

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: P903705

Luminaire Tested: DFN2DIP-SQ3F0-060D090US830-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P903705  
REPORT IS A COMBINATION OF REPORTS P901475 AND P898289  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-060D090US830-FLLONL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

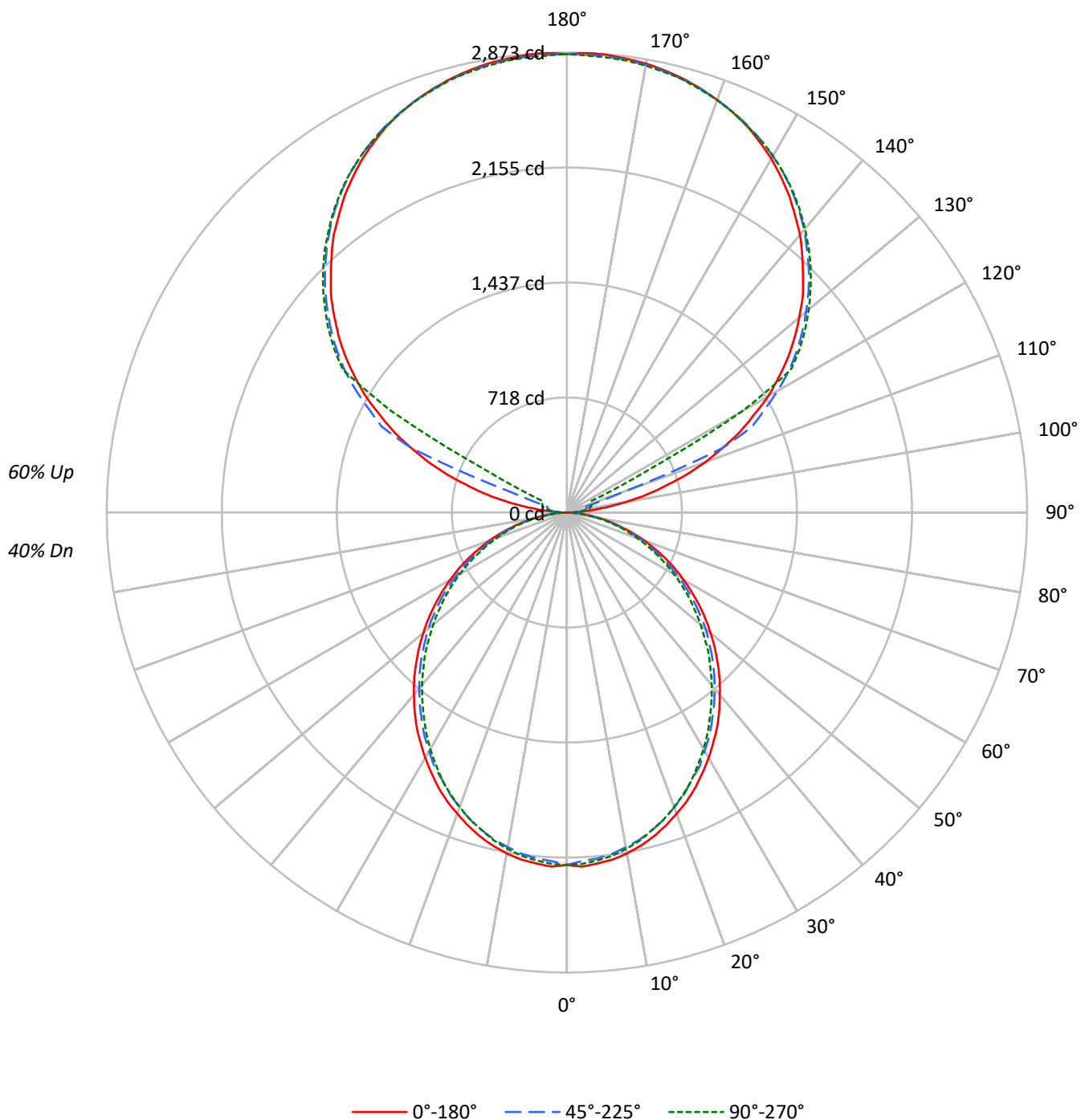
Lumens per Lamp: N/A  
Luminaire Lumens: 13996.7 lumens  
Efficiency: N/A  
Efficacy: 114.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 121.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9971  
Total Harmonic Distortion (THDi): 0.049  
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: P903705

CATALOG NUMBER: DFN2DIP-SQ3F0-060D090US830-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   | 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°  | 2521 | 2521 | 2521 |
| 5°  | 2524 | 2484 | 2502 |
| 10° | 2502 | 2449 | 2467 |
| 15° | 2463 | 2407 | 2414 |
| 20° | 2412 | 2350 | 2359 |
| 25° | 2361 | 2281 | 2295 |
| 30° | 2297 | 2217 | 2215 |
| 35° | 2237 | 2142 | 2130 |
| 40° | 2163 | 2066 | 2049 |
| 45° | 2089 | 1989 | 1966 |
| 50° | 2008 | 1909 | 1870 |
| 55° | 1923 | 1816 | 1781 |
| 60° | 1827 | 1707 | 1680 |
| 65° | 1721 | 1593 | 1560 |
| 70° | 1587 | 1453 | 1431 |
| 75° | 1402 | 1286 | 1311 |
| 80° | 1179 | 1073 | 1084 |
| 85° | 829  | 711  | 710  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2089 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 207.1   | 1.5       |
| 10°-20°   | 582.7   | 4.2       |
| 20°-30°   | 856.4   | 6.1       |
| 30°-40°   | 994.6   | 7.1       |
| 40°-50°   | 993.4   | 7.1       |
| 50°-60°   | 866.2   | 6.2       |
| 60°-70°   | 640.3   | 4.6       |
| 70°-80°   | 362.3   | 2.6       |
| 80°-90°   | 100.7   | 0.7       |
| 90°-100°  | 94.4    | 0.7       |
| 100°-110° | 351.9   | 2.5       |
| 110°-120° | 933.3   | 6.7       |
| 120°-130° | 1548.0  | 11.1      |
| 130°-140° | 1644.3  | 11.7      |
| 140°-150° | 1528.2  | 10.9      |
| 150°-160° | 1228.6  | 8.8       |
