

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: P909940

Luminaire Tested: DFN2DIP-TR3F0-070D080US840-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P909940  
REPORT IS A COMBINATION OF REPORTS P900349 AND P897195  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-070D080US840-FLLFLL  
Description: 3 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

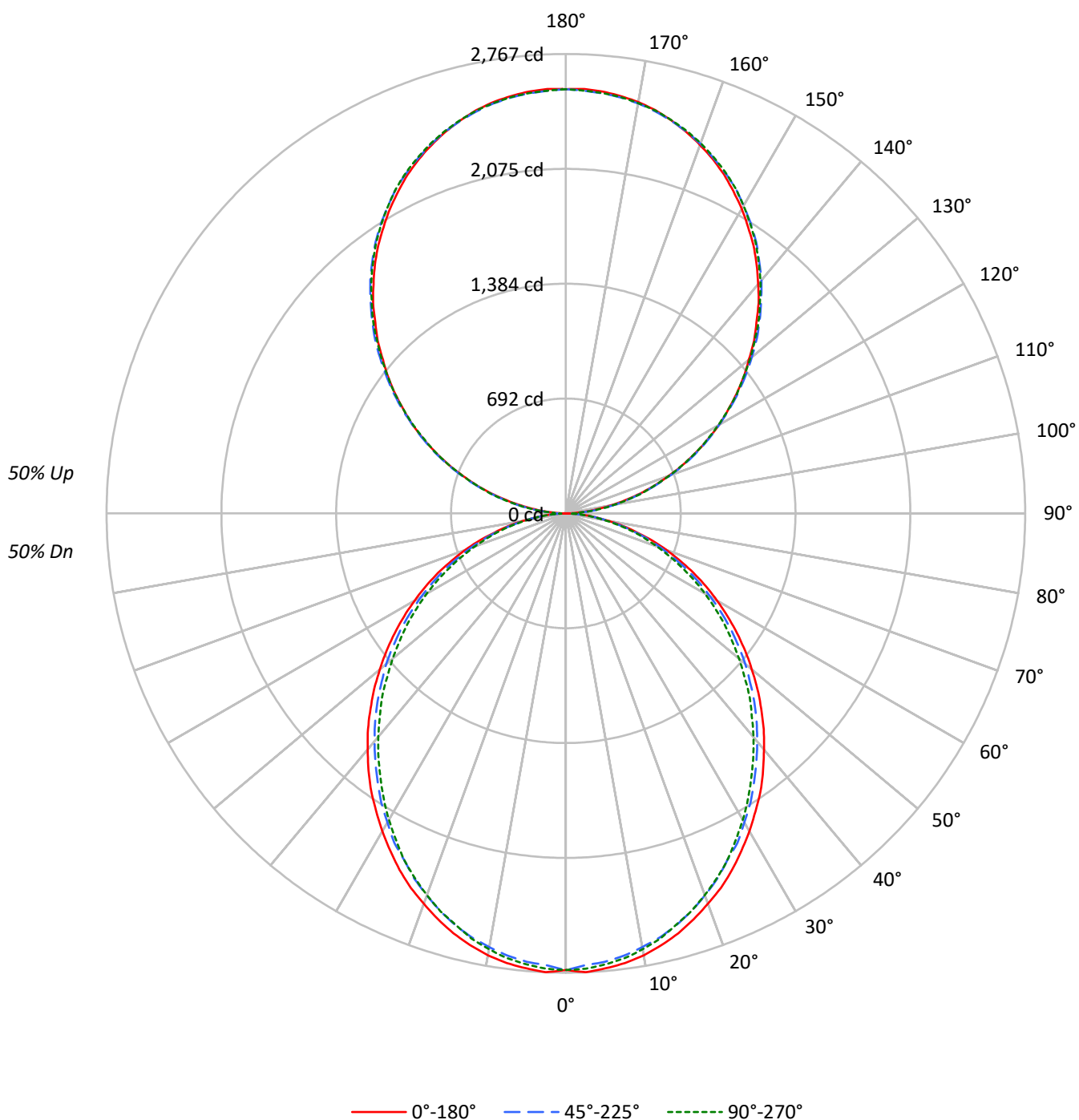
Lumens per Lamp: N/A  
Luminaire Lumens: 14148.2 lumens  
Efficiency: N/A  
Efficacy: 107.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 131.3  
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   | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 83 | 83 | 83 | 69 | 69 | 69 | 56 | 56 | 56 |
| 1   | 98  | 93  | 89  | 86  | 90 | 86 | 83 | 80 | 73 | 70 | 68 | 61 | 59 | 57 | 49 | 48 | 47 |
| 2   | 89  | 82  | 75  | 70  | 82 | 75 | 70 | 66 | 64 | 60 | 56 | 53 | 50 | 48 | 43 | 41 | 40 |
| 3   | 81  | 72  | 64  | 58  | 74 | 66 | 60 | 55 | 56 | 51 | 47 | 47 | 43 | 40 | 38 | 36 | 34 |
| 4   | 74  | 63  | 56  | 49  | 68 | 59 | 52 | 46 | 50 | 45 | 40 | 42 | 38 | 35 | 34 | 31 | 29 |
| 5   | 68  | 57  | 48  | 42  | 63 | 52 | 45 | 40 | 45 | 39 | 35 | 38 | 33 | 30 | 31 | 28 | 25 |
| 6   | 63  | 51  | 43  | 37  | 58 | 47 | 40 | 35 | 40 | 35 | 30 | 34 | 30 | 26 | 28 | 25 | 22 |
| 7   | 58  | 46  | 38  | 32  | 53 | 43 | 35 | 30 | 37 | 31 | 27 | 31 | 27 | 23 | 26 | 22 | 20 |
| 8   | 54  | 42  | 34  | 28  | 50 | 39 | 32 | 27 | 33 | 28 | 24 | 28 | 24 | 21 | 24 | 20 | 18 |
| 9   | 50  | 38  | 30  | 25  | 46 | 35 | 29 | 24 | 31 | 25 | 21 | 26 | 22 | 19 | 22 | 18 | 16 |
| 10  | 47  | 35  | 28  | 23  | 43 | 33 | 26 | 22 | 28 | 23 | 19 | 24 | 20 | 17 | 20 | 17 | 15 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3428 | 3428 | 3428 |
| 5°  | 3431 | 3377 | 3400 |
| 10° | 3401 | 3328 | 3352 |
| 15° | 3350 | 3271 | 3278 |
| 20° | 3280 | 3192 | 3202 |
| 25° | 3211 | 3098 | 3115 |
| 30° | 3125 | 3010 | 3004 |
| 35° | 3043 | 2907 | 2887 |
| 40° | 2942 | 2803 | 2776 |
| 45° | 2842 | 2699 | 2662 |
| 50° | 2732 | 2589 | 2530 |
| 55° | 2617 | 2462 | 2408 |
| 60° | 2487 | 2312 | 2269 |
| 65° | 2345 | 2156 | 2104 |
| 70° | 2163 | 1965 | 1927 |
| 75° | 1913 | 1737 | 1760 |
| 80° | 1610 | 1445 | 1446 |
