

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: P906818

Luminaire Tested: DFN2DIP-SQ4F0-100D080US835-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P906818  
REPORT IS A COMBINATION OF REPORTS P900104 AND P896915  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-100D080US835-RLLFLL  
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

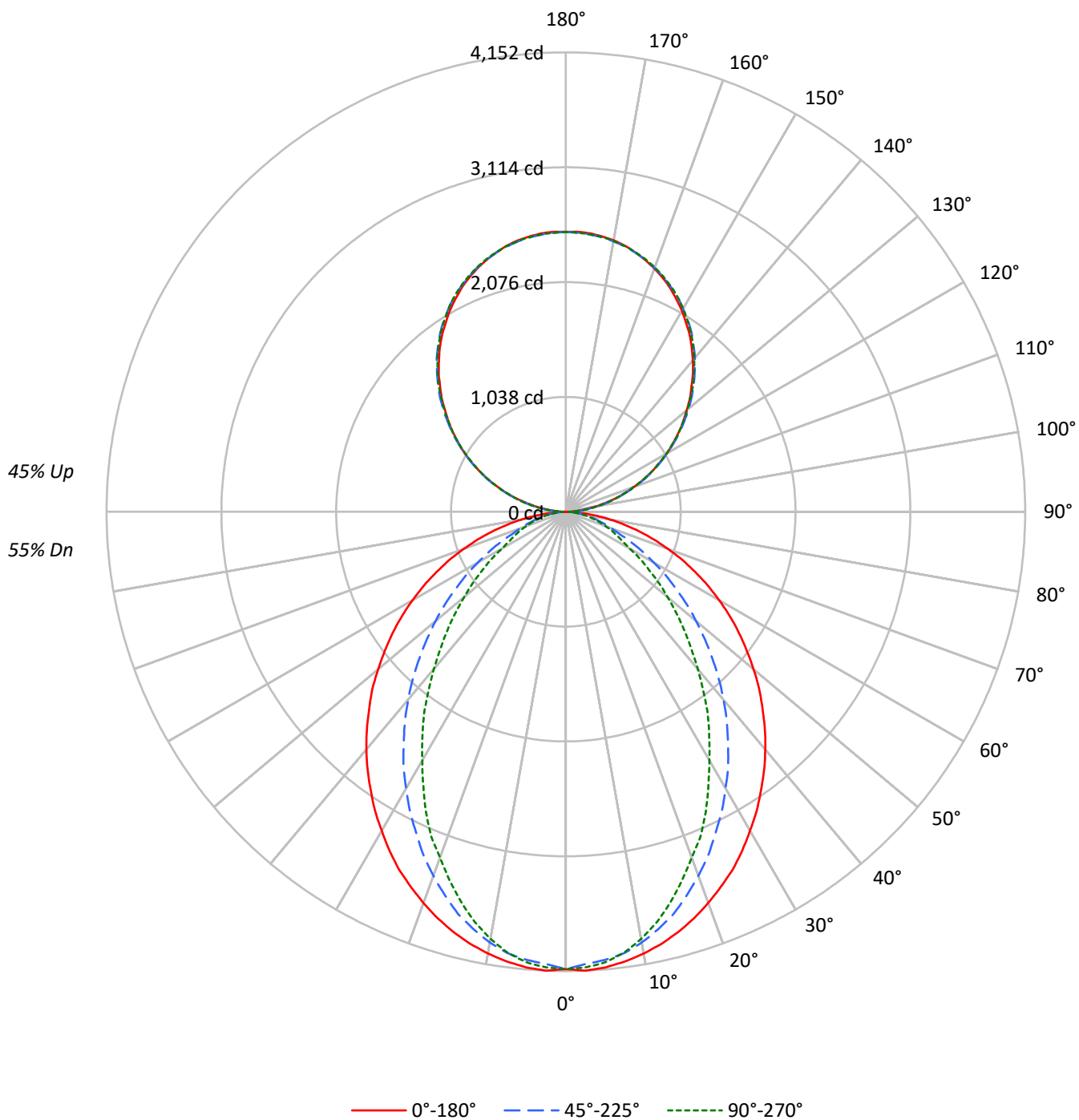
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 15580.0 lumens  
Efficiency: N/A  
Efficacy: 102.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 152.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9968  
Total Harmonic Distortion (THDi): 0.064  
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: P906818

CATALOG NUMBER: DFN2DIP-SQ4F0-100D080US835-RLFL

**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 | 86 | 86 | 86 | 73 | 73 | 73 | 60 | 60 | 60 |
| 1   | 99  | 95  | 91  | 88  | 92  | 89  | 85  | 82  | 76 | 74 | 72 | 65 | 63 | 62 | 54 | 53 | 52 |
| 2   | 91  | 84  | 78  | 73  | 84  | 78  | 73  | 69  | 67 | 63 | 60 | 57 | 55 | 52 | 48 | 46 | 45 |
| 3   | 83  | 74  | 67  | 61  | 77  | 69  | 63  | 58  | 60 | 55 | 51 | 51 | 48 | 45 | 43 | 41 | 39 |
| 4   | 76  | 66  | 58  | 52  | 71  | 62  | 55  | 50  | 54 | 48 | 44 | 46 | 42 | 39 | 39 | 36 | 34 |
| 5   | 70  | 59  | 51  | 45  | 65  | 55  | 48  | 43  | 48 | 43 | 38 | 42 | 37 | 34 | 35 | 32 | 30 |
| 6   | 65  | 53  | 45  | 40  | 60  | 50  | 43  | 38  | 44 | 38 | 34 | 38 | 33 | 30 | 32 | 29 | 26 |
| 7   | 60  | 48  | 40  | 35  | 56  | 45  | 38  | 33  | 40 | 34 | 30 | 35 | 30 | 27 | 30 | 26 | 24 |
| 8   | 56  | 44  | 36  | 31  | 52  | 41  | 34  | 30  | 36 | 31 | 27 | 32 | 27 | 24 | 27 | 24 | 21 |
| 9   | 52  | 40  | 33  | 28  | 49  | 38  | 31  | 27  | 34 | 28 | 24 | 29 | 25 | 22 | 25 | 22 | 19 |
| 10  | 49  | 37  | 30  | 25  | 46  | 35  | 28  | 24  | 31 | 26 | 22 | 27 | 23 | 20 | 24 | 20 | 18 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2900 | 2900 | 2900 |
| 5°  | 2905 | 2855 | 2873 |
| 10° | 2876 | 2799 | 2780 |
| 15° | 2836 | 2707 | 2637 |
| 20° | 2784 | 2580 | 2460 |
| 25° | 2730 | 2438 | 2289 |
| 30° | 2658 | 2292 | 2073 |
| 35° | 2587 | 2134 | 1882 |
| 40° | 2516 | 1972 | 1664 |
| 45° | 2432 | 1791 | 1466 |
| 50° | 2346 | 1609 | 1272 |
| 55° | 2256 | 1414 | 1086 |
