

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: P905386

Luminaire Tested: DFN2DIP-HX3F0-080D080US835-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P905386  
REPORT IS A COMBINATION OF REPORTS P899281 AND P896089  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-080D080US835-FLLFLL  
Description: 3 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

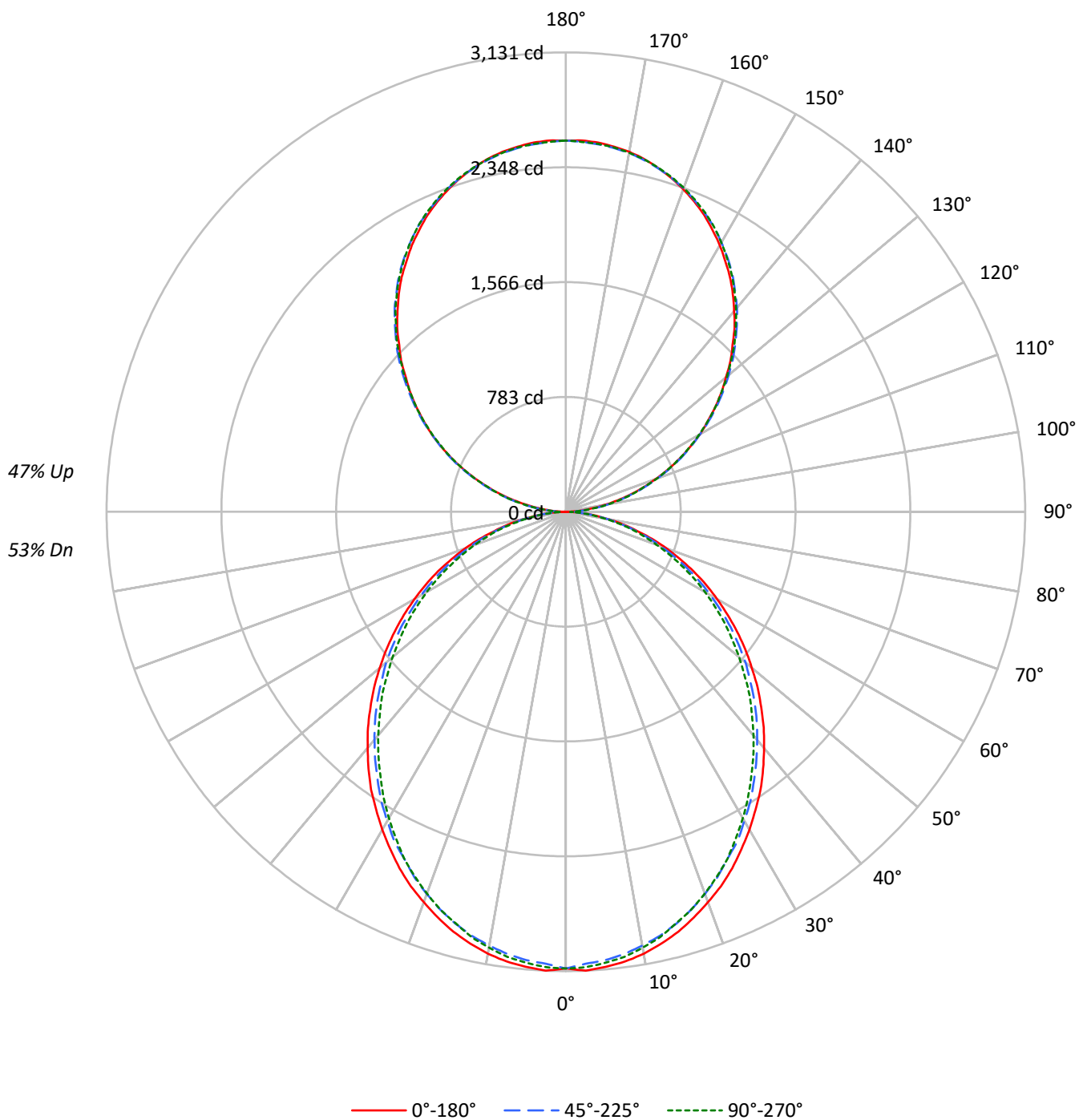
Lumens per Lamp: N/A  
Luminaire Lumens: 15000.0 lumens  
Efficiency: N/A  
Efficacy: 106.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.84' x L: 3.28' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 141.3  
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



TEST NUMBER: P905386

CATALOG NUMBER: DFN2DIP-HX3F0-080D080US835-FLLFL

**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 |
| RCR |     |     |     |     |     |     |     |     |    |    |    |  |    |    |    |  |    |
| 0   | 108 | 108 | 108 | 108 | 100 | 100 | 100 | 100 | 85 | 85 | 85 |  | 71 | 71 | 71 |  | 59 |
| 1   | 98  | 94  | 90  | 87  | 91  | 87  | 84  | 81  | 74 | 72 | 70 |  | 63 | 61 | 59 |  | 52 |
| 2   | 90  | 82  | 76  | 71  | 83  | 76  | 71  | 66  | 65 | 61 | 58 |  | 55 | 52 | 50 |  | 46 |
| 3   | 82  | 72  | 65  | 59  | 75  | 67  | 61  | 55  | 58 | 53 | 49 |  | 49 | 45 | 42 |  | 41 |
| 4   | 75  | 64  | 56  | 50  | 69  | 60  | 52  | 47  | 51 | 46 | 41 |  | 43 | 39 | 36 |  | 36 |
| 5   | 69  | 57  | 49  | 43  | 63  | 53  | 46  | 40  | 46 | 40 | 36 |  | 39 | 35 | 31 |  | 33 |
| 6   | 63  | 51  | 43  | 37  | 58  | 48  | 40  | 35  | 41 | 36 | 31 |  | 35 | 31 | 27 |  | 30 |
| 7   | 59  | 46  | 38  | 33  | 54  | 43  | 36  | 31  | 37 | 32 | 28 |  | 32 | 28 | 24 |  | 27 |
| 8   | 54  | 42  | 34  | 29  | 50  | 39  | 32  | 27  | 34 | 29 | 24 |  | 29 | 25 | 22 |  | 25 |
| 9   | 51  | 38  | 31  | 26  | 47  | 36  | 29  | 24  | 31 | 26 | 22 |  | 27 | 23 | 19 |  | 23 |
| 10  | 47  | 35  | 28  | 23  | 44  | 33  | 26  | 22  | 29 | 23 | 20 |  | 25 | 21 | 18 |  | 21 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3606 | 3606 | 3606 |
| 5°  | 3610 | 3553 | 3578 |
| 10° | 3579 | 3503 | 3527 |
| 15° | 3525 | 3442 | 3449 |
| 20° | 3452 | 3360 | 3370 |
| 25° | 3380 | 3262 | 3278 |
| 30° | 3289 | 3170 | 3163 |
| 35° | 3203 | 3062 | 3040 |
