

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: P912597

Luminaire Tested: DFN2DIP-TR3F0-050D030US850-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P912597  
REPORT IS A COMBINATION OF REPORTS P901795 AND P898751  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-050D030US850-FLLONL  
Description: 3 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

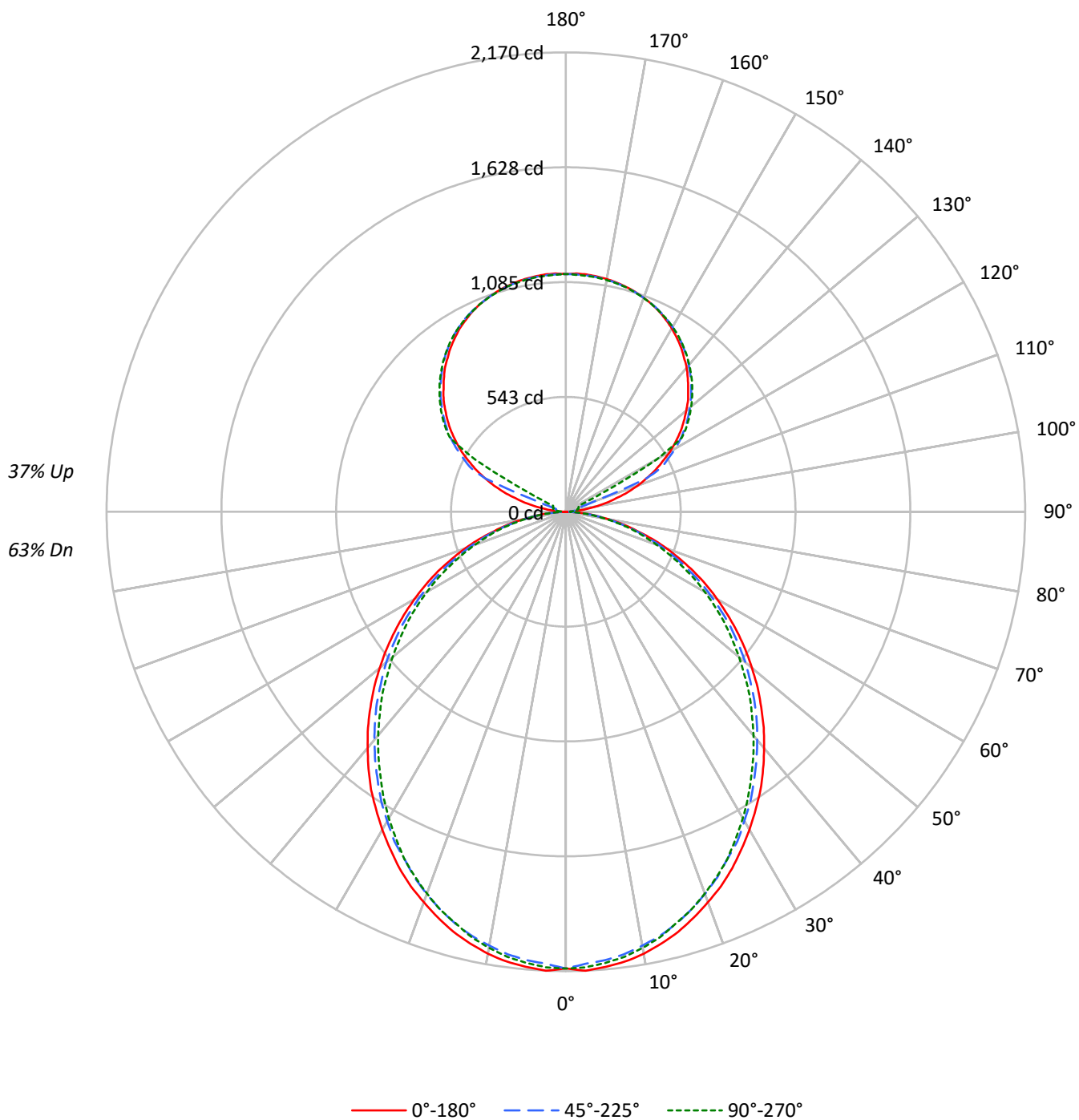
Lumens per Lamp: N/A  
Luminaire Lumens: 8783.3 lumens  
Efficiency: N/A  
Efficacy: 129.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 68.1  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9933  
Total Harmonic Distortion (THDi): 0.066  
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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CATALOG NUMBER: DFN2DIP-TR3F0-050D030US850-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   | 110 | 110 | 110 | 110 | 103 | 103 | 103 | 103 | 90 | 90 | 90 | 78 | 78 | 78 | 68 | 68 | 68 |
| 1   | 101 | 96  | 92  | 89  | 94  | 90  | 87  | 84  | 79 | 77 | 74 | 69 | 67 | 65 | 60 | 58 | 57 |
| 2   | 92  | 84  | 78  | 72  | 86  | 79  | 73  | 69  | 69 | 65 | 62 | 61 | 58 | 55 | 53 | 50 | 48 |
| 3   | 84  | 74  | 66  | 60  | 78  | 70  | 63  | 57  | 61 | 56 | 52 | 54 | 50 | 46 | 47 | 44 | 41 |
| 4   | 77  | 65  | 57  | 51  | 71  | 62  | 54  | 49  | 55 | 49 | 44 | 48 | 43 | 40 | 42 | 38 | 35 |
| 5   | 70  | 58  | 50  | 44  | 66  | 55  | 48  | 42  | 49 | 43 | 38 | 43 | 38 | 34 | 38 | 34 | 31 |
| 6   | 65  | 53  | 44  | 38  | 61  | 50  | 42  | 37  | 44 | 38 | 33 | 39 | 34 | 30 | 34 | 30 | 27 |
| 7   | 60  | 47  | 39  | 34  | 56  | 45  | 38  | 32  | 40 | 34 | 30 | 35 | 31 | 27 | 31 | 27 | 24 |
| 8   | 56  | 43  | 35  | 30  | 52  | 41  | 34  | 29  | 37 | 31 | 26 | 33 | 28 | 24 | 29 | 25 | 22 |
| 9   | 52  | 40  | 32  | 27  | 49  | 37  | 30  | 26  | 34 | 28 | 24 | 30 | 25 | 22 | 27 | 23 | 20 |
| 10  | 49  | 36  | 29  | 24  | 46  | 34  | 28  | 23  | 31 | 25 | 21 | 28 | 23 | 20 | 25 | 21 | 18 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2689 | 2689 | 2689 |
| 5°  | 2691 | 2649 | 2667 |
| 10° | 2668 | 2611 | 2629 |
| 15° | 2627 | 2566 | 2571 |
| 20° | 2573 | 2504 | 2512 |
| 25° | 2519 | 2430 | 2443 |
| 30° | 2451 | 2361 | 2356 |
| 35° | 2387 | 2281 | 2265 |
| 40° | 2308 | 2199 | 2178 |
