

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: P918173

Luminaire Tested: DFN2DIP-TR3F0-090D070US930-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P918173  
REPORT IS A COMBINATION OF REPORTS P901859 AND P898751  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-090D070US930-FLLONL  
Description: 3 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

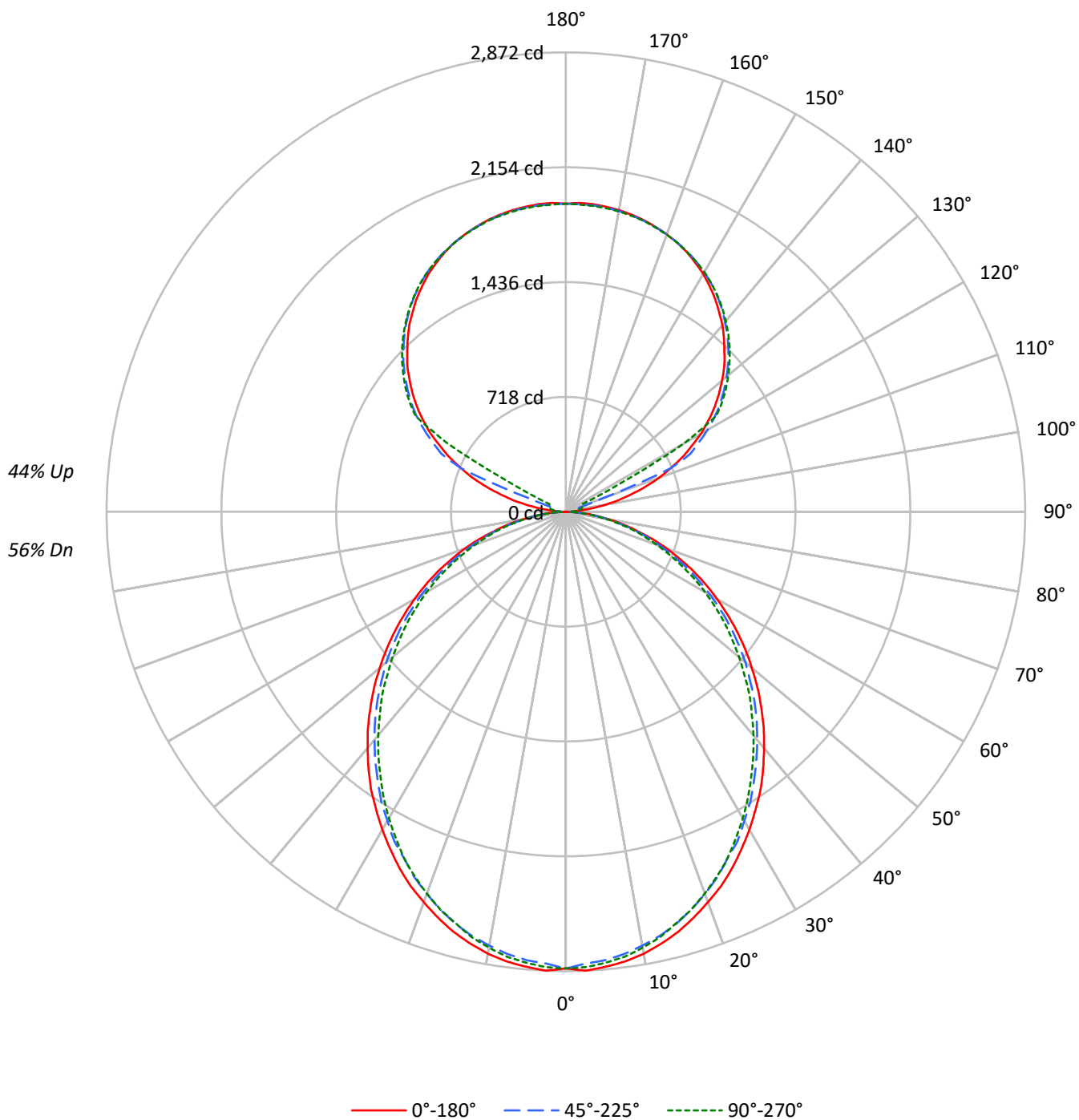
Lumens per Lamp: N/A  
Luminaire Lumens: 12914.3 lumens  
Efficiency: N/A  
Efficacy: 87.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 148.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9951  
Total Harmonic Distortion (THDi): 0.07  
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: P918173

CATALOG NUMBER: DFN2DIP-TR3F0-090D070US930-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   | 109 | 109 | 109 | 109 |  | 101 | 101 | 101 | 101 |  | 87 | 87 | 87 |  | 74 | 74 | 74 |  | 62 | 62 | 62 |
| 1   | 99  | 95  | 91  | 87  |  | 92  | 88  | 85  | 82  |  | 76 | 74 | 71 |  | 65 | 63 | 62 |  | 55 | 53 | 52 |
| 2   | 90  | 83  | 77  | 71  |  | 84  | 77  | 72  | 67  |  | 67 | 63 | 59 |  | 57 | 54 | 51 |  | 48 | 46 | 44 |
| 3   | 82  | 73  | 65  | 59  |  | 76  | 68  | 61  | 56  |  | 59 | 54 | 50 |  | 51 | 47 | 44 |  | 43 | 40 | 38 |
| 4   | 75  | 64  | 56  | 50  |  | 70  | 60  | 53  | 48  |  | 52 | 47 | 42 |  | 45 | 41 | 37 |  | 38 | 35 | 32 |
| 5   | 69  | 58  | 49  | 43  |  | 64  | 54  | 46  | 41  |  | 47 | 41 | 37 |  | 40 | 36 | 32 |  | 34 | 31 | 28 |
| 6   | 64  | 52  | 43  | 38  |  | 59  | 48  | 41  | 36  |  | 42 | 36 | 32 |  | 37 | 32 | 28 |  | 31 | 28 | 25 |
| 7   | 59  | 47  | 39  | 33  |  | 55  | 44  | 37  | 31  |  | 38 | 33 | 28 |  | 33 | 29 | 25 |  | 29 | 25 | 22 |
| 8   | 55  | 42  | 35  | 29  |  | 51  | 40  | 33  | 28  |  | 35 | 29 | 25 |  | 30 | 26 | 22 |  | 26 | 23 | 20 |
| 9   | 51  | 39  | 31  | 26  |  | 48  | 36  | 30  | 25  |  | 32 | 26 | 23 |  | 28 | 23 | 20 |  | 24 | 21 | 18 |
| 10  | 48  | 36  | 28  | 23  |  | 44  | 34  | 27  | 22  |  | 30 | 24 | 20 |  | 26 | 21 | 18 |  | 22 | 19 | 16 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3558 | 3558 | 3558 |
| 5°  | 3561 | 3505 | 3529 |
| 10° | 3531 | 3455 | 3479 |
| 15° | 3477 | 3395 | 3402 |
| 20° | 3405 | 3313 | 3324 |
| 25° | 3333 | 3216 | 3233 |
