

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: P916728

Luminaire Tested: DFN2DIP-PN3F0-080D030US930-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P916728  
REPORT IS A COMBINATION OF REPORTS P899521 AND P896399  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-080D030US930-FLLFLL  
Description: 3 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

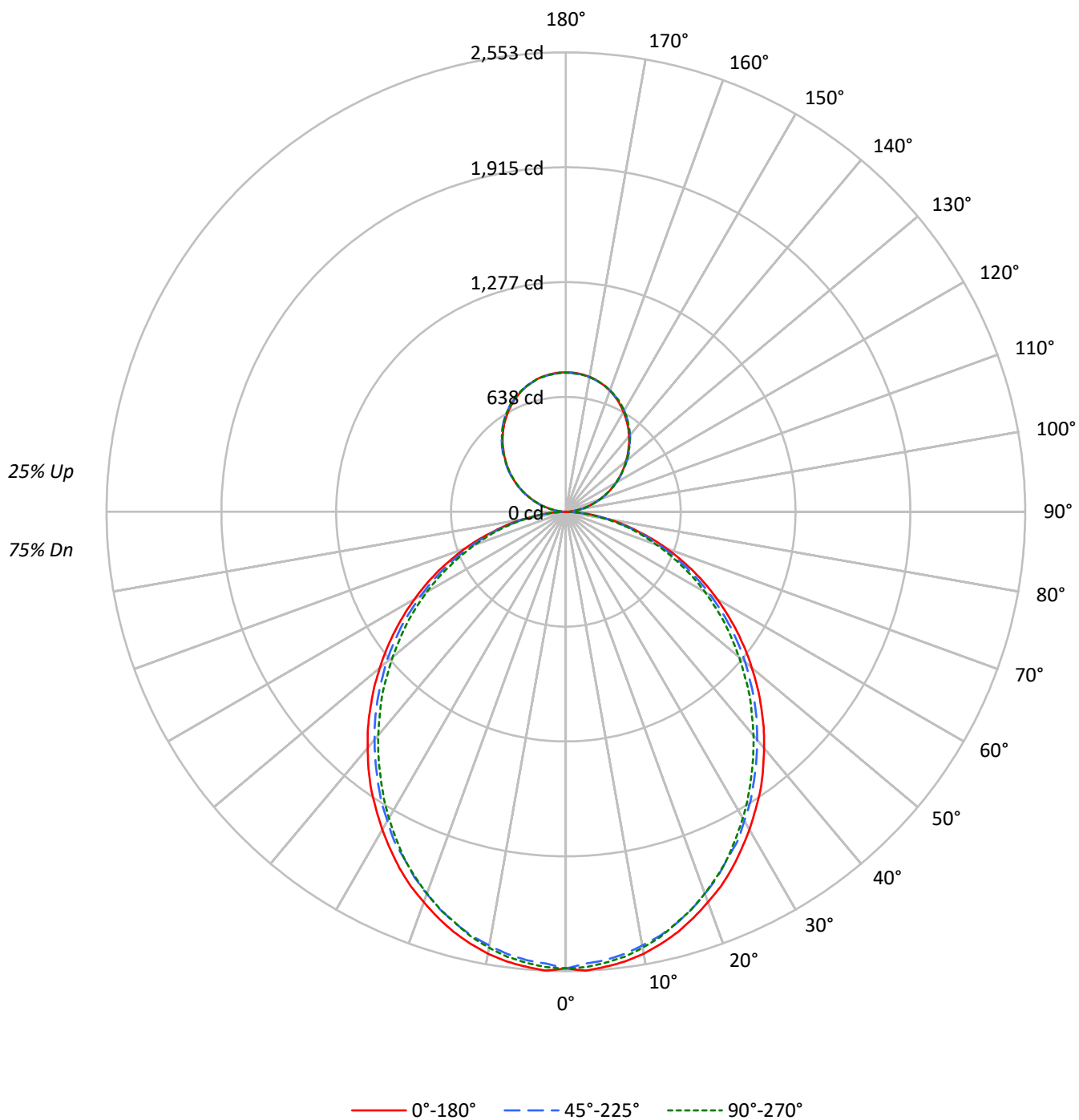
Lumens per Lamp: N/A  
Luminaire Lumens: 8621.8 lumens  
Efficiency: N/A  
Efficacy: 83.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 103.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9967  
Total Harmonic Distortion (THDi): 0.063  
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: P916728