| 85° | 1138 | 952  | 934  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2842 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 258.9   | 1.8       |
| 10°-20°   | 728.4   | 5.1       |
| 20°-30°   | 1070.5  | 7.6       |
| 30°-40°   | 1243.3  | 8.8       |
| 40°-50°   | 1241.7  | 8.8       |
| 50°-60°   | 1082.8  | 7.7       |
| 60°-70°   | 800.4   | 5.7       |
| 70°-80°   | 452.9   | 3.2       |
| 80°-90°   | 126.8   | 0.9       |
| 90°-100°  | 158.1   | 1.1       |
| 100°-110° | 502.4   | 3.6       |
| 110°-120° | 859.7   | 6.1       |
| 120°-130° | 1130.6  | 8.0       |
| 130°-140° | 1269.1  | 9.0       |
| 140°-150° | 1244.5  | 8.8       |
| 150°-160° | 1043.9  | 7.4       |
| 160°-170° | 692.3   | 4.9       |
| 170°-180° | 242.0   | 1.7       |
| 0°-30°    | 2057.8  | 14.5      |
| 0°-40°    | 3301.1  | 23.3      |
| 0°-60°    | 5625.6  | 39.8      |
| 0°-90°    | 7005.6  | 49.5      |
| 90°-120°  | 1520.1  | 10.7      |
| 90°-150°  | 5164.3  | 36.5      |
| 90°-180°  | 7143.0  | 50.5      |
| 0°-180°   | 14148.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2751 | 2751  | 2751 | 2751  | 2751 |      |
| 5°   | 2751 | 2740  | 2711 | 2732  | 2727 | 261  |
| 15°  | 2618 | 2603  | 2568 | 2579  | 2566 | 737  |
| 25°  | 2370 | 2349  | 2304 | 2309  | 2304 | 1090 |
| 35°  | 2045 | 2018  | 1976 | 1960  | 1947 | 1277 |
| 45°  | 1664 | 1645  | 1605 | 1576  | 1566 | 1284 |
| 55°  | 1259 | 1243  | 1211 | 1180  | 1166 | 1126 |
| 65°  | 849  | 833   | 807  | 783   | 770  | 840  |
| 75°  | 444  | 439   | 426  | 410   | 415  | 474  |
| 85°  | 108  | 106   | 103  | 95    | 93   | 121  |
| 90°  | 2    | 28    | 76   | 71    | 73   | 14   |
| 95°  | 112  | 134   | 138  | 138   | 134  | 125  |
| 105° | 464  | 470   | 474  | 478   | 478  | 489  |
| 115° | 863  | 875   | 871  | 869   | 863  | 853  |
| 125° | 1255 | 1274  | 1268 | 1261  | 1259 | 1121 |
| 135° | 1623 | 1647  | 1652 | 1649  | 1643 | 1254 |
| 145° | 1970 | 1986  | 1998 | 2000  | 1992 | 1231 |
| 155° | 2253 | 2259  | 2266 | 2277  | 2270 | 1037 |
| 165° | 2451 | 2449  | 2449 | 2464  | 2453 | 691  |
| 175° | 2550 | 2544  | 2540 | 2555  | 2542 | 242  |
| 180° | 2555 | 2555  | 2555 | 2555  | 2555 |      |

