

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: P925650

Luminaire Tested: DFN2DIP-SQ3F0-090D120US950-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P925650  
REPORT IS A COMBINATION OF REPORTS P900016 AND P896733  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-090D120US950-RLLFLL  
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

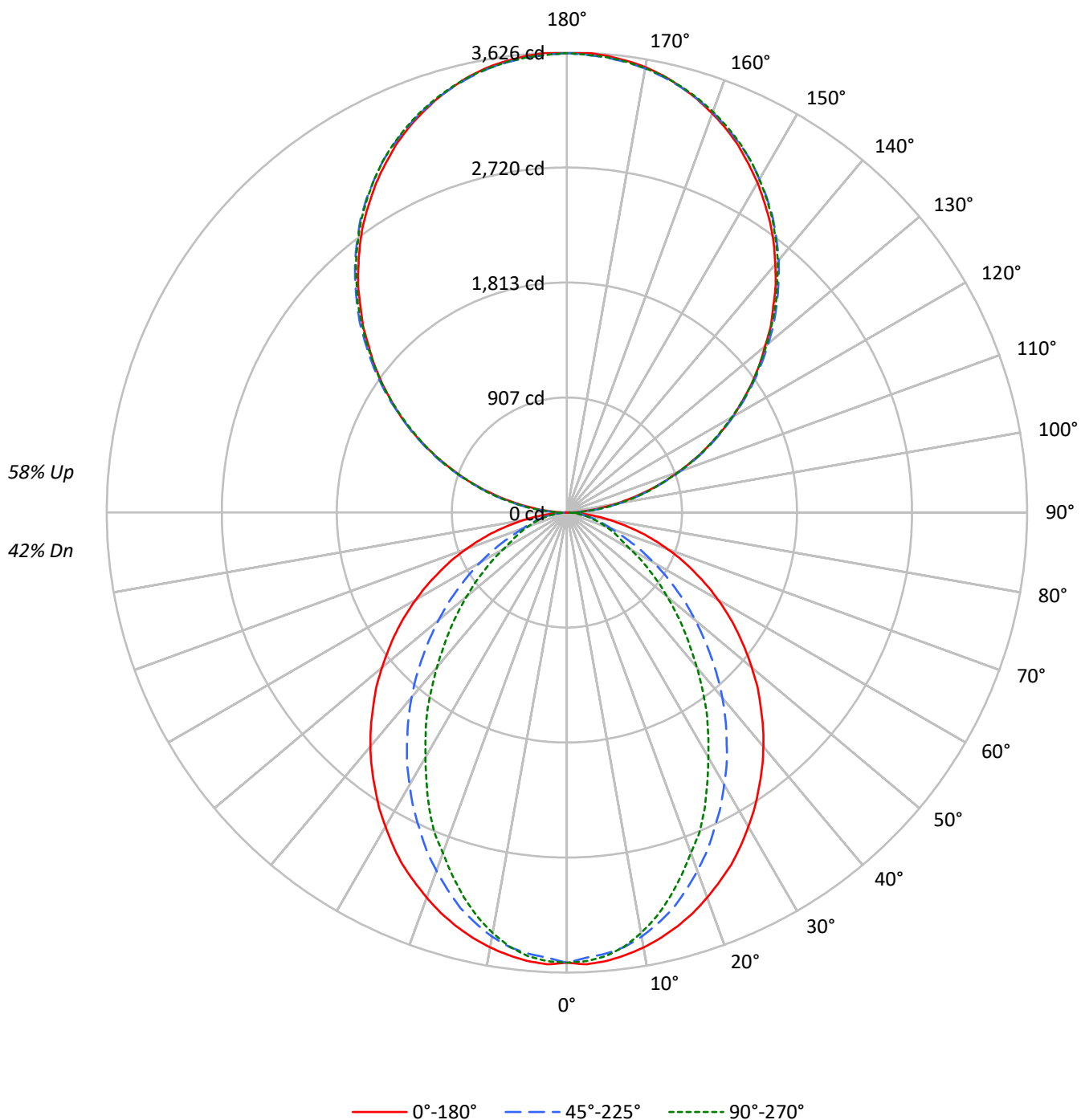
Lumens per Lamp: N/A  
Luminaire Lumens: 17429.6 lumens  
Efficiency: N/A  
Efficacy: 95.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 181.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.996  
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: P925650

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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   | 105 | 105 | 105 | 105 | 96 | 96 | 96 | 96 | 79 | 79 | 79 | 63 | 63 | 63 | 49 | 49 | 49 |
| 1   | 96  | 92  | 89  | 85  | 88 | 84 | 81 | 78 | 70 | 67 | 65 | 56 | 55 | 53 | 44 | 43 | 42 |
| 2   | 88  | 81  | 75  | 70  | 80 | 74 | 69 | 65 | 61 | 58 | 55 | 50 | 47 | 45 | 39 | 37 | 36 |
| 3   | 81  | 72  | 65  | 59  | 73 | 66 | 60 | 55 | 55 | 50 | 47 | 44 | 41 | 39 | 35 | 33 | 31 |
| 4   | 74  | 64  | 56  | 50  | 67 | 58 | 52 | 47 | 49 | 44 | 40 | 40 | 36 | 33 | 31 | 29 | 27 |
| 5   | 68  | 57  | 49  | 43  | 62 | 52 | 45 | 40 | 44 | 39 | 35 | 36 | 32 | 29 | 28 | 26 | 24 |
| 6   | 63  | 51  | 43  | 38  | 57 | 47 | 40 | 35 | 40 | 34 | 30 | 33 | 29 | 26 | 26 | 23 | 21 |
| 7   | 58  | 46  | 38  | 33  | 53 | 43 | 36 | 31 | 36 | 31 | 27 | 30 | 26 | 23 | 24 | 21 | 19 |
| 8   | 54  | 42  | 34  | 29  | 49 | 39 | 32 | 28 | 33 | 28 | 24 | 27 | 23 | 21 | 22 | 19 | 17 |
| 9   | 50  | 38  | 31  | 26  | 46 | 36 | 29 | 25 | 30 | 25 | 22 | 25 | 21 | 19 | 20 | 18 | 16 |
| 10  | 47  | 35  | 28  | 24  | 43 | 33 | 26 | 22 | 28 | 23 | 19 | 23 | 19 | 17 | 19 | 16 | 14 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4066 | 4066 | 4066 |
| 5°  | 4070 | 3999 | 4026 |
| 10° | 4027 | 3918 | 3893 |
| 15° | 3969 | 3786 | 3690 |
| 20° | 3893 | 3605 | 3440 |
| 25° | 3815 | 3402 | 3199 |
| 30° | 3712 | 3195 | 2894 |
| 35° | 3610 | 2972 | 2626 |
| 40° | 3507 | 2742 | 2319 |
| 45° | 3387 | 2487 | 2041 |
| 50° | 3262 | 2230 | 1769 |
| 55° | 3132 | 1956 | 1508 |
