

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: P927354

Luminaire Tested: DFN2DIP-HX4F0-080D070US835-RLLONL

Issue Date: 12/12/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P927354  
REPORT IS A COMBINATION OF REPORTS P900882 AND P896187  
Test Lab: INNOVATION CENTER  
Issue Date: 12/12/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-080D070US835-RLLONL  
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

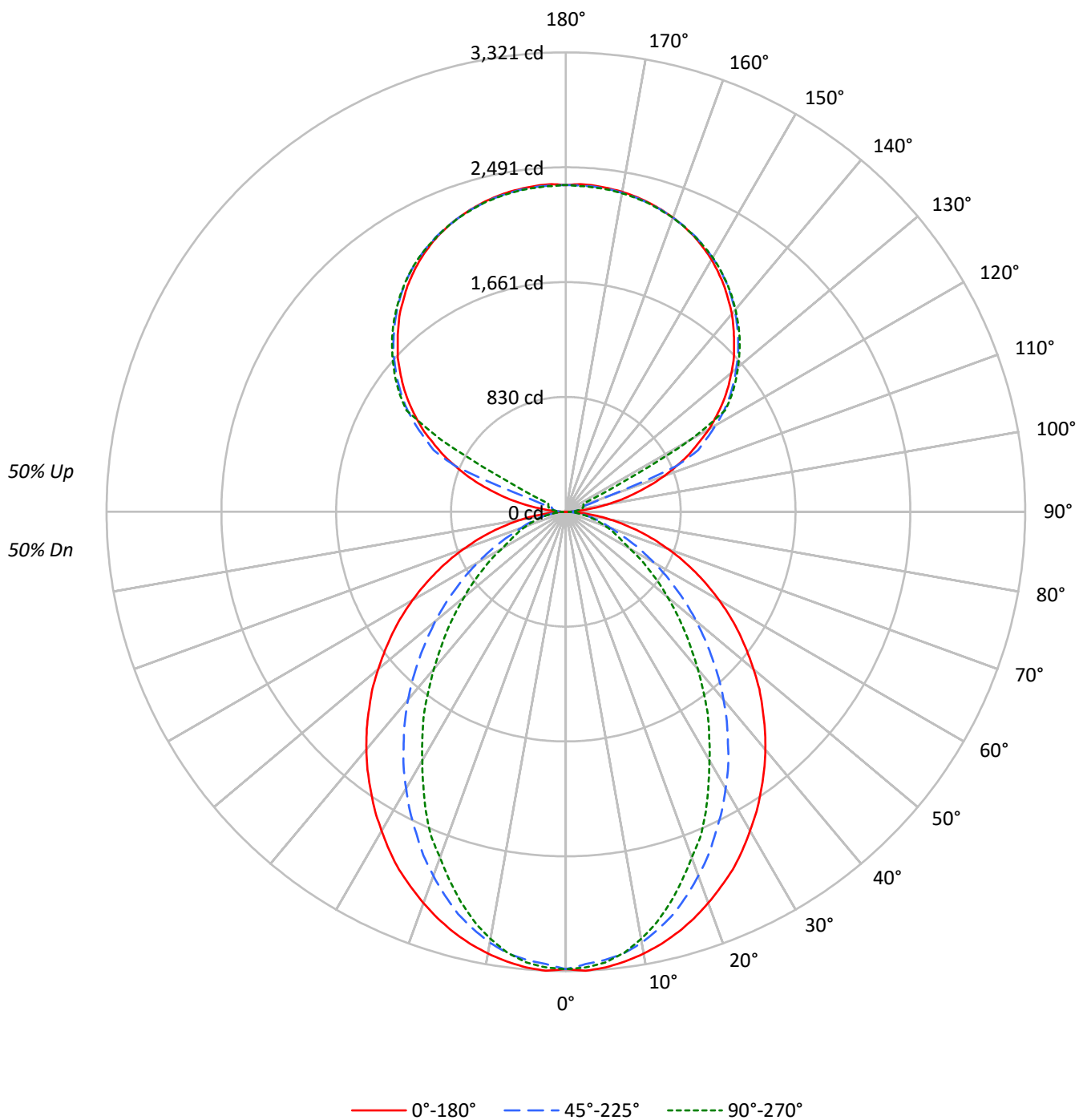
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 13730.0 lumens  
Efficiency: N/A  
Efficacy: 106.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 128.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9613  
Total Harmonic Distortion (THDi): 0.083  
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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**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   | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 83 | 83 | 83 | 69 | 69 | 69 | 56 | 56 | 56 |
| 1   | 98  | 94  | 90  | 87  | 90 | 87 | 84 | 81 | 74 | 71 | 69 | 61 | 60 | 58 | 50 | 49 | 48 |
| 2   | 90  | 83  | 77  | 72  | 83 | 77 | 71 | 67 | 65 | 61 | 58 | 54 | 52 | 49 | 45 | 43 | 41 |
| 3   | 82  | 73  | 66  | 60  | 76 | 68 | 62 | 57 | 58 | 53 | 49 | 49 | 45 | 42 | 40 | 38 | 36 |
| 4   | 75  | 65  | 57  | 52  | 69 | 60 | 54 | 48 | 52 | 47 | 42 | 44 | 40 | 37 | 36 | 33 | 31 |
| 5   | 69  | 58  | 50  | 44  | 64 | 54 | 47 | 42 | 46 | 41 | 37 | 39 | 35 | 32 | 33 | 30 | 27 |
| 6   | 64  | 52  | 44  | 39  | 59 | 49 | 42 | 37 | 42 | 37 | 32 | 36 | 32 | 28 | 30 | 27 | 24 |
| 7   | 59  | 47  | 40  | 34  | 55 | 44 | 37 | 32 | 38 | 33 | 29 | 33 | 28 | 25 | 27 | 24 | 22 |
| 8   | 55  | 43  | 36  | 30  | 51 | 40 | 34 | 29 | 35 | 30 | 26 | 30 | 26 | 23 | 25 | 22 | 20 |
| 9   | 51  | 39  | 32  | 27  | 48 | 37 | 30 | 26 | 32 | 27 | 23 | 28 | 23 | 21 | 23 | 20 | 18 |
| 10  | 48  | 36  | 29  | 25  | 45 | 34 | 28 | 23 | 30 | 25 | 21 | 26 | 22 | 19 | 22 | 19 | 16 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2459 | 2459 | 2459 |
| 5°  | 2463 | 2420 | 2435 |
| 10° | 2438 | 2373 | 2356 |
| 15° | 2405 | 2294 | 2234 |
| 20° | 2361 | 2186 | 2083 |
| 25° | 2316 | 2065 | 1938 |
| 30° | 2255 | 1941 | 1754 |
| 35° | 2195 | 1808 | 1593 |
| 40° | 2135 | 1670 | 1407 |