| 45° | 2229 | 2117 | 2088 |
| 50° | 2143 | 2031 | 1985 |
| 55° | 2053 | 1931 | 1889 |
| 60° | 1951 | 1814 | 1780 |
| 65° | 1839 | 1691 | 1651 |
| 70° | 1697 | 1542 | 1512 |
| 75° | 1500 | 1362 | 1380 |
| 80° | 1263 | 1134 | 1135 |
| 85° | 891  | 746  | 732  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 2229 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 203.1  | 2.3       |
| 10°-20°   | 571.4  | 6.5       |
| 20°-30°   | 839.7  | 9.6       |
| 30°-40°   | 975.2  | 11.1      |
| 40°-50°   | 974.0  | 11.1      |
| 50°-60°   | 849.3  | 9.7       |
| 60°-70°   | 627.9  | 7.1       |
| 70°-80°   | 355.2  | 4.0       |
| 80°-90°   | 95.7   | 1.1       |
| 90°-100°  | 37.0   | 0.4       |
| 100°-110° | 138.0  | 1.6       |
| 110°-120° | 366.1  | 4.2       |
| 120°-130° | 607.1  | 6.9       |
| 130°-140° | 644.9  | 7.3       |
| 140°-150° | 599.4  | 6.8       |
| 150°-160° | 481.9  | 5.5       |
| 160°-170° | 310.5  | 3.5       |
| 170°-180° | 106.9  | 1.2       |
| 0°-30°    | 1614.1 | 18.4      |
| 0°-40°    | 2589.4 | 29.5      |
| 0°-60°    | 4412.7 | 50.2      |
| 0°-90°    | 5491.5 | 62.5      |
| 90°-120°  | 541.1  | 6.2       |
| 90°-150°  | 2392.5 | 27.2      |
| 90°-180°  | 3292.0 | 37.5      |
| 0°-180°   | 8783.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2158 | 2158  | 2158 | 2158  | 2158 |      |
| 5°   | 2158 | 2150  | 2126 | 2143  | 2139 | 205  |
| 15°  | 2054 | 2042  | 2014 | 2023  | 2012 | 578  |
| 25°  | 1859 | 1842  | 1807 | 1811  | 1807 | 855  |
| 35°  | 1604 | 1583  | 1550 | 1537  | 1527 | 1001 |
| 45°  | 1305 | 1290  | 1259 | 1237  | 1228 | 1007 |
| 55°  | 988  | 975   | 950  | 925   | 915  | 883  |
| 65°  | 666  | 654   | 633  | 614   | 604  | 659  |
| 75°  | 348  | 344   | 334  | 322   | 326  | 372  |
| 85°  | 85   | 83    | 81   | 75    | 73   | 95   |
| 90°  | 1    | 10    | 16   | 20    | 22   | 8    |
| 95°  | 53   | 26    | 32   | 36    | 35   | 63   |
| 105° | 247  | 271   | 50   | 58    | 62   | 264  |
| 115° | 467  | 481   | 501  | 125   | 67   | 460  |
| 125° | 660  | 671   | 687  | 692   | 695  | 589  |
| 135° | 817  | 830   | 838  | 846   | 844  | 631  |
| 145° | 948  | 947   | 961  | 967   | 963  | 593  |
| 155° | 1044 | 1037  | 1046 | 1051  | 1045 | 481  |