| 40° | 3098 | 2953 | 2923 |
| 45° | 2993 | 2844 | 2804 |
| 50° | 2878 | 2729 | 2666 |
| 55° | 2757 | 2596 | 2538 |
| 60° | 2621 | 2439 | 2392 |
| 65° | 2472 | 2275 | 2220 |
| 70° | 2282 | 2076 | 2034 |
| 75° | 2020 | 1837 | 1859 |
| 80° | 1703 | 1532 | 1530 |
| 85° | 1208 | 1014 | 993  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2993 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 293.0   | 2.0       |
| 10°-20°   | 824.3   | 5.5       |
| 20°-30°   | 1211.5  | 8.1       |
| 30°-40°   | 1407.0  | 9.4       |
| 40°-50°   | 1405.3  | 9.4       |
| 50°-60°   | 1225.4  | 8.2       |
| 60°-70°   | 905.8   | 6.0       |
| 70°-80°   | 512.5   | 3.4       |
| 80°-90°   | 142.5   | 0.9       |
| 90°-100°  | 156.6   | 1.0       |
| 100°-110° | 497.5   | 3.3       |
| 110°-120° | 851.3   | 5.7       |
| 120°-130° | 1119.6  | 7.5       |
| 130°-140° | 1256.7  | 8.4       |
| 140°-150° | 1232.3  | 8.2       |
| 150°-160° | 1033.7  | 6.9       |
| 160°-170° | 685.6   | 4.6       |
| 170°-180° | 239.6   | 1.6       |
| 0°-30°    | 2328.8  | 15.5      |
| 0°-40°    | 3735.8  | 24.9      |
| 0°-60°    | 6366.4  | 42.4      |
| 0°-90°    | 7927.2  | 52.8      |
| 90°-120°  | 1505.3  | 10.0      |
| 90°-150°  | 5113.9  | 34.1      |
| 90°-180°  | 7073.0  | 47.2      |
| 0°-180°   | 15000.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3113 | 3113  | 3113 | 3113  | 3113 |      |
| 5°   | 3113 | 3101  | 3068 | 3092  | 3086 | 295  |
| 15°  | 2963 | 2946  | 2906 | 2918  | 2904 | 835  |
| 25°  | 2682 | 2658  | 2607 | 2613  | 2607 | 1234 |
| 35°  | 2314 | 2284  | 2236 | 2218  | 2203 | 1445 |
| 45°  | 1883 | 1862  | 1817 | 1784  | 1772 | 1453 |
| 55°  | 1425 | 1407  | 1371 | 1335  | 1320 | 1274 |
| 65°  | 961  | 943   | 913  | 886   | 871  | 950  |
| 75°  | 503  | 497   | 482  | 464   | 470  | 537  |
| 85°  | 123  | 120   | 117  | 108   | 105  | 137  |
| 90°  | 2    | 28    | 75   | 70    | 72   | 15   |
| 95°  | 111  | 133   | 136  | 136   | 133  | 124  |
| 105° | 459  | 465   | 470  | 474   | 474  | 485  |
| 115° | 854  | 866   | 863  | 860   | 854  | 845  |
| 125° | 1242 | 1262  | 1256 | 1249  | 1246 | 1110 |
| 135° | 1607 | 1631  | 1635 | 1633  | 1627 | 1242 |
| 145° | 1951 | 1966  | 1979 | 1981  | 1972 | 1219 |
| 155° | 2231 | 2237  | 2244 | 2255  | 2248 | 1027 |