| 60° | 2151 | 1210 | 895  |
| 65° | 2031 | 1003 | 806  |
| 70° | 1886 | 809  | 731  |
| 75° | 1703 | 715  | 667  |
| 80° | 1438 | 602  | 581  |
| 85° | 1002 | 405  | 442  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2432 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 387.3   | 2.5       |
| 10°-20°   | 1063.3  | 6.8       |
| 20°-30°   | 1492.9  | 9.6       |
| 30°-40°   | 1627.4  | 10.4      |
| 40°-50°   | 1495.7  | 9.6       |
| 50°-60°   | 1174.7  | 7.5       |
| 60°-70°   | 764.6   | 4.9       |
| 70°-80°   | 393.6   | 2.5       |
| 80°-90°   | 107.7   | 0.7       |
| 90°-100°  | 156.6   | 1.0       |
| 100°-110° | 497.5   | 3.2       |
| 110°-120° | 851.3   | 5.5       |
| 120°-130° | 1119.6  | 7.2       |
| 130°-140° | 1256.7  | 8.1       |
| 140°-150° | 1232.3  | 7.9       |
| 150°-160° | 1033.7  | 6.6       |
| 160°-170° | 685.6   | 4.4       |
| 170°-180° | 239.6   | 1.5       |
| 0°-30°    | 2943.6  | 18.9      |
| 0°-40°    | 4571.0  | 29.3      |
| 0°-60°    | 7241.3  | 46.5      |
| 0°-90°    | 8507.2  | 54.6      |
| 90°-120°  | 1505.3  | 9.7       |
| 90°-150°  | 5113.9  | 32.8      |
| 90°-180°  | 7073.0  | 45.4      |
| 0°-180°   | 15580.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 4133 | 4133  | 4133 | 4133  | 4133 |      |
| 5°   | 4133 | 4114  | 4066 | 4099  | 4088 | 392  |
| 15°  | 3931 | 3890  | 3763 | 3692  | 3654 | 1108 |
| 25°  | 3568 | 3448  | 3202 | 3048  | 2992 | 1641 |
| 35°  | 3075 | 2884  | 2555 | 2319  | 2236 | 1924 |
| 45°  | 2514 | 2263  | 1870 | 1604  | 1515 | 1941 |
| 55°  | 1911 | 1620  | 1216 | 991   | 920  | 1708 |
| 65°  | 1290 | 987   | 651  | 524   | 512  | 1279 |
| 75°  | 688  | 426   | 299  | 273   | 269  | 728  |
| 85°  | 161  | 82    | 71   | 71    | 71   | 184  |
| 90°  | 2    | 28    | 75   | 70    | 72   | 15   |
| 95°  | 111  | 133   | 136  | 136   | 133  | 124  |
| 105° | 459  | 465   | 470  | 474   | 474  | 485  |
| 115° | 854  | 866   | 863  | 860   | 854  | 845  |
| 125° | 1242 | 1262  | 1256 | 1249  | 1246 | 1110 |
| 135° | 1607 | 1631  | 1635 | 1633  | 1627 | 1242 |
| 145° | 1951 | 1966  | 1979 | 1981  | 1972 | 1219 |
| 155° | 2231 | 2237  | 2244 | 2255  | 2248 | 1027 |
| 165° | 2427 | 2425  | 2425 | 2440  | 2429 | 685  |