| 160°-170° | 791.7   | 5.7       |
| 170°-180° | 272.5   | 1.9       |
| 0°-30°    | 1646.2  | 11.8      |
| 0°-40°    | 2640.9  | 18.9      |
| 0°-60°    | 4500.5  | 32.2      |
| 0°-90°    | 5603.7  | 40.0      |
| 90°-120°  | 1379.6  | 9.9       |
| 90°-150°  | 6100.2  | 43.6      |
| 90°-180°  | 8393.0  | 60.0      |
| 0°-180°   | 13996.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2200 | 2200  | 2200 | 2200  | 2200 |      |
| 5°   | 2200 | 2192  | 2169 | 2186  | 2182 | 209  |
| 15°  | 2095 | 2082  | 2055 | 2063  | 2053 | 590  |
| 25°  | 1896 | 1879  | 1843 | 1847  | 1843 | 872  |
| 35°  | 1636 | 1615  | 1581 | 1568  | 1557 | 1021 |
| 45°  | 1331 | 1316  | 1284 | 1261  | 1253 | 1027 |
| 55°  | 1007 | 994   | 969  | 944   | 933  | 901  |
| 65°  | 679  | 667   | 646  | 626   | 616  | 672  |
| 75°  | 355  | 351   | 340  | 328   | 332  | 379  |
| 85°  | 87   | 85    | 83   | 76    | 74   | 97   |
| 90°  | 2    | 25    | 41   | 52    | 56   | 13   |
| 95°  | 135  | 66    | 81   | 91    | 89   | 159  |
| 105° | 630  | 692   | 126  | 149   | 157  | 673  |
| 115° | 1191 | 1226  | 1278 | 319   | 170  | 1173 |
| 125° | 1684 | 1711  | 1750 | 1765  | 1771 | 1502 |
| 135° | 2084 | 2117  | 2136 | 2157  | 2152 | 1610 |
| 145° | 2418 | 2415  | 2451 | 2465  | 2455 | 1512 |
| 155° | 2662 | 2644  | 2668 | 2681  | 2664 | 1227 |
| 165° | 2805 | 2792  | 2799 | 2813  | 2799 | 792  |
| 175° | 2869 | 2854  | 2859 | 2873  | 2852 | 273  |
| 180° | 2863 | 2863  | 2863 | 2863  | 2863 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2200.5 | 2200.5 | 2200.5 | 2200.5 | 2200.5 |
| 2.5°   | 2213.3 | 2202.7 | 2179.3 | 2200.5 | 2196.4 |
| 5°     | 2200.5 | 2192.2 | 2168.8 | 2185.7 | 2181.6 |
| 7.5°   | 2185.7 | 2173.1 | 2149.8 | 2166.8 | 2162.6 |
| 10°    | 2162.6 | 2147.8 | 2122.3 | 2139.2 | 2132.9 |
| 12.5°  | 2130.7 | 2118.1 | 2092.7 | 2103.3 | 2099.0 |
| 15°    | 2094.7 | 2082.2 | 2054.6 | 2063.1 | 2052.6 |
| 17.5°  | 2050.3 | 2037.8 | 2010.2 | 2020.6 | 2010.2 |
| 20°    | 2001.6 | 1989.0 | 1959.4 | 1965.7 | 1957.4 |