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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 | 50 | 30 | 10 |
| RCR |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |
| 0   | 113 | 113 | 113 | 113 | 108 | 108 | 108 | 108 | 97 | 97 | 97 | 88 | 88 | 88 | 79 | 79 | 79 | 79 | 79 | 79 |
| 1   | 103 | 99  | 95  | 91  | 98  | 94  | 91  | 87  | 85 | 83 | 80 | 77 | 75 | 73 | 70 | 68 | 67 | 67 | 67 | 67 |
| 2   | 94  | 86  | 80  | 75  | 89  | 82  | 77  | 72  | 75 | 70 | 66 | 68 | 64 | 61 | 62 | 59 | 56 | 56 | 56 | 56 |
| 3   | 86  | 76  | 68  | 62  | 81  | 73  | 66  | 60  | 66 | 61 | 56 | 60 | 56 | 52 | 55 | 51 | 48 | 48 | 48 | 48 |
| 4   | 79  | 67  | 59  | 53  | 75  | 64  | 57  | 51  | 59 | 53 | 48 | 54 | 49 | 45 | 49 | 45 | 41 | 41 | 41 | 41 |
| 5   | 72  | 60  | 52  | 45  | 69  | 58  | 50  | 44  | 53 | 46 | 41 | 48 | 43 | 39 | 44 | 40 | 36 | 36 | 36 | 36 |
| 6   | 67  | 54  | 46  | 40  | 63  | 52  | 44  | 39  | 48 | 41 | 36 | 44 | 38 | 34 | 40 | 35 | 32 | 32 | 32 | 32 |
| 7   | 62  | 49  | 41  | 35  | 59  | 47  | 39  | 34  | 43 | 37 | 32 | 40 | 34 | 30 | 37 | 32 | 28 | 28 | 28 | 28 |
| 8   | 58  | 45  | 37  | 31  | 55  | 43  | 36  | 30  | 40 | 33 | 29 | 37 | 31 | 27 | 34 | 29 | 25 | 25 | 25 | 25 |
| 9   | 54  | 41  | 33  | 28  | 51  | 39  | 32  | 27  | 36 | 30 | 26 | 34 | 28 | 24 | 31 | 26 | 23 | 23 | 23 | 23 |
| 10  | 50  | 38  | 30  | 25  | 48  | 36  | 29  | 25  | 34 | 28 | 23 | 31 | 26 | 22 | 29 | 24 | 21 | 21 | 21 | 21 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2967 | 2967 | 2967 |
| 5°  | 2970 | 2923 | 2944 |
| 10° | 2944 | 2882 | 2903 |
| 15° | 2899 | 2832 | 2839 |
| 20° | 2839 | 2764 | 2774 |
| 25° | 2779 | 2683 | 2699 |
| 30° | 2704 | 2608 | 2604 |
| 35° | 2633 | 2519 | 2504 |
| 40° | 2546 | 2430 | 2408 |
| 45° | 2459 | 2340 | 2310 |
| 50° | 2364 | 2245 | 2197 |
| 55° | 2264 | 2136 | 2093 |
| 60° | 2151 | 2006 | 1973 |
| 65° | 2027 | 1872 | 1832 |
| 70° | 1870 | 1708 | 1679 |
| 75° | 1653 | 1511 | 1537 |
| 80° | 1390 | 1260 | 1268 |
| 85° | 981  | 834  | 826  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2459 cd/sqm

