

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: P904511

Luminaire Tested: DFN2DIP-TR3F0-080D080US830-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P904511  
REPORT IS A COMBINATION OF REPORTS P901871 AND P898751  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-080D080US830-FLLONL  
Description: 3 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

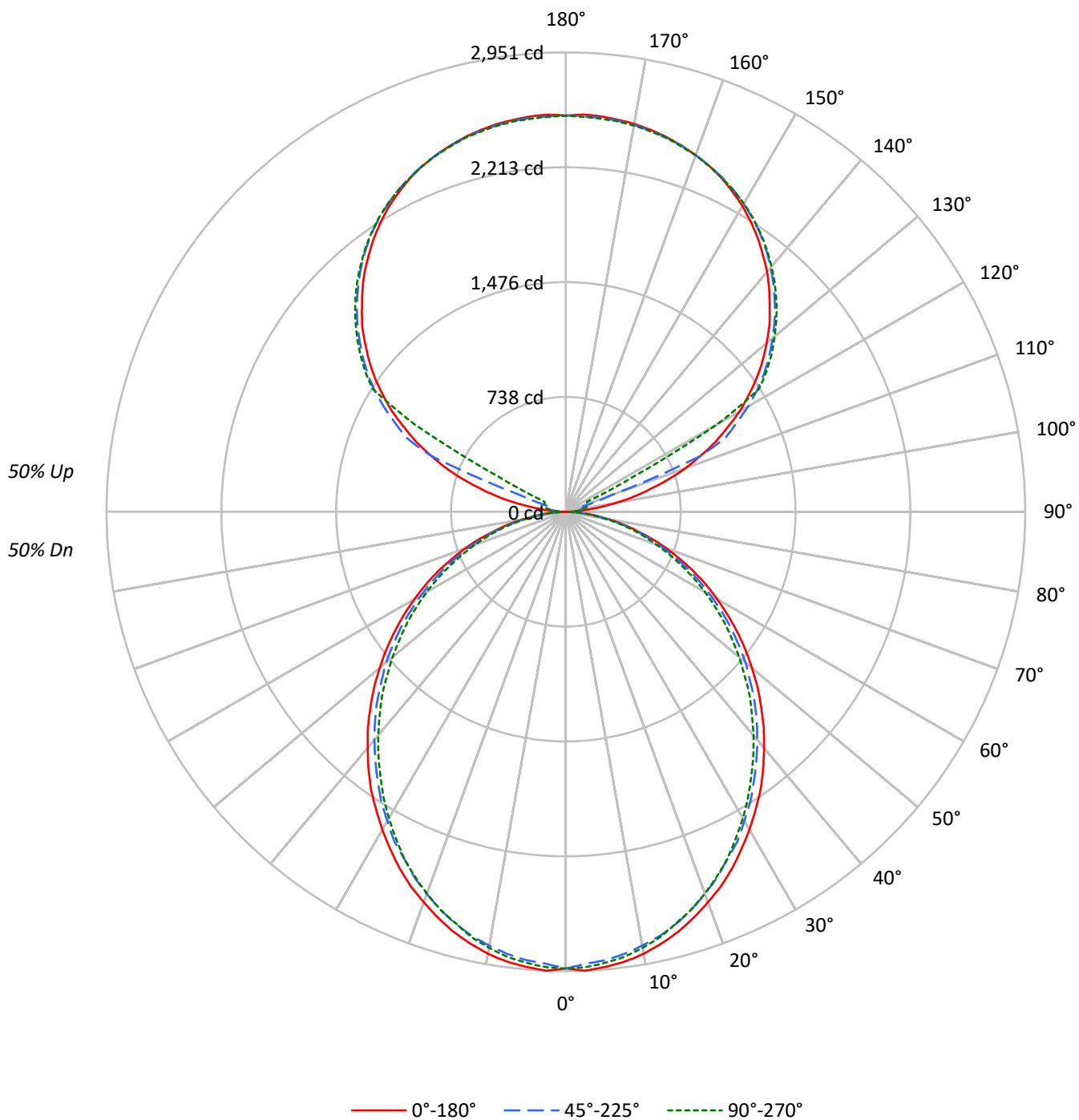
Lumens per Lamp: N/A  
Luminaire Lumens: 14929.9 lumens  
Efficiency: N/A  
Efficacy: 105.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 142  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9968  
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: P904511

