

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: P910819

Luminaire Tested: DFN2DIP-HX3F0-070D080US850-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P910819  
REPORT IS A COMBINATION OF REPORTS P899280 AND P896089  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-070D080US850-RLLFLL  
Description: 3 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

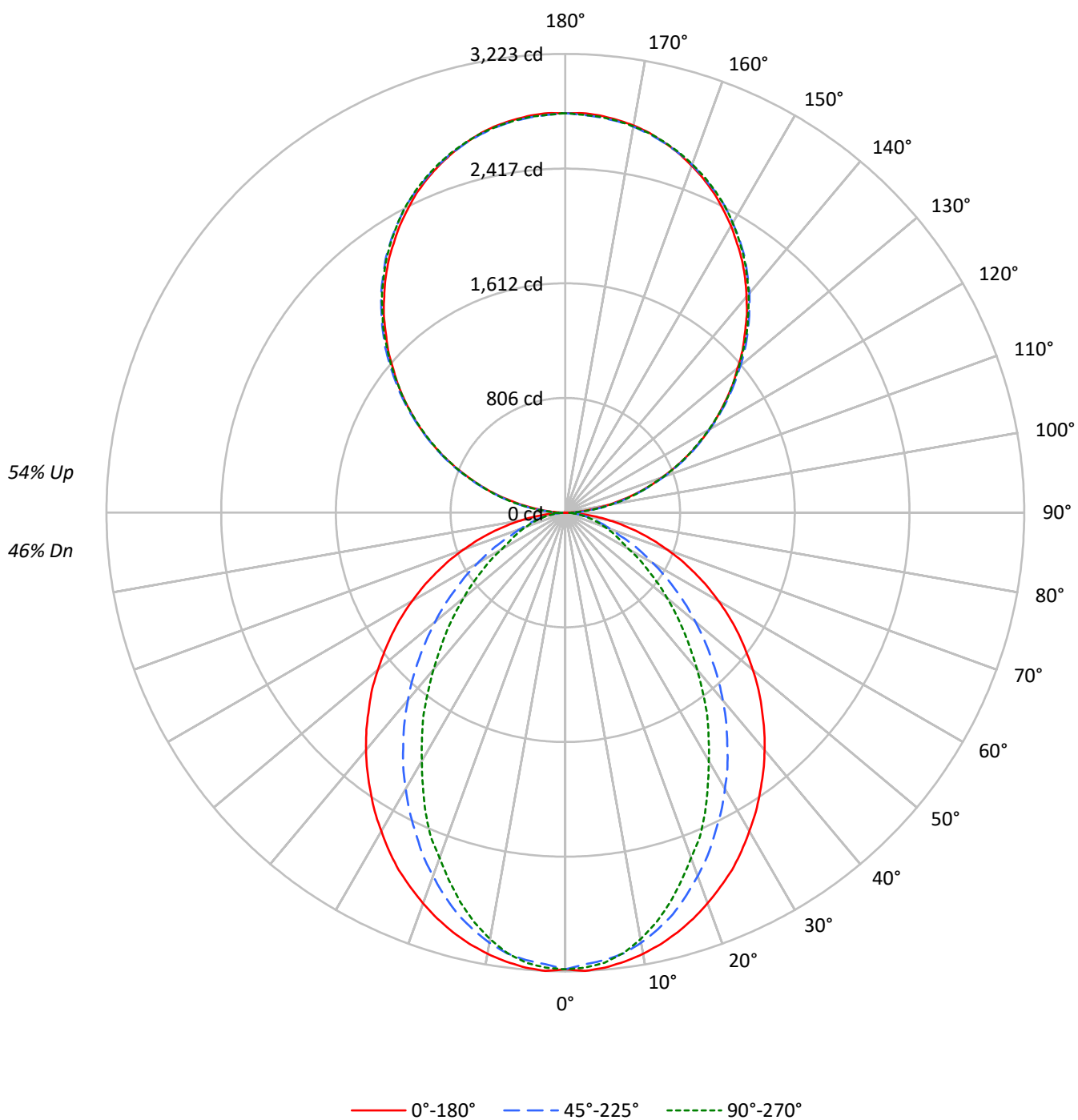
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 14450.2 lumens  
Efficiency: N/A  
Efficacy: 110.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.84' x L: 3.28' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 130.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9789  
Total Harmonic Distortion (THDi): 0.074  
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   | 106 | 106 | 106 | 106 | 97 | 97 | 97 | 97 | 81 | 81 | 81 | 66 | 66 | 66 | 52 | 52 | 52 |
| 1   | 97  | 93  | 89  | 86  | 89 | 86 | 82 | 80 | 72 | 69 | 67 | 59 | 57 | 56 | 47 | 46 | 45 |
| 2   | 89  | 82  | 76  | 71  | 81 | 75 | 70 | 66 | 63 | 60 | 56 | 52 | 49 | 47 | 42 | 40 | 38 |
| 3   | 81  | 72  | 65  | 60  | 74 | 67 | 61 | 56 | 56 | 52 | 48 | 46 | 43 | 40 | 37 | 35 | 33 |
| 4   | 75  | 64  | 57  | 51  | 68 | 59 | 53 | 48 | 50 | 45 | 41 | 42 | 38 | 35 | 34 | 31 | 29 |
| 5   | 69  | 57  | 50  | 44  | 63 | 53 | 46 | 41 | 45 | 40 | 36 | 38 | 34 | 31 | 31 | 28 | 26 |
| 6   | 63  | 52  | 44  | 38  | 58 | 48 | 41 | 36 | 41 | 35 | 31 | 34 | 30 | 27 | 28 | 25 | 23 |
| 7   | 59  | 47  | 39  | 34  | 54 | 43 | 37 | 32 | 37 | 32 | 28 | 31 | 27 | 24 | 26 | 23 | 20 |
| 8   | 55  | 43  | 35  | 30  | 50 | 40 | 33 | 28 | 34 | 29 | 25 | 29 | 25 | 22 | 24 | 21 | 18 |
| 9   | 51  | 39  | 32  | 27  | 47 | 36 | 30 | 25 | 31 | 26 | 22 | 26 | 22 | 20 | 22 | 19 | 17 |
| 10  | 47  | 36  | 29  | 24  | 44 | 33 | 27 | 23 | 29 | 24 | 20 | 24 | 20 | 18 | 20 | 17 | 15 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3716 | 3716 | 3716 |
| 5°  | 3721 | 3655 | 3679 |
| 10° | 3682 | 3581 | 3557 |
| 15° | 3630 | 3460 | 3370 |
| 20° | 3561 | 3294 | 3142 |
| 25° | 3491 | 3109 | 2921 |
| 30° | 3397 | 2920 | 2642 |
| 35° | 3305 | 2716 | 2396 |
| 40° | 3211 | 2506 | 2115 |
| 45° | 3102 | 2273 | 1861 |
| 50° | 2989 | 2038 | 1612 |
| 55° | 2871 | 1787 | 1374 |