TEST NUMBER: P916728

CATALOG NUMBER: DFN2DIP-PN3F0-080D030US930-FLLFLL

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 238.9  | 2.8       |
| 10°-20°   | 672.1  | 7.8       |
| 20°-30°   | 987.7  | 11.5      |
| 30°-40°   | 1147.1 | 13.3      |
| 40°-50°   | 1145.7 | 13.3      |
| 50°-60°   | 999.0  | 11.6      |
| 60°-70°   | 738.5  | 8.6       |
| 70°-80°   | 417.8  | 4.8       |
| 80°-90°   | 112.5  | 1.3       |
| 90°-100°  | 47.9   | 0.6       |
| 100°-110° | 152.1  | 1.8       |
| 110°-120° | 260.3  | 3.0       |
| 120°-130° | 342.3  | 4.0       |
| 130°-140° | 384.2  | 4.5       |
| 140°-150° | 376.8  | 4.4       |
| 150°-160° | 316.1  | 3.7       |
| 160°-170° | 209.6  | 2.4       |
| 170°-180° | 73.3   | 0.8       |
| 0°-30°    | 1898.6 | 22.0      |
| 0°-40°    | 3045.8 | 35.3      |
| 0°-60°    | 5190.5 | 60.2      |
| 0°-90°    | 6459.4 | 74.9      |
| 90°-120°  | 460.2  | 5.3       |
| 90°-150°  | 1563.5 | 18.1      |
| 90°-180°  | 2162.0 | 25.1      |
| 0°-180°   | 8621.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2538 | 2538  | 2538 | 2538  | 2538 |      |
| 5°   | 2538 | 2528  | 2501 | 2521  | 2516 | 241  |
| 15°  | 2416 | 2402  | 2370 | 2379  | 2367 | 680  |
| 25°  | 2186 | 2167  | 2126 | 2130  | 2126 | 1006 |
| 35°  | 1886 | 1862  | 1823 | 1808  | 1796 | 1178 |
| 45°  | 1535 | 1518  | 1481 | 1455  | 1445 | 1185 |
| 55°  | 1162 | 1147  | 1118 | 1088  | 1076 | 1039 |
| 65°  | 784  | 769   | 744  | 722   | 710  | 775  |
| 75°  | 410  | 405   | 393  | 378   | 383  | 438  |
| 85°  | 100  | 98    | 95   | 88    | 85   | 112  |
| 90°  | 1    | 8     | 23   | 21    | 22   | 8    |
| 95°  | 34   | 41    | 42   | 42    | 41   | 38   |
| 105° | 140  | 142   | 144  | 145   | 145  | 148  |
| 115° | 261  | 265   | 264  | 263   | 261  | 258  |
| 125° | 380  | 386   | 384  | 382   | 381  | 339  |
| 135° | 491  | 499   | 500  | 499   | 497  | 380  |
| 145° | 597  | 601   | 605  | 606   | 603  | 373  |
| 155° | 682  | 684   | 686  | 689   | 687  | 314  |
| 165° | 742  | 741   | 741  | 746   | 743  | 209  |
| 175° | 772  | 770   | 769  | 774   | 770  | 73   |
| 180° | 774  | 774   | 774  | 774   | 774  |      |

