

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: P903817

Luminaire Tested: DFN2DIP-SQ3F0-090D100US830-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P903817  
REPORT IS A COMBINATION OF REPORTS P901499 AND P898289  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-090D100US830-FLLONL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

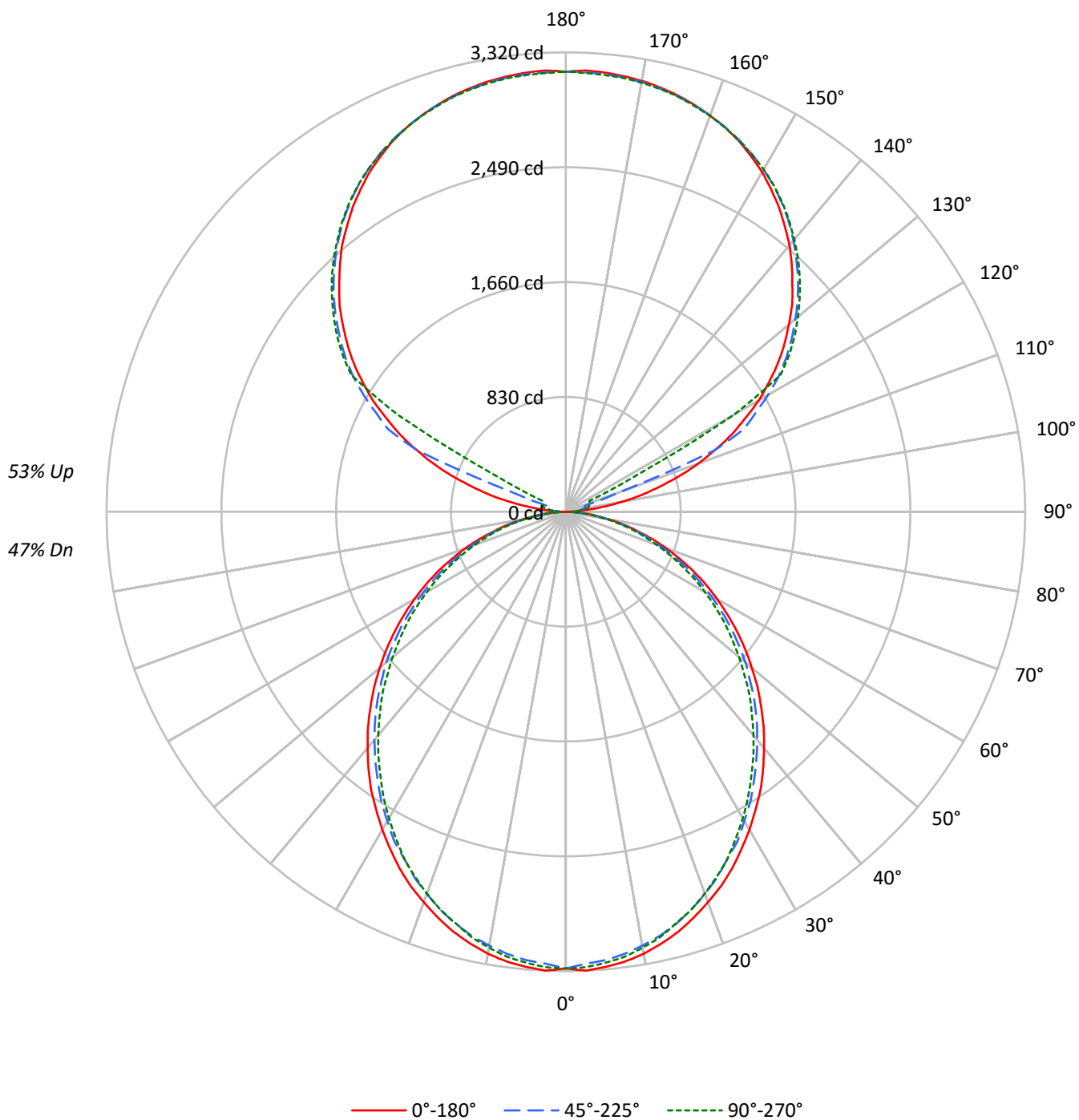
Lumens per Lamp: N/A  
Luminaire Lumens: 17729.2 lumens  
Efficiency: N/A  
Efficacy: 107.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 165.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.996  
Total Harmonic Distortion (THDi): 0.064  
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: P903817

CATALOG NUMBER: DFN2DIP-SQ3F0-090D100US830-FLONL

**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 | 69 | 67 | 59 | 57 | 56 | 47 | 46 | 45 |
| 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 | 59 | 54 | 55 | 51 | 47 | 46 | 42 | 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 | 24 |
| 6   | 62  | 50  | 42  | 37  | 57 | 47 | 40 | 34 | 40 | 34 | 30 | 33 | 29 | 26 | 27 | 24 | 22 |
| 7   | 58  | 45  | 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 | 15 |
| 10  | 47  | 35  | 27  | 23  | 43 | 32 | 26 | 21 | 28 | 22 | 19 | 23 | 19 | 16 | 19 | 16 | 14 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3782 | 3782 | 3782 |
| 5°  | 3786 | 3727 | 3753 |
| 10° | 3753 | 3674 | 3701 |
| 15° | 3695 | 3611 | 3620 |
| 20° | 3618 | 3524 | 3538 |
| 25° | 3541 | 3422 | 3443 |
| 30° | 3446 | 3325 | 3322 |
| 35° | 3355 | 3213 | 3195 |
| 40° | 3244 | 3098 | 3073 |
| 45° | 3133 | 2984 | 2949 |
| 50° | 3011 | 2864 | 2805 |
| 55° | 2884 | 2724 | 2672 |
| 60° | 2740 | 2560 | 2520 |
| 65° | 2582 | 2388 | 2341 |
| 70° | 2381 | 2180 | 2147 |
| 75° | 2104 | 1930 | 1967 |
| 80° | 1768 | 1609 | 1626 |
| 85° | 1245 | 1066 | 1064 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 3133 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 310.7   | 1.8       |
| 10°-20°   | 874.1   | 4.9       |
| 20°-30°   | 1284.6  | 7.2       |
| 30°-40°   | 1492.0  | 8.4       |
| 40°-50°   | 1490.1  | 8.4       |
