

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: P905785

Luminaire Tested: DFN2DIP-PN3F0-060D090US835-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P905785  
REPORT IS A COMBINATION OF REPORTS P901121 AND P897955  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-060D090US835-FLLONL  
Description: 3 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

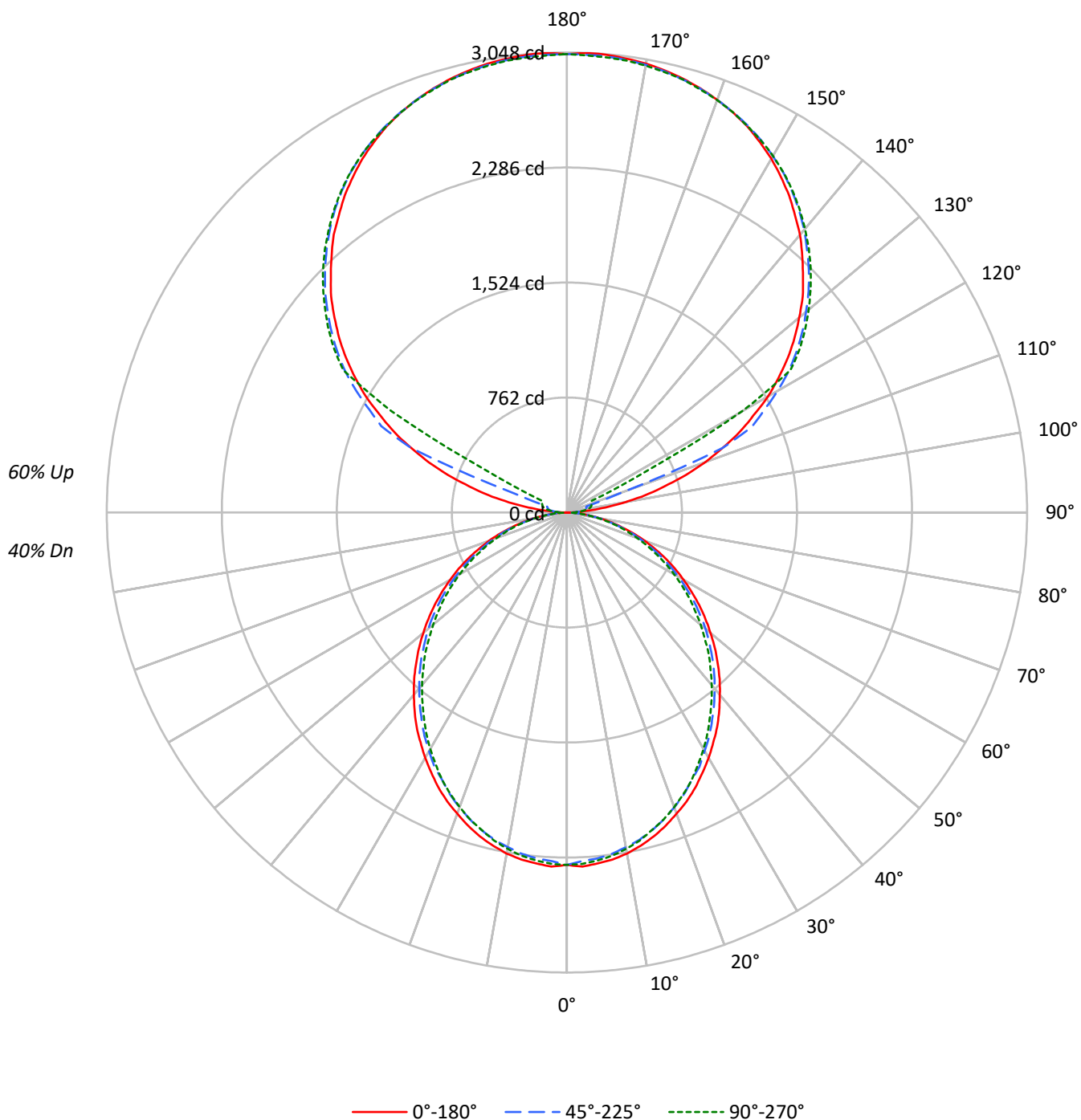
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 14850.0 lumens  
Efficiency: N/A  
Efficacy: 115.8 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: General Diffuse  
  
Input Watts (W): 128.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9821  
Total Harmonic Distortion (THDi): 0.08  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P905785