| 60° | 2734 | 1525 | 1129 |
| 65° | 2577 | 1259 | 1013 |
| 70° | 2386 | 1011 | 914  |
| 75° | 2146 | 886  | 827  |
| 80° | 1799 | 735  | 711  |
| 85° | 1230 | 478  | 522  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3102 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 300.7   | 2.1       |
| 10°-20°   | 825.5   | 5.7       |
| 20°-30°   | 1158.9  | 8.0       |
| 30°-40°   | 1263.3  | 8.7       |
| 40°-50°   | 1161.1  | 8.0       |
| 50°-60°   | 911.9   | 6.3       |
| 60°-70°   | 593.5   | 4.1       |
| 70°-80°   | 305.5   | 2.1       |
| 80°-90°   | 86.0    | 0.6       |
| 90°-100°  | 173.6   | 1.2       |
| 100°-110° | 551.7   | 3.8       |
| 110°-120° | 944.1   | 6.5       |
| 120°-130° | 1241.6  | 8.6       |
| 130°-140° | 1393.7  | 9.6       |
| 140°-150° | 1366.6  | 9.5       |
| 150°-160° | 1146.4  | 7.9       |
| 160°-170° | 760.3   | 5.3       |
| 170°-180° | 265.7   | 1.8       |
| 0°-30°    | 2285.1  | 15.8      |
| 0°-40°    | 3548.4  | 24.6      |
| 0°-60°    | 5621.4  | 38.9      |
| 0°-90°    | 6606.5  | 45.7      |
| 90°-120°  | 1669.4  | 11.6      |
| 90°-150°  | 5671.3  | 39.2      |
| 90°-180°  | 7844.0  | 54.3      |
| 0°-180°   | 14450.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3208 | 3208  | 3208 | 3208  | 3208 |      |
| 5°   | 3208 | 3194  | 3156 | 3182  | 3174 | 304  |
| 15°  | 3052 | 3020  | 2921 | 2866  | 2837 | 860  |
| 25°  | 2770 | 2677  | 2485 | 2366  | 2323 | 1274 |
| 35°  | 2387 | 2239  | 1983 | 1800  | 1736 | 1494 |
| 45°  | 1951 | 1756  | 1452 | 1246  | 1176 | 1507 |
| 55°  | 1484 | 1257  | 944  | 770   | 714  | 1326 |
| 65°  | 1002 | 766   | 505  | 407   | 398  | 993  |
| 75°  | 534  | 331   | 232  | 212   | 209  | 565  |
| 85°  | 125  | 64    | 55   | 55    | 55   | 143  |
| 90°  | 3    | 30    | 83   | 78    | 80   | 14   |
| 95°  | 124  | 147   | 151  | 151   | 147  | 137  |
| 105° | 509  | 516   | 521  | 525   | 525  | 537  |
| 115° | 947  | 961   | 957  | 954   | 947  | 937  |
| 125° | 1378 | 1399  | 1392 | 1385  | 1382 | 1231 |
| 135° | 1782 | 1809  | 1814 | 1811  | 1804 | 1378 |
| 145° | 2164 | 2181  | 2194 | 2197  | 2188 | 1352 |
| 155° | 2474 | 2481  | 2489 | 2500  | 2493 | 1139 |
| 165° | 2692 | 2689  | 2689 | 2706  | 2694 | 759  |