| 60° | 2981 | 1670 | 1240 |
| 65° | 2808 | 1379 | 1115 |
| 70° | 2597 | 1107 | 1007 |
| 75° | 2332 | 970  | 913  |
| 80° | 1948 | 805  | 787  |
| 85° | 1320 | 525  | 584  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 3642 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 332.6   | 1.9       |
| 10°-20°   | 913.0   | 5.2       |
| 20°-30°   | 1281.8  | 7.4       |
| 30°-40°   | 1397.3  | 8.0       |
| 40°-50°   | 1284.2  | 7.4       |
| 50°-60°   | 1008.6  | 5.8       |
| 60°-70°   | 656.5   | 3.8       |
| 70°-80°   | 337.9   | 1.9       |
| 80°-90°   | 96.6    | 0.6       |
| 90°-100°  | 224.0   | 1.3       |
| 100°-110° | 711.8   | 4.1       |
| 110°-120° | 1218.2  | 7.0       |
| 120°-130° | 1602.1  | 9.2       |
| 130°-140° | 1798.3  | 10.3      |
| 140°-150° | 1763.5  | 10.1      |
| 150°-160° | 1479.3  | 8.5       |
| 160°-170° | 981.0   | 5.6       |
| 170°-180° | 342.9   | 2.0       |
| 0°-30°    | 2527.4  | 14.5      |
| 0°-40°    | 3924.6  | 22.5      |
| 0°-60°    | 6217.4  | 35.7      |
| 0°-90°    | 7308.4  | 41.9      |
| 90°-120°  | 2154.1  | 12.4      |
| 90°-150°  | 7318.0  | 42.0      |
| 90°-180°  | 10121.0 | 58.1      |
| 0°-180°   | 17429.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3549 | 3549  | 3549 | 3549  | 3549 |      |
| 5°   | 3549 | 3533  | 3491 | 3520  | 3510 | 336  |
| 15°  | 3375 | 3340  | 3231 | 3170  | 3138 | 951  |
| 25°  | 3064 | 2961  | 2749 | 2617  | 2569 | 1409 |
| 35°  | 2640 | 2476  | 2194 | 1991  | 1920 | 1652 |
| 45°  | 2158 | 1943  | 1606 | 1378  | 1300 | 1667 |
| 55°  | 1641 | 1390  | 1044 | 851   | 790  | 1466 |
| 65°  | 1108 | 848   | 559  | 450   | 440  | 1099 |
| 75°  | 591  | 366   | 257  | 234   | 231  | 625  |
| 85°  | 138  | 70    | 61   | 61    | 61   | 158  |
| 90°  | 3    | 39    | 107  | 100   | 104  | 17   |
| 95°  | 159  | 190   | 195  | 195   | 190  | 177  |
| 105° | 657  | 666   | 672  | 678   | 678  | 693  |
| 115° | 1222 | 1240  | 1234 | 1231  | 1222 | 1209 |
| 125° | 1778 | 1805  | 1797 | 1787  | 1784 | 1589 |
| 135° | 2300 | 2334  | 2340 | 2337  | 2328 | 1778 |
| 145° | 2792 | 2814  | 2831 | 2835  | 2823 | 1745 |
| 155° | 3193 | 3201  | 3211 | 3226  | 3217 | 1470 |
| 165° | 3473 | 3470  | 3470 | 3492  | 3476 | 980  |