| 22.5°  | 1953.1 | 1934.0 | 1906.4 | 1906.4 | 1902.1 |
| 25°    | 1895.8 | 1879.1 | 1843.0 | 1847.1 | 1843.0 |
| 27.5°  | 1832.3 | 1817.5 | 1790.1 | 1783.9 | 1773.3 |
| 30°    | 1769.1 | 1751.9 | 1720.3 | 1714.0 | 1705.4 |
| 32.5°  | 1701.2 | 1688.7 | 1654.7 | 1641.9 | 1633.4 |
| 35°    | 1635.7 | 1614.6 | 1580.6 | 1567.8 | 1557.3 |
| 37.5°  | 1561.6 | 1542.5 | 1508.6 | 1493.7 | 1483.2 |
| 40°    | 1485.4 | 1468.4 | 1434.5 | 1415.7 | 1407.1 |
| 42.5°  | 1411.4 | 1394.3 | 1360.7 | 1339.4 | 1326.7 |
| 45°    | 1331.1 | 1316.2 | 1284.3 | 1261.2 | 1252.6 |
| 47.5°  | 1252.6 | 1237.8 | 1204.0 | 1180.6 | 1168.0 |
| 50°    | 1170.1 | 1159.5 | 1129.9 | 1100.2 | 1089.7 |
| 52.5°  | 1089.7 | 1074.9 | 1047.4 | 1024.2 | 1009.4 |
| 55°    | 1007.3 | 994.5  | 969.1  | 943.8  | 933.2  |
| 57.5°  | 924.7  | 914.2  | 886.6  | 861.2  | 852.6  |
| 60°    | 842.1  | 833.8  | 804.2  | 780.8  | 774.5  |
| 62.5°  | 761.7  | 746.9  | 725.8  | 704.6  | 696.2  |
| 65°    | 679.3  | 666.6  | 645.5  | 626.3  | 615.8  |
| 67.5°  | 594.6  | 583.9  | 565.1  | 550.3  | 541.7  |
| 70°    | 516.3  | 507.8  | 488.7  | 473.9  | 465.6  |
| 72.5°  | 435.9  | 427.4  | 416.9  | 402.1  | 395.8  |
| 75°    | 355.3  | 351.4  | 340.5  | 328.0  | 332.2  |
| 77.5°  | 283.5  | 275.0  | 270.7  | 264.5  | 258.2  |
| 80°    | 211.7  | 209.4  | 205.2  | 198.9  | 194.6  |
| 82.5°  | 143.9  | 143.9  | 141.9  | 133.4  | 133.4  |
| 85°    | 86.6   | 84.6   | 82.6   | 76.1   | 74.1   |
| 87.5°  | 38.2   | 33.9   | 29.6   | 23.4   | 21.1   |
| 90°    | 2.0    | 24.9   | 41.3   | 51.9   | 55.8   |
| 92.5°  | 51.9   | 43.5   | 49.7   | 53.9   | 55.8   |
| 95°    | 134.6  | 66.2   | 80.7   | 91.2   | 89.1   |
| 97.5°  | 242.3  | 72.6   | 105.6  | 111.9  | 113.9  |
| 100°   | 366.7  | 82.9   | 118.1  | 134.6  | 138.7  |
| 102.5° | 503.3  | 499.4  | 122.2  | 144.9  | 151.3  |
| 105°   | 629.7  | 692.0  | 126.4  | 149.1  | 157.4  |
| 107.5° | 776.8  | 828.5  | 130.6  | 153.3  | 161.6  |