| 175° | 2801 | 2794  | 2789 | 2806  | 2792 | 266  |
| 180° | 2806 | 2806  | 2806 | 2806  | 2806 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3208.4 | 3208.4 | 3208.4 | 3208.4 | 3208.4 |
| 2.5°   | 3222.9 | 3208.4 | 3176.4 | 3205.7 | 3199.8 |
| 5°     | 3208.4 | 3193.9 | 3156.1 | 3182.3 | 3173.6 |
| 7.5°   | 3182.3 | 3165.0 | 3124.4 | 3135.7 | 3121.3 |
| 10°    | 3147.5 | 3127.2 | 3069.2 | 3060.3 | 3043.0 |
| 12.5°  | 3104.0 | 3077.8 | 2999.3 | 2982.0 | 2949.9 |
| 15°    | 3051.6 | 3019.6 | 2921.0 | 2865.9 | 2836.9 |
| 17.5°  | 2990.6 | 2944.2 | 2822.2 | 2758.3 | 2711.8 |
| 20°    | 2921.0 | 2862.8 | 2717.7 | 2645.3 | 2581.2 |
| 22.5°  | 2845.6 | 2778.7 | 2610.1 | 2511.6 | 2468.2 |
| 25°    | 2770.1 | 2677.0 | 2485.4 | 2366.5 | 2322.8 |
| 27.5°  | 2680.1 | 2581.2 | 2369.3 | 2232.9 | 2166.0 |
| 30°    | 2584.3 | 2473.7 | 2241.4 | 2093.6 | 2015.1 |
| 32.5°  | 2491.3 | 2357.6 | 2119.7 | 1945.4 | 1872.7 |
| 35°    | 2386.8 | 2238.6 | 1983.3 | 1800.4 | 1736.3 |
| 37.5°  | 2285.2 | 2125.3 | 1855.5 | 1654.8 | 1582.5 |
| 40°    | 2177.6 | 2003.6 | 1721.7 | 1515.7 | 1440.1 |
| 42.5°  | 2067.4 | 1881.6 | 1588.3 | 1373.3 | 1301.0 |
| 45°    | 1951.3 | 1756.5 | 1451.9 | 1245.5 | 1175.9 |
| 47.5°  | 1840.9 | 1634.9 | 1321.3 | 1114.9 | 1051.1 |
| 50°    | 1719.0 | 1512.9 | 1193.4 | 992.9  | 932.2  |
| 52.5°  | 1599.7 | 1381.9 | 1071.4 | 879.8  | 824.7  |
| 55°    | 1483.6 | 1257.2 | 943.5  | 769.5  | 714.4  |
| 57.5°  | 1364.7 | 1132.4 | 830.5  | 667.8  | 621.4  |
| 60°    | 1242.7 | 1010.4 | 711.3  | 563.5  | 516.9  |
| 62.5°  | 1123.7 | 891.5  | 609.6  | 470.4  | 447.3  |
| 65°    | 1001.8 | 766.4  | 505.3  | 406.7  | 397.7  |
| 67.5°  | 885.6  | 650.3  | 406.7  | 357.0  | 348.4  |
| 70°    | 763.7  | 537.2  | 336.7  | 307.7  | 296.0  |
| 72.5°  | 647.5  | 432.5  | 281.6  | 258.5  | 252.6  |
| 75°    | 534.2  | 330.8  | 232.2  | 211.9  | 209.2  |
| 77.5°  | 421.1  | 235.0  | 183.0  | 171.2  | 165.5  |
| 80°    | 316.4  | 168.5  | 139.3  | 127.9  | 127.9  |
| 82.5°  | 220.6  | 113.3  | 95.8   | 89.9   | 89.9   |
| 85°    | 124.8  | 63.8   | 55.1   | 55.1   | 55.1   |
| 87.5°  | 46.5   | 23.1   | 23.1   | 20.3   | 20.3   |
| 90°    | 2.6    | 30.5   | 83.0   | 77.9   | 80.4   |
| 92.5°  | 52.5   | 71.1   | 73.6   | 76.1   | 76.1   |