| 175° | 2526 | 2519  | 2515 | 2530  | 2517 | 240  |
| 180° | 2530 | 2530  | 2530 | 2530  | 2530 |      |



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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 4133.0 | 4133.0 | 4133.0 | 4133.0 | 4133.0 |
| 2.5°   | 4151.6 | 4133.0 | 4091.7 | 4129.4 | 4121.9 |
| 5°     | 4133.0 | 4114.3 | 4065.5 | 4099.3 | 4088.1 |
| 7.5°   | 4099.3 | 4077.0 | 4024.6 | 4039.3 | 4020.7 |
| 10°    | 4054.4 | 4028.2 | 3953.6 | 3942.1 | 3919.9 |
| 12.5°  | 3998.5 | 3964.7 | 3863.5 | 3841.3 | 3800.0 |
| 15°    | 3931.0 | 3889.7 | 3762.7 | 3691.7 | 3654.4 |
| 17.5°  | 3852.4 | 3792.5 | 3635.4 | 3553.2 | 3493.3 |
| 20°    | 3762.7 | 3687.7 | 3500.8 | 3407.6 | 3325.0 |
| 22.5°  | 3665.5 | 3579.4 | 3362.3 | 3235.4 | 3179.4 |
| 25°    | 3568.3 | 3448.5 | 3201.6 | 3048.4 | 2992.1 |
| 27.5°  | 3452.4 | 3325.0 | 3052.0 | 2876.2 | 2790.1 |
| 30°    | 3329.0 | 3186.5 | 2887.3 | 2696.9 | 2595.7 |
| 32.5°  | 3209.2 | 3036.9 | 2730.6 | 2506.0 | 2412.3 |
| 35°    | 3074.6 | 2883.8 | 2554.8 | 2319.1 | 2236.5 |
| 37.5°  | 2943.7 | 2737.7 | 2390.1 | 2131.8 | 2038.5 |
| 40°    | 2805.2 | 2581.0 | 2217.9 | 1952.4 | 1855.2 |
| 42.5°  | 2663.1 | 2423.8 | 2046.1 | 1769.1 | 1675.8 |
| 45°    | 2513.5 | 2262.7 | 1870.3 | 1604.4 | 1514.7 |
| 47.5°  | 2371.5 | 2106.0 | 1702.0 | 1436.1 | 1354.0 |
| 50°    | 2214.3 | 1948.8 | 1537.3 | 1279.0 | 1200.8 |
| 52.5°  | 2060.7 | 1780.2 | 1380.2 | 1133.3 | 1062.3 |
| 55°    | 1911.1 | 1619.5 | 1215.5 | 991.3  | 920.2  |
| 57.5°  | 1758.0 | 1458.7 | 1069.9 | 860.3  | 800.4  |
| 60°    | 1600.8 | 1301.6 | 916.3  | 725.8  | 665.9  |
| 62.5°  | 1447.6 | 1148.4 | 785.3  | 606.0  | 576.2  |
| 65°    | 1290.5 | 987.3  | 650.8  | 523.8  | 512.3  |
| 67.5°  | 1140.9 | 837.7  | 523.8  | 459.9  | 448.8  |
| 70°    | 983.7  | 692.1  | 433.7  | 396.4  | 381.4  |
| 72.5°  | 834.1  | 557.1  | 362.7  | 332.9  | 325.4  |
| 75°    | 688.1  | 426.2  | 299.2  | 273.0  | 269.4  |
| 77.5°  | 542.5  | 302.8  | 235.7  | 220.6  | 213.1  |
| 80°    | 407.5  | 217.1  | 179.4  | 164.7  | 164.7  |
| 82.5°  | 284.1  | 146.0  | 123.4  | 115.9  | 115.9  |
| 85°    | 160.7  | 82.1   | 71.0   | 71.0   | 71.0   |
| 87.5°  | 59.9   | 29.8   | 29.8   | 26.2   | 26.2   |
| 90°    | 2.3    | 27.5   | 74.8   | 70.2   | 72.5   |
