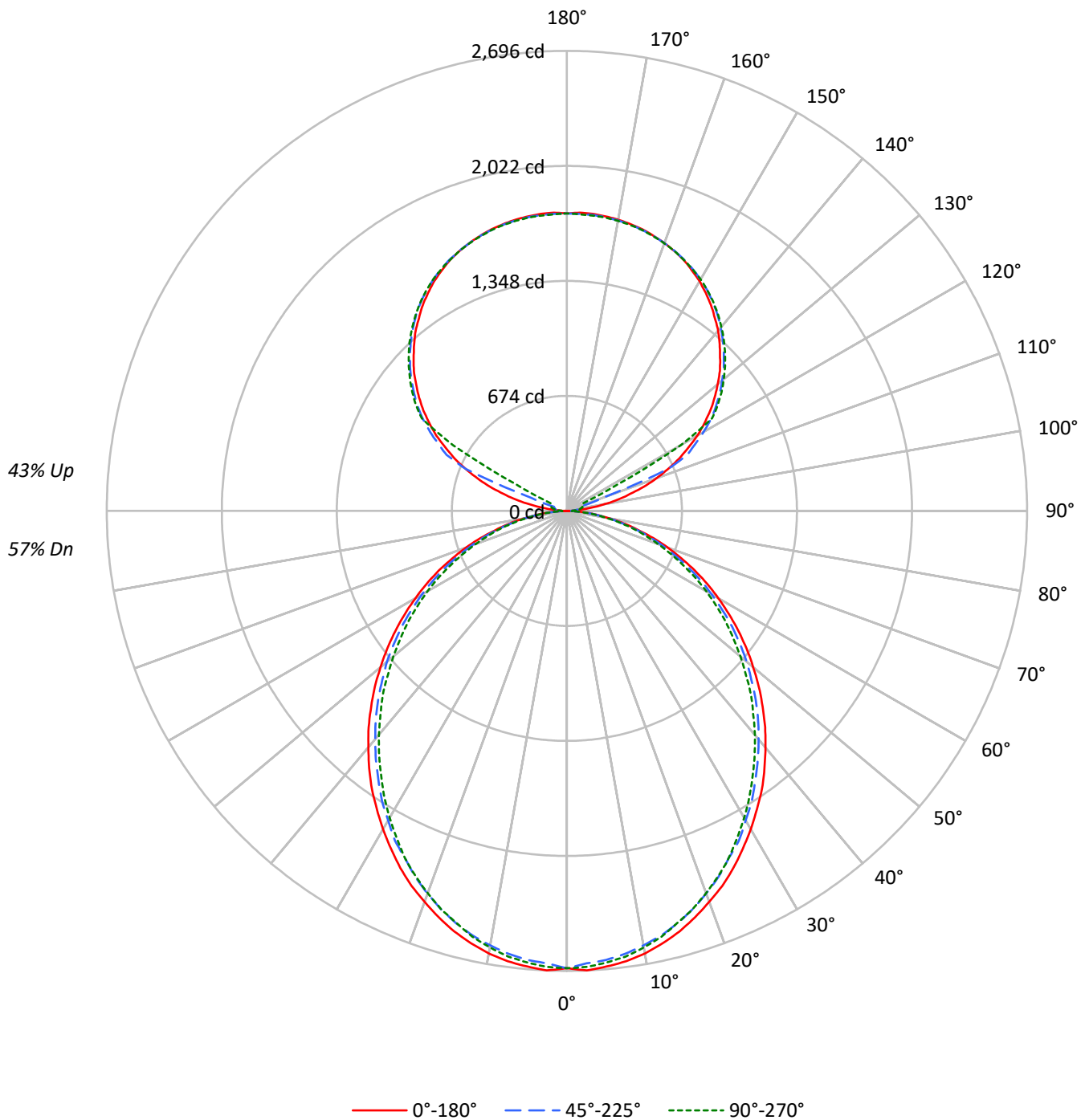
Lumens per Lamp: N/A  
Luminaire Lumens: 11933.4 lumens  
Efficiency: N/A  
Efficacy: 95.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.84' x L: 3.28' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 125.3  
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   | 109 | 109 | 109 | 109 | 101 | 101 | 101 | 101 | 87 | 87 | 87 | 74 | 74 | 74 | 63 | 63 | 63 |
| 1   | 99  | 95  | 91  | 88  | 92  | 89  | 85  | 82  | 77 | 74 | 72 | 66 | 64 | 62 | 55 | 54 | 53 |
| 2   | 91  | 83  | 77  | 72  | 84  | 77  | 72  | 67  | 67 | 63 | 59 | 58 | 55 | 52 | 49 | 47 | 45 |
| 3   | 83  | 73  | 66  | 60  | 77  | 68  | 62  | 56  | 59 | 54 | 50 | 51 | 47 | 44 | 43 | 40 | 38 |
| 4   | 76  | 65  | 57  | 50  | 70  | 61  | 53  | 48  | 53 | 47 | 43 | 45 | 41 | 38 | 39 | 35 | 33 |
| 5   | 69  | 58  | 49  | 43  | 64  | 54  | 47  | 41  | 47 | 41 | 37 | 41 | 36 | 33 | 35 | 31 | 29 |
| 6   | 64  | 52  | 44  | 38  | 59  | 49  | 41  | 36  | 43 | 37 | 32 | 37 | 32 | 29 | 32 | 28 | 25 |
| 7   | 59  | 47  | 39  | 33  | 55  | 44  | 37  | 32  | 39 | 33 | 28 | 34 | 29 | 25 | 29 | 25 | 22 |
| 8   | 55  | 43  | 35  | 29  | 51  | 40  | 33  | 28  | 35 | 29 | 25 | 31 | 26 | 23 | 27 | 23 | 20 |
| 9   | 51  | 39  | 31  | 26  | 48  | 37  | 30  | 25  | 32 | 27 | 23 | 28 | 24 | 20 | 25 | 21 | 18 |
| 10  | 48  | 36  | 28  | 24  | 45  | 34  | 27  | 22  | 30 | 24 | 20 | 26 | 22 | 18 | 23 | 19 | 17 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3104 | 3104 | 3104 |
| 5°  | 3108 | 3059 | 3080 |
| 10° | 3082 | 3016 | 3037 |
| 15° | 3035 | 2964 | 2970 |
| 20° | 2972 | 2893 | 2902 |
| 25° | 2910 | 2808 | 2823 |
| 30° | 2832 | 2729 | 2723 |
| 35° | 2758 | 2637 | 2618 |
| 40° | 2668 | 2543 | 2517 |
| 45° | 2577 | 2449 | 2414 |
| 50° | 2478 | 2350 | 2295 |
| 55° | 2374 | 2235 | 2185 |
| 60° | 2257 | 2100 | 2060 |
| 65° | 2128 | 1959 | 1911 |
| 70° | 1965 | 1788 | 1751 |
| 75° | 1739 | 1582 | 1601 |
| 80° | 1466 | 1319 | 1318 |
| 85° | 1040 | 874  | 854  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2577 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 252.3   | 2.1       |
| 10°-20°   | 709.8   | 5.9       |