| 175° | 3614 | 3605  | 3599 | 3620  | 3602 | 343  |
| 180° | 3620 | 3620  | 3620 | 3620  | 3620 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3548.6 | 3548.6 | 3548.6 | 3548.6 | 3548.6 |
| 2.5°   | 3564.6 | 3548.6 | 3513.1 | 3545.5 | 3539.1 |
| 5°     | 3548.6 | 3532.6 | 3490.7 | 3519.6 | 3510.1 |
| 7.5°   | 3519.6 | 3500.5 | 3455.6 | 3468.2 | 3452.1 |
| 10°    | 3481.1 | 3458.6 | 3394.6 | 3384.7 | 3365.6 |
| 12.5°  | 3433.1 | 3404.2 | 3317.2 | 3298.2 | 3262.7 |
| 15°    | 3375.2 | 3339.8 | 3230.7 | 3169.7 | 3137.7 |
| 17.5°  | 3307.7 | 3256.3 | 3121.3 | 3050.8 | 2999.4 |
| 20°    | 3230.7 | 3166.3 | 3005.8 | 2925.7 | 2854.8 |
| 22.5°  | 3147.2 | 3073.3 | 2886.9 | 2777.9 | 2729.9 |
| 25°    | 3063.8 | 2960.8 | 2749.0 | 2617.4 | 2569.0 |
| 27.5°  | 2964.3 | 2854.8 | 2620.4 | 2469.5 | 2395.6 |
| 30°    | 2858.3 | 2736.0 | 2479.1 | 2315.5 | 2228.6 |
| 32.5°  | 2755.3 | 2607.5 | 2344.5 | 2151.7 | 2071.2 |
| 35°    | 2639.9 | 2476.0 | 2193.5 | 1991.2 | 1920.3 |
| 37.5°  | 2527.4 | 2350.7 | 2052.1 | 1830.3 | 1750.3 |
| 40°    | 2408.6 | 2216.0 | 1904.3 | 1676.4 | 1592.9 |
| 42.5°  | 2286.5 | 2081.2 | 1756.7 | 1519.0 | 1438.8 |
| 45°    | 2158.1 | 1942.8 | 1605.8 | 1377.5 | 1300.5 |
| 47.5°  | 2036.1 | 1808.2 | 1461.3 | 1233.0 | 1162.5 |
| 50°    | 1901.2 | 1673.2 | 1320.0 | 1098.1 | 1031.0 |
| 52.5°  | 1769.4 | 1528.5 | 1185.1 | 973.1  | 912.1  |
| 55°    | 1640.9 | 1390.5 | 1043.6 | 851.2  | 790.1  |
| 57.5°  | 1509.4 | 1252.5 | 918.6  | 738.7  | 687.3  |
| 60°    | 1374.4 | 1117.5 | 786.8  | 623.2  | 571.7  |
| 62.5°  | 1243.0 | 986.1  | 674.3  | 520.3  | 494.7  |
| 65°    | 1108.0 | 847.7  | 558.8  | 449.7  | 439.9  |
| 67.5°  | 979.6  | 719.2  | 449.7  | 394.9  | 385.3  |
| 70°    | 844.7  | 594.2  | 372.4  | 340.4  | 327.4  |
| 72.5°  | 716.2  | 478.3  | 311.4  | 285.8  | 279.4  |
| 75°    | 590.8  | 366.0  | 256.9  | 234.4  | 231.3  |
| 77.5°  | 465.7  | 260.0  | 202.3  | 189.5  | 183.0  |
| 80°    | 349.9  | 186.4  | 154.0  | 141.4  | 141.4  |
| 82.5°  | 243.9  | 125.4  | 106.0  | 99.5   | 99.5   |
| 85°    | 137.9  | 70.5   | 61.0   | 61.0   | 61.0   |
| 87.5°  | 51.4   | 25.6   | 25.6   | 22.5   | 22.5   |
| 90°    | 3.2    | 39.3   | 106.9  | 100.5  | 103.7  |
| 92.5°  | 67.6   | 91.7   | 94.9   | 98.3   | 98.3   |