| 45° | 2064 | 1517 | 1239 |
| 50° | 1991 | 1362 | 1075 |
| 55° | 1915 | 1197 | 917  |
| 60° | 1827 | 1024 | 755  |
| 65° | 1726 | 848  | 680  |
| 70° | 1603 | 684  | 616  |
| 75° | 1449 | 604  | 560  |
| 80° | 1226 | 507  | 486  |
| 85° | 857  | 340  | 366  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 2064 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 309.9   | 2.3       |
| 10°-20°   | 850.7   | 6.2       |
| 20°-30°   | 1194.3  | 8.7       |
| 30°-40°   | 1301.9  | 9.5       |
| 40°-50°   | 1196.6  | 8.7       |
| 50°-60°   | 939.7   | 6.8       |
| 60°-70°   | 611.7   | 4.5       |
| 70°-80°   | 314.9   | 2.3       |
| 80°-90°   | 84.5    | 0.6       |
| 90°-100°  | 77.9    | 0.6       |
| 100°-110° | 290.4   | 2.1       |
| 110°-120° | 770.2   | 5.6       |
| 120°-130° | 1277.4  | 9.3       |
| 130°-140° | 1356.9  | 9.9       |
| 140°-150° | 1261.1  | 9.2       |
| 150°-160° | 1013.9  | 7.4       |
| 160°-170° | 653.3   | 4.8       |
| 170°-180° | 224.9   | 1.6       |
| 0°-30°    | 2354.9  | 17.2      |
| 0°-40°    | 3656.8  | 26.6      |
| 0°-60°    | 5793.1  | 42.2      |
| 0°-90°    | 6804.2  | 49.6      |
| 90°-120°  | 1138.5  | 8.3       |
| 90°-150°  | 5033.8  | 36.7      |
| 90°-180°  | 6926.0  | 50.4      |
| 0°-180°   | 13730.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3306 | 3306  | 3306 | 3306  | 3306 |      |
| 5°   | 3306 | 3292  | 3252 | 3279  | 3270 | 314  |
| 15°  | 3145 | 3112  | 3010 | 2953  | 2924 | 886  |
| 25°  | 2855 | 2759  | 2561 | 2439  | 2394 | 1313 |
| 35°  | 2460 | 2307  | 2044 | 1855  | 1789 | 1540 |
| 45°  | 2011 | 1810  | 1496 | 1284  | 1212 | 1553 |
| 55°  | 1529 | 1296  | 972  | 793   | 736  | 1366 |
| 65°  | 1032 | 790   | 521  | 419   | 410  | 1024 |
| 75°  | 550  | 341   | 239  | 218   | 216  | 582  |
| 85°  | 129  | 66    | 57   | 57    | 57   | 148  |
| 90°  | 2    | 20    | 34   | 43    | 46   | 13   |
| 95°  | 111  | 55    | 67   | 75    | 74   | 131  |
| 105° | 520  | 571   | 104  | 123   | 130  | 555  |
| 115° | 983  | 1012  | 1055 | 263   | 140  | 968  |
| 125° | 1390 | 1412  | 1444 | 1456  | 1462 | 1239 |
| 135° | 1720 | 1747  | 1762 | 1780  | 1776 | 1328 |
| 145° | 1995 | 1993  | 2022 | 2034  | 2026 | 1248 |
| 155° | 2197 | 2181  | 2202 | 2212  | 2198 | 1012 |