CATALOG NUMBER: DFN2DIP-PN3F0-060D090US835-FLLONL

### Luminous Intensity Polar Plot



TEST NUMBER: P905785

CATALOG NUMBER: DFN2DIP-PN3F0-060D090US835-FLLONL

**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   | 105 | 105 | 105 | 105 | 95 | 95 | 95 | 95 | 78 | 78 | 78 | 62 | 62 | 62 | 47 | 47 | 47 |
| 1   | 96  | 91  | 87  | 84  | 87 | 83 | 80 | 77 | 68 | 66 | 64 | 54 | 53 | 51 | 41 | 41 | 40 |
| 2   | 87  | 80  | 74  | 69  | 79 | 73 | 68 | 63 | 60 | 56 | 53 | 48 | 45 | 43 | 37 | 35 | 33 |
| 3   | 79  | 70  | 63  | 57  | 72 | 64 | 58 | 53 | 53 | 48 | 44 | 42 | 39 | 36 | 32 | 30 | 28 |
| 4   | 73  | 62  | 54  | 48  | 66 | 57 | 50 | 45 | 47 | 42 | 38 | 37 | 34 | 31 | 29 | 26 | 24 |
| 5   | 67  | 55  | 47  | 41  | 60 | 50 | 44 | 38 | 42 | 37 | 33 | 34 | 30 | 27 | 26 | 23 | 21 |
| 6   | 61  | 49  | 41  | 36  | 56 | 45 | 38 | 33 | 38 | 32 | 28 | 30 | 26 | 23 | 24 | 21 | 19 |
| 7   | 57  | 45  | 37  | 31  | 51 | 41 | 34 | 29 | 34 | 29 | 25 | 28 | 24 | 21 | 22 | 19 | 17 |
| 8   | 52  | 40  | 33  | 27  | 48 | 37 | 30 | 26 | 31 | 26 | 22 | 25 | 21 | 18 | 20 | 17 | 15 |
| 9   | 49  | 37  | 29  | 24  | 44 | 34 | 27 | 23 | 28 | 23 | 20 | 23 | 19 | 17 | 18 | 15 | 13 |
| 10  | 46  | 34  | 27  | 22  | 41 | 31 | 25 | 20 | 26 | 21 | 18 | 21 | 18 | 15 | 17 | 14 | 12 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2729 | 2729 | 2729 |
| 5°  | 2732 | 2689 | 2708 |
| 10° | 2708 | 2651 | 2670 |
| 15° | 2667 | 2605 | 2612 |
| 20° | 2611 | 2543 | 2552 |
| 25° | 2556 | 2468 | 2483 |
| 30° | 2487 | 2399 | 2396 |
| 35° | 2422 | 2318 | 2303 |
| 40° | 2342 | 2235 | 2215 |
| 45° | 2262 | 2152 | 2125 |
| 50° | 2174 | 2065 | 2021 |
| 55° | 2082 | 1965 | 1925 |
| 60° | 1979 | 1846 | 1815 |
| 65° | 1865 | 1722 | 1685 |
| 70° | 1720 | 1571 | 1545 |
| 75° | 1520 | 1390 | 1414 |
| 80° | 1279 | 1159 | 1167 |
| 85° | 901  | 766  | 760  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 2262 cd/sqm