CATALOG NUMBER: DFN2DIP-TR3F0-080D080US830-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 | 99 | 99 | 99 | 99 | 83 | 83 | 83 | 69 | 69 | 69 | 56 | 56 | 56 |
| 1   | 98  | 93  | 90  | 86  | 90 | 86 | 83 | 80 | 73 | 71 | 68 | 61 | 59 | 58 | 50 | 48 | 47 |
| 2   | 89  | 82  | 75  | 70  | 82 | 76 | 70 | 66 | 64 | 60 | 57 | 53 | 51 | 48 | 44 | 42 | 40 |
| 3   | 81  | 72  | 64  | 59  | 75 | 66 | 60 | 55 | 56 | 52 | 48 | 47 | 44 | 41 | 39 | 36 | 34 |
| 4   | 74  | 64  | 56  | 50  | 68 | 59 | 52 | 47 | 50 | 45 | 41 | 42 | 38 | 35 | 35 | 32 | 29 |
| 5   | 68  | 57  | 48  | 42  | 63 | 53 | 45 | 40 | 45 | 39 | 35 | 38 | 34 | 30 | 31 | 28 | 26 |
| 6   | 63  | 51  | 43  | 37  | 58 | 47 | 40 | 35 | 40 | 35 | 31 | 34 | 30 | 27 | 28 | 25 | 23 |
| 7   | 58  | 46  | 38  | 32  | 53 | 43 | 36 | 30 | 37 | 31 | 27 | 31 | 27 | 23 | 26 | 23 | 20 |
| 8   | 54  | 42  | 34  | 29  | 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 | 19 | 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°  | 3656 | 3656 | 3656 |
| 5°  | 3660 | 3602 | 3627 |
| 10° | 3628 | 3550 | 3575 |
| 15° | 3573 | 3489 | 3496 |
| 20° | 3499 | 3405 | 3415 |
| 25° | 3425 | 3305 | 3322 |
| 30° | 3333 | 3211 | 3204 |
| 35° | 3246 | 3101 | 3080 |
| 40° | 3139 | 2990 | 2961 |
| 45° | 3031 | 2879 | 2840 |
| 50° | 2914 | 2762 | 2699 |
| 55° | 2791 | 2626 | 2569 |
| 60° | 2653 | 2466 | 2420 |
| 65° | 2501 | 2299 | 2245 |
| 70° | 2307 | 2097 | 2055 |
| 75° | 2040 | 1853 | 1877 |
| 80° | 1717 | 1542 | 1542 |
| 85° | 1214 | 1016 | 996  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3031 cd/sqm