TEST NUMBER: P909940

CATALOG NUMBER: DFN2DIP-TR3F0-070D080US840-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2750.6 | 2750.6 | 2750.6 | 2750.6 | 2750.6 |
| 2.5°   | 2766.6 | 2753.4 | 2724.2 | 2750.6 | 2745.5 |
| 5°     | 2750.6 | 2740.3 | 2711.1 | 2732.1 | 2727.0 |
| 7.5°   | 2732.1 | 2716.3 | 2687.2 | 2708.6 | 2703.2 |
| 10°    | 2703.2 | 2684.6 | 2652.9 | 2674.0 | 2666.1 |
| 12.5°  | 2663.3 | 2647.7 | 2616.0 | 2629.1 | 2623.7 |
| 15°    | 2618.5 | 2602.7 | 2568.2 | 2578.9 | 2565.7 |
| 17.5°  | 2562.8 | 2547.2 | 2512.6 | 2525.9 | 2512.6 |
| 20°    | 2501.9 | 2486.3 | 2449.2 | 2457.1 | 2446.7 |
| 22.5°  | 2441.3 | 2417.5 | 2383.0 | 2383.0 | 2377.6 |
| 25°    | 2369.9 | 2348.7 | 2303.9 | 2309.0 | 2303.9 |
| 27.5°  | 2290.4 | 2271.9 | 2237.7 | 2229.8 | 2216.6 |
| 30°    | 2211.3 | 2189.9 | 2150.4 | 2142.5 | 2131.8 |
| 32.5°  | 2126.5 | 2110.8 | 2068.4 | 2052.5 | 2041.7 |
| 35°    | 2044.6 | 2018.2 | 1975.8 | 1959.8 | 1946.6 |
| 37.5°  | 1952.0 | 1928.1 | 1885.7 | 1867.2 | 1854.0 |
| 40°    | 1856.8 | 1835.5 | 1793.1 | 1769.6 | 1758.9 |
| 42.5°  | 1764.2 | 1742.9 | 1700.8 | 1674.2 | 1658.4 |
| 45°    | 1663.8 | 1645.3 | 1605.4 | 1576.5 | 1565.8 |
| 47.5°  | 1565.8 | 1547.3 | 1504.9 | 1475.7 | 1460.1 |
| 50°    | 1462.6 | 1449.4 | 1412.3 | 1375.3 | 1362.1 |
| 52.5°  | 1362.1 | 1343.6 | 1309.4 | 1280.2 | 1261.6 |
| 55°    | 1259.1 | 1243.1 | 1211.4 | 1179.7 | 1166.5 |
| 57.5°  | 1155.9 | 1142.7 | 1108.1 | 1076.4 | 1065.8 |
| 60°    | 1052.6 | 1042.2 | 1005.2 | 976.0  | 968.2  |
| 62.5°  | 952.1  | 933.6  | 907.3  | 880.9  | 870.2  |
| 65°    | 849.2  | 833.1  | 806.8  | 782.9  | 769.7  |
| 67.5°  | 743.4  | 729.9  | 706.3  | 687.8  | 677.1  |
| 70°    | 645.4  | 634.8  | 610.9  | 592.4  | 582.0  |
| 72.5°  | 544.9  | 534.3  | 521.1  | 502.6  | 494.7  |
| 75°    | 444.2  | 439.2  | 425.7  | 410.0  | 415.4  |
| 77.5°  | 354.5  | 343.8  | 338.4  | 330.5  | 322.8  |
| 80°    | 264.6  | 261.9  | 256.5  | 248.6  | 243.3  |
| 82.5°  | 179.9  | 179.9  | 177.3  | 166.7  | 166.7  |
| 85°    | 108.4  | 105.8  | 103.3  | 95.1   | 92.6   |
| 87.5°  | 47.7   | 42.4   | 37.1   | 29.2   | 26.4   |
| 90°    | 2.3    | 27.8   | 75.5   | 70.9   | 73.2   |
| 92.5°  | 47.8   | 64.7   | 67.1   | 69.3   | 69.3   |
| 95°    | 112.5  | 134.0  | 137.8  | 137.8  | 134.0  |
| 97.5°  | 187.2  | 207.2  | 215.7  | 215.7  | 215.7  |
| 100°   | 273.5  | 291.1  | 297.3  | 297.3  | 295.0  |
| 102.5° | 364.4  | 377.5  | 385.9  | 388.2  | 385.9  |
| 105°   | 463.7  | 469.9  | 474.5  | 478.4  | 478.4  |
| 107.5° | 562.3  | 571.6  | 571.6  | 573.1  | 562.3  |
| 110°   | 657.8  | 670.1  | 670.1  | 670.1  | 664.0  |