| 50°-60°   | 1299.3  | 7.3       |
| 60°-70°   | 960.5   | 5.4       |
| 70°-80°   | 543.4   | 3.1       |
| 80°-90°   | 149.0   | 0.8       |
| 90°-100°  | 104.9   | 0.6       |
| 100°-110° | 391.0   | 2.2       |
| 110°-120° | 1037.0  | 5.8       |
| 120°-130° | 1720.0  | 9.7       |
| 130°-140° | 1827.0  | 10.3      |
| 140°-150° | 1698.0  | 9.6       |
| 150°-160° | 1365.2  | 7.7       |
| 160°-170° | 879.7   | 5.0       |
| 170°-180° | 302.8   | 1.7       |
| 0°-30°    | 2469.3  | 13.9      |
| 0°-40°    | 3961.3  | 22.3      |
| 0°-60°    | 6750.7  | 38.1      |
| 0°-90°    | 8403.7  | 47.4      |
| 90°-120°  | 1532.9  | 8.6       |
| 90°-150°  | 6778.0  | 38.2      |
| 90°-180°  | 9326.0  | 52.6      |
| 0°-180°   | 17729.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3301 | 3301  | 3301 | 3301  | 3301 |      |
| 5°   | 3301 | 3288  | 3253 | 3278  | 3272 | 313  |
| 15°  | 3142 | 3123  | 3082 | 3095  | 3079 | 885  |
| 25°  | 2844 | 2818  | 2765 | 2771  | 2765 | 1309 |
| 35°  | 2454 | 2422  | 2371 | 2352  | 2336 | 1532 |
| 45°  | 1996 | 1974  | 1926 | 1892  | 1879 | 1541 |
| 55°  | 1511 | 1492  | 1454 | 1416  | 1400 | 1351 |
| 65°  | 1019 | 1000  | 968  | 940   | 924  | 1007 |
| 75°  | 533  | 527   | 511  | 492   | 498  | 569  |
| 85°  | 130  | 127   | 124  | 114   | 111  | 145  |
| 90°  | 2    | 28    | 46   | 58    | 62   | 16   |
| 95°  | 150  | 74    | 90   | 101   | 99   | 177  |
| 105° | 700  | 769   | 140  | 166   | 175  | 748  |
| 115° | 1323 | 1362  | 1420 | 354   | 189  | 1303 |
| 125° | 1871 | 1901  | 1945 | 1961  | 1968 | 1669 |
| 135° | 2316 | 2352  | 2373 | 2396  | 2392 | 1789 |
| 145° | 2686 | 2684  | 2723 | 2739  | 2728 | 1680 |
| 155° | 2958 | 2937  | 2965 | 2978  | 2960 | 1363 |
| 165° | 3116 | 3103  | 3110 | 3126  | 3110 | 880  |
| 175° | 3188 | 3172  | 3176 | 3192  | 3170 | 303  |
| 180° | 3181 | 3181  | 3181 | 3181  | 3181 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3300.7 | 3300.7 | 3300.7 | 3300.7 | 3300.7 |
| 2.5°   | 3319.9 | 3304.1 | 3269.1 | 3300.7 | 3294.7 |
| 5°     | 3300.7 | 3288.2 | 3253.3 | 3278.5 | 3272.4 |
| 7.5°   | 3278.5 | 3259.7 | 3224.6 | 3250.3 | 3243.9 |