| 165° | 2314 | 2304  | 2309 | 2321  | 2309 | 654  |
| 175° | 2368 | 2356  | 2359 | 2371  | 2354 | 225  |
| 180° | 2362 | 2362  | 2362 | 2362  | 2362 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3306.4 | 3306.4 | 3306.4 | 3306.4 | 3306.4 |
| 2.5°   | 3321.3 | 3306.4 | 3273.4 | 3303.5 | 3297.5 |
| 5°     | 3306.4 | 3291.5 | 3252.4 | 3279.4 | 3270.5 |
| 7.5°   | 3279.4 | 3261.6 | 3219.7 | 3231.5 | 3216.5 |
| 10°    | 3243.5 | 3222.6 | 3162.9 | 3153.7 | 3135.9 |
| 12.5°  | 3198.8 | 3171.8 | 3090.8 | 3073.0 | 3040.0 |
| 15°    | 3144.8 | 3111.8 | 3010.2 | 2953.4 | 2923.5 |
| 17.5°  | 3081.9 | 3034.0 | 2908.3 | 2842.6 | 2794.6 |
| 20°    | 3010.2 | 2950.2 | 2800.7 | 2726.1 | 2660.0 |
| 22.5°  | 2932.4 | 2863.5 | 2689.9 | 2588.3 | 2543.5 |
| 25°    | 2854.6 | 2758.8 | 2561.3 | 2438.8 | 2393.7 |
| 27.5°  | 2761.9 | 2660.0 | 2441.6 | 2301.0 | 2232.1 |
| 30°    | 2663.2 | 2549.2 | 2309.9 | 2157.5 | 2076.5 |
| 32.5°  | 2567.3 | 2429.6 | 2184.5 | 2004.8 | 1929.9 |
| 35°    | 2459.7 | 2307.0 | 2043.8 | 1855.3 | 1789.2 |
| 37.5°  | 2354.9 | 2190.2 | 1912.1 | 1705.4 | 1630.8 |
| 40°    | 2244.2 | 2064.8 | 1774.3 | 1561.9 | 1484.1 |
| 42.5°  | 2130.5 | 1939.1 | 1636.8 | 1415.3 | 1340.6 |
| 45°    | 2010.8 | 1810.2 | 1496.2 | 1283.5 | 1211.8 |
| 47.5°  | 1897.2 | 1684.8 | 1361.6 | 1148.9 | 1083.2 |
| 50°    | 1771.4 | 1559.1 | 1229.9 | 1023.2 | 960.6  |
| 52.5°  | 1648.6 | 1424.1 | 1104.1 | 906.7  | 849.9  |
| 55°    | 1528.9 | 1295.6 | 972.4  | 793.0  | 736.2  |
| 57.5°  | 1406.4 | 1167.0 | 855.9  | 688.3  | 640.3  |
| 60°    | 1280.6 | 1041.3 | 733.0  | 580.6  | 532.7  |
| 62.5°  | 1158.1 | 918.7  | 628.3  | 484.8  | 461.0  |
| 65°    | 1032.4 | 789.8  | 520.6  | 419.1  | 409.8  |
| 67.5°  | 912.7  | 670.2  | 419.1  | 367.9  | 359.1  |
| 70°    | 787.0  | 553.7  | 347.0  | 317.1  | 305.1  |
| 72.5°  | 667.3  | 445.7  | 290.2  | 266.4  | 260.3  |
| 75°    | 550.5  | 341.0  | 239.4  | 218.4  | 215.6  |
| 77.5°  | 434.0  | 242.2  | 188.6  | 176.5  | 170.5  |
| 80°    | 326.0  | 173.7  | 143.5  | 131.7  | 131.7  |
| 82.5°  | 227.3  | 116.8  | 98.7   | 92.7   | 92.7   |
| 85°    | 128.6  | 65.7   | 56.8   | 56.8   | 56.8   |
| 87.5°  | 47.9   | 23.8   | 23.8   | 21.0   | 21.0   |
| 90°    | 1.6    | 20.5   | 34.1   | 42.8   | 46.1   |