TEST NUMBER: P916728

CATALOG NUMBER: DFN2DIP-PN3F0-080D030US930-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2537.9 | 2537.9 | 2537.9 | 2537.9 | 2537.9 |
| 2.5°   | 2552.6 | 2540.5 | 2513.6 | 2537.9 | 2533.2 |
| 5°     | 2537.9 | 2528.3 | 2501.4 | 2520.8 | 2516.2 |
| 7.5°   | 2520.8 | 2506.3 | 2479.4 | 2499.1 | 2494.2 |
| 10°    | 2494.2 | 2477.0 | 2447.8 | 2467.2 | 2460.0 |
| 12.5°  | 2457.4 | 2442.9 | 2413.6 | 2425.8 | 2420.9 |
| 15°    | 2416.0 | 2401.5 | 2369.6 | 2379.4 | 2367.3 |
| 17.5°  | 2364.7 | 2350.2 | 2318.3 | 2330.5 | 2318.3 |
| 20°    | 2308.5 | 2294.0 | 2259.8 | 2267.1 | 2257.5 |
| 22.5°  | 2252.6 | 2230.6 | 2198.7 | 2198.7 | 2193.8 |
| 25°    | 2186.5 | 2167.1 | 2125.7 | 2130.4 | 2125.7 |
| 27.5°  | 2113.3 | 2096.2 | 2064.6 | 2057.3 | 2045.2 |
| 30°    | 2040.3 | 2020.6 | 1984.1 | 1976.9 | 1967.0 |
| 32.5°  | 1962.1 | 1947.6 | 1908.5 | 1893.7 | 1883.9 |
| 35°    | 1886.4 | 1862.1 | 1823.0 | 1808.2 | 1796.1 |
| 37.5°  | 1801.0 | 1779.0 | 1739.9 | 1722.8 | 1710.7 |
| 40°    | 1713.3 | 1693.5 | 1654.5 | 1632.7 | 1622.9 |
| 42.5°  | 1627.8 | 1608.1 | 1569.3 | 1544.7 | 1530.2 |
| 45°    | 1535.1 | 1518.0 | 1481.2 | 1454.6 | 1444.8 |
| 47.5°  | 1444.8 | 1427.7 | 1388.5 | 1361.6 | 1347.1 |
| 50°    | 1349.5 | 1337.3 | 1303.1 | 1268.9 | 1256.8 |
| 52.5°  | 1256.8 | 1239.7 | 1208.1 | 1181.2 | 1164.1 |
| 55°    | 1161.7 | 1147.0 | 1117.8 | 1088.5 | 1076.3 |
| 57.5°  | 1066.5 | 1054.3 | 1022.5 | 993.2  | 983.3  |
| 60°    | 971.2  | 961.6  | 927.4  | 900.5  | 893.2  |
| 62.5°  | 878.5  | 861.4  | 837.1  | 812.8  | 802.9  |
| 65°    | 783.5  | 768.7  | 744.4  | 722.4  | 710.2  |
| 67.5°  | 685.8  | 673.4  | 651.7  | 634.6  | 624.8  |
| 70°    | 595.5  | 585.6  | 563.7  | 546.6  | 537.0  |
| 72.5°  | 502.8  | 493.0  | 480.8  | 463.7  | 456.5  |
| 75°    | 409.9  | 405.2  | 392.8  | 378.3  | 383.2  |
| 77.5°  | 327.0  | 317.2  | 312.3  | 305.0  | 297.7  |
| 80°    | 244.2  | 241.6  | 236.7  | 229.4  | 224.5  |
| 82.5°  | 166.0  | 166.0  | 163.6  | 153.8  | 153.8  |
| 85°    | 100.0  | 97.6   | 95.3   | 87.8   | 85.4   |
| 87.5°  | 44.0   | 39.1   | 34.2   | 26.9   | 24.4   |
| 90°    | 0.7    | 8.4    | 22.8   | 21.4   | 22.2   |
| 92.5°  | 14.4   | 19.6   | 20.3   | 21.0   | 21.0   |
| 95°    | 34.1   | 40.6   | 41.7   | 41.7   | 40.6   |
| 97.5°  | 56.7   | 62.7   | 65.3   | 65.3   | 65.3   |
| 100°   | 82.8   | 88.1   | 90.0   | 90.0   | 89.4   |
| 102.5° | 110.3  | 114.3  | 116.8  | 117.6  | 116.8  |
| 105°   | 140.4  | 142.3  | 143.7  | 144.8  | 144.8  |
| 107.5° | 170.2  | 173.0  | 173.0  | 173.5  | 170.2  |
| 110°   | 199.2  | 202.9  | 202.9  | 202.9  | 201.1  |

TEST NUMBER: P916728

CATALOG NUMBER: DFN2DIP-PN3F0-080D030US930-FLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 230.4 | 234.4 | 233.7 | 231.8 | 230.4 |
| 115°   | 261.2 | 264.9 | 263.7 | 263.1 | 261.2 |
| 117.5° | 291.7 | 296.9 | 293.6 | 291.7 | 289.8 |
| 120°   | 322.5 | 327.7 | 322.5 | 322.5 | 320.4 |
| 122.5° | 350.5 | 357.0 | 353.8 | 351.9 | 350.5 |
| 125°   | 379.9 | 385.7 | 383.8 | 381.7 | 381.1 |
| 127.5° | 408.5 | 415.8 | 413.3 | 410.4 | 408.5 |
| 130°   | 435.4 | 443.8 | 442.6 | 441.2 | 438.6 |
| 132.5° | 465.5 | 472.0 | 472.5 | 469.2 | 467.3 |
| 135°   | 491.4 | 498.6 | 500.0 | 499.3 | 497.4 |
| 137.5° | 520.2 | 526.1 | 527.3 | 526.8 | 524.0 |
| 140°   | 545.7 | 551.5 | 554.8 | 554.8 | 552.2 |
| 142.5° | 571.9 | 577.6 | 579.5 | 580.2 | 577.6 |
| 145°   | 596.6 | 601.2 | 605.0 | 605.6 | 603.1 |
| 147.5° | 618.7 | 624.5 | 627.3 | 628.5 | 625.9 |
| 150°   | 641.6 | 645.6 | 648.1 | 650.2 | 648.1 |
| 152.5° | 661.9 | 665.8 | 669.0 | 671.6 | 669.0 |
| 155°   | 682.2 | 684.0 | 686.1 | 689.3 | 687.3 |
| 157.5° | 699.6 | 701.0 | 702.2 | 706.9 | 703.6 |
| 160°   | 715.3 | 716.6 | 717.4 | 721.3 | 718.5 |
| 162.5° | 729.7 | 729.7 | 730.4 | 734.8 | 731.6 |
| 165°   | 742.1 | 741.4 | 741.4 | 746.0 | 742.7 |
| 167.5° | 753.3 | 751.1 | 751.1 | 755.8 | 752.5 |
| 170°   | 761.7 | 759.8 | 759.1 | 763.8 | 759.8 |
| 172.5° | 767.4 | 765.6 | 764.9 | 769.6 | 765.6 |
| 175°   | 772.2 | 770.3 | 768.9 | 773.6 | 769.6 |
| 177.5° | 774.7 | 772.8 | 771.4 | 775.4 | 771.4 |
| 180°   | 773.6 | 773.6 | 773.6 | 773.6 | 773.6 |