| 20°-30°   | 1043.1  | 8.7       |
| 30°-40°   | 1211.4  | 10.2      |
| 40°-50°   | 1209.9  | 10.1      |
| 50°-60°   | 1055.0  | 8.8       |
| 60°-70°   | 779.9   | 6.5       |
| 70°-80°   | 441.2   | 3.7       |
| 80°-90°   | 119.5   | 1.0       |
| 90°-100°  | 57.5    | 0.5       |
| 100°-110° | 214.3   | 1.8       |
| 110°-120° | 568.4   | 4.8       |
| 120°-130° | 942.7   | 7.9       |
| 130°-140° | 1001.4  | 8.4       |
| 140°-150° | 930.7   | 7.8       |
| 150°-160° | 748.2   | 6.3       |
| 160°-170° | 482.1   | 4.0       |
| 170°-180° | 165.9   | 1.4       |
| 0°-30°    | 2005.1  | 16.8      |
| 0°-40°    | 3216.5  | 27.0      |
| 0°-60°    | 5481.5  | 45.9      |
| 0°-90°    | 6822.2  | 57.2      |
| 90°-120°  | 840.2   | 7.0       |
| 90°-150°  | 3714.9  | 31.1      |
| 90°-180°  | 5111.0  | 42.8      |
| 0°-180°   | 11933.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2680 | 2680  | 2680 | 2680  | 2680 |      |
| 5°   | 2680 | 2670  | 2642 | 2662  | 2657 | 254  |
| 15°  | 2551 | 2536  | 2502 | 2513  | 2500 | 719  |
| 25°  | 2309 | 2289  | 2245 | 2250  | 2245 | 1063 |
| 35°  | 1992 | 1966  | 1925 | 1910  | 1897 | 1244 |
| 45°  | 1621 | 1603  | 1564 | 1536  | 1526 | 1251 |
| 55°  | 1227 | 1211  | 1180 | 1150  | 1137 | 1097 |
| 65°  | 827  | 812   | 786  | 763   | 750  | 818  |
| 75°  | 433  | 428   | 415  | 400   | 405  | 462  |
| 85°  | 106  | 103   | 101  | 93    | 90   | 118  |
| 90°  | 1    | 15    | 25   | 32    | 34   | 11   |
| 95°  | 82   | 40    | 49   | 56    | 54   | 97   |
| 105° | 384  | 421   | 77   | 91    | 96   | 410  |
| 115° | 725  | 747   | 778  | 194   | 104  | 714  |
| 125° | 1026 | 1042  | 1066 | 1075  | 1079 | 915  |
| 135° | 1269 | 1289  | 1301 | 1313  | 1311 | 980  |
| 145° | 1472 | 1471  | 1492 | 1501  | 1495 | 921  |
| 155° | 1621 | 1610  | 1625 | 1632  | 1622 | 747  |
| 165° | 1708 | 1701  | 1704 | 1713  | 1704 | 483  |
| 175° | 1747 | 1738  | 1741 | 1750  | 1737 | 166  |
| 180° | 1743 | 1743  | 1743 | 1743  | 1743 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2680.1 | 2680.1 | 2680.1 | 2680.1 | 2680.1 |
| 2.5°   | 2695.7 | 2682.9 | 2654.5 | 2680.1 | 2675.2 |