| 92.5°  | 42.8   | 35.9   | 41.0   | 44.5   | 46.1   |
| 95°    | 111.0  | 54.6   | 66.6   | 75.3   | 73.5   |
| 97.5°  | 199.9  | 59.9   | 87.1   | 92.4   | 94.0   |
| 100°   | 302.7  | 68.4   | 97.4   | 111.0  | 114.5  |
| 102.5° | 415.3  | 412.1  | 100.9  | 119.6  | 124.8  |
| 105°   | 519.7  | 571.0  | 104.3  | 123.0  | 129.9  |
| 107.5° | 641.0  | 683.7  | 107.8  | 126.5  | 133.4  |
| 110°   | 757.4  | 793.1  | 299.2  | 128.3  | 135.0  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 866.8  | 897.4  | 868.4  | 131.5  | 136.8  |
| 115°   | 982.9  | 1011.9 | 1054.7 | 263.3  | 140.3  |
| 117.5° | 1083.8 | 1117.9 | 1147.1 | 902.5  | 454.7  |
| 120°   | 1196.6 | 1222.2 | 1253.1 | 1273.6 | 1042.8 |
| 122.5° | 1292.2 | 1319.6 | 1354.0 | 1364.1 | 1365.9 |
| 125°   | 1389.7 | 1412.0 | 1444.5 | 1456.5 | 1461.5 |
| 127.5° | 1478.6 | 1502.5 | 1528.3 | 1545.4 | 1547.0 |
| 130°   | 1562.4 | 1589.8 | 1608.5 | 1627.4 | 1625.8 |
| 132.5° | 1647.9 | 1670.2 | 1688.9 | 1704.3 | 1702.7 |
| 135°   | 1719.7 | 1747.1 | 1762.4 | 1779.6 | 1776.2 |
| 137.5° | 1794.8 | 1815.4 | 1832.6 | 1849.7 | 1844.6 |
| 140°   | 1868.3 | 1882.1 | 1900.8 | 1916.2 | 1907.7 |
| 142.5° | 1930.0 | 1942.0 | 1964.1 | 1977.7 | 1969.2 |
| 145°   | 1995.0 | 1993.2 | 2022.2 | 2034.2 | 2025.7 |
| 147.5° | 2051.2 | 2046.2 | 2075.2 | 2083.7 | 2077.0 |
| 150°   | 2106.0 | 2094.1 | 2121.5 | 2131.6 | 2123.1 |
| 152.5° | 2152.1 | 2138.5 | 2164.1 | 2174.4 | 2162.5 |
| 155°   | 2196.6 | 2181.3 | 2201.8 | 2212.0 | 2198.4 |
| 157.5° | 2232.5 | 2218.9 | 2234.3 | 2246.3 | 2232.5 |
| 160°   | 2263.4 | 2253.0 | 2263.4 | 2273.5 | 2261.5 |
| 162.5° | 2290.6 | 2280.4 | 2288.9 | 2300.9 | 2285.5 |
| 165°   | 2314.5 | 2304.4 | 2309.4 | 2321.4 | 2309.4 |
| 167.5° | 2333.4 | 2323.0 | 2328.3 | 2340.3 | 2324.9 |
| 170°   | 2348.8 | 2338.5 | 2341.9 | 2353.9 | 2338.5 |
| 172.5° | 2359.0 | 2348.8 | 2352.3 | 2364.2 | 2348.8 |
| 175°   | 2367.5 | 2355.5 | 2359.0 | 2370.9 | 2353.9 |
| 177.5° | 2370.9 | 2359.0 | 2360.8 | 2372.8 | 2357.3 |
| 180°   | 2362.4 | 2362.4 | 2362.4 | 2362.4 | 2362.4 |

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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 | 10.23            | 11.06 | 11.20 | 12.04 | 13.32 | 6.20           | 7.03  | 7.17  | 8.01  | 9.29  |