TEST NUMBER: P909940

CATALOG NUMBER: DFN2DIP-TR3F0-070D080US840-FLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 761.0  | 774.2  | 771.8  | 765.7  | 761.0  |
| 115°   | 862.7  | 875.0  | 871.2  | 868.9  | 862.7  |
| 117.5° | 963.6  | 980.6  | 969.8  | 963.6  | 957.5  |
| 120°   | 1065.3 | 1082.3 | 1065.3 | 1065.3 | 1058.3 |
| 122.5° | 1157.7 | 1179.3 | 1168.5 | 1162.4 | 1157.7 |
| 125°   | 1254.8 | 1274.0 | 1267.9 | 1260.9 | 1258.7 |
| 127.5° | 1349.6 | 1373.4 | 1364.9 | 1355.7 | 1349.6 |
| 130°   | 1438.1 | 1465.8 | 1462.0 | 1457.4 | 1449.0 |
| 132.5° | 1537.5 | 1559.0 | 1560.6 | 1549.8 | 1543.7 |
| 135°   | 1623.0 | 1646.9 | 1651.5 | 1649.2 | 1643.1 |
| 137.5° | 1718.5 | 1737.8 | 1741.6 | 1740.1 | 1730.8 |
| 140°   | 1802.5 | 1821.7 | 1832.5 | 1832.5 | 1824.0 |
| 142.5° | 1888.8 | 1908.0 | 1914.2 | 1916.5 | 1908.0 |
| 145°   | 1970.4 | 1985.8 | 1998.1 | 2000.4 | 1992.0 |
| 147.5° | 2043.6 | 2062.9 | 2072.0 | 2076.0 | 2067.5 |
| 150°   | 2119.1 | 2132.1 | 2140.6 | 2147.6 | 2140.6 |
| 152.5° | 2186.1 | 2199.2 | 2210.0 | 2218.5 | 2210.0 |
| 155°   | 2253.1 | 2259.3 | 2266.2 | 2276.9 | 2270.1 |
| 157.5° | 2310.9 | 2315.5 | 2319.4 | 2334.7 | 2324.0 |
| 160°   | 2362.5 | 2367.1 | 2369.4 | 2382.5 | 2373.3 |
| 162.5° | 2410.2 | 2410.2 | 2412.6 | 2427.2 | 2416.4 |
| 165°   | 2451.0 | 2448.7 | 2448.7 | 2464.2 | 2453.4 |
| 167.5° | 2488.0 | 2481.1 | 2481.1 | 2496.5 | 2485.7 |
| 170°   | 2515.8 | 2509.6 | 2507.3 | 2522.7 | 2509.6 |
| 172.5° | 2535.1 | 2528.9 | 2526.6 | 2541.9 | 2528.9 |
| 175°   | 2550.4 | 2544.3 | 2539.6 | 2555.1 | 2541.9 |
| 177.5° | 2558.9 | 2552.7 | 2548.1 | 2561.2 | 2548.1 |
| 180°   | 2555.1 | 2555.1 | 2555.1 | 2555.1 | 2555.1 |

