

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: P918177

Luminaire Tested: DFN2DIP-TR3F0-090D080US930-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P918177  
REPORT IS A COMBINATION OF REPORTS P901873 AND P898751  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-090D080US930-FLLONL  
Description: 3 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

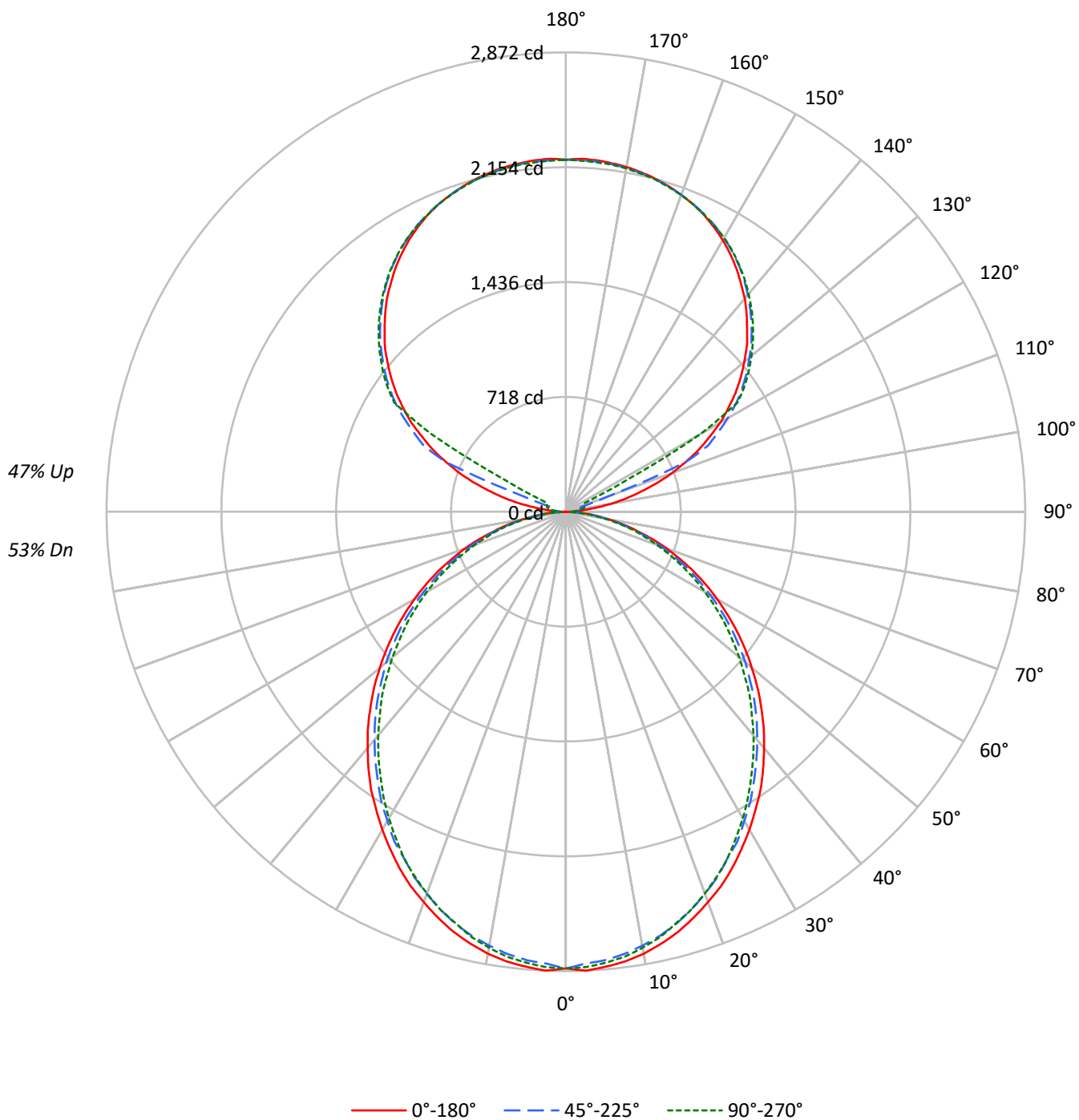
Lumens per Lamp: N/A  
Luminaire Lumens: 13721.5 lumens  
Efficiency: N/A  
Efficacy: 88.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 156  
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