| 30° | 3243 | 3125 | 3118 |
| 35° | 3158 | 3018 | 2997 |
| 40° | 3054 | 2910 | 2882 |
| 45° | 2950 | 2801 | 2763 |
| 50° | 2836 | 2687 | 2627 |
| 55° | 2717 | 2556 | 2500 |
| 60° | 2581 | 2400 | 2355 |
| 65° | 2434 | 2238 | 2185 |
| 70° | 2245 | 2040 | 2000 |
| 75° | 1985 | 1803 | 1826 |
| 80° | 1671 | 1500 | 1501 |
| 85° | 1180 | 988  | 969  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2950 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 268.7   | 2.1       |
| 10°-20°   | 756.1   | 5.9       |
| 20°-30°   | 1111.2  | 8.6       |
| 30°-40°   | 1290.5  | 10.0      |
| 40°-50°   | 1288.9  | 10.0      |
| 50°-60°   | 1123.9  | 8.7       |
| 60°-70°   | 830.8   | 6.4       |
| 70°-80°   | 470.1   | 3.6       |
| 80°-90°   | 127.4   | 1.0       |
| 90°-100°  | 63.5    | 0.5       |
| 100°-110° | 236.8   | 1.8       |
| 110°-120° | 627.9   | 4.9       |
| 120°-130° | 1041.5  | 8.1       |
| 130°-140° | 1106.3  | 8.6       |
| 140°-150° | 1028.1  | 8.0       |
| 150°-160° | 826.6   | 6.4       |
| 160°-170° | 532.6   | 4.1       |
| 170°-180° | 183.3   | 1.4       |
| 0°-30°    | 2136.0  | 16.5      |
| 0°-40°    | 3426.5  | 26.5      |
| 0°-60°    | 5839.4  | 45.2      |
| 0°-90°    | 7267.7  | 56.3      |
| 90°-120°  | 928.2   | 7.2       |
| 90°-150°  | 4104.1  | 31.8      |
| 90°-180°  | 5647.0  | 43.7      |
| 0°-180°   | 12914.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2855 | 2855  | 2855 | 2855  | 2855 |      |
| 5°   | 2855 | 2844  | 2814 | 2836  | 2831 | 271  |
| 15°  | 2718 | 2702  | 2666 | 2677  | 2663 | 765  |
| 25°  | 2460 | 2438  | 2391 | 2397  | 2391 | 1132 |
| 35°  | 2122 | 2095  | 2051 | 2034  | 2021 | 1325 |
| 45°  | 1727 | 1708  | 1666 | 1636  | 1625 | 1333 |
| 55°  | 1307 | 1290  | 1257 | 1225  | 1211 | 1169 |
| 65°  | 881  | 865   | 837  | 813   | 799  | 871  |
| 75°  | 461  | 456   | 442  | 426   | 431  | 492  |
| 85°  | 112  | 110   | 107  | 99    | 96   | 125  |
| 90°  | 1    | 17    | 28   | 35    | 38   | 12   |
| 95°  | 90   | 44    | 54   | 61    | 60   | 107  |
| 105° | 424  | 466   | 85   | 100   | 106  | 453  |
| 115° | 801  | 825   | 860  | 215   | 114  | 789  |
| 125° | 1133 | 1151  | 1178 | 1188  | 1192 | 1010 |
| 135° | 1402 | 1424  | 1437 | 1451  | 1448 | 1083 |
| 145° | 1626 | 1625  | 1649 | 1658  | 1652 | 1017 |