| 10°    | 3243.9 | 3221.6 | 3183.5 | 3208.8 | 3199.4 |
| 12.5°  | 3196.0 | 3177.1 | 3139.1 | 3154.9 | 3148.6 |
| 15°    | 3142.2 | 3123.3 | 3081.8 | 3094.6 | 3078.8 |
| 17.5°  | 3075.4 | 3056.6 | 3015.2 | 3031.0 | 3015.2 |
| 20°    | 3002.4 | 2983.5 | 2939.0 | 2948.5 | 2936.0 |
| 22.5°  | 2929.6 | 2901.1 | 2859.6 | 2859.6 | 2853.2 |
| 25°    | 2843.7 | 2818.5 | 2764.7 | 2770.7 | 2764.7 |
| 27.5°  | 2748.5 | 2726.2 | 2685.2 | 2675.8 | 2659.9 |
| 30°    | 2653.5 | 2627.9 | 2580.4 | 2571.0 | 2558.2 |
| 32.5°  | 2551.8 | 2533.0 | 2482.1 | 2463.0 | 2450.1 |
| 35°    | 2453.5 | 2421.9 | 2371.0 | 2351.8 | 2336.0 |
| 37.5°  | 2342.4 | 2313.8 | 2262.9 | 2240.7 | 2224.9 |
| 40°    | 2228.2 | 2202.6 | 2151.7 | 2123.5 | 2110.7 |
| 42.5°  | 2117.0 | 2091.5 | 2041.0 | 2009.0 | 1990.2 |
| 45°    | 1996.5 | 1974.3 | 1926.5 | 1891.8 | 1879.1 |
| 47.5°  | 1879.1 | 1856.8 | 1805.9 | 1770.9 | 1752.1 |
| 50°    | 1755.1 | 1739.3 | 1694.8 | 1650.4 | 1634.6 |
| 52.5°  | 1634.6 | 1612.3 | 1571.2 | 1536.2 | 1514.0 |
| 55°    | 1511.0 | 1491.8 | 1453.7 | 1415.7 | 1399.9 |
| 57.5°  | 1387.0 | 1371.2 | 1329.8 | 1291.8 | 1278.9 |
| 60°    | 1263.1 | 1250.7 | 1206.2 | 1171.2 | 1161.8 |
| 62.5°  | 1142.5 | 1120.3 | 1088.6 | 1057.1 | 1044.2 |
| 65°    | 1019.0 | 999.8  | 968.1  | 939.5  | 923.7  |
| 67.5°  | 892.0  | 875.9  | 847.5  | 825.4  | 812.6  |
| 70°    | 774.5  | 761.7  | 733.1  | 710.9  | 698.4  |
| 72.5°  | 653.9  | 641.1  | 625.3  | 603.1  | 593.7  |
| 75°    | 533.1  | 527.0  | 510.9  | 492.0  | 498.4  |
| 77.5°  | 425.3  | 412.6  | 406.1  | 396.7  | 387.3  |
| 80°    | 317.5  | 314.1  | 307.7  | 298.3  | 292.0  |
| 82.5°  | 215.8  | 215.8  | 212.8  | 200.0  | 200.0  |
| 85°    | 130.0  | 127.0  | 123.9  | 114.1  | 111.1  |
| 87.5°  | 57.2   | 50.8   | 44.5   | 35.1   | 31.7   |
| 90°    | 2.2    | 27.6   | 45.9   | 57.7   | 62.0   |
| 92.5°  | 57.7   | 48.4   | 55.2   | 59.9   | 62.0   |
| 95°    | 149.5  | 73.5   | 89.6   | 101.4  | 99.0   |
| 97.5°  | 269.2  | 80.6   | 117.3  | 124.3  | 126.6  |
| 100°   | 407.6  | 92.1   | 131.2  | 149.5  | 154.2  |
| 102.5° | 559.2  | 554.9  | 135.8  | 161.0  | 168.1  |
