

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: P914769

Luminaire Tested: DFN2DIP-SQ3F0-100D110US927-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P914769  
REPORT IS A COMBINATION OF REPORTS P901519 AND P898289  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-100D110US927-FLLONL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

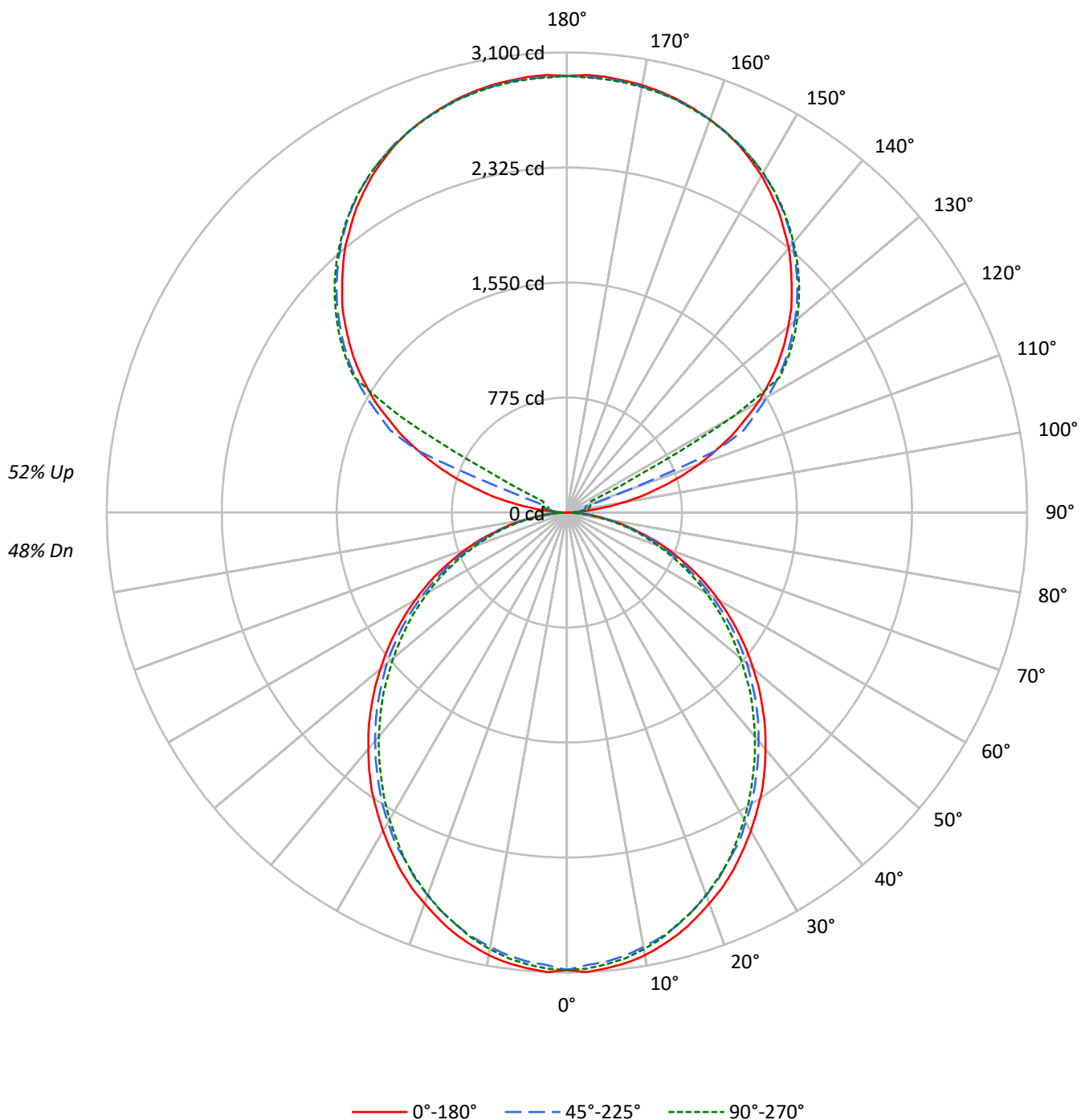
Lumens per Lamp: N/A  
Luminaire Lumens: 16469.4 lumens  
Efficiency: N/A  
Efficacy: 89.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 184.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9781  
Total Harmonic Distortion (THDi): 0.075  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P914769