| 5°     | 2680.1 | 2670.0 | 2641.6 | 2662.1 | 2657.2 |
| 7.5°   | 2662.1 | 2646.8 | 2618.4 | 2639.1 | 2634.0 |
| 10°    | 2634.0 | 2615.9 | 2585.0 | 2605.5 | 2597.9 |
| 12.5°  | 2595.1 | 2579.8 | 2548.9 | 2561.7 | 2556.6 |
| 15°    | 2551.4 | 2536.1 | 2502.4 | 2512.8 | 2500.0 |
| 17.5°  | 2497.2 | 2481.9 | 2448.2 | 2461.2 | 2448.2 |
| 20°    | 2437.9 | 2422.6 | 2386.5 | 2394.2 | 2384.0 |
| 22.5°  | 2378.9 | 2355.6 | 2321.9 | 2321.9 | 2316.8 |
| 25°    | 2309.1 | 2288.6 | 2244.9 | 2249.8 | 2244.9 |
| 27.5°  | 2231.7 | 2213.7 | 2180.3 | 2172.6 | 2159.8 |
| 30°    | 2154.6 | 2133.8 | 2095.3 | 2087.7 | 2077.2 |
| 32.5°  | 2072.1 | 2056.8 | 2015.4 | 1999.8 | 1989.5 |
| 35°    | 1992.2 | 1966.5 | 1925.2 | 1909.6 | 1896.8 |
| 37.5°  | 1901.9 | 1878.7 | 1837.5 | 1819.4 | 1806.5 |
| 40°    | 1809.3 | 1788.5 | 1747.2 | 1724.2 | 1713.8 |
| 42.5°  | 1719.1 | 1698.2 | 1657.2 | 1631.2 | 1616.0 |
| 45°    | 1621.2 | 1603.1 | 1564.3 | 1536.1 | 1525.8 |
| 47.5°  | 1525.8 | 1507.7 | 1466.4 | 1438.0 | 1422.6 |
| 50°    | 1425.1 | 1412.3 | 1376.1 | 1340.1 | 1327.2 |
| 52.5°  | 1327.2 | 1309.1 | 1275.8 | 1247.4 | 1229.3 |
| 55°    | 1226.8 | 1211.3 | 1180.4 | 1149.5 | 1136.6 |
| 57.5°  | 1126.3 | 1113.4 | 1079.8 | 1048.9 | 1038.4 |
| 60°    | 1025.6 | 1015.5 | 979.4  | 951.0  | 943.3  |
| 62.5°  | 927.7  | 909.7  | 884.0  | 858.3  | 847.9  |
| 65°    | 827.4  | 811.8  | 786.1  | 762.8  | 750.0  |
| 67.5°  | 724.3  | 711.2  | 688.2  | 670.2  | 659.8  |
| 70°    | 628.9  | 618.5  | 595.3  | 577.2  | 567.1  |
| 72.5°  | 531.0  | 520.6  | 507.7  | 489.7  | 482.1  |
| 75°    | 432.8  | 427.9  | 414.8  | 399.5  | 404.7  |
| 77.5°  | 345.3  | 334.9  | 329.8  | 322.1  | 314.4  |
| 80°    | 257.9  | 255.1  | 249.9  | 242.3  | 237.0  |
| 82.5°  | 175.3  | 175.3  | 172.8  | 162.4  | 162.4  |
| 85°    | 105.6  | 103.1  | 100.7  | 92.7   | 90.2   |
| 87.5°  | 46.5   | 41.3   | 36.1   | 28.4   | 25.7   |
| 90°    | 1.2    | 15.2   | 25.1   | 31.6   | 34.0   |
| 92.5°  | 31.6   | 26.5   | 30.2   | 32.8   | 34.0   |
| 95°    | 82.0   | 40.3   | 49.2   | 55.6   | 54.2   |
| 97.5°  | 147.6  | 44.2   | 64.2   | 68.2   | 69.4   |
| 100°   | 223.3  | 50.5   | 71.9   | 82.0   | 84.5   |