| 105°   | 699.7  | 768.8  | 140.5  | 165.6  | 174.9  |
| 107.5° | 863.2  | 920.6  | 145.2  | 170.3  | 179.6  |
| 110°   | 1019.7 | 1067.9 | 402.8  | 172.8  | 181.7  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1167.1 | 1208.3 | 1169.3 | 177.1  | 184.3  |
| 115°   | 1323.4 | 1362.5 | 1420.2 | 354.5  | 188.9  |
| 117.5° | 1459.2 | 1505.2 | 1544.5 | 1215.2 | 612.3  |
| 120°   | 1611.3 | 1645.7 | 1687.2 | 1714.9 | 1404.1 |
| 122.5° | 1740.0 | 1776.9 | 1823.1 | 1836.7 | 1839.2 |
| 125°   | 1871.2 | 1901.3 | 1945.0 | 1961.1 | 1967.9 |
| 127.5° | 1990.9 | 2023.2 | 2057.9 | 2080.9 | 2083.0 |
| 130°   | 2103.8 | 2140.7 | 2165.9 | 2191.2 | 2189.1 |
| 132.5° | 2218.8 | 2248.9 | 2274.1 | 2294.8 | 2292.6 |
| 135°   | 2315.6 | 2352.5 | 2373.0 | 2396.2 | 2391.6 |
| 137.5° | 2416.8 | 2444.4 | 2467.6 | 2490.6 | 2483.7 |
| 140°   | 2515.6 | 2534.3 | 2559.4 | 2580.2 | 2568.7 |
| 142.5° | 2598.8 | 2614.9 | 2644.7 | 2663.0 | 2651.6 |
| 145°   | 2686.2 | 2683.8 | 2722.9 | 2739.0 | 2727.5 |
| 147.5° | 2761.9 | 2755.1 | 2794.2 | 2805.7 | 2796.7 |
| 150°   | 2835.7 | 2819.6 | 2856.6 | 2870.2 | 2858.7 |
| 152.5° | 2897.8 | 2879.5 | 2914.0 | 2927.8 | 2911.7 |
| 155°   | 2957.7 | 2937.2 | 2964.8 | 2978.4 | 2960.1 |
| 157.5° | 3006.1 | 2987.8 | 3008.5 | 3024.6 | 3006.1 |
| 160°   | 3047.6 | 3033.7 | 3047.6 | 3061.3 | 3045.2 |
| 162.5° | 3084.2 | 3070.5 | 3082.0 | 3098.1 | 3077.4 |
| 165°   | 3116.4 | 3102.8 | 3109.6 | 3125.8 | 3109.6 |
| 167.5° | 3141.9 | 3127.9 | 3135.1 | 3151.2 | 3130.4 |
| 170°   | 3162.6 | 3148.8 | 3153.4 | 3169.5 | 3148.8 |
| 172.5° | 3176.3 | 3162.6 | 3167.3 | 3183.4 | 3162.6 |
| 175°   | 3187.8 | 3171.7 | 3176.3 | 3192.5 | 3169.5 |
| 177.5° | 3192.5 | 3176.3 | 3178.8 | 3194.9 | 3174.1 |
| 180°   | 3181.0 | 3181.0 | 3181.0 | 3181.0 | 3181.0 |

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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 | 11.61            | 12.45 | 12.59 | 13.44 | 14.75 | 11.17          | 12.01 | 12.15 | 13.00 | 14.31 |
|                 | 3H   | 13.27            | 14.02 | 14.26 | 15.02 | 16.35 | 12.78          | 13.53 | 13.77 | 14.53 | 15.86 |