TEST NUMBER: P904511

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 276.1   | 1.8       |
| 10°-20°   | 777.0   | 5.2       |
| 20°-30°   | 1141.8  | 7.6       |
| 30°-40°   | 1326.2  | 8.9       |
| 40°-50°   | 1324.5  | 8.9       |
| 50°-60°   | 1155.0  | 7.7       |
| 60°-70°   | 853.8   | 5.7       |
| 70°-80°   | 483.0   | 3.2       |
| 80°-90°   | 132.0   | 0.9       |
| 90°-100°  | 83.9    | 0.6       |
| 100°-110° | 312.8   | 2.1       |
| 110°-120° | 829.6   | 5.6       |
| 120°-130° | 1376.0  | 9.2       |
| 130°-140° | 1461.6  | 9.8       |
| 140°-150° | 1358.4  | 9.1       |
| 150°-160° | 1092.1  | 7.3       |
| 160°-170° | 703.7   | 4.7       |
| 170°-180° | 242.2   | 1.6       |
| 0°-30°    | 2195.0  | 14.7      |
| 0°-40°    | 3521.1  | 23.6      |
| 0°-60°    | 6000.6  | 40.2      |
| 0°-90°    | 7469.4  | 50.0      |
| 90°-120°  | 1226.4  | 8.2       |
| 90°-150°  | 5422.4  | 36.3      |
| 90°-180°  | 7460.0  | 50.0      |
| 0°-180°   | 14929.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2934 | 2934  | 2934 | 2934  | 2934 |      |
| 5°   | 2934 | 2923  | 2892 | 2914  | 2909 | 279  |
| 15°  | 2793 | 2776  | 2739 | 2751  | 2737 | 787  |
| 25°  | 2528 | 2505  | 2458 | 2463  | 2458 | 1163 |
| 35°  | 2181 | 2153  | 2108 | 2090  | 2076 | 1362 |
| 45°  | 1775 | 1755  | 1712 | 1682  | 1670 | 1370 |
| 55°  | 1343 | 1326  | 1292 | 1258  | 1244 | 1201 |
| 65°  | 906  | 889   | 860  | 835   | 821  | 896  |
| 75°  | 474  | 468   | 454  | 437   | 443  | 506  |
| 85°  | 116  | 113   | 110  | 102   | 99   | 129  |
| 90°  | 2    | 22    | 37   | 46    | 50   | 14   |
| 95°  | 120  | 59    | 72   | 81    | 79   | 142  |
| 105° | 560  | 615   | 112  | 132   | 140  | 598  |
| 115° | 1059 | 1090  | 1136 | 284   | 151  | 1042 |
| 125° | 1497 | 1521  | 1556 | 1569  | 1574 | 1335 |
| 135° | 1852 | 1882  | 1898 | 1917  | 1913 | 1431 |
| 145° | 2149 | 2147  | 2178 | 2191  | 2182 | 1344 |
| 155° | 2366 | 2350  | 2372 | 2383  | 2368 | 1090 |
| 165° | 2493 | 2482  | 2488 | 2501  | 2488 | 704  |
| 175° | 2550 | 2537  | 2541 | 2554  | 2536 | 243  |
| 180° | 2545 | 2545  | 2545 | 2545  | 2545 |      |

TEST NUMBER: P904511

CATALOG NUMBER: DFN2DIP-TR3F0-080D080US830-FLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2933.9 | 2933.9 | 2933.9 | 2933.9 | 2933.9 |
| 2.5°   | 2951.0 | 2937.0 | 2905.9 | 2933.9 | 2928.6 |
| 5°     | 2933.9 | 2922.9 | 2891.8 | 2914.2 | 2908.9 |
| 7.5°   | 2914.2 | 2897.5 | 2866.4 | 2889.1 | 2883.4 |
| 10°    | 2883.4 | 2863.6 | 2829.8 | 2852.2 | 2843.9 |
| 12.5°  | 2840.9 | 2824.1 | 2790.3 | 2804.3 | 2798.7 |
| 15°    | 2793.0 | 2776.3 | 2739.4 | 2750.8 | 2736.8 |
| 17.5°  | 2733.7 | 2717.0 | 2680.1 | 2694.3 | 2680.1 |
| 20°    | 2668.8 | 2652.0 | 2612.5 | 2620.9 | 2609.8 |
| 22.5°  | 2604.2 | 2578.7 | 2541.8 | 2541.8 | 2536.2 |
| 25°    | 2527.8 | 2505.4 | 2457.5 | 2462.9 | 2457.5 |
| 27.5°  | 2443.1 | 2423.4 | 2386.8 | 2378.4 | 2364.4 |
| 30°    | 2358.7 | 2335.9 | 2293.8 | 2285.4 | 2274.0 |
| 32.5°  | 2268.3 | 2251.5 | 2206.3 | 2189.2 | 2177.9 |
| 35°    | 2180.9 | 2152.8 | 2107.5 | 2090.5 | 2076.4 |
| 37.5°  | 2082.1 | 2056.6 | 2011.5 | 1991.7 | 1977.6 |
| 40°    | 1980.7 | 1957.8 | 1912.7 | 1887.5 | 1876.1 |
| 42.5°  | 1881.9 | 1859.1 | 1814.2 | 1785.7 | 1769.1 |
| 45°    | 1774.7 | 1754.9 | 1712.4 | 1681.6 | 1670.3 |
| 47.5°  | 1670.3 | 1650.5 | 1605.2 | 1574.1 | 1557.4 |
| 50°    | 1560.1 | 1546.1 | 1506.5 | 1467.0 | 1452.9 |
| 52.5°  | 1452.9 | 1433.1 | 1396.7 | 1365.6 | 1345.8 |
| 55°    | 1343.0 | 1326.0 | 1292.2 | 1258.4 | 1244.3 |
| 57.5°  | 1232.9 | 1218.9 | 1182.0 | 1148.2 | 1136.8 |
| 60°    | 1122.8 | 1111.7 | 1072.1 | 1041.0 | 1032.6 |
| 62.5°  | 1015.6 | 995.9  | 967.7  | 939.6  | 928.2  |
| 65°    | 905.8  | 888.7  | 860.5  | 835.1  | 821.0  |
| 67.5°  | 792.9  | 778.5  | 753.4  | 733.7  | 722.3  |
| 70°    | 688.4  | 677.0  | 651.7  | 631.9  | 620.8  |
| 72.5°  | 581.3  | 570.0  | 555.8  | 536.1  | 527.7  |
| 75°    | 473.8  | 468.4  | 454.1  | 437.3  | 443.0  |
| 77.5°  | 378.1  | 366.6  | 361.0  | 352.6  | 344.2  |
| 80°    | 282.3  | 279.3  | 273.6  | 265.2  | 259.5  |
| 82.5°  | 191.9  | 191.9  | 189.2  | 177.8  | 177.8  |
| 85°    | 115.6  | 112.8  | 110.2  | 101.5  | 98.8   |
| 87.5°  | 50.9   | 45.2   | 39.5   | 31.1   | 28.2   |
| 90°    | 1.8    | 22.1   | 36.8   | 46.1   | 49.7   |
| 92.5°  | 46.1   | 38.7   | 44.2   | 47.9   | 49.7   |
| 95°    | 119.6  | 58.8   | 71.7   | 81.2   | 79.2   |
| 97.5°  | 215.4  | 64.5   | 93.8   | 99.5   | 101.2  |
| 100°   | 326.0  | 73.7   | 105.0  | 119.6  | 123.3  |
| 102.5° | 447.4  | 443.8  | 108.7  | 128.8  | 134.5  |
| 105°   | 559.8  | 615.1  | 112.4  | 132.5  | 140.0  |
| 107.5° | 690.5  | 736.4  | 116.1  | 136.2  | 143.6  |
| 110°   | 815.9  | 854.3  | 322.3  | 138.2  | 145.4  |