TEST NUMBER: P918177

CATALOG NUMBER: DFN2DIP-TR3F0-090D080US930-FLLONL

### Luminous Intensity Polar Plot



TEST NUMBER: P918177

CATALOG NUMBER: DFN2DIP-TR3F0-090D080US930-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   | 108 | 108 | 108 | 108 | 100 | 100 | 100 | 100 | 85 | 85 | 85 | 71 | 71 | 71 | 59 | 59 | 59 |
| 1   | 98  | 94  | 90  | 87  | 91  | 87  | 84  | 81  | 75 | 72 | 70 | 63 | 61 | 59 | 52 | 51 | 50 |
| 2   | 90  | 82  | 76  | 71  | 83  | 76  | 71  | 66  | 65 | 61 | 58 | 55 | 52 | 50 | 46 | 44 | 42 |
| 3   | 82  | 72  | 65  | 59  | 75  | 67  | 61  | 55  | 58 | 53 | 49 | 49 | 45 | 42 | 41 | 38 | 36 |
| 4   | 75  | 64  | 56  | 50  | 69  | 60  | 53  | 47  | 51 | 46 | 41 | 43 | 39 | 36 | 36 | 33 | 31 |
| 5   | 69  | 57  | 49  | 43  | 63  | 53  | 46  | 40  | 46 | 40 | 36 | 39 | 35 | 31 | 33 | 29 | 27 |
| 6   | 63  | 51  | 43  | 37  | 58  | 48  | 40  | 35  | 41 | 36 | 31 | 35 | 31 | 27 | 30 | 26 | 24 |
| 7   | 59  | 46  | 38  | 33  | 54  | 43  | 36  | 31  | 37 | 32 | 28 | 32 | 28 | 24 | 27 | 24 | 21 |
| 8   | 54  | 42  | 34  | 29  | 50  | 39  | 32  | 27  | 34 | 29 | 24 | 29 | 25 | 22 | 25 | 21 | 19 |
| 9   | 51  | 38  | 31  | 26  | 47  | 36  | 29  | 24  | 31 | 26 | 22 | 27 | 23 | 19 | 23 | 20 | 17 |
| 10  | 47  | 35  | 28  | 23  | 44  | 33  | 26  | 22  | 29 | 24 | 20 | 25 | 21 | 18 | 21 | 18 | 15 |

**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

TEST NUMBER: P918177

CATALOG NUMBER: DFN2DIP-TR3F0-090D080US930-FLLONL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 268.7   | 2.0       |
| 10°-20°   | 756.1   | 5.5       |
| 20°-30°   | 1111.2  | 8.1       |
| 30°-40°   | 1290.5  | 9.4       |
| 40°-50°   | 1288.9  | 9.4       |
| 50°-60°   | 1123.9  | 8.2       |
| 60°-70°   | 830.8   | 6.1       |
| 70°-80°   | 470.1   | 3.4       |
| 80°-90°   | 127.9   | 0.9       |
| 90°-100°  | 72.6    | 0.5       |
| 100°-110° | 270.6   | 2.0       |
| 110°-120° | 717.6   | 5.2       |
| 120°-130° | 1190.2  | 8.7       |
| 130°-140° | 1264.3  | 9.2       |
| 140°-150° | 1175.0  | 8.6       |
| 150°-160° | 944.7   | 6.9       |
| 160°-170° | 608.7   | 4.4       |
| 170°-180° | 209.5   | 1.5       |
| 0°-30°    | 2136.0  | 15.6      |
| 0°-40°    | 3426.5  | 25.0      |
| 0°-60°    | 5839.4  | 42.6      |
| 0°-90°    | 7268.2  | 53.0      |
| 90°-120°  | 1060.8  | 7.7       |
| 90°-150°  | 4690.4  | 34.2      |
| 90°-180°  | 6453.0  | 47.0      |
| 0°-180°   | 13721.5 | 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°  | 2    | 19    | 32   | 40    | 43   | 13   |
| 95°  | 104  | 51    | 62   | 70    | 68   | 123  |
| 105° | 484  | 532   | 97   | 115   | 121  | 517  |
| 115° | 916  | 943   | 983  | 245   | 131  | 902  |
| 125° | 1295 | 1316  | 1346 | 1357  | 1362 | 1155 |
| 135° | 1602 | 1628  | 1642 | 1658  | 1655 | 1238 |
| 145° | 1859 | 1857  | 1884 | 1895  | 1887 | 1163 |
| 155° | 2047 | 2032  | 2052 | 2061  | 2048 | 943  |
| 165° | 2157 | 2147  | 2152 | 2163  | 2152 | 609  |
| 175° | 2206 | 2195  | 2198 | 2209  | 2193 | 210  |
| 180° | 2201 | 2201  | 2201 | 2201  | 2201 |      |

