

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: P920159

Luminaire Tested: DFN2DIP-SQ3F0-080D120US935-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P920159  
REPORT IS A COMBINATION OF REPORTS P901534 AND P898289  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-080D120US935-RLLONL  
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

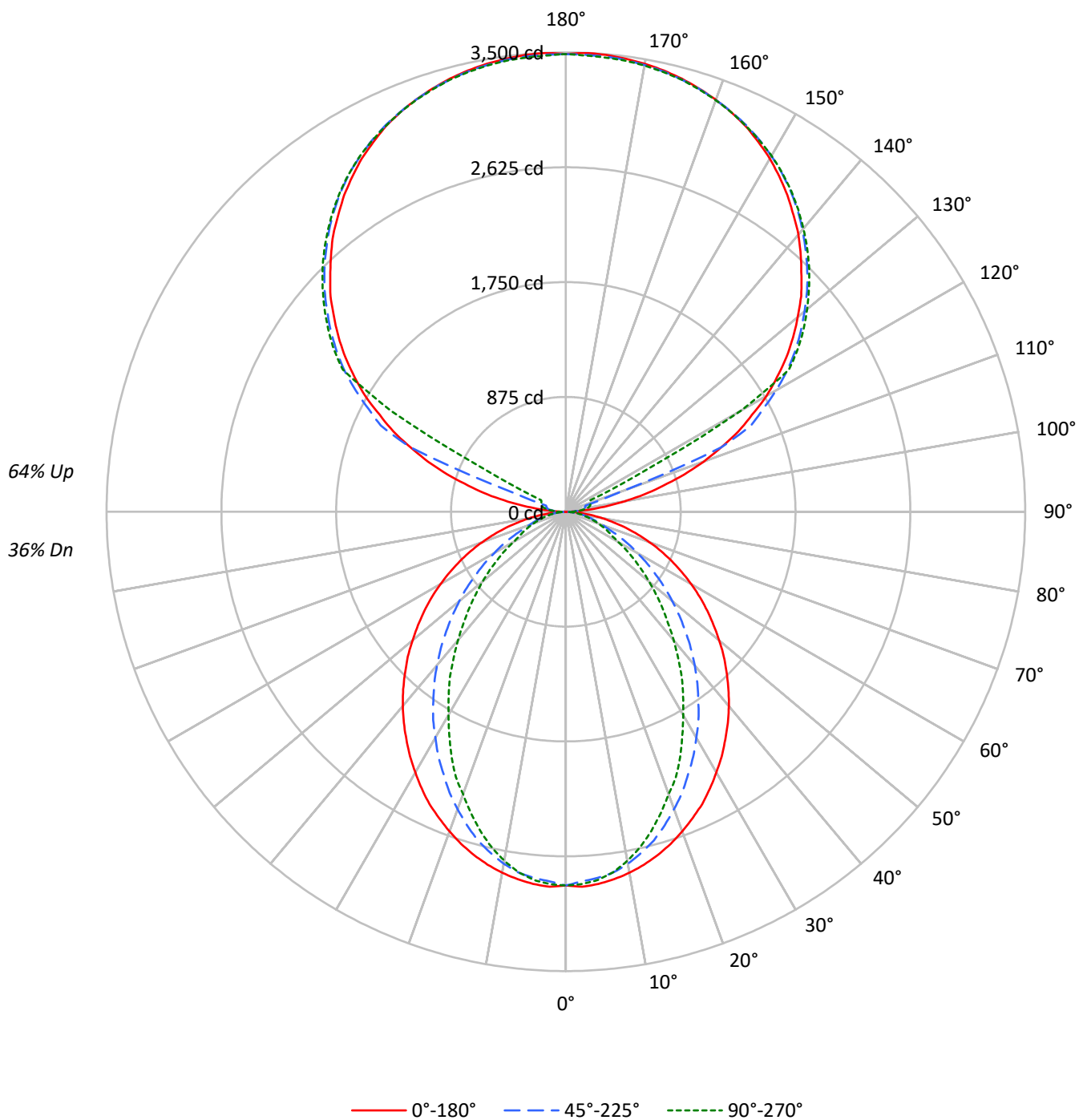
Lumens per Lamp: N/A  
Luminaire Lumens: 16083.5 lumens  
Efficiency: N/A  
Efficacy: 94.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 170.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9952  
Total Harmonic Distortion (THDi): 0.069  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P920159