CATALOG NUMBER: DFN2DIP-SQ3F0-100D110US927-FLLONL

### Luminous Intensity Polar Plot



TEST NUMBER: P914769

CATALOG NUMBER: DFN2DIP-SQ3F0-100D110US927-FLLONL

**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 | 98 | 98 | 98 | 98 | 82 | 82 | 82 | 67 | 67 | 67 | 54 | 54 | 54 |
| 1   | 97  | 93  | 89  | 86  | 89 | 86 | 82 | 79 | 72 | 70 | 67 | 59 | 58 | 56 | 48 | 47 | 46 |
| 2   | 89  | 81  | 75  | 70  | 81 | 75 | 70 | 65 | 63 | 59 | 56 | 52 | 49 | 47 | 42 | 40 | 38 |
| 3   | 81  | 71  | 64  | 58  | 74 | 66 | 60 | 54 | 56 | 51 | 47 | 46 | 43 | 40 | 37 | 35 | 33 |
| 4   | 74  | 63  | 55  | 49  | 68 | 58 | 51 | 46 | 49 | 44 | 40 | 41 | 37 | 34 | 33 | 30 | 28 |
| 5   | 68  | 56  | 48  | 42  | 62 | 52 | 45 | 40 | 44 | 39 | 34 | 37 | 33 | 29 | 30 | 27 | 25 |
| 6   | 62  | 50  | 42  | 37  | 57 | 47 | 40 | 34 | 40 | 34 | 30 | 33 | 29 | 26 | 27 | 24 | 22 |
| 7   | 58  | 46  | 38  | 32  | 53 | 42 | 35 | 30 | 36 | 30 | 26 | 30 | 26 | 23 | 25 | 22 | 19 |
| 8   | 54  | 41  | 34  | 28  | 49 | 38 | 31 | 27 | 33 | 27 | 23 | 28 | 23 | 20 | 23 | 20 | 17 |
| 9   | 50  | 38  | 30  | 25  | 46 | 35 | 28 | 24 | 30 | 25 | 21 | 25 | 21 | 18 | 21 | 18 | 16 |
| 10  | 47  | 35  | 27  | 23  | 43 | 32 | 26 | 21 | 28 | 23 | 19 | 24 | 19 | 17 | 20 | 16 | 14 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3532 | 3532 | 3532 |
| 5°  | 3535 | 3480 | 3505 |
| 10° | 3504 | 3431 | 3456 |
| 15° | 3451 | 3372 | 3381 |
| 20° | 3379 | 3291 | 3304 |
| 25° | 3307 | 3195 | 3215 |
| 30° | 3218 | 3105 | 3102 |
| 35° | 3133 | 3000 | 2983 |
| 40° | 3029 | 2894 | 2870 |
| 45° | 2926 | 2787 | 2754 |
| 50° | 2812 | 2674 | 2619 |
| 55° | 2693 | 2544 | 2495 |
| 60° | 2559 | 2390 | 2353 |
| 65° | 2411 | 2230 | 2186 |
| 70° | 2224 | 2035 | 2005 |
| 75° | 1965 | 1802 | 1837 |
| 80° | 1651 | 1503 | 1518 |
| 85° | 1162 | 996  | 994  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 2926 cd/sqm