| 155° | 1791 | 1778  | 1795 | 1803  | 1792 | 825  |
| 165° | 1887 | 1879  | 1883 | 1893  | 1883 | 533  |
| 175° | 1930 | 1920  | 1923 | 1933  | 1919 | 184  |
| 180° | 1926 | 1926  | 1926 | 1926  | 1926 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2855.1 | 2855.1 | 2855.1 | 2855.1 | 2855.1 |
| 2.5°   | 2871.7 | 2858.0 | 2827.8 | 2855.1 | 2849.9 |
| 5°     | 2855.1 | 2844.3 | 2814.1 | 2835.9 | 2830.6 |
| 7.5°   | 2835.9 | 2819.6 | 2789.3 | 2811.5 | 2805.9 |
| 10°    | 2805.9 | 2786.7 | 2753.8 | 2775.6 | 2767.4 |
| 12.5°  | 2764.5 | 2748.2 | 2715.4 | 2729.0 | 2723.5 |
| 15°    | 2718.0 | 2701.7 | 2665.8 | 2676.9 | 2663.2 |
| 17.5°  | 2660.2 | 2643.9 | 2608.1 | 2621.8 | 2608.1 |
| 20°    | 2597.1 | 2580.7 | 2542.3 | 2550.4 | 2539.7 |
| 22.5°  | 2534.1 | 2509.4 | 2473.5 | 2473.5 | 2468.0 |
| 25°    | 2459.8 | 2438.0 | 2391.4 | 2396.7 | 2391.4 |
| 27.5°  | 2377.4 | 2358.2 | 2322.7 | 2314.6 | 2300.9 |
| 30°    | 2295.3 | 2273.1 | 2232.0 | 2223.9 | 2212.9 |
| 32.5°  | 2207.3 | 2191.0 | 2147.0 | 2130.5 | 2119.4 |
| 35°    | 2122.3 | 2094.9 | 2050.9 | 2034.3 | 2020.6 |
| 37.5°  | 2026.2 | 2001.4 | 1957.4 | 1938.2 | 1924.5 |
| 40°    | 1927.4 | 1905.3 | 1861.2 | 1836.8 | 1825.8 |
| 42.5°  | 1831.2 | 1809.1 | 1765.4 | 1737.8 | 1721.5 |
| 45°    | 1727.0 | 1707.8 | 1666.4 | 1636.4 | 1625.4 |
| 47.5°  | 1625.4 | 1606.1 | 1562.1 | 1531.9 | 1515.6 |
| 50°    | 1518.2 | 1504.5 | 1466.0 | 1427.6 | 1413.9 |
| 52.5°  | 1413.9 | 1394.6 | 1359.1 | 1328.9 | 1309.6 |
| 55°    | 1307.0 | 1290.4 | 1257.4 | 1224.6 | 1210.9 |
| 57.5°  | 1199.8 | 1186.1 | 1150.3 | 1117.4 | 1106.3 |
| 60°    | 1092.6 | 1081.8 | 1043.3 | 1013.1 | 1004.9 |
| 62.5°  | 988.3  | 969.1  | 941.7  | 914.4  | 903.3  |
| 65°    | 881.4  | 864.8  | 837.4  | 812.7  | 799.0  |
| 67.5°  | 771.6  | 757.7  | 733.1  | 714.0  | 702.9  |
| 70°    | 669.9  | 658.8  | 634.1  | 614.9  | 604.1  |
| 72.5°  | 565.7  | 554.6  | 540.9  | 521.7  | 513.6  |
| 75°    | 461.1  | 455.8  | 441.9  | 425.6  | 431.1  |
| 77.5°  | 367.9  | 356.9  | 351.3  | 343.2  | 335.0  |
| 80°    | 274.7  | 271.7  | 266.2  | 258.0  | 252.6  |
| 82.5°  | 186.7  | 186.7  | 184.1  | 173.0  | 173.0  |
| 85°    | 112.4  | 109.8  | 107.2  | 98.7   | 96.1   |
| 87.5°  | 49.5   | 43.9   | 38.5   | 30.3   | 27.4   |