| 92.5°  | 47.3   | 64.1   | 66.4   | 68.6   | 68.6   |
| 95°    | 111.4  | 132.7  | 136.5  | 136.5  | 132.7  |
| 97.5°  | 185.4  | 205.2  | 213.6  | 213.6  | 213.6  |
| 100°   | 270.8  | 288.3  | 294.4  | 294.4  | 292.1  |
| 102.5° | 360.8  | 373.8  | 382.1  | 384.4  | 382.1  |
| 105°   | 459.2  | 465.3  | 469.9  | 473.7  | 473.7  |
| 107.5° | 556.8  | 566.0  | 566.0  | 567.5  | 556.8  |
| 110°   | 651.4  | 663.6  | 663.6  | 663.6  | 657.5  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 753.6  | 766.6  | 764.3  | 758.2  | 753.6  |
| 115°   | 854.3  | 866.5  | 862.7  | 860.4  | 854.3  |
| 117.5° | 954.2  | 971.0  | 960.3  | 954.2  | 948.1  |
| 120°   | 1054.9 | 1071.7 | 1054.9 | 1054.9 | 1048.0 |
| 122.5° | 1146.4 | 1167.8 | 1157.1 | 1151.0 | 1146.4 |
| 125°   | 1242.5 | 1261.6 | 1255.5 | 1248.6 | 1246.4 |
| 127.5° | 1336.4 | 1360.0 | 1351.6 | 1342.5 | 1336.4 |
| 130°   | 1424.1 | 1451.5 | 1447.7 | 1443.2 | 1434.8 |
| 132.5° | 1522.5 | 1543.8 | 1545.4 | 1534.7 | 1528.6 |
| 135°   | 1607.1 | 1630.8 | 1635.4 | 1633.1 | 1627.0 |
| 137.5° | 1701.7 | 1720.8 | 1724.6 | 1723.1 | 1713.9 |
| 140°   | 1784.9 | 1803.9 | 1814.6 | 1814.6 | 1806.2 |
| 142.5° | 1870.3 | 1889.4 | 1895.5 | 1897.8 | 1889.4 |
| 145°   | 1951.2 | 1966.4 | 1978.6 | 1980.9 | 1972.5 |
| 147.5° | 2023.6 | 2042.7 | 2051.8 | 2055.7 | 2047.3 |
| 150°   | 2098.4 | 2111.3 | 2119.7 | 2126.6 | 2119.7 |
| 152.5° | 2164.7 | 2177.7 | 2188.4 | 2196.8 | 2188.4 |
| 155°   | 2231.1 | 2237.2 | 2244.1 | 2254.7 | 2247.9 |
| 157.5° | 2288.3 | 2292.9 | 2296.7 | 2311.9 | 2301.3 |
| 160°   | 2339.4 | 2344.0 | 2346.3 | 2359.2 | 2350.1 |
| 162.5° | 2386.7 | 2386.7 | 2389.0 | 2403.5 | 2392.8 |
| 165°   | 2427.1 | 2424.8 | 2424.8 | 2440.1 | 2429.4 |
| 167.5° | 2463.7 | 2456.9 | 2456.9 | 2472.1 | 2461.4 |
| 170°   | 2491.2 | 2485.1 | 2482.8 | 2498.1 | 2485.1 |
| 172.5° | 2510.3 | 2504.2 | 2501.9 | 2517.1 | 2504.2 |
| 175°   | 2525.5 | 2519.4 | 2514.8 | 2530.1 | 2517.1 |
| 177.5° | 2533.9 | 2527.8 | 2523.2 | 2536.2 | 2523.2 |
| 180°   | 2530.1 | 2530.1 | 2530.1 | 2530.1 | 2530.1 |

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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 | 11.28            | 12.15 | 12.20 | 13.08 | 14.29 | 7.24           | 8.11  | 8.16  | 9.04  | 10.25 |