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CATALOG NUMBER: DFN2DIP-TR3F0-070D080US840-FLLFL

**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 | 11.45            | 12.31 | 12.41 | 13.29 | 14.57 | 11.02          | 11.88 | 11.99 | 12.86 | 14.14 |
|                 | 3H   | 13.10            | 13.87 | 14.08 | 14.86 | 16.16 | 12.64          | 13.40 | 13.61 | 14.39 | 15.69 |
|                 | 4H   | 13.69            | 14.41 | 14.67 | 15.40 | 16.71 | 13.22          | 13.95 | 14.20 | 14.93 | 16.24 |
|                 | 6H   | 14.08            | 14.75 | 15.07 | 15.74 | 17.06 | 13.61          | 14.28 | 14.61 | 15.27 | 16.59 |
|                 | 8H   | 14.18            | 14.82 | 15.18 | 15.83 | 17.15 | 13.71          | 14.35 | 14.71 | 15.36 | 16.68 |
|                 | 12H  | 14.22            | 14.83 | 15.23 | 15.84 | 17.18 | 13.75          | 14.36 | 14.76 | 15.36 | 16.70 |
| 4H              | 2H   | 11.91            | 12.64 | 12.90 | 13.63 | 14.94 | 11.57          | 12.30 | 12.56 | 13.29 | 14.59 |
|                 | 3H   | 13.77            | 14.37 | 14.77 | 15.39 | 16.71 | 13.38          | 13.98 | 14.38 | 15.00 | 16.32 |
|                 | 4H   | 14.47            | 15.03 | 15.48 | 16.04 | 17.39 | 14.07          | 14.63 | 15.08 | 15.64 | 16.98 |
|                 | 6H   | 14.98            | 15.46 | 16.00 | 16.49 | 17.83 | 14.57          | 15.05 | 15.60 | 16.09 | 17.43 |
|                 | 8H   | 15.12            | 15.57 | 16.15 | 16.60 | 17.96 | 14.72          | 15.16 | 15.74 | 16.19 | 17.55 |
|                 | 12H  | 15.19            | 15.60 | 16.23 | 16.64 | 18.00 | 14.78          | 15.18 | 15.82 | 16.22 | 17.59 |
| 8H              | 4H   | 14.67            | 15.11 | 15.69 | 16.14 | 17.50 | 14.31          | 14.76 | 15.33 | 15.78 | 17.14 |
|                 | 6H   | 15.29            | 15.66 | 16.33 | 16.72 | 18.08 | 14.93          | 15.30 | 15.97 | 16.37 | 17.72 |
|                 | 8H   | 15.50            | 15.83 | 16.55 | 16.88 | 18.25 | 15.14          | 15.46 | 16.19 | 16.52 | 17.89 |
|                 | 12H  | 15.63            | 15.91 | 16.68 | 16.96 | 18.38 | 15.25          | 15.53 | 16.30 | 16.58 | 18.00 |
| 12H             | 4H   | 14.65            | 15.05 | 15.69 | 16.10 | 17.46 | 14.30          | 14.70 | 15.34 | 15.75 | 17.11 |
|                 | 6H   | 15.31            | 15.64 | 16.37 | 16.69 | 18.07 | 14.97          | 15.29 | 16.02 | 16.35 | 17.72 |
|                 | 8H   | 15.55            | 15.83 | 16.61 | 16.88 | 18.30 | 15.20          | 15.48 | 16.25 | 16.53 | 17.95 |