| 102.5° | 306.5  | 304.1  | 74.5   | 88.3   | 92.1   |
| 105°   | 383.5  | 421.4  | 77.0   | 90.7   | 95.9   |
| 107.5° | 473.1  | 504.5  | 79.6   | 93.3   | 98.4   |
| 110°   | 559.0  | 585.3  | 220.8  | 94.7   | 99.6   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 639.6  | 662.3  | 640.8  | 97.0   | 101.0  |
| 115°   | 725.4  | 746.8  | 778.4  | 194.3  | 103.5  |
| 117.5° | 799.8  | 825.0  | 846.5  | 666.1  | 335.5  |
| 120°   | 883.1  | 902.0  | 924.8  | 939.9  | 769.6  |
| 122.5° | 953.6  | 973.9  | 999.2  | 1006.7 | 1008.1 |
| 125°   | 1025.6 | 1042.1 | 1066.0 | 1074.9 | 1078.6 |
| 127.5° | 1091.2 | 1108.9 | 1127.9 | 1140.5 | 1141.7 |
| 130°   | 1153.0 | 1173.3 | 1187.1 | 1201.0 | 1199.8 |
| 132.5° | 1216.2 | 1232.6 | 1246.4 | 1257.7 | 1256.5 |
| 135°   | 1269.2 | 1289.4 | 1300.6 | 1313.4 | 1310.8 |
| 137.5° | 1324.6 | 1339.7 | 1352.5 | 1365.0 | 1361.3 |
| 140°   | 1378.8 | 1389.0 | 1402.8 | 1414.2 | 1407.9 |
| 142.5° | 1424.3 | 1433.2 | 1449.6 | 1459.6 | 1453.3 |
| 145°   | 1472.3 | 1470.9 | 1492.4 | 1501.2 | 1495.0 |
| 147.5° | 1513.8 | 1510.0 | 1531.5 | 1537.7 | 1532.8 |
| 150°   | 1554.3 | 1545.4 | 1565.6 | 1573.1 | 1566.8 |
| 152.5° | 1588.3 | 1578.2 | 1597.1 | 1604.7 | 1595.9 |
| 155°   | 1621.1 | 1609.8 | 1625.0 | 1632.5 | 1622.4 |
| 157.5° | 1647.6 | 1637.5 | 1648.9 | 1657.8 | 1647.6 |
| 160°   | 1670.3 | 1662.7 | 1670.3 | 1677.8 | 1669.0 |
| 162.5° | 1690.4 | 1682.9 | 1689.2 | 1698.1 | 1686.7 |
| 165°   | 1708.1 | 1700.6 | 1704.3 | 1713.2 | 1704.3 |
| 167.5° | 1722.0 | 1714.4 | 1718.3 | 1727.2 | 1715.7 |
| 170°   | 1733.4 | 1725.8 | 1728.4 | 1737.1 | 1725.8 |
| 172.5° | 1740.9 | 1733.4 | 1735.9 | 1744.8 | 1733.4 |
| 175°   | 1747.2 | 1738.4 | 1740.9 | 1749.7 | 1737.1 |
| 177.5° | 1749.7 | 1740.9 | 1742.2 | 1751.1 | 1739.7 |
| 180°   | 1743.4 | 1743.4 | 1743.4 | 1743.4 | 1743.4 |

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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 | 11.80            | 12.73 | 12.69 | 13.64 | 14.81 | 11.37          | 12.30 | 12.27 | 13.22 | 14.38 |
|                 | 3H   | 13.46            | 14.29 | 14.36 | 15.22 | 16.41 | 12.99          | 13.82 | 13.90 | 14.75 | 15.94 |