|                 | 3H   | 12.96            | 13.74 | 13.90 | 14.69 | 15.92 | 8.43           | 9.21  | 9.37  | 10.15 | 11.38 |
|                 | 4H   | 13.58            | 14.31 | 14.53 | 15.26 | 16.50 | 8.88           | 9.62  | 9.83  | 10.57 | 11.81 |
|                 | 6H   | 14.00            | 14.68 | 14.96 | 15.64 | 16.89 | 9.21           | 9.88  | 10.17 | 10.84 | 12.09 |
|                 | 8H   | 14.13            | 14.78 | 15.10 | 15.75 | 17.00 | 9.30           | 9.94  | 10.27 | 10.91 | 12.16 |
|                 | 12H  | 14.20            | 14.81 | 15.17 | 15.78 | 17.05 | 9.34           | 9.96  | 10.32 | 10.92 | 12.20 |
| 4H              | 2H   | 11.30            | 12.03 | 12.26 | 12.99 | 14.23 | 7.84           | 8.57  | 8.80  | 9.53  | 10.77 |
|                 | 3H   | 13.14            | 13.75 | 14.10 | 14.73 | 15.98 | 9.20           | 9.81  | 10.16 | 10.79 | 12.04 |
|                 | 4H   | 13.83            | 14.39 | 14.81 | 15.37 | 16.64 | 9.75           | 10.30 | 10.72 | 11.28 | 12.56 |
|                 | 6H   | 14.36            | 14.84 | 15.34 | 15.83 | 17.11 | 10.17          | 10.65 | 11.15 | 11.64 | 12.92 |
|                 | 8H   | 14.53            | 14.98 | 15.52 | 15.97 | 17.26 | 10.30          | 10.74 | 11.29 | 11.74 | 13.03 |
|                 | 12H  | 14.63            | 15.04 | 15.64 | 16.05 | 17.34 | 10.37          | 10.77 | 11.37 | 11.78 | 13.07 |
| 8H              | 4H   | 13.81            | 14.25 | 14.79 | 15.24 | 16.54 | 10.03          | 10.48 | 11.02 | 11.47 | 12.76 |
|                 | 6H   | 14.38            | 14.75 | 15.39 | 15.78 | 17.07 | 10.55          | 10.92 | 11.56 | 11.95 | 13.24 |
|                 | 8H   | 14.60            | 14.92 | 15.62 | 15.94 | 17.25 | 10.74          | 11.07 | 11.77 | 12.09 | 13.40 |
|                 | 12H  | 14.74            | 15.03 | 15.77 | 16.04 | 17.40 | 10.87          | 11.15 | 11.89 | 12.17 | 13.52 |
| 12H             | 4H   | 13.76            | 14.16 | 14.77 | 15.17 | 16.47 | 10.04          | 10.44 | 11.04 | 11.45 | 12.75 |
|                 | 6H   | 14.35            | 14.68 | 15.37 | 15.70 | 17.01 | 10.60          | 10.93 | 11.62 | 11.95 | 13.26 |
|                 | 8H   | 14.58            | 14.87 | 15.60 | 15.88 | 17.23 | 10.82          | 11.10 | 11.84 | 12.12 | 13.47 |