TEST NUMBER: P905785

CATALOG NUMBER: DFN2DIP-PN3F0-060D090US835-FLLONL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 219.7   | 1.5       |
| 10°-20°   | 618.3   | 4.2       |
| 20°-30°   | 908.6   | 6.1       |
| 30°-40°   | 1055.3  | 7.1       |
| 40°-50°   | 1054.0  | 7.1       |
| 50°-60°   | 919.0   | 6.2       |
| 60°-70°   | 679.4   | 4.6       |
| 70°-80°   | 384.4   | 2.6       |
| 80°-90°   | 106.8   | 0.7       |
| 90°-100°  | 100.2   | 0.7       |
| 100°-110° | 373.4   | 2.5       |
| 110°-120° | 990.2   | 6.7       |
| 120°-130° | 1642.4  | 11.1      |
| 130°-140° | 1744.6  | 11.7      |
| 140°-150° | 1621.4  | 10.9      |
| 150°-160° | 1303.5  | 8.8       |
| 160°-170° | 840.0   | 5.7       |
| 170°-180° | 289.1   | 1.9       |
| 0°-30°    | 1746.6  | 11.8      |
| 0°-40°    | 2801.8  | 18.9      |
| 0°-60°    | 4774.8  | 32.2      |
| 0°-90°    | 5945.3  | 40.0      |
| 90°-120°  | 1463.7  | 9.9       |
| 90°-150°  | 6472.0  | 43.6      |
| 90°-180°  | 8905.0  | 60.0      |
| 0°-180°   | 14850.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2335 | 2335  | 2335 | 2335  | 2335 |      |
| 5°   | 2335 | 2326  | 2301 | 2319  | 2315 | 222  |
| 15°  | 2222 | 2209  | 2180 | 2189  | 2178 | 626  |
| 25°  | 2011 | 1994  | 1955 | 1960  | 1955 | 926  |
| 35°  | 1735 | 1713  | 1677 | 1663  | 1652 | 1084 |
| 45°  | 1412 | 1396  | 1363 | 1338  | 1329 | 1090 |
| 55°  | 1069 | 1055  | 1028 | 1001  | 990  | 955  |
| 65°  | 721  | 707   | 685  | 664   | 653  | 713  |
| 75°  | 377  | 373   | 361  | 348   | 352  | 402  |
| 85°  | 92   | 90    | 88   | 81    | 79   | 103  |
| 90°  | 2    | 26    | 44   | 55    | 59   | 14   |
| 95°  | 143  | 70    | 86   | 97    | 94   | 169  |
| 105° | 668  | 734   | 134  | 158   | 167  | 714  |
| 115° | 1264 | 1301  | 1356 | 338   | 180  | 1244 |
| 125° | 1787 | 1815  | 1857 | 1873  | 1879 | 1594 |
| 135° | 2211 | 2246  | 2266 | 2288  | 2284 | 1708 |
| 145° | 2565 | 2563  | 2600 | 2615  | 2604 | 1604 |
| 155° | 2824 | 2805  | 2831 | 2844  | 2826 | 1301 |
| 165° | 2976 | 2963  | 2969 | 2985  | 2969 | 841  |
| 175° | 3044 | 3028  | 3033 | 3048  | 3026 | 290  |
| 180° | 3037 | 3037  | 3037 | 3037  | 3037 |      |