CATALOG NUMBER: DFN2DIP-SQ3F0-080D120US935-RLLONL

### Luminous Intensity Polar Plot



TEST NUMBER: P920159

CATALOG NUMBER: DFN2DIP-SQ3F0-080D120US935-RLLONL

**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   | 104 | 104 | 104 | 104 | 94 | 94 | 94 | 94 | 76 | 76 | 76 | 59 | 59 | 59 | 44 | 44 | 44 |
| 1   | 95  | 91  | 87  | 84  | 86 | 83 | 80 | 77 | 67 | 65 | 63 | 52 | 51 | 50 | 39 | 38 | 38 |
| 2   | 87  | 80  | 74  | 69  | 78 | 73 | 68 | 63 | 59 | 56 | 53 | 46 | 44 | 42 | 35 | 33 | 32 |
| 3   | 79  | 70  | 63  | 58  | 72 | 64 | 58 | 53 | 52 | 48 | 45 | 41 | 38 | 36 | 31 | 29 | 28 |
| 4   | 73  | 63  | 55  | 49  | 66 | 57 | 51 | 46 | 47 | 42 | 38 | 37 | 34 | 31 | 28 | 26 | 24 |
| 5   | 67  | 56  | 48  | 42  | 60 | 51 | 44 | 39 | 42 | 37 | 33 | 33 | 30 | 27 | 25 | 23 | 21 |
| 6   | 62  | 50  | 42  | 37  | 56 | 46 | 39 | 34 | 38 | 33 | 29 | 30 | 27 | 24 | 23 | 21 | 19 |
| 7   | 57  | 45  | 38  | 32  | 52 | 41 | 35 | 30 | 34 | 29 | 26 | 28 | 24 | 21 | 21 | 19 | 17 |
| 8   | 53  | 41  | 34  | 29  | 48 | 38 | 31 | 27 | 31 | 26 | 23 | 25 | 22 | 19 | 20 | 17 | 15 |
| 9   | 49  | 37  | 30  | 25  | 45 | 34 | 28 | 24 | 29 | 24 | 20 | 23 | 20 | 17 | 18 | 16 | 14 |
| 10  | 46  | 34  | 27  | 23  | 42 | 32 | 25 | 21 | 26 | 22 | 18 | 22 | 18 | 15 | 17 | 14 | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3262 | 3262 | 3262 |
| 5°  | 3265 | 3208 | 3230 |
| 10° | 3231 | 3143 | 3123 |
| 15° | 3184 | 3037 | 2960 |
| 20° | 3123 | 2892 | 2760 |
| 25° | 3061 | 2729 | 2567 |
| 30° | 2978 | 2563 | 2322 |
| 35° | 2896 | 2384 | 2107 |
| 40° | 2813 | 2200 | 1860 |
| 45° | 2717 | 1995 | 1637 |
| 50° | 2617 | 1789 | 1419 |
| 55° | 2513 | 1569 | 1210 |
| 60° | 2392 | 1339 | 995  |
| 65° | 2252 | 1106 | 894  |
| 70° | 2083 | 888  | 808  |
| 75° | 1871 | 778  | 732  |
| 80° | 1563 | 646  | 631  |
| 85° | 1060 | 421  | 468  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2717 cd/sqm