| 90°    | 1.3    | 16.7   | 27.8   | 34.9   | 37.6   |
| 92.5°  | 34.9   | 29.3   | 33.4   | 36.3   | 37.6   |
| 95°    | 90.5   | 44.5   | 54.3   | 61.4   | 59.9   |
| 97.5°  | 163.0  | 48.8   | 71.0   | 75.3   | 76.6   |
| 100°   | 246.8  | 55.8   | 79.4   | 90.5   | 93.4   |
| 102.5° | 338.6  | 336.0  | 82.3   | 97.5   | 101.7  |
| 105°   | 423.7  | 465.5  | 85.0   | 100.3  | 105.9  |
| 107.5° | 522.6  | 557.4  | 87.9   | 103.1  | 108.8  |
| 110°   | 617.5  | 646.6  | 243.9  | 104.6  | 110.1  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 706.7  | 731.6  | 708.0  | 107.2  | 111.5  |
| 115°   | 801.4  | 825.0  | 859.9  | 214.7  | 114.4  |
| 117.5° | 883.6  | 911.4  | 935.2  | 735.8  | 370.7  |
| 120°   | 975.6  | 996.5  | 1021.7 | 1038.4 | 850.2  |
| 122.5° | 1053.5 | 1075.9 | 1103.9 | 1112.1 | 1113.6 |
| 125°   | 1133.0 | 1151.2 | 1177.7 | 1187.5 | 1191.6 |
| 127.5° | 1205.5 | 1225.0 | 1246.0 | 1260.0 | 1261.3 |
| 130°   | 1273.8 | 1296.2 | 1311.4 | 1326.8 | 1325.5 |
| 132.5° | 1343.5 | 1361.7 | 1377.0 | 1389.5 | 1388.2 |
| 135°   | 1402.1 | 1424.4 | 1436.9 | 1450.9 | 1448.1 |
| 137.5° | 1463.3 | 1480.1 | 1494.1 | 1508.1 | 1503.9 |
| 140°   | 1523.2 | 1534.5 | 1549.7 | 1562.3 | 1555.3 |
| 142.5° | 1573.5 | 1583.3 | 1601.3 | 1612.4 | 1605.5 |
| 145°   | 1626.5 | 1625.1 | 1648.7 | 1658.5 | 1651.5 |
| 147.5° | 1672.3 | 1668.3 | 1691.9 | 1698.8 | 1693.4 |
| 150°   | 1717.0 | 1707.3 | 1729.7 | 1737.9 | 1731.0 |
| 152.5° | 1754.6 | 1743.5 | 1764.4 | 1772.8 | 1763.1 |
| 155°   | 1790.9 | 1778.4 | 1795.1 | 1803.4 | 1792.4 |
| 157.5° | 1820.2 | 1809.1 | 1821.6 | 1831.4 | 1820.2 |
| 160°   | 1845.3 | 1836.9 | 1845.3 | 1853.6 | 1843.8 |
| 162.5° | 1867.5 | 1859.2 | 1866.1 | 1875.9 | 1863.4 |
| 165°   | 1887.0 | 1878.8 | 1882.8 | 1892.6 | 1882.8 |
| 167.5° | 1902.4 | 1893.9 | 1898.3 | 1908.0 | 1895.5 |
| 170°   | 1915.0 | 1906.6 | 1909.3 | 1919.1 | 1906.6 |
| 172.5° | 1923.3 | 1915.0 | 1917.8 | 1927.5 | 1915.0 |
| 175°   | 1930.2 | 1920.4 | 1923.3 | 1933.0 | 1919.1 |
| 177.5° | 1933.0 | 1923.3 | 1924.8 | 1934.5 | 1921.9 |
| 180°   | 1926.1 | 1926.1 | 1926.1 | 1926.1 | 1926.1 |

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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 | 12.19            | 13.11 | 13.09 | 14.03 | 15.21 | 11.76          | 12.68 | 12.66 | 13.60 | 14.78 |