| 110°   | 917.8  | 961.1  | 362.6  | 155.4  | 163.6  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1050.4 | 1087.5 | 1052.3 | 159.4  | 165.8  |
| 115°   | 1191.1 | 1226.2 | 1278.2 | 319.1  | 169.9  |
| 117.5° | 1313.3 | 1354.7 | 1390.1 | 1093.7 | 551.0  |
| 120°   | 1450.1 | 1481.1 | 1518.5 | 1543.3 | 1263.7 |
| 122.5° | 1566.0 | 1599.2 | 1640.8 | 1653.0 | 1655.3 |
| 125°   | 1684.0 | 1711.1 | 1750.5 | 1765.0 | 1771.1 |
| 127.5° | 1791.8 | 1820.8 | 1852.1 | 1872.7 | 1874.7 |
| 130°   | 1893.4 | 1926.7 | 1949.3 | 1972.1 | 1970.2 |
| 132.5° | 1997.0 | 2024.0 | 2046.6 | 2065.4 | 2063.4 |
| 135°   | 2084.1 | 2117.2 | 2135.7 | 2156.6 | 2152.5 |
| 137.5° | 2175.1 | 2199.9 | 2220.8 | 2241.5 | 2235.3 |
| 140°   | 2264.1 | 2280.9 | 2303.5 | 2322.1 | 2311.9 |
| 142.5° | 2338.9 | 2353.4 | 2380.2 | 2396.7 | 2386.4 |
| 145°   | 2417.6 | 2415.4 | 2450.6 | 2465.1 | 2454.8 |
| 147.5° | 2485.8 | 2479.6 | 2514.8 | 2525.2 | 2517.0 |
| 150°   | 2552.2 | 2537.7 | 2570.9 | 2583.1 | 2572.9 |
| 152.5° | 2608.0 | 2591.5 | 2622.5 | 2635.1 | 2620.6 |
| 155°   | 2661.9 | 2643.5 | 2668.2 | 2680.6 | 2664.1 |
| 157.5° | 2705.5 | 2689.0 | 2707.6 | 2722.2 | 2705.5 |
| 160°   | 2742.8 | 2730.3 | 2742.8 | 2755.1 | 2740.6 |
| 162.5° | 2775.8 | 2763.4 | 2773.8 | 2788.3 | 2769.7 |
| 165°   | 2804.8 | 2792.5 | 2798.7 | 2813.2 | 2798.7 |
| 167.5° | 2827.7 | 2815.2 | 2821.5 | 2836.0 | 2817.4 |
| 170°   | 2846.4 | 2833.8 | 2838.0 | 2852.5 | 2833.8 |
| 172.5° | 2858.7 | 2846.4 | 2850.5 | 2865.0 | 2846.4 |
| 175°   | 2869.0 | 2854.5 | 2858.7 | 2873.2 | 2852.5 |
| 177.5° | 2873.2 | 2858.7 | 2860.9 | 2875.4 | 2856.8 |
| 180°   | 2862.9 | 2862.9 | 2862.9 | 2862.9 | 2862.9 |

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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 | 9.45             | 10.23 | 10.49 | 11.28 | 12.68 | 9.01           | 9.79  | 10.05 | 10.83 | 12.24 |
|                 | 3H   | 11.10            | 11.80 | 12.15 | 12.85 | 14.28 | 10.61          | 11.31 | 11.66 | 12.36 | 13.79 |
|                 | 4H   | 11.68            | 12.35 | 12.74 | 13.40 | 14.83 | 11.19          | 11.85 | 12.25 | 12.91 | 14.34 |