TEST NUMBER: P914769

CATALOG NUMBER: DFN2DIP-SQ3F0-100D110US927-FLONL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 290.1   | 1.8       |
| 10°-20°   | 816.3   | 5.0       |
| 20°-30°   | 1199.6  | 7.3       |
| 30°-40°   | 1393.3  | 8.5       |
| 40°-50°   | 1391.5  | 8.4       |
| 50°-60°   | 1213.4  | 7.4       |
| 60°-70°   | 897.0   | 5.4       |
| 70°-80°   | 507.5   | 3.1       |
| 80°-90°   | 139.1   | 0.8       |
| 90°-100°  | 97.0    | 0.6       |
| 100°-110° | 361.5   | 2.2       |
| 110°-120° | 958.7   | 5.8       |
| 120°-130° | 1590.2  | 9.7       |
| 130°-140° | 1689.1  | 10.3      |
| 140°-150° | 1569.9  | 9.5       |
| 150°-160° | 1262.1  | 7.7       |
| 160°-170° | 813.3   | 4.9       |
| 170°-180° | 279.9   | 1.7       |
| 0°-30°    | 2306.0  | 14.0      |
| 0°-40°    | 3699.3  | 22.5      |
| 0°-60°    | 6304.2  | 38.3      |
| 0°-90°    | 7847.8  | 47.7      |
| 90°-120°  | 1417.2  | 8.6       |
| 90°-150°  | 6266.3  | 38.0      |
| 90°-180°  | 8622.0  | 52.4      |
| 0°-180°   | 16469.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3082 | 3082  | 3082 | 3082  | 3082 |      |
| 5°   | 3082 | 3071  | 3038 | 3062  | 3056 | 293  |
| 15°  | 2934 | 2917  | 2878 | 2890  | 2875 | 826  |
| 25°  | 2656 | 2632  | 2582 | 2587  | 2582 | 1222 |
| 35°  | 2291 | 2262  | 2214 | 2196  | 2181 | 1431 |
| 45°  | 1864 | 1844  | 1799 | 1767  | 1755 | 1439 |
| 55°  | 1411 | 1393  | 1358 | 1322  | 1307 | 1262 |
| 65°  | 952  | 934   | 904  | 877   | 863  | 941  |
| 75°  | 498  | 492   | 477  | 460   | 465  | 531  |
| 85°  | 121  | 119   | 116  | 107   | 104  | 135  |
| 90°  | 2    | 26    | 42   | 53    | 57   | 15   |
| 95°  | 138  | 68    | 83   | 94    | 92   | 164  |
| 105° | 647  | 711   | 130  | 153   | 162  | 691  |
| 115° | 1224 | 1260  | 1313 | 328   | 175  | 1205 |
| 125° | 1730 | 1758  | 1798 | 1813  | 1819 | 1543 |
| 135° | 2141 | 2175  | 2194 | 2215  | 2211 | 1654 |
| 145° | 2484 | 2481  | 2517 | 2532  | 2522 | 1553 |
| 155° | 2734 | 2715  | 2741 | 2754  | 2737 | 1260 |
| 165° | 2881 | 2869  | 2875 | 2890  | 2875 | 814  |
| 175° | 2947 | 2932  | 2936 | 2952  | 2930 | 280  |
| 180° | 2941 | 2941  | 2941 | 2941  | 2941 |      |

TEST NUMBER: P914769

CATALOG NUMBER: DFN2DIP-SQ3F0-100D110US927-FLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3082.5 | 3082.5 | 3082.5 | 3082.5 | 3082.5 |
| 2.5°   | 3100.4 | 3085.5 | 3052.8 | 3082.5 | 3076.8 |
| 5°     | 3082.5 | 3070.8 | 3038.1 | 3061.7 | 3056.0 |
| 7.5°   | 3061.7 | 3044.0 | 3011.3 | 3035.2 | 3029.3 |
| 10°    | 3029.3 | 3008.5 | 2973.0 | 2996.6 | 2987.8 |
| 12.5°  | 2984.6 | 2967.0 | 2931.5 | 2946.3 | 2940.3 |
| 15°    | 2934.3 | 2916.7 | 2878.0 | 2890.0 | 2875.2 |
| 17.5°  | 2872.1 | 2854.5 | 2815.7 | 2830.5 | 2815.7 |
| 20°    | 2803.8 | 2786.2 | 2744.7 | 2753.5 | 2741.8 |
| 22.5°  | 2735.9 | 2709.2 | 2670.4 | 2670.4 | 2664.5 |
| 25°    | 2655.7 | 2632.1 | 2581.8 | 2587.4 | 2581.8 |
| 27.5°  | 2566.7 | 2545.9 | 2507.6 | 2498.8 | 2484.0 |
| 30°    | 2478.0 | 2454.1 | 2409.7 | 2400.9 | 2389.0 |
| 32.5°  | 2383.0 | 2365.5 | 2317.9 | 2300.0 | 2288.1 |
| 35°    | 2291.2 | 2261.7 | 2214.1 | 2196.2 | 2181.4 |
| 37.5°  | 2187.4 | 2160.7 | 2113.2 | 2092.5 | 2077.7 |
| 40°    | 2080.8 | 2056.9 | 2009.4 | 1983.1 | 1971.1 |
| 42.5°  | 1977.0 | 1953.1 | 1906.0 | 1876.1 | 1858.5 |
| 45°    | 1864.5 | 1843.7 | 1799.0 | 1766.6 | 1754.8 |
| 47.5°  | 1754.8 | 1734.0 | 1686.5 | 1653.8 | 1636.2 |
| 50°    | 1639.0 | 1624.2 | 1582.7 | 1541.2 | 1526.5 |
| 52.5°  | 1526.5 | 1505.7 | 1467.3 | 1434.6 | 1413.9 |
| 55°    | 1411.0 | 1393.1 | 1357.6 | 1322.0 | 1307.3 |
| 57.5°  | 1295.3 | 1280.5 | 1241.8 | 1206.3 | 1194.4 |
| 60°    | 1179.6 | 1167.9 | 1126.4 | 1093.7 | 1084.9 |
| 62.5°  | 1067.0 | 1046.2 | 1016.7 | 987.1  | 975.2  |
| 65°    | 951.6  | 933.7  | 904.1  | 877.3  | 862.6  |
| 67.5°  | 833.1  | 817.9  | 791.5  | 770.8  | 758.8  |
| 70°    | 723.3  | 711.3  | 684.6  | 663.8  | 652.2  |
| 72.5°  | 610.7  | 598.7  | 584.0  | 563.2  | 554.4  |
| 75°    | 497.8  | 492.2  | 477.1  | 459.5  | 465.4  |
| 77.5°  | 397.2  | 385.2  | 379.2  | 370.4  | 361.6  |
| 80°    | 296.5  | 293.4  | 287.4  | 278.6  | 272.7  |
| 82.5°  | 201.6  | 201.6  | 198.8  | 186.8  | 186.8  |
| 85°    | 121.4  | 118.6  | 115.7  | 106.6  | 103.8  |
| 87.5°  | 53.5   | 47.5   | 41.5   | 32.7   | 29.5   |
| 90°    | 2.1    | 25.5   | 42.5   | 53.3   | 57.4   |
| 92.5°  | 53.3   | 44.8   | 51.0   | 55.4   | 57.4   |
| 95°    | 138.2  | 68.0   | 82.9   | 93.7   | 91.5   |
| 97.5°  | 248.9  | 74.5   | 108.4  | 114.9  | 117.0  |
| 100°   | 376.8  | 85.2   | 121.3  | 138.2  | 142.5  |
| 102.5° | 517.0  | 512.9  | 125.6  | 148.9  | 155.4  |
| 105°   | 646.9  | 710.8  | 129.9  | 153.1  | 161.8  |
| 107.5° | 798.0  | 851.0  | 134.2  | 157.4  | 166.0  |
| 110°   | 942.8  | 987.3  | 372.5  | 159.7  | 168.0  |