TEST NUMBER: P905785

CATALOG NUMBER: DFN2DIP-PN3F0-060D090US835-FLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2334.6 | 2334.6 | 2334.6 | 2334.6 | 2334.6 |
| 2.5°   | 2348.2 | 2337.0 | 2312.2 | 2334.6 | 2330.3 |
| 5°     | 2334.6 | 2325.8 | 2301.0 | 2318.9 | 2314.6 |
| 7.5°   | 2318.9 | 2305.6 | 2280.8 | 2298.9 | 2294.4 |
| 10°    | 2294.4 | 2278.7 | 2251.7 | 2269.6 | 2262.9 |
| 12.5°  | 2260.6 | 2247.2 | 2220.3 | 2231.5 | 2227.0 |
| 15°    | 2222.4 | 2209.1 | 2179.8 | 2188.9 | 2177.7 |
| 17.5°  | 2175.3 | 2162.0 | 2132.7 | 2143.8 | 2132.7 |
| 20°    | 2123.6 | 2110.3 | 2078.8 | 2085.5 | 2076.7 |
| 22.5°  | 2072.2 | 2051.9 | 2022.6 | 2022.6 | 2018.1 |
| 25°    | 2011.4 | 1993.6 | 1955.4 | 1959.7 | 1955.4 |
| 27.5°  | 1944.0 | 1928.3 | 1899.2 | 1892.6 | 1881.4 |
| 30°    | 1876.9 | 1858.7 | 1825.2 | 1818.5 | 1809.4 |
| 32.5°  | 1804.9 | 1791.6 | 1755.6 | 1742.0 | 1733.0 |
| 35°    | 1735.4 | 1713.0 | 1677.0 | 1663.4 | 1652.2 |
| 37.5°  | 1656.8 | 1636.5 | 1600.6 | 1584.8 | 1573.6 |
| 40°    | 1576.0 | 1557.9 | 1522.0 | 1502.0 | 1492.9 |
| 42.5°  | 1497.4 | 1479.3 | 1443.6 | 1421.0 | 1407.6 |
| 45°    | 1412.2 | 1396.4 | 1362.6 | 1338.1 | 1329.0 |
| 47.5°  | 1329.0 | 1313.3 | 1277.4 | 1252.6 | 1239.2 |
| 50°    | 1241.4 | 1230.2 | 1198.8 | 1167.3 | 1156.1 |
| 52.5°  | 1156.1 | 1140.4 | 1111.3 | 1086.6 | 1070.9 |
| 55°    | 1068.7 | 1055.1 | 1028.2 | 1001.3 | 990.1  |
| 57.5°  | 981.1  | 969.9  | 940.6  | 913.7  | 904.6  |
| 60°    | 893.4  | 884.6  | 853.2  | 828.4  | 821.7  |
| 62.5°  | 808.1  | 792.4  | 770.0  | 747.6  | 738.6  |
| 65°    | 720.7  | 707.2  | 684.8  | 664.5  | 653.3  |
| 67.5°  | 630.9  | 619.5  | 599.5  | 583.8  | 574.7  |
| 70°    | 547.8  | 538.8  | 518.5  | 502.8  | 494.0  |
| 72.5°  | 462.5  | 453.5  | 442.3  | 426.6  | 419.9  |
| 75°    | 377.0  | 372.8  | 361.3  | 348.0  | 352.5  |
| 77.5°  | 300.8  | 291.8  | 287.2  | 280.6  | 273.9  |
| 80°    | 224.6  | 222.2  | 217.7  | 211.0  | 206.5  |
| 82.5°  | 152.7  | 152.7  | 150.5  | 141.5  | 141.5  |
| 85°    | 91.9   | 89.8   | 87.6   | 80.7   | 78.6   |
| 87.5°  | 40.5   | 36.0   | 31.4   | 24.8   | 22.4   |
| 90°    | 2.1    | 26.4   | 43.8   | 55.1   | 59.2   |
| 92.5°  | 55.1   | 46.2   | 52.7   | 57.2   | 59.2   |
| 95°    | 142.8  | 70.2   | 85.6   | 96.8   | 94.5   |
| 97.5°  | 257.1  | 77.0   | 112.0  | 118.7  | 120.8  |
| 100°   | 389.1  | 88.0   | 125.3  | 142.8  | 147.2  |
| 102.5° | 534.0  | 529.8  | 129.7  | 153.7  | 160.5  |
| 105°   | 668.1  | 734.2  | 134.1  | 158.2  | 167.0  |
| 107.5° | 824.2  | 879.0  | 138.6  | 162.6  | 171.5  |
| 110°   | 973.7  | 1019.7 | 384.7  | 164.9  | 173.6  |

TEST NUMBER: P905785

CATALOG NUMBER: DFN2DIP-PN3F0-060D090US835-FLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1114.4 | 1153.8 | 1116.5 | 169.1  | 175.9  |
| 115°   | 1263.7 | 1301.0 | 1356.1 | 338.5  | 180.3  |
| 117.5° | 1393.4 | 1437.3 | 1474.8 | 1160.4 | 584.6  |
| 120°   | 1538.5 | 1571.4 | 1611.1 | 1637.4 | 1340.7 |
| 122.5° | 1661.5 | 1696.7 | 1740.8 | 1753.8 | 1756.2 |
| 125°   | 1786.7 | 1815.4 | 1857.2 | 1872.6 | 1879.1 |
| 127.5° | 1901.0 | 1931.8 | 1965.0 | 1986.9 | 1989.0 |
| 130°   | 2008.8 | 2044.1 | 2068.1 | 2092.3 | 2090.3 |
| 132.5° | 2118.7 | 2147.4 | 2171.4 | 2191.3 | 2189.2 |
| 135°   | 2211.1 | 2246.3 | 2265.9 | 2288.1 | 2283.7 |
| 137.5° | 2307.7 | 2334.0 | 2356.2 | 2378.1 | 2371.6 |
| 140°   | 2402.1 | 2419.9 | 2443.9 | 2463.7 | 2452.8 |
| 142.5° | 2481.5 | 2496.9 | 2525.3 | 2542.8 | 2531.9 |
| 145°   | 2565.0 | 2562.6 | 2600.0 | 2615.4 | 2604.4 |
| 147.5° | 2637.3 | 2630.8 | 2668.1 | 2679.1 | 2670.4 |
| 150°   | 2707.8 | 2692.4 | 2727.6 | 2740.6 | 2729.7 |
| 152.5° | 2767.0 | 2749.5 | 2782.4 | 2795.7 | 2780.3 |
| 155°   | 2824.2 | 2804.6 | 2830.9 | 2844.0 | 2826.5 |
| 157.5° | 2870.4 | 2852.9 | 2872.7 | 2888.1 | 2870.4 |
| 160°   | 2910.0 | 2896.7 | 2910.0 | 2923.1 | 2907.7 |
| 162.5° | 2945.0 | 2931.9 | 2942.9 | 2958.3 | 2938.5 |
| 165°   | 2975.8 | 2962.7 | 2969.3 | 2984.7 | 2969.3 |
| 167.5° | 3000.1 | 2986.8 | 2993.5 | 3008.9 | 2989.1 |
| 170°   | 3019.9 | 3006.6 | 3011.0 | 3026.4 | 3006.6 |
| 172.5° | 3033.0 | 3019.9 | 3024.3 | 3039.7 | 3019.9 |
| 175°   | 3043.9 | 3028.5 | 3033.0 | 3048.3 | 3026.4 |
| 177.5° | 3048.3 | 3033.0 | 3035.3 | 3050.7 | 3030.9 |
| 180°   | 3037.4 | 3037.4 | 3037.4 | 3037.4 | 3037.4 |