|                 | 6H   | 12.08            | 12.68 | 13.15 | 13.74 | 15.19 | 11.58          | 12.18 | 12.65 | 13.24 | 14.69 |
|                 | 8H   | 12.18            | 12.76 | 13.25 | 13.83 | 15.27 | 11.68          | 12.25 | 12.75 | 13.33 | 14.77 |
|                 | 12H  | 12.22            | 12.77 | 13.30 | 13.84 | 15.30 | 11.71          | 12.26 | 12.79 | 13.33 | 14.79 |
| 4H              | 2H   | 9.90             | 10.56 | 10.97 | 11.62 | 13.05 | 9.55           | 10.21 | 10.61 | 11.26 | 12.70 |
|                 | 3H   | 11.75            | 12.31 | 12.83 | 13.39 | 14.83 | 11.35          | 11.90 | 12.42 | 12.98 | 14.43 |
|                 | 4H   | 12.46            | 12.97 | 13.54 | 14.04 | 15.51 | 12.04          | 12.54 | 13.12 | 13.62 | 15.08 |
|                 | 6H   | 12.97            | 13.40 | 14.06 | 14.50 | 15.96 | 12.53          | 12.97 | 13.62 | 14.07 | 15.53 |
|                 | 8H   | 13.11            | 13.52 | 14.20 | 14.61 | 16.08 | 12.68          | 13.08 | 13.76 | 14.17 | 15.65 |
|                 | 12H  | 13.18            | 13.55 | 14.29 | 14.65 | 16.13 | 12.73          | 13.10 | 13.84 | 14.20 | 15.68 |
| 8H              | 4H   | 12.65            | 13.05 | 13.74 | 14.14 | 15.62 | 12.27          | 12.68 | 13.36 | 13.76 | 15.24 |
|                 | 6H   | 13.27            | 13.60 | 14.38 | 14.73 | 16.21 | 12.88          | 13.22 | 14.00 | 14.35 | 15.82 |
|                 | 8H   | 13.48            | 13.78 | 14.60 | 14.89 | 16.39 | 13.09          | 13.39 | 14.21 | 14.50 | 15.99 |
|                 | 12H  | 13.61            | 13.87 | 14.73 | 14.98 | 16.51 | 13.20          | 13.46 | 14.32 | 14.57 | 16.10 |
| 12H             | 4H   | 12.63            | 12.99 | 13.73 | 14.10 | 15.58 | 12.26          | 12.63 | 13.36 | 13.73 | 15.21 |
|                 | 6H   | 13.30            | 13.59 | 14.41 | 14.70 | 16.20 | 12.92          | 13.22 | 14.04 | 14.33 | 15.82 |
|                 | 8H   | 13.53            | 13.79 | 14.65 | 14.90 | 16.43 | 13.15          | 13.41 | 14.27 | 14.52 | 16.05 |