|                 | 4H   | 14.04            | 14.83 | 14.96 | 15.76 | 16.96 | 13.58          | 14.36 | 14.50 | 15.29 | 16.49 |
|                 | 6H   | 14.44            | 15.17 | 15.37 | 16.10 | 17.32 | 13.97          | 14.70 | 14.90 | 15.63 | 16.85 |
|                 | 8H   | 14.55            | 15.24 | 15.48 | 16.19 | 17.40 | 14.08          | 14.77 | 15.02 | 15.72 | 16.93 |
|                 | 12H  | 14.59            | 15.25 | 15.54 | 16.20 | 17.43 | 14.12          | 14.78 | 15.06 | 15.72 | 16.96 |
| 4H              | 2H   | 12.27            | 13.06 | 13.19 | 13.99 | 15.18 | 11.93          | 12.71 | 12.85 | 13.64 | 14.84 |
|                 | 3H   | 14.13            | 14.79 | 15.07 | 15.75 | 16.96 | 13.74          | 14.40 | 14.68 | 15.36 | 16.57 |
|                 | 4H   | 14.84            | 15.44 | 15.79 | 16.40 | 17.64 | 14.44          | 15.04 | 15.39 | 16.00 | 17.23 |
|                 | 6H   | 15.35            | 15.87 | 16.31 | 16.85 | 18.09 | 14.95          | 15.47 | 15.91 | 16.44 | 17.68 |
|                 | 8H   | 15.50            | 15.99 | 16.46 | 16.96 | 18.21 | 15.09          | 15.58 | 16.06 | 16.55 | 17.80 |
|                 | 12H  | 15.57            | 16.01 | 16.56 | 17.00 | 18.26 | 15.16          | 15.60 | 16.14 | 16.58 | 17.84 |
| 8H              | 4H   | 15.04            | 15.53 | 16.00 | 16.50 | 17.75 | 14.68          | 15.17 | 15.65 | 16.14 | 17.39 |
|                 | 6H   | 15.67            | 16.07 | 16.65 | 17.08 | 18.33 | 15.31          | 15.71 | 16.29 | 16.72 | 17.97 |
|                 | 8H   | 15.88            | 16.24 | 16.88 | 17.24 | 18.51 | 15.52          | 15.87 | 16.51 | 16.87 | 18.14 |
|                 | 12H  | 16.01            | 16.32 | 17.01 | 17.32 | 18.63 | 15.63          | 15.94 | 16.63 | 16.94 | 18.26 |
| 12H             | 4H   | 15.03            | 15.47 | 16.01 | 16.45 | 17.71 | 14.68          | 15.12 | 15.66 | 16.11 | 17.36 |
|                 | 6H   | 15.70            | 16.05 | 16.69 | 17.05 | 18.32 | 15.35          | 15.70 | 16.34 | 16.70 | 17.97 |
|                 | 8H   | 15.93            | 16.25 | 16.93 | 17.24 | 18.56 | 15.58          | 15.89 | 16.58 | 16.89 | 18.20 |