TEST NUMBER: P920159

CATALOG NUMBER: DFN2DIP-SQ3F0-080D120US935-RLLONL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 266.8   | 1.7       |
| 10°-20°   | 732.4   | 4.6       |
| 20°-30°   | 1028.3  | 6.4       |
| 30°-40°   | 1120.9  | 7.0       |
| 40°-50°   | 1030.3  | 6.4       |
| 50°-60°   | 809.1   | 5.0       |
| 60°-70°   | 526.6   | 3.3       |
| 70°-80°   | 271.1   | 1.7       |
| 80°-90°   | 75.3    | 0.5       |
| 90°-100°  | 115.0   | 0.7       |
| 100°-110° | 428.6   | 2.7       |
| 110°-120° | 1136.8  | 7.1       |
| 120°-130° | 1885.4  | 11.7      |
| 130°-140° | 2002.8  | 12.5      |
| 140°-150° | 1861.3  | 11.6      |
| 150°-160° | 1496.5  | 9.3       |
| 160°-170° | 964.3   | 6.0       |
| 170°-180° | 331.9   | 2.1       |
| 0°-30°    | 2027.6  | 12.6      |
| 0°-40°    | 3148.5  | 19.6      |
| 0°-60°    | 4987.8  | 31.0      |
| 0°-90°    | 5860.9  | 36.4      |
| 90°-120°  | 1680.4  | 10.4      |
| 90°-150°  | 7429.9  | 46.2      |
| 90°-180°  | 10223.0 | 63.6      |
| 0°-180°   | 16083.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2847 | 2847  | 2847 | 2847  | 2847 |      |
| 5°   | 2847 | 2834  | 2800 | 2824  | 2816 | 270  |
| 15°  | 2708 | 2679  | 2592 | 2543  | 2517 | 763  |
| 25°  | 2458 | 2375  | 2205 | 2100  | 2061 | 1130 |
| 35°  | 2118 | 1986  | 1760 | 1597  | 1540 | 1326 |
| 45°  | 1731 | 1559  | 1288 | 1105  | 1043 | 1337 |
| 55°  | 1316 | 1116  | 837  | 683   | 634  | 1176 |
| 65°  | 889  | 680   | 448  | 361   | 353  | 881  |
| 75°  | 474  | 294   | 206  | 188   | 186  | 501  |
| 85°  | 111  | 57    | 49   | 49    | 49   | 127  |
| 90°  | 2    | 30    | 50   | 63    | 68   | 15   |
| 95°  | 164  | 81    | 98   | 111   | 108  | 194  |
| 105° | 767  | 843   | 154  | 182   | 192  | 820  |
| 115° | 1451 | 1494  | 1557 | 389   | 207  | 1428 |
| 125° | 2051 | 2084  | 2132 | 2150  | 2157 | 1829 |
| 135° | 2538 | 2579  | 2601 | 2627  | 2622 | 1961 |
| 145° | 2945 | 2942  | 2985 | 3002  | 2990 | 1842 |
| 155° | 3242 | 3220  | 3250 | 3265  | 3245 | 1494 |
| 165° | 3416 | 3401  | 3409 | 3426  | 3409 | 965  |
| 175° | 3494 | 3477  | 3482 | 3500  | 3474 | 333  |
| 180° | 3487 | 3487  | 3487 | 3487  | 3487 |      |

TEST NUMBER: P920159

CATALOG NUMBER: DFN2DIP-SQ3F0-080D120US935-RLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2846.8 | 2846.8 | 2846.8 | 2846.8 | 2846.8 |
| 2.5°   | 2859.6 | 2846.8 | 2818.4 | 2844.3 | 2839.1 |
| 5°     | 2846.8 | 2834.0 | 2800.3 | 2823.6 | 2815.9 |
| 7.5°   | 2823.6 | 2808.2 | 2772.2 | 2782.3 | 2769.4 |
| 10°    | 2792.6 | 2774.7 | 2723.3 | 2715.3 | 2700.0 |
| 12.5°  | 2754.2 | 2730.9 | 2661.2 | 2645.8 | 2617.4 |
| 15°    | 2707.7 | 2679.3 | 2591.8 | 2542.9 | 2517.1 |
| 17.5°  | 2653.5 | 2612.3 | 2504.0 | 2447.5 | 2406.1 |
| 20°    | 2591.8 | 2540.1 | 2411.4 | 2347.2 | 2290.3 |
| 22.5°  | 2524.8 | 2465.5 | 2316.0 | 2228.5 | 2189.9 |
| 25°    | 2457.8 | 2375.3 | 2205.3 | 2099.8 | 2061.0 |
| 27.5°  | 2378.0 | 2290.3 | 2102.2 | 1981.2 | 1921.8 |
| 30°    | 2293.0 | 2194.9 | 1988.8 | 1857.6 | 1787.9 |
| 32.5°  | 2210.4 | 2091.9 | 1880.8 | 1726.1 | 1661.6 |
| 35°    | 2117.8 | 1986.3 | 1759.7 | 1597.4 | 1540.5 |
| 37.5°  | 2027.6 | 1885.8 | 1646.3 | 1468.3 | 1404.1 |
| 40°    | 1932.3 | 1777.8 | 1527.7 | 1344.8 | 1277.8 |
| 42.5°  | 1834.4 | 1669.6 | 1409.3 | 1218.6 | 1154.3 |
| 45°    | 1731.3 | 1558.6 | 1288.2 | 1105.1 | 1043.4 |
| 47.5°  | 1633.5 | 1450.6 | 1172.3 | 989.2  | 932.6  |
| 50°    | 1525.2 | 1342.4 | 1058.9 | 881.0  | 827.1  |
| 52.5°  | 1419.4 | 1226.1 | 950.6  | 780.7  | 731.8  |
| 55°    | 1316.4 | 1115.5 | 837.2  | 682.8  | 633.9  |
| 57.5°  | 1210.9 | 1004.8 | 736.9  | 592.6  | 551.3  |
| 60°    | 1102.6 | 896.6  | 631.1  | 499.9  | 458.7  |
| 62.5°  | 997.1  | 791.0  | 541.0  | 417.4  | 396.9  |
| 65°    | 888.9  | 680.0  | 448.2  | 360.8  | 352.8  |
| 67.5°  | 785.8  | 577.0  | 360.8  | 316.8  | 309.2  |
| 70°    | 677.6  | 476.7  | 298.8  | 273.0  | 262.7  |
| 72.5°  | 574.5  | 383.7  | 249.9  | 229.4  | 224.1  |
| 75°    | 474.0  | 293.6  | 206.1  | 188.0  | 185.6  |
| 77.5°  | 373.7  | 208.5  | 162.4  | 152.0  | 146.8  |
| 80°    | 280.7  | 149.6  | 123.6  | 113.4  | 113.4  |
| 82.5°  | 195.7  | 100.6  | 85.0   | 79.8   | 79.8   |
| 85°    | 110.7  | 56.6   | 48.9   | 48.9   | 48.9   |
| 87.5°  | 41.2   | 20.5   | 20.5   | 18.1   | 18.1   |
| 90°    | 2.4    | 30.2   | 50.4   | 63.2   | 68.0   |
| 92.5°  | 63.2   | 53.0   | 60.5   | 65.6   | 68.0   |
| 95°    | 163.8  | 80.6   | 98.2   | 111.2  | 108.5  |
| 97.5°  | 295.2  | 88.4   | 128.5  | 136.3  | 138.7  |
| 100°   | 446.7  | 101.0  | 143.8  | 163.8  | 169.0  |
| 102.5° | 613.0  | 608.2  | 148.9  | 176.5  | 184.3  |
| 105°   | 767.0  | 842.8  | 154.0  | 181.6  | 191.7  |
| 107.5° | 946.2  | 1009.1 | 159.1  | 186.7  | 196.8  |
| 110°   | 1117.8 | 1170.6 | 441.6  | 189.3  | 199.2  |