| 165° | 2427 | 2425  | 2425 | 2440  | 2429 | 685  |
| 175° | 2526 | 2519  | 2515 | 2530  | 2517 | 240  |
| 180° | 2530 | 2530  | 2530 | 2530  | 2530 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3112.8 | 3112.8 | 3112.8 | 3112.8 | 3112.8 |
| 2.5°   | 3130.9 | 3116.0 | 3083.0 | 3112.8 | 3107.1 |
| 5°     | 3112.8 | 3101.1 | 3068.1 | 3091.9 | 3086.2 |
| 7.5°   | 3091.9 | 3074.1 | 3041.1 | 3065.2 | 3059.2 |
| 10°    | 3059.2 | 3038.2 | 3002.3 | 3026.1 | 3017.3 |
| 12.5°  | 3014.1 | 2996.3 | 2960.4 | 2975.3 | 2969.3 |
| 15°    | 2963.3 | 2945.5 | 2906.4 | 2918.5 | 2903.6 |
| 17.5°  | 2900.4 | 2882.6 | 2843.5 | 2858.5 | 2843.5 |
| 20°    | 2831.5 | 2813.7 | 2771.8 | 2780.7 | 2768.9 |
| 22.5°  | 2762.9 | 2735.9 | 2696.8 | 2696.8 | 2690.8 |
| 25°    | 2681.9 | 2658.1 | 2607.3 | 2613.0 | 2607.3 |
| 27.5°  | 2592.0 | 2571.1 | 2532.3 | 2523.4 | 2508.5 |
| 30°    | 2502.5 | 2478.3 | 2433.6 | 2424.7 | 2412.6 |
| 32.5°  | 2406.6 | 2388.8 | 2340.8 | 2322.7 | 2310.7 |
| 35°    | 2313.8 | 2284.0 | 2236.0 | 2217.9 | 2203.0 |
| 37.5°  | 2209.0 | 2182.0 | 2134.1 | 2113.1 | 2098.2 |
| 40°    | 2101.4 | 2077.2 | 2029.3 | 2002.6 | 1990.5 |
| 42.5°  | 1996.6 | 1972.4 | 1924.8 | 1894.6 | 1876.9 |
| 45°    | 1882.9 | 1861.9 | 1816.8 | 1784.1 | 1772.1 |
| 47.5°  | 1772.1 | 1751.1 | 1703.1 | 1670.1 | 1652.3 |
| 50°    | 1655.2 | 1640.3 | 1598.3 | 1556.4 | 1541.5 |
| 52.5°  | 1541.5 | 1520.5 | 1481.8 | 1448.8 | 1427.8 |
| 55°    | 1424.9 | 1406.8 | 1371.0 | 1335.1 | 1320.1 |
| 57.5°  | 1308.1 | 1293.2 | 1254.1 | 1218.2 | 1206.1 |
| 60°    | 1191.2 | 1179.5 | 1137.5 | 1104.5 | 1095.6 |
| 62.5°  | 1077.5 | 1056.6 | 1026.7 | 996.9  | 984.8  |
| 65°    | 961.0  | 942.9  | 913.0  | 886.0  | 871.1  |
| 67.5°  | 841.2  | 826.0  | 799.3  | 778.4  | 766.3  |
| 70°    | 730.4  | 718.3  | 691.4  | 670.4  | 658.6  |
| 72.5°  | 616.7  | 604.7  | 589.7  | 568.8  | 559.9  |
| 75°    | 502.7  | 497.0  | 481.8  | 464.0  | 470.0  |
| 77.5°  | 401.1  | 389.0  | 383.0  | 374.1  | 365.2  |
| 80°    | 299.5  | 296.3  | 290.3  | 281.4  | 275.3  |
| 82.5°  | 203.6  | 203.6  | 200.7  | 188.6  | 188.6  |
| 85°    | 122.6  | 119.7  | 116.9  | 107.7  | 104.8  |
| 87.5°  | 54.0   | 48.0   | 41.9   | 33.0   | 29.9   |
| 90°    | 2.3    | 27.5   | 74.8   | 70.2   | 72.5   |