| 95°    | 123.5  | 147.2  | 151.4  | 151.4  | 147.2  |
| 97.5°  | 205.6  | 227.6  | 236.9  | 236.9  | 236.9  |
| 100°   | 300.3  | 319.7  | 326.5  | 326.5  | 323.9  |
| 102.5° | 400.1  | 414.5  | 423.7  | 426.3  | 423.7  |
| 105°   | 509.3  | 516.0  | 521.1  | 525.3  | 525.3  |
| 107.5° | 617.5  | 627.7  | 627.7  | 629.4  | 617.5  |
| 110°   | 722.4  | 735.9  | 735.9  | 735.9  | 729.2  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 835.7  | 850.2  | 847.6  | 840.8  | 835.7  |
| 115°   | 947.4  | 960.9  | 956.7  | 954.2  | 947.4  |
| 117.5° | 1058.2 | 1076.8 | 1065.0 | 1058.2 | 1051.4 |
| 120°   | 1169.9 | 1188.5 | 1169.9 | 1169.9 | 1162.2 |
| 122.5° | 1271.4 | 1295.1 | 1283.2 | 1276.5 | 1271.4 |
| 125°   | 1377.9 | 1399.1 | 1392.3 | 1384.7 | 1382.3 |
| 127.5° | 1482.1 | 1508.2 | 1498.9 | 1488.8 | 1482.1 |
| 130°   | 1579.3 | 1609.7 | 1605.5 | 1600.5 | 1591.2 |
| 132.5° | 1688.5 | 1712.1 | 1713.8 | 1702.0 | 1695.2 |
| 135°   | 1782.3 | 1808.6 | 1813.7 | 1811.1 | 1804.3 |
| 137.5° | 1887.2 | 1908.4 | 1912.6 | 1910.9 | 1900.7 |
| 140°   | 1979.5 | 2000.5 | 2012.4 | 2012.4 | 2003.1 |
| 142.5° | 2074.2 | 2095.3 | 2102.1 | 2104.7 | 2095.3 |
| 145°   | 2163.9 | 2180.7 | 2194.3 | 2196.8 | 2187.5 |
| 147.5° | 2244.2 | 2265.4 | 2275.4 | 2279.8 | 2270.5 |
| 150°   | 2327.1 | 2341.4 | 2350.7 | 2358.4 | 2350.7 |
| 152.5° | 2400.7 | 2415.1 | 2426.9 | 2436.3 | 2426.9 |
| 155°   | 2474.3 | 2481.1 | 2488.7 | 2500.5 | 2492.9 |
| 157.5° | 2537.7 | 2542.8 | 2547.0 | 2563.9 | 2552.1 |
| 160°   | 2594.4 | 2599.5 | 2602.0 | 2616.4 | 2606.3 |
| 162.5° | 2646.9 | 2646.9 | 2649.4 | 2665.5 | 2653.6 |
| 165°   | 2691.7 | 2689.1 | 2689.1 | 2706.1 | 2694.2 |
| 167.5° | 2732.2 | 2724.7 | 2724.7 | 2741.6 | 2729.7 |
| 170°   | 2762.7 | 2756.0 | 2753.4 | 2770.4 | 2756.0 |
| 172.5° | 2783.9 | 2777.2 | 2774.6 | 2791.5 | 2777.2 |
| 175°   | 2800.8 | 2794.0 | 2788.9 | 2805.9 | 2791.5 |
| 177.5° | 2810.1 | 2803.3 | 2798.2 | 2812.6 | 2798.2 |
| 180°   | 2805.9 | 2805.9 | 2805.9 | 2805.9 | 2805.9 |

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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 | 11.25            | 12.05 | 12.25 | 13.05 | 14.39 | 7.22           | 8.02  | 8.22  | 9.03  | 10.36 |