|                 | 3H   | 11.91            | 12.65 | 12.89 | 13.64 | 14.94 | 7.40           | 8.13  | 8.37  | 9.12  | 10.42 |
|                 | 4H   | 12.52            | 13.22 | 13.51 | 14.21 | 15.52 | 7.85           | 8.55  | 8.84  | 9.54  | 10.85 |
|                 | 6H   | 12.94            | 13.58 | 13.94 | 14.58 | 15.90 | 8.17           | 8.81  | 9.17  | 9.81  | 11.13 |
|                 | 8H   | 13.07            | 13.68 | 14.08 | 14.69 | 16.01 | 8.26           | 8.87  | 9.27  | 9.88  | 11.20 |
|                 | 12H  | 13.13            | 13.71 | 14.14 | 14.72 | 16.06 | 8.30           | 8.89  | 9.32  | 9.89  | 11.24 |
| 4H              | 2H   | 10.25            | 10.95 | 11.25 | 11.94 | 13.25 | 6.80           | 7.50  | 7.80  | 8.49  | 9.80  |
|                 | 3H   | 12.08            | 12.66 | 13.09 | 13.68 | 15.00 | 8.15           | 8.73  | 9.16  | 9.75  | 11.08 |
|                 | 4H   | 12.77            | 13.30 | 13.79 | 14.32 | 15.66 | 8.70           | 9.23  | 9.72  | 10.24 | 11.59 |
|                 | 6H   | 13.29            | 13.74 | 14.31 | 14.78 | 16.13 | 9.12           | 9.58  | 10.15 | 10.61 | 11.96 |
|                 | 8H   | 13.46            | 13.89 | 14.49 | 14.92 | 16.28 | 9.25           | 9.68  | 10.28 | 10.71 | 12.07 |
|                 | 12H  | 13.56            | 13.94 | 14.60 | 14.99 | 16.35 | 9.32           | 9.70  | 10.36 | 10.75 | 12.11 |
| 8H              | 4H   | 12.74            | 13.17 | 13.77 | 14.19 | 15.55 | 8.98           | 9.41  | 10.01 | 10.44 | 11.80 |
|                 | 6H   | 13.31            | 13.66 | 14.36 | 14.73 | 16.09 | 9.50           | 9.85  | 10.55 | 10.92 | 12.28 |
|                 | 8H   | 13.53            | 13.83 | 14.58 | 14.89 | 16.27 | 9.70           | 10.00 | 10.75 | 11.06 | 12.44 |
|                 | 12H  | 13.66            | 13.94 | 14.73 | 14.99 | 16.41 | 9.82           | 10.09 | 10.88 | 11.14 | 12.56 |
| 12H             | 4H   | 12.69            | 13.08 | 13.74 | 14.12 | 15.48 | 8.99           | 9.37  | 10.03 | 10.41 | 11.78 |
|                 | 6H   | 13.28            | 13.59 | 14.34 | 14.65 | 16.02 | 9.55           | 9.86  | 10.61 | 10.92 | 12.29 |
|                 | 8H   | 13.50            | 13.78 | 14.57 | 14.83 | 16.25 | 9.76           | 10.04 | 10.83 | 11.09 | 12.50 |