| 165° | 1100 | 1095  | 1098 | 1103  | 1098 | 311  |
| 175° | 1125 | 1120  | 1121 | 1127  | 1119 | 107  |
| 180° | 1123 | 1123  | 1123 | 1123  | 1123 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2157.6 | 2157.6 | 2157.6 | 2157.6 | 2157.6 |
| 2.5°   | 2170.1 | 2159.8 | 2136.9 | 2157.6 | 2153.7 |
| 5°     | 2157.6 | 2149.5 | 2126.5 | 2143.0 | 2139.2 |
| 7.5°   | 2143.0 | 2130.7 | 2107.9 | 2124.6 | 2120.4 |
| 10°    | 2120.4 | 2105.9 | 2081.0 | 2097.5 | 2091.4 |
| 12.5°  | 2089.1 | 2076.8 | 2052.0 | 2062.3 | 2058.1 |
| 15°    | 2053.9 | 2041.6 | 2014.5 | 2022.9 | 2012.5 |
| 17.5°  | 2010.3 | 1998.0 | 1970.9 | 1981.2 | 1970.9 |
| 20°    | 1962.6 | 1950.3 | 1921.2 | 1927.3 | 1919.2 |
| 22.5°  | 1915.0 | 1896.3 | 1869.2 | 1869.2 | 1865.0 |
| 25°    | 1858.9 | 1842.4 | 1807.1 | 1811.1 | 1807.1 |
| 27.5°  | 1796.6 | 1782.1 | 1755.2 | 1749.0 | 1738.7 |
| 30°    | 1734.5 | 1717.8 | 1686.8 | 1680.6 | 1672.3 |
| 32.5°  | 1668.0 | 1655.7 | 1622.5 | 1609.9 | 1601.6 |
| 35°    | 1603.7 | 1583.1 | 1549.8 | 1537.3 | 1527.0 |
| 37.5°  | 1531.1 | 1512.5 | 1479.2 | 1464.7 | 1454.3 |
| 40°    | 1456.6 | 1439.8 | 1406.5 | 1388.0 | 1379.7 |
| 42.5°  | 1383.9 | 1367.2 | 1334.1 | 1313.2 | 1300.9 |
| 45°    | 1305.1 | 1290.5 | 1259.3 | 1236.6 | 1228.2 |
| 47.5°  | 1228.2 | 1213.7 | 1180.5 | 1157.6 | 1145.3 |
| 50°    | 1147.3 | 1136.9 | 1107.9 | 1078.8 | 1068.4 |
| 52.5°  | 1068.4 | 1053.9 | 1027.0 | 1004.2 | 989.7  |
| 55°    | 987.7  | 975.1  | 950.2  | 925.3  | 915.0  |
| 57.5°  | 906.6  | 896.3  | 869.2  | 844.4  | 836.0  |
| 60°    | 825.7  | 817.6  | 788.5  | 765.5  | 759.4  |
| 62.5°  | 746.9  | 732.4  | 711.6  | 690.9  | 682.6  |
| 65°    | 666.1  | 653.5  | 632.8  | 614.2  | 603.7  |
| 67.5°  | 583.1  | 572.6  | 554.1  | 539.5  | 531.1  |
| 70°    | 506.3  | 497.9  | 479.2  | 464.7  | 456.6  |
| 72.5°  | 427.5  | 419.1  | 408.8  | 394.2  | 388.0  |
| 75°    | 348.4  | 344.5  | 333.9  | 321.6  | 325.8  |
| 77.5°  | 278.0  | 269.6  | 265.5  | 259.3  | 253.2  |
| 80°    | 207.6  | 205.4  | 201.2  | 195.1  | 190.9  |
| 82.5°  | 141.1  | 141.1  | 139.1  | 130.8  | 130.8  |
| 85°    | 84.9   | 83.0   | 81.0   | 74.6   | 72.6   |
| 87.5°  | 37.4   | 33.3   | 29.1   | 22.8   | 20.7   |
| 90°    | 0.8    | 9.8    | 16.2   | 20.4   | 21.8   |