TEST NUMBER: P914769

CATALOG NUMBER: DFN2DIP-SQ3F0-100D110US927-FLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1079.0 | 1117.1 | 1081.0 | 163.7  | 170.3  |
| 115°   | 1223.5 | 1259.6 | 1313.0 | 327.7  | 174.6  |
| 117.5° | 1349.2 | 1391.6 | 1428.0 | 1123.5 | 566.0  |
| 120°   | 1489.6 | 1521.5 | 1559.9 | 1585.4 | 1298.1 |
| 122.5° | 1608.7 | 1642.7 | 1685.4 | 1698.1 | 1700.4 |
| 125°   | 1730.0 | 1757.8 | 1798.2 | 1813.1 | 1819.4 |
| 127.5° | 1840.6 | 1870.4 | 1902.5 | 1923.7 | 1925.8 |
| 130°   | 1945.0 | 1979.1 | 2002.3 | 2025.8 | 2023.9 |
| 132.5° | 2051.4 | 2079.2 | 2102.4 | 2121.6 | 2119.6 |
| 135°   | 2140.9 | 2174.9 | 2193.9 | 2215.4 | 2211.1 |
| 137.5° | 2234.3 | 2259.9 | 2281.3 | 2302.6 | 2296.2 |
| 140°   | 2325.8 | 2343.0 | 2366.2 | 2385.4 | 2374.8 |
| 142.5° | 2402.6 | 2417.5 | 2445.1 | 2462.0 | 2451.4 |
| 145°   | 2483.5 | 2481.2 | 2517.3 | 2532.3 | 2521.7 |
| 147.5° | 2553.5 | 2547.2 | 2583.3 | 2593.9 | 2585.6 |
| 150°   | 2621.7 | 2606.8 | 2640.9 | 2653.6 | 2643.0 |
| 152.5° | 2679.1 | 2662.1 | 2694.0 | 2706.9 | 2692.0 |
| 155°   | 2734.5 | 2715.4 | 2740.9 | 2753.6 | 2736.7 |
| 157.5° | 2779.1 | 2762.2 | 2781.4 | 2796.3 | 2779.1 |
| 160°   | 2817.6 | 2804.6 | 2817.6 | 2830.1 | 2815.3 |
| 162.5° | 2851.4 | 2838.8 | 2849.4 | 2864.3 | 2845.1 |
| 165°   | 2881.2 | 2868.6 | 2874.9 | 2889.8 | 2874.9 |
| 167.5° | 2904.7 | 2891.9 | 2898.4 | 2913.3 | 2894.2 |
| 170°   | 2923.9 | 2911.0 | 2915.3 | 2930.3 | 2911.0 |
| 172.5° | 2936.5 | 2923.9 | 2928.2 | 2943.1 | 2923.9 |
| 175°   | 2947.2 | 2932.3 | 2936.5 | 2951.5 | 2930.3 |
| 177.5° | 2951.5 | 2936.5 | 2938.8 | 2953.7 | 2934.6 |
| 180°   | 2940.9 | 2940.9 | 2940.9 | 2940.9 | 2940.9 |