|                 | 3H   | 13.85            | 14.67 | 14.76 | 15.60 | 16.81 | 13.38          | 14.20 | 14.29 | 15.13 | 16.34 |
|                 | 4H   | 14.43            | 15.21 | 15.36 | 16.15 | 17.36 | 13.96          | 14.74 | 14.89 | 15.68 | 16.89 |
|                 | 6H   | 14.83            | 15.55 | 15.77 | 16.49 | 17.71 | 14.36          | 15.08 | 15.30 | 16.02 | 17.24 |
|                 | 8H   | 14.93            | 15.61 | 15.88 | 16.57 | 17.80 | 14.46          | 15.15 | 15.41 | 16.10 | 17.33 |
|                 | 12H  | 14.97            | 15.63 | 15.93 | 16.58 | 17.83 | 14.50          | 15.15 | 15.45 | 16.11 | 17.36 |
| 4H              | 2H   | 12.66            | 13.44 | 13.59 | 14.37 | 15.58 | 12.31          | 13.09 | 13.25 | 14.03 | 15.24 |
|                 | 3H   | 14.52            | 15.17 | 15.46 | 16.13 | 17.36 | 14.13          | 14.78 | 15.07 | 15.74 | 16.97 |
|                 | 4H   | 15.23            | 15.82 | 16.18 | 16.78 | 18.03 | 14.82          | 15.42 | 15.78 | 16.38 | 17.63 |
|                 | 6H   | 15.74            | 16.25 | 16.70 | 17.23 | 18.48 | 15.33          | 15.85 | 16.30 | 16.83 | 18.08 |
|                 | 8H   | 15.88            | 16.36 | 16.85 | 17.34 | 18.60 | 15.48          | 15.96 | 16.44 | 16.93 | 18.20 |
|                 | 12H  | 15.95            | 16.39 | 16.94 | 17.38 | 18.65 | 15.54          | 15.97 | 16.53 | 16.97 | 18.24 |
| 8H              | 4H   | 15.42            | 15.90 | 16.39 | 16.88 | 18.15 | 15.07          | 15.55 | 16.04 | 16.52 | 17.79 |
|                 | 6H   | 16.05            | 16.44 | 17.04 | 17.46 | 18.73 | 15.69          | 16.08 | 16.68 | 17.10 | 18.37 |
|                 | 8H   | 16.26            | 16.61 | 17.26 | 17.62 | 18.90 | 15.90          | 16.25 | 16.90 | 17.25 | 18.54 |
|                 | 12H  | 16.39            | 16.70 | 17.40 | 17.70 | 19.03 | 16.01          | 16.32 | 17.02 | 17.32 | 18.65 |
| 12H             | 4H   | 15.41            | 15.84 | 16.40 | 16.84 | 18.11 | 15.06          | 15.49 | 16.05 | 16.49 | 17.76 |
|                 | 6H   | 16.07            | 16.43 | 17.08 | 17.43 | 18.71 | 15.73          | 16.08 | 16.73 | 17.09 | 18.37 |
|                 | 8H   | 16.31            | 16.62 | 17.32 | 17.62 | 18.95 | 15.96          | 16.27 | 16.97 | 17.27 | 18.60 |