TEST NUMBER: P916728

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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 | 13.05            | 14.19 | 13.76 | 14.92 | 15.78 | 12.61          | 13.75 | 13.32 | 14.48 | 15.35 |
|                 | 3H   | 14.73            | 15.75 | 15.45 | 16.49 | 17.39 | 14.24          | 15.27 | 14.97 | 16.01 | 16.90 |
|                 | 4H   | 15.32            | 16.29 | 16.06 | 17.04 | 17.95 | 14.84          | 15.80 | 15.58 | 16.55 | 17.46 |
|                 | 6H   | 15.73            | 16.62 | 16.49 | 17.38 | 18.31 | 15.24          | 16.13 | 16.00 | 16.89 | 17.82 |
|                 | 8H   | 15.84            | 16.69 | 16.61 | 17.47 | 18.40 | 15.35          | 16.20 | 16.12 | 16.98 | 17.91 |
|                 | 12H  | 15.90            | 16.71 | 16.67 | 17.48 | 18.43 | 15.40          | 16.21 | 16.17 | 16.98 | 17.94 |
| 4H              | 2H   | 13.54            | 14.51 | 14.29 | 15.26 | 16.17 | 13.19          | 14.16 | 13.93 | 14.91 | 15.82 |
|                 | 3H   | 15.42            | 16.23 | 16.18 | 17.02 | 17.94 | 15.02          | 15.83 | 15.78 | 16.62 | 17.54 |
|                 | 4H   | 16.15            | 16.88 | 16.92 | 17.67 | 18.62 | 15.73          | 16.46 | 16.50 | 17.25 | 18.20 |
|                 | 6H   | 16.67            | 17.31 | 17.46 | 18.12 | 19.08 | 16.25          | 16.89 | 17.04 | 17.70 | 18.66 |
|                 | 8H   | 16.82            | 17.42 | 17.62 | 18.23 | 19.20 | 16.40          | 16.99 | 17.19 | 17.80 | 18.77 |
|                 | 12H  | 16.91            | 17.44 | 17.72 | 18.27 | 19.25 | 16.47          | 17.01 | 17.28 | 17.83 | 18.81 |
| 8H              | 4H   | 16.36            | 16.96 | 17.15 | 17.76 | 18.74 | 15.99          | 16.59 | 16.78 | 17.39 | 18.37 |
|                 | 6H   | 17.00            | 17.49 | 17.82 | 18.34 | 19.31 | 16.62          | 17.11 | 17.44 | 17.96 | 18.94 |
|                 | 8H   | 17.21            | 17.65 | 18.05 | 18.50 | 19.49 | 16.83          | 17.27 | 17.67 | 18.12 | 19.11 |
|                 | 12H  | 17.36            | 17.74 | 18.19 | 18.58 | 19.63 | 16.96          | 17.34 | 17.79 | 18.18 | 19.23 |
| 12H             | 4H   | 16.36            | 16.89 | 17.17 | 17.72 | 18.70 | 16.00          | 16.53 | 16.81 | 17.36 | 18.34 |
|                 | 6H   | 17.03            | 17.47 | 17.86 | 18.31 | 19.30 | 16.66          | 17.10 | 17.50 | 17.95 | 18.94 |
|                 | 8H   | 17.28            | 17.66 | 18.11 | 18.50 | 19.55 | 16.91          | 17.29 | 17.74 | 18.13 | 19.18 |