|                 | 4H   | 13.85            | 14.56 | 14.86 | 15.57 | 16.91 | 13.36          | 14.07 | 14.36 | 15.07 | 16.41 |
|                 | 6H   | 14.25            | 14.90 | 15.26 | 15.91 | 17.26 | 13.75          | 14.40 | 14.76 | 15.41 | 16.76 |
|                 | 8H   | 14.35            | 14.97 | 15.37 | 16.00 | 17.35 | 13.85          | 14.47 | 14.87 | 15.50 | 16.84 |
|                 | 12H  | 14.40            | 14.99 | 15.42 | 16.01 | 17.38 | 13.89          | 14.48 | 14.91 | 15.50 | 16.87 |
| 4H              | 2H   | 12.07            | 12.78 | 13.08 | 13.79 | 15.12 | 11.71          | 12.43 | 12.72 | 13.43 | 14.77 |
|                 | 3H   | 13.93            | 14.52 | 14.95 | 15.55 | 16.91 | 13.52          | 14.11 | 14.54 | 15.15 | 16.50 |
|                 | 4H   | 14.64            | 15.18 | 15.66 | 16.21 | 17.58 | 14.21          | 14.76 | 15.24 | 15.78 | 17.16 |
|                 | 6H   | 15.15            | 15.61 | 16.18 | 16.66 | 18.03 | 14.71          | 15.18 | 15.75 | 16.23 | 17.60 |
|                 | 8H   | 15.29            | 15.73 | 16.33 | 16.77 | 18.16 | 14.86          | 15.29 | 15.89 | 16.33 | 17.72 |
|                 | 12H  | 15.36            | 15.76 | 16.42 | 16.81 | 18.20 | 14.91          | 15.31 | 15.97 | 16.37 | 17.76 |
| 8H              | 4H   | 14.83            | 15.26 | 15.86 | 16.31 | 17.69 | 14.45          | 14.89 | 15.49 | 15.93 | 17.31 |
|                 | 6H   | 15.45            | 15.81 | 16.51 | 16.90 | 18.28 | 15.07          | 15.43 | 16.13 | 16.51 | 17.90 |
|                 | 8H   | 15.67            | 15.99 | 16.74 | 17.05 | 18.46 | 15.28          | 15.59 | 16.34 | 16.66 | 18.06 |
|                 | 12H  | 15.80            | 16.08 | 16.87 | 17.14 | 18.58 | 15.38          | 15.66 | 16.46 | 16.73 | 18.17 |
| 12H             | 4H   | 14.81            | 15.21 | 15.87 | 16.26 | 17.65 | 14.44          | 14.84 | 15.50 | 15.89 | 17.28 |
|                 | 6H   | 15.48            | 15.80 | 16.55 | 16.87 | 18.27 | 15.11          | 15.43 | 16.18 | 16.49 | 17.90 |
|                 | 8H   | 15.72            | 16.00 | 16.79 | 17.06 | 18.50 | 15.34          | 15.62 | 16.41 | 16.68 | 18.12 |