TEST NUMBER: P914769

CATALOG NUMBER: DFN2DIP-SQ3F0-100D110US927-FLLONL

**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 | 11.40            | 12.24 | 12.38 | 13.23 | 14.54 | 10.96          | 11.80 | 11.93 | 12.79 | 14.09 |
|                 | 3H   | 13.05            | 13.81 | 14.04 | 14.81 | 16.13 | 12.56          | 13.32 | 13.55 | 14.32 | 15.64 |
|                 | 4H   | 13.64            | 14.35 | 14.64 | 15.36 | 16.69 | 13.14          | 13.86 | 14.15 | 14.86 | 16.20 |
|                 | 6H   | 14.03            | 14.69 | 15.05 | 15.70 | 17.05 | 13.53          | 14.19 | 14.55 | 15.20 | 16.55 |
|                 | 8H   | 14.14            | 14.76 | 15.15 | 15.79 | 17.13 | 13.63          | 14.26 | 14.65 | 15.28 | 16.63 |
|                 | 12H  | 14.18            | 14.78 | 15.20 | 15.80 | 17.16 | 13.67          | 14.27 | 14.70 | 15.29 | 16.65 |
| 4H              | 2H   | 11.86            | 12.57 | 12.86 | 13.57 | 14.91 | 11.50          | 12.21 | 12.51 | 13.22 | 14.55 |
|                 | 3H   | 13.71            | 14.31 | 14.73 | 15.34 | 16.69 | 13.31          | 13.90 | 14.32 | 14.93 | 16.28 |
|                 | 4H   | 14.42            | 14.97 | 15.45 | 15.99 | 17.36 | 14.00          | 14.54 | 15.02 | 15.57 | 16.94 |
|                 | 6H   | 14.93            | 15.40 | 15.97 | 16.45 | 17.82 | 14.50          | 14.97 | 15.54 | 16.02 | 17.38 |
|                 | 8H   | 15.08            | 15.52 | 16.12 | 16.56 | 17.94 | 14.64          | 15.08 | 15.68 | 16.12 | 17.50 |
|                 | 12H  | 15.15            | 15.55 | 16.20 | 16.60 | 17.99 | 14.70          | 15.10 | 15.75 | 16.15 | 17.54 |
| 8H              | 4H   | 14.61            | 15.05 | 15.65 | 16.09 | 17.47 | 14.24          | 14.68 | 15.27 | 15.72 | 17.10 |
|                 | 6H   | 15.24            | 15.60 | 16.30 | 16.68 | 18.06 | 14.85          | 15.22 | 15.91 | 16.30 | 17.68 |
|                 | 8H   | 15.46            | 15.77 | 16.52 | 16.84 | 18.24 | 15.06          | 15.38 | 16.13 | 16.45 | 17.85 |
|                 | 12H  | 15.58            | 15.86 | 16.65 | 16.93 | 18.37 | 15.17          | 15.45 | 16.24 | 16.51 | 17.95 |
| 12H             | 4H   | 14.60            | 14.99 | 15.65 | 16.05 | 17.44 | 14.23          | 14.63 | 15.28 | 15.68 | 17.07 |
|                 | 6H   | 15.27            | 15.59 | 16.33 | 16.65 | 18.05 | 14.89          | 15.21 | 15.96 | 16.28 | 17.68 |
|                 | 8H   | 15.50            | 15.78 | 16.57 | 16.85 | 18.29 | 15.12          | 15.40 | 16.19 | 16.46 | 17.91 |