| 92.5°  | 20.4   | 17.1   | 19.5   | 21.2   | 21.8   |
| 95°    | 52.8   | 26.0   | 31.6   | 35.8   | 34.9   |
| 97.5°  | 95.0   | 28.5   | 41.4   | 43.9   | 44.7   |
| 100°   | 143.8  | 32.5   | 46.4   | 52.8   | 54.5   |
| 102.5° | 197.4  | 195.8  | 47.9   | 56.8   | 59.3   |
| 105°   | 247.0  | 271.4  | 49.6   | 58.4   | 61.8   |
| 107.5° | 304.6  | 324.9  | 51.2   | 60.1   | 63.4   |
| 110°   | 360.0  | 376.9  | 142.2  | 61.0   | 64.2   |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 412.0  | 426.5  | 412.8  | 62.5   | 65.0   |
| 115°   | 467.1  | 481.0  | 501.3  | 125.1  | 66.7   |
| 117.5° | 515.1  | 531.3  | 545.2  | 429.0  | 216.1  |
| 120°   | 568.7  | 580.9  | 595.5  | 605.3  | 495.6  |
| 122.5° | 614.2  | 627.3  | 643.6  | 648.3  | 649.2  |
| 125°   | 660.5  | 671.1  | 686.6  | 692.2  | 694.7  |
| 127.5° | 702.8  | 714.1  | 726.4  | 734.5  | 735.3  |
| 130°   | 742.6  | 755.7  | 764.5  | 773.4  | 772.8  |
| 132.5° | 783.2  | 793.8  | 802.7  | 810.0  | 809.2  |
| 135°   | 817.3  | 830.4  | 837.6  | 845.8  | 844.2  |
| 137.5° | 853.0  | 862.8  | 871.0  | 879.1  | 876.7  |
| 140°   | 888.0  | 894.5  | 903.4  | 910.7  | 906.7  |
| 142.5° | 917.4  | 923.0  | 933.6  | 940.0  | 936.0  |
| 145°   | 948.2  | 947.3  | 961.2  | 966.8  | 962.7  |
| 147.5° | 974.9  | 972.5  | 986.3  | 990.3  | 987.1  |
| 150°   | 1001.0 | 995.3  | 1008.3 | 1013.1 | 1009.1 |
| 152.5° | 1022.8 | 1016.4 | 1028.6 | 1033.5 | 1027.8 |
| 155°   | 1044.0 | 1036.8 | 1046.5 | 1051.3 | 1044.9 |
| 157.5° | 1061.1 | 1054.7 | 1062.0 | 1067.6 | 1061.1 |
| 160°   | 1075.7 | 1070.9 | 1075.7 | 1080.6 | 1074.8 |
| 162.5° | 1088.7 | 1083.8 | 1087.9 | 1093.6 | 1086.3 |
| 165°   | 1100.0 | 1095.2 | 1097.7 | 1103.3 | 1097.7 |
| 167.5° | 1109.0 | 1104.1 | 1106.6 | 1112.3 | 1105.0 |
| 170°   | 1116.3 | 1111.4 | 1113.1 | 1118.8 | 1111.4 |
| 172.5° | 1121.2 | 1116.3 | 1118.0 | 1123.6 | 1116.3 |
| 175°   | 1125.2 | 1119.5 | 1121.2 | 1126.9 | 1118.8 |
| 177.5° | 1126.9 | 1121.2 | 1122.1 | 1127.7 | 1120.4 |
| 180°   | 1122.9 | 1122.9 | 1122.9 | 1122.9 | 1122.9 |

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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 | 11.74            | 12.72 | 12.58 | 13.59 | 14.67 | 11.31          | 12.30 | 12.15 | 13.16 | 14.24 |