TEST NUMBER: P904511

CATALOG NUMBER: DFN2DIP-TR3F0-080D080US830-FLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 933.7  | 966.7  | 935.5  | 141.7  | 147.4  |
| 115°   | 1058.8 | 1090.1 | 1136.1 | 283.6  | 151.1  |
| 117.5° | 1167.4 | 1204.2 | 1235.7 | 972.1  | 489.8  |
| 120°   | 1289.0 | 1316.5 | 1349.8 | 1371.9 | 1123.2 |
| 122.5° | 1391.9 | 1421.5 | 1458.5 | 1469.4 | 1471.4 |
| 125°   | 1496.9 | 1521.0 | 1555.9 | 1568.9 | 1574.3 |
| 127.5° | 1592.7 | 1618.5 | 1646.3 | 1664.6 | 1666.4 |
| 130°   | 1683.0 | 1712.5 | 1732.7 | 1753.0 | 1751.2 |
| 132.5° | 1775.1 | 1799.1 | 1819.3 | 1835.9 | 1834.1 |
| 135°   | 1852.5 | 1882.0 | 1898.4 | 1917.0 | 1913.3 |
| 137.5° | 1933.4 | 1955.5 | 1974.1 | 1992.4 | 1987.0 |
| 140°   | 2012.5 | 2027.4 | 2047.6 | 2064.2 | 2054.9 |
| 142.5° | 2079.1 | 2091.9 | 2115.7 | 2130.4 | 2121.2 |
| 145°   | 2149.0 | 2147.0 | 2178.3 | 2191.2 | 2182.0 |
| 147.5° | 2209.6 | 2204.1 | 2235.3 | 2244.6 | 2237.3 |
| 150°   | 2268.6 | 2255.7 | 2285.2 | 2296.1 | 2287.0 |
| 152.5° | 2318.3 | 2303.6 | 2331.1 | 2342.3 | 2329.4 |
| 155°   | 2366.2 | 2349.8 | 2371.8 | 2382.7 | 2368.1 |
| 157.5° | 2404.8 | 2390.2 | 2406.8 | 2419.7 | 2404.8 |
| 160°   | 2438.1 | 2427.0 | 2438.1 | 2449.0 | 2436.1 |
| 162.5° | 2467.4 | 2456.5 | 2465.6 | 2478.5 | 2461.9 |
| 165°   | 2493.2 | 2482.3 | 2487.7 | 2500.6 | 2487.7 |
| 167.5° | 2513.5 | 2502.4 | 2508.0 | 2520.9 | 2504.3 |
| 170°   | 2530.2 | 2518.9 | 2522.7 | 2535.6 | 2518.9 |
| 172.5° | 2541.1 | 2530.2 | 2533.8 | 2546.7 | 2530.2 |
| 175°   | 2550.2 | 2537.3 | 2541.1 | 2553.9 | 2535.6 |
| 177.5° | 2553.9 | 2541.1 | 2543.0 | 2555.9 | 2539.3 |
| 180°   | 2544.8 | 2544.8 | 2544.8 | 2544.8 | 2544.8 |