|                 | 3H   | 12.92            | 13.63 | 13.93 | 14.64 | 16.00 | 8.41           | 9.12  | 9.42  | 10.13 | 11.49 |
|                 | 4H   | 13.52            | 14.19 | 14.54 | 15.21 | 16.57 | 8.85           | 9.53  | 9.88  | 10.54 | 11.91 |
|                 | 6H   | 13.93            | 14.55 | 14.96 | 15.57 | 16.95 | 9.17           | 9.79  | 10.20 | 10.81 | 12.19 |
|                 | 8H   | 14.05            | 14.64 | 15.09 | 15.68 | 17.05 | 9.26           | 9.85  | 10.29 | 10.88 | 12.25 |
|                 | 12H  | 14.11            | 14.67 | 15.15 | 15.70 | 17.10 | 9.30           | 9.86  | 10.34 | 10.89 | 12.28 |
| 4H              | 2H   | 11.26            | 11.94 | 12.29 | 12.95 | 14.32 | 7.81           | 8.49  | 8.84  | 9.50  | 10.87 |
|                 | 3H   | 13.08            | 13.64 | 14.12 | 14.69 | 16.06 | 9.15           | 9.71  | 10.19 | 10.76 | 12.14 |
|                 | 4H   | 13.76            | 14.28 | 14.81 | 15.31 | 16.71 | 9.70           | 10.21 | 10.74 | 11.25 | 12.65 |
|                 | 6H   | 14.27            | 14.71 | 15.32 | 15.77 | 17.17 | 10.11          | 10.55 | 11.16 | 11.61 | 13.00 |
|                 | 8H   | 14.44            | 14.85 | 15.49 | 15.90 | 17.31 | 10.23          | 10.65 | 11.29 | 11.70 | 13.11 |
|                 | 12H  | 14.53            | 14.90 | 15.60 | 15.97 | 17.38 | 10.30          | 10.67 | 11.37 | 11.74 | 13.15 |
| 8H              | 4H   | 13.73            | 14.14 | 14.78 | 15.19 | 16.60 | 9.97           | 10.38 | 11.02 | 11.43 | 12.84 |
|                 | 6H   | 14.28            | 14.62 | 15.36 | 15.72 | 17.13 | 10.48          | 10.82 | 11.56 | 11.92 | 13.32 |
|                 | 8H   | 14.50            | 14.79 | 15.58 | 15.87 | 17.30 | 10.67          | 10.97 | 11.75 | 12.05 | 13.47 |
|                 | 12H  | 14.63            | 14.89 | 15.72 | 15.96 | 17.43 | 10.78          | 11.04 | 11.87 | 12.12 | 13.58 |
| 12H             | 4H   | 13.68            | 14.05 | 14.75 | 15.12 | 16.53 | 9.97           | 10.34 | 11.04 | 11.41 | 12.82 |
|                 | 6H   | 14.26            | 14.56 | 15.34 | 15.64 | 17.06 | 10.53          | 10.83 | 11.61 | 11.91 | 13.33 |
|                 | 8H   | 14.47            | 14.73 | 15.56 | 15.81 | 17.28 | 10.73          | 10.99 | 11.82 | 12.07 | 13.54 |