|                 | 3H   | 13.40            | 14.28 | 14.25 | 15.16 | 16.26 | 12.93          | 13.82 | 13.78 | 14.69 | 15.80 |
|                 | 4H   | 13.99            | 14.82 | 14.86 | 15.70 | 16.82 | 13.52          | 14.35 | 14.39 | 15.23 | 16.35 |
|                 | 6H   | 14.38            | 15.16 | 15.27 | 16.04 | 17.17 | 13.92          | 14.69 | 14.80 | 15.57 | 16.71 |
|                 | 8H   | 14.49            | 15.22 | 15.38 | 16.13 | 17.26 | 14.02          | 14.76 | 14.91 | 15.66 | 16.79 |
|                 | 12H  | 14.54            | 15.24 | 15.43 | 16.14 | 17.29 | 14.06          | 14.76 | 14.96 | 15.66 | 16.82 |
| 4H              | 2H   | 12.21            | 13.05 | 13.09 | 13.93 | 15.05 | 11.87          | 12.71 | 12.74 | 13.59 | 14.70 |
|                 | 3H   | 14.08            | 14.78 | 14.96 | 15.69 | 16.82 | 13.69          | 14.39 | 14.57 | 15.30 | 16.43 |
|                 | 4H   | 14.79            | 15.43 | 15.69 | 16.33 | 17.49 | 14.39          | 15.03 | 15.29 | 15.93 | 17.09 |
|                 | 6H   | 15.30            | 15.85 | 16.22 | 16.79 | 17.95 | 14.90          | 15.45 | 15.81 | 16.38 | 17.54 |
|                 | 8H   | 15.45            | 15.97 | 16.37 | 16.89 | 18.07 | 15.05          | 15.56 | 15.96 | 16.49 | 17.66 |
|                 | 12H  | 15.53            | 15.99 | 16.46 | 16.93 | 18.11 | 15.11          | 15.57 | 16.05 | 16.52 | 17.70 |
| 8H              | 4H   | 14.99            | 15.51 | 15.91 | 16.43 | 17.61 | 14.64          | 15.15 | 15.55 | 16.08 | 17.25 |
|                 | 6H   | 15.62            | 16.04 | 16.56 | 17.01 | 18.19 | 15.26          | 15.69 | 16.20 | 16.65 | 17.83 |
|                 | 8H   | 15.83            | 16.21 | 16.79 | 17.17 | 18.36 | 15.47          | 15.85 | 16.42 | 16.81 | 18.00 |
|                 | 12H  | 15.96            | 16.30 | 16.92 | 17.25 | 18.49 | 15.59          | 15.92 | 16.54 | 16.87 | 18.11 |
| 12H             | 4H   | 14.98            | 15.45 | 15.92 | 16.39 | 17.57 | 14.63          | 15.10 | 15.57 | 16.04 | 17.22 |
|                 | 6H   | 15.65            | 16.02 | 16.60 | 16.98 | 18.17 | 15.30          | 15.68 | 16.25 | 16.64 | 17.83 |
|                 | 8H   | 15.89            | 16.22 | 16.84 | 17.17 | 18.41 | 15.54          | 15.87 | 16.49 | 16.82 | 18.06 |