TEST NUMBER: P904511

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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 | 11.73            | 12.59 | 12.68 | 13.56 | 14.83 | 11.30          | 12.16 | 12.26 | 13.13 | 14.40 |
|                 | 3H   | 13.38            | 14.15 | 14.35 | 15.13 | 16.43 | 12.91          | 13.68 | 13.88 | 14.66 | 15.96 |
|                 | 4H   | 13.96            | 14.69 | 14.94 | 15.68 | 16.98 | 13.49          | 14.22 | 14.47 | 15.21 | 16.51 |
|                 | 6H   | 14.35            | 15.03 | 15.34 | 16.02 | 17.33 | 13.88          | 14.56 | 14.88 | 15.55 | 16.86 |
|                 | 8H   | 14.45            | 15.10 | 15.45 | 16.10 | 17.41 | 13.99          | 14.63 | 14.98 | 15.63 | 16.94 |
|                 | 12H  | 14.50            | 15.11 | 15.50 | 16.11 | 17.45 | 14.02          | 14.63 | 15.03 | 15.64 | 16.97 |
| 4H              | 2H   | 12.19            | 12.92 | 13.17 | 13.90 | 15.20 | 11.84          | 12.57 | 12.83 | 13.56 | 14.86 |
|                 | 3H   | 14.04            | 14.65 | 15.04 | 15.67 | 16.98 | 13.65          | 14.26 | 14.65 | 15.28 | 16.59 |
|                 | 4H   | 14.75            | 15.31 | 15.75 | 16.31 | 17.65 | 14.35          | 14.90 | 15.35 | 15.91 | 17.25 |
|                 | 6H   | 15.25            | 15.73 | 16.27 | 16.77 | 18.10 | 14.85          | 15.33 | 15.87 | 16.36 | 17.70 |
|                 | 8H   | 15.40            | 15.85 | 16.42 | 16.87 | 18.22 | 14.99          | 15.44 | 16.01 | 16.47 | 17.82 |
|                 | 12H  | 15.47            | 15.87 | 16.50 | 16.91 | 18.27 | 15.05          | 15.46 | 16.09 | 16.50 | 17.85 |
| 8H              | 4H   | 14.94            | 15.39 | 15.96 | 16.41 | 17.76 | 14.58          | 15.03 | 15.60 | 16.06 | 17.41 |
|                 | 6H   | 15.56            | 15.93 | 16.60 | 17.00 | 18.35 | 15.20          | 15.57 | 16.24 | 16.64 | 17.99 |
|                 | 8H   | 15.78            | 16.10 | 16.83 | 17.15 | 18.52 | 15.41          | 15.74 | 16.46 | 16.79 | 18.16 |
|                 | 12H  | 15.90            | 16.19 | 16.95 | 17.23 | 18.64 | 15.52          | 15.81 | 16.58 | 16.86 | 18.27 |
| 12H             | 4H   | 14.92            | 15.33 | 15.96 | 16.37 | 17.73 | 14.58          | 14.98 | 15.61 | 16.02 | 17.38 |
|                 | 6H   | 15.59            | 15.92 | 16.64 | 16.97 | 18.33 | 15.24          | 15.57 | 16.29 | 16.62 | 17.99 |
|                 | 8H   | 15.82            | 16.11 | 16.88 | 17.16 | 18.57 | 15.47          | 15.76 | 16.52 | 16.80 | 18.21 |