| 95°    | 159.3  | 189.9  | 195.4  | 195.4  | 189.9  |
| 97.5°  | 265.2  | 293.6  | 305.7  | 305.7  | 305.7  |
| 100°   | 387.5  | 412.6  | 421.3  | 421.3  | 418.0  |
| 102.5° | 516.3  | 534.8  | 546.8  | 550.2  | 546.8  |
| 105°   | 657.1  | 665.8  | 672.4  | 677.8  | 677.8  |
| 107.5° | 796.8  | 809.9  | 809.9  | 812.0  | 796.8  |
| 110°   | 932.2  | 949.6  | 949.6  | 949.6  | 940.9  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1078.4 | 1097.0 | 1093.7 | 1085.0 | 1078.4 |
| 115°   | 1222.5 | 1240.0 | 1234.5 | 1231.2 | 1222.5 |
| 117.5° | 1365.5 | 1389.5 | 1374.2 | 1365.5 | 1356.8 |
| 120°   | 1509.6 | 1533.6 | 1509.6 | 1509.6 | 1499.8 |
| 122.5° | 1640.6 | 1671.1 | 1655.9 | 1647.1 | 1640.6 |
| 125°   | 1778.1 | 1805.3 | 1796.7 | 1786.8 | 1783.5 |
| 127.5° | 1912.4 | 1946.2 | 1934.1 | 1921.1 | 1912.4 |
| 130°   | 2037.8 | 2077.1 | 2071.7 | 2065.1 | 2053.1 |
| 132.5° | 2178.6 | 2209.3 | 2211.4 | 2196.1 | 2187.4 |
| 135°   | 2299.8 | 2333.7 | 2340.3 | 2336.9 | 2328.2 |
| 137.5° | 2435.2 | 2462.5 | 2467.9 | 2465.7 | 2452.6 |
| 140°   | 2554.1 | 2581.4 | 2596.7 | 2596.7 | 2584.7 |
| 142.5° | 2676.4 | 2703.7 | 2712.4 | 2715.7 | 2703.7 |
| 145°   | 2792.1 | 2813.9 | 2831.4 | 2834.7 | 2822.7 |
| 147.5° | 2895.8 | 2923.1 | 2936.2 | 2941.7 | 2929.6 |
| 150°   | 3002.8 | 3021.3 | 3033.3 | 3043.2 | 3033.3 |
| 152.5° | 3097.7 | 3116.2 | 3131.6 | 3143.6 | 3131.6 |
| 155°   | 3192.7 | 3201.4 | 3211.3 | 3226.5 | 3216.7 |
| 157.5° | 3274.6 | 3281.1 | 3286.5 | 3308.4 | 3293.1 |
| 160°   | 3347.7 | 3354.3 | 3357.5 | 3376.1 | 3362.9 |
| 162.5° | 3415.3 | 3415.3 | 3418.7 | 3439.4 | 3424.1 |
| 165°   | 3473.2 | 3470.0 | 3470.0 | 3491.7 | 3476.5 |
| 167.5° | 3525.6 | 3515.8 | 3515.8 | 3537.6 | 3522.4 |
| 170°   | 3564.9 | 3556.1 | 3552.9 | 3574.7 | 3556.1 |
| 172.5° | 3592.2 | 3583.4 | 3580.2 | 3602.0 | 3583.4 |
| 175°   | 3614.0 | 3605.3 | 3598.8 | 3620.5 | 3602.0 |
| 177.5° | 3626.1 | 3617.3 | 3610.7 | 3629.3 | 3610.7 |
| 180°   | 3620.5 | 3620.5 | 3620.5 | 3620.5 | 3620.5 |

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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 | 11.18            | 11.95 | 12.21 | 12.98 | 14.37 | 7.14           | 7.91  | 8.17  | 8.94  | 10.33 |