TEST NUMBER: P905785

CATALOG NUMBER: DFN2DIP-PN3F0-060D090US835-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 | 9.72             | 10.50 | 10.76 | 11.55 | 12.95 | 9.29           | 10.06 | 10.32 | 11.11 | 12.51 |
|                 | 3H   | 11.37            | 12.07 | 12.42 | 13.12 | 14.55 | 10.89          | 11.59 | 11.94 | 12.64 | 14.07 |
|                 | 4H   | 11.95            | 12.61 | 13.01 | 13.67 | 15.10 | 11.47          | 12.13 | 12.53 | 13.18 | 14.62 |
|                 | 6H   | 12.34            | 12.95 | 13.41 | 14.01 | 15.46 | 11.85          | 12.46 | 12.92 | 13.52 | 14.97 |
|                 | 8H   | 12.44            | 13.02 | 13.52 | 14.10 | 15.54 | 11.95          | 12.53 | 13.03 | 13.61 | 15.05 |
|                 | 12H  | 12.49            | 13.04 | 13.57 | 14.11 | 15.57 | 11.99          | 12.54 | 13.07 | 13.61 | 15.07 |
| 4H              | 2H   | 10.17            | 10.83 | 11.24 | 11.89 | 13.32 | 9.82           | 10.48 | 10.89 | 11.54 | 12.97 |
|                 | 3H   | 12.02            | 12.57 | 13.10 | 13.66 | 15.10 | 11.62          | 12.17 | 12.70 | 13.26 | 14.70 |
|                 | 4H   | 12.73            | 13.24 | 13.81 | 14.31 | 15.78 | 12.31          | 12.82 | 13.39 | 13.89 | 15.36 |
|                 | 6H   | 13.23            | 13.67 | 14.32 | 14.77 | 16.23 | 12.81          | 13.25 | 13.90 | 14.34 | 15.80 |
|                 | 8H   | 13.38            | 13.78 | 14.47 | 14.87 | 16.35 | 12.95          | 13.36 | 14.04 | 14.45 | 15.92 |
|                 | 12H  | 13.44            | 13.81 | 14.55 | 14.91 | 16.40 | 13.01          | 13.37 | 14.11 | 14.48 | 15.96 |
| 8H              | 4H   | 12.91            | 13.32 | 14.00 | 14.41 | 15.89 | 12.54          | 12.95 | 13.63 | 14.04 | 15.52 |
|                 | 6H   | 13.53            | 13.87 | 14.65 | 15.00 | 16.48 | 13.16          | 13.50 | 14.27 | 14.63 | 16.10 |
|                 | 8H   | 13.75            | 14.04 | 14.87 | 15.16 | 16.65 | 13.37          | 13.66 | 14.49 | 14.77 | 16.27 |
|                 | 12H  | 13.87            | 14.13 | 15.00 | 15.24 | 16.77 | 13.47          | 13.73 | 14.60 | 14.84 | 16.37 |
| 12H             | 4H   | 12.90            | 13.26 | 14.00 | 14.37 | 15.85 | 12.53          | 12.90 | 13.64 | 14.00 | 15.49 |
|                 | 6H   | 13.56            | 13.86 | 14.68 | 14.97 | 16.46 | 13.20          | 13.49 | 14.32 | 14.61 | 16.10 |
|                 | 8H   | 13.80            | 14.05 | 14.92 | 15.16 | 16.69 | 13.42          | 13.68 | 14.55 | 14.79 | 16.32 |