TEST NUMBER: P918177

CATALOG NUMBER: DFN2DIP-TR3F0-090D080US930-FLLONL

**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°    | 1.5    | 19.1   | 31.8   | 39.9   | 43.0   |
| 92.5°  | 39.9   | 33.5   | 38.2   | 41.4   | 43.0   |
| 95°    | 103.5  | 50.9   | 62.0   | 70.2   | 68.5   |
| 97.5°  | 186.3  | 55.8   | 81.1   | 86.1   | 87.6   |
| 100°   | 282.0  | 63.8   | 90.8   | 103.5  | 106.6  |
| 102.5° | 387.0  | 383.9  | 94.0   | 111.4  | 116.3  |
| 105°   | 484.2  | 532.1  | 97.2   | 114.6  | 121.1  |
| 107.5° | 597.3  | 637.0  | 100.4  | 117.8  | 124.3  |
| 110°   | 705.7  | 739.0  | 278.8  | 119.5  | 125.8  |

TEST NUMBER: P918177

CATALOG NUMBER: DFN2DIP-TR3F0-090D080US930-FLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 807.6  | 836.2  | 809.2  | 122.5  | 127.5  |
| 115°   | 915.8  | 942.9  | 982.8  | 245.3  | 130.7  |
| 117.5° | 1009.8 | 1041.6 | 1068.9 | 840.9  | 423.7  |
| 120°   | 1115.0 | 1138.8 | 1167.6 | 1186.7 | 971.6  |
| 122.5° | 1204.0 | 1229.6 | 1261.6 | 1271.0 | 1272.8 |
| 125°   | 1294.9 | 1315.6 | 1345.9 | 1357.1 | 1361.8 |
| 127.5° | 1377.7 | 1400.0 | 1424.1 | 1439.9 | 1441.4 |
| 130°   | 1455.8 | 1481.3 | 1498.8 | 1516.4 | 1514.8 |
| 132.5° | 1535.5 | 1556.2 | 1573.7 | 1588.0 | 1586.5 |
| 135°   | 1602.4 | 1627.9 | 1642.1 | 1658.2 | 1655.0 |
| 137.5° | 1672.4 | 1691.5 | 1707.6 | 1723.5 | 1718.7 |
| 140°   | 1740.8 | 1753.7 | 1771.2 | 1785.5 | 1777.5 |
| 142.5° | 1798.4 | 1809.5 | 1830.1 | 1842.8 | 1834.8 |
| 145°   | 1858.9 | 1857.2 | 1884.2 | 1895.4 | 1887.4 |
| 147.5° | 1911.3 | 1906.6 | 1933.6 | 1941.6 | 1935.3 |
| 150°   | 1962.3 | 1951.2 | 1976.7 | 1986.1 | 1978.2 |
| 152.5° | 2005.3 | 1992.6 | 2016.4 | 2026.1 | 2014.9 |
| 155°   | 2046.7 | 2032.5 | 2051.6 | 2061.1 | 2048.4 |
| 157.5° | 2080.2 | 2067.5 | 2081.9 | 2093.0 | 2080.2 |
| 160°   | 2108.9 | 2099.3 | 2108.9 | 2118.4 | 2107.2 |
| 162.5° | 2134.3 | 2124.8 | 2132.7 | 2143.9 | 2129.6 |
| 165°   | 2156.6 | 2147.2 | 2151.9 | 2163.0 | 2151.9 |
| 167.5° | 2174.2 | 2164.5 | 2169.4 | 2180.6 | 2166.2 |
| 170°   | 2188.6 | 2178.9 | 2182.1 | 2193.3 | 2178.9 |
| 172.5° | 2198.0 | 2188.6 | 2191.8 | 2202.9 | 2188.6 |
| 175°   | 2206.0 | 2194.8 | 2198.0 | 2209.1 | 2193.3 |
| 177.5° | 2209.1 | 2198.0 | 2199.7 | 2210.8 | 2196.5 |
| 180°   | 2201.2 | 2201.2 | 2201.2 | 2201.2 | 2201.2 |