| 92.5°  | 47.3   | 64.1   | 66.4   | 68.6   | 68.6   |
| 95°    | 111.4  | 132.7  | 136.5  | 136.5  | 132.7  |
| 97.5°  | 185.4  | 205.2  | 213.6  | 213.6  | 213.6  |
| 100°   | 270.8  | 288.3  | 294.4  | 294.4  | 292.1  |
| 102.5° | 360.8  | 373.8  | 382.1  | 384.4  | 382.1  |
| 105°   | 459.2  | 465.3  | 469.9  | 473.7  | 473.7  |
| 107.5° | 556.8  | 566.0  | 566.0  | 567.5  | 556.8  |
| 110°   | 651.4  | 663.6  | 663.6  | 663.6  | 657.5  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 753.6  | 766.6  | 764.3  | 758.2  | 753.6  |
| 115°   | 854.3  | 866.5  | 862.7  | 860.4  | 854.3  |
| 117.5° | 954.2  | 971.0  | 960.3  | 954.2  | 948.1  |
| 120°   | 1054.9 | 1071.7 | 1054.9 | 1054.9 | 1048.0 |
| 122.5° | 1146.4 | 1167.8 | 1157.1 | 1151.0 | 1146.4 |
| 125°   | 1242.5 | 1261.6 | 1255.5 | 1248.6 | 1246.4 |
| 127.5° | 1336.4 | 1360.0 | 1351.6 | 1342.5 | 1336.4 |
| 130°   | 1424.1 | 1451.5 | 1447.7 | 1443.2 | 1434.8 |
| 132.5° | 1522.5 | 1543.8 | 1545.4 | 1534.7 | 1528.6 |
| 135°   | 1607.1 | 1630.8 | 1635.4 | 1633.1 | 1627.0 |
| 137.5° | 1701.7 | 1720.8 | 1724.6 | 1723.1 | 1713.9 |
| 140°   | 1784.9 | 1803.9 | 1814.6 | 1814.6 | 1806.2 |
| 142.5° | 1870.3 | 1889.4 | 1895.5 | 1897.8 | 1889.4 |
| 145°   | 1951.2 | 1966.4 | 1978.6 | 1980.9 | 1972.5 |
| 147.5° | 2023.6 | 2042.7 | 2051.8 | 2055.7 | 2047.3 |
| 150°   | 2098.4 | 2111.3 | 2119.7 | 2126.6 | 2119.7 |
| 152.5° | 2164.7 | 2177.7 | 2188.4 | 2196.8 | 2188.4 |
| 155°   | 2231.1 | 2237.2 | 2244.1 | 2254.7 | 2247.9 |
| 157.5° | 2288.3 | 2292.9 | 2296.7 | 2311.9 | 2301.3 |
| 160°   | 2339.4 | 2344.0 | 2346.3 | 2359.2 | 2350.1 |
| 162.5° | 2386.7 | 2386.7 | 2389.0 | 2403.5 | 2392.8 |
| 165°   | 2427.1 | 2424.8 | 2424.8 | 2440.1 | 2429.4 |
| 167.5° | 2463.7 | 2456.9 | 2456.9 | 2472.1 | 2461.4 |
| 170°   | 2491.2 | 2485.1 | 2482.8 | 2498.1 | 2485.1 |
| 172.5° | 2510.3 | 2504.2 | 2501.9 | 2517.1 | 2504.2 |
| 175°   | 2525.5 | 2519.4 | 2514.8 | 2530.1 | 2517.1 |
| 177.5° | 2533.9 | 2527.8 | 2523.2 | 2536.2 | 2523.2 |
| 180°   | 2530.1 | 2530.1 | 2530.1 | 2530.1 | 2530.1 |

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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 | 11.94            | 12.83 | 12.87 | 13.78 | 15.01 | 11.51          | 12.40 | 12.45 | 13.35 | 14.58 |