|                 | 3H   | 12.85            | 13.54 | 13.89 | 14.58 | 15.98 | 8.32           | 9.01  | 9.36  | 10.05 | 11.45 |
|                 | 4H   | 13.45            | 14.10 | 14.50 | 15.15 | 16.56 | 8.76           | 9.41  | 9.81  | 10.46 | 11.87 |
|                 | 6H   | 13.87            | 14.47 | 14.93 | 15.51 | 16.94 | 9.07           | 9.67  | 10.14 | 10.72 | 12.14 |
|                 | 8H   | 13.99            | 14.56 | 15.06 | 15.62 | 17.04 | 9.16           | 9.73  | 10.23 | 10.79 | 12.21 |
|                 | 12H  | 14.05            | 14.59 | 15.12 | 15.65 | 17.09 | 9.20           | 9.74  | 10.27 | 10.80 | 12.24 |
| 4H              | 2H   | 11.19            | 11.84 | 12.25 | 12.88 | 14.30 | 7.73           | 8.38  | 8.79  | 9.42  | 10.83 |
|                 | 3H   | 13.01            | 13.55 | 14.07 | 14.62 | 16.05 | 9.06           | 9.61  | 10.13 | 10.68 | 12.10 |
|                 | 4H   | 13.69            | 14.19 | 14.77 | 15.25 | 16.70 | 9.60           | 10.10 | 10.68 | 11.16 | 12.61 |
|                 | 6H   | 14.20            | 14.63 | 15.28 | 15.71 | 17.15 | 10.01          | 10.44 | 11.09 | 11.53 | 12.97 |
|                 | 8H   | 14.37            | 14.77 | 15.45 | 15.85 | 17.30 | 10.14          | 10.53 | 11.22 | 11.61 | 13.07 |
|                 | 12H  | 14.46            | 14.82 | 15.56 | 15.91 | 17.37 | 10.20          | 10.55 | 11.29 | 11.65 | 13.11 |
| 8H              | 4H   | 13.66            | 14.05 | 14.74 | 15.13 | 16.59 | 9.88           | 10.27 | 10.96 | 11.35 | 12.81 |
|                 | 6H   | 14.21            | 14.54 | 15.32 | 15.66 | 17.12 | 10.39          | 10.71 | 11.49 | 11.83 | 13.29 |
|                 | 8H   | 14.43            | 14.71 | 15.54 | 15.82 | 17.29 | 10.57          | 10.86 | 11.68 | 11.96 | 13.43 |
|                 | 12H  | 14.56            | 14.81 | 15.67 | 15.91 | 17.42 | 10.68          | 10.93 | 11.79 | 12.03 | 13.54 |
| 12H             | 4H   | 13.60            | 13.96 | 14.70 | 15.06 | 16.52 | 9.88           | 10.24 | 10.98 | 11.33 | 12.79 |
|                 | 6H   | 14.19            | 14.48 | 15.30 | 15.58 | 17.05 | 10.43          | 10.72 | 11.54 | 11.82 | 13.30 |
|                 | 8H   | 14.40            | 14.66 | 15.52 | 15.75 | 17.27 | 10.64          | 10.89 | 11.75 | 11.99 | 13.50 |