TEST NUMBER: P920159

CATALOG NUMBER: DFN2DIP-SQ3F0-080D120US935-RLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1279.4 | 1324.6 | 1281.8 | 194.2  | 201.9  |
| 115°   | 1450.7 | 1493.6 | 1556.8 | 388.6  | 207.1  |
| 117.5° | 1599.6 | 1650.0 | 1693.2 | 1332.0 | 671.1  |
| 120°   | 1766.3 | 1804.0 | 1849.5 | 1879.8 | 1539.1 |
| 122.5° | 1907.4 | 1947.8 | 1998.5 | 2013.4 | 2016.1 |
| 125°   | 2051.2 | 2084.1 | 2132.1 | 2149.7 | 2157.2 |
| 127.5° | 2182.4 | 2217.8 | 2255.8 | 2281.0 | 2283.4 |
| 130°   | 2306.1 | 2346.6 | 2374.1 | 2402.0 | 2399.6 |
| 132.5° | 2432.2 | 2465.2 | 2492.8 | 2515.6 | 2513.2 |
| 135°   | 2538.3 | 2578.8 | 2601.2 | 2626.7 | 2621.7 |
| 137.5° | 2649.2 | 2679.4 | 2704.9 | 2730.1 | 2722.6 |
| 140°   | 2757.7 | 2778.0 | 2805.6 | 2828.4 | 2815.8 |
| 142.5° | 2848.7 | 2866.4 | 2899.1 | 2919.1 | 2906.6 |
| 145°   | 2944.6 | 2941.9 | 2984.7 | 3002.5 | 2989.8 |
| 147.5° | 3027.6 | 3020.1 | 3063.0 | 3075.6 | 3065.7 |
| 150°   | 3108.5 | 3090.8 | 3131.3 | 3146.3 | 3133.7 |
| 152.5° | 3176.5 | 3156.4 | 3194.2 | 3209.5 | 3191.8 |
| 155°   | 3242.1 | 3219.6 | 3249.9 | 3264.9 | 3244.8 |
| 157.5° | 3295.1 | 3275.1 | 3297.9 | 3315.5 | 3295.1 |
| 160°   | 3340.7 | 3325.4 | 3340.7 | 3355.7 | 3338.0 |
| 162.5° | 3380.9 | 3365.9 | 3378.5 | 3396.1 | 3373.4 |
| 165°   | 3416.2 | 3401.2 | 3408.7 | 3426.4 | 3408.7 |
| 167.5° | 3444.1 | 3428.8 | 3436.6 | 3454.2 | 3431.5 |
| 170°   | 3466.8 | 3451.6 | 3456.6 | 3474.3 | 3451.6 |
| 172.5° | 3481.8 | 3466.8 | 3472.0 | 3489.6 | 3466.8 |
| 175°   | 3494.4 | 3476.7 | 3481.8 | 3499.5 | 3474.3 |
| 177.5° | 3499.5 | 3481.8 | 3484.5 | 3502.2 | 3479.5 |
| 180°   | 3487.0 | 3487.0 | 3487.0 | 3487.0 | 3487.0 |