|                 | 3H   | 13.60            | 14.39 | 14.54 | 15.35 | 16.61 | 13.13          | 13.92 | 14.07 | 14.88 | 16.14 |
|                 | 4H   | 14.18            | 14.93 | 15.14 | 15.90 | 17.16 | 13.71          | 14.47 | 14.67 | 15.43 | 16.69 |
|                 | 6H   | 14.58            | 15.27 | 15.55 | 16.24 | 17.51 | 14.11          | 14.80 | 15.07 | 15.77 | 17.04 |
|                 | 8H   | 14.68            | 15.34 | 15.65 | 16.33 | 17.60 | 14.21          | 14.87 | 15.18 | 15.86 | 17.13 |
|                 | 12H  | 14.72            | 15.35 | 15.71 | 16.33 | 17.63 | 14.25          | 14.88 | 15.23 | 15.86 | 17.16 |
| 4H              | 2H   | 12.40            | 13.16 | 13.37 | 14.12 | 15.38 | 12.06          | 12.82 | 13.03 | 13.78 | 15.04 |
|                 | 3H   | 14.26            | 14.89 | 15.24 | 15.89 | 17.16 | 13.87          | 14.50 | 14.85 | 15.50 | 16.77 |
|                 | 4H   | 14.97            | 15.55 | 15.96 | 16.53 | 17.84 | 14.57          | 15.15 | 15.55 | 16.13 | 17.43 |
|                 | 6H   | 15.48            | 15.98 | 16.48 | 16.99 | 18.29 | 15.08          | 15.57 | 16.07 | 16.58 | 17.88 |
|                 | 8H   | 15.63            | 16.09 | 16.63 | 17.10 | 18.41 | 15.22          | 15.68 | 16.22 | 16.69 | 18.00 |
|                 | 12H  | 15.70            | 16.12 | 16.71 | 17.14 | 18.46 | 15.28          | 15.70 | 16.30 | 16.72 | 18.04 |
| 8H              | 4H   | 15.17            | 15.63 | 16.17 | 16.64 | 17.95 | 14.81          | 15.27 | 15.81 | 16.28 | 17.59 |
|                 | 6H   | 15.79            | 16.18 | 16.81 | 17.22 | 18.53 | 15.43          | 15.82 | 16.45 | 16.86 | 18.17 |
|                 | 8H   | 16.01            | 16.35 | 17.04 | 17.38 | 18.71 | 15.64          | 15.98 | 16.67 | 17.01 | 18.34 |
|                 | 12H  | 16.14            | 16.43 | 17.17 | 17.46 | 18.83 | 15.76          | 16.05 | 16.79 | 17.08 | 18.45 |
| 12H             | 4H   | 15.15            | 15.57 | 16.17 | 16.59 | 17.91 | 14.81          | 15.22 | 15.82 | 16.24 | 17.56 |
|                 | 6H   | 15.82            | 16.16 | 16.85 | 17.19 | 18.52 | 15.47          | 15.81 | 16.50 | 16.84 | 18.17 |
|                 | 8H   | 16.06            | 16.36 | 17.09 | 17.38 | 18.76 | 15.70          | 16.00 | 16.74 | 17.03 | 18.40 |