TEST NUMBER: P918177

CATALOG NUMBER: DFN2DIP-TR3F0-090D080US930-FLLONL

**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 | 11.90            | 12.79 | 12.83 | 13.74 | 14.97 | 11.47          | 12.36 | 12.40 | 13.31 | 14.54 |
|                 | 3H   | 13.55            | 14.35 | 14.50 | 15.31 | 16.56 | 13.09          | 13.88 | 14.03 | 14.84 | 16.09 |
|                 | 4H   | 14.14            | 14.89 | 15.09 | 15.85 | 17.11 | 13.67          | 14.42 | 14.63 | 15.39 | 16.65 |
|                 | 6H   | 14.53            | 15.23 | 15.50 | 16.19 | 17.47 | 14.06          | 14.76 | 15.03 | 15.72 | 17.00 |
|                 | 8H   | 14.63            | 15.29 | 15.61 | 16.28 | 17.55 | 14.16          | 14.83 | 15.14 | 15.81 | 17.08 |
|                 | 12H  | 14.68            | 15.31 | 15.66 | 16.29 | 17.58 | 14.20          | 14.83 | 15.18 | 15.81 | 17.11 |
| 4H              | 2H   | 12.36            | 13.12 | 13.32 | 14.08 | 15.34 | 12.02          | 12.77 | 12.98 | 13.74 | 15.00 |
|                 | 3H   | 14.22            | 14.85 | 15.19 | 15.84 | 17.12 | 13.83          | 14.46 | 14.80 | 15.45 | 16.73 |
|                 | 4H   | 14.93            | 15.50 | 15.91 | 16.49 | 17.79 | 14.53          | 15.10 | 15.51 | 16.09 | 17.39 |
|                 | 6H   | 15.44            | 15.93 | 16.43 | 16.94 | 18.24 | 15.03          | 15.53 | 16.03 | 16.54 | 17.83 |
|                 | 8H   | 15.58            | 16.04 | 16.58 | 17.05 | 18.36 | 15.18          | 15.64 | 16.17 | 16.64 | 17.95 |
|                 | 12H  | 15.65            | 16.07 | 16.67 | 17.09 | 18.40 | 15.24          | 15.65 | 16.25 | 16.67 | 17.99 |
| 8H              | 4H   | 15.12            | 15.59 | 16.12 | 16.59 | 17.90 | 14.77          | 15.23 | 15.76 | 16.23 | 17.54 |
|                 | 6H   | 15.74            | 16.13 | 16.76 | 17.17 | 18.48 | 15.39          | 15.77 | 16.41 | 16.81 | 18.12 |
|                 | 8H   | 15.96            | 16.30 | 16.99 | 17.33 | 18.66 | 15.59          | 15.93 | 16.62 | 16.96 | 18.29 |
|                 | 12H  | 16.08            | 16.38 | 17.12 | 17.41 | 18.78 | 15.71          | 16.00 | 16.74 | 17.03 | 18.40 |
| 12H             | 4H   | 15.11            | 15.53 | 16.12 | 16.55 | 17.86 | 14.76          | 15.18 | 15.77 | 16.20 | 17.51 |
|                 | 6H   | 15.77            | 16.11 | 16.80 | 17.14 | 18.47 | 15.42          | 15.76 | 16.45 | 16.79 | 18.12 |
|                 | 8H   | 16.01            | 16.31 | 17.04 | 17.33 | 18.70 | 15.66          | 15.95 | 16.69 | 16.98 | 18.35 |