TEST NUMBER: P920159

CATALOG NUMBER: DFN2DIP-SQ3F0-080D120US935-RLONL

**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 | 9.81             | 10.54 | 10.88 | 11.61 | 13.06 | 5.77           | 6.50 | 6.84  | 7.57  | 9.02  |
|                 | 3H   | 11.47            | 12.12 | 12.55 | 13.20 | 14.67 | 6.94           | 7.59 | 8.02  | 8.67  | 10.14 |
|                 | 4H   | 12.07            | 12.69 | 13.16 | 13.77 | 15.25 | 7.38           | 8.00 | 8.47  | 9.08  | 10.56 |
|                 | 6H   | 12.48            | 13.05 | 13.59 | 14.14 | 15.63 | 7.69           | 8.26 | 8.79  | 9.34  | 10.83 |
|                 | 8H   | 12.61            | 13.15 | 13.71 | 14.25 | 15.73 | 7.78           | 8.32 | 8.88  | 9.42  | 10.90 |
|                 | 12H  | 12.66            | 13.18 | 13.77 | 14.27 | 15.78 | 7.81           | 8.33 | 8.92  | 9.42  | 10.93 |
| 4H              | 2H   | 9.81             | 10.43 | 10.91 | 11.51 | 12.99 | 6.35           | 6.97 | 7.45  | 8.05  | 9.52  |
|                 | 3H   | 11.62            | 12.14 | 12.73 | 13.25 | 14.74 | 7.68           | 8.20 | 8.79  | 9.30  | 10.79 |
|                 | 4H   | 12.31            | 12.78 | 13.42 | 13.88 | 15.39 | 8.22           | 8.69 | 9.33  | 9.79  | 11.30 |
|                 | 6H   | 12.81            | 13.22 | 13.93 | 14.34 | 15.84 | 8.63           | 9.03 | 9.74  | 10.15 | 11.66 |
|                 | 8H   | 12.99            | 13.36 | 14.10 | 14.47 | 15.99 | 8.75           | 9.13 | 9.87  | 10.24 | 11.76 |
|                 | 12H  | 13.07            | 13.41 | 14.21 | 14.54 | 16.06 | 8.81           | 9.15 | 9.94  | 10.27 | 11.80 |
| 8H              | 4H   | 12.27            | 12.65 | 13.38 | 13.76 | 15.28 | 8.49           | 8.87 | 9.61  | 9.98  | 11.50 |
|                 | 6H   | 12.83            | 13.14 | 13.96 | 14.29 | 15.81 | 9.00           | 9.31 | 10.13 | 10.46 | 11.98 |
|                 | 8H   | 13.04            | 13.31 | 14.18 | 14.44 | 15.98 | 9.18           | 9.45 | 10.32 | 10.59 | 12.13 |
|                 | 12H  | 13.17            | 13.41 | 14.32 | 14.54 | 16.11 | 9.29           | 9.53 | 10.44 | 10.66 | 12.23 |
| 12H             | 4H   | 12.22            | 12.56 | 13.35 | 13.68 | 15.21 | 8.49           | 8.83 | 9.62  | 9.95  | 11.48 |
|                 | 6H   | 12.80            | 13.07 | 13.94 | 14.21 | 15.74 | 9.04           | 9.32 | 10.19 | 10.45 | 11.99 |
|                 | 8H   | 13.01            | 13.25 | 14.16 | 14.38 | 15.96 | 9.24           | 9.48 | 10.39 | 10.61 | 12.19 |